FCC RADIO TEST REPORT
FCC ID: 2ANUXMT101BTN

Product： Wireless Smart Gateway

Trade Name： TASHI, Unitech, WELLDO, TVPRO

Model Name： MT101

Serial Model： HD3 S

Prepared for

TASHI Smartech Co., Ltd

3F, No.188, Baoqiao Road, Xindian District, New Taipei City 231, Taiwan R.O.C

Prepared by

Dongguan Yaxu (AiT) Technology Limited

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TEST RESULT CERTIFICATION

Manufacture's Name... TASHI Smartech Co., Ltd

Address ..... 3F, No.188, Baoqiao Road, Xindian District, New Taipei City 231, Taiwan R.O.C

Product description

Product name ..... Wireless Smart Gateway

Model and/or type reference MT101

Additional Model ..... HD3 S

Standards ..... FCC Part15.247

Test procedure ..... ANSI C63.10-2013

This device described above has been tested by AiT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test .....

Date (s) of performance of tests ..... Jul. 02 2017 ~Jul. 11 2017

Date of Issue..... Jul. 11 2017

Test Result..... **Pass**

Testing Engineer : Jack Yu

(Jack Yu)

Technical Manager : Jerry You

(Jerry You)

Authorized Signatory : Can Liu

(Can Liu)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Test Item	FCC Part No.	Requirements	Verdict
DTS (6 dB) Bandwidth	15.247(a)(2)	≥ 500 kHz.	PASS
Maximum Peak Conducted Output Power	15.247(b)(3)	For directional gain:< 30dBm – (G[dBi] –6 [dB]),peak; Otherwise :< 30dBm, peak.	PASS
Transmitter Power Spectral Density	15.247(e)	For directional gain :< 8dBm/3 kHz – (G[dBi] –6[dB]), peak. Otherwise :< 8dBm/3 kHz, peak.	PASS
Conducted Out of band emission measurement	15.247(d)	< -20dBr/100 kHz if total peak power ≤power limit.	PASS
Spurious Radiated Emissions	15.247(d) 15.209 15.35(b)	FCC Part 15.209&15.35(b) field strength limit;	PASS
AC Power Line Conducted Emissions	15.207	FCC Part 15.207 conducted limit;	PASS

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

Summary of measurement results

Test Specification clause	Test case	Test Mode	Test Channel	Recorded In Report		Pass	Fail	NA	NP	Remark
§15.247(b)(4)	Antenna gain	802.11b	☒ Lowest ☒ Middle ☒ Highest	802.11b	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.247(e)	Power spectral density	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.247(a)(2)	Spectrum bandwidth – 6 dB bandwidth	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.247(b)(3)	Maximum output power	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	☒ ☒ ☒	☐	☐	☐	complies
§15.247(d)	Band edge compliance conducted	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.205	Band edge compliance radiated	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Highest	☒	☐	☐	☐	complies

§15.247(d)	TX spurious emissions conducted	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.247(d)	TX spurious emissions radiated	802.11b 802.11g 802.11n HT20	☒ Lowest ☒ Middle ☒ Highest	802.11b	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.109	RX spurious emissions radiated	-/-	-/-	-/-	-/-	☒	☐	☐	☐	complies
§15.209(a)	TX spurious Emissions radiated < 30 MHz	802.11b	-/-	802.11b	-/-	☒	☐	☐	☐	complies
§15.107(a) §15.207	Conducted Emissions < 30 MHz	802.11b	-/-	802.11b	-/-	☒	☐	☐	☐	complies

1.1 TEST FACILITY

The test facility is recognized, certified or accredited by the following organizations:

.CNAS- Registration No: L6177

Dongguan Yaxu (AiT) technology Limited is accredited to ISO/IEC 17025:2005 general Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the competence of testing and calibration laboratories) on Apr. 18, 2013

.FCC- Registration No: 248337

The 3m Semi-Anechoic Chamber, 3m/10m Open Area Test Site and Shielding Room of Dongguan Yaxu (AiT) Technology Limited have been registered by Federal Communications Commission (FCC) on Aug.29, 2014.

.Industry Canada(IC)-Registration No: IC6819A-1

The 3m Semi-Anechoic Chamber and 3m of Dongguan Yaxu (AiT) Technology Limited have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing on Oct. 01, 2014.

.VCCI- Registration No: 2705

The 3m/10m Open Area Test Site, Shielding Room and 3m Chamber of Dongguan Yaxu (AiT) Technology Limited have been registered by Voluntary Control Council for Interference on Nov. 21, 2012. The Telecommunication Ports Conducted Disturbance Measurement of Dongguan Yaxu (AiT) Technology Limited have been registered by Voluntary Control Council for Interference on May. 13, 2013.

.TUV NORD

Dongguan Yaxu (AiT) Technology Limited has been assessed on Jun. 13, 2013 that it can carry out EMC tests by order and under supervision of TUV NORD.

.ITS- Registration No: TMPSHA031

Dongguan Yaxu (AiT) Technology Limited has been assessed and included in Intertek Shanghai TMP Program regarding Laboratory facilities and test equipment on Jul.22, 2012.

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Smart Gateway
Model Name	MT101
Serial number	N/A
Serial Model	HD3 S
Model Difference	All models are identical except model name and colors.
WLAN FCC Operation frequency	IEEE 802.11b:2412-2462MHz IEEE 802.11g:2412-2462MHz IEEE 802.11n HT20:2412-2462MHz
WLAN FCC Modulation Type	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK)
Antenna	0dbi, PCB antenna
Ratings	DC 5V, 0.1A
Adapter	M/N:XSG0502000US Input:100-240V~, 50/60Hz, 0.6A Output:5Vdc, 2A
Battery	N/A
HW:	V1.0
SW:	V1.1

2.2 DESCRIPTION OF TEST MODES

IEEE 802.11b/g/n: The product support thirteen channels but only use Eleventh channels in USA.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	**2412**	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	**11**	**2462**
5	2432		
6	**2437**		
7	2442		

2.2.1 TEST MODES

Test Case	Test Conditions	
	Configuration	Description
DTS (6 dB) Bandwidth	Measurement Method	FCC KDB 558074 §8.2 Option 2
	Test Environment	NTNV
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H
Maximum Peak Conducted Output Power	Measurement Method	FCC KDB 558074§9.1.2
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H
Maximum Power Spectral Density Level	Measurement Method	FCC KDB 558074 §10.2 (peak PSD).
	Test Environment	NTNV
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H
Unwanted Emissions into Non-Restricted Frequency Bands	Measurement Method	FCC KDB 558074§11.0.
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H
Unwanted Emissions into Restricted Frequency Bands (Conducted)	Measurement Method	FCC KDB 558074§12.2, Conducted (antenna-port).
	Test Environment	NTNV
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H
Unwanted Emissions into Restricted	Measurement Method	FCC KDB 558074§12.1,Radiated(cabinet/case emissions with

		Impedance matching for antenna-port).
	Test Environment	NTNV
	EUT Configuration	11b_L,11b_M,11b_H 11g_L,11g_M,11g_H 11n HT20_L, 11n HT20_M, 11n HT20_H

Test Case	Test Conditions	
	Configuration	Description
AC Power Line Conducted Emissions	Measurement Method	AC mains conducted.
	Test Environment	NTNV
	EUT Configuration	11g_M (Worst Conf.).

Remark:
1. For Radiated Emissions, By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.
2. Typical working modes for each IEEE 802.11mode are selected to perform tests. The manufacturer provide special test software(WLAN facility) to control TX duty cycle >98% for TX test. Set the output power to max(PK) as Prescribed by the manufacturer.

Test Mode	Test Modes Description
IEEE 802.11b	IEEE 802.11b with data rate of 1 Mbps using SISO mode.
IEEE 802.11g	IEEE 802.11g with data rate of 6 Mbps using SISO mode.
IEEE 802.11n HT20	IEEE 802.11n with data date of MCS0 and bandwidth of 20MHz using SISO mode.

2.2.2 EUT operation mode

Test Mode	RF Ch.	TX Freq. [MHz]	RX Freq. [MHz]	Ch. BW [MHz]
IEEE 802.11b	L	Ch No. 1 / 2412MHz	---	20
	M	Ch No. 6 / 2437 MHz	---	20
	H	Ch No. 11/ 2462MHz	---	20
IEEE 802.11g	L	Ch No. 1 / 2412MHz	---	20
	M	Ch No. 6 / 2437 MHz	---	20
	H	Ch No. 11/ 2462MHz	---	20
IEEE 802.11n HT20	L	Ch No. 1 / 2412MHz	---	20
	M	Ch No. 6 / 2437 MHz	---	20
	H	Ch No. 11/ 2462MHz	---	20

2.2.3 EUT configuratio

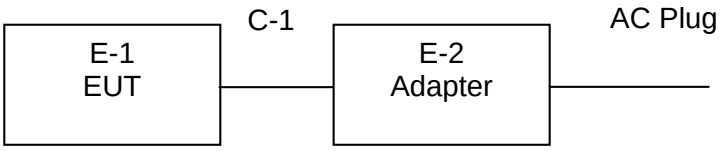
The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Wireless Smart Gateway	TASHI, Unitech, WELLDO, TVPRO,	MT101	N/A	EUT
E-2	Adapter	N/A	YNQX09T060060VL	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.8m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Equipment No.	Instrument	Manufacturer	Model Name	Serial Number	Specification	Cal. Data	due date
1	Semi-anechoic chamber	Changzhou Chengyu	EC3088	N/A	9*6*6m	10/25/2016	10/24/2017
2	Broadband antenna	R&S	VULB 9160	VULB91 60-516	30MHz-1500 MHz	10/25/2016	10/24/2017
3	Horn antenna	R&S	BBHA 9120D	10087	1GHz-18GH z	06/05/2016	10/24/2017
4	Test receiver	R&S	ESCI	101686	9KHz-3GHz	10/25/2016	10/24/2017
5	EMI Measuring Receiver	R&S	ESR	101660	9KHz-40GHz	10/25/2016	10/24/2017
6	Multi-device controller	MF	MF-7868	MF78680 8762	N/A	10/25/2016	10/24/2017
7	Amplifier	EM	EM-30180	060538	1GHz-18GH z	10/25/2016	10/24/2017
8	Amplifier	Schwarzbeck	BBV 9475	BBV 9475-663	1GHz-18GH z	06/05/2016	06/04/2017
9	Spectrum Analyzer	agilent	E4440B	US44300368	1GHz-26.5GH z	06/05/2016	06/04/2017
10	Test receiver	R&S	ESCI	101689	9KHz-3GHz	10/25/2016	10/24/2017
11	LISN	R&S	NSLK81 26	8126466	9k-30MHz	10/25/2016	10/24/2017
12	LISN	Narda	L2-16B	5589756	9k-30MHz	10/25/2016	10/24/2017
13	Power Meter	Anritsu	ML2495A	N/A	40MHz	10/25/2016	10/24/2017
14	Power sensor	Anritsu	MA2411B	N/A	40MHz	10/25/2016	10/24/2017
15	Radiated Cable 1#	FUJIKURA	5D-2W	01	30MHz-1GHz	10/25/2016	10/24/2017
16	Radiated Cable 2#	FUJIKURA	10D2W	02	1GHz -25GHz	10/25/2016	10/24/2017
17	Conducted Cable 1#	FUJIKURA	1D-2W	01	9KHz-30MHz	10/25/2016	10/24/2017
18	SMA Antenna connector	Dosin	Dosin-SMA	N/A	N/A	10/25/2016	10/24/2017

Note: The SMA antenna connector is soldered on the PCB board in order to perform conducted tests and this SMA antenna connector is listed in the equipment list. The Cal.Interval was one year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)			Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

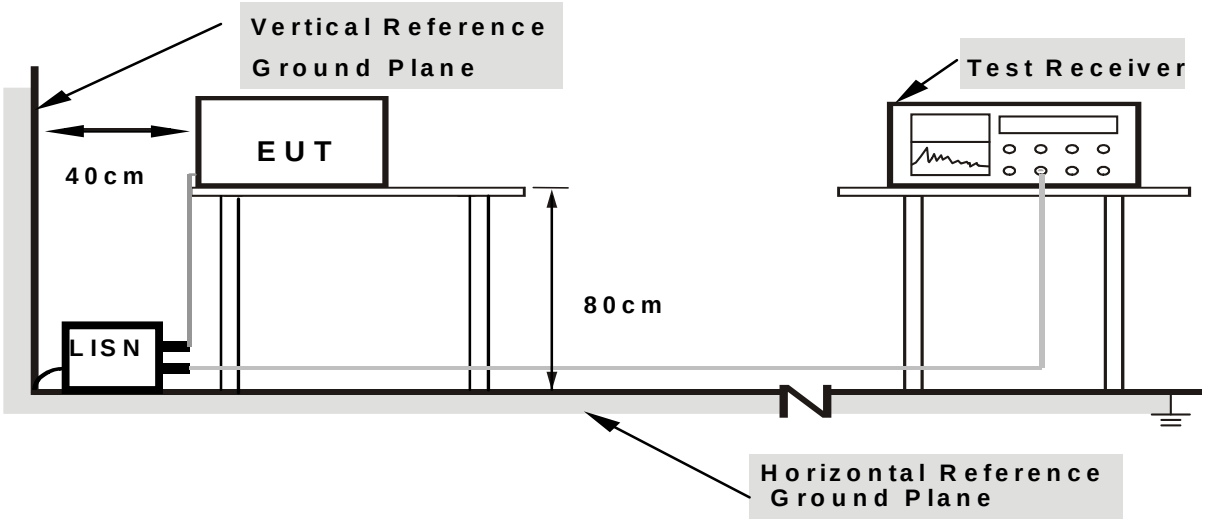
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

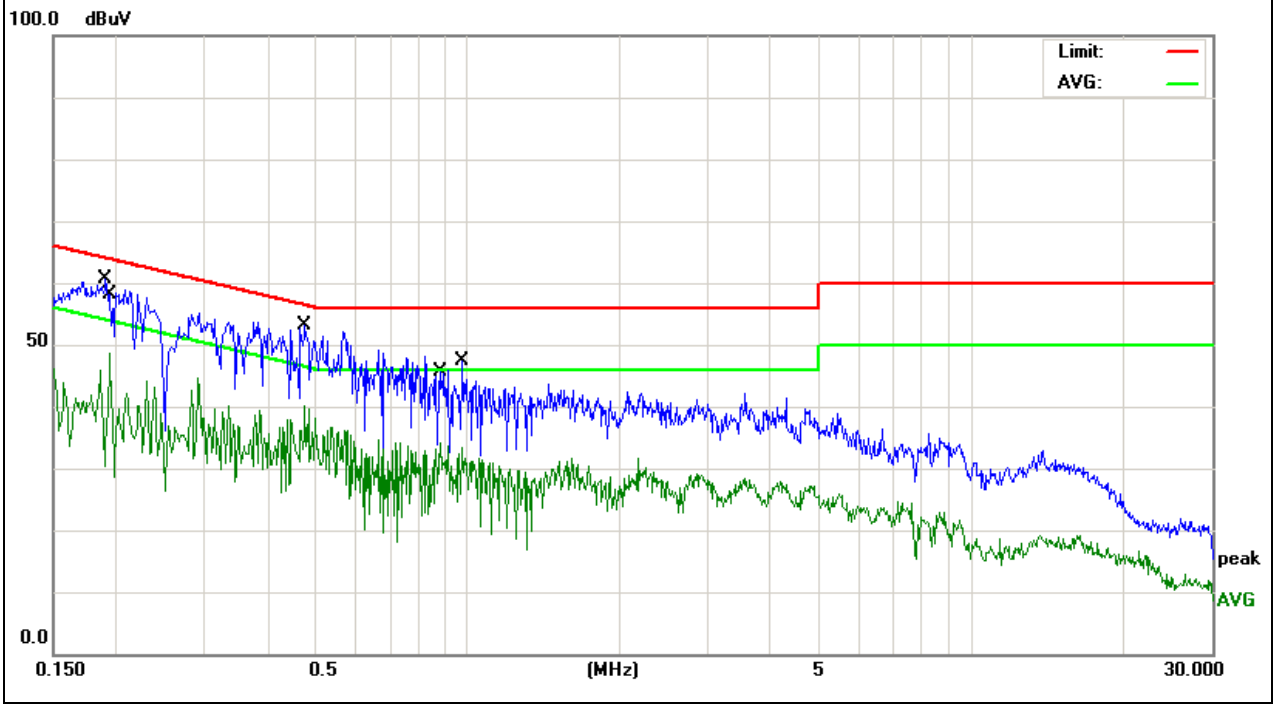
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

Phase :	L	Test Voltage :	DC 5V from adapter AC 120V/60Hz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1904	49.34	11.26	60.60	64.01	-3.41	QP	
2		0.1945	37.33	11.21	48.54	53.84	-5.30	AVG	
3	*	0.4740	43.08	10.04	53.12	56.44	-3.32	QP	
4		0.4740	30.13	10.04	40.17	46.44	-6.27	AVG	
5		0.8820	24.20	9.95	34.15	46.00	-11.85	AVG	
6		0.9780	37.51	9.93	47.44	56.00	-8.56	QP	

