Test Report

47 CFR FCC Part 15 subpart C
Intentional Radiators

Report reference no. .....:	28112902 002
FCC Designation Number .....:	IT0008
FCC Test Firm Registration # .....:	804595
Tested by (name + signature).....:	Alessandro Zappa\ Tester
Approved by (name + signature).....:	Giovanni Molteni \ TM
Date of issue .....:	20-Feb-2019
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Testing Laboratory.....:	TÜV Rheinland Italia S.r.l.
Address .....:	Via Mattei 3 - 20010 - Pogliano Milanese (MI) – Italy
Applicant's name .....:	Seco Tools AB
Address .....:	Björnbacksvägen 2 73782 Fagersta Sweden
Test item description .....:	Handheld RFID-to-BLE reader
Trade Mark .....:	Idem
Manufacturer.....:	Seco Tools AB
Model/type reference.....:	S1-A
FCC ID.....:	2AR2G-03280923
Ratings .....:	Internal rechargeable battery 3,7V dc
Sample.....:	
Samples received on.....:	25/Jan/2019
TUV reference samples.....:	190056 (sampled by the customer)
Samples tested n. .....:	2
Testing.....:	
Start Date: .....:	30-Jan-2019
End Date: .....:	06-Feb-2019

The results in this Test Report are exclusively referred to the tested samples.
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Compliance with performed tests and recorded in this technical report does not give presumption of compliance to all requirements of the reference standard

SUMMARY

RELEASE CONTROL RECORD		
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
28112902_002	Original release	20-Feb-2019

1. Reference Standards

Standard	Description
FCC Part 15 (Subpart C)	§15.247 Operation within the bands 902-928 MHz, 2400-2483,5 MHz, and 5725-5850 MHz.
FCC Part 15 (Subpart C)	§15.207 Conducted Limits
FCC Part 15 (Subpart C)	§15.209 Radiated emission limits; general requirements
FCC Part 15 (Subpart C)	§15.203 Antenna Requirement
ANSI C63.4:2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
558074 D01 DTS Meas Guidance v05 - August 24,2018	Guidance for performing compliance measurements on digital transmission systems (dts) operating under §15.247

2. Summary of testing:			
FCC Rule Part	**Test Item**	**Result**	**Remarks**
15.207	AC POWER CONDUCTED EMISSION	PASS	See note[1]
15.205 15.209 15.247(d)	RADIATED EMISSIONS	PASS	Meet the requirement of limit
15.247(a)(2)	6dB BANDWIDTH	PASS	Meet the requirement of limit
15.247(b)(3)	OUTPUT POWER	PASS	Meet the requirement of limit
15.247(d)	OUT OF BAND EMISSIONS	PASS	Meet the requirement of limit
15.247(d)	100 kHz Bandwidth of Frequency Band Edges	PASS	Meet the requirement of limit
15.247(e)	POWER SPECTRAL DENSITY	PASS	Meet the requirement of limit
15.203	ANTENNA REQUIREMENT	PASS	Integral Antenna Declared gain= -0,2dBi
15.247 (i) (§ 47CFR 1.1307(b)(1))	RF humane exposure	PASS	Output power less than exemption limit

Possible test case verdicts:

- test case does not apply to the test object.... : N/A
- test object does meet the requirement..... : PASS
- test object does not meet the requirement ... : FAIL

Note[1]	As required on §15.207 (c): Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits. To demonstrate compliance with the conducted limits the test has been executed on AC/DC adapter CELLULARLINE mod. ACHSMKIT15WMUSBW powered by AC mains line 115V~ 60Hz Output 5Vdc 3A max.

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

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"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

3. General product information
Handheld RFID-to-BLE reader

4. General Chipset information

5. General Antennas information
Antenna information declared by manufacturer: monopole design, maximum gain of -0.2dBi.

6. Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	Handheld RFID-to-BLE reader	Seco Tools AB	S1-A	---
AE	PC	Dell	---	Used to set Bluetooth Channels

Note:

* Use :

EUT - Equipment Under Test,
AE - Auxiliary/Associated Equipment, or
SIM - Simulator (Not Subjected to Test)

No other Auxiliary/Associated Equipment was connected/installed on the EUT

7. Input/Output Ports

CONNECTIONS

Port		Description	Connection	Cable lenght
1	Enclosure	Non conductive surface	---	---
2	AC Power Port	Port not present		
3	DC Power Port	DC	Internal rechargeable battery 3,7V	---

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
WN = Wired Network

8. Power Interface

Mode #	Voltage (Vdc)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	3,7 dc	--	--	DC	--	---

9. EUT Operation Modes	
Operation mode	**Description**
#1	Continuous Bluetooth Low Energy Modulation RF Transmission RF setting during tests: Frequency: 2402 MHz (low channel); 2440 MHz (mid channel); 2480 MHz (high channel); TX RF Power : factory default set at 0dBm
#2	Battery charging mode (see §2 sumamry testing for details)

10. EUT Configuration Modes	
Mode #	**Description**
1	EUT transmitting by means of PCB antenna (standard configuration)
2	EUT equipped with temporary SMA connector for RF conducted measurements

11. Test Conditions and Results

11.1 Antenna requirements			PASS
Parameters required prior to the test	Laboratory Ambient Temperature (°C)	15 to 35 °C	
	Relative Humidity (%)	30 to 60 %	
Parameters recorded during the test	Laboratory Ambient Temperature (°C)	21°C	
	Relative Humidity (%)	56%	
	Air pressure (hPa)	1020	
—	Power Supply / Frequency	Application Point	
Fully configured sample tested at the power line frequency	Batteries Operated	Enclosure	
Equipment mode:	Operation mode	#1	
FCC Standard	§15.203 § 15.247 (B)(4)(I)		

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

Antenna specifications	
N° of authorized antenna types	1
Antenna type	PCB trace
Maximum total gain	-0.2 dBi
External power amplifiers	Not present

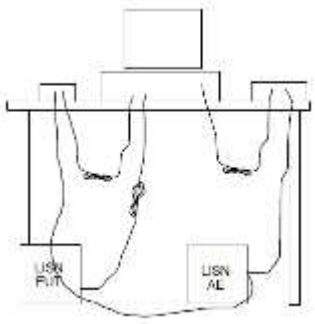
11.2 AC Power Conducted Emission			PASS
Parameters required prior to the test	Laboratory Ambient Temperature (°C)	15 to 35 °C	
	Relative Humidity (%)	30 to 60 %	
Parameters recorded during the test	Laboratory Ambient Temperature (°C)	21°C	
	Relative Humidity (%)	56%	
	Air pressure (hPa)	1020	
—	Power Supply / Frequency	Application Point	
Fully configured sample tested at the power line frequency	115V ~ 60Hz (via AC/DC adapter)	AC Mains	
Equipment mode:	Operation mode	#2	
FCC Standard	§15.207		

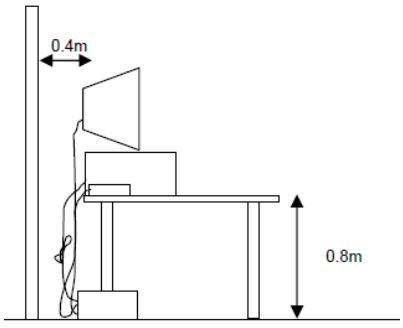
Frequency (MHz)	Quasi-peak (dBuV)	Average (dBuV)	Result
0.15-0.5	66 to 56	56 to 46	PASS
0.5-5	56	46	PASS
5-30	60	50	PASS

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Further information to test setup



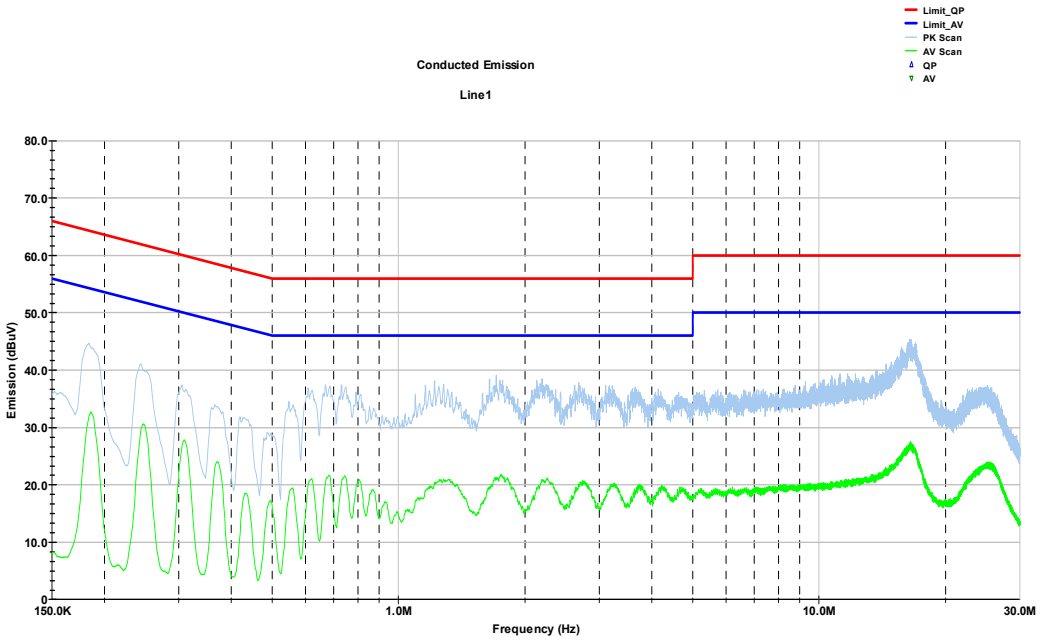


Test Equipment Used					
Description	Manufacturer	Model	TUV Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESR	87020864	12/2018	12/2019
Two line V-Network	R&S	ENV216	87020993	01/2018	01/2020
Stabilized Power Supply	Elettrotest	TPS T 30K60S	87020490	09/2018	09/2020

Test Results

EUT Operating Mode(s) #2

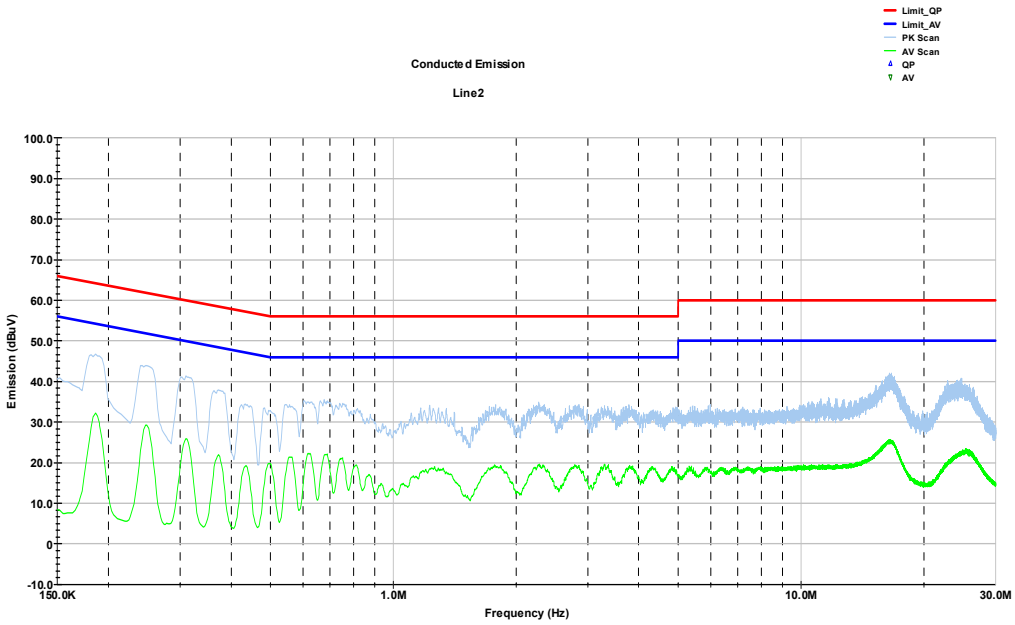
AC MAINS - Phase line



Test Results

EUT Operating Mode(s) #2

AC MAINS - Neutral line



11.3 TEST: Radiated Emission			PASS
Parameters required prior to the test	Laboratory Ambient Temperature (°C)	15 to 35 °C	
	Relative Humidity (%)	30 to 60 %	
Parameters recorded during the test	Laboratory Ambient Temperature (°C)	21°C	
	Relative Humidity (%)	50%	
	Air pressure (hPa)	1020	
—	Power Mode	Application Point	
Fully configured sample tested at the power line frequency	Batteries Operated	Enclosure	
Equipment mode: #1	Operation mode	#1	
FCC Standard	§15.205; §15.209; §15.247		

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

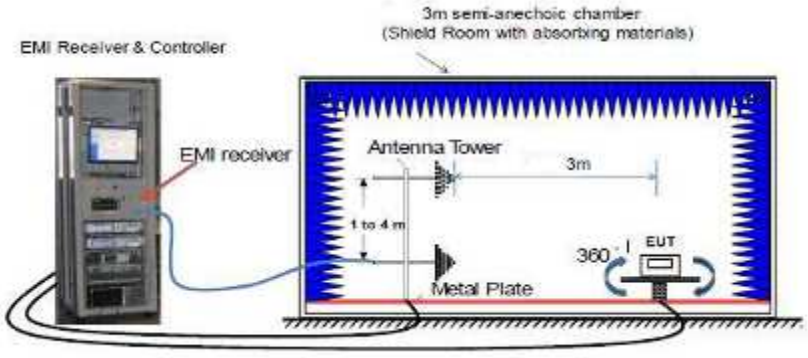
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

Remark: In accordance with part 15.31 (f) (2), where the measurement distance was specified to be 30 or 300 meters, a correction factor was applied in order to permit measurement to be performed at a separation distance. The applied formula for limits at 3 meter is:Extrapolation (dB) = 40log (300meter / 3meter) = +80db Extrapolation (dB) = 40log (30meter / 3meter) = +40dB
According to KDB 414788 D01v01r01, for emission measurements below 30 MHz semi-anechoic chamber has been characterized so that the measurements correspond to those obtained at an open-field test site. EUT is battery operated and has been tested on all three orthogonal axis positions. Worst case result has been listed

Further information to test setup:

For frequencies above 1GHz, the anechoic material is also placed on the metallic floor between EUT and Antenna



Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
CSSA	ETS Lindgren	FACT3	87020484	06/2017	06/2019
EMI Test Receiver	R&S	ESW44	87020967	06/2018	06/2019
Loop Antenna	EMCO	6512	87020465	02/2017	02/2020
Antenna BiConiLog	ETS Lindgren	314E	87020457	04/2017	04/2020
Antenna Horn with Preamplifier	ETS Lindgren	3117-PA	87020458	04/2017	04/2020
2xAntenna Horn with Preamplifier	ETS Lindgren	114514 120722	87020459 87020460	04/2017	04/2020
Highpass Filter	Wainwright Instr.	WHKX10-2520-2800-18000-40ss	87020799	05/2018	05/2019

Test Procedure
In accordance to sections 6.3, 6.4, 6.5, 6.6 of ANSI C63.10

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 – Low Channel (2402 MHz)
Frequency: 9kHz – 30MHz

y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time
9 kHz - 150 kHz	50 Hz	PK+	200 Hz	0.10 s
150 kHz - 30 MHz	2.25 kHz	PK+	9 kHz	0.10 s

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 – Middle Channel (2440 MHz)
Frequency: 9kHz – 30MHz

y axis (worst case)

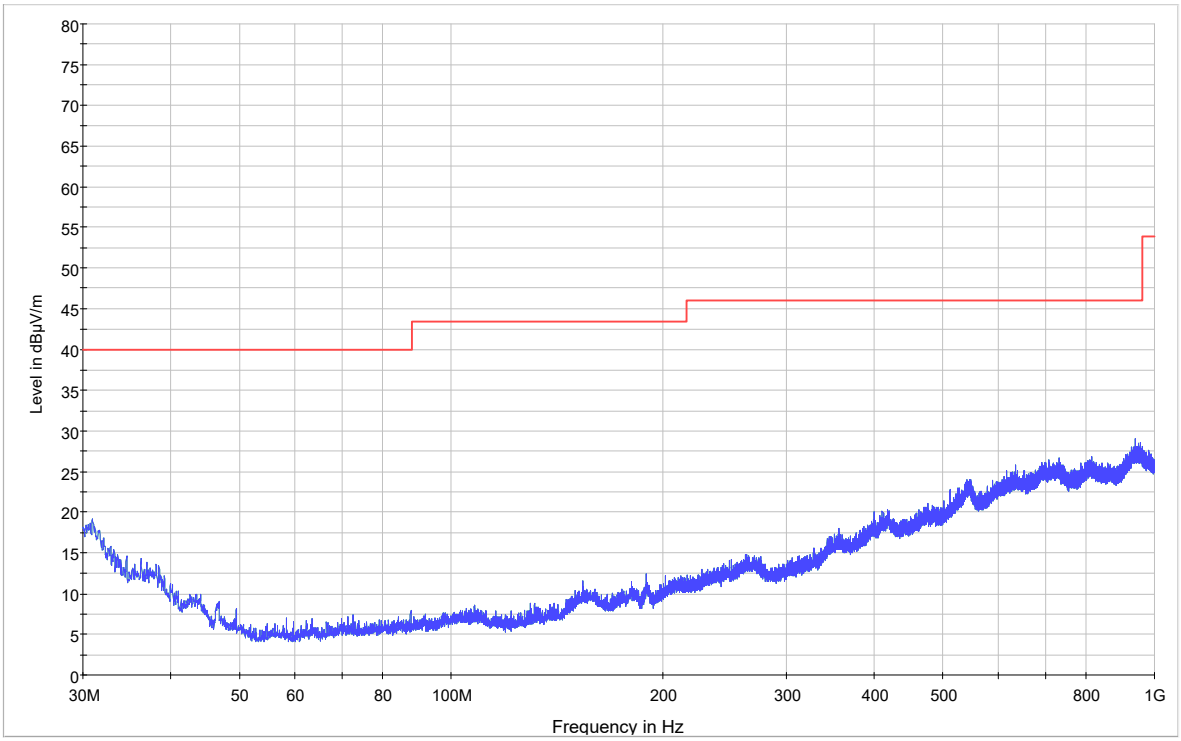
Subrange	Step Size	Detectors	IF BW	Meas. Time
9 kHz - 150 kHz	50 Hz	PK+	200 Hz	0.10 s
150 kHz - 30 MHz	2.25 kHz	PK+	9 kHz	0.10 s

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 – High Channel (2480 MHz)
Frequency: 9kHz – 30MHz

y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time
9 kHz - 150 kHz	50 Hz	PK+	200 Hz	0.10 s
150 kHz - 30 MHz	2.25 kHz	PK+	9 kHz	0.10 s

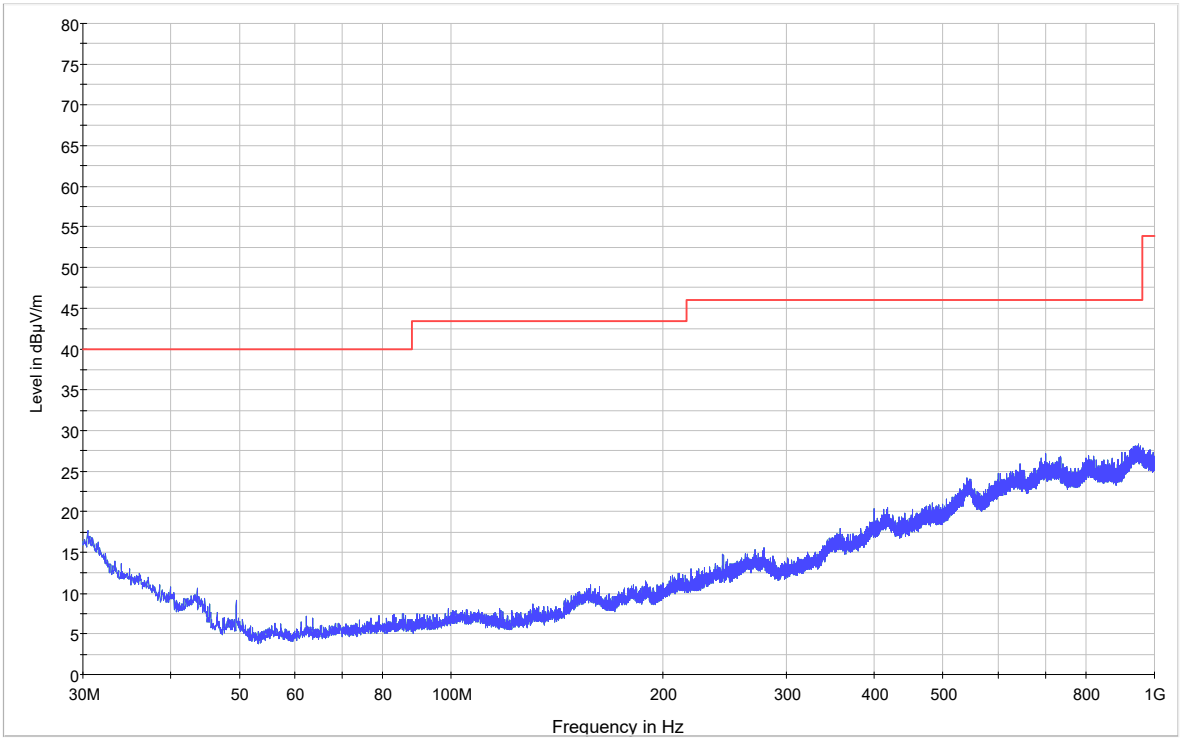
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel Low
Frequency: 30MHz – 1GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

