



FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Sony Corporation

Bluetooth Module

Model Number: BTM-S1

FCC ID: AK8BTMS1

Prepared for : Sony Corporation
1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan

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Report Number : ACS-F11268
Date of Test : Nov.14~Dec.02, 2011
Date of Report : Dec.02, 2011

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TEST REPORT CERTIFICATION

Applicant : Sony Corporation
Manufacturer : Sony Corporation
EUT Description : Bluetooth Module
FCC ID : AK8BTMS1

(A) MODEL NO. : BTM-S1
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 3.3V
(D) TEST VOLTAGE : DC 3.3V

Tested for comply with:

FCC Rules and Regulations Part 15 Subpart C: 2008

Test procedure used:

ANSI C63.10:2009

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

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. 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 : Nov.14~Dec.02, 2011 Report of date: Dec.02, 2011

Prepared by : Cerry He
Cerry He / Assistant

Reviewer by : Sunny Lu
Sunny Lu / Supervisor

Approved & Authorized Signer :



Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

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

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 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
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
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10 :2009	PASS
Number Of Hopping Frequency Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2009	PASS
Dwell Time 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
Band Edge Compliance Test	FCC Part 15: 15.247(d) ANSI C63.10 :2009	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

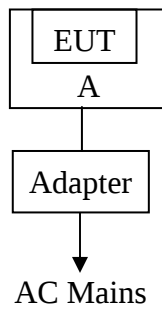
2.1. Description of Device (EUT)

Product Name	: Bluetooth Module
Model Number	: BTM-S1
FCC ID	: AK8BTMS1
Operation frequency	: 2402MHz-2480MHz
Antenna	: PCB, 0dBi gain
Modulation	: GFSK, $\pi/4$ DQPSK, 8-DPSK
Remark	: $\pi/4$ DQPSK modulation is same type modulation with 8-DPSK, and according exploratory test, 8-DPSK will have worse emissions, so the final test were only performed with GFSK and 8-DPSK modulation.
Power Supply	: DC 3.3V
Applicant	: Sony Corporation 1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Date of Test	: Nov.14~Dec.02, 2011
Date of Receipt	: Nov.11, 2011
Sample Type	: Prototype production

2.2. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Personal Audio Docking System	---	SONY	RDP-XF300iP	3Q5932X	☒ FCC DoC ☒ BSMI ID:R33002

2.3. EUT Configuration and operation conditions for test.



A: Personal Audio Docking System
(EUT: Bluetooth Module)

2.4. Test Facility

Site Description

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

3m Anechoic Chamber : 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

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

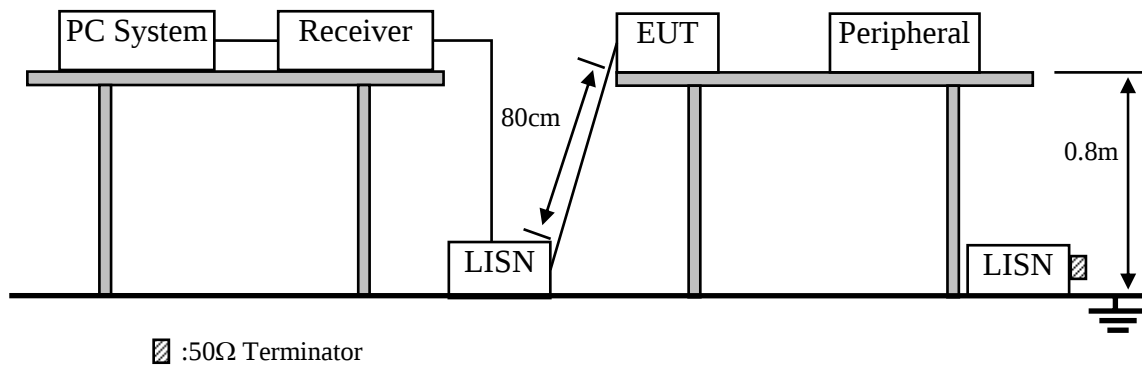
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.2 dB (150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6 dB(30~200MHz, Polarize: H)
	3.7 dB(30~200MHz, Polarize: V)
	4.0 dB(200M~1GHz, Polarize: H)
	3.7 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	3.1dB (Distance: 3m Polarize: V)
	3.7 dB (Distance: 3m Polarize: H)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.57 dB
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	Oct.31, 11	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Oct.31, 11	1 Year
3.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 11	1 Year
4.	RF Cable	Fujikura	3D-2W	No.1	May.08, 11	1Year
5.	Coaxial Switch	Anritsu	MP59B	M50564	May.08, 11	1 Year
6.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11	1 Year
7.	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	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

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. Bluetooth Module (EUT)

Model Number : BTM-S1

Serial Number : N/A

3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown as Section 3.2.
- 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

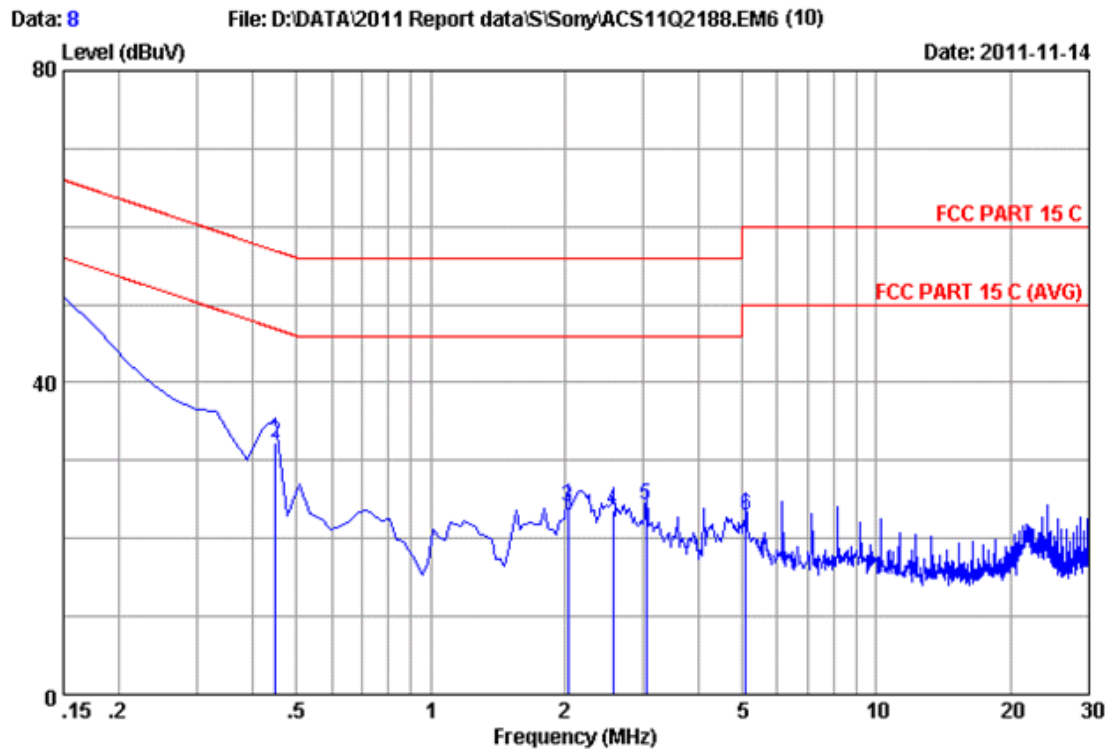
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). 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

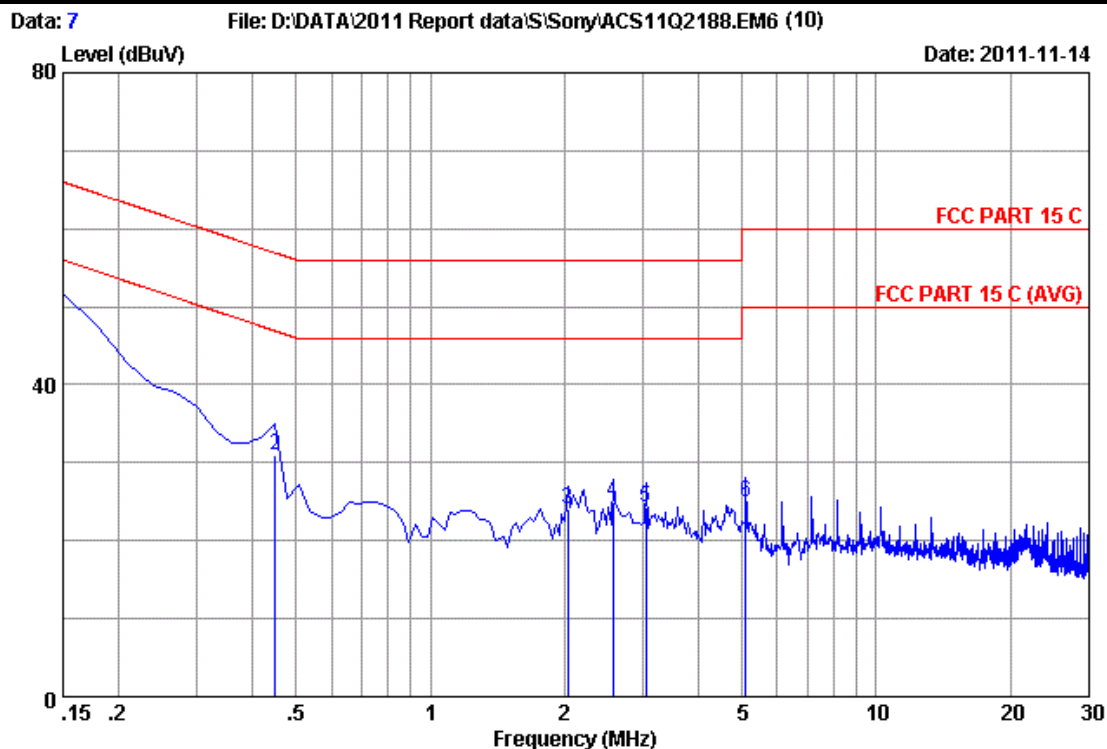
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1#conduction Data No :8
 Dis./Ant. :** 2011 ESH2-Z5 LINE
 Limit :FCC PART 15 C
 Env./Ins. :24.5°C/57% Engineer :Leo_Li
 EUT :Bluetooth Module
 Power Rating :DC 3.3V
 Test Mode :Tx Mode
 :M/N: BTM-S1

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.86	36.09	46.12	66.00	19.88	QP
2	0.44850	0.19	9.87	22.34	32.40	56.90	24.50	QP
3	2.031	0.31	9.92	13.74	23.97	56.00	32.03	QP
4	2.568	0.32	9.94	13.36	23.62	56.00	32.38	QP
5	3.045	0.33	9.95	14.07	24.35	56.00	31.65	QP
6	5.105	0.38	10.02	12.49	22.89	60.00	37.11	QP

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



Site no :1#conduction Data No :7
 Dis./Ant. :** 2011 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 C
 Env./Ins. :24.5°C/57% Engineer :Leo_Li
 EUT :Bluetooth Module
 Power Rating :DC 3.3V
 Test Mode :Tx Mode
 :M/N: BTM-S1

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.21	9.86	36.69	46.76	66.00	19.24	QP
2	0.44850	0.22	9.87	20.80	30.89	56.90	26.01	QP
3	2.031	0.27	9.92	13.86	24.05	56.00	31.95	QP
4	2.568	0.28	9.94	14.72	24.94	56.00	31.06	QP
5	3.045	0.29	9.95	14.07	24.31	56.00	31.69	QP
6	5.105	0.33	10.02	14.71	25.06	60.00	34.94	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

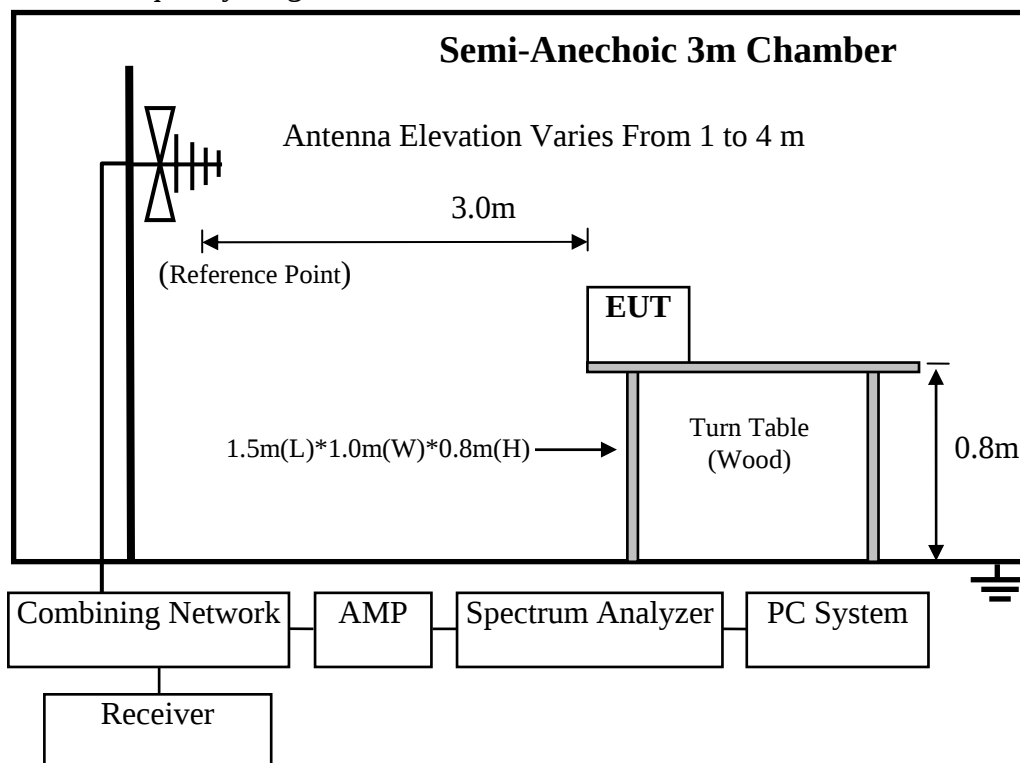
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.06,10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 11	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 11	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 11	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2597	May.25, 11	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

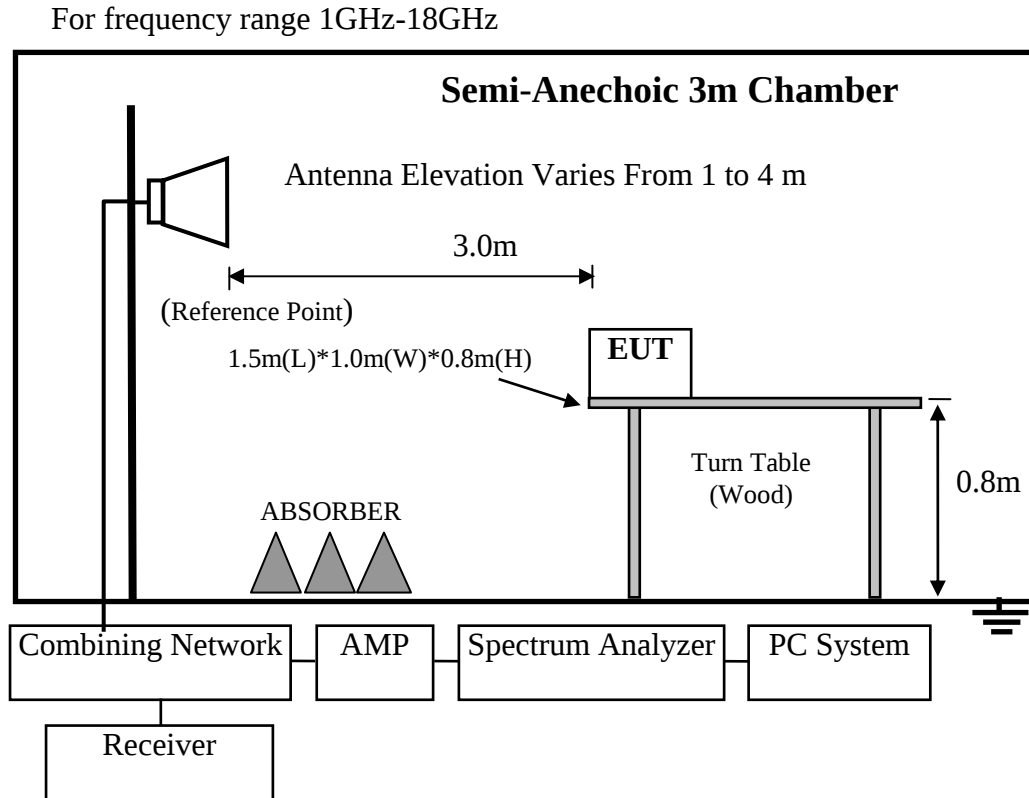
Frequency rang: above 1000MHz

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	Horn Antenna	EMCO	3116	00060089	Nov.25, 10	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 11	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28622/2	May.08, 11	1 Year
6	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

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark : (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

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

4.4.1. Bluetooth Module (EUT)

Model Number : BTM-S1
Serial Number : N/A

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT and simulator as shown as Section 3.2.
- 4.5.2. Turned on the power of all equipment.
- 4.5.3. Let EUT work in Tx mode.

4.6. Test Procedure

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

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

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

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

The bandwidth of Spectrum's VBW is set at 10Hz and RBW is set at 1MHz for AV emission measurement

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

4.7. Radiated Emission Test Results

PASS.

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

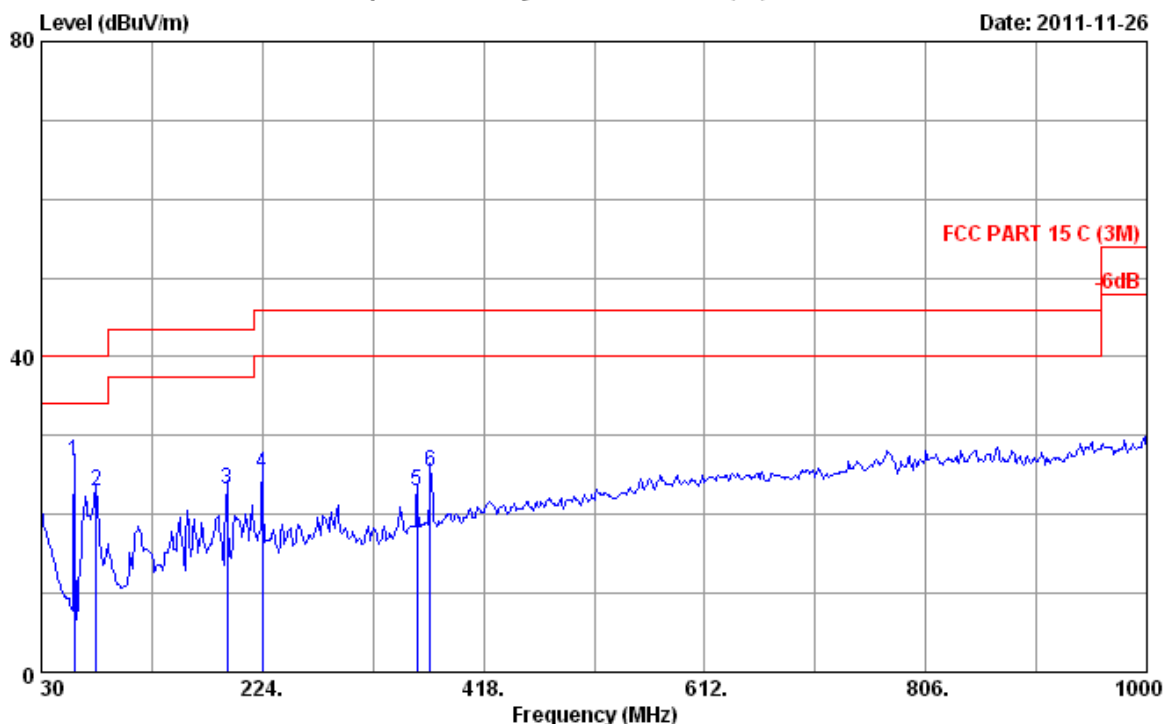
Note: The duty cycle of this signal is 100%

Frequency: 30MHz~1GHz

Data: 53

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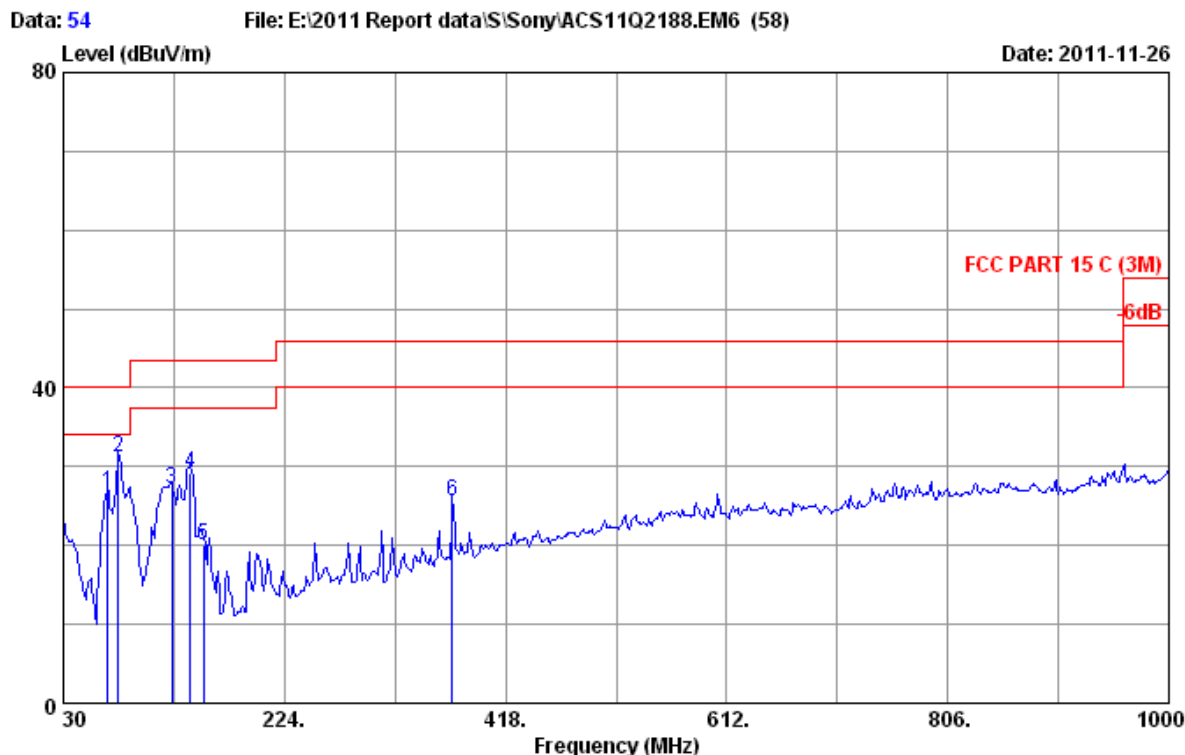
Date: 2011-11-26



