



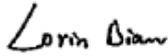
# FCC PART 15.247 TEST REPORT

For

## SZ DJI TECHNOLOGY CO., LTD

14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave,  
Nanshan, Shenzhen, Guangdong, China

**FCC ID: SS3-GL800A1703**

<b>Report Type:</b> Original Report	<b>Product Name:</b> Cendence
<b>Test Engineer:</b> <u>Lorin Bian</u>	
<b>Report Number:</b> <u>RDG170326002A</u>	
<b>Report Date:</b> <u>2017-04-26</u>	
<b>Reviewed By:</b> <u>Henry Ding</u> EMC Leader	
<b>Test Laboratory:</b>	Bay Area Compliance Laboratories Corp. (Chengdu) No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

**Note:** This test report was prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Chengdu). Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. This report was valid only with a valid digital signature.

## TABLE OF CONTENTS

<b>GENERAL INFORMATION .....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
OBJECTIVE.....	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY.....	4
TEST FACILITY.....	5
<b>SYSTEM TEST CONFIGURATION .....</b>	<b>6</b>
DESCRIPTION OF TEST CONFIGURATION.....	6
EUT EXERCISE SOFTWARE .....	6
EQUIPMENT MODIFICATIONS .....	8
SUPPORT EQUIPMENT LIST AND DETAILS.....	8
EXTERNAL CABLE .....	8
BLOCK DIAGRAM OF TEST SETUP .....	9
<b>SUMMARY OF TEST RESULTS.....</b>	<b>10</b>
<b>FCC §15.247 (i) &amp; §1.1310 &amp; §2.1093- RF EXPOSURE .....</b>	<b>11</b>
APPLICABLE STANDARD.....	11
TEST RESULT .....	11
<b>FCC §15.203 - ANTENNA REQUIREMENT .....</b>	<b>12</b>
APPLICABLE STANDARD.....	12
ANTENNA CONNECTOR CONSTRUCTION .....	12
<b>FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS .....</b>	<b>13</b>
APPLICABLE STANDARD.....	13
EUT SETUP .....	13
EMI TEST RECEIVER SETUP .....	13
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST PROCEDURE .....	14
TEST DATA .....	15
<b>FCC §15.209, §15.205 &amp; §15.247(d) - SPURIOUS EMISSIONS .....</b>	<b>18</b>
APPLICABLE STANDARD.....	18
EUT SETUP .....	18
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	19
TEST PROCEDURE .....	19
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	19
TEST EQUIPMENT LIST AND DETAILS .....	20
TEST DATA .....	20
<b>FCC §15.247(a) (2) – 6dB BANDWIDTH.....</b>	<b>24</b>
APPLICABLE STANDARD.....	24
TEST PROCEDURE .....	24
TEST EQUIPMENT LIST AND DETAILS.....	24
TEST DATA .....	24
<b>FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER .....</b>	<b>29</b>
APPLICABLE STANDARD.....	29
TEST PROCEDURE .....	29
TEST EQUIPMENT LIST AND DETAILS.....	29

TEST DATA ..... 30

**FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....31**

    APPLICABLE STANDARD..... 31

    TEST PROCEDURE ..... 31

    TEST EQUIPMENT LIST AND DETAILS ..... 31

    TEST DATA ..... 32

**FCC §15.247(e) - POWER SPECTRAL DENSITY..... 36**

    APPLICABLE STANDARD..... 36

    TEST PROCEDURE ..... 36

    TEST EQUIPMENT LIST AND DETAILS ..... 36

    TEST DATA ..... 36

## GENERAL INFORMATION

---

### Product Description for Equipment under Test (EUT)

The **SZ DJI TECHNOLOGY CO., LTD**'s product, model number: **GL800A (FCC ID: SS3-GL800A1703)** (the "EUT") in this report was a **Cendence**, which was measured approximately: 17.8 cm (L) x17.04 cm (W) x 12.6 cm(H), rated input voltage: DC7.6V from Rechargeable Battery.

*\*All measurement and test data in this report was gathered from final production sample, serial number: 170326002 (assigned by the BAACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-03-26, and EUT conformed to test requirement.*

### Objective

This report is prepared on behalf of **SZ DJI TECHNOLOGY CO., LTD** in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communications Commission's rules

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

### Related Submittal(s)/Grant(s)

FCC Part 15E NII submissions with FCC ID: SS3-GL800A1703.  
Part of system granted with FCC ID: SS3-T650A1609.

### Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices".

All of the measurements detailed in this Test Report were performed by Bay Area Compliance Laboratories Corp. (Chengdu).

The Bay Area Compliance Laboratories Corp. Chengdu's measurement Uncertainties (calculated for a k=2 Coverage Factor corresponding to approximately 95% Coverage) were as follows:

- For all of the AC Line Conducted Emissions Tests reported herein:  $\pm 3.17$  dB.
- For of all of the Direct Antenna Conducted Emissions Tests reported herein:  $\pm 0.56$  dB.

-For of all of the direct Radiated Emissions Tests reported herein are:

- 30 MHz to 200 MHz:  $\pm 4.7$  dB;
- 200 MHz to 1 GHz:  $\pm 6.0$  dB;
- 1 GHz to 6 GHz:  $\pm 5.13$ dB; and,
- 6 GHz to 40 GHz:  $\pm 5.47$ 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 No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, 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.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

For 2.4G band, the device employed LB and 10MHz modes.

EUT employed two antennas For LB mode, only antenna 2 was used for transmitting, and 45 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2404	24	2443.1
2	2405.7	25	2444.8
3	2407.4	26	2446.5
~	~	~	~
21	2438.0	44	2477.1
22	2439.7	45	2478.8
23	2441.4	/	/

Per pretest the peak output power for all channels, Low(channel 1)/Middle(channel 23)/High(channel 45) channels were test for all items, and channel 2,3,43,44 were selected to test radiated bandedge and output power.

EUT employed two antennas for 10MHz mode, the two antennas only operated at MIMO mode, and 11channels are provided:

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

Test was performed at Channel 1, 6 and 11.

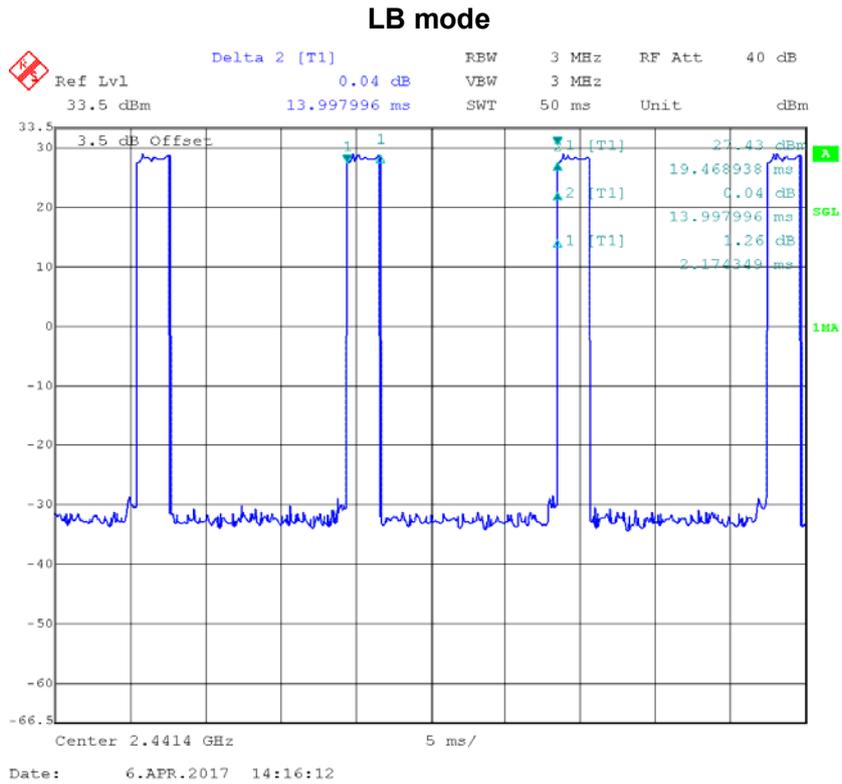
### EUT Exercise Software

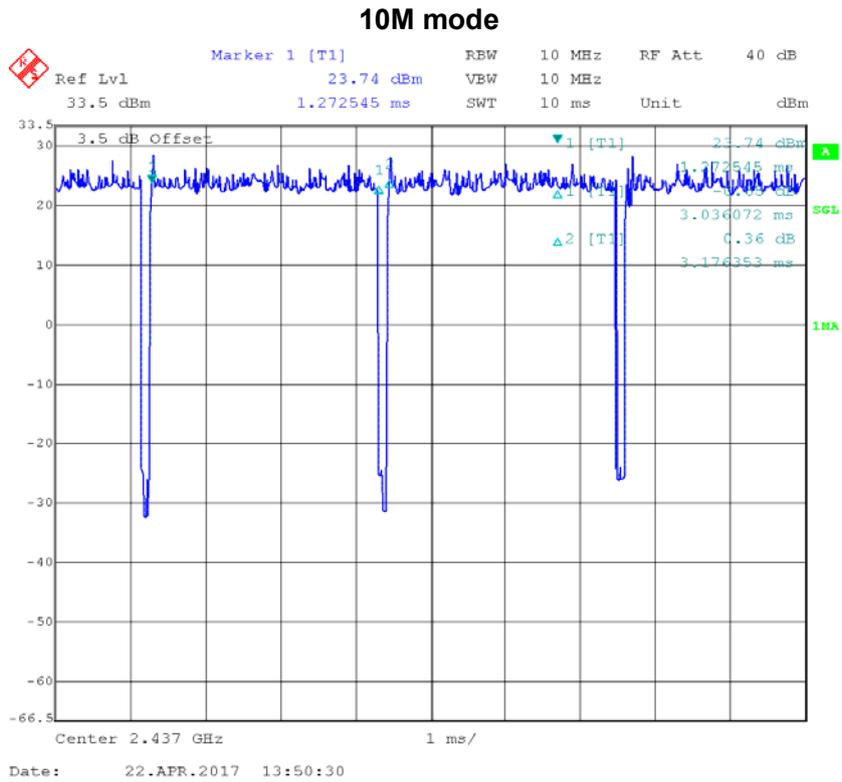
The software "DJI-RF Certification" was used for testing, which was provided by manufacturer. The maximum power for LB mode was configured as default setting by software, and the maximum power for 10MHz was as below setting, the power setting was provided by the manufacturer:

Test Mode	Test Software Version	DJI-RF Certification		
	10MHz	Frequency (MHz)	2412	2437
Power Level Setting		32	32	32

The software configured maximum duty cycle as below:

Mode	T <sub>on</sub> (ms)	T <sub>on+off</sub> (ms)	Duty Cycle (%)
LB	2.174	13.998	15.53
10M	3.036	3.176	95.59





### Equipment Modifications

No modification was made to the EUT.

