

TEST REPORT

Reference No. : WTS18S08120183W
FCC ID..... : 2ACQ5MBZ001
Applicant..... : Revogi Innovation Co., Ltd.
Address : 2018, Anhui Building, No. 6007, Shennan Boulevard, Shenzhen, Guangdong, China
Manufacturer : SkyRC Technology Co., Ltd.
Address : 4,5,8/F, Building No. 4, MeiTai Industry Park, GuanGuang South Road, Guihua, Guanlan, longhua District, Shenzhen,guangdong China
Product..... : MBZ001
Model(s)..... : MBZ001
Standards..... : FCC CFR47 Part 15 C Section 15.247: 2018
Date of Receipt sample..... : 2018-08-04
Date of Test..... : 2018-08-06 to 2018-09-11
Date of Issue : 2018-09-11
Test Result : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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2 Laboratories Introduction

Waltek Services (Shenzhen) Co., Ltd is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation, the certification number is 4243.01) of USA, CNAS (China National Accreditation Service for Conformity Assessment, the registration number is L3110) of China. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CEC(California energy efficiency), ISED Canada (Innovation, Science and Economic Development Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek(ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.



Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test. ElectroMagnetic Compatibility(EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

2.1 Test Facility

A. Accreditations for Conformity Assessment (International)

Country/Region	Scope Covered By	Scope	Note
USA	ISO/IEC 17025	FCC ID \ SDoC(VOC/DOC)	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India		WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note: 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. 2. ISED Canada Registration No.: 7760A			

B.TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of ...	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd.	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

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2. Revision History

Test report #	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS18S08120183W	2018-08-04	2018-08-06 to2018-08-24	2018-08-25	Original	-	Valid

4 General Information

4.1 General Description of E.U.T

Product: MBZ001
Model(s): MBZ001
Operation Frequency: 2405-2480MHz
RF output power: 3.18dBm
Antenna installation: Integrated Antenna
Antenna Gain: 0dBi
Type of modulation: Zigbee: O-QPSK

4.2 Channel List

Zigbee:

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2405	1	2410	2	2415	3	2420
4	2425	5	2430	6	2435	7	2440
8	2445	9	2450	10	2455	11	2460
12	2465	13	2470	14	2475	15	2480

4.3 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum Peak Output Power	Zigbee	250kbps	0/7/15	TX
Power Spectral Density	Zigbee	250kbps	0/7/15	TX
Frequency Range	Zigbee	250kbps	0/7/15	TX
Transmitter Spurious Emissions	Zigbee	250kbps	0/7/15	TX

Note :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product.

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions Test Site						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	2017-09-12	2018-09-11
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2017-09-12	2018-09-11
3.	Limitter	York	MTS-IMP-136	261115-001-0024	2017-09-12	2018-09-11
4.	Cable	LARGE	RF300	-	2017-09-12	2018-09-11
3m Semi-anechoic Chamber for Radiation Emissions Test site						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP30	100091	2018-04-29	2019-04-28
2	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2018-04-09	2019-04-08
3	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2018-04-13	2019-04-12
4	Coaxial Cable (above 1GHz)	Top	1GHz-18GHz	EW02014-7	2018-04-13	2019-04-12
5	Spectrum Analyzer	R&S	FSP40	100501	2017-10-20	2018-10-19
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2017-09-14	2018-09-13
7	Microwave Broadband Preamplifier	SCHWARZBECK	BBV 9721	100472	2017-10-25	2018-10-24
8	Cable	Top	18GHz-40GHz	-	2017-10-25	2018-10-24
3m Semi-anechoic Chamber for Radiation Emissions Test site						
Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2018-04-13	2019-04-12
2	Ative Loop Antenna	Beijing Dazhi	ZN30900A	-	2017-10-17	2018-10-16
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2018-04-08	2019-04-07
4	Amplifier	ANRITSU	MH648A	M43381	2018-04-13	2019-04-12
5	Cable	HUBER+SUHNER	CBL2	525178	2018-04-13	2019-04-12
6	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2017-09-12	2018-09-11
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	2017-09-14	2018-09-13

2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2017-09-12	2018-09-11
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2017-09-12	2018-09-11
4.	Coaxial Cable (10Hz-30GHz)	/	/	/	2017-09-12	2018-09-11
5.	Antenna Connector*	/	/	/	2017-09-12	2018-09-11

“**”: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD. address is No.163, Pingyun Rd. West of Huangpu Ave, Tianhe District, Guangzhou, Guangdong, China.

6 Test Summary

Test Items	Test Requirement	Result
Spurious Radiated Emissions	15.247 15.205(a) 15.209(a)	C
Conducted Emissions	15.207(a)	C
Bandwidth	15.247(a)(2)	C
Maximum Peak Output Power	15.247(b)(3),(4)	C
Power Spectral Density	15.247(e)	C
Band Edge	15.247(d)	C
Antenna Requirement	15.203	C
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	C
Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable.		

