Report on the FCC and ISEDC Testing of:

Sepura Ltd
Portable TETRA Handset, Model: SC2124

In accordance with FCC 47 CFR Part 15C, ISEDC RSS-247 and ISEDC RSS-GEN

Prepared for: Sepura Ltd
9000 Cambridge Research Park
Beach Drive, Waterbeach, Cambridge
CB25 9TL, United Kingdom

FCC ID: XX6SC2124 IC: 8739A-SC2124

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Document Number: 75944487-04 | Issue: 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Simon Bennett	Innovations Manager	Authorised Signatory	11 December 2019

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C, ISEDC RSS-247 and ISEDC RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Graeme Lawler	Test Engineer	Testing	11 December 2019
Mehadi Choudhury	Test Engineer	Testing	11 December 2019

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

ISEDC Accreditation
12669A Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C (2018), ISEDC RSS-247 Issue 2 (2017-02) and ISEDC RSS-GEN Issue 5 + A1 (2019-03).

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Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	11 December 2019

Table 1

1.2 Introduction

Applicant	Sepura Ltd
Manufacturer	Sepura Ltd
Model Number(s)	SC2124
Serial Number(s)	1) 2PS001845GM55XT 2) 2PS001845GM55YP
Hardware Version(s)	Production
Software Version(s)	1) 1754 006 07367 2) 2001 684 07367
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C (2018) ISEDC RSS-247 Issue 2 (2017-02) ISEDC RSS-GEN Issue 5 + A1 (2019-03)
Order Number Date	PLC-PO011393-1 07-December-2018
Date of Receipt of EUT	18-March-2019
Start of Test	17-May-2019
Finish of Test	07-June-2019
Name of Engineer(s)	Graeme Lawler and Mehadi Choudhury
Related Document(s)	ANSI C63.10 (2013)

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C, ISEDC RSS-247 and ISEDC RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-247	RSS-GEN			
Configuration and Mode: Bluetooth - Transmit						
2.1	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2013)
2.2	15.247 (a)(1)	5.1	-	Frequency Hopping Systems - Average Time of Occupancy	Pass	ANSI C63.10 (2013)
2.3	15.247 (a)(1)	5.1	-	Frequency Hopping Systems - Channel Separation	Pass	ANSI C63.10 (2013)
2.4	15.247 (a)(1)	5.1	-	Frequency Hopping Systems - Number of Hopping Channels	Pass	ANSI C63.10 (2013)
2.5	15.247 (a)(1)	5.1	-	Frequency Hopping Systems - 20 dB Bandwidth	Pass	ANSI C63.10 (2013)
2.6	15.247 (d)	5.5	-	Authorised Band Edges	Pass	ANSI C63.10 (2013)
2.7	15.205	-	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2013)
2.8	15.247 (d) and 15.205	5.5	6.13	Spurious Radiated Emissions	Pass	ANSI C63.10 (2013)

Table 2

1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	SC2124
Part Number	N/A
Hardware Version	Production
Software Version	1) 1754 006 07367 2) 2001 684 07367
FCC ID (if applicable)	XX6SC2124
Industry Canada ID (if applicable)	8739A-SC2124
Technical Description (Please provide a brief description of the intended use of the equipment)	Portable TETRA Radio for use by the emergency services etc.

INTENTIONAL RADIATORS									
Technology	Frequency Band (MHz)	Conducted Declared Output Power (dBm)	Antenna Gain (dBi)	Supported Bandwidth (s) (MHz)	Modulation Scheme(s)	ITU Emission Designator	Test Channels (MHz)		
							Bottom	Middle	Top
TETRA	403-470	34	>-1	25 kHz	π/4DQPSK	22K0DXW	403	436.5	470
TETRA	403-470	34	**>-1**	22 kHz	π/4DQPSK	20K0DXW	403	436.5	470
Bluetooth	2402-2480	7.382	2.5	1.0	8PSK, DQPSK, GFSK	1M00F1D	2402	2441	2480

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	
Lowest frequency generated or used in the device or on which the device operates or tunes	
Class A Digital Device (Use in commercial, industrial or business environment) ☒ Class B Digital Device (Use in residential environment only) ☐	

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage	Maximum Current	
	7.4V DC	2A	
Battery	Nominal Voltage	Battery Operating End Point Voltage	
	7.4V DC	6.2V DC	
Can EUT transmit whilst being charged?		Yes ☒ No ☐	

EXTREME CONDITIONS					
Maximum temperature	65	°C	Minimum temperature	-30	°C

Ancillaries
Please list all ancillaries which will be used with the device.
Remote speaker microphone, leasther cases, pocket clips, earpieces

ANTENNA CHARACTERISTICS						
☐	Antenna connector			State impedance		Ohm
☒	Temporary antenna connector			State impedance	50	Ohm
☒	Integral antenna	Type	Bluetooth			
☐	External antenna	Type				

I hereby declare that the information supplied is correct and complete.

Name: Chris Beecham

Position held: Conformance Engineer Date: 06/12/2019

1.5 Product Information

1.5.1 Technical Description

Portable TETRA Radio for use by the emergency services etc.

1.5.2 Test Setup Diagram(s)

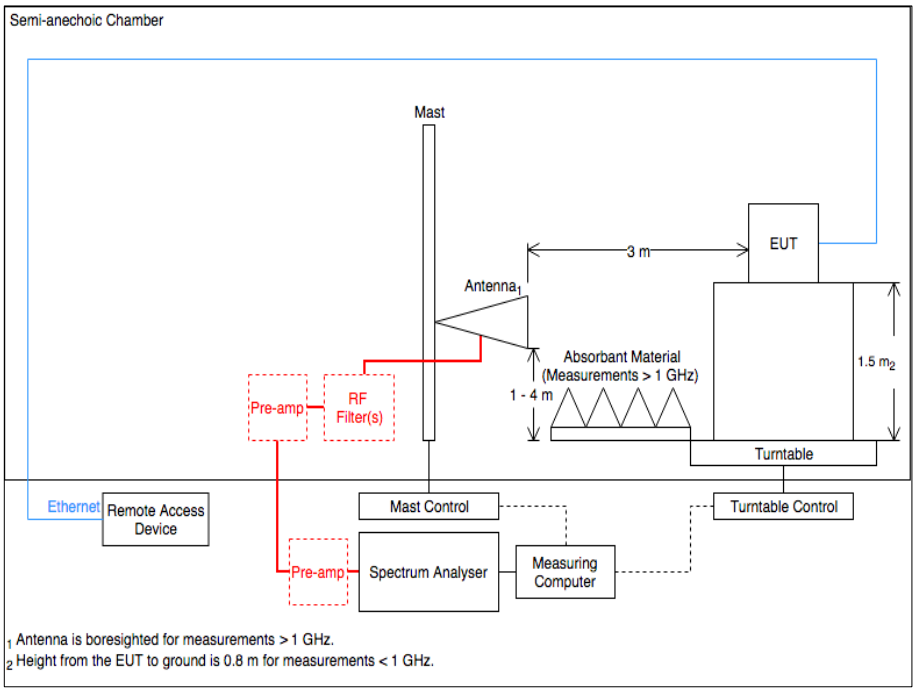

Figure 1 - Radiated Emissions

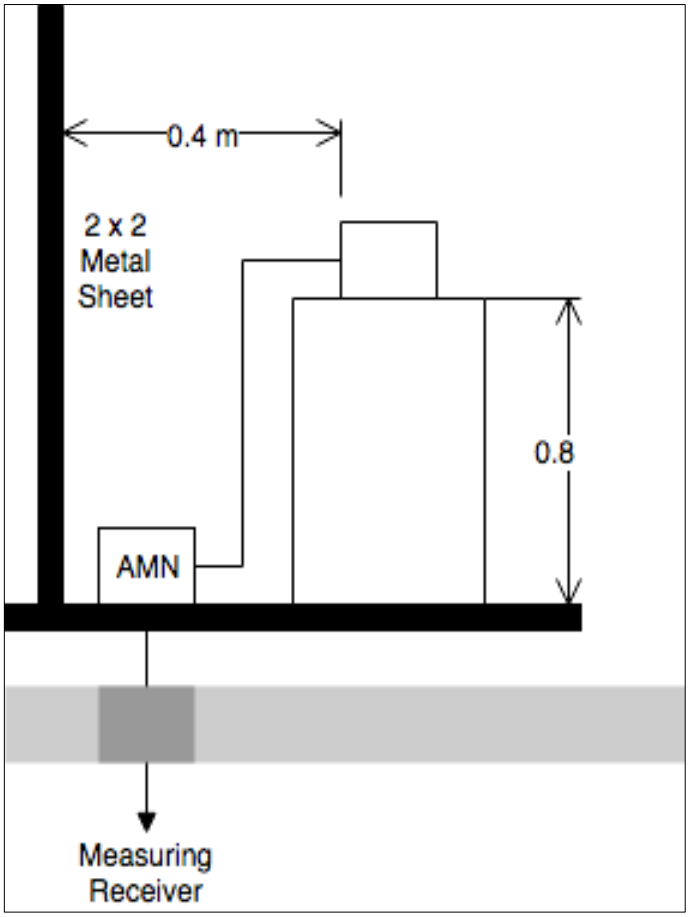

Figure 2 - AC Line Conducted Emissions

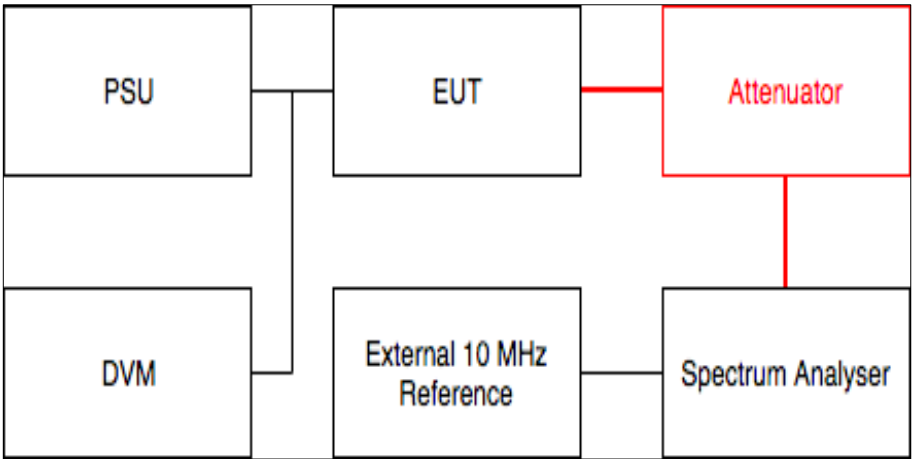

Figure 3 - Conducted Tests

1.5.3 EUT Configuration and Rationale for Radiated Spurious Emissions

The EUT was placed on the non-conducting platform in a manner typical of a normal installation.

Pre-scans were performed with the EUT orientated in X, Y and Z planes with reference to the ground plane.

Ports on the EUT were terminated with loads as described in ANSI C63.4 clause 6.2.4.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: 2PS001845GM55XT			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: 2PS001845GM55YP			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Bluetooth - Transmit		
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Frequency Hopping Systems - Average Time of Occupancy	Mehadi Choudhury	UKAS
Frequency Hopping Systems - Channel Separation	Mehadi Choudhury	UKAS
Frequency Hopping Systems - Number of Hopping Channels	Mehadi Choudhury	UKAS
Frequency Hopping Systems - 20 dB Bandwidth	Mehadi Choudhury	UKAS
Authorised Band Edges	Graeme Lawler	UKAS
Restricted Band Edges	Graeme Lawler	UKAS
Spurious Radiated Emissions	Graeme Lawler	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom

2 Test Details

2.1 Maximum Conducted Output Power

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (b)
ISEDC RSS-247, Clause 5.4
ISEDC RSS-GEN, Clause 6.12

2.1.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55YP - Modification State 0

2.1.3 Date of Test

17-May-2019

2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 11.9.1.1.

2.1.5 Environmental Conditions

Ambient Temperature	24.4 °C
Relative Humidity	34.4 %

2.1.6 Test Results

Bluetooth - Transmit

Testing was performed on the modulation/packet type with the highest conducted output power. This modulation/packet type was 8-DPSK/3DH5.

Frequency (MHz)	Maximum Output Power	
	dBm	mW
2402	7.55	5.69
2441	7.86	6.11
2480	8.37	6.87

Table 5 - Maximum Conducted Output Power Results

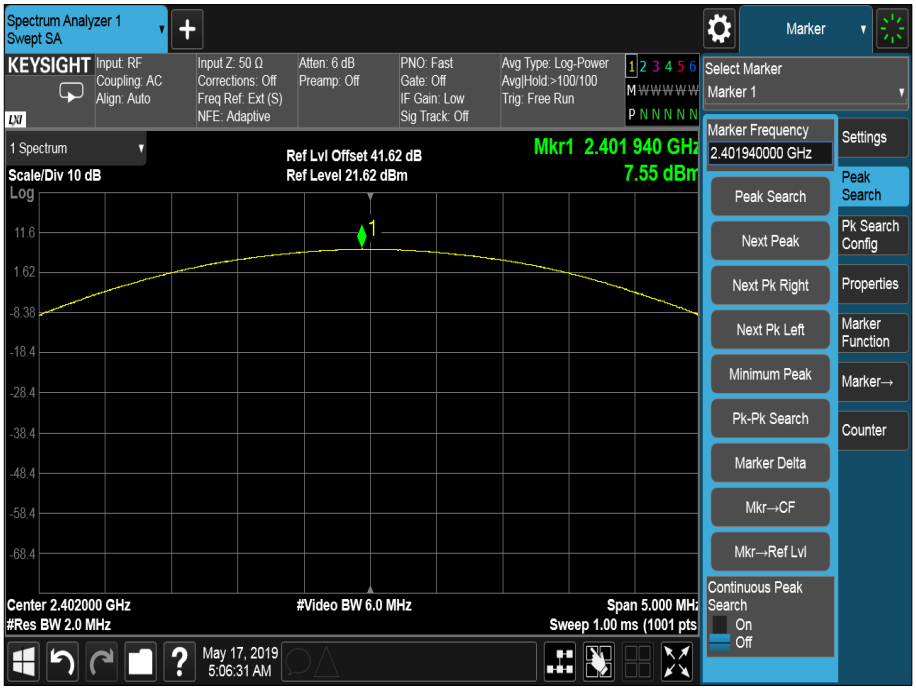

Figure 4 - 2402 MHz - Maximum Output Power

Figure 5 - 2441 MHz - Maximum Output Power

Figure 6 - 2480 MHz - Maximum Output Power

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(1)

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

ISEDC RSS-247, Limit Clause 5.4 (b)

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channel; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channel. The e.i.r.p. shall not exceed 4 W except as provided in section 5.4(e) of the specification.

2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 3.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
50dB/2W Attenuator	Narda	4772-50	458	-	TU
Multimeter	Fluke	79 Series III	611	12	07-Sep-2019
Hygrometer	Rotronic	I-1000	3220	12	13-Sep-2019
Signal Generator, 9kHz - 3GHz	Rohde & Schwarz	SMA 100A	3504	12	22-Aug-2019
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	18-Mar-2020
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
'N' - 'N' RF Cable (1m)	Rhophase	NPS-1803-1000-NPS	3701	-	O/P Mon
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
1 metre N-Type Cable	Florida Labs	NMS-235SP-39.4-NMS	4510	12	10-Jul-2019
Attenuator (20dB, 100W)	Weinschel	48-20-43	4870	12	17-Jul-2019
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	04-Oct-2019

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored using Calibrated Equipment

2.2 Frequency Hopping Systems - Average Time of Occupancy

2.2.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)
ISEDC RSS-247, Clause 5.1

2.2.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55YP - Modification State 0

2.2.3 Date of Test

18-May-2019

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.4.

2.2.5 Environmental Conditions

Ambient Temperature	22.9 °C
Relative Humidity	27.1 %

2.2.6 Test Results

Bluetooth - Transmit

Packet Type	Dwell Time (ms)	Number of Transmissions	Average Occupancy Time (ms)
DH1	0.404	320	129.280
DH3	1.660	158	262.280
DH5	2.904	104	302.016

Table 7

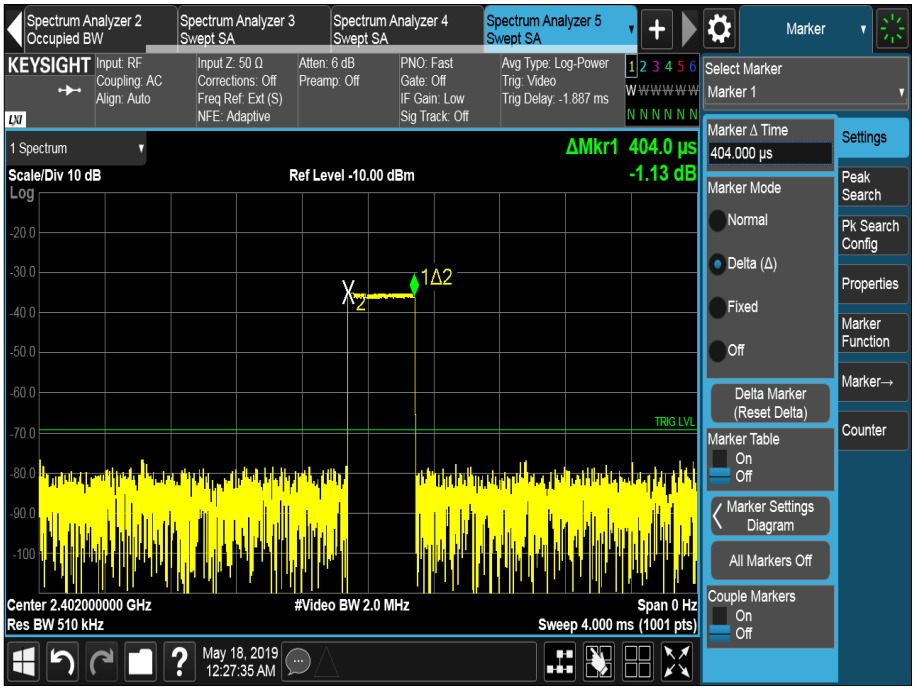

Figure 7 - DH1, Dwell Time

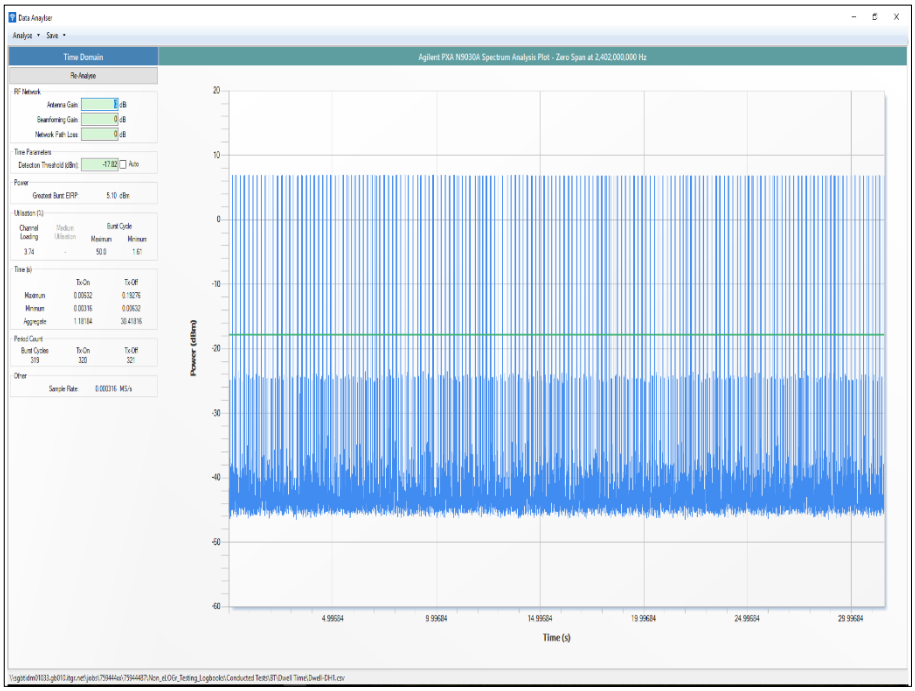

Figure 8 - DH1, Total Average Time of Occupancy

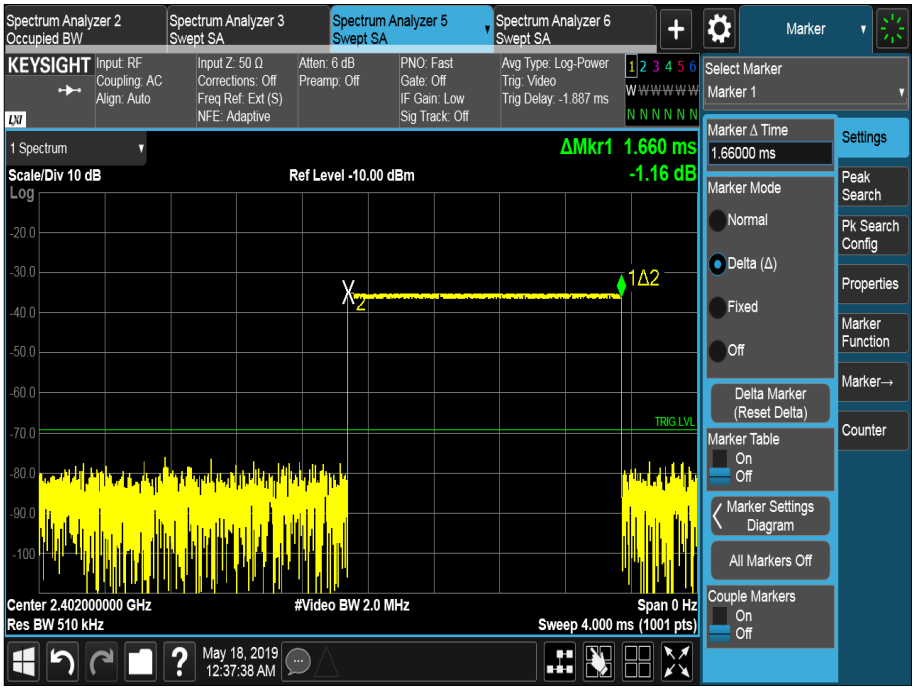

Figure 9 - DH3, Dwell Time

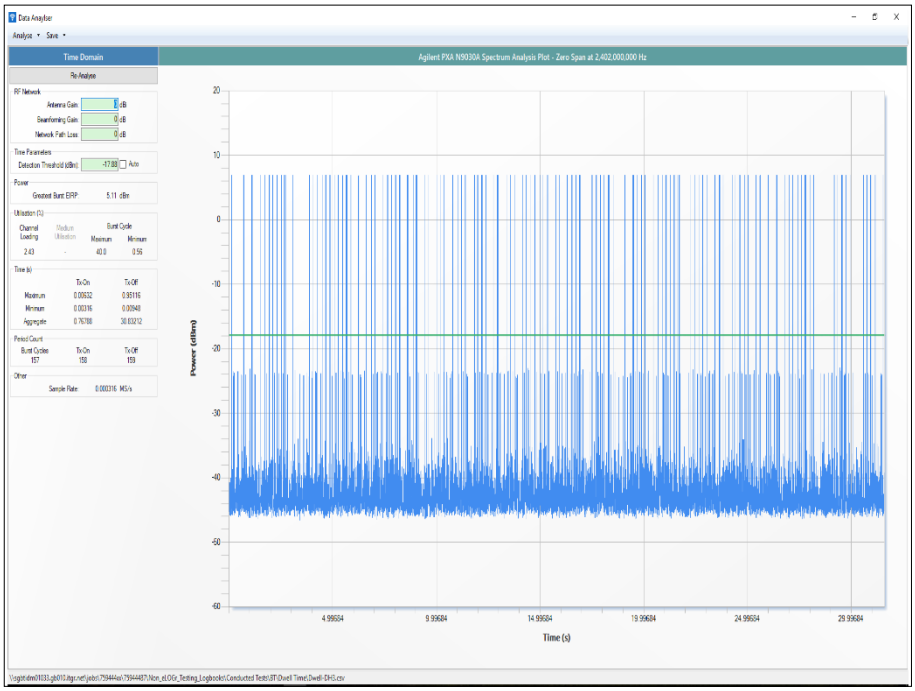

Figure 10 - DH3, Total Average Time of Occupancy

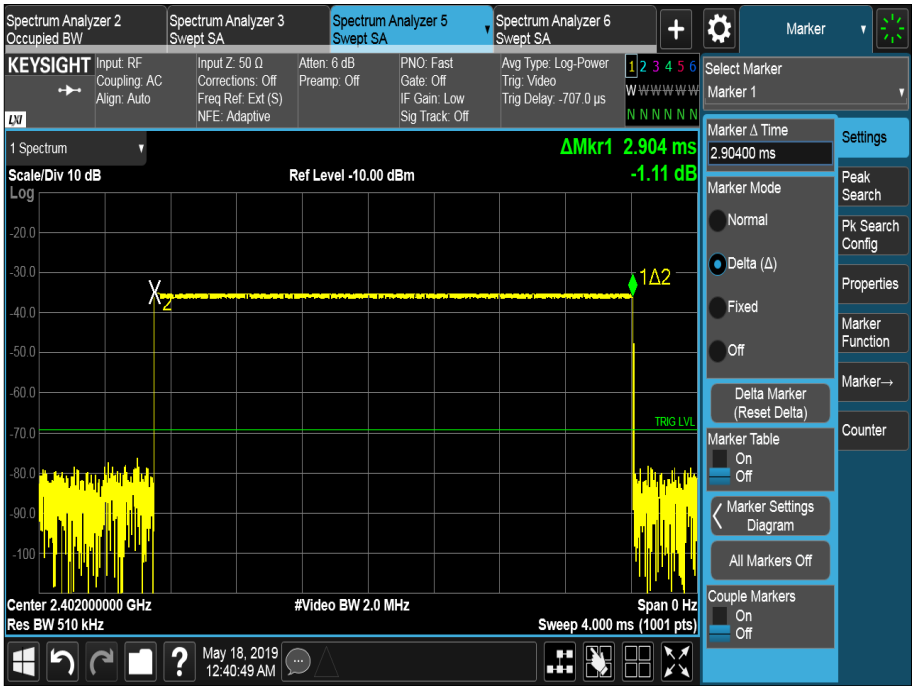

Figure 11 - DH5, Dwell Time

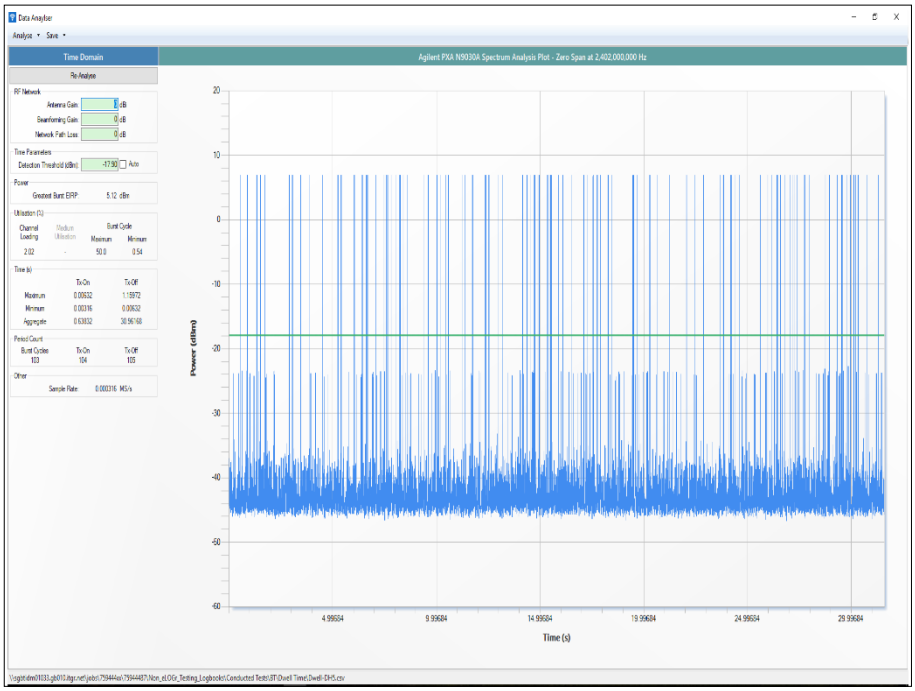

Figure 12 - DH5, Total Average Time of Occupancy

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)(iii)

Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

ISEDC RSS-247, Limit Clause 5.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.

