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Test Report for the EMC Testing of a TechRitePRO for Bartec Auto ID

Test Report number 14347TR3

Project number C6399

Author: .....
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Issue	Description						Issue by	Date
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Test Report Change History

Issue	Date	Modification Details
1	2nd November 2021	Original issue of test report
2	25th November 2021	New FCC ID and HVIN added
3	16th March 2022	Amendment of RSS 210 to Issue 10 and PMN on Page 7
4		
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Section 1 Test Location

All testing was performed at;

Eurofins York Ltd	Unit 5
	Speedwell Road
	Castleford
	WF10 5PY
Tel:	01977 731173
Website	https://www.yorkemc.com
UKAS Testing No.	1574

1.1 UKAS Accreditation

Tests marked "Not UKAS Accredited" in this report are not included in the UKAS Accreditation Schedule for our laboratory.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Eurofins York, Castleford latest accreditation schedule can be found at:

http://www.ukas.org/testing/lab_detail.asp?lab_id=989&location_id=&vMenuOption=3

For USA

Eurofins York Castleford Laboratory, is an Accredited facility recognised by the Federal Communications Commission (FCC) for certification testing.
The appropriate FCC Designation Number is number is UK02013, dated 1st March 2021.

For Canada

Eurofins York Castleford Laboratory is recognised by ISED for certification testing.

ISED Assigned Code: 22959

Section 2 Customer Information

Company name	Bartec Auto ID Ltd
Address	Unit 9 Redbrook Business Park
	Wilthorpe Road
	BARNSLEY
	South Yorkshire
	S75 1JN
	UK
Tel:	+44 01226 770581
Contact	Simon Phillips
Email	simon.phillips@nyquist-solutions.com

Section 3 Equipment Details

3.1 Equipment Under Test (EUT)

Date received:	27th July 2021				
EUT name:	TechRitePRO				
EUT description:	The TechRite Pro is a rugged test tool for tyre pressure monitoring devices (TPMs), designed specifically for the workshop environment. Simple to use, the main functions are: Operated with large keys and a friendly on-screen menu enables easy set-up. The DUT enables the operator to activate a TPM sensor via LF (125 kHz) Transmission, identify that the TPM has transmitted a response by receiver detection, decode the data received, and display such information as identification code, pressure, temperature, status and type. The hardware may populate dual UHF receivers for reception of TPMS transmission at 315 and 433.92 MHz. The software architecture is designed to accommodate a library of TPM types with various encoding schemes from a range of TPM suppliers. USB is used for charging the internal battery and doing occasional software updates to the unit.				
FCC ID:	SX8TRP1				
ISED Number:	5736A-TRP1				
Product Marketing Name (PMN)	TechRitePRO				
Hardware Version identification Number (HVIN)	TechRitePRO				
Firmware Version Identification Number (FVIN)	v3.1.0.2				
EUT power:	Rechargeable Li-ion Battery 3.8V				
Cables:	Cable 1	X	m	unscreened	Charger
Size of EUT (m)	L: - 200			W: - 100	H: - 30
Tested as	Hand held				
Mode/s of operation	Transmitting 125kHz continuous RFID, amplitude modulated				
Client modification statement:	Not required				
Modifications incorporated during testing:	None				

3.2 Equipment Under Test Photographs

Photographs are supplied separately.

3.3 Configuration of EUT

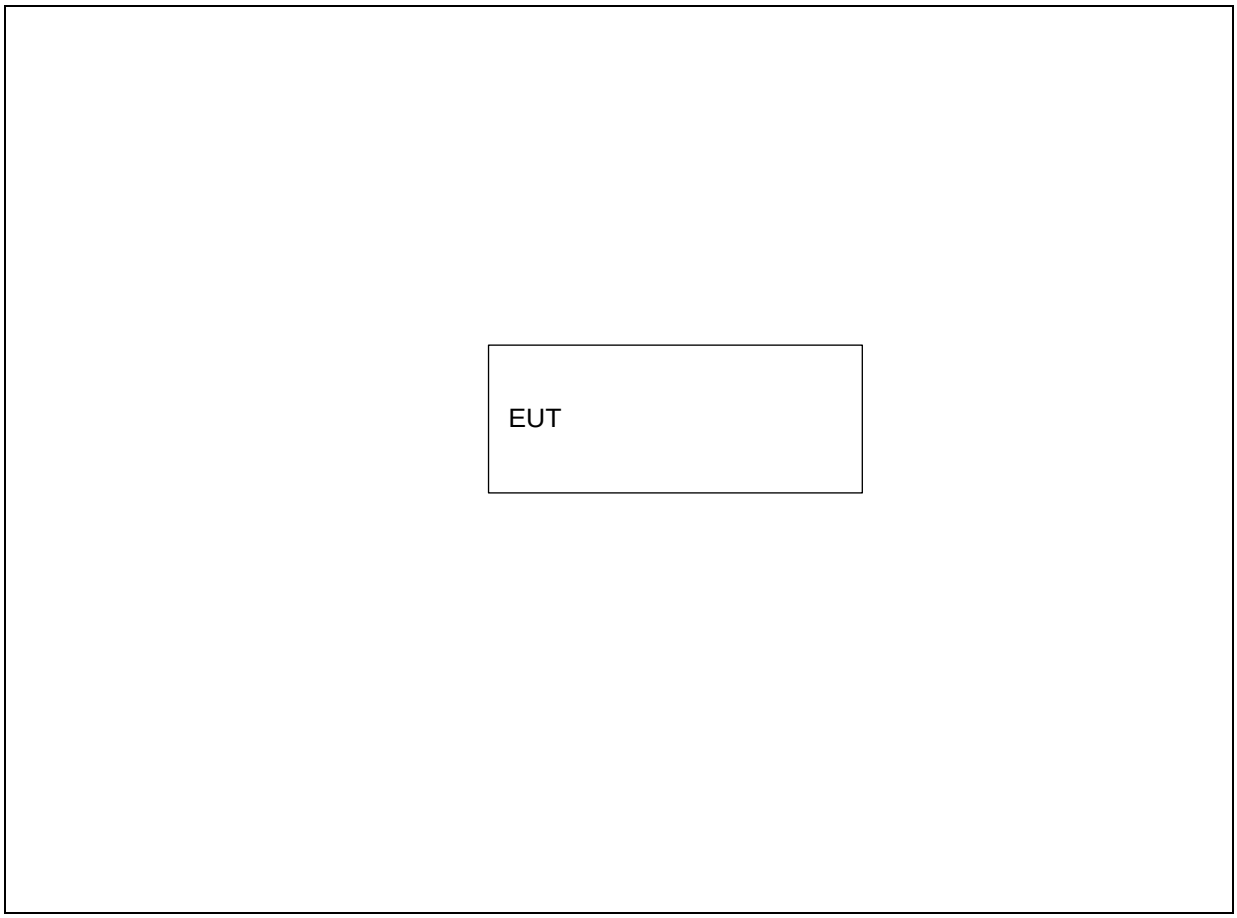

Figure 1: Diagram of EUT

3.4 EUT Monitoring/Auxiliary Equipment

None.

Section 4 Result Summary

The tests were performed in accordance with Eurofins York Ltd Quotation QuC6399.

For USA

FCC Rule	47 CFR Part 15 Radio Frequency Devices; Subpart C Intentional Radiators

Reference	**Test Description**	**Result Summary**
47 CFR Part 15C Test standard: ANSI C63.10-2013 Clause 6.3	General radiated emission limits in Section 15.209, 9kHz to 1GHz	Complies
47 CFR Part 15C Test standard: ANSI C63.10-2013 Clause 6.10	Band edge compliance	Complies
47CFR Part 15C Clause 6.9	20dB Bandwidth	Complies
47 CFR Part 15C Section 15.207 Test standard: ANSI C63.10-2013 Clause 6.2	Mains conducted emissions 150kHz to 30MHz Applicable if the apparatus connects to the AC supply directly or via other apparatus.	Complies
47 CFR 15.31(e) Test standard: ANSI C63.10-2013 Clause 5.13	For battery operated equipment, the equipment tests shall be performed using a new battery	Complies

Note 1 :All testing was carried out at a test distance of 3m and the limits adjusted accordingly. This is a deviation from the standard as Class A limits are specified at 10m test distance.

Note 2 :Applies to carrier current systems see reference 47CFR Part 15Clause 15.109(e).

For Canada

Regulation	RSS 210 Issue 10 December 2019 Licence –Exempt Radio Apparatus: Category 1 Equipment And, RSS-Gen — General Requirements for Compliance of Radio Apparatus Issue 5

Reference	**Test Description**	**Result Summary**
RSS-GEN Clause 8.9 Test standard: ANSI C63.10-2013 Clause 6.3	General radiated emission limits in Section, 9kHz to 1GHz	Complies
RSS-GEN Clause 8.10 Test standard: ANSI C63.10-2013 Clause 6.10	Band edge compliance	Complies
RSS-GEN Clause 6.7 Test standard: ANSI C63.10-2013 Clause 6.9	99% Occupied bandwidth	Complies
RSS-GEN Clause 8.8 Test standard: ANSI C63.10-2013 Clause 6.2	Mains conducted emissions 150kHz to 30MHz Applicable if the apparatus connects to the AC supply directly or via other apparatus.	Complies
Test standard: ANSI C63.10-2013 Clause 5.13	For battery operated equipment, the equipment tests shall be performed using a new battery	Complies

The Decision Rule is applied on the basis of the following:

• EMC testing - CISPR16-4-2 and/or EN61000-4-x (TR61000-1-6)

These standards provide guidance on how to calculate and apply measurement uncertainty whilst providing maximum uncertainties allowance.

In all cases due consideration will be given to JCGM 106:2012, ILAC-G8:09/2019 and LAB 48.

This laboratory has demonstrated by calibrating its equipment and facilities, and calculating its own uncertainties, that it complies with the above requirements and therefore no allowance of uncertainties has been given to the tolerances.

Where a result is considered marginal in respect of its proximity to the limit line, for example, the customer would be made aware of situation so that they can make an informed decision on how to proceed.

4.1 Knowledge Database References

The following KDBs were referenced during the testing of the TechRitePRO

The latest knowledge database references are available via the FCC KDB website at:

https://apps.fcc.gov/kdb

4.1.1 Conducted Emissions

Publication Number	Keyword	Publication Date
174176	Section 15.107, 15.207,18.307, C63.4, C63.10, Suitable Dummy Load, AC Power Line Conducted Measurement	03/06/2015

4.1.2 Radiated Emissions (9kHz to 30MHz)

Publication Number	Keyword	Publication Date
937606	Test Site Requirements for Part 15 and 18 Devices Operating Below 30 MHz	10/10/2014
460108	Radiated emission measurements below 30 MHz	06/15/2015

4.1.3 Radiated Emissions (30MHz to 1000MHz)

Publication Number	Keyword	Publication Date
746324	CE Mark and use of CISPR 22 limits	06/12/2015
913591	Measurement of radiated emissions at the band-edge for a Part 15 RF Device	04/05/2017

4.1.4 Radiated Emissions (1GHz to 40GHz)

Publication Number	Keyword	Publication Date
746324	CE Mark and use of CISPR 22 limits	12/06/2015
714737	15B, Average Detector for Unintentional Radiator	30/11/2010

4.1.5 Radiated Emissions - Apparatus Containing a Modular Transmitter

Publication Number	Keyword	Publication Date
996369	Modular Transmitter Integration Guide – Guidance for Host Product Manufacturers, Frequency Spectrum to be Investigated	01/02/2019

4.2 Compliance Statement

The TechRitePRO as tested, was shown to meet requirements of the standards listed in **Error! Reference s ource not found.** of this report.

