

TEST REPORT

Ref. n.	FCCTR_185482-0	Issue Date:	25/09/2024	Pages:	47
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	Barcode reader				
Tested model	PBT9600				
Type	SR RFUS				
FCC Identification number	U4F-PGSRF				
Date of test samples receipt	28/08/2024				
No. of tested samples	1 – Sampled by the manufacturer				
Test date	From 02/09/2024 to 23/09/2024				
Testing site	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
FCC designation number	IT0012				
Test results	COMPLIANT				
Verifications carried out by	Edoardo AMATI EMC and RADIO Test Engineer				
Approved by	Daniele AOSANI Reviewer				

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

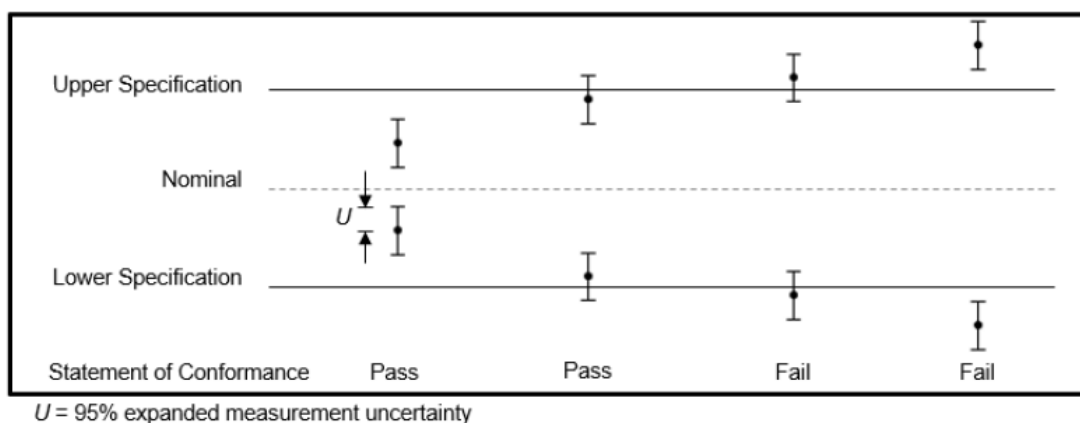
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_185482-0	Original release	25/09/2024

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

- None

3. GENERAL REMARKS

- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

4.1 EUT Identification

DESCRIPTION	Barcode scanner
MODEL NAME	PBT9600
TYPE	SR RFUS
FCC ID	U4F-PGSRF
SERIAL NO.	B24P00845
PRS LAB INTERNAL REFERENCE	BC218/2024 2/2
TRADEMARK	
MANUFACTURER	DATALOGIC S.r.l.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	Li-Ion Internal battery
SUPPLY VOLTAGE	3.6Vdc 
MAX POWER OR MAX ABSORBED CURRENT	750mA
OPERATING TEMPERATURE	0°C ÷ +50°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
CONTAINS FCC ID	U4FBT-MRY-A1 (Bluetooth module)

4.2 RFID module technical data

CHIP MANUFACTURER	SILION 芯联
CHIP TYPE	SIM3600
ETS CATEGORY	Radio Frequency Identification (RFID)
FREQUENCY BAND	902.75MHz – 927.25MHz
NUMBER OF CHANNELS	50
CHANNEL OCCUPIED BANDWIDTH	92.95kHz
CHANNEL SPACING	500kHz
TYPE OF MODULATION	ASK
TRANSFER RATE	921.6kb/s
ANTENNA TYPE (Information provided by Customer)	PGS-RFID Antenna + Coaxial cable
ANTENNA GAIN (Information provided by Customer)	-0.6dB

4.3 Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☒	Enclosure	Plastic / Glass	Screws	---
☐	AC power port	Port not present	---	---
☒	DC power port	3.6Vdc from internal battery	---	---
☐	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, model **PP17L**, manufactured by **DELL**, used to set radio channels.

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, modulated carrier, on low channel (902.75MHz)
#2	Continuous transmission, modulated carrier, on middle channel (914MHz)
#3	Continuous transmission, modulated carrier, on high channel (927.25MHz)
#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
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 dBμV; dB referenced to one microvolt

Radiated EMI Data is in dBμV/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.

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

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) (i)	#1, #2, #3	Within the limits
	Band-Edge	FCC Part 15 § 15.247 (d)	#1, #3, #4	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) (i)	#4	Within the limits
	Transmitter Number of Hopping Frequencies and Average Time of Occupancy	FCC Part 15 § 15.247 (a) (1) (i)	#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

ANTENNA REQUIREMENTS	10
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20dB CHANNEL BANDWIDTH	14
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RF RADIATED SPURIOUS EMISSIONS AT THE TRANSMITTER ANTENNA TERMINAL	20
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TRANSMITTER RADIATED EMISSIONS < 1GHz	28
TRANSMITTER RADIATED EMISSIONS > 1GHz	39

TEST 1.	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 internal PGS-RFID antenna.
RESULT: COMPLIANT

TEST 2.	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
	MXE Emi Receiver	Keysight	N9038A	MY57290150	11/2023	11/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2024	02/2025
	Horn antenna	Electro Metrics	EM-6961	6278	10/2023	10/2026
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 7.8.5					
• 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	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION :#1, #2, #3

RESULT: WITHIN THE LIMITS

MEASUREMENT PARAMETER

Resolution bandwidth	$RBW \geq DTS \text{ bandwidth}$
Video bandwidth	$VBW \geq 3 \times RBW$
Span	$\text{span} \geq 3 \times RBW$
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.

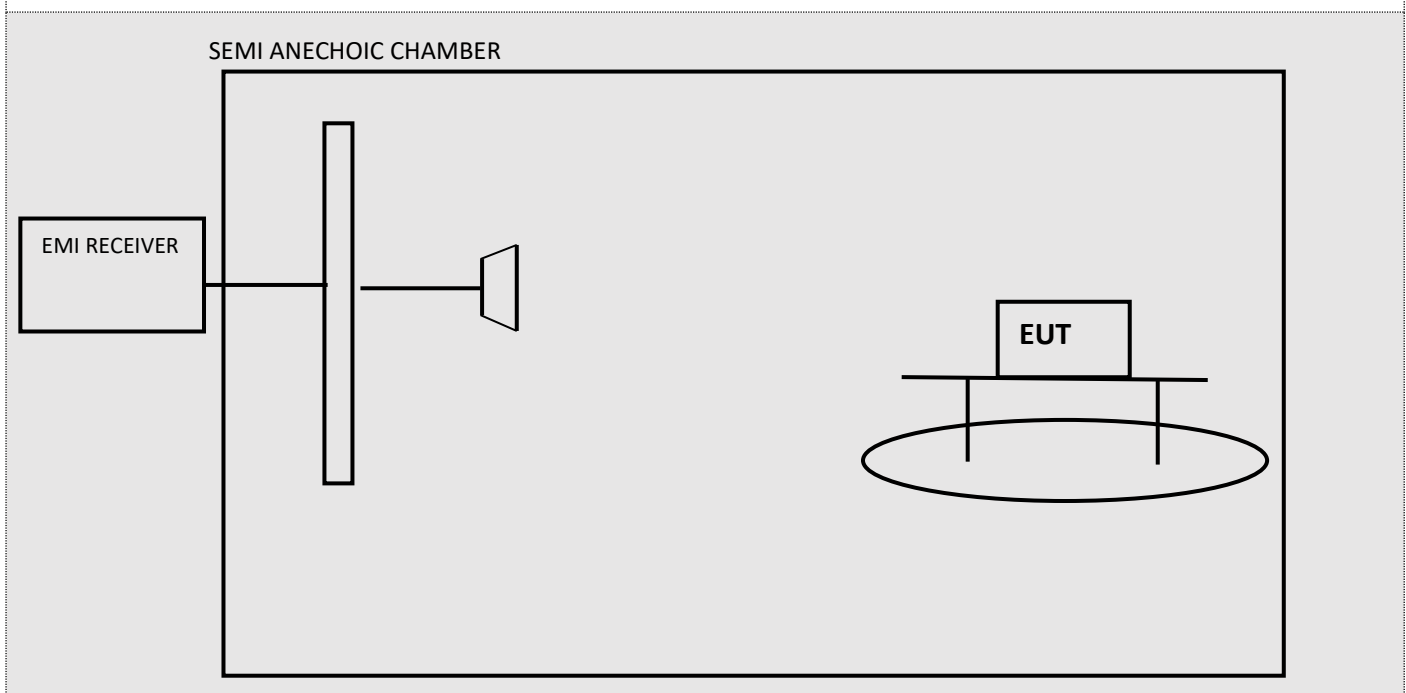
The EUT is placed at test table.

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

Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain (dB)	Max Conducted Output power	Limit (dBm)	Result
LOW	902.75	19.79	-0.6	20.39	30	WITHIN THE LIMITS
MIDDLE	914.75	19.69	-0.6	20.29		
HIGH	927.25	18.89	-0.6	19.49		

Note: ---

TEST 3.	20dB CHANNEL BANDWIDTH
REFERENCE DOCUMENT	According to §15,247(a)(1)(i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 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	03/2024	03/2025
• 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	86 - 106kPa (860mbar - 1060mbar)	1014 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

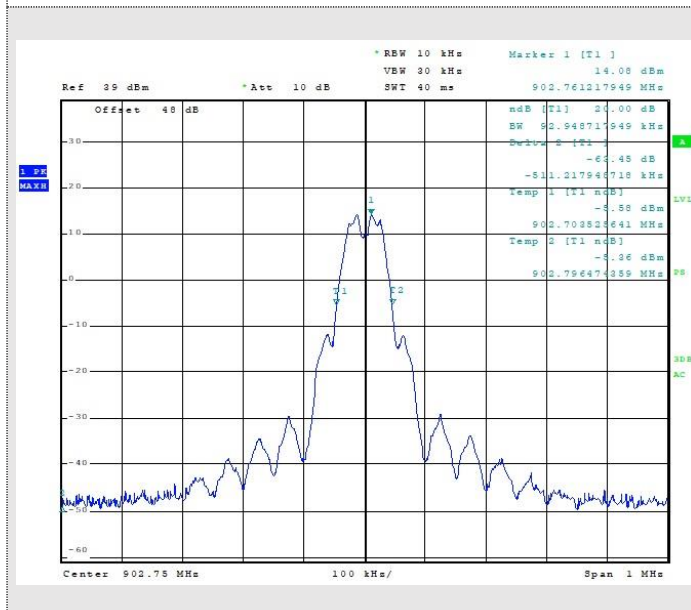
Allow the trace to stabilize.