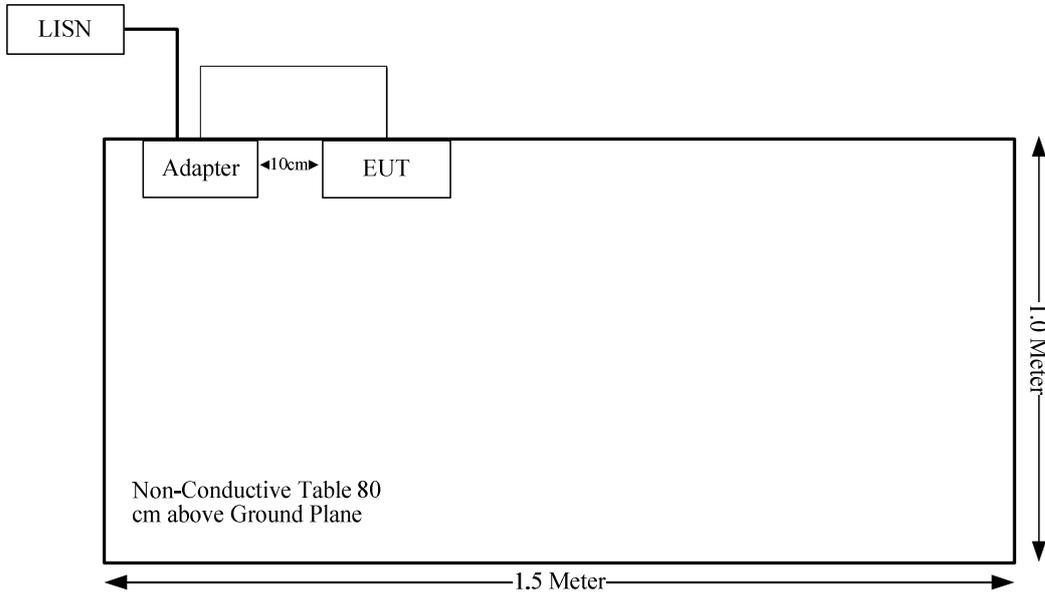
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DJI	Adapter	PH4C100	ADF0230S11546300055

### External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC cable	Yes	Yes	1.0	Adapter	EUT

### Block Diagram of Test Setup



## **SUMMARY OF TEST RESULTS**

---

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

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

---

### **Applicable Standard**

According to §15.247(i), §1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: RDG170326002-20A.

## **FCC §15.203 - ANTENNA REQUIREMENT**

---

### **Applicable Standard**

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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.
- c. 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 2 un-detachable external antennas arrangement for LB mode, Antenna 1 only for receiving, antenna 2 for transmitting and receiving, the antenna gain are 3.3dBi@ 2.4GHz band and 4.48dBi@5.8GHz, and 2 internal antennas for 10MHz mode, the antenna gain are 3.34dBi @ 2.4GHz band and 5 dBi @5.8GHz band, that fulfill the requirement of the item. Please refer to the EUT photos.

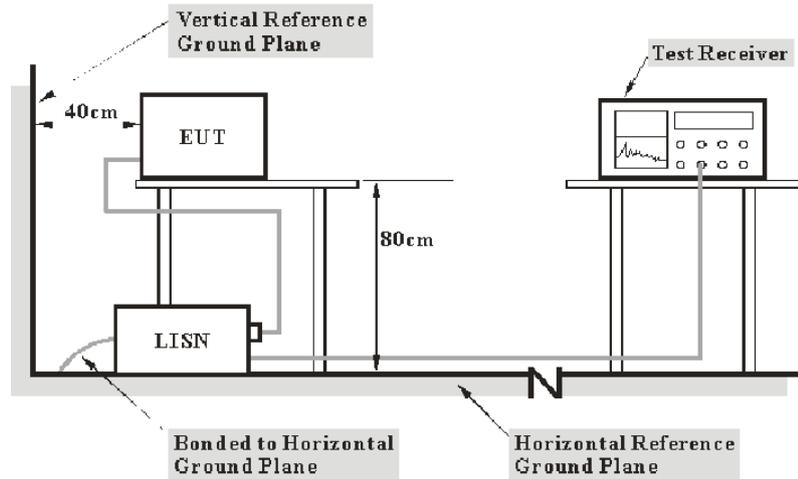
**Result:** Compliance.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

FCC §15.207(a)

### EUT Setup



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

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

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120V/60Hz AC 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

## Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

$V_C$  (cord. Reading): corrected voltage amplitude

$V_R$ : reading voltage amplitude

$A_C$ : attenuation caused by cable loss

VDF: voltage division factor of AMN

$C_f$ : Correction Factor

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	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	100018	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	DE14781	2016-10-31	2017-10-30
Unknown	Conducted Cable	Unknown	NO.5	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

\* **Statement of Traceability:** BAACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

## Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

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.

## Test Data

### Environmental Conditions

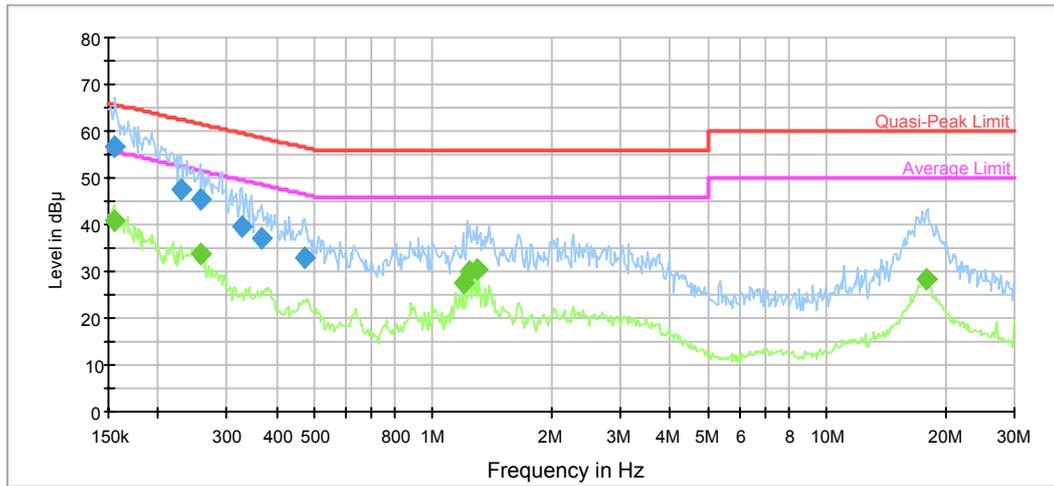
<b>Temperature:</b>	23.7 °C
<b>Relative Humidity:</b>	44.3 %
<b>ATM Pressure:</b>	100.5 kPa

*The testing was performed by Lorin Bian on 2017-04-17.*

*Test Result: Compliance, please refer to the below data and plots.*

Test Mode: Charging and transmitting (10MHz mode was the worst)

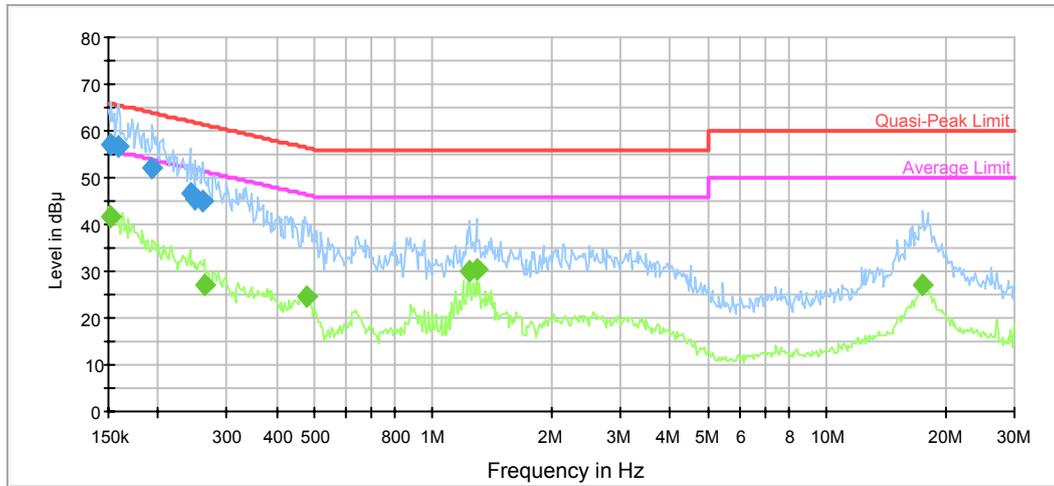
**AC120V, 60Hz, Line**



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.156097	56.8	9.000	L1	19.7	8.9	65.7	Compliance
0.228823	47.6	9.000	L1	19.7	14.9	62.5	Compliance
0.255827	45.5	9.000	L1	19.7	16.1	61.6	Compliance
0.327509	39.7	9.000	L1	19.7	19.8	59.5	Compliance
0.366160	37.2	9.000	L1	19.7	21.4	58.6	Compliance
0.472507	33.1	9.000	L1	19.7	23.4	56.5	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154858	40.8	9.000	L1	19.7	14.9	55.7	Compliance
0.255827	33.8	9.000	L1	19.7	17.8	51.6	Compliance
1.190776	27.4	9.000	L1	19.7	18.6	46.0	Compliance
1.239175	30.0	9.000	L1	19.7	16.0	46.0	Compliance
1.289541	30.3	9.000	L1	19.7	15.7	46.0	Compliance
17.881783	28.2	9.000	L1	20.1	21.8	50.0	Compliance

