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TEST REPORT

FCC PART 15 SUBPART C 15.247 & RSS 247

Report Reference No. ..... : **CTL1604131131-WF**

Compiled by: (position+printed name+signature)	Jacky Chen (File administrators)	Jacky chen
Tested by: (position+printed name+signature)	Allen Wang (Test Engineer)	Allen Wang
Approved by: (position+printed name+signature)	Tracy Qi (Manager)	Tracy Qi

Product Name ..... :	MCT243 RECEIVER
Model/Type reference ..... :	MCT243
List Model(s)..... :	N/A
Trade Mark..... :	Kar-tech
FCC ID..... :	P4U-MCT243
IC..... :	4534A-MCT243
Applicant's name ..... :	**Kar-Tech, Inc.**
Address of applicant..... :	111 Enterprise Road, P.O. Box 180606, Delafield, Wisconsin, 53018, USA
Test Firm..... :	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm ..... :	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification..... :	
Standard ..... :	**47 CFR FCC Part 15 Subpart C 15.247 & RSS 247 Issue 1, May 2015**
TRF Originator..... :	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF..... :	Dated 2011-01
Date of Receipt..... :	Apr. 14, 2016
Date of Test Date..... :	Apr. 15, 2016 – Jun. 01, 2016
Data of Issue..... :	Jun. 03, 2016
Result..... :	Pass

TEST REPORT

Test Report No. :	CTL1604131131-WF	Jun. 03, 2016 Date of issue

Equipment under Test	:	MCT243 RECEIVER
Model /Type	:	MCT243
Listed Models	:	N/A
Applicant	:	**Kar-Tech, Inc.**
Address	:	111 Enterprise Road, P.O. Box 180606, Delafield, Wisconsin, 53018, USA
Manufacturer	:	**Kar-Tech, Inc.**
Address	:	111 Enterprise Road, P.O. Box 180606, Delafield, Wisconsin, 53018, USA

Test result	Pass *

* In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2016-06-03	CTL1604131131-WF	Tracy Qi

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1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

RSS-247-Issue 1: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

RSS-Gen Issue 4: — General Requirements for Compliance of Radio Apparatus

ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

ANSI C63.4: 2014: –American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

1.2. Test Description

FCC and IC Requirements		
FCC Part 15.207 RSS-Gen 8.8	AC Power Conducted Emission	N/A
FCC Part 15.247(a)(2) RSS 247 5.2 (1)	6dB Bandwidth	PASS
FCC Part 15.247(d) RSS 247 5.5	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b) RSS 247 5.4 (4)	Maximum Conducted Output Power	PASS
FCC Part 15.247(e) RSS 247 5.2 (2)	Power Spectral Density	PASS
FCC Part 15.205/ 15.209 RSS-Gen 8.9	Radiated Emissions	PASS
FCC Part 15.247(d) RSS-Gen 8.10	Band Edge	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

1.3.2 Laboratory accreditation

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

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	MCT243 RECEIVER
Model/Type reference:	MCT243
Power supply:	DC 12V
2.4GHz Wireless	
Modulation:	GFSK
Operation frequency:	2405MHz to 2480MHz
Channel number:	16
Channel separation:	5 MHz
Antenna type and gain:	Type 1: integrated antenna 2dbi Type 2: external antenna 2dBi

Note: For more details, refer to the user's manual of the EUT.

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing .There are 16 channels provided to the EUT and Channel 01/08/16 were selected to test.

Operation Frequency list :

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2405	09	2445
02	2410	10	2450
03	2415	11	2455
04	2420	12	2460
05	2425	13	2465
06	2430	14	2470
07	2435	15	2475
08	2440	16	2480

Note: The line display in grey were the channel selected for testing

2.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date last time	Calibration Date recent	Calibration Due Date
LISN	R&S	ENV216	3560.6550.12	2015/06/02	--	2016/06/01
LISN	R&S	ESH2-Z5	860014/010	2015/06/02	--	2016/06/01
Power Meter	Anritsu	ML2487B	110553	2015/06/02	--	2017/06/01
Power Sensor	Anritsu	MA2411B	100345	2015/05/21	2016/05/21	2017/05/20
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2015/06/02	--	2016/06/01
EMI Test Receiver	R&S	ESCI	103710	2015/06/02	--	2016/06/01
Spectrum Analyzer	Agilent	E4407B	MY41440676	2015/05/21	2016/05/21	2017/05/20
Spectrum Analyzer	Agilent	N9020	US46220290	2016/01/17	--	2017/01/16
Controller	EM Electronics	Controller EM 1000	N/A	2015/05/21	2016/05/21	2017/05/20
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2015/05/19	2016/05/19	2017/05/18
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2015/05/19	2016/05/19	2017/05/18
Amplifier	Agilent	8349B	3008A02306	2015/05/19	2016/05/19	2017/05/18
Amplifier	Agilent	8447D	2944A10176	2015/05/19	2016/05/19	2017/05/18
Temperature/Humidity Meter	Gangxing	CTH-608	02	2015/05/20	2016/05/20	2017/05/19
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	N/A	2015/05/20	2016/05/20	2017/05/19
High-Pass Filter	K&L	41H10-1375/U12750-O/O	N/A	2015/05/20	2016/05/20	2017/05/19
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	2015/06/02	--	2016/06/01
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2015/06/02	--	2016/06/01
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2015/06/02	--	2016/06/01
RF Cable	Megalon	RF-A303	N/A	2015/06/02	--	2016/06/01

The calibration interval was one year

2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID:P4U-MCT243 & IC:4534A-MCT243 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules & RSS-247.

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

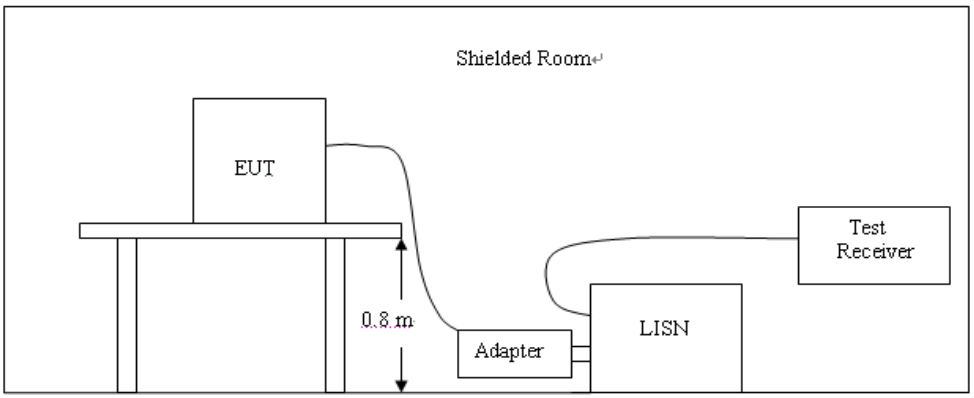
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS–Gen 8.8

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Not applicable to this device.

3.2. Radiated Emissions and Band Edge

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

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)

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission

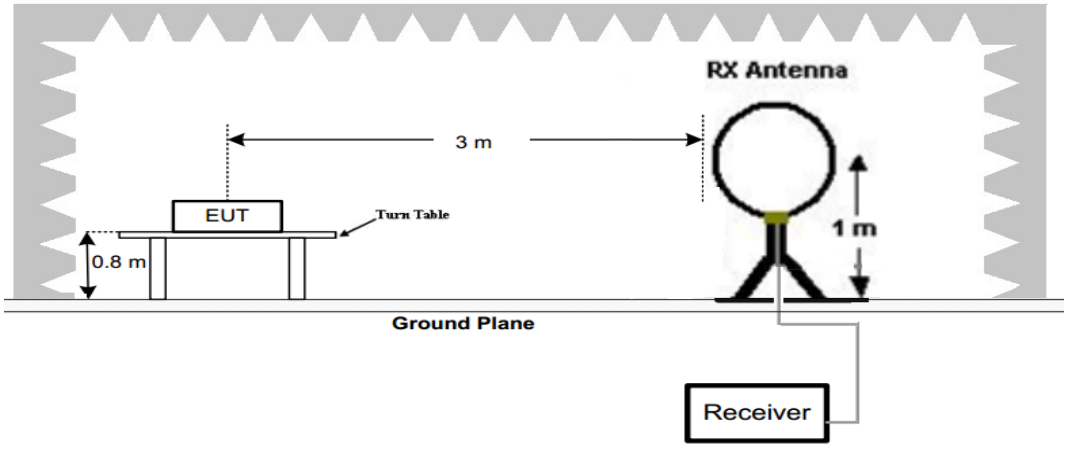
Unwanted emissions that fall into restricted bands shall comply with the limits specified in RSS-Gen; and Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Radiated emission limits

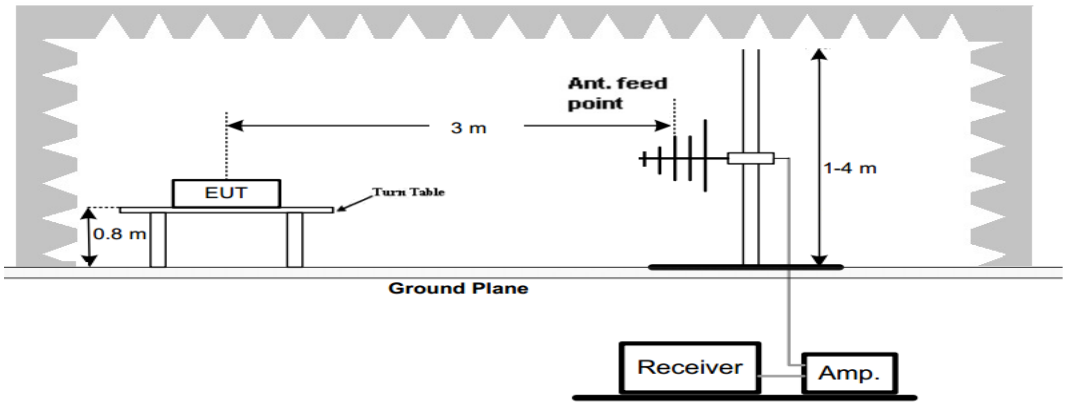
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