7 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.10:2013
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

7.1 E.U.T. Operation

Operating Environment :

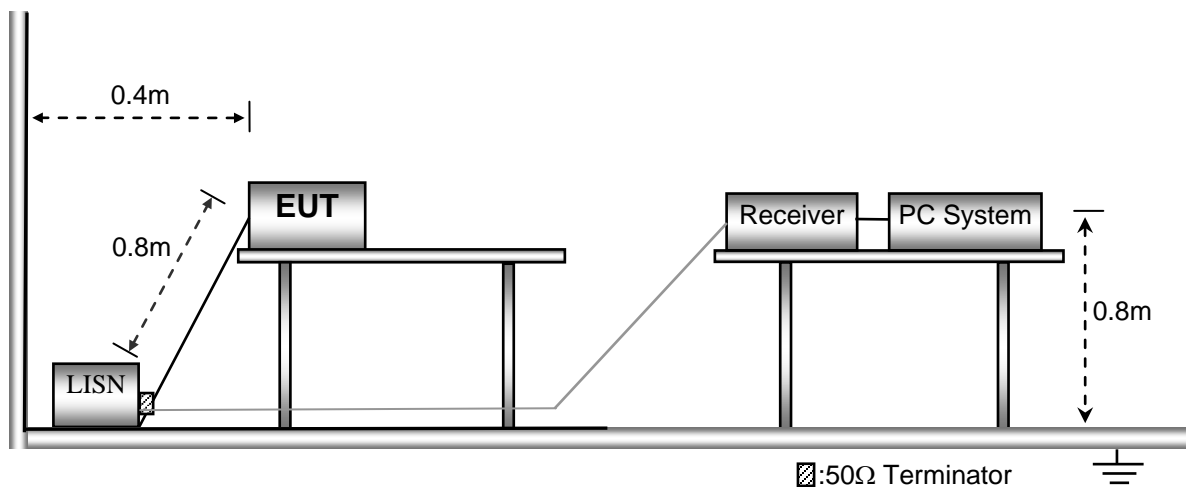
Temperature:	21.5 °C
Humidity:	51.9 % RH
Atmospheric Pressure:	101.2kPa

EUT Operation : Transmitting mode

The test was performed in Transmitting mode, Only the worst case Low channel mode were record in the report.

7.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4: 2014..



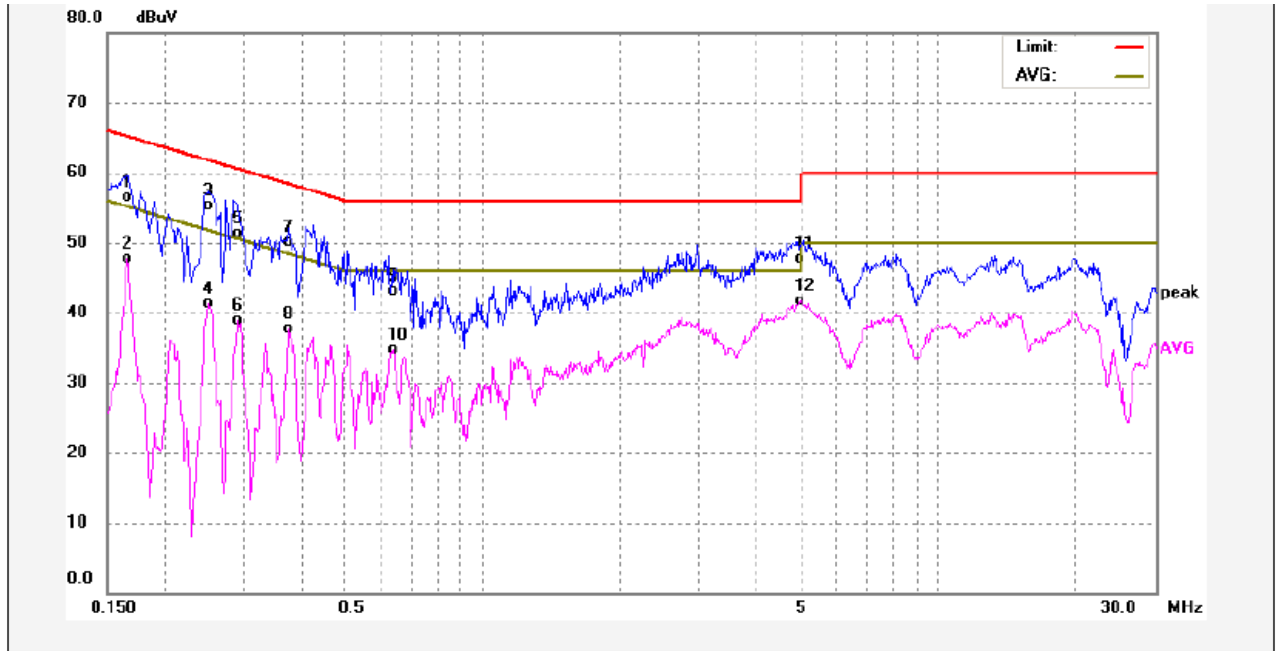
7.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

