COMPLIANCE ENGINEERING IRELAND LTD

Compliance Engineering Ireland Ltd
Clonross Lane, Derrockstown,
Dunshaughlin
Co. Meath, Ireland A85 XN59
Ph +353 1 8017000 , 8256722
www.cei.ie

Project Num	24E10961-1b
Quotation	Q24-0902-1
Prepared For	Gentian Health Ltd
Company Address	Bay 89.3, Shannon Free Zone, Shannon, Co. Clare, Ireland V14 E177
Contact	Mark Butler
Contact Email	Gentian Health Ltd
Prepared By	markbutler@gentianhealth.com
Test Lab Address	Compliance Engineering Ireland
Tested By	Joy Dalayap
Test Report By	Michael Kirby
FCC Designation Number	IE0002
IC Site Registration	IE0001
Date	30th Oct 2024
EUT Description	Sensor with Bluetooth Low Energy
FCC ID	2BFPM-PERI-1
IC ID	32314-PERI01
Authorised by	**Paul Reilly**
Authorised Signature:	

This report supersedes 24E10961-1b

TEST SUMMARY

The equipment complies with the requirements according to the following standards.

FCC 15.247 Section	RSS-247 Section	TEST PARAMETERS	Test Result
15.247 (a)2	RSS-247 5.2a	6dB bandwidth	Pass
15.247 (e)	RSS-247 5.2b	Power Spectral Density	Pass
15.247 (b)3	RSS-247 5.4d	Output power Conducted	Pass
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Pass
15.205 15.209	RSS Gen 8.9 RSS Gen 8.10	Radiated Spurious Emissions	Pass
	RSS Gen 6.7	99% bandwidth	Pass

RSS 247 Issue 3 Aug 2023
RSS-Gen Issue 5 Apr 2018 + Amd1 Mar 2019 + Amd2 Feb 2021

Exhibit A – Technical Report

Table of Contents

1.0 EUT Description

Type:	Bio sensor with Bluetooth Low Energy
Type of radio:	Stand-alone
Transmitter Type:	Bluetooth Low Energy
Operating Frequency Range(s):	2.402 GHz - 2.480GHz
Number of Channels:	79
PMN	PERI
HVIN	PERI
FVIN	v1.0
Power configuration:	3.7 v DC battery
Ports:	None
Classification:	DTS
Antenna:	Integral
BLE Antenna Type :	Chip antenna
BLE Antenna Gain Max:	2.7dBi
BLE Antenna Impedance:	50 ohms
Test Standards:	15.247 RSS-247
Test Methodology:	Measurements performed according to the procedures in ANSI C63.10-2013

The is a wireless (BLE) biosensor designed to be worn on the body to detect and track symptoms of perimenopause
The EUT is powered from a battery.

Software used to control the EUT
Commands over the temporary serial connection allowed control over the channel and modulation

1.1 EUT Operation

Operating Conditions during Test:

Conducted measurements were carried out on a sample (Labelled DUT #1) where the antenna was replaced by cable and SMA. The EUT was powered from its internal battery for all tests.

The EUT was operated in test mode which allowed serial connection to a laptop via temporary connector. Commands over the serial connector allowed control over the channel and modulation.

Radiated measurements were performed on a sample (Labelled DUT #2) with standard internal antenna and powered from its internal battery.

The firmware setting for output power was 4dBm for all tests.

Environmental conditions

	Temperature	Relative Humidity
Test	°C	%
Conducted Emissions	24	41
Radiated Emissions <1GHz	21	45
Radiated Emissions >1GHz	21	46

1.2 Modifications

No modifications were required in order to pass the test specifications.

1.3 Date of Test

The tests were carried out on 28th 29th Mar 2nd 3rd 4th and 9th Apr 2024.

1.4 Description of Test modes

Channel	Freq MHz
Low	2402
Mid	2440
High	2480

All tests were performed with the EUT on the low mid and high channels.

2 Emissions Measurements

2.1 Conducted Emissions Measurements

Radio Conducted measurements were carried out on the EUT as per section 1.1 above.

All results were measured as conducted on the antenna except radiated spurious emissions and radiated carrier power.

.

2.2 Radiated Emissions Measurements

Radiated Power measurements were made at the Compliance Engineering Ireland Ltd anechoic chamber located in Dunshaughlin, Co. Meath, Ireland to determine the radio noise radiated from the EUT. A "Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.
The EUT was centred on a motorized turntable, which allows 360 degree rotation.

Emissions below 1GHz were measured using a test antenna positioned at a distance of 3 metres from the EUT (as measured from the closest point of the EUT). The radiated emissions were maximised by configuring the EUT, by rotating the EUT, and by raising and lowering the antenna from 1 to 4 metres. In this case the resolution bandwidth was 100kHz.
Emissions in the 1GHz-18GHz range were measured using a horn antenna located at 3 metres distance from the EUT in a fully anechoic chamber.
The radiated emissions were maximised by configuring the EUT and by rotating the EUT, and by raising and lowering the test antenna from 1 to 4 metres.
Emissions above 18GHz were measured using a horn antenna located at 1 metre distance from the EUT in a fully anechoic chamber. The radiated emissions were maximised by configuring the EUT and by rotating the EUT and raising the test and antenna from 1 to 4 metres.
In this case the resolution bandwidth was 1MHz and video bandwidth was 3 MHz. for peak measurements. Average measurements were performed as per ANSI 63.10 2013 Section 11.12.2.5.2)

A pre-scan was performed to determine the worst case EUT orientation for the radiated measurements.
All radiated tests were performed with the EUT in orientation O1 for Horizontal polarization measurements and with the EUT in orientation O1 for Vertical polarisation measurements.
Ref Appendix E for orientations.

3. Conducted Measurements

3.1 Bandwidth

3.1.1 6dB bandwidth

Test Method
As per Ansi 63.10 Section 11.8.2

Ansi63.10 Section **11.8.2 Option 2**
The automatic bandwidth measurement capability of an instrument may be employed using the *X* dB bandwidth mode with *X* set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 × RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

Limit for 6dB Bandwidth = 500KHz min

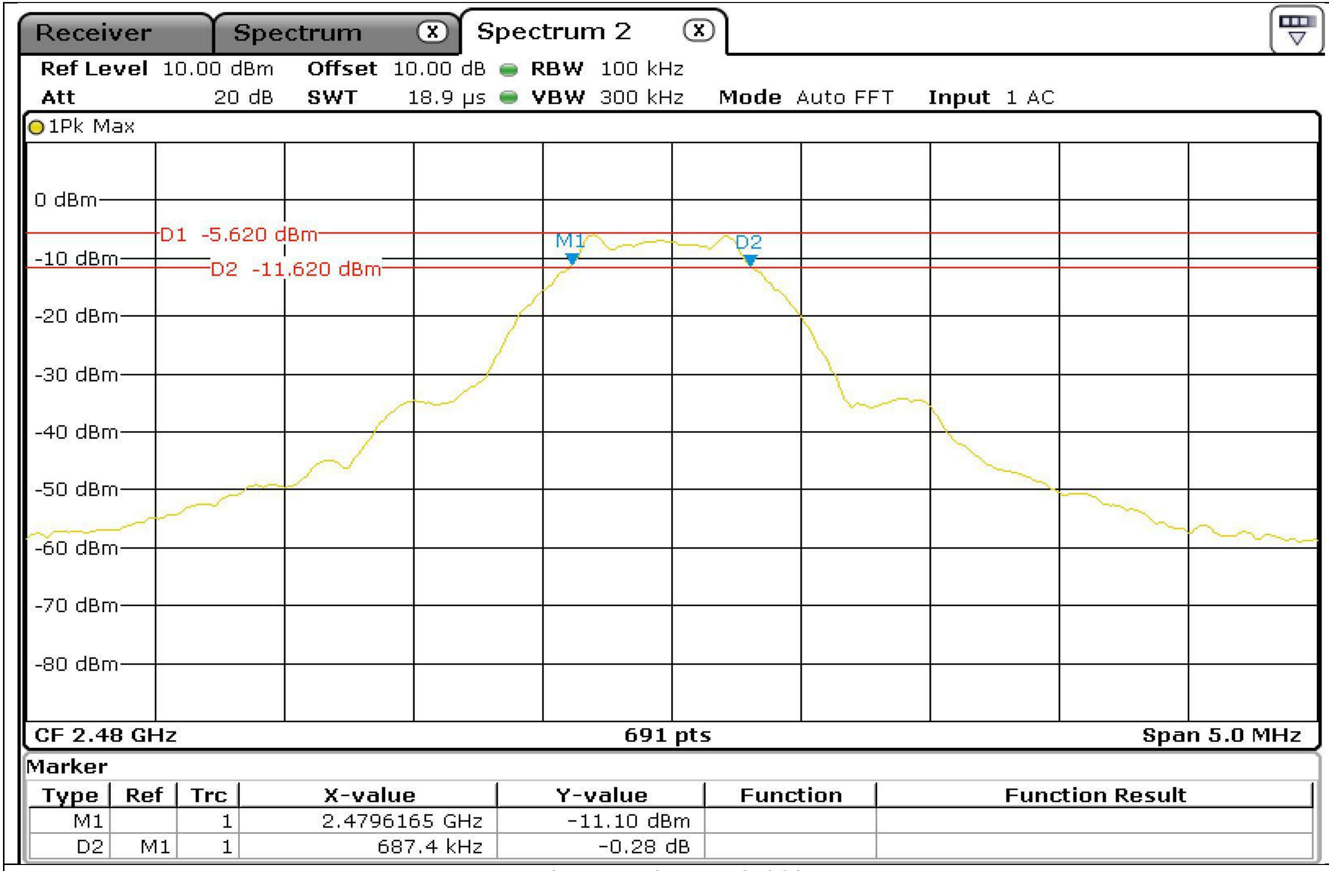


Fig 1 6dB Bandwidth

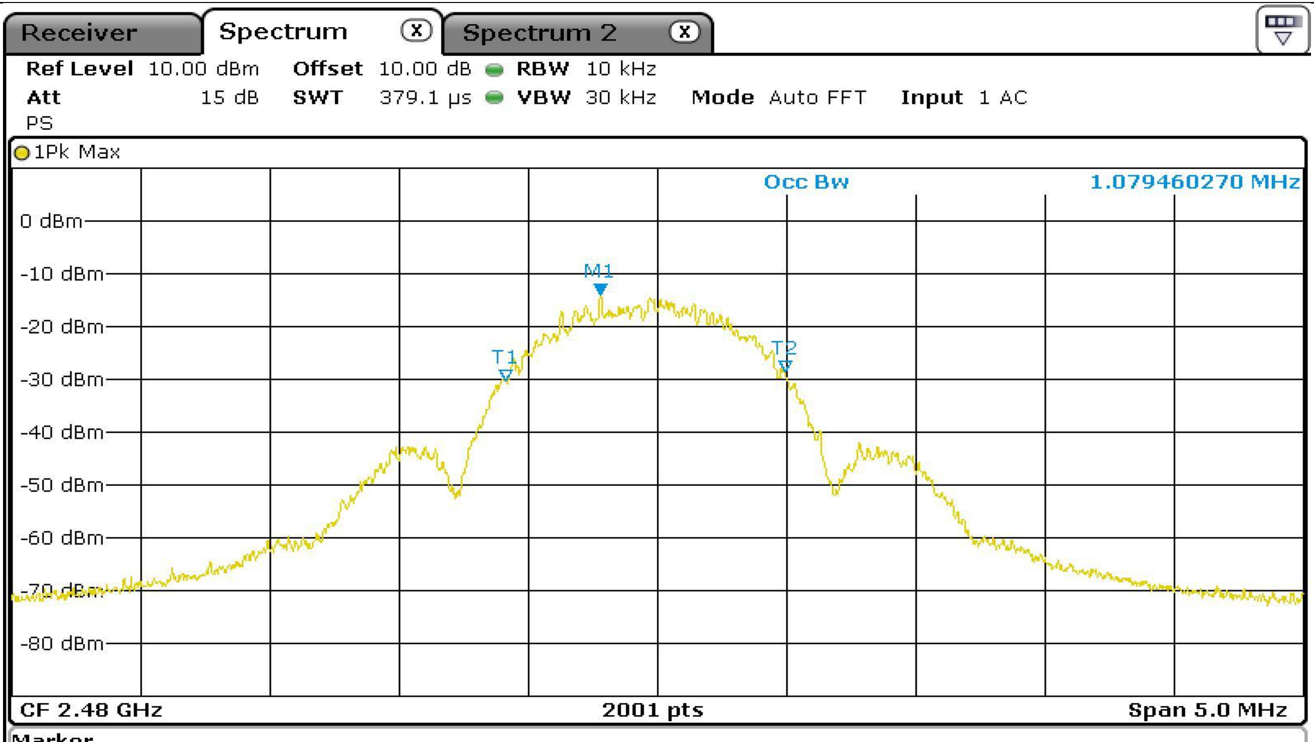
Frequency	6dB Bandwidth	Limit Min	Margin
GHz	KHz	KHz	MHz
2.402	687.4	500	187.4
2.44	687.4	500	187.4
2.48	687.4	500	187.4

Result :- Pass

3.1.2 99% bandwidth

Test Method
As per Ansi 63.10 Section 6.9.3

Ansi63.10 Section **6.9.3 Occupied bandwidth—power bandwidth (99%) measurement procedure**
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
The following procedure shall be used for measuring 99% power bandwidth:
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labelled. Tabular data may be reported in addition to the plot(s).



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4797801 GHz	-13.92 dBm		
T1		1	2.47941279 GHz	-30.23 dBm	Occ Bw	1.07946027 MHz
T2		1	2.48049225 GHz	-28.54 dBm		

Fig 2 99% Bandwidth

Frequency	99% Bandwidth
GHz	MHz
2.402	1.064
2.44	1.076
2.48	1.079

Result :- Pass

3.2 Power Spectral Density

Test Method
As per Ansi 63.10 Section 11.10.2

Ansi63.10 Section **Section 11.10.2 Method PKPSD (peak PSD)**
The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:
a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ [3 × RBW].
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

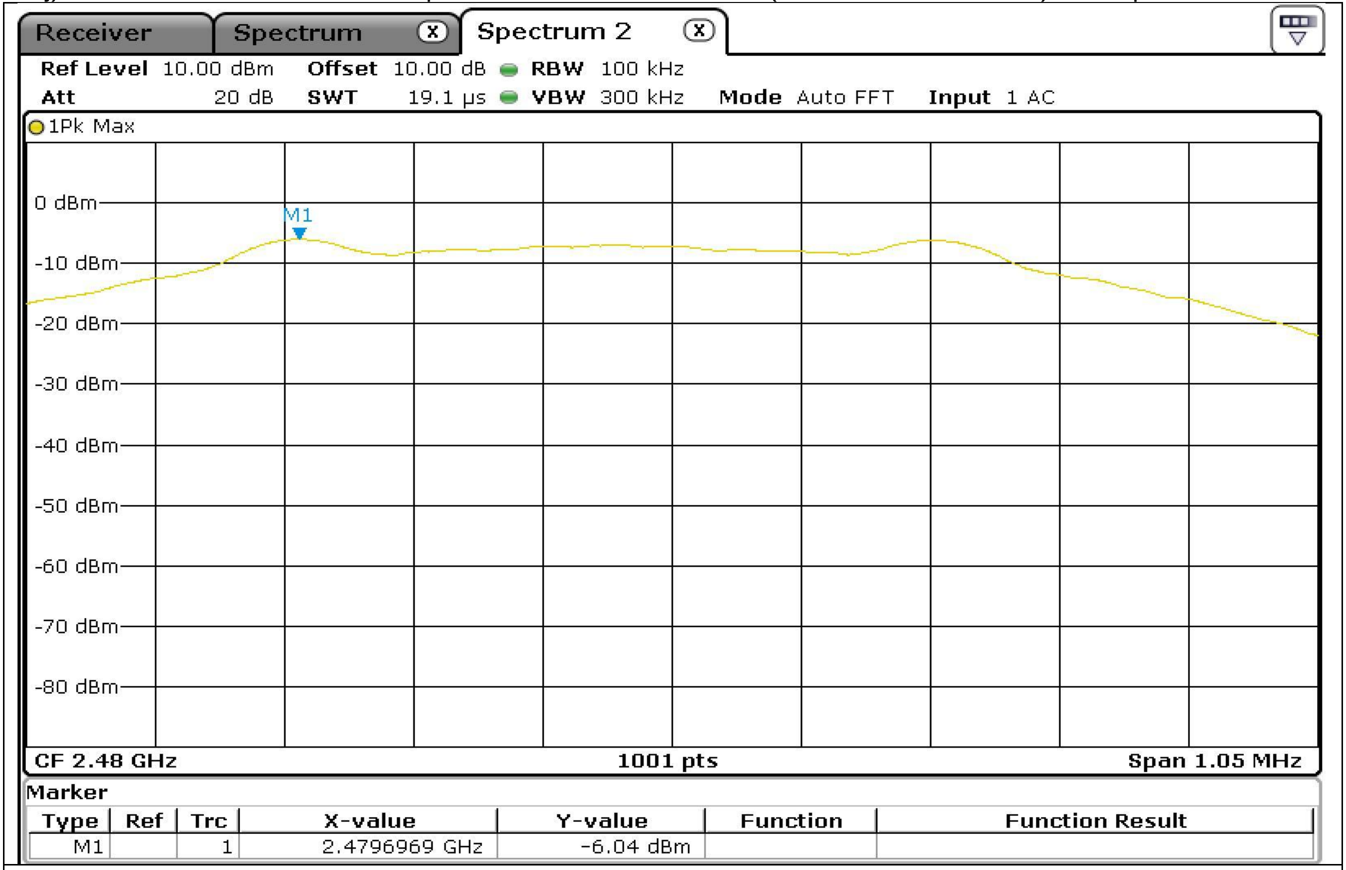


Fig 4 Power Spectral Density

Frequency	Measurement Conducted Peak	Limit	Margin
GHz	dBm	dBm	dB
2.402	-6.04	8	14.10
2.44	-6.31	8	14.31
2.48	-6.1	8	14.04

