

FCC Part 15C Test Report

FCC ID:2AD6LGC0324355

Product Name:	RC Quadcopter
Trademark:	N/A
Model Name :	CX-35W EDJT400VR, CX-39, CX-35, CX-10, CX-50, CX-60, CX-70, CX-30, CX-OF, CX-40, CX-41, CX-42, CX-43, CX-Star D, CX-32, CX-33, CX-36, CX-37, CX-22, CX-20
Prepared For :	Guangdong Cheerson Hobby Technology Co., Ltd.
Address :	FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN INDUSTRIAL ZONE CHENGHAI SHANTOU, CHINA
Prepared By :	Shenzhen BCTC Testing Co., Ltd.
Address :	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	Jul.27, 2018 – Aug. 03, 2018
Date of Report :	Aug. 03, 2018
Report No.:	BCTC-FY180704148E

TEST RESULT CERTIFICATION

Applicant's name : Guangdong Cheerson Hobby Technology Co., Ltd.
Address : FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN
INDUSTRIAL ZONE CHENGHAI SHANTOU, CHINA
Manufacture's Name : Guangdong Cheerson Hobby Technology Co., Ltd.
Address : FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN
INDUSTRIAL ZONE CHENGHAI SHANTOU, CHINA

Product description

Product name : RC Quadcopter
Trademark : N/A
Model and/or type reference : CX-35W
EDJT400VR, CX-39, CX-35, CX-10, CX-50, CX-60, CX-70,
CX-30, CX-OF, CX-40, CX-41, CX-42, CX-43, CX-Star D,
CX-32, CX-33, CX-36, CX-37, CX-22, CX-20

Standards : FCC Part15.247
ANSI C63.10:2013

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Prepared by(Engineer): Lake Xie

Reviewer(Supervisor): Rita Xiao

Approved(Manager): Carson Zhang






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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

RSS-247 Issue 2: February 2017 FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
RSS-GEN 8.8 RSS-247 3.1 FCC Part15.207	Conducted Emission	N/A	
RSS-247 5.2 (a) RSS-GEN 6.6 FCC Part 15.247 (a)(2)	6dB Bandwidth	PASS	
RSS-247 5.4 (b) FCC Part 15.247 (b)	Peak Output Power	PASS	
RSS-247 5.5 FCC Part 15.247 (d) FCC Part 15.209	Radiated Spurious Emission	PASS	
RSS-247 5.2 (b) FCC Part 15.247 (e)	Power Spectral Density	PASS	
RSS-247 5.5 FCC Part 15.205	Restricted Band of Operation	PASS	
RSS-Gen.6.7 FCC Part 15.203	Band Edge (Out of Band Emissions)	PASS	
RSS-GEN 8.8 RSS-247 3.1 FCC Part15.207	Antenna Requirement	PASS	

NOTE:

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

1.1 TEST FACILITY

Shenzhen BCTC Testing Co., Ltd.

Add.: BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	RC Quadcopter	
Trade Name	N/A	
Model Name	CX-35W EDJT400VR, CX-39, CX-35, CX-10, CX-50, CX-60, CX-70, CX-30, CX-OF, CX-40, CX-41, CX-42, CX-43, CX-Star D, CX-32, CX-33, CX-36, CX-37, CX-22, CX-20	
Model Difference	Only for different Model name.	
Product Description	The EUT is a RC Quadcopter	
	Operation Frequency:	2416-2475 MHz
	Modulation Type:	GFSK
	Number Of Channel	60CH
	Antenna Designation:	Please see Note 3.
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.		
Channel List	Please refer to the Note 2.	
Ratings	DC 6V From Battery	
Adapter	N/A	
Connecting I/O Port(s)	Please refer to the User's Manual	
Hardware Version:	N/A	
Software Version:	N/A	

Note:

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



2.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2416	31	2446
02	2417	32	2447
03	2418	33	2448
04	2419	34	2449
05	2420	35	2450
06	2421	36	2451
07	2422	37	2452
08	2423	38	2453
09	2424	39	2454
10	2425	40	2455
11	2426	41	2456
12	2427	42	2457
13	2428	43	2458
14	2429	44	2459
15	2430	45	2460
16	2431	46	2461
17	2432	47	2462
18	2433	48	2463
19	2434	49	2464
20	2435	50	2465
21	2436	51	2466
22	2437	52	2467
23	2438	53	2468
24	2439	54	2469
25	2440	55	2470
26	2441	56	2471
27	2442	57	2472
28	2443	58	2473
29	2444	59	2474
30	2445	60	2475

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
1	N/A	N/A	internal cable antenna	1	

2.2 DESCRIPTION OF TEST MODES

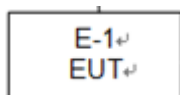
For Conducted & Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH30
Mode 3	CH60
Mode 4	Link Mode

Note:

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

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	RC Quadcopter	N/A	CX-35W	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4407B	MY45108040	2017.08.27	2018.08.26
2	Test Receiver (9kHz-7GHz)	R&S	ESPI	101318	2017.08.27	2018.08.26
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB 9168	VULB91 68-438	2017.08.27	2018.08.26
4	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1201	2017.09.03	2018.09.02
5	Horn Antenna (14GHz-40GHz)	SCHWARZBECK	BBHA 9170	9170-181	2017.09.03	2018.09.02
6	Amplifier (9KHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	2017.08.27	2018.08.26
7	Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV9718	9718-309	2017.08.27	2018.08.26
8	Amplifier (18GHz-40GHz)	SCHWARZBECK	BBV 9721	9721-205	2017.08.27	2018.08.26
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	00014	2017.09.03	2018.09.02
10	RF cables1 (9kHz-1GHz)	R&S	R203	R20X	2017.08.27	2018.08.26
11	RF cables2 (1GHz-40GHz)	R&S	R204	R21X	2017.08.27	2018.08.26
12	Antenna connector	Florida RF Labs	N/A	RF 01#	2017.08.27	2018.08.26
13	Power Metter	ANRITSU	ML2487A	6K00001568	2017.08.27	2018.08.26
14	Power Sensor (AV)	ANRITSU	ML2491A	030989	2017.08.27	2018.08.26
15	Signal Analyzer 9kHz-26.5GHz	Agilent	N9010A	MY48030494	2017.08.27	2018.08.26
16	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	2017.08.27	2018.08.26
17	D.C. Power Supply	LongWei	PS-305D	010964729	2017.08.27	2018.08.26

