



FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

SHENZHEN GIEC ELECTRONICS CO., LTD.

HOME ROAM

Model Number: HR701 (Transmitter)
HR702 (Transmitter)
HR703 (Transmitter)

FCC ID: ZVRHR701DKUSA0002

Prepared for : SHENZHEN GIEC ELECTRONICS CO., LTD.
24/F, Building A Xinian Center, No. 6021 Shennan Road,
Shenzhen, Guangdong, China

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

Tel: (0755) 26639496

Report Number : ACS-F11237
Date of Test : Oct.08~18, 2011
Date of Report : Oct.26, 2011

TABLE OF CONTENTS

Description	Page
1. SUMMARY OF STANDARDS AND RESULTS.....	1-1
1.1. Description of Standards and Results	1-1
2. GENERAL INFORMATION	2-1
2.1. Description of Device (EUT)	2-1
2.2. EUT Configuration and operation conditions for test.....	2-1
2.3. Test Facility	2-2
2.4. Measurement Uncertainty (95% confidence levels, k=2)	2-2
3. POWER LINE CONDUCTED EMISSION TEST	3-1
3.1. Test Equipment	3-1
3.2. Block Diagram of Test Setup.....	3-1
3.3. Power Line Conducted Emission Test Limits.....	3-1
3.4. Configuration of EUT on Test	3-1
3.5. Operating Condition of EUT.....	3-2
3.6. Test Procedure.....	3-2
3.7. Conducted Disturbance at Mains Terminals Test Results.....	3-2
4. RADIATED EMISSION TEST	4-1
4.1. Test Equipment	4-1
4.2. Block Diagram of Test Setup.....	4-1
4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249	4-2
4.4. EUT Configuration on Test.....	4-3
4.5. Operating Condition of EUT.....	4-3
4.6. Test Procedure.....	4-3
4.7. Radiated Emission Test Results	4-3
5. 20 DB BANDWIDTH TEST	5-1
5.1. Test Equipment	5-1
5.2. Limit.....	5-1
5.3. Test Results	5-1
6. BAND EDGE COMPLIANCE TEST	6-1
6.1. Test Equipment	6-1
6.2. Limit.....	6-1
6.3. Test Produce	6-1
6.4. Test Results	6-1
7. CONDUCTED SPURIOUS EMISSIONS.....	7-1
7.1. Test Equipment	7-1
7.2. Limit.....	7-1
7.3. Test Procedure.....	7-1
7.4. Test result.....	7-1
8. CARRIER FREQUENCY SEPARATION TEST	8-1
8.1. Test Equipment	8-1
8.2. Limit.....	8-1
8.3. Test Results	8-1
9. NUMBER OF HOPPING FREQUENCY TEST	9-1
9.1. Test Equipment	9-1
9.2. Limit.....	9-1

9.3.	Test Results	9-1
10.	MAXIMUM PEAK OUTPUT POWER TEST	10-1
10.1.	Test Equipment	10-1
10.2.	Limit	10-1
10.3.	Test Procedure	10-1
11.	DWELL TIME	11-1
11.1.	Test Equipment	11-1
11.2.	Limit	11-1
11.3.	Test Results	11-1
12.	MPE ESTIMATION	12-1
12.1.	Limit for General Population/ Uncontrolled Exposures	12-1
12.2.	Estimation Result	12-1
13.	TEST SOFTWARE	13-1
14.	DEVIATION TO TEST SPECIFICATIONS	14-1
15.	PHOTOGRAPH OF TEST	15-1
15.1.	Photos of Power Line Conducted Emission Test	15-1
15.2.	Photos of Radiated Emission Test (30-1000MHz)	15-2
16.	PHOTOGRAPH OF EUT	16-1

TEST REPORT CERTIFICATION

Applicant : SHENZHEN GIEC ELECTRONICS CO., LTD.
Manufacturer : SHENZHEN GIEC ELECTRONICS CO., LTD.
EUT Description : HOME ROAM
FCC ID : ZVRHR701DKUSA0002

(A) MODEL NO. : HR701 (Transmitter)
HR702 (Transmitter)
HR703 (Transmitter)
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 9V
(D) TEST VOLTAGE : DC 9V From Adapter Input AC 120V/60Hz

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

Test procedure used:
ANSI C63.10:2009, DA-00-705 Released March 30, 2000
Filling and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

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. This report contains data that are not covered by the NVLAP accreditation. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

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.

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.

Date of Test : Oct.08~18, 2011 Report of date: Oct.26, 2011

Prepared by : Cerry He Reviewer by : Sunny Lu
Cerry He / Assistant Sunny Lu / Supervisor

Approved & Authorized Signer :



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 15: 15.207 ANSI C63.10 :2009	PASS
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10 :2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10 :2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.247(d) ANSI C63.10 :2009	PASS
Conducted Spurious Emissions	FCC Part 15: 15.247(a)(1) ANSI C63.10 :2009	PASS
Carrier Frequency Separation Test	FCC Part 15: 15.247(a)(1) ANSI C63.10 :2009	PASS
Number Of Hopping Frequency Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2009	PASS
Maximum Peak Output Power Test	FCC Part 15: 15.247(b)(1)\ ANSI C63.10 :2009	PASS
Dwell Time Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2009	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product Name : HOME ROAM

Model Number : HR701 (Transmitter)
HR702 (Transmitter)
HR703 (Transmitter)

FCC ID : ZVRHR701DKUSA0002

Operation frequency : 2408MHz-2467MHz

Antenna : Dipole antenna 3dBi gain

Modulation : GFSK

Power Supply : DC 9V

Applicant : SHENZHEN GIEC ELECTRONICS CO., LTD.
24/F, Building A Xinian Center, No. 6021 Shennan Road,
Shenzhen, Guangdong, China

Manufacturer : SHENZHEN GIEC ELECTRONICS CO., LTD.
24/F, Building A Xinian Center, No. 6021 Shennan Road,
Shenzhen, Guangdong, China

Power Adapter : Manufacturer: DONIU M/N:HNC090100U
Unshielded, Detachable, 1.5m

AV Cable1 : 0.2m

AV Cable2 : 1.0m

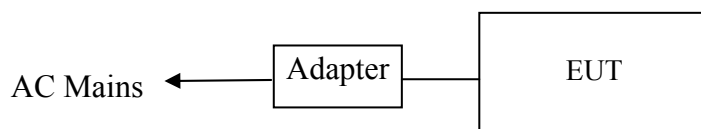
Date of Test : Oct.08~18, 2011

Date of Receipt : Oct.08, 2011

Sample Type : Prototype production

Remark: The antenna type of this device complies with the requirement of section 15.203

2.2. EUT Configuration and operation conditions for test.



(EUT: HOME ROAM)

2.3. 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 : Certificated by FCC, USA
Registration Number: 90454
Valid Date: Mar.31, 2012

3m & 10m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 794232
Valid Date: Dec.30, 2012

EMC Lab. : Certificated by Industry Canada
Registration Number: IC 5183A-1
Valid Date: Jun.13, 2014

Certificated by DAkkS, Germany
Registration No: D-PL-12151-01-01
Valid Date: Feb.01, 2014

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2012

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

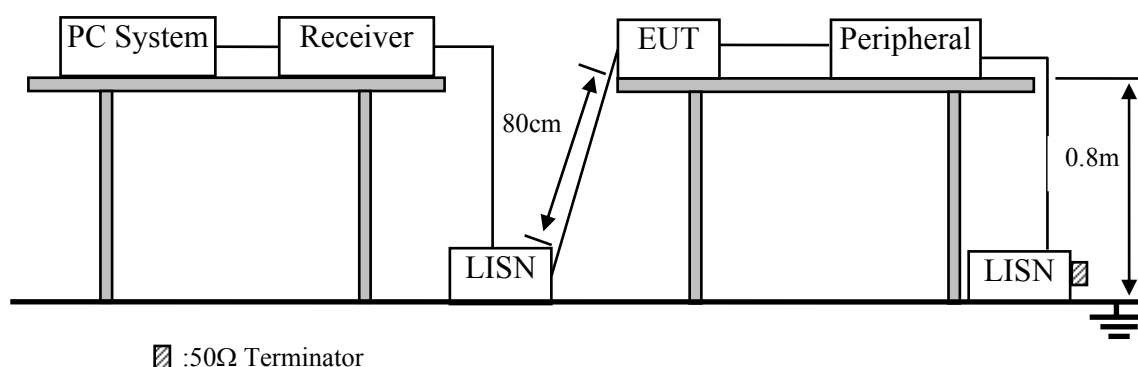
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.2 dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6 dB(30~200MHz, Polarize: H)
	3.7 dB(30~200MHz, Polarize: V)
	4.0 dB(200M~1GHz, Polarize: H)
	3.7 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.57dB
Uncertainty for Conduction Spurious emission test	2.00 dB
Uncertainty for Output power test	0.73 dB
Uncertainty for Power density test	2.00 dB
Uncertainty for Frequency range test	7×10^{-8}
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

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, 11	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 11	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 11	1 Year
5.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 11	1 Year
6.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 11	1 Year
7.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 11	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. HOME ROAM (EUT)

Model Number : HR701 (Transmitter)
Serial Number : N/A
Manufacturer : SHENZHEN GIEC ELECTRONICS CO., 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 (TX Mode) and measure it.

3.6. Test Procedure

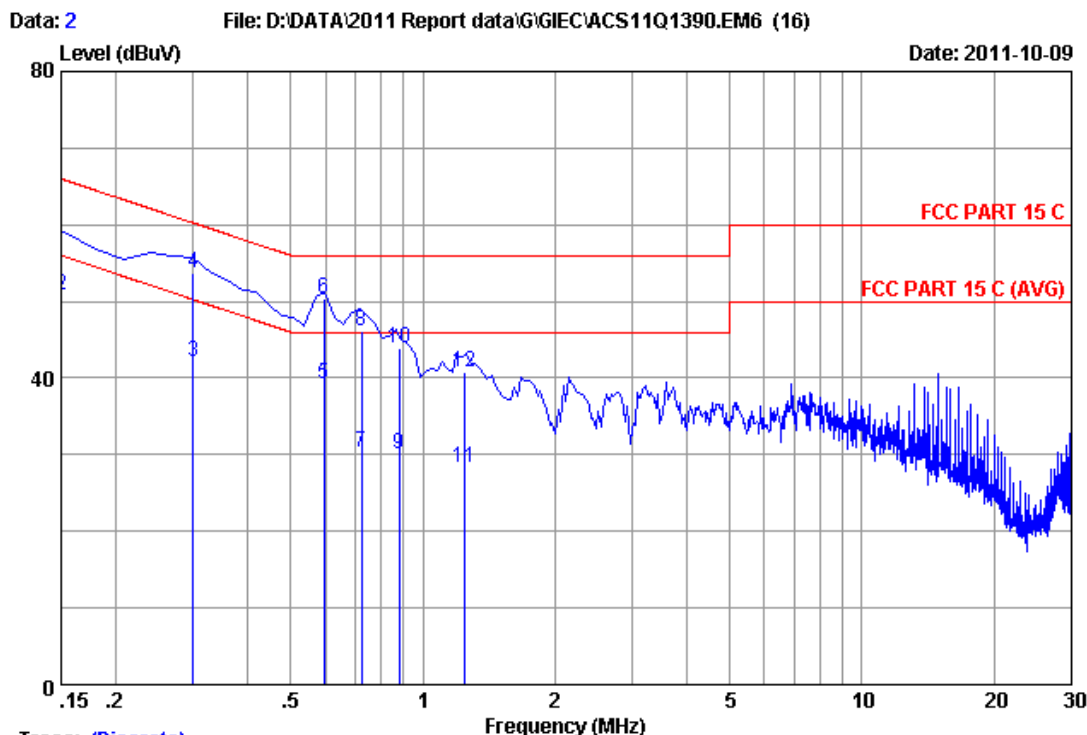
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). 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

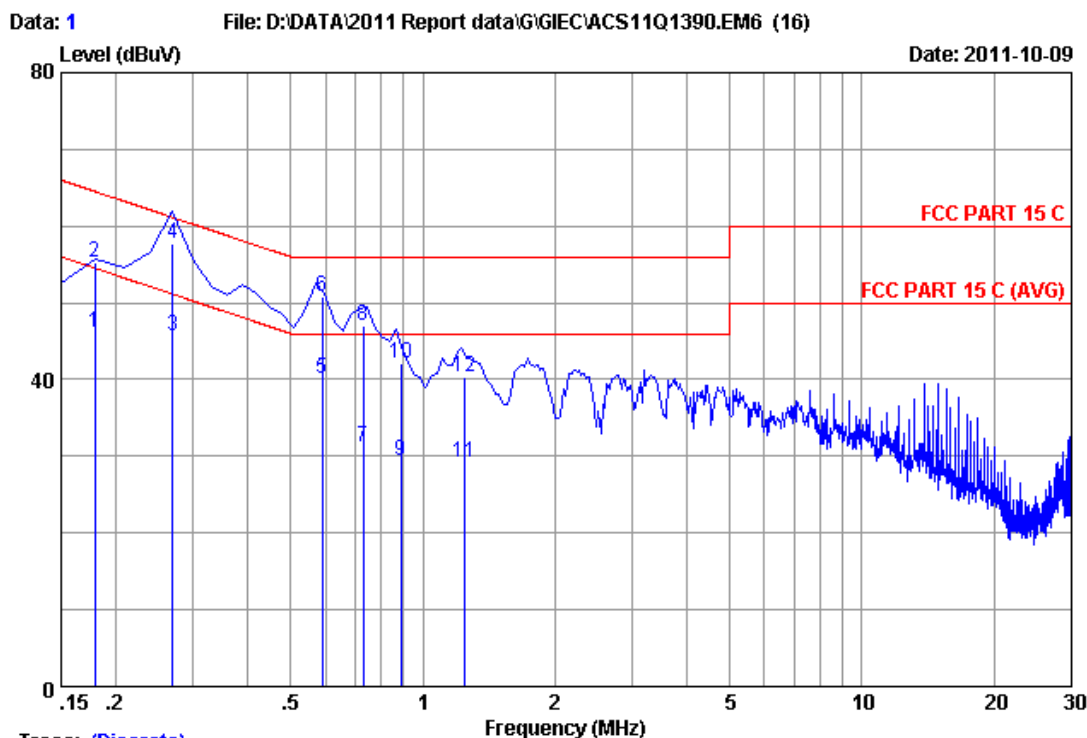
PASS. (All emissions not reported below are too low against the prescribed limits.)


Trace: (Discrete)

Site no : 1#conduction Data No : 2
 Dis./Ant. : ** 2011 ESH2-Z5 LINE
 Limit : FCC PART 15 C
 Env./Ins. : 29.5°C/55% Engineer : Leo-Li
 EUT : HOME ROAM M/N:HR701(Transmitter)
 Power Rating : DC 9V From Adapter Input AC 120V/60Hz
 Test Mode : Tx Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.98	16.31	26.46	56.00	29.54	Average
2	0.15000	0.17	9.98	40.61	50.76	66.00	15.24	QP
3	0.29959	0.18	9.98	32.00	42.16	50.25	8.09	Average
4	0.29959	0.18	9.98	43.50	53.66	60.25	6.59	QP
5	0.59396	0.19	9.98	29.00	39.17	46.00	6.83	Average
6	0.59396	0.19	9.98	40.20	50.37	56.00	5.63	QP
7	0.72477	0.19	9.97	20.11	30.27	46.00	15.73	Average
8	0.72477	0.19	9.97	36.01	46.17	56.00	9.83	QP
9	0.88163	0.21	9.98	20.00	30.19	46.00	15.81	Average
10	0.88163	0.21	9.98	33.70	43.89	56.00	12.11	QP
11	1.239	0.25	9.97	18.00	28.22	46.00	17.78	Average
12	1.239	0.25	9.97	30.50	40.72	56.00	15.28	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.


Trace: (Discrete)

Site no :1#conduction Data No :1
 Dis./Ant. :** 2011 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 C
 Env./Ins. :29.5°C/55% Engineer :Leo-Li
 EUT :HOME ROAM M/N:HR701(Transmitter)
 Power Rating :DC 9V From Adapter Input AC 120V/60Hz
 Test Mode :Tx Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17914	0.21	9.98	36.00	46.19	54.53	8.34	Average
2	0.17914	0.21	9.98	45.00	55.19	64.53	9.34	QP
3	0.26940	0.21	9.98	35.50	45.69	51.14	5.45	Average
4	0.26940	0.21	9.98	47.50	57.69	61.14	3.45	QP
5	0.59075	0.22	9.98	30.00	40.20	46.00	5.80	Average
6	0.59075	0.22	9.98	40.50	50.70	56.00	5.30	QP
7	0.73048	0.23	9.97	21.00	31.20	46.00	14.80	Average
8	0.73048	0.23	9.97	36.80	47.00	56.00	9.00	QP
9	0.89300	0.24	9.98	19.29	29.51	46.00	16.49	Average
10	0.89300	0.24	9.98	31.99	42.21	56.00	13.79	QP
11	1.240	0.25	9.97	19.00	29.22	46.00	16.78	Average
12	1.240	0.25	9.97	30.20	40.42	56.00	15.58	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

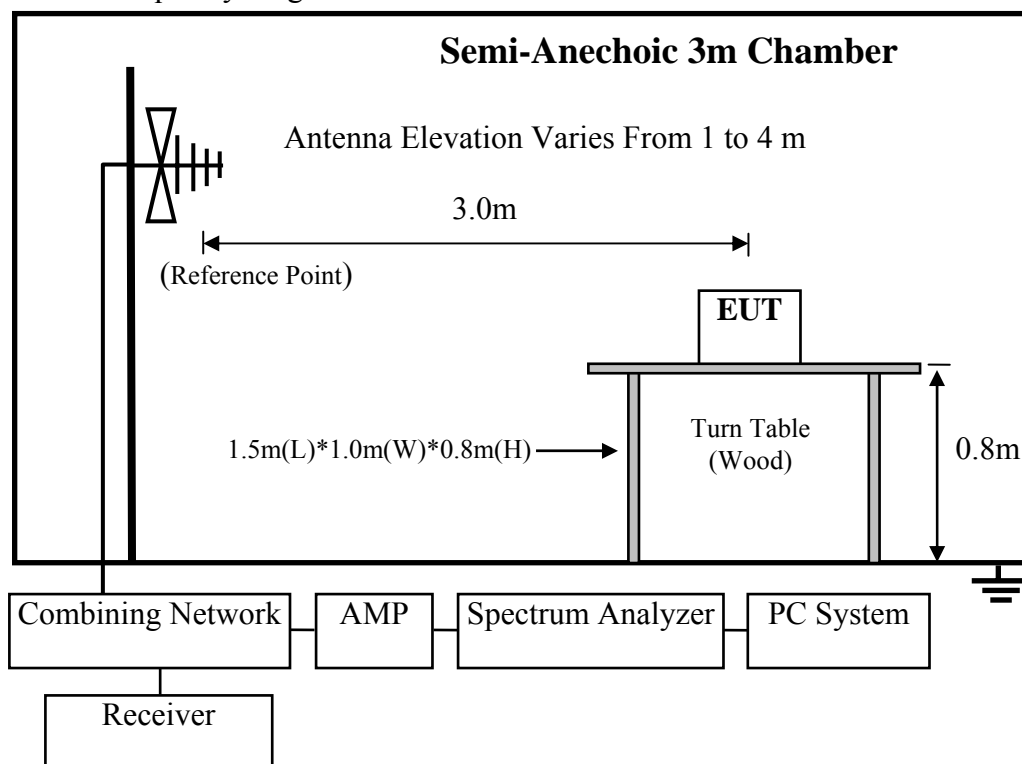
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.06,10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 11	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 11	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 11	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Oct.26, 10	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 11	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 11	1 Year

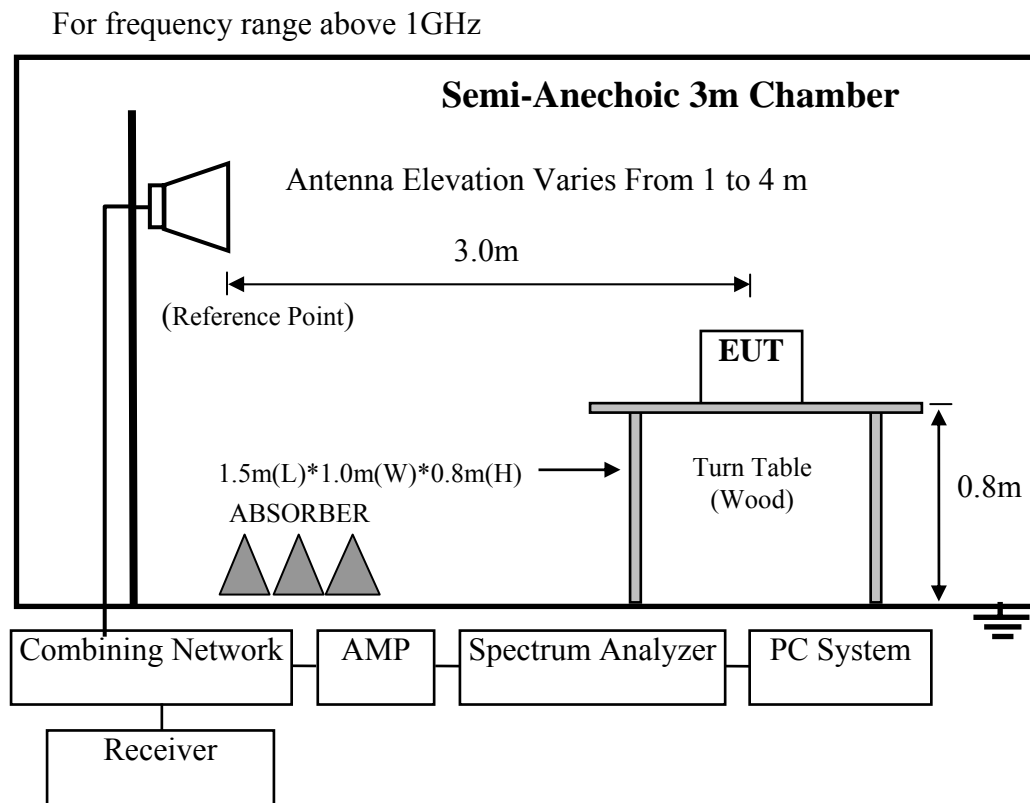
Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 11	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	July.01, 11	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 11	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX102	28622/2	May.08, 11	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 11	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	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
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 $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$
 - (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

Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a duty cycle correction factor, derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions.

