APPLICATION FOR CERTIFICATION

On Behalf of

FUTABA Corporation

Radio Control

Model No.：T8J-2.4G

FCC ID：AZPT8J-24G

Brand: Futaba

Prepared for : FUTABA Corporation
629 Oshiba, Mobara, Chiba Prefecture,
Japan, 297-8588

Prepared by : AUDIX Technology Corporation
EMC Department
No. 53-11, Dingfu, Linkou Dist.,
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File Number	:	C1M1201057
Report Number	:	EM-F1010087
Date of Test	:	Jan. 19 ~ Feb. 05, 2012
Date of Report	:	Feb. 09, 2012

TABLE OF CONTENTS

TEST REPORT CERTIFICATION

Applicant	:	FUTABA Corporation		
Manufacturer	:	FUTABA Corporation		
EUT Description	:	Radio Control		
FCC ID	:	AZPT8J-24G		
		(A) Model No.	:	T8J-2.4G
		(B) Serial No.	:	N/A
		(C) Brand	:	Futaba
		(D) Power Supply	:	DC 6V
		(E) Test Voltage	:	DC 6V (Via Batteries)

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, October 2010
AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.207 and §15.209 and §15.247)

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B & C limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test : Jan. 19 ~ Feb. 05, 2012 Date of Report : Feb. 09, 2012

Producer : Annie Yu
(Annie Yu/Assistant Administrator)

Signatory : Ben Cheng
(Ben Cheng/Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Radio Control (Transmitter Unit)
Model Number	:	T8J-2.4G
Serial Number	:	N/A
FCC ID	:	AZPT8J-24G
Applicant	:	FUTABA Corporation 629 Oshiba, Mobara, Chiba Prefecture, Japan, 297-8588
Manufacturer	:	FUTABA Corporation 629 Oshiba, Mobara, Chiba Prefecture, Japan, 297-8588
Radio Technology	:	FHSS (FSK) Modulation
Frequency Band	:	2403.250MHz ~ 2447.500MHz
Tested Frequency	:	2403.250MHz (Channel 01) 2425.000MHz (Channel 30) 2447.500MHz (Channel 60)
Frequency Channel	:	60 channels
Antenna (Pencil Antenna)	:	Antenna Gain: 2.0dBi
Date of Receipt of Sample	:	Jan. 07, 2012
Date of Test	:	Jan. 19 ~ Feb. 05, 2012

Remark: T8J-2.4G had two antennas, but they can't transmit simultaneously. We perform all test items in ANT A for worse performance.

1.2. Description of Test Facility

Name of Firm	:	**AUDIX Technology Corporation** **EMC Department** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C.
Test Location & Facility (AC)	:	**Semi-Anechoic Chamber** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. May 14, 2009 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB
	300MHz~1000MHz	±2.94dB
	Above 1GHz	± 5.02dB

Remark **:** Uncertainty = $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	± 0.2kHz
Carrier Frequency Separation	± 0.2kHz
Time Of Occupancy	± 0.03sec
Maximum peak Output power	± 0.52dBm
Emission Limitations	± 0.13dB
Band Edges	± 0.13dB

2. CONDUCTED EMISSION MEASUREMET

【The EUT only employs battery power for operation, no conductive emission limits are required according to FCC Part 15 Section §15.207】

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 11’	Aug. 03, 12’
2.	Test Receiver	R & S	ESCS 30	100338	Jun. 12, 11’	Jun. 11, 12’
3.	Pre-Amplifier	HP	8447D	2944A06305	Feb. 10, 11’	Feb. 09, 12’
4.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 08, 11’	Mar. 07, 12’
5.	Log Periodic Antenna	Schwarzbeck	UHALP 9108-A	0810	Mar. 08, 11’	Mar. 07, 12’

3.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

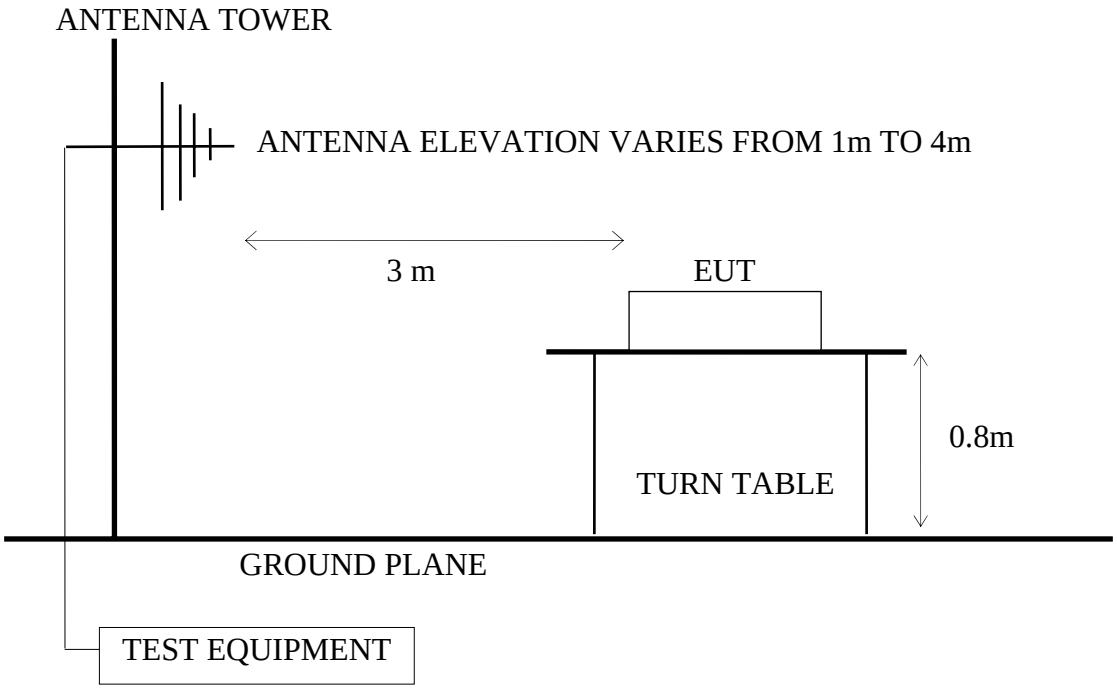
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 11’	Aug. 03, 12’
2.	Test Receiver	R & S	ESCS 30	100338	Jun. 12, 11’	Jun. 11, 12’
3.	Pre-Amplifier	HP	8449B	3008A00529	Dec. 09, 11’	Dec. 08, 12’
4.	Horn Antenna	EMCO	3115	9112-3775	Mar. 09, 11’	Mar. 08, 12’
5.	Horn Antenna	EMCO	3116	2653	Oct. 07, 11’	Oct. 06, 12’

3.2. Test Setup

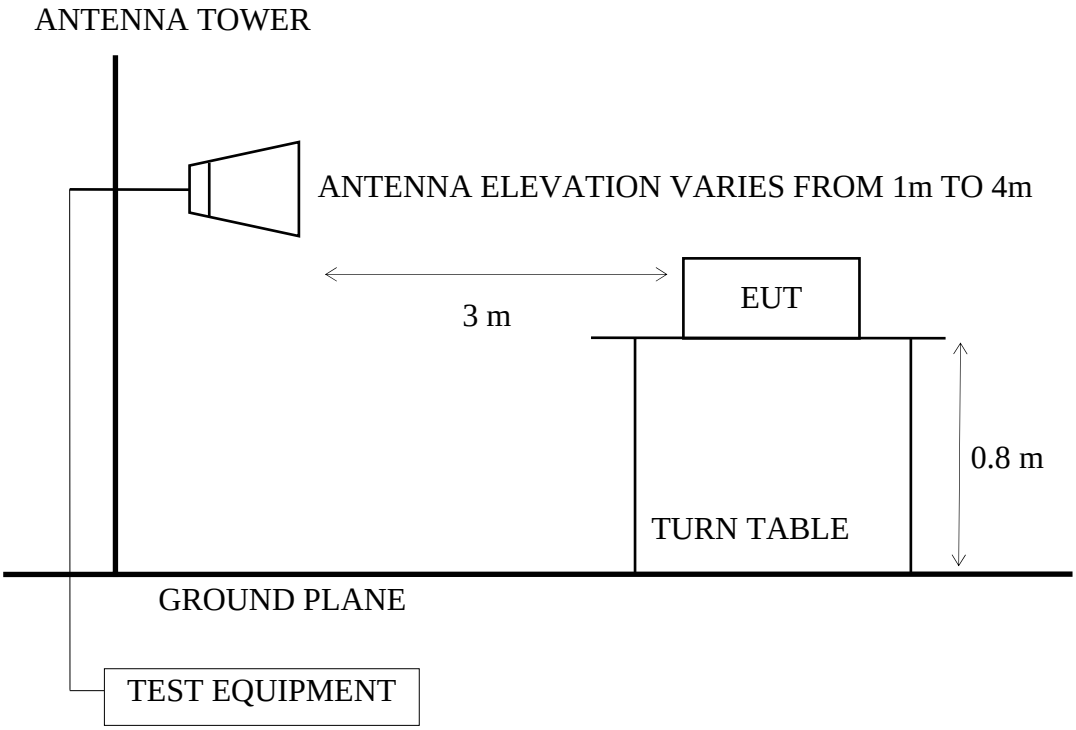
3.2.1. Block Diagram of connection between EUT and simulators

RADIO CONTROL (EUT)

3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



3.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



3.3. Radiated Emission Limits (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		μV/m	dBμV/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) Emission level (dBμV/m) = 20 log Emission level (μV/m)
(2) The tighter limit applies at the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
(5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

3.4.1. Set up the EUT (Radio Control) as shown on 3.2.

3.4.2. To turn on the power of all equipment.

3.4.3. The EUT was set the PC system using test program “Futaba Term”.

3.4.4. Transmit Mode: The EUT was set to continuously transmit signals at 2403.250MHz、2425.000MHz and 2447.500MHz during testing.

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna could be moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz.
(For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency

The frequency range from 30MHz to 25GHz (Up to 10^{th} harmonics from fundamental frequency) was checked.

Above 1GHz was measured with peak and average.

3.6. Radiated Emission Measurement Results

PASSED.

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

EUT：Radio Control M/N：T8J-2.4G

Test Date：Feb. 05, 2012 Temperature：24℃ Humidity：54%

For Frequency Range 30MHz~1000MHz:

The EUT emitted the fundamental frequency with data code at the stand, side and lying conditions.

The EUT select **worst position "stand"** and with following test modes was performed during this section testing and all the test results are listed in section 3.6.1.

Mode	Channel	Frequency	Test Mode	Position	Reference Test Data	
					Horizontal	Vertical
1.	01	2403.250MHz	Transmit	Stand	# 2, 4	# 1, 3
2.	30	2425.000MHz		Stand	# 1, 3	# 2, 4
3.	60	2447.500MHz		Stand	# 2, 3	# 1

* Above all final readings were measured with Quasi-Peak detector.

* There is no emission be found at vertical polarization at 300-1000MHz frequency for 2447.500MHz.

For Frequency above 1GHz:

The EUT with following test modes was performed during this section testing and all the test results are listed in section 3.6.2.

Mode	Chnnel	Frequency	Test Mode	Position	Test Frequency Range
1.	01	2403.250MHz	Transmit	Stand	**1000-2680MHz***
2.					2680-4000MHz
3.					**4000-5500MHz***
4.					**5500-11000MHz***
5.					11000-18000MHz
6.					18000-25000MHz
7.	30	2425.000MHz	Transmit	Stand	**1000-2680MHz***
8.					2680-4000MHz
9.					**4000-5500MHz***
10.					**5500-11000MHz***
11.					11000-18000MHz
12.					18000-25000MHz
13.	60	2447.500MHz	Transmit	Stand	**1000-2680MHz***
14.					2680-4000MHz
15.					**4000-5500MHz***
16.					**5500-11000MHz***
17.					11000-18000MHz
18.					18000-25000MHz

Remark 1：The emissions level were too low against the official limit and not report.

Remark 2：”*” means there is spurious emission falling the frequency band and be measures.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.3. (The restricted bands defined in part 15.205(a))

Mode	Channel	Frequency	Test Mode	Reference Test Data	
				Horizontal	Vertical
1.	01	2403.250MHz	Transmit	# 1	#2
2.	60	2447.500MHz	Transmit	#4	#3

3.6.1. Frequency Range 30-1000MHz

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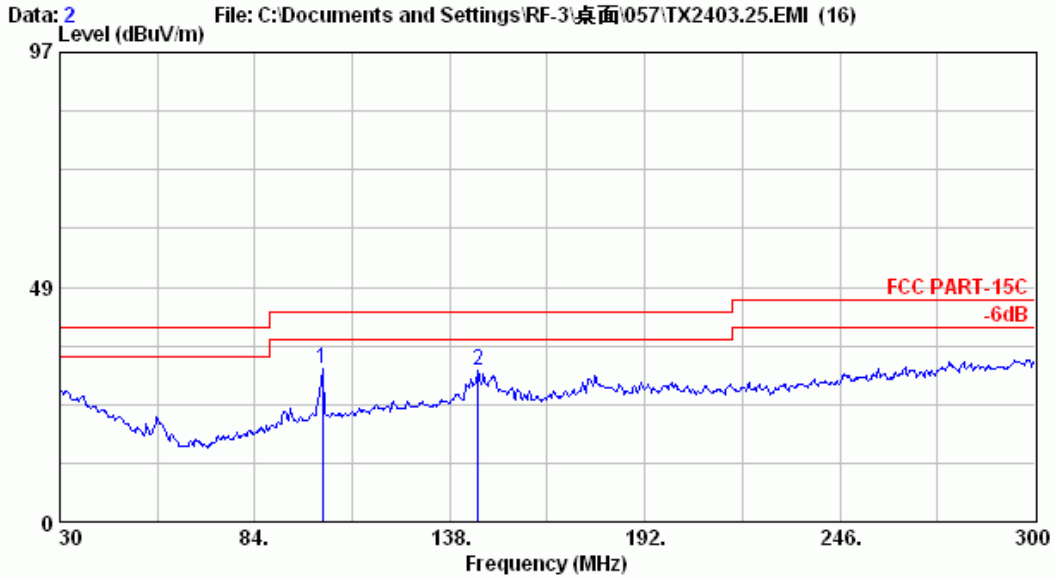

Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2403.25

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	102.630	17.40	2.10	12.02	31.52	43.50	11.98	QP
2	145.830	20.40	2.50	8.53	31.44	43.50	12.06	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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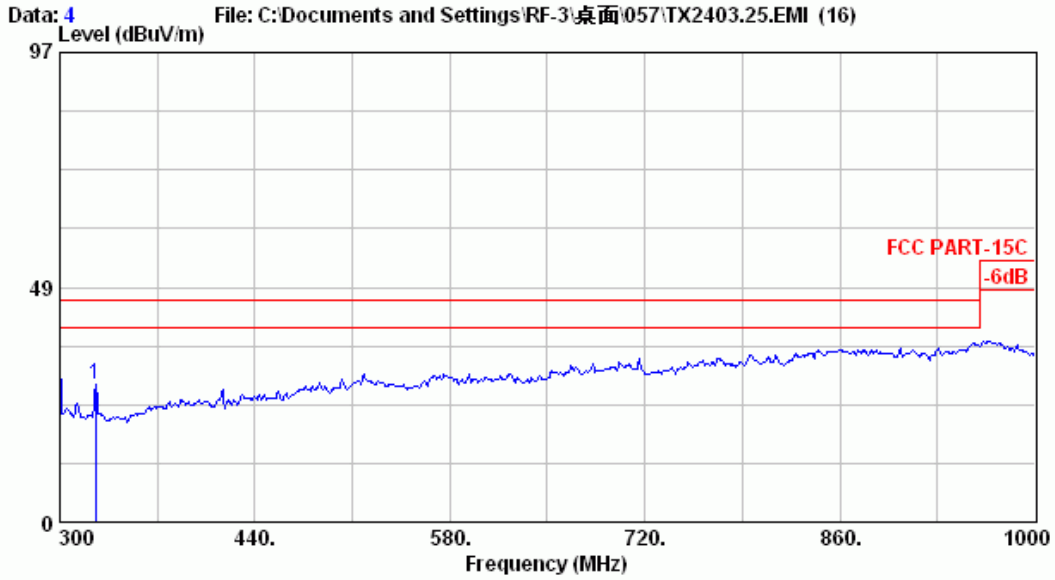

Site no. : A/C Chamber Data no. : 4
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2403.25

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	325.900	15.15	4.20	9.22	28.57	46.00	17.43	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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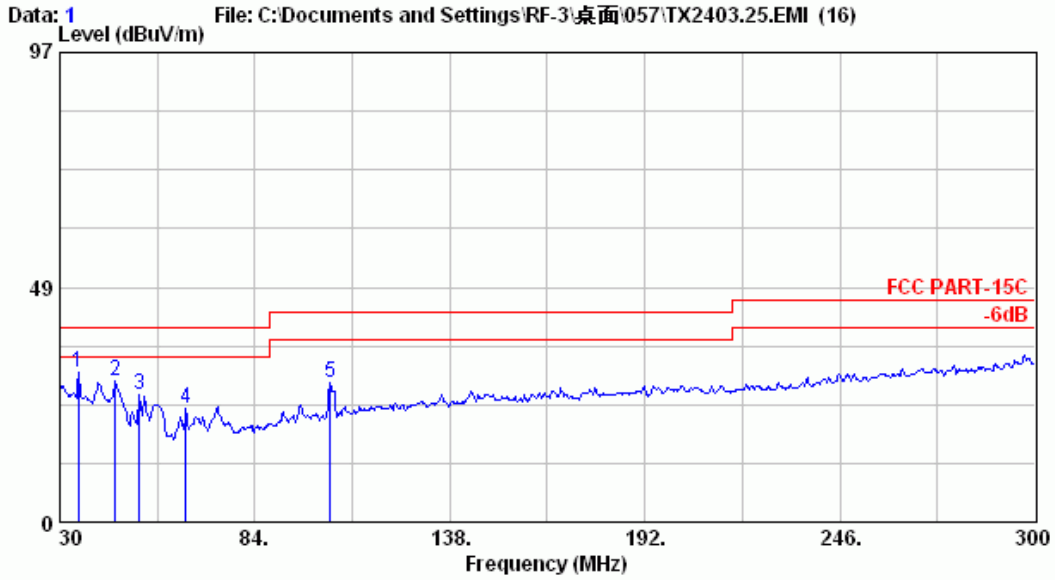

Site no. : A/C Chamber Data no. : 1
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2403.25

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	35.130	22.85	1.20	7.04	31.09	40.00	8.91	QP
2	45.390	18.57	1.36	9.35	29.28	40.00	10.72	QP
3	52.140	15.52	1.50	9.12	26.14	40.00	13.86	QP
4	64.830	11.81	1.70	9.85	23.36	40.00	16.64	QP
5	104.790	17.58	2.15	9.01	28.73	43.50	14.77	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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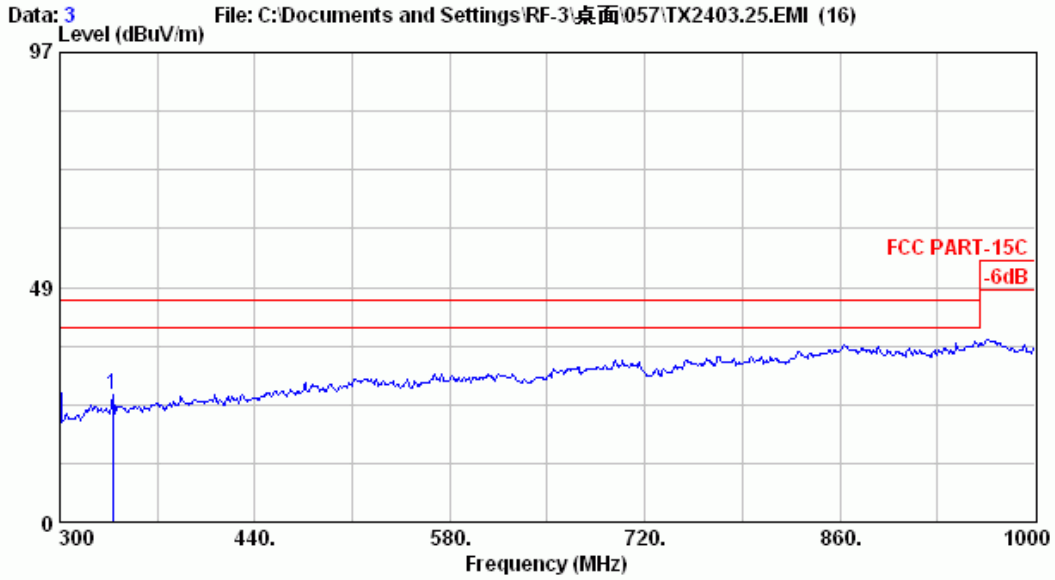