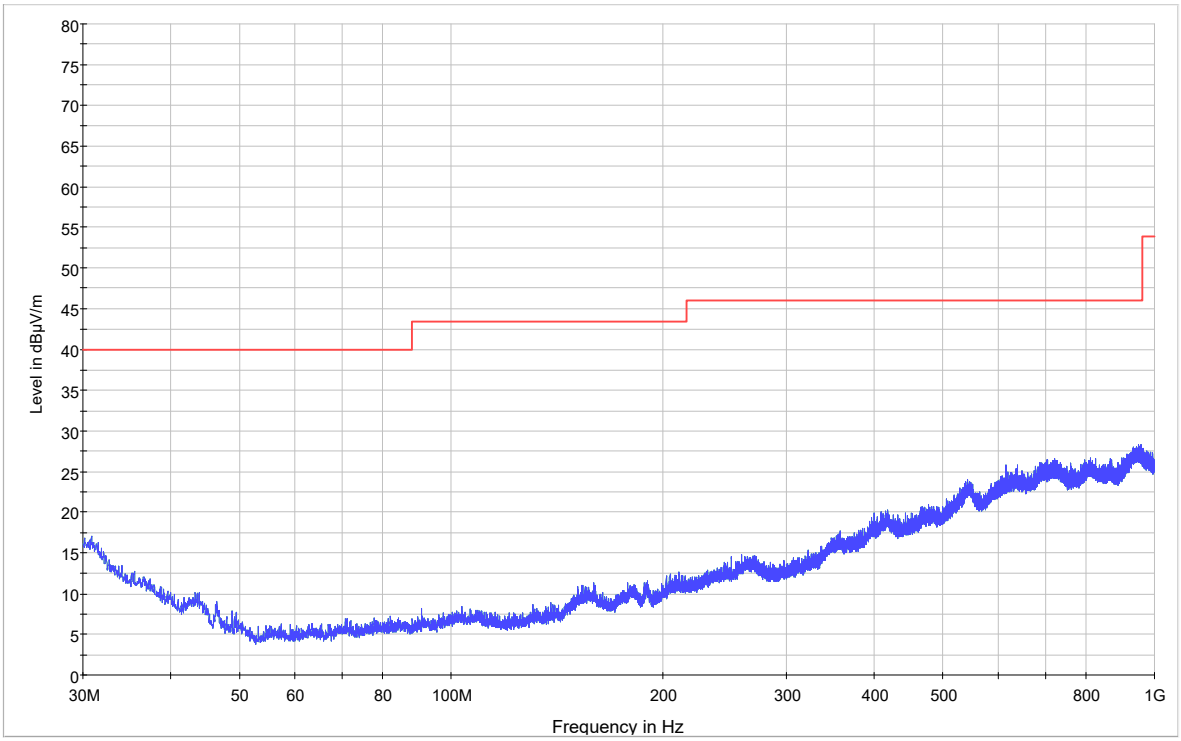
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel low
Frequency: 30MHz – 1GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

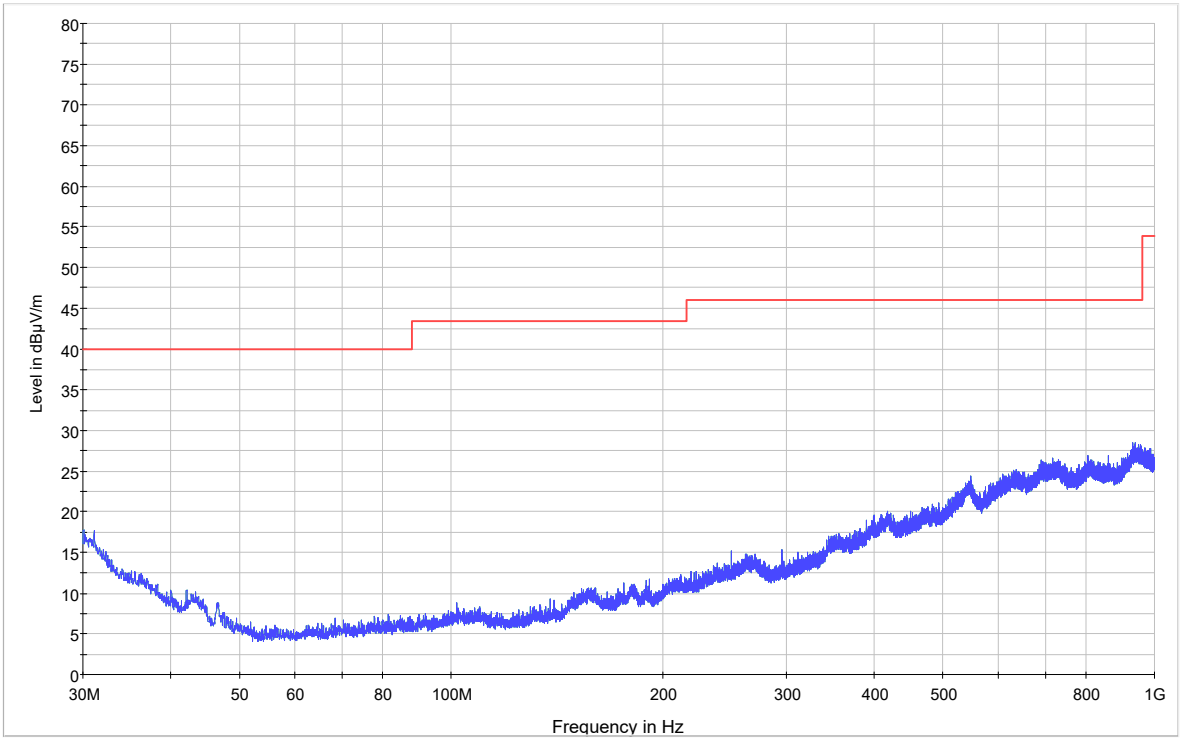
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 30MHz – 1GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

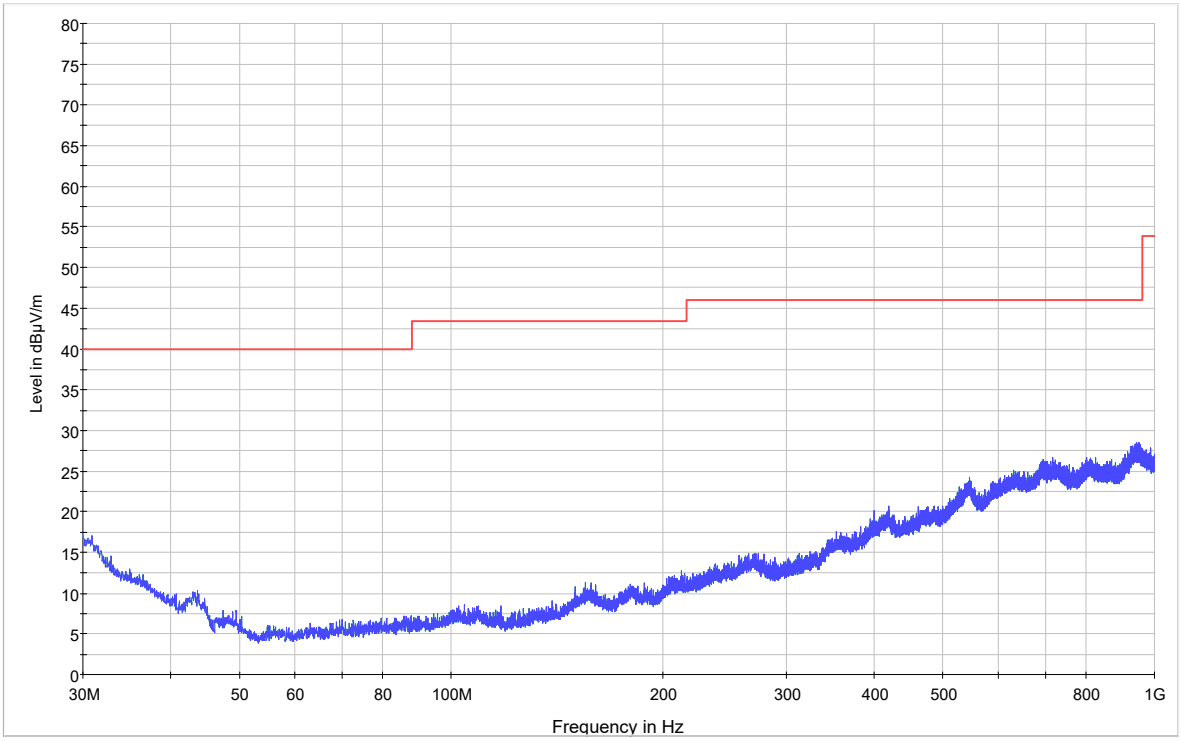
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 30MHz – 1GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

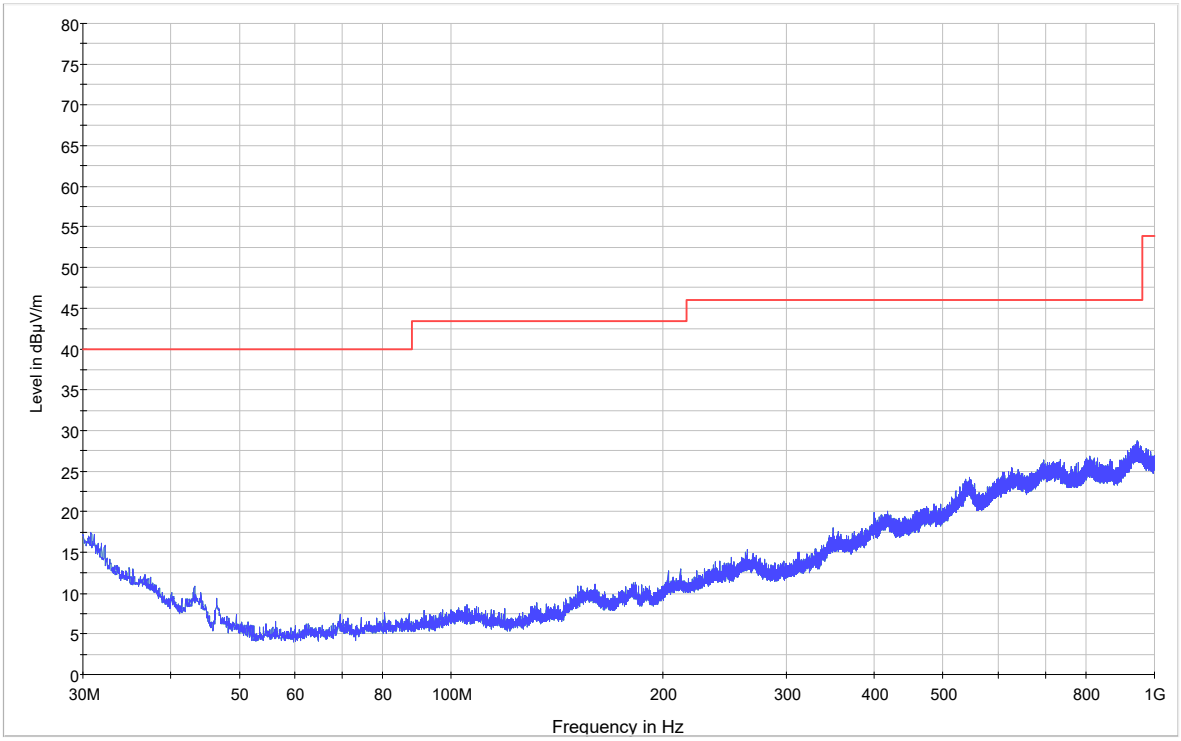
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 30MHz – 1GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

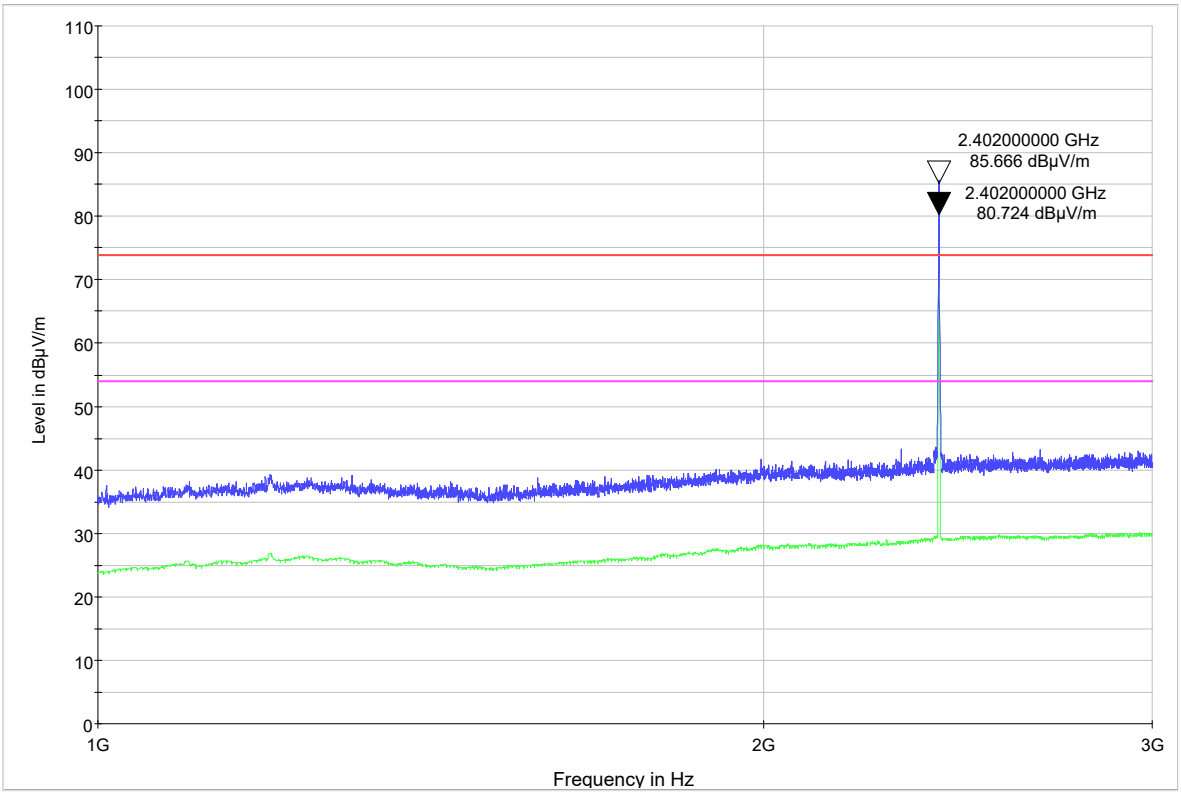
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 30MHz – 1GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	30 kHz	PK+	120 kHz	0.1 s	20 dB

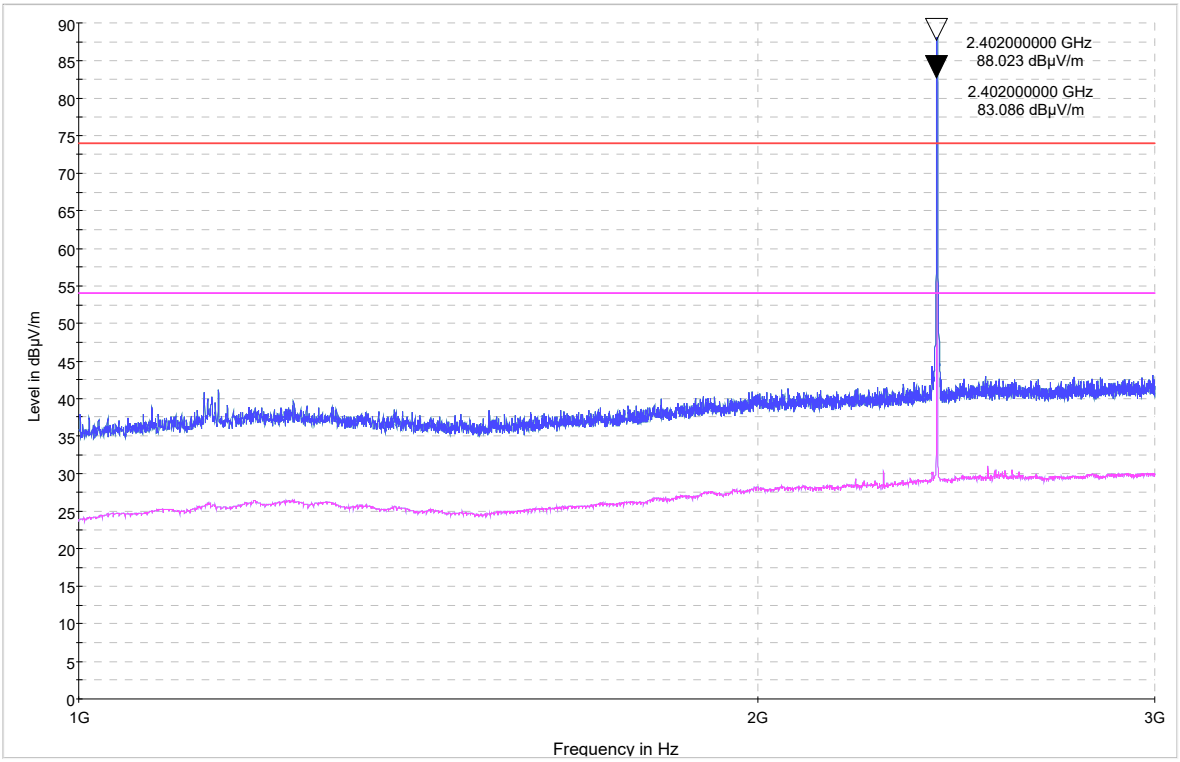
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel low
Frequency: 1GHz – 3GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

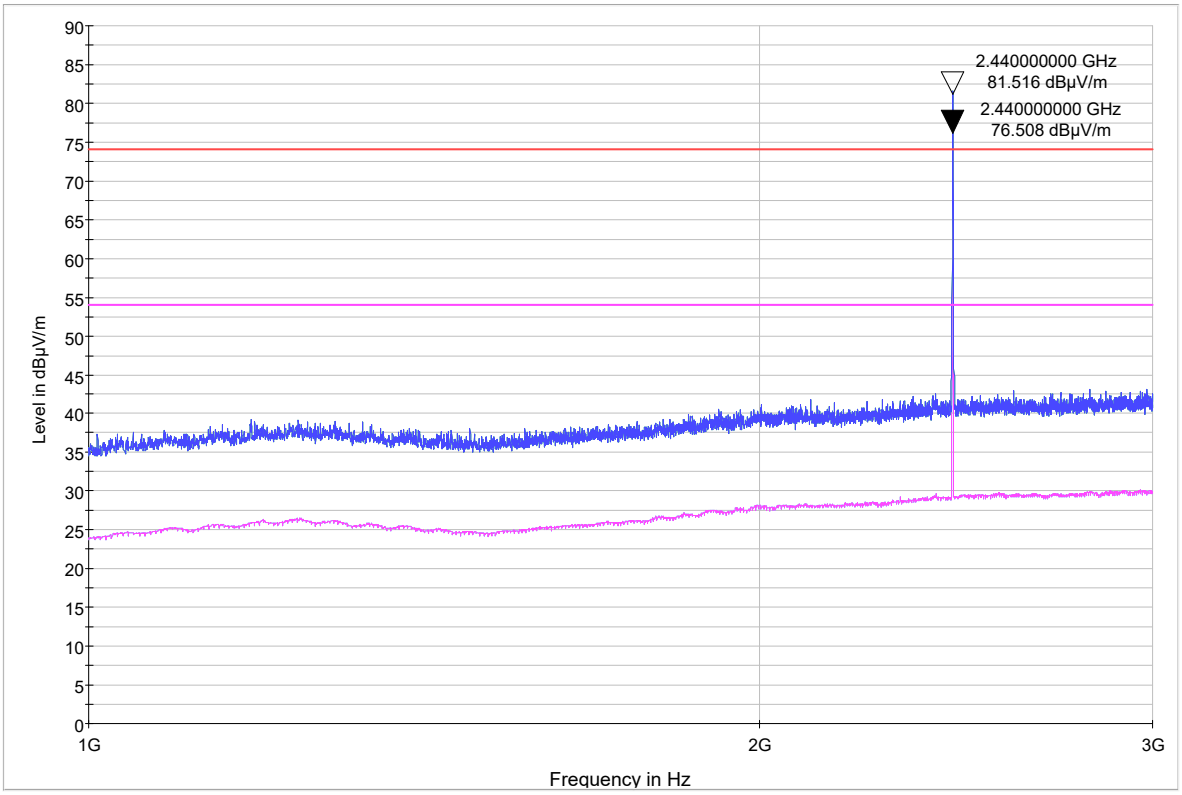
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel low
Frequency: 1GHz – 3GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

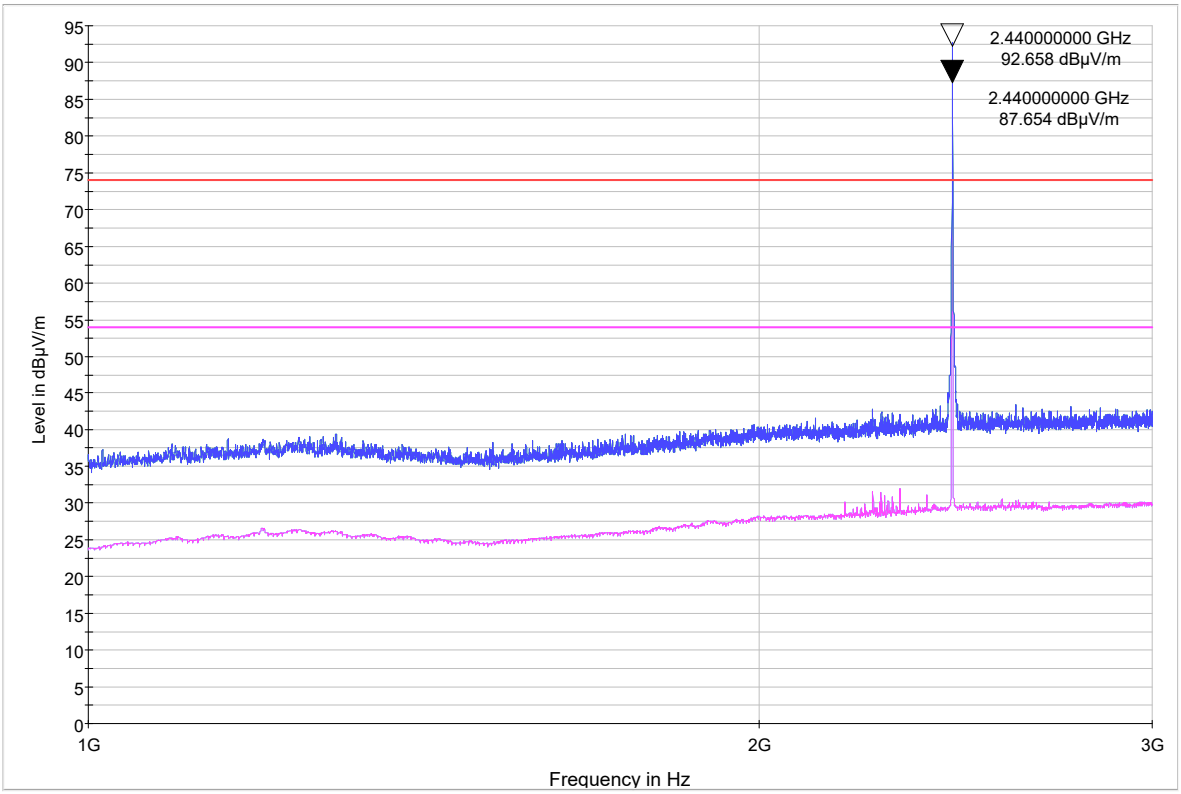
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 1GHz – 3GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

