



TEST REPORT

Ref. n.	FCCTR_185699-0	Issue Date:	26/11/2024	Pages:	61
Test object	Type test according to Standards 47 CFR FCC Part 15 Subpart C §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	Radio module				
Tested model	SIRIUS STAR RADIO, 915MHZ				
FCC Identification number	U4F-SIRIUS915				
Date of test samples receipt	16/10/2024				
No. of tested samples	1 – Sampled by the manufacturer				
Test date	From 29/10/2024 to 12/11/2024				
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	Daniele AOSANI Laboratory Engineer				
Approved by	Luana PARISI 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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PRSLAB refuses any responsibility about information provided by the customer contained in this test report.

TABLE OF CONTENTS

0. RELEASE CONTROL RECORD	3
1. DECISION RULE	3
2. INFORMATION PROVIDED BY CUSTOMER.....	3
3. GENERAL REMARKS	3
4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT).....	4
4.1 EUT Identification	4
4.2 Radio module technical data	5
4.3 Ports identification.....	6
4.4 Modifications incorporated in E.U.T.....	6
4.5 Auxiliary equipment.....	6
5. OPERATING MODES AND TEST CONDITIONS.....	6
6. REFERENCE STANDARDS	7
7. UNITS OF MEASUREMENTS	7
8. SUMMARY OF TEST RESULTS	8
9. TESTS RESULTS.....	9

0. RELEASE CONTROL RECORD

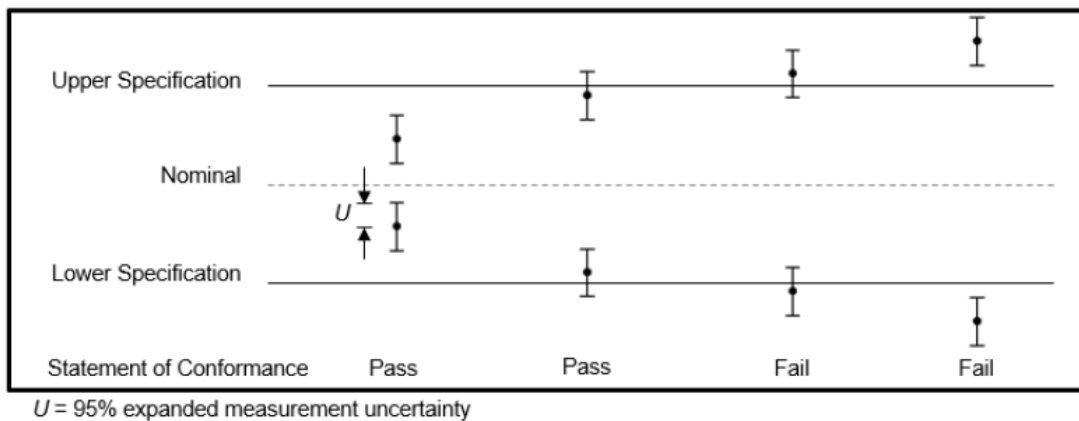
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_185699-0	Original release	26/11/2024

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

1. DECISION RULE

PRSLAB 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	Radio module
MODEL NAME	SIRIUS STAR RADIO, 915MHZ
FCC ID	U4F-SIRIUS915
SERIAL NO.	B24PAAFEY00001040
PRS LAB INTERNAL REFERENCE	BC 267/2024 3/15
TRADEMARK	
MANUFACTURER	DATALOGIC S.r.l.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	DC power from board
SUPPLY VOLTAGE	3.0 ÷ 3.6Vdc, Typical 3.3Vdc
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	<input checked="" type="checkbox"/> WALL; <input type="checkbox"/> CEILING; <input checked="" type="checkbox"/> TABLE; <input type="checkbox"/> FLOOR; <input type="checkbox"/> RACK MOUNTED; <input type="checkbox"/> BODY WORN; <input checked="" type="checkbox"/> HANDELD; <input type="checkbox"/> PORTABLE; <input type="checkbox"/> MOBILE
HIGHEST INTERNAL FREQUENCY (Information provided by Customer)	<input type="checkbox"/> <108MHz; <input type="checkbox"/> 108MHz<F<500MHz; <input checked="" type="checkbox"/> 500MHz<F<1GHz; <input type="checkbox"/> F>1GHz; F = 926.936MHz

4.2 Radio module technical data

ETS CATEGORY	Hybrid System device (DSS) - Transceiver
FREQUENCY BAND	From 902MHz to 928MHz
NUMBER OF CHANNELS	12
CHANNEL OCCUPIED BANDWIDTH	1.16MHz
CHANNEL SPACING	2.117MHz
TYPE OF MODULATION	NRZ
DATA RATE	500000 bit/s
ANTENNA TYPE (Information provided by Customer)	Flexible antenna with cable
ANTENNA GAIN (Information provided by Customer)	SRFI068H-100 with peak gain of 0.2dBi
ANTENNA MODEL (Information provided by Customer)	SRFI068V-100 with peak gain of 0.7dBi
ANTENNA MANUFACTURER (Information provided by Customer)	

4.3 Ports identification

PORT	DESCRIPTION	CONNECTION	NOTES
<input type="checkbox"/> Enclosure	Electronic board	---	---
<input type="checkbox"/> AC power port	Port not present	---	---
<input checked="" type="checkbox"/> DC power port	3.3Vdc	PIN stripe	---
<input type="checkbox"/> Signal/control port	Port not present	---	---
<input type="checkbox"/> Telecommunication port	Port not present	---	---
<input checked="" type="checkbox"/> Antenna port	<input type="checkbox"/> Internal; <input checked="" type="checkbox"/> External	UFL	---

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 used to set radio channels.
- Auxiliary board to supply radio module and send command via USB connected to

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 (903.649MHz)
#2	Continuous transmission, modulated carrier, on middle channel (914.117MHz)
#3	Continuous transmission, modulated carrier, on high channel (926.936MHz)
#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 was tested with two antennas, one at a time, mounted in a typical manner for its normal intended use as external antenna equipment.

6. REFERENCE STANDARDS

REFERENCE STANDARD	DESCRIPTION
47 CFR FCC Part 15 Subpart C §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 compliance measurements on Digital Transmission Systems (DTS), Frequency Hopping Spread Spectrum System (DSS) and Hybrid System Device (DSS) operating under §15.247 of the FCC rules.
ANSI C63.10:2020; ANSI C63.10:2020/Cor.1:2023	American National Standard of Procedures for Compliance Testing of 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 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.

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

8. SUMMARY OF TEST RESULTS

EUT PORT	DESCRIPTION OF PHENOMENA	BASIC STANDARD	OPERATING CONDITION ¹	RESULTS
Antenna port	Antenna requirement	FCC Part 15 §15.203	---	Compliant
	Maximum Peak Output Power	FCC Part 15 §15.247 (b) (2)	#1, #2, #3	Within the limits
	Power Spectral Density	FCC Part 15 §15.247 (f)	#1, #2, #3	Within the limits
	Band-Edge	FCC Part 15 § 15.247 (d)	#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)	#1, #4	Within the limits
	Average Time of Occupancy	FCC Part 15 §15.247 (f)	#4	Within the limits

Note: ¹ Ref. Tab. Of Section 5

EUT uses an Hybrid System communication, the required tests are described in 558074 D01 15.247 Meas Guidance v05r02.

9. TESTS RESULTS

ANTENNA REQUIREMENTS	10
MAXIMUM PEAK OUTPUT POWER	11
POWER SPECTRAL DENSITY	14
BAND EDGE	17
RF RADIATED SPURIOUS EMISSIONS AT THE TRANSMITTER ANTENNA TERMINAL	19
TRANSMITTER CARRIER FREQUENCY SEPARATION	23
AVERAGE TIME OF OCCUPANCY	25
TRANSMITTER RADIATED EMISSIONS < 1GHz	27
TRANSMITTER RADIATED EMISSIONS > 1GHz	47

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 two external flexible antennas with cable.

RESULT: COMPLIANT

TEST 2.

MAXIMUM PEAK OUTPUT POWER

REFERENCE DOCUMENT

According to §15.247(b) (3)

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

• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 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	86 - 106kPa (860mbar - 1060mbar)	1014 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.

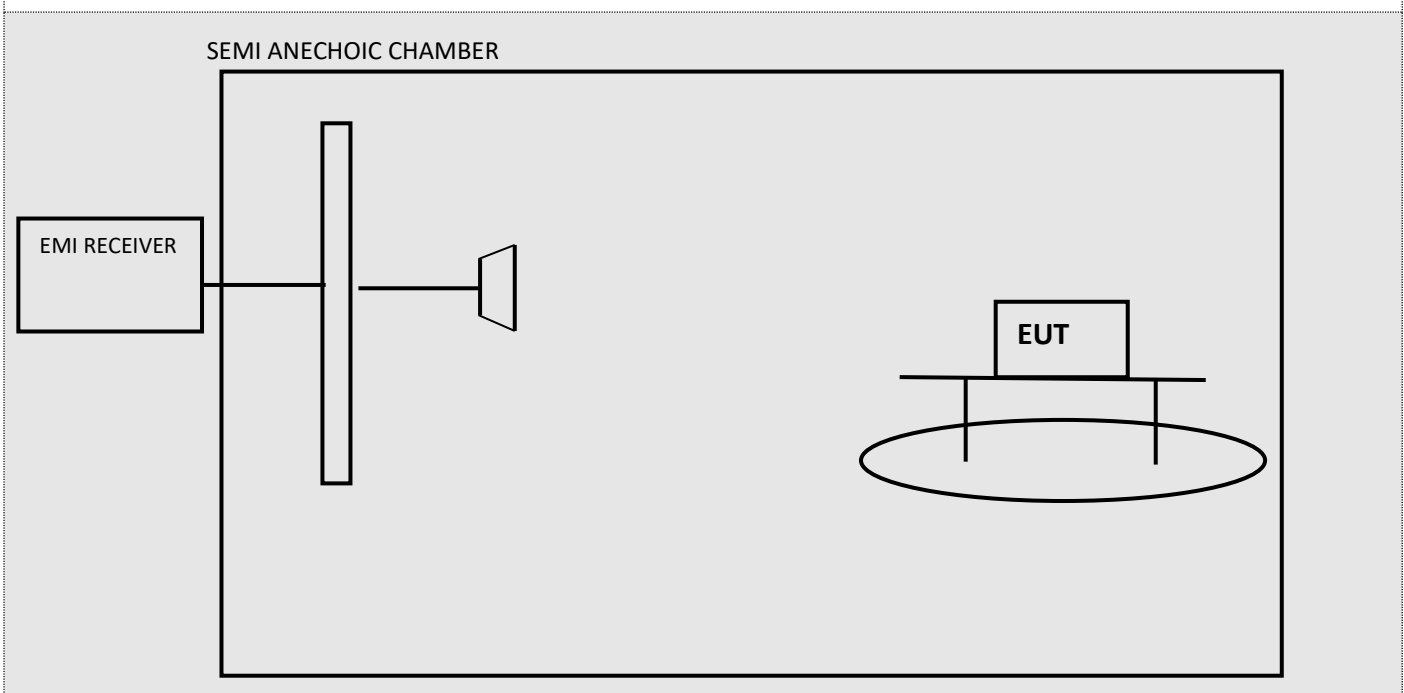
The EUT is placed at test table.

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

Radiated power with antenna SRFI068H-100						
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain (dB)	Max Conducted Output power	Limit (dBm)	Result
LOW	903.649	14.78	0.2	14.58	30	WITHIN THE LIMITS
MIDDLE	914.234	14.84	0.2	14.64		
HIGH	926.936	14.84	0.2	14.64		
Note: ---						

Radiated power with antenna SRFI068V-100						
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain (dB)	Max Conducted Output power	Limit (dBm)	Result
LOW	903.649	15.28	0.7	14.58	30	WITHIN THE LIMITS
MIDDLE	914.234	15.34	0.7	14.64		
HIGH	926.936	15.34	0.7	14.64		
Note: ---						

TEST 3.

POWER SPECTRAL DENSITY

REFERENCE DOCUMENT

According to §15,247) (f)

The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Conducted					
• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 section 11.10					
• 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**

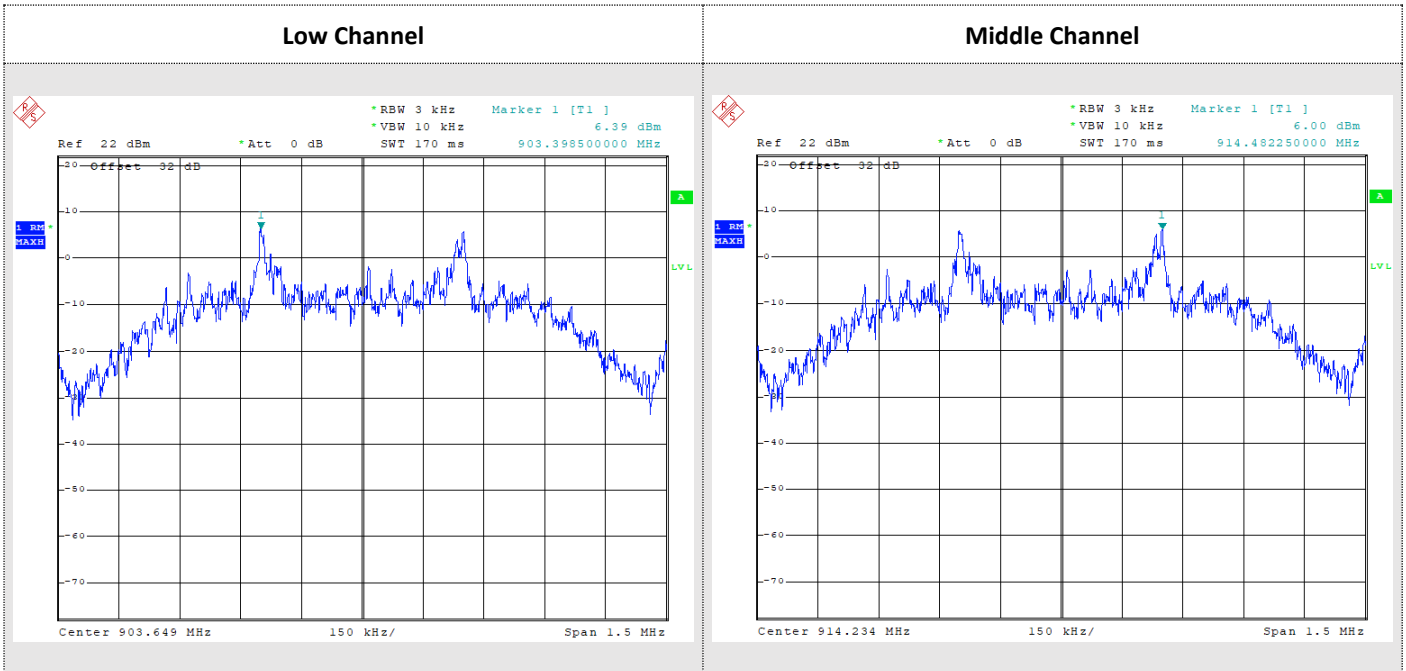
MEASUREMENT PARAMETER

Resolution bandwidth	3kHz
Video bandwidth	10kHz
Span	1.5MHz
Sweep time	Auto couple
Detector	Peak
Trace-Mode	Max. hold