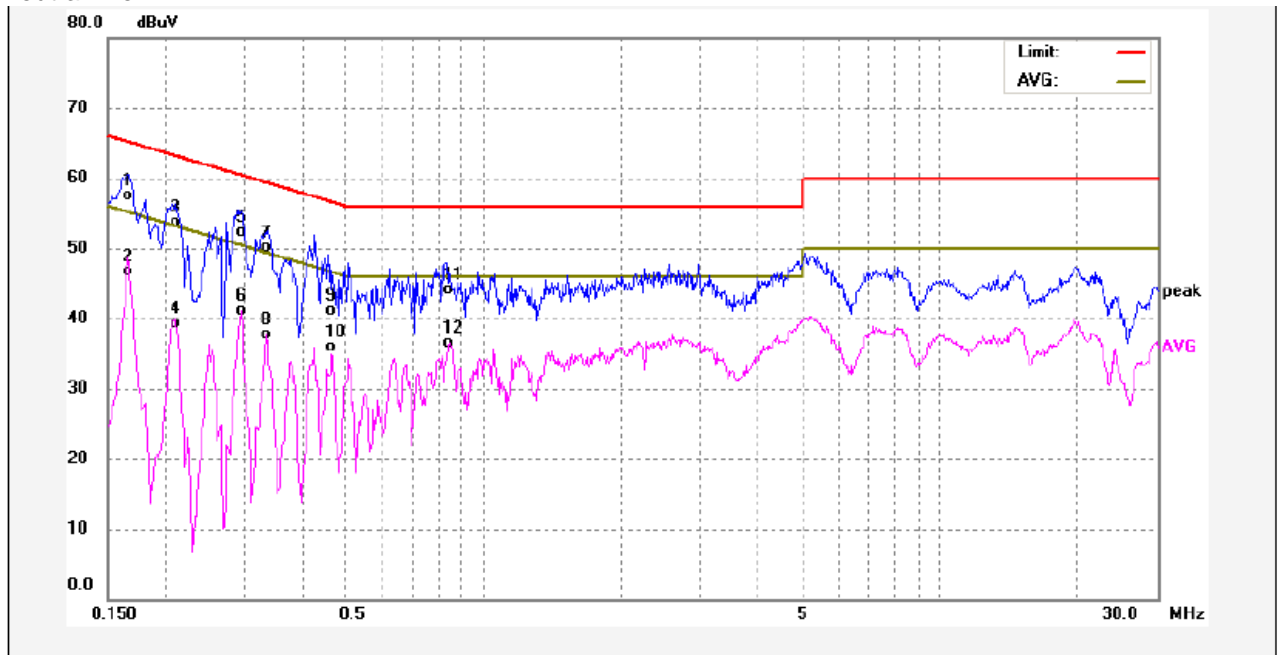
An initial pre-scan was performed on the live and neutral lines.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1660	46.24	10.28	56.52	65.15	-8.63	QP	
2	0.1660	37.41	10.28	47.69	55.15	-7.46	AVG	
3	0.2500	44.98	10.39	55.37	61.75	-6.38	QP	
4	0.2500	31.00	10.39	41.39	51.75	-10.36	AVG	
5	0.2909	40.92	10.41	51.33	60.50	-9.17	QP	
6	0.2909	28.55	10.41	38.96	50.50	-11.54	AVG	
7	0.3740	39.63	10.42	50.05	58.41	-8.36	QP	
8	0.3740	27.27	10.42	37.69	48.41	-10.72	AVG	
9	0.6340	32.62	10.47	43.09	56.00	-12.91	QP	
10	0.6340	24.31	10.47	34.78	46.00	-11.22	AVG	
11	4.9699	36.93	10.81	47.74	56.00	-8.26	QP	
12	4.9699	30.97	10.81	41.78	46.00	-4.22	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1660	47.24	10.28	57.52	65.15	-7.63	QP	
2	0.1660	36.41	10.28	46.69	55.15	-8.46	AVG	
3	0.2106	43.34	10.34	53.68	63.18	-9.50	QP	
4	0.2106	28.92	10.34	39.26	53.18	-13.92	AVG	
5	0.2940	41.82	10.41	52.23	60.41	-8.18	QP	
6	0.2940	30.66	10.41	41.07	50.41	-9.34	AVG	
7	0.3339	39.77	10.42	50.19	59.35	-9.16	QP	
8	0.3339	27.21	10.42	37.63	49.35	-11.72	AVG	
9	0.4600	30.70	10.42	41.12	56.69	-15.57	QP	
10	0.4600	25.49	10.42	35.91	46.69	-10.78	AVG	
11	0.8460	33.61	10.44	44.05	56.00	-11.95	QP	
12	0.8460	26.01	10.44	36.45	46.00	-9.55	AVG	

8 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

8.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

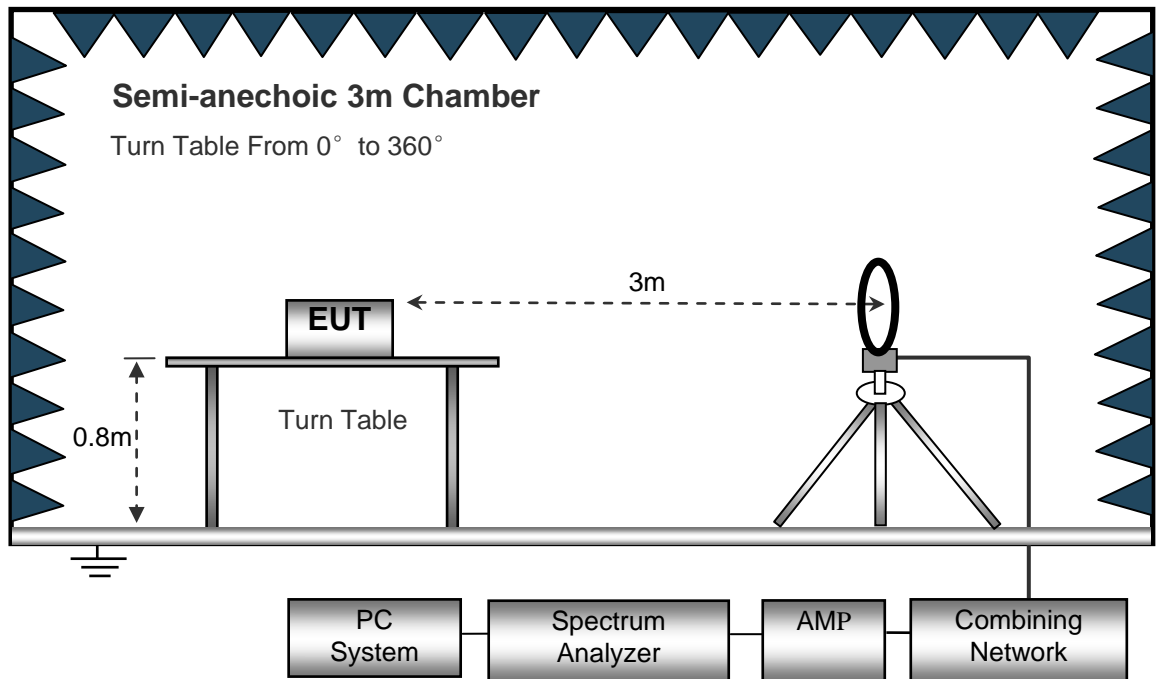
EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