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

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

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

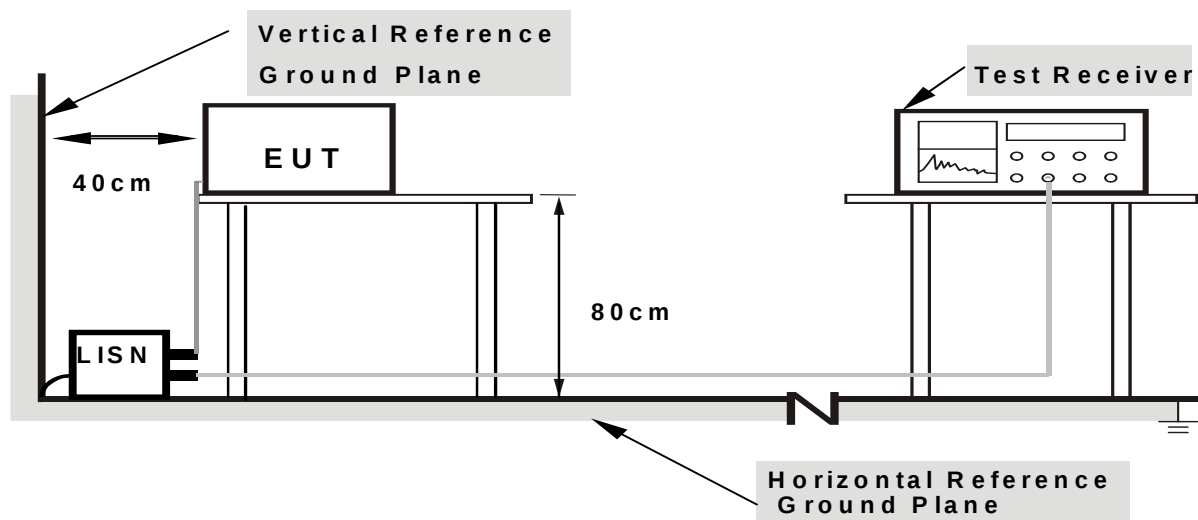
3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

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

3.1.6 TEST RESULTS

The EUT power is DC 6V From DC Battery, not applicable.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

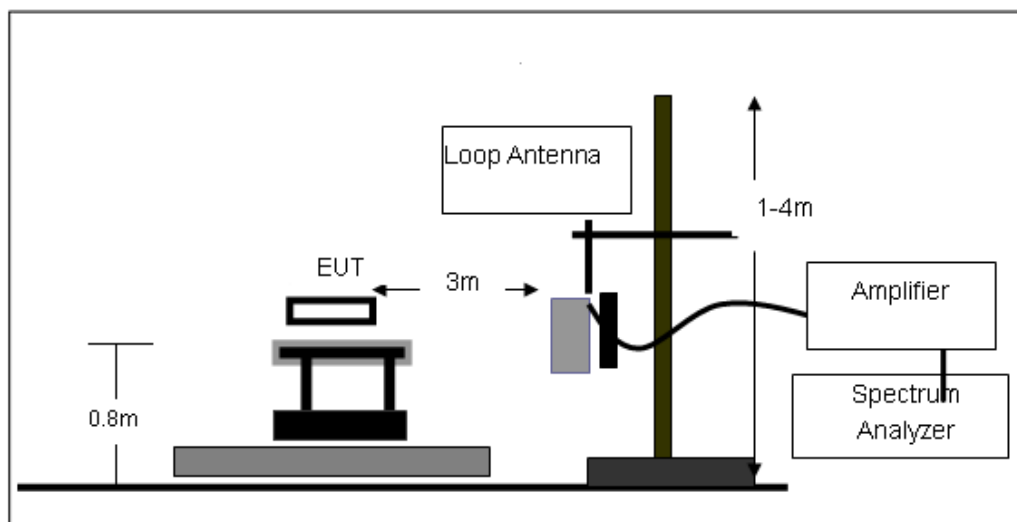
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

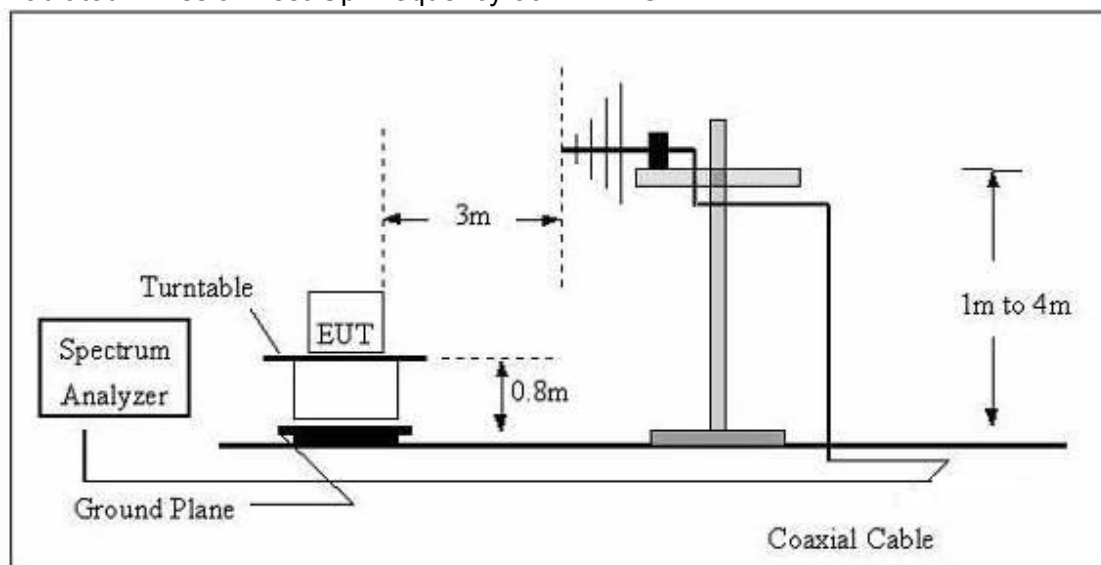
No deviation

3.2.4 TEST SETUP

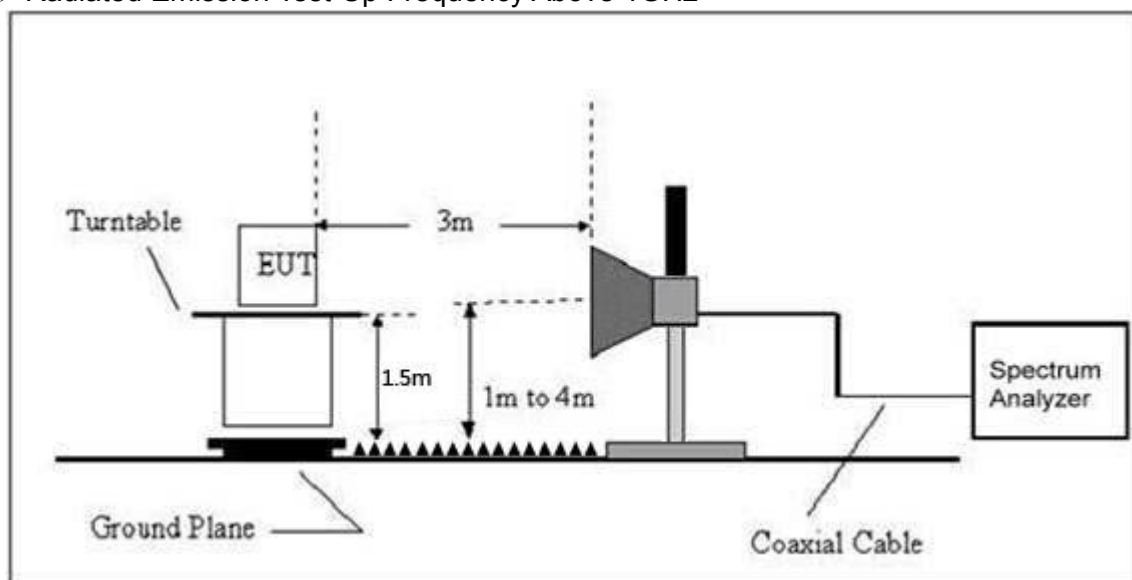
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage :	DC 6V
Test Mode :	Mode 4	Polarization :	--

