FCC 47 CFR PART 15 SUBPART C

RF Test Report

Applicant	:	Kiwi Technology Inc.
Product Type	:	LoRa wireless module
Trade Name	:	Kiwi Technology Inc.
Model Number	:	TLM991
Test Specification	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Receive Date	:	Apr. 24, 2017
Test Period	:	May 04 ~ May 09, 2017
Issue Date	:	Jun. 09, 2017

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C)
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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Revision History

Rev.	Issue Date	Revisions	Revised By
00	May 16, 2017	Initial Issue	Janet Chao
01	Jun. 09, 2017	Revised Report Information	Janet Chao

Verification of Compliance

Issued Date: Jun. 09, 2017

Applicant	:	Kiwi Technology Inc.
Product Type	:	LoRa wireless module
Trade Name	:	Kiwi Technology Inc.
Model Number	:	TLM991
FCC ID	:	2AKIBTLM991
EUT Rated Voltage	:	DC 3.3V, DC 5V
Test Voltage	:	DC 3.3V
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

A Test Lab Techno Corp. 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 A Test Lab Techno Corp. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By	:	Fly Lu	Reviewed By	:	Eric Ou Yang
(Manager)		(Fly Lu)	(Testing Engineer)		(Eric Ou Yang)

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1 General Information

1.1 Summary of Test Result

Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	N/A	Not applicable, This device use DC power source.
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6dB RF Bandwidth	PASS	-----
15.247(e)	Power Spectral Density	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----
15.203	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	9kHz ~ 150KHz	2.7
	150kHz ~ 30MHz	2.7
Radiated Emission	9kHz ~ 30MHz	1.7
	30MHz ~ 1000MHz	5.7
	1000MHz ~ 18000MHz	5.5
	18000MHz ~ 26500MHz	4.8
	26500MHz ~ 40000MHz	4.8
Conducted Output Power	+0.27 dB / -0.28 dB	
RF Bandwidth	4.96%	
Power Spectral Density	+0.71 dB / -0.77 dB	

2 EUT Description

Applicant	Kiwi Technology Inc. 4F., No.158, Sec. 1, Wenxing Rd., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.)			
Manufacturer	FIRST CREATION INDUSTRY CO. No. 45, Heping Road, Panchiao City, Taipei County, 3rd Floor			
Product Type	LoRa wireless module			
Trade Name	Kiwi Technology Inc.			
Model No.	TLM991			
FCC ID	2AKIBTLM991			
Frequency Range	902 ~ 928 MHz			
Modulation Type	LoRa			
Antenna information	Antenna	Model Number	Type	Max. Gain (dBi)
	Indoor Antenna	RFA-WAVE-C55-U-B70-1	dipole Antenna	2.0
	Outdoor Antenna	OMA-G01	dipole Antenna	8.0
RF Output Power	0.36475 W			

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL 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:

Test Mode
Mode 1: TX Mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

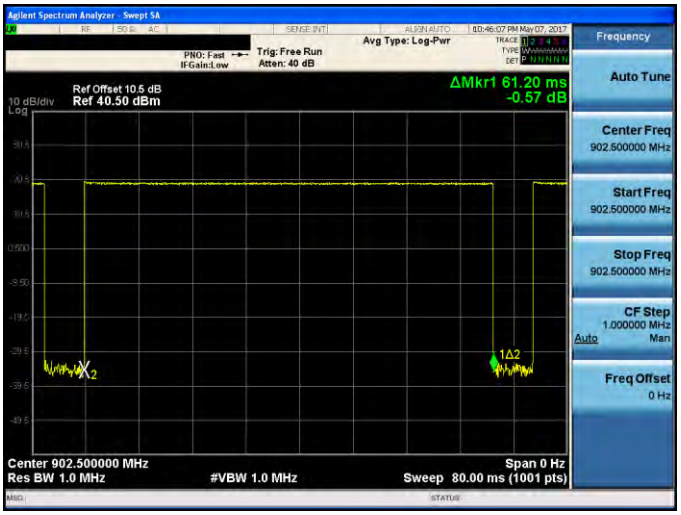
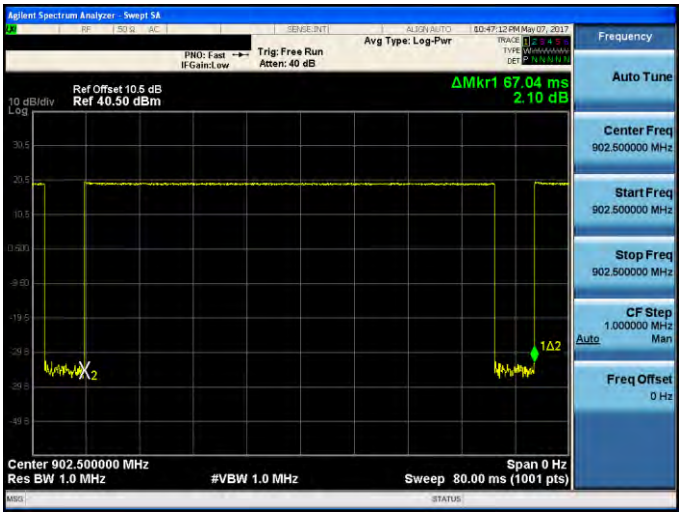
After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in TX mode only.

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

Duty cycle

Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 1: TX Mode	902.5	61.210	67.040	0.913	0.395	0.016

Duty Cycle Graphs

Mode 2: IEEE 802.11b TX mode	
On time	
On+off time	

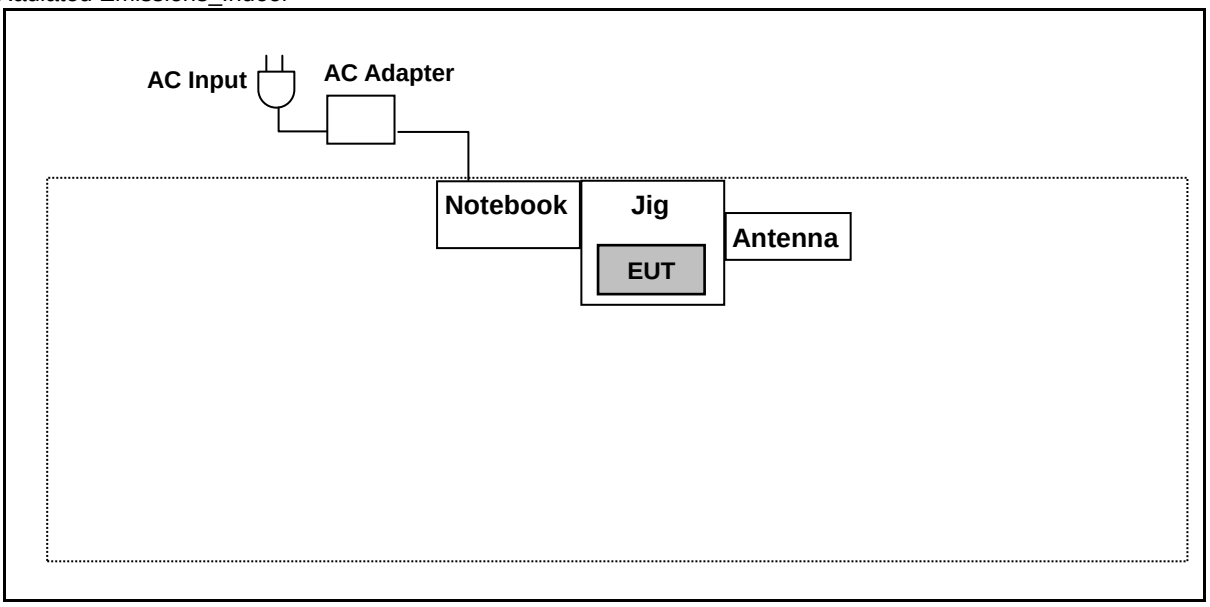
3.2. EUT Exercise Software

1	Setup the EUT shown on 3.3.
2	Turn on the power of all equipment.
3	Setup Continuous TX
4	EUT run test program.

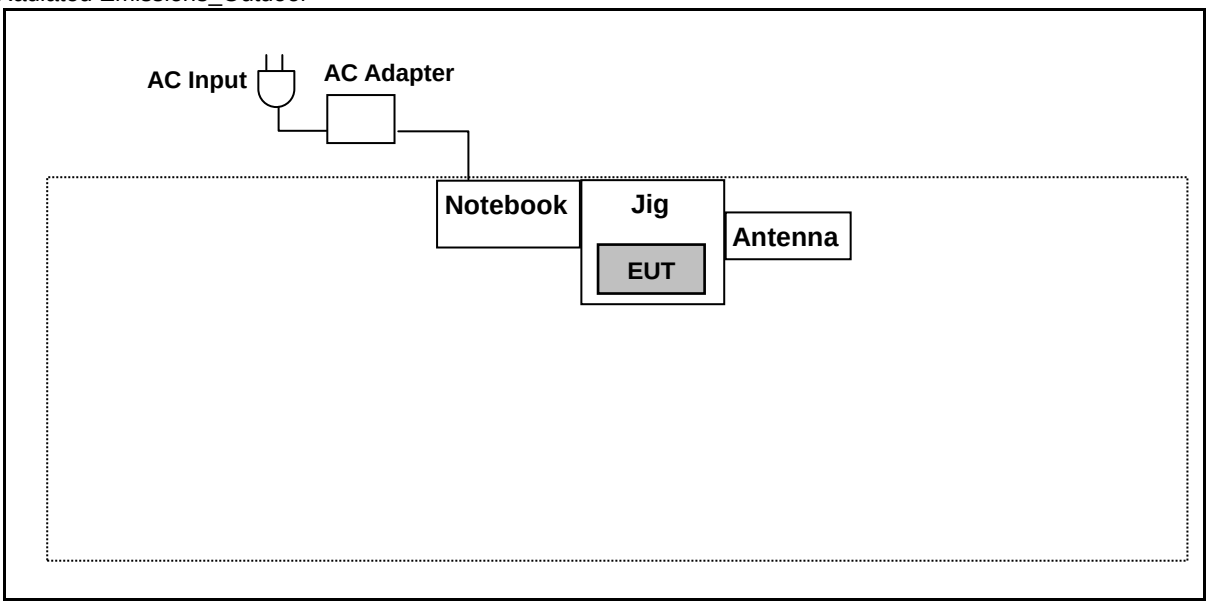
Measurement Software	
1	EZ-EMC Ver. ATL-03A1-1

3.3. Configuration of Test System Details

Radiated Emissions_Indoor



Radiated Emissions_Outdoor



3.4. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 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 (μV/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.

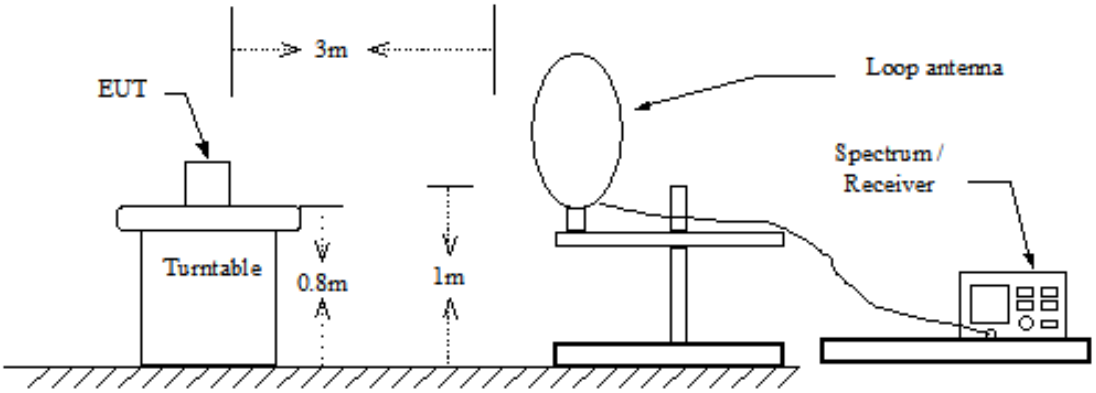
■ Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
RF Pre-selector	Agilent	N9039A	MY46520256	04/05/2017	1 year
Spectrum Analyzer	Agilent	E4446A	MY46180578	04/05/2017	1 year
Pre Amplifier	Agilent	8449B	3008A02237	10/11/2016	1 year
Pre Amplifier	Agilent	8447D	2944A11119	01/12/2017	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	10/13/2016	1 year
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/06/2016	1 year
Horn Antenna (18~40GHz)	ETS	3116	86467	09/05/2016	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	01/26/2017	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	02/20/2017	1 year
Microwave Cable	EMCI	EMC-104-SM-SM-14000	140202	02/20/2017	1 year
Microwave Cable	EMCI	EMC104-SM-SM-600	140301	02/20/2017	1 year
Test Site	ATL	TE01	888001	08/29/2016	1 year

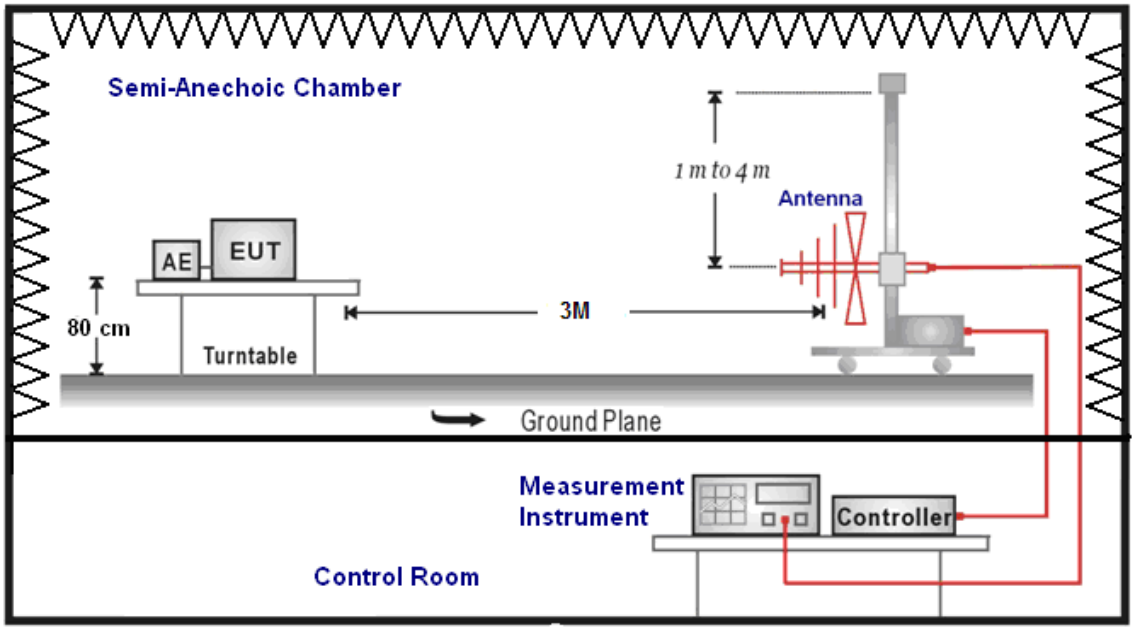
Note: N.C.R. = No Calibration Request.