After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation show in the test setup photos.

Because all peak emission which fall in the restricted bands are comply with the radiated emission, Specified in 15.209, the duty cycle factor is . So all average emission are also comply with the average limit

4.7.Radiated Emission Test Results

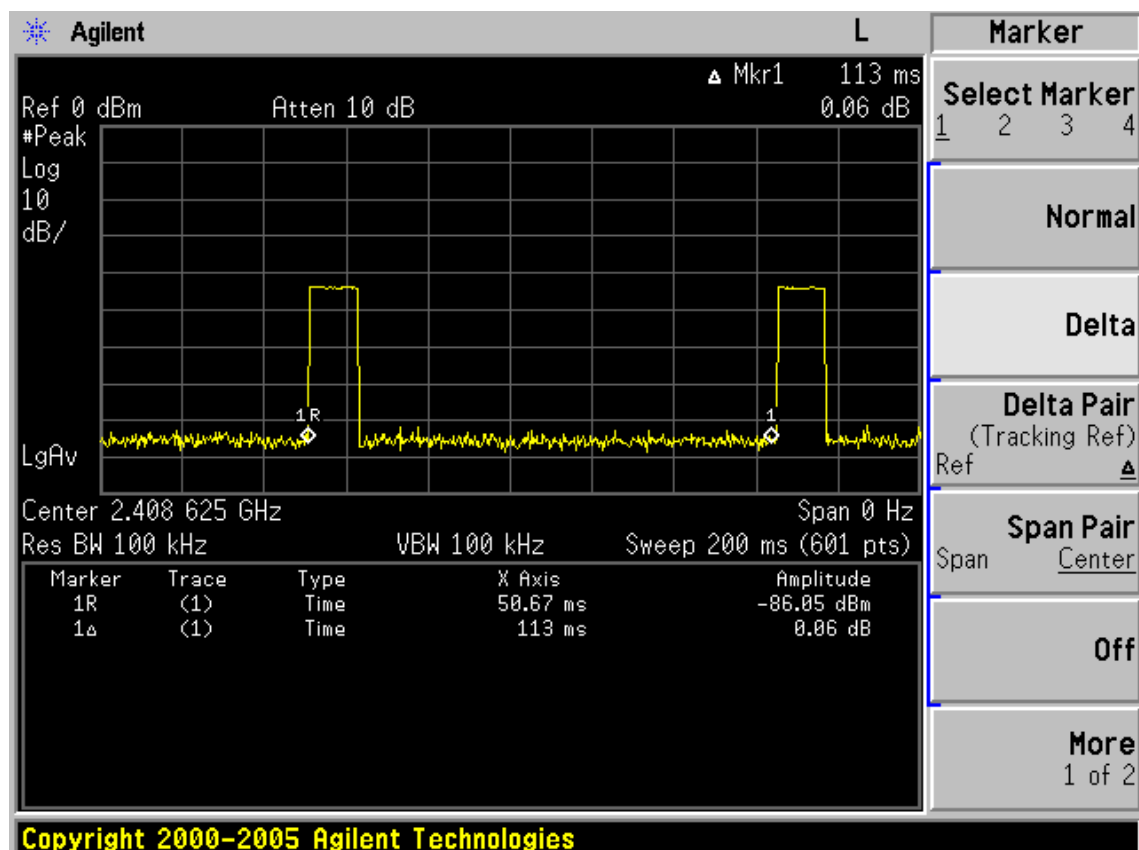
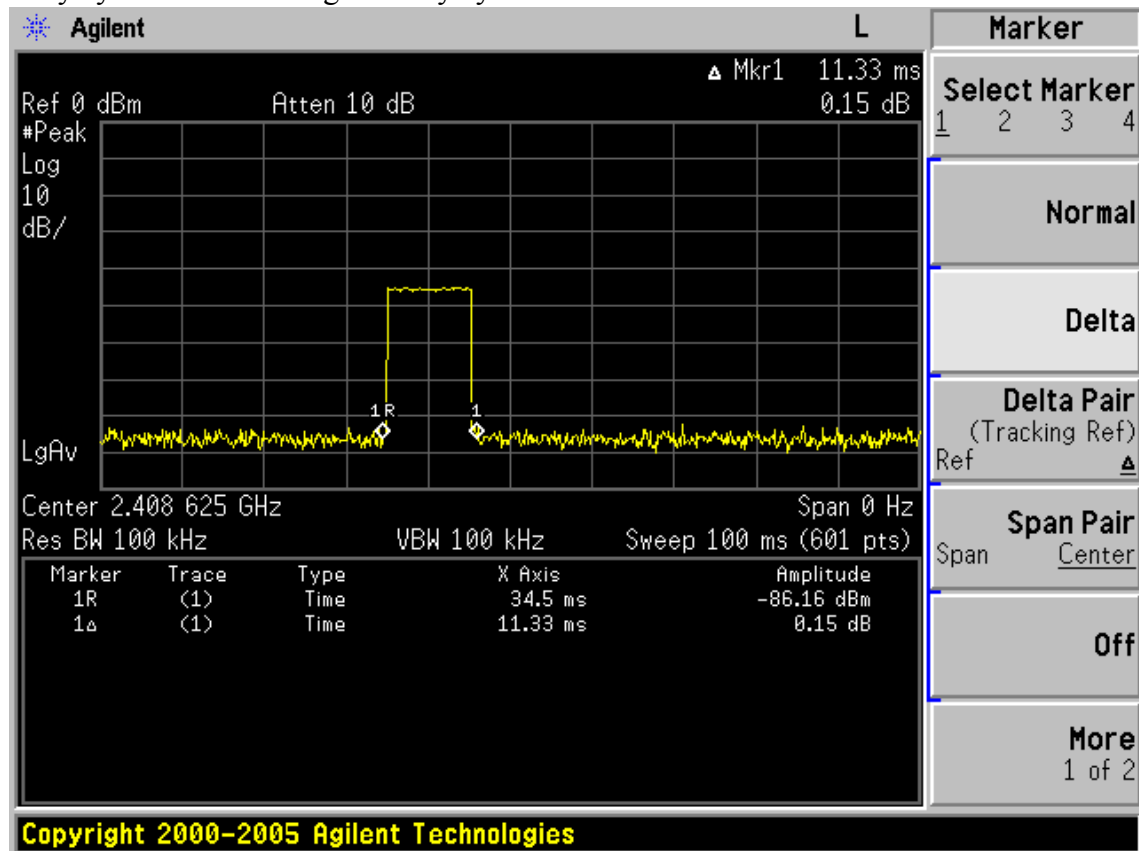
PASS.

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

Note: The duty cycle factor for calculate average level is 19.97dB, 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: $11.33\text{ms} / 113\text{ms} * 100\% = 10.03\%$

Duty cycle factor = $20\log (1/\text{duty cycle}) = 19.97$

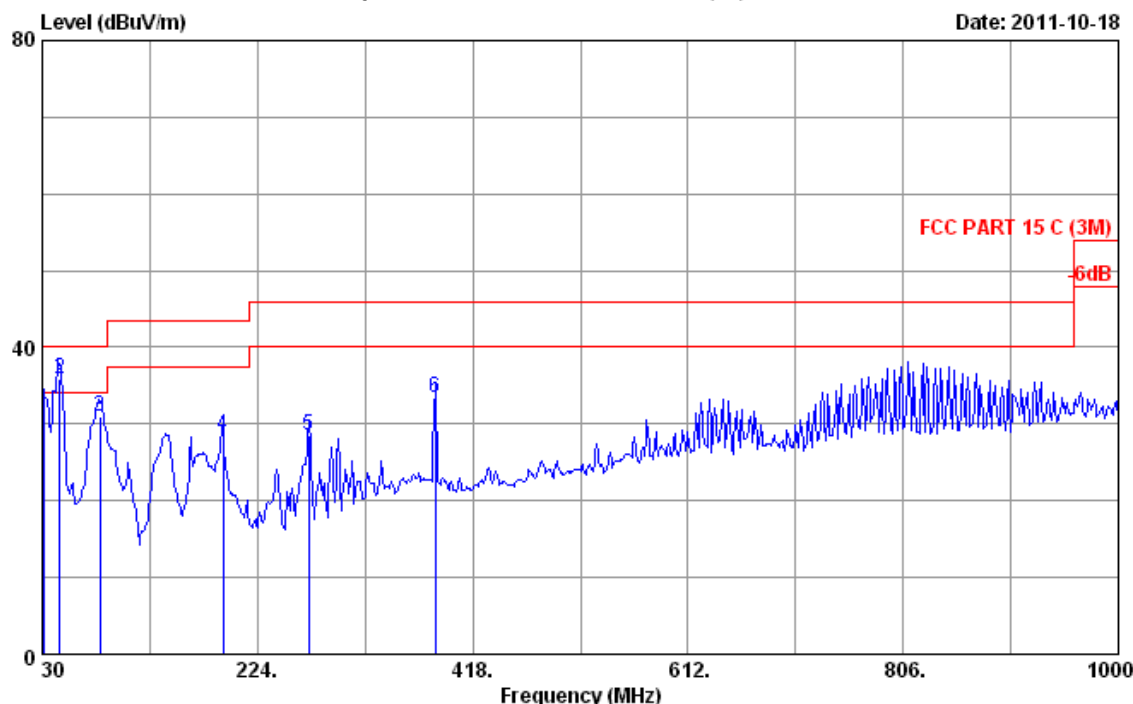


Frequency: 30MHz~1GHz

Data: 1

File: E:\2011 Report data\GIGIEC\ACS11Q1390.EM6 (40)

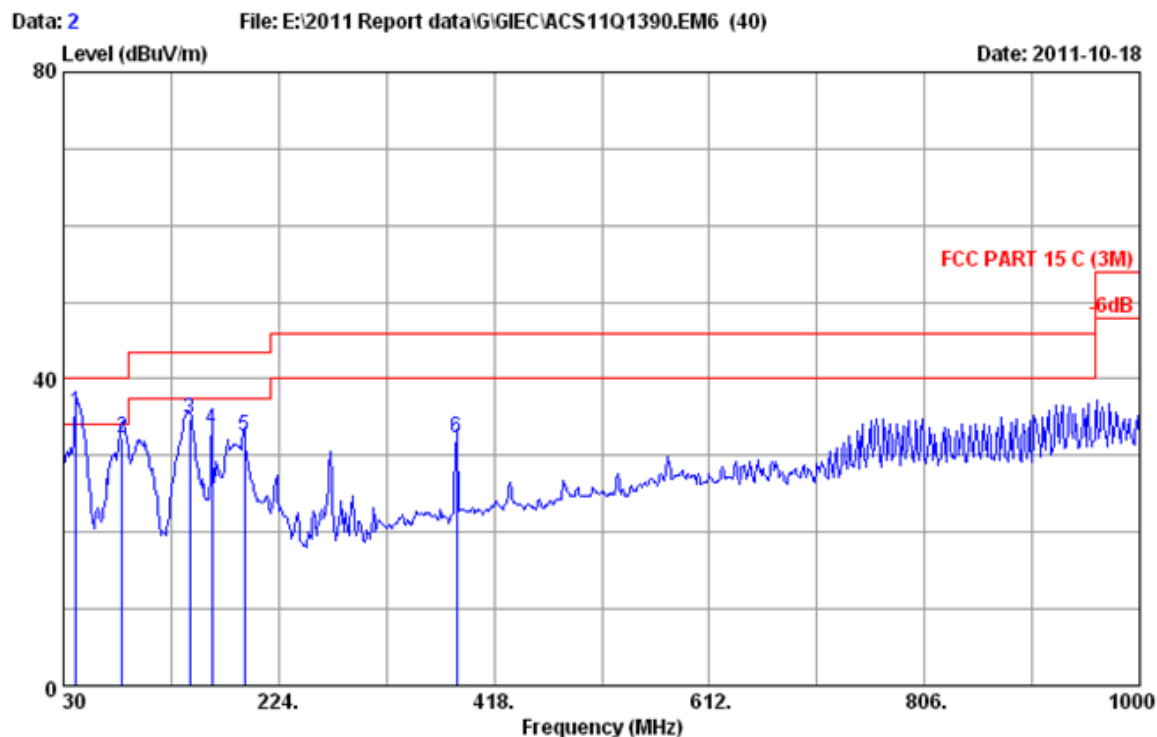
Date: 2011-10-18



Site no. : 3m Chamber Data no. : 1
Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Leo-Li
EUT : HOME ROAM M/N:HR701 (Transmitter)
Power rating : DC 9V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	12.32	31.81	40.00	8.19	QP
2	45.520	11.38	0.78	23.62	35.78	40.00	4.22	QP
3	82.380	8.04	1.05	21.84	30.93	40.00	9.07	QP
4	192.960	9.58	1.78	17.05	28.41	43.50	15.09	QP
5	270.560	13.28	2.66	12.53	28.47	46.00	17.53	QP
6	384.050	15.94	3.28	14.24	33.46	46.00	12.54	QP

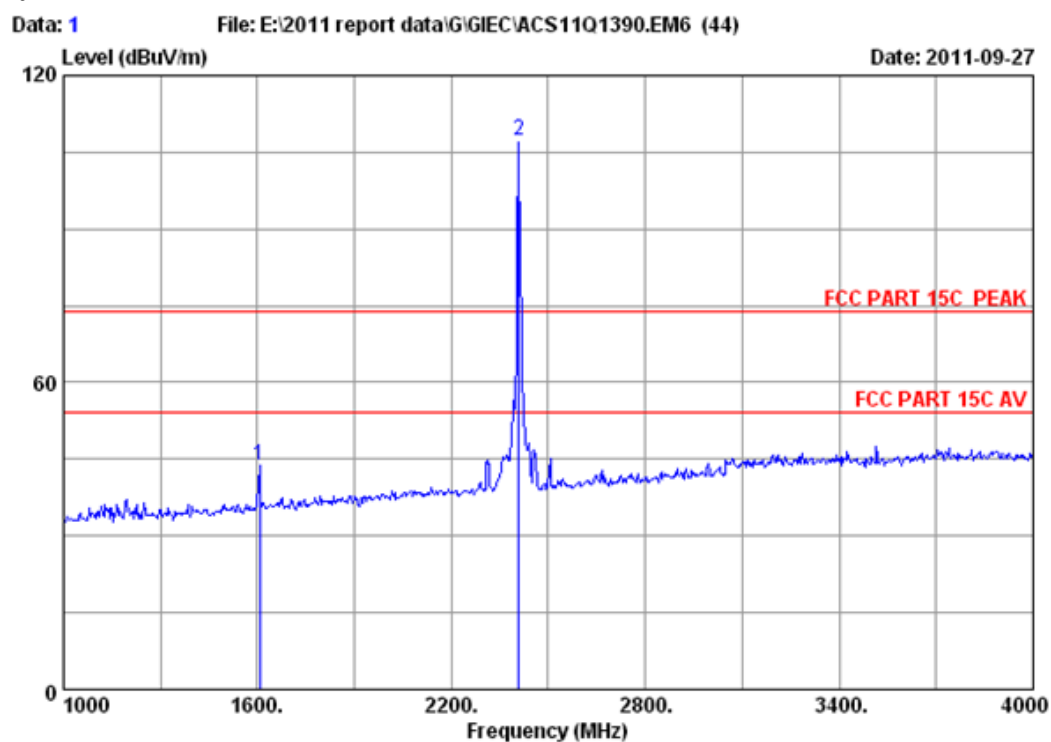
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Leo-Li
EUT : HOME ROAM M/N:HR701 (Transmitter)
Power rating : DC 9V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	41.560	13.42	0.73	21.60	35.75	40.00	4.25	QP
2	83.194	8.16	1.05	23.00	32.21	40.00	7.79	QP
3	143.490	11.93	1.45	21.38	34.76	43.50	8.74	QP
4	163.860	10.78	1.59	20.95	33.32	43.50	10.18	QP
5	192.960	9.58	1.78	21.27	32.63	43.50	10.87	QP
6	384.050	15.94	3.28	13.12	32.34	46.00	13.66	QP

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

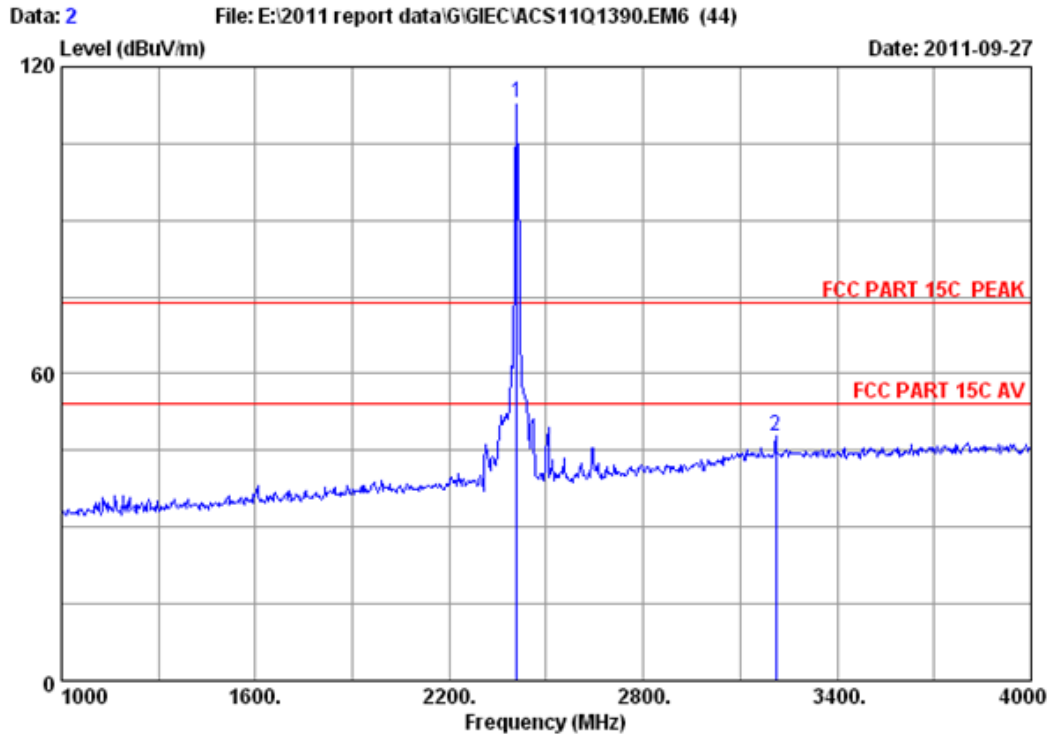
Frequency: 1GHz~18GHz


Site no. : 3m Chamber Data no. : 1
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701 (Transmitter)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits dBuV/m)	Margin (dB)	
1	1606.000	25.79	5.38	34.60	47.06	43.63	74.00	30.37	Peak
2	2408.625	27.98	6.75	34.44	107.15	107.44	74.00	-33.44	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.