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

NOTE:

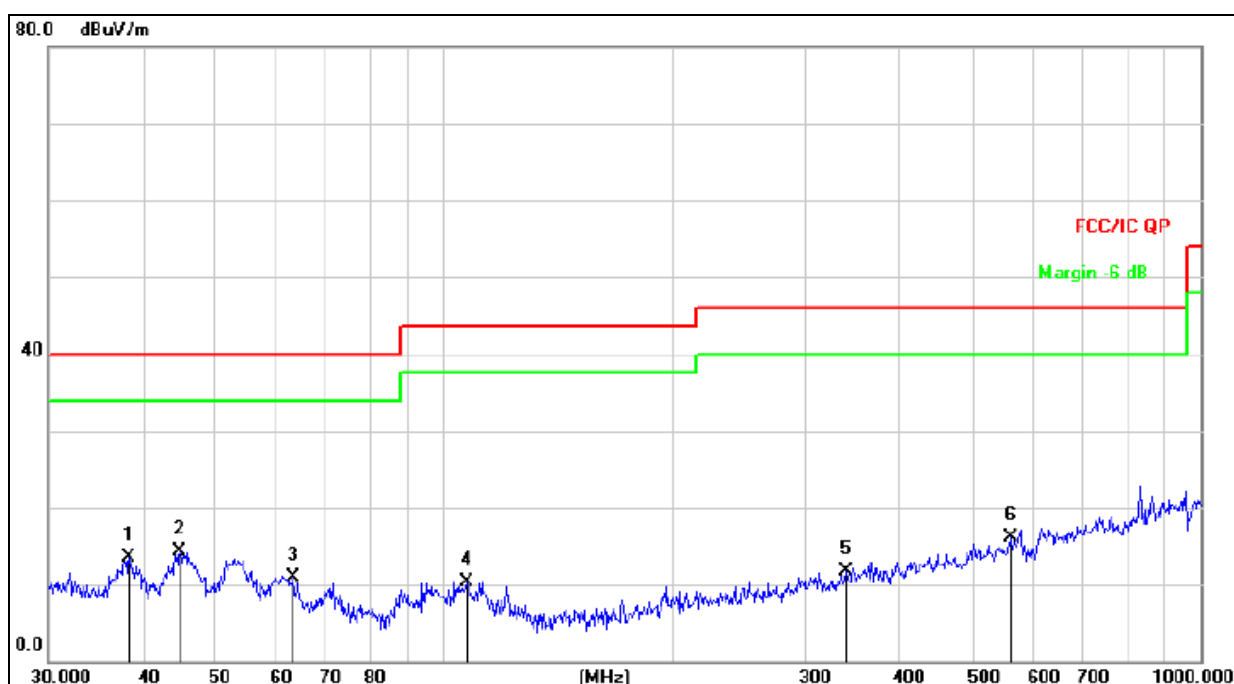
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Polarization :	Horizontal
Test Voltage :	DC 6V		
Test Mode :	Mode 4		

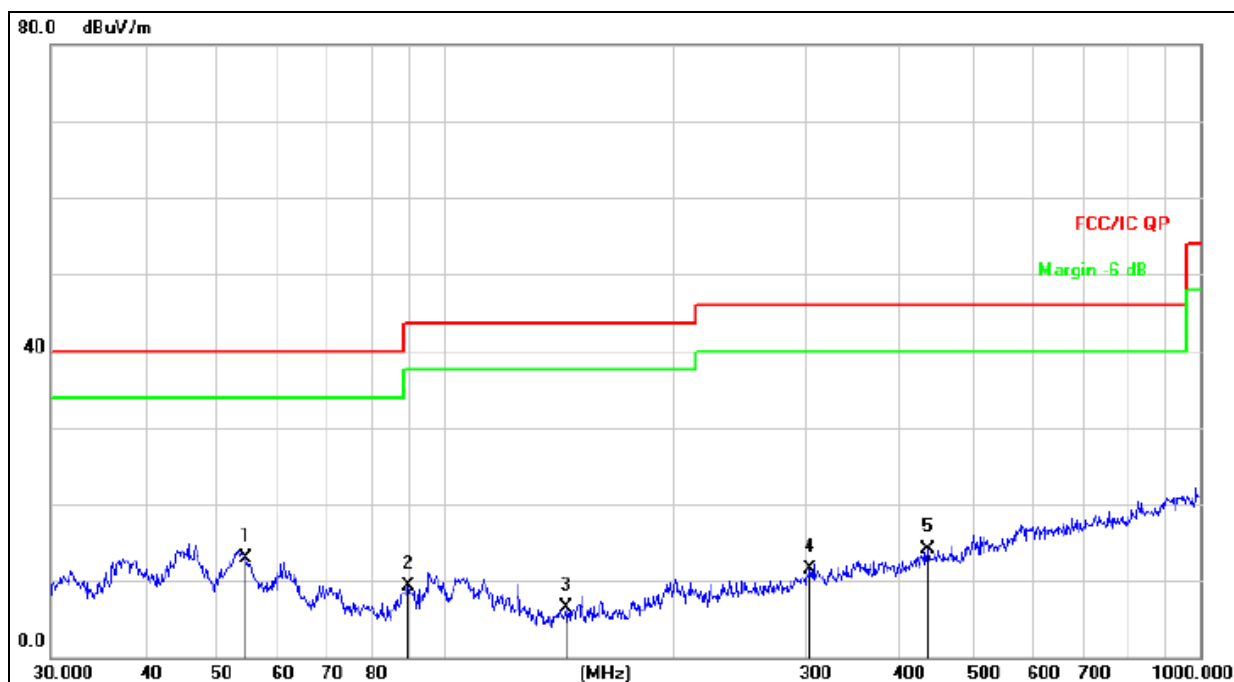


Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		38.3462	28.76	-15.31	13.45	40.00	-26.55	QP
2	*	44.7433	28.39	-14.08	14.31	40.00	-25.69	QP
3		63.3132	27.07	-16.25	10.82	40.00	-29.18	QP
4		107.1337	26.03	-15.69	10.34	43.50	-33.16	QP
5		339.5888	24.56	-12.79	11.77	46.00	-34.23	QP
6		560.6928	23.94	-7.85	16.09	46.00	-29.91	QP

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101KPa	Polarization :	Vertical
Test Voltage :	DC 6V		
Test Mode :	Mode 4		



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	*	54.4516	27.64	-14.68	12.96	40.00	-27.04	peak
2		89.2764	26.94	-17.59	9.35	43.50	-34.15	peak
3		144.8418	25.75	-19.22	6.53	43.50	-36.97	peak
4		303.5437	24.90	-13.47	11.43	46.00	-34.57	peak
5		435.5898	24.83	-10.80	14.03	46.00	-31.97	peak

