



FCC ID:009GR380

AUDIX Technology (Shenzhen) Co., Ltd.

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

G. tech Technology Ltd.

2.4GHz Wireless Receiver

Model Number: GR380

FCC ID: 009GR380

Prepared for : G. tech Technology Ltd.

**No.21, Jinding Industrial Park, West Jinfeng Road,
Tangjiawan Town, Xiangzhou District Zhuhai Guangdong
China**

Prepared By : Audix Technology (Shenzhen) Co., Ltd.

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Report Number : ACS-F10287

Date of Test : Jan.06~19, 2011

Date of Report : Jan.25, 2011

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TEST REPORT CERTIFICATION

Applicant : G. tech Technology Ltd.
Manufacturer : G. tech Technology Ltd.
EUT Description : 2.4GHz Wireless Receiver
FCC ID : OO9GR380
(A) MODEL NO. : GR380
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 5V
(D) TEST VOLTAGE : DC 5V From PC Input
AC 120V/60Hz

Tested for comply with:
FCC Rules and Regulations Part 15 Subpart C:2008

Test procedure used:
ANSI C63.10:2009

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : Jan.06~19, 2011 Report of date: Jan.25, 2011

Prepared by : Annie Wu Reviewer by : Jamy Yu
Annie Wu / Supervisor Jamy Yu / Supervisor



Approved & Authorized Signer : Ken Lu
Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 15C: 15.207 ANSI C63.10-2009	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10-2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10-2009	PASS

2. GENERAL INFORMATION

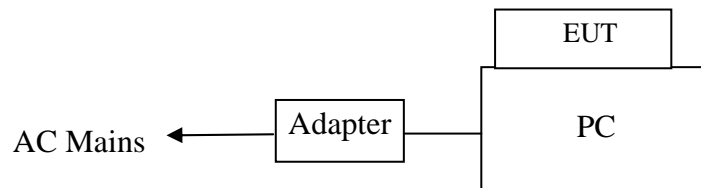
2.1. Description of Device (EUT)

Product Name	: 2.4GHz Wireless Receiver
Model Number	: GR380
FCC ID	: OO9GR380
Operation frequency	: 2405MHz~2475MHz
Antenna	: Integrated PCB antenna, 0dBi gain
Modulation	: O-QPSK
Power Supply	: DC 5V
Applicant	: G. tech Technology Ltd. No.21, Jinding Industrial Park, West Jinfeng Road, Tangjiawan Town, Xiangzhou District Zhuhai Guangdong China
Manufacturer	: G. tech Technology Ltd. No.21, Jinding Industrial Park, West Jinfeng Road, Tangjiawan Town, Xiangzhou District Zhuhai Guangdong China
Date of Test	: Jan.06~09, 2011
Date of Receipt	: Jan.06, 2010
Sample Type	: Prototype production

2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Notebook	N/A	DELL	PP09S	N/A	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID: R41108
Power Cord: Unshielded, Detachable, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachable, 4.0m(Bond one ferrite core)						

2.3. EUT Configuration and operation conditions for test.



PC run test software to control EUT work in test mode

2.4. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou,
Shenzhen, Guangdong, China

3m Anechoic Chamber : Mar.31, 2009 File on Federal
Communication Commission
Registration Number: 90454

3m & 10m Anechoic Chamber : Dec. 30, 2009 File on Federal
Communication Commission
Registration Number: 794232

EMC Lab. : Certificated by Industry Canada
Registration Number: IC 5183A-1
Jul. 03, 2009
: Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Feb. 02, 2009
Accredited by NVLAP, USA
NVLAP Code: 200372-0
Apr. 01, 2010

2.5.Measurement Uncertainty (95% confidence levels, k=2)

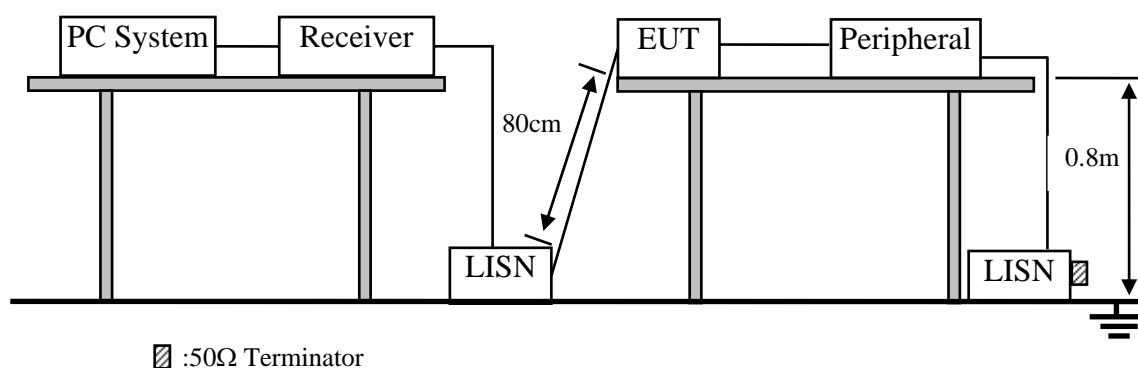
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.64 dB (9kHz to 150kHz)
	3.22 dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	4.20 dB (Polarize: V)
	4.66 dB (Polarize: H)
Uncertainty for Radiated Spurious Emission test in RF chamber	2.70 dB(Bilog antenna 30M~1000MHz)
	2.27 dB(Horn antenna 1000M~12750MHz)
Uncertainty for Conduction Spurious emission test	2.12 dB
Uncertainty for Output power test	0.97 dB
Uncertainty for Power density test	2.21 dB
Uncertainty for Frequency range test	1×10^{-9}
Uncertainty for Bandwidth test	1×10^{-9}
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.3℃
	2%

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Nov.05, 10	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Nov.05, 10	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 10	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 10	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 2	May.08, 10	1 Year
6.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 10	1Year
7.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 10	1 Year
8.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 10	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 10	1 Year

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency range MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0,15 to 0,5	79	66
0,5 to 30	73	60

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. 2.4GHz Wireless Receiver (EUT)

Model Number : GR380
Serial Number : N/A
Manufacturer : G. tech Technology Ltd.

3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown as Section 2.2.
- 3.5.2. Turn on the power of all equipment.
- 3.5.3. Let the EUT work in test mode (PC LINK) and measure it.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

3.7. Conducted Disturbance at Mains Terminals Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

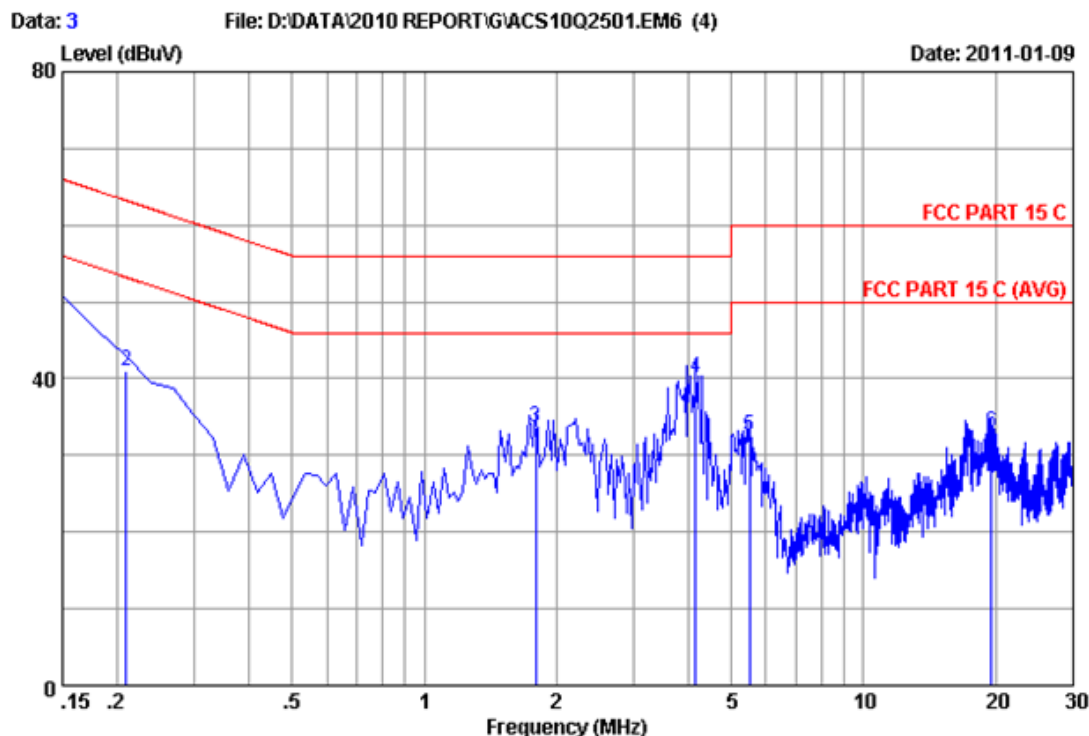
The EUT with the following test modes were tested and selected to read Q.P values and average values, all the test results are listed in next pages.

EUT: 2.4GHz Wireless Receiver Model No. : GR380

Test Date: Jan.09, 2011 Temperature: 29.5℃ Humidity: 55%

The details of test modes are as follows :

No.	Test Mode	Reference Test Data No.	
		Line	Neutral
1.	TX Mode	#3	#4

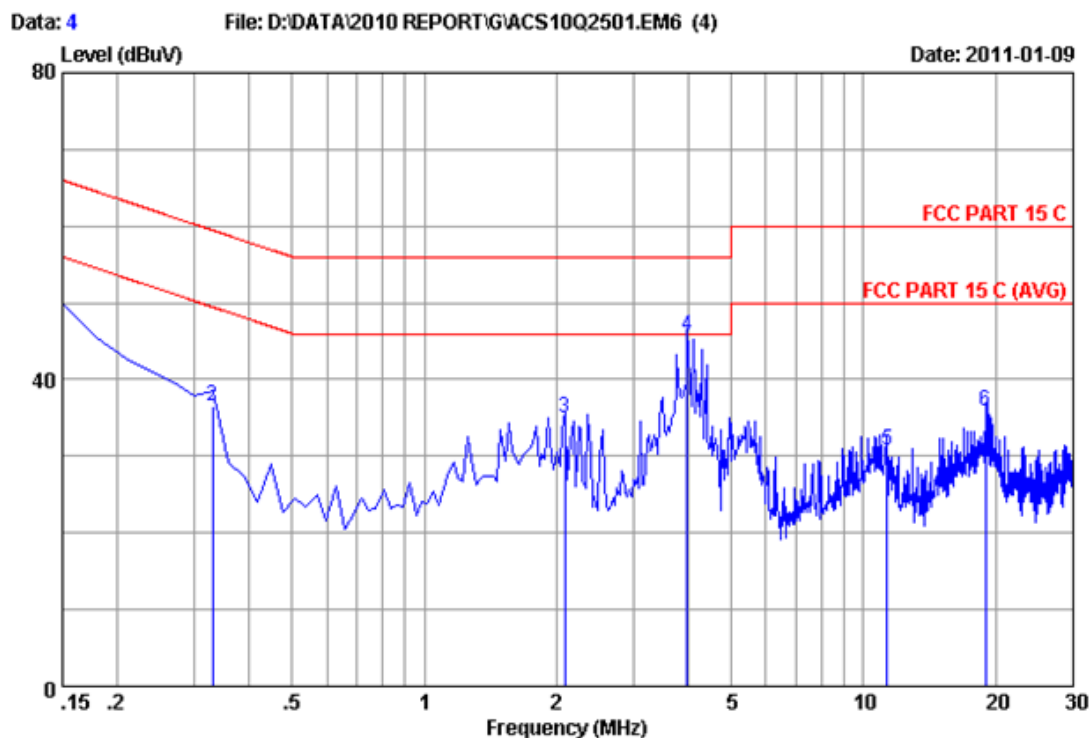


Site no :1#conduction Data No :3
 Dis./Ant. :** 2011 ESH2-Z5 LINE
 Limit :FCC PART 15 C
 Env./Ins. :Temp:23' Humi:54% ESHS10 Engineer :Paul Tian
 EUT :2.4G Wireless Receiver
 Power Rating :DC 5V From PC input AC 120V/60Hz
 Test Mode :Tx Mode
 M/N :GR380

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.88	38.72	48.77	66.00	17.23	QP
2	0.20970	0.17	9.88	31.00	41.05	63.22	22.17	QP
3	1.792	0.29	9.90	23.51	33.70	56.00	22.30	QP
4	4.150	0.35	9.94	29.88	40.17	56.00	15.83	QP
5	5.493	0.40	9.94	22.10	32.44	60.00	27.56	QP
6	19.523	0.99	10.08	21.94	33.01	60.00	26.99	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
 +Reading.