■ Setup

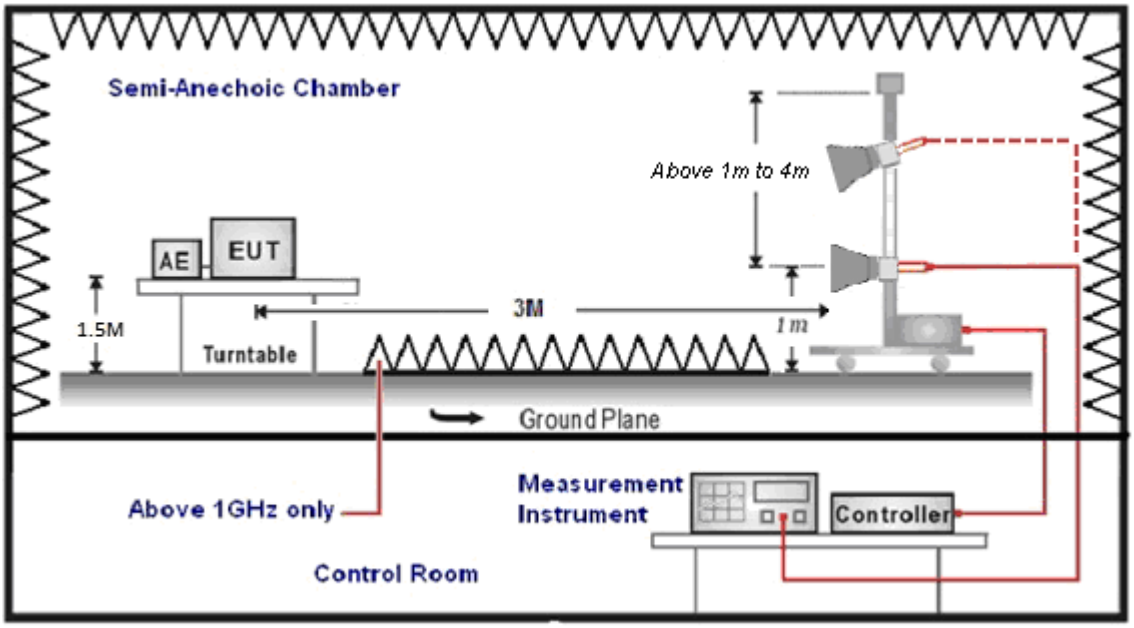
9kHz ~ 30MHz



Below 1GHz



Above 1GHz


Semi-Anechoic Chamber
Above 1m to 4m
AE
EUT
1.5M
3M
1 m
Turntable
Ground Plane
Above 1GHz only
Measurement
Instrument
Controller
Control Room

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(below 1GHz use 0.8m turntable / above 1GHz use 1.5m turntable), 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 1 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 tree 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 (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB 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 pre meter (uV/m).

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

The actual field is 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) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-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 < +30dBm
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

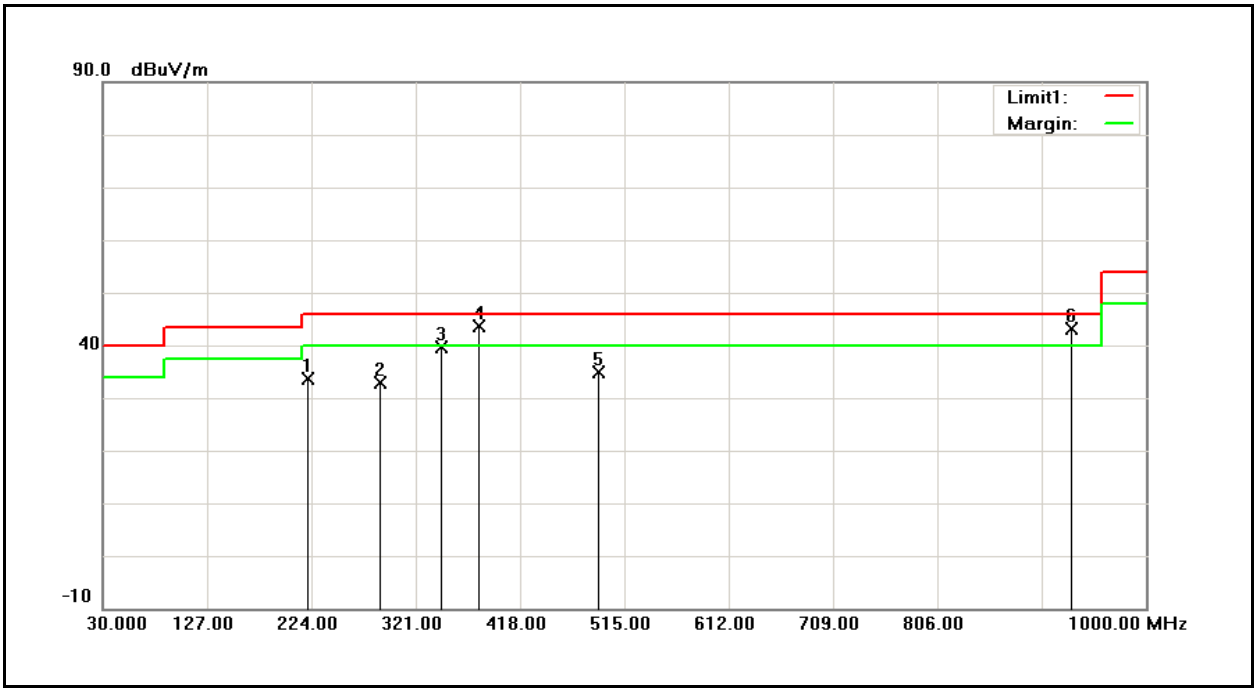
Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

■ Test Result

Below 1GHz

Indoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



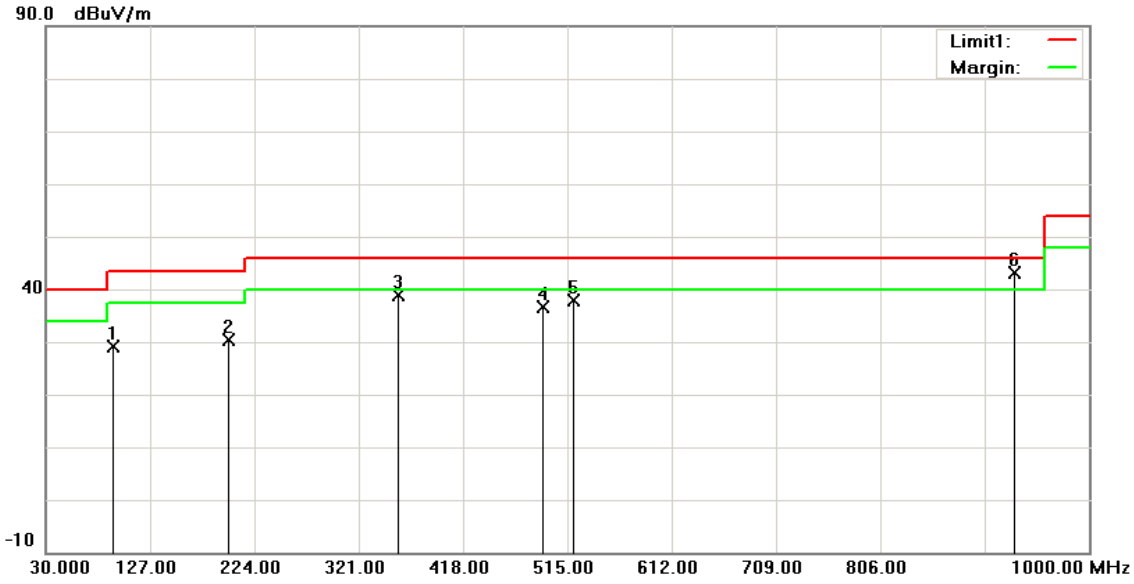
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	220.1200	39.70	-6.17	33.53	46.00	-12.47	QP
2	288.0200	36.00	-3.15	32.85	46.00	-13.15	QP
3	345.2500	41.59	-2.06	39.53	46.00	-6.47	QP
4	380.1700	45.14	-1.40	43.74	46.00	-2.26	QP
5	490.7500	34.02	0.87	34.89	46.00	-11.11	QP
6	931.1300	33.68	9.33	43.01	46.00	-2.99	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



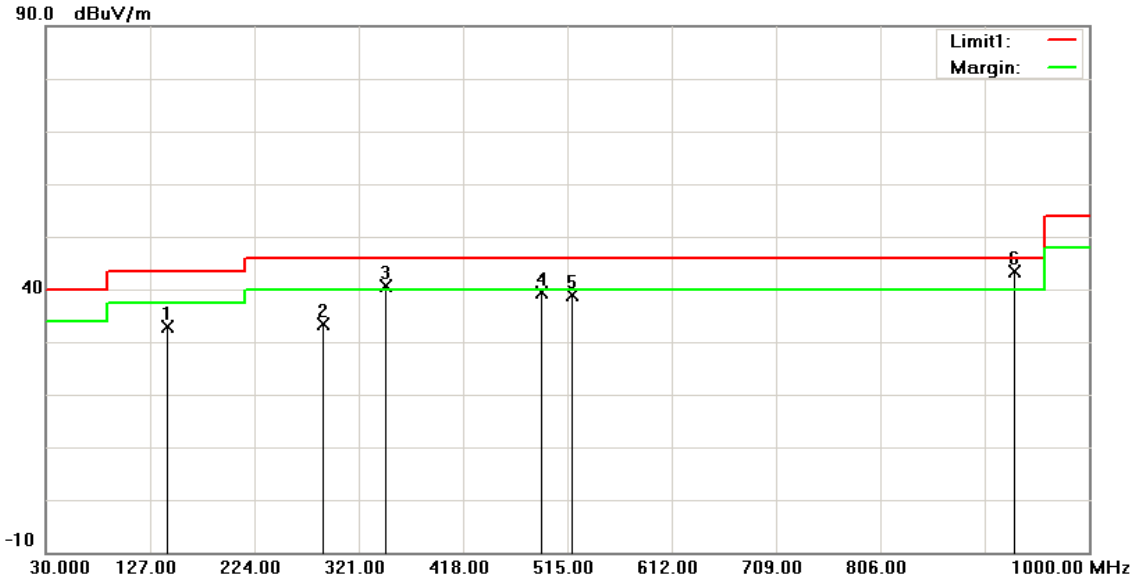
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	93.0500	40.31	-11.26	29.05	43.50	-14.45	QP
2	199.7500	37.08	-6.82	30.26	43.50	-13.24	QP
3	357.8600	40.80	-1.83	38.97	46.00	-7.03	QP
4	492.6900	35.67	0.90	36.57	46.00	-9.43	QP
5	520.8200	36.45	1.46	37.91	46.00	-8.09	QP
6	931.1300	33.87	9.33	43.20	46.00	-2.80	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



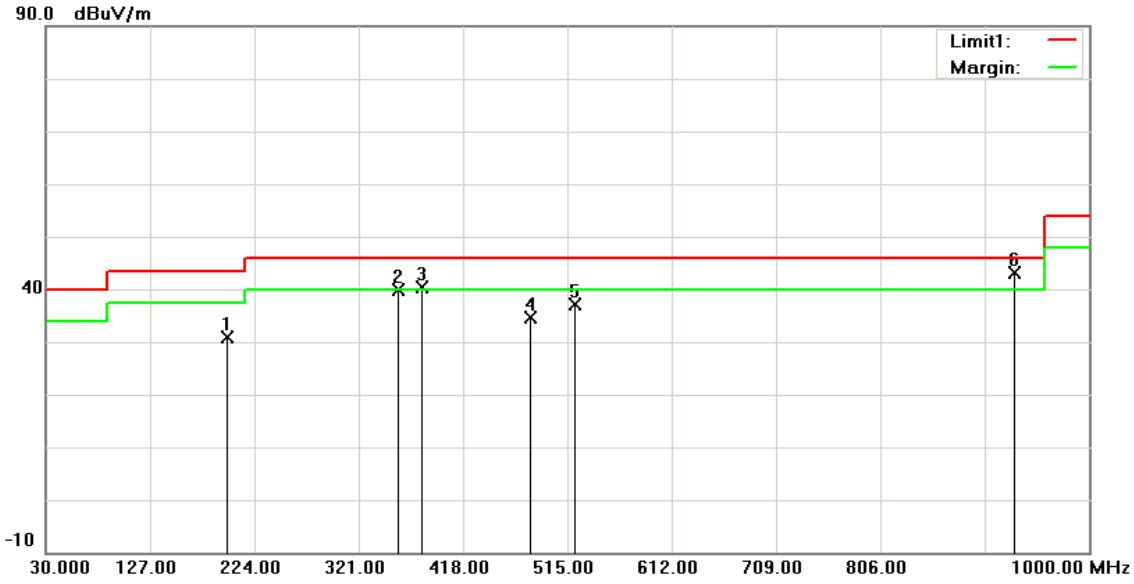
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	143.4900	37.81	-4.98	32.83	43.50	-10.67	QP
2	288.0200	36.44	-3.15	33.29	46.00	-12.71	QP
3	346.2200	42.60	-2.04	40.56	46.00	-5.44	QP
4	490.7500	38.40	0.87	39.27	46.00	-6.73	QP
5	519.8500	37.41	1.44	38.85	46.00	-7.15	QP
6	931.1300	34.03	9.33	43.36	46.00	-2.64	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



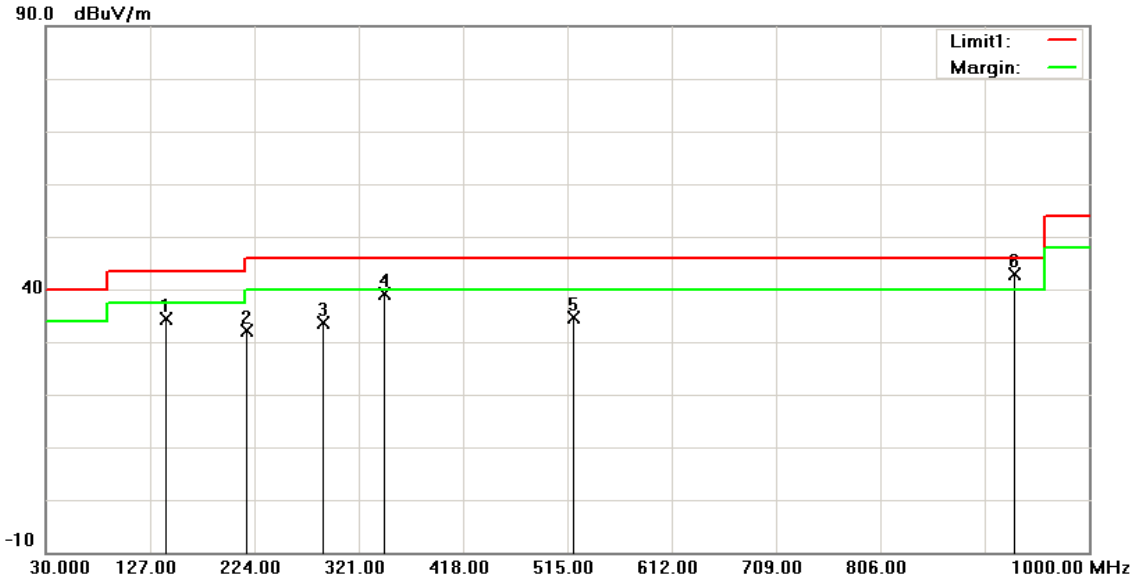
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	198.7800	37.63	-6.82	30.81	43.50	-12.69	QP
2	357.8600	41.69	-1.83	39.86	46.00	-6.14	QP
3	380.1700	41.75	-1.40	40.35	46.00	-5.65	QP
4	480.0800	33.96	0.67	34.63	46.00	-11.37	QP
5	521.7900	35.59	1.48	37.07	46.00	-8.93	QP
6	931.1300	33.74	9.33	43.07	46.00	-2.93	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



