

RF Test Report

Applicant : Vizmonet Pte Ltd

Product Name : Radio Module

Trade Name : VIZMONET

Model Number : R-6LP-G1H-28D-A1

Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013

Received Date : Sep. 26, 2022

Test Period : Nov. 05, 2022 ~ Feb. 06, 2023

Issued Date : Oct. 27, 2023

Issued by

Eurofins E&E Wireless Taiwan Co., Ltd.
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Taoyuan City 334025, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range: 9 kHz to 325 GHz (Bade test site)
Frequency Range: 9 kHz to 40 GHz (Wugu test site)
Test Firm MRA designation number: TW0010

Note:

1. The test results are valid only for samples provided by customers and under the test conditions described in this report.
2. This report shall not be reproduced except in full, without the written approval of Eurofins E&E Wireless Taiwan Co., Ltd.
3. The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Version	Issued Date	Revisions	Revised By
00	Aug. 03, 2023	Initial Issue	Snow Wang
01	Oct. 27, 2023	Update chapter 2 (P.7) Update chapter 3.4 (P.10) Add chapter 4.10 (P.23) Update chapter 5.2 (P.39) Update chapter 5.3 (P.52)	Snow Wang

Verification of Compliance

Applicant : Vizmonet Pte Ltd

Product Name : Radio Module

Trade Name : VIZMONET

Model Number : R-6LP-G1H-28D-A1

FCC ID : 2BAF3-R6LPG1H28DA1

Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013

Test Result : Complied

Performing Lab. : Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330



Eurofins E&E Wireless Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Eurofins E&E Wireless Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : _____

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	-----
15.203	Antenna Requirement	PASS	-----
15.247(b)(2)	Max. Output Power	PASS	-----
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(a)(1)(i)	20 dB RF Bandwidth	PASS	-----
15.247(a)(1)	Carrier Frequency Separation	PASS	-----
15.247(a)(1)(i)	Number of Hopping	PASS	-----
15.247(a)(1)(i)	Time of Occupancy (Dwell Time)	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Decision Rule

- ☒ Uncertainty is not included.
- ☐ Uncertainty is included.

1.2. Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ☒ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☐ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	150 kHz ~ 30 MHz	2.7 dB
Radiated Emission	9 kHz ~ 30 MHz	2.2 dB
	30 MHz ~ 1000 MHz	5.1 dB
	1000 MHz ~ 18000 MHz	5.2 dB
	18000 MHz ~ 26500 MHz	4.6 dB
	26500 MHz ~ 40000 MHz	4.6 dB
Conducted Output Power	1.1 dB	
RF Bandwidth	4.7 %	
Power Spectral Density	1.1 dB	

2 EUT Description

Applicant	Vizmonet Pte Ltd 21 Woodlands Close, #03-01, Primz Biz Hub, Singapore 737 854				
Product Name	Radio Module				
Trade Name	VIZMONET				
Model Number	R-6LP-G1H-28D-A1				
FCC ID	2BAF3-R6LPG1H28DA1				
Mode	Frequency (MHz)	Data Rate	Channel Bandwidth	Channel Number	Modulation
	902 ~ 928	50 kbps	200 kHz	129	FSK
		150 kbps	400 kHz	64	FSK
		200 kbps	400 kHz	64	FSK
Operate Temp. Range	-40 ~ +85 °C				
EUT Power Rating	DC 3.3 V				
Antenna information	Type			Max. Gain (dBi)	
	Chip Antenna			-1.38	
RF Output Power	0.21429 W				

3 Test Methodology

3.1. Mode of Operation

Decision of Test Eurofins has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode
Transmit mode

After verification, all tests were carried out with the worst case test modes.

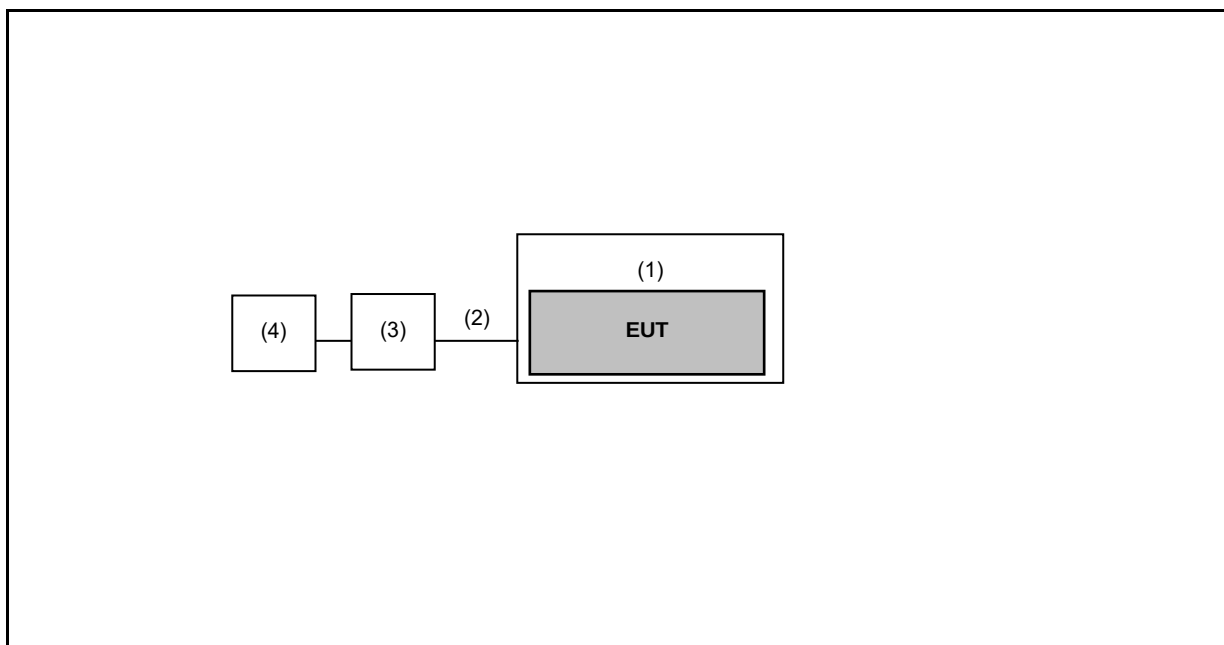
By preliminary testing and verifying three axis (Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

3.2. EUT Test Step

1	Setup the EUT shown on "Configuration of Test System Details".
2	Turn on the power of all equipment.
3	Turn on TX function.
4	EUT run test program.

3.3. Configuration of Test System Details

Radiated Emission & Conduction Emission



Devices Description					
	Product	Manufacturer	Model Number	Serial Number	Power Cord
(1)	Fixture	2BAF3	R6LPG1H28DA1	---	---
(2)	USB Cable	REMAX	RC-094m	---	---
(3)	Notebook	HP	TPN-I130	---	---
(4)	Adapter	HP	TPN-DA17	---	---

3.4. Test Instruments

For Conducted Emission

Test Period: Nov. 05, 2022

Testing Engineer: Chi Chang

Test Site		Conduction01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Test Receiver	R&S	ESCI	100367	May 19, 2022	1 year
☒	LISN	R&S	ENV216	101040	Apr. 06, 2022	1 year
☐	LISN	R&S	ENV216	101140	Jan. 25, 2022	1 year
☒	RF Cable	Woken	00100D1380194M	TE-02-03	May 27, 2022	1 year
☒	Software	EZ EMC	1.1.4.3	N/A	N.C.R.	---

For Conducted

Test Period: Dec. 27, 2022 ~ Feb. 06, 2023

Testing Engineer: John Chen

Test Site		RF01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Power Sensor	Anritsu	MA2411B	1126022	Sep. 04, 2022	1 year
☒	Power Meter	Anritsu	ML2495A	1135009	Sep. 04, 2022	1 year
☐	Spectrum Analyzer (10 Hz~26.5 GHz)	Keysight	N9010B	MY59071418	Mar. 16, 2022	1 year
☒	Spectrum Analyzer (9 kHz~26.5 GHz)	Agilent	N9010A	MY48030518	Jul. 21, 2022	1 year
☐	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 01, 2022	1 year
☐	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	Mar. 28, 2022	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Dec. 23, 2022 ~ Jan. 30, 2023
Testing Engineer: Hung Chou

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (2 Hz~50 GHz)	Keysight	N9030B	MY57143537	Apr. 14, 2022	1 year
☒	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9020B	MY60112363	Feb. 27, 2022	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	Jan. 14, 2022 Jan. 07, 2023	1 year
☐	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A10961	Jul. 07, 2022	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330 A1F	001	Jul. 21, 2022	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025 A1F	002	Jul. 21, 2022	1 year
☐	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	Sep. 02, 2022	1 year
☐	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	Mar. 28, 2022	1 year
☒	Active Loop Antenna (9 kHz~30 MHz)	Schwarzbeck Mess-Elektronik	FMZB 1513-60	1513-60-031	Feb. 17, 2022	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	Jul. 22, 2022	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	Jul. 13, 2022	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	Aug. 25, 2022	1 year
☐	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	Aug. 25, 2022	1 year
☐	RF Cable	EMCI	EMC104-N-N-600 0	TE01-1	Feb. 18, 2022	1 year
☐	Microwave Cable	EMCI	EMC104-SM-SM- 13000	170814	Feb. 18, 2022	1 year
☐	Microwave Cable	EMCI	EMC102-KM-KM- 14000	151001	Feb. 18, 2022	1 year

Note: N.C.R. = No Calibration Request.

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Coaxial Cable	Titan	T0710AT327A10A 100	J11005	Aug. 04, 2022	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 900	J11004	Aug. 04, 2022	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	Aug. 04, 2022	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 17, 2021	2 years
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

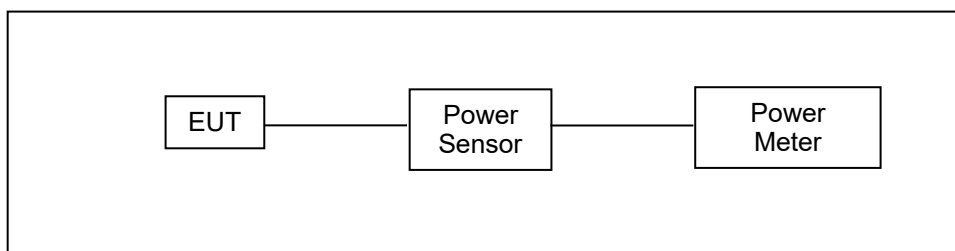
4 Measurement Procedure

4.1. Maximum Conducted Output Power Measurement

■ Limit

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

■ Test Setup



■ Test Procedure

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The tests below are run with the EUT's transmitter set at high power in Transmit mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

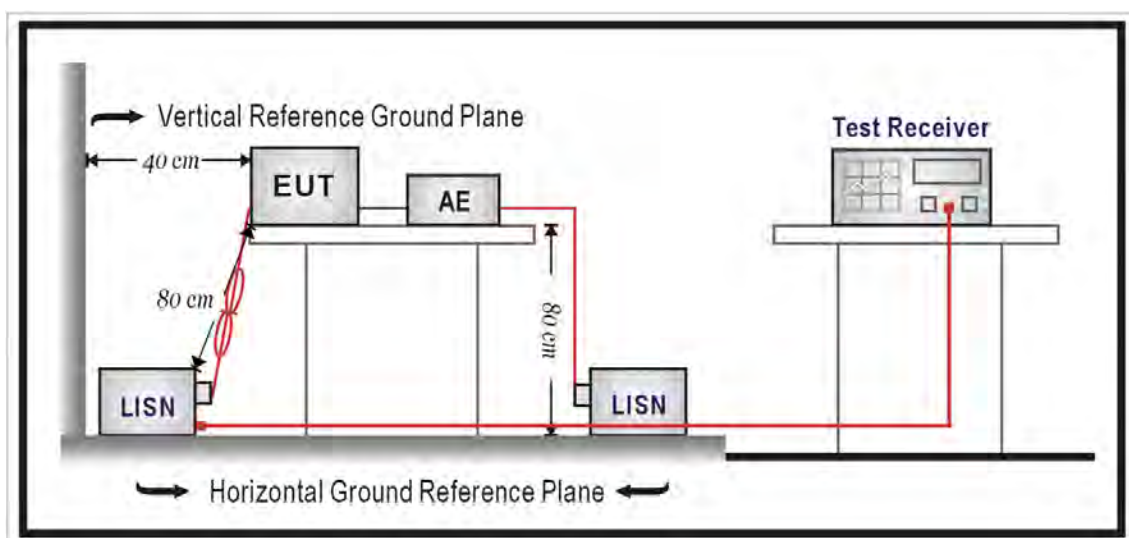
Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode. For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to $(\text{GAIN} - 6)/3$ dBm. The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

4.2. AC Power Line Conducted Emission Measurement

■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Setup



■ Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

4.3. Radiated Emission Measurement

■ Limit

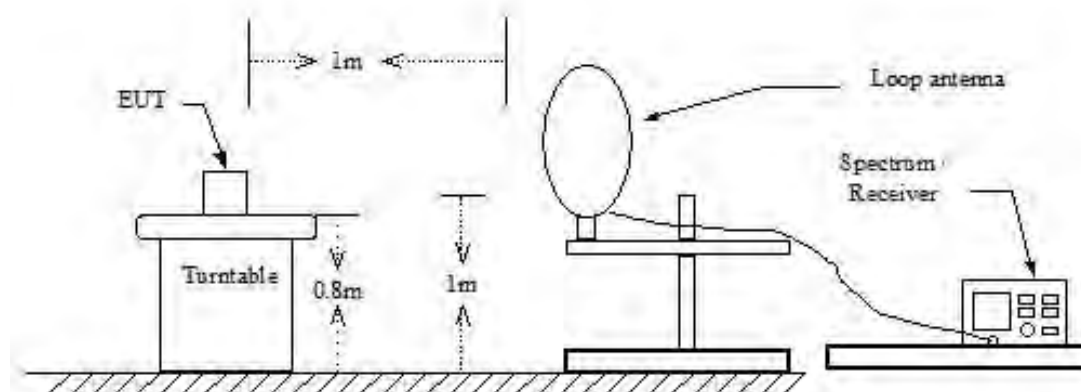
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at meter)	Measurement Distance (meters)
0.009 – 0.490	$2400 / F$ (kHz)	300
0.490 – 1.705	$24000 / F$ (kHz)	30
1.705 – 30.0	30	30
30 - 88	100^{**}	3
88-216	150^{**}	3
216-960	200^{**}	3
Above 960	500	3

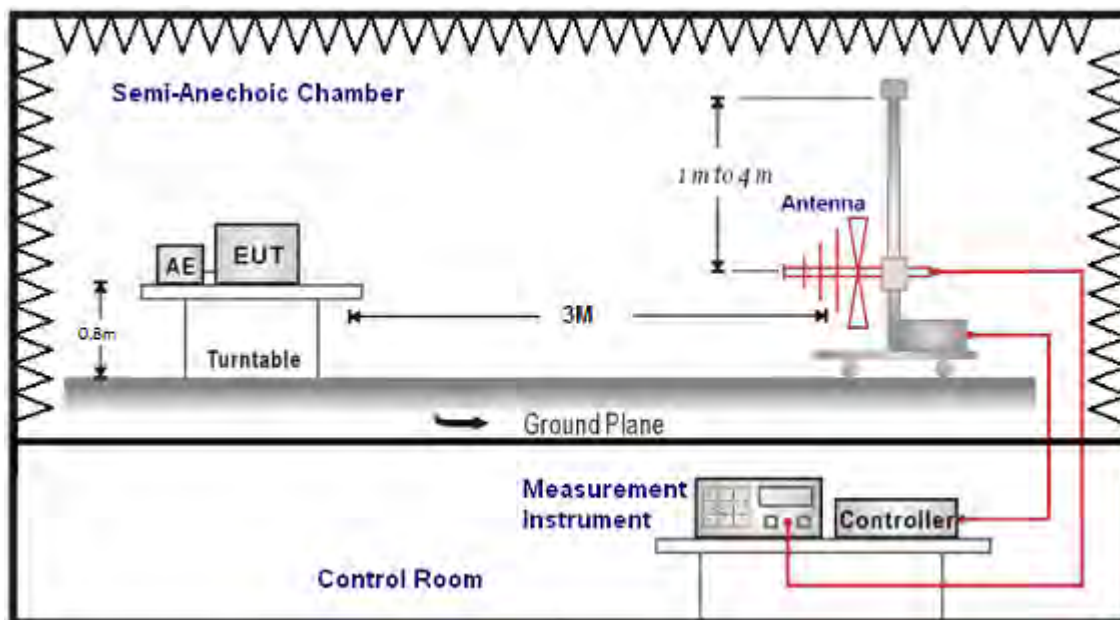
****** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

■ Setup

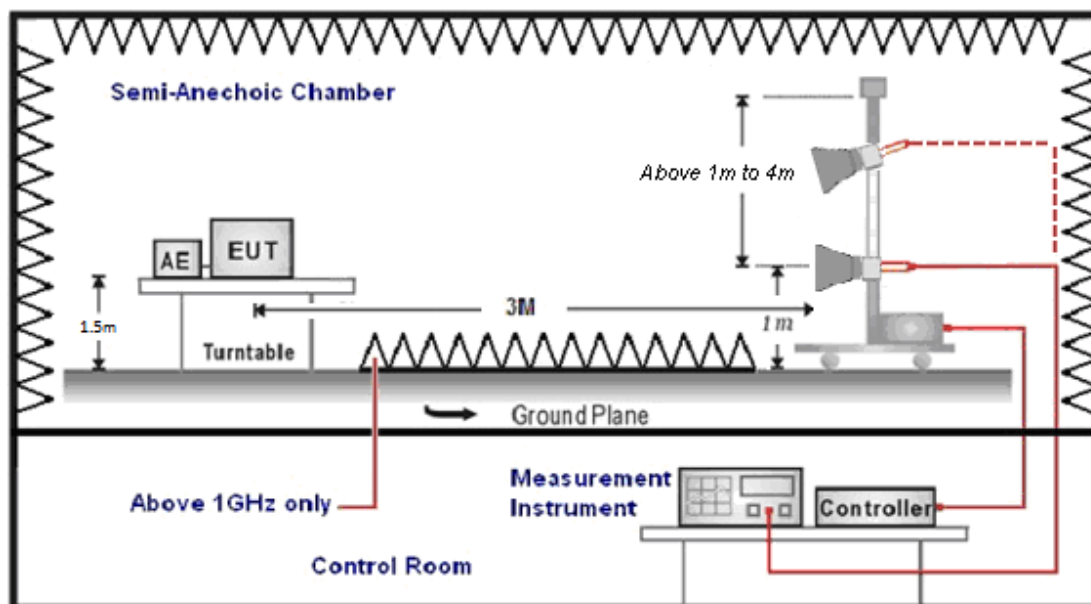
9 kHz ~ 30 MHz



Below 1 GHz



Above 1 GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle >98 % / 1/T for average measurements when Duty cycle <98 %. A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30 dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

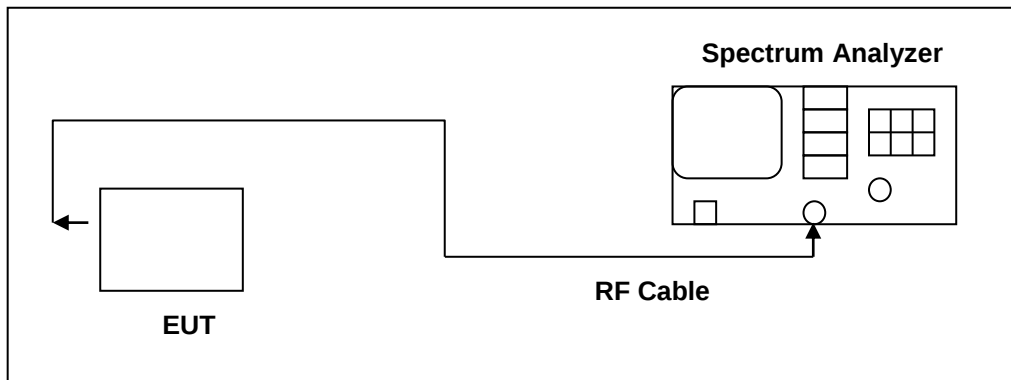
Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

4.4. 20 dB RF Bandwidth Measurement

■ **Limit**

N/A

■ **Test Setup**



■ **Test Procedure**

20 dB RF Bandwidth

1. Span = approx. 2 to 3 times the 20 dB bandwidth, centered on a hopping frequency
2. RBW $\geq$ 1 % of the 20 dB span
3. VBW $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

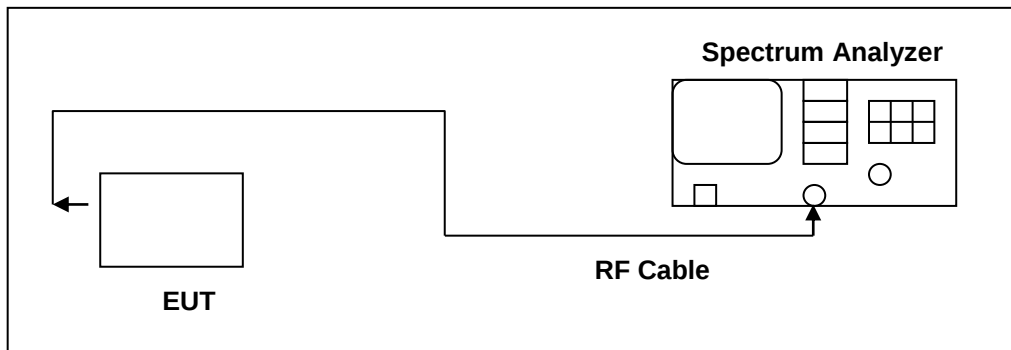
The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20 dB bandwidth of the emission.

4.5. Carrier Frequency Separation Measurement

■ Limit

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.

■ Test Setup



■ Test Procedure

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10 dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

1. Span = wide enough to capture the peaks of two adjacent channels
2. Resolution (or IF) Bandwidth (RBW) $\geq 1\%$ of the span
3. Video (or Average) Bandwidth (VBW) $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

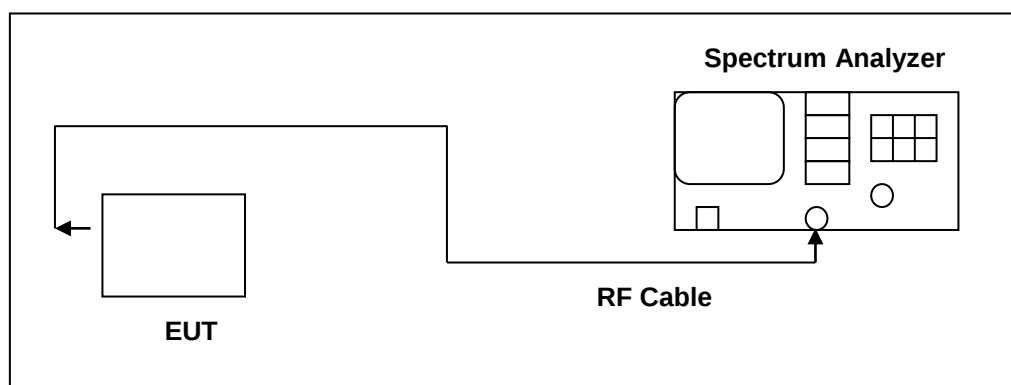
The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

4.6. Number of Hopping Measurement

■ Limit

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 Setup



■ Test Procedure

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10 dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = the frequency band of operation
2. RBW $\geq$ 1 % of the span
3. VBW $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

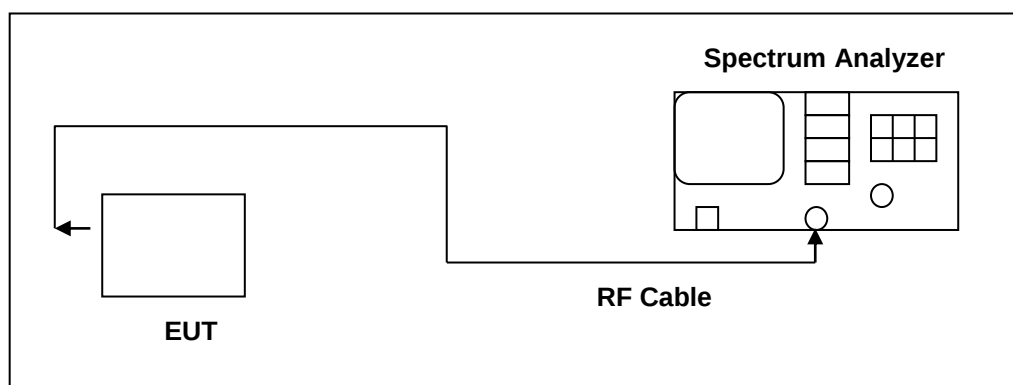
The trace was allowed to stabilize.

4.7. Time of Occupancy (Dwell Time) Measurement

■ Limit

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 Setup



■ Test Procedure

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the spectrum through a specialized RF connector and a 10 dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

1. Span = zero span, centered on a hopping channel
2. RBW = 1 MHz
3. VBW $\geq$ RBW
4. Sweep = as necessary to capture the entire dwell time per hopping channel
5. Detector function = peak
6. Trace = max hold

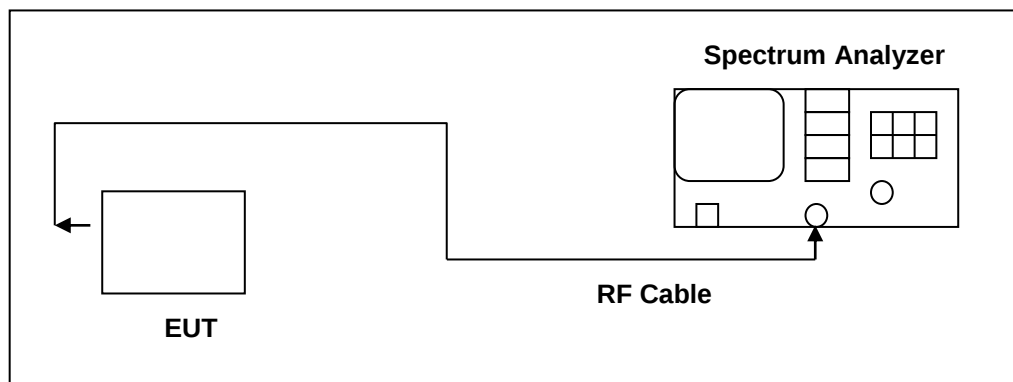
The marker-delta function was used to determine the dwell time.

4.8. Out of Band Conducted Emissions Measurement

■ Limit

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

■ Test Setup



■ Test Procedure

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.

4.9. Antenna Measurement

■ Limit

For intentional device, according to 15.203, 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.

And According to 15.247 (b)(4), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ Antenna Connector Construction

See section 2 – antenna information.