Site no. : 3m Chamber Data no. : 53
Dis. / Ant. : 3m CBL6111C SN 2768 (11 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Leo_Li
EUT : Bluetooth Module
Power rating : DC 3.3V
Test Mode : Tx
BTM-S1

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	59.100	5.25	0.40	21.05	26.70	40.00	13.30	QP
2	78.500	6.78	0.58	15.52	22.88	40.00	17.12	QP
3	192.960	8.86	0.94	13.40	23.20	43.50	20.30	QP
4	224.000	10.18	1.10	13.84	25.12	46.00	20.88	QP
5	359.800	15.61	1.50	5.75	22.86	46.00	23.14	QP
6	371.440	15.81	1.44	8.24	25.49	46.00	20.51	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. : 54
 Dis. / Ant. : 3m CBL6111C SN 2768 (11 Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 24°C/56% Engineer : Leo_Li
 EUT : Bluetooth Module
 Power rating : DC 3.3V
 Test Mode : Tx
 BTM-S1

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	68.800	5.61	0.49	20.75	26.85	40.00	13.15	QP
2	78.500	6.78	0.58	23.75	31.11	40.00	8.89	QP
3	125.060	11.09	0.65	15.40	27.14	43.50	16.36	QP
4	141.550	11.14	0.80	17.29	29.23	43.50	14.27	QP
5	153.190	10.69	0.80	8.54	20.03	43.50	23.47	QP
6	371.440	15.81	1.44	8.36	25.61	46.00	20.39	QP

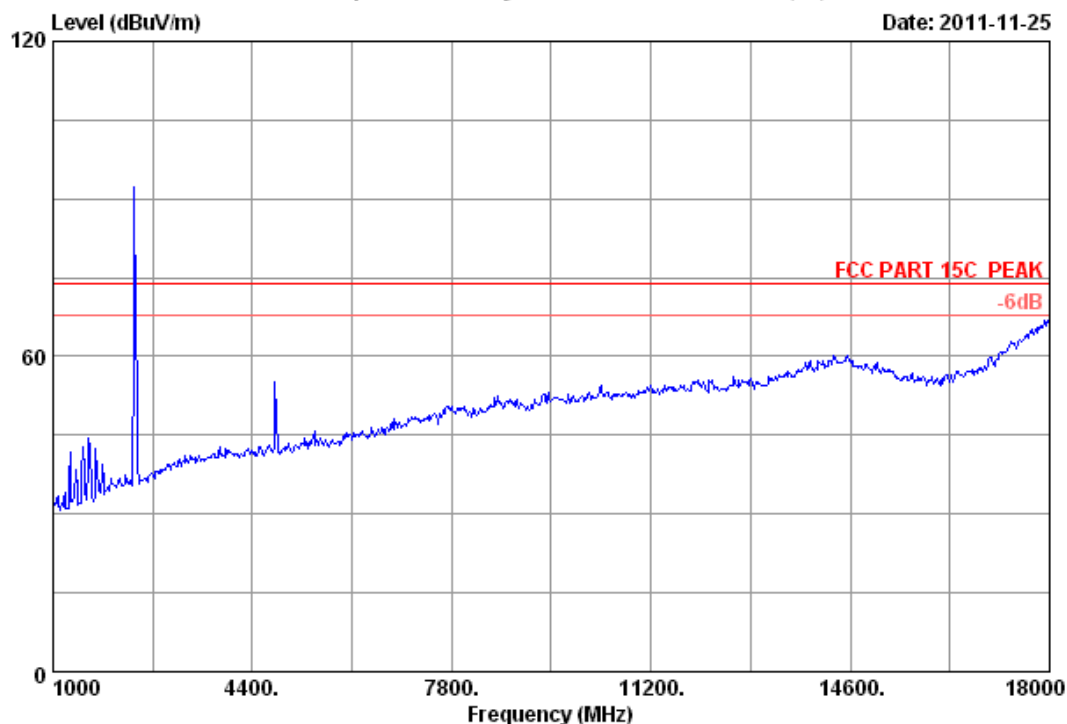
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz

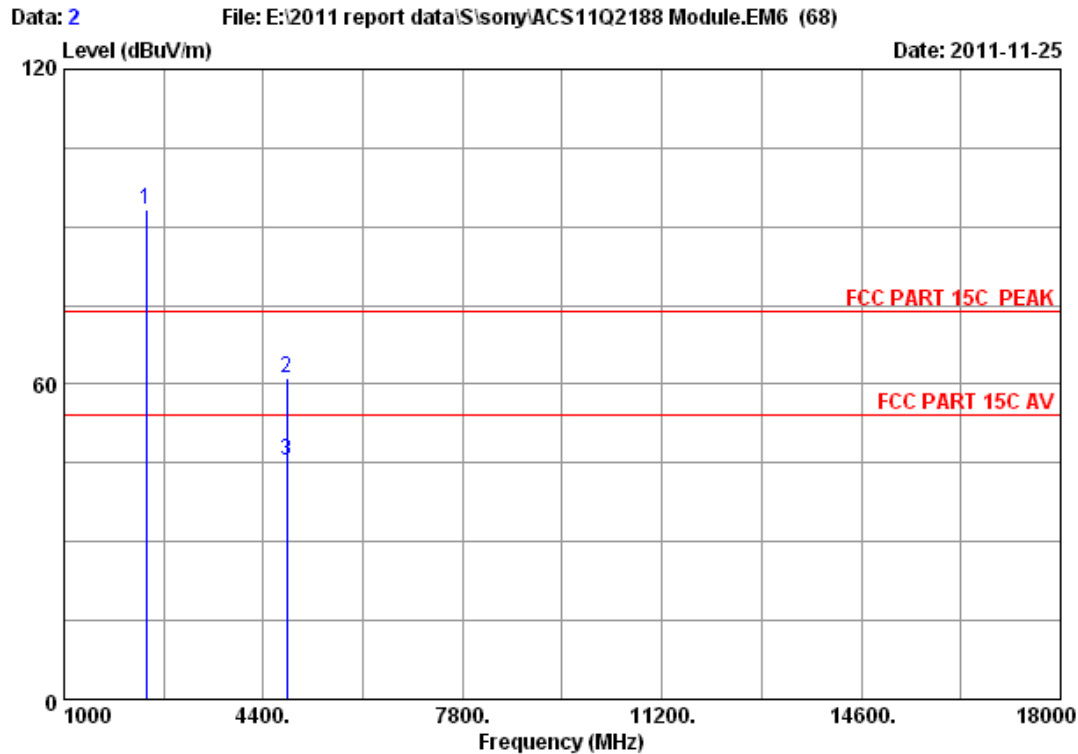
Data: 1

File: E:\2011 report data\S\sony\ACS11Q2188 Module.EM6 (68)

Date: 2011-11-25



Site no.	: 3m Chamber	Data no. :	1
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2402MHz Tx		
M/N	: BTM-S1		

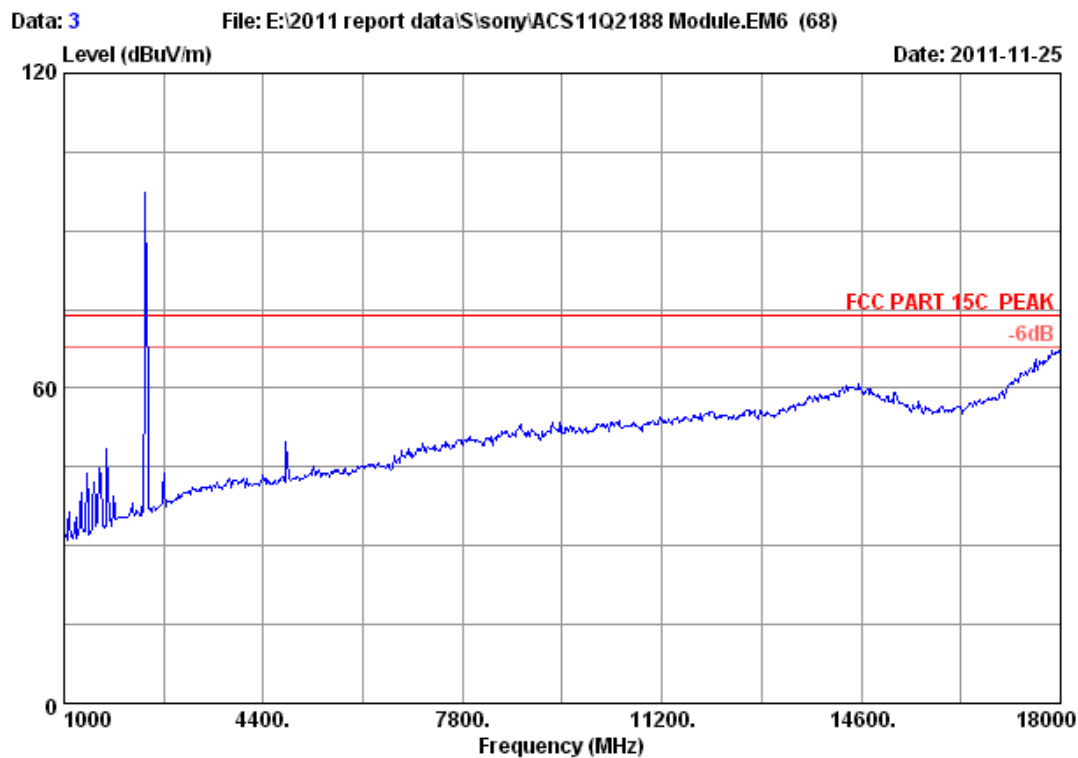


Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : GFSK 2402MHz Tx
 M/N : BTM-S1

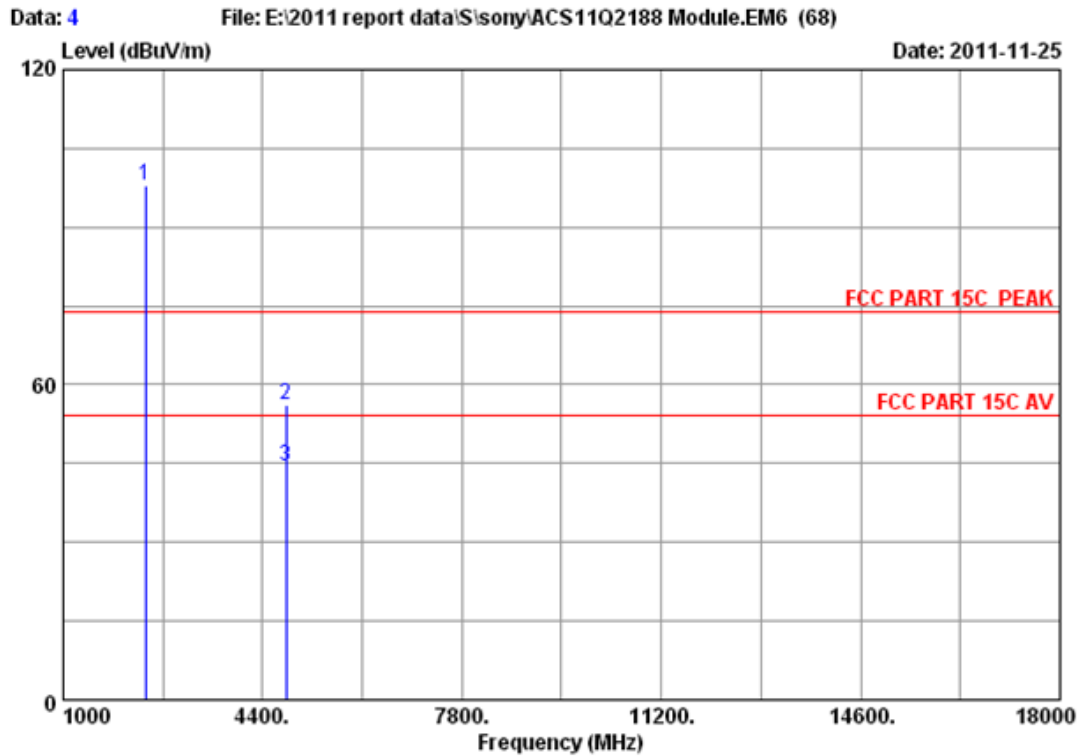
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2402.000	27.96	6.75	34.44	92.88	93.15	74.00	-19.15	Peak
2	4804.000	32.86	9.55	34.60	53.52	61.33	74.00	12.67	Peak
3	4804.000	32.86	9.55	34.60	37.72	45.53	54.00	8.47	Average

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. :	3
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2402MHz Tx		
M/N	: BTM-S1		

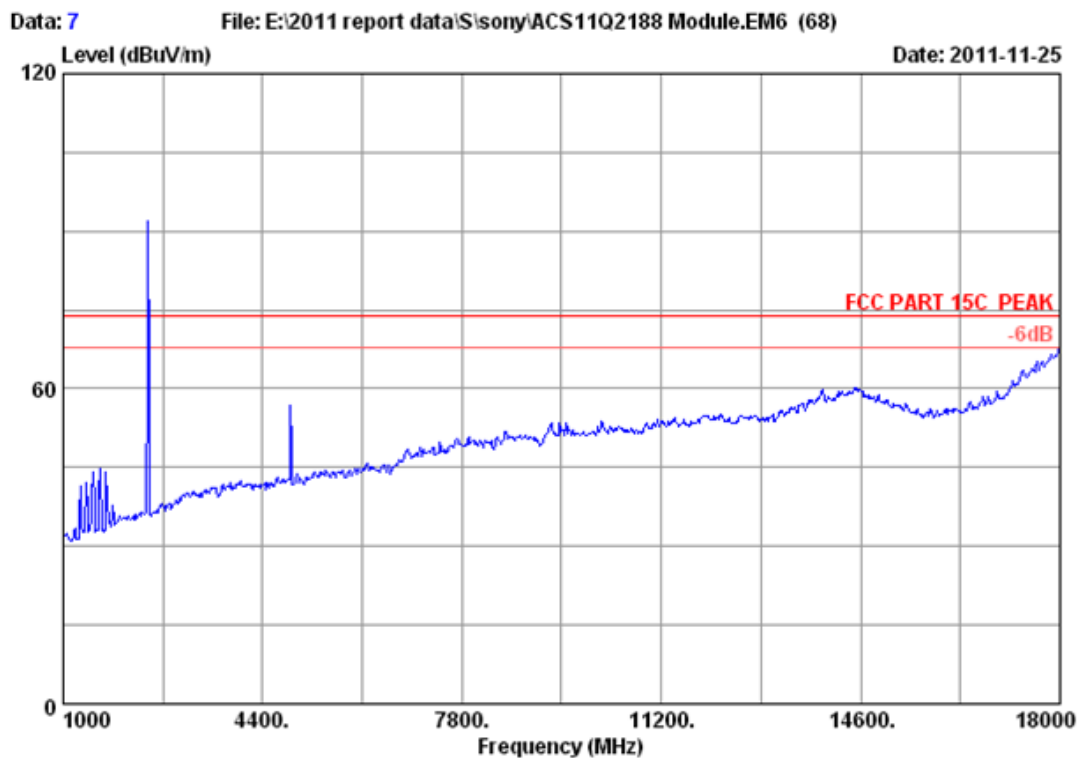


Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : GFSK 2402MHz Tx
 M/N : BTM-S1

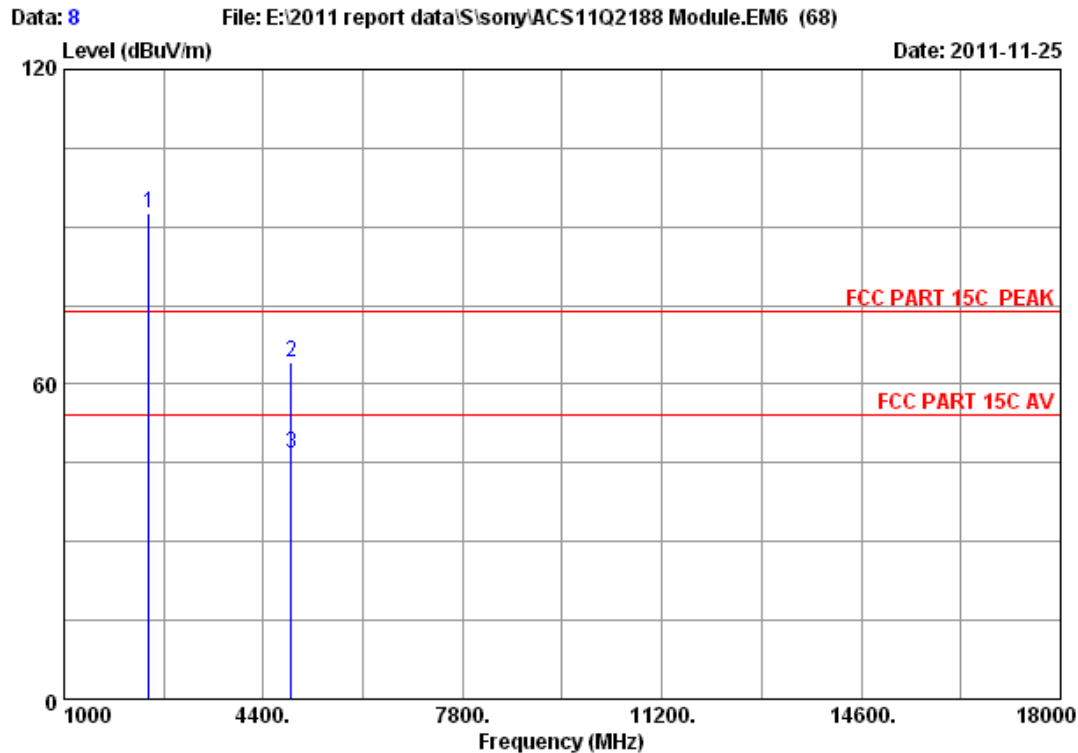
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2402.000	27.96	6.75	34.44	97.83	98.10	74.00	-24.10	Peak
2	4804.000	32.86	9.55	34.60	48.34	56.15	74.00	17.85	Peak
3	4804.000	32.86	9.55	34.60	36.76	44.57	54.00	9.43	Average

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. :	7
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2441MHz Tx		
M/N	: BTM-S1		

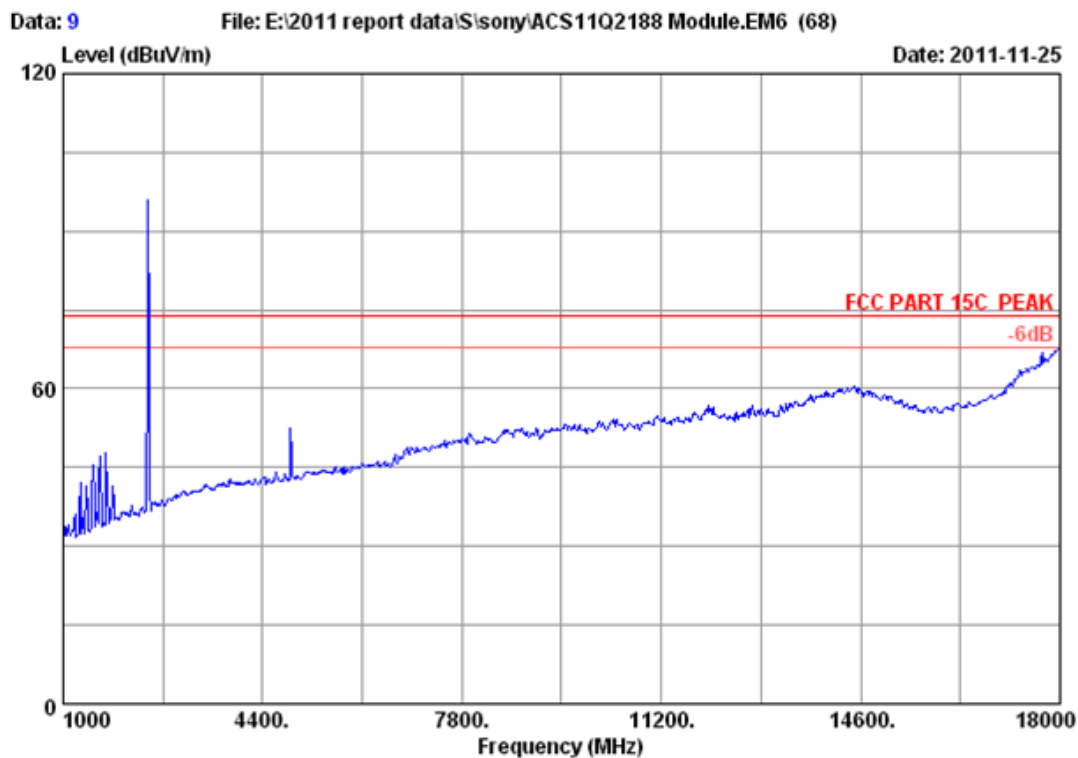


Site no. : 3m Chamber	Data no. : 8
Dis. / Ant. : 3m 2011 3115 4580	Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK	
Env. / Ins. : 24°C/66%	Engineer : Leo-Li
EUT : Bluetooth Module	
Power supply : DC 3.3V	
Test mode : GFSK 2441MHz Tx	
M/N : BTM-S1	

