

TEST REPORT

Ref. n.	FCCTR_183525BT-0	Issue Date:	26/10/2023	Pages:	93
Test object	Type test according to Standards 47 CFR FCC part 15.247				
Applicant	DATALOGIC S.r.l. Via S. Vitalino 13 - 40012 Lippo Di Calderara Di Reno - Bologna - Italy Phone. +39 051 3147196 Fax +39 051 3147561				
Trade mark					
Manufacturer	DATALOGIC S.r.l.				
Product	Bluetooth radio module				
Tested model	BT-MRY-A1				
FCC Identification number	U4FBT-MRY-A1				
Date of test samples receipt	02/10/2023				
No. of tested samples	1 – Sampled by the manufacturer				
Test date	From 02/10/2023 to 10/10/2023				
Testing site	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
FCC designation number	IT0012				
Test results	CONFORME / COMPLIANT				
Verifications carried out by	Daniele AOSANI Laboratory Engineer				
Approved by	Riccardo PFEIFFER Laboratory Manager				

The test results reported in this test report shall refer only to the samples tested.

The sample has been provided by the customer and the results apply to the sample as received.

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PRS refuses any responsibility about information provided by the customer contained in this test report.

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0. RELEASE CONTROL RECORD

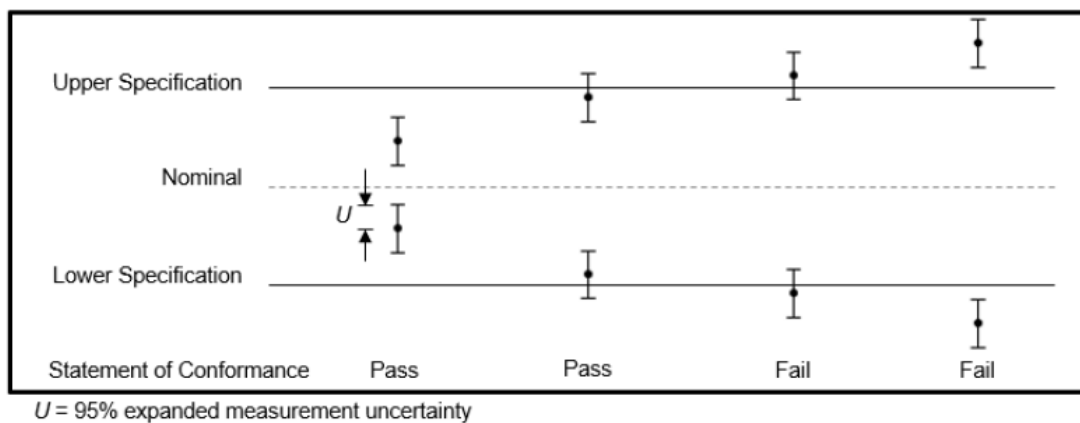
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_183525BT-0	Original release	26/10/2023

This document is valid in last revision that deletes and replaces the previous one

1. DECISION RULE

PRS LAB specifies that, if the decision rules of conformity of the test results are not indicated in detail in the standard/s object of tests, it takes as a decision rule for the declaration of conformity the simple binary system ($w = 0$) stated in the ILAC-G8-09:2019 document.

The decision rule is applicable for all parts of standard



Statements of conformity are reported as:

- Pass: the measured value is below the acceptance limit, $AL=TL$.
- Fail: the measured value is above the acceptance limit, $AL=TL$.

Definitions

- Guard Band (w): interval between a tolerance limit and a corresponding acceptance limit where length $w=|TL-AL|$.
- Tolerance Limit (TL) (Specification Limit): specified upper or lower bound of permissible values of a property.
- Acceptance Limit (AL): specified upper or lower bound of permissible measured quantity values.

2. INFORMATION PROVIDED BY CUSTOMER

- The EUT was tested inside a model **BC9600-433 Type CM9630** charging base through which it was possible to send commands to activate the radio channels.

3. GENERAL REMARKS

- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

4.1 EUT Identification

DESCRIPTION	Bluetooth radio module
MODEL NAME	BT-MRY-A1
FCC ID	U4FBT-MRY-A1
SERIAL NO.	B23PAAGRU
PRS LAB INTERNAL REFERENCE	BC 264/2023 3/4
TRADEMARK	
MANUFACTURER	DATALOGIC S.r.l.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	DC power from board
SUPPLY VOLTAGE	1.8Vdc  3.3Vdc 
MAX POWER OR MAX ABSORBED CURRENT	70mA
OPERATING TEMPERATURE	-30°C ~ +85°C
HARDWARE VERSION (Information provided by Customer)	A
FIRMWARE VERSION (Information provided by Customer)	A
DIMENSIONS	See photographic documentation
EUT STANDING	☒ WALL; ☐ CEILING; ☒ TABLE; ☐ FLOOR; ☐ RACK MOUNTED; ☐ BODY WORN; ☐ HANDELD; ☒ PORTABLE; ☐ MOBILE
HIGHEST INTERNAL FREQUENCY (Information provided by Customer)	☐ <108MHz; ☐ 108MHz<F<500MHz; ☐ 500MHz<F<1GHz; ☒ F>1GHz; F = 2480MHz

4.2 Classic Bluetooth module technical data

MODULE MANUFACTURER			
CHIP MANUFACTURER	CYPRESS		
CHIP TYPE	CYW20706		
ETS CATEGORY	Classic Bluetooth - Basic Rate & Enhanced Data Rate		
TYPE OF RADIO DEVICE	Transceiver		
FREQUENCY BAND	2400 – 2483.5MHz		
NUMBER OF CHANNELS	79		
CHANNEL BANDWIDTH	1MHz		
CHANNEL SPACING	1MHz		
MODE	Basic Rate mode (BR) Enhanced Data Rate (EDR)		
TYPE OF MODULATION	GFSK	$\pi/4$ -DQPSK	8DQPSK
PACKET TYPE	DH5	2DH5	3DH5
SENSITIVITY	-89.5dBm		
TRANSFER RATES (Mbit/s)	Up to 3		
ANTENNA TYPE (Information provided by Customer)	PCB Antenna		
ANTENNA GAIN (Information provided by Customer)	+0.5dBi		

4.2.1 Classic Bluetooth Channels list

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

4.3 Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☐	Enclosure	Electronic board	---	---
☐	AC power port	Port not present	---	---
☒	DC power port	1.8Vdc	Strip	<3m
☐	Signal/control port	Port not present	---	---
☐	Telecommunication port	Port not present	---	---
☐	Antenna port	☒ Internal; ☐ External	---	---

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

4.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test:

- None

4.5 Auxiliary equipment

- Auxiliary laboratory laptop to set radio channels.
- Auxiliary base charger station, model BC9600-433, used to supply radio module and communicate with it.

5. OPERATING MODES AND TEST CONDITIONS

In the following table there are the operating conditions adopted during tests identified by an indicator (#) at which has been referred the item "Operating condition of the equipment under test"

OPERATING CONDITION	DESCRIPTION
#1	Continuous transmission at maximum power in modulated carrier on channel 0
#2	Continuous transmission at maximum power in modulated carrier on channel 39
#3	Continuous transmission at maximum power in modulated carrier on channel 78
#4	Continuous transmission, frequency hopping mode

Special Test Software: Special software by the Applicant to operate the EUT at each channel frequency continuously. For example, the transmitter will be operated at each of the lowest, middle and highest frequencies individually continuously during testing.

Special Hardware Used: None

Transmitter Test Antenna: The EUT has been tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment as described with the test results.

6. REFERENCE STANDARDS

REFERENCE STANDARD	DESCRIPTION
Cfr 47 part 15 subpart C par. 15.247	Radio Frequency Devices – Intentional Radiators Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
KDB 558074 D01	Guidance for performing Compliance measurements on Digital Transmission Systems (DTS) Operating under §15.247
ANSI C63.10:2013	American National Standard for Testing Unlicensed Wireless Devices
Title 47 Part 1 Subpart I § 1.1310	Procedures Implementing the National Environmental Policy Act of 1969. Radiofrequency radiation exposure limits.
Title 47 Part 2 Subpart J § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
KDB 447498	RF Exposure procedures and equipment authorization policies for mobile and portable devices
ANSI C63.4:2014	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

7. UNITS OF MEASUREMENTS

Conducted EMI Data is in dB μ V; dB referenced to one microvolt

Radiated EMI Data is in dB μ V/m; dB/m referenced to one microvolt per meter

Sample Calculation:

RFS = Radiated Field Strength,

FSM = Field Strength Measured,

A.F. = Receive antenna factor,

Gain = amplification gains and/or cable losses.

$$\text{RFS (dB}\mu\text{V/m @ 3m)} = \text{FSM (dB}\mu\text{V)} + \text{A.F. (dB/m)} - \text{Gain (dB)}$$

8. SUMMARY OF TEST RESULTS

EUT PORT	DESCRIPTION OF PHENOMENA	BASIC STANDARD	OPERATING CONDITION	RESULTS
Antenna port	Antenna requirement	FCC Part 15 §15.203	---	Compliant
	Maximum Peak Output Power	FCC Part 15 §15.247 (b) (3)	#1, #2, #3	Within the limits
	20 dB Bandwidth	FCC Part 15 §15.247 (a) (1)	#1, #2, #3	Within the limits
	Band-Edge	FCC Part 15 § 15.247 (d)	#1, #3	Within the limits
	RF radiated Spurious Emissions at the Transmitter Antenna Terminal	FCC Part 15 § 15.247 (d)	#1, #2, #3	Within the limits
	Transmitter Radiated Emissions <1GHz	FCC Part 15 § 15.247 (d) & § 15.249 (a)	#1, #2, #3	Within the limits
	Transmitter Radiated Emissions >1GHz	FCC Part 15 § 15.247 (d) & § 15.249 (a)	#1, #2, #3	Within the limits
	Transmitter Carrier Frequency Separation	FCC Part 15 § 15.247 (a) (1)	#4	Within the limits
	Transmitter Number of Hopping Frequencies and Average Time of Occupancy	FCC Part 15 § 15.247 (a) (1) (iii)	#4	Within the limits

Note: ¹All tests are performed with the device in position shown in the photographic documentation.

¹ Ref. Tab. Of Section 5

9. TESTS RESULTS

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TRANSMITTER RADIATED EMISSIONS < 1GHz	35
TRANSMITTER RADIATED EMISSIONS > 1GHz	55

TEST 1.	CONDUCTED EMISSIONS
REFERENCE DOCUMENT	FCC Cfr 47 part 15 - Subpart B - §15.207

• TEST SETUP	Acc. To ref. Std.
• TEST LOCATION	Semi-anechoic chamber
• TEST EQUIPMENT USED FOR TEST	Network simulator Spitzenberger+Spies mod. PAS5000 MXE Emi Receiver Keysight mod. N9038A LISN Rohde & Schwarz mod. ESH3-Z5
• TESTED PORT	AC input power port
• FREQUENCY RANGE	150kHz - 30MHz
• LIMITS	Acc. To ref. Std.
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2) Expanded uncertainty 150kHz - 30MHz = 3,28 dB

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar
Voltage		AC main through External AC/DC Power Supply: 115Vac to 1.8Vdc

OPERATING CONDITION: #4

RESULT: WITHIN THE LIMITS

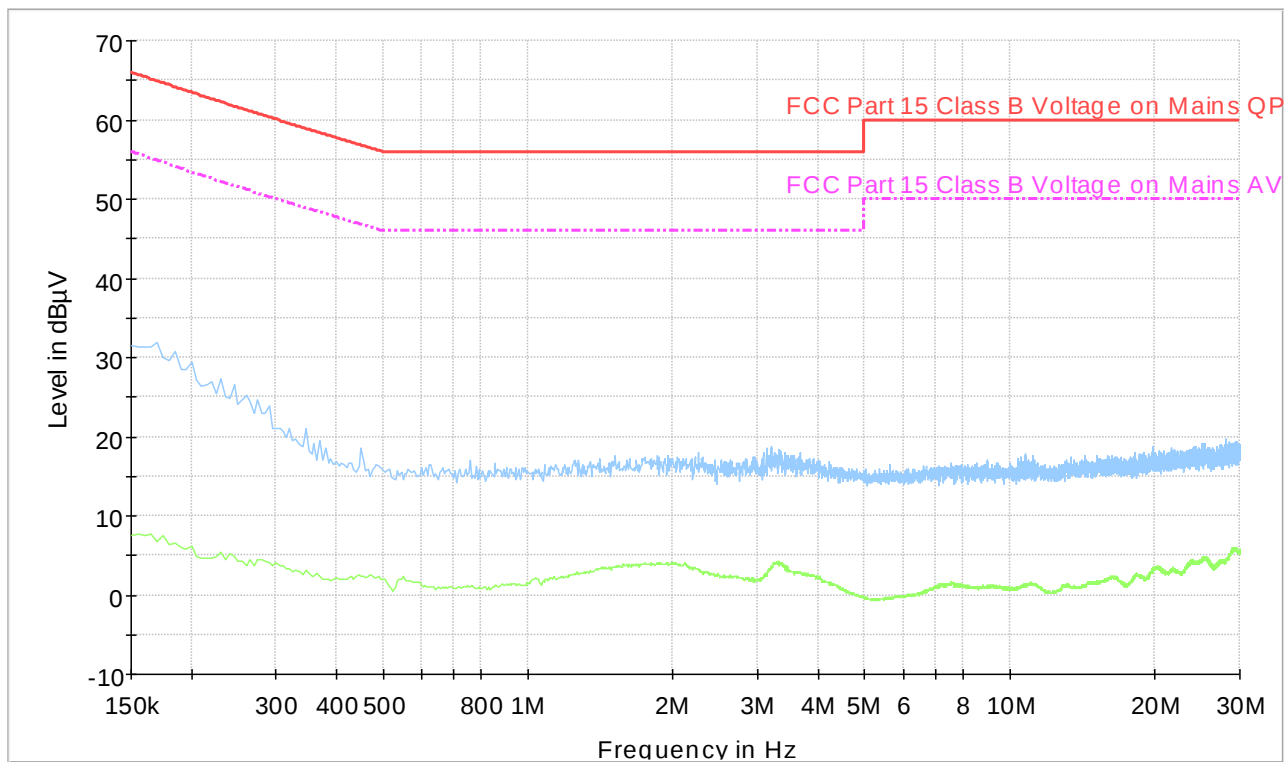
TEST RESULTS

OPERATING CONDITION #4 – 1.8Vdc to External AC/DC Power Supply

Frequency Range 150kHz – 30MHz

Line L+N

EN_55011_EMI_COND_3PHASE-MONO



TEST 2.	ANTENNA REQUIREMENTS
REFERENCE DOCUMENT	According to §15.203 / 15.204 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 Sec. 15.211, Sec. 15.213, Sec. 15.217, Sec. 15.219, or Sec. 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 Sec. 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 Requirements
The EUT has an integrated Chip antenna.
RESULT: COMPLIANT

TEST 3.	MAXIMUM PEAK OUTPUT POWER
REFERENCE DOCUMENT	According to §15.247(b) (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 signalling 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.

• TEST LOCATION	Semi-Anechoic Chamber					
• DISTANCE OF MEASUREMENT	3m					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2022	02/2023
	Horn antenna	Electro Metrics	EM-6961	100437	10/2020	10/2023
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 11.9					
• FREQUENCY RANGE	Carrier					
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2)					
	Expanded uncertainty = 5,15 dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION :#1, #2, #3

RESULT: WITHIN THE LIMITS

MEASUREMENT PARAMETER

Resolution bandwidth	RBW $\geq$ DTS bandwidth
Video bandwidth	VBW $\geq$ 3 x RBW
Span	span $\geq$ 3 x RBW
Sweep time	Auto couple
Detector	Peak
Trace-Mode	Max. hold

TEST DESCRIPTION

Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency.

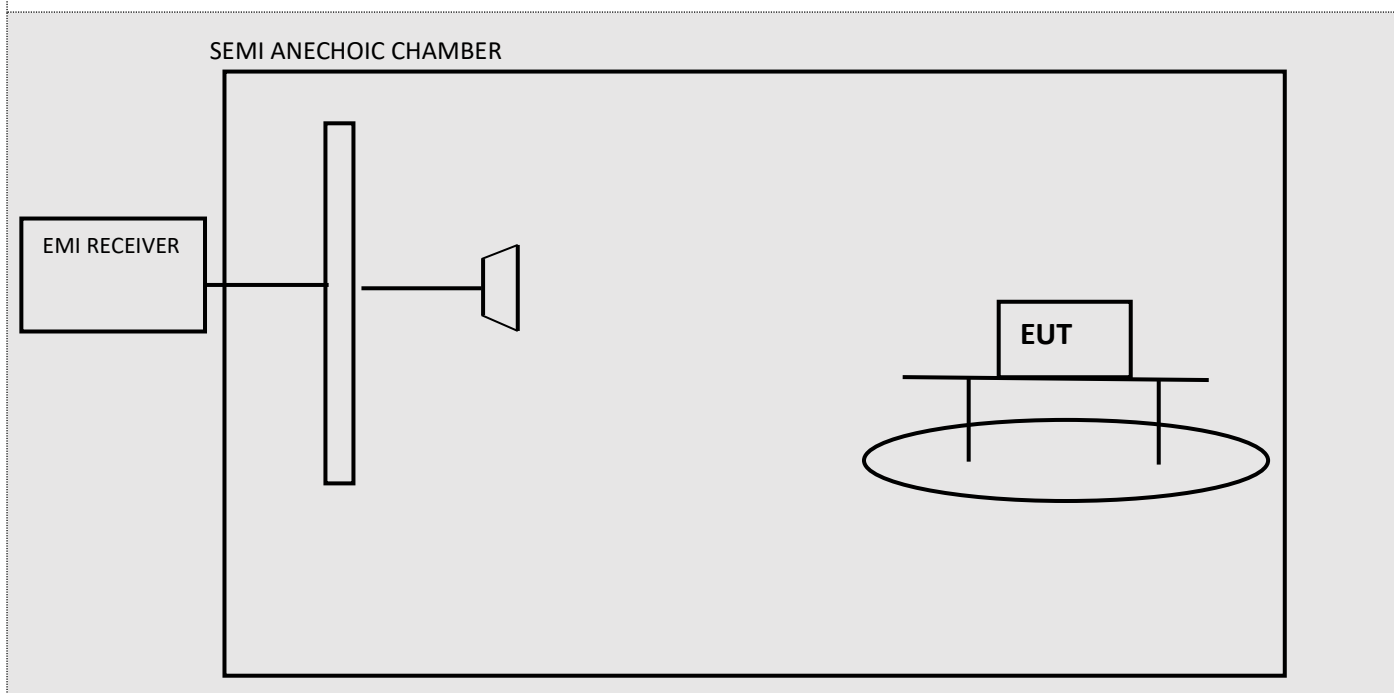
The EUT is placed at test table.

For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m

Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

TEST SETUP BLOCK DIAGRAM



TEST RESULTS

Mode				Basic Rate		
Modulation				GFSK		
Packet Type: (Maximum Payload):				3DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	4.942	-0.5	5.442	30	WITHIN THE LIMITS
38	2440	5.679	-0.5	6.179		
78	2480	4.764	-0.5	5.264		
Note: ---						

Mode				Enhanced Data Rate		
Modulation				π/4-DQPSK		
Packet Type: (Maximum Payload):				2DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	2.940	-0.5	3.440	30	WITHIN THE LIMITS
38	2440	3.245	-0.5	3.745		
78	2480	2.361	-0.5	2.861		
Note: ---						

Mode				Enhanced Data Rate		
Modulation				8DQPSK		
Packet Type: (Maximum Payload):				3DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	3.412	-0.5	3.912	30	WITHIN THE LIMITS
38	2440	3.626	-0.5	4.126		
78	2480	3.073	-0.5	3.573		
Note: ---						

TEST 4.	20dB CHANNEL BANDWIDTH
REFERENCE DOCUMENT	According to §15,247(a)(1) Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands, The minimum 20 dB bandwidth shall be at least 500 kHz.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 6.9					
• FREQUENCY RANGE	Carrier					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION :#1, #2, #3

RESULT: COMPLIANT

MEASUREMENT PARAMETER – 20dB Bandwidth

Resolution bandwidth	100kHz
Video bandwidth	300kHz
Span	5MHz
Sweep time	Auto couple
Detector	Peak
Trace-Mode	Max. hold

TEST DESCRIPTION

Allow the trace to stabilize.

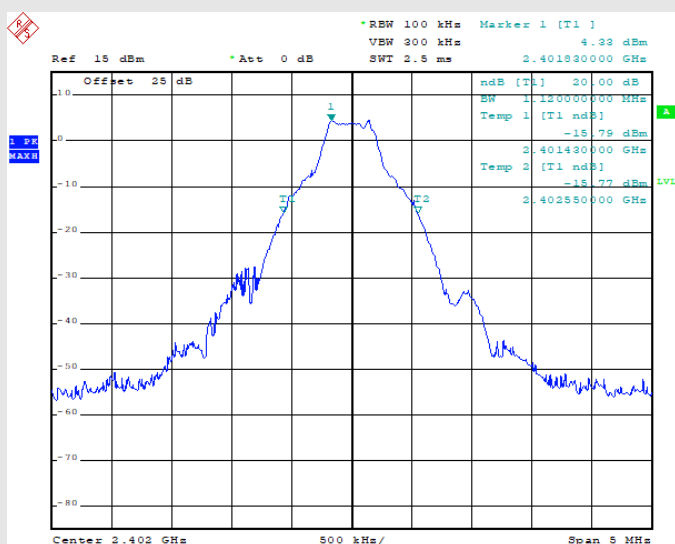
Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission

Measurement Result

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Limits (kHz)	Verdict
0	2402	1120	>500	Within the limits
38	2440	1102	>500	
78	2480	1120	>500	

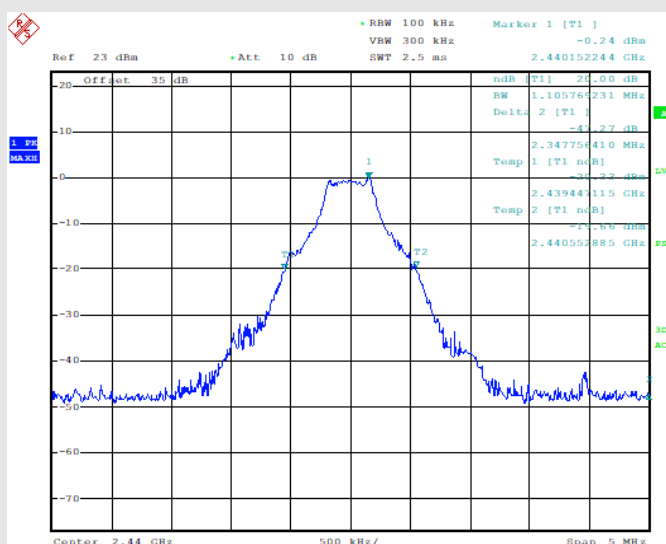
Basic Rate – 3DH5

Channel 0

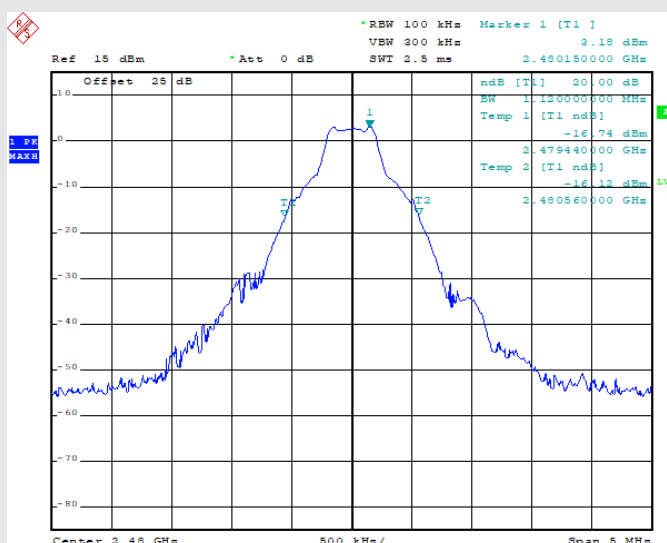


20dB Bandwidth

Channel 38



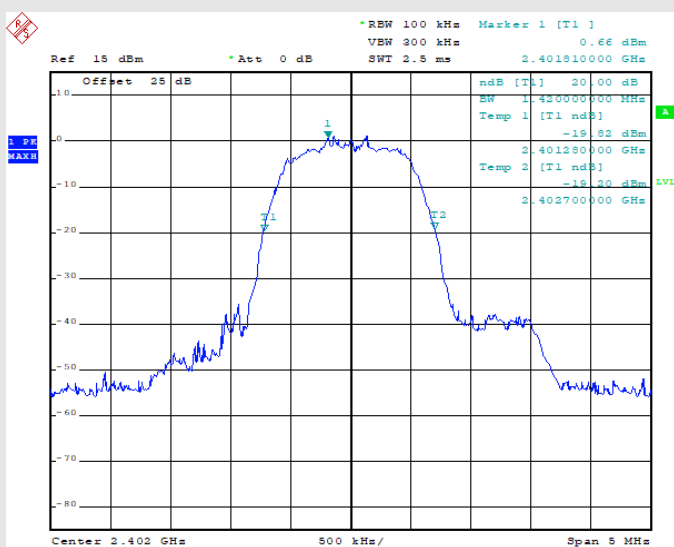
Channel 78



Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Limits (kHz)	Verdict
0	2402	1420	>500	Within the limits
38	2440	1402	>500	
78	2480	1420	>500	

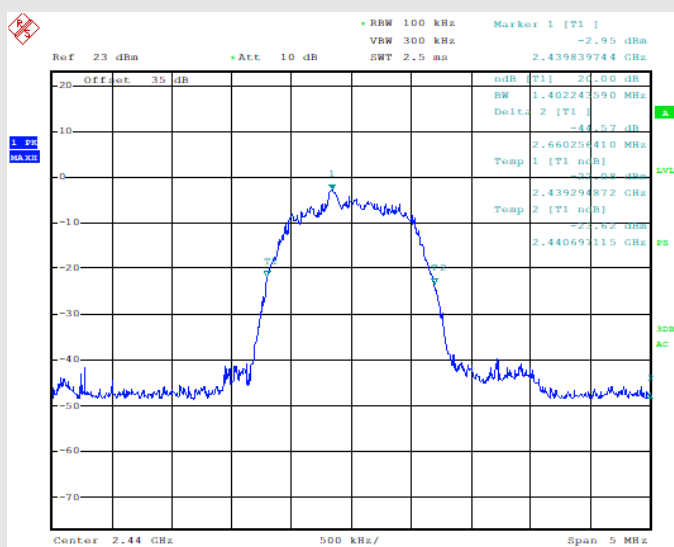
Enhanced Data Rate – 2DH5

Channel 0

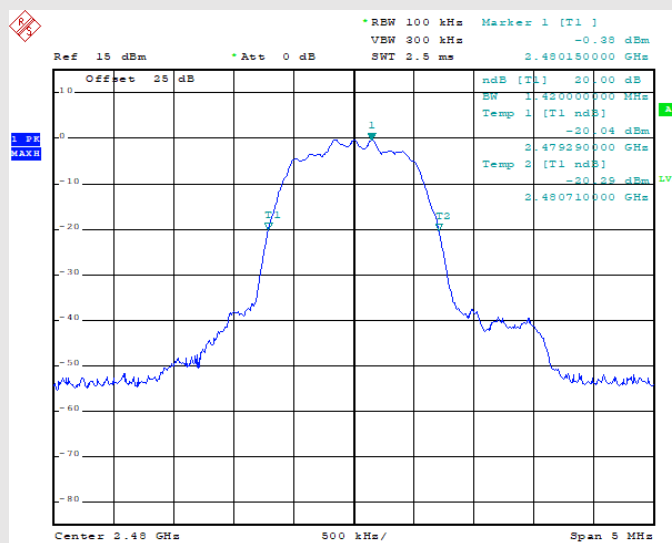


20dB Bandwidth

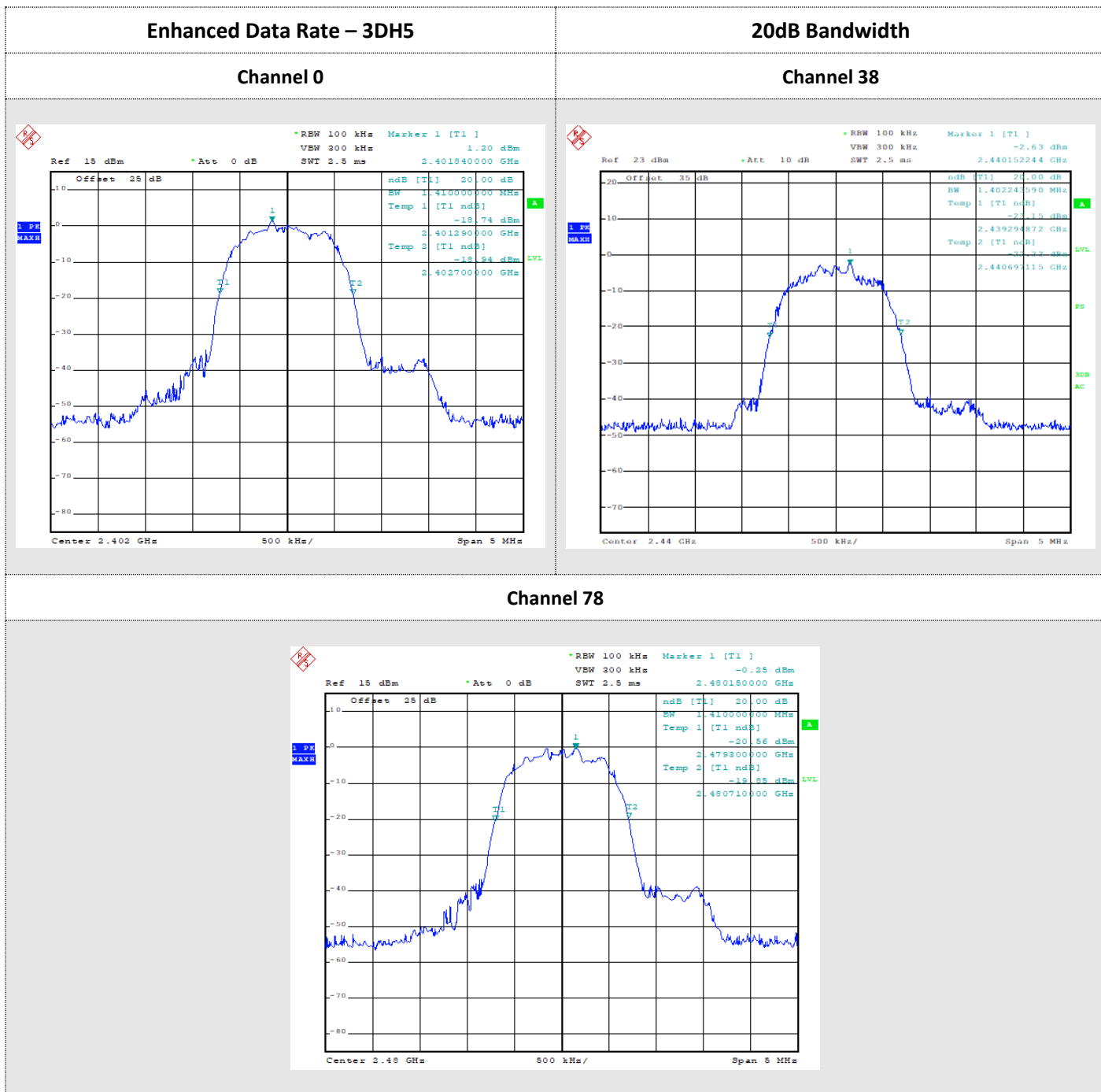
Channel 38



Channel 78



Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Limits (kHz)	Verdict
0	2402	1410	>500	Within the limits
38	2440	1402	>500	
78	2480	1410	>500	



TEST 5.	BAND EDGE
REFERENCE DOCUMENT	According to §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 Sec. 15,209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Sec. 15,205(a), must also comply with the radiated emission limits specified in Sec. 15,209(a) (see Sec. 15,205(c)).