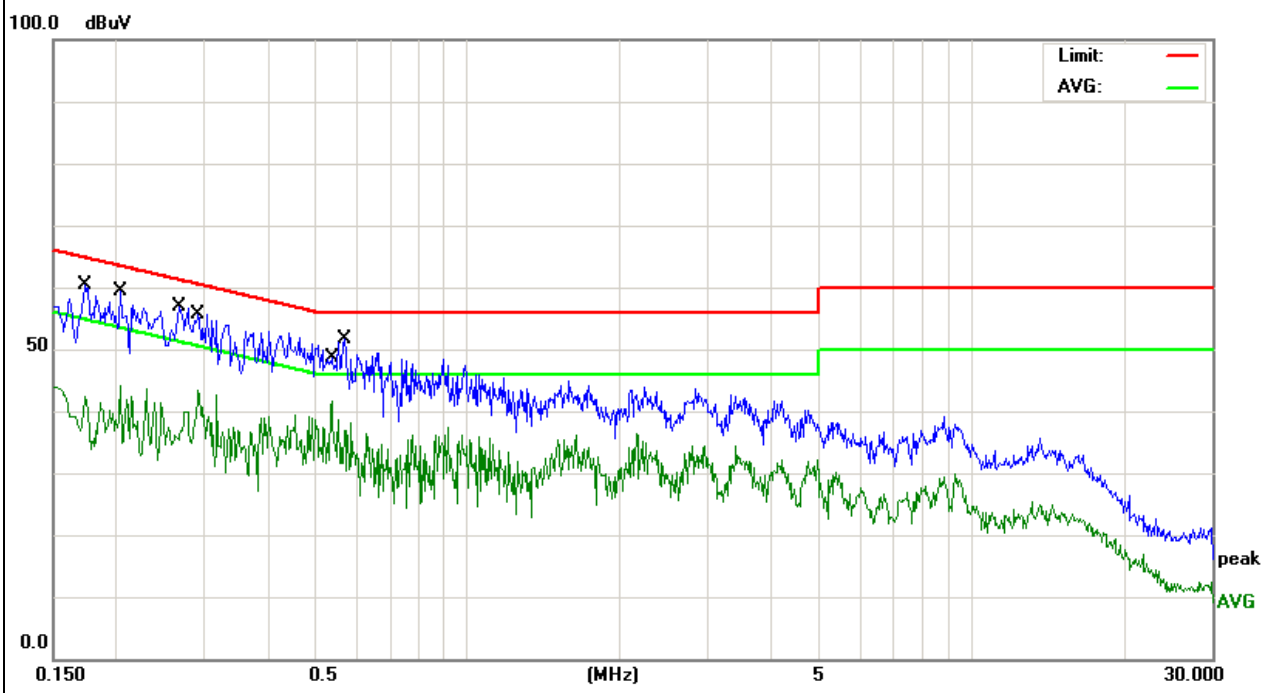
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



Phase :	N	Test Voltage :	DC 5V from adapter AC 120V/60Hz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1731	48.80	11.50	60.30	64.81	-4.51	QP	
2		0.2040	33.09	11.11	44.20	53.44	-9.24	AVG	
3	*	0.2660	46.15	10.84	56.99	61.24	-4.25	QP	
4		0.2909	32.88	10.47	43.35	50.50	-7.15	AVG	
5		0.5350	31.51	10.00	41.51	46.00	-4.49	AVG	
6		0.5700	41.66	10.00	51.66	56.00	-4.34	QP	

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average
Receiver Parameter	**Setting**
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane for below 1GHz and 1.50m above ground plane for above 1GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

5. The EUT minimum operation frequency was 24MHz and maximum operation frequency was 2480MHz.so radiated emission test frequency band from 9 KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-25GHz	Horn Anternna	3

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto	Peak
	Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

More procudre as follows;

1) Sequence of testing 9 kHz to 30 MHz

Setup:
--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
--- If the EUT is a floor standing device, it is placed on the ground.
--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
--- The measurement distance is 3 meter.
--- The EUT was set into operation.

Premeasurement:
--- The turntable rotates from 0° to 315° using 45° steps.
--- The antenna height is 1.0 meter.
--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:
--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.
--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:
--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
--- Auxiliary equipment and cables were positioned to simulate normal operation conditions
--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
--- The measurement distance is 3 meter.
--- The EUT was set into operation.

Premeasurement:
--- The turntable rotates from 0° to 315° using 45° steps.
--- The antenna is polarized vertical and horizontal.
--- The antenna height changes from 1 to 4 meter.
--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:
--- The final measurement will be performed with minimum the six highest peaks.
--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.
--- The final measurement will be done with QP detector with an EMI receiver.
--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:
--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
--- Auxiliary equipment and cables were positioned to simulate normal operation conditions
--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
--- The measurement distance is 3 meter.
--- The EUT was set into operation.

Premeasurement:
--- The turntable rotates from 0° to 315° using 45° steps.
--- The antenna is polarized vertical and horizontal.
--- The antenna height scan range is 1 meter to 2.5 meter.
--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:
--- The final measurement will be performed with minimum the six highest peaks.
--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:
--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
--- Auxiliary equipment and cables were positioned to simulate normal operation conditions
--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
--- The measurement distance is 1 meter.
--- The EUT was set into operation.

Premeasurement:
--- The antenna is moved spherical over the EUT in different polarizations of the antenna.
Final measurement:
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

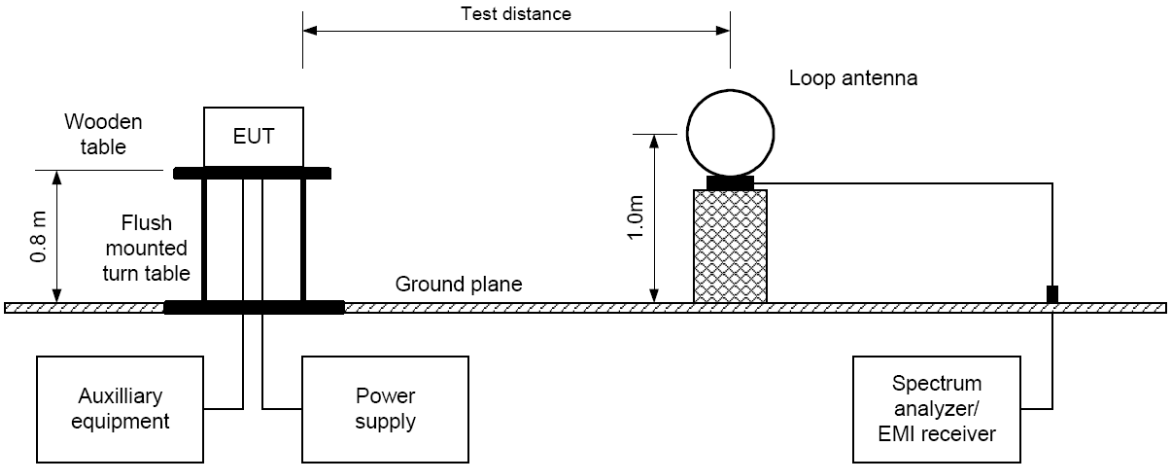
Frequency (MHz)	FS (dBµV/m)	RA (dBµV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

Transd=AF +CL-AG

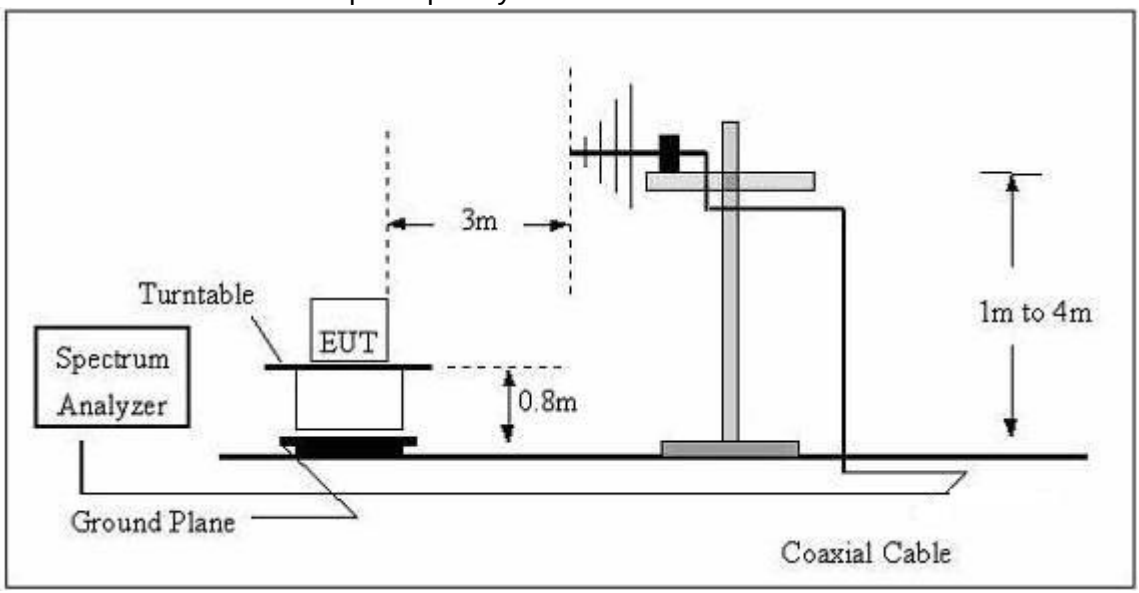
3.2.3 DEVIATION FROM TEST STANDARD
No deviation

3.2.4 TEST SETUP

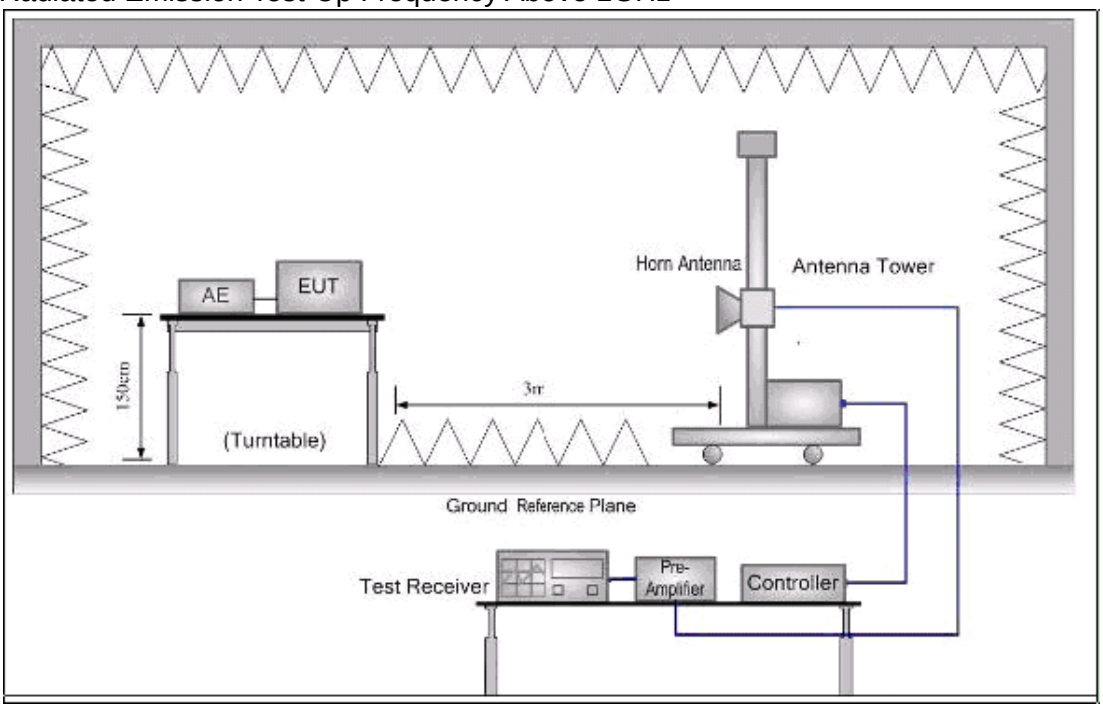
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	Wireless Smart Gateway	Model Name. ：	MT101
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

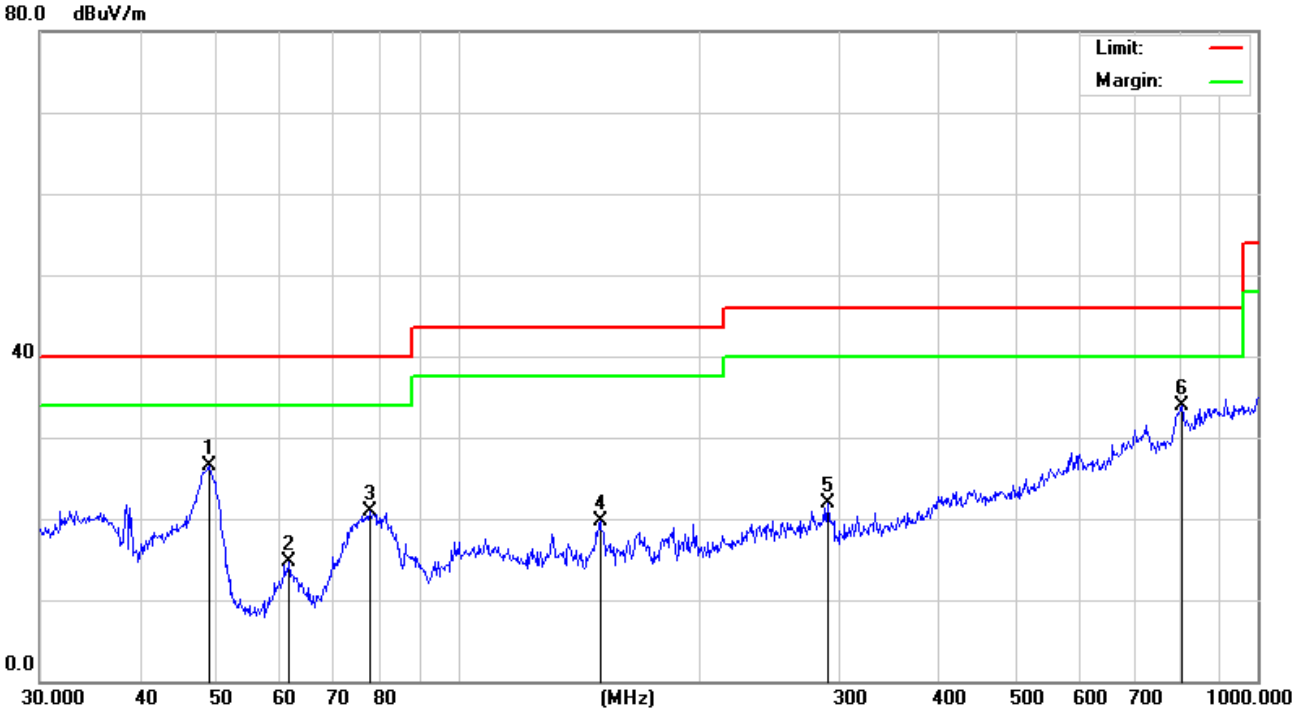
NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

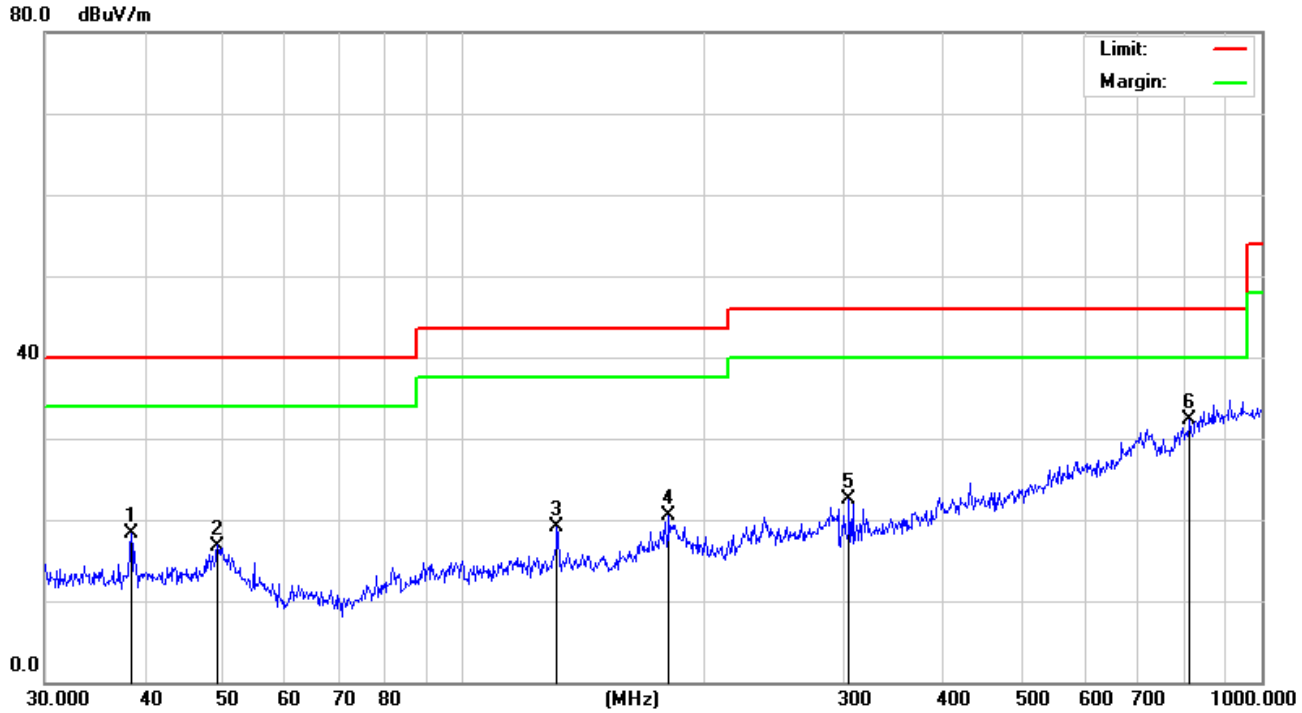
Polarization:	Horizontal	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2412		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		48.8429	55.16	-28.68	26.48	40.00	-13.52	QP			
2		61.5618	44.47	-29.69	14.78	40.00	-25.22	QP			
3		77.5928	49.98	-29.11	20.87	40.00	-19.13	QP			
4		150.5378	44.91	-25.29	19.62	43.50	-23.88	QP			
5		290.0172	41.80	-19.90	21.90	46.00	-24.10	QP			
6	*	804.6028	40.11	-6.21	33.90	46.00	-12.10	QP			



