FCC/IC Test Report

For

Industrial Remote Control

Model Number	:	**Alpha 604AJ, Alpha 604BJ**
FCC ID	:	**LZ6ALPHA604XJ**
IC	:	**2383A-A604XJ**
Report Number	:	**S3RF-A340-1205-081**
Date of Receipt	:	**April 26, 2021**
Date of Report	:	**July 8, 2021**

Prepared for

Fomotech International Corp.

2F-1, 286-3, Hsin Ya Road,Chien Chen District, Kaohsiung City 806, Taiwan, R.O.C.

Prepared by

Central Research Technology Co.

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Verification of Compliance

Equipment under Test	: Industrial Remote Control
Model No.	: Alpha 604AJ, Alpha 604BJ
FCC ID	: LZ6ALPHA604XJ
IC	: 2383A-A604XJ
Manufacturer	: Fomotech International Corp.
Applicant	: Fomotech International Corp.
Address	: 2F-1, 286-3, Hsin Ya Road,Chien Chen District, Kaohsiung City 806, Taiwan, R.O.C.
Applicable Standards	: 47 CFR part 15, Subpart C ANSI 63.10:2013 RSS-247 Issue 2 RSS-Gen Issue 5
Date of Testing	: April 28 ~ June 18, 2021
Deviation	: The method, configuration and arrangement of the tests are following the requirement of customer and the applicable standards cited above.
Condition of Test Sample	: Mass Production

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Rosa Hsieh , DATE : July 8, 2021
(Rosa Hsieh/System Executive)

APPROVED BY : Cathy Chen , DATE : July 8, 2021
(Cathy Chen/ Technical Manager)

Contents

1 General Description

1.1 General Description of EUT

Equipment under Test	:	Industrial Remote Control
Model No.	:	Alpha 604AJ, Alpha 604BJ
Power in	:	3Vdc (Transmitter)
Test Voltage	:	3Vdc by battery (Transmitter) ,
Manufacturer	:	Fomotech International Corp.
Channel Numbers	:	50
Frequency Range	:	902~928MHz
Modular Function	:	GFSK
Antenna Spec	:	Antenna Gain : 0dBi

Since the transmitter is considered a portable unit, it was pre-tested on the positioned in each of 3 axis.It was found that the Z Axis was the worst. It was taken as the representative condition for testing and its data are recorded in the present document.

Channel List:

Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel
903.0	1	911.5	18	920.0	35
903.5	2	912.0	19	920.5	36
904.0	3	912.5	20	921.0	37
904.5	4	913.0	21	921.5	38
905.0	5	913.5	22	922.0	39
905.5	6	914.0	23	922.5	40
906.0	7	914.5	24	923.0	41
906.5	8	915.0	25	923.5	42
907.0	9	915.5	26	924.0	43
907.5	10	916.0	27	924.5	44
908.0	11	916.5	28	925.0	45
908.5	12	917.0	29	925.5	46
909.0	13	917.5	30	926.0	47
909.5	14	918.0	31	926.5	48
910.0	15	918.5	32	927.0	49
910.5	16	919.0	33	927.5	50
911.0	17	919.5	34		

1.2 Test Mode

Test item	Test frequency
Conducted power test	902 MHz, 915 MHz, 927.5 MHz
Radiated emission below 1 GHz	902 MHz
Radiated emission above 1 GHz	902 MHz, 915 MHz, 927.5 MHz

EUT Test step:

1. Adjust test channel.
2. Turn on the power.
3. EUT transmit signal.

1.3 Applied standards

(1) 20 dB Bandwidth

According to FCC 15.247(a)(1)(i) and RSS-247 5.1(c), the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

(2) Hopping number and Time of occupancy

According to FCC 15.247(a)(1)(i) and RSS-247 5.1(c), 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.

(3) Hopping separation

According to FCC 15.247(a)(1) and RSS-247 5.1(b),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.

(4) Maximun Peak Output Power

According to FCC 15.247(b) (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.(2) For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section. According to RSS 247 5.4(a), For FHSs operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W and the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.

(5) 100 kHz bandwidth outside of band

According to FCC 15.247(d) and RSS-247 5.5, 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 FCC 15.247(b)(3) and RSS-247 5.4(d), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in FCC 15.209(a) and RSS-Gen are not required. Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) RSS-Gen 8.10, must also comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Gen 8.9.

(6) 99% Occupied Bandwidth

According RSS-Gen 6.7, when the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

(7) Radiated emission measurements

For intentional device, according to FCC 15.209 and RSS-Gen 8.9, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

Frequency (MHz)	**Measurement Distance (m)**	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**
0.009-0.490	300	2400/F(kHz)	
0.490-1.705	30	24000/F(kHz)	
1.705-30.0	3	30	29.5
30 – 88	3	100	40.0
88 – 216	3	150	43.5
216 – 960	3	200	46.0
above 1610	3	500	54.0

Note1 : At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

Note 2: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade)

(8) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.4 Test result

Test Item	FCC/RSS standard section	Report section	Test result
20 dB bandwidth	FCC 15.247(a)(1)(i) RSS-247 5.1(c)	2	**PASS**
Hopping number and Time of occupancy	FCC 15.247(a)(1)(i) RSS-247 5.1(c)	3	**PASS**
Hopping separation	FCC 15.247(a)(1) RSS-247 5.1(b)	4	**PASS**
Maximun Peak Output Power	FCC 15.247(b) RSS-247 5.4(a)	5	**PASS**
100 kHz bandwidth outside of band	FCC 15.247(d) RSS-247 5.5	6	**PASS**
Radiated emission measurements	FCC 15.209 RSS-Gen 8.9	7	**PASS**
99% bandwidth	RSS-Gen 6.7	8	**PASS**

According to ANSI C63.10, determining compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

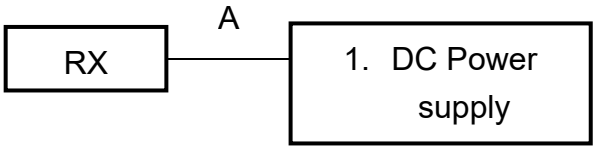
1.5 The Support Units

No.	Unit	Model No./ Serial No.	Trade Name	Power Code	Supported by lab.
1.	Power supply	6110/ 1102108	EXTECH		V

1.6 Layout of Setup

Transmitter

Receiver



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	Power Cable	3.0m				V	

1.7 Test Instruments

Conducted Power Test

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Alayzer	R&S	FSV40/ 101609	2020/10/16	2021/10/16
RFcable	JMCA	MWX/ C0150~C0153, C0161~C0163	2020/12/3	2021/12/3
Test software	R&S	EMC32/ V11.10.00	NCR	NCR
Test room	N/A	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Radiated Emission Test (Below 1GHz)

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
EMI Receiver	R&S	ESCS30/ 836858/020	2020/10/30	2021/10/30
Spectrum Alayzer	Agilent	E4407B/ MY45106795	2020/6/23	2021/6/23
Antenna	SCHWARZBECK & Mini-Circuits	VULB 9168 & BW-N5W5+/ VULB 9168-668 & 003	2021/5/6	2022/5/6
Pre-amplifer	Mini-circuit	ZKL-1R5+/ 004	2021/1/17	2021/7/17
RF cable	JYEBAO	0214/ C0080-4 + C0080-1 + C0080-2+RSU(CRC-011/11)+C0080-3	2021/1/17	2021/7/17
Test software	Audix	e3/ V6.20110303a1	NCR	NCR
Semi-anechoic chamber	ETS. LINDGREN	TR11/ 906-A	2021/4/10	2022/4/10

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the semi-anechoic chamber listed above is the date of NSA measurement.

Radiated Emission Test (Above 1 GHz)

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Antenna	EMCO	3117/ 0082847	2020/11/3	2021/11/3
Antenna	Com-Power	AH-840/ 101098	2020/12/31	2021/12/31
Pre-amplifer	MITEQ	TTA1800-30-HG-N-M/ 1904295	2020/10/28	2021/10/28
RFcable	Suhner	Sucoflex 106P / C0091	2020/10/5	2021/10/5
RFcable	JMCA	MWX241/B/ C0103~C0104	2021/4/9	2022/4/9
MXA singal analyzer	KeySight	N9020A/ MY54420147	2020/7/2	2021/7/2
Test software	Audix	e3/ V9 20150907c	NCR	NCR
Semi-anechoic chamber	ETS. LINDGREN	TR1/ 17627-B	2021/2/9	2022/2/9

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the chamber TR1 listed above is the date of site VSWR measurement.

1.8 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16 series and ANSI C63.4:2014 amended as per ANSI 63.4a:2017.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber	For the radiated emission measurement (below 1GHz)
TR1	3m fully-anechoic chamber	For the radiated emission measurement (above 1GHz)
TR11	3m semi-anechoic chamber	For the radiated emission measurement (below 1GHz)
TR13	Test Site	For the RF conducted emission measurement.
TR5	Shielding Room	For the conducted emission measurement.
TR20	Shielding Room	

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	USA	FCC	TW1104, TW0019	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033, SL2-L1-E-0033	ISO/IEC 17025
	Canada	ISED	TW0905	ISO/IEC 17025
Site Filing Document	Japan	VCCI	R-11527,C-11609,T-11441, G-10010,C-20010, G-10614, T-20009	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	UA 50235497	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

1.9 Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Test Item	Measurement Uncertainty	
Radiated Emission: (9kHz~30MHz)	Horizontal 3.92dB；Vertical 3.92dB	
Radiated Emission: (30MHz~1000MHz)	Horizontal 4.42dB；Vertical 5.98dB	
Radiated Emission: (1GHz~6GHz)	Horizontal 4.60dB；Vertical 4.48dB	
Radiated Emission: (6GHz~18GHz)	Horizontal 4.66dB；Vertical 4.58dB	
Radiated Emission: (18GHz~40GHz)	Horizontal 4.74dB；Vertical 4.76dB	
Line Conducted Emission	NSLK-8128-RC	2.48 dB
	ENV 4200	2.52 dB
	ESH2-Z5	2.20 dB

2 20dB Bandwidth

Result: Pass

2.1 Applied standard

According to According to FCC 15.247(a)(1)(i) and RSS-247 5.1(c),and The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

2.2 Measurement Procedure

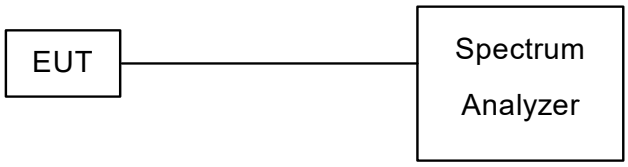
a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit data at middle channel frequencies individually.

c. Test procedures follow ANSI C63.10 Section 6.9.

d. Measure the 20dB bandwidth and compare with the required limit.

