



198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663

Telephone: +86 (0) 20 82155555

Fax: +86 (0) 20 82075059

Email: sgs_internet_operations@sgs.com

FEDERAL COMMUNICATIONS COMMISSION

Registration number: 282399

Report No.: GZEM101000254601

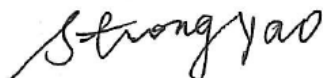
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FCC ID: ON5USBCU

TEST REPORT

Application No.:	GZEM1010002546RF
Applicant:	CATEYE Co., Ltd.
Product Name:	USB Dongle Transceiver
Product Description:	Wireless Transmission for Data
Model No.:	USBCU
FCC ID:	ON5USBCU
Trade Mark:	CATEYE
Standards:	FCC PART 15 Subpart C: 2009
Date of Receipt:	2010-12-27
Date of Test:	2011-01-27 to 2011-01-31
Date of Issue:	2011-04-08
Test Result :	Pass*

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


2011 Apr.

Strong Yao
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2011-04-08		Original

Authorized for issue by:			
Tested By	 _____ (Little Xiang) /Project Engineer	2011-01-27 to 2011-01-31 _____ Date	
Prepared By	 _____ ((Little Xiang) /Clerk	2011-02-25 _____ Date	
Checked By	 _____ (Strong Yao) /Reviewer	2011-04-08 _____ Date	



3 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Conducted Emission	FCC PART 15:2009	Section 15.207(a)	PASS
Field Strength of Fundamental	FCC PART 15:2009	Section 15.249 (a)	PASS
Field Strength of Unwanted Emissions	FCC PART 15:2009	Section 15.249 (a) Section 15.249 (d)	PASS
Occupied Bandwidth	FCC PART 15:2009	Section 15.215(c)	PASS
Band Edges	FCC PART 15:2009	Section 15.249 (d)	PASS
Tx: In this whole report Tx (or tx) means Transmitter. Rx: In this whole report Rx (or rx) means Receiver. RF: In this whole report RF means Radiated Frequency.			



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5 General Information

5.1 Client Information

Applicant: CATEYE Co., Ltd.
Address of Applicant: 2-8-25 Kuwazu, Higashi-Sumiyoshi-ku, Osaka Japan
Manufacturer: National Electronics & Watch Co., Ltd.
Address of Manufacturer: 15/F., SHING DAO IND. BLDG., 232 ABERDEEN MAIN ROAD, ABERDEEN, HONG KONG

5.2 General Description of E.U.T

Product Name: USB Dongle Transceiver
Model No.: USBCU
Trade Mark: CATEYE
Operating Frequency: 2.41GHz to 2.47GHz
Modulation Type: GFSK
Channel Number: 61
Channel Separation: 1MHz
Antenna Gain: 2dBi
Antenna Type: ISM Band Planar Chip Antenna
Function: 2.41GHz is used for common channel for data transfer. Transmitter will be hopped between 2.41GHz and 2.47GHz for searching the Receiver. When the receiver is found, this frequency will be fixed and not be changed any more.

5.3 Details of E.U.T

Power Supply: DC 5.0V by USB Port of PC
Power Cord: N/A

5.4 Description of Support Units

The EUT has been test supported by Personal Computer's USB Port and software named "Cateye FCC Test" which is supplied by the applicant.

5.5 Standards Applicable for Testing

The customer requested FCC tests for the EUT.

The standard used was FCC PART 15, SUBPART C (2009) section 15.249.

5.6 Other Information Requested by the Customer

None.



5.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **FCC – Registration No.: 282399**

SGS-CSTC Standards Technical Services 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 282399, May 31, 2002.

5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



6 Equipment Used during Test

RE in Chamber					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2011-09-06
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2012-01-17
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	10036	2011-06-02
N/A	EMI Test Software	Audix	E3	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	2011-12-08
EMC2025	Trilog Broadband Antenna 30-3000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9163	9163-450	2011-10-28
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2011-12-20
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2011-12-20
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2011-09-11
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2012-01-17
EMC0049	Amplifier	Agilent	8447D	2944A10862	2012-04-21
EMC0075	310N Amplifier	Sonama	310N	272683	2011-10-25
EMC0523	Active Loop Antenna	EMCO	6502	42963	2011-11-17
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	2012-05-10

Conducted Emission					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m ³	N/A	N/A
EMC0118	Two-line v-netwok	R&S	ENV216	100359	2011-09-25
EMC0102	LISN	SCHAFFNER CHASE	MN2050D/1	1421	2011-11-23
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	2011-11-24
EMC0107	Coaxial Cable	SGS	2m	N/A	2011-07-18
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A
EMC0120	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	2012-01-17
EMC0121	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	2012-01-17
EMC0122	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	2012-01-17

General used equipment					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0006	DMM	Fluke	73	70681569	2011-12-16
EMC0007	DMM	Fluke	73	70671122	2011-12-16



7 Test Results

7.1 E.U.T. Operation

Input voltage: DC 5.0V by USB Port of PC

Operating Environment: Normal

Temperature: 25°C

Humidity: 50% RH

Atmospheric Pressure: 1006mbar

Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

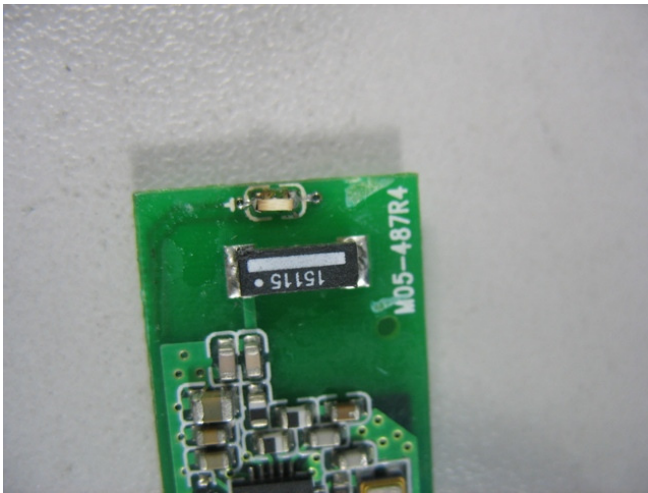
Since the carriers of the EUT are 2410~2470MHz and the alignment range of the transmitter is More than 10 MHz. So full test is carried out on the lowest frequency: (2410 MHz), and middle frequency: (2445MHz), the highest frequency: (2470MHz)

7.2 Antenna Requirement

7.2.1 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.