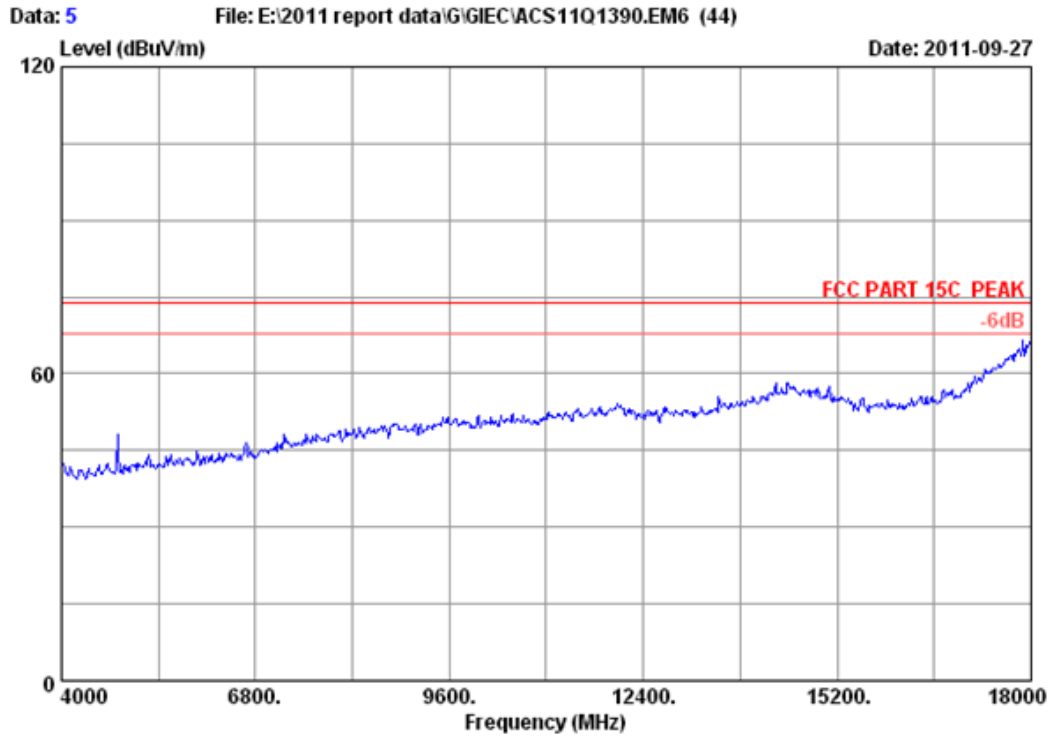


Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701 (Transmitter)

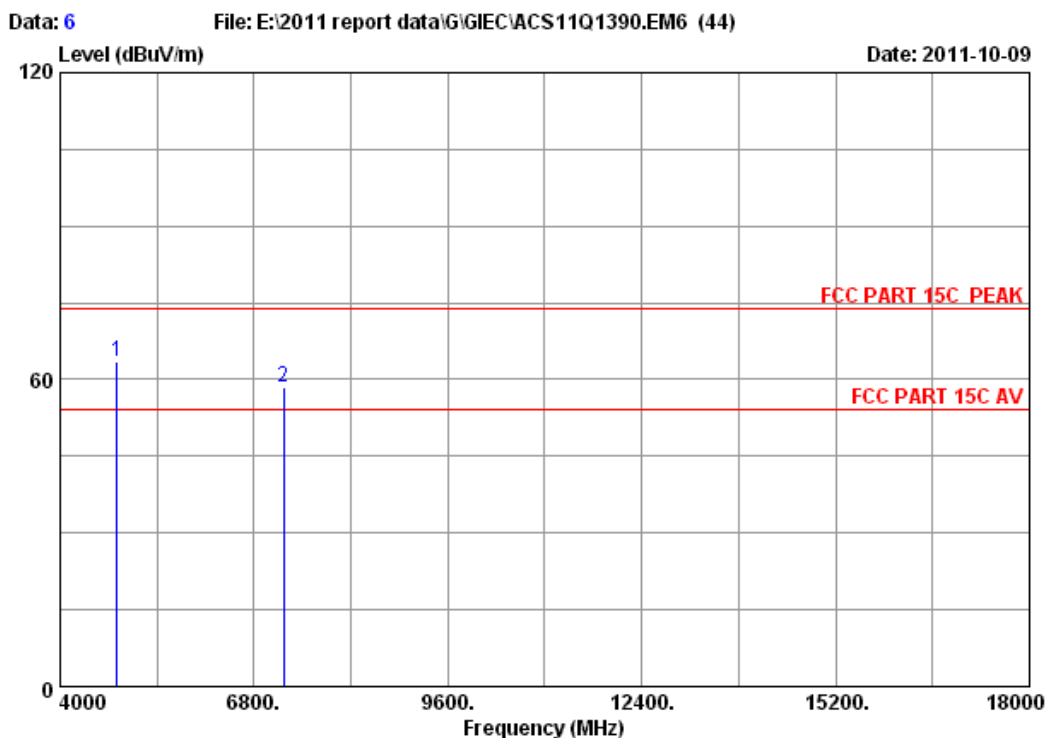
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2408.625	27.98	6.75	34.44	112.56	112.85	74.00	-38.85	Peak
2	3211.000	30.46	7.98	34.52	43.99	47.91	74.00	26.09	Peak

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.	: 3m Chamber	Data no. :	5
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2408.625MHz		
	HR701 (Transmitter)		



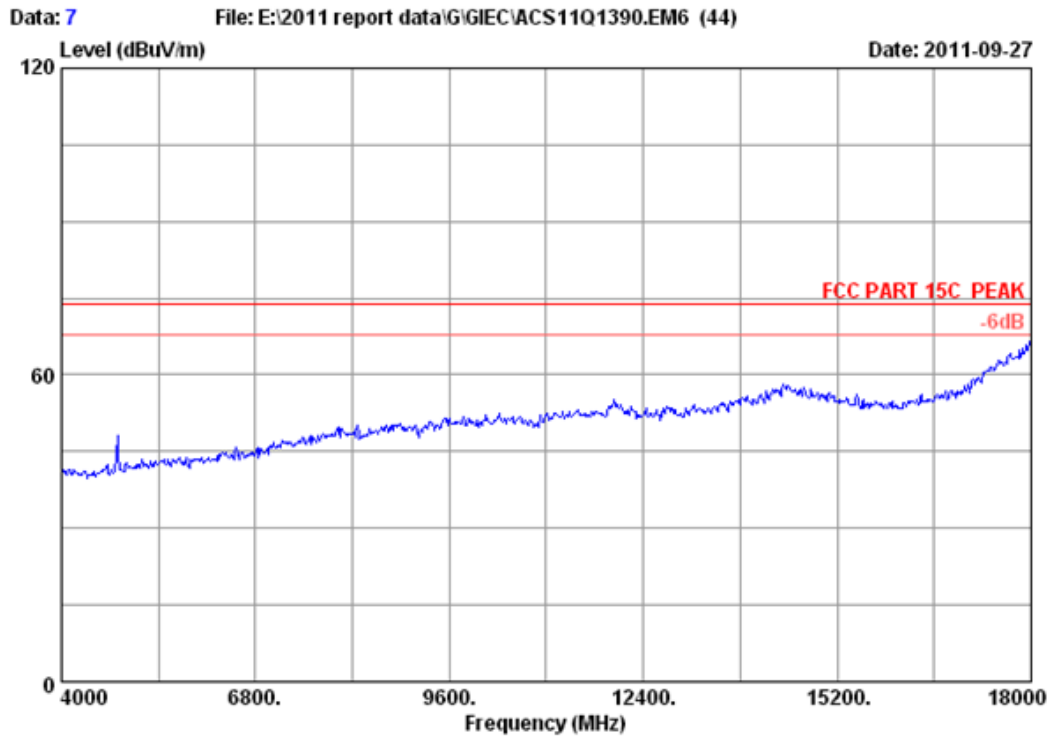
Site no. : 3m Chamber Data no. : 6
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701(Transmitter)

	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 4817.250	32.89	9.55	34.60	55.76	63.60	74.00	10.40	Peak	
2 7225.875	35.78	11.83	34.72	45.71	58.60	74.00	15.40	Peak	

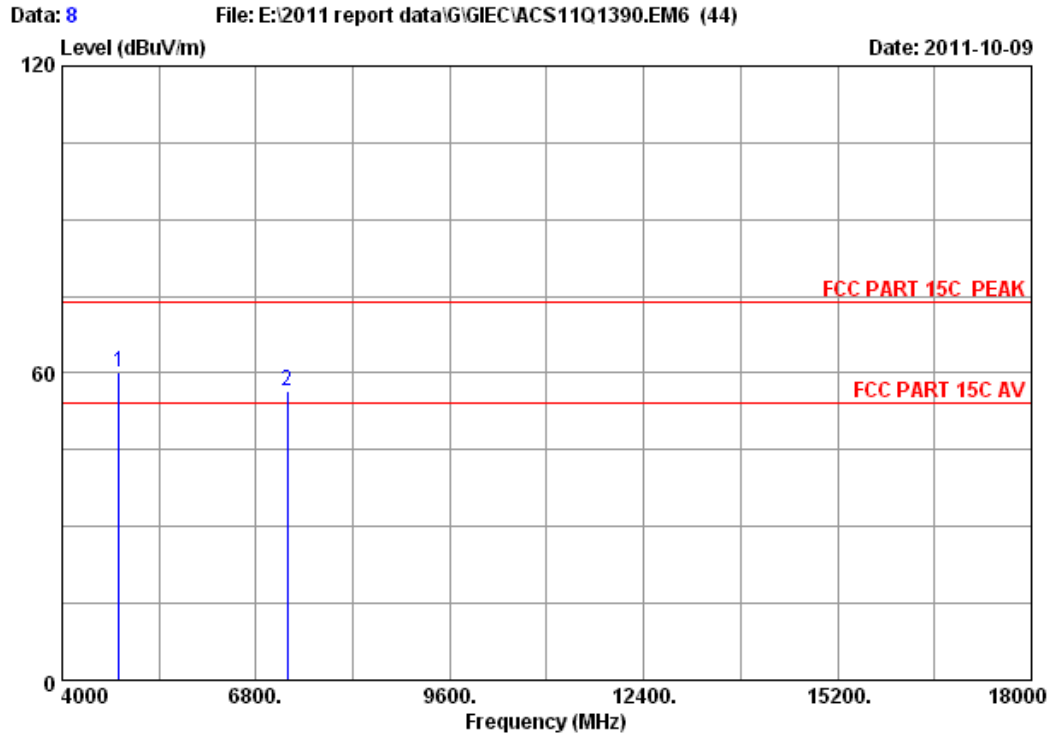
Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4817.250	63.60	19.97	40.51	54	Pass
7225.875	58.60	19.97	35.51	54	Pass



Site no.	: 3m Chamber	Data no. :	7
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2408.625MHz		
	HR701 (Transmitter)		



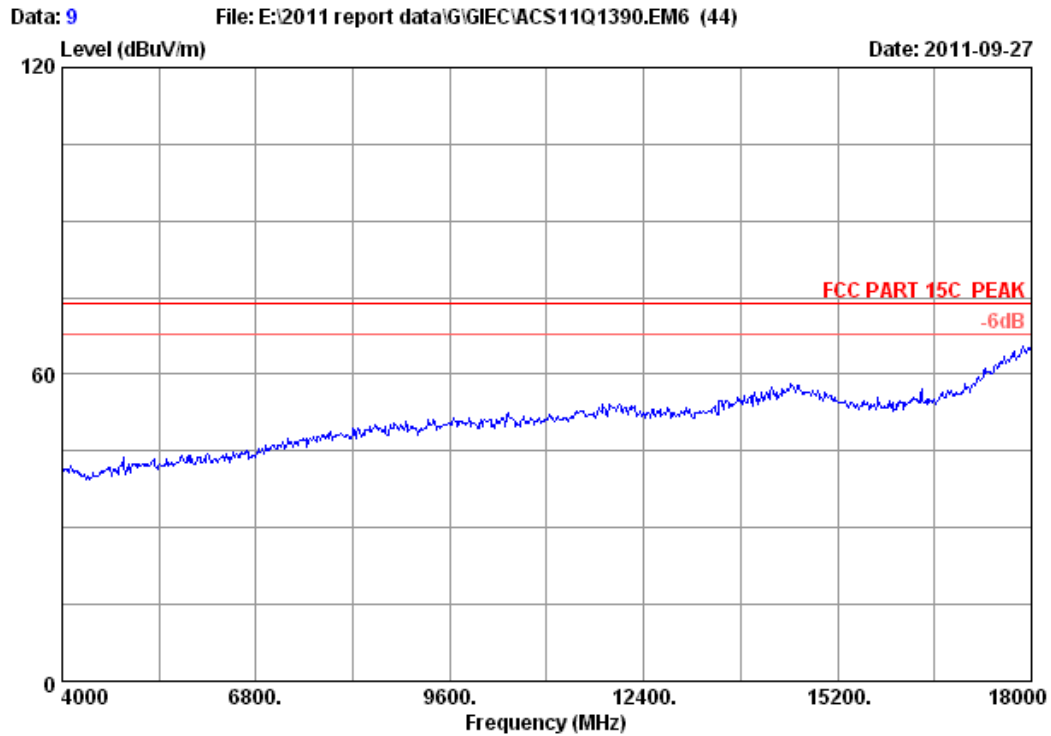
Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701(Transmitter)

	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 4817.250	32.89	9.55	34.60	52.28	60.12	74.00	13.88	Peak	
2 7255.875	35.87	11.85	34.72	43.55	56.55	74.00	17.45	Peak	

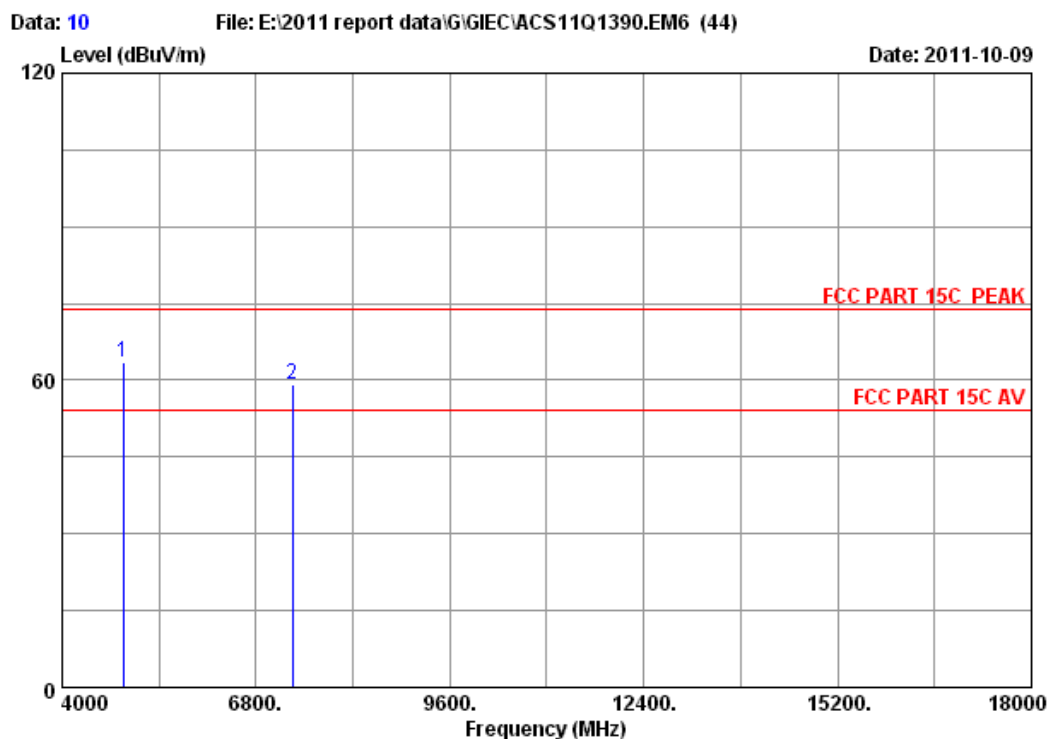
Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4817.250	60.12	19.97	37.03	54	Pass
7255.875	56.55	19.97	33.46	54	Pass



Site no.	: 3m Chamber	Data no. :	9
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2443.5MHz		
	HR701(Transmitter)		



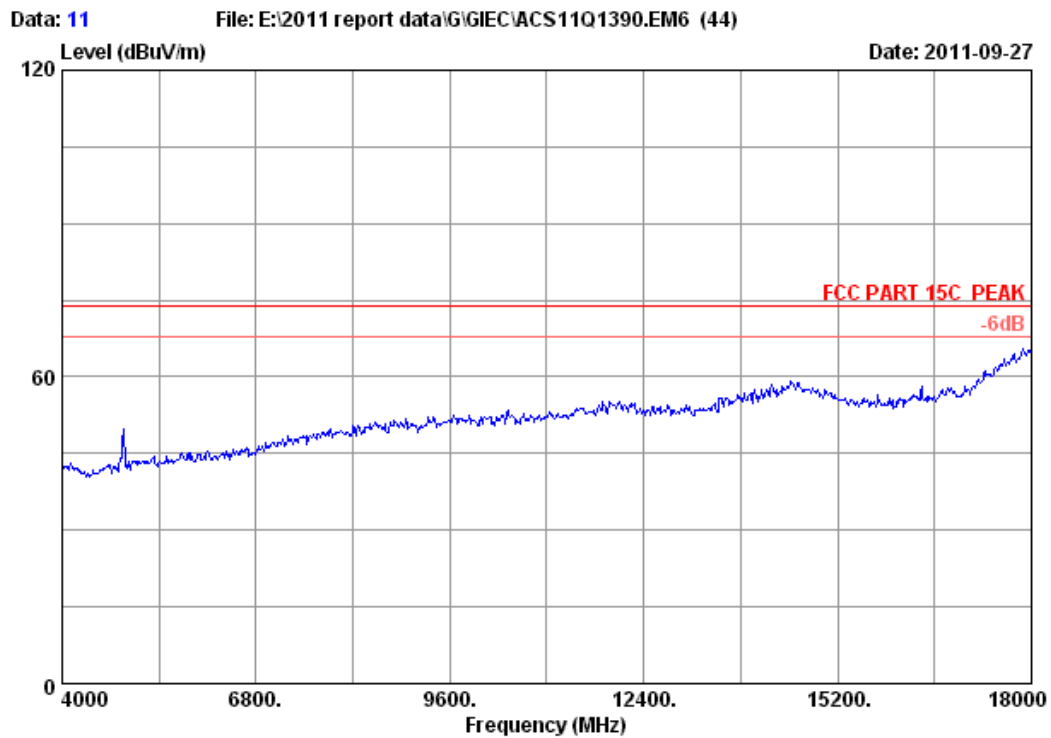
Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2443.5MHz
 HR701(Transmitter)

