

Model: TIB 120-112*

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 120-112
Manufacturers No.: 120PSX182
Manufacturer: Traco Power Solutions Ltd.
Whitemill Industrial Estate
Wexford
Ireland
Serial No: 21823100048
Shipment No: 1070608002
Nominal input: 100-240Vac
Nominal output: 12V/ 10A

Tested by:	Shaun Foley	Report by:	Shaun Foley
Date tested:	06/07/2018	Issue date	13/07/2018
Test facility:	Traco Power Solutions Ltd. 3m Free Field Measurement Site Whitemill Industrial Estate Wexford, Ireland		

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 Schwarzbeck Antenna – VHBB 9124. 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.



Input Power Cable:	2m	H05VV-F3G 1.0mm ² - PVC isolated cable
Output Power Cable:	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:

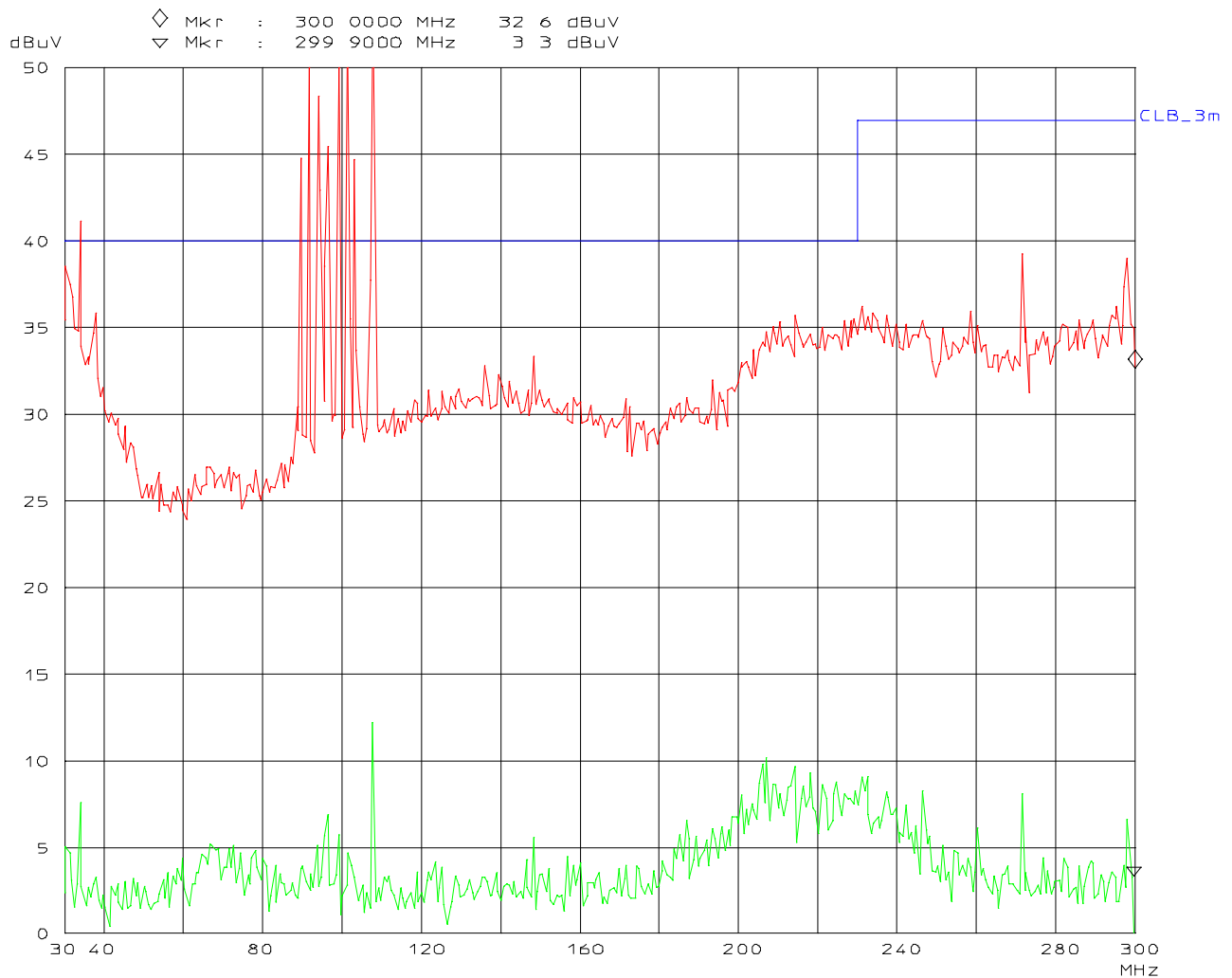
$$\text{Margin} = \text{Measured QP} - \text{Limit}$$