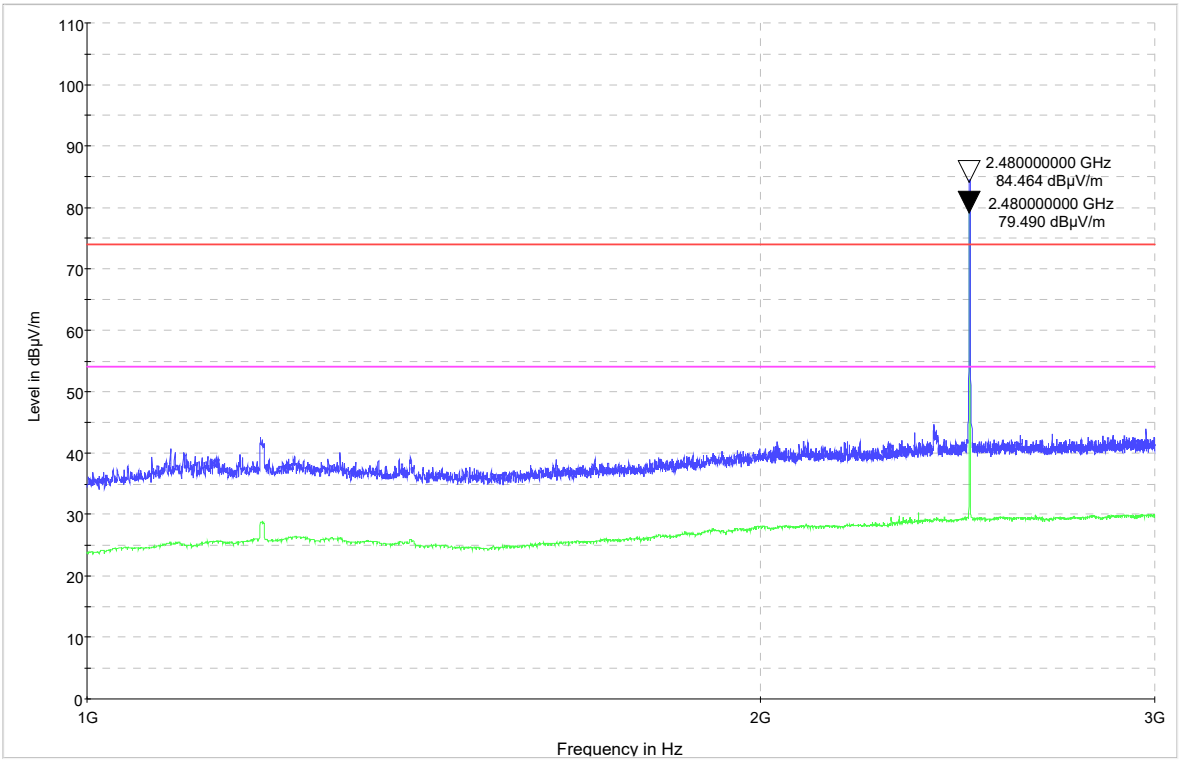
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 1GHz – 3GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

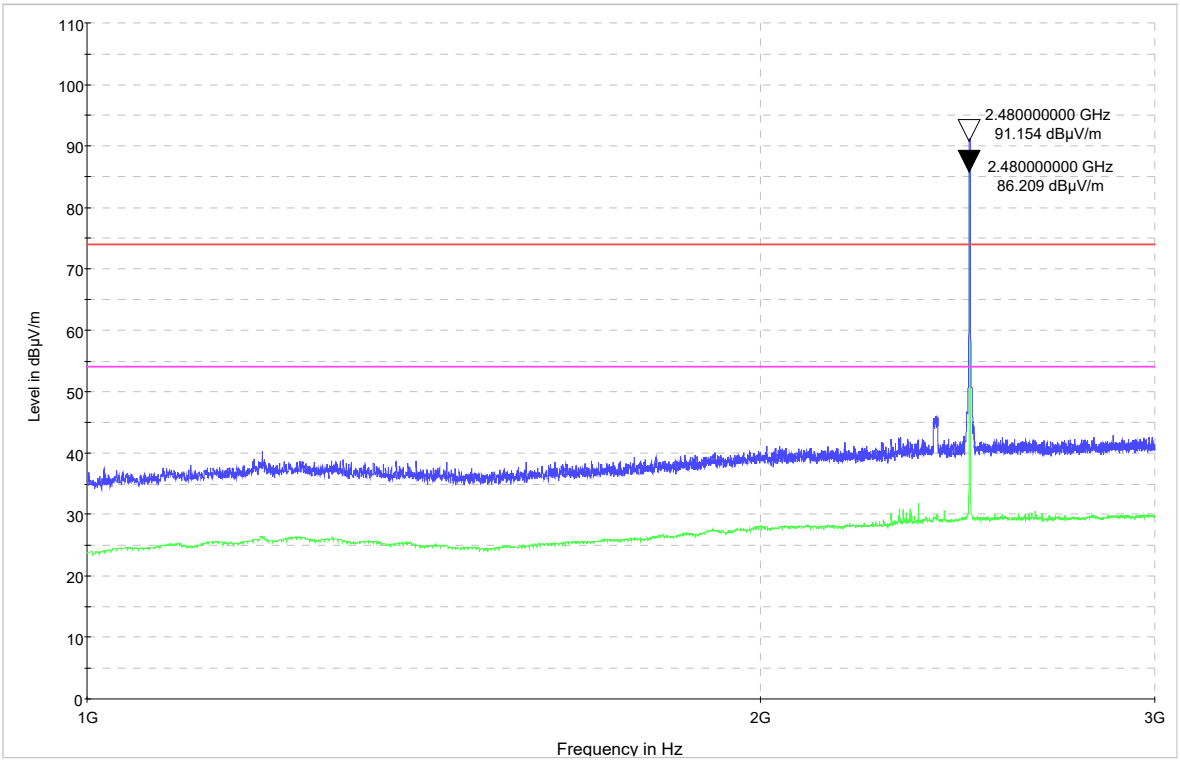
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 1GHz – 3GHz
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

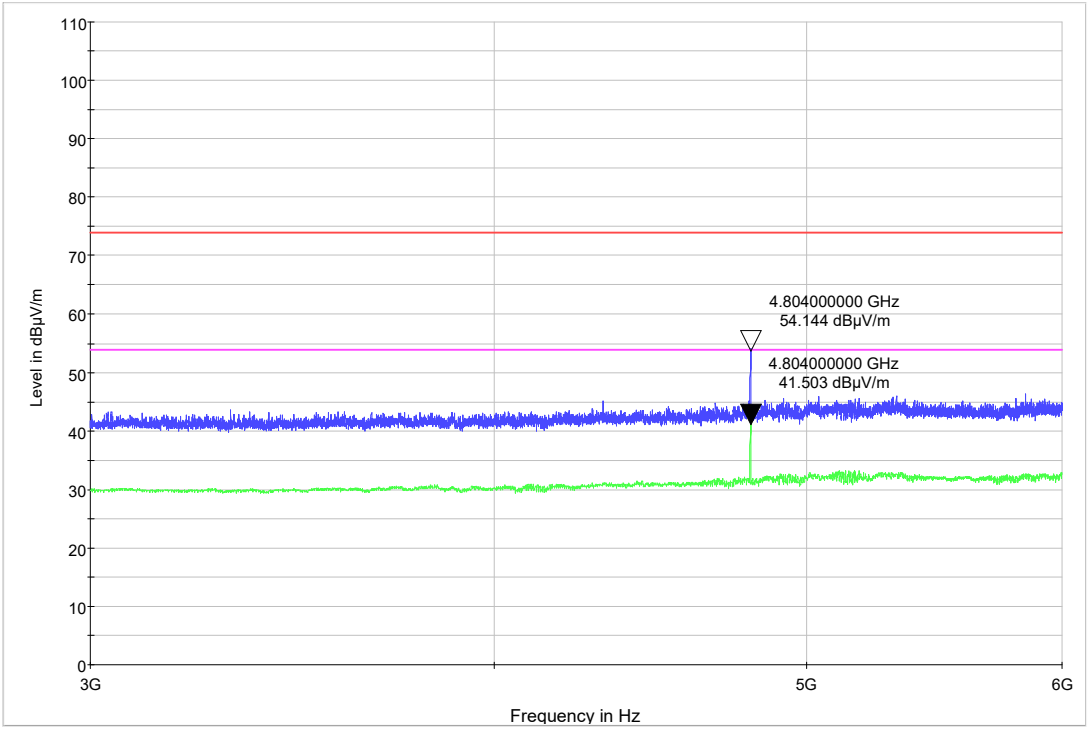
Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 1GHz – 3GHz
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel low
Frequency: 3GHz – 6GHz
Antenna Polarization: Vertical



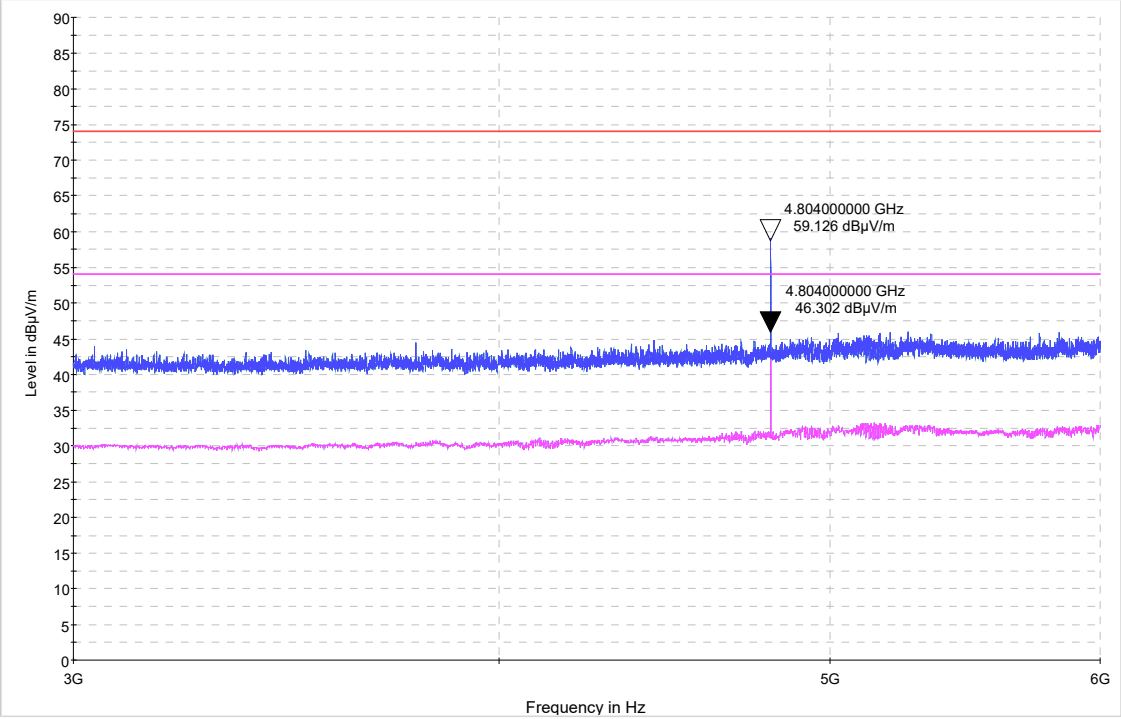
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4804	58,44	-9,53	5,23	**54,14**	yes	74,00	19,86

AVERAGE RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4804	45,80	-9,53	5,23	**41,50**	yes	54,00	12,50

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel low
Frequency: 3GHz – 6GHz
Antenna Polarization: Horizontal



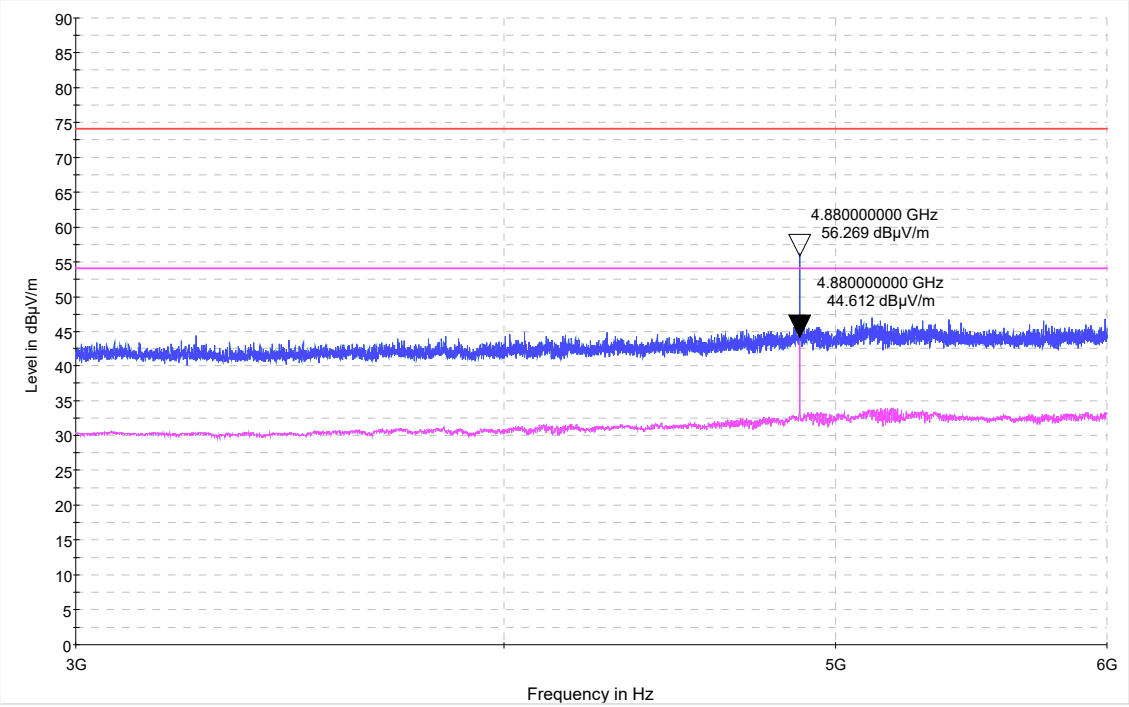
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	Reading value	Antenna Factor with Pre-Amp.	Cable Loss	Correcting reading	Restricted band	PK Limit (AV Limit + 20dB)	Margin
(MHz)	(dBµV)	(dB3/m)	(dB)	(dBµV/m)	/	(dBµV/m)	(dB)
4804	63,53	-9,53	5,23	**59,13**	yes	74,00	14,87

AVERAGE RESULT (RBW=1MHz)							
Frequency	Reading value	Antenna Factor with Pre-Amp.	Cable Loss	Correcting reading	Restricted band	AV Limit	Margin
(MHz)	(dBµV)	(dB3/m)	(dB)	(dBµV/m)	/	(dBµV/m)	(dB)
4804	50,60	-9,53	5,23	**46,30**	yes	54,00	7,70

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 3GHz – 6GHz
Antenna Polarization: Vertical



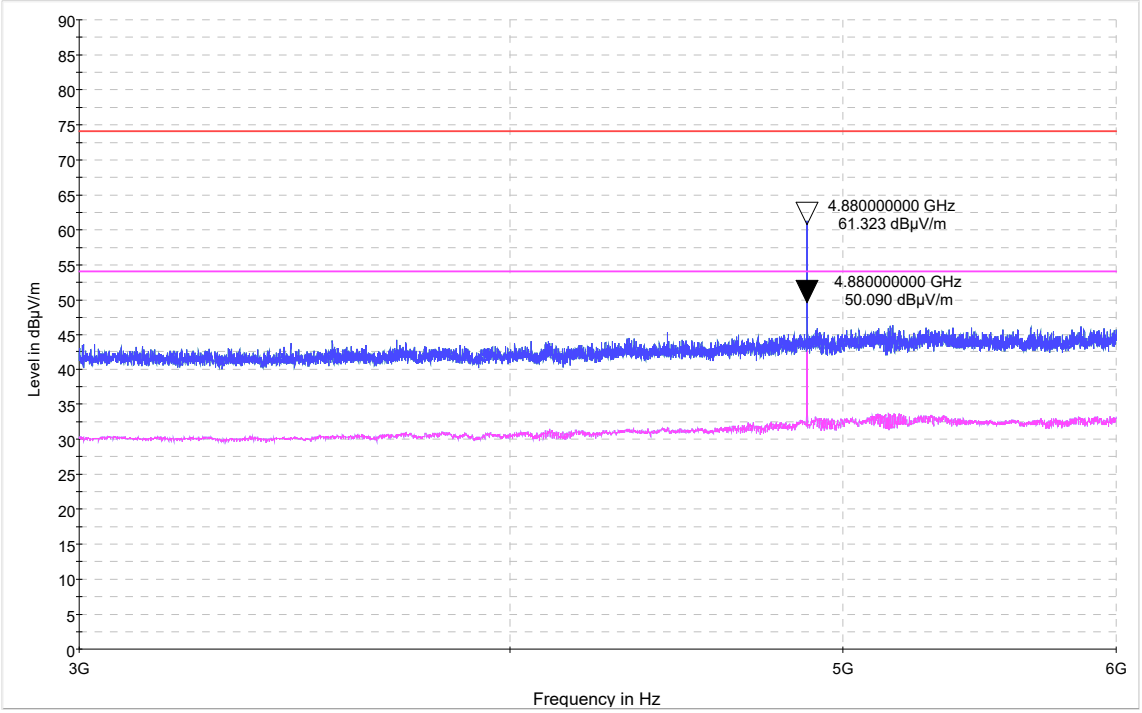
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4880	60,52	-9,51	5,26	**56,27**	yes	74,00	17,73

AVERAGE RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4880	48,85	-9,51	5,26	**44,61**	yes	54,00	9,39

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel middle
Frequency: 3GHz – 6GHz
Antenna Polarization: Horizontal



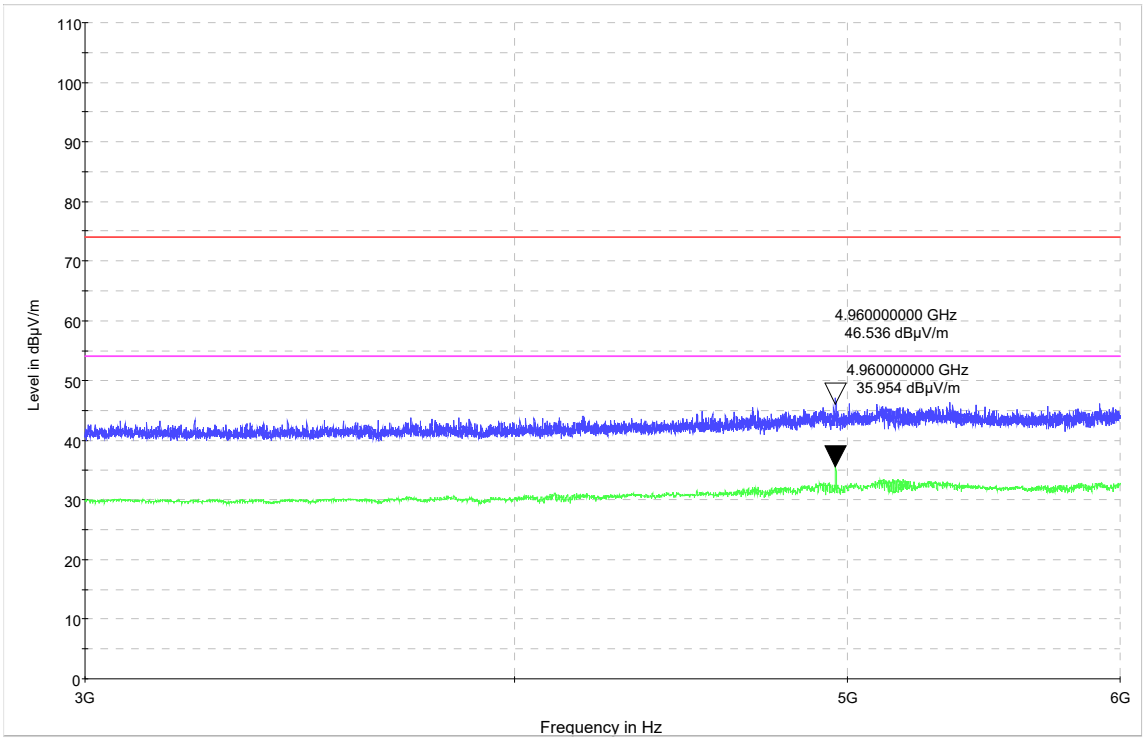
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	Reading value	Antenna Factor with Pre-Amp.	Cable Loss	Correcting reading	Restricted band	PK Limit (AV Limit + 20dB)	Margin
(MHz)	(dBµV)	(dB3/m)	(dB)	(dBµV/m)	/	(dBµV/m)	(dB)
4880	65,57	-9,51	5,26	**61,32**	yes	74,00	12,68

AVERAGE RESULT (RBW=1MHz)							
Frequency	Reading value	Antenna Factor with Pre-Amp.	Cable Loss	Correcting reading	Restricted band	AV Limit	Margin
(MHz)	(dBµV)	(dB3/m)	(dB)	(dBµV/m)	/	(dBµV/m)	(dB)
4880	54,35	-9,51	5,26	**50,10**	yes	54,00	3,90

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 3GHz – 6GHz
Antenna Polarization: Vertical



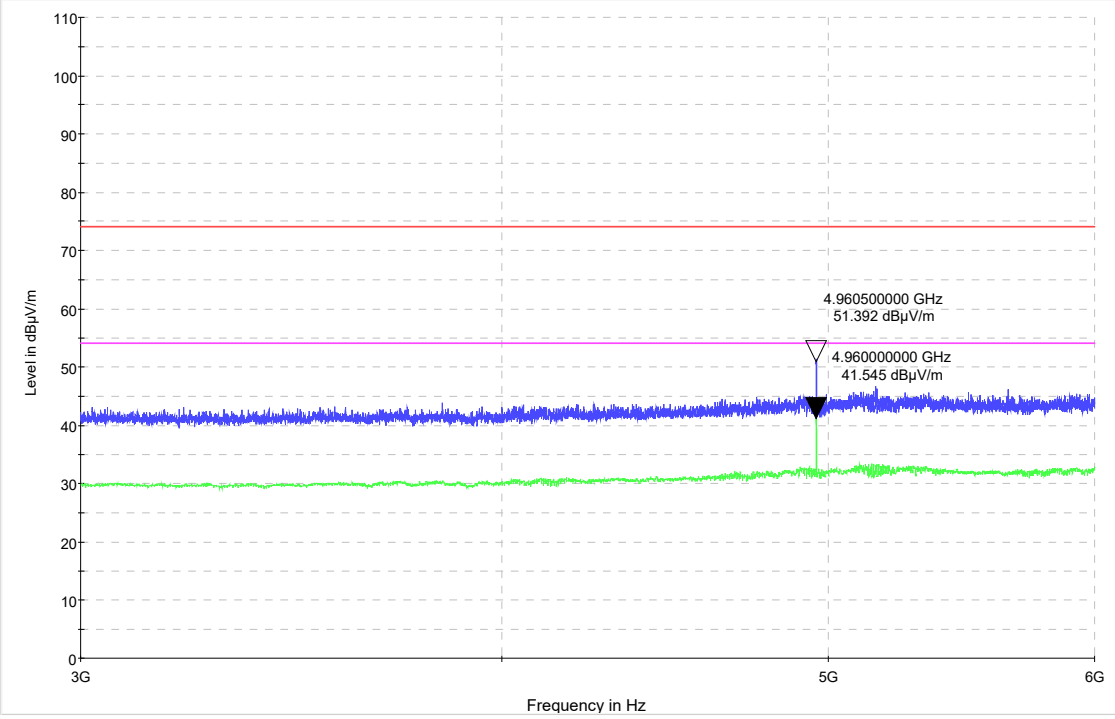
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4960	50,73	-9,48	5,29	**46,54**	yes	74,00	27,68