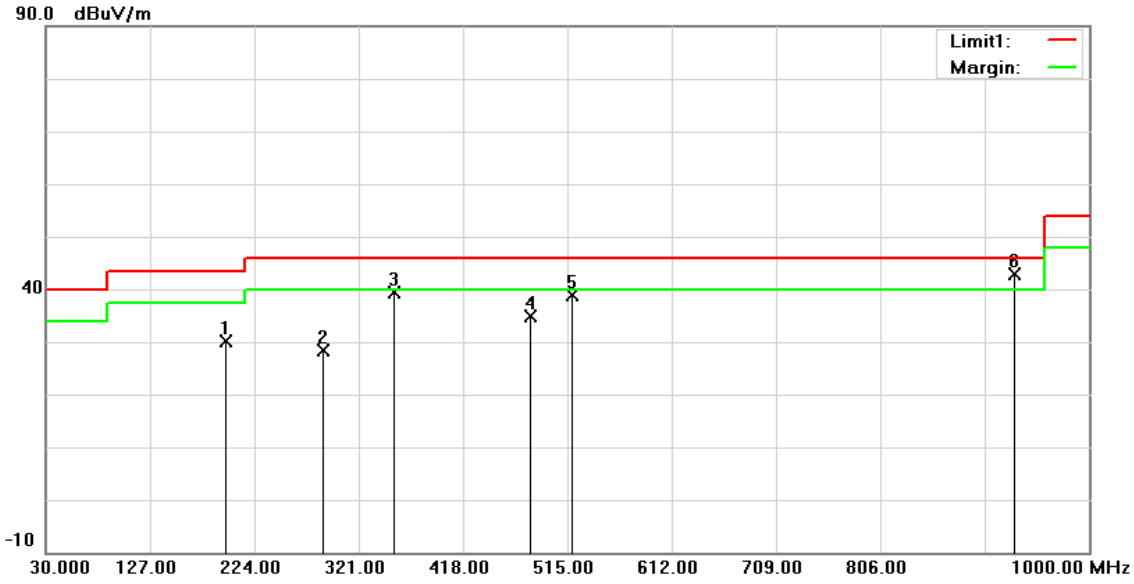
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	141.5500	39.49	-5.07	34.42	43.50	-9.08	QP
2	216.2400	38.35	-6.28	32.07	46.00	-13.93	QP
3	288.0200	36.70	-3.15	33.55	46.00	-12.45	QP
4	344.2800	41.21	-2.09	39.12	46.00	-6.88	QP
5	520.8200	33.22	1.46	34.68	46.00	-11.32	QP
6	931.1300	33.54	9.33	42.87	46.00	-3.13	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	197.8100	36.95	-6.81	30.14	43.50	-13.36	QP
2	288.0200	31.58	-3.15	28.43	46.00	-17.57	QP
3	353.9800	41.25	-1.90	39.35	46.00	-6.65	QP
4	480.0800	34.12	0.67	34.79	46.00	-11.21	QP
5	518.8800	37.55	1.43	38.98	46.00	-7.02	QP
6	931.1300	33.56	9.33	42.89	46.00	-3.11	QP

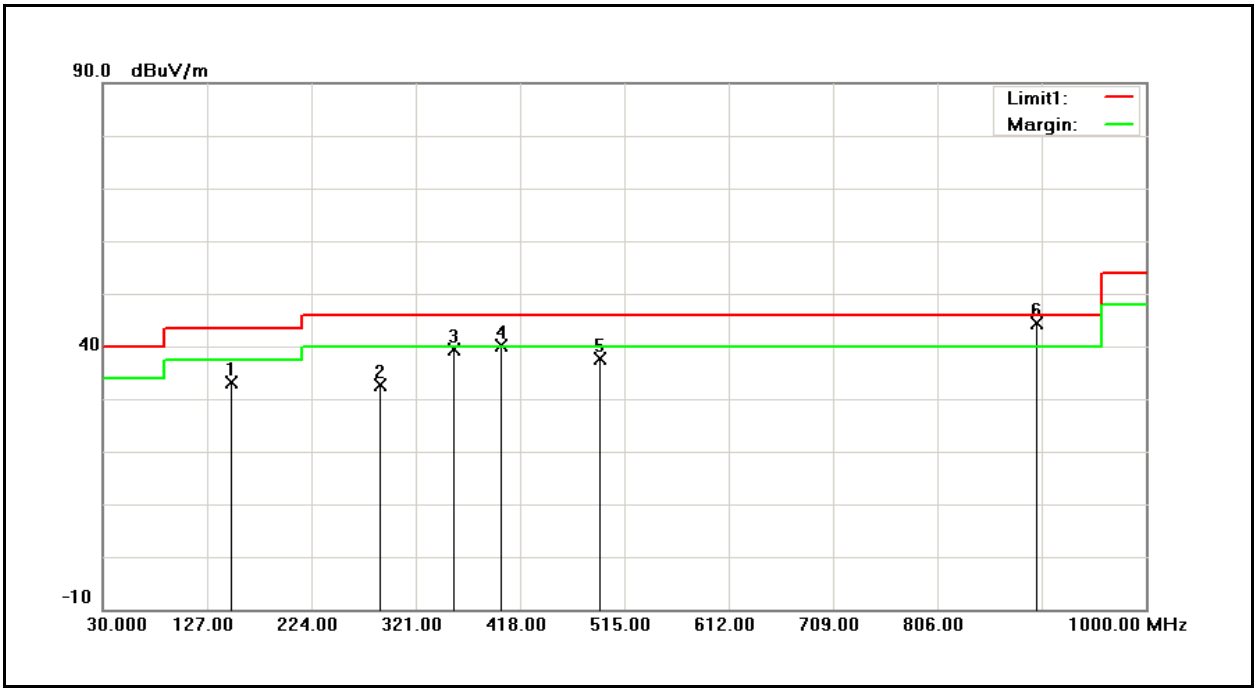
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Outdoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



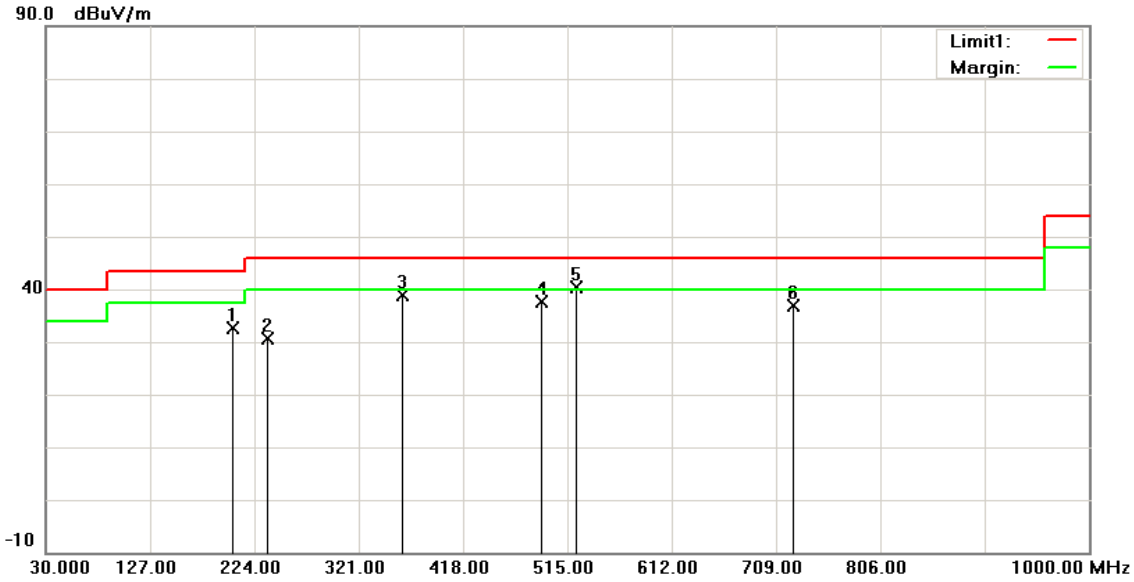
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	149.3100	37.93	-4.71	33.22	43.50	-10.28	QP
2	288.0200	35.69	-3.15	32.54	46.00	-13.46	QP
3	355.9200	41.18	-1.87	39.31	46.00	-6.69	QP
4	400.5400	41.12	-0.99	40.13	46.00	-5.87	QP
5	491.7200	36.79	0.89	37.68	46.00	-8.32	QP
6	898.1500	35.67	8.76	44.43	46.00	-1.57	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



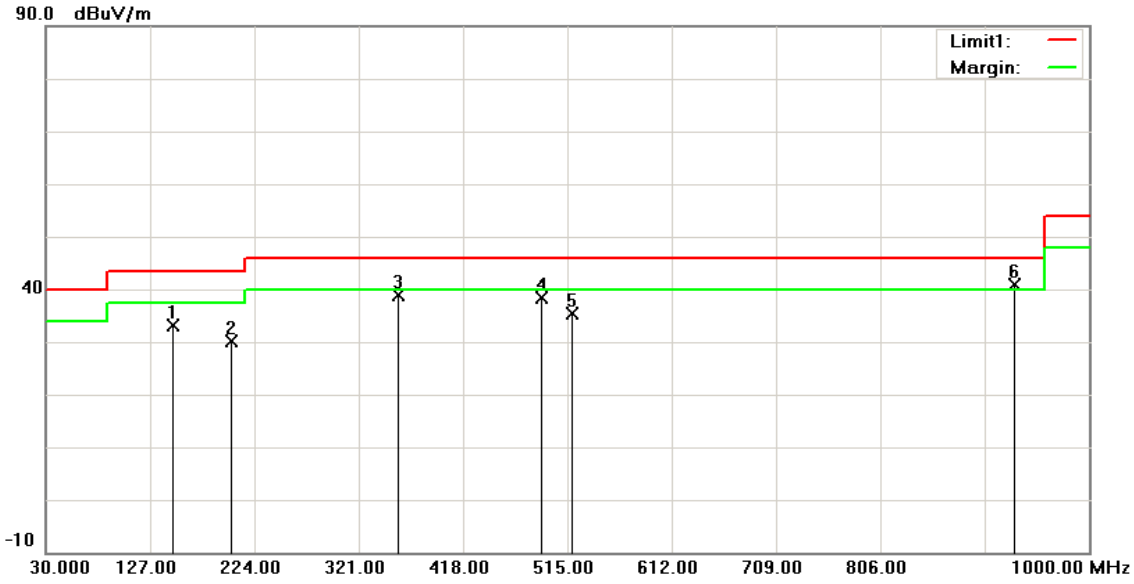
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	203.6300	39.30	-6.69	32.61	43.50	-10.89	QP
2	235.6400	35.93	-5.29	30.64	46.00	-15.36	QP
3	361.7400	40.61	-1.76	38.85	46.00	-7.15	QP
4	490.7500	36.67	0.87	37.54	46.00	-8.46	QP
5	522.7600	38.99	1.51	40.50	46.00	-5.50	QP
6	725.4900	31.45	5.46	36.91	46.00	-9.09	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



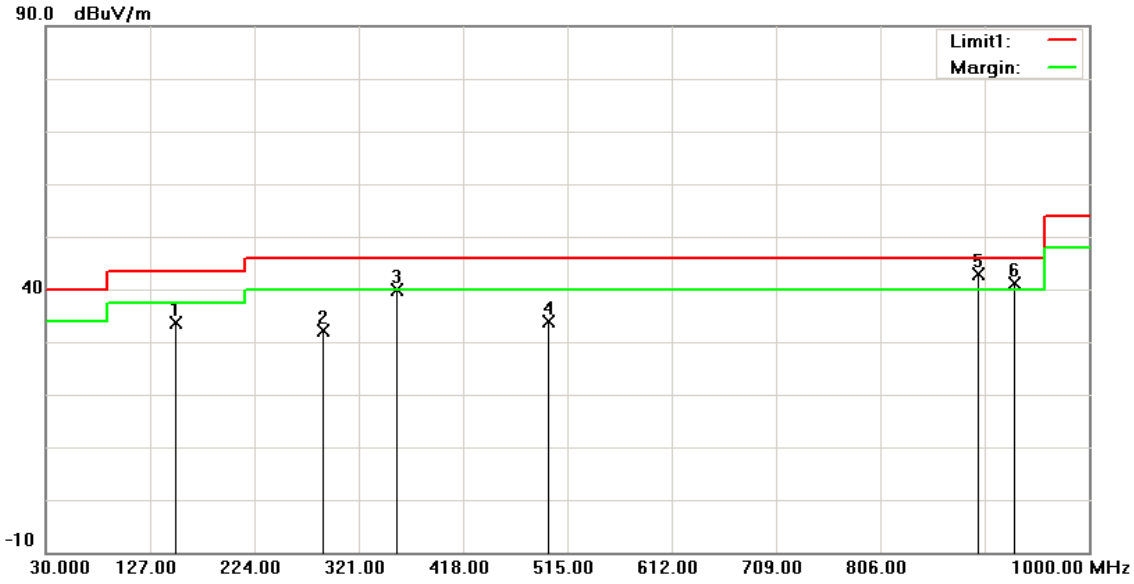
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	148.3400	37.82	-4.76	33.06	43.50	-10.44	QP
2	202.6600	36.88	-6.72	30.16	43.50	-13.34	QP
3	357.8600	40.71	-1.83	38.88	46.00	-7.12	QP
4	490.7500	37.52	0.87	38.39	46.00	-7.61	QP
5	519.8500	34.04	1.44	35.48	46.00	-10.52	QP
6	931.1300	31.66	9.33	40.99	46.00	-5.01	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