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 6.10					
• FREQUENCY RANGE	Carrier					

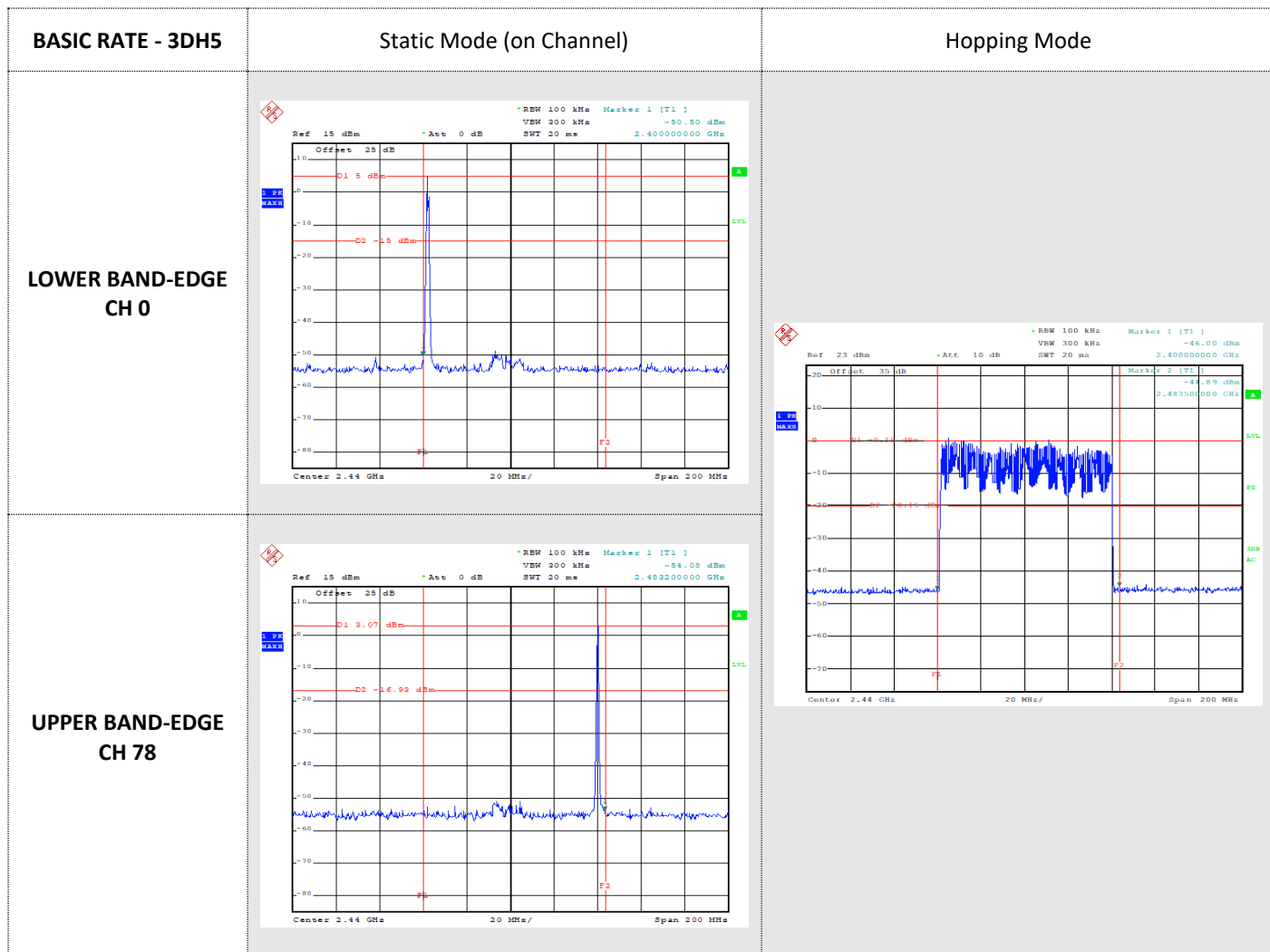
TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

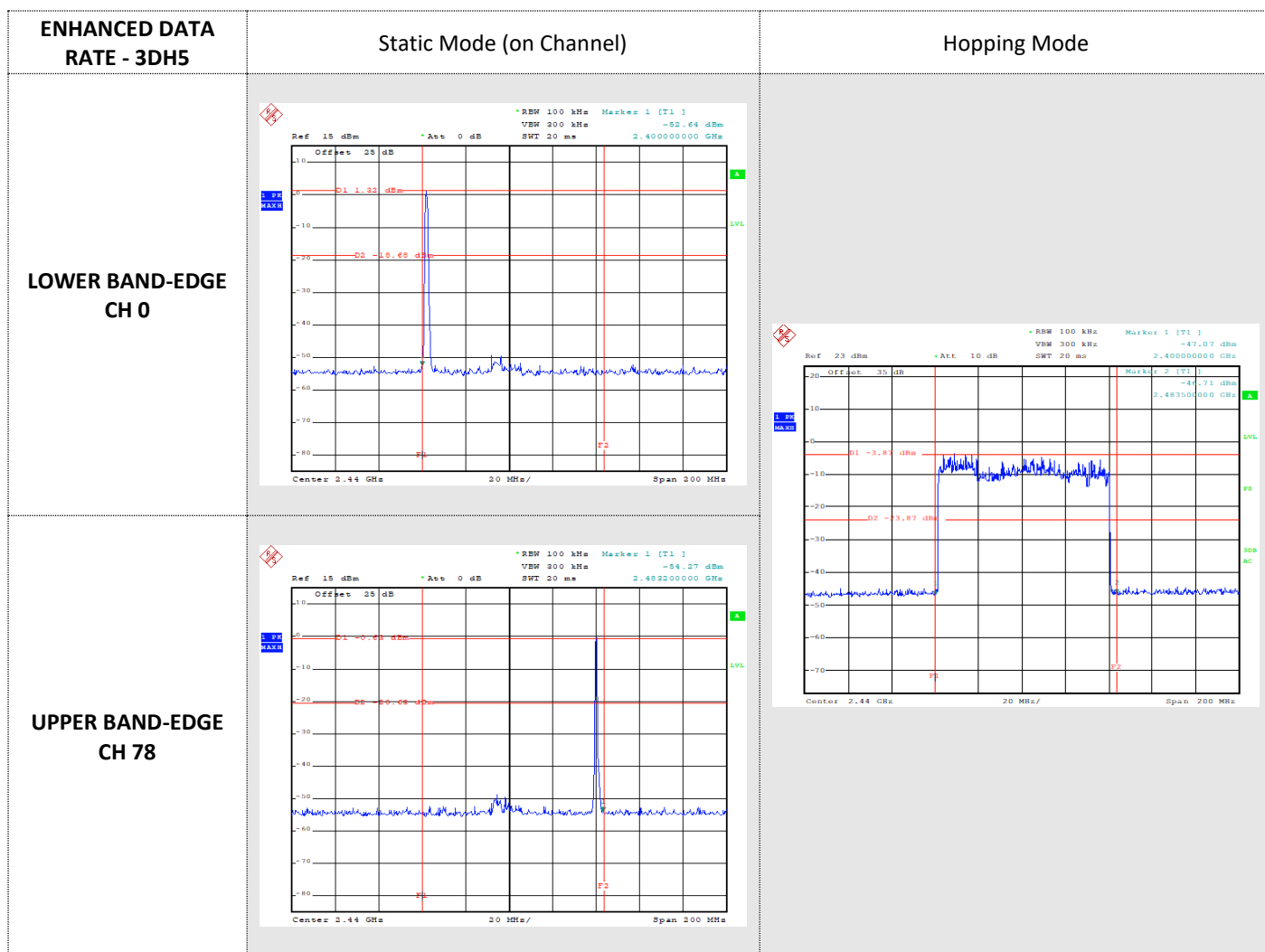
OPERATING CONDITION :#1, #3, #4
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RESULT: COMPLIANT

Note: The plots shown only the results of Modulation DH5 and 3DH5 because are the worst case

TEST RESULTS





TEST 6.

RF RADIATED SPURIOUS EMISSIONS AT THE TRANSMITTER ANTENNA TERMINAL

REFERENCE DOCUMENT

According to § 15.247 (d) and § 15.209 (a)

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)).

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
• TESTED PORT	Enclosure					
• TEST METHOD	ANSI C63.10:2013 section 6.5 and 6.6					
• FREQUENCY RANGE	9kHz – 1GHz					
• LIMITS	Acc. To ref. Std.					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION :#1, #2, #3

RESULT: **WITHIN THE LIMITS**

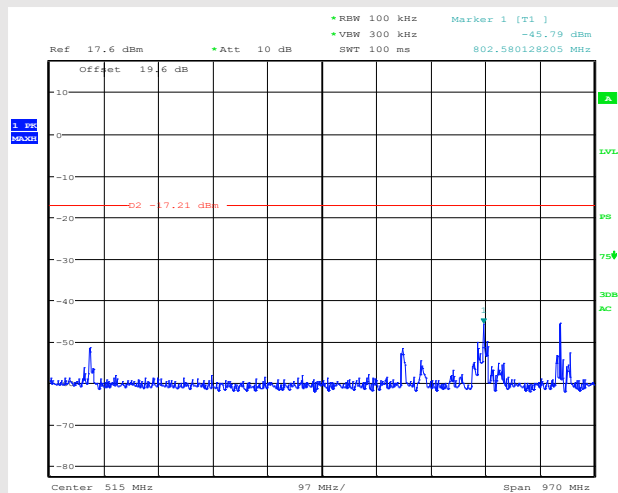
Note: The plots shown only the results of Modulation DH5 and 3DH5 because are the worst case

TEST RESULTS

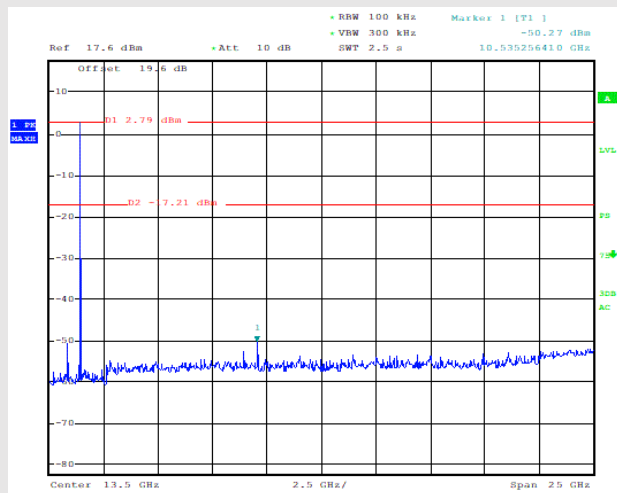
- Basic Rate – 3DH5 -

Channel: 0

Frequency range: 30MHz – 1GHz

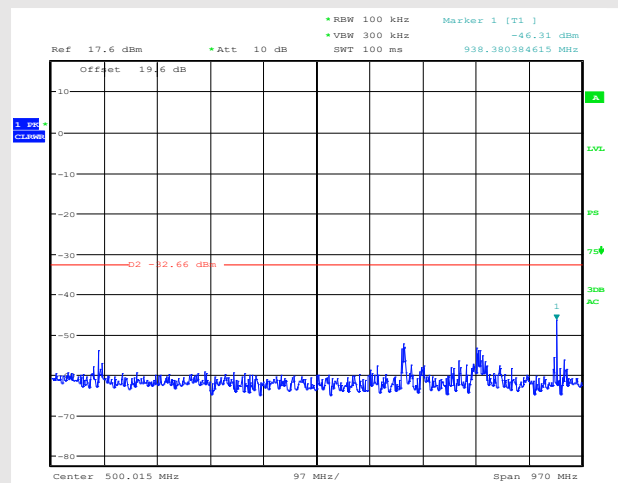


Frequency range: 1GHz – 26GHz

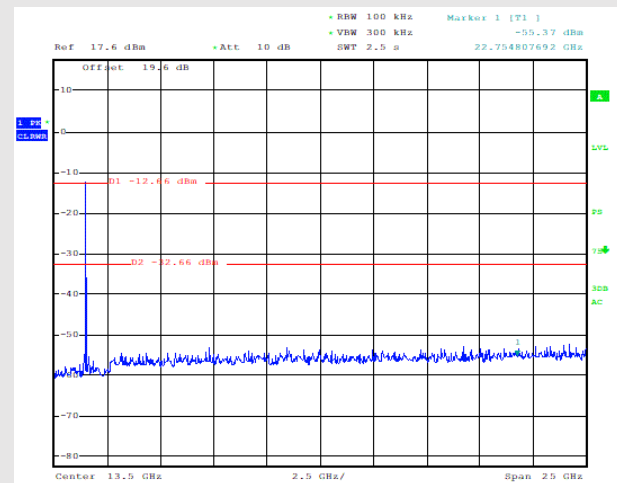


Channel: 38

Frequency range: 30MHz – 1GHz

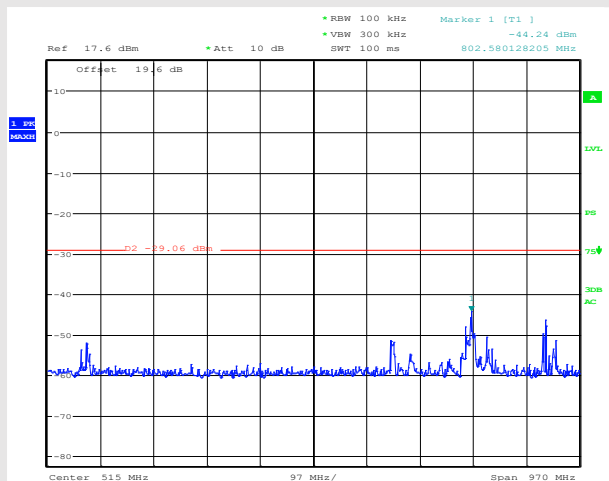


Frequency range: 1GHz – 26GHz

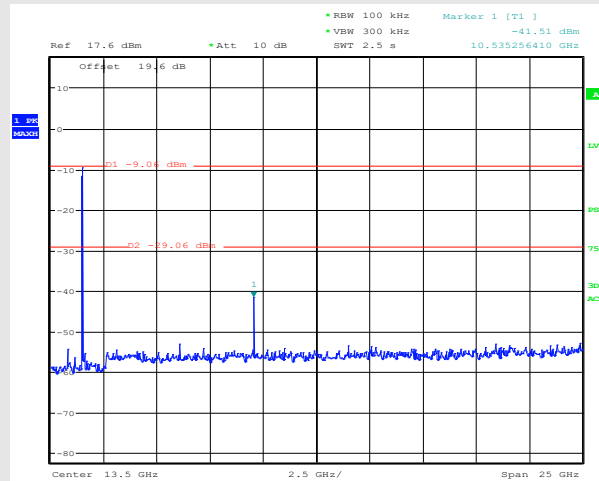


Channel: 78

Frequency range: 30MHz – 1GHz



Frequency range: 1GHz – 26GHz

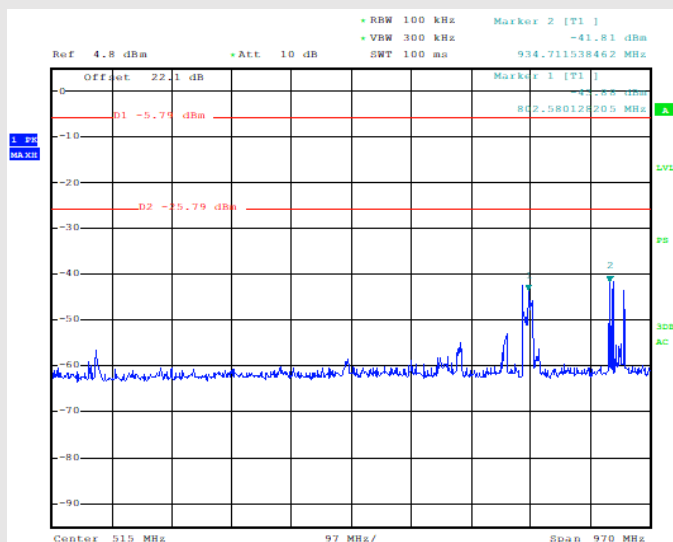


TEST RESULTS

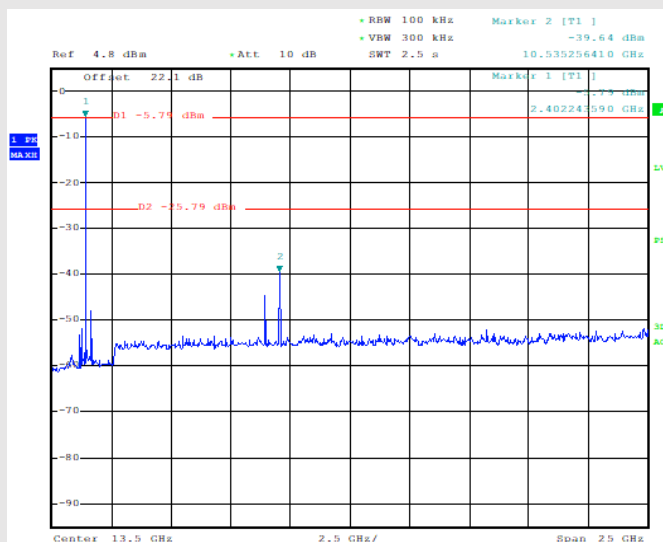
- Enhanced Data Rate – 3DH5 -

Channel: 0

Frequency range: 30MHz – 1GHz

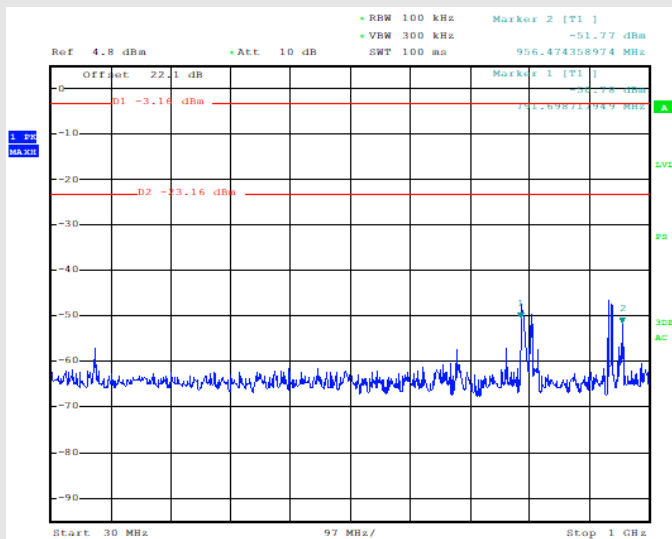


Frequency range: 1GHz – 26GHz

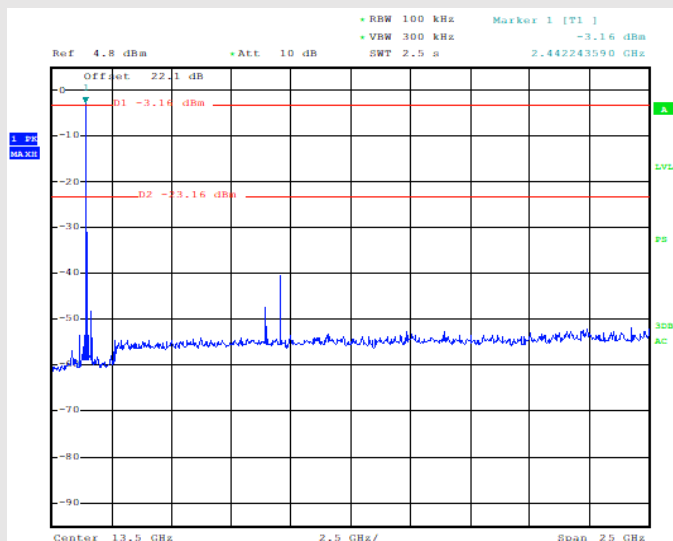


Channel: 38

Frequency range: 30MHz – 1GHz

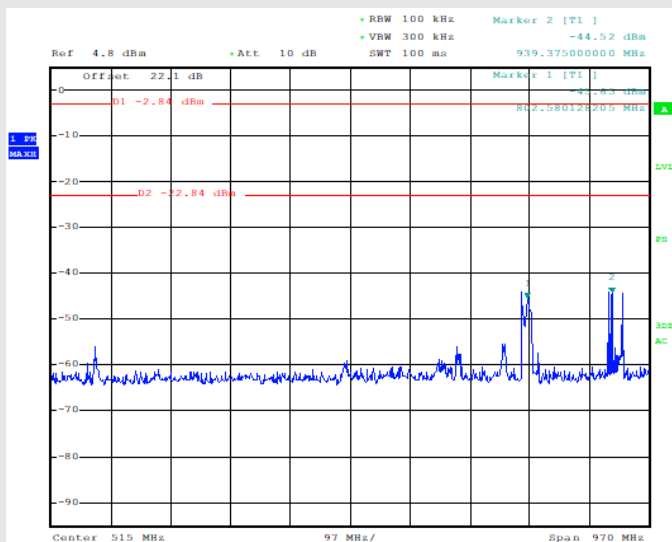


Frequency range: 1GHz – 26GHz

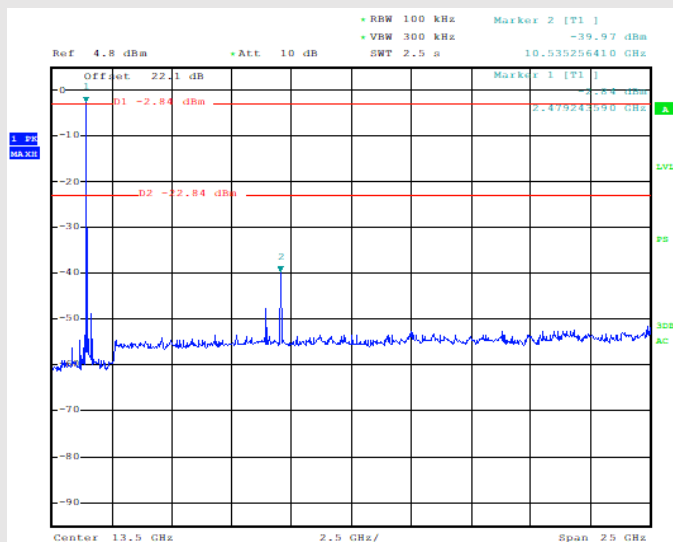


Channel: 78

Frequency range: 30MHz – 1GHz



Frequency range: 1GHz – 26GHz



TEST 7.