AVERAGE RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4960	40,14	-9,48	5,29	**35,95**	yes	54,00	18,05

Graphical representation of Radiated Emission Measurement
Operation Mode: #1 Channel high
Frequency: 3GHz – 6GHz
Antenna Polarization: Horizontal



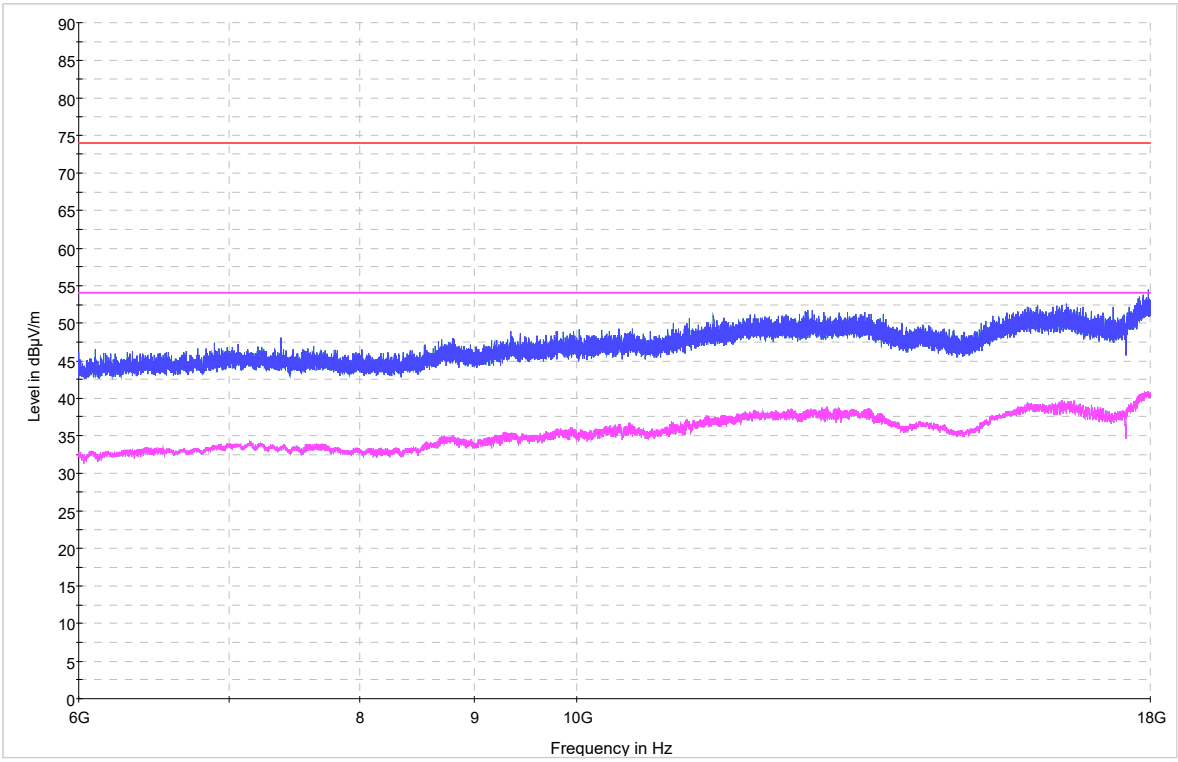
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4960	55,58	-9,48	5,29	**51,39**	yes	74,00	22,61

AVERAGE RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp.**	**Cable Loss**	**Correcting reading**	**Restricted band**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
4960	45,73	-9,48	5,29	**41,54**	yes	54,00	12,46

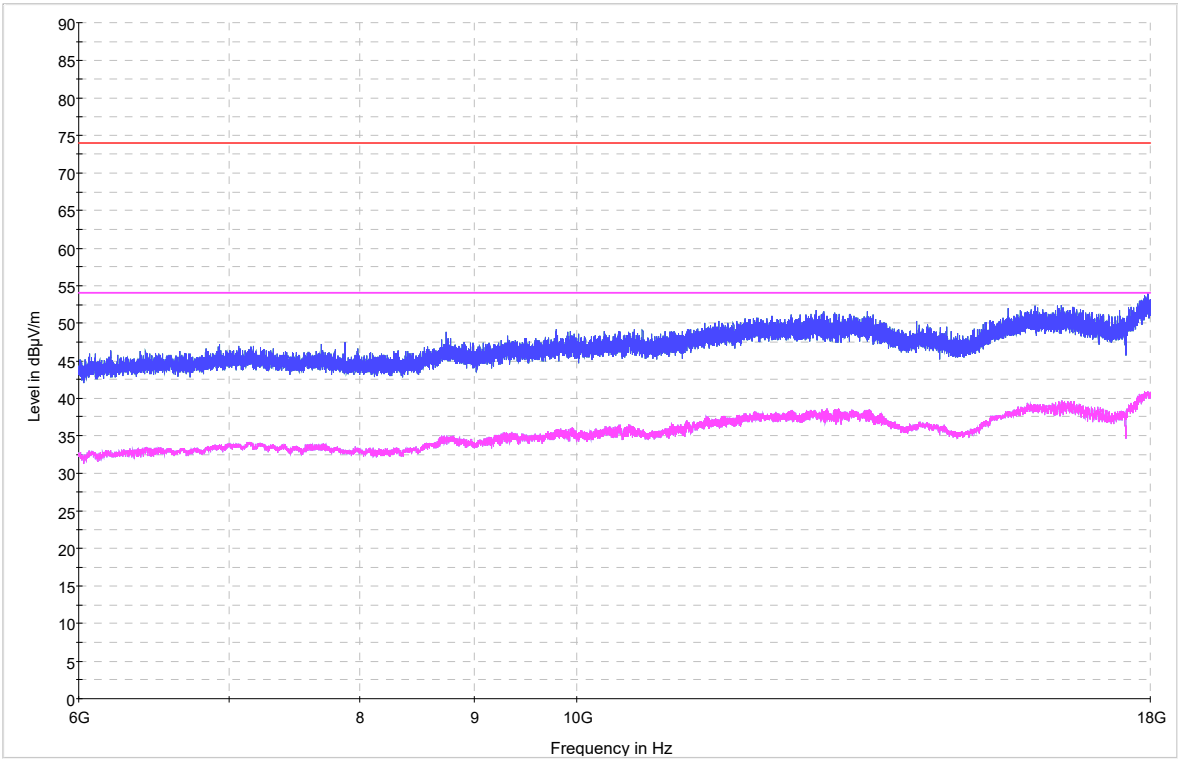
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel low
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

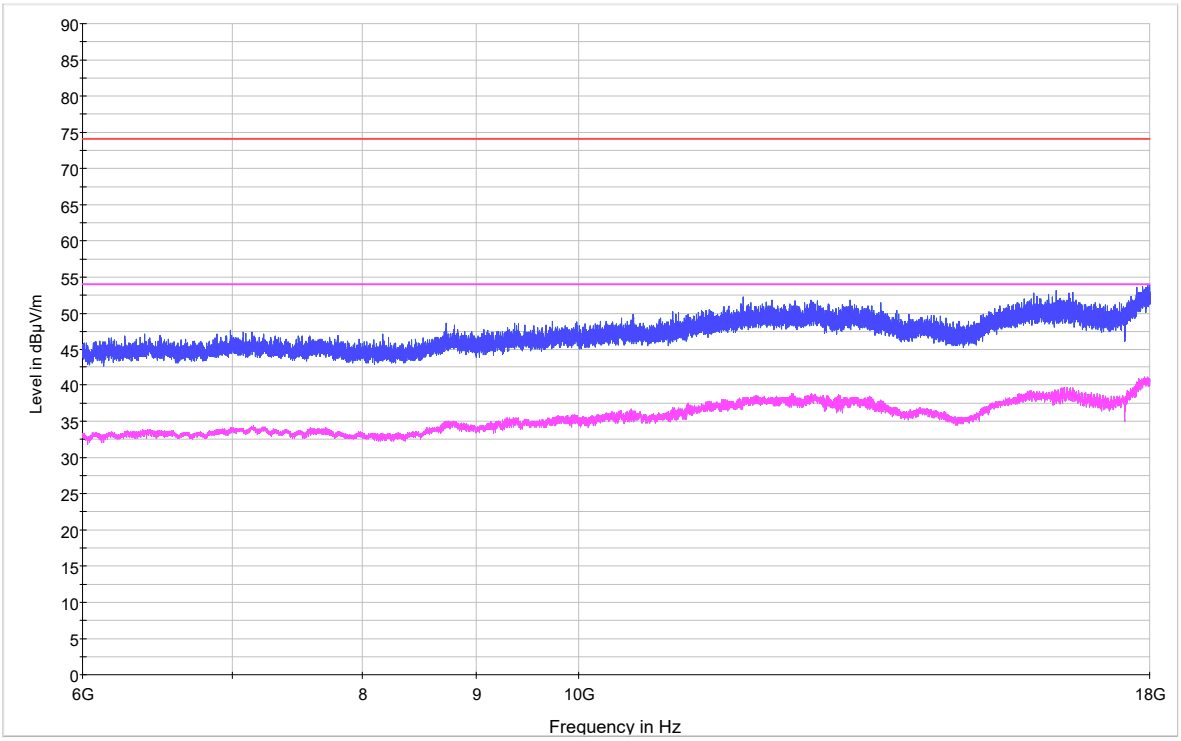
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel low
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

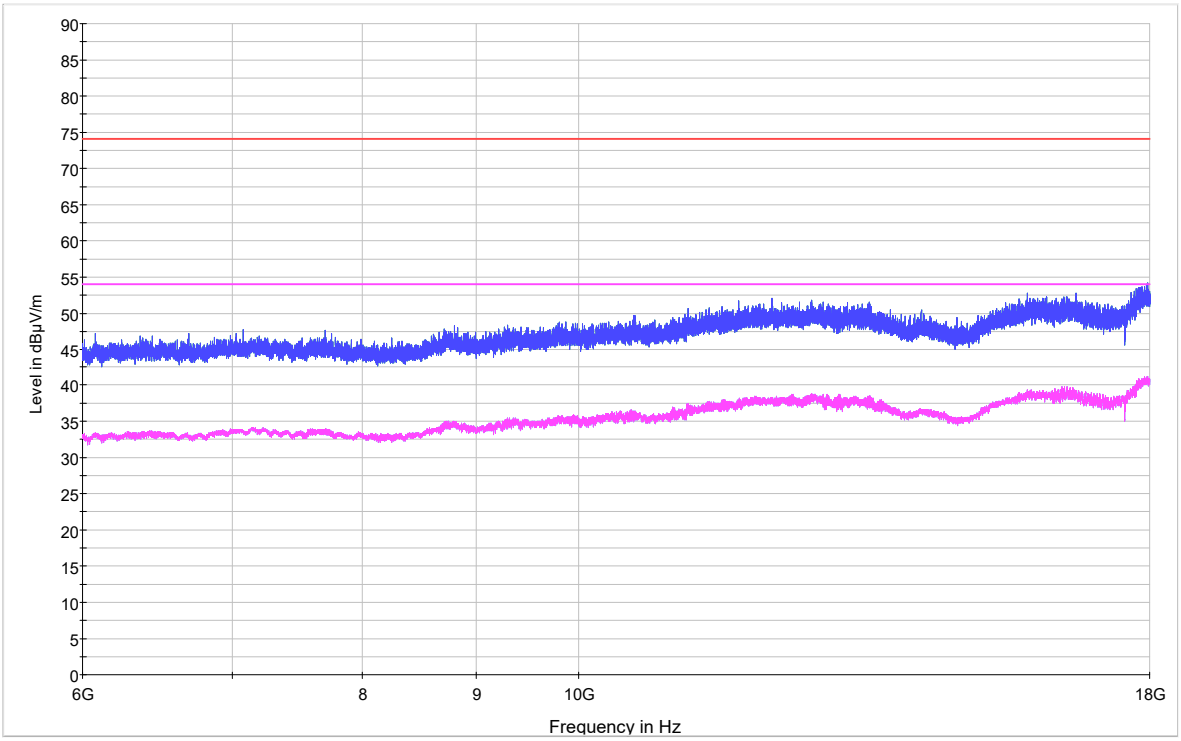
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel mid
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

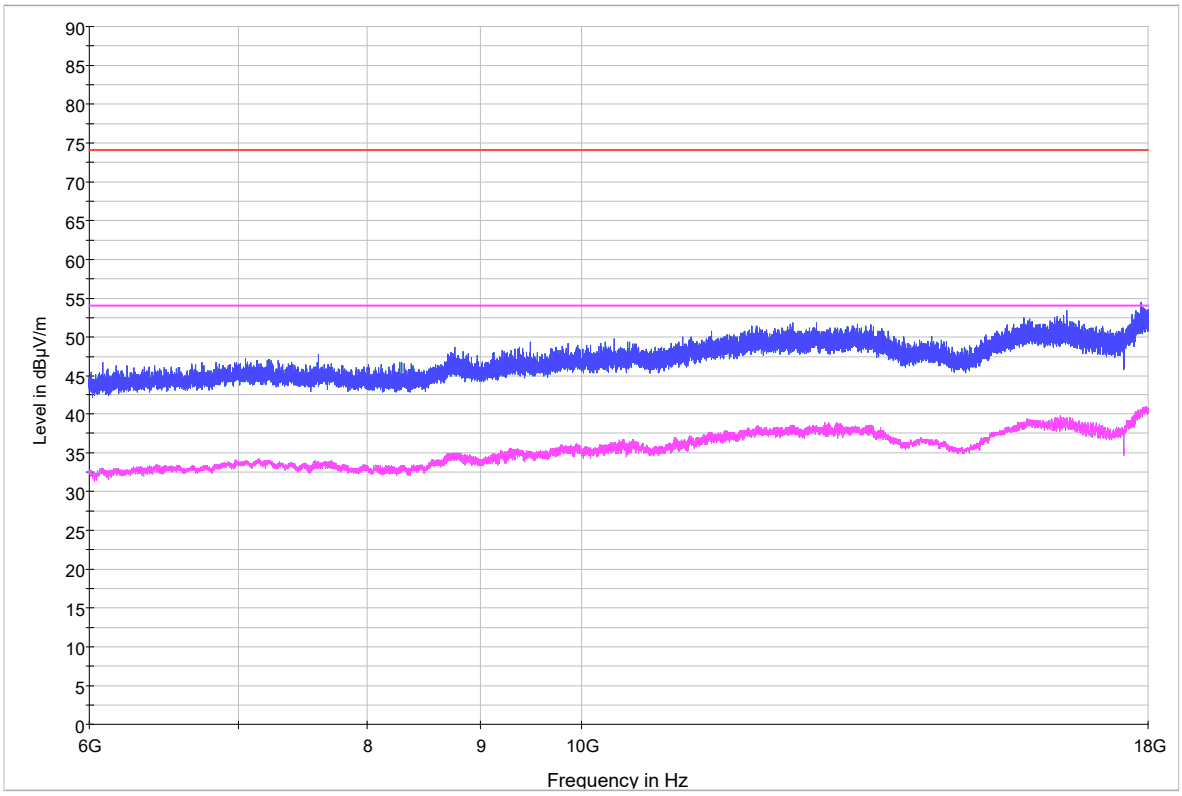
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel mid
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

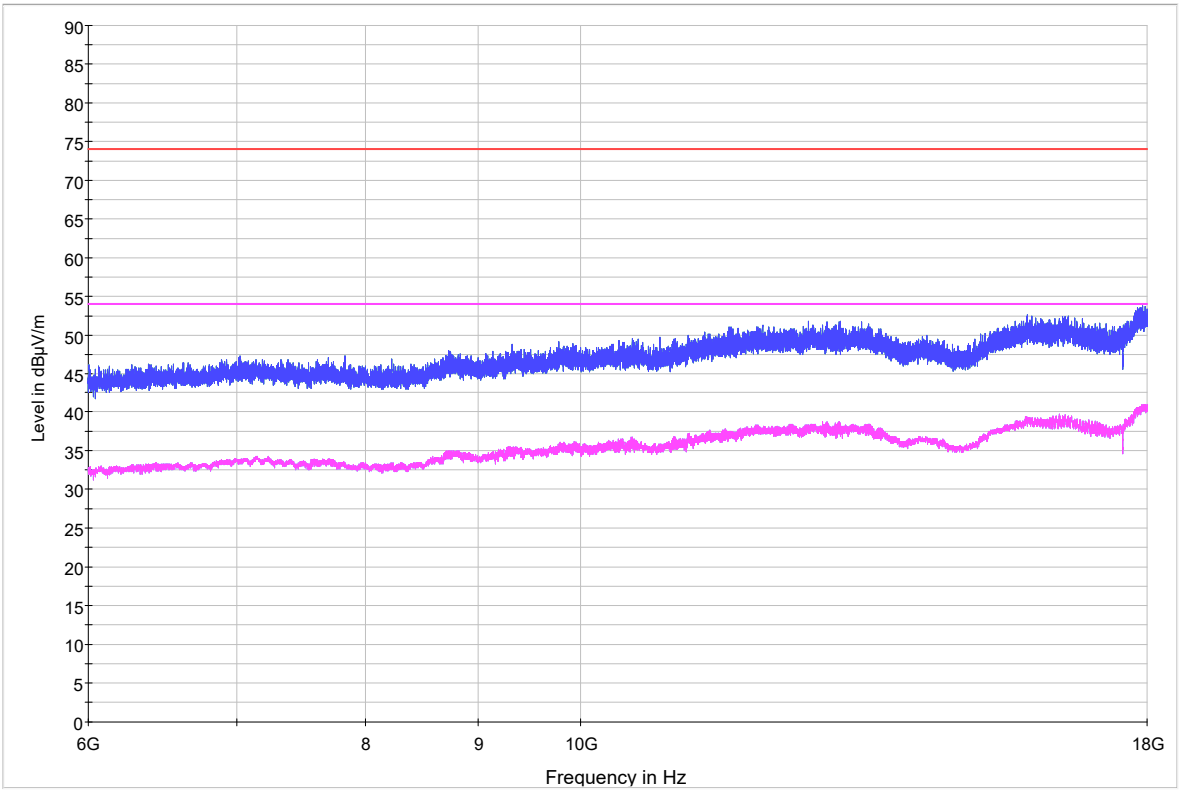
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel high
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

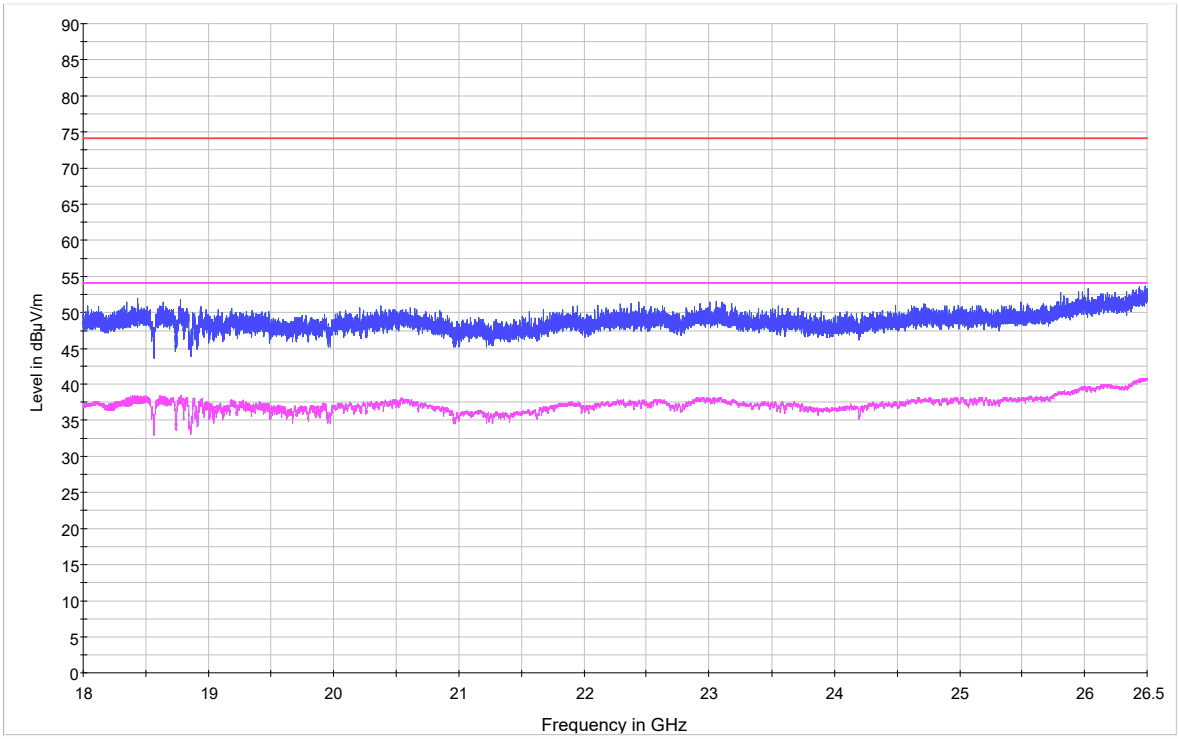
Frequency: 6GHz – 18GHz
Operation Mode: #1 Channel high
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

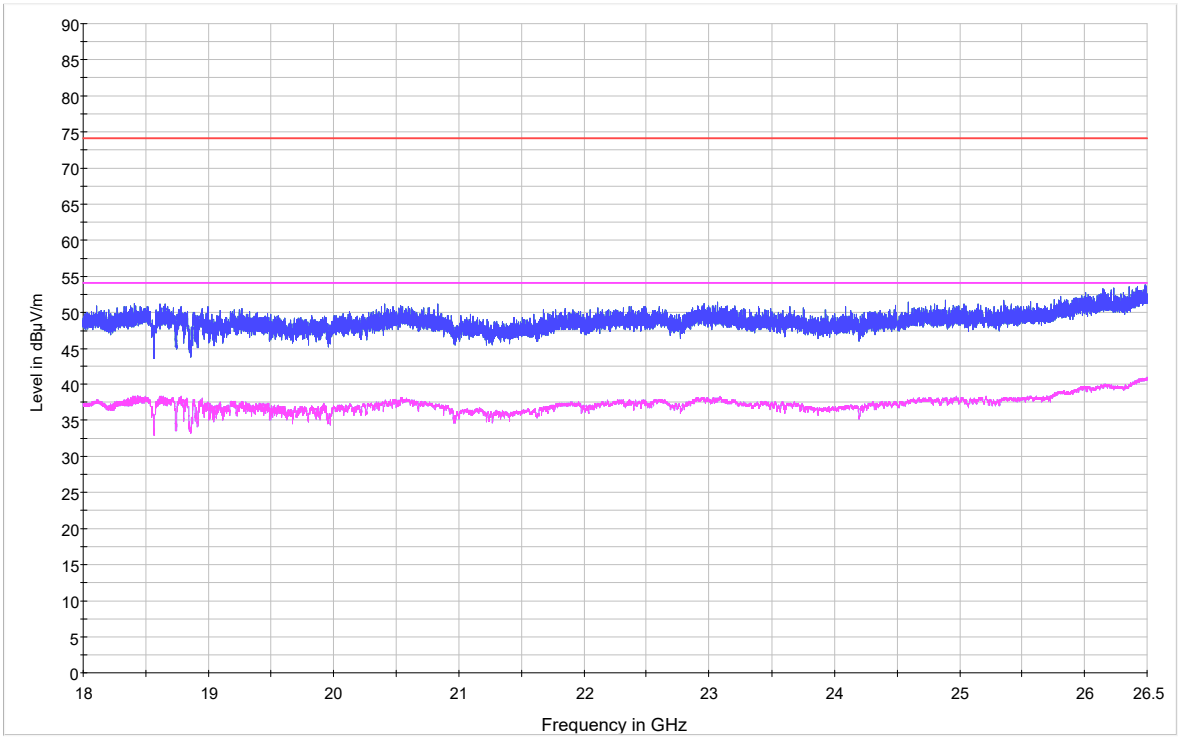
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel low
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