Result :- Pass

3.3 Output power Conducted

3.3.1 Test Method

As per Ansi 63.10 Section 11.9..1.1

Ansi63.10 Section **11.9.1.1 RBW ≥ DTS bandwidth**

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

3.3.2 Results

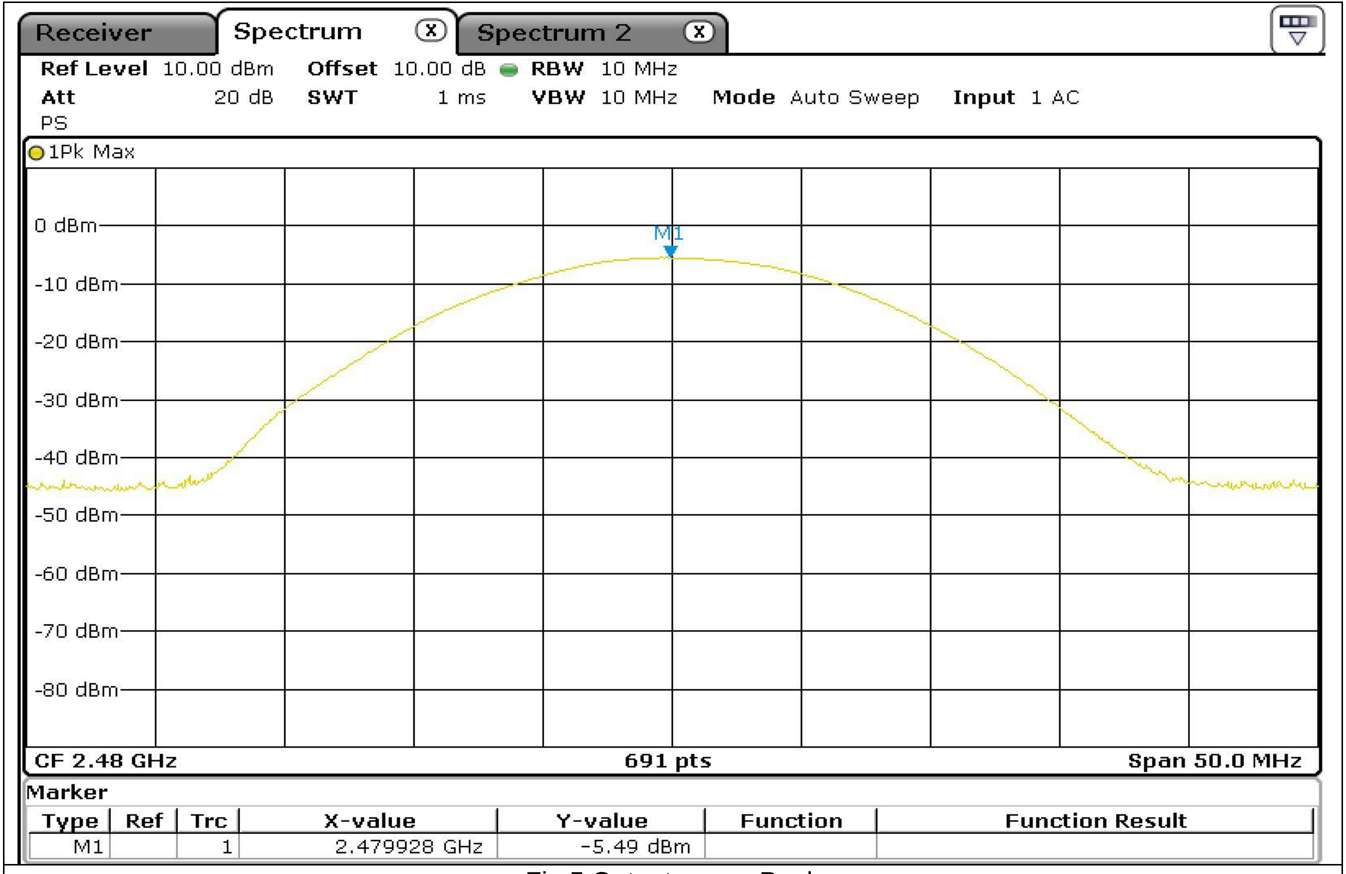


Fig 5 Output power Peak

Frequency	Measurement	Limit	Margin
GHz	dBm	dBm	dB
2.402	-5.75	30	35.75
2.44	-5.47	30	35.47
2.48	-5.49	30	35.49

Test Result :- Pass

4. Spurious Emissions Measurements

4.1 Conducted Spurious Emissions

5.1.1 Test Method
As per Ansi63.10 Section 11.11.1 and 6.10.4

Ansi63.10 Section **11.11.1 General**
Typical regulatory requirements specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions[89]:
a) If the maximum peak conducted output power procedure was used to determine compliance as described in 11.9.1, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

Ansi63.10 Section **6.10.4 Authorized-band band-edge measurements (relative method)**
These procedures are applicable for determining compliance at authorized-band band-edges where the requirements are expressed as a value relative to the in-band signal level. Procedures for determining compliance with field strength limits at or close to the band-edges are given in 6.10.6 (see also Table A.2).

4.1.2 Results

Frequency	100KHz RBW	dBc Limit Min	Margin	Result
GHz	dBm	dB	dB	P/F
2.402	-6.28	20	-	-
4.804	-46.53	20	56.18	Pass
9.608	-63.95	20	73.6	Pass
12.01	-74.95	20	84.6	Pass

Frequency	100KHz RBW	dBc Limit Min	Margin	Result
GHz	dBm	dB	dB	P/F
2.44	-5.25	20	-	-
4.88	-45.36	20	54.96	Pass
7.32	-64.11	20	73.71	Pass
9.76	-65.44	20	75.04	Pass
12.2	-74.75	20	84.35	Pass

Frequency	100KHz RBW	dBc Limit Min	Margin	Result
GHz	dBm	dB	dB	P/F
2.48	-5.21	20	-	-
4.96	-45.49	20	55.07	Pass
7.44	-62.29	20	71.87	Pass
9.92	-65.77	20	75.35	Pass
12.4	-75.79	20	85.37	Pass

Ref Appendix A for Scans

Test Result: - Pass

4.2 Radiated Spurious Emissions in Restricted bands

4.2.1 Test Method
As per Ansi63.10 Section 11.12.1 and 6.10.5

Ansi63.10 Section **11.12.1 Radiated emission measurements**
Because the typical emission requirements are specified in terms of radiated field strength levels, measurements performed to determine compliance have traditionally relied on a radiated test configuration.92 Radiated measurements remain the principal method for determining compliance to the specified requirements; however antenna-port conducted measurements are also now acceptable to determine compliance (see 11.12.2 for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in 6.3, 6.5, and 6.6 shall be followed

6.10.5 Restricted-band band-edge measurements
These procedures are applicable for determining compliance at band edges of restricted bands.
6.10.5.1 Test setup
Restricted-band band-edge tests shall be performed as radiated measurements, on a test site meeting the specifications in 5.2 at the measurement distances specified in 5.3.57
The instrumentation shall meet the requirements in 4.1.1 using the bandwidths and detectors specified in 4.1.4.2. Considering the requirements of 5.8, the antenna(s) shall be connected to the antenna ports. When performing radiated measurements, the measurement antenna(s) shall meet the specifications in 4.3. The EUT shall be connected to an antenna and operated at the highest power settings following procedures in 6.3, and the relevant procedure in 6.4, 6.5, or 6.6

Frequency	Quasi peak Level	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Quasi Peak	Average Limit	Margin	Result
MHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
977.340	-10.2	O1	Vertical	24.6	0	5.6	20.0	54.0	34.0	Pass
961.710	-16.8	O1	Horizontal	24.3	0	5.6	13.1	54.0	40.9	Pass
608.670	-10.8	O1	Vertical	19.4	0	4.1	12.7	46.0	33.3	Pass
980.490	-10.7	O1	Horizontal	24.6	0	5.6	19.5	54.0	34.5	Pass
968.340	-10.2	O1	Vertical	24.5	0	5.4	19.7	54.0	34.3	Pass

Final Field Strength Quasi Peak (dBuV/m) =Quasi peak Level (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **13.1 = -16.8 + 24.3 - 0 + 5.6**

Frequency	Reading Peak	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Peak	Average Limit	Margin for Peak v Average Limit +20dB	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
4.804	45.2	O1	Vertical	33.1	39.3	7.8	46.8	54.0	27.2	Pass
12.010	42.0	O1	Vertical	39.2	37.3	10.9	54.8	54.0	19.2	Pass
4.804	44.1	O1	Horizontal	33.1	39.3	7.8	45.7	54.0	28.3	Pass
12.010	42.4	O1	Horizontal	39.2	37.3	10.9	55.2	54.0	18.8	Pass

Final Field Strength Peak (dBuV/m) =Reading Peak (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **46.8 = 45.2 + 33.1 - 39.3 + 7.8**

Frequency	Reading Peak	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Peak	Average Limit	Margin for Peak v Average Limit +20dB	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
12.010	31.8	O1	Vertical	39.2	37.3	10.9	44.6	54.0	9.4	Pass
12.010	31.4	O1	Horizontal	39.2	37.3	10.9	44.2	54.0	9.8	Pass

Final Field Strength Average (dBuV/m) =Reading Average (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **44.6 = 31.8 + 39.2 - 37.3 + 10.9**

Frequency	Reading Peak	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Peak	Average Limit	Margin for Peak v Average Limit +20dB	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
4.880	43.7	O1	Vertical	33.2	39	7.8	45.7	54.0	28.3	Pass
7.320	44.6	O1	Vertical	36.4	40.6	10.1	50.5	54.0	23.5	Pass
12.200	41.0	O1	Vertical	39	36.8	10.8	54.0	54.0	20.0	Pass
4.880	43.2	O1	Horizontal	33.2	39	7.8	45.2	54.0	28.8	Pass
7.320	44.6	O1	Horizontal	36.4	40.6	10.1	50.5	54.0	23.5	Pass
12.200	37.2	O1	Horizontal	39	36.8	10.8	50.2	54.0	23.8	Pass

Final Field Strength Peak (dBuV/m) =Reading Peak (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **45.7 = 43.7 + 33.2 - 39 + 7.8**

Frequency	Reading Average	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Average	Average Limit	Margin	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
12.200	30.5	O1	Vertical	39	36.8	10.8	43.5	54.0	10.5	Pass

Final Field Strength Average (dBuV/m) =Reading Average (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **43.5 = 30.5 + 39 - 36.8 + 10.8**

Frequency	Reading Peak	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Peak	Average Limit	Margin for Peak v Average Limit +20dB	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
4.960	44.3	O1	Vertical	33.5	39.2	8	46.6	54.0	27.4	Pass
7.440	47.2	O1	Vertical	36.6	40.8	10.4	53.4	54.0	20.6	Pass
12.400	40.2	O1	Vertical	39	37.1	11.3	53.4	54.0	20.6	Pass
4.960	44.5	O1	Horizontal	33.5	39.2	8	46.8	54.0	27.2	Pass
7.440	45.5	O1	Horizontal	36.6	40.8	10.4	51.7	54.0	22.3	Pass
12.400	41.0	O1	Horizontal	39	37.1	11.3	54.2	54.0	19.8	Pass

Final Field Strength Peak (dBuV/m) =Reading Peak (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **46.6 = 44.3 + 33.5 - 39.2 + 8**

Frequency	Reading Average	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Average	Average Limit	Margin	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBuV/m	dB	P/F
12.400	30.1	O1	Vertical	39	37.1	11.3	43.3	54.0	10.7	Pass
12.400	30.7	O2	Horizontal	39	37.1	11.3	43.9	54.0	10.1	Pass

Final Field Strength Average (dBuV/m) =Reading Average (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **43.3 = 30.1 + 39 - 37.1 + 11.3**

Average measurements not performed where the Final Peak level is below the Average limit of 54dBuV/m.

Test Result: - Pass

4.3 Radiated Band Edge / Restricted band Measurements

Band Edge/ Restricted Band near 2.4 GHz band

Ref Scans in appendix B

Test Result: - Pass

4.4 Radiated Power at fundamental

Frequency	Reading Peak	EUT Orientation	Antenna Polarity	Antenna Factor	Preamp Gain	Cable loss	Final Field Strength Peak	Transmitted Power	Limit	Margin	Result
GHz	dBuV/m		V/H	dB	dB	dB	dBuV/m	dBm	dBm	dB	P/F
2.402	53.5	O1	Vertical	28.6	0	4.8	86.9	-8.3	36.0	44.3	Pass
2.402	53.6	O1	Horizontal	28.6	0	4.8	87.0	-8.2	36.0	44.2	Pass
2.440	54.5	O1	Vertical	28.6	0	4.8	87.9	-7.3	36.0	43.3	Pass
2.440	53.1	O1	Horizontal	28.6	0	4.8	86.5	-8.7	36.0	44.7	Pass
2.480	56.7	O1	Vertical	28.6	0	4.9	90.2	-5.0	36.0	41	Pass
2.480	55.5	O1	Horizontal	28.6	0	4.9	89.0	-6.2	36.0	42.2	Pass

Final Field Strength Peak (dBuV/m) =Reading Peak (dBuV/m) + Antenna Factor (dB)- Pre-amp Gain (dB) +Cable Loss (dB)
Calculation Example **89 = 55.5 + 28.6 - 0 + 4.9**

Note the Radiated field strength was measured at 3 metres and
the conversion formula below was used to determine the EIRP in dBm

EIRP (dBm) = E3m (dBuV/m) – 95.2

Transmitted power (dBm) = Final Field Strength Peak (dBuV/m) -95.2 dB
Calculation Example **-8.3 = 86.9 - 95.2**

Test Result Pass

5 Measurement Uncertainties

Measurement	Uncertainty
Radio Frequency	+/- $5x10^{-7}$
Maximum Frequency Deviation	+/- 1.7 %
Conducted Emissions	+/- 1 dB
Radiated Emission 30MHz-100MHz	+/- 5.3 dB
Radiated Emission 100MHz-300MHz	+/- 4.7 dB
Radiated Emission 300MHz-1GHz	+/- 3.9 dB
Radiated Emission 1GHz-40GHz	+/- 3.8 dB
Modulation bandwidth	+/- $5x10^{-7}$
Duty Cycle	+/- 5 %
Power supply	±0.1 VDC
Temperature	±0.2 °C
Frequency	±0.01 ppm

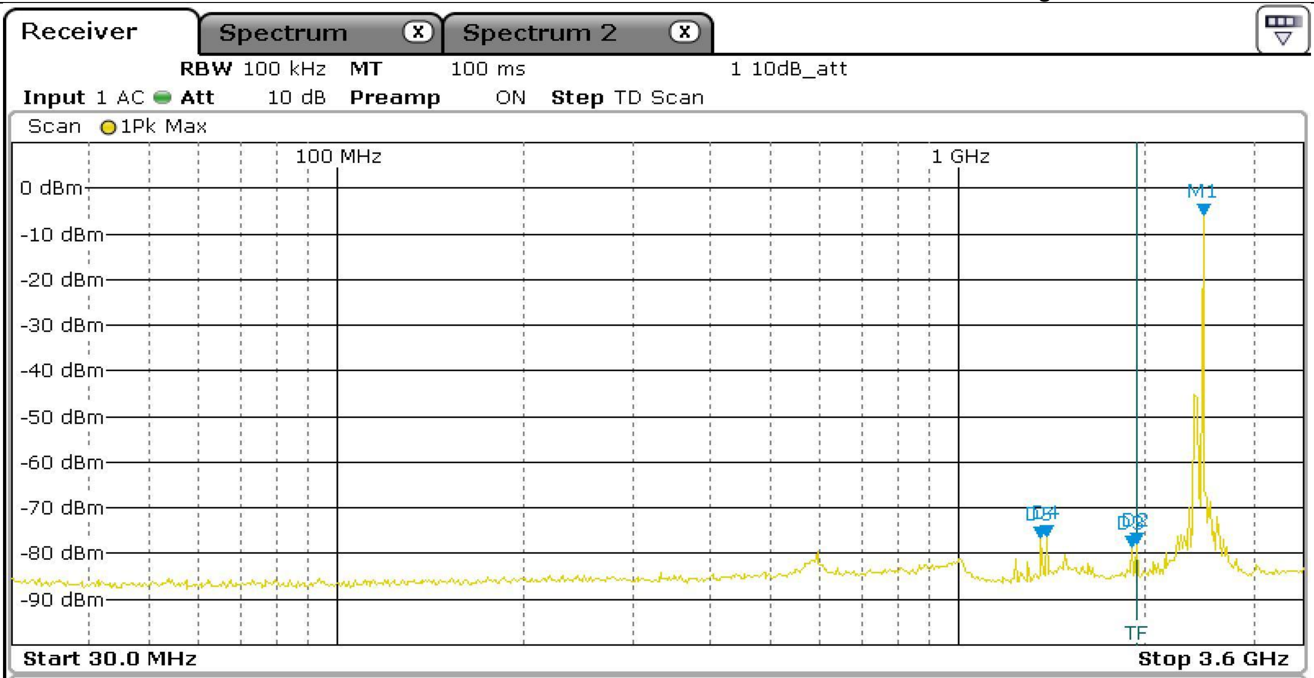
The measurement uncertainties stated were calculated with a k=2 for a confidence level of over 95% as per ETS TR100 028.

