

# **Model: TIB 120-148\***

## **EMC - Test Report for Radiated Emission acc. CISPR 16-2-3**

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**\*Also covers models with EX designation**

It should be noted, that combining two or more CE compliant finished appliances does not automatically produce a compliant system. The manufacturer of an apparatus or a fixed installation as defined in the EMC Directive 2014/30/EU, 29 March 2014 is responsible for the EMC-compliance of the final apparatus.

## EMC - Test Report For Radiated Emission

### EUT Description

**Product Type:** Standalone Power Supply  
**Model No:** TIB 120-148  
**Manufacturers No.:** 120PSX185  
**Manufacturer:** Traco Power Solutions Ltd.  
Whitemill Industrial Estate  
Wexford  
Ireland  
**Serial No:** 21803100033  
**Shipment No:** 1070608002  
**Nominal input:** 100-240Vac  
**Nominal output:** 48V/2.5A

**Tested by:** Shaun Foley  
**Date tested:** 06/07/2018  
**Test facility:** Traco Power Solutions Ltd.  
3m Free Field Measurement Site  
Whitemill Industrial Estate  
Wexford, Ireland

**Report by:** Shaun Foley  
**Issue date:** 17/07/2018

### Executive summary:

The EUT was tested for radiated EMC emission according following Standards

Standard	Result Pass/Fail
EN 55022:2010 - Class B Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement	Pass
EN 55011:2009 + A1:2010 - Class B – Group 1 Equipment Industrial, scientific and medical equipment — Radio-frequency disturbance characteristics — Limits and methods of measurement	Pass

**Comment:** Highest emission appeared at full load

## Radiated Emissions

### Test setup:

The measurement was carried out in 3m Free Field Measurement site as outlined in CISPR 16-2-3. The Antenna and the EUT were setup at least 3m away from any surrounding object. The EUT was setup 0.8m above the ground. The EUT was connected to a resistive load and operated at its normal performance parameters.

Radiated Emission was measured with a Rohde & Schwarz EMI Receiver - ESVS 30 and a Teseq Bilog Antenna – CBL111D. Appropriate correction factors for the Antenna were applied. The antenna was mounted onto an antenna mast to enable measurement heights between 1 and 4 m. The resolution bandwidth of the Spectrum Analyser was set to 120kHz.



<b>Input Power Cable:</b>	2m	H05VV-F3G 1.0mm <sup>2</sup> - PVC isolated cable
<b>Output Power Cable:</b>	1m	2 x 16AWG wires - BS6231 tri rated PVC 105°C

The cable arrangement is in accordance to CISPR 16-2-3.

### Test procedure:

A pre-scan was first performed in order to find prominent radiated emissions. The points closest to the limit line were examined. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded.

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of - 7dBμV means the emission is 7dBμV below the stated limit. The equation for margin calculation is as follows:

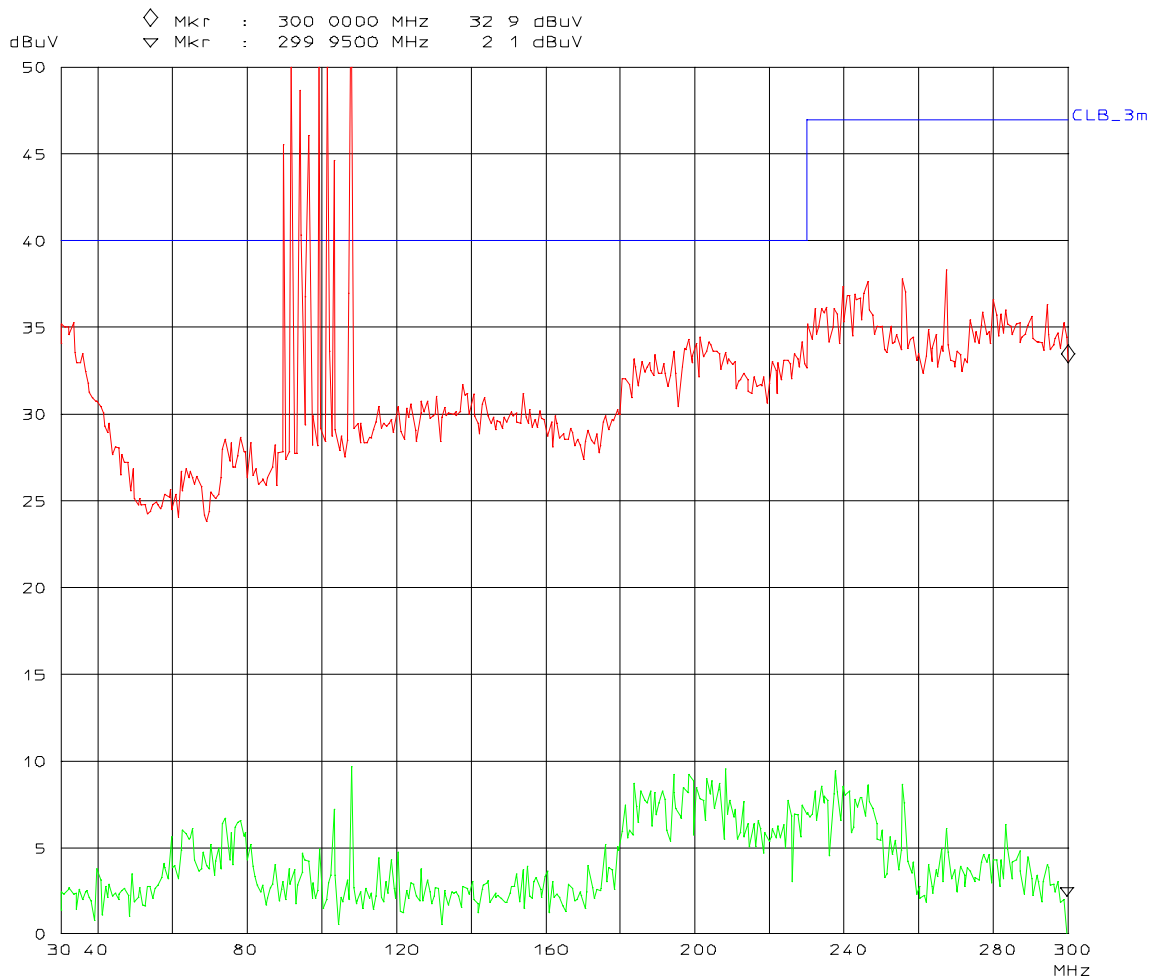
$$\text{Margin} = \text{Measured QP} - \text{Limit}$$

**Deviations:** None

**Input Voltage:** 230V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A/ Resistive  
**Polarization:** Horizontal

09. Jul 18 14:47

Scan Settings (1 Range) |----- Receiver Settings -----|  
 |----- Frequencies -----| |-----|  
 Start Stop Step IF BW Detector M-Time Atten Preamp OpRge  
 30M 300M 50k 120k PK 1ms AUTO LN OFF 60dB  
 Transducer No Start Stop Name  
 21 30M 1000M BILOG