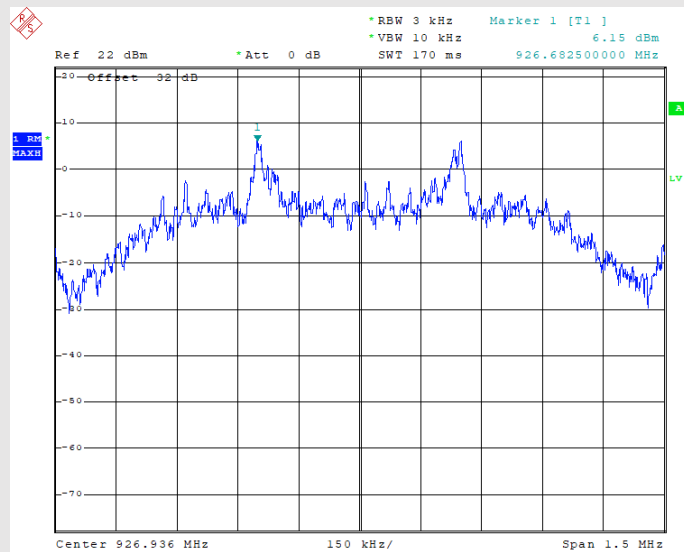
TEST DESCRIPTION

Allow trace to fully stabilize.
Use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat

TEST RESULTS



High Channel



Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result
1	903.649	6.39	8	1.61	COMPLIANT
6	914.234	6.00	8	2.00	COMPLIANT
12	926.936	6.15	8	1.85	COMPLIANT

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	Conducted					
• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 section 7.8.6					
• FREQUENCY RANGE	Carrier					

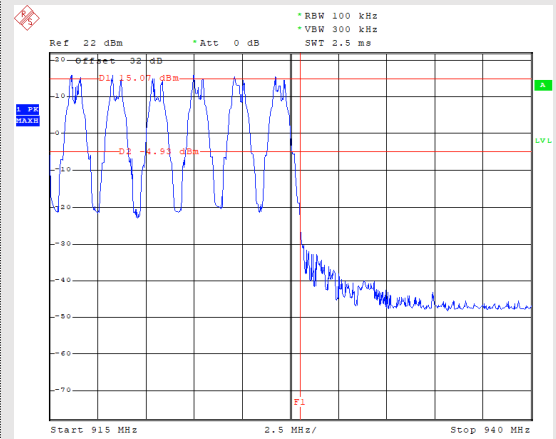
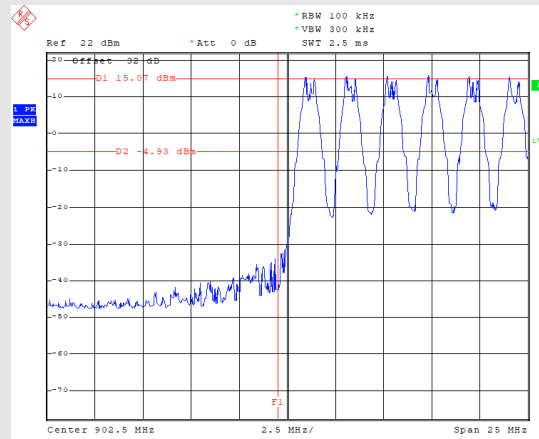
TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #4

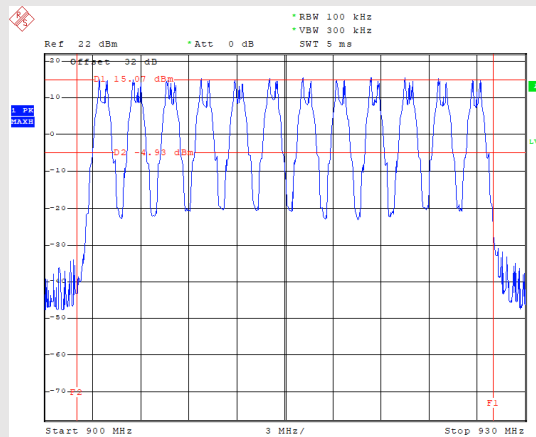
RESULT: **COMPLIANT**

TEST RESULTS

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	Conducted					
• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 section 7.8.8					
• FREQUENCY RANGE	30MHz – 26GHz					
• 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

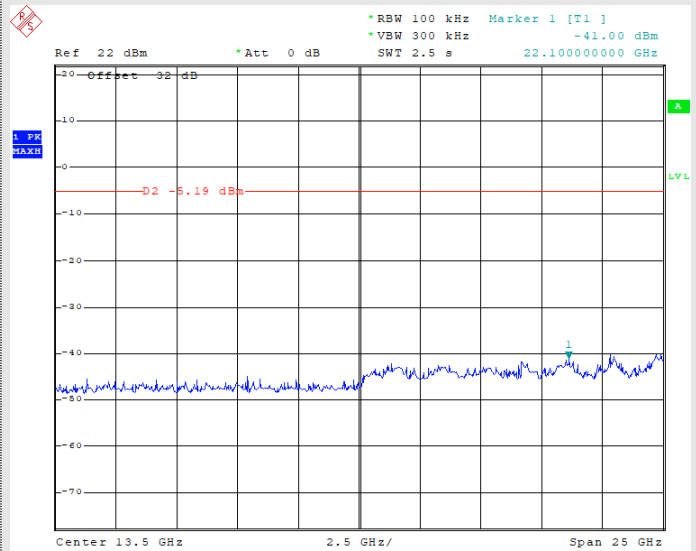
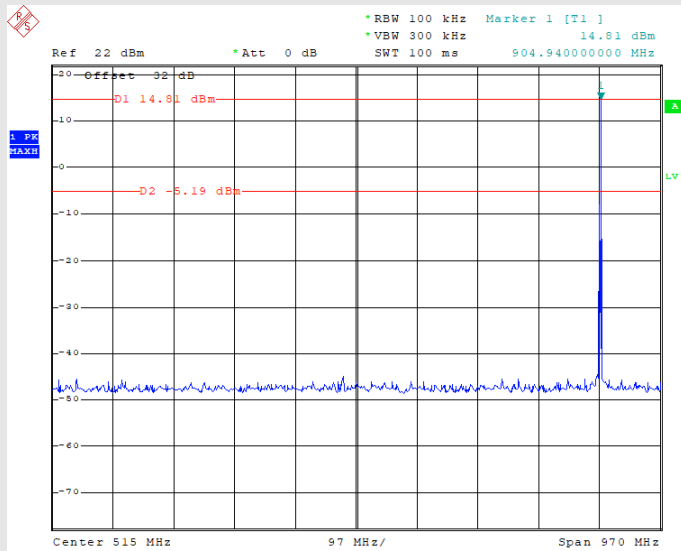
RESULT: **WITHIN THE LIMITS**

TEST RESULTS

Low channel: 903.649MHz

Frequency range: 30MHz – 1GHz

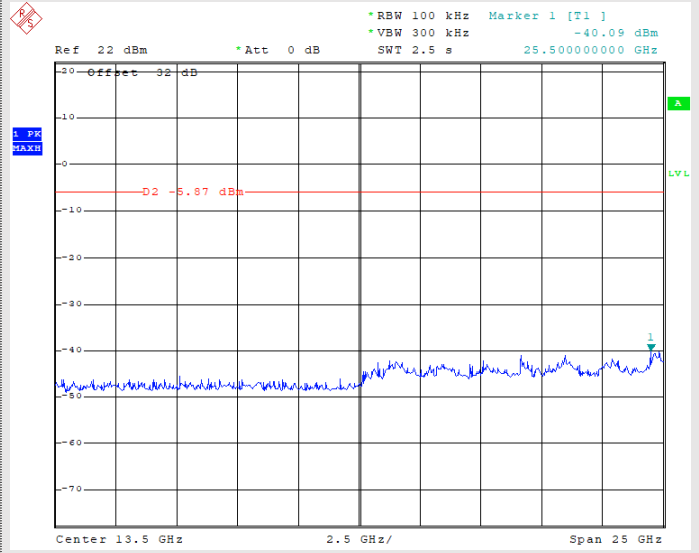
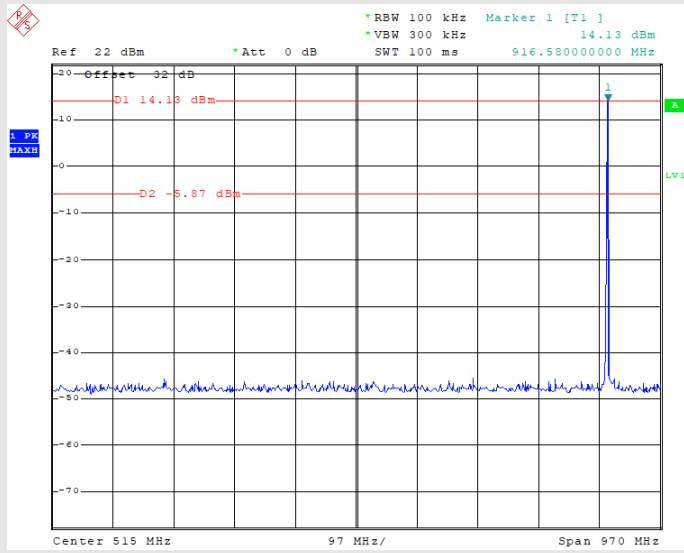
Frequency range: 1GHz – 26GHz



Middle channel: 914.234MHz

Frequency range: 30MHz – 1GHz

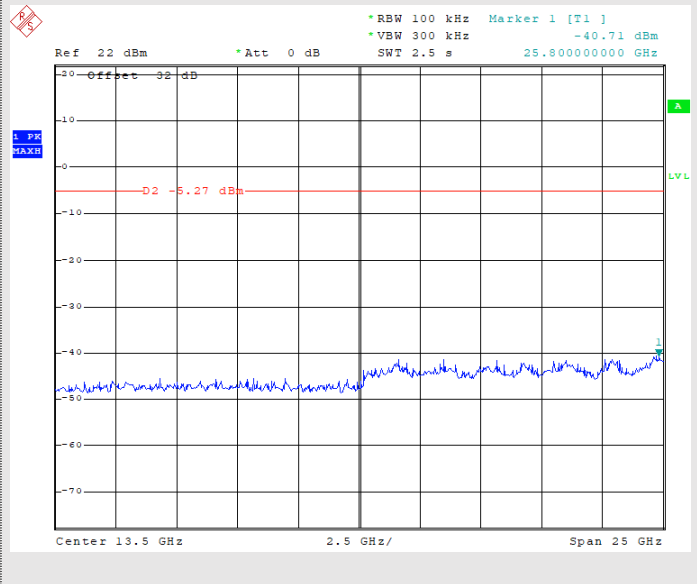
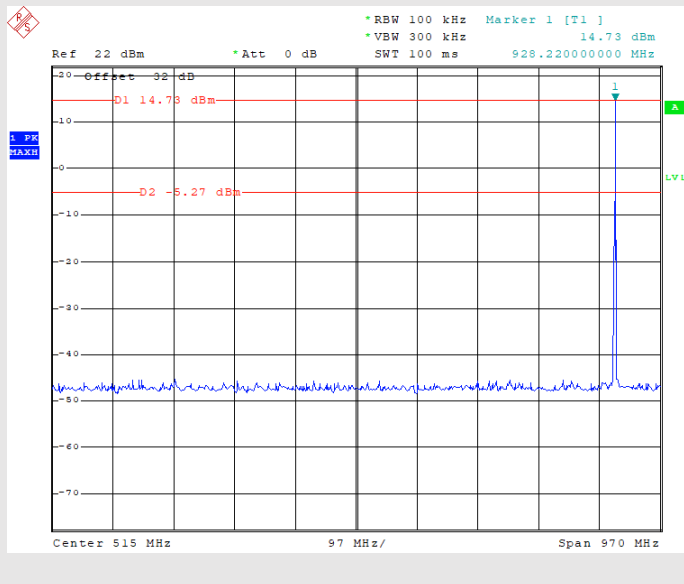
Frequency range: 1GHz – 26GHz



High channel: 926.936MHz

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	Conducted					
• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 section 7.8.8					
• FREQUENCY RANGE	Two adjacent channels (1st and 2nd)					

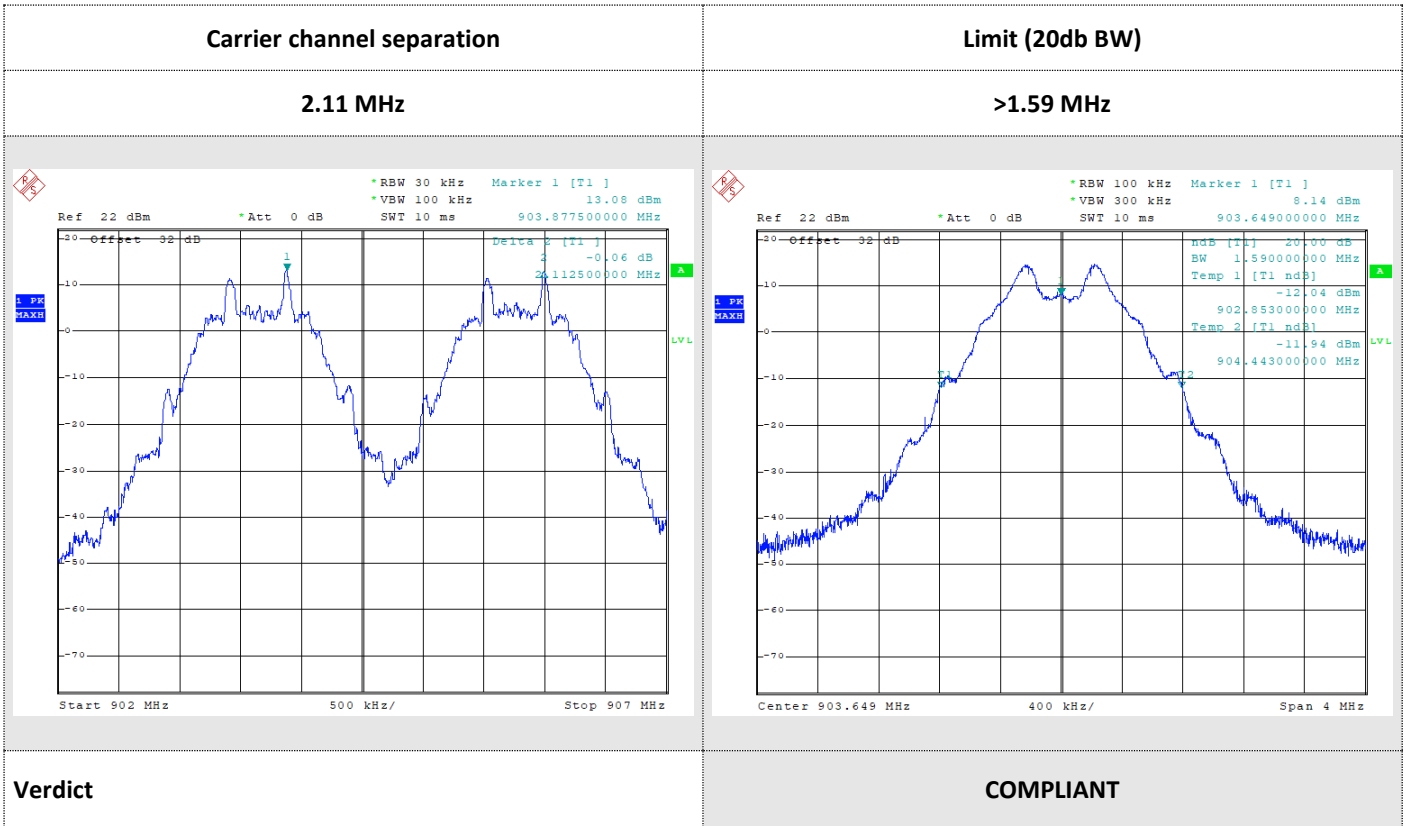
TEST CONDITIONS	REQUIRED	MEASURED
Ambient temperature	23°C ± 5°C	24 °C
Ambient humidity	25 - 75%rH	45%
Pressure	86 - 106kPa (860mbar - 1060mbar)	1014 mbar

OPERATING CONDITION: #1¹, #4

NOTE: ¹Condition used only for 20dB Bandwidth to calculate the limits.

RESULT: COMPLIANT

TEST RESULTS



TEST 7.

AVERAGE TIME OF OCCUPANCY

REFERENCE DOCUMENT

According to § 15.247 (f)

For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4.