4.10. Other requirements

■ System Receiver Input Bandwidth

Each channel bandwidth is 100 kHz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

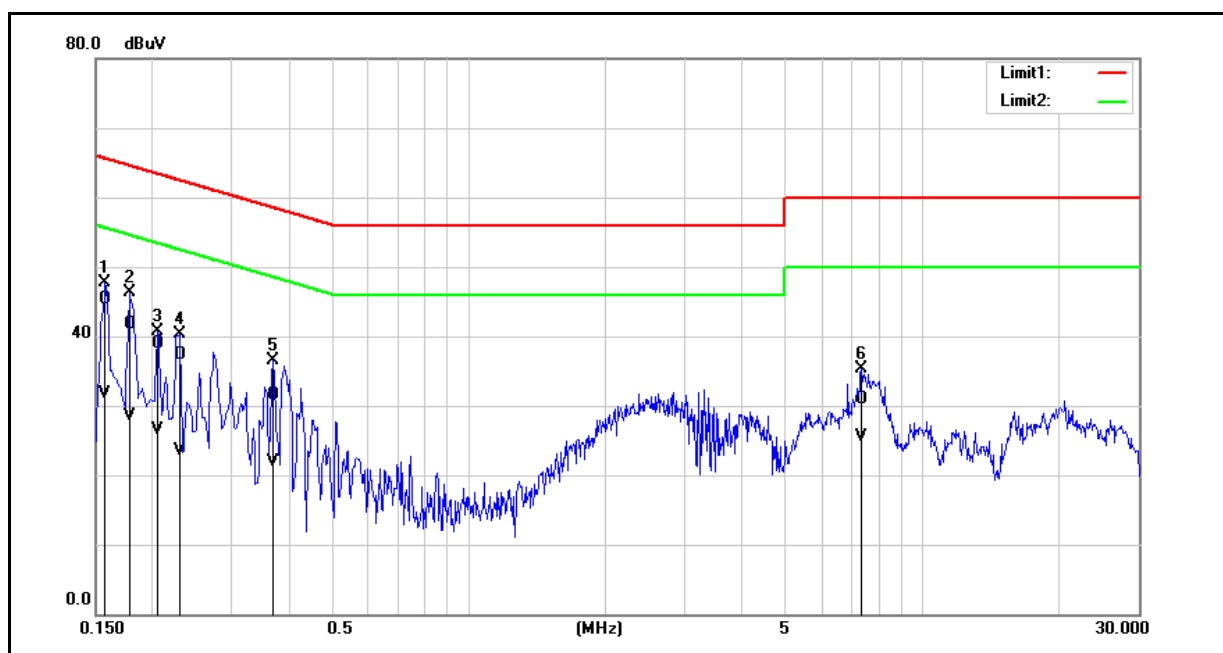
■ Equipment Description

The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. 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.

5 Test Results

5.1 Conducted Emission

Standard:	FCC Part 15.247	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit mode		
Description:			

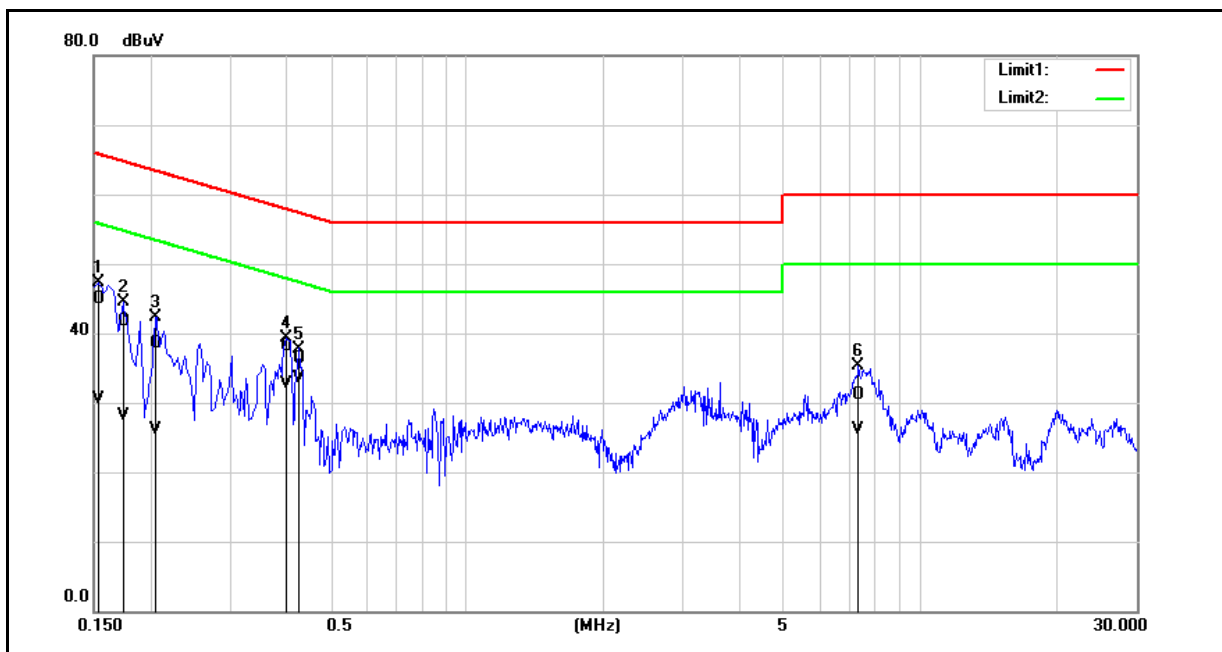


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	35.67	22.09	9.54	45.21	31.63	65.57	55.57	-20.36	-23.94	Pass
2	0.1780	32.22	18.92	9.54	41.76	28.46	64.58	54.58	-22.82	-26.12	Pass
3	0.2060	29.36	17.04	9.54	38.90	26.58	63.37	53.37	-24.47	-26.79	Pass
4	0.2300	27.84	13.94	9.54	37.38	23.48	62.45	52.45	-25.07	-28.97	Pass
5	0.3700	21.91	12.28	9.55	31.46	21.83	58.50	48.50	-27.04	-26.67	Pass
6	7.3500	21.19	15.82	9.73	30.92	25.55	60.00	50.00	-29.08	-24.45	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.247	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit mode		
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	35.21	20.89	9.60	44.81	30.49	65.78	55.78	-20.97	-25.29	Pass
2	0.1740	32.08	18.45	9.60	41.68	28.05	64.77	54.77	-23.09	-26.72	Pass
3	0.2060	28.92	16.57	9.60	38.52	26.17	63.37	53.37	-24.85	-27.20	Pass
4	0.3980	28.49	23.16	9.61	38.10	32.77	57.90	47.90	-19.80	-15.13	Pass
5	0.4260	26.64	23.82	9.61	36.25	33.43	57.33	47.33	-21.08	-13.90	Pass
6	7.3260	21.29	16.25	9.81	31.10	26.06	60.00	50.00	-28.90	-23.94	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
 2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

5.2 Conducted Test Results

Maximum Conducted Output Power Measurement

Power Setting Table			
Data Rate / BW	MHz	Power Setting	Test Software Version
Data Rate=50kbps BW=200kHz	902.2	37	RF TestStudio
	915	34	
	927.8	32	
Data Rate=150kbps BW=400kHz	902.4	37	
	914.8	34	
	927.6	32	
Data Rate=200kbps BW=400kHz	902.4	37	
	914.8	33	
	927.6	32	

Transmit mode					
Conducted power table		Data Rate=50kbps_BW=200kHz			
MHz	Average Power		Peak Power		Limit
	dBm	W	dBm	W	dBm
902.2	23.23	0.21038	23.29	0.21330	30.00
915	22.28	0.16904	22.35	0.17179	30.00
927.8	20.54	0.11324	20.62	0.11535	30.00
Conducted power table		Data Rate=150kbps_BW=400kHz			
MHz	Average Power		Peak Power		Limit
	dBm	W	dBm	W	dBm
902.4	23.25	0.21135	23.31	0.21429	30.00
914.8	22.30	0.16982	22.38	0.17298	30.00
927.6	20.54	0.11324	20.63	0.11561	30.00
Conducted power table		Data Rate=200kbps_BW=400kHz			
MHz	Average Power		Peak Power		Limit
	dBm	W	dBm	W	dBm
902.4	23.17	0.20749	23.25	0.21135	30.00
914.8	21.96	0.15704	22.02	0.15922	30.00
927.6	20.47	0.11143	20.56	0.11376	30.00

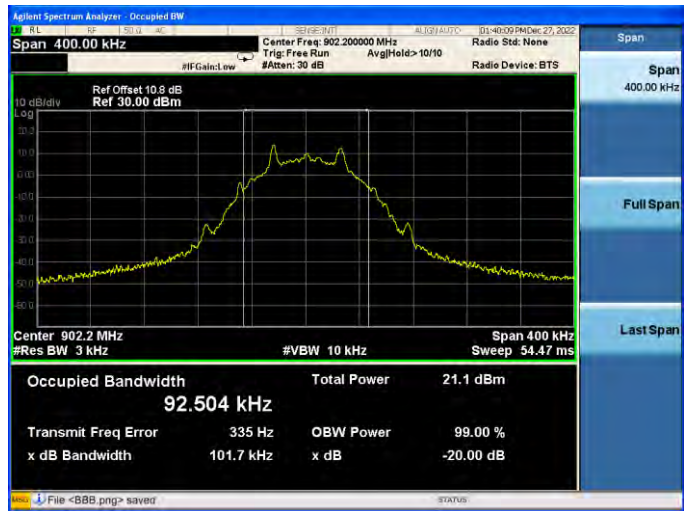
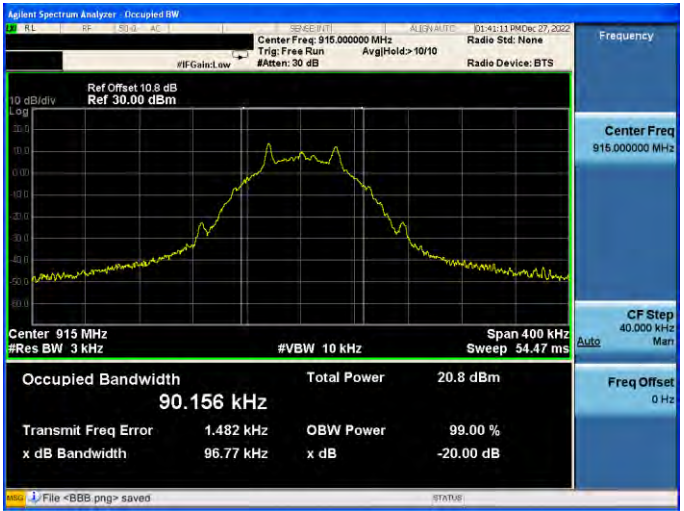
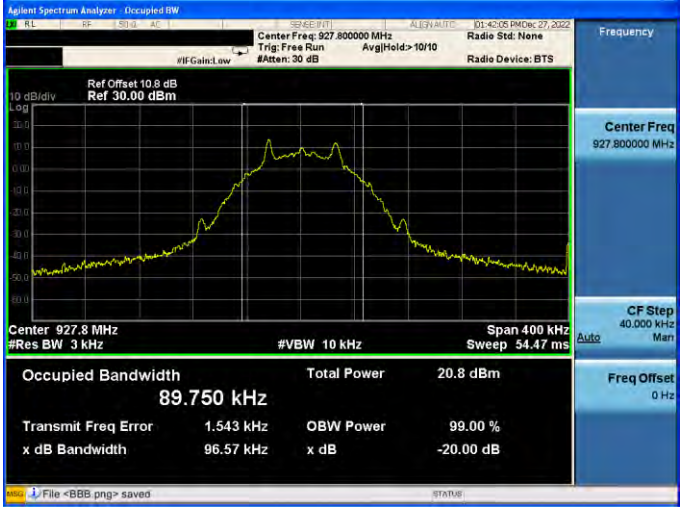
Note: The relevant measured result has the offset with cable loss already.

20 dB RF Bandwidth Measurement

20dB RF Bandwidth		Data Rate=50kbps_BW=200kHz		
Mode	Frequency	20dB BW	Limit	Max 20dB BW
	(MHz)	(kHz)	(kHz)	(kHz)
Transmit mode	902.2	101.70	< 250	101.70
	915	96.77	< 250	
	927.8	96.57	< 250	
20dB RF Bandwidth		Data Rate=150kbps_BW=400kHz		
Mode	Frequency	20dB BW	Limit	Max 20dB BW
	(MHz)	(kHz)	(kHz)	(kHz)
Transmit mode	902.4	175.00	< 250	175.00
	914.8	175.00	< 250	
	927.6	174.90	< 250	
20dB RF Bandwidth		Data Rate=200kbps_BW=400kHz		
Mode	Frequency	20dB BW	Limit	Max 20dB BW
	(MHz)	(kHz)	(kHz)	(kHz)
Transmit mode	902.4	237.50	< 250	237.50
	914.8	237.40	< 250	
	927.6	237.10	< 250	

■ Test Graphs

50 kbps

Transmit Mode	
902.2 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 902.200000 MHz Span: 400.00 kHz Ref Offset: 10.8 dB Ref: 30.00 dBm Occupied Bandwidth: 92.504 kHz Total Power: 21.1 dBm Transmit Freq Error: 335 Hz OBW Power: 99.00 % x dB Bandwidth: 101.7 kHz x dB: -20.00 dB
915.0 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 915.000000 MHz Span: 400.00 kHz Ref Offset: 10.8 dB Ref: 30.00 dBm Occupied Bandwidth: 90.156 kHz Total Power: 20.8 dBm Transmit Freq Error: 1.482 kHz OBW Power: 99.00 % x dB Bandwidth: 96.77 kHz x dB: -20.00 dB
927.8 MHz	 Agilent Spectrum Analyzer - Occupied BW Center Freq: 927.800000 MHz Span: 400.00 kHz Ref Offset: 10.8 dB Ref: 30.00 dBm Occupied Bandwidth: 89.750 kHz Total Power: 20.8 dBm Transmit Freq Error: 1.543 kHz OBW Power: 99.00 % x dB Bandwidth: 96.57 kHz x dB: -20.00 dB

150 kbps

Transmit Mode

902.4 MHz



914.8 MHz



927.6 MHz



200 kbps

Transmit Mode

902.4 MHz



914.8 MHz



927.6 MHz

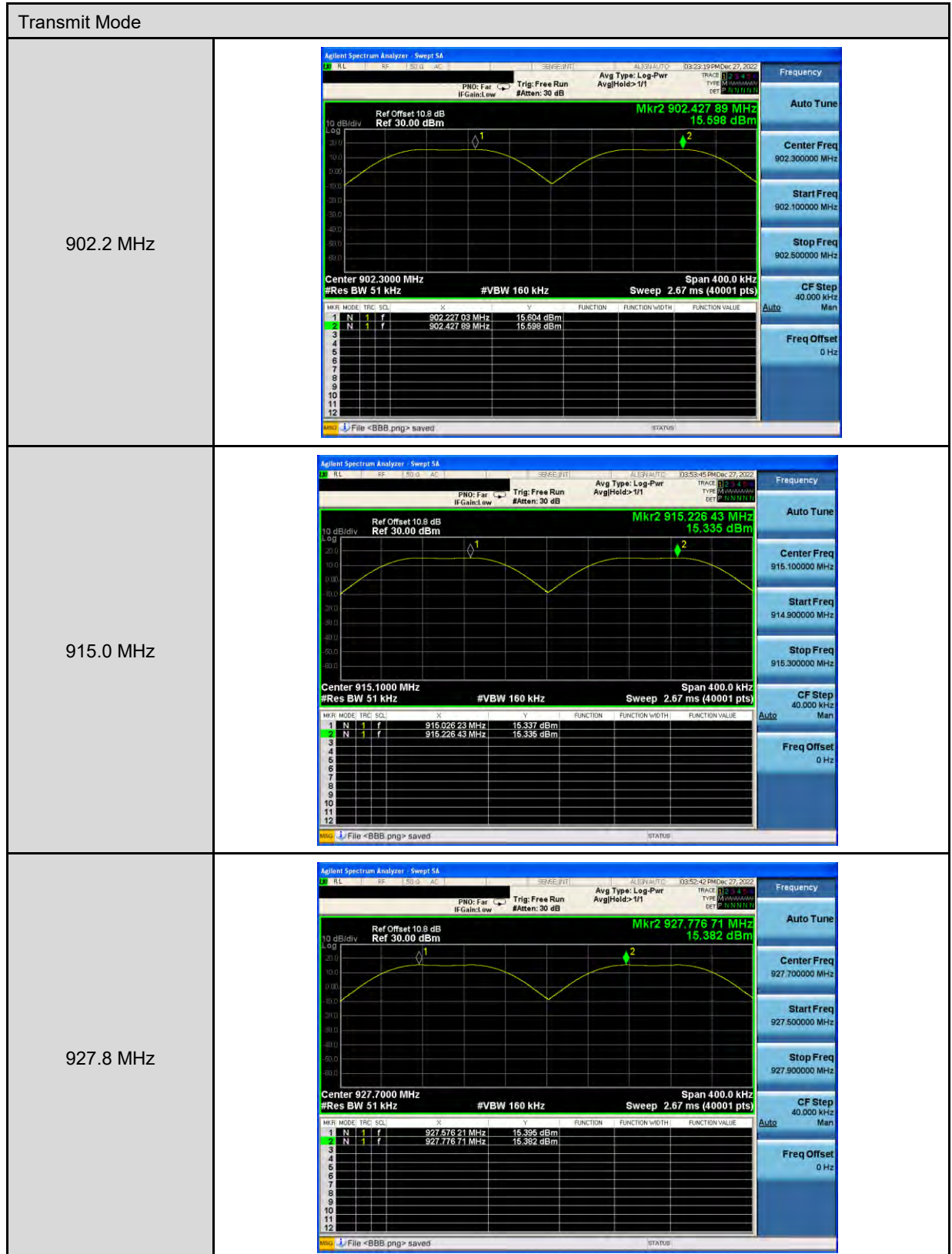


Carrier Frequency Separation Measurement

Carrier Frequency Separation Measurement			Data Rate=50kbps_BW=200kHz	
Mode	Frequency	Measurement	Limit	
	(MHz)	(kHz)	(kHz)	
Transmit mode	902.2	201.0	$\geq$	101.70
	915	200.0	$\geq$	101.70
	927.8	201.0	$\geq$	101.70
Carrier Frequency Separation Measurement			Data Rate=150kbps_BW=400kHz	
Mode	Frequency	Measurement	Limit	
	(MHz)	(kHz)	(kHz)	
Transmit mode	902.4	400.0	$\geq$	175.00
	914.8	400.0	$\geq$	175.00
	927.6	399.0	$\geq$	175.00
Carrier Frequency Separation Measurement			Data Rate=200kbps_BW=400kHz	
Mode	Frequency	Measurement	Limit	
	(MHz)	(kHz)	(kHz)	
Transmit mode	902.4	400.0	$\geq$	237.50
	914.8	400.0	$\geq$	237.50
	927.6	401.0	$\geq$	237.50

Test Graphs

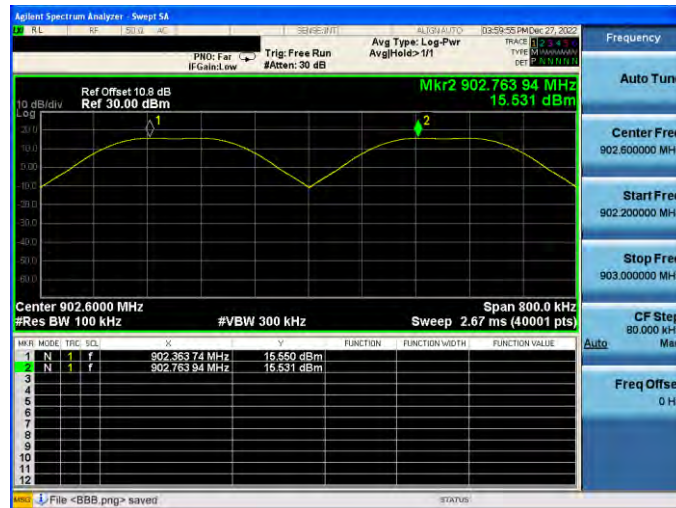
50 kbps



150 kbps

Transmit Mode

902.4 MHz



914.8 MHz



927.6 MHz



200 kbps

Transmit Mode

902.4 MHz



914.8 MHz



927.6 MHz



Number of Hopping Measurement

Number of Hopping		Data Rate=50kbps_BW=200kHz
Mode	ch	Limit
Transmit mode	129	≥ 50.00
Number of Hopping		Data Rate=150kbps_BW=400kHz
Mode	ch	Limit
Transmit mode	64	≥ 50.00
Number of Hopping		Data Rate=200kbps_BW=400kHz
Mode	ch	Limit
Transmit mode	64	≥ 50.00

50 kbps

Transmit Mode

902.2 MHz



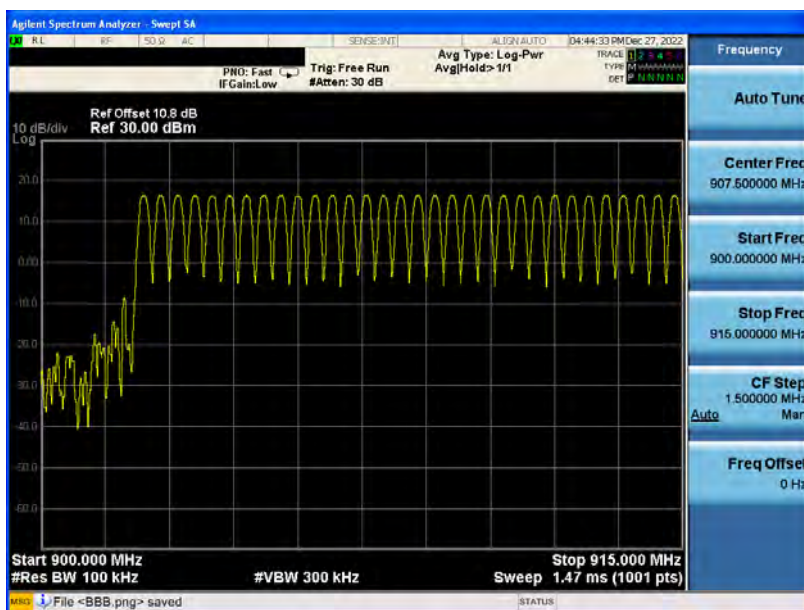
902.2 MHz



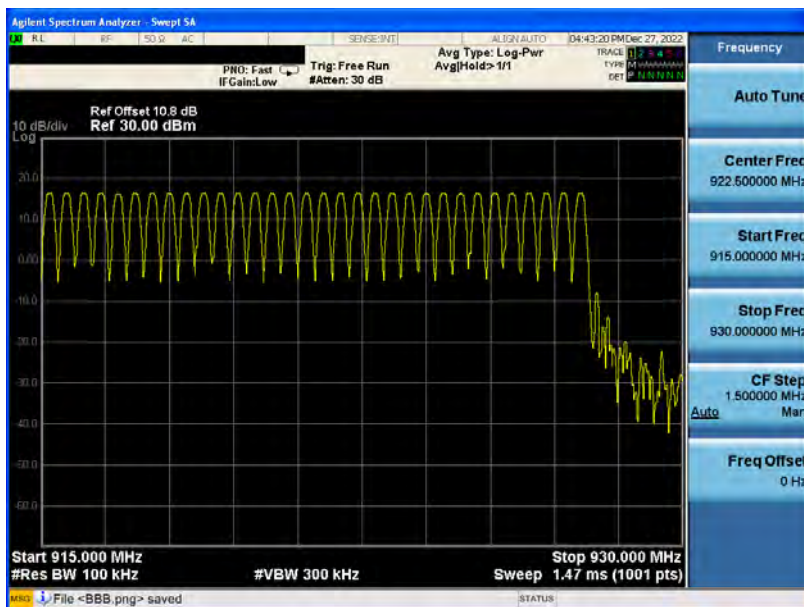
150 kbps

Transmit Mode

902.4 MHz



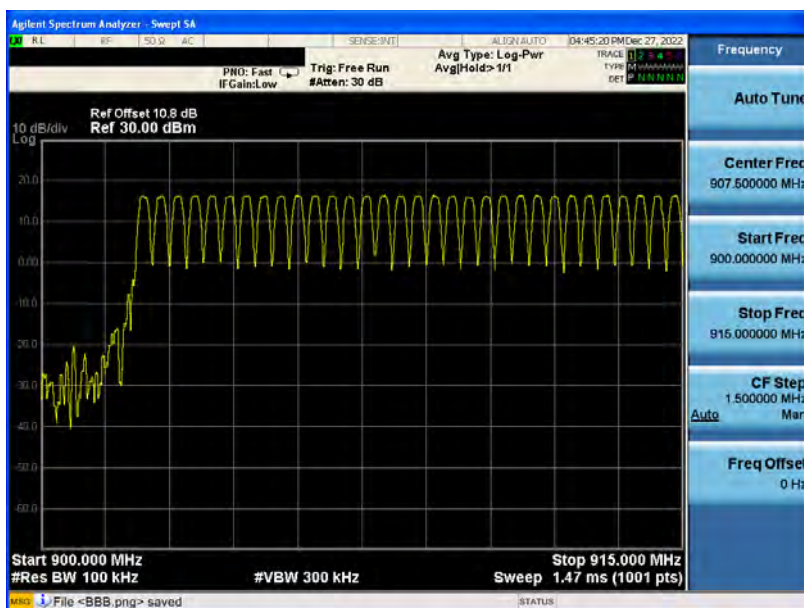
902.4 MHz



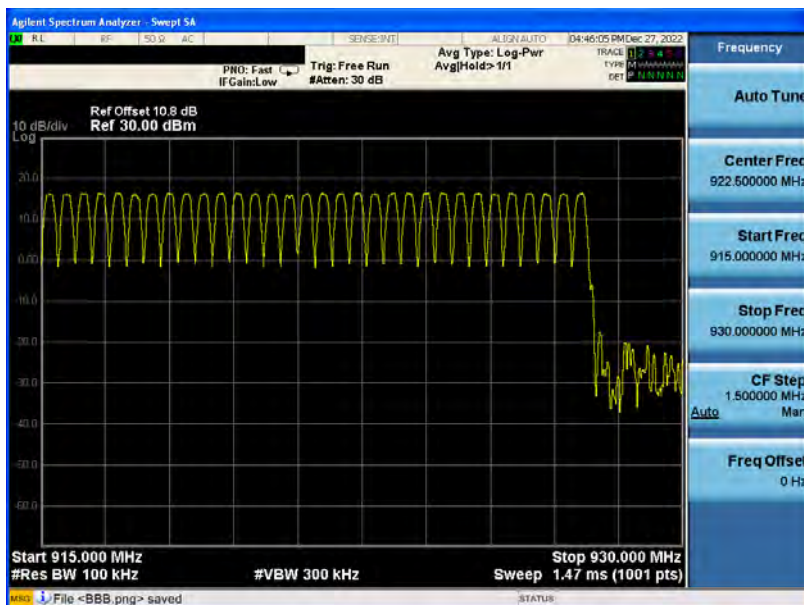
200 kbps

Transmit Mode

902.4 MHz



902.4 MHz



Time of Occupancy (Dwell Time) Measurement

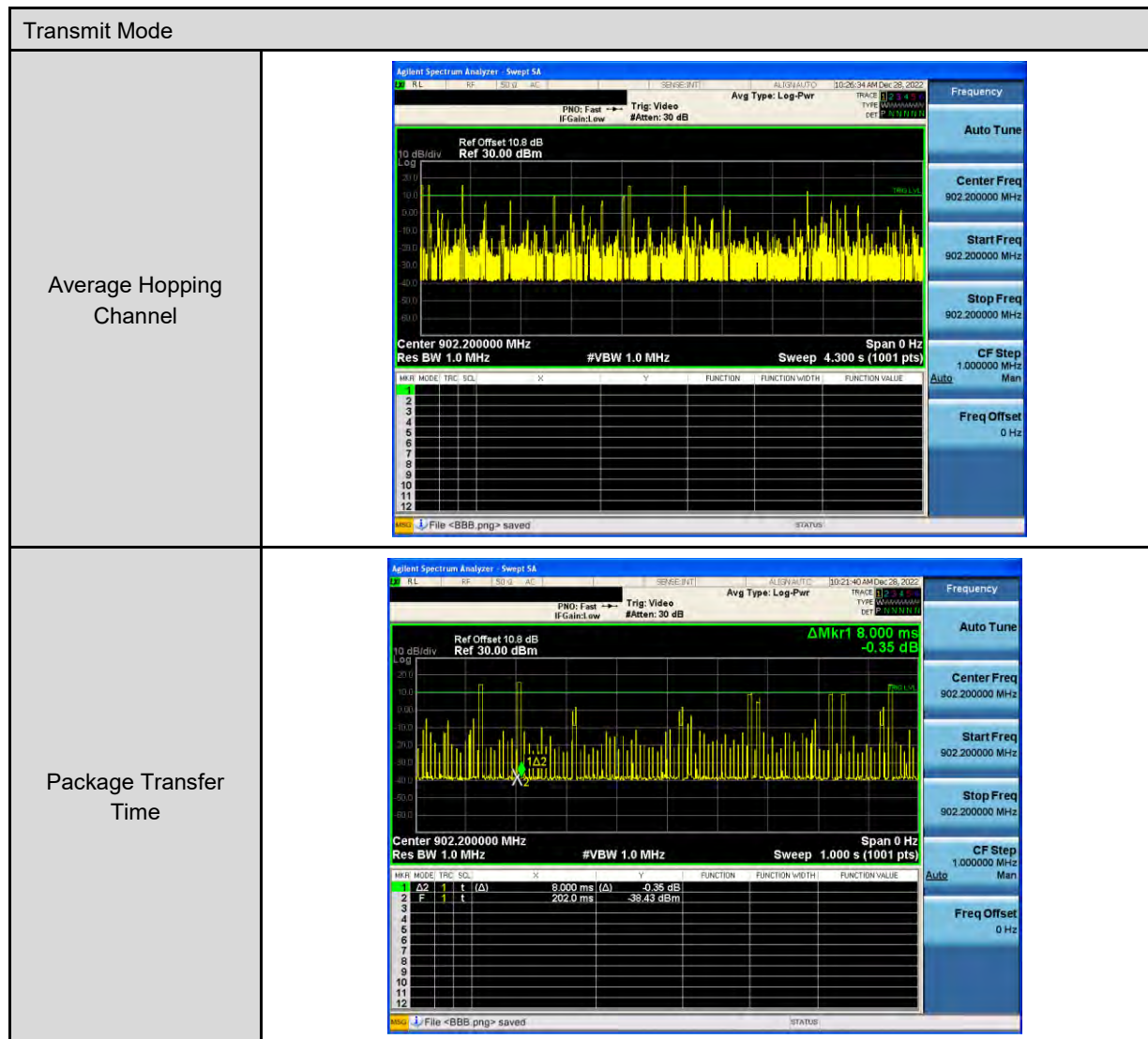
Time of Occupancy (Dwell Time) Measurement					Data Rate=50kbps_BW=200kHz			
Mode	Frequency	Number of Hopping	Hopping channel	Average Hopping Channel	Package Transfer Time	Dwell Time	Limit	PASS/ FAIL
	(MHz)			times/Sec	Sec	Sec	Sec	
Transmit mode	902.2	129	36	0.698	0.00800	0.288	0.4	PASS
Time of Occupancy (Dwell Time) Measurement					Data Rate=150kbps_BW=400kHz			
Mode	Frequency	Number of Hopping	Hopping channel	Average Hopping Channel	Package Transfer Time	Dwell Time	Limit	PASS/ FAIL
	(MHz)			times/Sec	Sec	Sec	Sec	
Transmit mode	902.4	64	40	1.563	0.00027	0.108	0.4	PASS
Time of Occupancy (Dwell Time) Measurement					Data Rate=200kbps_BW=400kHz			
Mode	Frequency	Number of Hopping	Hopping channel	Average Hopping Channel	Package Transfer Time	Dwell Time	Limit	PASS/ FAIL
	(MHz)			times/Sec	Sec	Sec	Sec	
Transmit mode	902.4	64	110	4.297	0.00200	0.198	0.4	PASS