Deviations: None

Input Voltage: 230V/50Hz
Output voltage: 12V
Load Current/Type of load: 10.0A/ Resistive
Polarization: Horizontal

06. Jul 18 10:49

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

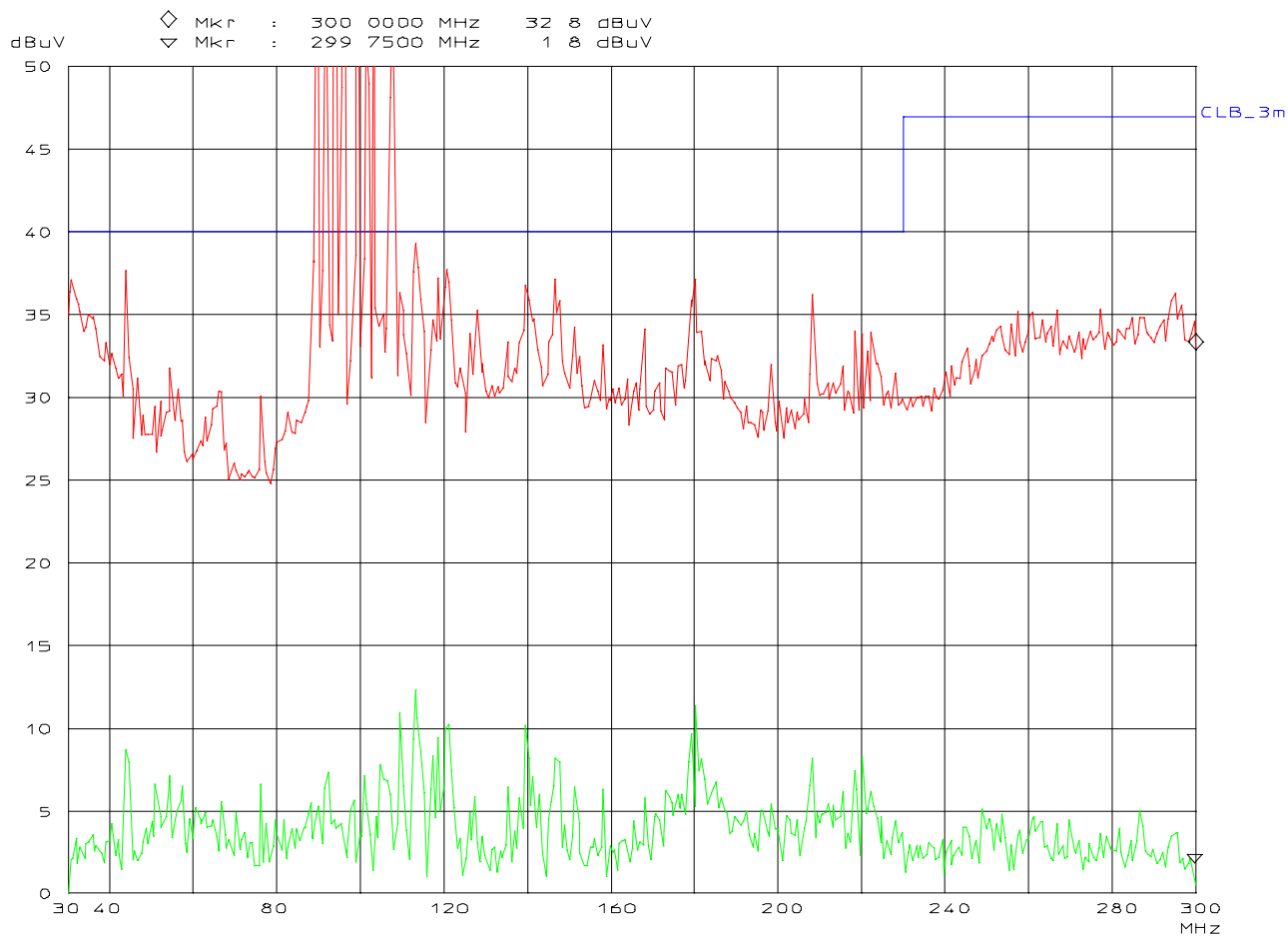


Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.

Input Voltage: 230V/50Hz
Output voltage: 12V
Load Current/Type of load: 10.0A/ Resistive
Polarization: Vertical

06. Jul 18 10:58

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: 12V
Load Current/Type of load: 10.0A/ Resistive

Frequency	QP	Limit	Margin	Antenna Height	Table rotation	Polarization
[MHz]	[dBuV/m]	[dBuV/m]	[dB]	[m]	[°] ¹	
206.80	32.2	40	-7.8	1.75	0	Horizontal
216.45	32.0	40	-8.0	1.75	0	
232.6	31.9	40	-8.1	1.5	0	
113.2	26.0	40	-14.0	1.0	0	Vertical
121.20	21.6	40	-18.4	1.0	0	
139.40	24.5	40	-15.5	1.0	45	
180.1	29.0	40	-11.0	1.0	0	
		40				
		40				

