



FCC PART 15.247



TEST REPORT

For

Chengdu Xgimi Technology Co., Ltd.

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Hi-tech Zone, Chengdu, China

FCC ID: 2AFENB900C

Report Type: Original Report	Product Name: Remote Controller
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Chengdu Xgimi Technology Co., Ltd.**'s product, model number: **B900C (FCC ID: 2AFENB900C)** or ("EUT") in this report was the **Remote Controller**, which was measured approximately: 150mm (L) x 36mm (W) x 9mm (H). Rated input voltage: DC3.7V rechargeable Li-ion battery or DC5V charging from USB port.

The products, test model: B900C, multiple model: B901C, B902C, B903C, B904C. Their differences were presented in Product Difference Statement provided by the applicant. And we selected B900C to fully test.

**All measurement and test data in this report was gathered from final production sample, serial number: 160411001/01 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-04-11, and EUT conformed to test requirement.*

Objective

This report is prepared on behalf of **Chengdu Xgimi Technology Co., Ltd.** In accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

Equipment Name: LED Projector
FCC Part 15B JBP submissions with FCC ID: 2AFENXF09G.
FCC Part 15.407 NII submissions with FCC ID: 2AFENXF09G.
FCC Part 15.247 DTS submissions with FCC ID: 2AFENXF09G.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ± 4.7 dB;
200M~1GHz: ± 6.0 dB;
1G-6GHz: ± 5.13 dB;
6G~25GHz: ± 5.47 dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

FINAL

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for test in testing mode, which was provided by manufacturer.

Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404
...
...
..	...	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

EUT Exercise Software

The setting software: 'SSCOM33' was used during test. The worst condition (maximum power) was configured by default setting.

Test Software Version	SSCOM33		
Test Frequency	2402 MHz	2440 MHz	2480 MHz
Power Level	N/A	N/A	N/A

Note: No power level parameter configuration, it was set by default configuration.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

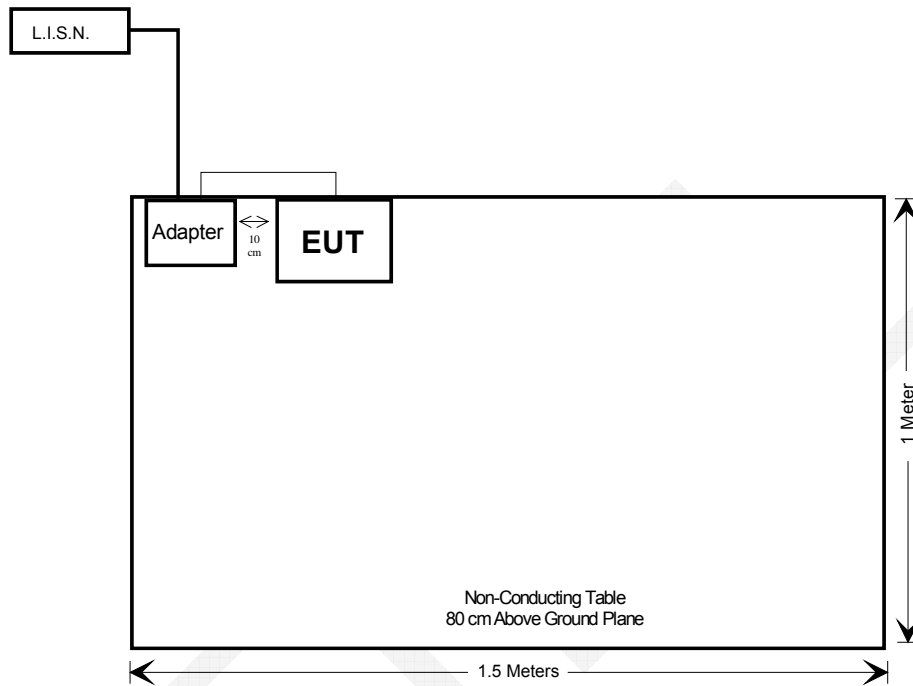
Manufacturer	Description	Model	Serial Number
SAMSUNG	Adapter	ATADS20C	DW1S311ES/7-G

External I/O Cable

Cable Description	Length (m)	From	To
Unshielded USB Cable	0.45	EUT	Adapter

Block Diagram of Test Setup

AC power line conducted emission test



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Peak Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

FCC §15.247 (i) & §1.1310 & §2.1093 - RF EXPOSURE

Applicable Standard

According to §15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max tune-up conducted power is 0 dBm (1.0 mW).

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$
 $= 1.0/5 \cdot (\sqrt{2.48}) = 0.31 < 7.5$

So the stand-alone for BLE SAR evaluation is not necessary.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has one PCB antenna arrangement, which was permanently attached and the antenna gain is 1.3 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
 –non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

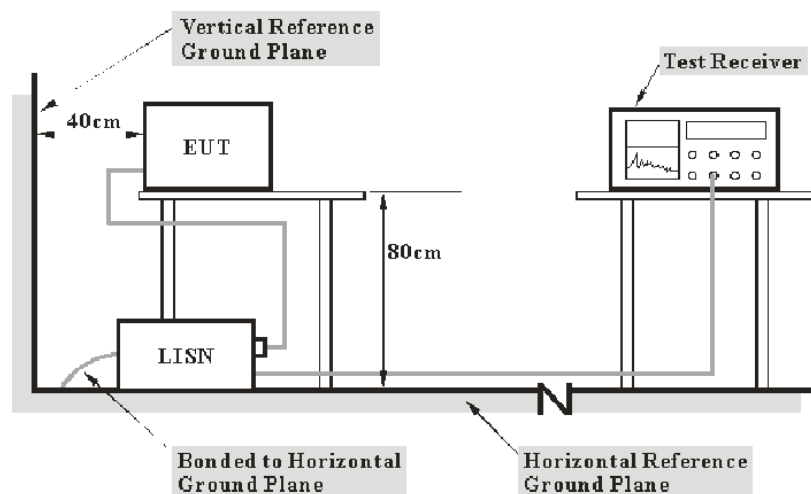
–compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
 –non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is ± 3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 30 cm from other units and other metal planes support units.