Note:

1. Dwell Time = Number of Hopping x 0.4(s) x Average Hopping Channel x Package Transfer Time
2. Average Hopping Channel = Hopping channel / (Number of Hopping * 0.4 Sec)

■ Test Graphs

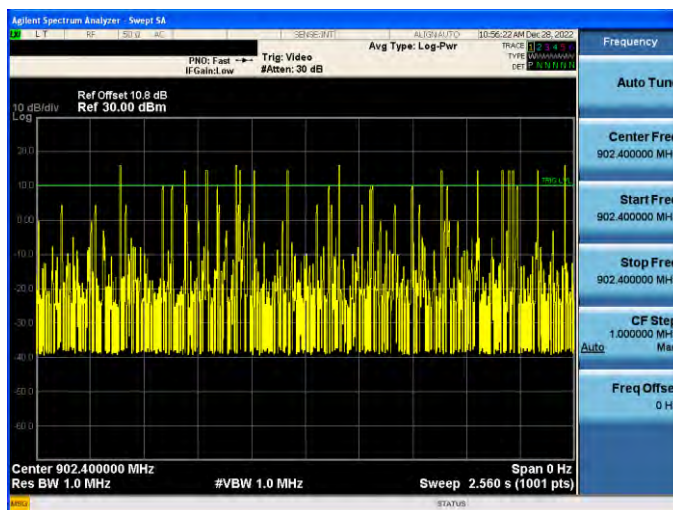
50 kbps



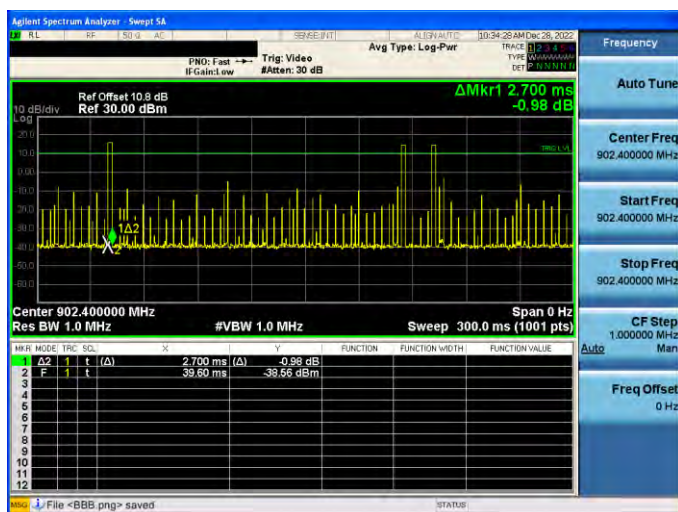
150 kbps

Transmit Mode

Average Hopping Channel



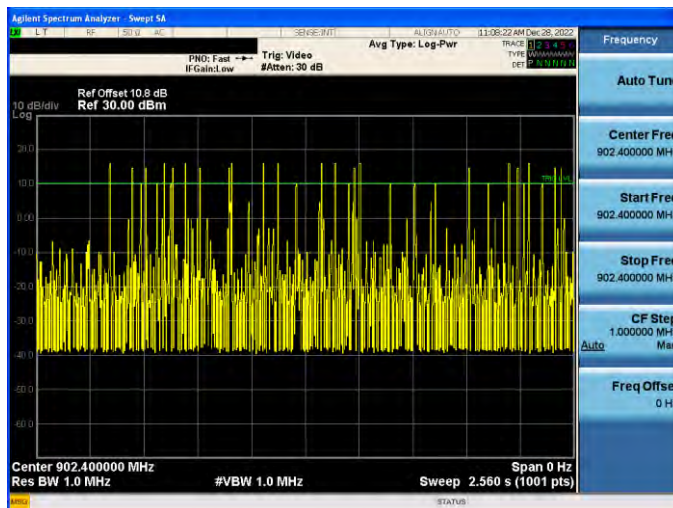
Package Transfer Time



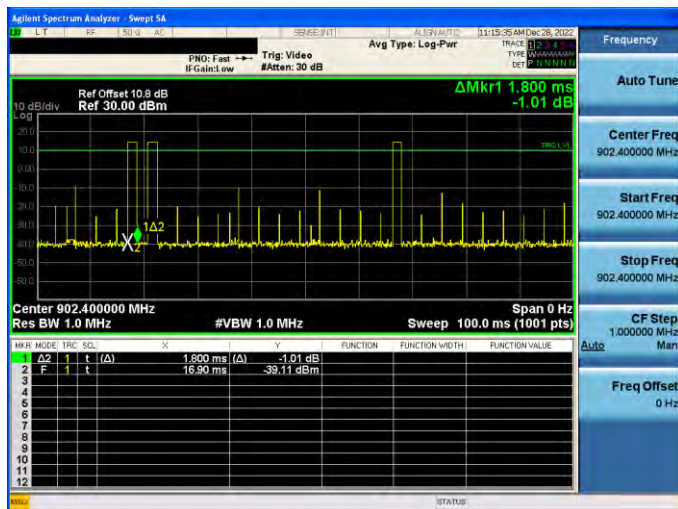
200 kbps

Transmit Mode

Average Hopping Channel



Package Transfer Time



Out of Band Conducted Emissions Measurement

■ Test Graphs

Conducted Spurious Emission

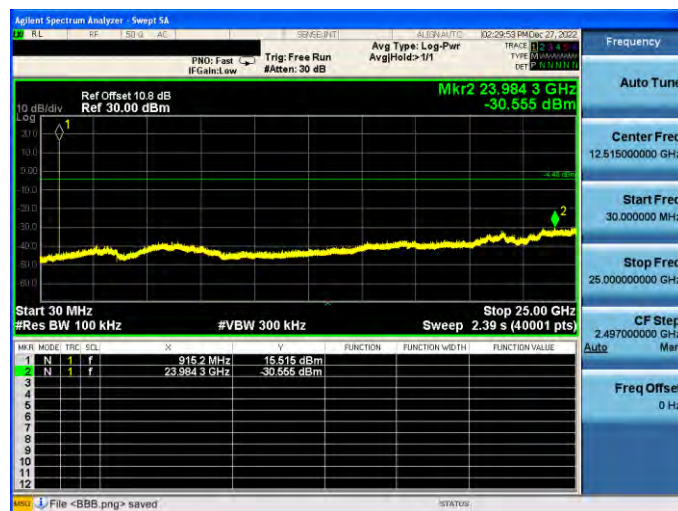
50 kbps

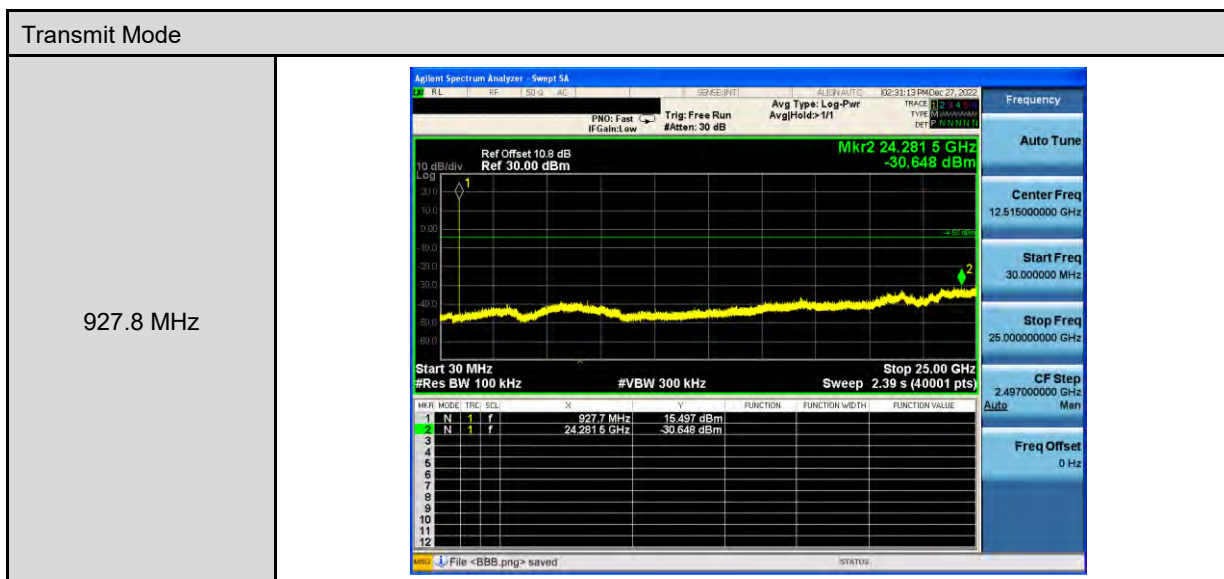
Transmit Mode

902.2 MHz



915.0 MHz





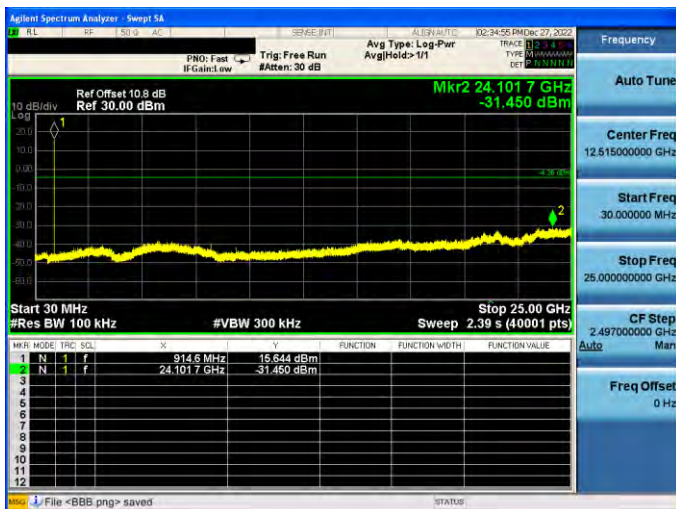
150 kbps

Transmit Mode

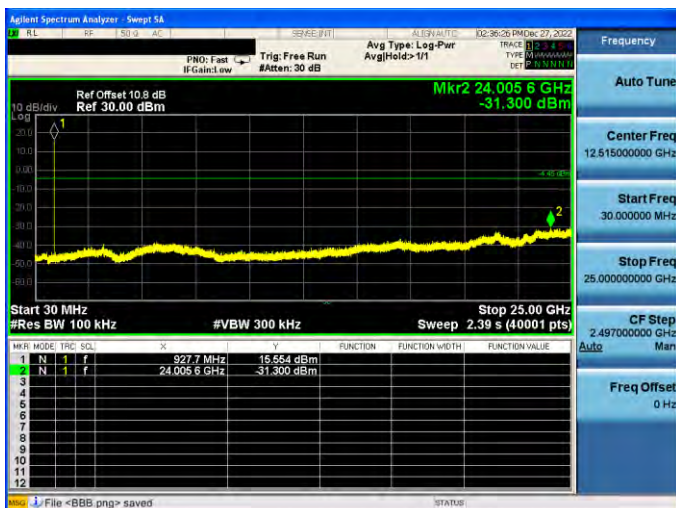
902.4 MHz



914.8 MHz



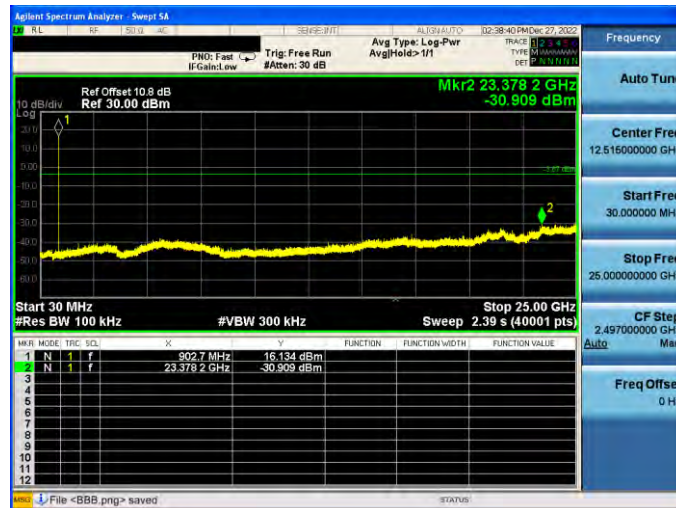
927.6 MHz



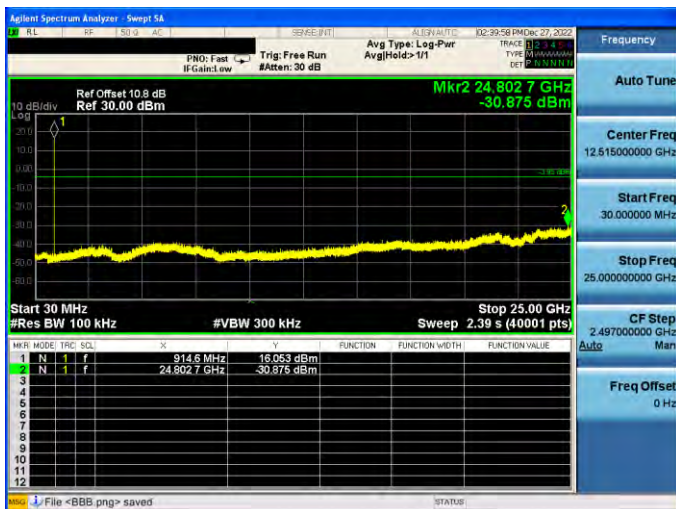
200 kbps

Transmit Mode

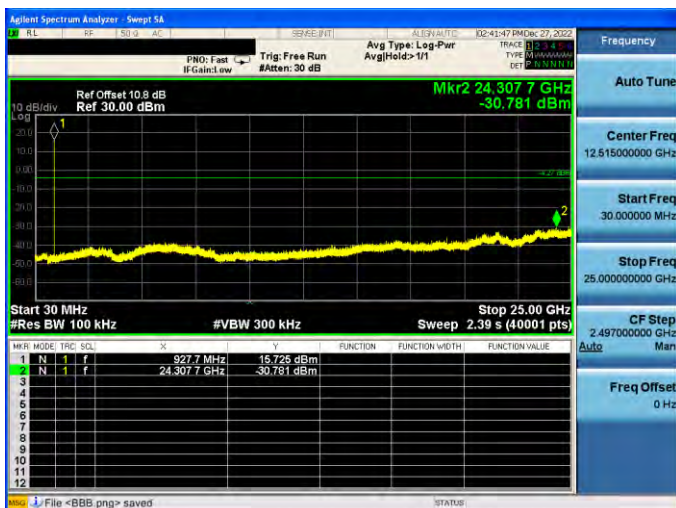
902.4 MHz



914.8 MHz



927.6 MHz

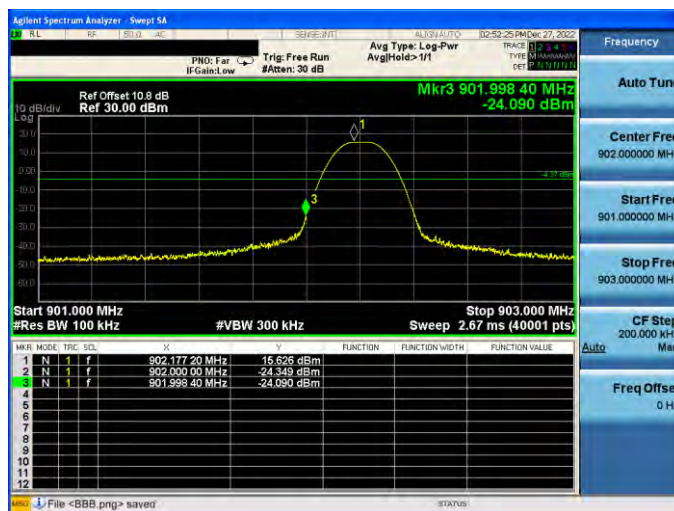


Conducted Band Edge

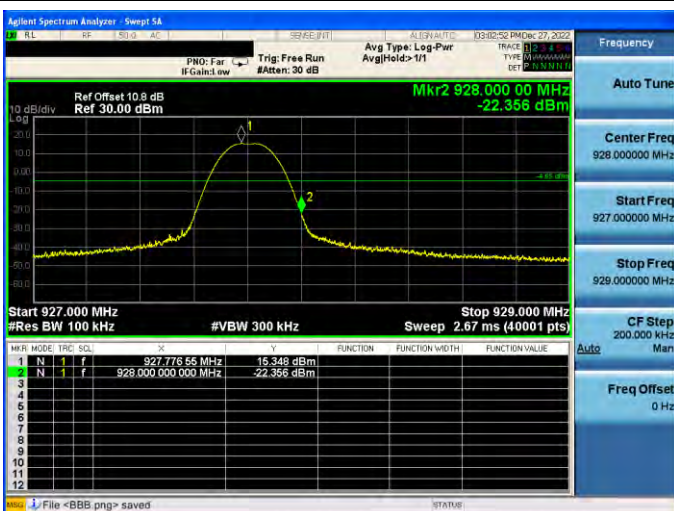
50 kbps

Transmit Mode

902.2 MHz



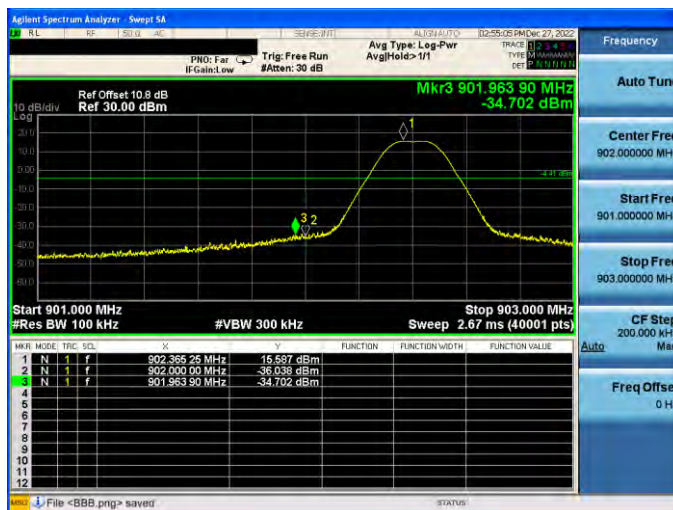
927.8 MHz



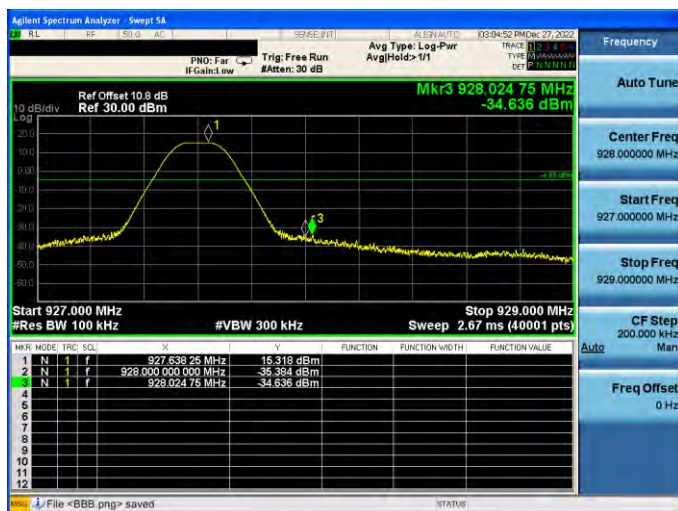
150 kbps

Transmit Mode

902.4 MHz



927.6 MHz



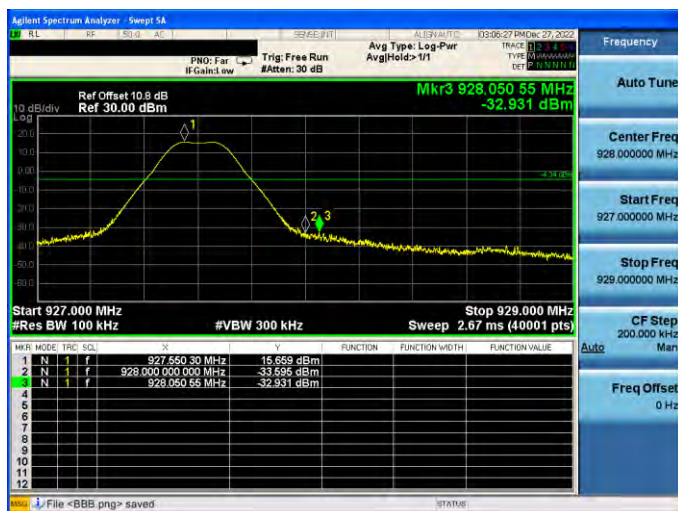
200 kbps

Transmit Mode

902.4 MHz



927.6 MHz

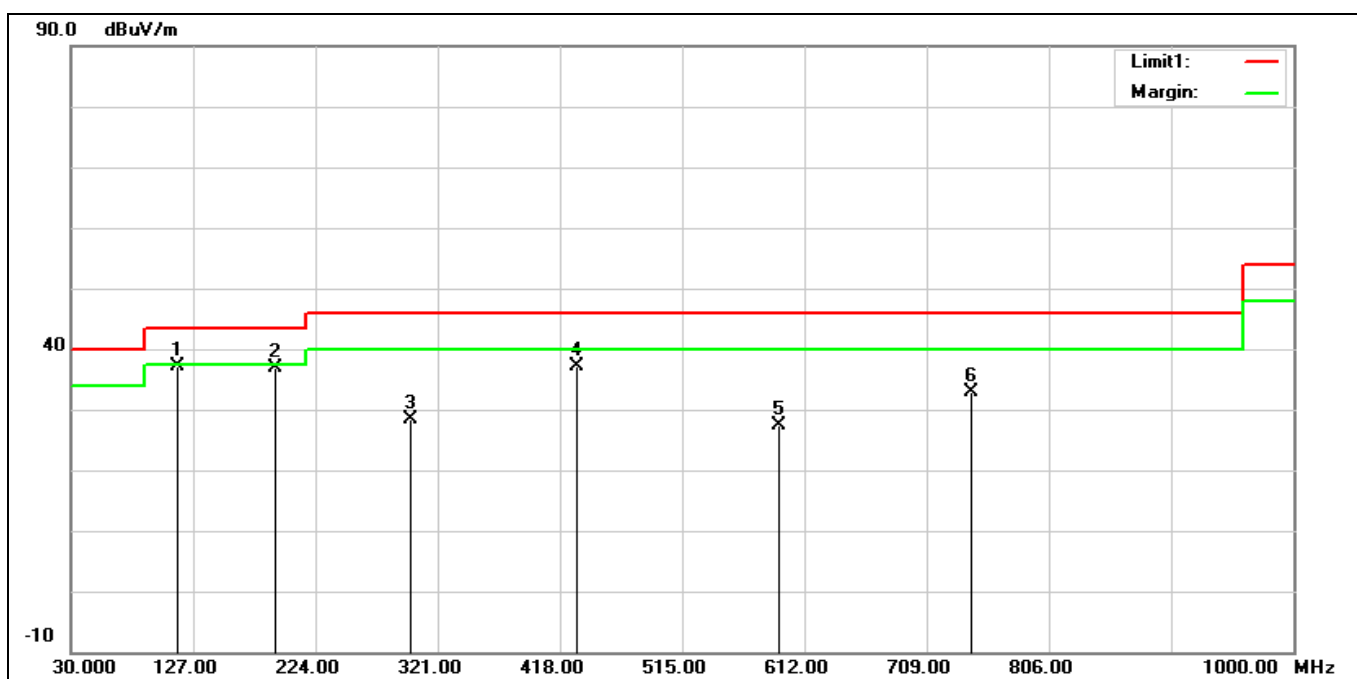


5.3 Radiated Emission Measurement

50 kbps

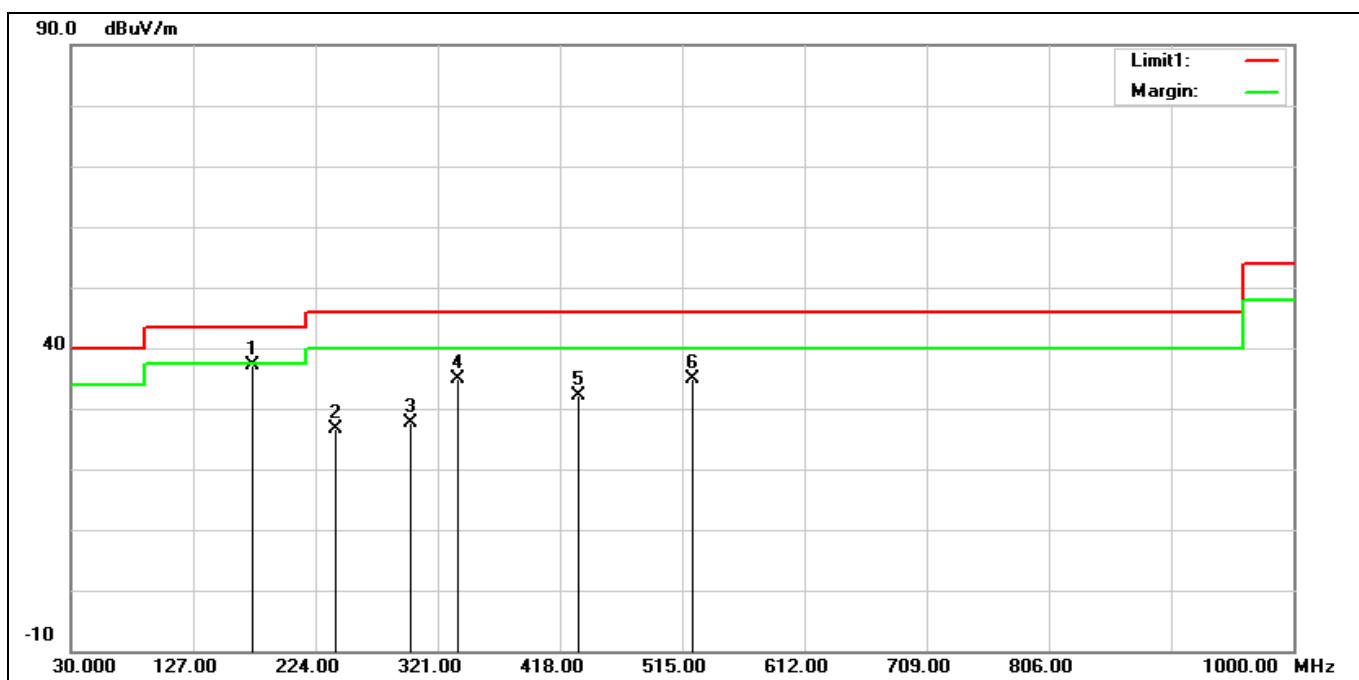
Below 1 GHz

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	114.3900	47.54	-10.30	37.24	43.50	-6.26	QP
2	191.9900	45.77	-8.86	36.91	43.50	-6.59	QP
3	299.6600	34.66	-6.24	28.42	46.00	-17.58	QP
4	431.5800	40.04	-2.98	37.06	46.00	-8.94	QP
5	591.6300	27.08	0.41	27.49	46.00	-18.51	QP
6	744.8900	29.70	3.21	32.91	46.00	-13.09	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode		
Remark:			