**AC120V, 60Hz, Neutral:**



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.152410	57.0	9.000	N	19.7	8.9	65.9	Compliance
0.158604	56.5	9.000	N	19.7	9.0	65.5	Compliance
0.193566	52.1	9.000	N	19.6	11.8	63.9	Compliance
0.241949	46.6	9.000	N	19.6	15.4	62.0	Compliance
0.249785	45.6	9.000	N	19.6	16.2	61.8	Compliance
0.259937	45.2	9.000	N	19.6	16.2	61.4	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.152410	41.8	9.000	N	19.7	14.1	55.9	Compliance
0.262017	27.2	9.000	N	19.6	24.2	51.4	Compliance
0.480097	24.4	9.000	N	19.6	21.9	46.3	Compliance
1.239175	29.8	9.000	N	19.6	16.2	46.0	Compliance
1.289541	30.6	9.000	N	19.6	15.4	46.0	Compliance
17.599071	27.0	9.000	N	19.9	23.0	50.0	Compliance

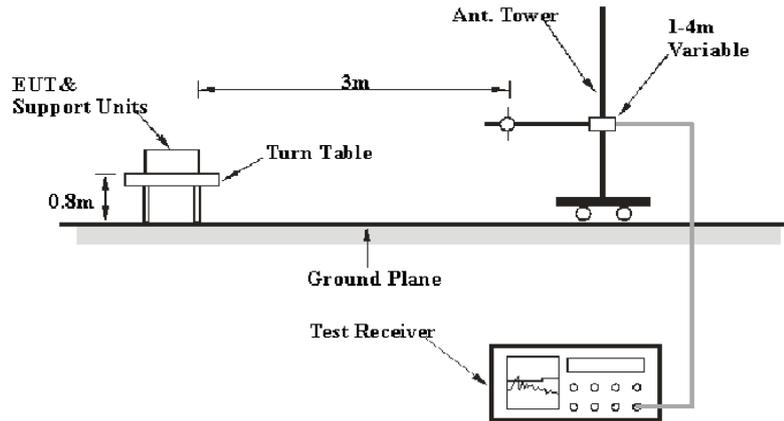
## FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

### Applicable Standard

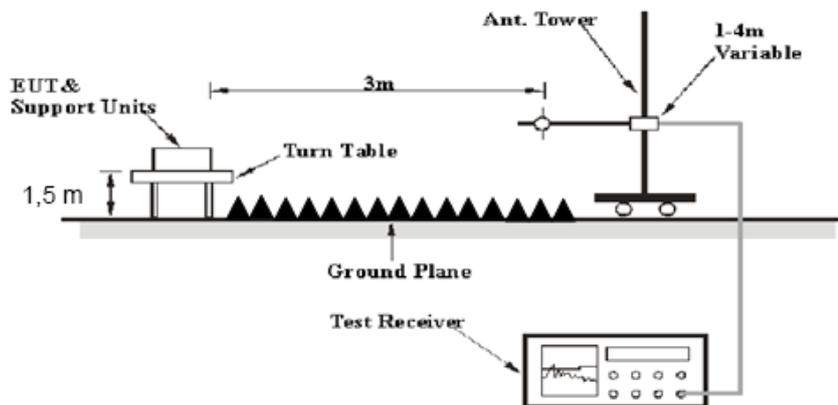
FCC §15.247 (d); §15.209; §15.205;

### EUT Setup

#### Below 1GHz:



#### Above 1GHz:



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

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:

30MHz-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 25GHz:

Detector	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

## 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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A121808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
HP	Amplifier	8449B	3008A00277	2016-12-02	2017-12-01
EMCT	Semi-Anechoic Chamber	966	966-1	2015-04-24	2018-04-23
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09
Unknown	RF Cable (above 1GHz)	Unknown	NO.2	2016-11-10	2017-11-09

\* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B "Implementation of traceability policy in accredited laboratories".

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	22.3~24.9 °C
<b>Relative Humidity:</b>	54.1~56 %
<b>ATM Pressure:</b>	100.2~100.9 kPa

*The testing was performed by Lorin Bian from 2017-04-19 to 2017-04-24.*

*Test Result: Compliance, please Refer to the following data*

*Test Mode: Transmitting*

LB Mode:  
30MHz-25GHz

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: 2404 MHz									
2404	85.37	PK	H	23.53	3.00	0.00	111.9	N/A	N/A
2404	75.75	AV	H	23.53	3.00	0.00	102.28	N/A	N/A
2404	91.96	PK	V	23.53	3.00	0.00	118.49	N/A	N/A
2404	81.71	AV	V	23.53	3.00	0.00	108.24	N/A	N/A
2390	28.62	PK	V	23.57	3.00	0.00	55.19	74	18.81
2390	15.56	AV	V	23.57	3.00	0.00	42.13	54	11.87
4808	36.00	PK	V	30.79	5.12	26.87	45.04	74	28.96
4808	22.87	AV	V	30.79	5.12	26.87	31.91	54	22.09
7212	34.89	PK	V	34.72	6.17	26.35	49.43	74	24.57
7212	22.28	AV	V	34.72	6.17	26.35	36.82	54	17.18
3257	40.58	PK	V	25.64	3.82	26.50	43.54	74	30.46
3257	27.49	AV	V	25.64	3.82	26.50	30.45	54	23.55
334.58	37.63	QP	H	14.75	1.16	27.69	25.85	46.00	20.15
422.85	37.31	QP	H	16.81	1.48	28.41	27.19	46.00	18.81
Middle Channel: 2441.4 MHz									
2441.4	85.40	PK	H	23.40	3.00	0.00	111.8	N/A	N/A
2441.4	74.14	AV	H	23.40	3.00	0.00	100.54	N/A	N/A
2441.4	94.97	PK	V	23.40	3.00	0.00	121.37	N/A	N/A
2441.4	84.49	AV	V	23.40	3.00	0.00	110.89	N/A	N/A
4882.8	16.89	PK	V	31.02	5.09	0.00	53	74	21
4882.8	-1.37	AV	V	31.02	5.09	0.00	34.74	54	19.26
7324.2	35.24	PK	V	34.95	6.22	26.40	50.01	74	23.99
7324.2	21.72	AV	V	34.95	6.22	26.40	36.49	54	17.51
3304	54.80	PK	V	25.90	3.89	26.52	58.07	74	15.93
3304	31.59	AV	V	25.90	3.89	26.52	34.86	54	19.14
3142	48.61	PK	V	25.00	3.64	26.46	50.79	74	23.21
3142	29.75	AV	V	25.00	3.64	26.46	31.93	54	22.07
334.58	37.9	QP	H	14.75	1.16	27.69	26.12	46.00	19.88
422.85	37.45	QP	H	16.81	1.48	28.41	27.33	46.00	18.67
High Channel: 2478.8 MHz									
2478.8	82.26	PK	H	23.27	2.99	0.00	108.52	N/A	N/A
2478.8	72.44	AV	H	23.27	2.99	0.00	98.7	N/A	N/A
2478.8	90.11	PK	V	23.27	2.99	0.00	116.37	N/A	N/A
2478.8	79.94	AV	V	23.27	2.99	0.00	106.2	N/A	N/A
2483.5	31.40	PK	V	23.26	2.99	0.00	57.65	74	16.35
2483.5	16.73	AV	V	23.26	2.99	0.00	42.98	54	11.02
4957.6	36.57	PK	V	31.26	5.05	26.88	46	74	28
4957.6	22.66	AV	V	31.26	5.05	26.88	32.09	54	21.91
7436.4	36.07	PK	V	35.17	6.27	26.45	51.06	74	22.94
7436.4	22.98	AV	V	35.17	6.27	26.45	37.97	54	16.03
4042	40.99	PK	V	29.07	4.95	26.58	48.43	74	25.57
4042	25.08	AV	V	29.07	4.95	26.58	32.52	54	21.48
334.58	38.74	QP	H	14.75	1.16	27.69	26.96	46.00	19.04
422.85	37.87	QP	H	16.81	1.48	28.41	27.75	46.00	18.25

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)					
Additional Channel: 2405.7 MHz									
2405.7	86.76	PK	H	23.52	3.00	0.00	113.28	N/A	N/A
2405.7	76.61	AV	H	23.52	3.00	0.00	103.13	N/A	N/A
2405.7	93.72	PK	V	23.52	3.00	0.00	120.24	N/A	N/A
2405.7	83.29	AV	V	23.52	3.00	0.00	109.81	N/A	N/A
2390	28.43	PK	V	23.57	3.00	0.00	55	74	19
2390	15.51	AV	V	23.57	3.00	0.00	42.08	54	11.92
Additional Channel: 2407.4 MHz									
2407.4	85.85	PK	H	23.51	3.00	0.00	112.36	N/A	N/A
2407.4	76.03	AV	H	23.51	3.00	0.00	102.54	N/A	N/A
2407.4	94.85	PK	V	23.51	3.00	0.00	121.36	N/A	N/A
2407.4	84.16	AV	V	23.51	3.00	0.00	110.67	N/A	N/A
2390	28.12	PK	V	23.57	3.00	0.00	54.69	74	19
2390	14.82	AV	V	23.57	3.00	0.00	41.39	54	11.92
Additional Channel: 2475.4 MHz									
2475.4	86.74	PK	H	23.28	2.99	0.00	113.01	N/A	N/A
2475.4	76.36	AV	H	23.28	2.99	0.00	102.63	N/A	N/A
2475.4	96.15	PK	V	23.28	2.99	0.00	122.42	N/A	N/A
2475.4	85.04	AV	V	23.28	2.99	0.00	111.31	N/A	N/A
2483.5	28.77	PK	V	23.26	2.99	0.00	55.02	74	19
2483.5	16.22	AV	V	23.26	2.99	0.00	42.47	54	11.92
Additional Channel: 2477.1 MHz									
2477.1	84.55	PK	H	25.84	3.10	0.00	113.49	N/A	N/A
2477.1	74.92	AV	H	25.84	3.10	0.00	103.86	N/A	N/A
2477.1	89.81	PK	V	25.84	3.10	0.00	118.75	N/A	N/A
2477.1	79.53	AV	V	25.84	3.10	0.00	108.47	N/A	N/A
2483.5	31.01	PK	V	25.86	3.10	0.00	59.97	74.00	14.03
2483.5	15.64	AV	V	25.86	3.10	0.00	44.60	54.00	9.40