Polarization:	Vertical	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2412		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		38.4809	42.83	-24.47	18.36	40.00	-21.64	QP			
2		49.3594	41.22	-24.42	16.80	40.00	-23.20	QP			
3		131.2965	44.15	-25.05	19.10	43.50	-24.40	QP			
4		181.2834	42.16	-21.64	20.52	43.50	-22.98	QP			
5		304.6099	42.06	-19.62	22.44	46.00	-23.56	QP			
6	*	813.1115	40.43	-8.06	32.37	46.00	-13.63	QP			

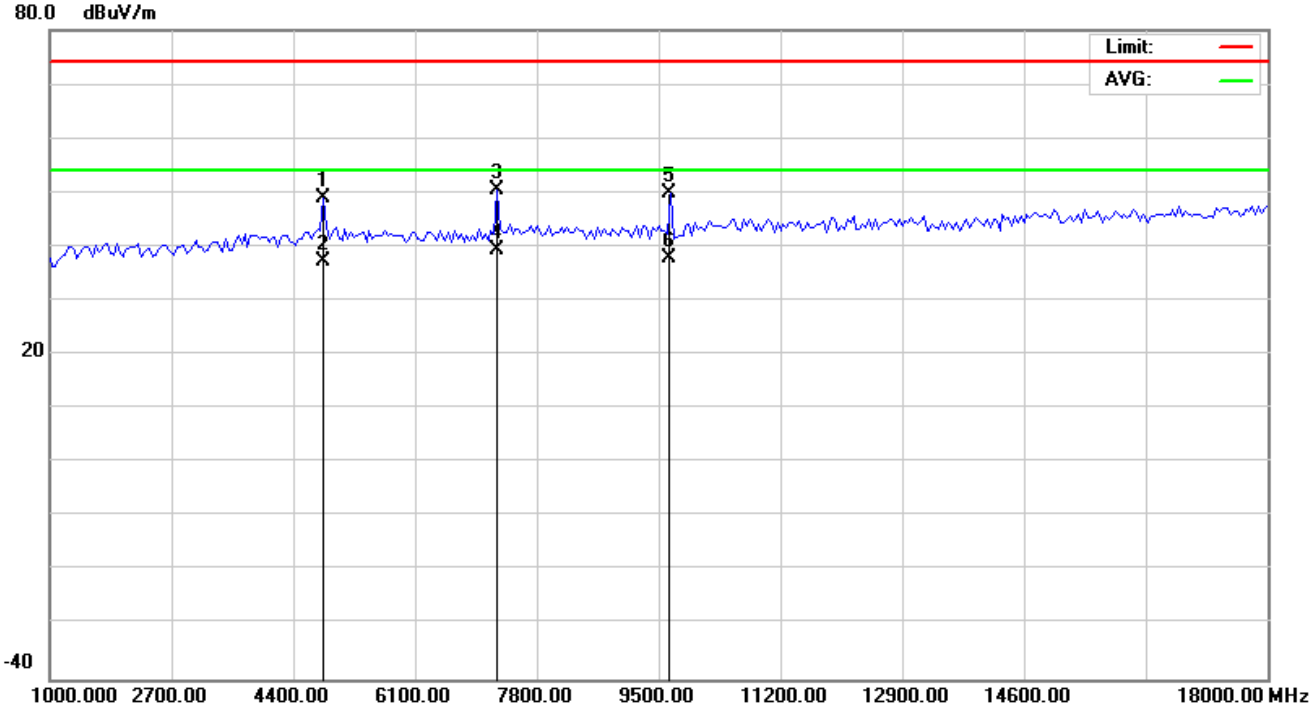


Note:test perform on 802.11b/g/n mode,"802.11b TX2412" mode is the worst mode and has been reported.

3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

Polarization:	Horizontal	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2412		

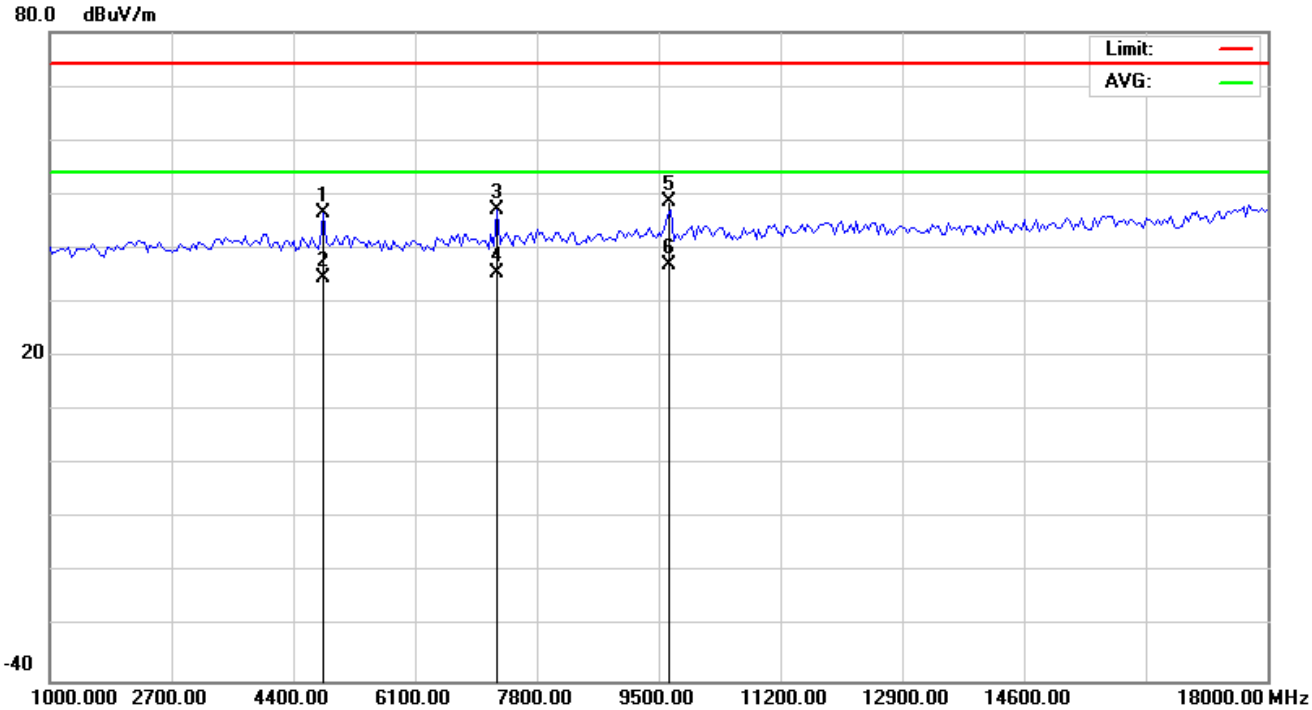
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4824.000	40.96	8.14	49.10	74.00	-24.90	QP			
2		4824.000	29.00	8.14	37.14	54.00	-16.86	AVG			
3		7236.000	38.77	11.73	50.50	74.00	-23.50	QP			
4	*	7236.000	27.62	11.73	39.35	54.00	-14.65	AVG			
5		9648.000	32.12	17.68	49.80	74.00	-24.20	QP			
6		9648.000	20.16	17.68	37.84	54.00	-16.16	AVG			



Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

Polarization:	Vertical	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2412		

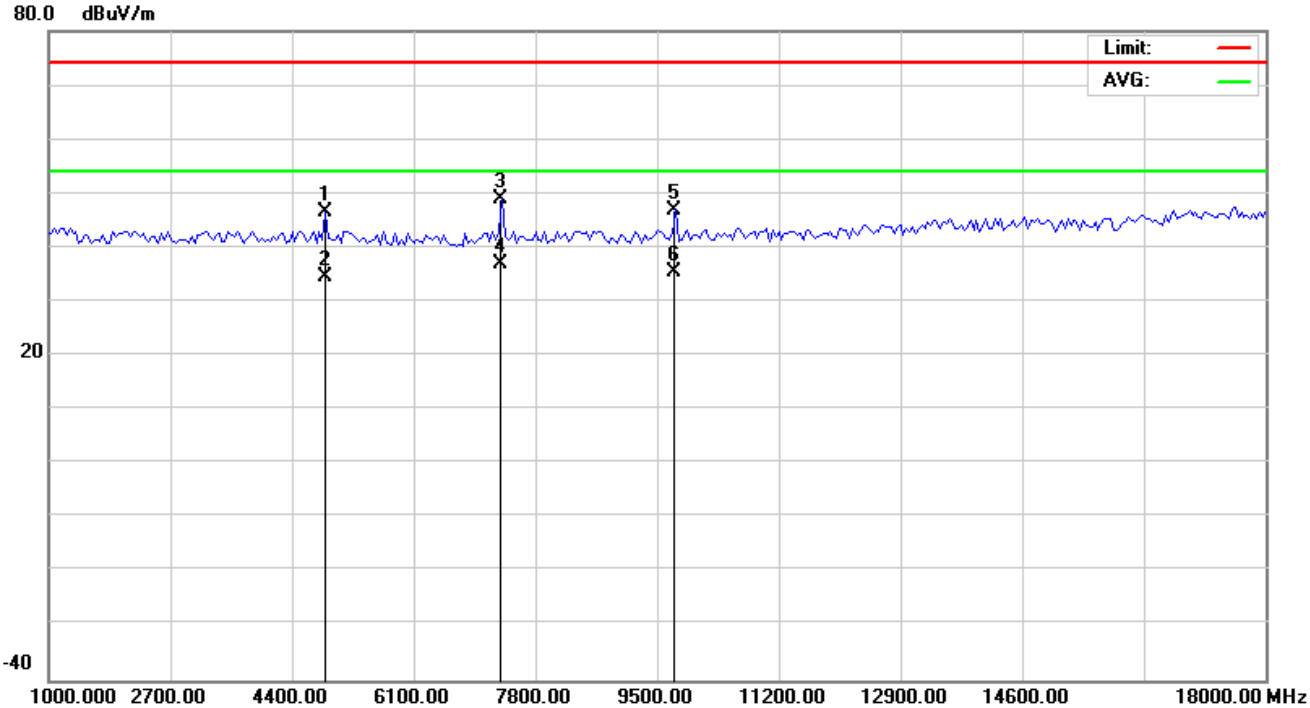
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4824.000	38.46	8.14	46.60	74.00	-27.40	QP			
2		4824.000	26.37	8.14	34.51	54.00	-19.49	AVG			
3		7236.000	35.37	11.73	47.10	74.00	-26.90	QP			
4		7236.000	23.66	11.73	35.39	54.00	-18.61	AVG			
5		9648.000	31.02	17.68	48.70	74.00	-25.30	QP			
6	*	9648.000	19.30	17.68	36.98	54.00	-17.02	AVG			



Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

Polarization:	Horizontal	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2437		

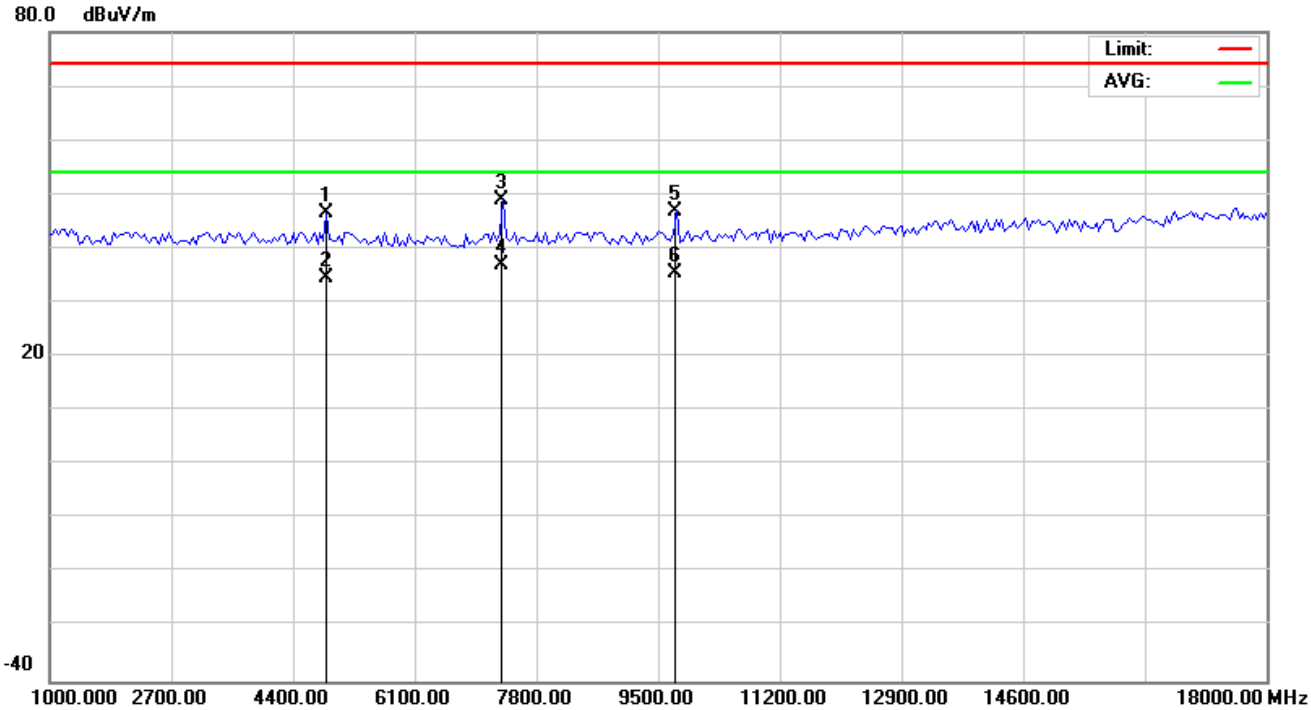
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4874.000	38.33	8.17	46.50	74.00	-27.50	QP			
2		4874.000	26.40	8.17	34.57	54.00	-19.43	AVG			
3		7311.000	36.83	12.07	48.90	74.00	-25.10	QP			
4	*	7311.000	24.87	12.07	36.94	54.00	-17.06	AVG			
5		9748.000	28.80	18.20	47.00	74.00	-27.00	QP			
6		9748.000	17.28	18.20	35.48	54.00	-18.52	AVG			



Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

Polarization:	Vertical	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2437		

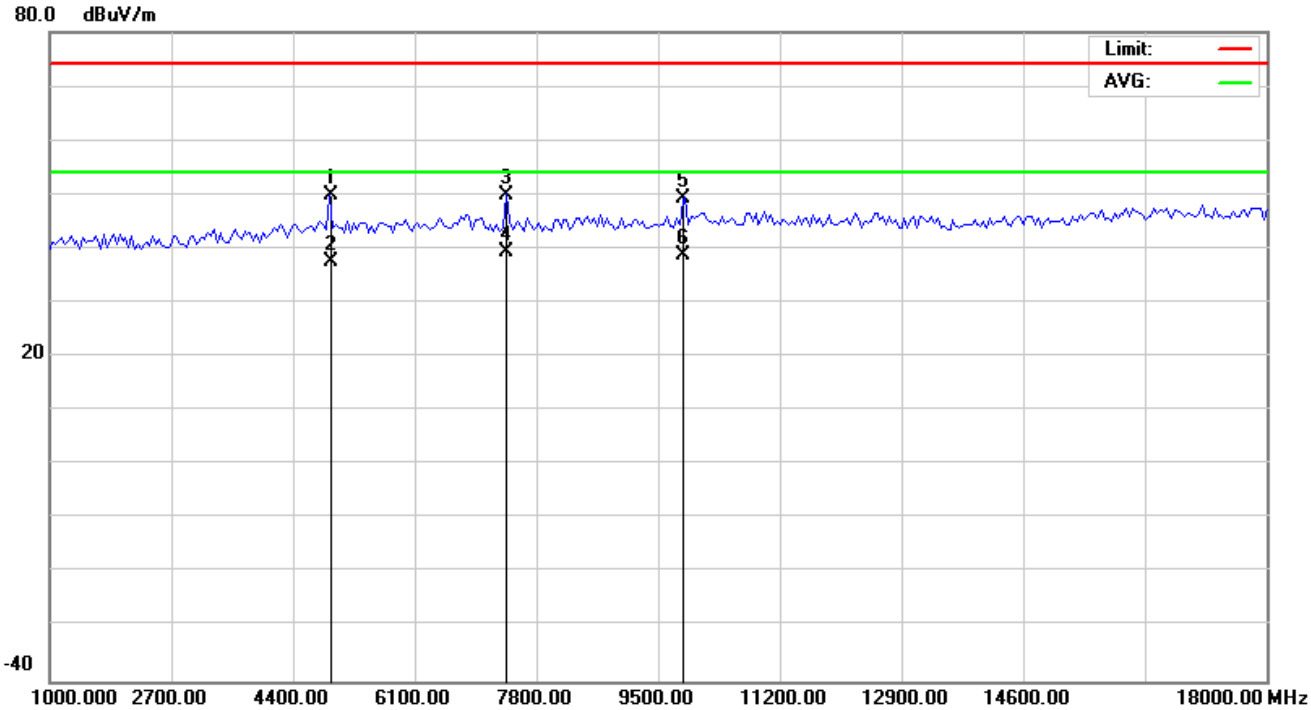
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4874.000	39.13	8.17	47.30	74.00	-26.70	QP			
2		4874.000	27.77	8.17	35.94	54.00	-18.06	AVG			
3		7311.000	34.63	12.07	46.70	74.00	-27.30	QP			
4		7311.000	23.09	12.07	35.16	54.00	-18.84	AVG			
5		9748.000	30.50	18.20	48.70	74.00	-25.30	QP			
6	*	9748.000	18.64	18.20	36.84	54.00	-17.16	AVG			



Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

Polarization:	Horizontal	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2462		

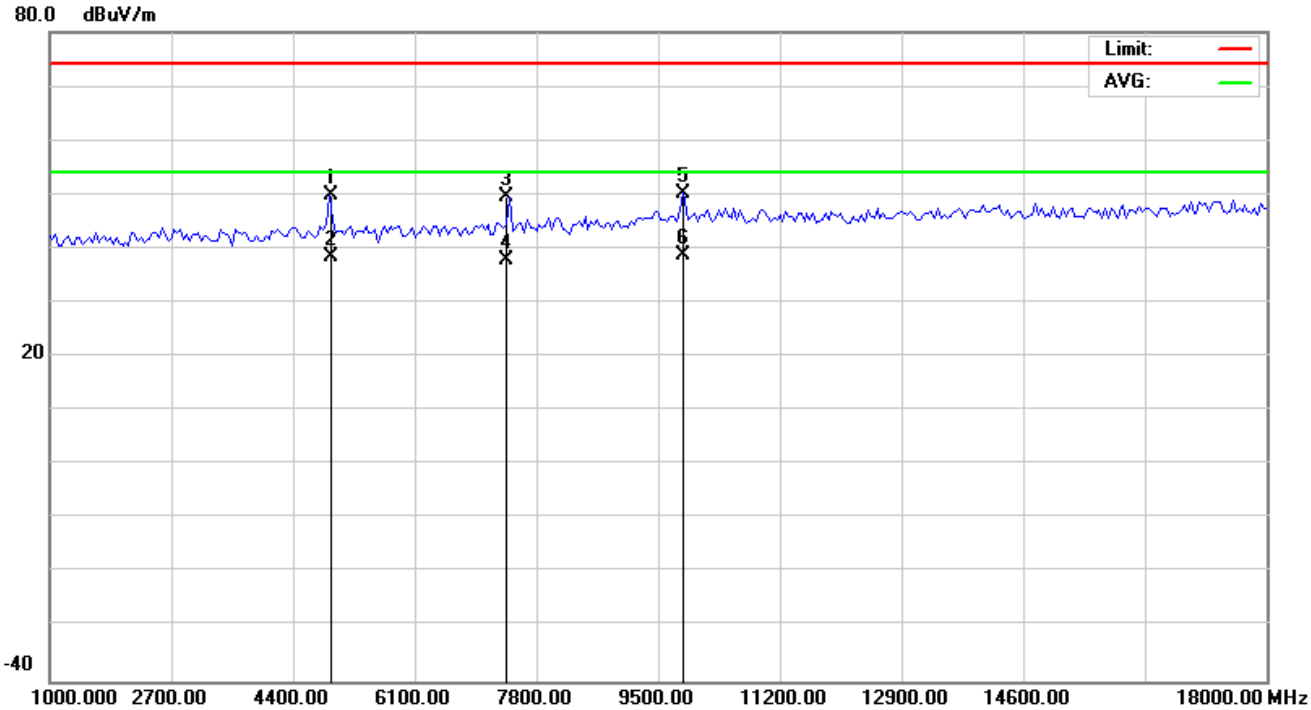
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4924.000	41.60	8.20	49.80	74.00	-24.20	QP			
2		4924.000	29.42	8.20	37.62	54.00	-16.38	AVG			
3		7386.000	37.59	12.41	50.00	74.00	-24.00	QP			
4	*	7386.000	27.07	12.41	39.48	54.00	-14.52	AVG			
5		9848.000	30.69	18.71	49.40	74.00	-24.60	QP			
6		9848.000	19.93	18.71	38.64	54.00	-15.36	AVG			



Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

Polarization:	Vertical	Test Voltage :	DC 5V from adapter AC 120V/60Hz
Test Mode :	802.11B TX 2462		

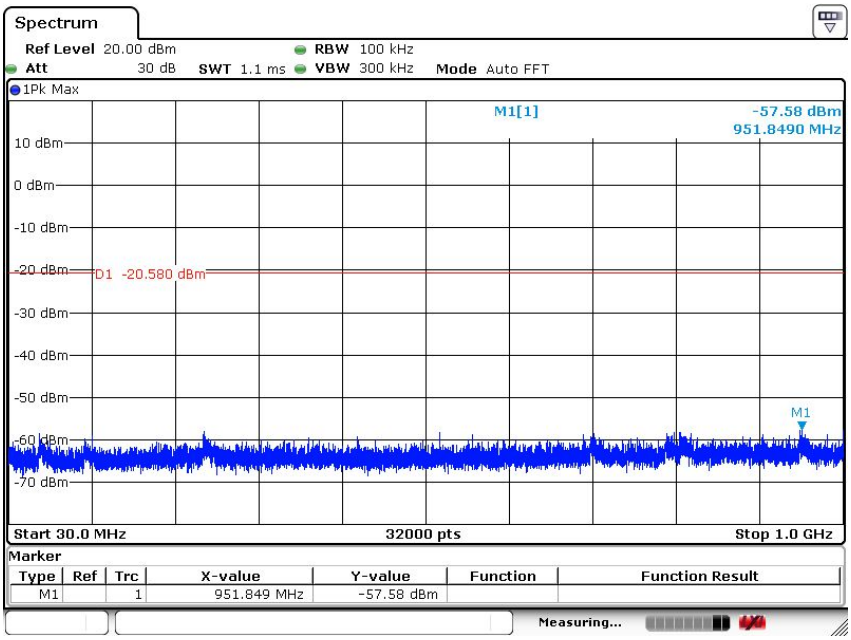
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		4924.000	41.70	8.20	49.90	74.00	-24.10	QP			
2		4924.000	30.26	8.20	38.46	54.00	-15.54	AVG			
3		7386.000	37.19	12.41	49.60	74.00	-24.40	QP			
4		7386.000	25.53	12.41	37.94	54.00	-16.06	AVG			
5		9848.000	31.59	18.71	50.30	74.00	-23.70	QP			
6	*	9848.000	20.04	18.71	38.75	54.00	-15.25	AVG			

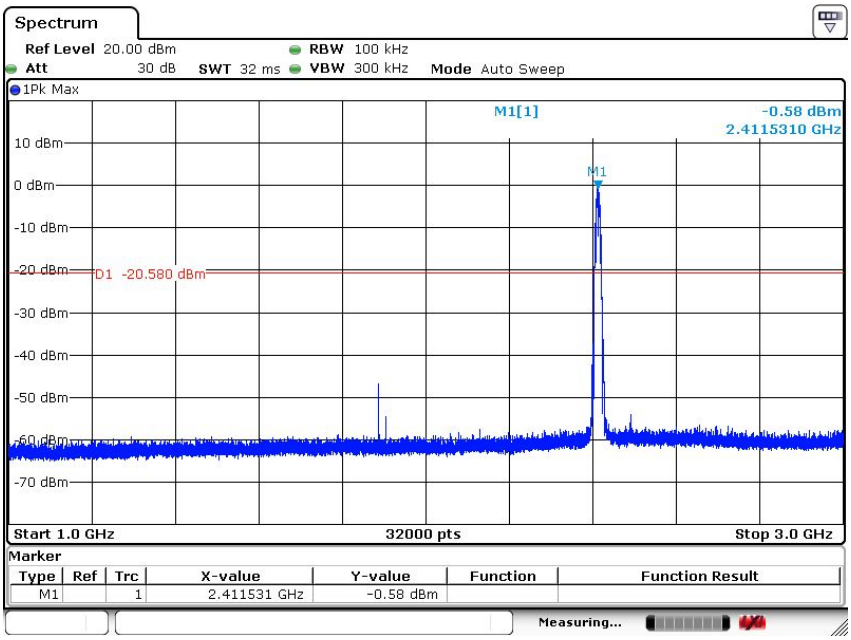


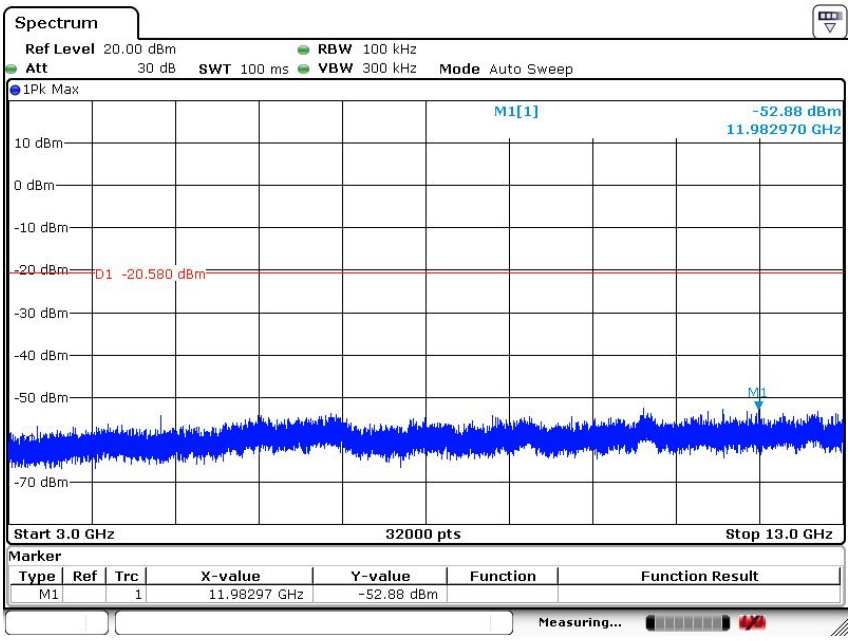
Note:test perform on 802.11b/g/n mode,"802.11b" mode is the worst mode and has been reported. spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported above 18G.

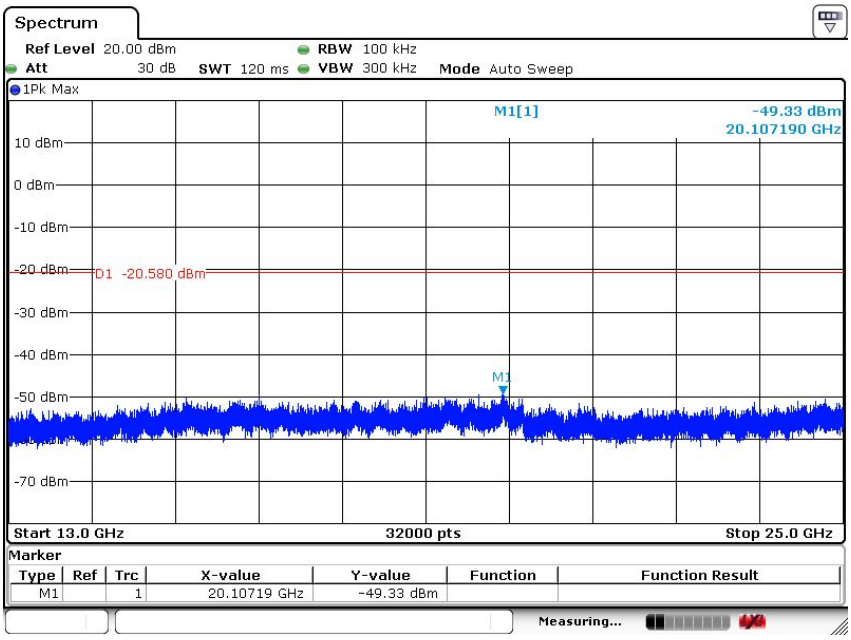
Conducted Spurious Emissions at Antenna Port:

802.11b Low Channel

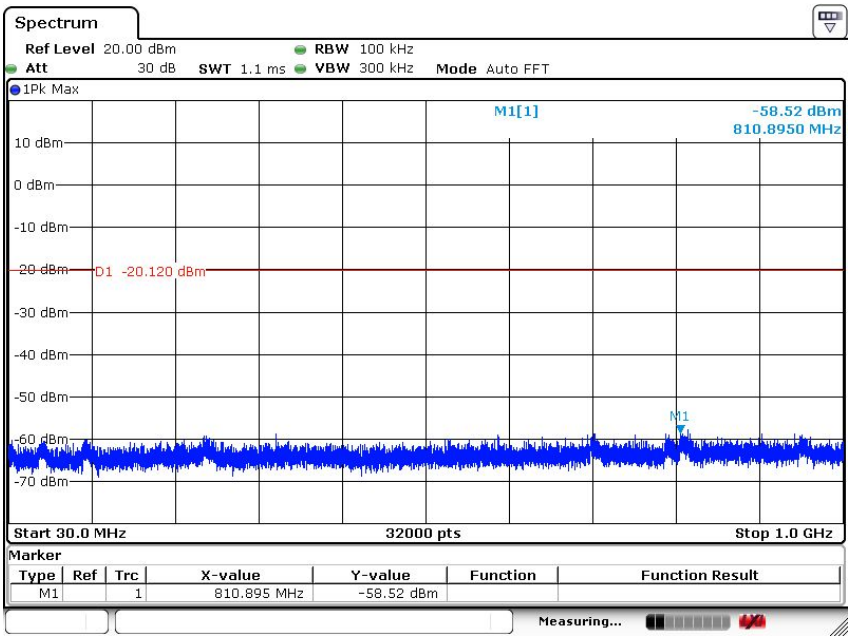


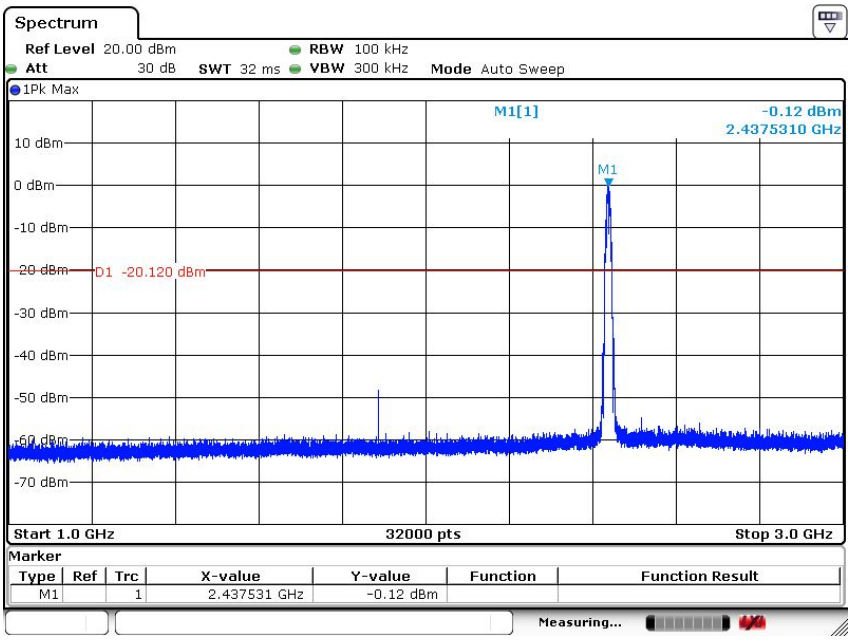


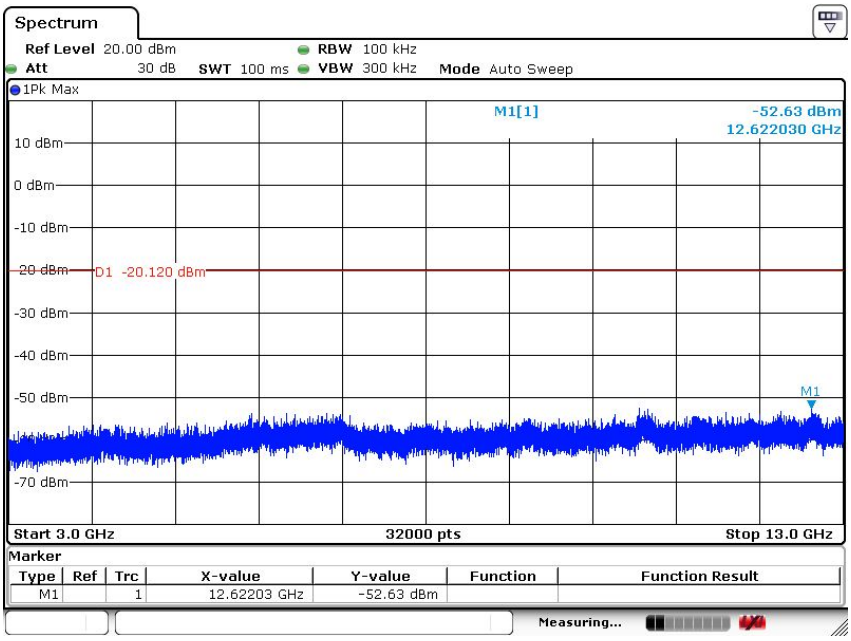

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.88 dBm
11.982970 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -20.580 dBm
-30 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 11.98297 GHz -52.88 dBm
Measuring...

