RADIO TEST REPORT

Report No:STS1906072W09

Issued for

eInfochips Inc

2025 Gateway Place Suite 270, San Jose, Ca 95110, USA

Product Name:	Eragon™ 624
Brand Name:	Eragon™ 624
Model Name:	Eragon™ 624 SOM
Series Model:	EIC-Q624-300
FCC ID:	2ATUP-Q624300
IC:	25301-Q624300
Test Standard:	FCC Part 15.247
	RSS-247 Issue 2, February 2017

Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

TEST RESULT CERTIFICATION

Applicant's Name ..... :	eInfochips Inc
Address ..... :	2025 Gateway Place Suite 270, San Jose, Ca 95110, USA
Manufacture's Name ..... :	eInfochips Inc
Address ..... :	2025 Gateway Place Suite 270, San Jose, Ca 95110, USA
Product Description	
Product Name ..... :	Eragon™ 624
Brand Name ..... :	Eragon™ 624
Model Name ..... :	Eragon™ 624 SOM
SeriesModel ..... :	EIC-Q624-300
Test Standards ..... :	FCC Part15.247
	RSS-247 Issue 2, February 2017
Test Procedure ..... :	ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC 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 ..... :	24 July 2019 ~ 12 Oct. 2019
Date of Issue ..... :	12 Oct. 2019
Test Result ..... :	**Pass**

Testing Engineer : 

(Chris Chen)

Technical Manager : 

(Sunday Hu)

Authorized Signatory : 

(Vita Li)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	12 Oct. 2019	STS1906072W09	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02

FCC Part 15.247,Subpart C RSS-247 Issue 2			
Standard Section	Test Item	Judgment	Remark
15.207 RSS-Gen Issue 5, Amendment 1, March 2019	Conducted Emission	PASS	--
15.247 (a)(2)	6dB Bandwidth	PASS	--
RSS-GEN clause 6.7	99% Bandwidth	PASS	--
15.247 (b)(3) RSS-247 Issue 2, February 2017 (5.4)	Output Power	PASS	--
15.247 (d) RSS-247 Issue 2, February 2017 (5.5)	Radiated Spurious Emission	PASS	--
15.247 (d) RSS-247 Issue 2, February 2017 (5.5)	Conducted Spurious & Band Edge Emission	PASS	--
15.247 (e) RSS-247 Issue 2, February 2017	Power Spectral Density	PASS	--
15.205 RSS-Gen Issue 5, Amendment 1, March 2019	Restricted frequency bands	PASS	--
Part 15.247(d)/part 15.209(a) RSS-247 Issue 2, February 2017	Band Edge Emission	PASS	--
15.203 RSS-Gen Issue 5, Amendment 1, March 2019	Antenna Requirement	PASS	--
RSS-Gen Issue 5, Amendment 1, March 2019	Frequency Stability	PASS	--

NOTE:

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

(2)all tests are according to ANSI C63.10-2013 .

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District,Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

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	RF output power, conducted	±0.71dB
2	Unwanted Emissions, conducted	±0.63dB
3	All emissions, radiated 30-200MHz	±3.43dB
4	All emissions, radiated 200MHz-1GHz	±3.57dB
5	All emissions, radiated>1G	±4.13dB
6	Conducted Emission (9KHz-150KHz)	±3.18dB
7	Conducted Emission (150KHz-30MHz)	±2.70dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name</td><td>Eragon™ 624</td></tr>
<tr><td>Trade Name</td><td>Eragon™ 624</td></tr>
<tr><td>Model Name</td><td>Eragon™ 624 SOM</td></tr>
<tr><td>Series Model</td><td>EIC-Q624-300</td></tr>
<tr><td>Model Difference</td><td>Only different in model name.</td></tr>
<tr><td>Product Description</td><td>The EUT is a Eragon™ 624
<table>
<tr><td>Operation Frequency:</td><td>802.11b/g/n 20: 2412~2462 MHz
802.11n(40MHz):2422~2452MHz</td></tr>
<tr><td>Modulation Type:</td><td>802.11b(DSSS):CCK,DQPSK,DBPSK
802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM
802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM</td></tr>
<tr><td>Bit Rate of Transmitter:</td><td>802.11b:11/5.5/2/1 Mbps
802.11g:54/48/36/24/18/12/9/6Mbps
802.11n(20MHz):
65/58.5/52/39/26/19.5/13/6.5Mbps
802.11n(40MHz):
135/121.5/108/81/54/40.5/37/13.5Mbps</td></tr>
<tr><td>Number of Channel:</td><td>802.11b/g/n20: 11CH
802.11n 40: 7CH</td></tr>
<tr><td>Antenna Designation:</td><td>Please see Note 4.</td></tr>
<tr><td>AntennaGain (dBi):</td><td>1.5 dBi</td></tr>
<tr><td>Duty Cycle:</td><td>>98%</td></tr>
</table></td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Adapter</td><td>Input: AC 100-240V, 1500mA, 50/60Hz
Output: DC 12V, 3000 mA</td></tr>
<tr><td>Power Rating</td><td>Input: 3.8V --- 6.67A
(As the 3.8V supply is coming from Carrier Board.)</td></tr>
<tr><td>Hardware version number</td><td>SOM: Rev 1.2</td></tr>
<tr><td>Software versionnumber</td><td>AND.8.1.0_EI.1.2.0</td></tr>
<tr><td>Radio Hardware Version of Test Equipment</td><td>MPLY.LR9.W1444,MD.LWTG.MP.V79.P4</td></tr>
<tr><td>Radio Software Version of Test Equipment</td><td>SC6531_W13.04.05_Release</td></tr>
<tr><td>Test Software</td><td>3.18.19</td></tr>
<tr><td>RF Power Setting TEST Software (power class)</td><td>2.4 GHz:802.11 b/g/n 20:12/10/9
2.4 GHz:802.11 n 40:9</td></tr>
</table>

Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1 For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2

Operation Frequency of channel			
802.11b/g/n(20MHz)		Channel List for 802.11n(40MHz)	
Channel	Frequency	Channel	Frequency
01	2412	03	2422
02	2417	04	2427
03	2422	05	2432
04	2427	06	2437
05	2432	07	2442
06	2437	08	2447
07	2442	09	2452
08	2447		
09	2452		
10	2457		
11	2462		

3 Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, themiddle frequency, and the highest frequency of channel were selected to perform the test, and the selectedchannel see below:
Carrier Frequency Channel

2.4GHz Test Frequency:

For 802.11b/g/n (HT20)		For 802.11n (HT40)	
Channel	Freq.(MHz)	Channel	Freq.(MHz)
01	2412	03	2422
06	2437	06	2437
11	2462	09	2452

4

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	Eragon™ 624	Eragon™ 624 SOM	Ceramic	N/A	1.5 dBi	WLAN Antenna

2.2 DESCRIPTION OF THE TEST MODES

Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11b CH1	1 Mbps
Mode 2	TX IEEE 802.11b CH6	1 Mbps
Mode 3	TX IEEE 802.11 b CH11	1 Mbps
Mode 4	TX IEEE 802.11g CH1	6 Mbps
Mode 5	TX IEEE 802.11g CH6	6 Mbps
Mode 6	TX IEEE 802.11g CH11	6 Mbps
Mode 7	TX IEEE 802.11n HT20 CH1	MCS 0
Mode 8	TX IEEE 802.11n HT20 CH6	MCS 0
Mode 9	TX IEEE 802.11n HT20 CH11	MCS 0
Mode 10	TX IEEE 802.11n HT40 CH3	MCS 0
Mode 11	TX IEEE 802.11n HT40 CH6	MCS 0
Mode 12	TX IEEE 802.11n HT40 CH9	MCS 0

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

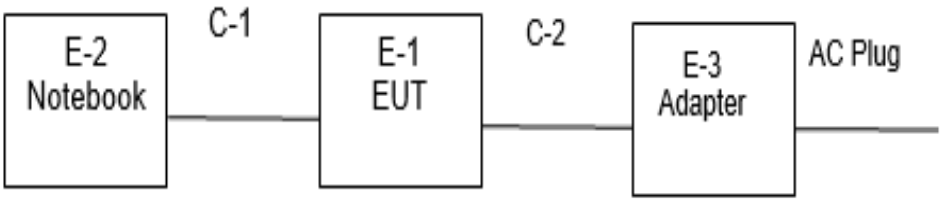
(2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V /60Hz is shown in the report

AC Conducted Emission

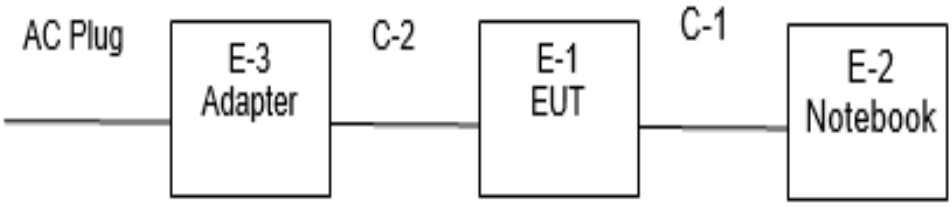
Test Case	
AC Conducted Emission	Mode13: Keeping WIFI TX

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiation Test Set



conduction Test Set



2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-3	Adapter	N/A	YHY-12003000	N/A	N/A
E-2	DC Cable	N/A	110cm	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Notebook	DELL	3480	N/A	N/A
C-1	USB Cable	N/A	100cm	N/A	N/A

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.

(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.07.29	2020.07.28
Signal Analyzer	Agilent	N9020A	MY51110105	2019.03.02	2020.03.01
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.1
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier(0.1M-3GHz)	EM	EM330	060665	2018.10.13, 2019.10.09	2019.10.12, 2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2018.10.13, 2019.10.09	2019.10.12, 2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2018.10.11, 2019.10.09	2019.10.10, 2020.10.08
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.07.29	2020.07.28
LISN	R&S	ENV216	101242	2018.10.11, 2019.10.09	2019.10.10, 2020.10.08
LISN	EMCO	3810/2NM	23625	2018.10.11, 2019.10.09	2019.10.10, 2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2018.10.11, 2019.10.09	2019.10.10, 2020.10.08
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2018.10.13, 2019.10.09	2019.10.12, 2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2018.10.13, 2019.10.09	2019.10.12, 2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2018.10.11, 2019.10.09	2019.10.10, 2020.10.08
Test SW	FARAD	LZ-RF /LzRf-3A3			

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

operating frequency band. In case the emission fall within the restricted band specified on Part 15. 207(a) and RSS-Gen Issue 5 limit in the table below has to be followed.

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

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.

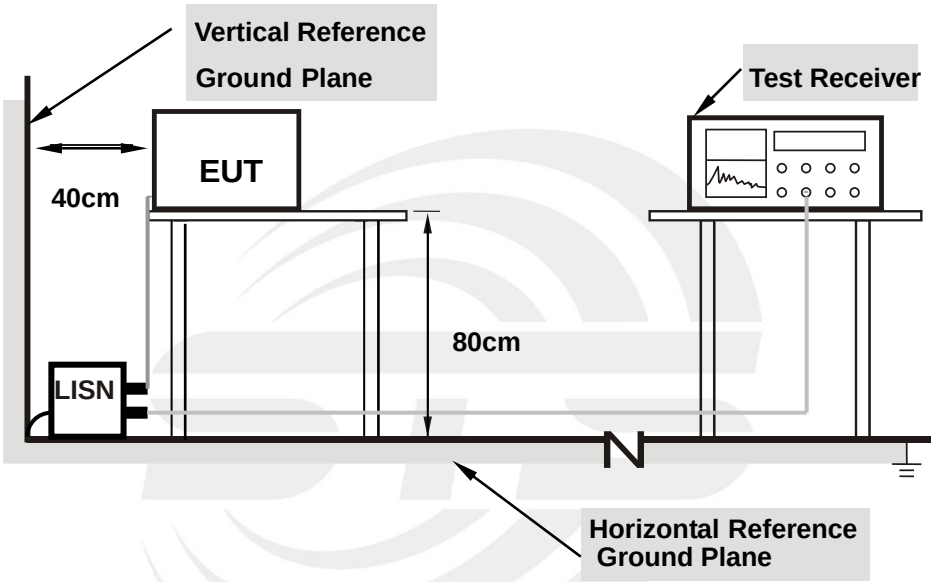
The following table is the setting of the receiver

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 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical 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 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

3.1.4EUT OPERATING CONDITIONS

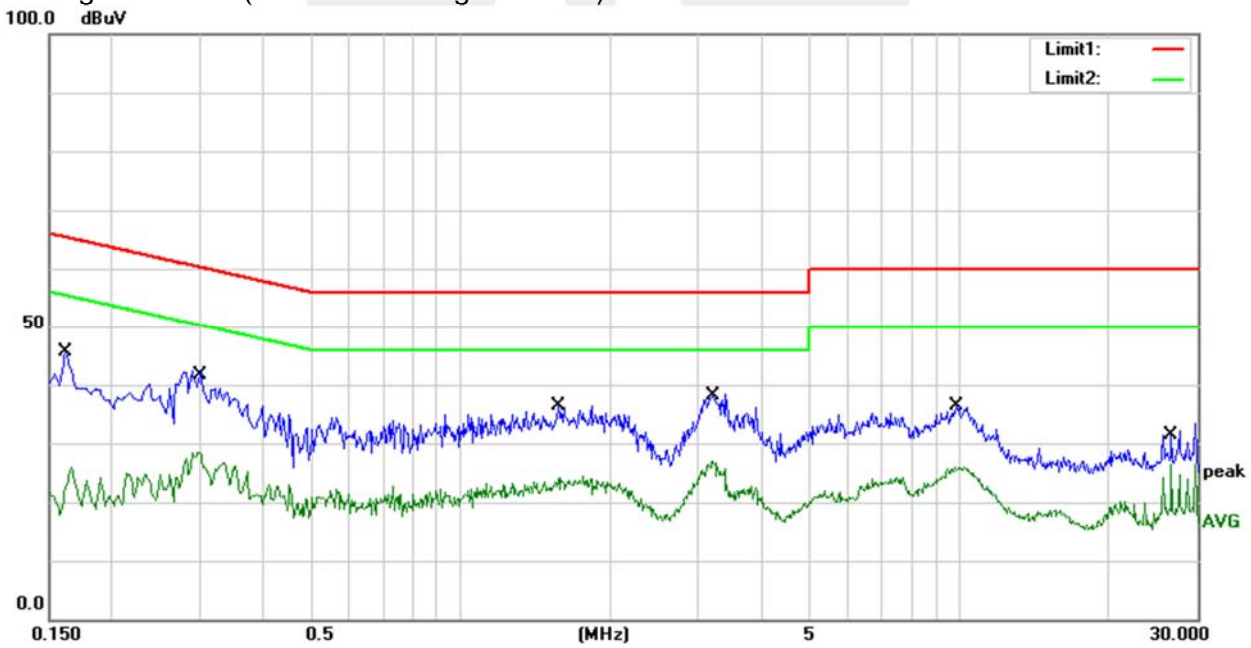
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.5 TEST RESULT

Temperature:	25.3(C)	Relative Humidity:	62%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 13		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1620	-10.18	55.85	45.67	65.36	-19.69	QP
2	0.1620	-29.88	55.85	25.97	55.36	-29.39	AVG
3	0.2980	-13.18	55.66	42.48	60.30	-17.82	QP
4	0.2980	-27.32	55.66	28.34	50.30	-21.96	AVG
5	1.5740	-18.52	55.02	36.50	56.00	-19.50	QP
6	1.5740	-31.10	55.02	23.92	46.00	-22.08	AVG
7	3.1940	-14.77	53.13	38.36	56.00	-17.64	QP
8	3.1940	-26.14	53.13	26.99	46.00	-19.01	AVG
9	9.8740	-9.33	45.75	36.42	60.00	-23.58	QP
10	9.8740	-19.79	45.75	25.96	50.00	-24.04	AVG
11	26.6220	-5.78	39.22	33.44	60.00	-26.56	QP
12	26.6220	-12.86	39.22	26.36	50.00	-23.64	AVG

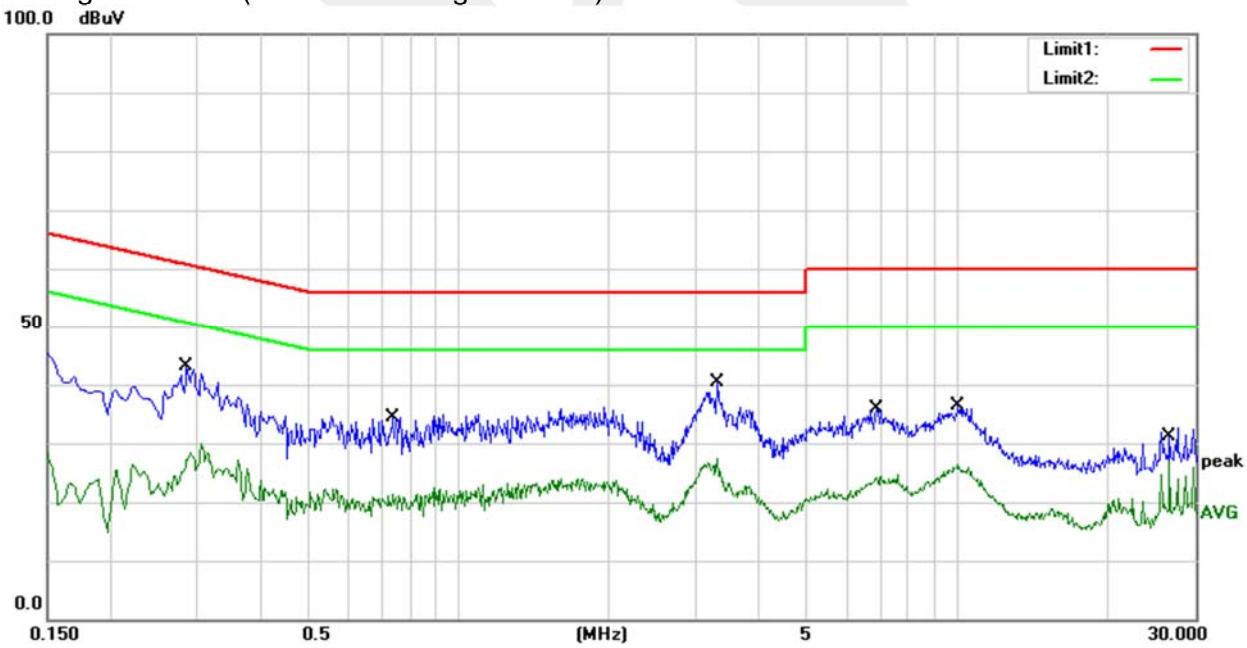
Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	25.3(C)	Relative Humidity:	62%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 13		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2860	-12.53	55.69	43.16	60.64	-17.48	QP
2	0.2860	-25.74	55.69	29.95	50.64	-20.69	AVG
3	0.7420	-21.02	55.52	34.50	56.00	-21.50	QP
4	0.7420	-34.09	55.52	21.43	46.00	-24.57	AVG
5	3.3060	-12.70	52.98	40.28	56.00	-15.72	QP
6	3.3060	-25.64	52.98	27.34	46.00	-18.66	AVG
7	6.8980	-13.05	48.97	35.92	60.00	-24.08	QP
8	6.8980	-24.35	48.97	24.62	50.00	-25.38	AVG
9	10.0580	-9.12	45.57	36.45	60.00	-23.55	QP
10	10.0580	-19.68	45.57	25.89	50.00	-24.11	AVG
11	26.6260	-6.55	39.22	32.67	60.00	-27.33	QP
12	26.6260	-12.38	39.22	26.84	50.00	-23.16	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a), RSS-Gen Issue 5, Amendment 1, March 2019 and RSS-247 Issue 2, February 2017 (5.5) limit in the table and according to ANSI C63.10-2013 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

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

LIMITS OF RADIATED EMISSION MEASUREMENT (1000MHz-25GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

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).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5

8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 – 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 – 8500	
108 – 138		

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz /3MHz

For Band edge

Spectrum Parameter	Setting
Detector	Peak/AV
Start/Stop Frequency	Lower Band Edge: 2300 to 2412 MHz Upper Band Edge: 2462to 2500 MHz
RB / VB (emission in restricted band)	1 MHz /3MHz

Receiver Parameter	Setting
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

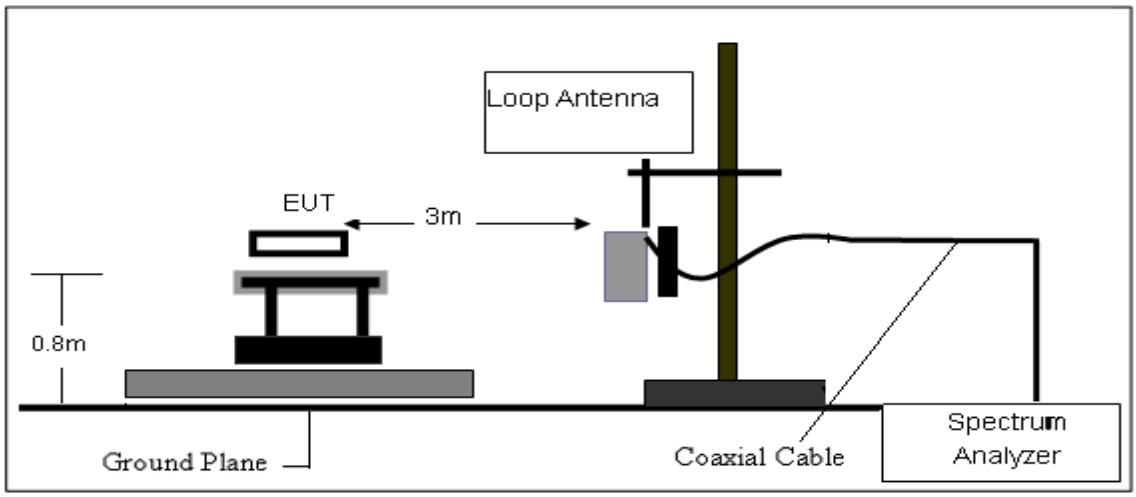
a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz
b. The EUT was placed on the top of a rotating table 0.8 meters(above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarizations of the antenna are set to make the measurement
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