Note: No antenna other than the product has by the manufacturer can be used with the device, so the product meets the Antenna Requirement.



7.3 Conducted Emissions Mains Terminals, 150 KHz to 30MHz

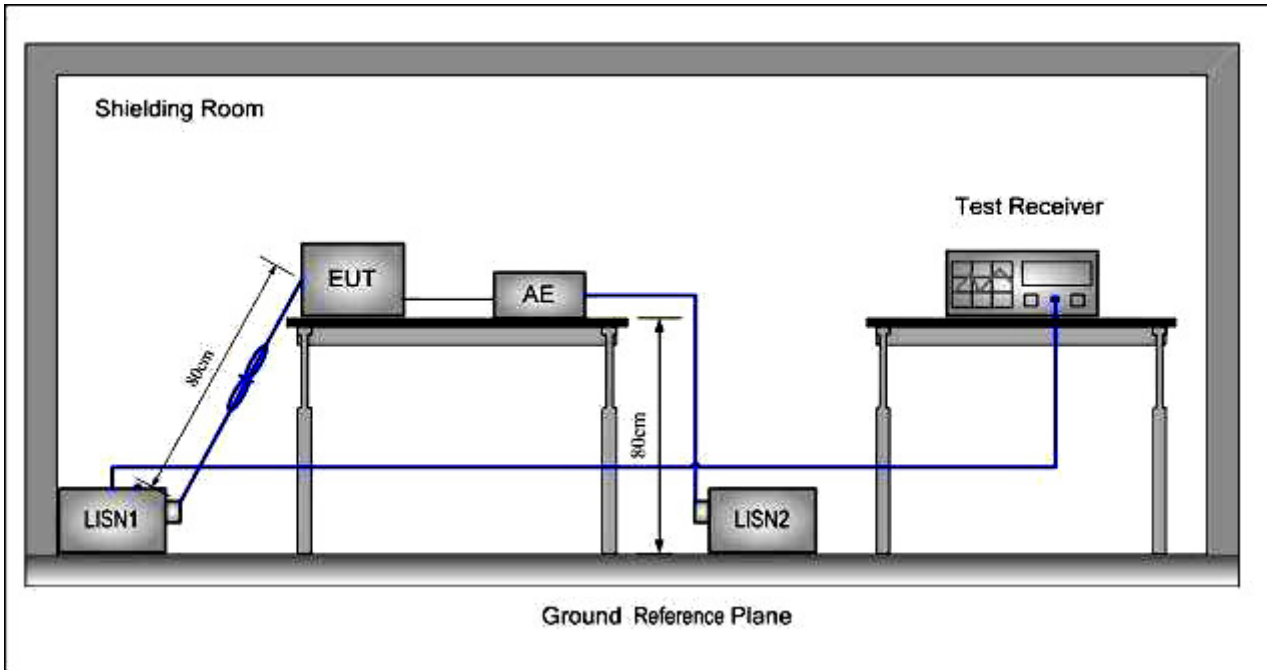
Test Requirement: FCC Part15 B
 Test Method: ANSI C63.4
 Test Voltage: 120V AC, 60Hz
 Test Date: 2011-01-27
 Frequency Range: 150KHz to 30MHz
 Detector: Peak for pre-scan
 Quasi-Peak and Average at frequency with maximum peak
 (9 kHz resolution bandwidth)
 Class / Limit: Class B

Frequency range MHz	Class B Limits dB (µV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		
NOTE 2: The lower limit is applicable at the transition frequency.		

7.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 25.0 °C Humidity: 52 %RH Atmospheric Pressure: 1003 mbar
 EUT Operation: Test the EUT in PC connectioning mode.

7.3.2 Test Setup and Procedure



1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment were at least 0.8 m from the LISN 2.



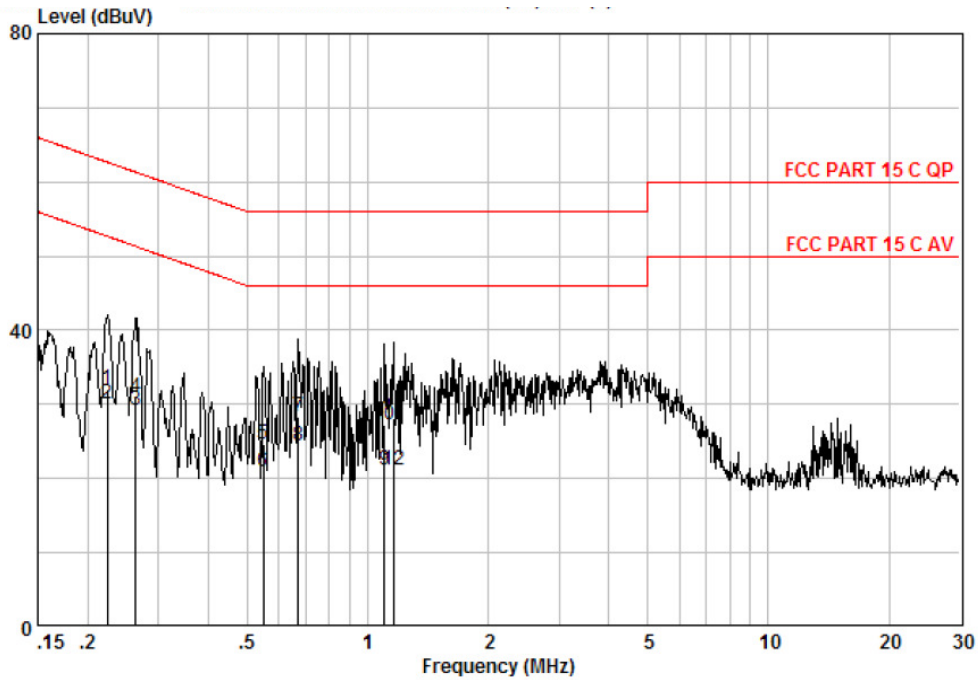
7.3.3 Measurement Data

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.