Section 5 Conducted Emission Results

5.1 Test Specification

Standard	ANSI C63.10:2013
Measurement Uncertainty	The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 % is +/- 3.45dB

5.2 Power Line Emission Limits

Frequency (MHz)	47CFR15.207 Limit (dBµV)	
	Quasi Peak	Average
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5.0	56.0	46.0
5.0 - 30	60.0	50.0

Note: * The limit decreases linearly with the logarithm of the frequency in the range

5.3 Receiver Settings

Receiver Parameters	Setting
Detector Function	Quasi Peak and Average
Start Frequency	150kHz
Stop Frequency	30MHz
Resolution Bandwidth	10kHz
Video Bandwidth	Auto

5.4 Procedure and Test Software Version

Eurofins York test procedure	CEP19 Issue 5
Test software	RadiMation Version 2016.1.6

5.4.1 Date of Test

7th September 2021

5.4.2 Test Area

LAB 2

5.4.3 Tested by

M Render

5.4.4 Test Setup

This test was applied to the EUT's Live and Neutral lines. The EUT was configured in the screened room on an 80cm high table and was positioned 40cm from the room wall.

A calibrated mains extension lead was used to ensure a known impedance was presented to the EUT

The EUT was then powered from the mains supply via a Line Impedance Stabilisation Network (LISN).

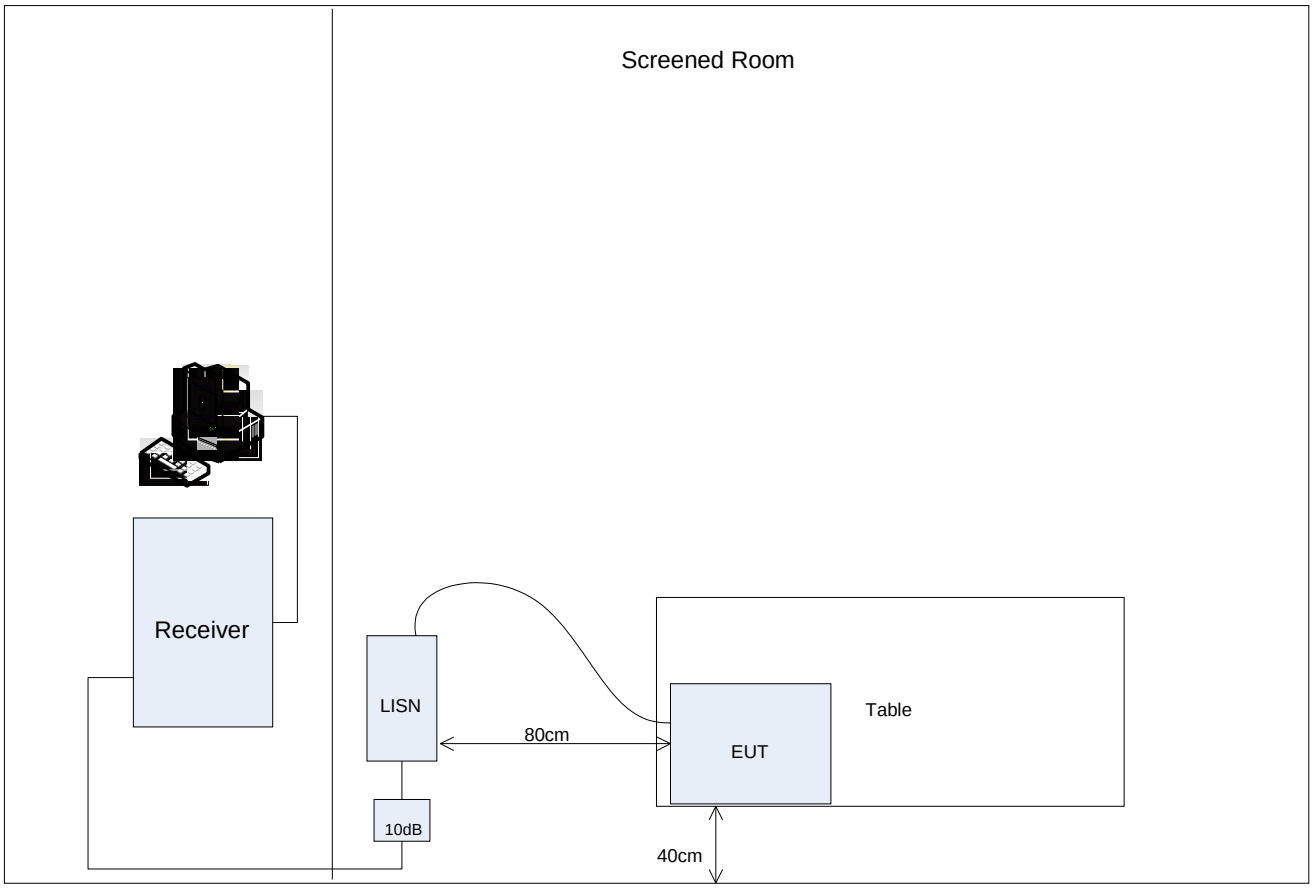

Figure 2: Test setup for Conducted Emissions on the AC power port

The screened room provides an environment that ensures valid, repeatable measurement results that meet the requirements of ANSI C63.10-2013.

5.4.5 Plots

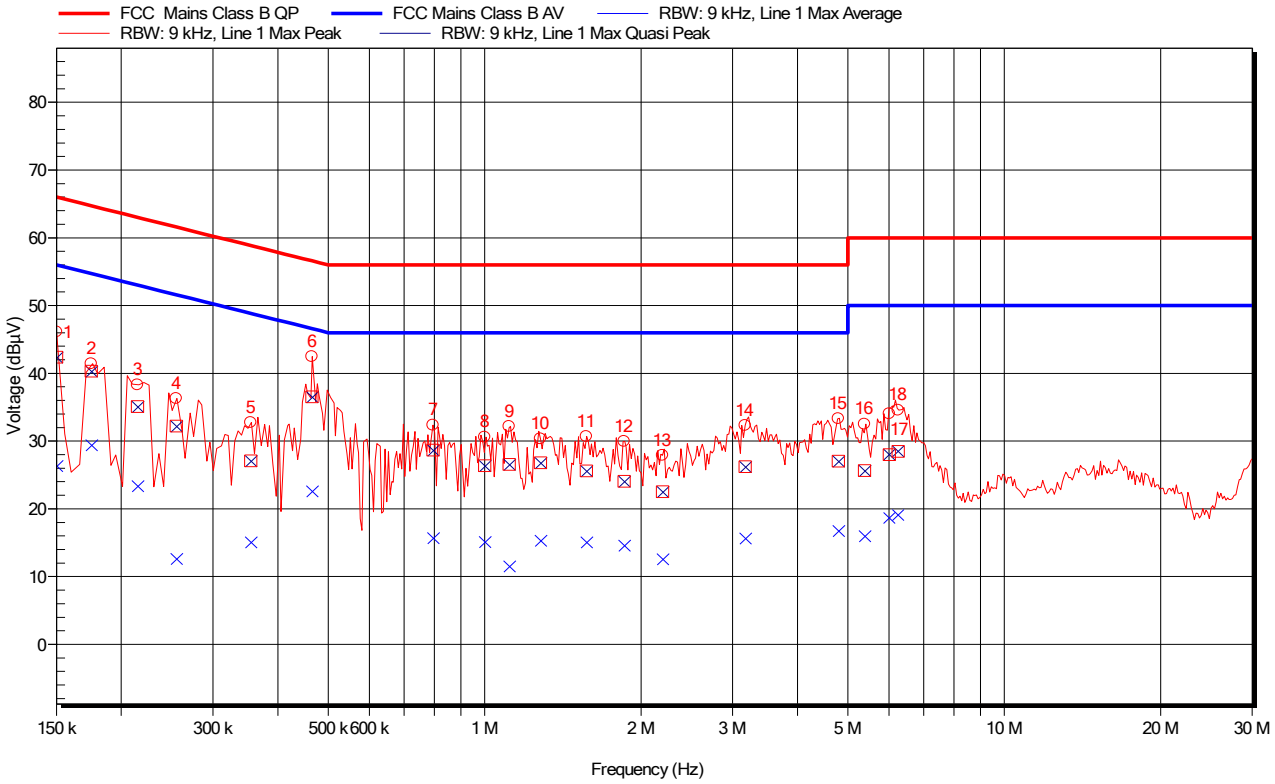

Figure 3: Conducted Emissions Plot - Input Power 120V 60Hz Live

Frequency MHz	Peak dBµV	Average dBµV	Average Limit dBµV	Average Difference dB	Average Correction dB	Average Status dB	Quasi-Peak dBµV	Quasi-Peak Limit dBµV	Quasi-Peak Difference dB	Quasi-Peak Correction dB	Quasi-Peak Status	Overall Status
0.355	32.7	15.1	48.8	-33.73	10.1	Pass	27.1	58.8	-31.74	10.1	Pass	Pass
0.255	36.3	12.7	51.6	-38.92	10.1	Pass	32.2	61.6	-29.39	10.1	Pass	Pass
0.215	38.3	23.4	53	-29.59	10.2	Pass	35.1	63	-27.94	10.2	Pass	Pass
0.465	42.5	22.6	46.6	-24	10.2	Pass	36.5	56.6	-20.09	10.2	Pass	Pass
0.795	32.4	15.7	46	-30.3	10.3	Pass	28.7	56	-27.32	10.3	Pass	Pass
1.000	30.6	15.1	46	-30.86	10.4	Pass	26.4	56	-29.62	10.4	Pass	Pass
0.175	41.4	29.4	54.7	-25.3	10.4	Pass	40.3	64.7	-24.41	10.4	Pass	Pass
1.115	32.2	11.6	46	-34.44	10.4	Pass	26.6	56	-29.45	10.4	Pass	Pass
0.15	46.1	26.4	56	-29.61	10.5	Pass	42.4	66	-23.6	10.5	Pass	Pass
1.57	30.7	15.1	46	-30.92	10.6	Pass	25.6	56	-30.39	10.6	Pass	Pass
1.855	30	14.6	46	-31.36	10.6	Pass	24.1	56	-31.93	10.6	Pass	Pass
2.2	27.9	12.6	46	-33.4	10.7	Pass	22.5	56	-33.49	10.7	Pass	Pass
3.17	32.3	15.7	46	-30.33	10.9	Pass	26.2	56	-29.79	10.9	Pass	Pass
4.795	33.3	16.8	46	-29.24	11.4	Pass	27.1	56	-28.95	11.4	Pass	Pass
5.38	32.5	16	50	-33.98	11.5	Pass	25.7	60	-34.33	11.5	Pass	Pass
6.01	34.1	18.7	50	-31.33	11.5	Pass	28	60	-32	11.5	Pass	Pass
6.25	34.6	19.1	50	-30.94	11.5	Pass	28.5	60	-31.54	11.5	Pass	Pass