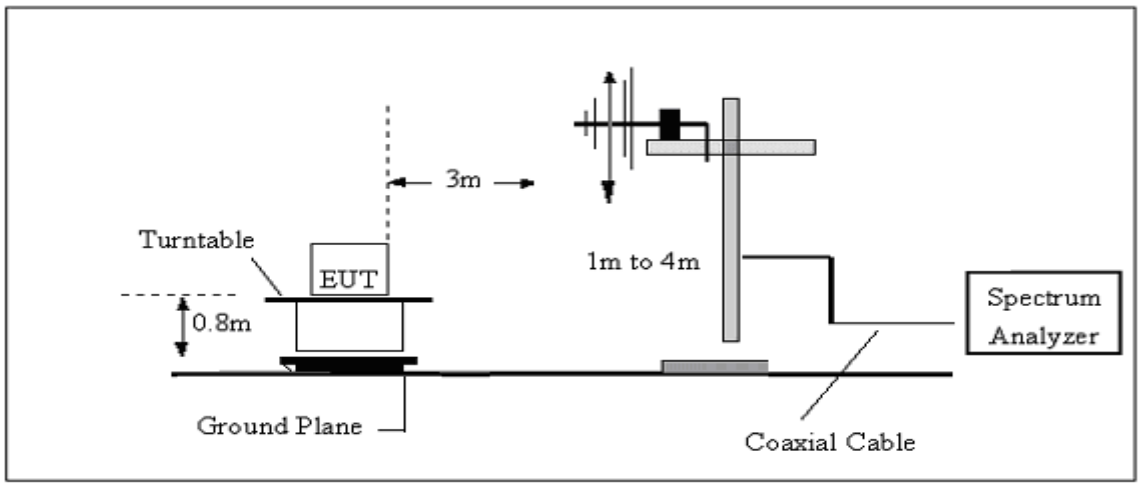
Both horizontal and vertical antenna polarities were testedand performed test to three orthogonal axis. The worst case emissions were reported

3.2.3 TEST SETUP

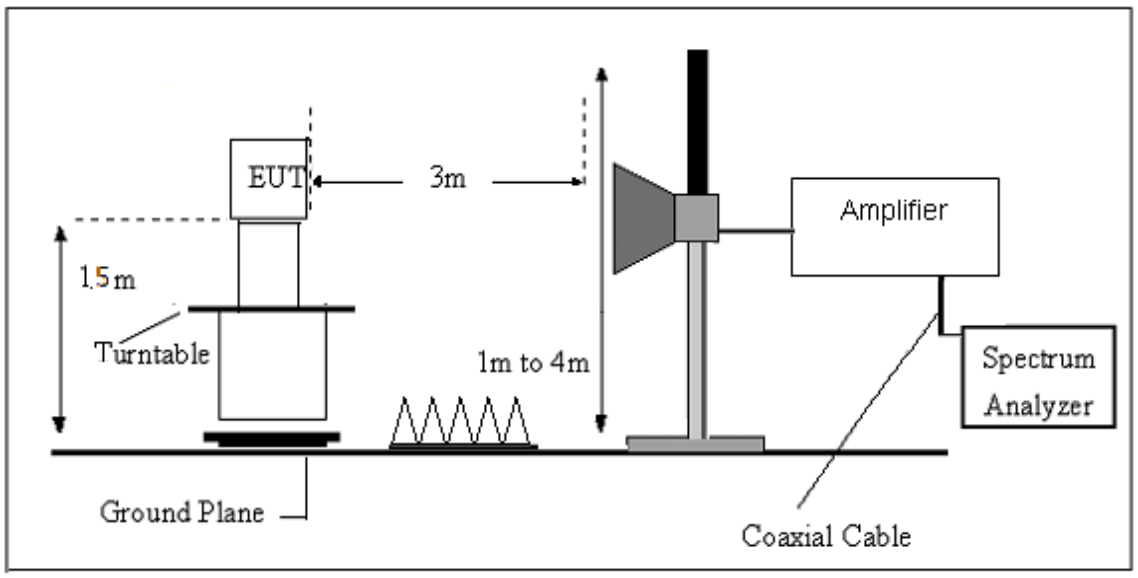
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting theAmplifier 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	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

3.2.6 TEST RESULT

9KHz-30MHz

Temperature:	25.7(C)	Relative Humidtity:	67%RH
Test Voltage:	AC 120V/60Hz	Polarization:	--
Test Mode:	TX Mode		

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

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.

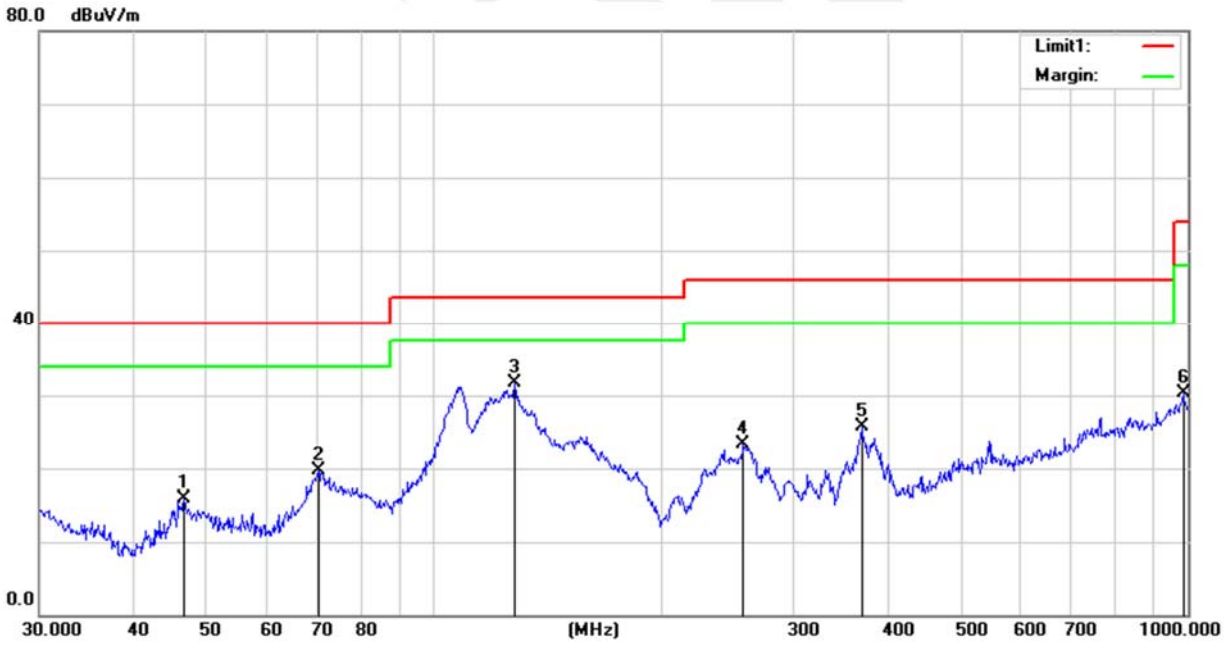
(30MHz - 1000MHz)

Temperature:	25.7(C)	Relative Humidtity:	67%RH
Test Voltage:	AC 120V/60Hz	Phase:	Horizontal
Test Mode:	Mode 1/2/3/4/5/6/7/8/9/10/11/12 (Mode 6 worst mode)		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	46.6664	37.36	-21.50	15.86	40.00	-24.14	QP
2	70.3365	44.59	-24.80	19.79	40.00	-20.21	QP
3	128.1130	49.91	-18.25	31.66	43.50	-11.84	QP
4	257.4222	38.34	-15.07	23.27	46.00	-22.73	QP
5	369.4047	38.20	-12.52	25.68	46.00	-20.32	QP
6	986.0717	28.00	2.29	30.29	54.00	-23.71	QP

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit

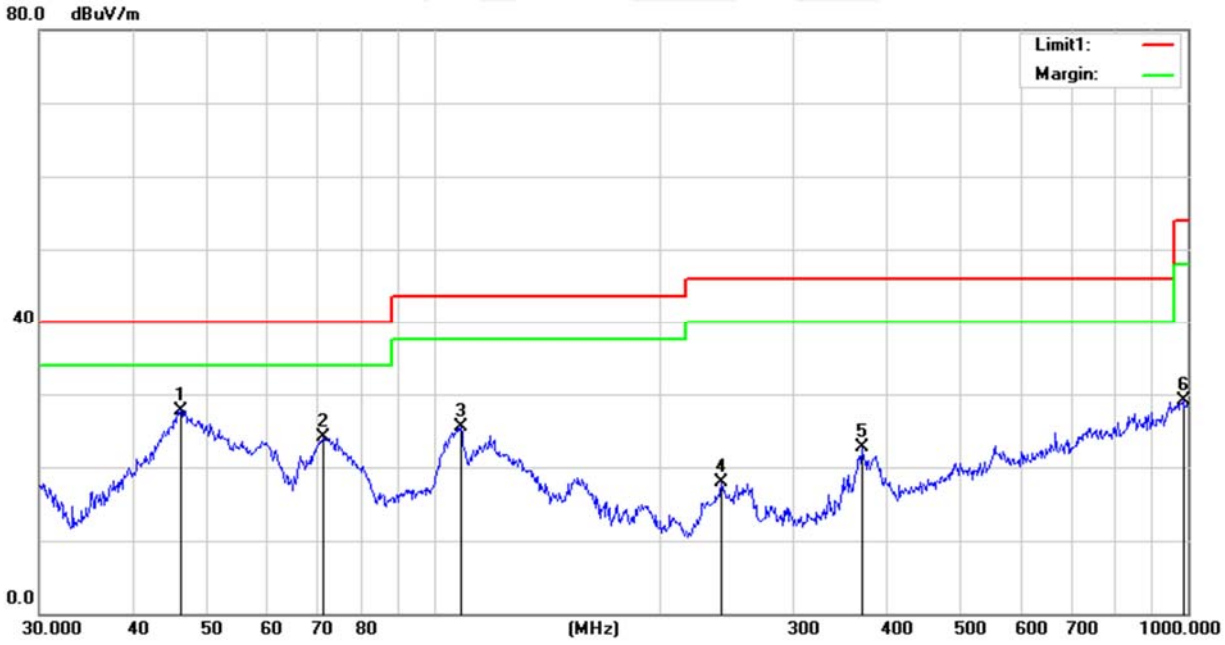


Temperature:	25.7(C)	Relative Humidtity:	67%RH
Test Voltage:	AC 120V/60Hz	Phase:	Vertical
Test Mode:	Mode 1/2/3/4/5/6/7/8/9/10/11/12 (Mode 6 worst mode)		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	46.1780	49.04	-21.24	27.80	40.00	-12.20	QP
2	71.3300	48.65	-24.62	24.03	40.00	-15.97	QP
3	108.6470	44.66	-19.21	25.45	43.50	-18.05	QP
4	240.8304	35.69	-17.85	17.84	46.00	-28.16	QP
5	369.4047	35.28	-12.52	22.76	46.00	-23.24	QP
6	986.0717	26.91	2.29	29.20	54.00	-24.80	QP

Remark:.

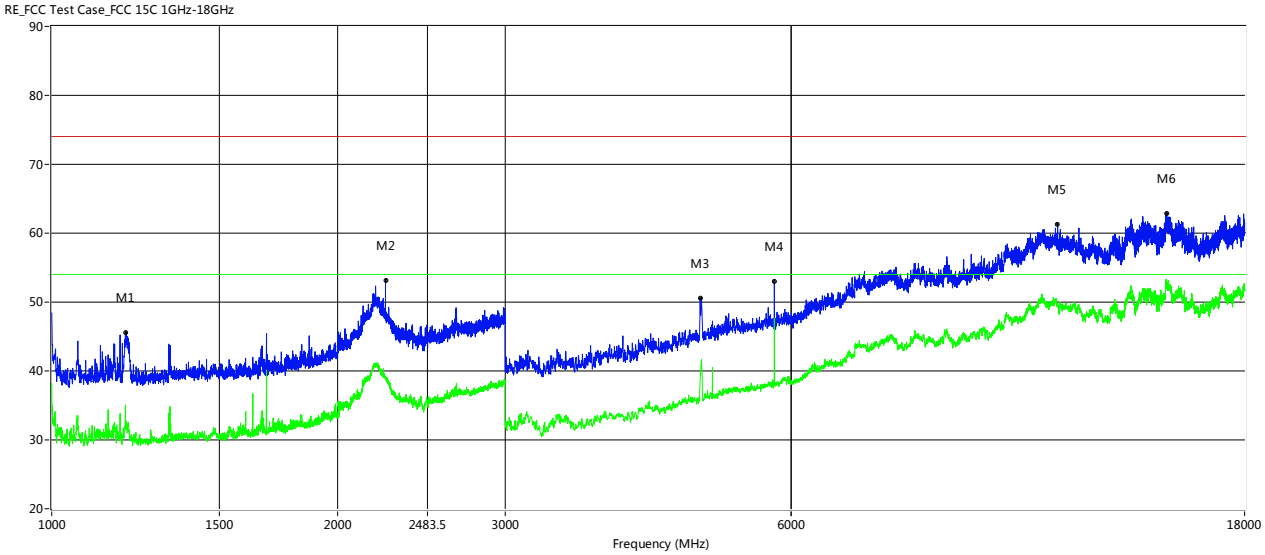
1. Margin = Result (Result =Reading + Factor)–Limit



(1000MHz-25GHz) Restricted band and Spurious emission Requirements

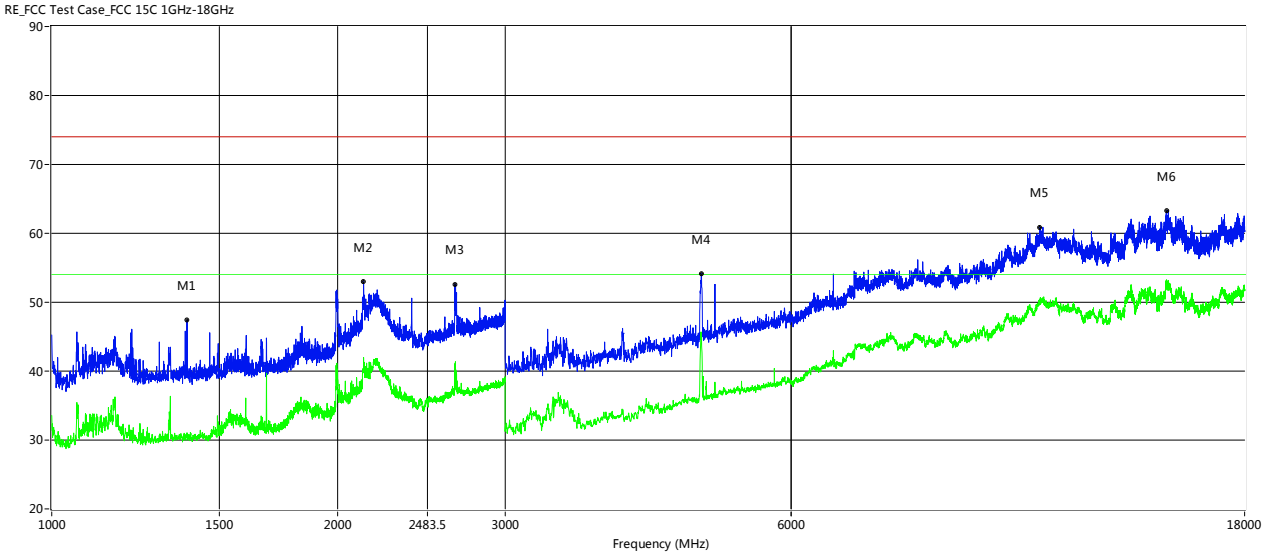
802.11 g-Low

Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1197.500	45.64	--	32.72	-0.74	74.0	--	54.0	-21.28	Horizontal	Pass
2245.000	53.12	--	39.05	8.28	74.0	--	54.0	-14.95	Horizontal	Pass
4812.500	50.56	--	39.06	-5.61	74.0	--	54.0	-14.94	Horizontal	Pass
5760.000	52.94	--	47.66	-2.48	74.0	--	54.0	-6.34	Horizontal	Pass
11442.500	61.23	--	49.57	9.69	74.0	--	54.0	-4.43	Horizontal	Pass
14890.000	62.93	--	52.75	12.29	74.0	--	54.0	-1.25	Horizontal	Pass

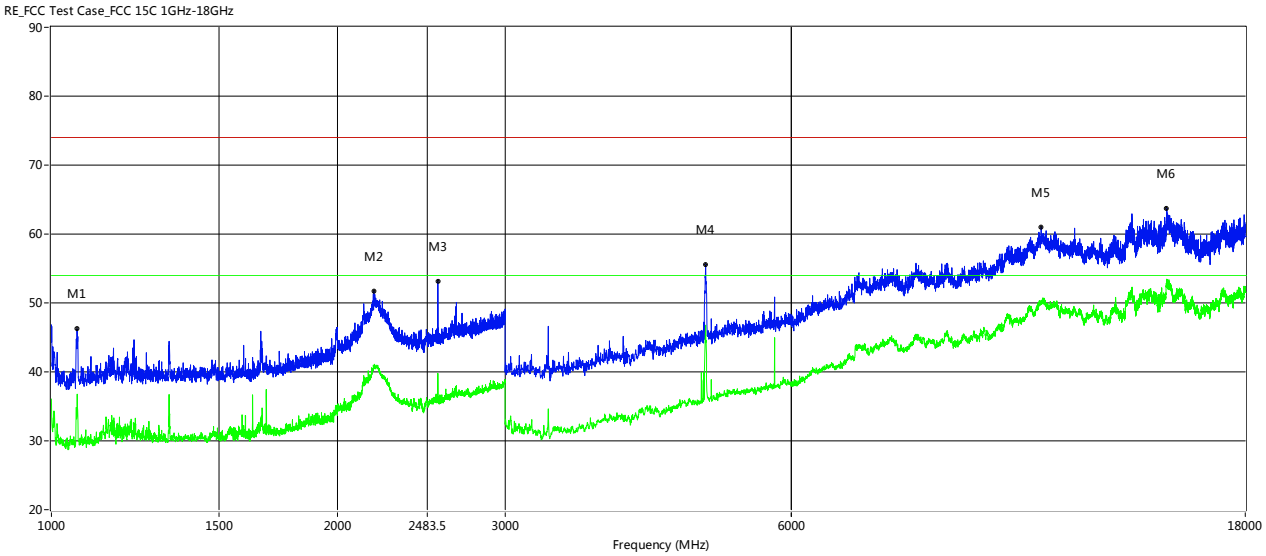
Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1387.500	47.41	--	31.05	0.02	74.0	--	54.0	-22.95	Vertical	Pass
2129.000	55.99	--	44.97	6.82	74.0	--	54.0	-9.03	Vertical	Pass
2655.500	52.63	--	41.04	6.15	74.0	--	54.0	-12.96	Vertical	Pass
4827.500	54.15	--	44.85	-5.45	74.0	--	54.0	-9.15	Vertical	Pass
10965.000	60.92	--	50.50	10.11	74.0	--	54.0	-3.50	Vertical	Pass
14897.500	63.31	--	52.72	12.36	74.0	--	54.0	-1.28	Vertical	Pass

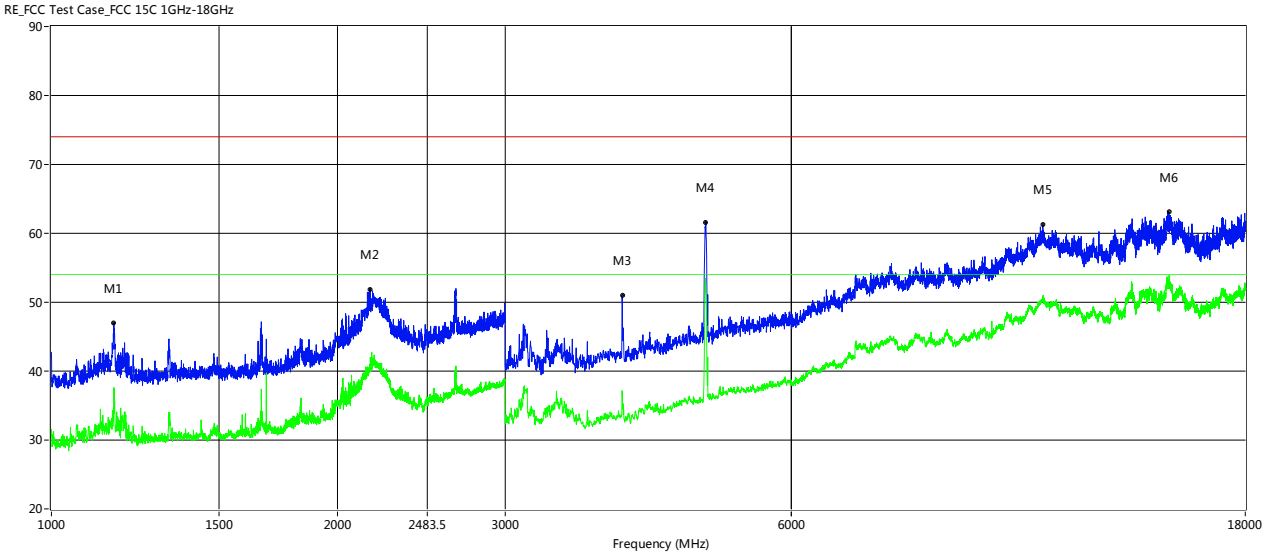
802.11 g-Mid

Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1064.000	46.26	--	34.97	-1.50	74.0	--	54.0	-19.03	Horizontal	Pass
2183.500	51.74	--	40.62	10.06	74.0	--	54.0	-13.38	Horizontal	Pass
2549.500	53.19	--	39.79	5.38	74.0	--	54.0	-14.21	Horizontal	Pass
4875.000	55.64	--	46.78	-4.94	74.0	--	54.0	-7.22	Horizontal	Pass
10982.500	61.05	--	49.86	10.22	74.0	--	54.0	-4.14	Horizontal	Pass
14886.250	63.69	--	52.88	12.26	74.0	--	54.0	-1.12	Horizontal	Pass