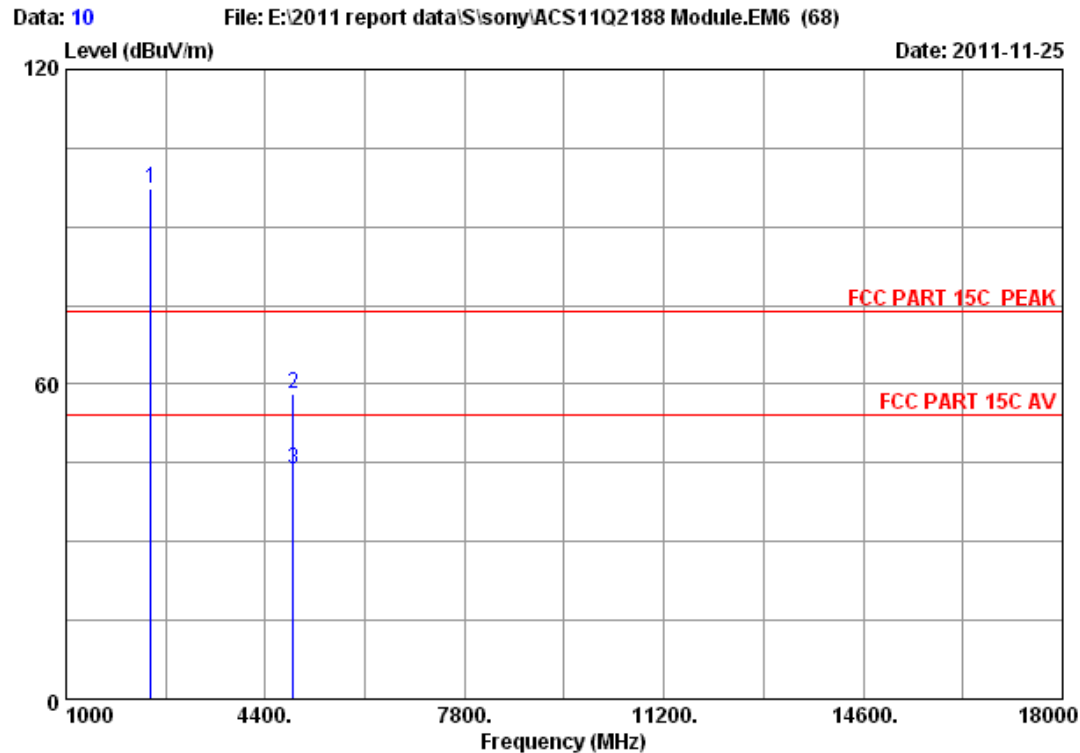
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2441.000	28.03	6.81	34.44	92.08	92.48	74.00	-18.48	Peak
2	4882.000	32.98	9.62	34.60	56.27	64.27	74.00	9.73	Peak
3	4882.000	32.98	9.62	34.60	38.85	46.85	54.00	7.15	Average

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. :	9
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2441MHz Tx		
M/N	: BTM-S1		

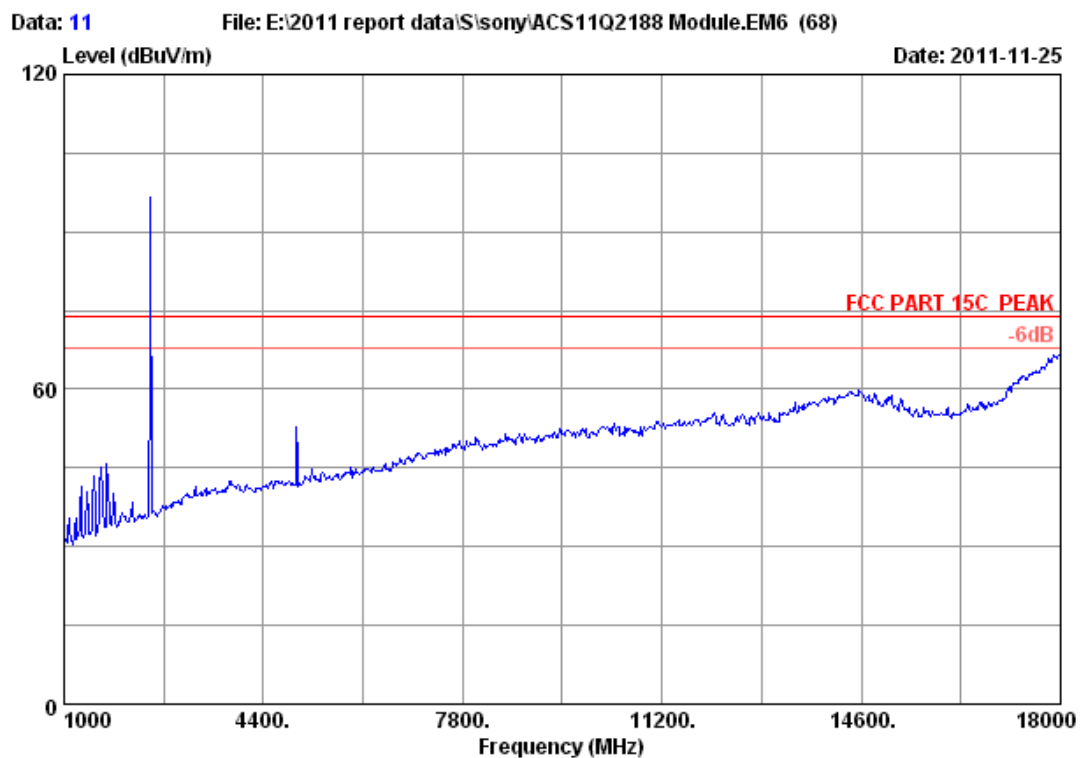


Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : GFSK 2441MHz Tx
 M/N : BTM-S1

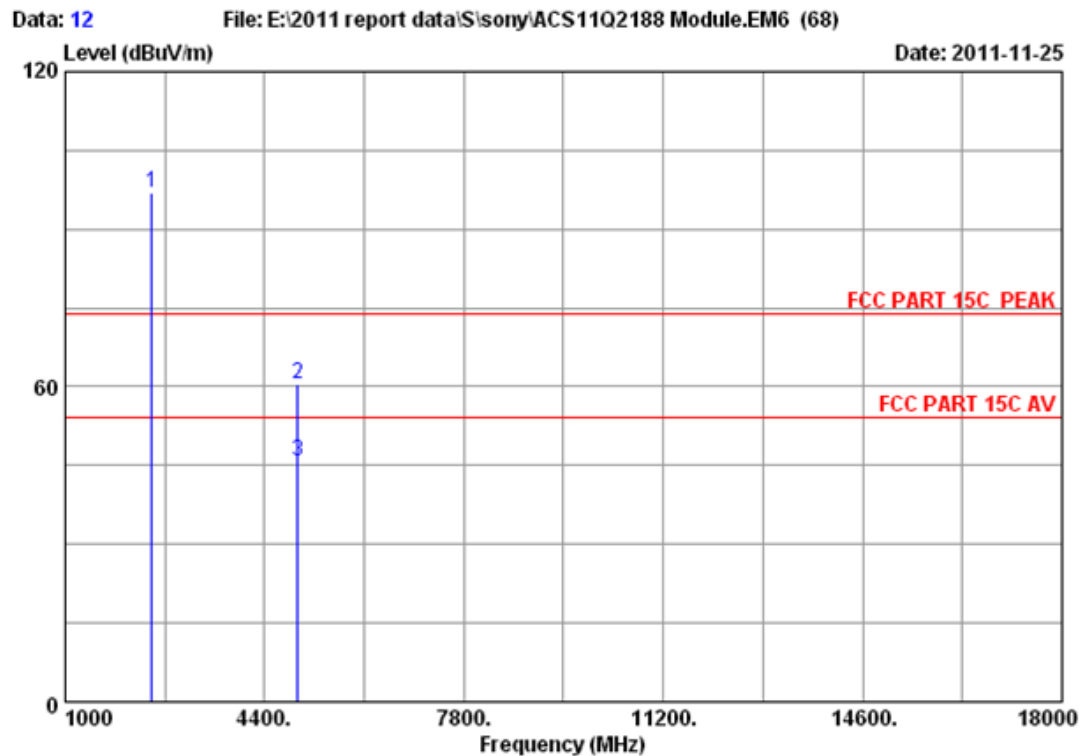
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2441.000	28.03	6.81	34.44	96.84	97.24	74.00	-23.24	Peak
2	4882.000	32.98	9.62	34.60	50.11	58.11	74.00	15.89	Peak
3	4882.000	32.98	9.62	34.60	35.75	43.75	54.00	10.25	Average

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. :	11
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2480MHz Tx		
M/N	: BTM-S1		

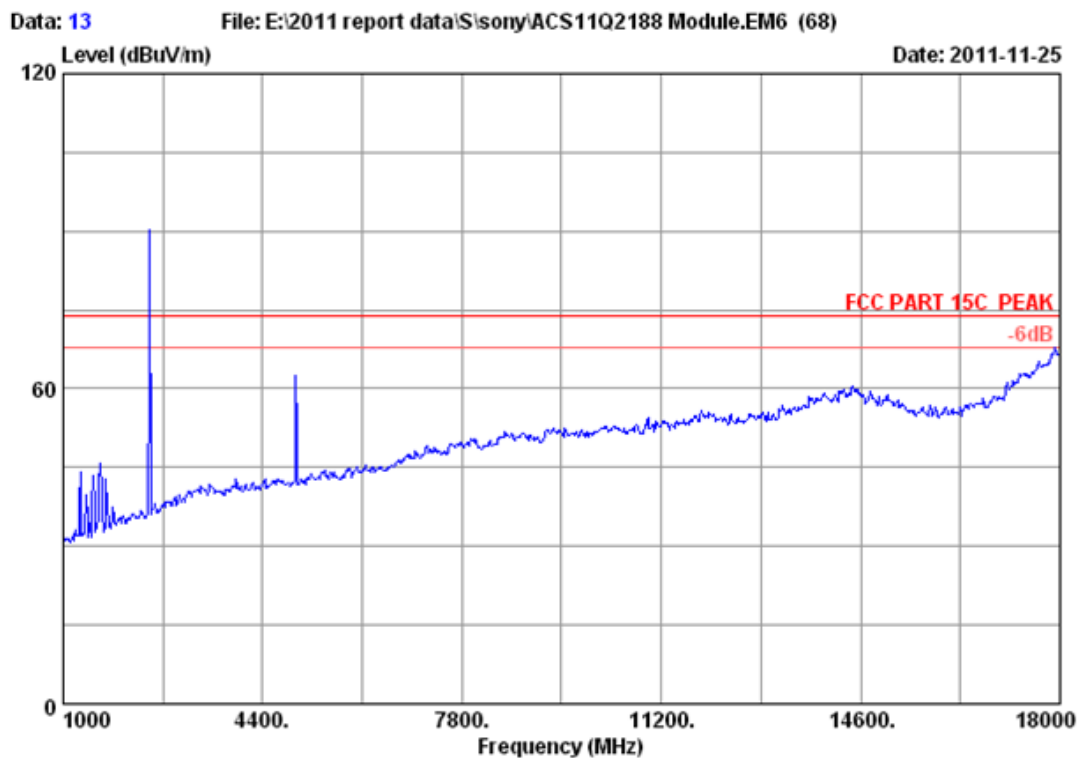


Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : GFSK 2480MHz Tx
 M/N : BTM-S1

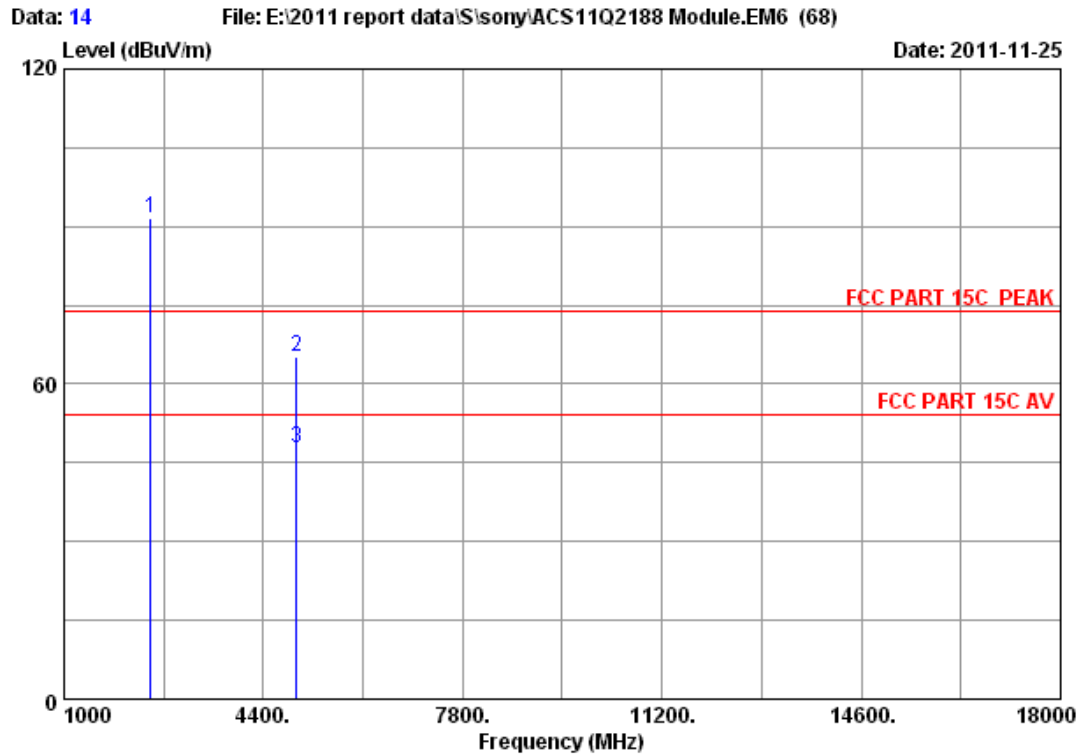
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.000	28.08	6.87	34.45	96.36	96.86	74.00	-22.86	Peak
2	4960.000	33.14	9.69	34.60	52.35	60.58	74.00	13.42	Peak
3	4960.000	33.14	9.69	34.60	37.44	45.67	54.00	8.33	Average

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.	: 13
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2480MHz Tx		
M/N	: BTM-S1		

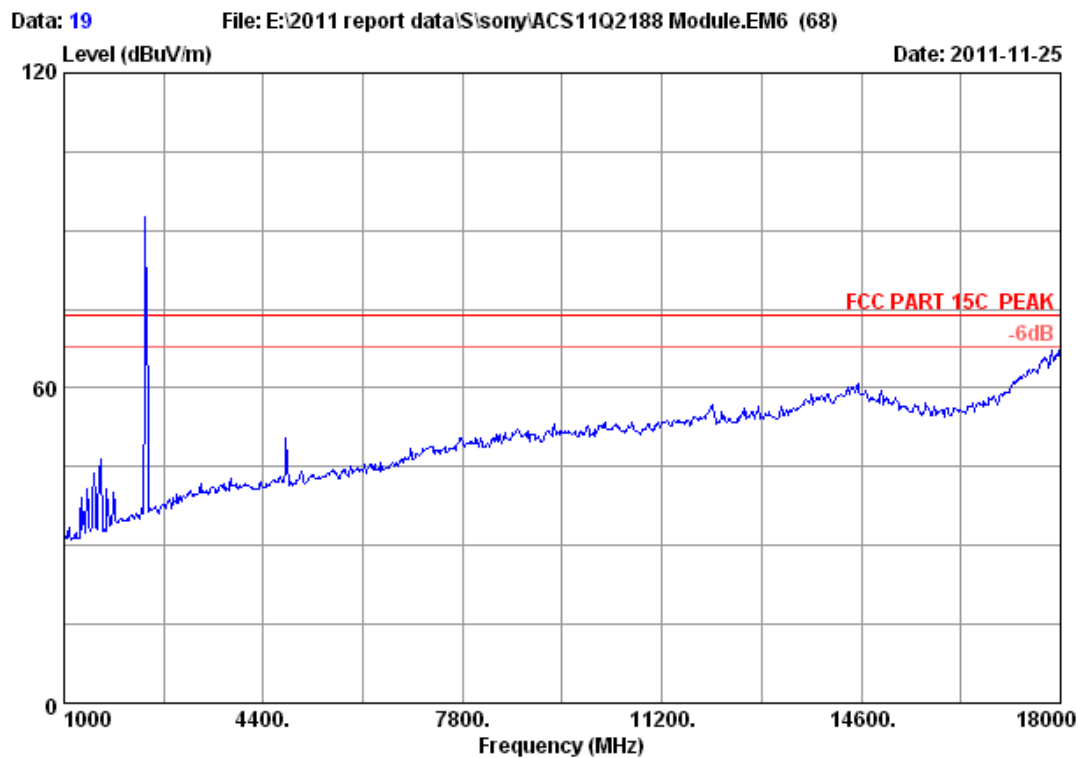


Site no.	: 3m Chamber	Data no.	: 14
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2480MHz Tx		
M/N	: BTM-S1		

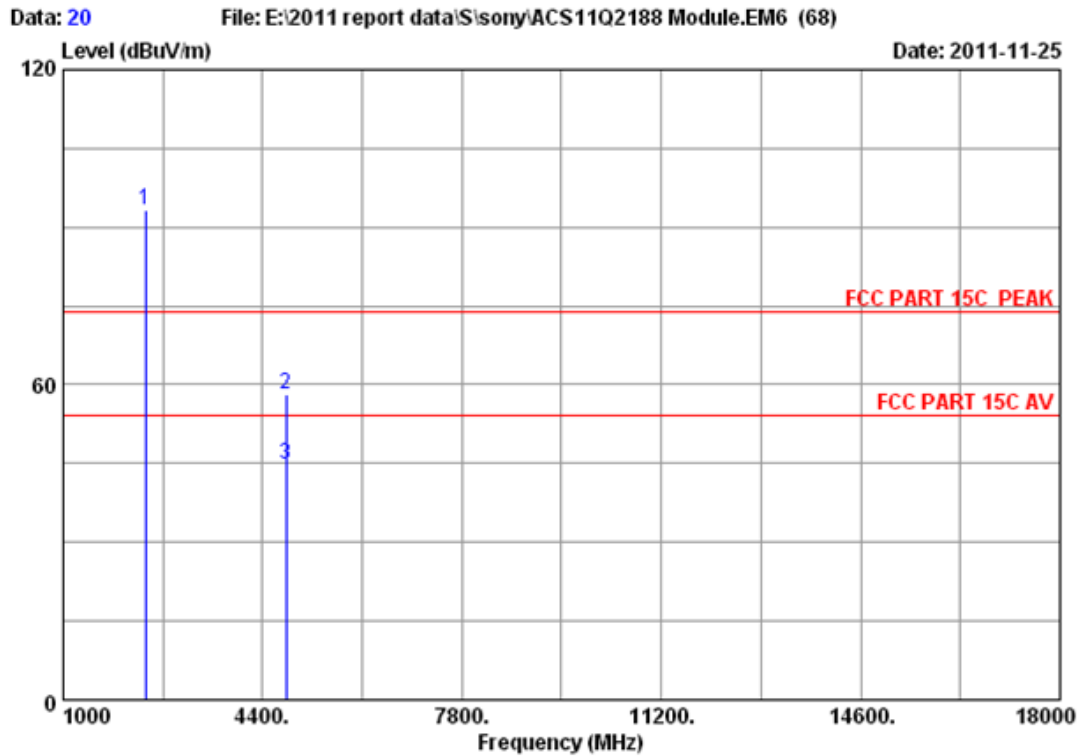
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.000	28.08	6.87	34.45	91.07	91.57	74.00	-17.57	Peak
2	4960.000	33.14	9.69	34.60	56.82	65.05	74.00	8.95	Peak
3	4960.000	33.14	9.69	34.60	39.63	47.86	54.00	6.14	Average

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. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2402MHz Tx		
M/N	: BTM-S1		

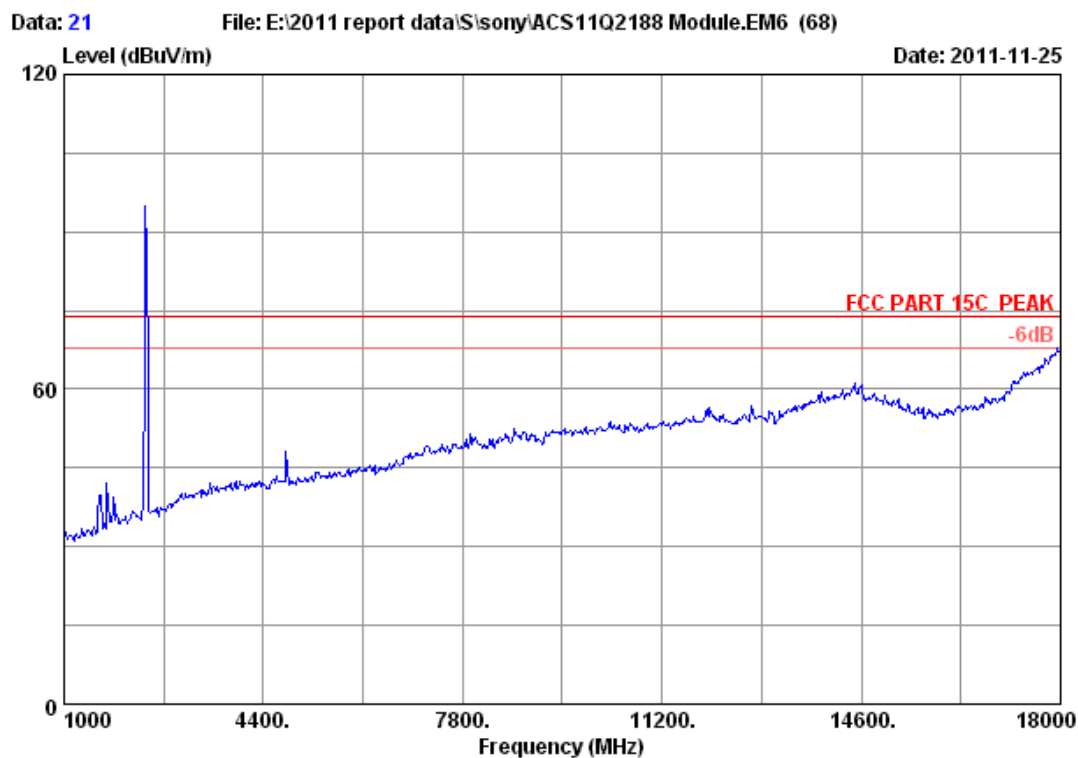


Site no. : 3m Chamber Data no. : 20
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2402MHz Tx
 M/N : BTM-S1