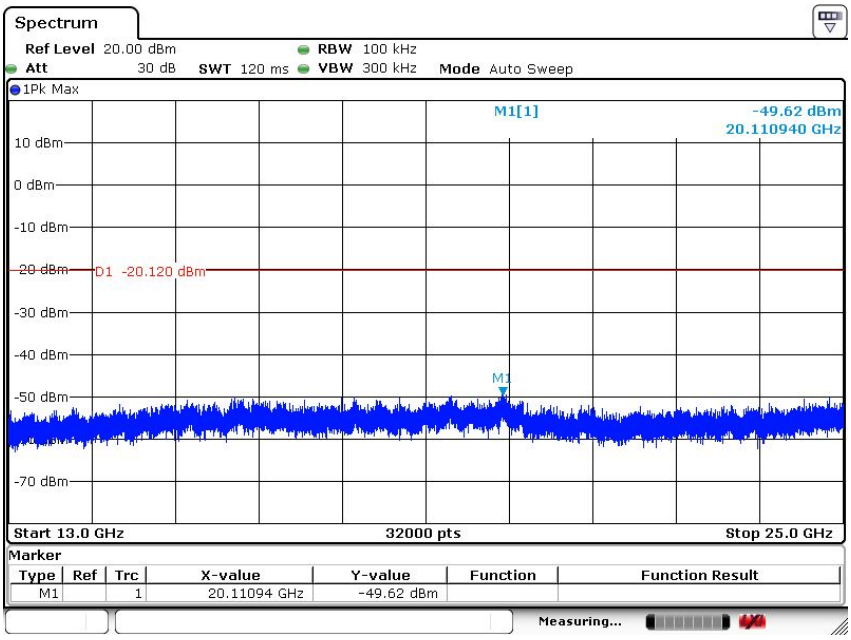

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-49.33 dBm
20.107190 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -20.580 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.10719 GHz -49.33 dBm
Measuring...

802.11b Middle Channel

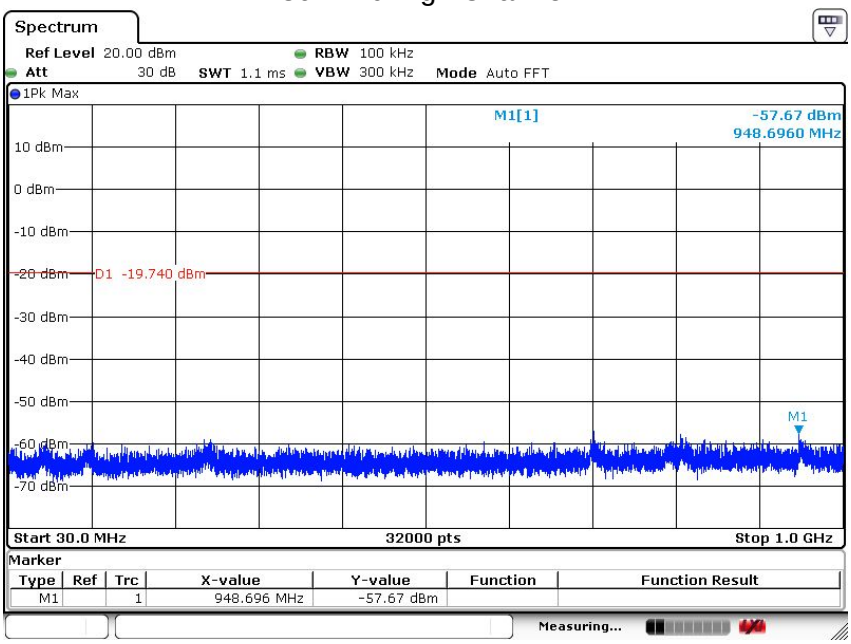


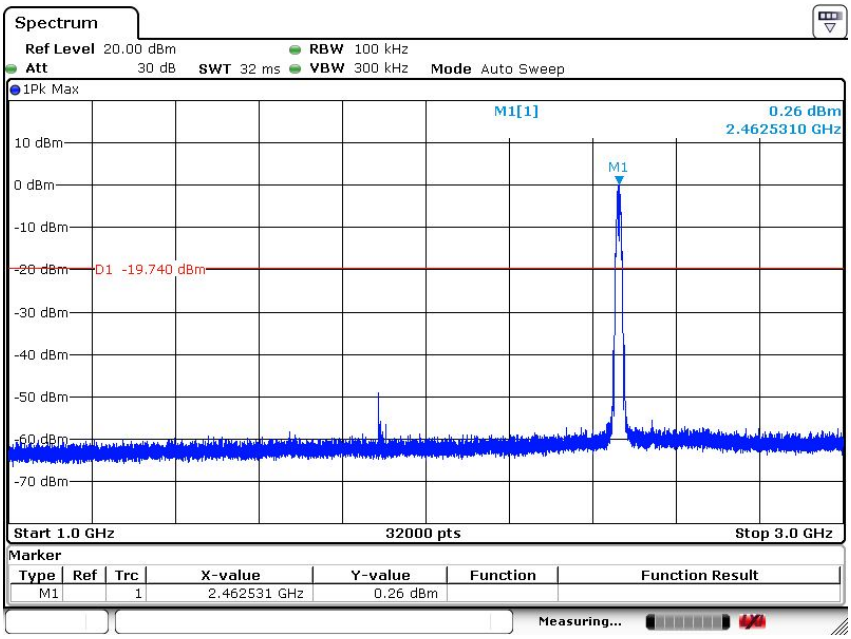


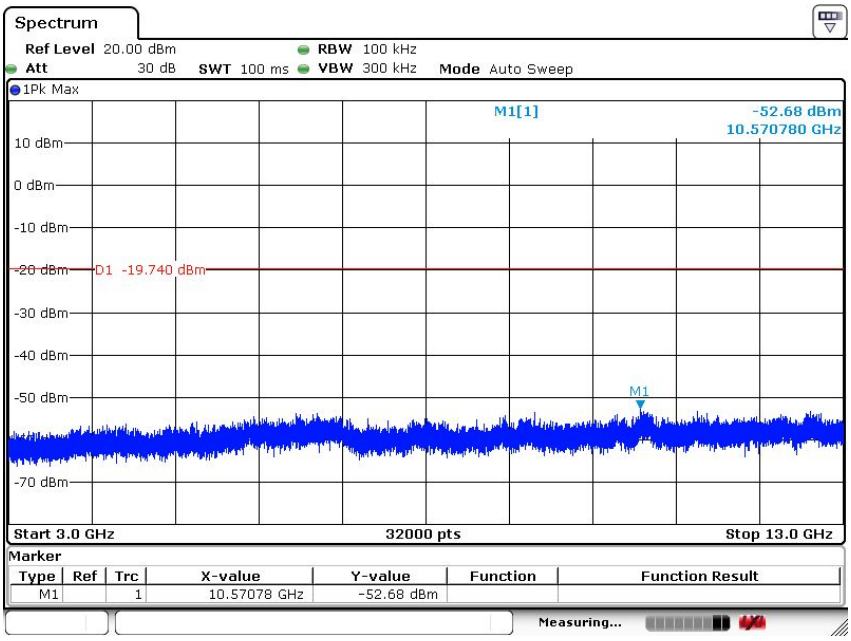

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.63 dBm
12.622030 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -20.120 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
M1
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 12.62203 GHz -52.63 dBm
Measuring...

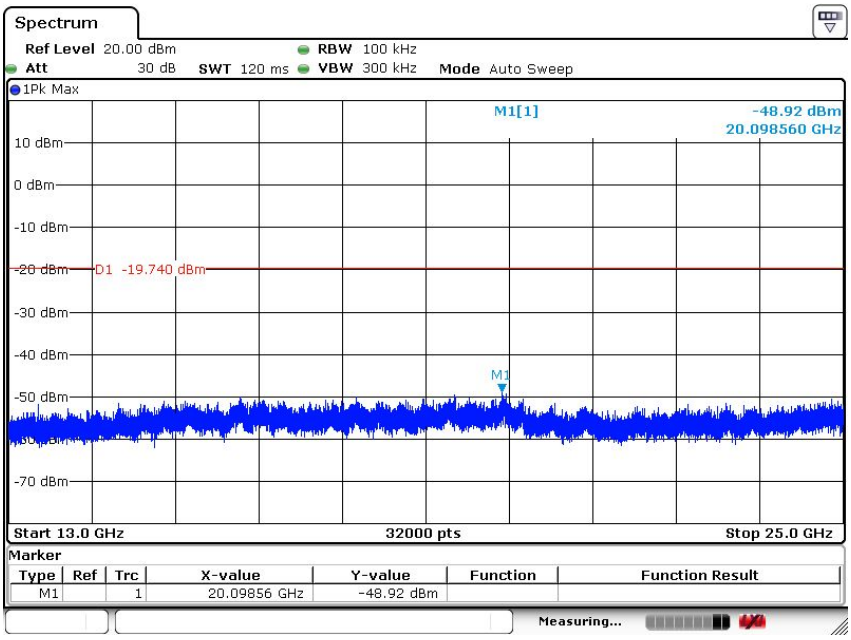

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-49.62 dBm
20.110940 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -20.120 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
M1
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.11094 GHz -49.62 dBm
Measuring...

802.11b High Channel

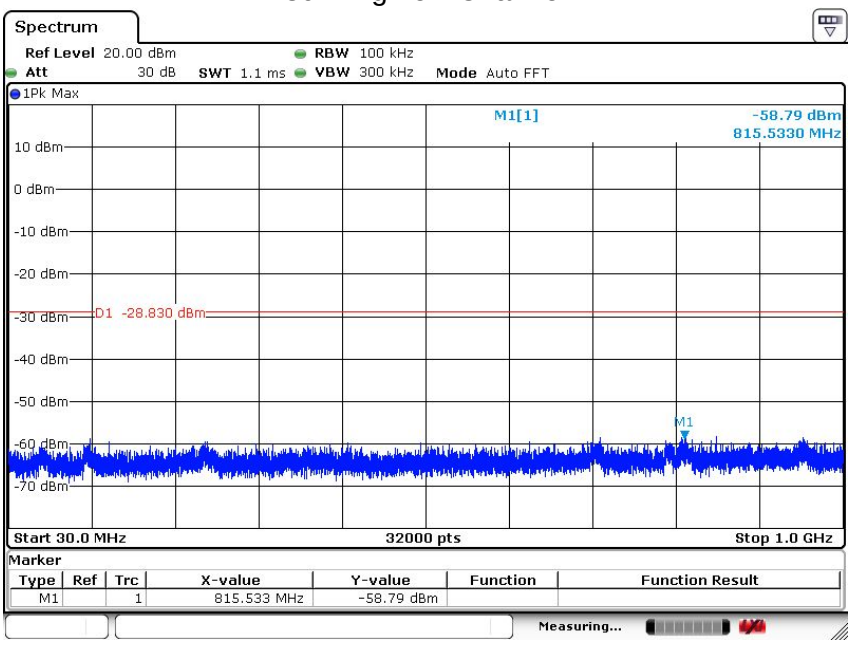


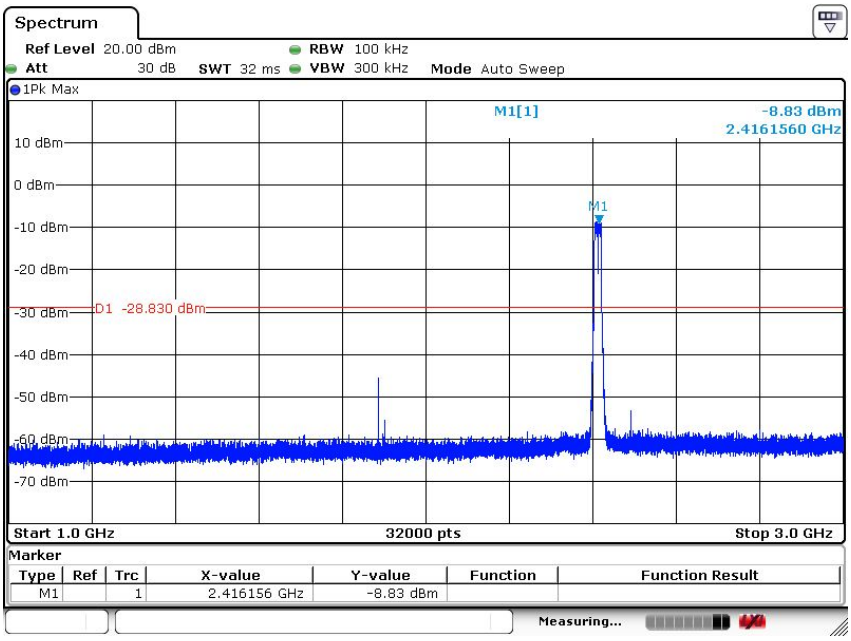


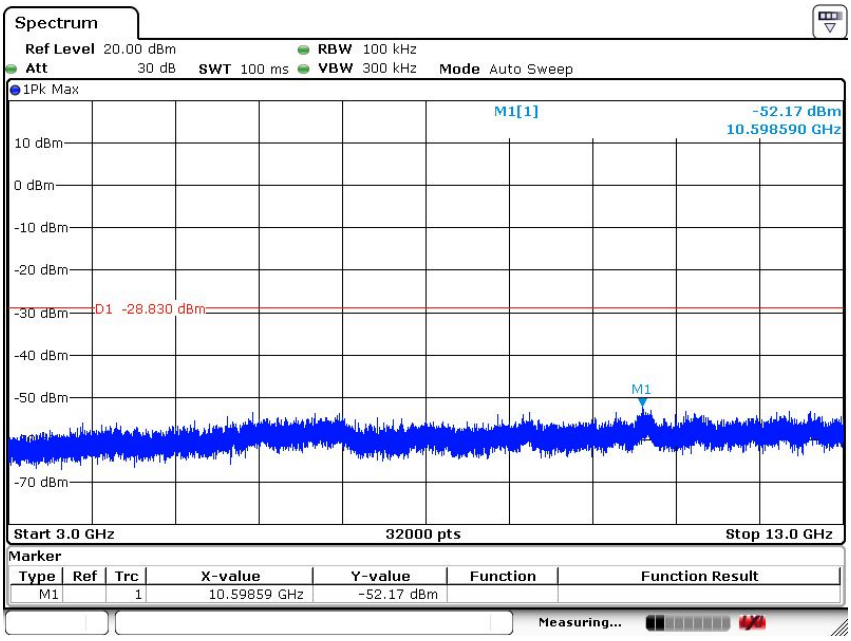

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.68 dBm
10.570780 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -19.740 dBm
-30 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.57078 GHz -52.68 dBm
Measuring...

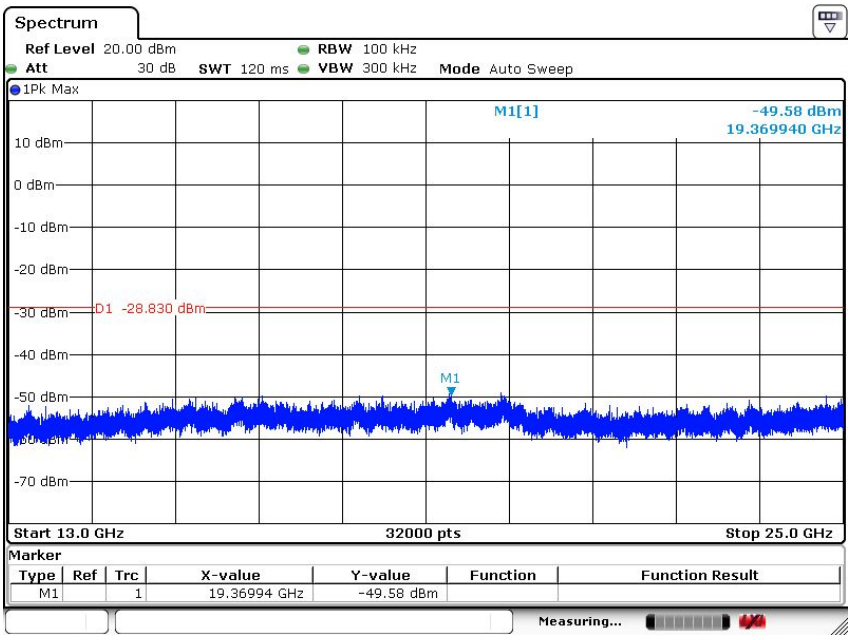

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.92 dBm
20.098560 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -19.740 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.09856 GHz -48.92 dBm
Measuring...