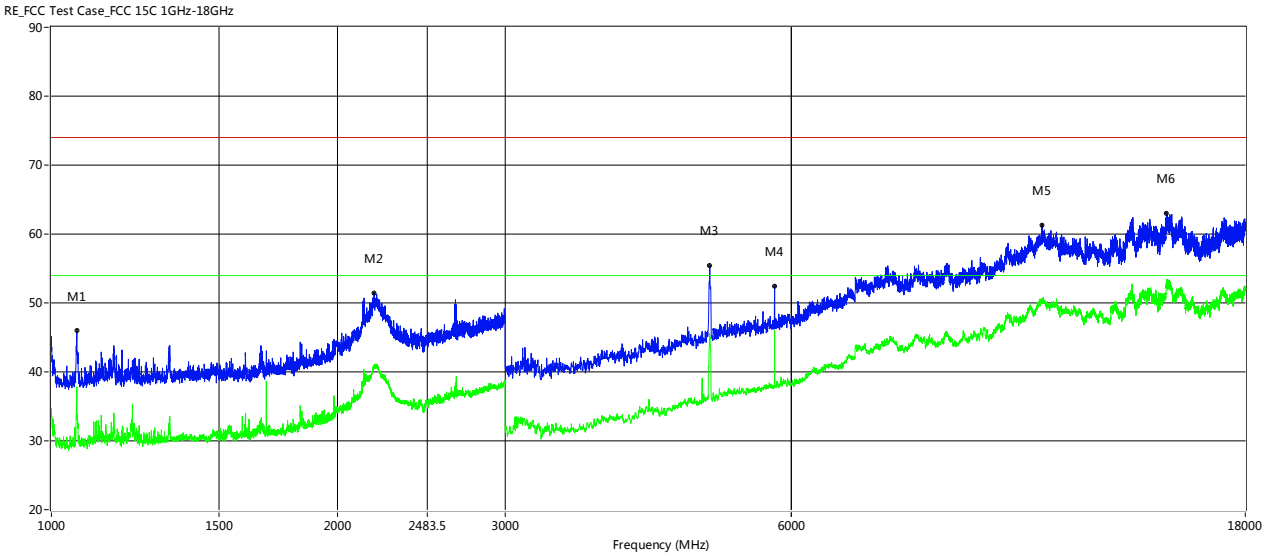
Vertical



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1163.500	47.02	--	37.62	-1.08	74.0	--	54.0	-16.38	Vertical	Pass
2124.500	57.66	--	45.69	6.36	74.0	--	54.0	-8.31	Vertical	Pass
3982.500	50.97	--	37.18	-8.22	74.0	--	54.0	-16.82	Vertical	Pass
4877.500	61.64	--	52.33	-4.91	74.0	--	54.0	-1.67	Vertical	Pass
11027.500	61.26	--	50.60	10.17	74.0	--	54.0	-3.40	Vertical	Pass
14960.000	63.09	--	52.71	12.39	74.0	--	54.0	-1.29	Vertical	Pass

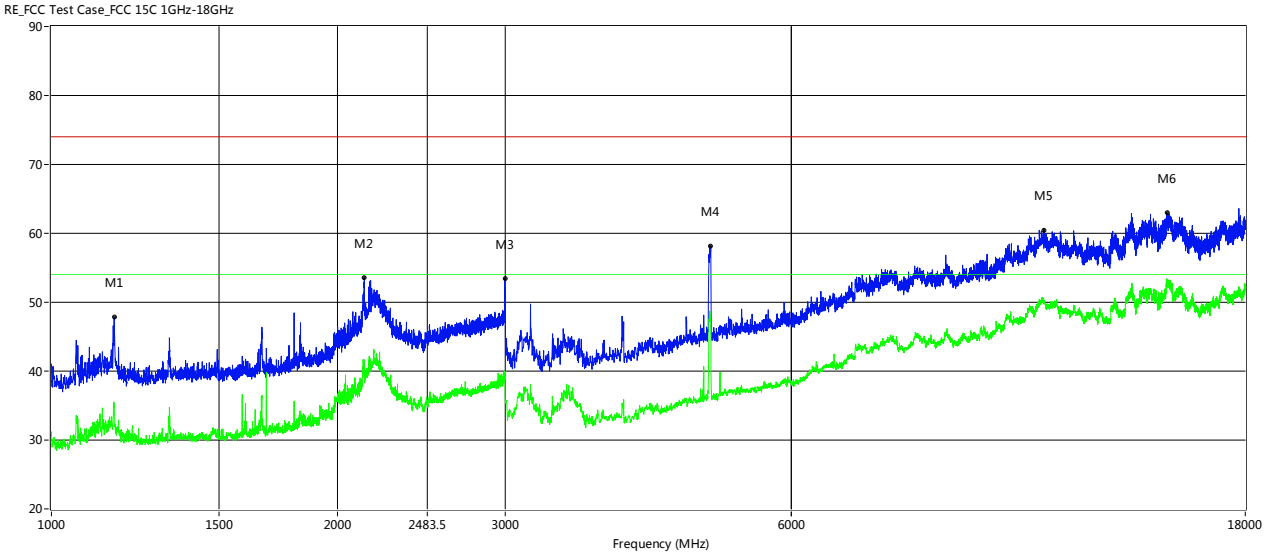
802.11 g-High

Horizontal



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1063.500	45.94	--	37.83	-1.50	74.0	--	54.0	-16.17	Horizontal	Pass
2184.500	51.47	--	40.91	10.07	74.0	--	54.0	-13.09	Horizontal	Pass
4925.000	55.38	--	44.73	-4.64	74.0	--	54.0	-9.27	Horizontal	Pass
5760.000	52.36	--	45.96	-2.48	74.0	--	54.0	-8.04	Horizontal	Pass
11007.500	61.31	--	50.24	10.28	74.0	--	54.0	-3.76	Horizontal	Pass
14882.500	63.01	--	52.96	12.23	74.0	--	54.0	-1.04	Horizontal	Pass

Vertical



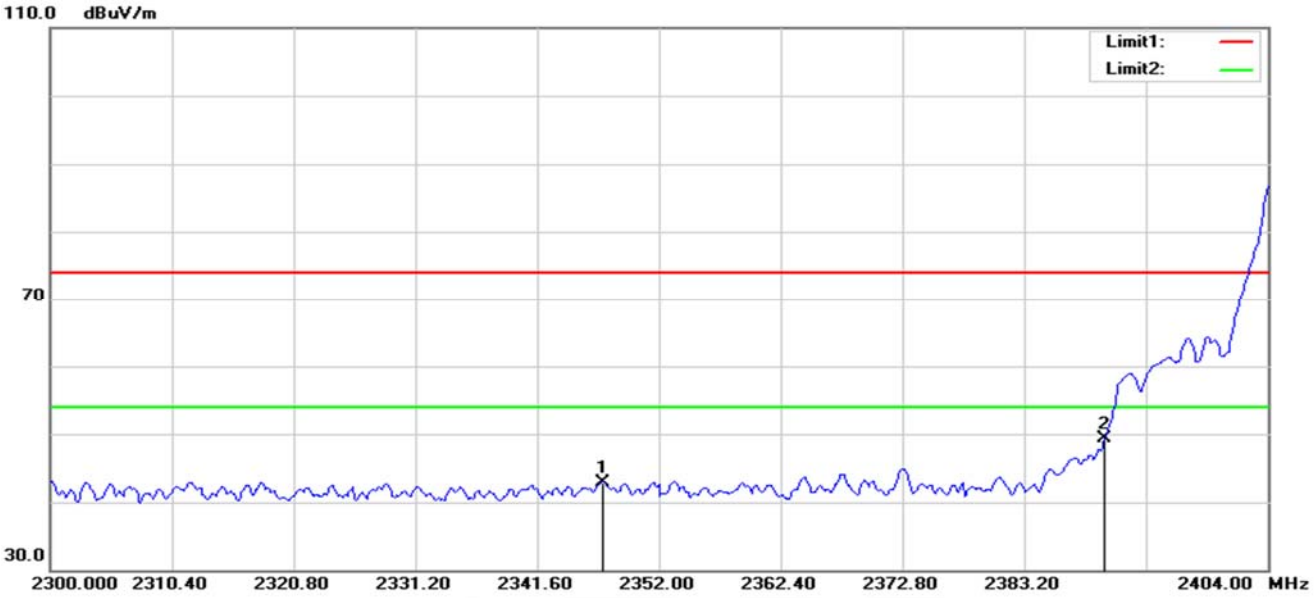
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1164.000	47.79	--	34.75	-1.08	74.0	--	54.0	-19.25	Vertical	Pass
2133.500	53.62	--	39.82	7.29	74.0	--	54.0	-14.18	Vertical	Pass
2998.000	53.40	--	39.59	8.10	74.0	--	54.0	-14.41	Vertical	Pass
4935.000	58.10	--	46.44	-4.63	74.0	--	54.0	-7.56	Vertical	Pass
11052.500	60.43	--	49.93	10.04	74.0	--	54.0	-4.07	Vertical	Pass
14888.750	63.03	--	53.38	12.28	74.0	--	54.0	-0.62	Vertical	Pass

Note: 802.11b, 802.11g, 802.11n (HT-20), 802.11n (HT-40) mode all have been tested, the worst case is 802.11 g, only show the worst case.

3.2.6 TEST RESULTS(Band edge Requirements)

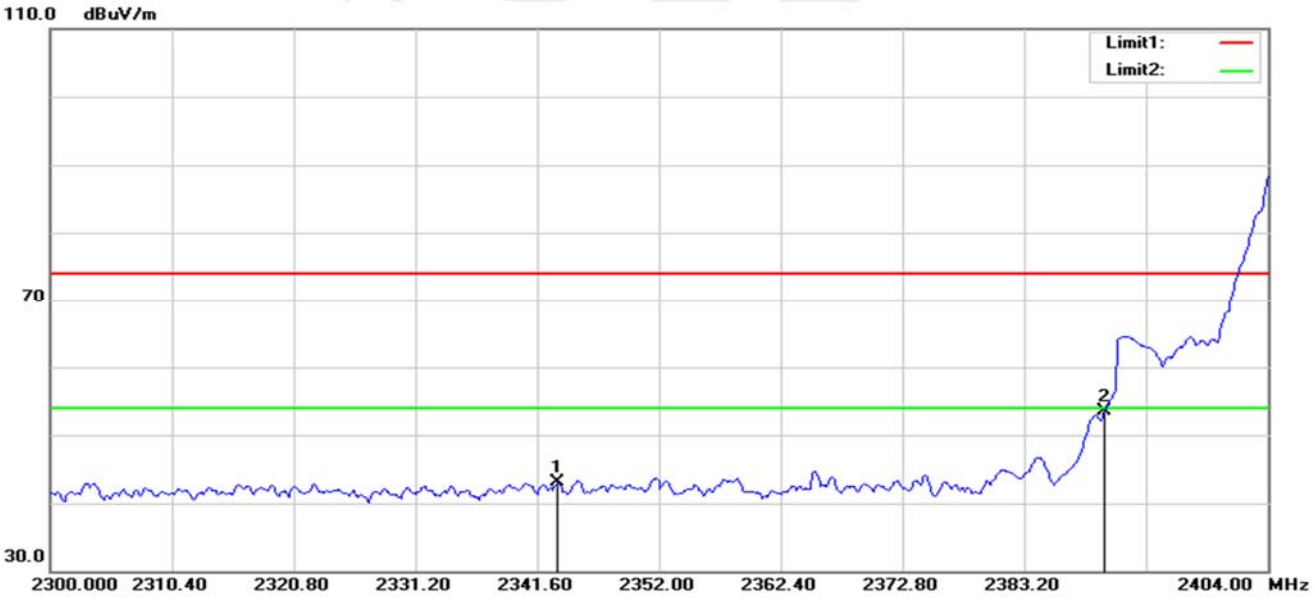
802.11 g-Low

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2347.216	39.28	3.72	43.00	74.00	-31.00	peak
2	2390.000	44.93	4.34	49.27	74.00	-24.73	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2343.368	39.33	3.71	43.04	74.00	-30.96	peak
2	2390.000	49.13	4.34	53.47	74.00	-20.53	peak

802.11 g-High

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	57.21	4.60	61.81	74.00	-12.19	peak
2	2483.500	44.83	4.60	49.43	54.00	-4.57	AVG

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	63.80	4.60	68.40	74.00	-5.60	peak
2	2483.500	47.69	4.60	52.29	54.00	-1.71	AVG

Note: 802.11b, 802.11g, 802.11n (HT-20), 802.11n (HT-40) mode all have been tested, the worst case is 802.11 g, only show the worst case.

4.CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d) & RSS-247 Issue 2, in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

.

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2300 to 2412 MHz Upper Band Edge: 2462to 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

4.3DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP

The EUT which is powered by the Adapter, is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

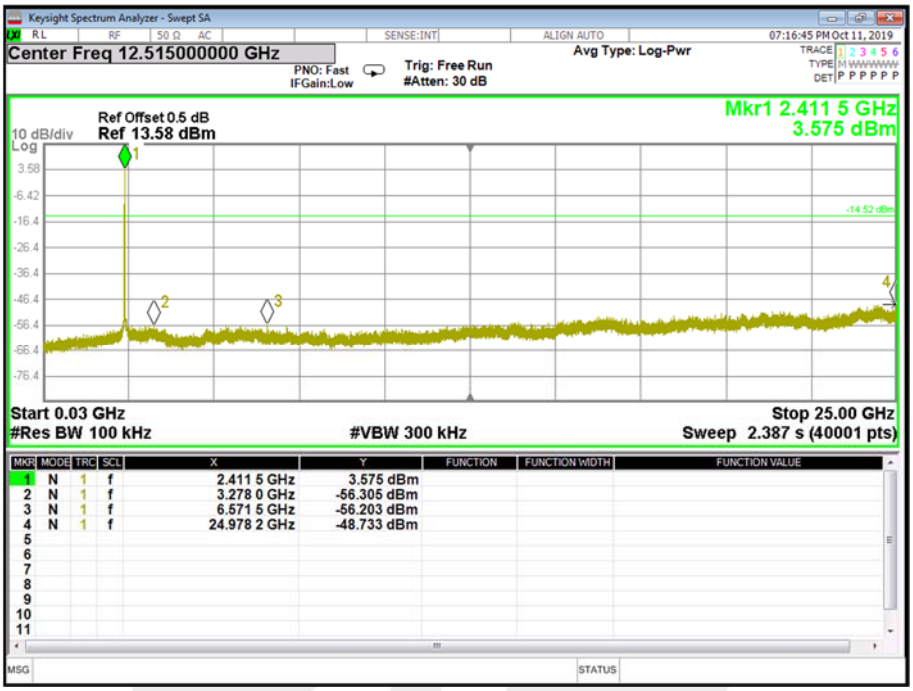
4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

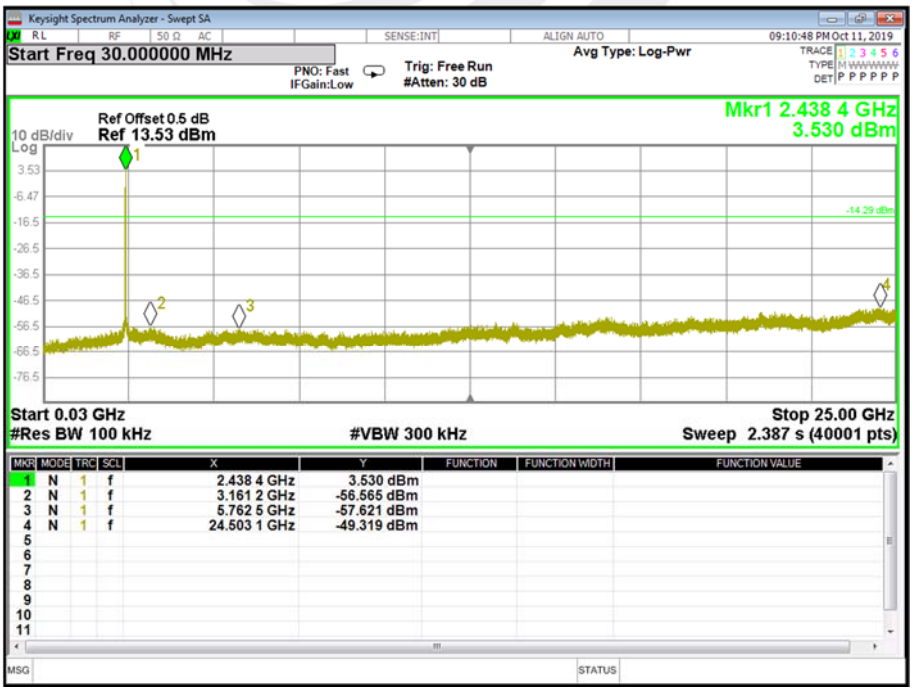
4.6 TEST RESULTS

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX b Mode /CH01, CH06, CH11

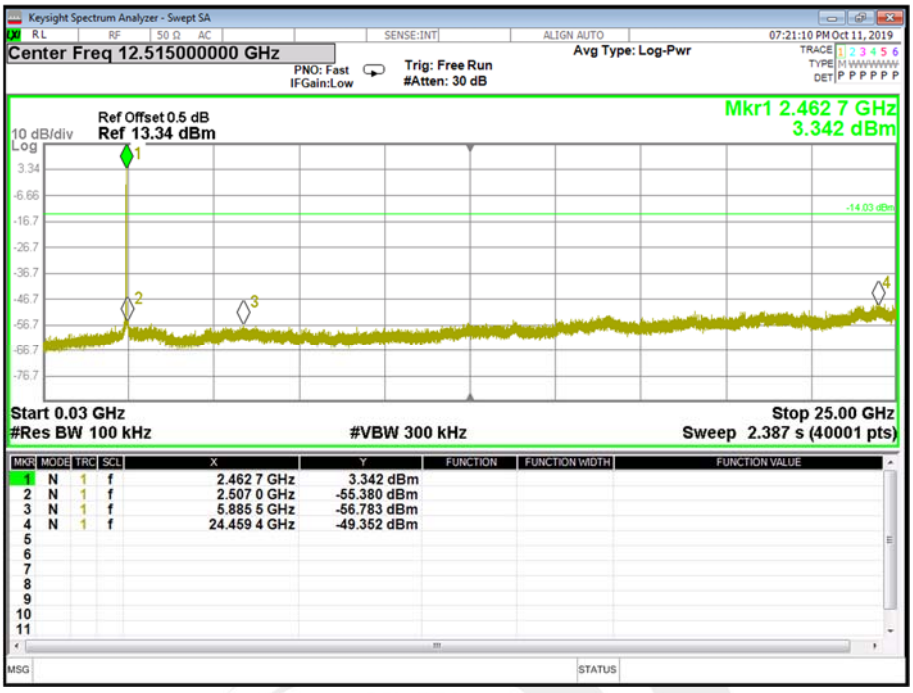
CH 01



CH 06

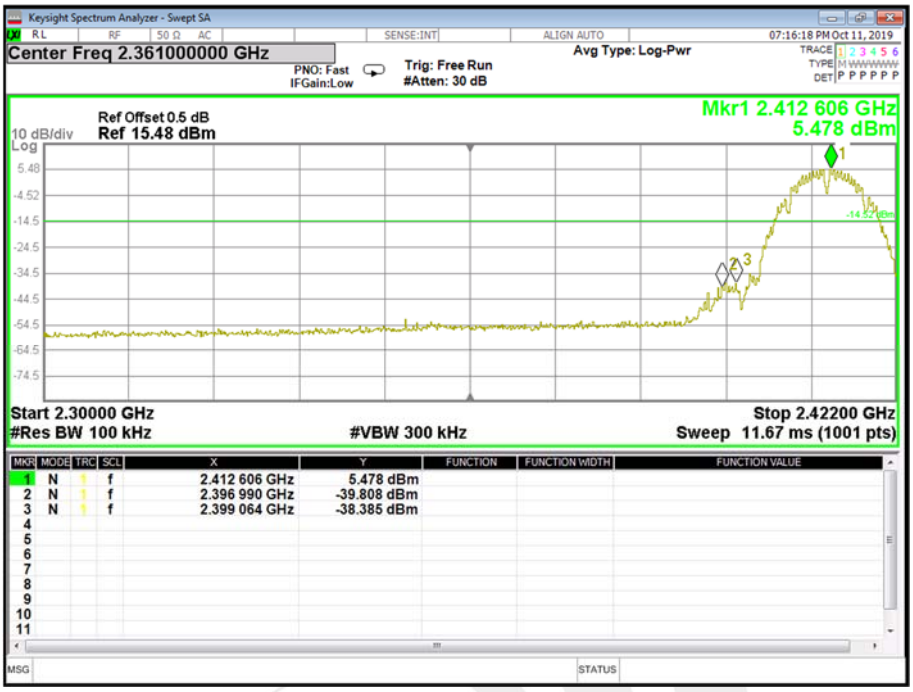


CH 11

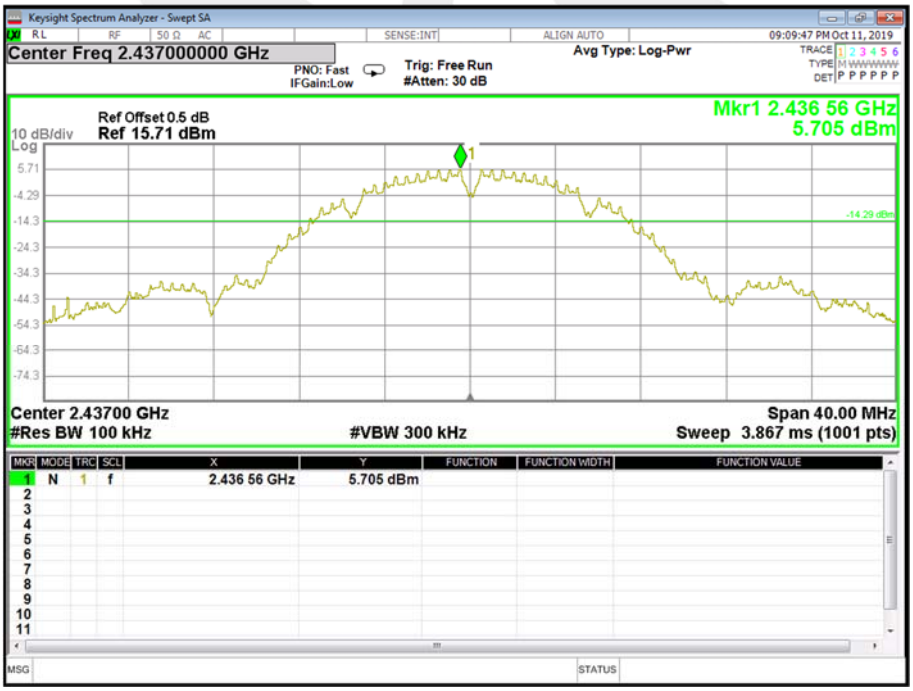

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:21:10 PM Oct 11, 2019
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P P P P
Ref Offset 0.5 dB
10 dB/div
Log
Ref 13.34 dBm
Mkr1 2.462 7 GHz
3.342 dBm
3.34
-6.66
-16.7
-26.7
-36.7
-46.7
-56.7
-66.7
-76.7
-14.03 dBm
Start 0.03 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.462 7 GHz 3.342 dBm
2 N 1 f 2.507 0 GHz -55.380 dBm
3 N 1 f 5.885 5 GHz -56.783 dBm
4 N 1 f 24.459 4 GHz -49.352 dBm
5
6
7
8
9
10
11
MSG
STATUS