The test data can be compared directly to the specification limit to determine compliance, as the calculated measurement uncertainty meets the requirements of the applicable specification.

6 List of Test Equipment

Instrument	Manufacturer	Model	Serial Num	CEI Ref	Cal Date	Cal Interval Months
Microwave Preamplifier	Hewlett Packard	83017A	3123A00175	805	30-Sep-23	12
Spectrum Analyser 30Hz-40GHz	Rohde & Schwarz	FSP40	100053	850	11-Dec-21	36
Test Receiver 3.6GHz	Rohde & Schwarz	ESR	1316.3003k03-101625-s	869	24-May-23	36
Antenna Horn	EMCO	3115	2363	1100	22-Feb-23	36
Fully Anechoic Chamber	CEI	FAR 3M	906	906	29-Jul-22	36
Anechoic Chamber	CEI	SAR 10M	845	845	12-Sep-22	36
Antenna Biconical	Schwarzbeck	VHBB 9124	9124 667	871	06-Oct-21	36
Antenna Log Periodic	Chase	UPA6108	1072	609	9-Sep-21	36
Antenna Horn Standard Gain 18-26.5GHz	A-Info	LB-42-25-C-KF	J2021091103028	877	30-Jul-23	12
Cable 20m				1213	16-May-23	12
Cable purple Ktype 1.8m				917	30-Jul-23	12
Cable HF Ktype 1.5m				705	30-Jul-23	12

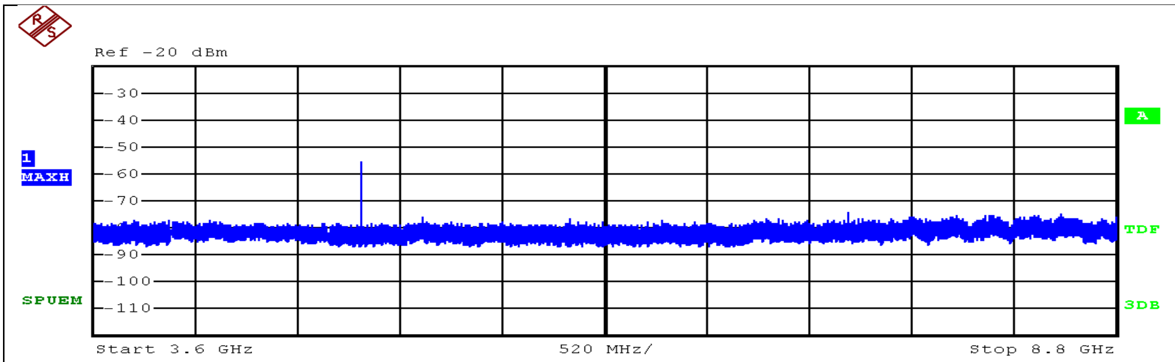
Appendix A Conducted Measurements on the Antenna Port



Marker

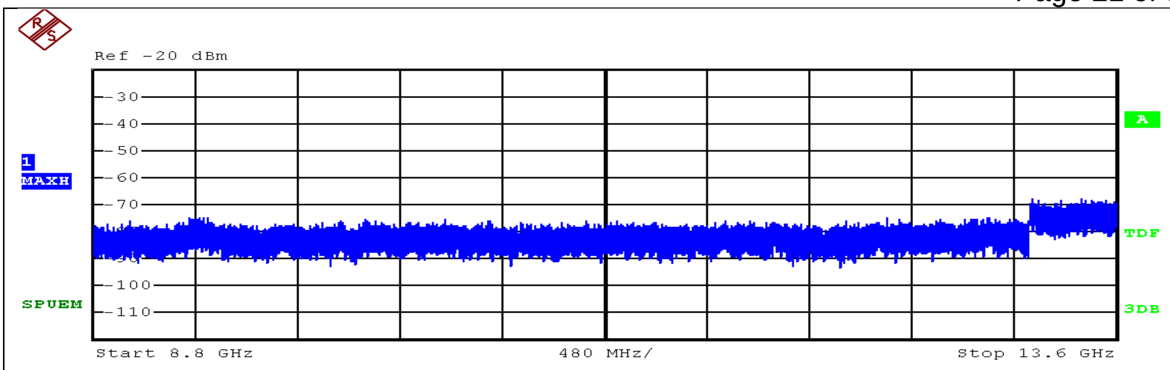
Diagr	Type	Ref	Trc	Stimulus	Response	Function	Function Result
Scan	N1		1	2.47995 GHz	-5.72 dBm		
Scan	D2	N1	1	-543.975 MHz	-72.14 dB		
Scan	D3	N1	1	-575.975 MHz	-72.97 dB		
Scan	D4	N1	1	-1.087975 GHz	-70.57 dB		
Scan	D5	N1	1	-1.119975 GHz	-70.86 dB		

Fig A1 High Channel Conducted Spurious Emissions 30MHz -3.6GHz



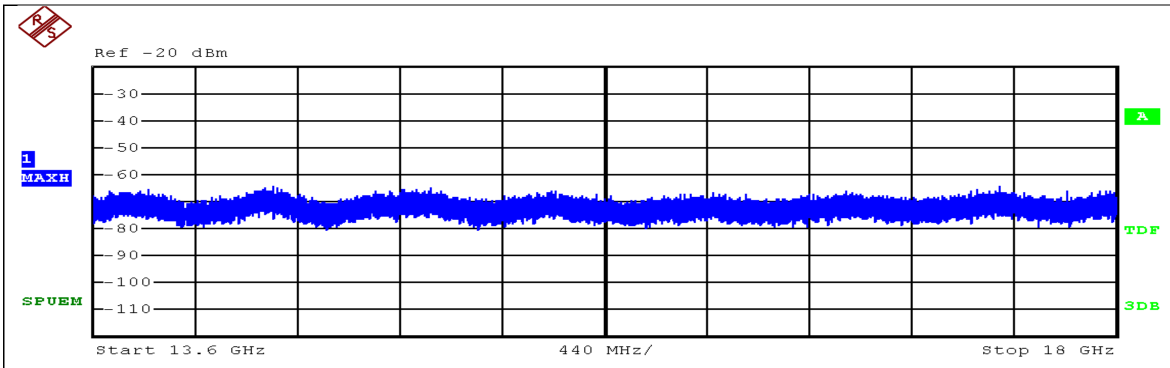
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
3.600 G	4.000 G	100.00 k	3.990900 G	-76.77	-200.00
4.000 G	4.800 G	100.00 k	4.191300 G	-76.84	-200.00
4.800 G	5.200 G	100.00 k	4.959900 G	-55.66	-200.00
5.200 G	5.600 G	100.00 k	5.278400 G	-75.92	-200.00
5.600 G	6.000 G	100.00 k	5.679000 G	-77.77	-200.00
6.000 G	6.400 G	100.00 k	6.025950 G	-76.29	-200.00
6.400 G	6.800 G	100.00 k	6.488500 G	-77.24	-200.00
6.800 G	7.200 G	100.00 k	7.018650 G	-76.30	-200.00
7.200 G	7.600 G	100.00 k	7.439900 G	-74.26	-200.00
7.600 G	8.000 G	100.00 k	7.985500 G	-75.47	-200.00
8.000 G	8.400 G	100.00 k	8.133550 G	-75.11	-200.00
8.400 G	8.800 G	100.00 k	8.518300 G	-74.71	-200.00

Fig A2 High Channel Conducted Spurious Emissions 3.6GHz-8.8GHz



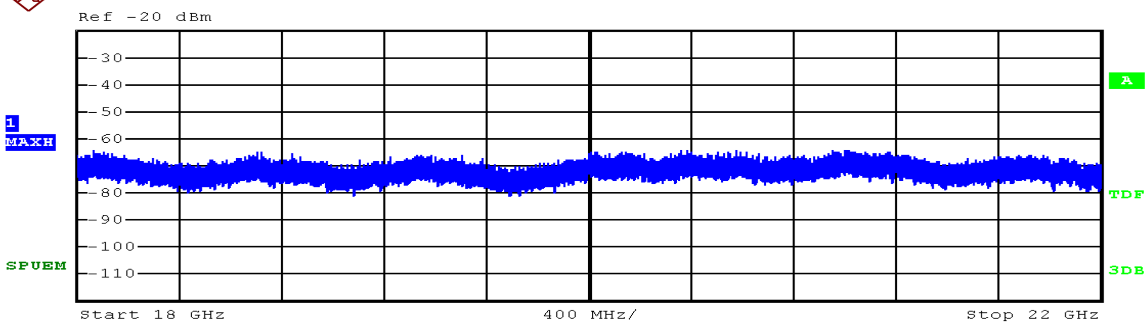
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
8.800 G	9.200 G	100.00 k	8.975300 G	-75.83	-200.00
9.200 G	9.600 G	100.00 k	9.294650 G	-74.47	-200.00
9.600 G	10.000 G	100.00 k	9.962250 G	-76.02	-200.00
10.000 G	10.400 G	100.00 k	10.074700 G	-75.22	-200.00
10.400 G	10.800 G	100.00 k	10.452450 G	-74.98	-200.00
10.800 G	11.200 G	100.00 k	11.116400 G	-75.95	-200.00
11.200 G	11.600 G	100.00 k	11.257850 G	-75.69	-200.00
11.600 G	12.000 G	100.00 k	11.769150 G	-75.71	-200.00
12.000 G	12.400 G	100.00 k	12.332400 G	-75.87	-200.00
12.400 G	12.800 G	100.00 k	12.526150 G	-74.86	-200.00
12.800 G	13.200 G	100.00 k	12.994800 G	-74.72	-200.00
13.200 G	13.600 G	100.00 k	13.210900 G	-67.51	-200.00

Fig A3 High Channel Conducted Spurious Emissions 8.8GHz- 13.6GHz



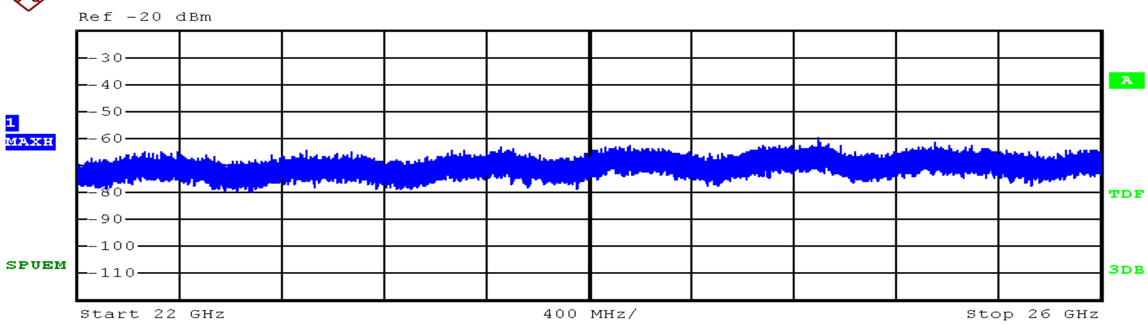
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
13.600 G	14.000 G	100.00 k	13.834800 G	-65.41	-200.00
14.000 G	14.400 G	100.00 k	14.372050 G	-64.12	-200.00
14.400 G	14.800 G	100.00 k	14.410200 G	-65.14	-200.00
14.800 G	15.200 G	100.00 k	15.055100 G	-64.94	-200.00
15.200 G	15.600 G	100.00 k	15.591100 G	-65.80	-200.00
15.600 G	16.000 G	100.00 k	15.608850 G	-66.86	-200.00
16.000 G	16.400 G	100.00 k	16.264200 G	-66.57	-200.00
16.400 G	16.800 G	100.00 k	16.409850 G	-67.06	-200.00
16.800 G	17.200 G	100.00 k	16.834100 G	-66.12	-200.00
17.200 G	17.600 G	100.00 k	17.495200 G	-64.30	-200.00
17.600 G	18.000 G	100.00 k	17.931050 G	-65.81	-200.00

Fig A4 High Channel Conducted Spurious Emissions 13.6GHz- 18GHz



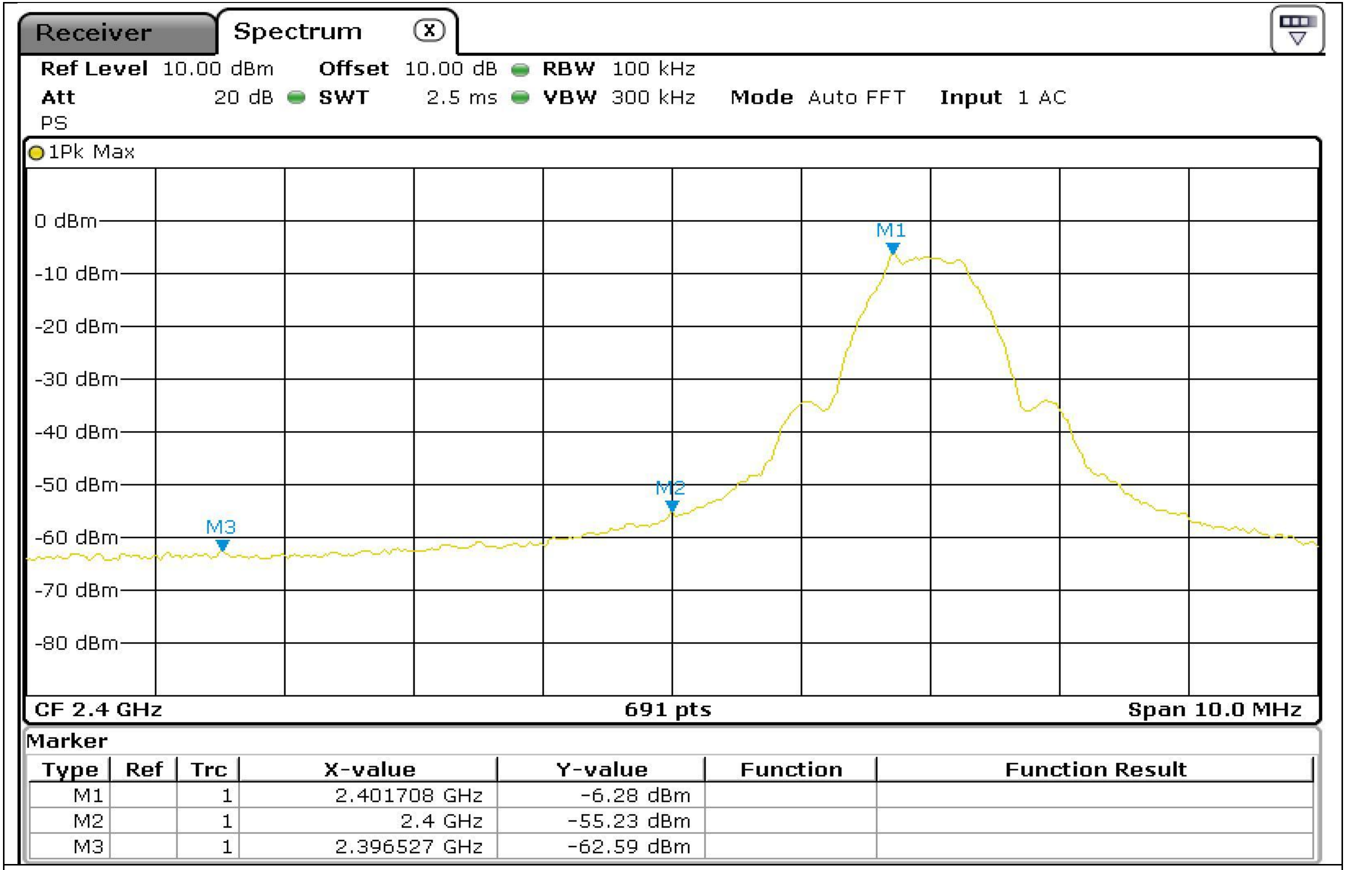
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
18.000 G	18.400 G	100.00 k	18.067000 G	-64.02	-200.00
18.400 G	18.800 G	100.00 k	18.707300 G	-64.75	-200.00
18.800 G	19.200 G	100.00 k	18.838500 G	-65.55	-200.00
19.200 G	19.600 G	100.00 k	19.501300 G	-65.76	-200.00
19.600 G	20.000 G	100.00 k	19.980200 G	-67.36	-200.00
20.000 G	20.400 G	100.00 k	20.358000 G	-63.95	-200.00
20.400 G	20.800 G	100.00 k	20.579750 G	-64.37	-200.00
20.800 G	21.200 G	100.00 k	21.009700 G	-63.88	-200.00
21.200 G	21.600 G	100.00 k	21.208000 G	-65.65	-200.00
21.600 G	22.000 G	100.00 k	21.722300 G	-65.84	-200.00