10M Mode  
30MHz-25GHz

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: 2412 MHz									
2412	85.95	PK	H	23.50	3.00	0.00	112.45	N/A	N/A
2412	75.13	AV	H	23.50	3.00	0.00	101.63	N/A	N/A
2412	88.04	PK	V	23.50	3.00	0.00	114.54	N/A	N/A
2412	76.52	AV	V	23.50	3.00	0.00	103.02	N/A	N/A
2390	33.42	PK	V	23.57	3.00	0.00	59.99	74	14.01
2390	20.10	AV	V	23.57	3.00	0.00	46.67	54	7.33
4824	41.16	PK	V	30.84	5.11	26.87	50.24	74	23.76
4824	30.33	AV	V	30.84	5.11	26.87	39.41	54	14.59
7236	36.03	PK	V	34.77	6.18	26.36	50.62	74	23.38
7236	24.55	AV	V	34.77	6.18	26.36	39.14	54	14.86
3163	40.27	PK	V	25.11	3.67	26.47	42.58	74	31.42
3163	29.01	AV	V	25.11	3.67	26.47	31.32	54	22.68
334.58	38.27	QP	H	14.75	1.16	27.69	26.49	46.00	19.51
422.85	38.31	QP	H	16.81	1.48	28.41	28.19	46.00	17.81
Middle Channel: 2437 MHz									
2437	84.40	PK	H	23.41	3.00	0.00	110.81	N/A	N/A
2437	73.01	AV	H	23.41	3.00	0.00	99.42	N/A	N/A
2437	85.88	PK	V	23.41	3.00	0.00	112.29	N/A	N/A
2437	75.07	AV	V	23.41	3.00	0.00	101.48	N/A	N/A
4874	41.25	PK	V	31.00	5.09	26.87	50.47	74	23.53
4874	30.62	AV	V	31.00	5.09	26.87	39.84	54	14.16
7311	36.50	PK	V	34.92	6.21	26.40	51.23	74	22.77
7311	24.68	AV	V	34.92	6.21	26.40	39.41	54	14.59
3221	40.68	PK	V	25.44	3.76	26.49	43.39	74	30.61
3221	29.76	AV	V	25.44	3.76	26.49	32.47	54	21.53
2894	38.22	PK	V	23.99	3.34	26.51	39.04	74	34.96
2894	25.50	AV	V	23.99	3.34	26.51	26.32	54	27.68
334.58	37.8	QP	H	14.75	1.16	27.69	26.02	46.00	19.98
422.85	38.75	QP	H	16.81	1.48	28.41	28.63	46.00	17.37
High Channel: 2462 MHz									
2462	86.35	PK	H	23.33	2.99	0.00	112.67	N/A	N/A
2462	75.18	AV	H	23.33	2.99	0.00	101.5	N/A	N/A
2462	88.93	PK	V	23.33	2.99	0.00	115.25	N/A	N/A
2462	76.48	AV	V	23.33	2.99	0.00	102.8	N/A	N/A
2483.5	33.64	PK	V	23.26	2.99	0.00	59.89	74	14.11
2483.5	20.65	AV	V	23.26	2.99	0.00	46.9	54	7.1
4924	41.76	PK	V	31.16	5.07	26.88	51.11	74	22.89
4924	30.26	AV	V	31.16	5.07	26.88	39.61	54	14.39
7386	36.77	PK	V	35.07	6.25	26.43	51.66	74	22.34
7386	25.03	AV	V	35.07	6.25	26.43	39.92	54	14.08
3302	40.05	PK	V	25.89	3.88	26.52	43.3	74	30.7
3302	29.02	AV	V	25.89	3.88	26.52	32.27	54	21.73
334.58	38.77	QP	H	14.75	1.16	27.69	26.99	46.00	19.01
422.85	38.62	QP	H	16.81	1.48	28.41	28.50	46.00	17.50

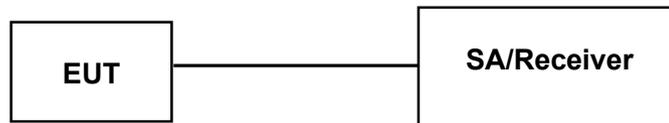
## FCC §15.247(a) (2) – 6dB BANDWIDTH

### 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

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 it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
Unknown	RF Cable	Unknown	NO.3	Each Time	/

\* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

### Test Data

#### Environmental Conditions

Temperature:	22.6 °C
Relative Humidity:	58 %
ATM Pressure:	98.6 kPa

*The testing was performed by Lorin Bian on 2017-04-06.*

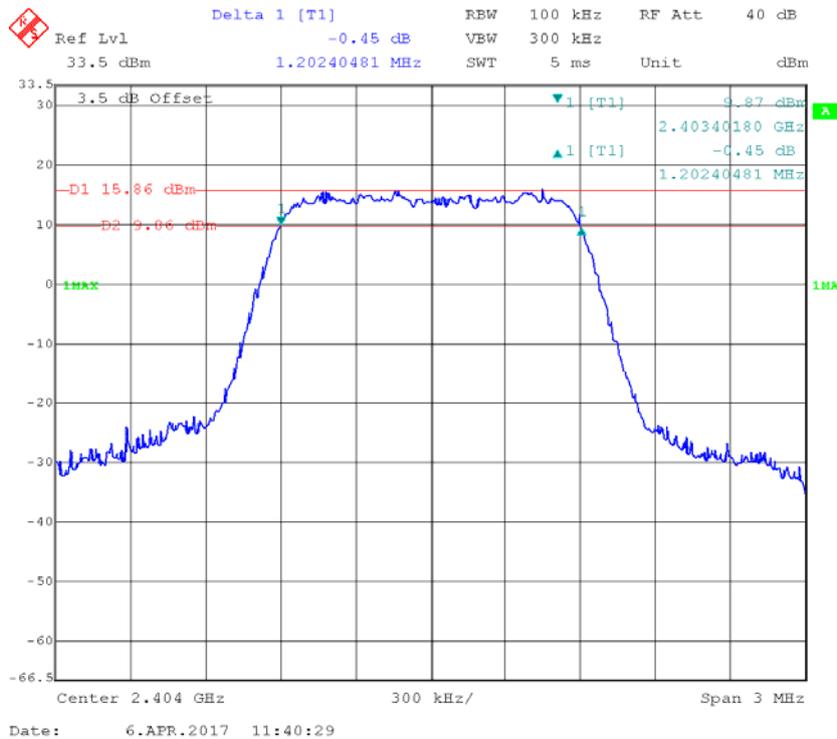
**Test Result:** Compliance.

Please refer to the following tables and plots.

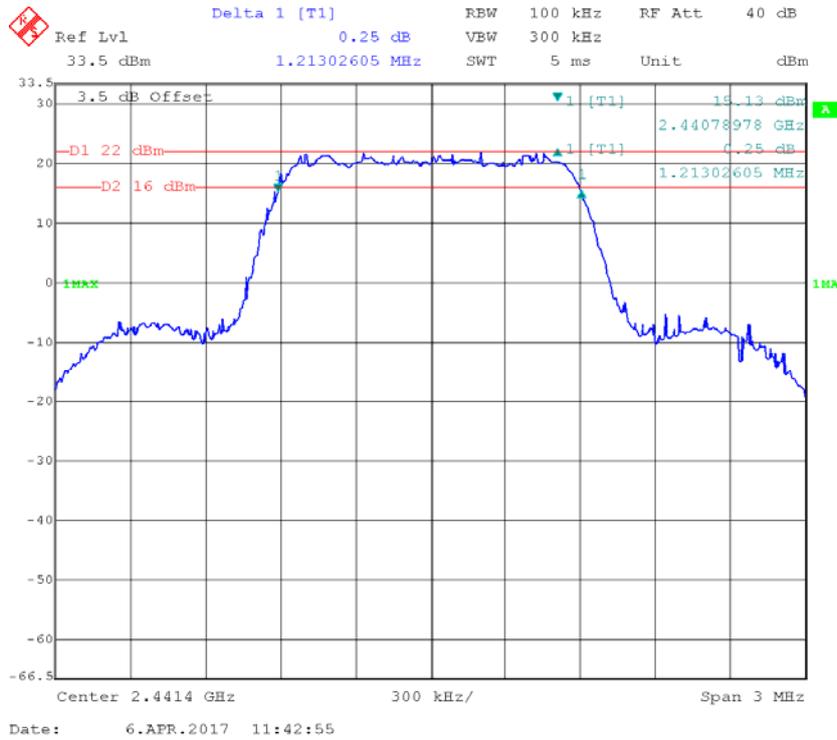
*Test Mode: Transmitting (Test was performed at antenna 2 for LB mode, and 1 for 10MHz mode)*

Test mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
LB	Low	2404	1.20	≥0.5
	Middle	2441.4	1.21	≥0.5
	High	2478.8	1.22	≥0.5
10M	Low	2412	8.94	≥0.5
	Middle	2437	8.94	≥0.5
	High	2462	8.94	≥0.5