TRANSMITTER CARRIER FREQUENCY SEPARATION

REFERENCE DOCUMENT

According to § 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 2400-2483.5 MHz band 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 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 6.6					
• FREQUENCY RANGE	Two adjacent channel					

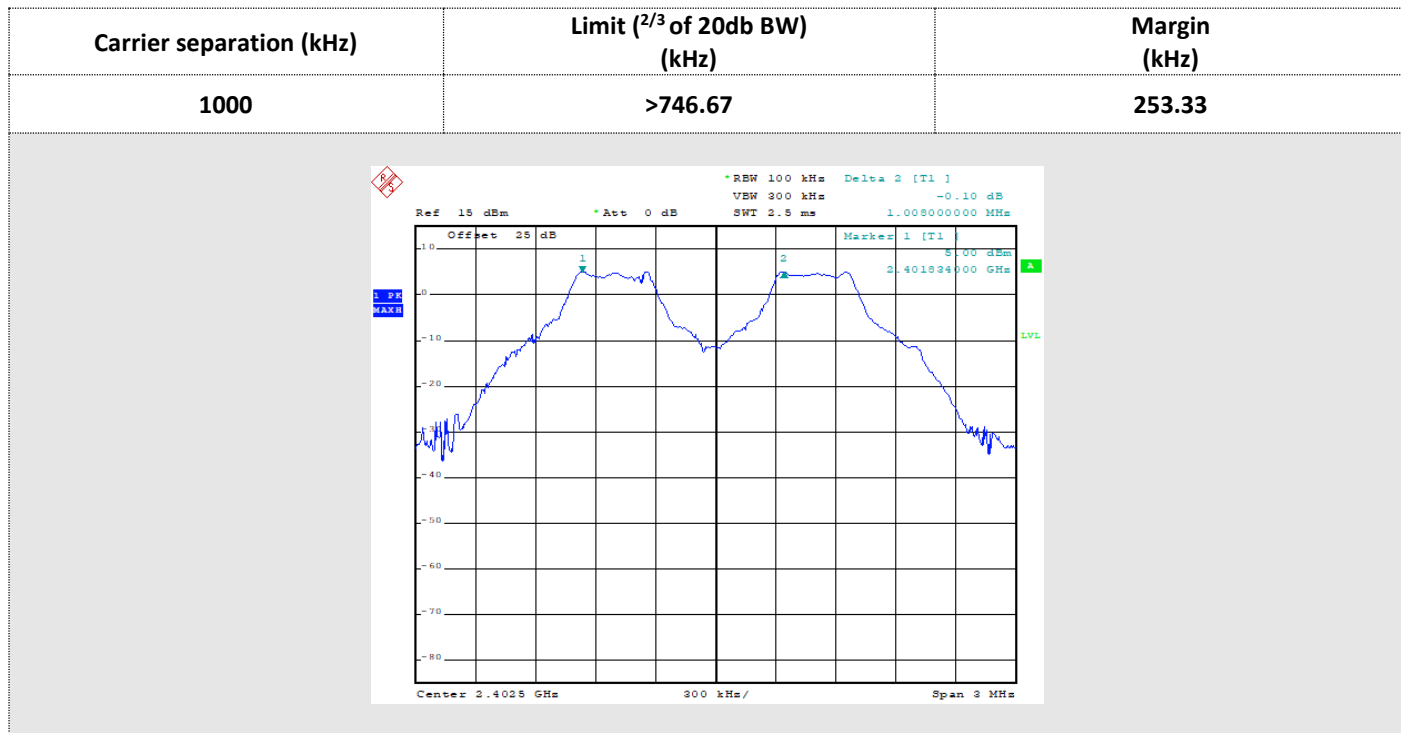
TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION: #4

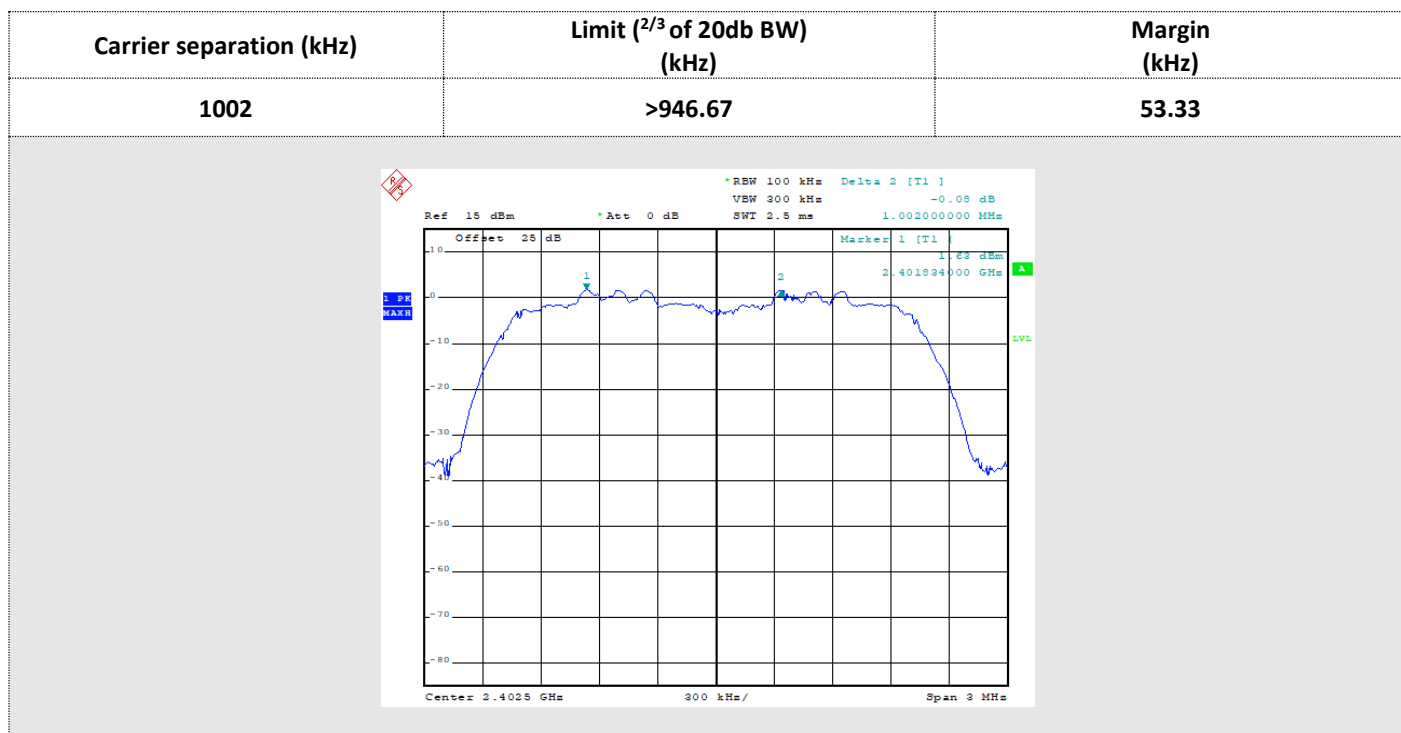
RESULT: **COMPLIANT**

TEST RESULTS

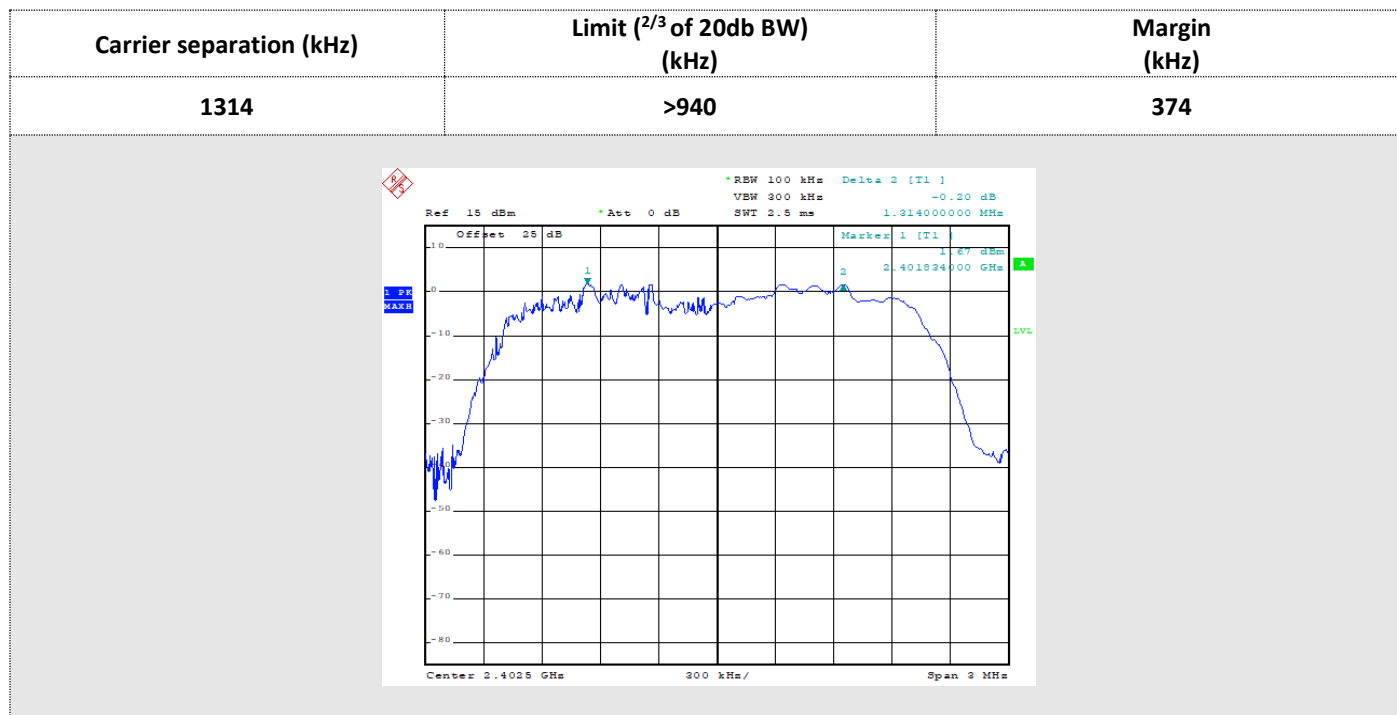
Basic Rate 3DH5



Enhanced Data Rate - 2DH5



Enhanced Data Rate - 3DH5



TEST 8.	TRANSMITTER NUMBER OF HOPPING FREQUENCIES AND AVERAGE TIME OF OCCUPANCY
REFERENCE DOCUMENT	According to § 15.247 (a) (1) (iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 6.6					
• FREQUENCY RANGE	Carrier					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION: #4

RESULT: COMPLIANT

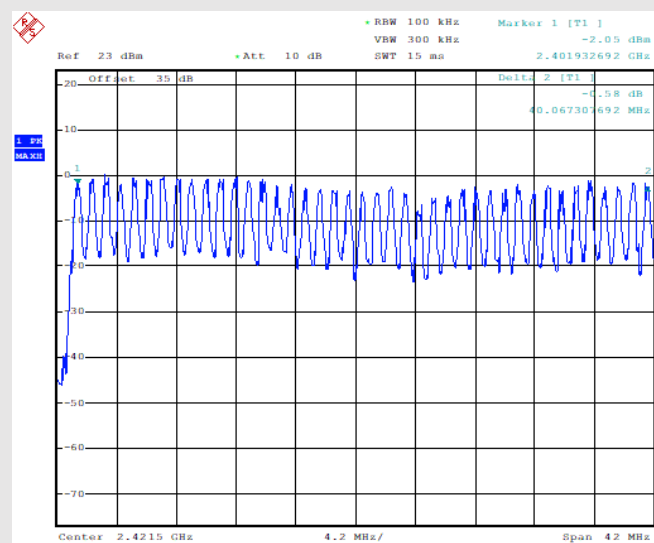
Note: The plots shown only the results of Modulation DH5 and 3DH5 because are the worst case

TEST RESULTS

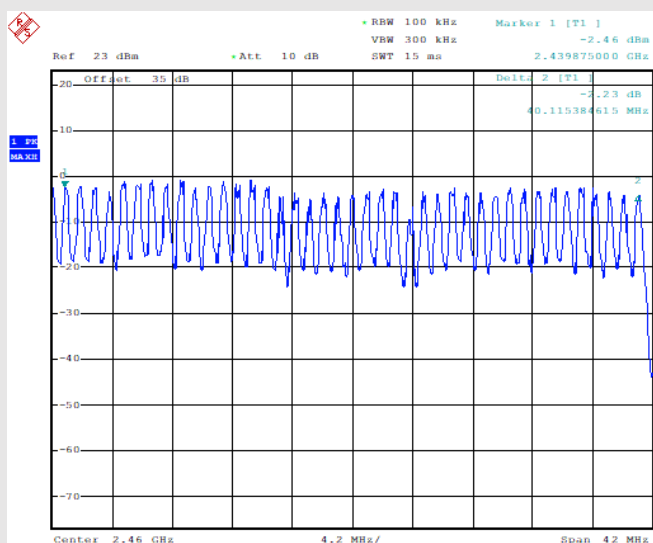
Basic Rate 3DH5

Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)
360	104	0.302	0.4	0.098

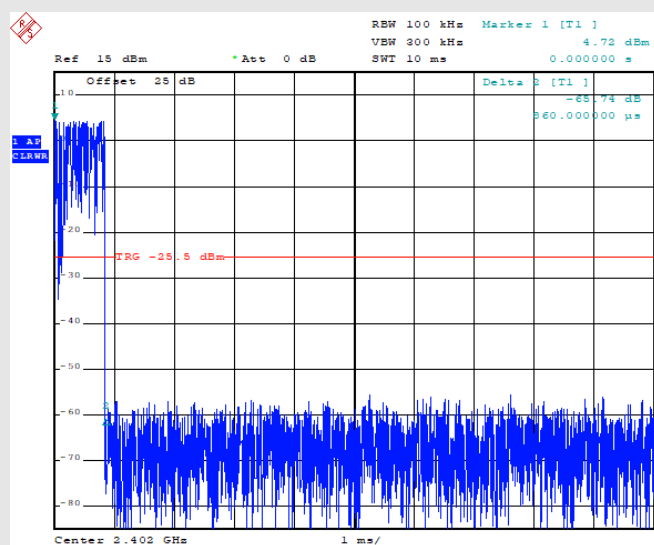
Number of Hopping part 1



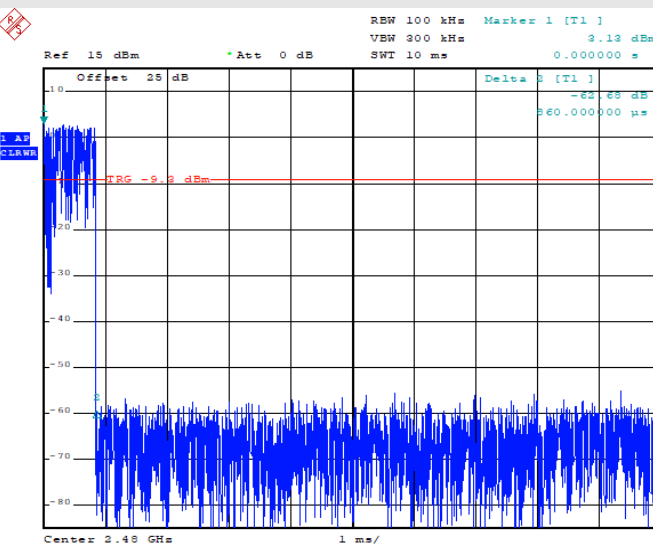
Number of Hopping part 2



Dwell time CH1



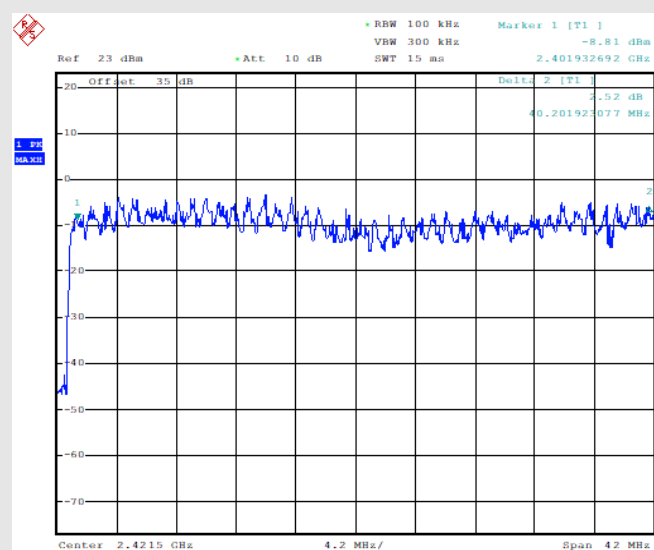
Dwell time CH78



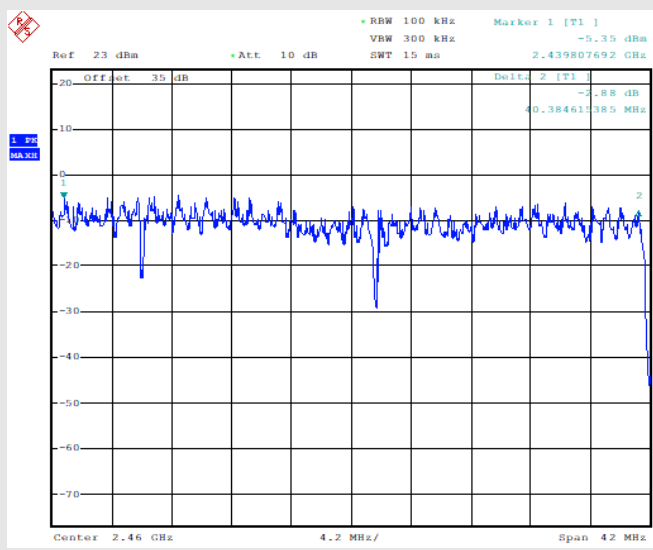
Enhanced Data Rate 3DH5

Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)
880	104	0.302	0.4	0.098

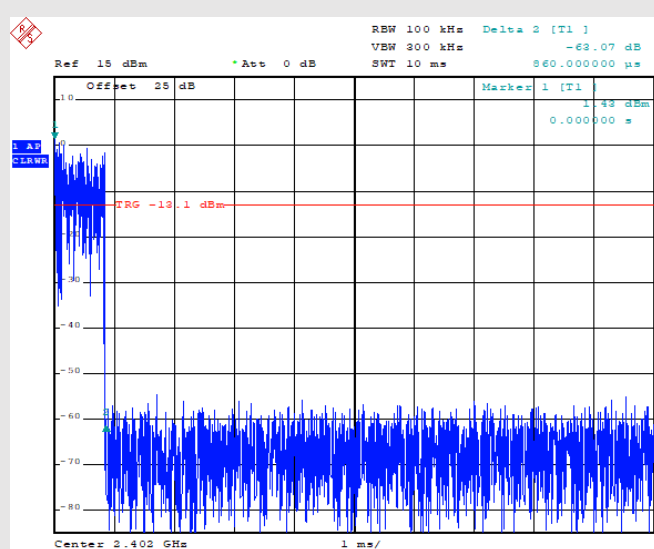
Number of Hopping part 1



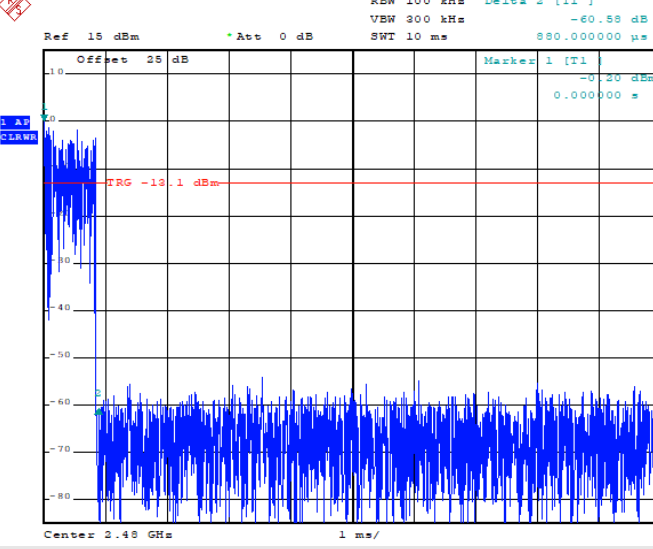
Number of Hopping part 2



Dwell time CH1



Dwell time CH78



TEST 9.

TRANSMITTER RADIATED EMISSIONS < 1GHZ

REFERENCE DOCUMENT

According to § 15.247 (d) and § 15.209 (a)

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)).

• TEST LOCATION	Semi-Anechoic Chamber					
• DISTANCE OF MEASUREMENT	3m					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2023	02/2024
	Loop antenna	Rohde & Schwarz	HFH 2-Z2	841801/012	03/2020	03/2023
	Bi-log antenna	Chase	CBL6111C	2717	03/2022	03/2025
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Enclosure					
• TEST METHOD	ANSI C63.10:2013 section 6.5					
• FREQUENCY RANGE	9kHz – 1GHz					
• LIMITS	Acc. To ref. Std.					
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2)					
	Expanded uncertainty 9kHz – 30MHz = 4,24 dB					
	Expanded uncertainty 30MHz – 1GHz = 5,72 dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION :#1, #2, #3

RESULT: **WITHIN THE LIMITS**

Note: The plots shown only the results of Modulation DH5 and 3DH5 because are the worst case

MEASUREMENT PARAMETER

Frequency Range:	9kHz – 30MHz	30MHz – 1GHz
Resolution bandwidth:	200Hz	100kHz
Video bandwidth:	1kHz	300kHz
Span:	See plots below	See plots below
Sweep time	Auto couple	Auto couple
Detector:	Peak	Peak
Trace-Mode:	Max. hold	Max. hold

TEST DESCRIPTION

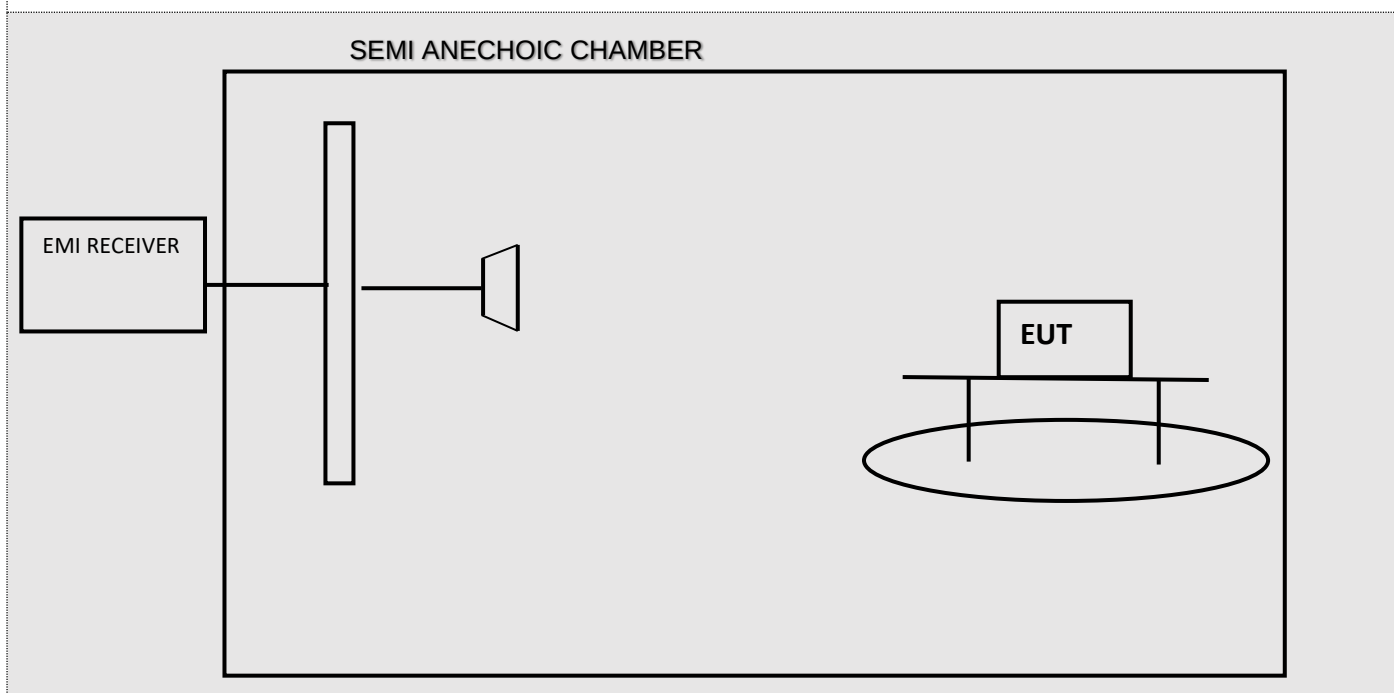
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency.

The EUT is placed at test table height is 80 cm above the reference ground plane.

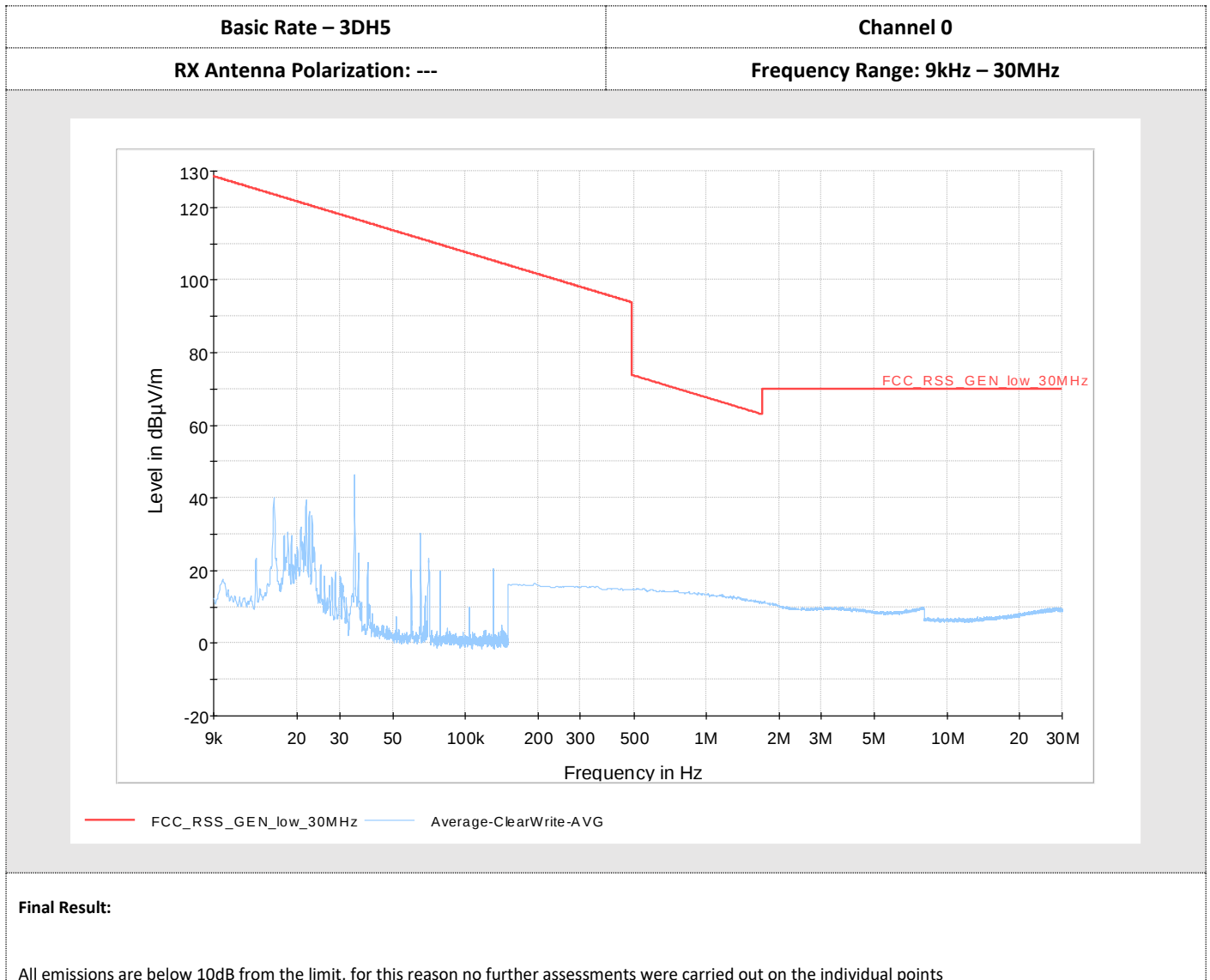
Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