Fig A5 High Channel Conducted Spurious Emissions 18GHz- 22GHz



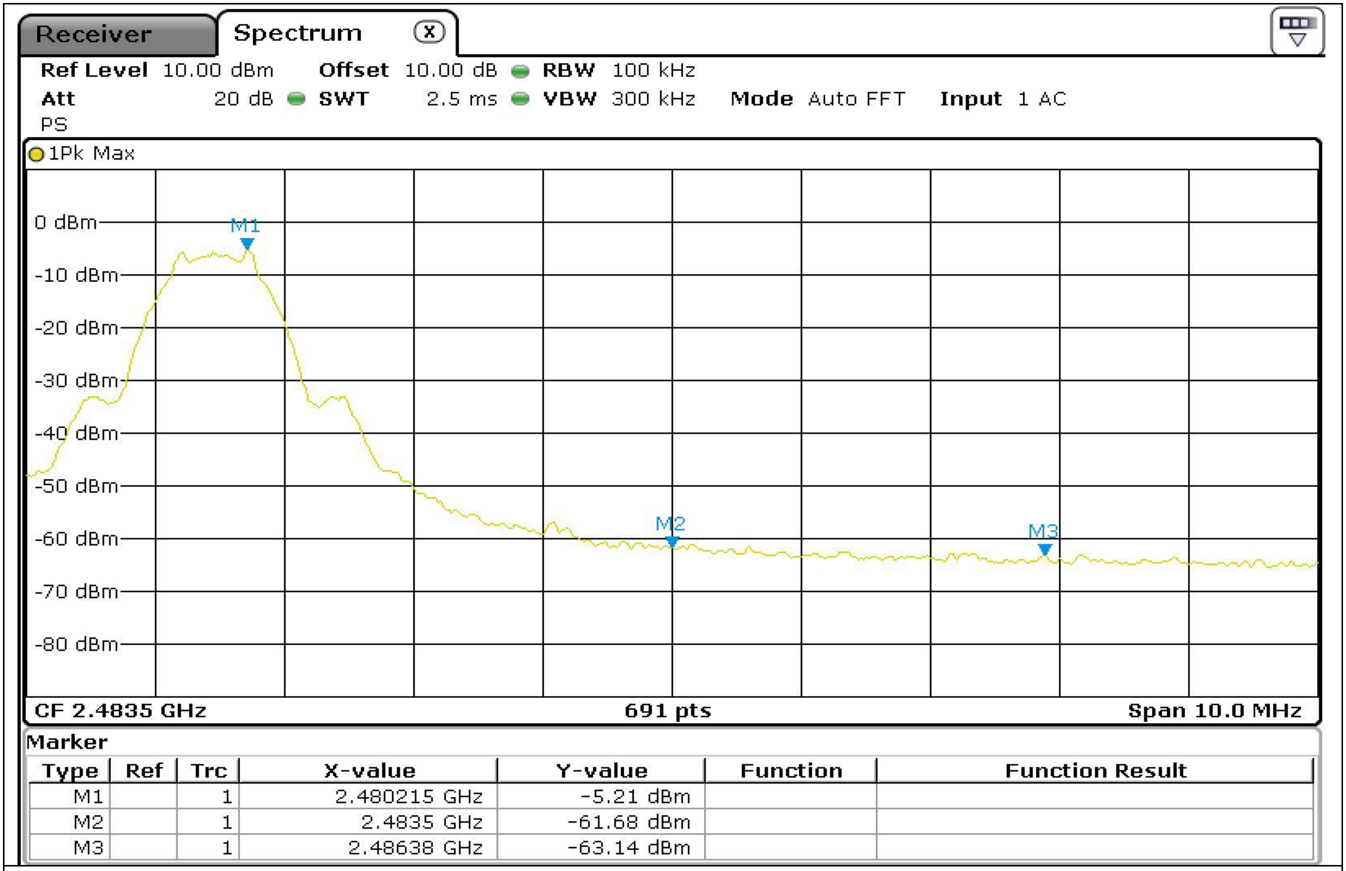
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
22.000 G	22.400 G	100.00 k	22.327500 G	-64.73	-200.00
22.400 G	22.800 G	100.00 k	22.410000 G	-65.63	-200.00
22.800 G	23.200 G	100.00 k	22.893450 G	-64.18	-200.00
23.200 G	23.600 G	100.00 k	23.512600 G	-64.05	-200.00
23.600 G	24.000 G	100.00 k	23.654350 G	-63.13	-200.00
24.000 G	24.400 G	100.00 k	24.157250 G	-62.64	-200.00
24.400 G	24.800 G	100.00 k	24.680450 G	-62.34	-200.00
24.800 G	25.200 G	100.00 k	24.895900 G	-59.61	-200.00
25.200 G	25.600 G	100.00 k	25.349350 G	-61.32	-200.00
25.600 G	26.000 G	100.00 k	25.881850 G	-63.93	-200.00

Fig A6 High Channel Conducted Spurious Emissions 22GHz- 26GHz



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401708 GHz	-6.28 dBm		
M2		1	2.4 GHz	-55.23 dBm		
M3		1	2.396527 GHz	-62.59 dBm		

Fig A7 Lower Band Edge Low Channel Conducted



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.480215 GHz	-5.21 dBm		
M2		1	2.4835 GHz	-61.68 dBm		
M3		1	2.48638 GHz	-63.14 dBm		