The setup of EUT was according to ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The power cables and external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to AC120V/60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,s

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2015-12-02	2016-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	357.8810.52	2015-10-31	2016-10-30
N/A	Conducted Cable	NO.5	N/A	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

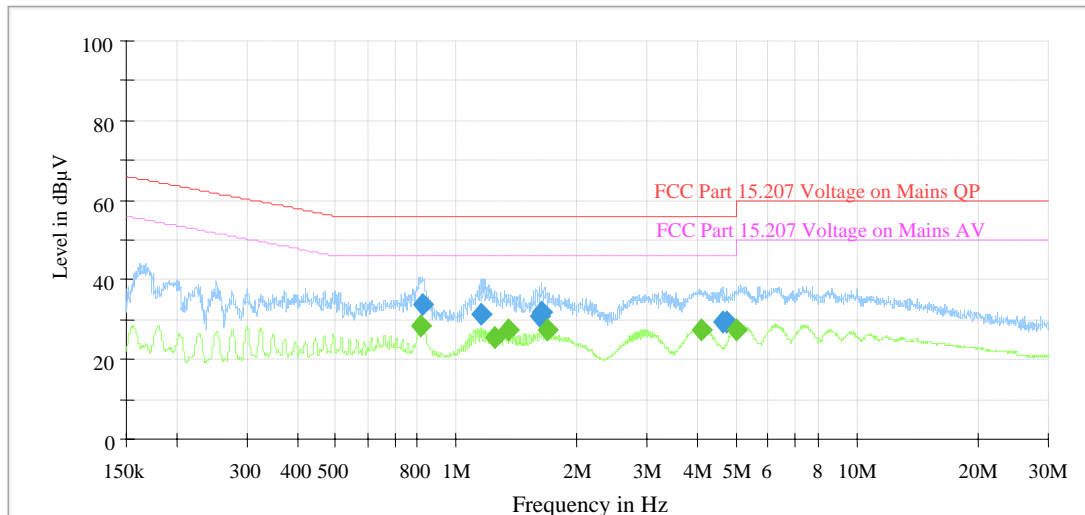
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	96 kPa

The testing was performed by Tom Tang on 2016-09-22.

Test Mode: Transmitting

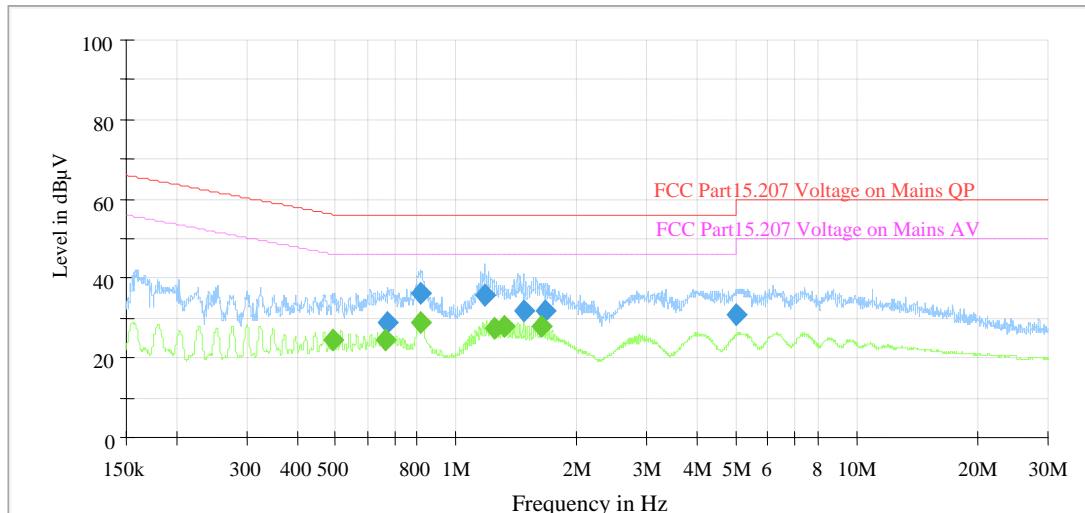
AC120V/60Hz, Line



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.821339	34.0	9.000	L1	19.9	22.0	56.0
1.151244	31.5	9.000	L1	20.0	24.5	56.0
1.610441	31.0	9.000	L1	20.0	25.0	56.0
1.633123	31.9	9.000	L1	20.0	24.1	56.0
4.634143	29.2	9.000	L1	20.2	26.8	56.0
4.737120	29.4	9.000	L1	20.2	26.6	56.0

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.814801	28.4	9.000	L1	19.9	17.6	46.0
1.239576	25.6	9.000	L1	20.0	20.4	46.0
1.348086	27.6	9.000	L1	20.0	18.4	46.0
1.686174	27.3	9.000	L1	20.0	18.7	46.0
4.077887	27.5	9.000	L1	20.2	18.5	46.0
4.989708	27.5	9.000	L1	20.3	18.5	46.0

AC120V/60Hz, Neutral



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.676634	29.1	9.000	N	19.9	26.9	56.0
0.818064	36.3	9.000	N	19.9	19.7	56.0
1.176827	35.6	9.000	N	20.0	20.4	56.0
1.469026	32.0	9.000	N	20.0	24.0	56.0
1.662755	32.1	9.000	N	20.0	23.9	56.0
4.989708	31.0	9.000	N	20.2	25.0	56.0