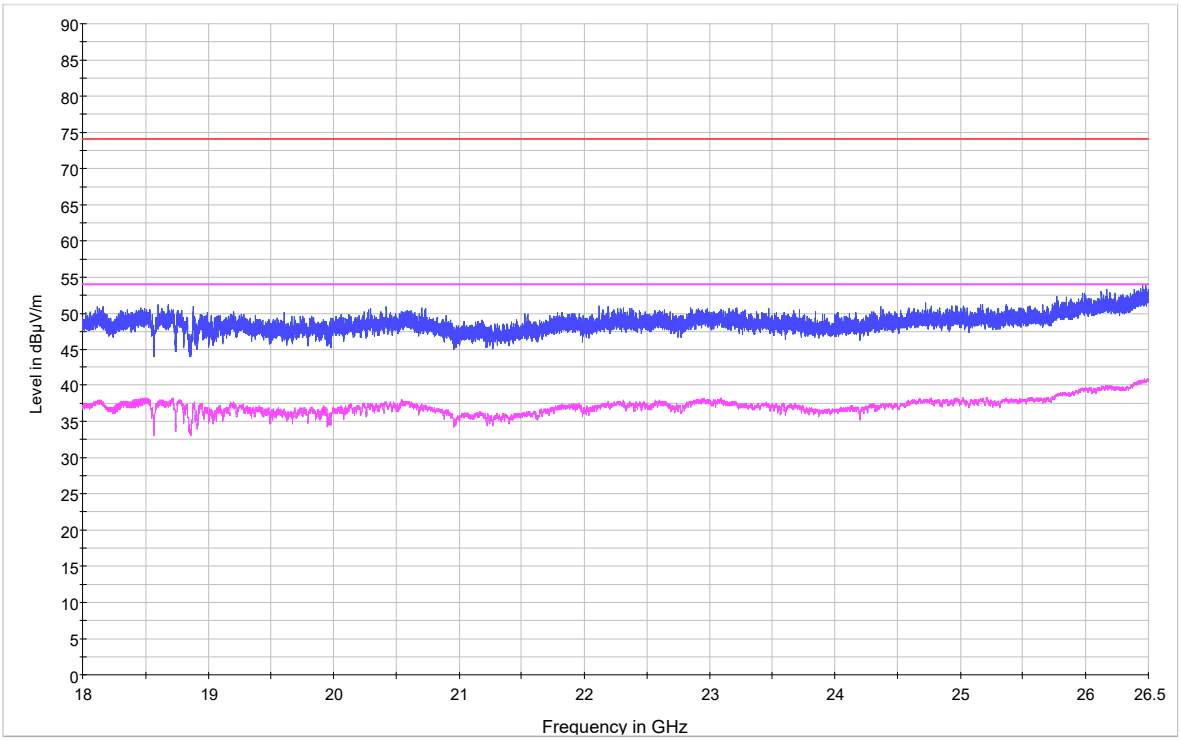
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel low
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

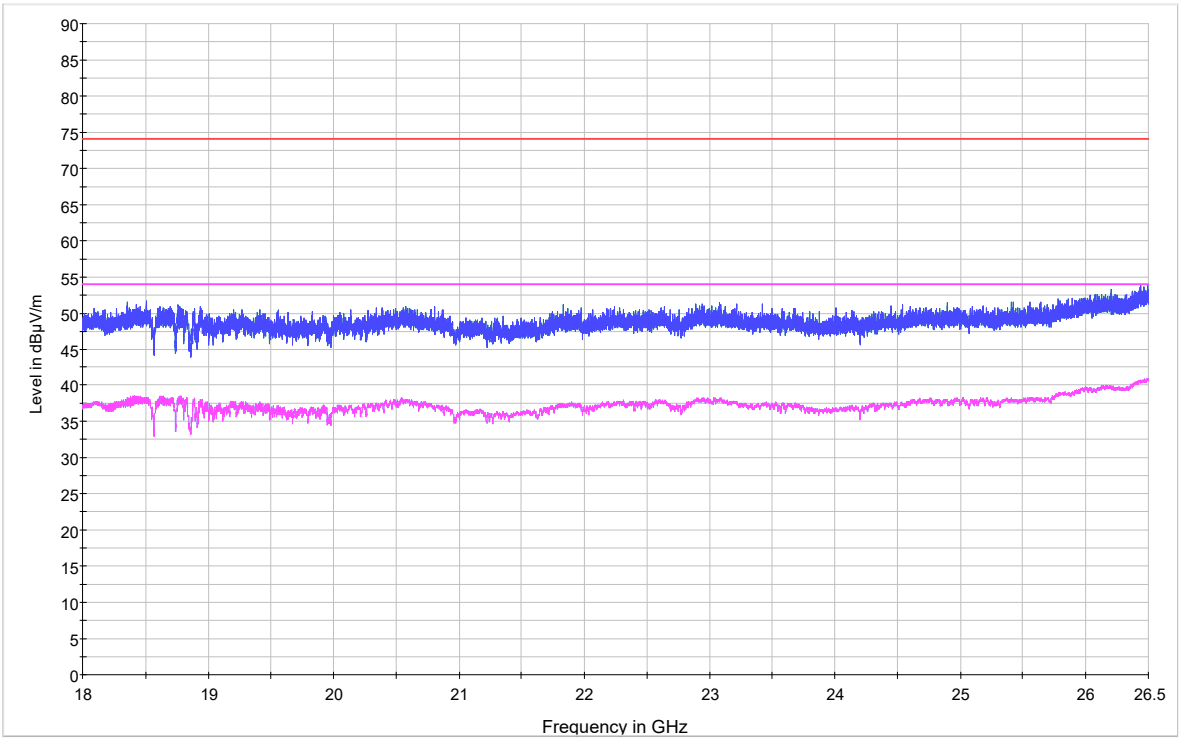
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel middle
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

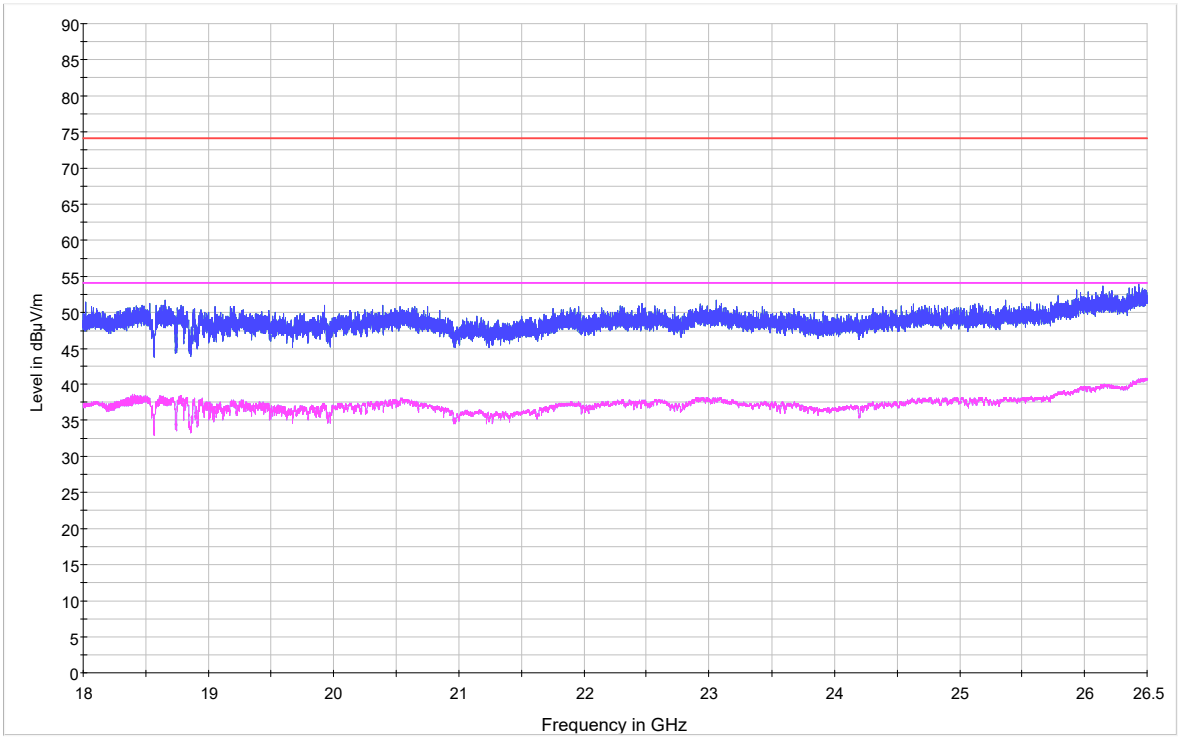
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel middle
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

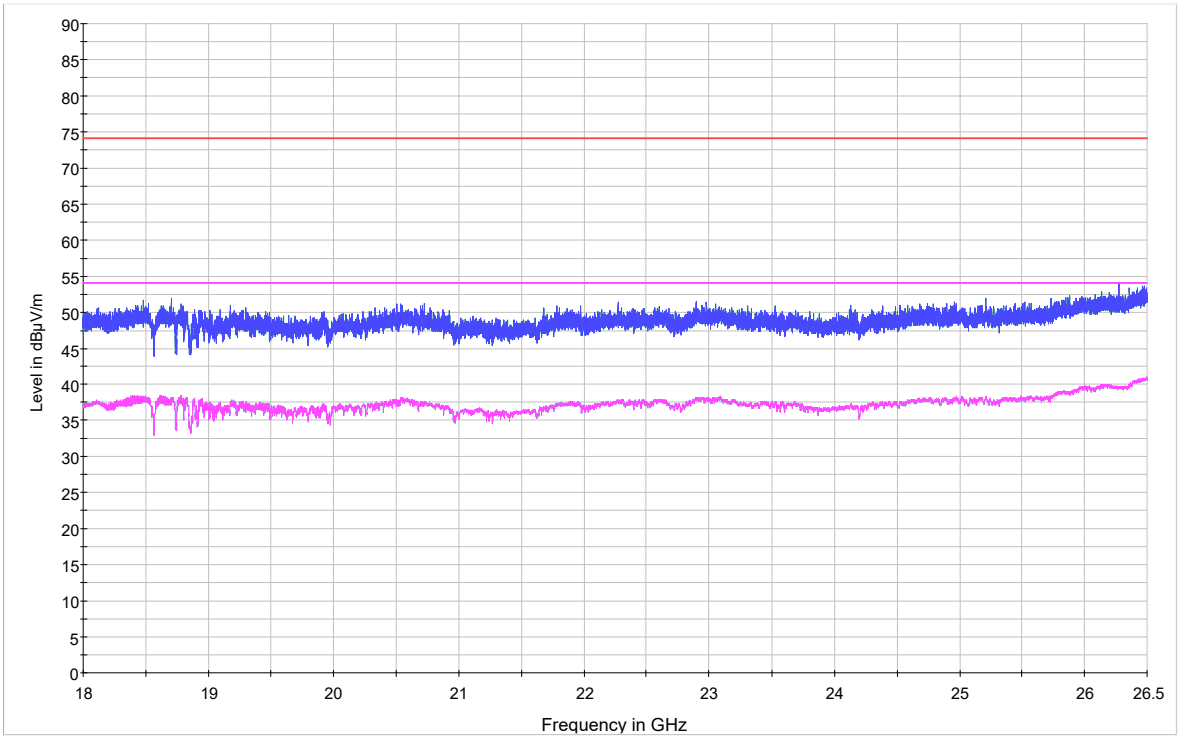
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel high
Antenna Polarization: Vertical



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

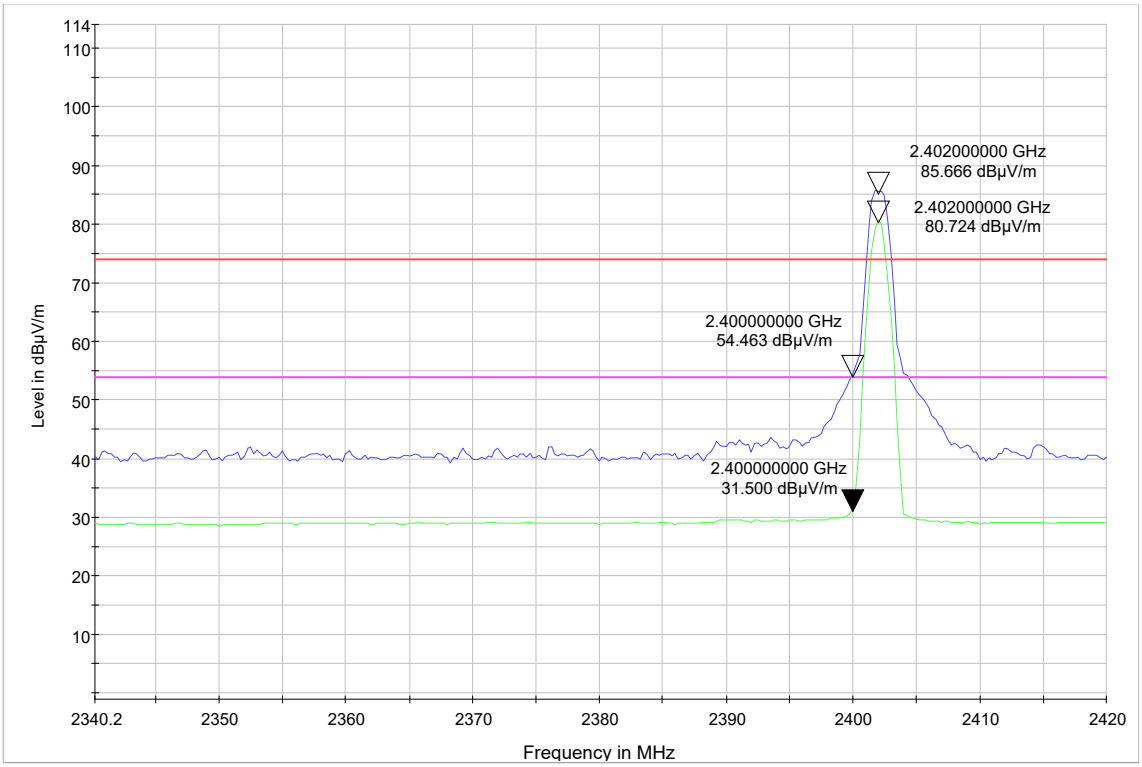
Frequency: 18GHz – 26GHz
Operation Mode: #1 Channel high
Antenna Polarization: Horizontal



Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 26.5 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

Graphical representation of Radiated Emission Measurement
BAND ENDGE LOW
Antenna Polarization: Vertical

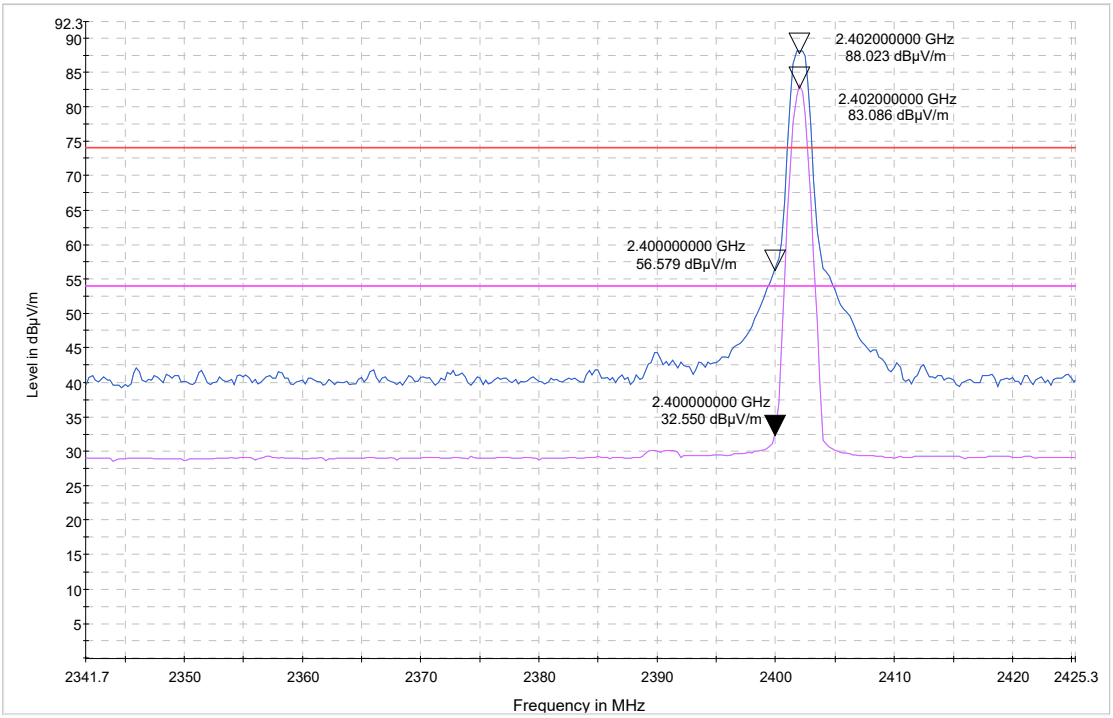


EUT in Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2400	72,19	-11,70	3,55	**54,46**	74,00	19,54
AVERAGE RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2400	39,65	-11,70	3,55	**31,50**	54,00	22,50

Graphical representation of Radiated Emission Measurement
BAND ENDGE LOW
Antenna Polarization: Horizontal

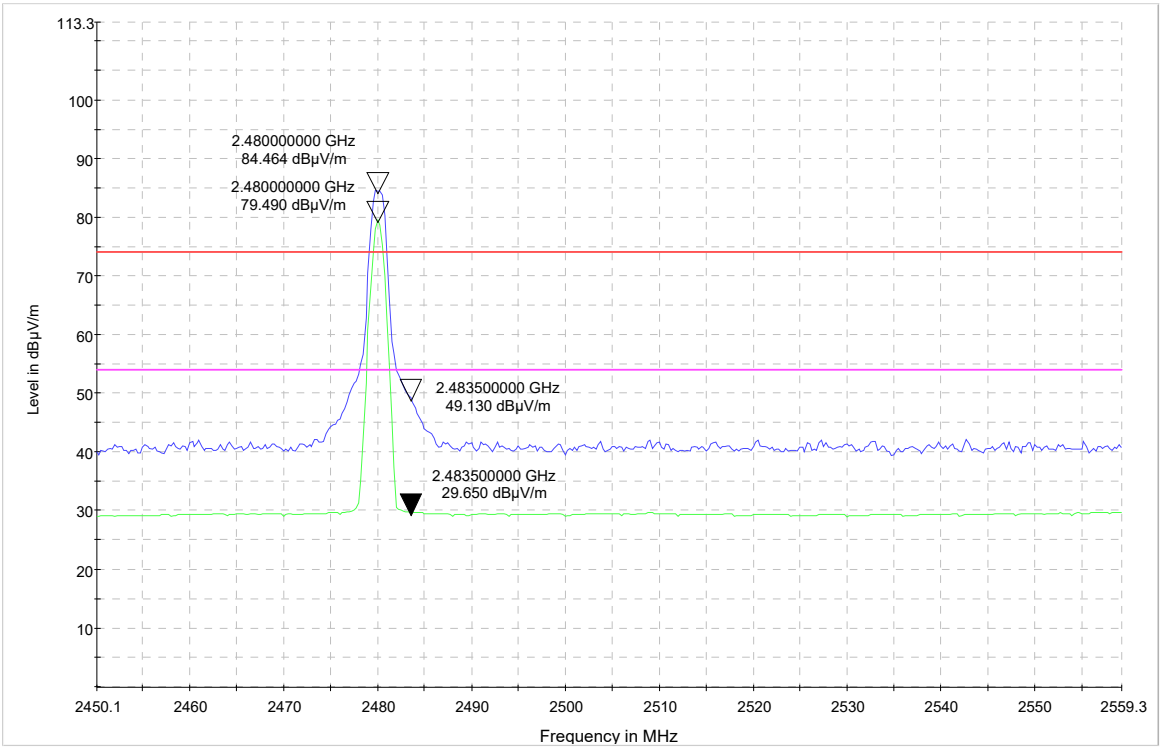


EUT in Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2400	64,73	-11,70	3,55	**56,58**	74,00	17,42
AVERAGE RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2400	40,70	-11,70	3,55	**32,55**	54,00	21,45

Graphical representation of Radiated Emission Measurement
BAND ENDGE HIGH
Antenna Polarization: Vertical



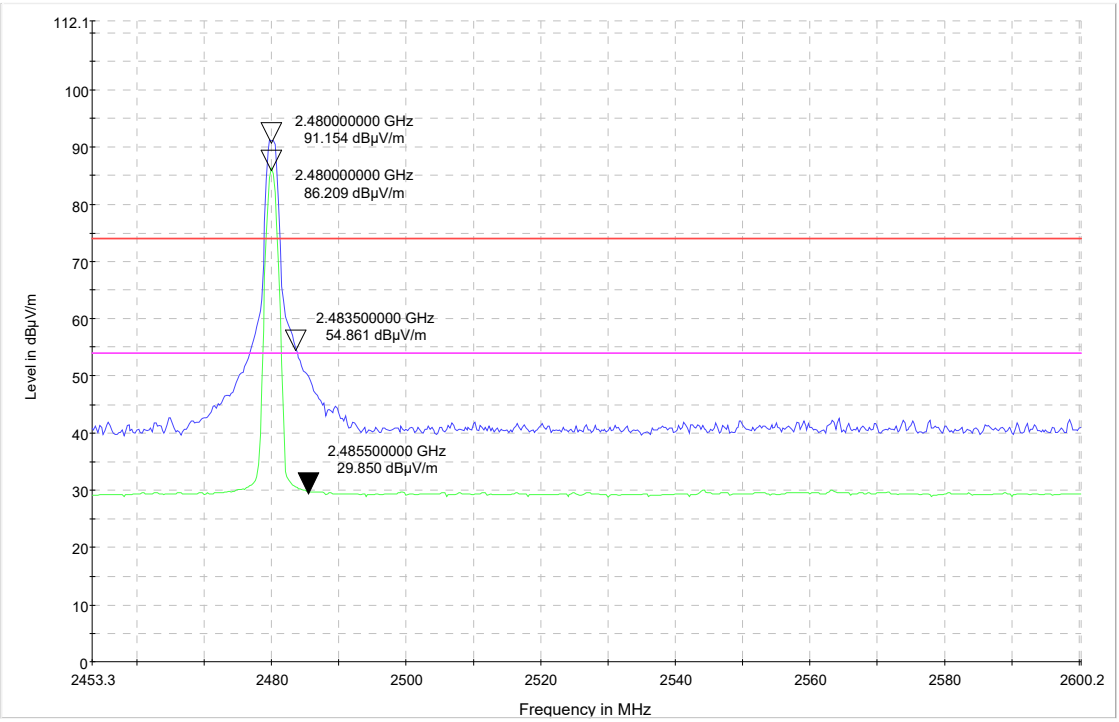
Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2483,5	57,80	-12,31	3,64	**49,13**	74,00	24,87
AVERAGE RESULT (RBW=1MHz)						
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**(dBµV/m)**	**(dB)**
2483,5	38,32	-12,31	3,64	**29,65**	54,00	9,00