Fig A8 Upper band edge High Channel Conducted

Appendix B Radiated tests for Band Edges /Restricted band

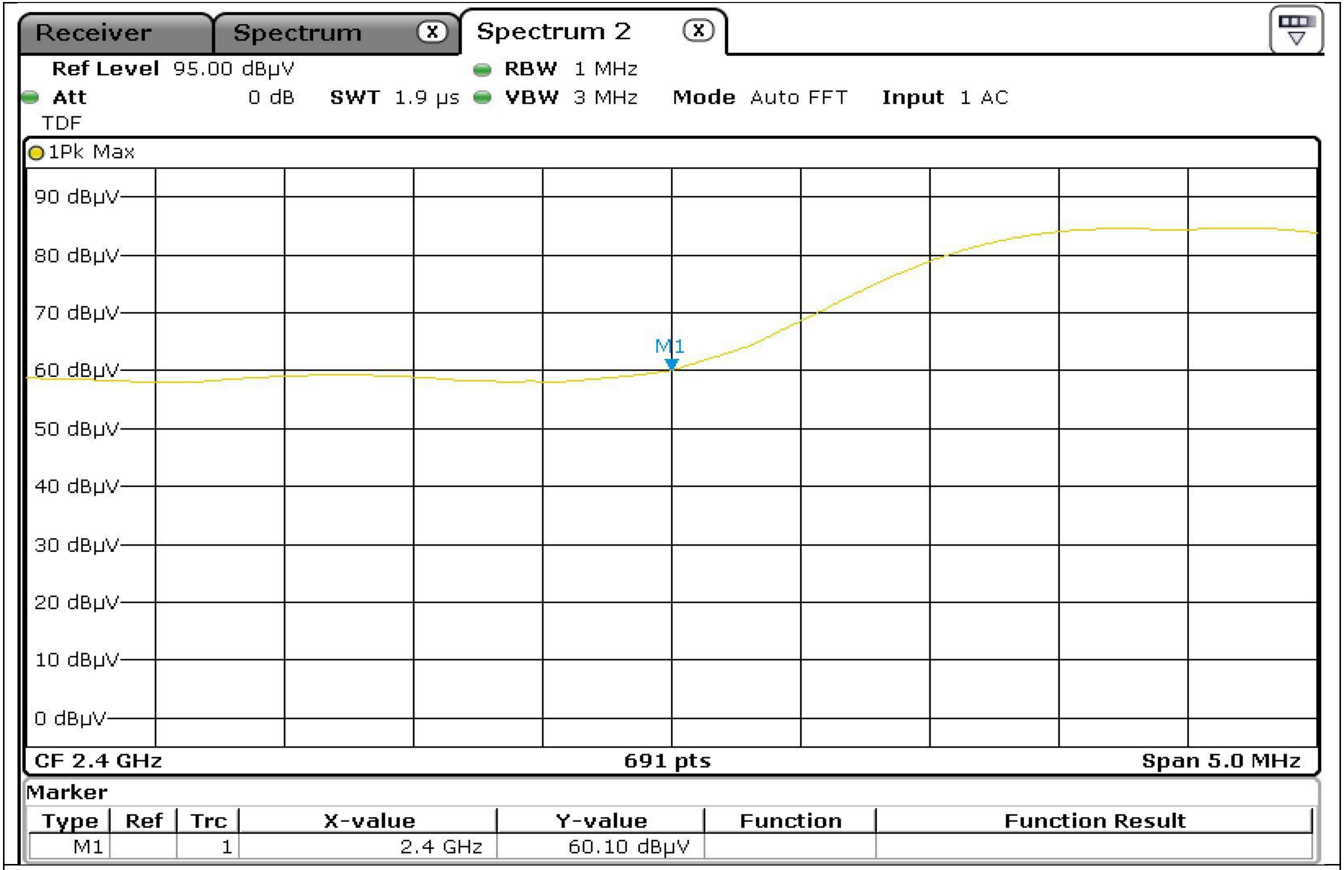


Fig B1 Low Channel Band Edge Vertical peak at 3 metres

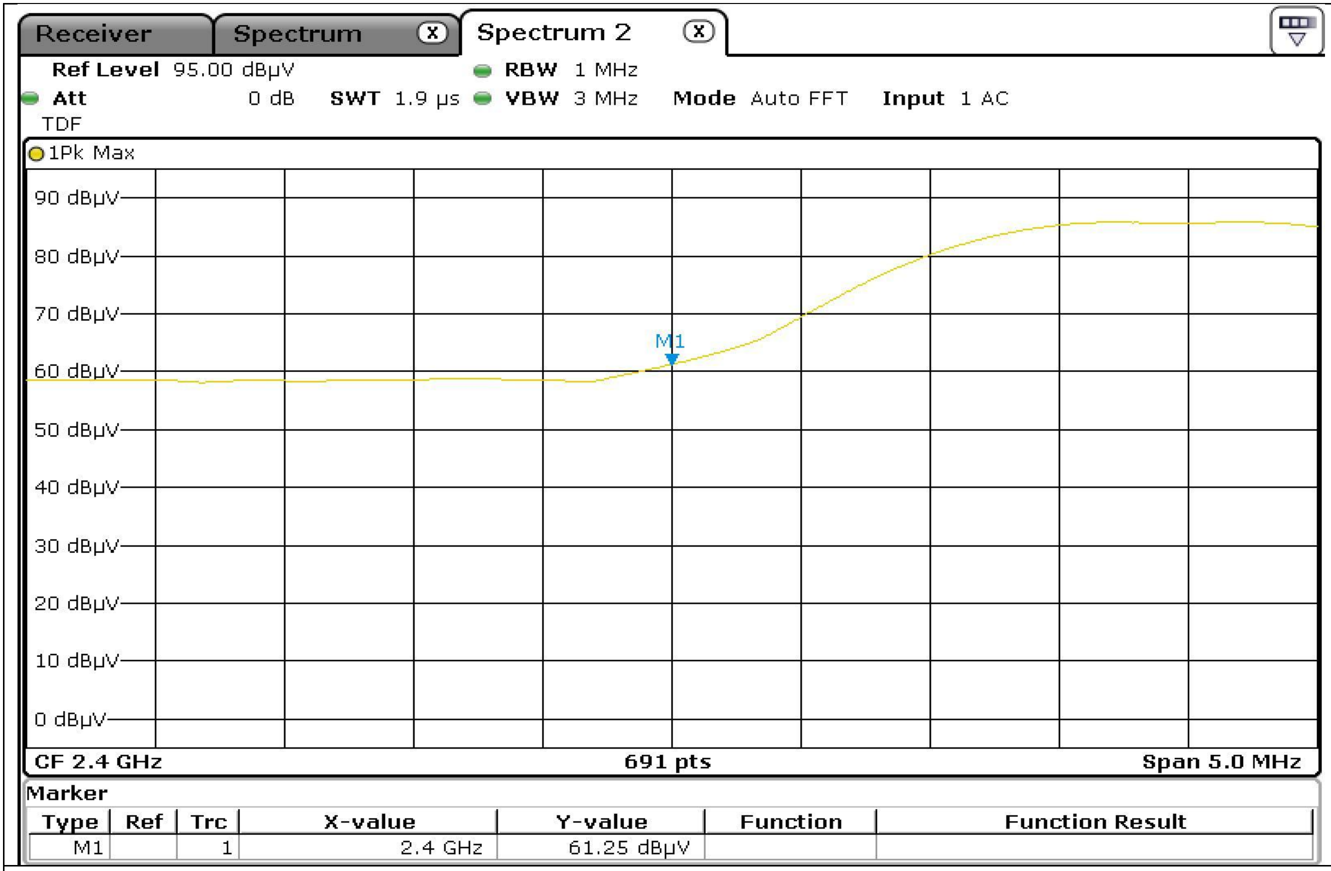


Fig B2 Low Channel Band Edge Horizontal peak at 3 metres

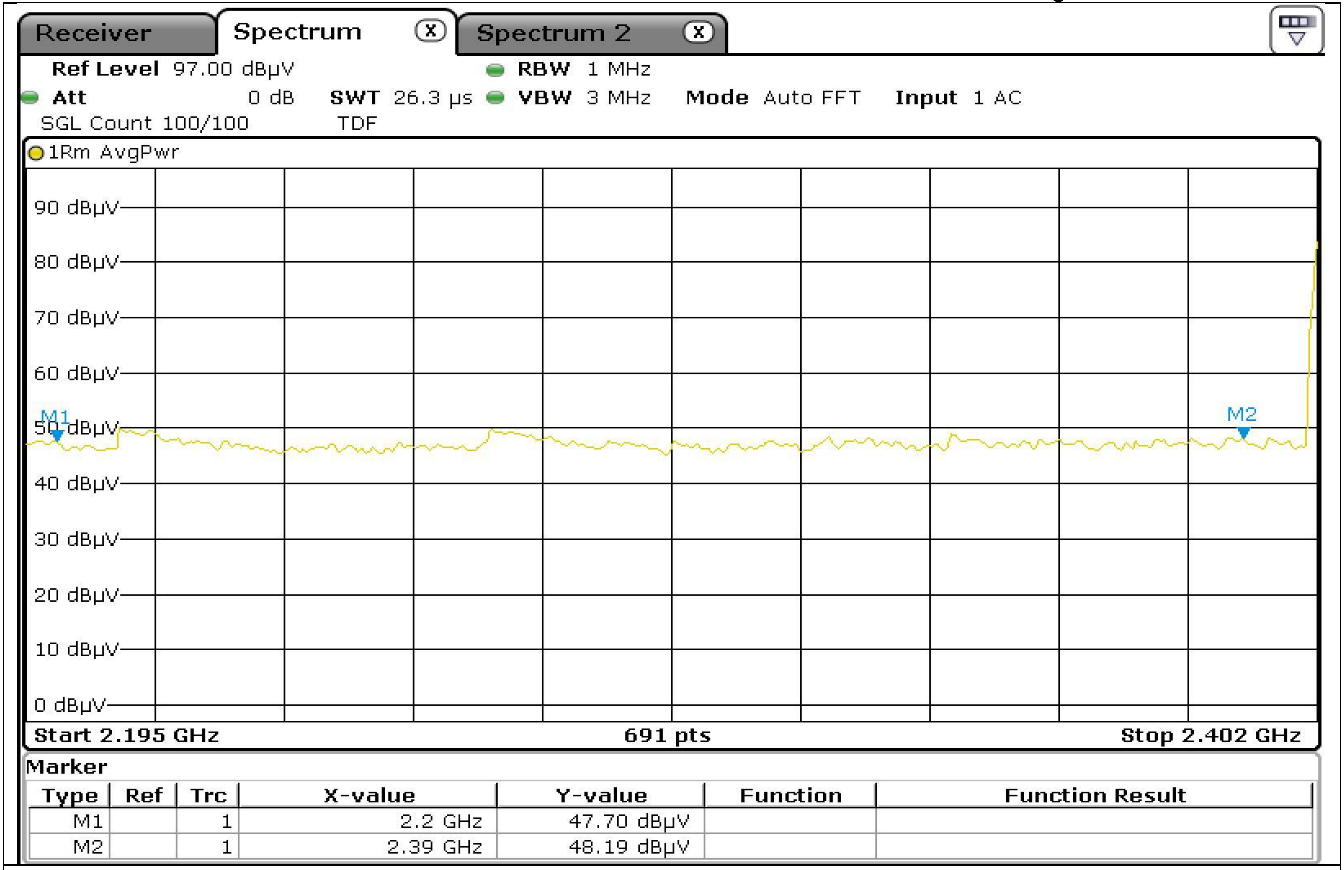


Fig B3 Low Channel Band Edge Vertical Average at 3 metres

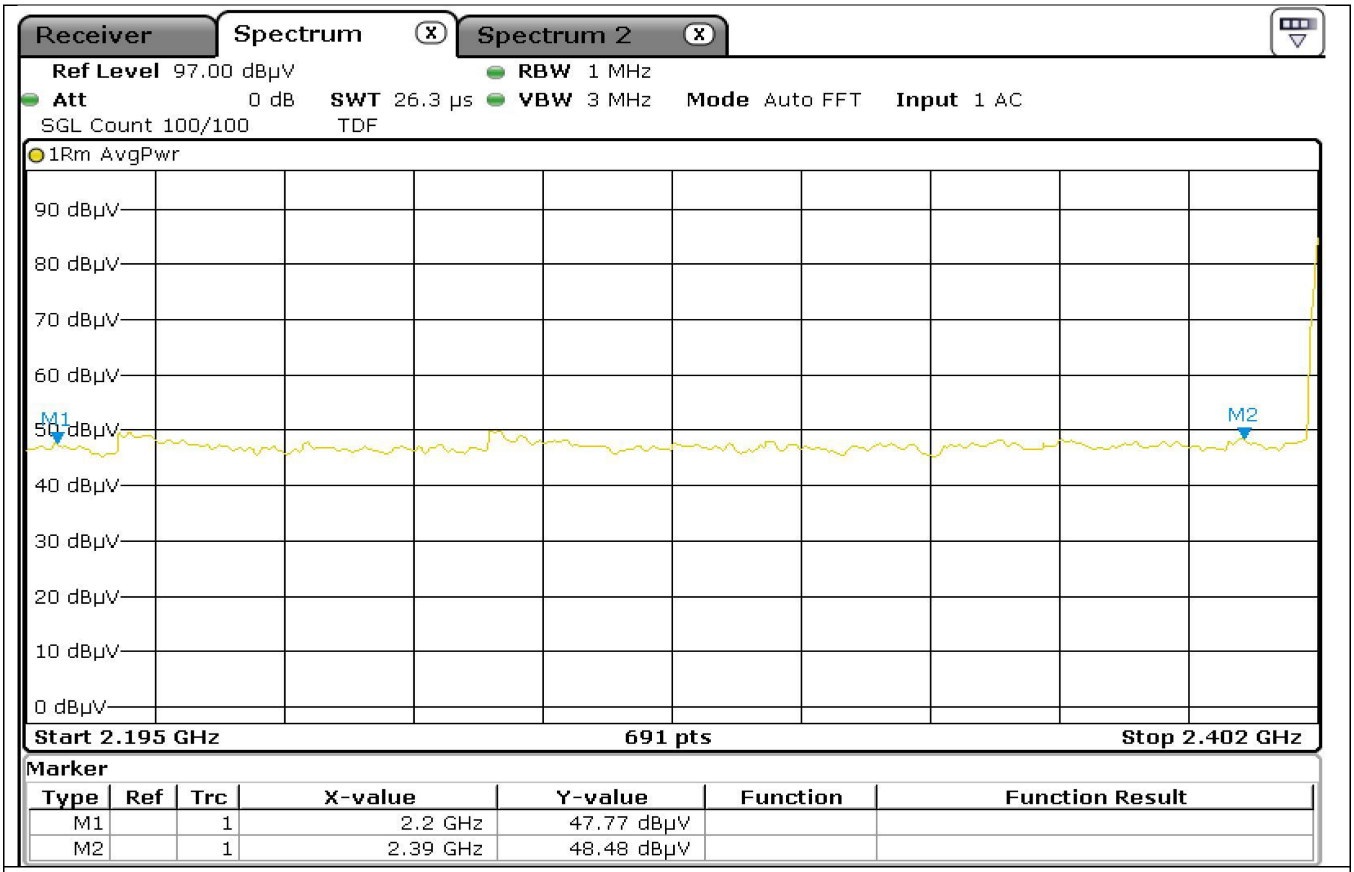


Fig B4 Low Channel Band Edge Horizontal Average at 3 metres

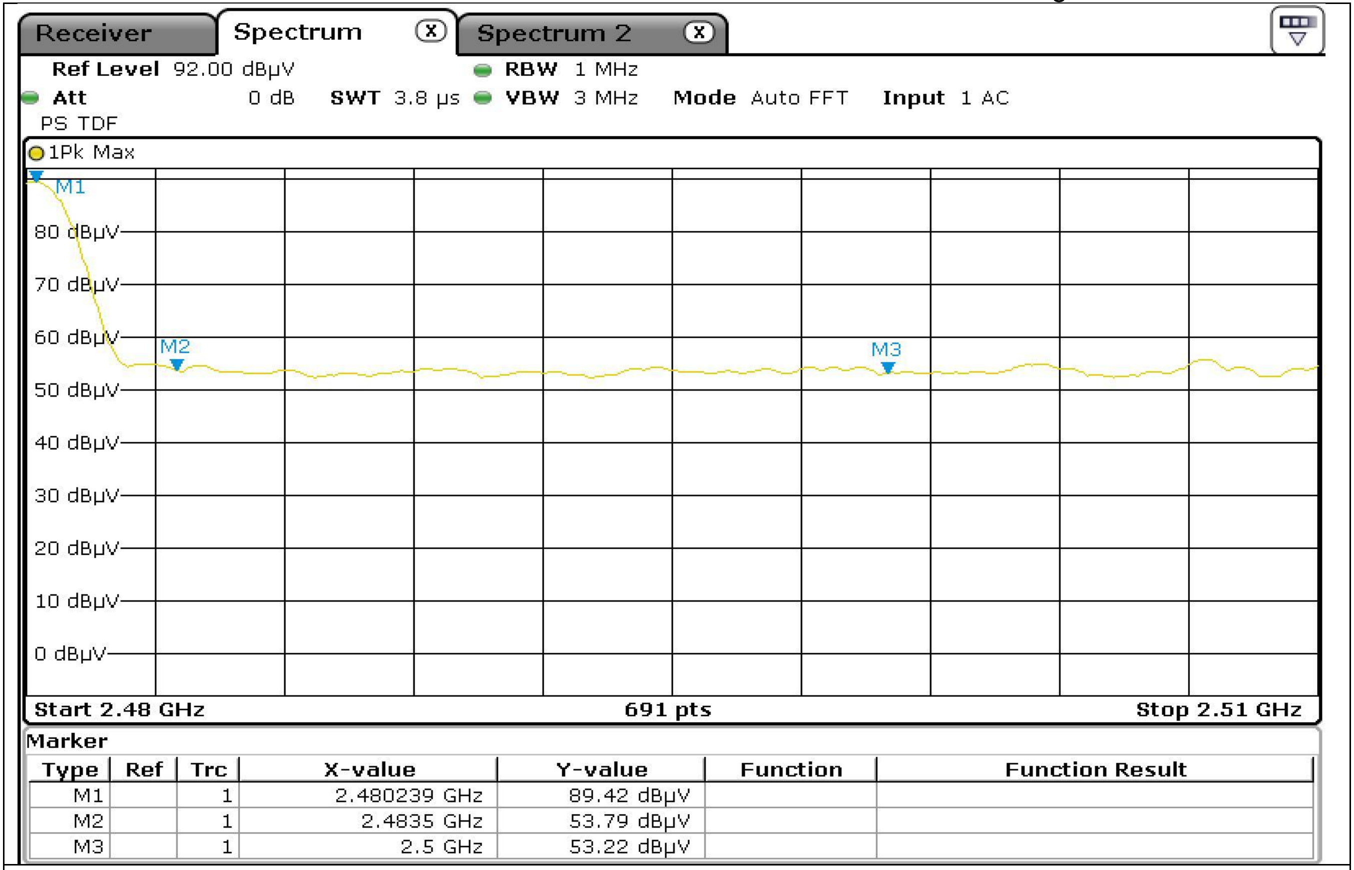


Fig B5 High Channel Band Edge Vertical peak at 3 metres

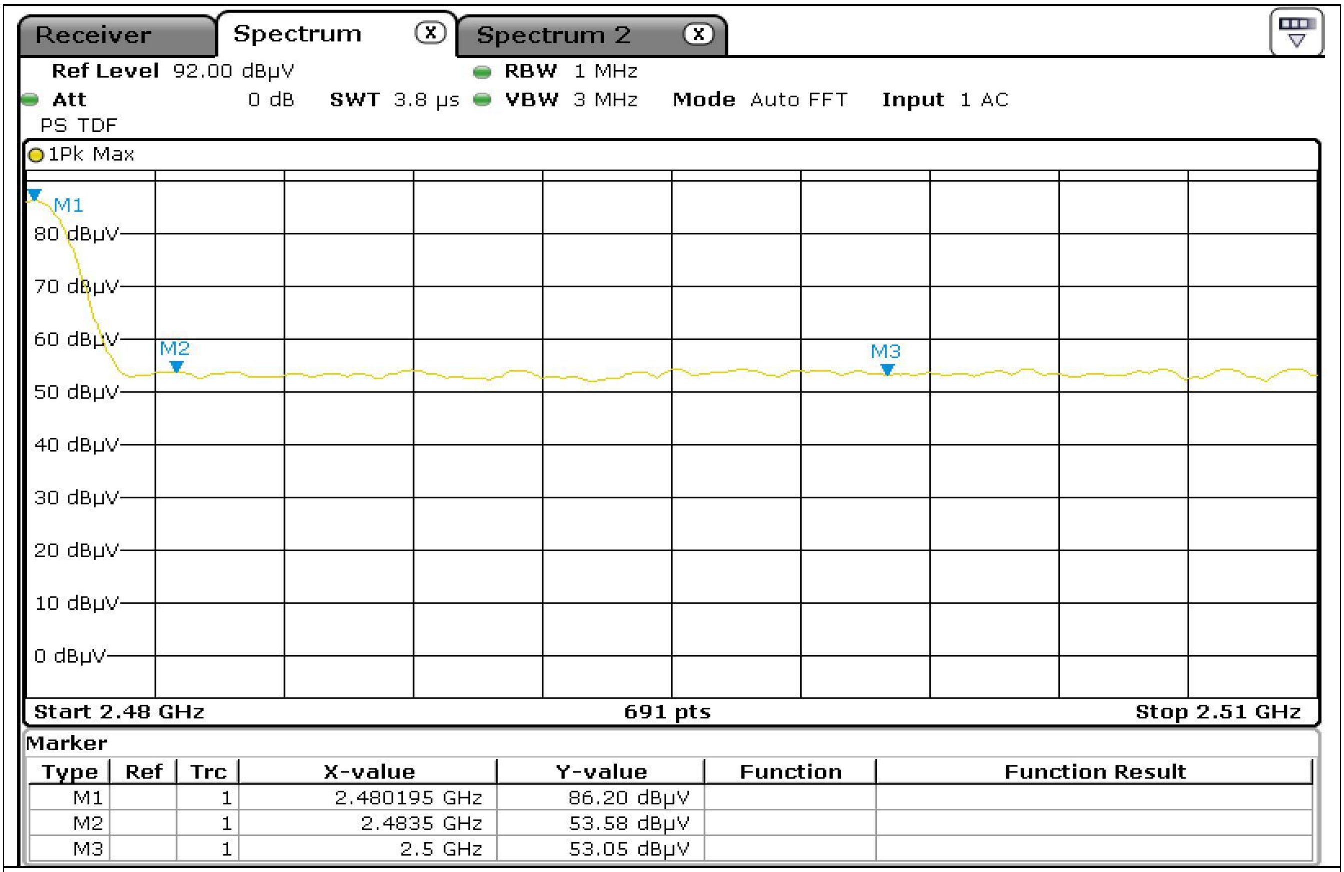


Fig B6 High Channel Band Edge Horizontal peak at 3 metres

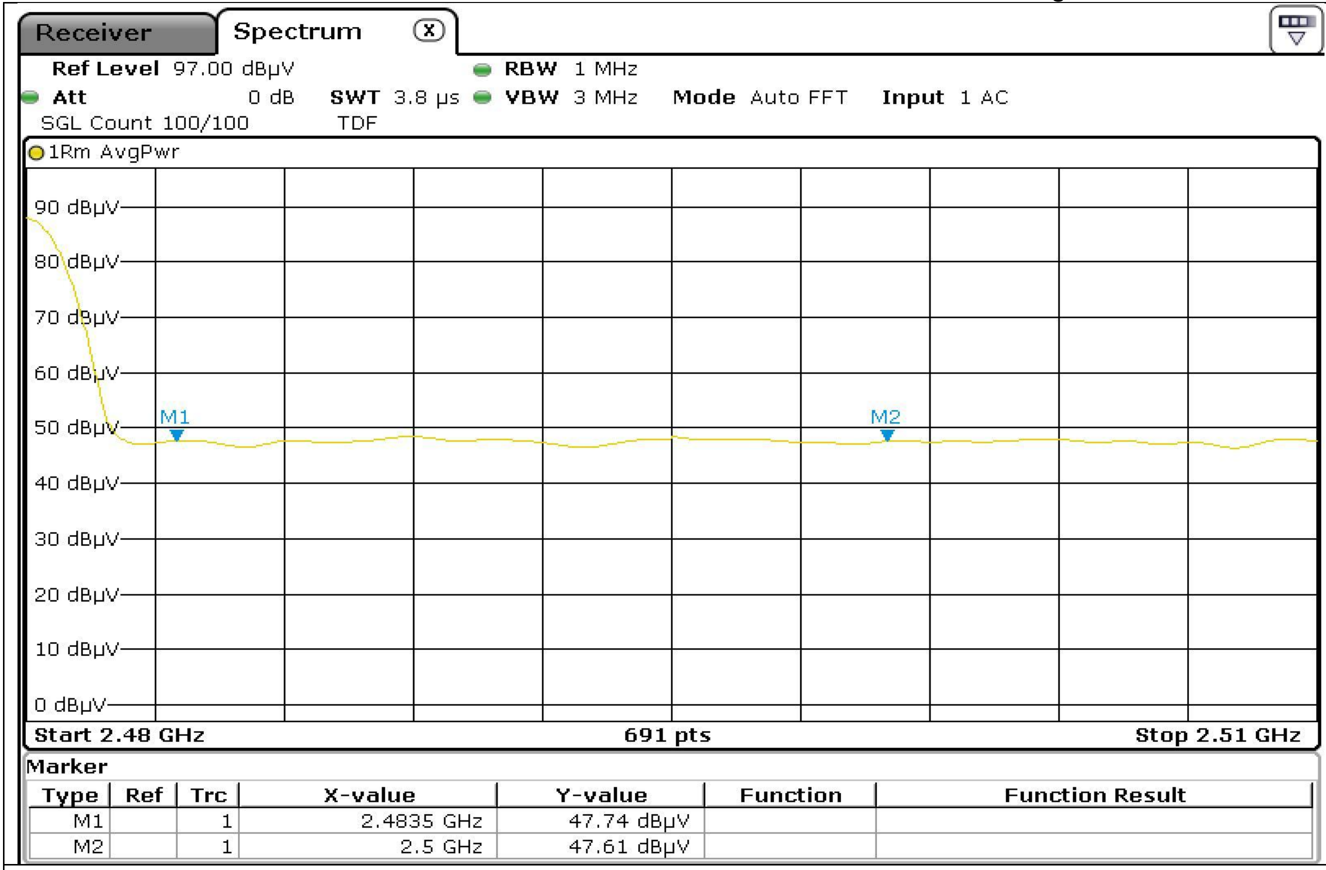