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.493462	24.4	9.000	N	19.9	21.7	46.1
0.663249	24.4	9.000	N	19.9	21.6	46.0
0.814801	29.1	9.000	N	19.9	16.9	46.0
1.239576	27.6	9.000	N	20.0	18.4	46.0
1.324061	28.0	9.000	N	20.0	18.0	46.0
1.636389	27.8	9.000	N	20.0	18.2	46.0

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:

30M~200MHz: ± 4.7 dB ;

200M~1GHz: ± 6.0 dB ;

1G-6GHz: ± 5.13 dB;

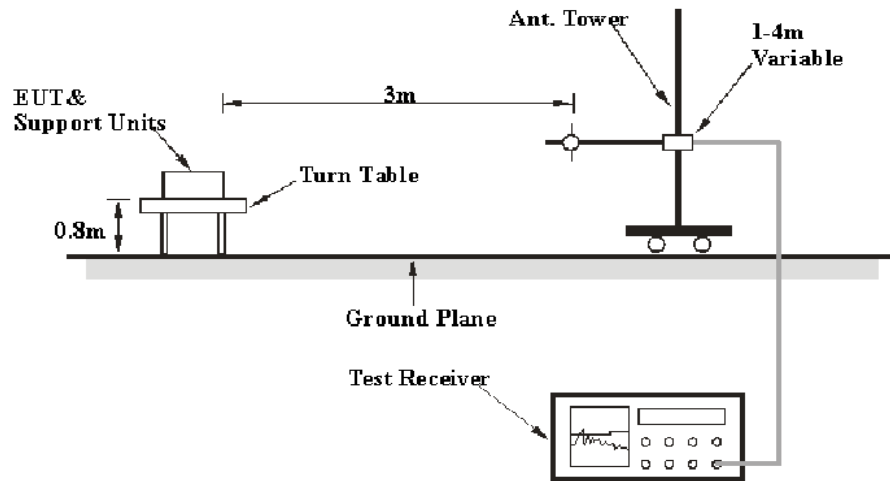
6G~25GHz: ± 5.47 dB;

Table 2 – Values of U_{cisp}

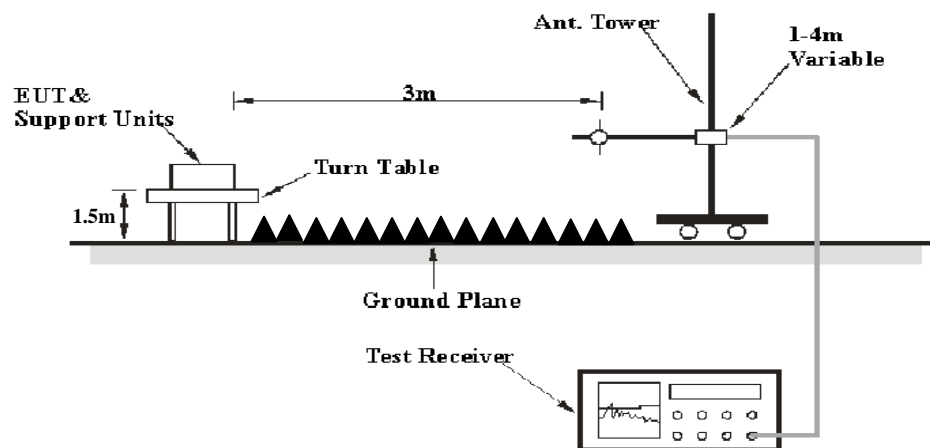
Measurement	U_{cisp}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters Semi-Anechoic Chamber, using the setup in accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Receiver Reading + Cable loss + Antenna Factor – Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2015-12-02	2016-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2015-12-02	2016-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
EM TEST	Horn Antenna	3115	003-6076	2015-12-02	2016-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-5-20	2017-5-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2015-11-10	2016-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2015-11-10	2016-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09
Rohde & Schwarz	EMC32	N/A	V 8.54.0	N/A	N/A

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247.

Please refer to the data and curve(s) as follows.

Test Data

Environmental Conditions

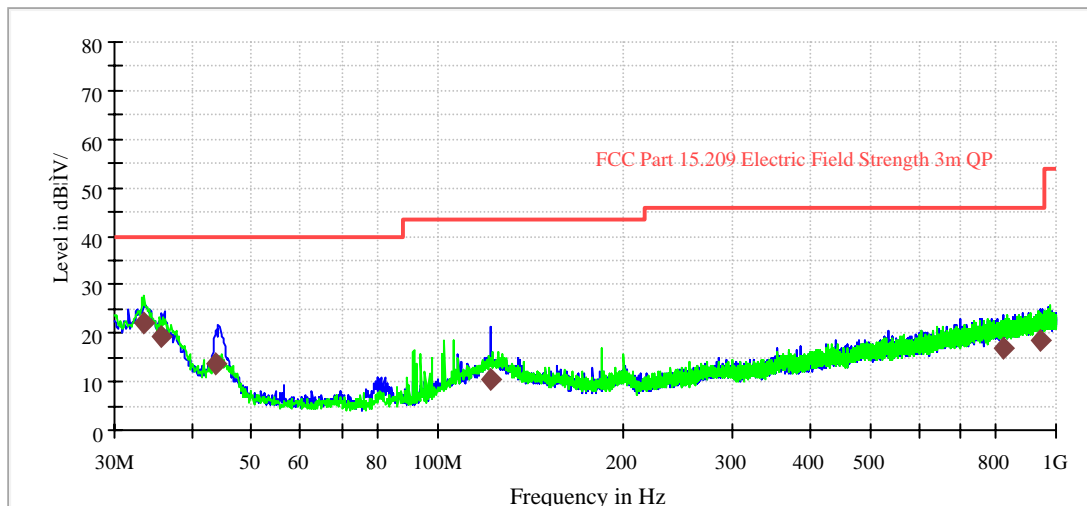
Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	96.5 kPa

The testing was performed by Tom Tang on 2016-09-26.