¹ the rotation of the table is given in clockwise direction

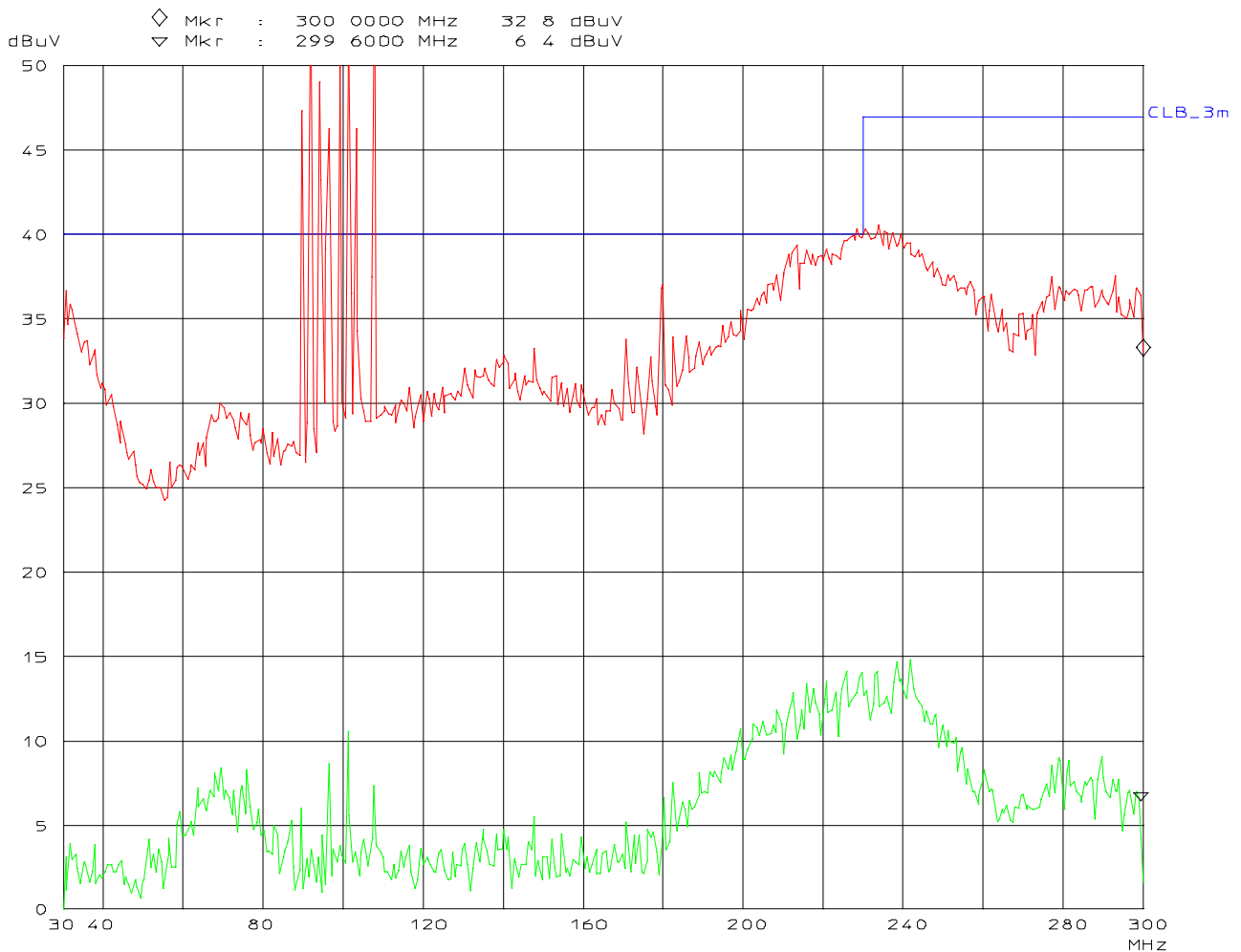
Test result: Pass

Input Voltage: 115V/50Hz
Output voltage: 12V
Load Current/Type of load: 10.0A / Resistive
Polarization: Horizontal

06. Jul 18 11:17

Scan Settings (1 Range)			Receiver Settings					
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