802.11g Low Channel

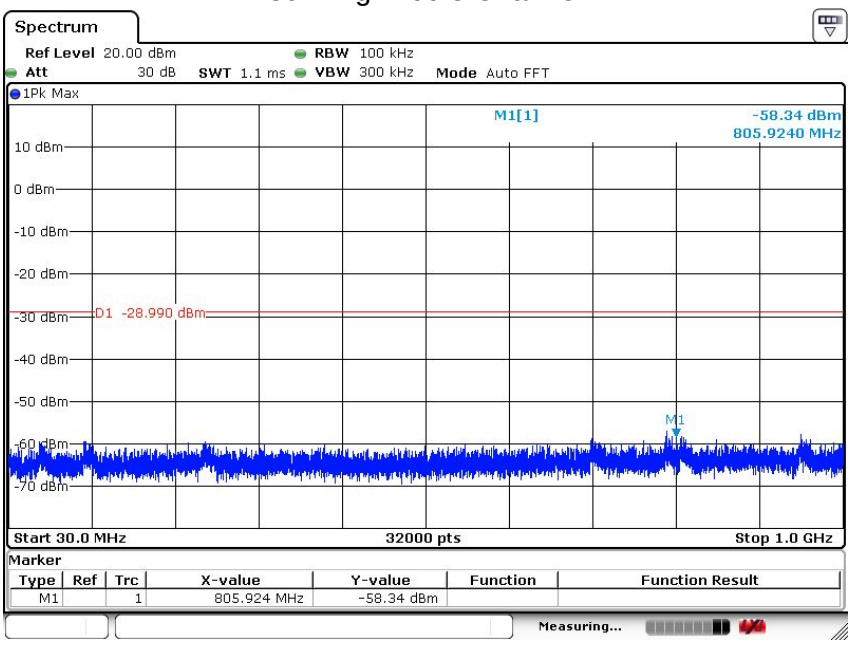


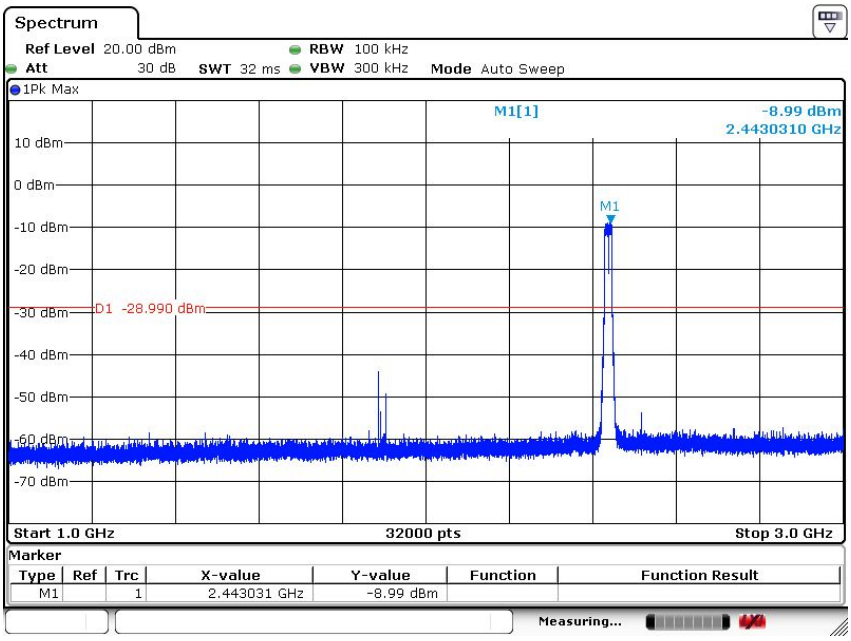


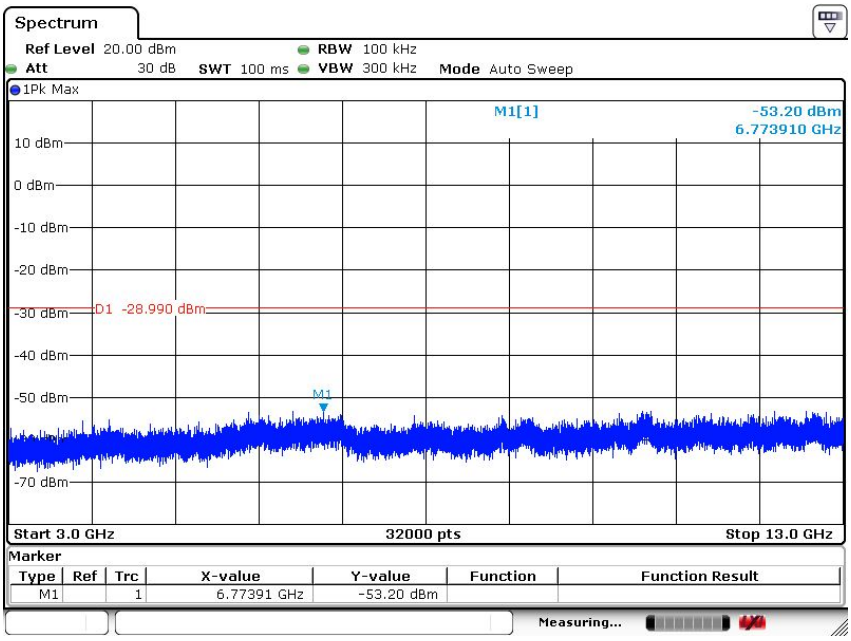

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.17 dBm
10.598590 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.830 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.59859 GHz -52.17 dBm
Measuring...

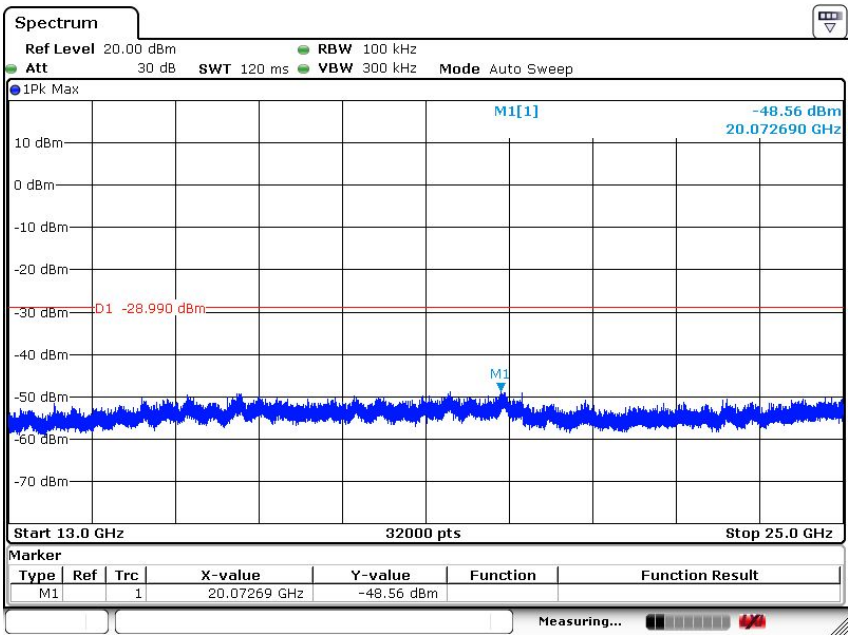

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-49.58 dBm
19.369940 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.830 dBm
-40 dBm
M1
-50 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 19.36994 GHz -49.58 dBm
Measuring...

802.11g Middle Channel

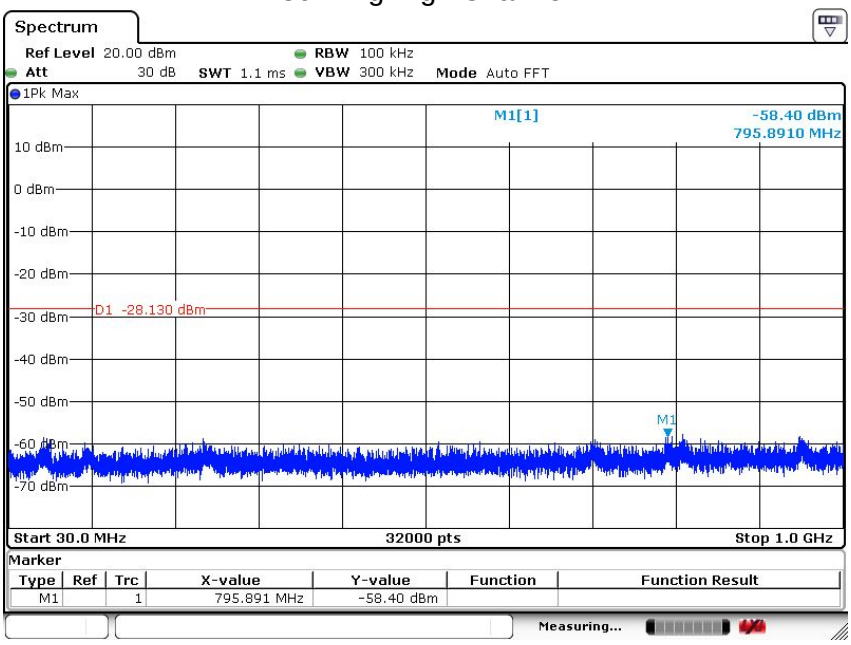


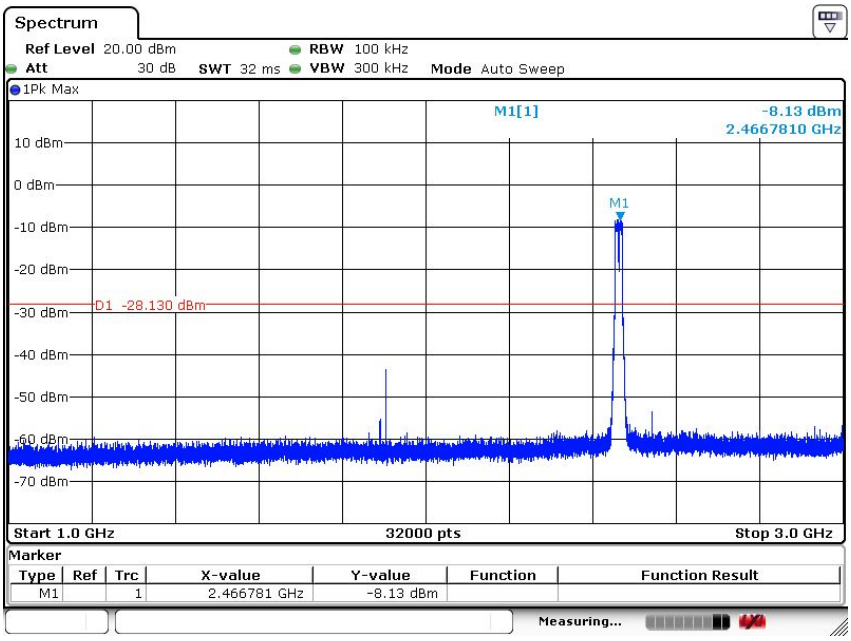


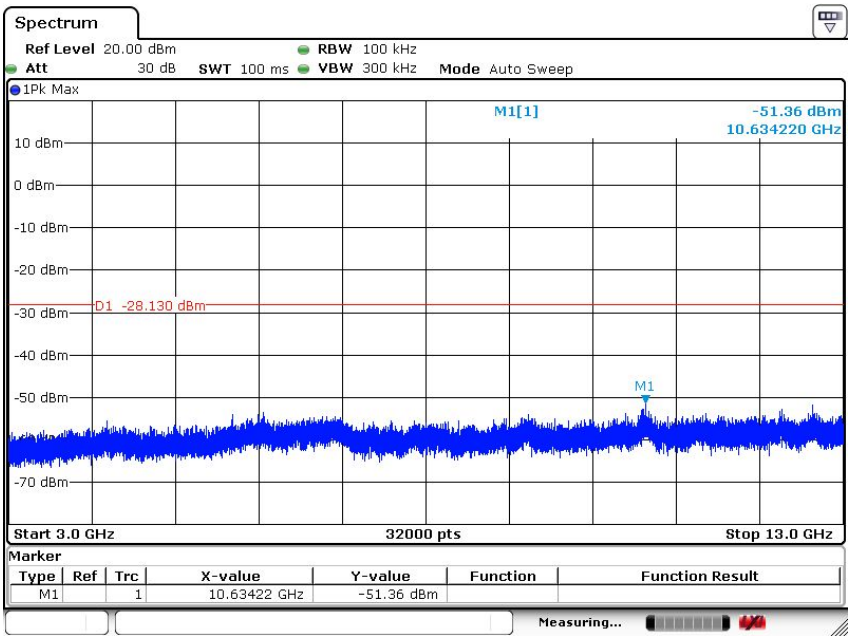

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-53.20 dBm
6.773910 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.990 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 6.77391 GHz -53.20 dBm
Measuring...

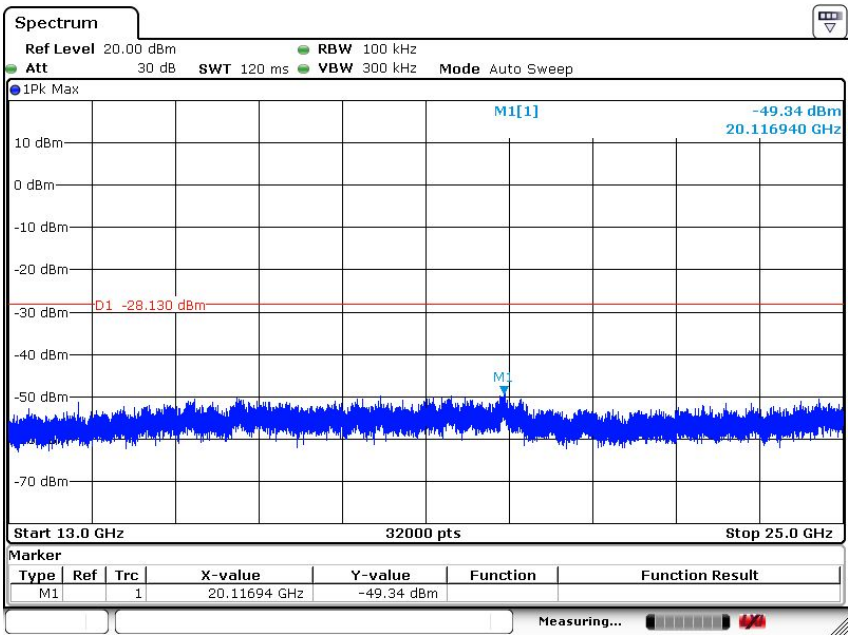

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.56 dBm
20.072690 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.990 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.07269 GHz -48.56 dBm
Measuring...

802.11g High Channel

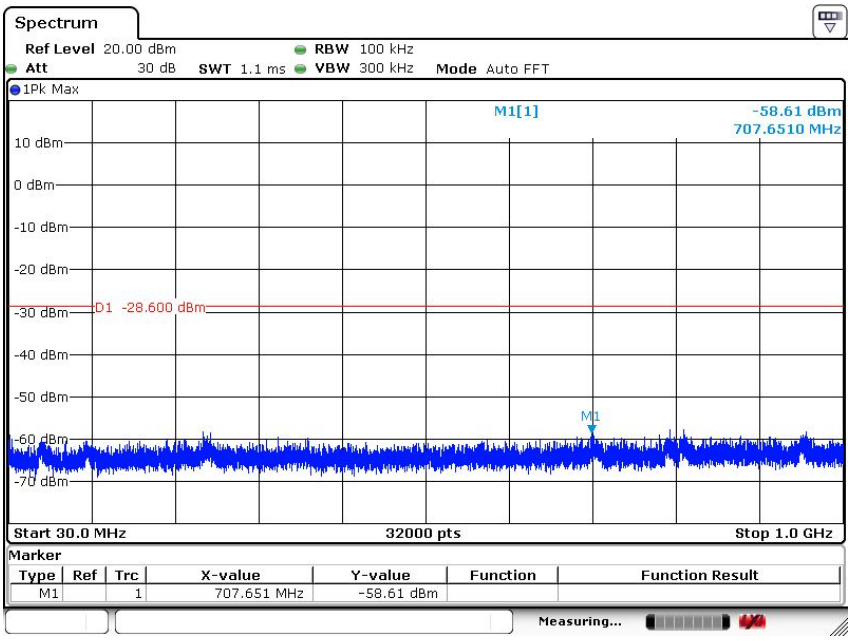


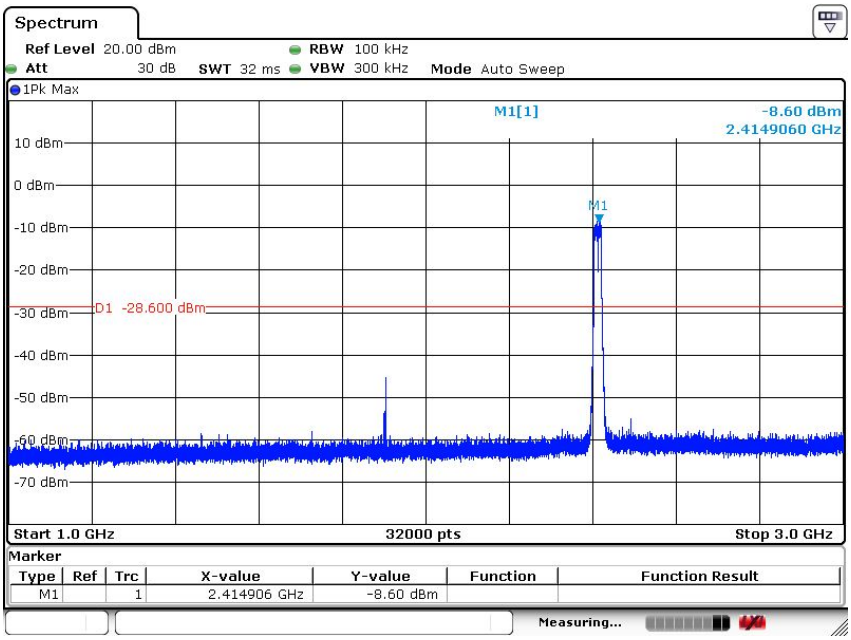


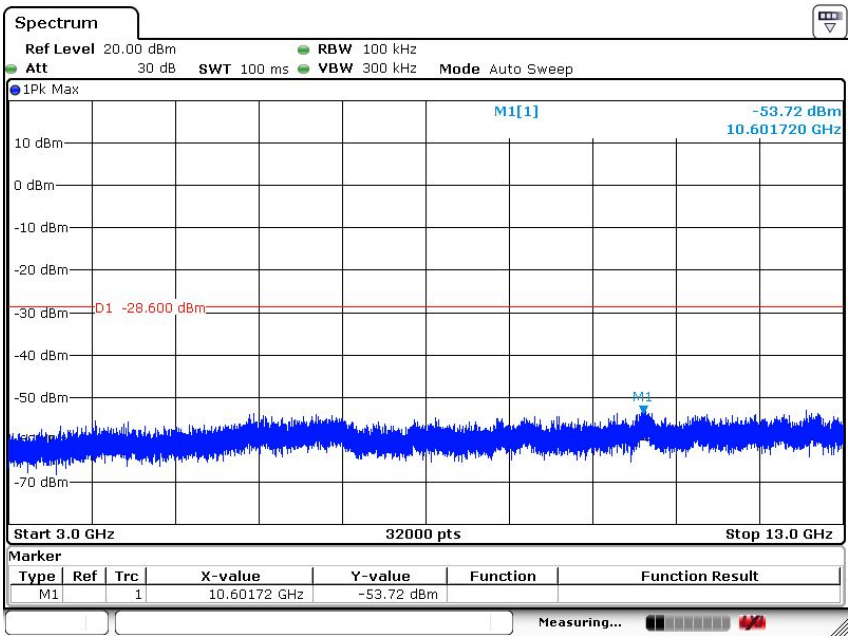

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-51.36 dBm
10.634220 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
D1 -28.130 dBm
M1
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.63422 GHz -51.36 dBm
Measuring...