Fig B7 High Channel Band Edge Vertical Average at 3 metres

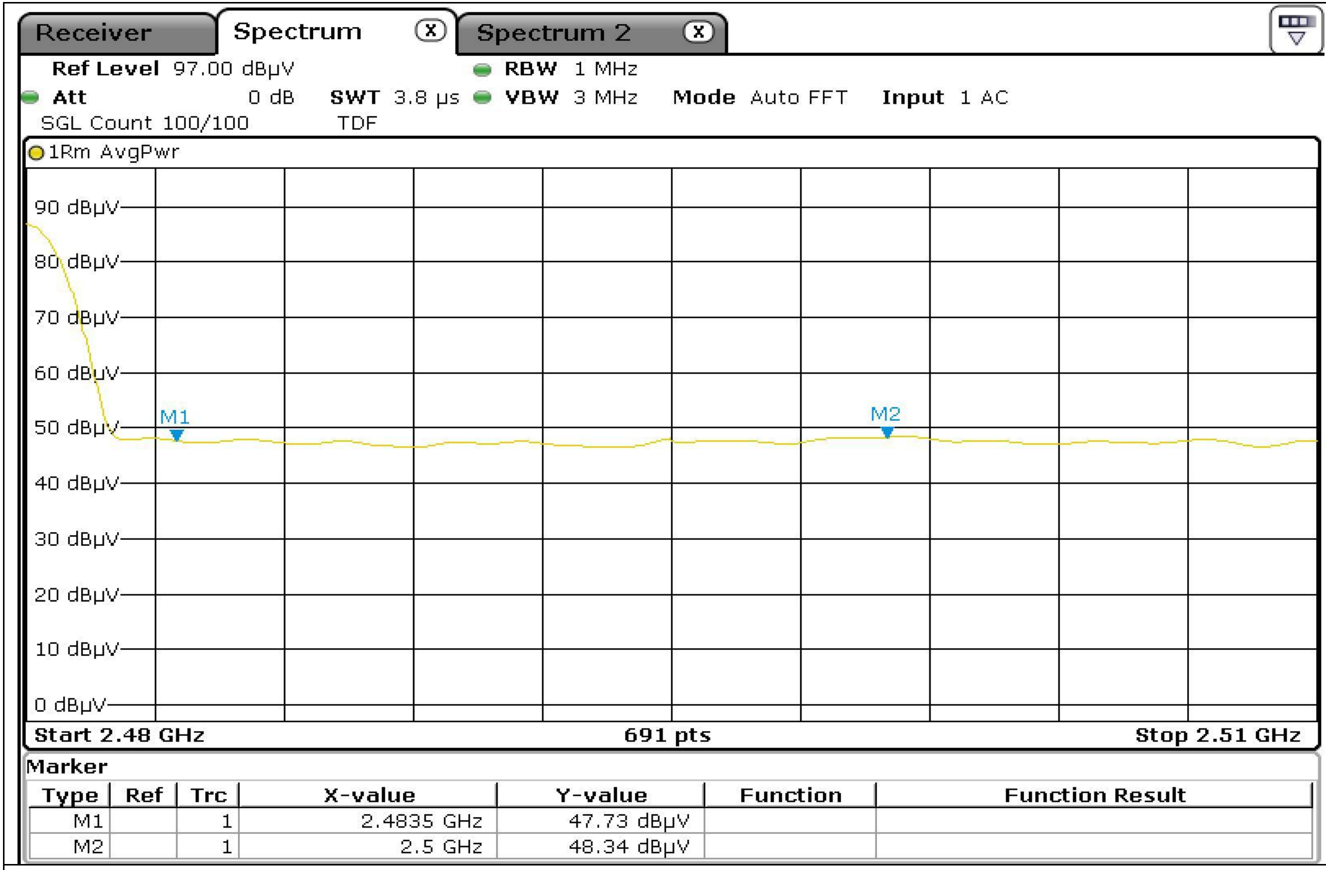


Fig B8 High Channel Band Edge Horizontal Average at 3 metres

Appendix C Radiated tests for Transmit Mode

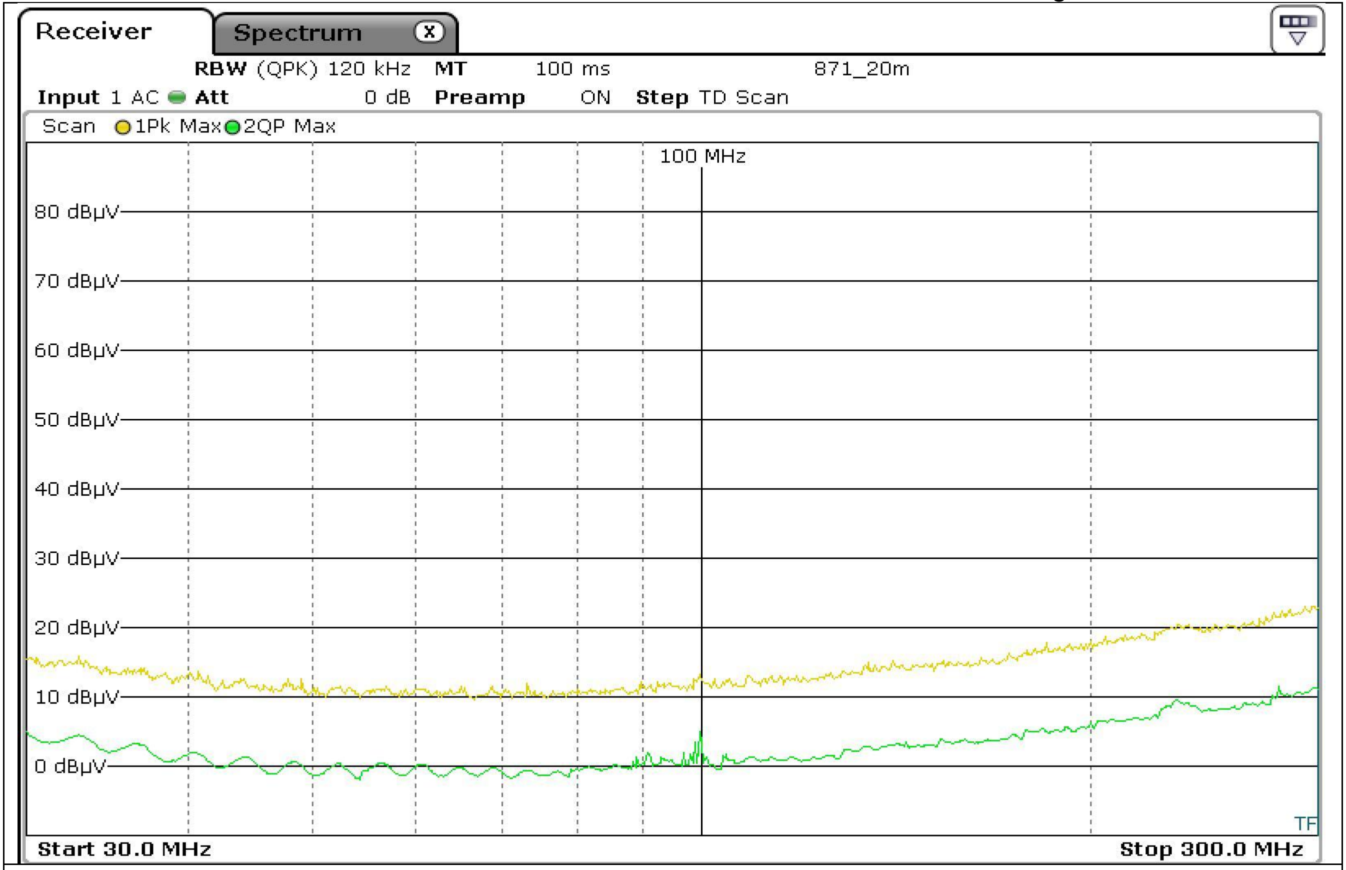


Fig C1 High Channel Radiated Emissions 30MHz -300MHz Vertical 3metres

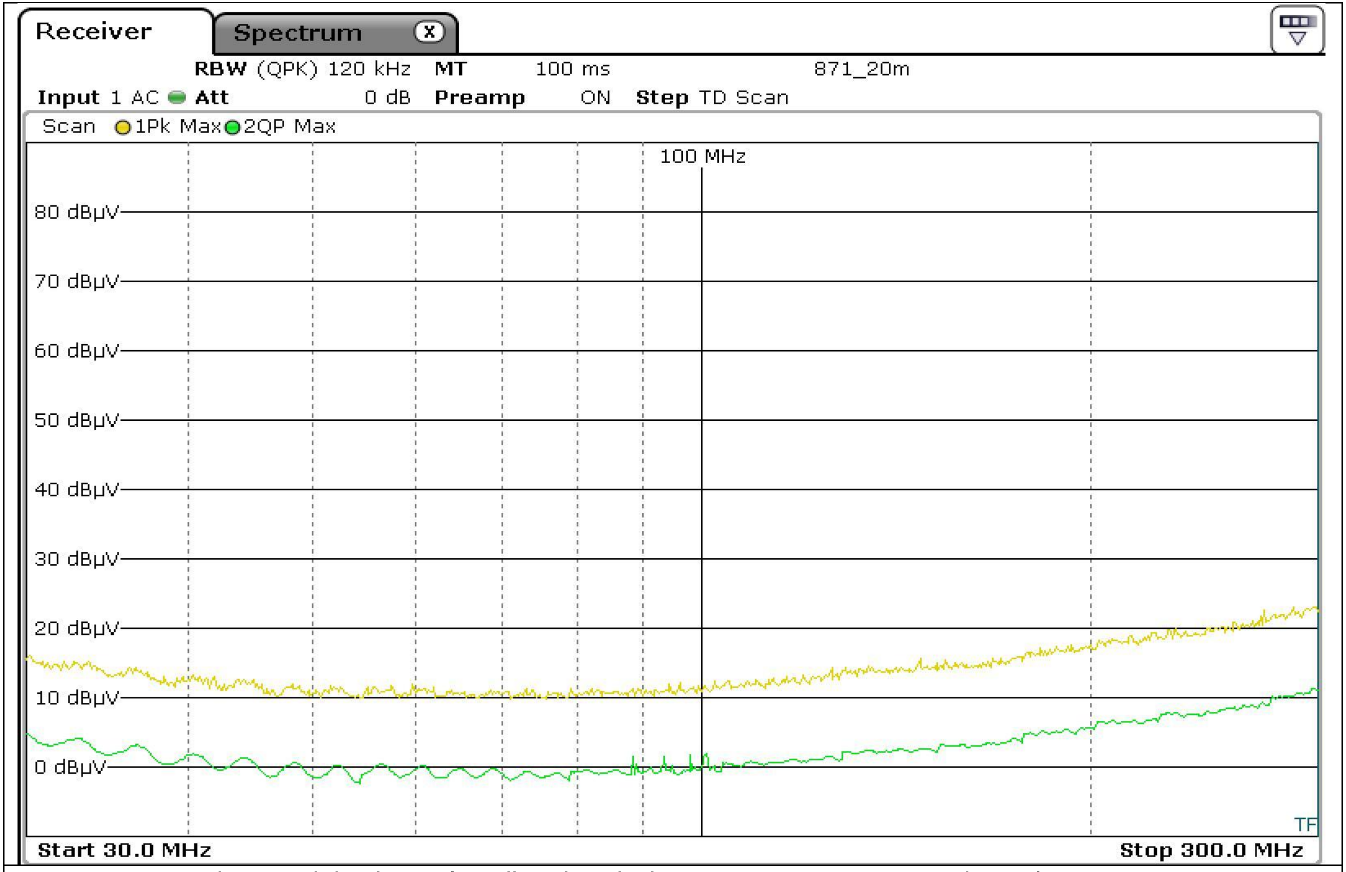


Fig C2 High Channel Radiated Emissions 30MHz -300MHz Horizontal 3metres

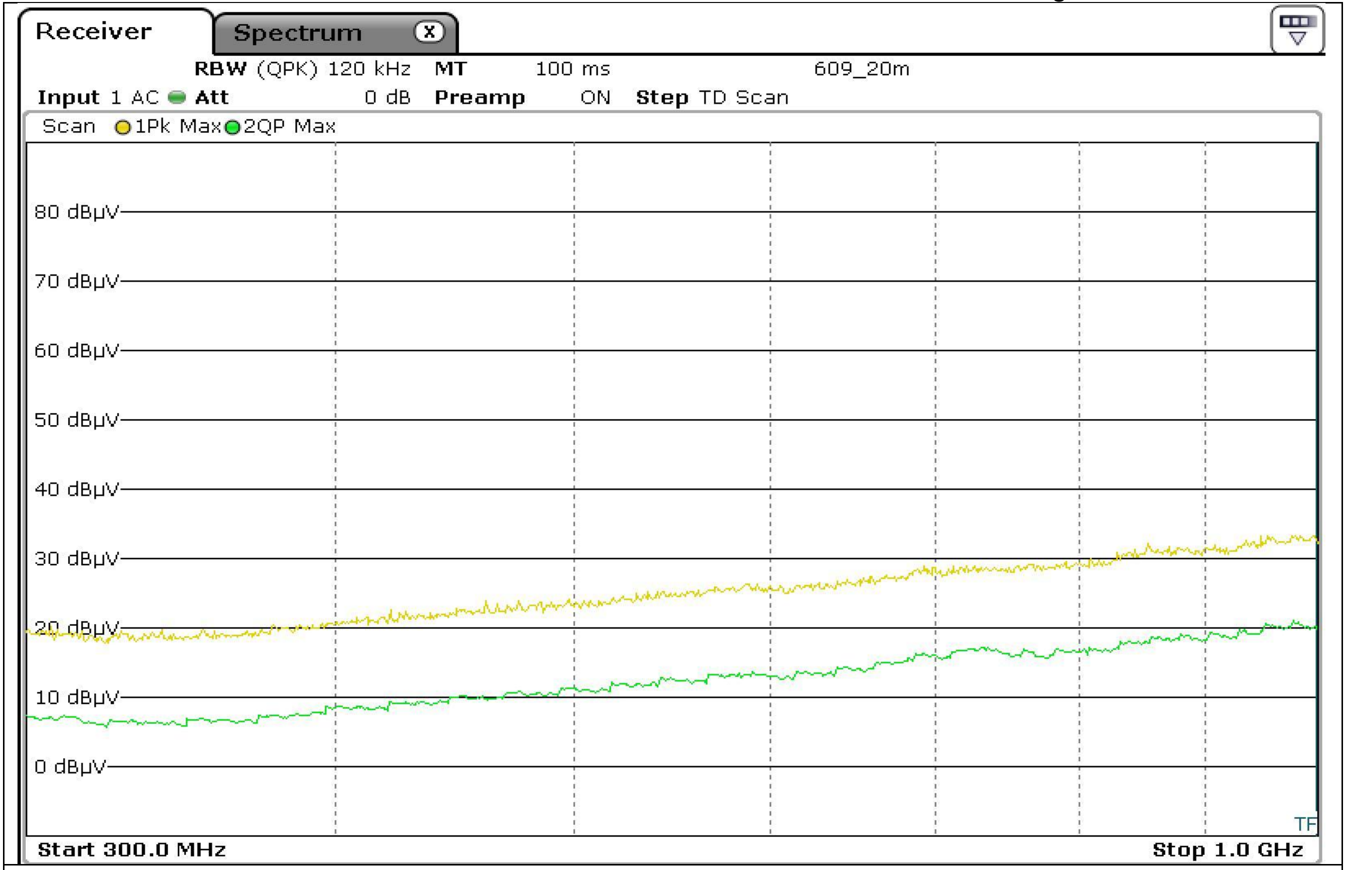


Fig C3 High Channel Radiated Emissions 300MHz -1GHz Vertical 3metres

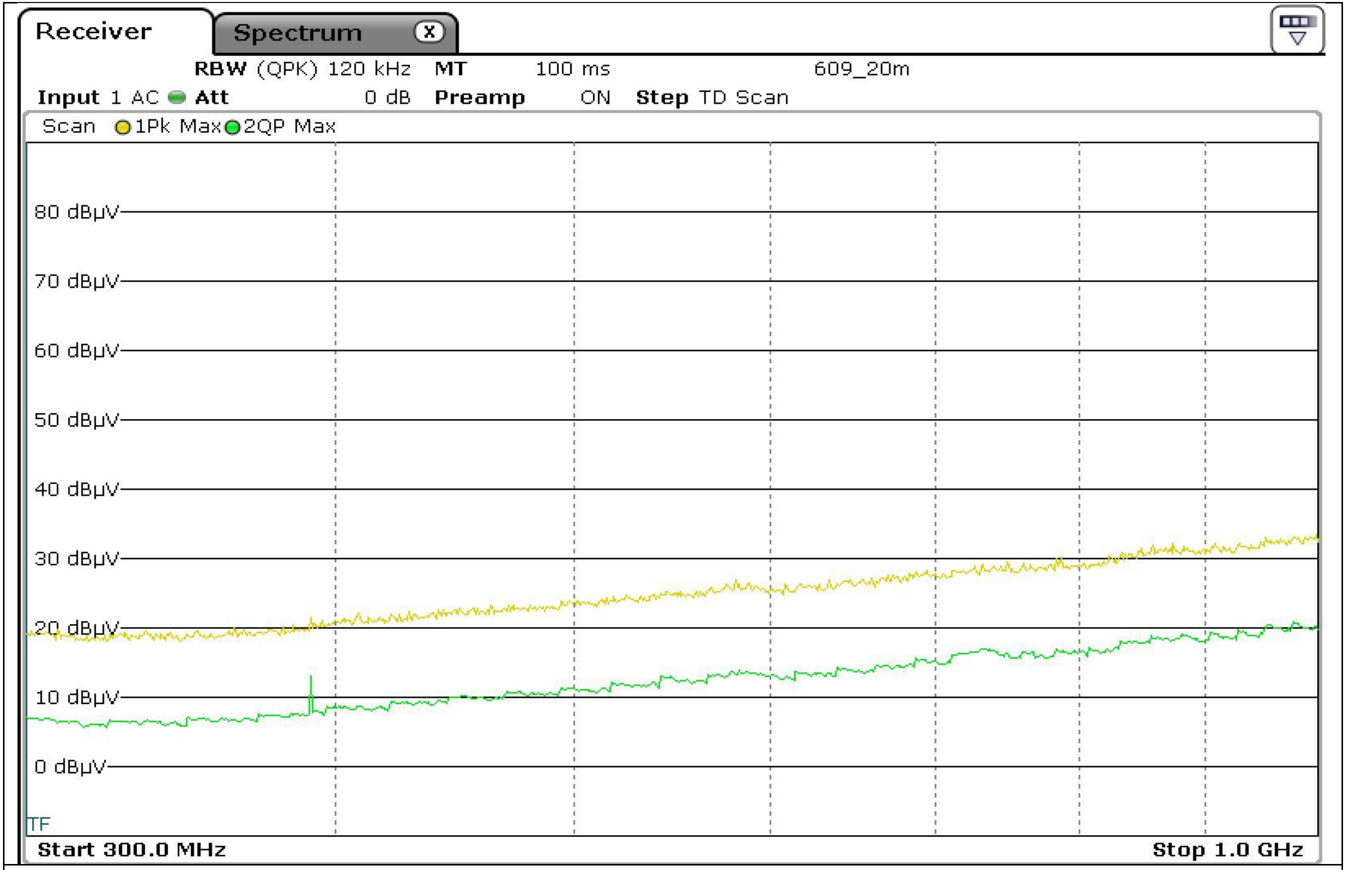


Fig C4 High Channel Radiated Emissions 300MHz -1GHz Horizontal 3metres

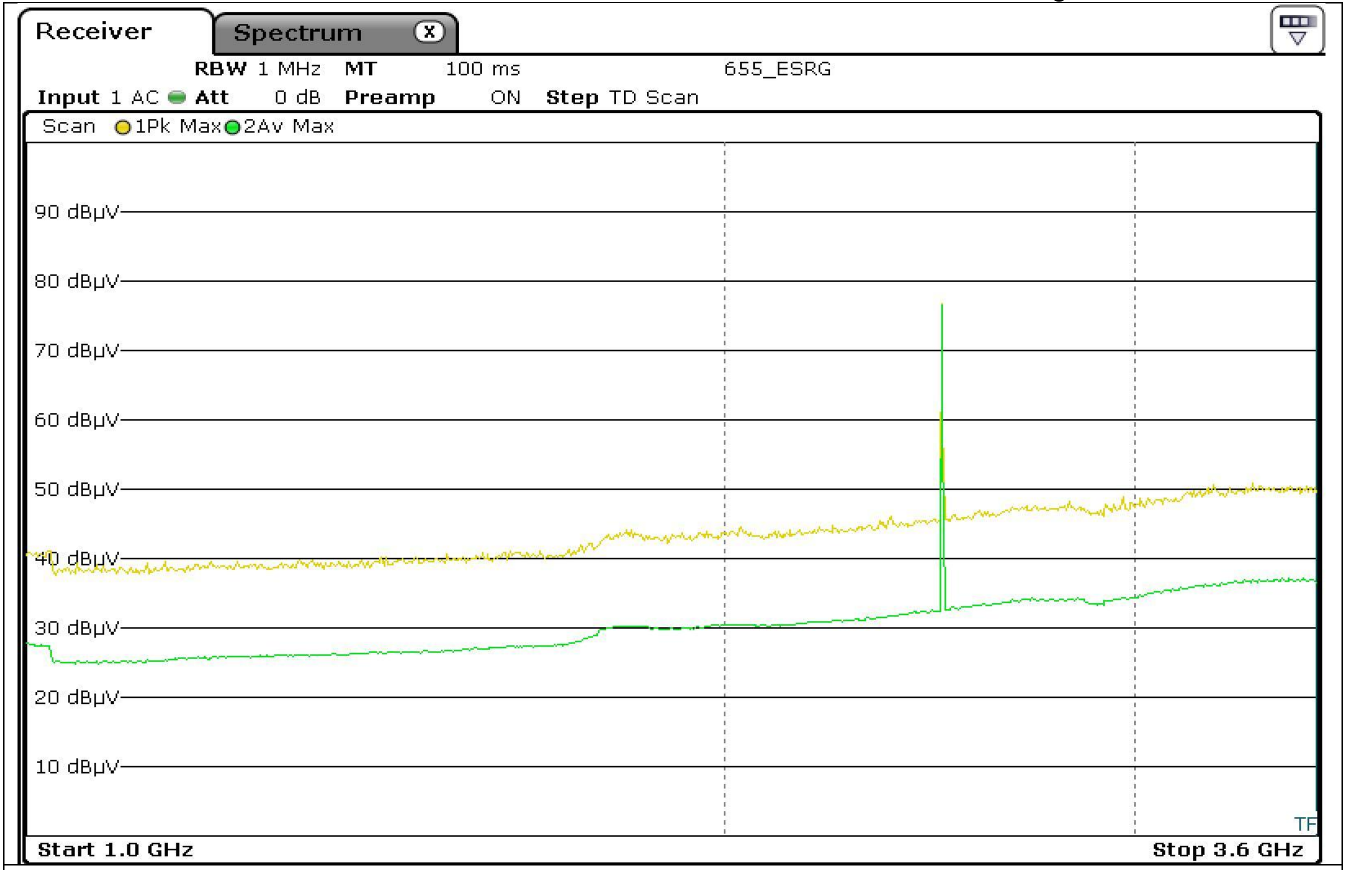


Fig C5 High Channel Radiated Emissions 1GHz -3.6GHz Vertical 3metres