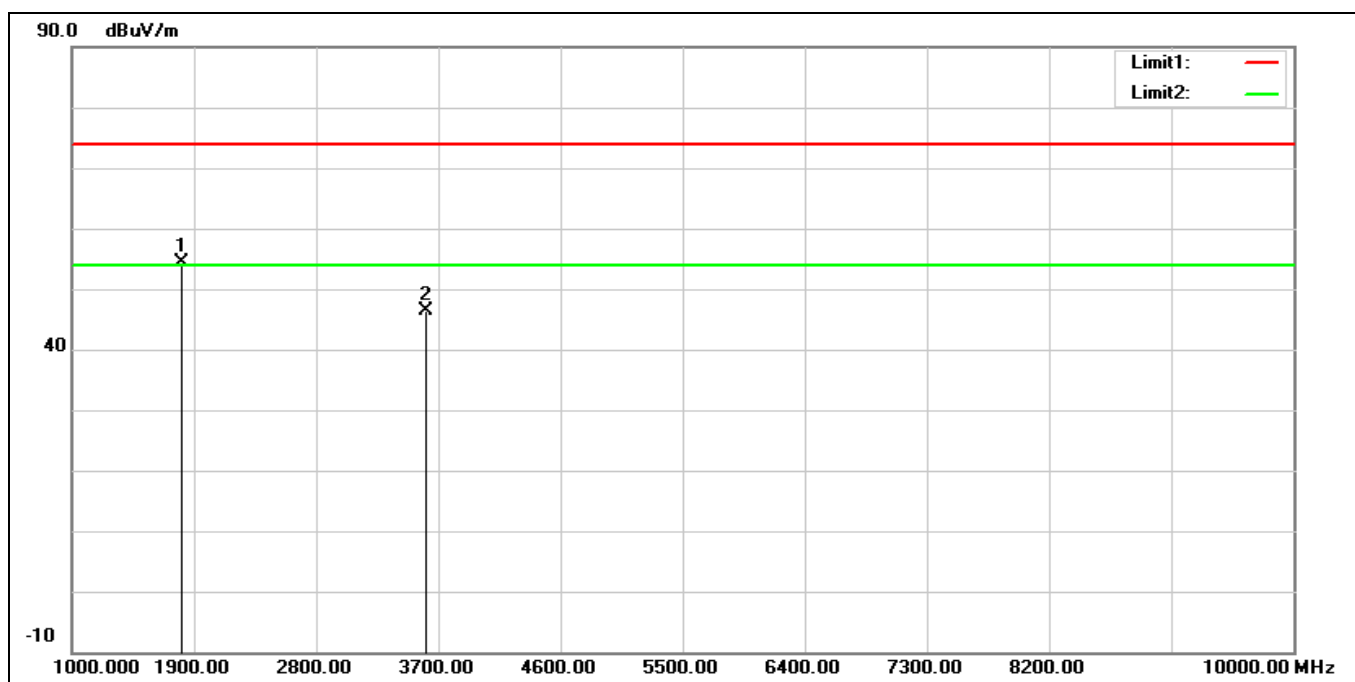


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	174.5300	44.50	-7.27	37.23	43.50	-6.27	QP
2	239.5200	34.46	-7.77	26.69	46.00	-19.31	QP
3	299.6600	33.86	-6.24	27.62	46.00	-18.38	QP
4	336.5200	40.32	-5.33	34.99	46.00	-11.01	QP
5	432.5500	35.19	-2.96	32.23	46.00	-13.77	QP
6	523.7300	36.29	-1.33	34.96	46.00	-11.04	QP

Harmonic

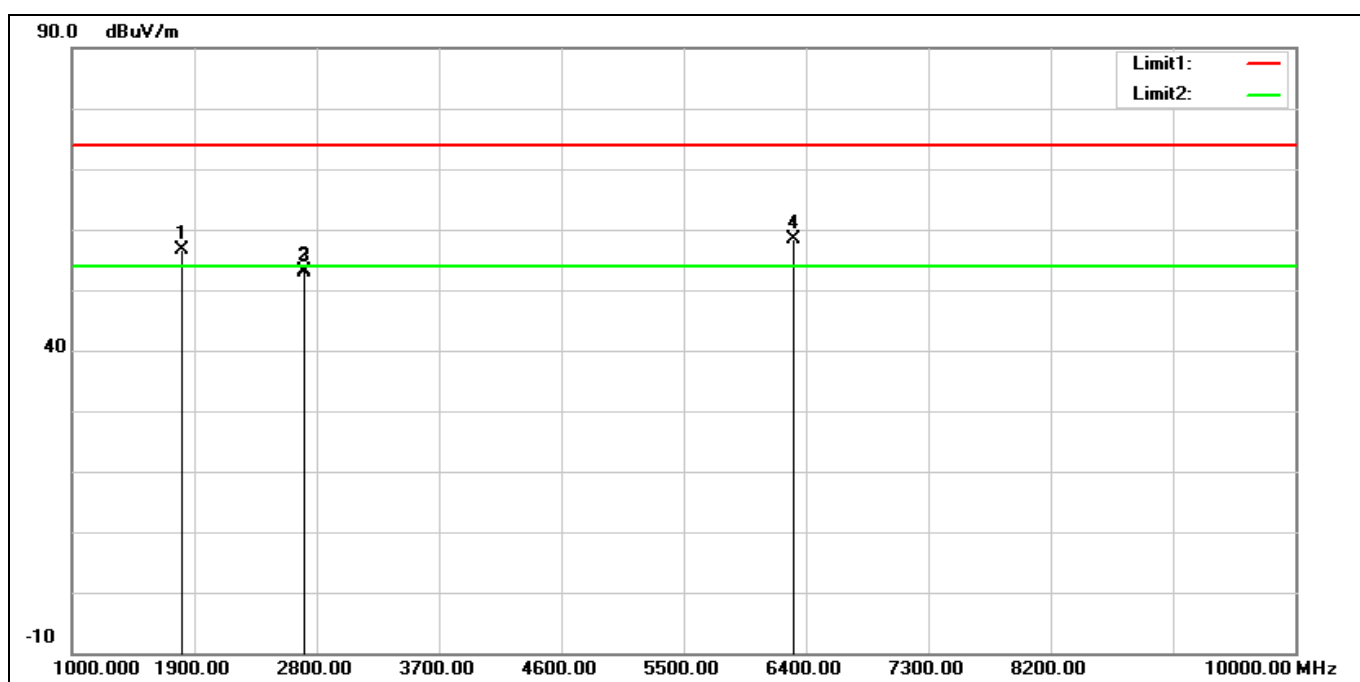
Above 1 GHz

Standard:	Part 15C	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	TX_902.2 MHz		
Remark:			



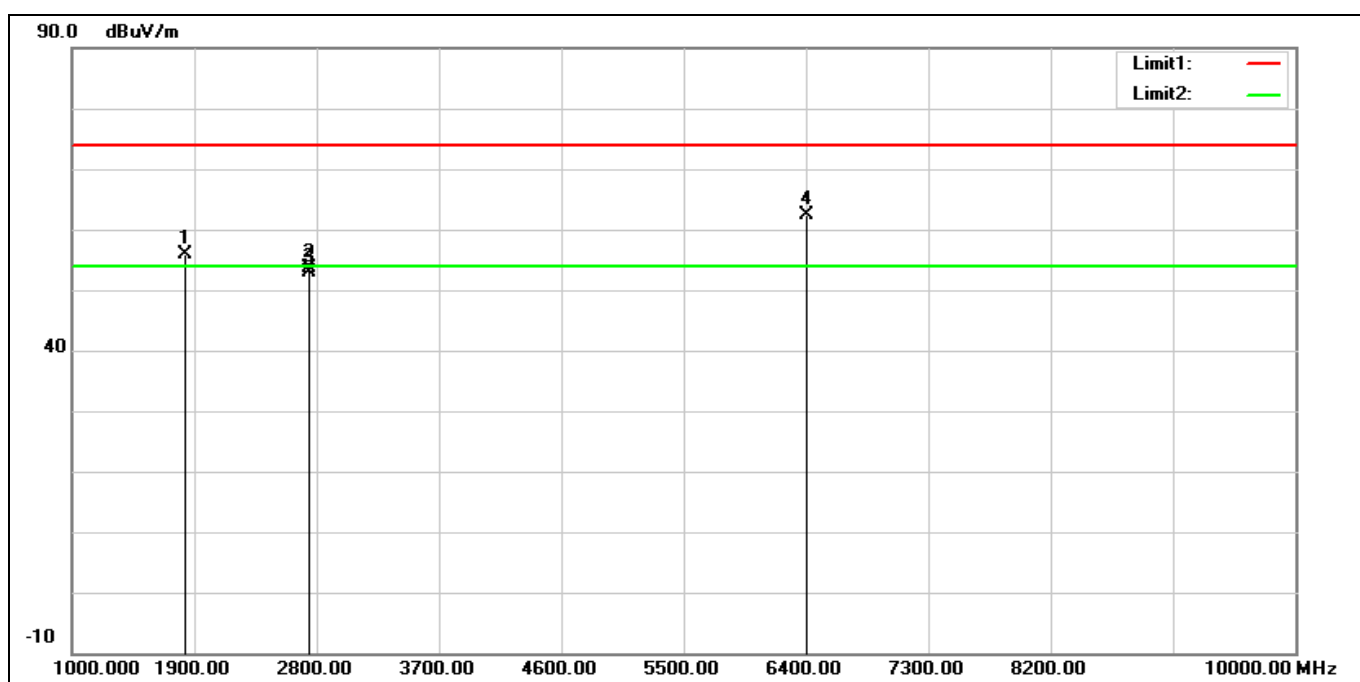
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	1804.400	64.05	-9.69	54.36	74.00	-19.64	peak
2	3608.800	49.93	-3.50	46.43	74.00	-27.57	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.2 MHz		
Remark:			



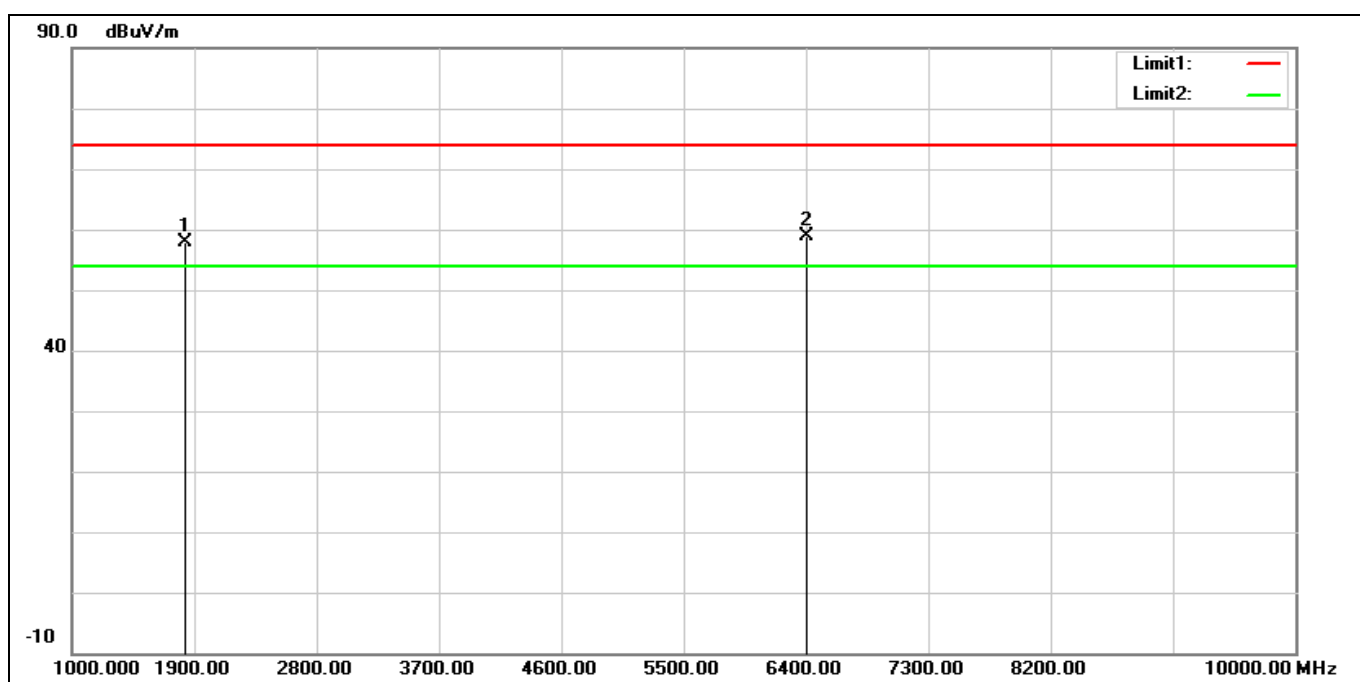
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1804.400	66.36	-9.69	56.67	74.00	-17.33	peak
2	2706.600	59.07	-5.85	53.22	74.00	-20.78	peak
3*	2706.600	58.69	-5.85	52.84	54.00	-1.16	AVG
4	6315.400	54.20	4.29	58.49	74.00	-15.51	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_915.0 MHz		
Remark:			



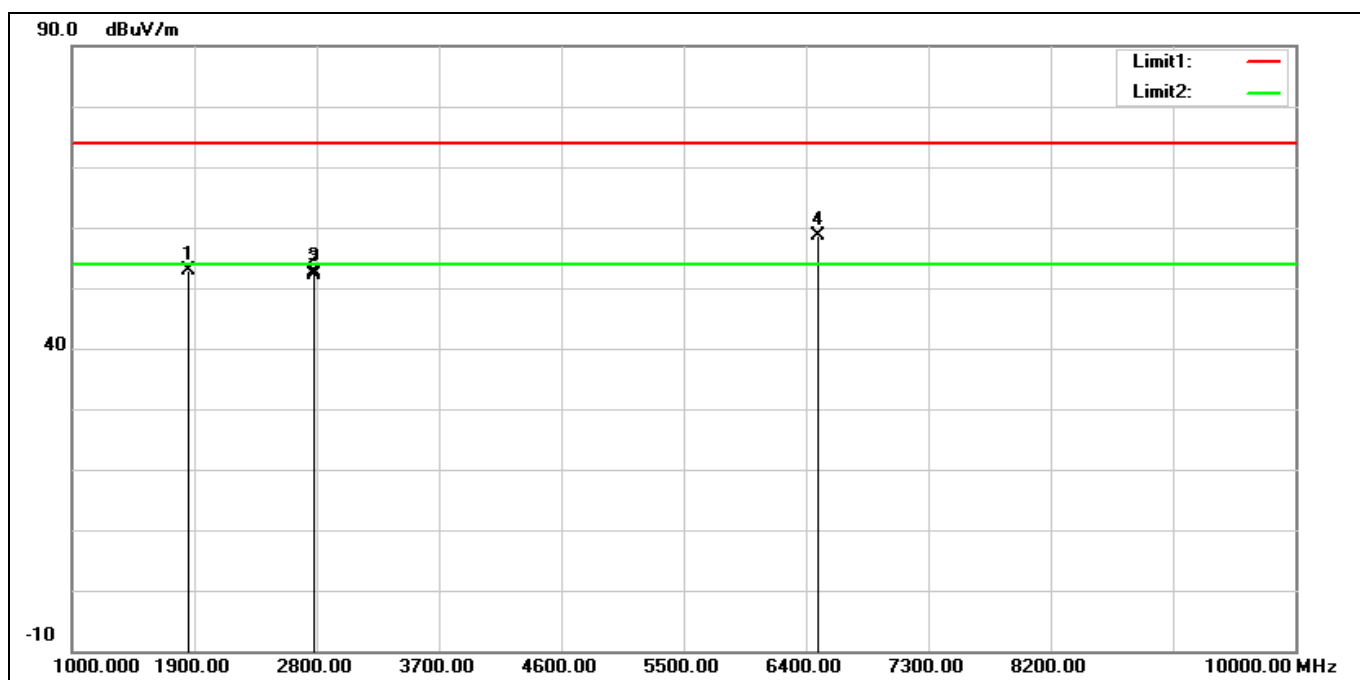
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1830.000	65.16	-9.33	55.83	74.00	-18.17	peak
2	2745.000	59.31	-5.66	53.65	74.00	-20.35	peak
3*	2745.000	58.62	-5.66	52.96	54.00	-1.04	AVG
4	6405.000	57.66	4.70	62.36	74.00	-11.64	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_915.0 MHz		
Remark:			



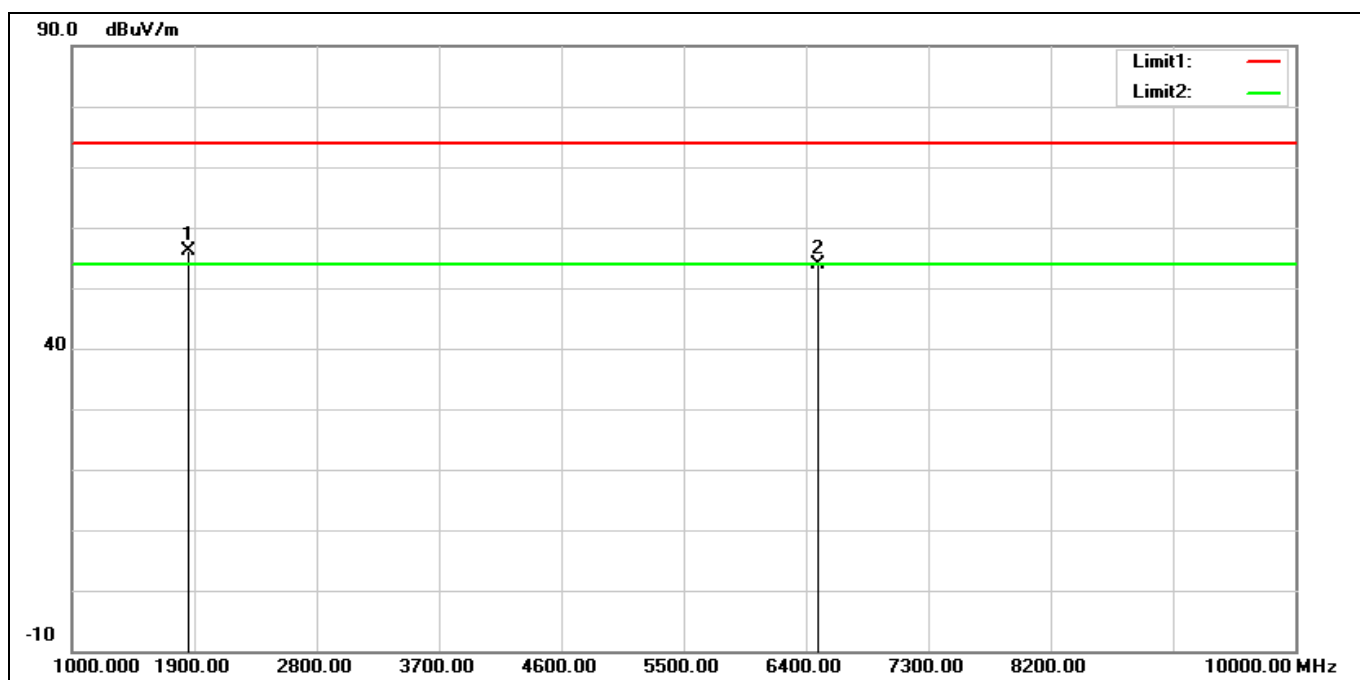
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1830.000	67.17	-9.33	57.84	74.00	-16.16	peak
2*	6405.000	54.28	4.70	58.98	74.00	-15.02	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.8 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1855.600	61.83	-9.02	52.81	74.00	-21.19	peak
2	2783.400	57.62	-5.40	52.22	74.00	-21.78	peak
3*	2783.400	57.92	-5.40	52.52	54.00	-1.48	AVG
4	6494.600	53.49	5.13	58.62	74.00	-15.38	peak

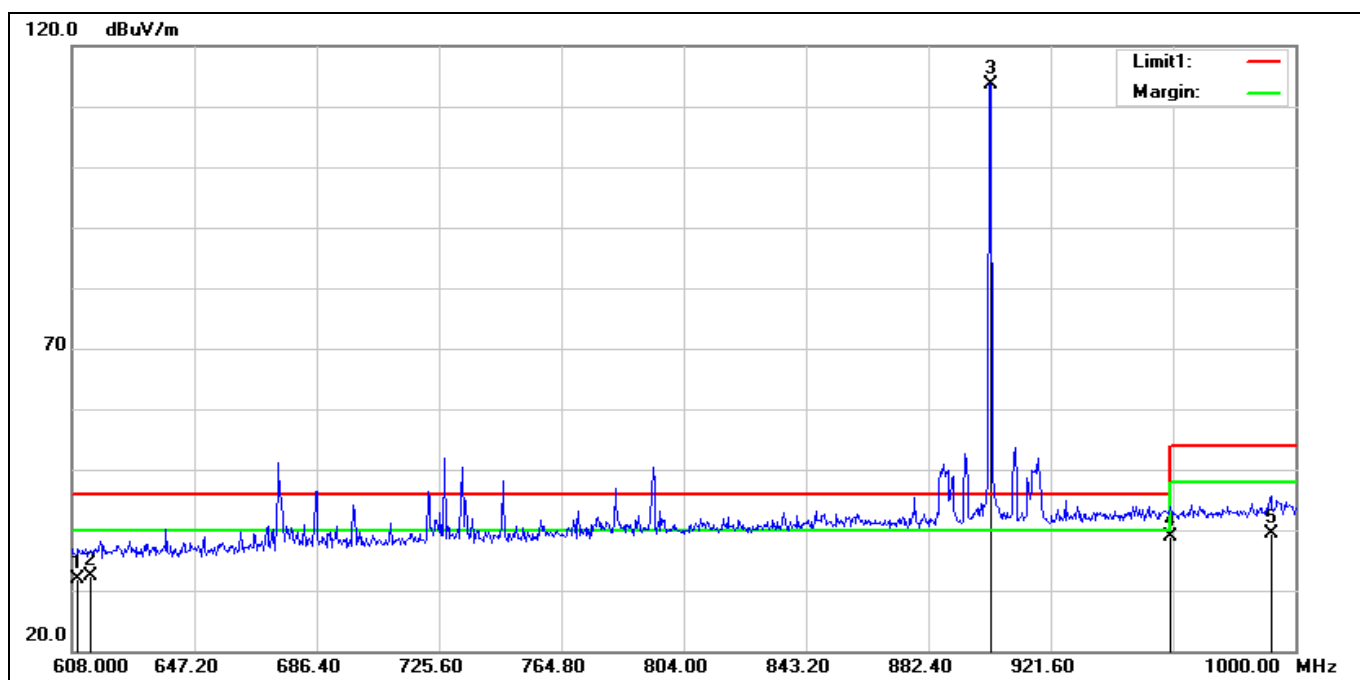
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.8 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	1855.600	65.23	-9.02	56.21	74.00	-17.79	peak
2	6494.600	48.86	5.13	53.99	74.00	-20.01	peak