2.2.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	07-Sep-2019
Hygrometer	Rotronic	I-1000	3220	12	13-Sep-2019
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	04-Oct-2019

Table 8

2.3 Frequency Hopping Systems - Channel Separation

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)
ISEDC RSS-247, Clause 5.1

2.3.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55YP - Modification State 0

2.3.3 Date of Test

17-May-2019

2.3.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.2.

2.3.5 Environmental Conditions

Ambient Temperature	24.4 °C
Relative Humidity	34.4 %

2.3.6 Test Results

Bluetooth - Transmit

Modulation	Channel Separation (MHz)
GFSK	1.002
8-DPSK	1.002
pi/4DQPSK	1.002

Table 9

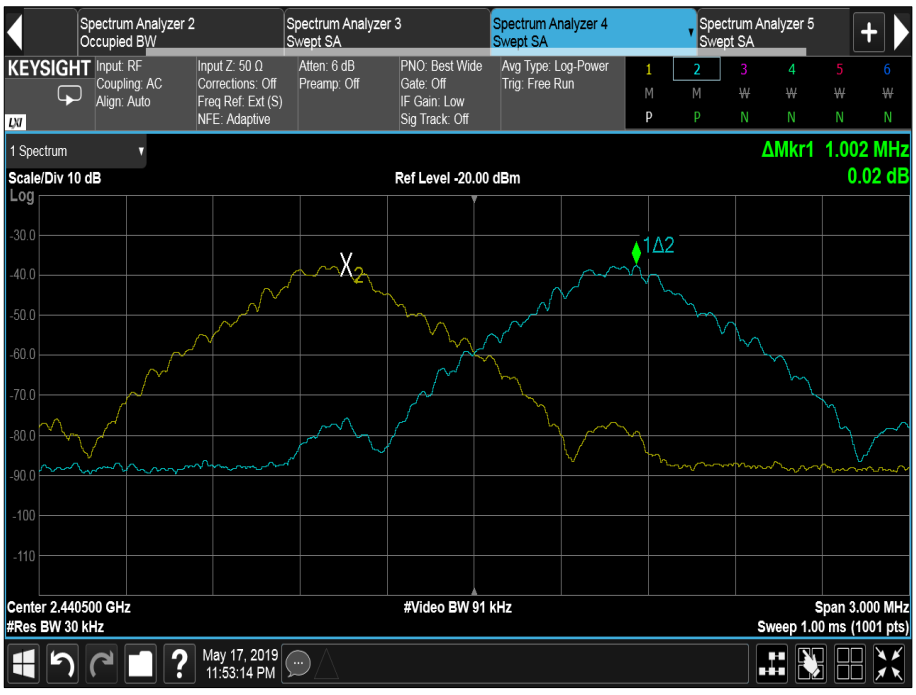

Figure 13 - GFSK

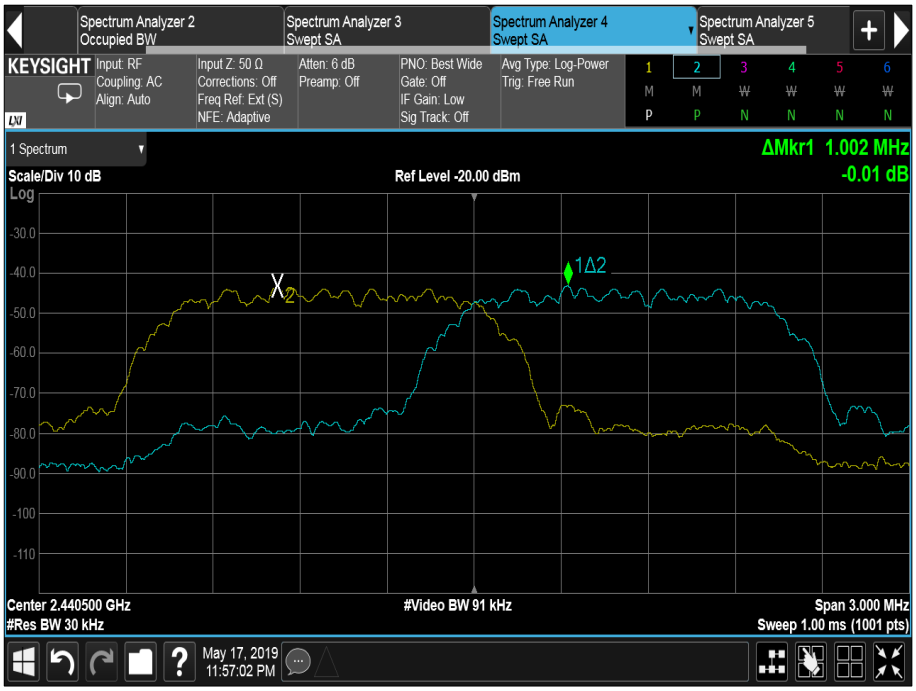

Figure 14 - 8-DPSK

Figure 15 - pi/4DQPSK

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W.

ISEDC RSS-247, Limit Clause 5.1 (b)

FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	07-Sep-2019
Hygrometer	Rotronic	I-1000	3220	12	13-Sep-2019
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	04-Oct-2019

Table 10

2.4 Frequency Hopping Systems - Number of Hopping Channels

2.4.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)
ISEDC RSS-247, Clause 5.1

2.4.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55YP - Modification State 0

2.4.3 Date of Test

17-May-2019

2.4.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.3.

2.4.5 Environmental Conditions

Ambient Temperature	24.4 °C
Relative Humidity	34.4 %

2.4.6 Test Results

Bluetooth - Transmit

Number of Hopping Channels: 79

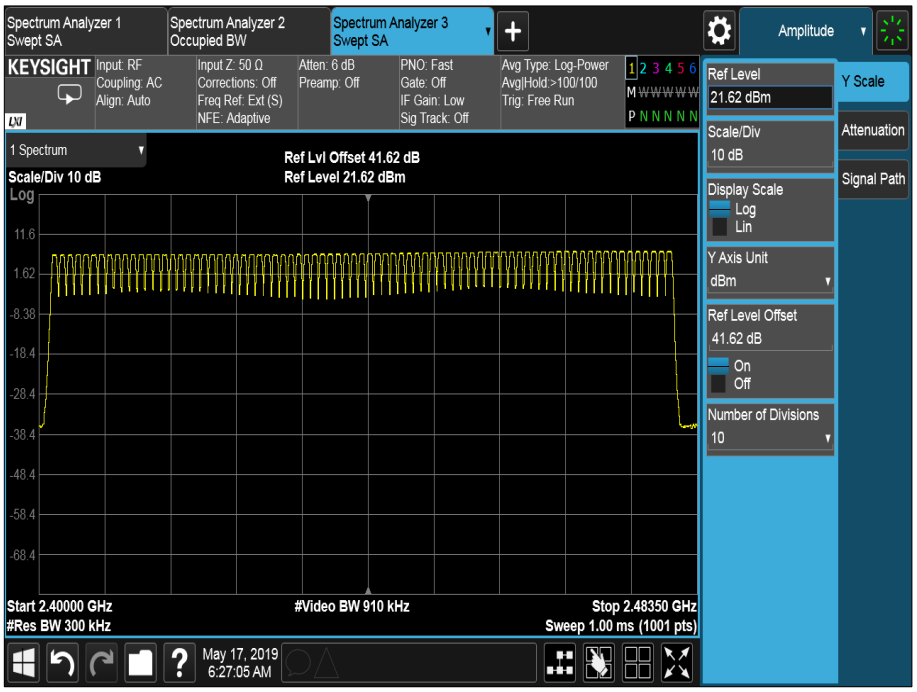

Figure 16 - Measurement Frequency Range: 2400 MHz to 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)(iii)

≥ 15 channels

ISEDC RSS-247, Limit Clause 5.1 (d)

FHSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	07-Sep-2019
Hygrometer	Rotronic	I-1000	3220	12	13-Sep-2019
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	04-Oct-2019

Table 11

2.5 Frequency Hopping Systems - 20 dB Bandwidth

2.5.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)
ISEDC RSS-247, Clause 5.1

2.5.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55YP - Modification State 0

2.5.3 Date of Test

17-May-2019

2.5.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.9.2.

2.5.5 Environmental Conditions

Ambient Temperature	24.4 °C
Relative Humidity	34.4 %

2.5.6 Test Results

Bluetooth - Transmit

Frequency (MHz)	20 dB Bandwidth (kHz)		
	GFSK (BDR)	π/4 DQPSK	8-DPSK
2402	953.60	1369.00	1357.00
2440	956.00	1369.00	1356.00
2480	956.00	1369.00	1356.00

Table 12

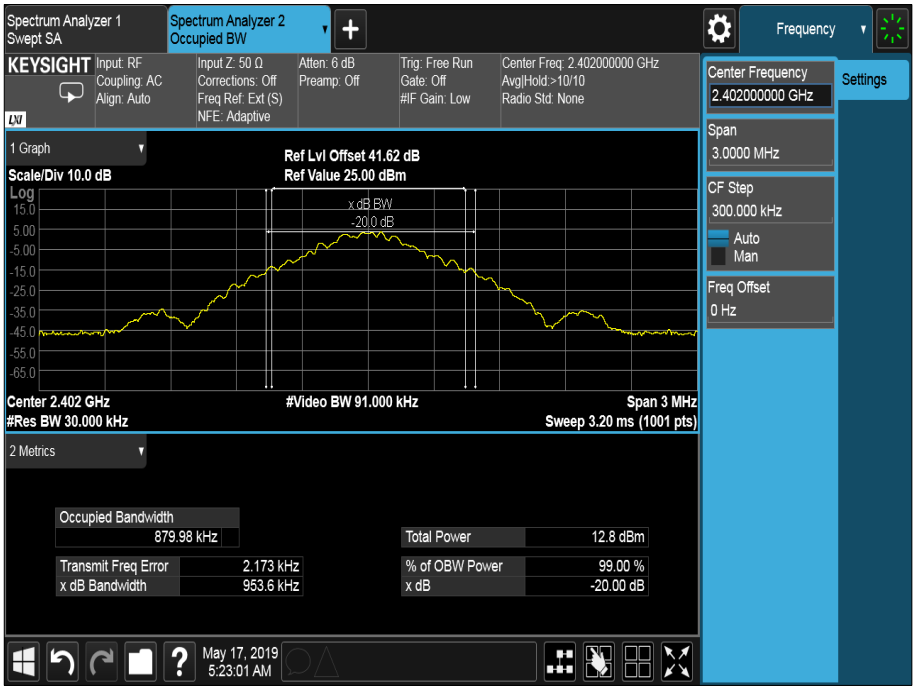

Figure 17 - 2402 MHz - GFSK

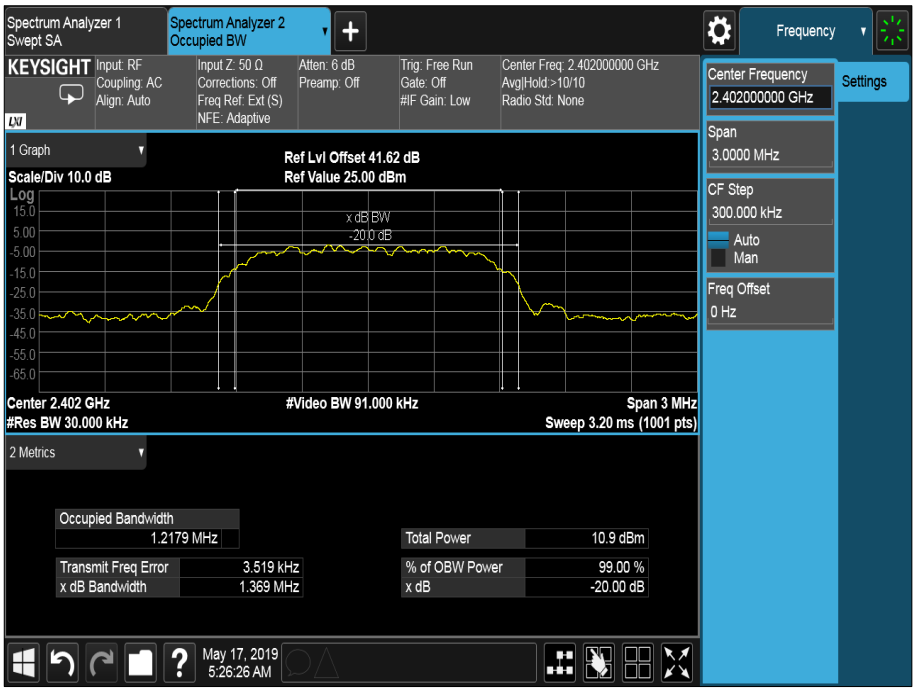

Figure 18 - 2402 MHz - π/4 DQPSK

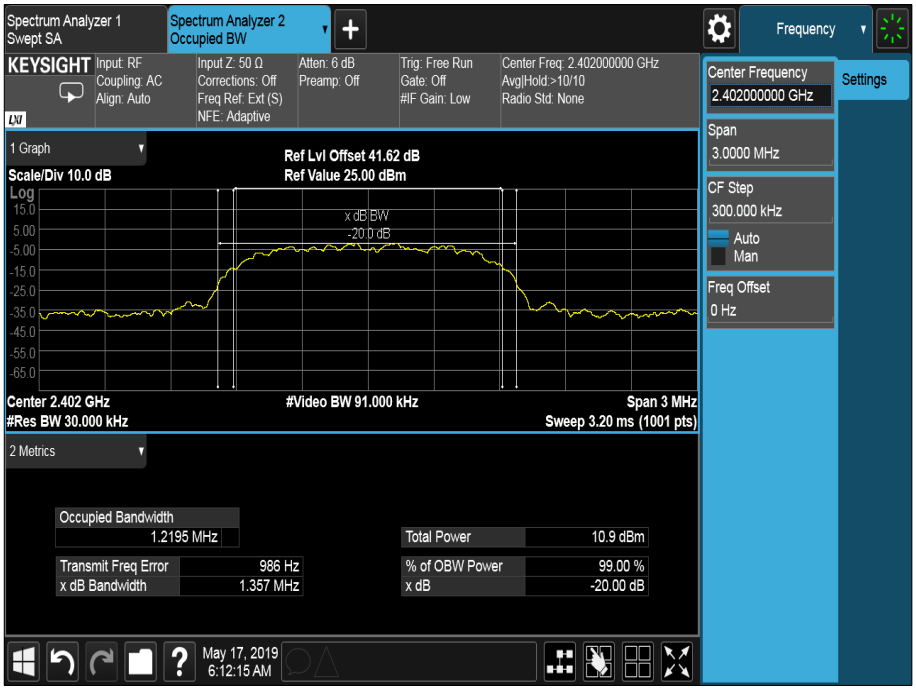

Figure 19 - 2402 MHz - 8-DPSK

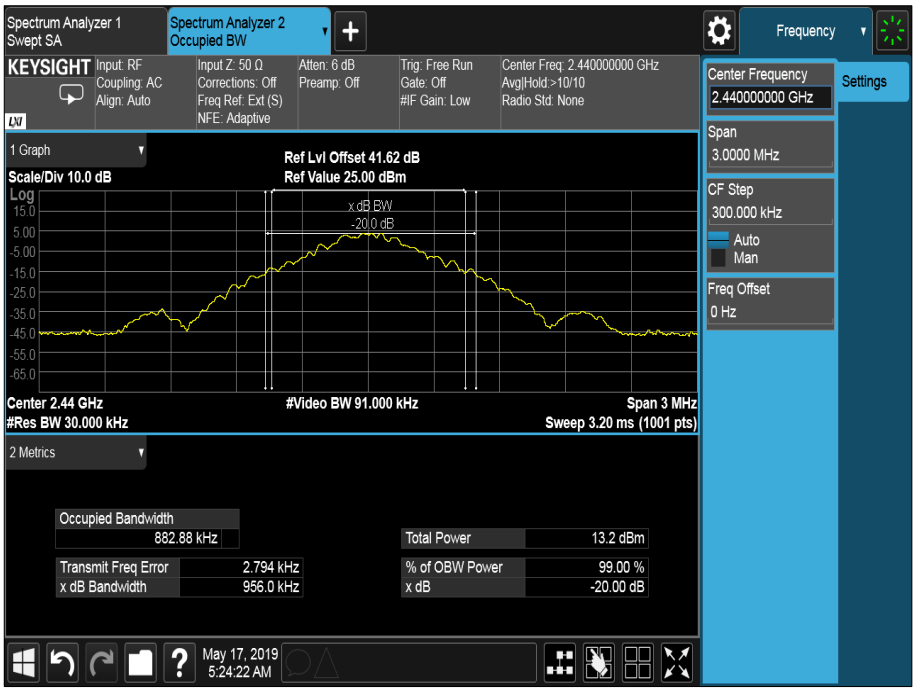

Figure 20 - 2440 MHz - GFSK

Figure 21 - 2440 MHz - π/4 DQPSK

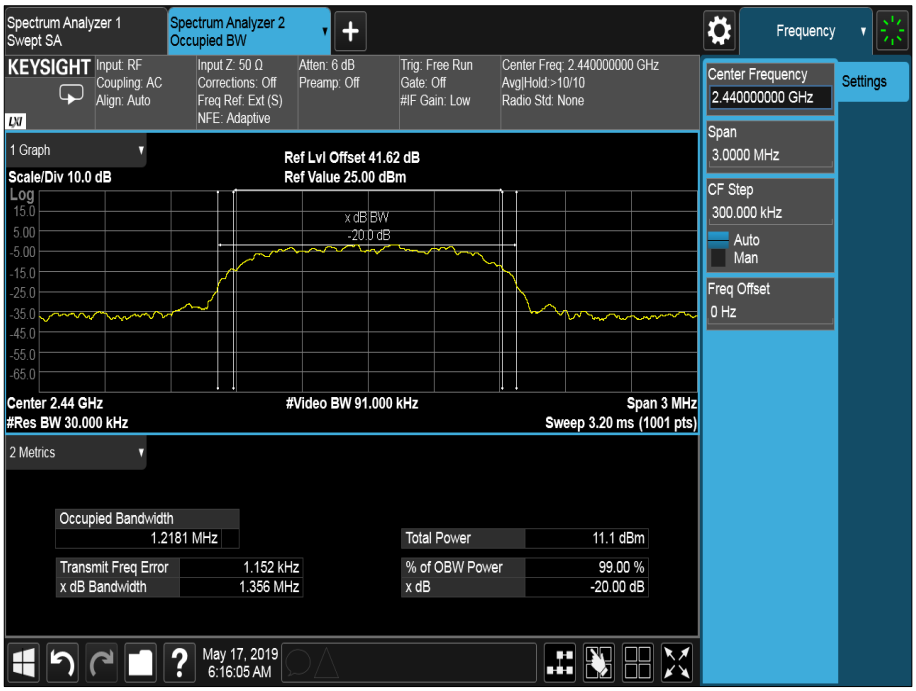

Figure 22 - 2440 MHz - 8-DPSK

Figure 23 - 2480 MHz - GFSK

Figure 24 - 2480 MHz - π/4 DQPSK

Figure 25 - 2480 MHz - 8-DPSK

2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	07-Sep-2019
Hygrometer	Rotronic	I-1000	3220	12	13-Sep-2019
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	04-Oct-2019

Table 13

2.6 Authorised Band Edges

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d)
ISEDC RSS-247, Clause 5.5

2.6.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55XT - Modification State 0

2.6.3 Date of Test

05-June-2019

2.6.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.4.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

2.6.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	49.2 %

2.6.6 Test Results

Bluetooth - Transmit

Mode	Modulation	Packet Type	Frequency (MHz)	Measured Frequency (MHz)	Level (dBc)
Static	GFSK	DH5	2402	2400.0	-56.27
Static	π/4 DQPSK	2DH5	2402	2400.0	-50.12
Static	8-DPSK	3DH5	2402	2400.0	-48.75
Static	GFSK	DH5	2480	2483.5	-55.74
Static	π/4 DQPSK	2DH5	2480	2483.5	-51.48
Static	8-DPSK	3DH5	2480	2483.5	-53.01
Hopping	GFSK	DH5	2402	2400.0	-59.20
Hopping	π/4 DQPSK	2DH5	2402	2400.0	-55.83
Hopping	8-DPSK	3DH5	2402	2400.0	-56.63
Hopping	GFSK	DH5	2480	2483.5	-53.93
Hopping	π/4 DQPSK	2DH5	2480	2483.5	-55.69
Hopping	8-DPSK	3DH5	2480	2483.5	-55.22

Table 14

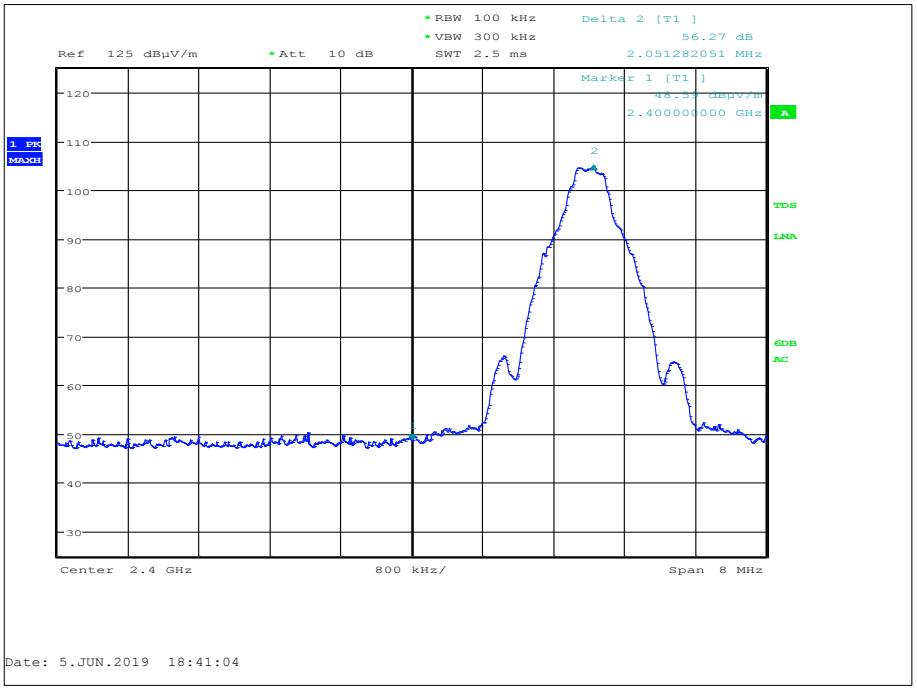

Figure 26 - Static - GFSK/DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

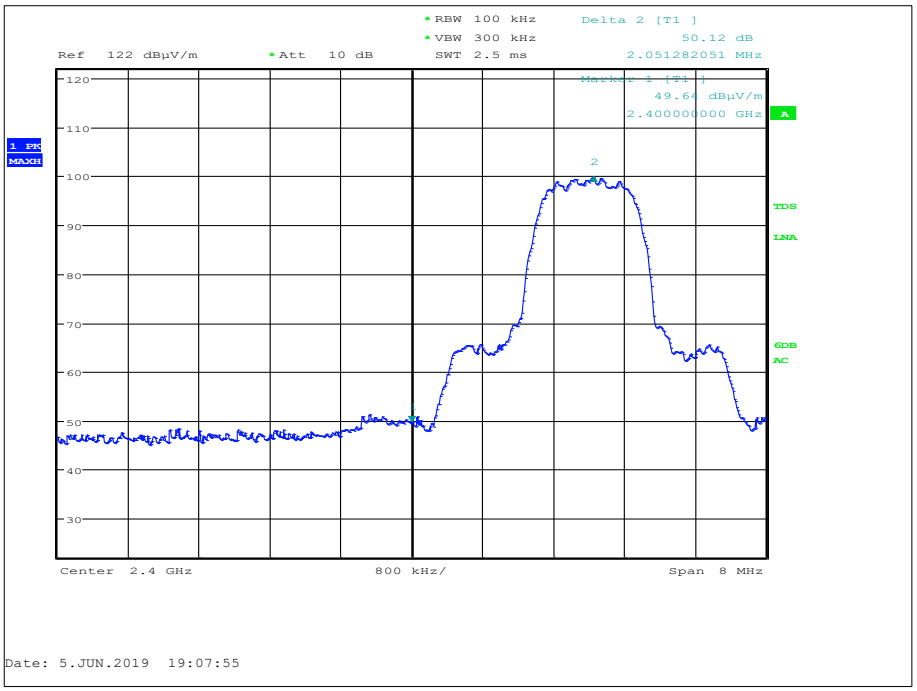

Figure 27 - Static - π/4 DQPSK/2DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

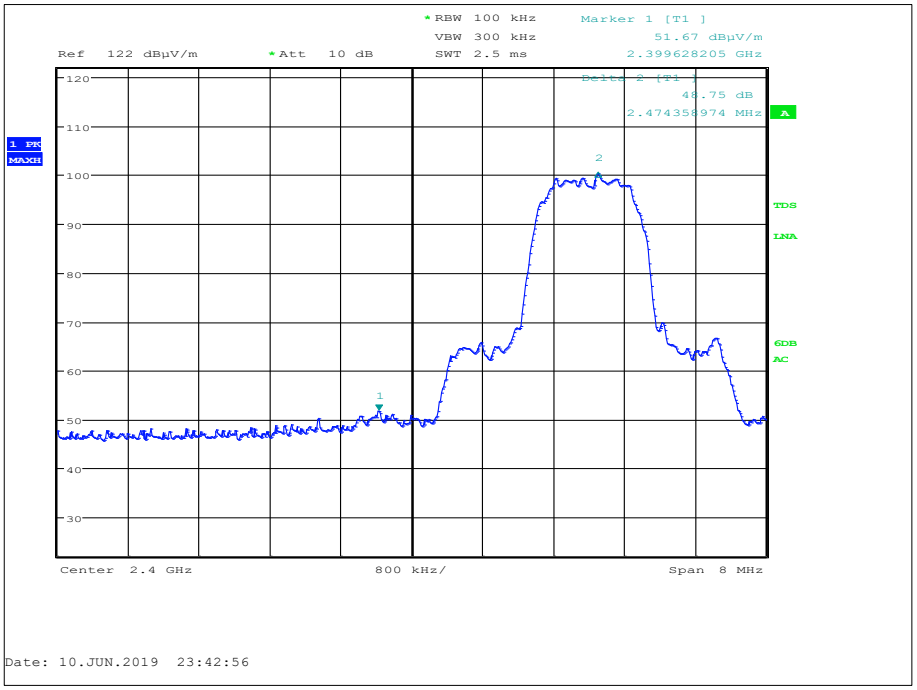

Figure 28 - Static - 8-DPSK/3DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