Test Mode: Transmitting

1) 30 MHz to 1 GHz

Electric Field Strength with Auto Test



Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.526750	21.9	100.0	H	22.0	-7.7	18.1	40.0
35.629650	19.5	121.0	V	63.0	-9.4	20.5	40.0
43.917300	13.7	100.0	V	245.0	-16.0	26.3	40.0
121.426900	10.3	125.0	V	326.0	-11.5	33.2	43.5
821.530550	16.9	125.0	V	281.0	-4.1	29.1	46.0
942.212400	18.3	100.0	V	164.0	-2.2	27.7	46.0

2) 1 GHz to 25 GHz:

Frequency (MHz)	Receiver		Rx Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2402 MHz									
2402	67.21	PK	H	23.53	3.00	0.00	93.74	N/A	N/A
2402	62.35	AV	H	23.53	3.00	0.00	88.88	N/A	N/A
2402	58.95	PK	V	23.53	3.00	0.00	85.48	N/A	N/A
2402	53.93	AV	V	23.53	3.00	0.00	80.46	N/A	N/A
2390	35.49	PK	H	23.57	3.00	0.00	62.06	74.00	11.94
2390	16.12	AV	H	23.57	3.00	0.00	42.69	54.00	11.31
4804	37.21	PK	H	30.77	5.12	26.87	46.23	74.00	27.77
4804	27.18	AV	H	30.77	5.12	26.87	36.20	54.00	17.80
7206	32.63	PK	H	34.71	6.16	26.35	47.15	74.00	26.85
7206	21.55	AV	H	34.71	6.16	26.35	36.07	54.00	17.93
9608	30.44	PK	H	37.06	7.82	26.18	49.14	74.00	24.86
9608	17.36	AV	H	37.06	7.82	26.18	36.06	54.00	17.94
Middle Channel: 2440 MHz									
2440	65.58	PK	H	23.40	3.00	0.00	91.98	N/A	N/A
2440	60.71	AV	H	23.40	3.00	0.00	87.11	N/A	N/A
2440	58.64	PK	V	23.40	3.00	0.00	85.04	N/A	N/A
2440	53.68	AV	V	23.40	3.00	0.00	80.08	N/A	N/A
4880	37.78	PK	H	31.02	5.09	26.87	47.02	74.00	26.98
4880	27.59	AV	H	31.02	5.09	26.87	36.83	54.00	17.17
7320	33.15	PK	H	34.94	6.22	26.40	47.91	74.00	26.09
7320	21.66	AV	H	34.94	6.22	26.40	36.42	54.00	17.58
9760	30.23	PK	H	37.16	7.71	26.27	48.83	74.00	25.17
9760	17.36	AV	H	37.16	7.71	26.27	35.96	54.00	18.04
High Channel: 2480 MHz									
2480	64.46	PK	H	23.27	2.99	0.00	90.72	N/A	N/A
2480	59.67	AV	H	23.27	2.99	0.00	85.93	N/A	N/A
2480	57.27	PK	V	23.27	2.99	0.00	83.53	N/A	N/A
2480	52.05	AV	V	23.27	2.99	0.00	78.31	N/A	N/A
2483.5	41.53	PK	H	23.26	2.99	0.00	67.78	74.00	6.22
2483.5	16.71	AV	H	23.26	2.99	0.00	42.96	54.00	11.04
4960	36.84	PK	H	31.27	5.05	26.88	46.28	74.00	27.72
4960	26.82	AV	H	31.27	5.05	26.88	36.26	54.00	17.74
7440	34.31	PK	H	35.18	6.27	26.45	49.31	74.00	24.69
7440	22.23	AV	H	35.18	6.27	26.45	37.23	54.00	16.77
9920	30.63	PK	H	37.25	7.60	26.37	49.11	74.00	24.89
9920	16.91	AV	H	37.25	7.60	26.37	35.39	54.00	18.61

FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) 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 relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
N/A	RF Cable	NO.3	N/A	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	96 kPa

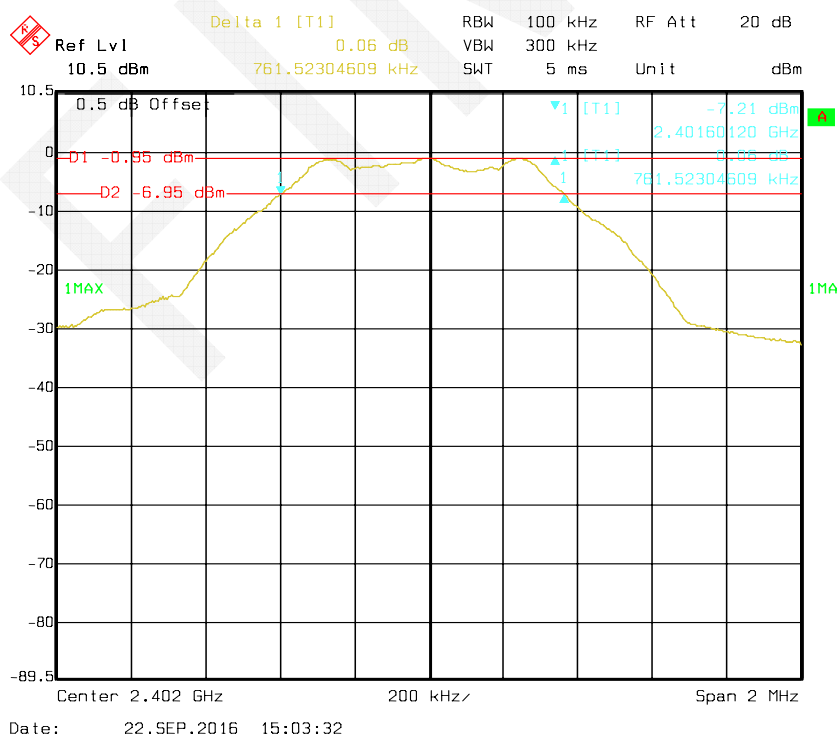
The testing was performed by Tom Tang on 2016-09-22.