Site no. : A/C Chamber Data no. : 3
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2403.25

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	337.800	15.09	4.25	6.87	26.21	46.00	19.79	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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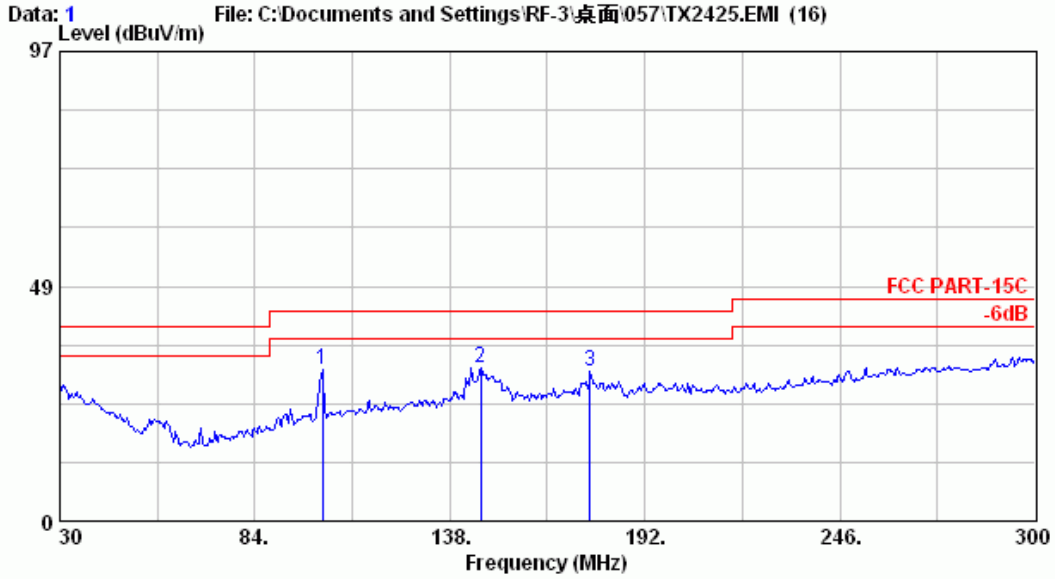

Site no. : A/C Chamber Data no. : 1
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2425

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	102.630	17.40	2.10	11.62	31.12	43.50	12.38	QP
2	146.640	20.47	2.58	8.74	31.79	43.50	11.71	QP
3	176.880	21.21	2.90	6.75	30.85	43.50	12.65	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
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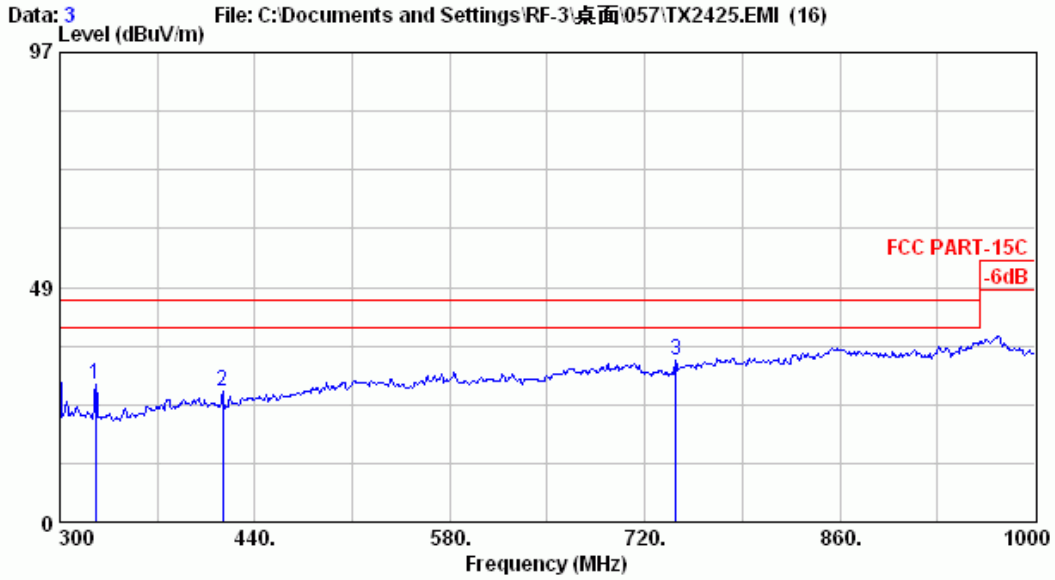

Site no. : A/C Chamber Data no. : 3
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2425

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	325.900	15.15	4.20	9.22	28.57	46.00	17.43	QP
2	416.900	16.95	5.08	5.08	27.10	46.00	18.90	QP
3	742.400	22.44	6.70	4.27	33.41	46.00	12.59	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
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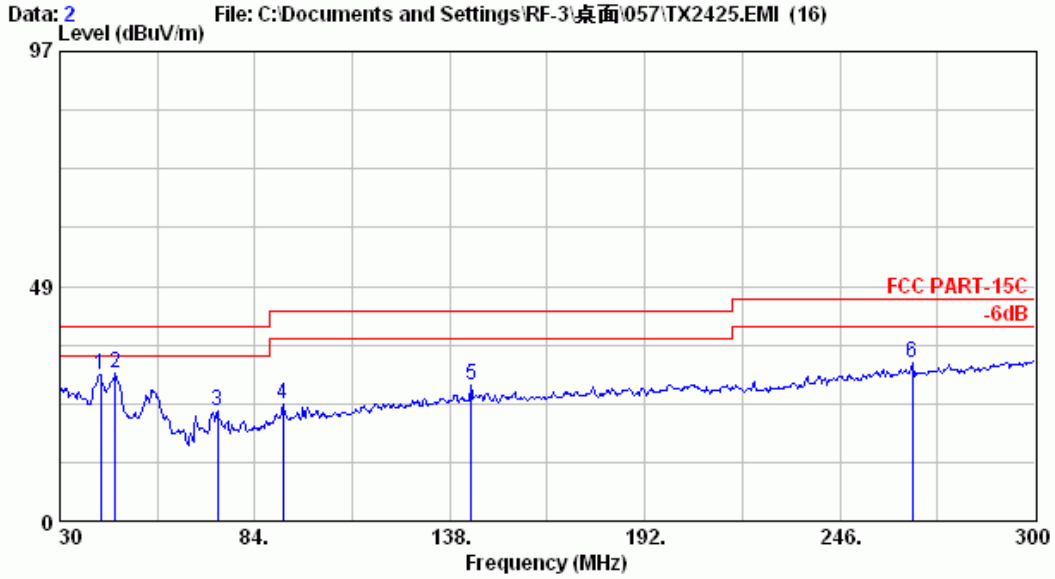

Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2425

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	41.340	20.14	1.30	8.93	30.37	40.00	9.63	QP
2	45.390	18.57	1.36	10.66	30.59	40.00	9.41	QP
3	73.740	12.59	1.80	8.35	22.74	40.00	17.26	QP
4	91.830	16.08	2.00	6.14	24.21	43.50	19.29	QP
5	143.940	20.27	2.60	5.08	27.96	43.50	15.54	QP
6	265.980	24.67	3.70	4.17	32.54	46.00	13.46	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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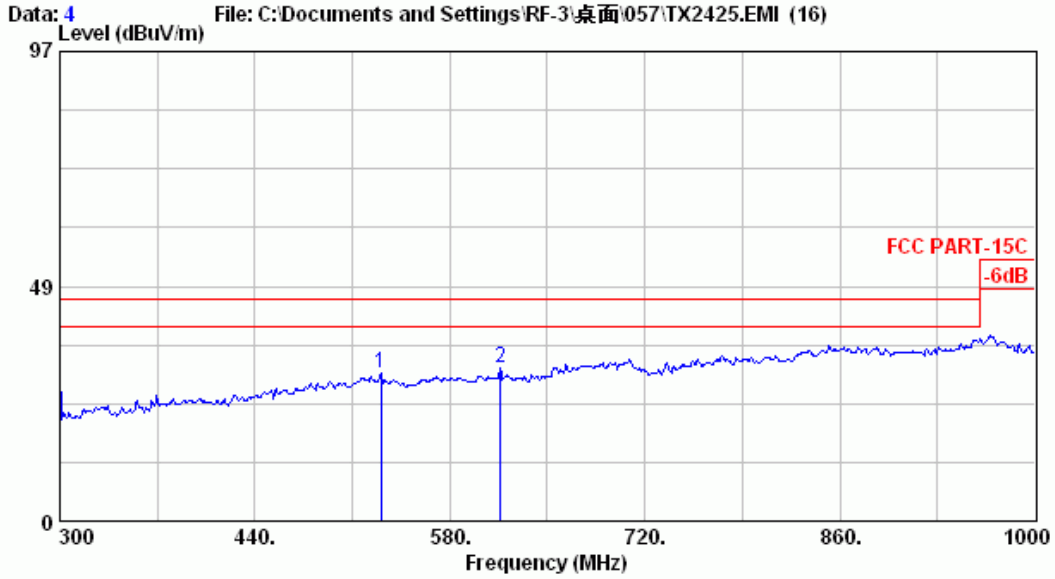

Site no. : A/C Chamber Data no. : 4
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2425

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	530.300	19.70	6.90	4.13	30.73	46.00	15.27	QP
2	616.400	21.31	6.30	4.13	31.74	46.00	14.26	QP

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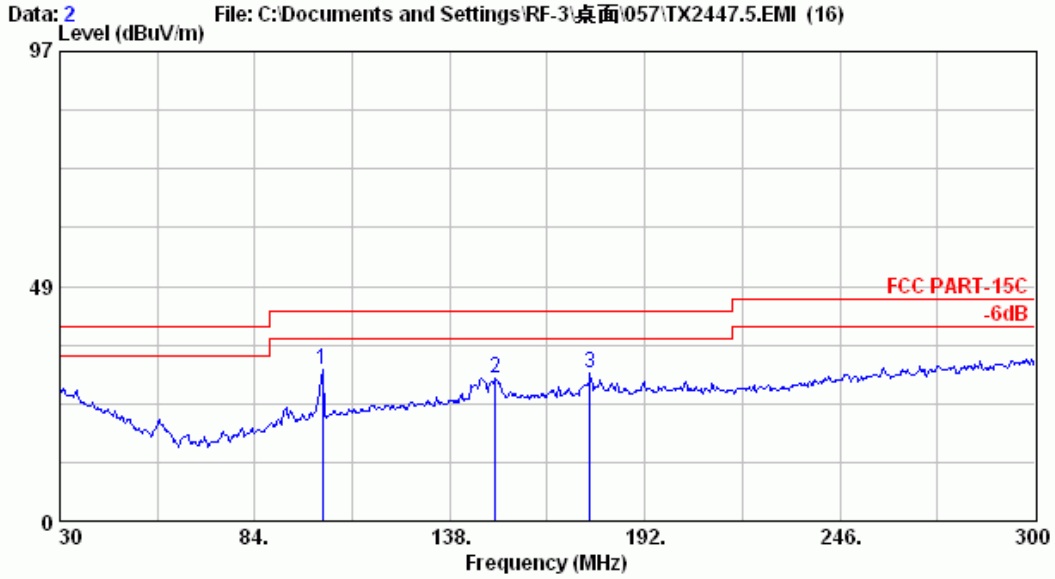

Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2447.5

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	102.630	17.40	2.10	11.90	31.40	43.50	12.10	QP
2	150.690	20.63	2.60	6.22	29.44	43.50	14.06	QP
3	176.880	21.21	2.90	6.32	30.42	43.50	13.08	QP

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

3. The pre-amplifier factor has been subtracted by test program actively.

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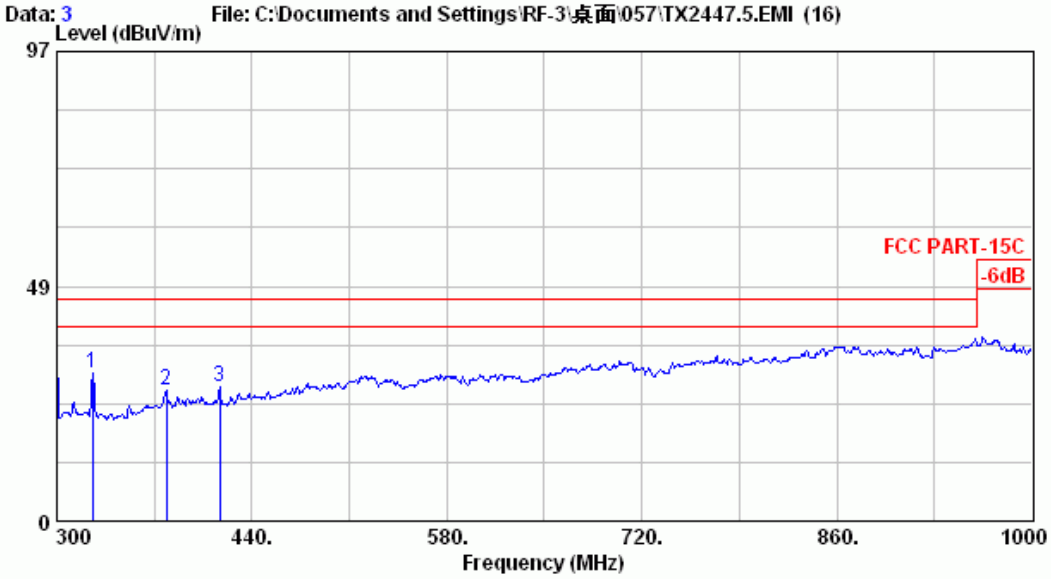

Site no. : A/C Chamber Data no. : 3
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2447.5

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	325.900	15.15	4.20	11.08	30.43	46.00	15.57	QP
2	378.400	17.19	4.60	5.25	27.04	46.00	18.96	QP
3	416.900	16.95	5.08	5.52	27.54	46.00	18.46	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

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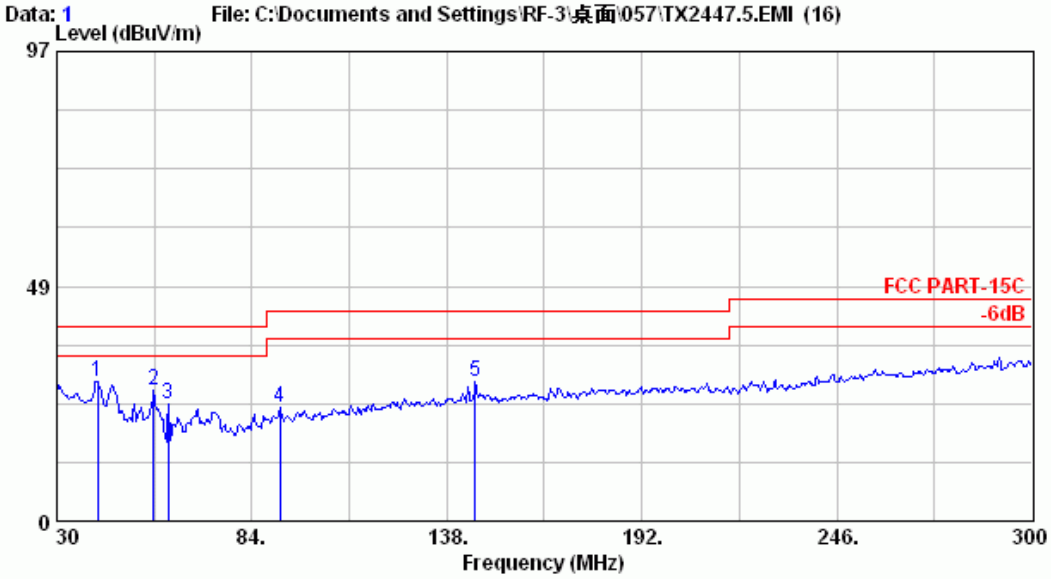


Site no. : A/C Chamber Data no. : 1
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2447.5

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	41.340	20.14	1.30	7.28	28.72	40.00	11.28	QP
2	56.730	13.77	1.60	11.66	27.03	40.00	12.97	QP
3	60.780	12.55	1.60	10.12	24.27	40.00	15.73	QP
4	91.830	16.08	2.00	5.48	23.55	43.50	19.95	QP
5	145.830	20.40	2.50	5.74	28.65	43.50	14.85	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The pre-amplifier factor has been subtracted by test program actively.

3.6.2. Above 1GHz Frequency Range Measurement Results

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2403.25MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dBμV)	Emission Level Horizontal (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2249.920	27.96	6.17	21.14	55.27	74.00	18.73
2330.560	28.03	6.26	24.99	59.28	74.00	14.72
2367.520	28.06	6.31	26.59	60.97	74.00	13.03
2409.520	28.11	6.36	12.90	47.38	74.00	26.62
4808.500	32.92	9.14	21.34	63.41	74.00	10.59
7216.000	35.84	11.25	16.36	63.46	74.00	10.54

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2249.92	55.27	-30.37	24.90	54.00	29.10
2330.56	59.28	-30.37	28.91	54.00	25.09
2367.52	60.97	-30.37	30.60	54.00	23.40
2409.52	47.38	-30.37	17.01	54.00	36.99
4808.50	63.41	-30.37	33.04	54.00	20.96
7216.00	63.46	-30.37	33.09	54.00	20.91

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2403.25MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dBμV)	Emission Level Vertical (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2249.920	27.96	6.17	16.79	50.92	74.00	23.08
2364.160	28.06	6.30	26.27	60.64	74.00	13.36
2409.520	28.11	6.36	12.30	46.78	74.00	27.22
4808.500	32.92	9.14	23.37	65.44	74.00	8.56
7216.000	35.84	11.25	15.08	62.18	74.00	11.82

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2249.92	50.92	-30.37	20.55	54.00	33.45
2364.16	60.64	-30.37	30.27	54.00	23.73
2409.52	46.78	-30.37	16.41	54.00	37.59
4808.50	65.44	-30.37	35.07	54.00	18.93
7216.00	62.18	-30.37	31.81	54.00	22.19

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2425MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dBμV)	Emission Level Horizontal (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2275.120	27.98	6.19	18.89	53.06	74.00	20.94
2359.120	28.06	6.30	23.14	57.51	74.00	16.49
4853.500	33.02	9.15	19.65	61.83	74.00	12.17
7282.000	36.00	11.36	14.02	61.39	74.00	12.61

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2275.12	53.06	-30.37	22.69	54.00	31.31
2359.12	57.51	-30.37	27.14	54.00	26.86
4853.50	61.83	-30.37	31.46	54.00	22.54
7282.00	61.39	-30.37	31.02	54.00	22.98

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2425MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dBμV)	Emission Level Vertical (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2338.960	28.04	6.28	20.84	55.16	74.00	18.84
2372.560	28.08	6.31	21.62	56.01	74.00	17.99
4853.500	33.02	9.15	22.75	64.93	74.00	9.07
7282.000	36.00	11.36	14.86	62.23	74.00	11.77

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2338.96	55.16	-30.37	24.79	54.00	29.21
2372.56	56.01	-30.37	25.64	54.00	28.36
4853.50	64.93	-30.37	34.56	54.00	19.44
7282.00	62.23	-30.37	31.86	54.00	22.14

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2447.5MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dBμV)	Emission Level Horizontal (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2296.960	27.99	6.23	21.93	56.16	74.00	17.84
2355.760	28.06	6.29	19.47	53.82	74.00	20.18
4898.500	33.09	9.16	16.68	58.94	74.00	15.06
7353.500	36.17	11.48	14.35	62.00	74.00	12.00

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2296.96	56.16	-30.37	25.79	54.00	28.21
2355.76	53.82	-30.37	23.45	54.00	30.55
4898.50	58.94	-30.37	28.57	54.00	25.43
7353.50	62.00	-30.37	31.63	54.00	22.37

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmitting Mode, Frequency: 2447.5MHz, Position: Stand

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dBμV)	Emission Level Vertical (dBμV/m)	Limits (dBμV/m)	Margin (dB)
2296.960	27.99	6.23	19.47	53.70	74.00	20.30
2350.720	28.04	6.29	19.50	53.83	74.00	20.17
2364.160	28.06	6.30	19.70	54.07	74.00	19.93
2535.520	28.33	6.53	13.96	48.82	74.00	25.18
4898.500	33.09	9.16	19.07	61.33	74.00	12.67
7353.500	36.17	11.48	15.26	62.91	74.00	11.09

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. All final readings of measurement were with Peak values.
4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	PDCF (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2296.96	53.70	-30.37	23.33	54.00	30.67
2350.72	53.83	-30.37	23.46	54.00	30.54
2364.16	54.07	-30.37	23.70	54.00	30.30
2535.52	48.82	-30.37	18.45	54.00	35.55
4898.50	61.33	-30.37	30.96	54.00	23.04
7353.50	62.91	-30.37	32.54	54.00	21.46

Remarks: 1. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
2. Average value=Peak value+PDCF
3. All final readings of measurement were with Average values.
4. The pre-amplifier factor has been subtracted by test program actively.