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

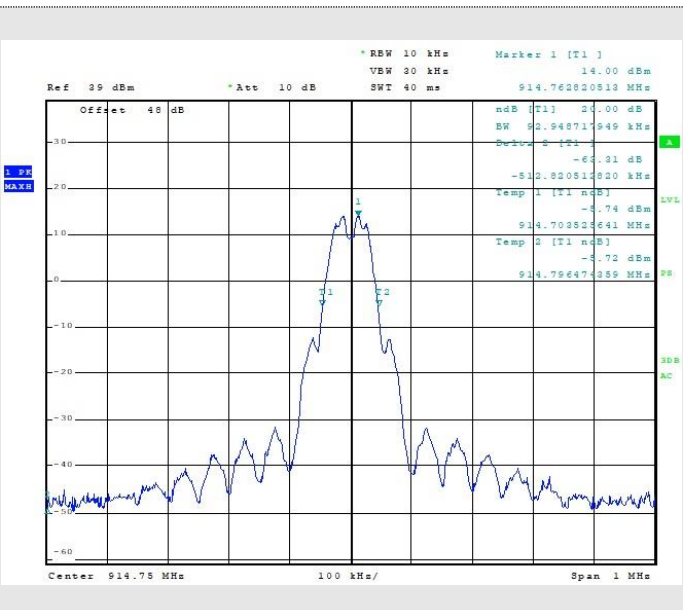
Measurement Result

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Limits (kHz)	Verdict
Low	902.75	92.95	<250	Compliant
Middle	914.25	92.95	<250	
High	927.25	92.95	<250	

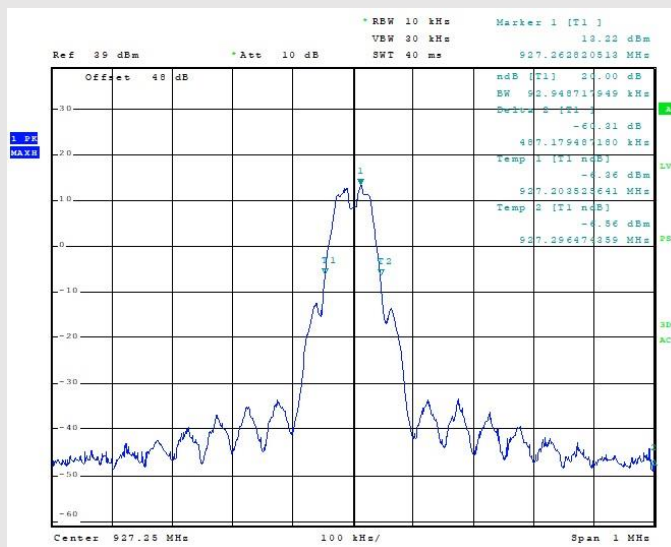
Low channel



Middle channel



High channel



TEST 4.	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	03/2024	03/2025
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 7.8.6					
• FREQUENCY RANGE	Carrier					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

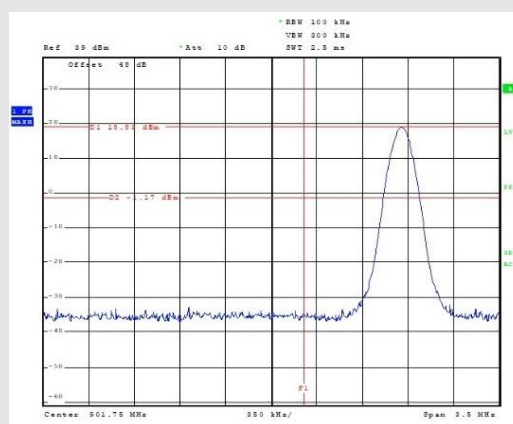
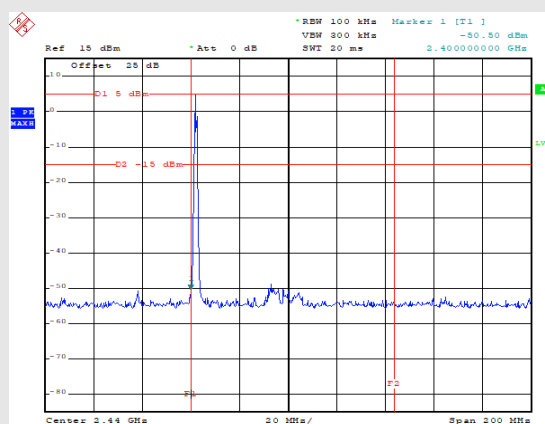
OPERATING CONDITION: #1, #3, #4
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RESULT: COMPLIANT

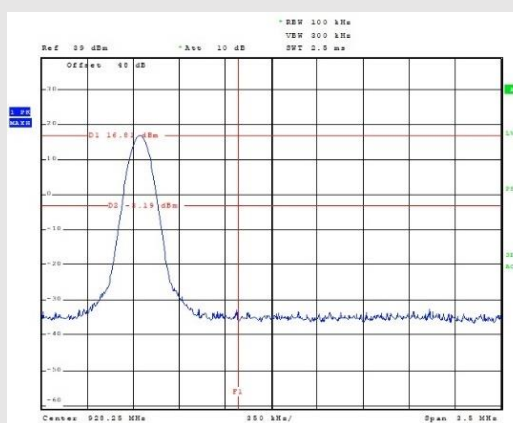
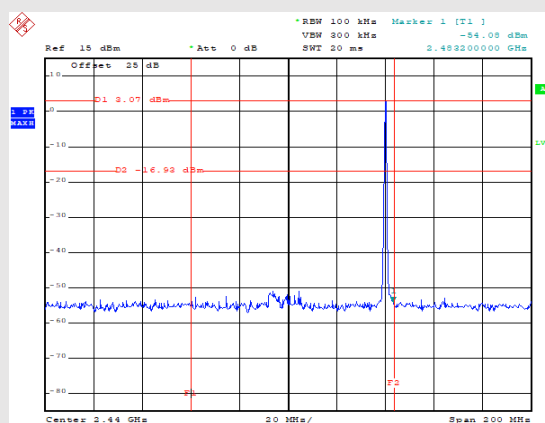
TEST RESULTS

Static Mode (on Channel)

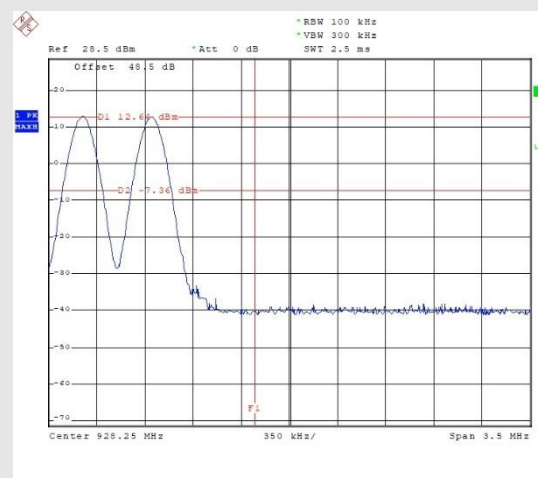
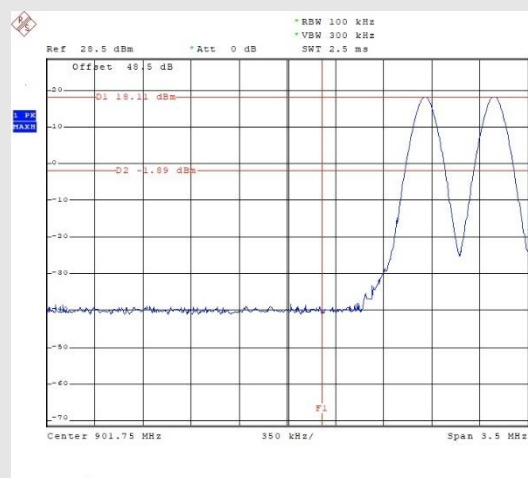
LOW CHANNEL 902.75MHZ



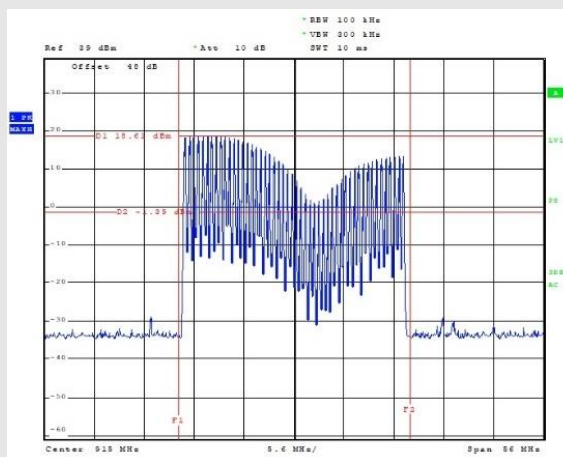
HIGH CHANNEL 927.25MHZ



Hopping Mode



HOPPING



TEST 5.

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	03/2024	03/2025
• TESTED PORT	Enclosure					
• TEST METHOD	ANSI C63.10:2013 section 7.8.8					
• FREQUENCY RANGE	30MHz – 10GHz					
• LIMITS	Acc. To ref. Std.					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #1, #2, #3

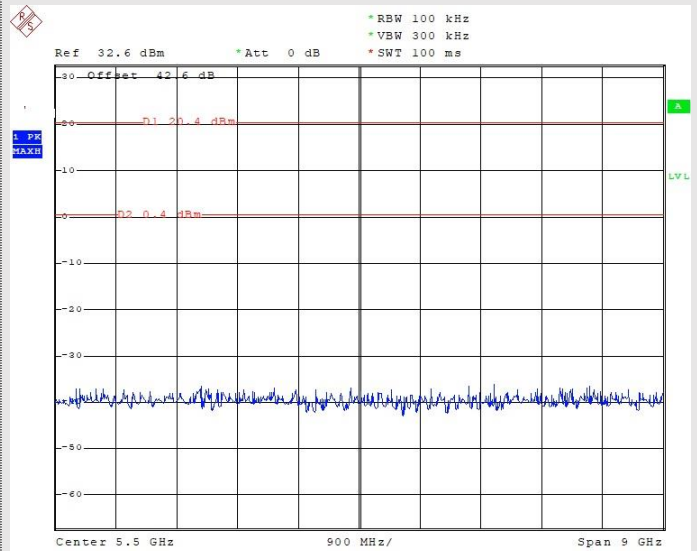
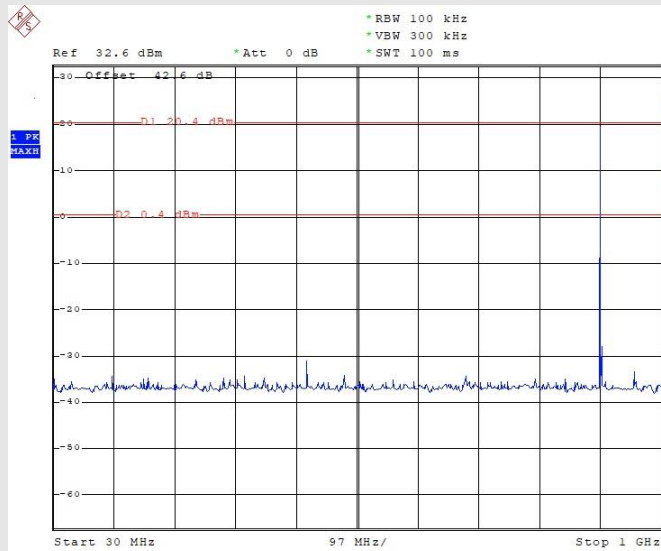
RESULT: **WITHIN THE LIMITS**