Live Line:

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement

Freq MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.223	31.96	0.12	9.62	41.70	62.70	-21.00	QP
0.223	29.92	0.12	9.62	39.66	52.70	-13.04	AVERAGE
0.263	29.17	0.10	9.62	38.88	51.34	-12.45	AVERAGE
0.263	30.78	0.10	9.62	40.49	61.34	-20.84	QP
0.549	24.54	0.05	9.61	34.20	56.00	-21.80	QP
0.549	20.98	0.05	9.61	30.64	46.00	-15.36	AVERAGE
0.672	28.40	0.04	9.62	38.06	56.00	-17.94	QP
0.672	24.38	0.04	9.62	34.04	46.00	-11.96	AVERAGE
1.100	21.03	0.02	9.62	30.67	46.00	-15.33	AVERAGE
1.100	27.18	0.02	9.62	36.82	56.00	-19.18	QP
1.160	28.16	0.02	9.62	37.80	56.00	-18.20	QP
1.160	21.18	0.02	9.62	30.82	46.00	-15.18	AVERAGE

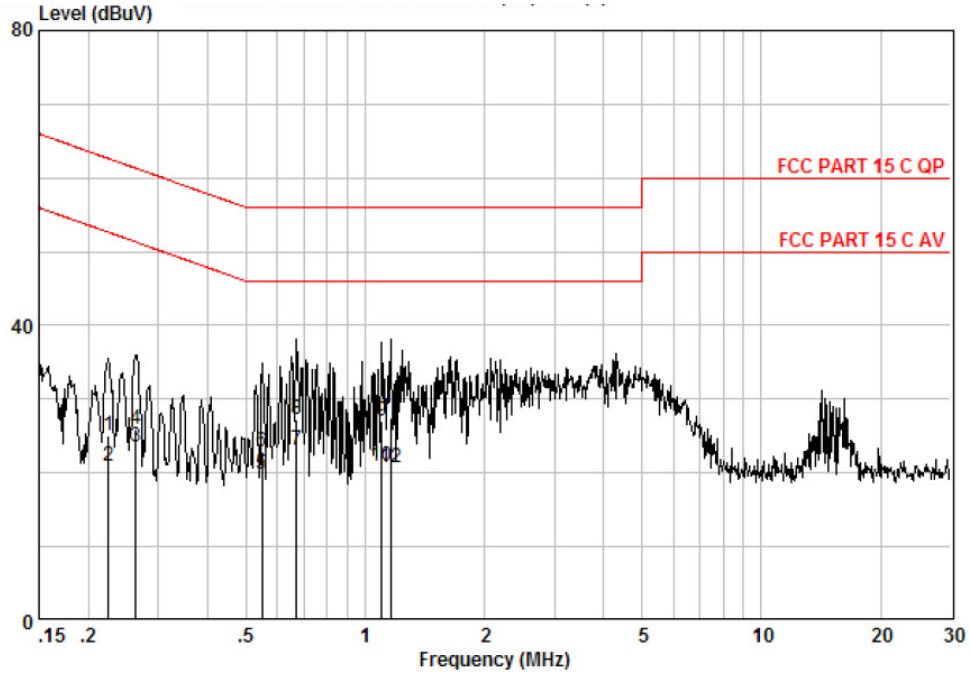
Level = Read Level + LISN Factor + Cable Loss.



Neutral Line:

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement:

Freq MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.224	24.88	0.12	9.62	34.62	62.66	-28.04	QP
0.224	20.78	0.12	9.62	30.52	52.66	-22.14	AVERAGE
0.263	23.38	0.10	9.62	33.10	51.34	-18.24	AVERAGE
0.263	25.82	0.10	9.62	35.54	61.34	-25.80	QP
0.549	19.68	0.05	9.62	29.35	46.00	-16.65	AVERAGE
0.549	22.90	0.05	9.62	32.57	56.00	-23.43	QP
0.672	23.15	0.04	9.61	32.81	46.00	-13.19	AVERAGE
0.672	27.24	0.04	9.61	36.90	56.00	-19.10	QP
1.100	26.92	0.02	9.64	36.58	56.00	-19.42	QP
1.100	20.83	0.02	9.64	30.49	46.00	-15.51	AVERAGE
1.160	27.52	0.02	9.64	37.18	56.00	-18.82	QP
1.160	20.78	0.02	9.64	30.44	46.00	-15.56	AVERAGE

Level = Read Level + LISN Factor + Cable Loss.

Test results: The unit does meet the FCC requirements.



7.4 Test Procedure & Measurement Data

7.4.1 Field Strength of Fundamental & Field Strength of Unwanted Emissions

Test Requirement: FCC Part15 C Section 15.249(a) & (d)

Test Method: Based on FCC Part15 C Section 15.249 & ANSI C63.4:2003

Test Date: 2011-01-27

Status: Pre-test the EUT in continuous transmitting mode with setup as stand-alone in X, Y, Z threes axes, found the worst case is X axes and report the data.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range: 30 MHz – 26 GHz for transmitting mode.
Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 MHz – 26 GHz)

Operation: Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal, a turntable rotate through 360° in the horizontal plane and it is used to support the test sample at 0.8m above the ground plane.

Requirements:

FCC Part 15.249(a)

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics (dBuV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

FCC Part 15.249(d)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Remark:

The fundamental frequency rang is in the frequency band of the EUT is 2410MHz ~ 2470MHz.

The limit for Average field strength dBuv/m for the fundamental frequency = 94.0 dBμV/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dBμV/m for the harmonics = 54.0 dBμV/m.

The limit for peak field strength dBμV/m for the harmonics = 74.0 dBμV/m.

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or 54.0 dBμV/m in 15.209. Here the limit for the other emission is 54.0 dBμV/m.

Test Procedure:

1)9K to 30MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.4:2003 section 8.2.1. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2)30MHz to 1GHz emissions:

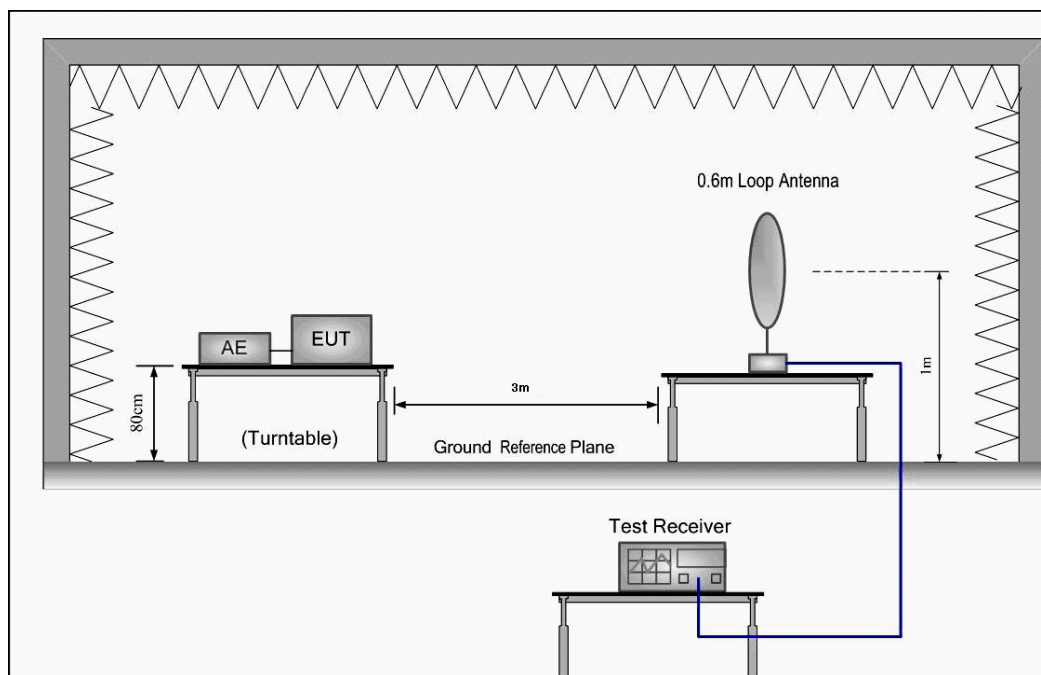
For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.4:2003. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3)1GHz to 40GHz emissions:

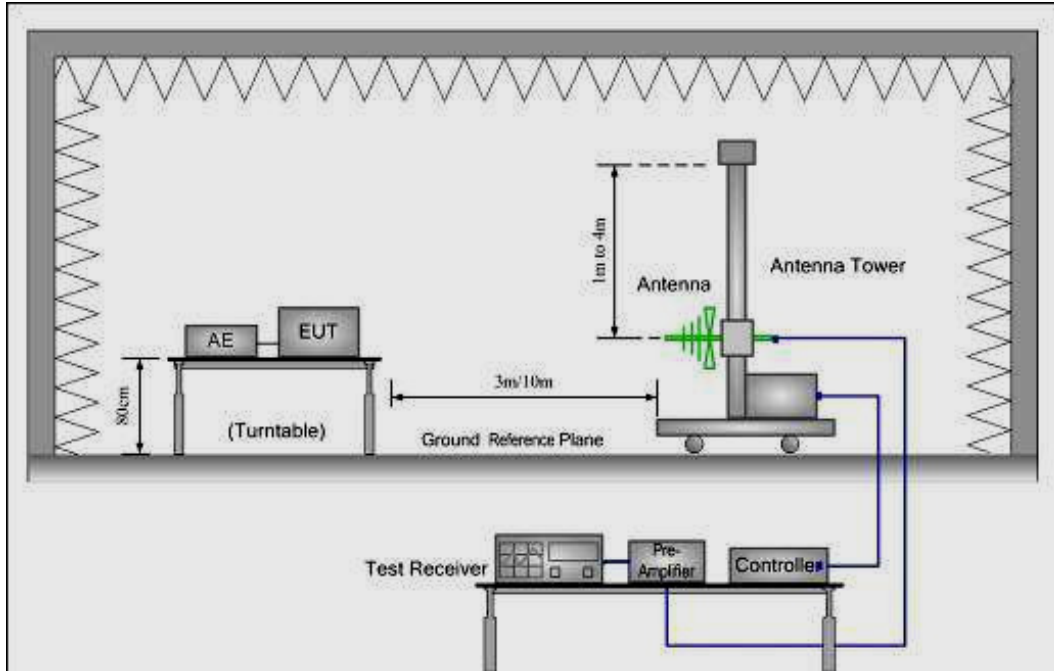
For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.4:2003. The measurement is performed with the EUT rotated 360°, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

Test Configuration:

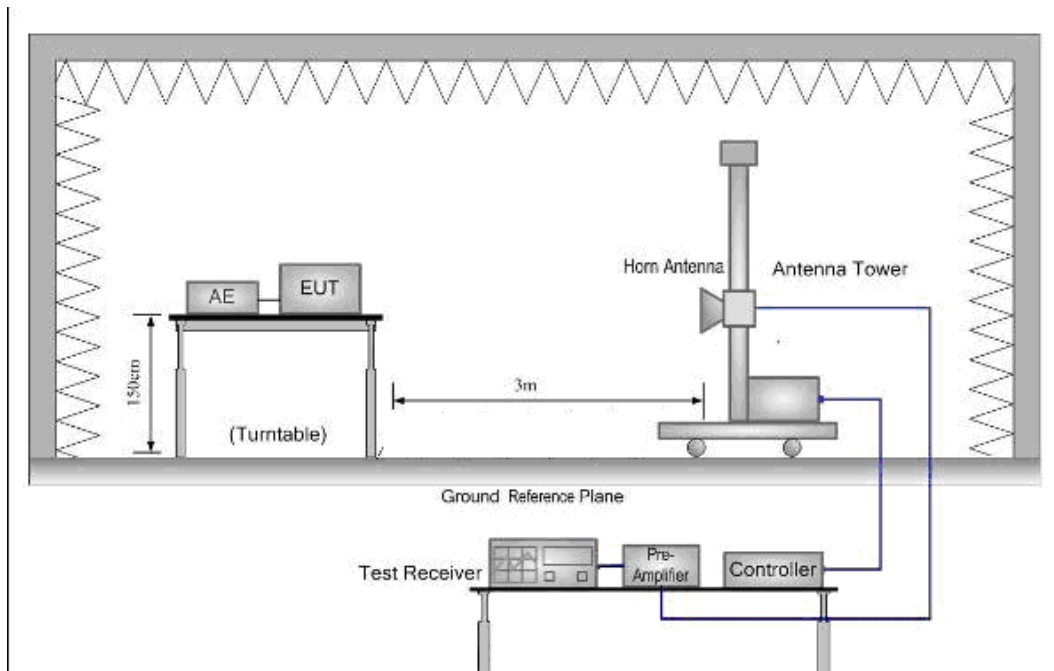
1) 9K to 30MHz emissions:



2) 30MHz to 1GHz emissions:



3) 1GHz to 40GHz emissions:



The field strength is calculated by adding the Antenna Factor, Cable Factor & Per-amplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Pre-amplifier Factor}$$