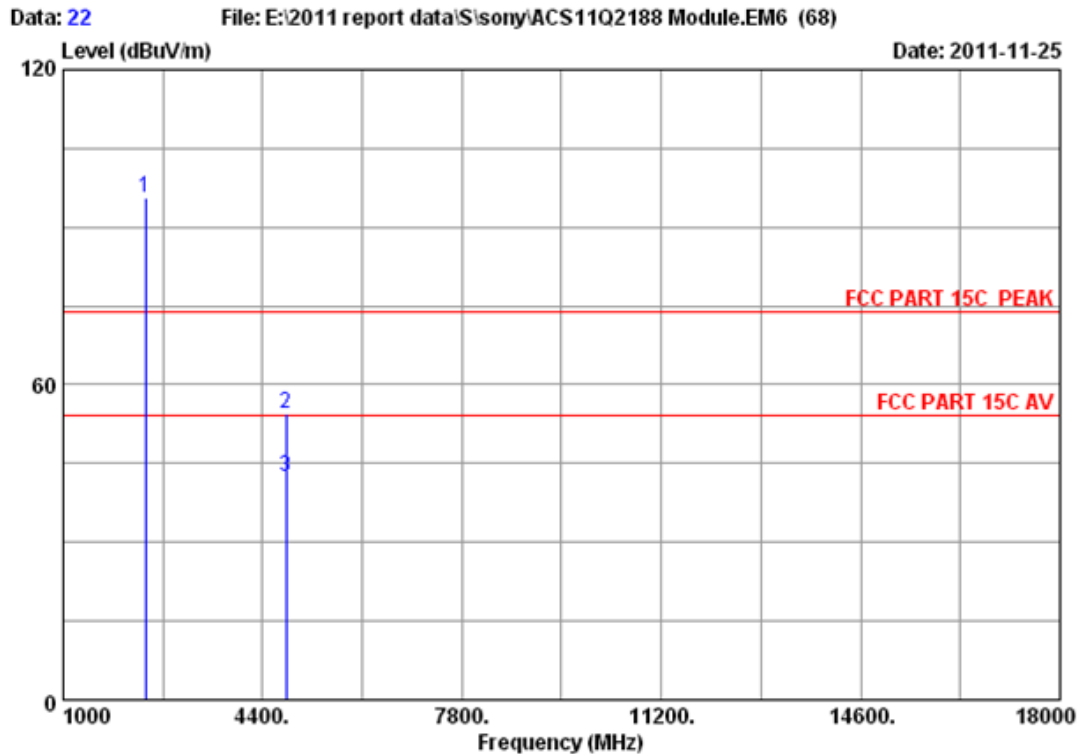
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2402.000	27.96	6.75	34.44	92.85	93.12	74.00	-19.12	Peak
2	4804.000	32.86	9.55	34.60	50.36	58.17	74.00	15.83	Peak
3	4804.000	32.86	9.55	34.60	36.90	44.71	54.00	9.29	Average

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. :	21
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2402MHz Tx		
M/N	: BTM-S1		

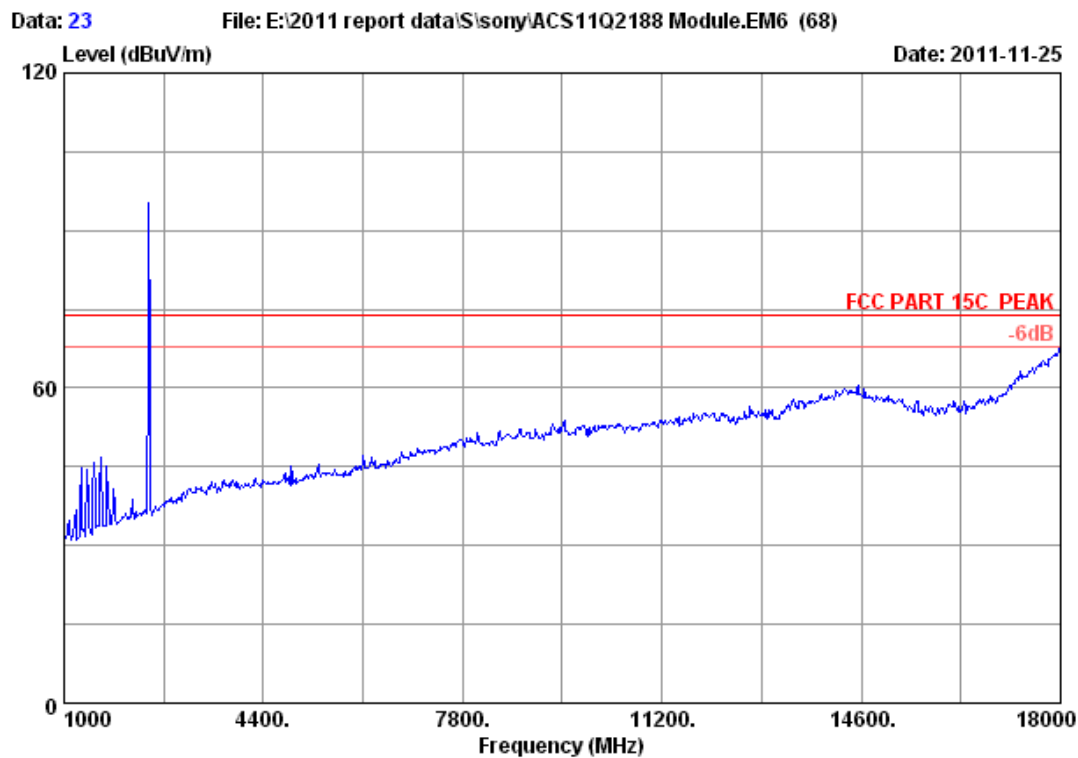


Site no. : 3m Chamber Data no. : 22
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2402MHz Tx
 M/N : BTM-S1

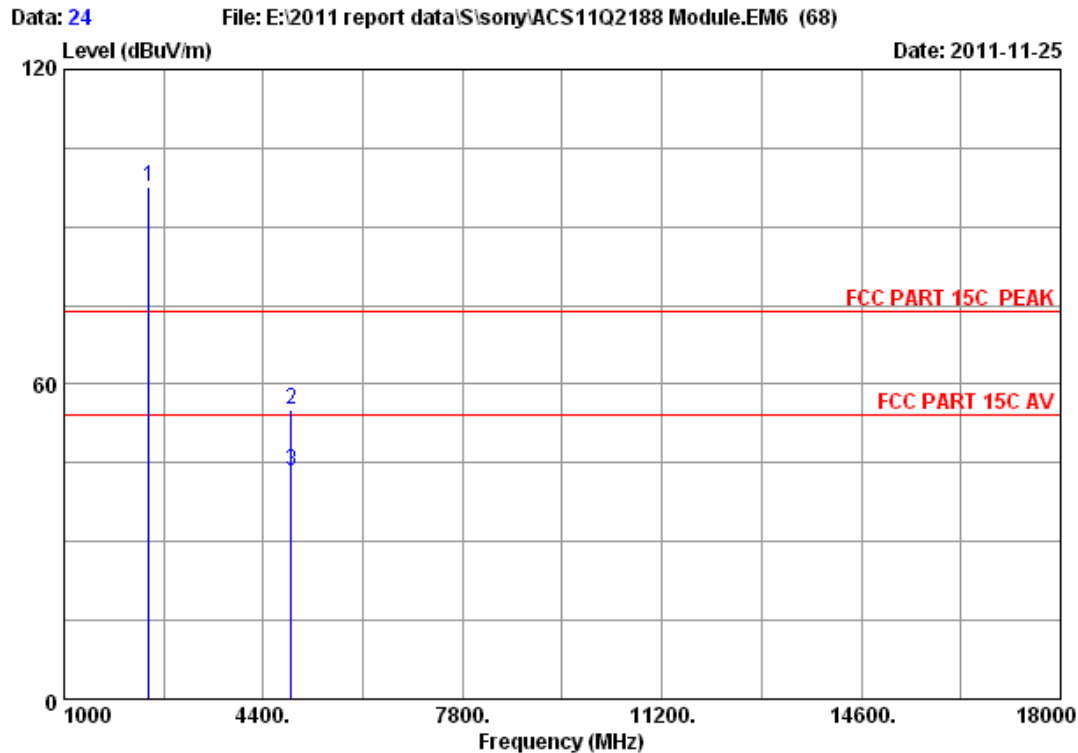
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2402.000	27.96	6.75	34.44	95.37	95.64	74.00	-21.64	Peak
2	4804.000	32.86	9.55	34.60	46.68	54.49	74.00	19.51	Peak
3	4804.000	32.86	9.55	34.60	34.57	42.38	54.00	11.62	Average

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. :	23
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2441MHz Tx		
M/N	: BTM-S1		

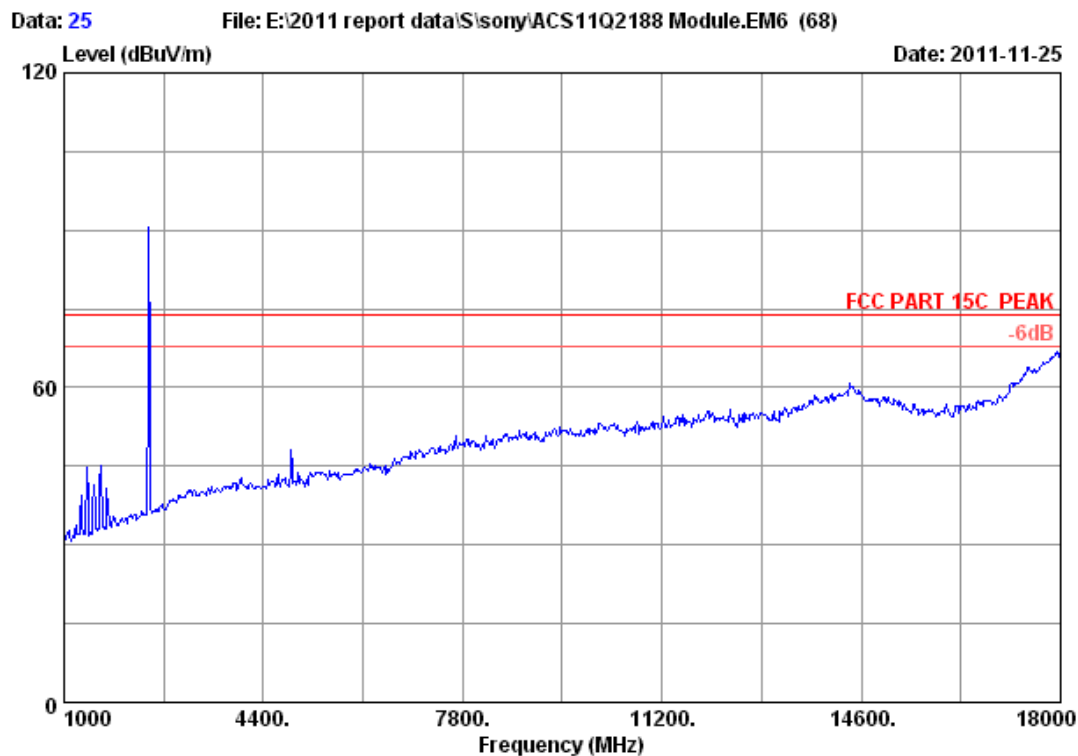


Site no. : 3m Chamber Data no. : 24
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2441MHz Tx
 M/N : BTM-S1

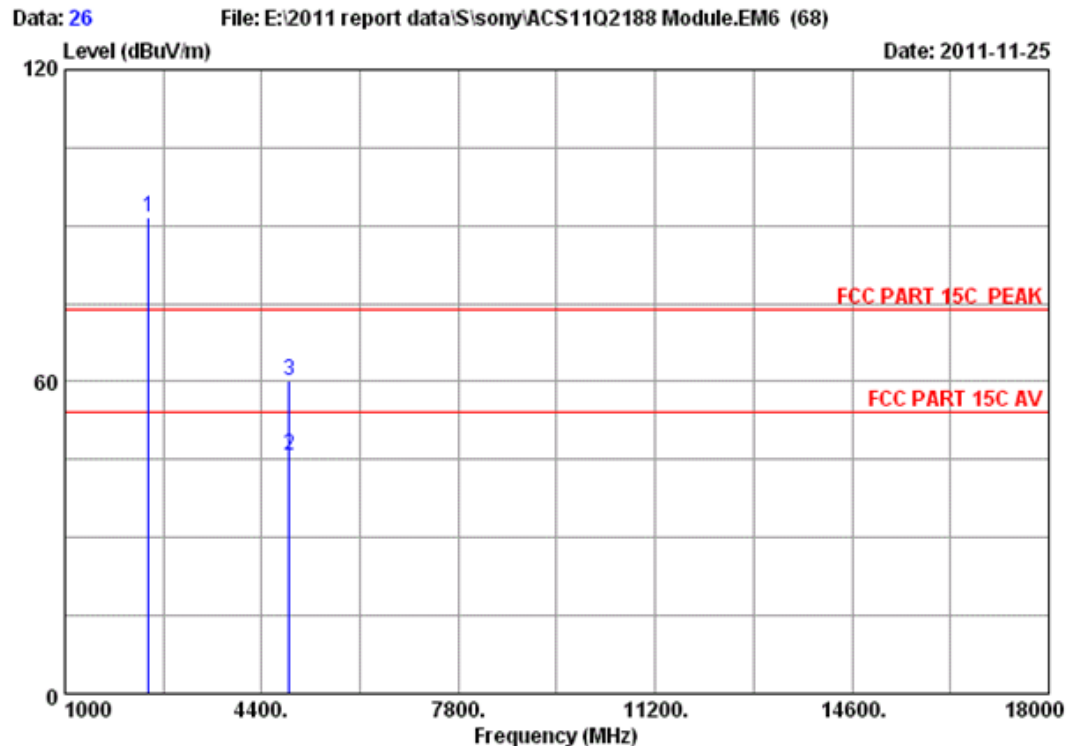
		Ant.	Cable	Amp.		Emission			
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2441.000	28.03	6.81	34.44	97.09	97.49	74.00	-23.49	Peak
2	4882.000	32.98	9.62	34.60	47.23	55.23	74.00	18.77	Peak
3	4882.000	32.98	9.62	34.60	35.53	43.53	54.00	10.47	Average

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.	: 25
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2441MHz Tx		
M/N	: BTM-S1		

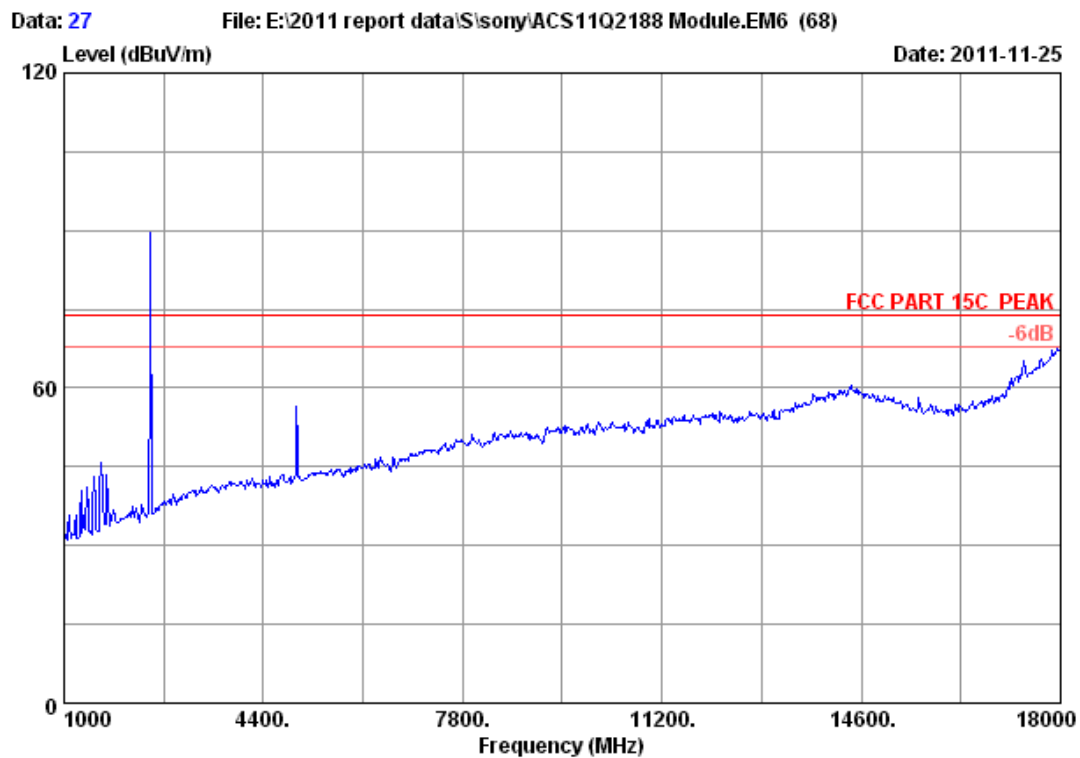


Site no.	: 3m Chamber	Data no.	: 26
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2441MHz Tx		
M/N	: BTM-S1		

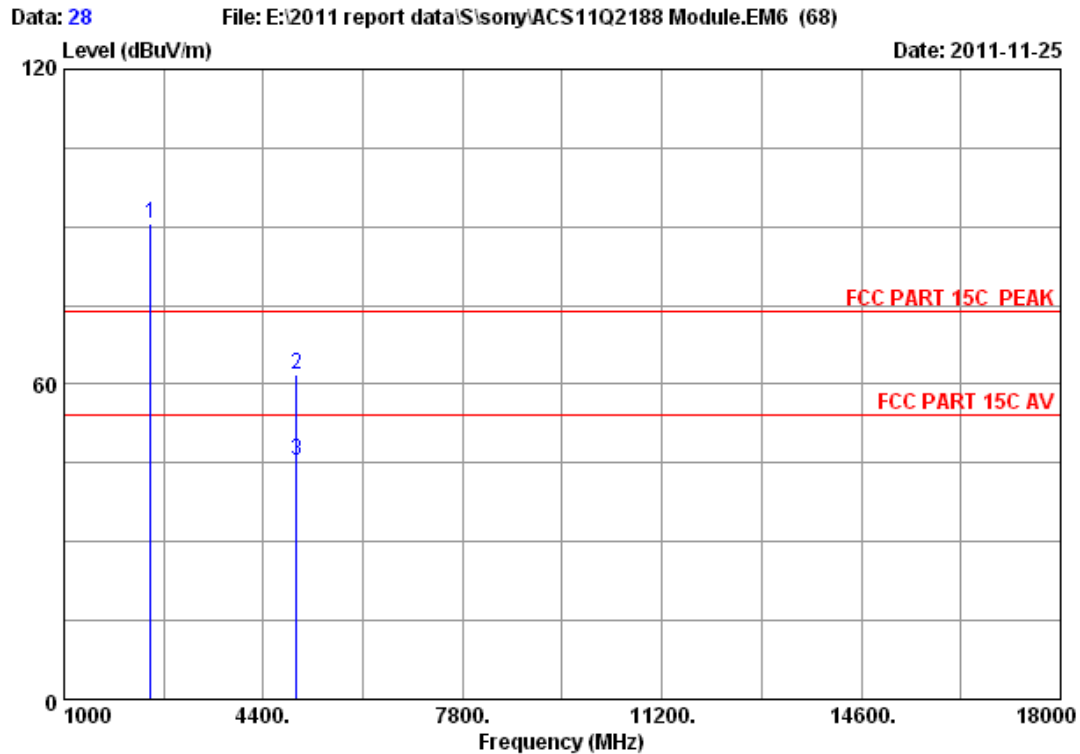
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits dBuV/m	Margin (dB)	
1	2441.000	28.03	6.81	34.44	91.14	91.54	74.00	-17.54	Peak
2	4882.000	32.98	9.62	34.60	37.75	45.75	54.00	8.25	Average
3	4882.000	32.98	9.62	34.60	52.23	60.23	74.00	13.77	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. :	27
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2480MHz Tx		
M/N	: BTM-S1		

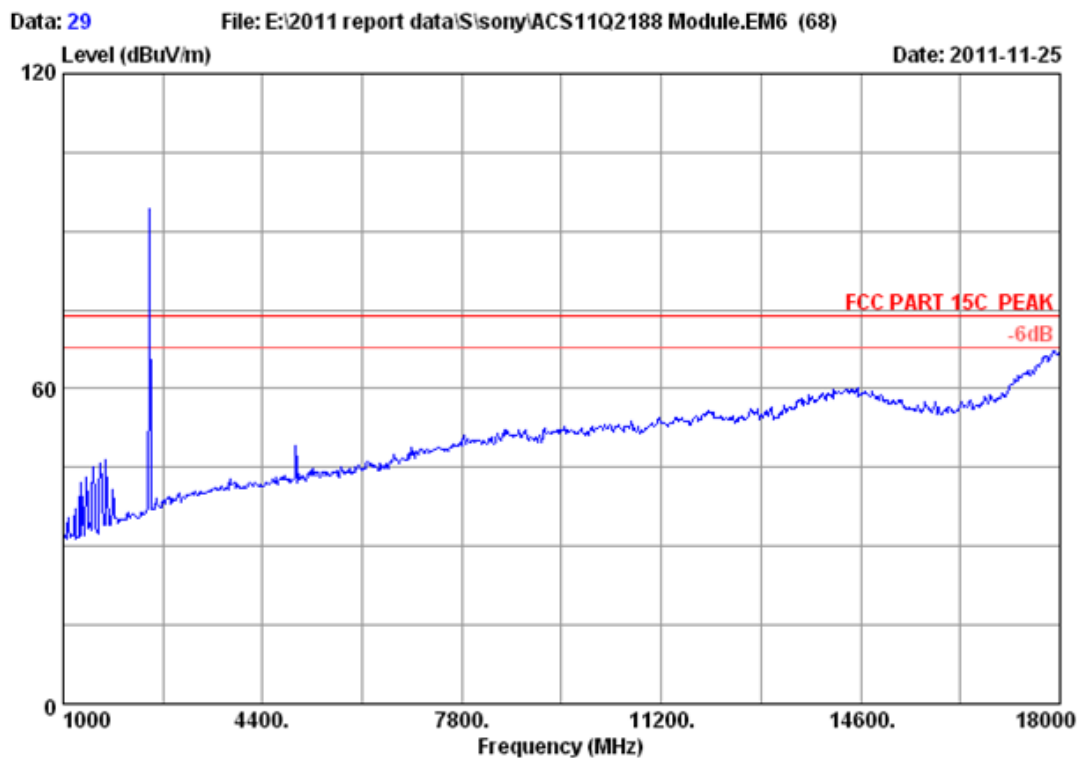


Site no. : 3m Chamber Data no. : 28
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2480MHz Tx
 M/N : BTM-S1

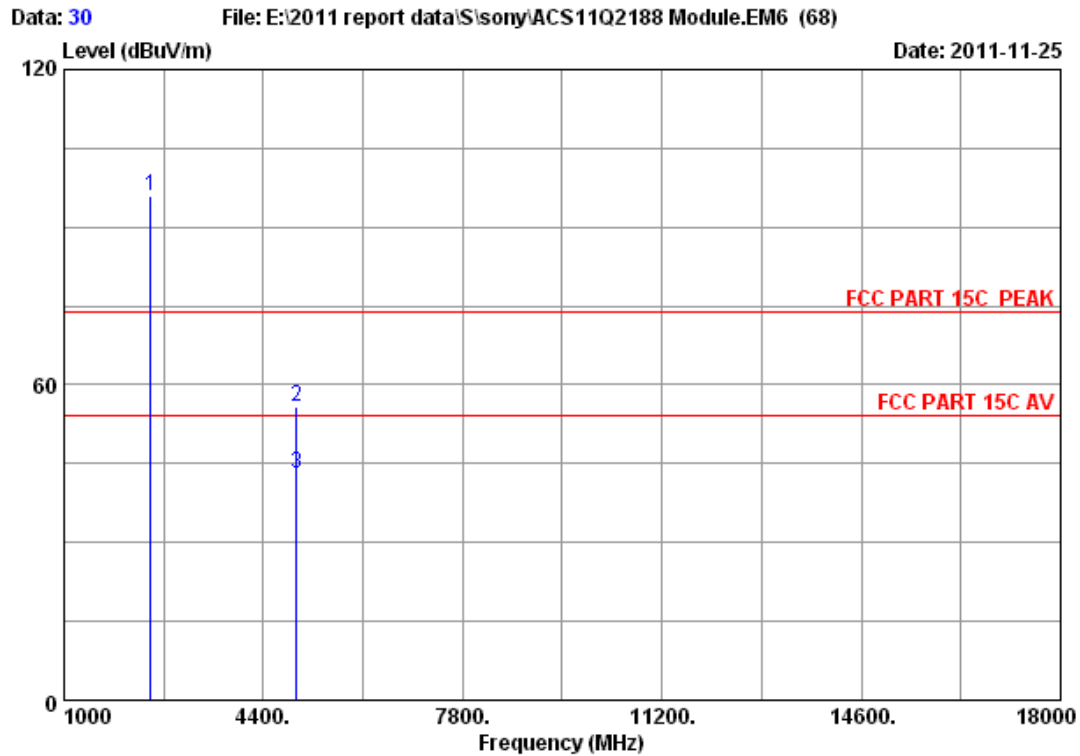
	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.000	28.08	6.87	34.45	89.95	90.45	74.00	-16.45	Peak
2	4960.000	33.14	9.69	34.60	53.69	61.92	74.00	12.08	Peak
3	4960.000	33.14	9.69	34.60	37.25	45.48	54.00	8.52	Average

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. :	29
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer :	Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2480MHz Tx		
M/N	: BTM-S1		



Site no. : 3m Chamber Data no. : 30
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2480MHz Tx
 M/N : BTM-S1

	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	2480.000	28.08	6.87	34.45	95.49	95.99	74.00	-21.99	Peak
2	4960.000	33.14	9.69	34.60	47.45	55.68	74.00	18.32	Peak
3	4960.000	33.14	9.69	34.60	34.82	43.05	54.00	10.95	Average

Remarks:

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

5. CONDUCTED SPURIOUS EMISSIONS

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
2.	Attenuator	Agilent	8491B	MY39262165	May.08,11	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,11	1Year

5.2. 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.