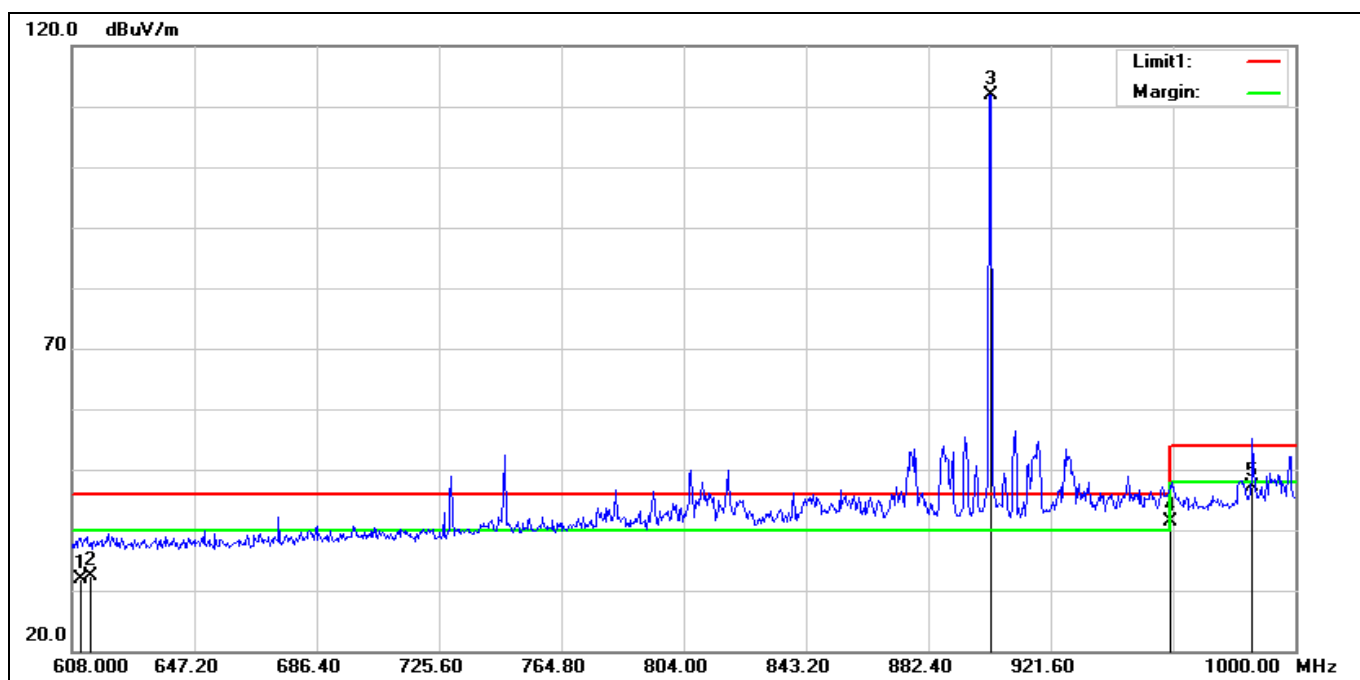
Band Edge

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_902.2 MHz		
Remark:			



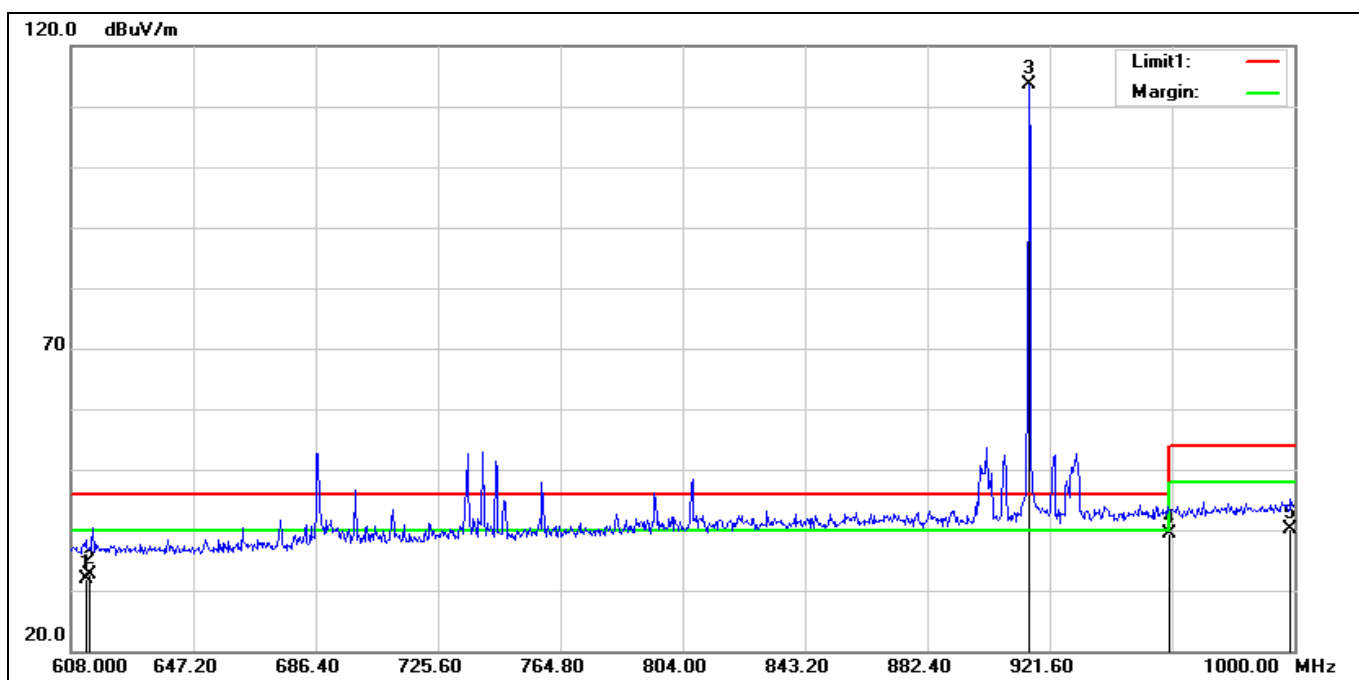
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	609.9600	47.64	-15.68	31.96	46.00	-14.04	QP
2	614.0000	48.11	-15.66	32.45	46.00	-13.55	QP
3*	902.3920	124.55	-11.00	113.55	46.00	67.55	peak
4	960.0000	49.08	-10.09	38.99	46.00	-7.01	QP
5	992.1600	48.92	-9.42	39.50	54.00	-14.50	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.2 MHz		
Remark:			



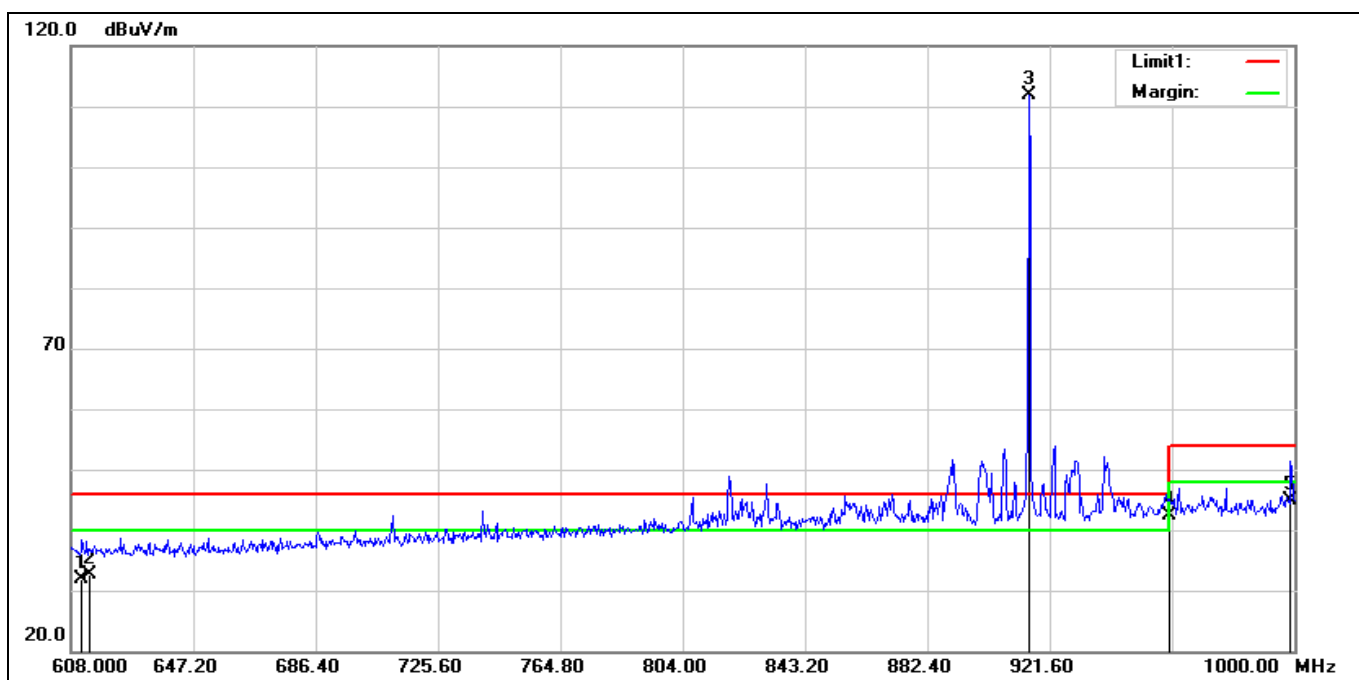
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	610.7440	47.62	-15.67	31.95	46.00	-14.05	QP
2	614.0000	48.05	-15.66	32.39	46.00	-13.61	QP
3*	902.3920	122.92	-11.00	111.92	46.00	65.92	peak
4!	960.0000	51.53	-10.09	41.44	46.00	-4.56	QP
5	986.2800	56.56	-9.54	47.02	54.00	-6.98	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_915.0 MHz		
Remark:			



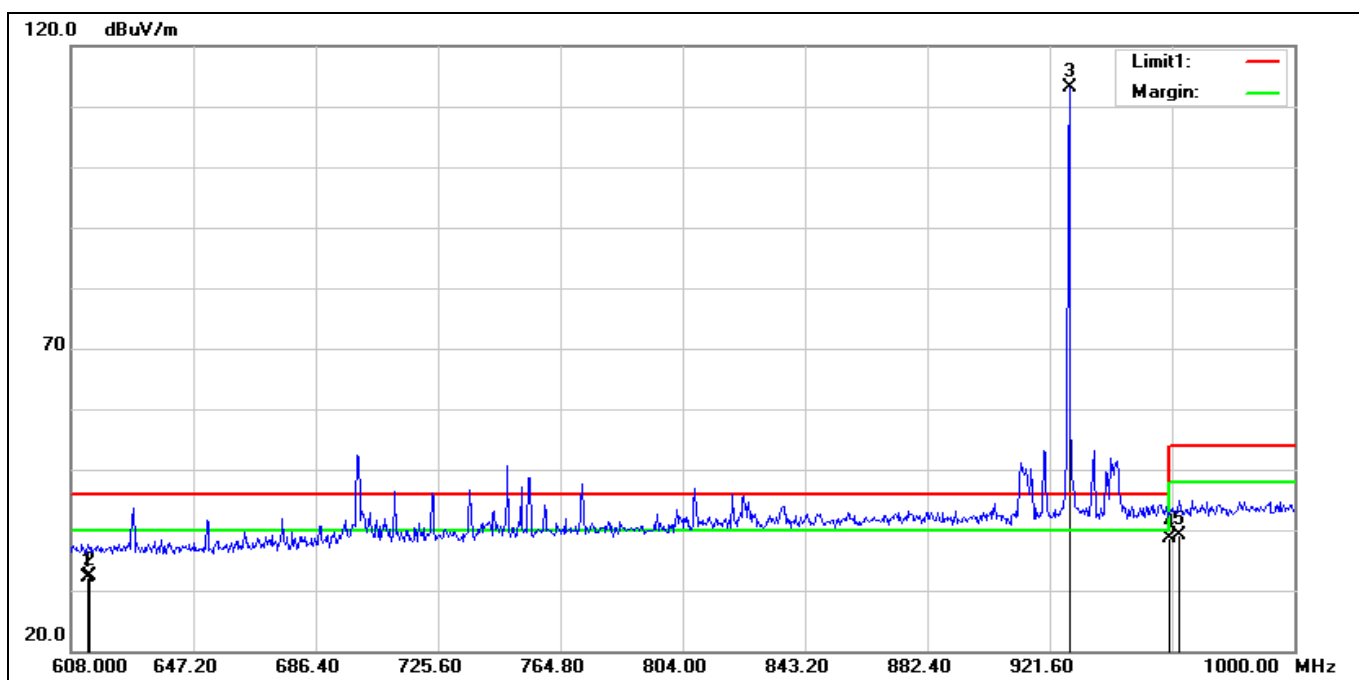
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	612.7040	47.59	-15.66	31.93	46.00	-14.07	QP
2	614.0000	48.41	-15.66	32.75	46.00	-13.25	QP
3*	914.9360	124.48	-10.80	113.68	46.00	67.68	peak
4	960.0000	49.44	-10.09	39.35	46.00	-6.65	QP
5	998.8240	49.50	-9.29	40.21	54.00	-13.79	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_915.0 MHz		
Remark:			



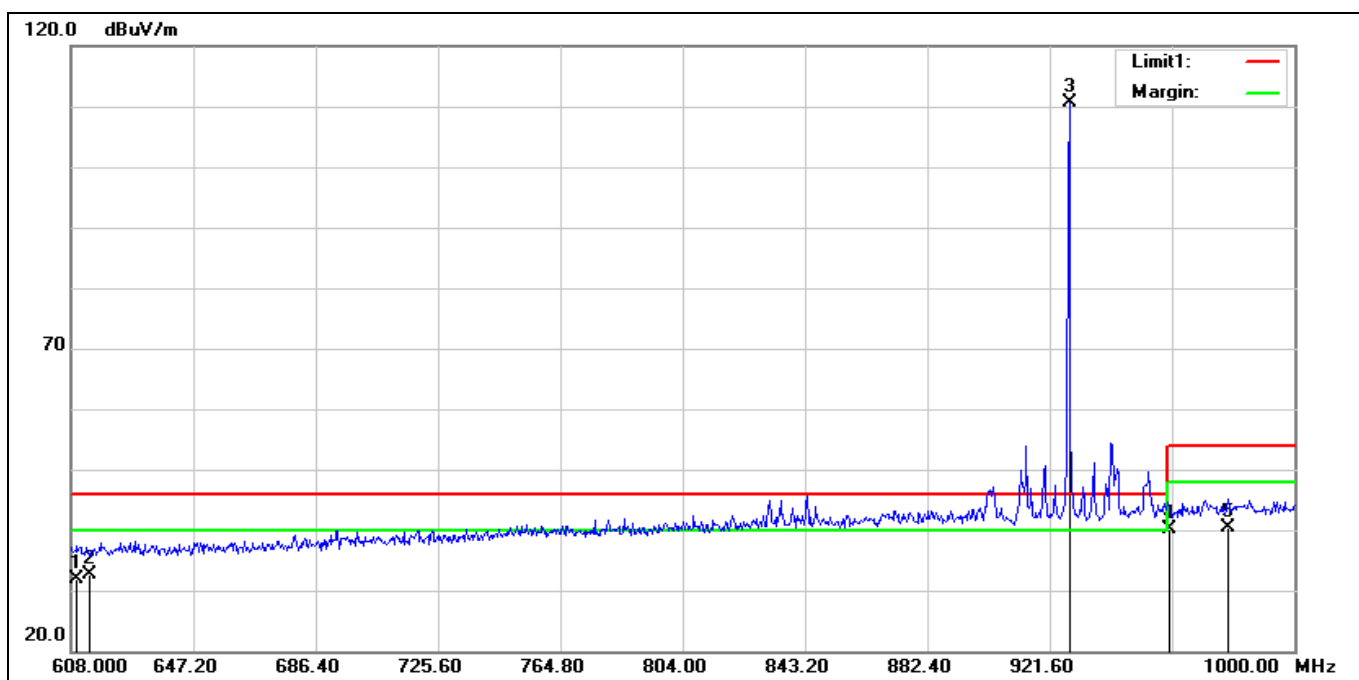
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	611.5280	47.57	-15.66	31.91	46.00	-14.09	QP
2	614.0000	48.24	-15.66	32.58	46.00	-13.42	QP
3*	914.9360	122.71	-10.80	111.91	46.00	65.91	peak
4!	960.0000	52.59	-10.09	42.50	46.00	-3.50	QP
5	998.8240	54.14	-9.29	44.85	54.00	-9.15	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.8 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	613.4880	47.90	-15.66	32.24	46.00	-13.76	QP
2	614.0000	48.10	-15.66	32.44	46.00	-13.56	QP
3*	927.8720	123.84	-10.62	113.22	46.00	67.22	peak
4	960.0000	48.79	-10.09	38.70	46.00	-7.30	QP
5	963.1520	49.07	-10.02	39.05	54.00	-14.95	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.8 MHz		
Remark:			

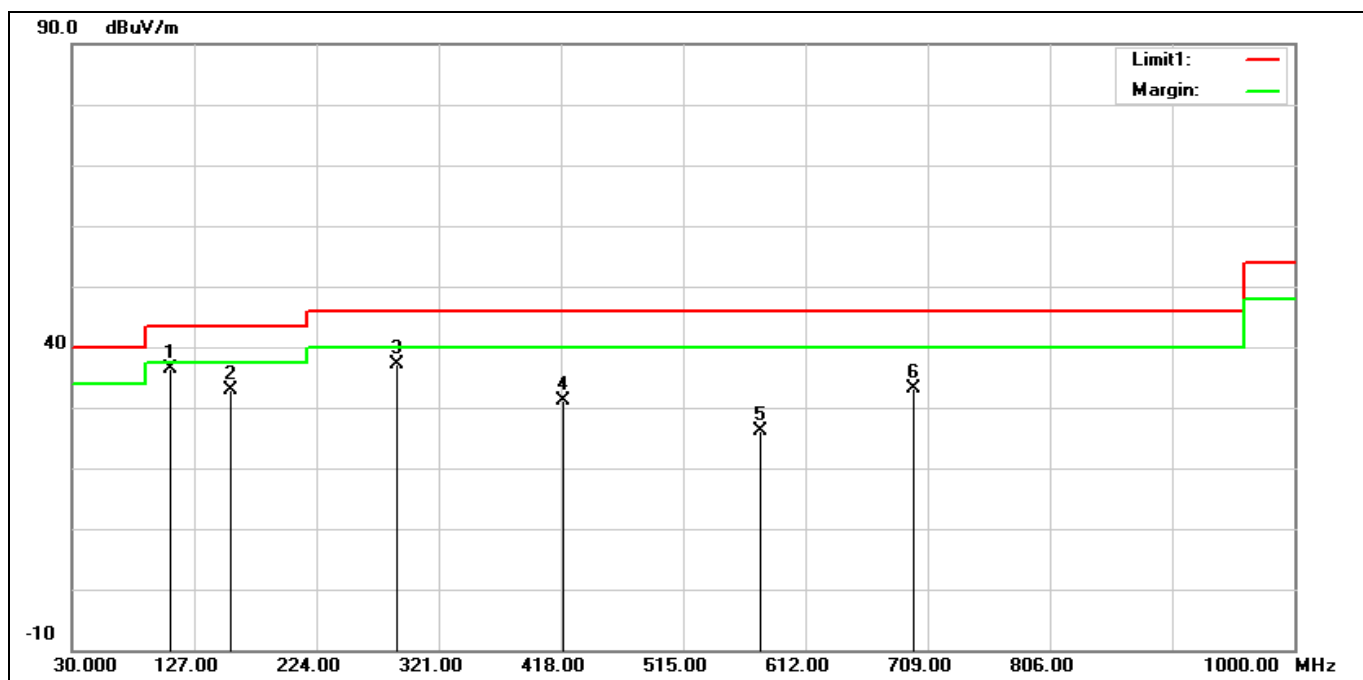


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	609.9600	47.65	-15.68	31.97	46.00	-14.03	QP
2	614.0000	48.35	-15.66	32.69	46.00	-13.31	QP
3*	927.8720	121.29	-10.62	110.67	46.00	64.67	peak
4!	960.0000	50.23	-10.09	40.14	46.00	-5.86	QP
5	978.8320	49.98	-9.71	40.27	54.00	-13.73	QP

150 kbps

Below 1 GHz

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode		
Remark:			



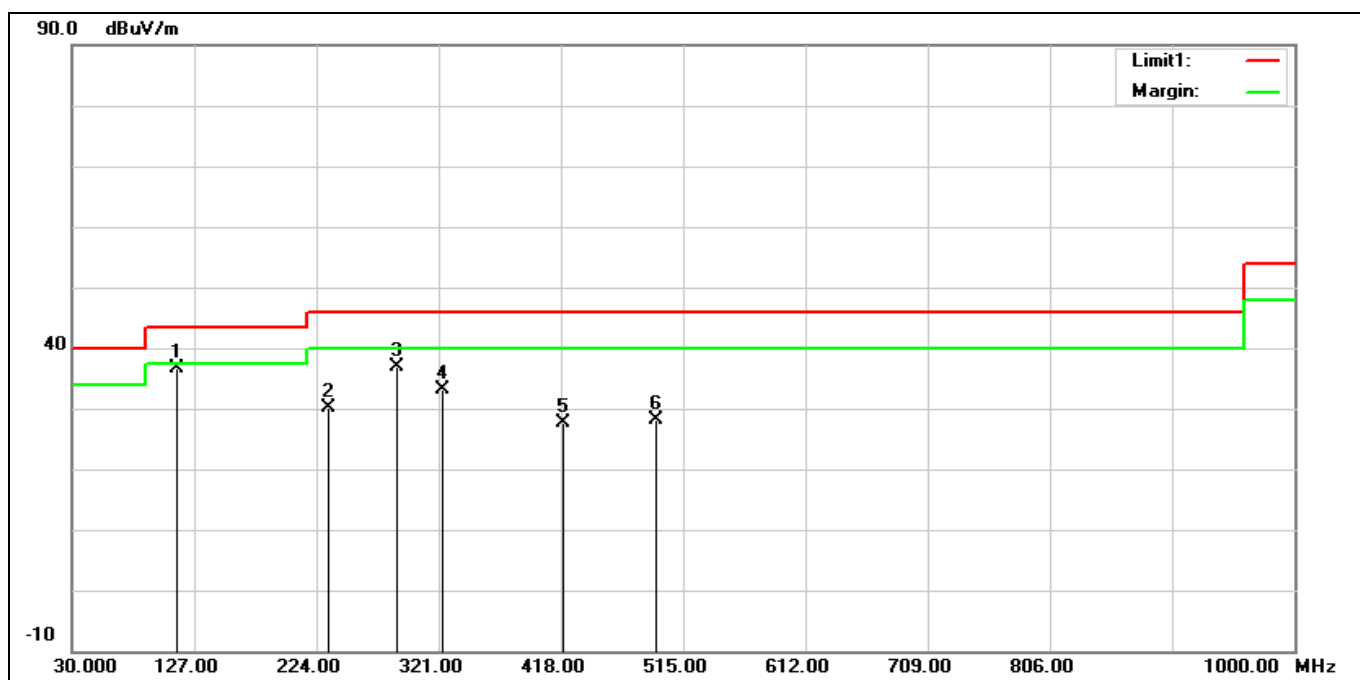
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	107.6000	47.56	-11.07	36.49	43.50	-7.01	QP
2	156.1000	39.68	-6.78	32.90	43.50	-10.60	QP
3	288.0200	43.49	-6.33	37.16	46.00	-8.84	QP
4	419.9400	34.28	-3.25	31.03	46.00	-14.97	QP
5	576.1100	26.04	-0.03	26.01	46.00	-19.99	QP
6	697.3600	31.07	2.09	33.16	46.00	-12.84	QP

Standard: Part 15.247 Test Site: 966 Chamber

Polarization: Vertical

Test Mode: Transmit mode

Remark:

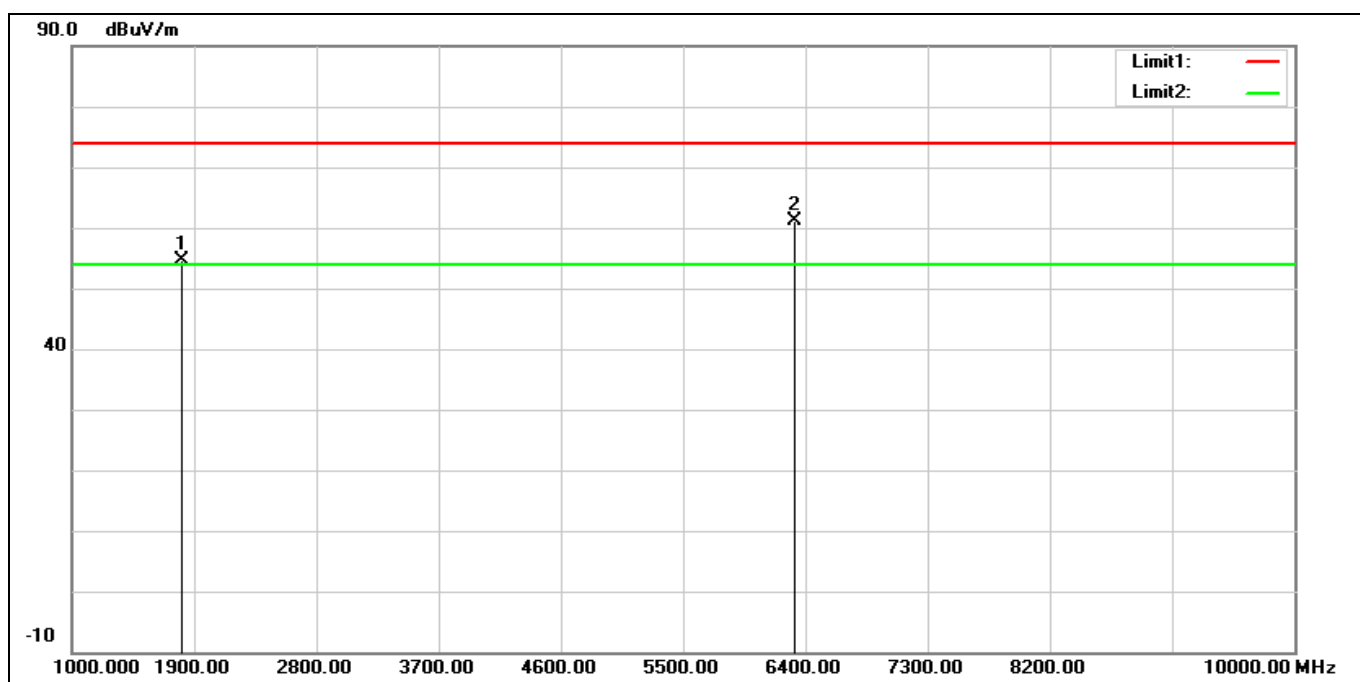


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	113.4200	46.89	-10.38	36.51	43.50	-6.99	QP
2	233.7000	38.37	-8.17	30.20	46.00	-15.80	QP
3	288.0200	43.12	-6.33	36.79	46.00	-9.21	QP
4	323.9100	38.77	-5.65	33.12	46.00	-12.88	QP
5	419.9400	30.78	-3.25	27.53	46.00	-18.47	QP
6	493.6600	29.93	-1.91	28.02	46.00	-17.98	QP