• TEST LOCATION	Radio test area					
• TYPE OF MEASUREMENT	Conducted					
• 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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 section 7.8.3 and 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

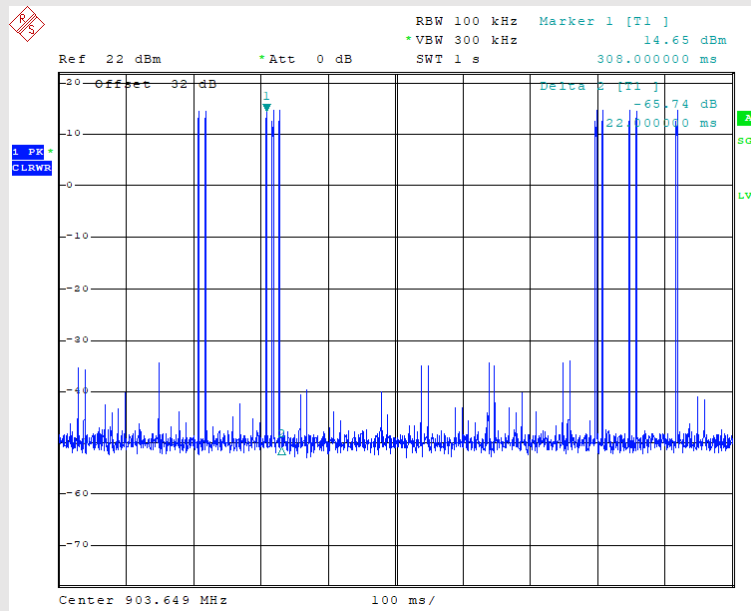
OPERATING CONDITION: #4

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	12	32.00	12	0.384	0.400	Compliant

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 C63.10:2020; ANSI C63.10:2020/Cor.1:2023 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

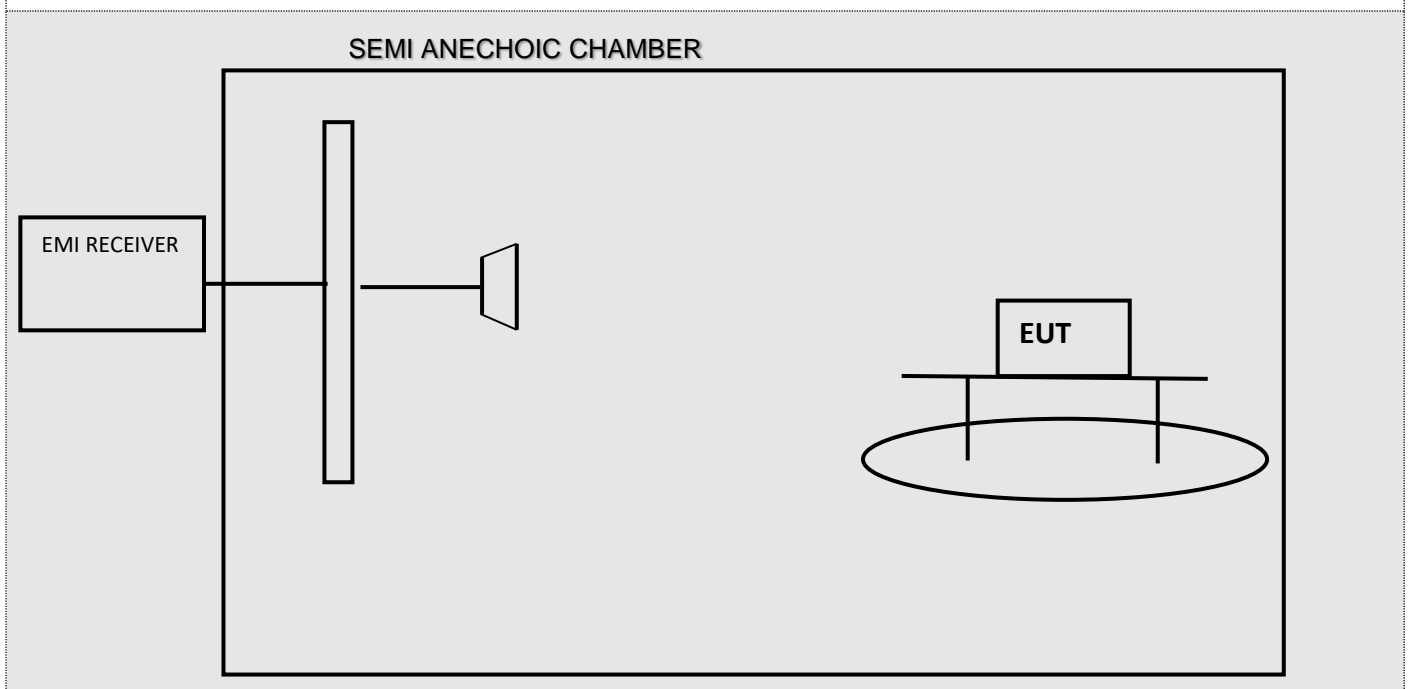
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

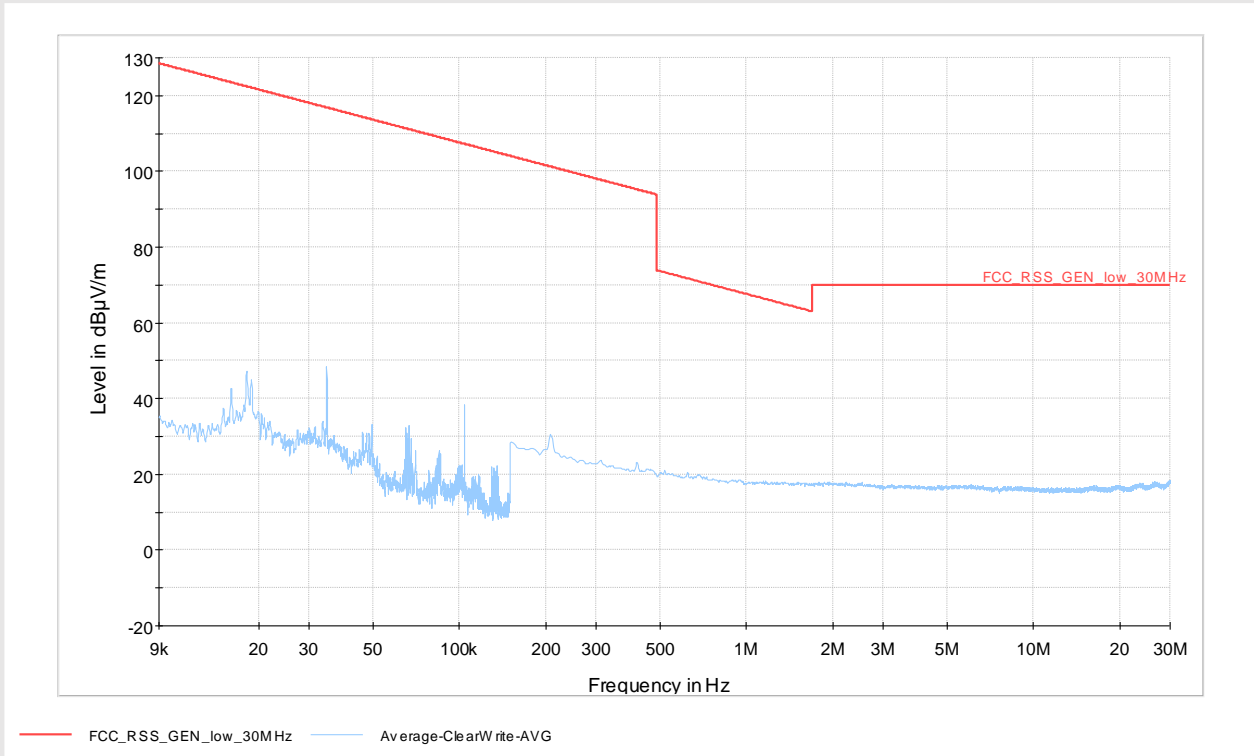


TEST RESULTS - Radiated with antenna SRFI068H-100

Low channel: 903.649MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

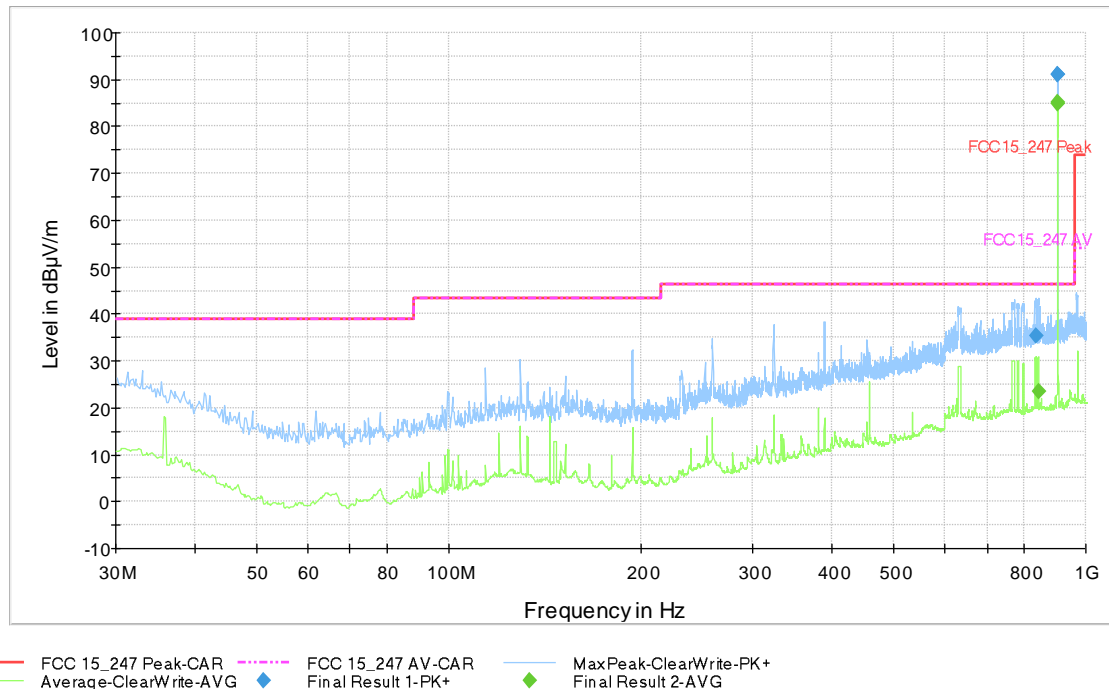


Final Result:

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:

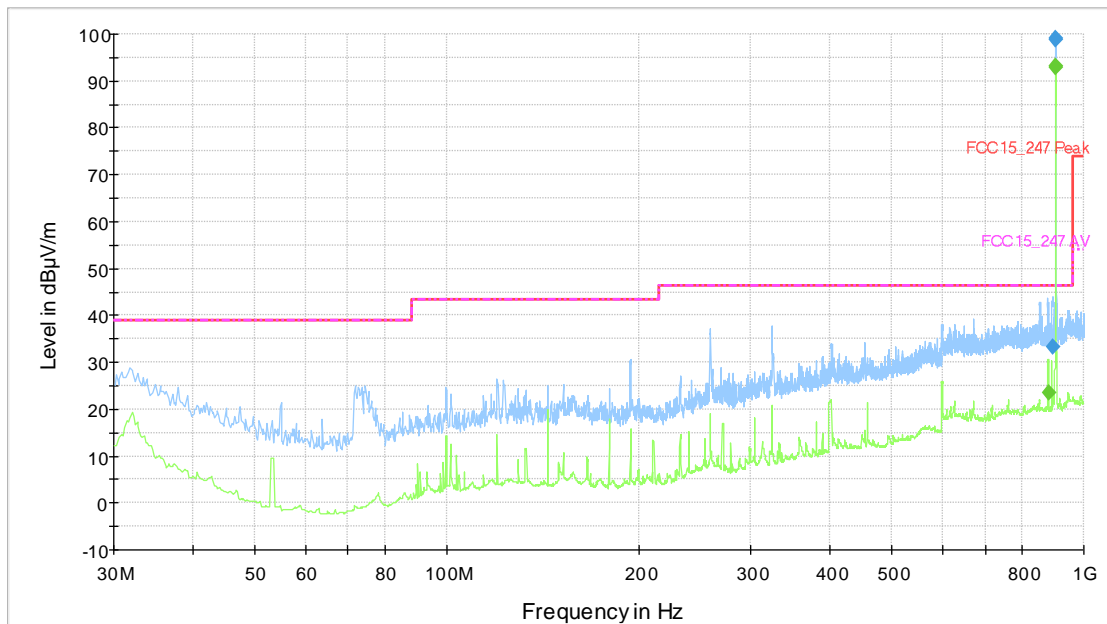
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
834.450000	35.4	99.7	277.0	11.00	46.40
903.420000	91.1	99.8	187.0	-44.70	46.40
903.870000	91.2	99.7	187.0	-44.80	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
843.420000	23.4	99.8	97.0	23.00	46.40
903.390000	84.9	99.8	187.0	-38.50	46.40
903.900000	85.0	99.7	187.0	-38.60	46.40

NOTE: Peaks out of limits are due to carrier frequency.

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)
893.520000	33.2	155.0	97.0	13.20	46.40
903.420000	99.0	99.7	2.0	-52.60	46.40
903.870000	98.9	99.8	-5.0	-52.50	46.40

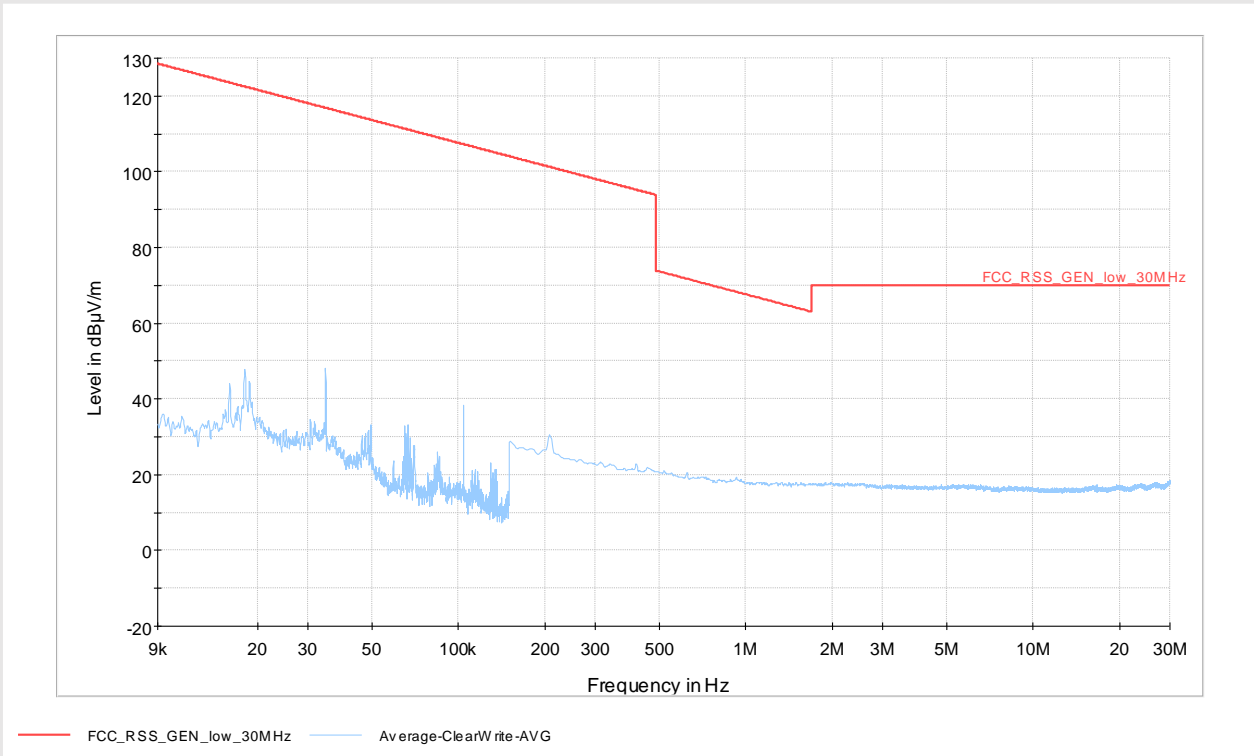
Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
879.480000	23.4	309.9	97.0	23.00	46.40
903.390000	92.8	99.8	-4.0	-46.40	46.40
903.900000	93.1	99.9	0.0	-46.70	46.40

NOTE: Peaks out of limits are due to carrier frequency.