Test Mode: Transmitting

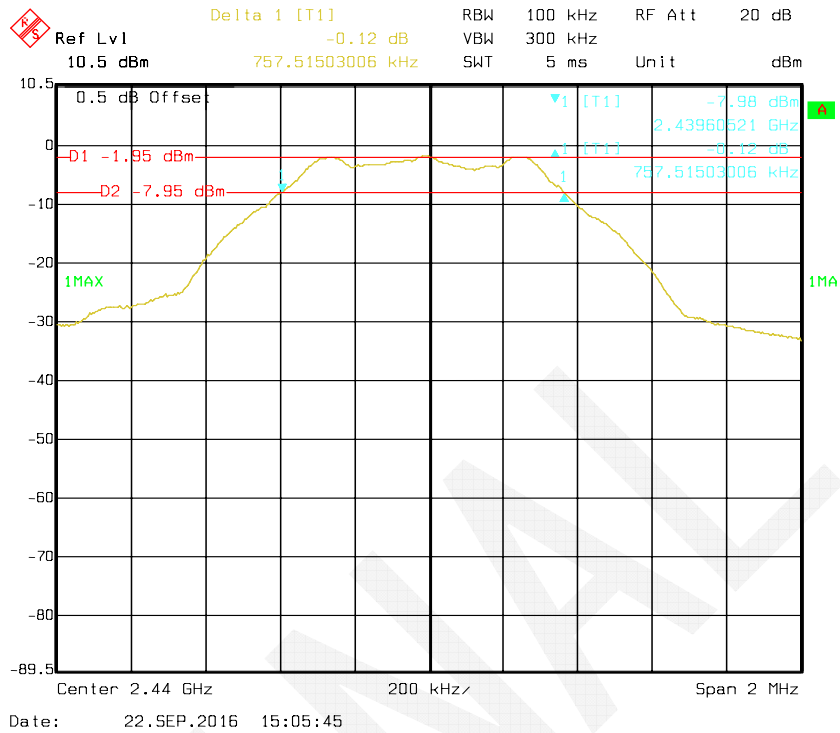
Frequency (MHz)	6 dB Bandwidth (kHz)	Limit (kHz)
2402	761	≥ 500
2440	757	≥ 500
2480	757	≥ 500

Please refer to the following plots:

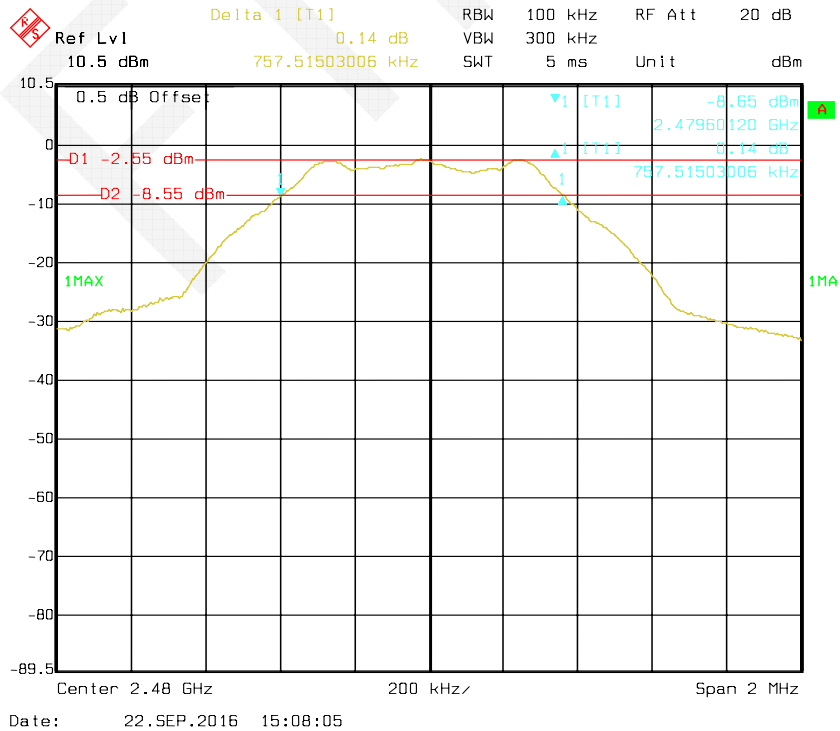
Low Channel



Middle Channel



High Channel



FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

- Set the RBW \geq DTS bandwidth.
- Set VBW $\geq 3 \times$ RBW.
- Set span $\geq 3 \times$ RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
N/A	RF Cable	NO.3	N/A	2015-11-10	2016-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