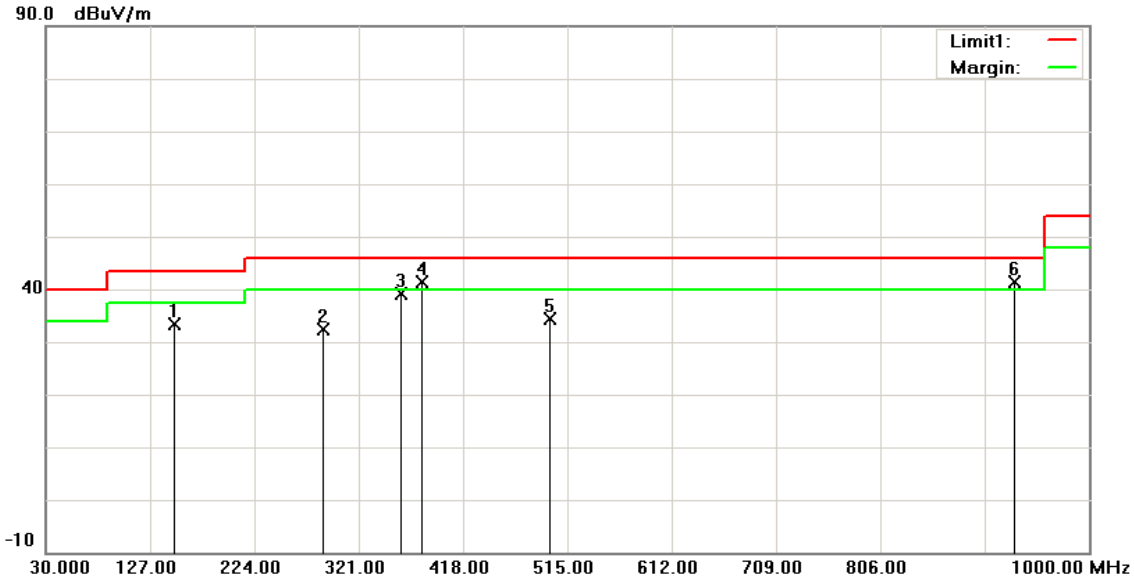
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	150.2800	38.21	-4.69	33.52	43.50	-9.98	QP
2	288.0200	35.32	-3.15	32.17	46.00	-13.83	QP
3	355.9200	41.70	-1.87	39.83	46.00	-6.17	QP
4	497.5400	32.90	1.00	33.90	46.00	-12.10	QP
5	897.1800	34.12	8.73	42.85	46.00	-3.15	QP
6	931.1300	31.77	9.33	41.10	46.00	-4.90	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



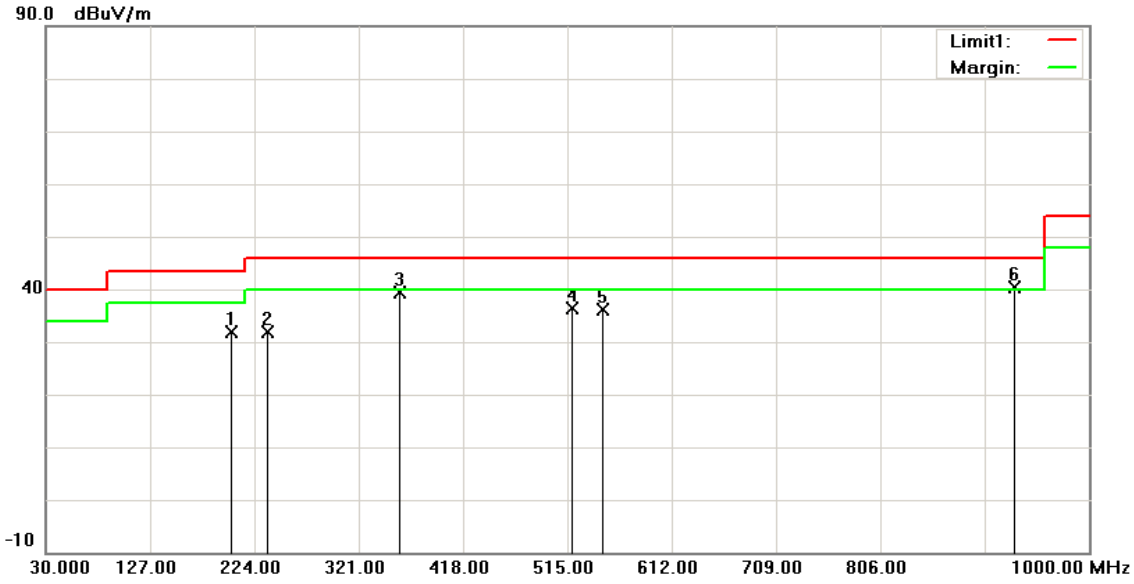
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	149.3100	38.06	-4.71	33.35	43.50	-10.15	QP
2	288.0200	35.44	-3.15	32.29	46.00	-13.71	QP
3	359.8000	40.97	-1.79	39.18	46.00	-6.82	QP
4	380.1700	42.81	-1.40	41.41	46.00	-4.59	QP
5	498.5100	33.41	1.01	34.42	46.00	-11.58	QP
6	931.1300	31.95	9.33	41.28	46.00	-4.72	QP

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	202.6600	38.60	-6.72	31.88	43.50	-11.62	QP
2	236.6100	37.07	-5.22	31.85	46.00	-14.15	QP
3	358.8300	41.28	-1.81	39.47	46.00	-6.53	QP
4	518.8800	34.92	1.43	36.35	46.00	-9.65	QP
5	547.9800	34.10	2.01	36.11	46.00	-9.89	QP
6	931.1300	31.05	9.33	40.38	46.00	-5.62	QP

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

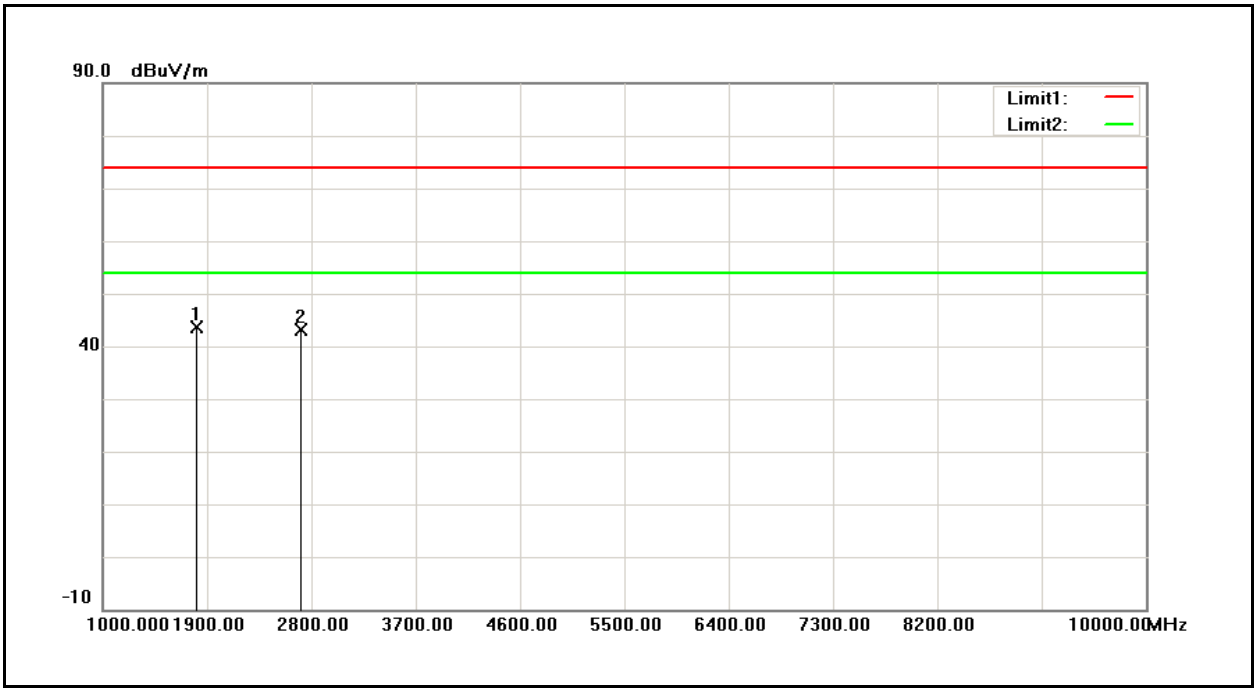
2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Above 1GHz

Indoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



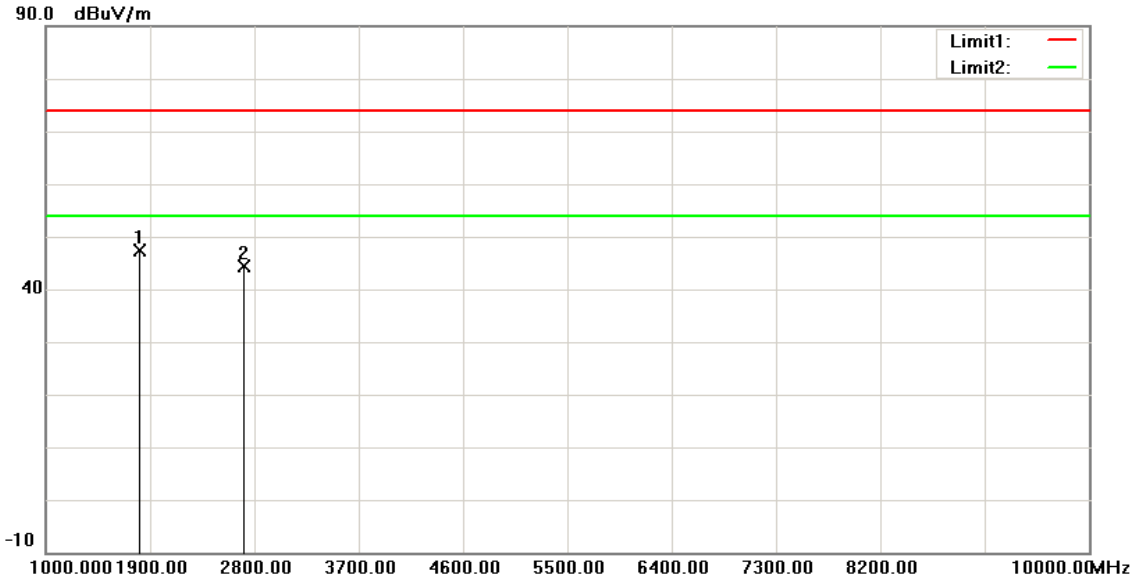
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1805.000	59.85	-16.16	43.69	74.00	-30.31	peak
2	2708.000	56.03	-13.02	43.01	74.00	-30.99	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



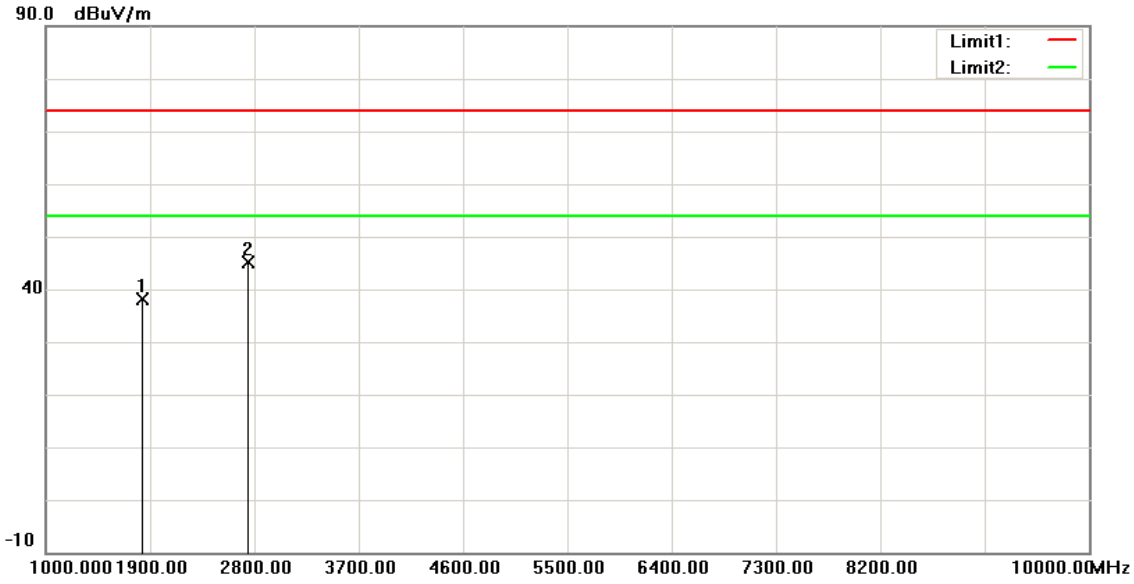
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1805.000	63.64	-16.16	47.48	74.00	-26.52	peak
2	2708.000	57.31	-13.02	44.29	74.00	-29.71	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



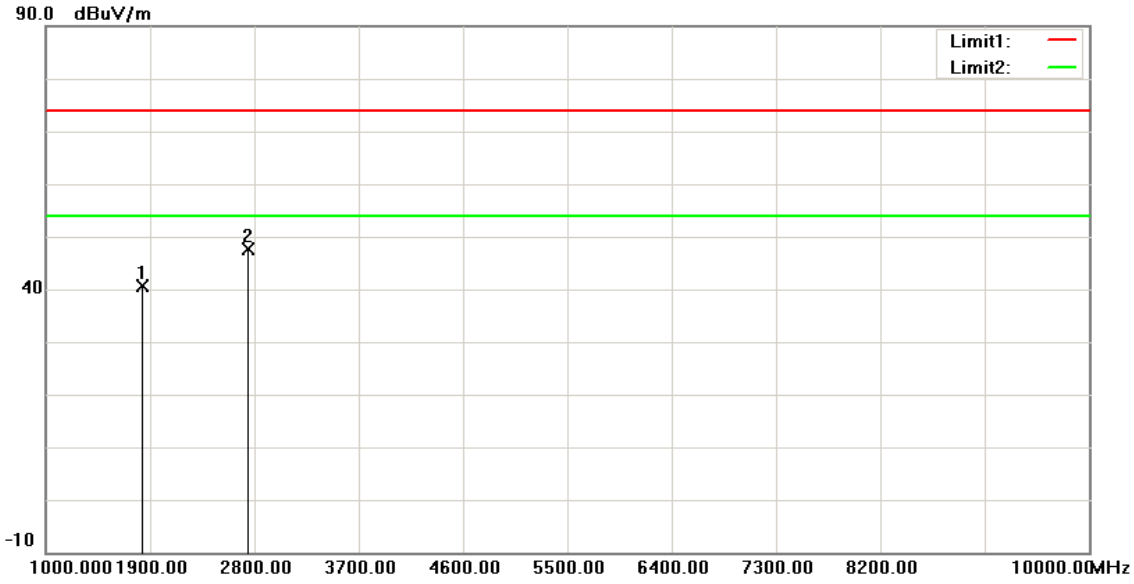
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1830.000	54.22	-16.08	38.14	74.00	-35.86	peak
2	2745.000	58.17	-12.94	45.23	74.00	-28.77	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