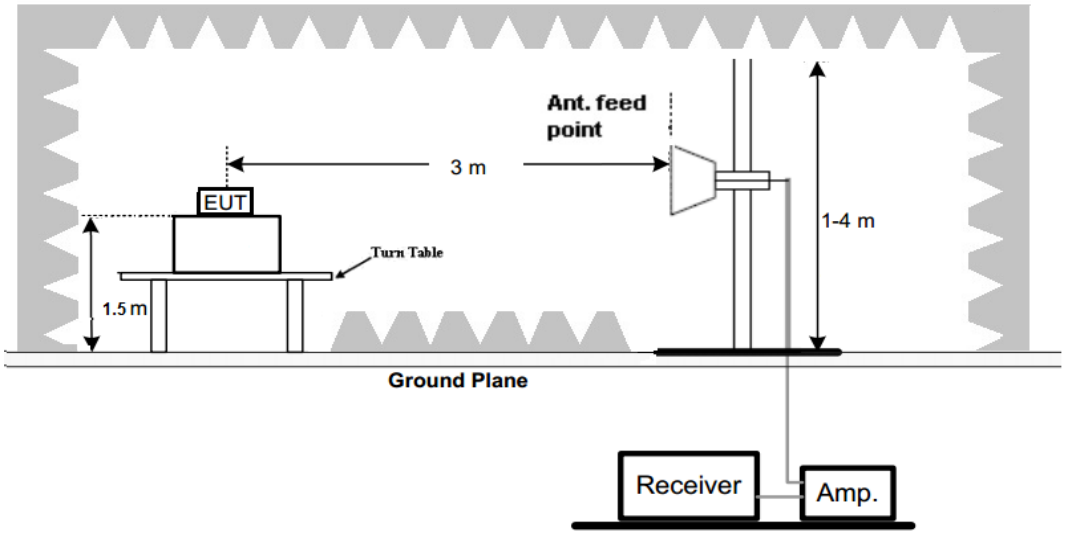
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
4. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.
5. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until all frequency measurements have been completed.

TEST RESULTS

Remark:

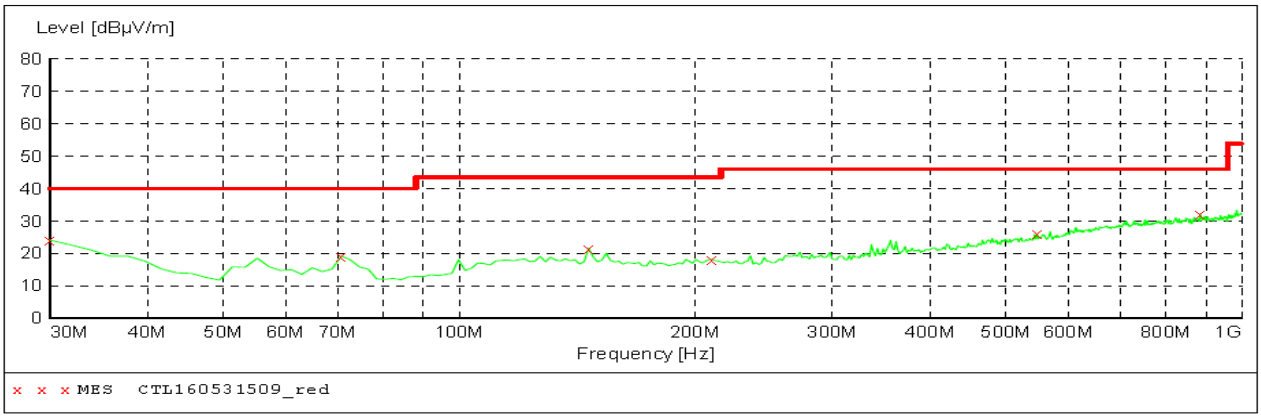
1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status with antenna type 1 and type 2, it was found that “Z axis” position with antenna type 2 was the worst, and test data recorded in this report.
2. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz

Horizontal

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL160531509_red"

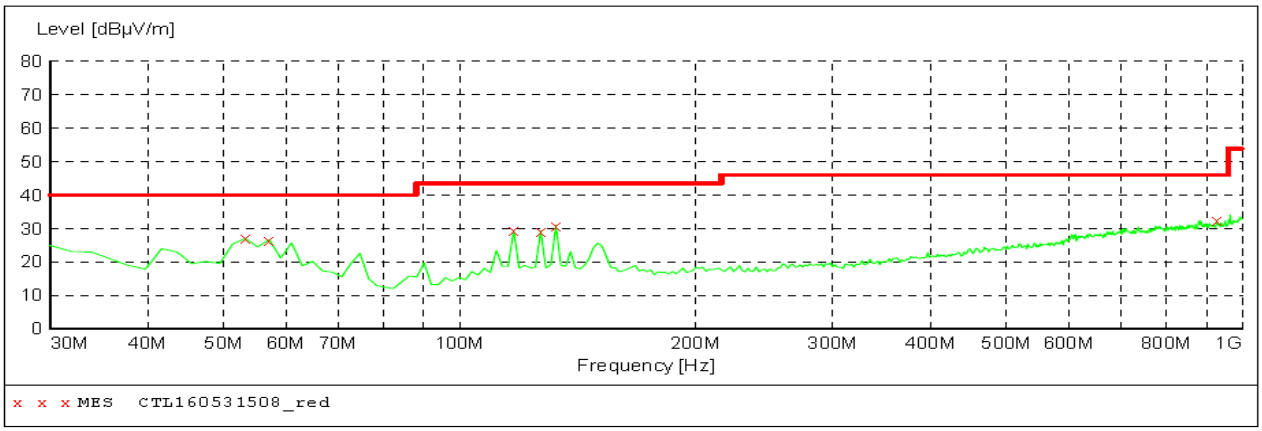
5/31/2016 8:49AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.10	20.8	40.0	15.9	---	0.0	0.00	HORIZONTAL
70.740000	19.20	8.2	40.0	20.8	---	0.0	0.00	HORIZONTAL
146.400000	21.60	14.0	43.5	21.9	---	0.0	0.00	HORIZONTAL
210.420000	18.10	14.0	43.5	25.4	---	0.0	0.00	HORIZONTAL
547.980000	26.00	20.9	46.0	20.0	---	0.0	0.00	HORIZONTAL
885.540000	32.30	25.7	46.0	13.7	---	0.0	0.00	HORIZONTAL

Vertical

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL160531508_red"

5/31/2016 8:48AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
53.280000	27.00	8.0	40.0	13.0	---	0.0	0.00	VERTICAL
57.160000	26.60	8.0	40.0	13.4	---	0.0	0.00	VERTICAL
117.300000	29.40	14.7	43.5	14.1	---	0.0	0.00	VERTICAL
127.000000	29.30	14.6	43.5	14.2	---	0.0	0.00	VERTICAL
132.820000	31.00	14.4	43.5	12.5	---	0.0	0.00	VERTICAL
928.220000	32.50	26.2	46.0	13.5	---	0.0	0.00	VERTICAL

For 1GHz to 25GHz

GFSK Mode (above 1GHz)

Frequency(MHz):				2405		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2405.00	105.58	PK	--	--	72.18	28.79	4.62	0.00	33.40
1	2405.00	96.41	AV	--	--	63.01	28.79	4.62	0.00	33.40
2	2390.00	48.63	PK	74	25.37	15.31	28.72	4.60	0.00	33.32
2	2390.00	--	AV	54	--	--	--	--	--	--
3	2400.00	55.24	PK	74	18.76	21.85	28.78	4.61	0.00	33.39
3	2400.00	46.21	AV	54	7.79	12.82	28.78	4.61	0.00	33.39
4	4810.00	56.25	PK	74	17.75	51.73	33.50	6.92	35.89	4.52
4	4810.00	48.26	AV	54	5.74	43.74	33.50	6.92	35.89	4.52
5	5075.50	42.35	PK	74	31.65	35.29	34.24	7.08	34.26	7.06
5	5075.50	--	AV	54	--	--	--	--	--	--
6	7215.00	50.21	PK	74	23.79	39.05	36.99	9.19	35.02	11.16
6	7215.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):				2405		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2405.00	104.87	PK	--	--	71.47	28.79	4.62	0.00	33.40
1	2405.00	96.22	AV	--	--	62.82	28.79	4.62	0.00	33.40
2	2390.00	48.74	PK	74	25.26	15.42	28.72	4.60	0.00	33.32
2	2390.00	--	AV	54	--	--	--	--	--	--
3	2400.00	56.35	PK	74	17.65	22.96	28.78	4.61	0.00	33.39
3	2400.00	47.22	AV	54	6.78	13.83	28.78	4.61	0.00	33.39
4	4810.00	58.38	PK	74	15.62	53.86	33.50	6.92	35.89	4.52
4	4810.00	49.41	AV	54	4.59	44.89	33.50	6.92	35.89	4.52
5	5222.25	42.33	PK	74	31.67	34.92	34.56	7.15	34.31	7.41
5	5222.25	--	AV	54	--	--	--	--	--	--
6	7215.00	51.45	PK	74	22.55	40.29	36.99	9.19	35.02	11.16
6	7215.00	--	AV	54	--	--	--	--	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