Band edge(it's also the reference level for conducted spurious emission)

CH 01



CH 06

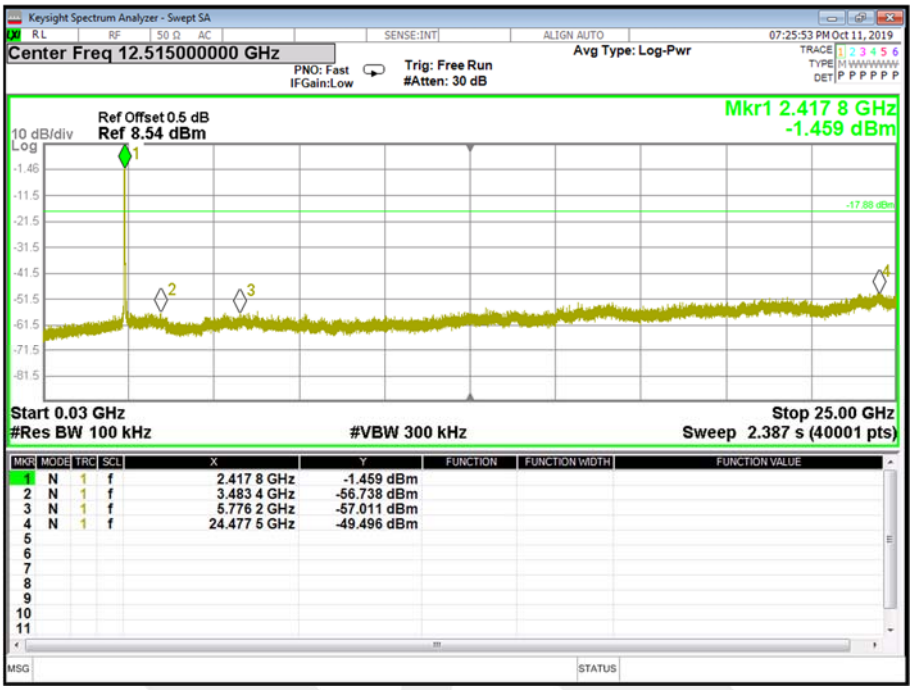


CH 11

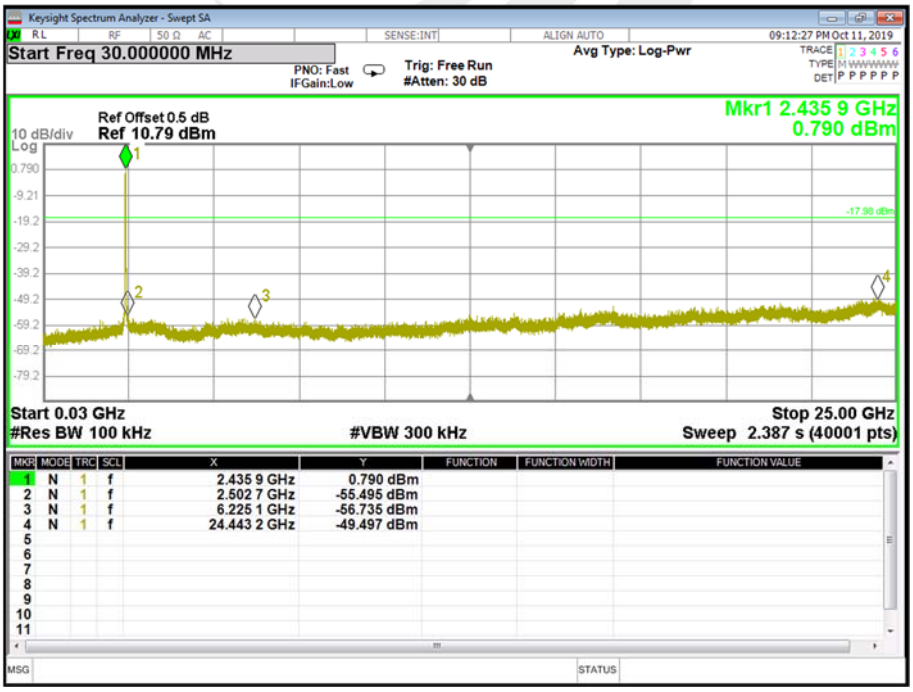

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.476000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
07:20:42 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 15.97 dBm
Log
Mkr1 2.461 552 GHz
5.969 dBm
-14.03 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 4.600 ms (1001 pts)
1 N 1 f 2.461 552 GHz 5.969 dBm
2 N 1 f 2.483 920 GHz -46.398 dBm
3 N 1 f 2.489 920 GHz -51.878 dBm

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX g Mode /CH01, CH06, CH11

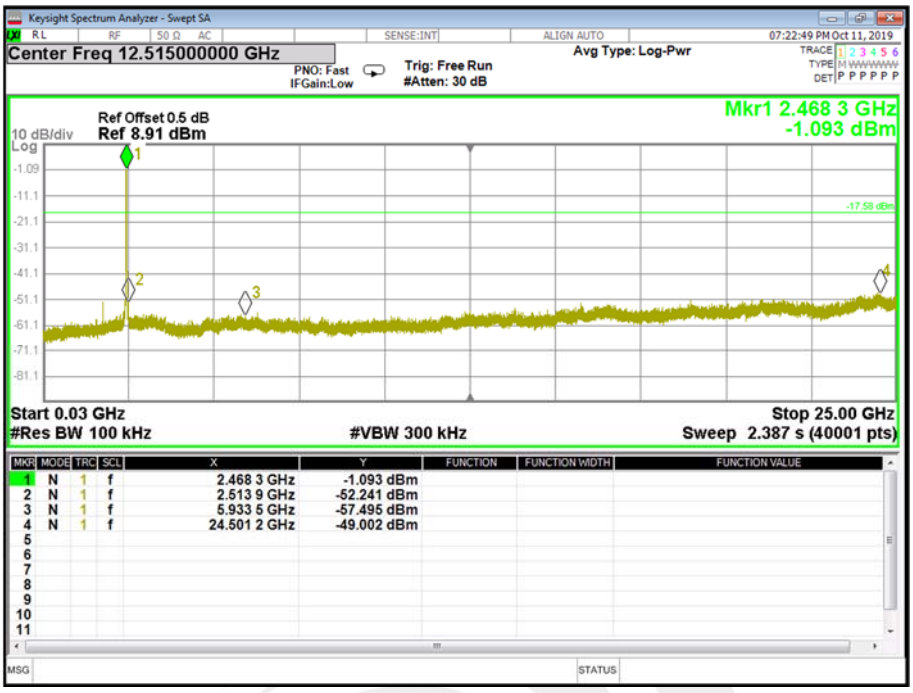
CH 01



CH06

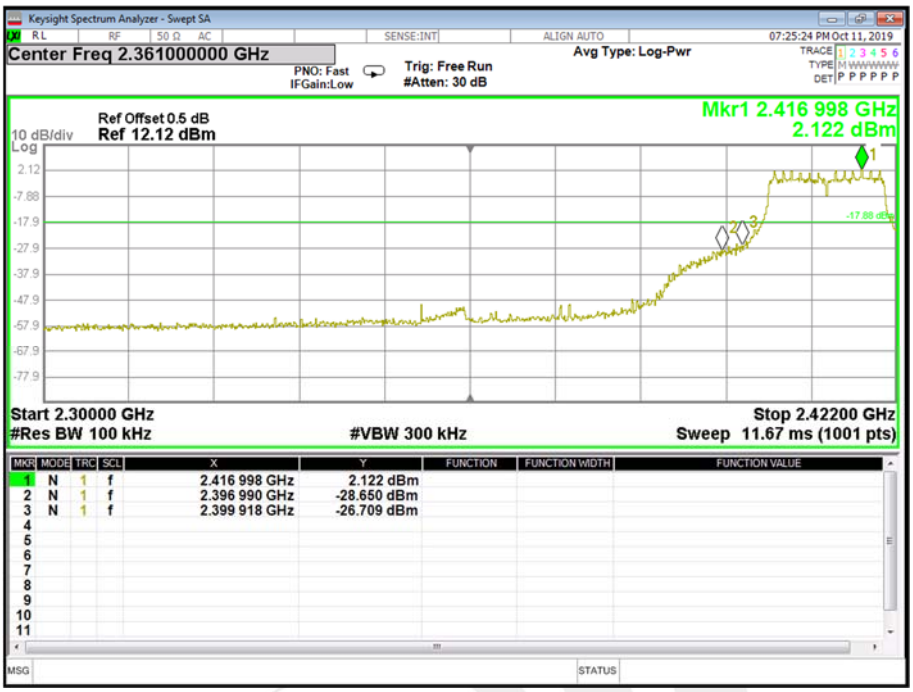


CH 11

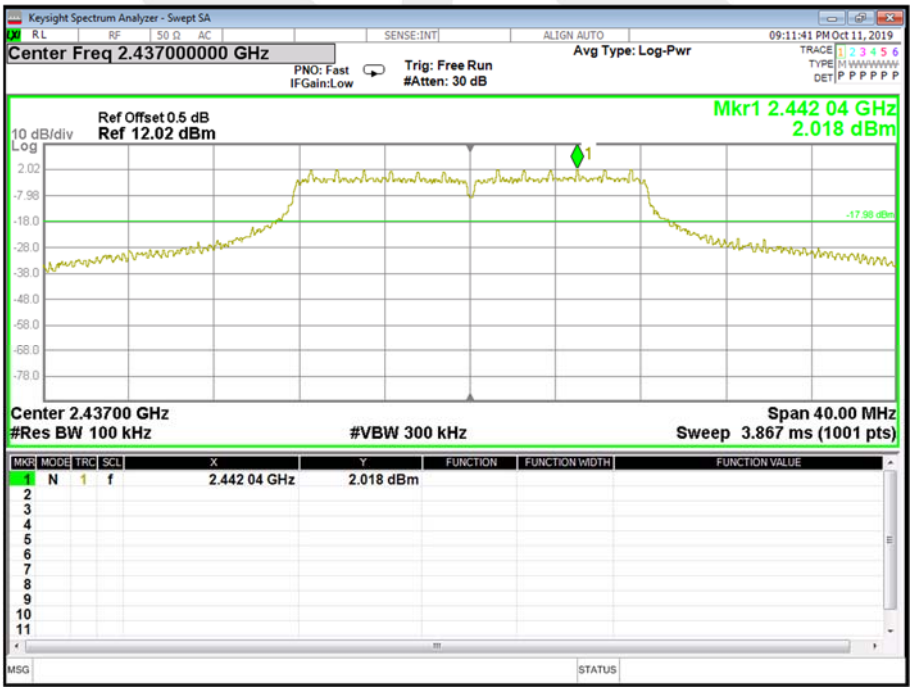

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:22:49 PM Oct 11, 2019
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P P P P P
Ref Offset 0.5 dB
10 dB/div
Ref 8.91 dBm
Log
Mkr1 2.468 3 GHz
-1.093 dBm
-17.58 dBm
Start 0.03 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.468 3 GHz -1.093 dBm
2 N 1 f 2.513 9 GHz -52.241 dBm
3 N 1 f 5.933 5 GHz -57.495 dBm
4 N 1 f 24.501 2 GHz -49.002 dBm
MSG
STATUS

Band edge(it's also the reference level for conducted spurious emission)

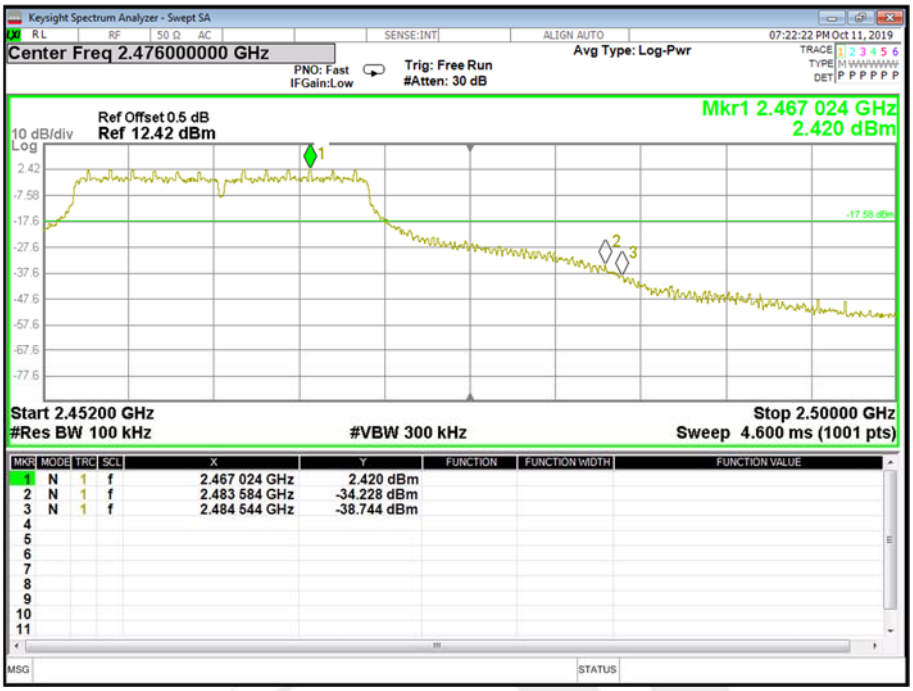
CH 01



CH11

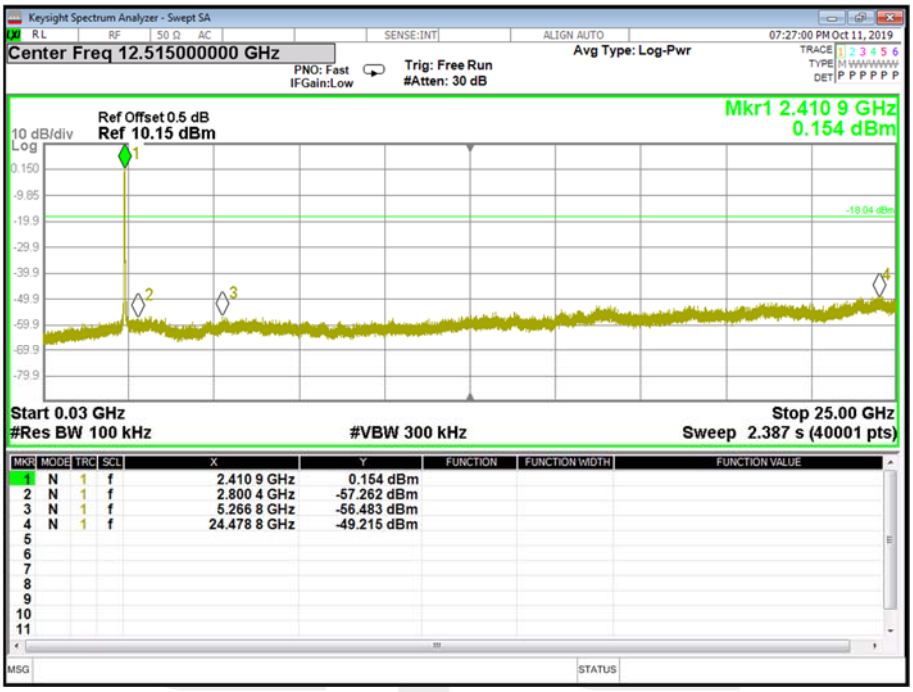


CH11

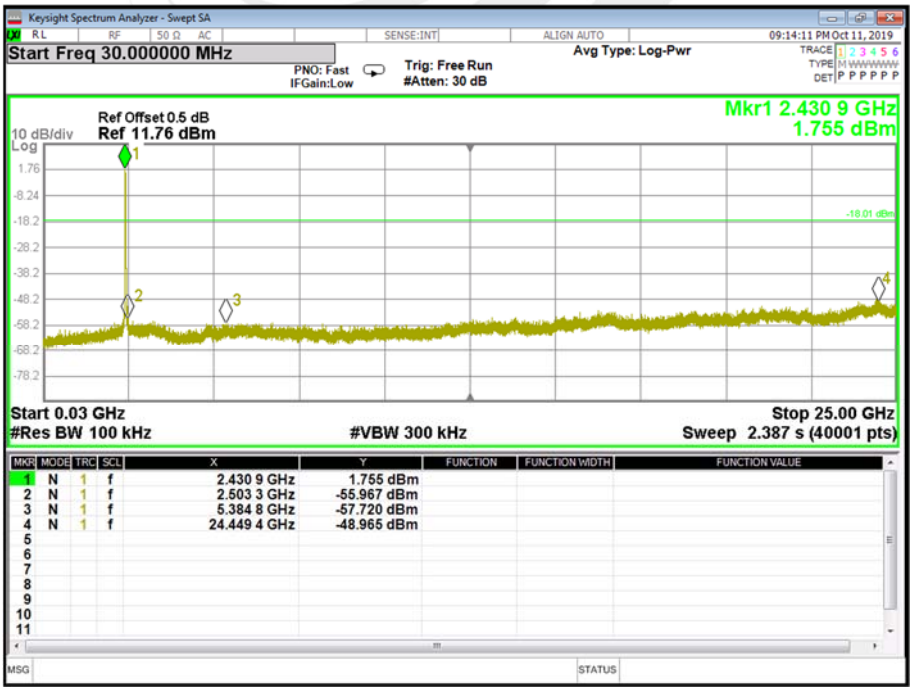

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.476000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
07:22:22 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 12.42 dBm
Mkr1 2.467 024 GHz
2.420 dBm
-17.58 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 4.600 ms (1001 pts)
1 N 1 f 2.467 024 GHz 2.420 dBm
2 N 1 f 2.483 584 GHz -34.228 dBm
3 N 1 f 2.484 544 GHz -38.744 dBm