Harmonic

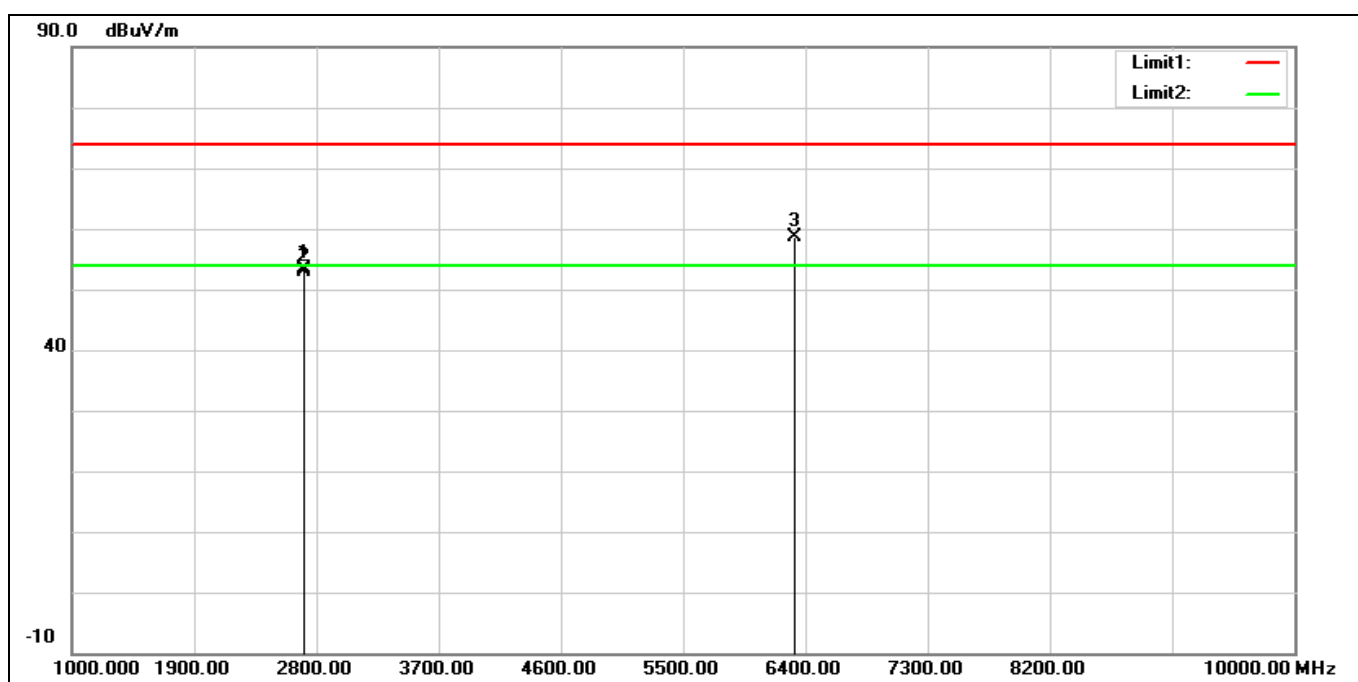
Above 1 GHz

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



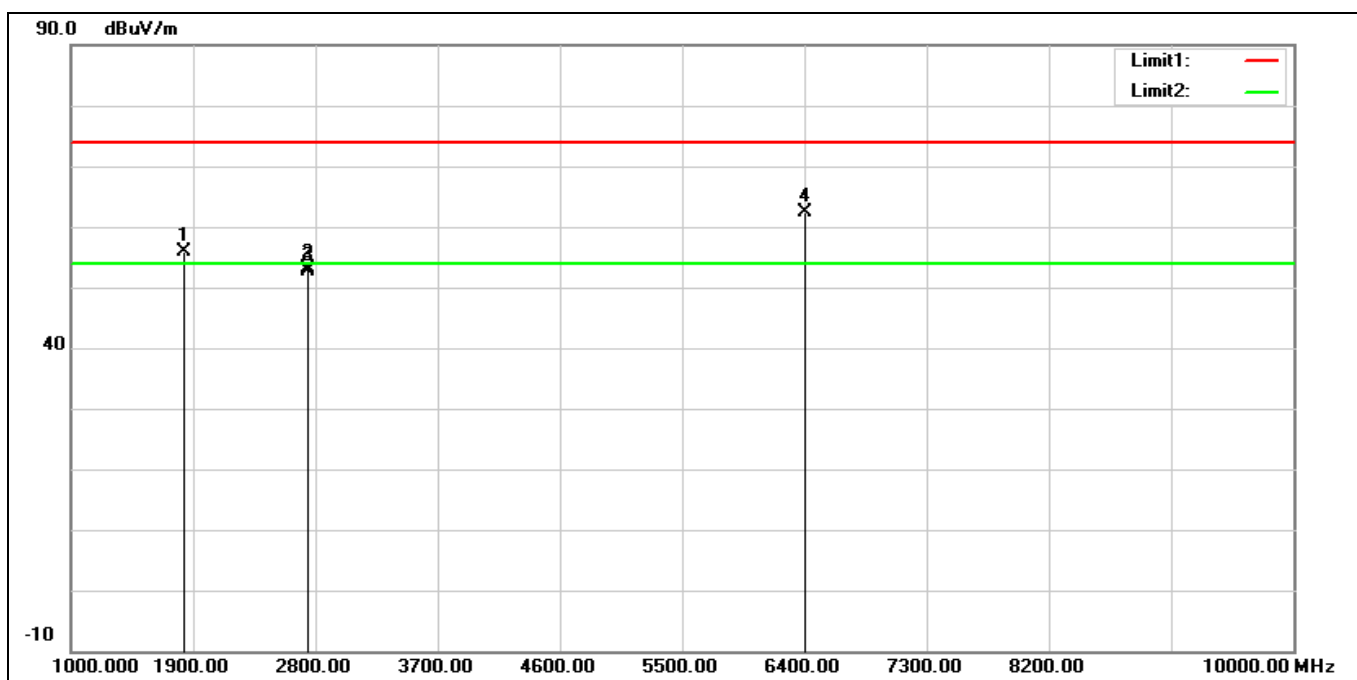
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1804.800	64.20	-9.68	54.52	74.00	-19.48	peak
2*	6316.800	56.87	4.30	61.17	74.00	-12.83	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



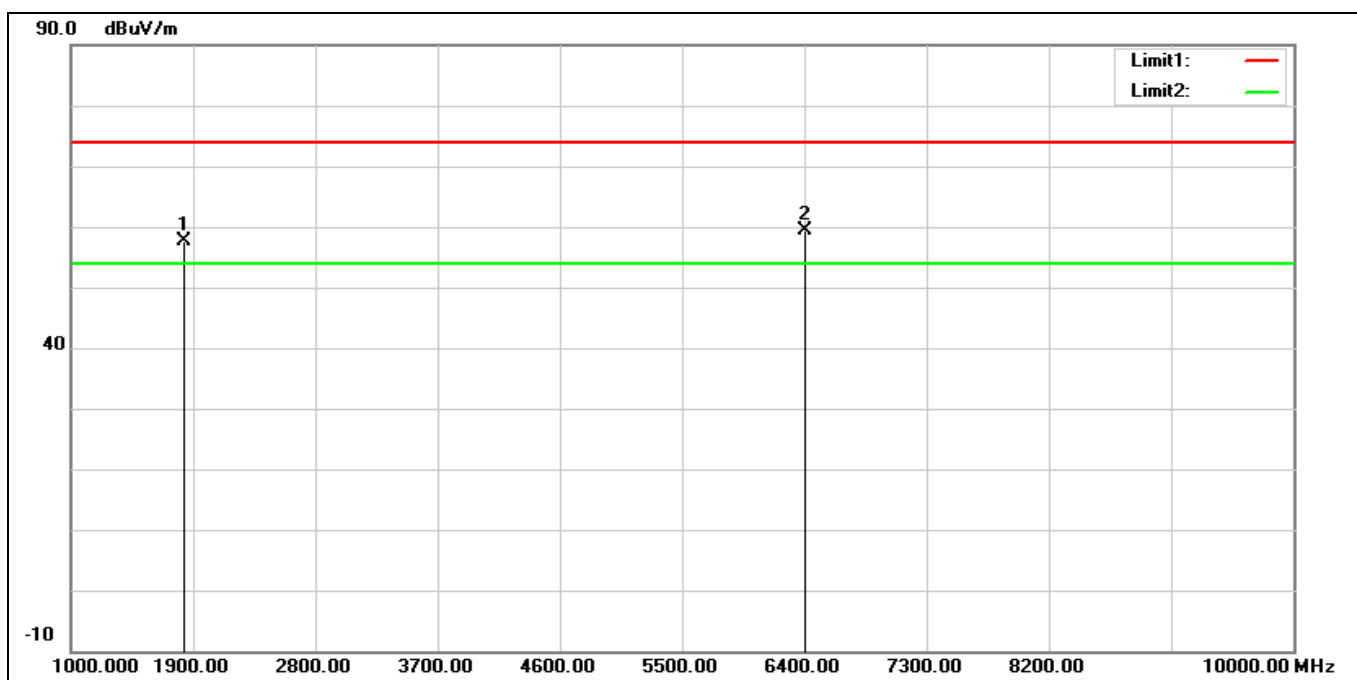
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2707.200	59.12	-5.85	53.27	74.00	-20.73	peak
2*	2707.200	58.79	-5.85	52.94	54.00	-1.06	AVG
3	6316.800	54.33	4.30	58.63	74.00	-15.37	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



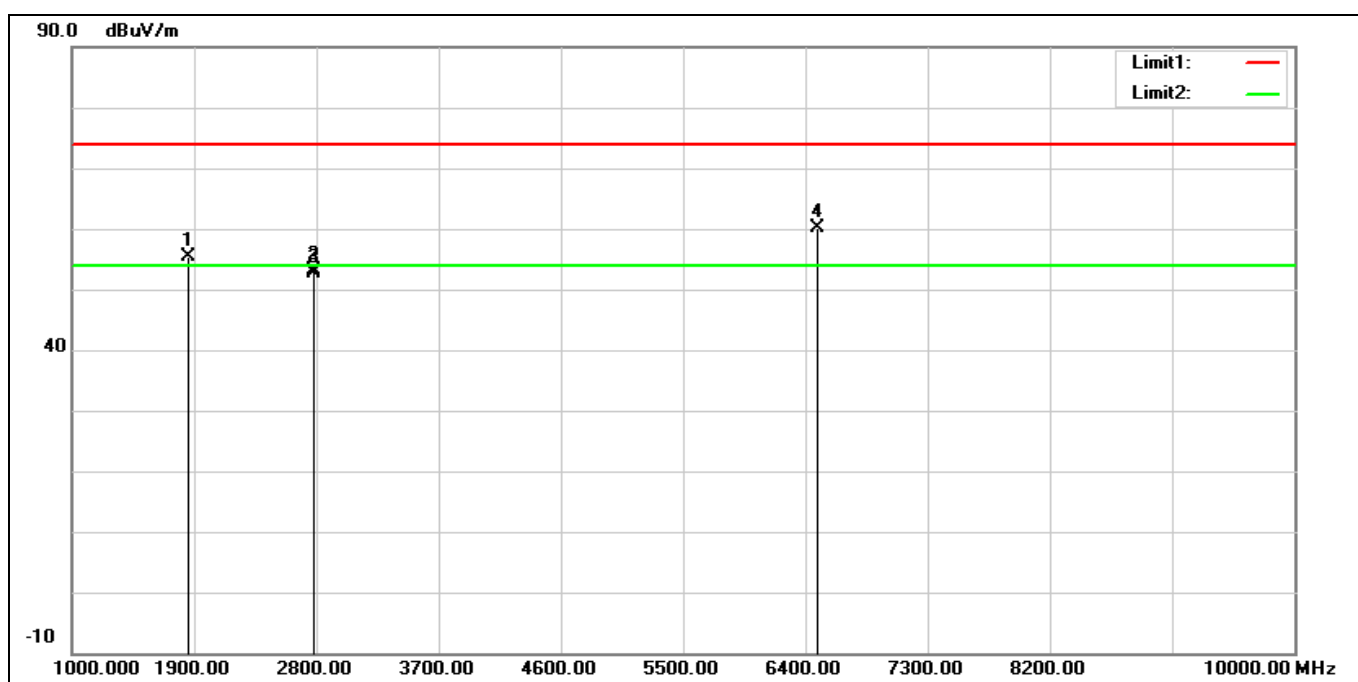
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1829.600	65.09	-9.33	55.76	74.00	-18.24	peak
2	2744.400	58.90	-5.66	53.24	74.00	-20.76	peak
3*	2744.400	58.32	-5.66	52.66	54.00	-1.34	AVG
4	6403.600	57.74	4.70	62.44	74.00	-11.56	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



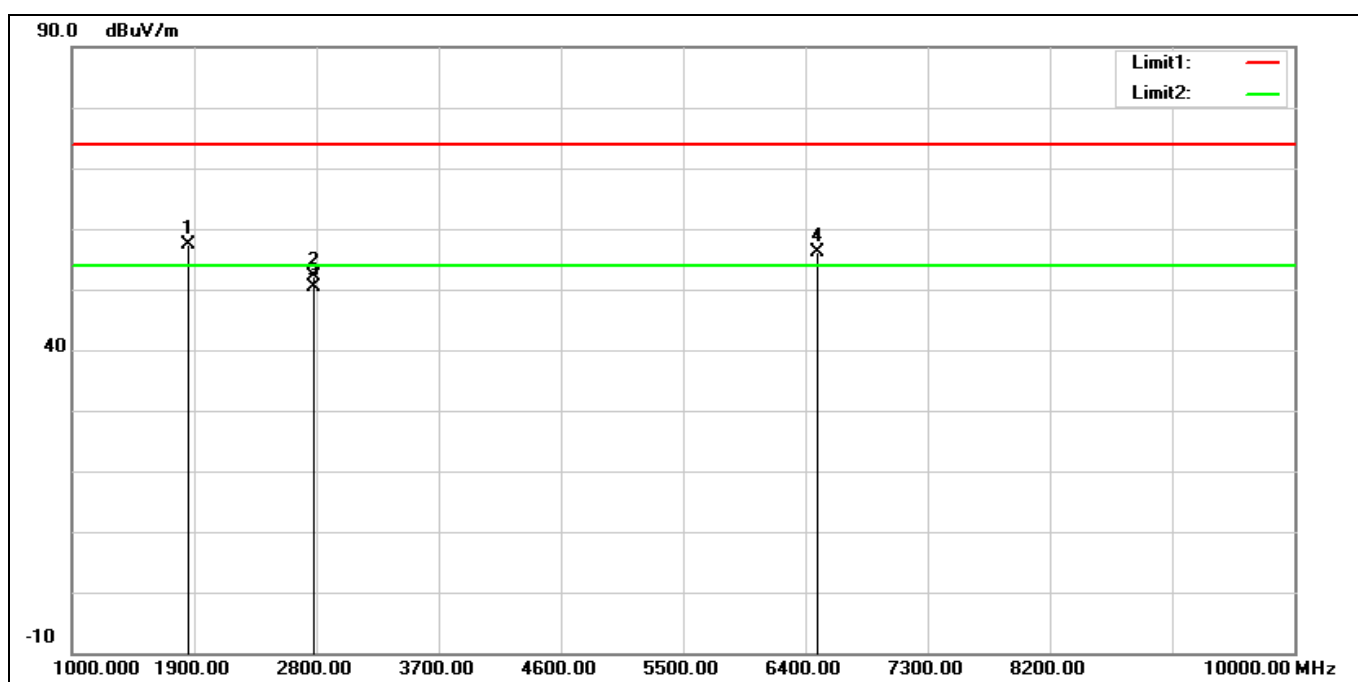
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1829.600	66.95	-9.33	57.62	74.00	-16.38	peak
2*	6403.600	54.63	4.70	59.33	74.00	-14.67	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1855.200	64.52	-9.02	55.50	74.00	-18.50	peak
2	2782.800	58.63	-5.40	53.23	74.00	-20.77	peak
3*	2782.800	57.91	-5.40	52.51	54.00	-1.49	AVG
4	6493.200	55.10	5.12	60.22	74.00	-13.78	peak

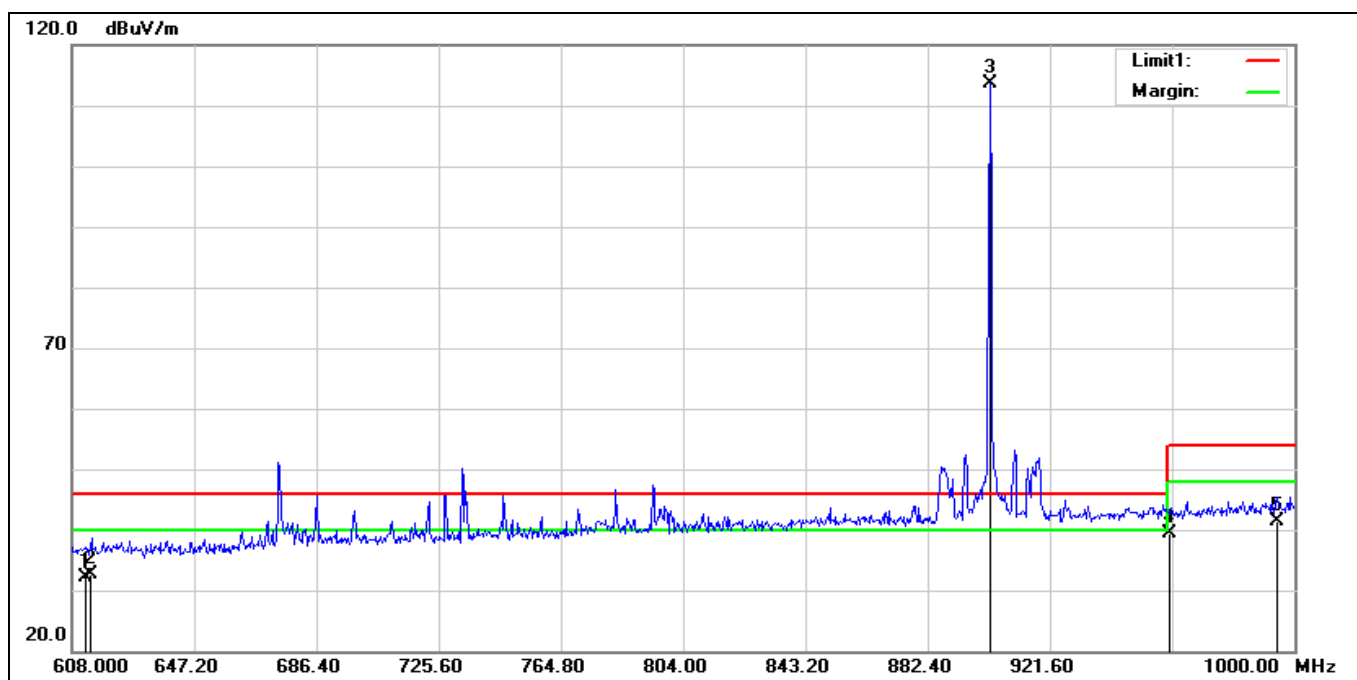
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1855.200	66.35	-9.02	57.33	74.00	-16.67	peak
2	2782.800	57.52	-5.40	52.12	74.00	-21.88	peak
3*	2782.800	55.71	-5.40	50.31	54.00	-3.69	AVG
4	6493.200	50.93	5.12	56.05	74.00	-17.95	peak

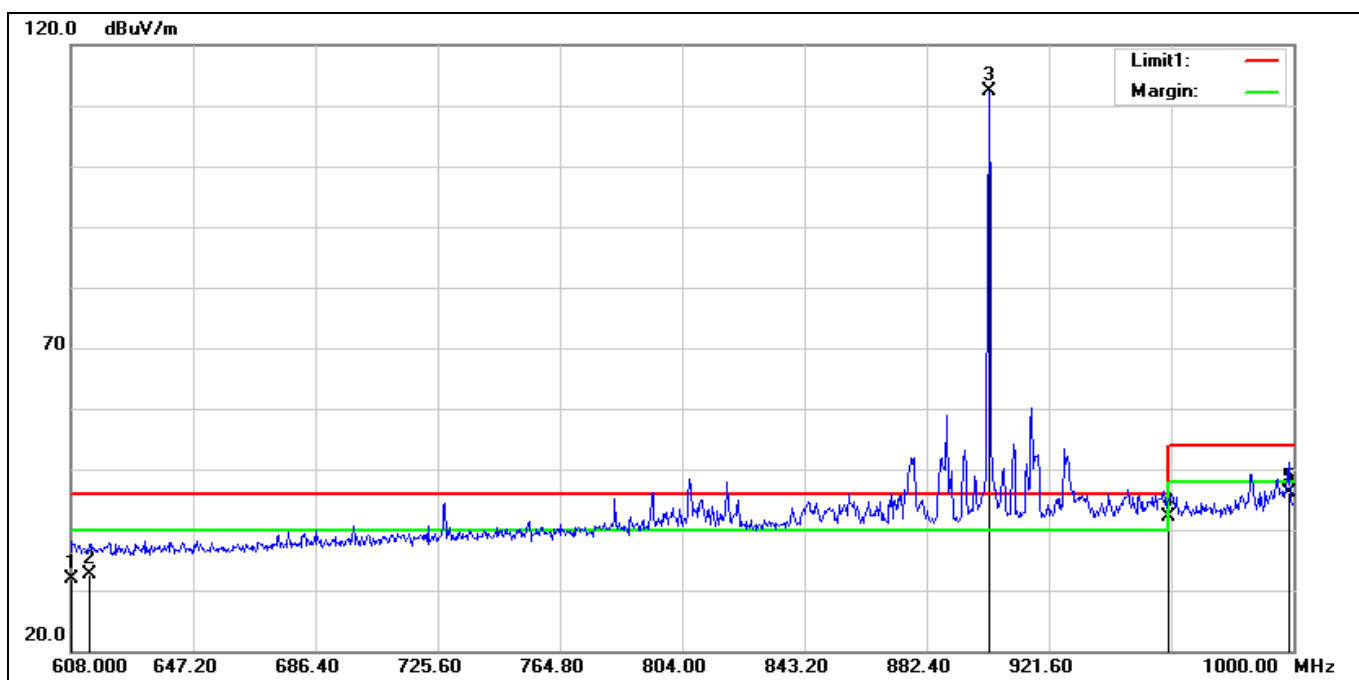
Band Edge

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



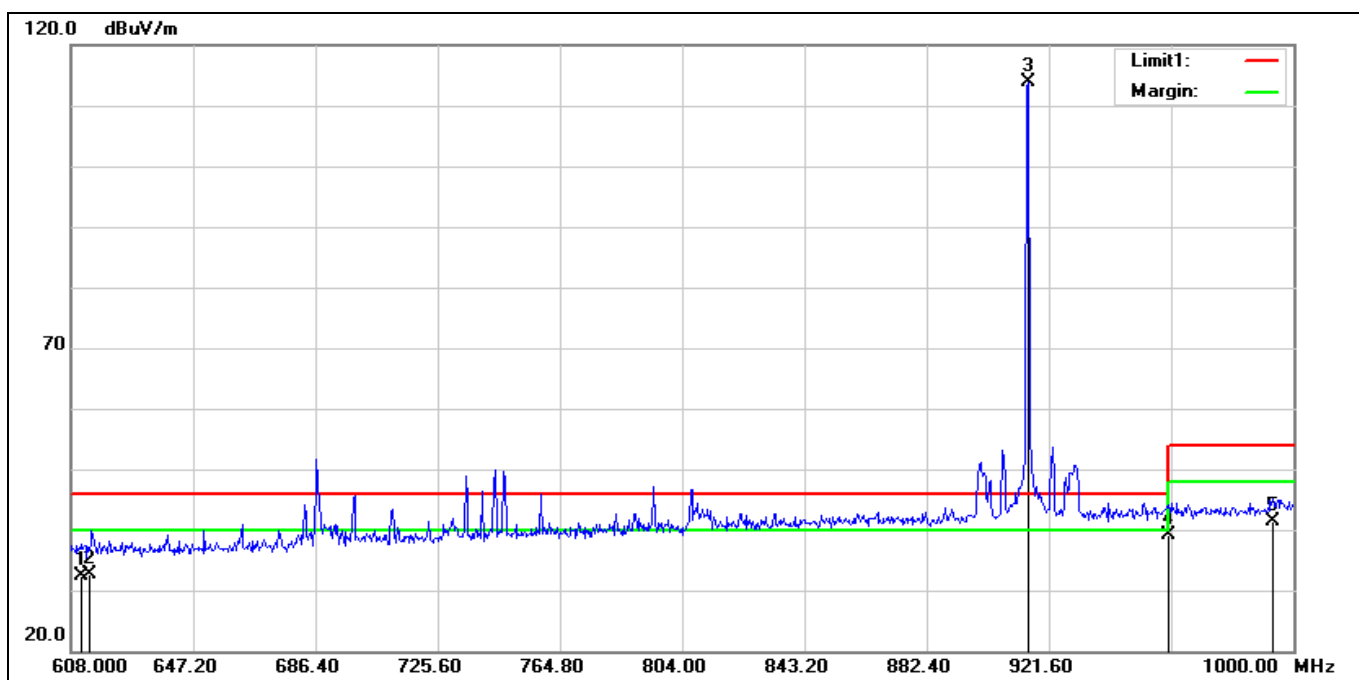
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	612.3120	47.71	-15.66	32.05	46.00	-13.95	QP
2	614.0000	48.30	-15.66	32.64	46.00	-13.36	QP
3*	902.3920	124.74	-11.00	113.74	46.00	67.74	peak
4	960.0000	49.36	-10.09	39.27	46.00	-6.73	QP
5	994.5120	50.73	-9.38	41.35	54.00	-12.65	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.3920	47.61	-15.69	31.92	46.00	-14.08	QP
2	614.0000	48.22	-15.66	32.56	46.00	-13.44	QP
3*	902.3920	123.48	-11.00	112.48	46.00	66.48	peak
4!	960.0000	52.30	-10.09	42.21	46.00	-3.79	QP
5	998.4320	55.52	-9.29	46.23	54.00	-7.77	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



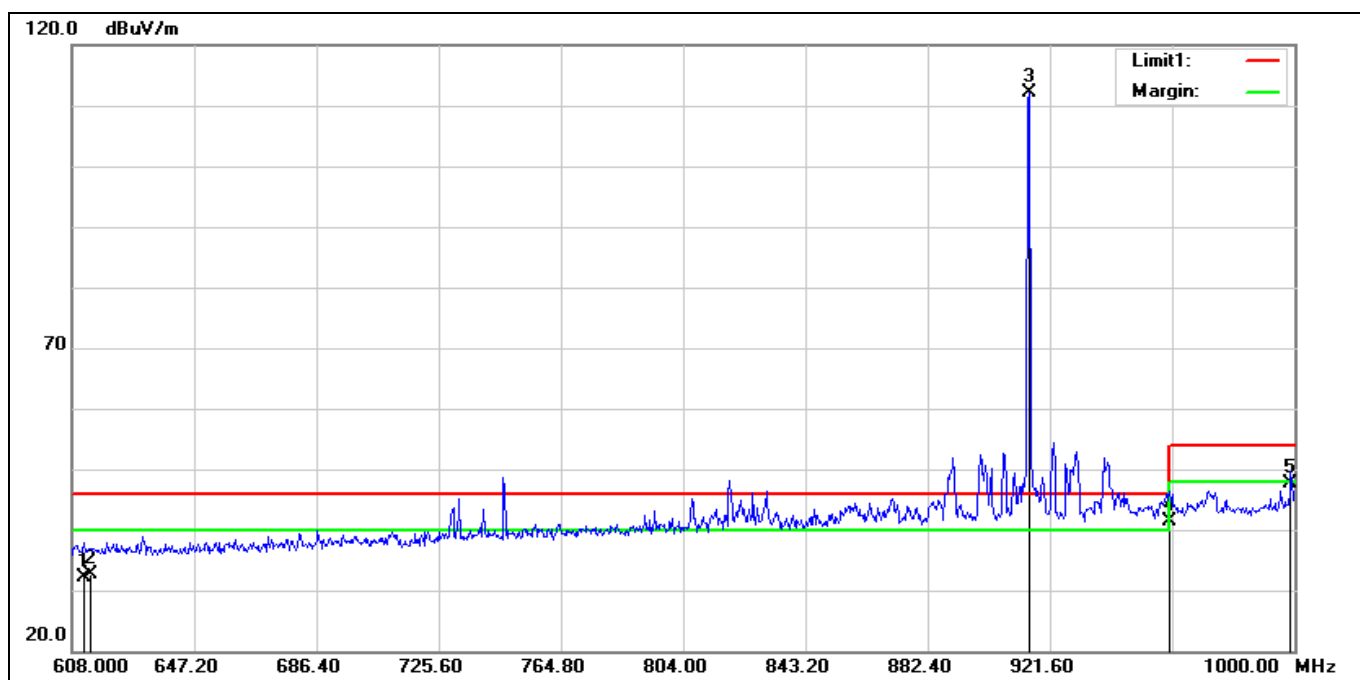
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	611.1360	47.94	-15.67	32.27	46.00	-13.73	QP
2	614.0000	48.22	-15.66	32.56	46.00	-13.44	QP
3*	914.9360	124.59	-10.80	113.79	46.00	67.79	peak
4	960.0000	49.27	-10.09	39.18	46.00	-6.82	QP
5	993.3360	50.66	-9.39	41.27	54.00	-12.73	QP