Frequency(MHz):				2440		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2440.00	105.33	PK	--	--	71.82	28.85	4.65	0.00	33.51
1	2440.00	96.54	AV	--	--	63.03	28.85	4.65	0.00	33.51
2	3425.50	43.39	PK	74	30.61	41.21	31.63	5.74	35.20	2.18
2	3425.50	--	AV	54	--	--	--	--	--	--
3	4880.00	57.52	PK	74	16.48	51.16	33.60	6.95	34.19	6.36
3	4880.00	48.36	AV	54	5.64	42.00	33.60	6.95	34.19	6.36
4	5225.75	43.58	PK	74	30.42	35.96	34.57	7.16	34.10	7.62
4	5225.75	--	AV	54	--	--	--	--	--	--
5	7320.00	51.22	PK	74	22.78	39.53	37.46	9.23	35.00	11.69
5	7320.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):				2440		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2440.00	105.58	PK	--	--	72.07	28.85	4.65	0.00	33.51
1	2440.00	95.71	AV	--	--	62.20	28.85	4.65	0.00	33.51
2	4235.50	42.33	PK	74	31.67	37.63	32.82	6.54	34.67	4.70
2	4235.50	--	AV	54	--	--	--	--	--	--
3	4880.00	56.89	PK	74	17.11	50.64	33.60	6.95	34.30	6.25
3	4880.00	47.52	AV	54	6.48	41.27	33.60	6.95	34.30	6.25
4	5235.50	43.44	PK	74	30.56	35.80	34.58	7.16	34.10	7.64
4	5235.50	--	AV	54	--	--	--	--	--	--
5	7320.00	50.87	PK	74	23.13	39.18	37.46	9.23	35.00	11.69
5	7320.00	--	AV	54	--	--	--	--	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

Frequency(MHz):				2480		Polarity:			HORIZONTAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2480.00	105.45	PK	--	--	71.83	28.92	4.70	0.00	33.62
1	2480.00	96.32	AV	--	--	62.70	28.92	4.70	0.00	33.62
2	2483.50	57.14	PK	74	16.86	23.51	28.93	4.70	0.00	33.63
2	2483.50	48.22	AV	54	5.78	14.59	28.93	4.70	0.00	33.63
3	2500.00	46.21	PK	74	27.79	12.53	28.96	4.72	0.00	33.68
3	2500.00	--	AV	54	--	--	--	--	--	--
4	4960.00	57.24	PK	74	16.76	52.32	33.84	7.00	35.92	4.92
4	4960.00	48.89	AV	54	5.11	43.97	33.84	7.00	35.92	4.92
5	5050.25	45.21	PK	74	28.79	38.24	34.16	7.06	34.25	6.97
5	5050.25	--	AV	54	--	--	--	--	--	--
6	7440.00	46.38	PK	74	27.62	34.43	37.64	9.28	34.97	11.95
6	7440.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):				2480		Polarity:			VERTICAL	
No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
1	2480.00	105.54	PK	--	--	71.92	28.92	4.70	0.00	33.62
1	2480.00	96.21	AV	--	--	62.59	28.92	4.70	0.00	33.62
2	2483.50	57.34	PK	74	16.66	23.71	28.93	4.70	0.00	33.63
2	2483.50	48.72	AV	54	5.28	15.09	28.93	4.70	0.00	33.63
3	2500.00	46.22	PK	74	27.78	12.54	28.96	4.72	0.00	33.68
3	2500.00	--	AV	54	--	--	--	--	--	--
4	4960.00	57.63	PK	74	16.37	52.71	33.84	7.00	35.92	4.92
4	4960.00	48.74	AV	54	5.26	43.82	33.84	7.00	35.92	4.92
5	5133.75	46.32	PK	74	27.68	39.09	34.40	7.11	34.28	7.23
5	5133.75	--	AV	54	--	--	--	--	--	--
6	7440.00	45.89	PK	74	28.11	33.94	37.64	9.28	34.97	11.95
6	7440.00	--	AV	54	--	--	--	--	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

3.3. Maximum Conducted Output Power

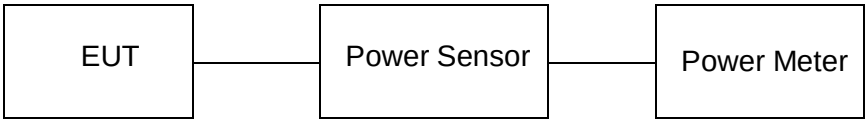
Limit

The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration



Test Results

Type	Channel	Output power (dBm)	Limit (dBm)	Result
GFSK	01	18.52	30.00	Pass
	08	18.56		
	16	18.41		

Note: 1.The test results including the cable lose.

3.4. Power Spectral Density

Limit

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.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW ≥ 3 kHz.
3. Set the VBW ≥ 3× RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

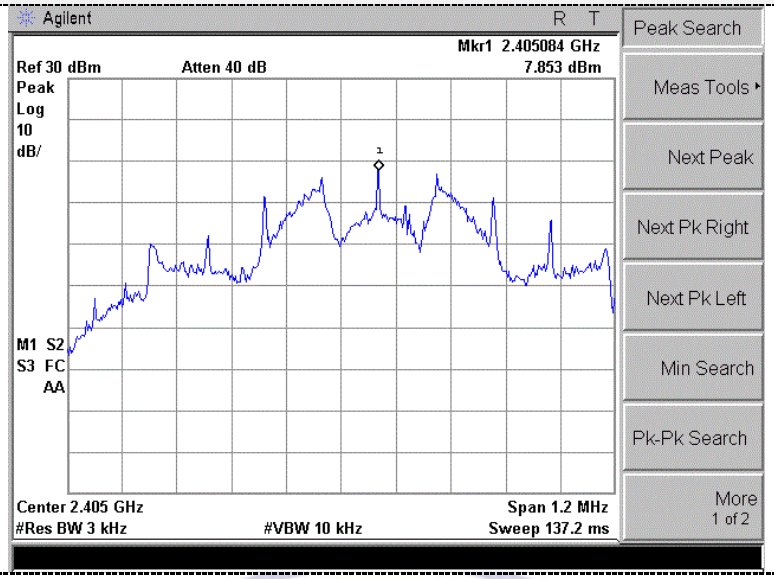
Test Configuration

Test Results

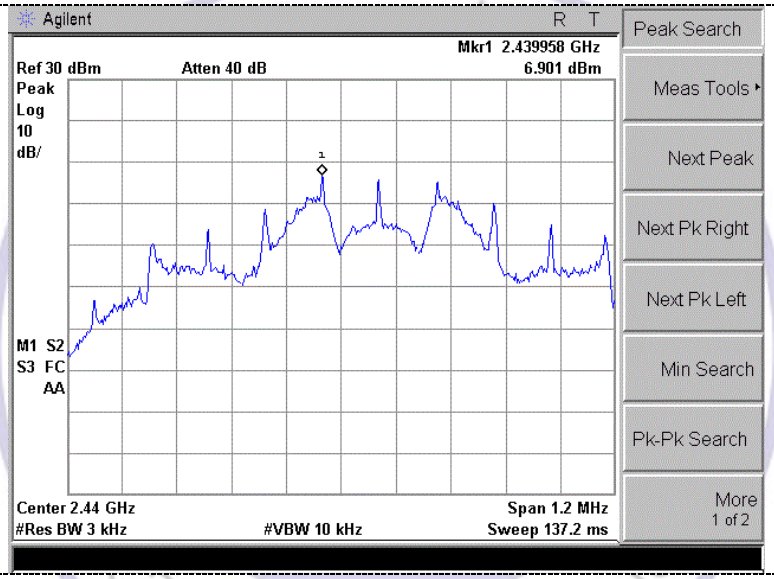
Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
GFSK	01	7.853	8.00	Pass
	08	6.901		
	16	7.099		

Test plot as follows:

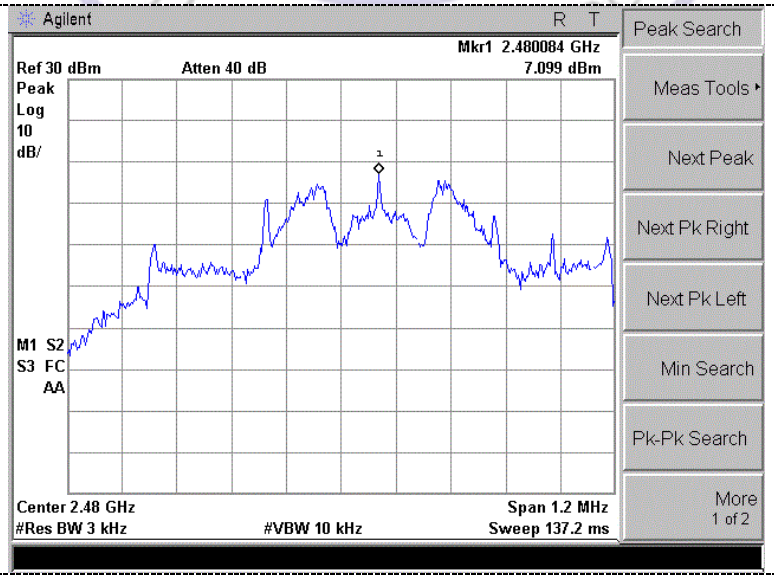
GFSK



CH01



CH08



CH16

3.5. 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

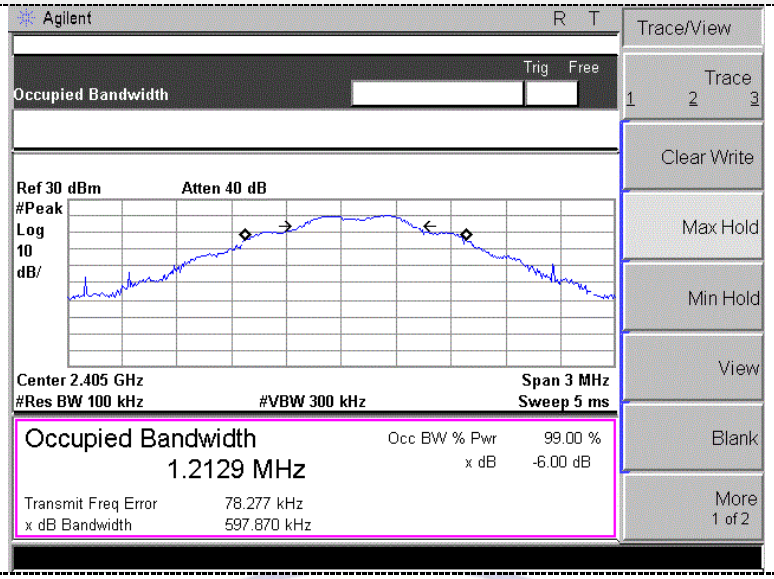
Test Configuration

Test Results

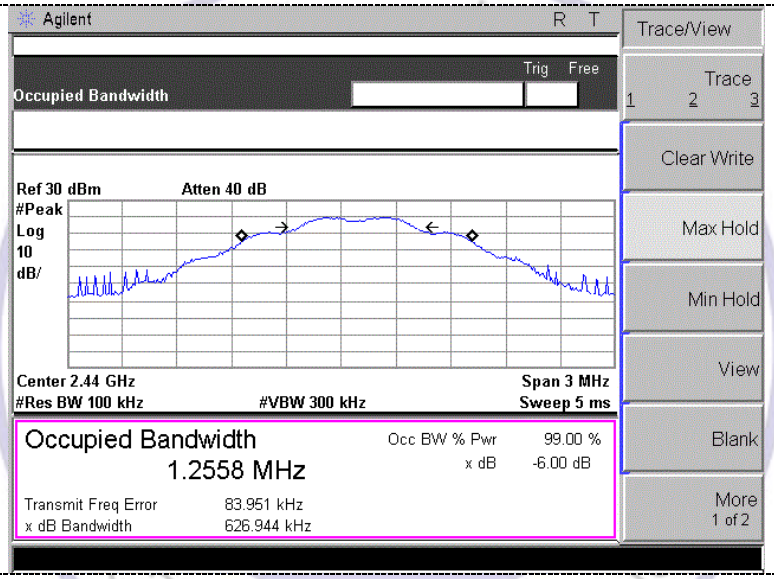
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
GFSK	01	0.598	≥500	Pass
	08	0.627		
	16	0.632		

Test plot as follows:

GFSK



CH01



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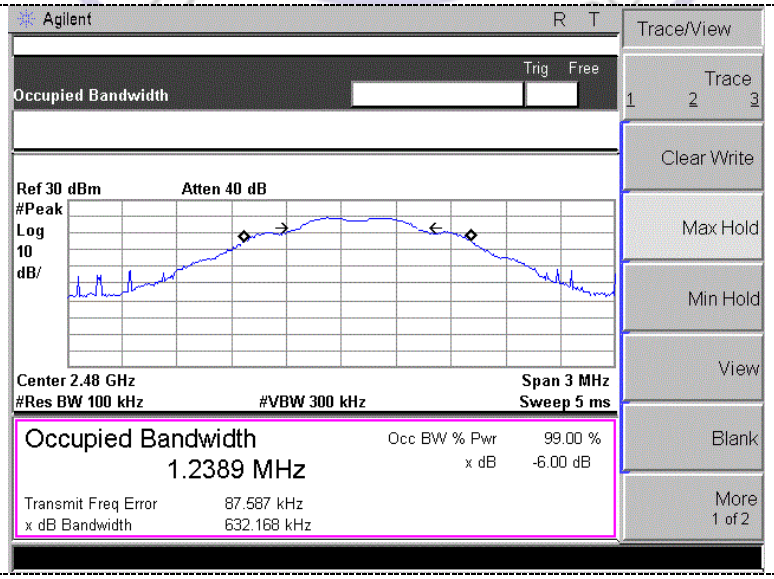


CH16

3.6. Occupied Bandwidth

Limit

N/A

Test Procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

RBW=1% to 5% of the OBW
VBW=approximately 3 X RBW
Detector=Peak
Trace Mode: Max Hold

Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recoded.

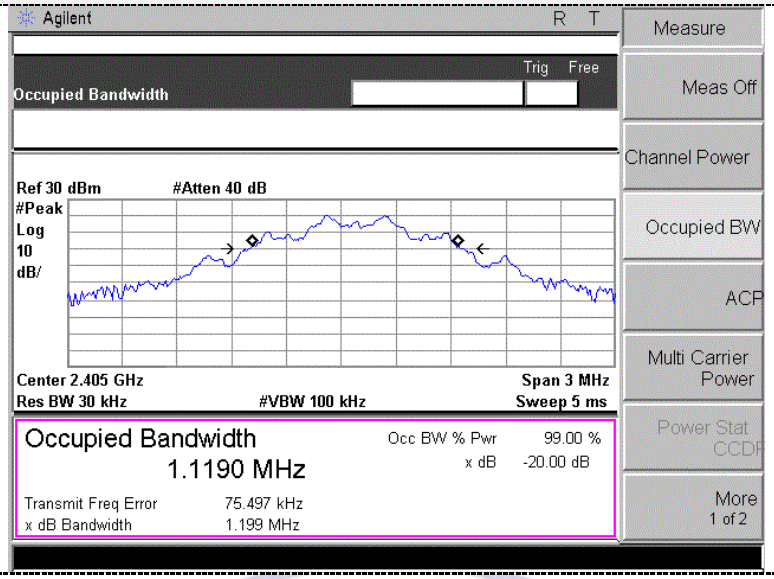
Test Configuration

Test Results

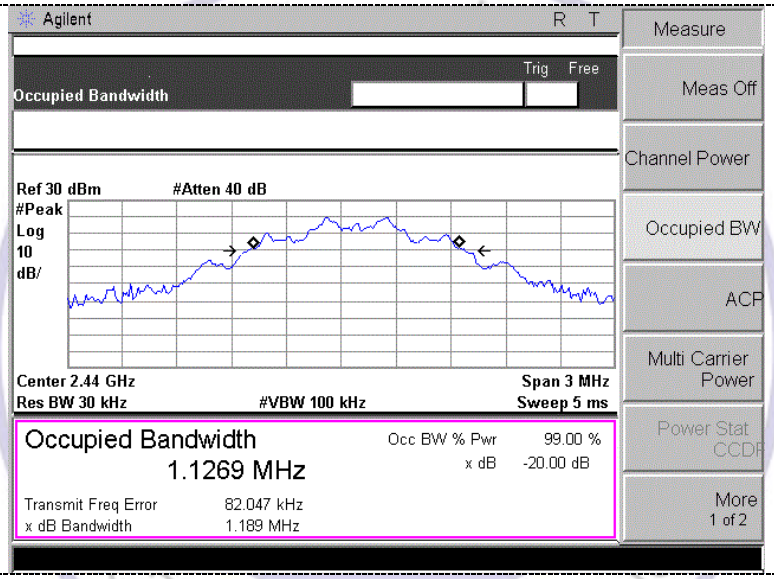
Type	Channel	99% Bandwidth (MHz)	Limit (KHz)	Result
GFSK	01	1.1190	N/A	Pass
	08	1.1269		
	16	1.0896		

Test plot as follows:

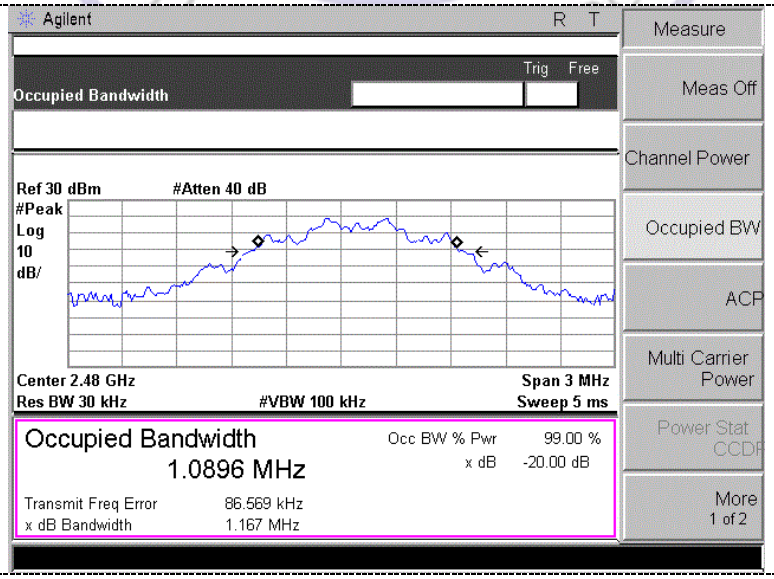
GFSK



CH01



CH08



CH16

3.7. Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section (b)(3) of §15.247 and RSS 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in §15.209(a) and RSS-Gen are not required.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