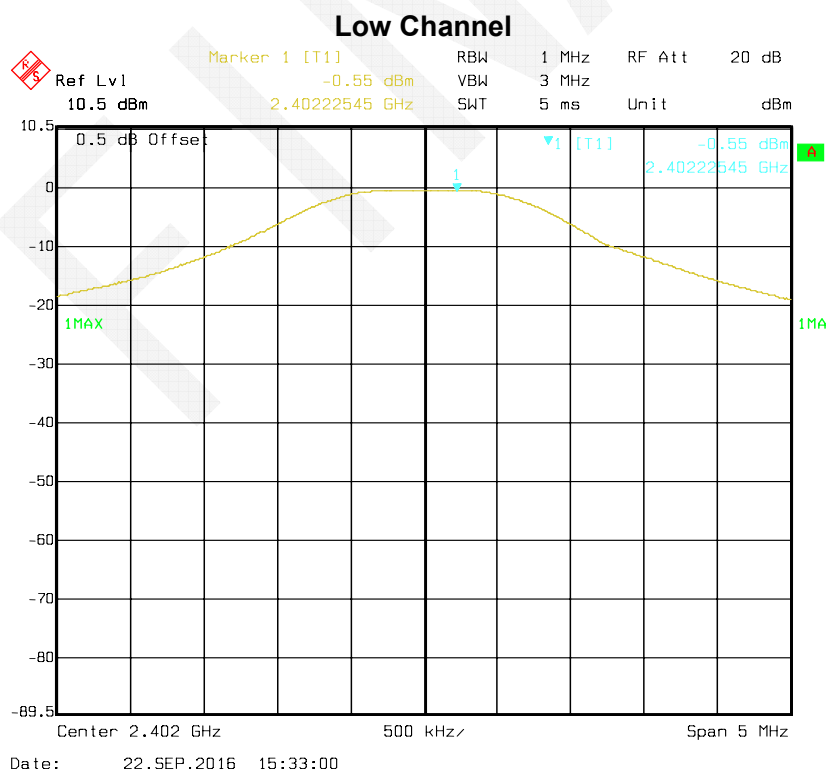
Temperature:	25 °C
Relative Humidity:	65 %
zATM Pressure:	96 kPa

The testing was performed by Tom Tang on 2016-09-22.

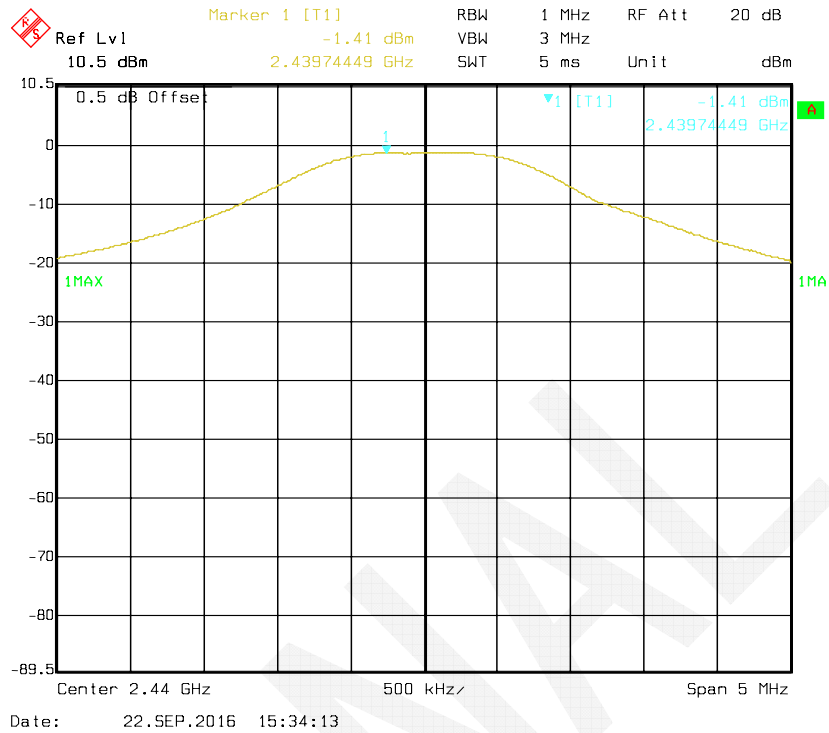
Test Mode: Transmitting

Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Limit (dBm)
2402	-0.55	30
2440	-1.41	30
2480	-2.03	30

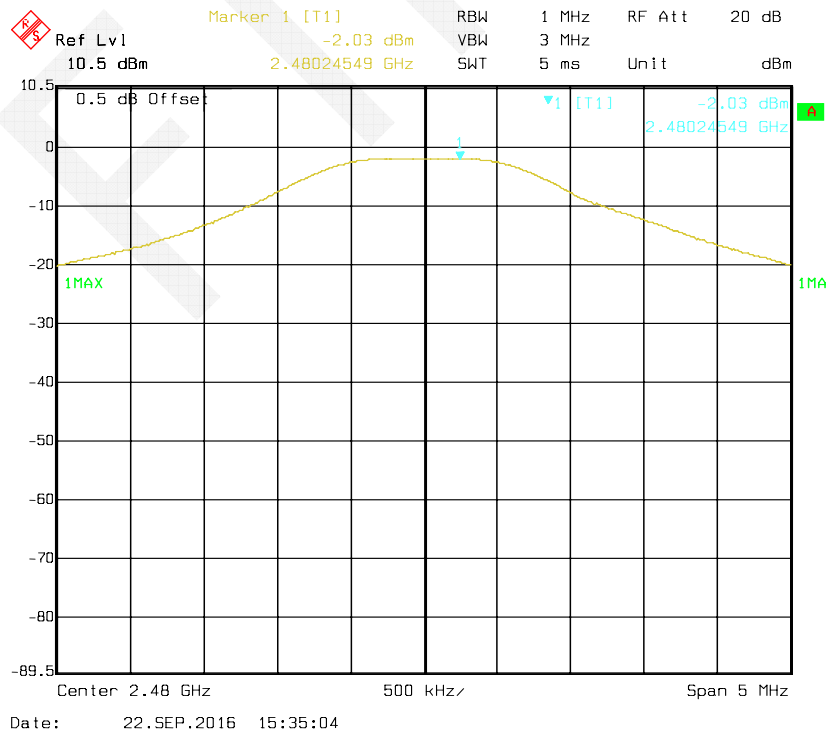
Please refer to the following plots:



Middle Channel



High Channel



FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
N/A	RF Cable	NO.3	N/A	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	96 kPa

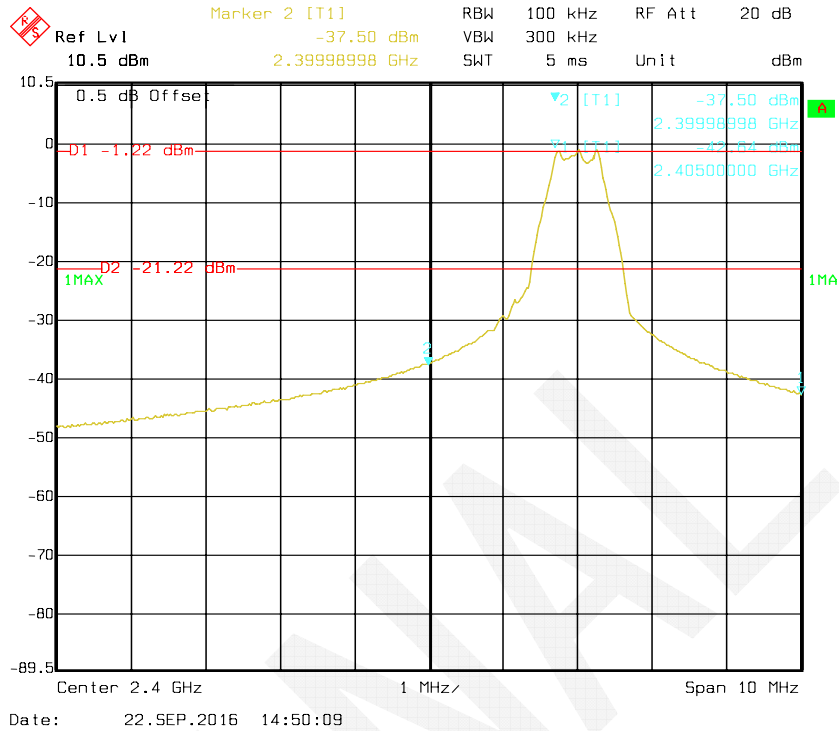
The testing was performed by Tom Tang on 2016-09-22.

Test Mode: Transmitting

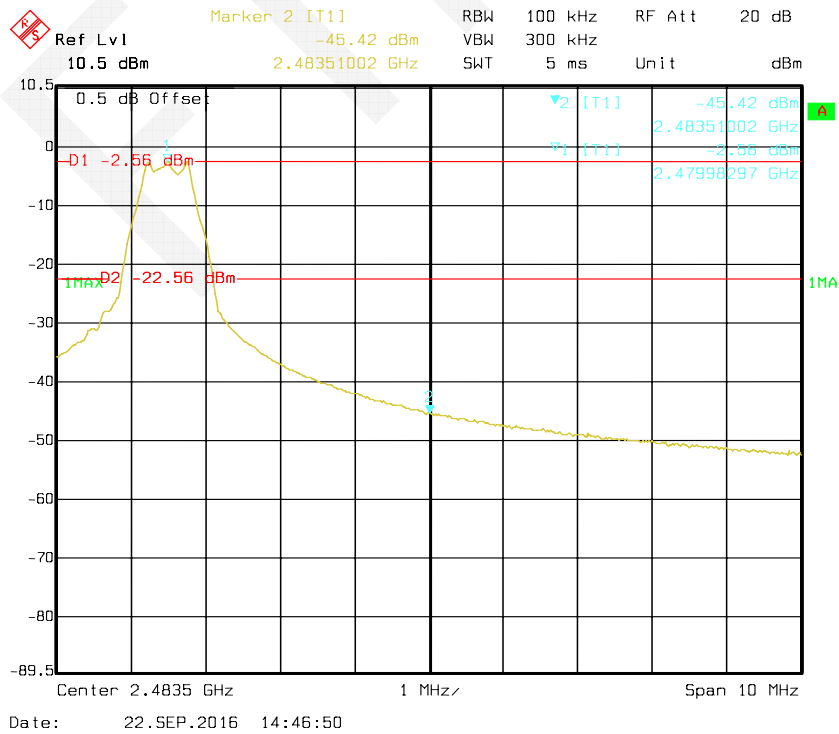
Test Result: Compliance. Please refer to following plots.

FINAL

Band Edge, Left Side



Band Edge, Right Side



FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. According to KDB 558074 D01 DTS Meas Guidance v03r05, set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS channel bandwidth.
4. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
N/A	RF Cable	NO.3	N/A	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	96 kPa