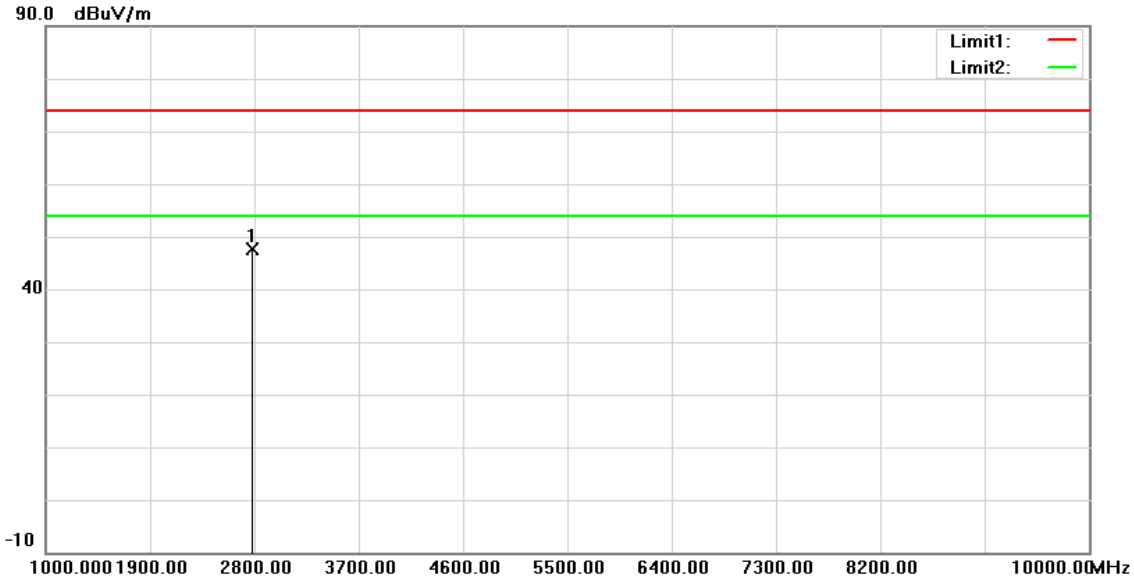
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1830.000	56.62	-16.08	40.54	74.00	-33.46	peak
2	2745.000	60.47	-12.94	47.53	74.00	-26.47	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/05/2017



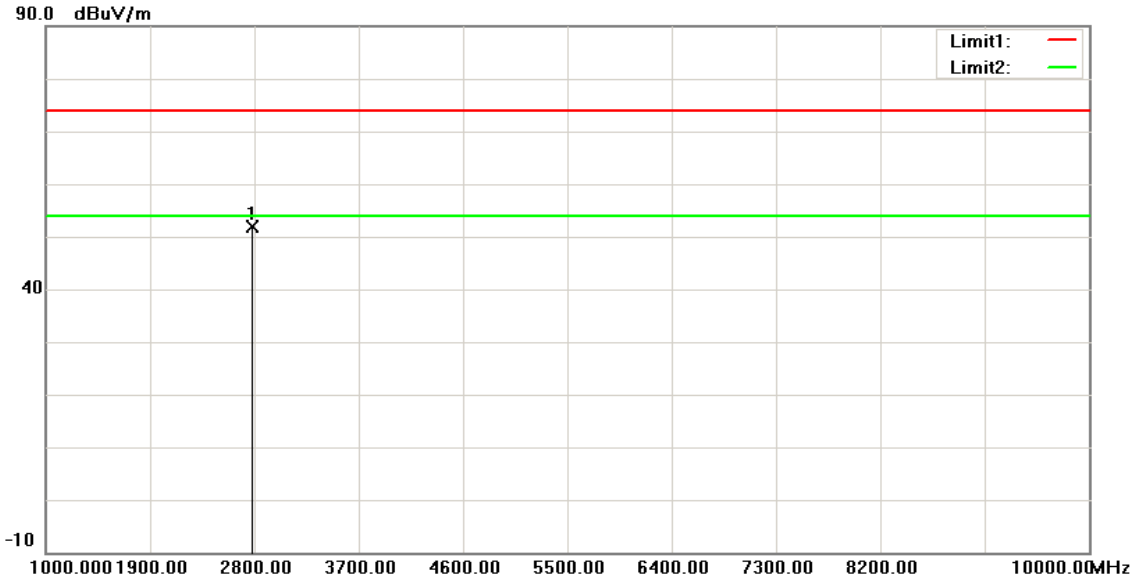
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2782.000	60.52	-12.86	47.66	74.00	-26.34	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/05/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2783.000	64.68	-12.86	51.82	74.00	-22.18	peak

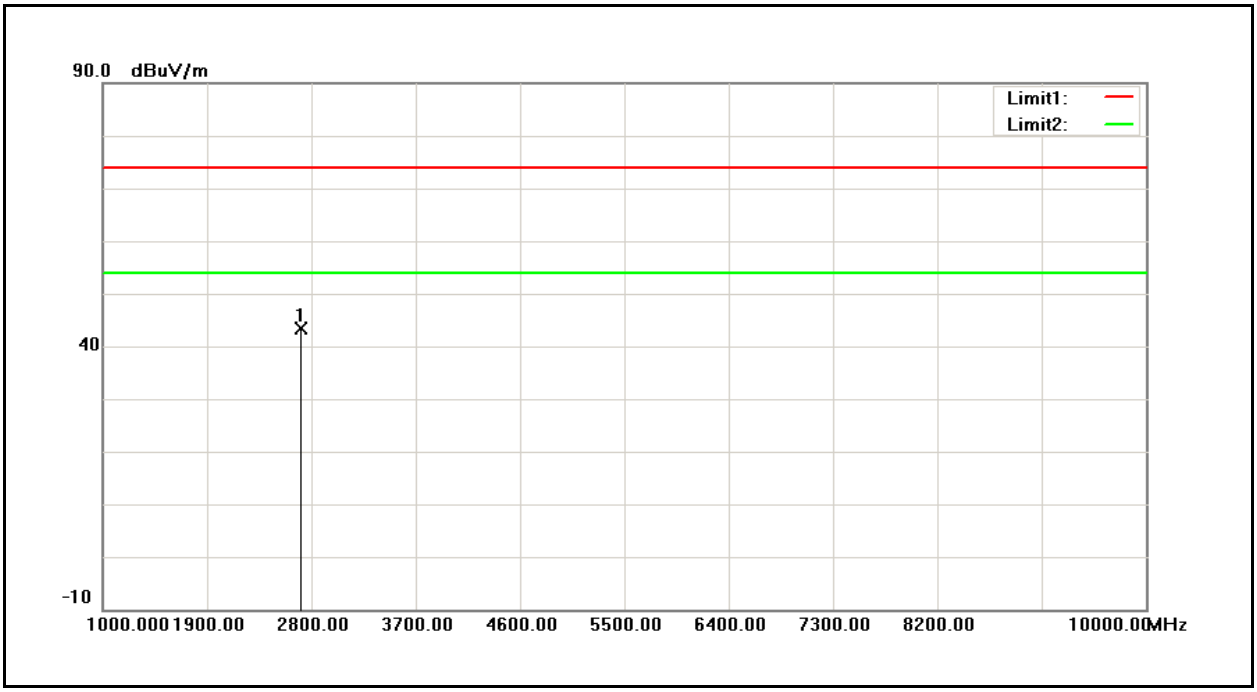
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Outdoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



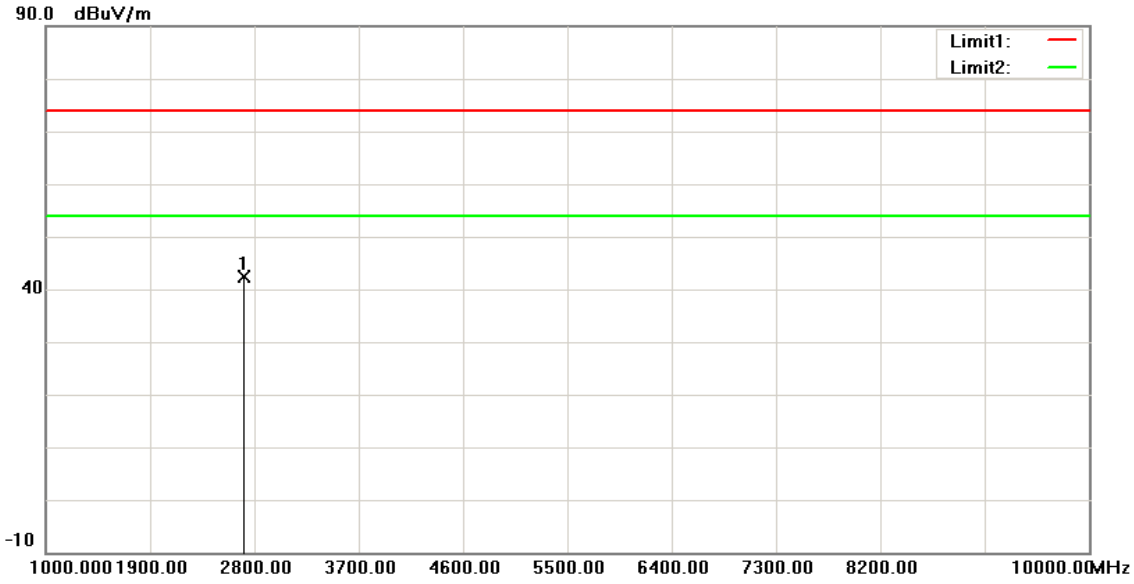
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2708.000	56.38	-13.02	43.36	74.00	-30.64	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



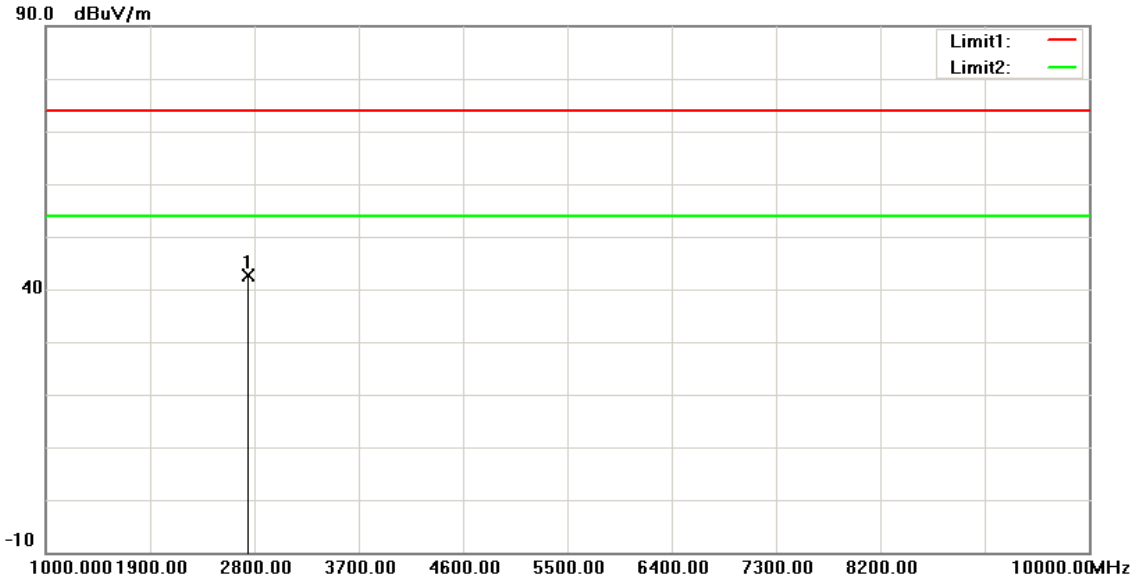
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2708.000	55.37	-13.02	42.35	74.00	-31.65	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



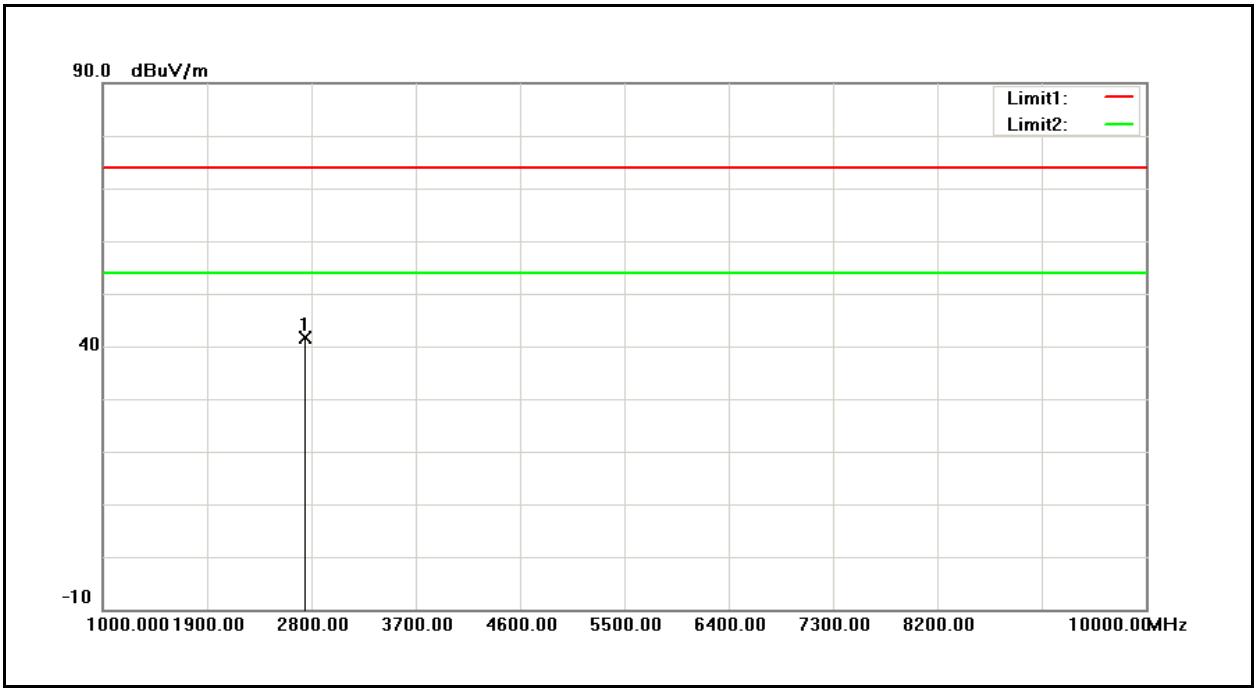
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2745.000	55.49	-12.94	42.55	74.00	-31.45	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	915MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