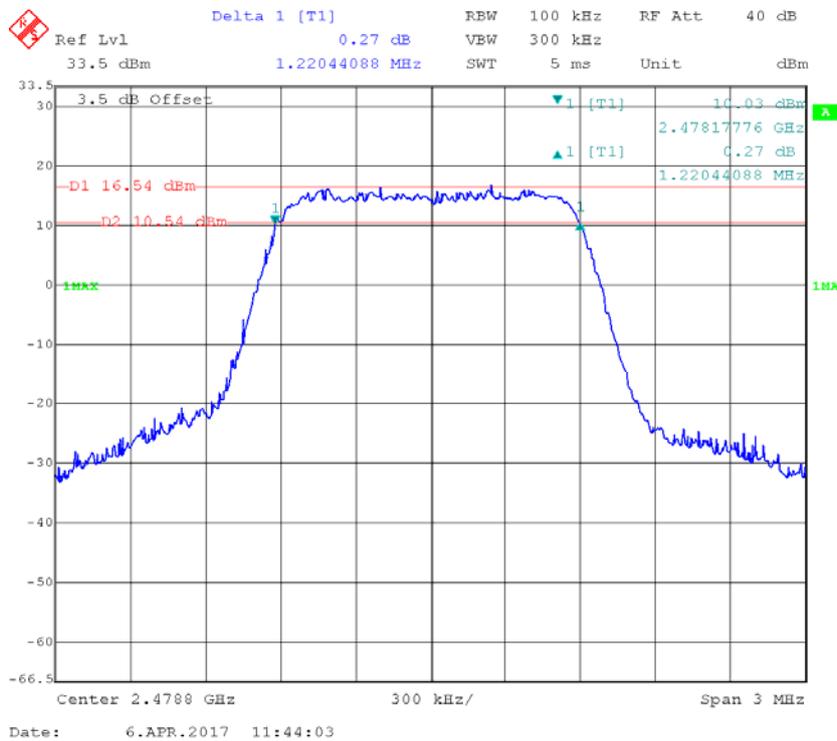
**LB, Low Channel**



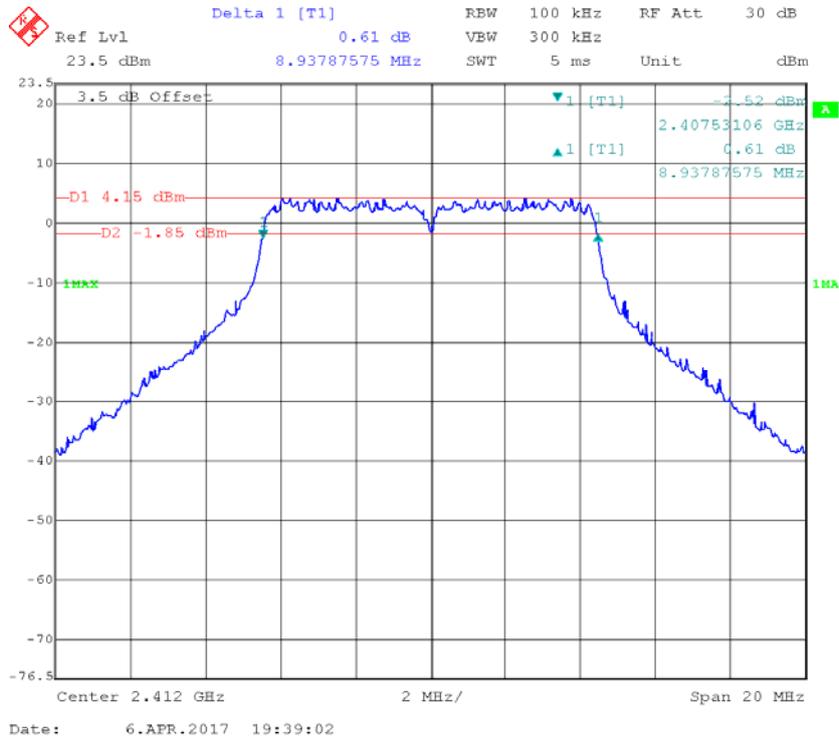
### LB, Middle Channel



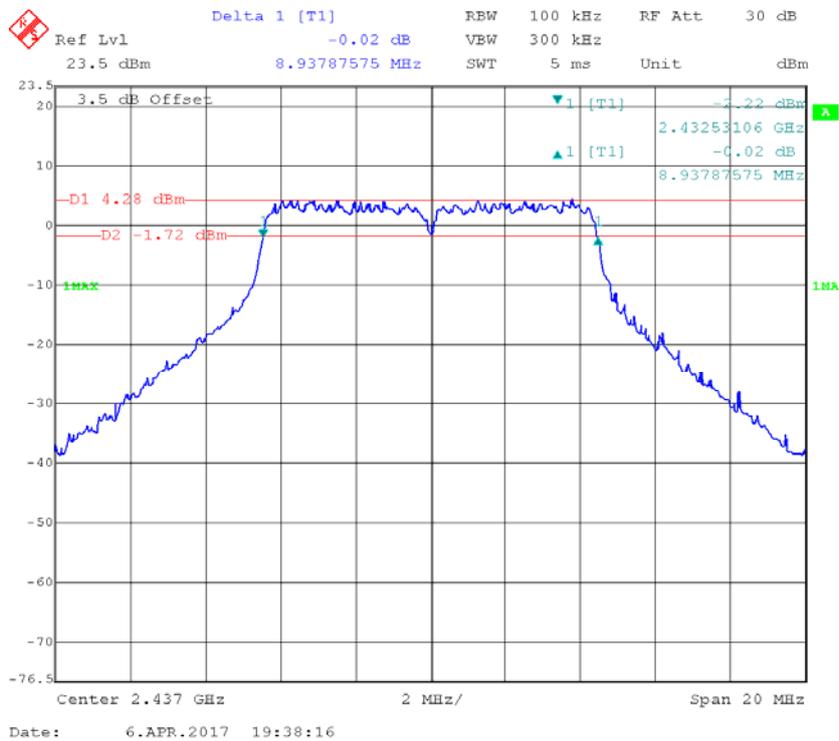
### LB, High Channel



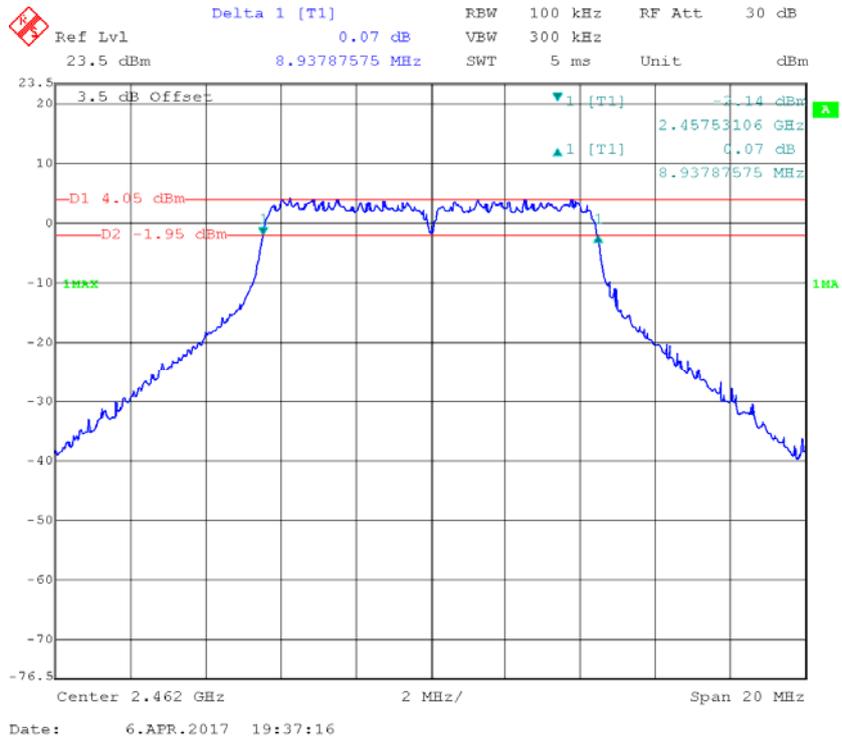
### 10M, Low Channel



### 10M, Middle Channel



### 10M, High Channel



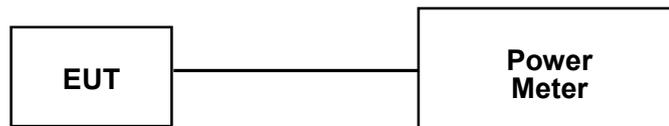
## **FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER**

### **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**

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to test equipment.
3. Add a correction factor to the display.
4. Set the power Meter to test Peak output power, record the result as peak power.
5. Set the power meter to test average output power, record the result as average power.



### **Test Equipment List and Details**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Agilent	Wideband Power Sensor	N1921A	MY54170074	2017-01-03	2018-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2017-01-03	2018-01-03
Unknown	RF Cable	Unknown	NO.3	Each Time	/

\* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	22.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	98.6 kPa

The testing was performed by Lorin Bian on 2017-04-06.

Test Mode: Transmitting

LB mode:

Frequency (MHz)	Conducted Output Power (dBm)		Limits (dBm)
	Peak	Average	
2404	25.41	17.07	30
2405.7	27.23	19.12	30
2407.4	29.07	21.80	30
2441.4	29.70	21.92	30
2475.4	29.10	22.24	30
2477.1	27.95	19.21	30
2478.8	26.55	17.36	30

10MHz Mode:

Frequency (MHz)	Conducted Peak Output Power (dBm)		Total (dBm)	Limits (dBm)
	Antenna 1	Antenna 2		
2412	22.13	21.90	25.03	30
2437	22.19	22.49	25.35	30
2462	21.92	21.85	24.90	30

Frequency (MHz)	Conducted Average Output Power (dBm)		Total (dBm)	Limits (dBm)
	Antenna 1	Antenna 2		
2412	14.49	14.56	17.54	30
2437	14.60	14.69	17.66	30
2462	14.29	14.15	17.23	30

Note: For 10MHz the device employed Cyclic Delay Diversity (CDD) for MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements:

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

So:

Directional gain = GANT + Array Gain = 3.34dBi < 6dBi

## **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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
Unknown	RF Cable	Unknown	NO.3	Each Time	/

\* **Statement of Traceability:** BAACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

## Test Data

### Environmental Conditions

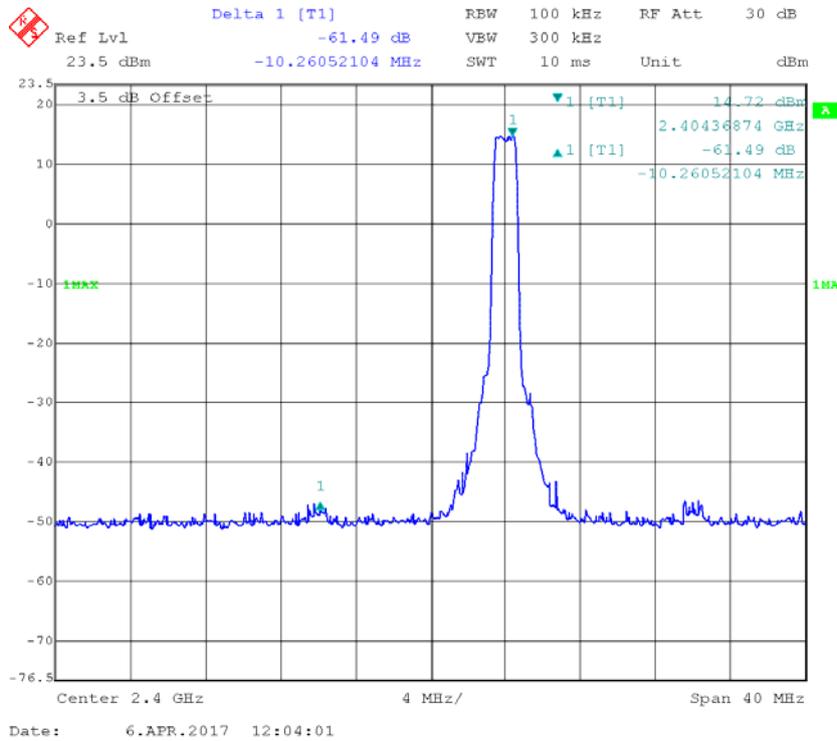
<b>Temperature:</b>	22.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	98.6 kPa

The testing was performed by Lorin Bian on 2017-04-06.