BAND ENDGE HIGH

Antenna Polarization: Horizontal

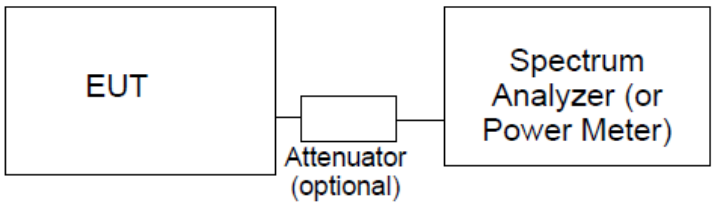


Y axis (worst case)

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 18 GHz	250 kHz	PK+ ; AVG	1 MHz	0.01 s	0 dB

PEAK RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**Restricted band**	**PK Limit (AV Limit + 20dB)**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
2483,5	63,53	-12,31	3,64	**54,86**	yes	74,00	19,14
AVERAGE RESULT (RBW=1MHz)							
Frequency	**Reading value**	**Antenna Factor with Pre-Amp. Gain**	**Cable Loss**	**Correcting reading**	**Restricted band**	**AV Limit**	**Margin**
(MHz)	**(dBµV)**	**(dB3/m)**	**(dB)**	**(dBµV/m)**	**/**	**(dBµV/m)**	**(dB)**
2483,5	38,52	-12,31	3,64	**29,85**	yes	54,00	24,15

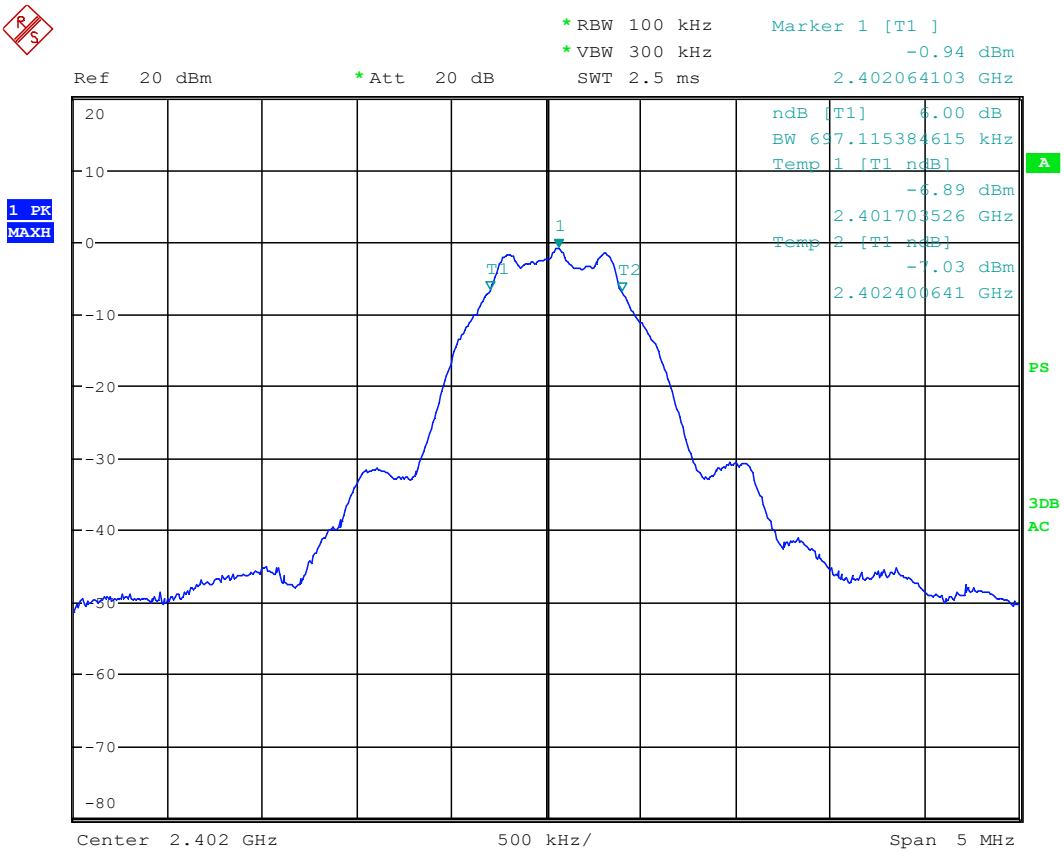
12. Test Conditions and Results – 6dB BANDWIDTH

12	TEST: 6dB Bandwidth		PASS
Parameters required prior to the test		Laboratory Ambient Temperature (°C)	15 to 35 °C
		Relative Humidity (%)	30 to 60 %
Parameters recorded during the test		Laboratory Ambient Temperature (°C)	22°C
		Relative Humidity (%)	49%
		Air pressure (hPa)	1020
—		Power Mode	Application Point
Fully configured sample tested at the power line frequency		Batteries Operated	SMA connector
Equipment mode: #2		Operation mode	#1
FCC Standard		§15.247	
Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.			
Further information to test setup			

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESU40	87020455	05/2018	05/2019

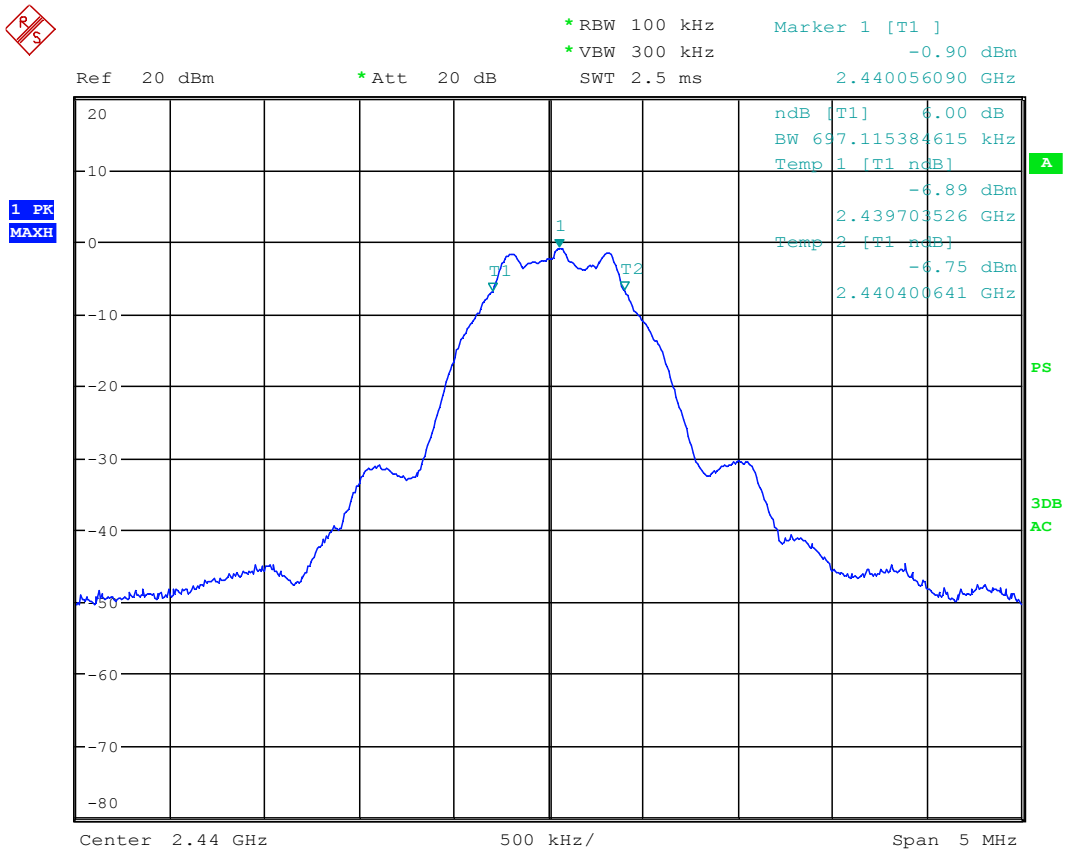
Test Procedure
Section 2.1 of KDB 558074 Subclause 11.8.1 Option 2 of ANSI C63.10 is applied DTS Bandwidth

Graphical representation of 6dB Bandwidth
Operation Mode: #1
Channel: Low



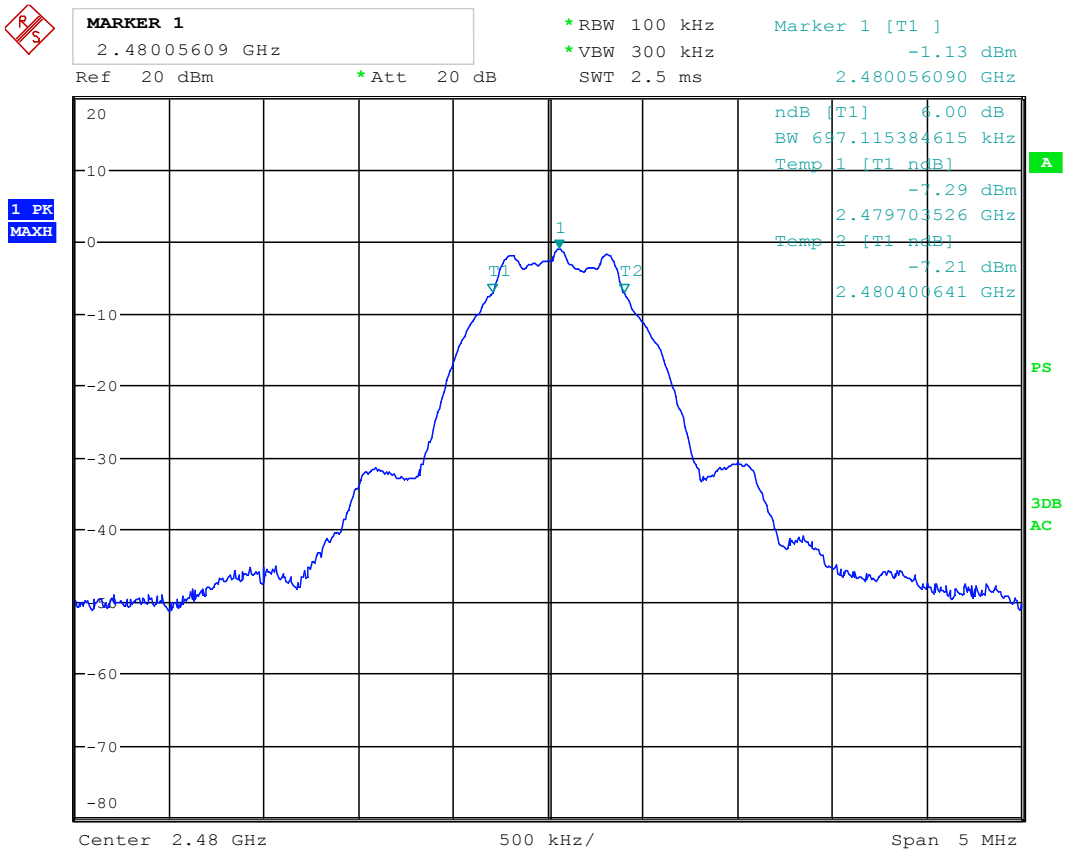
6dB Bandwidth

Graphical representation of 6dB Bandwidth
Operation Mode: #1
Channel: Medium



6dB Bandwidth

Graphical representation of 6dB Bandwidth
Operation Mode: #1
Channel: High



6dB Bandwidth

Frequency (MHz)	Channel	6dB BW (MHz)	Result
2402	Low	0.697	pass
2440	Middle	0.697	pass
2480	High	0.697	pass

13. Test Conditions and Results – RF OUTPUT POWER

13	TEST: Output Power		PASS
Parameters required prior to the test		Laboratory Ambient Temperature (°C)	15 to 35 °C
		Relative Humidity (%)	30 to 60 %
Parameters recorded during the test		Laboratory Ambient Temperature (°C)	22,5°C
		Relative Humidity (%)	51%
		Air pressure (hPa)	1020
—		Power Mode	Application Point
Fully configured sample tested at the power line frequency		Batteries Operated	SMA
Equipment mode: #2		Operation mode	#1
FCC Standard		§15.247	

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

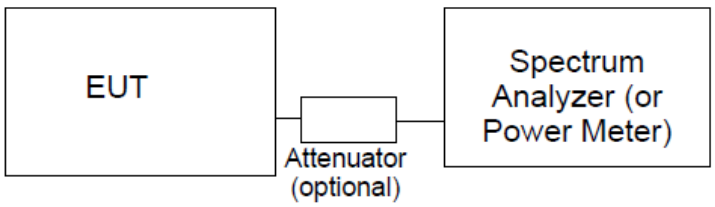
(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

(2) For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Further information to test setup:



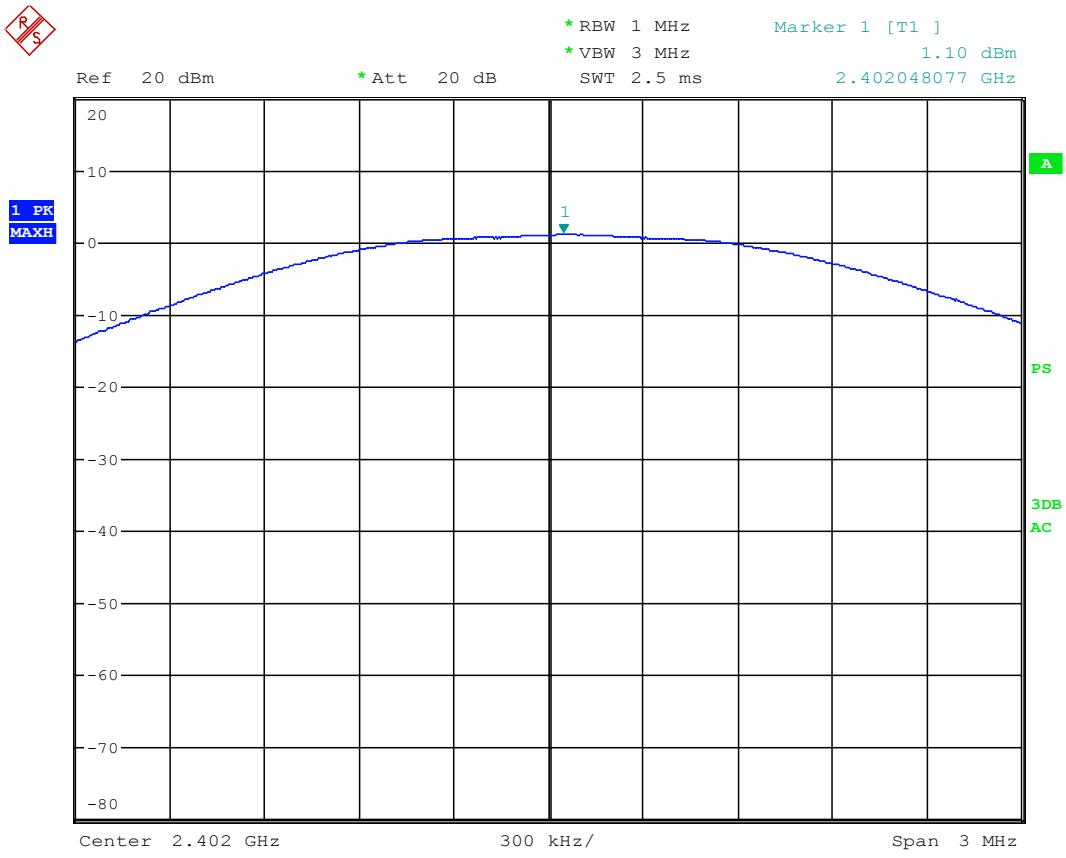
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESU40	87020455	05/2018	05/2019

Test Procedure
Section 8.3.1 of KDB 558074 Subclause 11.9.1.1 of ANSI C63.10 is applied Maximum peak conducted power RBW =1MHz, VBW=3MHz, Detector = Peak Sweep time = auto, Trace mode= max hold, Allow trace to fully stabilize.

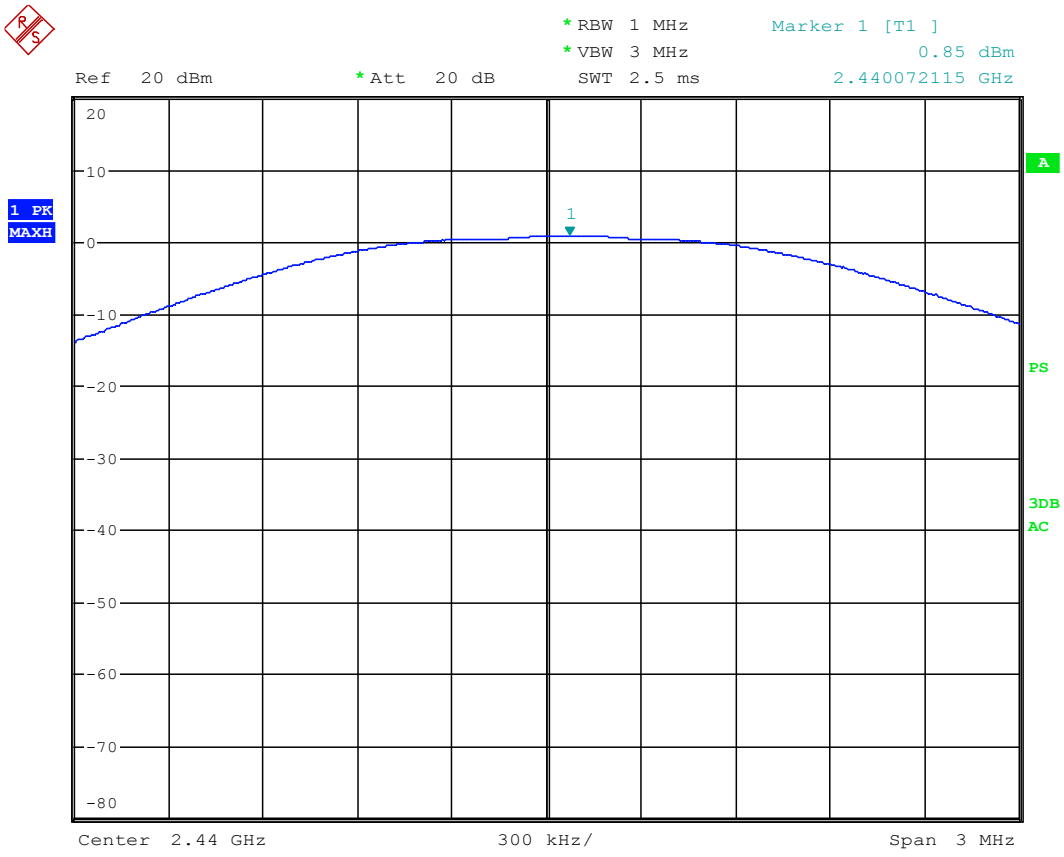
Test result of Maximum Output Power

Channel	Channel Frequency (MHz)	Output power (conducted) (dBm)	Limit (dBm)	Output power (conducted) (W)	Limit (W)
Low Channel	2402	+1,10	30	0,00129	1
Middle Channel	2440	+0,85	30	0,00122	1
High Channel	2480	+0,55	30	0,00114	1

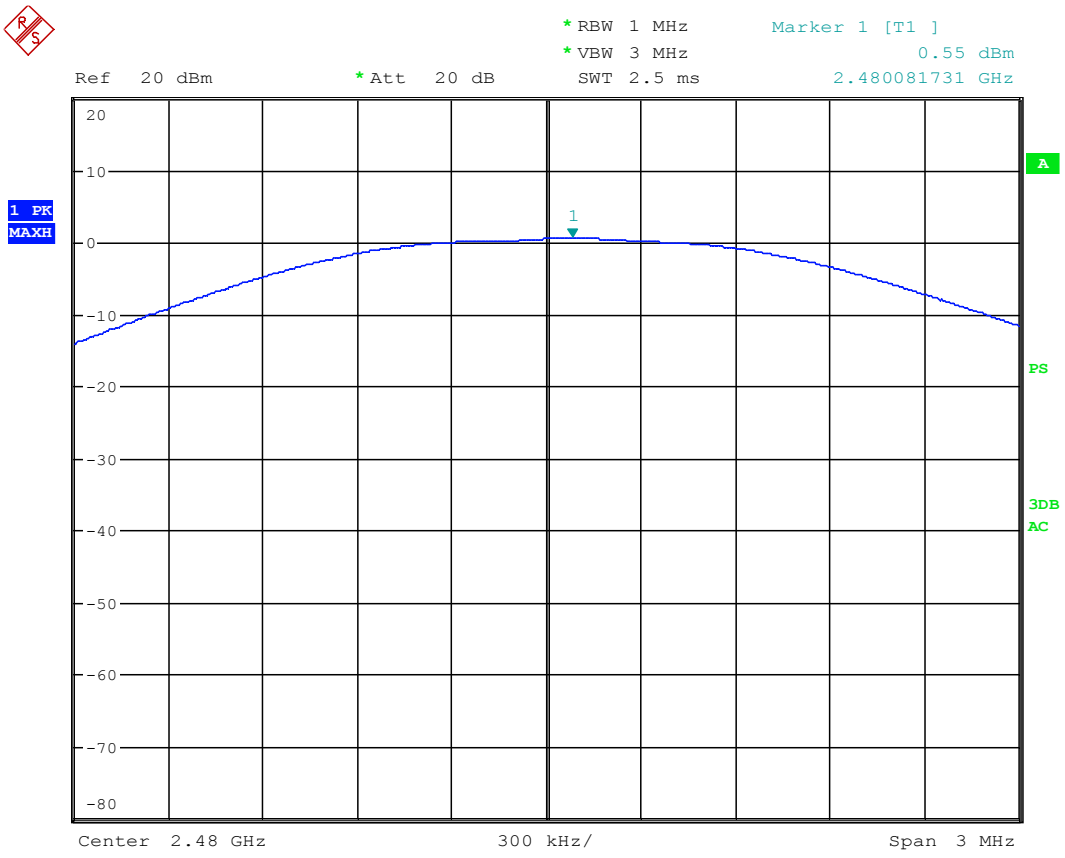
Graphical representation of RF Output Power
Operation Mode: #1
Channel: Low