Standard: Part 15.247 Test Site: 966 Chamber

Polarization: Vertical

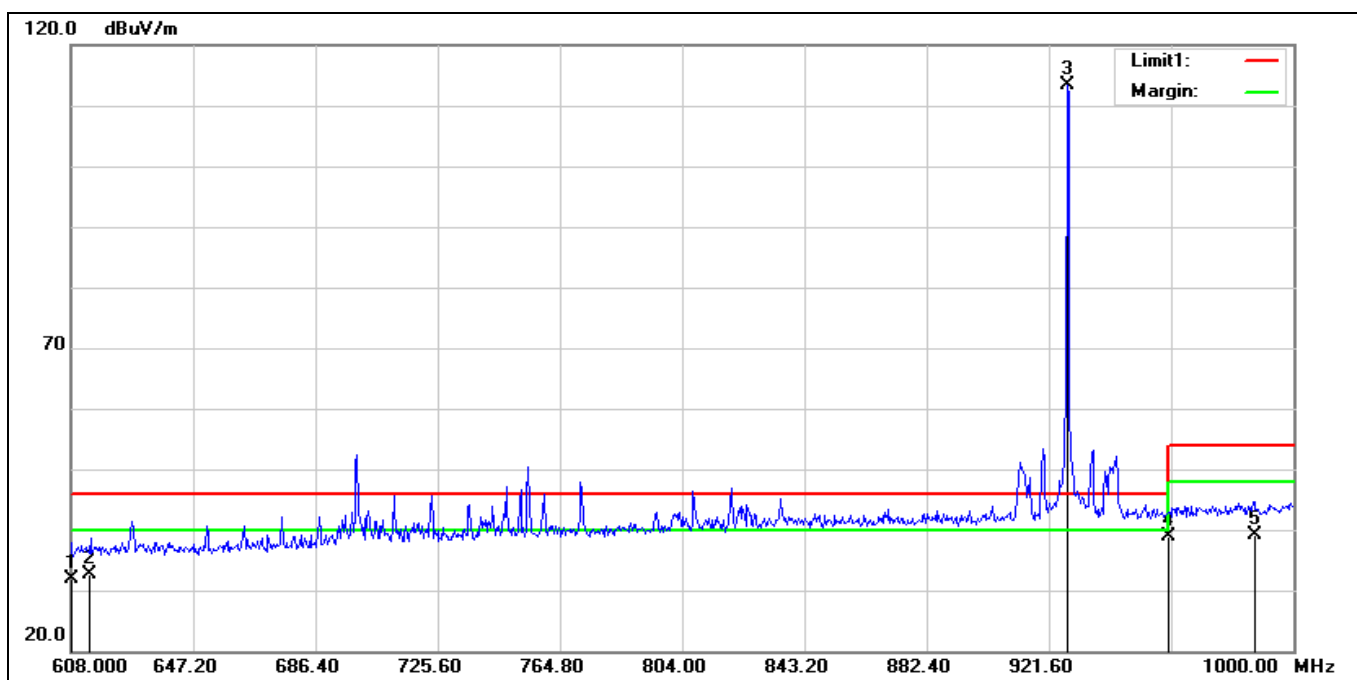
Test Mode: Transmit mode_914.8 MHz

Remark:



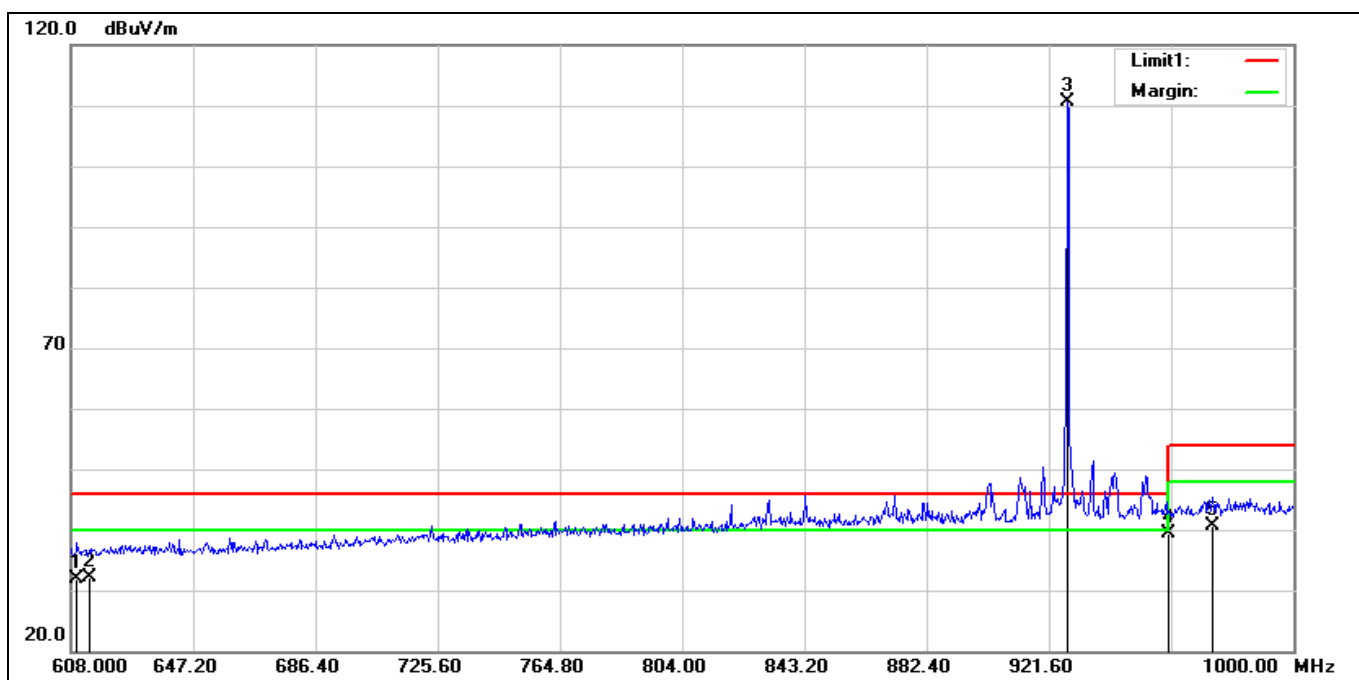
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	611.9200	47.82	-15.66	32.16	46.00	-13.84	QP
2	614.0000	48.25	-15.66	32.59	46.00	-13.41	QP
3*	914.9360	122.99	-10.80	112.19	46.00	66.19	peak
4!	960.0000	51.51	-10.09	41.42	46.00	-4.58	QP
5	998.8240	56.96	-9.29	47.67	54.00	-6.33	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.0000	47.56	-15.68	31.88	46.00	-14.12	QP
2	614.0000	48.21	-15.66	32.55	46.00	-13.45	QP
3*	927.4800	124.04	-10.63	113.41	46.00	67.41	peak
4	960.0000	48.99	-10.09	38.90	46.00	-7.10	QP
5	987.4560	48.66	-9.52	39.14	54.00	-14.86	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			

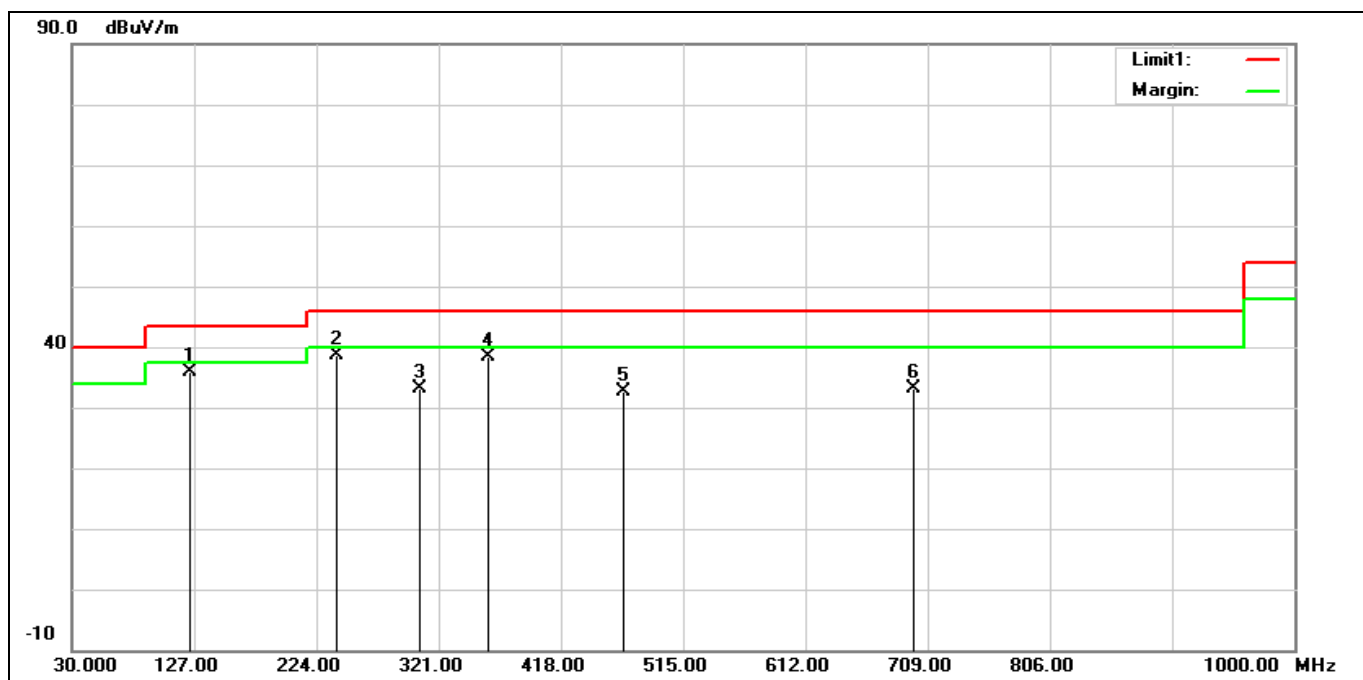


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	609.9600	47.48	-15.68	31.80	46.00	-14.20	QP
2	614.0000	47.74	-15.66	32.08	46.00	-13.92	QP
3*	927.4800	121.22	-10.63	110.59	46.00	64.59	peak
4	960.0000	49.43	-10.09	39.34	46.00	-6.66	QP
5	974.1280	50.35	-9.79	40.56	54.00	-13.44	QP

200 kbps

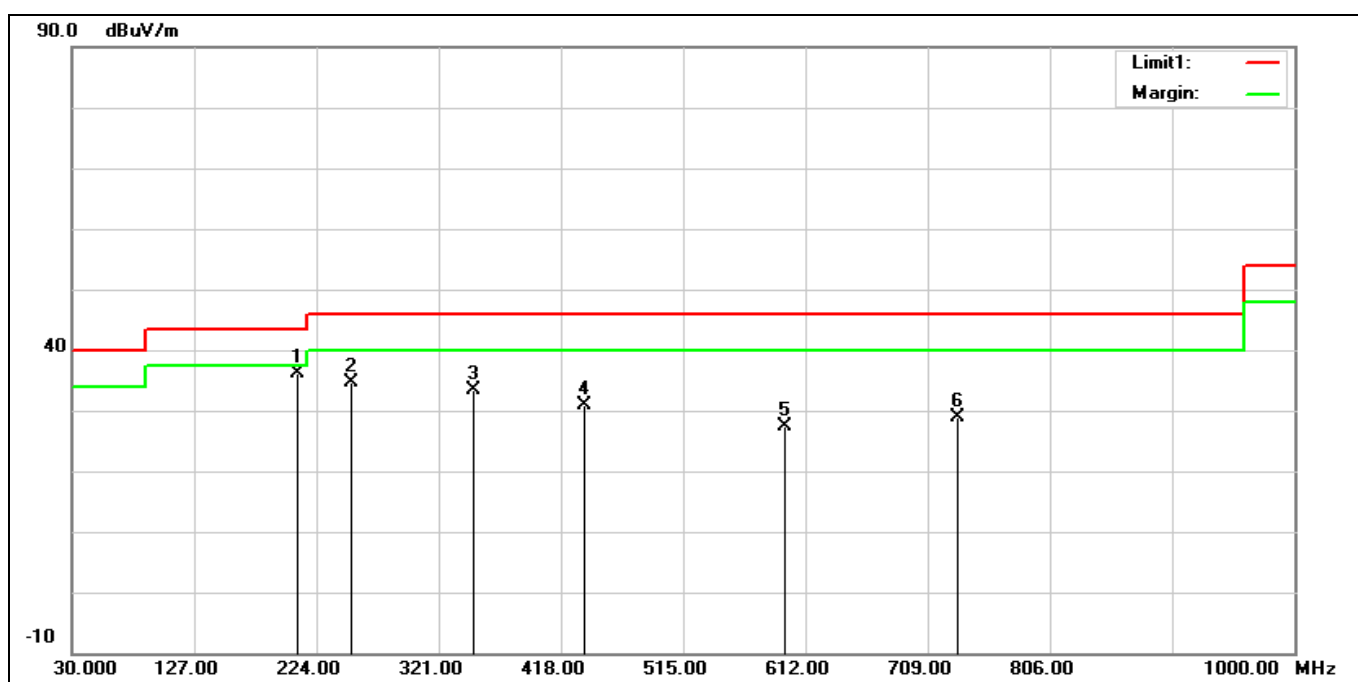
Below 1 GHz

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	123.1200	45.32	-9.41	35.91	43.50	-7.59	QP
2*	239.5200	46.44	-7.77	38.67	46.00	-7.33	QP
3	306.4500	39.10	-6.08	33.02	46.00	-12.98	QP
4	359.8000	43.22	-4.75	38.47	46.00	-7.53	QP
5	467.4700	34.82	-2.30	32.52	46.00	-13.48	QP
6	697.3600	31.07	2.09	33.16	46.00	-12.84	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode		
Remark:			

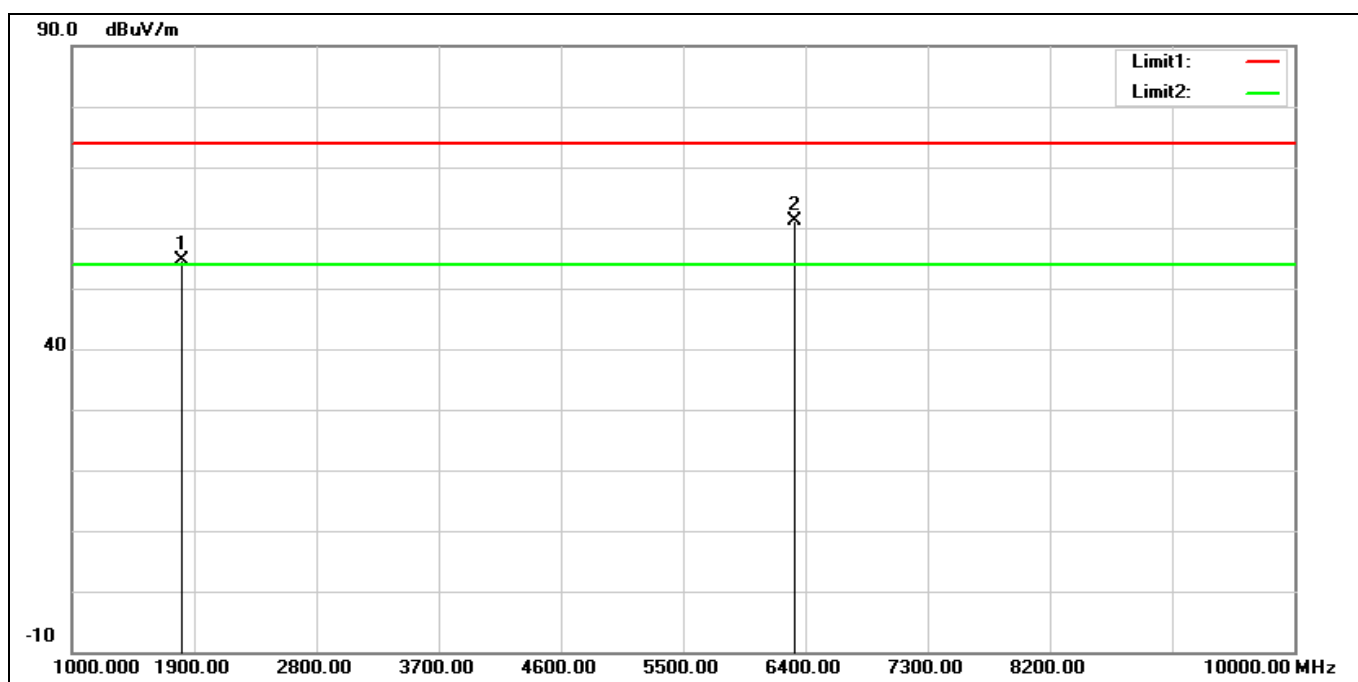


No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	209.4500	45.48	-9.39	36.09	43.50	-7.41	QP
2	252.1300	42.06	-7.43	34.63	46.00	-11.37	QP
3	349.1300	38.37	-5.02	33.35	46.00	-12.65	QP
4	436.4300	33.74	-2.87	30.87	46.00	-15.13	QP
5	595.5100	26.78	0.52	27.30	46.00	-18.70	QP
6	732.2800	25.88	2.92	28.80	46.00	-17.20	QP

Harmonic

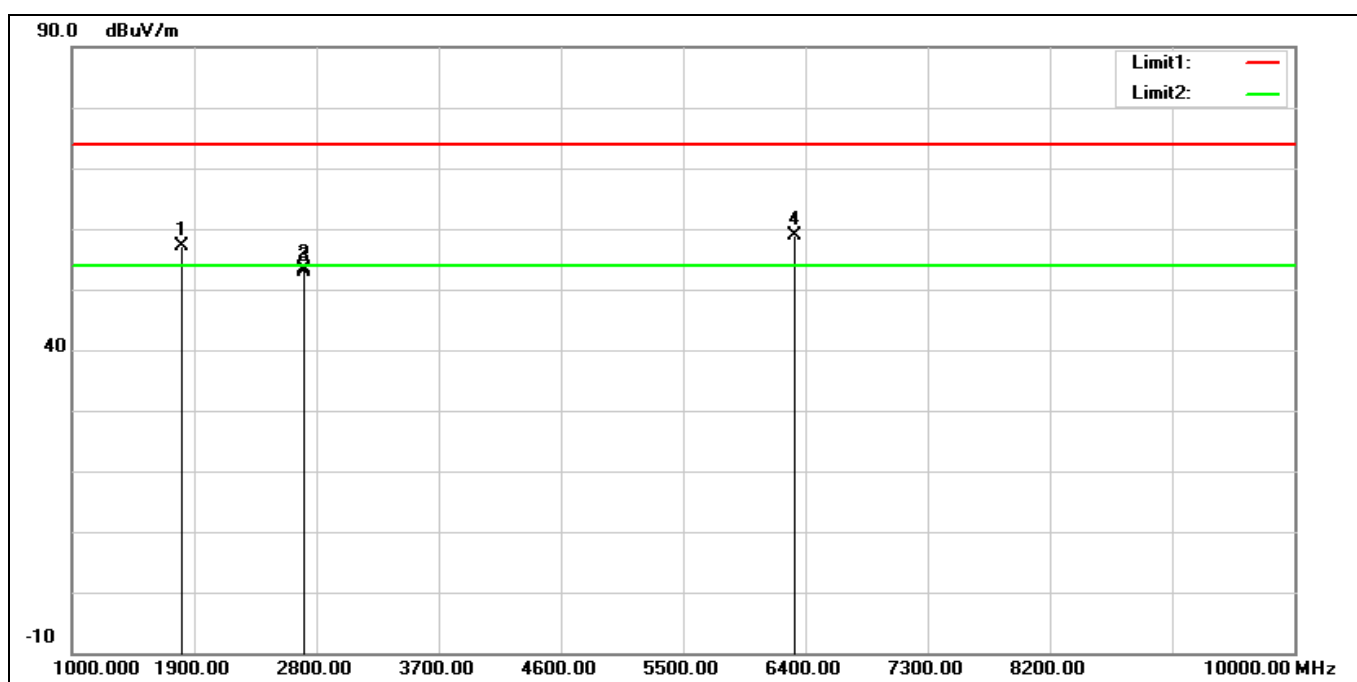
Above 1 GHz

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



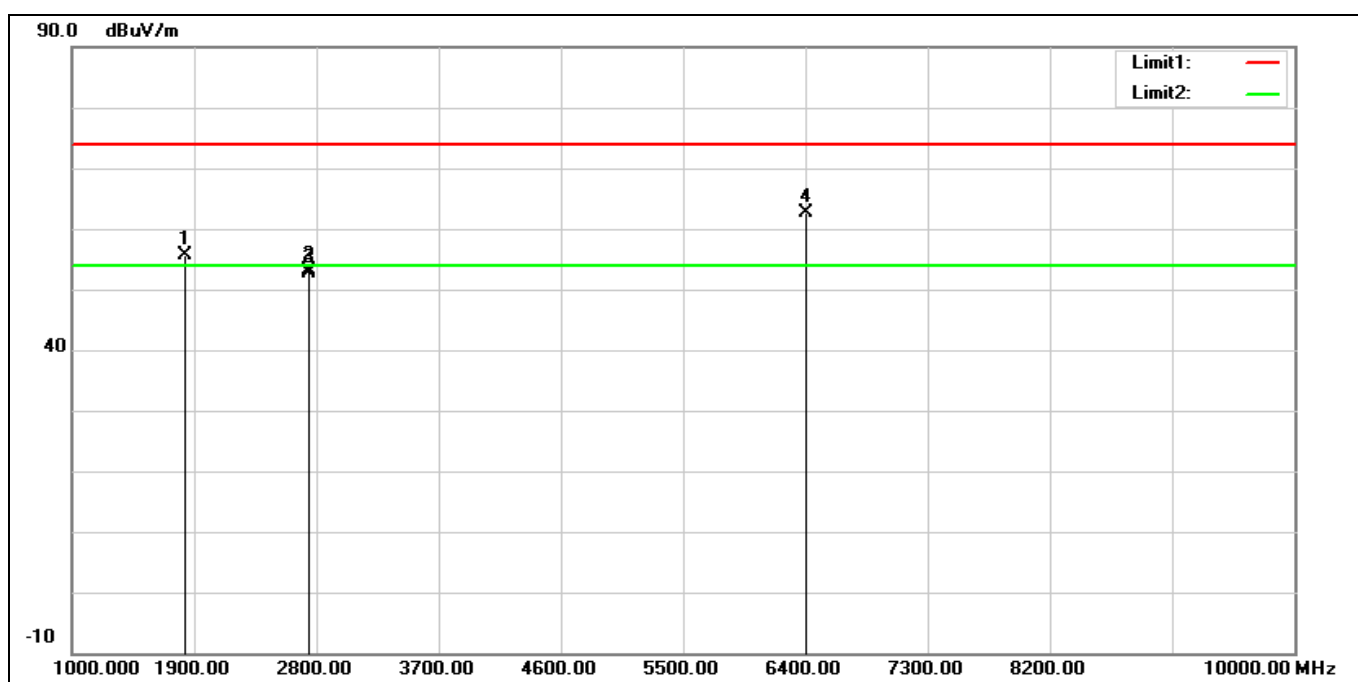
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1804.800	64.22	-9.68	54.54	74.00	-19.46	peak
2*	6316.800	56.93	4.30	61.23	74.00	-12.77	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



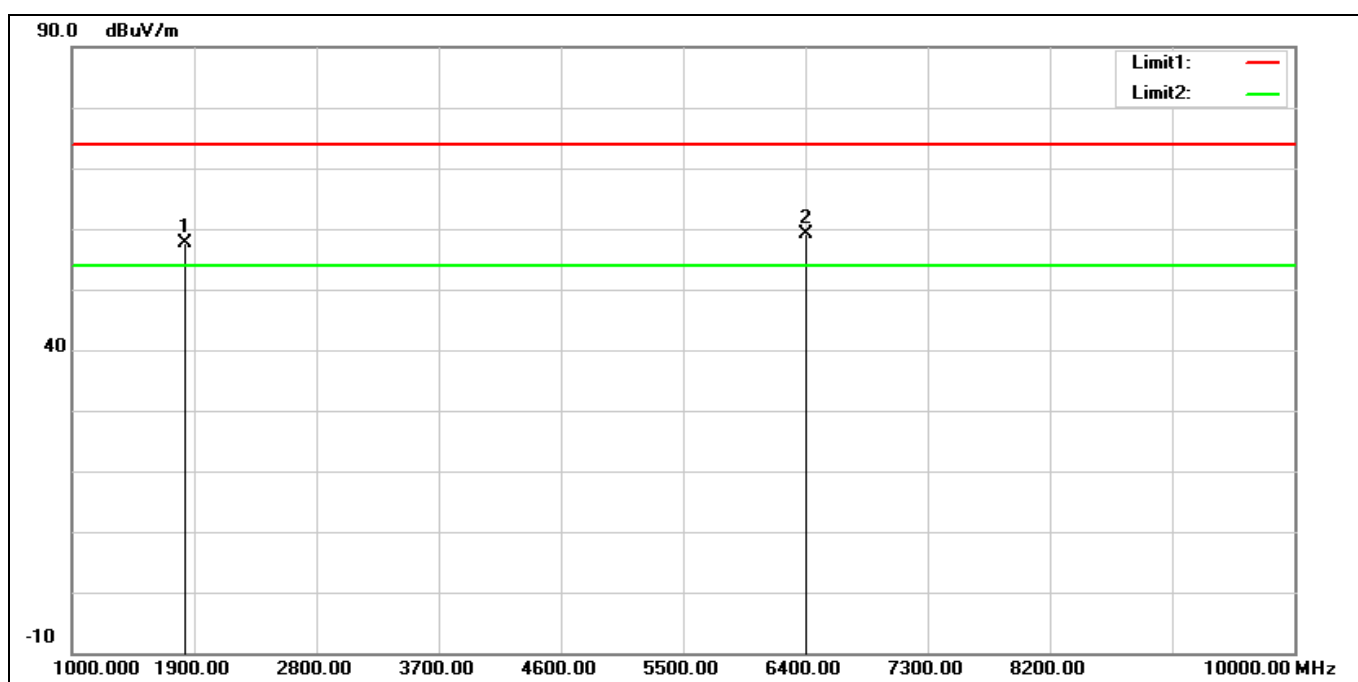
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1804.800	66.80	-9.68	57.12	74.00	-16.88	peak
2	2707.200	59.35	-5.85	53.50	74.00	-20.50	peak
3*	2707.200	58.84	-5.85	52.99	54.00	-1.01	AVG
4	6316.800	54.61	4.30	58.91	74.00	-15.09	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