3.6.3. Restricted Bands Measurement Results

Date of Test： Feb. 05, 2012 Temperature： 24℃

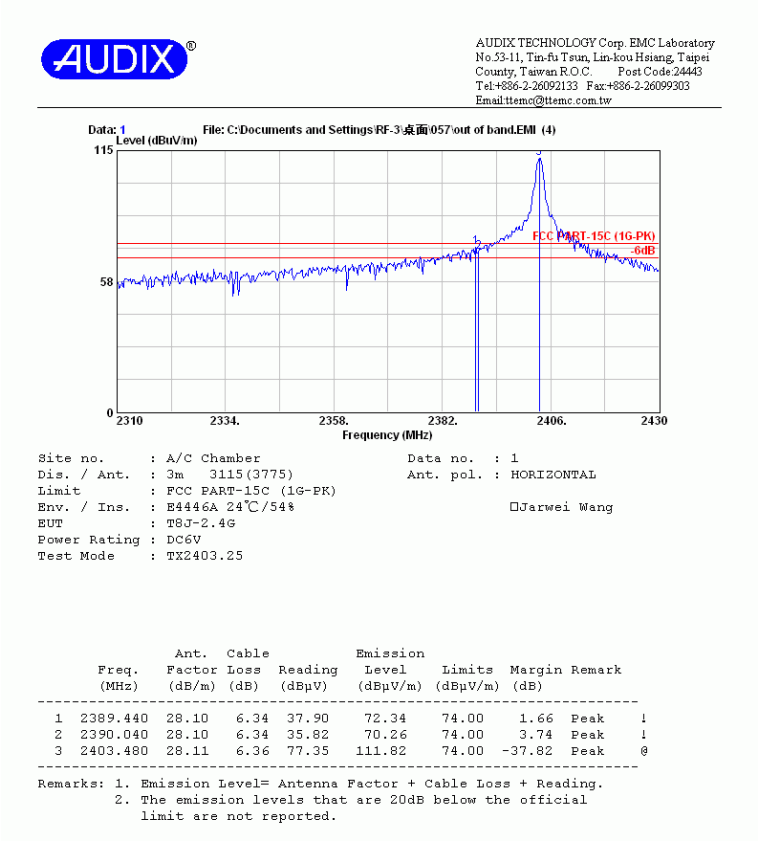
EUT： Radio Control Humidity： 54%

Test Mode： Transmit, Channel: 01, Frequency: 2403.250MHz

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Horizontal	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2389.440	28.10	6.34	37.90	72.34	74.00	1.66

	Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2389.44	72.34	-30.37	41.97	54.00	12.03

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2430MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
4. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
5. The pre-amplifier factor has been subtracted by test program actively.



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	
1	2389.440	28.10	6.34	37.90	72.34	74.00	1.66	Peak	!
2	2390.040	28.10	6.34	35.82	70.26	74.00	3.74	Peak	!
3	2403.480	28.11	6.36	77.35	111.82	74.00	-37.82	Peak	@

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

Date of Test： Feb. 05, 2012 Temperature： 24℃

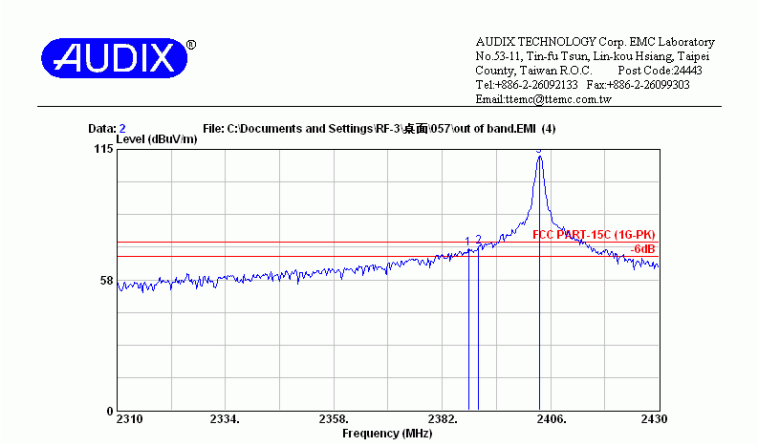
EUT： Radio Control Humidity： 54%

Test Mode： Transmit, Channel: 01, Frequency: 2403.250MHz

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2387.880	28.10	6.34	36.55	70.99	74.00	3.01

	Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2387.88	70.99	-30.37	40.62	54.00	13.38

R Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2420MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
4. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
5. The pre-amplifier factor has been subtracted by test program actively.



Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m 3115(3775) Ant. pol. : VERTICAL
Limit : FCC PART-15C (1G-PK)
Env. / Ins. : E4446A 24℃/54% Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2403.25

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	
1	2387.880	28.10	6.34	36.55	70.99	74.00	3.01	Peak	
2	2390.040	28.10	6.34	37.79	72.23	74.00	1.77	Peak	
3	2403.480	28.11	6.36	77.72	112.19	74.00	-38.19	Peak	@

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

Date of Test： Feb. 05, 2012 Temperature： 24℃

EUT： Radio Control Humidity： 54%

Test Mode： Transmit, Channel: 60, Frequency: 2447.500MHz

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Horizontal	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2484.530	28.18	6.45	22.19	56.82	74.00	17.18

	Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2484.53	56.82	-30.37	26.45	54.00	27.55

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2420MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
4. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
5. The pre-amplifier factor has been subtracted by test program actively.

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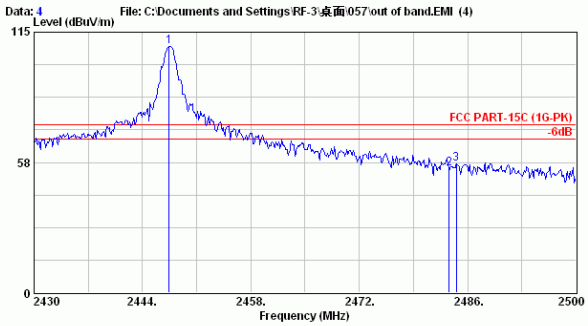


Site no. : A/C Chamber Data no. : 4
Dis. / Ant. : 3m 3115(3775) Ant. pol. : HORIZONTAL
Limit : FCC PART-15C (1G-PK)
Env. / Ins. : E4446A 24℃/54% ☐Jarwei Wang
EUT : T8J-2.4G
Power Rating : DC6V
Test Mode : TX2447.5

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	
1	2447.430	28.15	6.41	74.23	108.79	74.00	-34.79	Peak	X
2	2483.620	28.18	6.45	20.26	54.90	74.00	19.10	Peak	
3	2484.530	28.18	6.45	22.19	56.82	74.00	17.18	Peak	

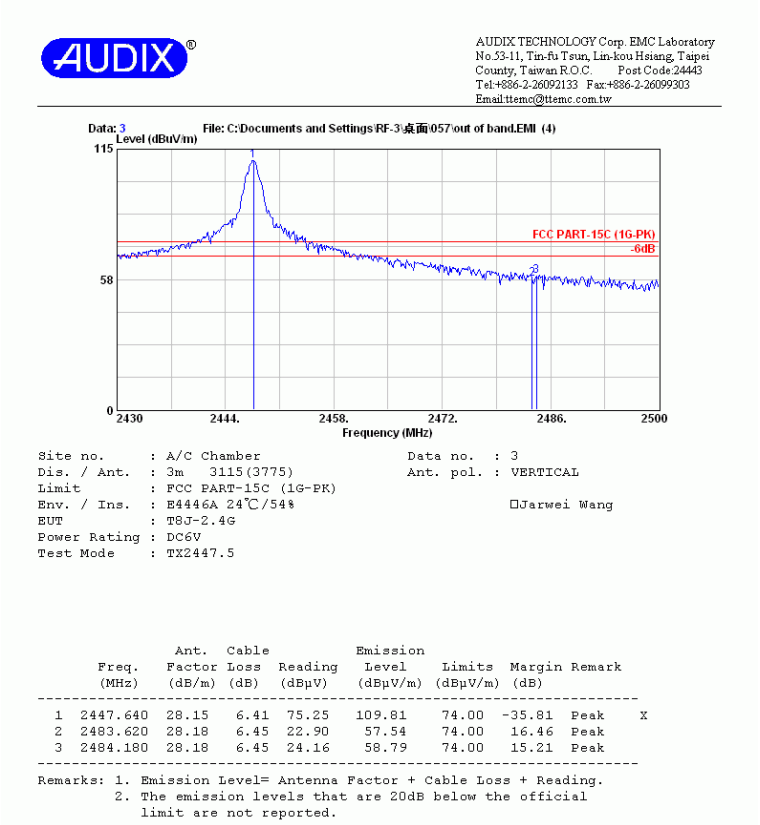
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Date of Test：	Feb. 05, 2012	Temperature：	24℃
EUT：	Radio Control	Humidity：	54%
Test Mode：	Transmit, Channel: 60, Frequency: 2447.500MHz		

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2484.180	28.18	6.45	24.16	58.79	74.00	15.21

	Emission Frequency	Peak Value	PDCF	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2484.18	58.79	-30.37	28.42	54.00	25.58

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2420MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
4. PDCF=20log(dwell time/100ms)=20log(3.028ms/100ms)=-30.37
5. The pre-amplifier factor has been subtracted by test program actively.



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	
1	2447.640	28.15	6.41	75.25	109.81	74.00	-35.81	Peak	X
2	2483.620	28.18	6.45	22.90	57.54	74.00	16.46	Peak	
3	2484.180	28.18	6.45	24.16	58.79	74.00	15.21	Peak	

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

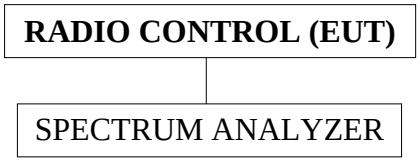
4. 20dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the 20dB bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11'	Oct. 13, 12'

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

4.4. Operating Condition of EUT

4.4.1. Set up the EUT and simulator as shown on 4.2.

4.4.2. To turn on the power of all equipment.

4.4.3. EUT (Radio Control) was on transmitting frequency function during the testing.

4.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 2.7kHz RBW and 2.7kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.
RBW=1% of the 20dB bandwidth
VBW=RBW

4.6. Test Results

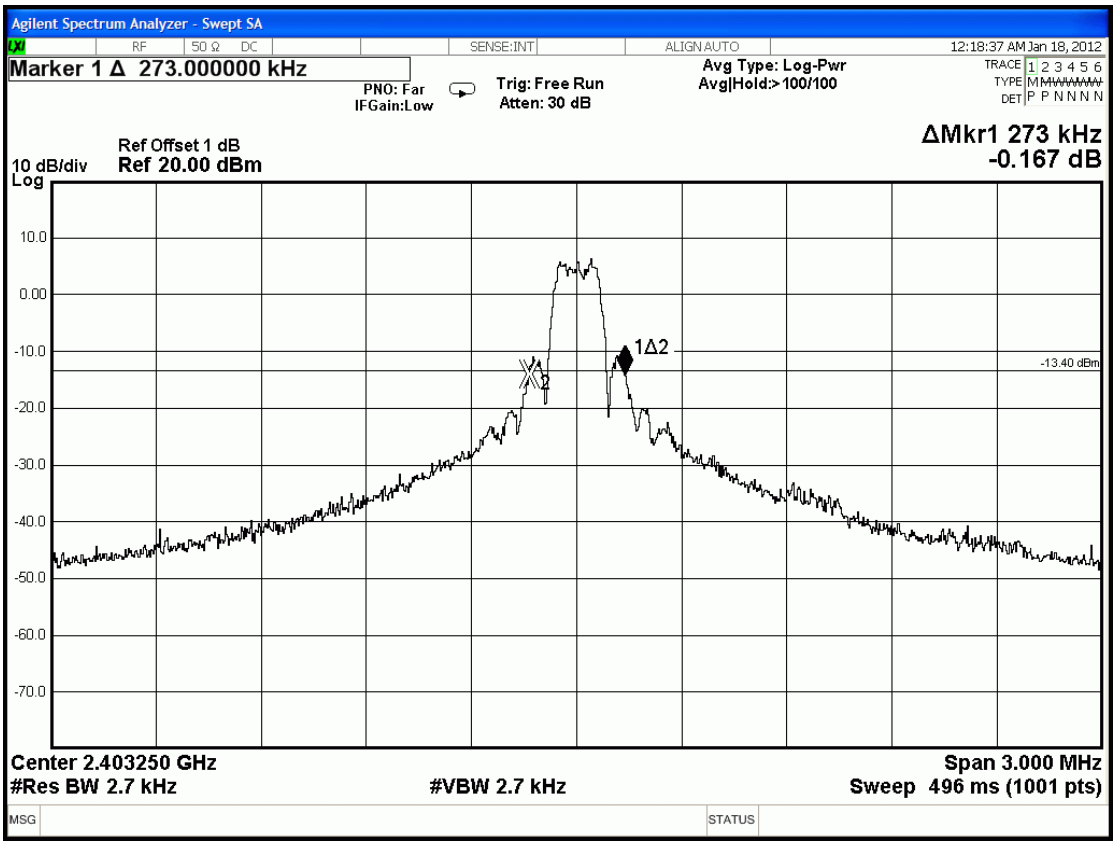
PASSED. All the test results are attached in next pages.

Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

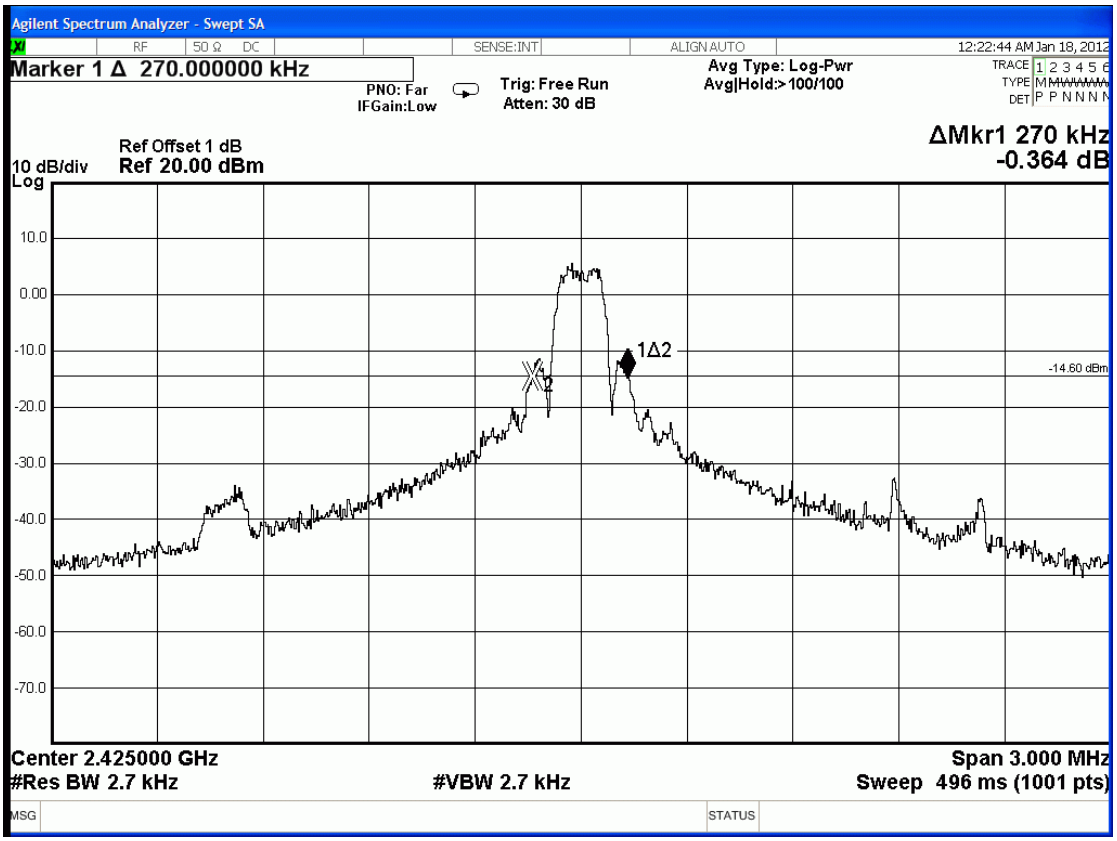
No.	Channel	Test Frequency	**20dB Bandwidth**	**2/3 (20dB Bandwidth)**
1.	01	2403.250MHz	**273kHz**	**180kHz**
2.	30	2425.000MHz	**270kHz**	**182kHz**
3.	60	2447.500MHz	**279kHz**	**186kHz**

The maximum two-thirds of the 20dB bandwidth shall be at maximum 190.00kHz.