2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.



Site no :1#conduction Data No :4
 Dis./Ant. :** 2011 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 C
 Env./Ins. :Temp:23' Humi:54% ESHS10 Engineer :Paul Tian
 EUT :2.4G Wireless Receiver
 Power Rating :DC 5V From PC input AC 120V/60Hz
 Test Mode :Tx Mode
 M/N :GR380

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.21	9.88	37.77	47.86	66.00	18.14	QP
2	0.32910	0.22	9.88	26.37	36.47	59.47	23.00	QP
3	2.090	0.27	9.91	24.80	34.98	56.00	21.02	QP
4	3.971	0.31	9.94	35.43	45.68	56.00	10.32	QP
5	11.314	0.49	10.00	20.37	30.86	60.00	29.14	QP
6	18.926	0.73	10.07	25.14	35.94	60.00	24.06	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1.Test Equipment

Frequency rang: 30~1000MHz

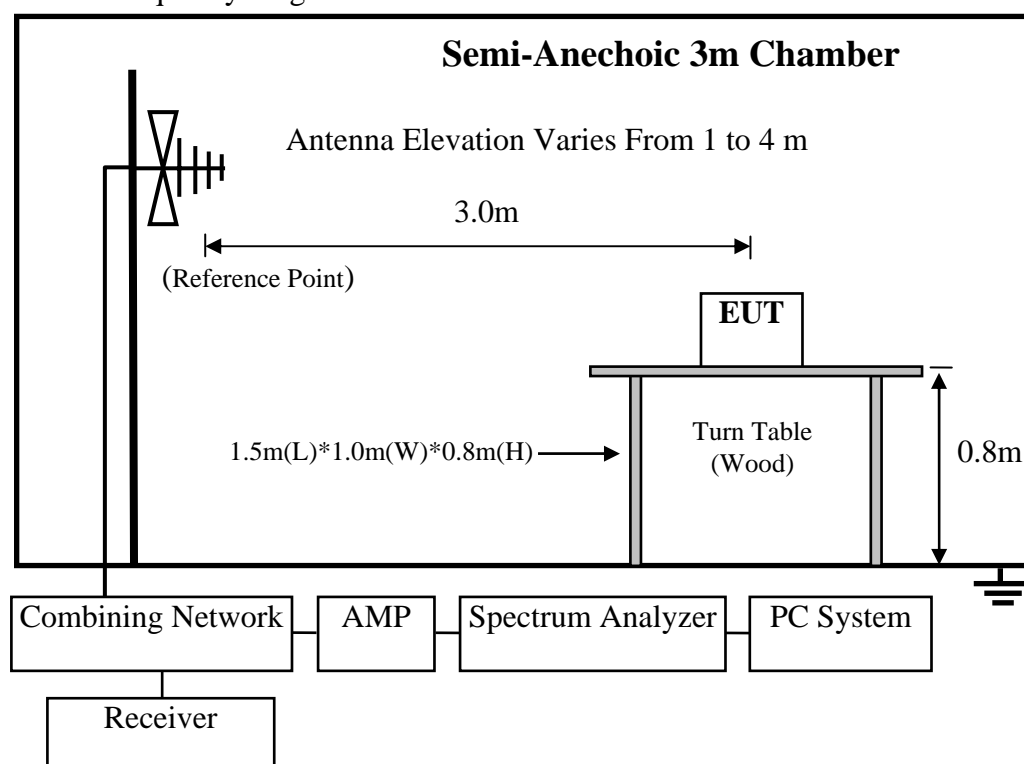
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.05, 10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 10	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 10	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 10	1 Year
5	Bilog Antenna	Schaffner	CBL6112D	25237	Mar. 27,10	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 10	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 10	1 Year

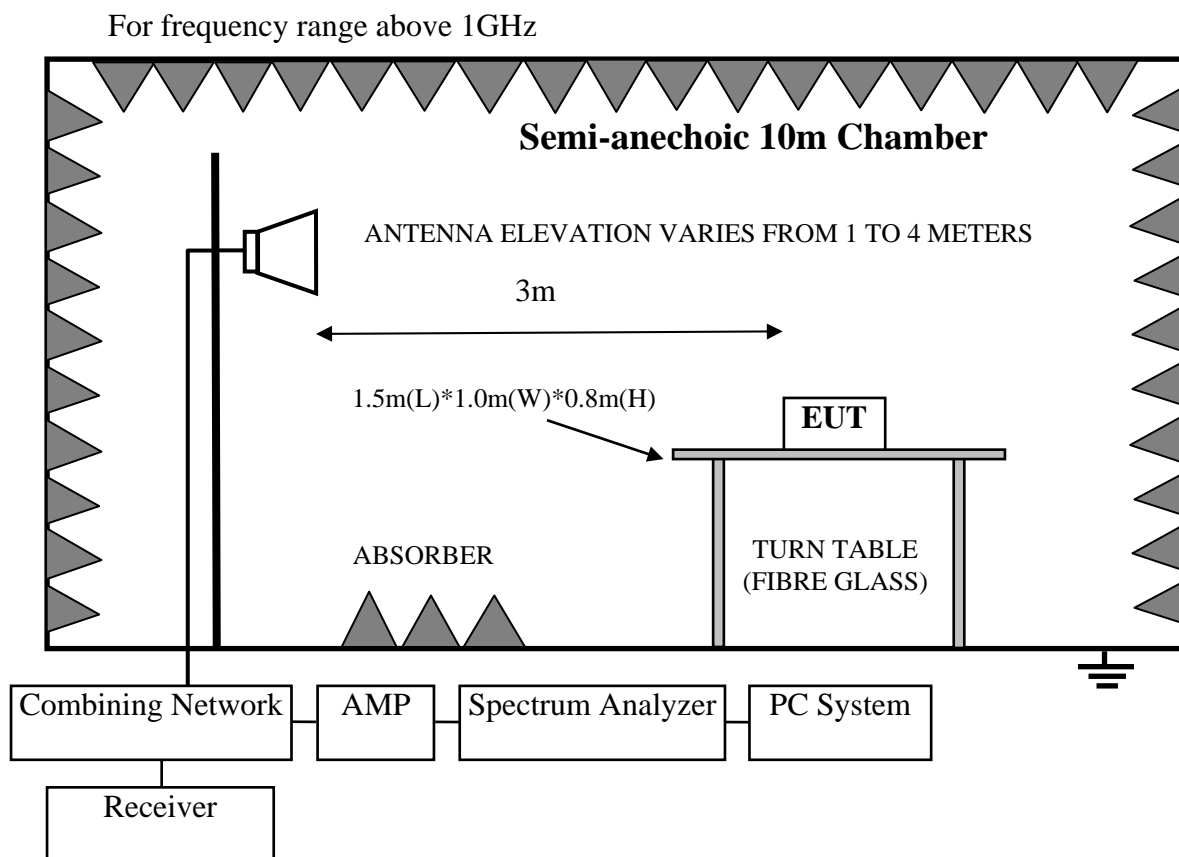
Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Horn Antenna	EMCO	3116	00060089	Nov.25, 09	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 10	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08, 10	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 10	1 Year

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz





4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of fundamental emissions for 2.4GHz-2.4835GHz	3	114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 - (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.5.Operating Condition of EUT

4.5.1. Setup the EUT and simulator as shown as Section 4.2.

4.5.2. Turned on the power of all equipment.

4.5.3. Let EUT work in Tx mode.

4.6.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2009 on radiated emission Test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz

This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level.