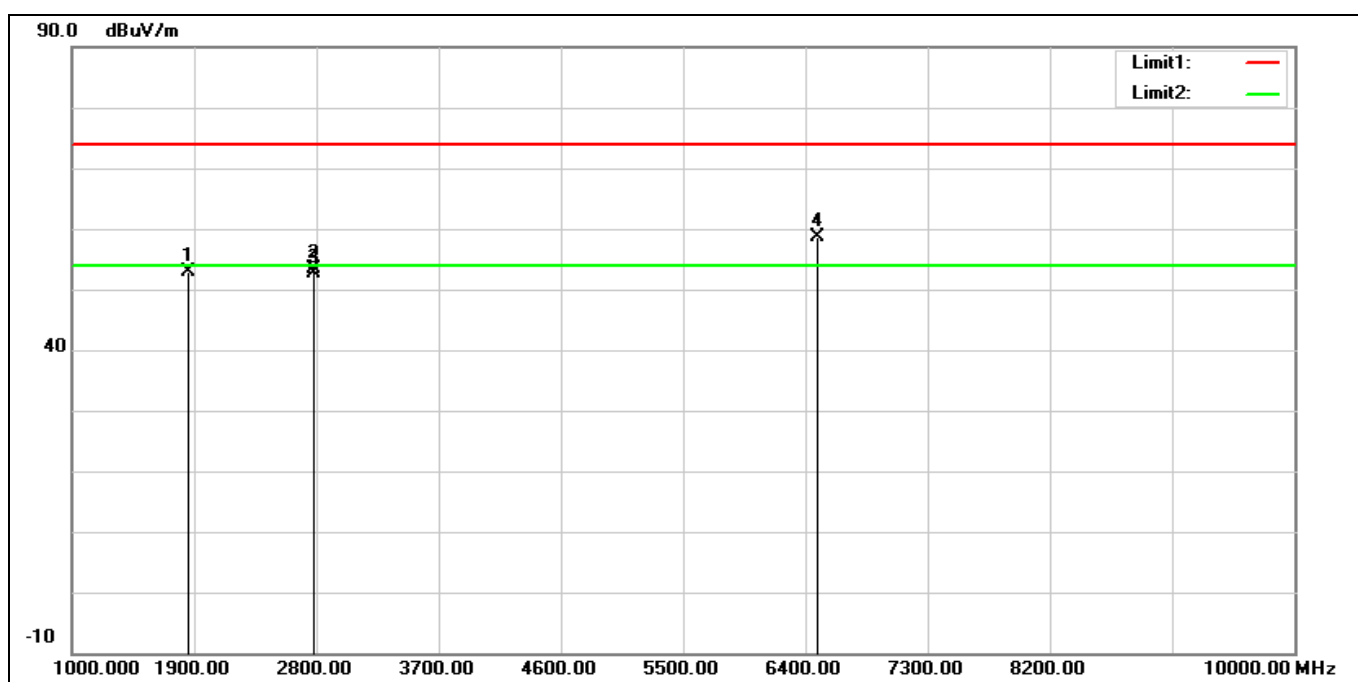
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1829.600	64.89	-9.33	55.56	74.00	-18.44	peak
2	2744.400	58.73	-5.66	53.07	74.00	-20.93	peak
3*	2744.400	58.21	-5.66	52.55	54.00	-1.45	AVG
4	6403.600	57.85	4.70	62.55	74.00	-11.45	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



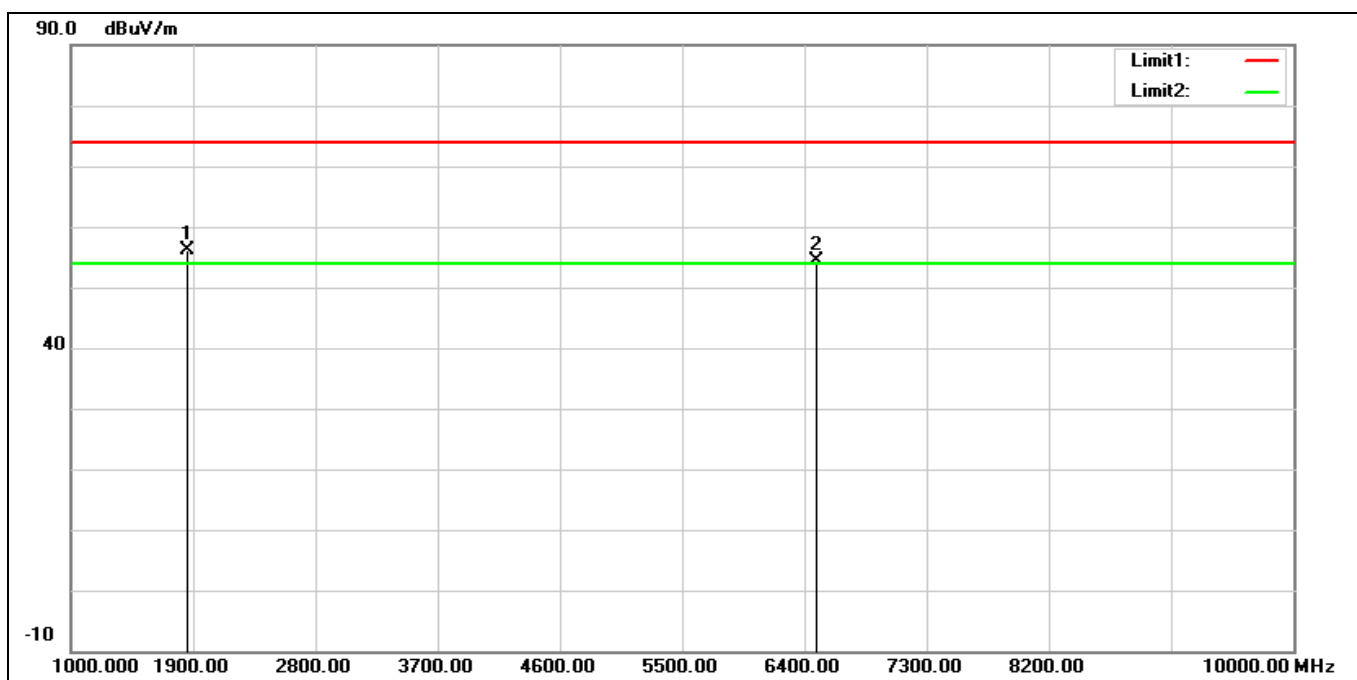
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1829.600	66.94	-9.33	57.61	74.00	-16.39	peak
2*	6403.600	54.50	4.70	59.20	74.00	-14.80	peak

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1855.200	61.91	-9.02	52.89	74.00	-21.11	peak
2	2782.800	58.75	-5.40	53.35	74.00	-20.65	peak
3*	2782.800	57.93	-5.40	52.53	54.00	-1.47	AVG
4	6493.200	53.53	5.12	58.65	74.00	-15.35	peak

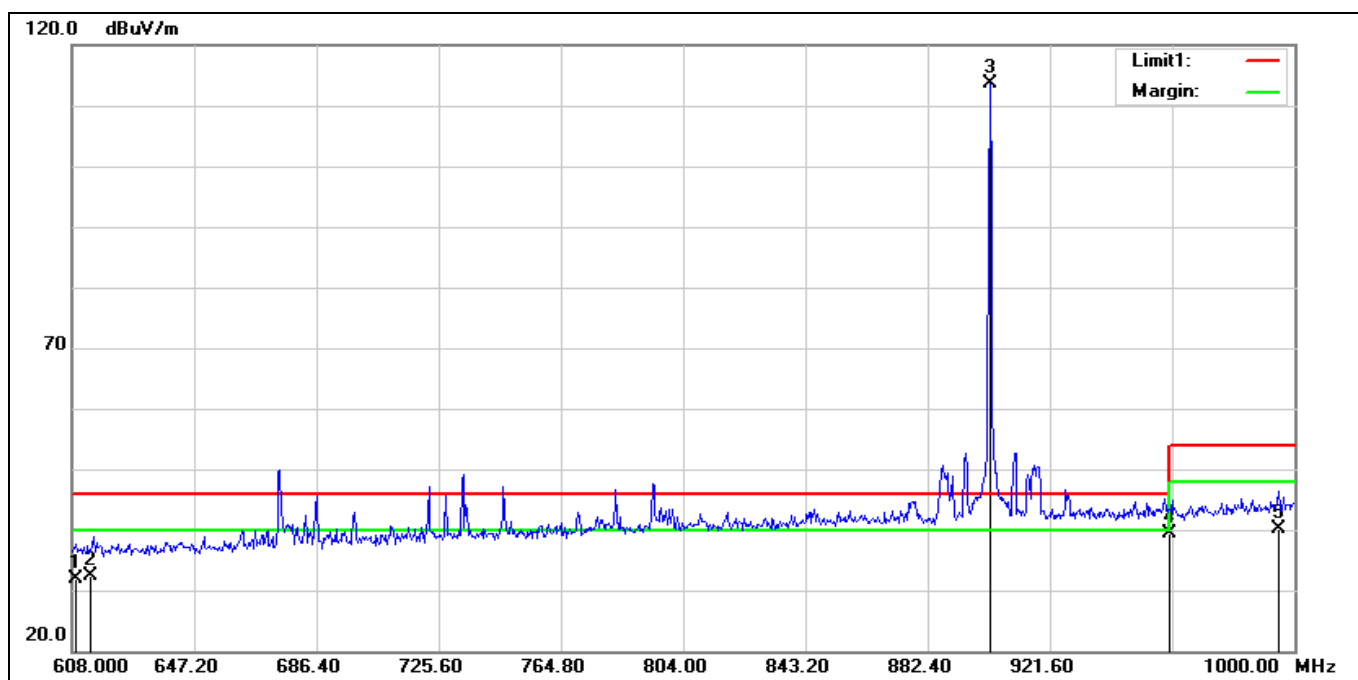
Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	1855.200	65.26	-9.02	56.24	74.00	-17.76	peak
2	6493.200	49.17	5.12	54.29	74.00	-19.71	peak

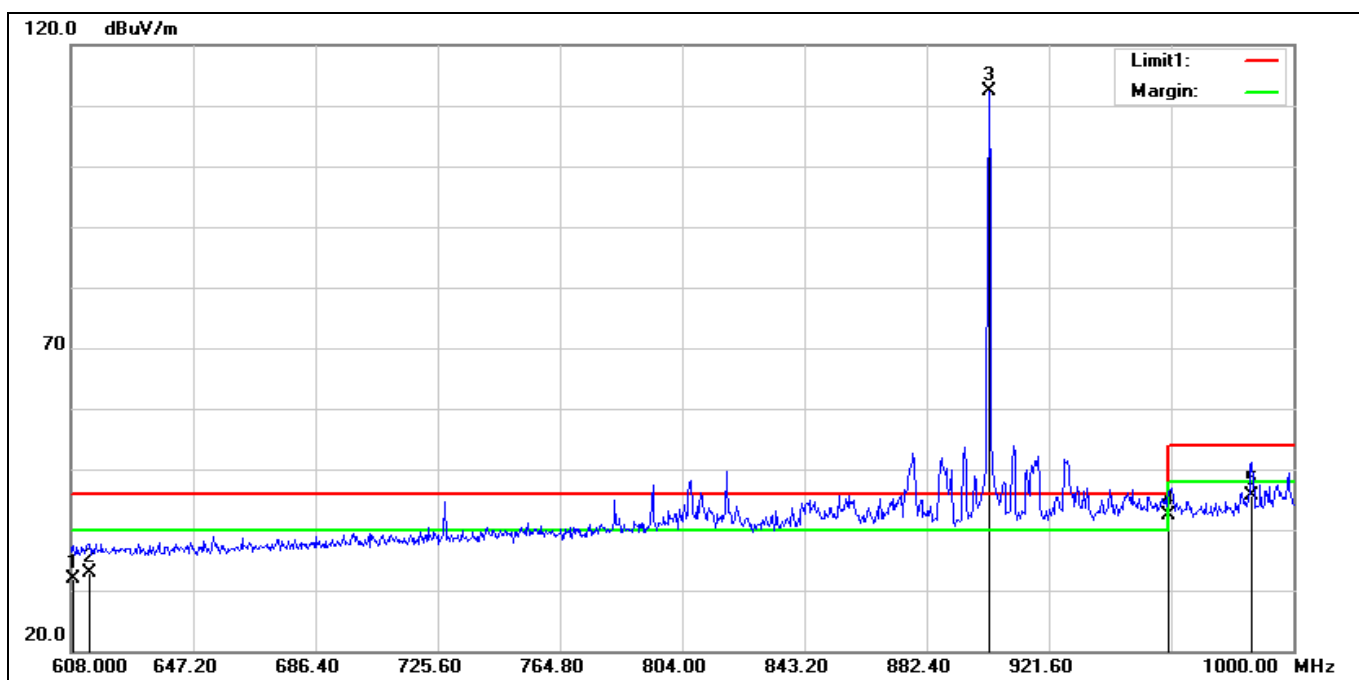
Band Edge

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	609.1760	47.64	-15.68	31.96	46.00	-14.04	QP
2	614.0000	48.01	-15.66	32.35	46.00	-13.65	QP
3*	902.3920	124.72	-11.00	113.72	46.00	67.72	peak
4	960.0000	49.39	-10.09	39.30	46.00	-6.70	QP
5	994.9040	49.46	-9.37	40.09	54.00	-13.91	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_902.4 MHz		
Remark:			



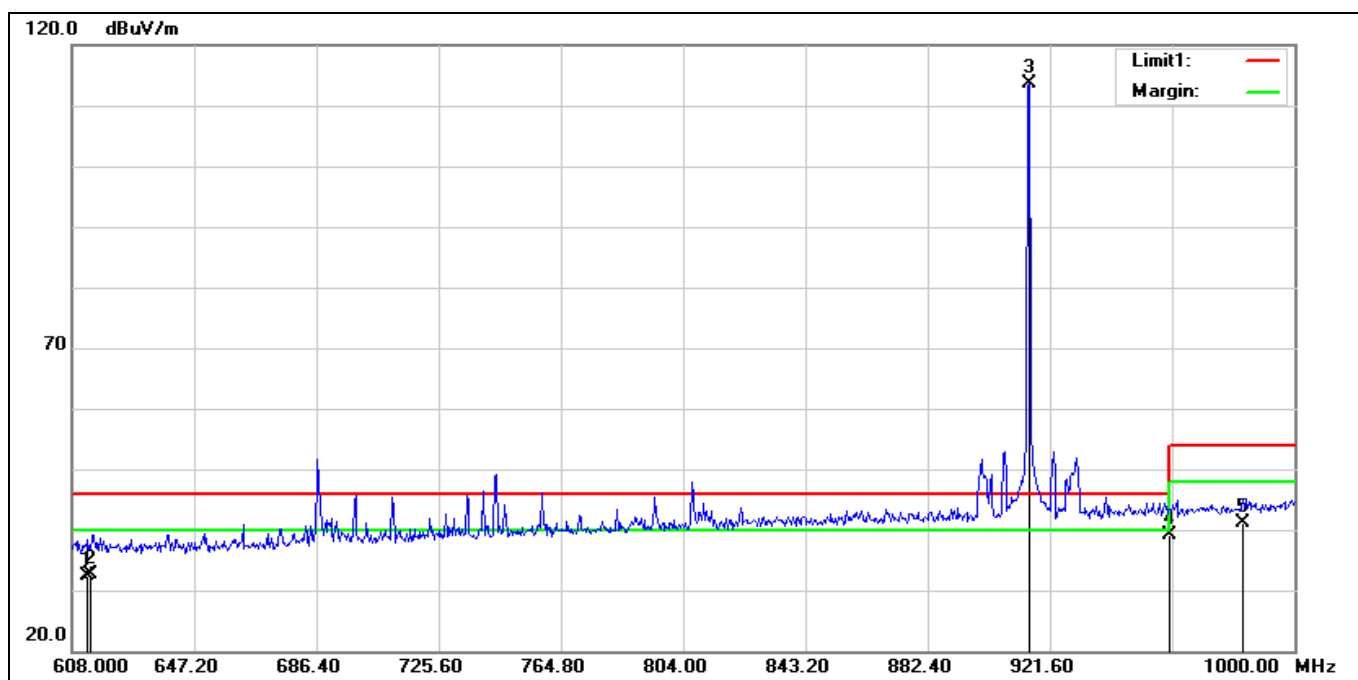
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.7840	47.61	-15.68	31.93	46.00	-14.07	QP
2	614.0000	48.54	-15.66	32.88	46.00	-13.12	QP
3*	902.3920	123.28	-11.00	112.28	46.00	66.28	peak
4!	960.0000	52.41	-10.09	42.32	46.00	-3.68	QP
5	986.6720	55.15	-9.54	45.61	54.00	-8.39	QP

Standard: Part 15.247 Test Site: 966 Chamber

Polarization: Horizontal

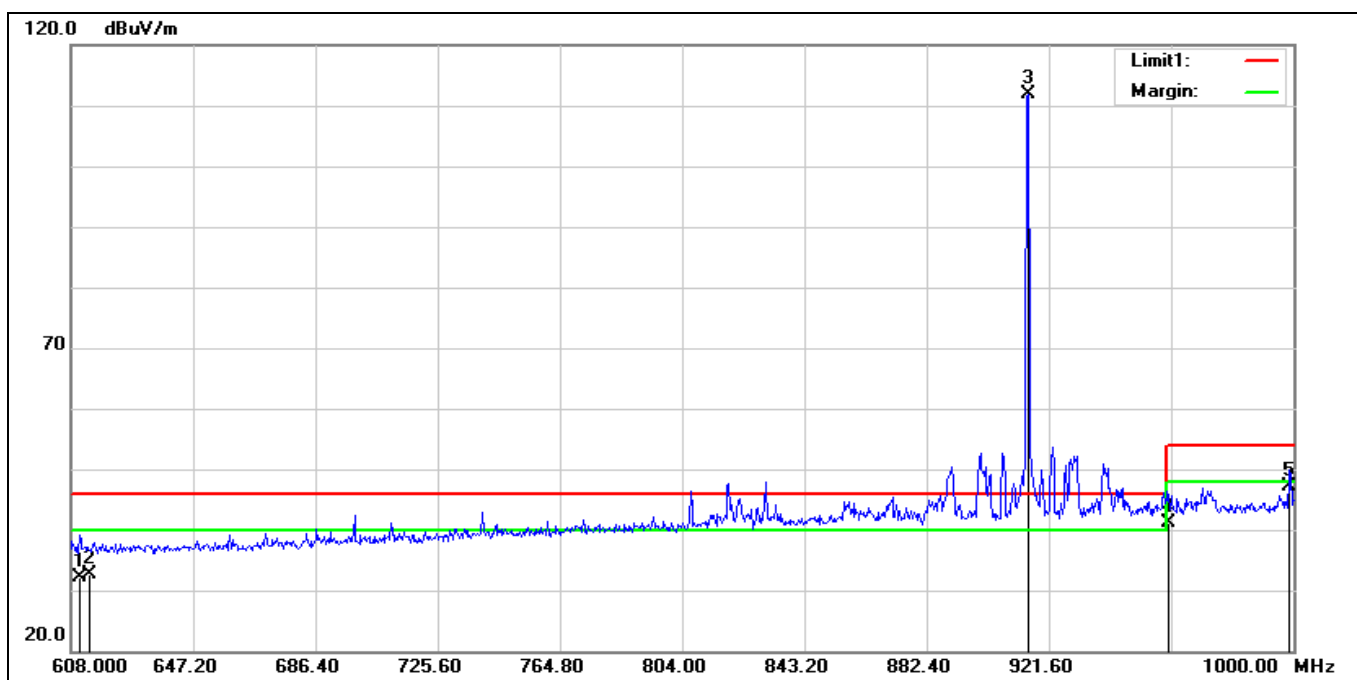
Test Mode: Transmit mode_914.8 MHz

Remark:



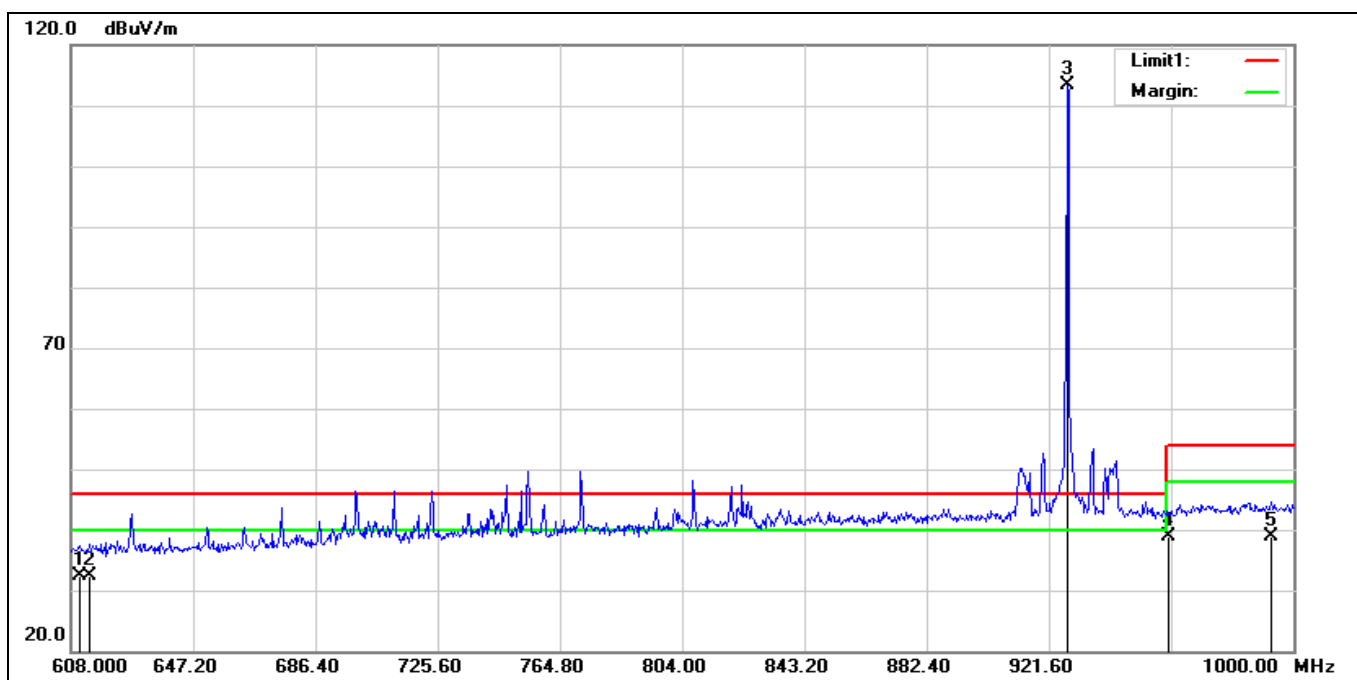
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	613.0960	47.93	-15.66	32.27	46.00	-13.73	QP
2	614.0000	48.36	-15.66	32.70	46.00	-13.30	QP
3*	914.9360	124.45	-10.80	113.65	46.00	67.65	peak
4	960.0000	49.29	-10.09	39.20	46.00	-6.80	QP
5	983.5360	50.69	-9.60	41.09	54.00	-12.91	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_914.8 MHz		
Remark:			



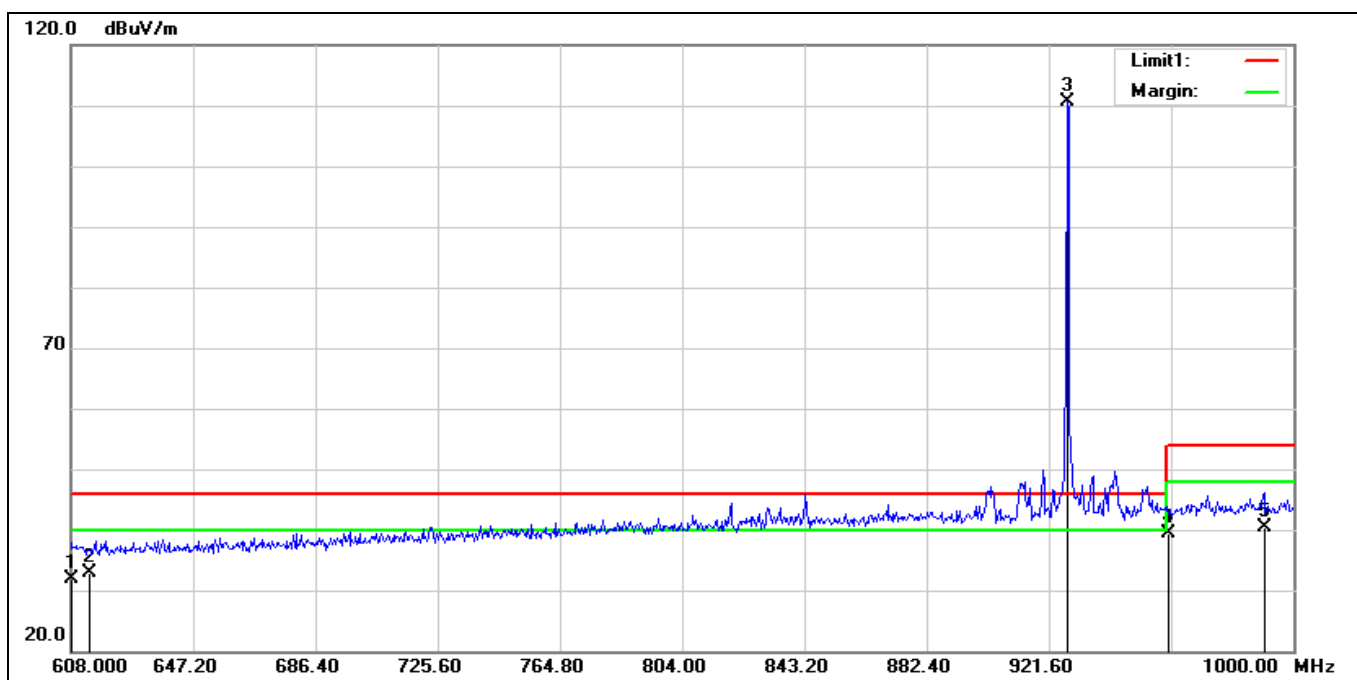
No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	610.7440	47.68	-15.67	32.01	46.00	-13.99	QP
2	614.0000	48.39	-15.66	32.73	46.00	-13.27	QP
3*	914.9360	122.69	-10.80	111.89	46.00	65.89	peak
4!	960.0000	51.28	-10.09	41.19	46.00	-4.81	QP
5	998.8240	56.53	-9.29	47.24	54.00	-6.76	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Horizontal		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	610.7440	48.00	-15.67	32.33	46.00	-13.67	QP
2	614.0000	48.06	-15.66	32.40	46.00	-13.60	QP
3*	927.4800	123.90	-10.63	113.27	46.00	67.27	peak
4	960.0000	49.00	-10.09	38.91	46.00	-7.09	QP
5	992.9440	48.39	-9.41	38.98	54.00	-15.02	QP

Standard:	Part 15.247	Test Site:	966 Chamber
Polarization:	Vertical		
Test Mode:	Transmit mode_927.6 MHz		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.0000	47.61	-15.68	31.93	46.00	-14.07	QP
2	614.0000	48.46	-15.66	32.80	46.00	-13.20	QP
3*	927.4800	121.27	-10.63	110.64	46.00	64.64	peak
4	960.0000	49.42	-10.09	39.33	46.00	-6.67	QP
5	990.5920	49.86	-9.46	40.40	54.00	-13.60	QP

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