	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	4887.000	33.01	9.62	34.60	55.62	63.65	74.00	10.35	Peak
2	7330.500	36.05	11.89	34.73	45.91	59.12	74.00	14.88	Peak

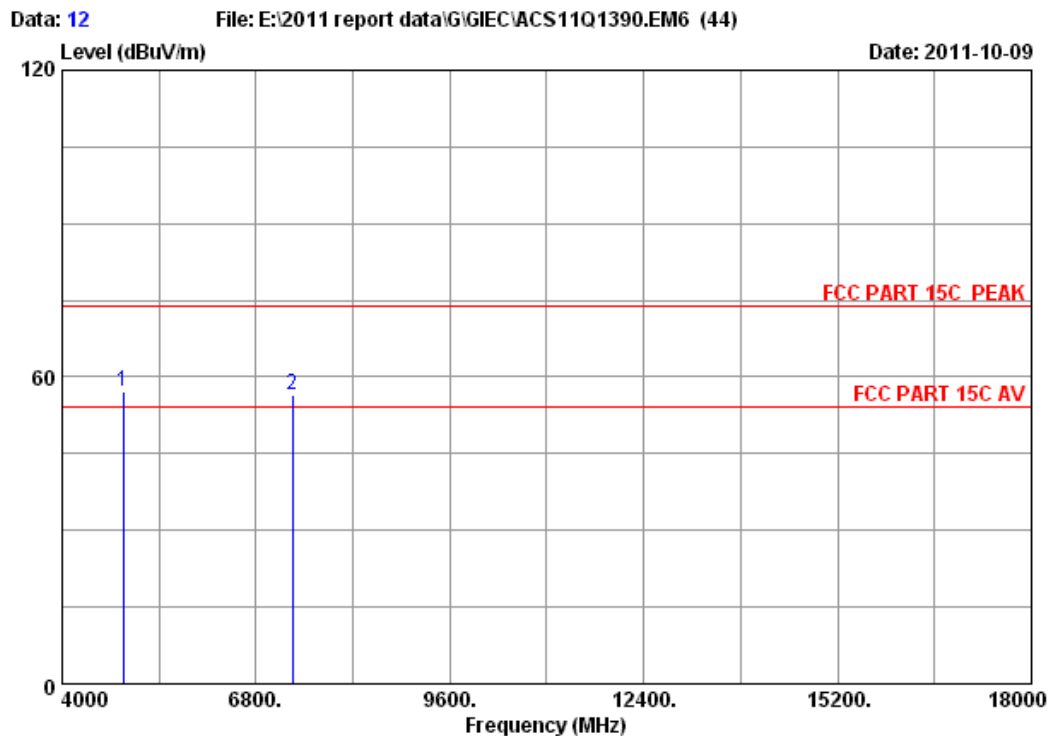
Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4887.000	63.65	19.97	40.56	54	Pass
7330.500	59.12	19.97	36.03	54	Pass



Site no.	: 3m Chamber	Data no. :	11
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2443.5MHz		
	HR701(Transmitter)		



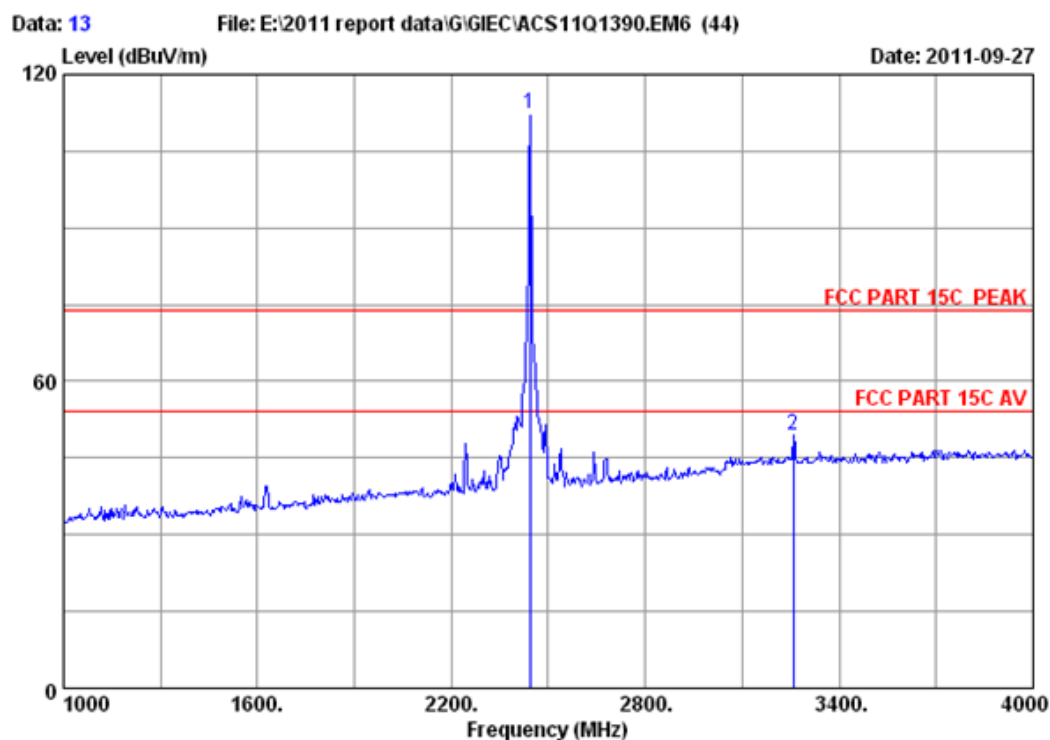
Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2443.5MHz
 HR701(Transmitter)

	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 4887.000	33.01	9.62	34.60	49.04	57.07	74.00	16.93	Peak	
2 7330.500	36.05	11.89	34.73	43.28	56.49	74.00	17.51	Peak	

Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4887.000	57.07	19.97	33.98	54	Pass
7330.500	56.49	19.97	33.40	54	Pass

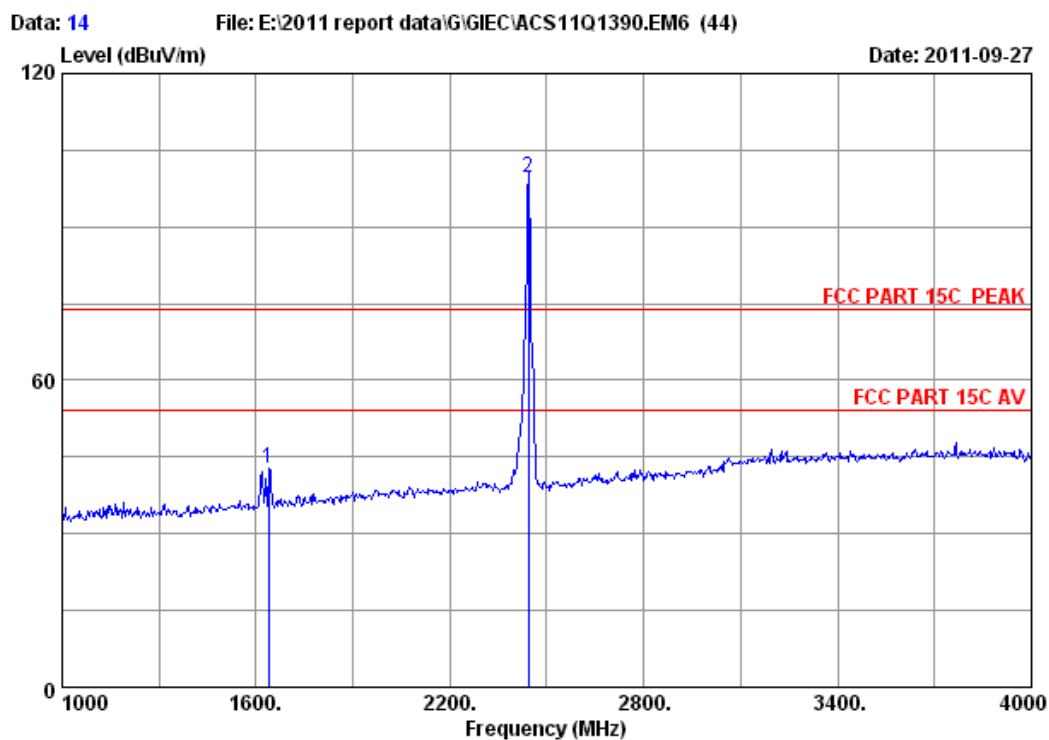


Site no. : 3m Chamber Data no. : 13
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2443.5MHz
 HR701 (Transmitter)

	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2443.500	28.03	6.81	34.44	111.75	112.15	74.00	-38.15	Peak
2	3259.000	30.57	8.03	34.52	45.26	49.34	74.00	24.66	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.

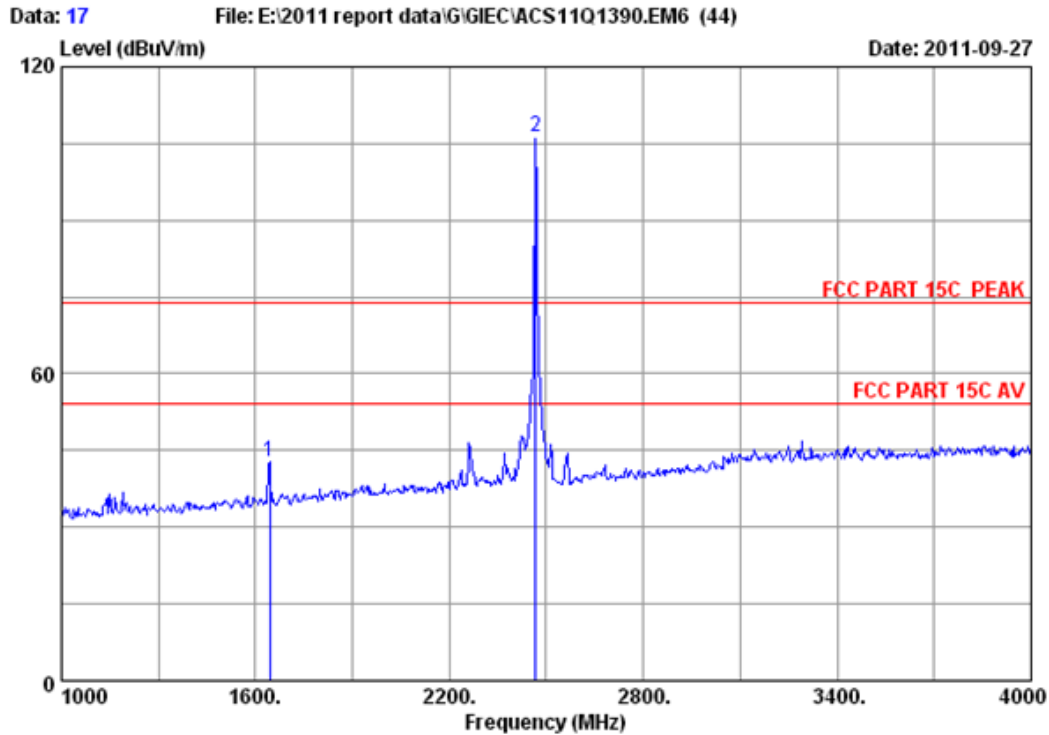


Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2443.5MHz
 HR701(Transmitter)

		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	1639.000	25.93	5.45	34.58	46.08	42.88	74.00	31.12	Peak
2	2443.500	28.03	6.81	34.44	99.18	99.58	74.00	-25.58	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.

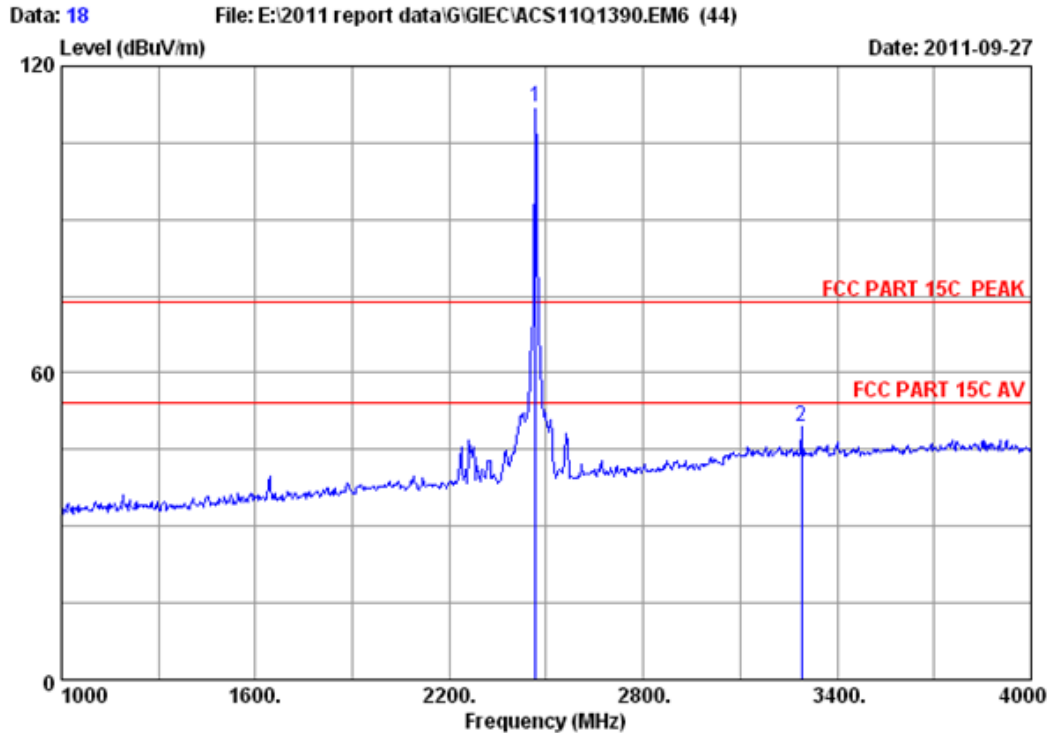


Site no. : 3m Chamber Data no. : 17
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2467.125MHz
 HR701 (Transmitter)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	1645.000	25.93	5.45	34.58	46.02	42.82	74.00	31.18	Peak
2	2467.125	28.05	6.87	34.45	105.87	106.34	74.00	-32.34	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.

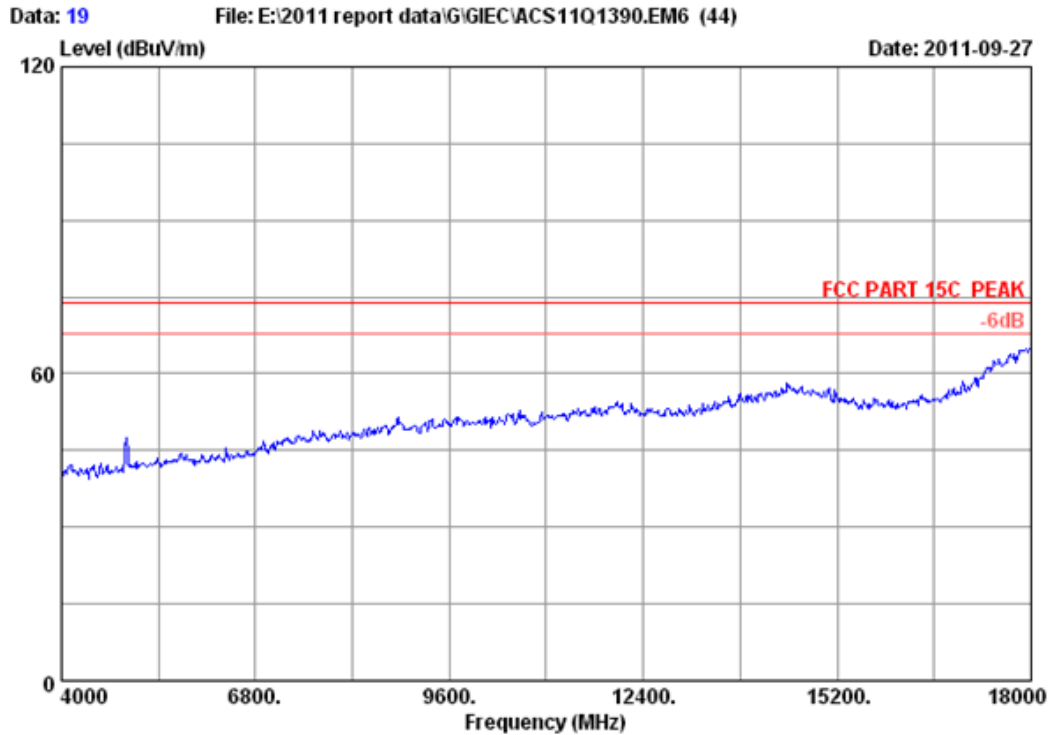


Site no. : 3m Chamber Data no. : 18
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2467.125MHz
 HR701 (Transmitter)

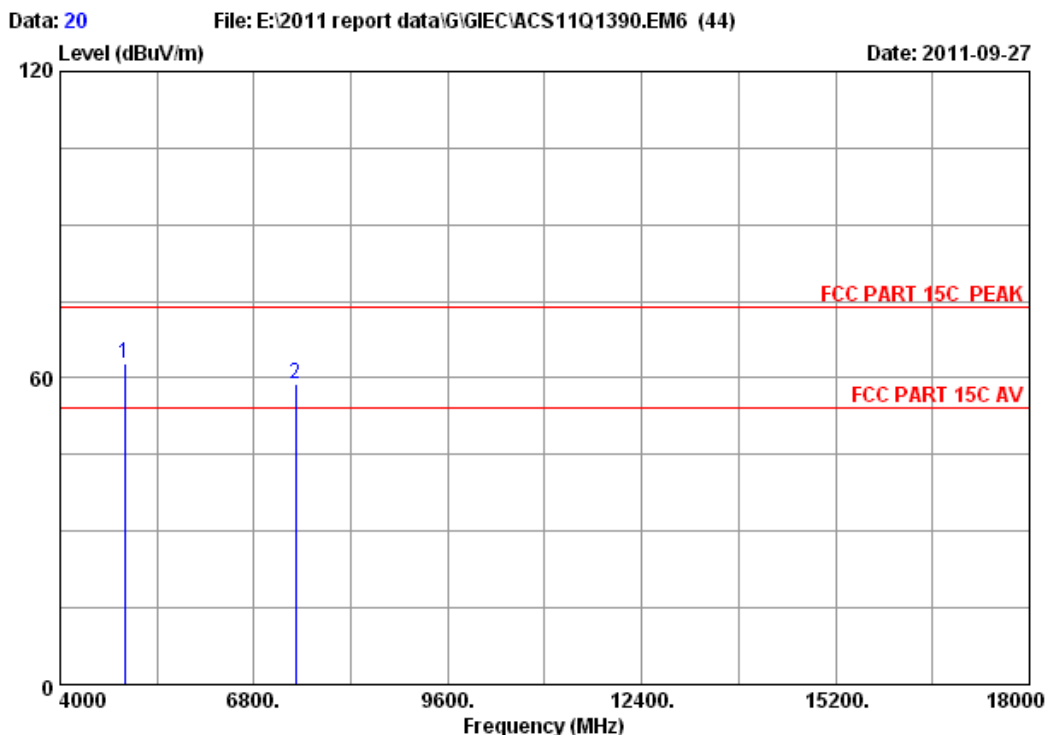
	Ant. Freq. (MHz)	Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits dBuV/m)	Margin (dB)	Remark
1	2467.125	28.05	6.87	34.45	111.36	111.83	74.00	-37.83	Peak
2	3289.000	30.64	8.05	34.53	45.43	49.59	74.00	24.41	Peak

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.	: 3m Chamber	Data no. :	19
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2467.125MHz		
	HR701 (Transmitter)		