2.3 Test configuration

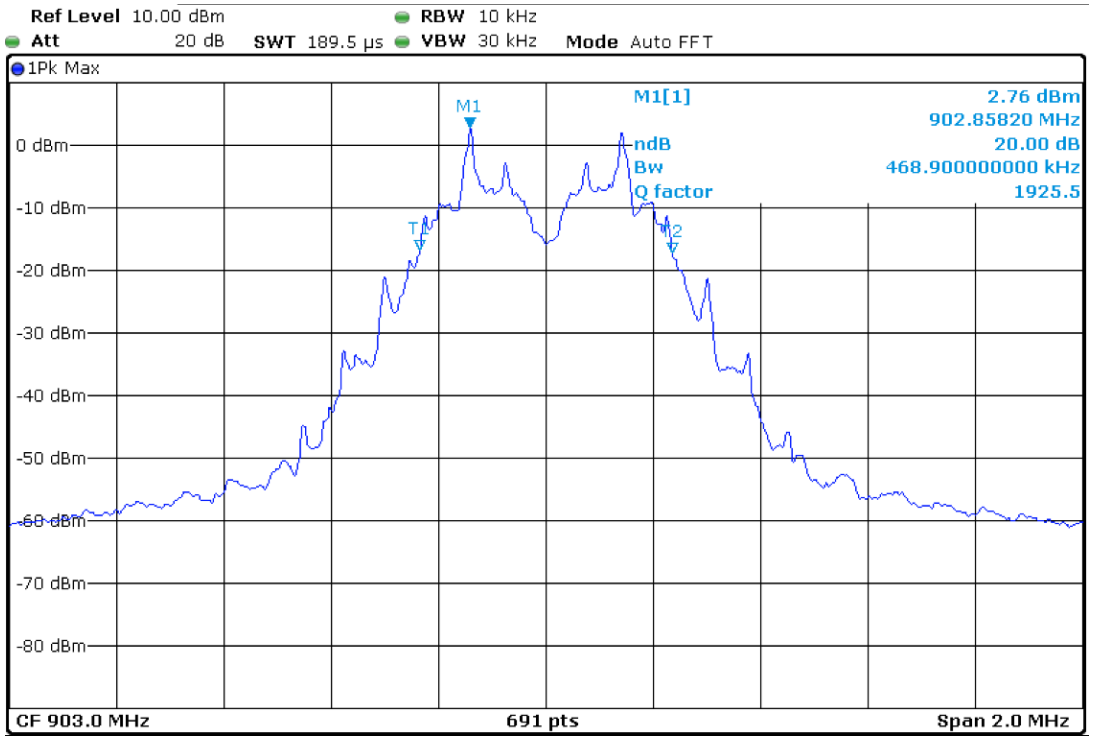


2.4 Test Data

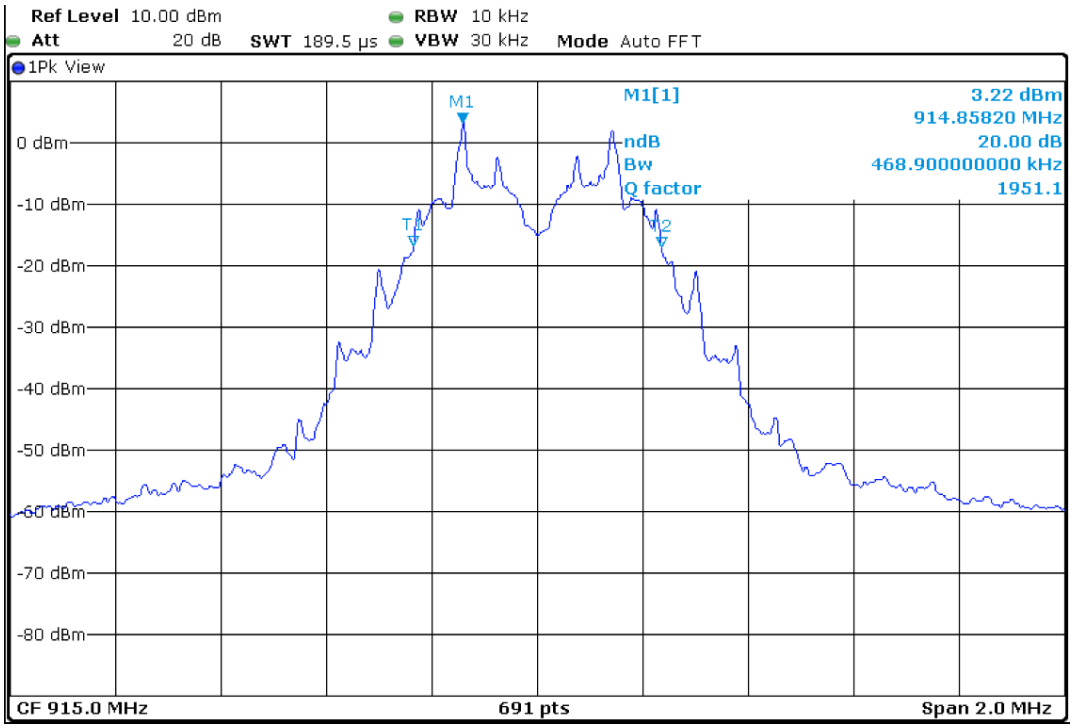
Test Mode : **Continuous Transmitting** **Tester** : Wayne
Ambient Temperature : 26℃ **Relative Humidity** : 65%

Operating Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
903	468	500
915	468	500
927.5	465	500

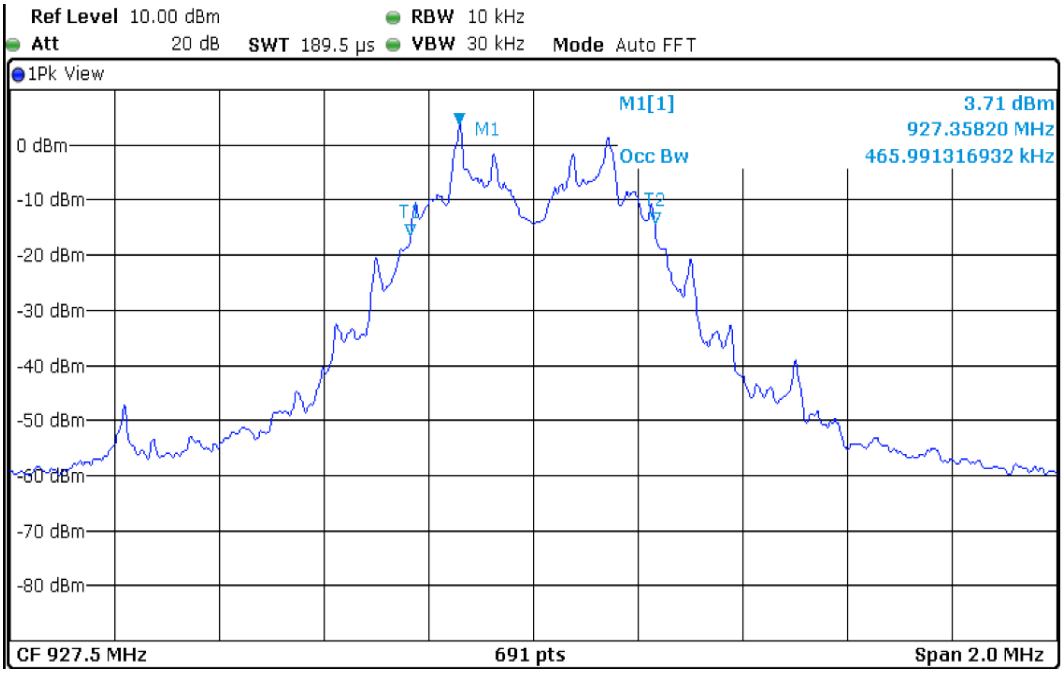
903 MHz



915 MHz



927.5 MHz



3 Hopping Channel and Time of Occupancy

Result: Pass

3.1 Applied standard

According to FCC 15.247(a)(1)(i) and RSS-247 5.1(c), 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.

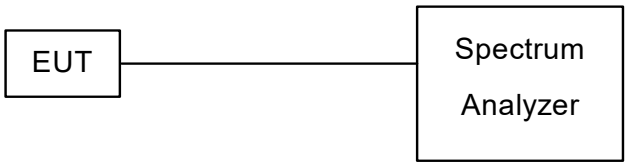
3.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. Test procedures follow ANSI 63.10 section 7.8.3.

c. Measurement the hopping channel and Time of occupancy and compare wit h the required limit.

3.3 Test configuration

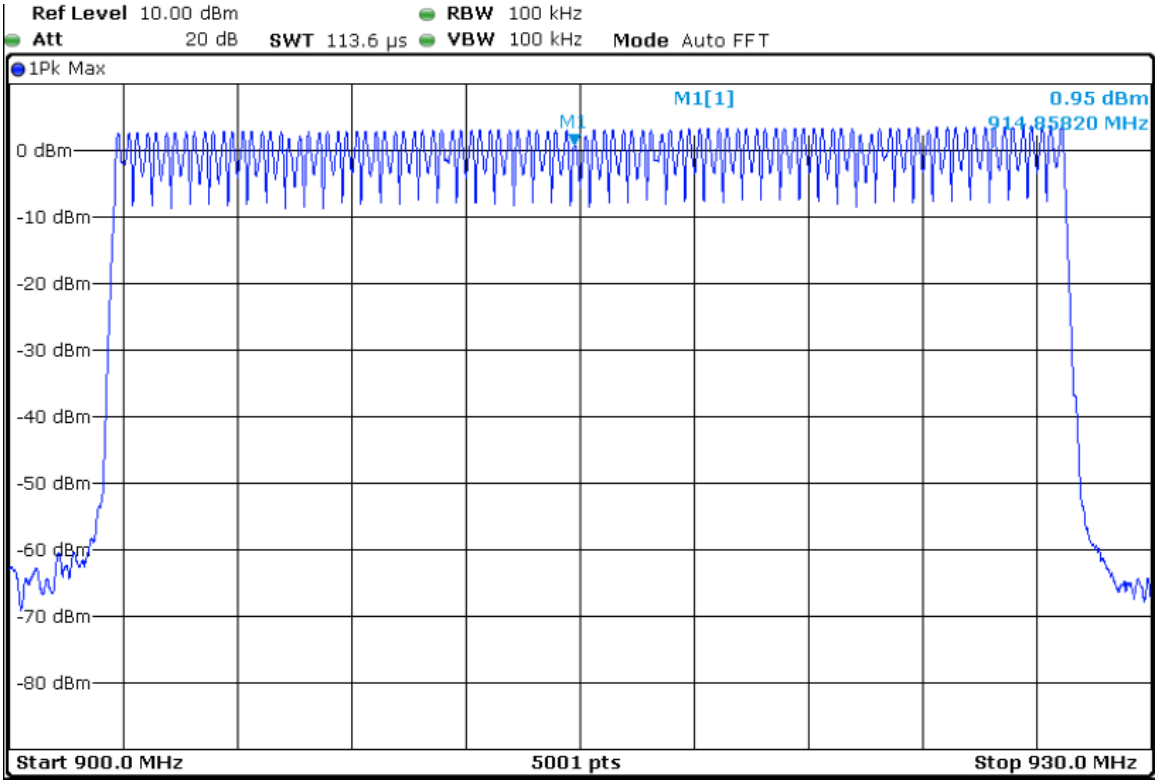


3.4 Test Data

Hopping Channel

Test Mode **: Hopping** **Tester** **:** Wayne
Ambient Temperature : 26℃ **Relative Humidity :** 65%

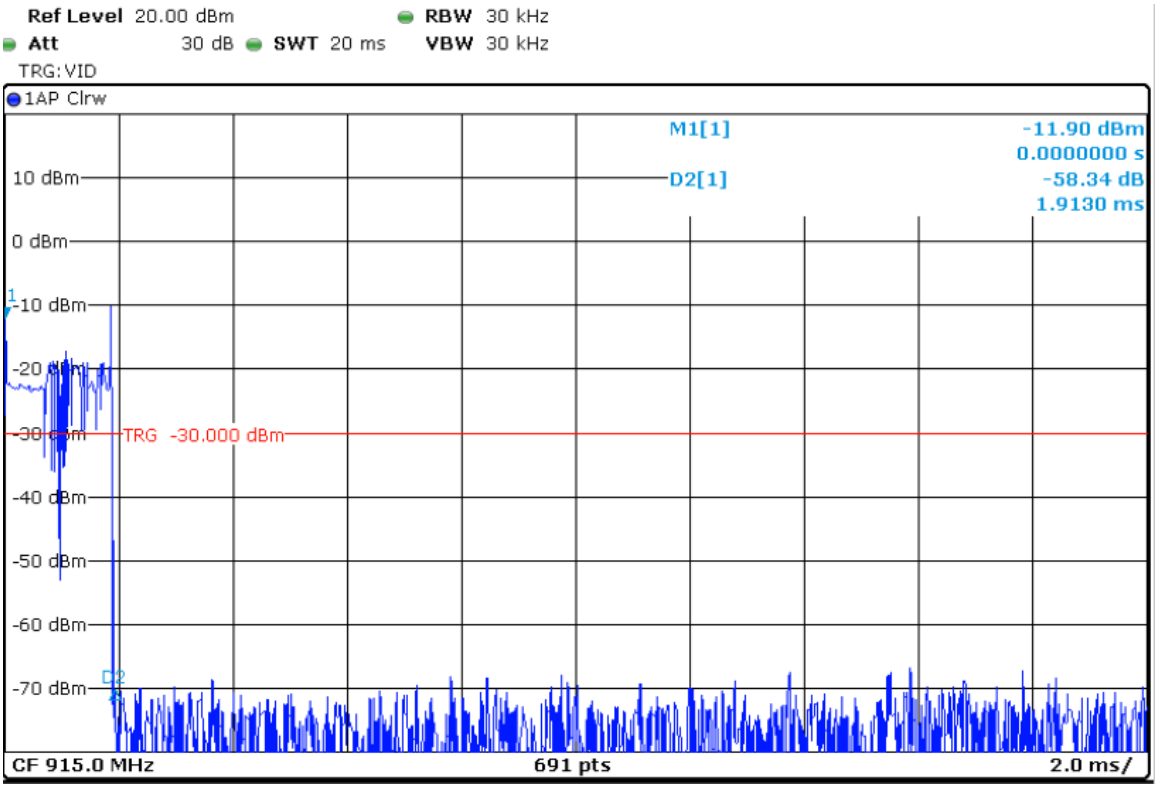
Hpooing number is 50 which is greater than limit 25.