Table 1: Input Power Live Conducted Emissions Peaks

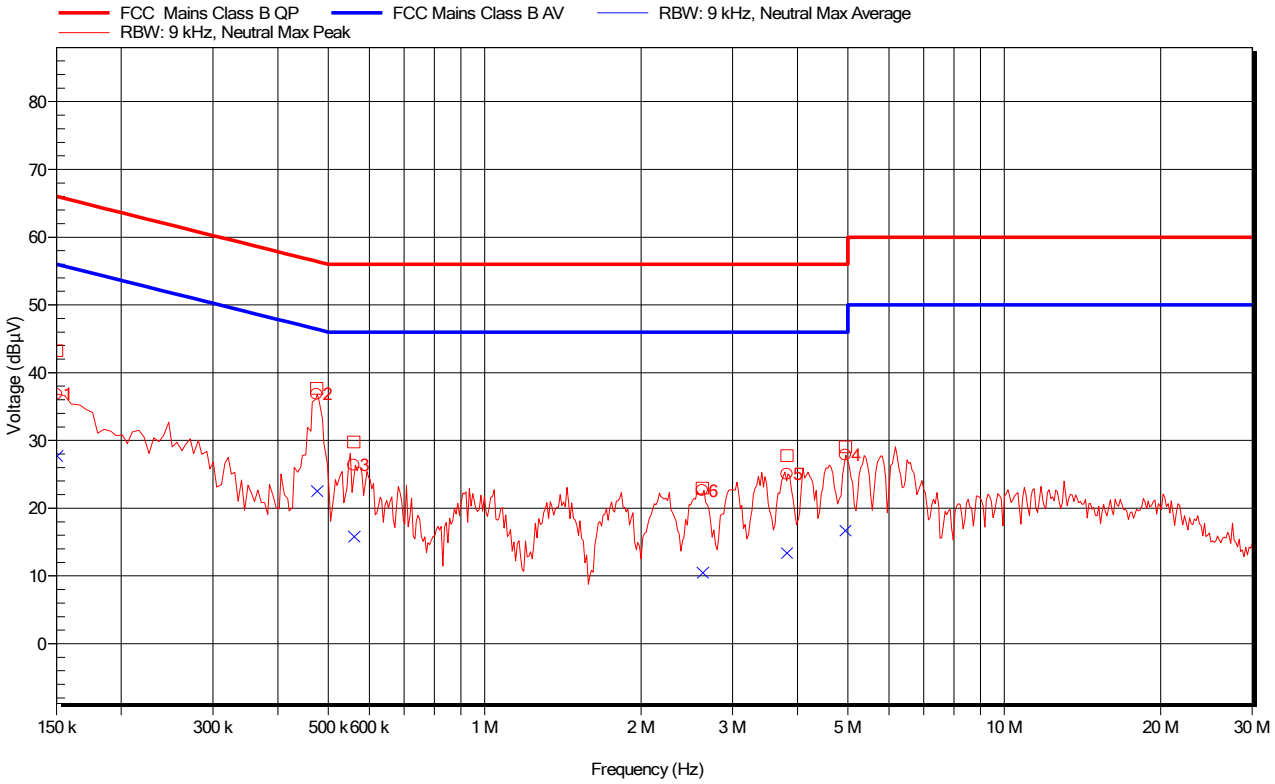

Figure 4: Conducted Emissions Plot - Input Power 120V 60Hz Neutral

Frequency MHz	Peak dBµV	Average dBµV	Average Limit dBµV	Average Difference dB	Average Correction dB	Average Status dB	Quasi-Peak dBµV	Quasi-Peak Limit dBµV	Quasi-Peak Difference dB	Quasi-Peak Correction dB	Quasi-Peak Status	Overall Status
0.475	36.8	22.6	46.4	46.4	10.2	Pass	37.7	56.4	-18.75	10.2	Pass	Pass
0.560	26.4	15.9	46	46	10.3	Pass	29.8	56	-26.23	10.3	Pass	Pass
0.150	36.8	27.7	56	56	10.5	Pass	43.2	66	-22.76	10.5	Pass	Pass
2.625	22.6	10.6	46	46	10.8	Pass	23.0	56	-33.03	10.8	Pass	Pass
3.820	25	13.4	46	46	11.1	Pass	27.8	56	-28.22	11.1	Pass	Pass
4.950	27.8	16.7	46	46	11.4	Pass	29.0	56	-26.96	11.4	Pass	Pass

Table 2: Input Power 120V 60Hz Neutral Conducted Emissions Peaks

5.4.6 Correction factors

The quasi-peak correction and average correction are shown in the above table. This correction figure consists of LISN Insertion loss (IL), Cable loss (CL) and Transient Limiter Loss (TL)

The Actual Signal Level (ASL) is calculated as follows:

ASL (dBµV) = Indicated Signal Level (dBµV) + IL (dB) + CL (dB) + TL (dB)

5.4.7 Sample Data

The Quasi-Peak level at 2.2 MHz

ASL (dBµV) = 12.6dBµV = 1.91dBµV + 0.68dB + 0.1dB + 9.9dB

Section 6 Radiated Emission Results

6.1 Test Specification

Standard	ANSI C63.4:2014
Measurement Uncertainty	The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95% is +/- 5.01dB for the frequency range from 9kHz to 30MHz +/- 6.23dB for the frequency range 30MHz to 1GHz +/- 5.04dB for the frequency range from 1GHz to 6GHz +/- 5.35dB for the frequency range from 6GHz to 18GHz +/- 4.81dB for the frequency range from 18GHz to 40GHz

6.2 Procedure and Test Software Version

Eurofins York test procedure (9kHz to 30MHz)	CEP22 Issue 5
Eurofins York test procedure (30MHz to 1GHz)	CEP23 Issue 5
Eurofins York test procedure (1GHz to 40GHz)	CEP64 Issue 6
Test software	Keysight Connect software

6.3 Magnetic Field Radiated Emissions (9kHz to 30MHz)

6.3.1 Limits

Frequency	Limits (µV/m)
9kHz to 490kHz	2400/F(kHz) at 300m
490kHz to 1.705MHz	24000/F(kHz) at 30m
1,705MHz to 30MHz	30 at 30m

Note 1: * The limit decreases linearly with the logarithm of the frequency in the range

Distance Correction Factor = 40log(test distance /specific distance).

For field strength specified at at 300m, the correction factor is:

Result at 300m = measurement at 3m - 40log(3/300) = measurement at 3m – 80dB.

For field strength specified at at 30m, the correction factor is:

Result at 30m = measurement at 3m - 40log(3/30) = . measurement at 3m – 40dB

6.3.2 Receiver / Spectrum Analyser Settings

Receiver Parameters	Setting
Detector Function	Peak (for initial investigation) Quasi Peak for any final measurements
Start Frequency	9kHz
Stop Frequency	150kHz
Resolution Bandwidth	200Hz
Video Bandwidth	1500Hz

6.3.3 Emissions measurements

6.3.4 Date of Test

27th August 2021

6.3.5 Test Area

Lab 5

6.3.6 Tested by

M Render

6.3.7 Outside Test Site Measurements

Not required.

6.3.8 SAC Test Setup

The EUT was configured in the fully anechoic room on an 80cm high table

The measurement was then performed with an antenna to EUT separation distance of 3m.

The centre of the loop antenna was 1m above the ground and results were obtained with it parallel to the EUT and then perpendicular to the EUT.

The results are maximised in orientation 0-360 degrees.

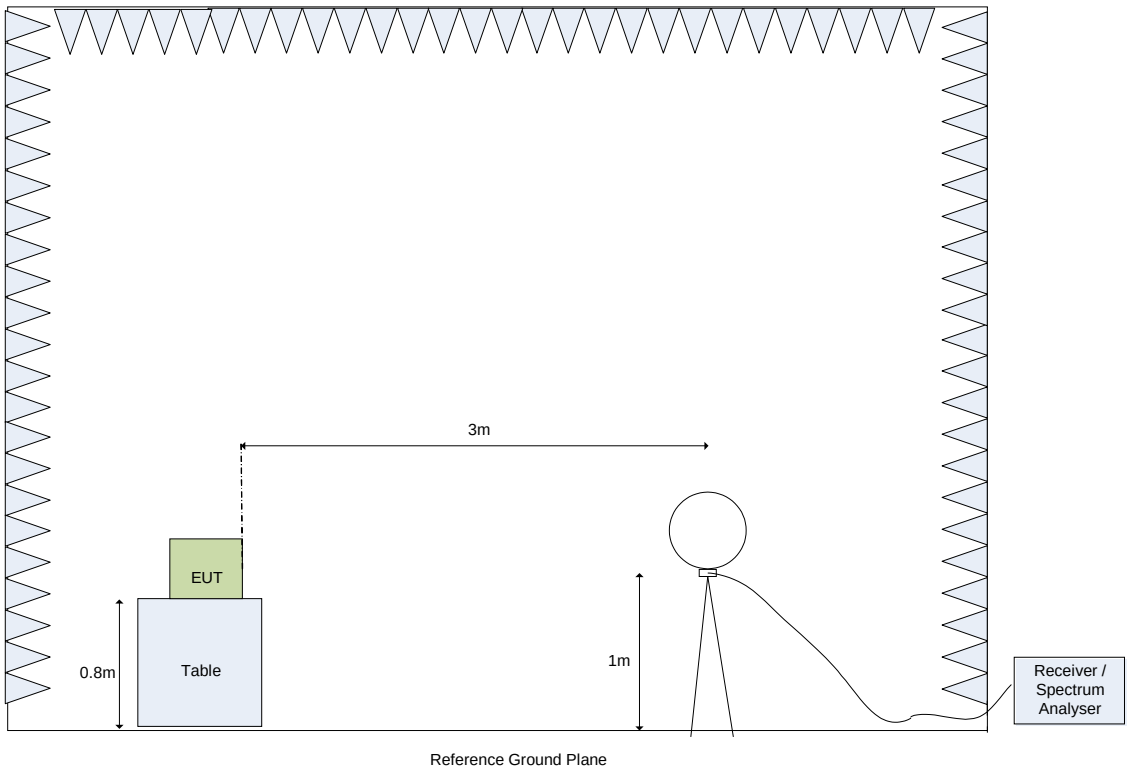

Figure 5: Test Setup for H-Field Measurements from 9kHz to 30MHz

Note 1 : With the EUT de-energized the ambient radio noise and signals met the 6dB peak detection requirement of ANSI C63.4-2014 Clause 5.1.3.

Note 2 : There were no significant environmental temperature changes during the test duration and hence it was not considered necessary to consider any variation in cable loss.

6.3.9 Magnetic field emissions, 9kHz to 30MHz

Three orientations of the product were tested.

EUT Positions:

1. Laid flat display side facing ceiling
2. Stood vertical
3. Laid vertical on long edge

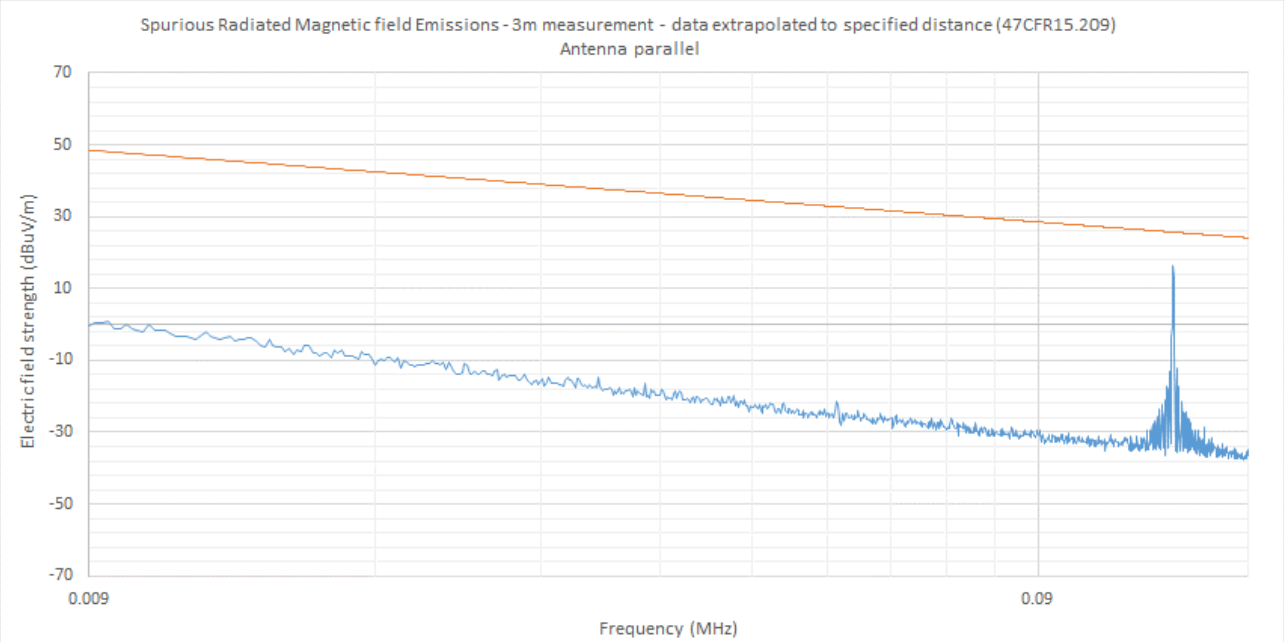

Figure 6: Magnetic field emissions Plot, 9kHz to 150kHz Parallel – EUT position 1