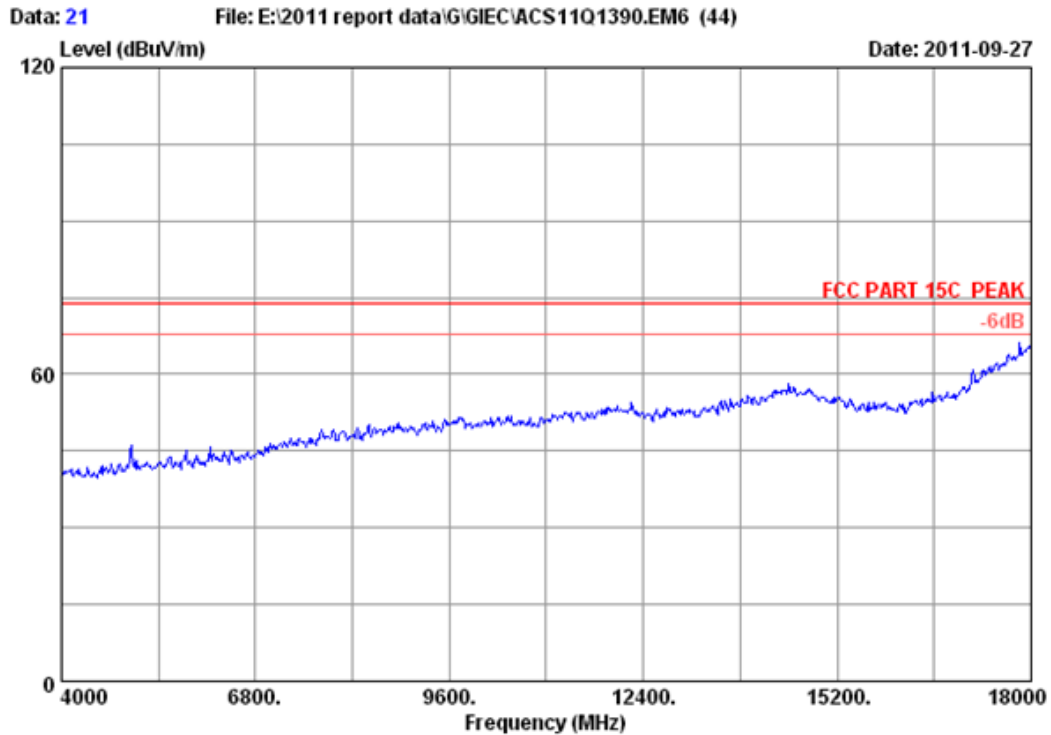
Site no. : 3m Chamber Data no. : 20
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : HOME ROAM
Power : DC 9V From Adapter Input AC 120V/60Hz
Test mode : Tx 2467.125MHz
HR701(Transmitter)

	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 4934.250	33.08	9.67	34.60	54.76	62.91	74.00	11.09	Peak	
2 7401.375	36.28	11.93	34.74	45.23	58.70	74.00	15.30	Peak	

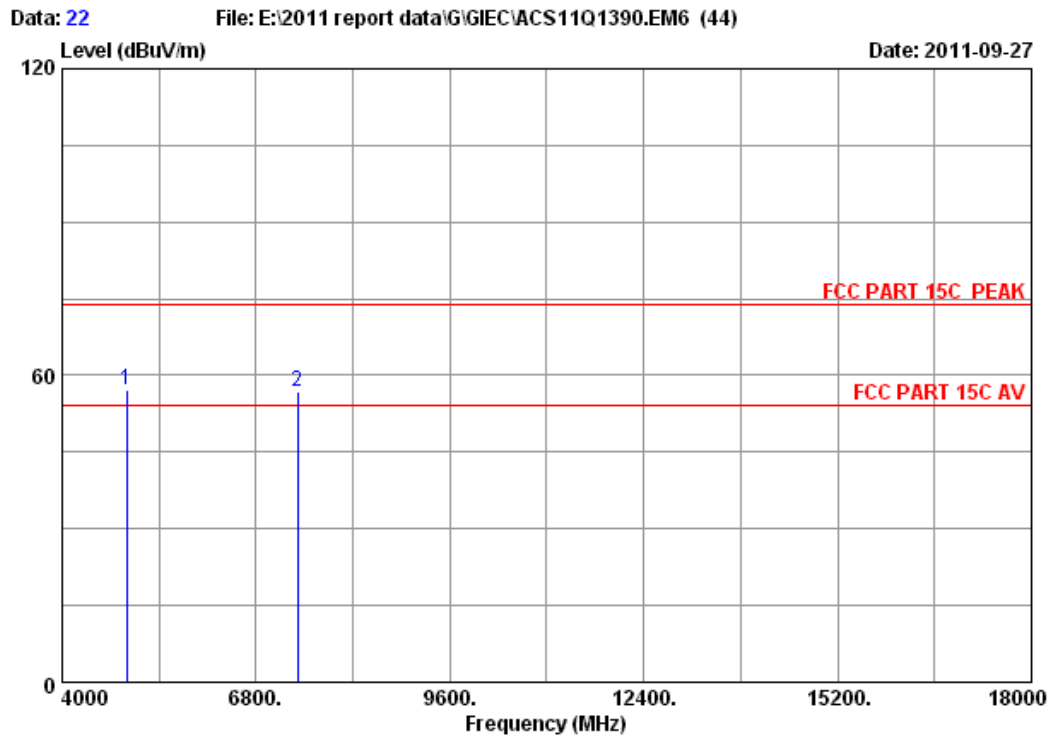
Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4934.250	62.91	19.97	39.82	54	Pass
7401.375	45.23	19.97	22.14	54	Pass



Site no.	: 3m Chamber	Data no. :	21
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: HOME ROAM		
Power	: DC 9V From Adapter Input AC 120V/60Hz		
Test mode	: Tx 2467.125MHz		
	HR701 (Transmitter)		



Site no. : 3m Chamber Data no. : 22
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2467.125MHz
 HR701(Transmitter)

	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 4934.250	33.08	9.67	34.60	49.16	57.31	74.00	16.69	Peak	
2 7401.375	36.28	11.93	34.74	43.26	56.73	74.00	17.27	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.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4934.250	57.31	19.97	34.22	54	Pass
7401.375	56.73	19.97	33.64	54	Pass

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.08,11	1 Year

5.2. Limit

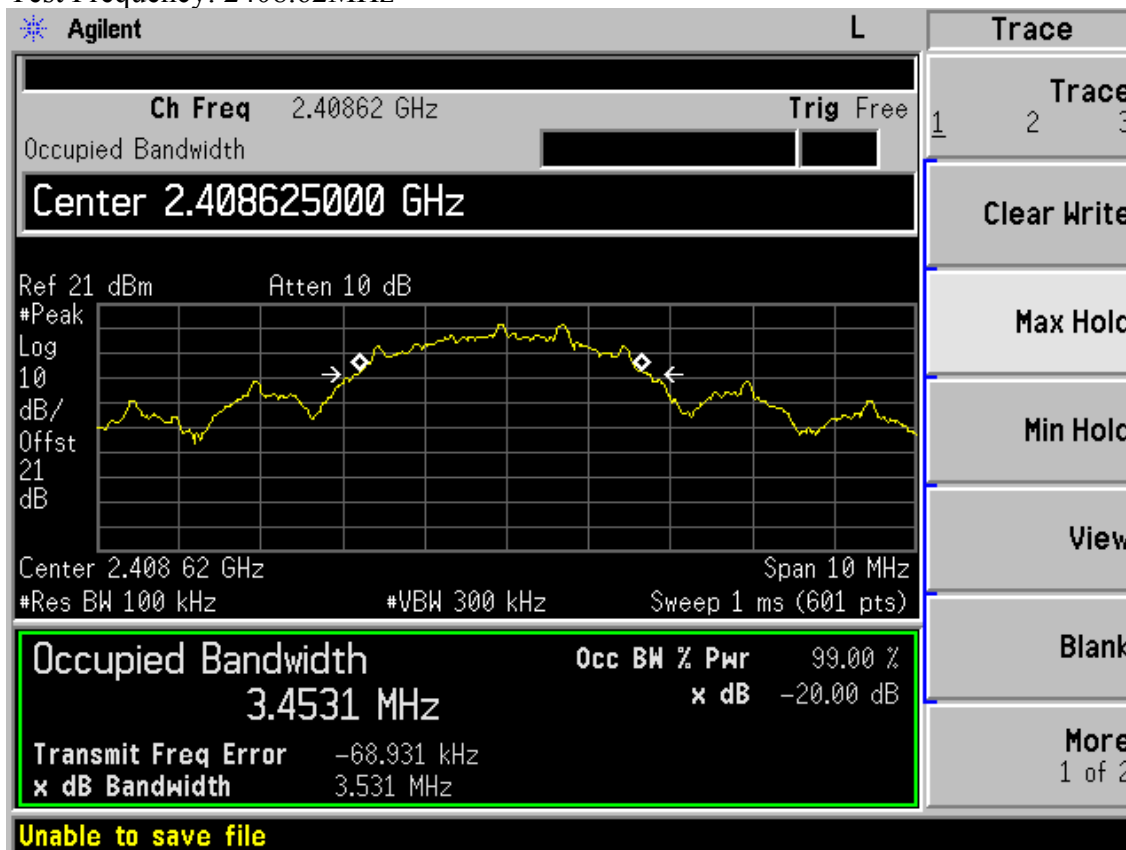
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific 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

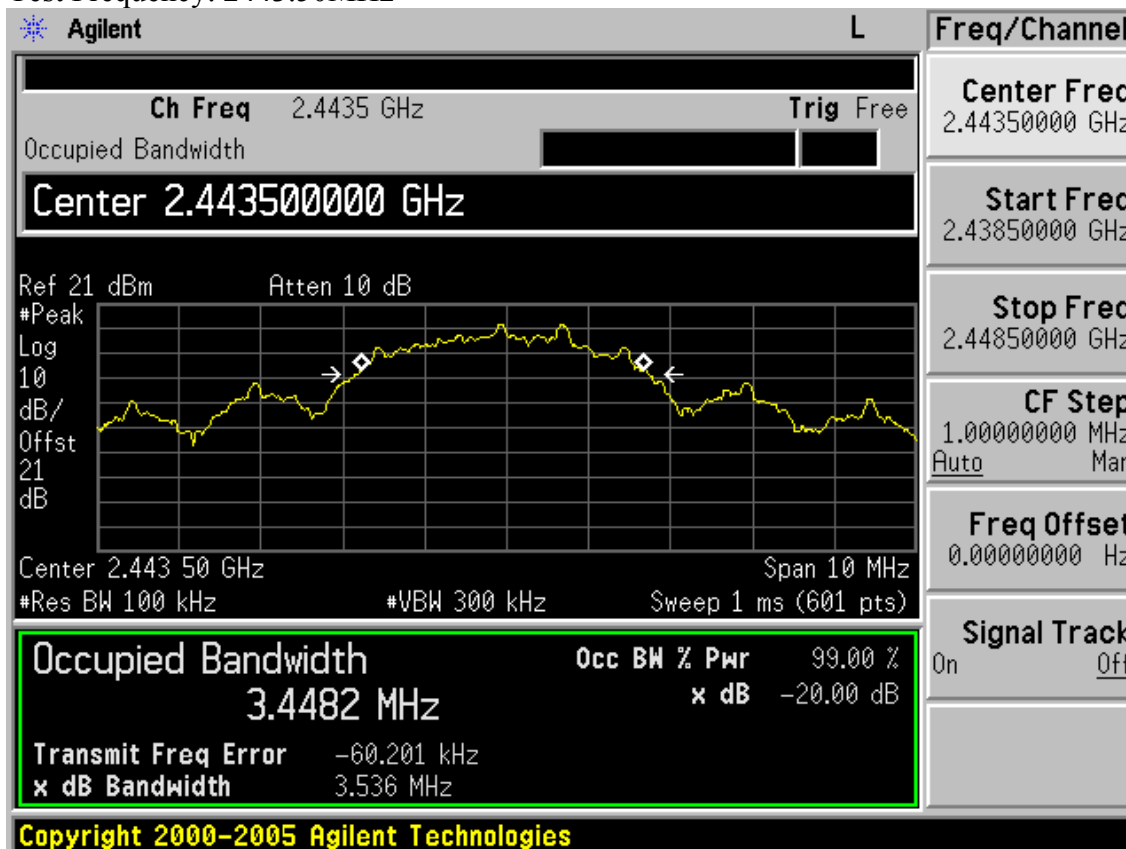
EUT: HOME ROAM		
M/N: HR701 (Transmitter)		
Test date:2011-10-09	Pressure: 101.7 kpa	Humidity: 52 %
Tested by: Leo-Li	Test site: RF site	Temperature : 25.6 °C

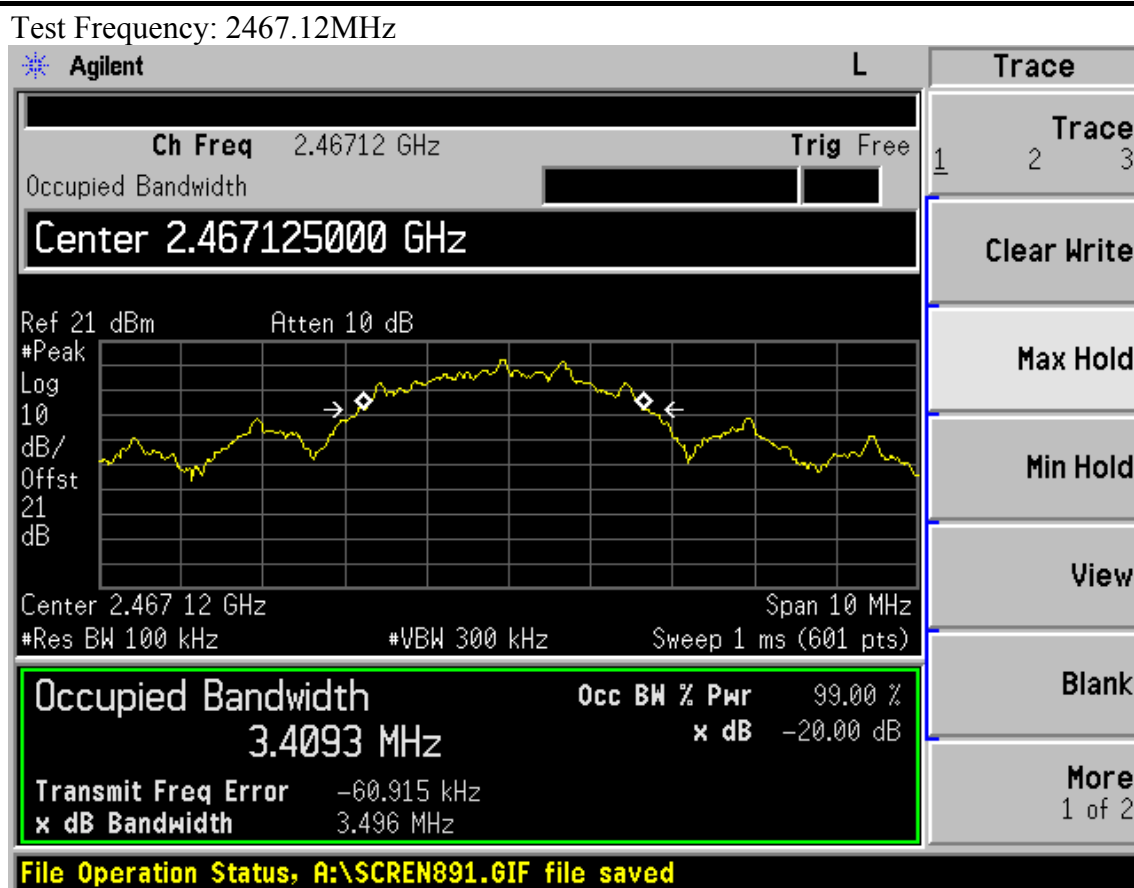
Frequency	20dB bandwidth (KHz)	Limit (KHz)
2408.62MHz	3531	N/A
2443.50MHz	3536	N/A
2467.12MHz	3496	N/A
Conclusion : PASS		

Test Frequency: 2408.62MHz



Test Frequency: 2443.50MHz





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.08,11	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	May.25, 11	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 11	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,11	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,11	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,11	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.

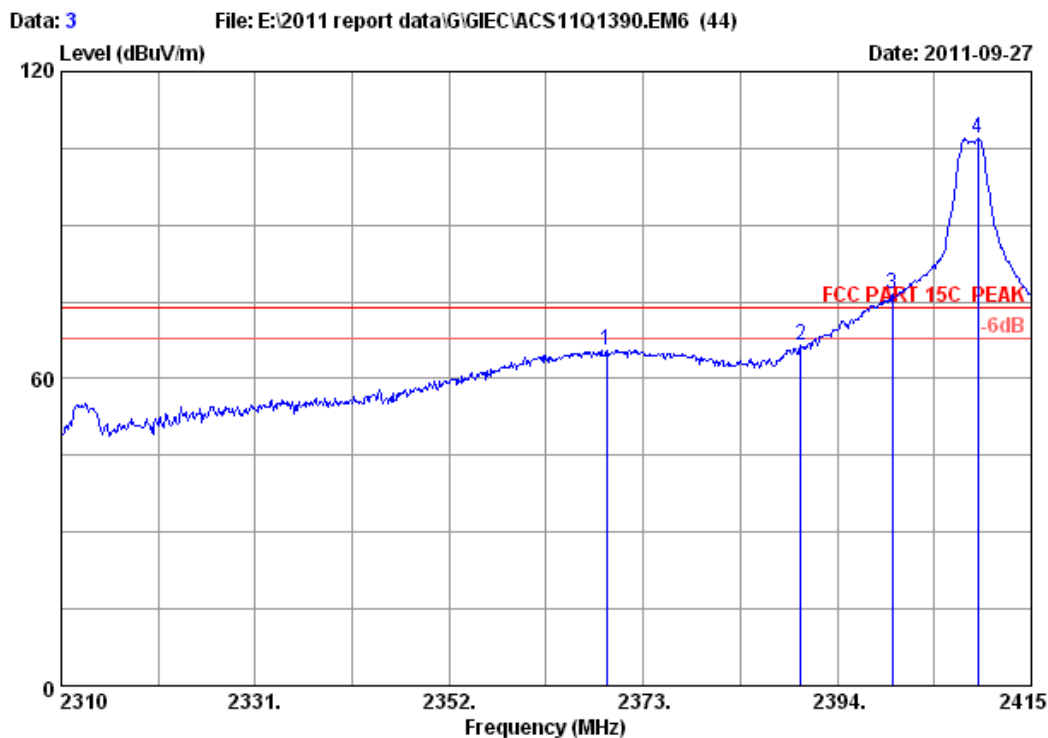
6.3. Test Produce

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.