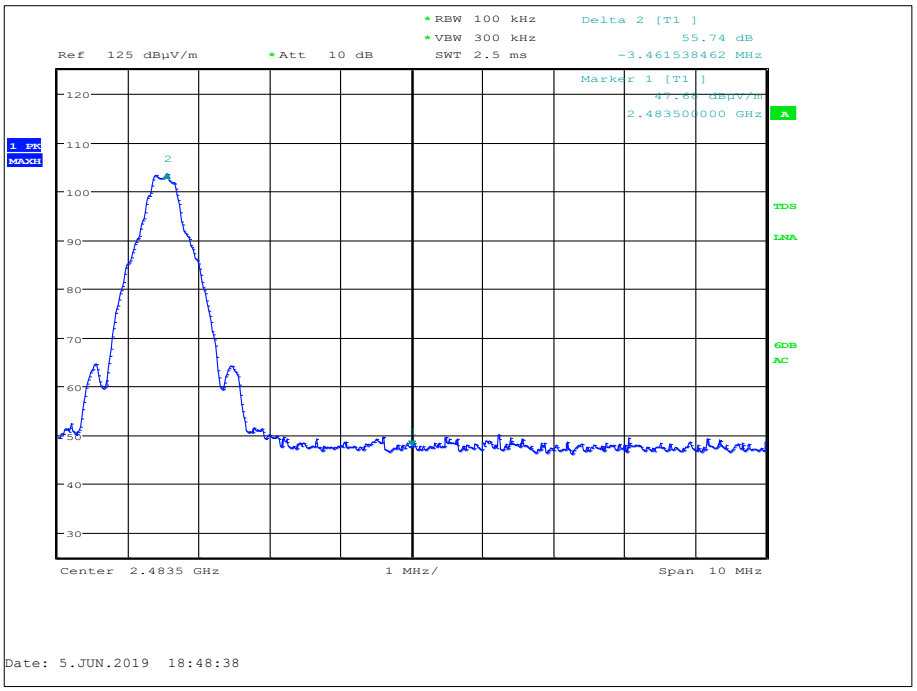

Figure 29 - Static - GFSK/DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

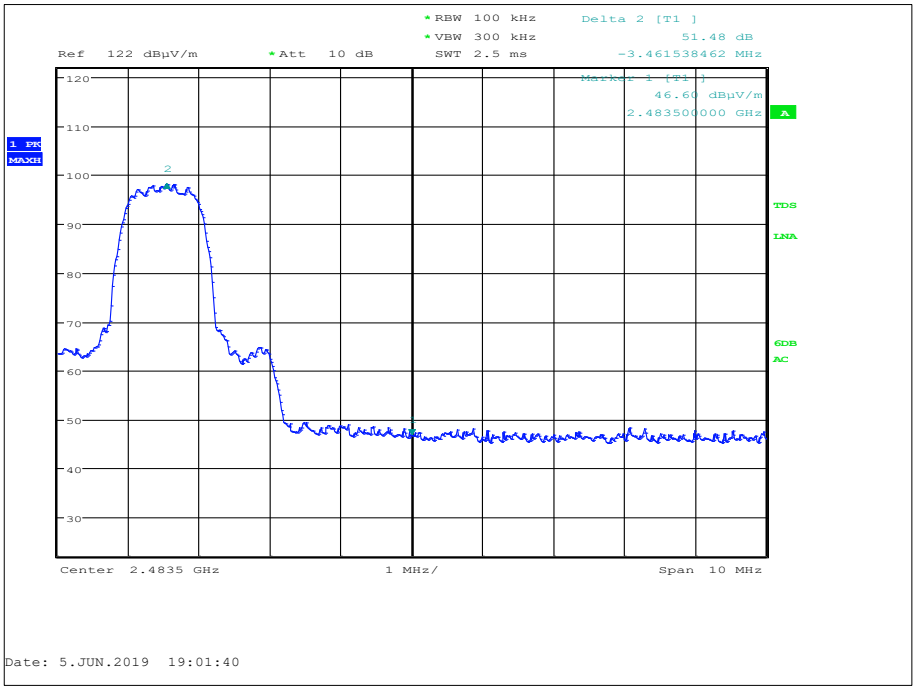

Figure 30 - Static - π/4 DQPSK/2DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

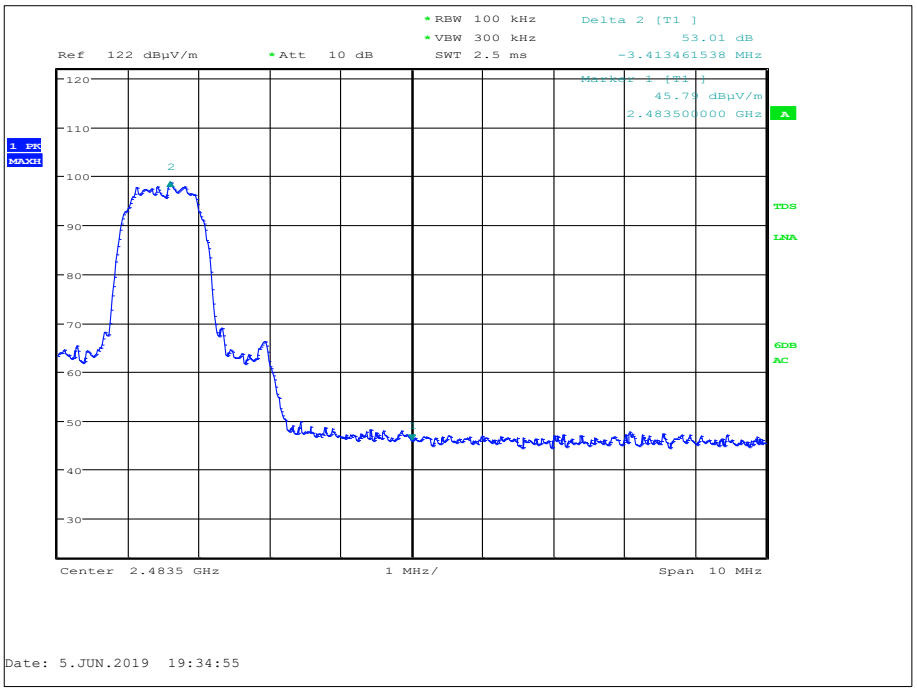

Figure 31 - Static - 8-DPSK/3DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

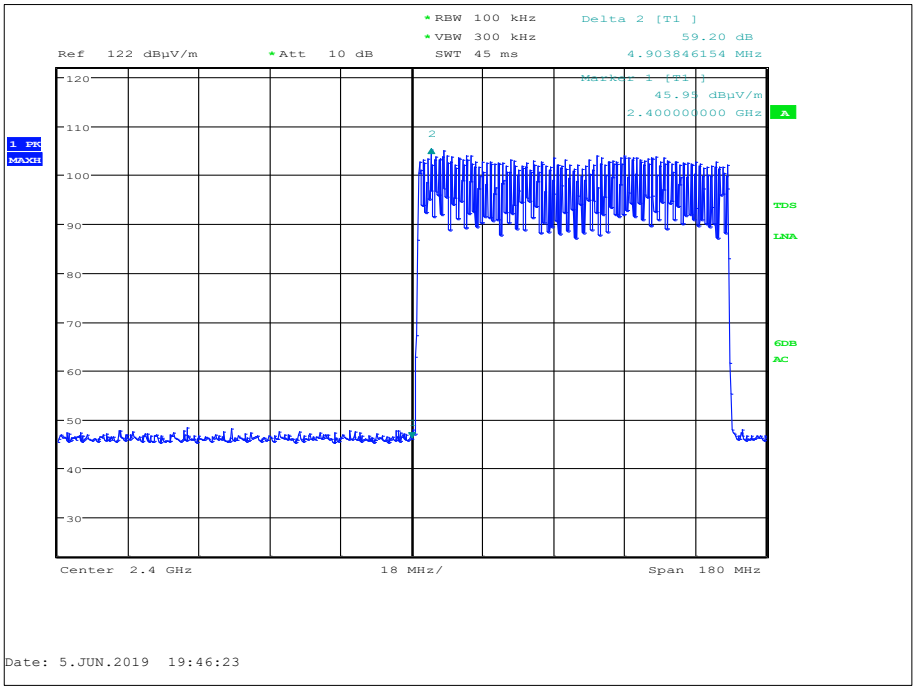

Figure 32 - Hopping - GFSK/DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

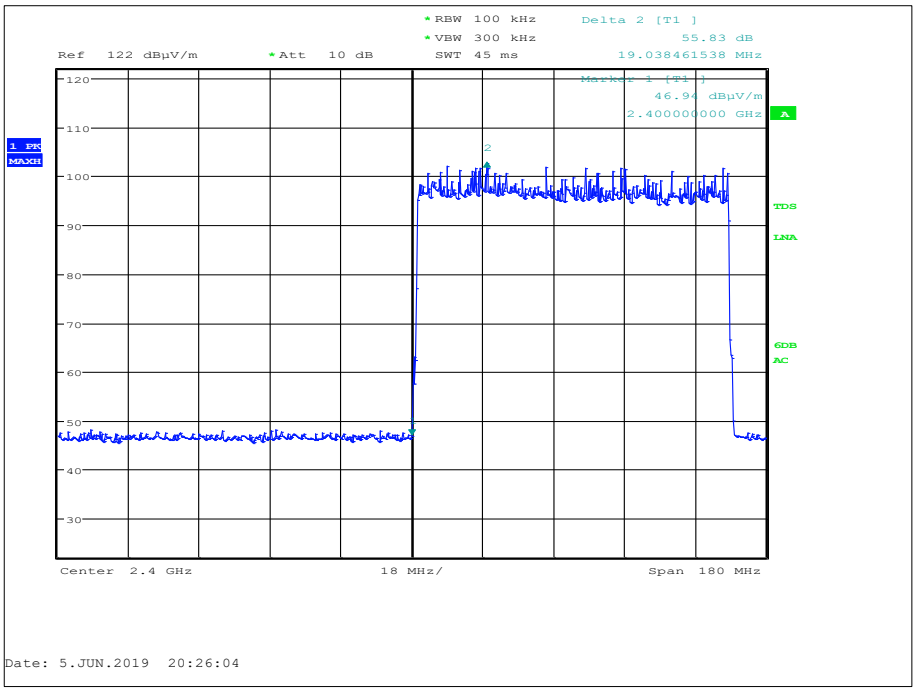

Figure 33 - Hopping - π/4 DQPSK/2DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

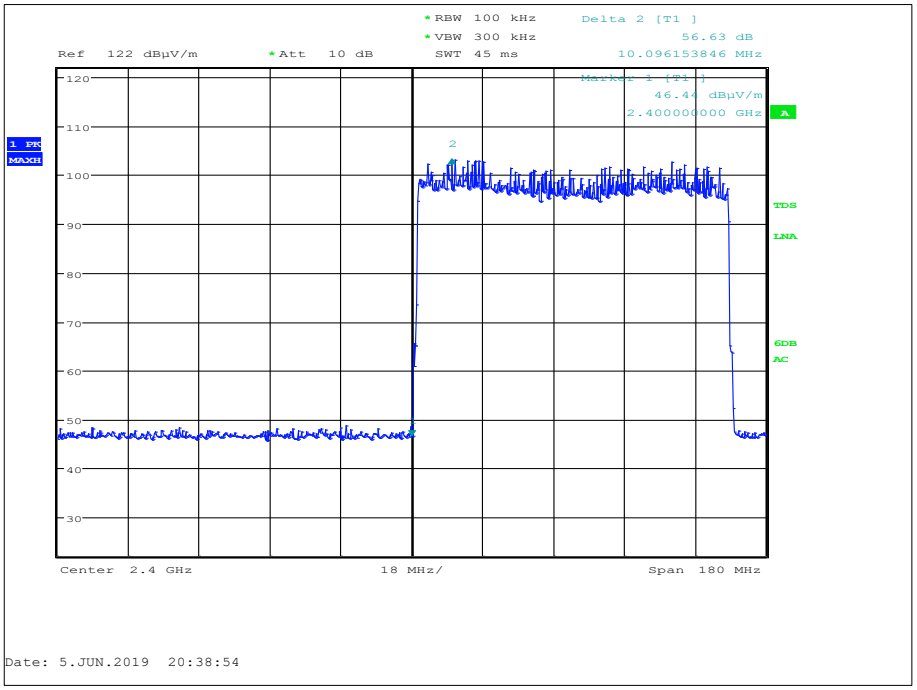

Figure 34 - Hopping - 8-DPSK/3DH5 - 2402 MHz - Measured Frequency 2400.0 MHz

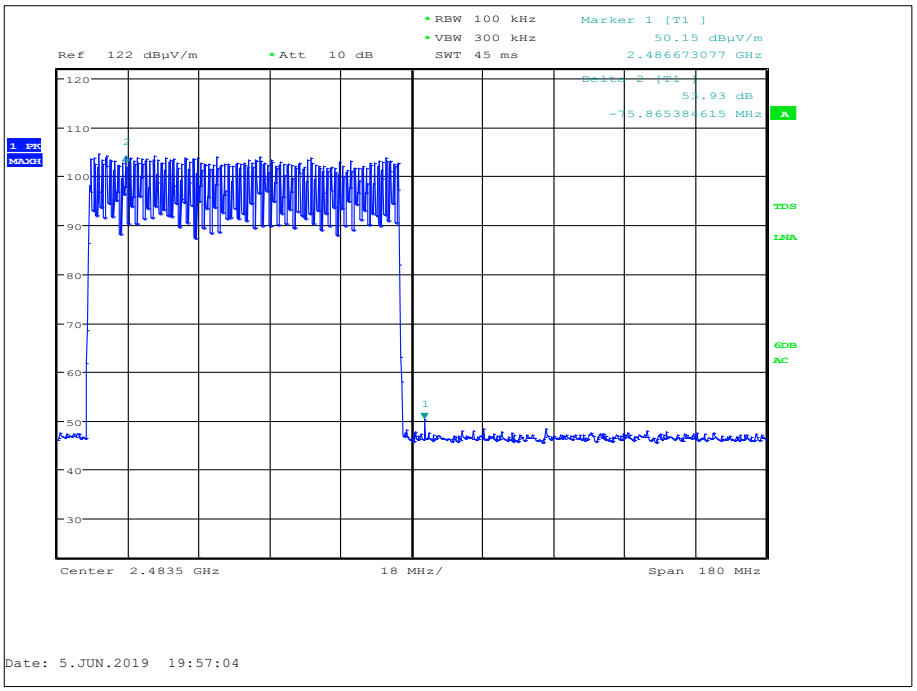

Figure 35 - Hopping - GFSK/DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

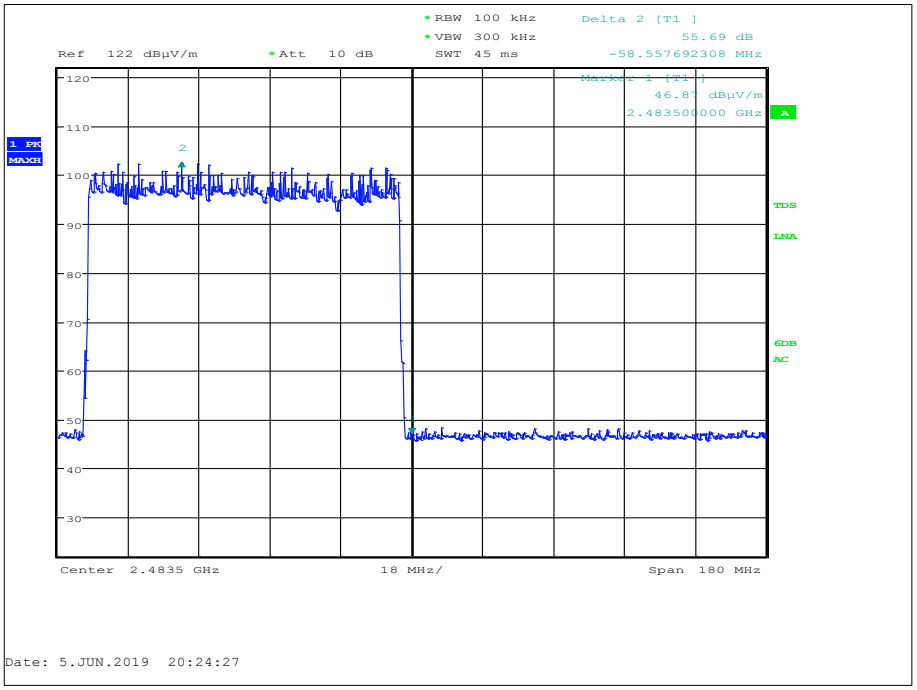

Figure 36 - Hopping - π/4 DQPSK/2DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

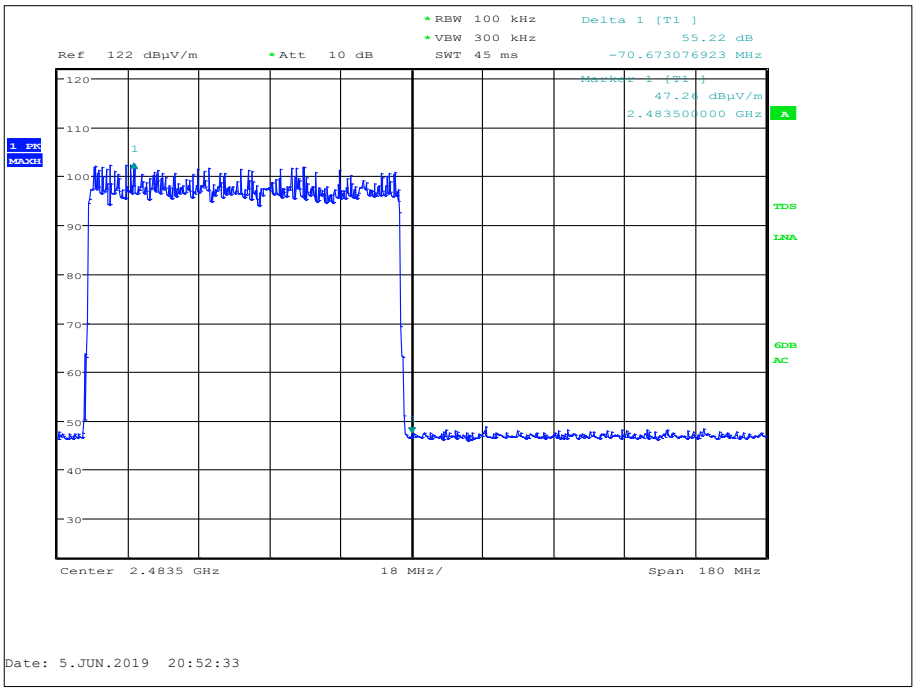

Figure 37 - Hopping - 8-DPSK/3DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitter complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB below the fundamental instead of 20 dB.

ISEDC RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

2.6.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	26-Apr-2019
1 - 18GHz DRG Antenna	ETS-Lindgren	3117	4738	12	05-Mar-2020
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5093	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5109	12	05-Oct-2019
EmX Software	TUV SUD	EmX	5125	-	Software

Table 15

TU - Traceability Unscheduled

2.7 Restricted Band Edges

2.7.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.205
ISEDC RSS-GEN, Clause 8.10

2.7.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55XT - Modification State 0

2.7.3 Date of Test

05-June-2019

2.7.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.10.5.

Plots for average measurements were taken in accordance with ANSI C63.10 clause 4.1.4.2.3.

These are shown for information purposes and were used to determine the worst case measurement point. Final average measurements were then taken in accordance with ANSI C63.10 clause 4.1.4.2.2. to obtain the measurement result recorded in the test results tables.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

2.7.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	49.2 %

2.7.6 Test Results

Bluetooth - Transmit

Mode	Modulation	Packet Type	Frequency (MHz)	Measured Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Static	GFSK	DH5	2402	2390.0	55.84	43.12
Static	π/4 DQPSK	2DH5	2402	2390.0	53.62	42.72
Static	8-DPSK	3DH5	2402	2390.0	53.46	42.84
Static	GFSK	DH5	2480	2483.5	55.91	44.15
Static	π/4 DQPSK	2DH5	2480	2483.5	55.69	44.82
Static	8-DPSK	3DH5	2480	2483.5	56.34	44.96
Hopping	GFSK	DH5	2402	2390.0	53.75	43.25
Hopping	π/4 DQPSK	2DH5	2402	2390.0	54.20	42.26
Hopping	8-DPSK	3DH5	2402	2390.0	53.99	42.24
Hopping	GFSK	DH5	2480	2483.5	53.12	45.00
Hopping	π/4 DQPSK	2DH5	2480	2483.5	53.75	45.25
Hopping	8-DPSK	3DH5	2480	2483.5	53.48	43.09

Table 16

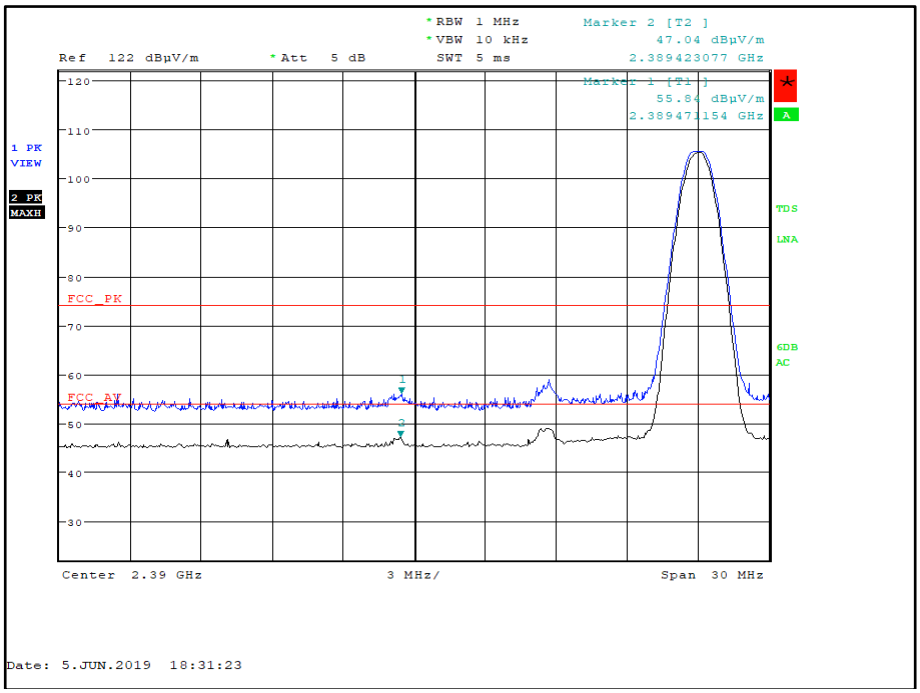

Figure 38 - Static - GFSK/DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

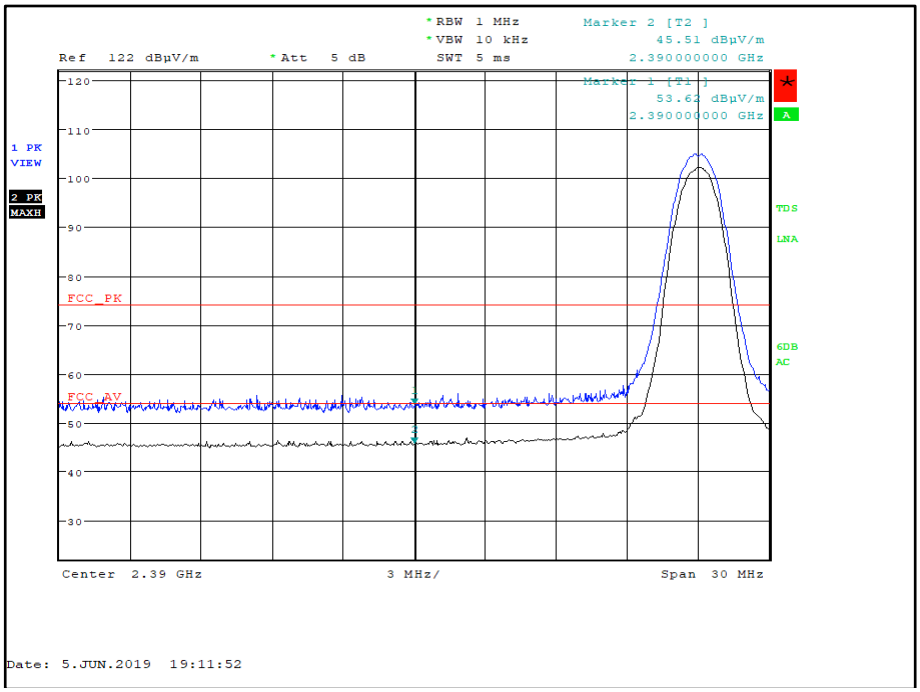

Figure 39 - Static - π/4 DQPSK/2DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

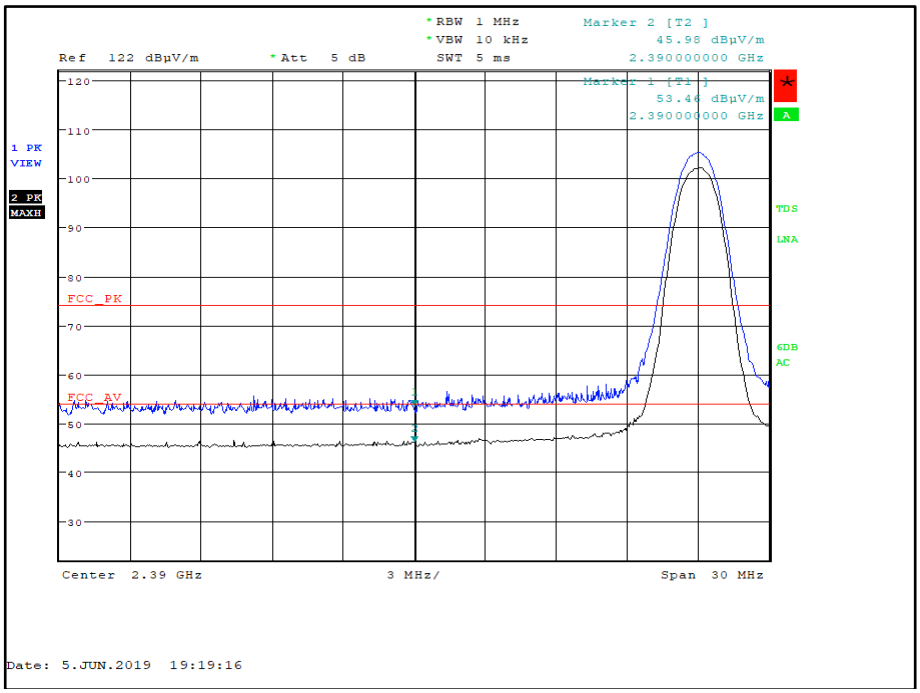

Figure 40 - Static - 8-DPSK/3DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