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

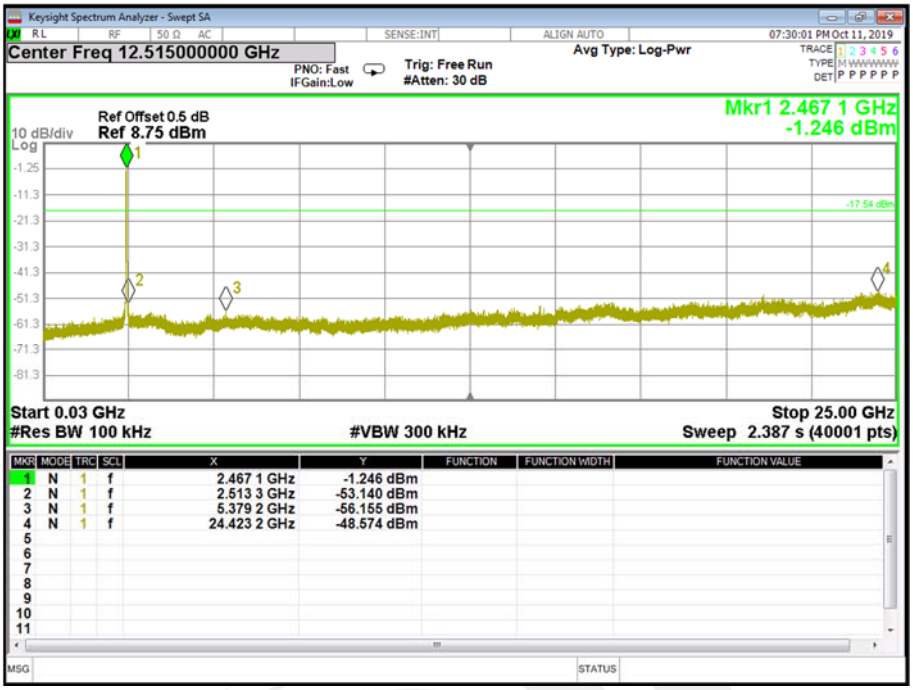
CH 01



CH 06

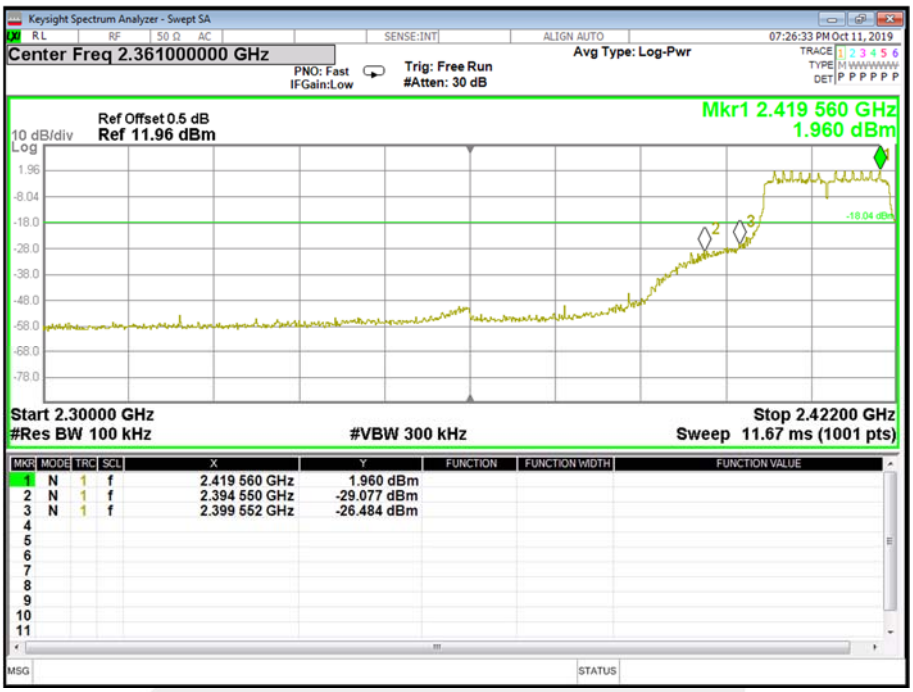


CH 11

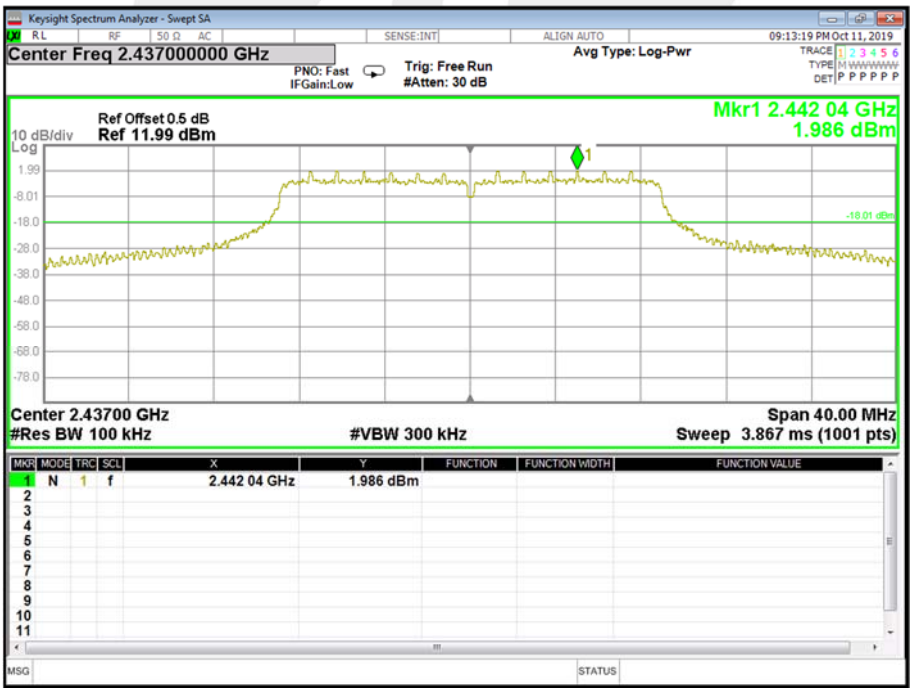

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:30:01 PM Oct 11, 2019
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P P P P
Ref Offset 0.5 dB
10 dB/div
Ref 8.75 dBm
Log
Mkr1 2.467 1 GHz
-1.246 dBm
-17.54 dBm
Start 0.03 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (40001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.467 1 GHz -1.246 dBm
2 N 1 f 2.513 3 GHz -53.140 dBm
3 N 1 f 5.379 2 GHz -56.155 dBm
4 N 1 f 24.423 2 GHz -48.574 dBm
MSG
STATUS

Band edge(it's also the reference level for conducted spurious emission)

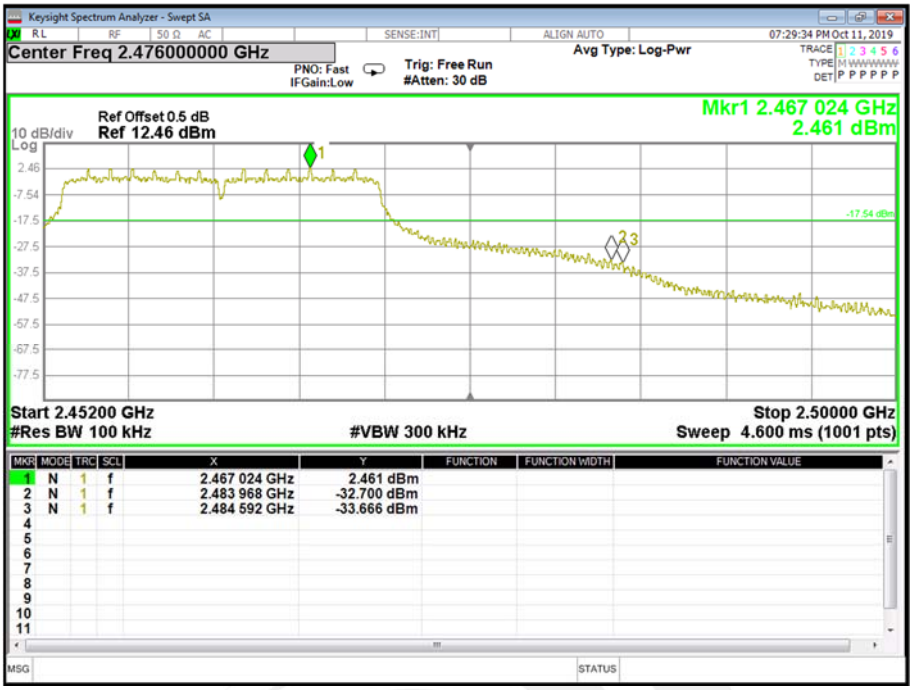
CH 01



CH 06

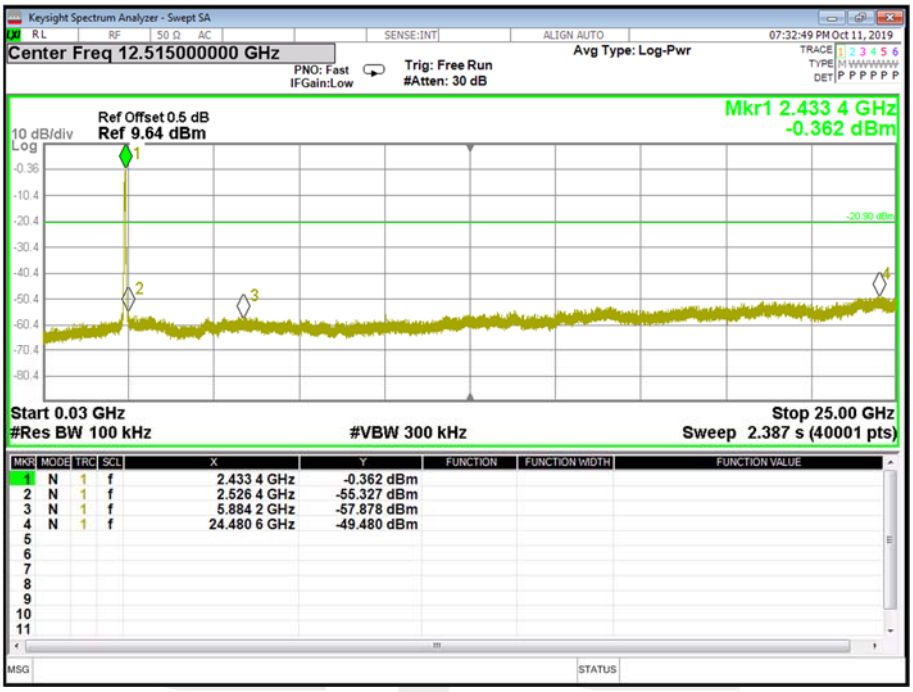


CH 11

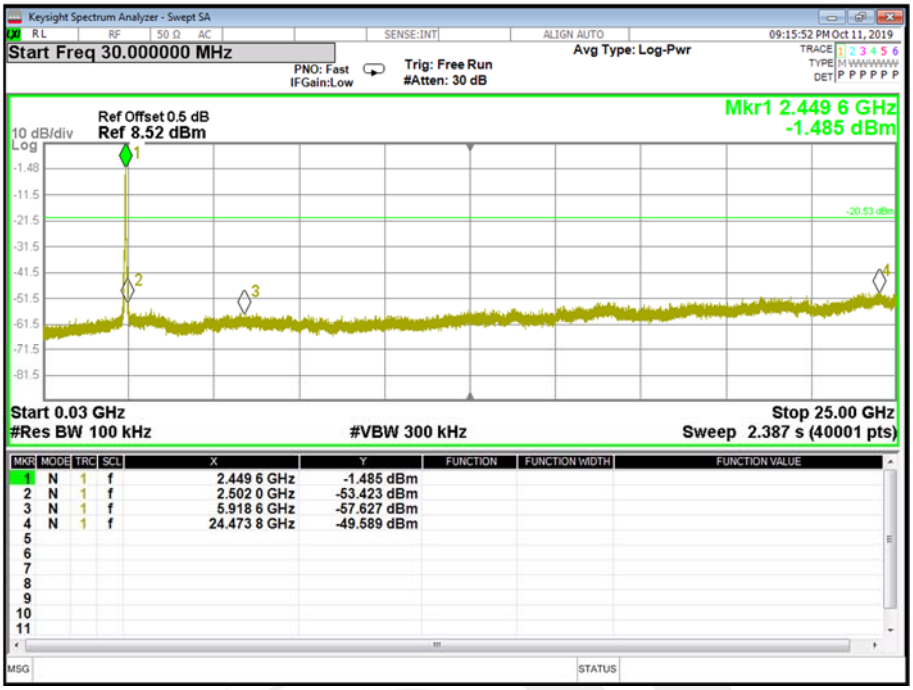

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.476000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
07:29:34 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 12.46 dBm
Mkr1 2.467 024 GHz
2.461 dBm
-17.54 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 4.600 ms (1001 pts)
1 N 1 f 2.467 024 GHz 2.461 dBm
2 N 1 f 2.483 968 GHz -32.700 dBm
3 N 1 f 2.484 592 GHz -33.666 dBm

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(40M) /CH03, CH06, CH09

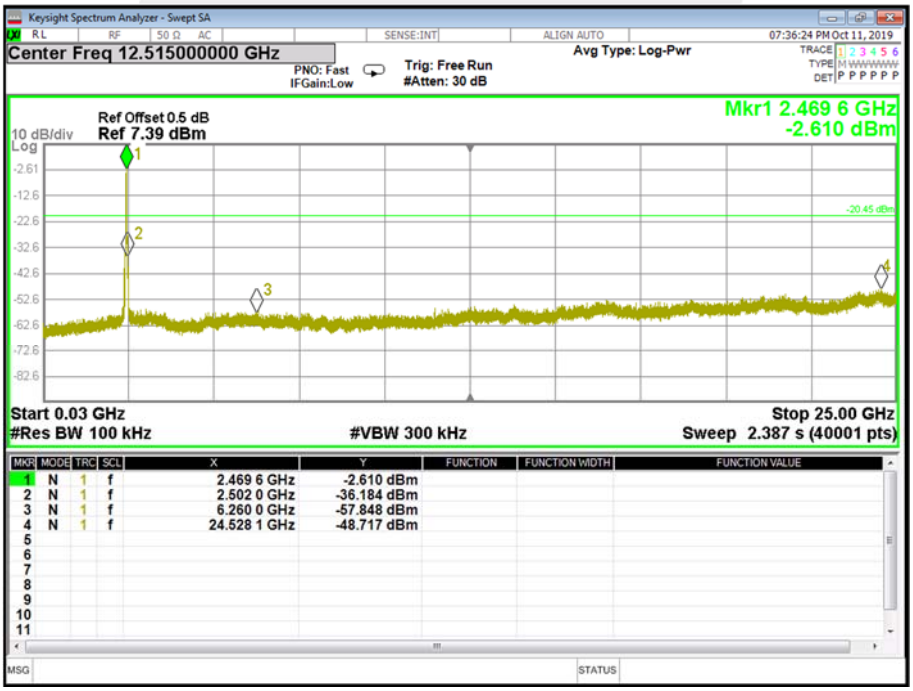
CH 03



CH06

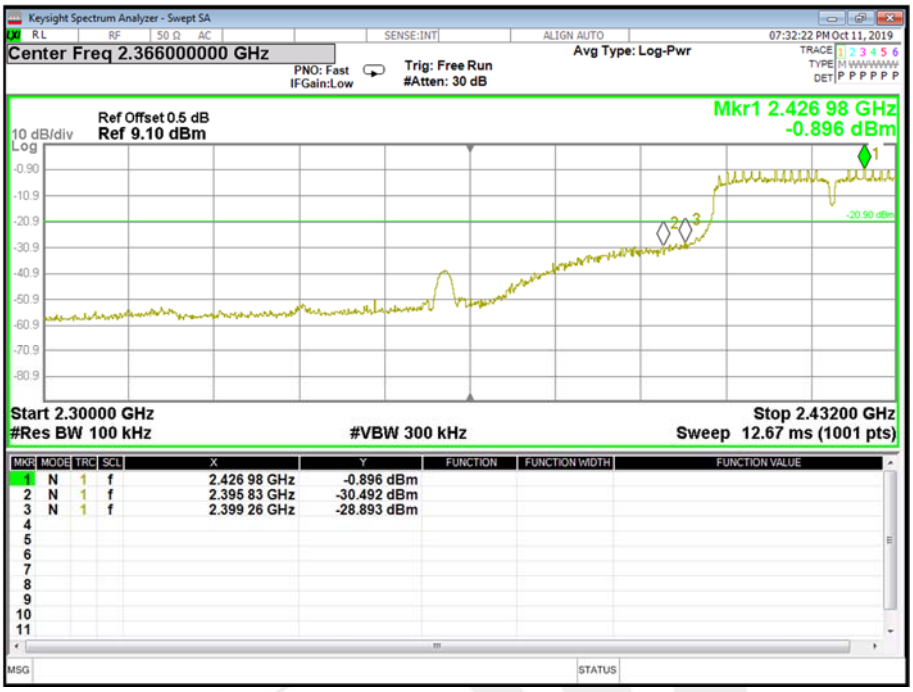

Keysight Spectrum Analyzer - Swept SA
Start Freq 30.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
09:15:52 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 8.52 dBm
Mkr1 2.449 6 GHz
-1.485 dBm
-20.53 dBm
Start 0.03 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (40001 pts)
1 N 1 f 2.449 6 GHz -1.485 dBm
2 N 1 f 2.502 0 GHz -53.423 dBm
3 N 1 f 5.918 6 GHz -57.627 dBm
4 N 1 f 24.473 8 GHz -49.589 dBm

CH09

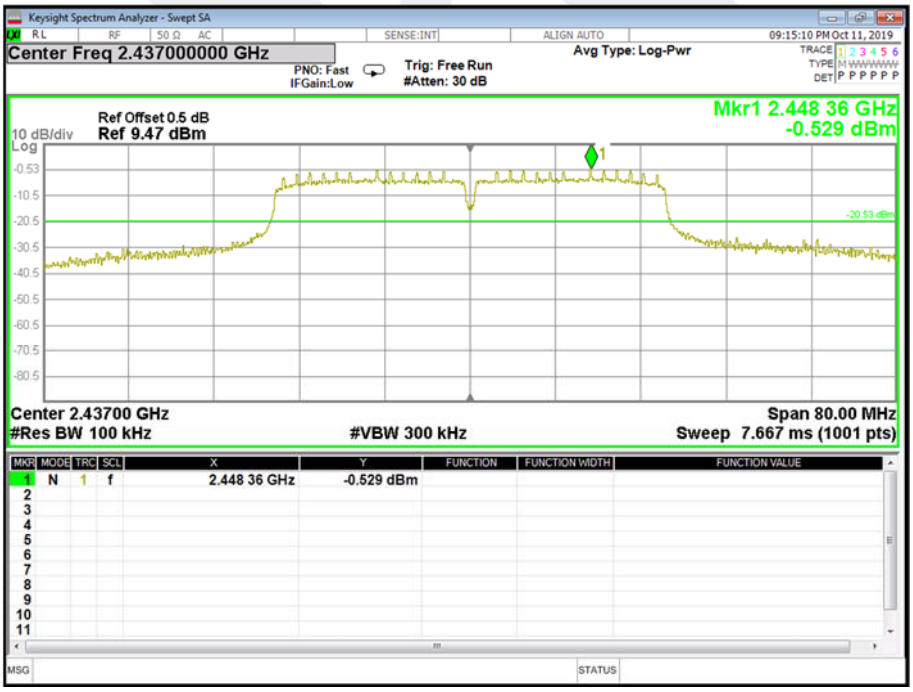

Keysight Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
07:36:24 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 7.39 dBm
Mkr1 2.469 6 GHz
-2.610 dBm
-20.45 dBm
Start 0.03 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (40001 pts)
1 N 1 f 2.469 6 GHz -2.610 dBm
2 N 1 f 2.502 0 GHz -36.184 dBm
3 N 1 f 6.260 0 GHz -57.848 dBm
4 N 1 f 24.528 1 GHz -48.717 dBm

Band edge(it's also the reference level for conducted spurious emission)

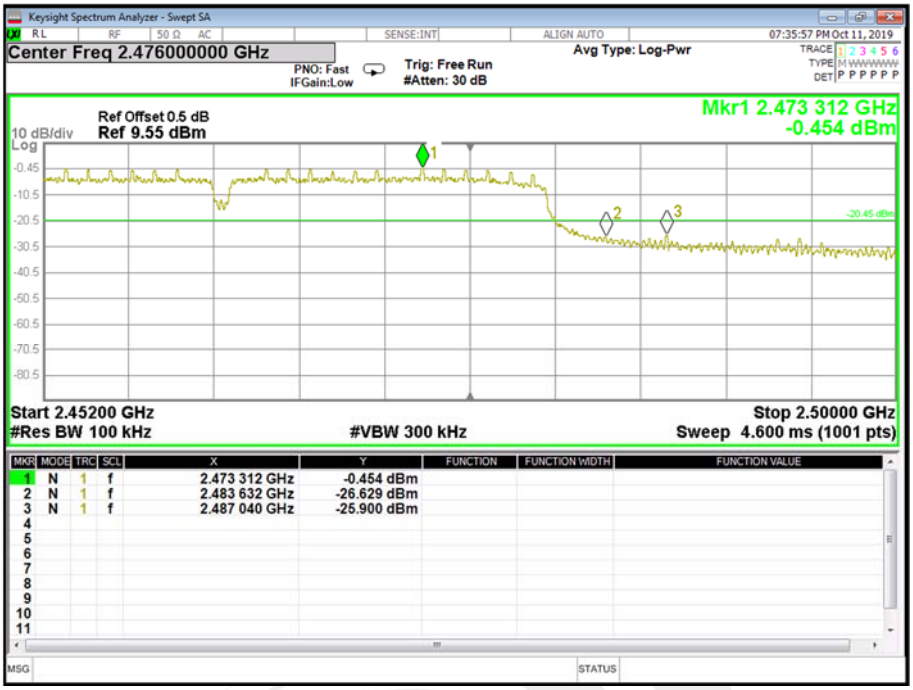
CH03



CH 06



CH 09


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.476000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
07:35:57 PM Oct 11, 2019
Ref Offset 0.5 dB
10 dB/div
Ref 9.55 dBm
Mkr1 2.473 312 GHz
-0.454 dBm
-20.45 dBm
Start 2.45200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 4.600 ms (1001 pts)
1 N 1 f 2.473 312 GHz -0.454 dBm
2 N 1 f 2.483 632 GHz -26.629 dBm
3 N 1 f 2.487 040 GHz -25.900 dBm