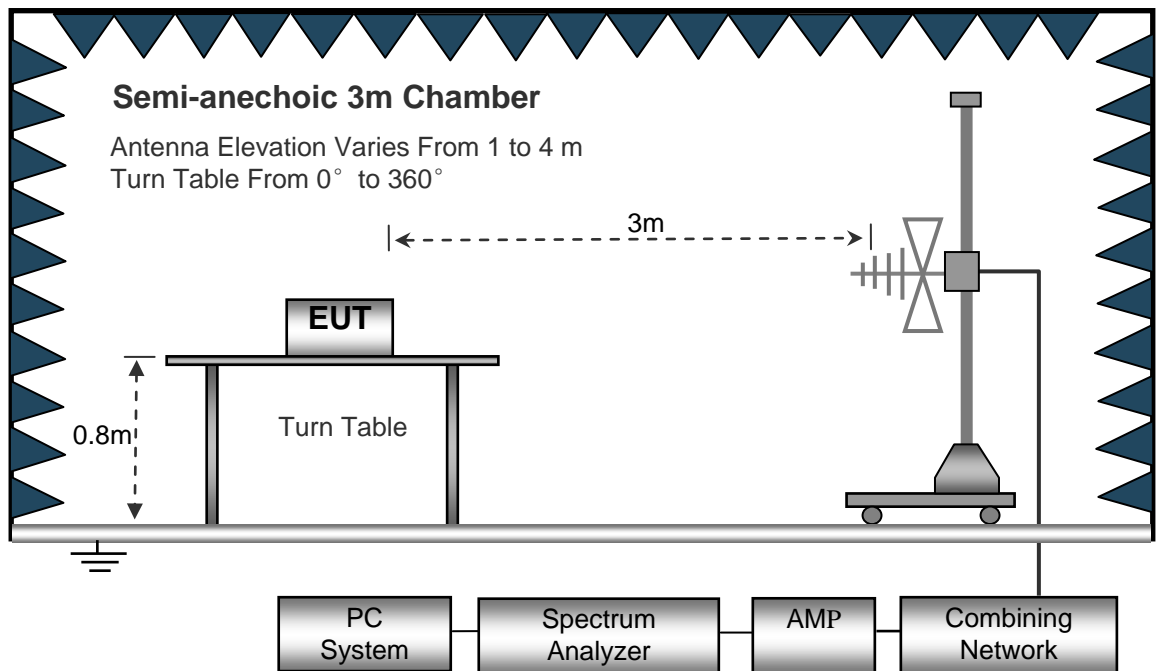
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

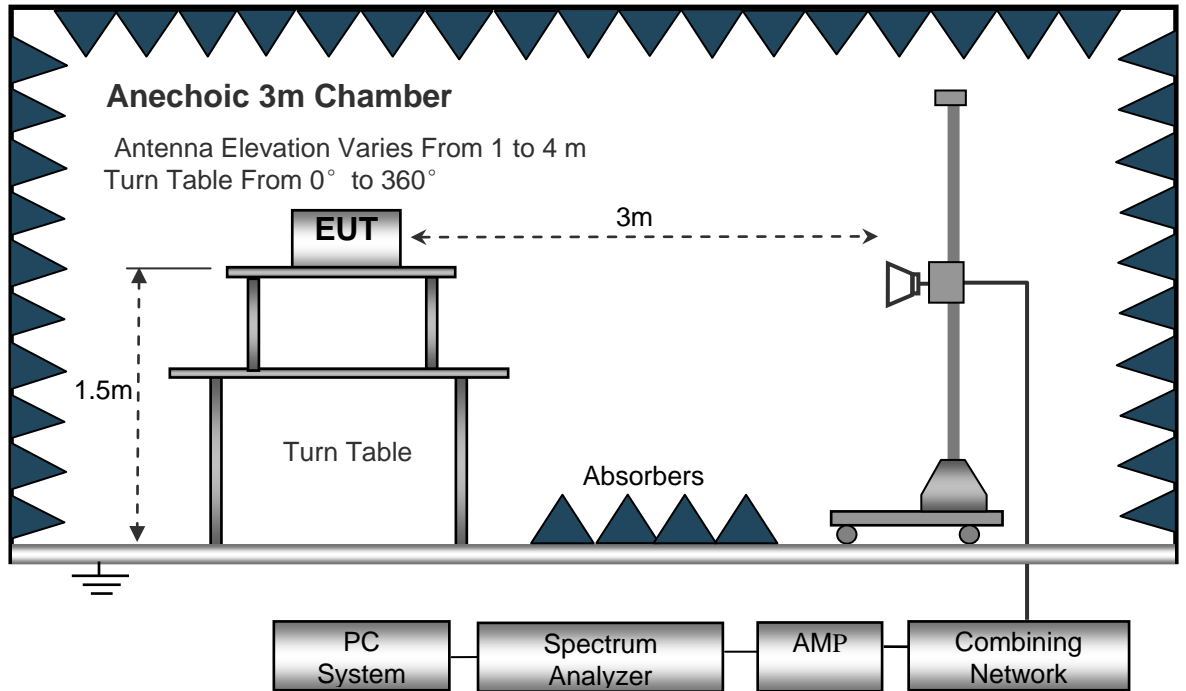
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
 IF Bandwidth..... 10kHz
 Video Bandwidth..... 10kHz
 Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed Auto
 Detector PK
 Resolution Bandwidth..... 100kHz
 Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed Auto
 Detector PK
 Resolution Bandwidth..... 1MHz
 Video Bandwidth..... 3MHz
 Detector Ave.
 Resolution Bandwidth..... 1MHz
 Video Bandwidth..... 10Hz

8.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane;
For above 1GHz, the EUT is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the EUT in X axis,so the worst data were shown as follow.
8. A 2.4GHz high-pass filter is used during radiated emissions above 1GHz measurement.