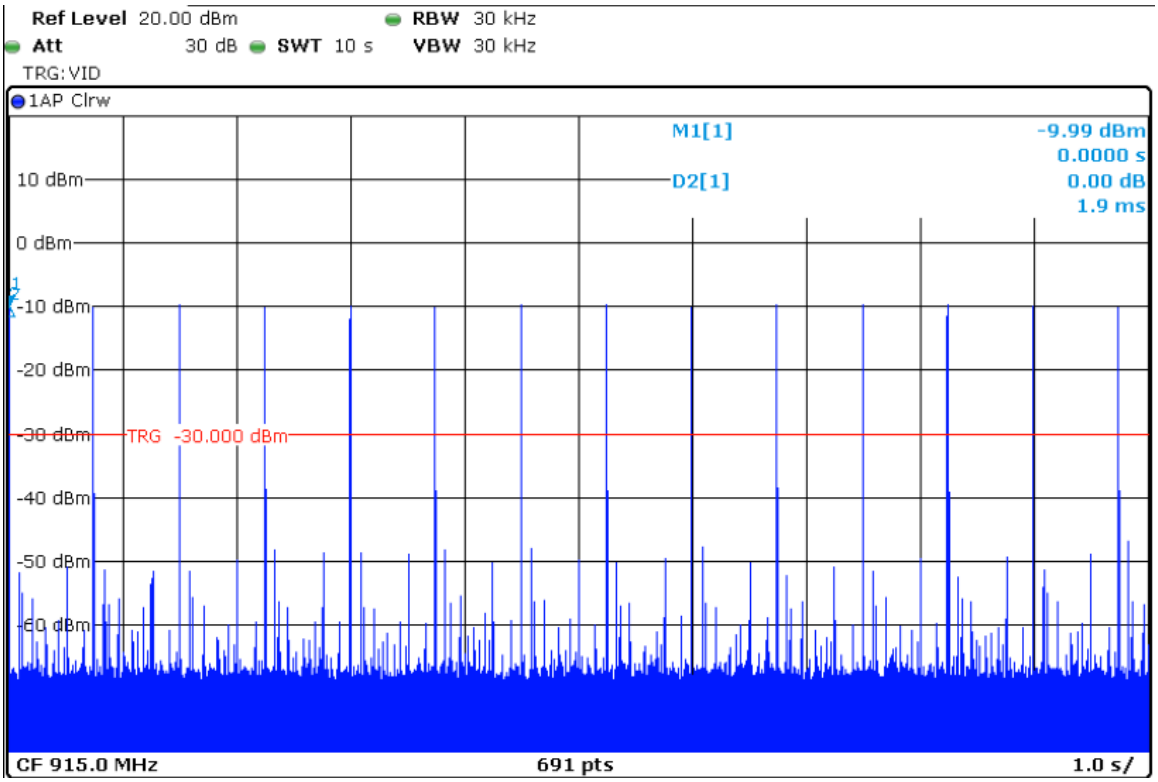


Time of Occupancy

Test Mode **: Hopping** **Tester** **:** Wayne
Ambient Temperature : 26℃ **Relative Humidity :** 65%

Operating Frequency (MHz)	Occupancy of hop (ms)	Number of hops @ 1s	Tiem of occupancy @10 s (ms)	Limit (s)
915	1.91	14	267.4	0.4




Ref Level 20.00 dBm
RBW 30 kHz
Att 30 dB SWT 10 s VBW 30 kHz
TRG: VID
1AP Clrw
M1[1]
-9.99 dBm
0.0000 s
D2[1]
0.00 dB
1.9 ms
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
TRG -30.000 dBm
-40 dBm
-50 dBm
-60 dBm
CF 915.0 MHz
691 pts
1.0 s/

4 Hopping Separation

Result: Pass

4.1 Applied standard

According to FCC 15.247(a)(1) and RSS-247 5.1(b),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.

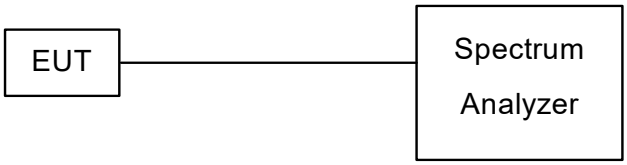
4.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. Test procedures follow ANSI 63.10 section 7.8.2

c. Measure the hopping separation and compare with the required limit.

4.3 Test configuration

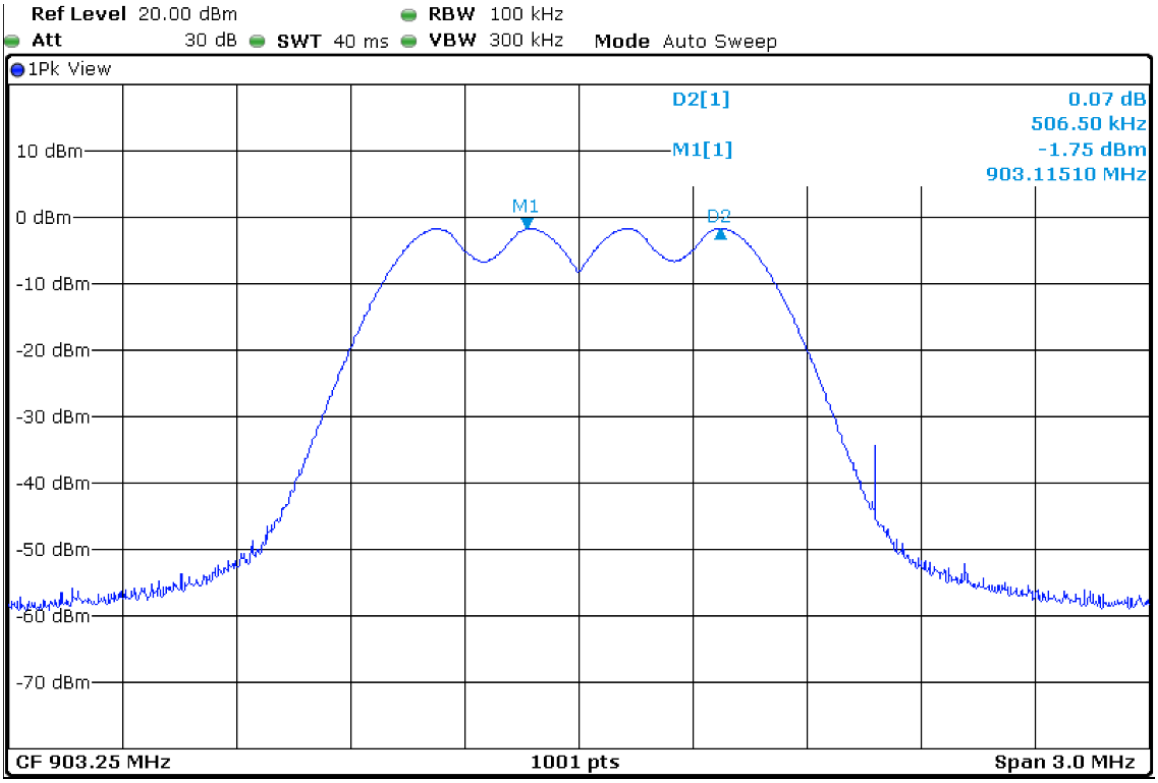


4.4 Test Data

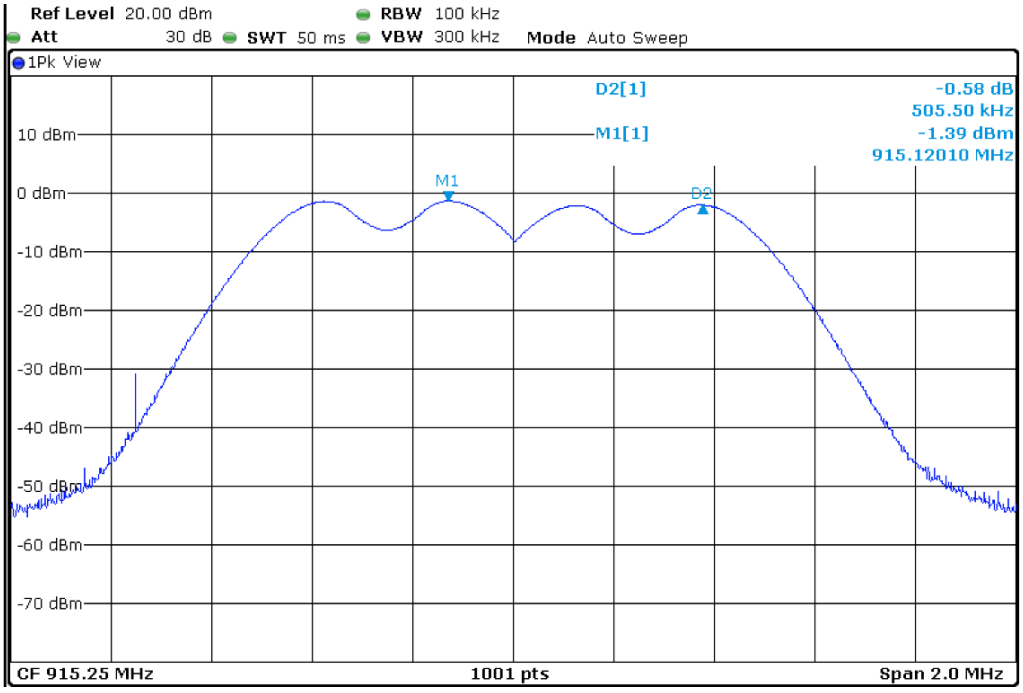
Test Mode **: Continuous transmitter** **Tester** **:** Wayne
Ambient Temperature : 26℃ **Relative Humidity :** 65%

Operating Frequency (MHz)	Hoppong separation (kHz)	Limit (kHz)
903	506.5	468
915	505.5	468
927.5	507.5	468

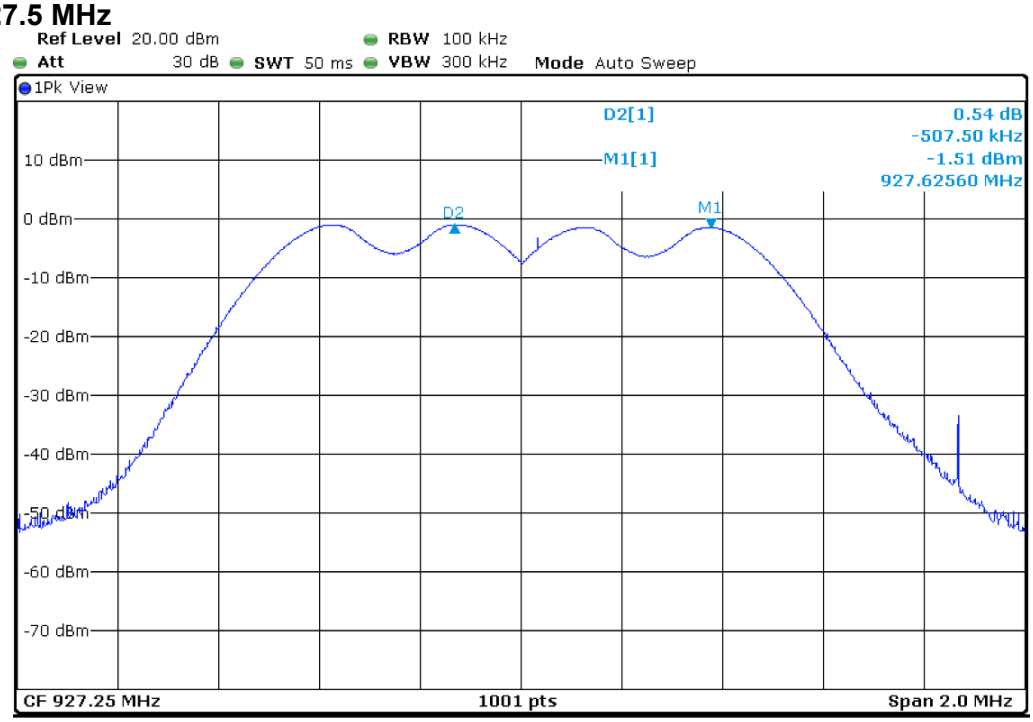
903 MHz



915 MHz



927.5 MHz



5 Output power

Result: Pass

5.1 Applied standard

According to FCC 15.247(b) (2) For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section. According to RSS 247 5.4(a), For FHSs operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W and the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.

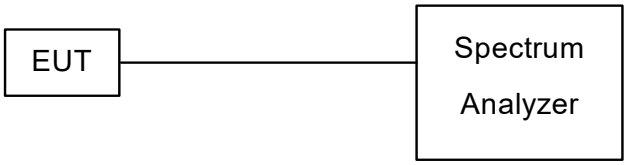
5.2 Measurement Procedure

d. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

e. Test procedures follow ANSI 63.10 section 7.8.5

f. Measure the output power and compare with the required limit.