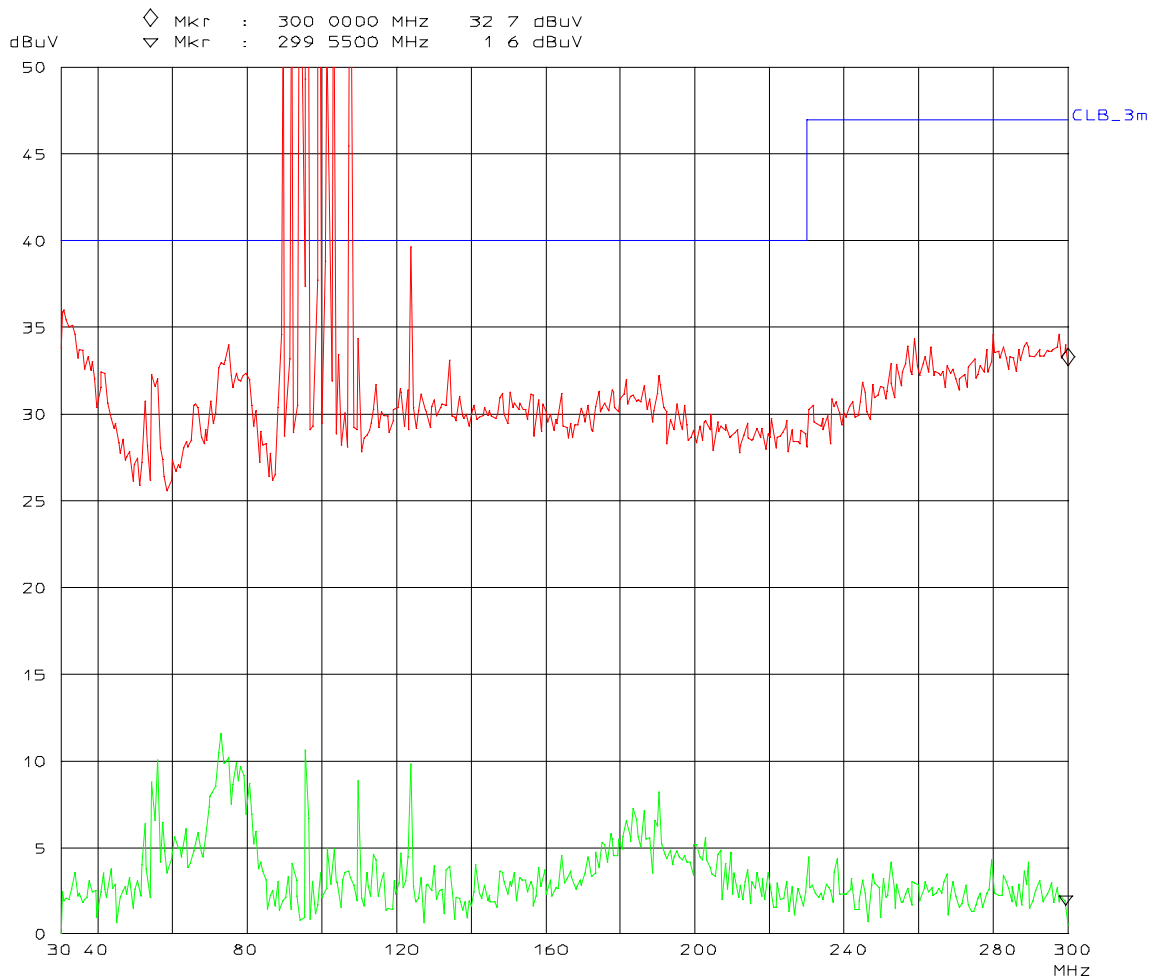


Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.

**Input Voltage:** 230V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A/ Resistive  
**Polarization:** Vertical

09. Jul 18 14:58

Scan Settings (1 Range) |----- Receiver Settings -----|  
 |----- Frequencies -----|  
 Start Stop Step IF BW Detector M-Time Atten Preamp OpRge  
 30M 300M 50k 120k PK 1ms AUTO LN OFF 60dB  
 Transducer No Start Stop Name  
 21 30M 1000M BILOG



Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.