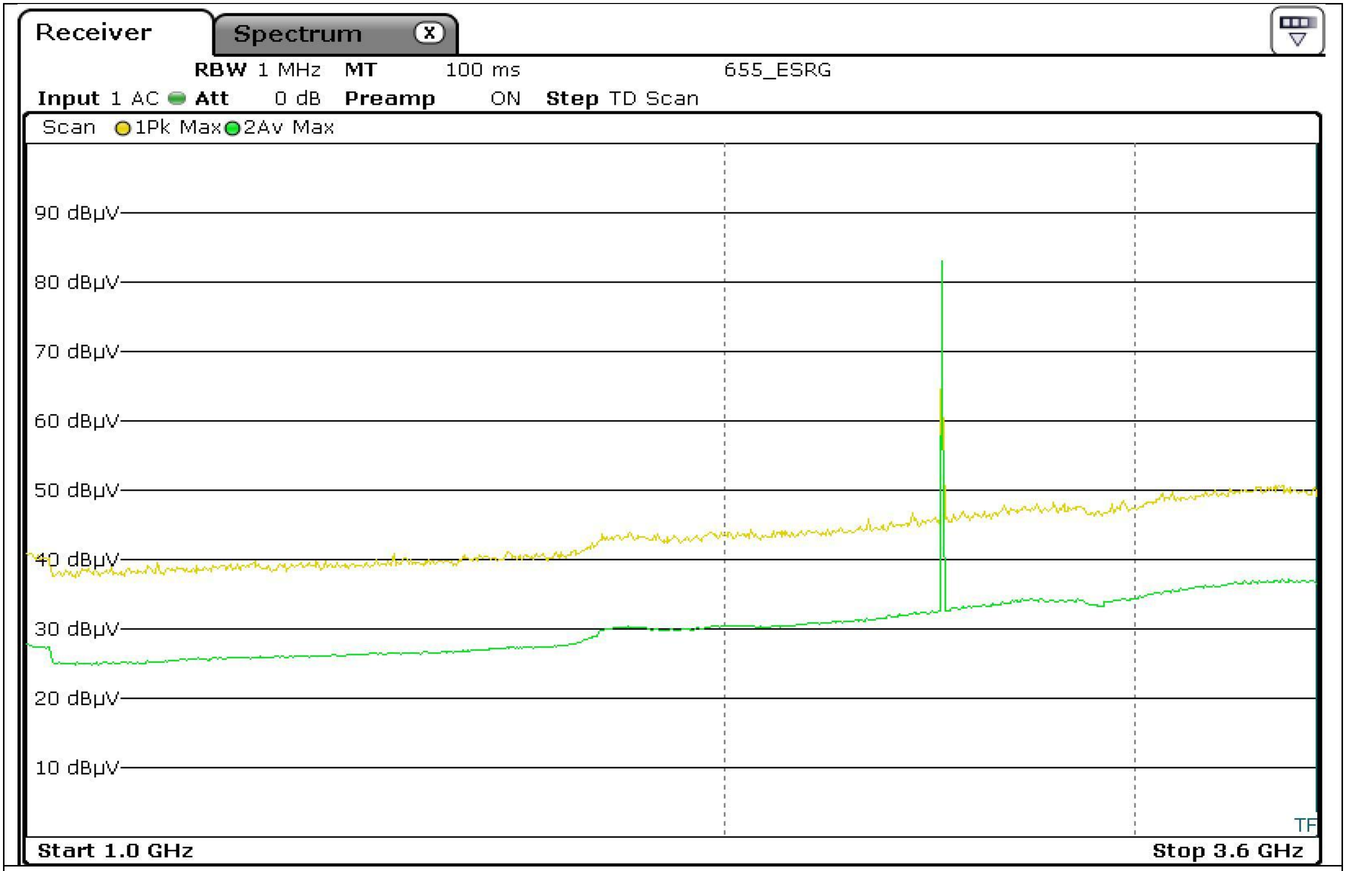
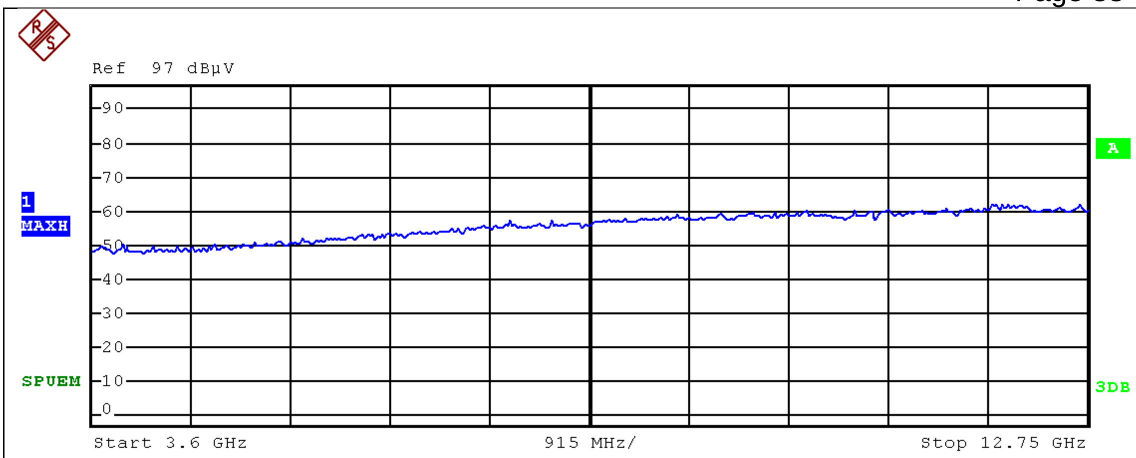
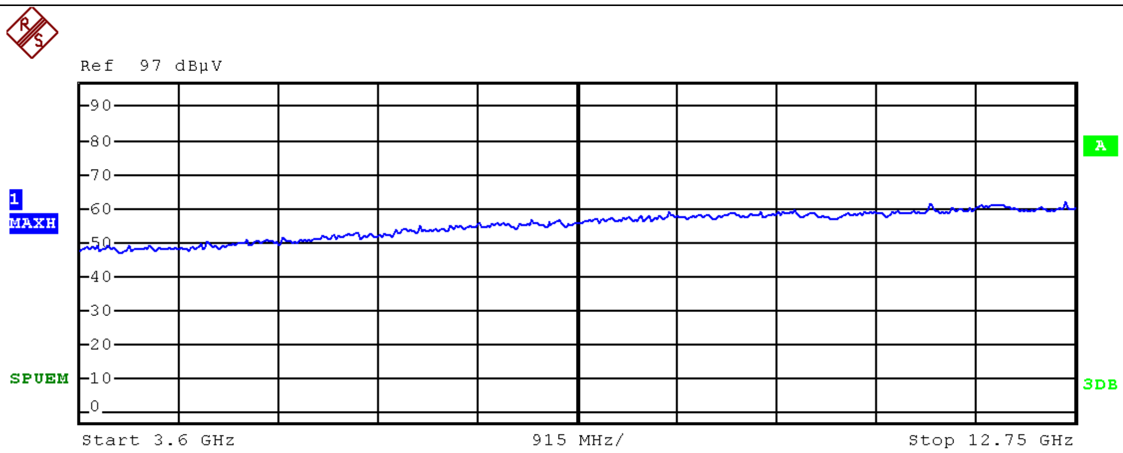


Fig C6 High Channel Radiated Emissions 1GHz -3.6GHz Horizontal 3metres



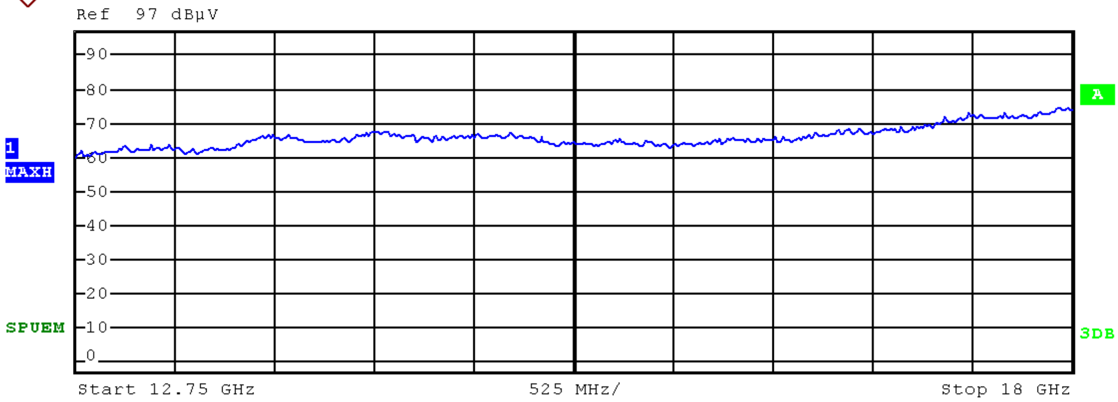
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
3.600 G	4.500 G	1.00 M	3.898013 G	-56.69	-200.00
4.500 G	5.400 G	1.00 M	5.314950 G	-55.78	-200.00
5.400 G	6.300 G	1.00 M	6.189075 G	-53.37	-200.00
6.300 G	7.200 G	1.00 M	7.192463 G	-51.04	-200.00
7.200 G	8.100 G	1.00 M	7.835737 G	-49.29	-200.00
8.100 G	9.000 G	1.00 M	8.971200 G	-47.94	-200.00
9.000 G	9.900 G	1.00 M	9.891562 G	-47.28	-200.00
9.900 G	10.800 G	1.00 M	10.607400 G	-46.57	-200.00
10.800 G	11.700 G	1.00 M	11.669850 G	-45.69	-200.00
11.700 G	12.750 G	1.00 M	12.668756 G	-44.87	-200.00