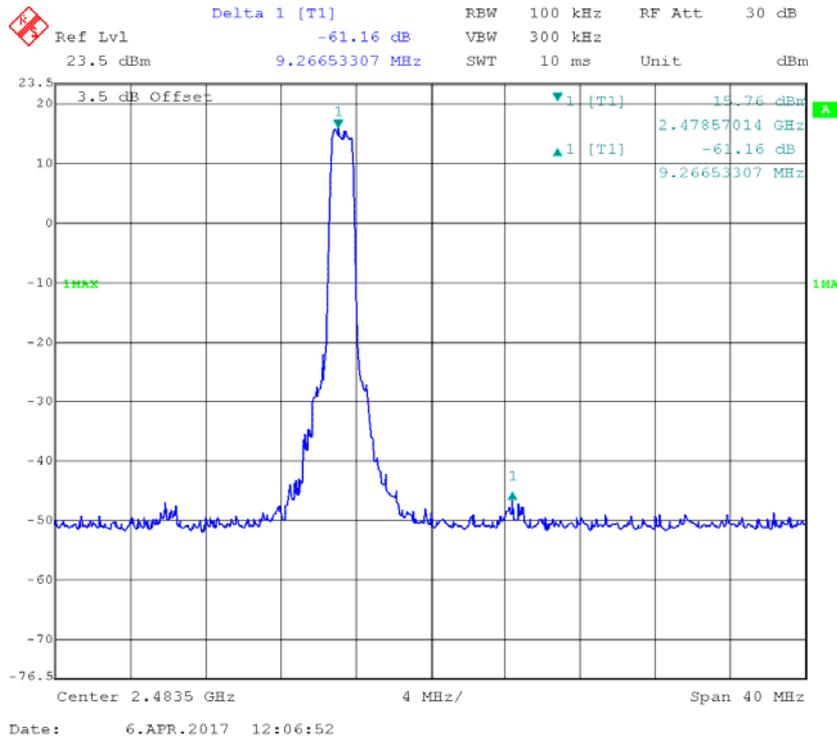
Test mode: Transmitting

Test Result: Compliant. All emissions out of the operation band are more than 20dB below the desired power, please refer to following plots.

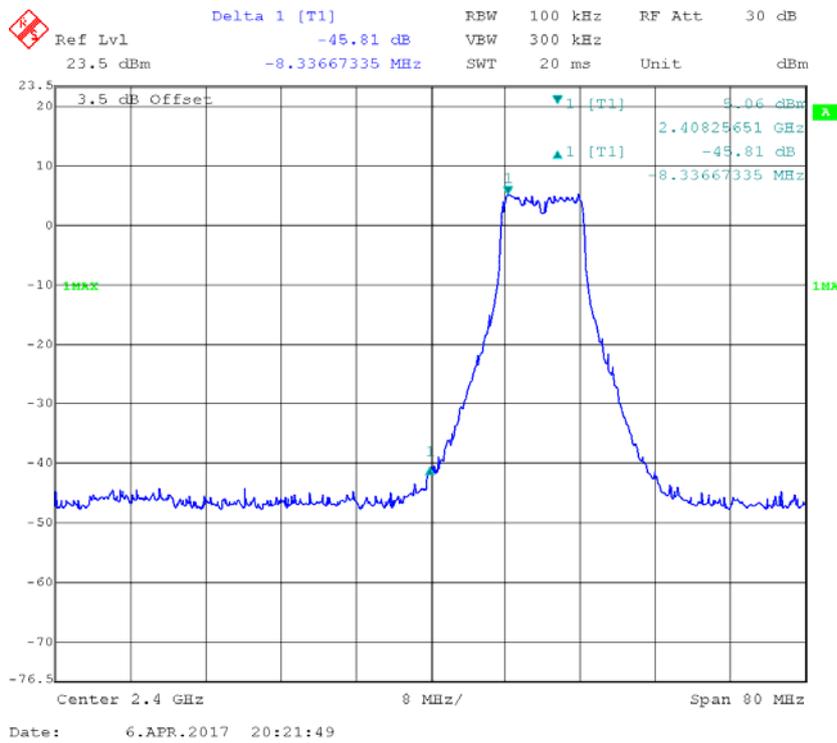
### LB Mode Left Edge



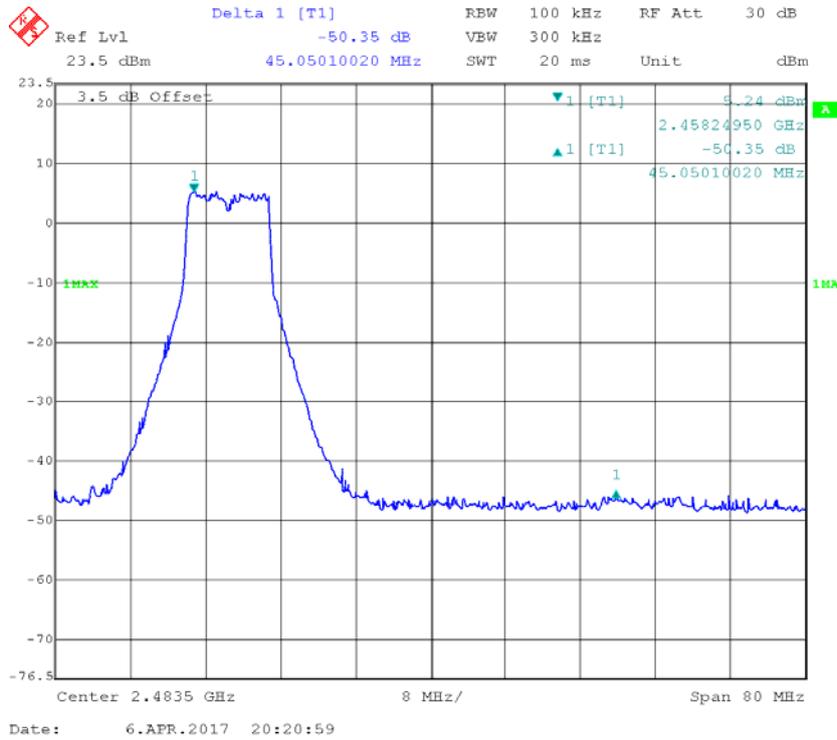
### LB Mode Right Edge



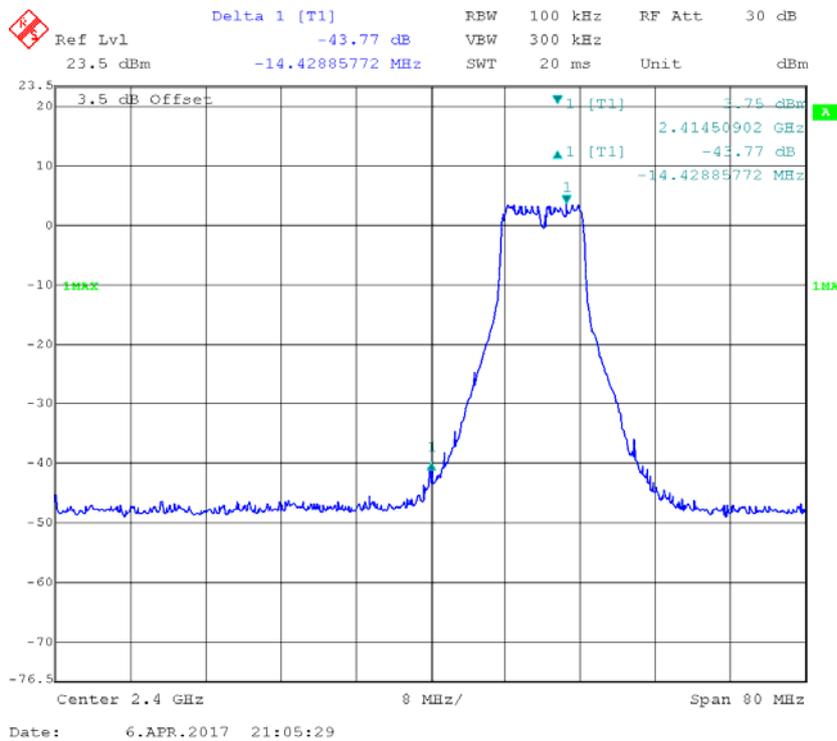
### 10M Mode Left Edge\_Antenna 1



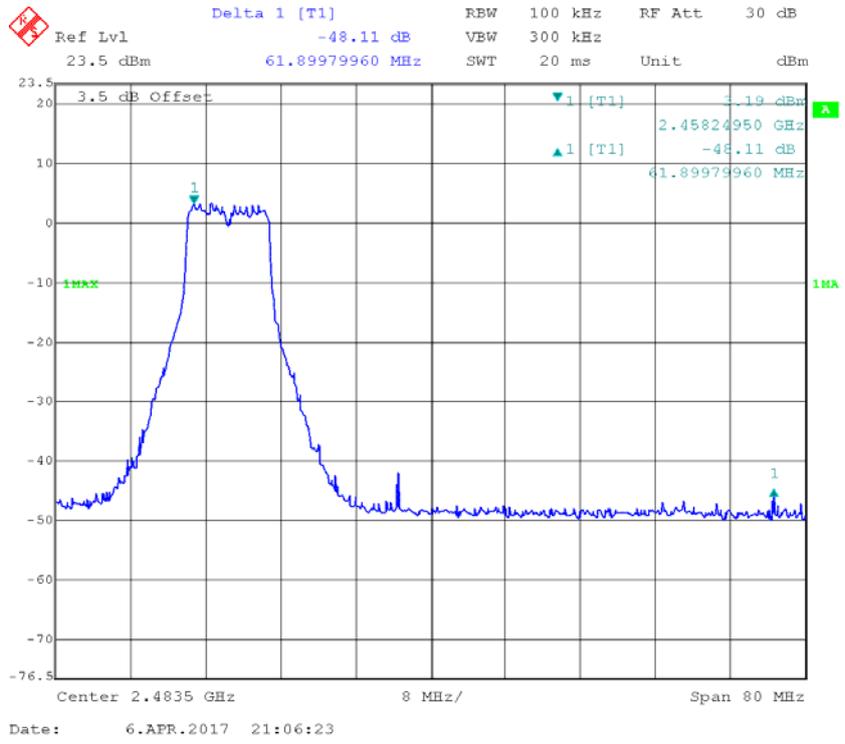
### 10M Mode Right Edge\_Antenna 1



### 10M Mode Left Edge\_Antenna 2



### 10M Mode Right Edge\_Antenna 2



## 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. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
Unknown	RF Cable	Unknown	NO.3	Each Time	/

\* **Statement of Traceability:** BAACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B "Implementation of traceability policy in accredited laboratories".