Middel channel: 914.234MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

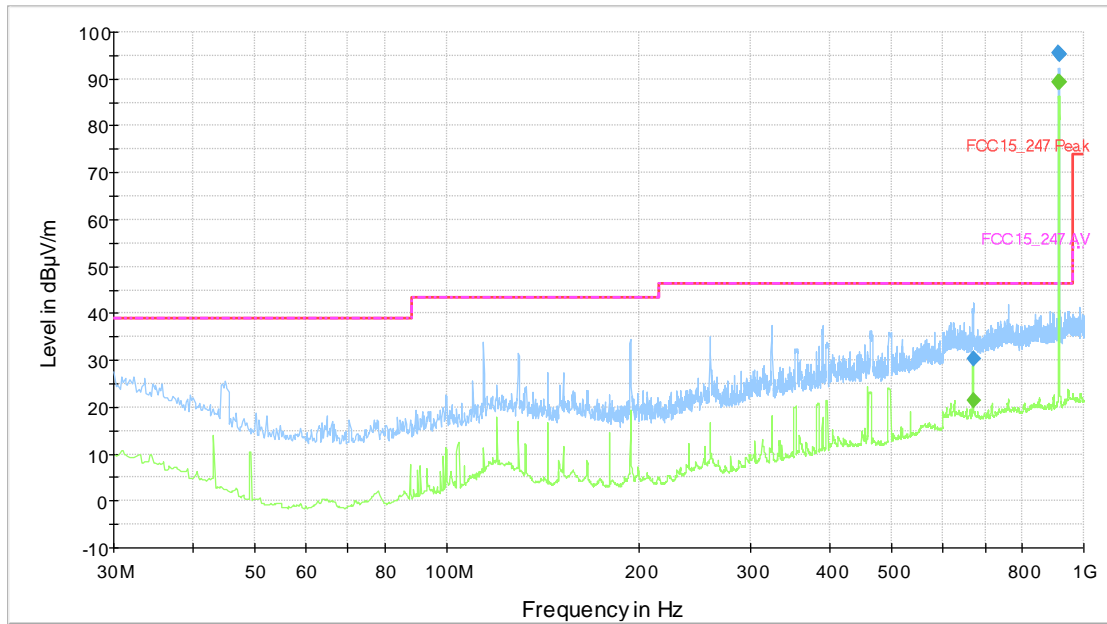


Final Result:

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:

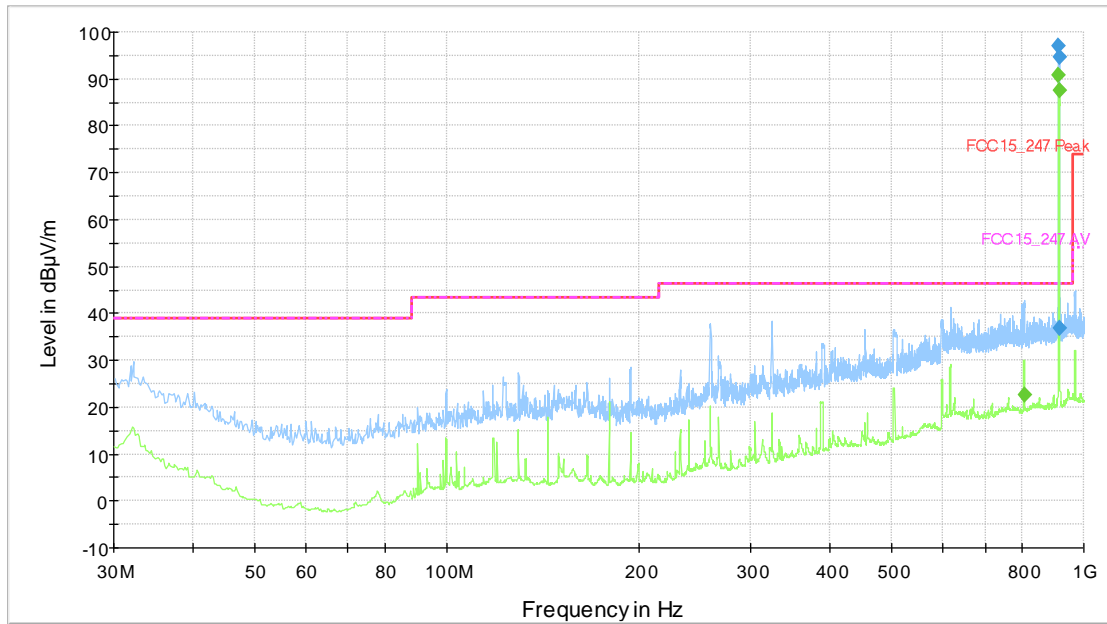
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
670.050000	30.3	180.0	264.0	16.10	46.40
914.010000	95.4	232.7	82.0	-49.00	46.40
914.460000	95.2	234.8	82.0	-48.80	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
672.510000	21.4	180.0	277.0	25.00	46.40
913.980000	89.4	231.8	82.0	-43.00	46.40
914.460000	89.2	232.8	82.0	-42.80	46.40

NOTE: Peaks out of limits are due to carrier frequency.

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)
914.010000	96.9	99.8	0.0	-50.50	46.40
914.460000	94.8	121.9	271.0	-48.40	46.40
917.340000	36.9	180.1	7.0	9.50	46.40

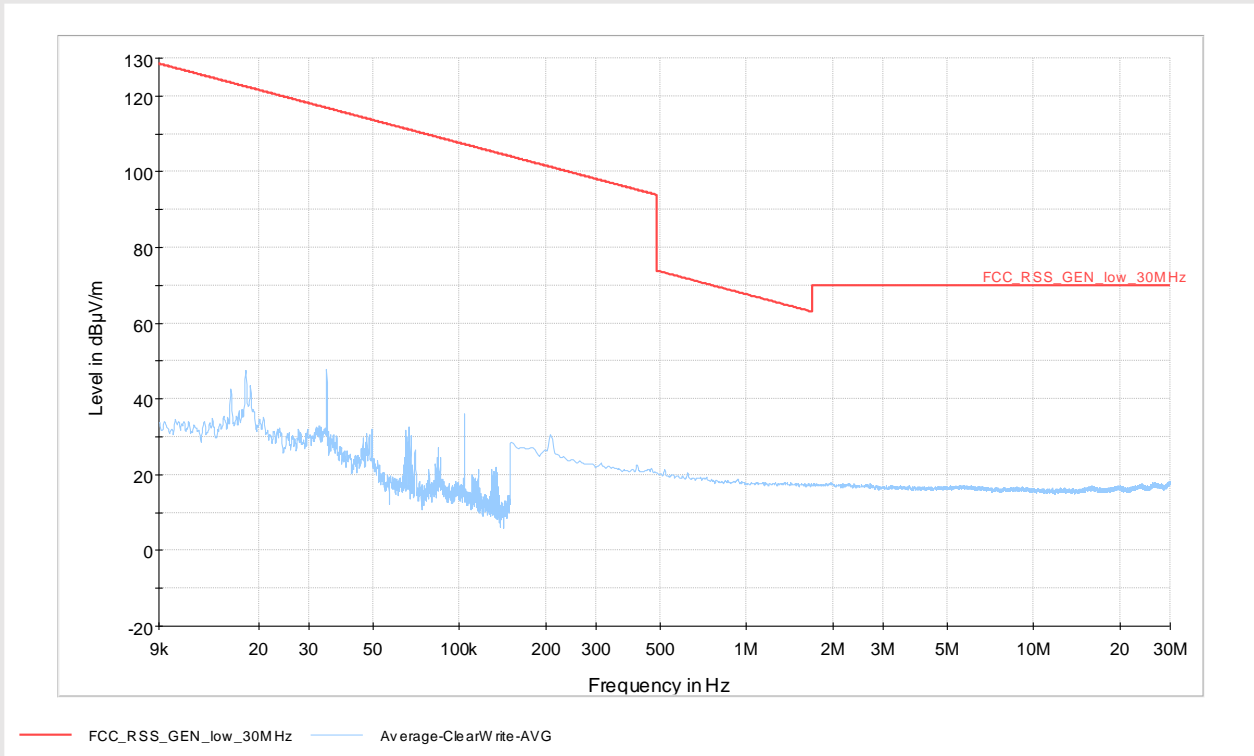
Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
807.510000	22.7	203.8	7.0	23.70	46.40
913.980000	90.7	99.8	2.0	-44.30	46.40
914.460000	87.5	99.9	277.0	-41.10	46.40

NOTE: Peaks out of limits are due to carrier frequency.

High channel: 926.936MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

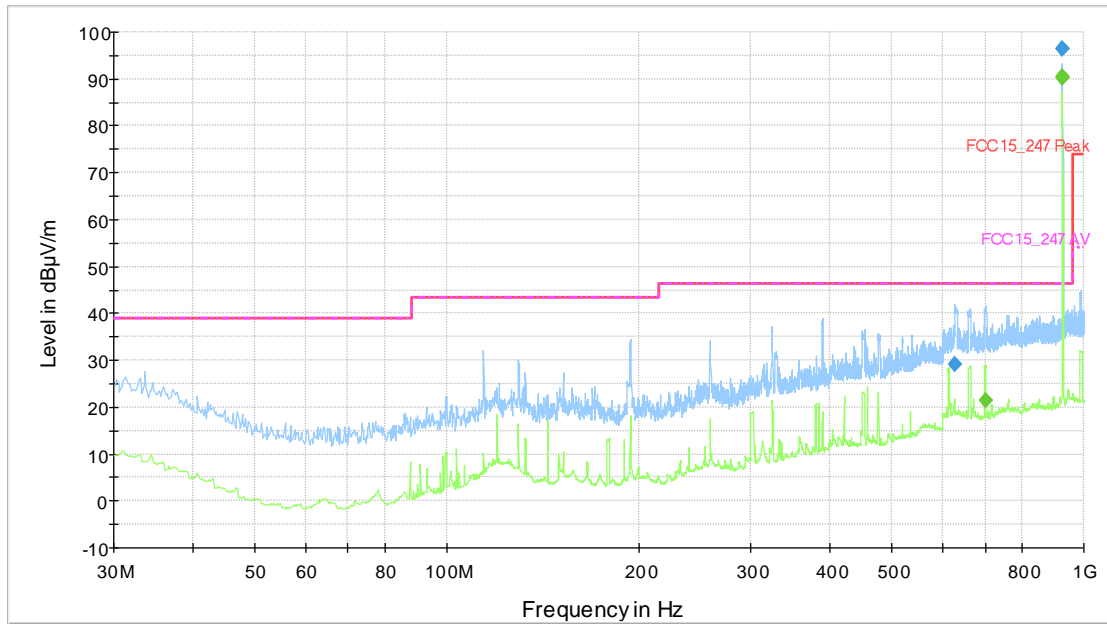


Final Result:

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:

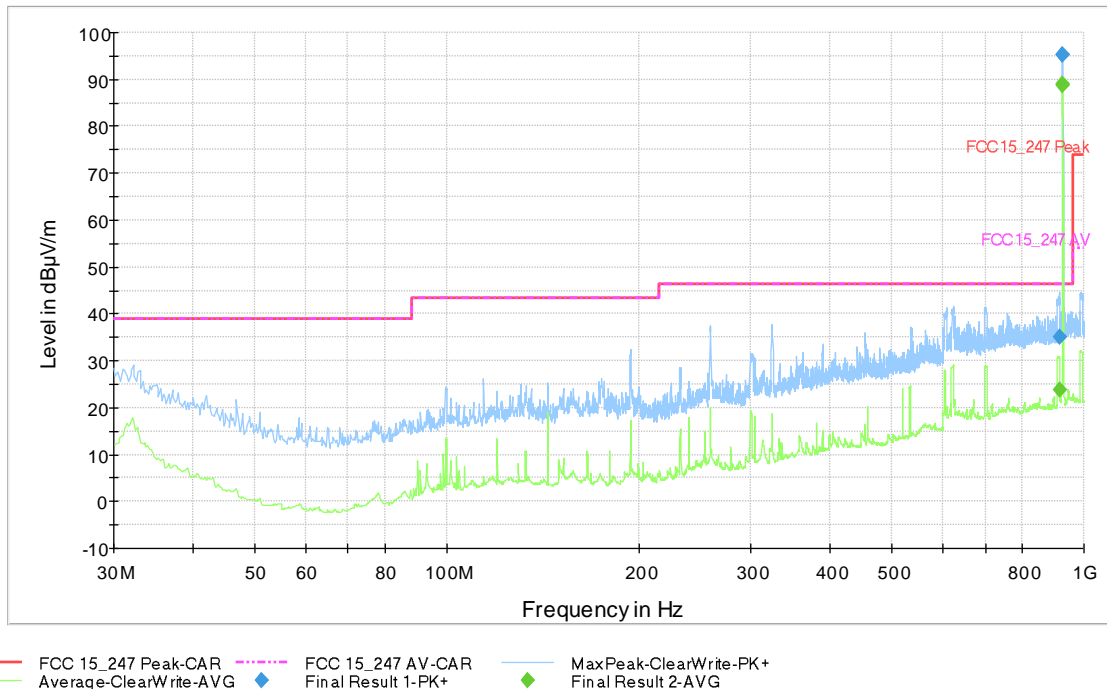
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
627.300000	29.2	179.7	277.0	17.20	46.40
926.700000	96.4	205.8	82.0	-50.00	46.40
927.150000	96.5	208.8	82.0	-50.10	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
701.130000	21.3	179.9	182.0	25.10	46.40
926.700000	90.3	203.8	82.0	-43.90	46.40
927.180000	90.5	206.8	82.0	-44.10	46.40

NOTE: Peaks out of limits are due to carrier frequency.

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
914.190000	35.1	173.9	97.0	11.30	46.40
926.700000	95.1	123.8	265.0	-48.70	46.40
927.150000	95.1	99.8	272.0	-48.70	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
915.000000	23.7	99.8	97.0	22.70	46.40
926.700000	88.9	99.7	272.0	-42.50	46.40
927.180000	89.1	99.8	272.0	-42.70	46.40

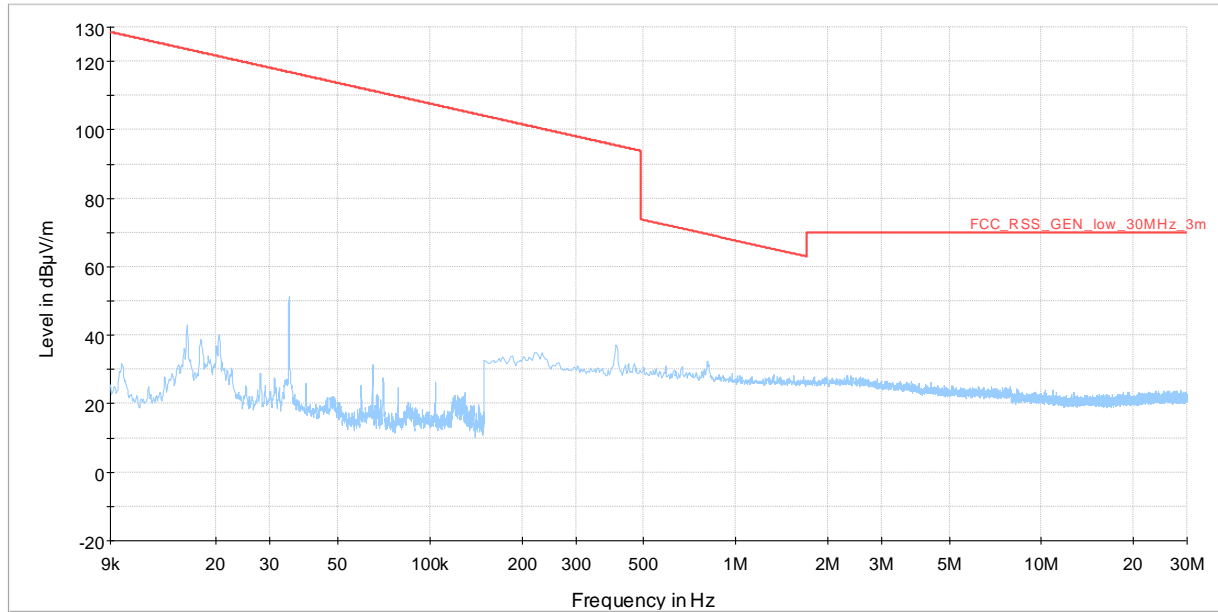
NOTE: Peaks out of limits are due to carrier frequency.