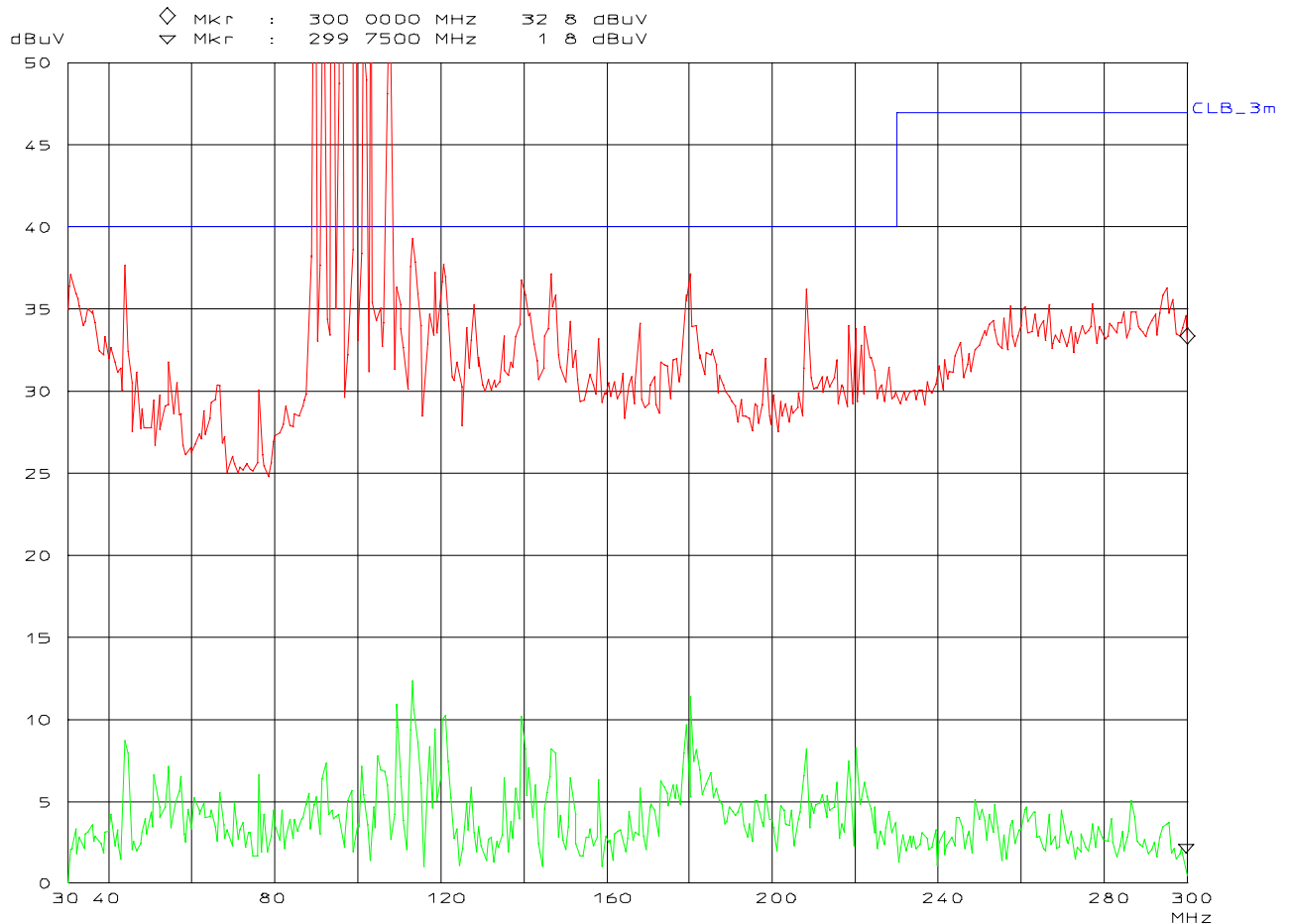


Note: The red graph shows the scan with in peak detector mode. The green graph shows the scan in peak detector mode when the ambient noise is subtracted. The graph for the ambient noise cannot be shown because the EMI Receiver can only show a max of 2 traces. The ambient noise is shown in Appendix 1.

Input Voltage: 115V/50Hz
Output voltage: 12V
Load Current/Type of load: 10.0A / Resistive
Polarization: Vertical

06. Jul 18 10:58

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: 115V/50Hz
Output voltage: 12V
Load Current/Type of load: 10.0A/ Resistive

Frequency	QP	Limit	Margin	Antenna Height	Table rotation	Polarization
[MHz]	[dBuV/m]	[dBuV/m]	[dB]	[m]	[°]	
69.2	24.4	40	-15.6	1.0	0	Horizontal
76.35	26.38	40	-13.62	1.0	0	
211.80	35.5	40	-4.5	1.5	0	
221.40	36.1	40	-3.9	1.5	0	
229.25	36.6	40	-3.4	1.5	0	
236.05	36.0	40	-4.0	1.5	0	
71.3	30.5	40	-9.5	1.0	0	Vertical
78.0	29.9	40	-10.1	1.0	0	
213.6	30.5	40	-9.5	1.0	0	
		40				