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

4.7.Radiated Emission Test Results

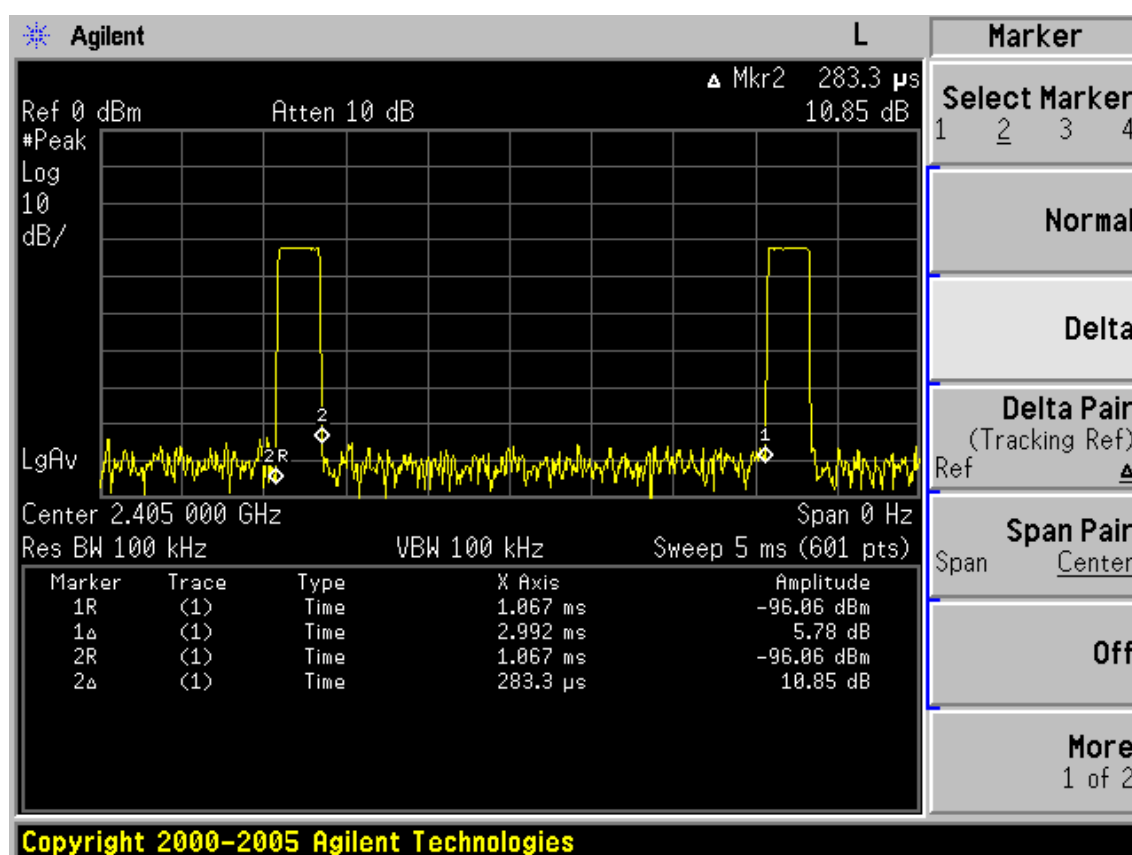
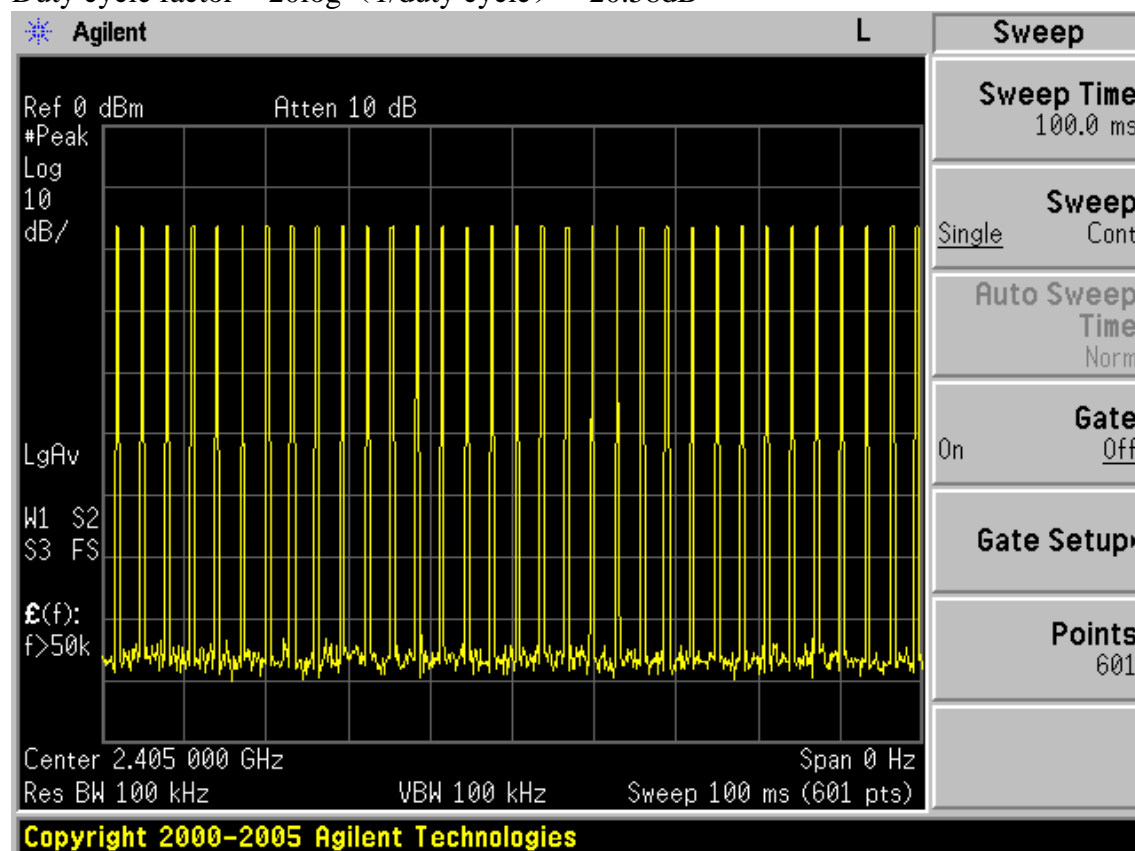
PASS.

All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Note: The duty cycle factor for calculate average level is 20.58dB, and average limit is 20dB below peak limit, so if peak measured level comply with peak limit, the average level was deemed to comply with average limit.

Duty cycle: $0.2833\text{ms} \times 33\text{times} / 100\text{ms} \times 100\% = 9.35\%$

Duty cycle factor = $20\log (1/\text{duty cycle}) = 20.58\text{dB}$

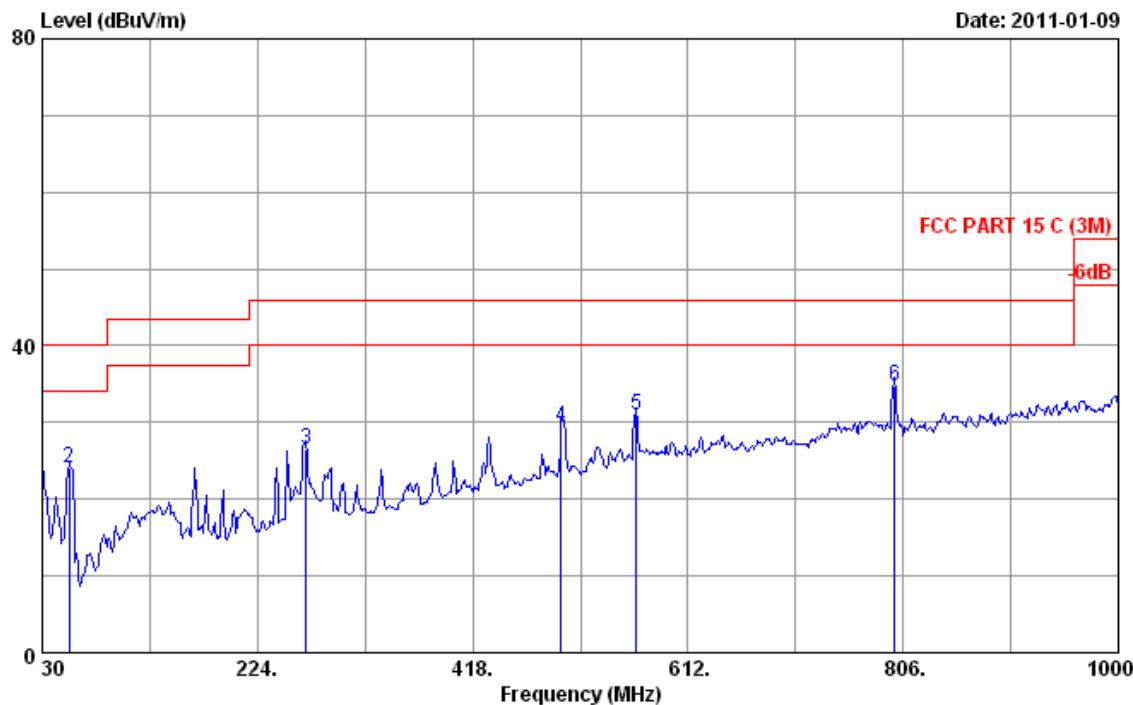


Frequency: 30MHz~1GHz

Data: 1

File: E:\2010 Report Data\G\G.tech\ACS10Q2501.EM6 (2)

Date: 2011-01-09

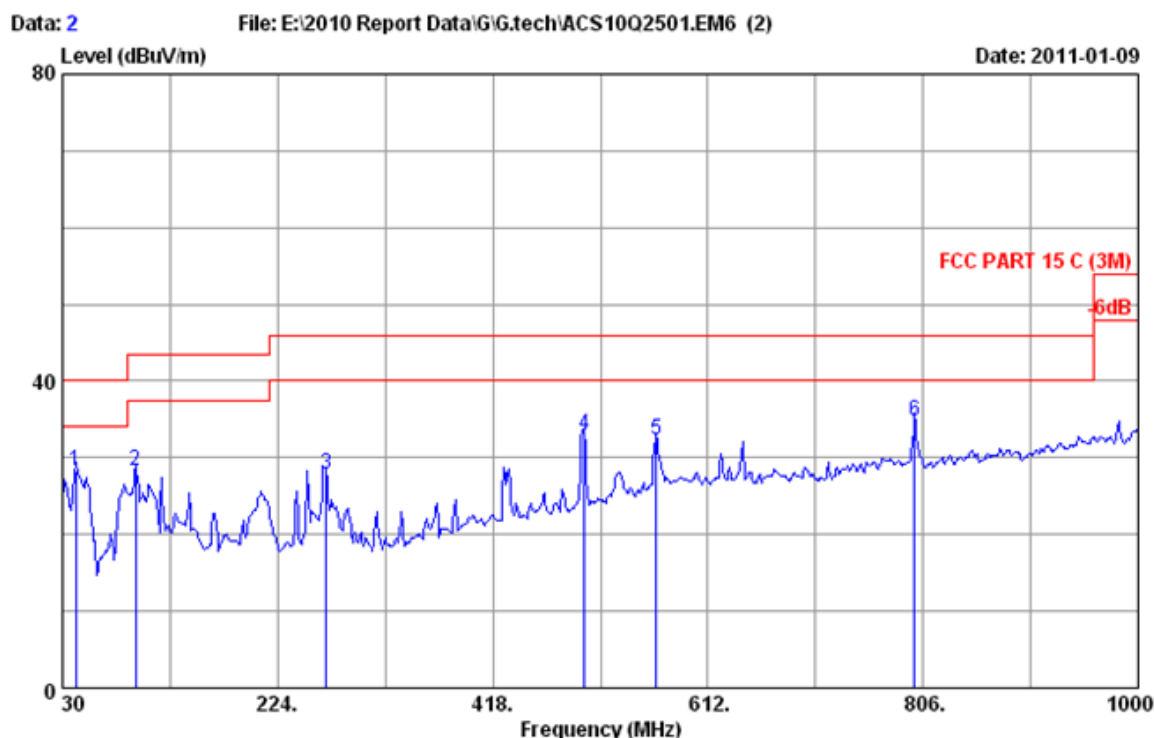


Site no. : 3m Chamber
Dis. / Ant. : 3m 2010 CBL6111C
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56%
EUT : 2.4GHz Wireless Receiver
Power rating : DC 5V PC Input AC 120V/60Hz
Test Mode : Tx Mode
M/N : GR380

Data no. : 1
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	20.00	0.61	3.79	24.40	40.00	15.60	QP
2	54.250	7.54	0.81	15.63	23.98	40.00	16.02	QP
3	267.650	13.50	2.28	10.84	26.62	46.00	19.38	QP
4	497.540	18.27	3.53	7.70	29.50	46.00	16.50	QP
5	565.440	19.61	3.92	7.39	30.92	46.00	15.08	QP
6	798.240	22.02	4.89	7.95	34.86	46.00	11.14	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