TEST RESULTS

Low channel: 902.75MHz

Frequency range: 30MHz – 1GHz

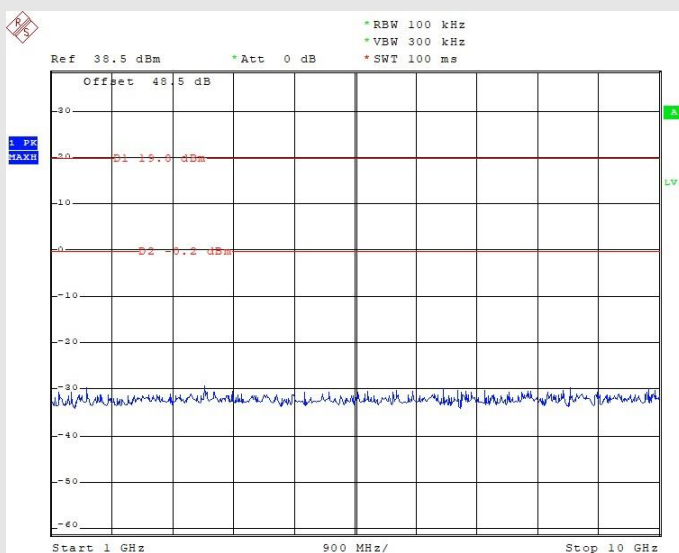
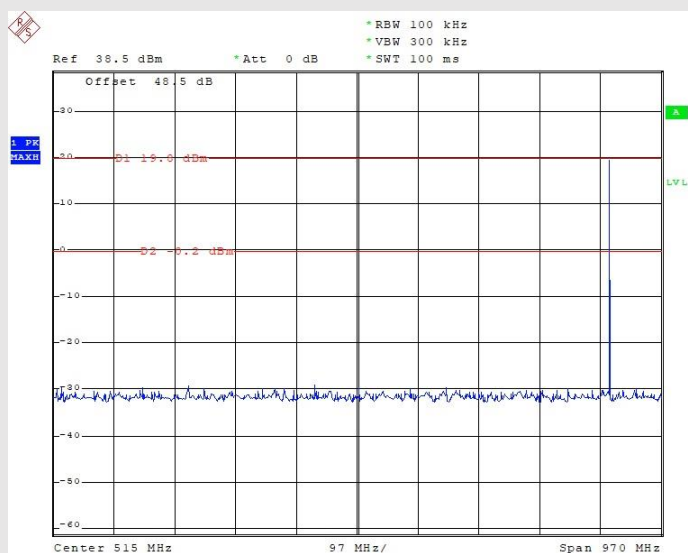
Frequency range: 1GHz – 10GHz

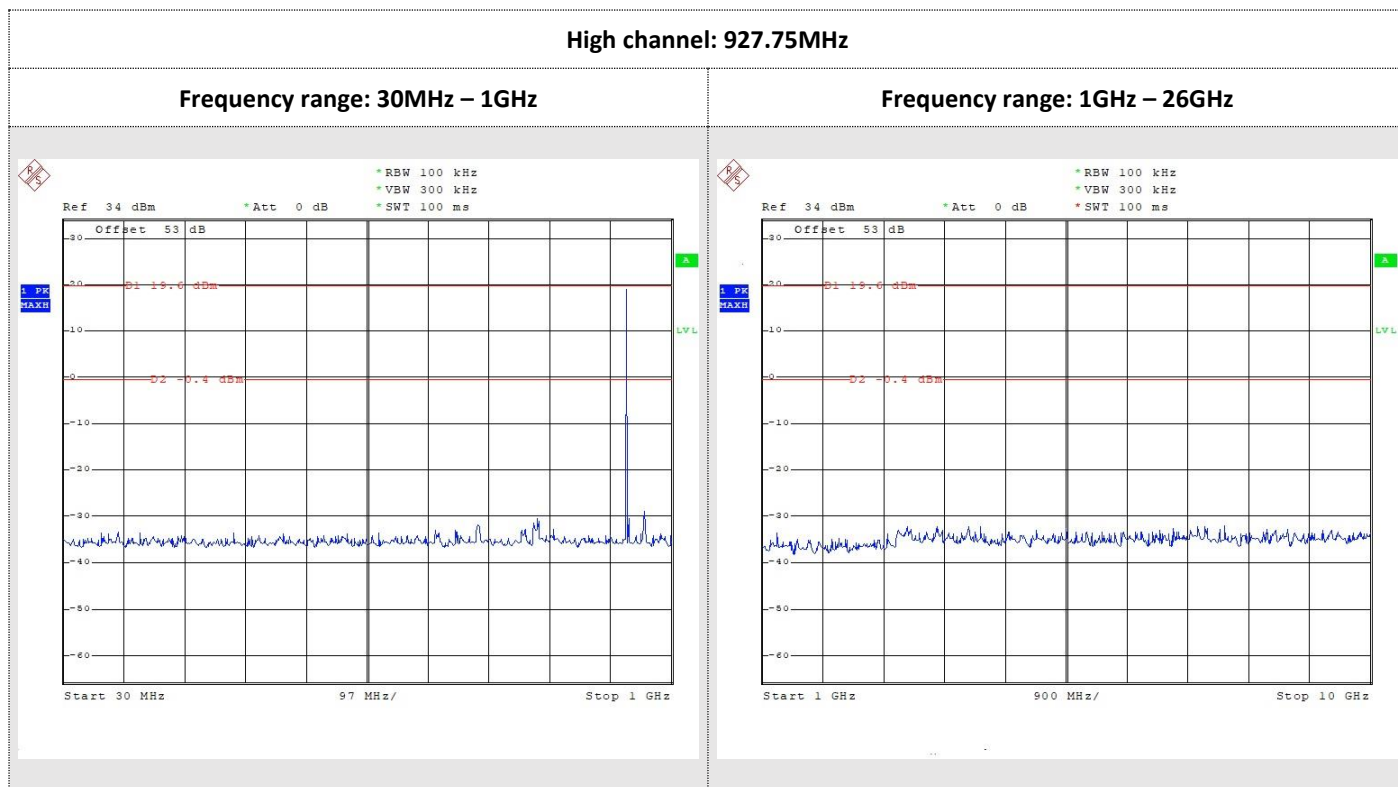


Middle channel: 914.75MHz

Frequency range: 30MHz – 1GHz

Frequency range: 1GHz – 26GHz





TEST 6.

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.

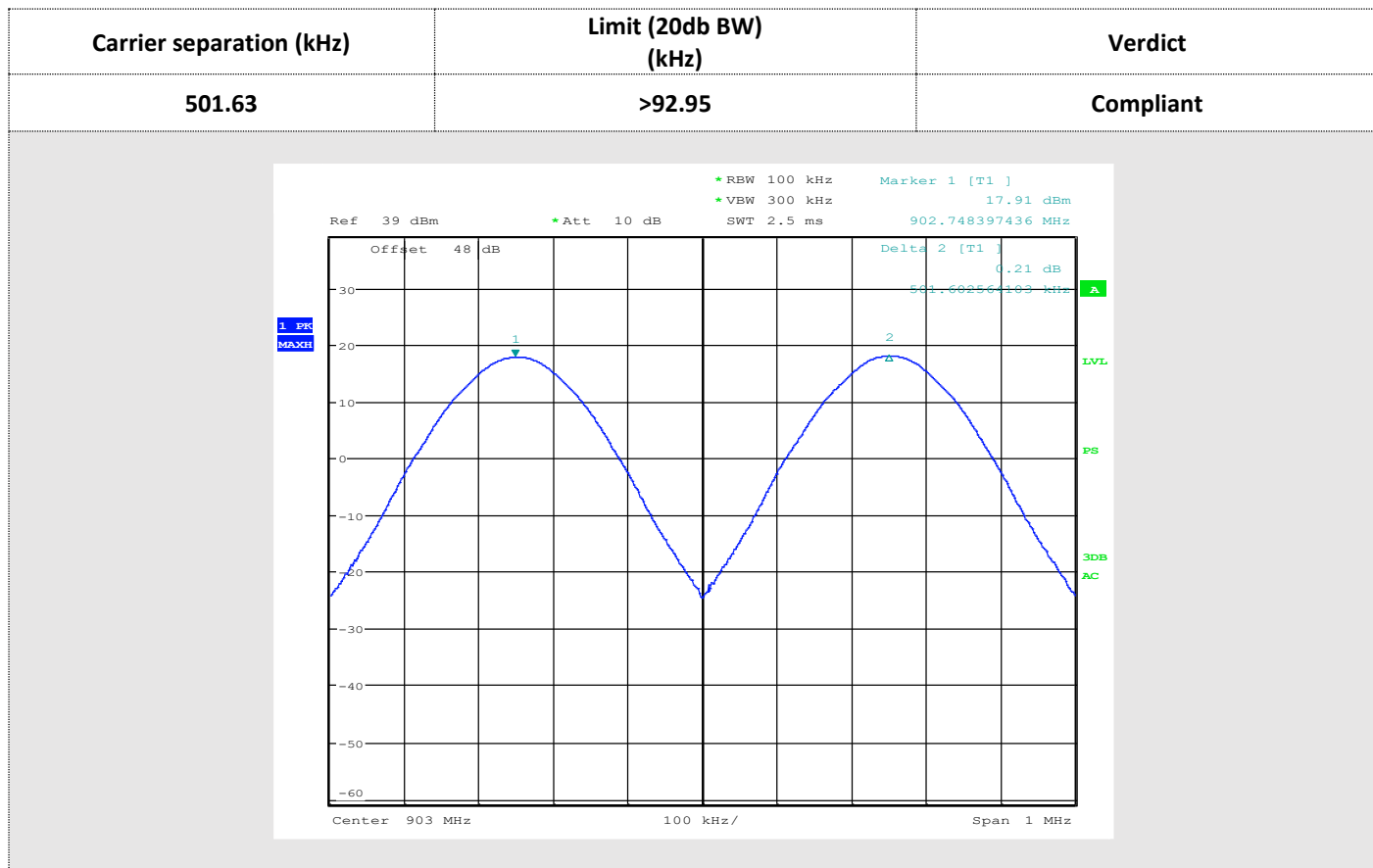
• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Radiated					
• TEST EQUIPMENT USED FOR TEST	Instrument	Manufacturer	Model	Serial n°	Calibrated On	Due to
	Emi Receiver	Rohde & Schwarz	ESU 40	100111	03/2024	03/2025
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 section 7.8.2					
• FREQUENCY RANGE	Two adjacent channels					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #4

RESULT: **COMPLIANT**

TEST RESULTS



TEST 7.	TRANSMITTER NUMBER OF HOPPING FREQUENCIES AND AVERAGE TIME OF OCCUPANCY
REFERENCE DOCUMENT	According to § 15.247 (a) (1) (i) For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 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	03/2024	03/2025
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2013 sections 7.8.3 & 7.8.4					
• 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