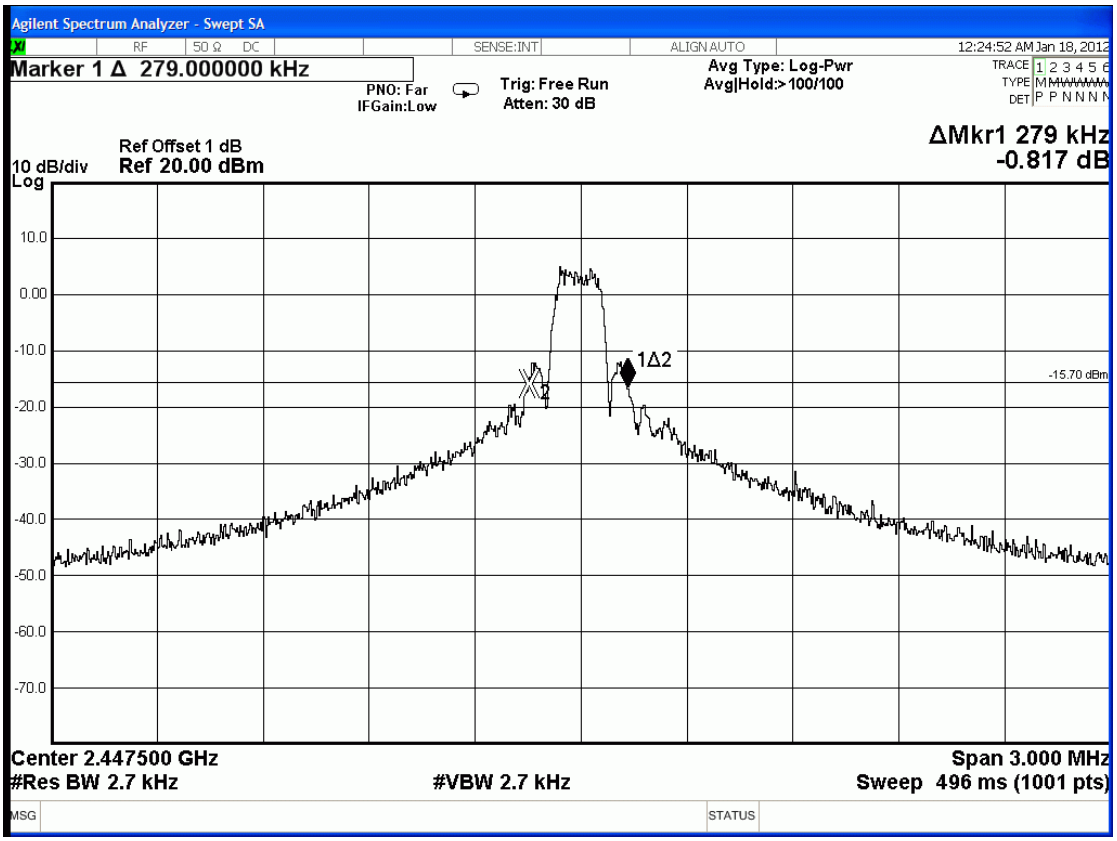
4.6.1. Channel 01, Frequency: 2403.250MHz



4.6.2. Channel 30, Frequency: 2425.000MHz



4.6.3. Channel 60, Frequency: 2447.500MHz



5. CARRIER FREQUENCY SEPARATION MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the carrier frequency separation measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11’	Oct. 13, 12’

5.2. Block Diagram of Test Setup

The same as section.4.2.

5.3. Specification Limits (§15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

5.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in section 4.4.

5.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The channel separation was measure by spectrum analyzer with 39kHz RBW and 39kHz VBW. The video bandwidth not to be smaller than resolution bandwidth, the peak was mark on adjacent bandwidth, the between of peak is carrier frequency separation.
RBW=1% Span
VBW=RBW

5.6. Test Results

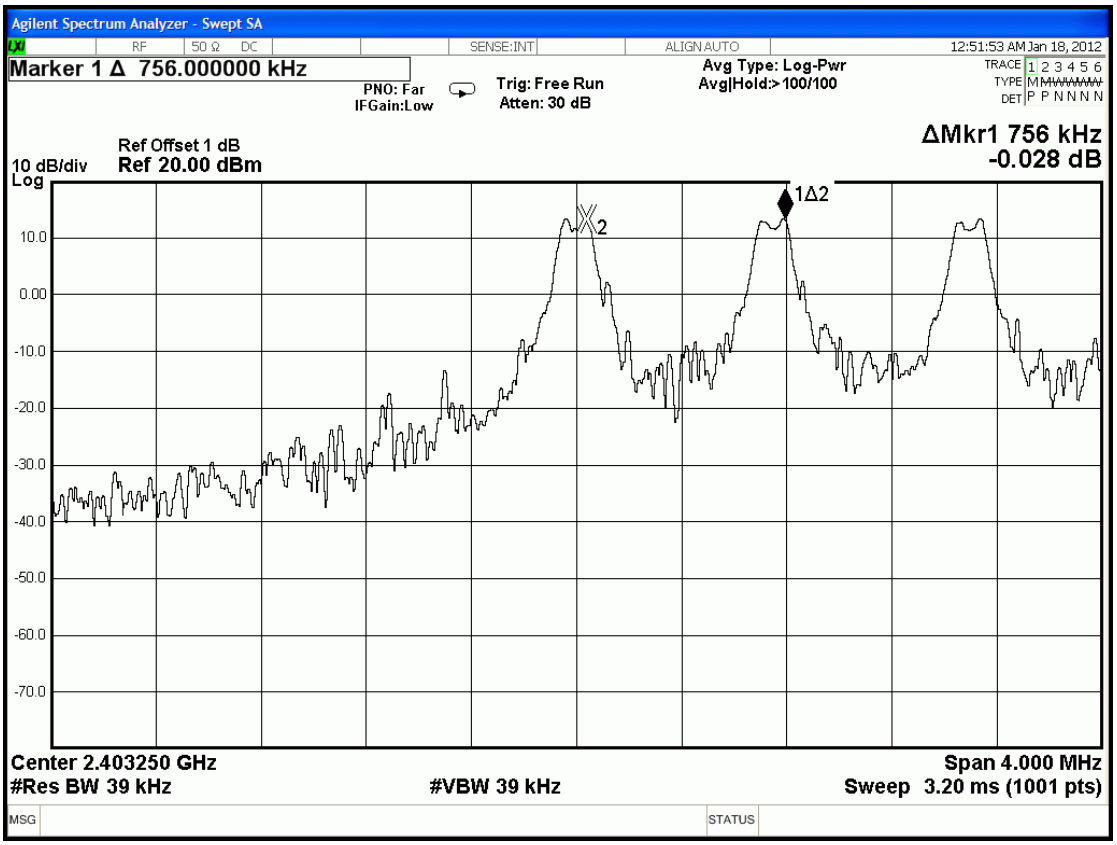
PASSED. All the test results are attached in next pages.

Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

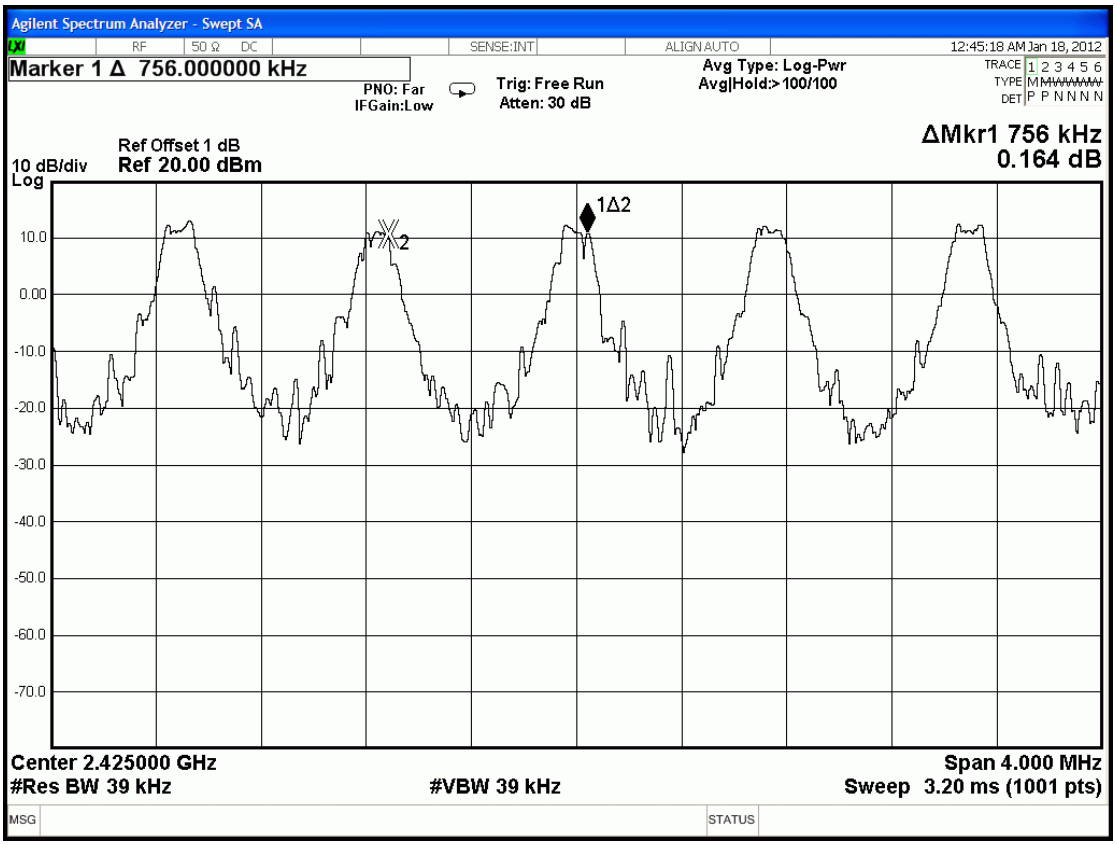
The minimum adjacent channel carrier frequency separation: 756kHz。

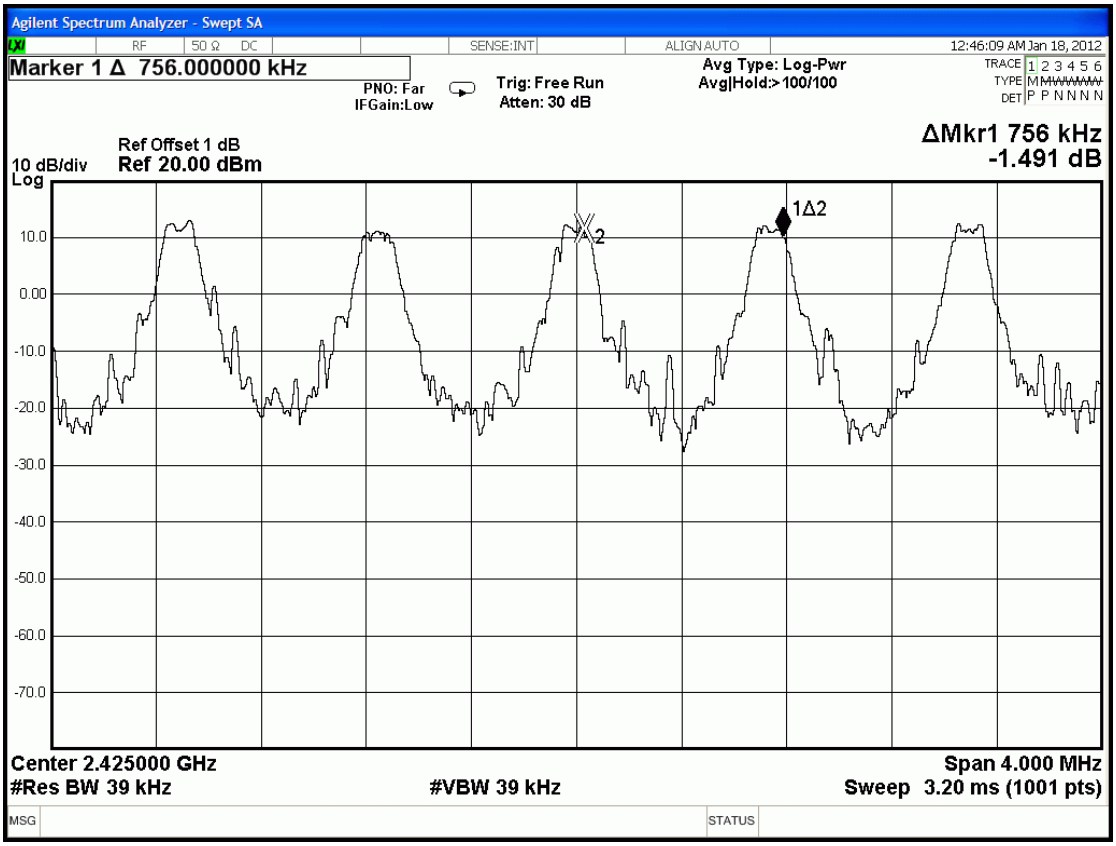
[Above values have met the requirement as specified in section 4.3: frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.]

5.6.1. Channel 01, Test Frequency: 2403.250MHz

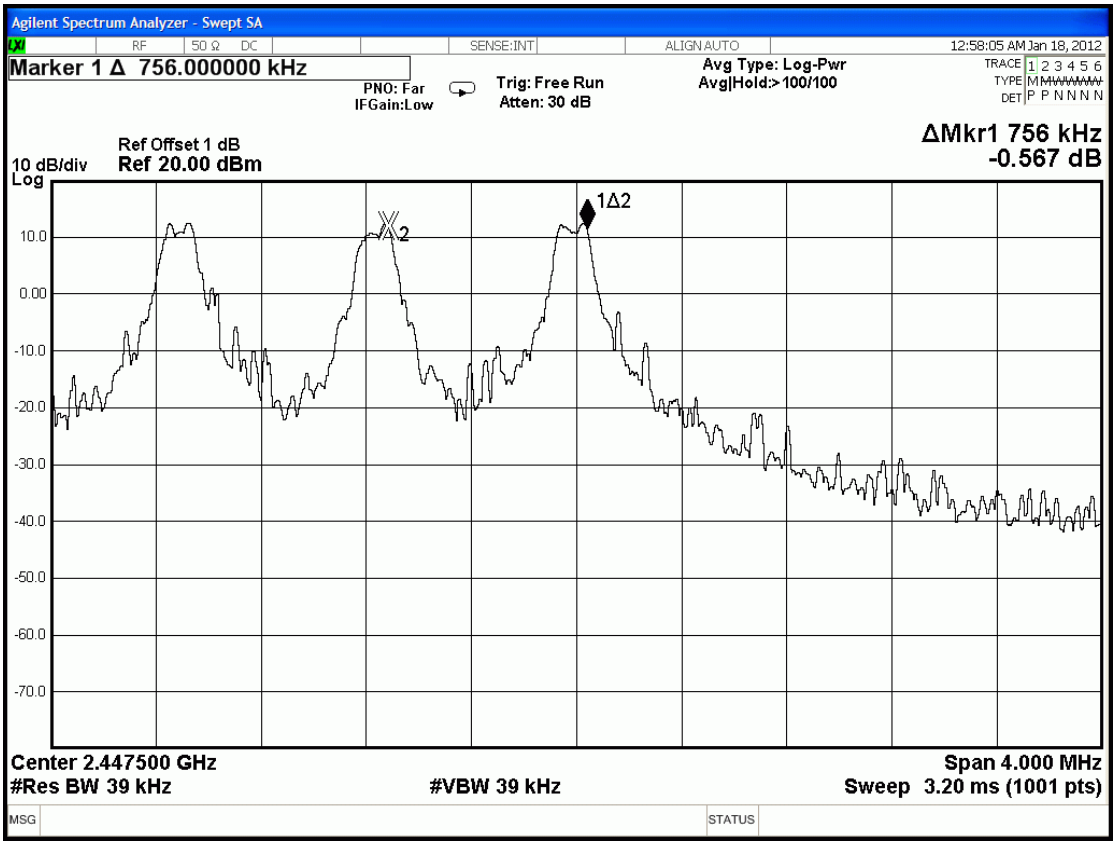


5.6.2. Channel 30, Test Frequency: 2425.000MHz





5.6.3. Channel 60, Test Frequency: 2447.500MHz



6. TIME OF OCCUPANCY MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the time of occupancy measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11’	Oct. 13, 12’

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. 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 number of hopping channels employed.

6.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in section 4.4.

6.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1MHz RBW and 1MHz VBW. VBW≥RBW ; Span=zero span.
Centered on a hopping channel sweep=as necessary to capture the entire dwell time per hopping channel ; Detector function=peak ; Trace=Max hold

6.6. Test Results

PASSED. All the test results are attached in next pages.

Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

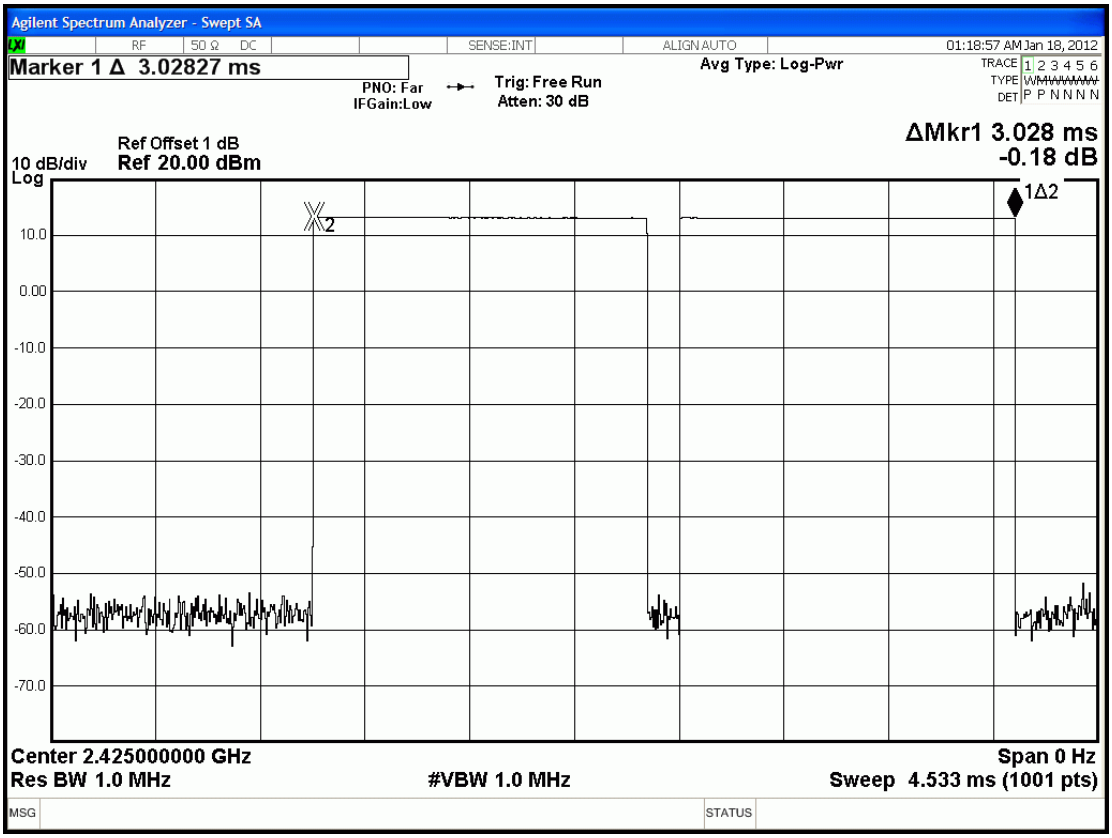
Duty cycle: 6 channels*0.4 seconds = 24econds

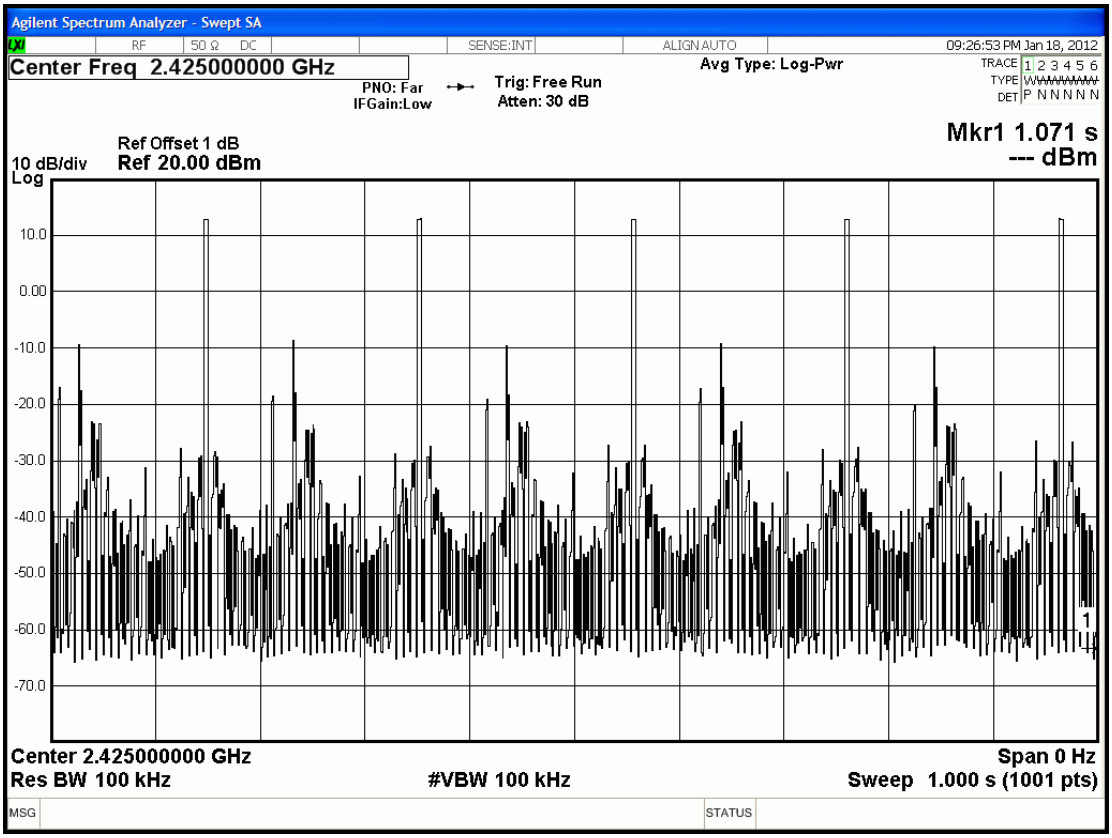
Test Frequency: 2425.000MHz

For per second of 5 channels appearance, the longest time of occupancy for each of 12 seconds is:

5 channels*24econds* 3.028ms = 363.36ms (<400ms)

6.6.1. Channel 30, Test Frequency: 2425.000MHz





7. NUMBER OF HOPPING CHANNELS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the number of hopping channels measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11’	Oct. 13, 12’

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

7.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in section 4.4.

