



TEST REPORT

FOR

DC to DC Converter

MODEL : TMR 4-2411, TMR 4-2423WI

SERIES MODEL : Refer to item 5.1 for more details

REPORT NUMBER: 5402532.1340137B-EN-E0-V0

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Prepared for

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|-------------|-------------------|------------------|-------------------|
| -- | Apr. 12, 2021 | Initial Issue | Sally Lu |

| Summary of Test Results | | | | |
|-------------------------|---|----------------|--------|--------------|
| EMISSION | | | | |
| Standard | Test Item | Limit | Result | Remark |
| EN 55032:2015 +AC:2016 | Conducted disturbance at mains terminals ports | Class A | PASS | N/A (Note 4) |
| | Conducted common mode (asymmetric mode) disturbance telecommunication ports | Class A | N/A | (Note 1) |
| | Radiated disturbance below 1GHz | Class A | PASS | N/A (Note 4) |
| | Radiated disturbance above 1 GHz | Class A | N/A | (Note 2) |
| EN 61000-3-2 : 2014 | Harmonic current disturbance | Class A | N/A | (Note 3) |
| EN 61000-3-3 : 2013 | Voltage Fluctuations & Flicker | Refer to 6.5.1 | N/A | (Note 3) |

Note 1: Since the EUT does not contain asymmetric port, the test is unnecessary.

Note 2: Since the highest frequency of EUT is less than 108 MHz, the measurement above 1 GHz is unnecessary.

Note 3: Since the EUT does not connect to mains power network directly, the test is unnecessary.

Note 4: Please refer to original report no.: 4789451449B-EN-E0-V0.

| Summary of Test Results (EN 55024) | | | | | |
|---|---|---|------------------------------|------------------|----------|
| IMMUNITY | | | | | |
| Basic Standard | Test Item | Class / Severity | Require Performance Criteria | Result | Remark |
| IEC 61000-4-2: 2008 EN 61000-4-2: 2009 | Electrostatic discharge immunity | Contact ± 4 kV Air ± 8 kV | B | PASS | (Note 7) |
| IEC 61000-4-3: 2006+ A1: 2007+A2: 2010 EN 61000-4-3: 2006+ A1: 2008+A2: 2010 | Radiated, radio frequency electromagnetic field immunity | 3V/m 80%, 1kHz, AM | A | PASS | |
| IEC 61000-4-4: 2012 EN 61000-4-4: 2012 | Electrical fast transient/burst immunity | 1kV(AC Mains) 5/50ns, 5kHz | B | N/A (Note 4) | |
| | | 0.5kV(DC port) 5/50ns, 5kHz | B | PASS (Note 6) | |
| | | 0.5kV(Signal Lines) 5/50ns, 5kHz or 100kHz (Note 3) | B | N/A (Note 5) | |
| IEC 61000-4-5: 2014 + A1: 2017 EN 61000-4-5: 2014 | Surge immunity | AC Mains 2.0kV(Common) 1.0kV(Differential) 1.2/50us | B | N/A (Note 4) | |
| | | DC power port 0.5kV Line to ground 1.2/50us | B | PASS (Note 6) | |
| | | Signal port 1.0kV(w/o primary protector) 4.0kV(w primary protector) 1.2/50us or 10/700us (Note 1) | C | N/A (Note 5) | |
| IEC 61000-4-6: 2013+ COR1: 2015 EN 61000-4-6: 2014 + AC: 2015 | Immunity to conducted disturbances, induced by radio-frequency fields | AC Mains 3V (e.m.f), 80%, 1kHz Amp. Mod. (Note 2) | A | N/A (Note 4) | |
| | | DC power port 3V (e.m.f), 80%, 1kHz Amp. Mod (Note 2) | A | PASS | |
| | | Signal line 3V (e.m.f), 80%, 1kHz Amp. Mod. (Note 2) | A | N/A (Note 5) | |
| IEC 61000-4-8: 2009 EN 61000-4-8: 2010 | Power frequency magnetic field immunity | 50Hz, 1A/m(r.m.s) | A | PASS | |

| Summary of Test Results (EN 55024) | | | | | |
|---|---|---|------------------------------|-----------------|----------|
| IMMUNITY | | | | | |
| Basic Standard | Test Item | Class / Severity | Require Performance Criteria | Result | Remark |
| IEC 61000-4-11: 2014+ A1:2017 EN 61000-4-11: 2004 | Voltage dips, short interruptions and voltage variations immunity | Voltage dips, >95% reduction with 0.5 period | B | N/A (Note 4) | (Note 7) |
| | | Voltage dips, 30% reduction with 25 periods | C | | |
| | | Voltage interruptions >95% reduction with 250 periods | C | | |

Note 1: Where the coupling network for the 10/700 μ s waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μ s waveform and appropriate coupling network.

Note 2: The frequency range is scanned as specified. However, when specified in EN 55024 Annex A, an additional comprehensive functional test shall be carried out at a limited number of frequencies. The selected frequencies for conducted tests are: 0,2; 1; 7,1; 13,56; 21; 27,12 and 40,68 MHz (± 1 %).

Note 3: For xDSL equipment, the repetition frequency for EFT testing shall be 100 kHz .

Note 4: Since the EUT does not connect to mains power network directly, the test is unnecessary.

Note 5: Since the EUT does not contain signal port, the test is unnecessary.

Note 6: Customers add countermeasure components to the fixture board. For the corresponding components, please refer to the appendix III.

Note 7: Please refer to original report no.: 4789451449B-EN-E0-V0.

| Summary of Test Results (EN 55035) | | | | | |
|---|--|---|------------------------------|------------------|----------|
| IMMUNITY | | | | | |
| Basic Standard | Test Item | Class / Severity | Require Performance Criteria | Result | Remark |
| IEC 61000-4-2: 2008 EN 61000-4-2: 2009 | Electrostatic discharge immunity | Contact ± 4 kV Air ± 8 kV | B | PASS | (Note 7) |
| IEC 61000-4-3: 2006+ A1: 2007+A2: 2010 EN 61000-4-3: 2006+ A1: 2008+A2: 2010 | Continuous RF electromagnetic field disturbances, swept test | 80-1000MHz 3V/m 80%, 1kHz, AM | A | PASS | |
| | Continuous RF electromagnetic field disturbances, spot test | 1800 ;2600 ;3500 5000 MHz ($\pm 1\%$) 3V/m 80%, 1kHz, AM (Note 2) | A | PASS | |
| | immunity levels to common wireless communication devices | Refer to Table I.1 | A | PASS | |
| IEC 61000-4-4: 2012 EN 61000-4-4: 2012 | Electrical fast transient/burst immunity | 1kV(AC Mains) 5/50ns, 5kHz | B | N/A (Note 4) | |
| | | 0.5kV(DC power port) 5/50ns, 5kHz | B | PASS (Note 6) | |
| | | 0.5kV(Signal Lines) 5/50ns, 5kHz or 100kHz (Note 3) | B | N/A (Note 5) | |
| IEC 61000-4-5: 2014 + A1: 2017 EN 61000-4-5: 2014 | Surge immunity | AC Mains 2.0kV(Common) 1.0kV(Differential) 1.2/50us | B | N/A (Note 4) | |
| | | DC power port 0.5kV Line to ground 1.2/50us | B | PASS (Note 6) | |
| | | Signal port 1.0kV (w/o primary protector) 4.0kV (w primary protector) 1.2/50us or 10/700us 0.5kV Coaxial or shielded to ground 1.2/50 (8/20) us (Note 1) | C | N/A (Note 5) | |

| Summary of Test Results (EN 55035) | | | | | | |
|--|---|---|------------------------------|-----------------|----------|--|
| IMMUNITY | | | | | | |
| Basic Standard | Test Item | Class / Severity | Require Performance Criteria | Result | Remark | |
| IEC 61000-4-6: 2013+ COR1: 2015 EN 61000-4-6: 2014 + AC: 2015 | Continuous induced RF disturbances | AC Mains 0.15~10MHz, 3V 10~30MHz, 3~1V 30-80MHz, 1V with 1kHz 80% AM (Note 2) | A | N/A (Note 4) | (Note 7) | |
| | | DC Ports 0.15~10MHz, 3V 10~30MHz, 3~1V 30-80MHz, 1V with 1kHz 80% AM (Note 2) | A | PASS | | |
| | | Signal Line 0.15~10MHz, 3V 10~30MHz, 3~1V 30-80MHz, 1V with 1kHz 80% AM (Note 2) | A | N/A (Note 5) | | |
| IEC 61000-4-8: 2009 EN 61000-4-8: 2010 | Power frequency magnetic field immunity | 50 Hz, 1 A/m(r.m.s) | A | PASS | | |
| IEC 61000-4-11: 2014+ A1:2017 EN 61000-4-11: 2004 | Voltage dips, short interruptions and voltage variations immunity | Voltage dips, >5% residual with 0.5cycles | B | N/A (Note 4) | | |
| | | Voltage dips, 70% residual with 25 cycles | C | | | |
| | | Voltage interruptions, >5% residual with 250 cycles | C | | | |

Note 1: Where the coupling network for the 10/700 μ s waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μ s waveform and appropriate coupling network.

Note 2: The frequency range is scanned as specified. However, when specified in EN 55035 , an additional EUT contains telephony functional test shall be carried out at a limited number of frequencies. The selected frequencies for conducted immunity tests are: 0,2; 1; 7,1; 13,56; 21; 27,12 and 40,68 MHz (± 1 %) and radiated immunity tests are 80; 120; 160; 230; 434; 460; 600; 863 and 900MHz (± 1 %).

Note 3: For xDSL equipment, the repetition frequency for EFT testing shall be 100 kHz .

Note 4: Since the EUT does not connect to mains power network directly, the test is unnecessary.

Note 5: Since the EUT does not contain signal port, the test is unnecessary.

Note 6: Customers add countermeasure components to the fixture board. For the corresponding components, please refer to the appendix III.

Note 7: Please refer to original report no.: 4789451449B-EN-E0-V0.

**Table I.1 – Guidance on the selection of immunity levels
to common wireless communication devices**

| Table clause | Approximate protection distance (m) | Calculated RF field strength in V/m for frequencies and protection distances simulating different radio transmission types, assuming a given ERP | | | | | | |
|---|-------------------------------------|--|---------|---------|--------------------|----------------|-------------|--|
| | | LTE/UMTS (0,2 W) | GSM | | WiMAX/3 G (1,26 W) | WiMAX (1,26 W) | Wi-Fi (1 W) | Maximum RF field strength at any frequency |
| | | | (2 W) | (1 W) | | | | |
| | | 800 MHz | 900 MHz | 1,8 GHz | 2,6 GHz | 3,5 GHz | 5 GHz | |
| I.1.1 | 3,0 | 0,6 | 1,8 | 1,3 | 1,5 | 1,5 | 1,3 | 3 |
| I.1.2 | 1,5 | 1,2 | 3,7 | 2,6 | 2,9 | 2,9 | 2,6 | 4 |
| I.1.3 | 1,0 | 1,7 | 5,5 | 3,9 | 4,4 | 4,4 | 3,9 | 6 |
| I.1.4 | 0,5 | 3,3 | 10,5 | 10,5 | 11,8 | 11,8 | 10,5 | 12 |
| I.1.5 | 0,2 | 8,3 | 26,4 | 26,4 | 29,6 | 29,6 | 26,4 | 30 |
| The protection distance is not the test distance as defined in IEC 61000-4-3:2006/AMD1:2007/AMD2:2010, but the shortest expected operating distance between the EUT and the interfering wireless communication device at which the immunity performance criteria will be satisfied. | | | | | | | | |

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: TRACO ELECTRONIC AG
SIHLBRUGGSTRASSE 111 CH-6340 BAAR, SWITZERLAND

EUT DESCRIPTION: DC to DC Converter

MODEL: TMR 4-2411, TMR 4-2423WI

SERIES MODEL : Refer to item 5.1 for more details

DATE of TESTED: May 5, 2020 ~ Dec. 9, 2020
(Refer to report no. 4789451449B-EN-E0-V0.)

| APPLICABLE STANDARDS | |
|--|--------------|
| STANDARDS | TEST RESULTS |
| EN 55032: 2015+AC: 2016 EN 55024: 2010+A1: 2015 EN 55035: 2017 | PASS |

Underwriters Laboratories Taiwan Co., Ltd. Tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. Based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

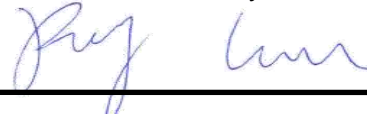
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. And all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. Will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:



Sally Lu Date : Apr. 12, 2021
Project Handler

Approved and Authorized By:



Roy Chen Date : Apr. 12, 2021
Operations Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented EN 55032, EN 55024, EN55035.

3. FACILITIES AND ACCREDITATION

| | |
|---------------|---|
| Test Location | Underwriters Laboratories Taiwan Co., Ltd., |
| Address | Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan |
| Description | All measurement facilities use to collect the measurement data are located at Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan |

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Electromagnetic interference:

| Test Item | Measurement Frequency Range | K | U(dB) |
|--|-----------------------------|---|-------|
| Conducted disturbance at mains terminals ports | 0.15MHz ~ 30MHz | 2 | 1.5 |
| 966-1 Test Site | | | |
| Radiated disturbance below 1 GHz | 30MHz ~ 1000MHz | 2 | 5.2 |

Electromagnetic sensitivity:

| Test Item | Measurement Frequency Range | K | U(dB) |
|---|-----------------------------|---|-------|
| Radiated, radio frequency electromagnetic field immunity | 80MHz ~ 1000MHz | 2 | 1.9 |
| Immunity to conducted disturbances, induced by radio-frequency fields (CDN) | 0.15MHz ~ 80MHz | 2 | 2.4 |

| Test Item | K | Voltage(%) | Rise Time(%) | First Peak Current (%) | Current @ 30ns (%) | Current @ 60ns (%) |
|----------------------------------|---|------------|--------------|------------------------|--------------------|--------------------|
| Electrostatic discharge immunity | 2 | 2.6 | 6.9 | 3.9 | 4.0 | 4.0 |

| Test Item | K | Peak Voltage(%) | Rise Time(%) | Pulse width(%) | Burst duration & Period (%) | Repetition rate (%) |
|--|---|-----------------|--------------|----------------|-----------------------------|---------------------|
| Electrical fast transient/burst immunity | 2 | 1.0 | 2.4 | 5.1 | 0.74 | 0.22 |

| Test Item | K | Phase Shifting (%) | Voltage (%) | Current (%) | Front Time & Duration(For waveform of the surge voltage)(%) | Front Time & Duration(For waveform of the surge current)(%) |
|----------------|---|--------------------|-------------|-------------|---|---|
| Surge immunity | 2 | 0.31 | 3.6 | 2.7 | 1.5 | 5.9 |

For test date: May 8, 2020

| Test Item | K | Magnetic field Strength(%) | Current (mA/A) |
|--|---|----------------------------|----------------|
| Power Frequency Magnetic Field Immunity Test | 2 | 1.0 | 31 |

For test date: Dec. 9, 2020

| Test Item | K | Magnetic field Strength(%) |
|--|---|----------------------------|
| Power Frequency Magnetic Field Immunity Test | 2 | 10.0 |

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

| | |
|--------------------------------------|--|
| EUT Name : | DC to DC Converter |
| Model: | TMR 4-2411, TMR 4-2423WI |
| Series Model: | TMR 4-1211, TMR 4-1212, TMR 4-1213, TMR 4-1215, TMR 4-1222, TMR 4-1223, TMR 4-2412, TMR 4-2413, TMR 4-2415, TMR 4-2422, TMR 4-2423, TMR 4-4811, TMR 4-4812, TMR 4-4813, TMR 4-4815, TMR 4-4822, TMR 4-4823, TMR 4-2411WI, TMR 4-2412WI, TMR 4-2413WI, TMR 4-2415WI, TMR 4-2422WI, TMR 4-4811WI, TMR 4-4812WI, TMR 4-4813WI, TMR 4-4815WI, TMR 4-4822WI, TMR 4-4823WI |
| Power Rating: | 12Vdc from DC source 24Vdc from DC source 48Vdc from DC source |
| Highest Frequency within EUT: | Less than 108MHz |
| Condition of EUT: | Production Unit |
| Date Of Receipt Of Sample: | Apr. 23, 2020 |

Note :

1. This report was issued refer to original report which report number is 4789451449B-EN-E0-V0. This report was added test data of PFMF for customer request, For other test data, copied from original report 4789451449B-EN-E0-V0.

2. The models difference table as below:

| Model Selection Guide (TMR 04 SERIES) | | |
|---------------------------------------|-----------------------|----------------|
| Model Number | Input Voltage (Range) | Output Voltage |
| Standard | VDC | VDC |
| TMR 4-1211 | 12 (9 ~ 18) | 5 |
| TMR 4-1212 | | 12 |
| TMR 4-1213 | | 15 |
| TMR 4-1215 | | 24 |
| TMR 4-1222 | | ±12 |
| TMR 4-1223 | | ±15 |
| TMR 4-2411 | 24 (18 ~ 36) | 5 |
| TMR 4-2412 | | 12 |
| TMR 4-2413 | | 15 |
| TMR 4-2415 | | 24 |
| TMR 4-2422 | | ±12 |
| TMR 4-2423 | | ±15 |
| TMR 4-4811 | 48 (36 ~ 75) | 5 |
| TMR 4-4812 | | 12 |
| TMR 4-4813 | | 15 |
| TMR 4-4815 | | 24 |
| TMR 4-4822 | | ±12 |
| TMR 4-4823 | | ±15 |

For each output

| Model Selection Guide (TMR 04WI SERIES) | | |
|---|-----------------------|----------------|
| Model Number | Input Voltage (Range) | Output Voltage |
| Standard | VDC | VDC |
| TMR 4-2411WI | 24 (18 ~ 36) | 5 |
| TMR 4-2412WI | | 12 |
| TMR 4-2413WI | | 15 |
| TMR 4-2415WI | | 24 |
| TMR 4-2422WI | | ±12 |
| TMR 4-2423WI | | ±15 |
| TMR 4-4811WI | 48 (36 ~ 75) | 5 |
| TMR 4-4812WI | | 12 |
| TMR 4-4813WI | | 15 |
| TMR 4-4815WI | | 24 |
| TMR 4-4822WI | | ±12 |
| TMR 4-4823WI | | ±15 |

For each output

Note: Customer only provided model number TMR 4-1223, TMR 4-1211, TMR 4-2411, TMR 4-4811, TMR 4-4823, TMR 4-2423WI, TMR 4-4823WI, TMR 4-2412WI, TMR 4-2411WI, TMR 4-4811WI for the pretest and used worst mode do the final test.

5.2. Test Mode

The Pre-test modes :

| Mode | Description | Conducted Emission | Radiated Emission |
|---------|--------------------------|--------------------|-------------------|
| Mode 1 | Full Load (TMR 4-1223) | v | v |
| Mode 2 | Full Load (TMR 4-1211) | v | v |
| Mode 3 | Full Load (TMR 4-2411) | v | v |
| Mode 4 | Full Load (TMR 4-4811) | v | v |
| Mode 5 | Full Load (TMR 4-4823) | v | v |
| Mode 6 | Full Load (TMR 4-2423WI) | v | v |
| Mode 7 | Full Load (TMR 4-4823WI) | v | v |
| Mode 8 | Full Load (TMR 4-2412WI) | v | v |
| Mode 9 | Full Load (TMR 4-2411WI) | v | v |
| Mode 10 | Full Load (TMR 4-4811WI) | v | v |

After pre-testing, the final test mode was displayed as below table.

| Test Items | | Test Mode |
|-----------------|---------------------------------------|-----------|
| Emission | Conducted Emission | Mode 3、6 |
| | Radiated Emission | Mode 3、6 |
| Immunity | Electrostatic Discharge | Mode 3、6 |
| | Radio Frequency Electromagnetic Field | Mode 3、6 |
| | Electrical Fast Transients | Mode 1~10 |
| | Surge immunity | Mode 1~10 |
| | Conducted disturbances immunity | Mode 3、6 |
| | Power frequency magnetic field | Mode 3、6 |

Note: The customer requires that the mode 1~2, 4~5, 7~10 test the EFT and surge .

5.3. EUT Operation Test Setup

For Conducted Emission & Radiated Emission test : (Mode 1)

- a. The EUT (TMR 4-1223) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 1)

- a. The EUT (TMR 4-1223) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 2)

- a. The EUT (TMR 4-1211) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 2)

- a. The EUT (TMR 4-1211) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 3)

- a. The EUT (TMR 4-2411) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 3)

- a. The EUT (TMR 4-2411) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 4)

- a. The EUT (TMR 4-4811) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 4)

- a. The EUT (TMR 4-4811) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 5)

- a. The EUT (TMR 4-4823) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 5)

- a. The EUT (TMR 4-4823) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 6)

- a. The EUT (TMR 4-2423WI) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 6)

- a. The EUT (TMR 4-2423WI) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 7)

- a. The EUT (TMR 4-4823WI) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 7)

- a. The EUT (TMR 4-4823WI) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 8)

- a. The EUT (TMR 4-2412WI) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 8)

- a. The EUT (TMR 4-2412WI) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 9)

- a. The EUT (TMR 4-2411WI) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 9)

- a. The EUT (TMR 4-2411WI) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

For Conducted Emission & Radiated Emission test : (Mode 10)

- a. The EUT (TMR 4-4811WI) was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test : (Mode 10)

- a. The EUT (TMR 4-4811WI) was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

5.4. Monitoring of EUT for All Immunity Test

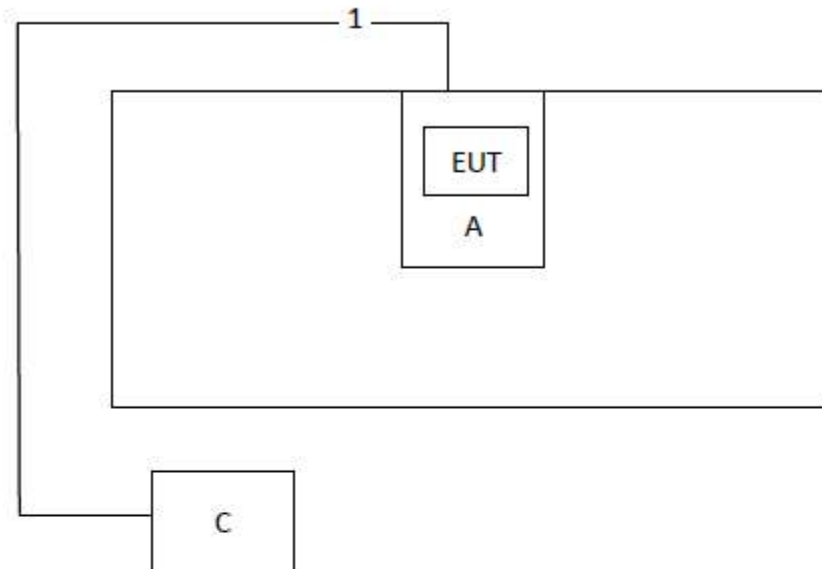
| | |
|---------------|---|
| Audio | N/A |
| Visual | Monitor the output voltage through the meter. |

5.5. Accessory

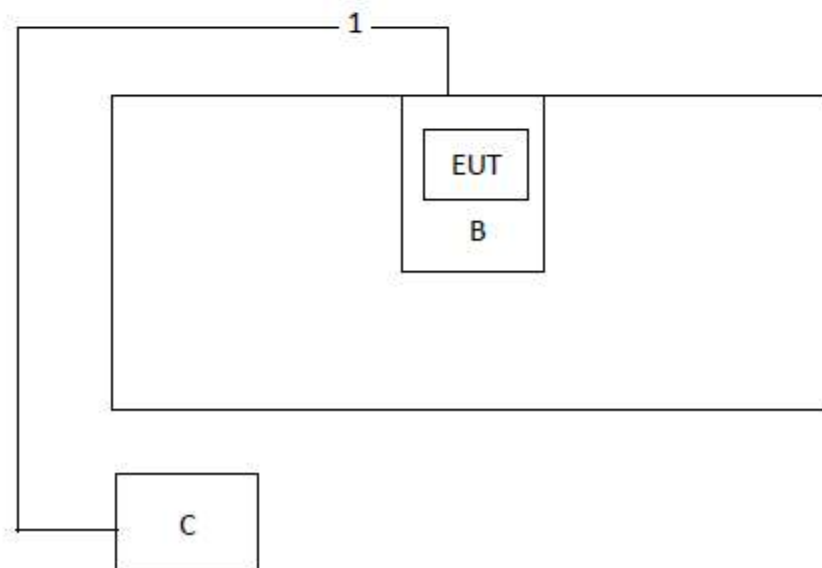
| Item | Accessory | Brand Name | Model Name | Note |
|-------------|------------------|-------------------|-------------------|-------------|
| - | N/A | N/A | N/A | N/A |

5.6. Block diagram showing the configuration of system tested

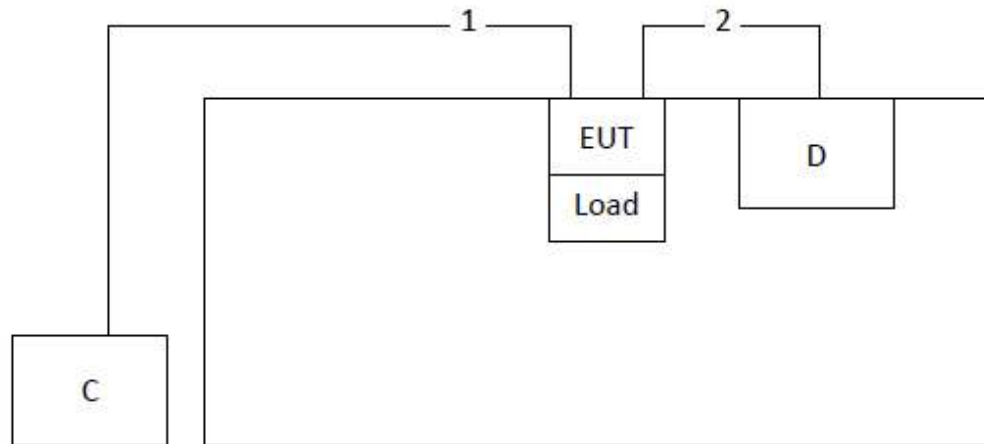
For Conducted Emission & Radiated Emission test : (Mode 3)



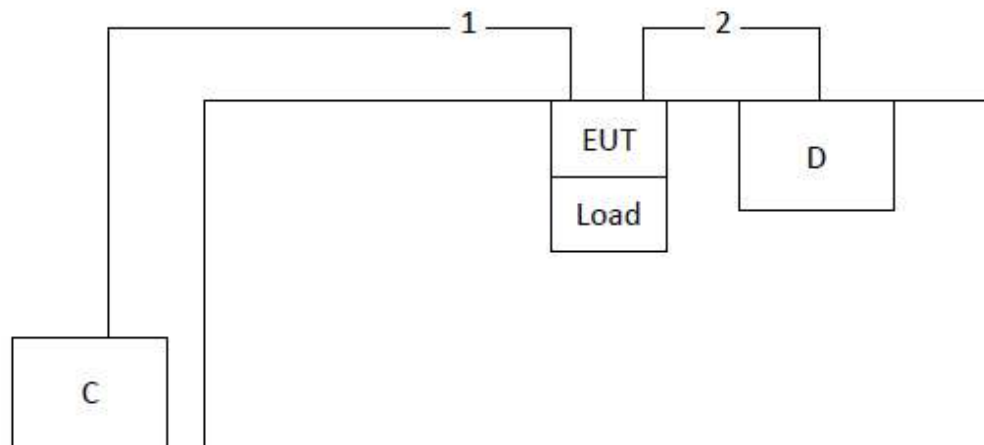
For Conducted Emission & Radiated Emission test : (Mode 6)



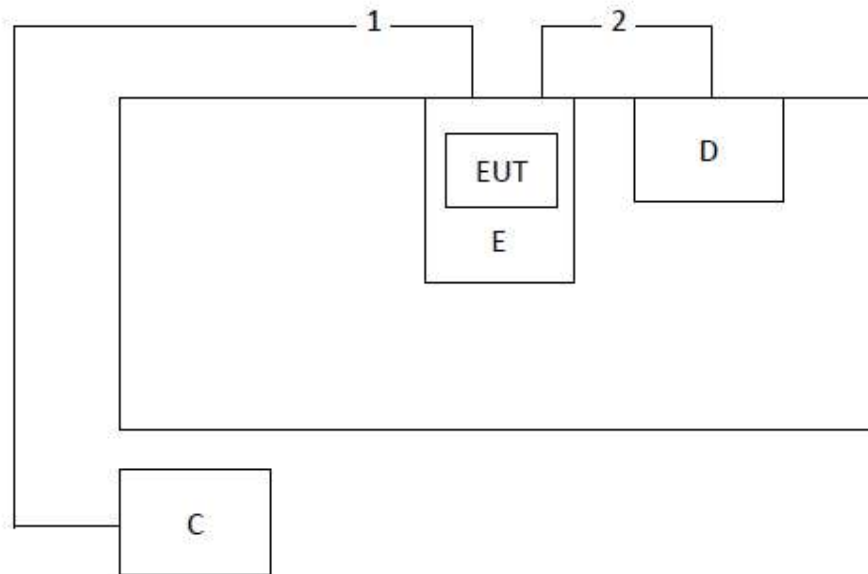
For Immunity - ESD, RS, CS, PFMF test : (Mode 3)



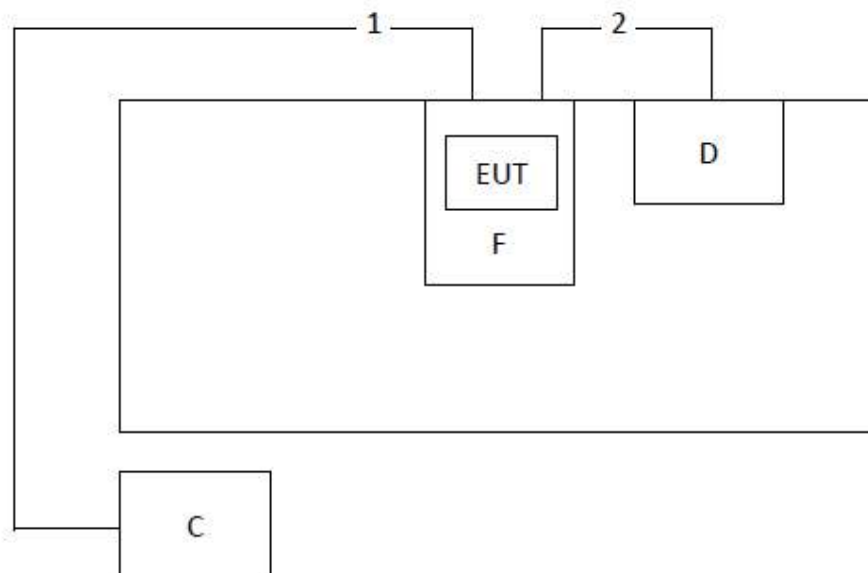
For Immunity - ESD, RS, CS, PFMF test : (Mode 6)



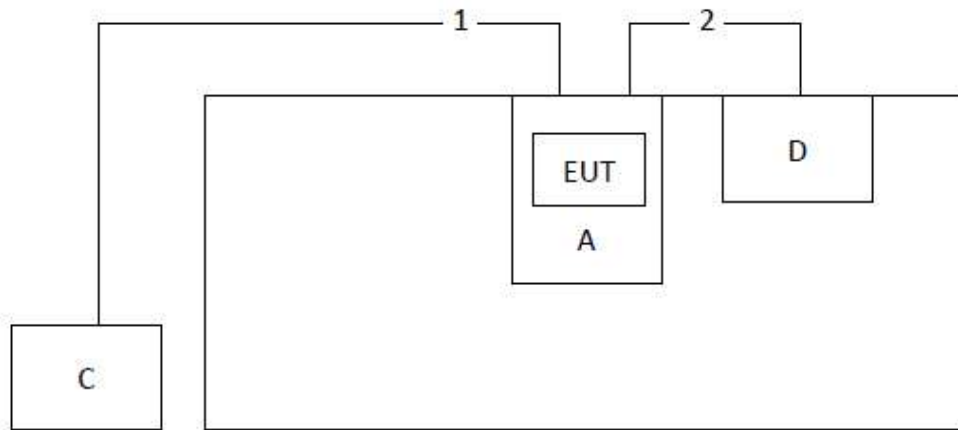
For Immunity - EFT, Surge test : (Mode 1)



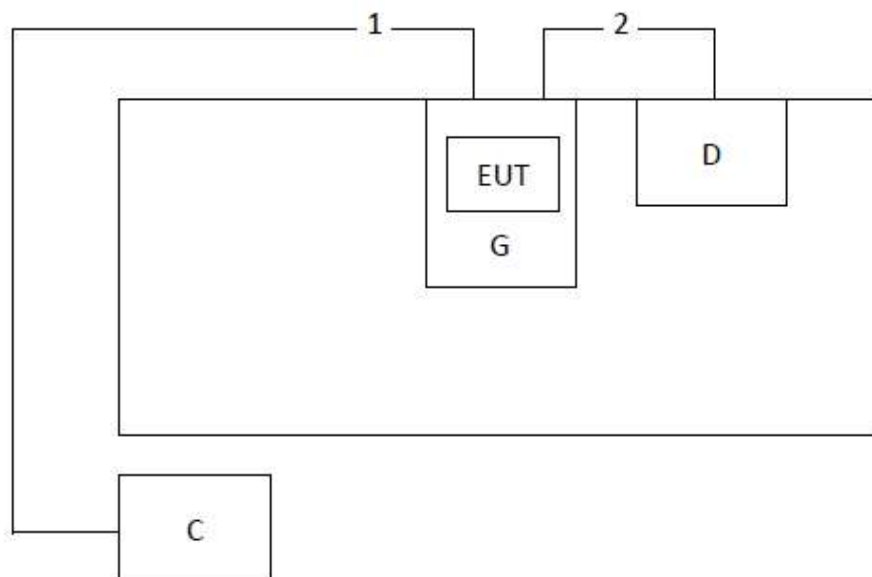
For Immunity - EFT, Surge test : (Mode 2)



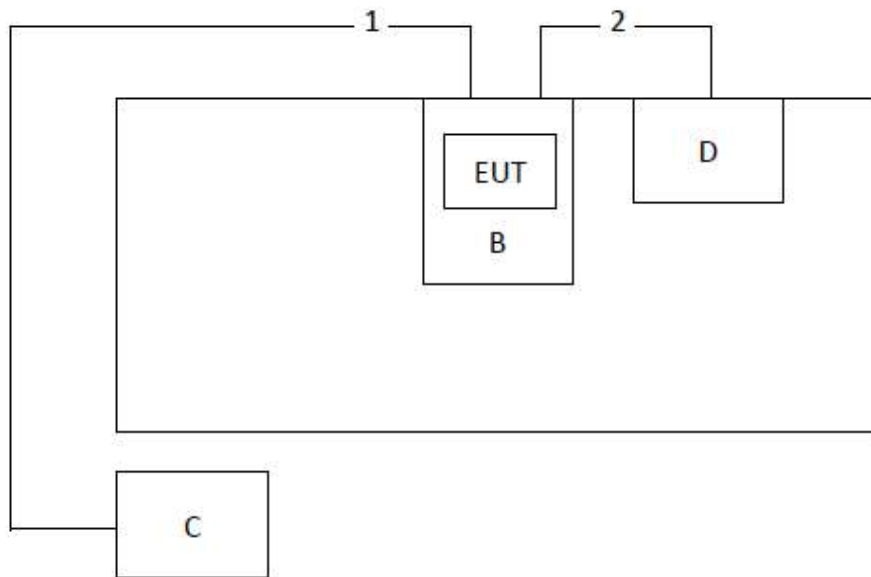
For Immunity - EFT, Surge test : (Mode 3)



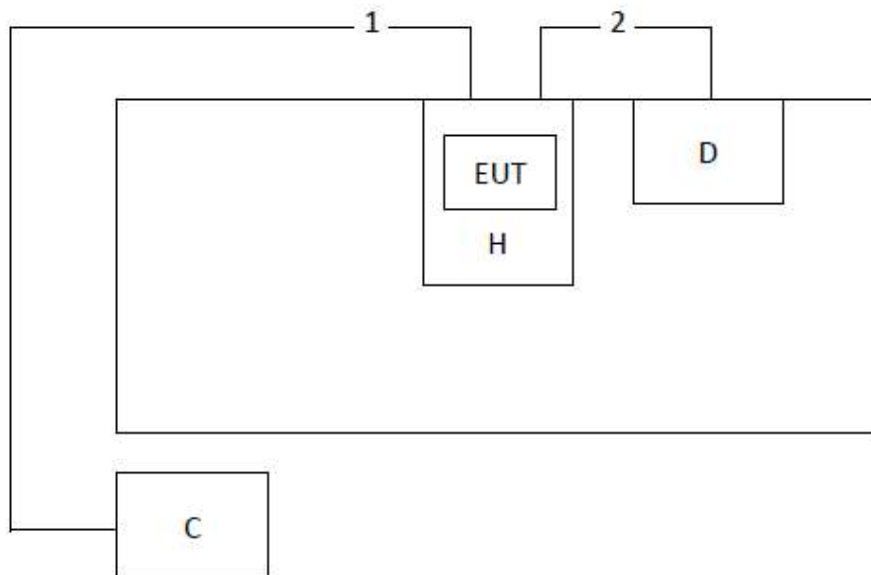
For Immunity - EFT, Surge test : (Mode 4)



For Immunity - EFT, Surge test : (Mode 5~7)



For Immunity - EFT, Surge test : (Mode 8~10)



5.7. Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | FCC ID | Note |
|------|-----------------|-------------------|----------------|------------|--------|------|
| A | Fixture board-1 | N/A | N/A | N/A | N/A | N/A |
| B | Fixture board-2 | N/A | N/A | N/A | N/A | N/A |
| C | DC source | Elektro-Automatik | PSI 9500-20 | N/A | N/A | N/A |
| D | Meter | CNSCKJ | C85C17-V | N/A | N/A | N/A |
| E | Fixture board-3 | N/A | N/A | N/A | N/A | N/A |
| F | Fixture board-4 | N/A | N/A | N/A | N/A | N/A |
| G | Fixture board-5 | N/A | N/A | N/A | N/A | N/A |
| H | Fixture board-6 | N/A | N/A | N/A | N/A | N/A |

| Item | Connection | Shielded Type | Length | Note |
|------|------------|---------------|--------|------|
| 1 | Power Wire | Non-shielded | 5 m | N/A |
| 2 | Power Wire | Non-shielded | 1.8 m | N/A |