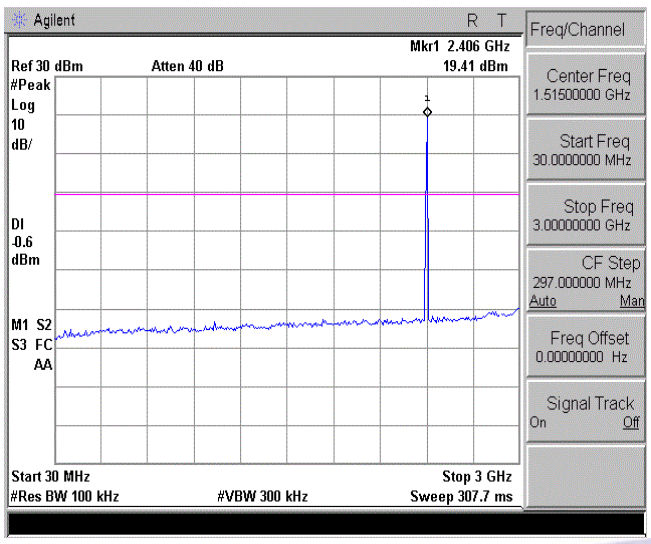
Test Configuration

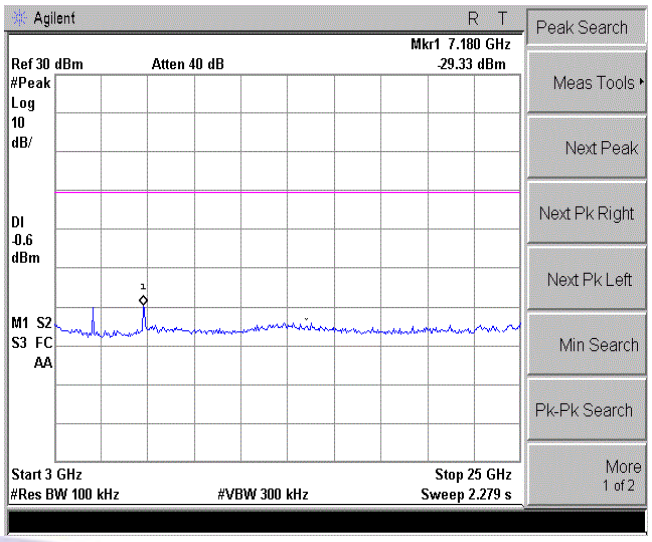
Test Results

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data.

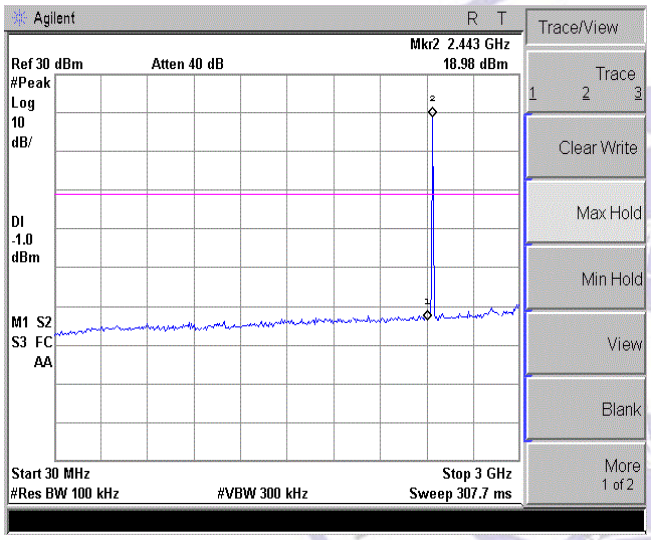
Test plot as follows:

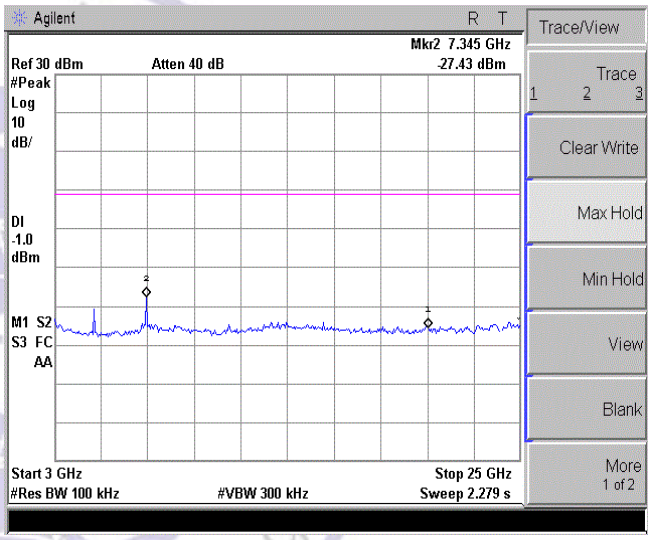
GFSK



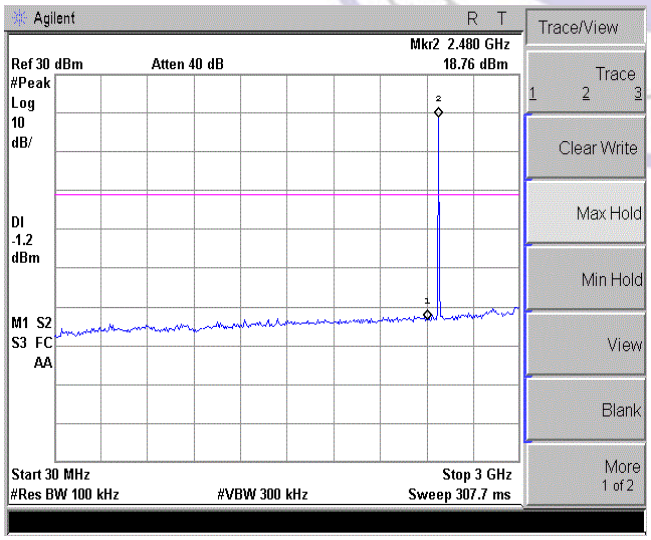


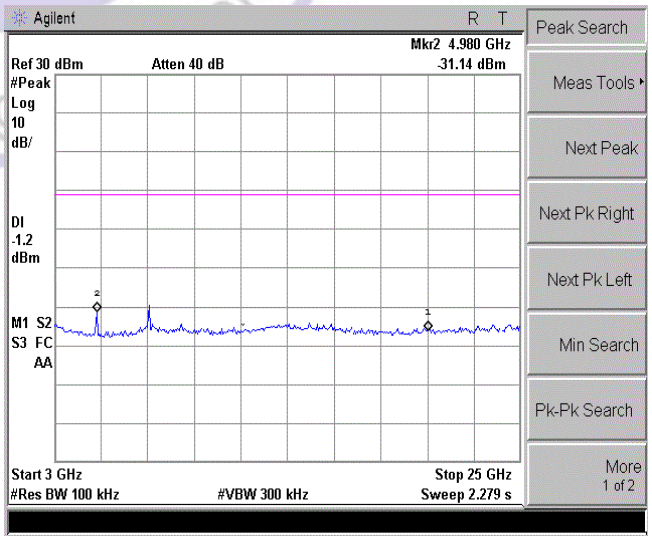
CH00



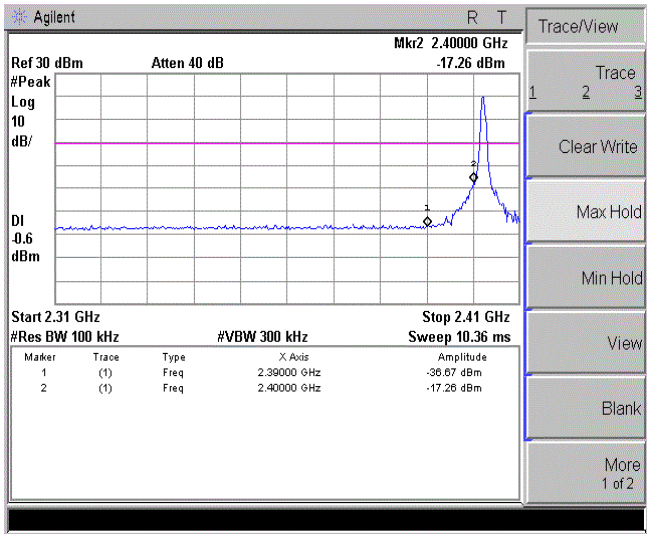


CH08

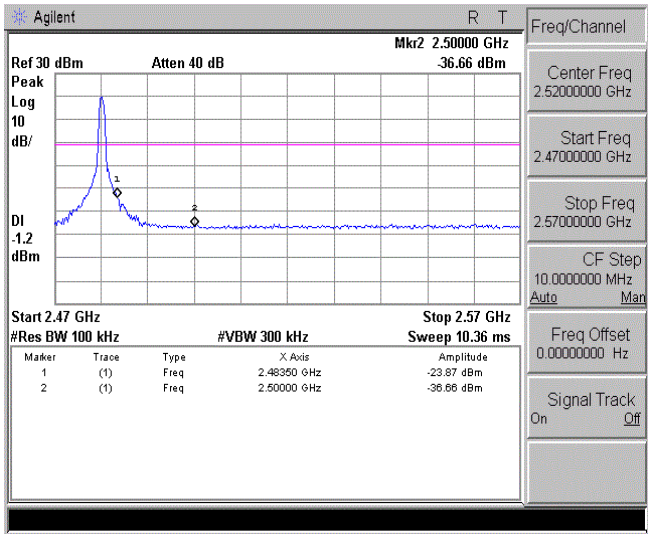




CH16

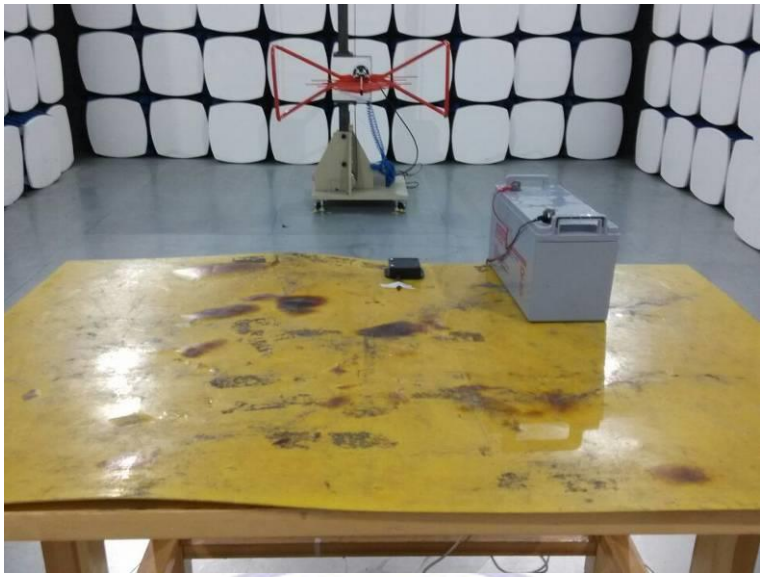


Left Band edge



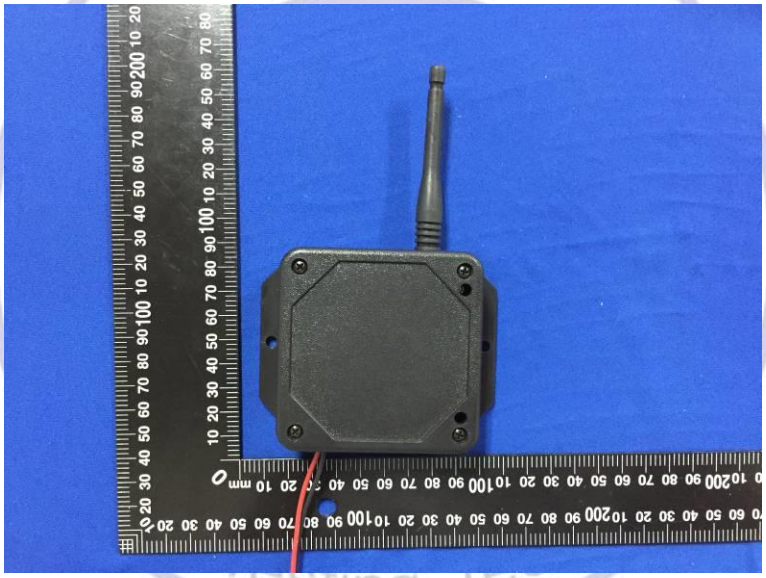
Right Band edge

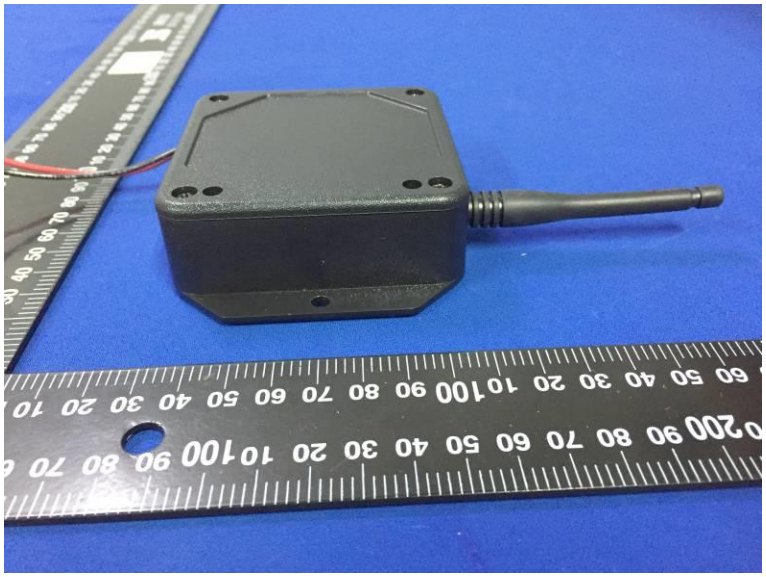
4. Test Setup Photos of the EUT