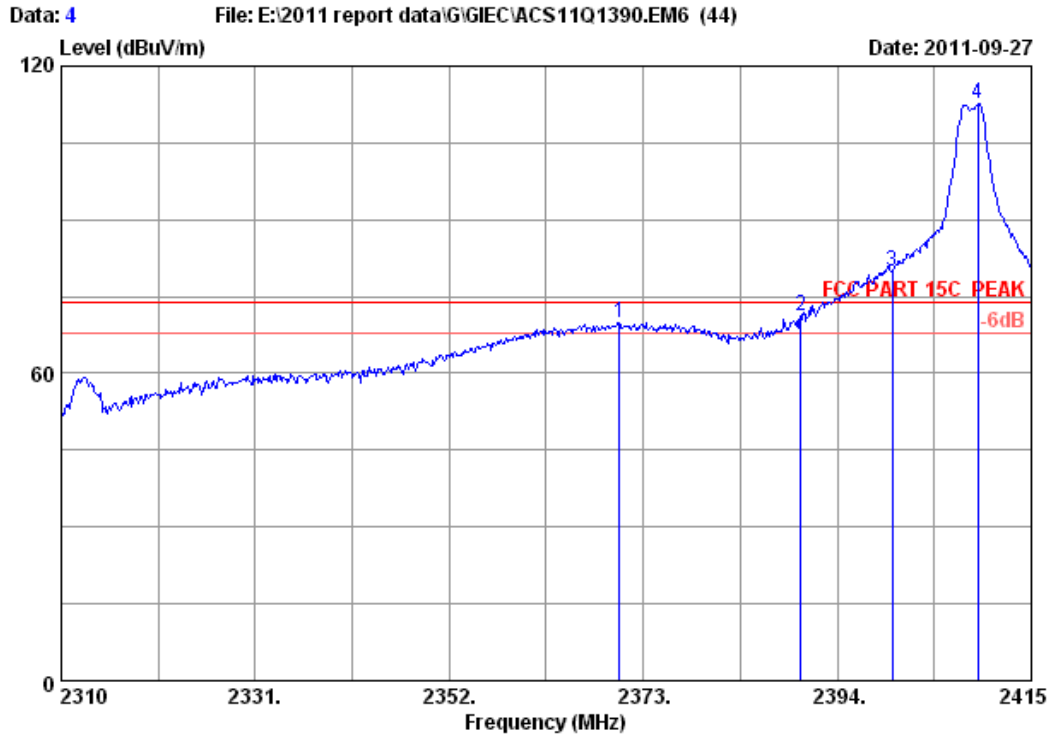
Site no. : 3m Chamber Data no. : 3
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701(Transmitter)

	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 2369.010	27.93	6.69	34.44	65.38	65.56	74.00	8.44	Peak	
2 2390.000	27.96	6.72	34.44	66.20	66.44	74.00	7.56	Peak	
3 2400.000	27.96	6.75	34.44	76.31	76.58	74.00	-2.58	Peak	
4 2409.225	27.98	6.75	34.44	106.53	106.82	74.00	-32.82	Peak	

Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2369.010	65.56	19.97	42.47	54	Pass
2390.000	66.44	19.97	43.35	54	Pass



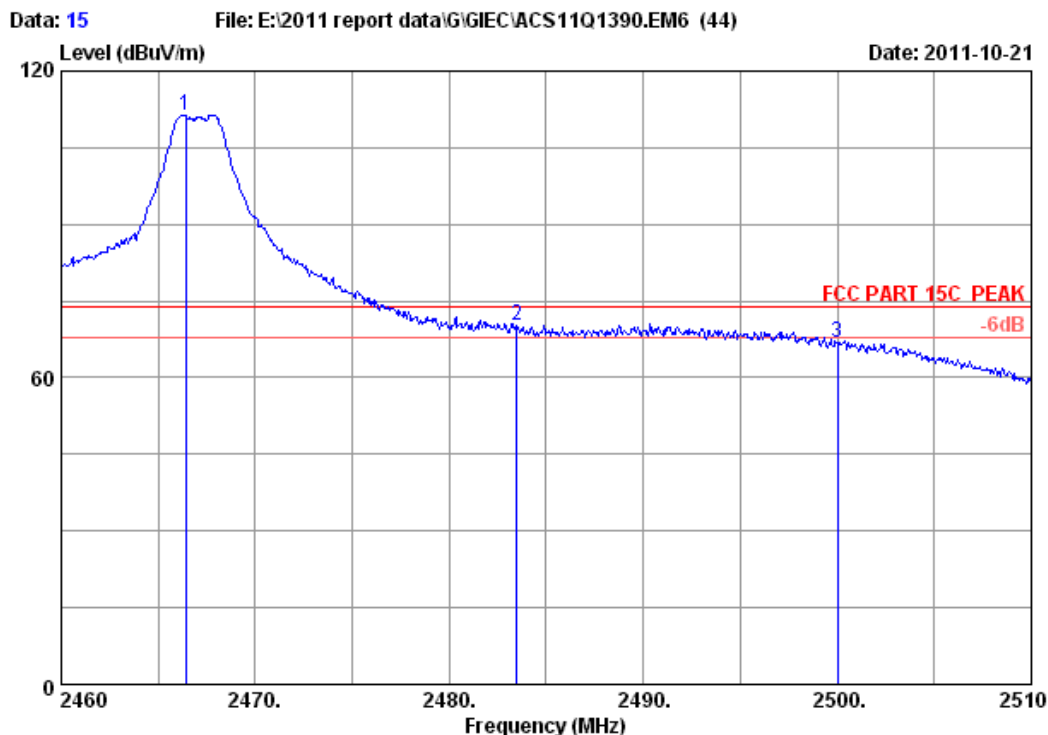
Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2408.625MHz
 HR701(Transmitter)

	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	2370.375	27.93	6.69	34.44	69.64	69.82	74.00	4.18	Peak
2	2390.000	27.96	6.72	34.44	71.00	71.24	74.00	2.76	Peak
3	2400.000	27.96	6.75	34.44	79.68	79.95	74.00	-5.95	Peak
4	2409.225	27.98	6.75	34.44	112.34	112.63	74.00	-38.63	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.

Frequency (MHz)	Peak level (dBUV/m)	Duty cycle factor (dB)	AV level (dBUV/m)	Limit(dBUV/m)	Conclusion
2370.375	69.82	19.97	46.73	54	Pass
2390.000	71.24	19.97	48.15	54	Pass



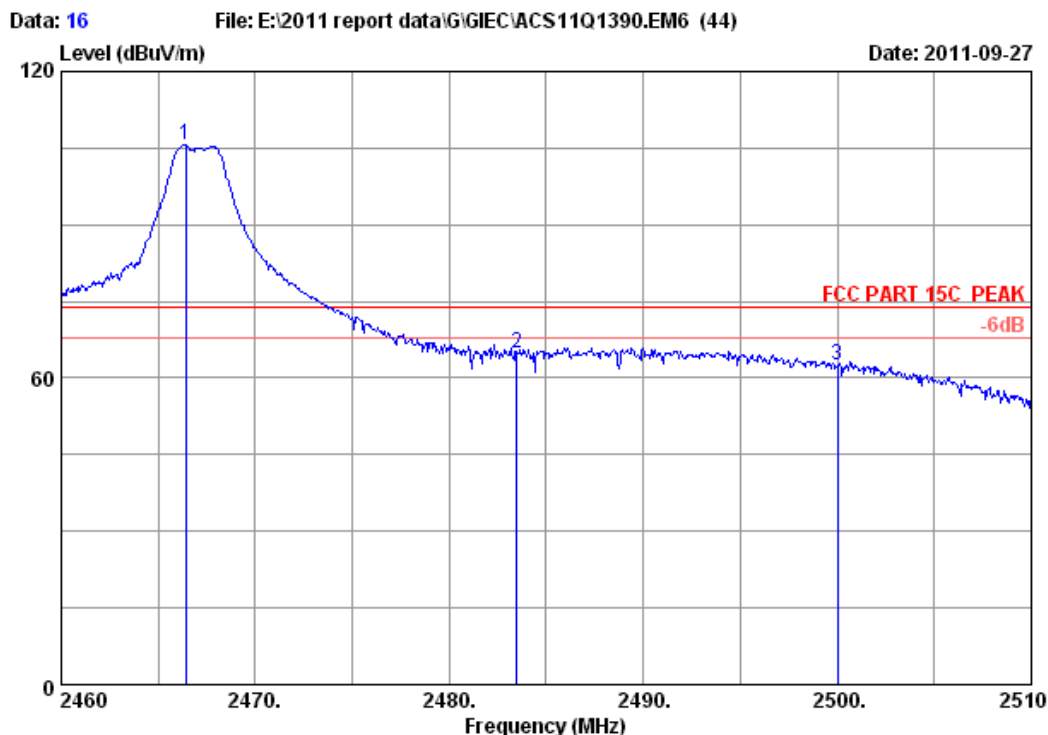
Site no. : 3m Chamber Data no. : 15
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2467.125MHz
 HR701(Transmitter)

	Ant.	Cable	Amp.						
	Freq.	Factor	loss	Factor	Reading	Emission	Level	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
1	2466.400	28.05	6.87	34.45	111.00	111.47	74.00	-37.47	Peak
2	2483.500	28.08	6.90	34.45	69.74	70.27	74.00	3.73	Peak
3	2500.000	28.10	6.90	34.45	66.23	66.78	74.00	7.22	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.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2483.500	70.27	19.97	47.18	54	Pass
2500.000	66.78	19.97	43.69	54	Pass



Site no. : 3m Chamber Data no. : 16
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Leo-Li
 EUT : HOME ROAM
 Power : DC 9V From Adapter Input AC 120V/60Hz
 Test mode : Tx 2467.125MHz
 HR701(Transmitter)

	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 2466.400	28.05	6.87	34.45	105.11	105.58	74.00	-31.58	Peak	
2 2483.500	28.08	6.90	34.45	64.33	64.86	74.00	9.14	Peak	
3 2500.000	28.10	6.90	34.45	62.02	62.57	74.00	11.43	Peak	

Remarks:

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

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2483.500	64.86	19.97	41.77	54	Pass
2500.000	62.57	19.97	39.48	54	Pass

7. CONDUCTED SPURIOUS EMISSIONS

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,11	1 Year
2.	Attenuator	Agilent	8491B	MY39262165	May.08,11	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,11	1Year

7.2. Limit

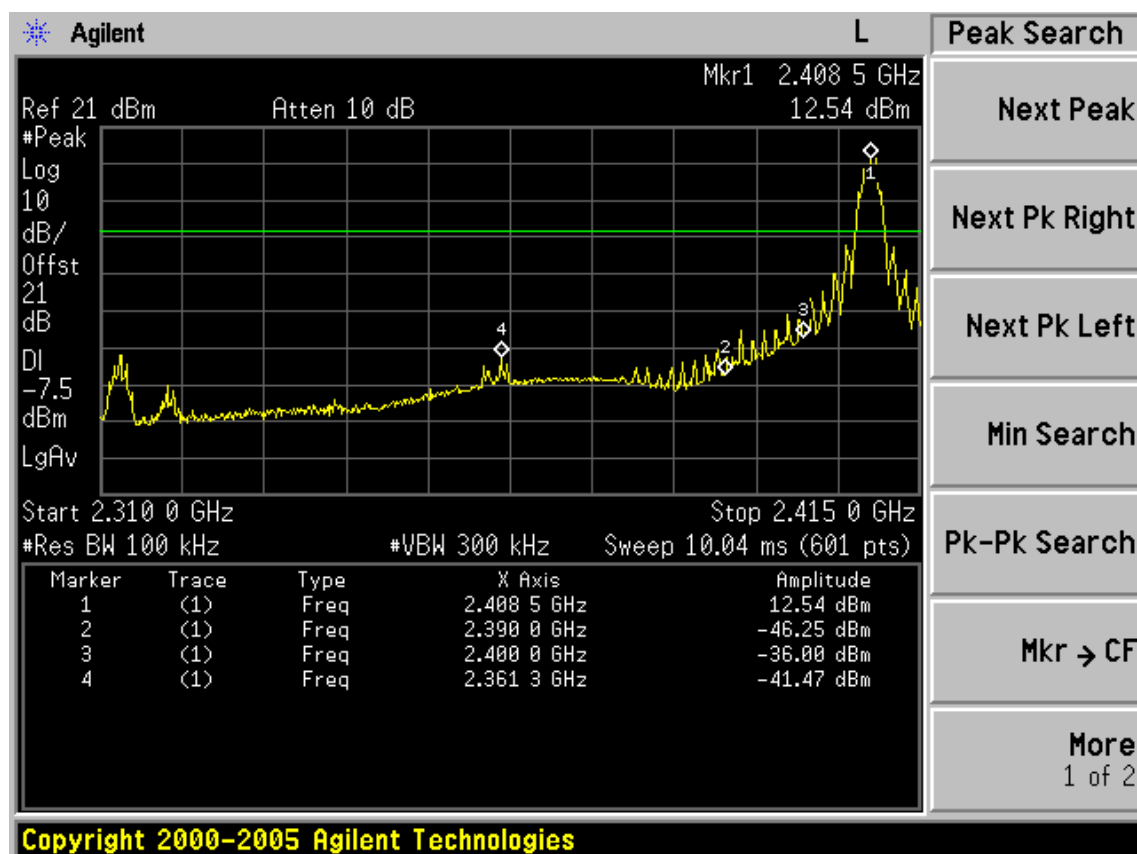
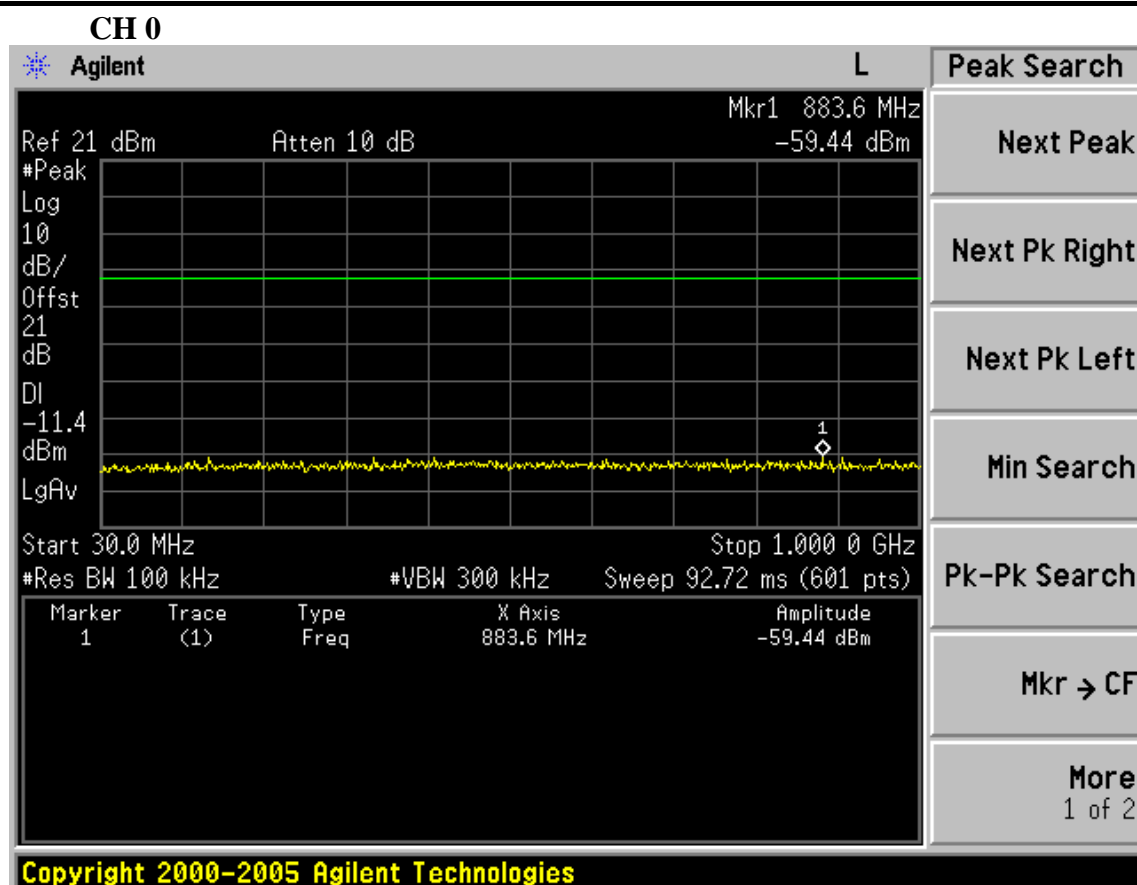
In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired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

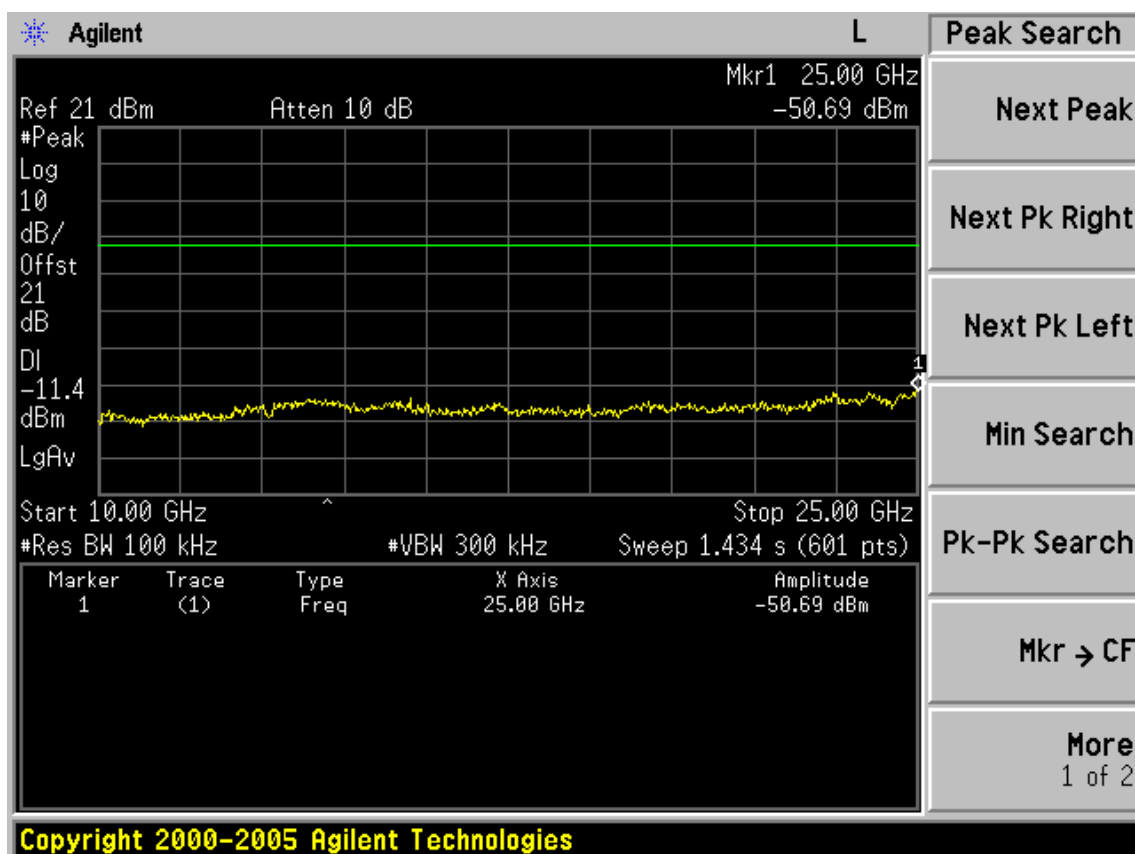
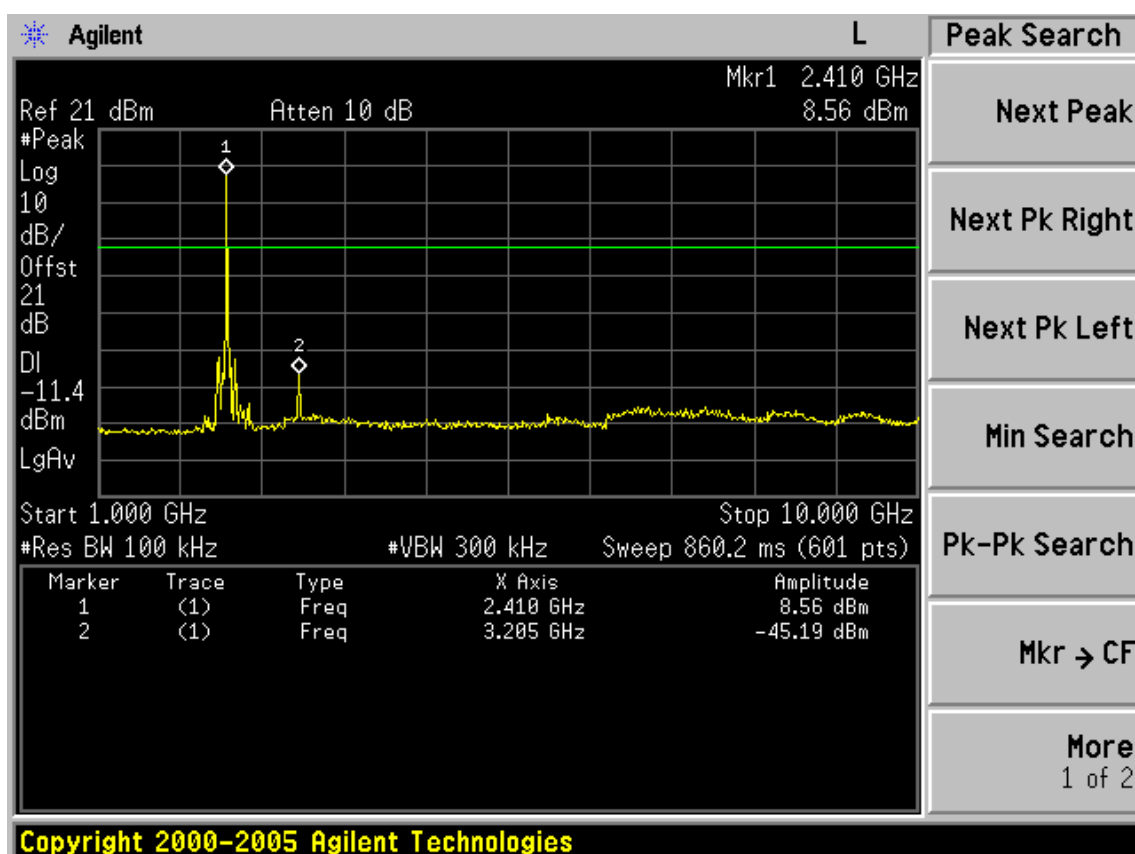
7.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions detected.