5.8. Measuring Instrument List

| Instrument | | | | | |
|--|---------------------------|--|------------------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Expired date |
| Conducted Disturbance | | | | | |
| EMI Test Receiver | Rohde & Schwarz | ESR7 | 101753 | 2019/11/19 | 2020/11/17 |
| Two-Line V-Network | Rohde & Schwarz | ENV216 | 102136 | 2019/8/8 | 2020/8/6 |
| Two-Path V-LISN | SCHWARZBECK | NSLK 8127 | 8127-946 | 2019/10/17 | 2020/10/16 |
| RF Current Probe | FCC | F-52 | 171502 | 2020/2/5 | 2021/2/3 |
| Coupling and Decoupling Network | TESEQ | ISN ST08 | 45105 | 2020/2/10 | 2021/2/8 |
| Impedance Stabilization Network | TESEQ | ISN T800 | 42830 | 2020/2/10 | 2021/2/8 |
| Impedance Stabilization Network | TESEQ | ISN T8-Cat6 | 39923 | 2020/2/3 | 2021/2/1 |
| Capacitive Voltage Probe | TESEQ | CVP 2200A | 44922 | 2020/1/22 | 2021/1/20 |
| Impuls-Begrenzer Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 102219-Qt | 2019/8/6 | 2020/8/4 |
| Measurement Software | Farad | EZ-EMC Ver: EMEC-3A1 | N/A | N/A | N/A |
| Cables | HARBOUR INDUSTRIES | LL142 | 170205-5000-1 | 2020/2/5 | 2021/2/3 |
| Radiated Disturbance | | | | | |
| 966-1 | | | | | |
| EMI Test Receiver | Rohde & Schwarz | ESR7 | 101755 | 2019/12/4 | 2020/12/3 |
| Trilog-Broadband Antenna with 5dB Attenuator | SCHWARZBECK | VULB 9168 & N-6-05 | 9168-773 & AT-N0539 | 2020/2/11 | 2021/2/9 |
| Double Ridged Guide Horn Antenna | SCHWARZBECK | BBHA 9120 D | 1686 | 2019/12/27 | 2020/12/25 |
| Preamplifier | EMC Instrument | EMC330E | 980405 | 2020/2/4 | 2021/2/3 |
| Preamplifier | EMC Instrument | EMC051835BE | 980407 | 2020/1/15 | 2021/1/13 |
| Measurement Software | Farad | EZ-EMC Ver: EMEC-3A1 | N/A | N/A | N/A |
| Cables | UltraPhase&EMC Instrument | A1K50-UP0358-A1K50-1500&EMC106-NM-SM-2500/8000 | 170111-3&170104/170223 | 2020/2/5 | 2021/2/3 |

| Instrument | | | | | |
|---|-----------------|------------------------|-------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Expired date |
| Electrostatic discharge | | | | | |
| ESD Generator | TESEQ | NSG 437 | 1125 | 2019/12/9 | 2020/12/7 |
| Radio frequency electromagnetic field immunity | | | | | |
| RF and Microwave Signal Generator | Rohde & Schwarz | SMB100A | 113793 | 2020/2/26 | 2021/2/24 |
| Power amplifier | Milmega | 80RF1000-300 | 1077558 | N/A | N/A |
| Power amplifier | Milmega | AS0860B | 1077559 | N/A | N/A |
| Directional coupler | Werlatone | C10117-10 | 111786 | N/A | N/A |
| Directional coupler | Werlatone | C8719-20 | 111759 | N/A | N/A |
| Antenna | AR | ATR80M6G | 346008 | N/A | N/A |
| Antenna | SCHWARZBECK | STLP 9149 | 00441 | N/A | N/A |
| RF switch | OSP | OSP | N/A | N/A | N/A |
| Power Meter | Rohde & Schwarz | NRP2 | 105524 | 2019/10/21 | 2020/10/19 |
| Power Sensor | Rohde & Schwarz | NRP-Z91 | 103732 | 2019/10/21 | 2020/10/19 |
| Power Sensor | Rohde & Schwarz | NRP-Z91 | 103733 | 2019/10/21 | 2020/10/19 |
| Measurement Software | Rohde & Schwarz | EMC32, VER.10.20.01 | N/A | N/A | N/A |
| Electrical fast transient | | | | | |
| Ultra Compact Simulator | EM TEST | UCS 500N7 | P1628180275 | 2019/12/12 | 2020/12/10 |
| Capacitive Coupling Clamp | EM TEST | HFK | P1642185790 | 2019/11/27 | 2020/11/25 |
| Measurement Software | TESEQ | IEC.control, VER.6.0.2 | N/A | N/A | N/A |
| Surge | | | | | |
| Ultra Compact Simulator | EM TEST | UCS 500N7 | P1628180275 | 2019/12/12 | 2020/12/10 |
| Telecom Surge Generator | EM TEST | TSurge7 | P1620180015 | 2019/12/11 | 2020/12/9 |
| Coupling and Decoupling Network | EM TEST | CNV 508T5 | P1637184038 | 2019/12/16 | 2020/12/14 |
| Coupling and Decoupling Network | TESEQ | CDN HSS-2 | 45091 | 2019/12/16 | 2020/12/14 |
| Measurement Software | TESEQ | IEC.control, VER.6.0.2 | N/A | N/A | N/A |

| Instrument | | | | | |
|--|-----------------|----------------------------|--------------------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Expired date |
| Immunity to conducted disturbances, induced by radio-frequency fields | | | | | |
| Signal Generator | Rohde & Schwarz | SMC100A | 105811 | 2019/10/24 | 2020/10/22 |
| Power amplifier | Rohde & Schwarz | BBA150-A125B125 | 102340 | N/A | N/A |
| Coupling and Decoupling Network | TESEQ | CDN M016 | 45073 | 2020/3/13 | 2021/3/12 |
| Coupling and Decoupling Network | TESEQ | CDN T2-10 | 45003 | 2020/3/13 | 2021/3/12 |
| Coupling and Decoupling Network | TESEQ | CDN T4-10 | 44939 | 2020/3/13 | 2021/3/12 |
| Coupling and Decoupling Network | TESEQ | CDN T8-10 | 49203 | 2019/12/23 | 2020/12/21 |
| EM Injection Clamp | TESEQ | CAL 801A & KEMZ 801A | 75454.1, 75454.2 & 45181 | 2020/3/18 | 2021/3/17 |
| Power - Sensor | Rohde & Schwarz | NRP-Z91 | 103730 | 2019/12/5 | 2020/12/3 |
| Power - Sensor | Rohde & Schwarz | NRP-Z91 | 103731 | 2019/12/5 | 2020/12/3 |
| Measurement Software | Rohde & Schwarz | EMC32, VER.10.20.01 | N/A | N/A | N/A |
| Power frequency magnetic field immunity | | | | | |
| Ultra Compact Simulator | EM TEST | UCS 500N7 | P1628180275 | 2019/12/12 | 2020/12/10 |
| Current Transformer | EM TEST | MC 2630 | P1644186773 | 2020/9/4 | 2021/9/3 |
| Magnetic Field Test Antenna | EM TEST | MS 100N | P1627181324 | 2020/9/4 | 2021/9/3 |
| Current Transformer | EM TEST | MFT100 | P2025241594 | 2020/9/4 | 2021/9/3 |
| Motorized Variac | EM TEST | MV 2616 (varic NX1-260-16) | P1643186426 | 2019/12/11 | 2020/12/9 |

6. EMISSION TEST

6.1. Conducted Disturbance Measurement

6.1.1. Limits of conducted disturbance voltage and common mode disturbance.

AC mains port:

| FREQUENCY (MHz) | <input checked="" type="checkbox"/> Class A (dB μ V) | | <input type="checkbox"/> Class B (dB μ V) | |
|-----------------|--|---------|---|----------|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 -0.5 | 79.00 | 66.00 | 66 - 56 * | 56 - 46* |
| 0.50 -5.0 | 73.00 | 60.00 | 56.00 | 46.00 |
| 5.0 -30.0 | 73.00 | 60.00 | 60.00 | 50.00 |

Telecommunications/network port:

| FREQUENCY (MHz) | <input type="checkbox"/> Class A | | | |
|-----------------|----------------------------------|----------|---------------------------|----------|
| | Voltage limit (dB μ V) | | Current limit(dB μ A) | |
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 -0.5 | 97 - 87 * | 84 - 74* | 53 - 43 * | 40 - 30* |
| 0.50 -30.0 | 87.00 | 74.00 | 43.00 | 30.00 |
| FREQUENCY (MHz) | <input type="checkbox"/> Class B | | | |
| | Voltage limit (dB μ V) | | Current limit(dB μ A) | |
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 -0.5 | 84 - 74 * | 74 - 64* | 40 - 30 * | 30 - 20* |
| 0.50 -30.0 | 74.00 | 64.00 | 30.00 | 20.00 |

Note:

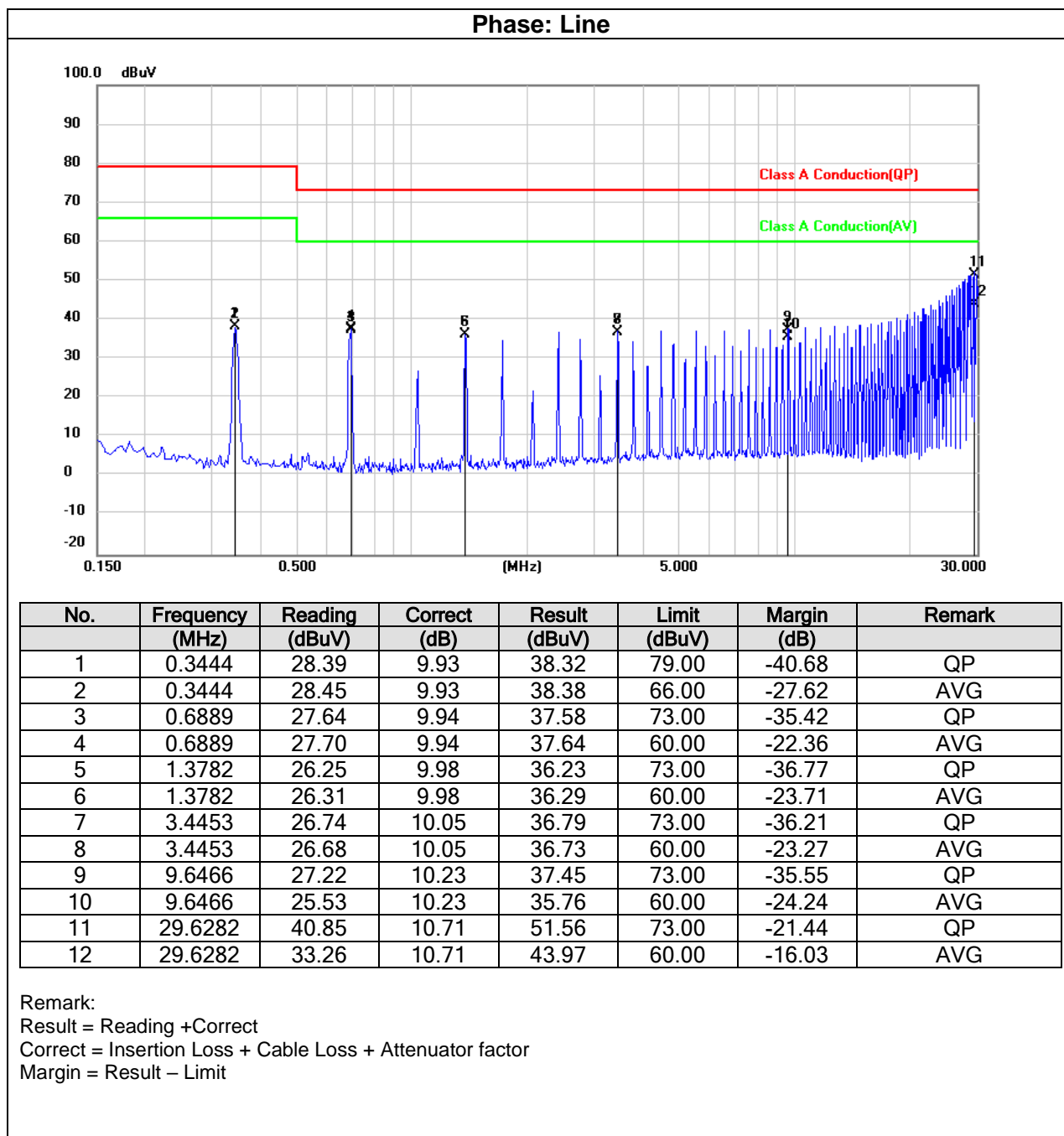
- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value
- (4) TMR 04 & TMR 04WI series with external components according to EMC solution

The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---------------------|----------|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

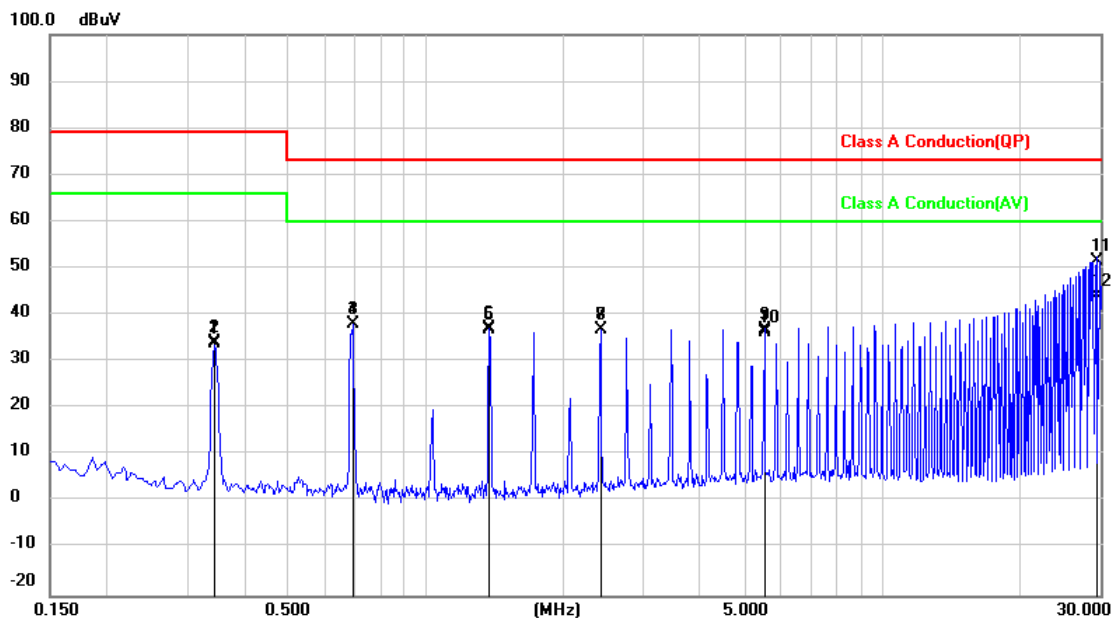
6.1.4. Test Result

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 60%RH |
| Tested By: | Edison Lin | Test Date: | May 6, 2020 |



| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 60%RH |
| Tested By: | Edison Lin | Test Date: | May 6, 2020 |

Phase: Neutral



| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.3443 | 24.03 | 9.92 | 33.95 | 79.00 | -45.05 | QP |
| 2 | 0.3443 | 24.11 | 9.92 | 34.03 | 66.00 | -31.97 | AVG |
| 3 | 0.6888 | 28.11 | 9.93 | 38.04 | 73.00 | -34.96 | QP |
| 4 | 0.6888 | 28.17 | 9.93 | 38.10 | 60.00 | -21.90 | AVG |
| 5 | 1.3782 | 26.98 | 9.97 | 36.95 | 73.00 | -36.05 | QP |
| 6 | 1.3782 | 27.04 | 9.97 | 37.01 | 60.00 | -22.99 | AVG |
| 7 | 2.4119 | 26.83 | 10.01 | 36.84 | 73.00 | -36.16 | QP |
| 8 | 2.4119 | 26.86 | 10.01 | 36.87 | 60.00 | -23.13 | AVG |
| 9 | 5.5131 | 26.63 | 10.11 | 36.74 | 73.00 | -36.26 | QP |
| 10 | 5.5131 | 26.18 | 10.11 | 36.29 | 60.00 | -23.71 | AVG |
| 11 | 29.6324 | 40.71 | 10.76 | 51.47 | 73.00 | -21.53 | QP |
| 12 | 29.6324 | 33.22 | 10.76 | 43.98 | 60.00 | -16.02 | AVG |

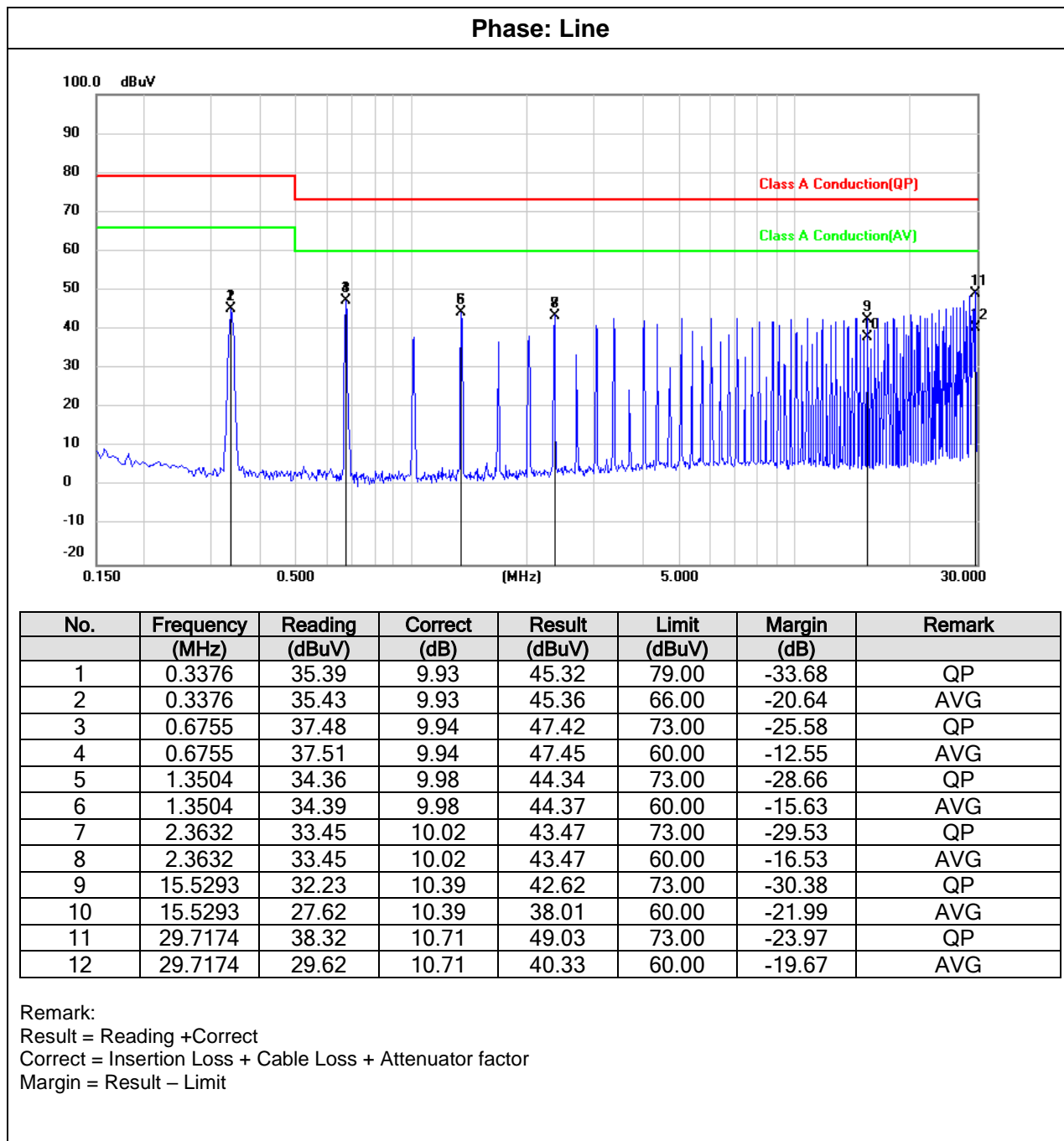
Remark:

Result = Reading +Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

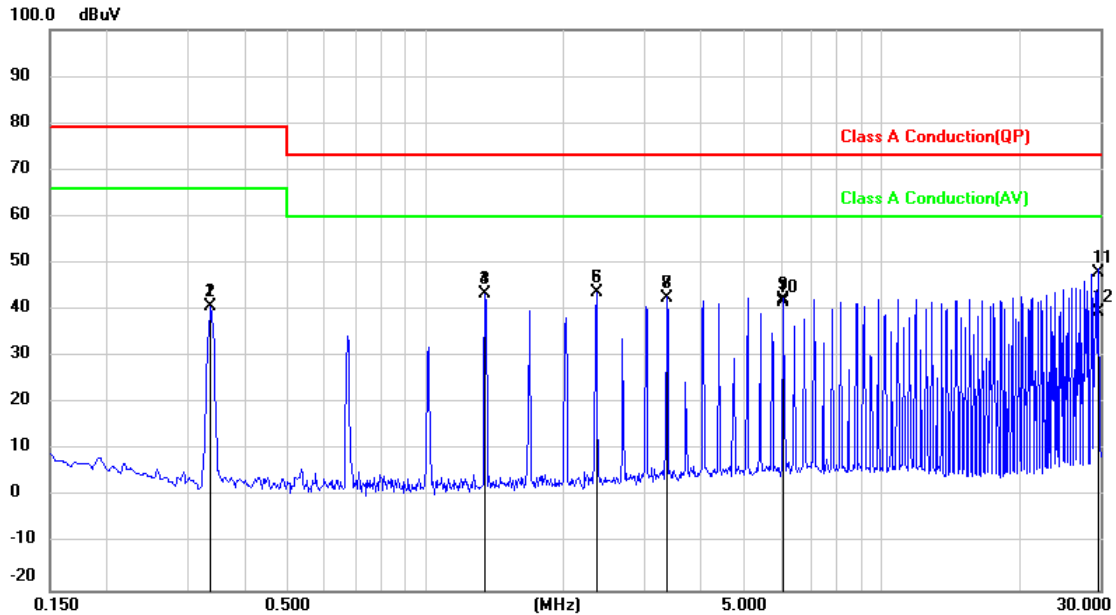
Margin = Result – Limit

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 6 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 60%RH |
| Tested By: | Edison Lin | Test Date: | May 6, 2020 |



| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 6 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 60%RH |
| Tested By: | Edison Lin | Test Date: | May 6, 2020 |

Phase: Neutral



| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.3376 | 30.72 | 9.92 | 40.64 | 79.00 | -38.36 | QP |
| 2 | 0.3376 | 30.77 | 9.92 | 40.69 | 66.00 | -25.31 | AVG |
| 3 | 1.3503 | 33.50 | 9.97 | 43.47 | 73.00 | -29.53 | QP |
| 4 | 1.3503 | 33.54 | 9.97 | 43.51 | 60.00 | -16.49 | AVG |
| 5 | 2.3631 | 33.66 | 10.01 | 43.67 | 73.00 | -29.33 | QP |
| 6 | 2.3631 | 33.66 | 10.01 | 43.67 | 60.00 | -16.33 | AVG |
| 7 | 3.3759 | 32.52 | 10.04 | 42.56 | 73.00 | -30.44 | QP |
| 8 | 3.3759 | 32.40 | 10.04 | 42.44 | 60.00 | -17.56 | AVG |
| 9 | 6.0767 | 32.25 | 10.12 | 42.37 | 73.00 | -30.63 | QP |
| 10 | 6.0767 | 31.51 | 10.12 | 41.63 | 60.00 | -18.37 | AVG |
| 11 | 29.6979 | 37.31 | 10.76 | 48.07 | 73.00 | -24.93 | QP |
| 12 | 29.6979 | 28.67 | 10.76 | 39.43 | 60.00 | -20.57 | AVG |

Remark:

Result = Reading + Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

Margin = Result - Limit

6.2. Radiated Disturbance Measurement(below 1GHz)

6.2.1. Limits of radiated disturbance measurement

| FREQUENCY (MHz) | <input checked="" type="checkbox"/> Class A | | <input type="checkbox"/> Class B | |
|-----------------|---|---|----------------------------------|--------------------------------|
| | <input type="checkbox"/> At 10m | <input checked="" type="checkbox"/> At 3m | <input type="checkbox"/> At 10m | <input type="checkbox"/> At 3m |
| | dBμV/m | dBμV/m | dBμV/m | dBμV/m |
| 30 – 230 | 40 | 50 | 30 | 40 |
| 230 – 1000 | 47 | 57 | 37 | 47 |

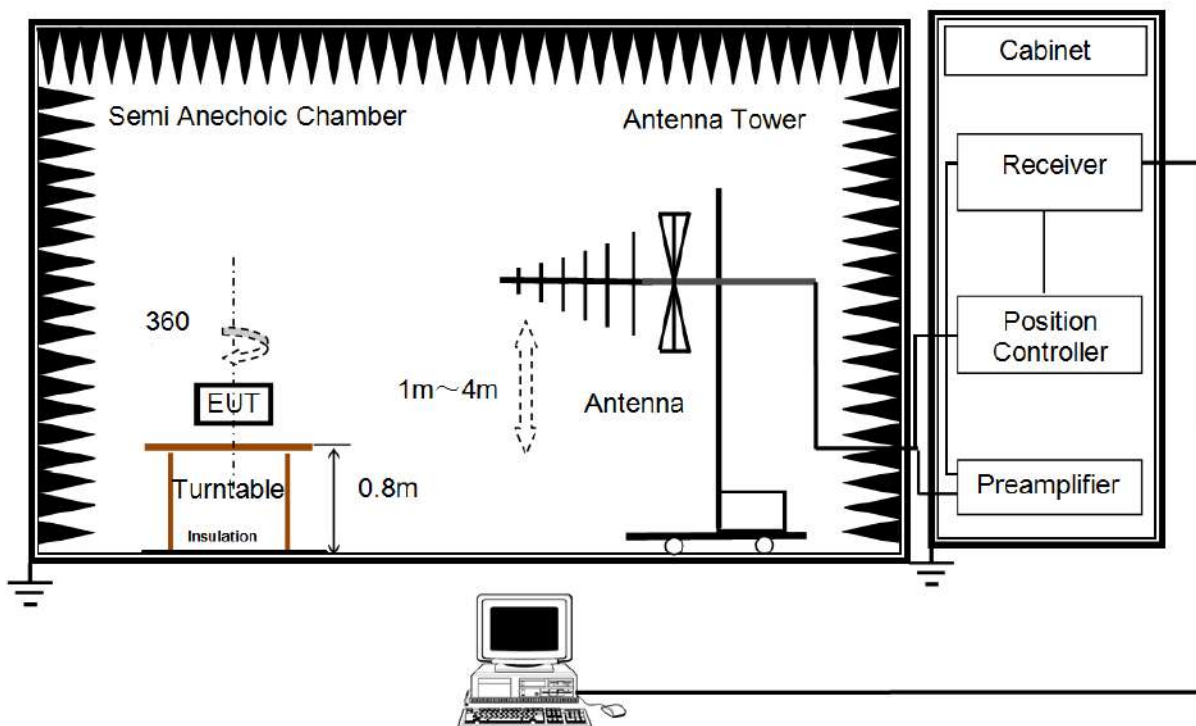
NOTE:

- (1) The limit for radiated test was performed according to EN55032.
- (2) The tighter limit applies at the band edges.
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),
Margin Level = Measurement Value - Limit Value.
- (4) TMR 04 & TMR 04WI series with external components according to EMC solution.

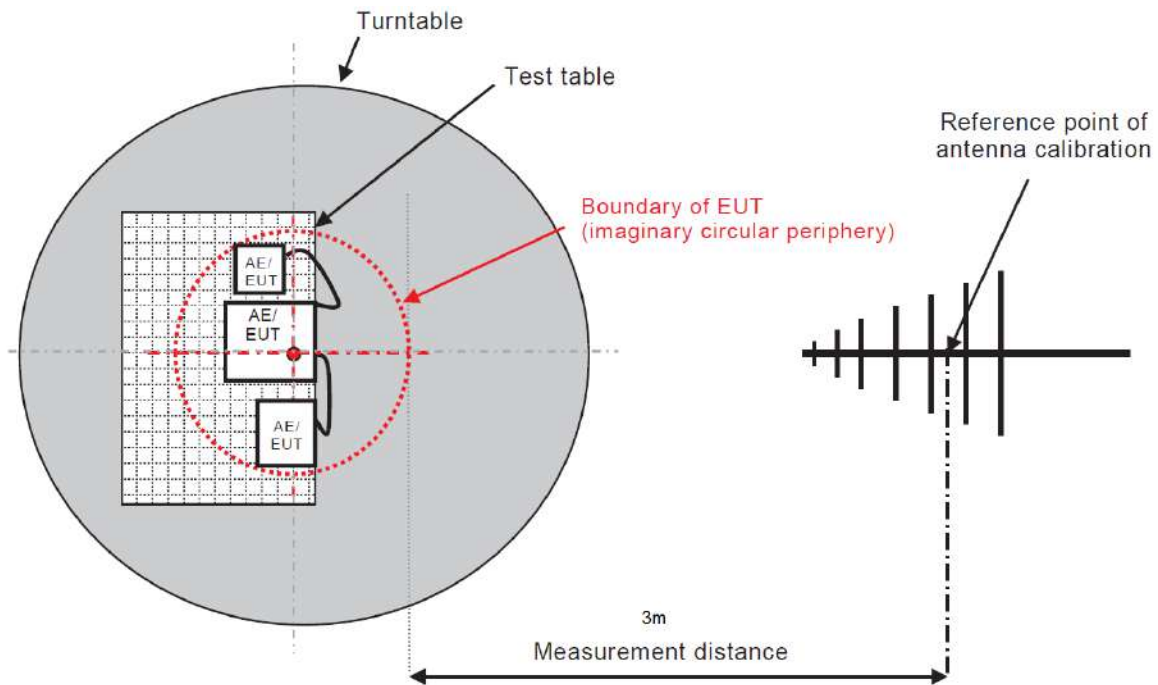
6.2.2. Test Procedure

- The measuring distance of at 3m shall be used for measurements at frequency from 30 to 1000MHz.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment shall be set at 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item:EUT Test Photos.

6.2.3. Test Setup

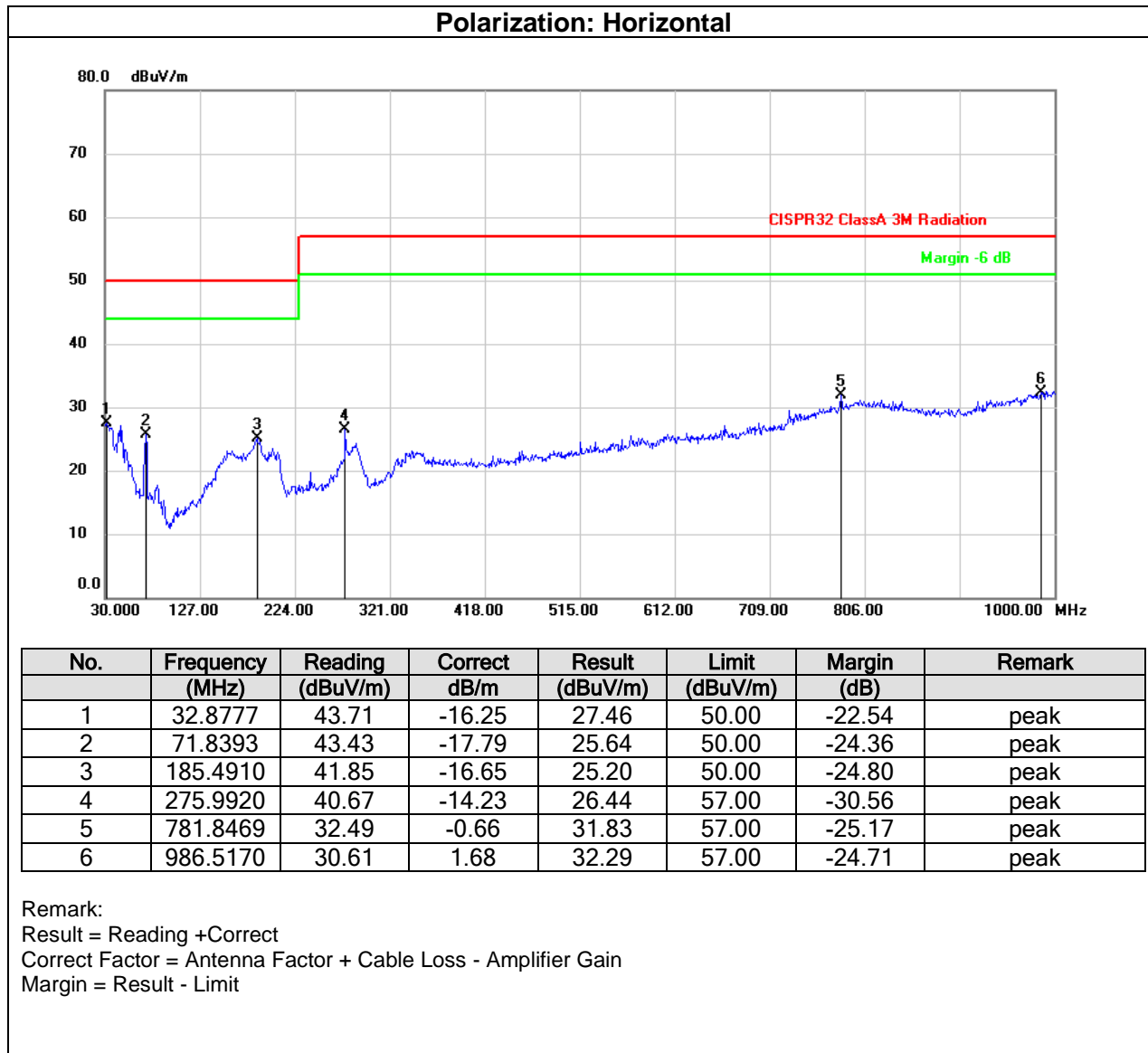


For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.



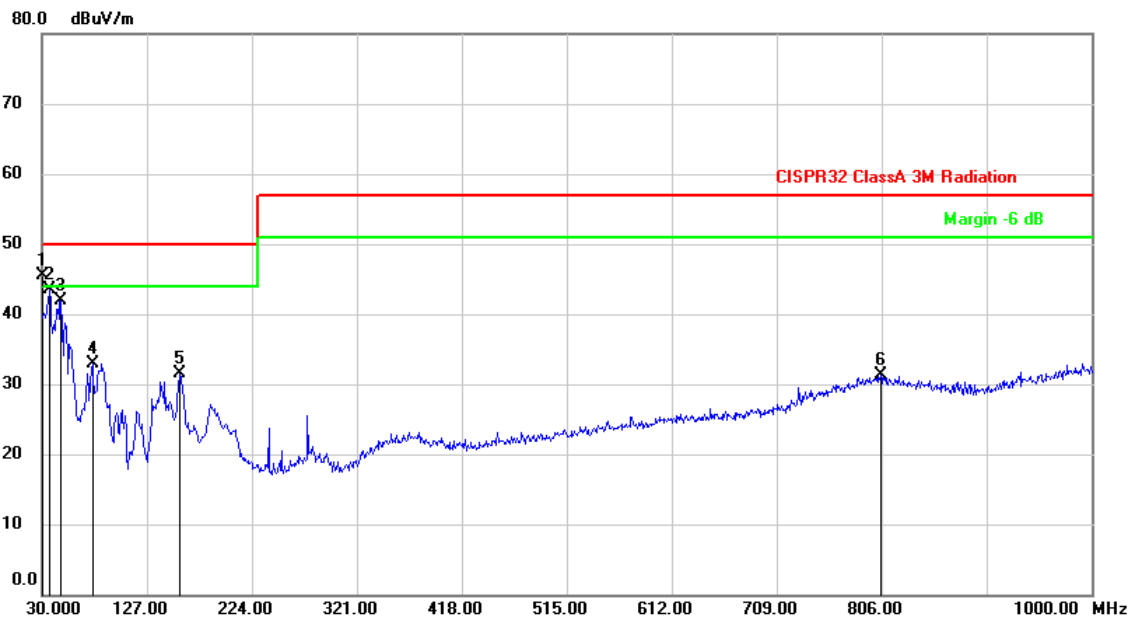
6.2.4. Test Result

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 59%RH |
| Tested By: | Edison Lin | Test Date: | May 5, 2020 |



| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 59%RH |
| Tested By: | Edison Lin | Test Date: | May 5, 2020 |

Polarization: Vertical



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 30.0970 | 61.86 | -16.29 | 45.57 | 50.00 | -4.43 | peak |
| 2 | 37.0487 | 59.41 | -15.88 | 43.53 | 50.00 | -6.47 | peak |
| 3 | 48.1389 | 56.71 | -14.82 | 41.89 | 50.00 | -8.11 | peak |
| 4 | 77.1742 | 51.92 | -18.92 | 33.00 | 50.00 | -17.00 | peak |
| 5 | 157.8460 | 46.13 | -14.69 | 31.44 | 50.00 | -18.56 | peak |
| 6 | 805.7413 | 31.37 | 0.01 | 31.38 | 57.00 | -25.62 | peak |

Remark:

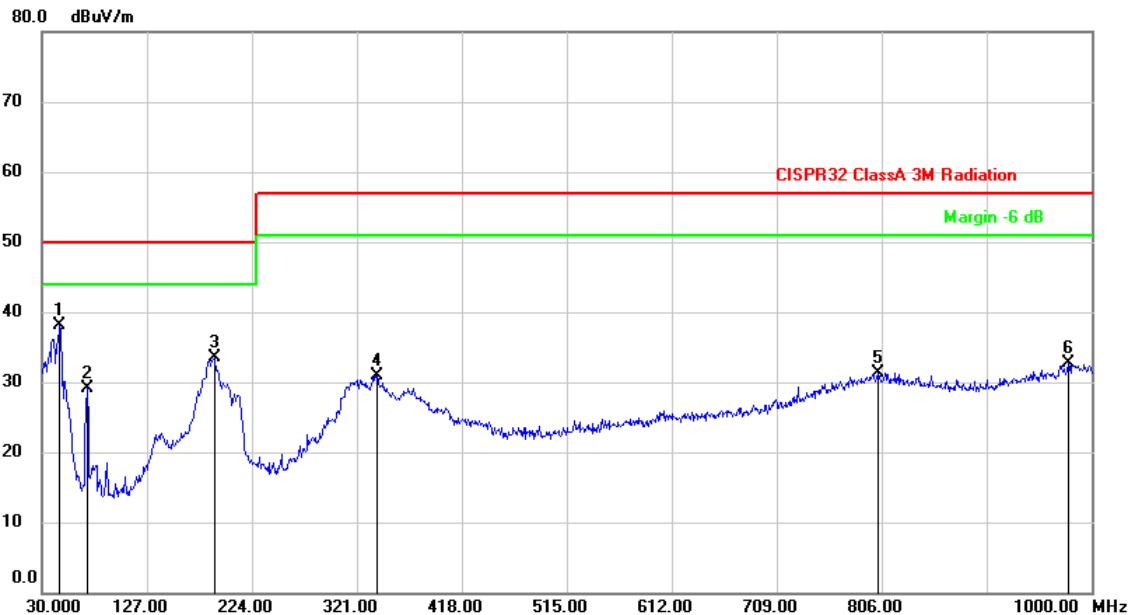
Result = Reading +Correct

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

Margin = Result - Limit

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 6 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 59%RH |
| Tested By: | Edison Lin | Test Date: | May 5, 2020 |

Polarization: Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 46.4900 | 52.86 | -14.85 | 38.01 | 50.00 | -11.99 | peak |
| 2 | 72.5182 | 47.03 | -17.92 | 29.11 | 50.00 | -20.89 | peak |
| 3 | 189.7589 | 50.39 | -16.94 | 33.45 | 50.00 | -16.55 | peak |
| 4 | 340.1090 | 43.30 | -12.34 | 30.96 | 57.00 | -26.04 | peak |
| 5 | 802.7990 | 31.31 | 0.09 | 31.40 | 57.00 | -25.60 | peak |
| 6 | 979.3067 | 31.23 | 1.51 | 32.74 | 57.00 | -24.26 | peak |

Remark:

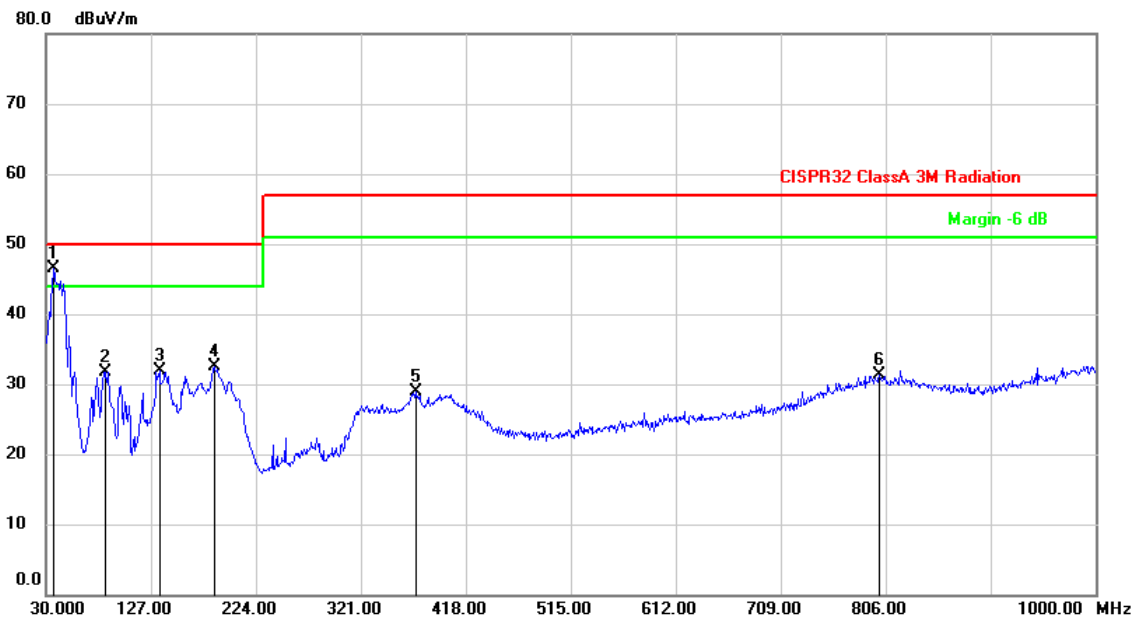
Result = Reading +Correct

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

Margin = Result - Limit

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 6 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 59%RH |
| Tested By: | Edison Lin | Test Date: | May 5, 2020 |

Polarization: Vertical



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 36.9193 | 62.31 | -15.90 | 46.41 | 50.00 | -3.59 | peak |
| 2 | 84.3200 | 52.20 | -20.49 | 31.71 | 50.00 | -18.29 | peak |
| 3 | 135.1157 | 47.57 | -15.74 | 31.83 | 50.00 | -18.17 | peak |
| 4 | 186.0730 | 49.29 | -16.70 | 32.59 | 50.00 | -17.41 | peak |
| 5 | 372.1513 | 40.28 | -11.44 | 28.84 | 57.00 | -28.16 | peak |
| 6 | 800.9560 | 31.12 | 0.13 | 31.25 | 57.00 | -25.75 | peak |

Remark:
Result = Reading +Correct
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain
Margin = Result - Limit

7. IMMUNITY TEST

7.1. Performance Criteria

According to EN 55024/ EN 55035 standard, the general performance criteria as following:

| | |
|-------------------|--|
| Criteria A | <p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.</p> <p>The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p> |
| Criteria B | <p>During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.</p> <p>After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p> |
| Criteria C | <p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.</p> <p>Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p> |

7.2. Electrostatic Discharge Immunity Test

7.2.1. Test Specification

For EN 55024 & EN 55035

| | |
|-------------------------------------|--|
| Standard: | EN 55024(Note)/ EN 55035 (refer to IEC/EN 61000-4-2) |
| Discharge Impedance: | 330(1±10%)Ω / 150(1±10%)pF |
| Discharge Voltage: | Air Discharge: ±2kV/±4kV/±8kV (Direct) |
| Polarity: | Contact Discharge: ±2kV/±4kV (Direct/Indirect) |
| | Positive and Negative |
| Discharge Mode of Operation: | Single discharges |
| Discharge Period: | 1 second minimum |

7.2.2. Test Procedure

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

- Contact discharge was applied to conductive surfaces and coupling planes of the EUT. During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. On each pre-selected point at least 10 single discharges (at each polarity) shall be applied. Test shall be performed at a maximum repetition rate of one discharge per second.