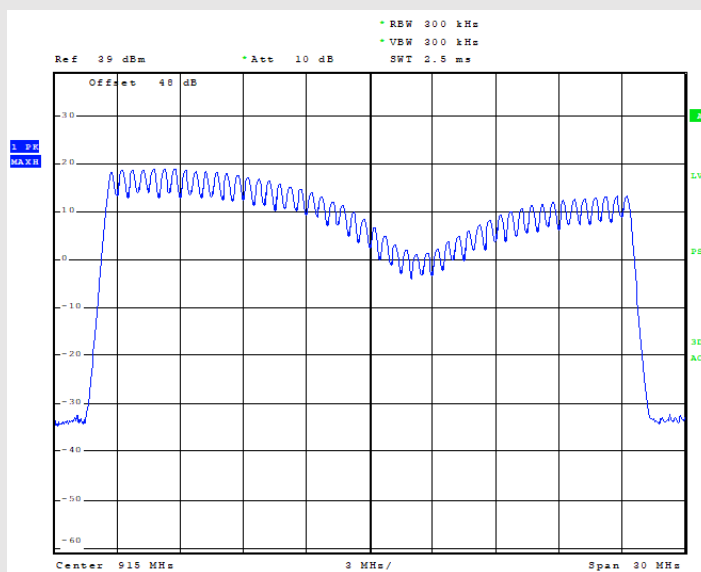
OPERATING CONDITION: #4

RESULT: COMPLIANT

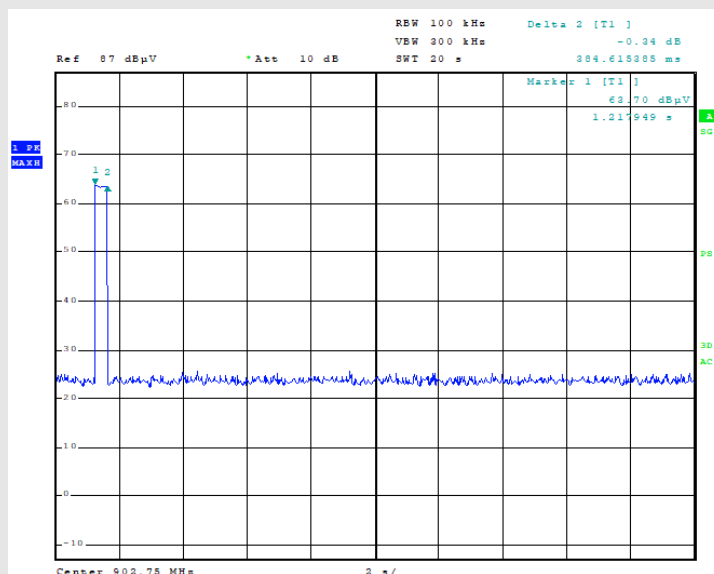
TEST RESULTS

Mod.	Channel Number Rate	Package Transfer Time (ms)	Hops Over Occupancy Time (hops)	Dwell Time (s)	Limit (s)	Verdict
Hopping mode	50	384.16	1	0.384	0.4	Compliant

Number of Hopping



Package Transfer Time Plot



TEST 8.	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	03/2024	03/2025
	MXE Emi Receiver	Keysight	N9038A	MY57290150	11/2023	11/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2024	02/2025
	Loop antenna	Rohde & Schwarz	HFH 2-Z2	841801/012	03/2023	03/2026
	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	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #1, #2, #3

RESULT: WITHIN THE LIMITS

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

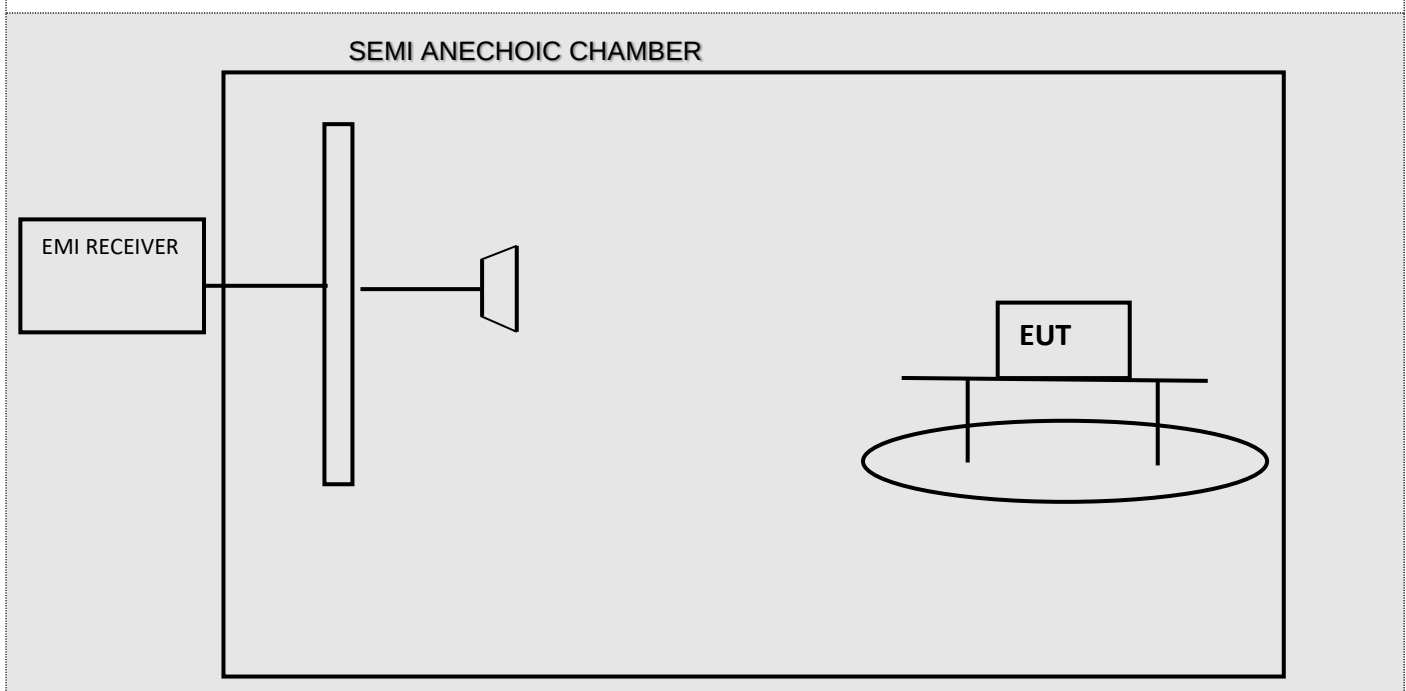
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

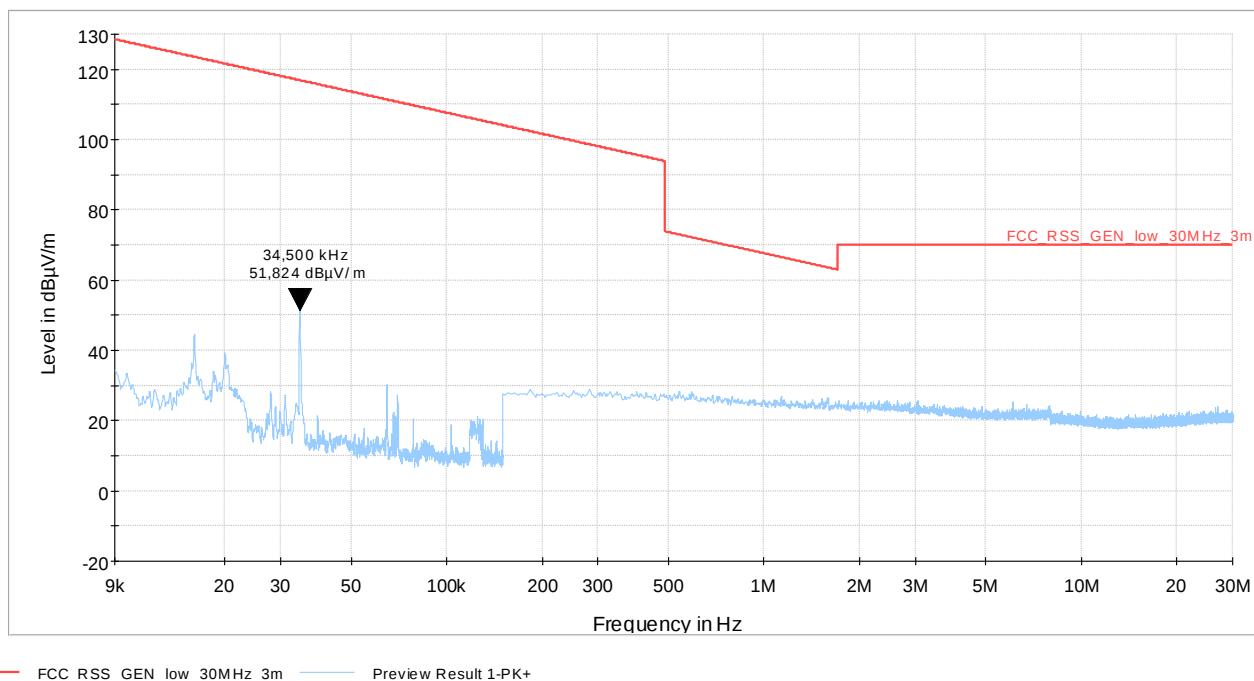


TEST RESULTS

Low channel: 902.75MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

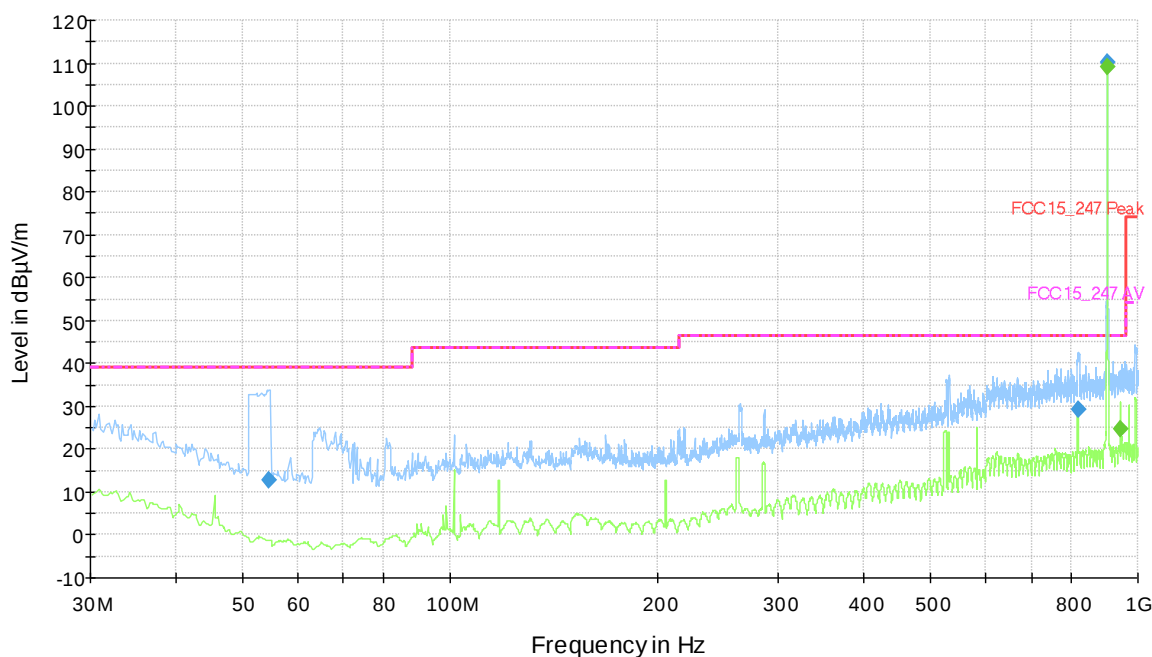


Final Result:

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

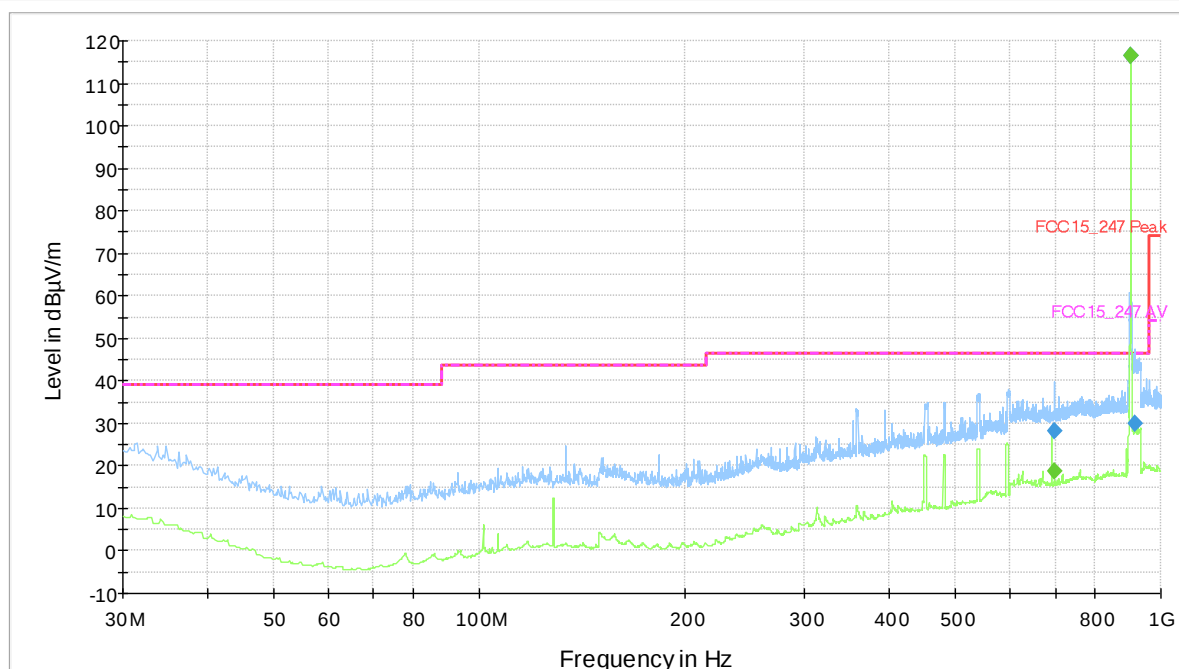
Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
54.630000	12.8	99.7	-8.0	26.20	39.00
820.620000	29.3	256.9	97.0	17.10	46.40
902.760000	110.4	205.8	277.0	-64.00	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
902.760000	109.3	203.7	277.0	-62.90	46.40
942.840000	24.6	179.8	-3.0	21.80	46.40

RX Antenna Polarization: Horizontal

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:

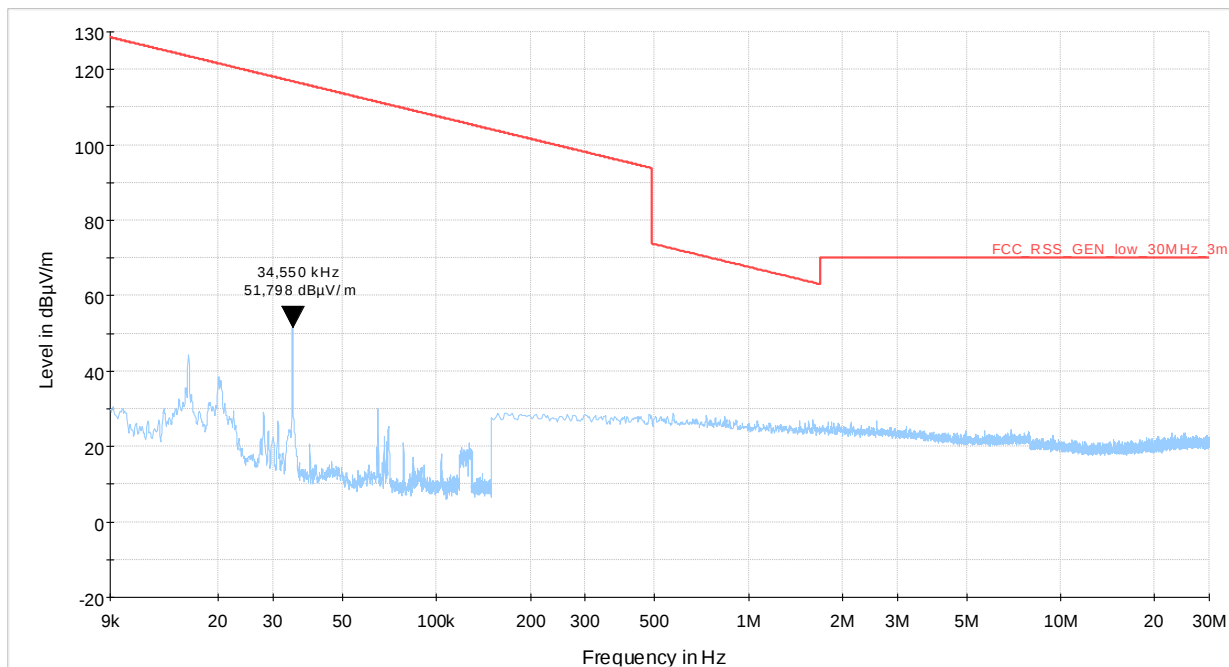
Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
699.270000	28.1	99.8	187.0	18.30	46.40
902.760000	116.3	205.8	187.0	-69.90	46.40
915.840000	30.1	99.7	176.0	16.30	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
699.270000	18.7	180.2	187.0	27.70	46.40
902.760000	116.4	205.8	187.0	-70.00	46.40

Middel channel: 914.75MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

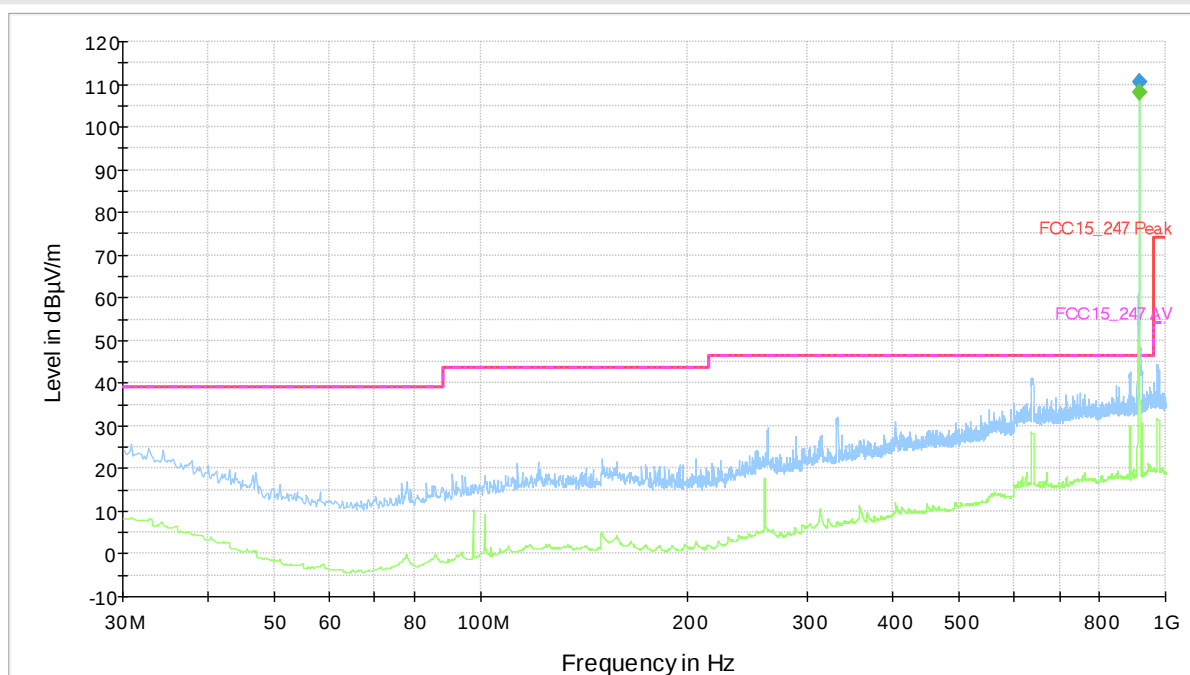


Final Result:

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

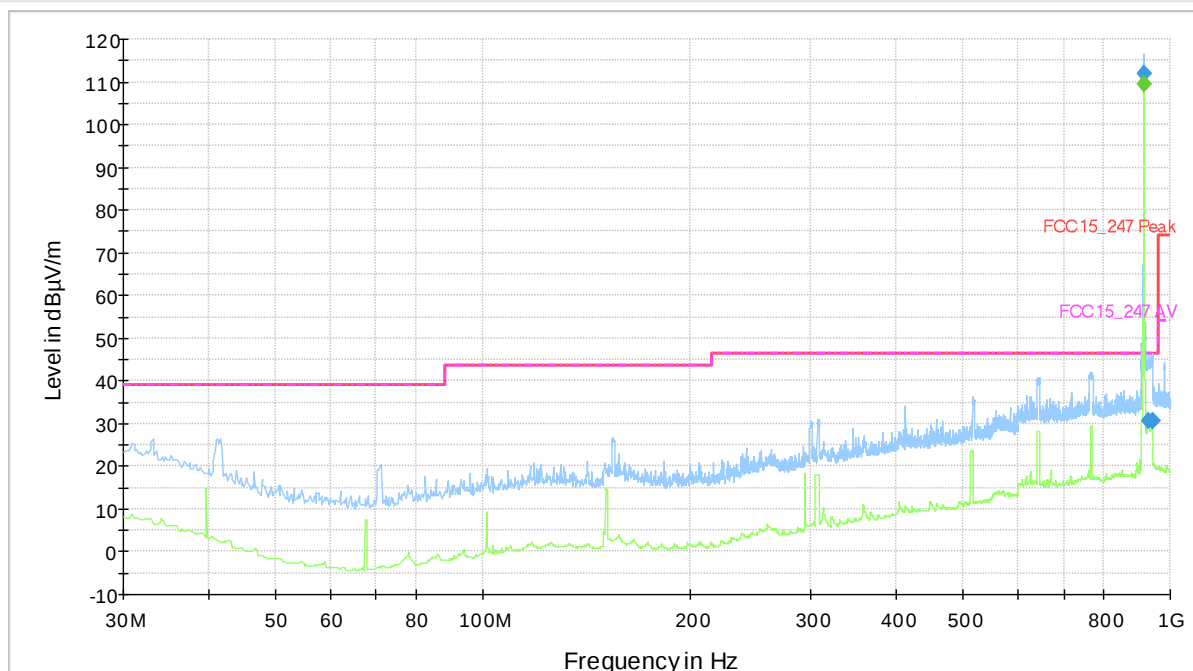
Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
914.760000	110.5	99.8	87.0	-64.10	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
914.760000	107.9	99.8	82.0	-61.50	46.40