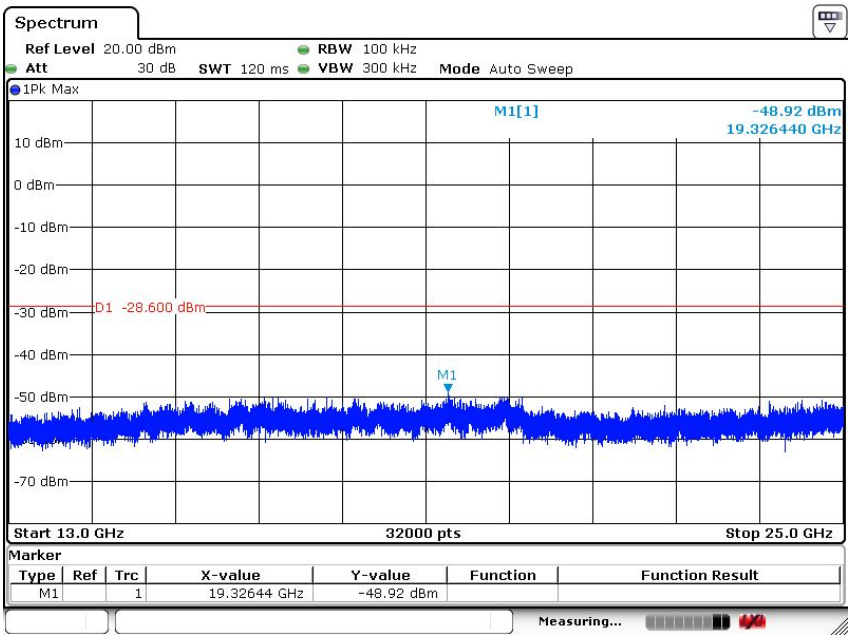

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-49.34 dBm
20.116940 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
D1 -28.130 dBm
M1
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.11694 GHz -49.34 dBm
Measuring...

802.11n(HT20) Low Channel

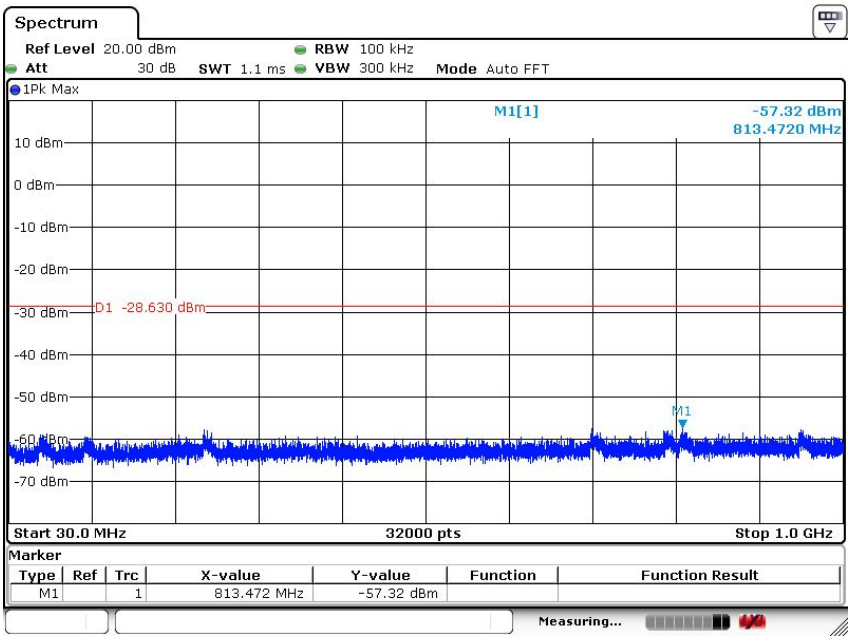


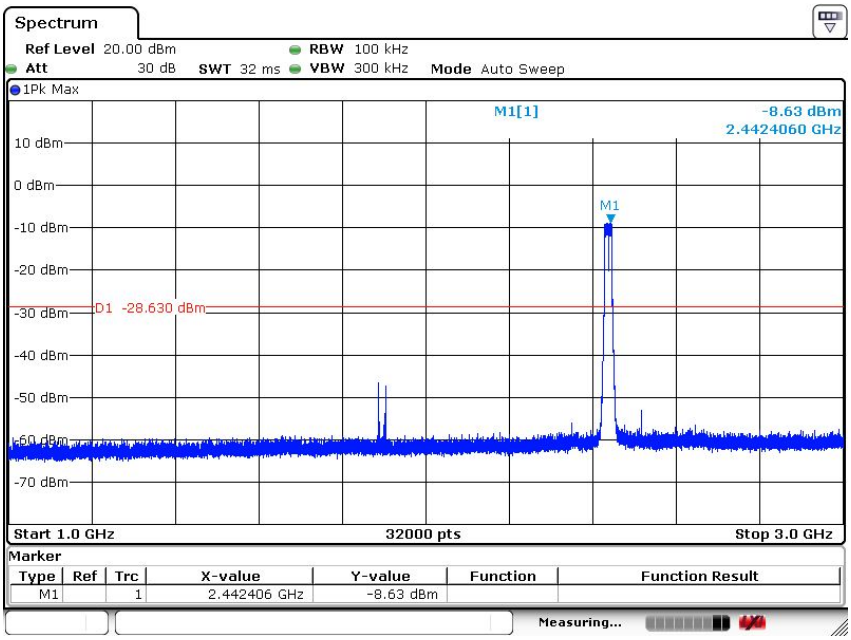


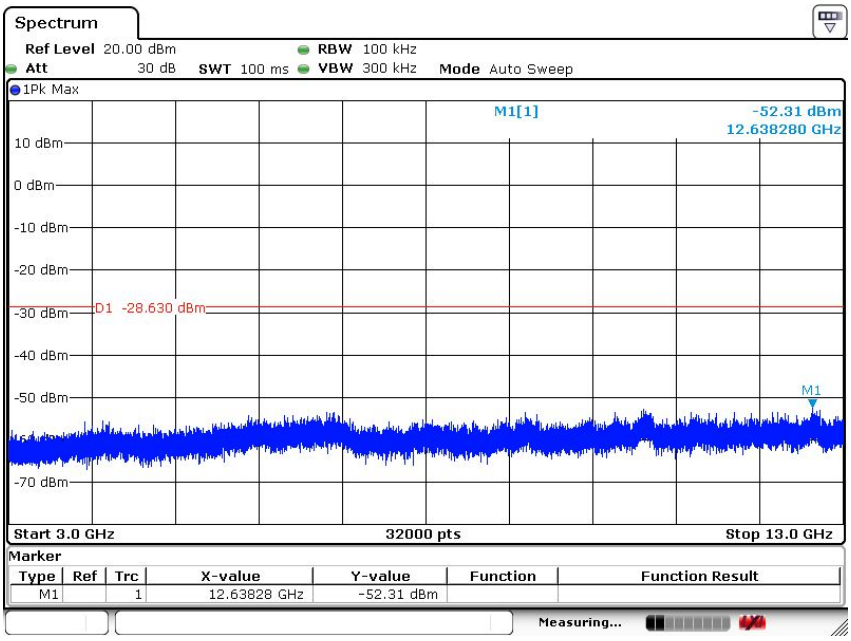

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-53.72 dBm
10.601720 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.600 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.60172 GHz -53.72 dBm
Measuring...

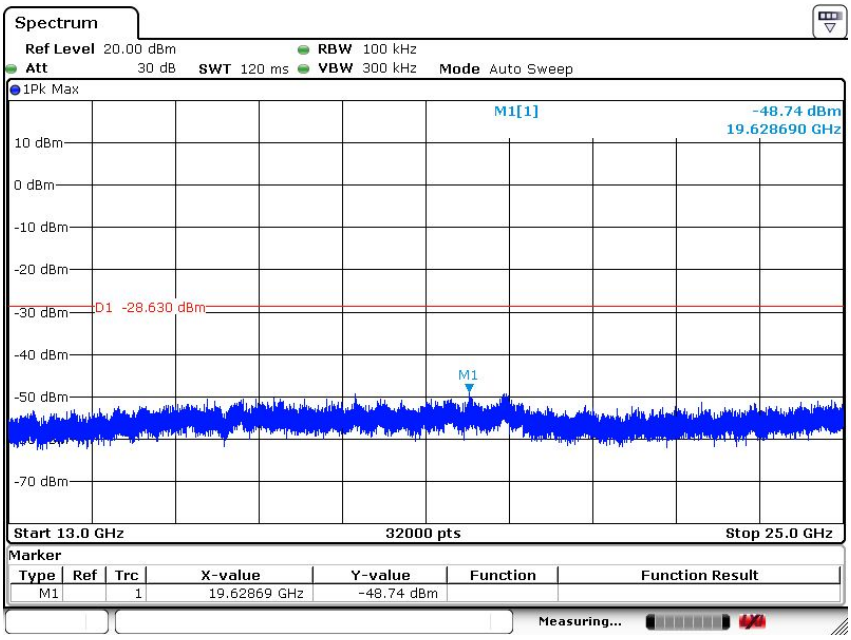

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.92 dBm
19.326440 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.600 dBm
-40 dBm
M1
-50 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 19.32644 GHz -48.92 dBm
Measuring...

802.11n(HT20) Middle Channel

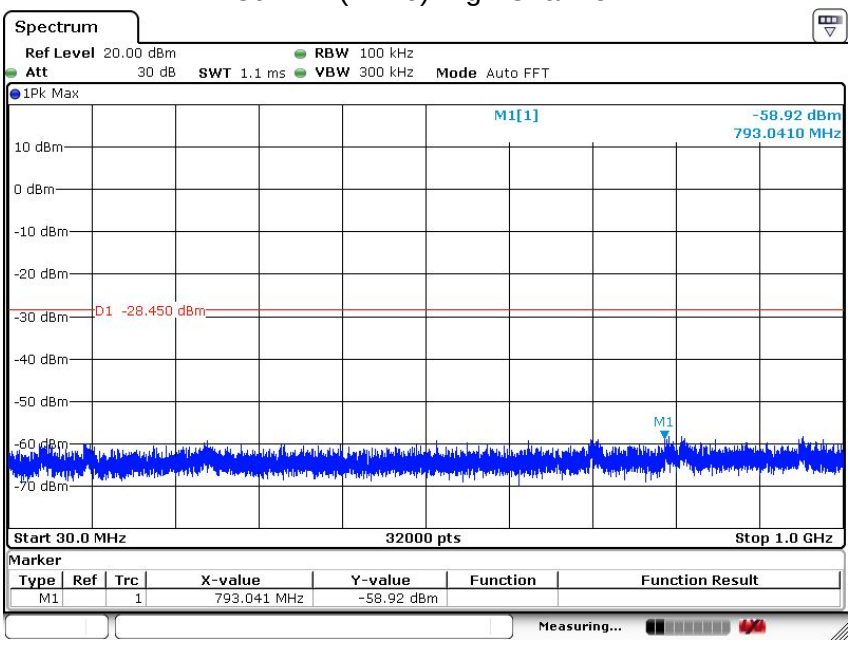


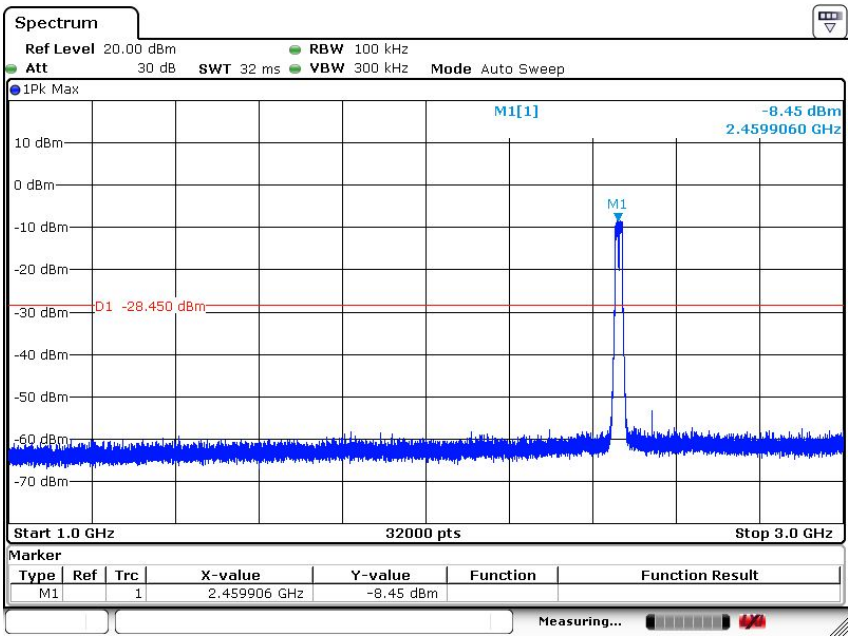


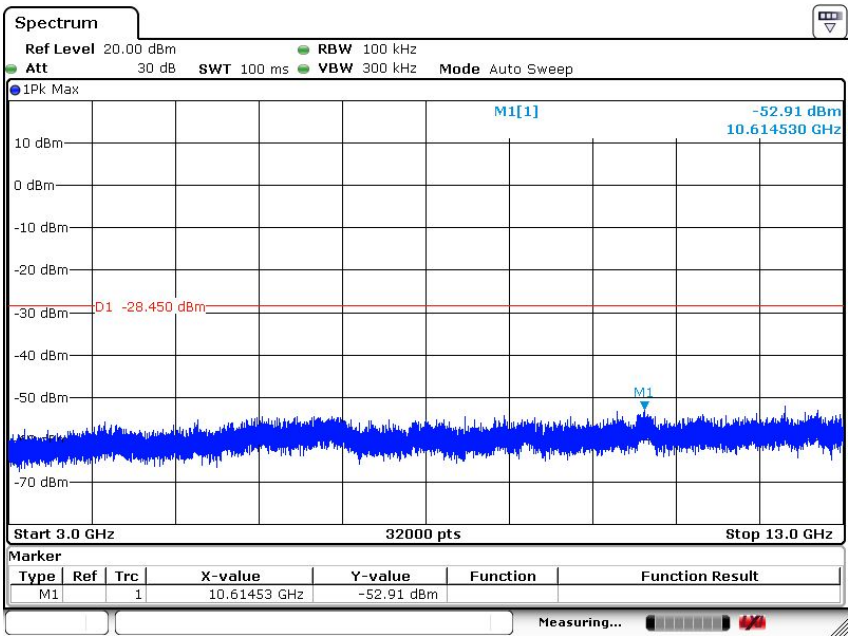

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.31 dBm
12.638280 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.630 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 12.63828 GHz -52.31 dBm
Measuring...

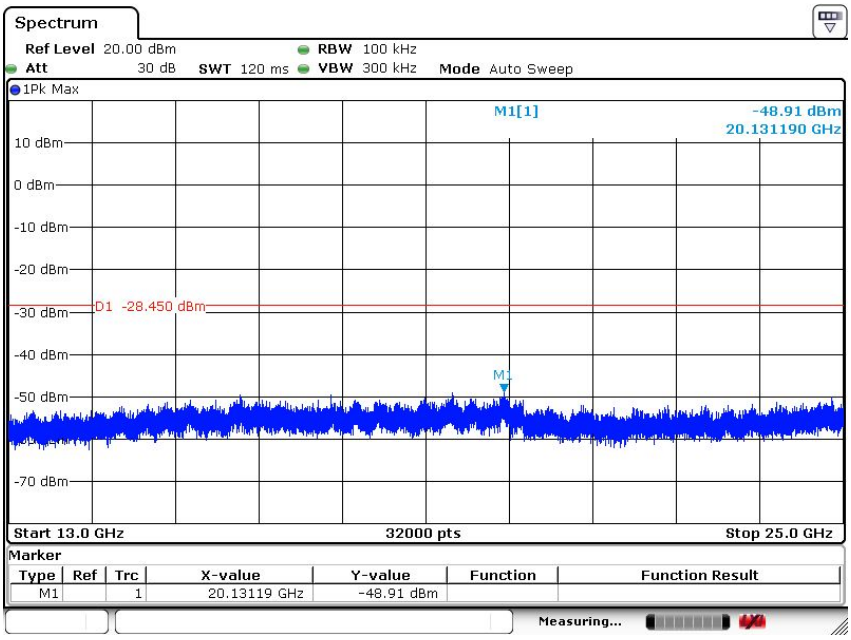

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.74 dBm
19.628690 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.630 dBm
-40 dBm
M1
-50 dBm
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 19.62869 GHz -48.74 dBm
Measuring...

802.11n(HT20) High Channel






Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 100 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-52.91 dBm
10.614530 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.450 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 3.0 GHz
32000 pts
Stop 13.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.61453 GHz -52.91 dBm
Measuring...