3.2.8 TEST RESULTS (1GHz~25GHz)

GFSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2416MHz									
V	4832.00	51.99	39.55	7.57	25.45	45.46	74.00	-28.54	PK
V	4832.00	43.43	39.55	7.57	25.45	36.90	54.00	-17.10	AV
V	7248.00	52.69	38.33	7.35	24.78	46.49	74.00	-27.51	PK
V	7248.00	43.20	38.33	7.35	24.78	37.00	54.00	-17.00	AV
V	15454.20	50.21	35.23	6.42	26.47	47.87	74.00	-26.13	PK
H	4832.00	51.12	35.23	6.42	26.47	48.78	74.00	-25.22	PK
H	4832.00	43.22	39.55	7.57	25.45	36.69	54.00	-17.31	AV
H	7248.00	52.03	39.55	7.57	25.45	45.50	74.00	-28.50	PK
H	7248.00	43.77	38.33	7.35	24.78	37.57	54.00	-16.43	AV
H	15454.20	51.42	35.23	6.42	26.47	49.08	74.00	-24.92	PK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2445MHz									
V	4890.00	53.97	38.89	7.57	25.45	48.10	74.00	-25.90	PK
V	4890.00	43.37	38.89	7.57	25.45	37.50	54.00	-16.50	AV
V	7335.00	53.12	38.78	7.35	24.78	46.47	74.00	-27.53	PK
V	7335.00	43.69	38.78	7.35	24.78	37.04	54.00	-16.96	AV
V	15454.08	53.89	38.89	7.57	25.45	48.02	74.00	-25.98	PK
H	4890.00	50.45	35.89	6.42	26.47	47.45	74.00	-26.55	PK
H	4890.00	43.38	38.89	7.57	25.45	37.51	54.00	-16.49	AV
H	7335.00	51.52	38.89	7.57	25.45	45.65	74.00	-28.35	PK
H	7335.00	43.30	38.78	7.35	24.78	36.65	54.00	-17.35	AV
H	15454.08	53.40	38.89	7.57	25.45	47.53	74.00	-26.47	PK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel: 2475MHz									
V	4950.00	52.42	38.75	7.46	25.45	46.58	74.00	-27.42	PK
V	4950.00	43.58	38.75	7.46	25.45	37.74	54.00	-16.26	AV
V	7425.00	52.64	38.65	7.22	24.78	45.99	74.00	-28.01	PK
V	7425.00	43.55	38.65	7.22	24.78	36.90	54.00	-17.10	AV
V	15450.10	54.02	38.89	7.57	25.45	48.15	74.00	-25.85	PK
H	4950.00	52.76	35.58	6.35	26.47	50.00	74.00	-24.00	PK
H	4950.00	43.50	38.75	7.46	25.45	37.66	54.00	-16.34	AV
H	7425.00	52.03	38.75	7.46	25.45	46.19	74.00	-27.81	PK
H	7425.00	43.98	38.65	7.22	24.78	37.33	54.00	-16.67	AV
H	15450.10	51.45	38.89	7.57	25.45	45.58	74.00	-28.42	PK

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel,the Highest channel

Note:

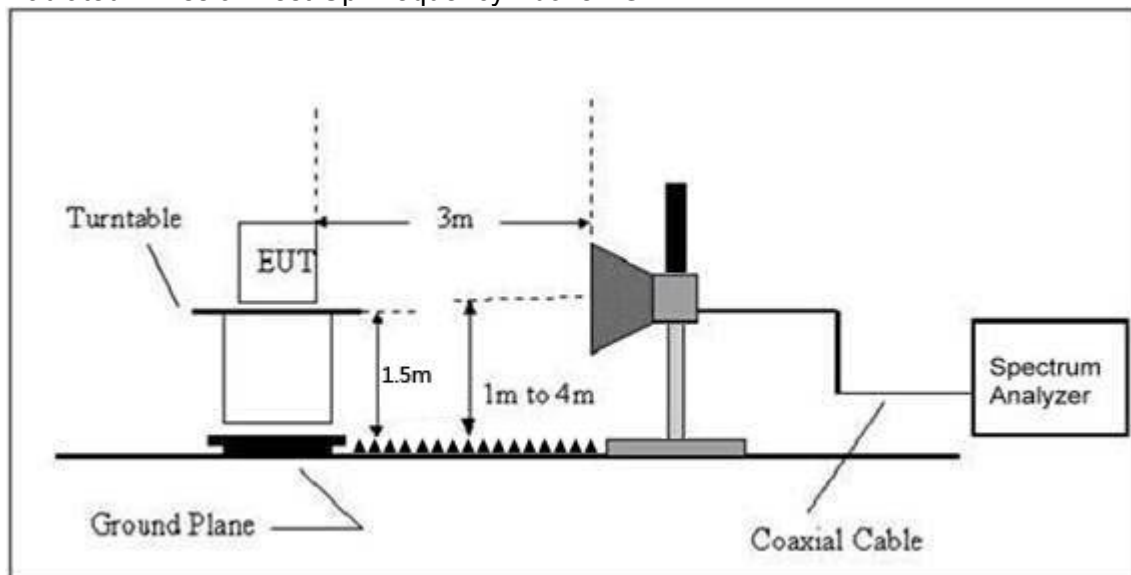
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



3.3.5 EUT OPERATING CONDITIONS

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

3.3.6 TEST RESULT

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission evel (dBuV/m)	Limits (dBuV/m)		Result
							PK	PK	AV	
GFSK	Low Channel 2416MHz									
	H	2390.00	52.16	38.06	7.42	20.15	41.67	74.00	54.00	PASS
	H	2400.00	55.36	38.06	7.42	20.15	44.87	74.00	54.00	PASS
	V	2390.00	55.07	38.06	7.42	20.15	44.58	74.00	54.00	PASS
	V	2400.00	54.11	38.06	7.42	20.15	43.62	74.00	54.00	PASS
	High Channel 2475MHz									
	H	2483.50	57.23	38.17	7.45	20.54	47.05	74.00	54.00	PASS
	H	2485.50	53.18	38.17	7.45	20.54	43.00	74.00	54.00	PASS
	V	2483.50	53.15	38.20	7.45	20.54	42.94	74.00	54.00	PASS
	V	2485.50	52.37	38.20	7.45	20.54	42.16	74.00	54.00	PASS
Remark:										
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit										
2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.										