5. POWER SPECTRAL DENSITY TEST

5.1 LIMIT

FCC Part 15.247,Subpart C RSS-247 Issue 2				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e) RSS-247 Issue 2	Power Spectral Density	≤8 dBm (RBW ≥3KHz)	2400-2483.5	PASS

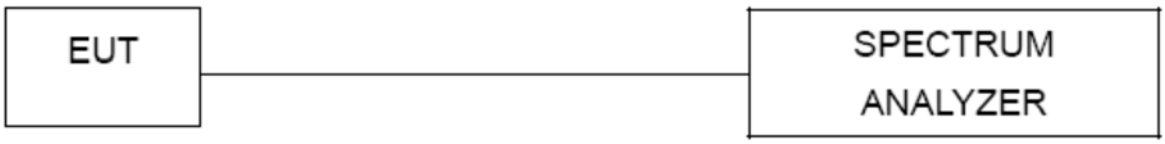
5.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the 100 kHz ≥ 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.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

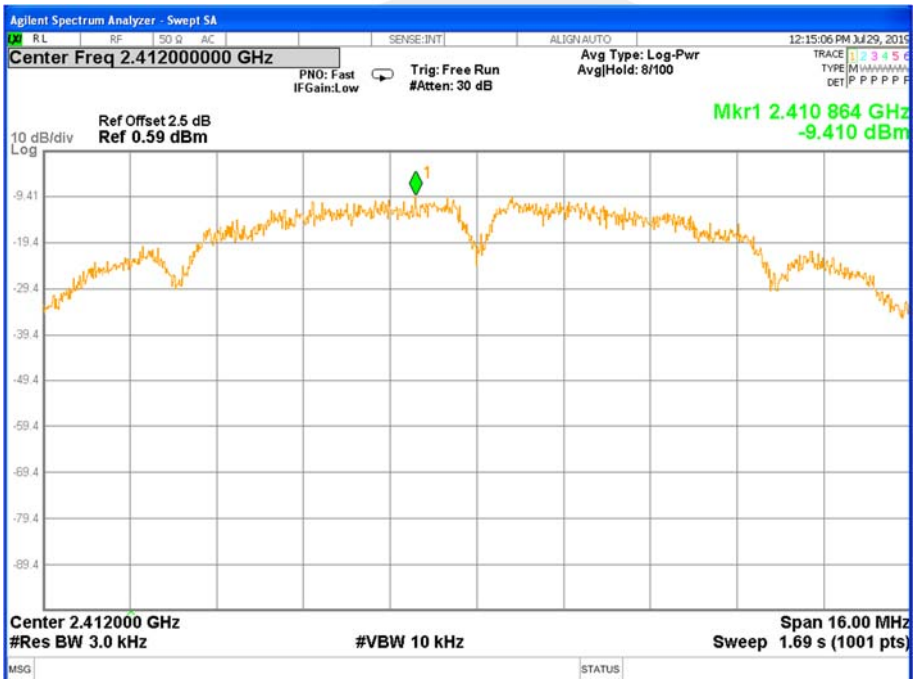
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX b Mode /CH01, CH06, CH11

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3KHz)	Result
2412 MHz	-9.410	≤8	PASS
2437 MHz	-5.864	≤8	PASS
2462 MHz	-5.599	≤8	PASS

TX CH01



TX CH06

TX CH11

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX g Mode /CH01, CH06, CH11

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3KHz)	Result
2412 MHz	-6.401	≤8	PASS
2437 MHz	-8.375	≤8	PASS
2462 MHz	-5.374	≤8	PASS

TX CH01

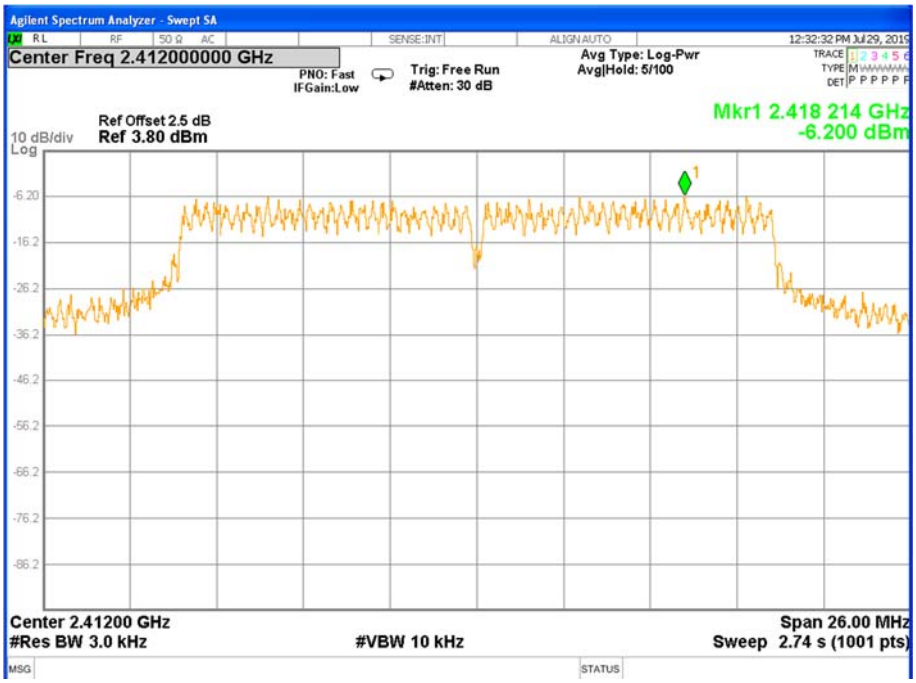
TX CH06

TX CH11

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

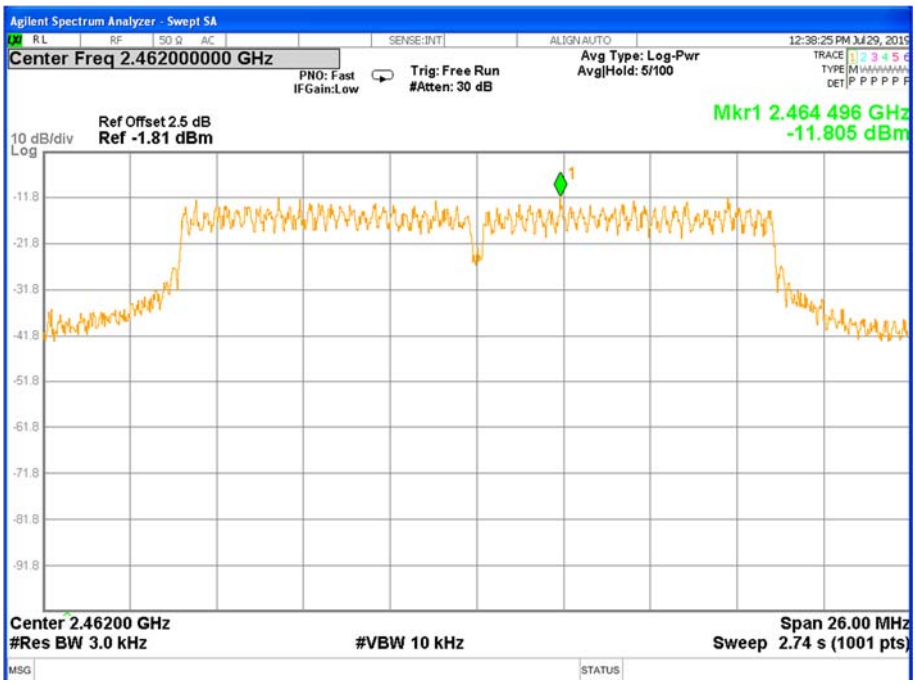
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3KHz)	Result
2412 MHz	-6.200	≤8	PASS
2437 MHz	-8.075	≤8	PASS
2462 MHz	-11.805	≤8	PASS

TX CH01



TX CH06

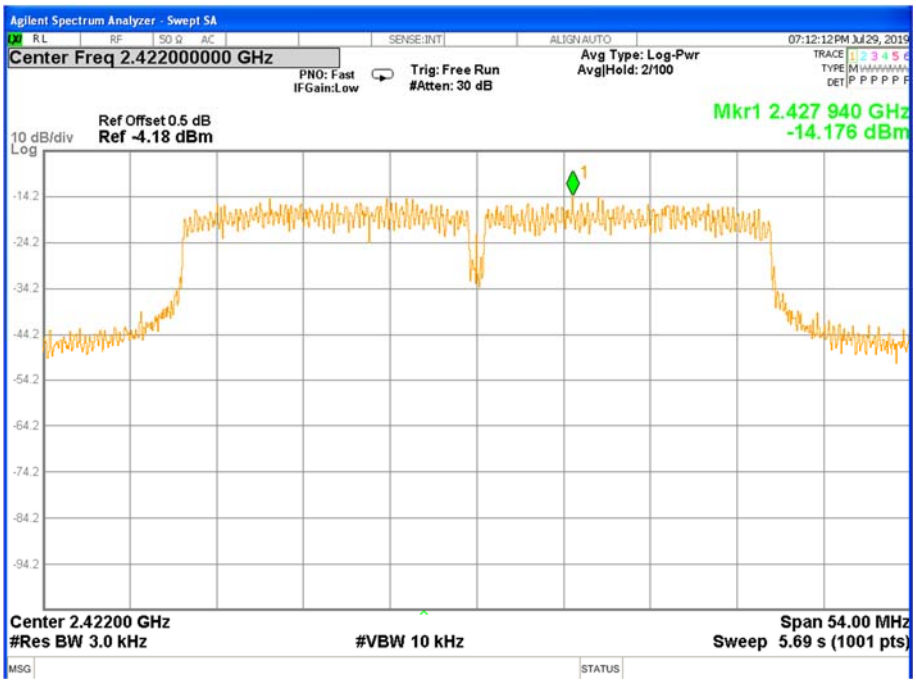
TX CH11



Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(40M) /CH03, CH06, CH09

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3KHz)	Result
2422 MHz	-14.176	≤8	PASS
2437 MHz	-13.379	≤8	PASS
2452 MHz	-12.747	≤8	PASS

TX CH03



TX CH06

TX CH09

6. BANDWIDTH TEST

6.1 LIMIT

FCC Part 15.247,Subpart C RSS-Gen Clause 6.7				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2) RSS-Gen Clause 6.7	6dB Bandwidth	>= 500KHz	2400-2483.5	PASS
RSS-Gen Clause 6.7	99% Bandwidth	For reporting purposes only.	2400-2483.5	PASS

6.2 TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

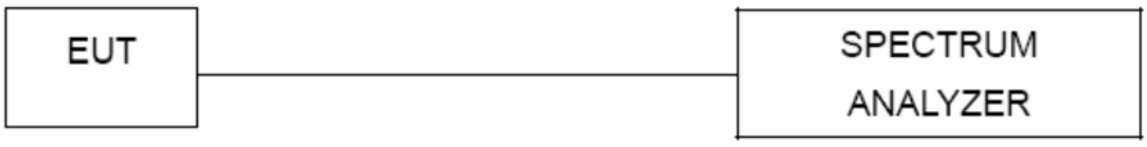
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth :100KHz For 99% Bandwidth :1% to 5% of the occupied bandwidth
VBW	For 6dB Bandwidth : ≥3 × RBW For 99% Bandwidth : approximately 3×RBW
Trace	Max hold
Sweep	Auto

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB and 99% relative to the maximum level measured in the fundamental emission.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

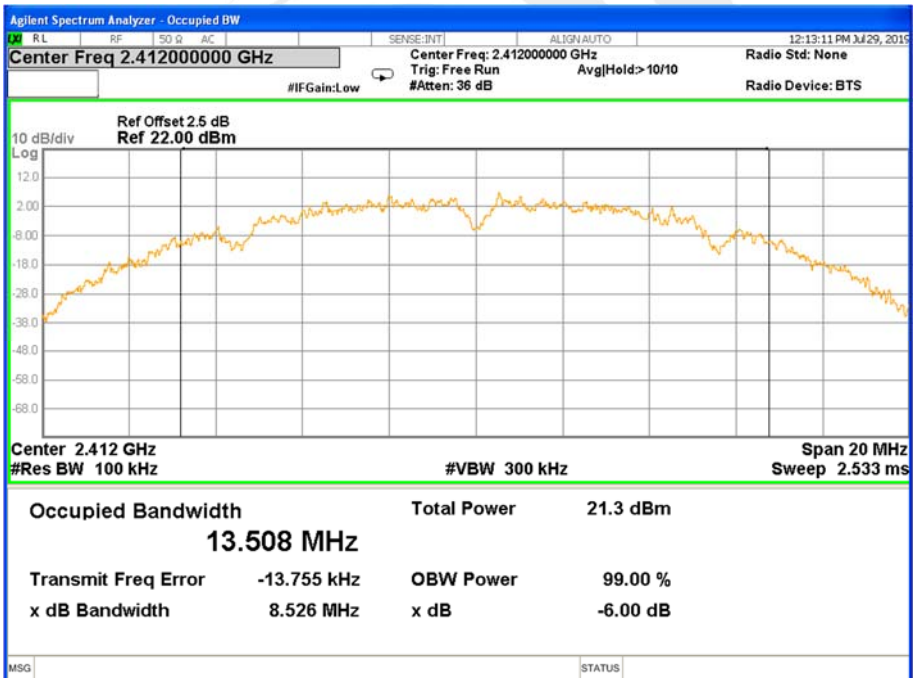
6.6 TEST RESULTS

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX b Mode /CH01, CH06, CH11

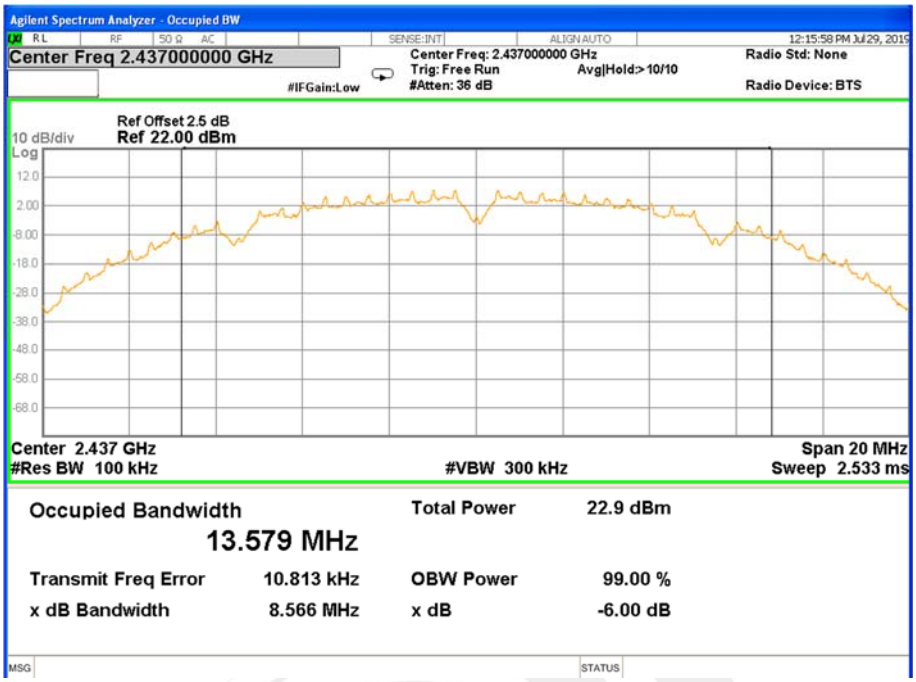
Remark: PEAK DETECTOR IS USED

Frequency	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	8.526	13.214	≥500KHz	PASS
2437 MHz	8.566	13.214	≥500KHz	PASS
2462 MHz	9.027	13.287	≥500KHz	PASS