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1. Test in Channel (2410MHz), keep in continuously transmitting status.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
122.67	27.89	11.80	0.90	27.60	12.96	43.50	-30.54	QP
532.46	28.96	17.96	2.00	28.16	20.76	46.0	-25.24	QP
582.90	29.33	18.54	2.10	28.33	21.64	46.0	-24.36	QP
1374.0	38.87	25.43	3.30	36.03	31.58	54.0	-22.42	Average
1374.0	58.74	25.43	3.30	36.03	51.45	74.0	-21.55	PK
2751.0	32.10	28.30	4.70	35.71	29.39	54.0	-24.61	Average
2751.0	52.28	28.30	4.70	35.71	49.57	74.0	-24.43	PK
7307.0	27.94	36.50	7.70	32.64	40.50	54.0	-13.50	Average
7307.0	50.20	36.50	7.70	32.64	61.76	74.0	-11.24	PK
2410.0	63.57	29.38	4.30	35.60	59.85	94.0	-34.15	Average
2410.0	66.34	27.58	4.30	35.60	62.62	114.0	-51.38	PK

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
113.42	27.86	11.80	0.90	27.60	12.96	43.5	-30.54	QP
229.82	30.46	9.67	1.30	27.18	14.25	46.0	-31.75	QP
1374.0	37.65	25.43	3.30	36.03	30.36	54.0	-23.64	Average
1374.0	58.74	25.43	3.30	36.03	51.45	74.0	-22.55	PK
2751.0	30.42	28.30	4.70	35.71	27.71	54.0	-26.29	Average
2751.0	52.28	28.30	4.70	35.71	49.57	74.0	-24.43	PK
3516.0	31.08	28.99	5.27	34.99	30.36	54.0	-23.64	Average
3516.0	51.80	28.99	5.27	34.99	51.08	74.0	-22.92	PK
6678.0	31.53	34.45	5.82	32.75	39.05	54.0	-14.95	Average
6678.0	51.15	34.45	5.82	32.75	58.67	74.0	-15.33	PK
2410.0	69.15	27.58	4.30	35.60	65.43	94.0	-28.57	Average
2410.0	73.35	27.58	4.30	35.60	69.63	114.0	-44.37	PK



SGS-CSTC Standards Technical Services Co., Ltd.

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2. Test in Channel (2445 MHz), keep in continuously transmitting status.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
121.98	28.17	11.80	0.90	27.60	13.27	43.50	-30.23	QP
202.66	33.22	8.97	1.30	27.34	16.35	43.5	-27.25	QP
1544.0	37.12	25.10	3.47	35.88	29.80	54.0	-25.20	Average
1544.0	58.12	25.10	3.47	35.88	50.80	74.0	-13.20	PK
2445.0	63.70	27.57	4.37	35.60	60.04	94.0	-33.56	Average
2445.0	67.46	27.57	4.37	35.60	63.80	114.0	-50.20	PK
2717.0	29.55	28.22	4.70	35.68	26.78	54.00	-27.22	Average
2717.0	51.77	28.22	4.70	35.68	49.00	74.00	-25.00	PK
3499.0	31.97	28.95	5.20	35.00	31.12	54.0	-22.88	Average
3499.0	52.19	28.95	5.20	35.00	51.34	74.0	-22.66	PK
7358.0	31.24	36.52	7.64	32.58	42.82	54.0	-11.18	Average
7358.0	49.20	36.52	7.64	32.58	60.78	74.0	-13.22	PK

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
144.46	26.79	10.20	1.00	27.45	10.54	43.5	-32.96	QP
174.59	32.29	8.37	1.20	27.33	14.52	43.50	-28.98	QP
967.99	28.98	21.38	2.70	26.88	26.18	54.0	-27.82	QP
2853.0	31.85	28.43	4.70	35.75	29.23	54.0	-24.77	Average
2853.0	51.96	28.43	4.70	35.75	49.34	74.0	-24.66	PK
3499.0	29.54	28.95	5.20	35.00	29.69	54.0	-24.31	Average
3499.0	50.95	28.95	5.20	35.00	50.10	74.0	-23.90	PK
7307.0	32.79	36.50	7.70	32.64	44.35	54.0	-9.65	Average
7307.0	49.37	36.50	7.70	32.64	60.93	74.0	-13.07	PK
2445.0	69.40	27.57	4.37	35.60	65.73	94.0	-28.27	Average
2445.0	72.13	27.57	4.37	35.60	68.46	114.0	-45.54	PK



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3. Test in Channel (2470MHz), keep in continuously transmitting status.

(a) Antenna polarization: Horizontal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
319.16	28.13	13.50	1.60	27.22	16.01	46.0	-29.99	QP
350.10	28.28	14.40	1.70	27.45	16.93	46.0	-29.99	QP
7902.0	29.52	37.00	7.70	33.52	40.97	54.0	-13.03	Average
7902.0	49.63	37.00	7.70	33.52	60.81	74.0	-13.19	PK
1697.0	32.76	24.98	3.70	35.79	25.65	74.0	-28.35	Average
1697.0	52.88	24.98	3.70	35.79	45.77	74.0	-28.23	PK
2802.0	29.64	28.42	4.70	35.73	27.04	54.0	-26.96	Average
2802.0	50.87	28.42	4.70	35.73	48.27	74.0	-25.73	PK
2470.0	63.42	27.56	4.40	35.60	59.78	94.0	-34.22	Average
2470.0	66.00	27.56	4.40	35.60	62.36	114.0	-51.64	PK
3584.0	50.86	29.12	5.40	34.96	50.43	74.0	-23.57	Average
3584.0	50.86	29.12	5.40	34.96	50.43	74.0	-23.57	PK

(b) Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
303.54	27.17	12.84	1.60	27.10	14.51	46.0	-31.49	QP
413.15	26.94	16.36	1.80	27.81	17.30	46.0	-28.70	QP
608.12	28.20	18.56	2.20	28.33	20.63	46.0	-25.37	QP
2785.0	30.32	28.38	4.70	35.72	27.68	54.0	-26.32	Average
2785.0	51.95	28.38	4.70	35.72	49.31	74.0	-24.69	PK
4468.0	29.21	30.37	5.90	34.79	30.98	54.0	-23.02	Average
4468.0	50.58	30.37	5.90	34.79	52.35	74.0	-21.65	PK
7307.0	29.92	36.50	7.70	32.64	41.48	54.0	-12.52	Average
7307.0	49.65	36.50	7.70	33.26	61.21	74.0	-12.79	PK
2470.0	72.29	29.56	4.40	35.60	68.64	94.0	-25.36	Average
2470.0	74.45	27.56	4.40	35.60	70.80	114.0	-43.20	PK

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Remark:

- 1). According to 15.249 (e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
- 2) Sweep from 30MHz to 26GHz, find the max radiated emissions and record it, when the emissions are too weak to be detected, it will not be reported.