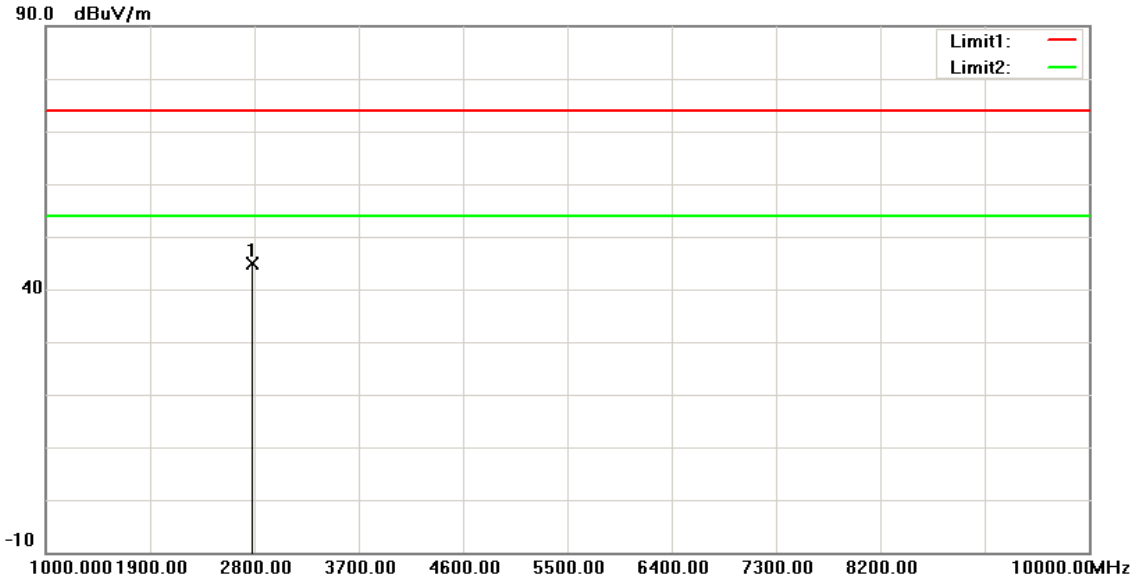
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2745.000	54.69	-12.94	41.75	74.00	-32.25	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



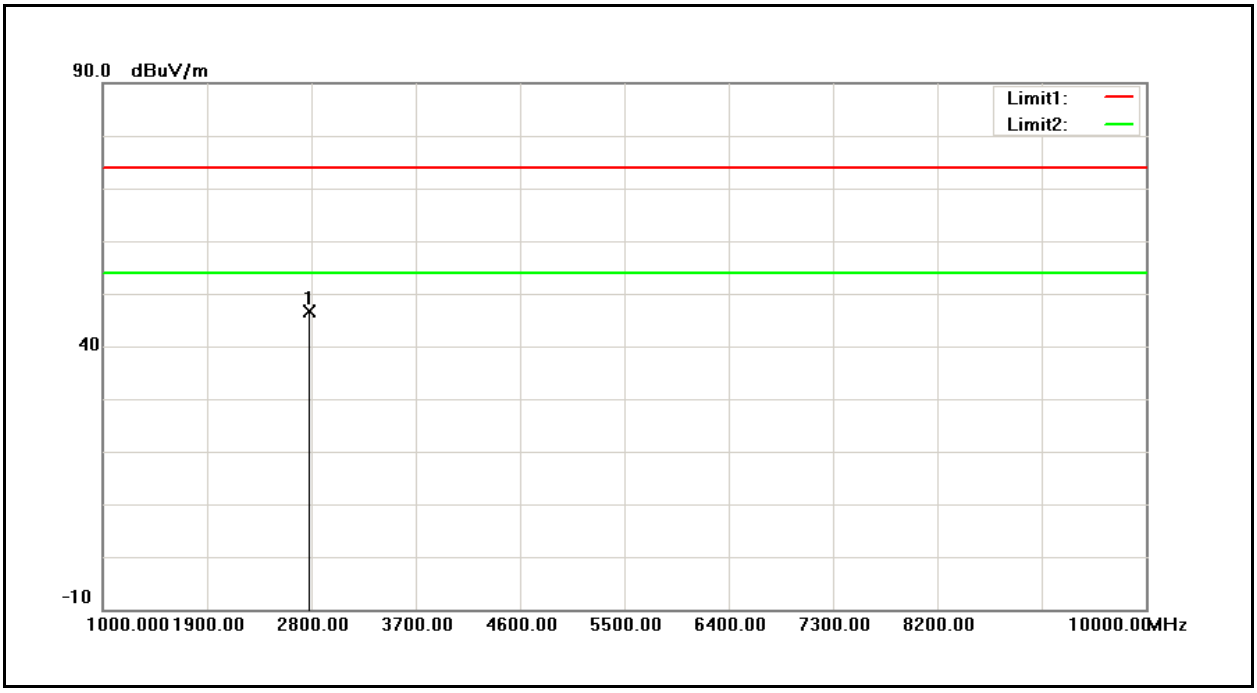
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2783.000	57.80	-12.86	44.94	74.00	-29.06	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2783.000	59.55	-12.86	46.69	74.00	-27.31	peak

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

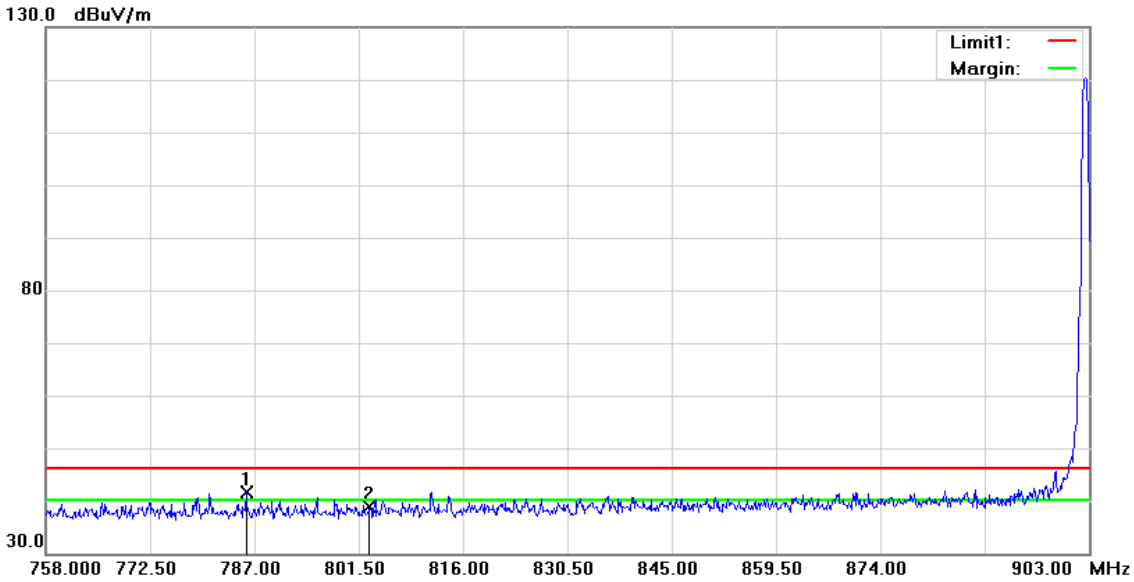
2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Band Edge

Indoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



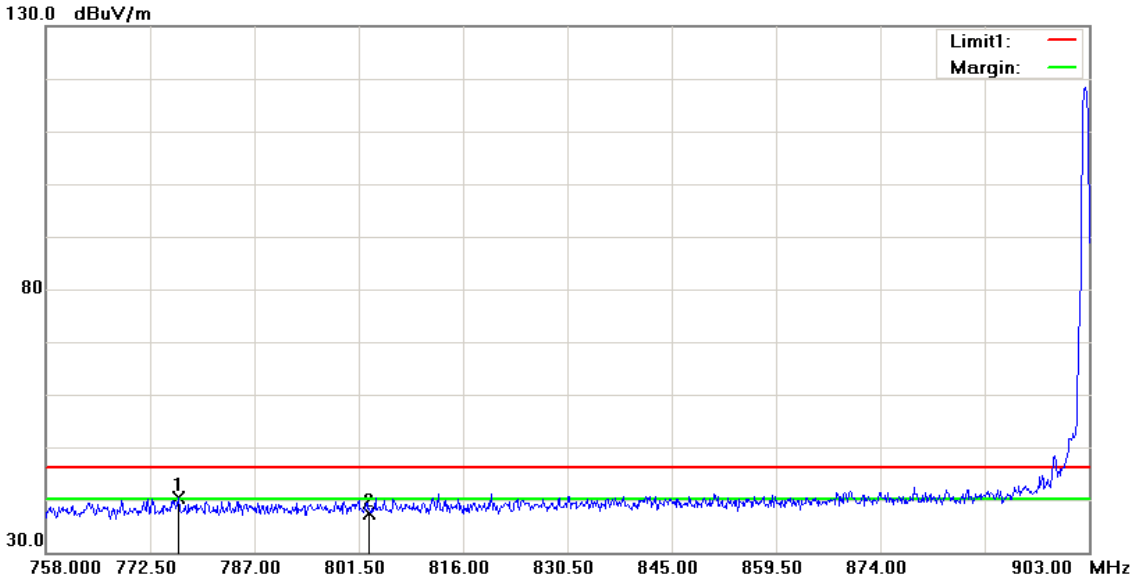
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	785.8400	35.11	6.50	41.61	46.02	-4.41	peak
2	803.0000	32.06	6.74	38.80	46.02	-7.22	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



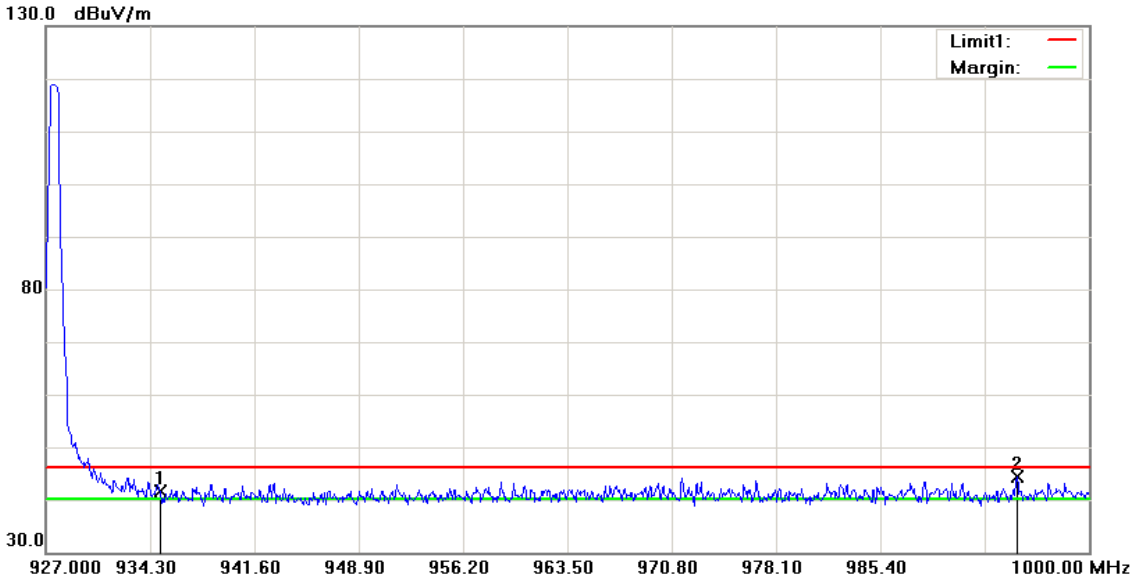
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	776.4150	33.91	6.37	40.28	46.02	-5.74	peak
2	803.0000	30.76	6.74	37.50	46.02	-8.52	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



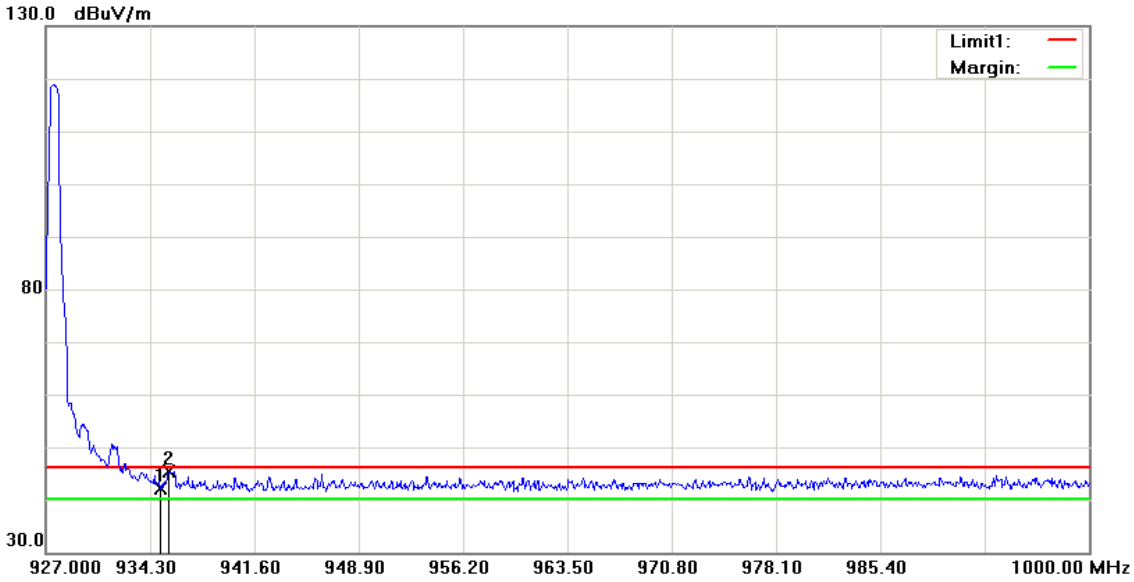
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	935.0000	32.35	9.40	41.75	46.02	-4.27	peak
2	994.9630	34.10	10.22	44.32	46.02	-1.70	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	935.0000	32.71	9.40	42.11	46.02	-3.91	peak
2	935.6140	35.92	9.41	45.33	46.02	-0.69	peak