RX Antenna Polarization: Horizontal

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:

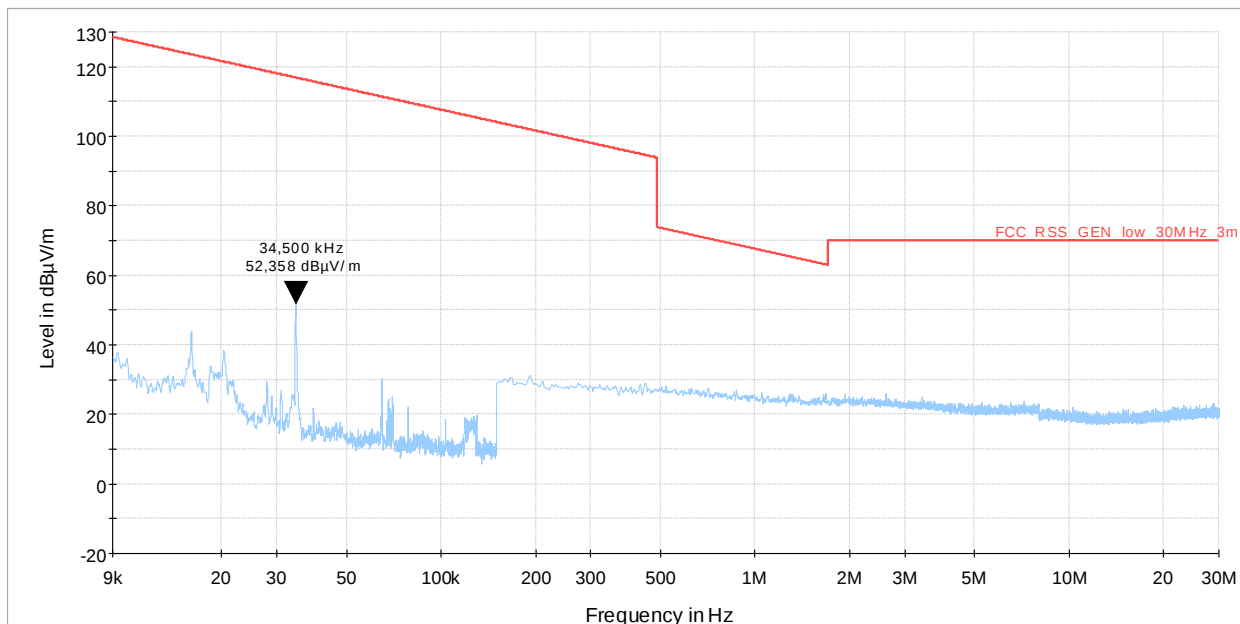
Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
914.760000	112.0	99.8	187.0	-65.60	46.40
931.740000	30.7	99.8	-5.0	15.70	46.40
941.520000	30.7	180.1	7.0	15.70	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
914.760000	109.4	99.8	187.0	-63.00	46.40

High channel: 927.25MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

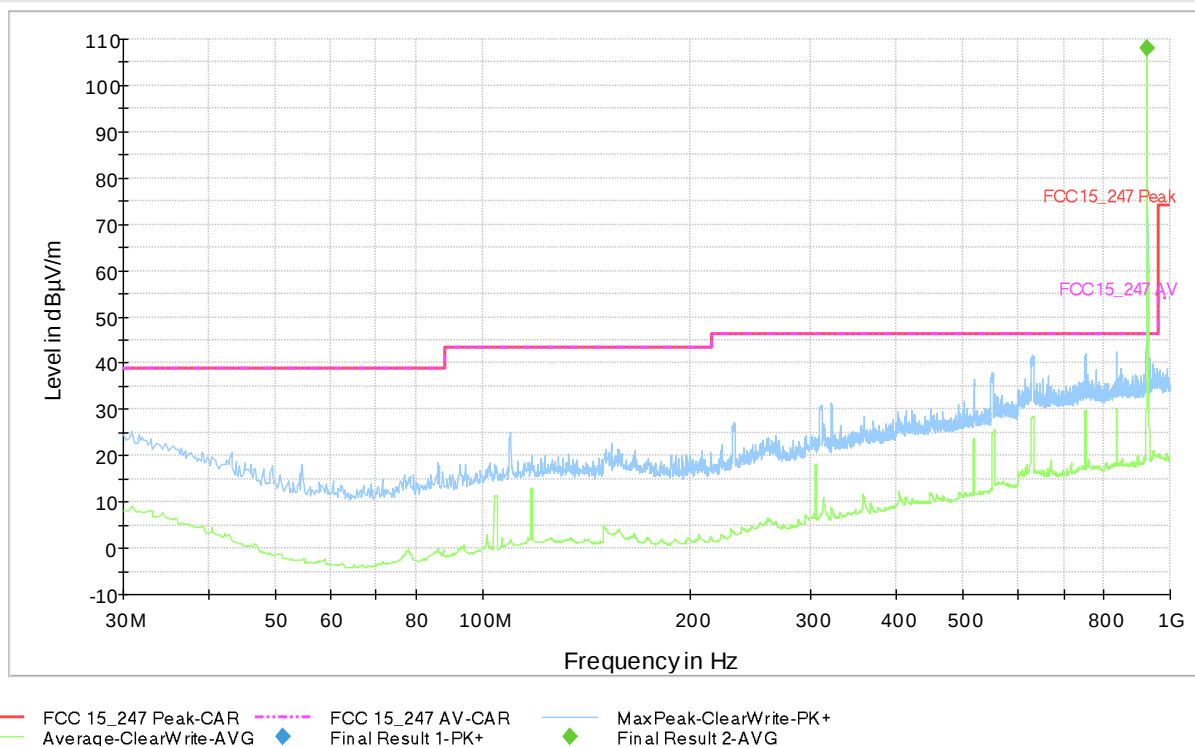


Final Result:

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



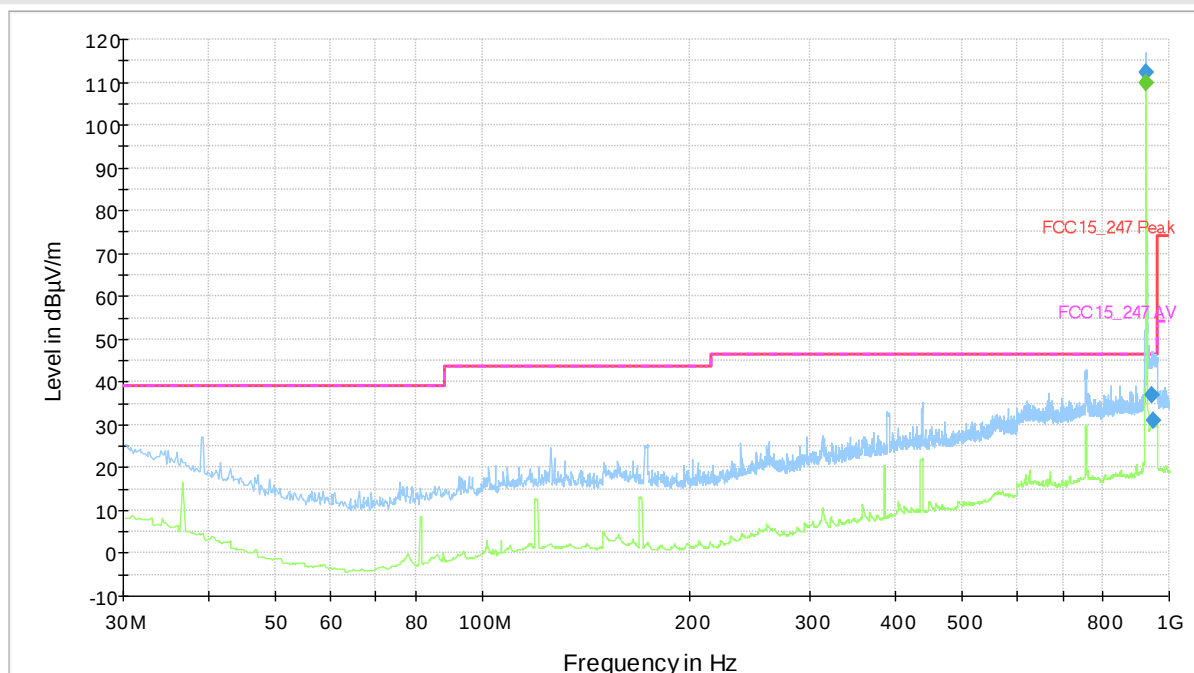
Final Result:

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
927.240000	110.8	99.8	82.0	-64.40	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
927.240000	108.2	99.7	82.0	-61.80	46.40

RX Antenna Polarization: Horizontal

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)	QuasiPeak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
927.240000	112.3	99.7	187.0	-65.90	46.40
942.810000	37.0	150.7	-8.0	9.40	46.40
946.650000	30.9	122.8	-8.0	15.50	46.40

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
927.240000	109.8	99.8	187.0	-63.40	46.40

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 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
	MXE Emi Receiver	Keysight	N9038A	MY57290150	11/2023	11/2024
	Semi-Anechoic Chamber	Siemens	B83117-D6019-T232	003-005-134/94C	02/2024	02/2025
	Horn antenna	Electro Metrics	EM-6961	100437	10/2023	10/2026
	Horn antenna + Low Noise Preamplifier	Bonn Elektronik	BLMA 1840-1A	262WL80452	04/2023	04/2025
	High pass filter	Waineright	WHK 2,8/15G	1	10/2023	10/2025
	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 – 10GHz = 5,15 dB					

TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #1, #2, #3

RESULT: **WITHIN THE LIMITS**

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

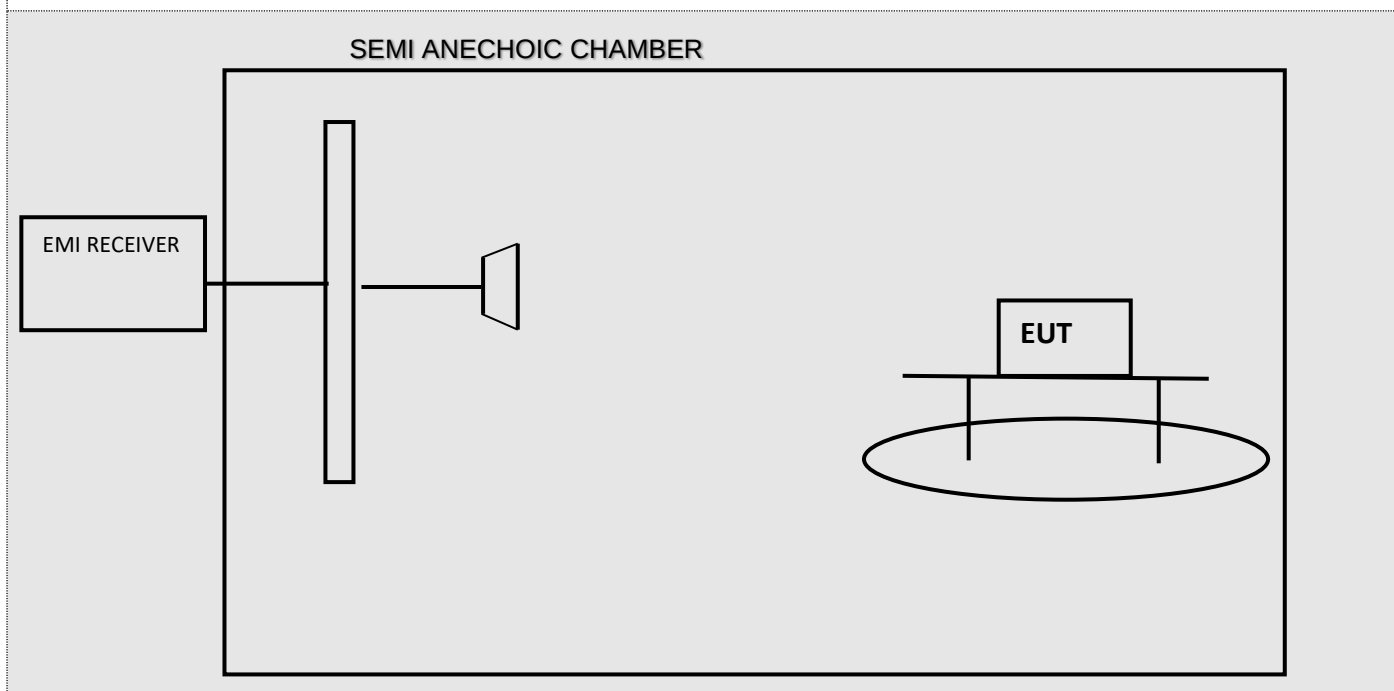
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