¹ 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

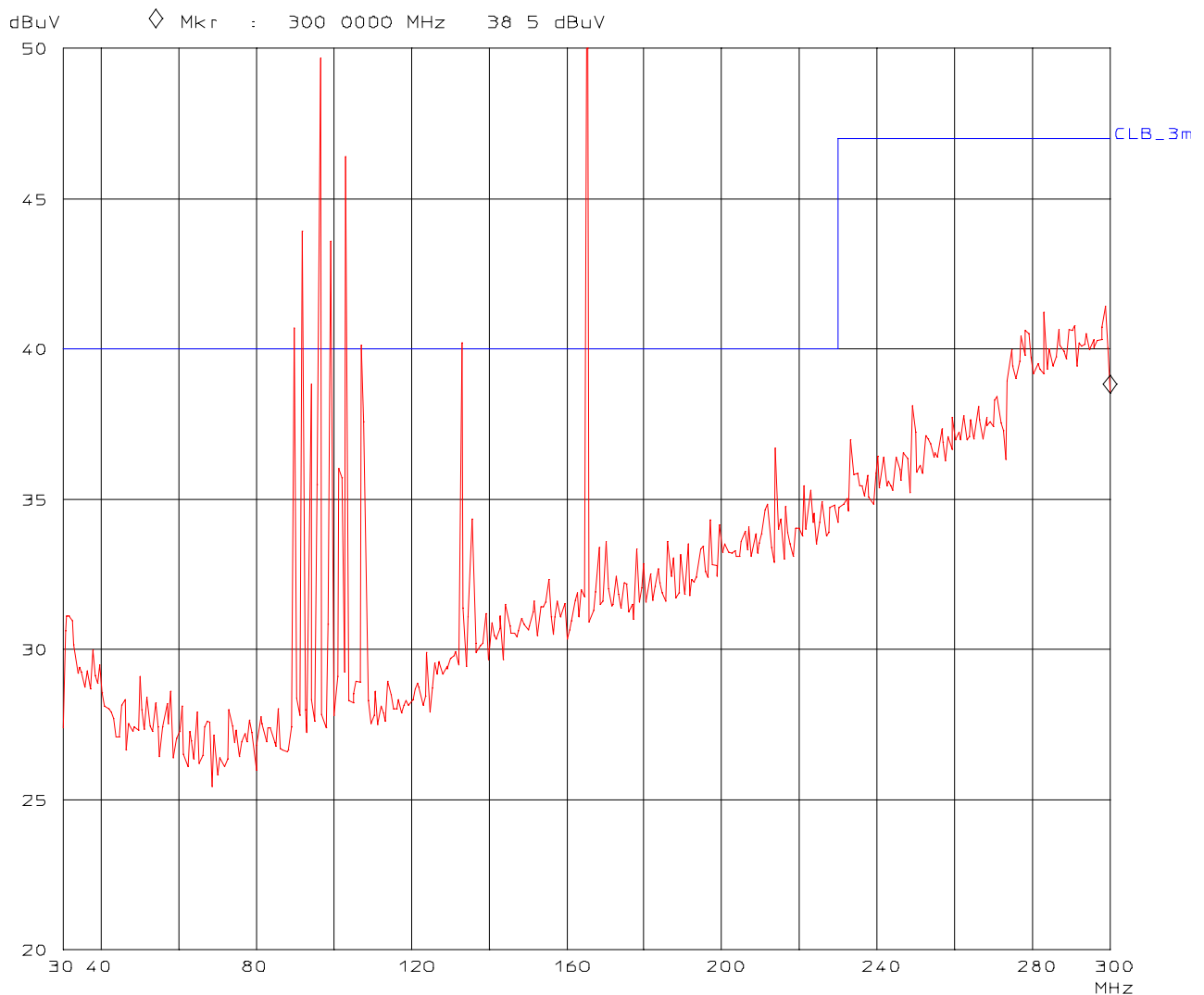
The ambient noise level was measured with the same receiver settings than for the radiated emission measurement. Any equipment in the close proximity was disconnected or turned off, including the EUT. The graphs below gives an indication of the constantly appearing radio broadcasting.