Test results: The unit does meet the FCC requirements.



7.4.2 Occupied Bandwidth & Band Edge

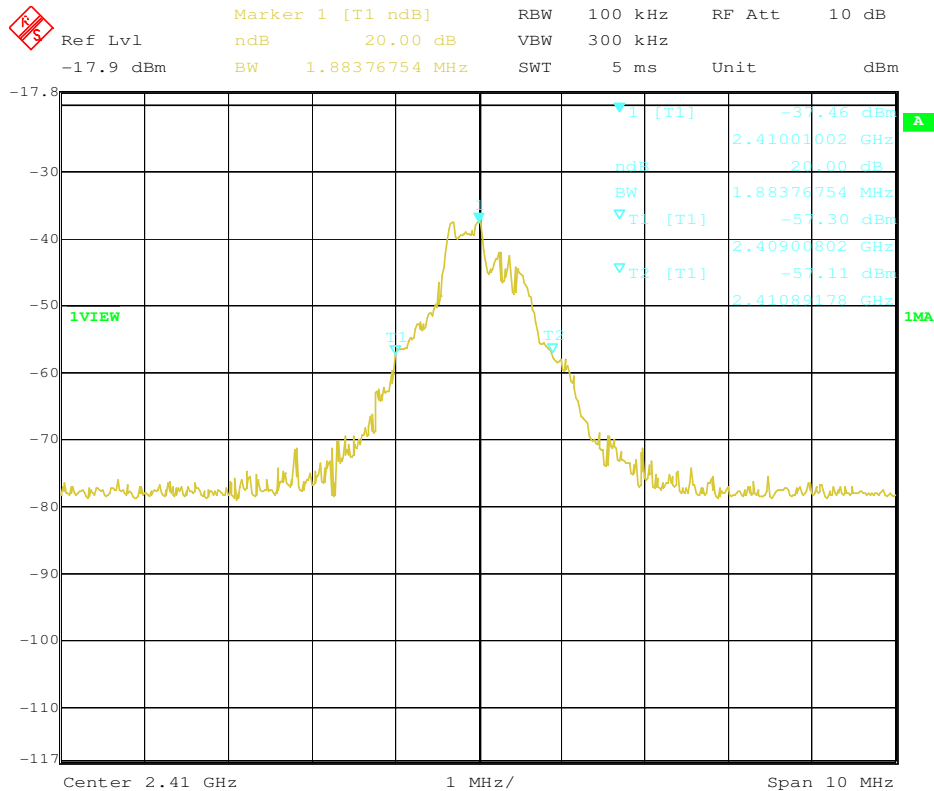
Test Requirement: FCC Part 15 C Section 15.249
Test Method: ANSI C63.4:2003 and FCC Part 2.1049
Test Date: 2011-01-31

Operation within the band 2.410 to 2.470GHz

Requirements: 15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

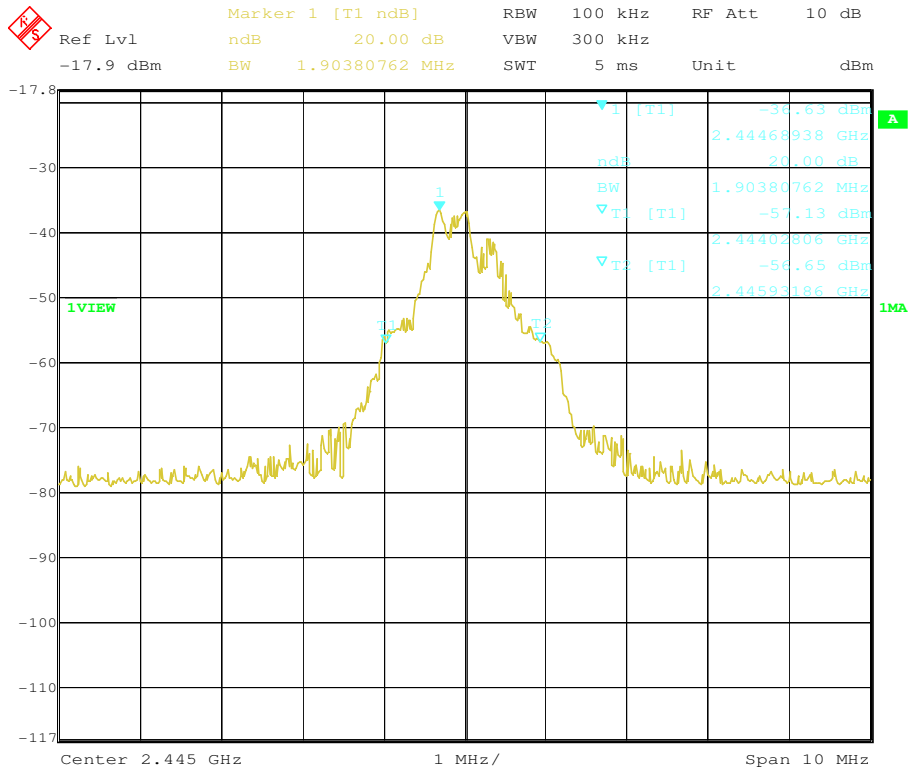
Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken.