5.3 Test configuration



5.4 Test Data

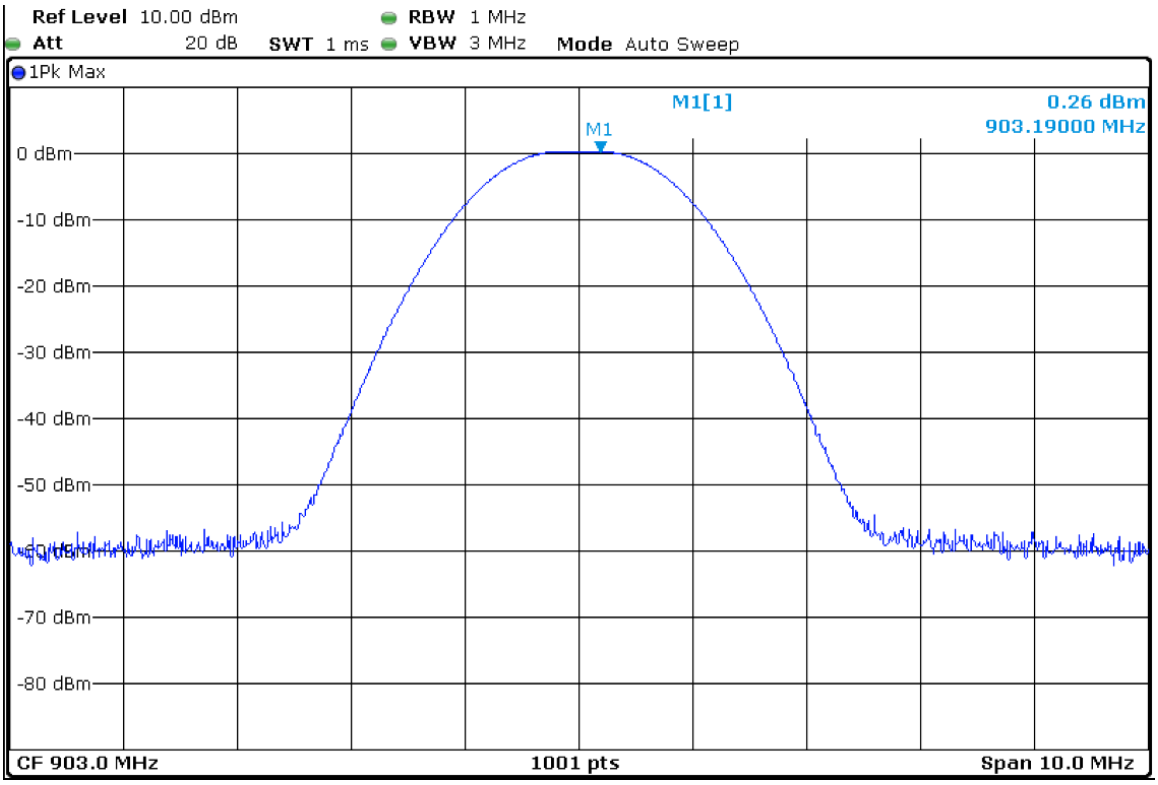
Test Mode **: Continuous transmitter** **Tester** **:** Wayne
Ambient Temperature : 26℃ **Relative Humidity :** 65%

Operating Frequency (MHz)	peak output power (dBm)			EIRP (dBm)		
	Test data		Limit (W)	Test data		Limit (W)
	(dBm)	(W)		(dBm)	(W)	
903	0.26	0.001	1	0.26	0.001	4
915	3.15	0.002	1	3.15	0.002	4
927.5	1.21	0.001	1	1.21	0.001	4

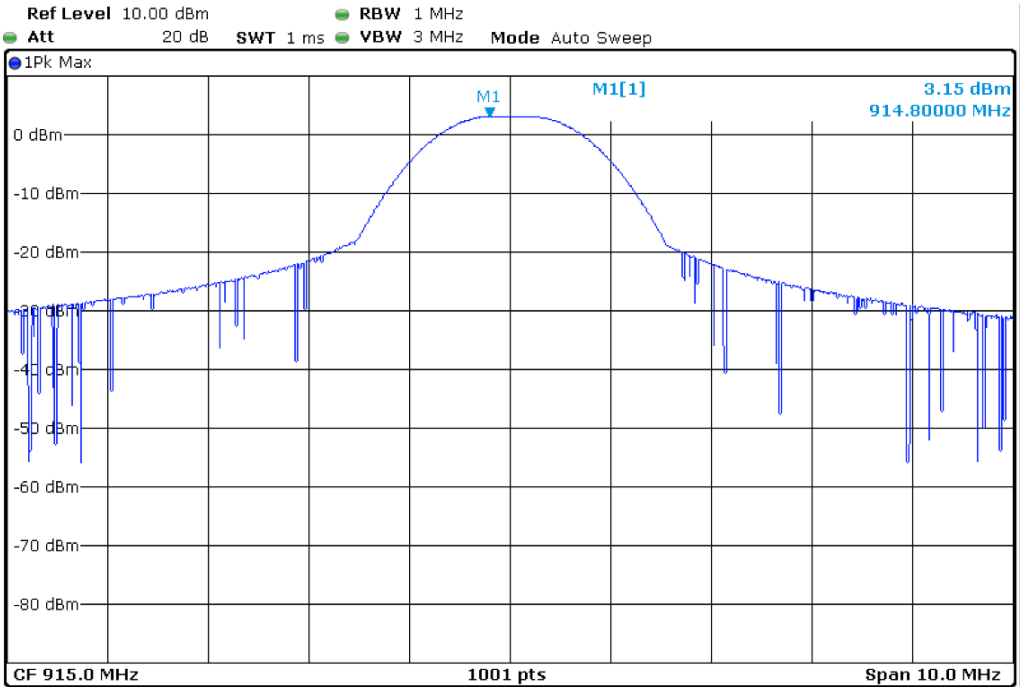
Note:

1. EIRP = peak output power+ antenna gain

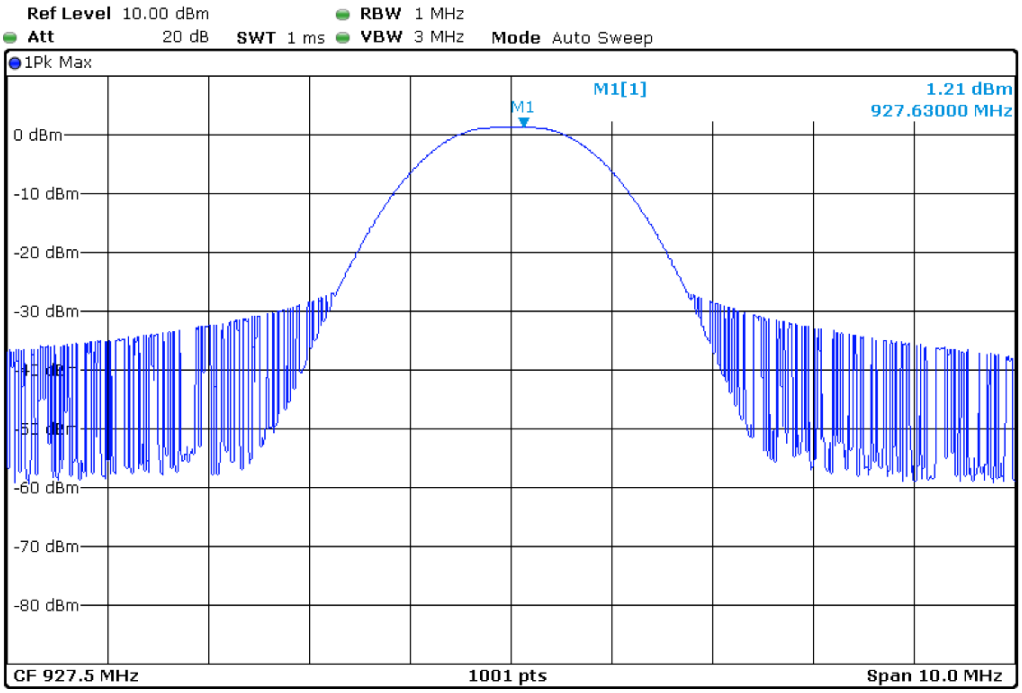
903 MHz



915 MHz



927.5 MHz



6 RF Antenna Conducted spurious

Result: Pass

6.1 Applied standard

According to FCC 15.247(d) and RSS-247 section 5.5, 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 FCC 15.247(b)(3) and RSS-247 section 5.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in FCC 15.209(a) and RSS-Gen are not required.

6.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at low and high channel frequencies individually.

c. Test procedures follow ANSI 63.10 section 7.8.6.

d. Measurement the conducted spurious and compare with the required limit.

6.3 Test configuration

6.4 Test Data

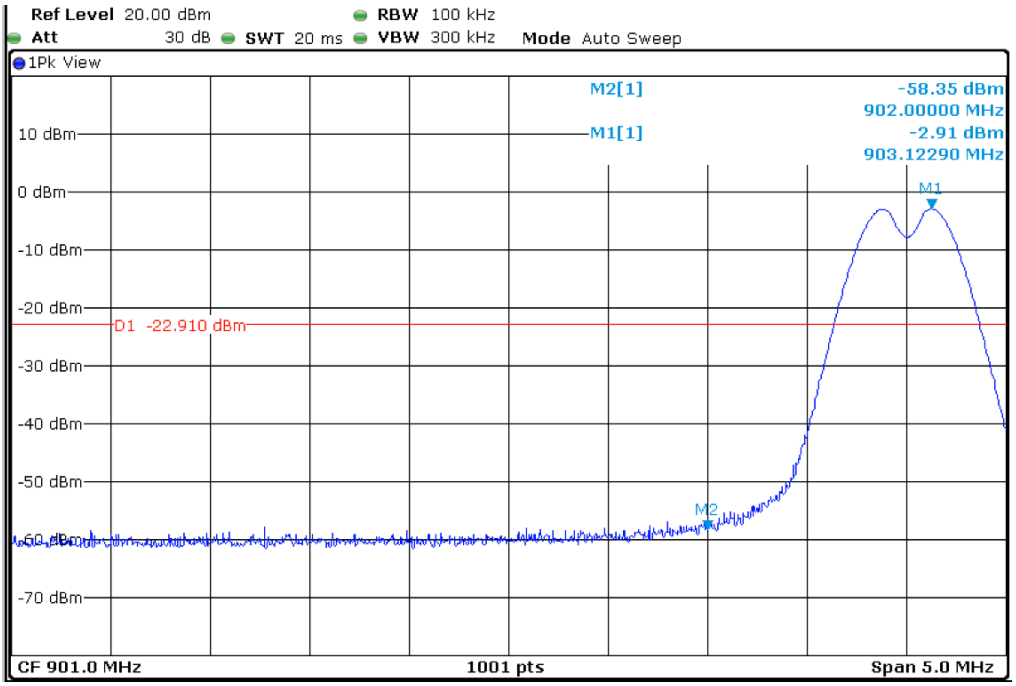
Bandedge

Test Mode **: Continuous transmitter** **Tester** **:** Wayne

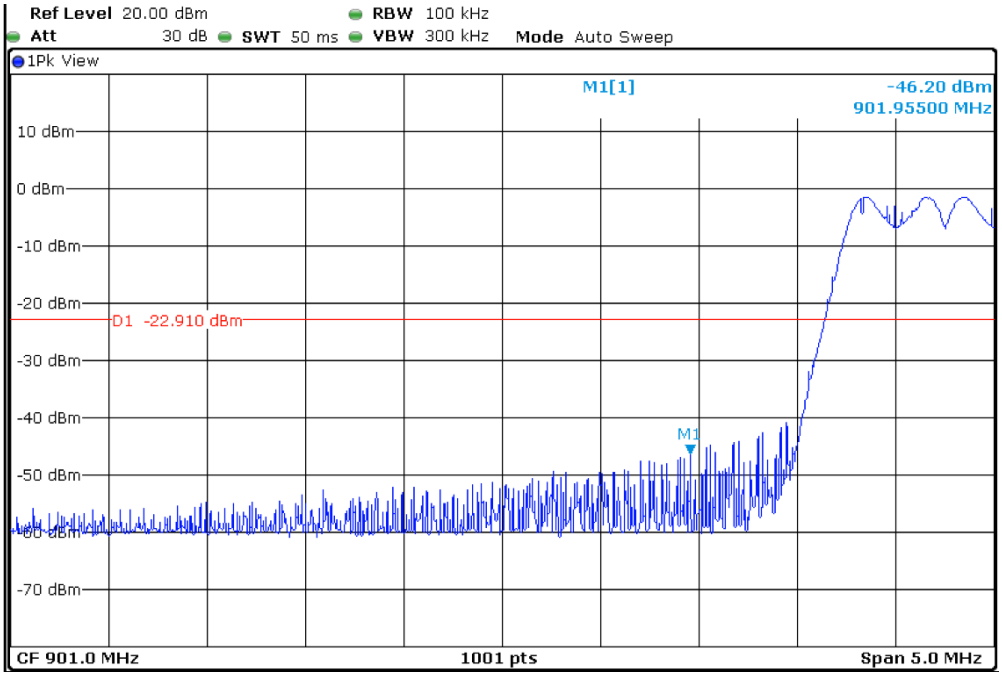
Ambient Temperature : 26℃ **Relative Humidity :** 65%