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

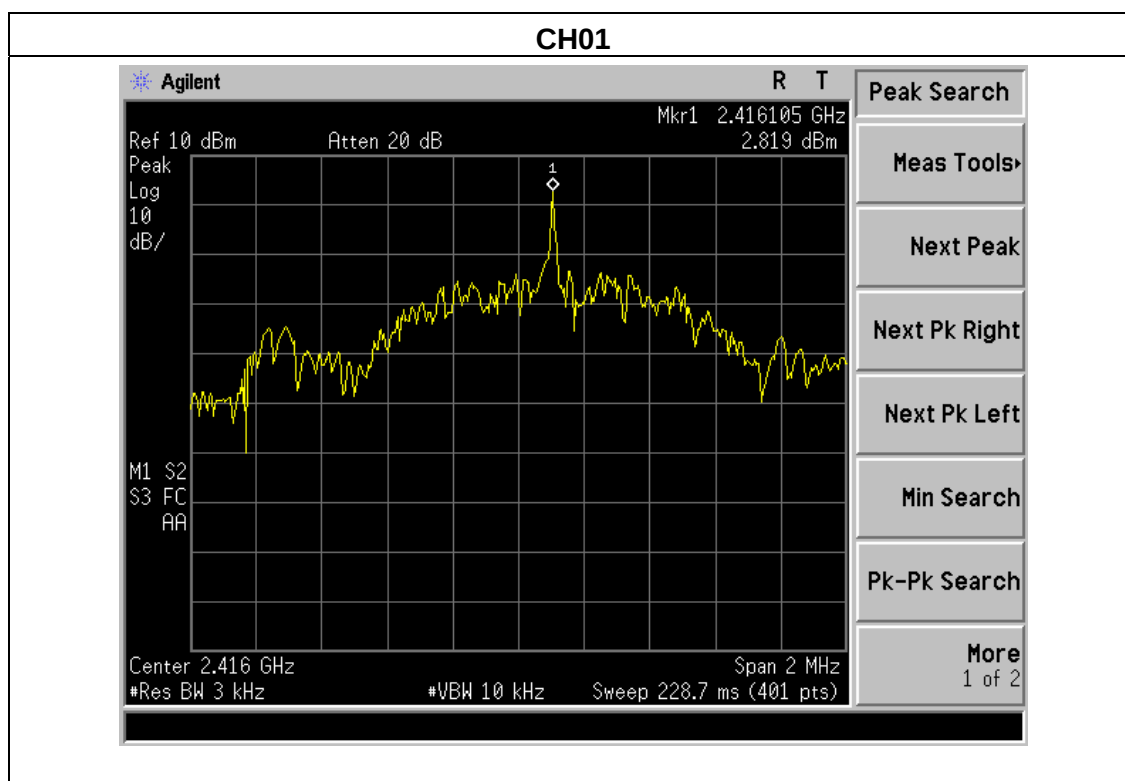
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

Note: Power Spectral Density(dBm)=Reading+Cable Loss

4.1.5 TEST RESULTS

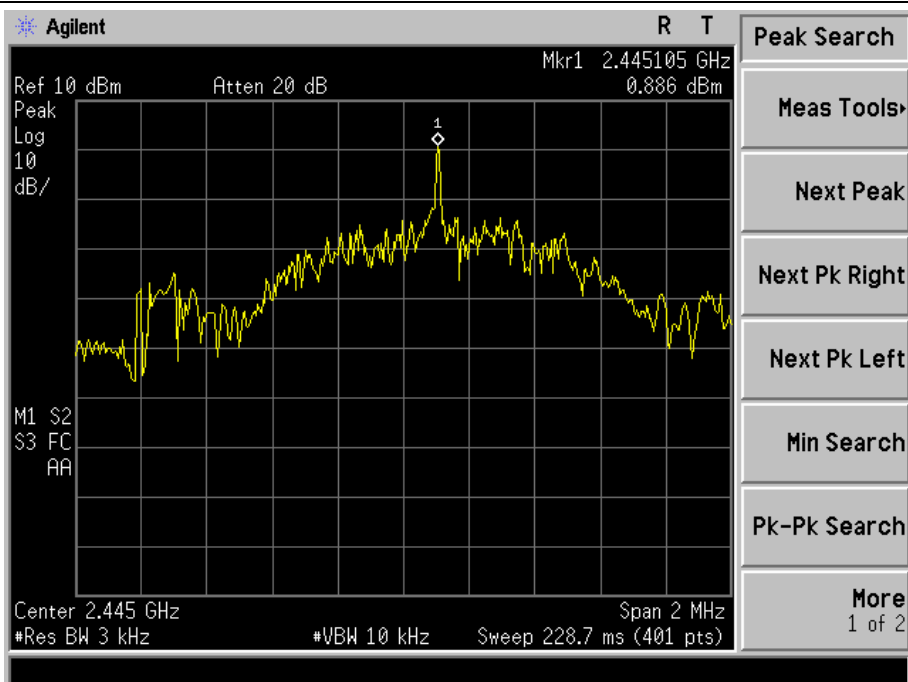
Temperature :	26℃	Relative Humidity:	54%
Pressure :	101kPa	Test Voltage :	DC 6V
Test Mode :	GFSK		

Frequency	Power Spectral Density(dBm)	Limit (dBm)	Result
2416 MHz	2.819	8	PASS
2445 MHz	0.886	8	PASS
2475 MHz	2.468	8	PASS

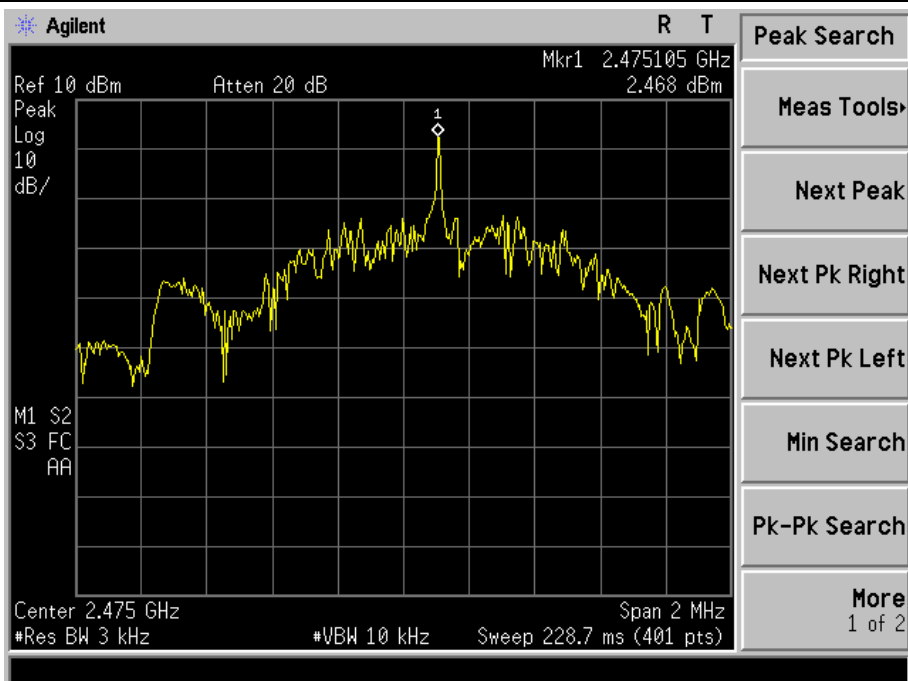




CH30



CH60



5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

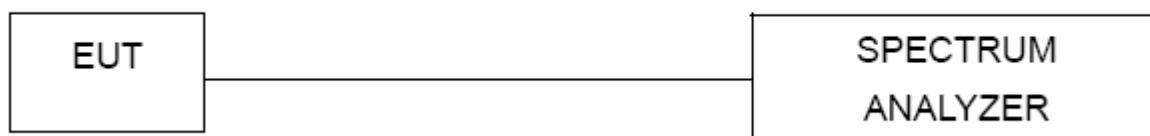
5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