7.5. Test Procedure (DA 00-705)

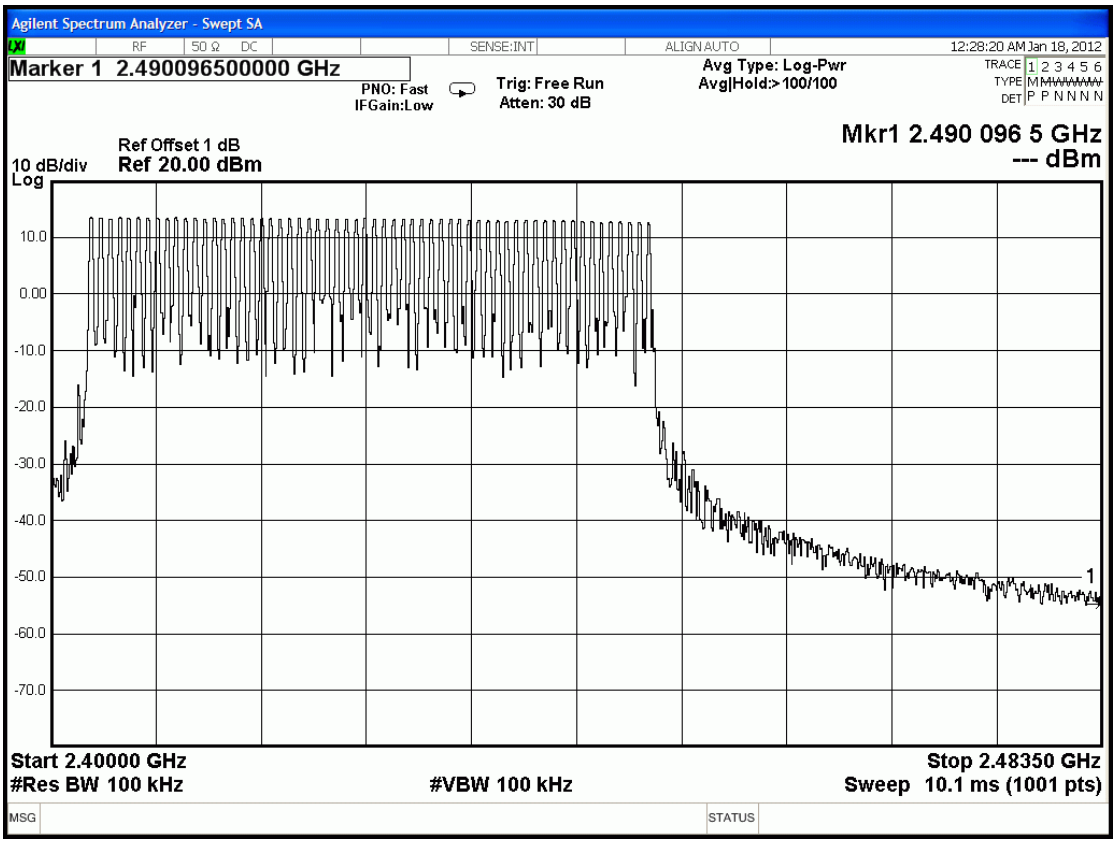
The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold

7.6. Test Results

PASSED. All the test results are attached in next page.

Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

The number of hopping channel is 60.


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
12:28:20 AM Jan 18, 2012
Marker 1 2.490096500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P P N N N N
Mkr1 2.490 096 5 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 2.48350 GHz
Sweep 10.1 ms (1001 pts)
MSG
STATUS

8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11’	Oct. 13, 12’

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits (§15.247(b)-(1))

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

8.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in 4.4 except the test set up replaced by section 8.2.

8.5. Test Procedure (DA 00-705)

The transmitter output was connected to the power sensor and record the reading of power meter.

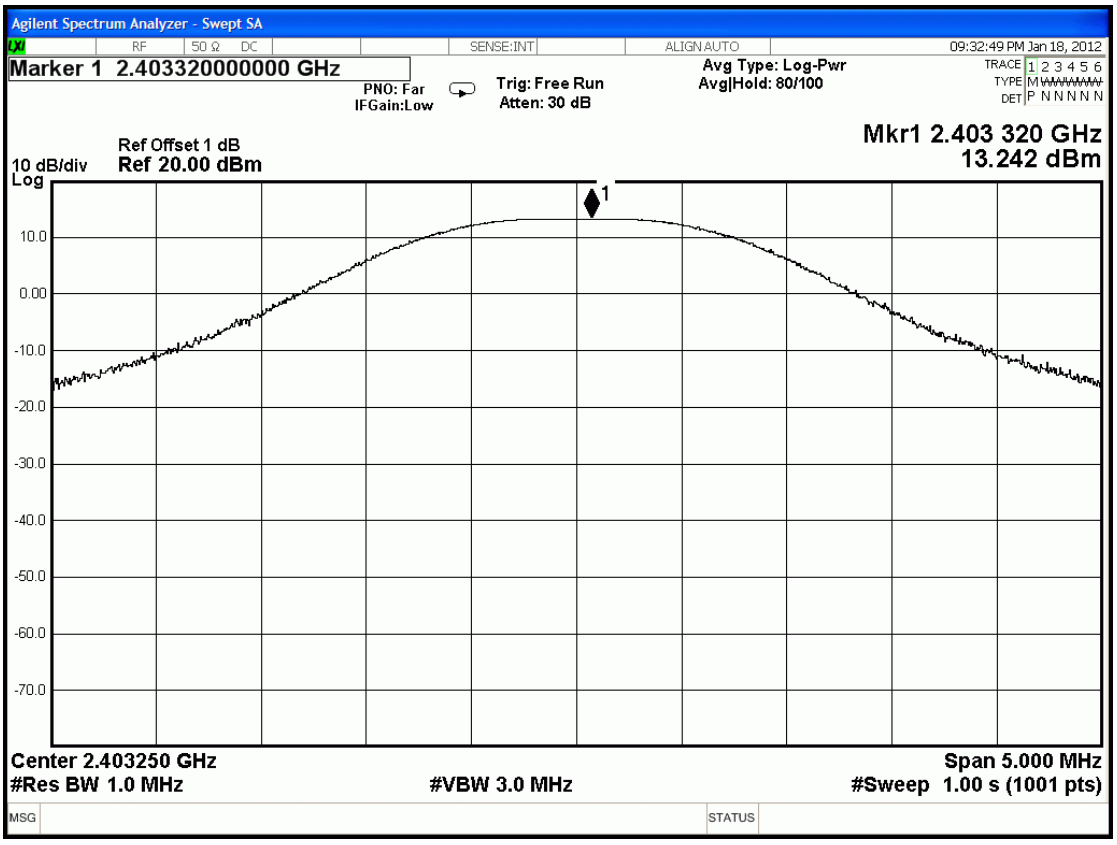
8.6. Test Results

PASSED. All the test results are listed below.

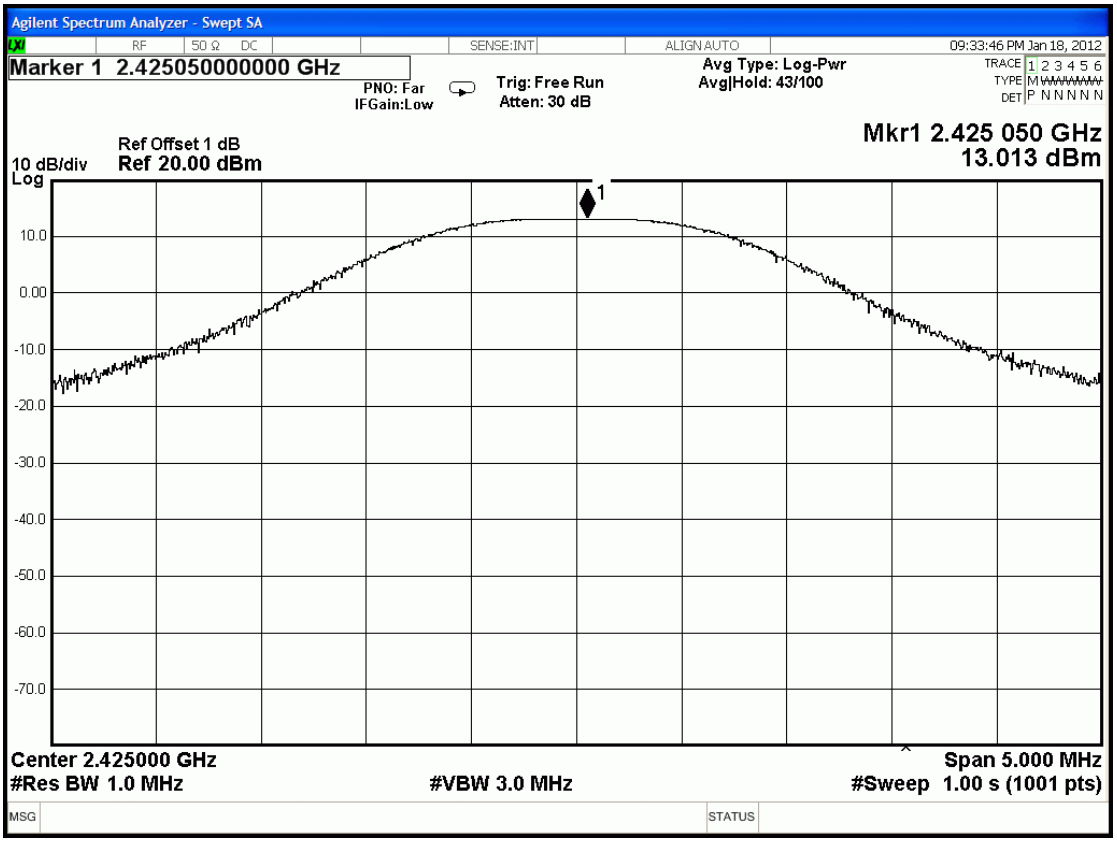
Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

No.	Channel	Test Frequency	**Peak Output Power**	Limit
1.	01	2403.250MHz	**13.242dBm**	21dBm
2.	30	2425.000MHz	**13.013dBm**	21dBm
3.	60	2447.500MHz	**12.518dBm**	21dBm

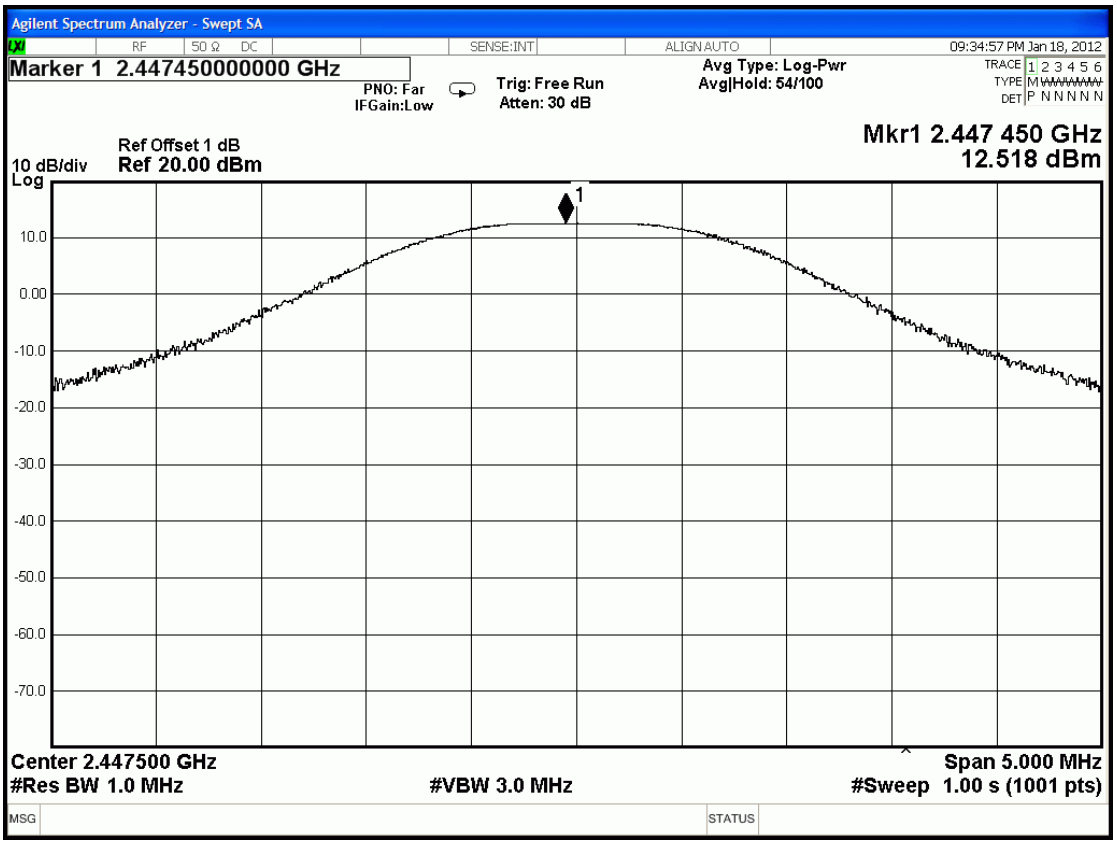
8.6.1. Channel 01, Test Frequency: 2403.250MHz



8.6.2. Channel 30, Test Frequency: 2425.000MHz



8.6.3. Channel 60, Test Frequency: 2447.500MHz



9. EMISSION LIMITATIONS MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the emission limitations measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11'	Oct. 13, 12'

9.2. Block Diagram of Test Setup

The same as section.4.2.

9.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※ This test result attaching to §3.6.3)

9.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in section 4.4.

9.5. Test Procedure (DA 00-705)

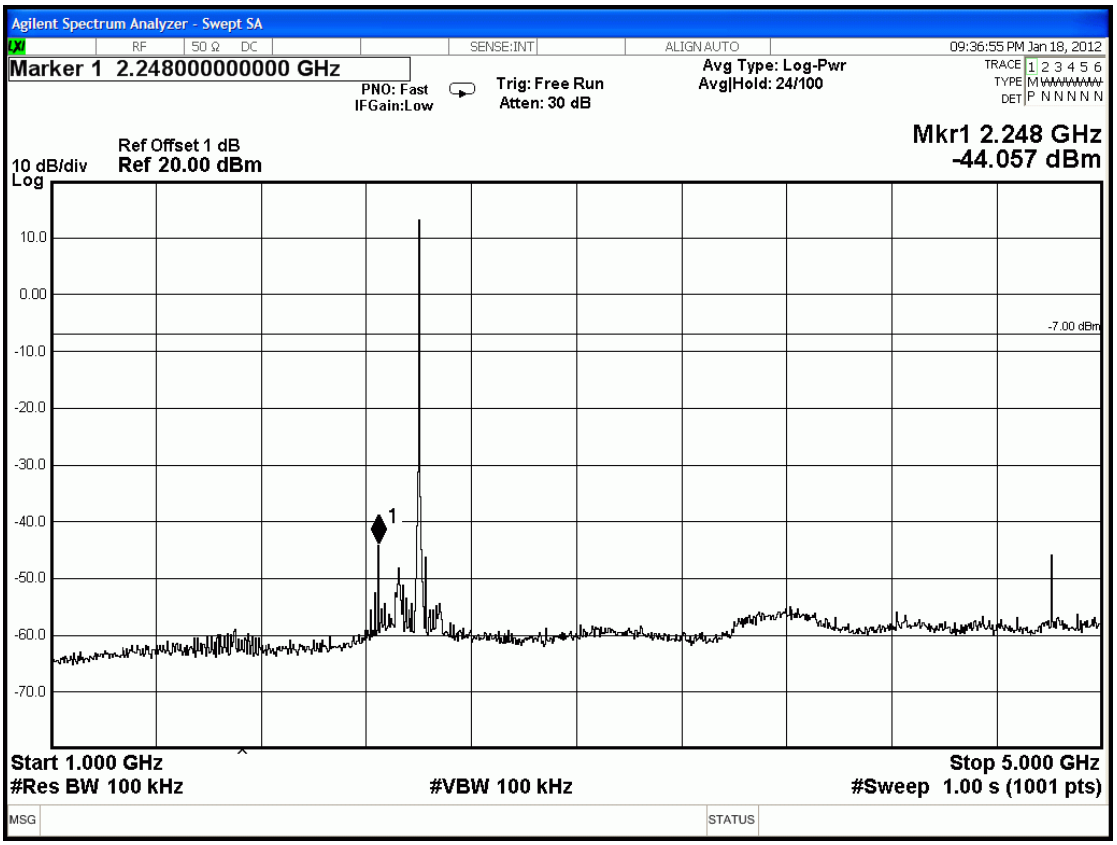
The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with frequency range from 30MHz to 25GHz.