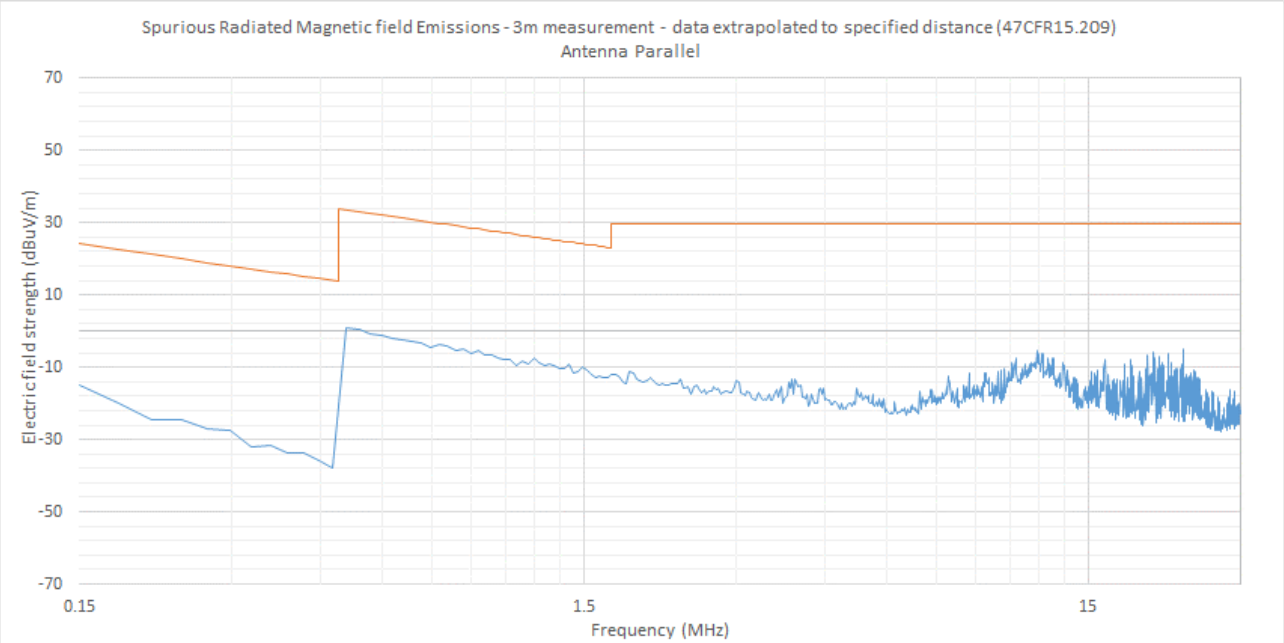

Figure 7: Magnetic field emissions Plot, 150kHz to 30MHz Parallel – EUT Position 1

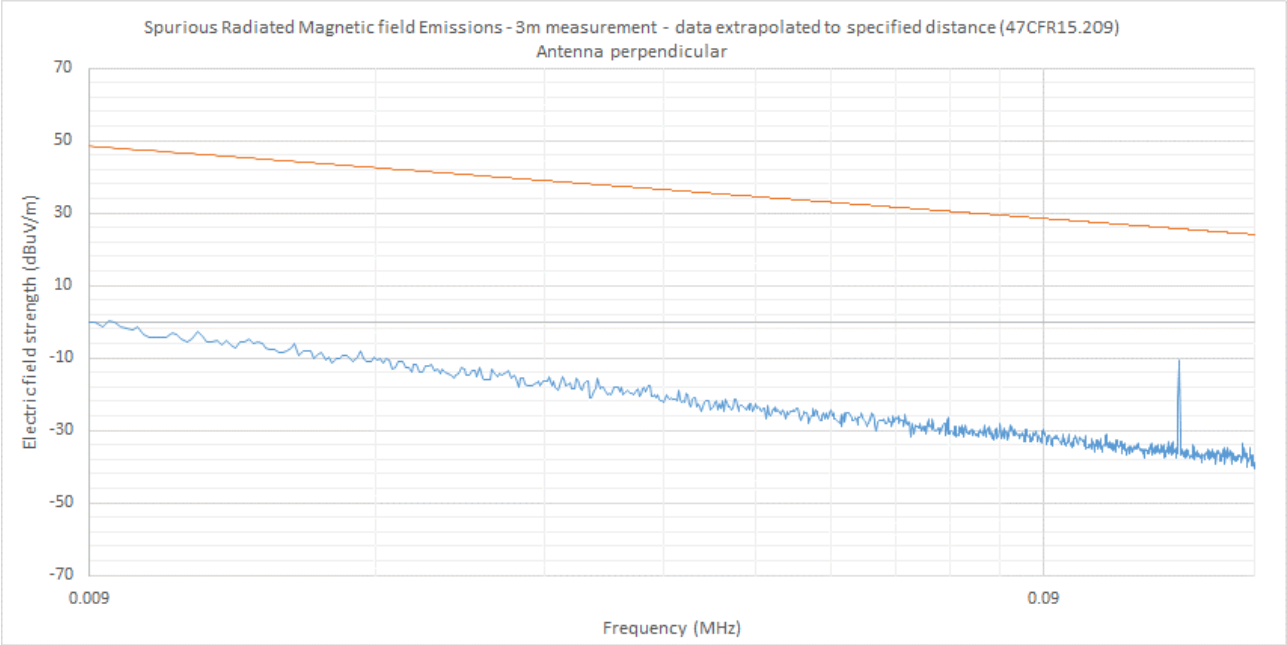

Figure 8: Magnetic field emissions Plot, 9kHz to 150kHz Perpendicular – EUT position 1

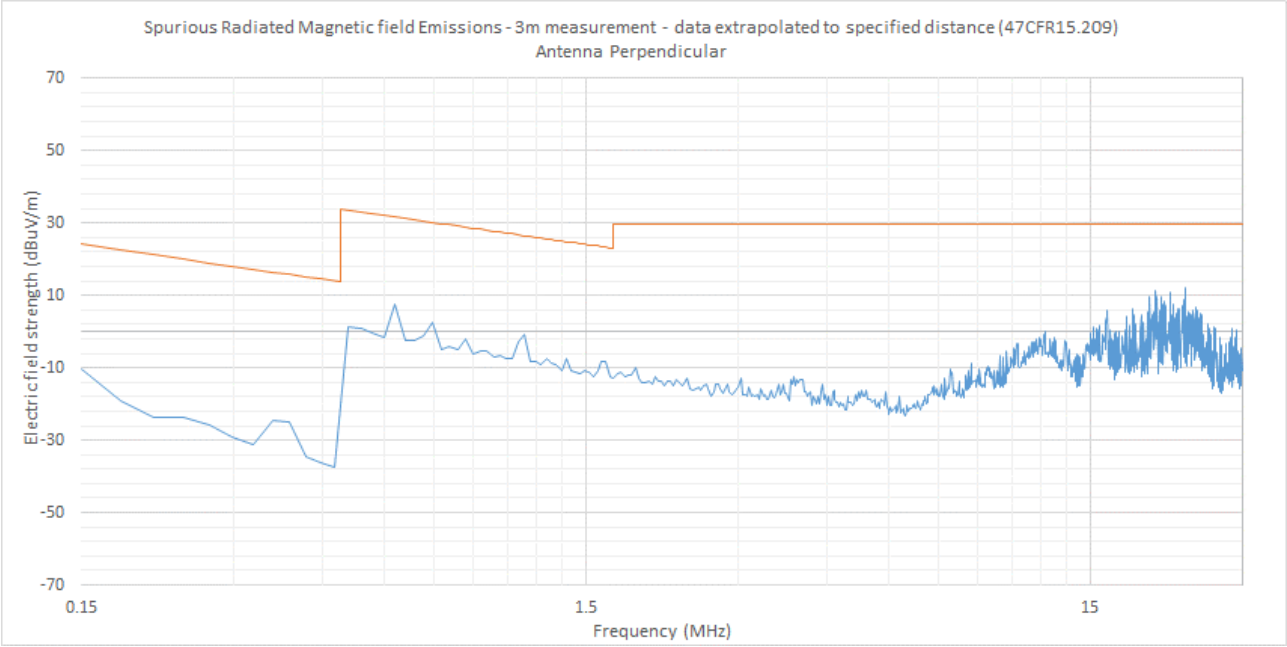

Figure 9: Magnetic field emissions Plot, 150kHz to 30MHz Perpendicular – EUT Position 1

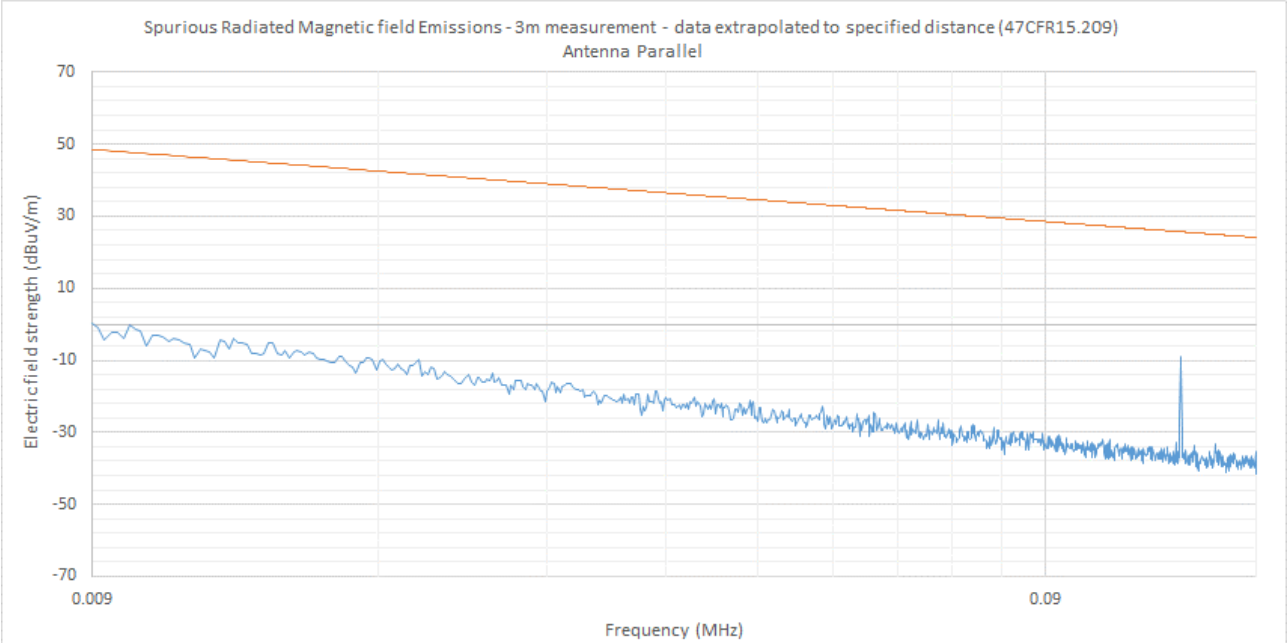

Figure 10: Magnetic field emissions Plot, 9kHz to 150kHz Parallel – EUT position 2