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

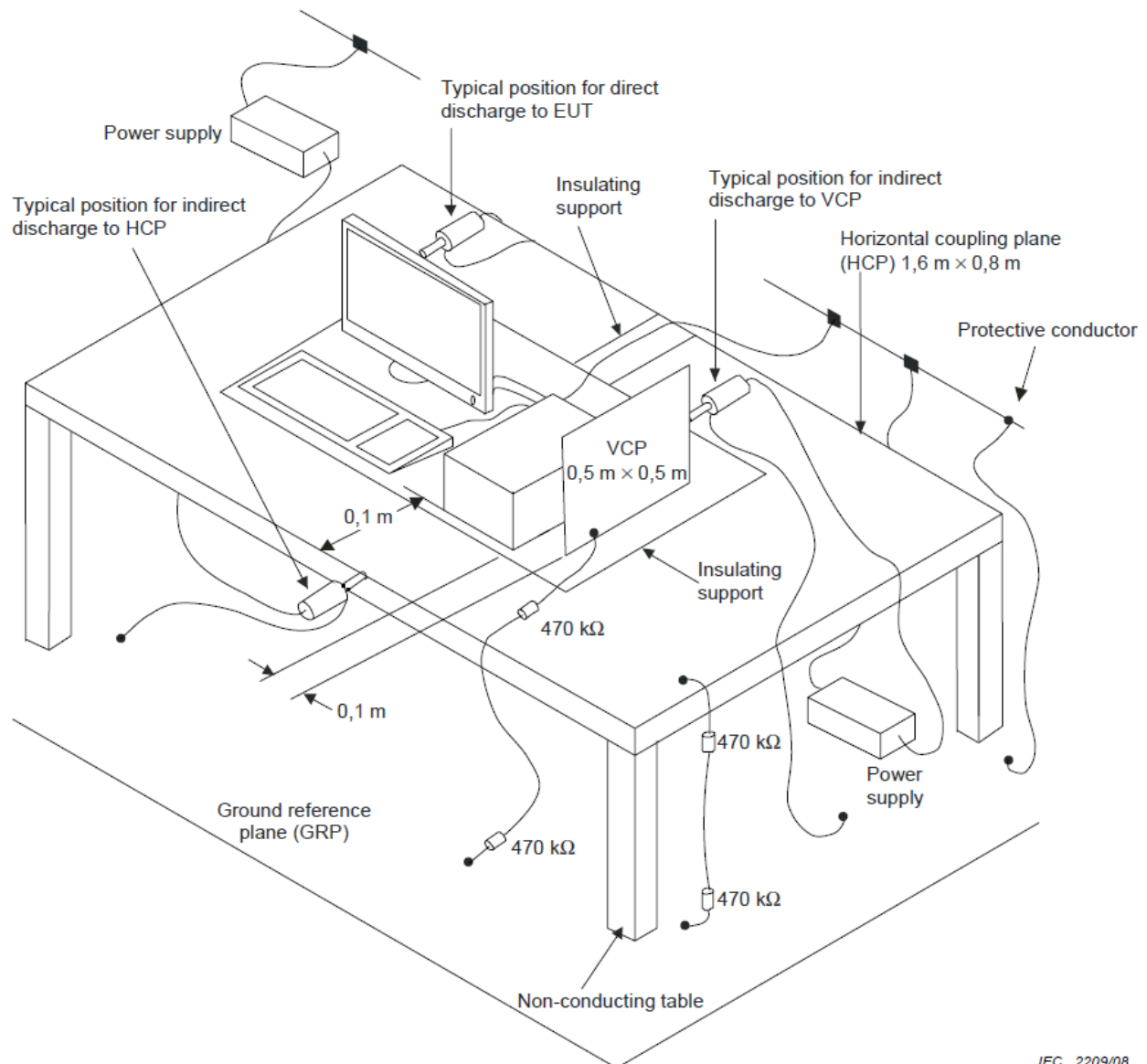
Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

For EN 55024, Step a shall be change to 25 single discharges at each polarity.

- Air discharges at insulation surfaces of the EUT.
It was at least 10 single discharges with positive and negative at the same selected point.
- For the actual test configuration, please refer to the related Item :EUT Test Photos.

7.2.3. Test Setup



IEC 2209/08

A distance of 0,8 m minimum shall be provided between the EUT and the walls of the laboratory and any other metallic structure.

For the actual test configuration, please refer to Appendix I : Photographs of the Test Configuration.

7.2.4. Test Result

EN 55024 :

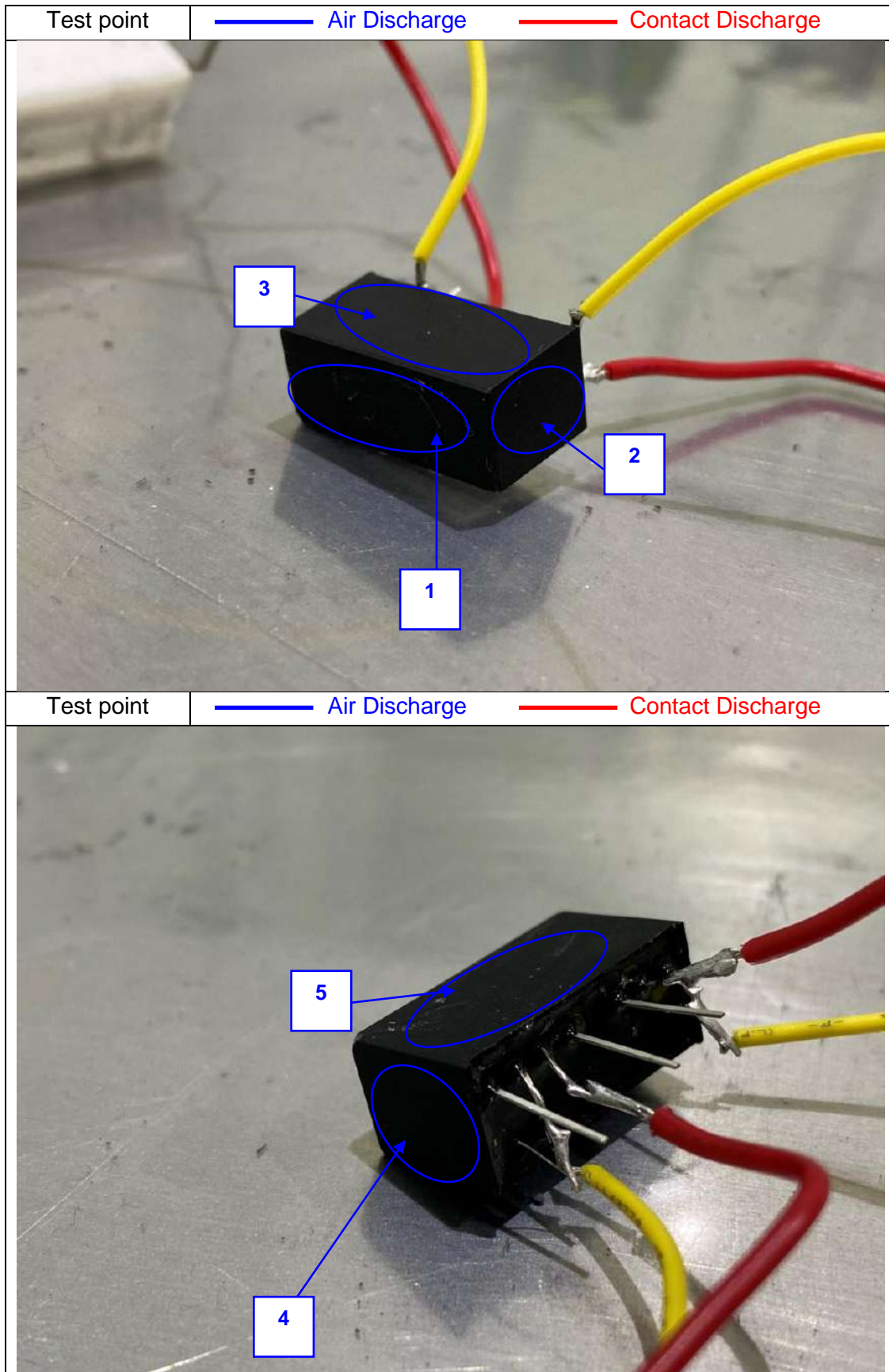
| | | | |
|---------------------|------------------------------------|---------------|--------------|
| Test Mode: | Mode 3 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 44%RH |
| Discharge of times: | Air: 10 times Contact: 25 times | ATM pressure: | 1018 hpa |
| Tested By: | Edison Lin | Test Date: | May 11, 2020 |

| Mode | Air Discharge | | | | | | | | Contact Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|-----|---|-------------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | 8kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| 1~5 | A | A | A | A | A | A | - | - | - | - | - | - | - | - | - | - |
| Criteria | B | | | | | | | | - | | | | | | | |
| Results | A | | | | | | | | - | | | | | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|-----|---|---------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | -kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| rear | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| left | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| right | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| Criteria | B | | | | - | | | | B | | | | - | | | |
| Results | A | | | | - | | | | A | | | | - | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

Customer request:

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|------|---|---------------|---|-----|---|-----|---|------|---|
| | 2kV | | 4kV | | 6kV | | 15kV | | 2kV | | 4kV | | 6kV | | 15kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| rear | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| left | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| right | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| Criteria | B | | | | | | | | B | | | | | | | |
| Results | A | | | | | | | | A | | | | | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |



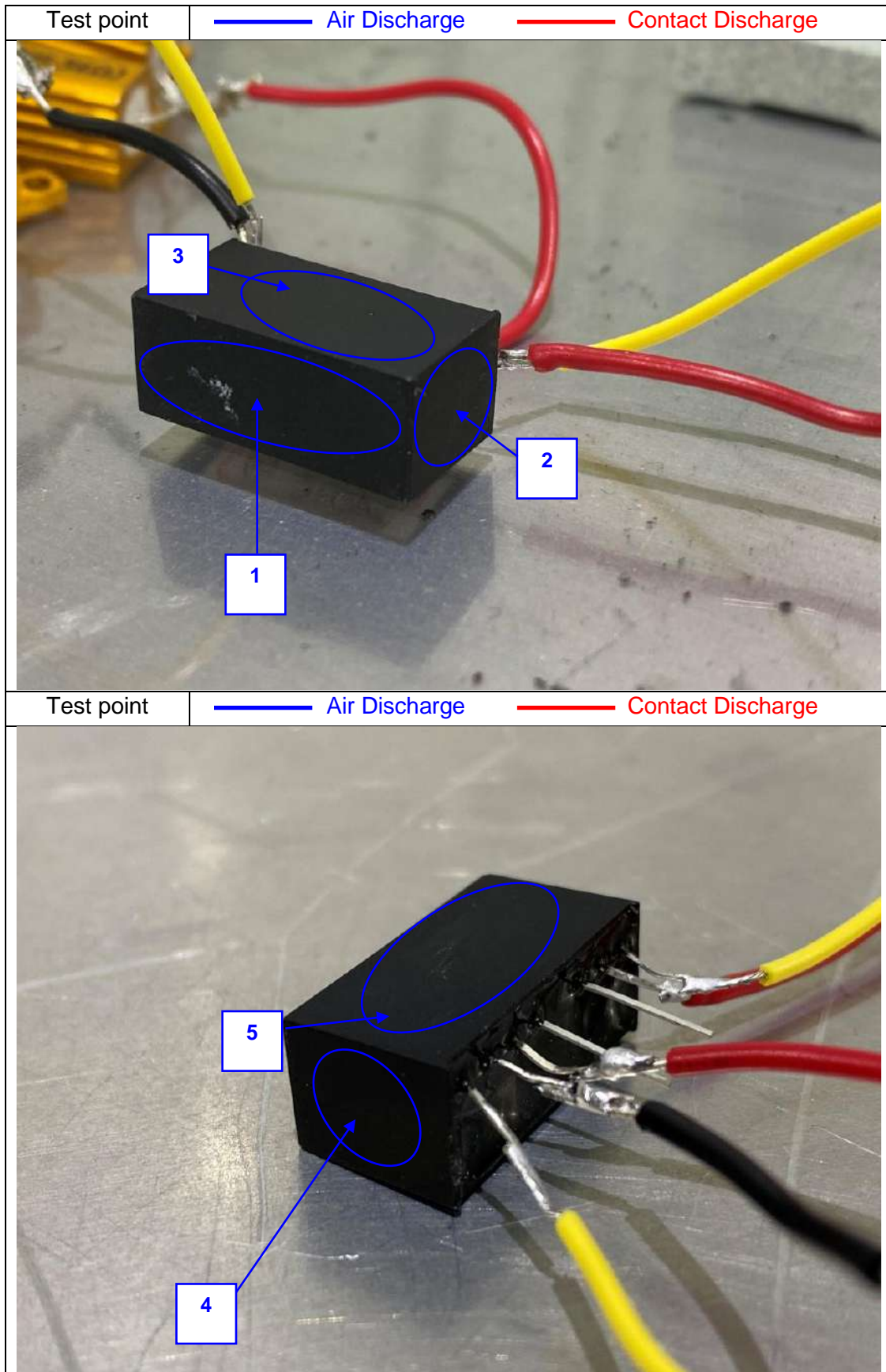
| | | | |
|---------------------|------------------------------------|---------------|--------------|
| Test Mode: | Mode 6 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 44%RH |
| Discharge of times: | Air: 10 times Contact: 25 times | ATM pressure: | 1018 hpa |
| Tested By: | Edison Lin | Test Date: | May 11, 2020 |

| Mode | Air Discharge | | | | | | | | Contact Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|-----|---|-------------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | 8kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| 1~5 | A | A | A | A | A | A | - | - | - | - | - | - | - | - | - | - |
| Criteria | B | | | | | | | | - | | | | | | | |
| Results | A | | | | | | | | - | | | | | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|-----|---|---------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | -kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| rear | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| left | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| right | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| Criteria | B | | | | - | | | | B | | | | - | | | |
| Results | A | | | | - | | | | A | | | | - | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

Customer request:

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|----------|--|---|-----|---|-----|---|------|---|---------------|---|-----|---|-----|---|------|---|
| | 2kV | | 4kV | | 6kV | | 15kV | | 2kV | | 4kV | | 6kV | | 15kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| rear | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| left | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| right | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| Criteria | B | | | | | | | | B | | | | | | | |
| Results | A | | | | | | | | A | | | | | | | |
| Judgment | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |



EN 55035:

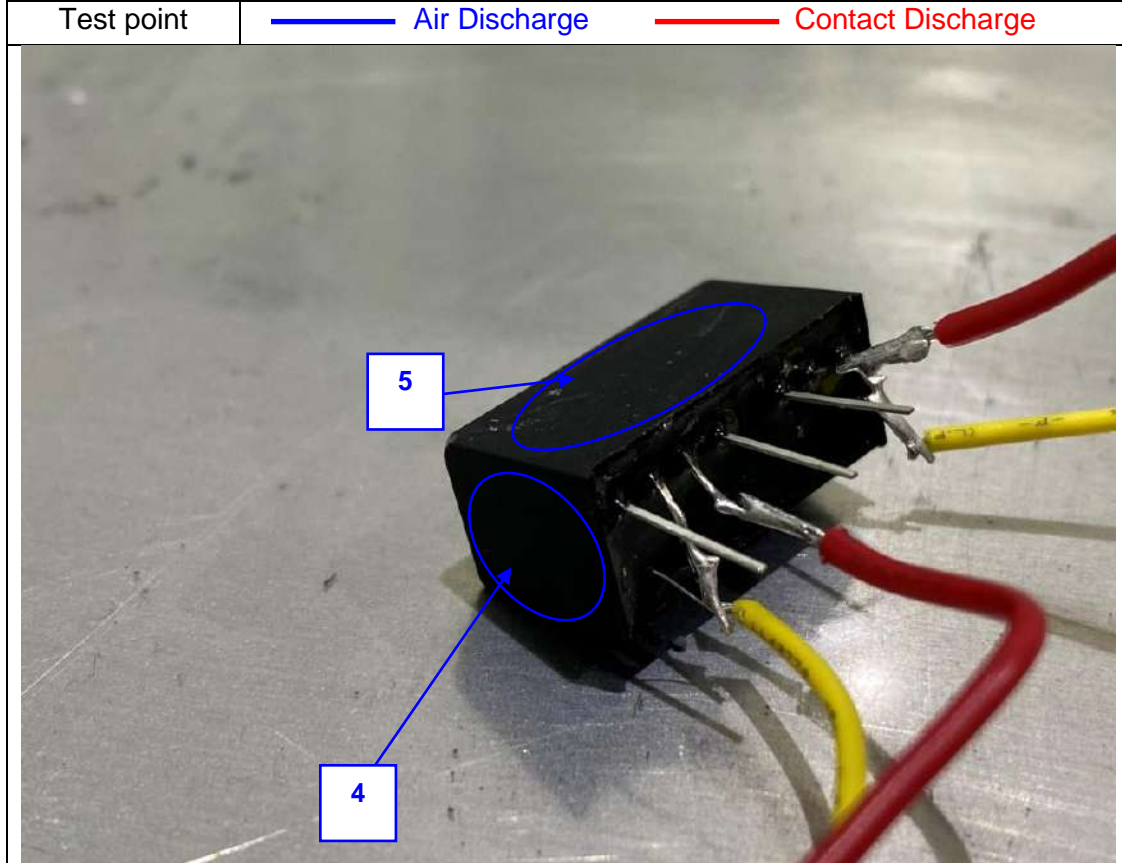
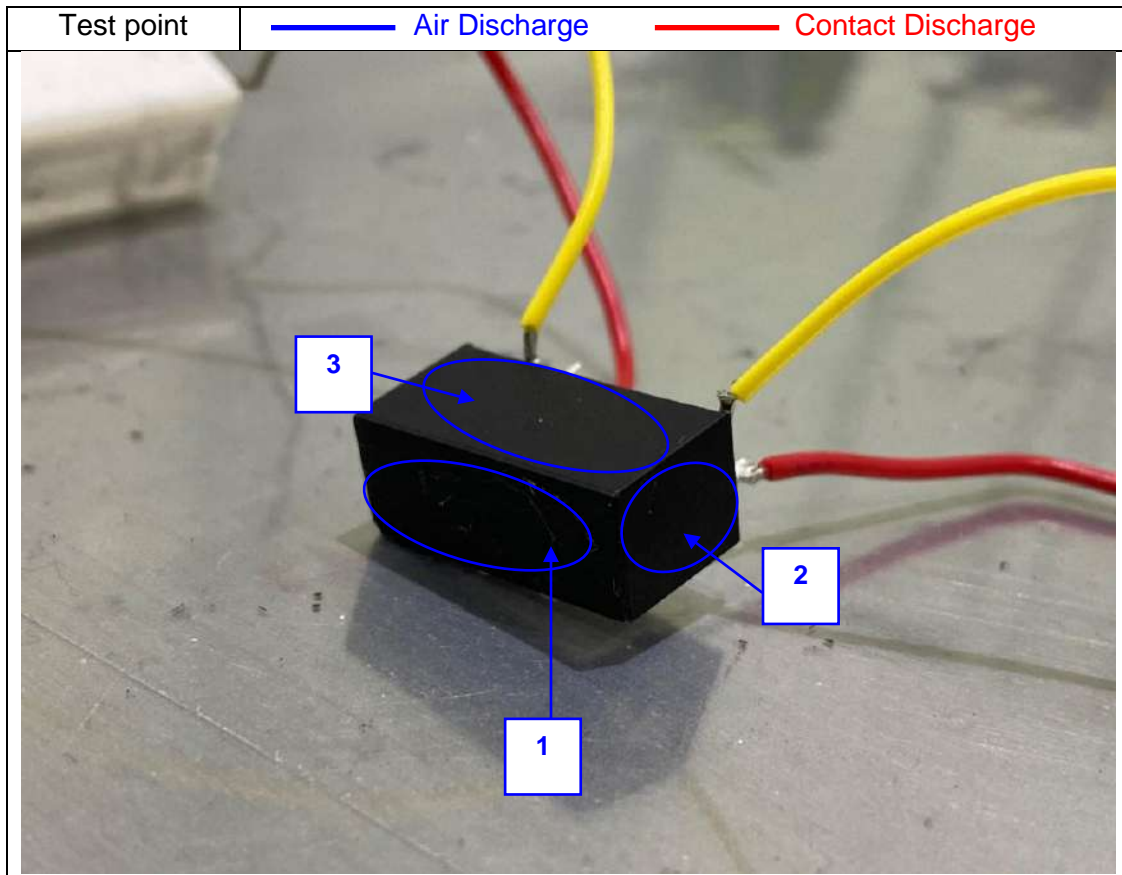
| | | | |
|---------------------|------------------------------------|---------------|--------------|
| Test Mode: | Mode 3 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 44%RH |
| Discharge of times: | Air: 10 times Contact: 10 times | ATM pressure: | 1018 hpa |
| Tested By: | Edison Lin | Test Date: | May 11, 2020 |

| Mode | Air Discharge | | | | | | | | Contact Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|-----|---|-------------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | 8kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| 1~5 | A | A | A | A | A | A | - | - | - | - | - | - | - | - | - | - |
| Criteria | B | | | | | | | | - | | | | | | | |
| Results | A | | | | | | | | - | | | | | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|-----|---|---------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | -kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| rear | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| left | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| right | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| Criteria | B | | | | - | | | | B | | | | - | | | |
| Results | A | | | | - | | | | A | | | | - | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

Customer request:

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|------|---|---------------|---|-----|---|-----|---|------|---|
| | 2kV | | 4kV | | 6kV | | 15kV | | 2kV | | 4kV | | 6kV | | 15kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| rear | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| left | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| right | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| Criteria | B | | | | | | | | B | | | | | | | |
| Results | A | | | | | | | | A | | | | | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |



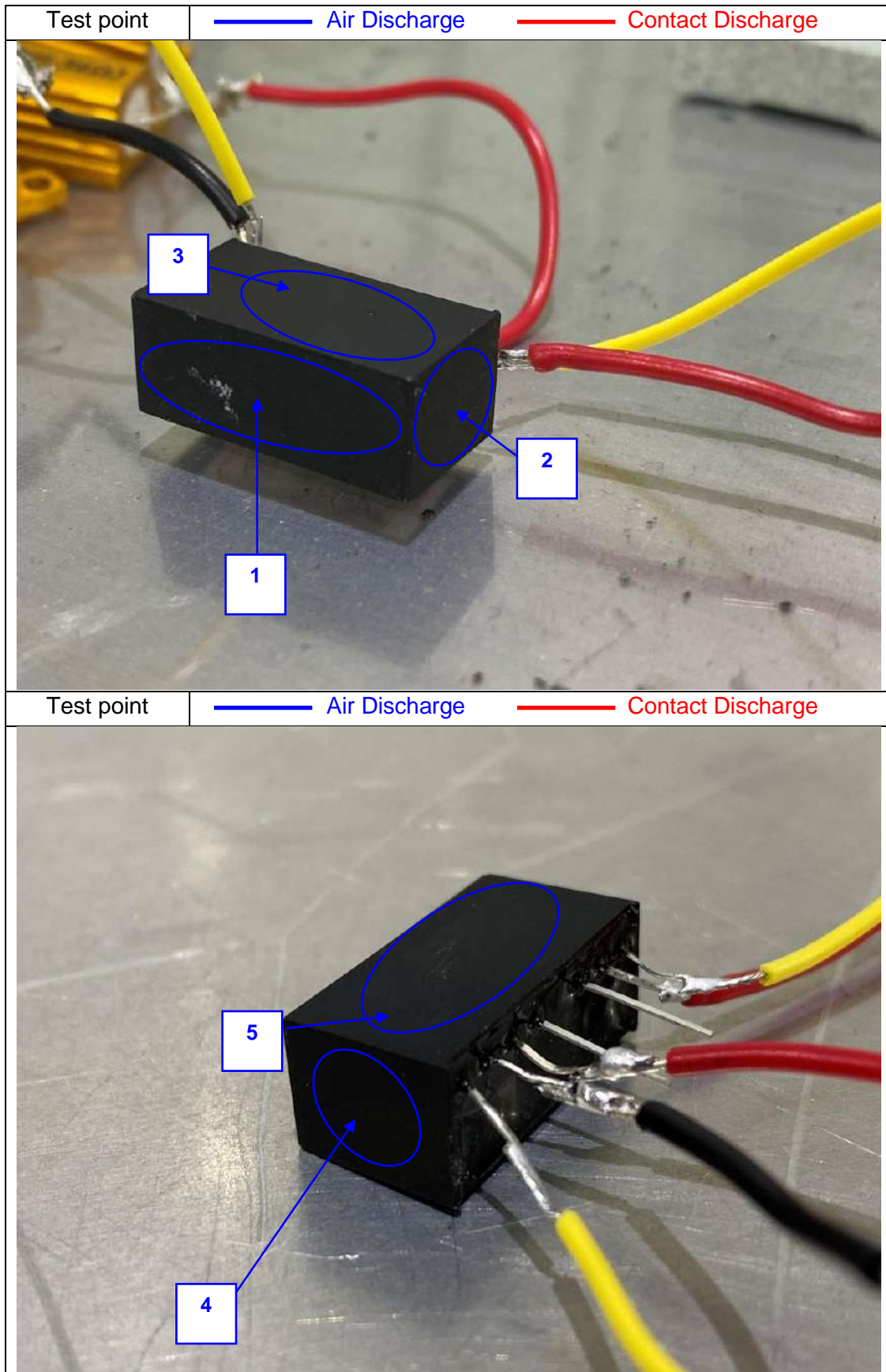
| | | | |
|---------------------|------------------------------------|---------------|--------------|
| Test Mode: | Mode 6 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 44%RH |
| Discharge of times: | Air: 10 times Contact: 10 times | ATM pressure: | 1018 hpa |
| Tested By: | Edison Lin | Test Date: | May 11, 2020 |

| Mode | Air Discharge | | | | | | | | Contact Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|-----|---|-------------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | 8kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| 1~5 | A | A | A | A | A | A | - | - | - | - | - | - | - | - | - | - |
| Criteria | B | | | | | | | | - | | | | | | | |
| Results | A | | | | | | | | - | | | | | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|-----|---|---------------|---|-----|---|-----|---|-----|---|
| | 2kV | | 4kV | | -kV | | -kV | | 2kV | | 4kV | | -kV | | -kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| rear | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| left | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| right | A | A | A | A | - | - | - | - | A | A | A | A | - | - | - | - |
| Criteria | B | | | | - | | | | B | | | | - | | | |
| Results | A | | | | - | | | | A | | | | - | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |

Customer request:

| Mode | HCP Discharge | | | | | | | | VCP Discharge | | | | | | | |
|-----------|--|---|-----|---|-----|---|------|---|---------------|---|-----|---|-----|---|------|---|
| | 2kV | | 4kV | | 6kV | | 15kV | | 2kV | | 4kV | | 6kV | | 15kV | |
| Location | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - |
| front | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| rear | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| left | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| right | - | - | - | - | A | A | - | - | - | - | - | - | A | A | - | - |
| Criteria | B | | | | | | | | B | | | | | | | |
| Results | A | | | | | | | | A | | | | | | | |
| Judgement | PASS | | | | | | | | | | | | | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | | | | | | | | |



7.3. Radio Frequency Electromagnetic Field Immunity Test

7.3.1. Test Specification

For Standard EN 55024 :

| | |
|----------------------------|--------------------------------------|
| Standard: | EN 55024 (refer to IEC/EN 61000-4-3) |
| Frequency Range: | 80 MHz to 1000MHz |
| Field Strength: | 3V/m (unmodulated) |
| Modulation: | 80%, AM(1 kHz) |
| Frequency Step: | 1% |
| Polarity of Antenna | Vertical and Horizontal |
| Test Distance: | 3 meters |
| Antenna Height: | 1.55 meters |
| Dwell Time: | 3 s |

For Standard EN 55035 :

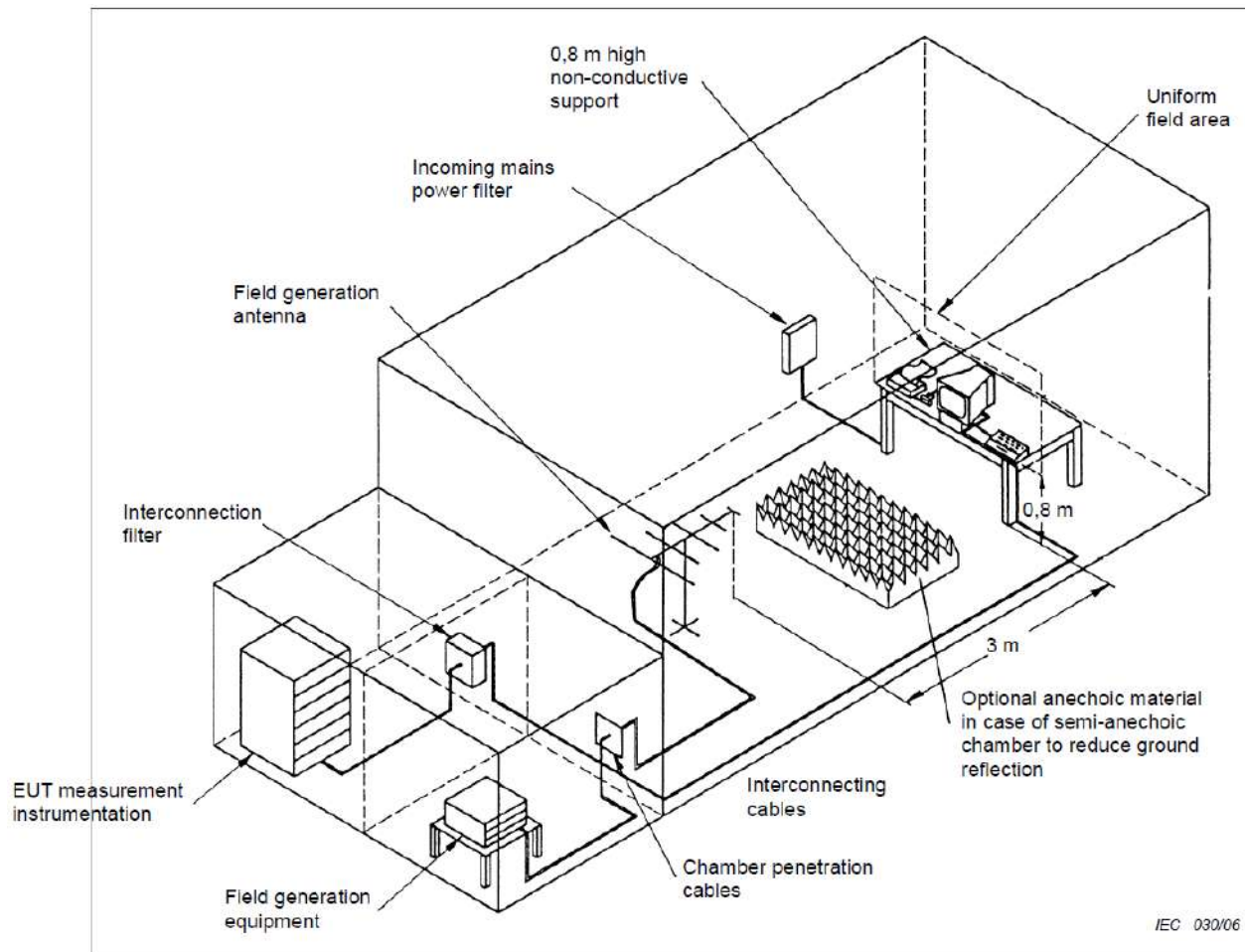
| | |
|---|--|
| Standard: | EN 55035 (refer to IEC/EN 61000-4-3) |
| Frequency Range: | 80 MHz to 1000MHz |
| Spot Frequency: | 1800, 2600, 3500, 5000 MHz($\pm 1\%$) |
| Field Strength: | 3V/m (unmodulated) |
| Immunity level to common wireless communication: | See Table I.1 for test frequency and level |
| Modulation: | 80%, AM(1 kHz) |
| Frequency Step: | 1% |
| Polarity of Antenna | Vertical and Horizontal |
| Test Distance: | 3 meters |
| Antenna Height: | 1.55 meters |
| Dwell Time: | 3 s |

7.3.2. Test Procedure

The test procedure was in accordance with IEC/EN 61000-4-3.

- a. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b. The frequency range is swept from 80 MHz to 1000MHz with the signal 80% amplitude modulated with a 1 KHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The field strength level from 80 MHz to 1000MHz was 3V/m.
- e. A special spot frequency test point are 1800, 2600, 3500 and 5000MHz ($\pm 1\%$)
- f. Wireless communication devices are considered to be the most significant sources of interference for MME in the range 800 MHz to 5 GHz. Consequently testing is only required at relevant spot frequencies refer to EN 55035 Annex I.
- g. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

7.3.3. Test Setup



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.3.4. Test Result

EN 55024 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 25°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 67%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgment |
|-------------------|--|-------------------|----------------------|-----------|---------|----------|
| 80-1000 | Front | H / V | 3V/m | A | A | PASS |
| 80-1000 | Left | H / V | 3V/m | A | A | PASS |
| 80-1000 | Right | H / V | 3V/m | A | A | PASS |
| 80-1000 | Rear | H / V | 3V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgment |
|-------------------|--|-------------------|----------------------|-----------|---------|----------|
| 80-1000 | Front | H / V | 10V/m | A | A | PASS |
| 80-1000 | Left | H / V | 10V/m | A | A | PASS |
| 80-1000 | Right | H / V | 10V/m | A | A | PASS |
| 80-1000 | Rear | H / V | 10V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

EN 55035 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 21°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 62%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgement |
|-------------------|--|-------------------|----------------------|-----------|---------|-----------|
| 80-1000 | Front / Left / Right / Rear | H / V | 3V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 3V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 3V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 3V/m | A | A | PASS |
| 1800(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 2600(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 3500(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 5000(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

| Immunity Level to common wireless communication | | | | | | |
|---|--|-------------------|----------------------|-----------|---------|-----------|
| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgement |
| 800(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 900(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 1800(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 2600(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 3500(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| 5000(±1%) | Front / Left / Right / Rear | H | 3V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 3V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgement |
|-------------------|--|-------------------|----------------------|-----------|---------|-----------|
| 80-1000 | Front / Left / Right / Rear | H / V | 10V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 10V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 10V/m | A | A | PASS |
| 80-1000 | Front / Left / Right / Rear | H / V | 10V/m | A | A | PASS |
| 1800(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 2600(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 3500(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 5000(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

| Immunity Level to common wireless communication | | | | | | |
|---|--|-------------------|----------------------|-----------|---------|-----------|
| Freq. Range (MHz) | Position (Face) | Polarity (H or V) | Field Strength (V/m) | Criterion | Results | Judgement |
| 800(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 900(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 1800(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 2600(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 3500(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| 5000(±1%) | Front / Left / Right / Rear | H | 10V/m | A | A | PASS |
| | Front / Left / Right / Rear | V | 10V/m | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

7.4. Electrical Fast Transient/Burst Immunity Test

7.4.1. Test Specification

For Standard EN 55024 & EN 55035 :

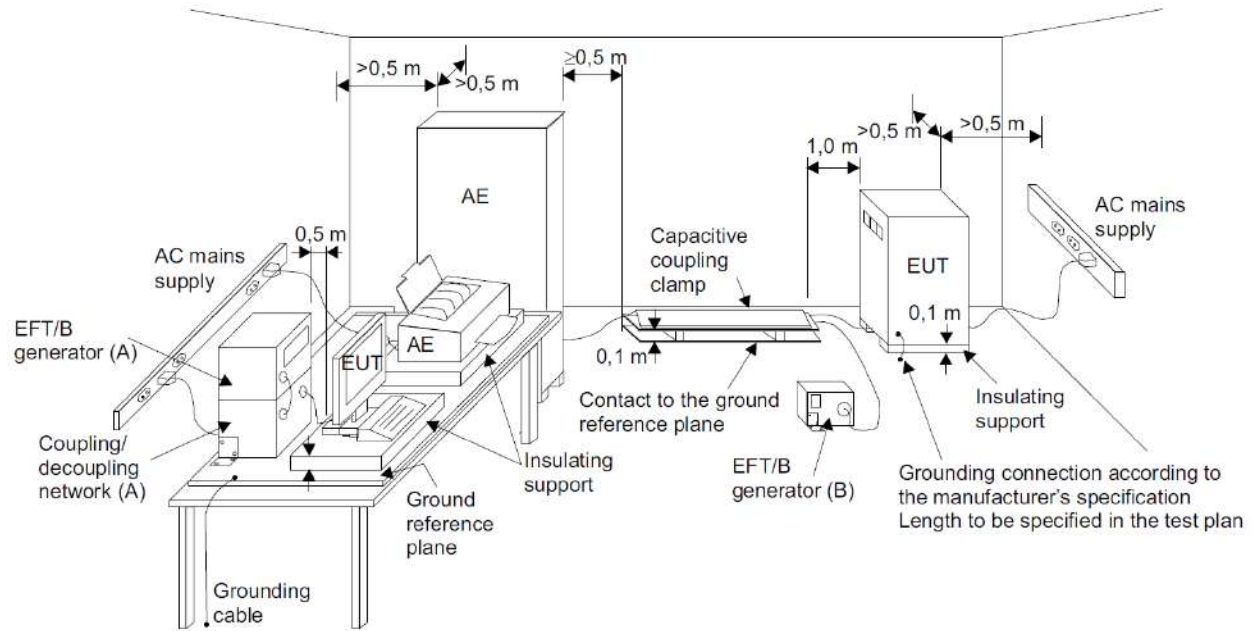
| | |
|----------------------------|---|
| Standard: | EN 55024/ EN55035 (refer to IEC/EN 61000-4-4) |
| Test Voltage: | 0.5,1 kV(Peak) |
| Polarity: | Positive and Negative |
| Impulse Frequency: | 5 or 100 kHz |
| Impulse wave shape: | 5/50 Tr/Th ns |
| Burst Duration: | 15ms or 0.75ms |
| Burst Period: | 300ms |
| Test Duration: | 1 Minute |

Note : TMR 04 & TMR 04WI series with external components according to EMC solution

7.4.2. Test Procedure

- The EUT was tested with 1000 volt discharges to the AC power input leads, 500 volt discharges to the signal/control ports.
- Both positive and negative polarity discharges were applied.
- Table-top equipment and equipment normally mounted on ceilings or walls as well as built-in equipment shall be tested with the EUT located $(0,1 \pm 0,01)$ m above the ground reference plane.
- The EUT and the auxiliary equipment were placed on a table of 0.8 m heights above a metal ground reference plane. The size of ground plane is greater than 0.8m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The minimum distance between the EUT and all other conductive structures (including the generator, AE and the walls of a shielded room), except the ground reference plane, shall be more than 0,5 m.
- The duration time of each test sequential was 1 minute.
- The transient/burst waveform was in accordance with IEC/EN 61000-4-4, 5/50ns.