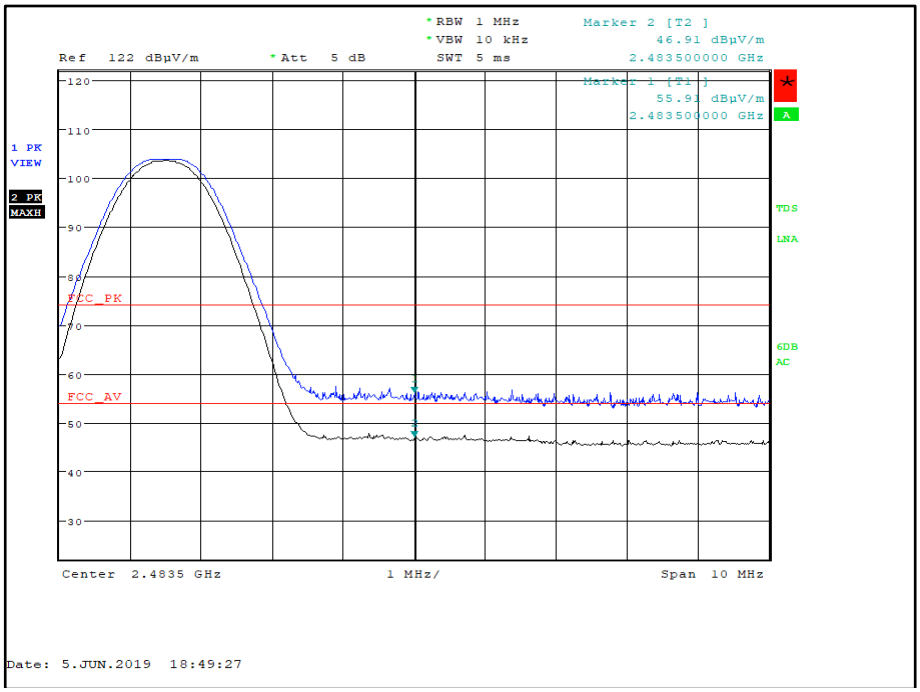

Figure 41 - Static - GFSK/DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

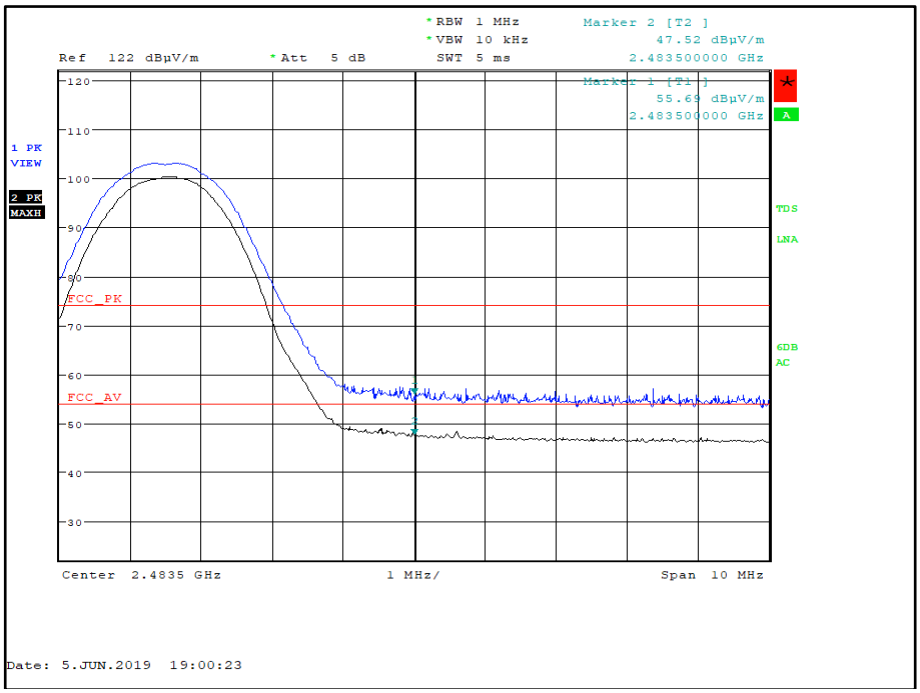

Figure 42 - Static - π/4 DQPSK/2DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

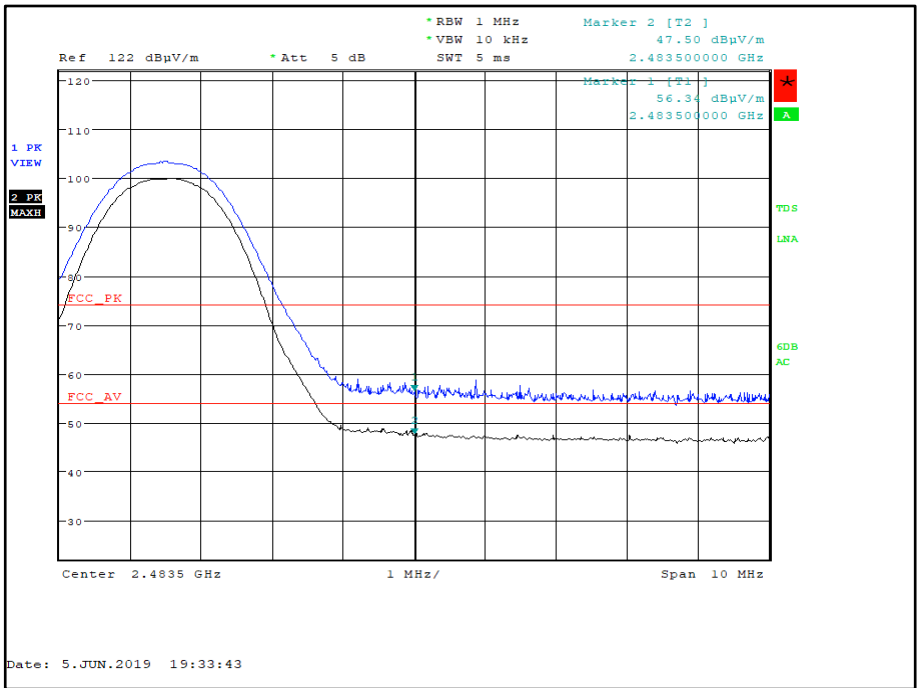

Figure 43 - Static - 8-DPSK/3DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

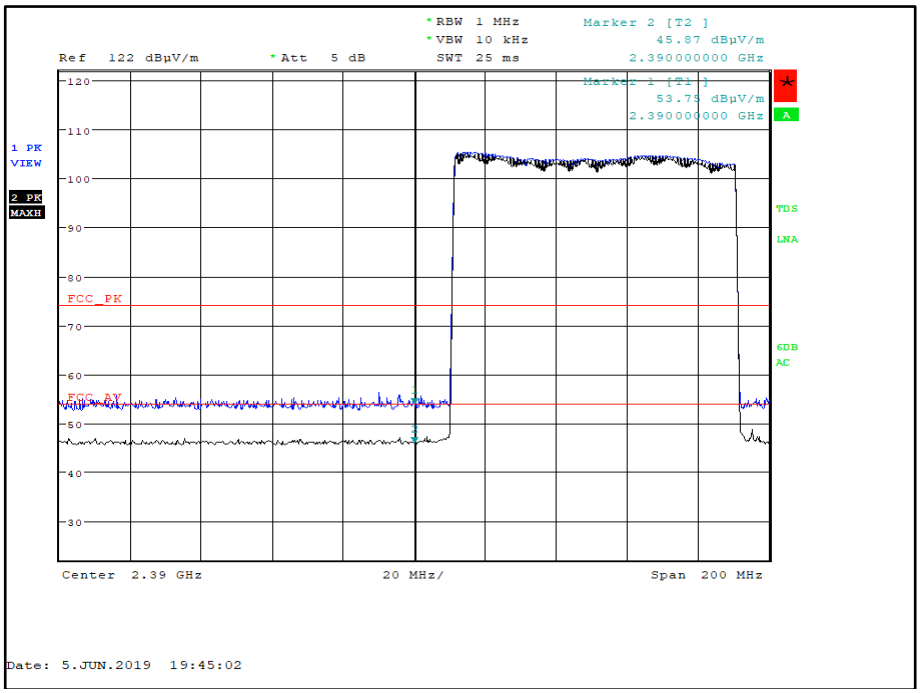

Figure 44 - Hopping - GFSK/DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

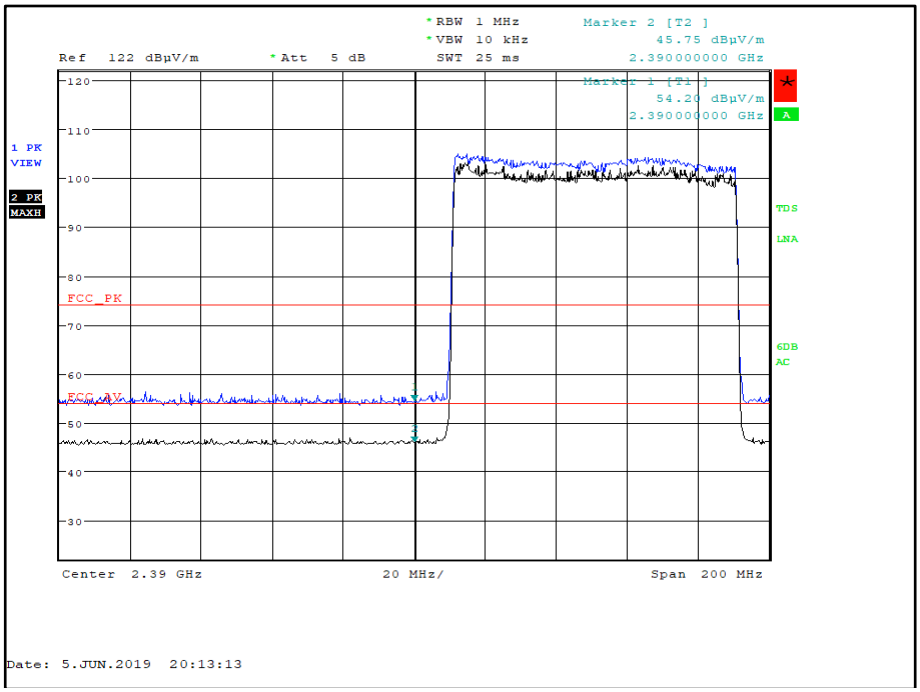

Figure 45 - Hopping - π/4 DQPSK/2DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

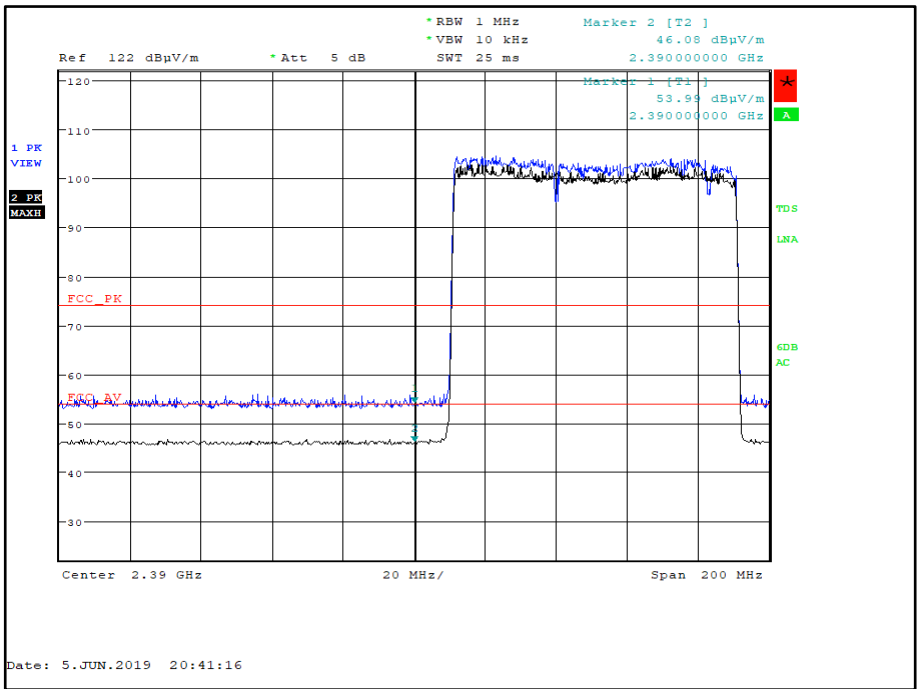

Figure 46 - Hopping - 8-DPSK/3DH5 - 2402 MHz - Measured Frequency 2390.0 MHz

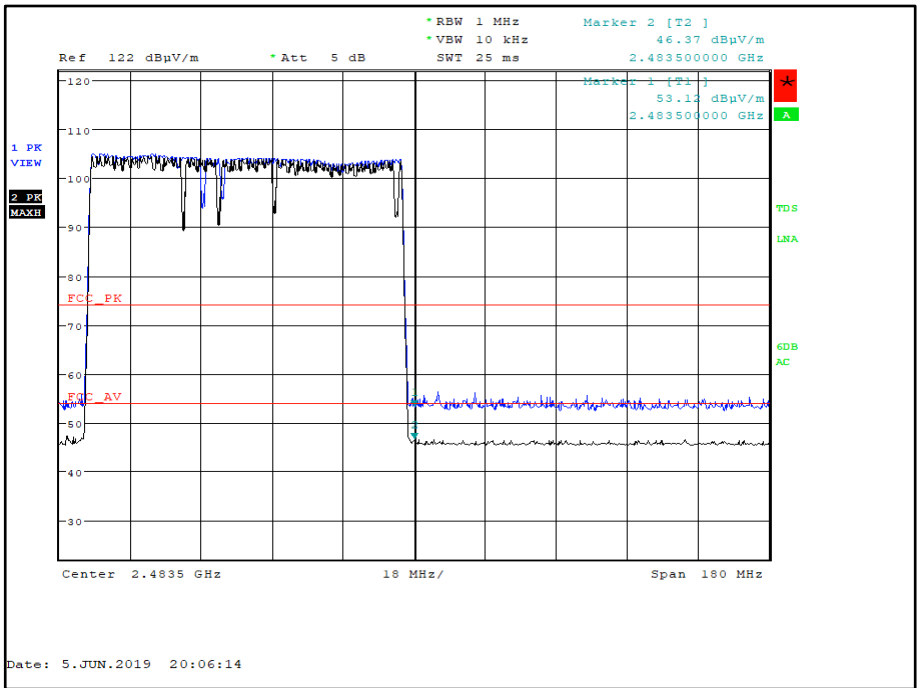

Figure 47 - Hopping - GFSK/DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

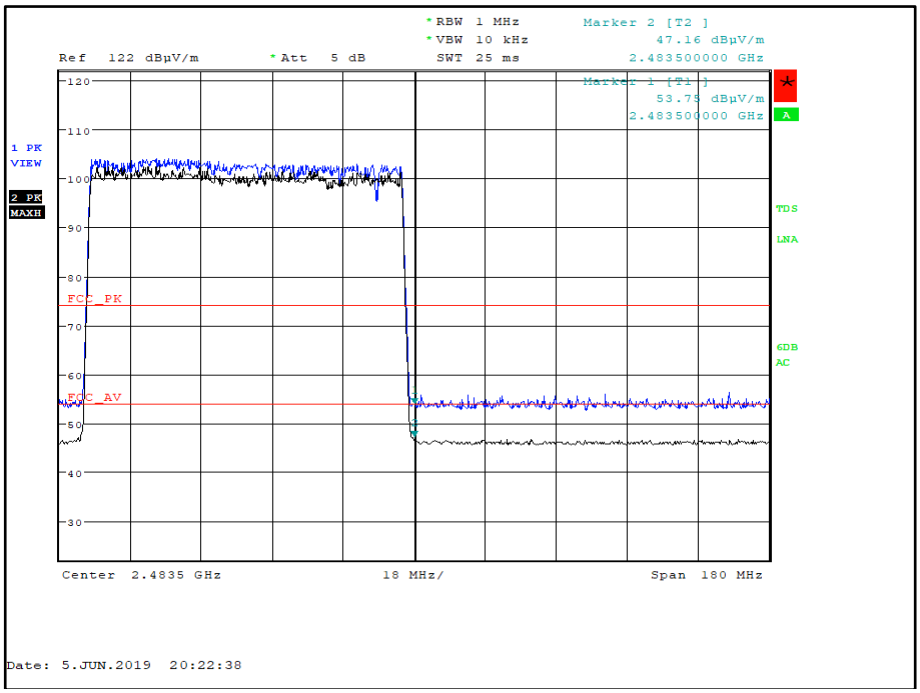

Figure 48 - Hopping - π/4 DQPSK/2DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

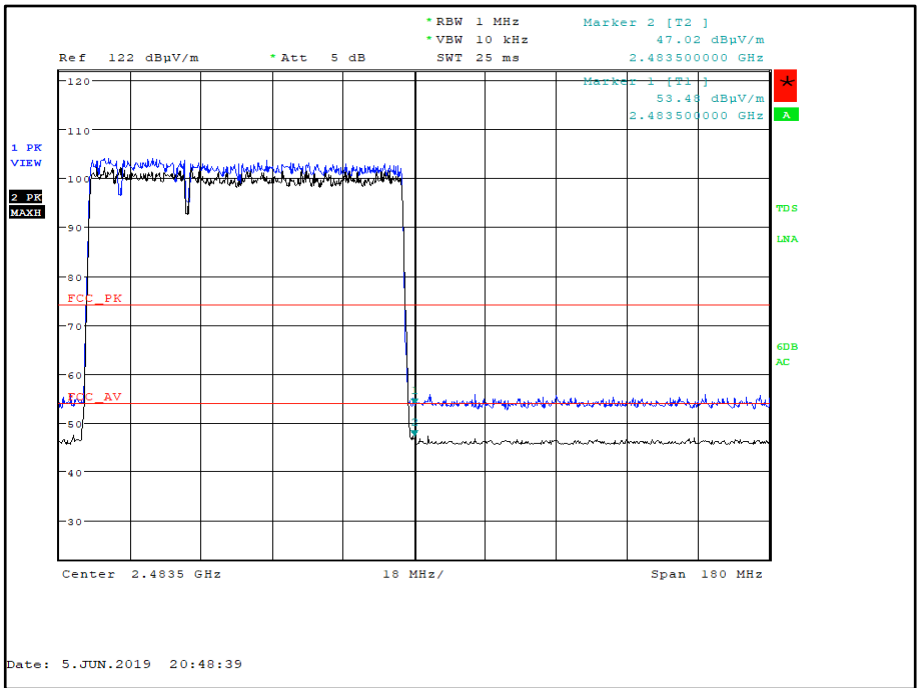

Figure 49 - Hopping - 8-DPSK/3DH5 - 2480 MHz - Measured Frequency 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 17

ISEDC RSS-GEN, Limit Clause 8.9

Frequency (MHz)	Field Strength (µV/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960*	500

Table 18

*Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

2.7.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-June-2019
1 - 18GHz DRG Antenna	ETS-Lindgren	3117	4738	12	05-Mar-2020
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5093	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5109	12	05-Oct-2019
EmX Software	TUV SUD	EmX	5125	-	Software

Table 19

TU - Traceability Unscheduled

2.8 Spurious Radiated Emissions

2.8.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d) and 15.205
ISEDC RSS-247, Clause 5.5
ISEDC RSS-GEN, Clause 6.13

2.8.2 Equipment Under Test and Modification State

SC2124, S/N: 2PS001845GM55XT - Modification State 0

2.8.3 Date of Test

05-June-2019 to 07-June-2019

2.8.4 Test Method

This test was performed in accordance with ANSI C63.10-2013 clause 6.3, 6.5 and 6.6.
The plots show the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (74/54 dBuV/m) when compared to 20 dBc outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10 dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

For frequencies greater than 1 GHz, plots for average measurements were taken with an RMS detector and a max hold trace to characterize the EUT. Where emissions were detected, final average measurements were taken in accordance with ANSI C63.10 clause 4.1.4.2.2.

If emissions were found to be pulsed, final measurements were taken in accordance with ANSI C63.10 clause 7.5. A peak measurement is performed. A duty cycle correction factor is then determined by the expression duty (dB) = 20log(On Time/(On Time + Off Time)). This factor is then added to the peak value to determine the average value.

The following conversion can be applied to convert from dBµV/m to µV/m: 10^(Field Strength in dBµV/m/20).

For frequencies greater than 18 GHz, the measurement distance was reduced to 1 meter and the limit line was increased by 20*LOG(3/1) = 9.54 dB.

2.8.5 Environmental Conditions

Ambient Temperature	20.1 °C
Relative Humidity	58.8 %

2.8.6 Test Results

Bluetooth - Transmit

Testing was performed on the modulation and packet type which resulted in the highest conducted output power. The Modulation/Packet type was 8-DPSK/3DH5.

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation	Orientation
*								

Table 20 - 2402 MHz - 30 MHz to 1 GHz Emissions Results

* No emissions were detected within 10 dB of the limit.

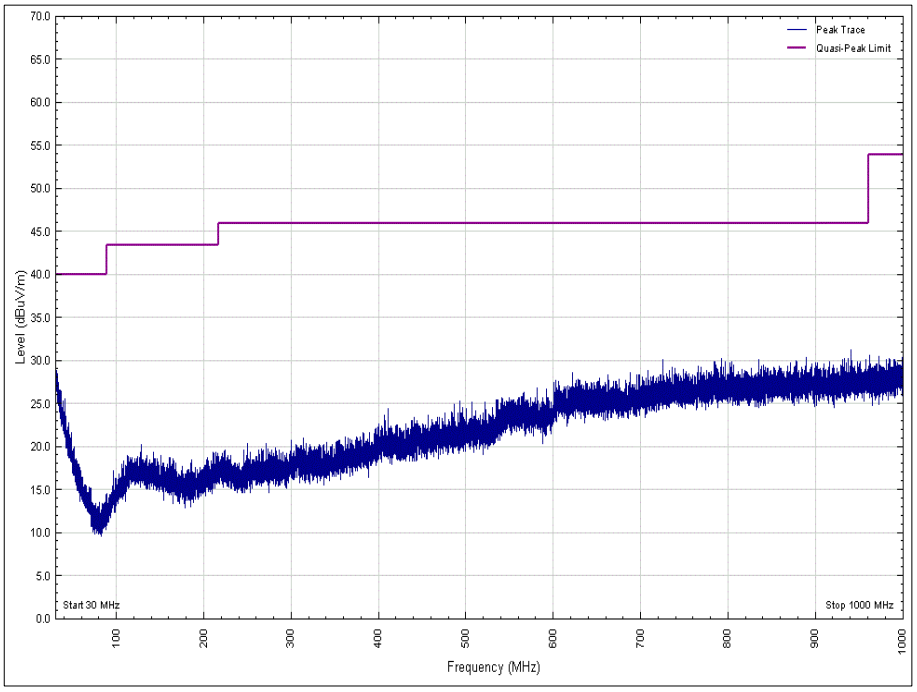

Figure 50 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: X

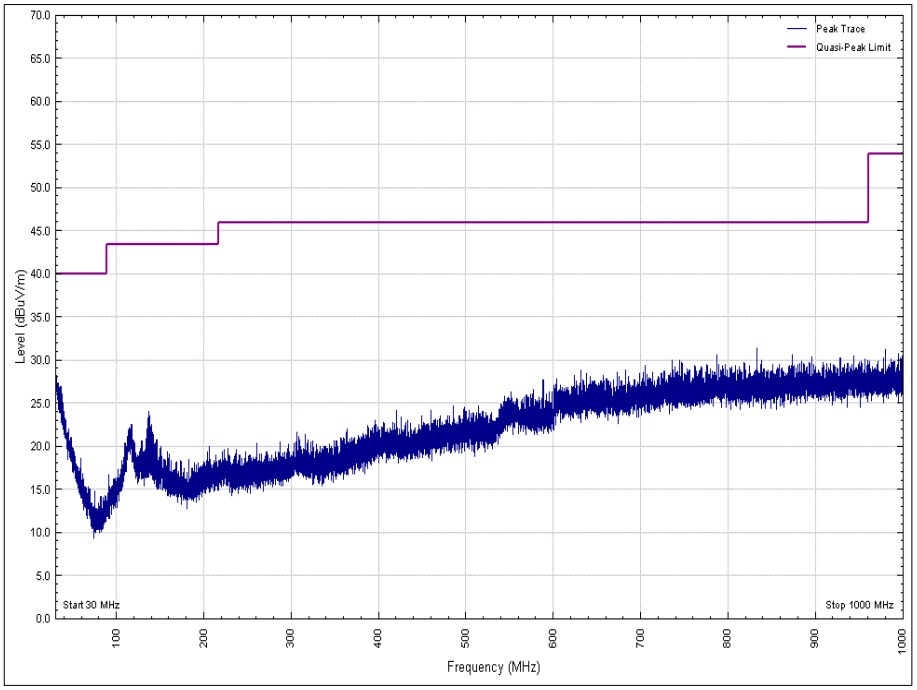

Figure 51 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: X

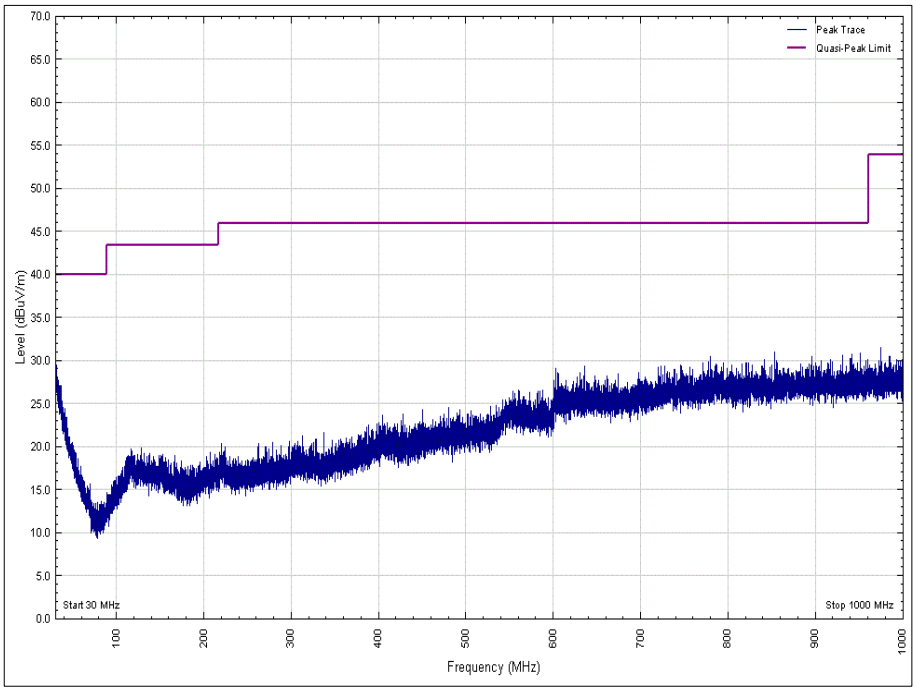

Figure 52 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Y

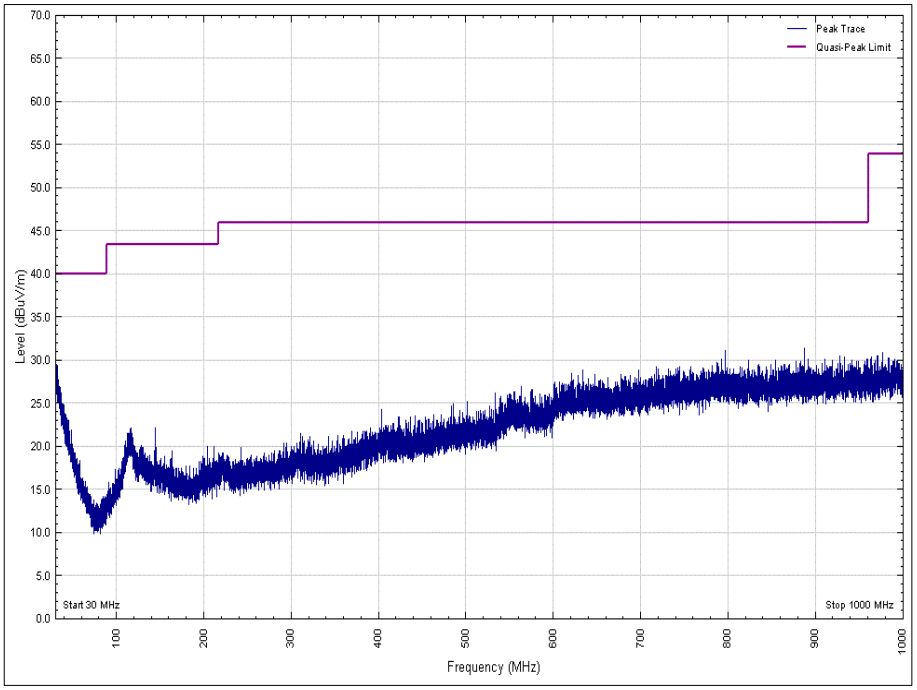

Figure 53 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Y

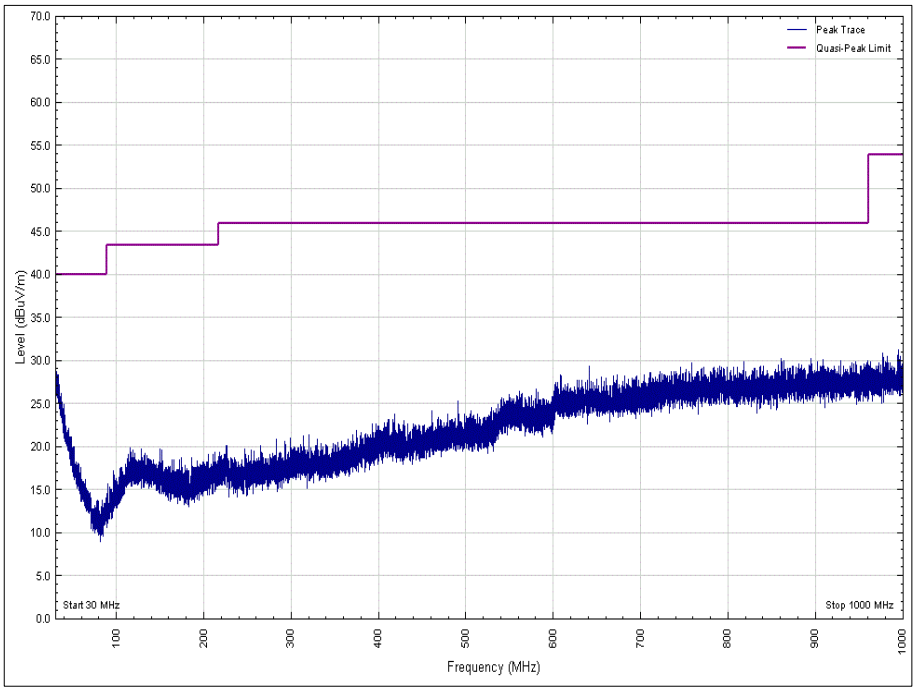

Figure 54 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Z

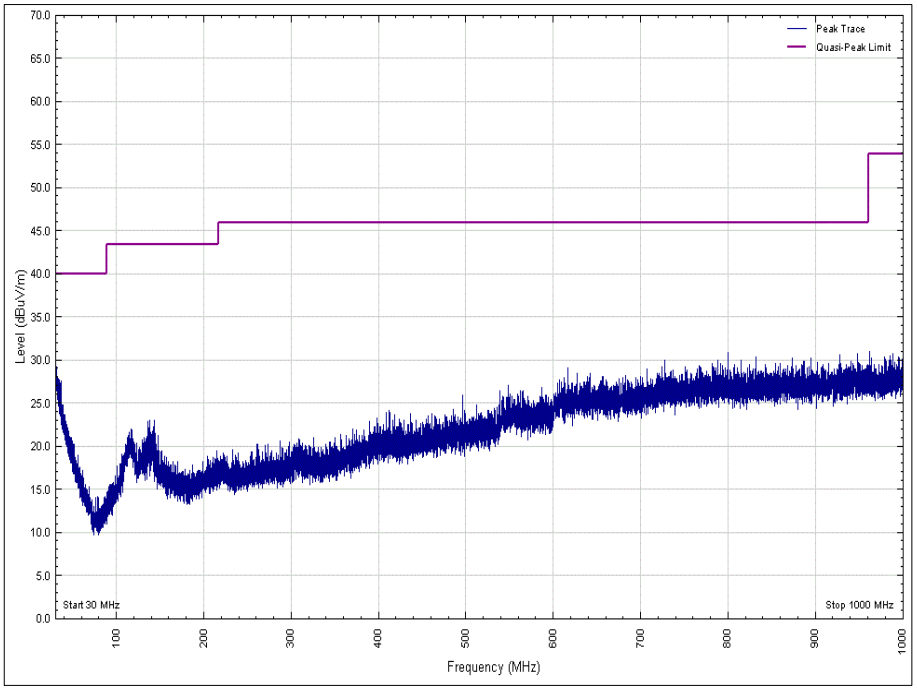

Figure 55 - 2402 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Z

Frequency (GHz)	Result (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 21 - 2402 MHz - 1 GHz to 25 GHz Emissions Results

*No emissions were detected within 10 dB of the limit.