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

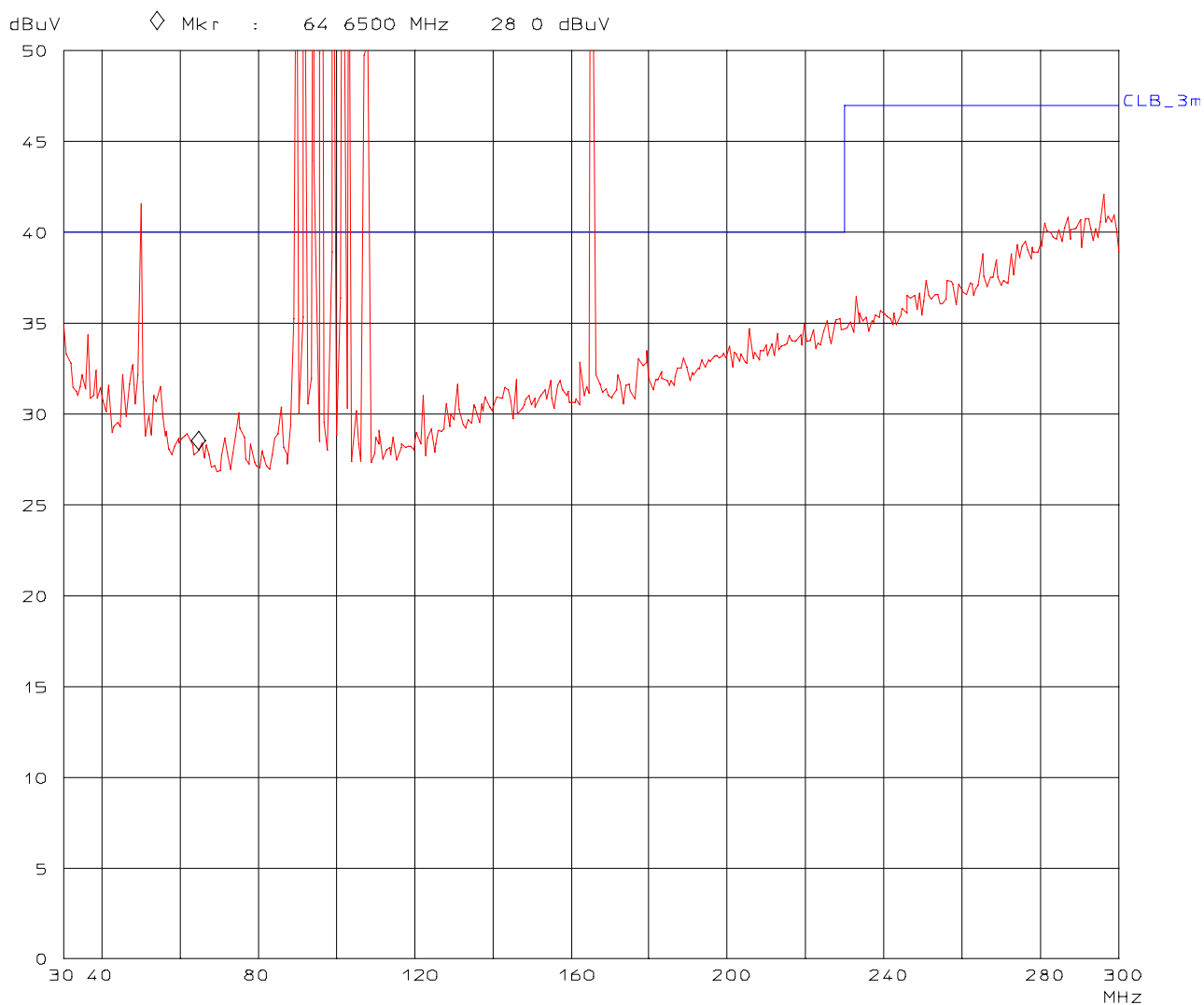


A1.2 Ambient radiation in Vertical Orientation of the Antenna

Scan Settings (1 Range)

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

Transducer	No	Start	Stop	Name
	13	25M	300M	ANT3MK10



Revision History			
Revision	Date	Name	Description
1.0	13/07/2018	Shaun Foley	Full radiated EMC report
1.1	15/03/2019	Sarah Evans	Add reference for EX models and revision history