Fig C7 High Channel Radiated Emissions 3.6GHz -12.75GHz Vertical 3metres



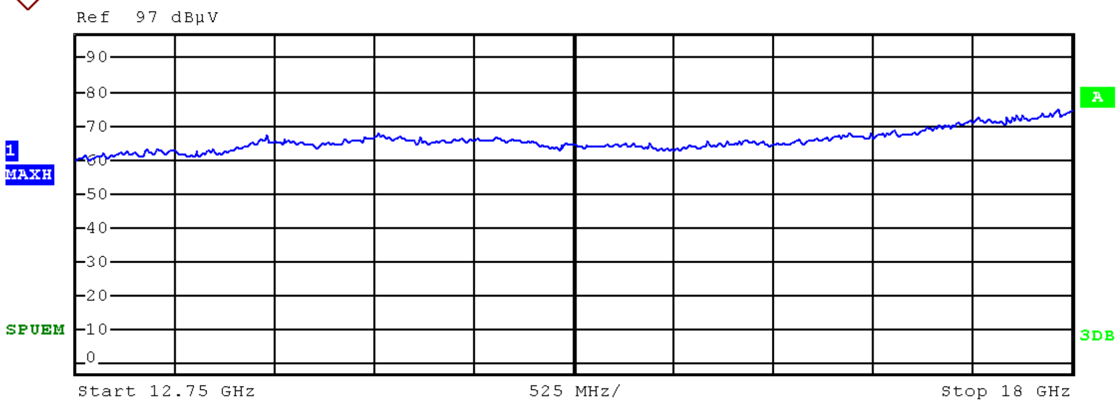
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
3.600 G	4.500 G	1.00 M	4.048762 G	-57.70	-200.00
4.500 G	5.400 G	1.00 M	5.320238 G	-55.70	-200.00
5.400 G	6.300 G	1.00 M	6.267825 G	-54.32	-200.00
6.300 G	7.200 G	1.00 M	7.184362 G	-51.79	-200.00
7.200 G	8.100 G	1.00 M	7.747200 G	-49.97	-200.00
8.100 G	9.000 G	1.00 M	8.928450 G	-48.72	-200.00
9.000 G	9.900 G	1.00 M	9.007763 G	-47.71	-200.00
9.900 G	10.800 G	1.00 M	10.166963 G	-47.35	-200.00
10.800 G	11.700 G	1.00 M	11.414138 G	-45.11	-200.00
11.700 G	12.750 G	1.00 M	12.658781 G	-45.09	-200.00

Fig C8 High Channel Radiated Emissions 3.6GHz -12.75GHz Horizontal 3metres



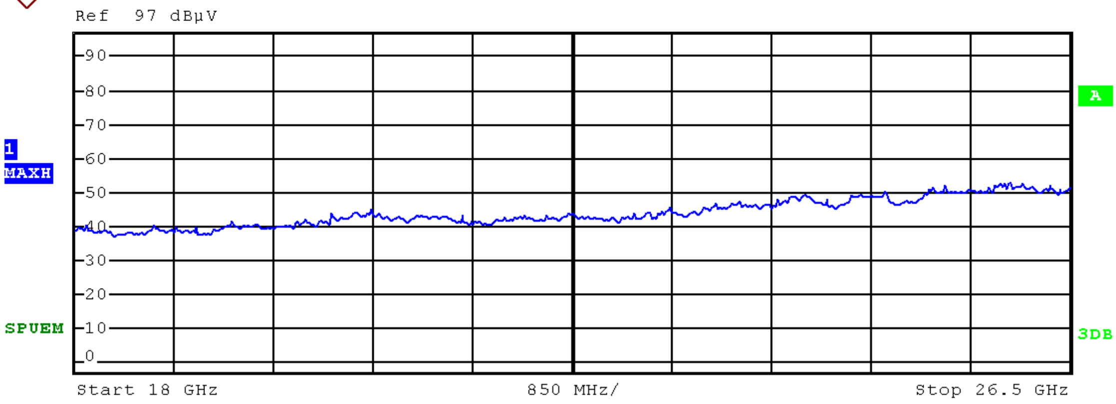
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
12.750 G	13.650 G	1.00 M	13.646625 G	-42.60	-200.00
13.650 G	14.550 G	1.00 M	14.393400 G	-39.27	-200.00
14.550 G	15.450 G	1.00 M	15.034200 G	-39.50	-200.00
15.450 G	16.350 G	1.00 M	16.185300 G	-41.01	-200.00
16.350 G	18.000 G	1.00 M	17.979375 G	-32.32	-200.00

Fig C9 High Channel Radiated Emissions 12.75GHz -18GHz Vertical 3metres



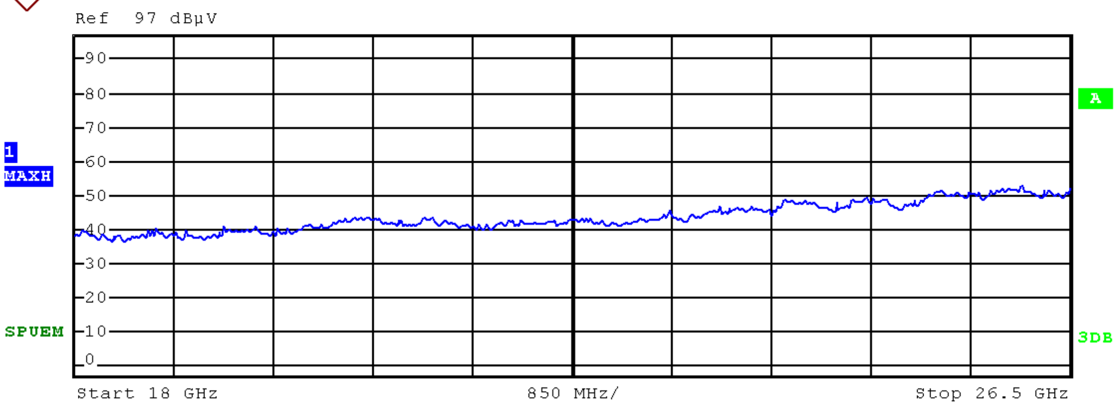
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
12.750 G	13.650 G	1.00 M	13.602975 G	-43.05	-200.00
13.650 G	14.550 G	1.00 M	14.342100 G	-39.19	-200.00
14.550 G	15.450 G	1.00 M	14.564850 G	-39.91	-200.00
15.450 G	16.350 G	1.00 M	16.080450 G	-41.13	-200.00
16.350 G	18.000 G	1.00 M	17.921625 G	-32.17	-200.00

Fig C10 High Channel Radiated Emissions 12.75GHz -18GHz Horizontal 3metres



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
18.000 G	18.850 G	1.00 M	18.099025 G	-66.30	-200.00
18.850 G	19.700 G	1.00 M	19.348950 G	-65.53	-200.00
19.700 G	20.550 G	1.00 M	20.548406 G	-61.56	-200.00
20.550 G	21.400 G	1.00 M	20.596325 G	-62.84	-200.00
21.400 G	22.250 G	1.00 M	22.218125 G	-63.05	-200.00
22.250 G	23.100 G	1.00 M	23.093944 G	-61.13	-200.00
23.100 G	23.950 G	1.00 M	23.683737 G	-59.20	-200.00
23.950 G	25.650 G	1.00 M	25.420713 G	-54.80	-200.00
25.650 G	26.500 G	1.00 M	25.976825 G	-54.20	-200.00

Fig C11 High Channel Radiated Emissions 18GHz -26.5GHz Vertical 1metre



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
18.000 G	18.850 G	1.00 M	18.694131 G	-66.70	-200.00
18.850 G	19.700 G	1.00 M	19.540519 G	-65.89	-200.00
19.700 G	20.550 G	1.00 M	20.513556 G	-63.25	-200.00
20.550 G	21.400 G	1.00 M	20.574331 G	-63.23	-200.00
21.400 G	22.250 G	1.00 M	22.092856 G	-63.81	-200.00
22.250 G	23.100 G	1.00 M	23.078431 G	-61.29	-200.00
23.100 G	23.950 G	1.00 M	23.778831 G	-60.14	-200.00
23.950 G	25.650 G	1.00 M	25.403075 G	-55.51	-200.00
25.650 G	26.500 G	1.00 M	26.089769 G	-53.86	-200.00

Fig C12 High Channel Radiated Emissions 18GHz -26.5GHz Horizontal 1metre

Appendix D Orientations for Radiated Emissions

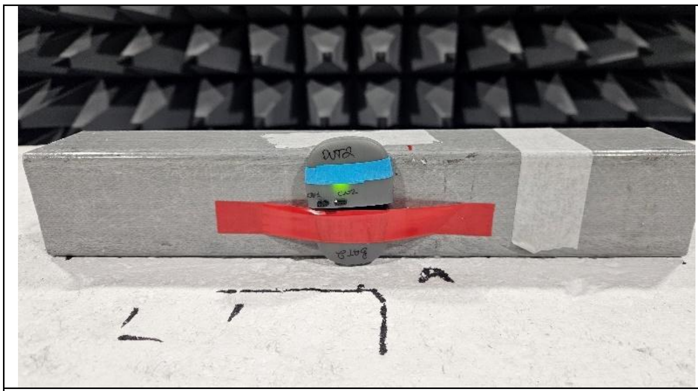


Fig D1 EUT orientation “O1”

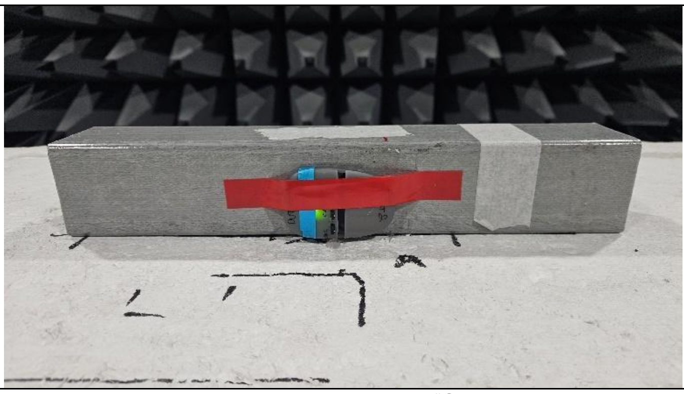


Fig D2 EUT orientation “O2”

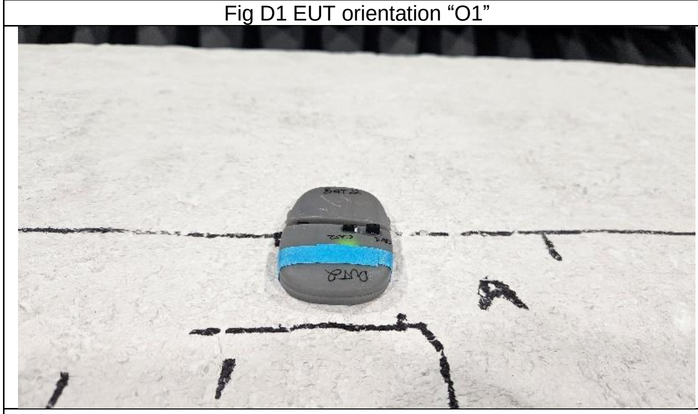
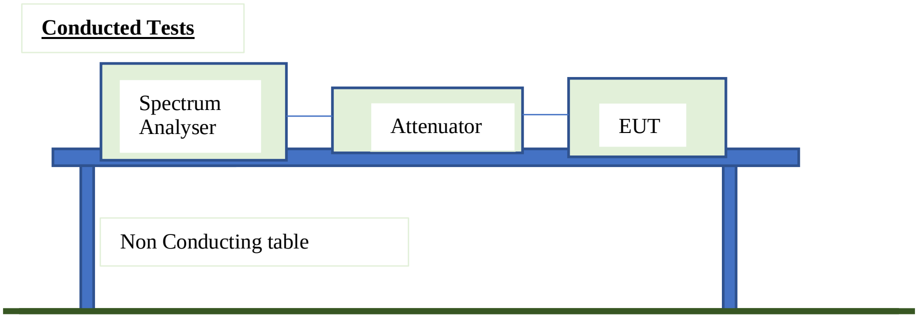
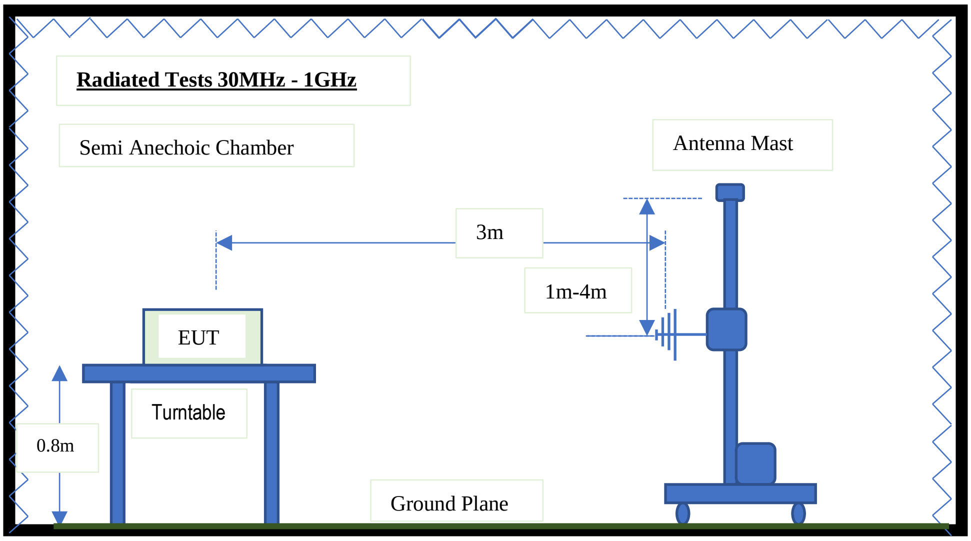
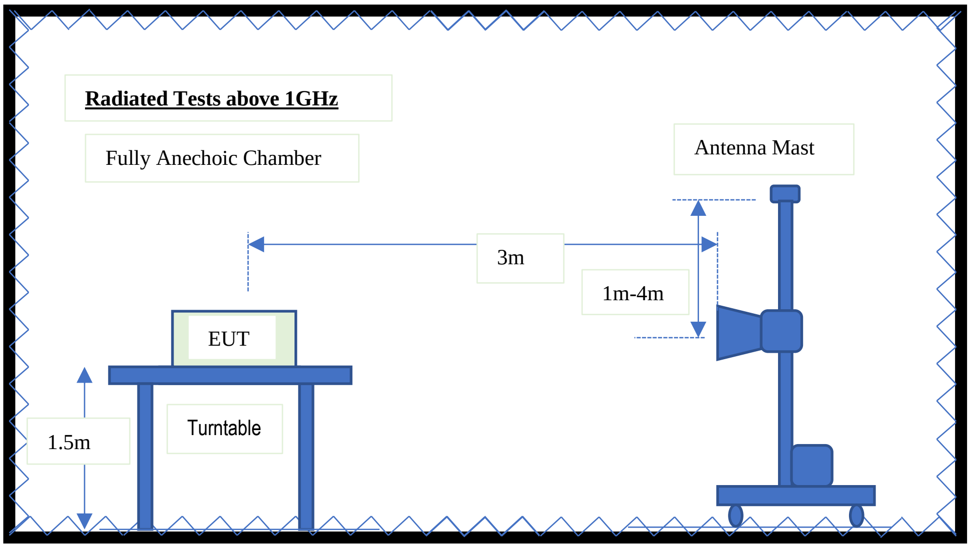


Fig D3 EUT orientation “O3”

Appendix E Block Diagrams of test set up







End of Report