## Measurements

**Input Voltage:** 230V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A/ Resistive

Frequency	QP	Limit	Margin	Antenna Height	Table rotation	Polarization
[MHz]	[dBuV/m]	[dBuV/m]	[dB]	[m]	[°] <sup>1</sup>	
74.1	27.2	40	-12.8	2.5	0	Horizontal
186.6	29.0	40	-11.0	1.0	0	
194.2	31.9	40	-8.1	1.5	0	
209.0	30.5	40	-9.5	1.0	0	
240.0	32.7	40	-7.3	1.0	0	
55.75	24.0	40	-16.0	1.0	0	Vertical
72.75	30.6	40	-9.4	1.5	0	
77.0	30.0	40	-10.0	1.5	90	
184.2	27.0	40	-13.0	1.0	0	
190.6	26.0	40	-14.0	1.0	0	
		40				

<sup>1</sup> the rotation of the table is given in clockwise direction

**Test result: Pass**

**Input Voltage:** 115V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A / Resistive  
**Polarization:** Horizontal

09. Jul 18 15:09

Scan Settings (1 Range) ----- Receiver Settings -----  
 |----- Frequencies -----|-----|  
 Start Stop Step IF BW Detector M-Time Atten Preamp OpRge  
 30M 300M 50k 120k PK 1ms AUTO LN OFF 60dB  
 Transducer No Start Stop Name  
 21 30M 1000M BILOG