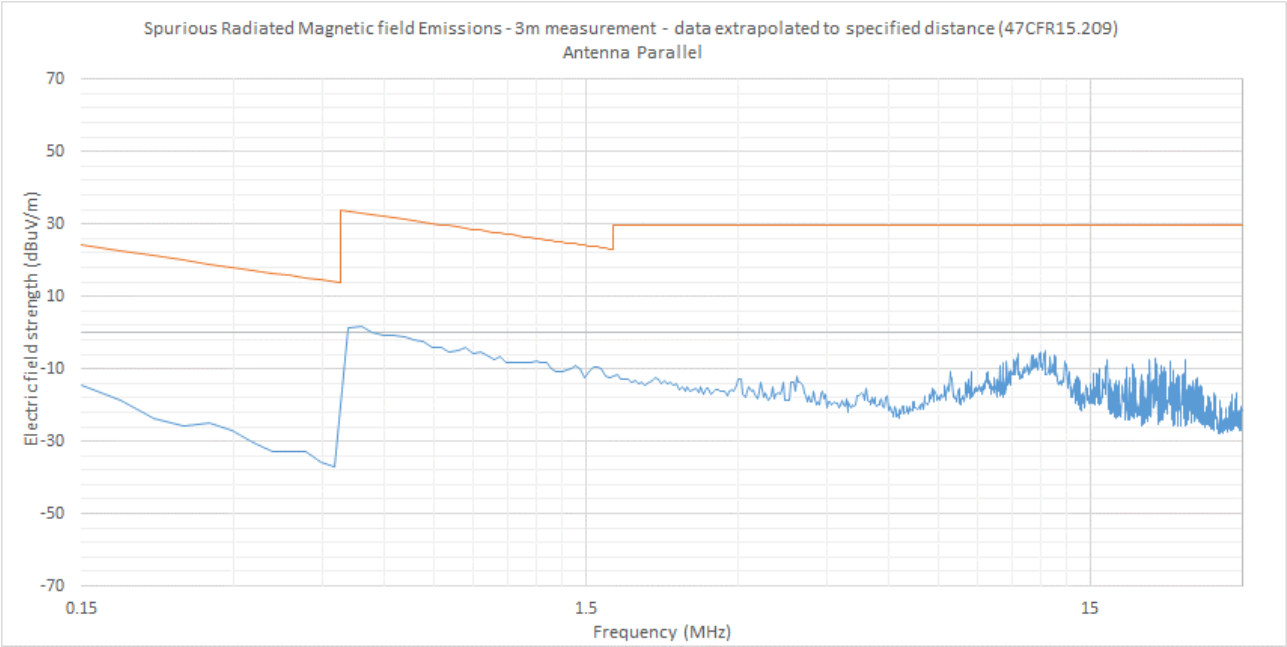

Figure 11: Magnetic field emissions Plot, 150kHz to 30MHz Parallel – EUT position 2

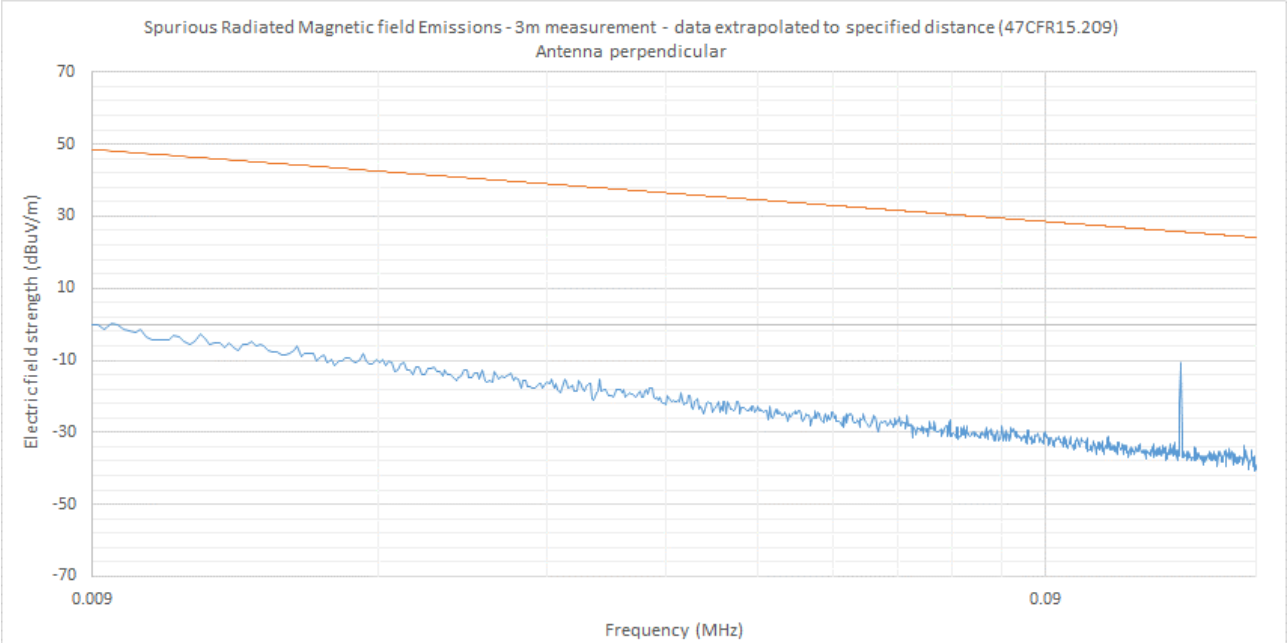

Figure 12: Magnetic field emissions Plot, 9kHz to 150kHz Perpendicular – EUT position 2

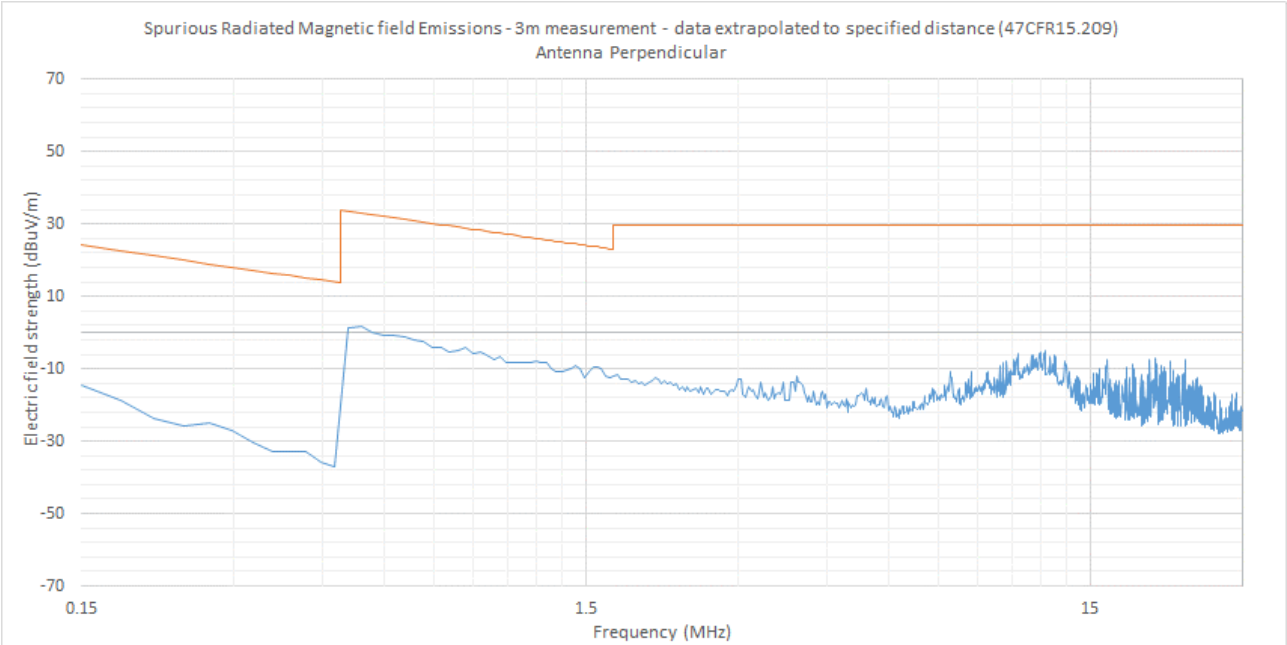

Figure 13: Magnetic field emissions Plot,150kHz – 30MHz Perpendicular – EUT position 2

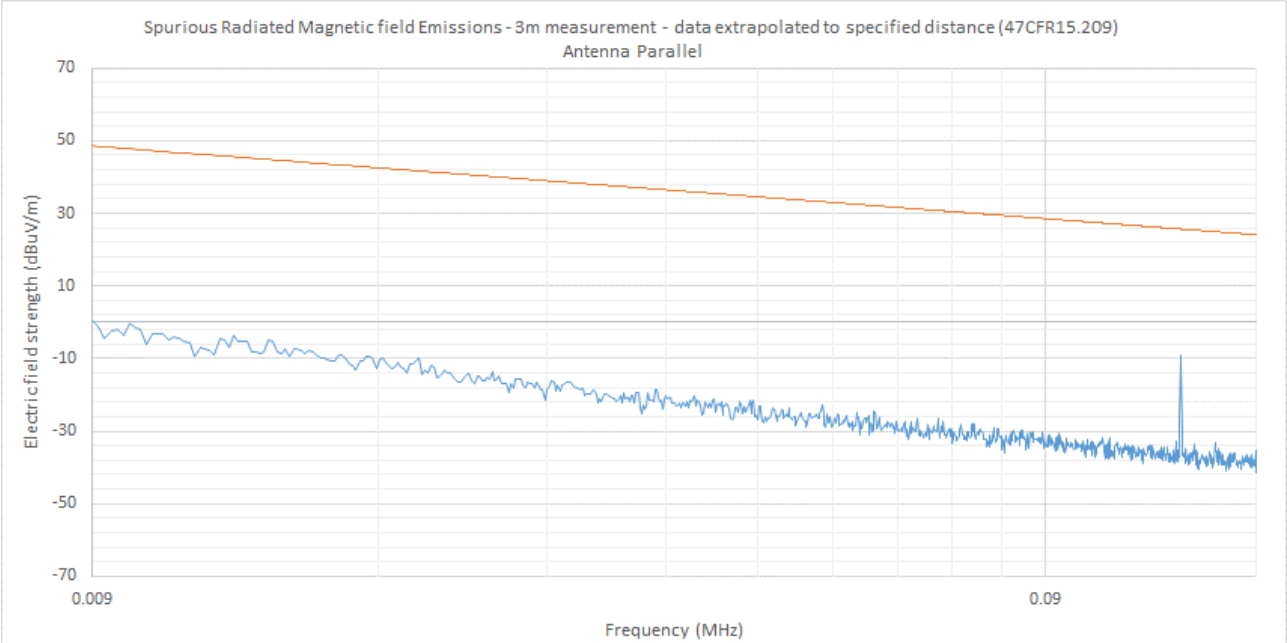

Figure 14: Magnetic field emissions Plot, 9kHz to 150kHz Parallel – EUT position 3