Graphical representation of RF Output Power
Operation Mode: #1
Channel: Middle



Graphical representation of RF Output Power
Operation Mode: #1
Channel: High

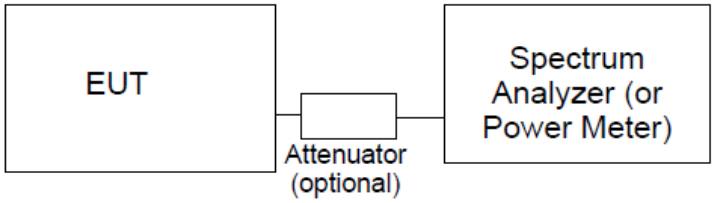


14. Test Conditions and Results – Out of Band Emissions

14	TEST: Out of Band Emissions		PASS
Parameters required prior to the test		Laboratory Ambient Temperature (°C)	15 to 35 °C
		Relative Humidity (%)	30 to 60 %
Parameters recorded during the test		Laboratory Ambient Temperature (°C)	21°C
		Relative Humidity (%)	49%
		Air pressure (hPa)	1020
—		Power Mode	Application Point
Fully configured sample tested at the power line frequency		Batteries Operated	SMA Connector
Equipment mode: #2		Operation mode	#1
FCC Standard		§15.247(D)	

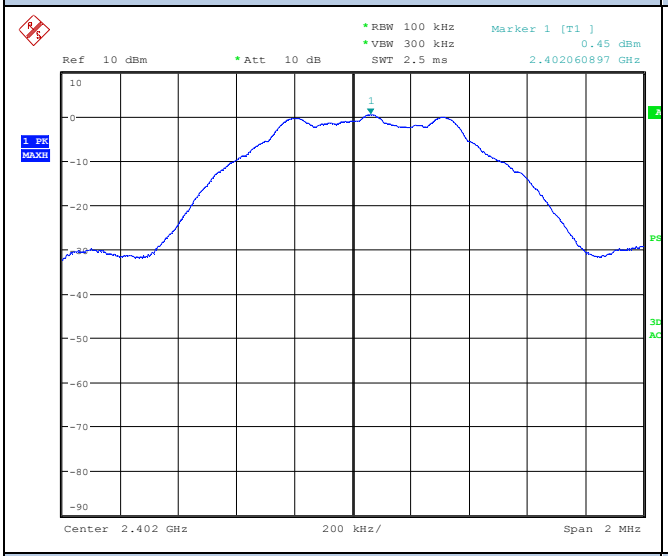
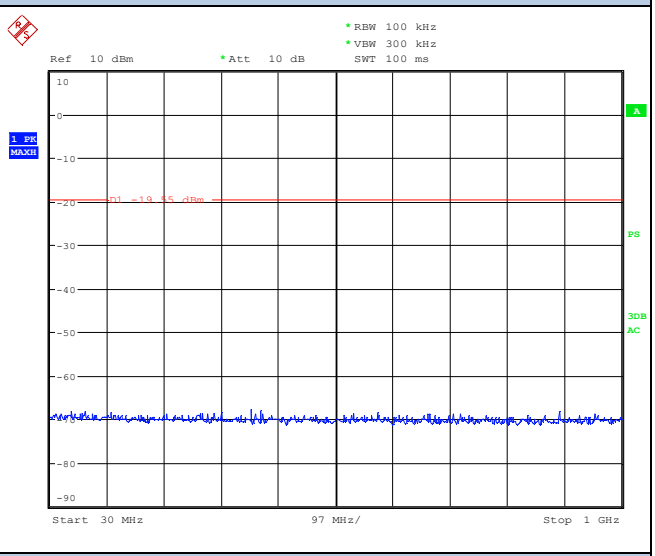
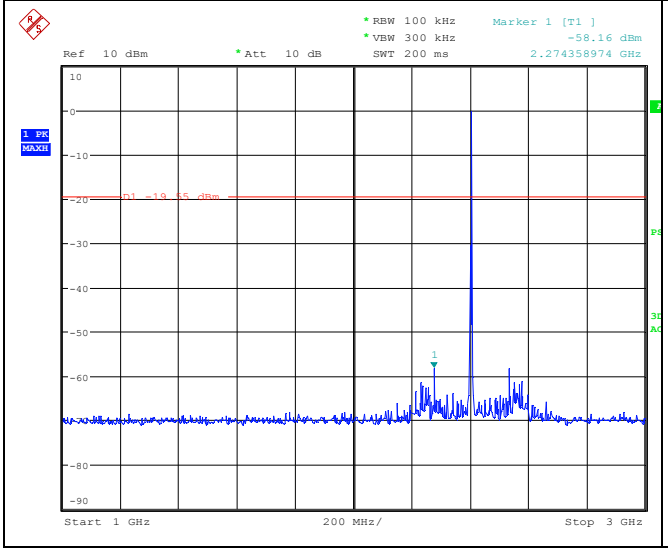
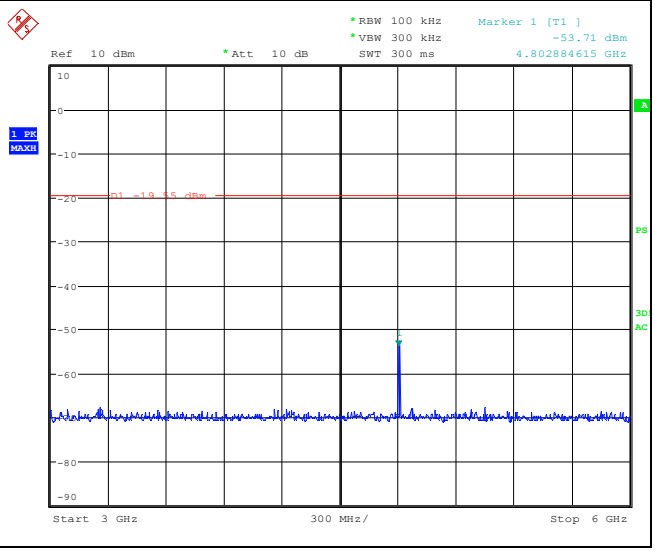
(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains 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) (see §15.205(c)).

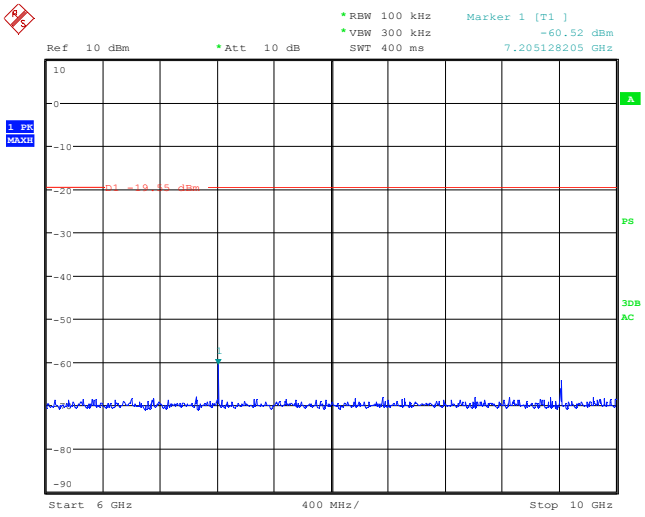
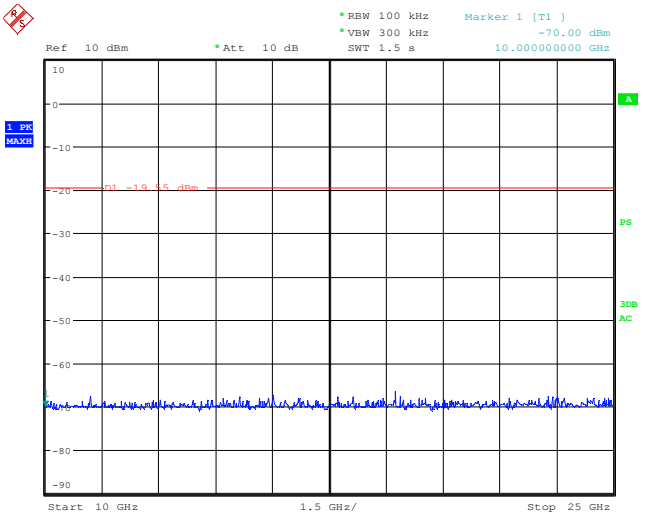
Further information to test setup



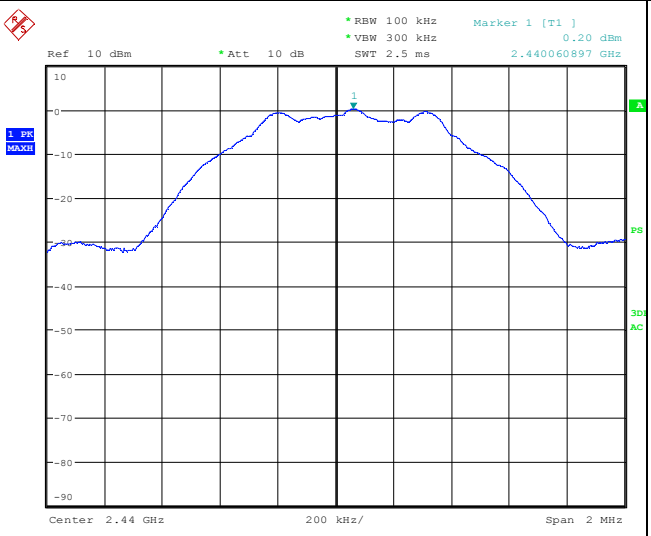
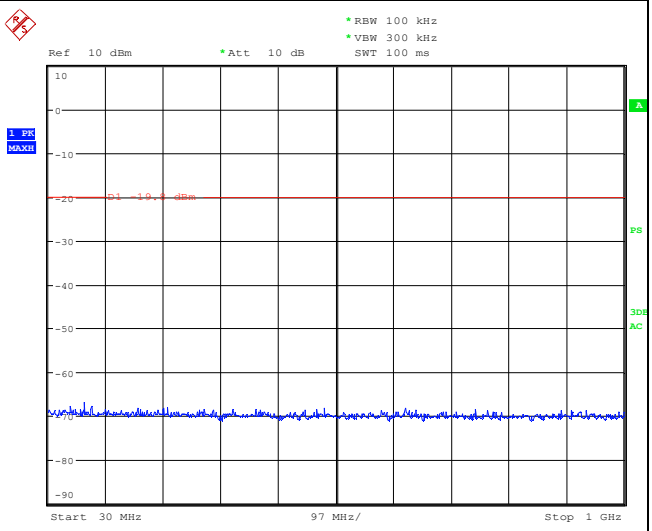
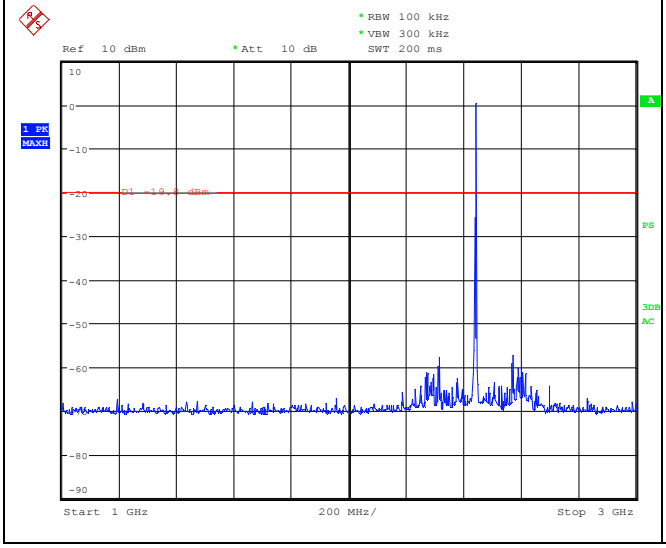
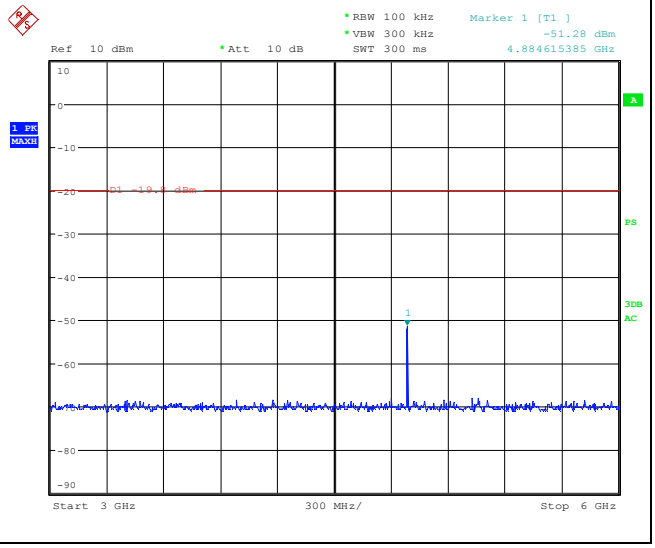
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESU40	87020455	05/2018	05/2019

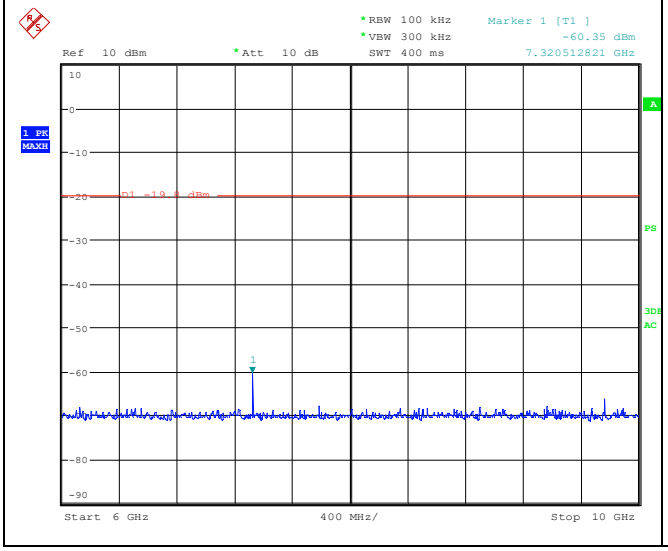
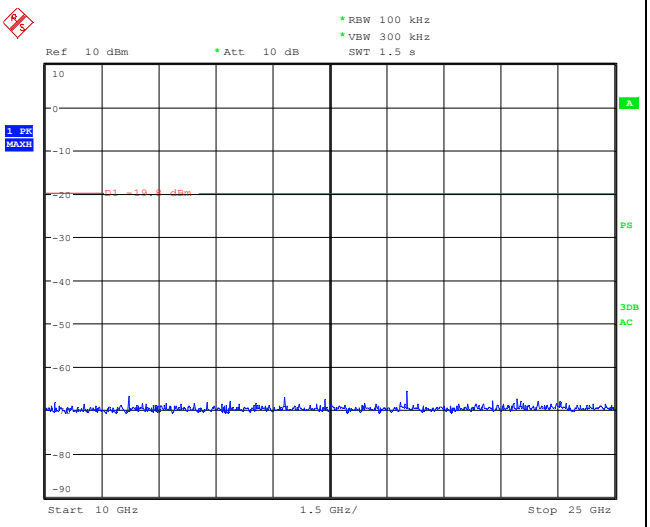
Test Procedure
Section 8.5 of DTS *KDB 558074* Subclause 11.11 of ANSI C63.10 is applied

Graphical representation of Antenna Port Spurious Emission - Conducted	
Operation Mode: #1 – Low Channel (2402 MHz)	
Fundamental	Frequency: 30MHz – 1000MHz
	
Frequency: 1GHz – 3GHz	Frequency: 3GHz – 6GHz
	

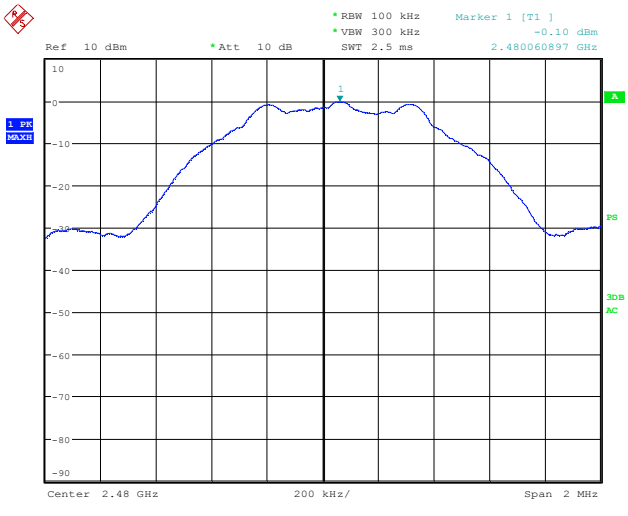
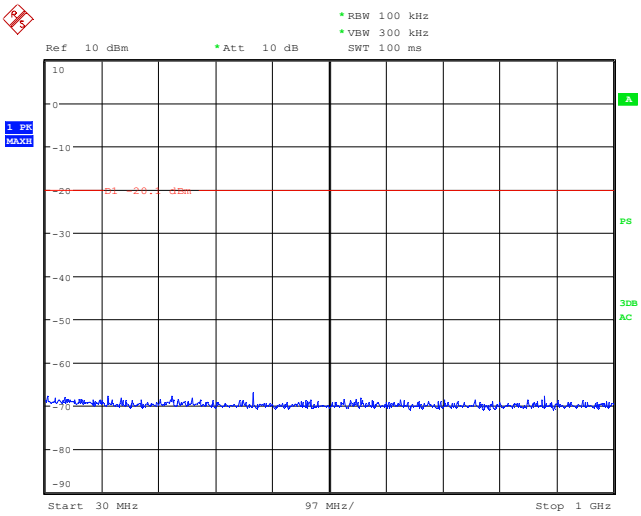
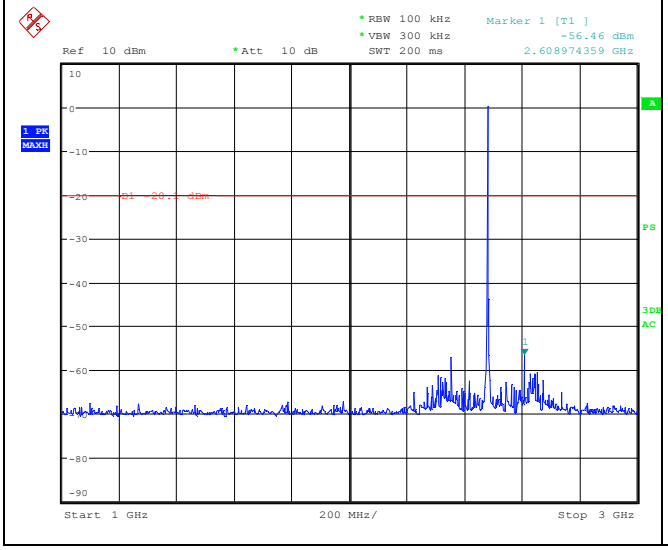
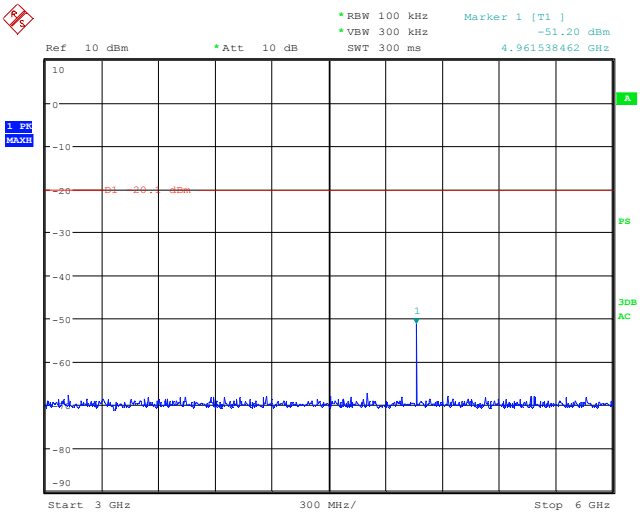
Frequency: 6GHz – 10GHz	Frequency: 10GHz – 25GHz
	

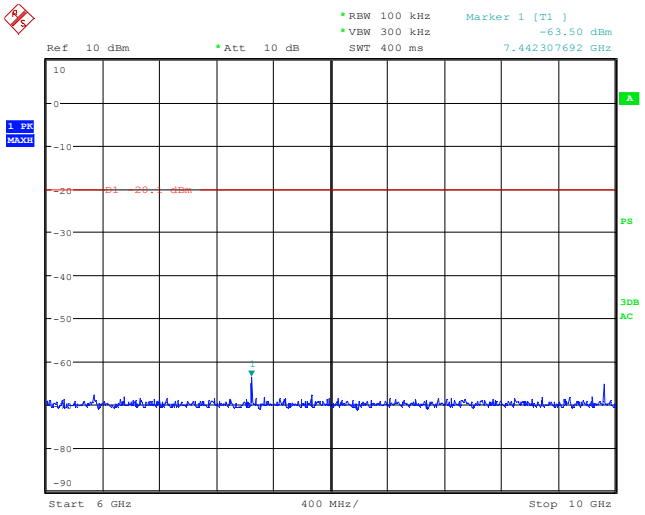
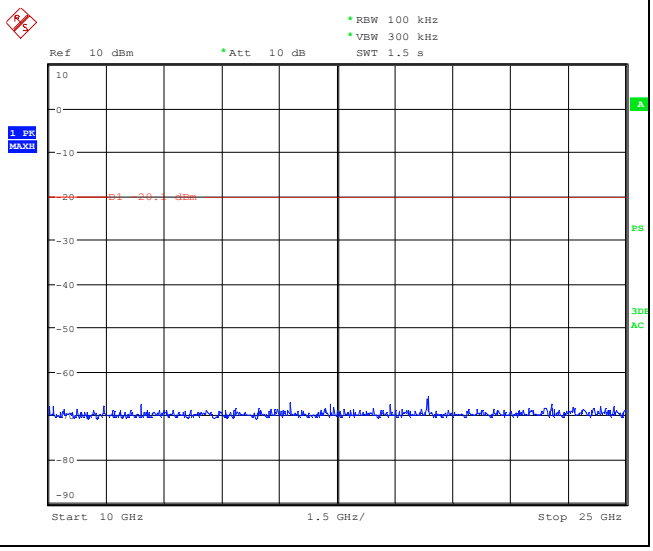
Frequency (MHz)	Level (dBm)	Fundamental Level (dBm)	Difference (dB)	Limit (at least) (dB)	Rusult
2274, 35	-58, 16	+0, 45	58, 61	20	compliant
4802, 88	-53, 71		54, 16		compliant
7205, 12	-60, 52		60, 97		compliant

Graphical representation of Antenna Port Spurious Emission - Conducted	
Operation Mode: #1 – Mid Channel (2440 MHz)	
Fundamental	Frequency: 30MHz – 1000MHz
	
Frequency: 1GHz – 3GHz	Frequency: 3GHz – 6GHz
	

Frequency: 6GHz – 10GHz	Frequency: 10GHz – 25GHz
	

Frequency (MHz)	Level (dBm)	Fundamental Level (dBm)	Difference (dB)	Limit (at least) (dB)	Rusult
4884, 61	−51, 28	+0, 20	51, 48	20	**compliant**
7320, 51	−60, 35		60, 55		**compliant**

Graphical representation of Antenna Port Spurious Emission - Conducted	
Operation Mode: #1 – high Channel (2480 MHz)	
Fundamental	Frequency: 30MHz – 1000MHz
	
Frequency: 1GHz – 3GHz	Frequency: 3GHz – 6GHz
	

Frequency: 6GHz – 10GHz	Frequency: 10GHz – 25GHz
	

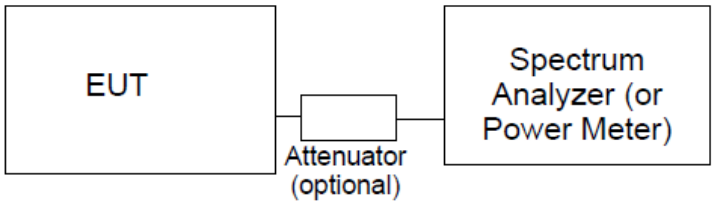
Frequency (MHz)	Level (dBm)	Fundamental Level (dBm)	Difference (dB)	Limit (at least) (dB)	Rusult
2608, 97	-56, 46	-0, 10	56, 36	20	compliant
4961, 53	-51, 20		51, 10		compliant
7442, 30	-63, 50		63, 40		compliant

15. Test Conditions and Results – 100 kHz Bandwidth of Frequency Band Edges

15	TEST: 100 kHz Bandwidth of Frequency Band Edges		PASS
Parameters required prior to the test	Laboratory Ambient Temperature (°C)	15 to 35 °C	
	Relative Humidity (%)	30 to 60 %	
Parameters recorded during the test	Laboratory Ambient Temperature (°C)	21°C	
	Relative Humidity (%)	49%	
	Air pressure (hPa)	1020	
—	Power Mode	Application Point	
Fully configured sample tested at the power line frequency	Batteries Operated	SMA Connector	
Equipment mode: #2	Operation mode	#1	
FCC Standard	§15.247(D)		

(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) (see §15.205(c)).