TEST SETUP BLOCK DIAGRAM

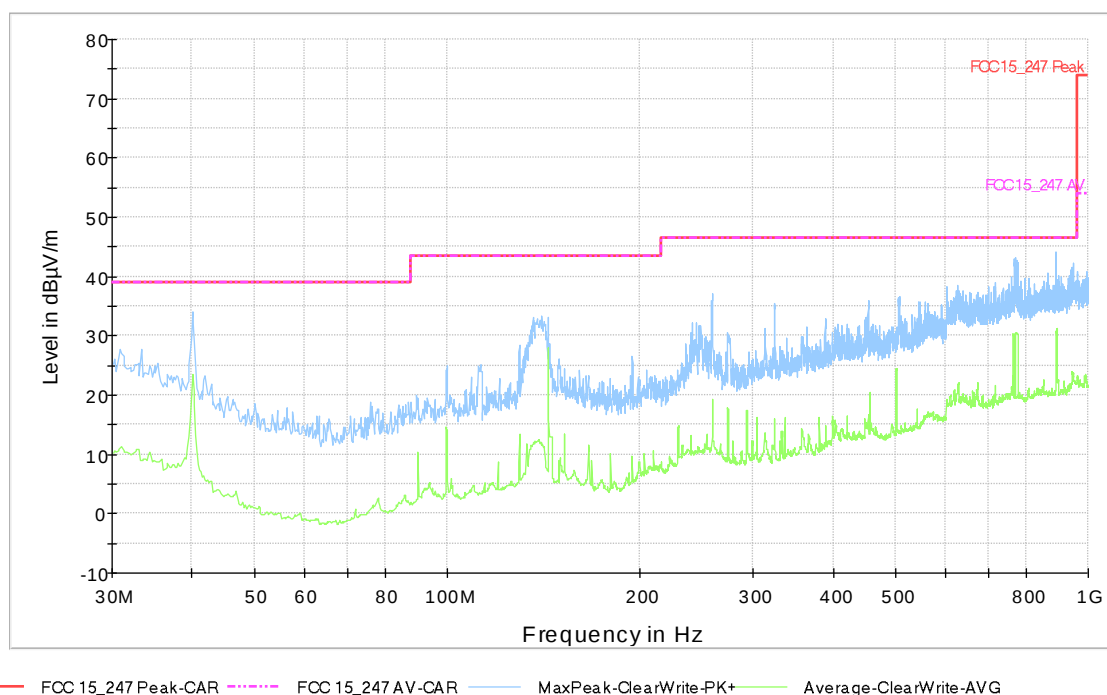


TEST RESULTS



RX Antenna Polarization: Vertical

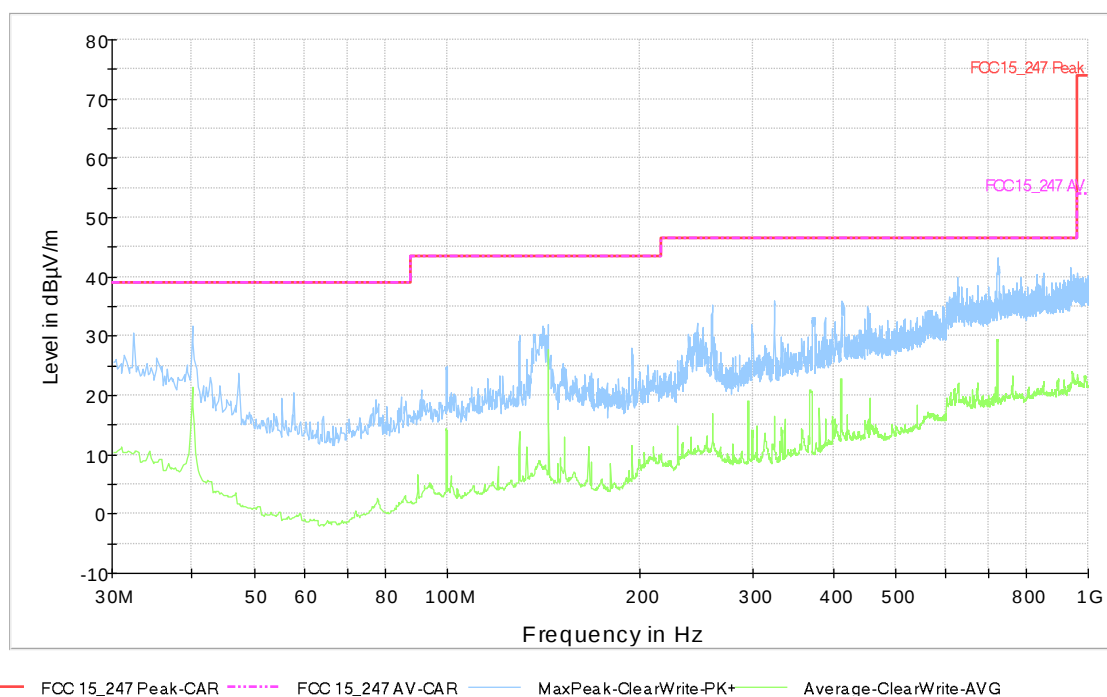
Frequency Range: 30MHz – 1GHz



Final Result:

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



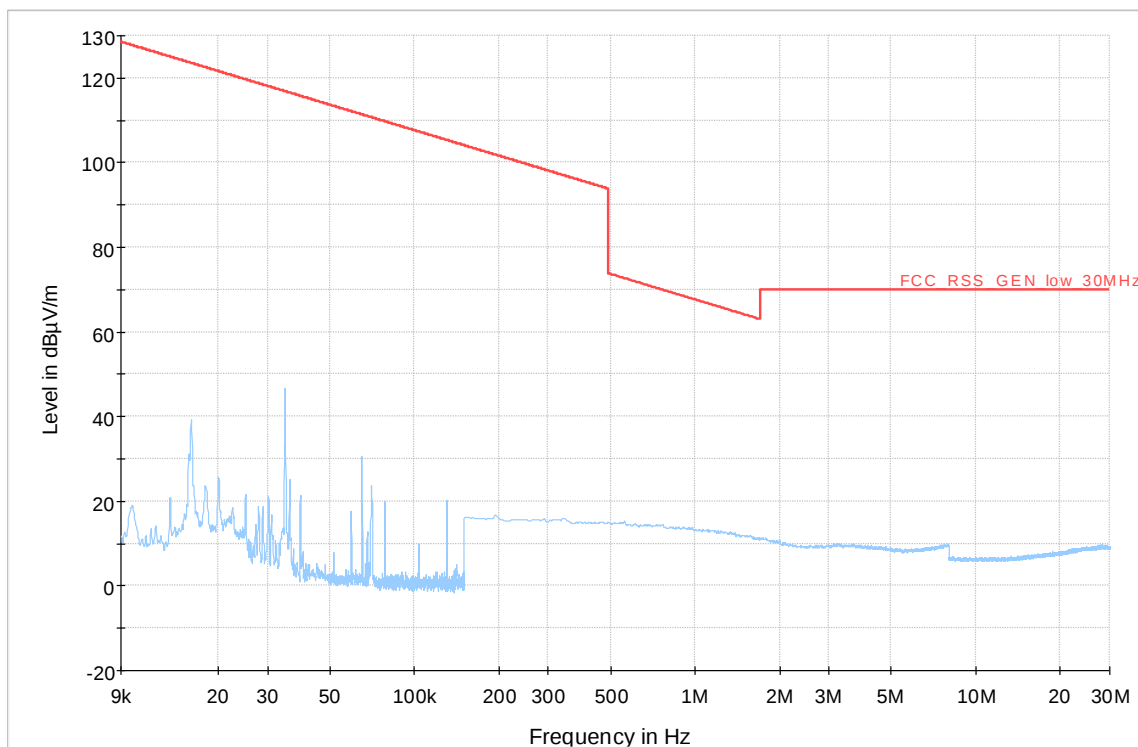
Final Result:

Basic Rate – 3DH5

Channel 38

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz



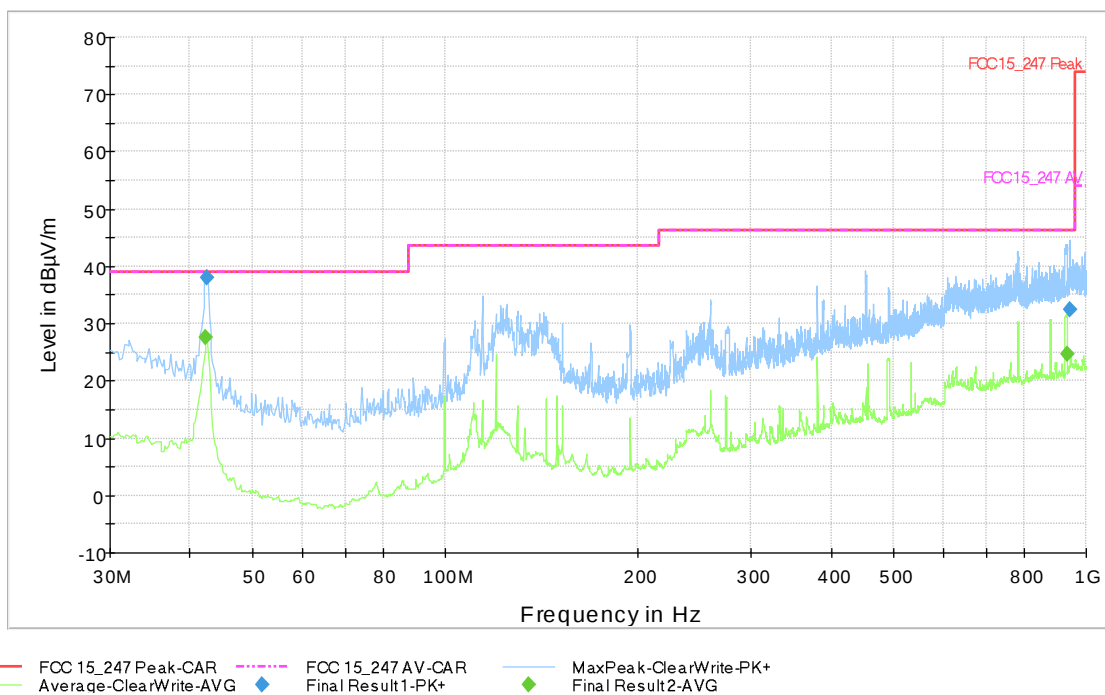
FCC_RSS_GEN_low_30MHz Average-ClearWrite-AVG

Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 30MHz – 1GHz



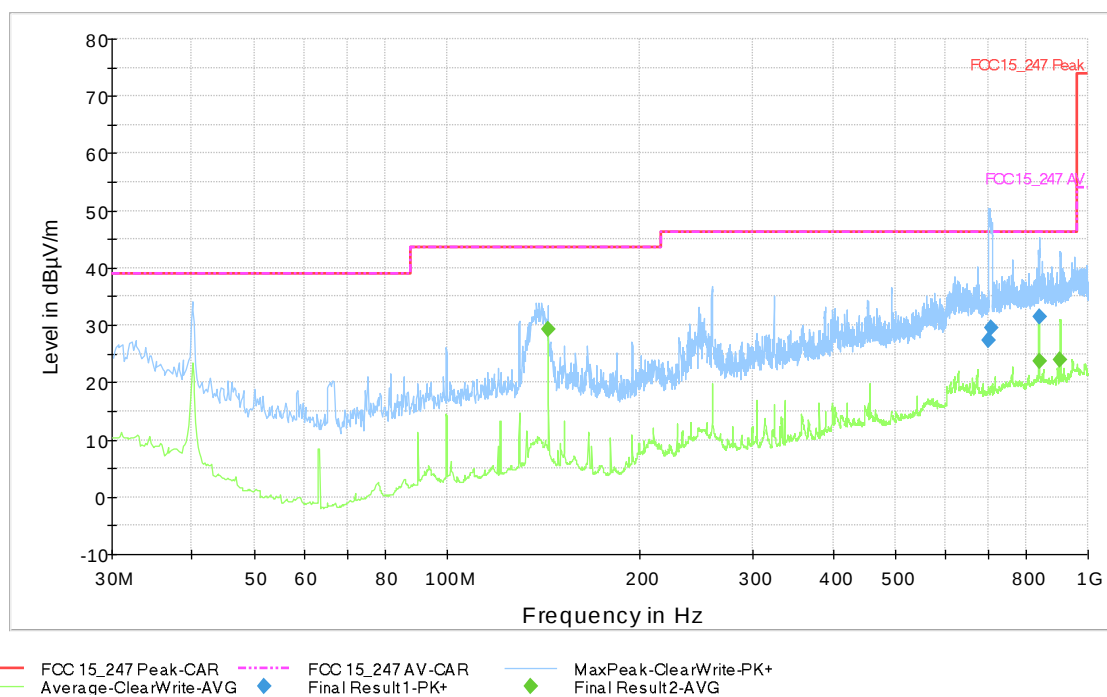
Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
42.450000	38.0	99.7	97.0	1.00	39.00
945.300000	32.4	99.8	0.0	14.00	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
42.390000	27.6	99.8	86.0	11.40	39.00
933.090000	24.8	99.8	262.0	21.60	46.40

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
700.050000	27.3	125.7	265.0	19.10	46.40
704.430000	29.5	152.8	264.0	16.90	46.40
841.050000	31.5	179.7	277.0	14.90	46.40

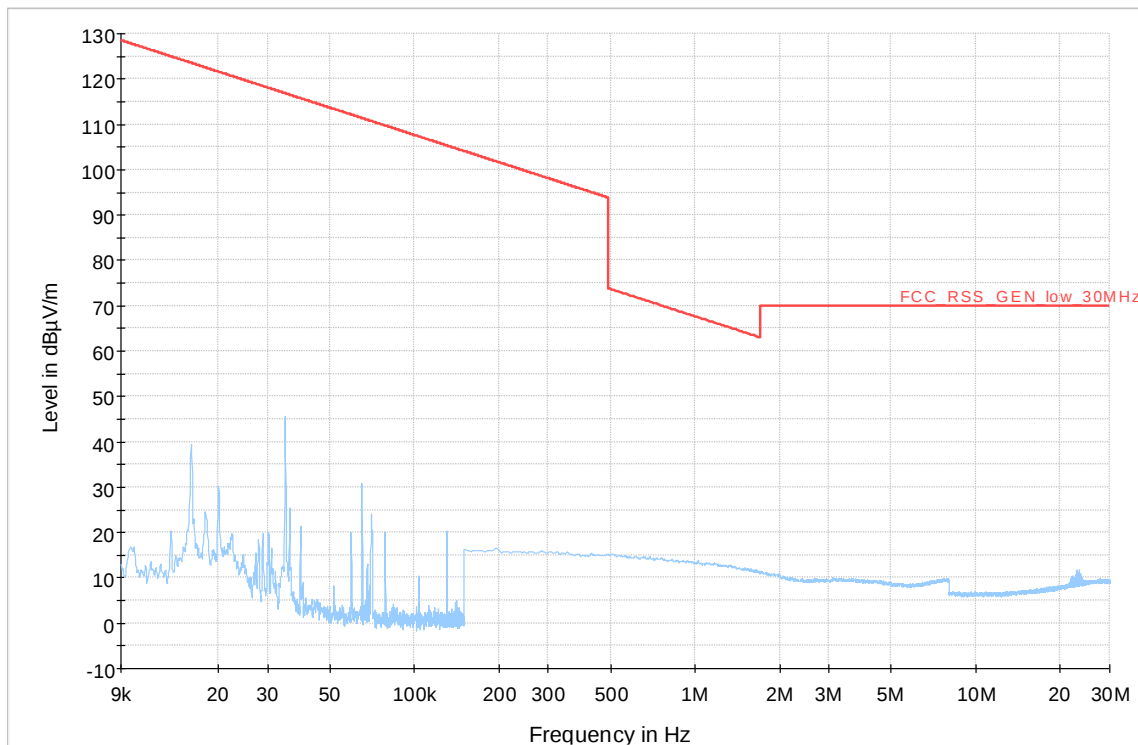
Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
144.000000	29.4	125.9	172.0	14.10	43.50
840.150000	23.6	258.8	277.0	22.80	46.40
903.240000	23.9	330.2	187.0	22.60	46.40

Basic Rate – 3DH5

Channel 78

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz



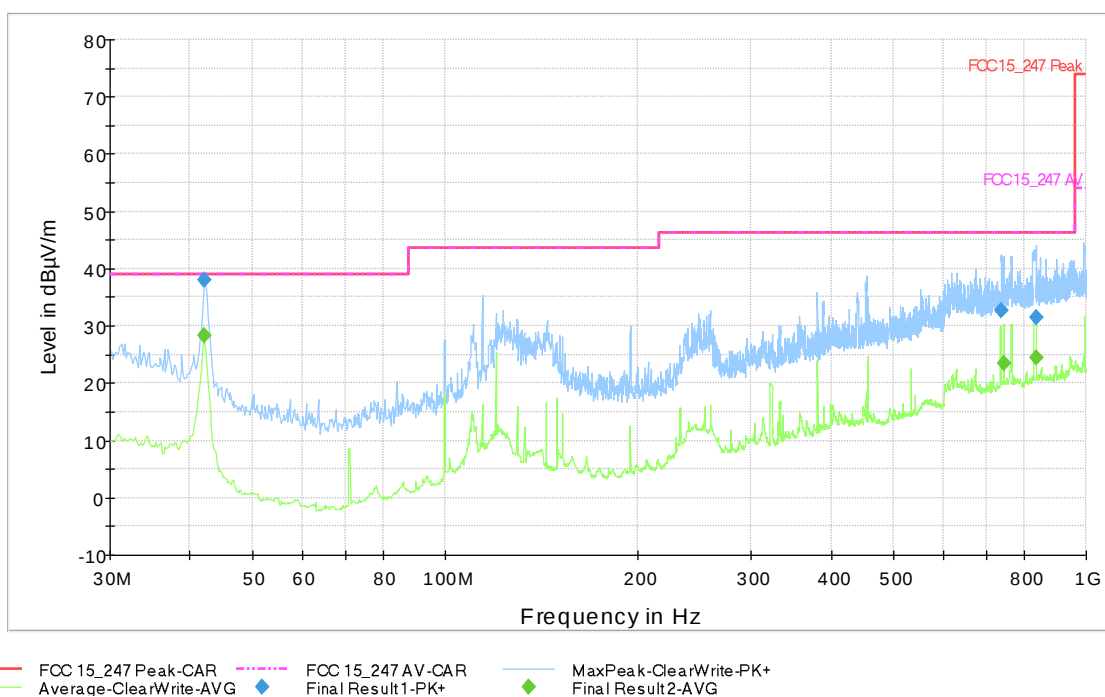
FCC_RSS_GEN_low_30MHz Average-ClearWrite-AVG

Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 30MHz – 1GHz



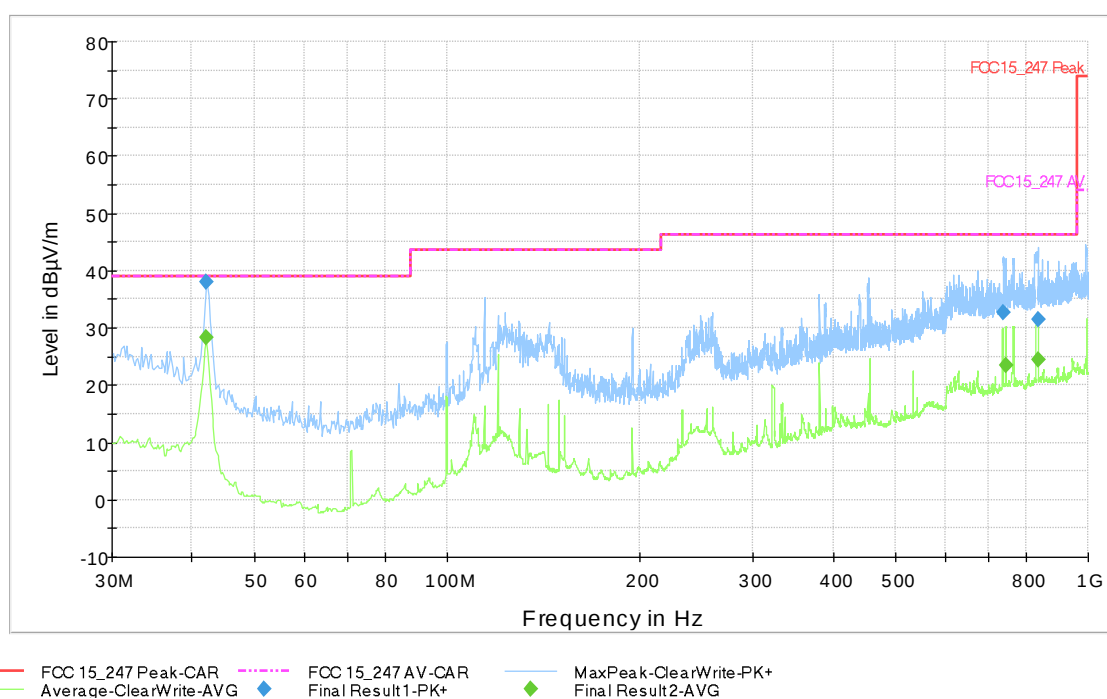
Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
42.180000	38.0	99.7	82.0	1.00	39.00
737.190000	32.7	99.7	187.0	13.70	46.40
834.360000	31.4	99.8	2.0	15.00	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
42.090000	28.3	99.8	82.0	10.70	39.00
745.110000	23.4	179.8	97.0	23.00	46.40
834.390000	24.4	125.7	7.0	22.00	46.40

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
39.570000	23.1	258.8	-6.0	15.90	39.00
933.840000	29.6	99.8	187.0	16.80	46.40
957.840000	34.5	330.0	84.0	11.90	46.40

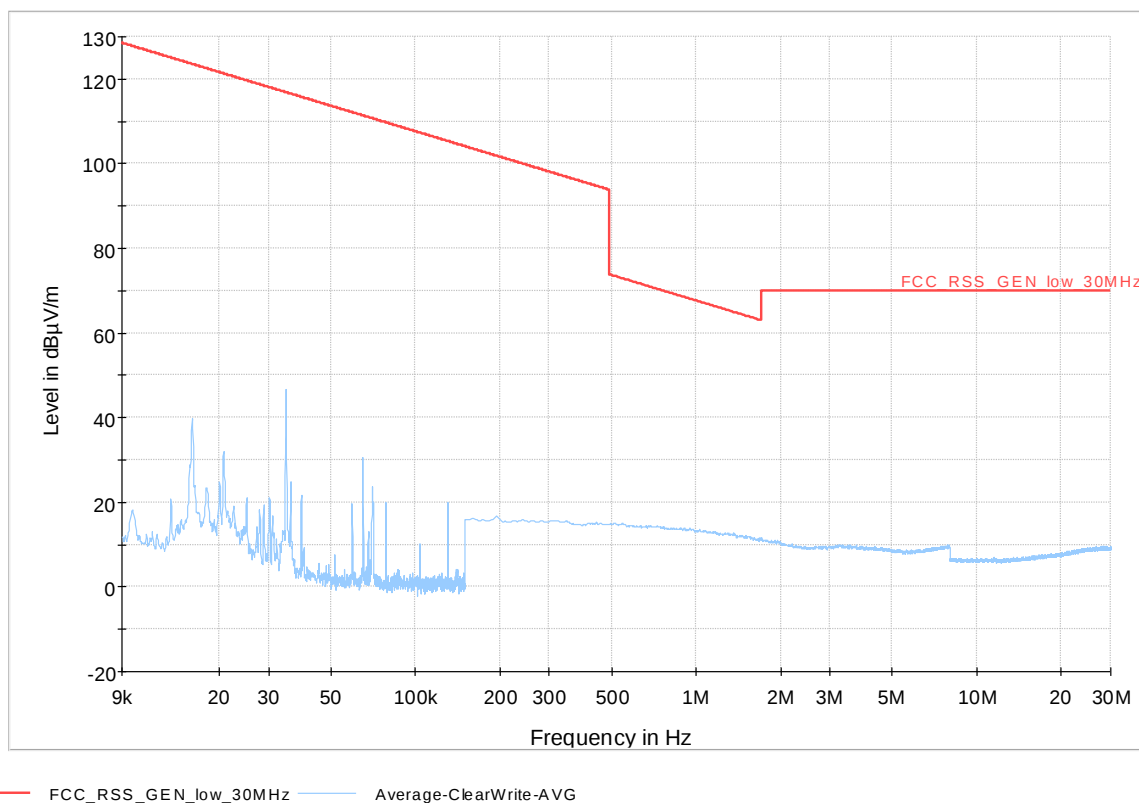
Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
39.450000	14.9	257.8	7.0	24.10	39.00
144.000000	27.6	125.9	172.0	15.90	43.50
940.350000	24.7	154.7	180.0	21.70	46.40

Enhanced Data Rate – 3DH5

Channel 0

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

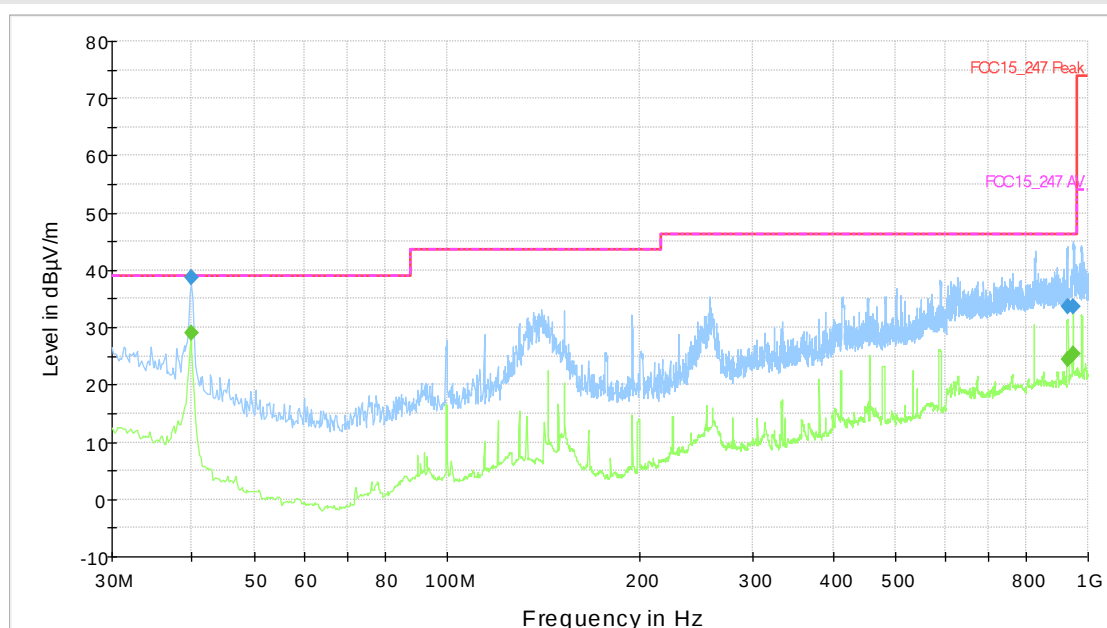


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 30MHz – 1GHz



— FCC 15_247 Peak-CAR — FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+
— Average-ClearWrite-AVG ◆ Final Result 1-PK+ ◆ Final Result 2-AVG

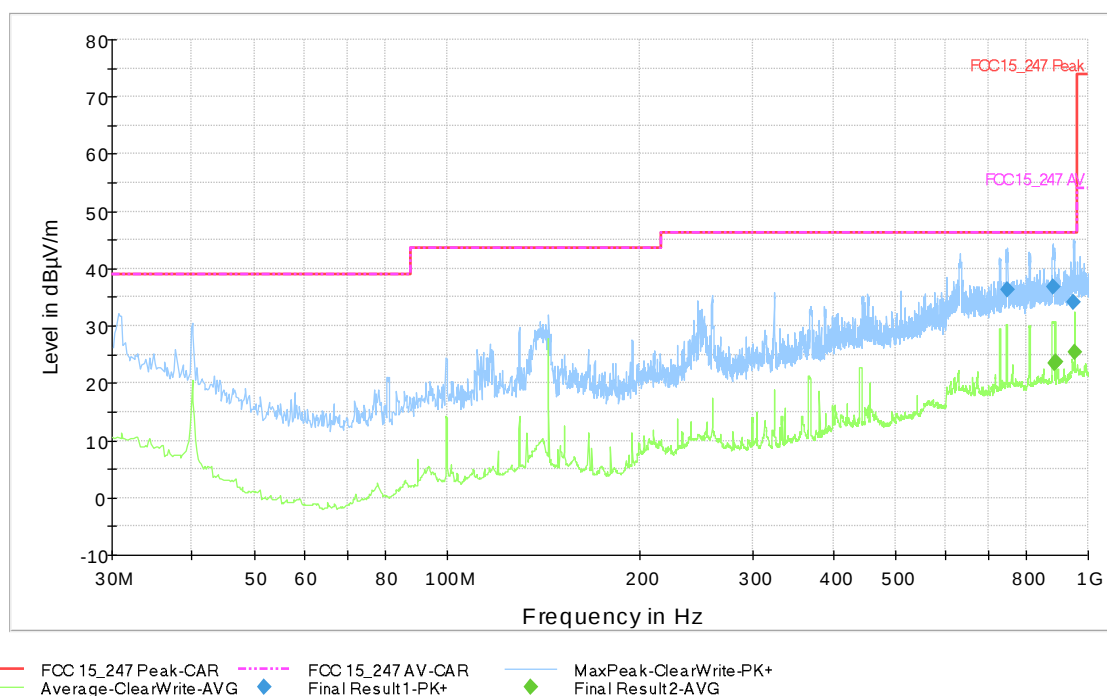
Final Result:

Frequency (MHz)	MaxPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
39.870000	38.7	99.8	97.0	0.30	39.00
928.350000	33.8	99.7	277.0	12.60	46.40
947.250000	33.7	286.8	-8.0	12.70	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
39.840000	29.1	99.8	97.0	9.90	39.00
931.470000	24.4	153.8	272.0	22.00	46.40
947.310000	25.5	179.8	-5.0	20.90	46.40

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
747.270000	36.2	283.8	97.0	10.20	46.40
881.940000	36.8	180.2	172.0	9.60	46.40
949.710000	34.1	124.7	7.0	12.30	46.40