903 MHz

Non-hopping

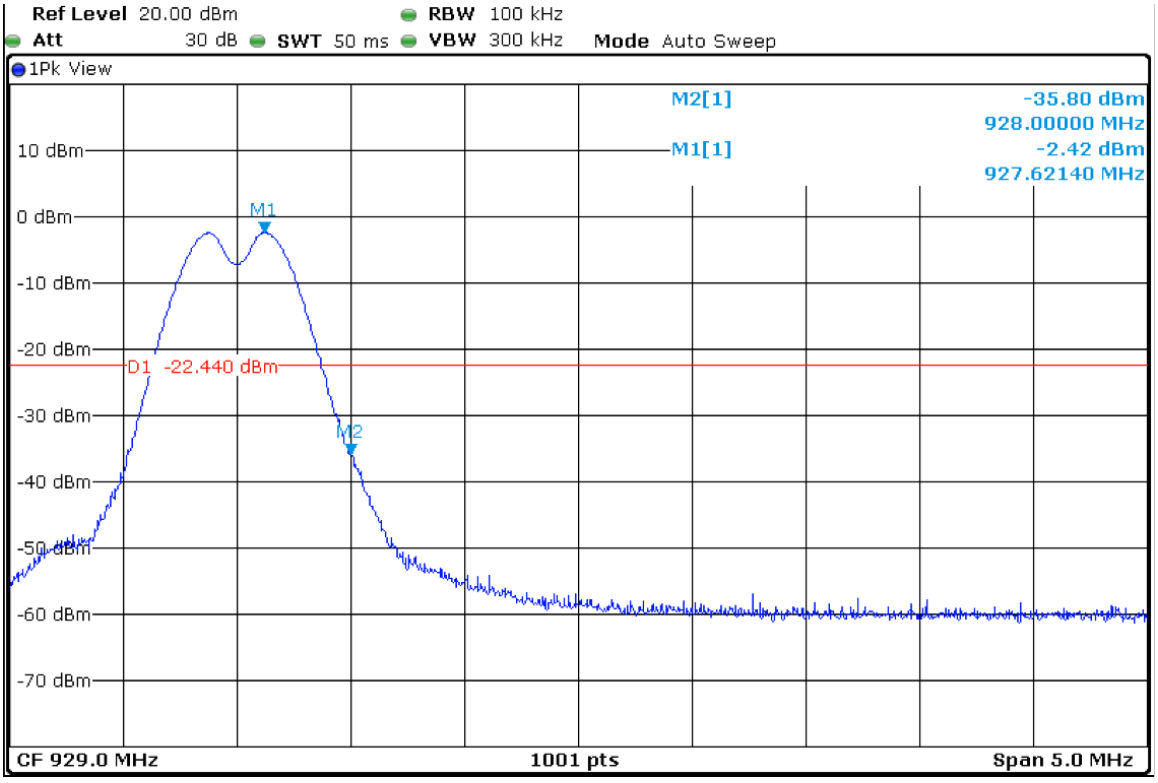


Hopping

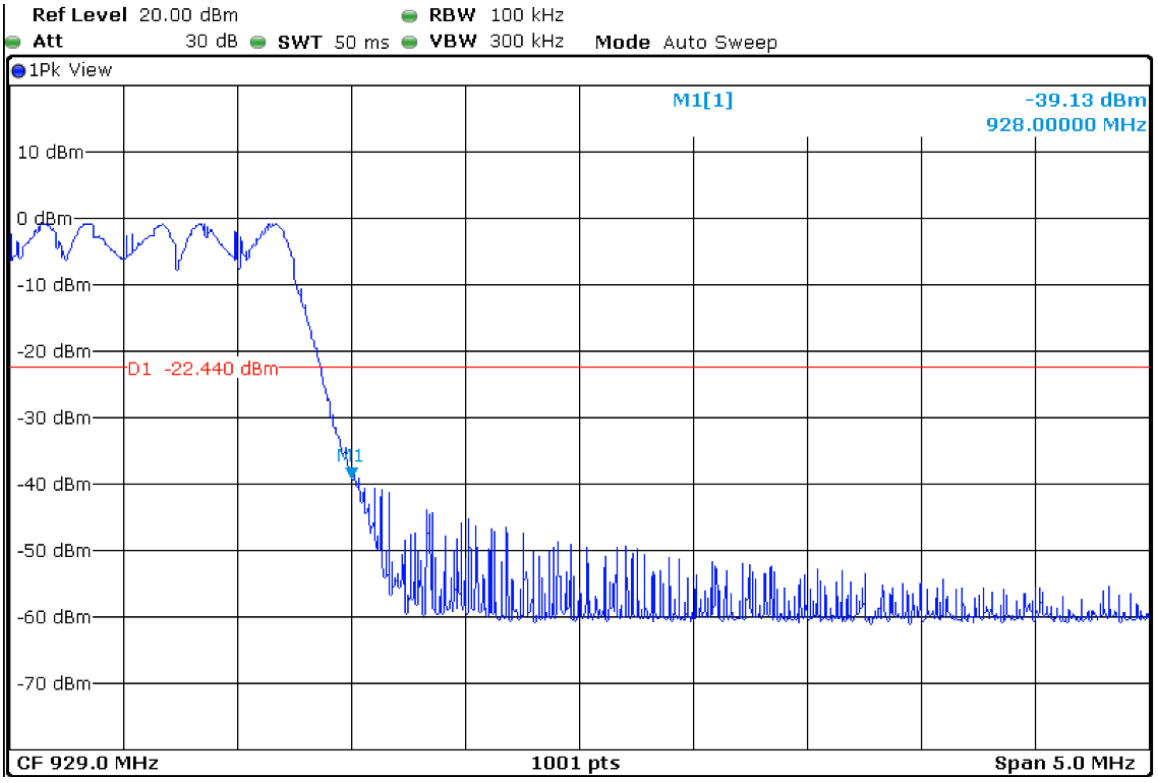


927 MHz

Non-hopping



Hopping

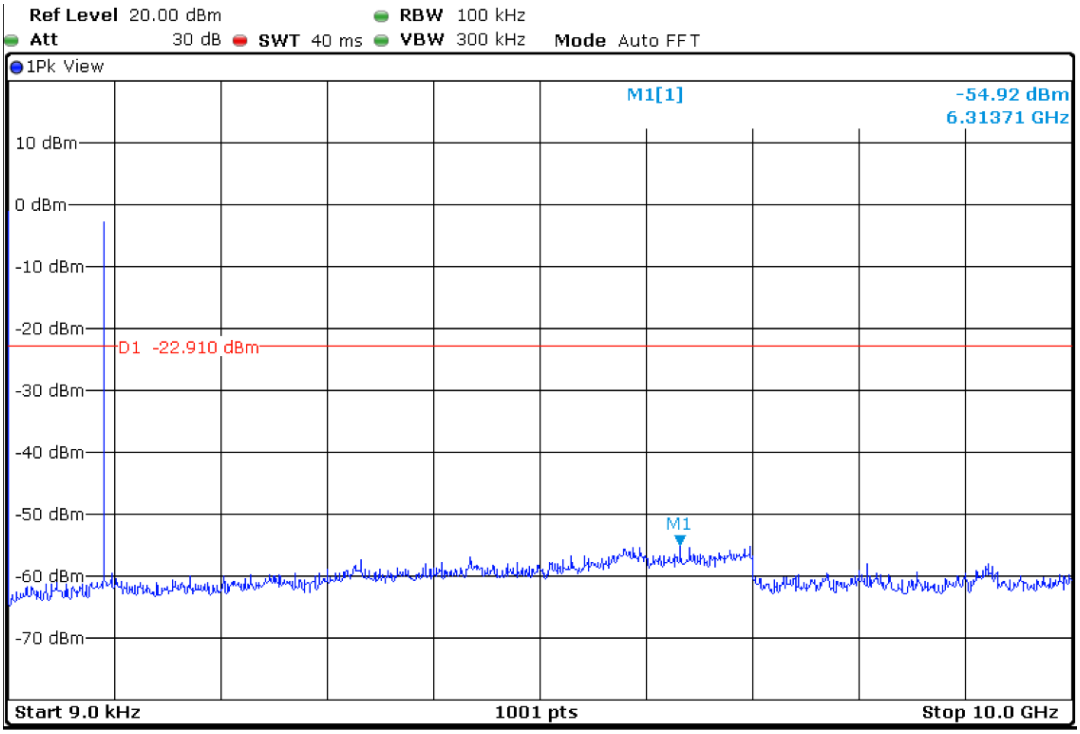


Out of band emission

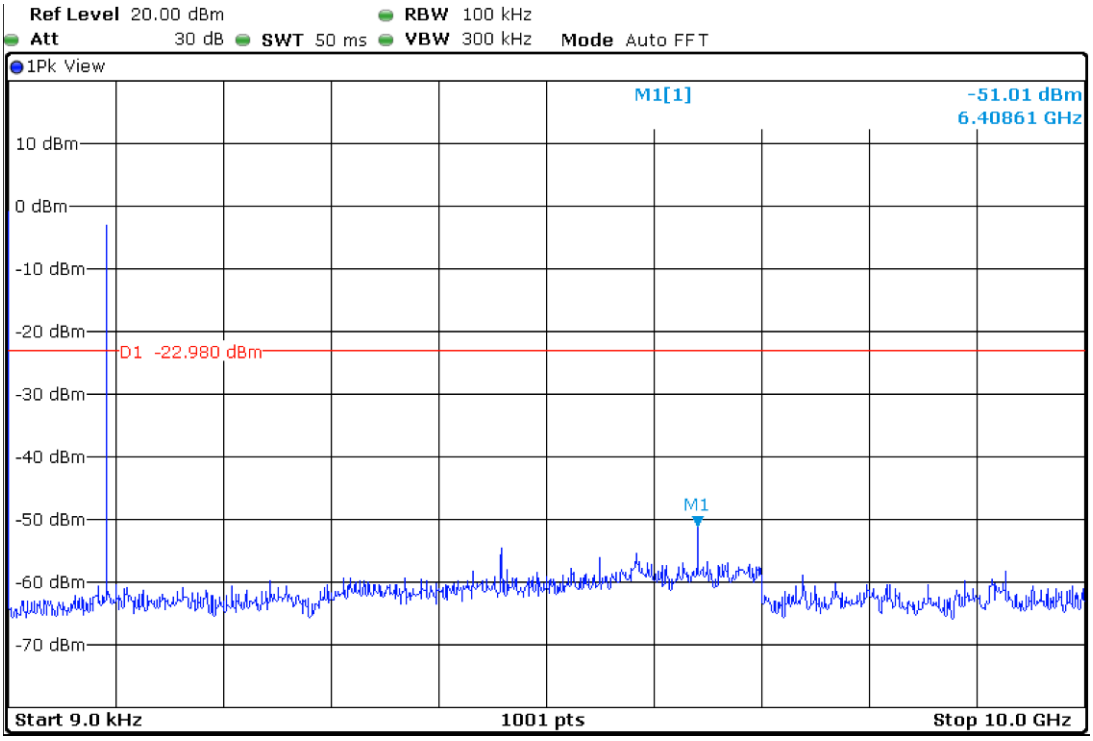
Test Mode **: Continuous transmitter** **Tester** **:** Wayne

Ambient Temperature : 26℃ **Relative Humidity :** 65%

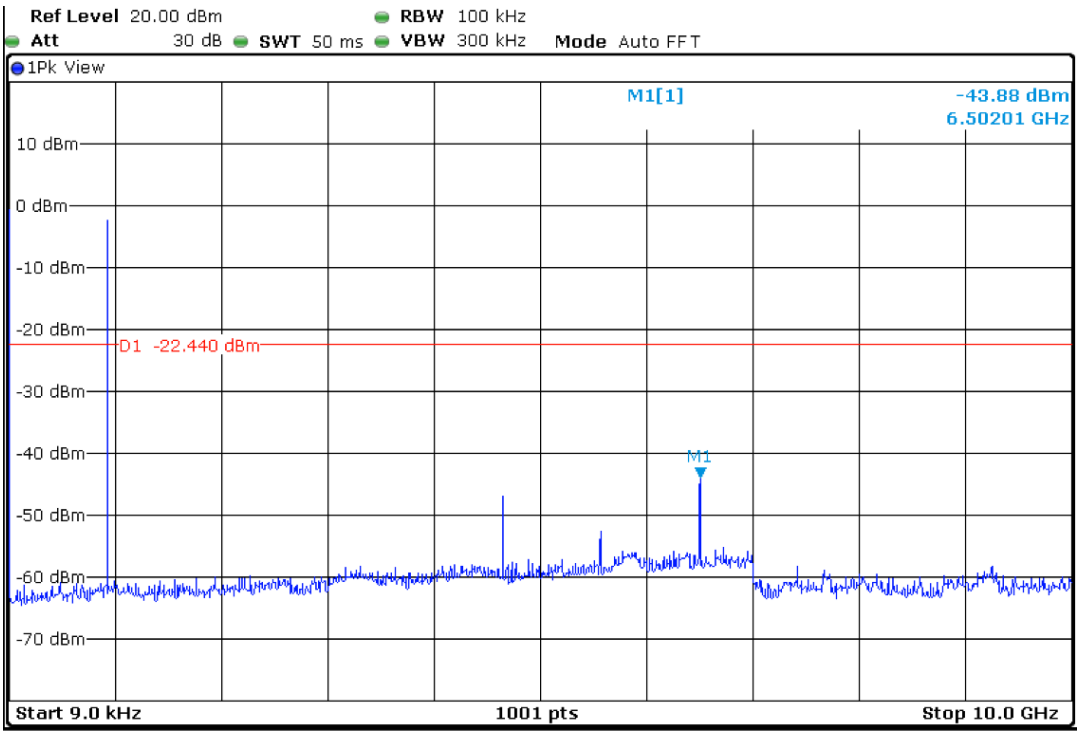
903 MHz



915 MHz



927.5 MHz



7 Radiated Emission

Result: Pass

7.1 Applied standard

According to FCC 15.247(d) and RSS-247 section 5.5, fall in the restricted bands, as defined in FCC 15.205(a) RSS-Gen section 8.10, must also comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Geb section 8.9.