7.4.3. Test Setup



IEC 645/12

- (A) location for supply line coupling
- (B) location for signal lines coupling

For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.4.4. Test Result

EN 55024 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 1~2 | Temperature: | 23°C |
| Test Voltage: | 12Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6, 8~9 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | 5kHz | | | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 4~5, 7, 10 | Temperature: | 23°C |
| Test Voltage: | 48Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

EN 55035 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 1~2 | Temperature: | 23°C |
| Test Voltage: | 12Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6, 8~9 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | 5kHz | | | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 4~5, 7, 10 | Temperature: | 23°C |
| Test Voltage: | 48Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Repetition Frequency | | | | 5kHz | | | | | | |
|----------------------|-----------|--|------|------|------|---|---|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | - | - | | | |
| DC power Port | DC(+) | A | A | - | - | - | - | B | A | PASS |
| | DC(-) | A | A | - | - | - | - | B | A | |
| | DC(+ & -) | A | A | - | - | - | - | B | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Repetition Frequency | | 5kHz | | | | | | | | |
|----------------------|-----------|--|------|------|------|------|------|----------|---------|-----------|
| Test Port | | Test Levels (kV) | | | | | | Criteria | Results | Judgement |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | | | |
| DC power Port | DC(+) | - | - | - | - | A | A | A | A | PASS |
| | DC(-) | - | - | - | - | A | A | A | A | |
| | DC(+ & -) | - | - | - | - | A | A | A | A | |
| Note | | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

7.5. Surge Immunity Test

7.5.1. Test Specification

For Standard EN 55024 :

| | |
|-------------------------|---|
| Standard: | EN 55024 (refer to IEC/EN 61000-4-5) |
| Waveform: | 1.2/50 (8/20) Tr/Th μ s , 10/700 Tr/Th μ s |
| Test Voltage: | 0.5,1 kV(Line to Line) 0.5,1,2 kV(Line to Earth) |
| Polarity: | Positive and Negative |
| Phase Angle: | 0°/90°/180°/270° |
| Repetition Rate: | 1 per minute |
| Times: | 5 times each polarity |

For Standard EN 55035 :

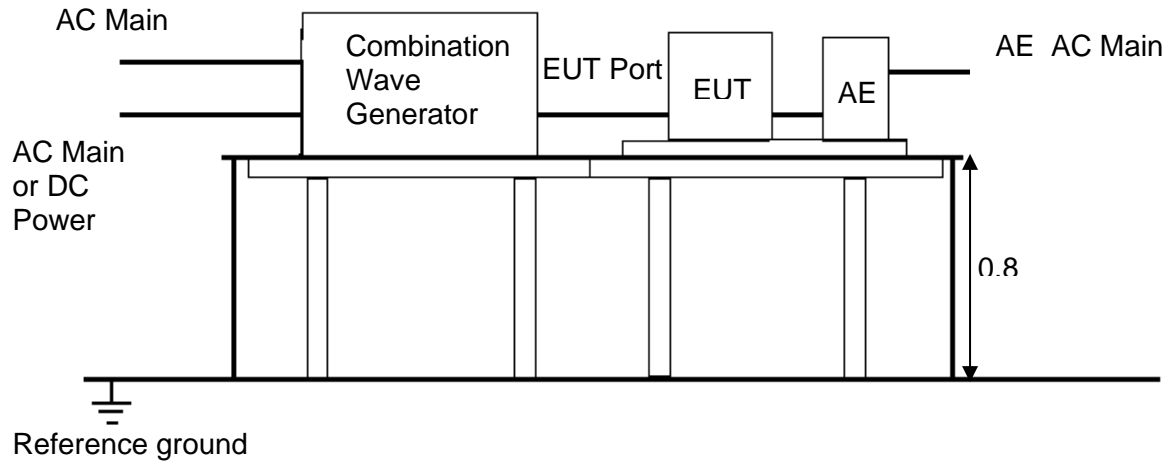
| | |
|-------------------------|---|
| Standard: | EN 55035 (refer to IEC/EN 61000-4-5) |
| Waveform: | 1.2/50 (8/20) Tr/Th μ s , 10/700 Tr/Th μ s |
| Test Voltage: | 0.5,1 kV(Line to Line) 0.5,1,2 kV(Line to Earth) |
| Polarity: | Positive and Negative |
| Phase Angle: | 90°/270° |
| Repetition Rate: | 1 per minute |
| Times: | 5 times each polarity |

Note : TMR 04 & TMR 04WI series with external components according to EMC solution

7.5.2. Test Procedure

- a. The EUT and the auxiliary equipment were placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT shall not exceed 2 meters (provided by the manufacturer).
- b. The EUT was connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).
- c. The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.
- d. If EUT was included telecom port and connected to outdoor directly, test shall be applied to line to earth test using 10/700 surge wave form. If the wave form affects the functioning of high speed data port, the test shall be carried out using 1.2/50 wave form do the test.

7.5.3. Test Setup



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.5.4. Test Result

EN 55024 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 1~2 | Temperature: | 23°C |
| Test Voltage: | 12Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6, 8~9 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 4~5, 7, 10 | Temperature: | 23°C |
| Test Voltage: | 48Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgment |
|----------------------------------|--|-------|---------|-----|-----|-----|----------|---------|----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | -kV | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

EN 55035 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 1~2 | Temperature: | 23°C |
| Test Voltage: | 12Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6, 8~9 | Temperature: | 23°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 4~5, 7, 10 | Temperature: | 23°C |
| Test Voltage: | 48Vdc from DC source | Humidity: | 61%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | A | - | - | - | B | A | PASS |
| | - | - | A | - | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

Customer request:

| Wave Form EUT Ports Tested | 1.2/50(8/20)Ti/Th us | | | | | | Criteria | Results | Judgement |
|-------------------------------|--|-------|---------|-----|-----|---|----------|---------|-----------|
| | Polarity | Phase | Voltage | | | | | | |
| | | | 0.5kV | 1kV | 2kV | - | | | |
| DC power Port + to - | + | - | - | A | - | - | A | A | PASS |
| | - | - | - | A | - | - | | | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | | | | |

7.6. Immunity to Conducted Disturbances Induced by RF Fields

7.6.1. Test Specification

For Standard EN 55024 :

| | |
|-------------------------|--------------------------------------|
| Standard: | EN 55024 (refer to IEC/EN 61000-4-6) |
| Frequency Range: | 0.15-80MHz |
| Field Strength: | 3V (unmodulated, r.m.s.) |
| Modulation: | 80% AM (1 kHz) |
| Frequency Step: | 1% |
| Dwell Time: | 3s |

For Standard EN 55035 :

| | |
|-------------------------|---------------------------------------|
| Standard: | EN 55035 (refer to IEC/EN 61000-4-6) |
| Frequency Range: | 0.15-10; 10-30; 30-80MHz |
| Field Strength: | 3V; 3 to 1V; 1V (unmodulated, r.m.s.) |
| Modulation: | 80% AM (1 kHz) |
| Frequency Step: | 1% |
| Dwell Time: | 3s |

7.6.2. Test Procedure

- The EUT shall be tested within its intended operating and climatic conditions.
- The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.
- The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

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7.6.4. Test Result

EN 55024 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 26°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 57%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Test Ports (Mode) | Freq. Range (MHz) | Field Strength | CDN | Criteria | Results | Judgment |
|-------------------|--|--|----------|----------|---------|----------|
| DC Power Port | 0.15 --- 80 | 3V(rms) AM Modulated 1000Hz, 80% | M016(M2) | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Test Ports (Mode) | Freq. Range (MHz) | Field Strength | CDN | Criteria | Results | Judgment |
|-------------------|--|---|----------|----------|---------|----------|
| DC Power Port | 0.15 --- 80 | 10V(rms) AM Modulated 1000Hz, 80% | M016(M2) | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

EN 55035 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 26°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 57%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Test Ports (Mode) | Freq. Range (MHz) | Field Strength | CDN | Criteria | Results | Judgement |
|----------------------|--|---|----------|----------|---------|-----------|
| DC Power Port | 0.15 --- 10 | 3V(rms) AM Modulated 1000Hz, 80% | M016(M2) | A | A | PASS |
| | 10 --- 30 | 3 to 1V(rms) AM Modulated 1000Hz, 80% | | A | A | PASS |
| | 30 --- 80 | 1V(rms) AM Modulated 1000Hz, 80% | | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Test Ports (Mode) | Freq. Range (MHz) | Field Strength | CDN | Criteria | Results | Judgement |
|-------------------|--|---|----------|----------|---------|-----------|
| DC Power Port | 0.15 --- 80 | 10V(rms) AM Modulated 1000Hz, 80% | M016(M2) | A | A | PASS |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

7.7. Power frequency magnetic field immunity Test

7.7.1. Test Specification

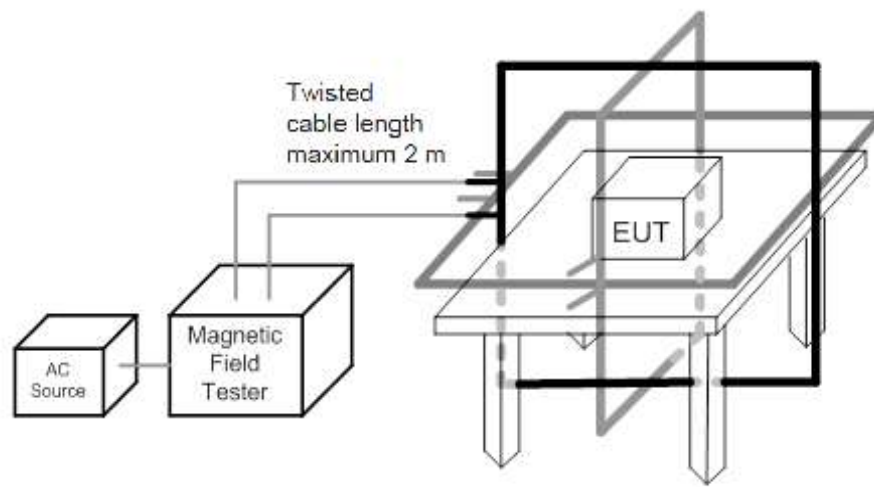
For Standard EN 55024 & EN 55035 :

| | |
|--------------------------|--|
| Standard: | EN 55024/ EN 55035 (refer to IEC/EN 61000-4-8) |
| Frequency Range: | 50 Hz |
| Field Strength: | 1 A/m 3, 10, 30, 100 A/m for Continuous (Client request) 300, 1000 A/m for short duration (Client request) |
| Observation Time: | 1 minute for continuous 1s to 3s for short duration |
| Inductance Coil: | Rectangular type, 1mx1m |

7.7.2. Test Procedure

- The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
- The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- The cables supplied or recommended by the equipment manufacturer shall be used 1 meter of all cables used shall be exposed to the magnetic field.
- The EUT with coil shall be leave all magnetic material and wall 1m away in any axis during the test.
- The cable length from generator to coil shall be less than 2m
- The background noise shall be 20dB less than test field strength.
- Test shall be applied to three axis X, Y, Z and disturbance over 1 minute and short term disturbance over 1 to 3 seconds.
- All cables shall be exposed to the magnetic field for 1m of their length.
- For magnetic field strength less than or equal to 30A/m the transformer shall be used MC 2630, for magnetic strength greater than 30A/m, the transformer shall be used MFT 100.

7.7.3. Test Setup



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50% of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.7.4. Test Results

EN 55024 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 24°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 56%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | A | A | A | A | PASS |
| 2 | 3 | / | / | / | / | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | / | / | / | / | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | / | / | / | / | PASS |
| 2 | 3 | A | A | A | A | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | / | / | / | / | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

| | | | |
|---------------|----------------------|--------------|--------------|
| Test Mode: | Mode 3, 6 | Temperature: | 24°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 56%RH |
| Tested By: | Rupert Huang | Test Date: | Dec. 9, 2020 |

Customer request:

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | A | A | A | A | PASS |
| 2 | 3 | / | / | / | / | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | A | A | A | A | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

(Short Term: 1 s)

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 4 | 300 | / | / | / | / | PASS |
| 5 | 1000 | A | A | A | A | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

EN 55035 :

| | | | |
|---------------|----------------------|--------------|-------------|
| Test Mode: | Mode 3, 6 | Temperature: | 24°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 56%RH |
| Tested By: | Edison Lin | Test Date: | May 8, 2020 |

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | A | A | A | A | PASS |
| 2 | 3 | / | / | / | / | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | / | / | / | / | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

Customer request:

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | / | / | / | / | PASS |
| 2 | 3 | A | A | A | A | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | / | / | / | / | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

| | | | |
|---------------|----------------------|--------------|--------------|
| Test Mode: | Mode 3, 6 | Temperature: | 24°C |
| Test Voltage: | 24Vdc from DC source | Humidity: | 56%RH |
| Tested By: | Rupert Huang | Test Date: | Dec. 9, 2020 |

Customer request:

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 1 | 1 | A | A | A | A | PASS |
| 2 | 3 | / | / | / | / | |
| 3 | 10 | / | / | / | / | |
| 4 | 30 | / | / | / | / | |
| 5 | 100 | A | A | A | A | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

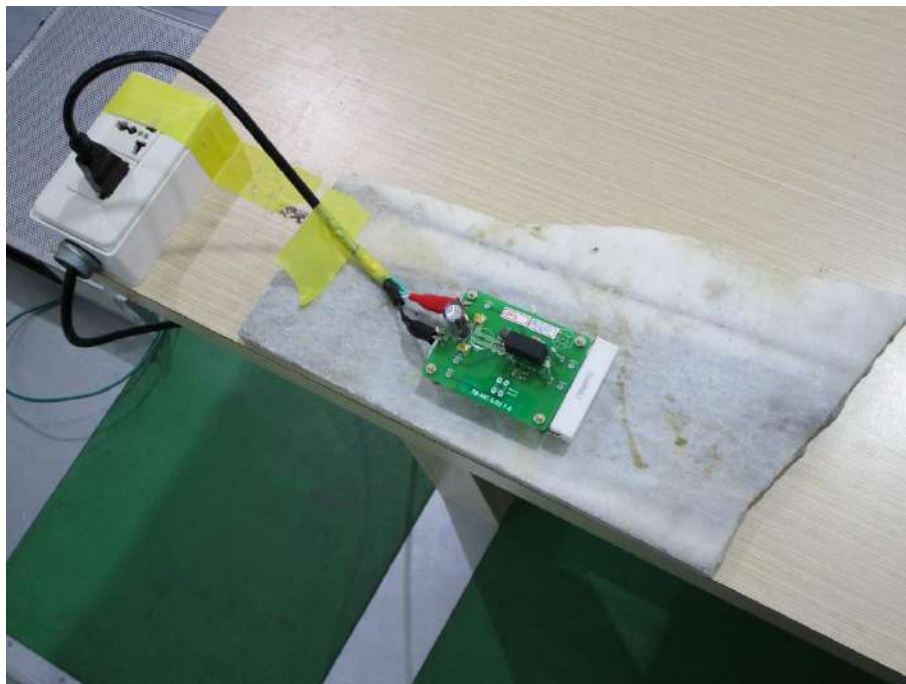
(Short Term: 1 s)

| Level | Magnetic Field Strength (A/m) | Criterion | Results | | | Judgement |
|-------|--|-----------|---------|---|---|-----------|
| | | | X | Y | Z | |
| 4 | 300 | / | / | / | / | PASS |
| 5 | 1000 | A | A | A | A | |
| X | Special | / | / | / | / | |
| Note | There was no abnormal situation during the test compared with initial operation. | | | | | |

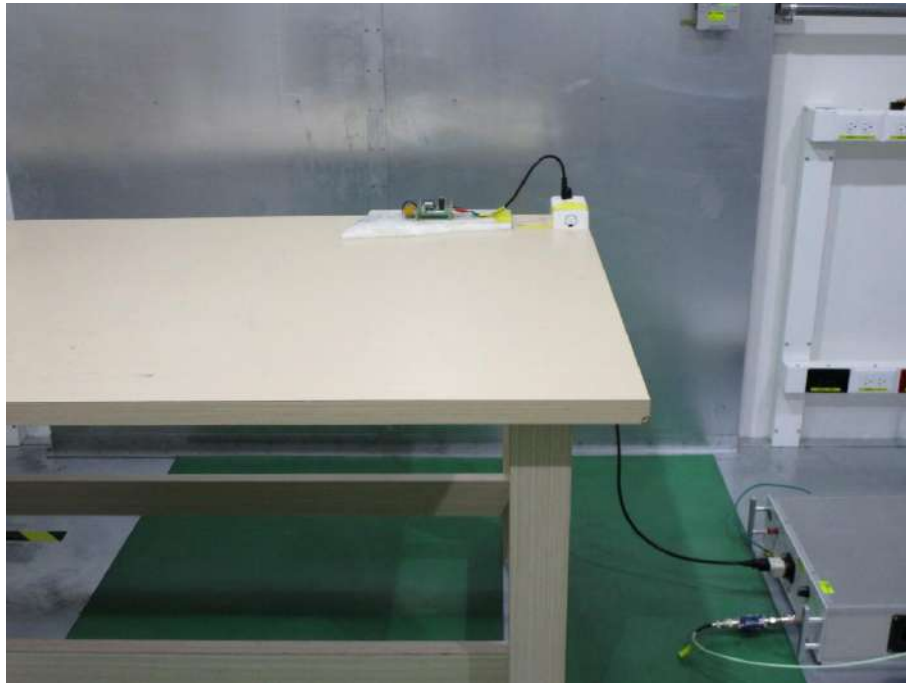
Appendix I: Photographs of EMC Test Configuration

Conducted Disturbance

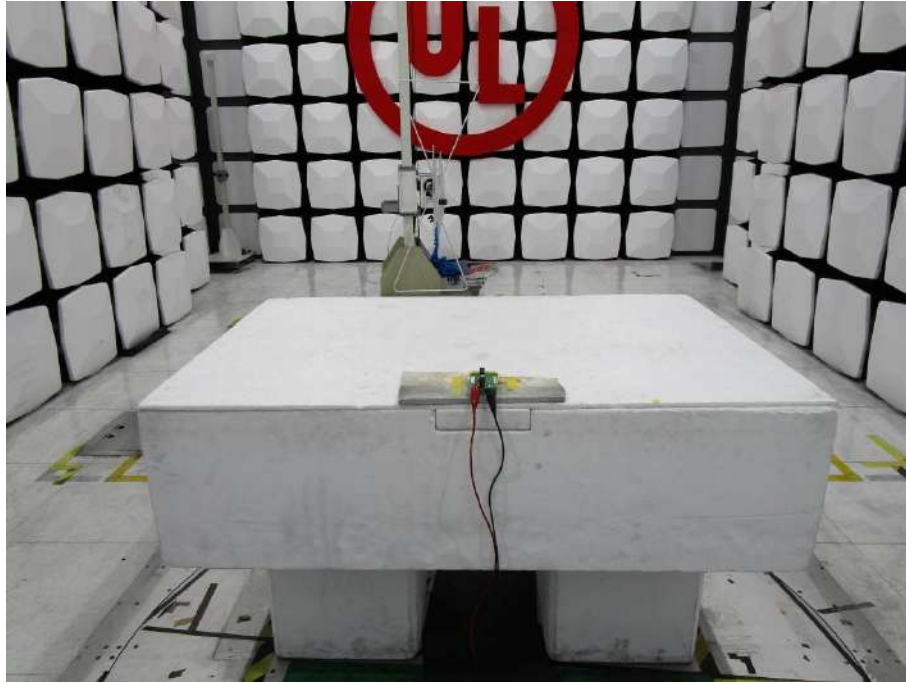
Mode 3



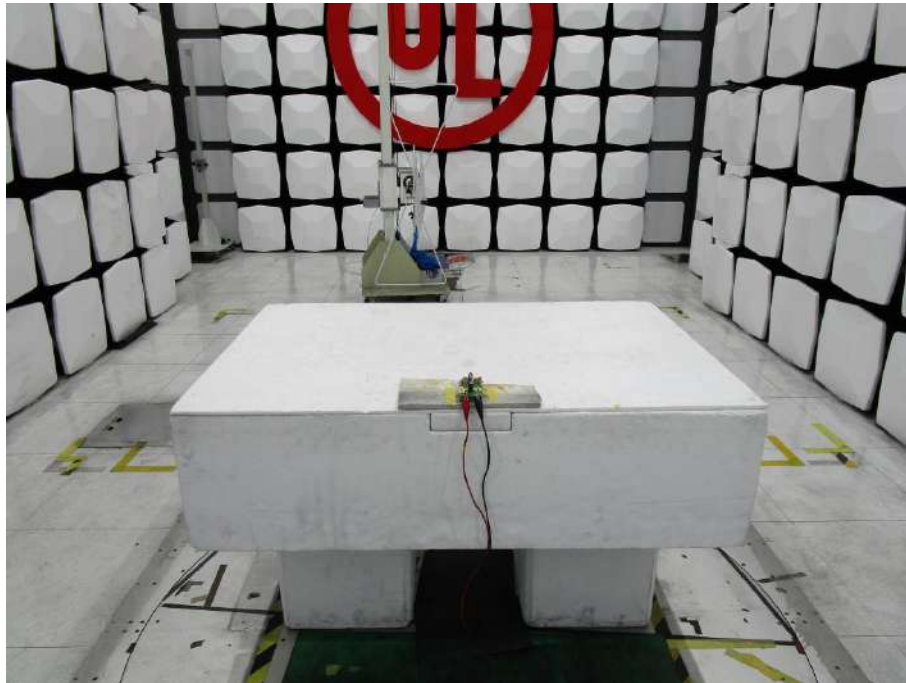
Mode 6



Radiated Disturbance
Below 1GHz
Mode 3

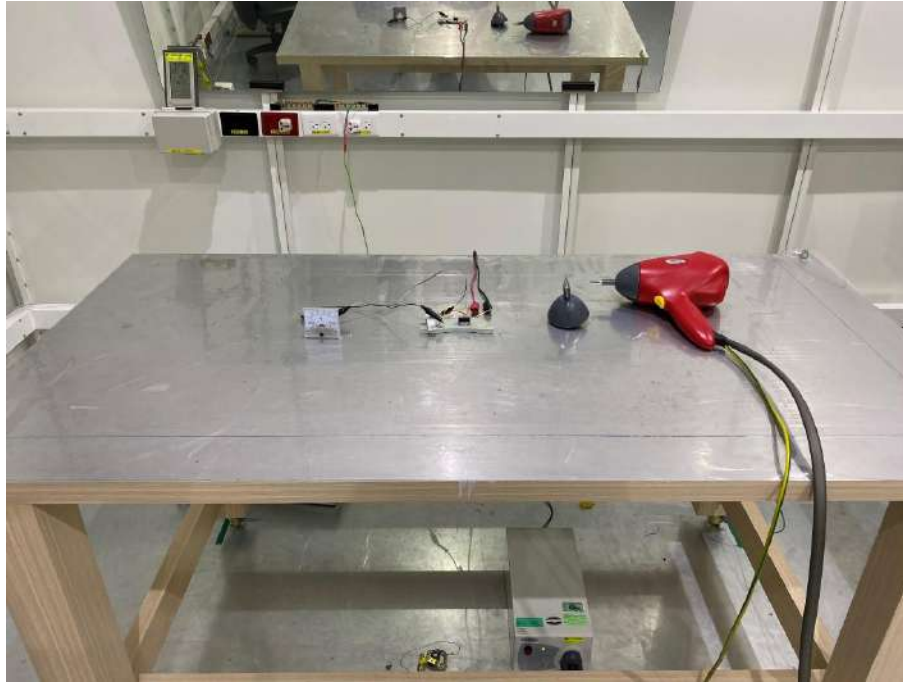


Mode 6

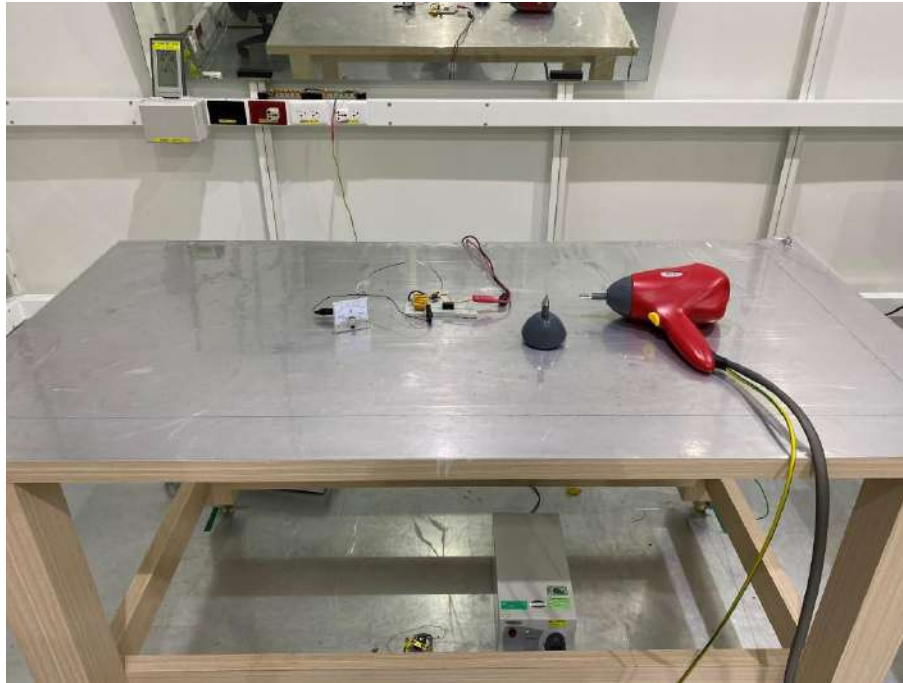


Electrostatic Discharge Immunity

Mode 3

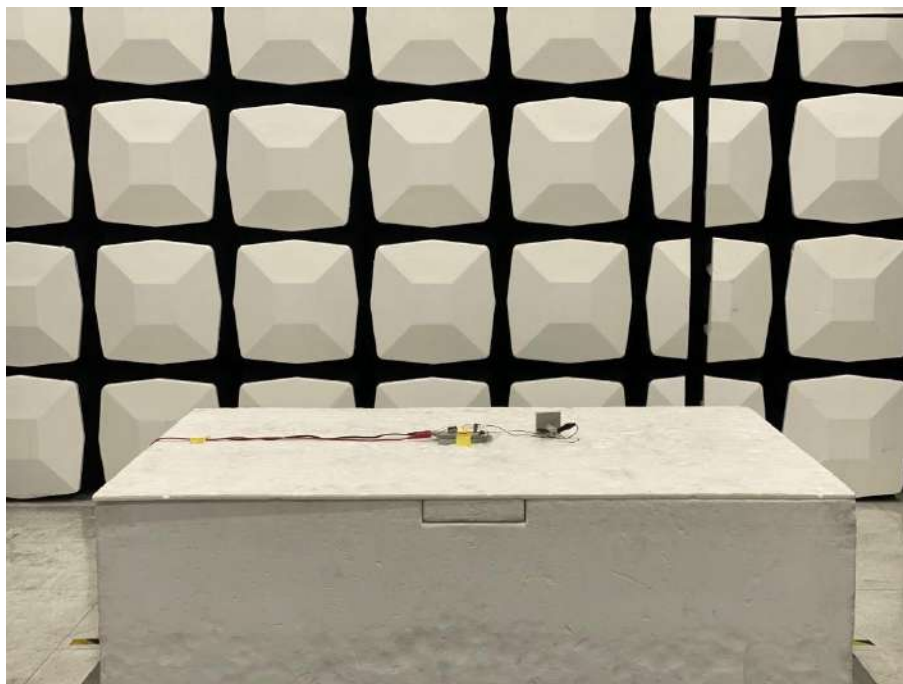
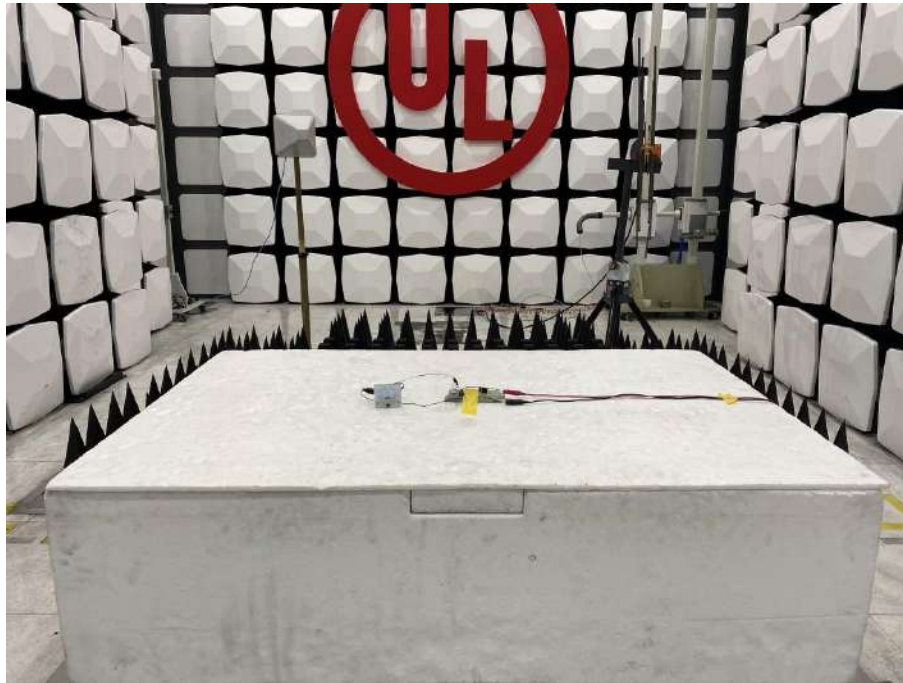


Mode 6

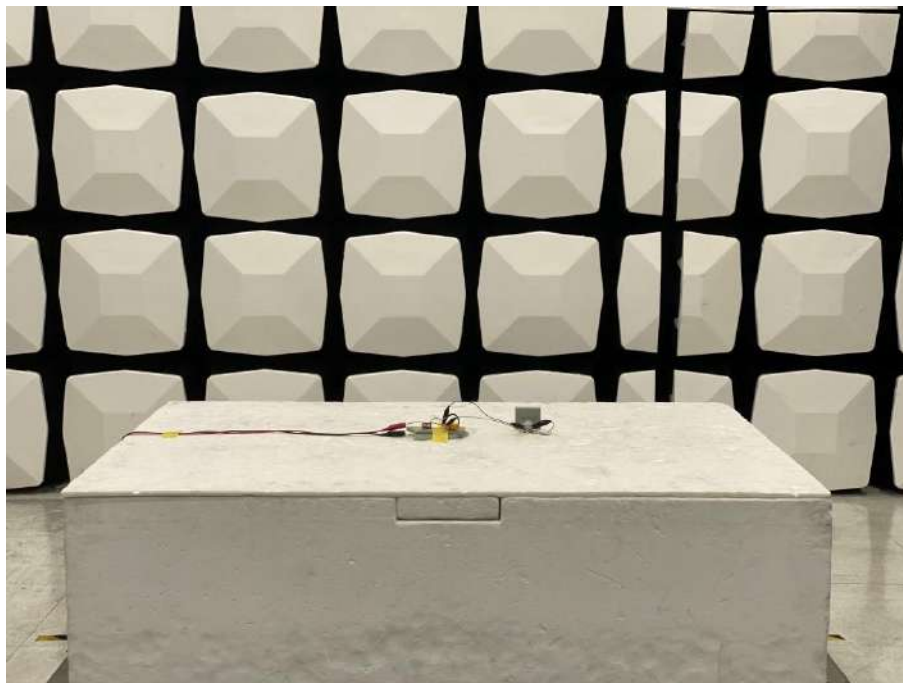
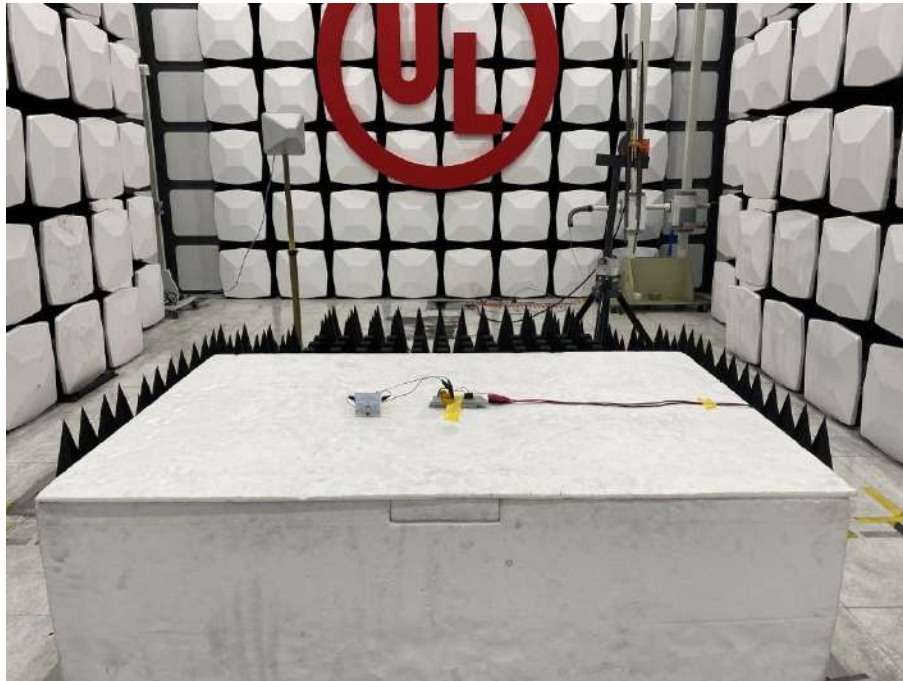