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	22.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	98.6 kPa

*The testing was performed by Lorin Bian on 2017-04-06.*

**Test Result:** Compliance

*Test Mode: Transmitting*

LB mode:

Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limits (dBm/3kHz)
2404	-1.49	8
2441.4	4.35	8
2478.8	-1.02	8

10MHz Mode:

Frequency (MHz)	Power Spectral Density (dBm/3kHz)		Total (dBm/3kHz)	Limits (dBm/3kHz)
	Antenna 1	Antenna 2		
2412	-9.53	-9.67	-6.59	7.66
2437	-9.48	-10.13	-6.78	7.66
2462	-9.70	-10.61	-7.12	7.66

Note: the device employed Cyclic Delay Diversity (CDD) for 10MHz mode transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

$$\text{Array Gain} = 10 \log(\text{NANT}/\text{NSS}) \text{ dB.}$$

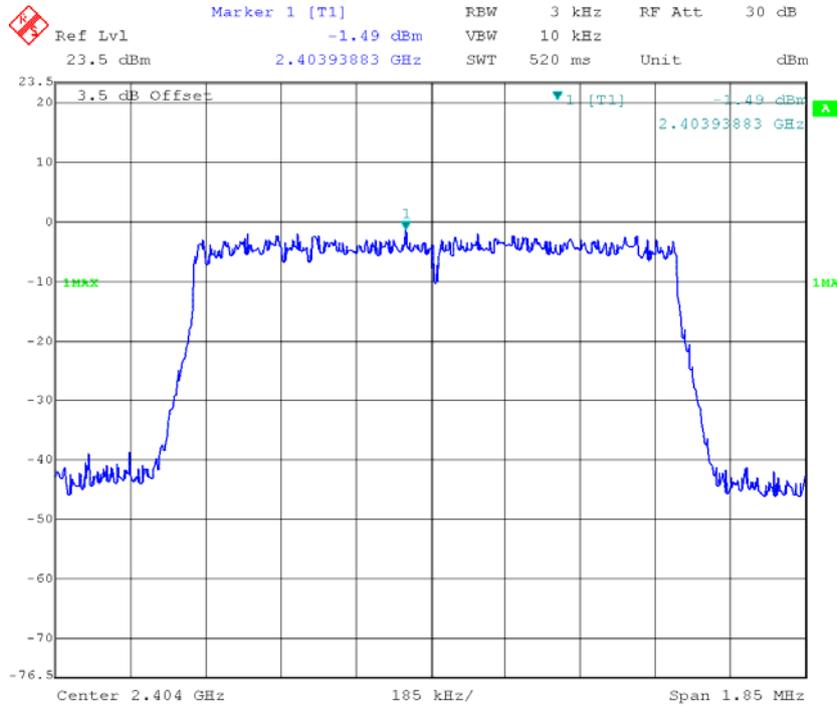
So:

$$\text{Directional gain} = \text{GANT} + \text{Array Gain} = 3.34 + 10 \cdot \log(2) = 6.34 \text{ dBi}$$

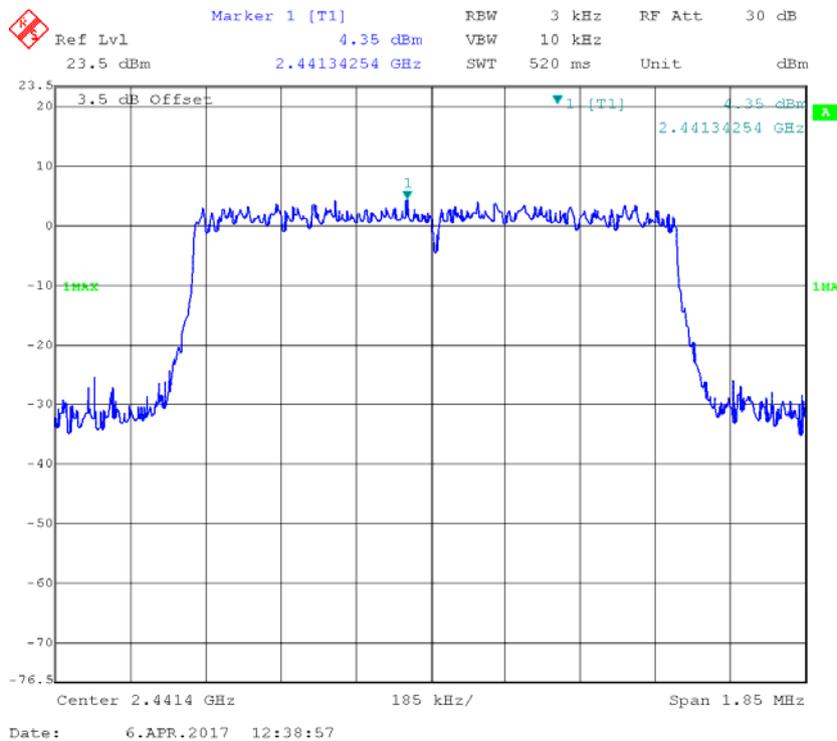
The Power density Limits was reduce 0.34dB

Please refer to the following plots

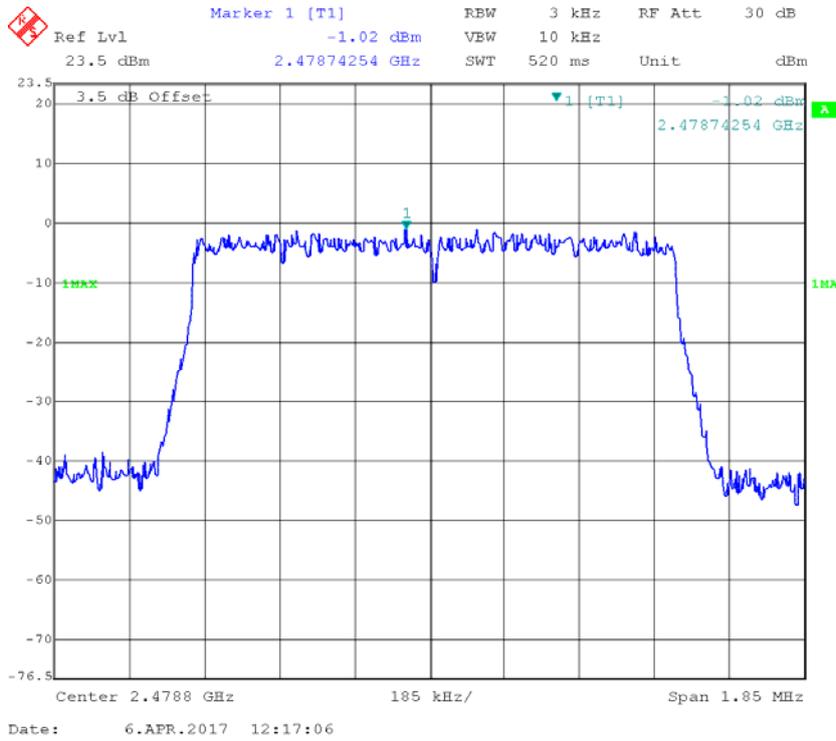
### Antenna 1-Power Spectral Density, LB Low Channel



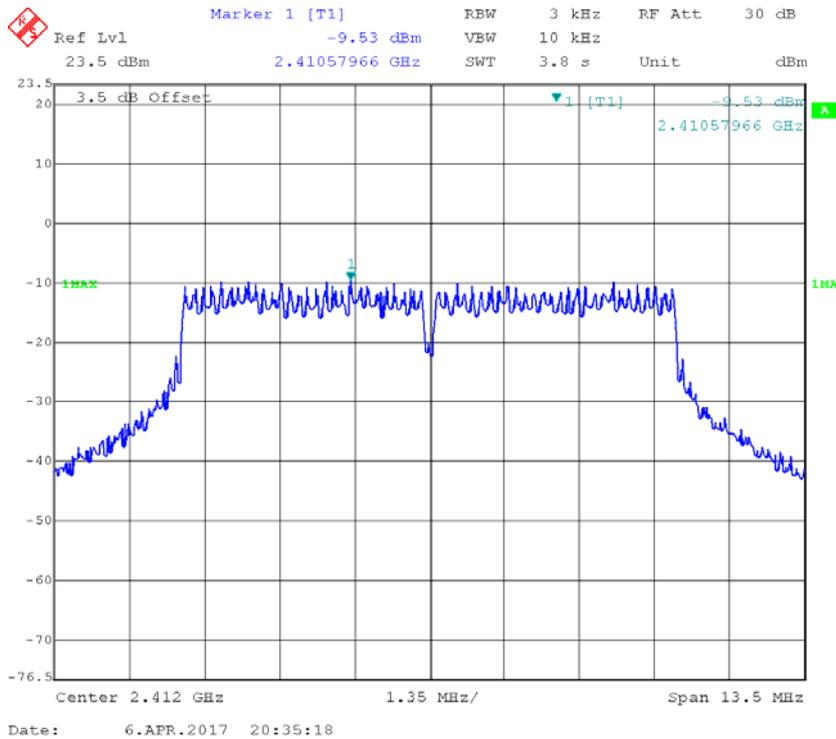
### Antenna 1-Power Spectral Density, LB Middle Channel