8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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 maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

8.6 Summary of Test Results

Test Frequency: 9 KHz~30 MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
Low Channel 2405MHz									
267.86	35.34	QP	327	1.6	H	-13.35	21.99	46.00	-24.01
267.86	39.99	QP	185	1.4	V	-13.35	26.64	46.00	-19.36
4810.00	57.21	PK	207	1.7	V	-1.06	56.15	74.00	-17.85
4810.00	47.92	Ave	207	1.7	V	-1.06	46.86	54.00	-7.14
7215.00	44.15	PK	197	1.5	H	1.33	45.48	74.00	-28.52
7215.00	36.58	Ave	197	1.5	H	1.33	37.91	54.00	-16.09
2317.00	46.80	PK	187	2.0	V	-13.19	33.61	74.00	-40.39
2317.00	38.94	Ave	187	2.0	V	-13.19	25.75	54.00	-28.25
2362.22	44.26	PK	108	1.1	H	-13.14	31.12	74.00	-42.88
2362.22	36.39	Ave	108	1.1	H	-13.14	23.25	54.00	-30.75
2494.57	43.36	PK	144	1.2	V	-13.08	30.28	74.00	-43.72
2494.57	37.71	Ave	144	1.2	V	-13.08	24.63	54.00	-29.37

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
Middle Channel 2440MHz									
267.86	35.42	QP	226	1.9	H	-13.35	22.07	46.00	-23.93
267.86	41.04	QP	230	2.0	V	-13.35	27.69	46.00	-18.31
4880.00	55.49	PK	305	1.3	V	-0.62	54.87	74.00	-19.13
4880.00	45.32	Ave	305	1.3	V	-0.62	44.70	54.00	-9.30
7320.00	41.18	PK	35	1.8	H	2.21	43.39	74.00	-30.61
7320.00	34.87	Ave	35	1.8	H	2.21	37.08	54.00	-16.92
2340.92	45.73	PK	321	1.1	V	-13.19	32.54	74.00	-41.46
2340.92	39.85	Ave	321	1.1	V	-13.19	26.66	54.00	-27.34
2384.94	44.36	PK	136	1.4	H	-13.14	31.22	74.00	-42.78
2384.94	38.06	Ave	136	1.4	H	-13.14	24.92	54.00	-29.08
2487.46	42.64	PK	185	1.0	V	-13.08	29.56	74.00	-44.44
2487.46	36.45	Ave	185	1.0	V	-13.08	23.37	54.00	-30.63

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
High Channel 2480MHz									
267.86	36.48	QP	184	2.0	H	-13.35	23.13	46.00	-22.87
267.86	39.36	QP	70	1.5	V	-13.35	26.01	46.00	-19.99
4960.00	52.89	PK	4	1.3	V	-0.24	52.65	74.00	-21.35
4960.00	43.07	Ave	4	1.3	V	-0.24	42.83	54.00	-11.17
7440.00	41.95	PK	8	2.0	H	2.84	44.79	74.00	-29.21
7440.00	38.48	Ave	8	2.0	H	2.84	41.32	54.00	-12.68
2320.41	46.41	PK	297	1.7	V	-13.19	33.22	74.00	-40.78
2320.41	39.46	Ave	297	1.7	V	-13.19	26.27	54.00	-27.73
2356.57	43.81	PK	81	1.9	H	-13.14	30.67	74.00	-43.33
2356.57	38.56	Ave	81	1.9	H	-13.14	25.42	54.00	-28.58
2489.69	43.93	PK	143	1.4	V	-13.08	30.85	74.00	-43.15
2489.69	37.21	Ave	143	1.4	V	-13.08	24.13	54.00	-29.87

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not recorded.

9 Band Edge Measurement

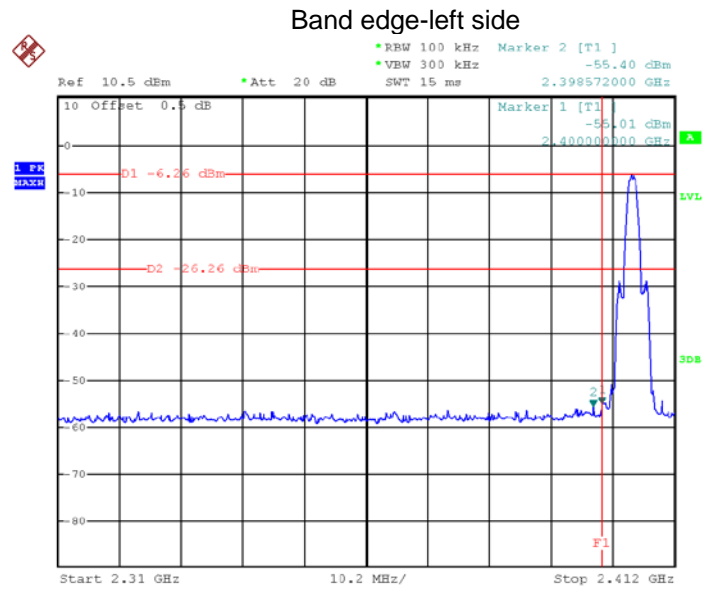
Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	558074 D01 15.247 Meas Guidance v05
Test Limit:	Regulation 15.247 (d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that 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 Mode:	Transmitting

9.1 Test Produce

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.