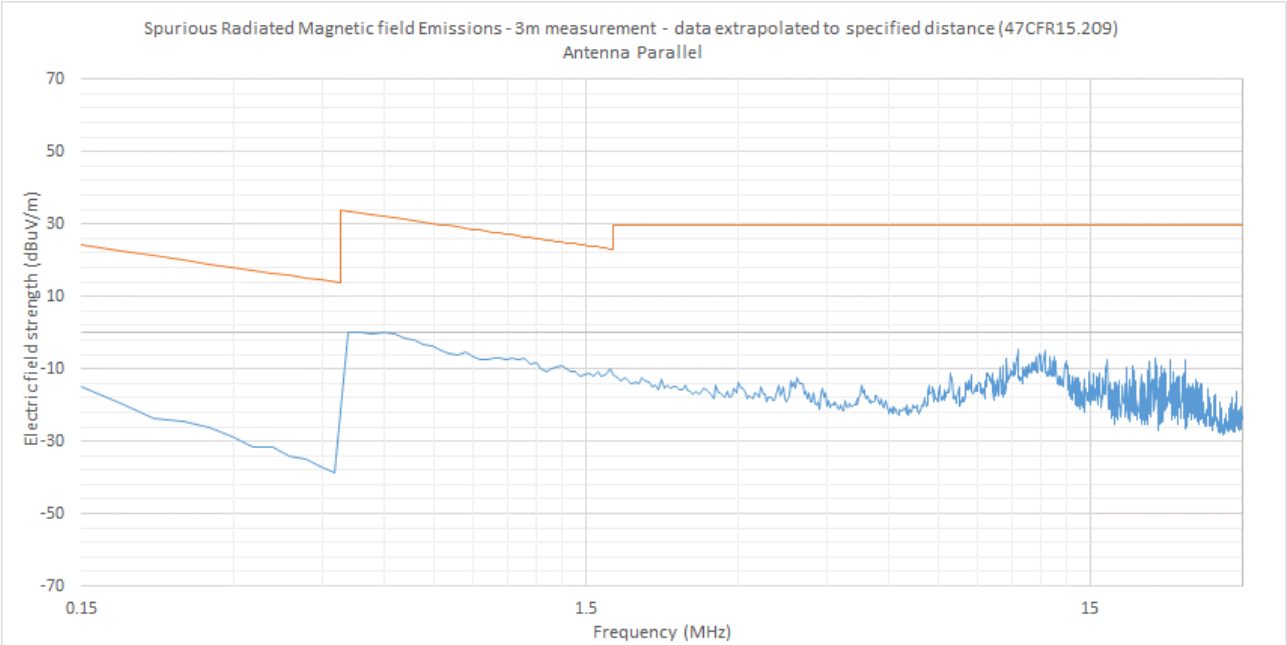

Figure 15: Magnetic field emissions Plot, 150kHz to 30MHz Parallel – EUT position 3

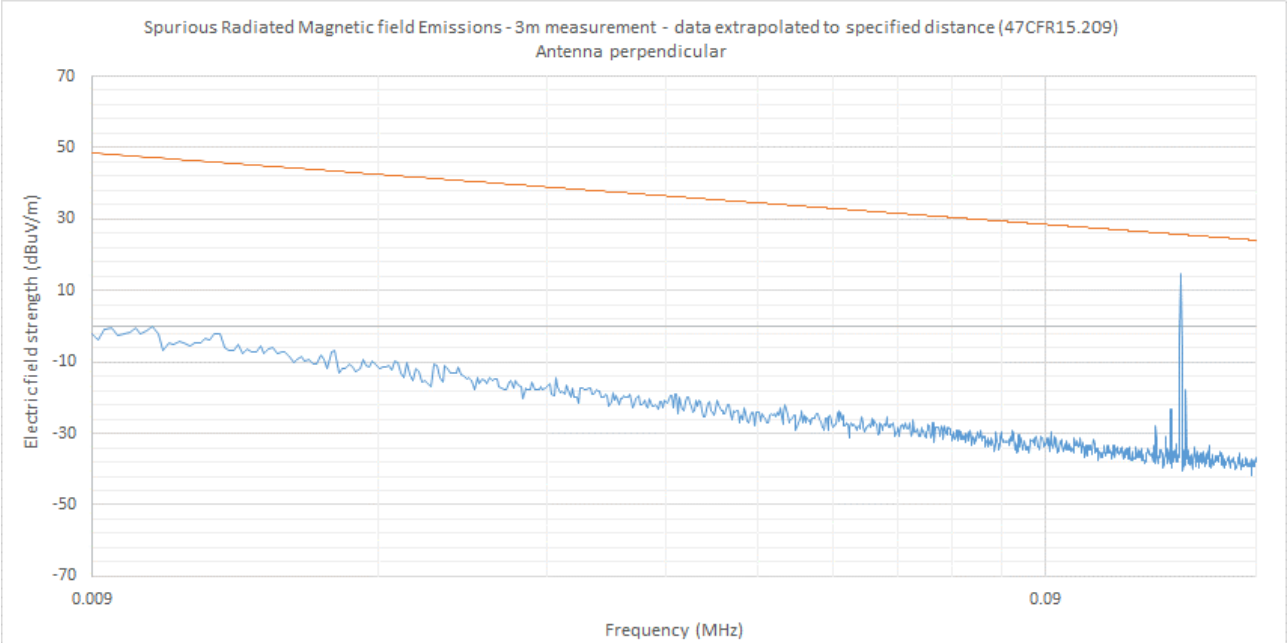

Figure 16: Magnetic field emissions Plot, 9kHz to 150kHz Perpendicular – EUT position 3

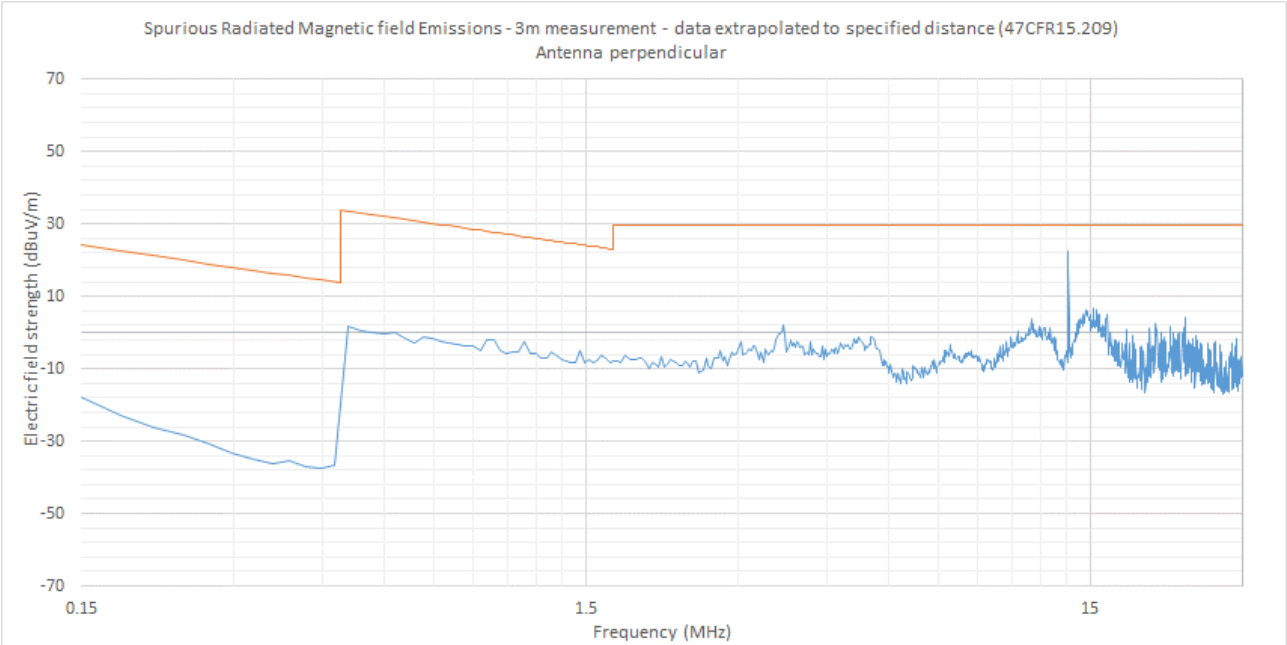

Figure 17: Magnetic field emissions Plot, 150kHz to 30MHz Perpendicular – EUT position 3

125kHz Carrier

EUT Position 1

Parallel

Frequency (MHz)	Measured Voltage (dBuV	Antenna factor (dB/m)	Cable loss (dB)	Spec dist (m)	Extrap. (dB)	Pre amp (dB)	Electric field strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
0.125	63.4	64.28	0	300	-80	31.2	16.48	25.6	-9.12

Perpendicular:

Frequency (MHz)	Measured Voltage (dBuV	Antenna factor (dB/m)	Cable loss (dB)	Spec dist (m)	Extrap. (dB)	Pre amp (dB)	Electric field strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
0.125	36.36	64.28	0	300	-80	31.2	-10.56	25.6	-36.16

Field strength (FS) is calculated as follows:

FS (dBµV/m) = measured voltage (dBµV) + AF(dB/m) +CL (dB) +Extrapolation (dB) – pre-amplifier gain (dB)

This calculation is demonstrated in the above tables.

6.4 Radiated Emissions (30MHz to 1GHz)

6.4.1 Limits at 3m

Frequency (MHz)	Class A (dBµV/m)	Class B (dBµV/m)
	Quasi Peak	Quasi Peak
30 - 88	49.5	40.0
88 -216	53.5	43.5
216 - 960	56.4	46.0
960- 1000	59.5	54.0

Note: FCC 47 CFR Part 15 Section 15.209 specifies test limits at 3m for frequencies>30MHz

Receiver Settings

Receiver Parameters	Setting
Detector Function	Quasi Peak
Start Frequency	30MHz
Stop Frequency	1000MHz
Resolution Bandwidth	120kHz
Video Bandwidth	Auto

6.4.2 Emissions measurements

6.4.3 Date of Test

24th August 2021

6.4.4 Test Area

LAB 1 (SAC)

6.4.5 Tested by

M Render

6.4.6 Test Setup

The EUT was configured in the SAC on an 80cm high table.
The measurement was performed with an antenna to EUT separation distance of 3m.

The results were maximised in orientation 0-360 degrees and height 1-4m.