Radio Frequency Electromagnetic Field Immunity

Mode 3

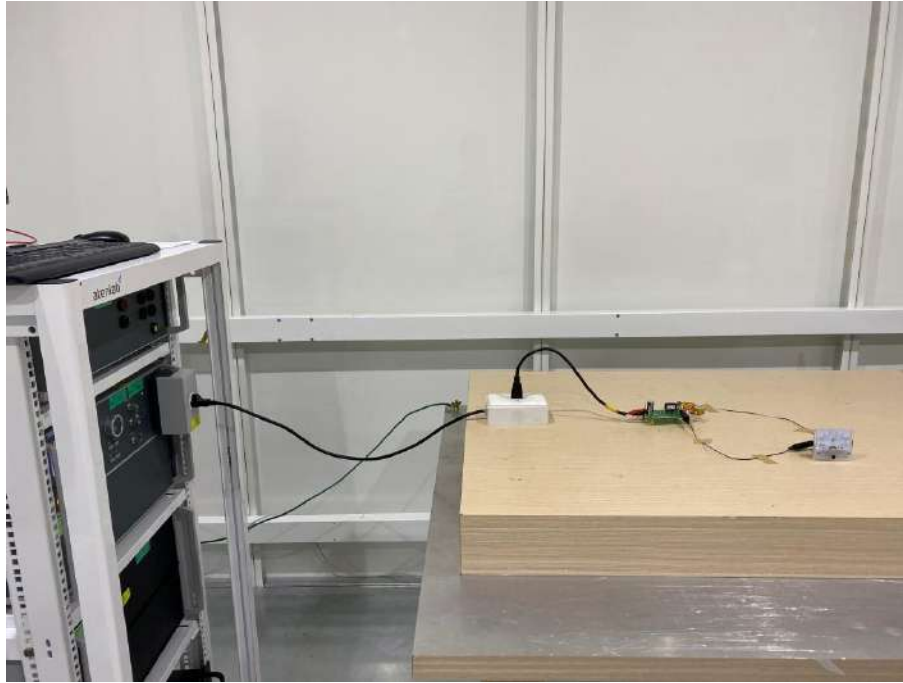


Mode 6

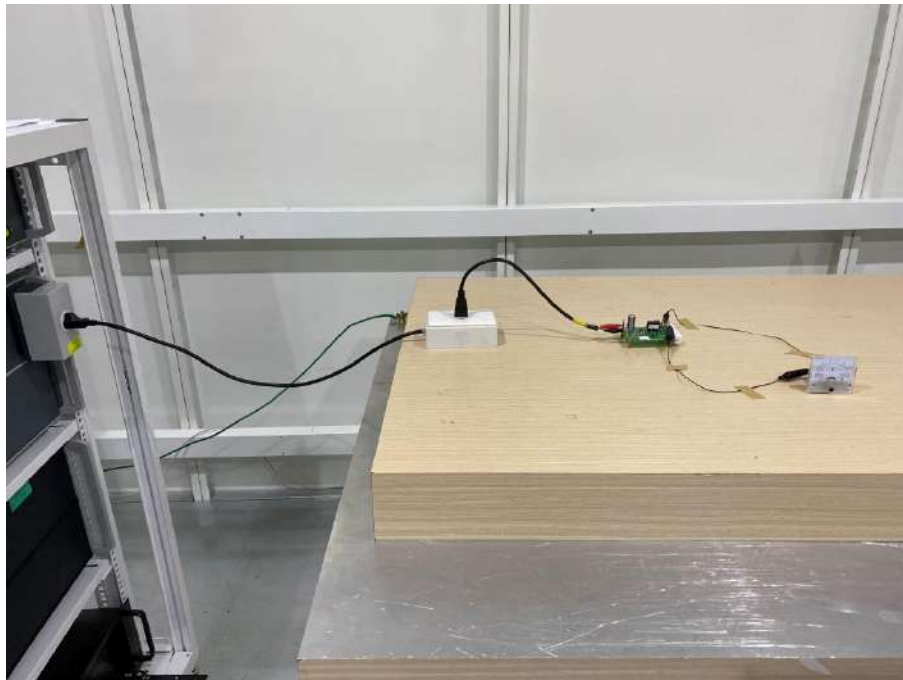


Electrical Fast Transient/ Surge Immunity

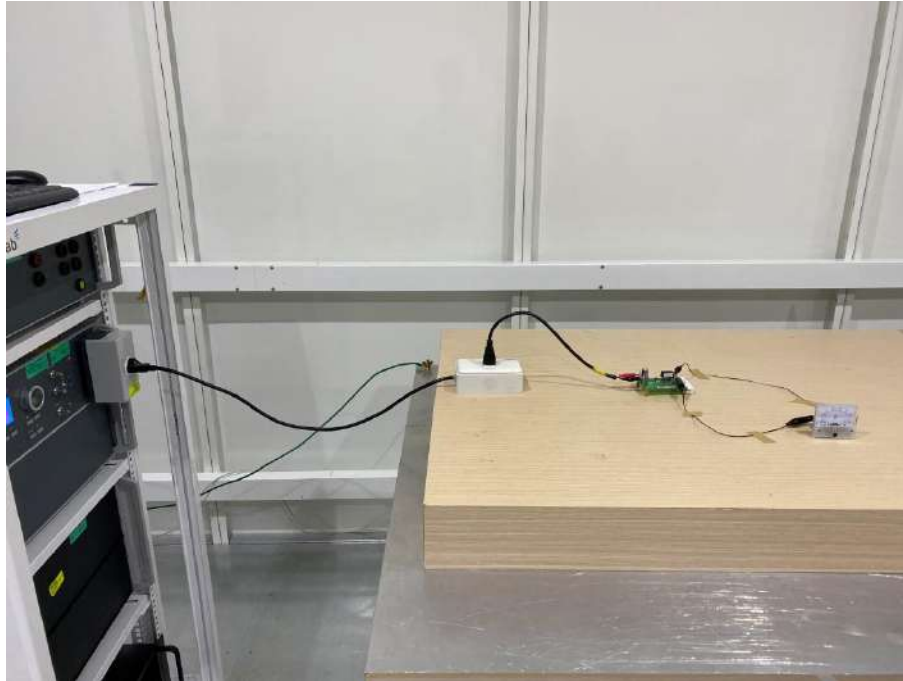
Mode 1



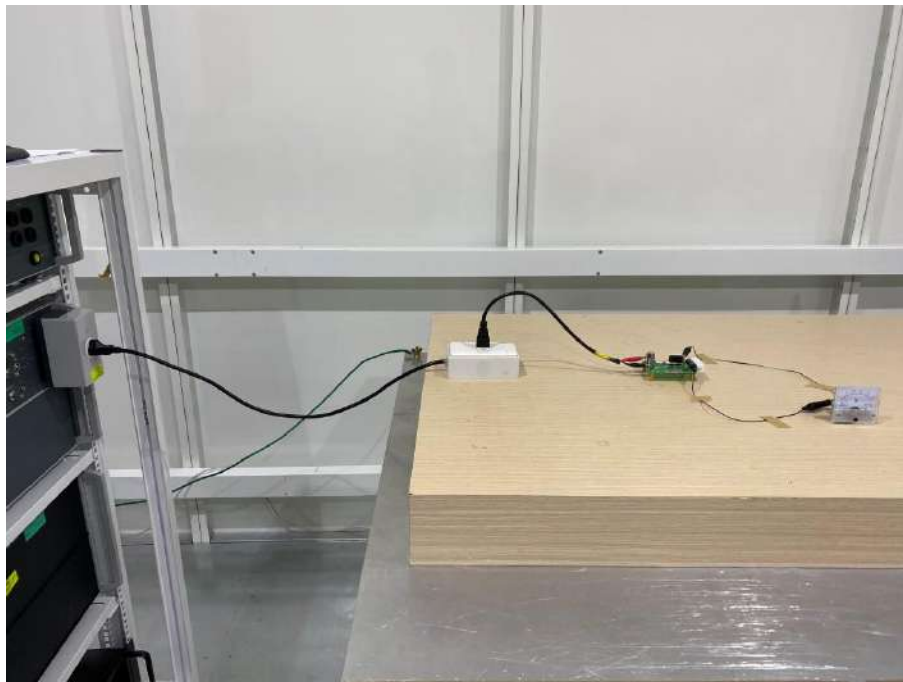
Mode 2



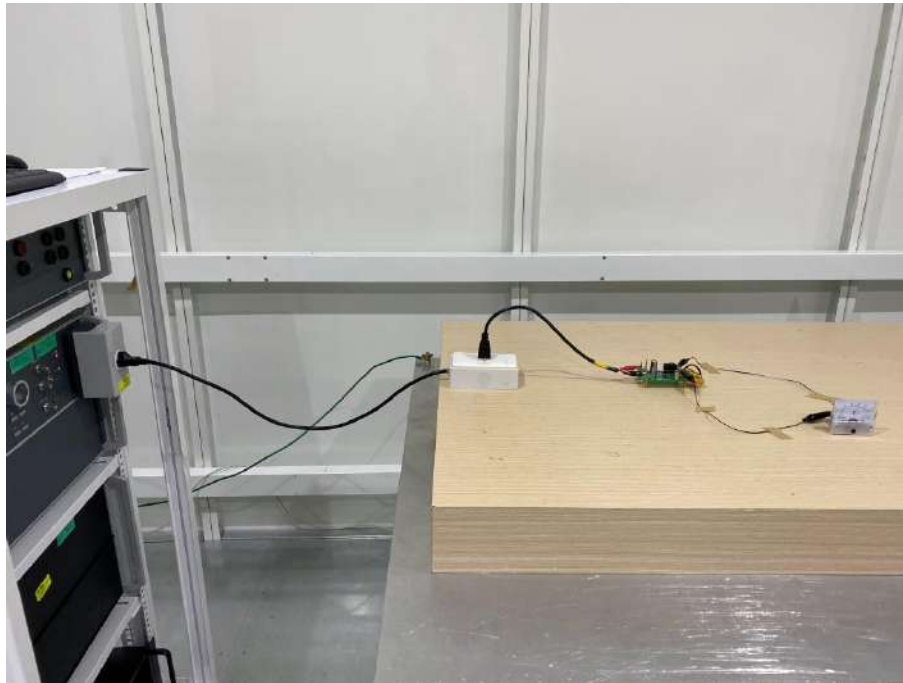
Mode 3



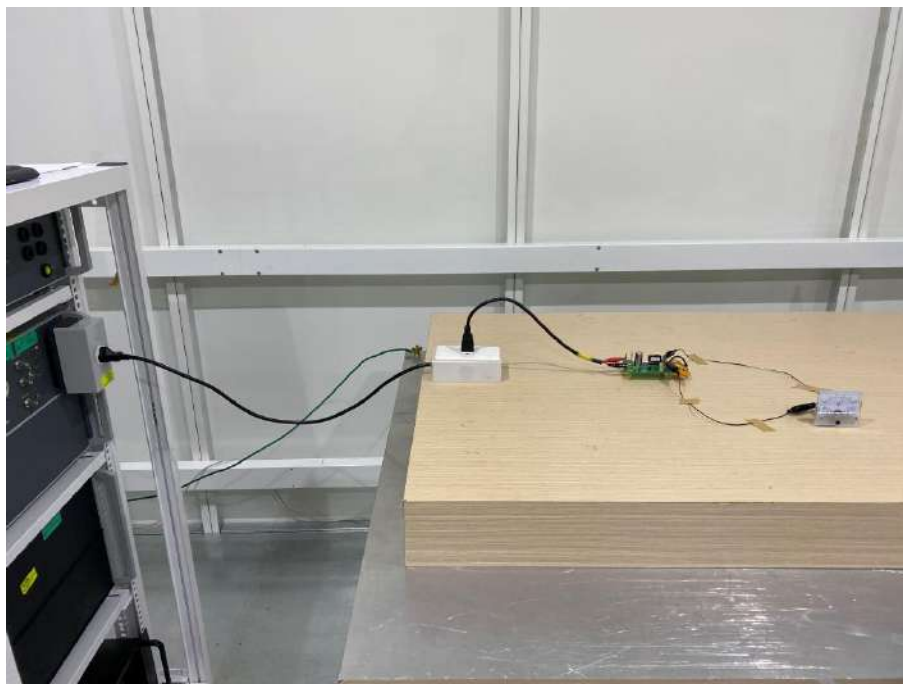
Mode 4



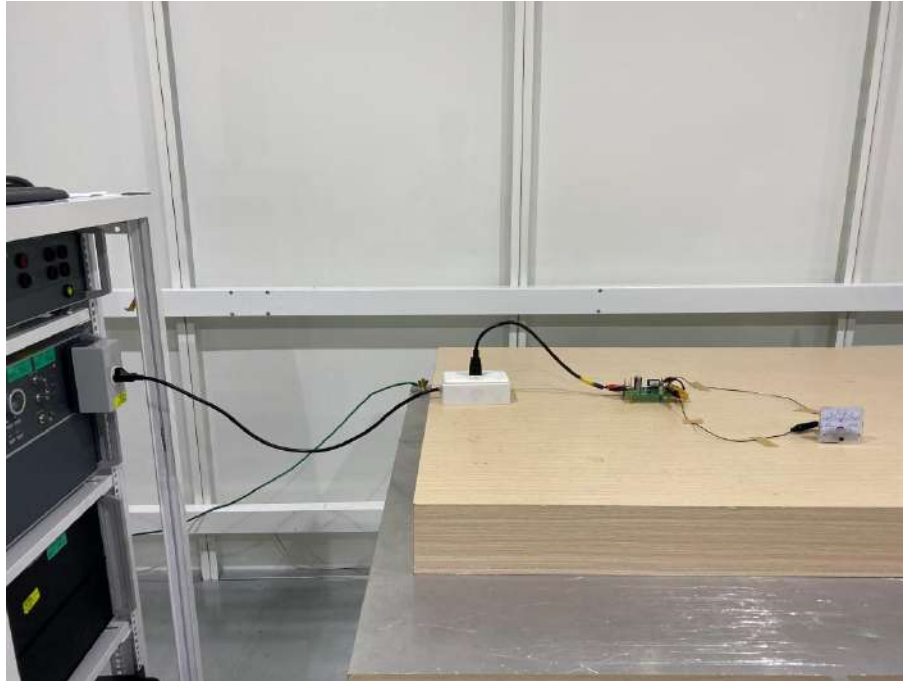
Mode 5



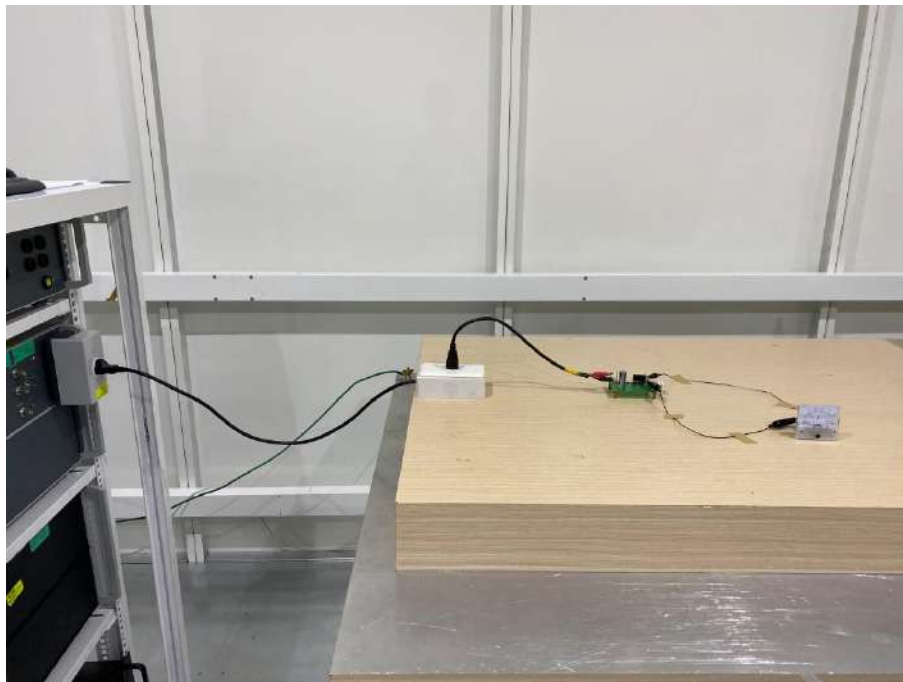
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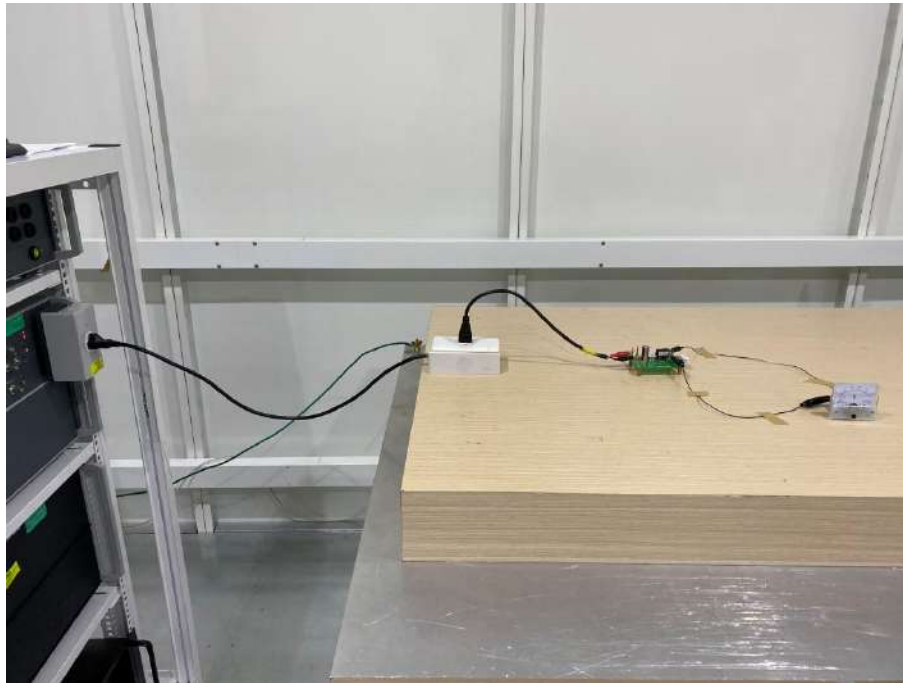
Mode 7



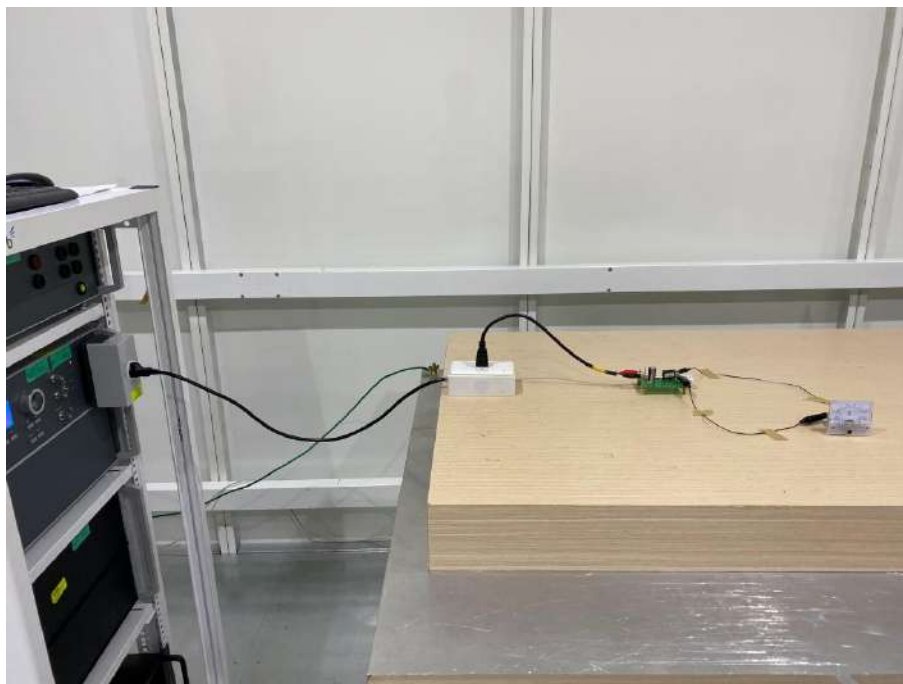
Mode 8



Mode 9

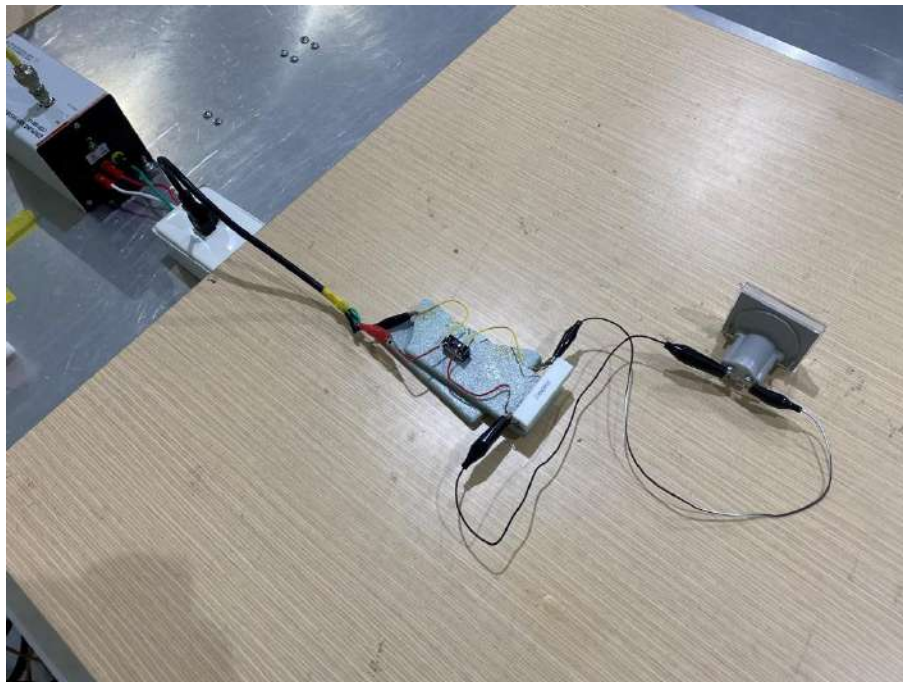
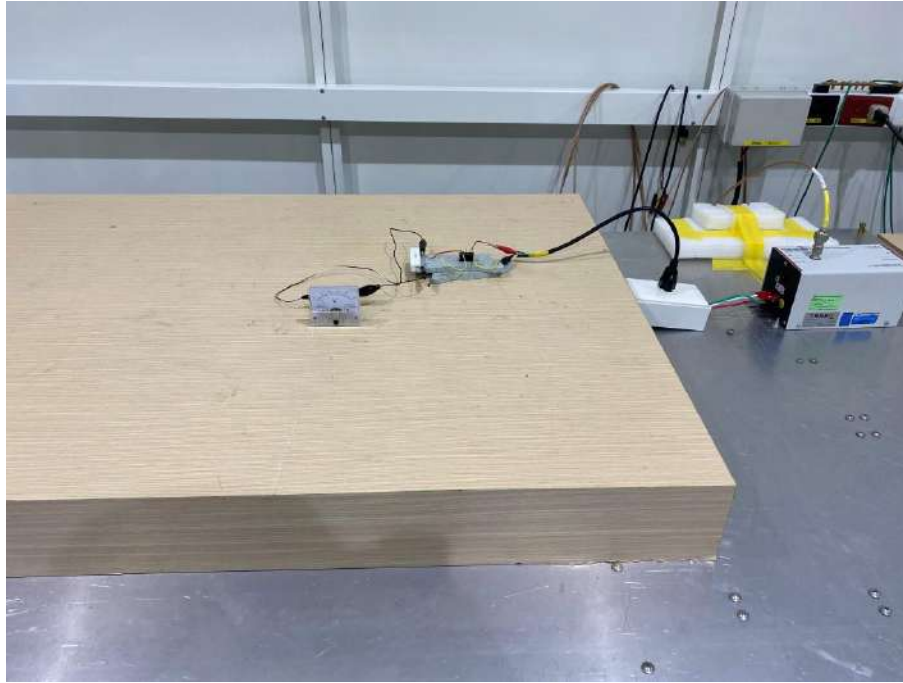


Mode 10

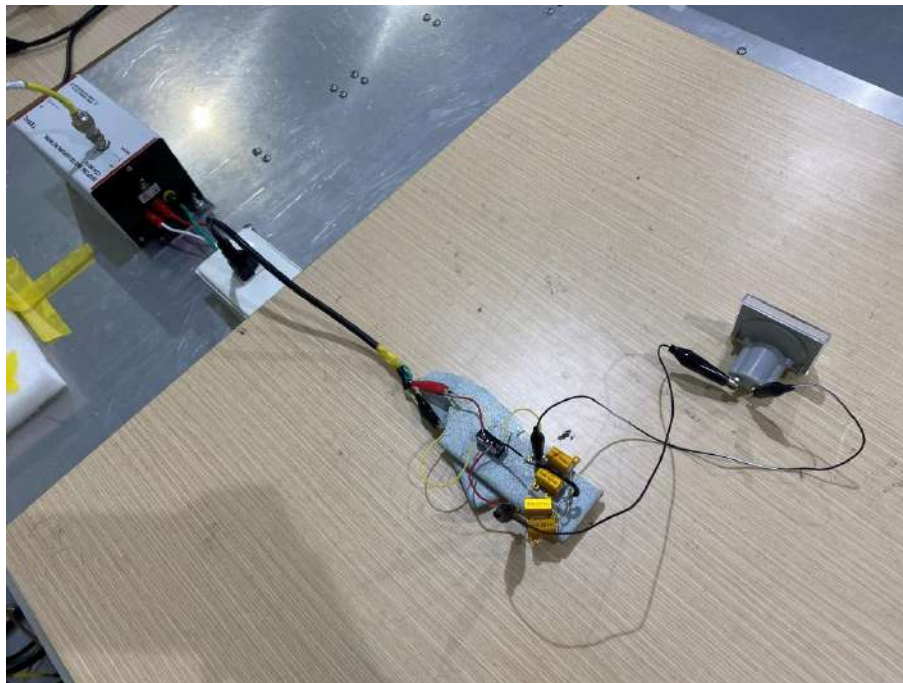
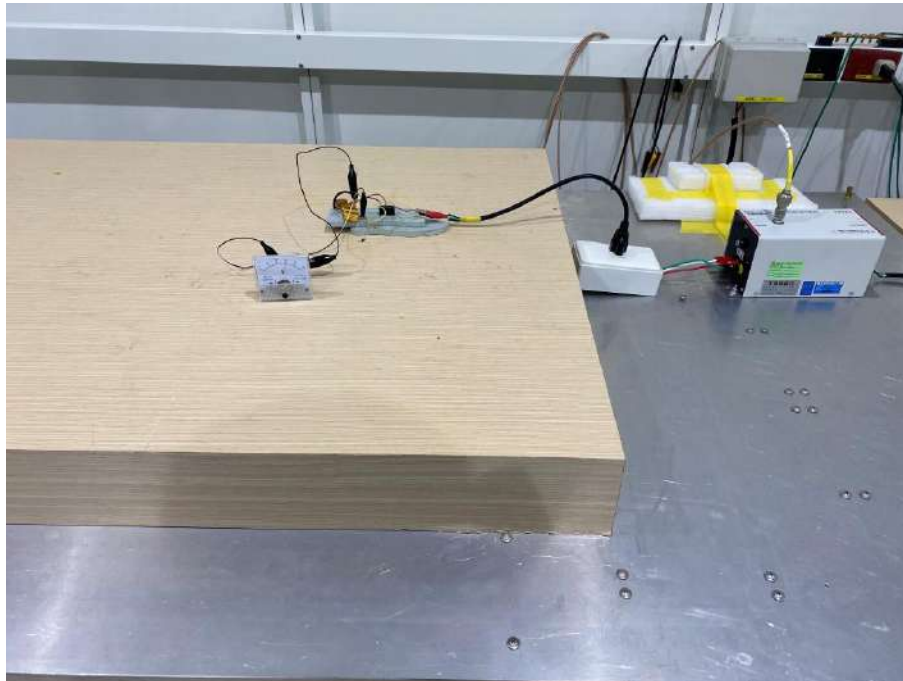


Immunity to conducted disturbances induced by RF fields

Mode 3

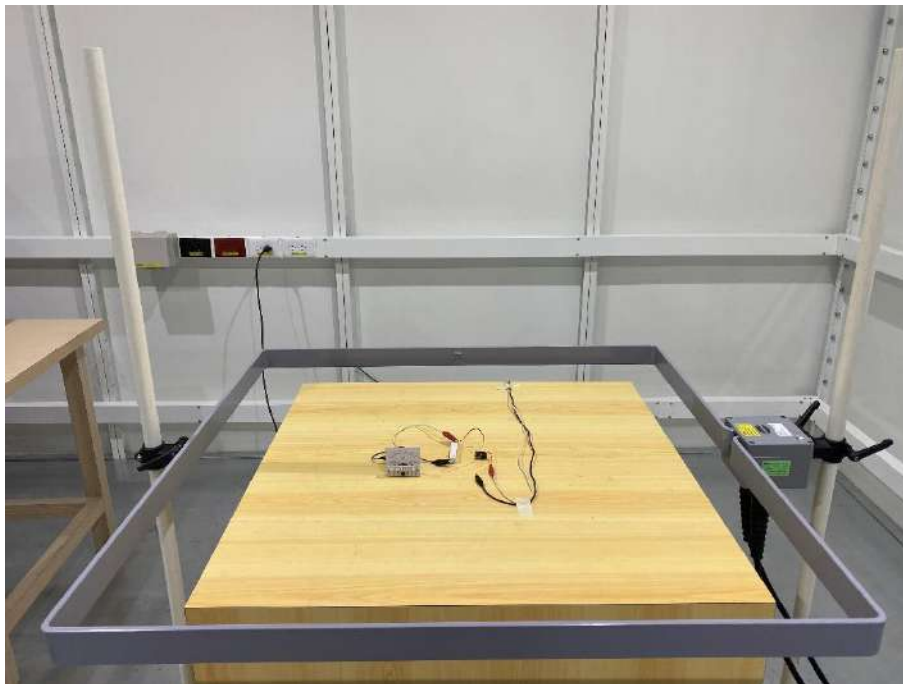
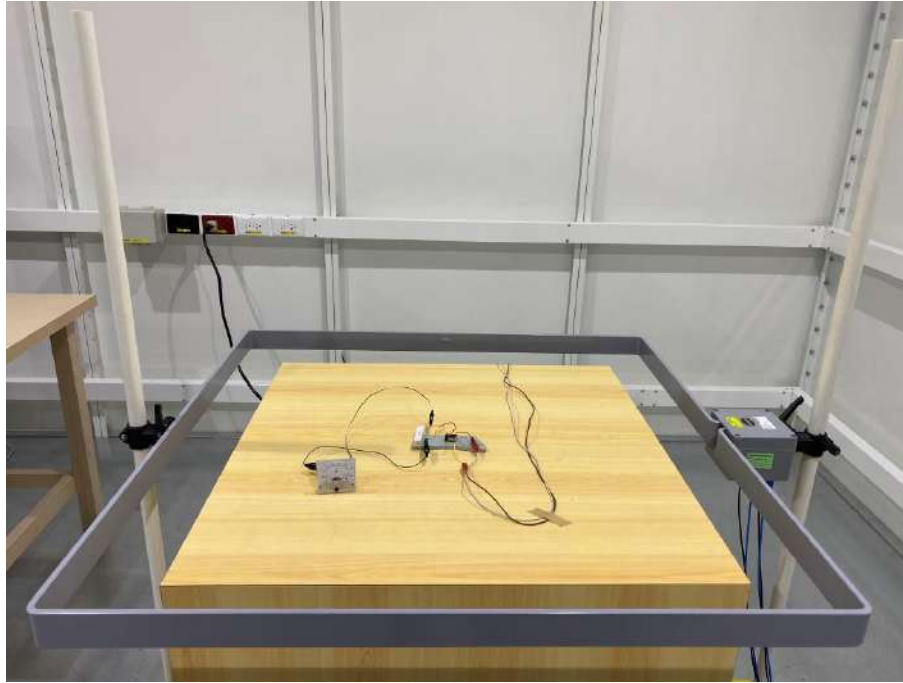


Mode 6

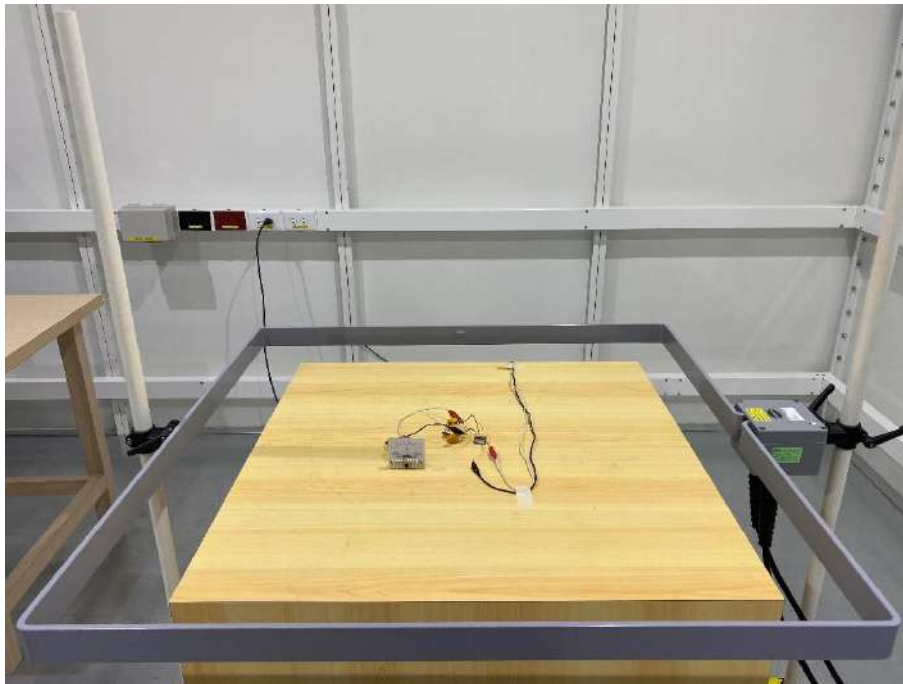
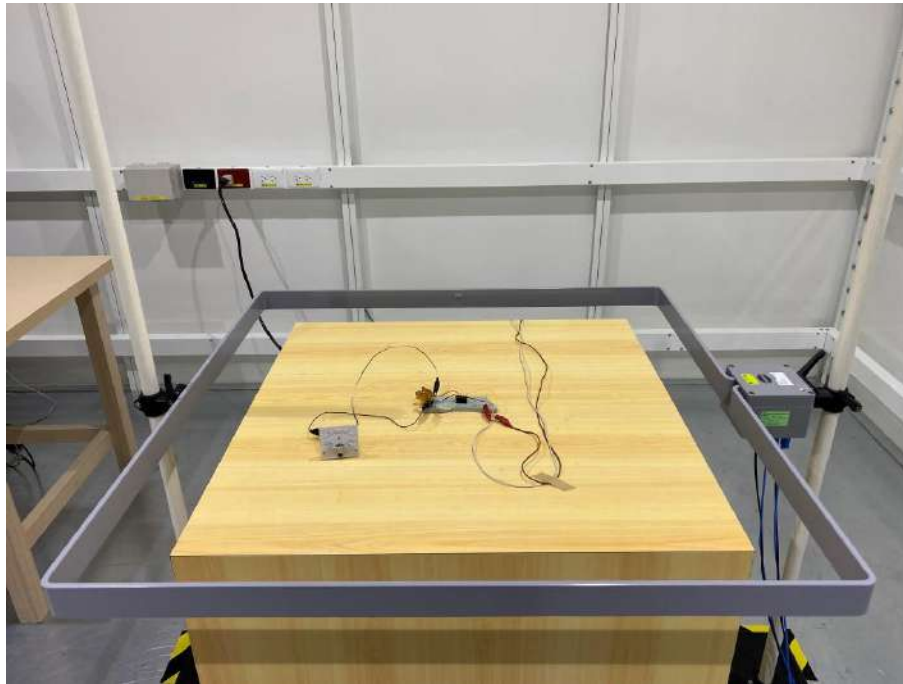


Power frequency magnetic field immunity

Mode 3

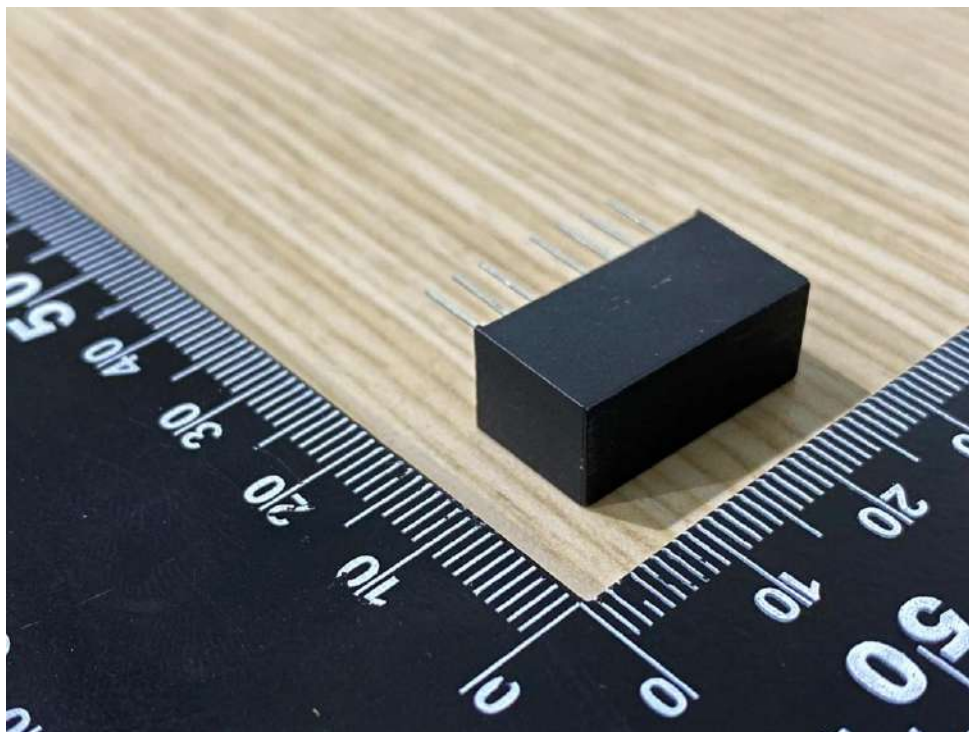
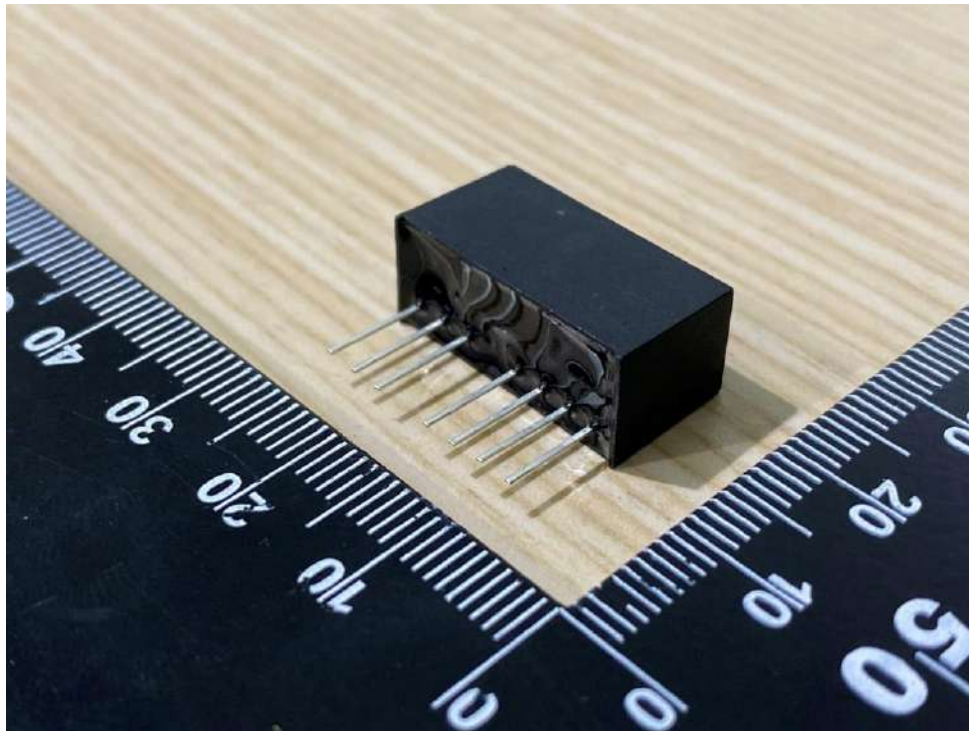


Mode 6

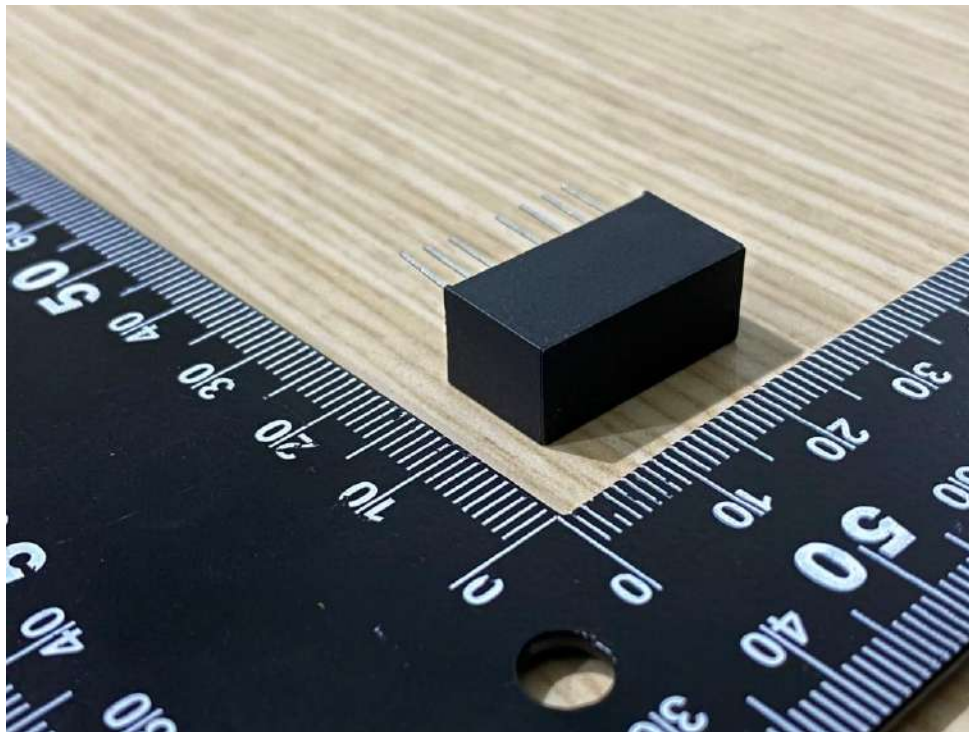
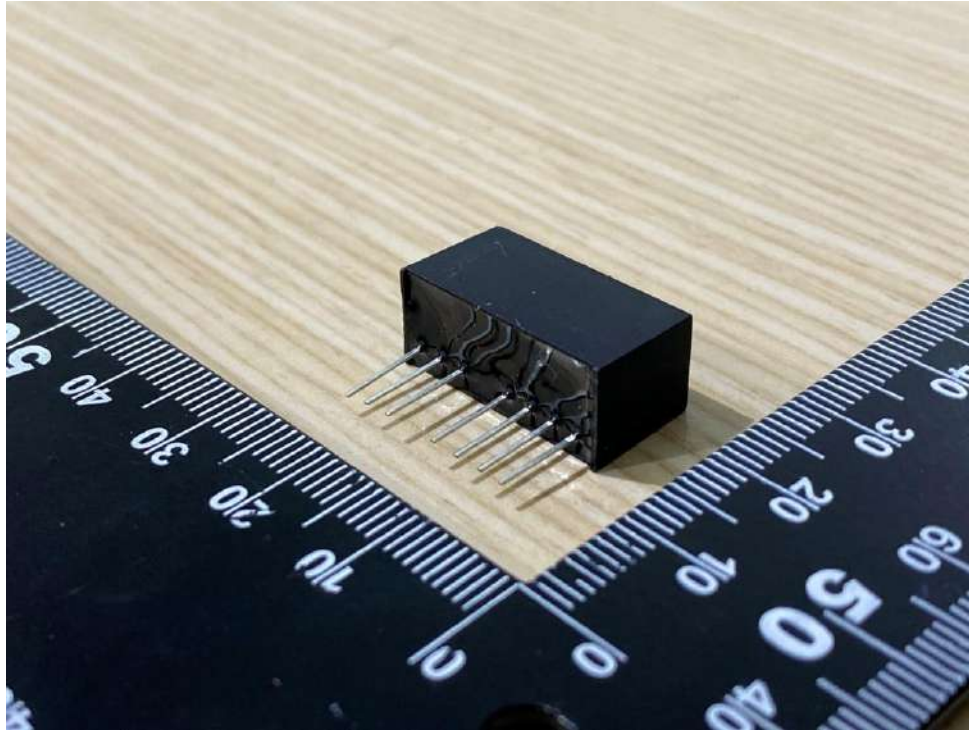


Appendix II: Photographs of the EUT

External
Model : TMR 4-2411



Model : TMR 4-2423WI

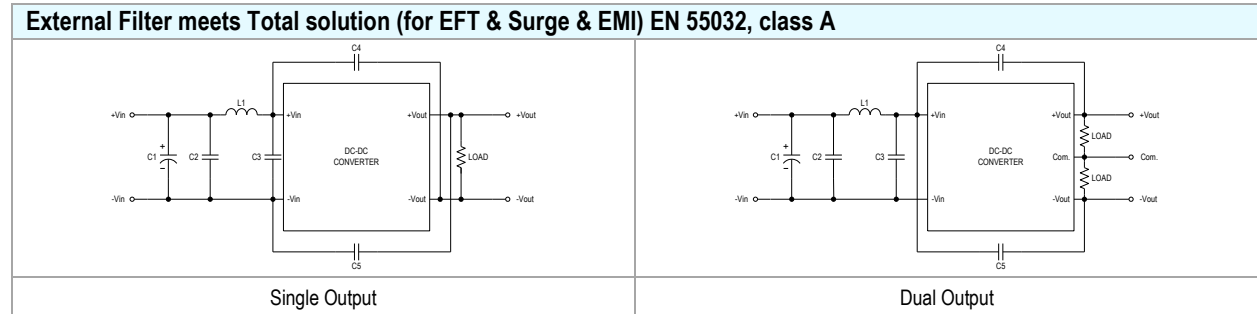


END OF REPORT

Appendix III : TMR 04 & TMR 04WI series with external components according to EMC solution

(1) EMC Solution:

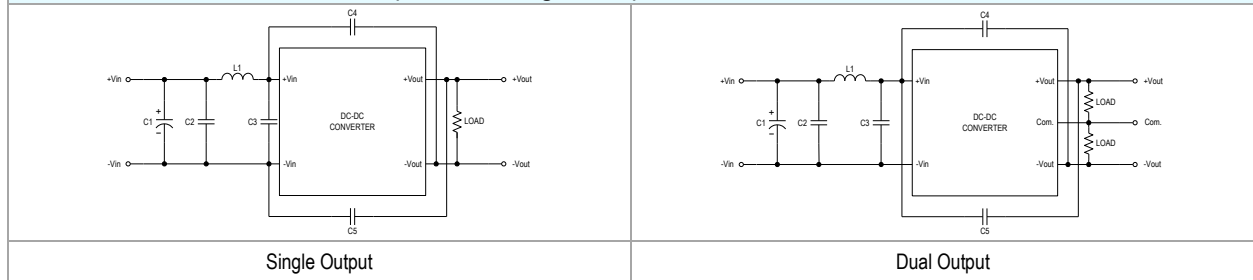
TMR 04 Series



| Model | C1 | C2 | L1 | C3 | C4, C5 |
|------------|-----------------------------------|------------------------|--------------------------|------------------------|-----------------------|
| TMR 4-1211 | 330μF/50V CHEMI-CON KY Series | 4.7μF/25V 1210 X5R | 68μH/0.64A 744774168 | 4.7μF/25V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-1212 | | | | | |
| TMR 4-1213 | | | | | |
| TMR 4-1215 | | | | | |
| TMR 4-1222 | 330μF/50V CHEMI-CON KY Series | 4.7μF/25V 1210 X5R | 10μH/1.7A 7447745100 | 4.7μF/25V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-1223 | | | | | |
| TMR 4-2411 | 330μF/80V CHEMI-CON KY Series | 4.7μF/50V 1210 X5R | 68μH/0.64A 744774168 | 4.7μF/50V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-2412 | | | | | |
| TMR 4-2413 | | | | | |
| TMR 4-2415 | | | | | |
| TMR 4-2422 | 330μF/80V CHEMI-CON KY Series | 4.7μF/50V 1210 X5R | 4.7μH/1.82A 744773047 | 4.7μF/50V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-2423 | | | | | |
| TMR 4-4811 | 330μF/100V CHEMI-CON KY Series | 4.7μF/100V 1210 X7S | 100μH/0.57A 74477420 | 4.7μF/100V 1210 X7S | 220pF/2kV 1808 X7R |
| TMR 4-4812 | | | | | |
| TMR 4-4813 | | | | | |
| TMR 4-4815 | | | | | |
| TMR 4-4822 | 330μF/100V CHEMI-CON KY Series | 4.7μF/100V 1210 X5R | 4.7μH/1.82A 744773047 | 4.7μF/100V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-4823 | | | | | |

TMR 04WI Series

External Filter meets Total solution (for EFT & Surge & EMI) EN 55032, class A



| Model | C1 | C2 | L1 | C3 | C4, C5 |
|--|---|------------------------------|-------------------------|------------------------------|-----------------------|
| TMR 4-2411WI TMR 4-2412WI TMR 4-2413WI TMR 4-2415WI TMR 4-2422WI TMR 4-2423WI | 330 μ F/80V CHEMI-CON KY Series | 4.7 μ F/50V 1210 X5R | SCD0403T 4.7 μ H | 4.7 μ F/50V 1210 X5R | 220pF/2kV 1808 X7R |
| TMR 4-4811WI TMR 4-4812WI TMR 4-4813WI TMR 4-4815WI TMR 4-4822WI TMR 4-4823WI | 330 μ F/100V CHEMI-CON KY Series | 4.7 μ F/100V 1210 X5R | SCD0403T 4.7 μ H | 4.7 μ F/100V 1210 X5R | 220pF/2kV 1808 X7R |

(2) Package Specifications:

Package Specifications

Mechanical Dimensions

The drawing shows the top and bottom views of the package. The top view has a width of 21.8 mm [0.86] and a height of 11.2 mm [0.44]. The bottom view has a width of 20.8 mm [0.82] and a height of 9.3 mm [0.37]. Pin dimensions are specified as 2x2.54 mm [0.10] and 3x2.54 mm [0.10].