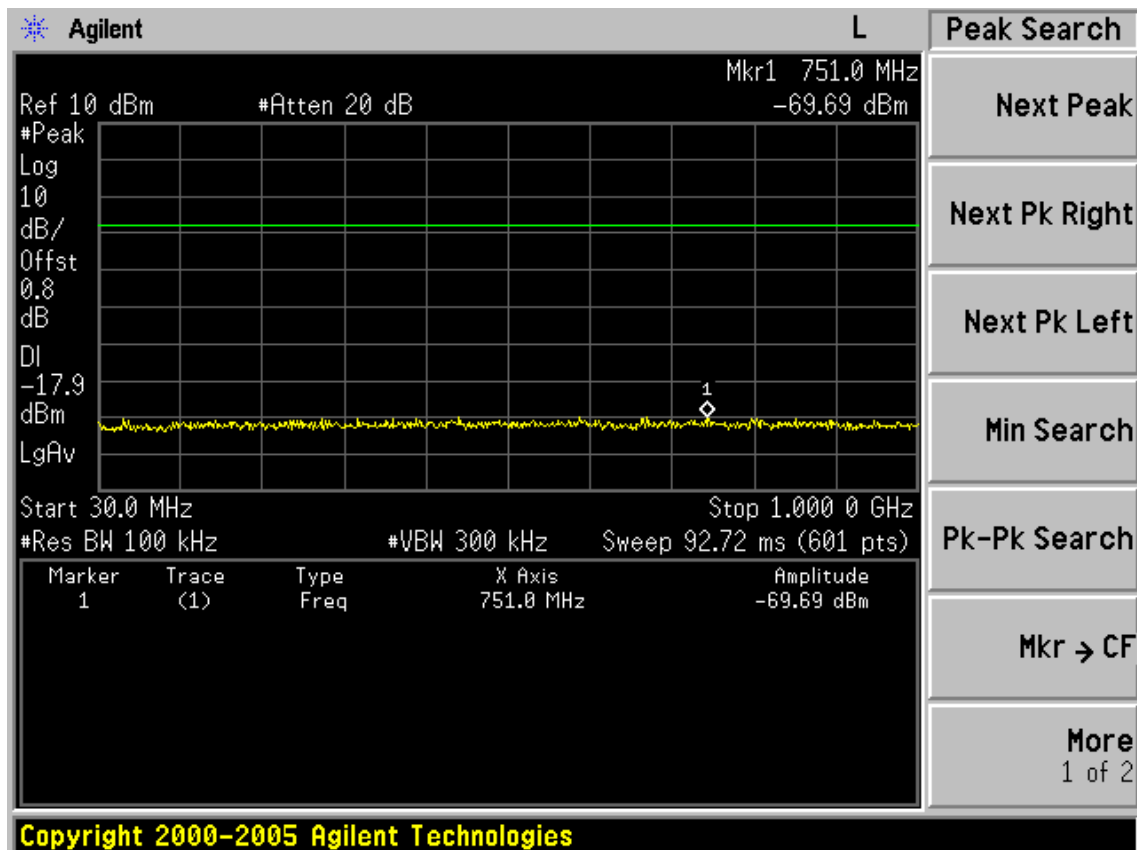
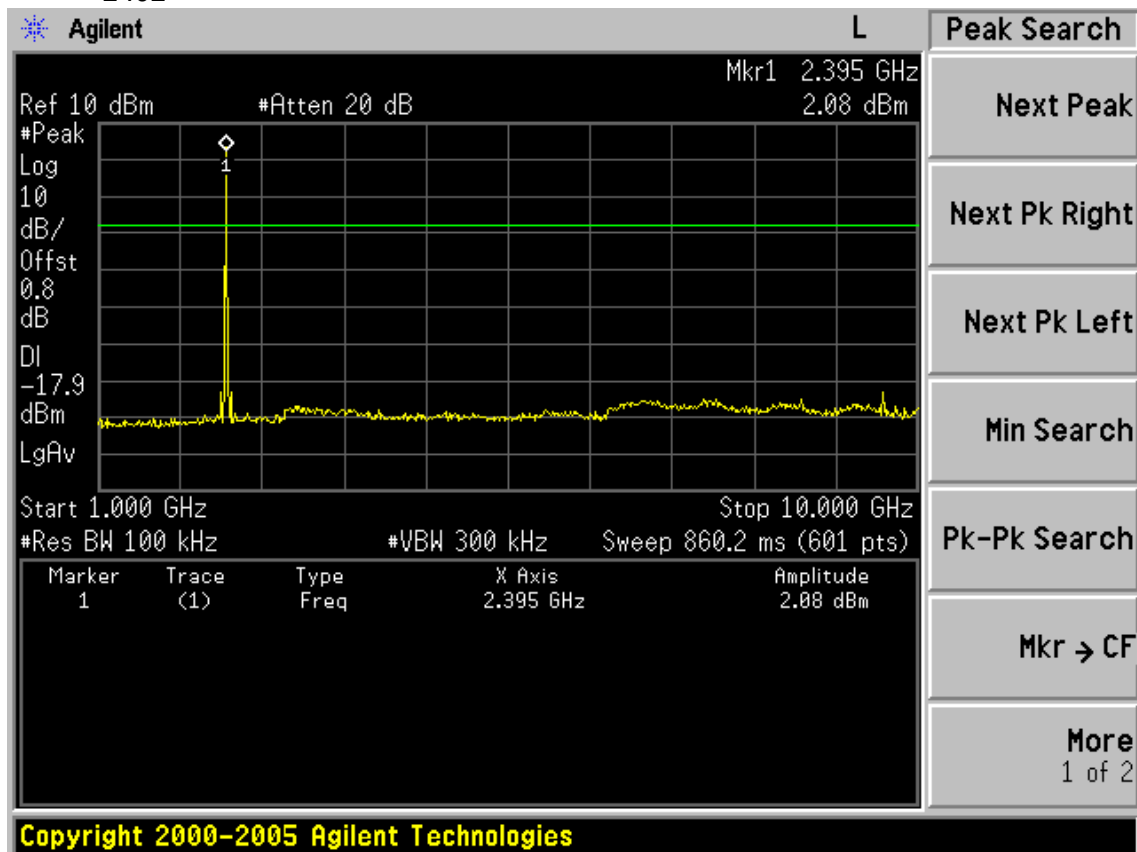
5.3. Test Procedure

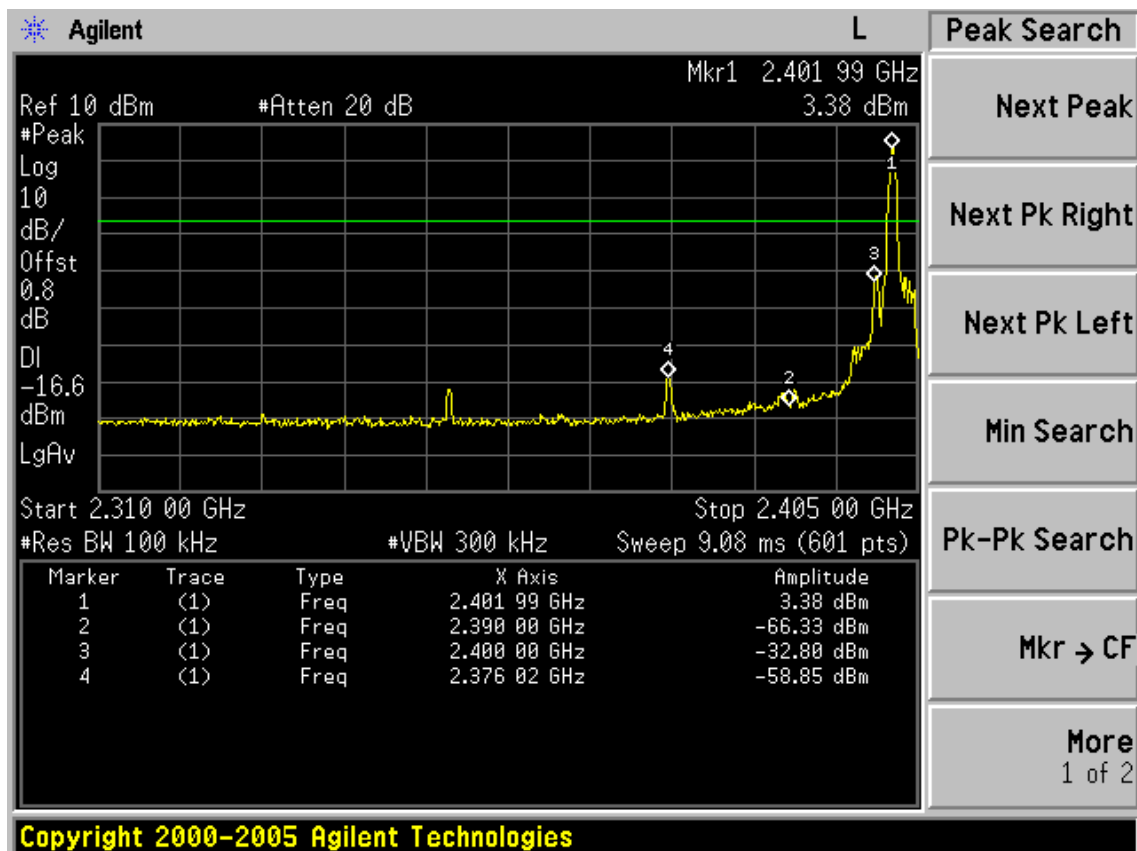
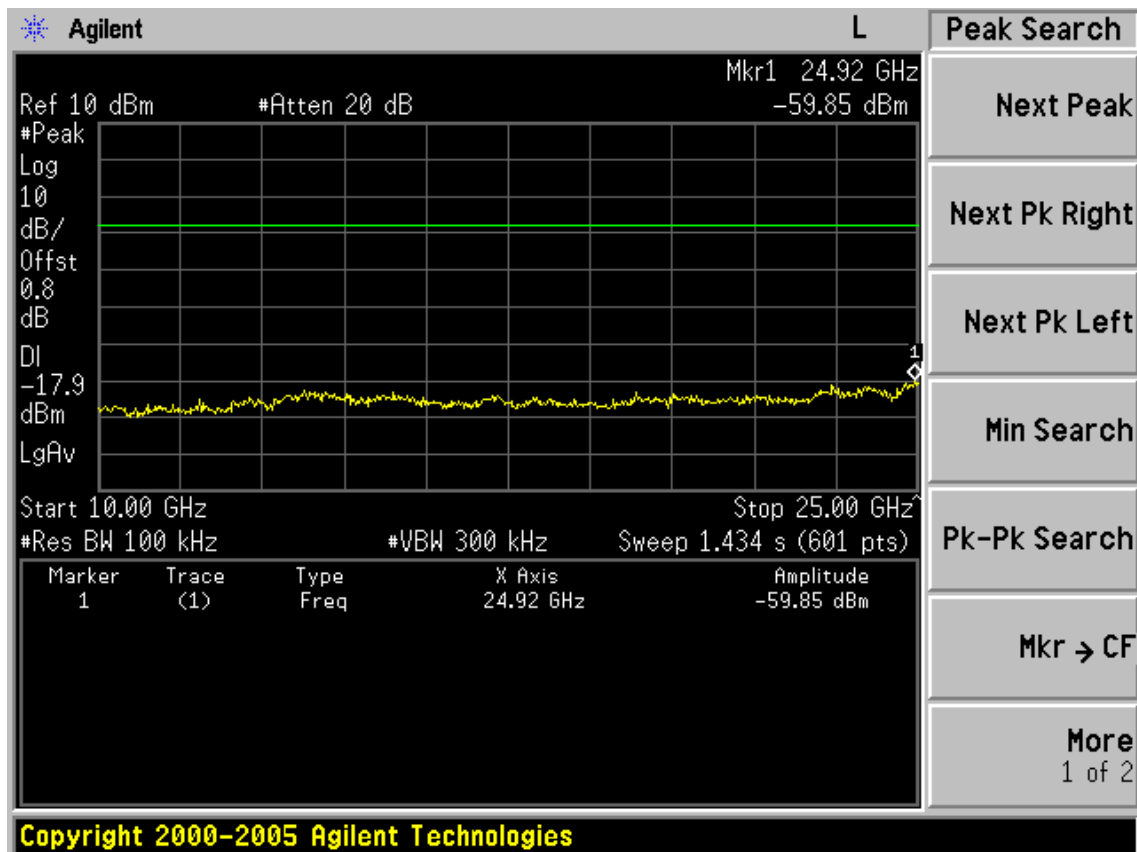
The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions detected.

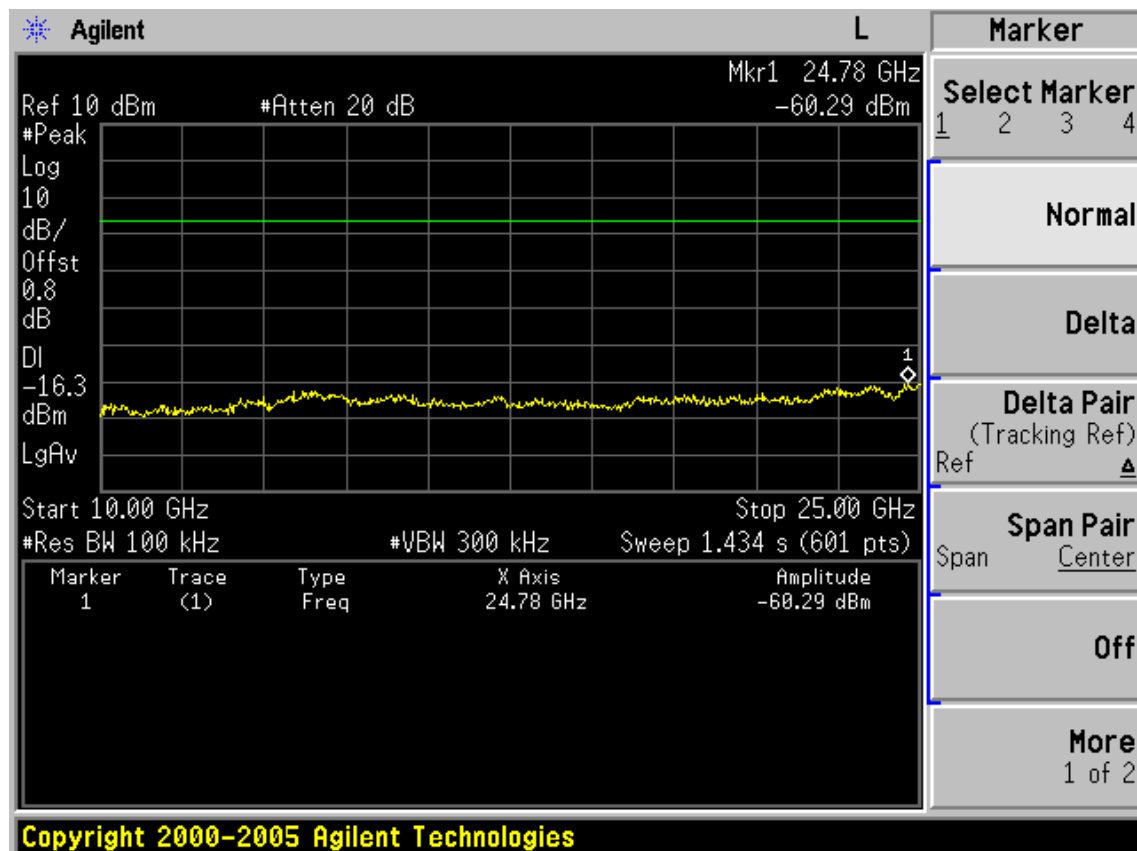
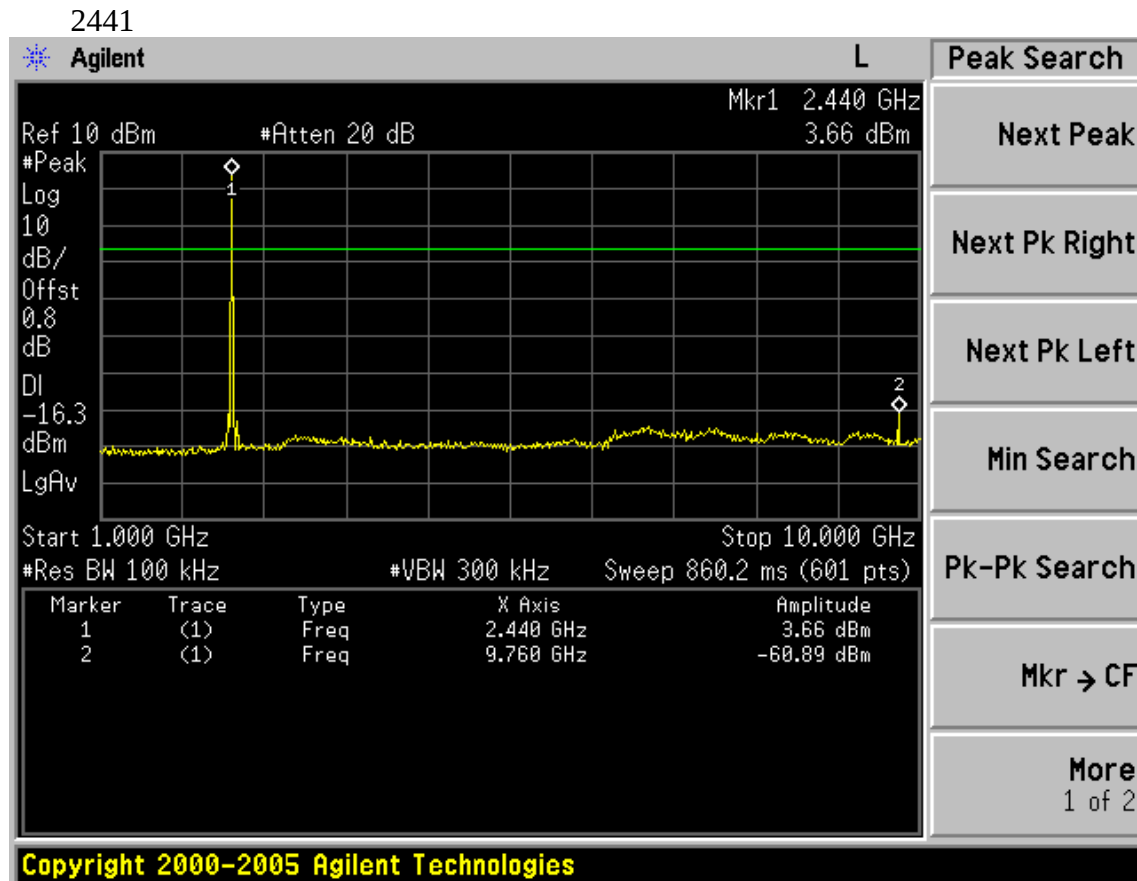
5.4. Test result