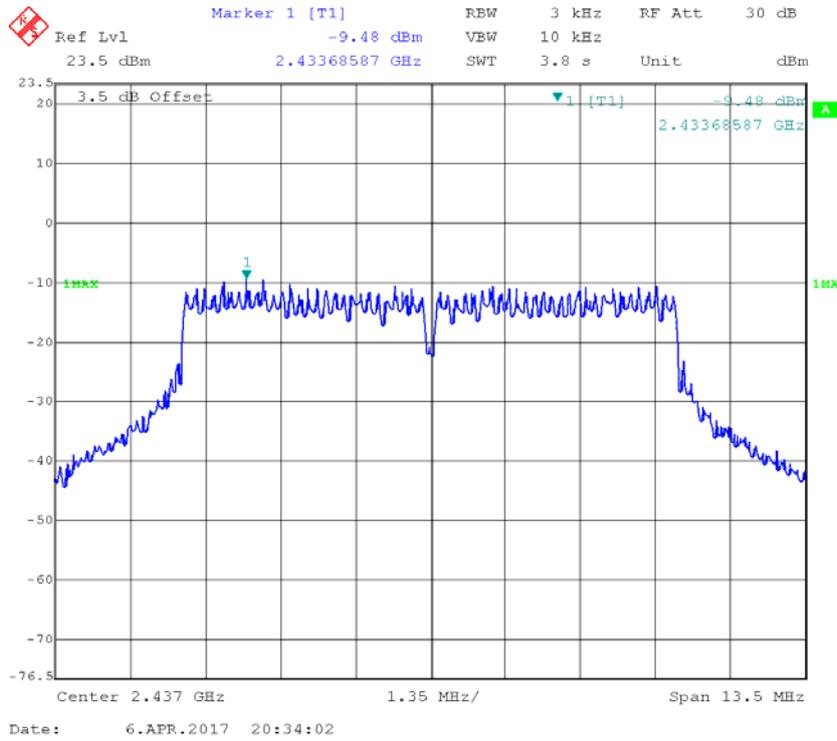
### Antenna 1-Power Spectral Density, LB High Channel



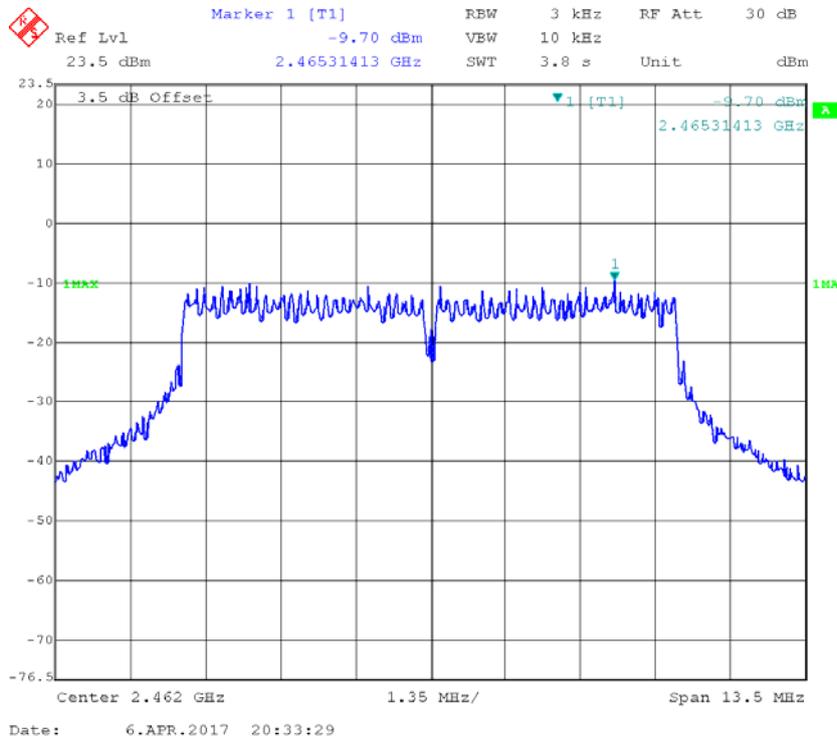
### Antenna 1-Power Spectral Density, 10M Low Channel



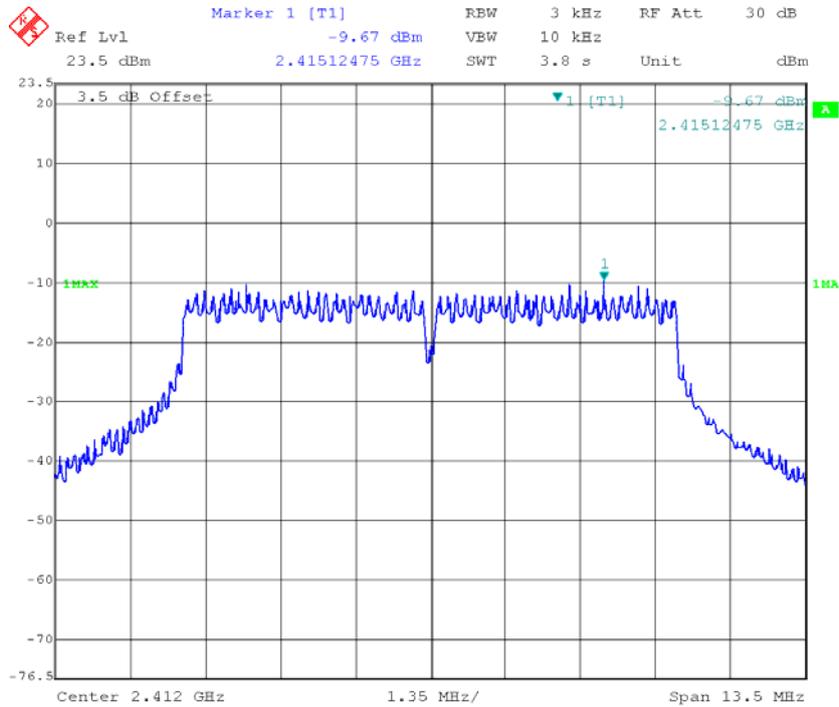
### Antenna 1-Power Spectral Density, 10M Middle Channel



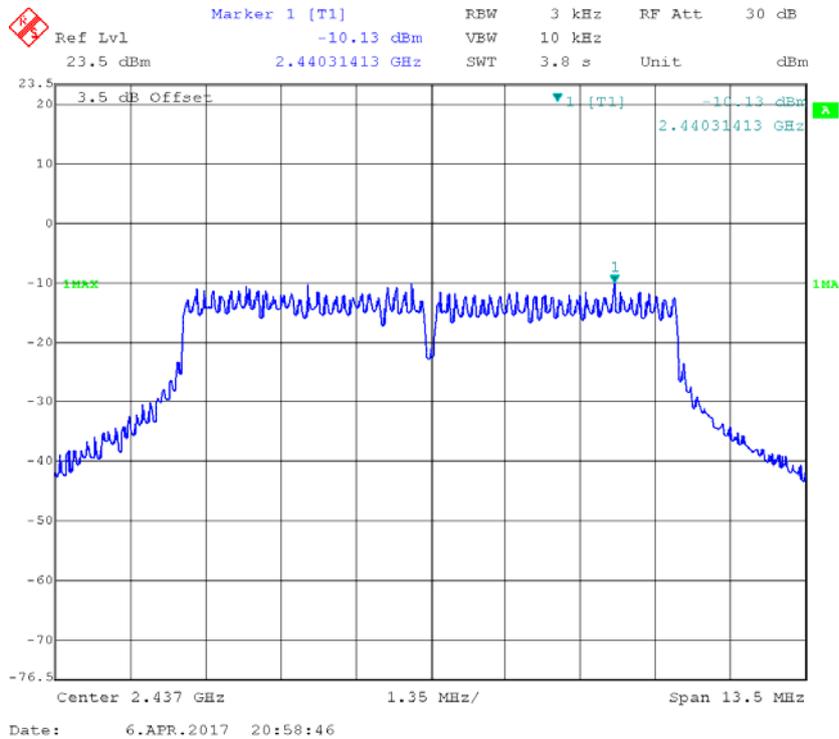
### Antenna 1-Power Spectral Density, 10M High Channel



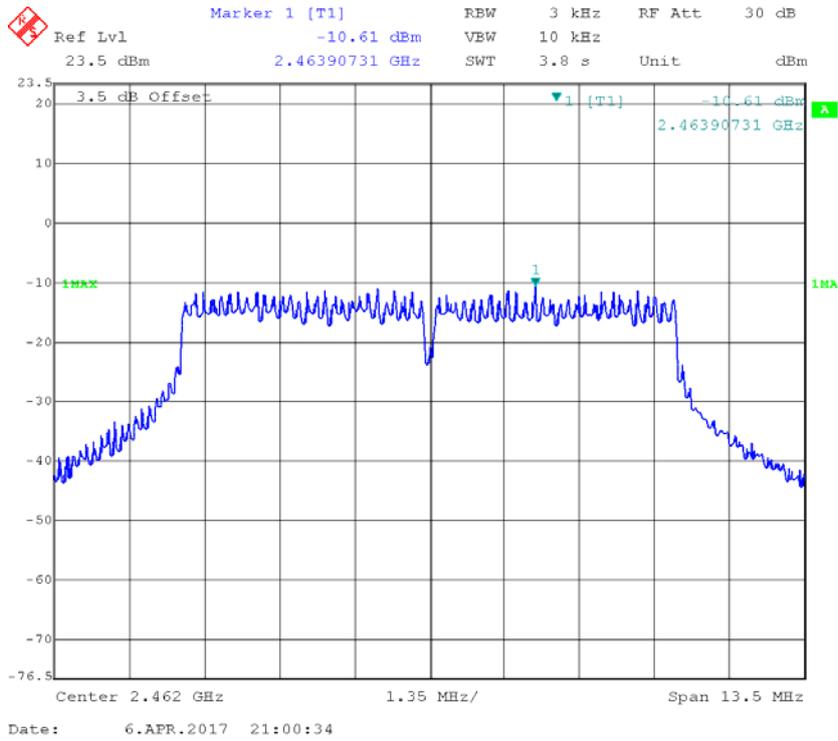
### Antenna 2-Power Spectral Density, 10M Low Channel



### Antenna 2-Power Spectral Density, 10M Middle Channel



### Antenna 2-Power Spectral Density, 10M High Channel



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