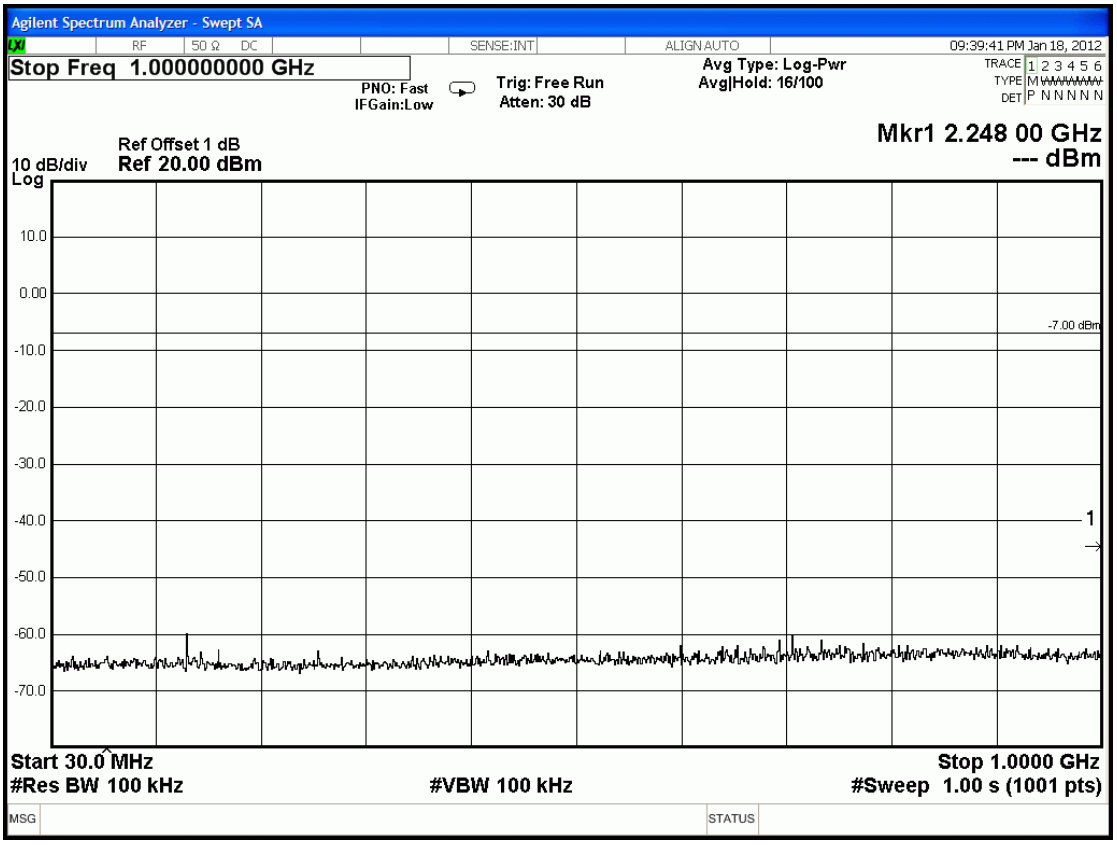
9.6. Test Results

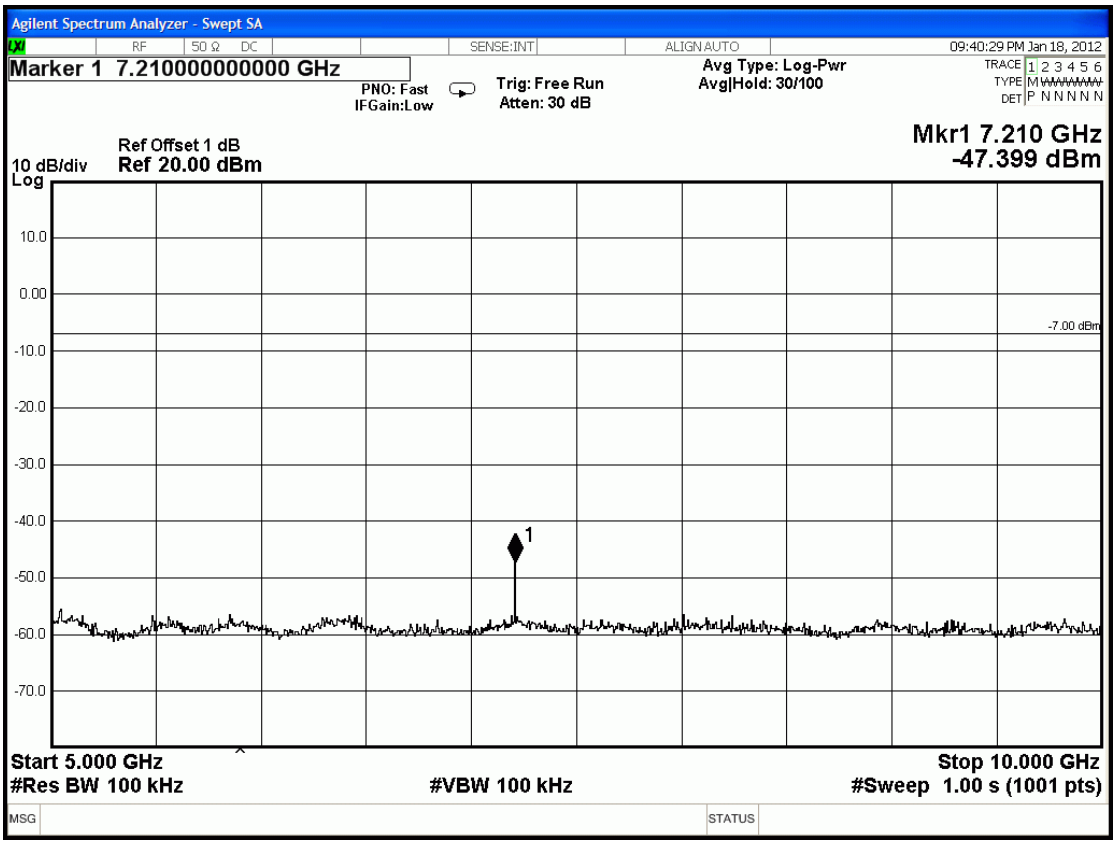
PASSED. All the test results are attached in next pages.

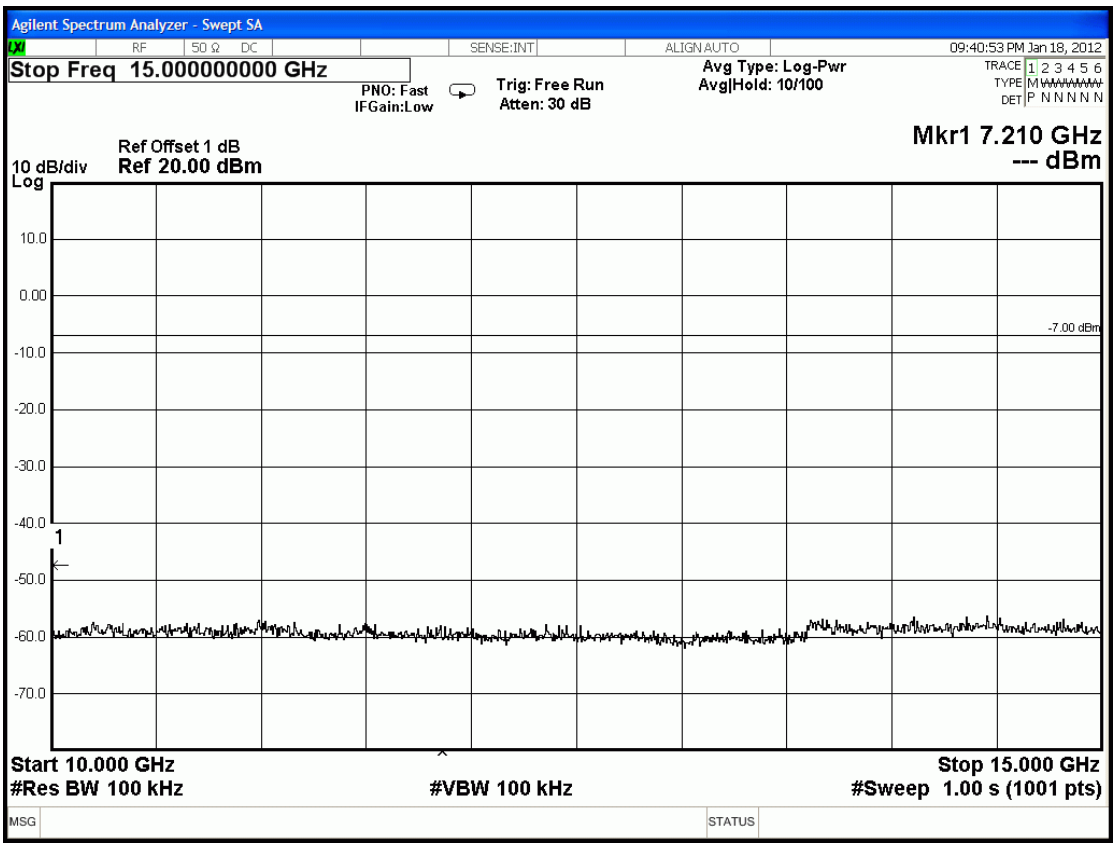
Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

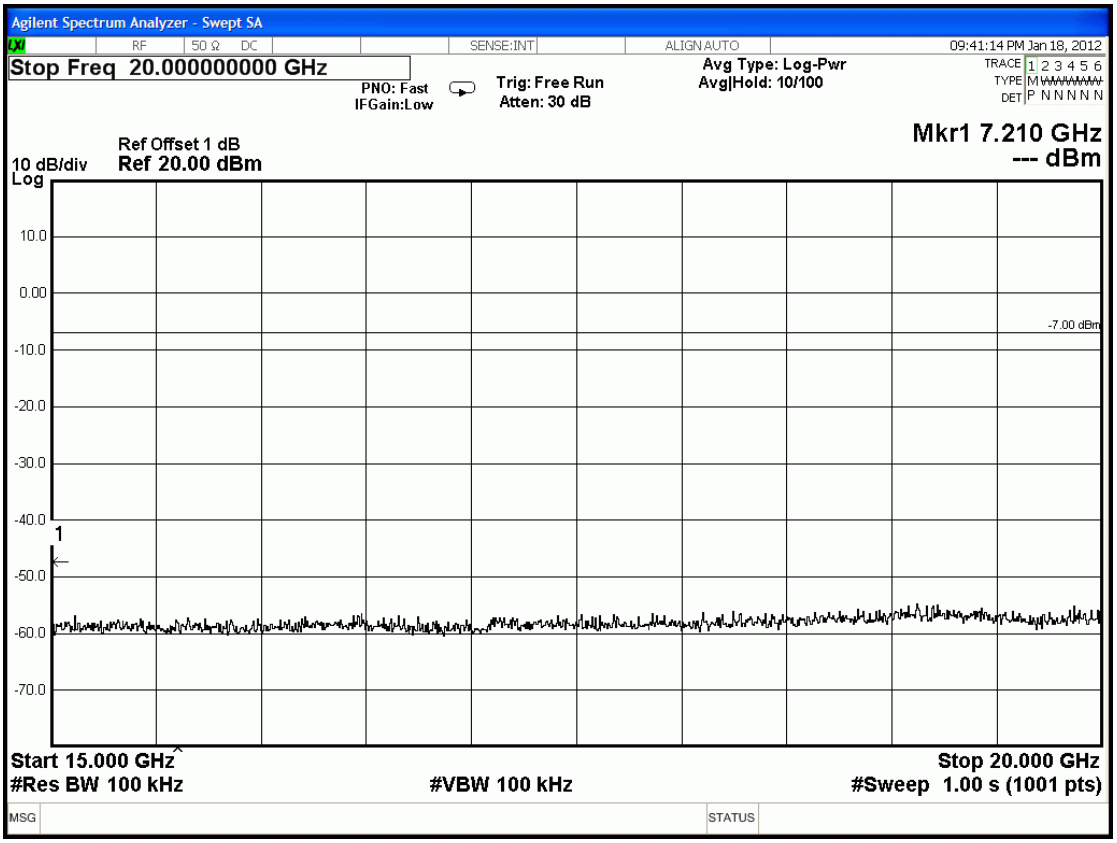
9.6.1. Channel 01, Frequency: 2403.250MHz

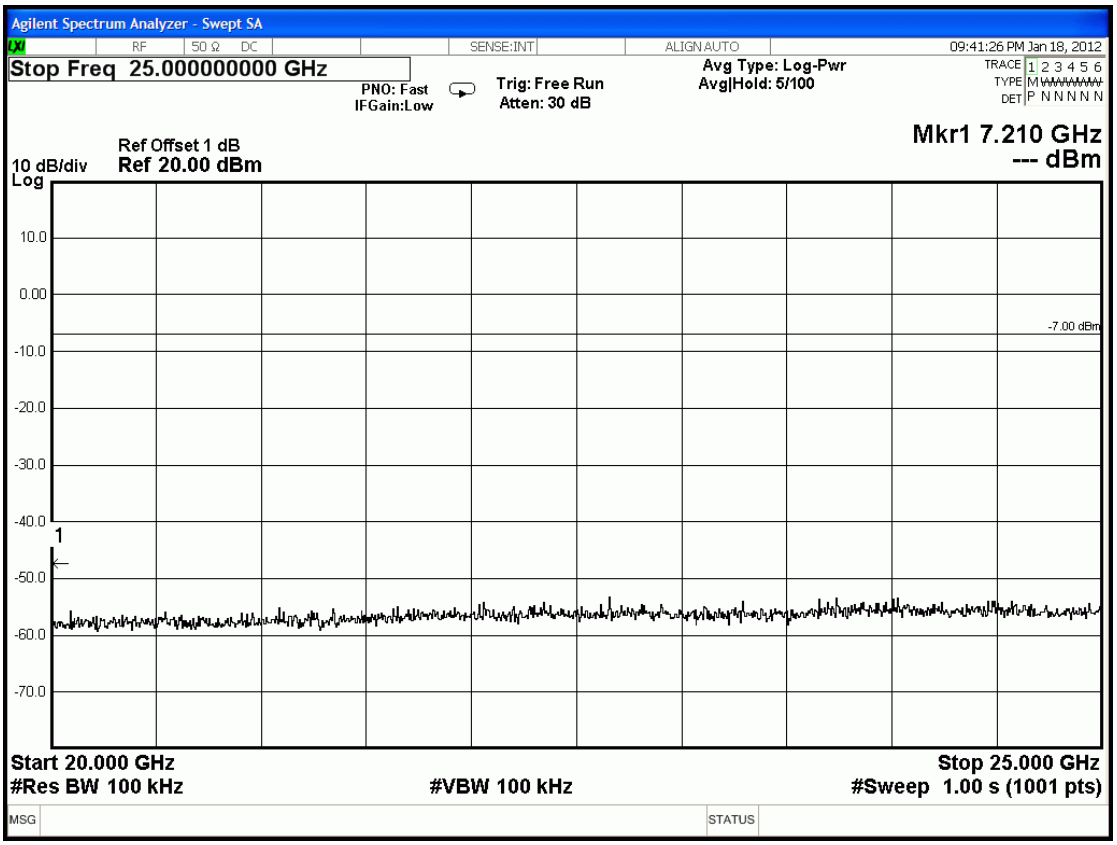




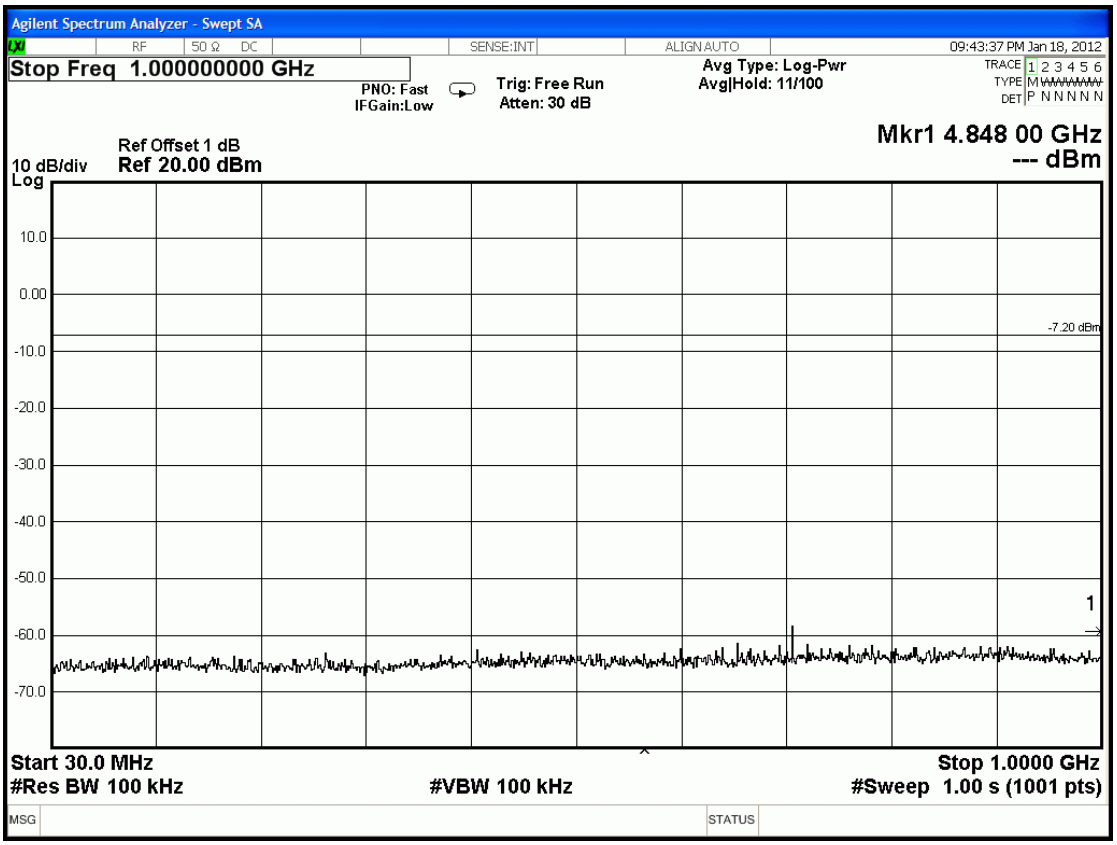

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
09:40:29 PM Jan 18, 2012
Marker 1 7.210000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 30/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 7.210 GHz
-47.399 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.00 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 10.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

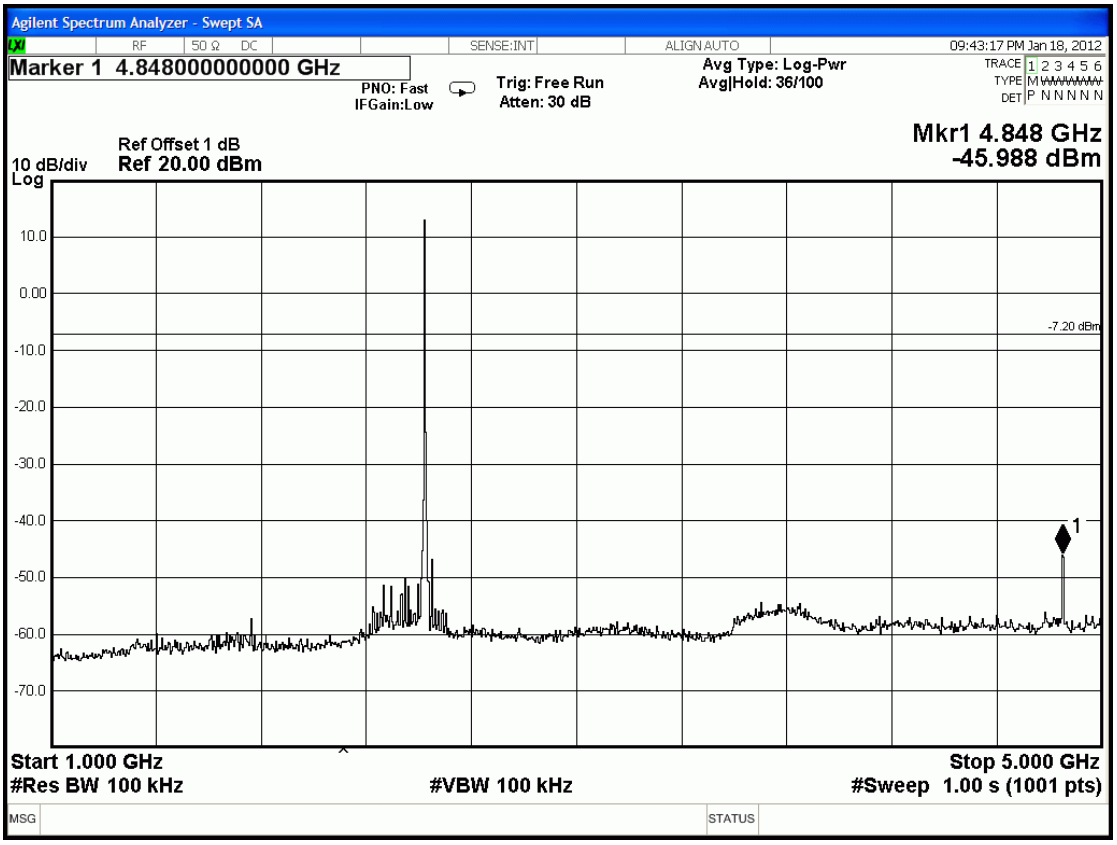

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
09:40:53 PM Jan 18, 2012
Stop Freq 15.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 7.210 GHz
--- dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.00 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 15.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