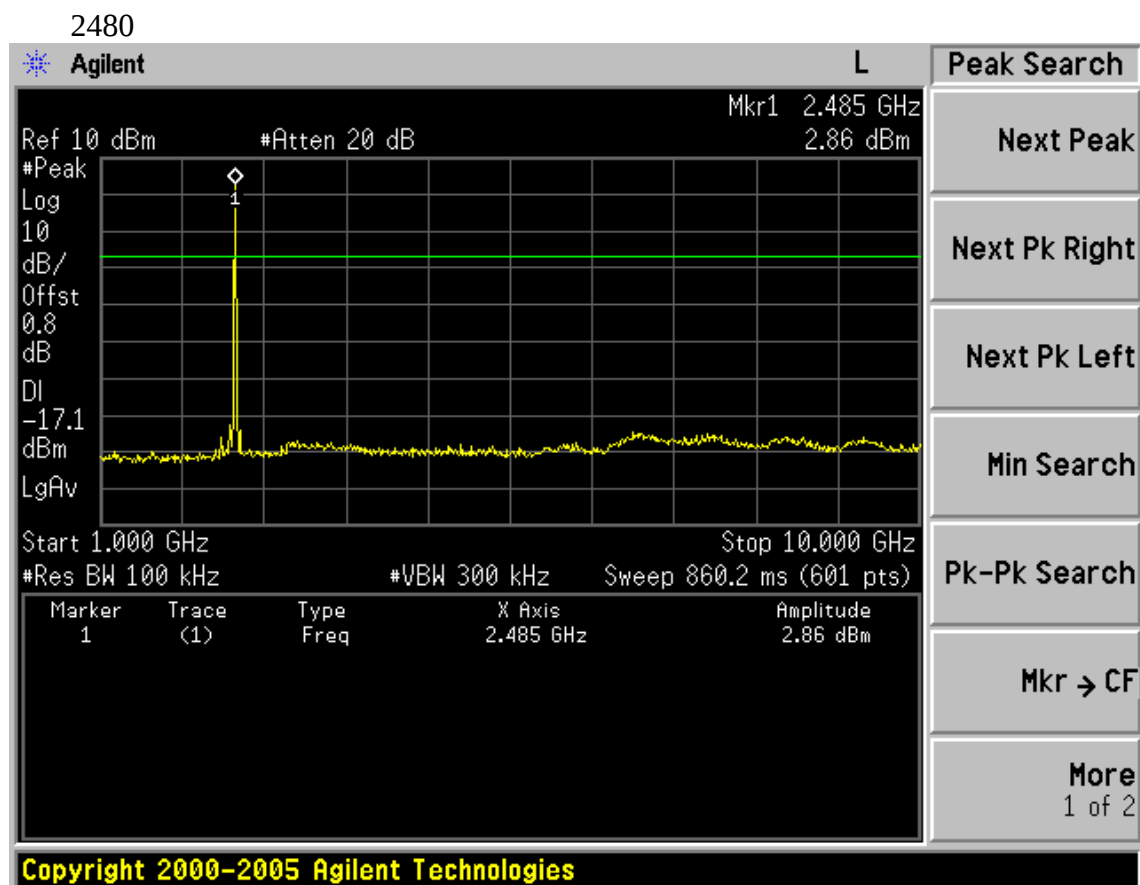
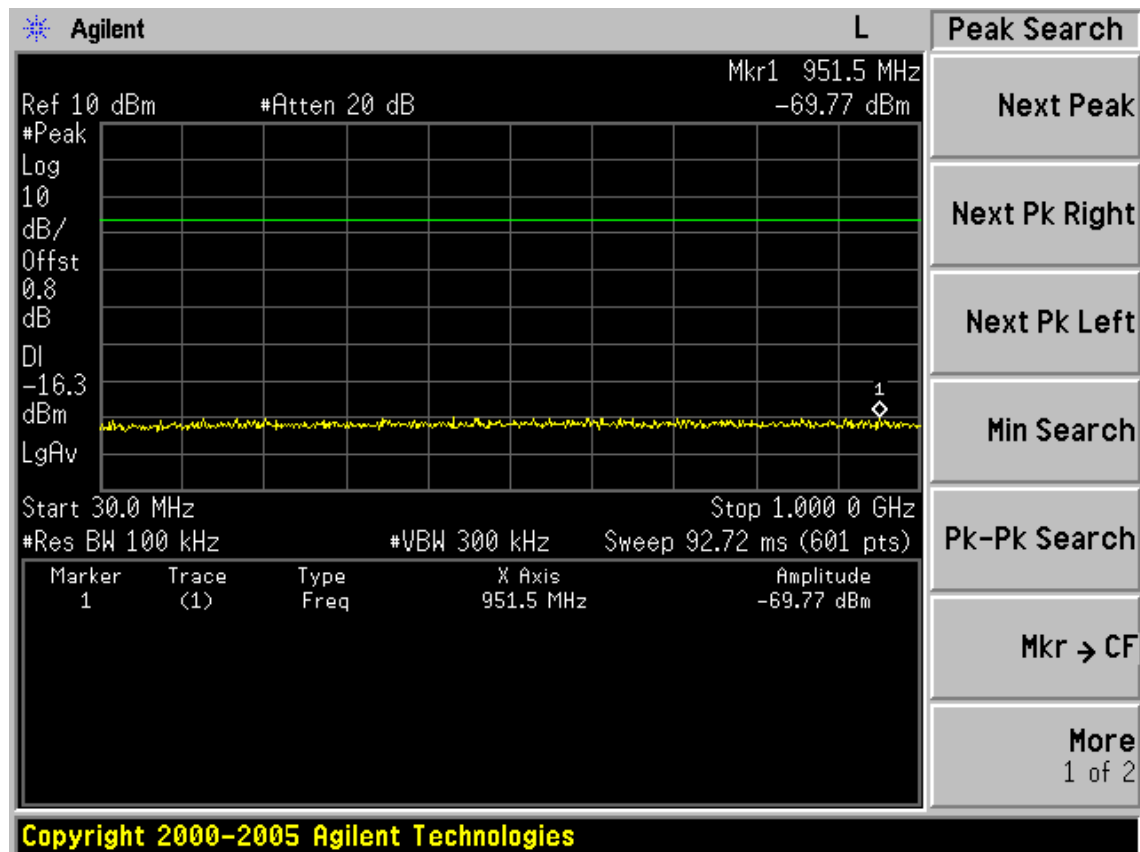
PASS (The testing data was attached in the next pages.)

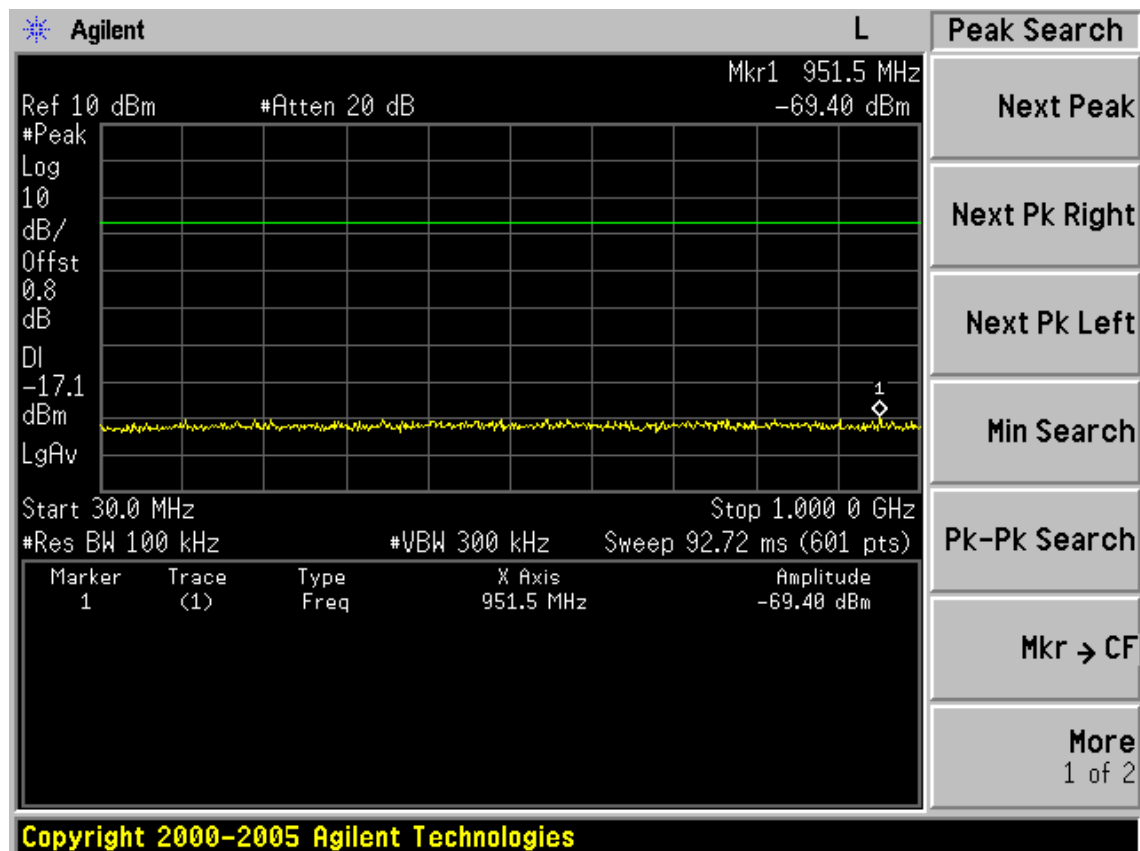
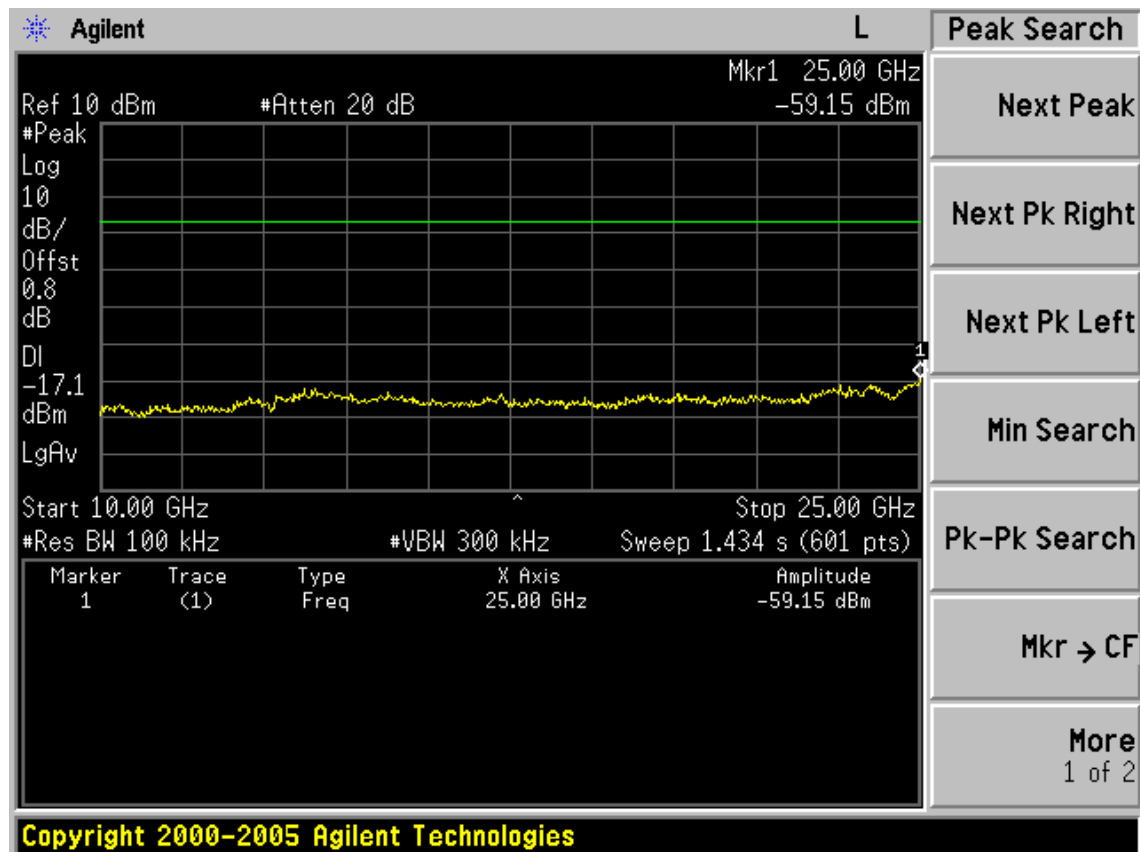
GFSK
2402

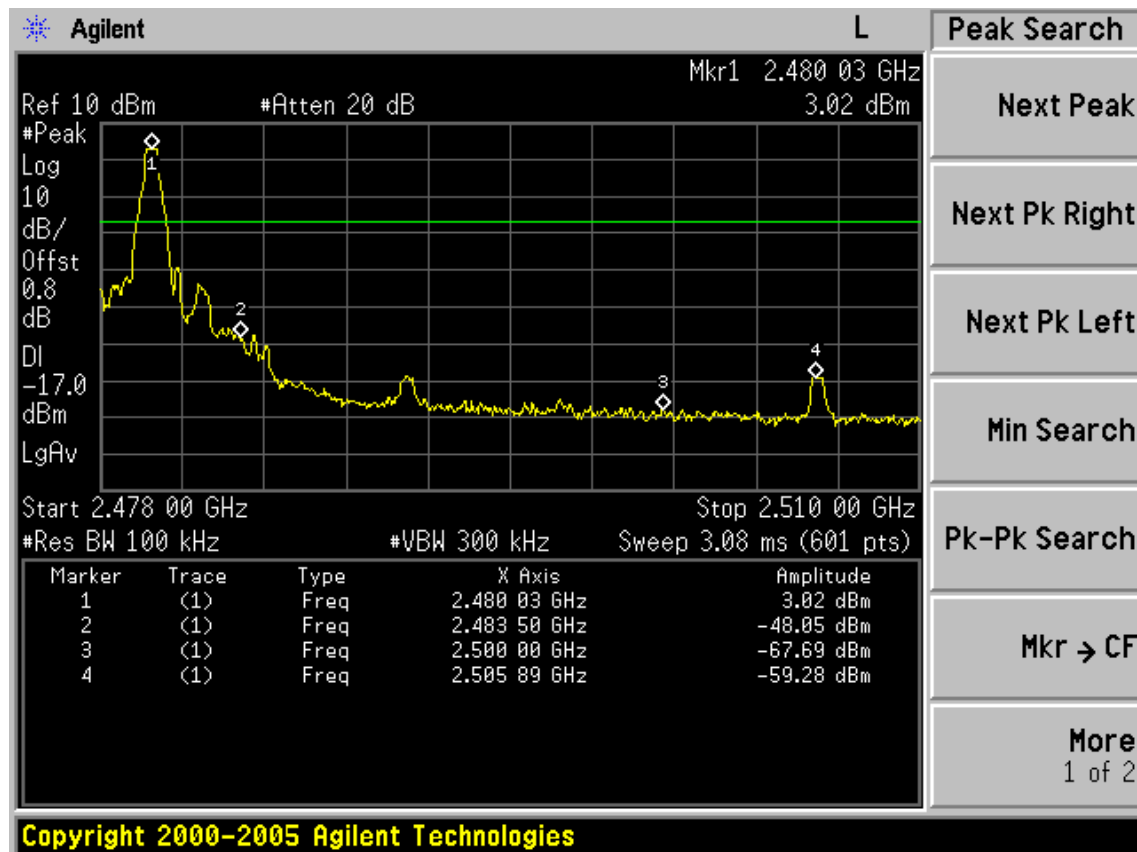






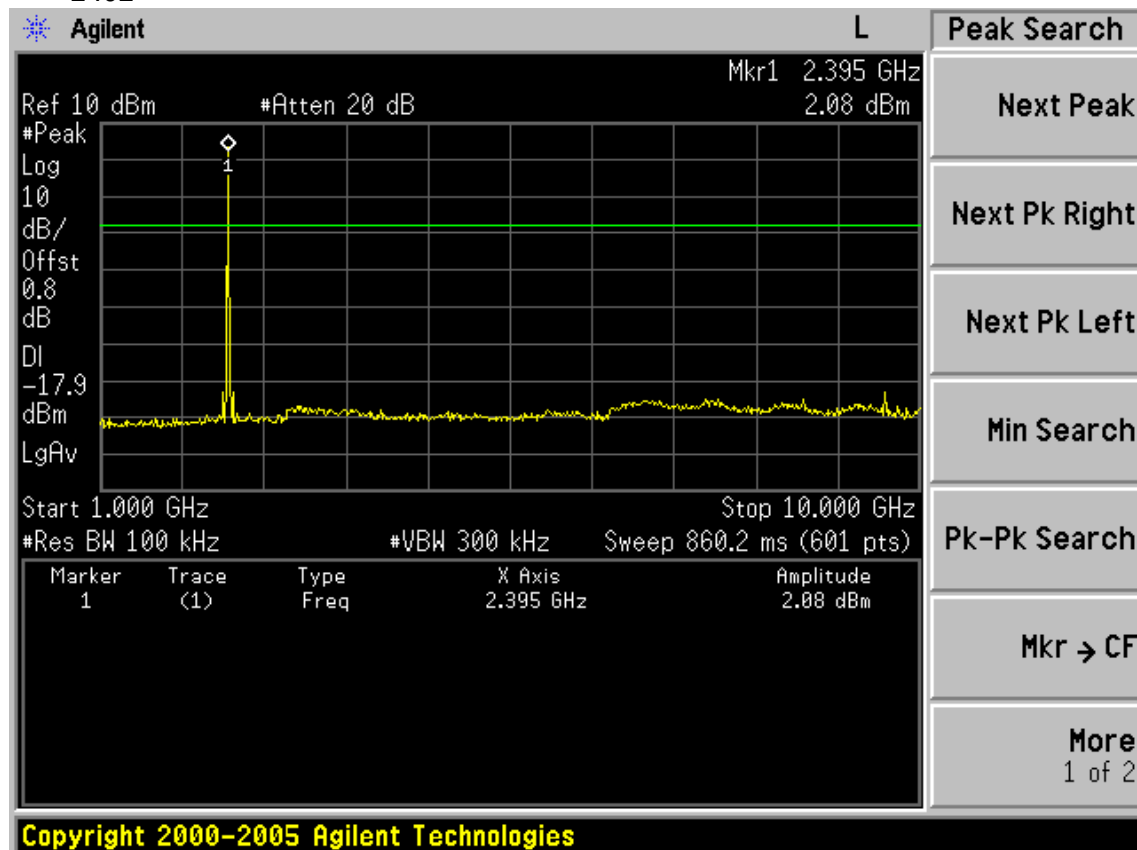


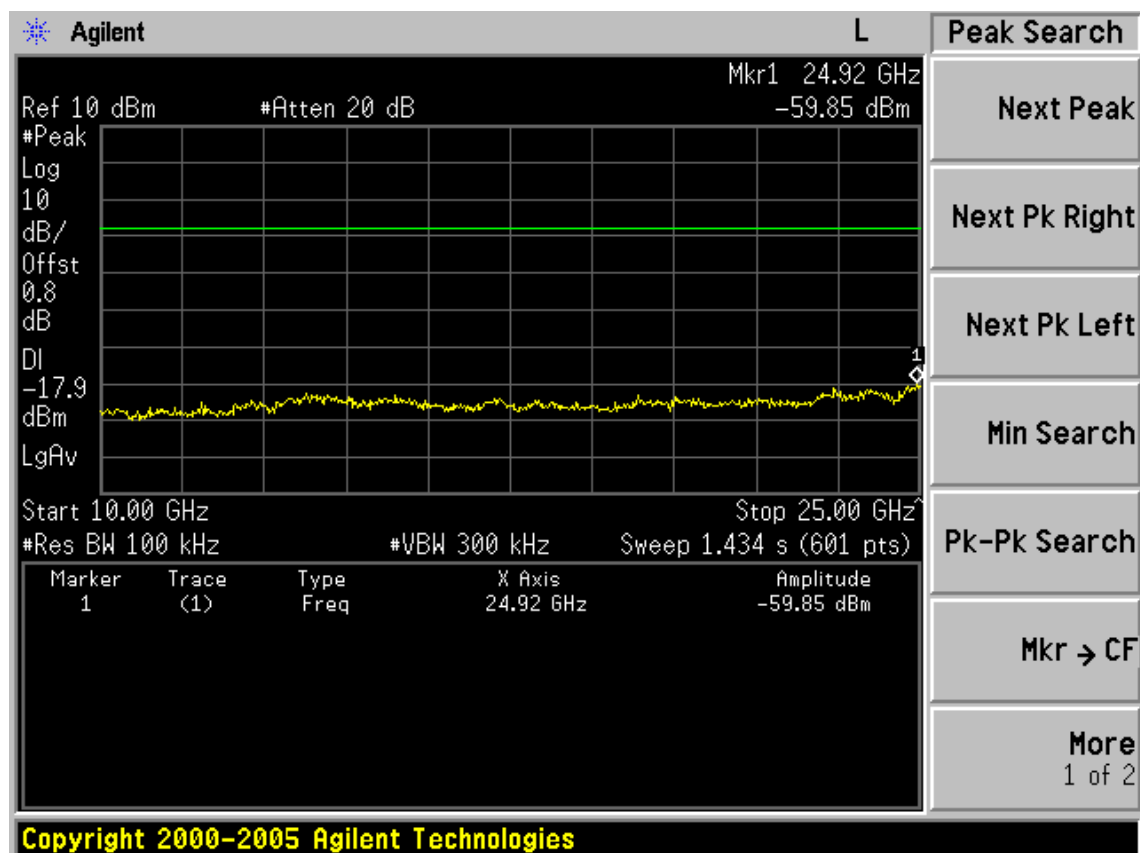
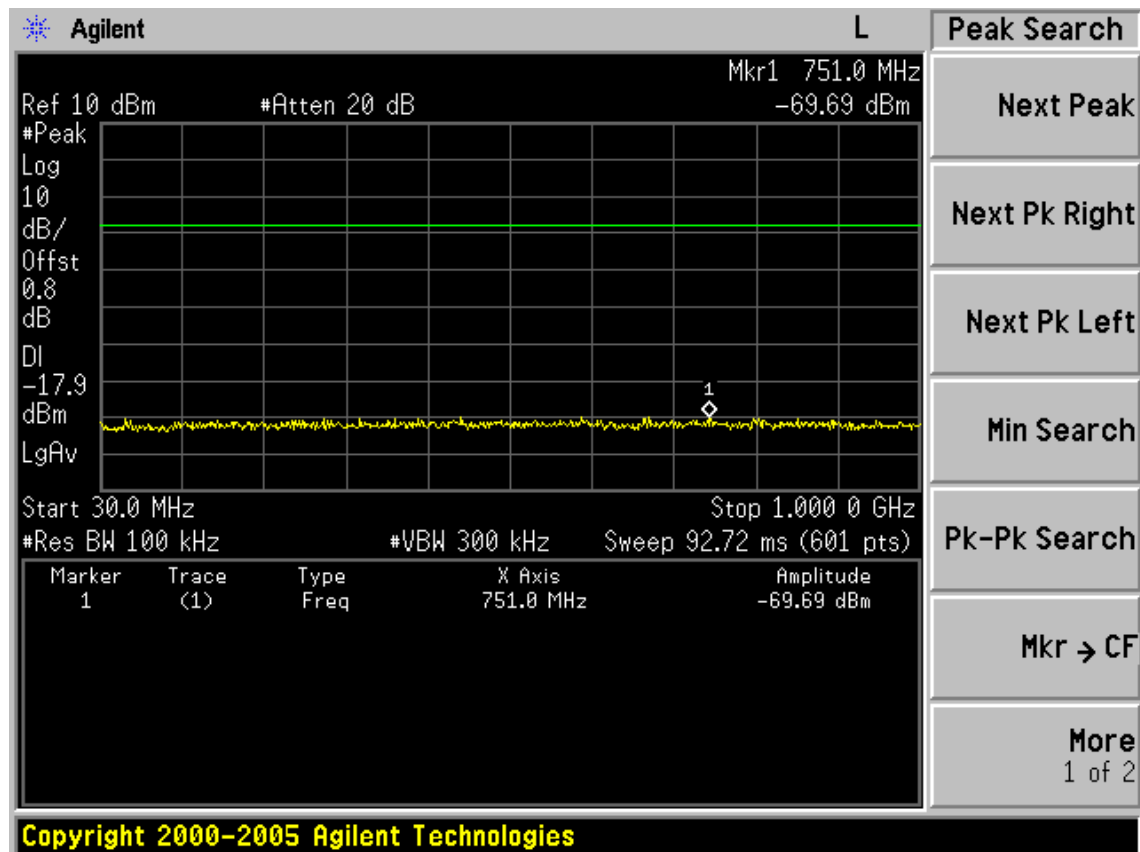