The EUT is placed at test table height is 1.5 m

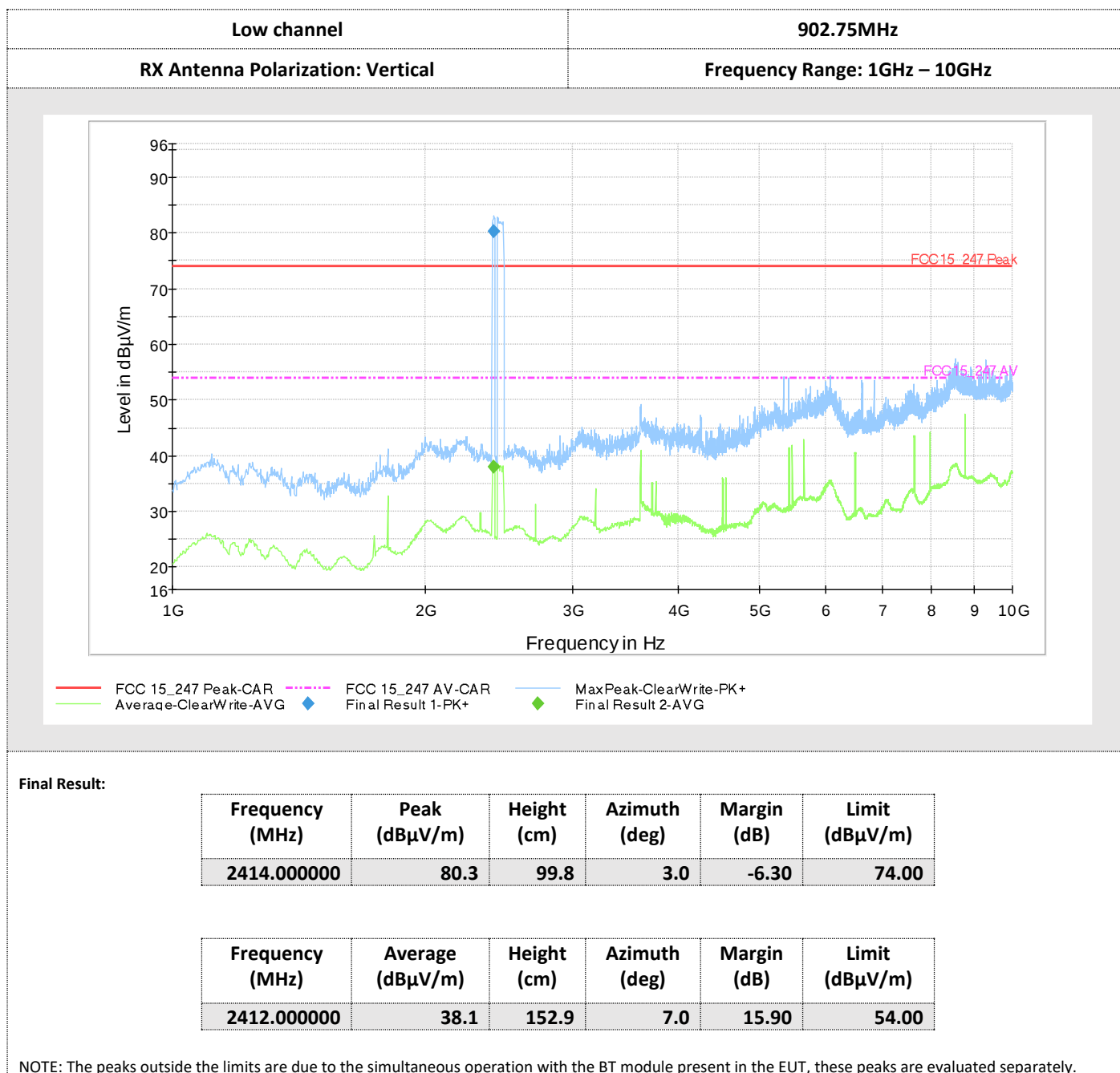
Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

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

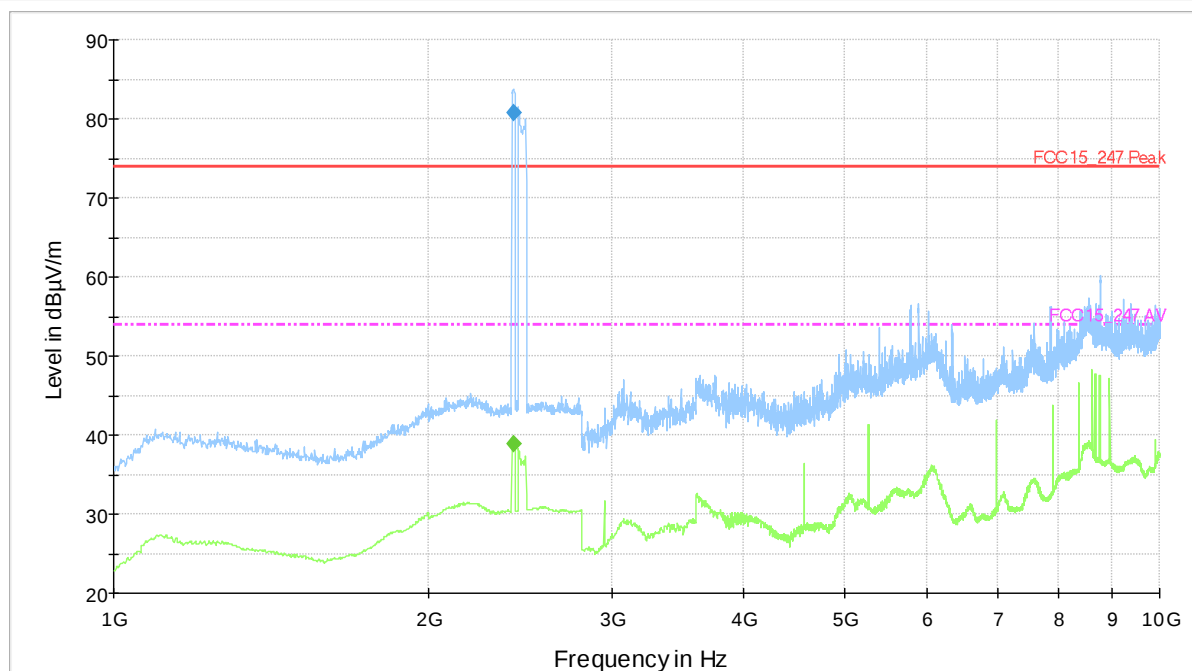


TEST RESULTS



RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



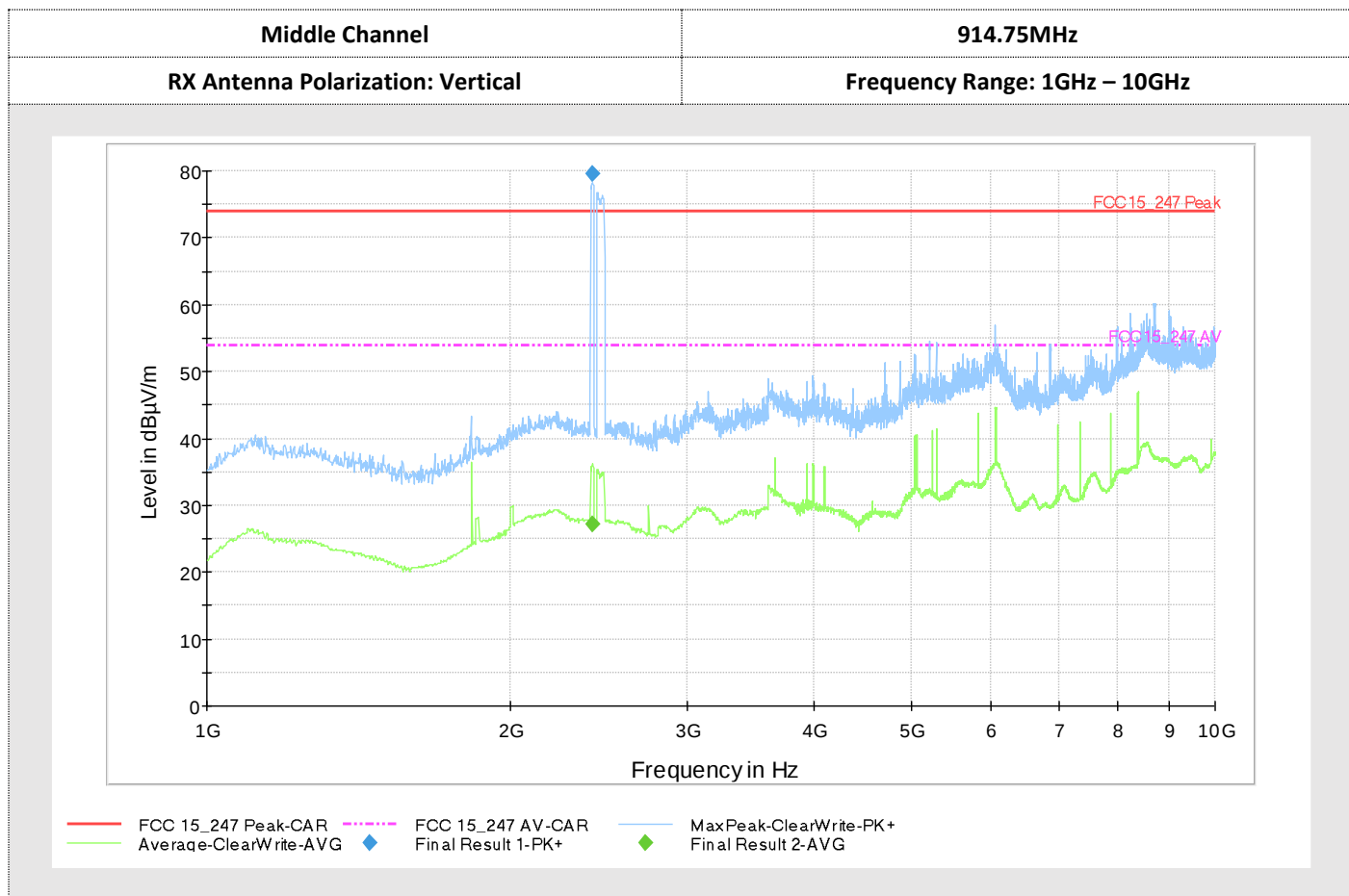
— FCC 15_247 Peak-CAR - - - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+
— Average-ClearWrite-AVG ◆ Final Result 1-PK+ ◆ Final Result 2-AVG

Final Result:

Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2414.000000	80.8	233.8	187.0	-6.80	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2412.000000	38.8	262.8	180.0	15.20	54.00

NOTE: The peaks outside the limits are due to the simultaneous operation with the BT module present in the EUT, these peaks are evaluated separately.