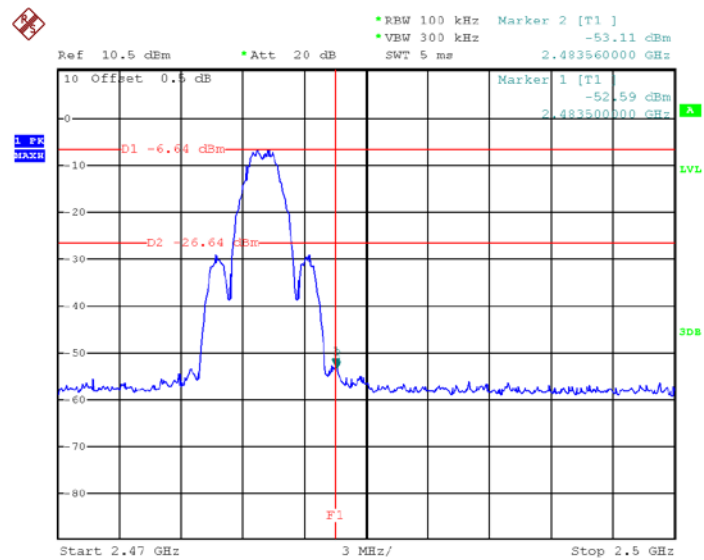
9.2 Test Result

Test result plots shown as follows:



Date: 22.AUG.2018 22:17:08

Band edge-right side



Date: 22.AUG.2018 22:19:39

10 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05

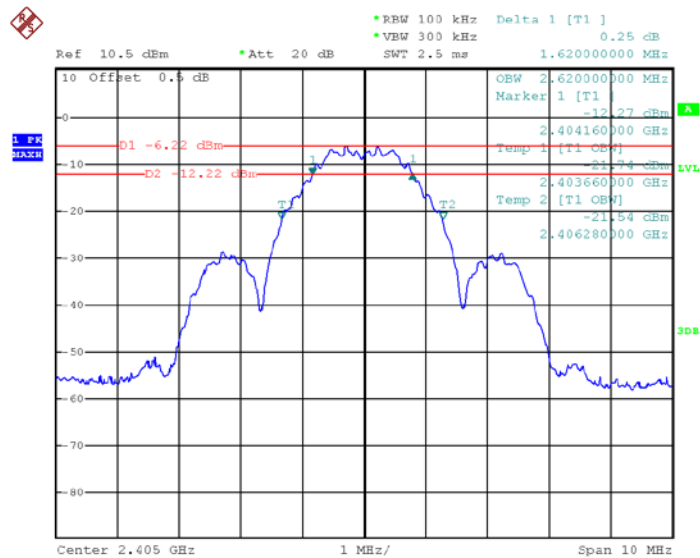
10.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

10.2 Test Result:

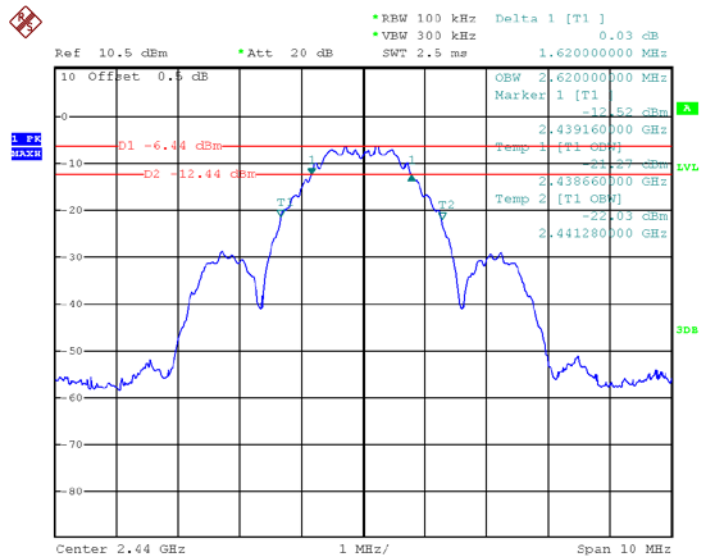
Operation mode	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low channel	1.620	2.620
Middle channel	1.620	2.620
High channel	1.640	2.620