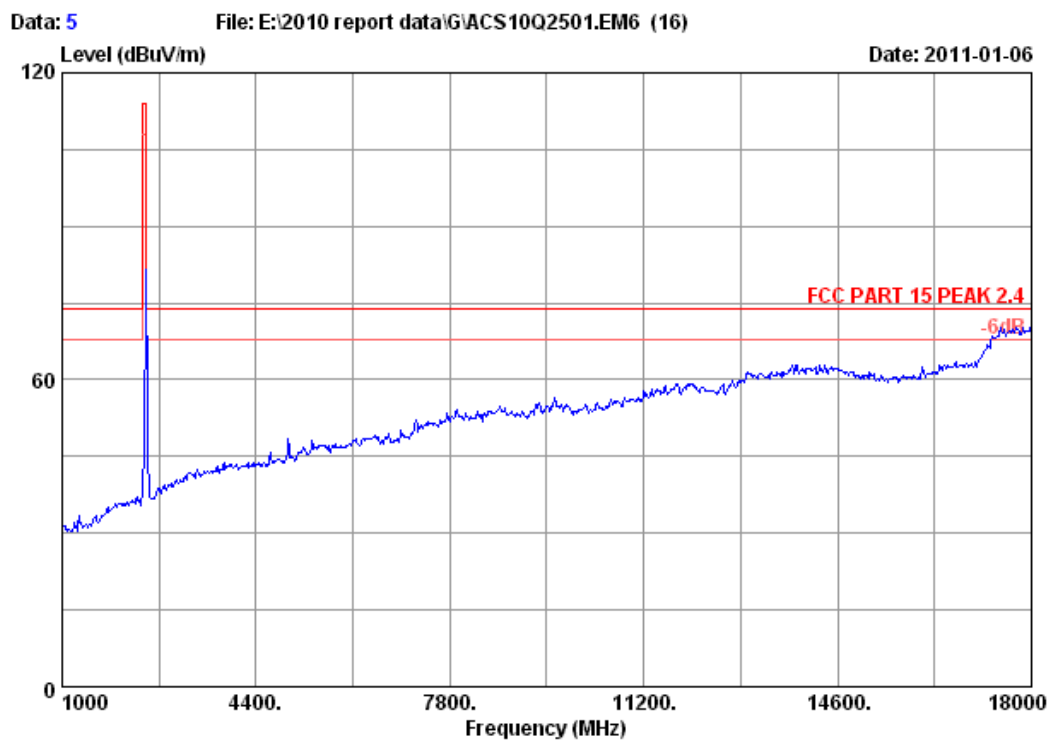


Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2010 CBL6111C Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Leo-Li
EUT : 2.4GHz Wireless Receiver
Power rating : DC 5V PC Input AC 120V/60Hz
Test Mode : Tx Mode
M/N : GR380

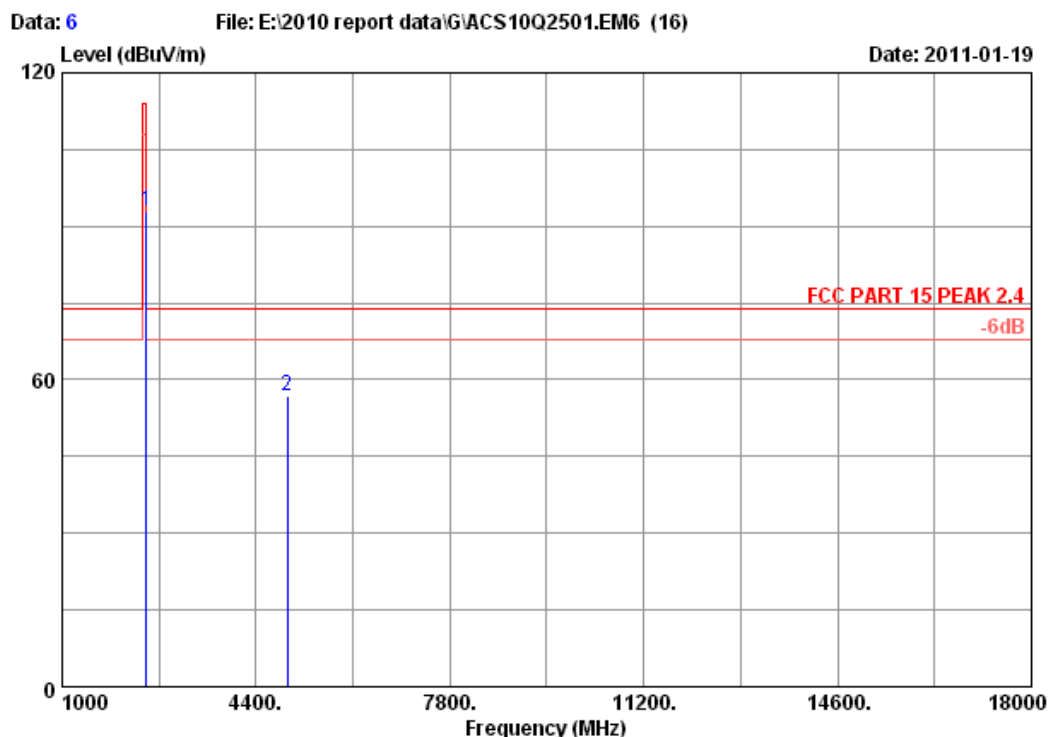
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	41.640	13.42	0.71	14.23	28.36	40.00	11.64	QP
2	95.960	9.84	1.09	17.34	28.27	43.50	15.23	QP
3	267.650	13.50	2.28	12.01	27.79	46.00	18.21	QP
4	500.450	18.30	3.55	11.09	32.94	46.00	13.06	QP
5	565.440	19.61	3.92	8.77	32.30	46.00	13.70	QP
6	798.240	22.02	4.89	7.89	34.80	46.00	11.20	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz



Site no.	: RF Chamber	Data no. :	5
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2475MHz Tx		
M/N	: GR380		

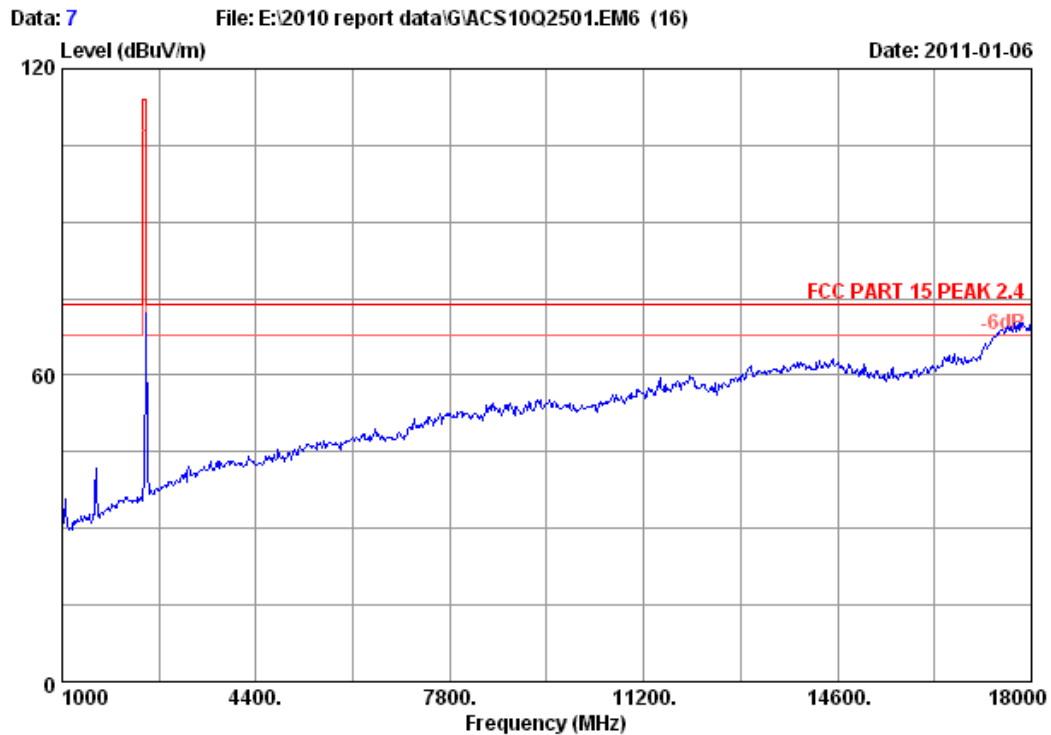


Site no. : RF Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/60Hz
 Test mode : 2475MHz Tx
 M/N : GR380

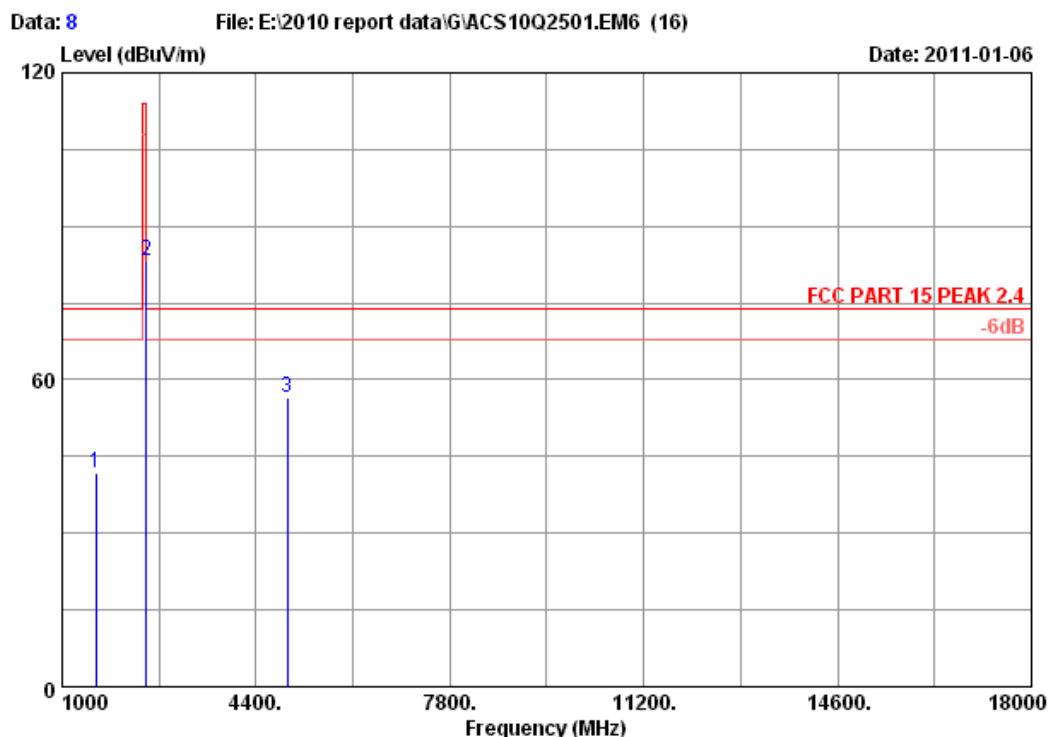
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2475.000	29.49	7.54	36.60	92.56	92.99	114.00	21.01	Peak
2	4950.000	34.52	10.78	34.95	46.40	56.75	74.00	17.25	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no.	: RF Chamber	Data no. :	7
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2475MHz Tx		
M/N	: GR380		