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 120 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-48.91 dBm
20.131190 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -28.450 dBm
-40 dBm
-50 dBm
M1
-70 dBm
Start 13.0 GHz
32000 pts
Stop 25.0 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.13119 GHz -48.91 dBm
Measuring...

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

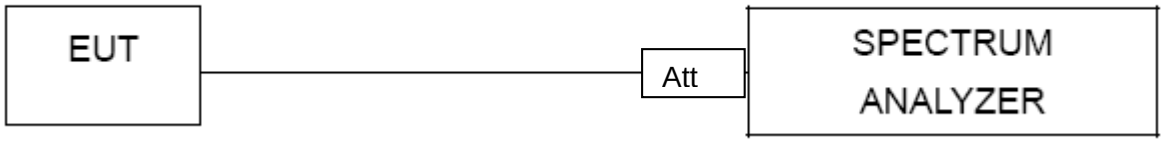
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times DTS bandwith.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

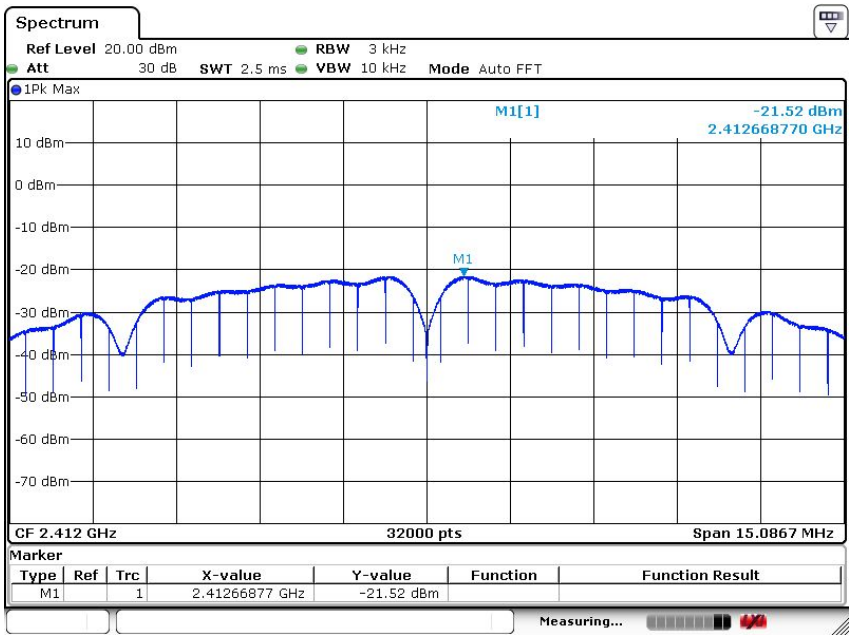
4.1.5 TEST RESULTS

EUT：	Wireless Smart Gateway	Model Name ：	MT101
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	TX b Mode /CH01, CH06, CH11		

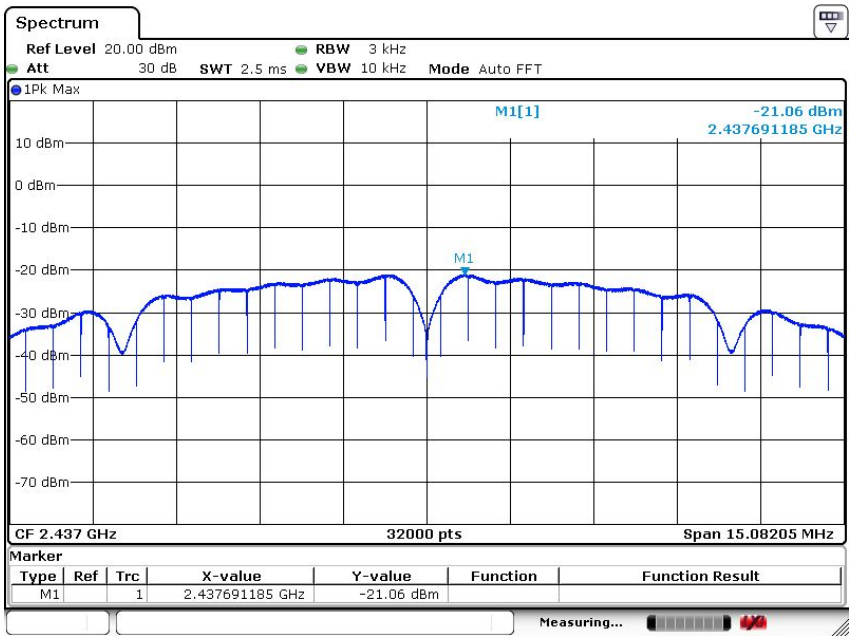
Note: The relevant measured result has the offset with cable loss already.

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-21.52	8	PASS
2437 MHz	-21.06	8	PASS
2462 MHz	-20.62	8	PASS

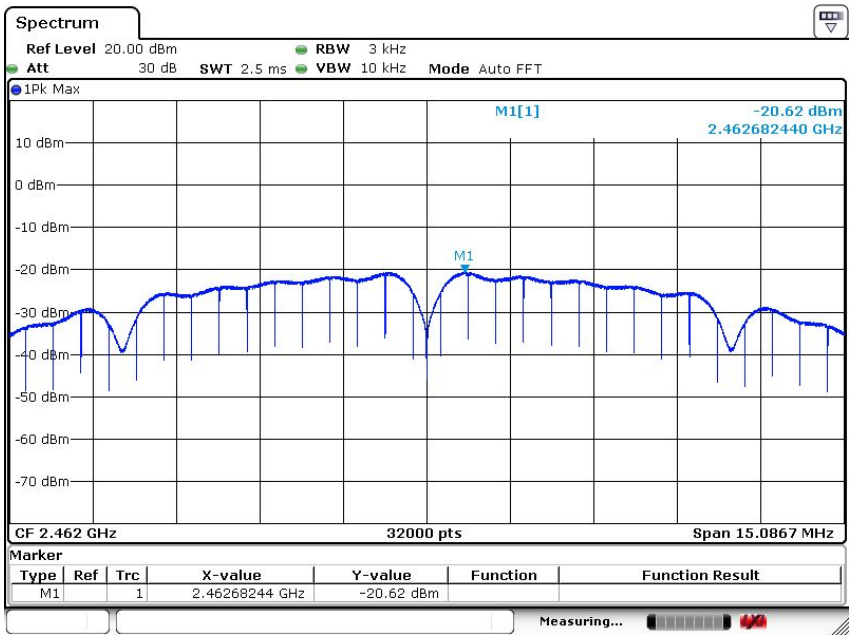
TX CH01



TX CH06



TX CH11

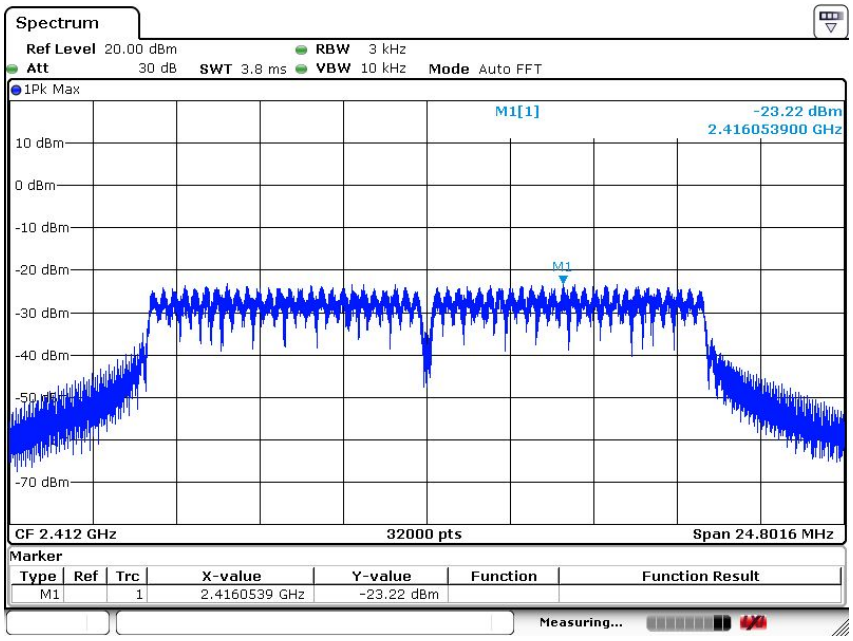


EUT：	Wireless Smart Gateway	Model Name ：	MT101
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	TX g Mode /CH01, CH06, CH11		

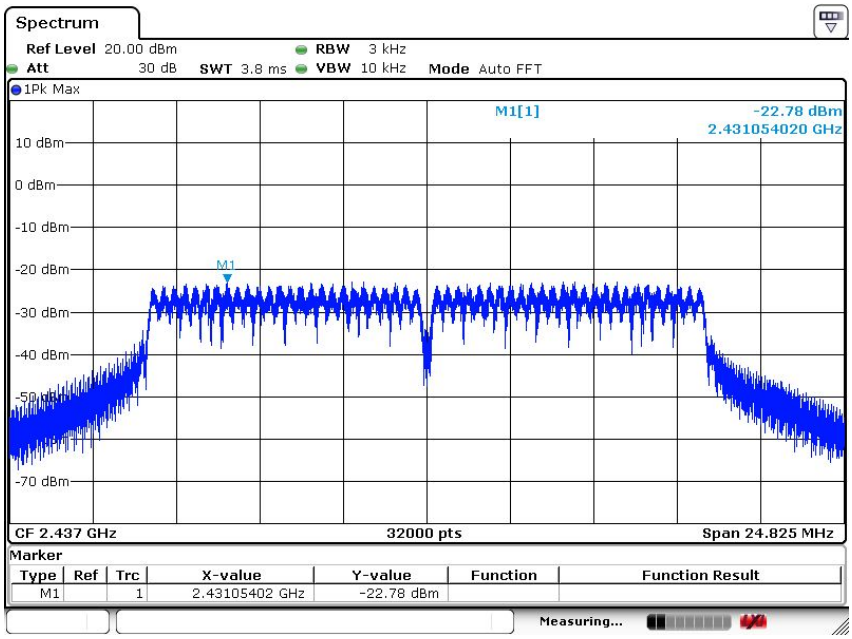
Note: The relevant measured result has the offset with cable loss already.

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-23.22	8	PASS
2437 MHz	-22.78	8	PASS
2462 MHz	-22.65	8	PASS

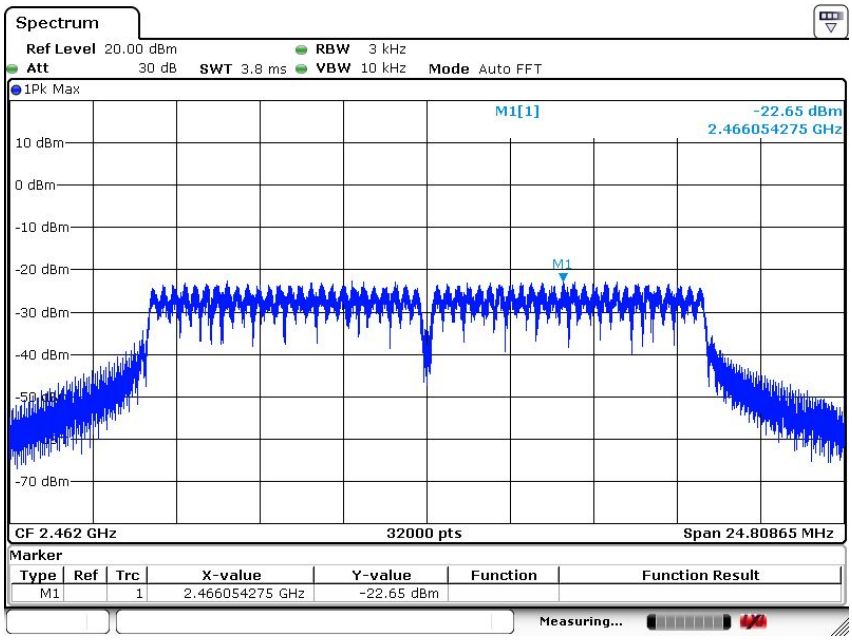
TX CH01



TX CH06



TX CH11

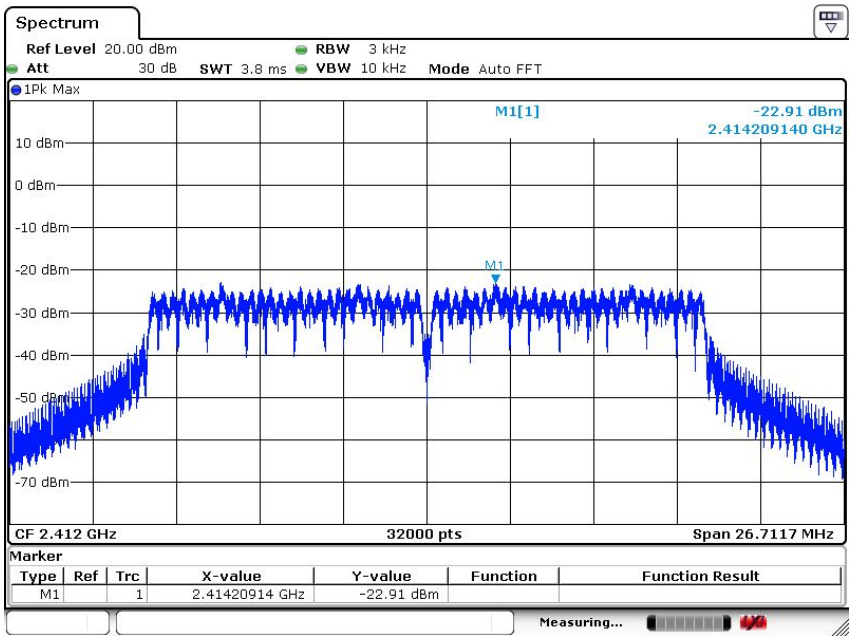


EUT：	Wireless Smart Gateway	Model Name ：	MT101
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	TX n(HT20) Mode /CH01, CH06, CH11		

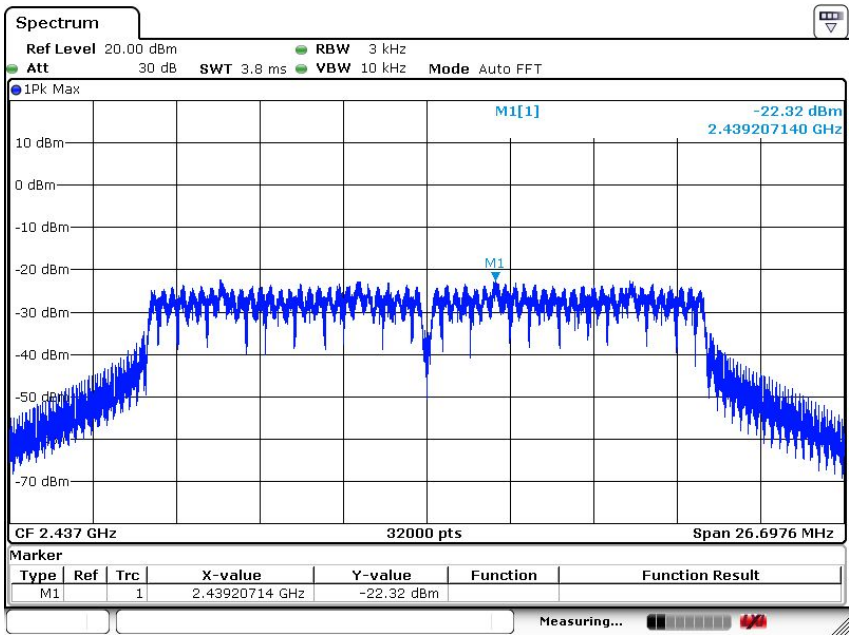
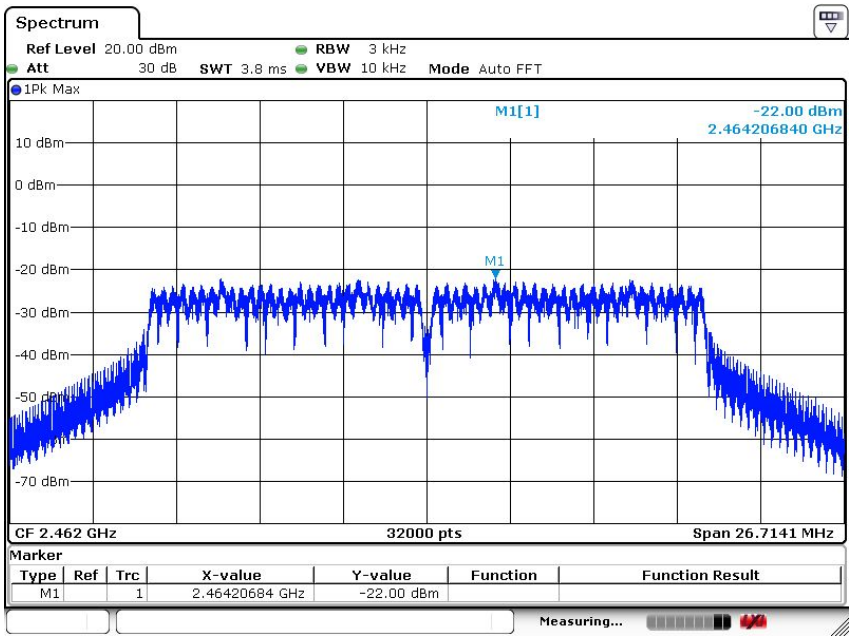
Note: The relevant measured result has the offset with cable loss already.

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-22.91	8	PASS
2437 MHz	-22.32	8	PASS
2462 MHz	-22.00	8	PASS

TX CH01



TX CH06



TX CH11