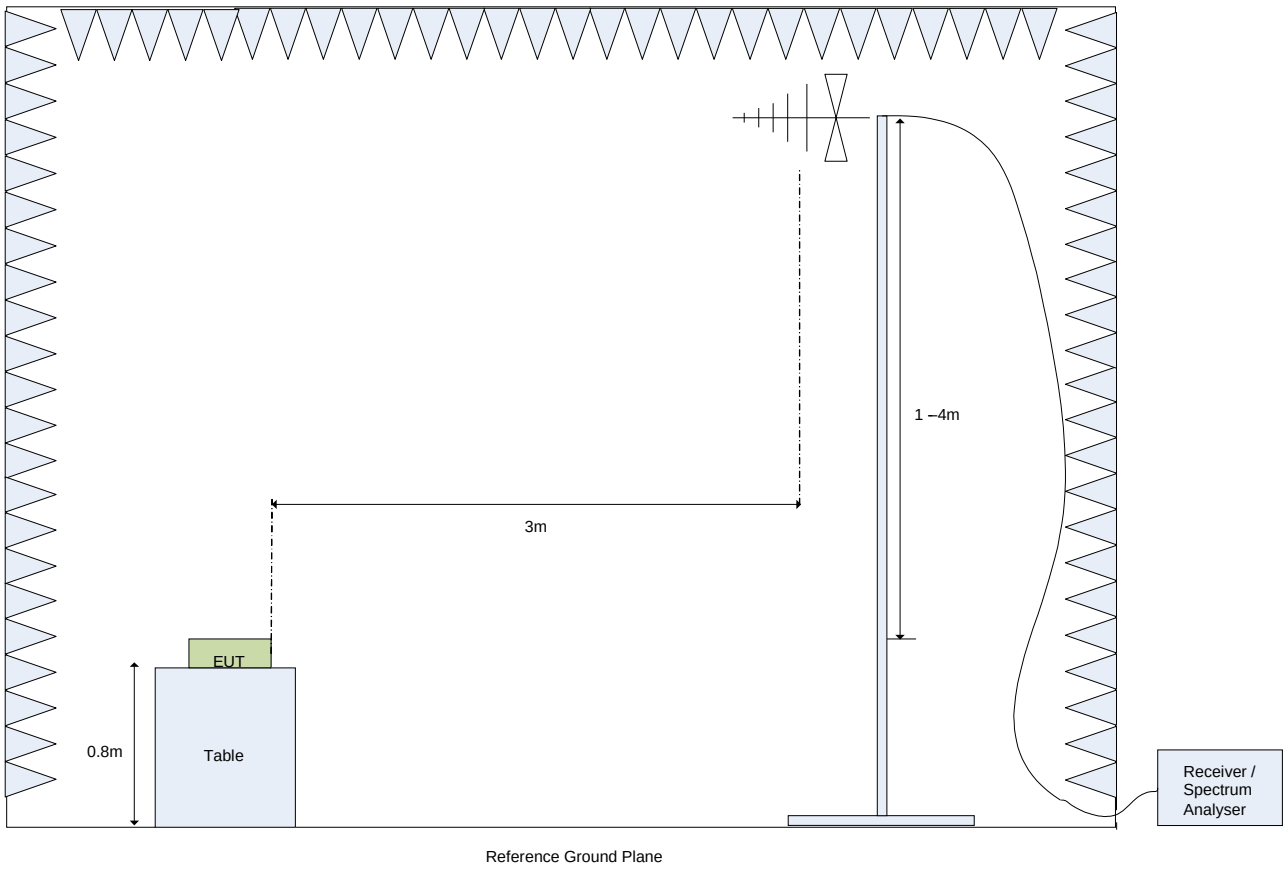

Figure 18: Test Setup for E-Field Measurements from 30MHz to 1GHz

Note 1 : With the EUT de-energized the ambient radio noise and signals met the 6dB peak detection requirement of ANSI C63.4-2014 Clause 5.1.3.

Note 2 : There were no significant environmental temperature changes during the test duration and hence it was not considered necessary to consider any variation in cable loss.

6.4.7 Electric field emissions, 30MHz to 1GHz

Three orientations of the product were tested.

EUT Positions:

1. Laid flat,display side facing ceiling
2. Stood vertical
3. Laid vertical on long edge

Spectrum analyser swept measurements were performed on each EUT position. Final measurements (Quasi-peak) were performed on one orientation.