Pin Connections

| Pin | Single Output | Dual Output |
|-----|---------------|---------------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 3 | Remote On/Off | Remote On/Off |
| 5 | NC | NC |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | NC | -Vout |

NC: No Connection

► All dimensions in mm (inches)
► Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
► Pins: ±0.1(±0.004)

Physical Characteristics

| | |
|---------------|---|
| Case Size | : 21.8x9.3x11.2 mm (0.86x0.37x0.44 inches) |
| Case Material | : Non-Conductive Black Plastic (flammability to UL 94V-0 rated) |
| Pin Material | : Tinned Copper |
| Weight | : 4.8g |

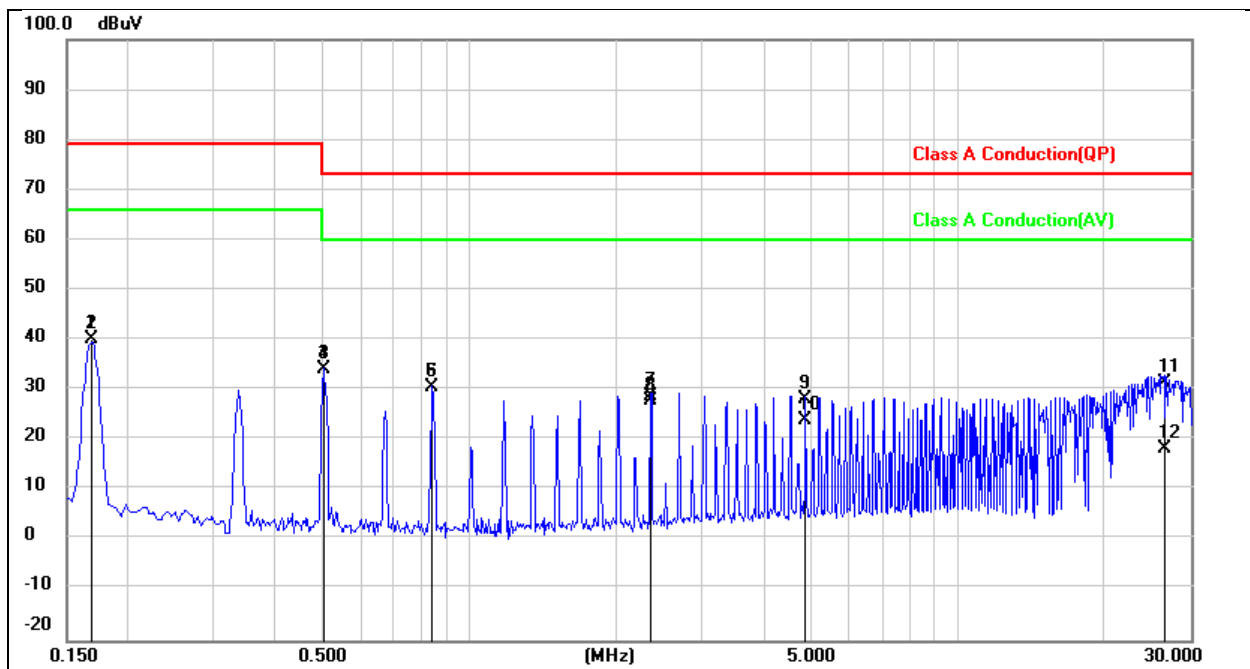
Appendix VI: Preliminary Test Raw Data

Each modes are correspond to original report no. 4789451449B-EN-E0-V0.

The difference are the list corresponding models(as below table) and applicant , others circuit design, enclosure and materials are the same.

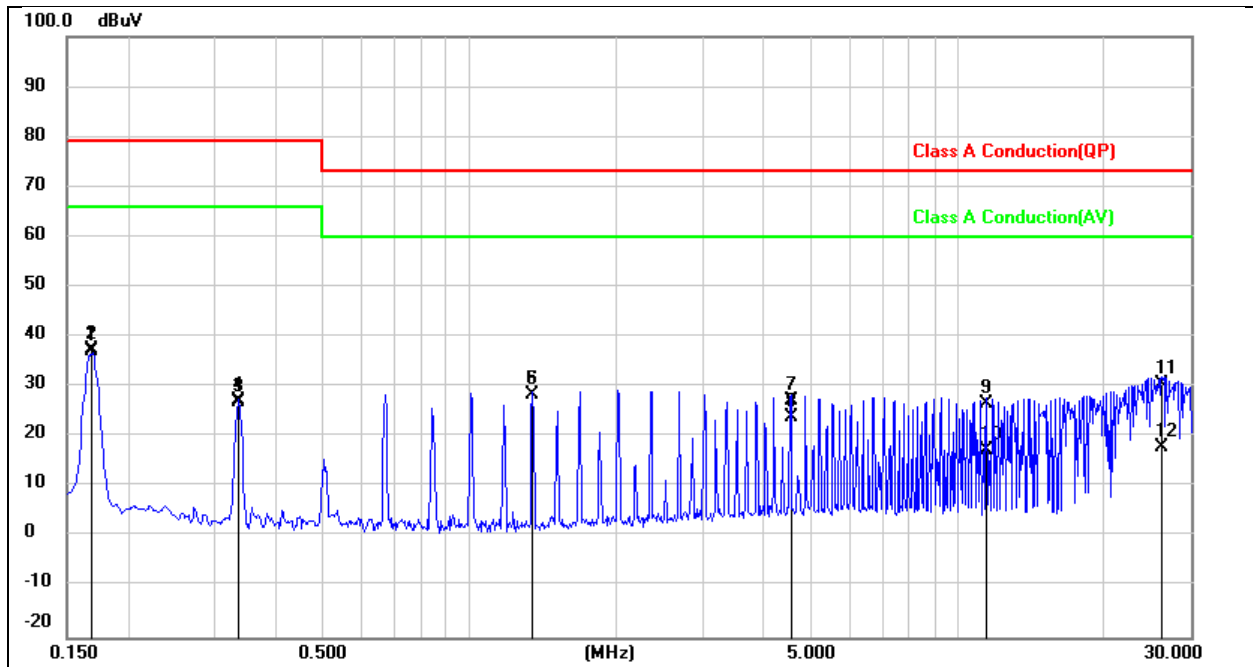
Conduction Emission:

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 4:44:16 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 1 | | |
| Note: | | | |



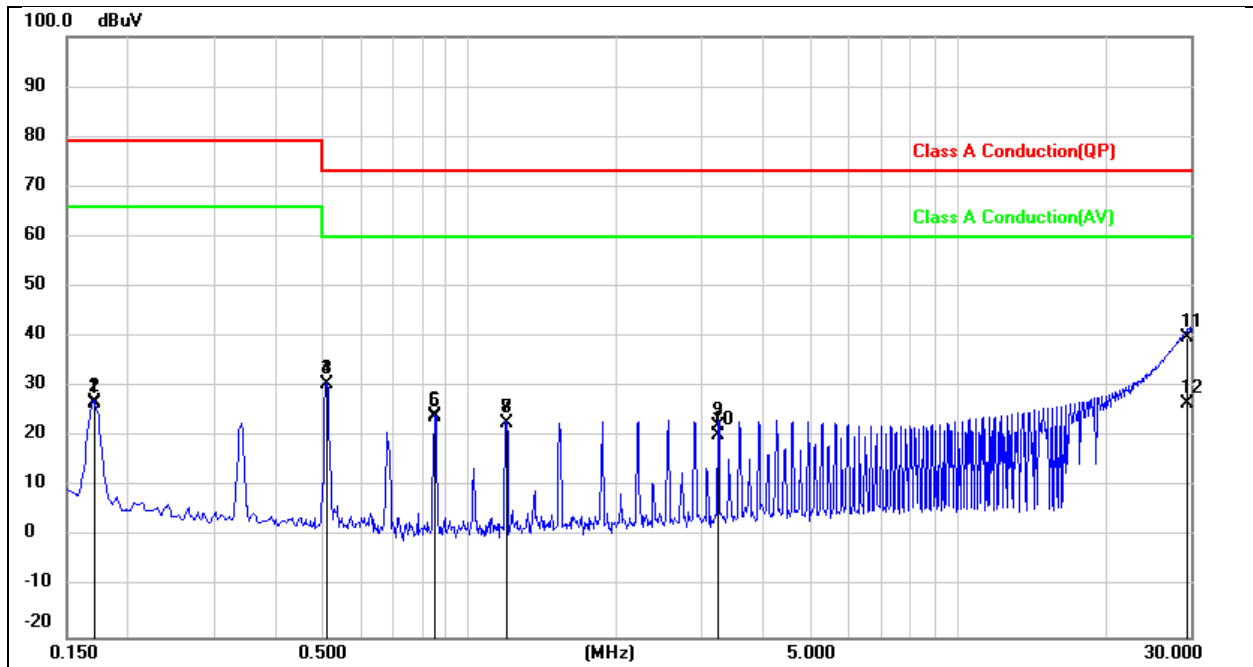
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1683 | 30.28 | 9.92 | 40.20 | 79.00 | -38.80 | QP |
| 2 | 0.1683 | 30.35 | 9.92 | 40.27 | 66.00 | -25.73 | AVG |
| 3 | 0.5061 | 24.25 | 9.94 | 34.19 | 73.00 | -38.81 | QP |
| 4 | 0.5061 | 24.28 | 9.94 | 34.22 | 60.00 | -25.78 | AVG |
| 5 | 0.8423 | 20.57 | 9.96 | 30.53 | 73.00 | -42.47 | QP |
| 6 | 0.8423 | 20.62 | 9.96 | 30.58 | 60.00 | -29.42 | AVG |
| 7 | 2.3587 | 18.71 | 10.02 | 28.73 | 73.00 | -44.27 | QP |
| 8 | 2.3587 | 17.83 | 10.02 | 27.85 | 60.00 | -32.15 | AVG |
| 9 | 4.8861 | 17.91 | 10.11 | 28.02 | 73.00 | -44.98 | QP |
| 10 | 4.8861 | 13.90 | 10.11 | 24.01 | 60.00 | -35.99 | AVG |
| 11 | 26.4247 | 20.70 | 10.62 | 31.32 | 73.00 | -41.68 | QP |
| 12 | 26.4247 | 7.49 | 10.62 | 18.11 | 60.00 | -41.89 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 4:48:19 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 1 | | |
| Note: | | | |



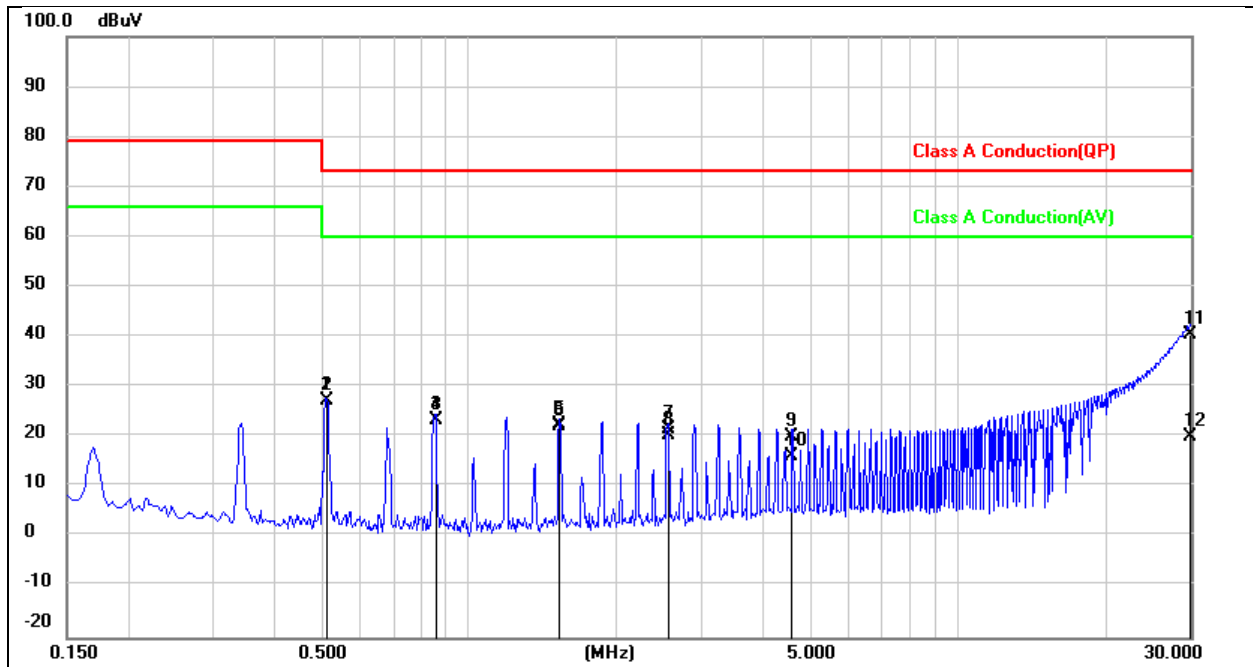
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1685 | 27.35 | 9.90 | 37.25 | 79.00 | -41.75 | QP |
| 2 | 0.1685 | 27.43 | 9.90 | 37.33 | 66.00 | -28.67 | AVG |
| 3 | 0.3369 | 17.15 | 9.92 | 27.07 | 79.00 | -51.93 | QP |
| 4 | 0.3369 | 17.27 | 9.92 | 27.19 | 66.00 | -38.81 | AVG |
| 5 | 1.3476 | 18.49 | 9.97 | 28.46 | 73.00 | -44.54 | QP |
| 6 | 1.3476 | 18.37 | 9.97 | 28.34 | 60.00 | -31.66 | AVG |
| 7 | 4.5486 | 17.30 | 10.08 | 27.38 | 73.00 | -45.62 | QP |
| 8 | 4.5486 | 13.84 | 10.08 | 23.92 | 60.00 | -36.08 | AVG |
| 9 | 11.4667 | 16.30 | 10.27 | 26.57 | 73.00 | -46.43 | QP |
| 10 | 11.4667 | 7.02 | 10.27 | 17.29 | 60.00 | -42.71 | AVG |
| 11 | 26.1402 | 20.02 | 10.65 | 30.67 | 73.00 | -42.33 | QP |
| 12 | 26.1402 | 7.21 | 10.65 | 17.86 | 60.00 | -42.14 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 4:57:35 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 2 | | |
| Note: | | | |



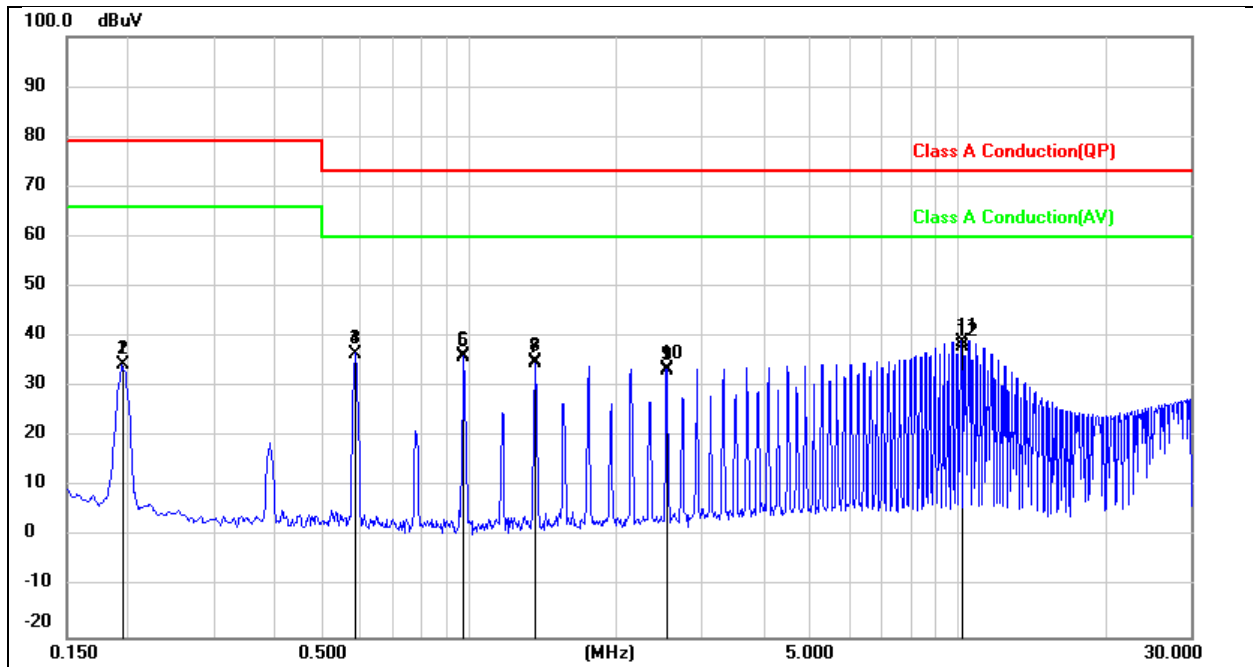
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1706 | 16.80 | 9.92 | 26.72 | 79.00 | -52.28 | QP |
| 2 | 0.1706 | 16.93 | 9.92 | 26.85 | 66.00 | -39.15 | AVG |
| 3 | 0.5112 | 20.54 | 9.94 | 30.48 | 73.00 | -42.52 | QP |
| 4 | 0.5112 | 20.64 | 9.94 | 30.58 | 60.00 | -29.42 | AVG |
| 5 | 0.8516 | 14.13 | 9.96 | 24.09 | 73.00 | -48.91 | QP |
| 6 | 0.8516 | 14.19 | 9.96 | 24.15 | 60.00 | -35.85 | AVG |
| 7 | 1.1928 | 12.68 | 9.96 | 22.64 | 73.00 | -50.36 | QP |
| 8 | 1.1928 | 12.67 | 9.96 | 22.63 | 60.00 | -37.37 | AVG |
| 9 | 3.2374 | 12.15 | 10.04 | 22.19 | 73.00 | -50.81 | QP |
| 10 | 3.2374 | 10.19 | 10.04 | 20.23 | 60.00 | -39.77 | AVG |
| 11 | 29.6766 | 29.01 | 10.71 | 39.72 | 73.00 | -33.28 | QP |
| 12 | 29.6766 | 15.99 | 10.71 | 26.70 | 60.00 | -33.30 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 4:53:40 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 2 | | |
| Note: | | | |



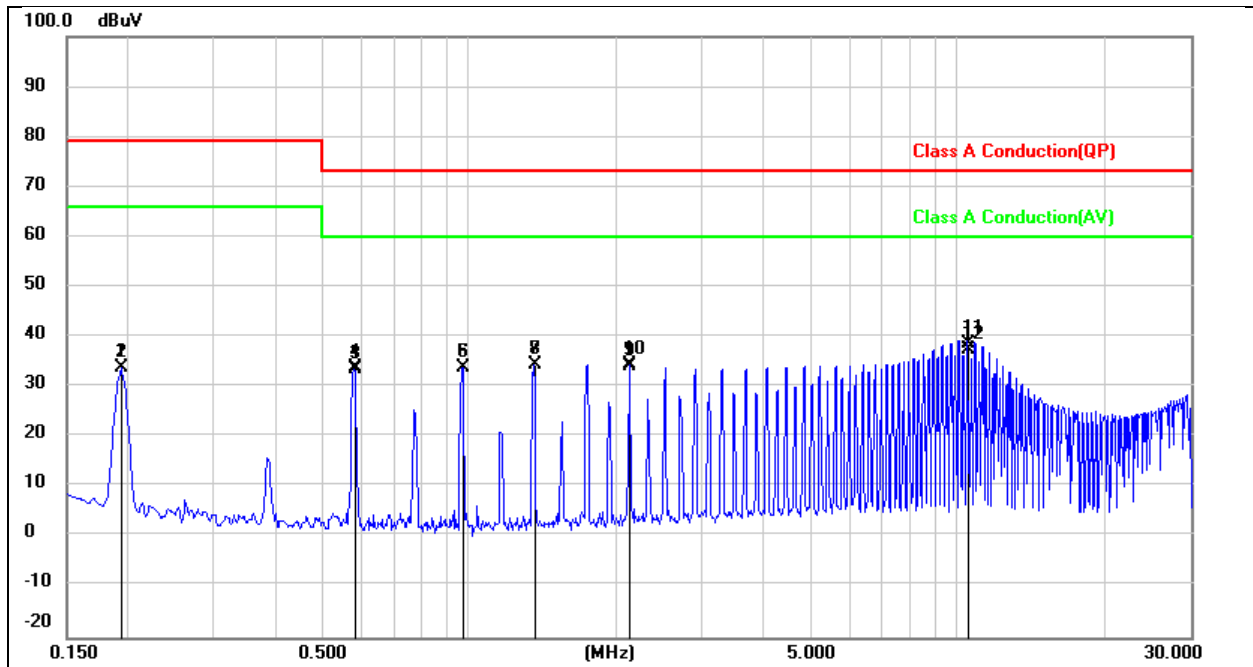
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.5103 | 17.25 | 9.93 | 27.18 | 73.00 | -45.82 | QP |
| 2 | 0.5103 | 17.34 | 9.93 | 27.27 | 60.00 | -32.73 | AVG |
| 3 | 0.8512 | 13.53 | 9.95 | 23.48 | 73.00 | -49.52 | QP |
| 4 | 0.8512 | 13.47 | 9.95 | 23.42 | 60.00 | -36.58 | AVG |
| 5 | 1.5305 | 12.47 | 9.98 | 22.45 | 73.00 | -50.55 | QP |
| 6 | 1.5305 | 12.26 | 9.98 | 22.24 | 60.00 | -37.76 | AVG |
| 7 | 2.5502 | 11.42 | 10.01 | 21.43 | 73.00 | -51.57 | QP |
| 8 | 2.5502 | 10.31 | 10.01 | 20.32 | 60.00 | -39.68 | AVG |
| 9 | 4.5896 | 9.99 | 10.08 | 20.07 | 73.00 | -52.93 | QP |
| 10 | 4.5896 | 6.15 | 10.08 | 16.23 | 60.00 | -43.77 | AVG |
| 11 | 29.9352 | 29.77 | 10.76 | 40.53 | 73.00 | -32.47 | QP |
| 12 | 29.9352 | 9.15 | 10.76 | 19.91 | 60.00 | -40.09 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:17:10 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 4 | | |
| Note: | | | |



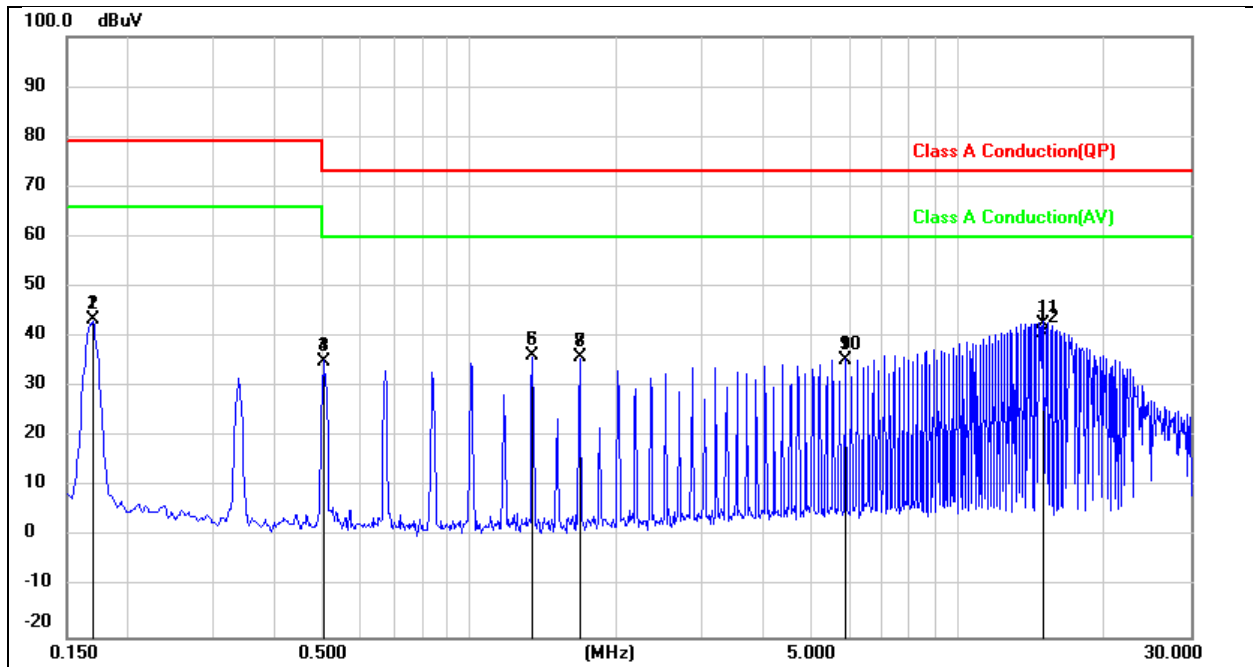
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1958 | 24.56 | 9.92 | 34.48 | 79.00 | -44.52 | QP |
| 2 | 0.1958 | 24.65 | 9.92 | 34.57 | 66.00 | -31.43 | AVG |
| 3 | 0.5873 | 26.60 | 9.94 | 36.54 | 73.00 | -36.46 | QP |
| 4 | 0.5873 | 26.67 | 9.94 | 36.61 | 60.00 | -23.39 | AVG |
| 5 | 0.9795 | 26.11 | 9.96 | 36.07 | 73.00 | -36.93 | QP |
| 6 | 0.9795 | 26.18 | 9.96 | 36.14 | 60.00 | -23.86 | AVG |
| 7 | 1.3714 | 24.87 | 9.98 | 34.85 | 73.00 | -38.15 | QP |
| 8 | 1.3714 | 24.95 | 9.98 | 34.93 | 60.00 | -25.07 | AVG |
| 9 | 2.5473 | 23.35 | 10.02 | 33.37 | 73.00 | -39.63 | QP |
| 10 | 2.5473 | 23.42 | 10.02 | 33.44 | 60.00 | -26.56 | AVG |
| 11 | 10.1909 | 28.73 | 10.24 | 38.97 | 73.00 | -34.03 | QP |
| 12 | 10.1909 | 27.69 | 10.24 | 37.93 | 60.00 | -22.07 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:13:14 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 4 | | |
| Note: | | | |



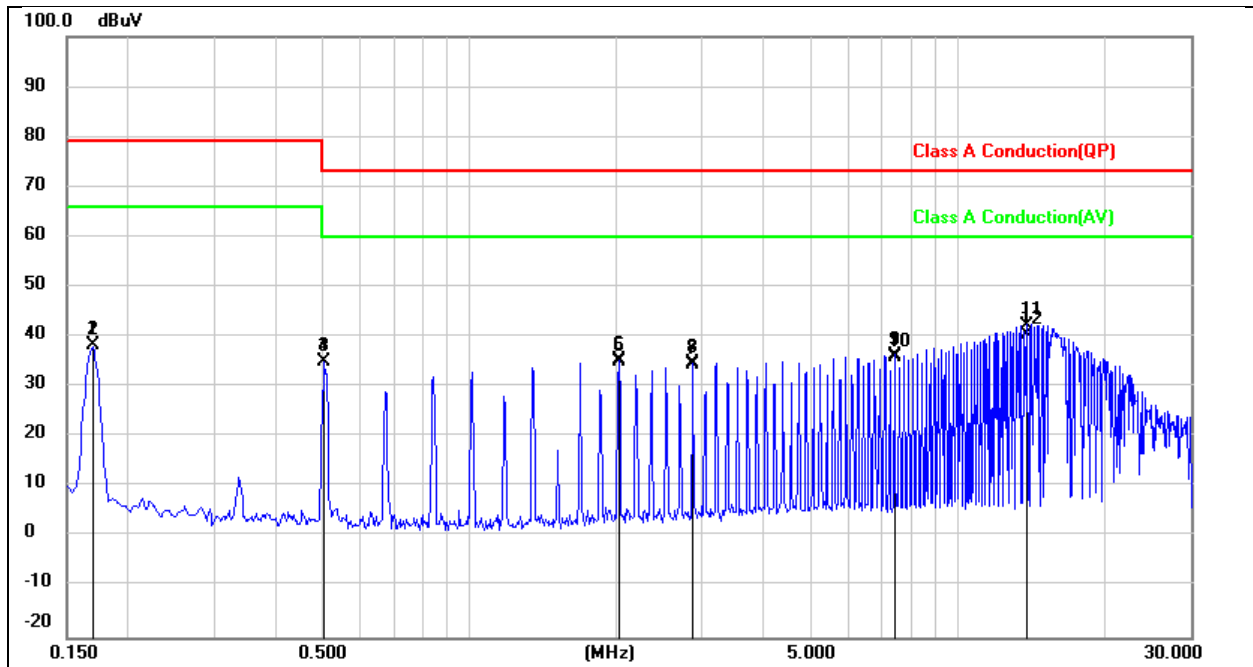
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1946 | 23.80 | 9.91 | 33.71 | 79.00 | -45.29 | QP |
| 2 | 0.1946 | 23.89 | 9.91 | 33.80 | 66.00 | -32.20 | AVG |
| 3 | 0.5834 | 23.69 | 9.93 | 33.62 | 73.00 | -39.38 | QP |
| 4 | 0.5834 | 23.77 | 9.93 | 33.70 | 60.00 | -26.30 | AVG |
| 5 | 0.9727 | 23.93 | 9.95 | 33.88 | 73.00 | -39.12 | QP |
| 6 | 0.9727 | 24.01 | 9.95 | 33.96 | 60.00 | -26.04 | AVG |
| 7 | 1.3622 | 24.39 | 9.97 | 34.36 | 73.00 | -38.64 | QP |
| 8 | 1.3622 | 24.46 | 9.97 | 34.43 | 60.00 | -25.57 | AVG |
| 9 | 2.1416 | 24.27 | 10.00 | 34.27 | 73.00 | -38.73 | QP |
| 10 | 2.1416 | 24.34 | 10.00 | 34.34 | 60.00 | -25.66 | AVG |
| 11 | 10.5163 | 28.44 | 10.25 | 38.69 | 73.00 | -34.31 | QP |
| 12 | 10.5163 | 27.06 | 10.25 | 37.31 | 60.00 | -22.69 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:22:53 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 5 | | |
| Note: | | | |



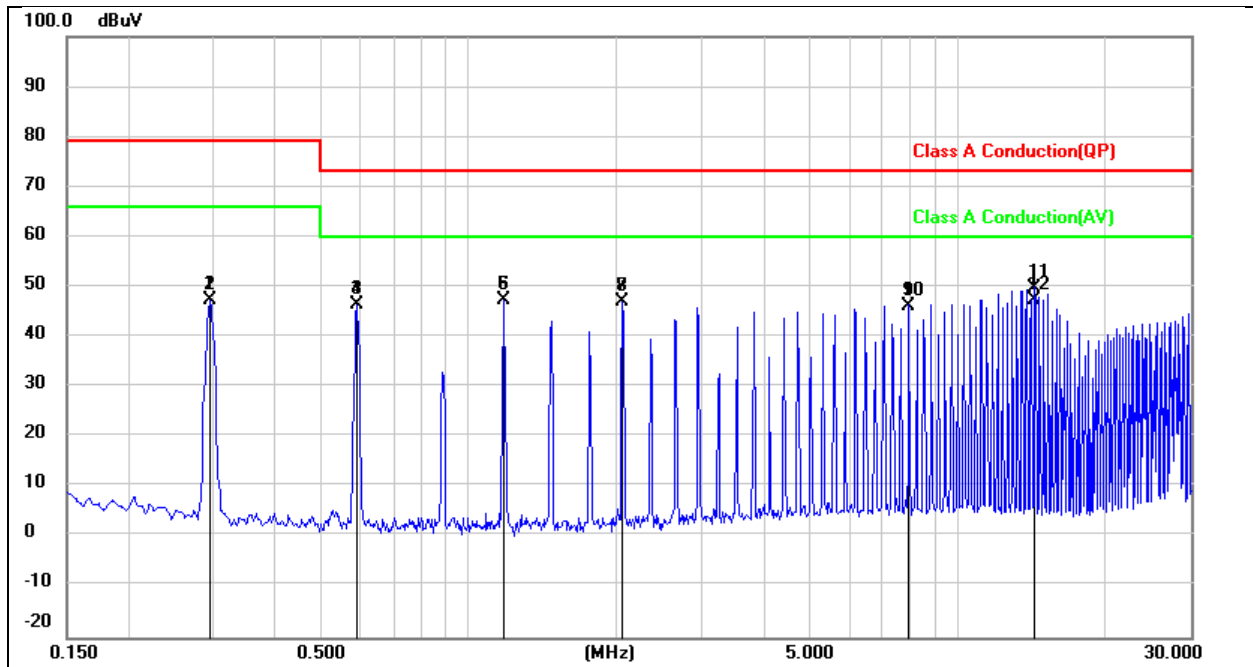
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1686 | 33.60 | 9.92 | 43.52 | 79.00 | -35.48 | QP |
| 2 | 0.1686 | 33.65 | 9.92 | 43.57 | 66.00 | -22.43 | AVG |
| 3 | 0.5059 | 25.10 | 9.94 | 35.04 | 73.00 | -37.96 | QP |
| 4 | 0.5059 | 25.18 | 9.94 | 35.12 | 60.00 | -24.88 | AVG |
| 5 | 1.3499 | 26.21 | 9.98 | 36.19 | 73.00 | -36.81 | QP |
| 6 | 1.3499 | 26.28 | 9.98 | 36.26 | 60.00 | -23.74 | AVG |
| 7 | 1.6876 | 25.99 | 9.99 | 35.98 | 73.00 | -37.02 | QP |
| 8 | 1.6876 | 26.06 | 9.99 | 36.05 | 60.00 | -23.95 | AVG |
| 9 | 5.9073 | 25.31 | 10.13 | 35.44 | 73.00 | -37.56 | QP |
| 10 | 5.9073 | 25.20 | 10.13 | 35.33 | 60.00 | -24.67 | AVG |
| 11 | 15.0233 | 32.07 | 10.38 | 42.45 | 73.00 | -30.55 | QP |
| 12 | 15.0233 | 30.25 | 10.38 | 40.63 | 60.00 | -19.37 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:30:28 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 5 | | |
| Note: | | | |



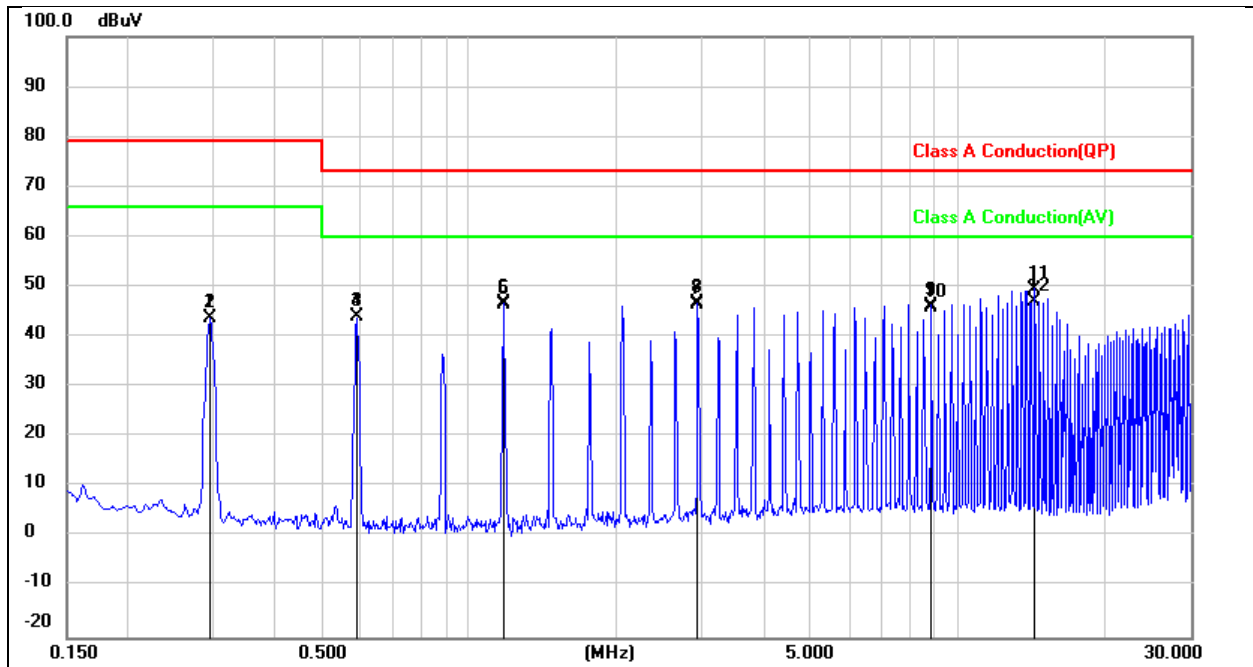
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.1689 | 28.39 | 9.90 | 38.29 | 79.00 | -40.71 | QP |
| 2 | 0.1689 | 28.46 | 9.90 | 38.36 | 66.00 | -27.64 | AVG |
| 3 | 0.5070 | 25.04 | 9.93 | 34.97 | 73.00 | -38.03 | QP |
| 4 | 0.5070 | 25.11 | 9.93 | 35.04 | 60.00 | -24.96 | AVG |
| 5 | 2.0283 | 25.13 | 10.00 | 35.13 | 73.00 | -37.87 | QP |
| 6 | 2.0283 | 25.20 | 10.00 | 35.20 | 60.00 | -24.80 | AVG |
| 7 | 2.8736 | 24.55 | 10.02 | 34.57 | 73.00 | -38.43 | QP |
| 8 | 2.8736 | 24.62 | 10.02 | 34.64 | 60.00 | -25.36 | AVG |
| 9 | 7.4375 | 26.12 | 10.16 | 36.28 | 73.00 | -36.72 | QP |
| 10 | 7.4375 | 25.77 | 10.16 | 35.93 | 60.00 | -24.07 | AVG |
| 11 | 13.8608 | 31.85 | 10.36 | 42.21 | 73.00 | -30.79 | QP |
| 12 | 13.8608 | 30.14 | 10.36 | 40.50 | 60.00 | -19.50 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:48:47 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 7 | | |
| Note: | | | |