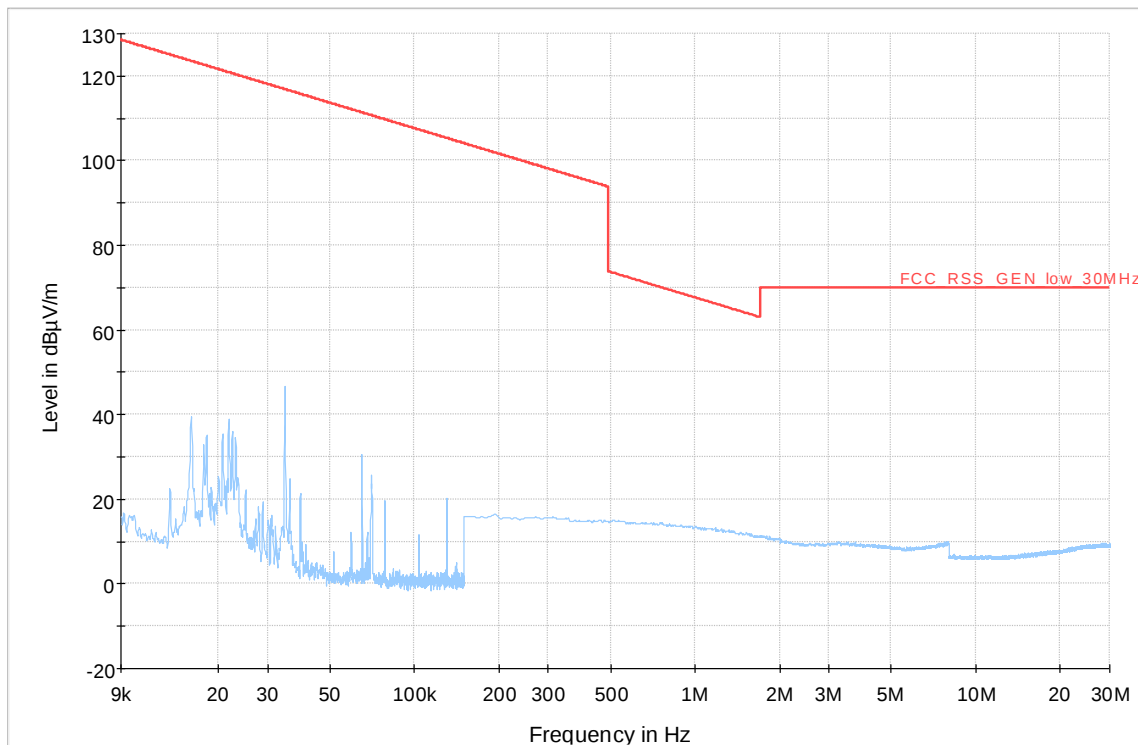
Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
884.490000	23.4	99.7	187.0	23.00	46.40
888.270000	23.7	330.0	87.0	22.70	46.40
951.510000	25.5	99.8	-4.0	20.90	46.40

Enhanced Data Rate – 3DH5

Channel 38

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz



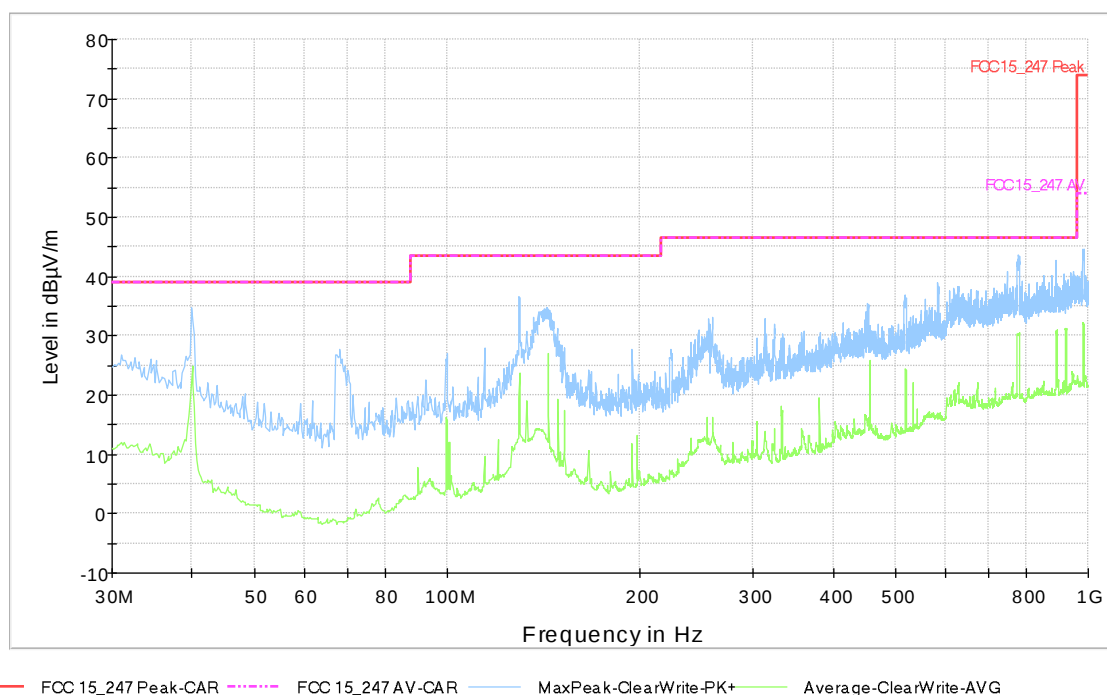
FCC_RSS_GEN_low_30MHz Average-ClearWrite-AVG

Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

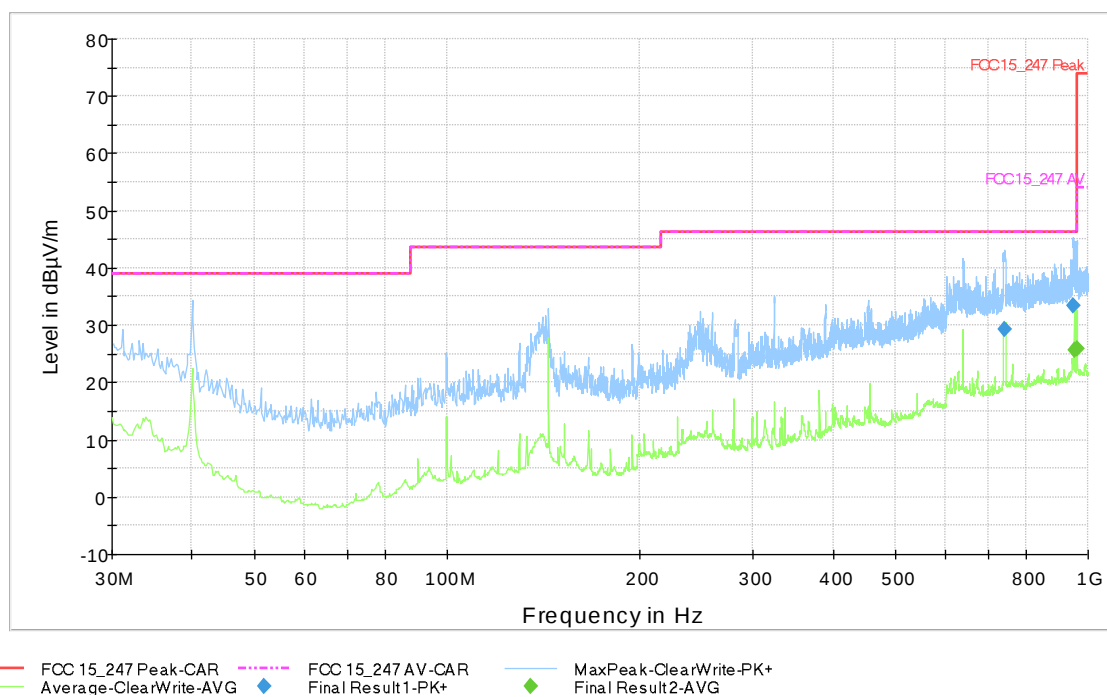
Frequency Range: 30MHz – 1GHz



Final Result:

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
740.160000	29.4	179.8	3.0	17.00	46.40
947.340000	33.3	99.7	7.0	13.10	46.40

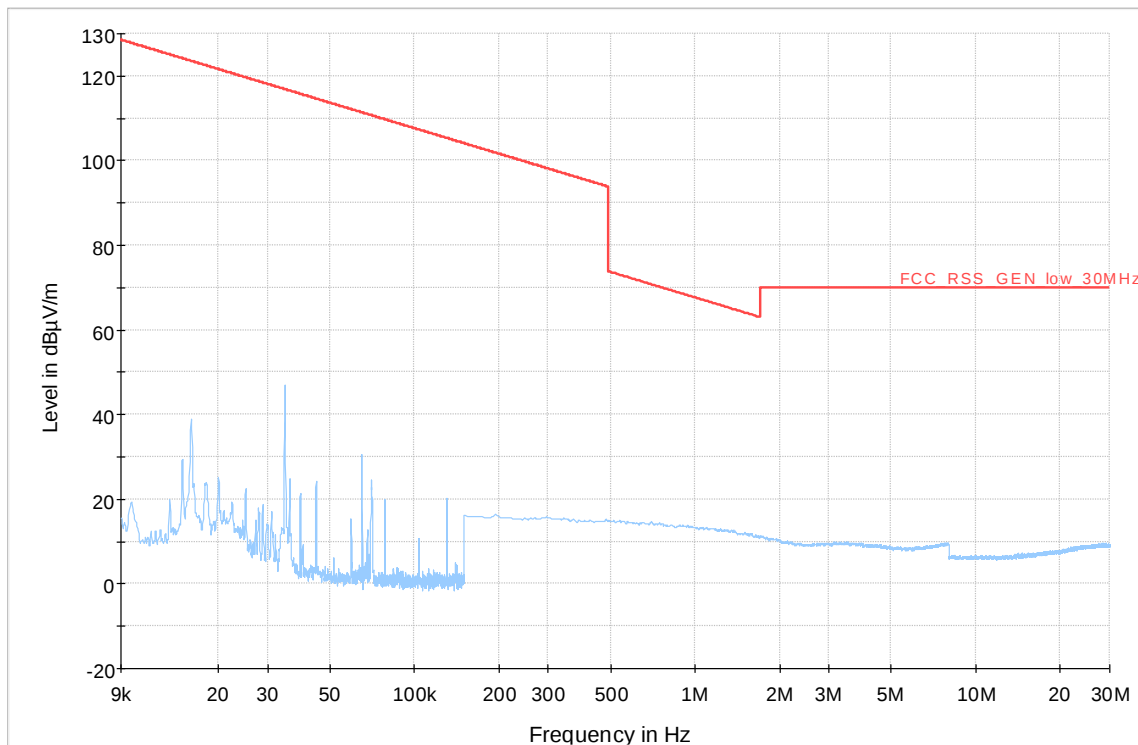
Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
951.420000	25.6	151.7	0.0	20.80	46.40
959.970000	25.9	99.8	187.0	20.50	46.40

Enhanced Data Rate – 3DH5

Channel 78

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz



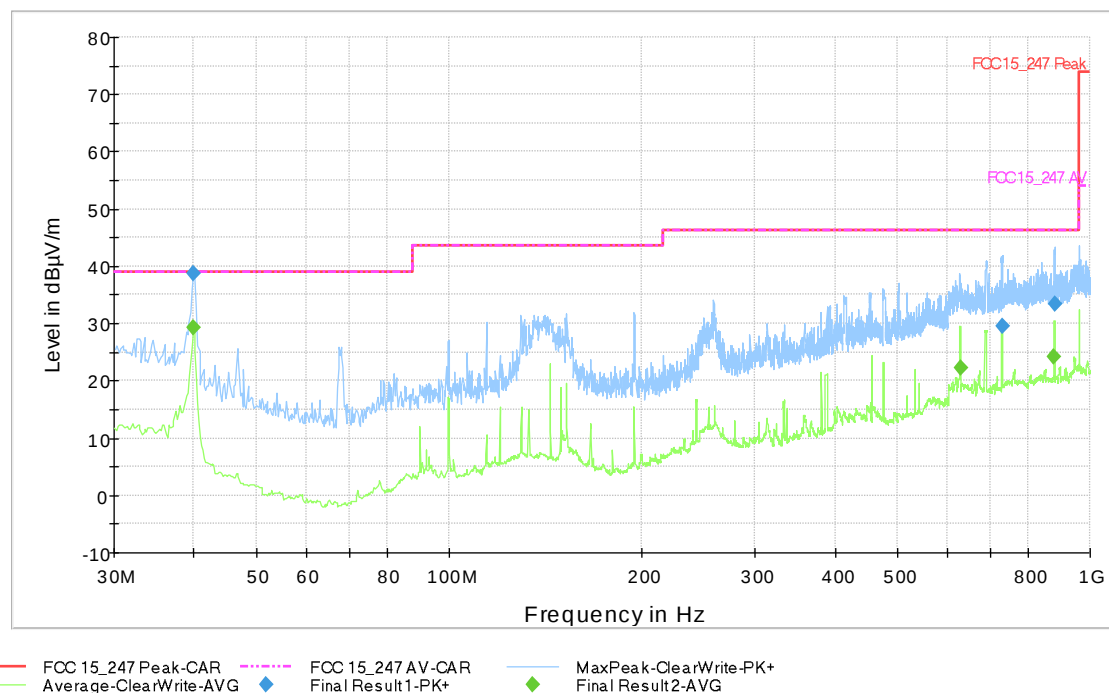
FCC_RSS_GEN_low_30MHz Average-ClearWrite-AVG

Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 30MHz – 1GHz



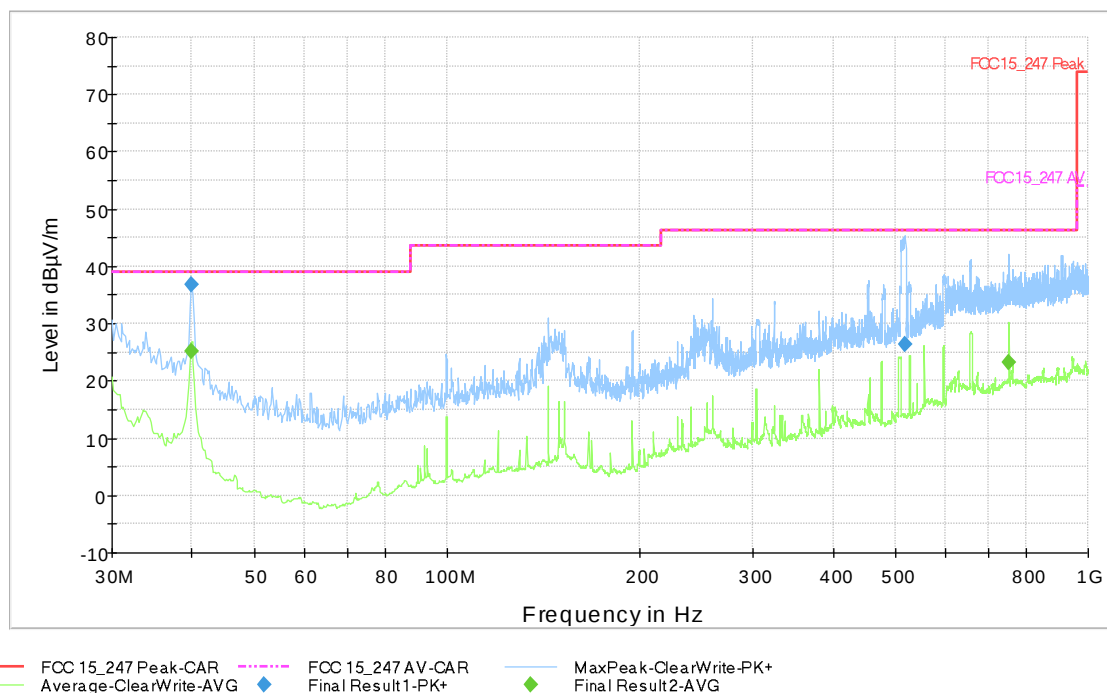
Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
39.990000	38.8	99.9	90.0	0.20	39.00
729.060000	29.5	312.8	97.0	16.90	46.40
880.920000	33.5	99.7	97.0	12.90	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
39.840000	29.2	99.7	97.0	9.80	39.00
627.390000	22.2	125.8	264.0	24.20	46.40
879.570000	24.2	154.8	82.0	22.20	46.40

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
39.870000	36.7	257.9	97.0	2.30	39.00
517.680000	26.3	99.7	277.0	20.10	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
39.840000	25.1	282.8	82.0	13.90	39.00
750.510000	23.2	99.7	262.0	23.20	46.40

TEST 10.

TRANSMITTER RADIATED EMISSIONS > 1GHZ

REFERENCE DOCUMENT

According to § 15.247 (d) and § 15.209 (a)

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)).

• TEST SETUP	Acc. To ref. Std.					
• TEST LOCATION	Semi-Anechoic Chamber					
• DISTANCE OF MEASUREMENT	3m					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2023	03/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2023	02/2024
	Horn antenna	Electro Metrics	EM-6961	100437	10/2020	10/2023
	Horn antenna + Low Noise Preamplifier	Bonn Elektronik	BLMA 1840-1A	262WL80452	04/2023	04/2025
	High pass filter	Waineright	WHK 2,8/15G	1	10/2021	10/2023
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 6.6					
• FREQUENCY RANGE	1GHz – 10GHz					
• LIMITS	Acc. To ref. Std.					
• UNCERTAINTY OF MEASURE	Level of confidence = 95% (k=2)					
	Expanded uncertainty 1GHz – 18GHz = 5,15 dB					
	Expanded uncertainty 18GHz – 26GHz = 5,82 dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	85 - 106kPa (860mbar - 1060mbar)	960 mbar

OPERATING CONDITION: #1, #2, #3

RESULT: **WITHIN THE LIMITS**

Note: The plots shown only the results of Modulation DH5 and 3DH5 because are the worst case

MEASUREMENT PARAMETER 1GHz - 10GHz

Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Span:	See plots below
Sweep time	Auto couple
Detector:	Peak
Trace-Mode:	Max. hold

TEST DESCRIPTION

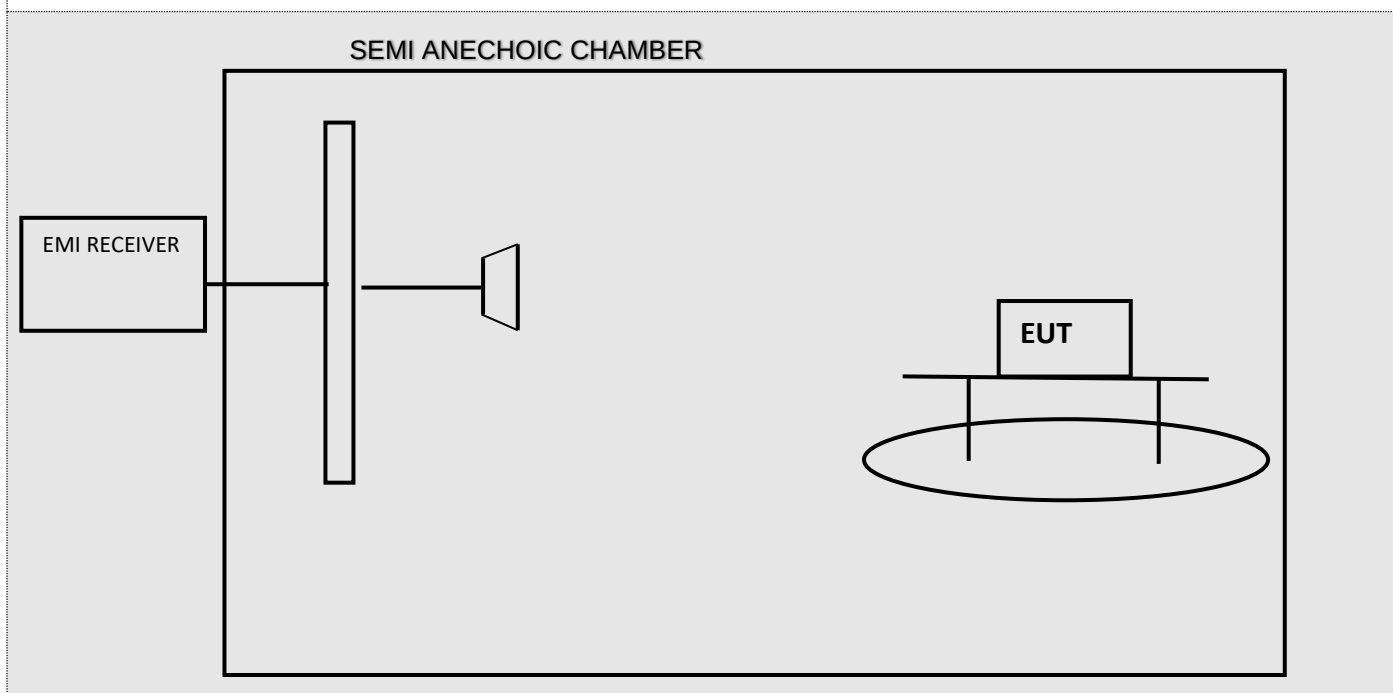
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency.

The EUT is placed at test table height is 1.5 m

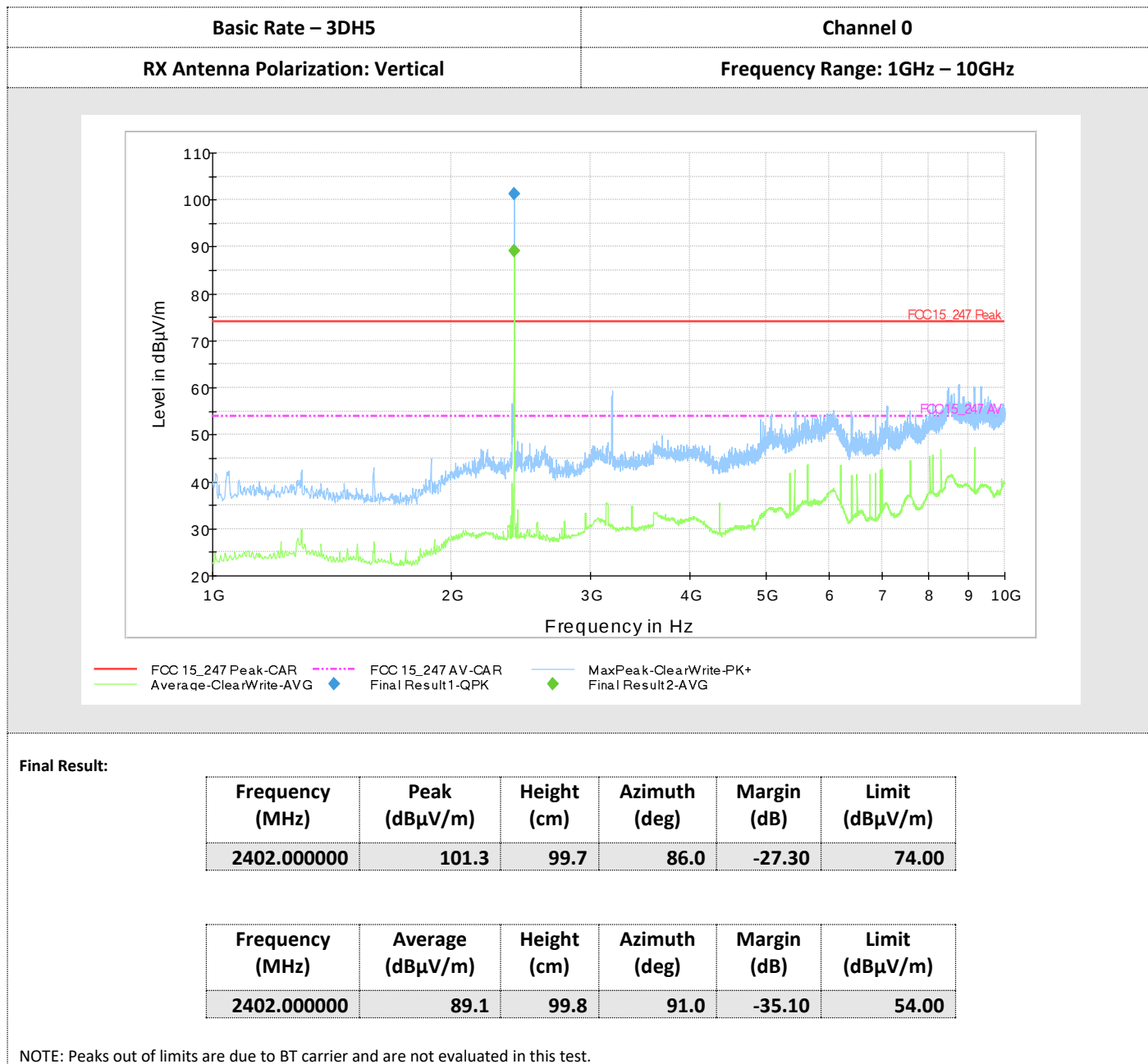
Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

TEST SETUP BLOCK DIAGRAM

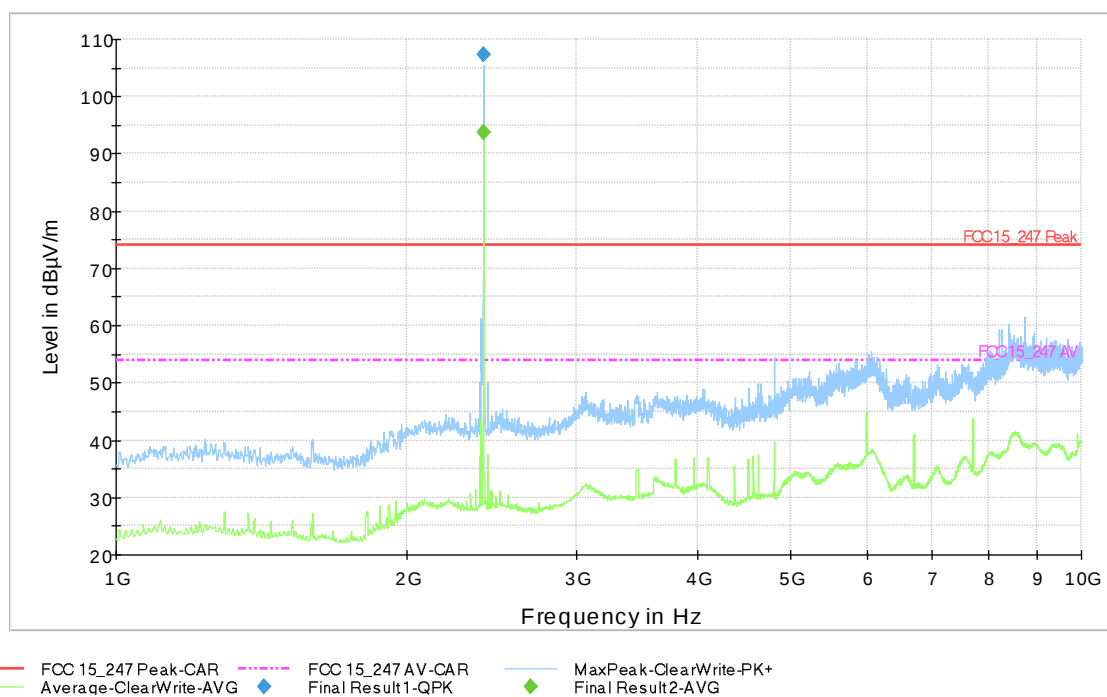


TEST RESULTS



RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

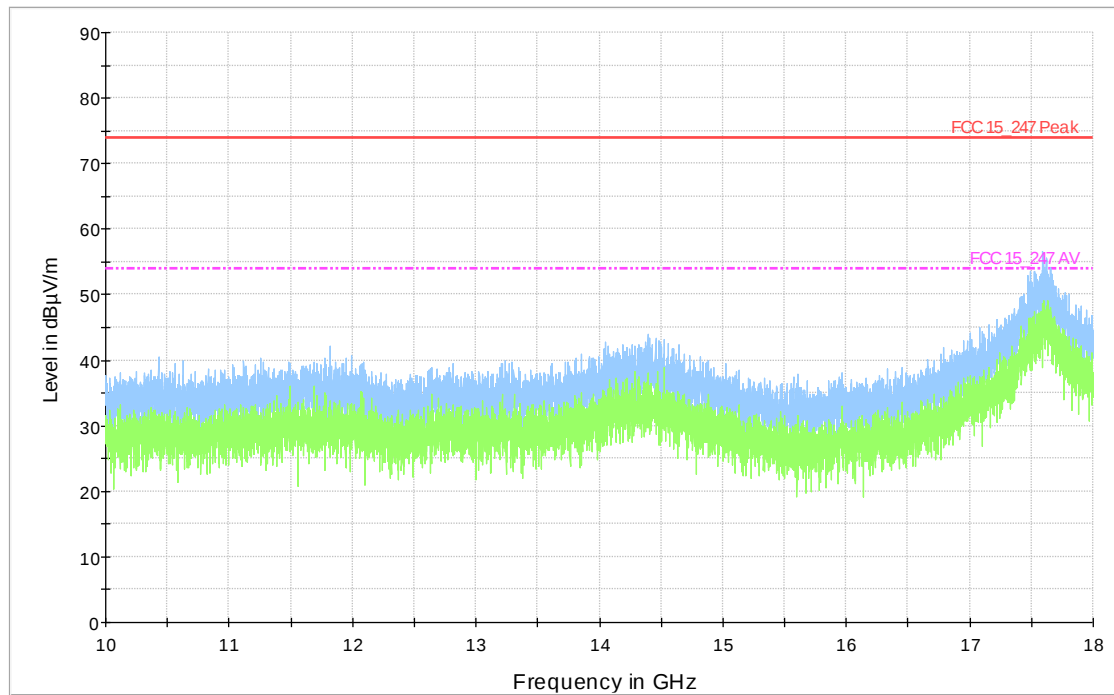
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	107.4	125.8	82.0	-33.40	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	93.8	123.8	82.0	-39.80	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