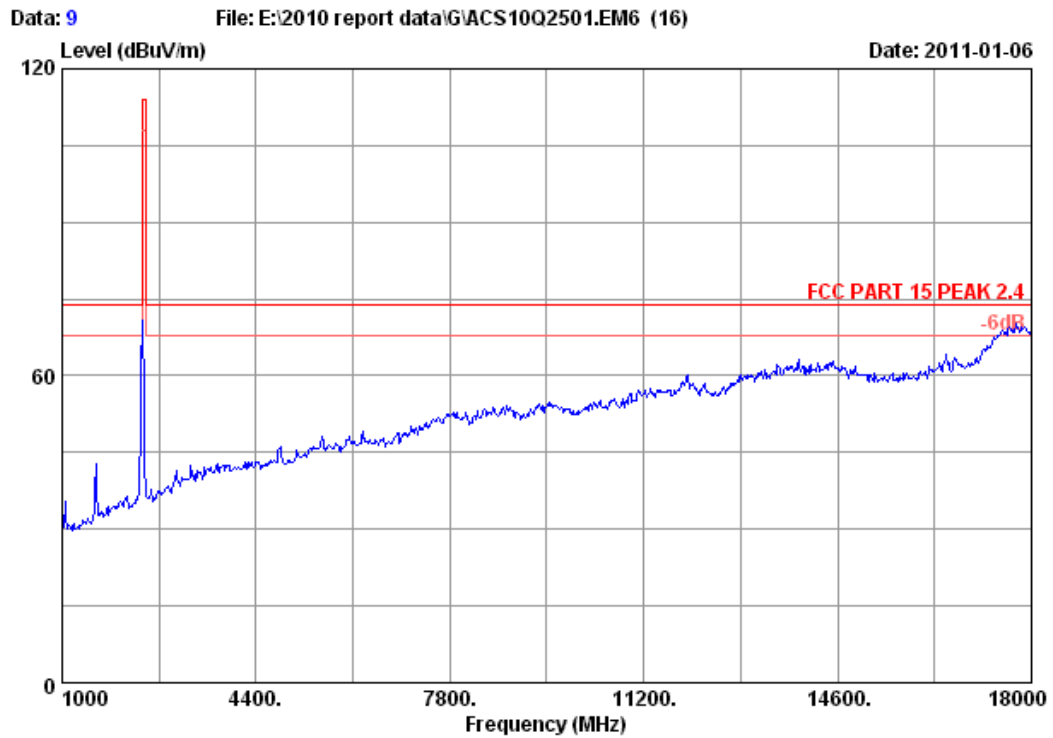


Site no. : RF Chamber Data no. : 8
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : 2.4GHz Wireless Receiver
Power : DC 5V From PC Input AC 120V/60Hz
Test mode : 2475MHz Tx
M/N : GR380

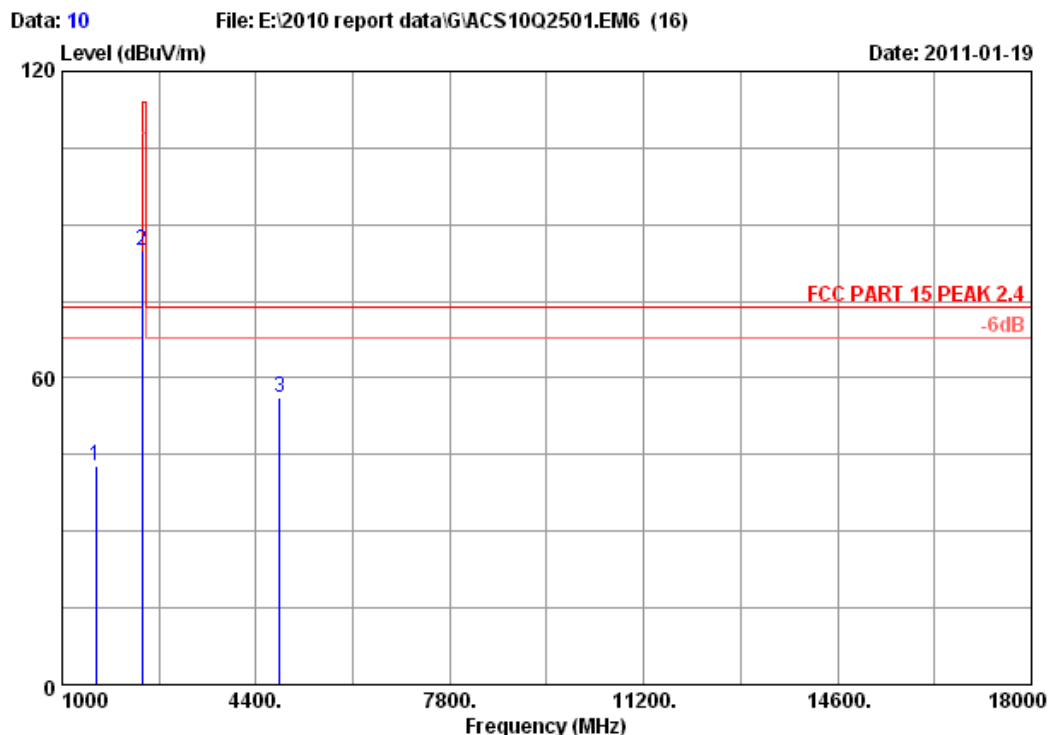
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	1595.000	26.96	5.88	36.95	45.88	41.77	74.00	32.23	Peak
2	2475.000	29.49	7.54	36.60	82.87	83.30	114.00	30.70	Peak
3	4950.000	34.52	10.78	34.95	46.15	56.50	74.00	17.50	Peak

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.



Site no.	: RF Chamber	Data no. :	9
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2405MHz Tx		
M/N	: GR380		

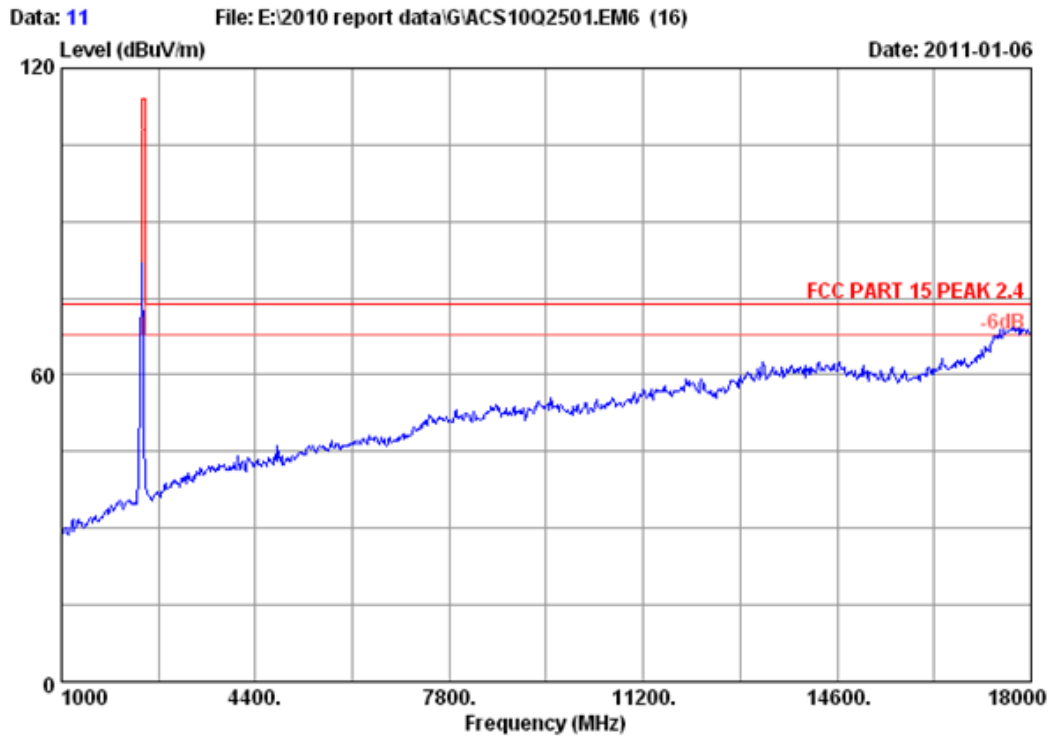


Site no. : RF Chamber Data no. : 10
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : 2.4GHz Wireless Receiver
Power : DC 5V From PC Input AC 120V/60Hz
Test mode : 2405MHz Tx
M/N : GR380

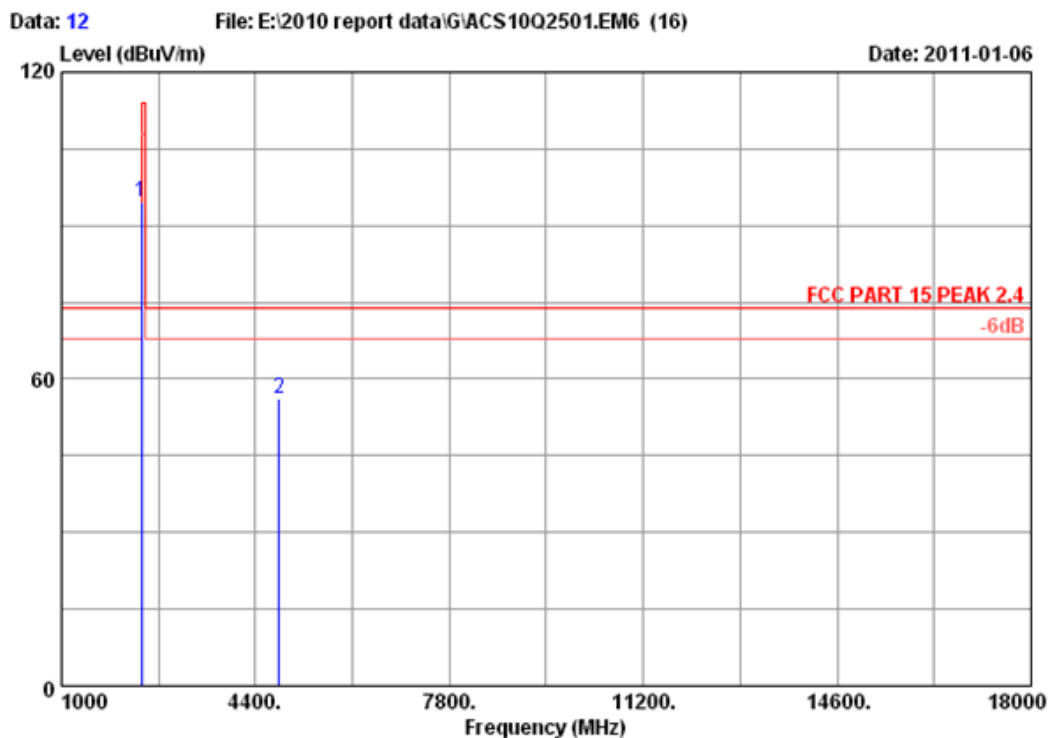
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	1595.000	26.96	5.88	36.95	46.78	42.67	74.00	31.33	Peak
2	2405.000	29.45	7.43	36.62	84.59	84.85	114.00	29.15	Peak
3	4810.000	34.30	10.62	35.10	46.24	56.06	74.00	17.94	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no.	: RF Chamber	Data no. :	11
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2405MHz Tx		
M/N	: GR380		