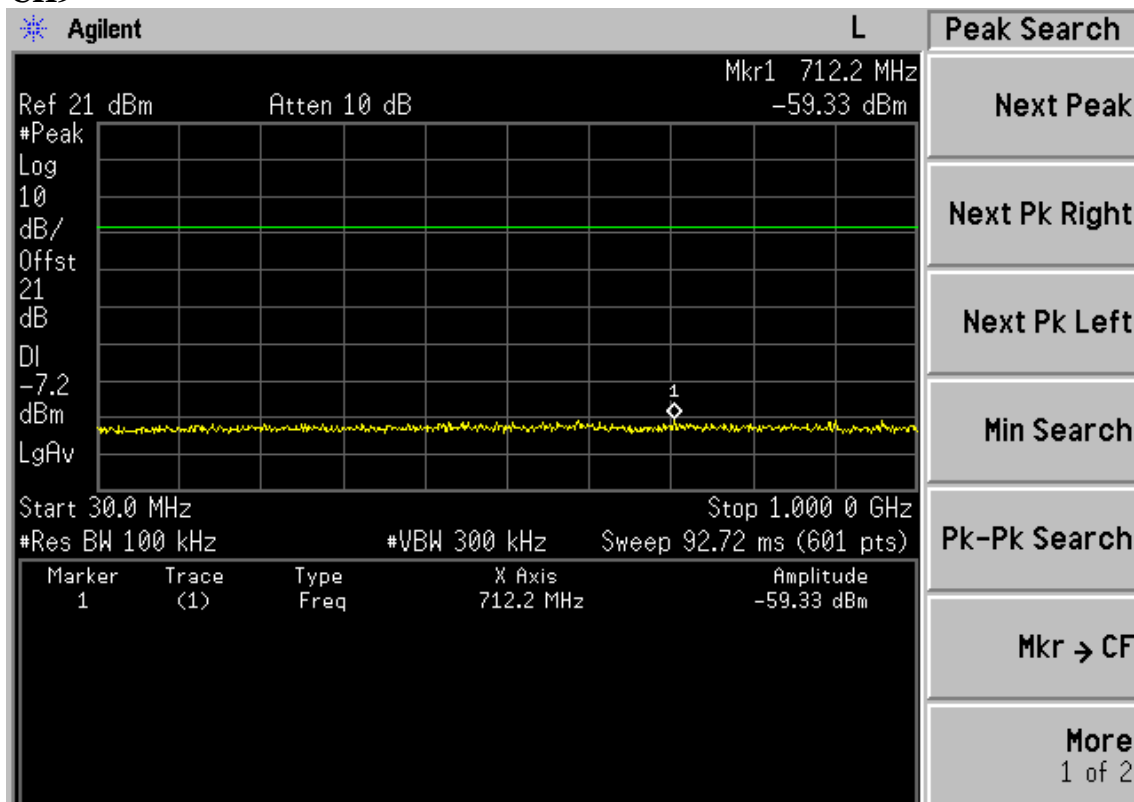
7.4. Test result

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

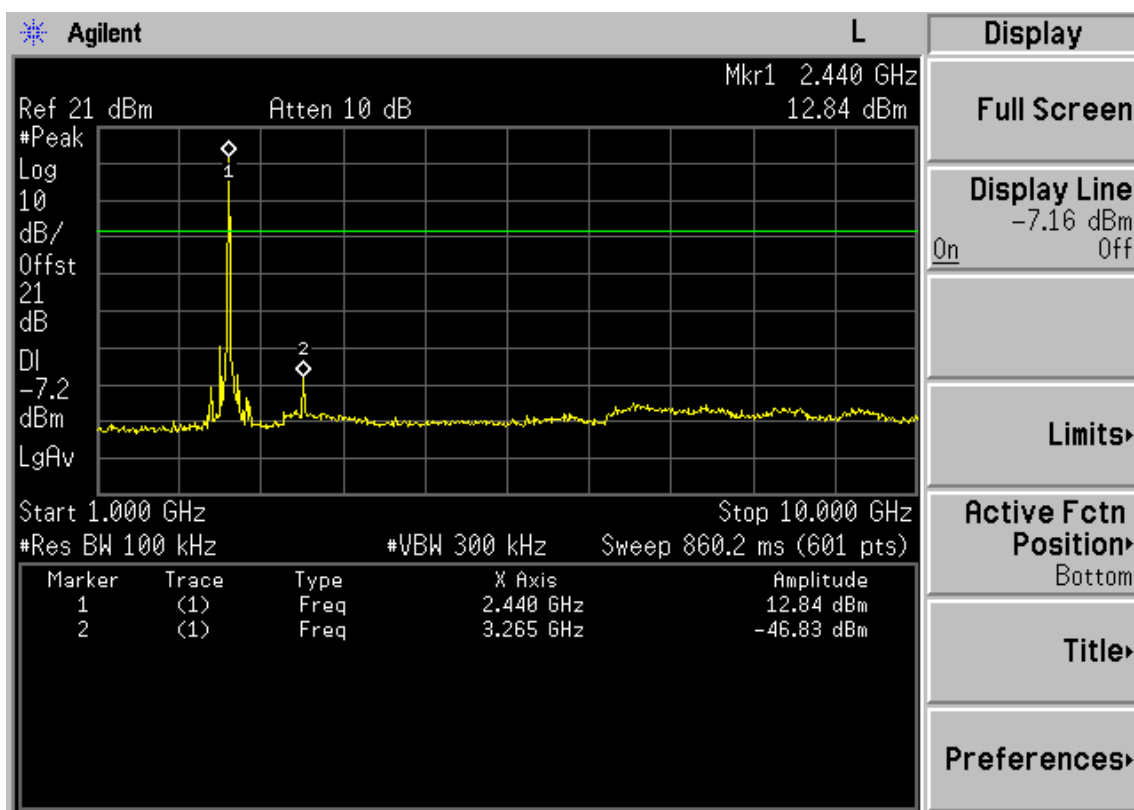




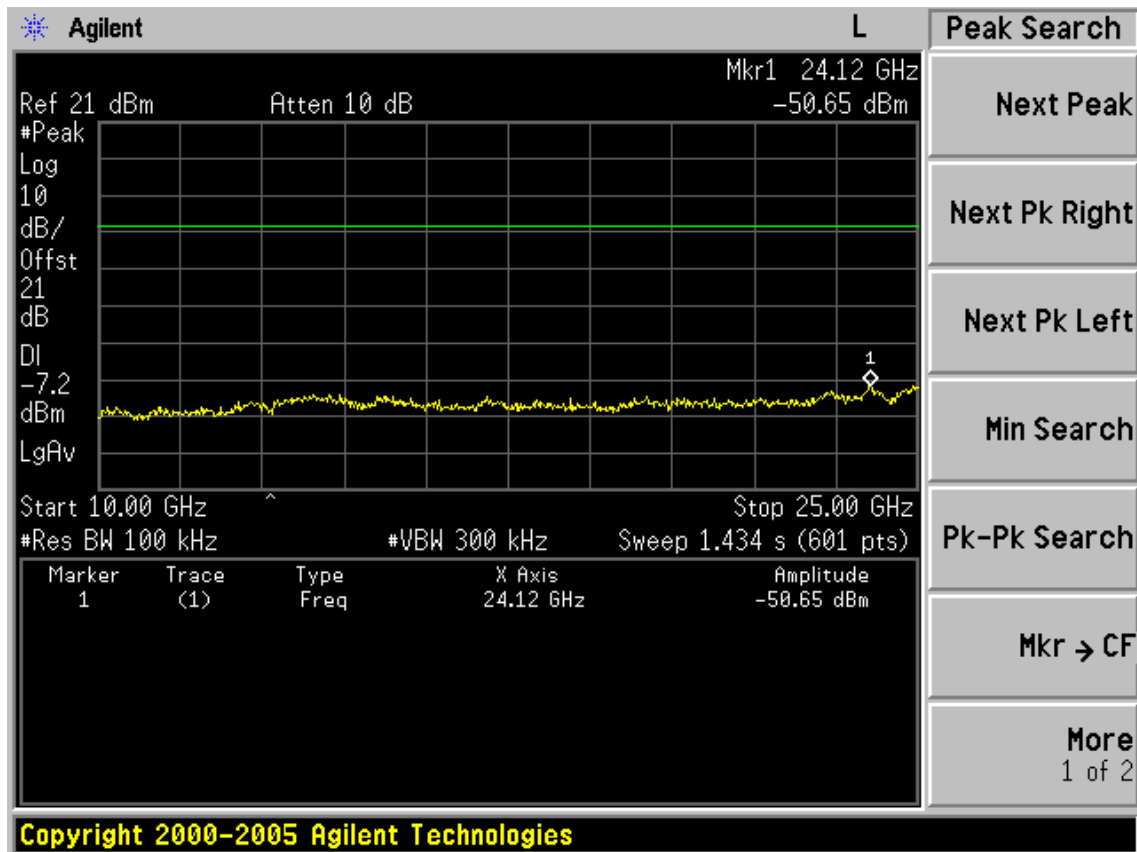
CH9



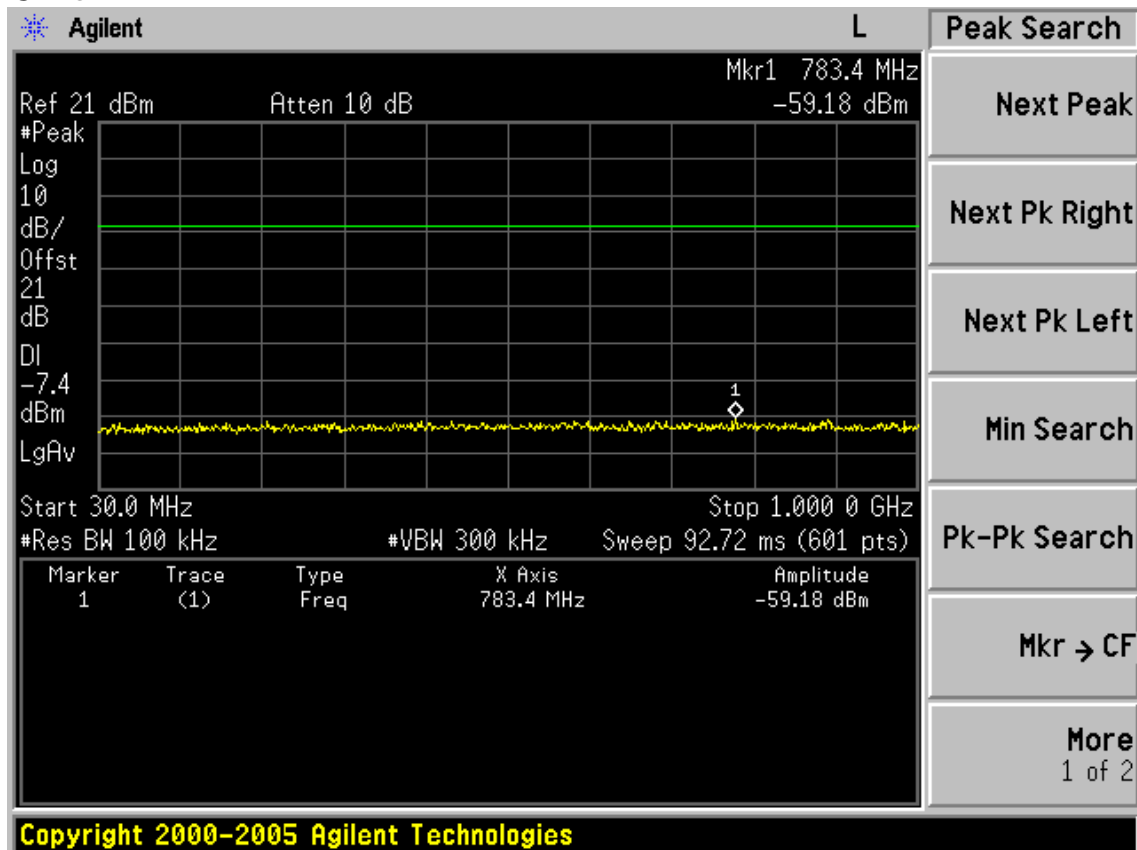
Copyright 2000-2005 Agilent Technologies

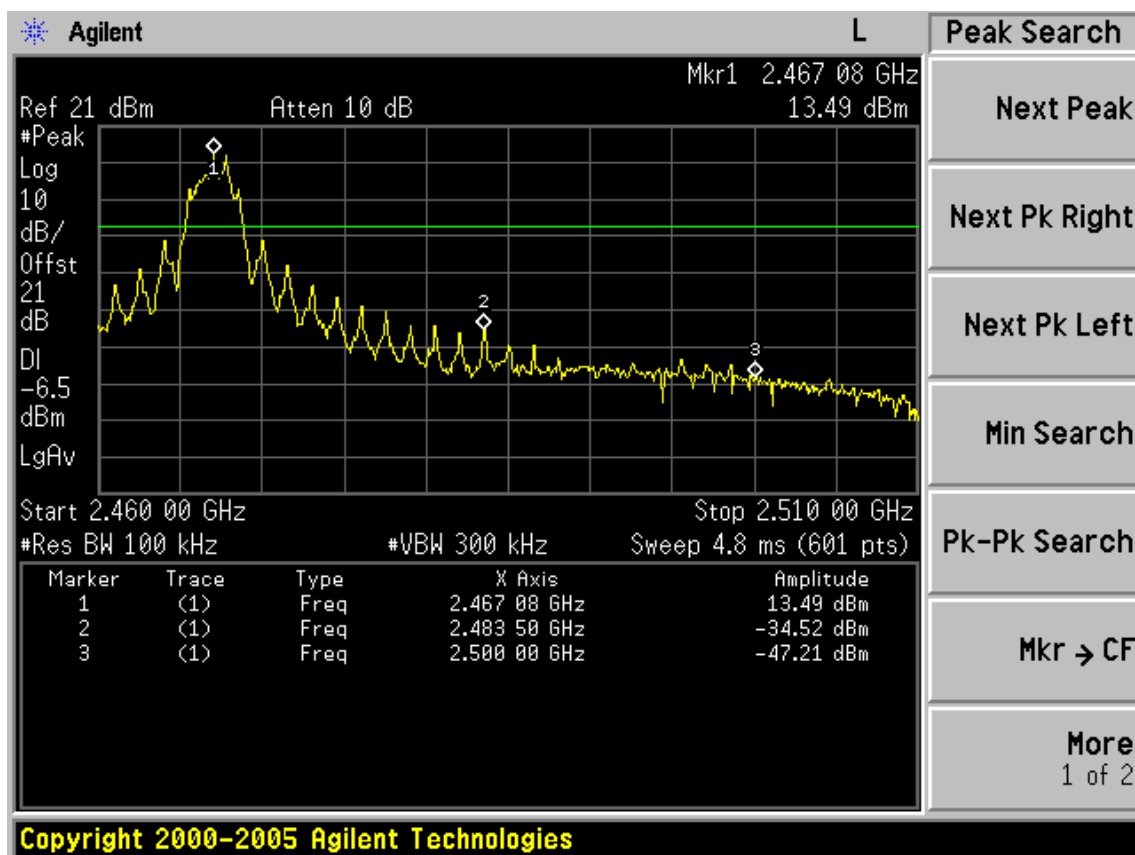
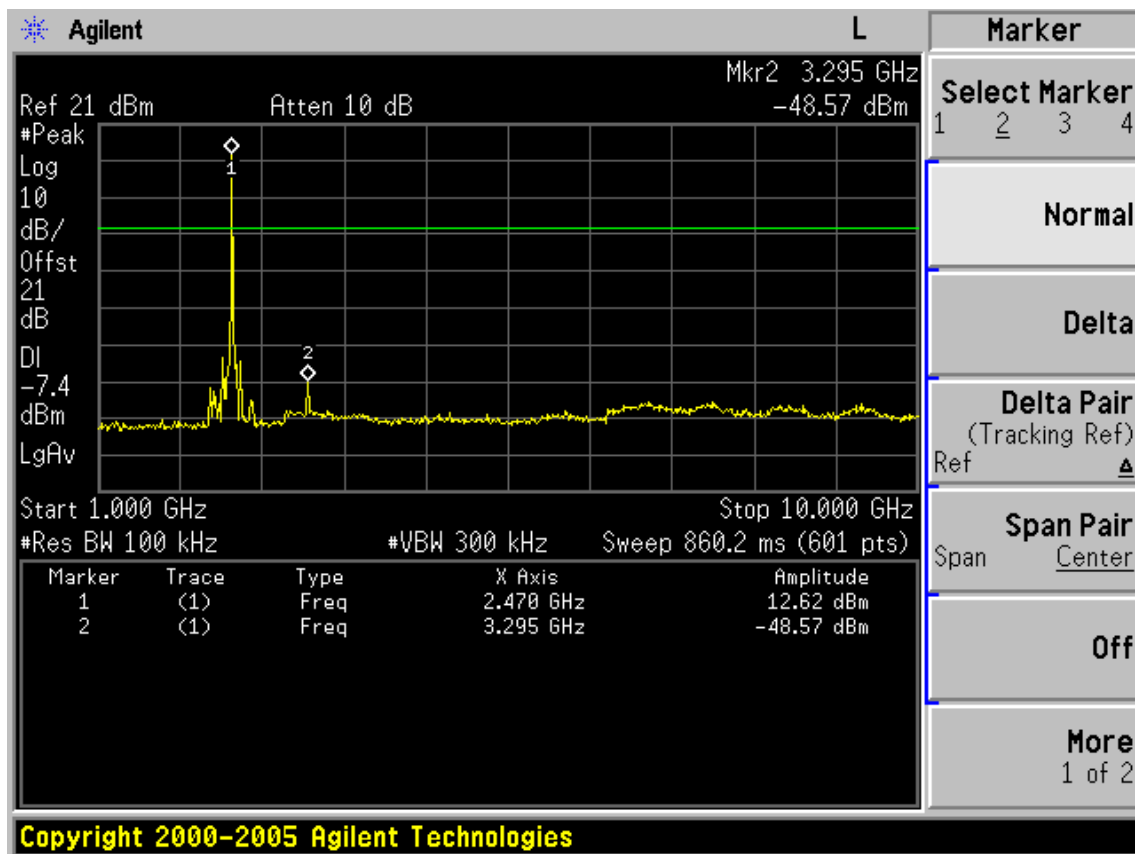