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

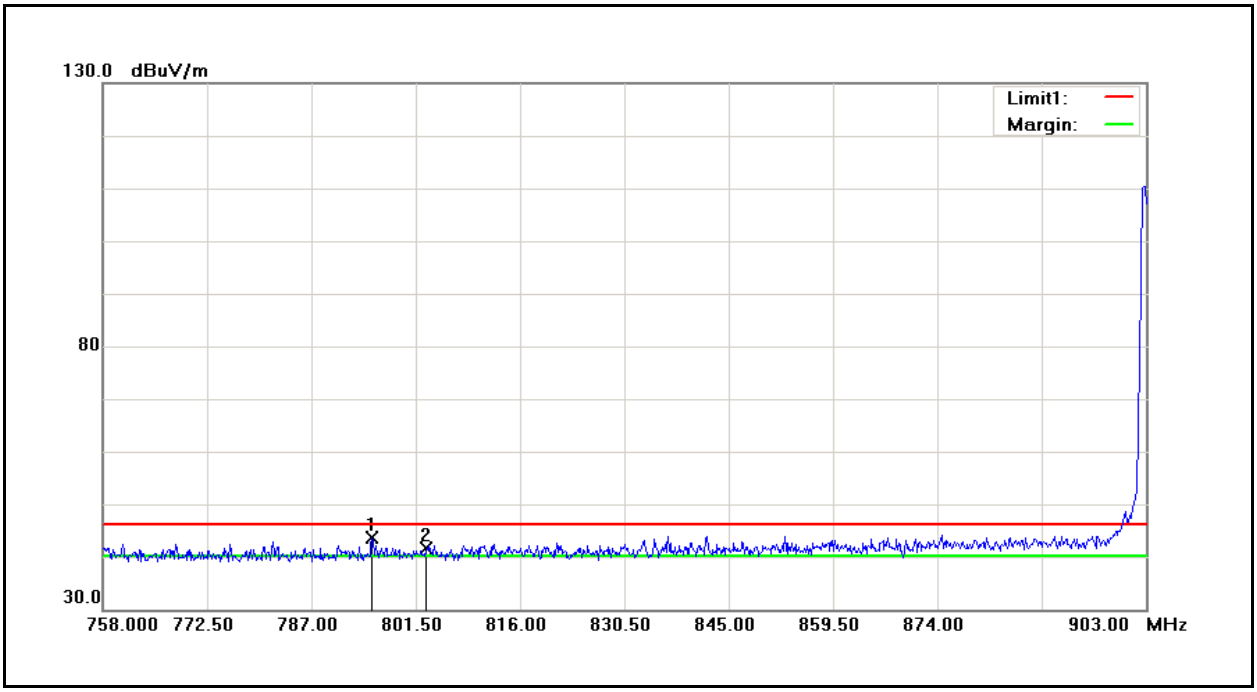
2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Band Edge

Outdoor:

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



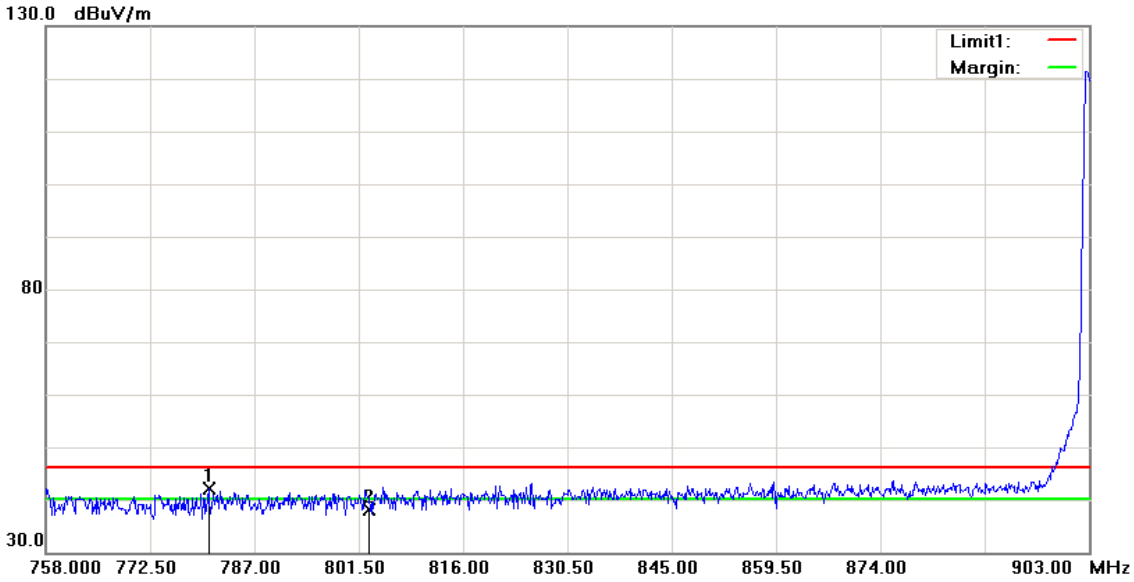
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	795.4100	36.97	6.62	43.59	46.02	-2.43	peak
2	803.0000	34.91	6.74	41.65	46.02	-4.37	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	902.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



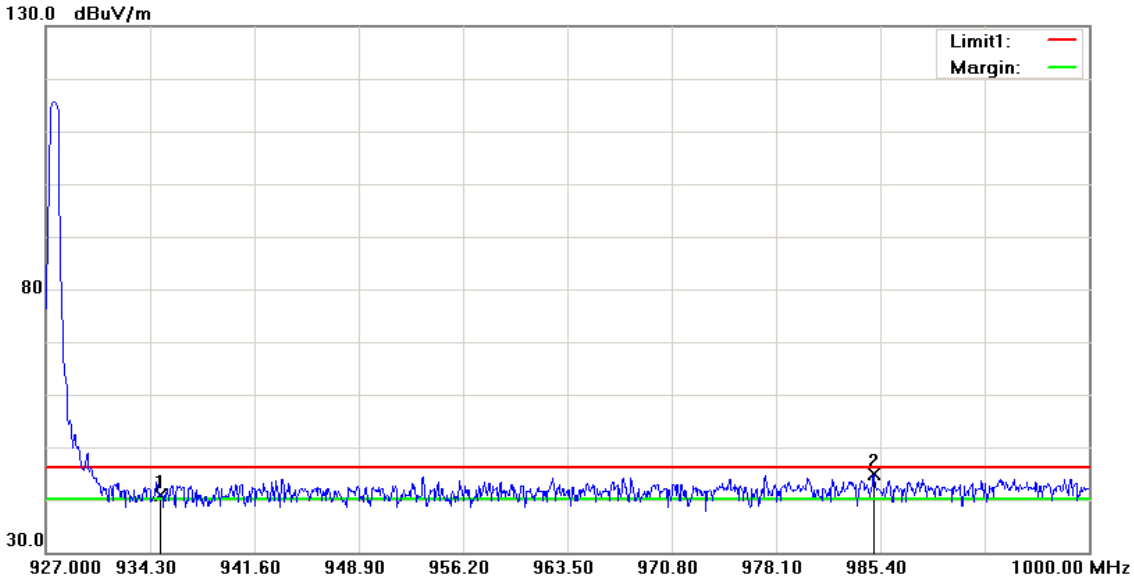
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	780.6200	35.66	6.42	42.08	46.02	-3.94	peak
2	803.0000	31.42	6.74	38.16	46.02	-7.86	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Horizontal	Date:	05/04/2017



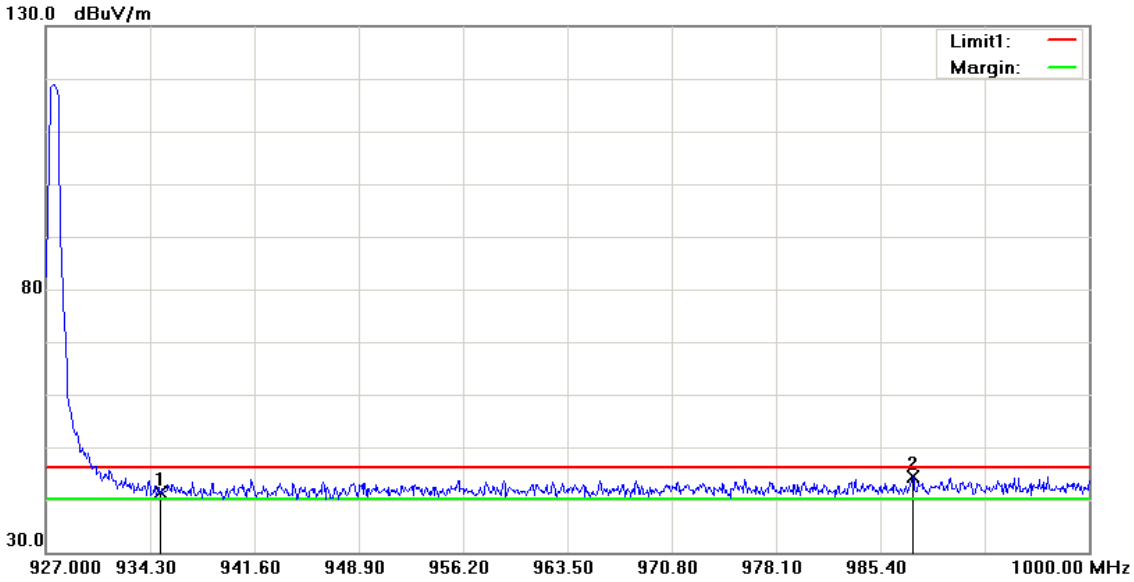
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	935.0000	31.59	9.40	40.99	46.02	-5.03	peak
2	984.9620	34.87	10.09	44.96	46.02	-1.06	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15C	Test Distance:	3m
Test Mode:	Mode 1	Power:	DC 3.3V
Frequency:	927.5 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Ant.Polar.:	Vertical	Date:	05/04/2017



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	935.0000	32.01	9.40	41.41	46.02	-4.61	peak
2	987.6630	34.29	10.13	44.42	46.02	-1.60	peak

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

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When peak results are less than average limit, so not need to evaluate the average.

5 Maximum Conducted Output Power Measurement

■ Limit

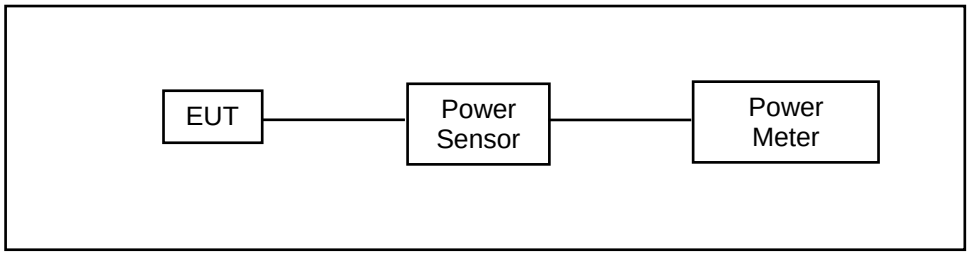
For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

Note: Limit = 30dBm - (Max. Peak Gain – 6)

= 30dBm - (8dBi – 6)

= 28dBm

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Power Sensor	Anritsu	MA2411B	1126022	08/29/2016	1 year
Power Meter	Anritsu	ML2495A	1135009	08/29/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-1500	140303	02/22/2017	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Test Procedure

T he tests below are run with the EUT's transmitter set at high power in TX 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..

■ Test Result

Test Date:	05/04/2017				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
902.5	25.27	0.33651	25.60	0.36308	< 28
915	25.33	0.34119	**25.62**	**0.36475**	< 28
927.5	25.20	0.33113	25.46	0.35156	< 28
915	24.42	0.27669	25.10	0.32359	< 28
915	24.24	0.26546	24.82	0.30339	< 28
915	24.05	0.25410	24.60	0.28840	< 28
915	23.33	0.21528	23.59	0.22856	< 28
915	22.83	0.19187	23.02	0.20045	< 28

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

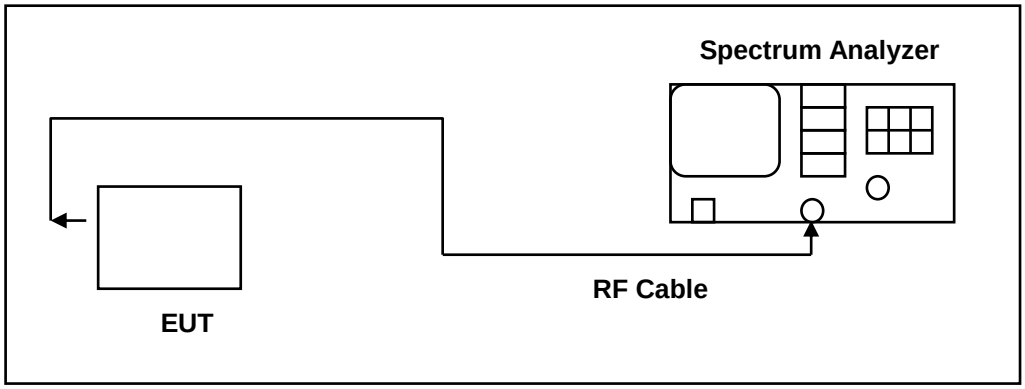
6 6dB RF Bandwidth Measurement

■ Limit

6dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

99 % Occupied Bandwidth: N/A

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-1500	140303	02/22/2017	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Test Procedure

The EUT tested to DTS test procedure of KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

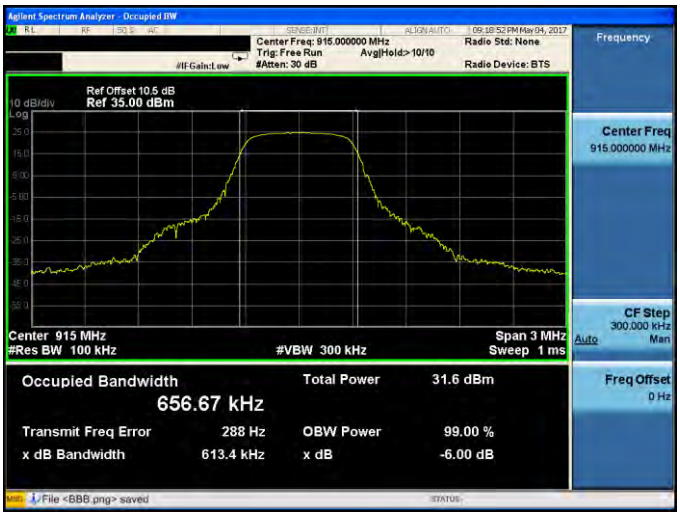
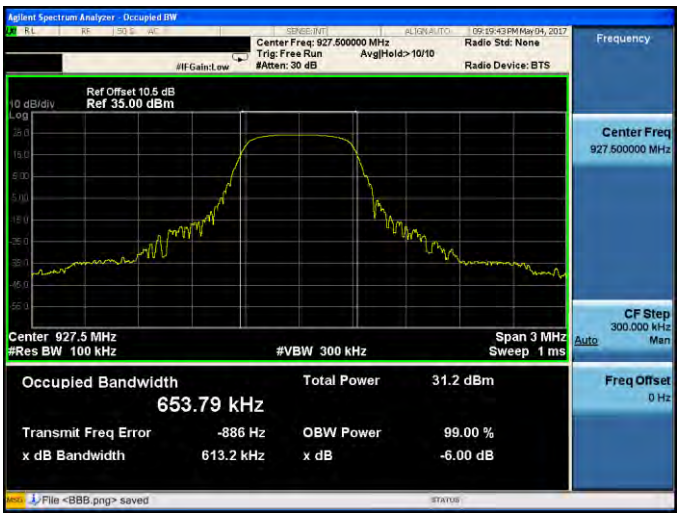
6dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel low, middle, high)

■ Test Result

Test Date:	05/04/2017	
Frequency (MHz)	Measurement Results (kHz)	Limit (kHz)
902.5	622.400	> 500
915	613.400	> 500
927.5	613.200	> 500

■ Test Graphs

Test Mode:	Mode 2
902.5 MHz	
915 MHz	
927.5 MHz	

7 Maximum Power Density Measurement

■ Limit

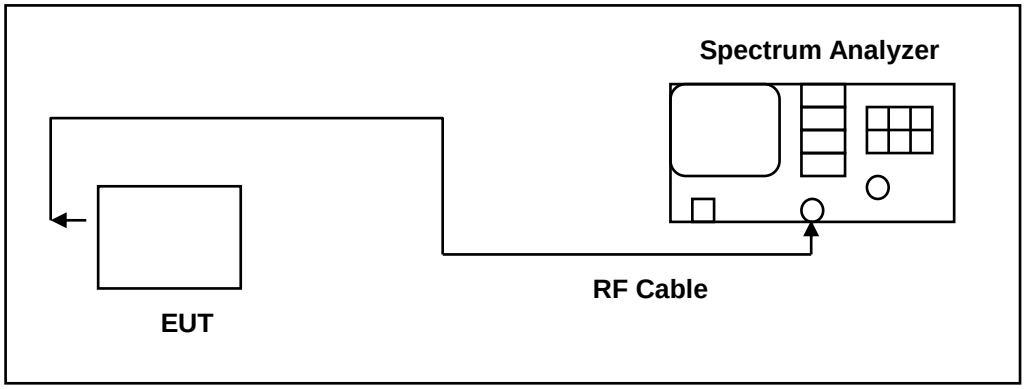
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Note: Limit = 8dBm/3KHz - (Max. Peak Gain – 6)

= 8dBm/3KHz - (8dBi – 6)

= 6dBm

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-1500	140303	02/22/2017	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Test Procedure

The EUT tested to DTS test procedure of KDB558074D01 for compliance to FCC 47CFR 15.247 requirements.