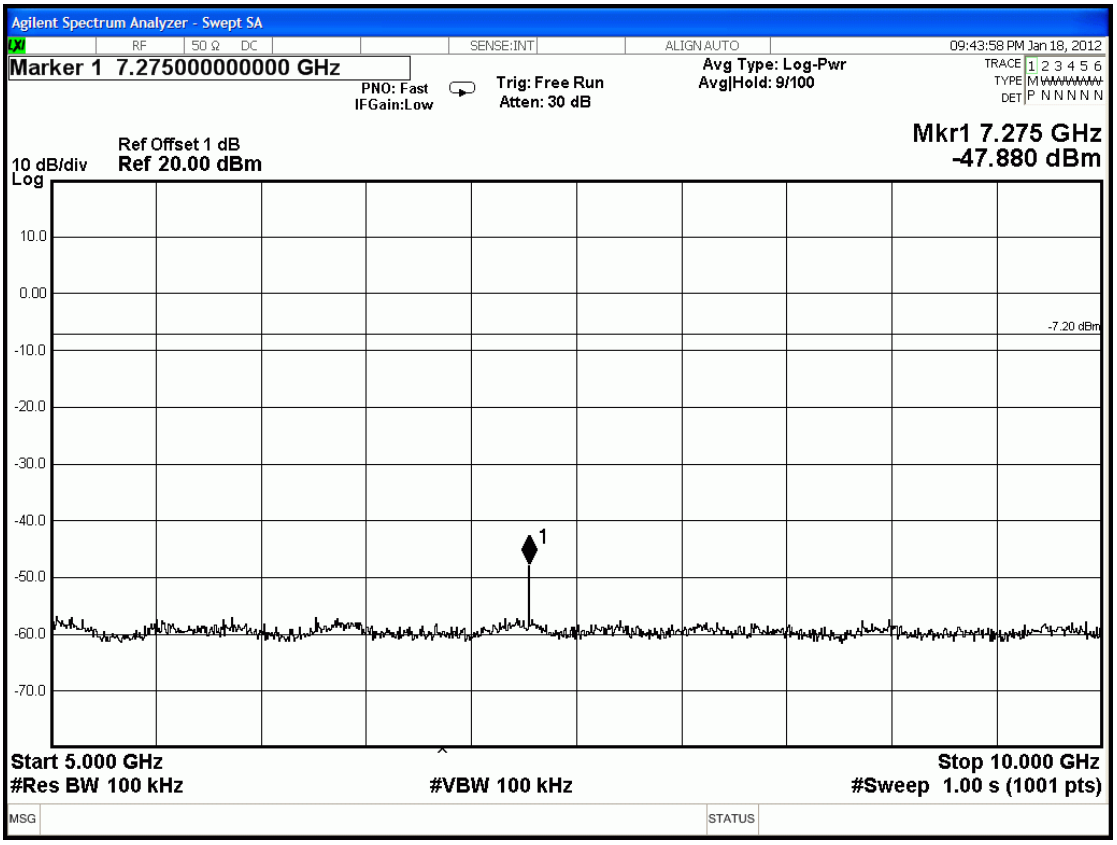

Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:41:14 PM Jan 18, 2012
Stop Freq 20.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.210 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.00 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 20.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

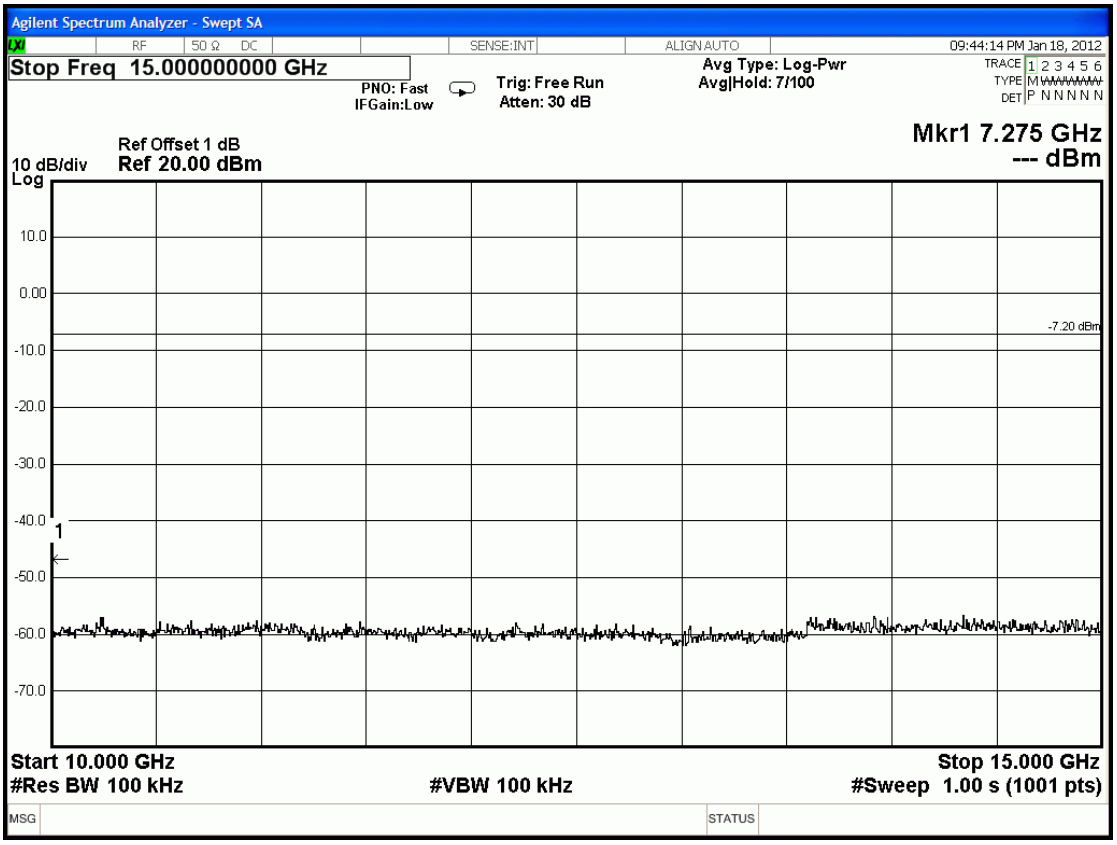

Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:41:26 PM Jan 18, 2012
Stop Freq 25.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 5/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.210 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.00 dBm
1
Start 20.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 25.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

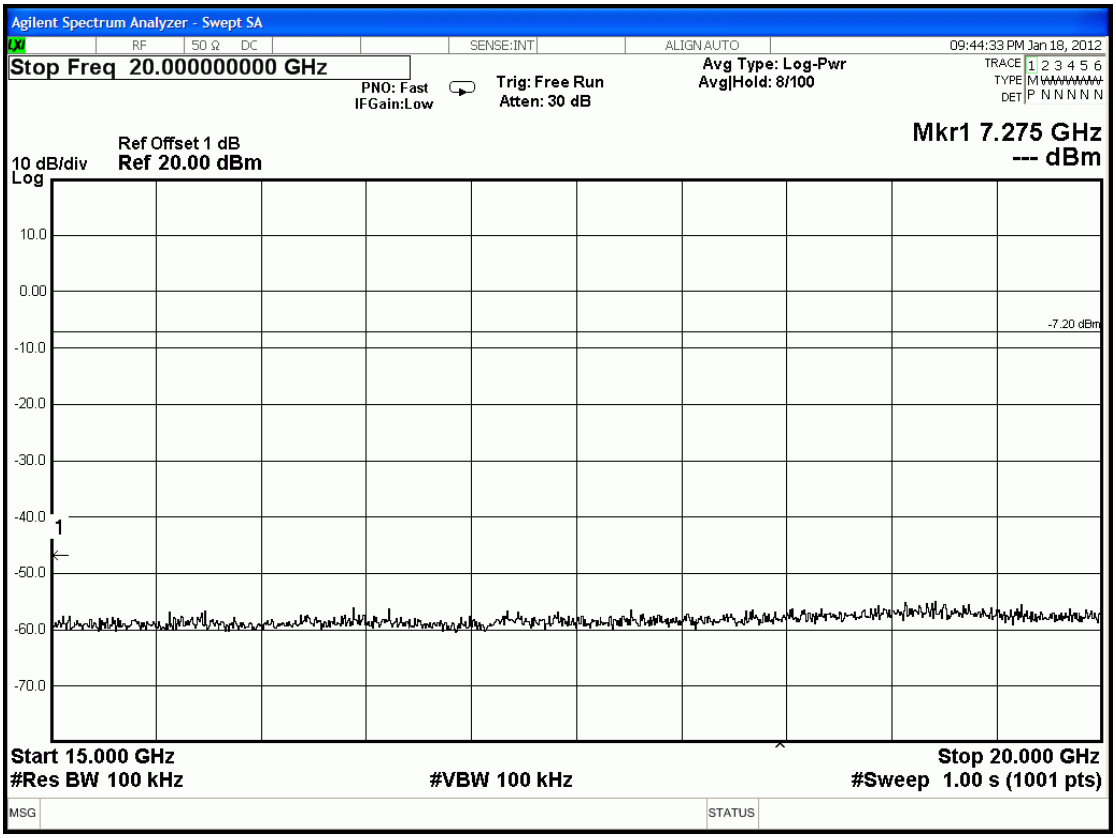
9.6.2. Channel 30, Frequency: 2425.000MHz

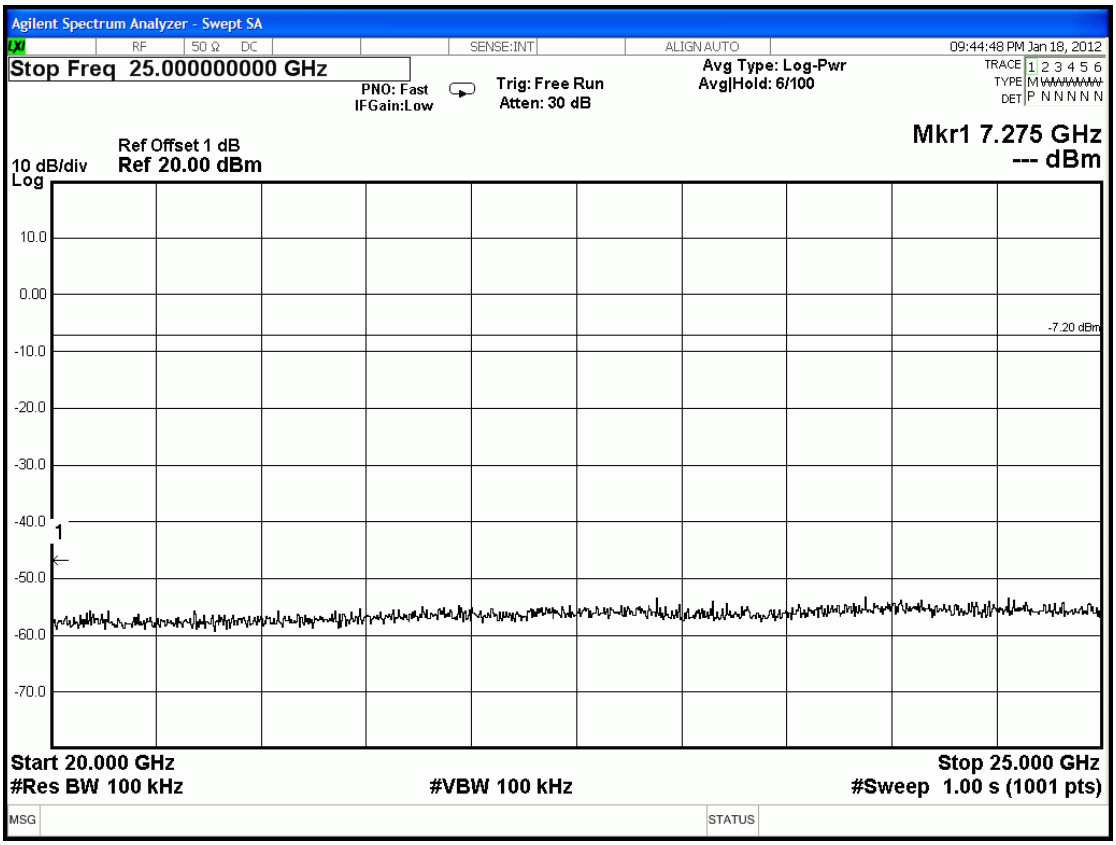




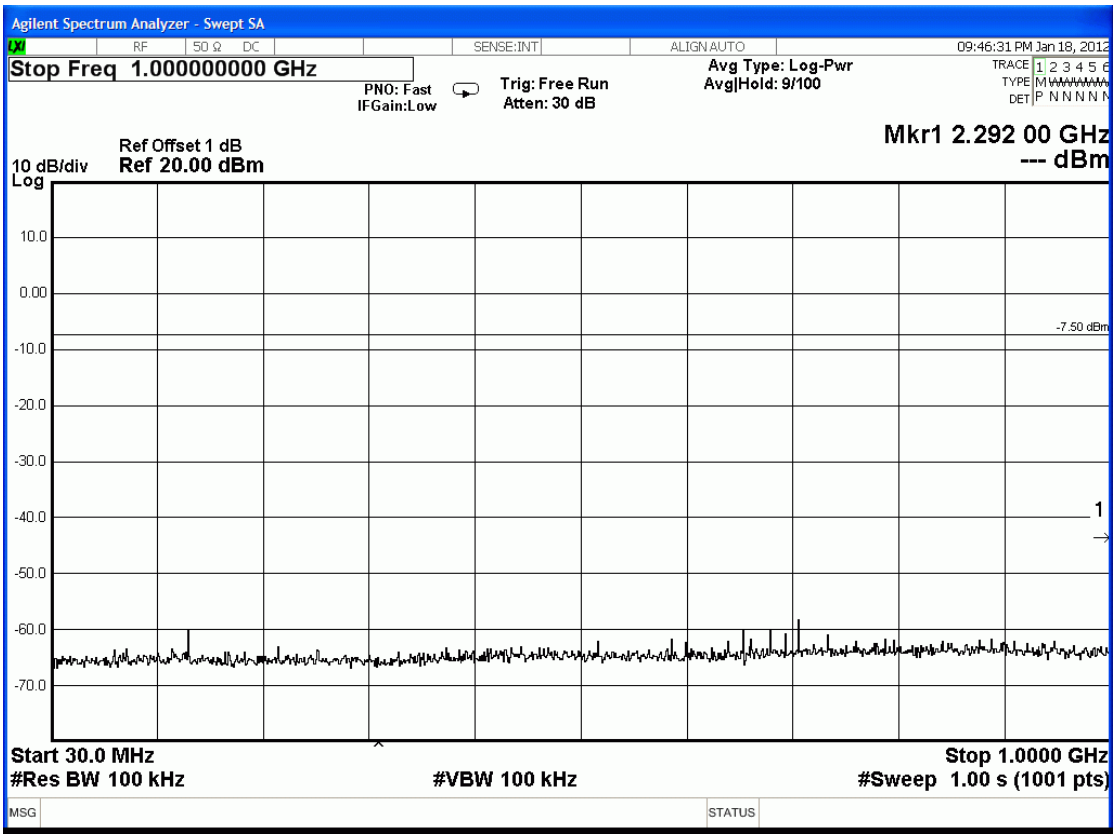

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
09:43:58 PM Jan 18, 2012
Marker 1 7.275000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 9/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Mkr1 7.275 GHz
-47.880 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.20 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 10.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

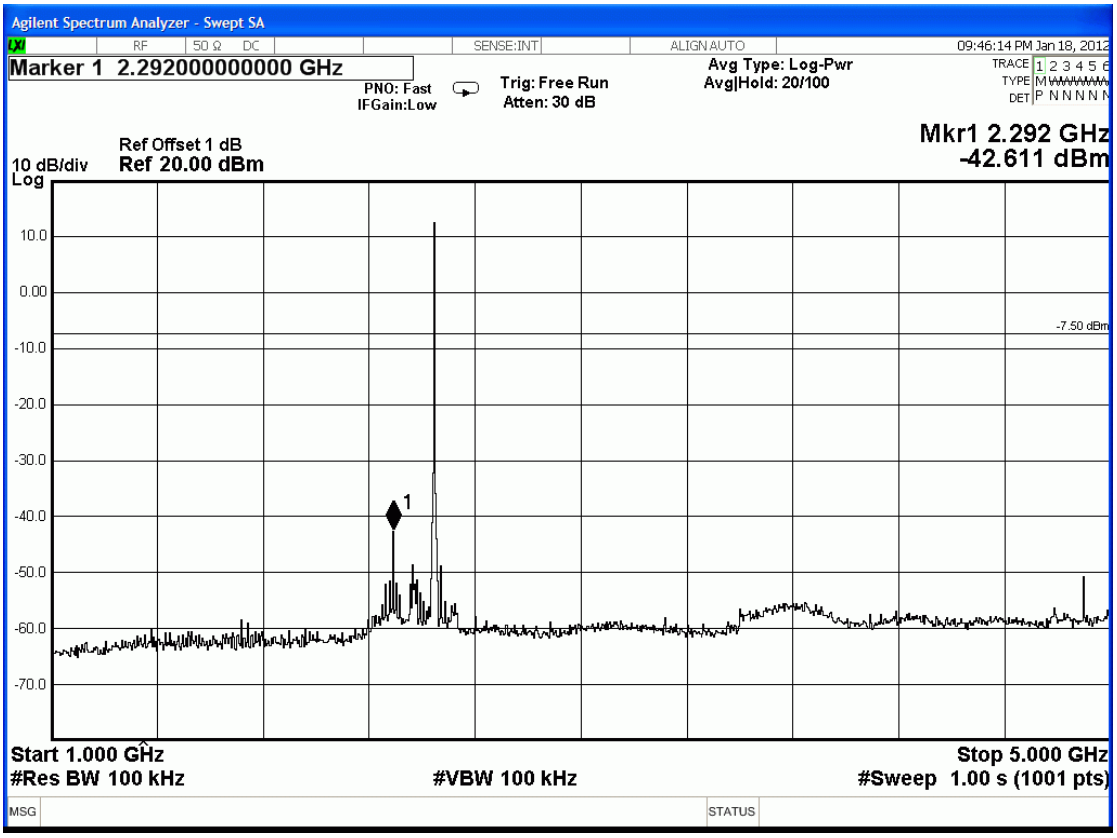

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
ALIGN AUTO
09:44:14 PM Jan 18, 2012
Stop Freq 15.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 7/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Mkr1 7.275 GHz
--- dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.20 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 15.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