7.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit and receive data at operating frequency.(if necessary)

c. If the EUT is tabletop equipment, it should be placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

d. The EUT is set 3m away from the interference receiving antenna.

e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.

f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.

g. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

h. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.

i. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.

j. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.

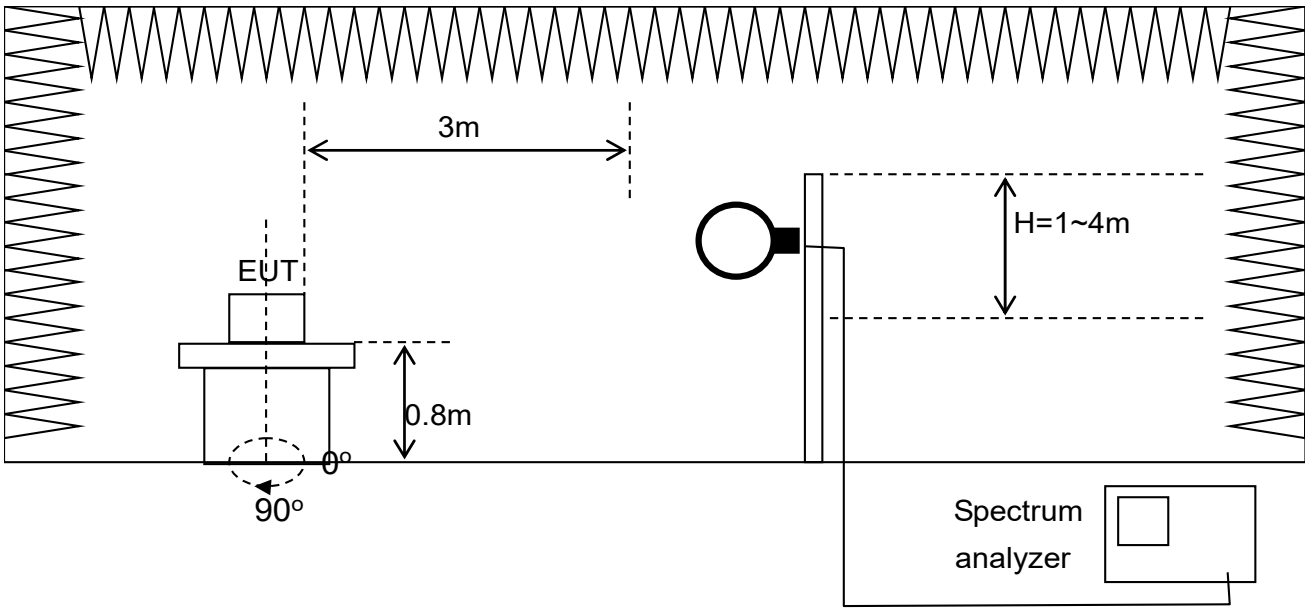
k. Change the receiving antenna to another polarization to measure radiated emission by following step e. to j. again.

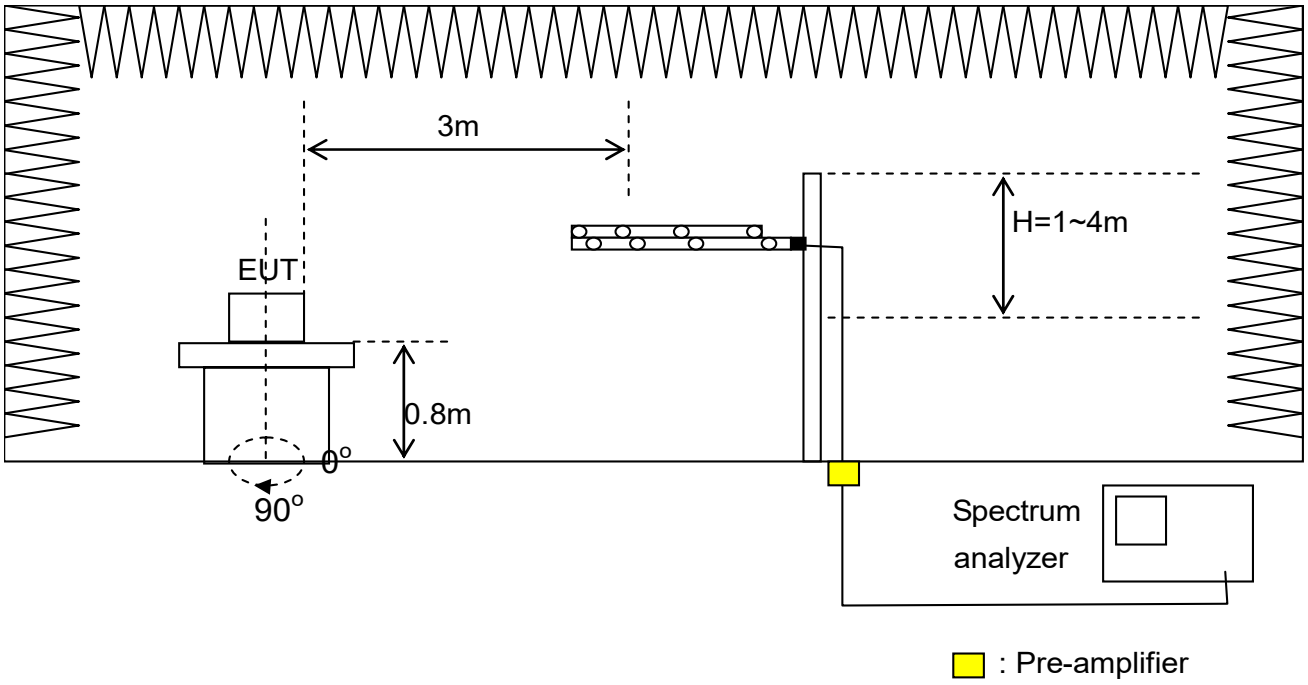
l. If the peak emission level below 1000MHz measured from step f. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

m. If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

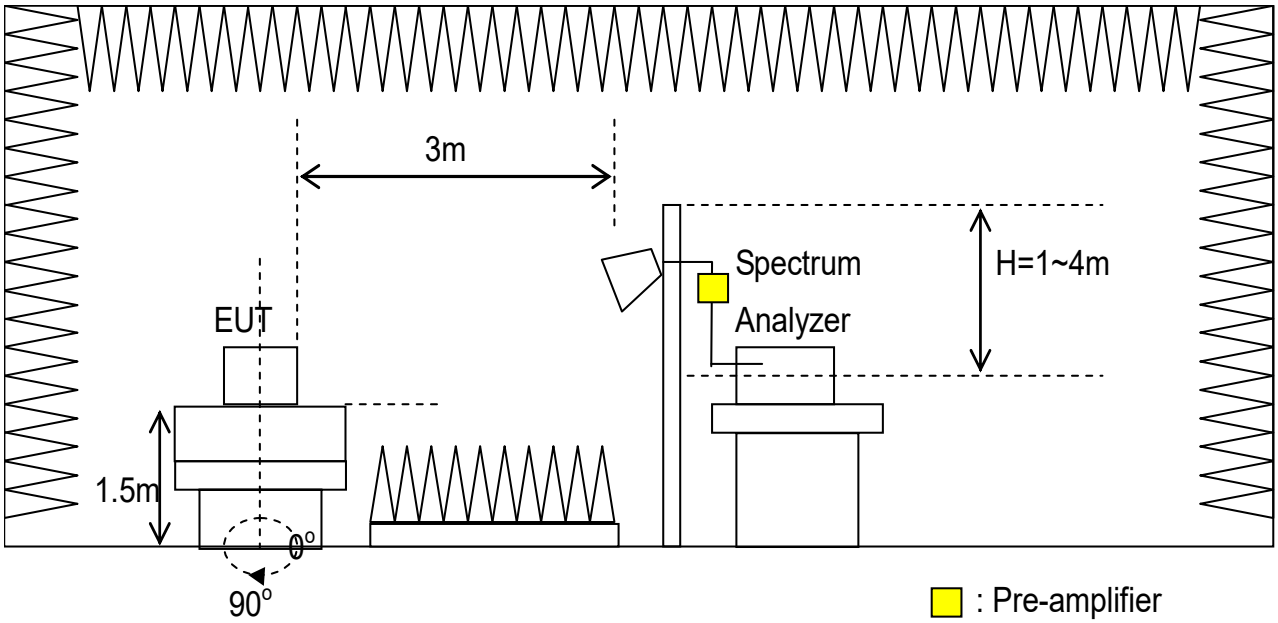
7.3 Test configuration

Below 1GHz





Above 1GHz



7.4 Test Data

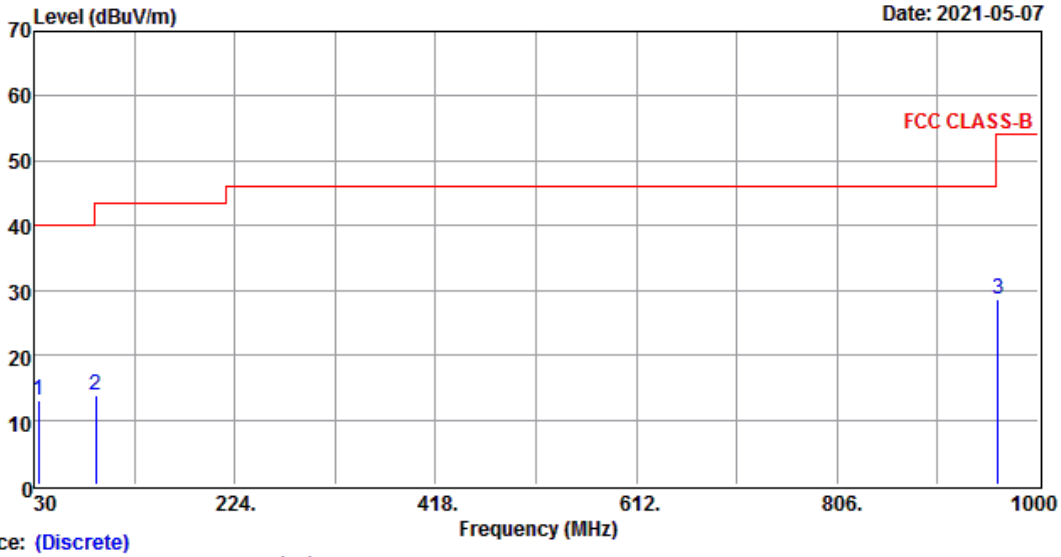
Radiated Emission Measurement below 1000MHz

Test Mode : **Continuous Transmitting**

Test Range : 30 MHz ~1 GHz

Polarization : Horizontal **Tester** : Martin

Ambient Temperature : 26℃ **Relative Humidity** : 53%



Trace: (Discrete)

Site : TR11 9*6*6 chamber
Condition : FCC CLASS-B 3m VULB_9168-612 HORIZONTAL
Power : battery
Operator : Martin T26 H53 P1010

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	34.850	13.04	35.08	-22.04	40.00	-26.96	400	360	HORIZONTAL	QP
2	90.140	13.89	40.70	-26.81	43.50	-29.61	100	121	HORIZONTAL	QP
3	961.200	28.62	36.66	-8.04	54.00	-25.38	100	294	HORIZONTAL	QP

Note:

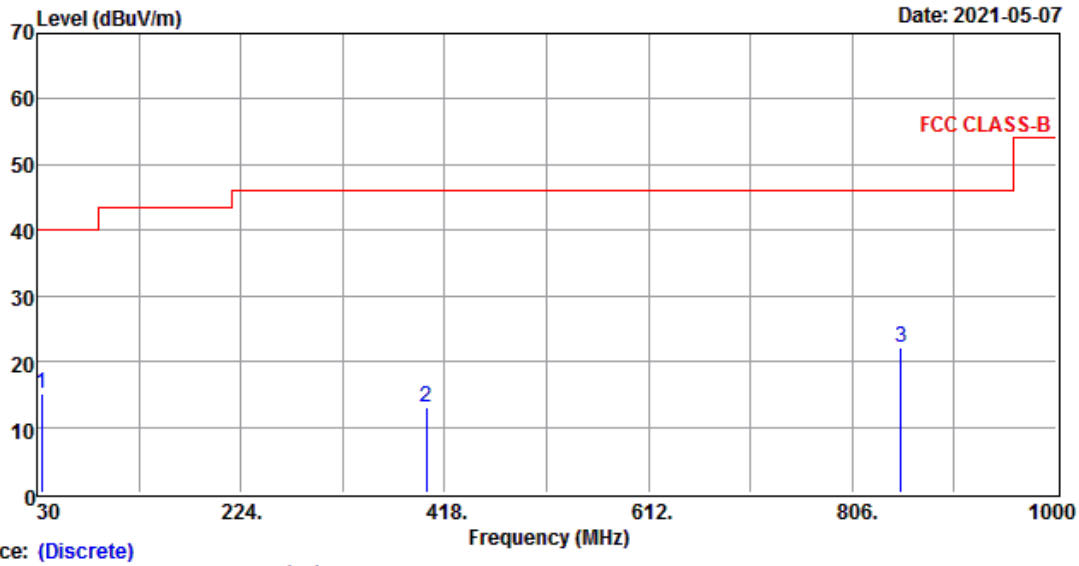
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. QK. is abbreviation of Quasi-Peak
5. The amplitude of spurious emission below 30 MHz which are attenuated by more than 20 dB below the permissible value has no need to be reprted.