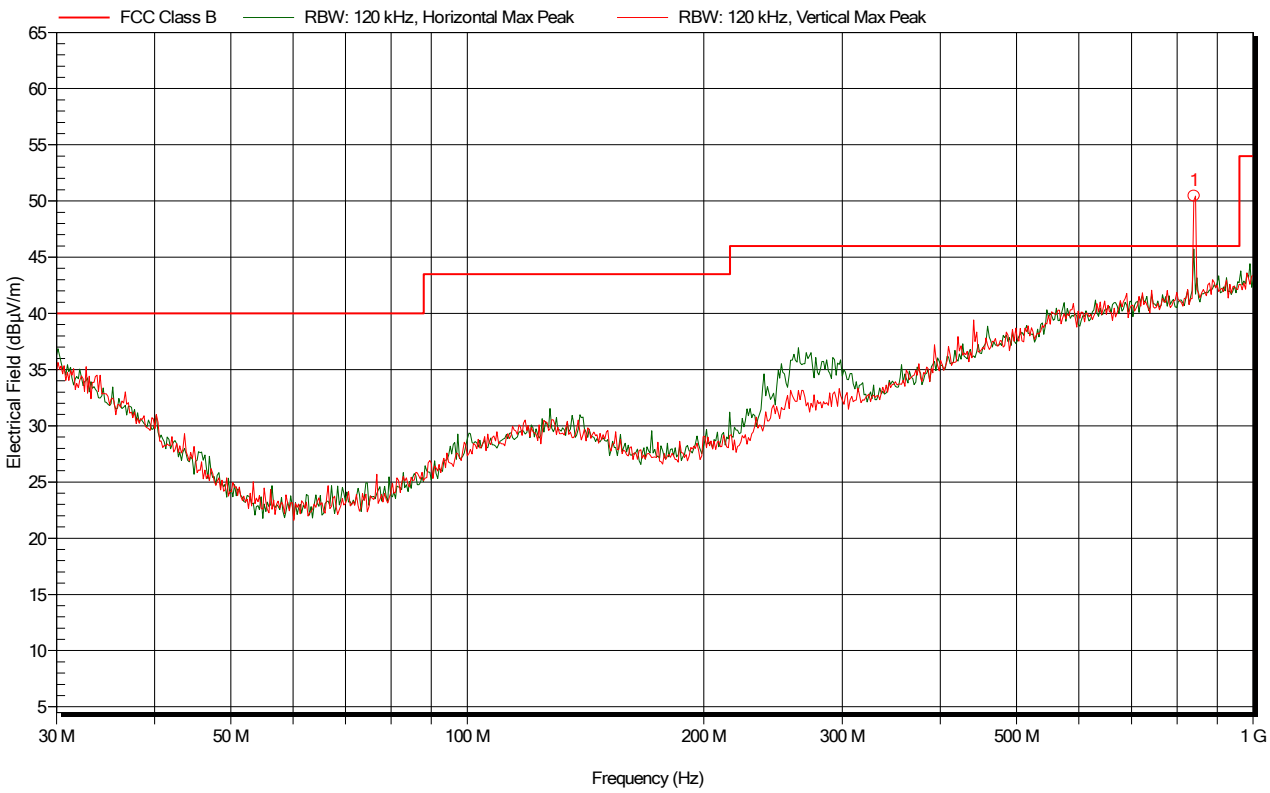

Figure 19: Electric field emissions Plot, 30MHz to 1GHz – EUT Position 1

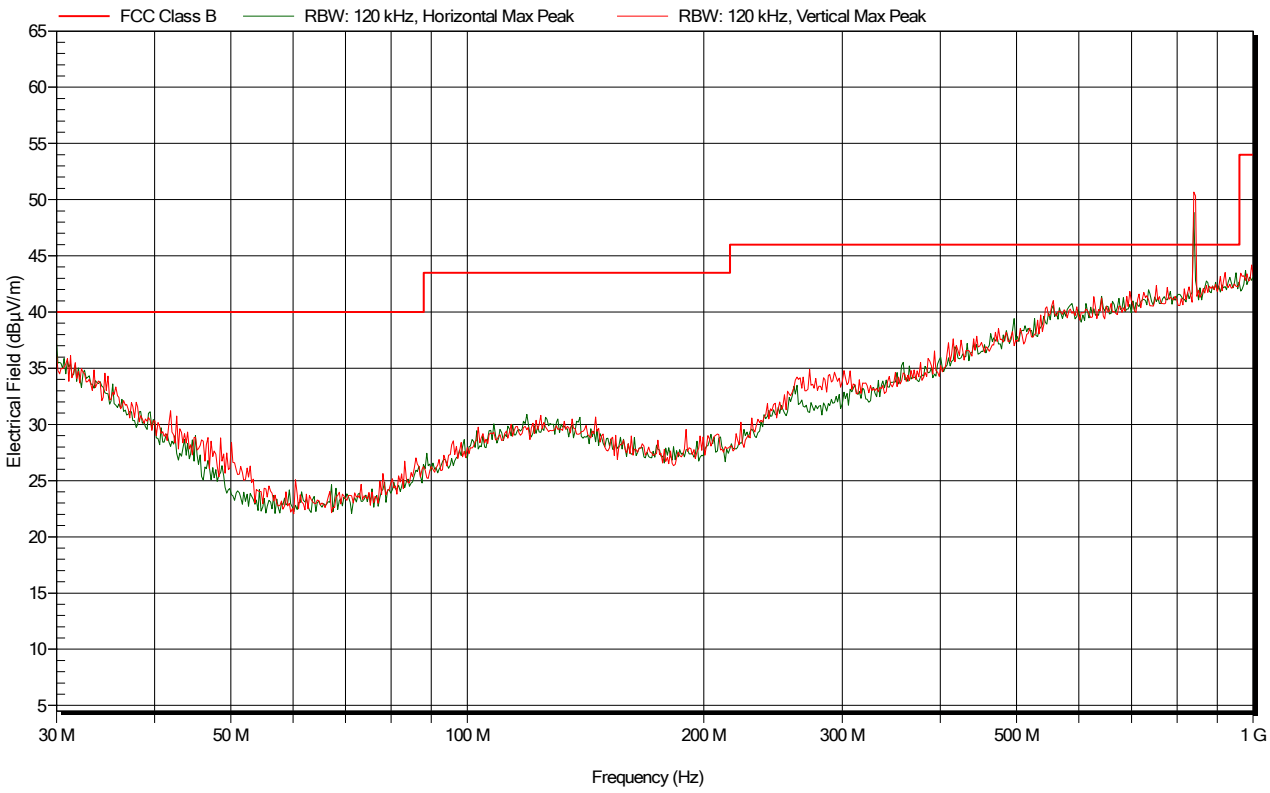

Figure 2: Electric field emissions Plot, 30MHz to 1GHz – EUT Position 2

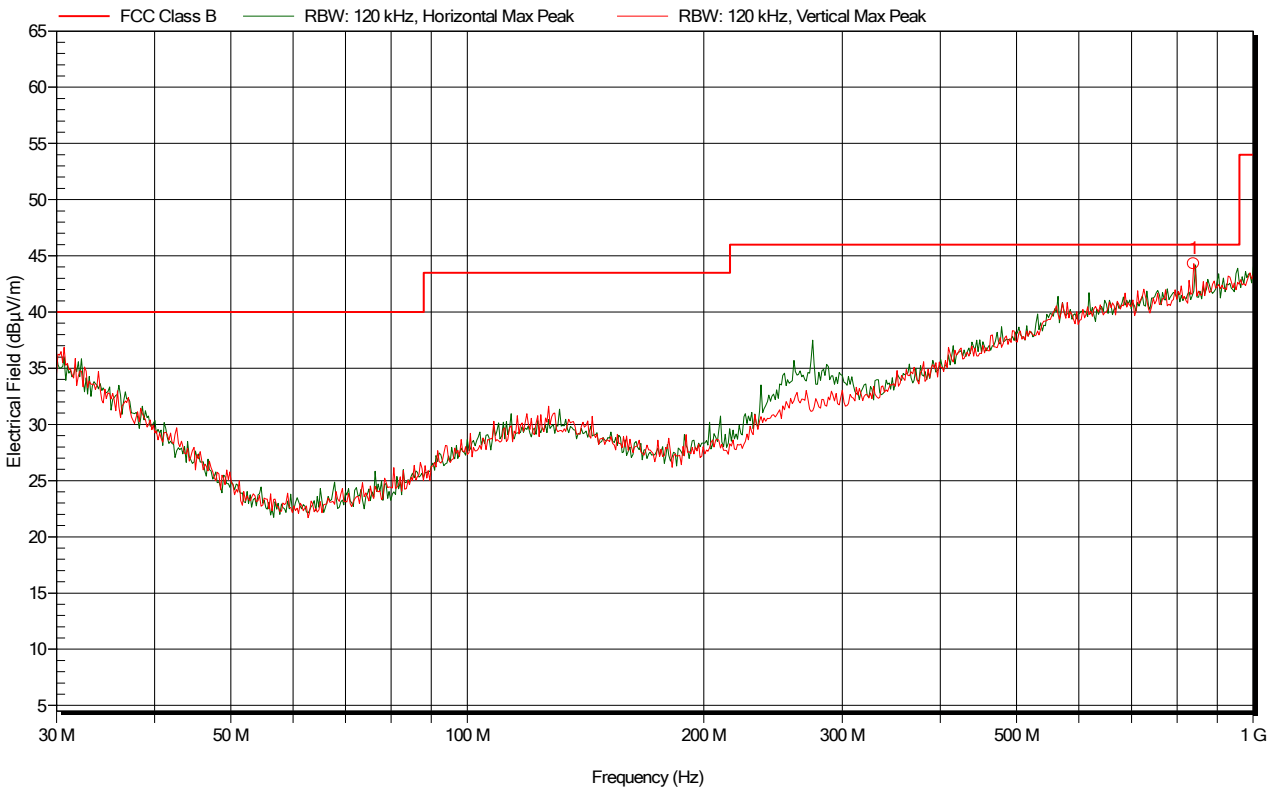

Figure 21: Electric field emissions Plot, 30MHz to 1GHz – EUT Position 3

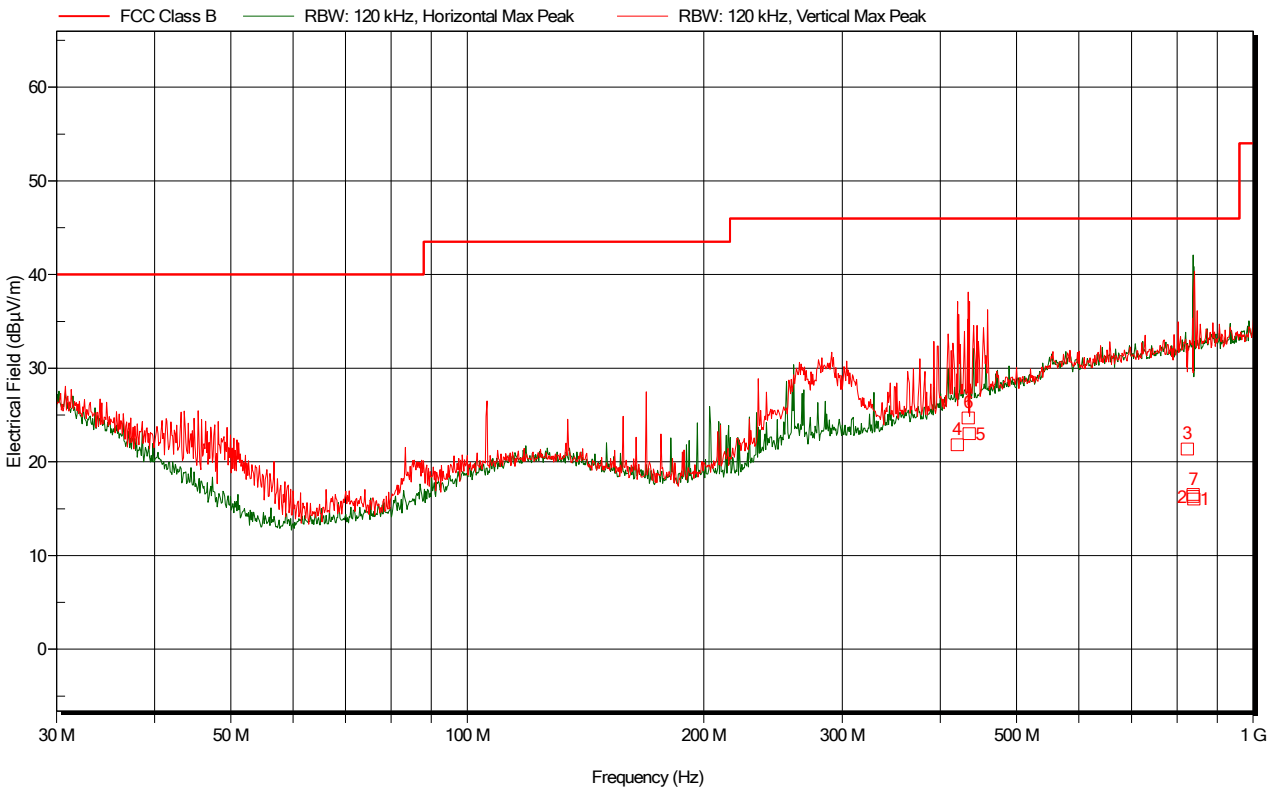

Figure 22: Final Measurement: Electric field emissions Plot, 30MHz to 1GHz – EUT Position 1

Frequency	Quasi-Peak	Quasi Peak Limit	Quasi-Peak Difference	Quasi-Peak Correction	Quasi-Peak Status	Angle	Height	Polarization
MHz	dBµV/m	dBµV/m	dB	dB		degrees	m	
840.084	16	46	-30	28.7	Pass	5	2.1	Horizontal
839.04	16.3	46	-29.7	28.8	Pass	110	1.5	Horizontal
824.22	21.4	46	-24.6	28.7	Pass	350	1.2	Vertical
420.36	21.8	46	-24.2	24.4	Pass	140	1.4	Vertical
435.288	23	46	-23	24.5	Pass	125	1.3	Vertical
433.98	24.7	46	-21.3	24.5	Pass	115	1.3	Vertical
838.5	16.5	46	-29.5	28.8	Pass	105	1.2	Vertical

Table 3: Electric Field Emissions Peaks, 30MHz to 1GHz

6.4.8 Quasi Peak correction factors

The quasi peak correction is shown in the above table. This correction figure consists of Antenna factor (AF); and Cable loss (CL).

Field strength (FS) is calculated as follows:

FS (dBµV/m) = Indicated Signal Level (dBµV) + AF (dB/m) + CL (dB)

6.4.9 Sample Data

The Quasi-Peak level at 433.98MHz

FS (dBµV/m) = 24.7dBµV/m = 1.5dBµV + 21.25dB/m + 1.97dB

Section 7 Band Edge Compliance

Specification	FCC: 47CFR15.205 – Restricted bands ISED: RSS-GEN Clause 8.12
Test standard	ANSI C63.10-2013
Clause reference	6.10

The whole emission was contained within the spurious domain, and is therefore compliant with this requirement.

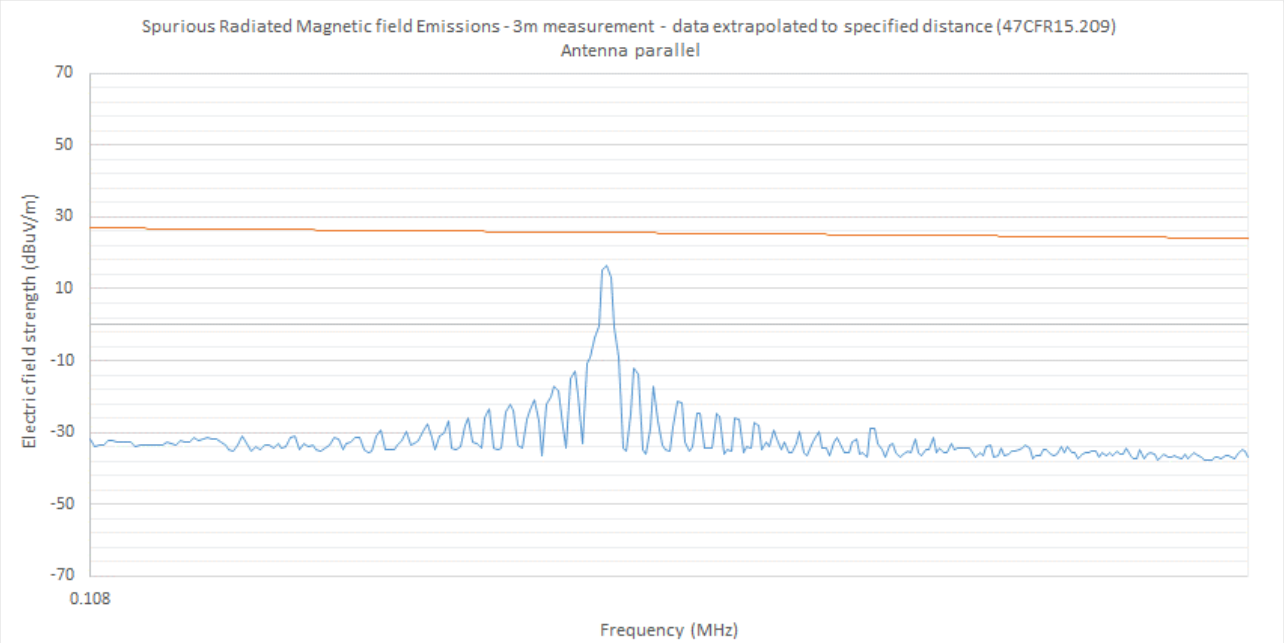

Figure 23: Measurement showing emission within the spurious domain.

Section 8 99% Occupied Bandwidth

Specification	ISED: RSS-GEN Clause 6.7
Test standard	ANSI C63.10-2013
Clause reference	6.9

The method of Clause 6.9 by measuring total power and summing the power from the centre frequency to the lower noise floor, adjusting the lower frequency until 99.5% of the half total power is measured. This gives the lower frequency point f_{low} of the 99% occupied bandwidth. The process is repeated by summing the power from centre frequency to the high frequency point $f_{high.}$

The 99% OBW is then f_{high} - f_{low}

Results

f_{high}	125.184kHz
f_{low}	124.479kHz

OBW is then f_{high} - f_{low} = 0.705kHz

Appendix A EUT Test Photos

Test set-up photographs are supplied separately.

Appendix B Test Equipment List

Conducted Emissions

Item	Serial No.	Last Calibration Date	Calibration Interval
Rohde & Schwarz ESR 26	101464	10/11/20	12 Months
Rohde & Schwarz ESR 7	101930	26/01/2021	12 Months
Rohde & Schwarz ESH3-Z5 plus calibrated mains lead (C0448)	831767/010	25/01/2021	12 Months
Cable	LF3	06/01/2021	12 Months
Cable	J7	06/01/2021	12 Months
Cable	J9	06/01/2021	12 Months
10dB Transient limiter	34718	06/01/2021	12 Months

Radiated Emissions Equipment

Item	Serial No.	Last Calibration Date	Calibration Interval
Laboratory 1 Semi-Anechoic Chamber	Lab 1	04/11/2019 (NSA) 28/01/2020 (Svswr)	36 Months
ETS Lindgren 2017B Mast (1 – 4m) with tilting mechanism	--	N/A	N/A
EMCO Loop antenna 6512	00148043	02/06/20	24 Months
Rohde & Schwarz ESR 26	101464	10/11/20	12 Months
Rohde & Schwarz ESR 7	101930	26/01/2021	12 Months
Teseq CBL6112D Bilog Antenna	49040	15/08/2018	24 Months
6dB Attenuator (For use with Bilog Antenna)	C0506B	15/08/2018	36 Months
HF 26 Cable	19148_06_13_001	5/01/2021	12 Months
HF 27 Cable	19149.03.13.004	5/01/2021	12 Months
HF17 Cable	167002-001	5/01/2021	12 Months
Schwarzbeck STLP9148 Stacked log periodic Antenna	179	17/11/20	12 Months
BONN BLMA 0118-5A Preamplifier	149759	03/02/2020	12 Months
ETS Lindgren 3116C-PA Horn Antenna with Integral Pre-amplifier	00209121	17/10/2019	36 Months
HF29 Cable (For use from 18GHz to 40GHz)	HF29	4/01/2021	12 Months
Keysight PXA EMI Receiver	MY54170531	03/04/20	20 Months