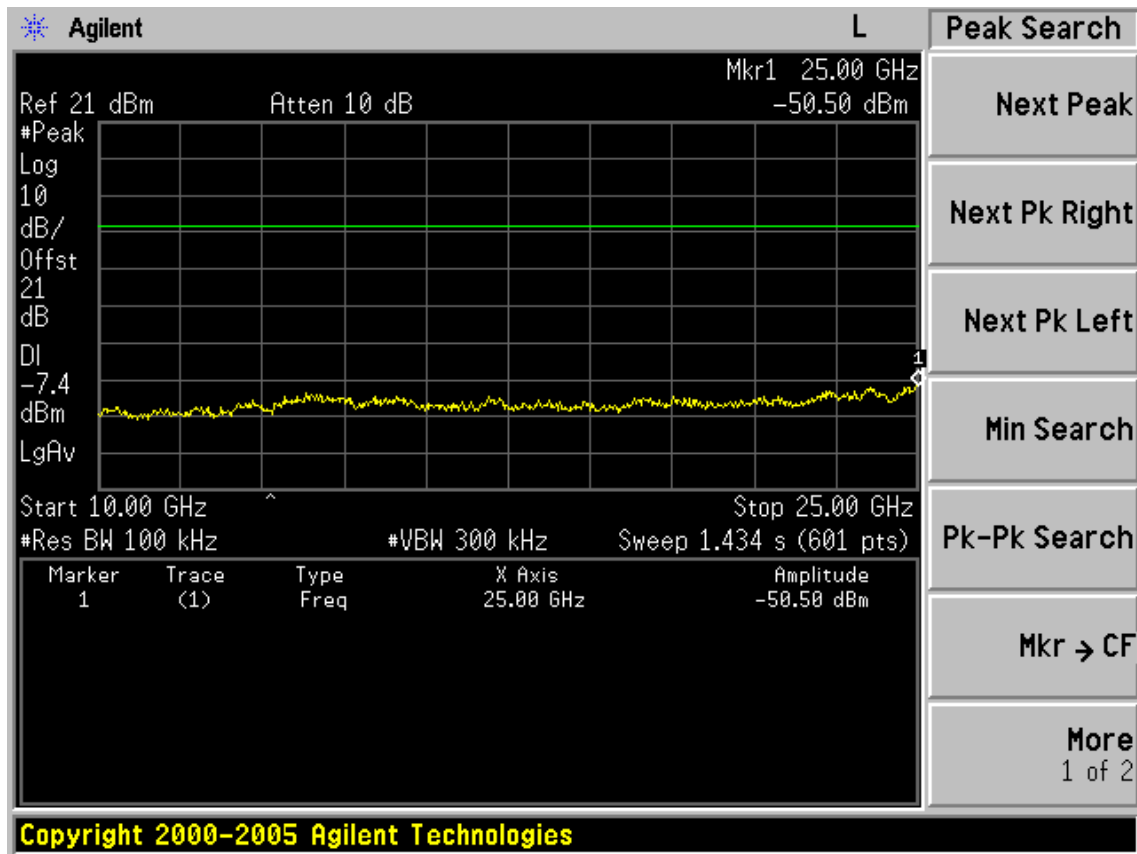
Copyright 2000-2005 Agilent Technologies



CH15







8. CARRIER FREQUENCY SEPARATION TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 11	1 Year

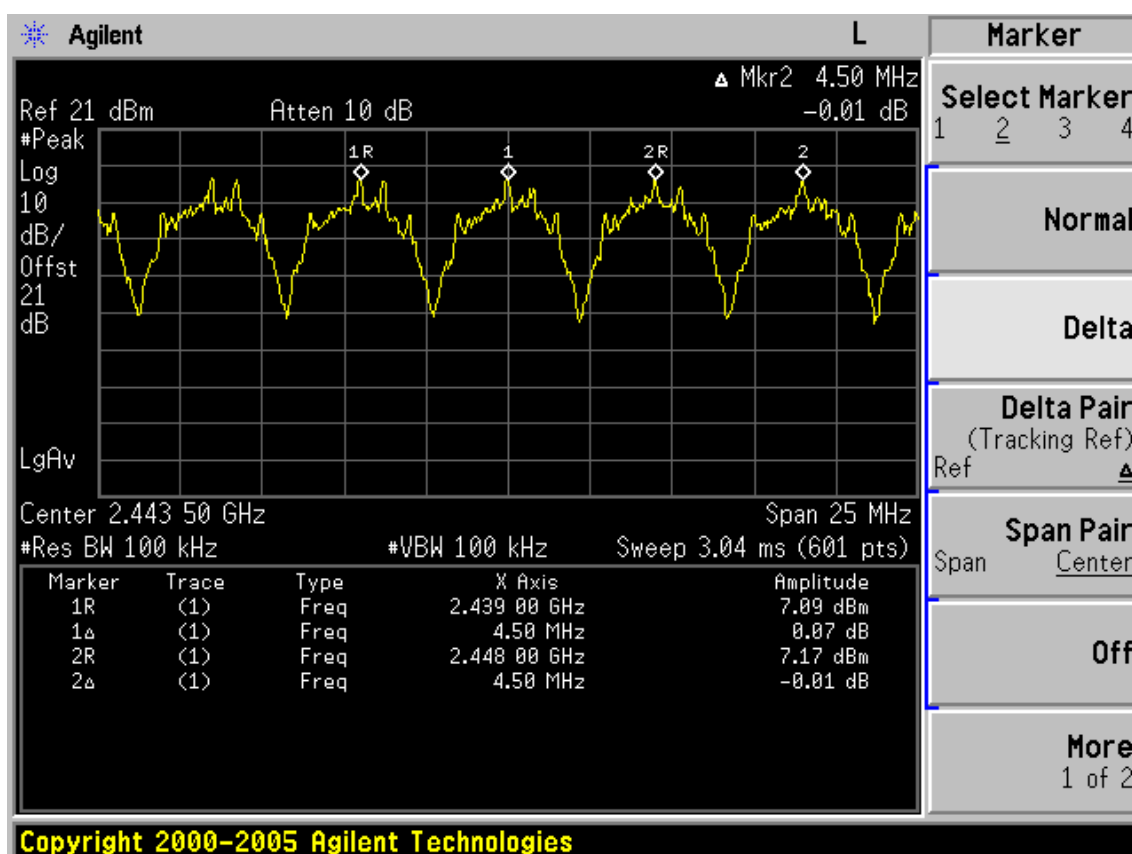
8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

8.3. Test Results.

EUT: HOME ROAM		
M/N: HR701 (Transmitter)		
Test date:2011-10-09	Pressure:100.6 kpa	Humidity:53%
Tested by: Leo-Li	Test site: RF site	Temperature:25 °C

Channel separation	Conclusion
4.5MHz	PASS



9. NUMBER OF HOPPING FREQUENCY TEST

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 11	1 Year

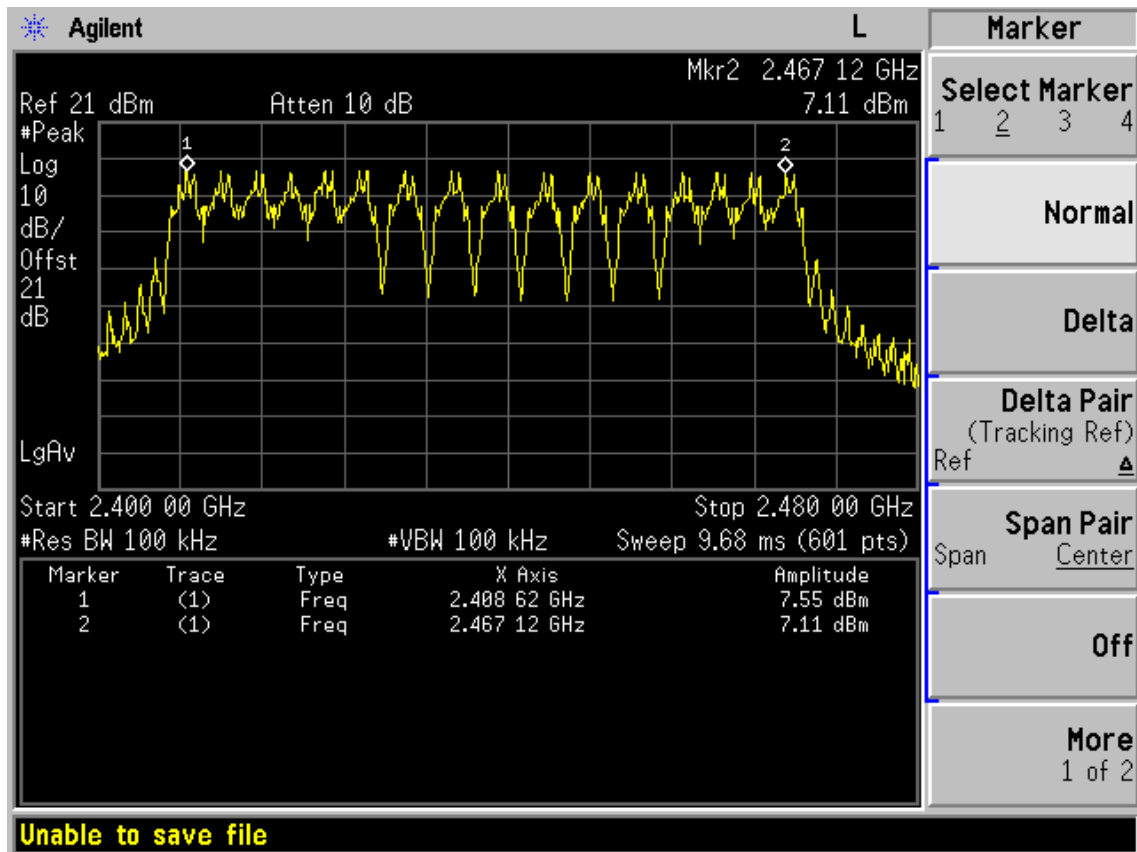
9.2. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

9.3. Test Results

EUT: HOME ROAM		
M/N: HR701 (Transmitter)		
Test date:2011-10-09	Pressure:100.6 kpa	Humidity:53%
Tested by:Leo-Li	Test site: RF site	Temperature:25 °C

Number of channel	Limit	Conclusion
16	≥ 15	PASS



10. MAXIMUM PEAK OUTPUT POWER TEST

10.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 11	1 Year
2.	Horn Antenna	EMCO	3115	9510-4580	Nov.19, 10	1.5 Year
3.	Horn Antenna	EMCO	3115	9607-4877	Nov. 25, 10	1.5 Year
4.	Signal Generator	HP	83732B	VS34490501	May.08, 11	1 Year
5.	Amplifier	Agilent	8491B	MY39262165	May.08, 11	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX 102	28620/2	May,08, 11	1 Year
7.	RF Cable	Hubersuhner	SUCOFLEX 102	271471/4	May,08, 11	1 Year
8.	RF Cable	Hubersuhner	SUCOFLEX 102	29086/2	May,08, 11	1 Year
9.	RF Cable	Hubersuhner	SUCOFLEX 102	271473/4	May,08, 11	1 Year
10.	RF Cable	Hubersuhner	SUCOFLEX 102	29091/2	May,08, 11	1 Year

10.2. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.3. Test Procedure

1. Connected the EUT's antenna port to spectrum analyzer.
2. Set the RBW> Bandwidth of test Frequency and put the test Frequency, Set the Span large enough to capture the entire signal
3. Use a peak detector on max hold
4. Reading the value from the Spectrum analyzer

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

EUT: HOME ROAM			
M/N: HR701 (Transmitter)			
Test date: 2011-10-08		Pressure: 101.7 kpa	Humidity: 55.2%
Tested by: Leo-Li		Test site: RF site	Temperature: 25 °C
Cable loss: 1.5 dB		Attenuator loss: 20 dB	
Test Mode	CH (MHz)	Peak output Power (dBm)	Limit (dBm)
Tx Mode	2408.625	17.03	21
	2443.5	16.49	21
	2467.125	16.44	21
Conclusion: PASS			

11.DWELL TIME

11.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 11	1 Year

11.2.Limit

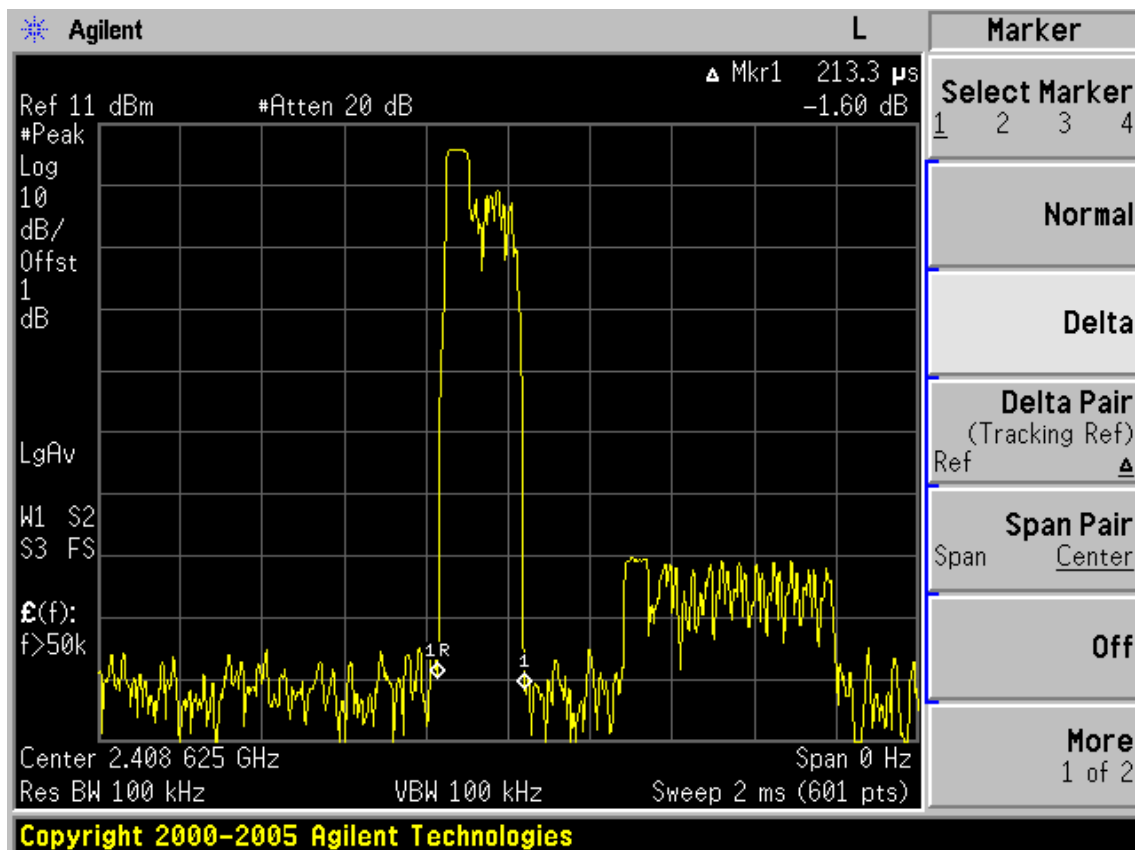
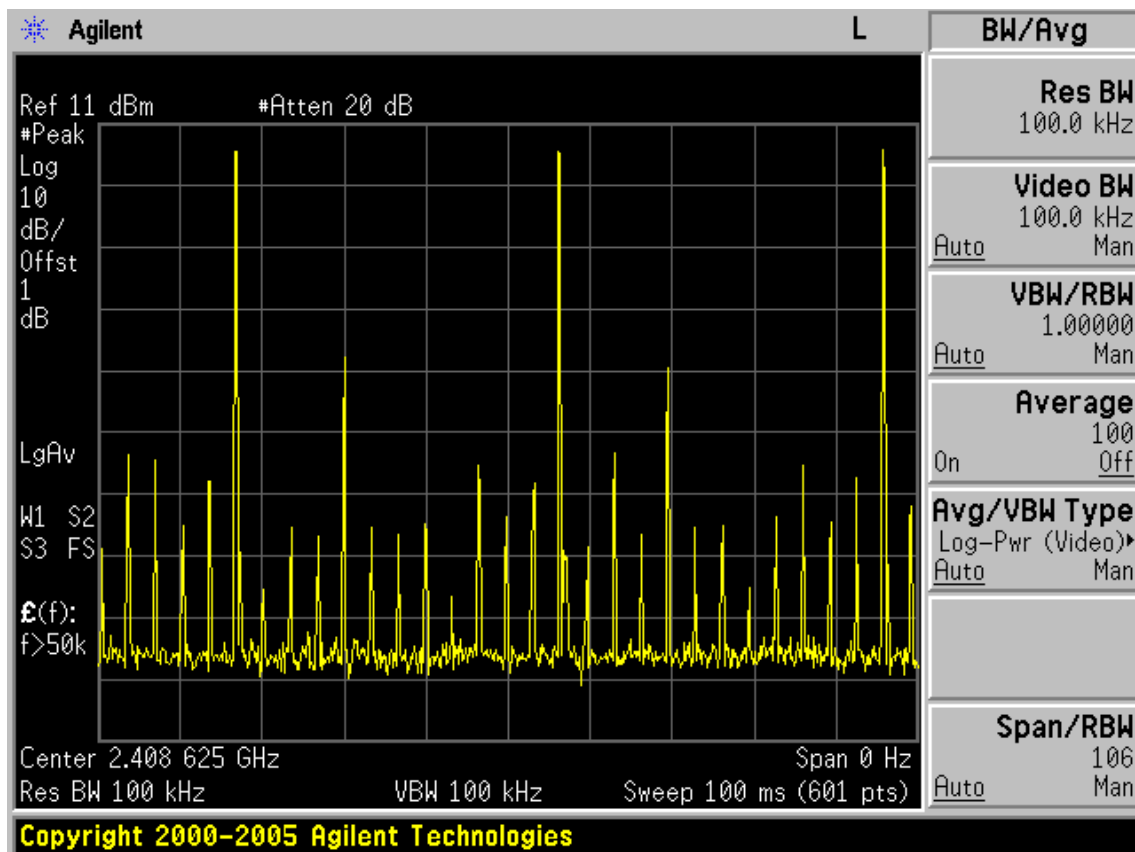
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.3.Test Results

EUT: HOME ROAM		
M/N: HR701 (Transmitter)		
Test date:2011-10-09	Pressure:100.6 kpa	Humidity:53%
Tested by:Leo-Li	Test site: RF site	Temperature:25 °C

dwel time	Limit	Conclusio n
3hops/0.1s*0.4*16chanel*0.213ms =40.90ms	<400ms	PASS

Note: All the lower levels were signal from receiver's, and should not considered in here.



12.MPE ESTIMATION

12.1.Limit for General Population/ Uncontrolled Exposures

Frequency	Power density (mW/ cm ²)	Averaging time(minutes)
300MHz----1.5GHz	F/1500	30
1.5GHz---100GHz	1.0	30

Frequency(MHz)	Power density (mW/ cm ²)	Averaging time(minutes)
2412	1	30
2437	1	30
2462	1	30

Note: F= Frequency in MHz

12.2. Estimation Result

EUT: HOME ROAM		
M/N: HR701 (Transmitter)		
Test date:2011-10-18	Pressure: 101.4kpa	Humidity: 48%
Tested by: Leo-Li	Test site: RF Site	Temperature : 24.7℃

Cable loss: 1.5 dB		Attenuator loss: 20 dB			Antenna Gain: 0 dBi	
Test Mode	Frequency (MHz)	Peak Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
Tx	2408.625	17.03	50.47	0	1.00	0.0100
	2443.5	16.49	44.57	0	1.00	0.0089
	2467.125	16.44	44.06	0	1.00	0.0088

According to MPE formula $P_d = (P * G) / 4\pi R^2$

Where P is the Power in Mw

G is the Numeric gain of the radiating element

R is the distance of antenna to the human body

So the closest distance is 1.88cm between the device's radiating structure and the body of the user or nearby person normal use.

13.TEST SOFTWARE

Manufacturer : SONIX TECHNOLOGY CO., LTD

Version : V3.0.1106156

The test software is used to control EUT work in TX mode and to change the test channel.

14.DEVIATION TO TEST SPECIFICATIONS

[NONE]