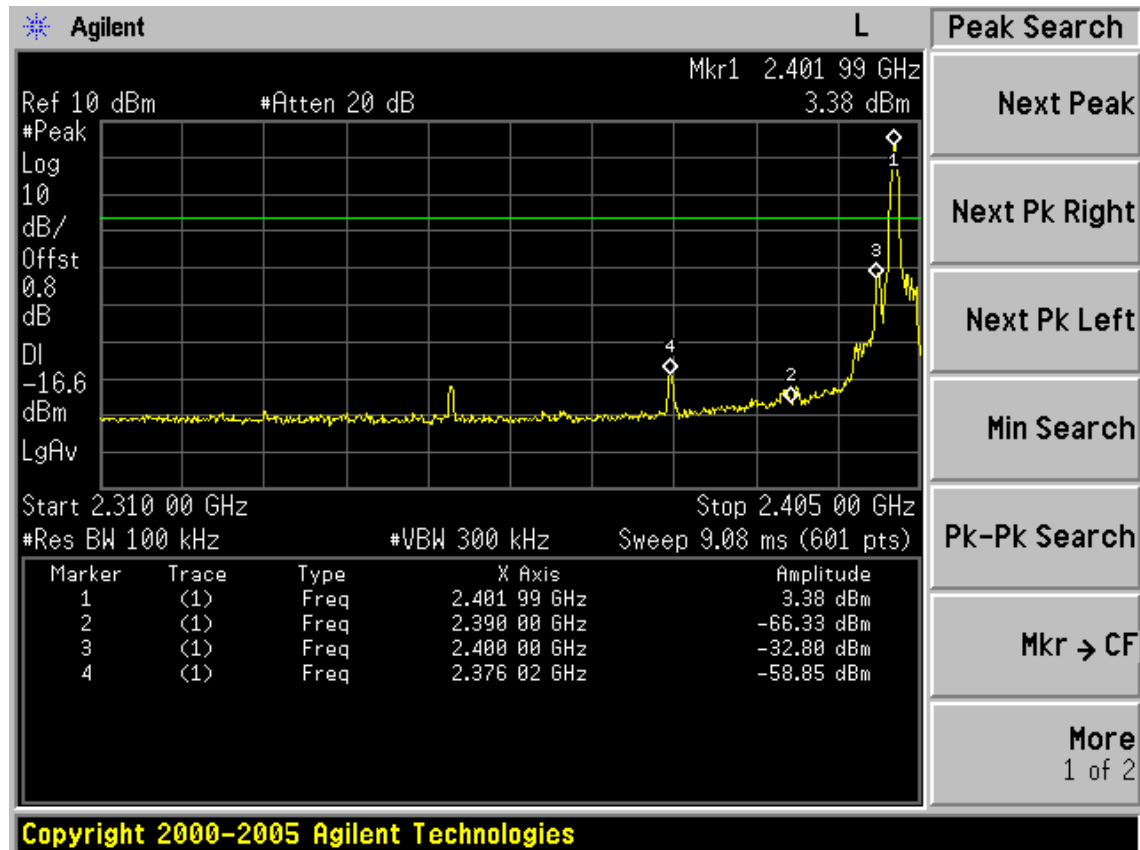


8-DPSK

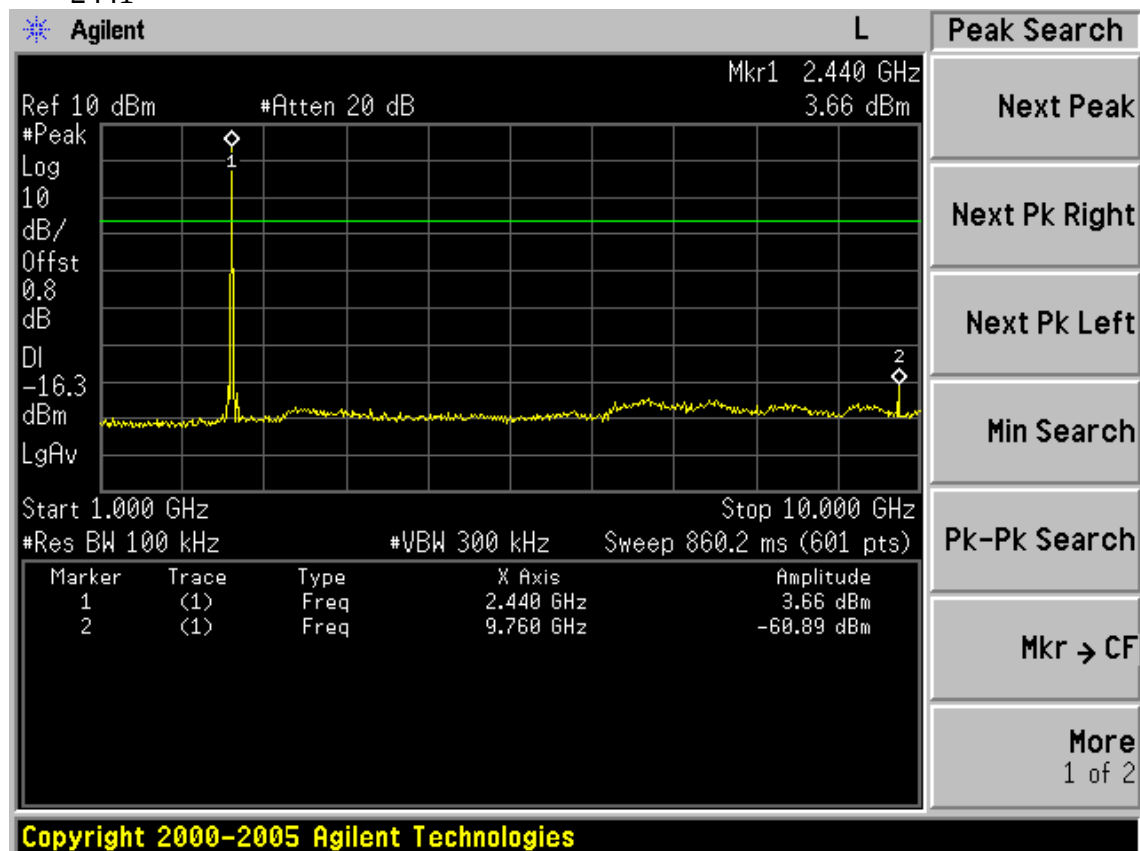
2402

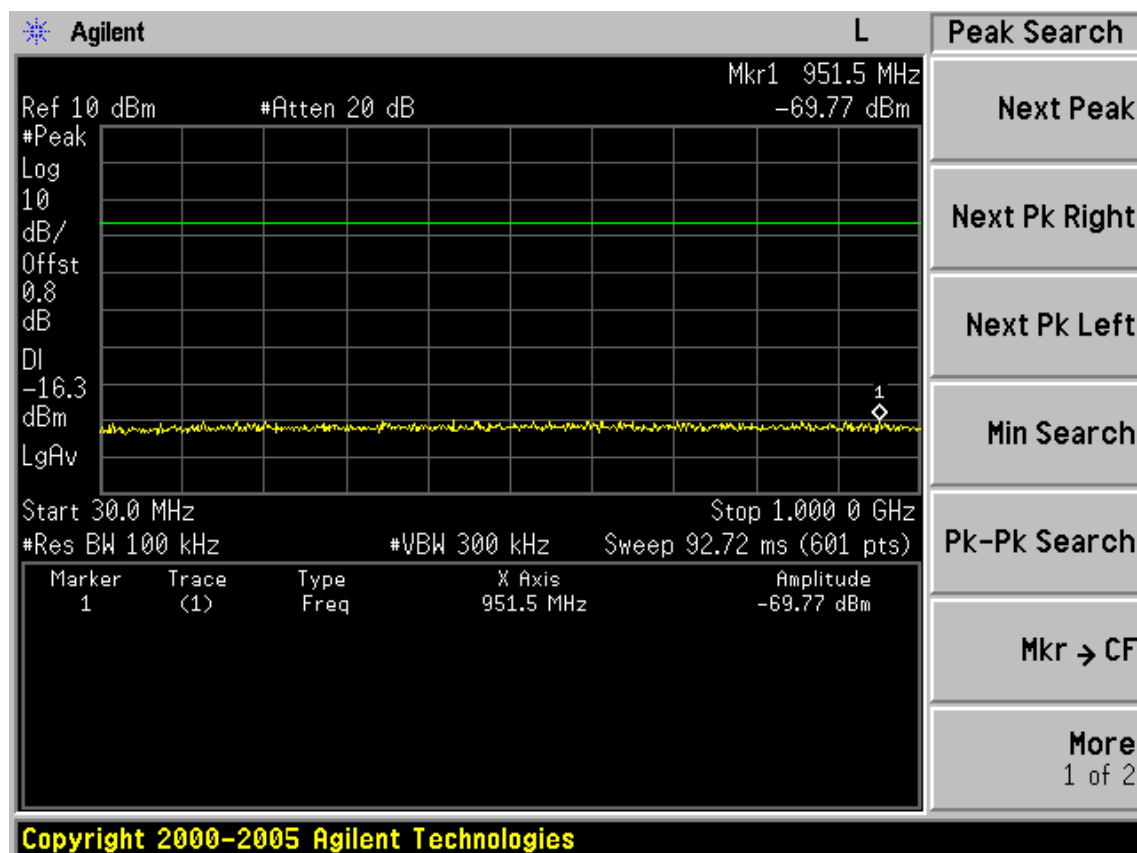
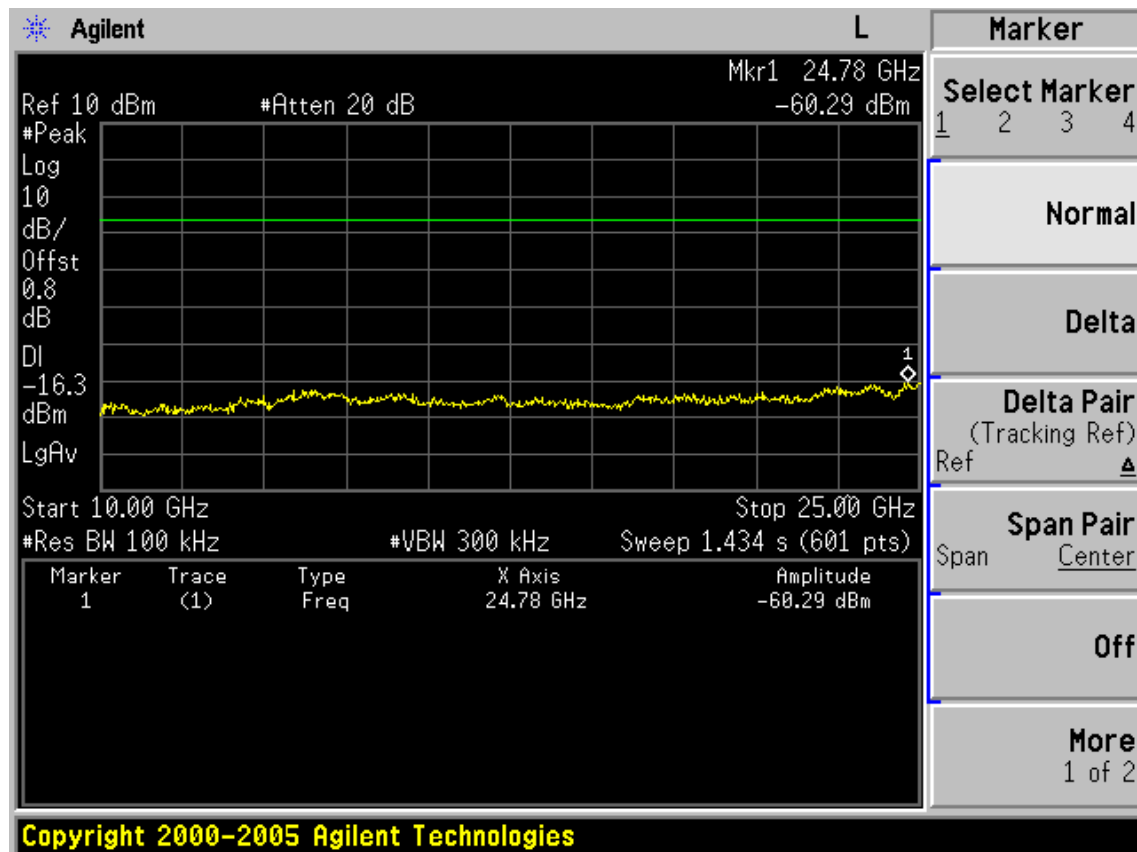


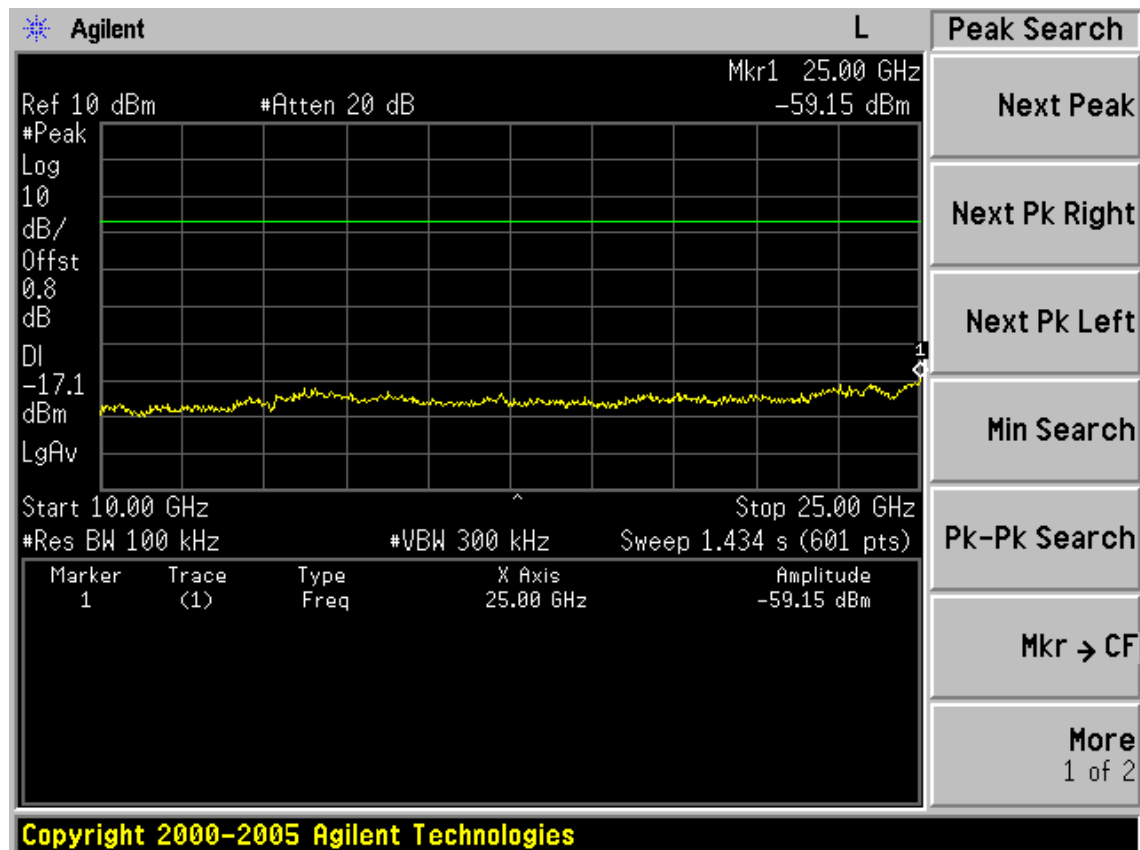
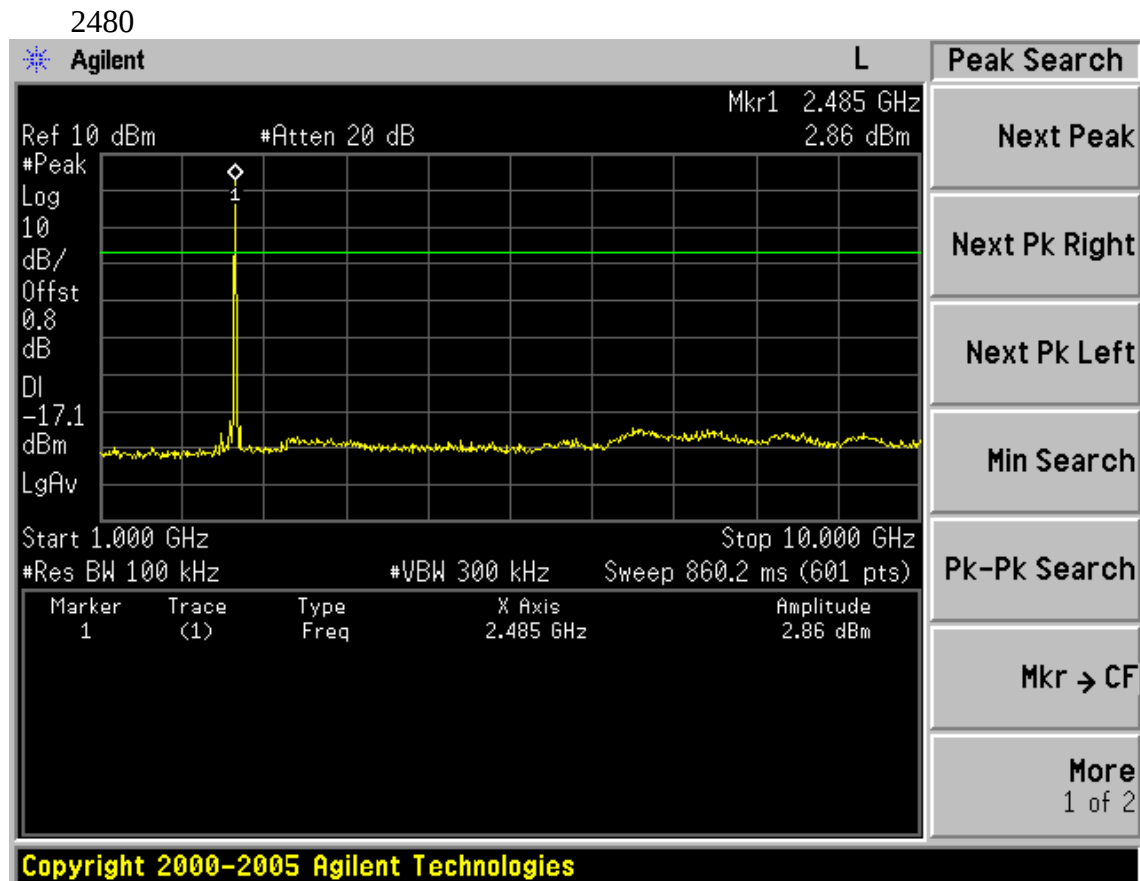