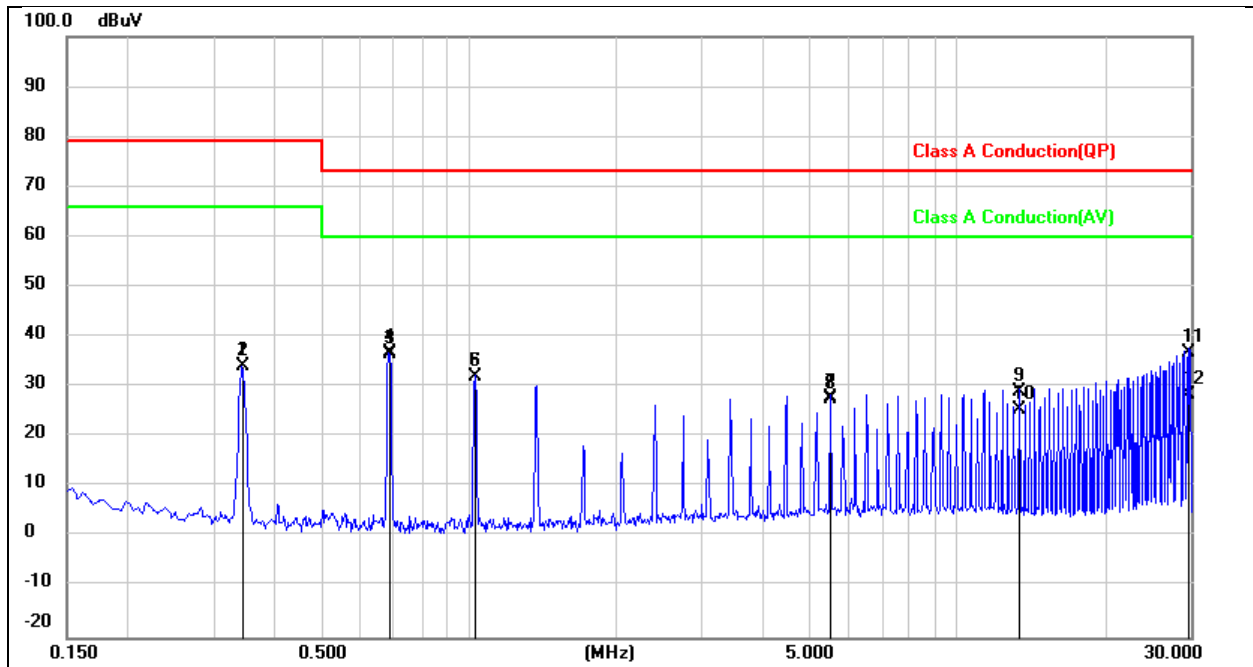
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.2946 | 37.43 | 9.93 | 47.36 | 79.00 | -31.64 | QP |
| 2 | 0.2946 | 37.46 | 9.93 | 47.39 | 66.00 | -18.61 | AVG |
| 3 | 0.5888 | 36.60 | 9.94 | 46.54 | 73.00 | -26.46 | QP |
| 4 | 0.5888 | 36.62 | 9.94 | 46.56 | 60.00 | -13.44 | AVG |
| 5 | 1.1781 | 37.33 | 9.96 | 47.29 | 73.00 | -25.71 | QP |
| 6 | 1.1781 | 37.36 | 9.96 | 47.32 | 60.00 | -12.68 | AVG |
| 7 | 2.0616 | 37.15 | 10.01 | 47.16 | 73.00 | -25.84 | QP |
| 8 | 2.0616 | 37.18 | 10.01 | 47.19 | 60.00 | -12.81 | AVG |
| 9 | 7.9518 | 36.05 | 10.19 | 46.24 | 73.00 | -26.76 | QP |
| 10 | 7.9518 | 35.86 | 10.19 | 46.05 | 60.00 | -13.95 | AVG |
| 11 | 14.4309 | 39.49 | 10.36 | 49.85 | 73.00 | -23.15 | QP |
| 12 | 14.4309 | 37.00 | 10.36 | 47.36 | 60.00 | -12.64 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:52:41 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 7 | | |
| Note: | | | |



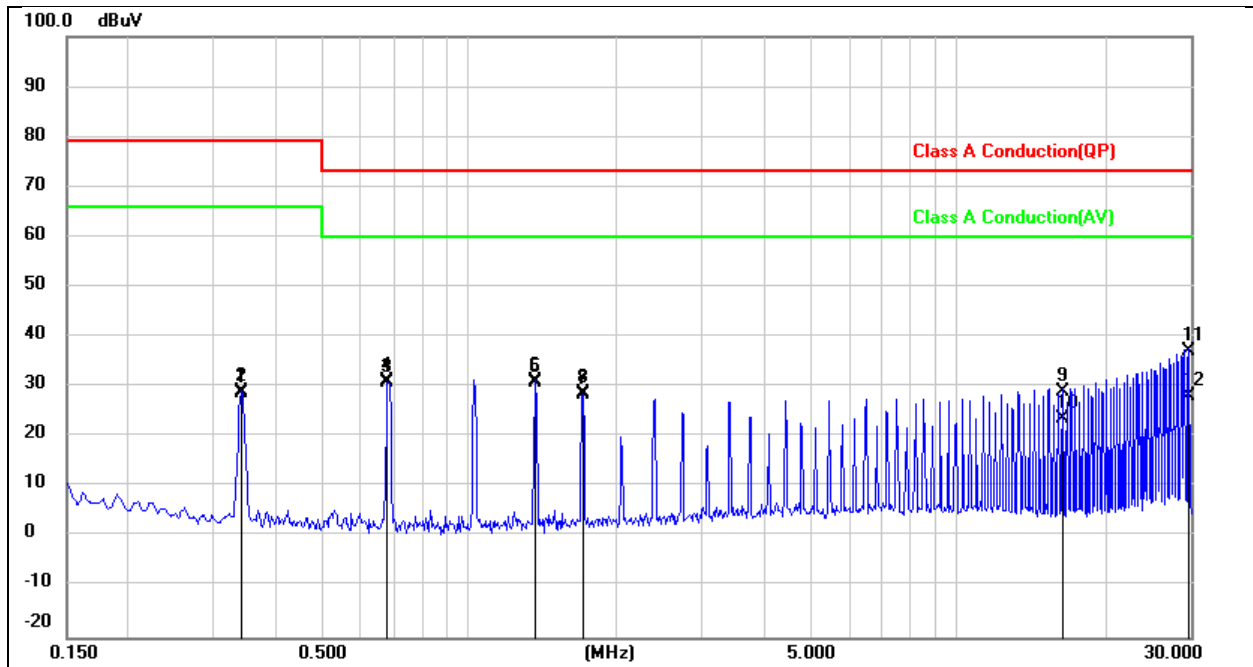
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.2945 | 33.87 | 9.92 | 43.79 | 79.00 | -35.21 | QP |
| 2 | 0.2945 | 33.90 | 9.92 | 43.82 | 66.00 | -22.18 | AVG |
| 3 | 0.5892 | 34.00 | 9.93 | 43.93 | 73.00 | -29.07 | QP |
| 4 | 0.5892 | 34.04 | 9.93 | 43.97 | 60.00 | -16.03 | AVG |
| 5 | 1.1780 | 36.64 | 9.95 | 46.59 | 73.00 | -26.41 | QP |
| 6 | 1.1780 | 36.67 | 9.95 | 46.62 | 60.00 | -13.38 | AVG |
| 7 | 2.9448 | 36.57 | 10.02 | 46.59 | 73.00 | -26.41 | QP |
| 8 | 2.9448 | 36.60 | 10.02 | 46.62 | 60.00 | -13.38 | AVG |
| 9 | 8.8349 | 36.01 | 10.21 | 46.22 | 73.00 | -26.78 | QP |
| 10 | 8.8349 | 35.71 | 10.21 | 45.92 | 60.00 | -14.08 | AVG |
| 11 | 14.4303 | 39.08 | 10.37 | 49.45 | 73.00 | -23.55 | QP |
| 12 | 14.4303 | 36.81 | 10.37 | 47.18 | 60.00 | -12.82 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 6:03:40 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 8 | | |
| Note: | | | |



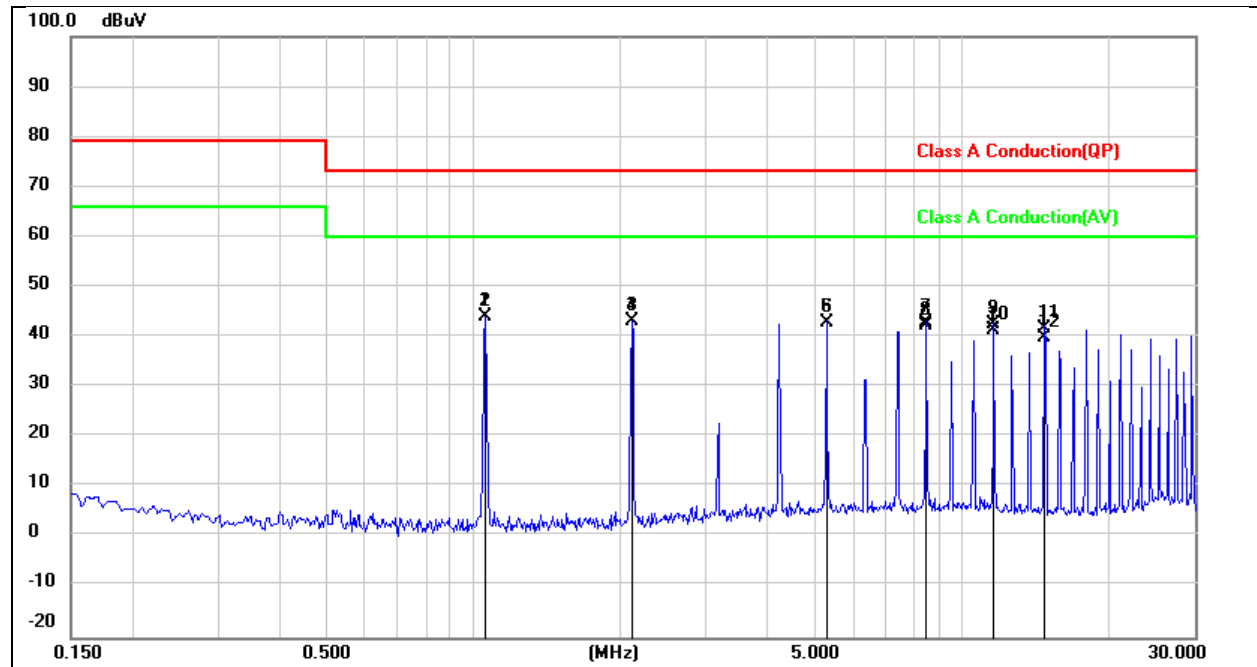
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.3429 | 24.10 | 9.93 | 34.03 | 79.00 | -44.97 | QP |
| 2 | 0.3429 | 24.18 | 9.93 | 34.11 | 66.00 | -31.89 | AVG |
| 3 | 0.6863 | 26.73 | 9.94 | 36.67 | 73.00 | -36.33 | QP |
| 4 | 0.6863 | 26.79 | 9.94 | 36.73 | 60.00 | -23.27 | AVG |
| 5 | 1.0294 | 22.11 | 9.96 | 32.07 | 73.00 | -40.93 | QP |
| 6 | 1.0294 | 22.20 | 9.96 | 32.16 | 60.00 | -27.84 | AVG |
| 7 | 5.4899 | 17.70 | 10.12 | 27.82 | 73.00 | -45.18 | QP |
| 8 | 5.4899 | 17.32 | 10.12 | 27.44 | 60.00 | -32.56 | AVG |
| 9 | 13.3821 | 18.59 | 10.33 | 28.92 | 73.00 | -44.08 | QP |
| 10 | 13.3821 | 15.19 | 10.33 | 25.52 | 60.00 | -34.48 | AVG |
| 11 | 29.8429 | 26.23 | 10.71 | 36.94 | 73.00 | -36.06 | QP |
| 12 | 29.8429 | 17.66 | 10.71 | 28.37 | 60.00 | -31.63 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 5:58:19 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 8 | | |
| Note: | | | |



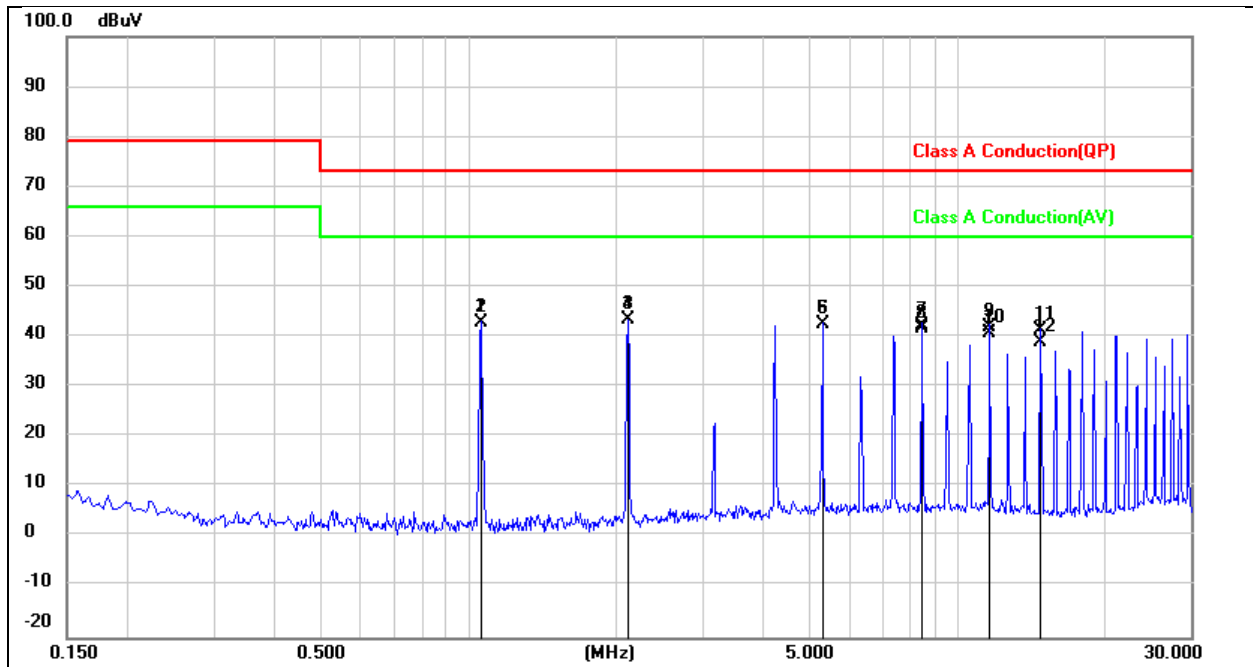
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.3426 | 18.91 | 9.92 | 28.83 | 79.00 | -50.17 | QP |
| 2 | 0.3426 | 19.03 | 9.92 | 28.95 | 66.00 | -37.05 | AVG |
| 3 | 0.6855 | 21.06 | 9.93 | 30.99 | 73.00 | -42.01 | QP |
| 4 | 0.6855 | 21.15 | 9.93 | 31.08 | 60.00 | -28.92 | AVG |
| 5 | 1.3705 | 20.99 | 9.97 | 30.96 | 73.00 | -42.04 | QP |
| 6 | 1.3705 | 21.09 | 9.97 | 31.06 | 60.00 | -28.94 | AVG |
| 7 | 1.7134 | 18.62 | 9.98 | 28.60 | 73.00 | -44.40 | QP |
| 8 | 1.7134 | 18.73 | 9.98 | 28.71 | 60.00 | -31.29 | AVG |
| 9 | 16.4509 | 18.54 | 10.43 | 28.97 | 73.00 | -44.03 | QP |
| 10 | 16.4509 | 13.27 | 10.43 | 23.70 | 60.00 | -36.30 | AVG |
| 11 | 29.8099 | 26.49 | 10.76 | 37.25 | 73.00 | -35.75 | QP |
| 12 | 29.8099 | 17.37 | 10.76 | 28.13 | 60.00 | -31.87 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 6:12:18 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 9 | | |
| Note: | | | |



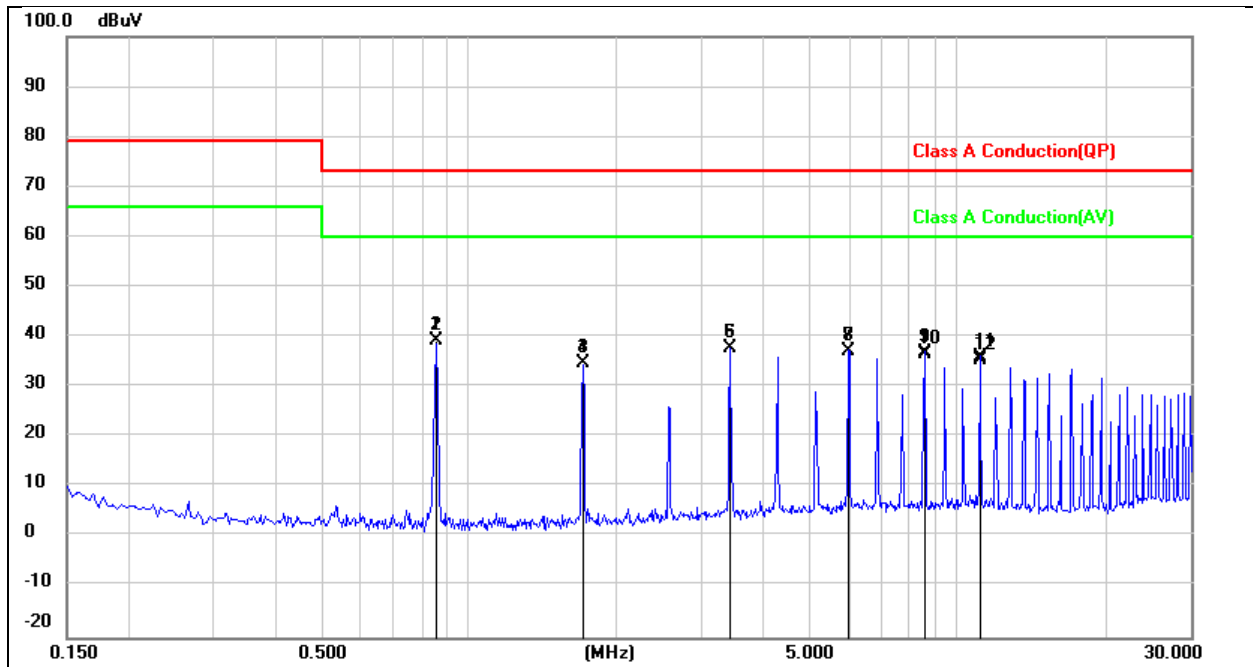
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 1.0582 | 34.09 | 9.96 | 44.05 | 73.00 | -28.95 | QP |
| 2 | 1.0582 | 34.12 | 9.96 | 44.08 | 60.00 | -15.92 | AVG |
| 3 | 2.1163 | 33.03 | 10.01 | 43.04 | 73.00 | -29.96 | QP |
| 4 | 2.1163 | 33.06 | 10.01 | 43.07 | 60.00 | -16.93 | AVG |
| 5 | 5.2905 | 32.75 | 10.12 | 42.87 | 73.00 | -30.13 | QP |
| 6 | 5.2905 | 32.62 | 10.12 | 42.74 | 60.00 | -17.26 | AVG |
| 7 | 8.4644 | 32.55 | 10.20 | 42.75 | 73.00 | -30.25 | QP |
| 8 | 8.4644 | 31.98 | 10.20 | 42.18 | 60.00 | -17.82 | AVG |
| 9 | 11.6380 | 32.19 | 10.29 | 42.48 | 73.00 | -30.52 | QP |
| 10 | 11.6380 | 30.97 | 10.29 | 41.26 | 60.00 | -18.74 | AVG |
| 11 | 14.8114 | 31.36 | 10.38 | 41.74 | 73.00 | -31.26 | QP |
| 12 | 14.8114 | 29.35 | 10.38 | 39.73 | 60.00 | -20.27 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 6:16:17 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 9 | | |
| Note: | | | |



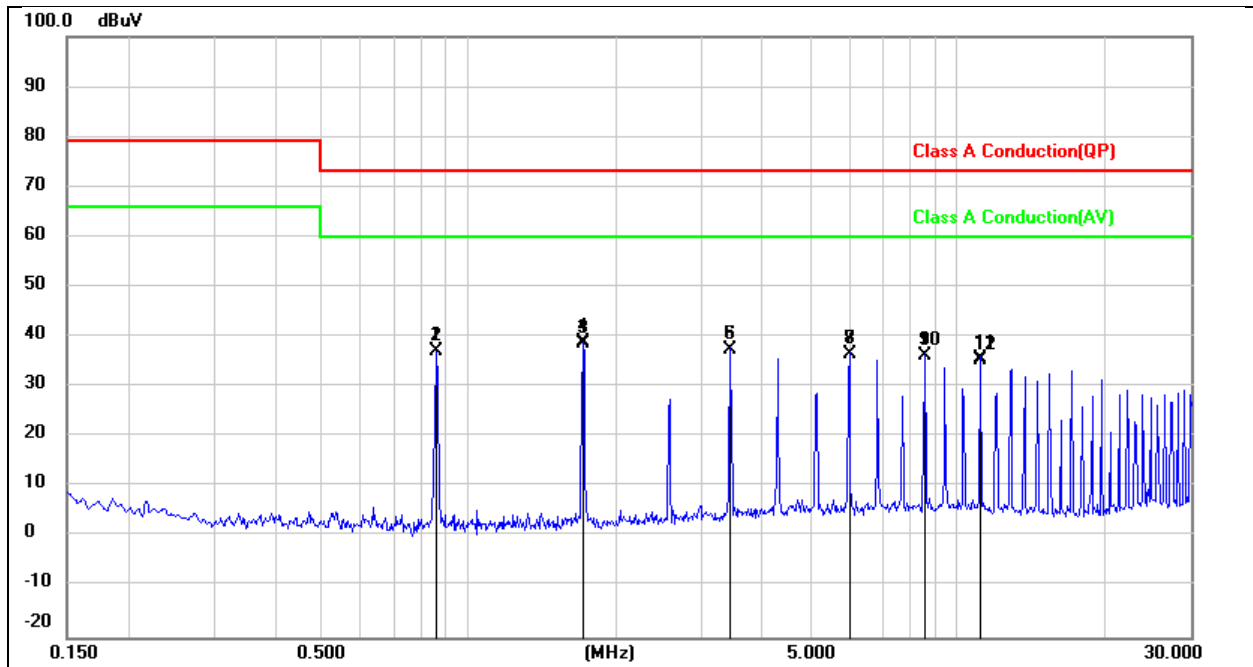
| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 1.0576 | 32.96 | 9.95 | 42.91 | 73.00 | -30.09 | QP |
| 2 | 1.0576 | 33.00 | 9.95 | 42.95 | 60.00 | -17.05 | AVG |
| 3 | 2.1152 | 33.44 | 10.00 | 43.44 | 73.00 | -29.56 | QP |
| 4 | 2.1152 | 33.47 | 10.00 | 43.47 | 60.00 | -16.53 | AVG |
| 5 | 5.2879 | 32.45 | 10.11 | 42.56 | 73.00 | -30.44 | QP |
| 6 | 5.2879 | 32.30 | 10.11 | 42.41 | 60.00 | -17.59 | AVG |
| 7 | 8.4607 | 32.16 | 10.19 | 42.35 | 73.00 | -30.65 | QP |
| 8 | 8.4607 | 31.50 | 10.19 | 41.69 | 60.00 | -18.31 | AVG |
| 9 | 11.6334 | 31.72 | 10.29 | 42.01 | 73.00 | -30.99 | QP |
| 10 | 11.6334 | 30.37 | 10.29 | 40.66 | 60.00 | -19.34 | AVG |
| 11 | 14.8064 | 30.88 | 10.38 | 41.26 | 73.00 | -31.74 | QP |
| 12 | 14.8064 | 28.68 | 10.38 | 39.06 | 60.00 | -20.94 | AVG |

| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | L1 |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 6:29:18 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 10 | | |
| Note: | | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.8556 | 29.39 | 9.96 | 39.35 | 73.00 | -33.65 | QP |
| 2 | 0.8556 | 29.44 | 9.96 | 39.40 | 60.00 | -20.60 | AVG |
| 3 | 1.7114 | 24.78 | 9.99 | 34.77 | 73.00 | -38.23 | QP |
| 4 | 1.7114 | 24.86 | 9.99 | 34.85 | 60.00 | -25.15 | AVG |
| 5 | 3.4228 | 27.58 | 10.05 | 37.63 | 73.00 | -35.37 | QP |
| 6 | 3.4228 | 27.62 | 10.05 | 37.67 | 60.00 | -22.33 | AVG |
| 7 | 5.9898 | 27.00 | 10.13 | 37.13 | 73.00 | -35.87 | QP |
| 8 | 5.9898 | 26.97 | 10.13 | 37.10 | 60.00 | -22.90 | AVG |
| 9 | 8.5568 | 26.50 | 10.20 | 36.70 | 73.00 | -36.30 | QP |
| 10 | 8.5568 | 26.31 | 10.20 | 36.51 | 60.00 | -23.49 | AVG |
| 11 | 11.1238 | 25.55 | 10.27 | 35.82 | 73.00 | -37.18 | QP |
| 12 | 11.1238 | 25.14 | 10.27 | 35.41 | 60.00 | -24.59 | AVG |

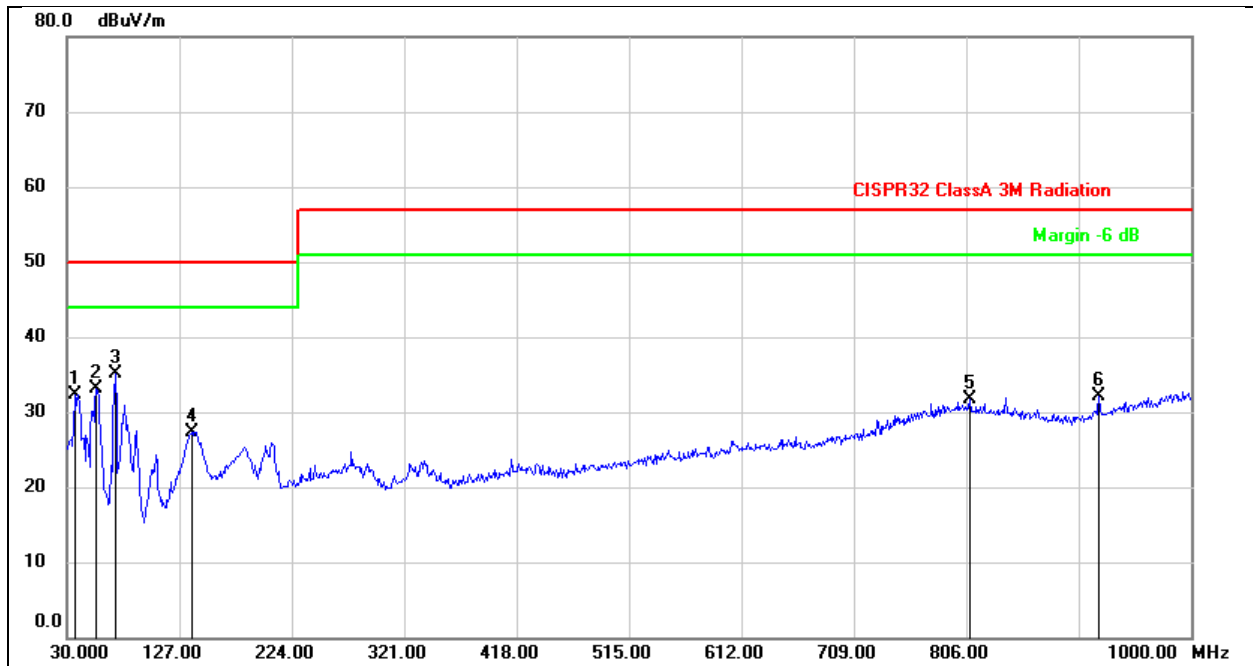
| | | | |
|------------------|------------------------|---------------|----------------|
| Project No.: | 4789451449 | Probe: | N |
| Standard: | Class A Conduction(QP) | Power Source: | from DC source |
| Test item: | Conduction Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 23(C)/60%RH | Time: | 6:23:31 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | | |
| Mode: | mode 10 | | |
| Note: | | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------|---------------|--------------|-------------|--------|
| 1 | 0.8566 | 27.14 | 9.95 | 37.09 | 73.00 | -35.91 | QP |
| 2 | 0.8566 | 27.20 | 9.95 | 37.15 | 60.00 | -22.85 | AVG |
| 3 | 1.7127 | 28.82 | 9.98 | 38.80 | 73.00 | -34.20 | QP |
| 4 | 1.7127 | 28.87 | 9.98 | 38.85 | 60.00 | -21.15 | AVG |
| 5 | 3.4252 | 27.40 | 10.04 | 37.44 | 73.00 | -35.56 | QP |
| 6 | 3.4252 | 27.45 | 10.04 | 37.49 | 60.00 | -22.51 | AVG |
| 7 | 5.9936 | 26.51 | 10.12 | 36.63 | 73.00 | -36.37 | QP |
| 8 | 5.9936 | 26.50 | 10.12 | 36.62 | 60.00 | -23.38 | AVG |
| 9 | 8.5619 | 26.10 | 10.19 | 36.29 | 73.00 | -36.71 | QP |
| 10 | 8.5619 | 25.93 | 10.19 | 36.12 | 60.00 | -23.88 | AVG |
| 11 | 11.1300 | 25.34 | 10.26 | 35.60 | 73.00 | -37.40 | QP |
| 12 | 11.1300 | 24.95 | 10.26 | 35.21 | 60.00 | -24.79 | AVG |

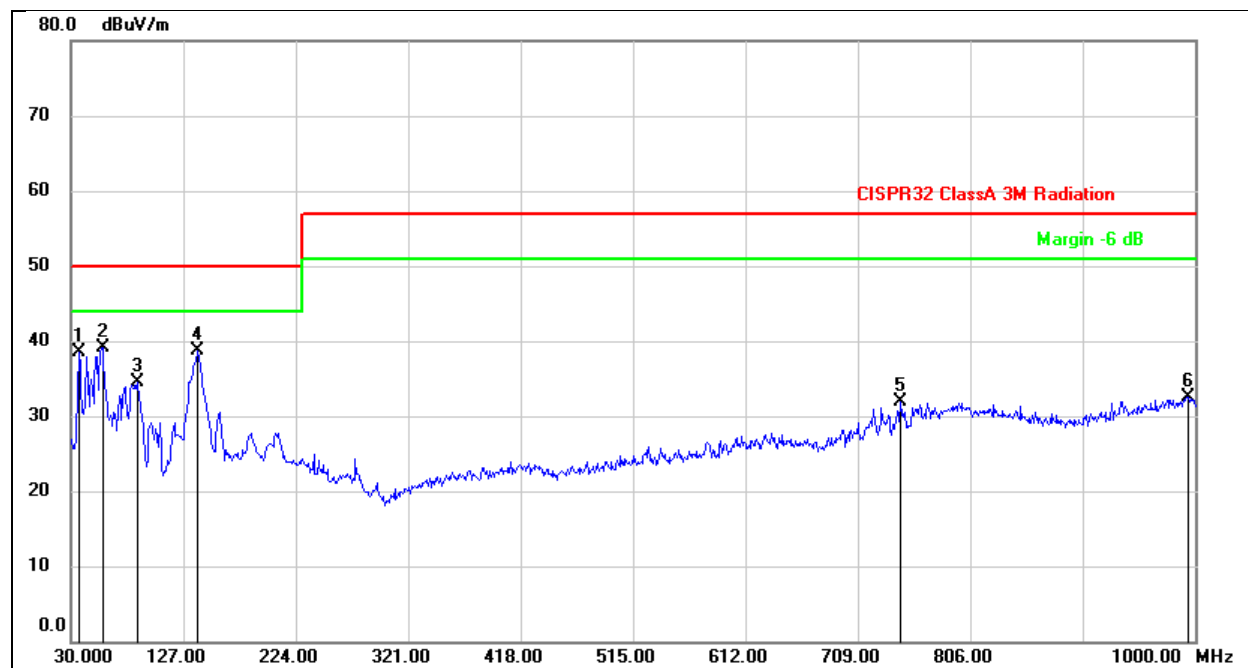
Radiation Emission:

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 8:33:49 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 1 | | |
| Note: | | | |



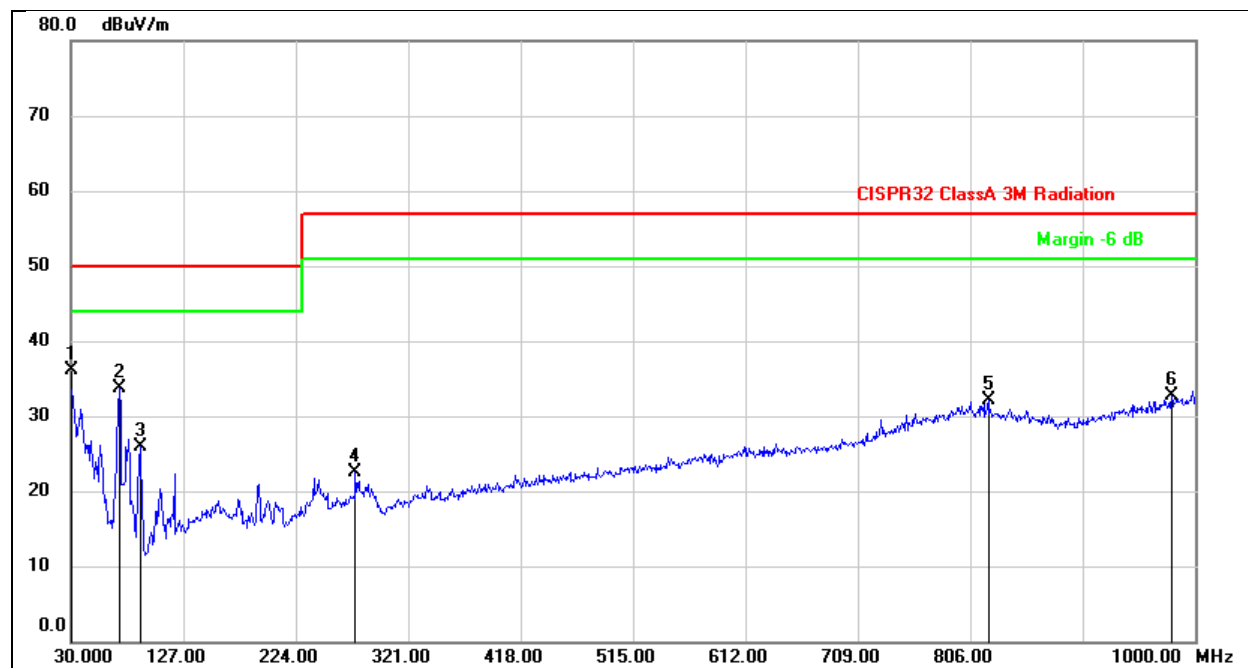
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 37.2427 | 48.20 | -15.84 | 32.36 | 50.00 | -17.64 | peak |
| 2 | 56.0930 | 48.21 | -15.05 | 33.16 | 50.00 | -16.84 | peak |
| 3 | 72.4860 | 53.08 | -17.92 | 35.16 | 50.00 | -14.84 | peak |
| 4 | 138.1550 | 42.71 | -15.33 | 27.38 | 50.00 | -22.62 | peak |
| 5 | 809.4920 | 31.76 | -0.08 | 31.68 | 57.00 | -25.32 | peak |
| 6 | 921.0097 | 32.64 | -0.51 | 32.13 | 57.00 | -24.87 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 8:37:33 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 1 | | |
| Note: | | | |



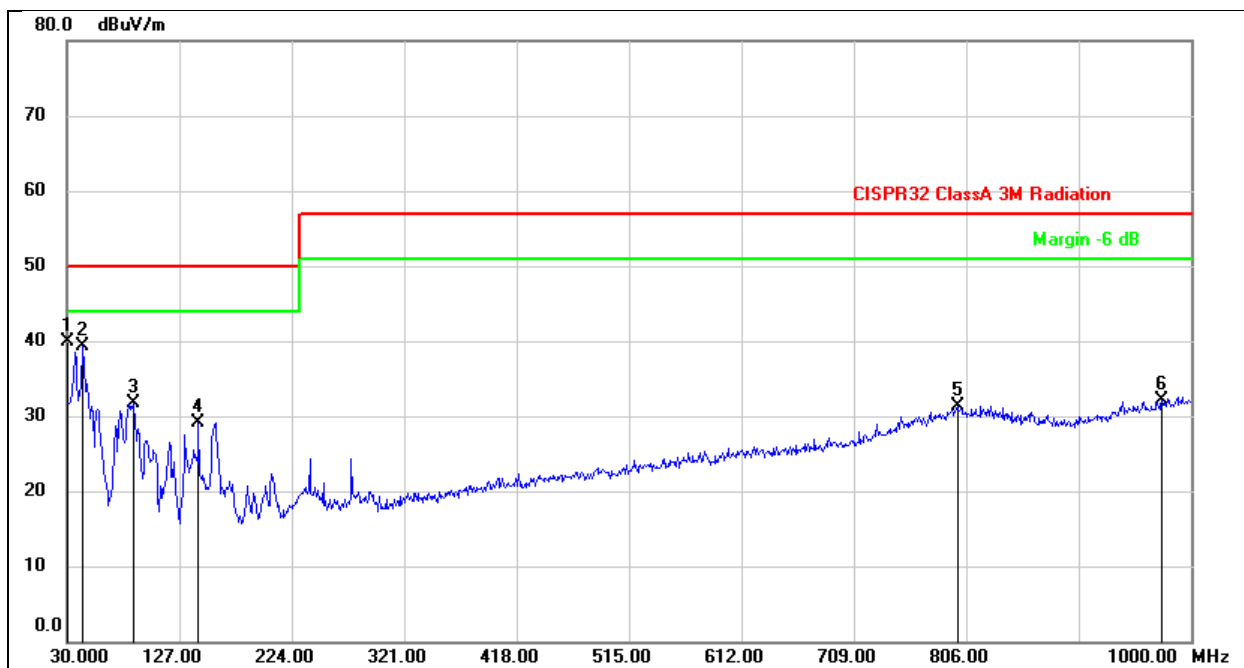
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 37.2427 | 54.31 | -15.84 | 38.47 | 50.00 | -11.53 | peak |
| 2 | 57.3217 | 54.21 | -15.14 | 39.07 | 50.00 | -10.93 | peak |
| 3 | 87.8443 | 55.37 | -20.90 | 34.47 | 50.00 | -15.53 | peak |
| 4 | 139.7070 | 53.99 | -15.25 | 38.74 | 50.00 | -11.26 | peak |
| 5 | 746.6360 | 33.96 | -2.14 | 31.82 | 57.00 | -25.18 | peak |
| 6 | 994.2123 | 30.75 | 1.79 | 32.54 | 57.00 | -24.46 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 8:44:47 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 2 | | |
| Note: | | | |