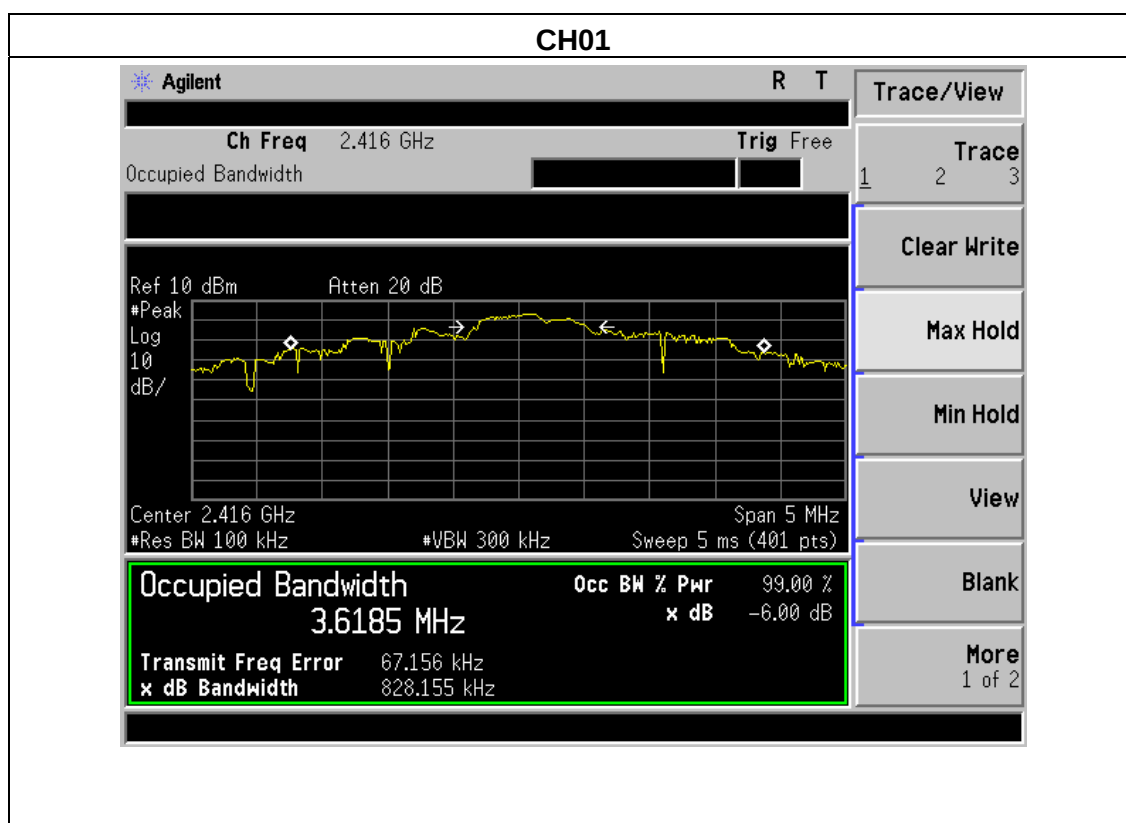
5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

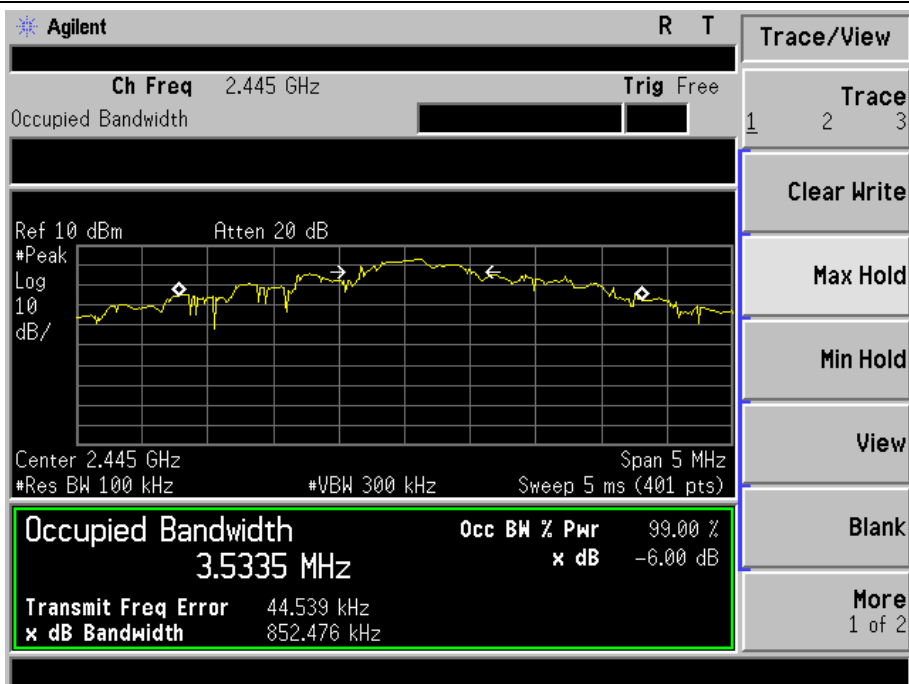
Temperature :	26°C	Relative Humidity:	54%
Pressure :	101kPa	Test Voltage :	DC 6V
Test Mode :	GFSK		

Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
2416	0.828	500	Pass
2445	0.852	500	Pass
2475	0.812	500	Pass

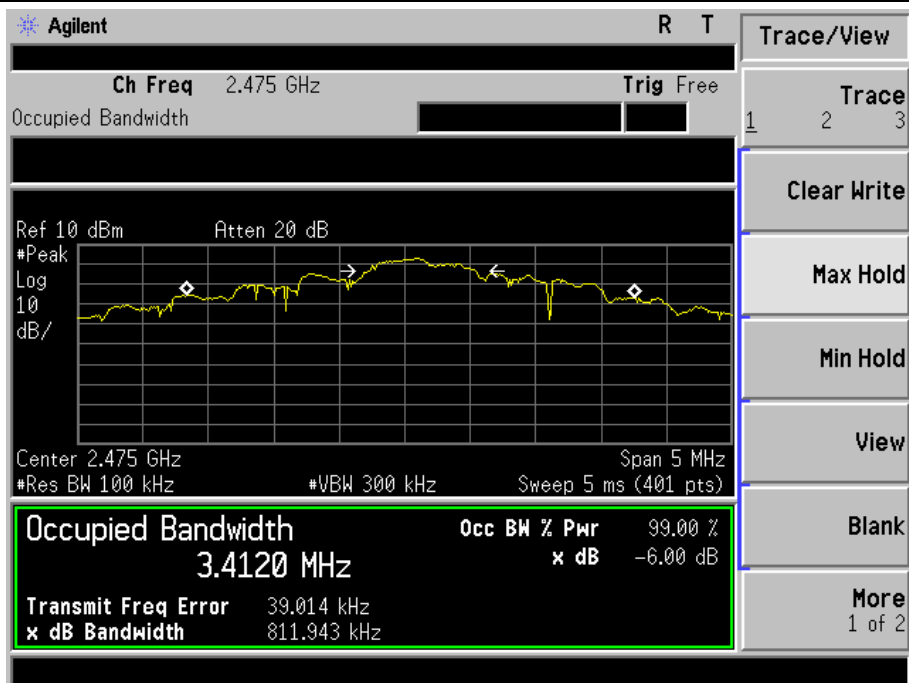




CH30



CH60



6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 6V

	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
GFSK	2416	2.786	30
	2445	2.614	30
	2475	2.619	30

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

7.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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).