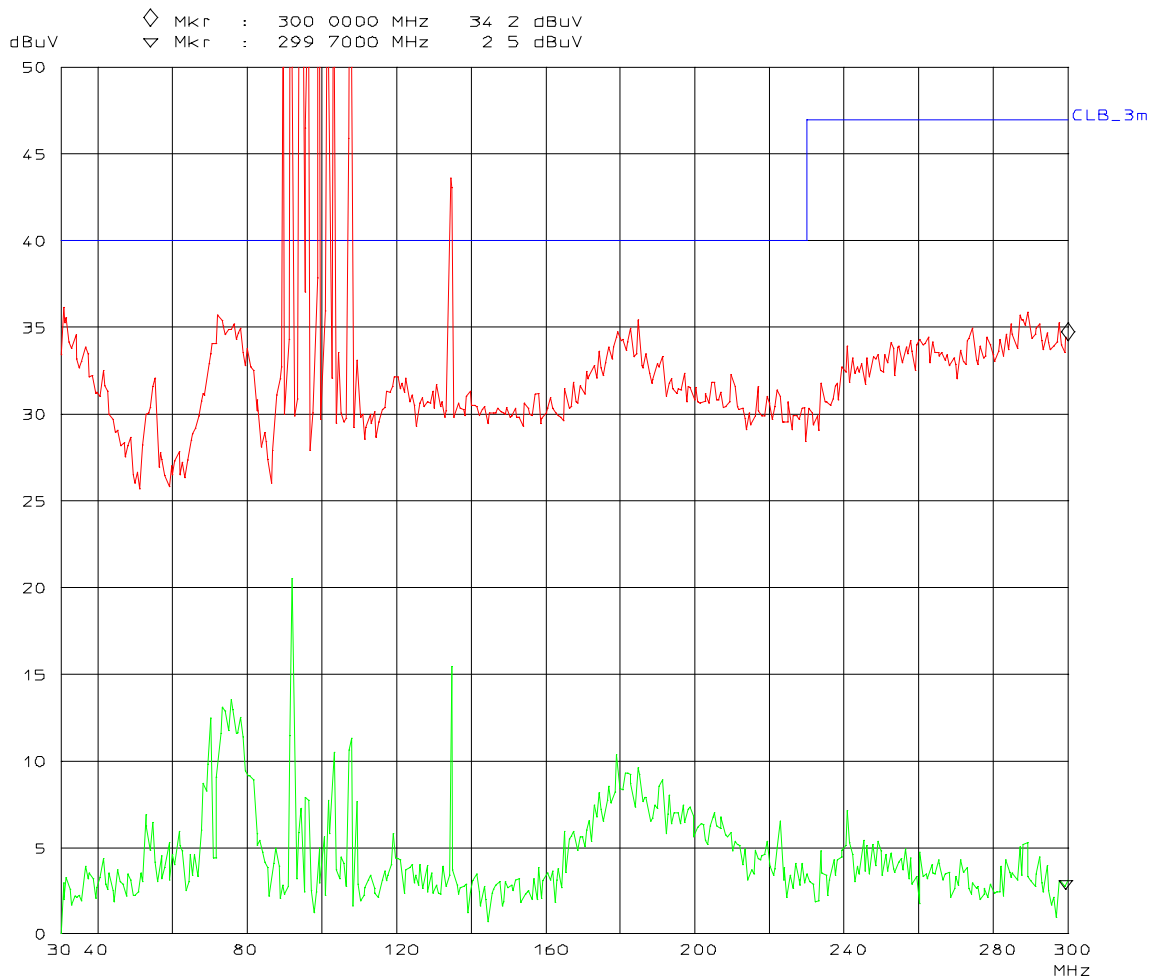


Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.

**Input Voltage:** 115V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A / Resistive  
**Polarization:** Vertical

09. Jul 18 15:23

Scan Settings (1 Range) -----|----- Receiver Settings -----|  
 |----- Frequencies -----|-----|  
 Start Stop Step IF BW Detector M-Time Atten Preamp OpRge  
 30M 300M 50k 120k PK 1ms AUTO LN OFF 60dB  
 Transducer No Start Stop Name  
 21 30M 1000M BILOG



Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.



## Measurements

**Input Voltage:** 115V/50Hz  
**Output voltage:** 48V  
**Load Current/Type of load:** 2.5A/ Resistive

Frequency	QP	Limit	Margin	Antenna Height	Table rotation	Polarization
[MHz]	[dBuV/m]	[dBuV/m]	[dB]	[m]	[°]	
73.65	30.2	40	-9.8	2.25	0	Horizontal
78.8	30.0	40	-10.0	2.5	0	
195.25	30.7	40	-9.3	2.0	0	
205.25	32.4	40	-7.8	2.0	0	
231.85	35.8	40	-4.2	2.0	0	
286.35	31.2	40	-8.8	2.25	0	
75.45	32.5	40	-7.5	1.0	0	Vertical
134.6	27.0	40	-13.0	1.0	0	
179.3	29.9	40	-10.1	1.0	0	
184.85	29.7	40	-10.3	1.0	0	

<sup>1</sup> the rotation of the table is given in clockwise direction

**Test result: Pass**

**Test Equipment Used:**

Description	Model	Manufaturer	Serial No
EMC Analyzer	ESVS 30	Rodhe & Schwarz	846814/004
Antenna	CBL 6111D	Teseq	50395
10m Coaxial cable	n/a	n/a	n/a
Multimeter	U1252B	Agilent	MY54480049
Multimeter	U1252B	Agilent	MY54260106

## Appendix 1

### Ambient Radiation level

The ambient noise level was measured with the same receiver settings than for the radiated emission measurement. Any equipment in the close proximity was disconnected or turned off, including the EUT. The graphs below gives an indication of the constantly appearing radio broadcasting.