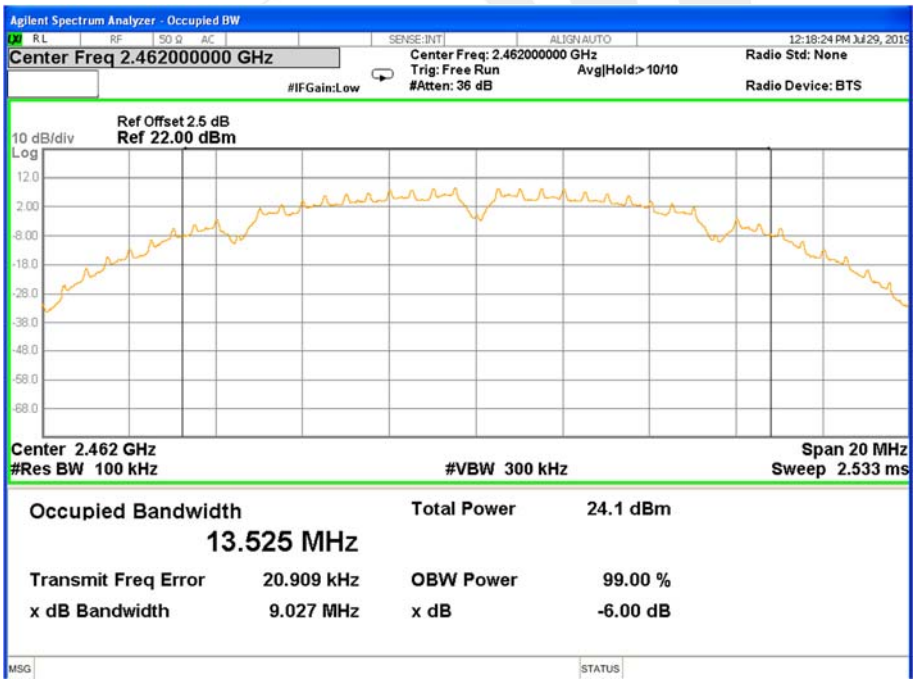
6dB Bandwidth TX CH 01



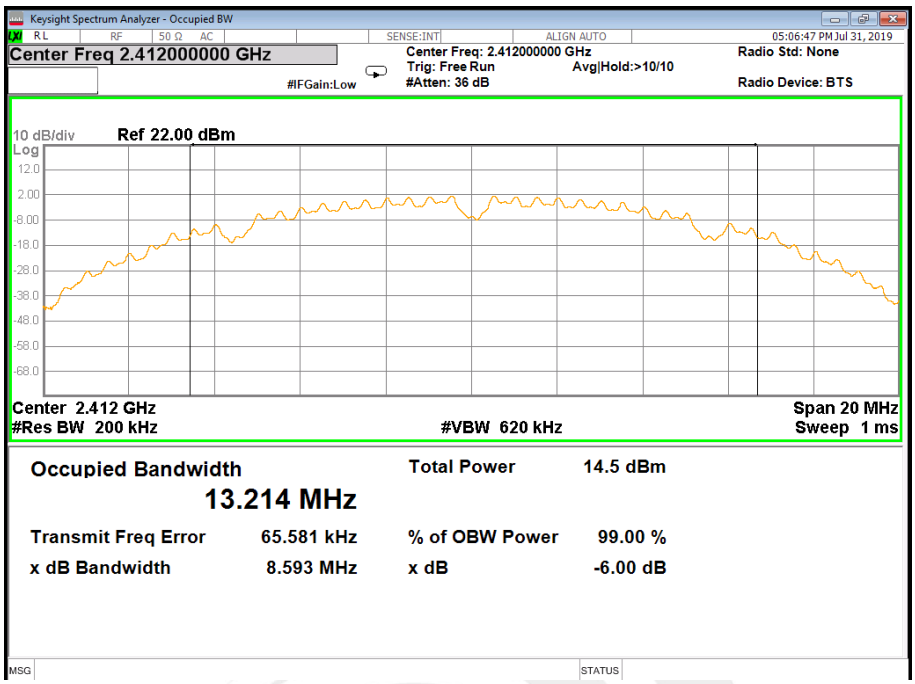
6dB Bandwidth TX CH 06



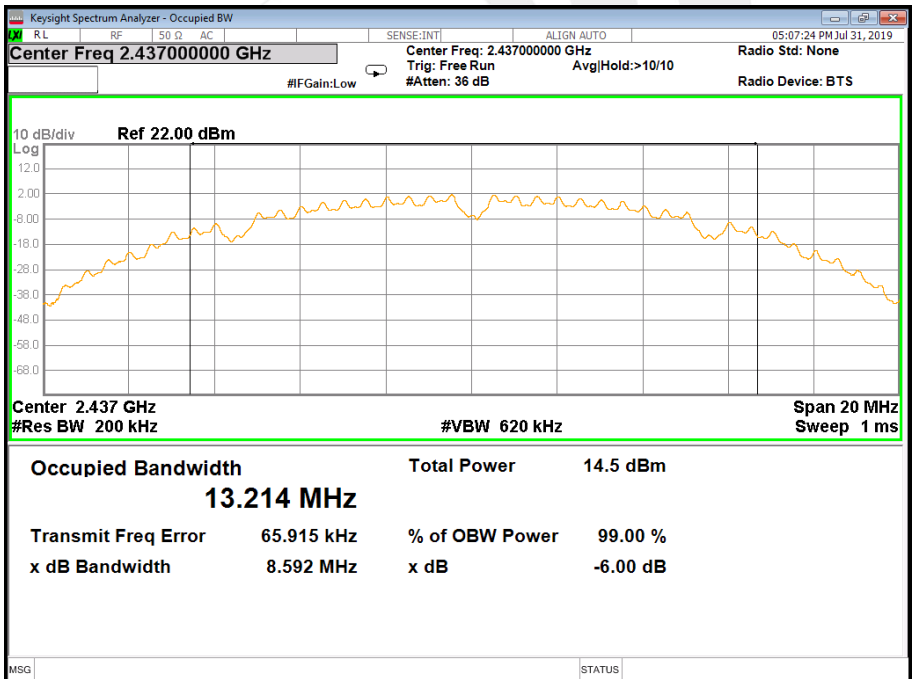
6dB Bandwidth TX CH 11



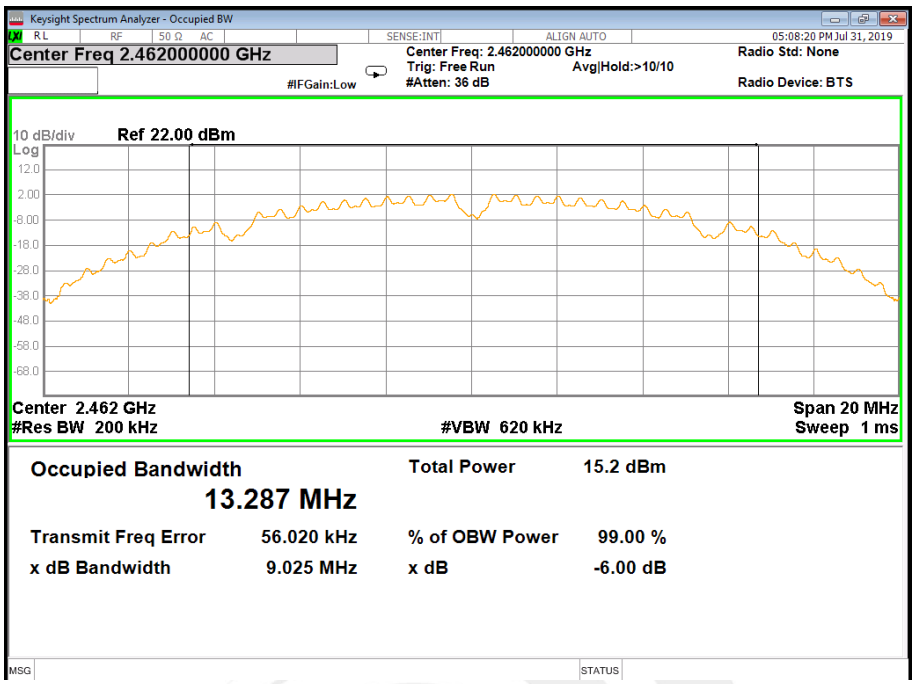
99% Bandwidth TX CH 01



99% Bandwidth TX CH 06



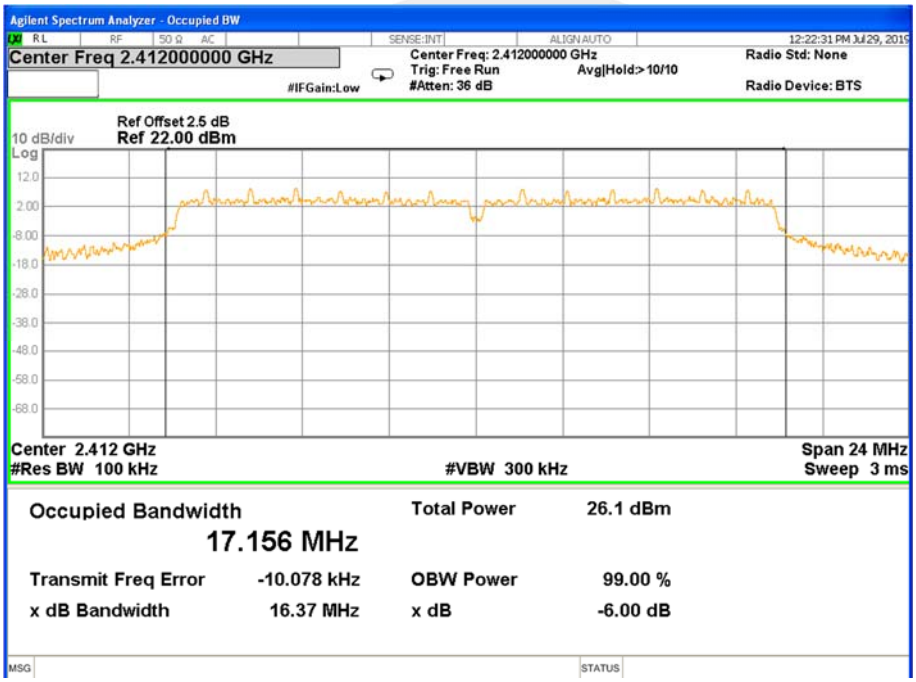
99% Bandwidth TX CH 11



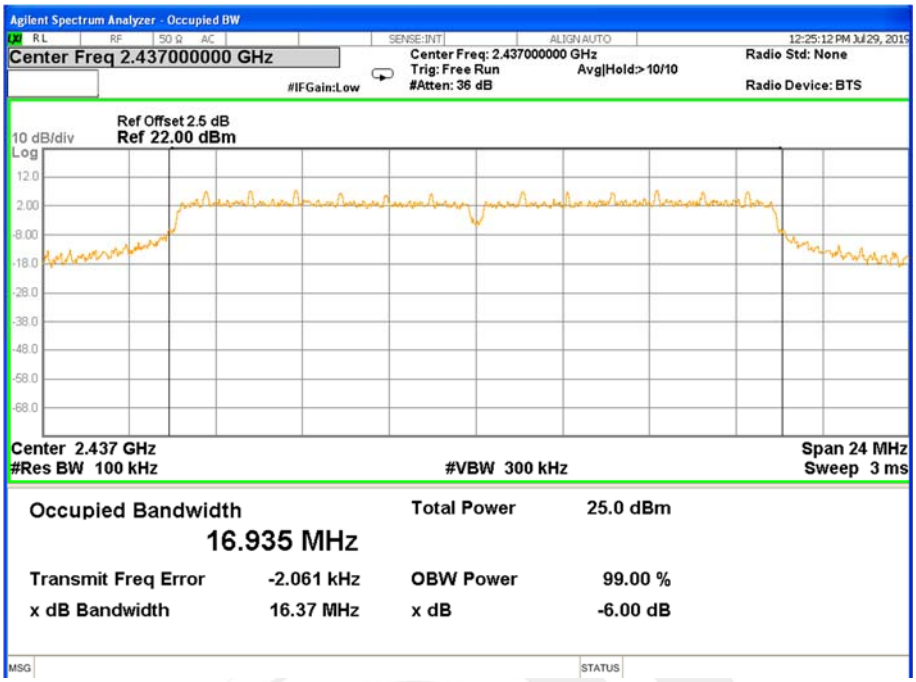
Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX g Mode /CH01, CH06, CH11

Frequency	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	16.37	16.817	≥500KHz	PASS
2437 MHz	16.37	16.803	≥500KHz	PASS
2462 MHz	16.37	16.833	≥500KHz	PASS

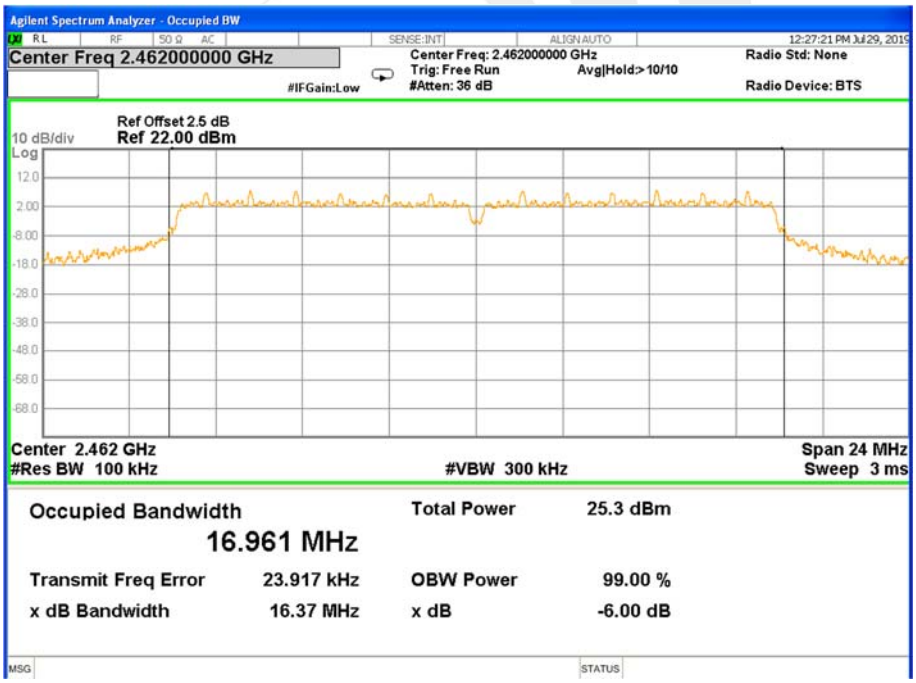
6dB Bandwidth TX CH 01



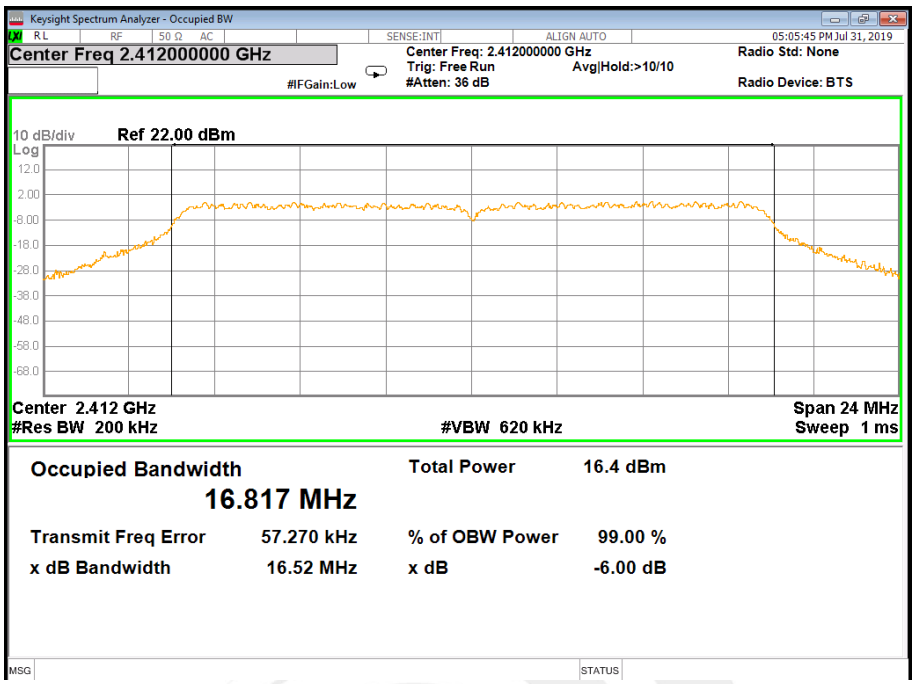
6dB Bandwidth TX CH 06



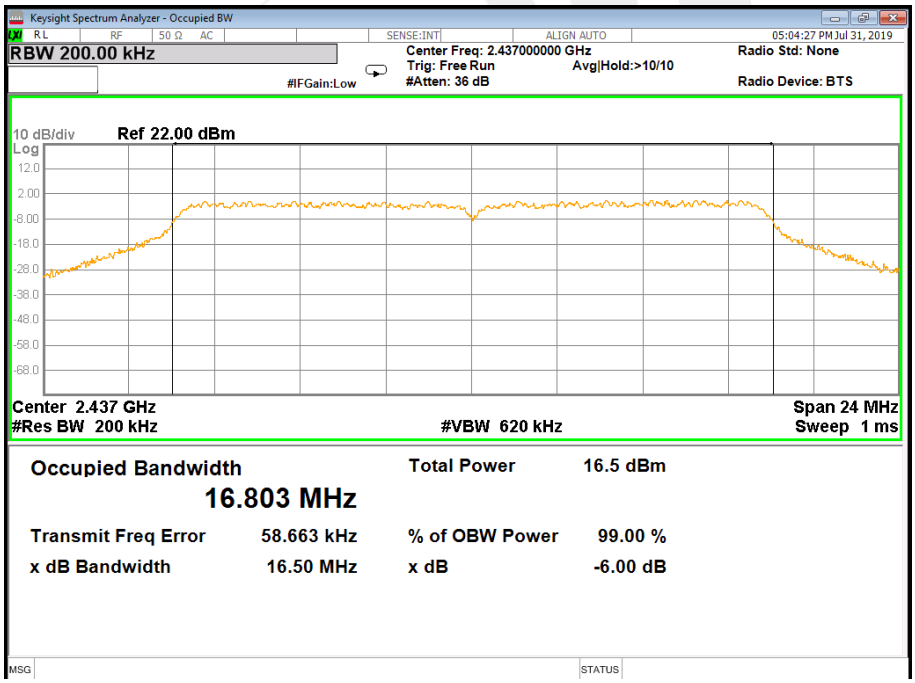
6dB Bandwidth TX CH 11



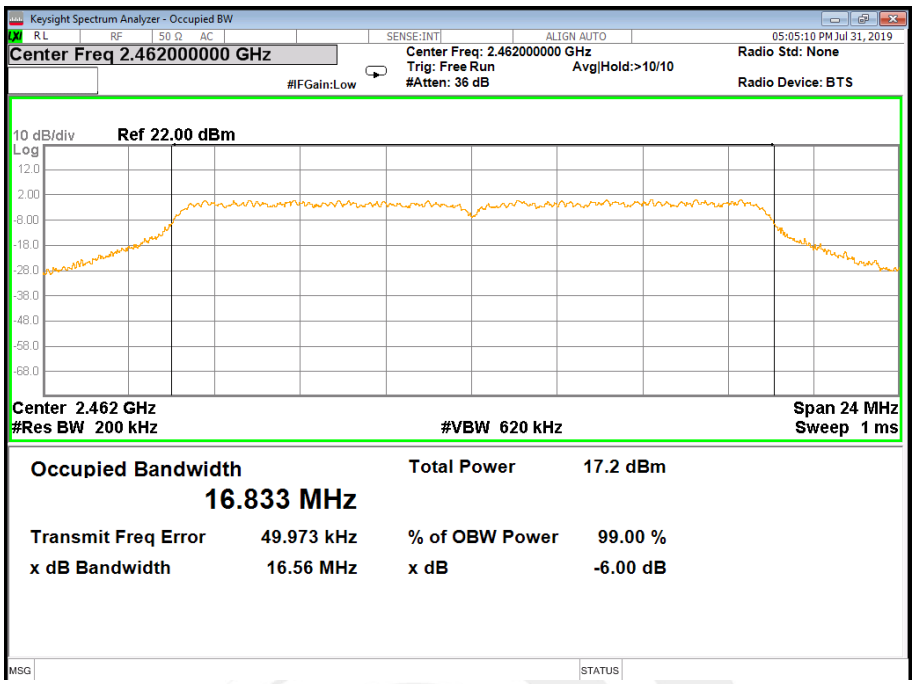
99% Bandwidth TX CH 01



99% Bandwidth TX CH 06



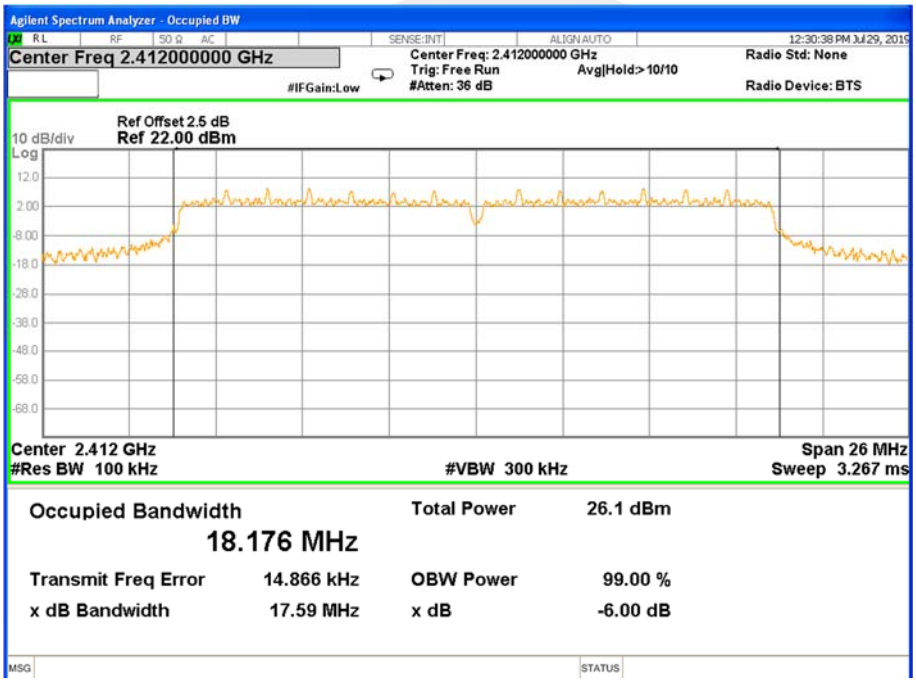
99% Bandwidth TX CH 11



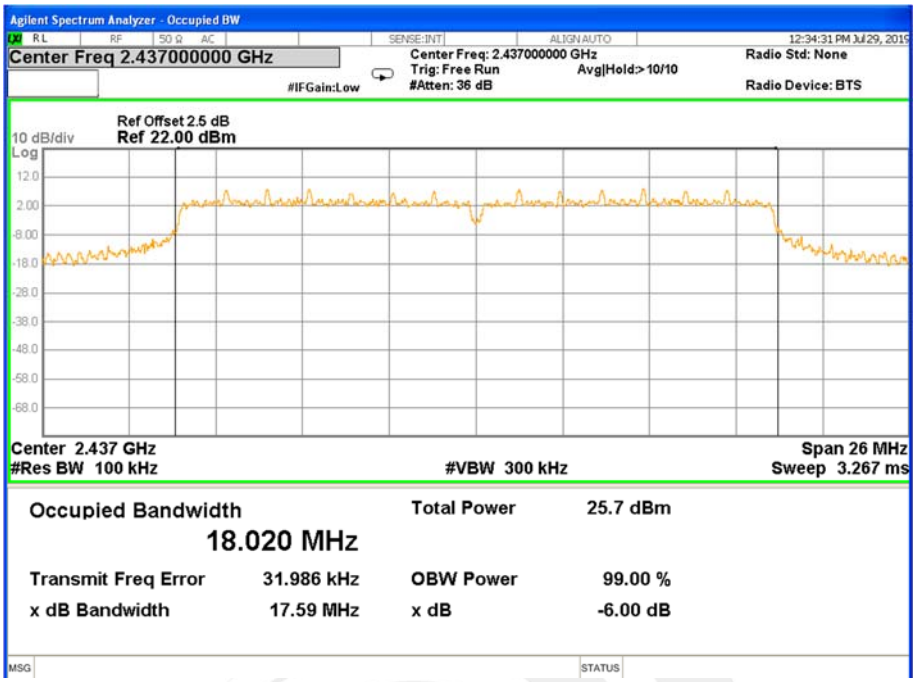
Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

Frequency	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	17.59	17.926	≥500KHz	PASS
2437 MHz	17.59	17.890	≥500KHz	PASS
2462 MHz	17.59	17.890	≥500KHz	PASS