Mode: Low channel



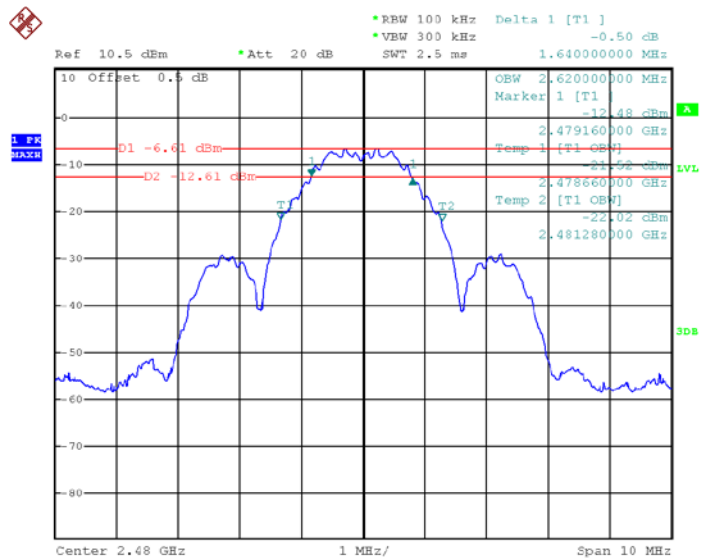
Date: 22.AUG.2018 21:50:33

Mode: Middle channel



Date: 22.AUG.2018 21:53:33

Mode: High channel



Date: 22.AUG.2018 21:55:55

11 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05

11.1 Test Procedure:

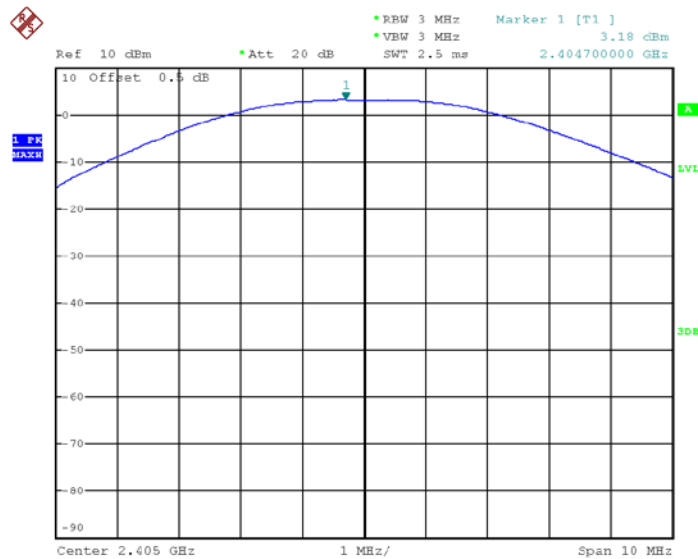
558074 D01 15.247 Meas Guidance v05

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

11.2 Test Result:

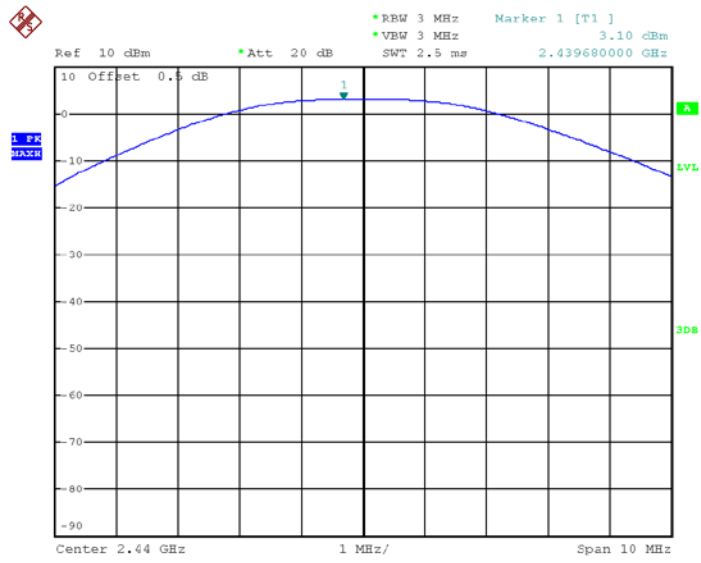
Maximum Peak Output Power (dBm)		
Low channel	Middle channel	High channel
3.18	3.10	3.11
Limit: 1W/30dBm		

Test mode: Low channel



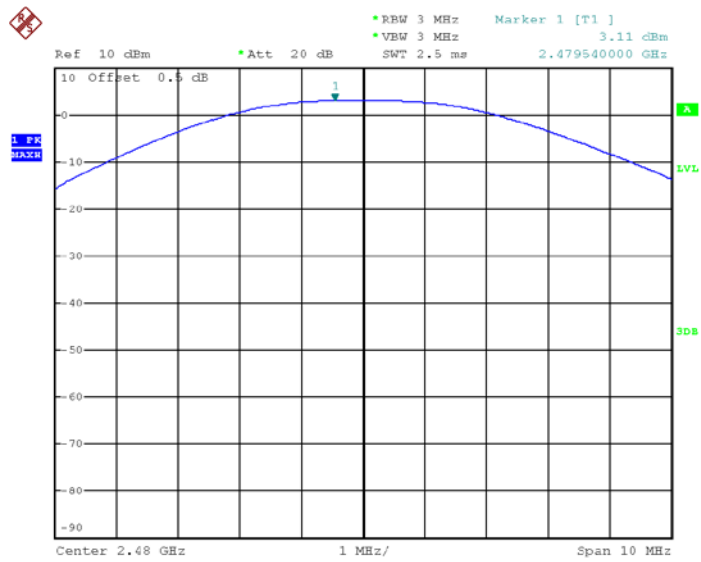
Date: 11.SEP.2018 09:50:43

Test mode: Middle channel



Date: 11.SEP.2018 09:51:23

Test mode: High channel



Date: 11.SEP.2018 09:51:45

12 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 15.247 Meas Guidance v05

12.1 Test Procedure:

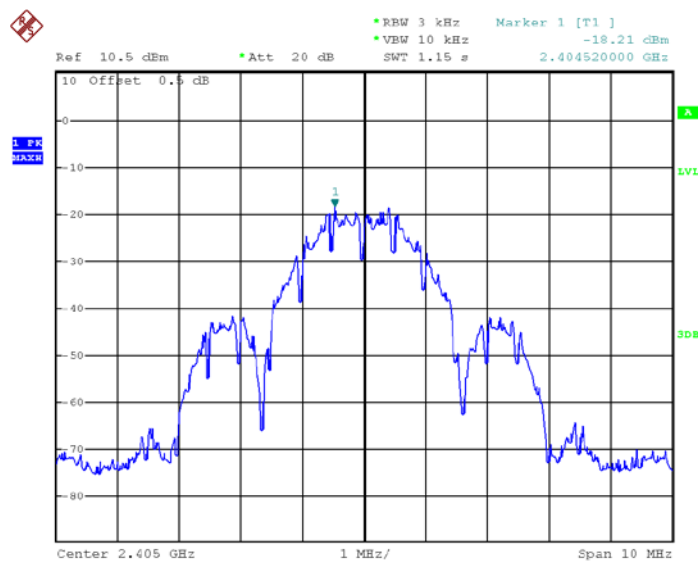
558074 D01 15.247 Meas Guidance v05

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span >= 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