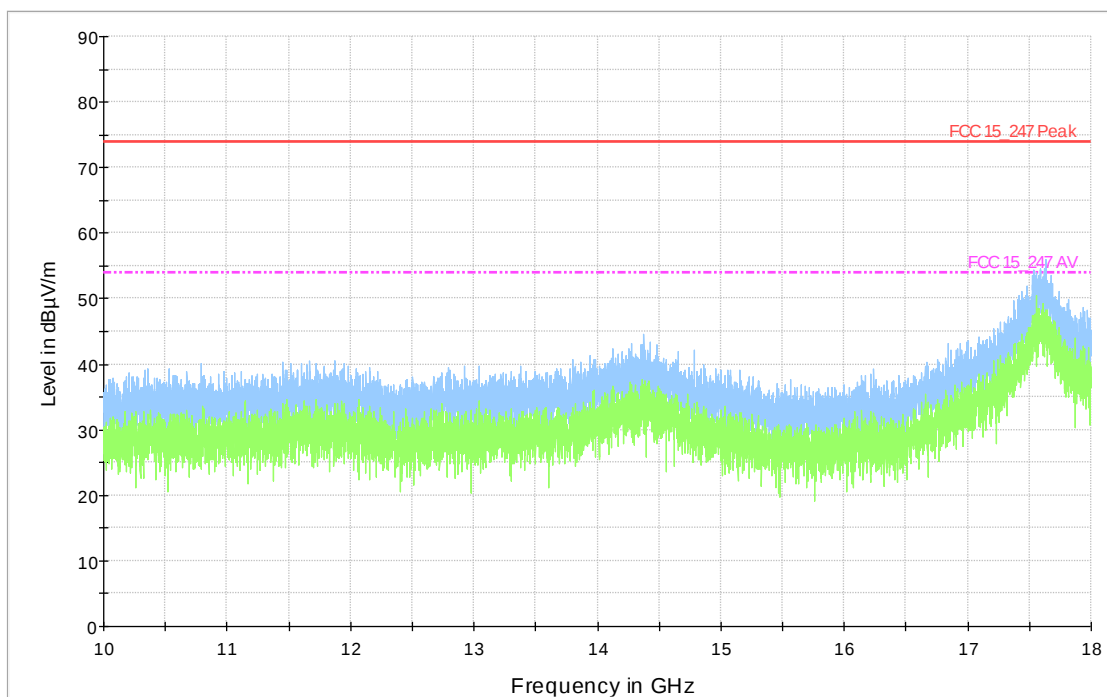


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

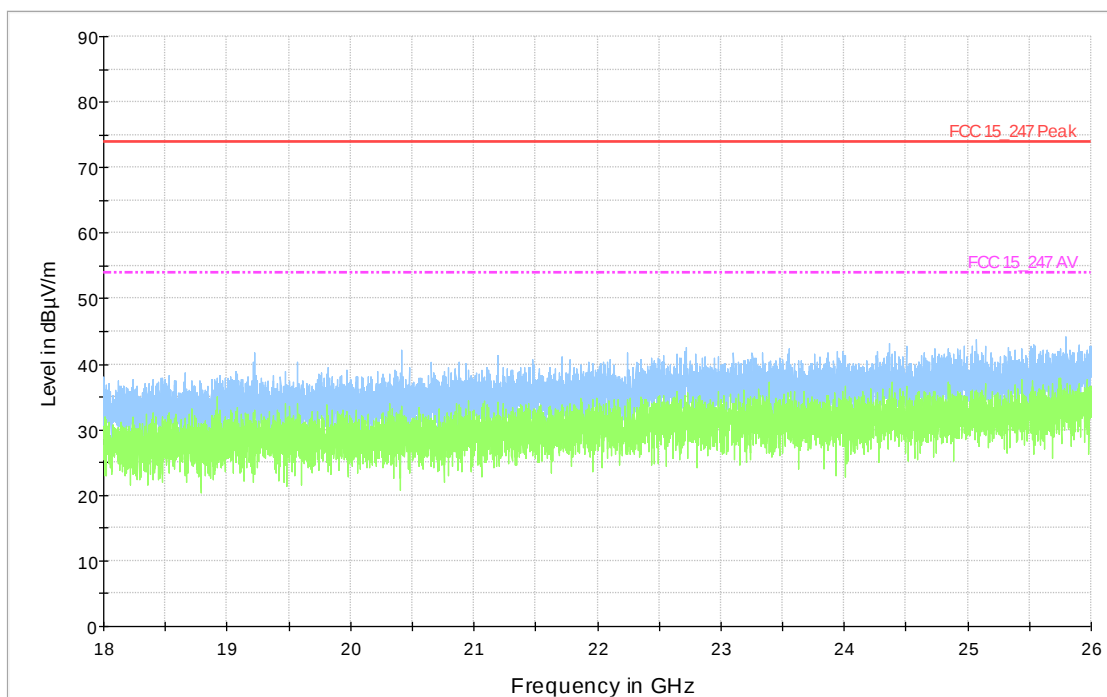


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

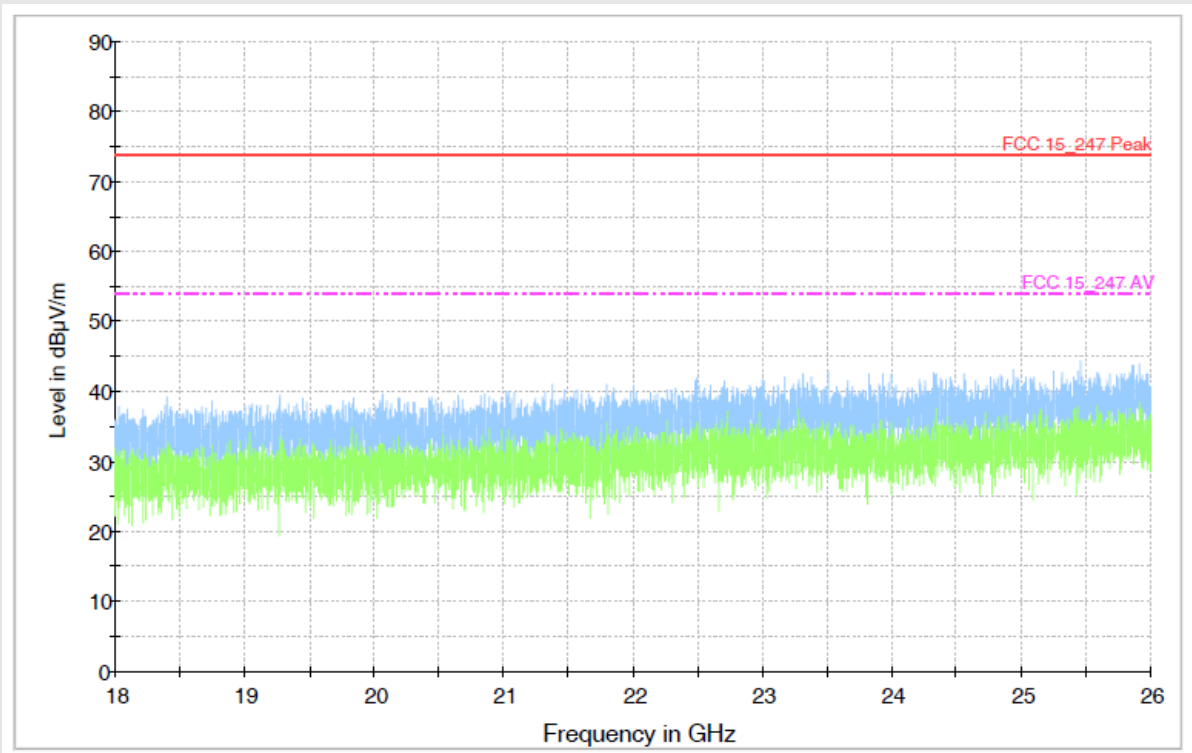


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

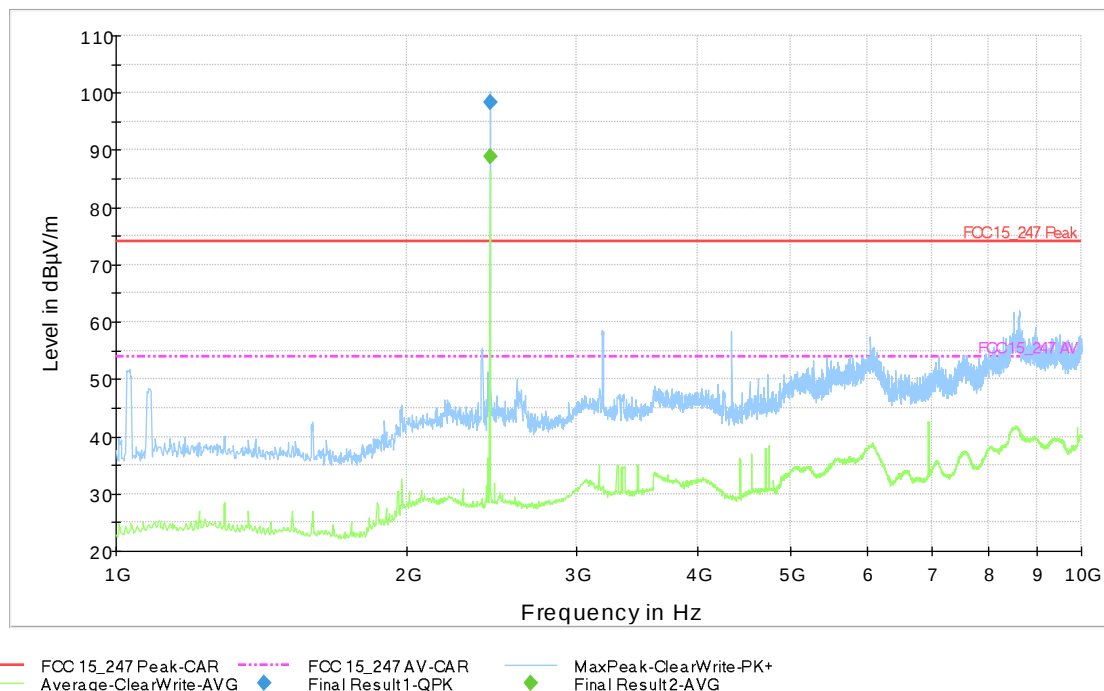
All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

Basic Rate – 3DH5

Channel 38

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz



Final Result:

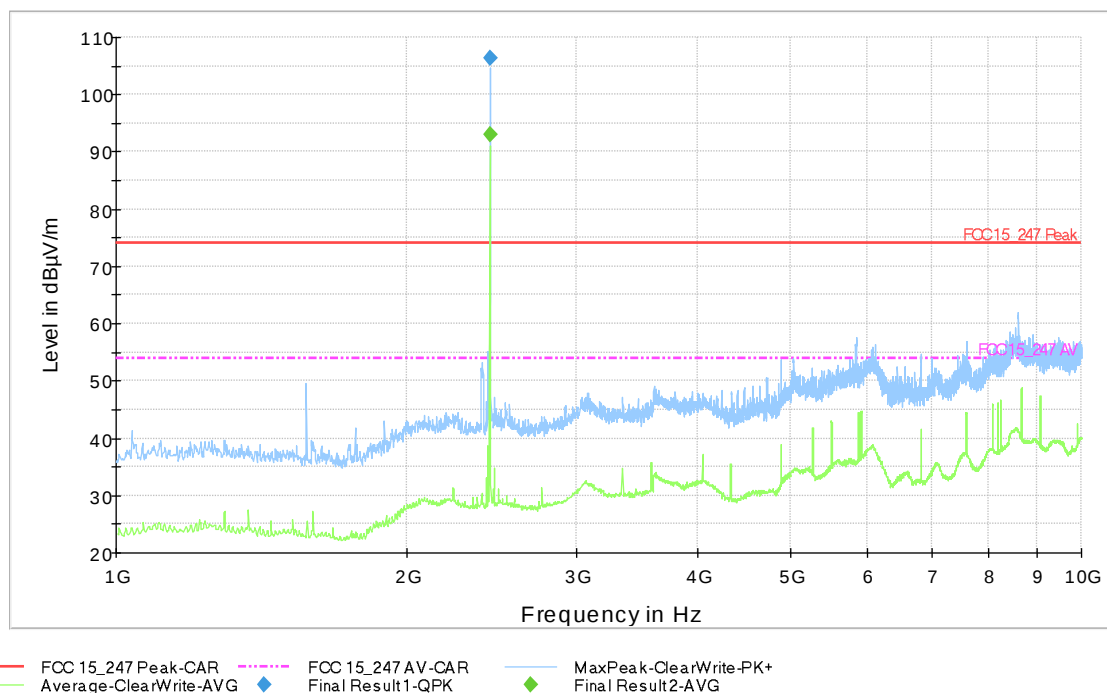
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	98.3	123.8	90.0	-24.30	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	89.0	99.9	90.0	-35.00	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

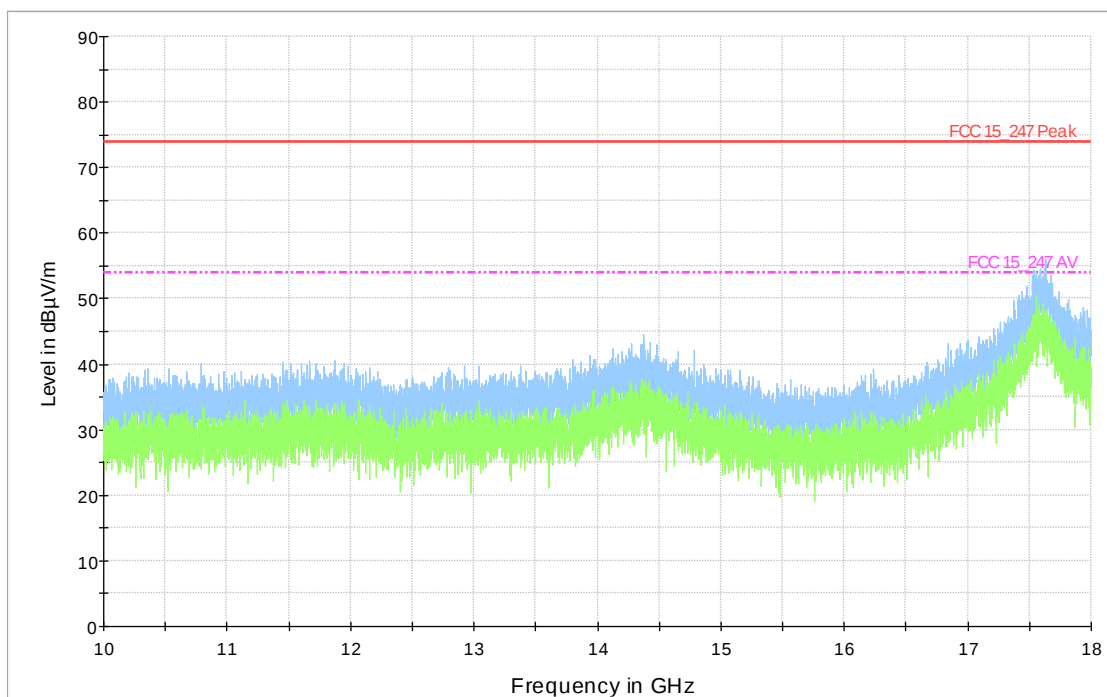
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	106.2	99.9	82.0	-32.20	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	93.1	99.9	82.0	-39.10	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

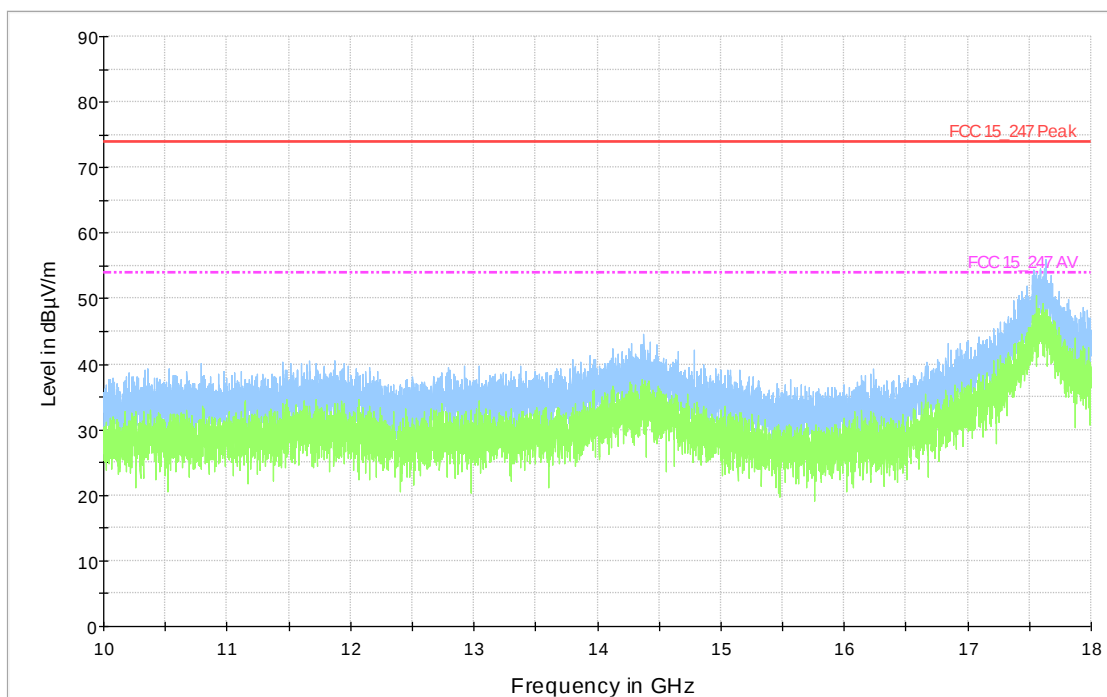


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

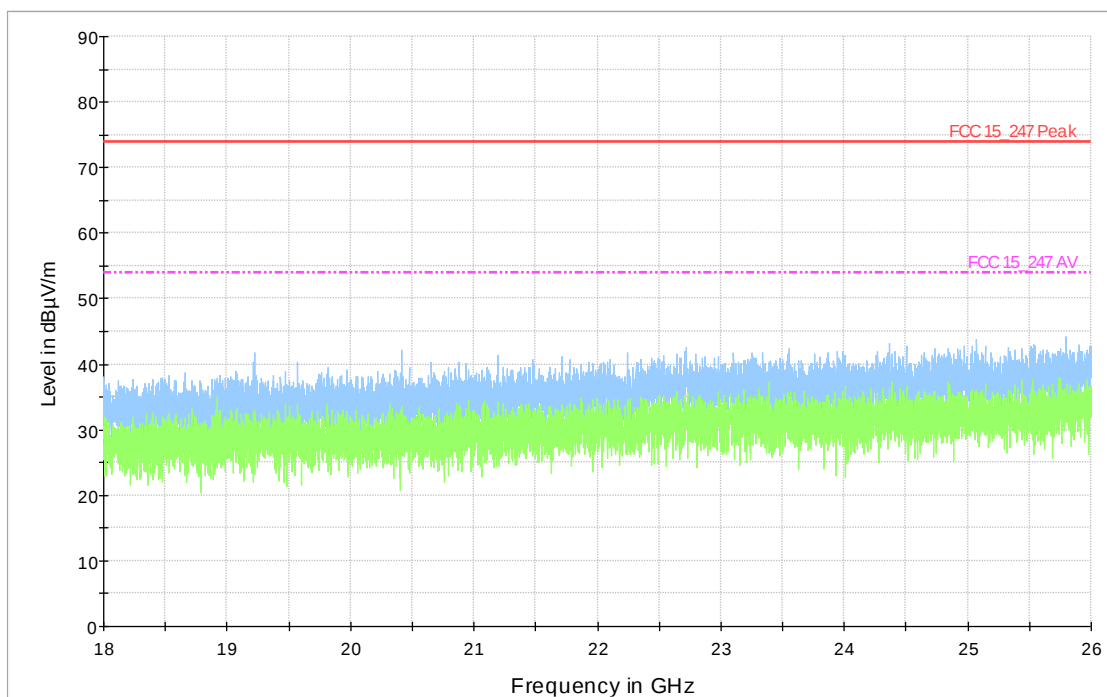


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

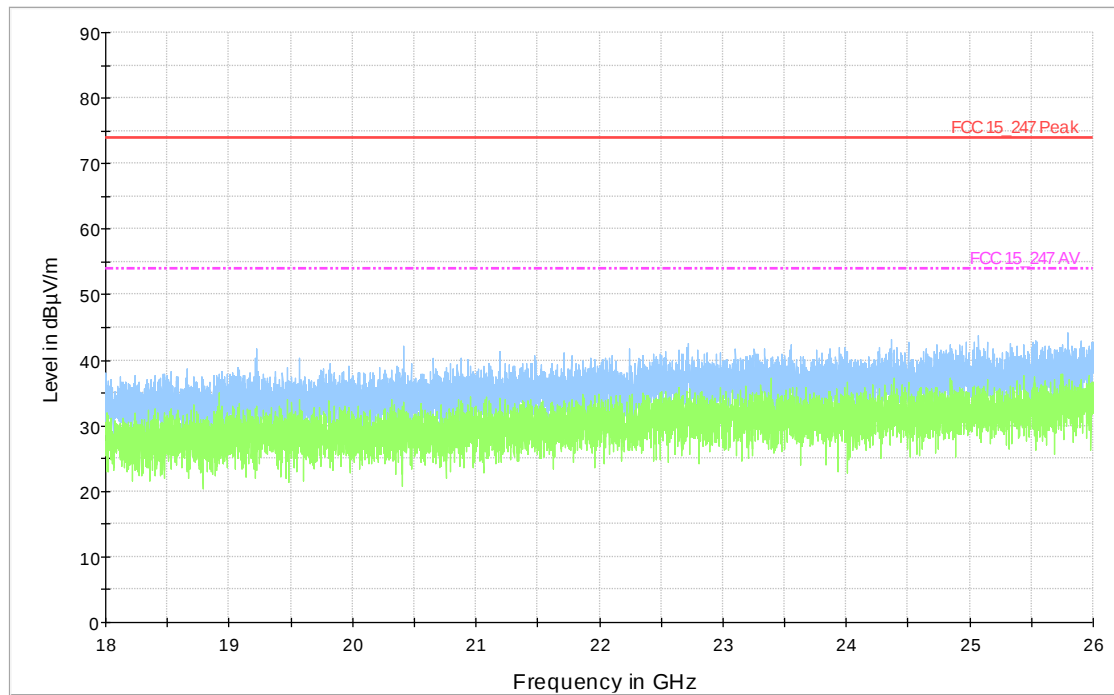


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

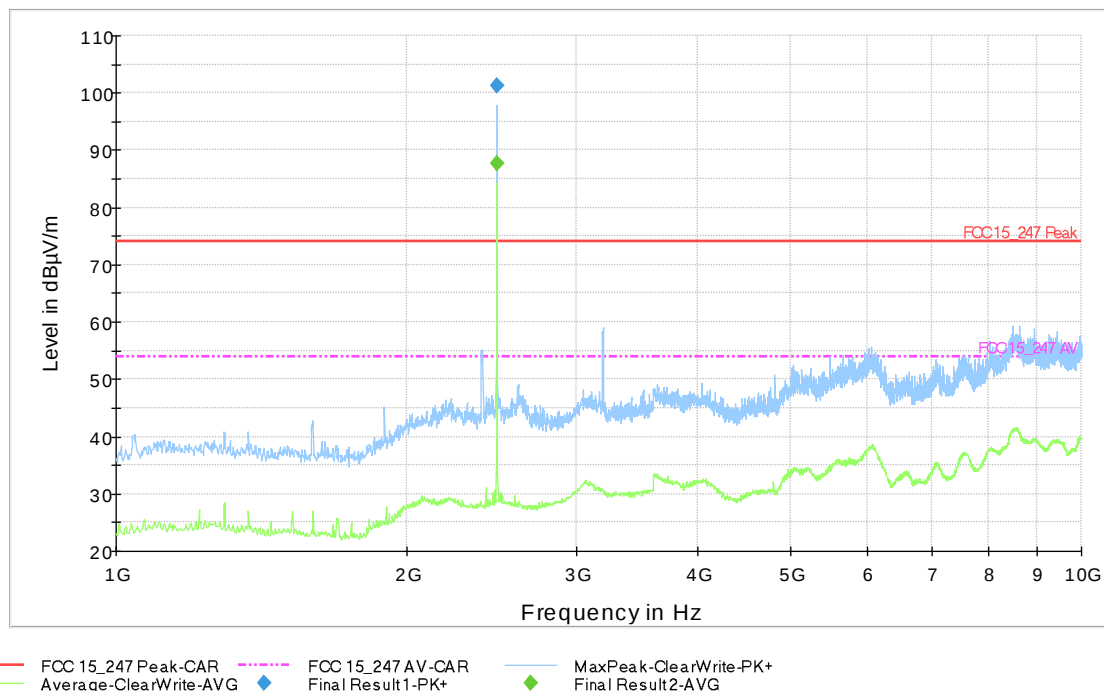
All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

Basic Rate – 3DH5

Channel 78

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz



Final Result:

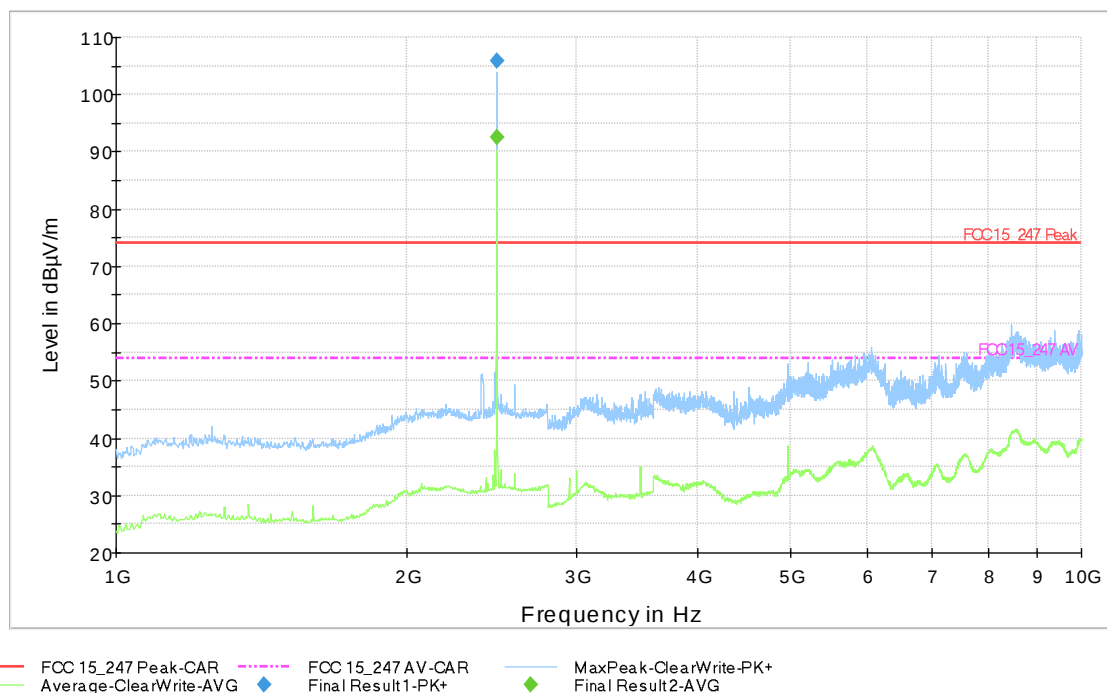
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	101.2	99.8	-8.0	-27.20	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	87.8	99.7	-8.0	-33.80	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