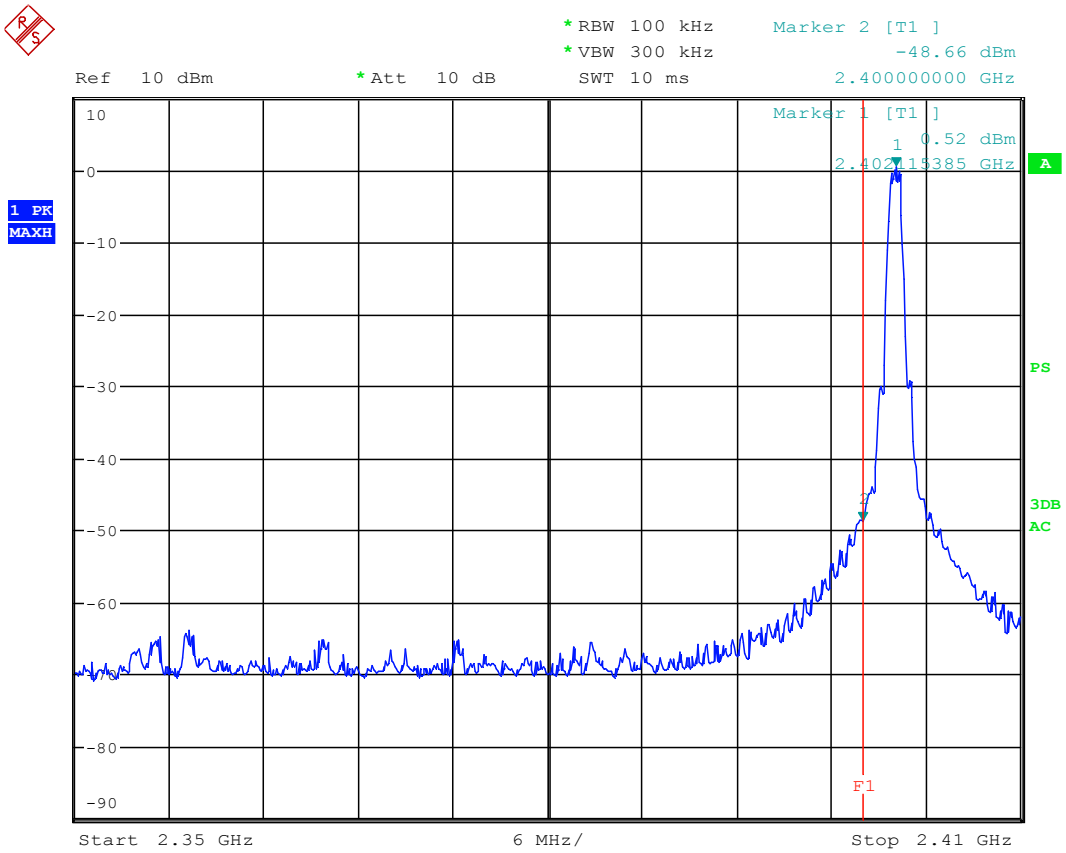
Further information to test setup



Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESU40	87020455	05/2018	05/2019

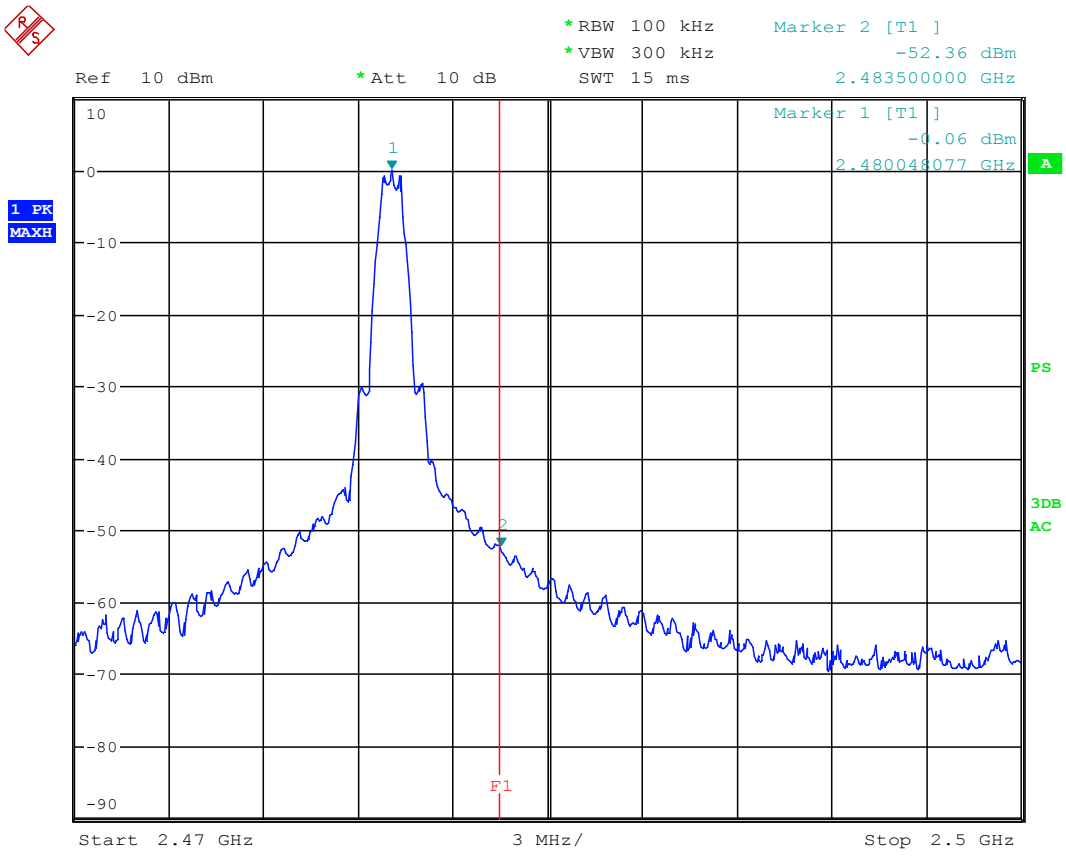
Test Procedure
Section 8.5 of DTS *KDB 558074* Subclause 11.11 of ANSI C63.10 is applied

Graphical representation of 100 kHz Bandwidth of Frequency Band Edges - Conducted
Operation Mode: #1 – Low Channel (2402 MHz)



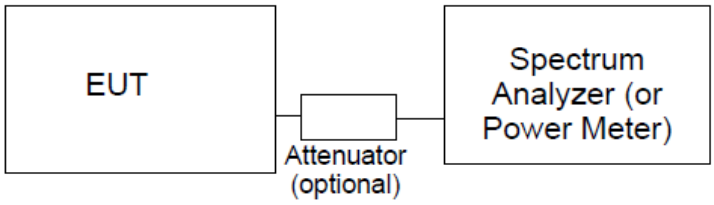
Frequency (MHz)	Measured power at the band edge (dBm)	Measured peak power at fundamental frequency (dBm)	Difference Peak / band edge (dB)	Peak Limit at PK power –20 dB (dBm)	Margin (dB)
2400,00	**-48,66**	**+0,52**	**49,18**	**-19,48**	**29,18**

Graphical representation of 100 kHz Bandwidth of Frequency Band Edges - Conducted
Operation Mode: #1 – High Channel (2480 MHz)



Frequency (MHz)	Measured power at the band edge (dBm)	Measured peak power at fundamental frequency (dBm)	Difference Peak / band edge (dB)	Peak Limit at PK power –20 dB (dBm)	Margin (dB)
2483,5	**-52,36**	**-0,06**	**52,30**	**-20,06**	**32,30**

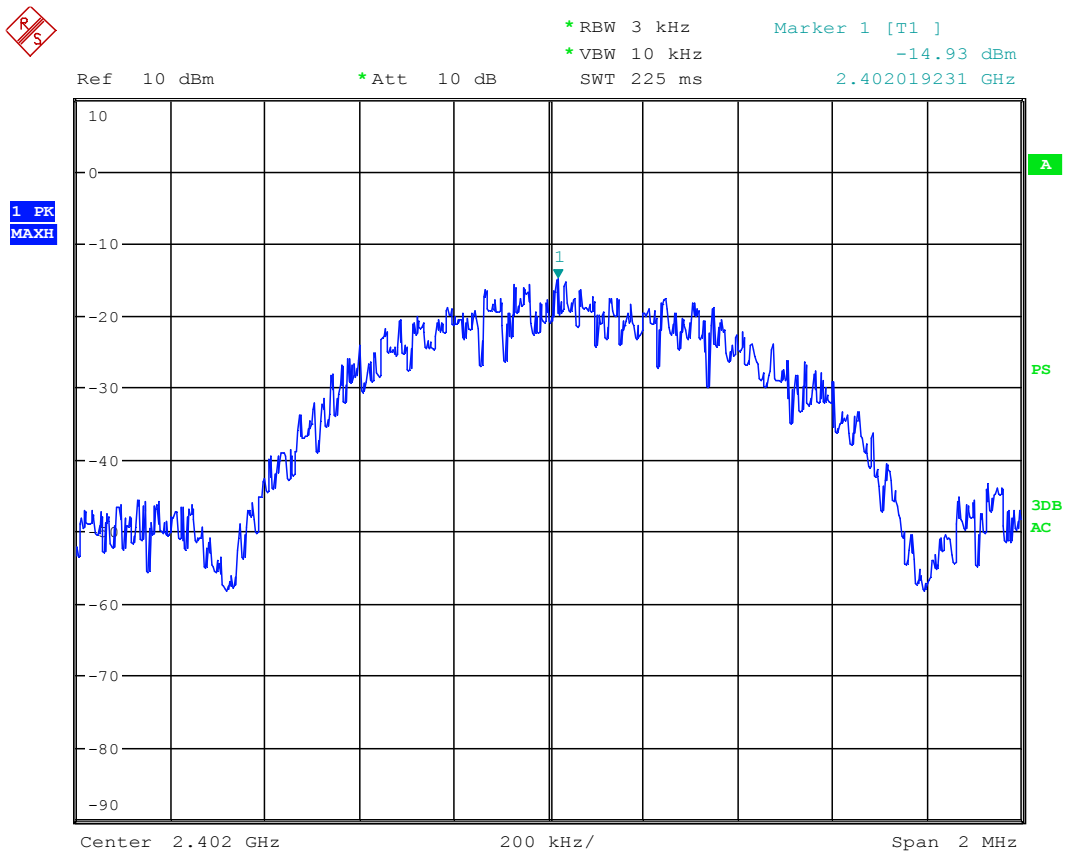
16. Test Conditions and Results – POWER SPECTRAL DENSITY

16	TEST: Power Spectral Density		PASS
Parameters required prior to the test		Laboratory Ambient Temperature (°C)	15 to 35 °C
		Relative Humidity (%)	30 to 60 %
Parameters recorded during the test		Laboratory Ambient Temperature (°C)	24°C
		Relative Humidity (%)	37%
		Air pressure (hPa)	1020
—		Power Mode	Application Point
Fully configured sample tested at the power line frequency		Batteries Operated	Enclosure
Equipment mode: #2		Operation mode	#1
FCC Standard		§15.247	
(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.			
Further information to test setup			

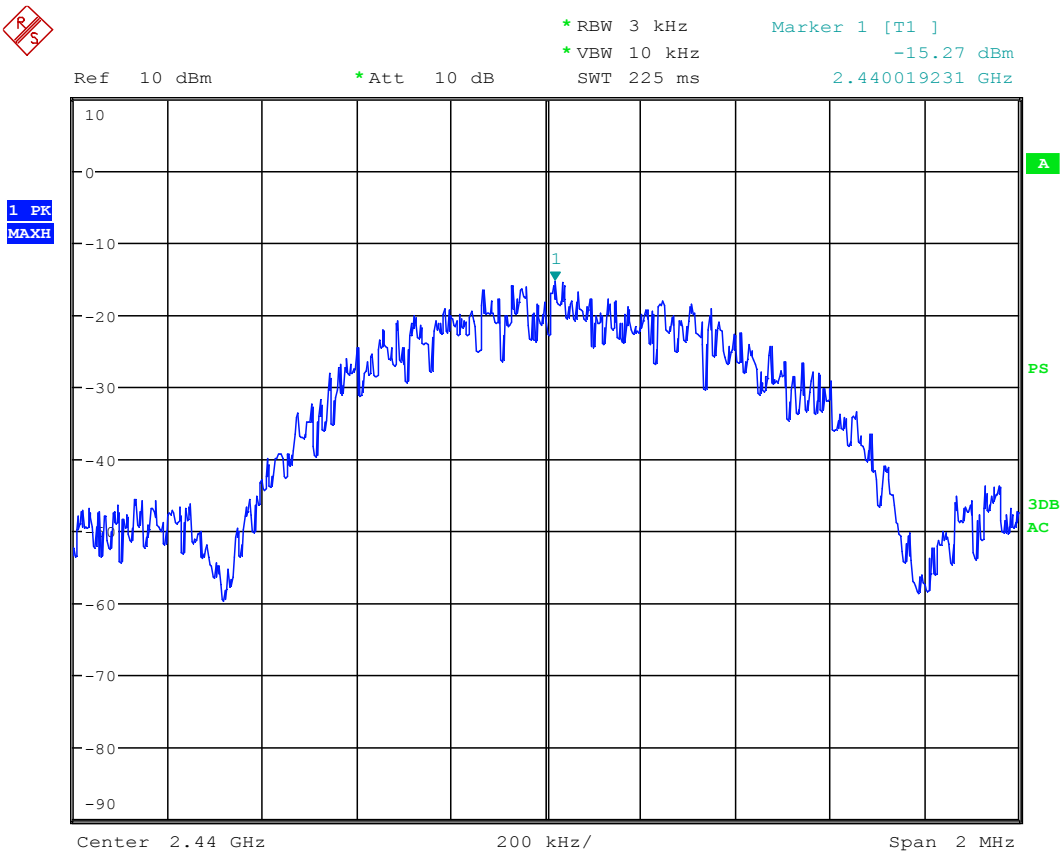
Test Equipment Used					
Description	Manufacturer	Model	Identifier	Calibration date	Calibration due
EMI Test Receiver	R&S	ESU40	87020455	05/2018	05/2019

Test Procedure
Section 8.4 of DTS KDB 558074 Subclause 11.10 of ANSI C63.10 is applicable.

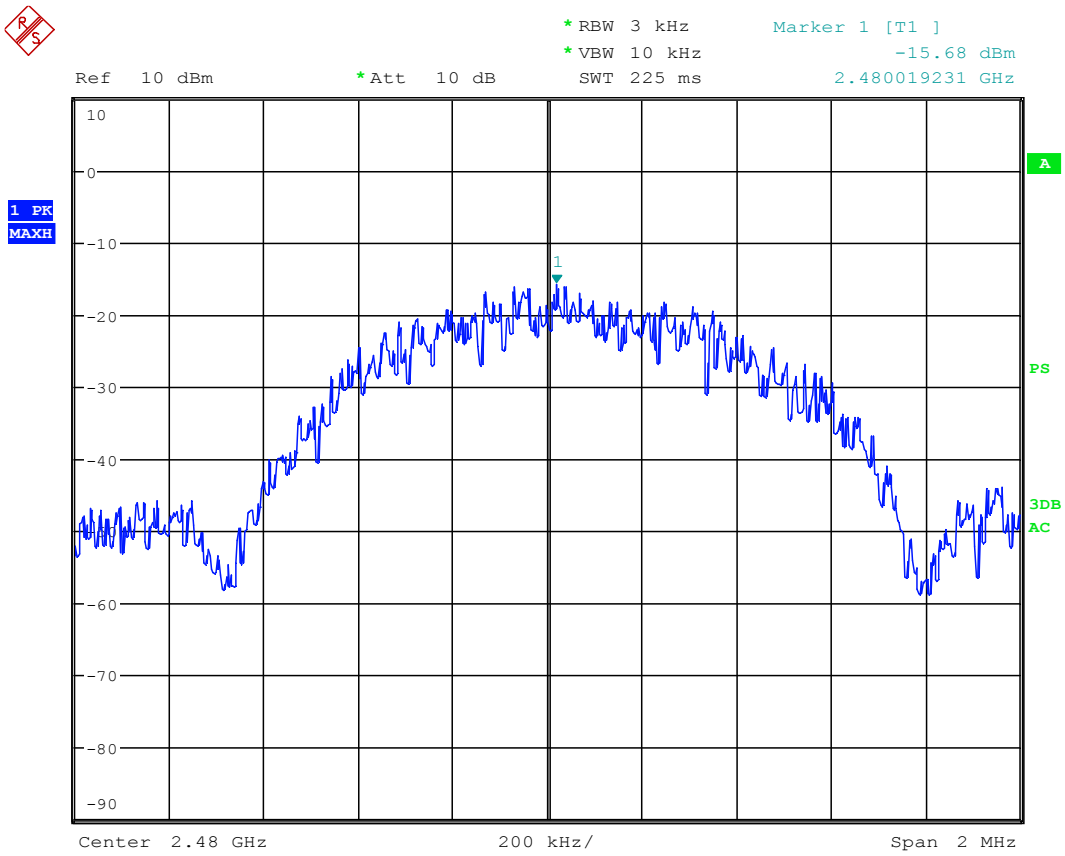
Graphical representation of Power Spectral Density
Operation Mode: #1
Channel: Low



Graphical representation of Power Spectral Density
Operation Mode: #1
Channel: Middle



Graphical representation of Power Spectral Density
Operation Mode: #1
Channel: High



Frequency (MHz)	Channel	PSD (dBm)	Limit (dBm)	result
2402	Low	-14,93	+8	Pass
2440	Middle	-15,27	+8	Pass
2480	High	-15,68	+8	Pass

17 RF Exposure Requirements			PASS
Parameters required prior to the test	Laboratory Ambient Temperature (°C)	15 to 35 °C	
	Relative Humidity (%)	30 to 60 %	
Parameters recorded during the test	Laboratory Ambient Temperature (°C)	---	
	Relative Humidity (%)	---	
	Air pressure (hPa)	1020	
—	Power Supply / Frequency	Application Point	
Fully configured sample tested at the power line frequency	Batteries operated	---	
Equipment mode:	Operation mode	#1	
FCC Standard	47 CFR 2.1093		
Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines 47 CFR 2.1093 - Radiofrequency radiation exposure evaluation: portable devices			
EUT classification (fixed, mobile or portable devices)	Portable equipment		
Limits	According to § 2.1093 of this Chapter, by means of the following guidelines: OET Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies (447498 D01 General RF Exposure Guidance v06)		

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm **447498 D01 General RF Exposure Guidance v06 – Appendix A**

Frequency (MHz)	Max Conducted Output Power (P)	Numeric Antenna Gain (G)	Max Radiated Output Power (P)	Max Radiated Output Power (P)	Distance	$\frac{\text{max power (mW)}}{\text{min distance(mm)}} X \sqrt{f(GHz)}$	Limits
	(dBm)	-	(dBm)	(mW)	(mm)		
2402	**+1,10**	**0,95**	**+2,05**	**1,60**	**5**	**0.495**	**≤ 3.0 for 1-g SAR or ≤ 7.5 for 10-g extremity SAR**
Frequency (MHz)	Max Conducted Output Power (P)	E.I.R.P.	Max Radiated Output Power (P)	Max Radiated Output Power (P)	Distance	$\frac{\text{max power (mW)}}{\text{min distance(mm)}} X \sqrt{f(GHz)}$	Limits
	(dBm)	(mW)	(dBm)	(mW)	(mm)		
2440	**+0,85**	**0,95**	**+1,80**	**1,51**	**5**	**0.471**	**≤ 3.0 for 1-g SAR or ≤ 7.5 for 10-g extremity SAR**
Frequency (MHz)	Max Conducted Output Power (P)	E.I.R.P.	Max Radiated Output Power (P)	Max Radiated Output Power (P)	Distance	$\frac{\text{max power (mW)}}{\text{min distance(mm)}} X \sqrt{f(GHz)}$	Limits
	(dBm)	(mW)	(dBm)	(mW)	(mm)		
2480	**+0,55**	**0,95**	**+1,50**	**1,41**	**5**	**0.443**	**≤ 3.0 for 1-g SAR or ≤ 7.5 for 10-g extremity SAR**

Note:
G = Numeric Gain ($10^{(dBi/10)}$)
When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

TEST RESULT
This value is less than the low threshold limit. No SAR test is required.

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marks the last page of this test report