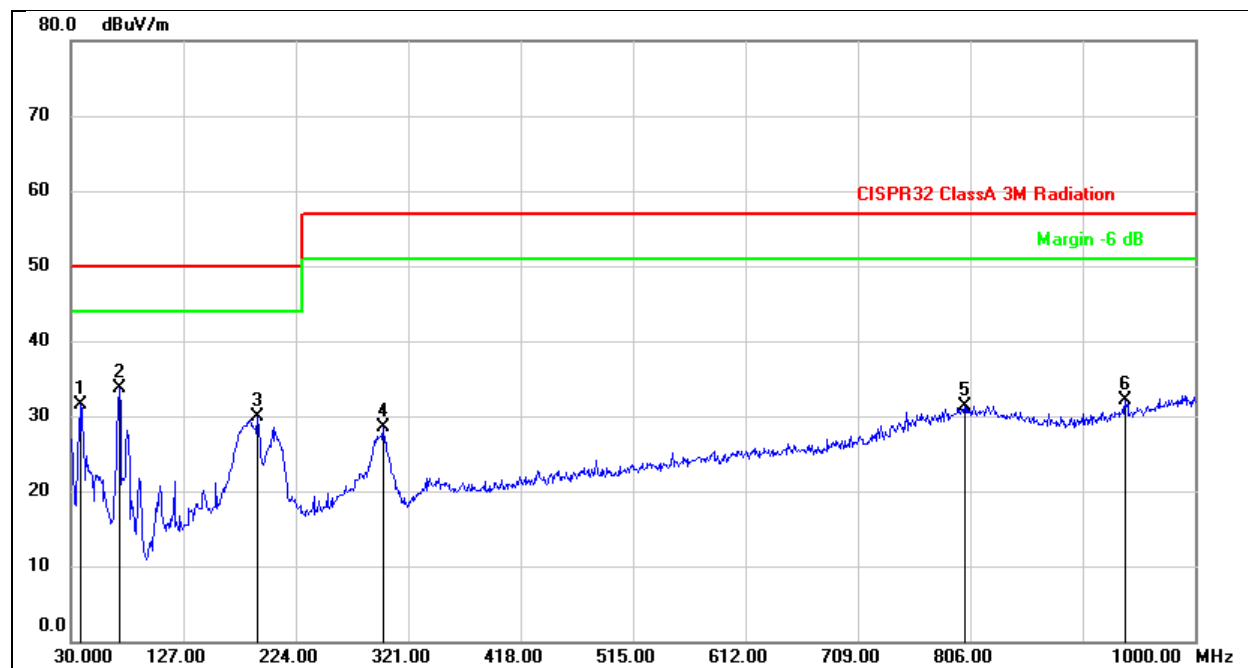
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 30.1617 | 52.31 | -16.29 | 36.02 | 50.00 | -13.98 | peak |
| 2 | 72.1950 | 51.56 | -17.86 | 33.70 | 50.00 | -16.30 | peak |
| 3 | 90.2693 | 47.02 | -21.08 | 25.94 | 50.00 | -24.06 | peak |
| 4 | 275.9920 | 36.81 | -14.23 | 22.58 | 57.00 | -34.42 | peak |
| 5 | 821.5200 | 32.29 | -0.13 | 32.16 | 57.00 | -24.84 | peak |
| 6 | 980.2120 | 31.15 | 1.53 | 32.68 | 57.00 | -24.32 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 8:48:41 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 2 | | |
| Note: | | | |



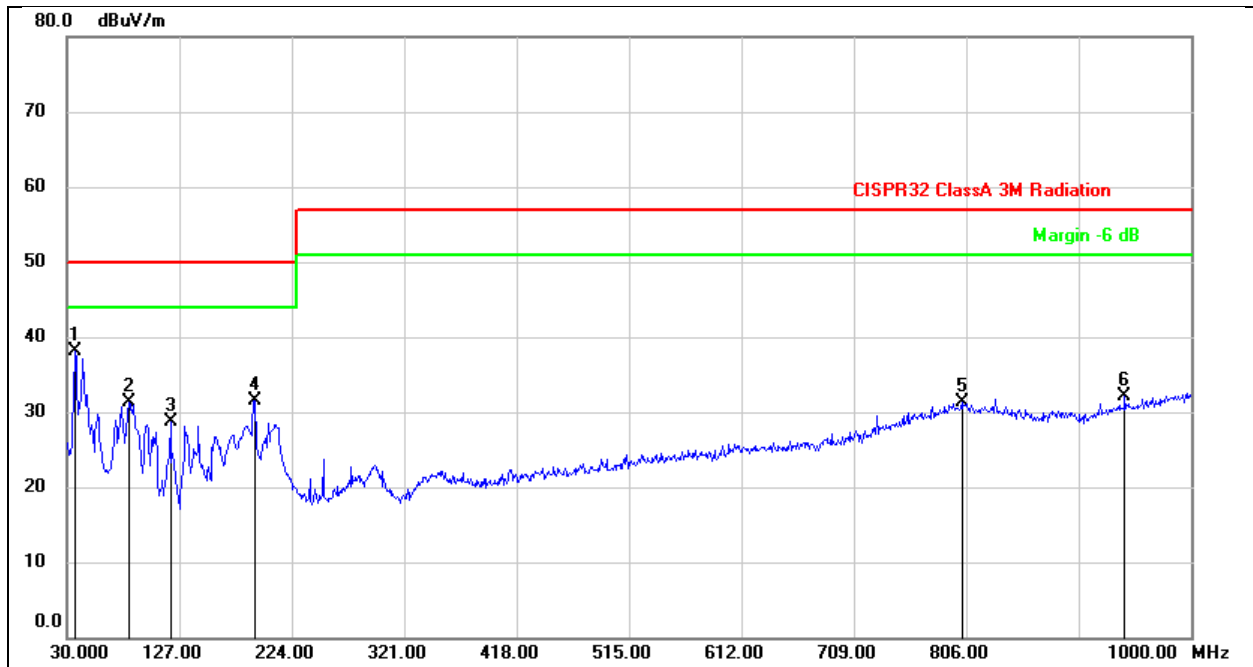
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 30.1293 | 56.11 | -16.29 | 39.82 | 50.00 | -10.18 | peak |
| 2 | 44.3883 | 54.29 | -15.02 | 39.27 | 50.00 | -10.73 | peak |
| 3 | 88.0060 | 52.68 | -20.90 | 31.78 | 50.00 | -18.22 | peak |
| 4 | 144.0073 | 44.19 | -14.99 | 29.20 | 50.00 | -20.80 | peak |
| 5 | 798.8220 | 31.12 | 0.14 | 31.26 | 57.00 | -25.74 | peak |
| 6 | 975.3943 | 30.70 | 1.41 | 32.11 | 57.00 | -24.89 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:53:38 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 4 | | |
| Note: | | | |



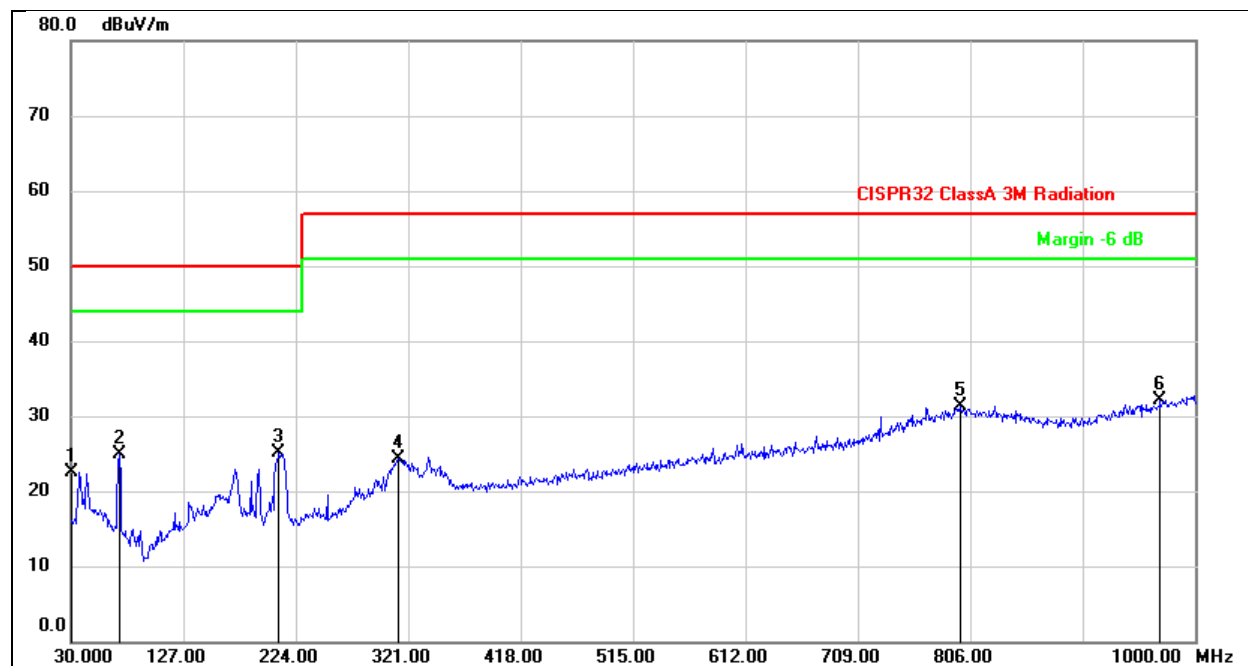
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 39.5707 | 46.96 | -15.50 | 31.46 | 50.00 | -18.54 | peak |
| 2 | 72.1627 | 51.58 | -17.85 | 33.73 | 50.00 | -16.27 | peak |
| 3 | 191.9253 | 47.13 | -17.14 | 29.99 | 50.00 | -20.01 | peak |
| 4 | 299.9833 | 42.15 | -13.63 | 28.52 | 57.00 | -28.48 | peak |
| 5 | 801.6027 | 31.24 | 0.12 | 31.36 | 57.00 | -25.64 | peak |
| 6 | 940.7977 | 31.89 | 0.27 | 32.16 | 57.00 | -24.84 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 10:01:55 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 4 | | |
| Note: | | | |



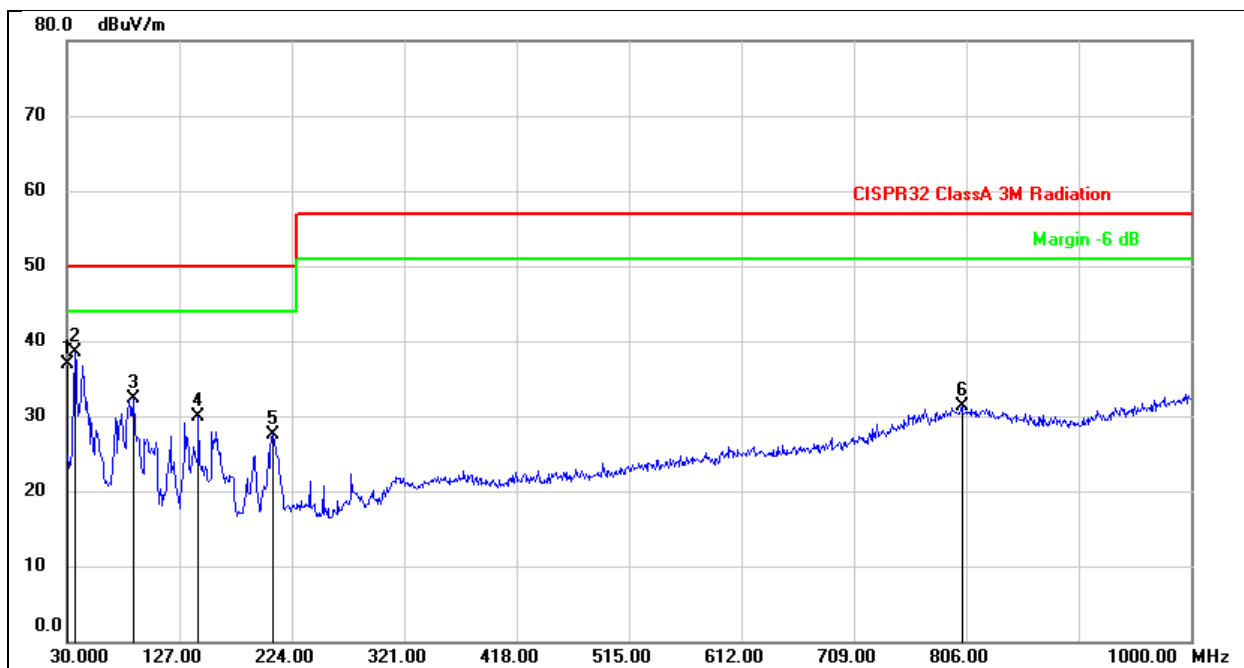
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 37.3073 | 53.87 | -15.83 | 38.04 | 50.00 | -11.96 | peak |
| 2 | 83.9967 | 51.66 | -20.43 | 31.23 | 50.00 | -18.77 | peak |
| 3 | 119.9837 | 45.99 | -17.36 | 28.63 | 50.00 | -21.37 | peak |
| 4 | 191.9900 | 48.68 | -17.15 | 31.53 | 50.00 | -18.47 | peak |
| 5 | 802.2493 | 31.14 | 0.10 | 31.24 | 57.00 | -25.76 | peak |
| 6 | 943.1257 | 31.70 | 0.33 | 32.03 | 57.00 | -24.97 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:09:01 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 5 | | |
| Note: | | | |



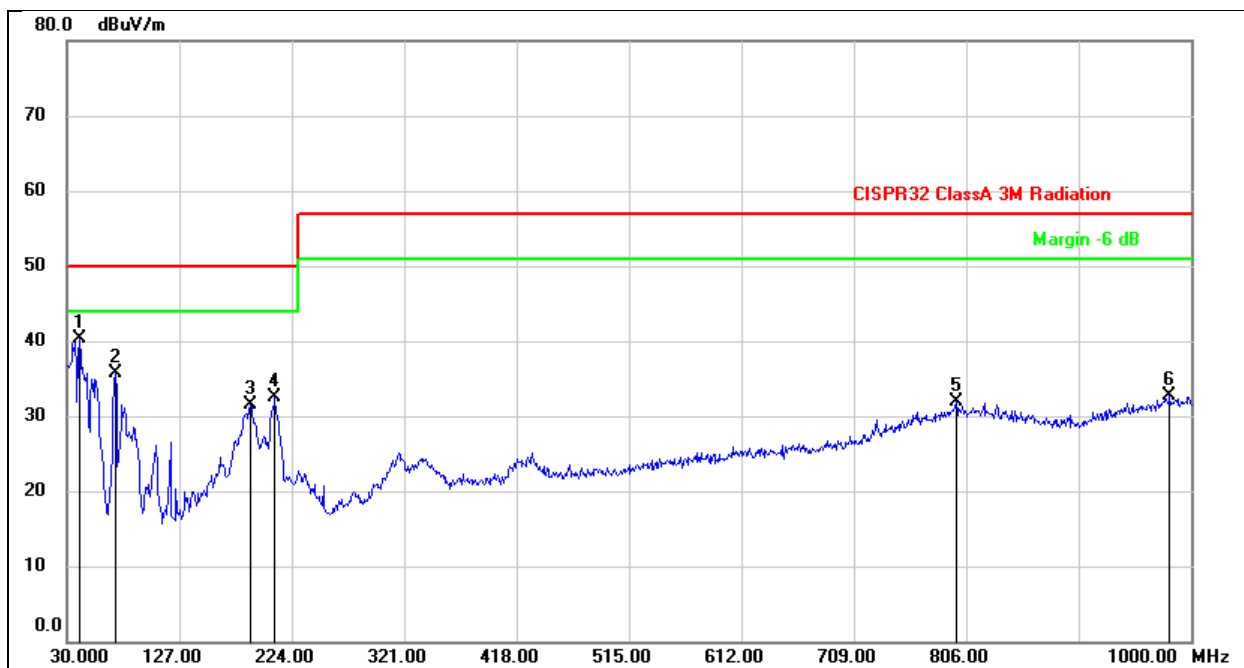
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 30.0323 | 38.89 | -16.29 | 22.60 | 50.00 | -27.40 | peak |
| 2 | 71.9687 | 42.73 | -17.81 | 24.92 | 50.00 | -25.08 | peak |
| 3 | 209.5147 | 42.17 | -17.06 | 25.11 | 50.00 | -24.89 | peak |
| 4 | 312.9166 | 37.58 | -13.27 | 24.31 | 57.00 | -32.69 | peak |
| 5 | 798.0460 | 31.07 | 0.14 | 31.21 | 57.00 | -25.79 | peak |
| 6 | 970.8030 | 30.89 | 1.22 | 32.11 | 57.00 | -24.89 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:12:17 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 5 | | |
| Note: | | | |



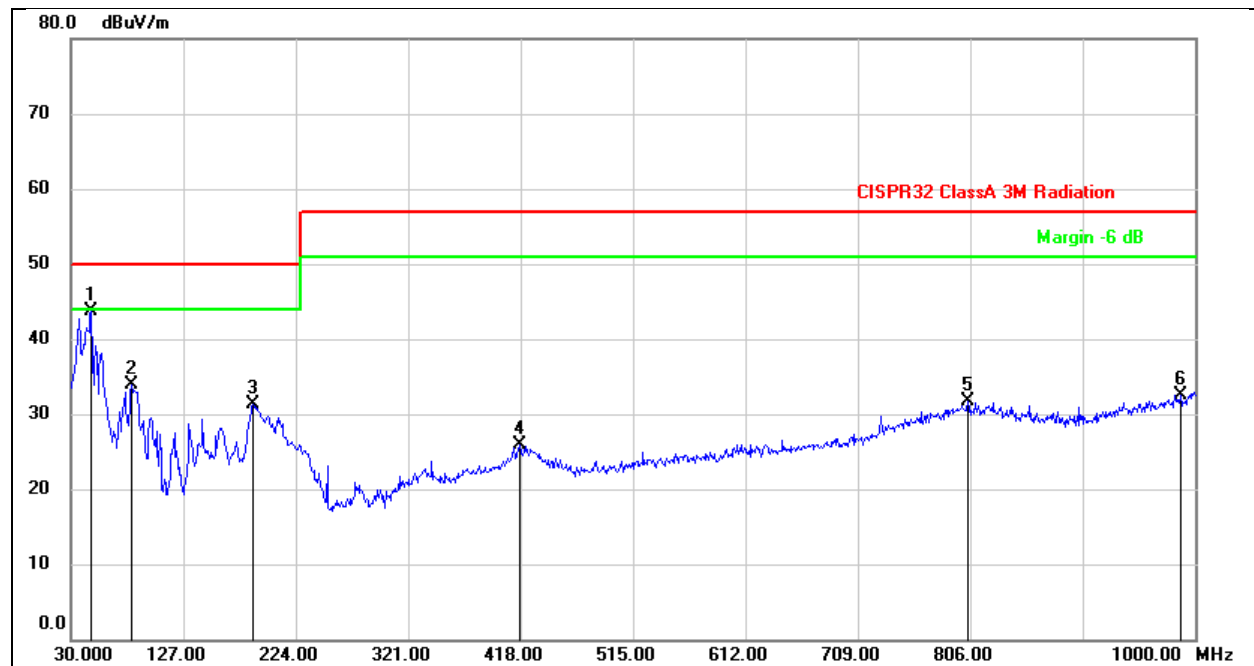
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 30.0506 | 53.25 | -16.29 | 36.96 | 50.00 | -13.04 | peak |
| 2 | 37.2427 | 54.38 | -15.84 | 38.54 | 50.00 | -11.46 | peak |
| 3 | 87.9090 | 53.20 | -20.90 | 32.30 | 50.00 | -17.70 | peak |
| 4 | 144.0073 | 44.89 | -14.99 | 29.90 | 50.00 | -20.10 | peak |
| 5 | 207.7040 | 44.57 | -17.14 | 27.43 | 50.00 | -22.57 | peak |
| 6 | 802.9607 | 31.18 | 0.09 | 31.27 | 57.00 | -25.73 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:38:38 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 7 | | |
| Note: | | | |



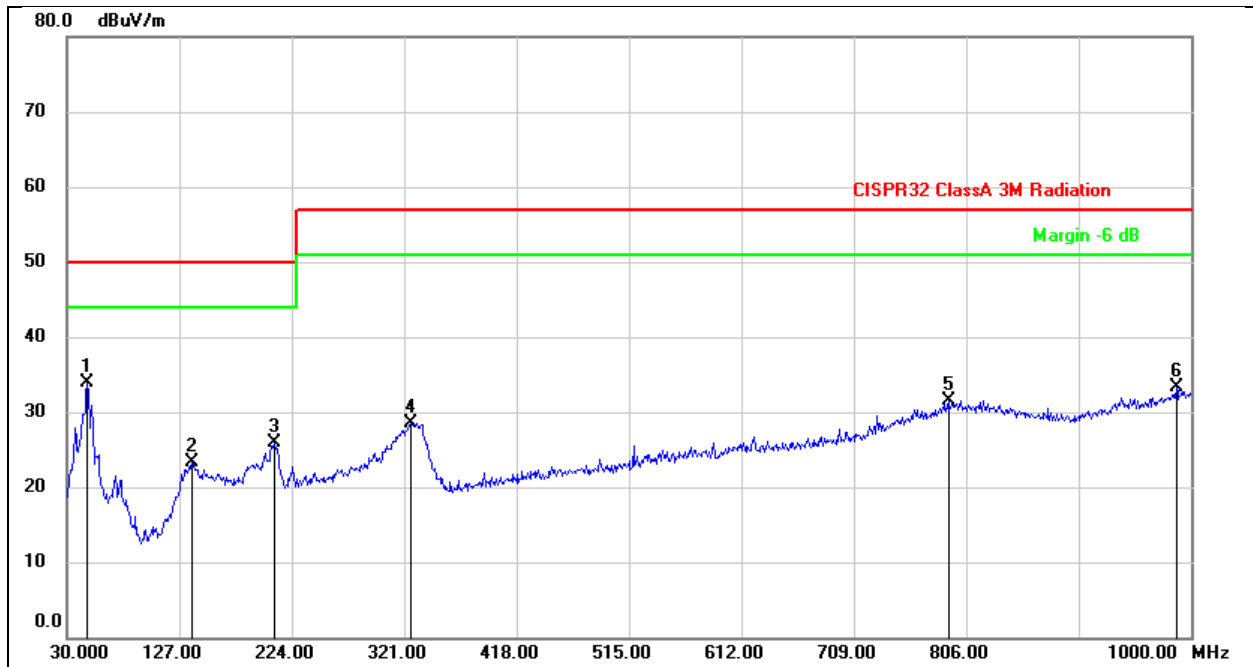
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 41.5753 | 55.46 | -15.22 | 40.24 | 50.00 | -9.76 | peak |
| 2 | 72.1950 | 53.58 | -17.86 | 35.72 | 50.00 | -14.28 | peak |
| 3 | 189.0477 | 48.35 | -16.86 | 31.49 | 50.00 | -18.51 | peak |
| 4 | 209.4500 | 49.52 | -17.06 | 32.46 | 50.00 | -17.54 | peak |
| 5 | 797.8520 | 31.79 | 0.13 | 31.92 | 57.00 | -25.08 | peak |
| 6 | 982.4107 | 31.02 | 1.59 | 32.61 | 57.00 | -24.39 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:47:16 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 7 | | |
| Note: | | | |



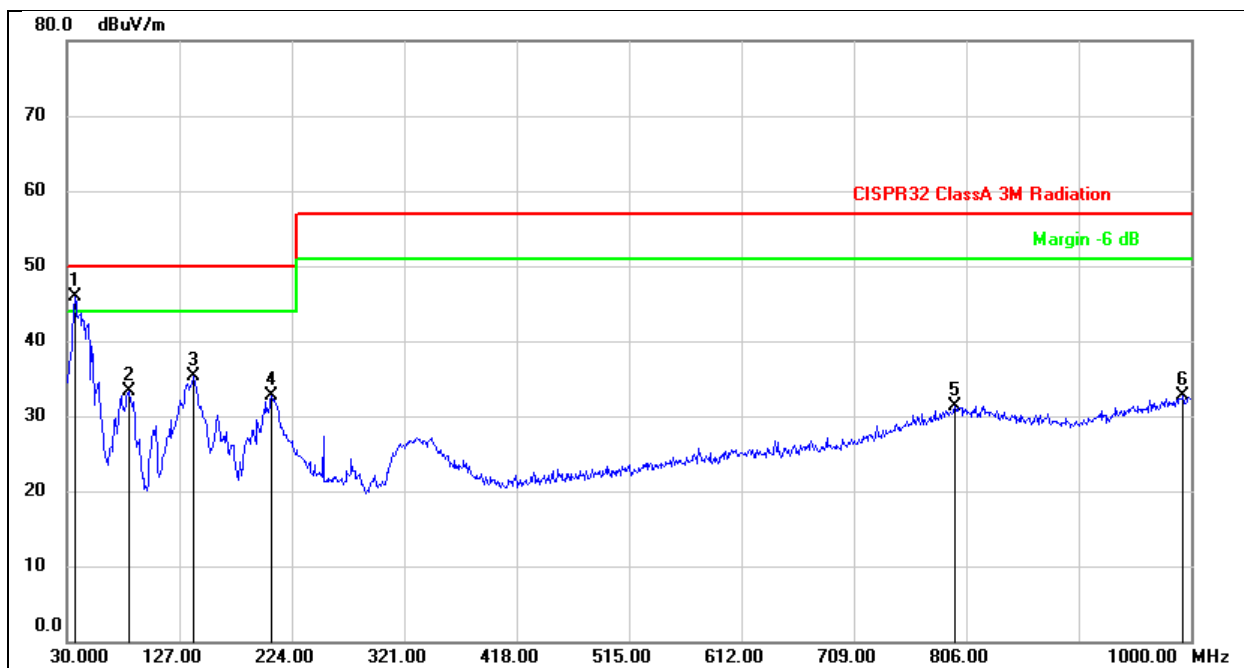
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 47.4600 | 58.46 | -14.84 | 43.62 | 50.00 | -6.38 | peak |
| 2 | 83.1237 | 54.07 | -20.26 | 33.81 | 50.00 | -16.19 | peak |
| 3 | 187.2046 | 48.09 | -16.81 | 31.28 | 50.00 | -18.72 | peak |
| 4 | 417.8060 | 36.16 | -10.29 | 25.87 | 57.00 | -31.13 | peak |
| 5 | 804.3832 | 31.72 | 0.05 | 31.77 | 57.00 | -25.23 | peak |
| 6 | 987.5517 | 30.77 | 1.71 | 32.48 | 57.00 | -24.52 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:22:29 AM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 8 | | |
| Note: | | | |



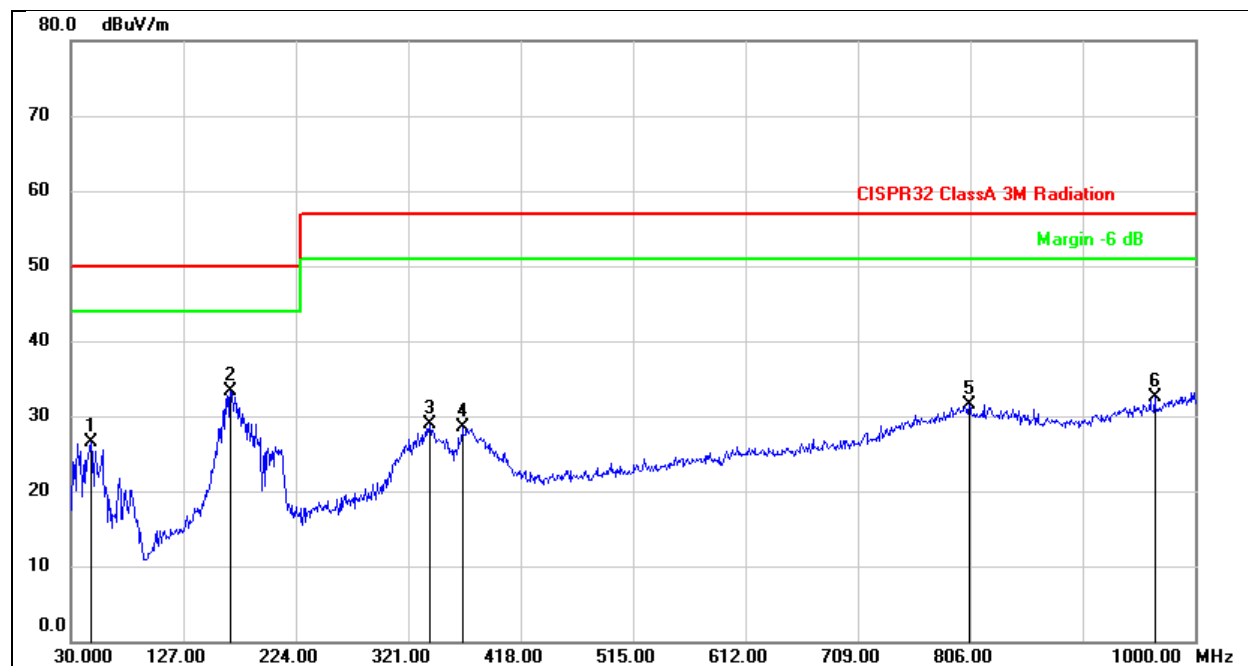
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 48.2037 | 48.80 | -14.81 | 33.99 | 50.00 | -16.01 | peak |
| 2 | 138.5753 | 38.53 | -15.32 | 23.21 | 50.00 | -26.79 | peak |
| 3 | 209.4177 | 43.06 | -17.06 | 26.00 | 50.00 | -24.00 | peak |
| 4 | 327.2727 | 41.14 | -12.65 | 28.49 | 57.00 | -28.51 | peak |
| 5 | 791.3530 | 31.71 | -0.11 | 31.60 | 57.00 | -25.40 | peak |
| 6 | 988.1983 | 31.64 | 1.73 | 33.37 | 57.00 | -23.63 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/6/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 9:31:08 AM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 8 | | |
| Note: | | | |



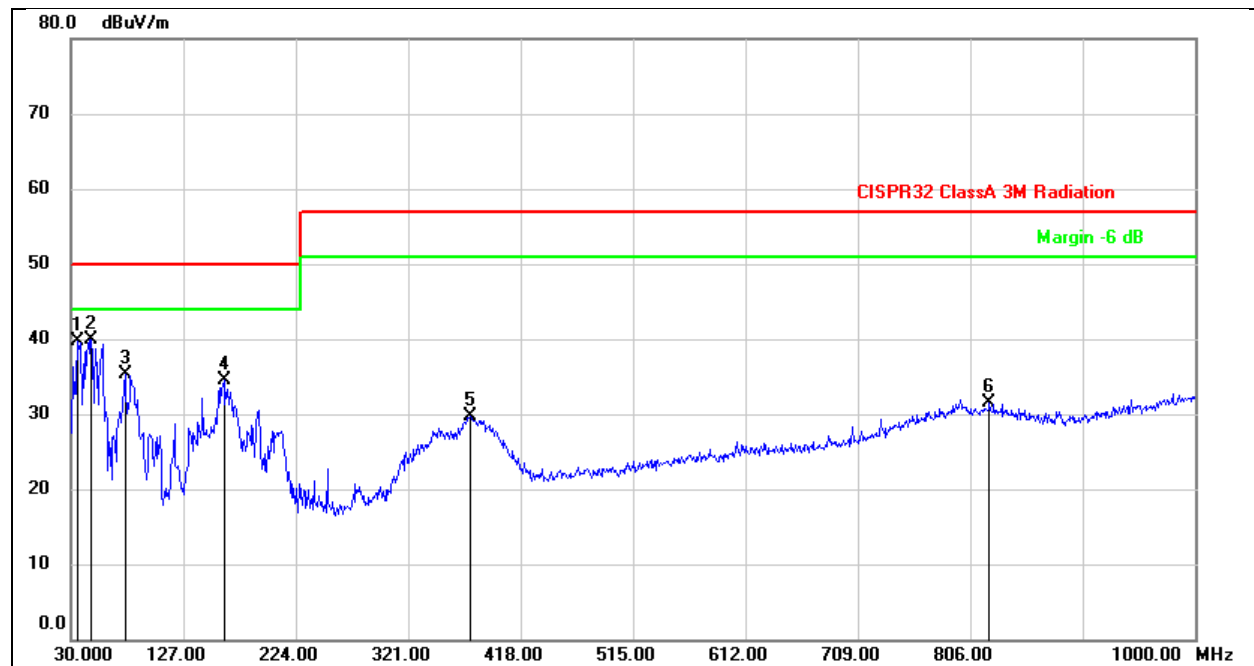
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 37.5337 | 61.69 | -15.78 | 45.91 | 50.00 | -4.09 | peak |
| 2 | 84.2229 | 53.86 | -20.47 | 33.39 | 50.00 | -16.61 | peak |
| 3 | 139.9980 | 50.44 | -15.21 | 35.23 | 50.00 | -14.77 | peak |
| 4 | 206.5399 | 49.80 | -17.19 | 32.61 | 50.00 | -17.39 | peak |
| 5 | 796.6557 | 31.17 | 0.11 | 31.28 | 57.00 | -25.72 | peak |
| 6 | 993.7597 | 31.02 | 1.78 | 32.80 | 57.00 | -24.20 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 10:07:20 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 9 | | |
| Note: | | | |



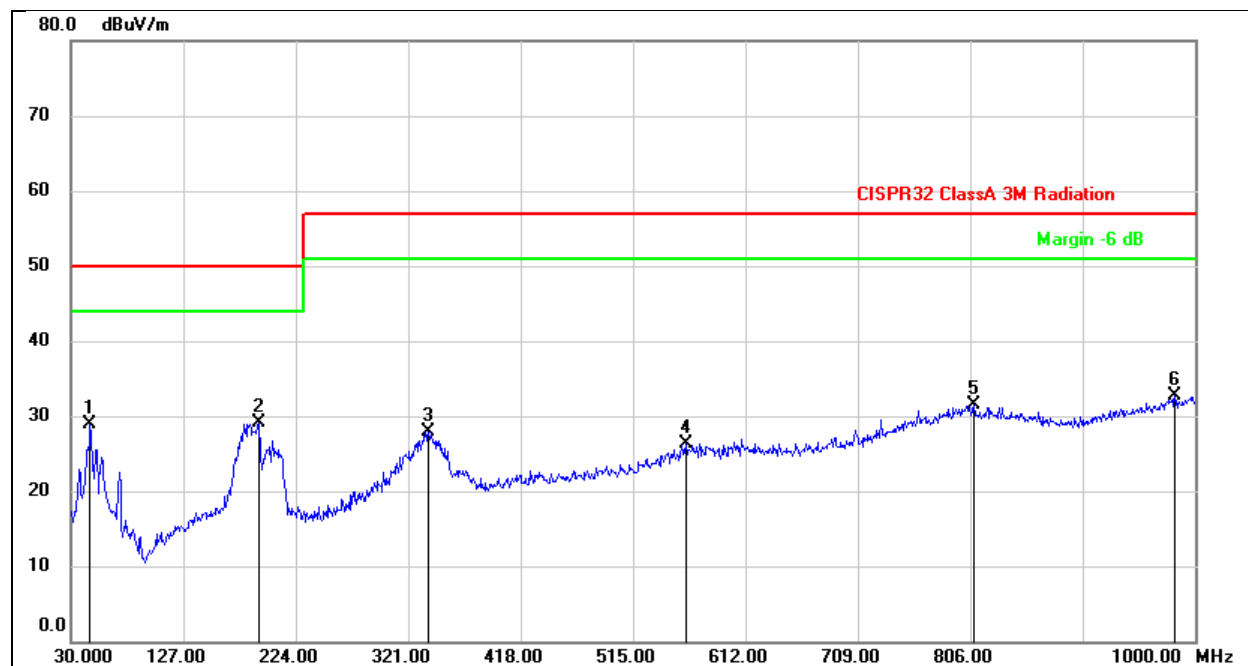
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 47.7833 | 41.30 | -14.83 | 26.47 | 50.00 | -23.53 | peak |
| 2 | 168.6777 | 48.01 | -14.78 | 33.23 | 50.00 | -16.77 | peak |
| 3 | 339.8180 | 41.25 | -12.34 | 28.91 | 57.00 | -28.09 | peak |
| 4 | 368.2713 | 40.09 | -11.56 | 28.53 | 57.00 | -28.47 | peak |
| 5 | 805.4180 | 31.39 | 0.02 | 31.41 | 57.00 | -25.59 | peak |
| 6 | 966.0177 | 31.47 | 1.01 | 32.48 | 57.00 | -24.52 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 10:12:18 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 9 | | |
| Note: | | | |



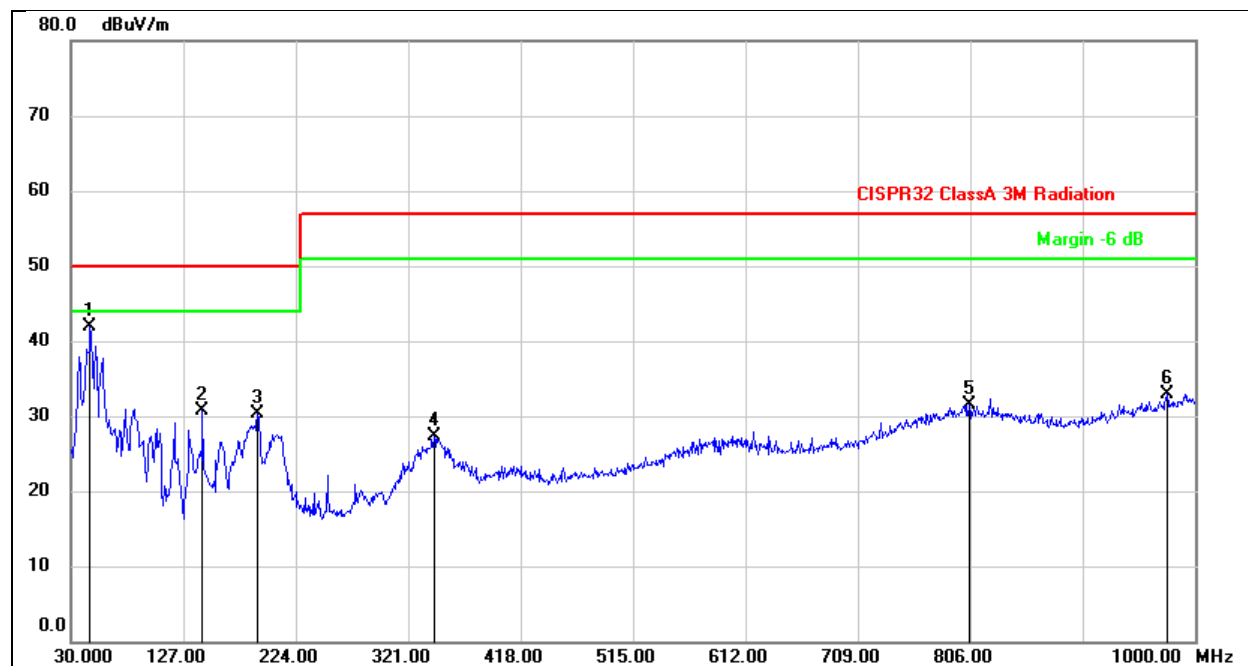
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 35.9817 | 55.62 | -15.91 | 39.71 | 50.00 | -10.29 | peak |
| 2 | 47.6540 | 54.65 | -14.83 | 39.82 | 50.00 | -10.18 | peak |
| 3 | 77.3037 | 54.25 | -18.95 | 35.30 | 50.00 | -14.70 | peak |
| 4 | 162.0817 | 49.10 | -14.57 | 34.53 | 50.00 | -15.47 | peak |
| 5 | 374.9643 | 41.10 | -11.37 | 29.73 | 57.00 | -27.27 | peak |
| 6 | 823.2013 | 31.55 | -0.11 | 31.44 | 57.00 | -25.56 | peak |

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|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Horizontal |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 10:17:06 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 10 | | |
| Note: | | | |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 47.1690 | 43.70 | -14.84 | 28.86 | 50.00 | -21.14 | peak |
| 2 | 191.9900 | 46.27 | -17.15 | 29.12 | 50.00 | -20.88 | peak |
| 3 | 338.7833 | 40.20 | -12.36 | 27.84 | 57.00 | -29.16 | peak |
| 4 | 561.2367 | 33.44 | -7.05 | 26.39 | 57.00 | -30.61 | peak |
| 5 | 809.0717 | 31.53 | -0.07 | 31.46 | 57.00 | -25.54 | peak |
| 6 | 983.0250 | 31.17 | 1.60 | 32.77 | 57.00 | -24.23 | peak |

| | | | |
|------------------|-----------------------------|---------------|----------------|
| Project No.: | 4789451449 | Polarization: | Vertical |
| Standard: | CISPR32 ClassA 3M Radiation | Power Source: | From DC source |
| Test item: | Radiation Test | Date: | 5/5/2020 |
| Temp./Hum.(%RH): | 25(C)/59%RH | Time: | 10:20:02 PM |
| EUT: | DC to DC Converter | Test By: | Edison |
| Model: | | Distance: | 3m |
| Mode: | Mode 10 | | |
| Note: | | | |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|--------------|-----------------|----------------|-------------|--------|
| 1 | 47.0397 | 56.76 | -14.84 | 41.92 | 50.00 | -8.08 | peak |
| 2 | 144.0073 | 45.70 | -14.99 | 30.71 | 50.00 | -19.29 | peak |
| 3 | 191.9577 | 47.45 | -17.15 | 30.30 | 50.00 | -19.70 | peak |
| 4 | 344.1182 | 39.59 | -12.31 | 27.28 | 57.00 | -29.72 | peak |
| 5 | 805.4180 | 31.41 | 0.02 | 31.43 | 57.00 | -25.57 | peak |
| 6 | 976.3320 | 31.38 | 1.44 | 32.82 | 57.00 | -24.18 | peak |