12.2 Test Result:

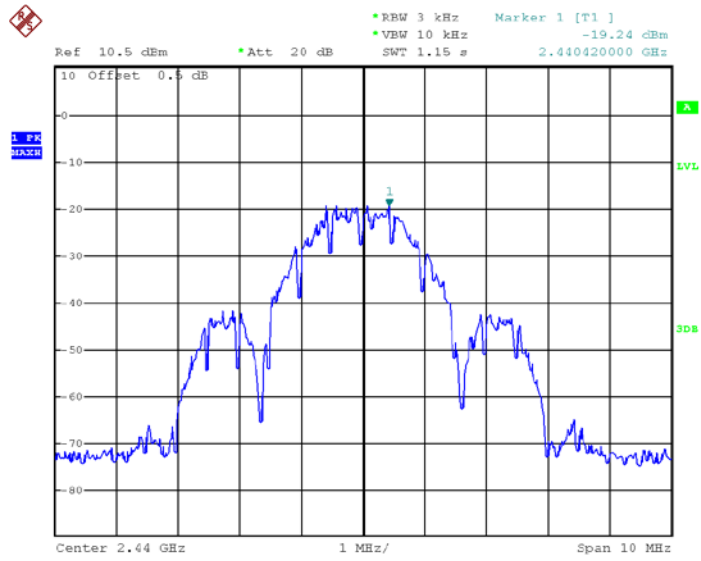
Power Spectral Density(dBm)		
Low channel	Middle channel	High channel
-18.21	-19.24	-18.19
Limit: 8dBm per 3kHz		

Test mode: Low channel



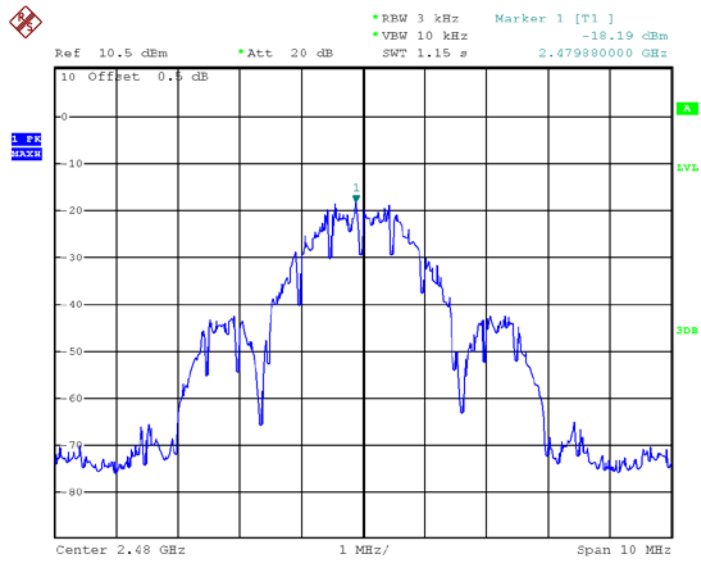
Date: 22.AUG.2018 21:45:56

Test mode: Middle channel



Date: 22.AUG.2018 21:46:57

Test mode: High channel



Date: 22.AUG.2018 21:47:46

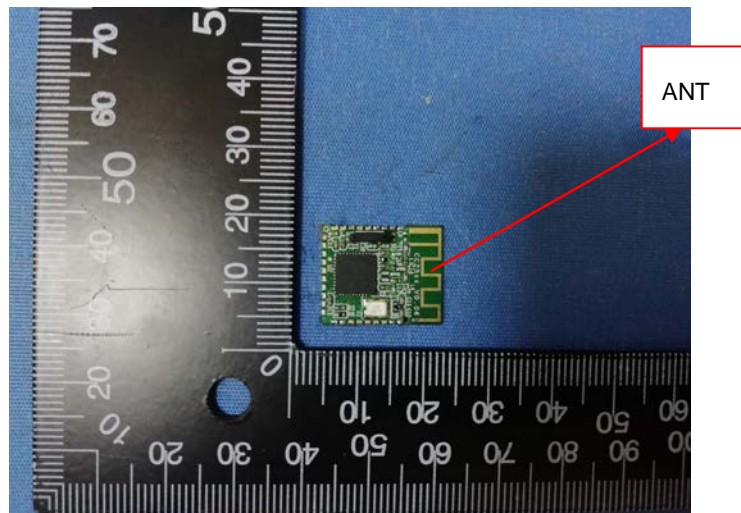
13 Antenna Requirement

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 use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 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.

Result:

The EUT have one Integrated Antenna, meets the requirements of FCC 15.203.



14 RF Exposure

Test Requirement: FCC Part 1.1307

Evaluation Method: FCC Part 2.1093 & KDB 447498 D01 General RF Exposure Guidance v06

14.1 Requirements

1) 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:

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

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion.

14.2 Test result

Conducted Peak power(dBm)	Conducted Peak power(mW)	Source-based time-averaged maximum conducted output power(mW)	Minimum test separation distance required for the exposure conditions (mm)	SAR Test Exclusion Thresholds Calculation Value	SAR Test Exclusion Thresholds Limit	Result
3.18	2.08	2.08	5	0.65	3.0	Compliance

Note: No SAR measurement is required.

15 Photographs – Test Setup Photos and EUT

Note: Please refer to file: MBZ001_Tsup Photos, MBZ001_Ext Photos and MBZ001_Internal Photos.

=====End of Report=====