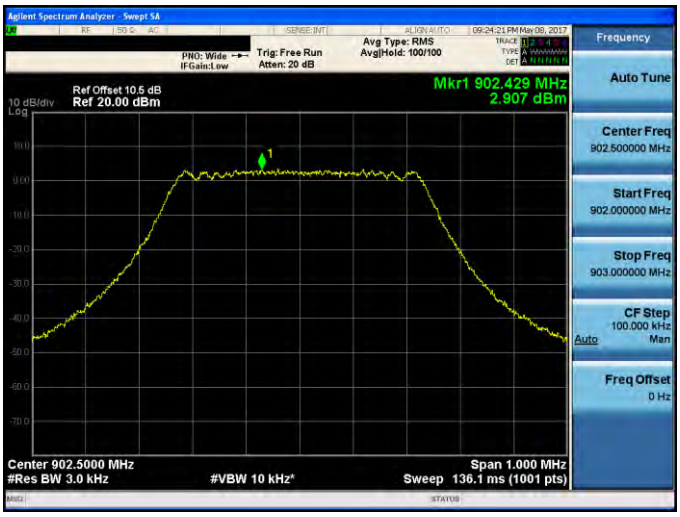
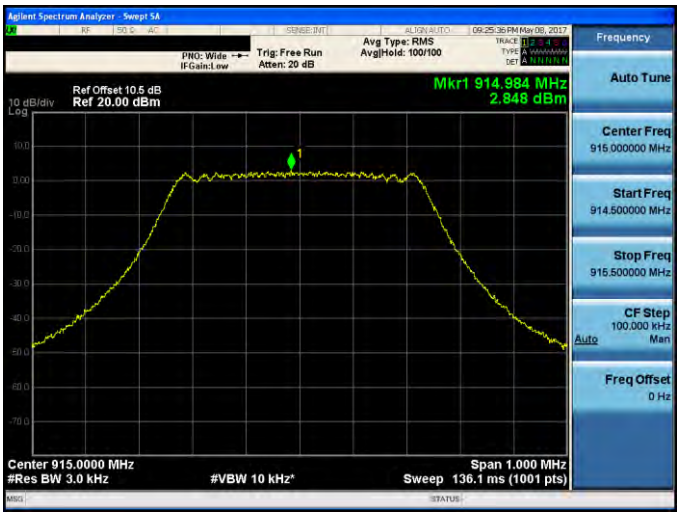
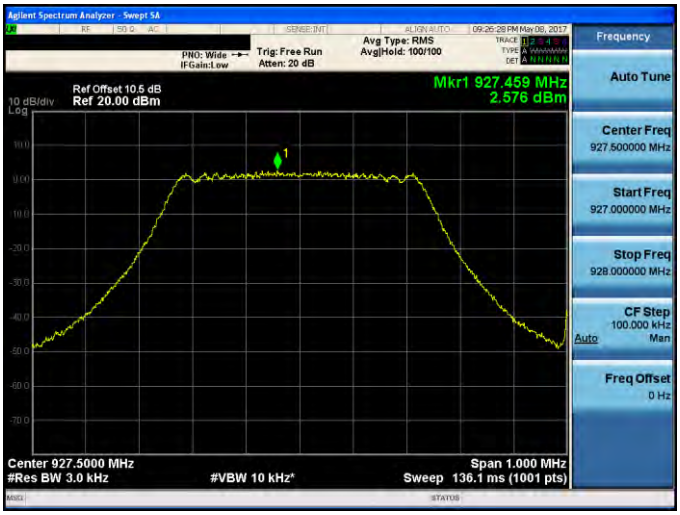
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 × RBW.
5. Detector = RMS
6. Sweep time = auto couple.
7. Trace mode = AVERAGE
8. Trace Average = 100 times
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

■ Test Result

Test Date:	05/08/2017			
Frequency (MHz)	Measurement Results (dBm/3KHz)	Ducty Factor	Result	Limit (dBm)
902.5	2.907	0.395	3.302	< 6
915	2.848	0.395	3.243	< 6
927.5	2.574	0.395	2.969	< 6

Note: Method AVGPSD-2, Power density = measured result + 10log(1/duty cycle) = measured result + duty factor.

■ Test Graphs

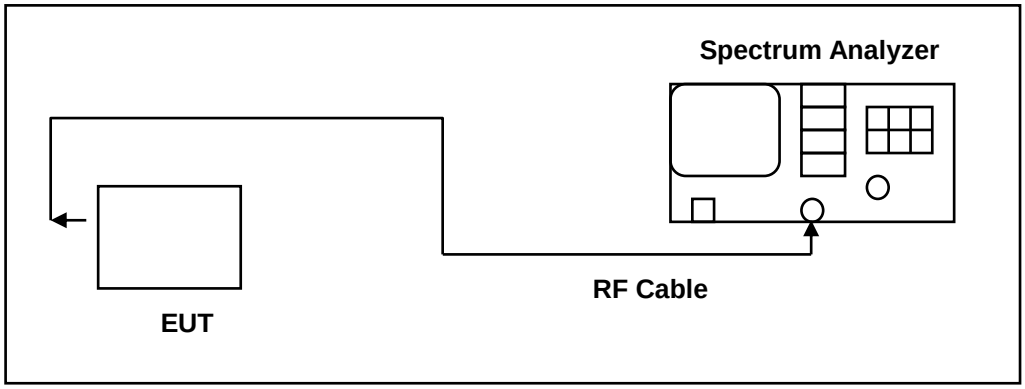
Test Mode:	Mode 2
902.5 MHz	
915 MHz	
927.5 MHz	

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 Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/19/2016	1 year
Spectrum Analyzer	Agilent	E4408B	MY45107753	08/08/2016	1 year
Microwave Cable	EMCI	EMC104-SM-SM-1500	140303	02/22/2017	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

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

■ Test Procedure

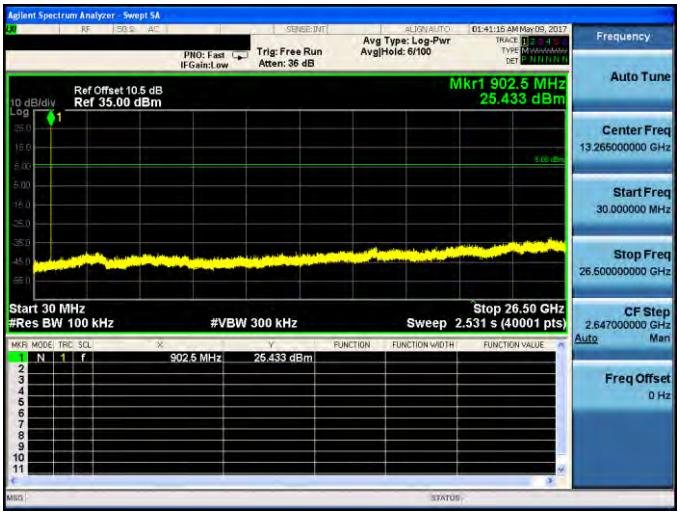
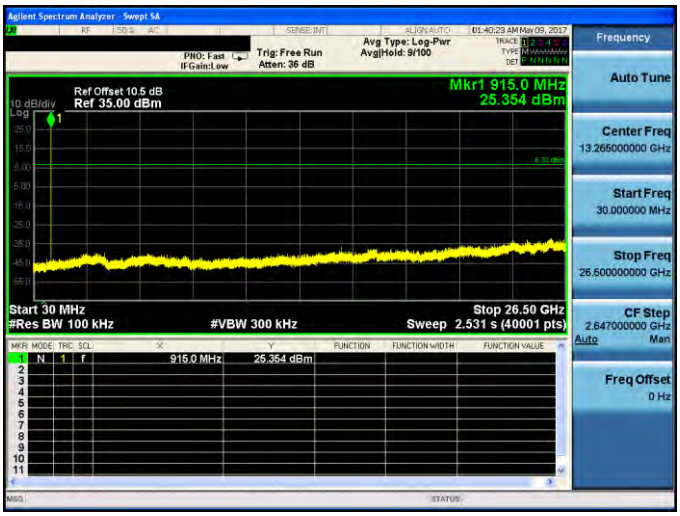
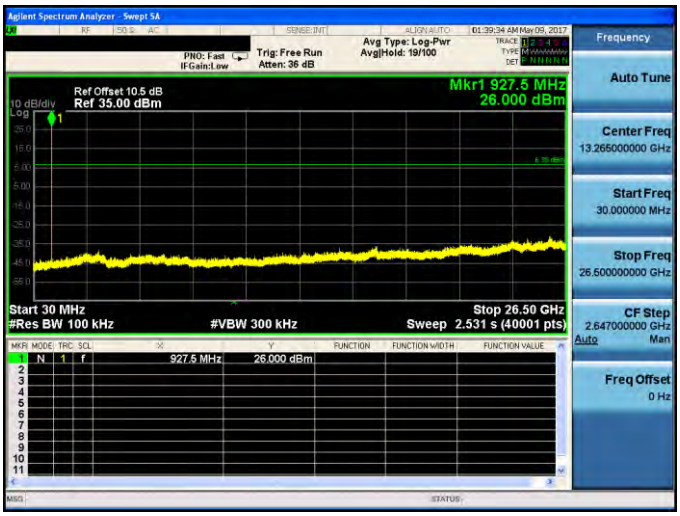
In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly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

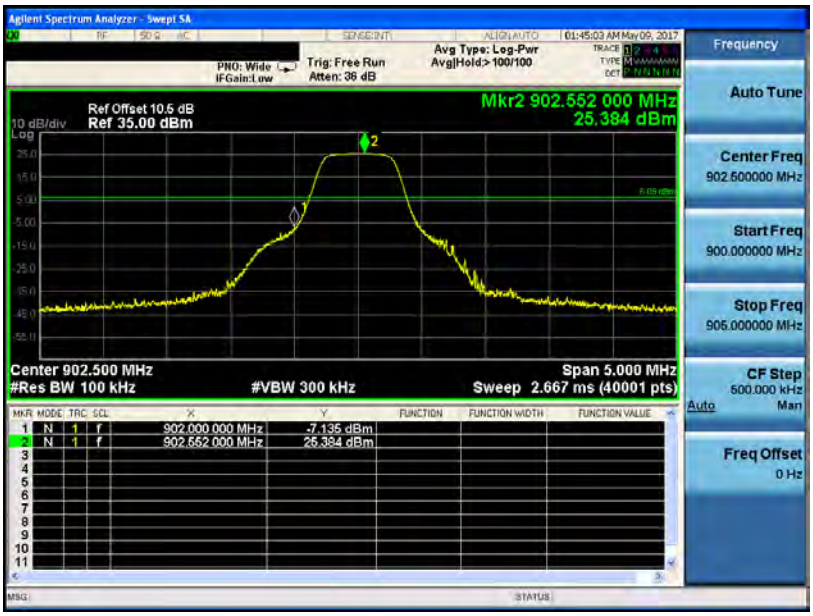
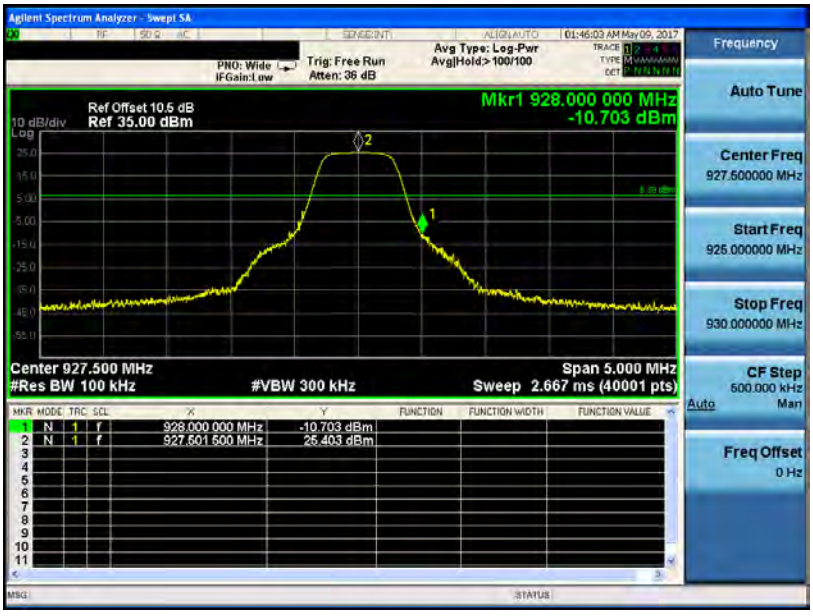
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.

The test was performed at 3 channels.

Test Graphs

Reference level	
Test Date:	05/09/2017
Test Mode:	Mode 2
902.5MHz	
915MHz	
927.5 MHz	

Out of Band Conducted Emissions	
Test Date:	05/09/2017
Test Mode:	Mode 2
902.5 MHz	
915 MHz	
927.5 MHz	

Conducted Band Edge	
Test Date:	05/09/2017
Test Mode:	Mode 2
902.5 MHz	
927.5 MHz	

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), 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 6dBi.

■ Antenna Connector Construction

See section 2 – antenna information.