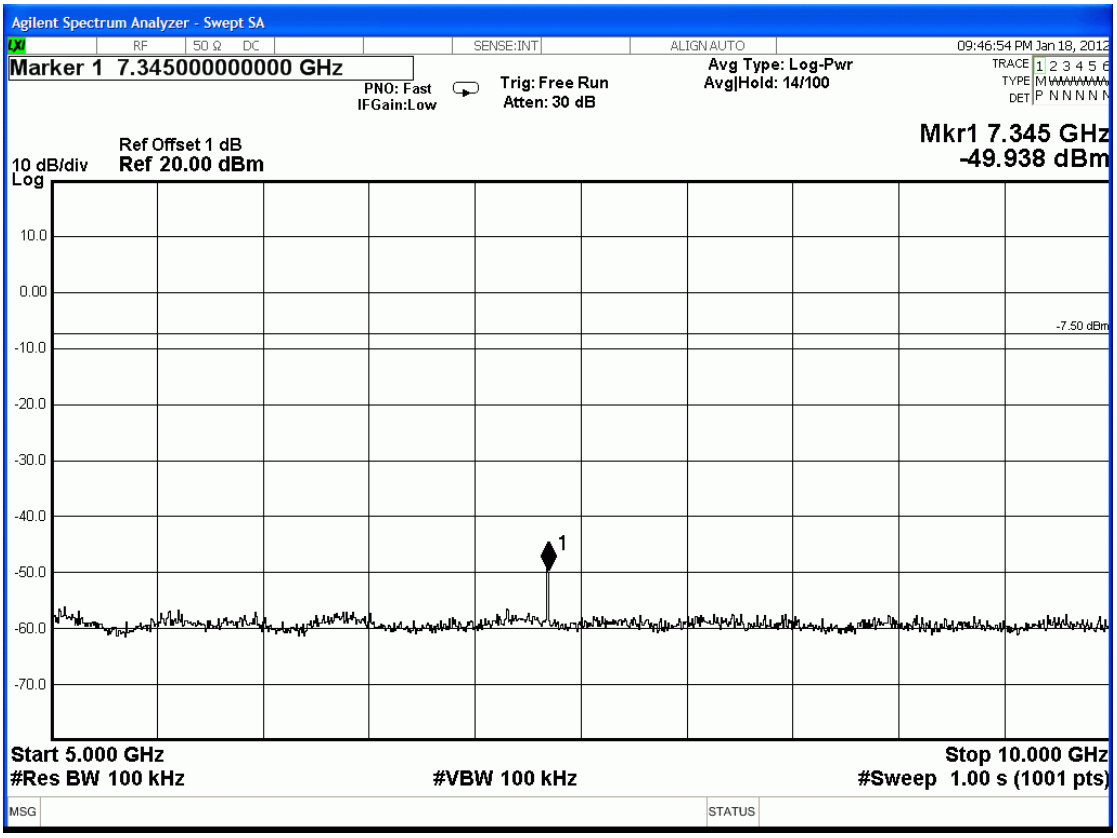

Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:44:33 PM Jan 18, 2012
Stop Freq 20.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 8/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.275 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.20 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 20.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

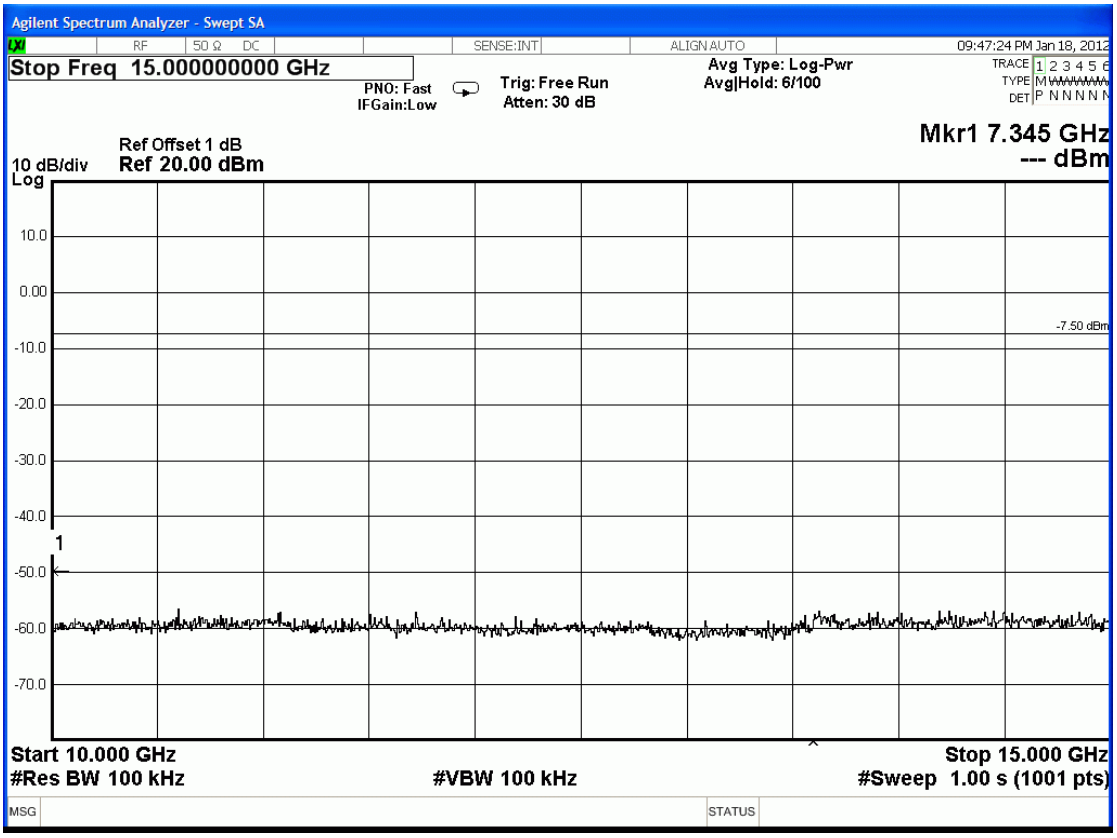

Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:44:48 PM Jan 18, 2012
Stop Freq 25.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 6/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.275 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.20 dBm
1
Start 20.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 25.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

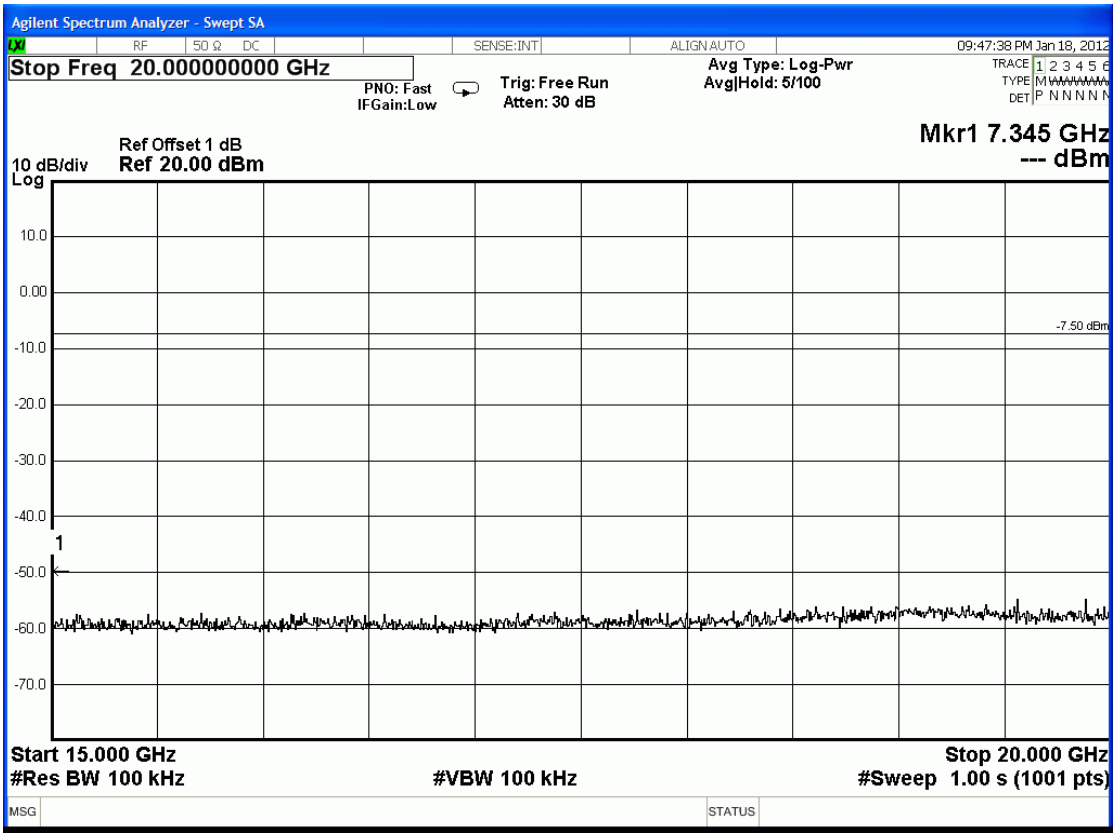
9.6.3. Channel 60, Frequency: 2447.500MHz

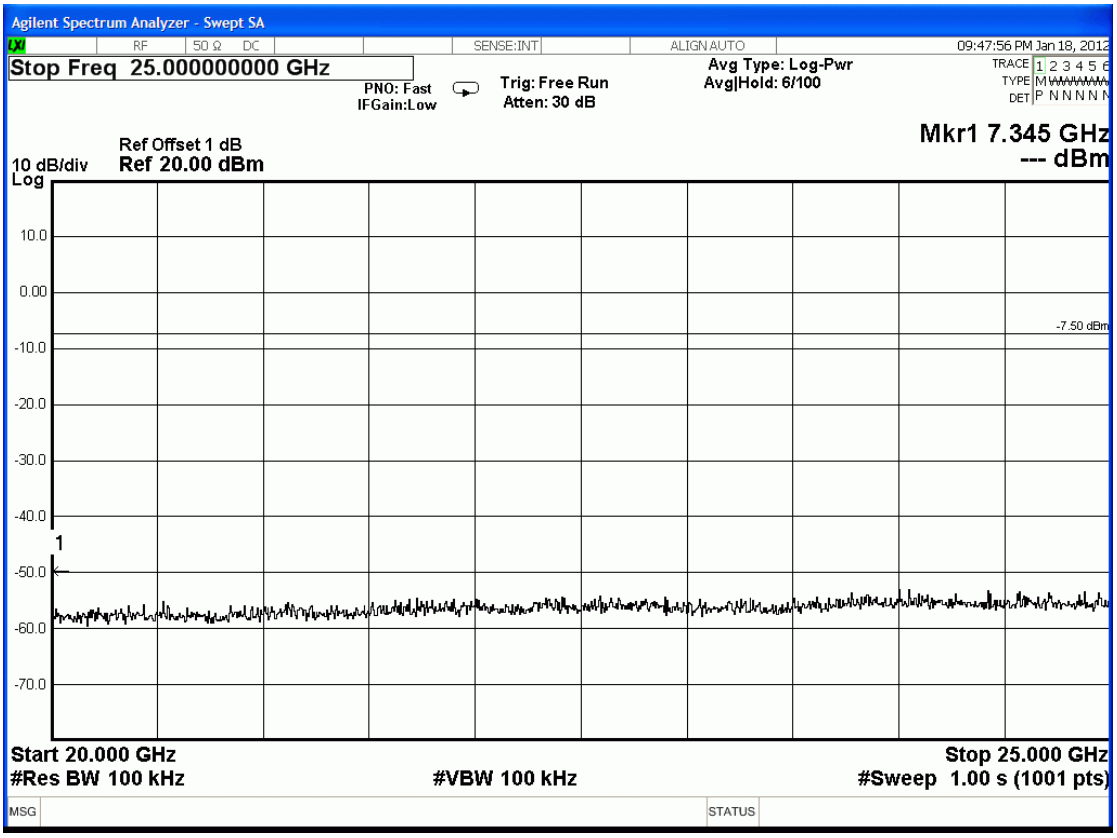





Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:46:54 PM Jan 18, 2012
Marker 1 7.345000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 14/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 7.345 GHz
-49.938 dBm
10.0
0.00
-7.50 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 10.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:47:24 PM Jan 18, 2012
Stop Freq 15.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 6/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 7.345 GHz
--- dBm
10.0
0.00
-7.50 dBm
-10.0
-20.0
-30.0
-40.0
1
-50.0
-60.0
-70.0
Start 10.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 15.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:47:38 PM Jan 18, 2012
Stop Freq 20.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 5/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.345 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.50 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 20.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
09:47:56 PM Jan 18, 2012
Stop Freq 25.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 6/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 7.345 GHz
--- dBm
Ref Offset 1 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-7.50 dBm
1
Start 20.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 25.000 GHz
#Sweep 1.00 s (1001 pts)
MSG
STATUS

10. BAND EDGES MEASUREMENT

10.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 14, 11'	Oct. 13, 12'

10.2. Block Diagram of Test Setup

The same as section.4.2.

10.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)). (※ This test result attaching to §3.6.3)

10.4. Operating Condition of EUT

Same as 20dB bandwidth measurement which was listed in section 4.4.

10.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

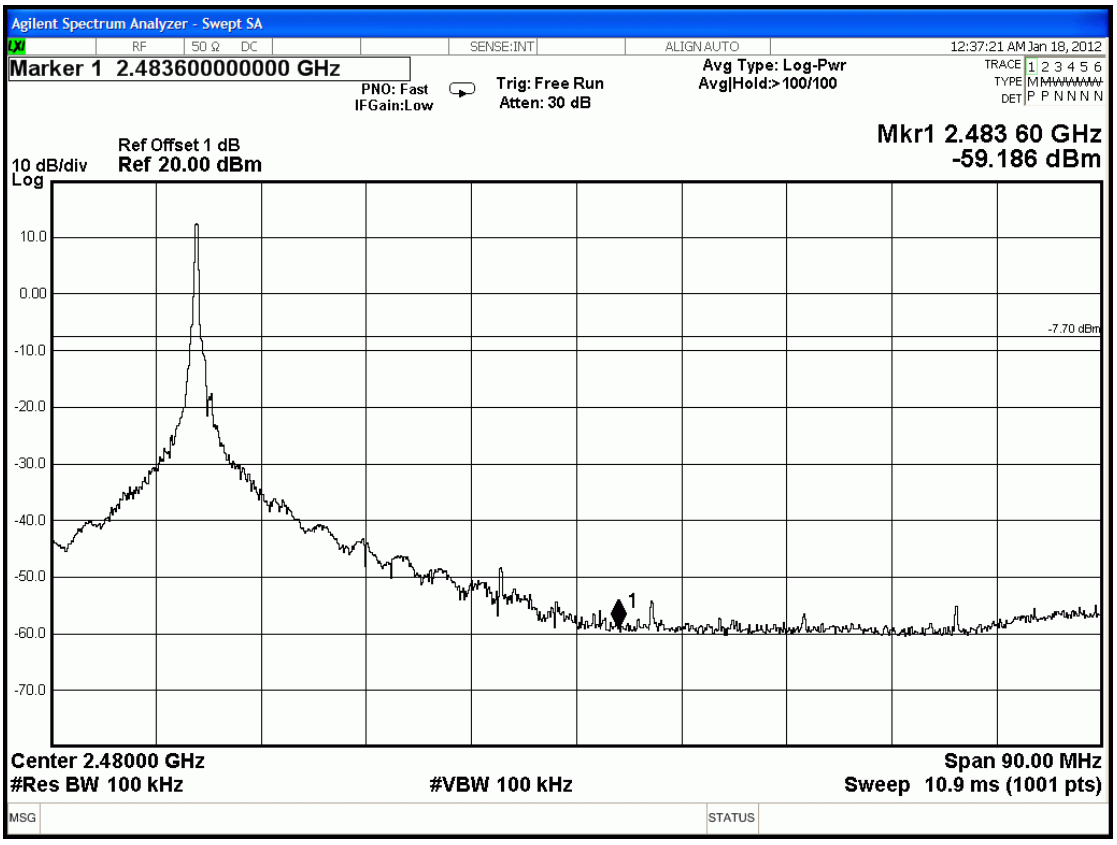
10.6. Test Results

PASSED. The testing data was attached in the next pages.

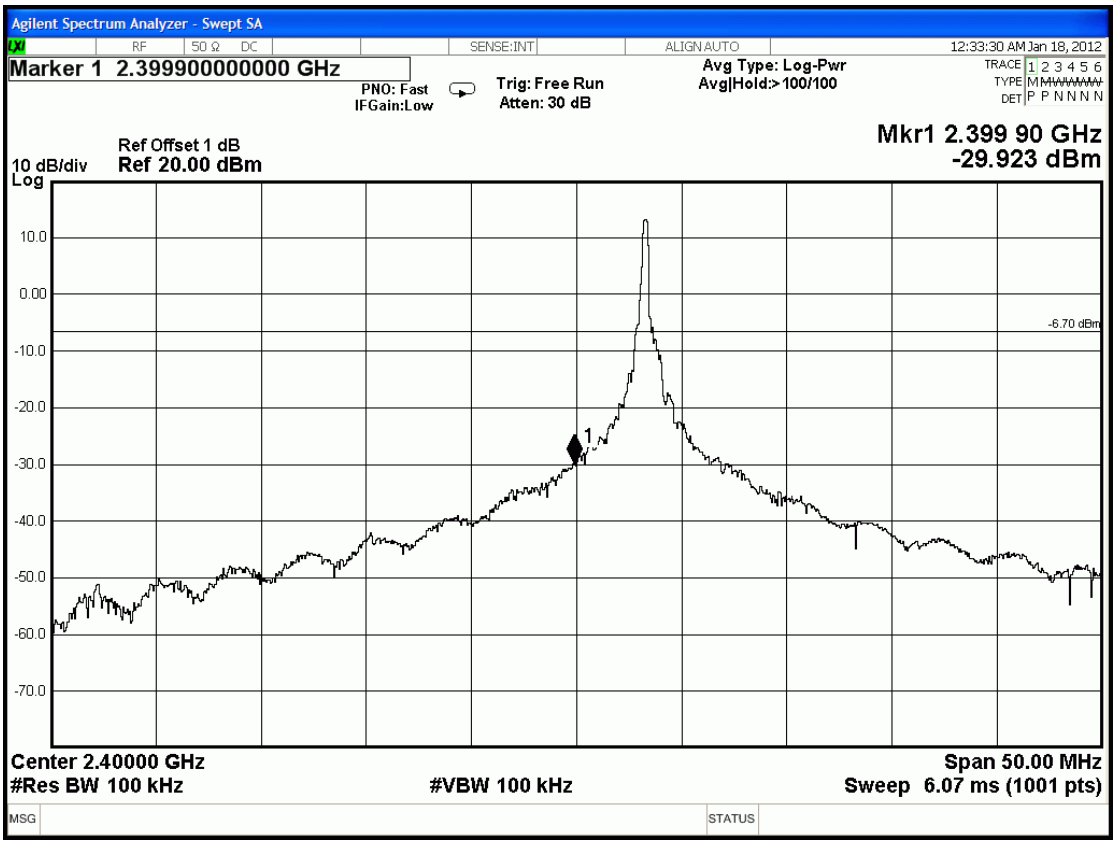
Test Date : Jan. 18, 2012 Temperature :25℃ Humidity : 58%

1. Below Band edge : The highest emission level is -59.186dBm on 2.48360Hz。
2. Upper Band edge: The highest emission level is -29.923dBm on 2.39990GHz。

10.6.1. Below Band edge



10.6.2. Upper Band edge



11. DEVIATION TO TEST SPECIFICATIONS

【NONE】

12. PHOTOGRAPHS

12.1. Photos of Radiated Measurement at Semi-Anechoic Chamber

12.1.1. Frequency Range 30MHz~1GHz, Stand

12.1.2. Frequency Range 30MHz~1GHz, Side

12.1.3.Frequency Range 30MHz~1GHz, Lie

12.1.4.Frequency Range Above 1GHz, Stand

12.1.5.Frequency Range Above 1GHz, Side

12.1.6.Frequency Range Above 1GHz, Lie

12.2.Photo of RF Conducted Measurement