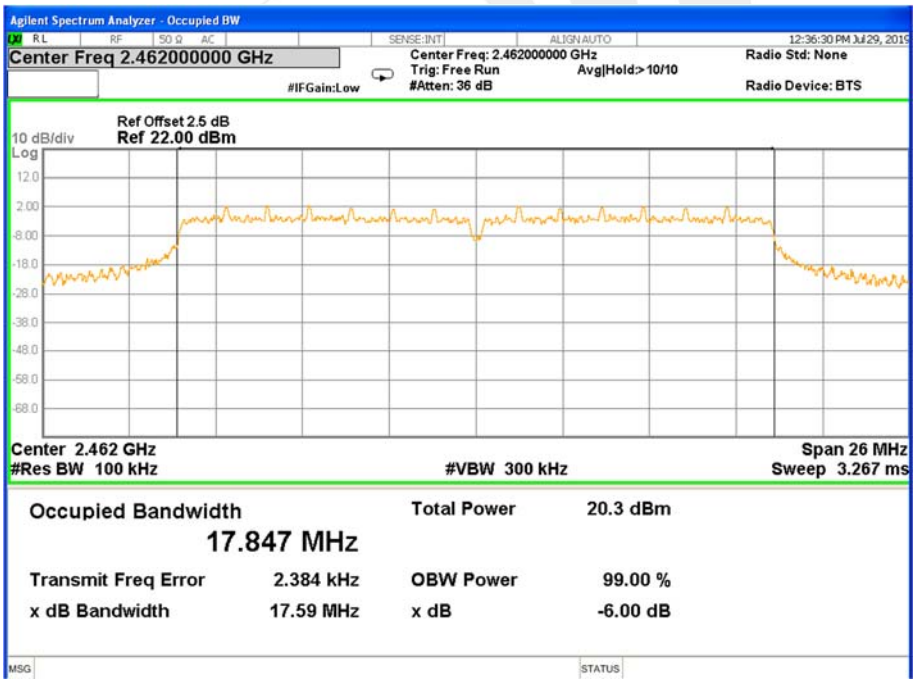
6dB Bandwidth TX CH 01



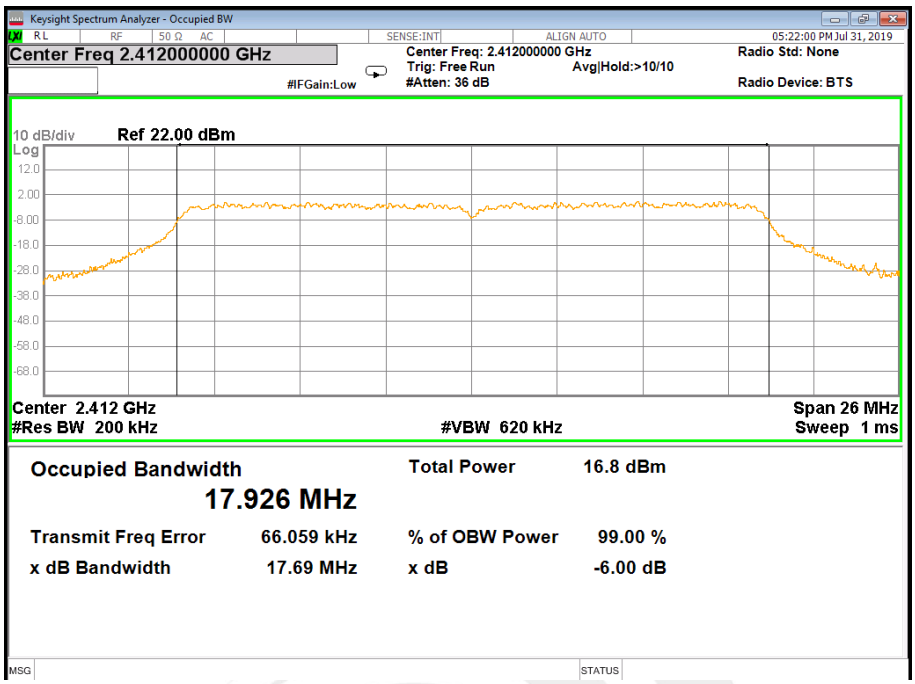
6dB Bandwidth TX CH 06



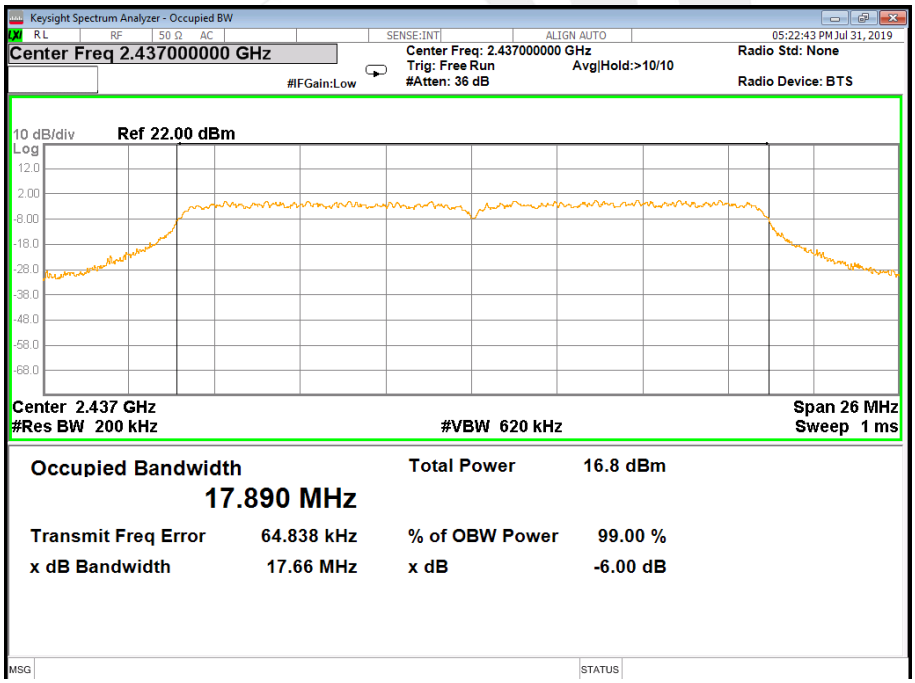
6dB Bandwidth TX CH 11



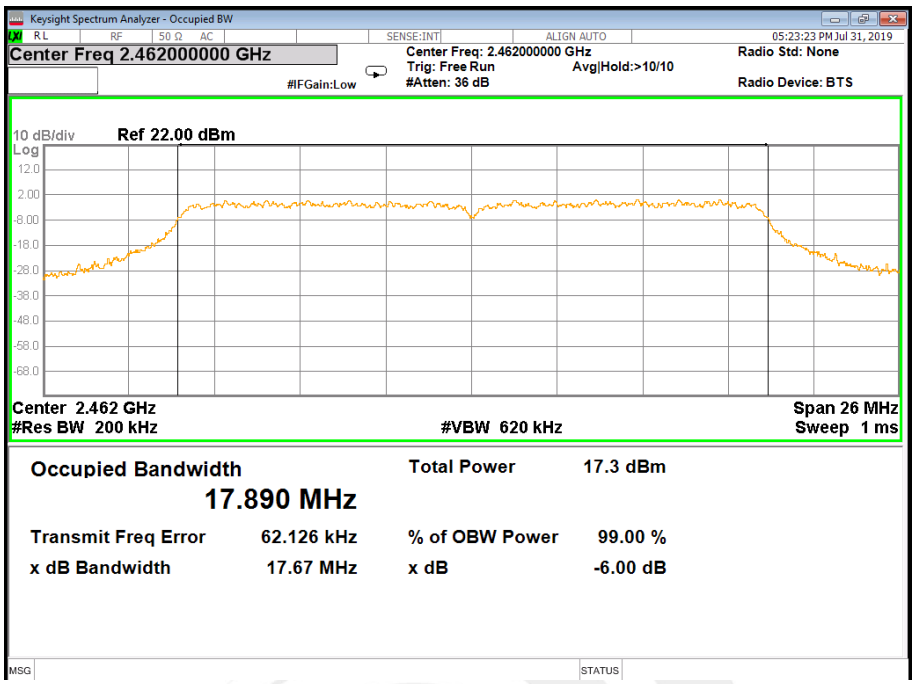
99% Bandwidth TX CH 01



99% Bandwidth TX CH 06



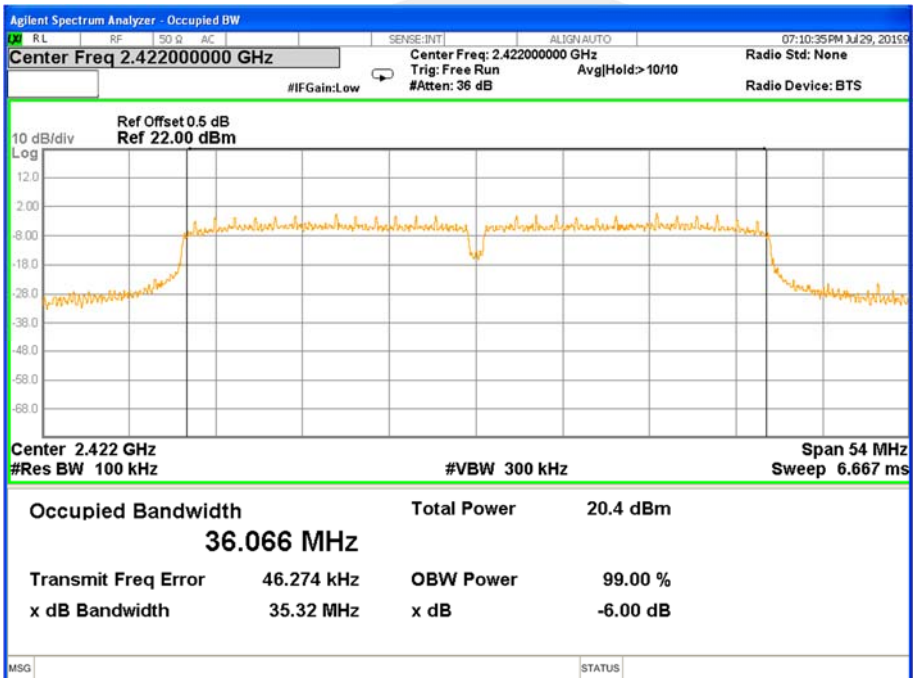
99% Bandwidth TX CH 11



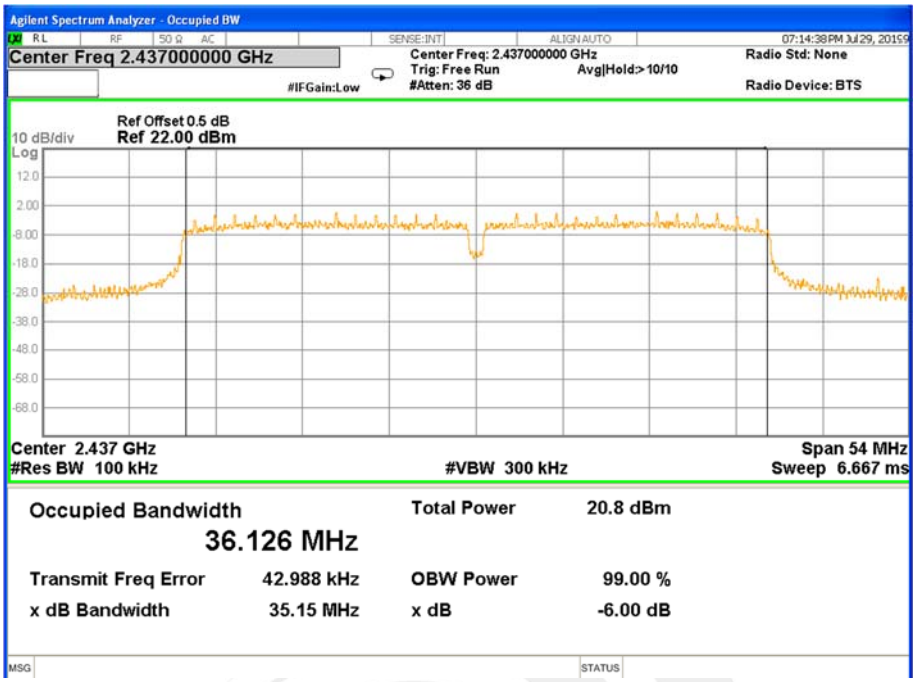
Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz	Test Mode:	TX n Mode(40M) /CH03, CH06, CH09

Frequency	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Channel Separation (KHz)	Result
2422 MHz	35.32	36.072	≥500KHz	PASS
2437 MHz	35.15	36.038	≥500KHz	PASS
2452 MHz	35.36	36.051	≥500KHz	PASS

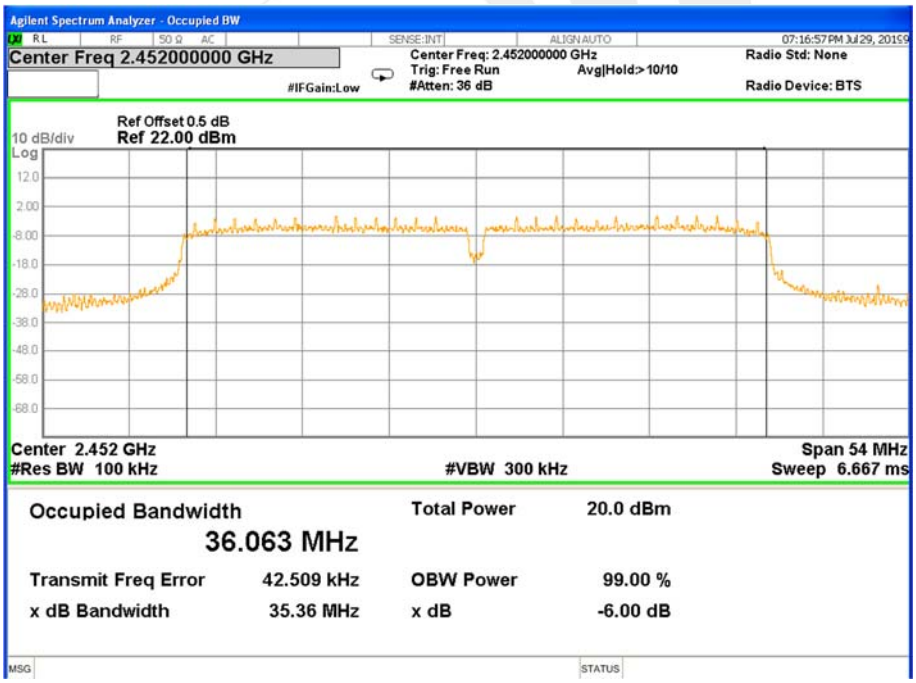
6dB Bandwidth TX CH 03



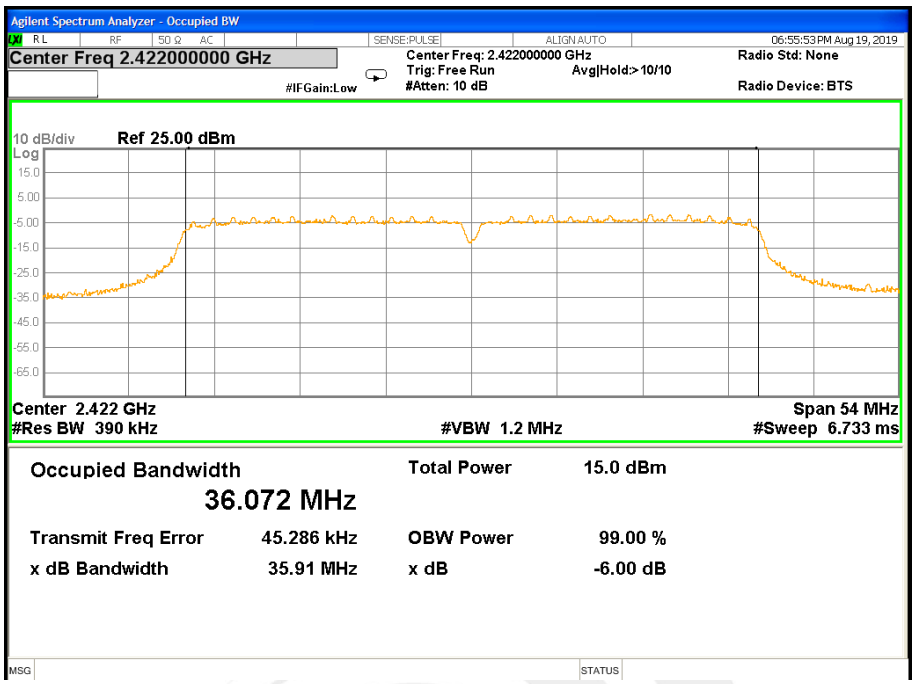
6dB Bandwidth TX CH 06



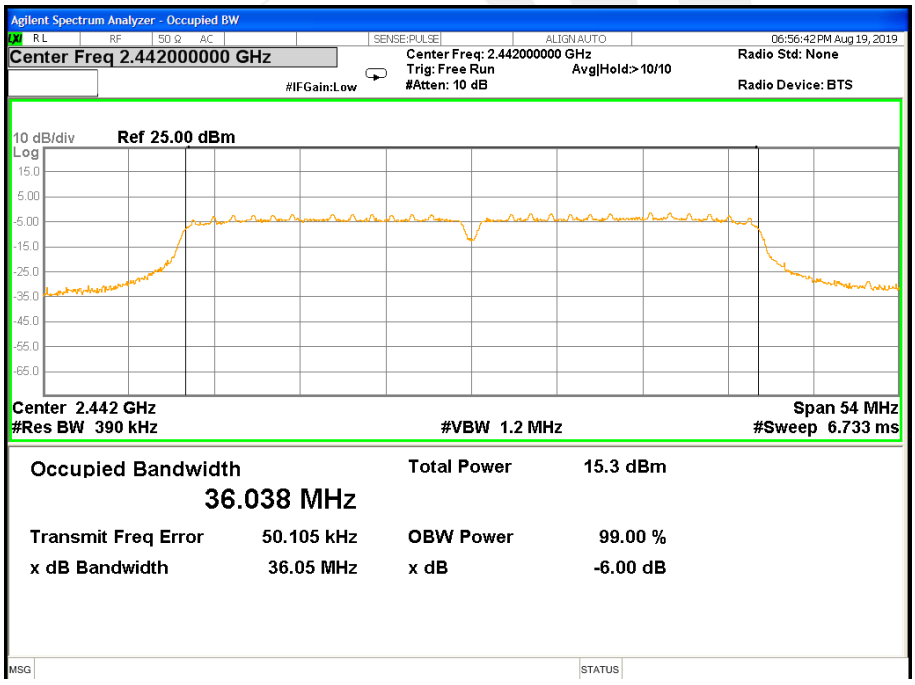
6dB Bandwidth TX CH 09



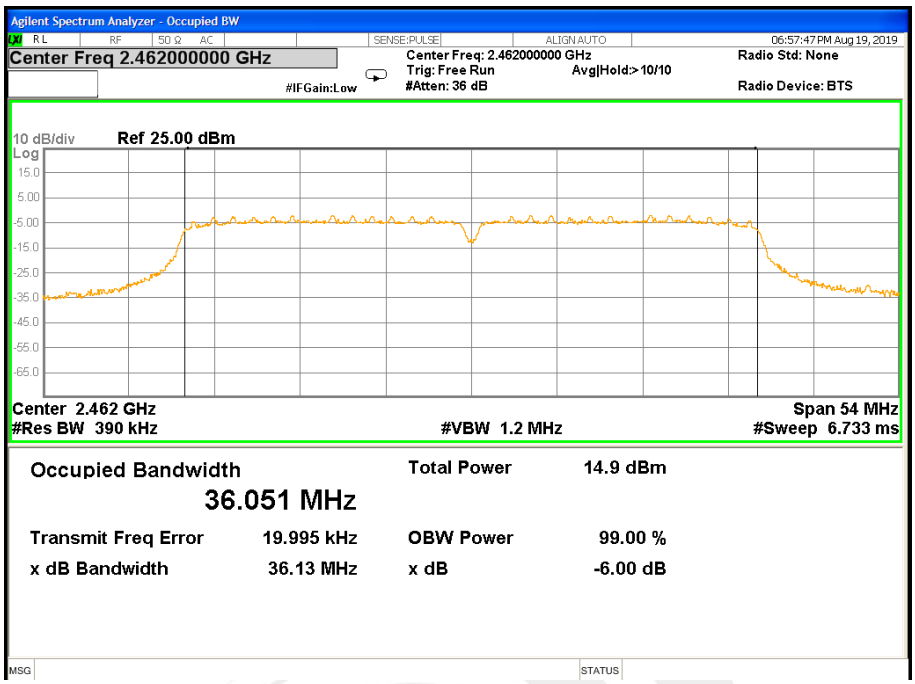
99% Bandwidth TX CH 03



99% Bandwidth TX CH 06



99% Bandwidth TX CH 09



7. PEAK OUTPUT POWER TEST

7.1 LIMIT

FCC Part 15.247,Subpart C RSS-247 Issue 2				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3) RSS 247 Issue 2	Output Power	1 watt or 30dBm	2400-2483.5	PASS
RSS-247	EIRP	4W	2400-2483.5	PASS

7.2 TEST PROCEDURE

a. The EUT was directly connected to the Power Sensor&PC

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP

7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Temperature:	25℃	Relative Humidity:	60%
Test Voltage:	AC 120V/60Hz		

TX 802.11b Mode				
Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH01	2412	15.04	12.17	30
CH06	2437	14.37	11.46	30
CH11	2462	15.94	13.12	30

TX 802.11g Mode				
Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH01	2412	20.18	11.06	30
CH06	2437	20.09	10.92	30
CH11	2462	20.74	11.58	30

TX 802.11n20 Mode				
Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH01	2412	20.01	11.04	30
CH06	2437	19.96	10.92	30
CH11	2462	20.36	11.58	30

TX 802.11n40 Mode				
Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH03	2422	19.76	10.38	30
CH06	2437	19.34	10.10	30
CH09	2452	19.29	9.73	30

EIRP Power

TX 802.11b Mode					
Test Channe	Frequency	Peak Conducted Output Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	15.04	1.50	16.54	36.00
CH06	2437	14.37	1.50	15.87	36.00
CH11	2462	15.94	1.50	17.44	36.00
TX 802.11g Mode					
Test Channe	Frequency	Peak Conducted Output Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	20.18	1.50	21.68	36.00
CH06	2437	20.09	1.50	21.59	36.00
CH11	2462	20.74	1.50	22.24	36.00
TX 802.11n20 Mode					
Test Channe	Frequency	Peak Conducted Output Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	20.01	1.50	21.51	36.00
CH06	2437	19.96	1.50	21.46	36.00
CH11	2462	20.36	1.50	21.86	36.00
TX 802.11n40 Mode					
Test Channe	Frequency	Peak Conducted Output Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH03	2422	19.76	1.50	21.26	36.00
CH06	2437	19.34	1.50	20.84	36.00
CH09	2452	19.29	1.50	20.79	36.00

8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 & RSS-GenIssue 5 requirement: For intentional device, according to 15.203 & RSS-GenIssue 5: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible partyshall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is Ceramic Antenna. It comply with the standard requirement.

9. FREQUENCY STABILITY

9.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/-0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage,and for a variation in primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees.

9.2 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize,turn the EUT on and measure the operating frequency after 2,5,and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes.The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

9.3 TEST RESULT

Channel 06 (2437MHz)

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency(MHz)
AC 138V/60Hz	2437.0011
AC 120V/60Hz	2437.0003
AC 102V/60Hz	2437.0002
Max.Deviation(MHz)	0.0011
Max.Deviation(ppm)	0.45

Rated working voltage: AC 120V/60Hz

Temperature vs. Frequency Stability

Temperature(℃)	Measurement Frequency(MHz)
-30	2437.0012
-20	2437.0010
-10	2437.0008
0	2437.0007
10	2437.0009
20	2437.0004
30	2437.0008
40	2437.0005
50	2437.0004
Max.Deviation(MHz)	0.0012
Max.Deviation(ppm)	0.49

APPENDIX-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※