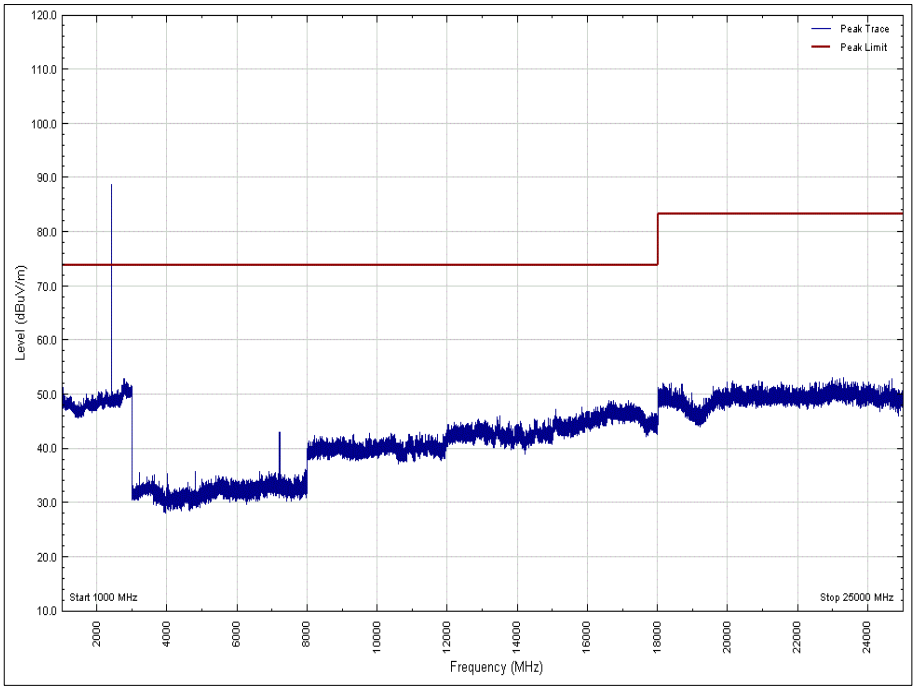

Figure 56 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: X

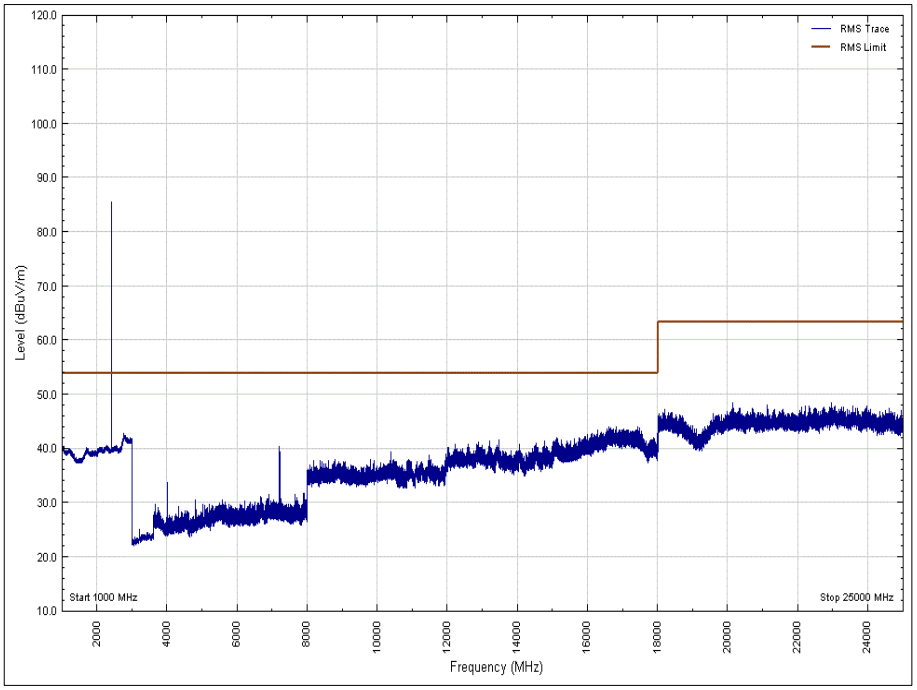

Figure 57 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: X

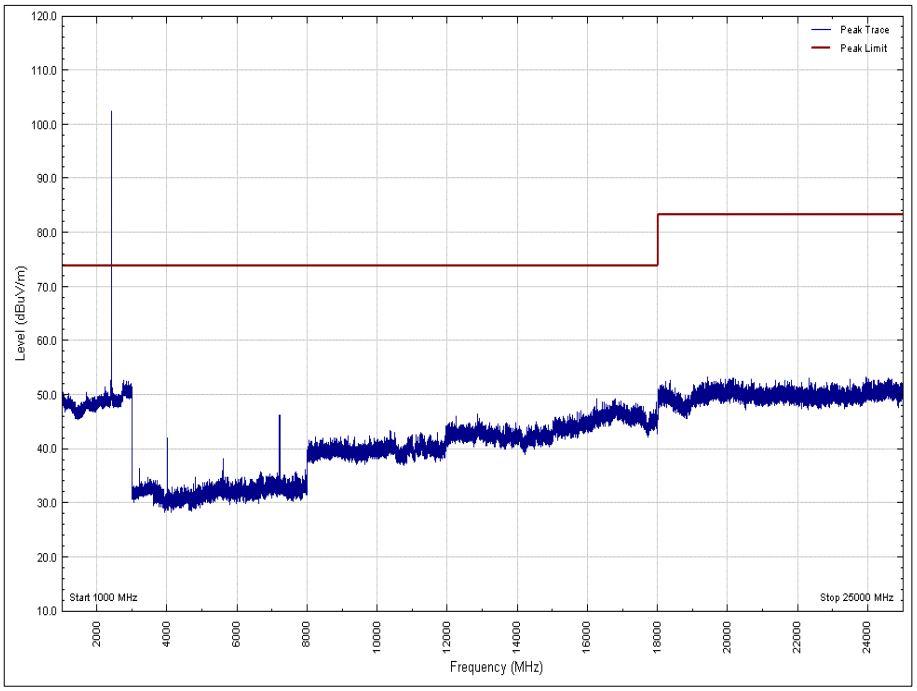

Figure 58 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: X

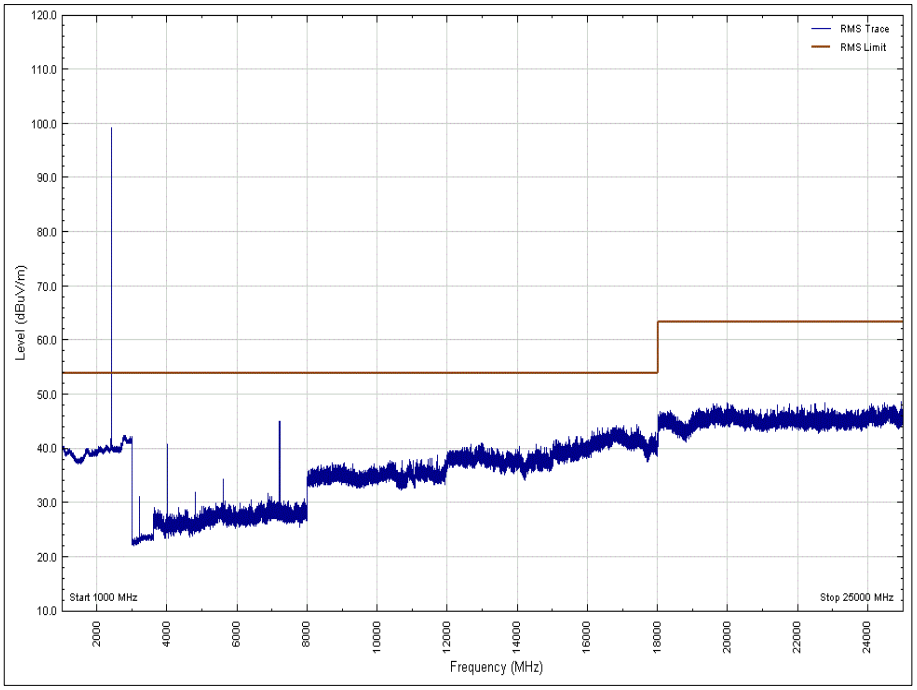

Figure 59 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: X

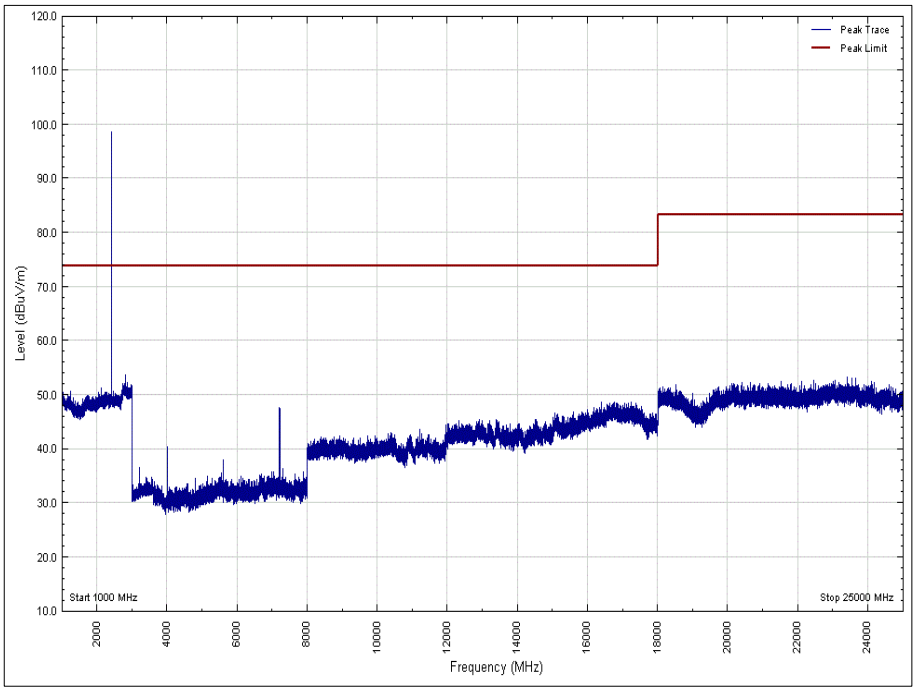

Figure 60 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Y

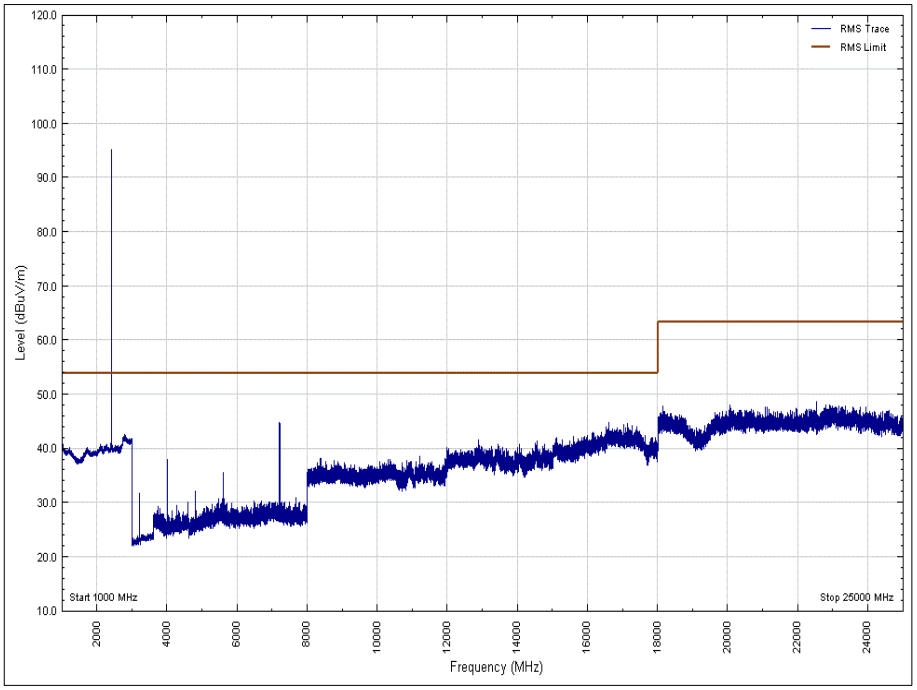

Figure 61 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Y

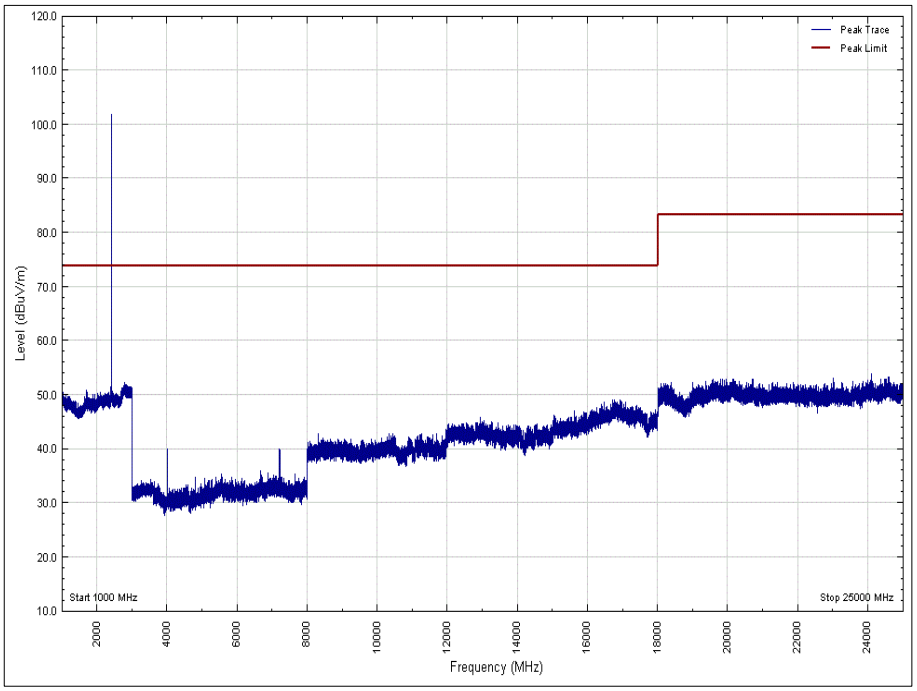

Figure 62 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Y

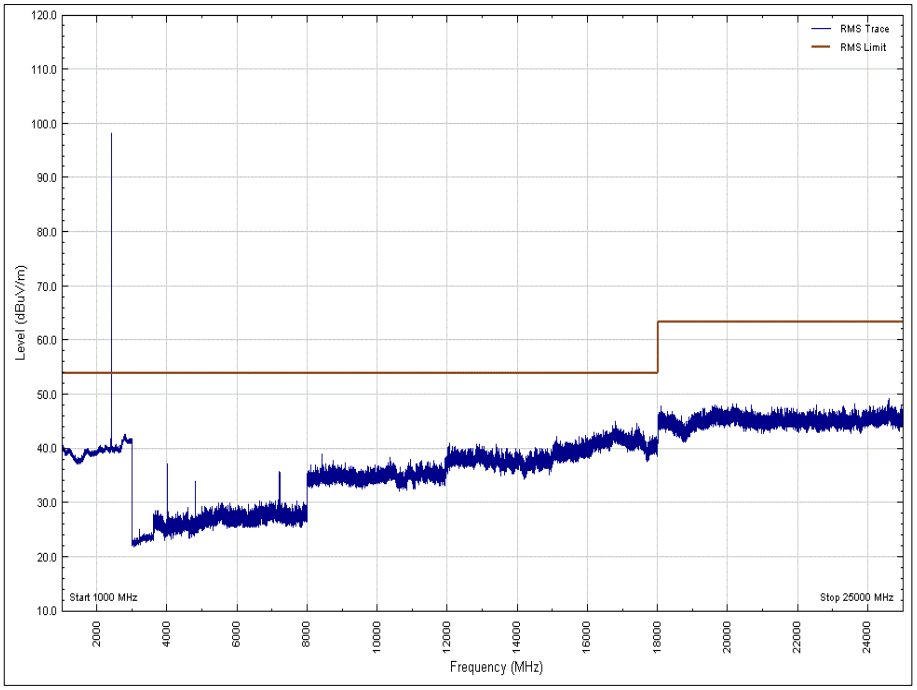

Figure 63 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Y

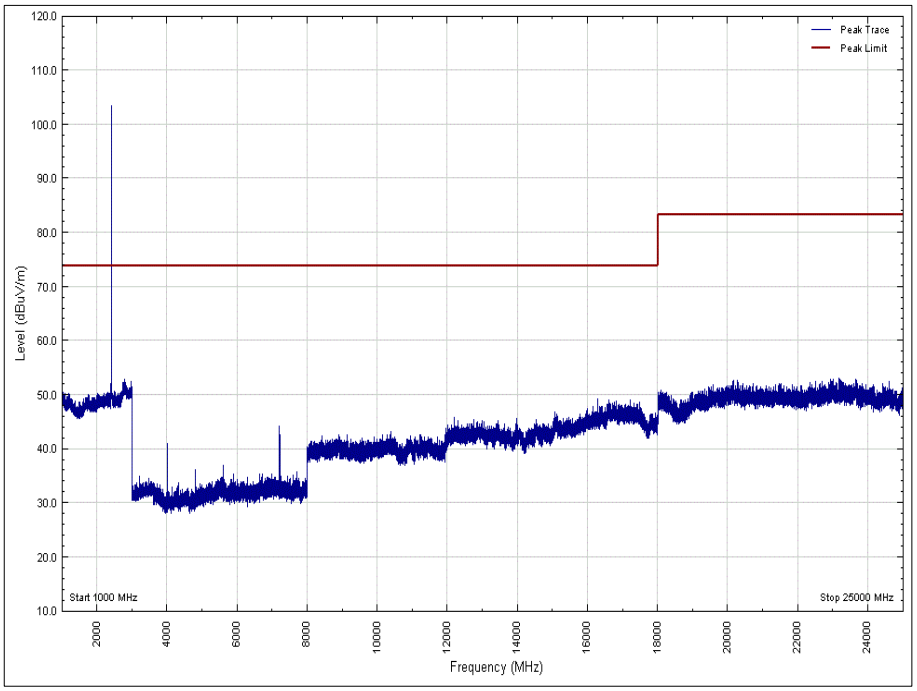

Figure 64 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Z

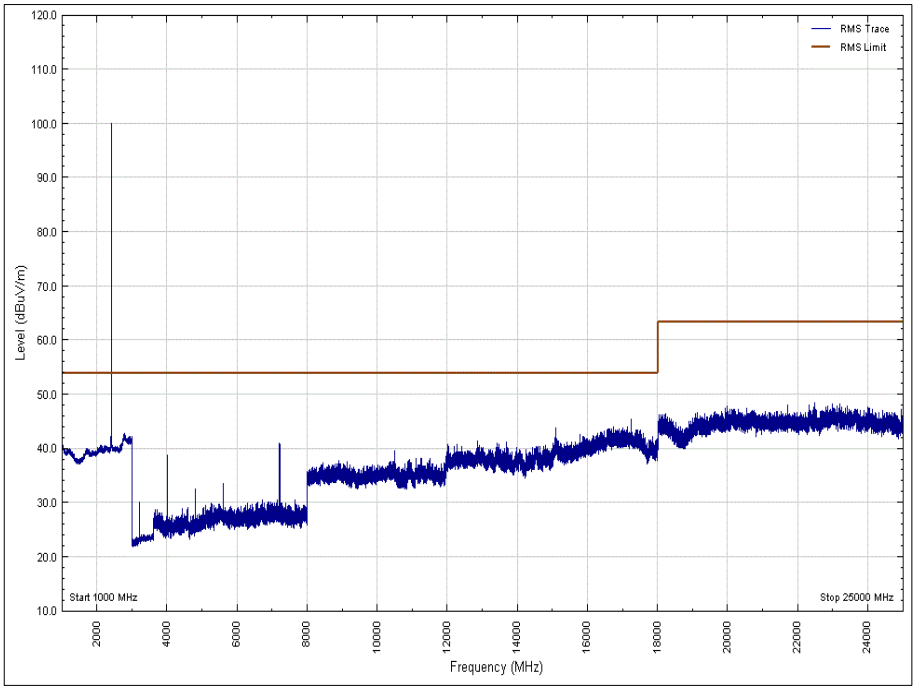

Figure 65 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Z

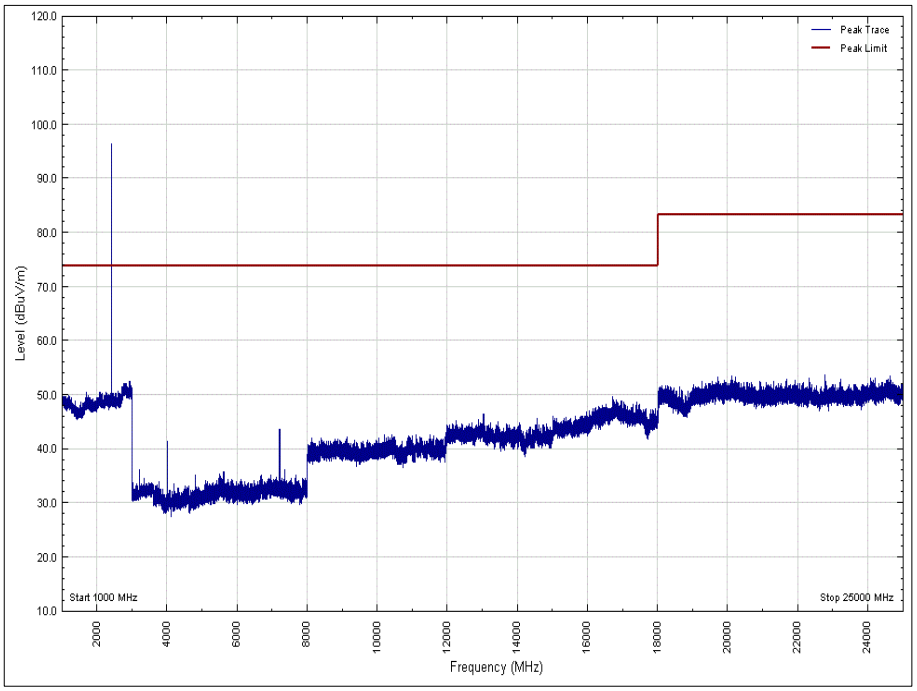

Figure 66 - 2402 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Z

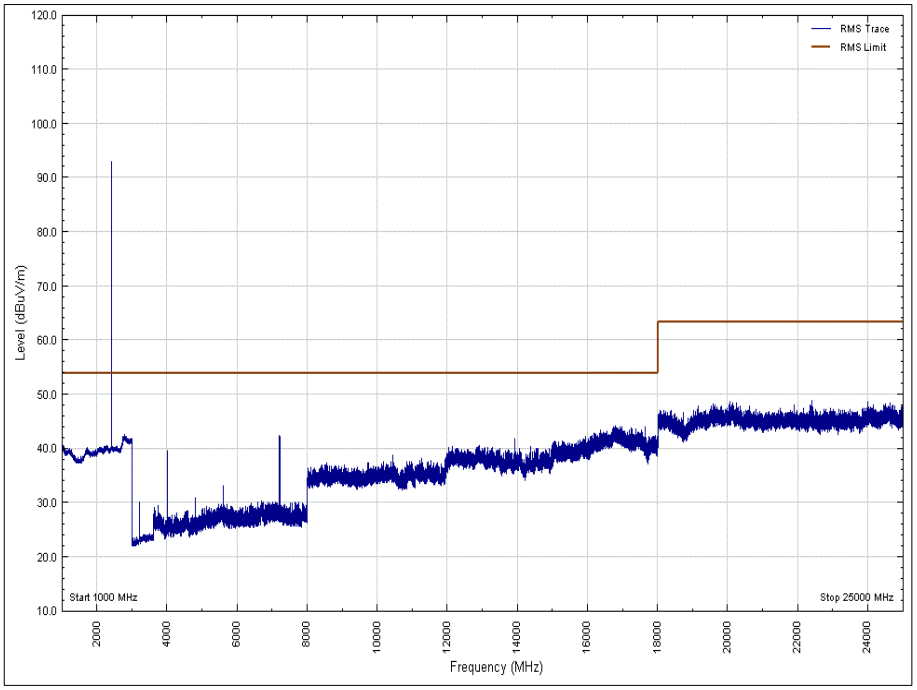

Figure 67 - 2402 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Z

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation	Orientation
*								

Table 22 - 2441 MHz - 30 MHz to 1 GHz Emissions Results

* No emissions were detected within 10 dB of the limit.