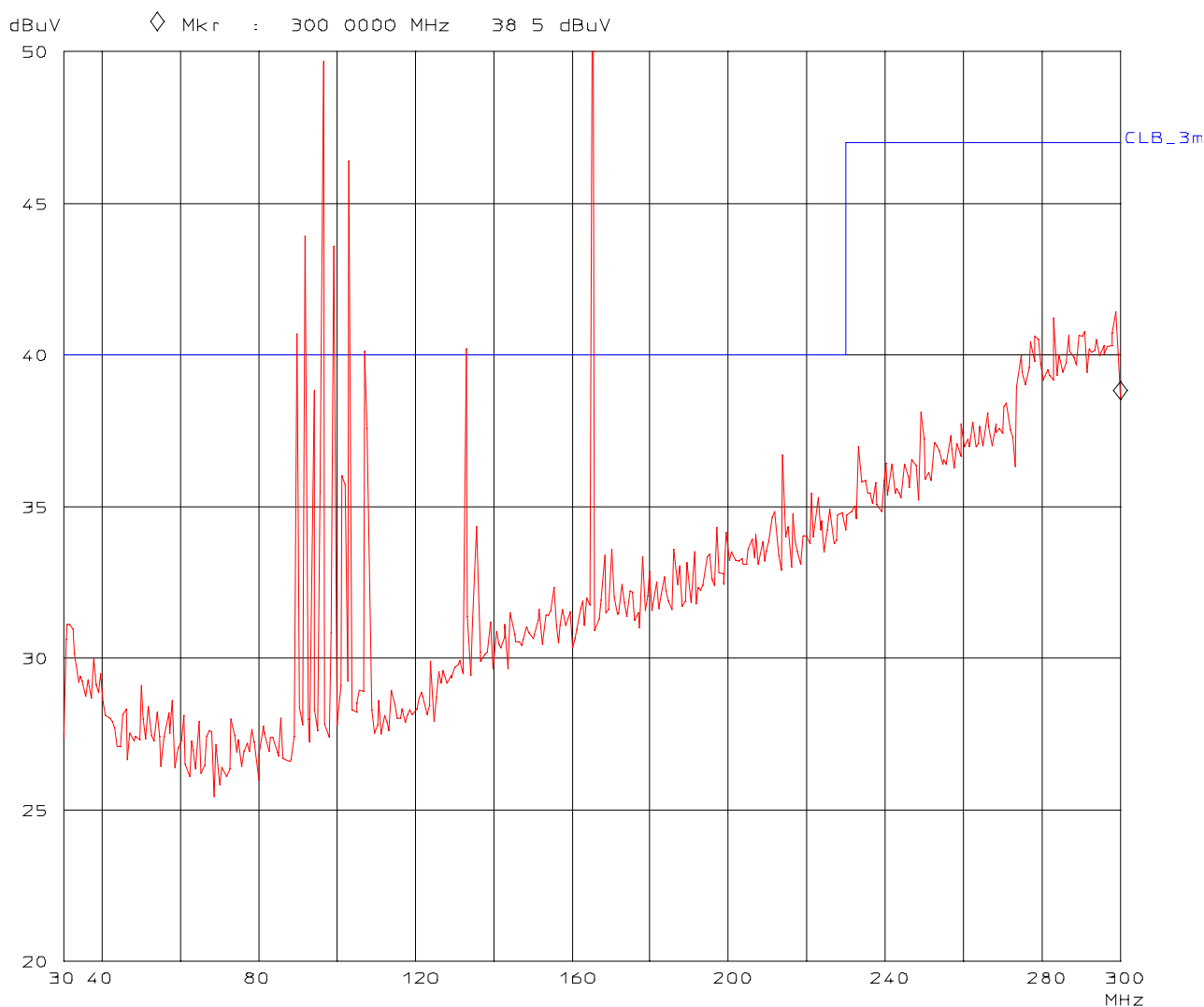
#### A1.1 Ambient radiation in Horizontal Orientation of the Antenna

Scan Settings (1 Range)

Frequencies			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
30M	300M	25k	120k	PK	1ms	AUTO	LN OFF	60dB	