1. Test in the lowest frequency 2.410GHz

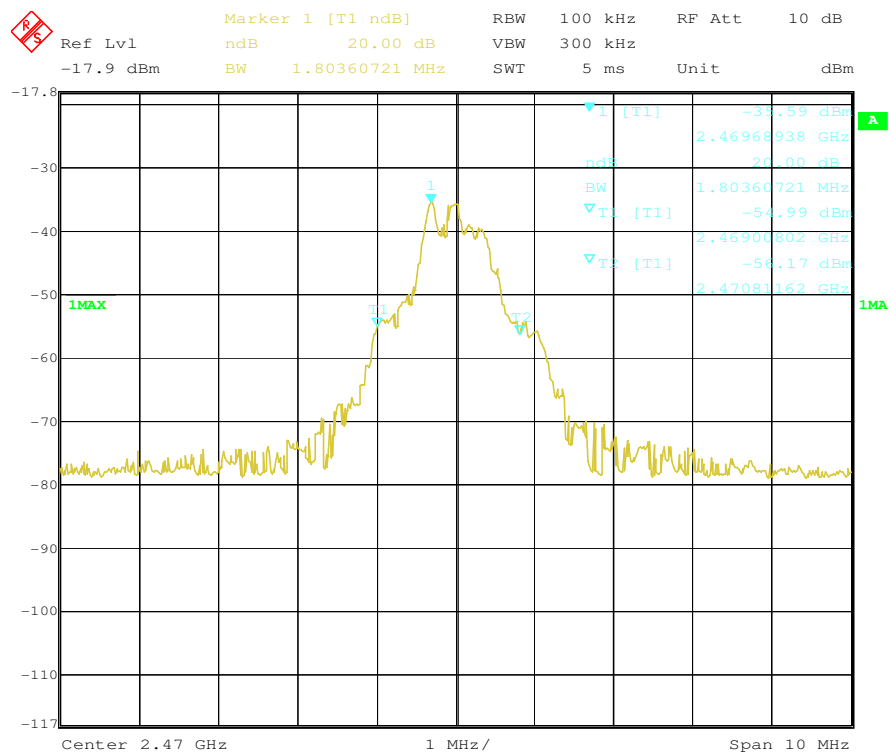




2. Test in the middle frequency 2.445GHz



3. Test in the highest frequency 2.470GHz

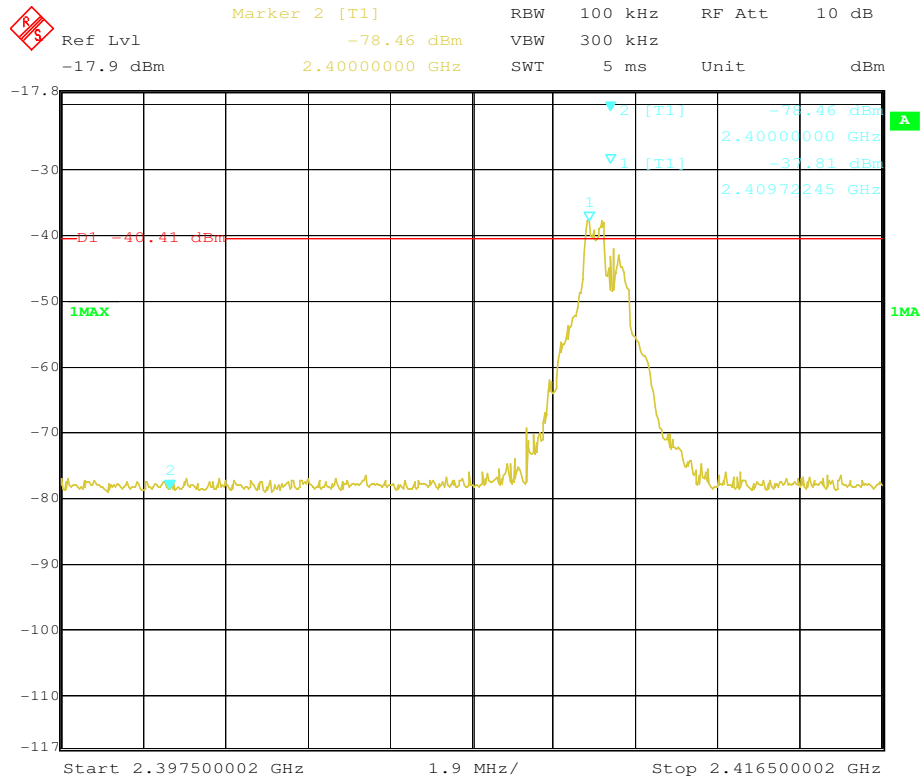




The Band Edge Emission as below:

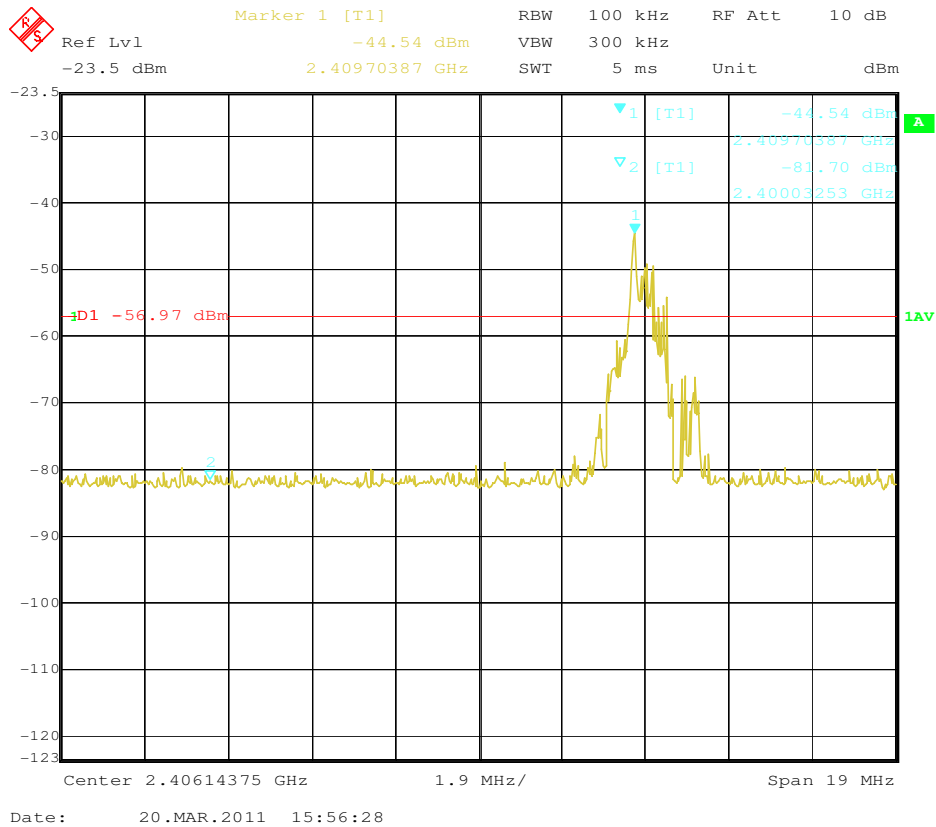
Band Edge 2.4GHz

Detector mode: Peak





Detector mode: Average



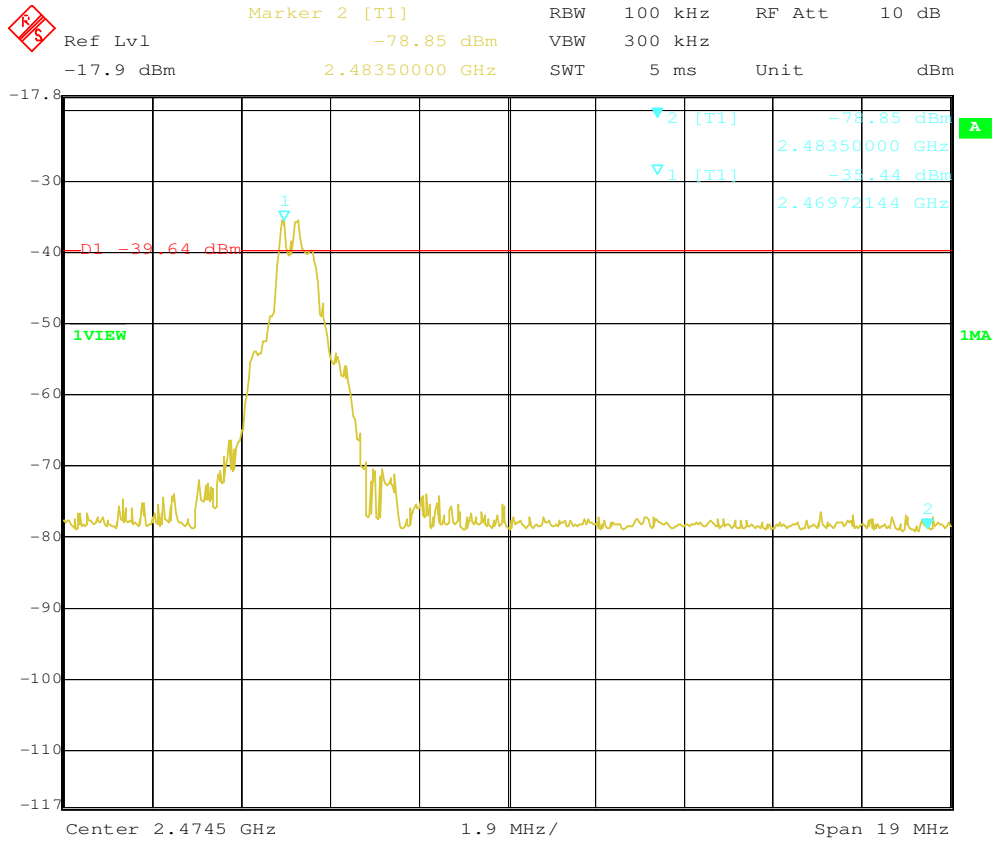
For 2.40GHz band edge checked with 2.41GHz frequency operated, the delta shown at the plots are -40.65dB for peak detector mode and -37.16dB for Average detector mode.

With the peak value 69.63dBuV/m and average value at 65.43dBuV/m for the fundamental, the spurious emission level at 2.400GHz were 28.98dBuV/m for peak and 28.37dBuV/m for average which is below the limit 74.0dBuV/m for peak and 54.0dBuV/m for average.



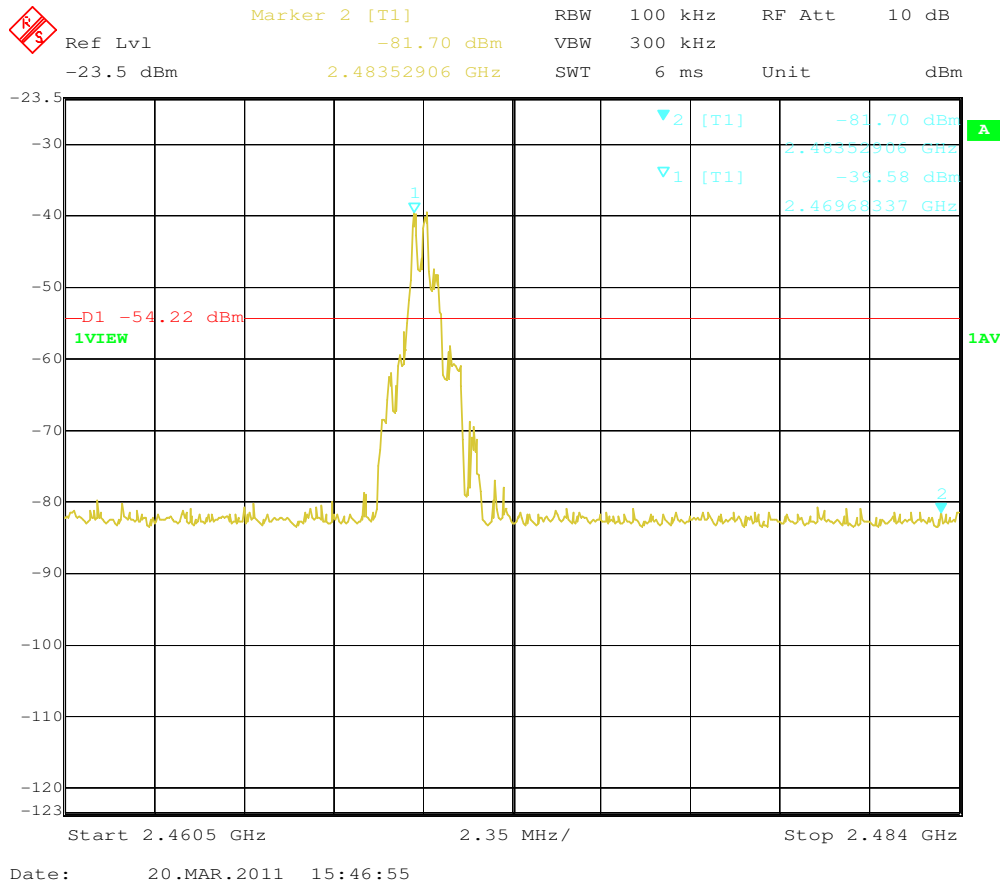
Highest Band Edge 2.4835GHz

Detector mode: Peak





Detector mode: Average



For 2.4835GHz bandage checked with 2.470GHz frequency operated, the delta shown at the plots are -43.41dB for peak detector mode and -42.12dB for Average detector mode.

With the peak value 70.80dBuV/m and average value at 68.64dBuV/m for the fundamental, the spurious emission level at 2.4835GHz were 27.39dBuV/m for peak and 26.52dBuV/m for average which is below the limit 74.0dBuV/m for peak and 54.0dBuV/m for average.

The test result for the Emissions radiated outside of the specified frequency bands; please refer to the section 7.2.1 of this report.

The results: The unit does meet the FCC requirements.

End of the report