TEST RESULTS - Radiated with antenna SRFI068V-100

Low channel: 903.649MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz



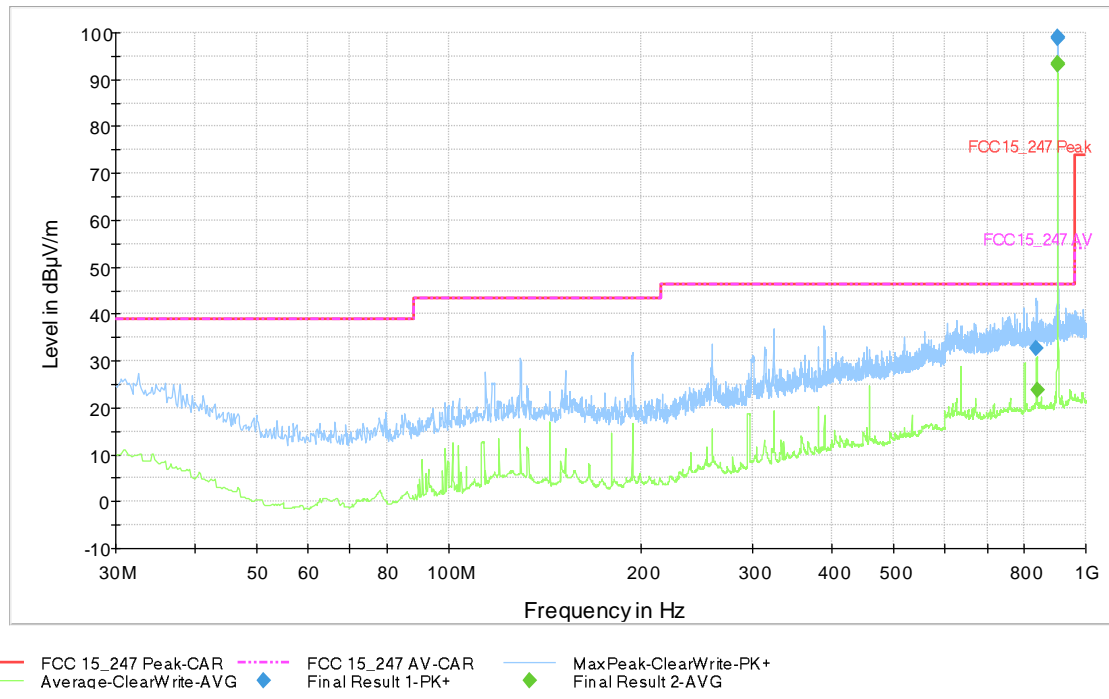
— FCC_RSS_GEN_low_30MHz_3m — Preview Result 1-PK+

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:

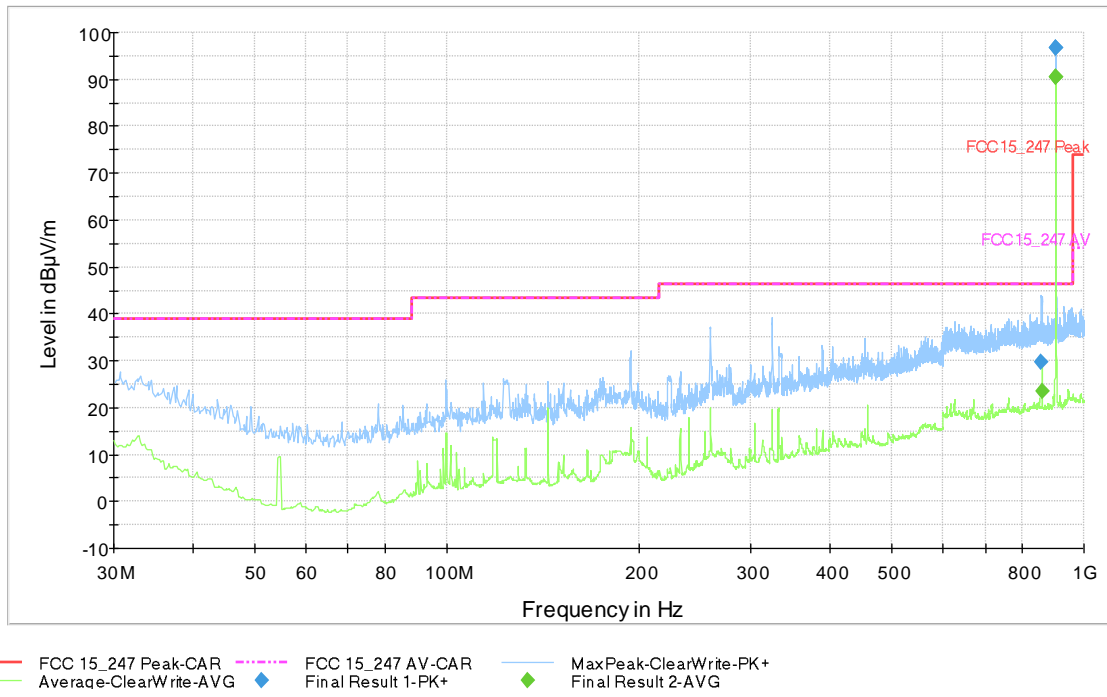
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
836.190000	32.6	99.7	187.0	13.80	46.40
903.420000	98.8	127.8	-8.0	-52.40	46.40
903.870000	99.1	126.7	-8.0	-52.70	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
840.630000	23.7	99.7	187.0	22.70	46.40
903.390000	93.2	123.7	-8.0	-46.80	46.40
903.900000	93.4	123.7	-8.0	-47.00	46.40

NOTE: Peaks out of limits are due to carrier frequency.

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
858.090000	29.7	99.7	262.0	16.70	46.40
903.420000	96.8	99.8	187.0	-50.40	46.40
903.870000	96.8	99.7	187.0	-50.40	46.40

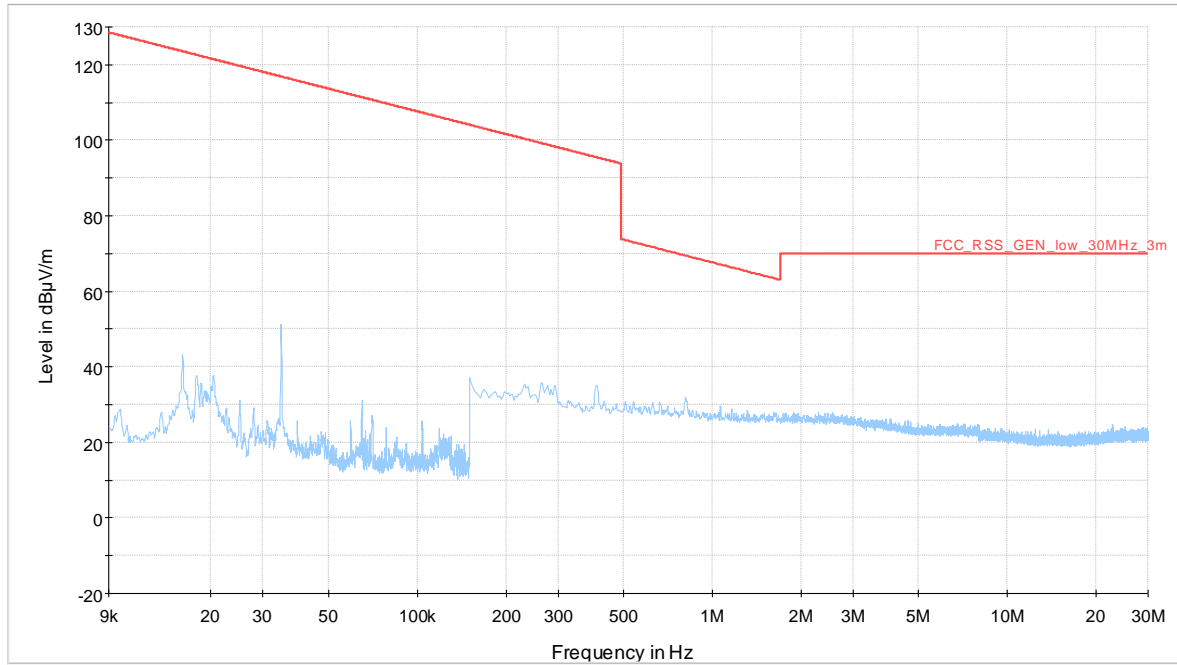
Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
861.060000	23.5	152.8	265.0	22.90	46.40
903.390000	90.6	99.8	187.0	-44.20	46.40
903.900000	90.7	99.8	187.0	-44.30	46.40

NOTE: Peaks out of limits are due to carrier frequency.

Middel channel: 914.234MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

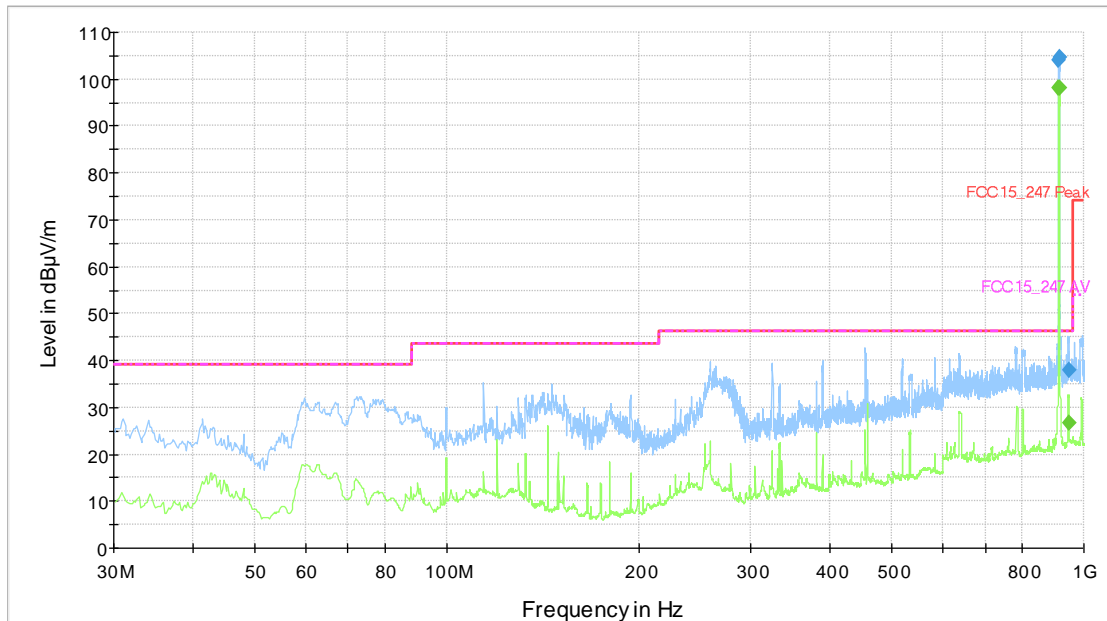


Final Result:

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:

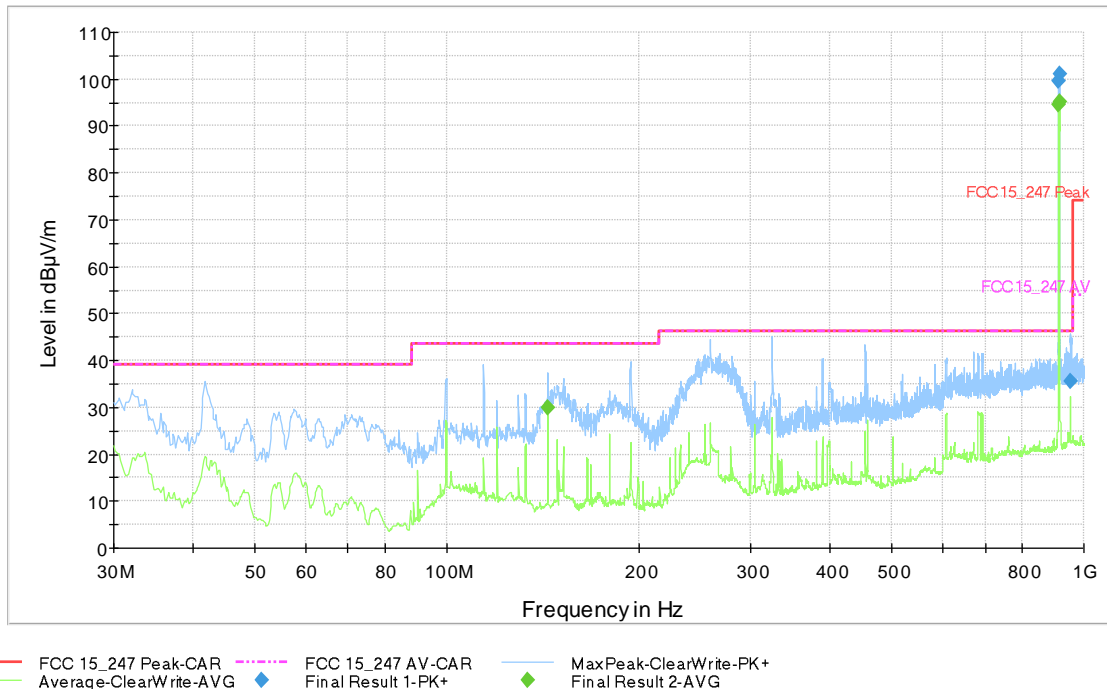
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
914.010000	104.1	104.9	-6.0	-57.70	46.40
914.460000	104.5	104.8	-5.0	-58.10	46.40
946.860000	38.0	313.9	183.0	8.40	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
913.980000	98.0	104.7	-6.0	-51.60	46.40
914.460000	98.2	104.8	-5.0	-51.80	46.40
945.990000	26.6	179.7	174.0	19.80	46.40

NOTE: Peaks out of limits are due to carrier frequency.