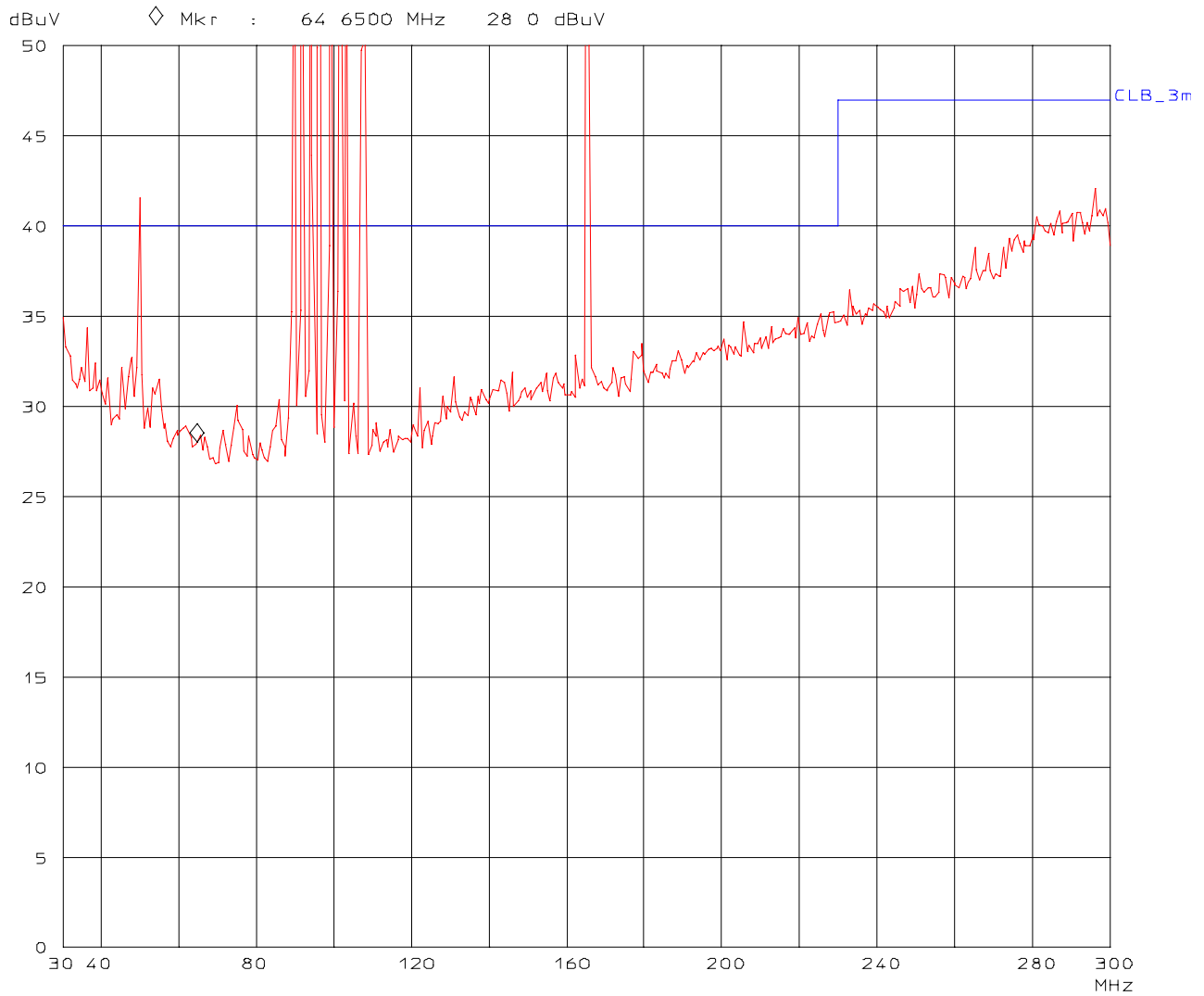
Transducer	No	Start	Stop	Name
	13	25M	300M	ANT3MK10



## A1.2 Ambient radiation in Vertical Orientation of the Antenna

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	25k	120k	PK	1ms	AUTO	LN OFF
							OpRge
							60dB
			Transducer	No	Start	Stop	Name
				13	25M	300M	ANT3MK10



Revision History			
Revision	Date	Name	Description
1.0	17/07/2018	Shaun Foley	Full radiated EMC report
1.1	15/03/2019	Sarah Evans	Add reference for EX models and revision history