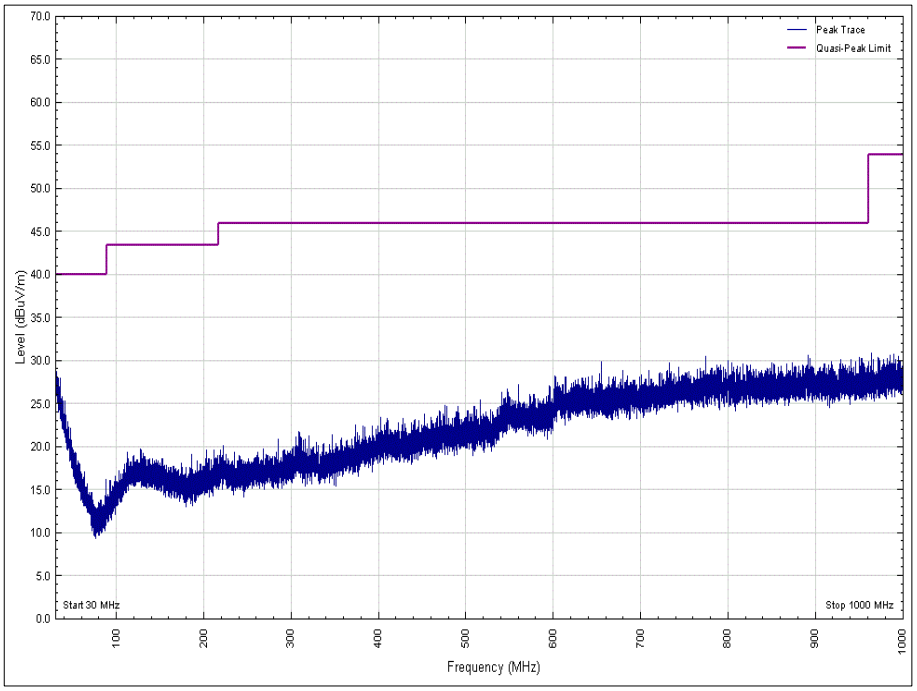

Figure 68 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: X

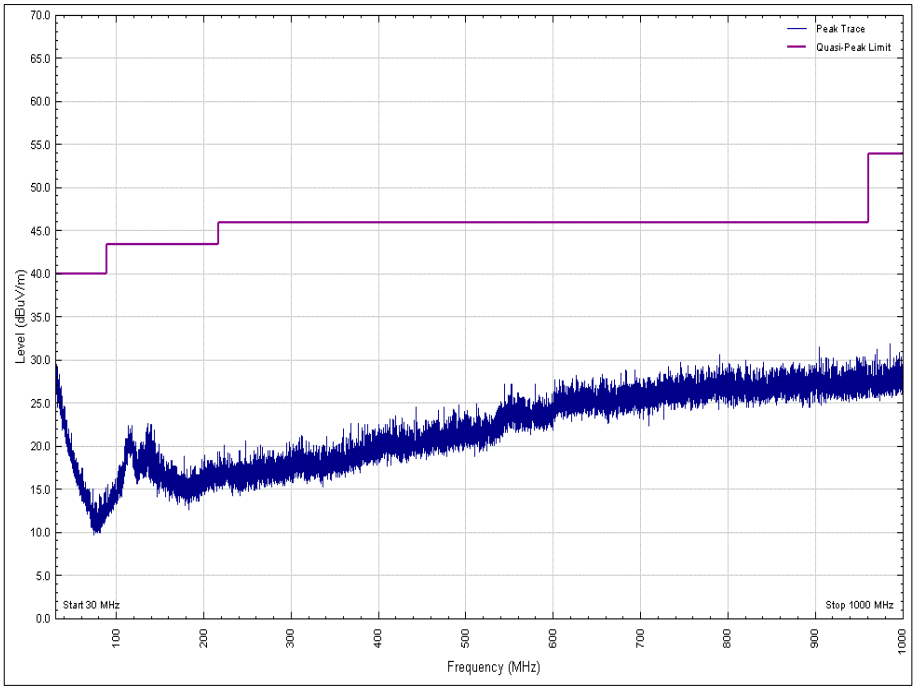

Figure 69 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: X

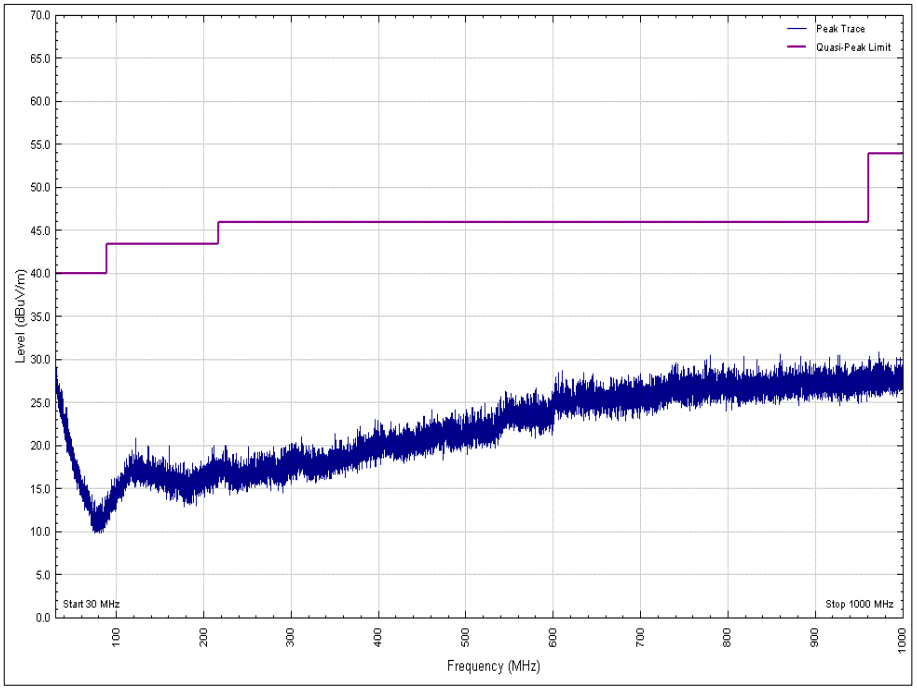

Figure 70 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Y

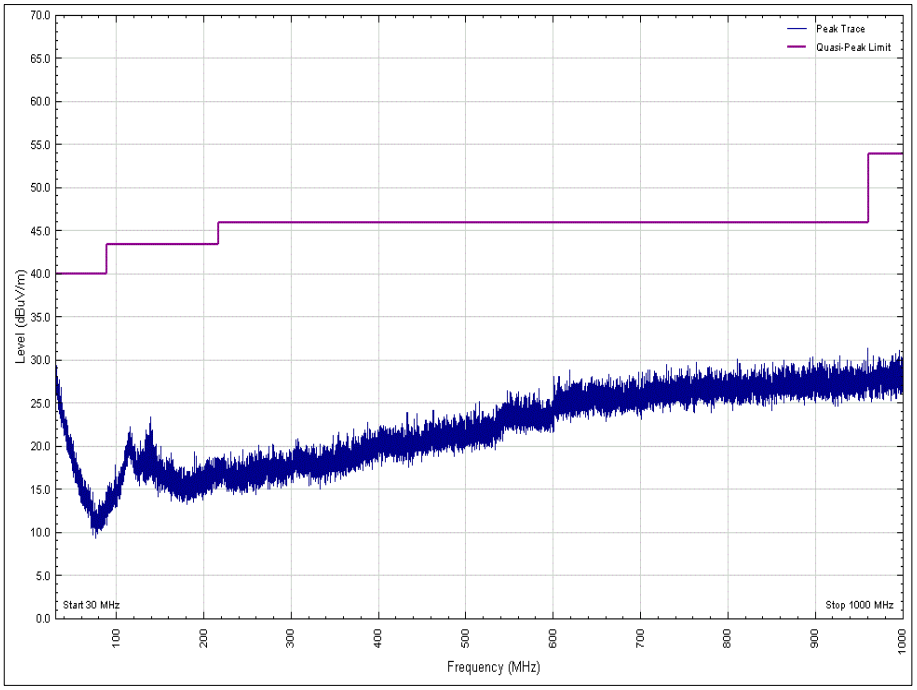

Figure 71 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Y

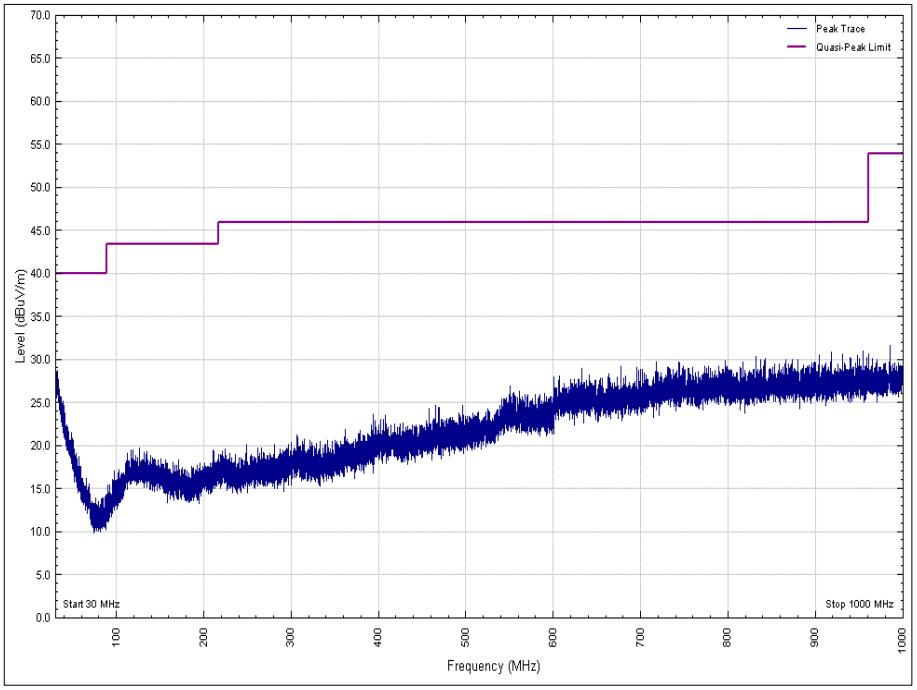

Figure 72 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Z

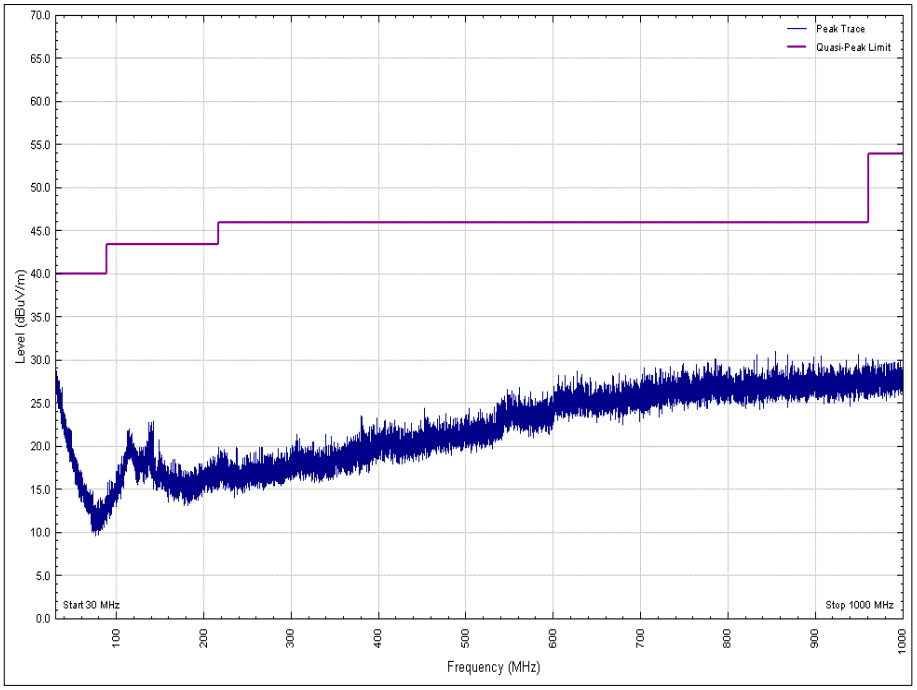

Figure 73 - 2441 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Z

Frequency (GHz)	Result (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 23 - 2441 MHz - 1 GHz to 25 GHz Emissions Results

*No emissions were detected within 10 dB of the limit.