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
914.010000	99.7	99.8	82.0	-53.30	46.40
914.460000	101.0	124.7	82.0	-54.60	46.40
952.800000	35.5	176.8	7.0	10.90	46.40

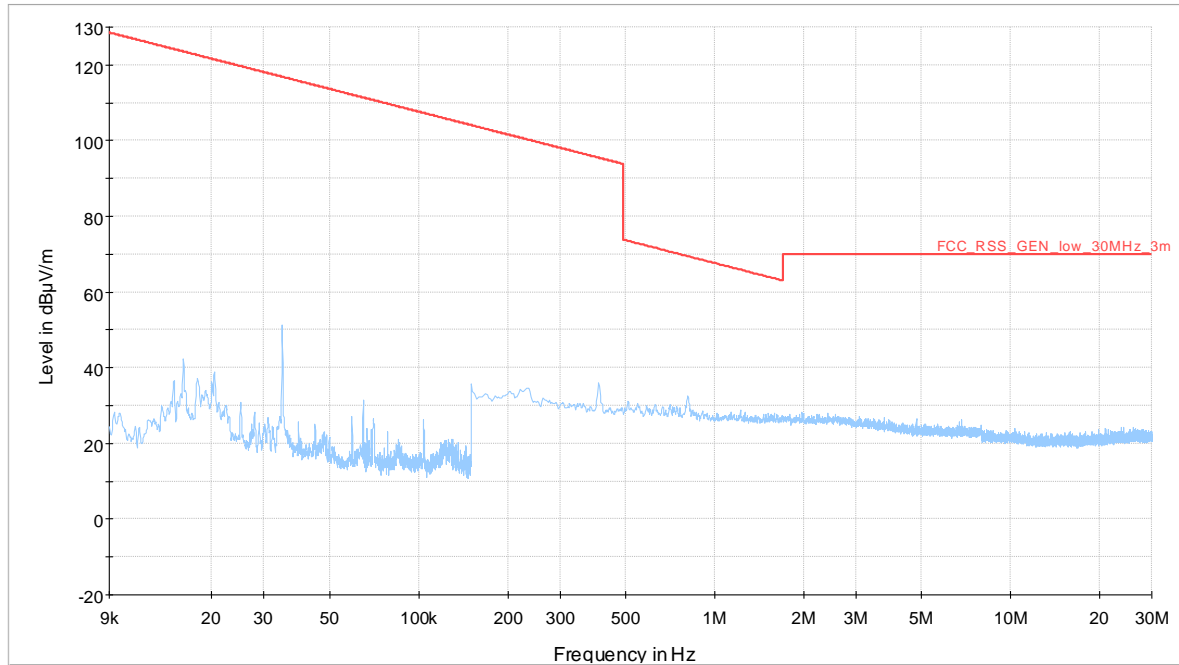
Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
144.000000	30.0	205.7	262.0	13.50	43.50
913.980000	94.5	125.7	82.0	-48.10	46.40
914.460000	95.2	123.8	82.0	-48.80	46.40

NOTE: Peaks out of limits are due to carrier frequency.

High channel: 926.936MHz

RX Antenna Polarization: ---

Frequency Range: 9kHz – 30MHz

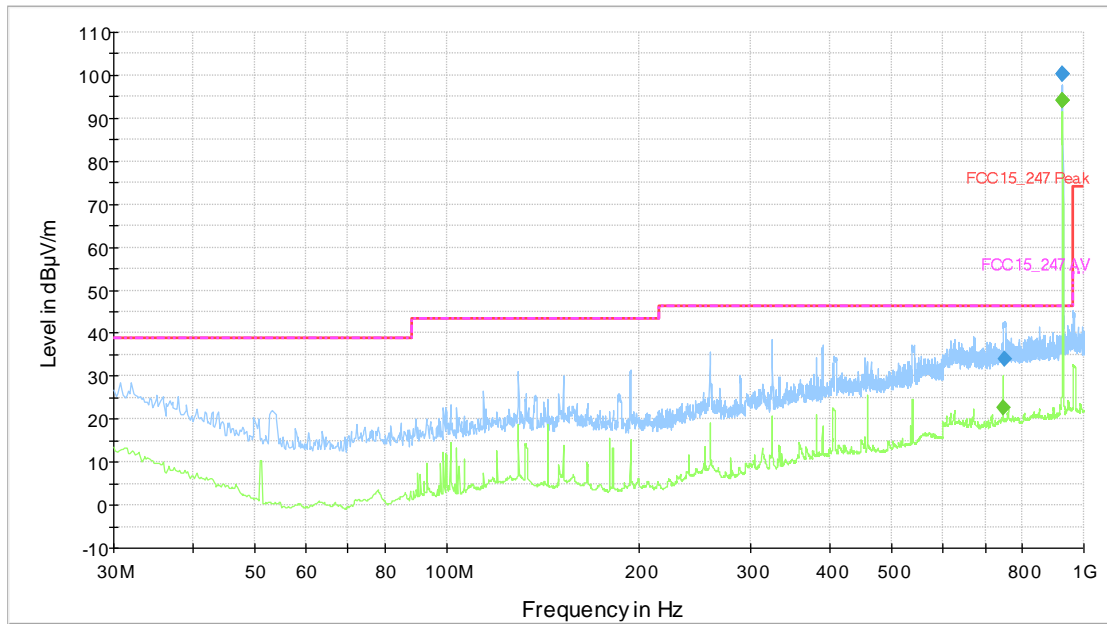


Final Result:

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:

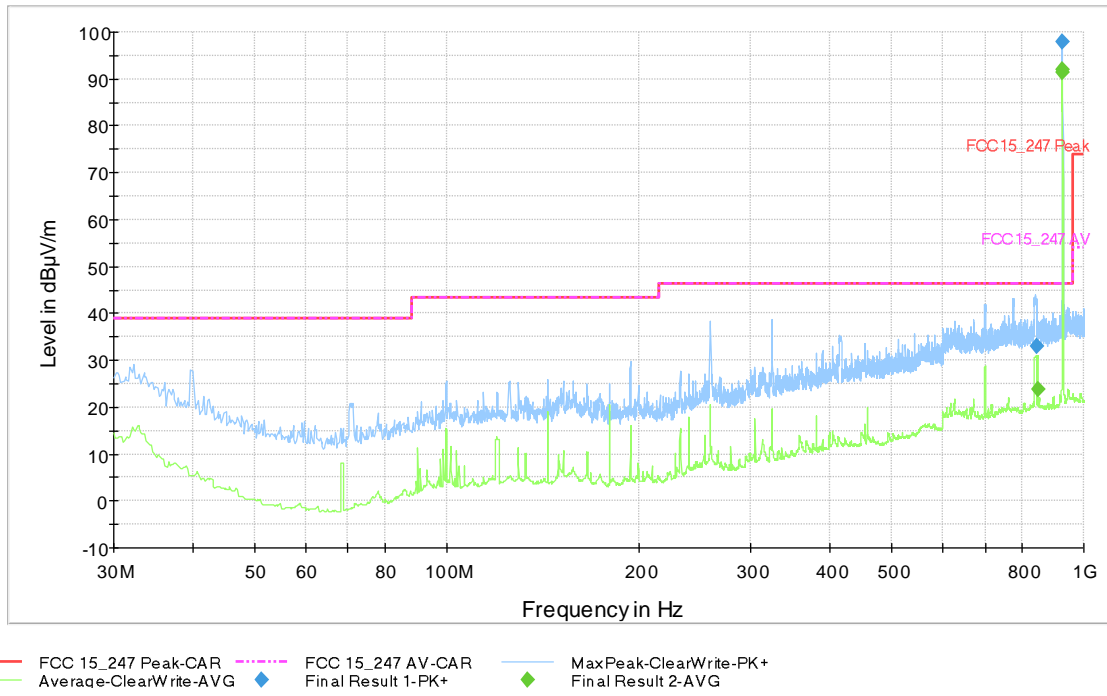
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
749.370000	34.0	99.8	90.0	12.40	46.40
926.700000	100.3	124.7	172.0	-53.90	46.40
927.150000	100.4	125.8	172.0	-54.00	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
746.880000	22.8	180.0	82.0	23.60	46.40
926.700000	94.0	126.7	172.0	-47.60	46.40
927.180000	94.2	126.7	172.0	-47.80	46.40

NOTE: Peaks out of limits are due to carrier frequency.

RX Antenna Polarization: Horizontal

Frequency Range: 30MHz – 1GHz



Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
842.700000	32.9	152.7	7.0	13.50	46.40
927.150000	97.9	99.7	277.0	-51.50	46.40

Frequency (MHz)	Average (dBµV/m)	Height (cm)	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
846.840000	23.7	153.7	7.0	22.70	46.40
926.700000	91.5	99.8	277.0	-45.10	46.40
927.180000	91.9	99.8	277.0	-45.50	46.40

NOTE: Peaks out of limits are due to carrier frequency.

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
	High pass filter	Wainwright	WHK 1,3/15G	9	10/2023	10/2025
	Software EMC	Rohde & Schwarz	EMC32-E	V 8.40.0	N.A.	
• TESTED PORT	Antenna					
• TEST METHOD	ANSI C63.10:2020; ANSI C63.10:2020/Cor.1:2023 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

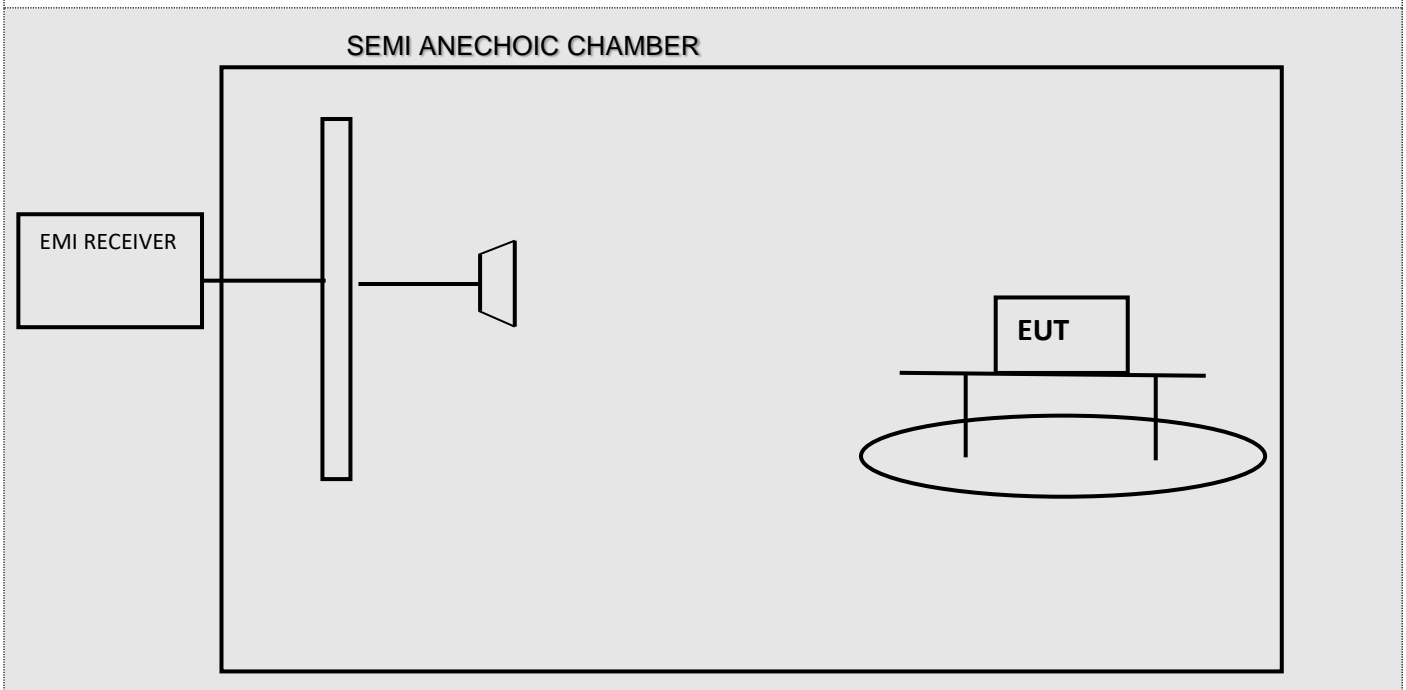
Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously - rotating, remotely - controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

The EUT is placed at test table height is 1.5 m

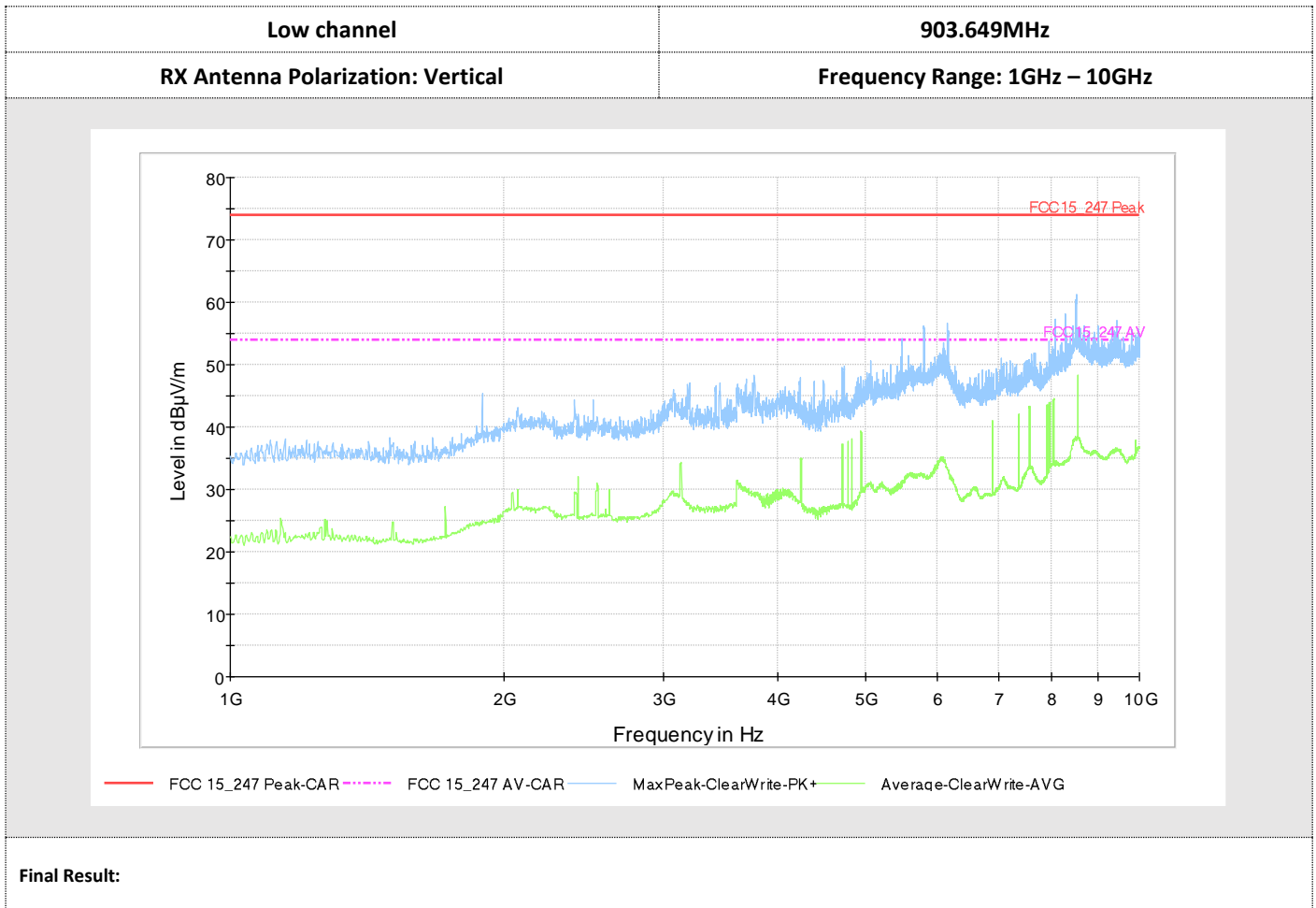
Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m~4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3m.