Test Mode : **Continuous Transmitting**

Test Range : 30 MHz ~1GHz

Polarization : Vertical **Tester** : Martin

Ambient Temperature : 26℃ **Relative Humidity** : 53%



Trace: (Discrete)

Site : TR11 9*6*6 chamber
Condition : FCC CLASS-B 3m VULB_9168-612 VERTICAL
Power : battery
Operator : Martin T26 H53 P1010

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	34.850	15.04	37.08	-22.04	40.00	-24.96	100	98	VERTICAL	QP
2	400.540	13.11	30.57	-17.46	46.00	-32.89	100	360	VERTICAL	QP
3	852.560	22.04	31.67	-9.63	46.00	-23.96	100	0	VERTICAL	QP

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. QK. is abbreviation of Quasi-Peak
5. The amplitude of spurious emission below 30 MHz which are attenuated by more than 20 dB below the permissible value has no need to be reprted.

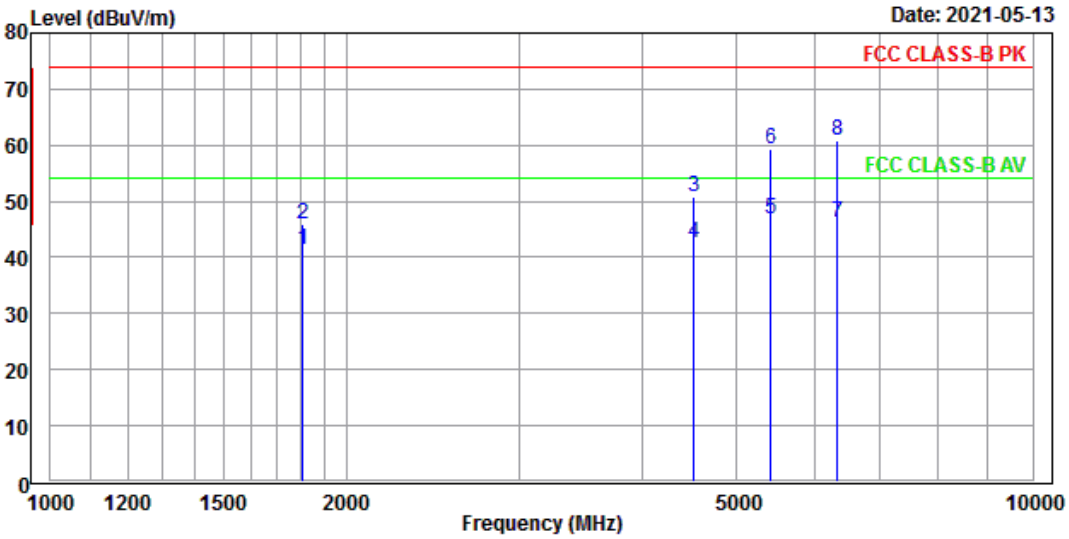
Radiated Emission Measurement above 1000MHz

Test Mode : **Continuous Transmitting, 902 MHz**

Test Range : 1 GHz ~ 10GHz

Polarization : Horizontal **Tester** : Jeffry

Ambient Temperature : 21℃ **Relative Humidity** : 60%



Condition : FCC CLASS-B PK 3m EMCO_3117_82847 HORIZONTAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1806.016	41.36	60.31	-18.95	54.00	-12.64	279	228	HORIZONTAL	Average
2	1806.127	45.81	64.76	-18.95	74.00	-28.19	278	224	HORIZONTAL	Peak
3	4514.080	50.65	66.40	-15.75	74.00	-23.35	295	173	HORIZONTAL	Peak
4	4514.296	42.51	58.26	-15.75	54.00	-11.49	292	176	HORIZONTAL	Average
5	5416.368	46.95	62.74	-15.79	54.00	-7.05	291	134	HORIZONTAL	Average
6	5416.878	59.38	75.17	-15.79	74.00	-14.62	296	138	HORIZONTAL	Peak
7	6319.673	46.30	60.74	-14.44	54.00	-7.70	293	99	HORIZONTAL	Average
8	6319.725	60.97	75.41	-14.44	74.00	-13.03	297	96	HORIZONTAL	Peak

Note:

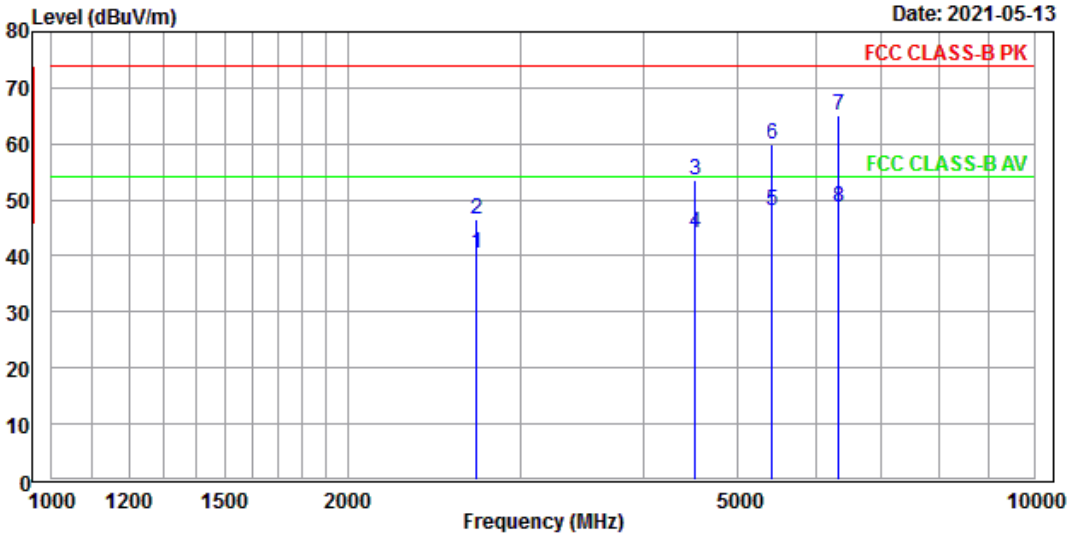
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

Test Mode : **Continuous Transmitting, 902 MHz**

Test Range : 1 GHz ~ 10 GHz

Polarization : Vertical **Tester** : Jeffry

Ambient Temperature : 21℃ **Relative Humidity** : 60%



Condition : FCC CLASS-B PK 3m EMCO_3117_82847 VERTICAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2709.015	40.52	57.14	-16.62	54.00	-13.48	141	5	VERTICAL	Average
2	2709.521	46.65	63.28	-16.63	74.00	-27.35	146	0	VERTICAL	Peak
3	4514.150	53.61	69.36	-15.75	74.00	-20.39	131	205	VERTICAL	Peak
4	4514.183	43.97	59.72	-15.75	54.00	-10.03	135	207	VERTICAL	Average
5	5416.351	48.06	63.85	-15.79	54.00	-5.94	126	113	VERTICAL	Average
6	5416.923	60.00	75.79	-15.79	74.00	-14.00	121	119	VERTICAL	Peak
7	6322.281	65.25	79.69	-14.44	74.00	-8.75	178	148	VERTICAL	Peak
8	6322.567	48.65	63.08	-14.43	54.00	-5.35	174	142	VERTICAL	Average

Note:

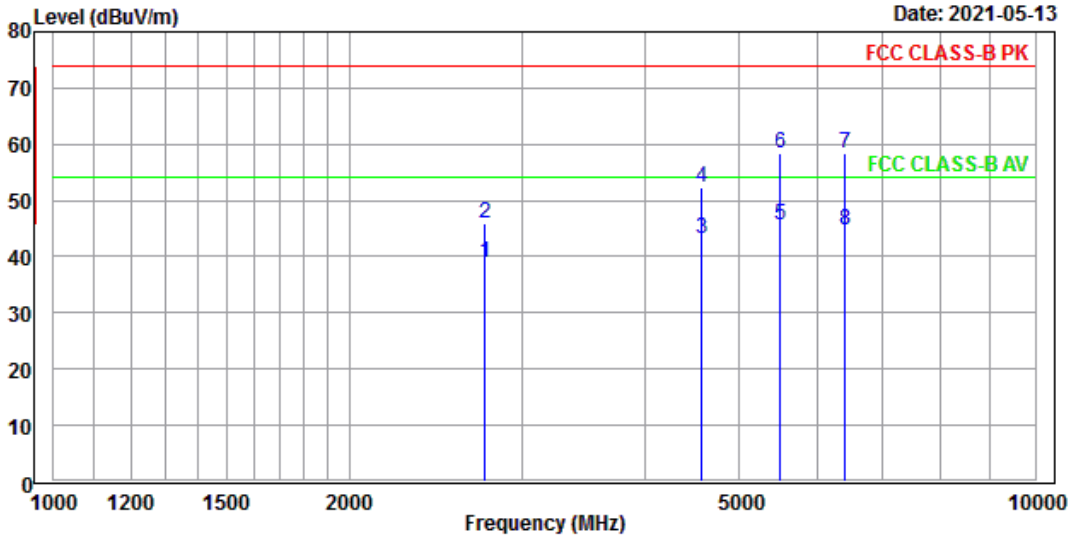
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

Test Mode : **Continuous Transmitting, 915 MHz**

Test Range : 1 GHz ~ 10 GHz

Polarization : Horizontal **Tester** : Jeffry

Ambient Temperature : 21℃ **Relative Humidity** : 60%



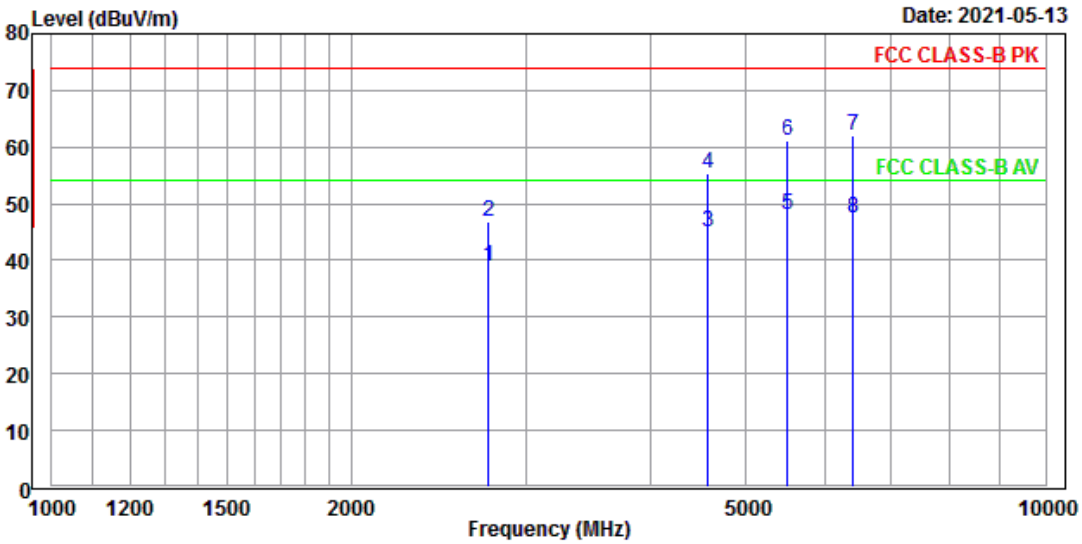
Condition : FCC CLASS-B PK 3m EMCO_3117_82847 HORIZONTAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2745.023	38.91	55.75	-16.84	54.00	-15.09	226	113	HORIZONTAL	Average
2	2745.319	45.80	62.64	-16.84	74.00	-28.20	220	110	HORIZONTAL	Peak
3	4575.251	43.12	58.83	-15.71	54.00	-10.88	244	98	HORIZONTAL	Average
4	4575.604	52.30	68.01	-15.71	74.00	-21.70	242	95	HORIZONTAL	Peak
5	5488.420	45.65	61.42	-15.77	54.00	-8.35	215	135	HORIZONTAL	Average
6	5488.926	58.25	74.02	-15.77	74.00	-15.75	212	137	HORIZONTAL	Peak
7	6406.245	58.35	72.55	-14.20	74.00	-15.65	175	325	HORIZONTAL	Peak
8	6406.712	44.77	58.97	-14.20	54.00	-9.23	177	323	HORIZONTAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