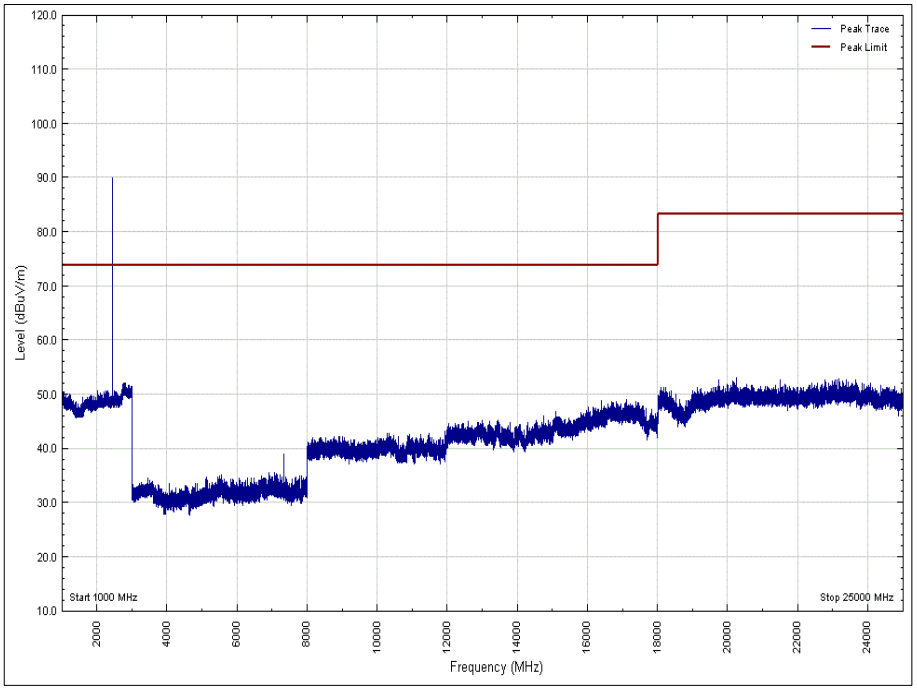

Figure 74 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: X

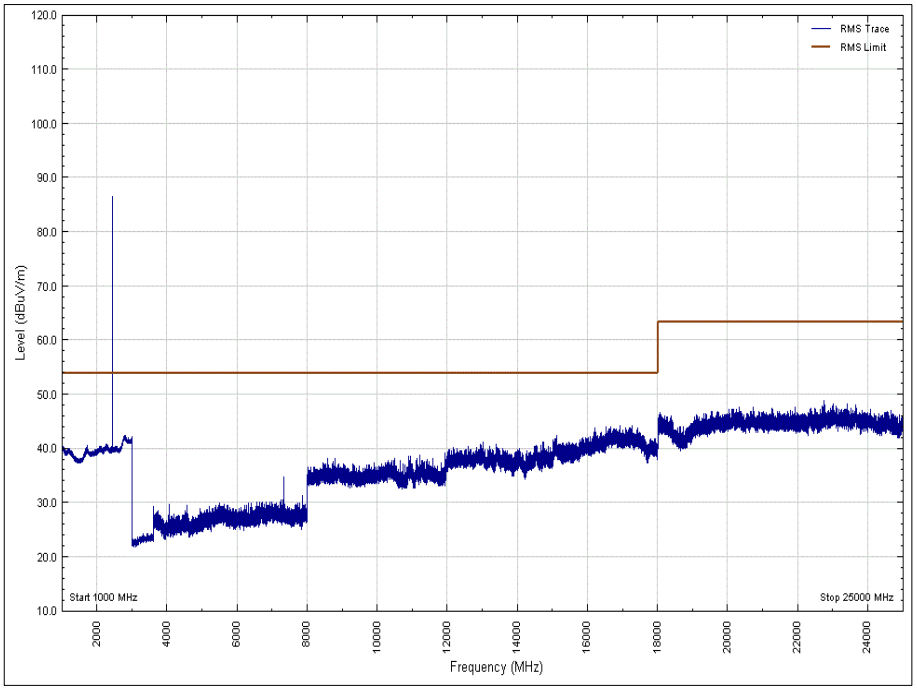

Figure 75 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: X

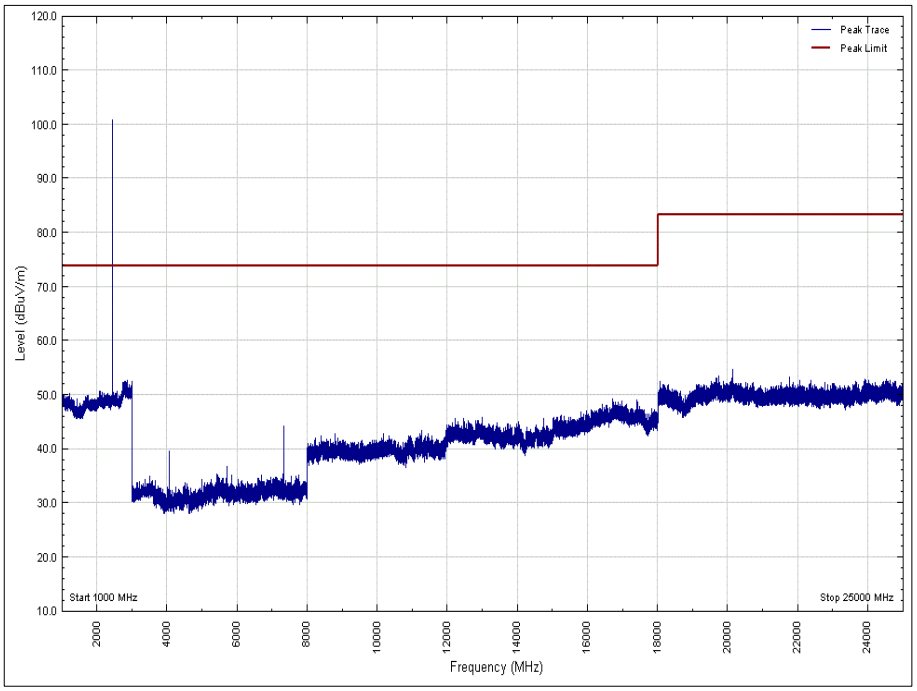

Figure 76 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: X

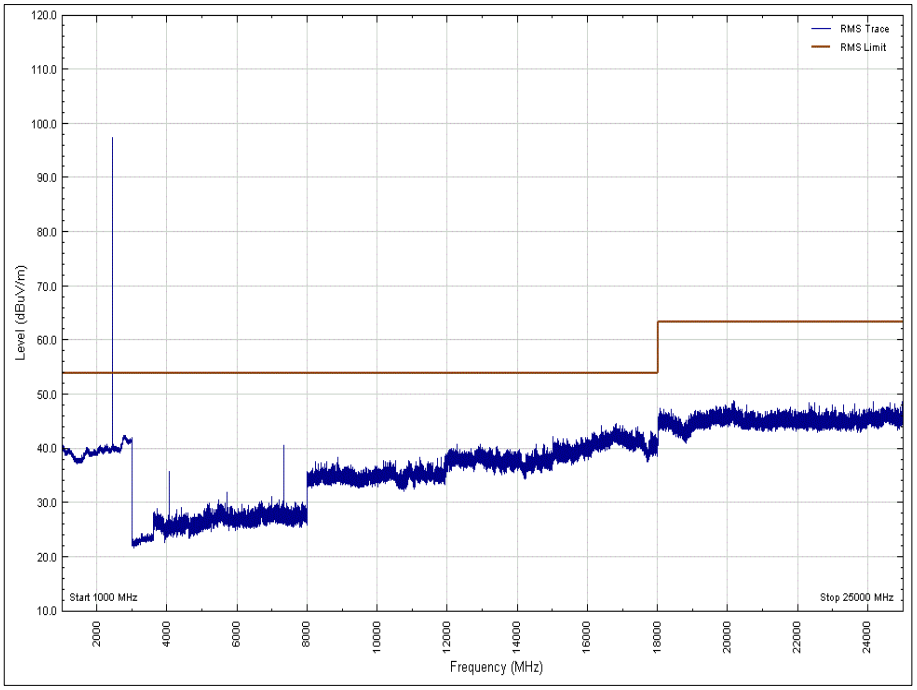

Figure 77 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: X

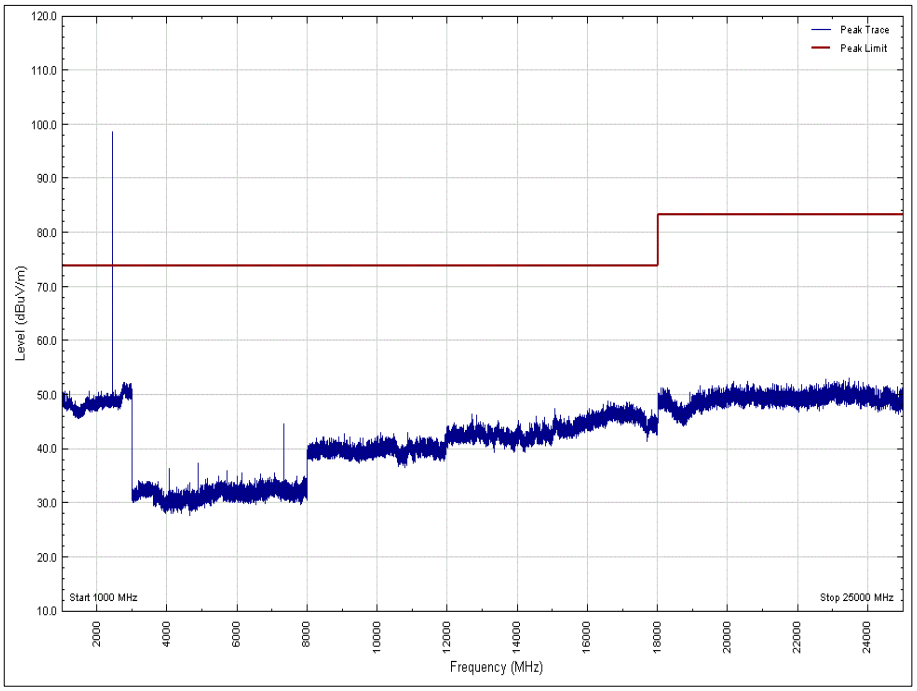

Figure 78 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Y

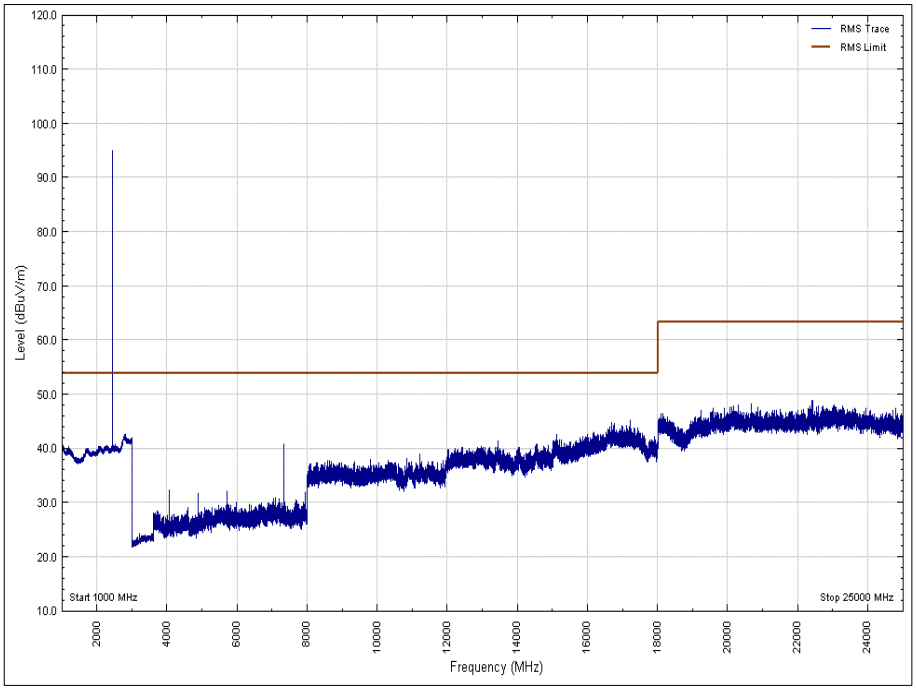

Figure 79 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Y

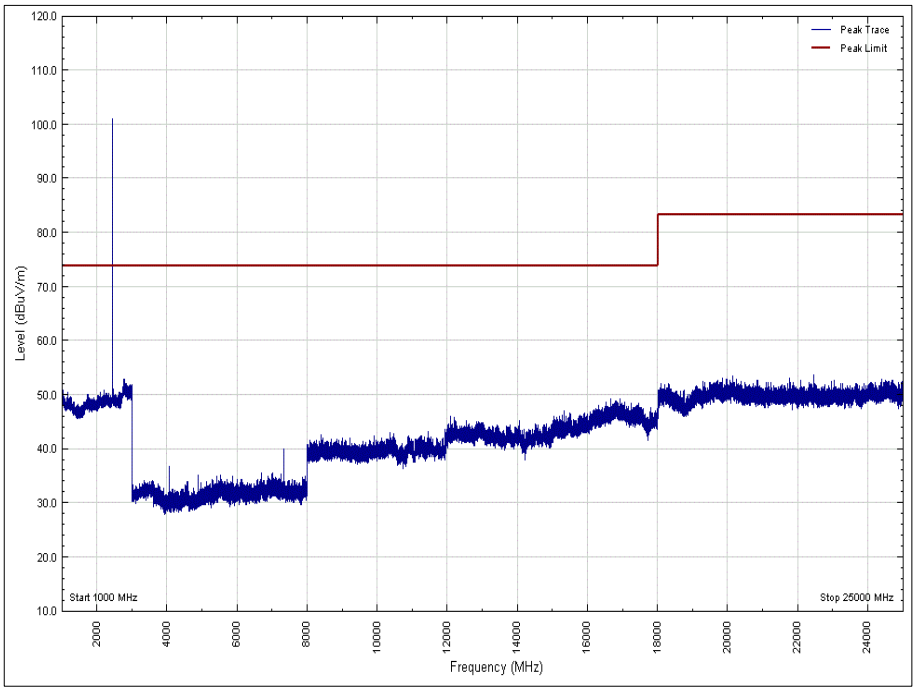

Figure 80 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Y

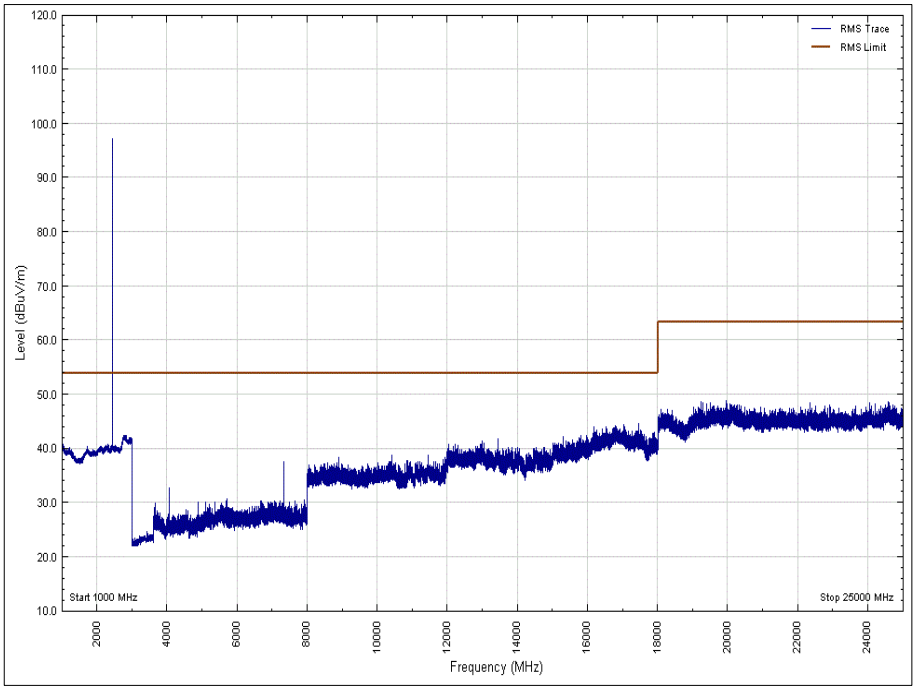

Figure 81 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Y

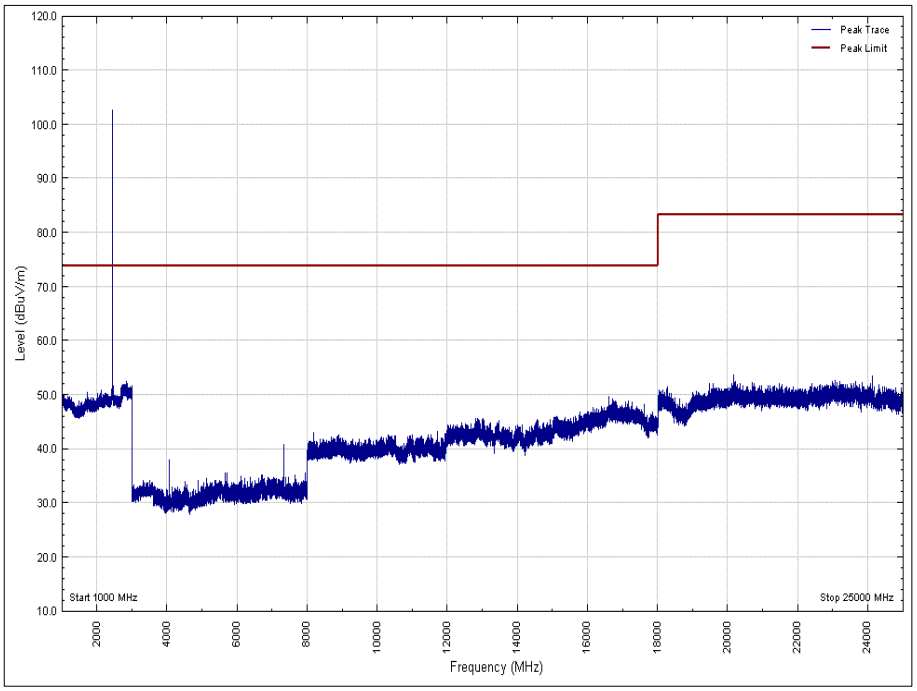

Figure 82 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Z

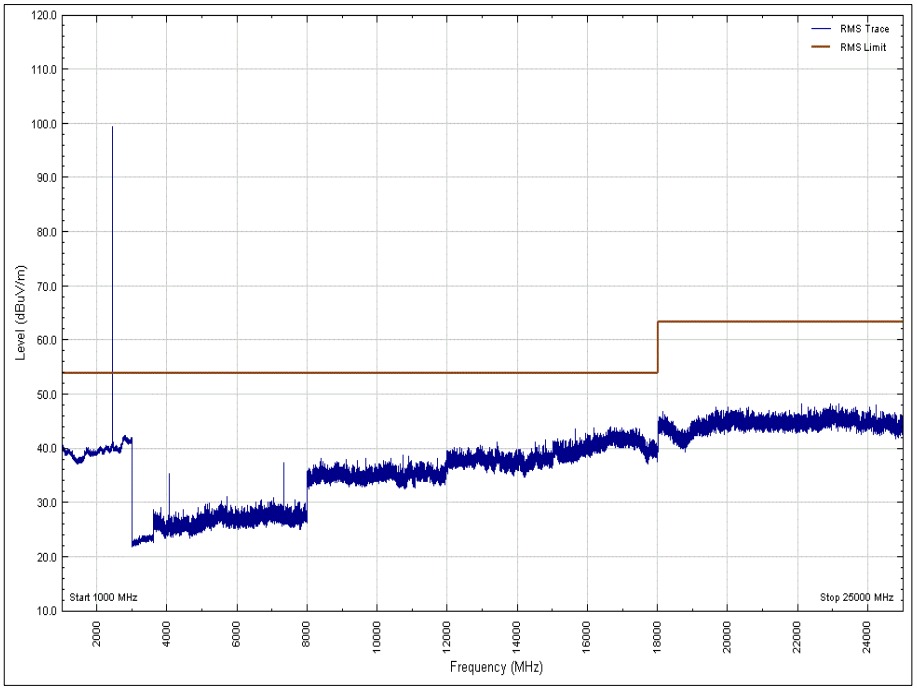

Figure 83 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Z

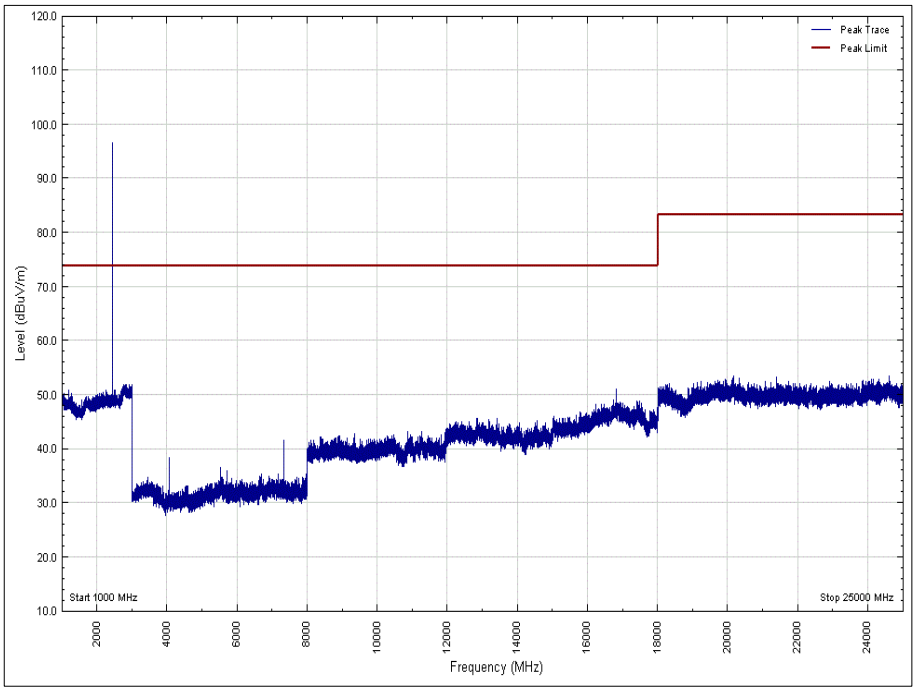

Figure 84 - 2441 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Z

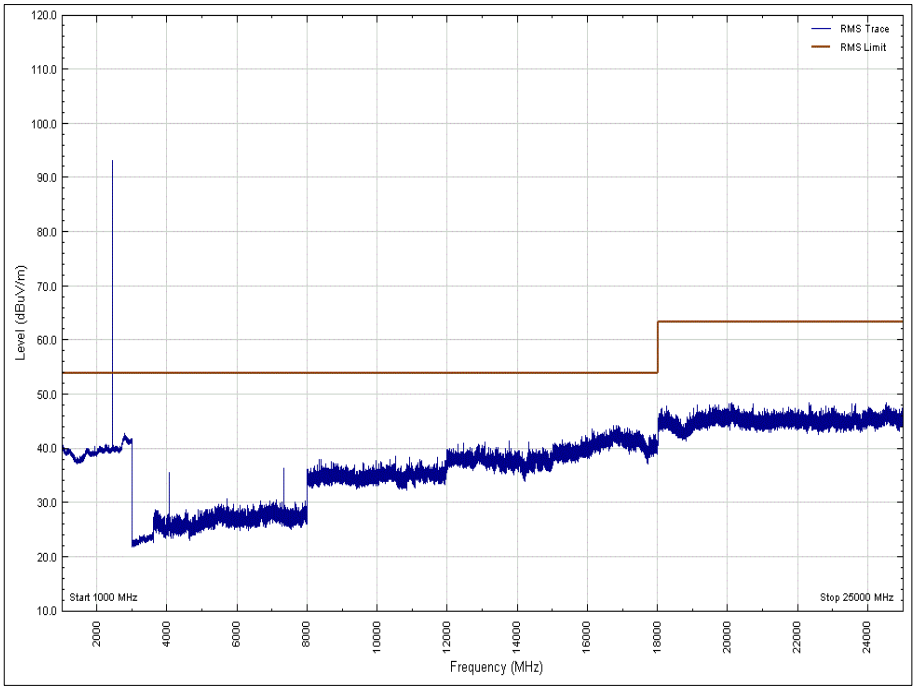

Figure 85 - 2441 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Z

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation	Orientation
*								

Table 24 - 2480 MHz - 30 MHz to 1 GHz Emissions Results

* No emissions were detected within 10 dB of the limit.

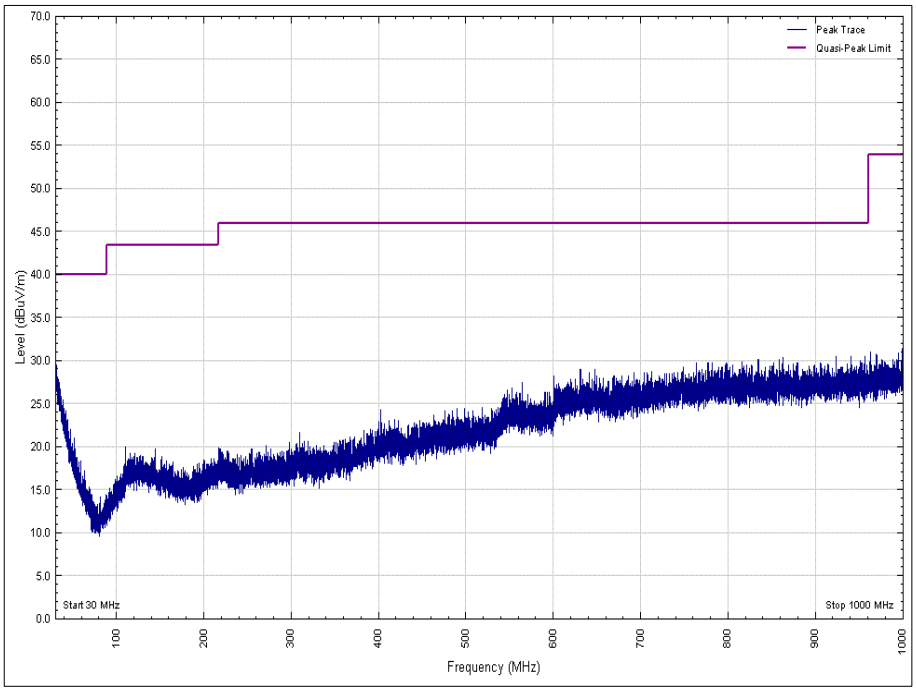

Figure 86 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: X

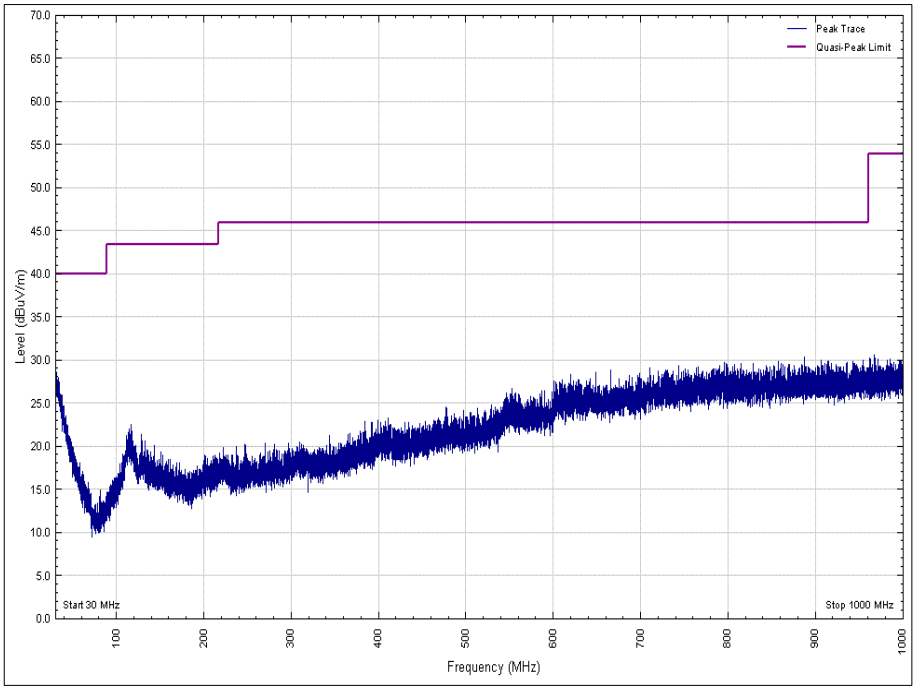

Figure 87 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: X

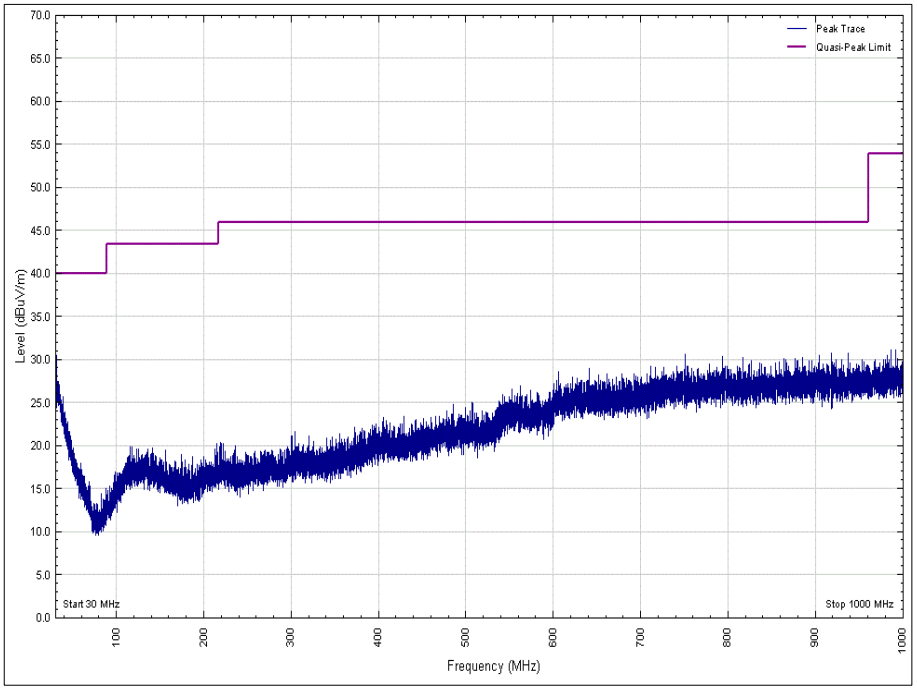

Figure 88 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Y

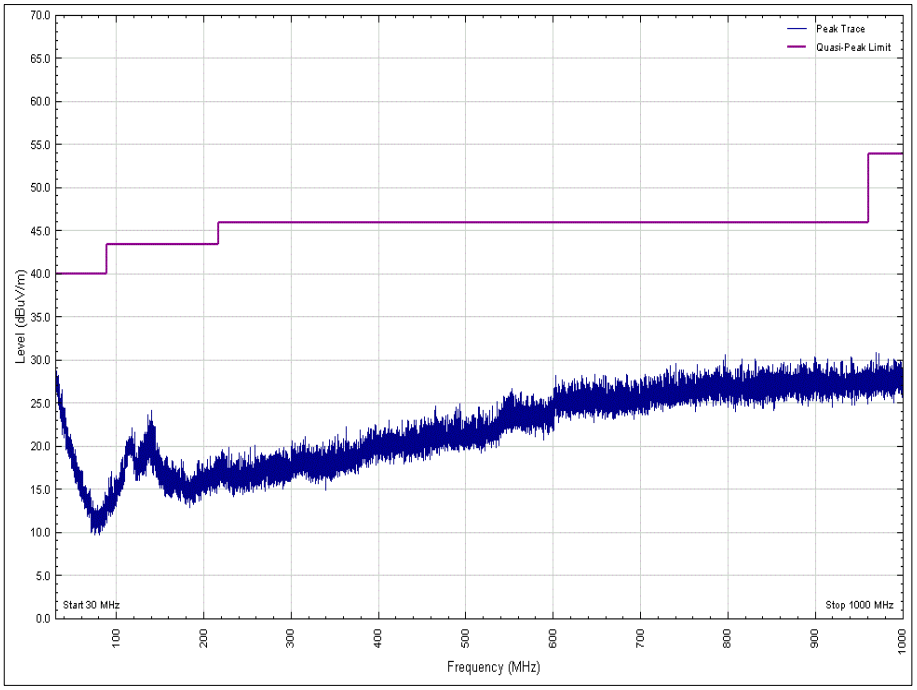

Figure 89 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Y

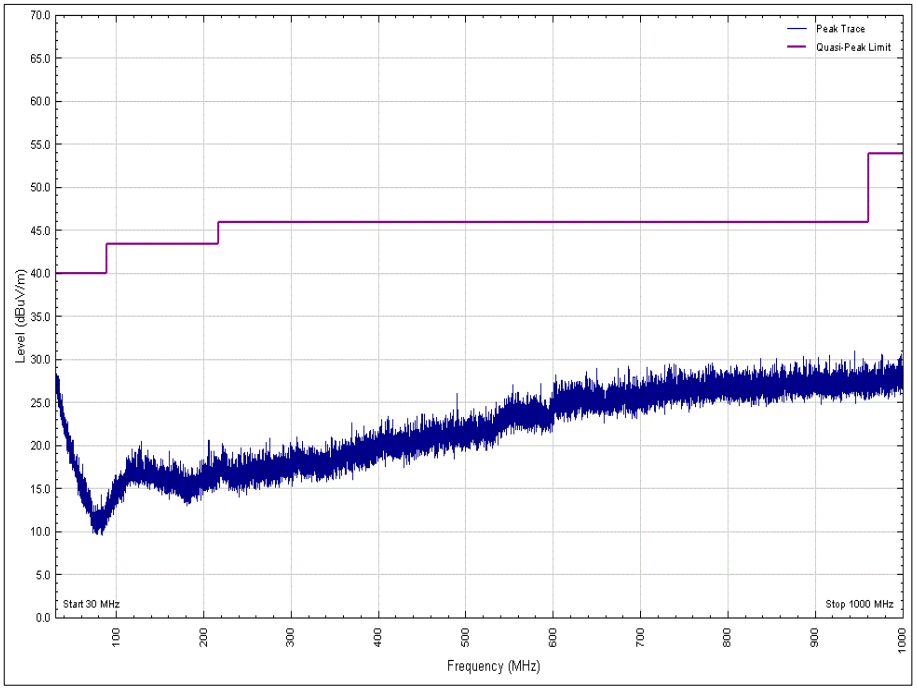

Figure 90 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Vertical, EUT Orientation: Z

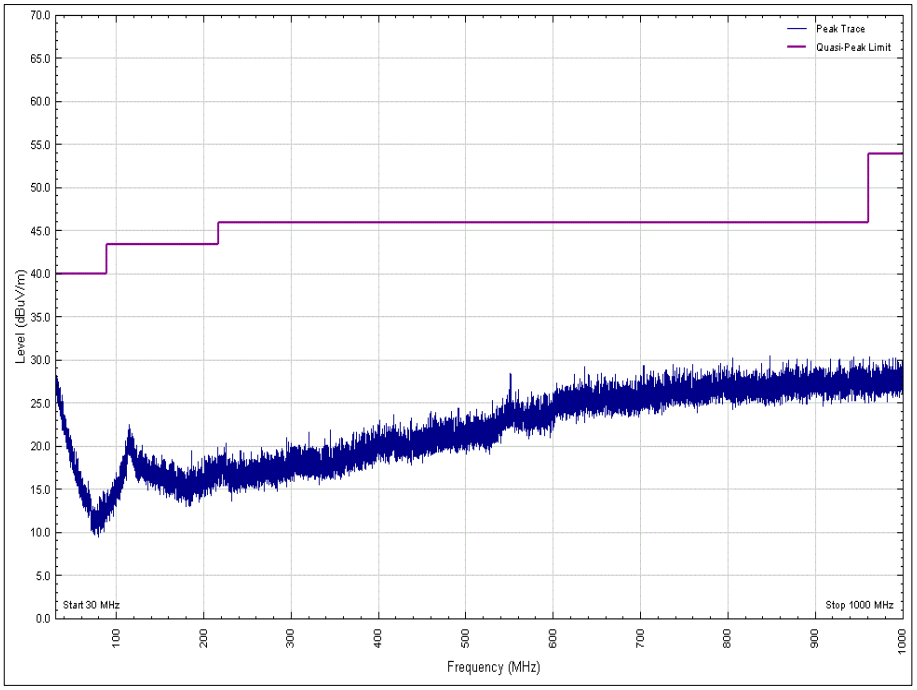

Figure 91 - 2480 MHz - 30 MHz to 1 GHz
Polarity: Horizontal, EUT Orientation: Z

Frequency (GHz)	Result (dBµV/m)		Limit (dBµV/m)		Margin (dBµV/m)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 25 - 2480 MHz - 1 GHz to 25 GHz Emissions Results

*No emissions were detected within 10 dB of the limit.