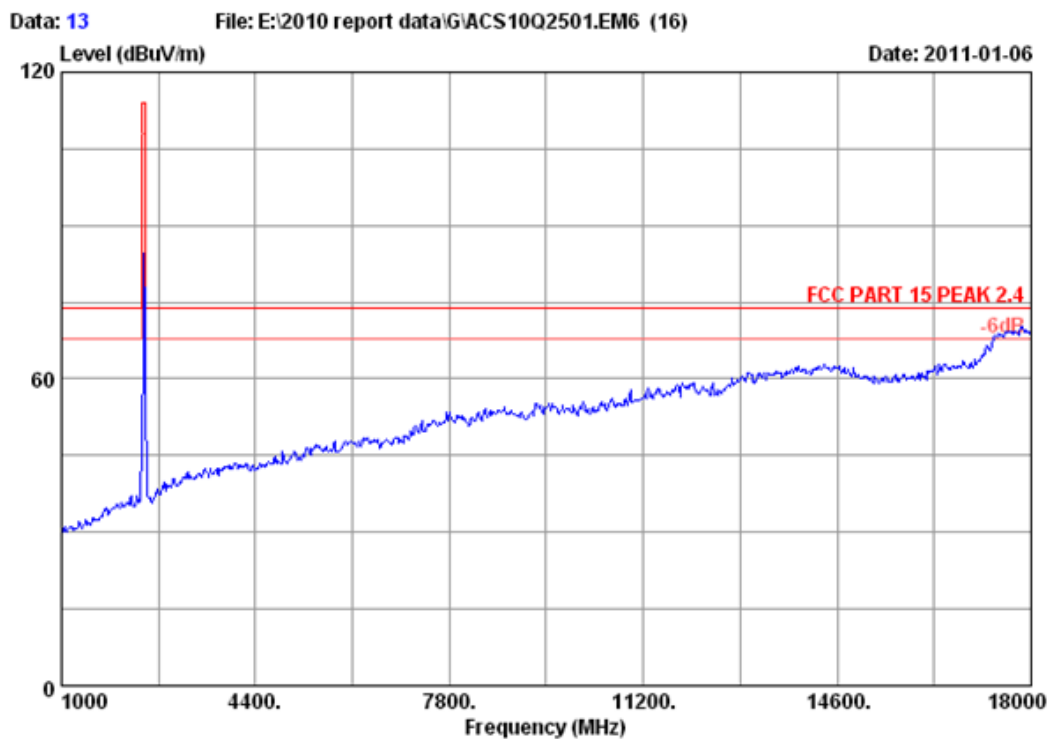


Site no. : RF Chamber Data no. : 12
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/60Hz
 Test mode : 2405MHz Tx
 M/N : GR380

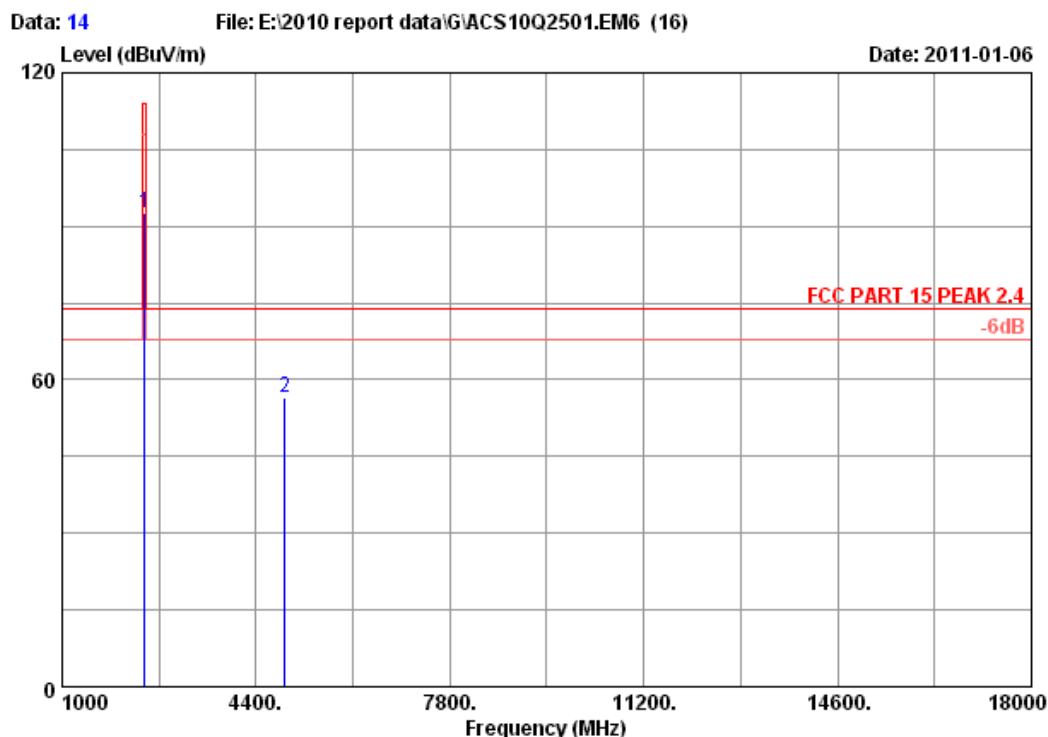
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2405.000	29.45	7.43	36.62	94.21	94.47	114.00	19.53	Peak
2	4810.000	34.30	10.62	35.10	46.25	56.07	74.00	17.93	Peak

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.



Site no.	: RF Chamber	Data no. :	13
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2450MHz Tx		
M/N	: GR380		

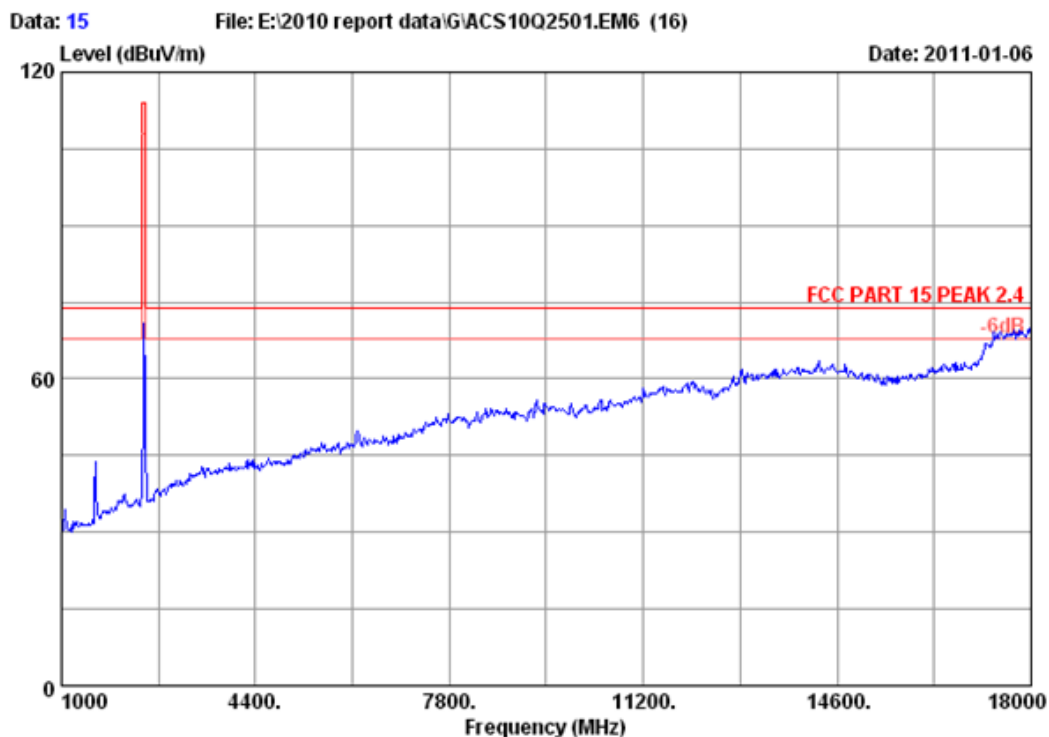


Site no. : RF Chamber Data no. : 14
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/60Hz
 Test mode : 2450MHz Tx
 M/N : GR380

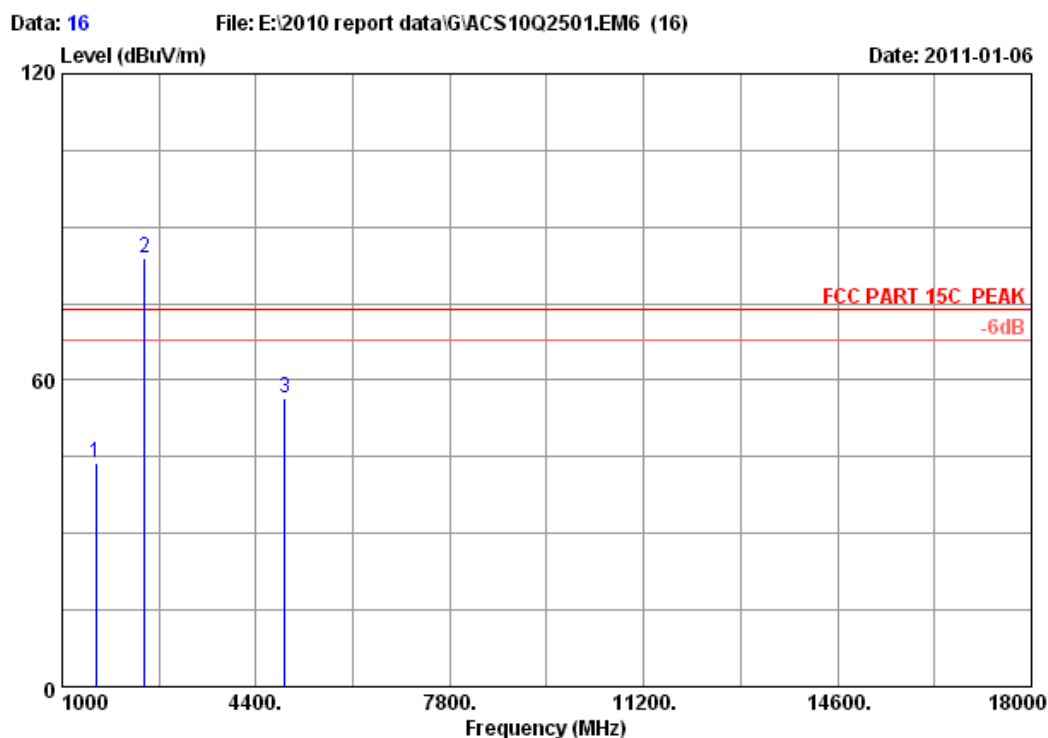
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2450.000	29.47	7.50	36.61	92.39	92.75	114.00	21.25	Peak
2	4900.000	34.43	10.74	35.00	46.35	56.52	74.00	17.48	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no.	: RF Chamber	Data no. :	15
Dis. / Ant.	: 3m 3115(0911)	Ant. pol. :	VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: 2.4GHz Wireless Receiver		
Power	: DC 5V From PC Input AC 120V/60Hz		
Test mode	: 2450MHz Tx		
M/N	: GR380		



Site no. : RF Chamber Data no. : 16
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/60Hz
 Test mode : 2450MHz Tx
 M/N : GR380

	Freq.	Ant.	Cable	Amp.	Emission				
	(MHz)	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	1595.000	26.96	5.88	36.95	47.88	43.77	74.00	30.23	Peak
2	2450.000	29.47	7.50	36.61	83.67	84.03	74.00	-10.03	Peak
3	4900.000	34.43	10.74	35.00	46.21	56.38	74.00	17.62	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