7.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- a) Set the RBW = 100KHz.
- b) Set the VBW = 300KHz.
- c) Sweep time = auto couple.
- d) Detector function = peak.
- e) Trace mode = max hold.
- f) Allow trace to fully stabilize.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



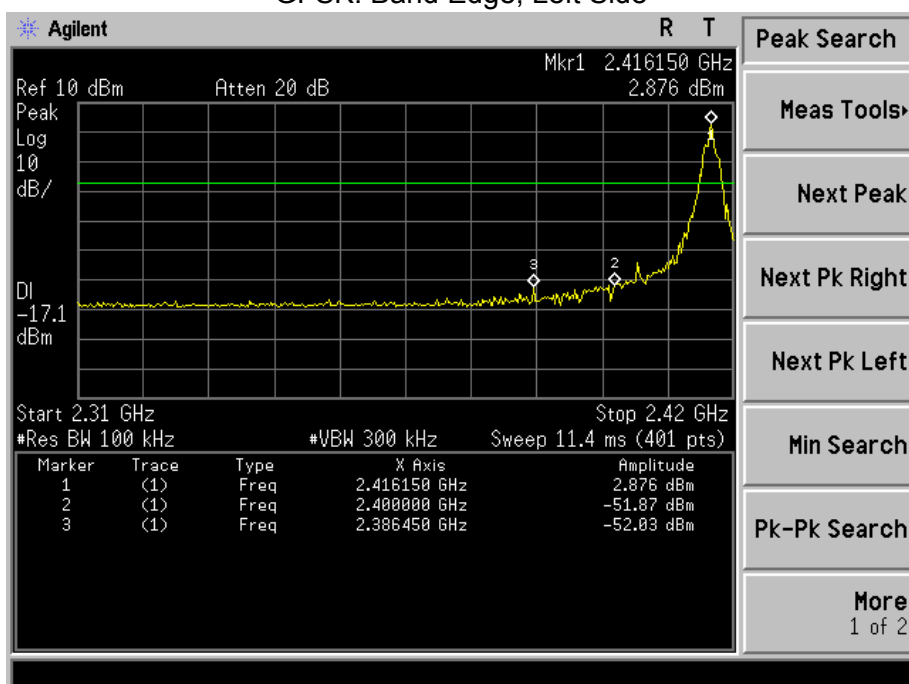
7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

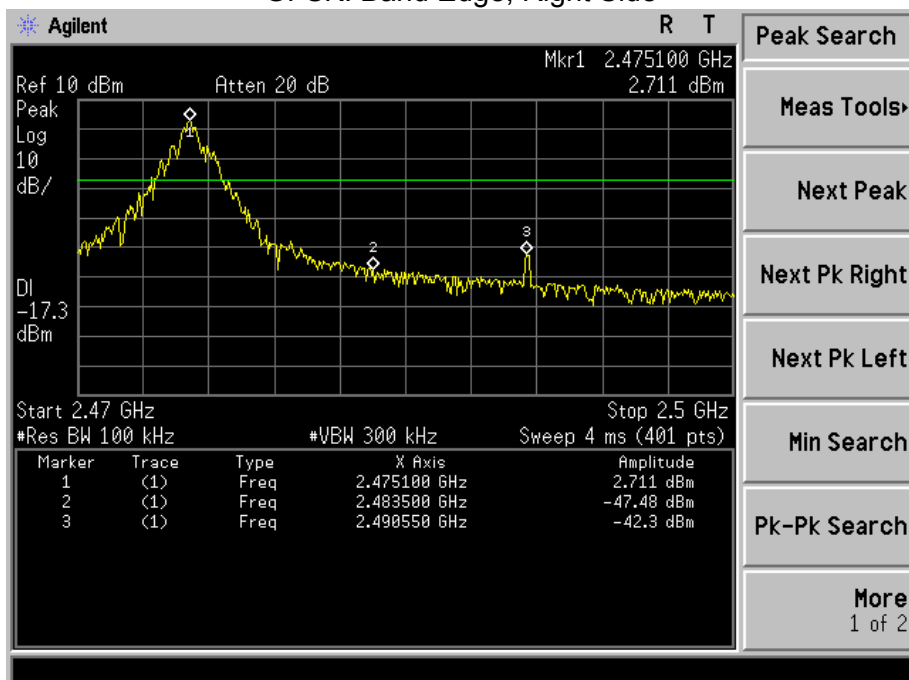
7.6 TEST RESULTS



GFSK: Band Edge, Left Side



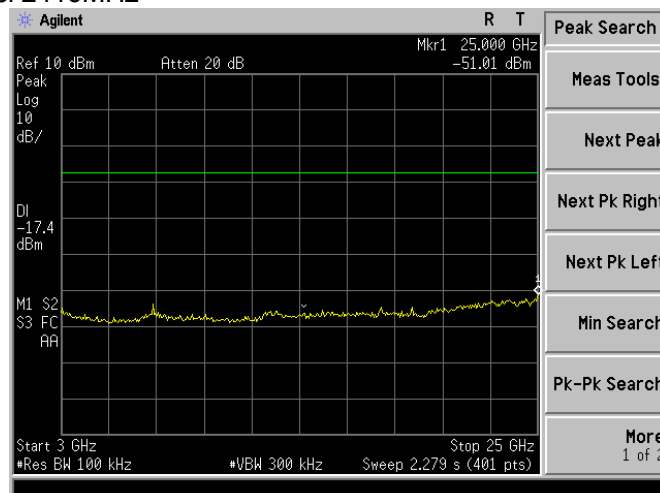
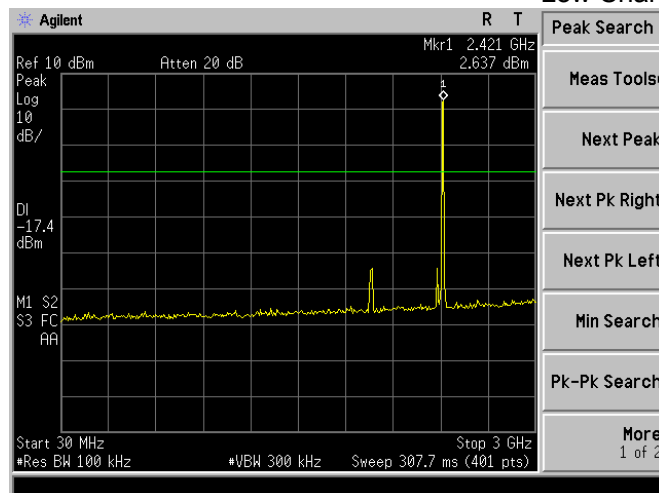
GFSK: Band Edge, Right Side