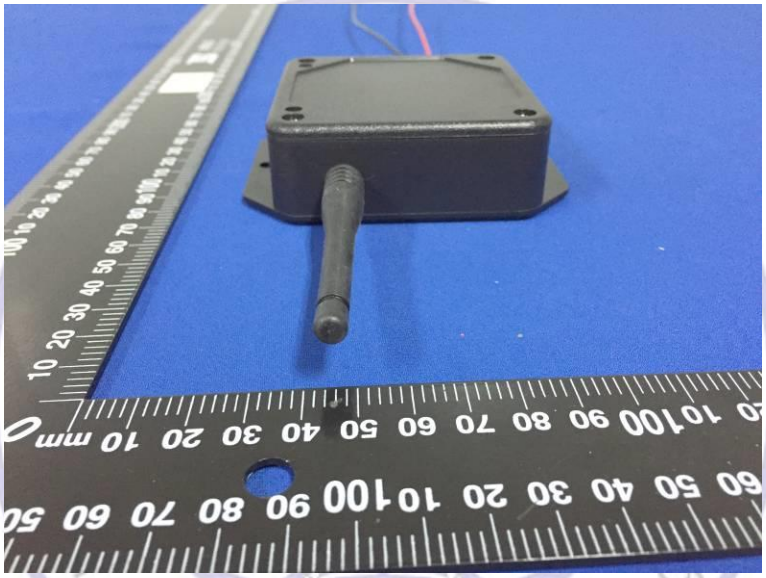


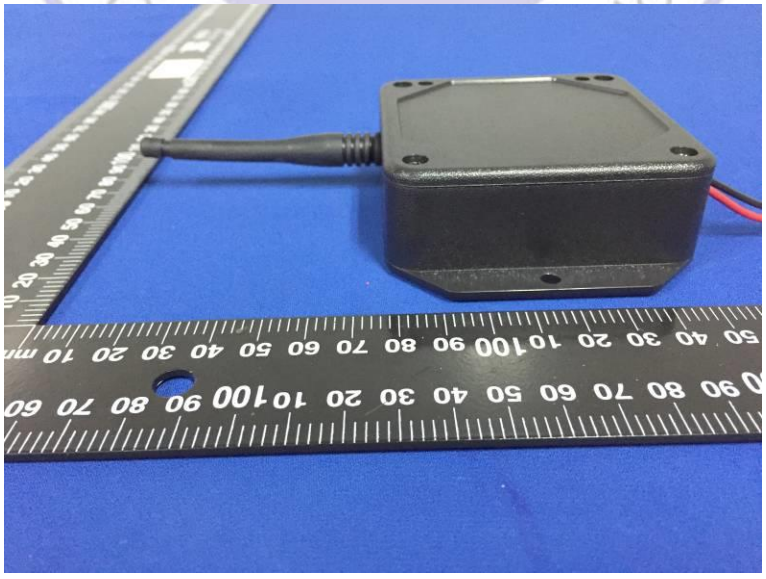
5. Photos of the EUT

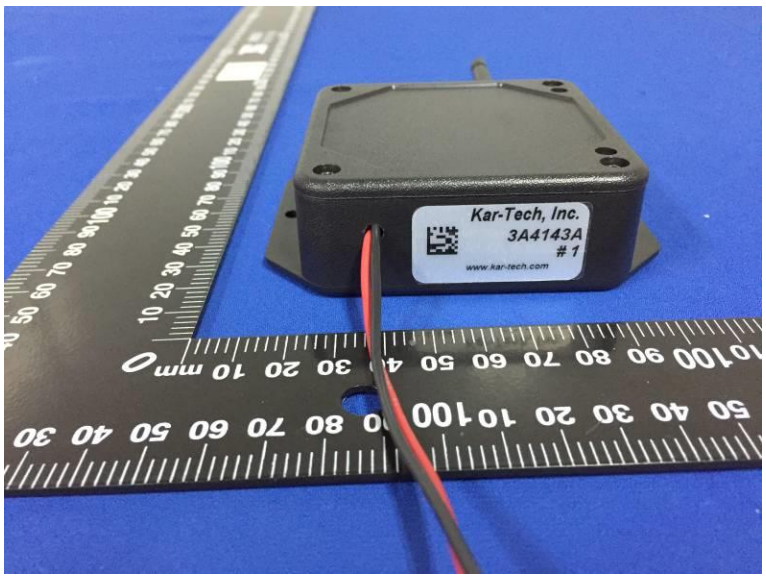
External photos with antenna type 1



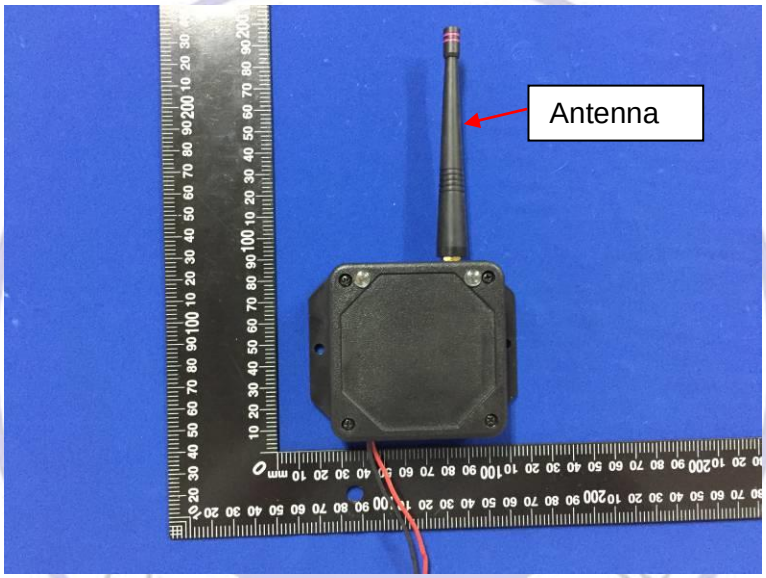


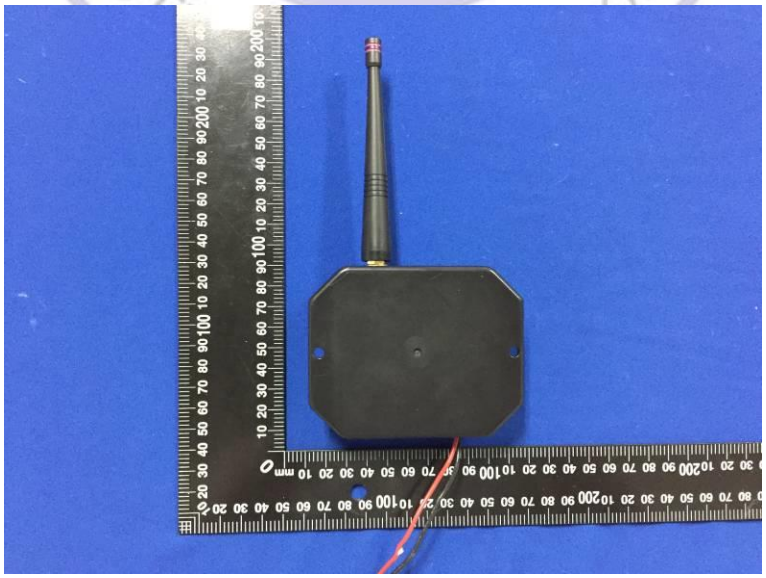


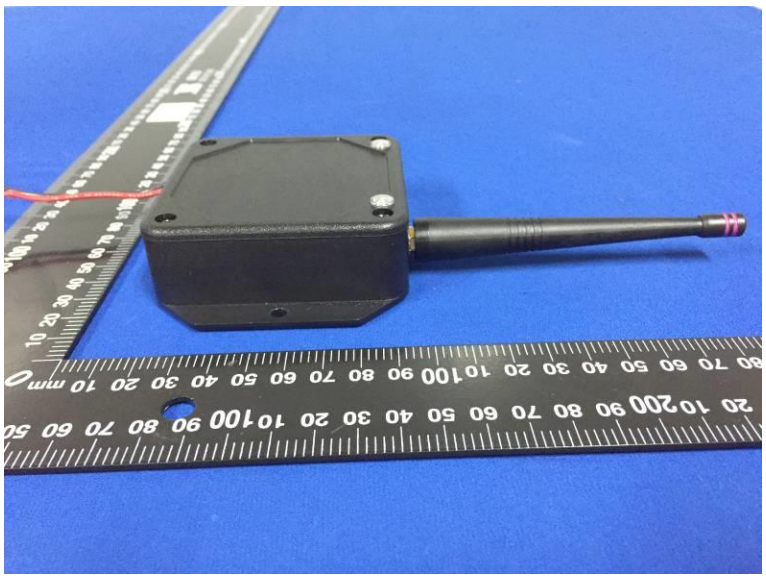


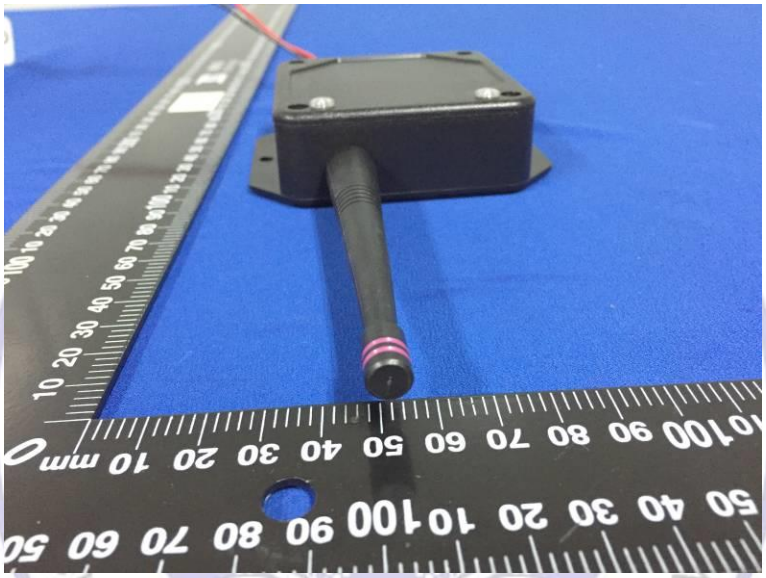


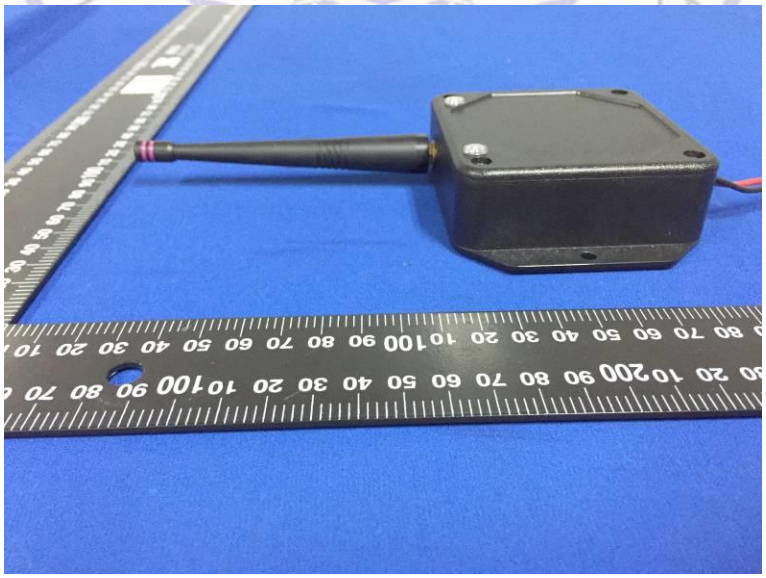
External photos with antenna type 2