Final Result:

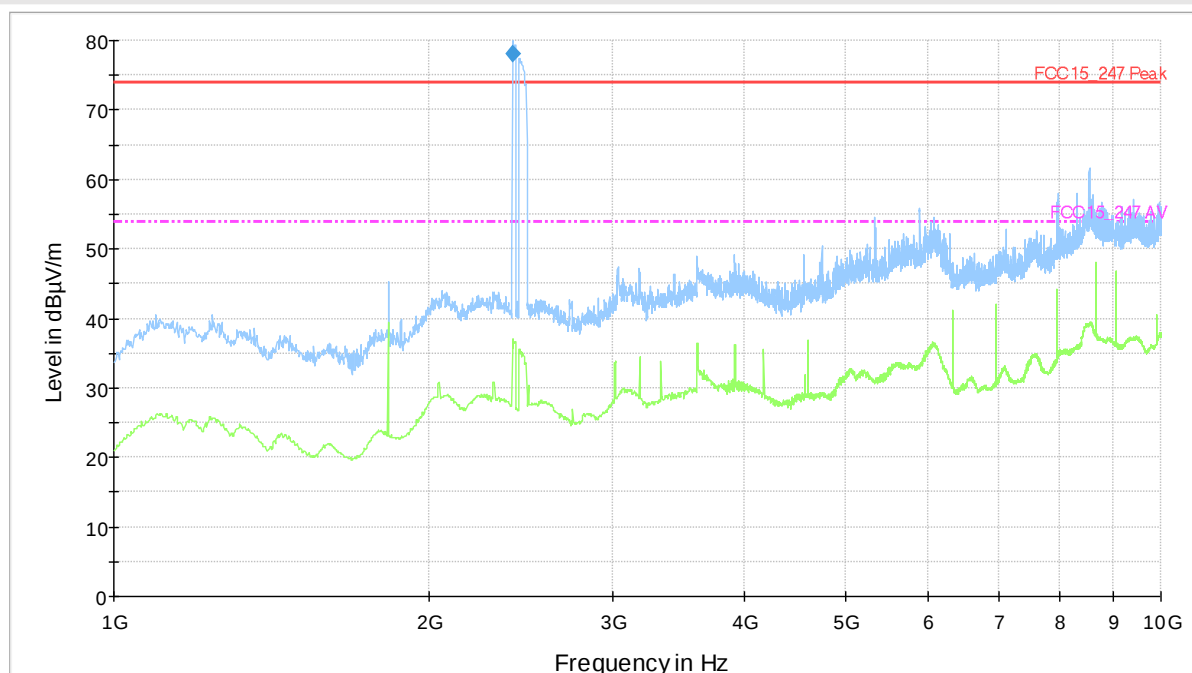
Frequency (MHz)	Peak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2412.000000	79.6	104.7	82.0	-5.60	74.00

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2414.000000	27.1	104.8	82.0	26.90	54.00

NOTE: The peaks outside the limits are due to the simultaneous operation with the BT module present in the EUT, these peaks are evaluated separately.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz

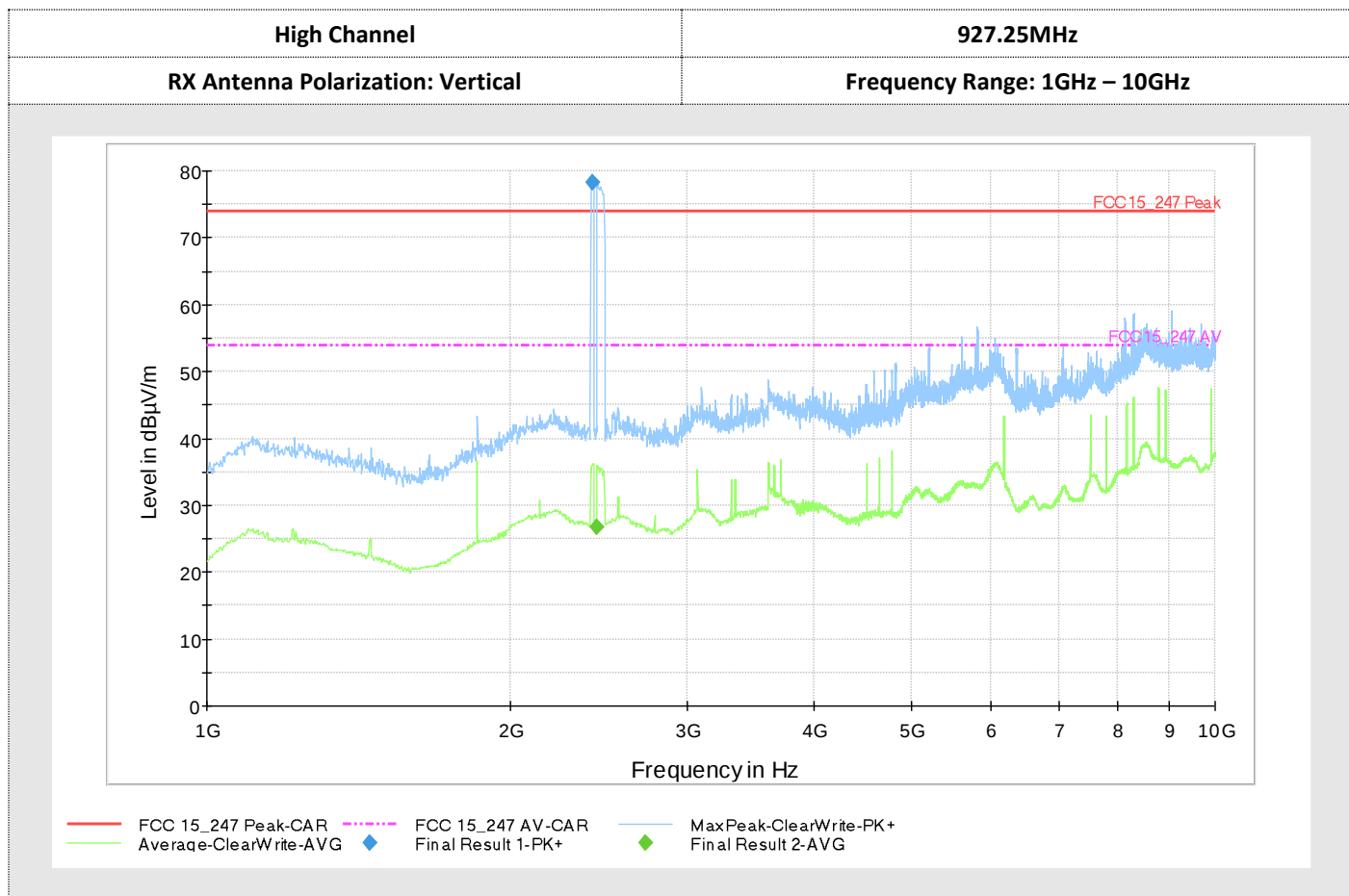


— FCC 15_247 Peak-CAR - - - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+
— Average-ClearWrite-AVG ◆ Final Result 1-PK+ ◆ Final Result 2-AVG

Final Result:

Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2402.000000	78.2	152.8	-4.0	-4.20	74.00

NOTE: The peaks outside the limits are due to the simultaneous operation with the BT module present in the EUT, these peaks are evaluated separately.



Final Result:

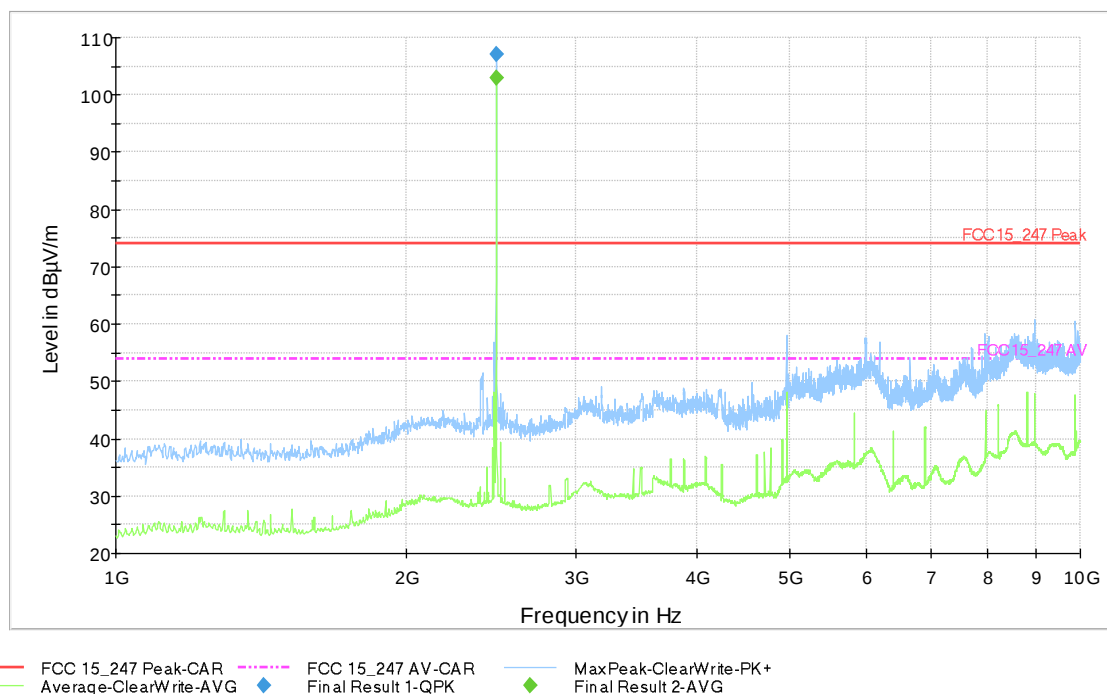
Frequency (MHz)	Peak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2416.000000	78.3	104.7	-8.0	-4.30	74.00

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
2439.000000	26.7	104.8	-5.0	27.30	54.00

NOTE: The peaks outside the limits are due to the simultaneous operation with the BT module present in the EUT, these peaks are evaluated separately.

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



Final Result:

Frequency (MHz)	Peak (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2479.750000	107.1	99.7	262.0	-33.10	74.00

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
2480.000000	102.8	104.7	262.0	-48.80	54.00

NOTE: The peaks outside the limits are due to the simultaneous operation with the BT module present in the EUT, these peaks are evaluated separately.

END OF TEST REPORT