5. 20 DB BANDWIDTH TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year

5.2. Limit

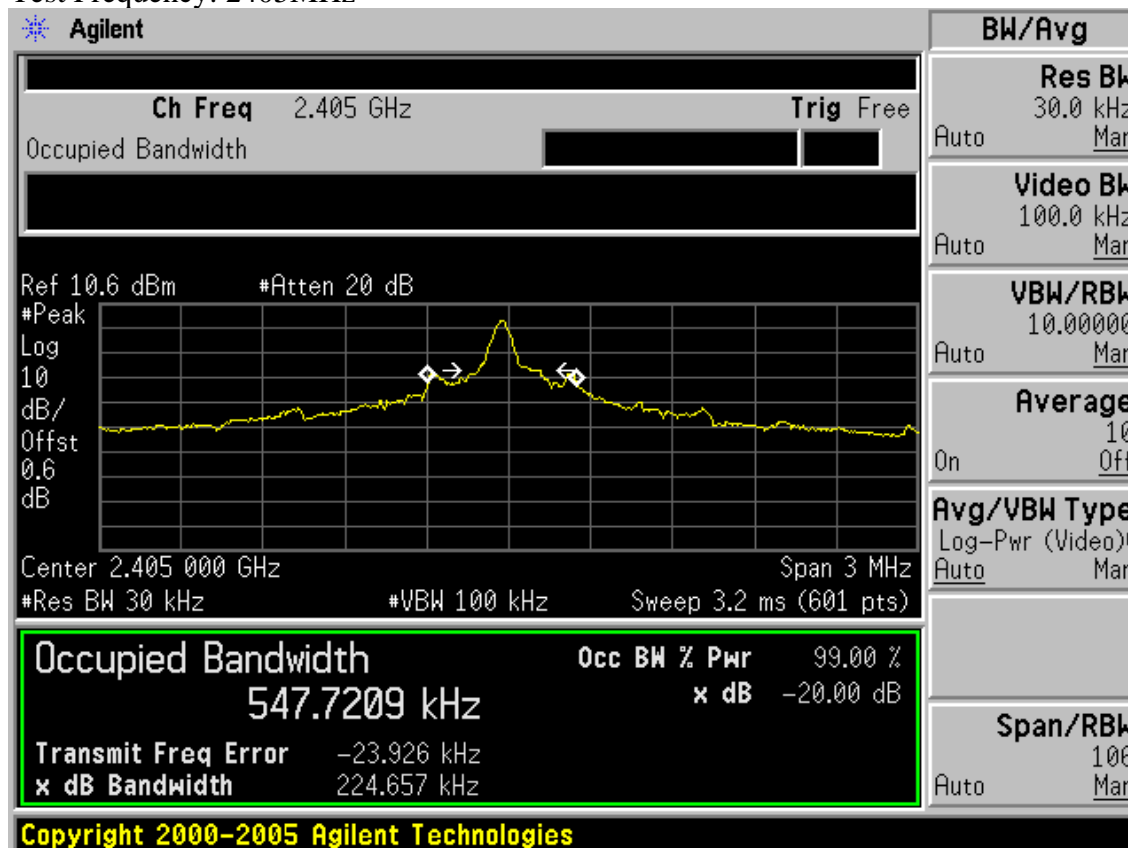
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.3. Test Results

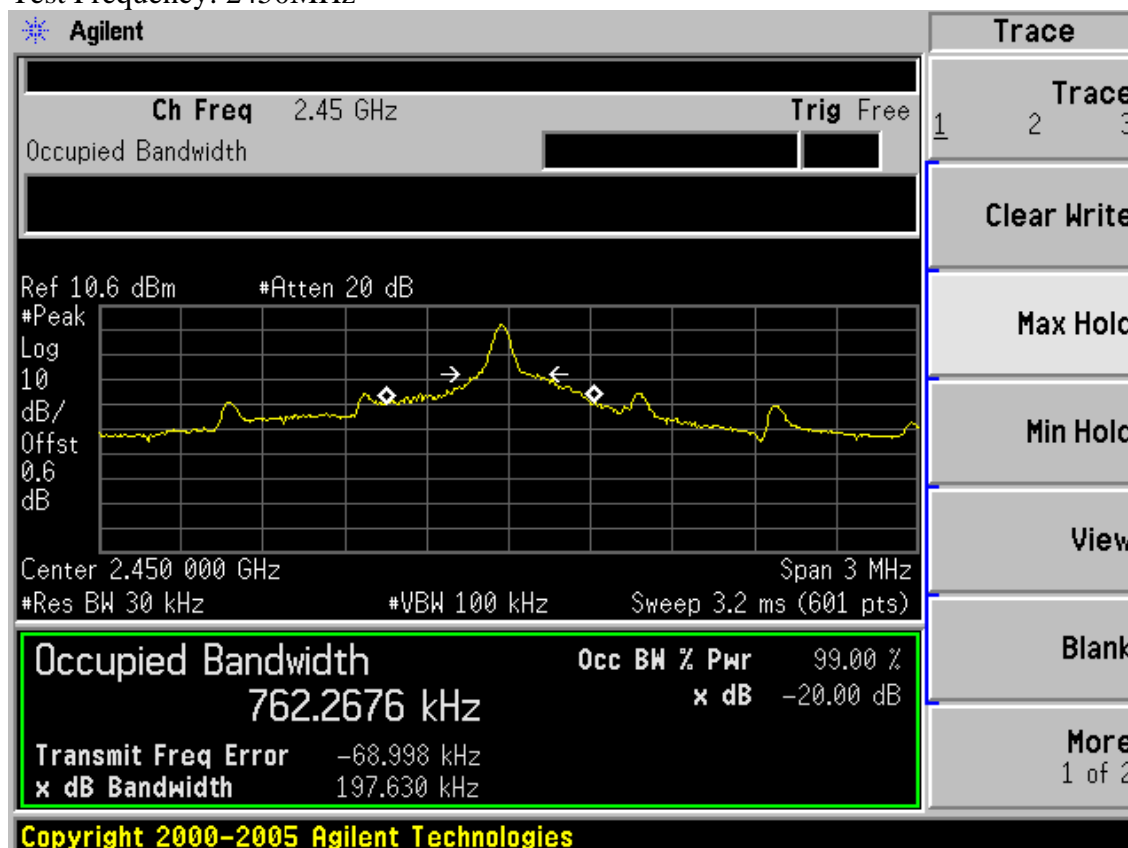
EUT: 2.4GHz Wireless Receiver		
M/N: GR380		
Test date:2011-01-11	Pressure:100.8 kpa	Humidity:37 %
Tested by:Paul Tian	Test site: RF site	Temperature : 19.1 °C

Frequency	20% bandwidth (KHz)	Limit (KHz)
2405	224.657	N/A
2450	197.630	N/A
2475	584.490	N/A
Conclusion : PASS		

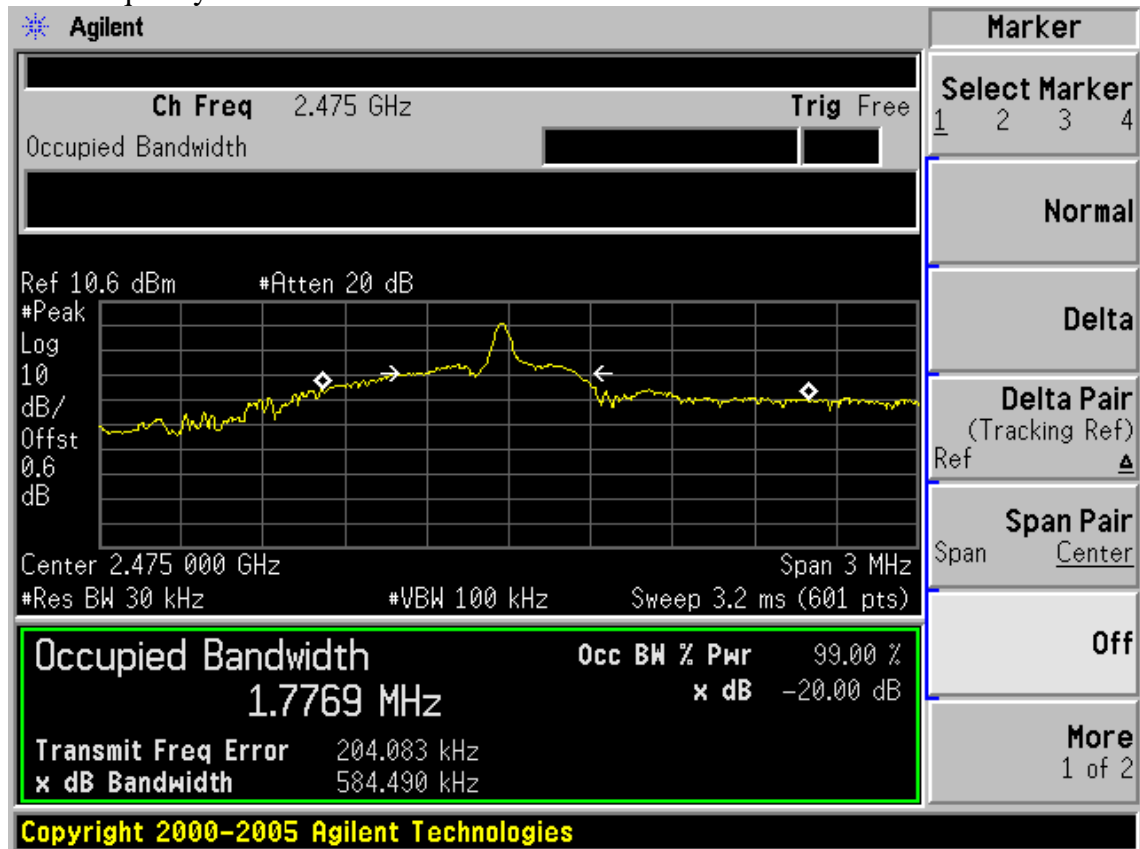
Test Frequency: 2405MHz



Test Frequency: 2450MHz



Test Frequency: 2475MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 10	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,10	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,10	1 Year

6.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

6.3. Test Produce

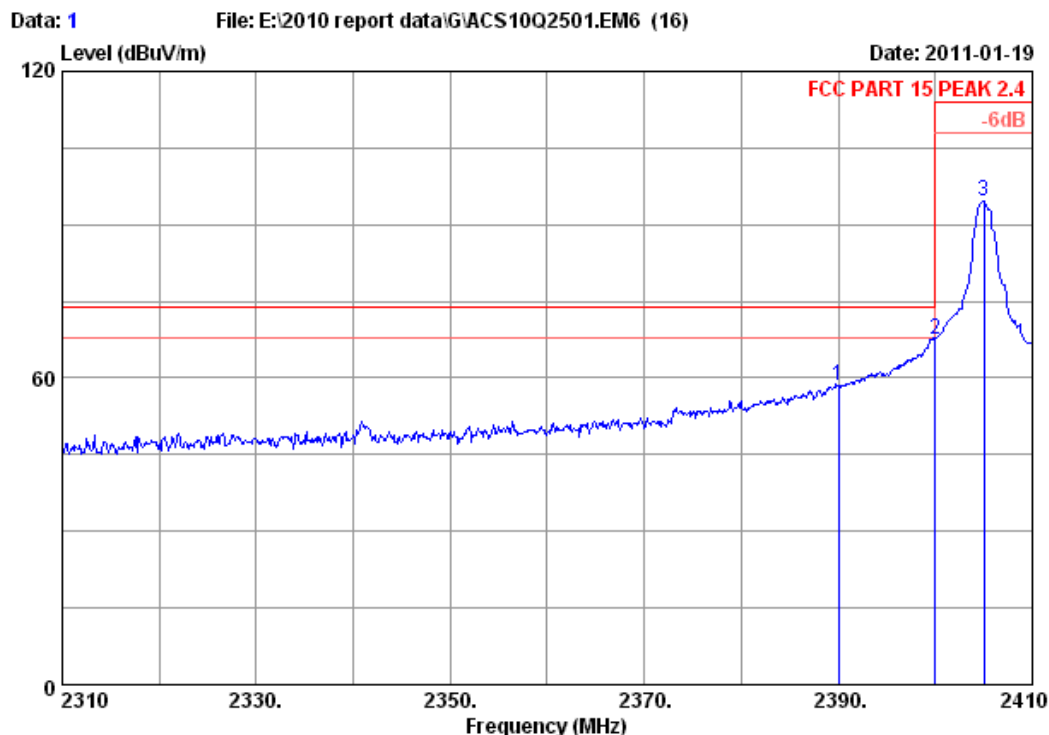
1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
 - (b)This device is pulse modulated, a duty cycle factor was used to calculate average level based measured peak level

6.4. Test Results

Pass (The testing data was attached in the next pages.)