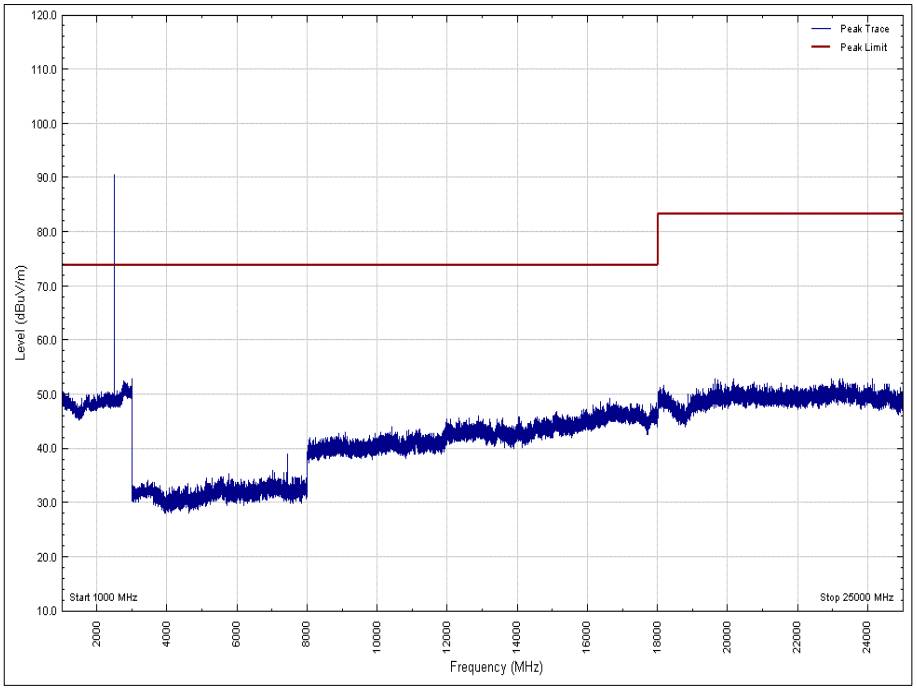

Figure 92 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: X

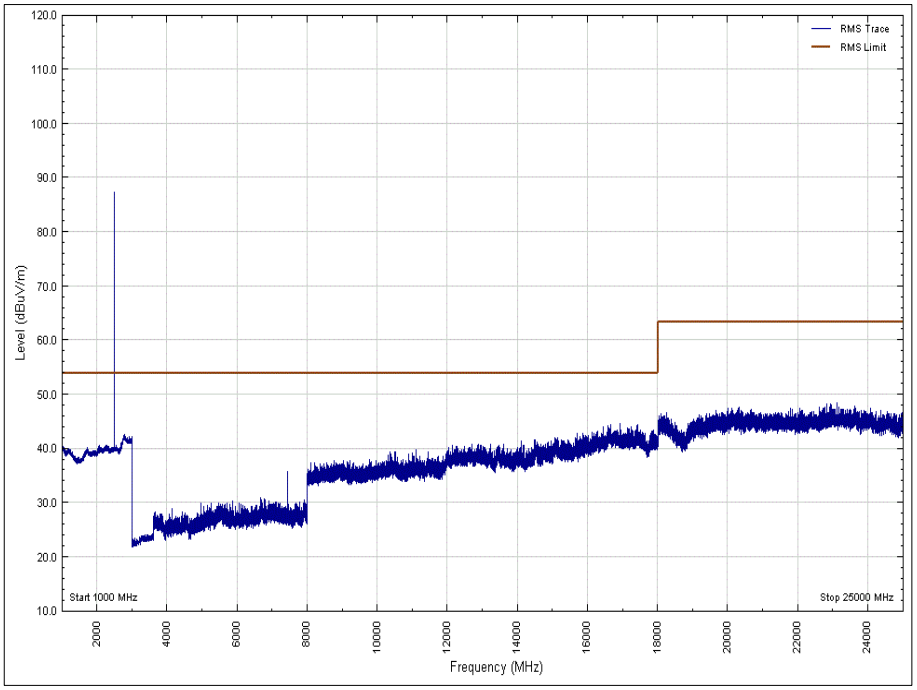

Figure 93 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: X

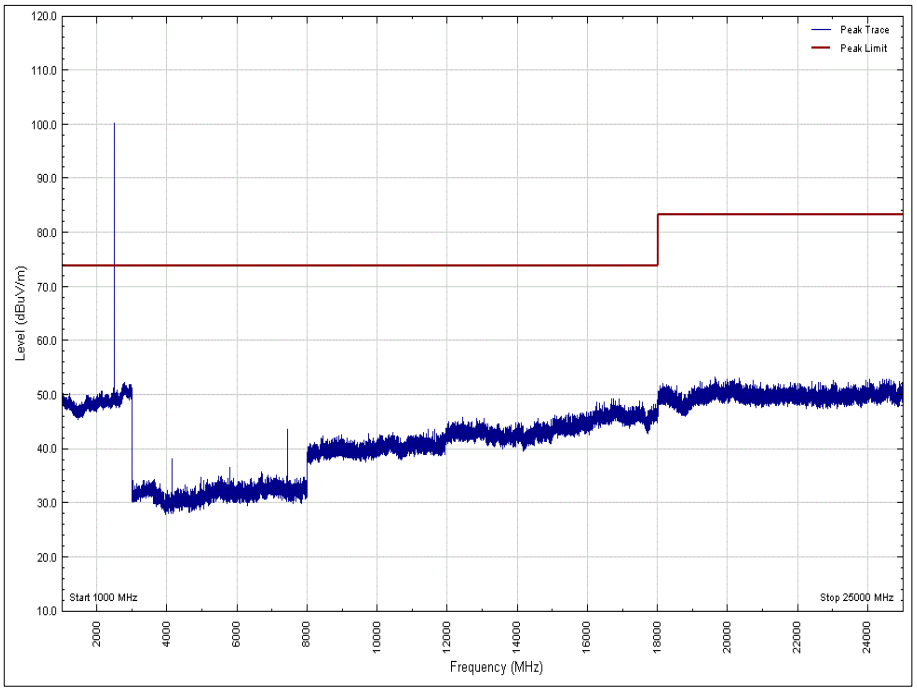

Figure 94 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: X

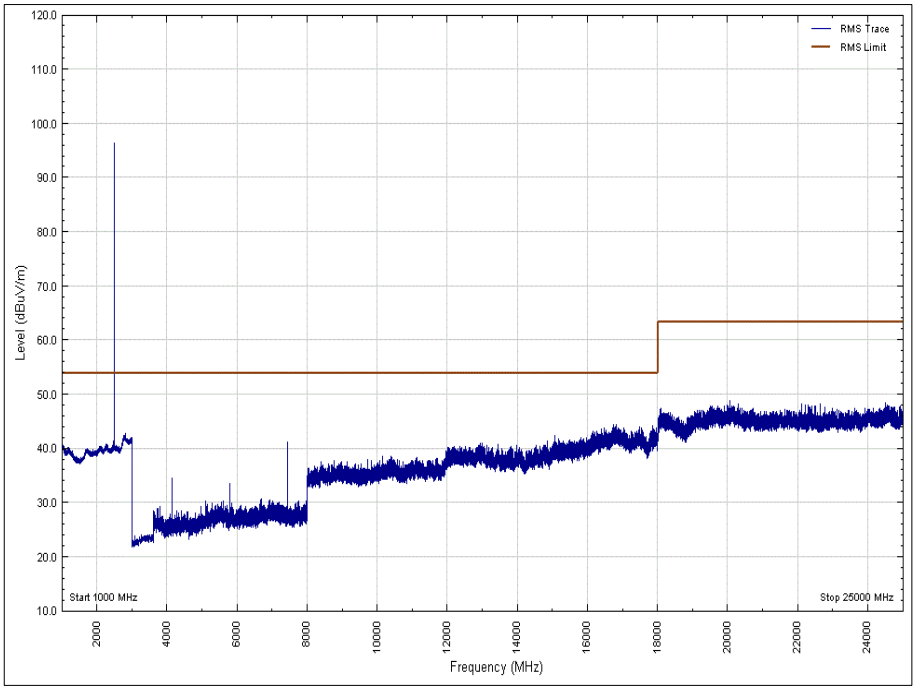

Figure 95 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: X

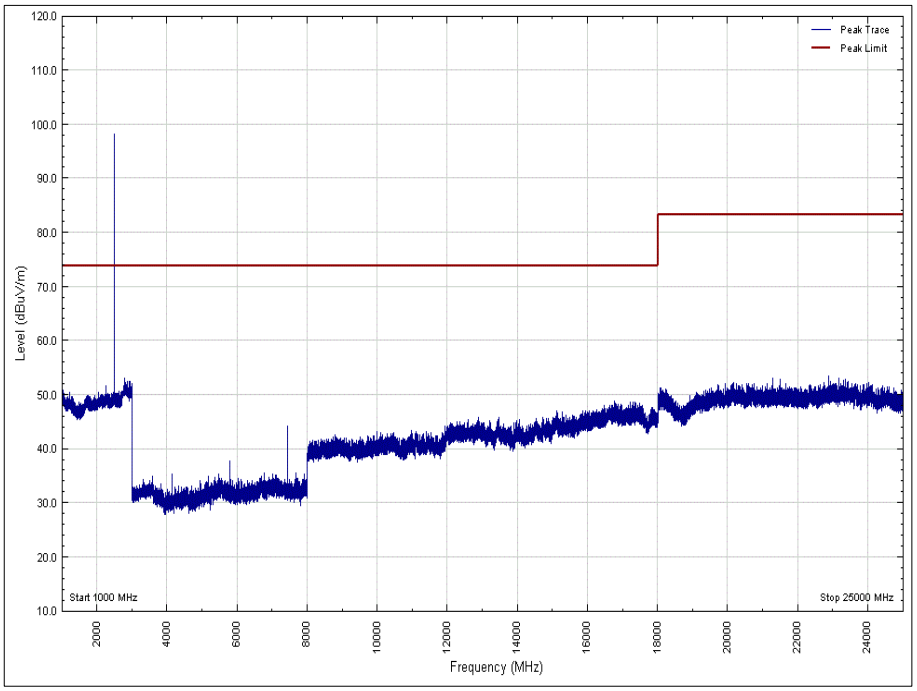

Figure 96 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Y

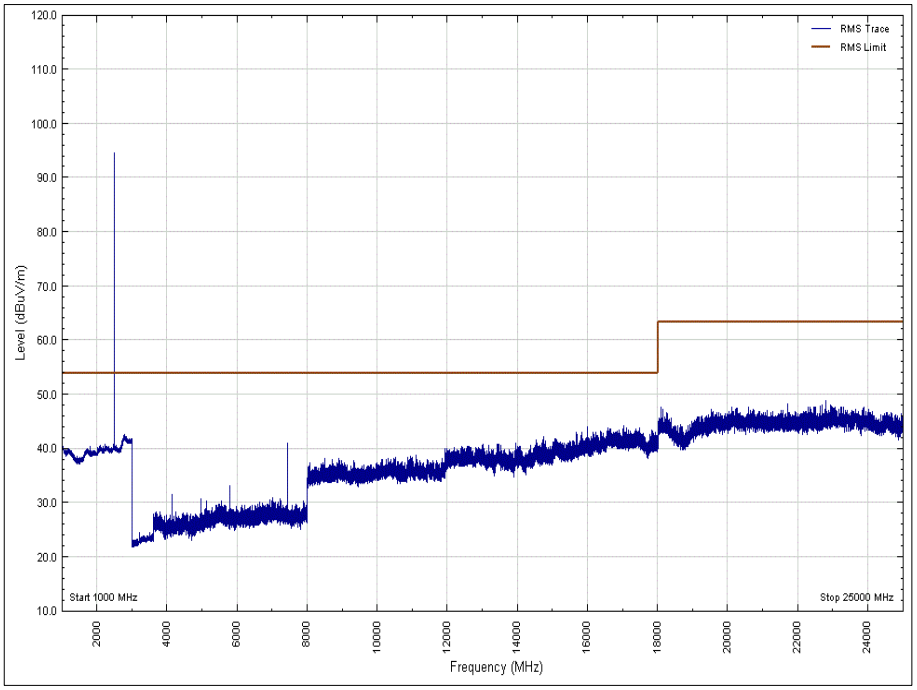

Figure 97 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Y

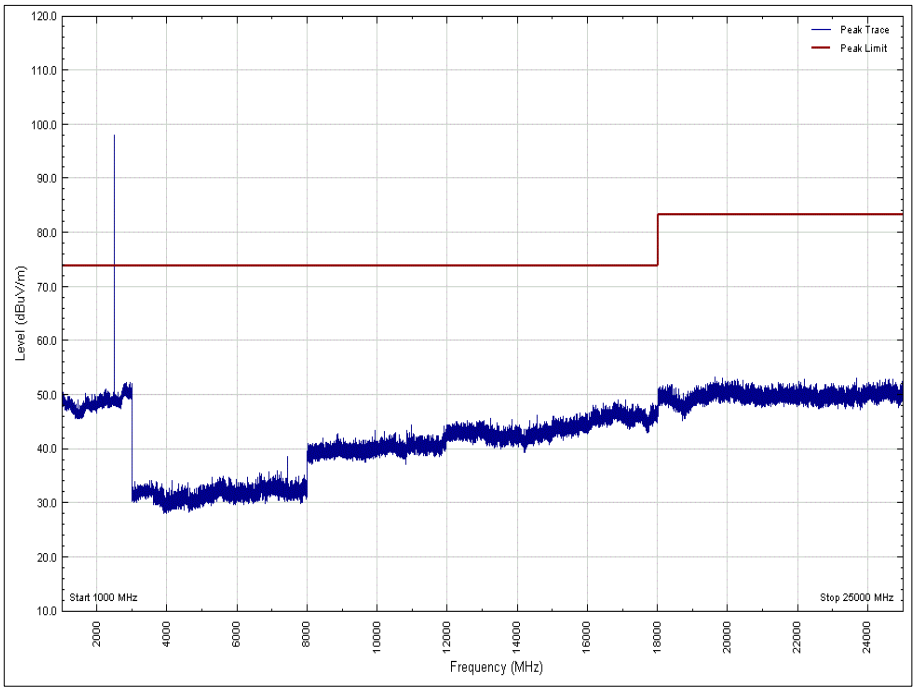

Figure 98 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Y

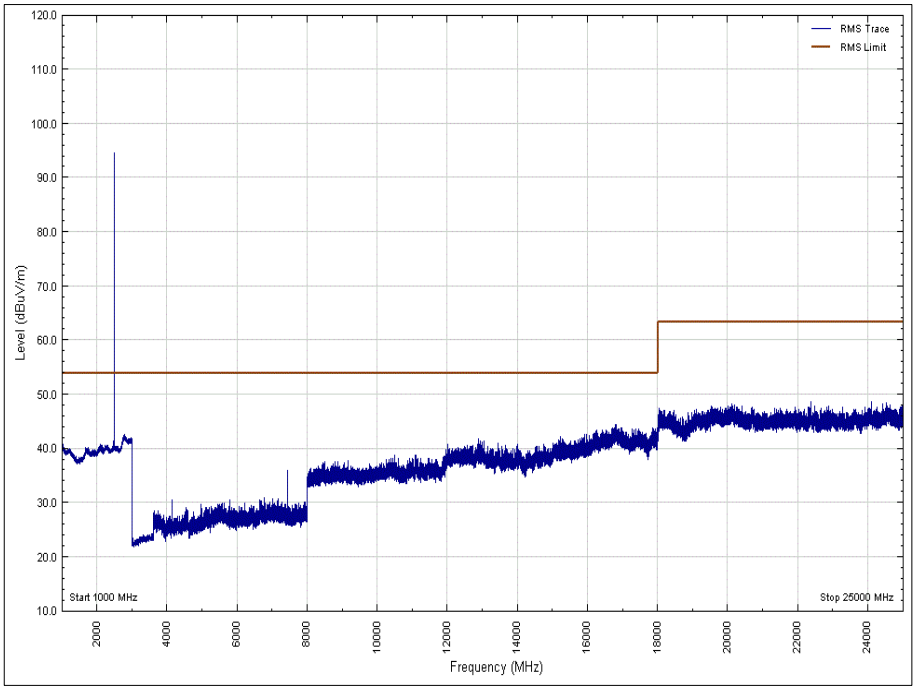

Figure 99 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Y

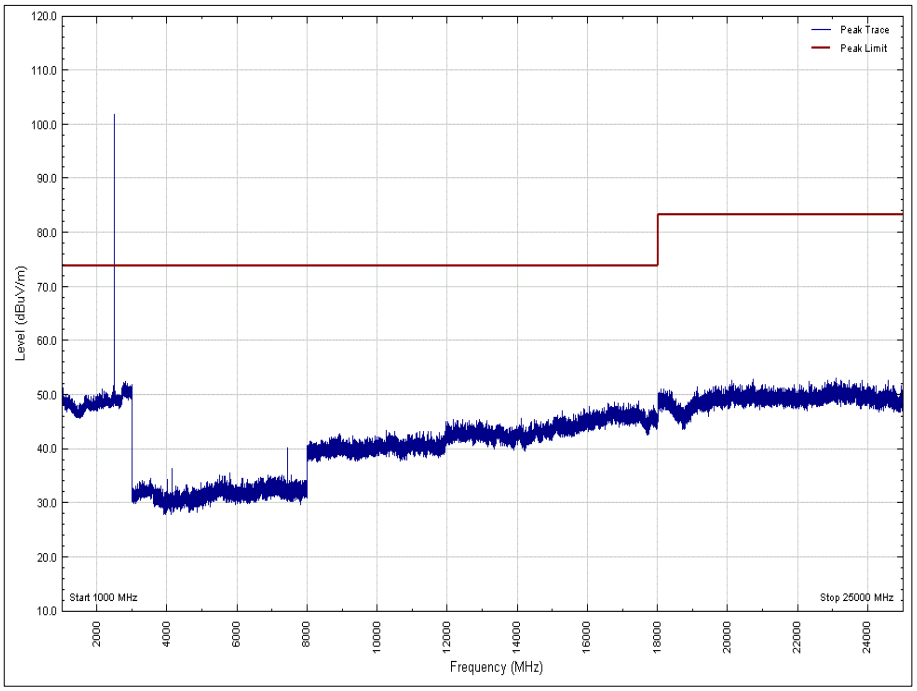

Figure 100 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Vertical, EUT Orientation: Z

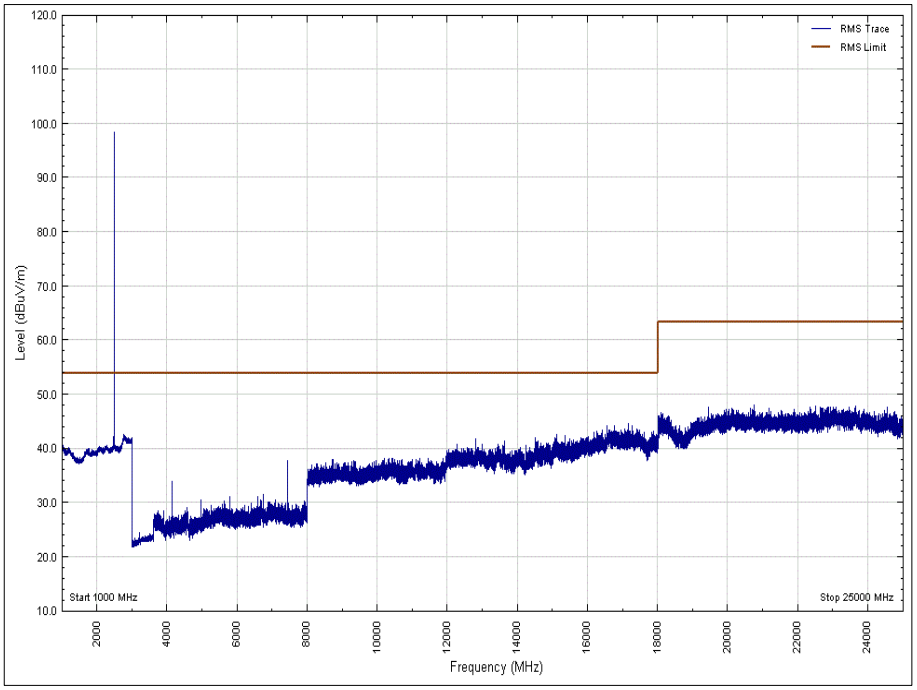

Figure 101 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Vertical, EUT Orientation: Z

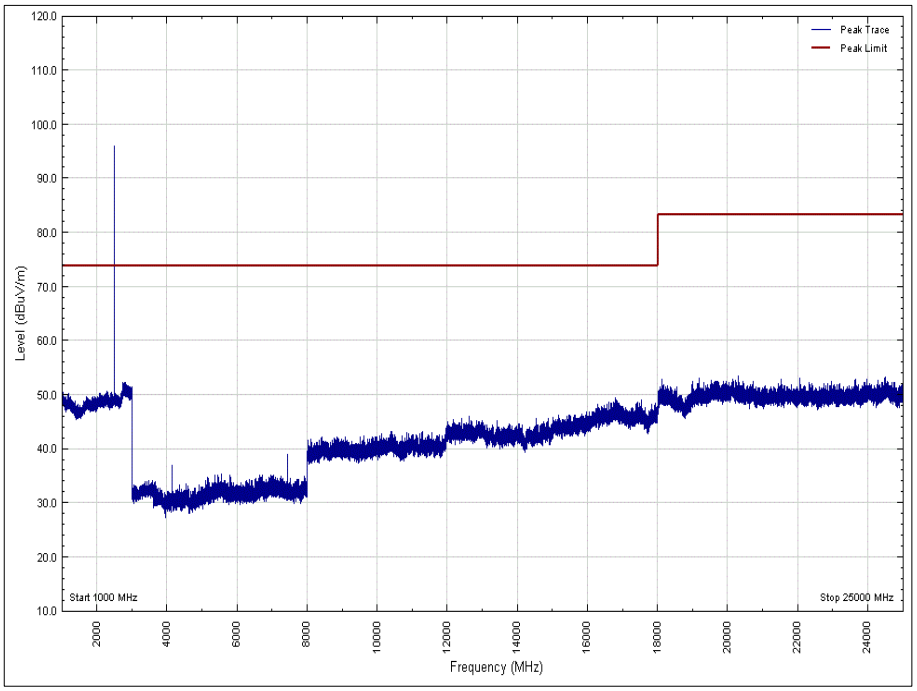

Figure 102 - 2480 MHz - 1 GHz to 25 GHz - Peak
Polarity: Horizontal, EUT Orientation: Z

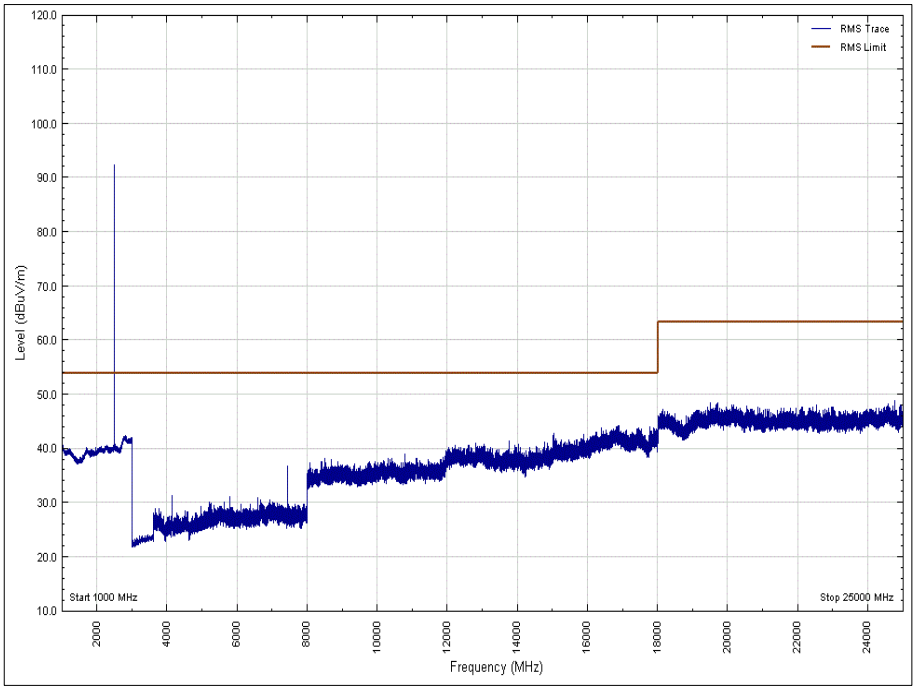

Figure 103 - 2480 MHz - 1 GHz to 25 GHz - Average
Polarity: Horizontal, EUT Orientation: Z

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

ISEDC RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

2.8.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	02-May-2020
Pre-Amplifier	Phase One	PS04-0086	1533	12	08-Feb-2020
18GHz - 40GHz Pre-Amplifier	Phase One	PSO4-0087	1534	12	05-Feb-2020
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
Antenna with permanent attenuator (Bilog)	Chase	CBL6143	2904	24	08-Aug-2019
Comb Generator	Schaffner	RSG1000	3034	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
Cable 1503 2M 2.92(P)m 2.92(P)m	Rhophase	KPS-1503A-2000-KPS	4293	12	26-Oct-2019
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	25-Oct-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-Jun-2019
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	15-Aug-2018
High Pass Filter (4GHz)	K&L Microwave	11SH10-4000/X18000-0/0	4599	12	04-Sep-2019
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	05-Mar-2020
1 - 18GHz DRG Antenna	ETS-Lindgren	3117	4738	12	05-Mar-2020
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
4dB Attenuator	Pasternack	PE7047-4	4935	24	28-Nov-2019
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5093	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5109	12	05-Oct-2019
EmX Software	TUV SUD	EmX	5125	-	Software
1.5m 40GHz RF Cable	Scott Cables	KPS-1501-2000-KPS	5126	6	26-Apr-2019
3 GHz High pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	5220	12	15-Feb-2020

Table 26

TU - Traceability Unscheduled

3 Photographs

3.1 Test Setup Photographs

Figure 104 - 30 MHz to 1 GHz - Orientation Y

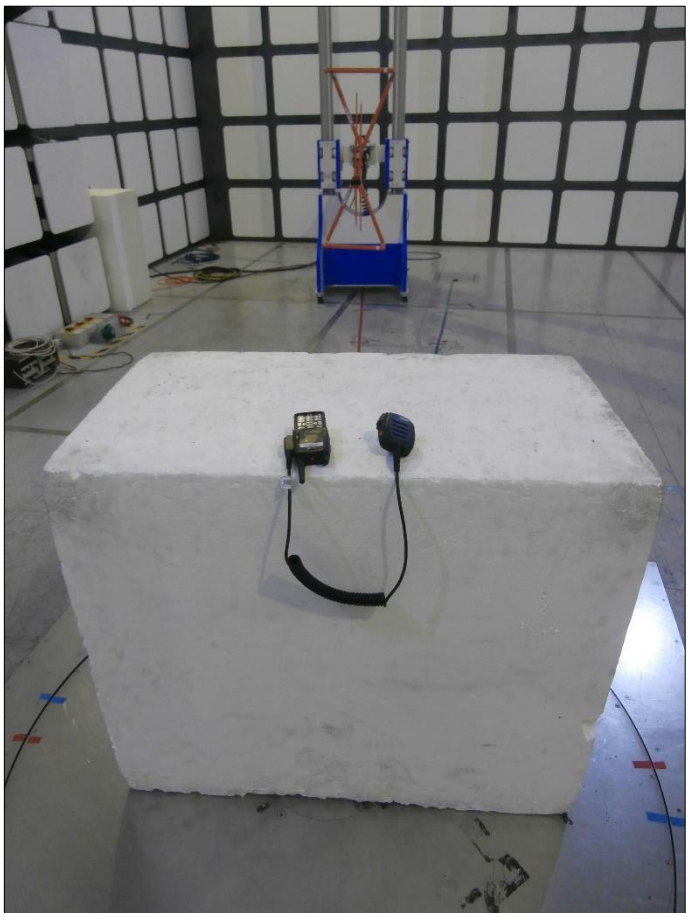

Figure 105 - 30 MHz to 1 GHz - Orientation X

Figure 106 - 1 GHz to 18 GHz - Orientation Y

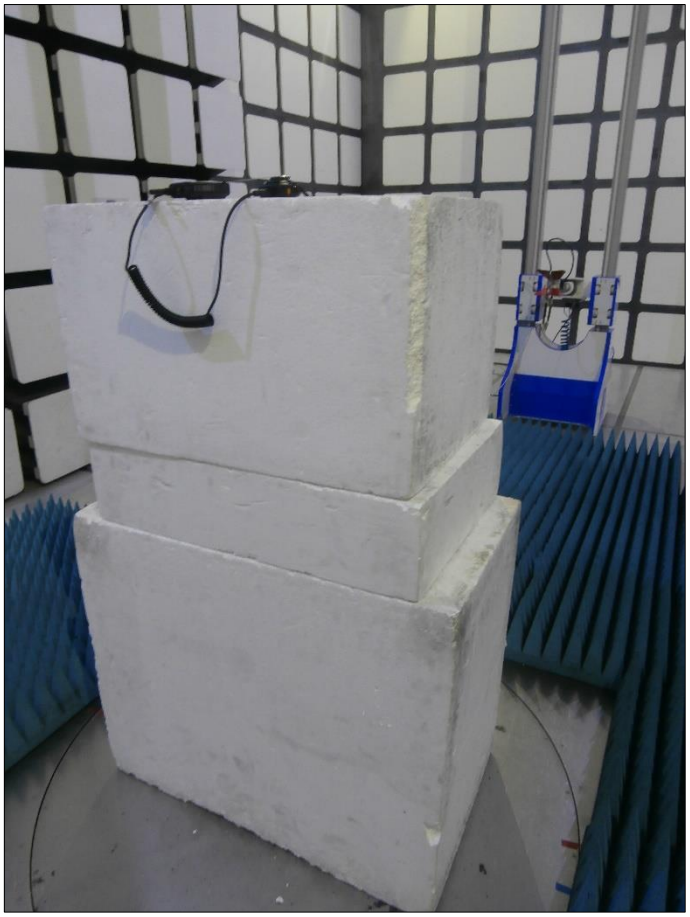

Figure 107 - 1 GHz to 18 GHz - Orientation X

Figure 108 - 18 GHz to 25 GHz - Orientation Y

Figure 109 - 18 GHz to 25 GHz - Orientation X

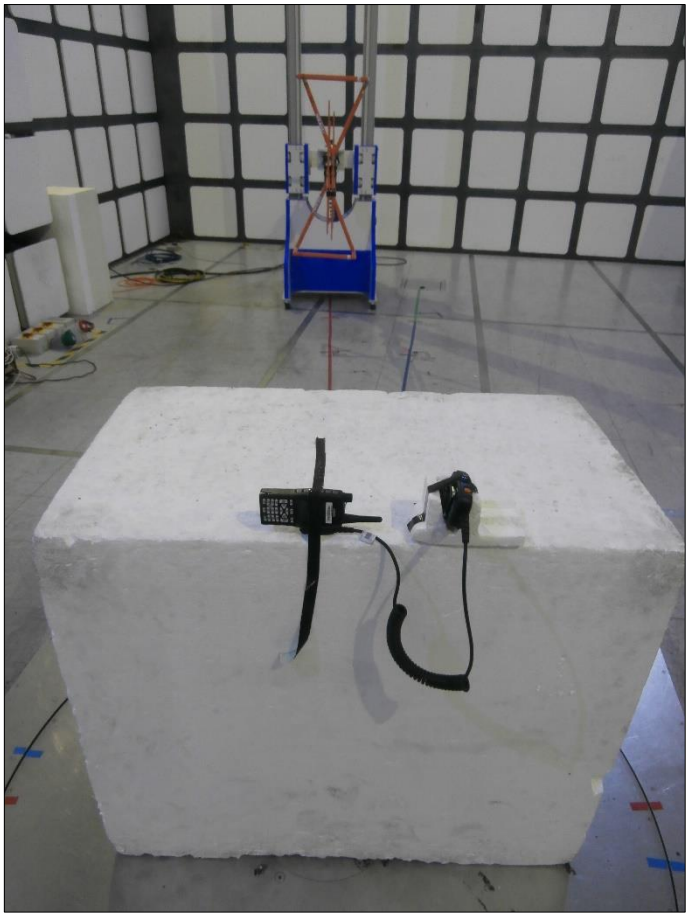

Figure 110 - 30 MHz to 1 GHz - Orientation Z

Figure 111 - 1 GHz to 18 GHz - Orientation Z

Figure 112 - 18 GHz to 25 GHz - Orientation Z

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Frequency Hopping Systems - 20 dB Bandwidth	± 30.43 kHz
Frequency Hopping Systems - Number of Hopping Channels	-
Frequency Hopping Systems - Channel Separation	± 30.43 kHz
Frequency Hopping Systems - Average Time of Occupancy	-
Maximum Conducted Output Power	± 3.2 dB

Table 27

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2007, clause 4.4.3 and 4.5.1.