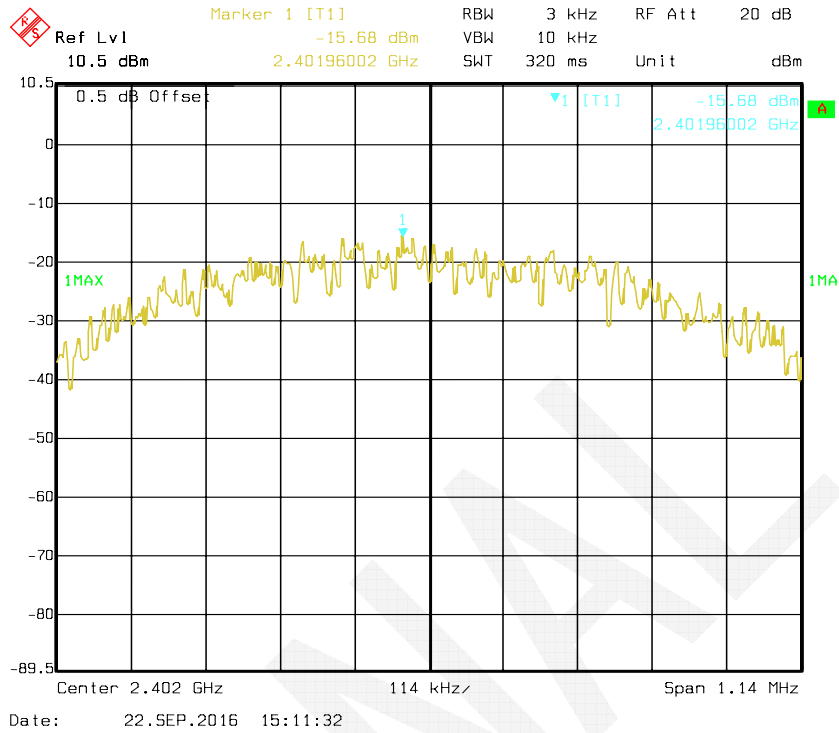
The testing was performed by Tom Tang on 2016-09-22.

Test Mode: Transmitting

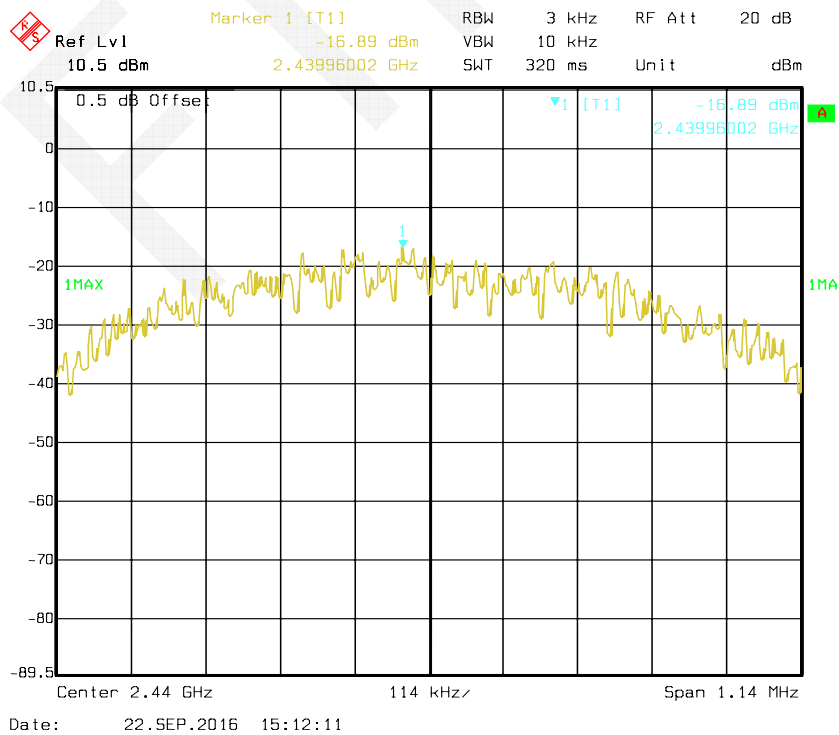
Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
2402	-15.68	≤8
2440	-16.89	≤8
2480	-17.17	≤8

Please refer to the following plots.

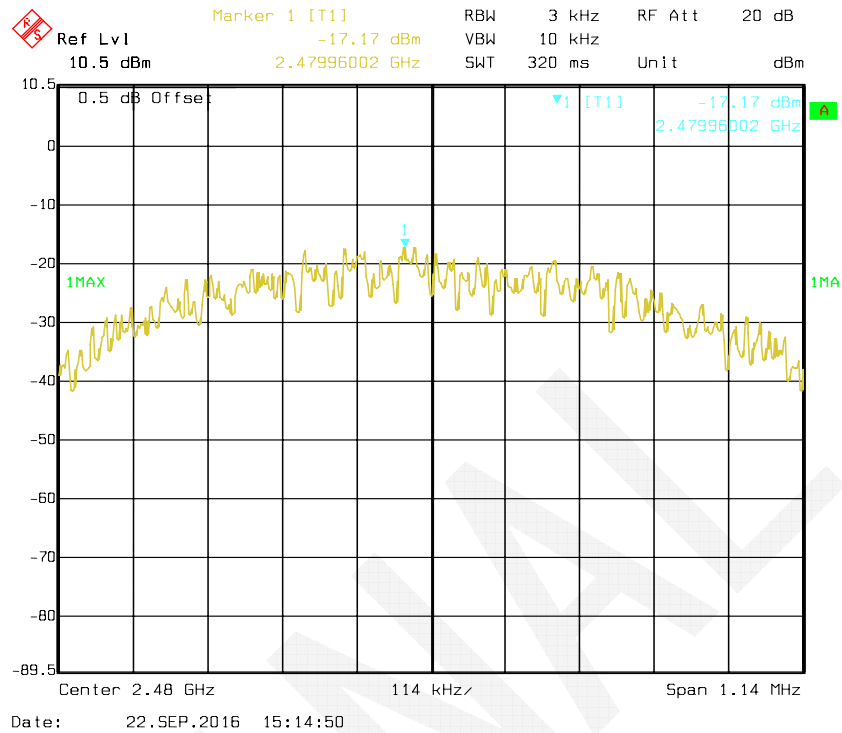
Power Spectral Density, Low Channel



Power Spectral Density, Middle Channel



Power Spectral Density, High Channel



***** END OF REPORT *****