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Note: The duty cycle factor for calculate average level is 20.58dB, and average limit is 20dB below peak limit, so if peak measured level comply with peak limit, the average level was deemed to comply with average limit.

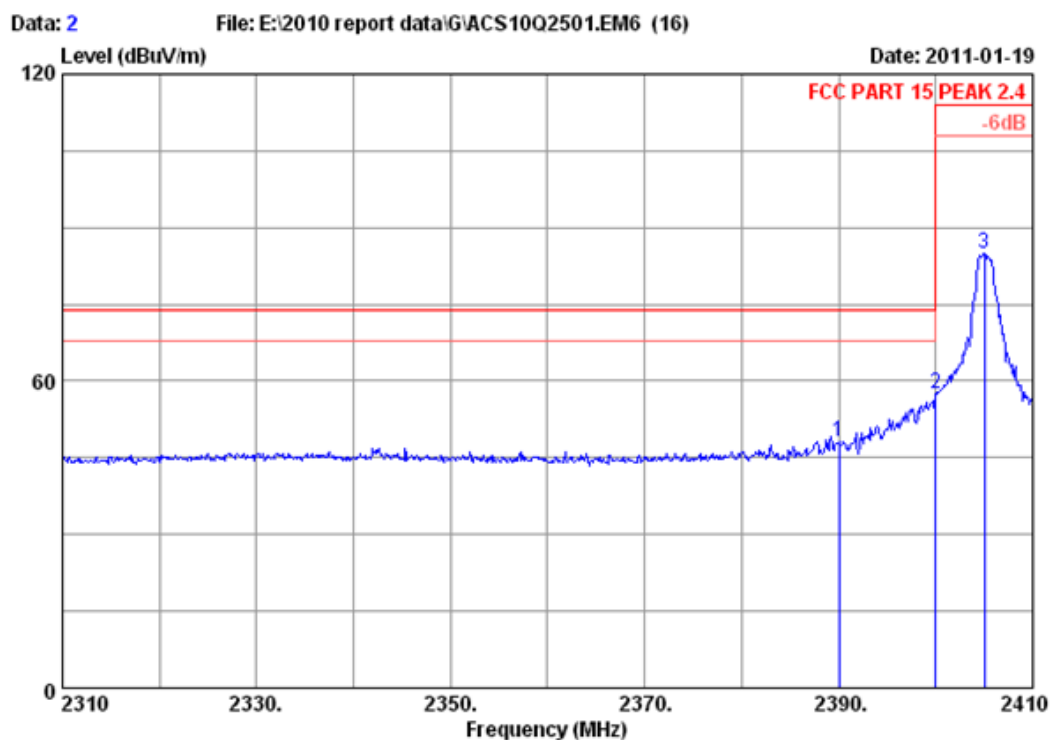


Site no. : RF Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/50Hz
 Test mode : 2405MHz Tx
 M/N : GR380

		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBUV)	(dBUV/m)	(dBUV/m)	(dB)	
1	2390.000	29.44	7.39	36.62	58.26	58.47	74.00	15.53	Peak
2	2400.000	29.44	7.43	36.62	67.41	67.66	74.00	6.34	Peak
3	2405.000	29.45	7.43	36.62	94.24	94.50	114.00	19.50	Peak

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

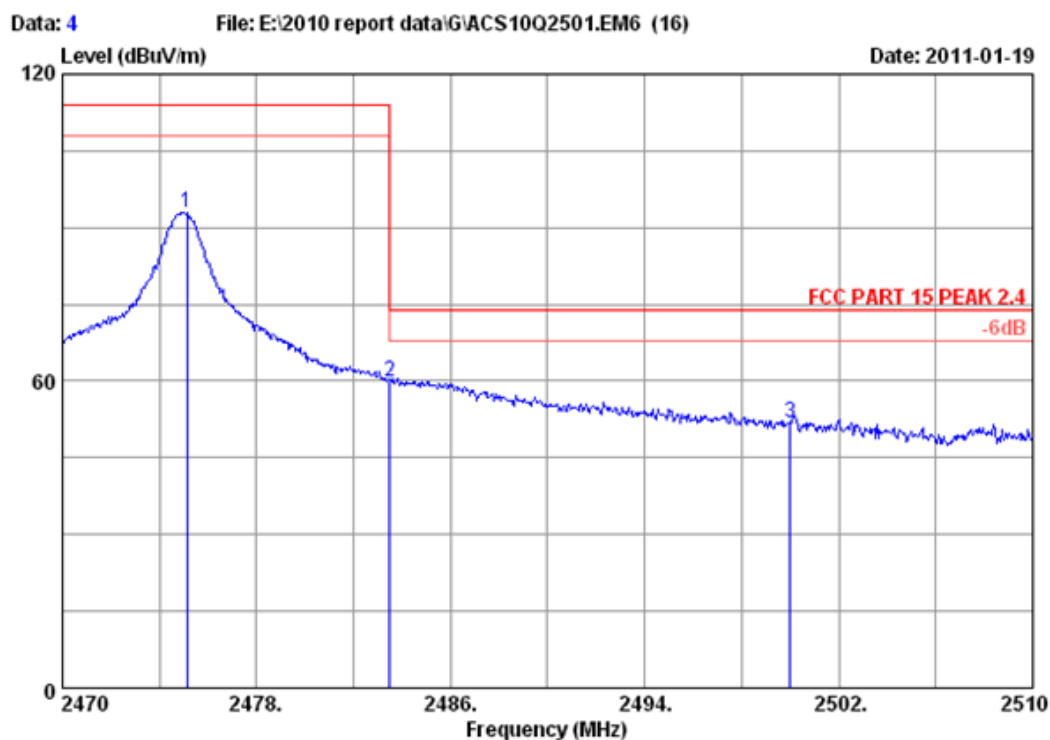


Site no. : RF Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/50Hz
 Test mode : 2405MHz Tx
 M/N : GR380

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1 2390.000	29.44	7.39	36.62	47.99	48.20	74.00	25.80	Peak	
2 2400.000	29.44	7.43	36.62	57.09	57.34	74.00	16.66	Peak	
3 2405.000	29.45	7.43	36.62	84.50	84.76	114.00	29.24	Peak	

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

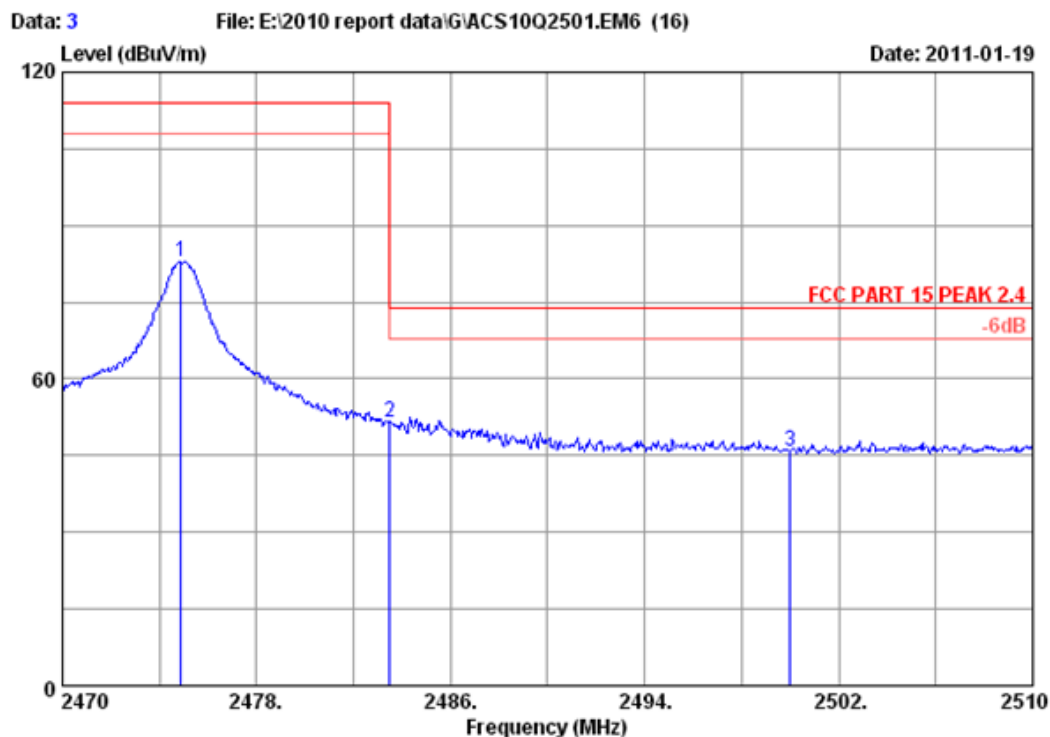


Site no. : RF Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/50Hz
 Test mode : 2475MHz Tx
 M/N : GR380

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1 2475.120	29.49	7.54	36.60	92.40	92.83	114.00	21.17	Peak	
2 2483.500	29.49	7.58	36.60	59.37	59.84	74.00	14.16	Peak	
3 2500.000	29.50	7.62	36.60	51.40	51.92	74.00	22.08	Peak	

Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.



Site no. : RF Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : 2.4GHz Wireless Receiver
 Power : DC 5V From PC Input AC 120V/50Hz
 Test mode : 2475MHz Tx
 M/N : GR380

	Ant. Freq. (MHz)	Cable Factor (dB/m)	Amp. loss (dB)	Factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2474.880	29.49	7.54	36.60	82.37	82.80	114.00	31.20	Peak
2	2483.500	29.49	7.58	36.60	51.05	51.52	74.00	22.48	Peak
3	2500.000	29.50	7.62	36.60	45.35	45.87	74.00	28.13	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.