Test Mode : **Continuous Transmitting, 915 MHz**
Test Range : 1 GHz ~ 10 GHz
Polarization : Vertical **Tester** : Jeffry
Ambient Temperature : 21℃ **Relative Humidity** : 60%



Condition : FCC CLASS-B PK 3m EMCO_3117_82847 VERTICAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2745.012	39.00	55.84	-16.84	54.00	-15.00	356	4	VERTICAL	Average
2	2745.473	46.86	63.70	-16.84	74.00	-27.14	352	0	VERTICAL	Peak
3	4574.030	45.12	60.83	-15.71	54.00	-8.88	260	210	VERTICAL	Average
4	4574.082	55.40	71.11	-15.71	74.00	-18.60	266	206	VERTICAL	Peak
5	5488.343	47.97	63.74	-15.77	54.00	-6.03	194	115	VERTICAL	Average
6	5488.900	61.00	76.77	-15.77	74.00	-13.00	191	117	VERTICAL	Peak
7	6406.279	62.10	76.30	-14.20	74.00	-11.90	161	149	VERTICAL	Peak
8	6406.639	47.54	61.74	-14.20	54.00	-6.46	165	143	VERTICAL	Average

Note:

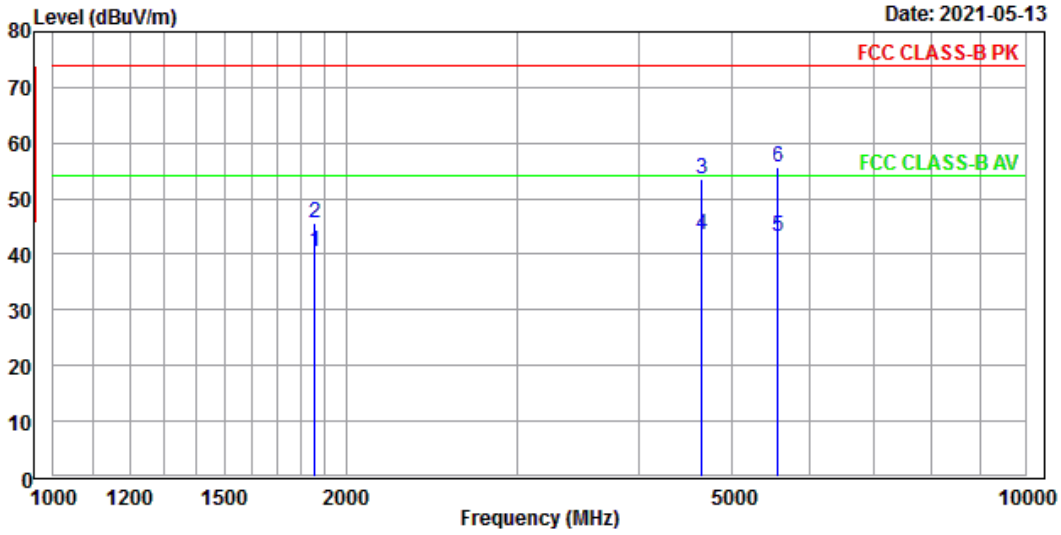
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

Test Mode : **Continuous Transmitting, 927.5 MHz**

Test Range : 1 GHz ~ 10 GHz

Polarization : Horizontal **Tester** : Jeffry

Ambient Temperature : 21℃ **Relative Humidity** : 60%



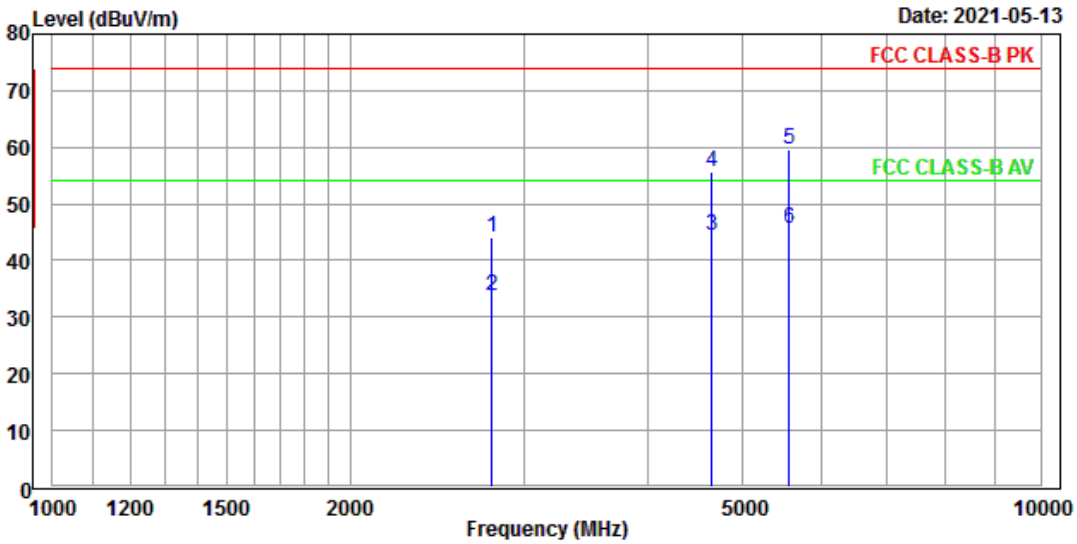
Condition : FCC CLASS-B PK 3m EMCO_3117_82847 HORIZONTAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1855.029	40.55	58.95	-18.40	54.00	-13.45	271	286	HORIZONTAL	Average
2	1855.151	45.59	63.99	-18.40	74.00	-28.41	275	281	HORIZONTAL	Peak
3	4638.405	53.39	69.13	-15.74	74.00	-20.61	264	114	HORIZONTAL	Peak
4	4638.643	43.56	59.30	-15.74	54.00	-10.44	267	110	HORIZONTAL	Average
5	5563.459	43.34	59.18	-15.84	54.00	-10.66	297	123	HORIZONTAL	Average
6	5563.930	55.67	71.51	-15.84	74.00	-18.33	294	120	HORIZONTAL	Peak

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

Test Mode : **Continuous Transmitting, 927.5 MHz**
Test Range : 1 GHz ~ 10 GHz
Polarization : Vertical **Tester** : Jeffry
Ambient Temperature : 21℃ **Relative Humidity** : 60%



Condition : FCC CLASS-B PK 3m EMCO_3117_82847 VERTICAL
POWER : BATTERY
OPERATOR : JEFFRY T:21 H:60 P:1020

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2782.149	44.10	60.97	-16.87	74.00	-29.90	177	135	VERTICAL	Peak
2	2782.473	33.87	50.74	-16.87	54.00	-20.13	172	133	VERTICAL	Average
3	4636.561	44.50	60.24	-15.74	54.00	-9.50	137	216	VERTICAL	Average
4	4636.599	55.68	71.42	-15.74	74.00	-18.32	134	213	VERTICAL	Peak
5	5564.021	59.66	75.50	-15.84	74.00	-14.34	187	117	VERTICAL	Peak
6	5564.364	45.69	61.53	-15.84	54.00	-8.31	185	115	VERTICAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line

8 Occupied Bandwidth

Result: Pass

8.1 Applied Standard

According RSS-Gen section 6.7, when the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

8.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter and to simulate the typical usage described in the user's manual supported by the manufacturer in chamber TR13.

b. Measure the 99% bandwidth by using the spectrum analyzer and following the test conditions described in RSS-Gen.

c. Record the frequency and compare with the required limit.

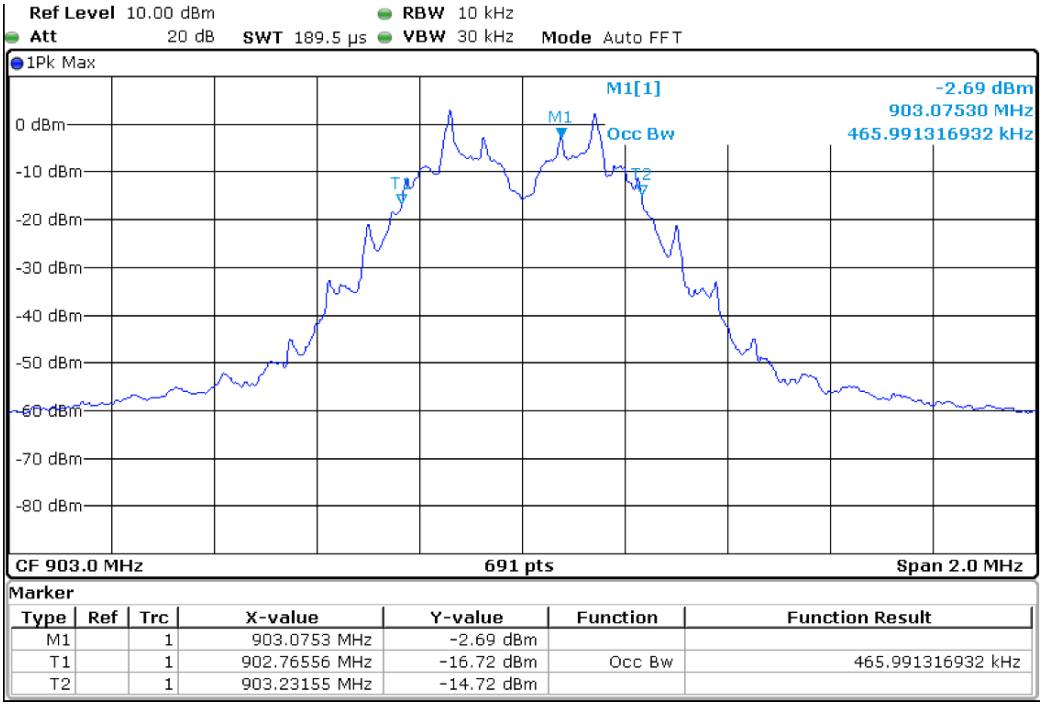
8.3 Test Configuration

8.4 Test Data

Test Model **: Continuous Transmitter**

Tester **:** Wayne

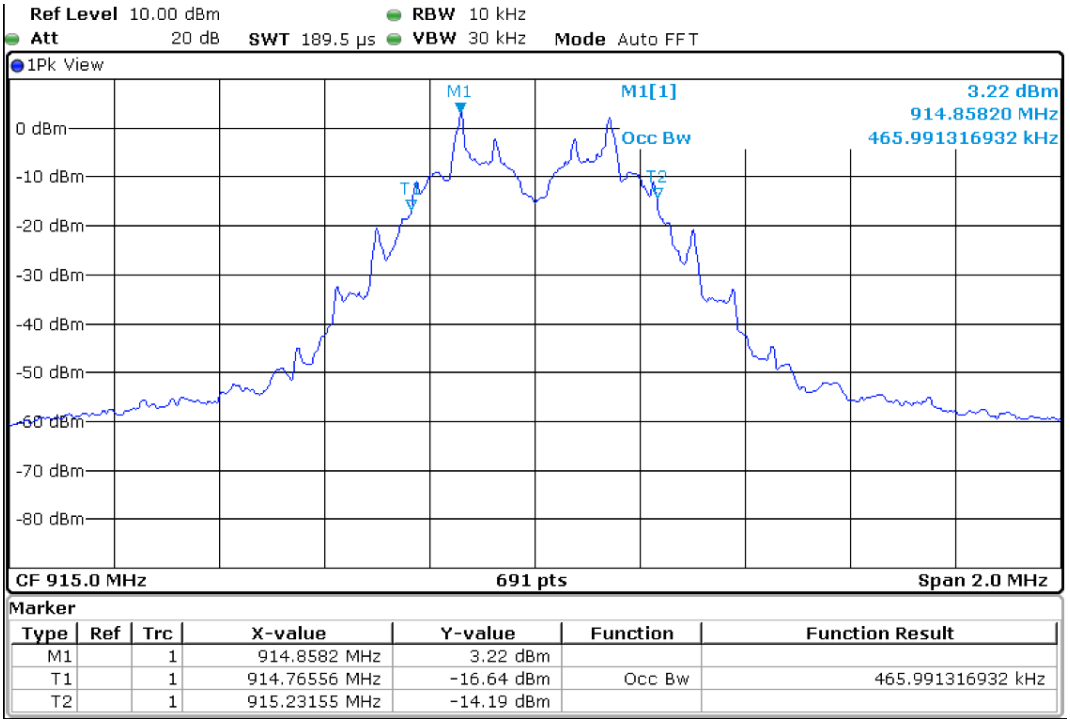
903 MHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	903.0753 MHz	-2.69 dBm		
T1		1	902.76556 MHz	-16.72 dBm	Occ Bw	465.991316932 kHz
T2		1	903.23155 MHz	-14.72 dBm		

915 MHz



927.5 MHz