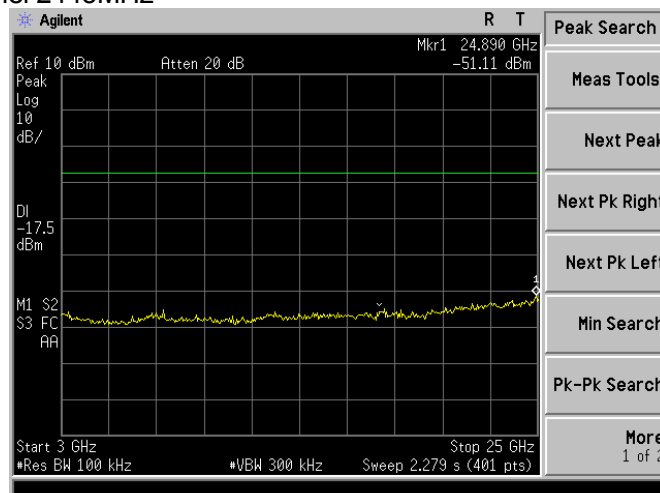
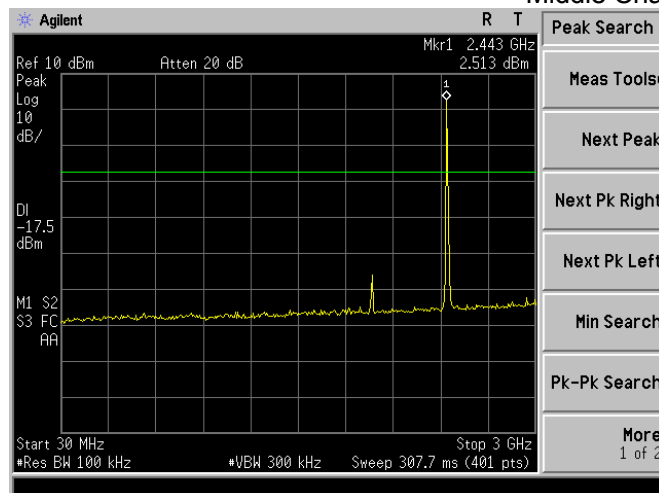
CONDUCTED EMISSION MEASUREMENT

GFSK

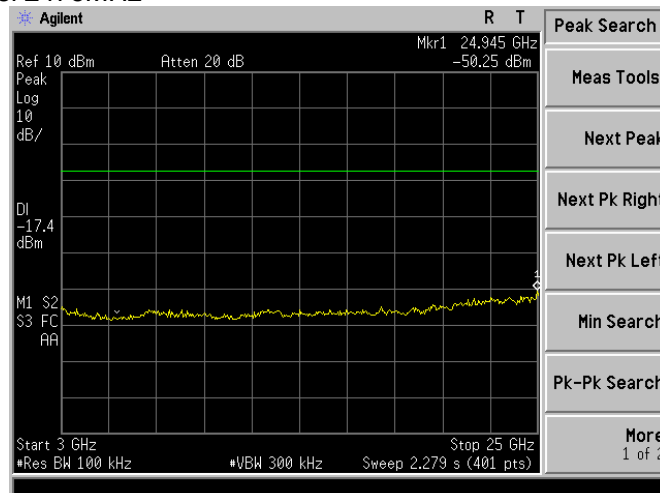
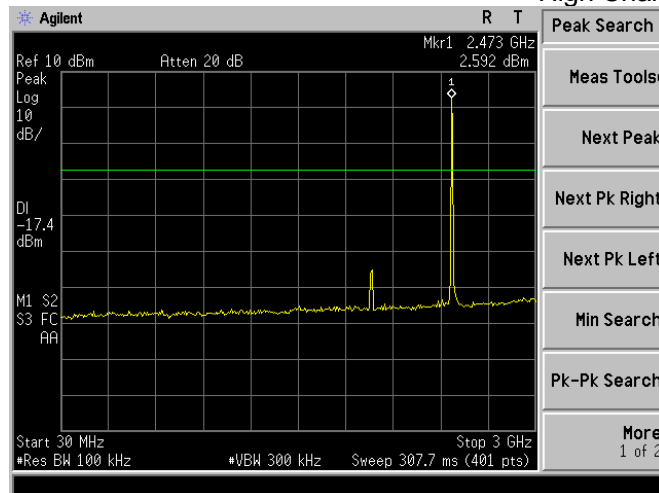
Low Channel 2416MHz



Middle Channel 2445MHz



High Channel 2475MHz



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

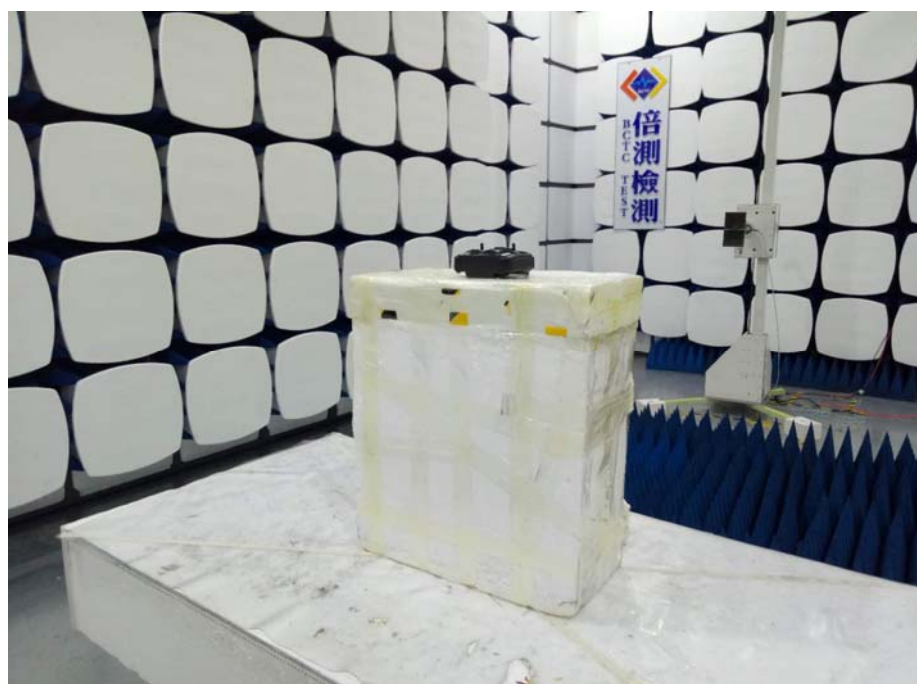
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is internal cable antenna, antenna Gain 1dBi, impedance 50Ω. It complies with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos





10. EUT PHOTO



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