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

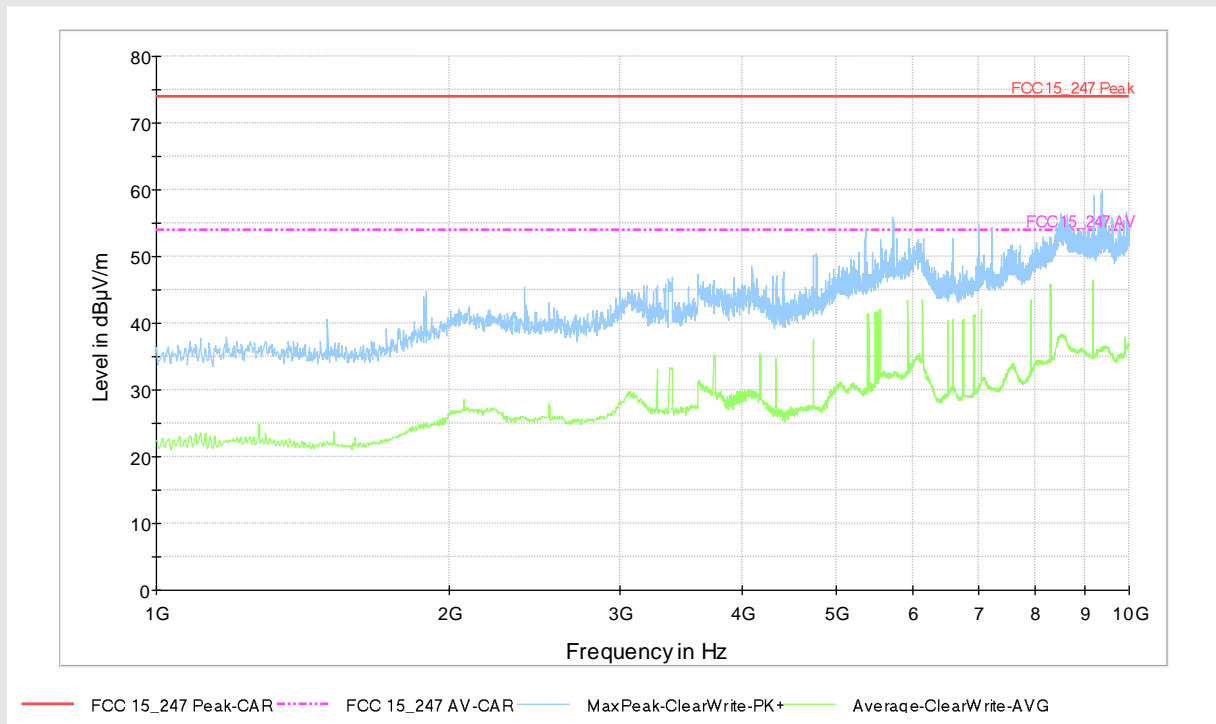


TEST RESULTS - Radiated with antenna SRFI068H-100

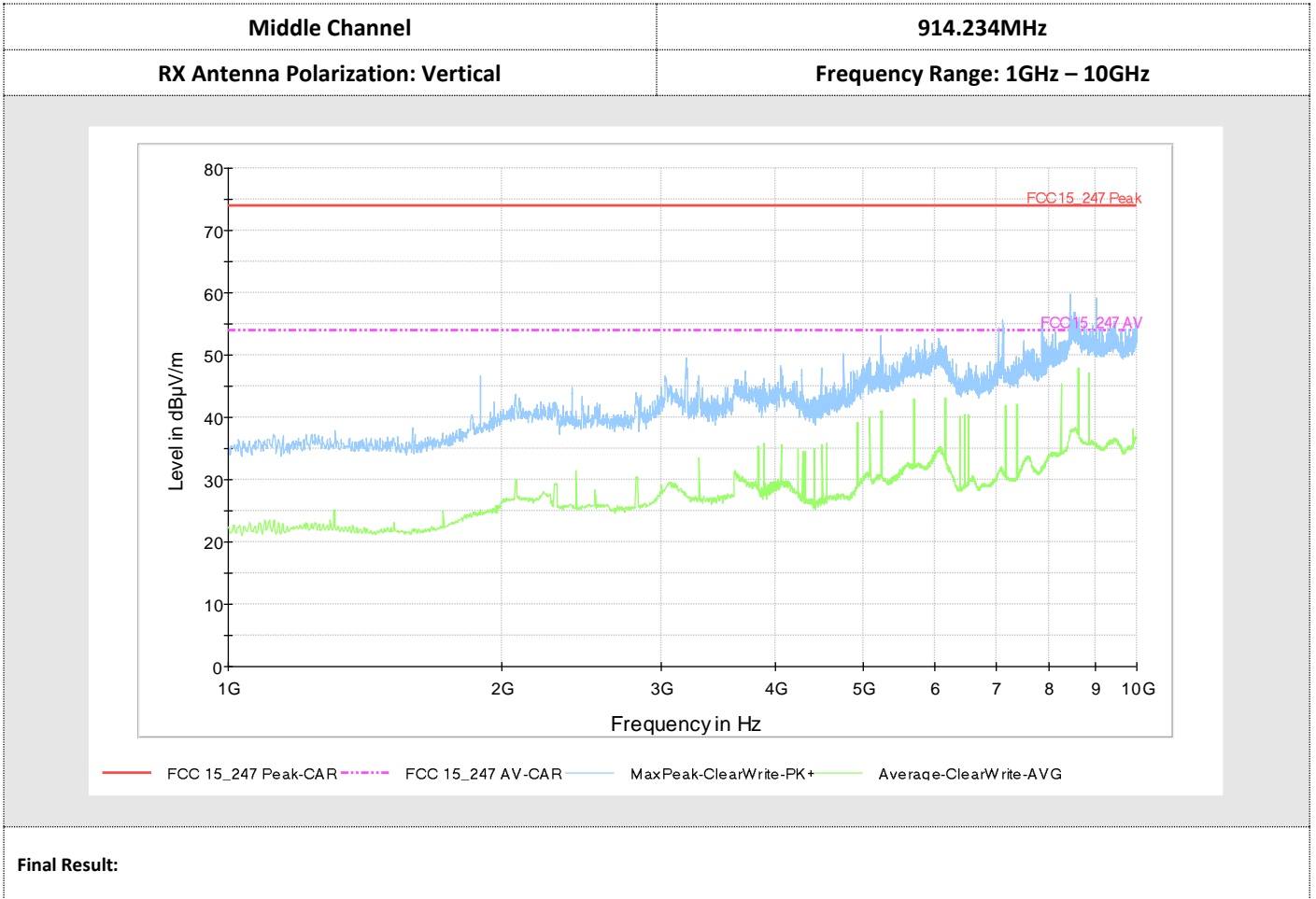


RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz

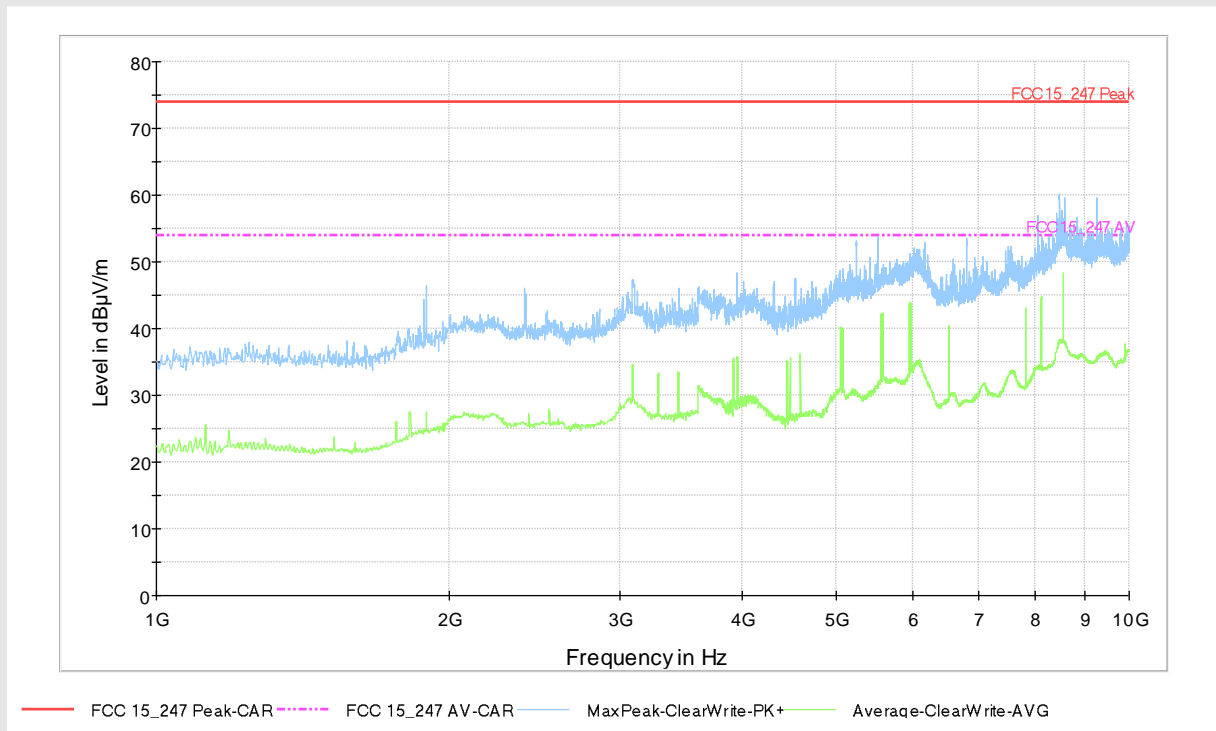


Final Result:

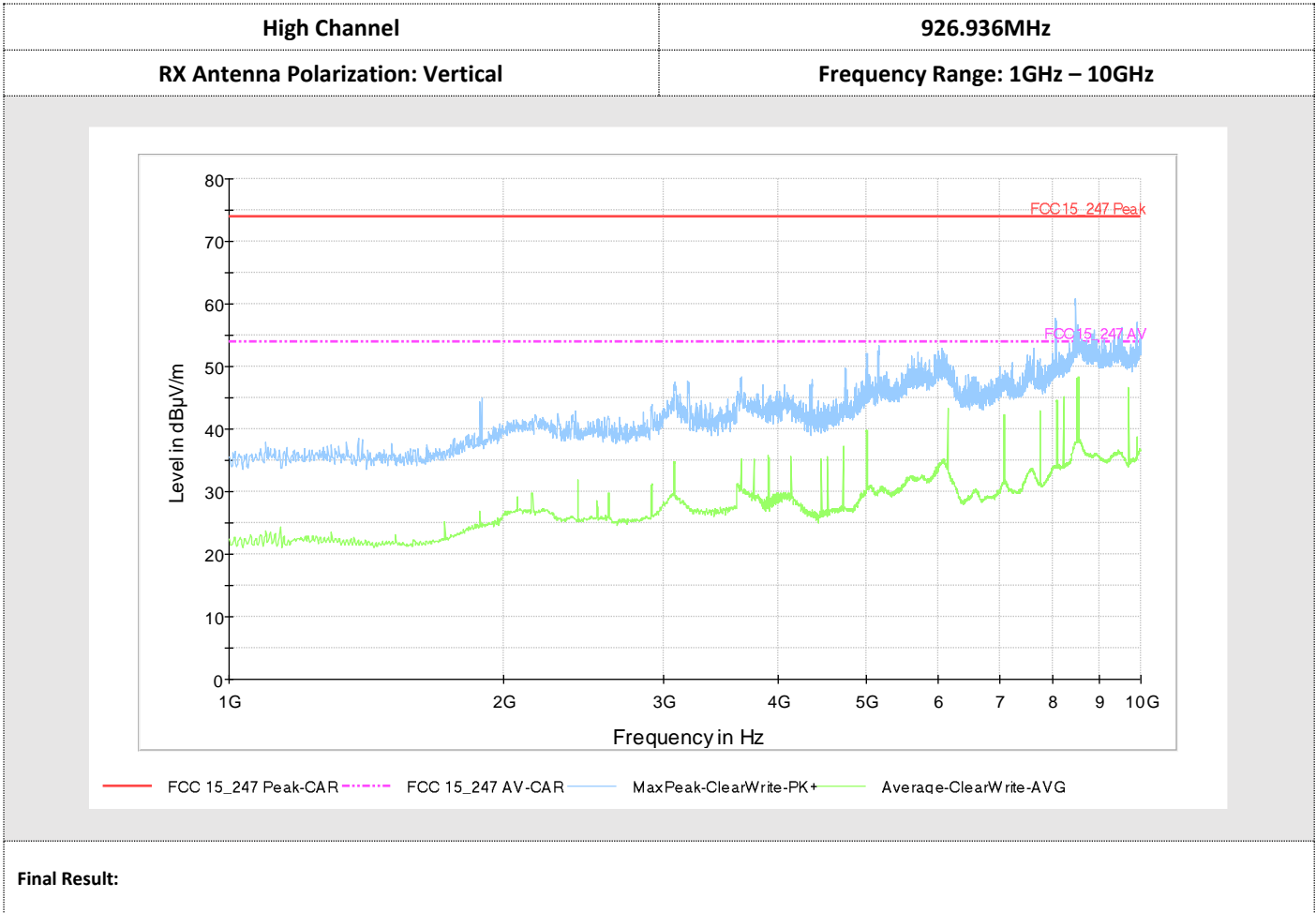


RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz

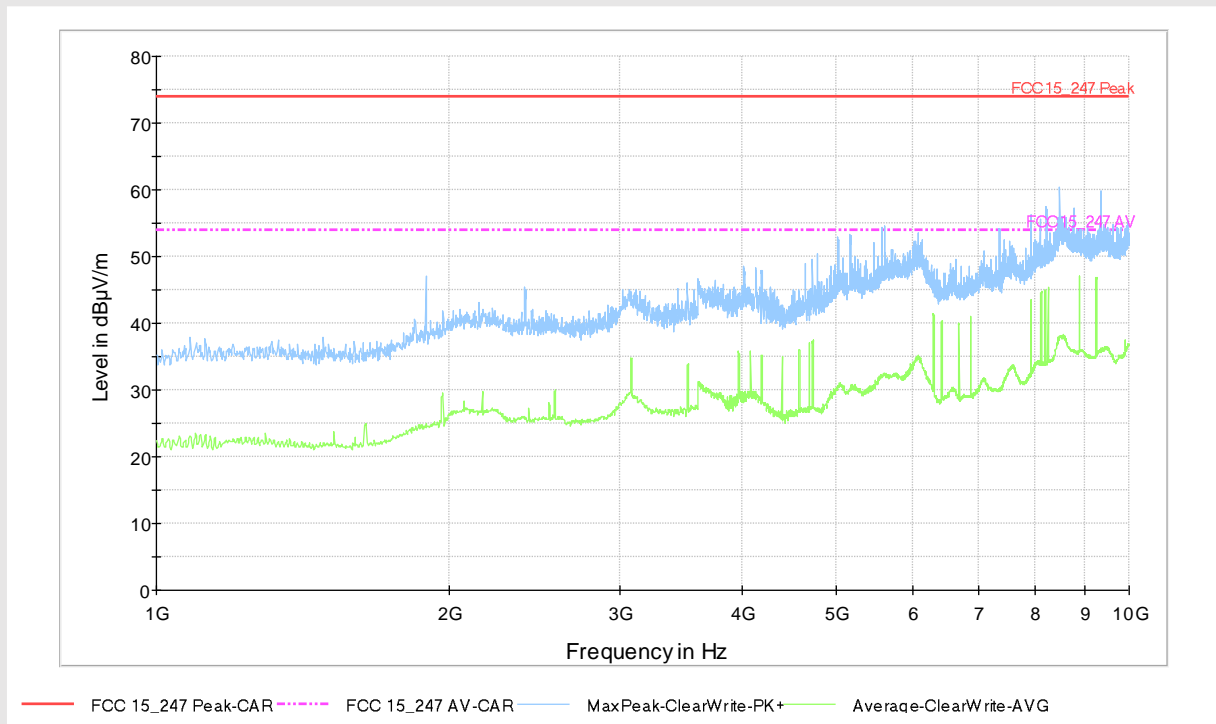


Final Result:



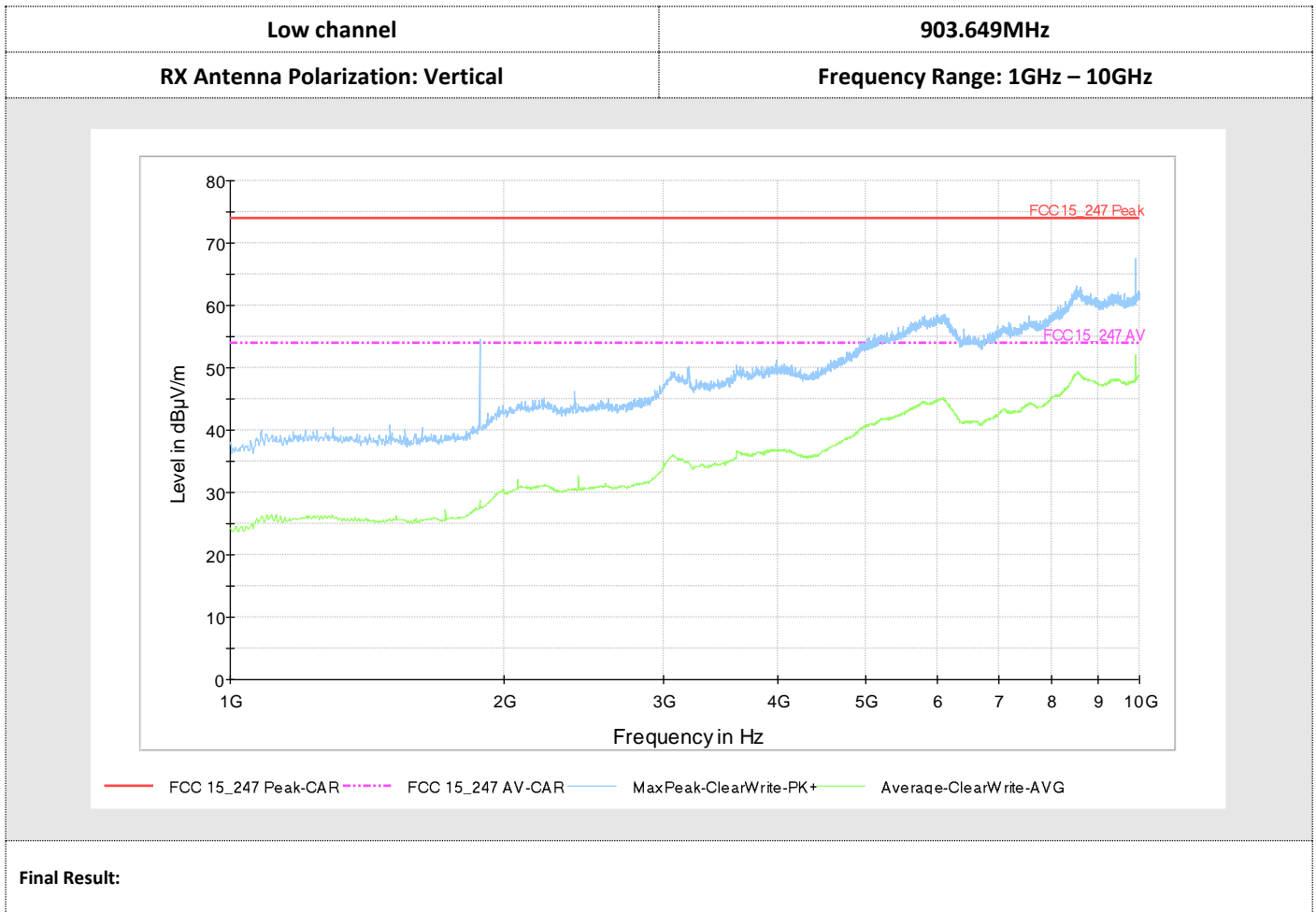
RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



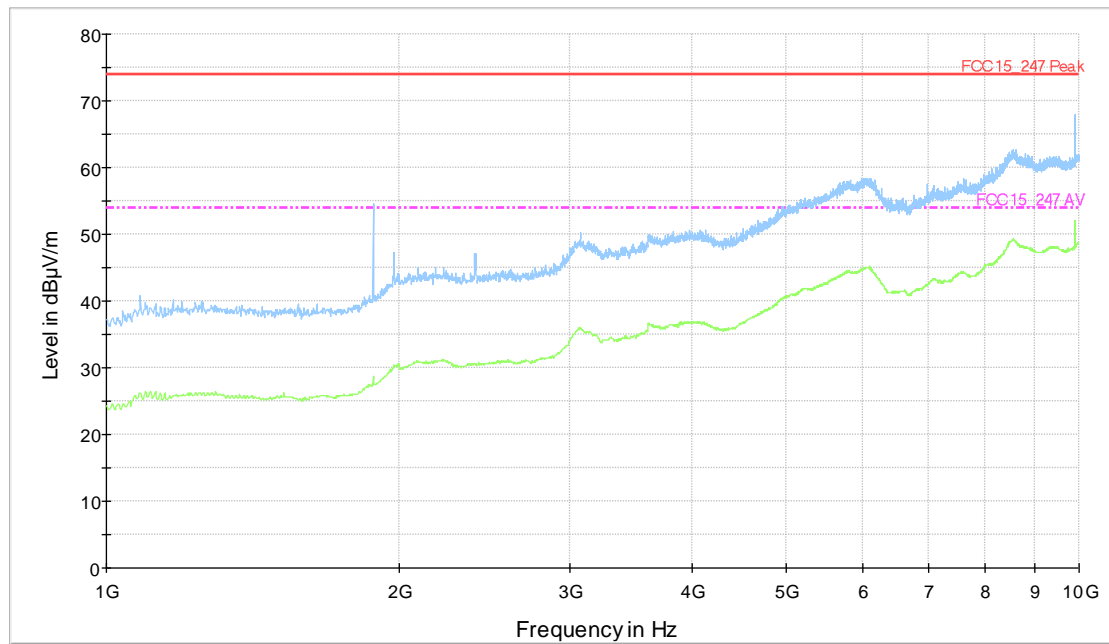
Final Result:

TEST RESULTS - Radiated with antenna SRFI068V-100



RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



— FCC 15_247 Peak-CAR - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+ — Average-ClearWrite-AVG

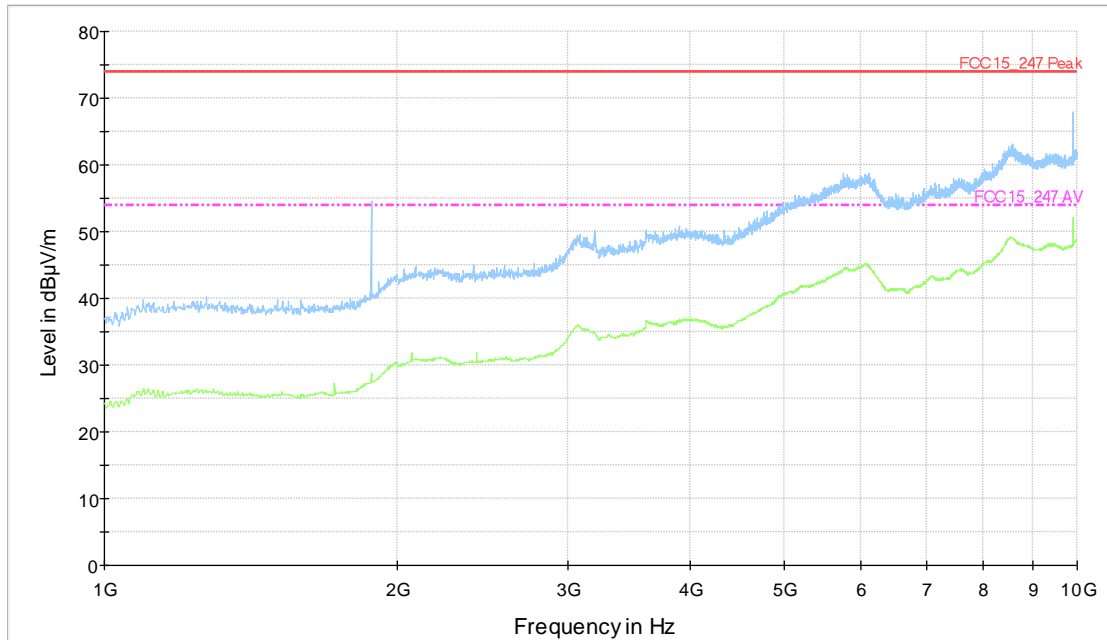
Final Result:

Middle Channel

914.234MHz

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz

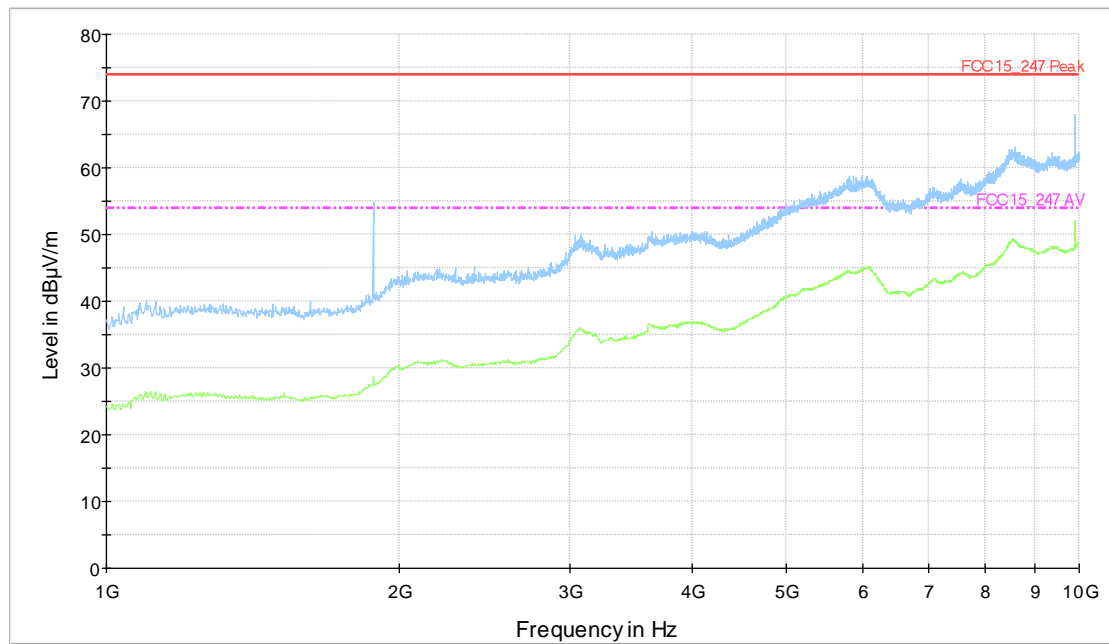


— FCC 15_247 Peak-CAR - - - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+ — Average-ClearWrite-AVG

Final Result:

RX Antenna Polarization: Horizontal

Frequency Range: 1GHz – 10GHz



— FCC 15_247 Peak-CAR - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+ — Average-ClearWrite-AVG

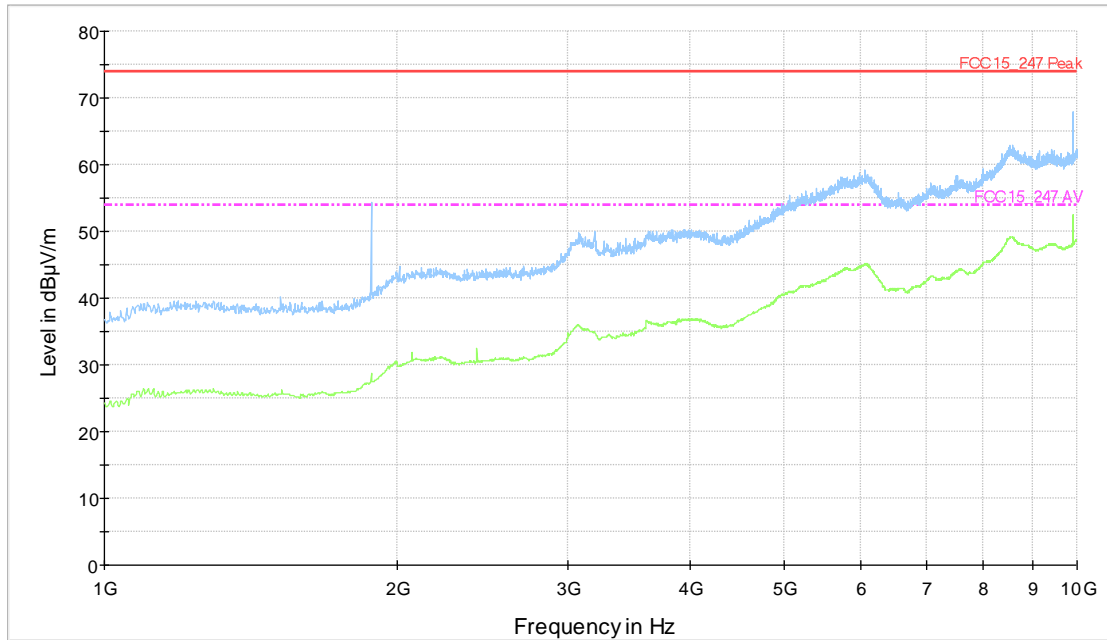
Final Result:

High Channel

926.936MHz

RX Antenna Polarization: Vertical

Frequency Range: 1GHz – 10GHz

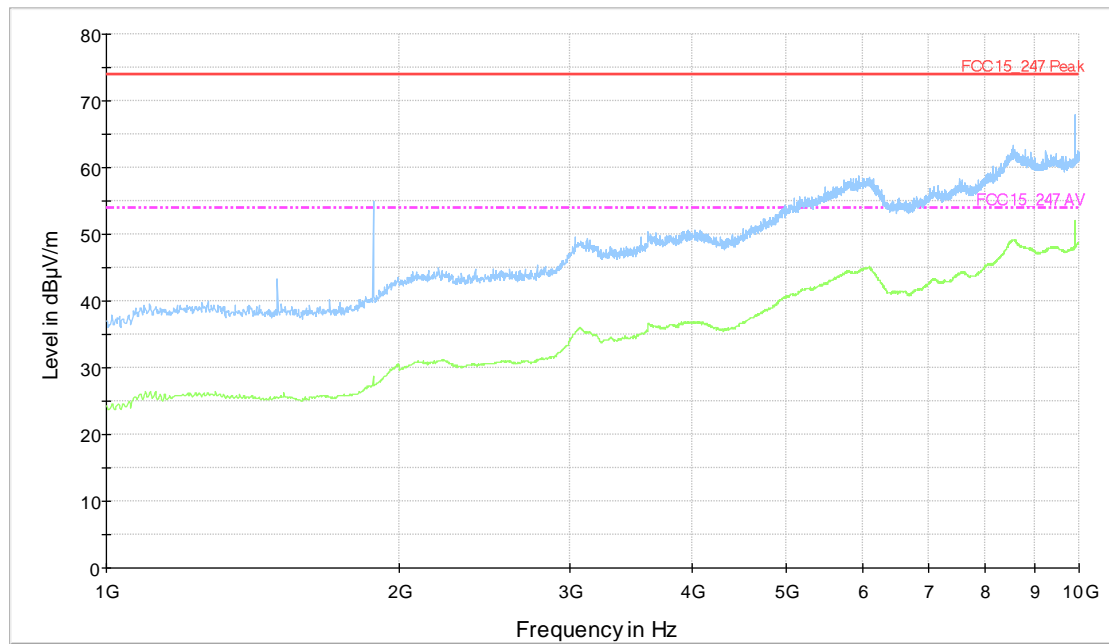


— FCC 15_247 Peak-CAR - - - - - FCC 15_247 AV-CAR — MaxPeak-ClearWrite-PK+ — Average-ClearWrite-AVG

Final Result:

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:

END OF TEST REPORT