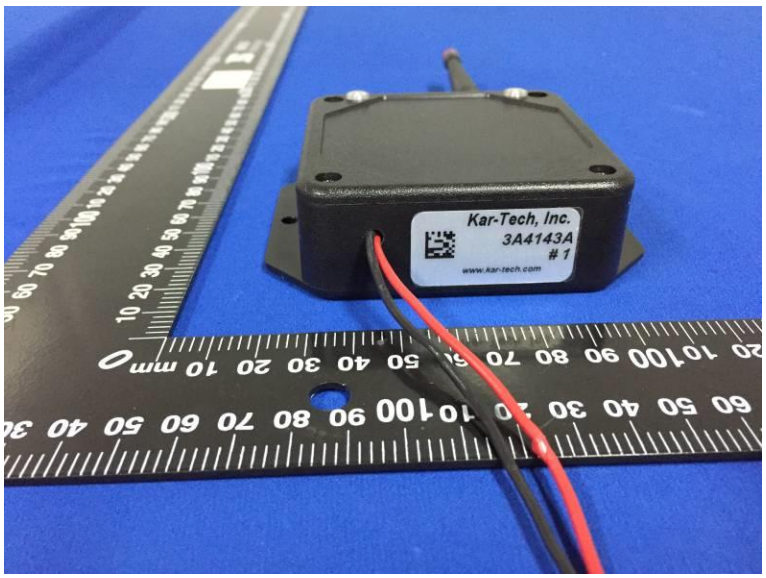




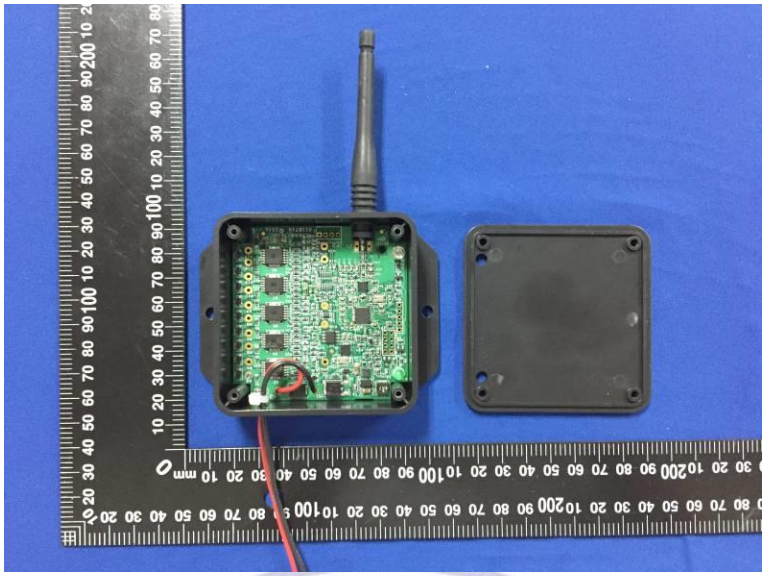


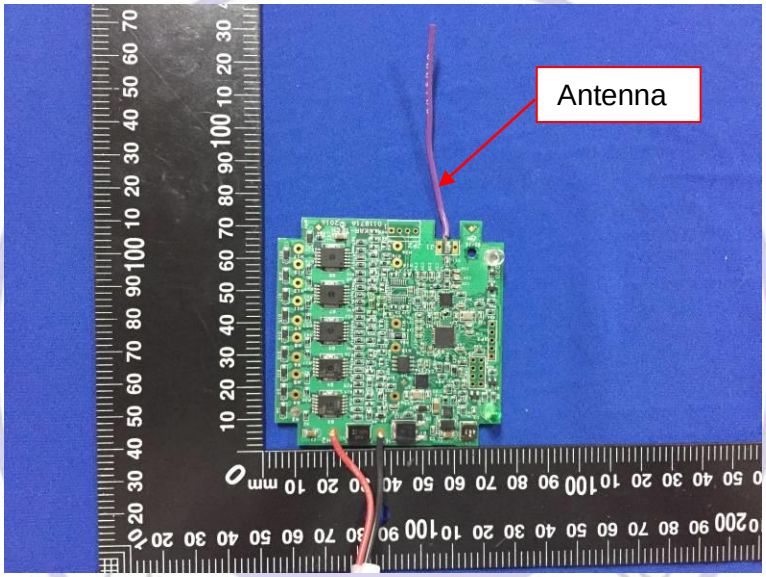


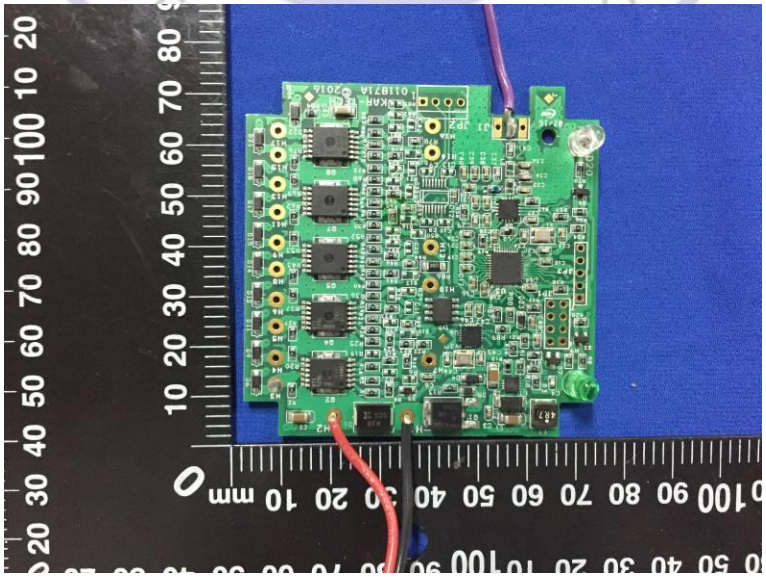


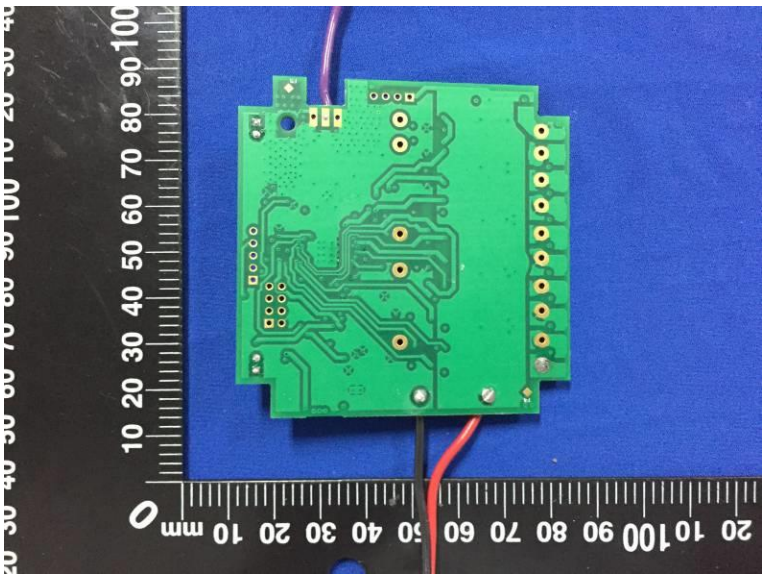


Internal photos with antenna type 1

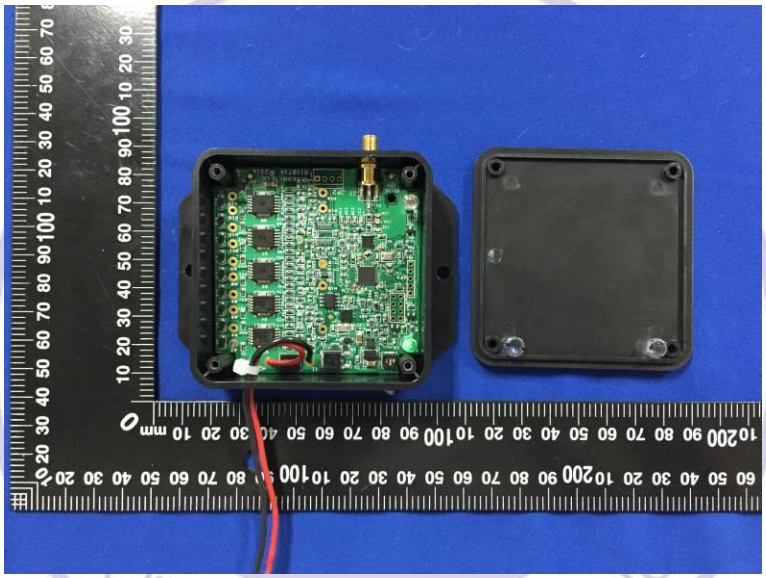


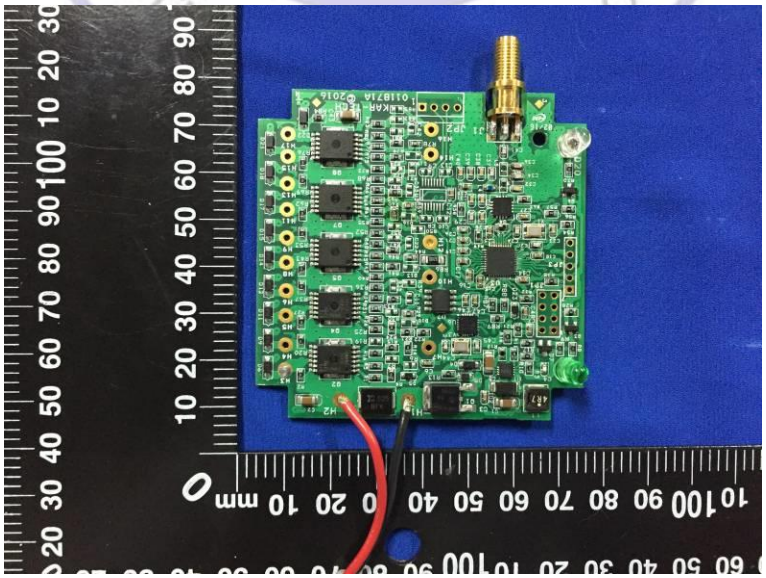


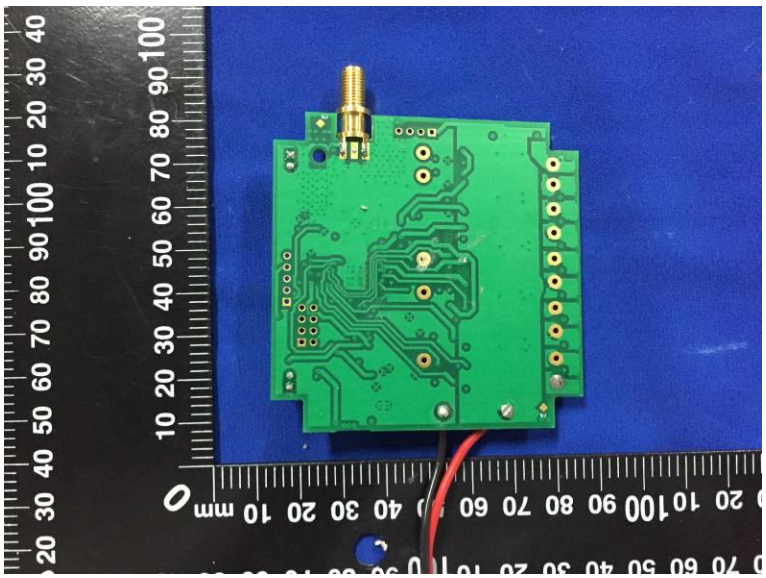




Internal photos with antenna type 2







********** End of Report **********