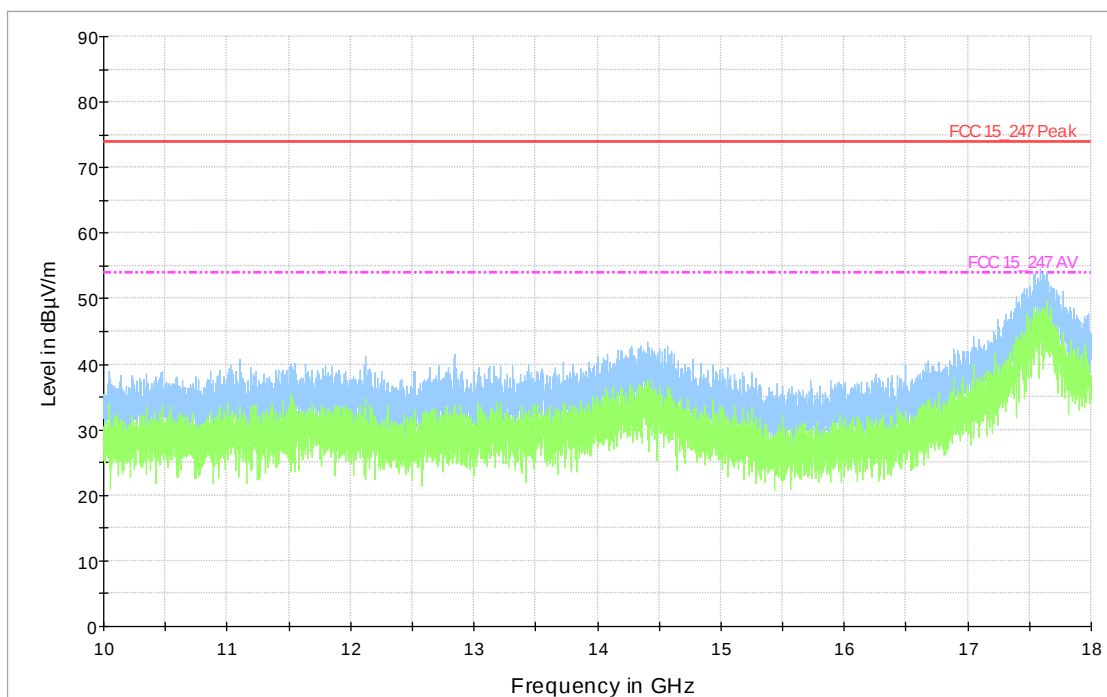
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	105.8	128.8	82.0	-31.80	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	92.6	124.8	82.0	-38.60	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

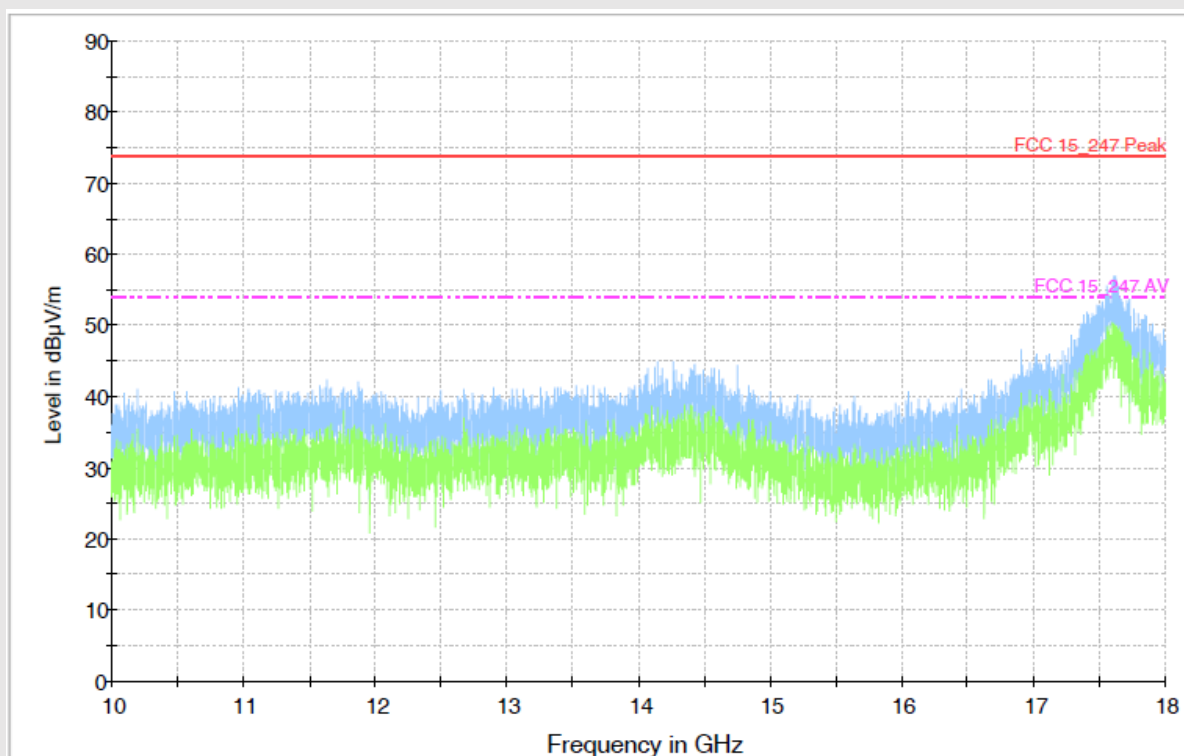


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

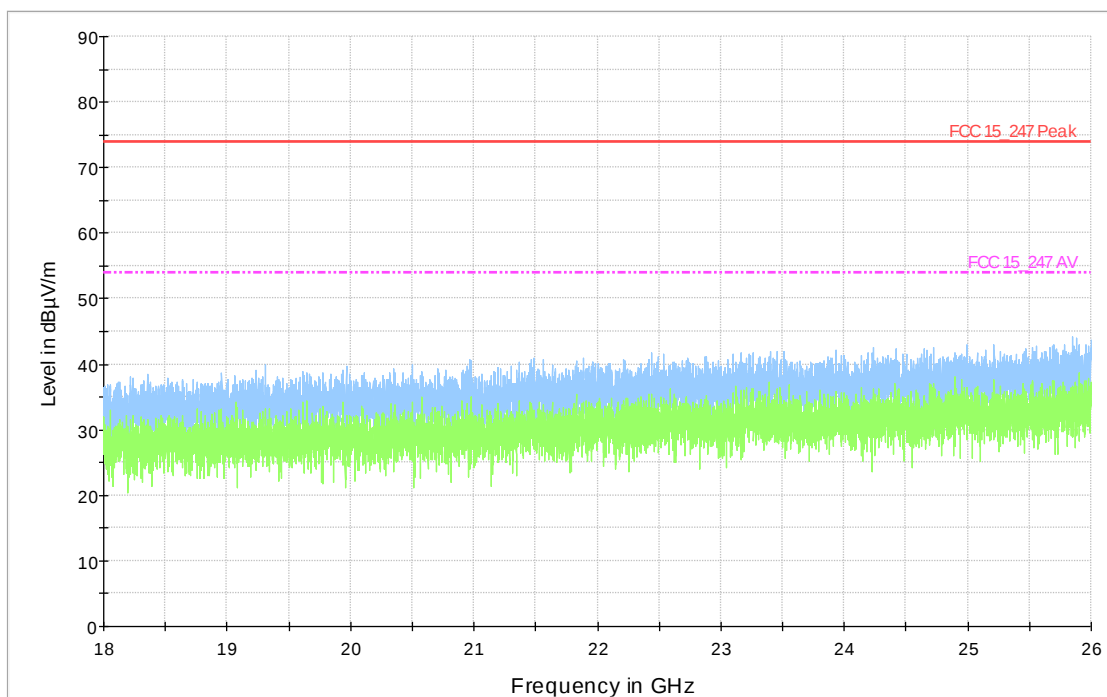


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

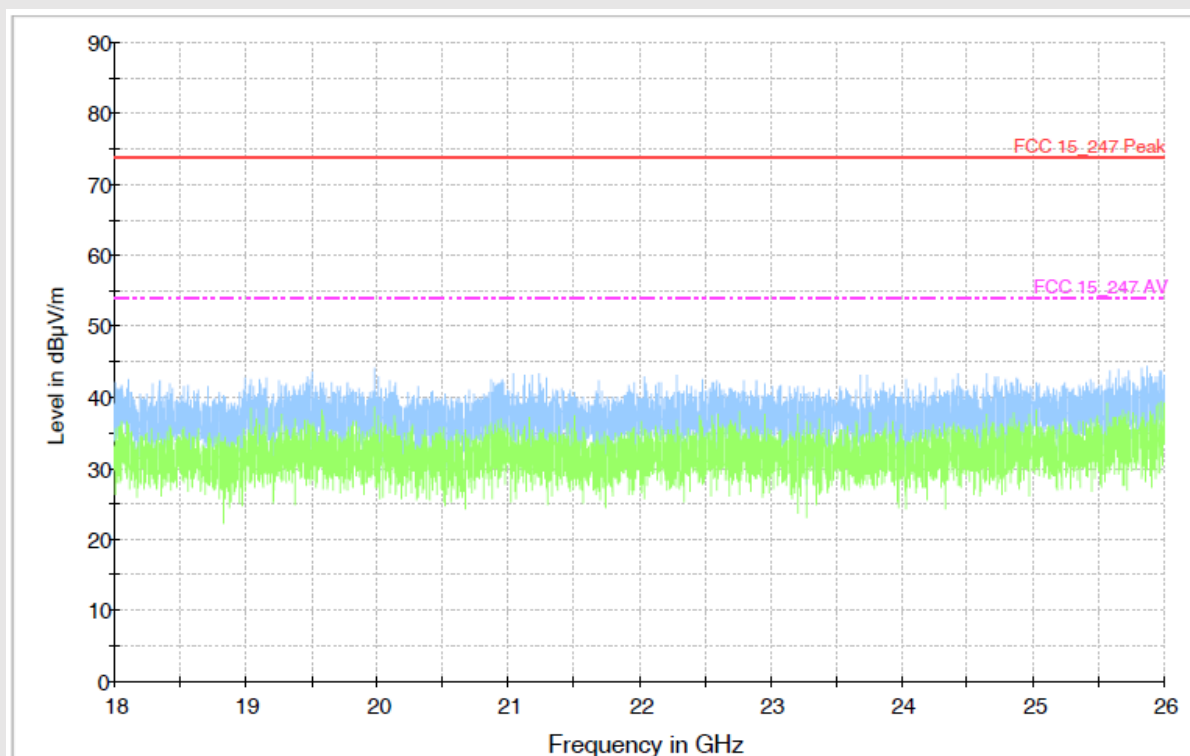


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

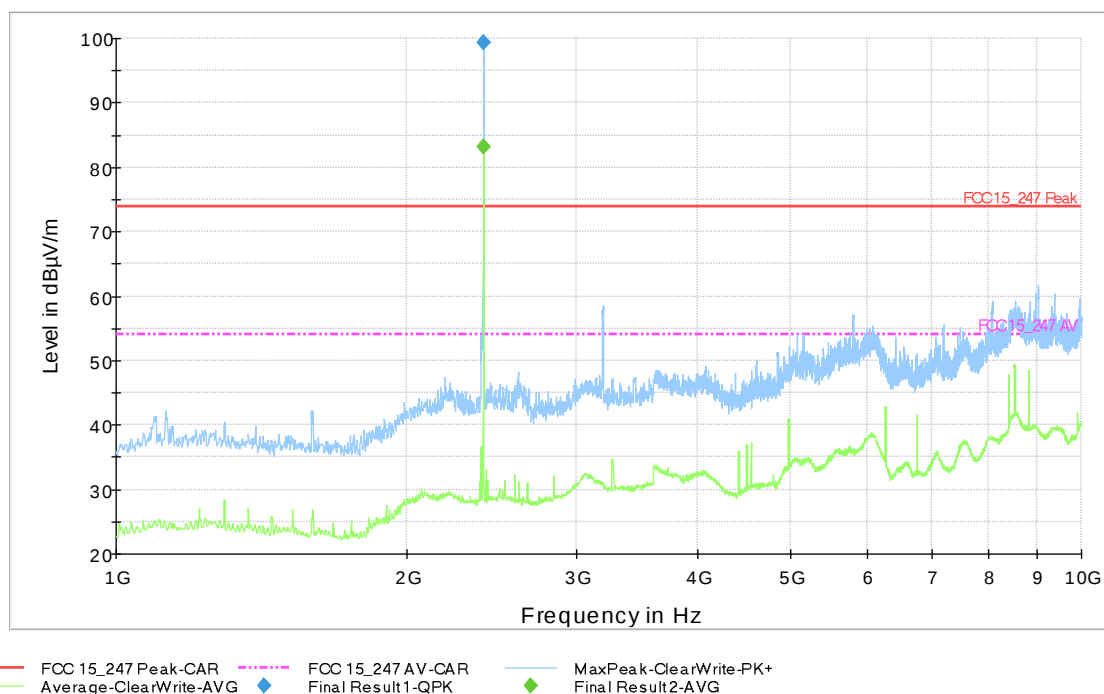
All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

Enhanced Data Rate – 3DH5

Channel 0

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz



Final Result:

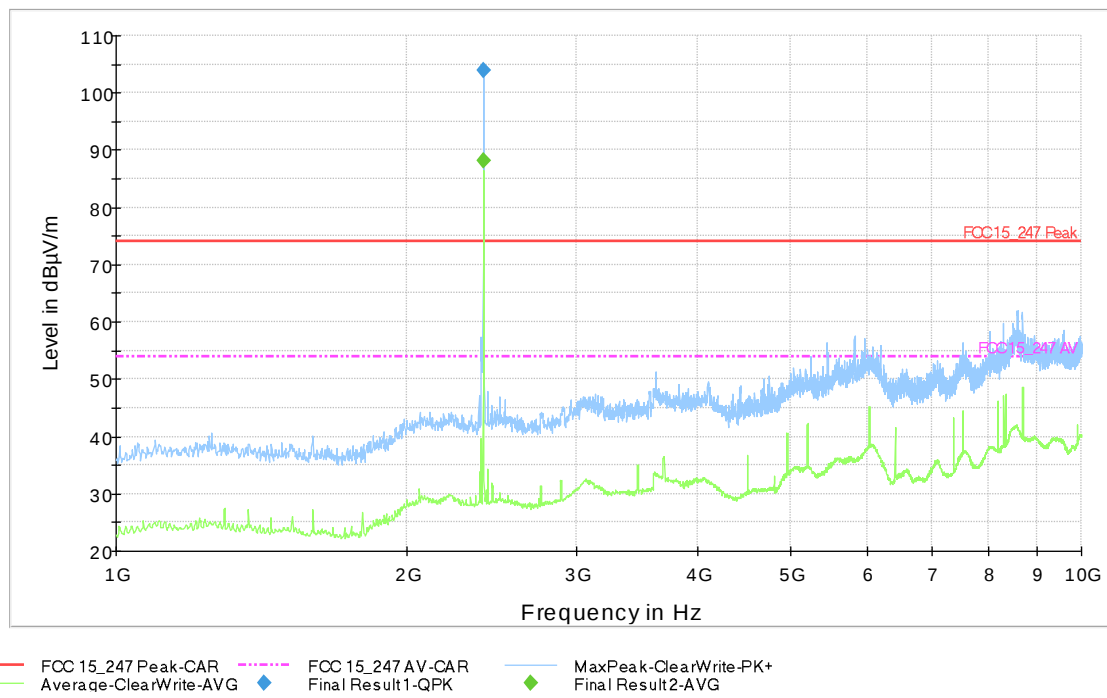
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	99.3	99.8	90.0	-25.30	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	83.3	99.8	85.0	-29.30	54.00

NOTE: Peaks out of limits are due to BLE carrier and are not evaluated in this test.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

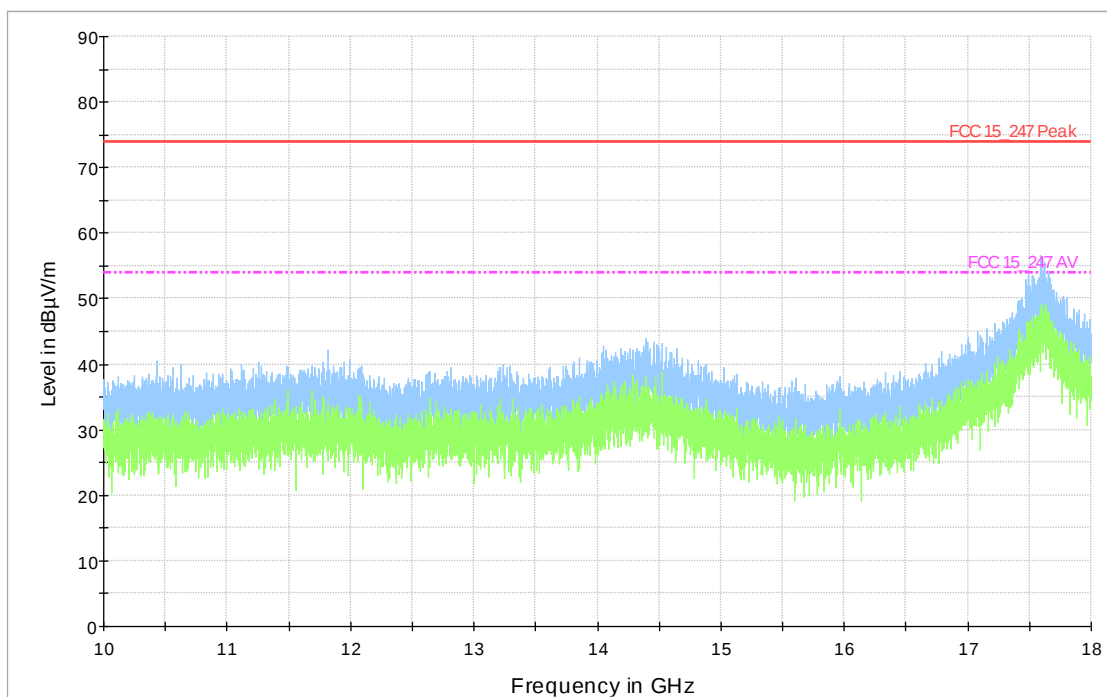
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	104.0	124.9	82.0	-30.00	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	88.1	99.7	82.0	-34.10	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

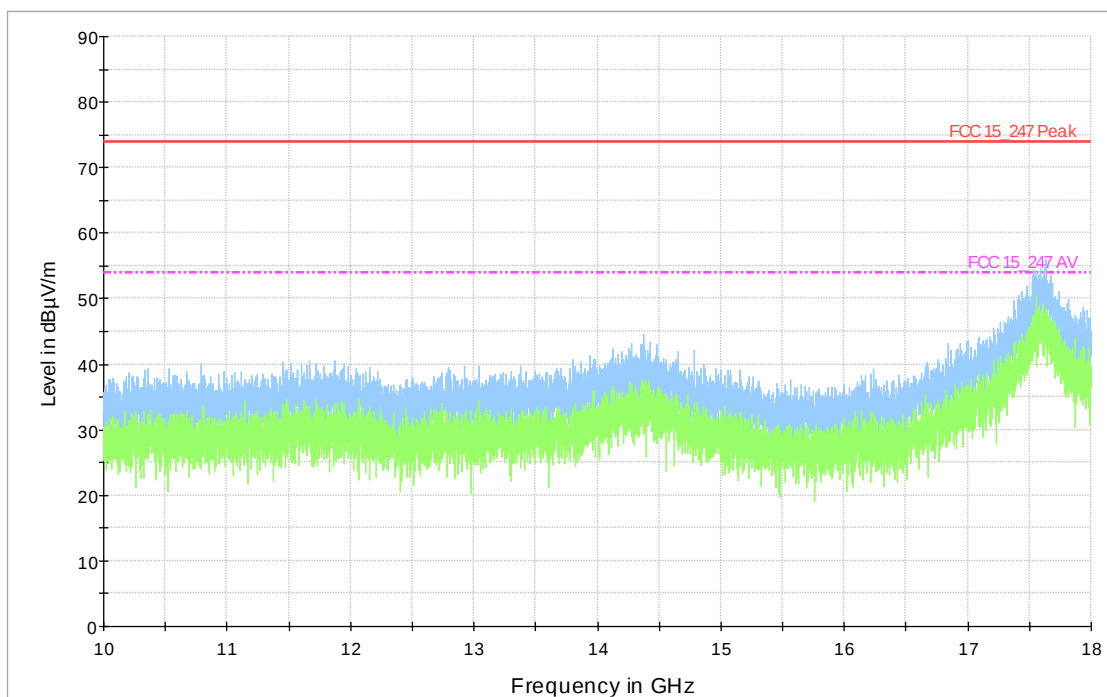


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

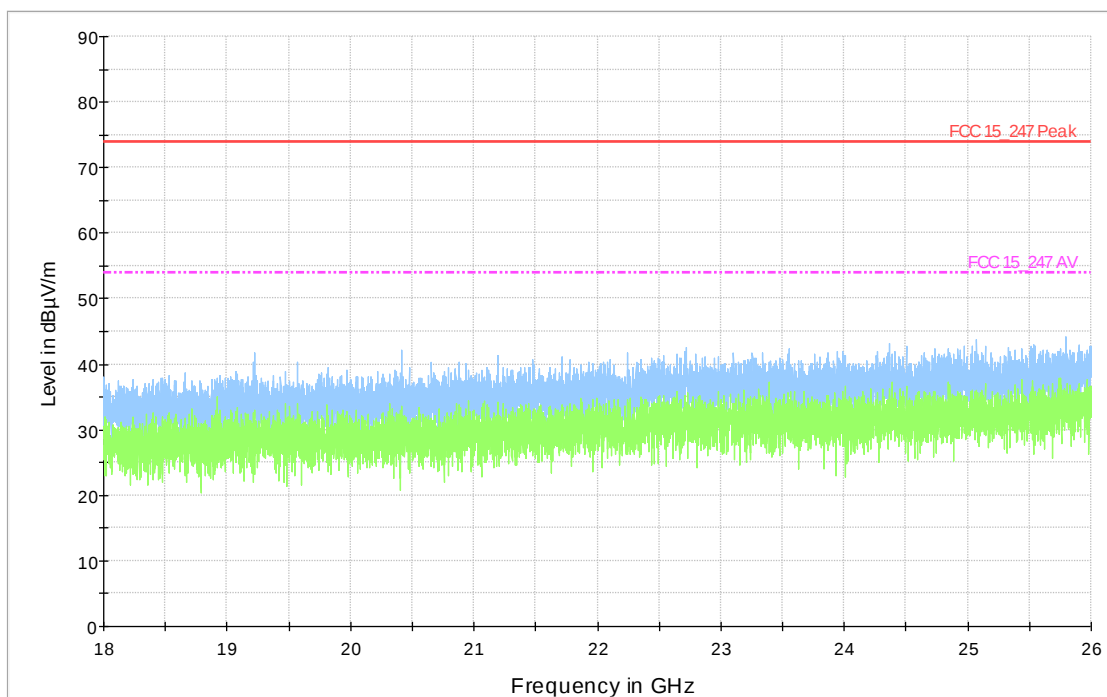


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

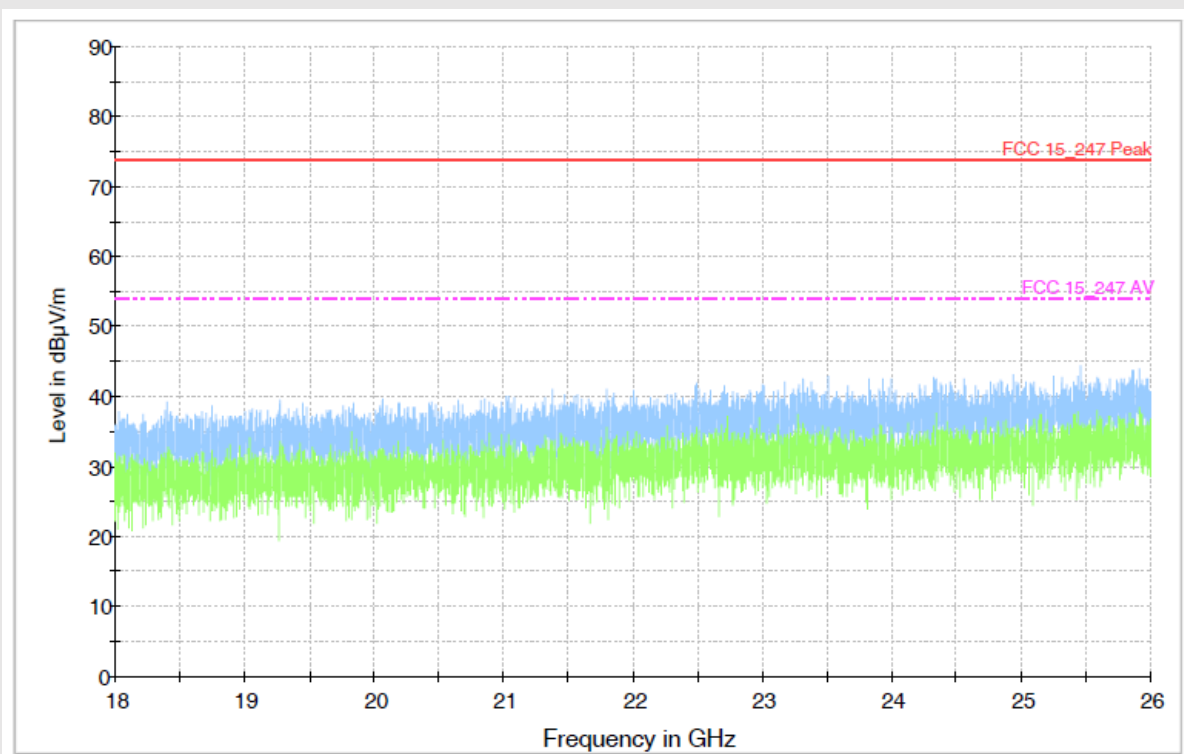


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

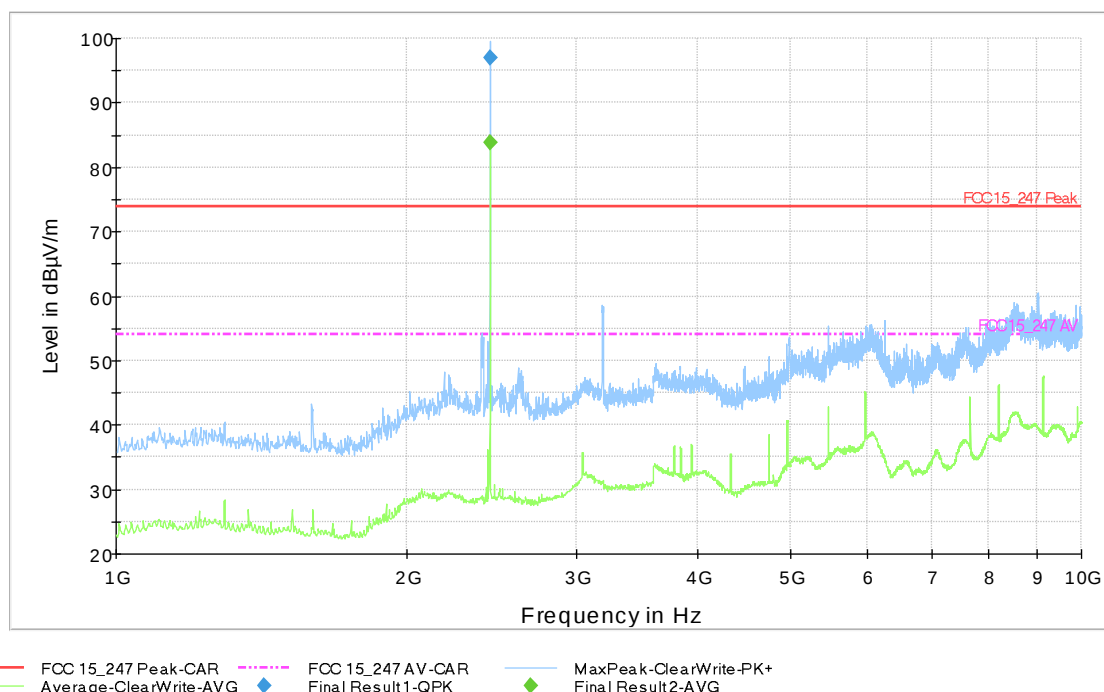
All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

Enhanced Data Rate – 3DH5

Channel 38

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz



Final Result:

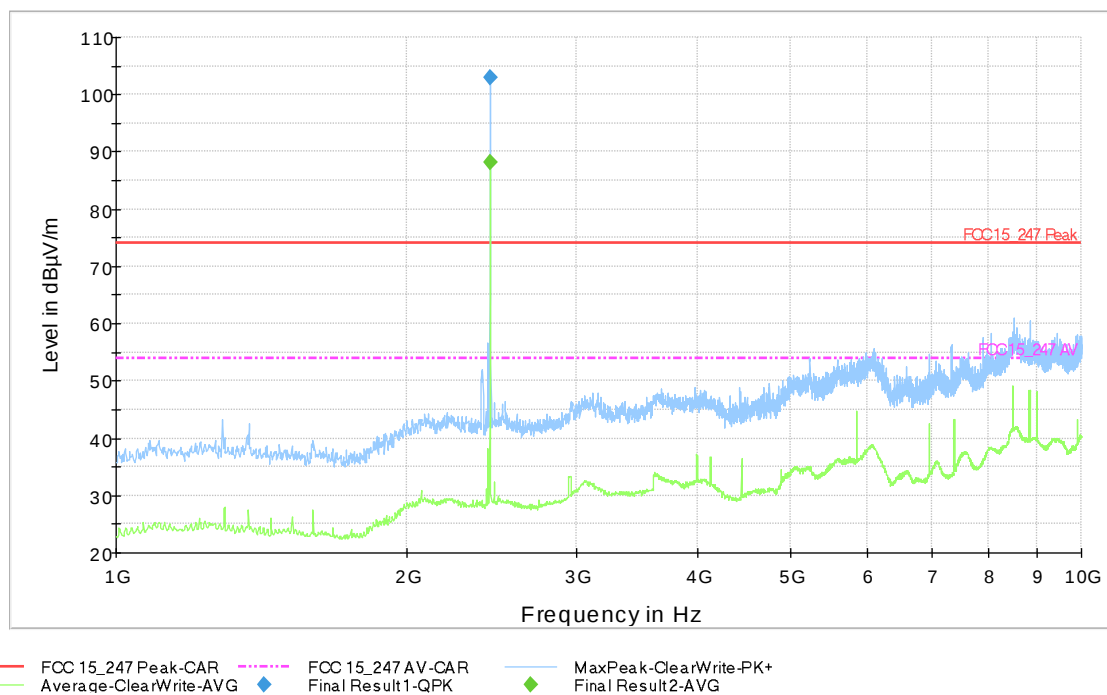
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	96.9	125.8	92.0	-22.90	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	83.8	99.7	85.0	-29.80	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

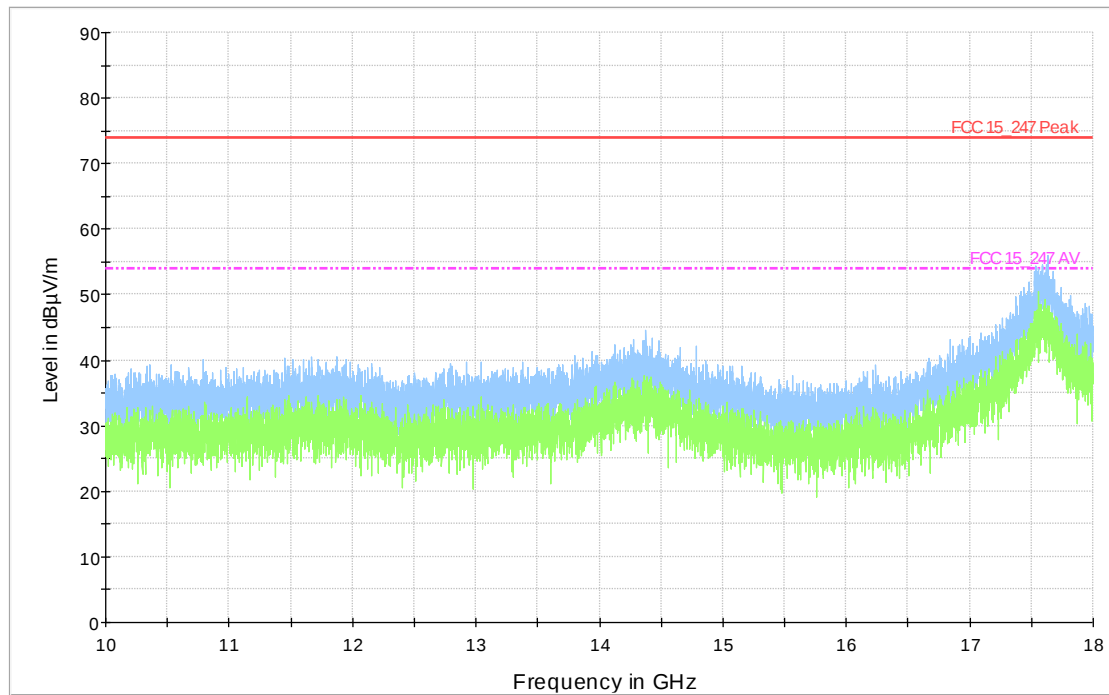
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	103.1	99.7	82.0	-29.10	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	88.1	99.7	82.0	-34.10	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

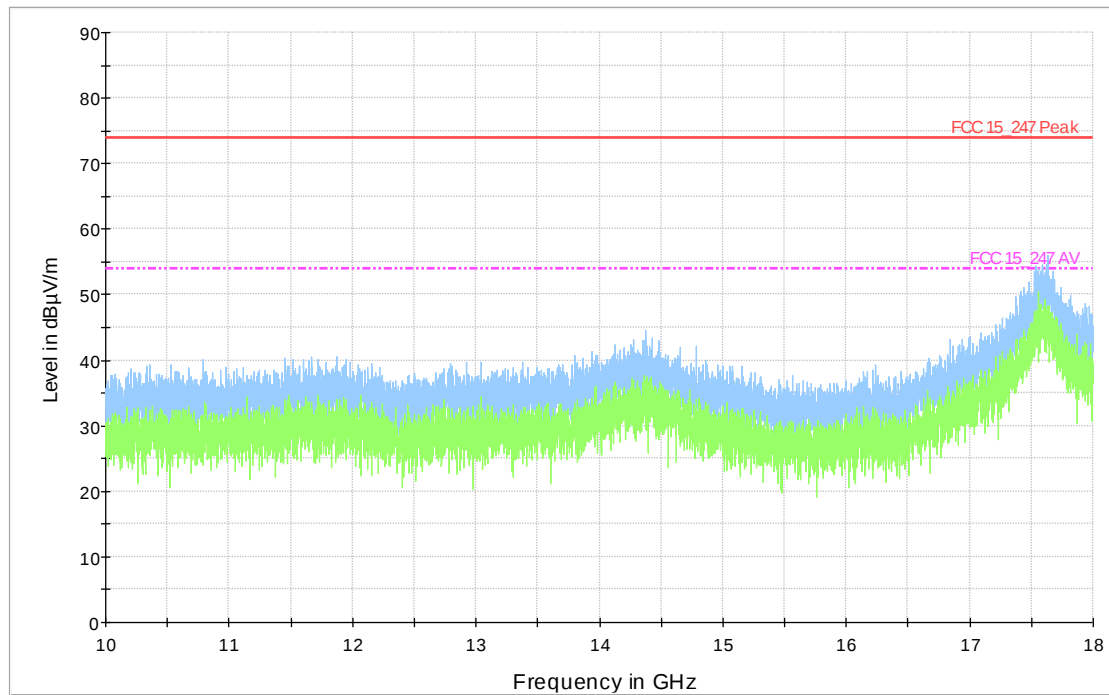


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

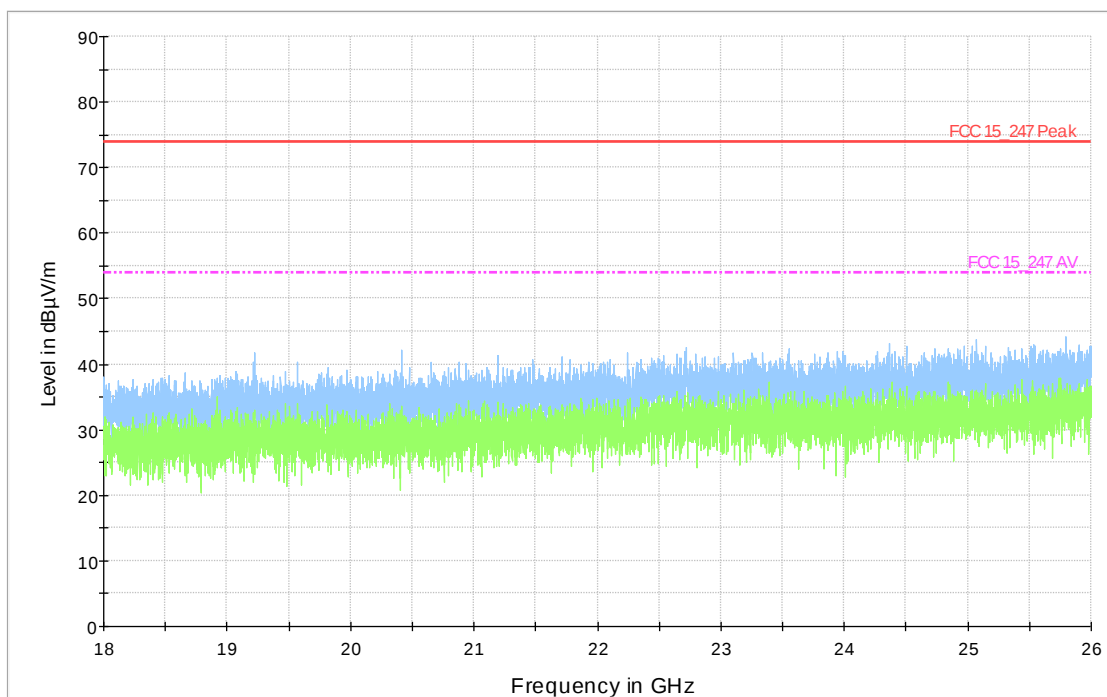


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

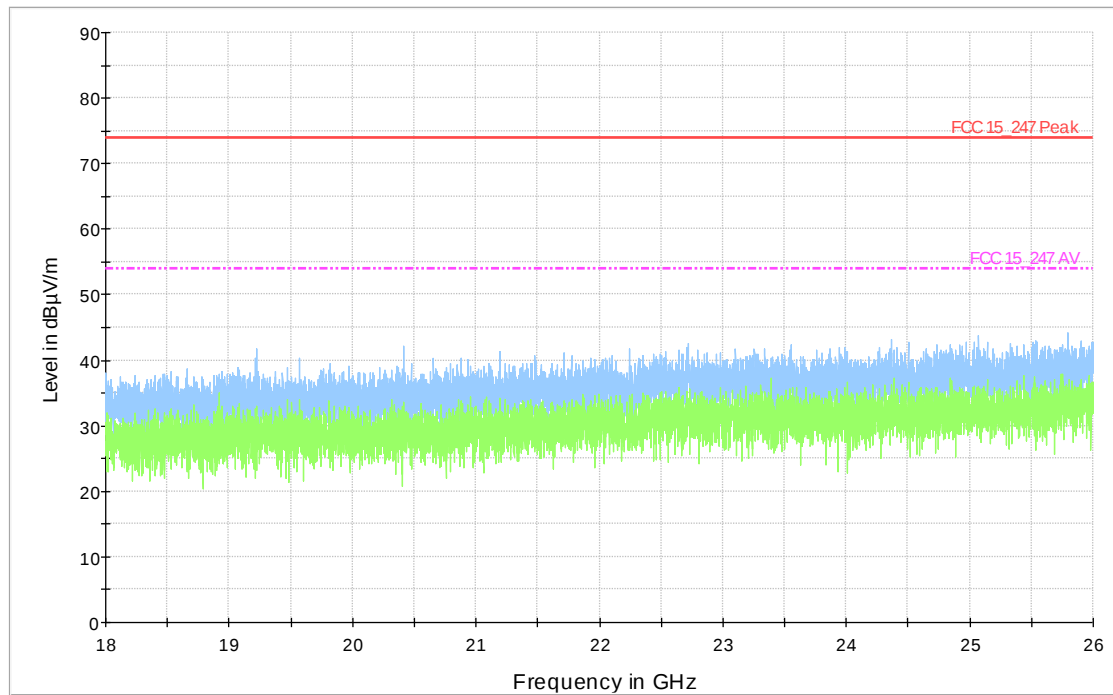


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

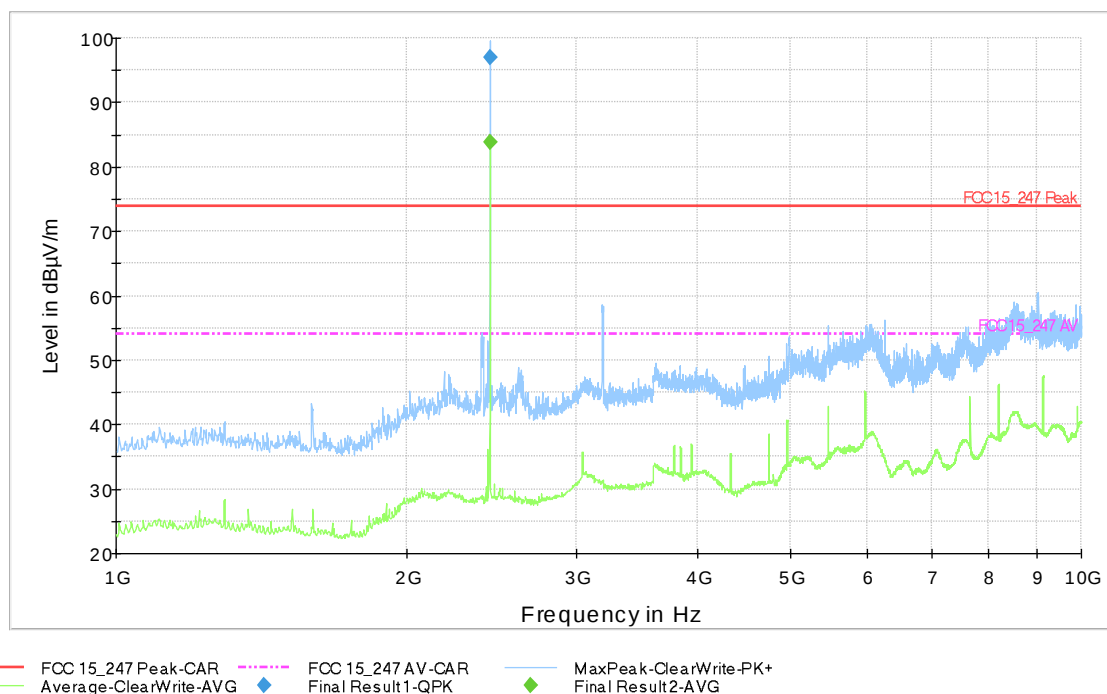
All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

Enhanced Data Rate – 3DH5

Channel 78

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz



Final Result:

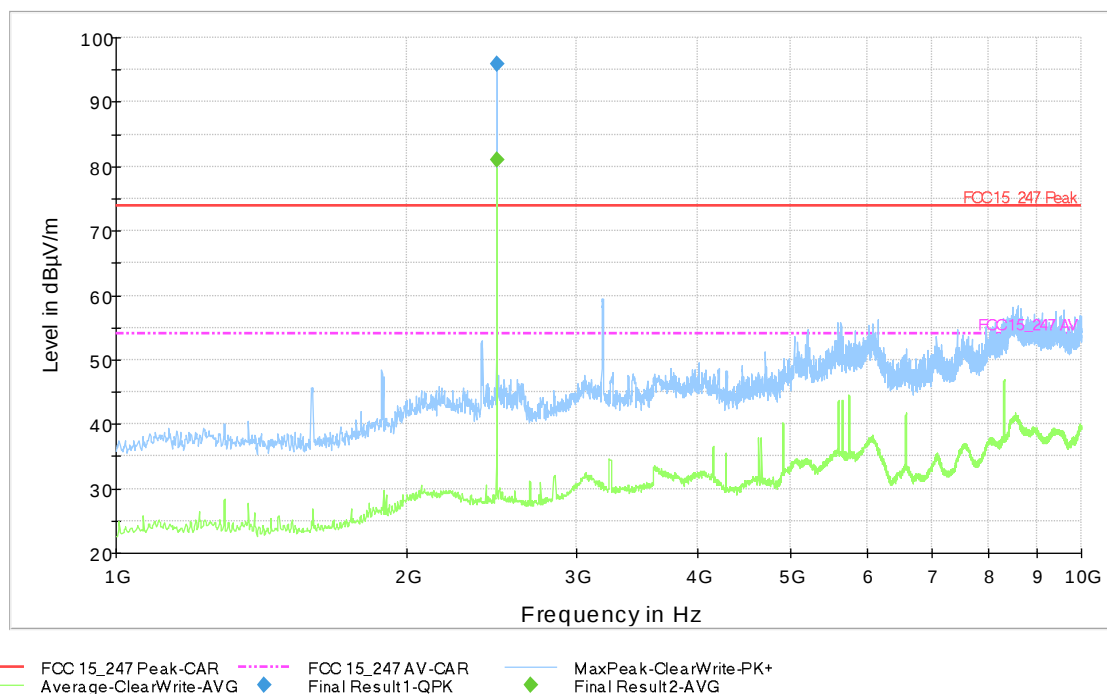
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	96.9	125.8	92.0	-22.90	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2440.000000	83.8	99.7	85.0	-29.80	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

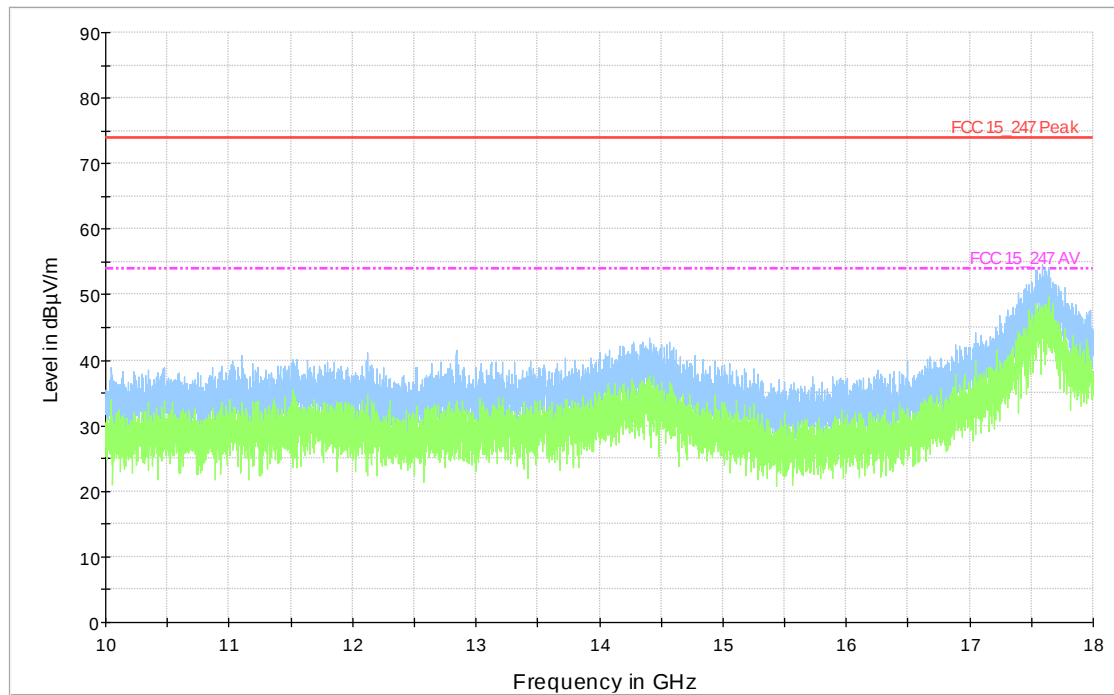
Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	95.8	99.7	85.0	-21.80	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	81.0	99.9	86.0	-27.00	54.00

NOTE: Peaks out of limits are due to BT carrier and are not evaluated in this test.

RX Antenna Polarization: Vertical

Frequency Range: 10GHz – 18GHz

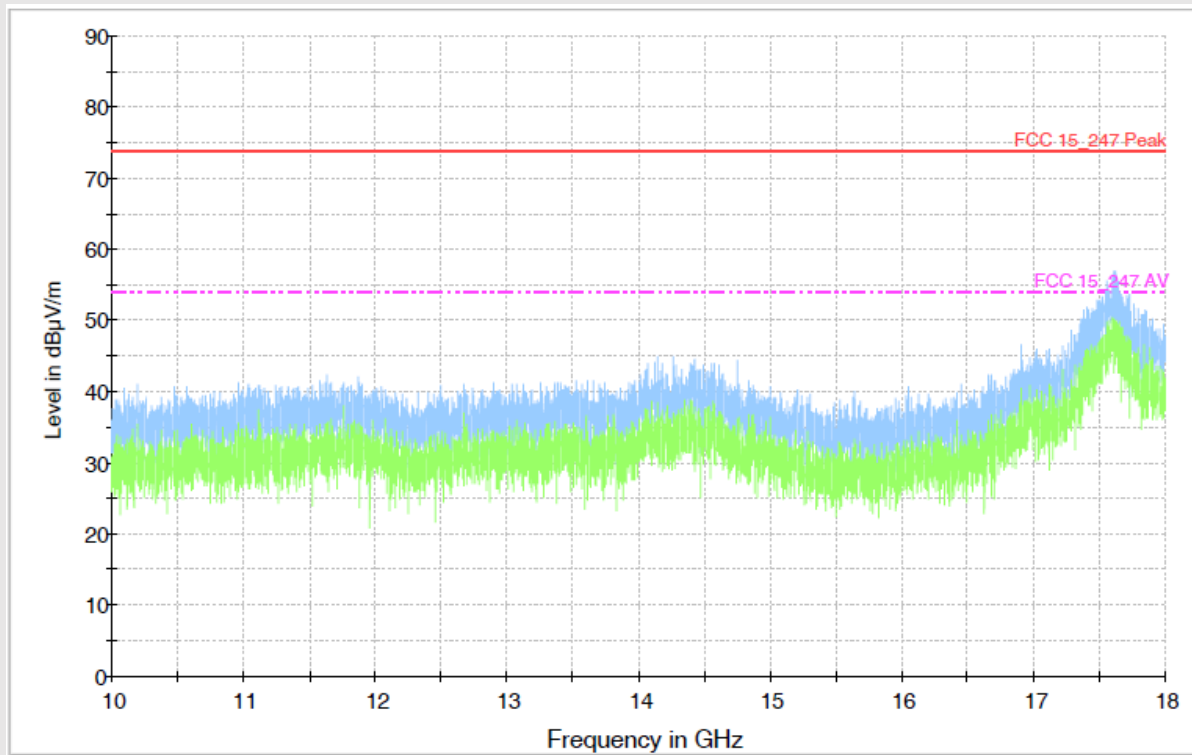


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 10GHz – 18GHz

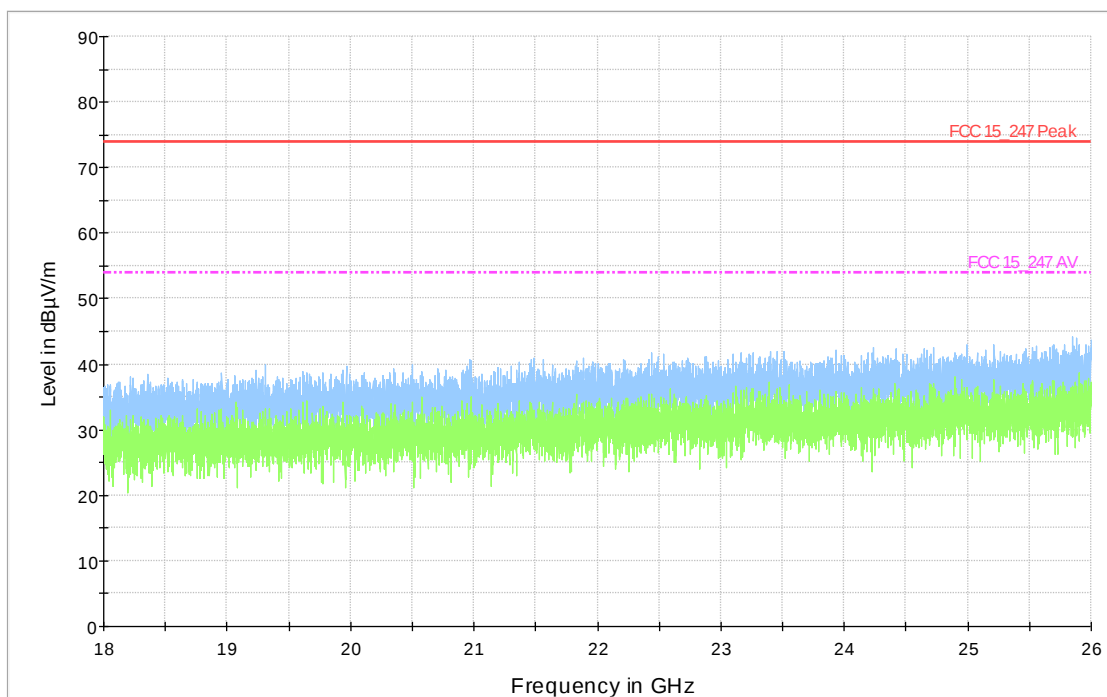


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Vertical

Frequency Range: 18GHz – 26GHz

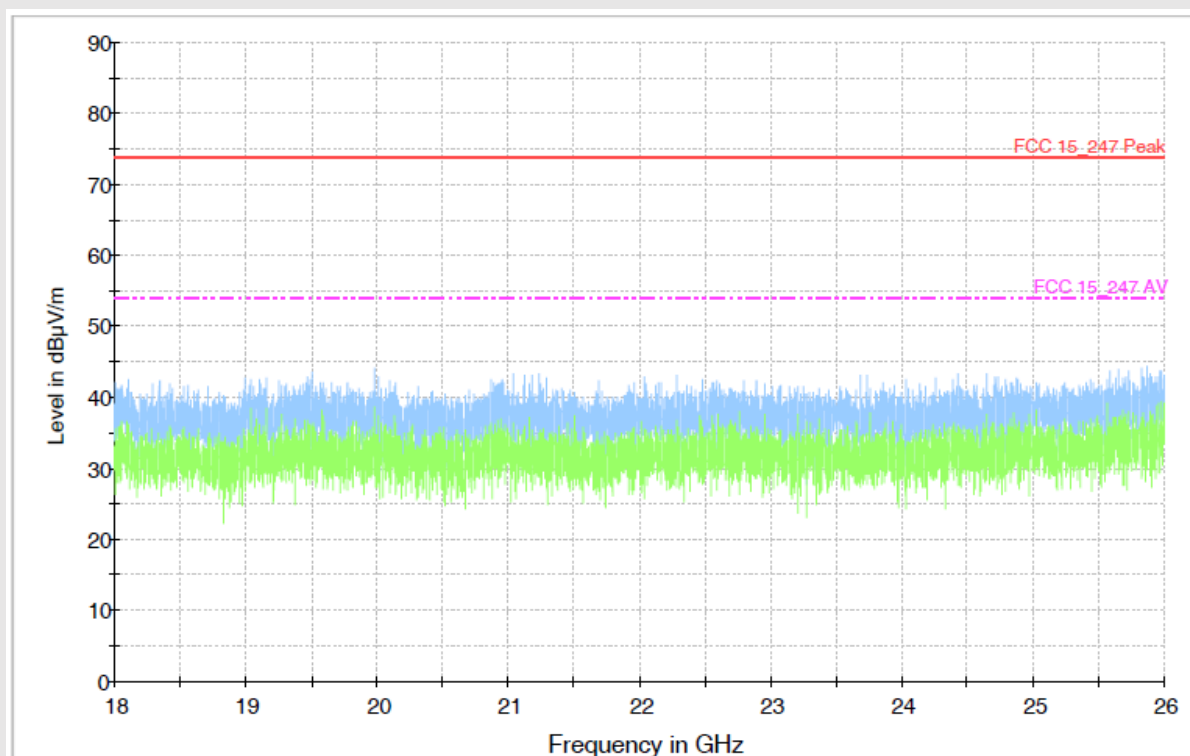


Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

RX Antenna Polarization: Horizontal

Frequency Range: 18GHz – 26GHz



Final Result:

All emissions are below 10dB from the limit, for this reason no further assessments were carried out on the individual points

END OF TEST REPORT