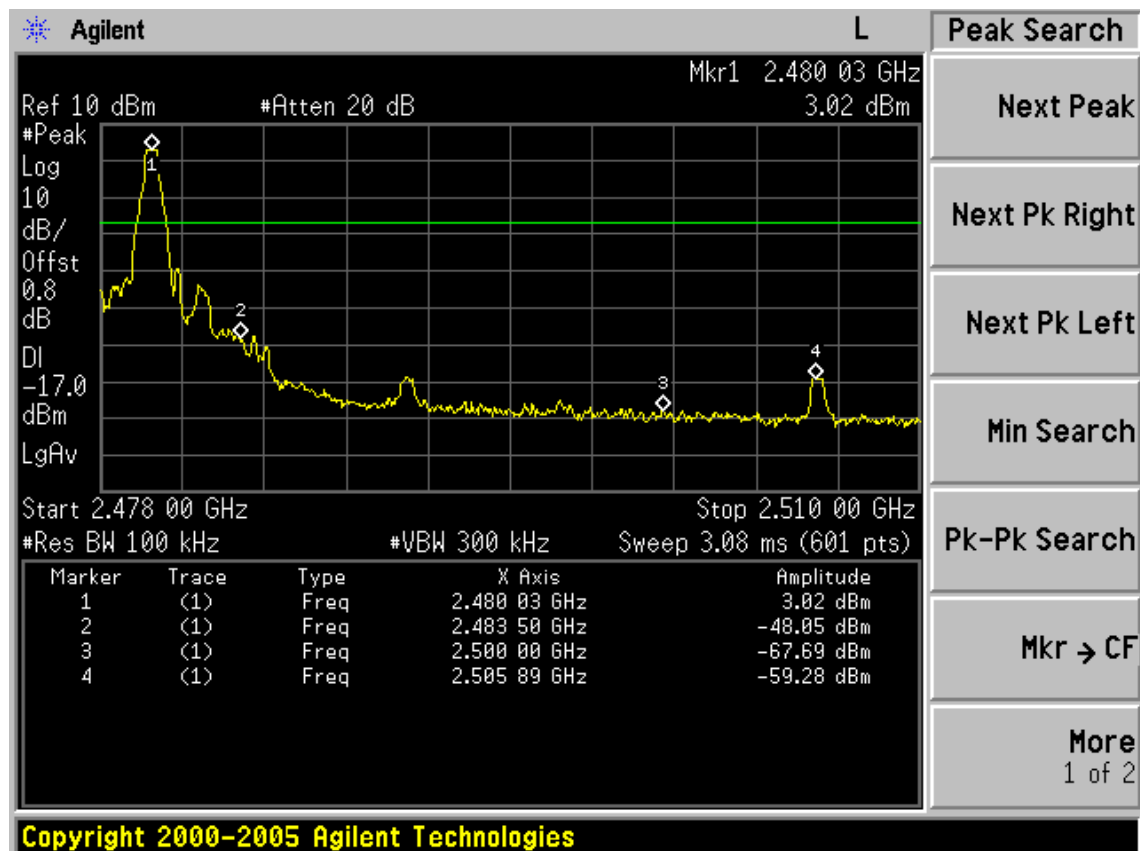
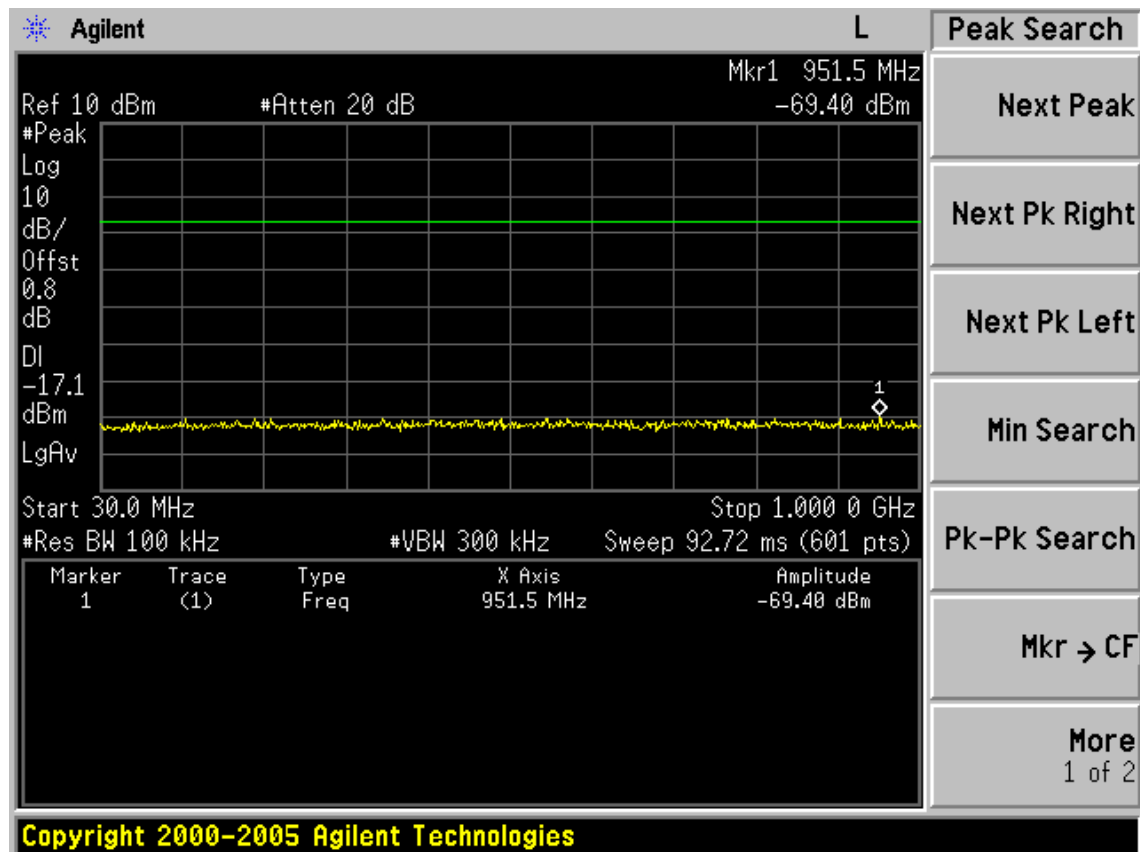


2441

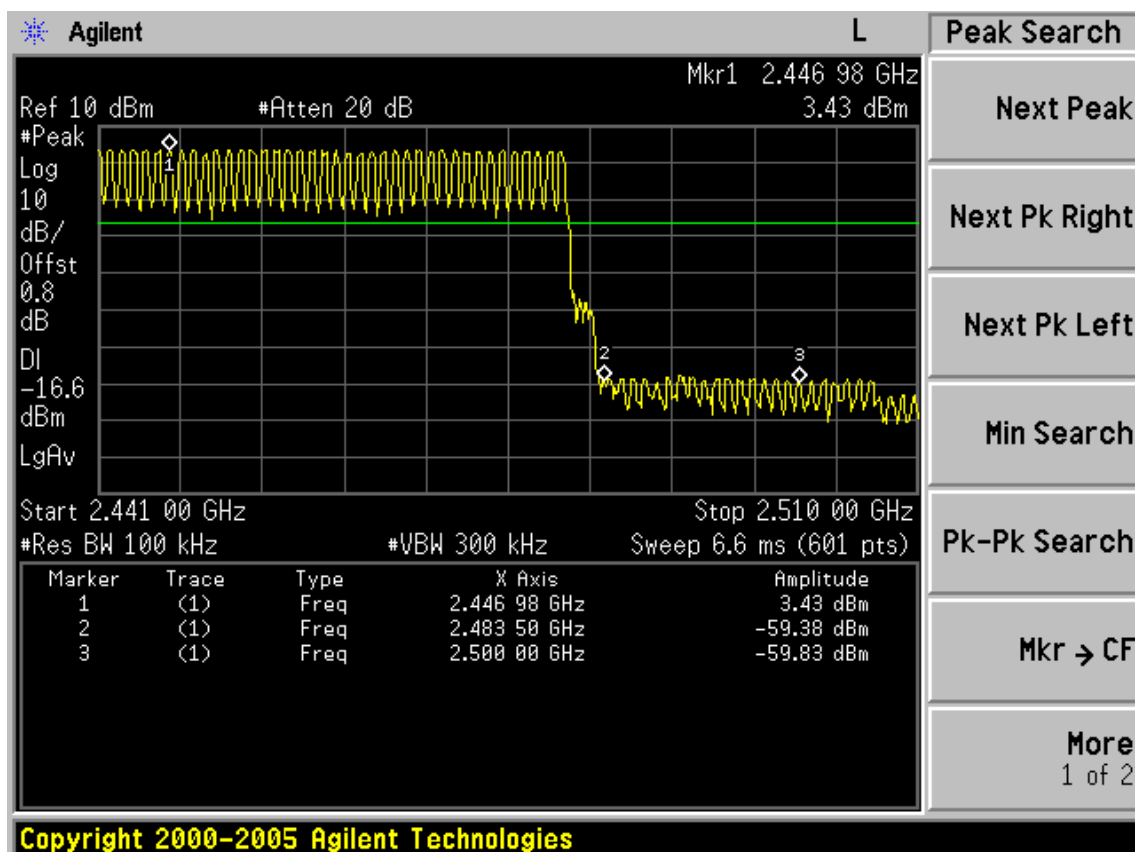
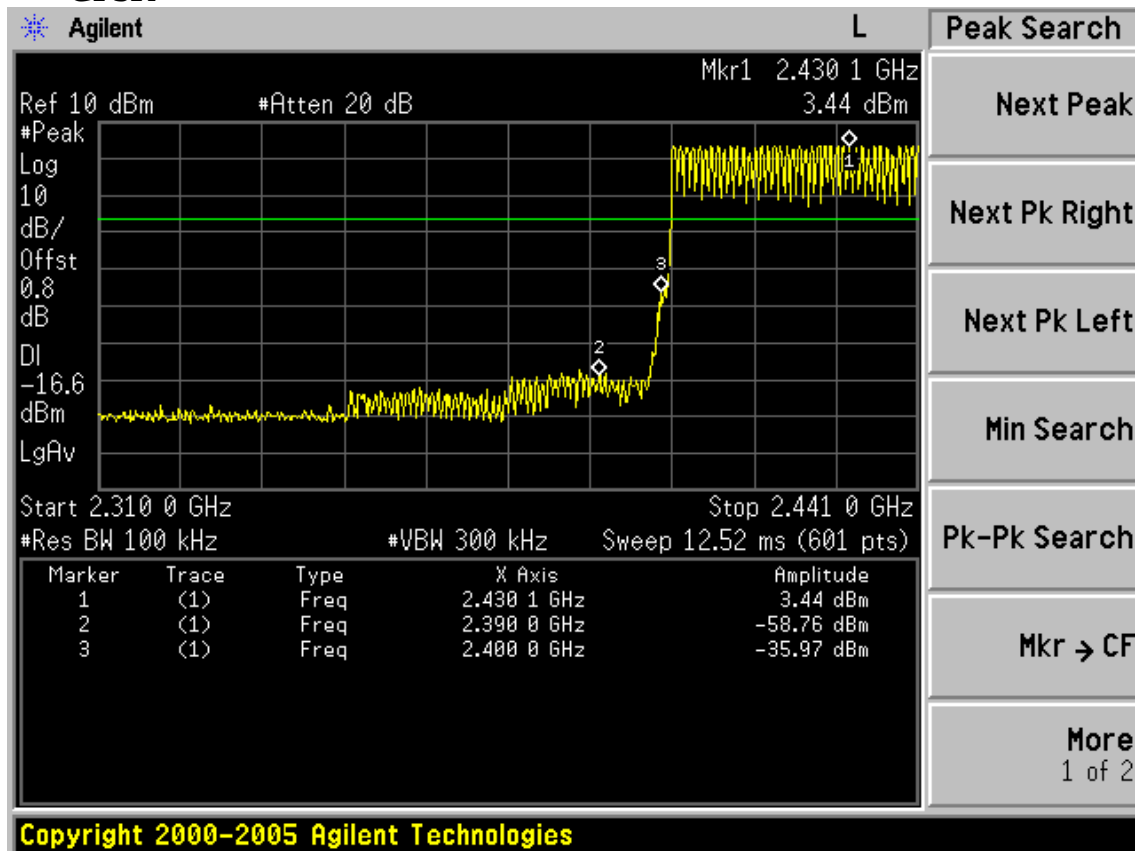




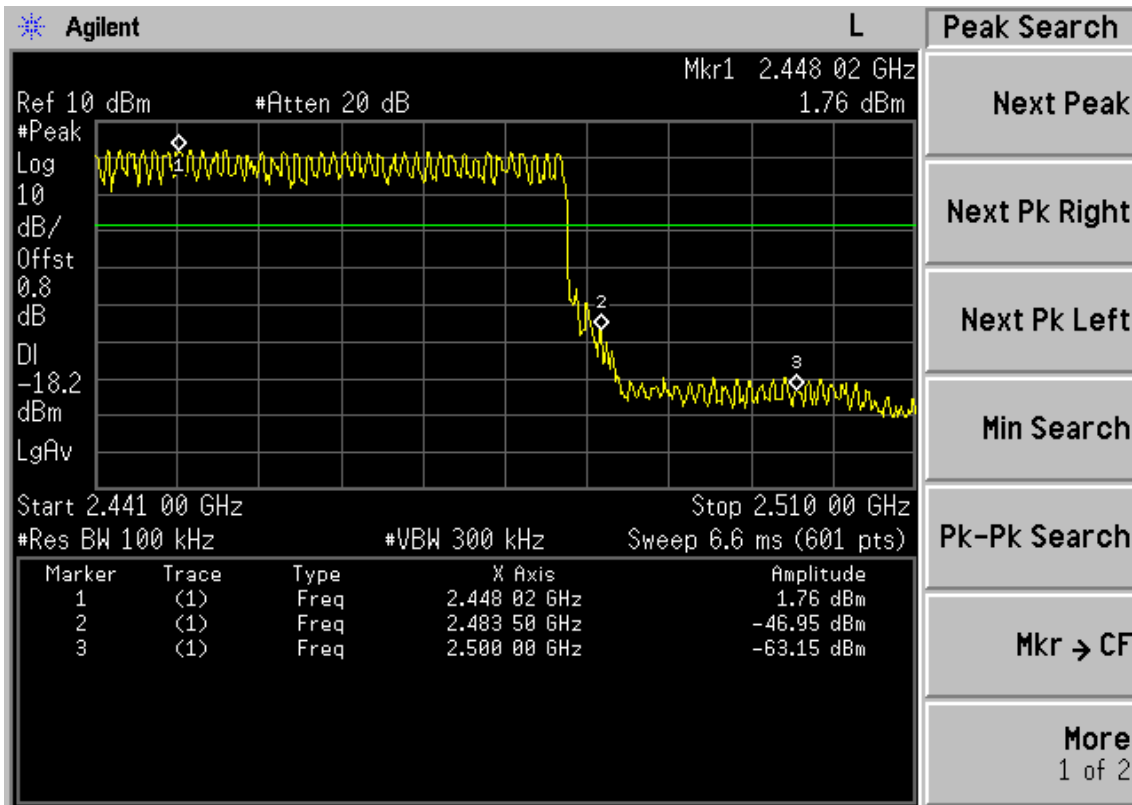




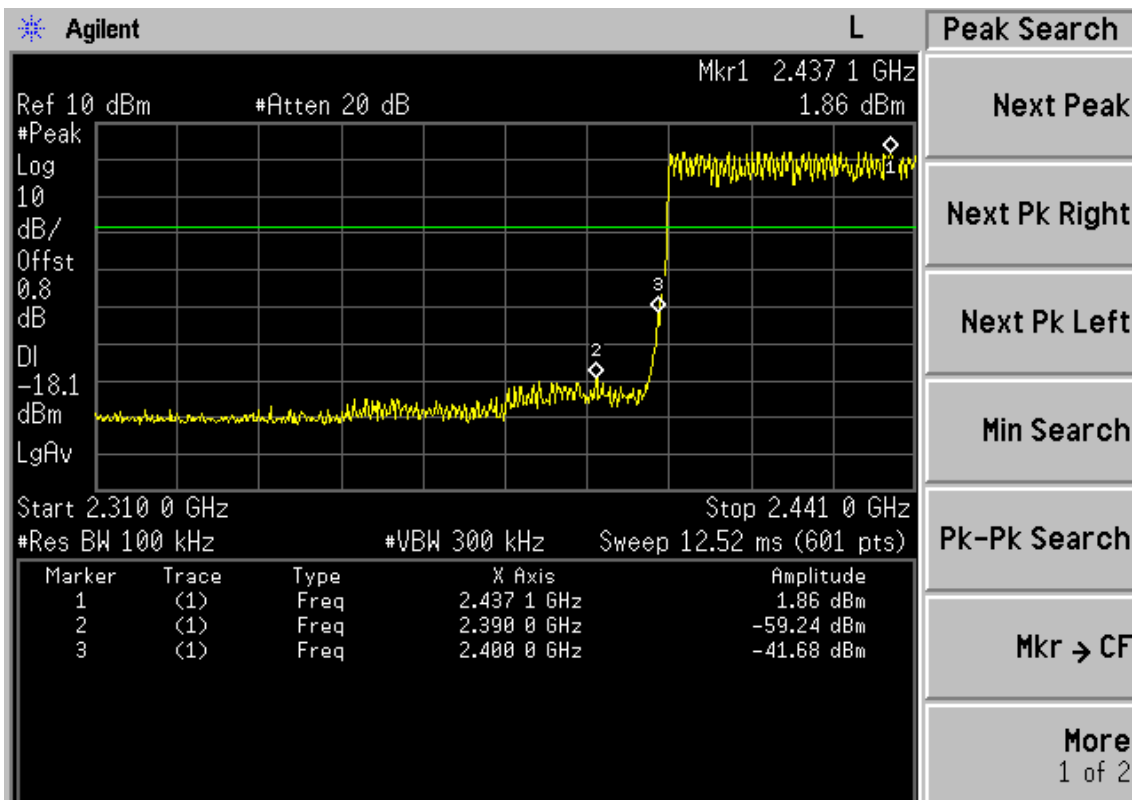
Hopping on GFSK



8-DPSK



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6. CARRIER FREQUENCY SEPARATION 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

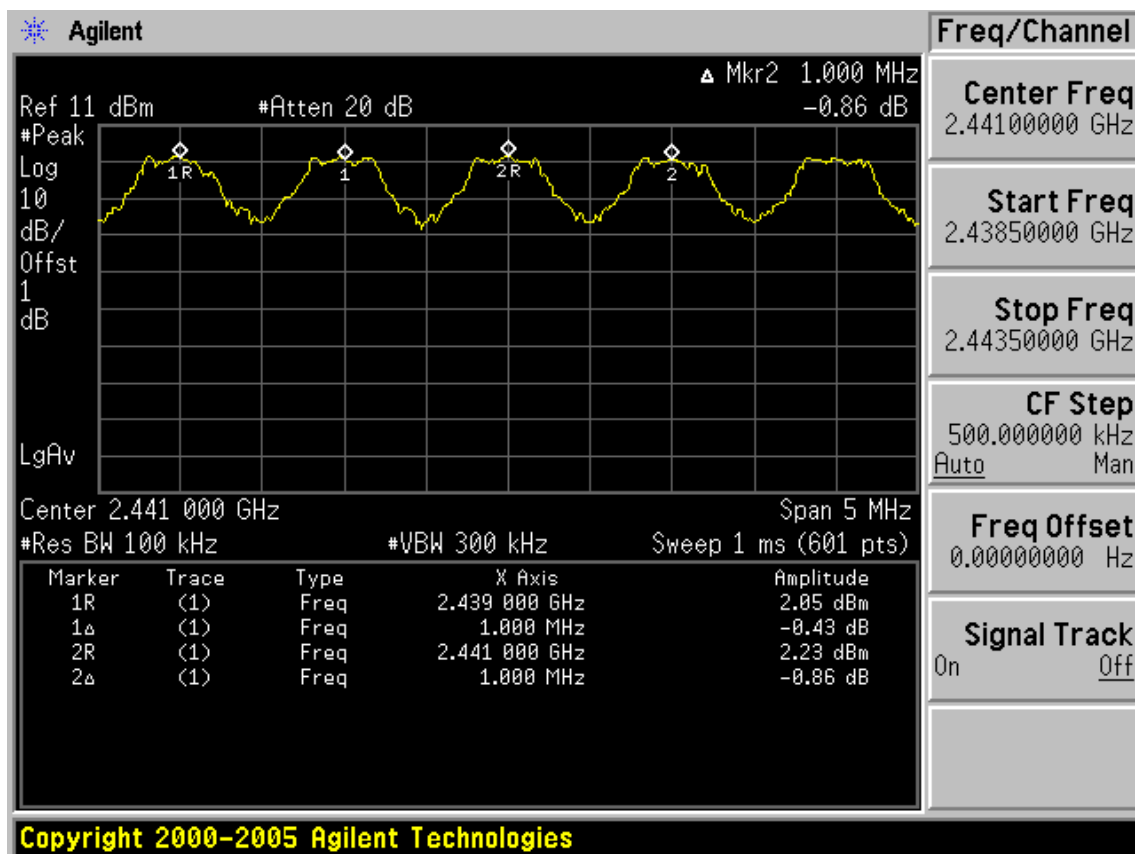
6.2. Limit

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.

6.3. Test Results.

EUT: Bluetooth Module		
M/N: BTM-S1		
Test date:2011-11-14	Pressure:100.6 kpa	Humidity:53%
Tested by: Leo-Li	Test site: RF site	Temperature:25 °C

Channel separation	Conclusion
1.00MHz	PASS



7. 20 DB BANDWIDTH TEST

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

7.2.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.

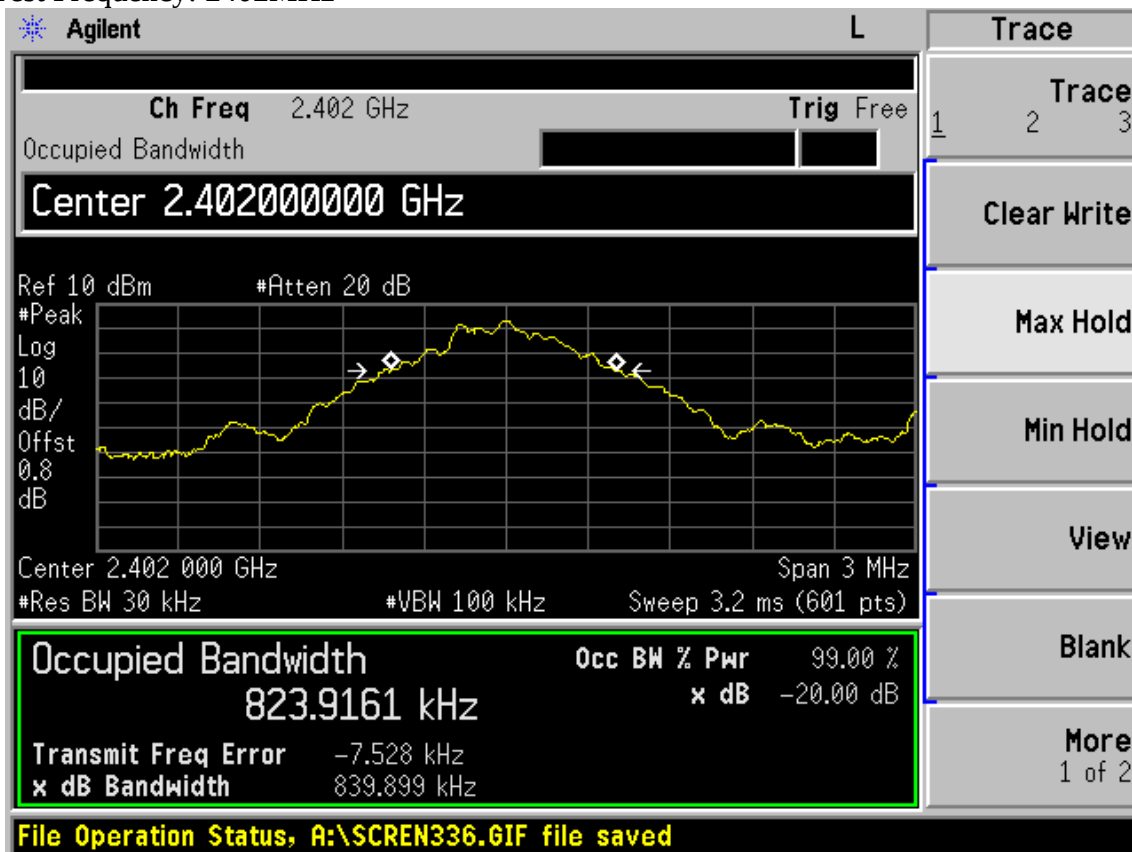
7.3.Test Results

EUT: Bluetooth Module		
M/N: BTM-S1		
Test date: 2011-11-15	Pressure: 101.6 kpa	Humidity: 52%
Tested by: Gary	Test site: RF Site	Temperature : 24.3 °C

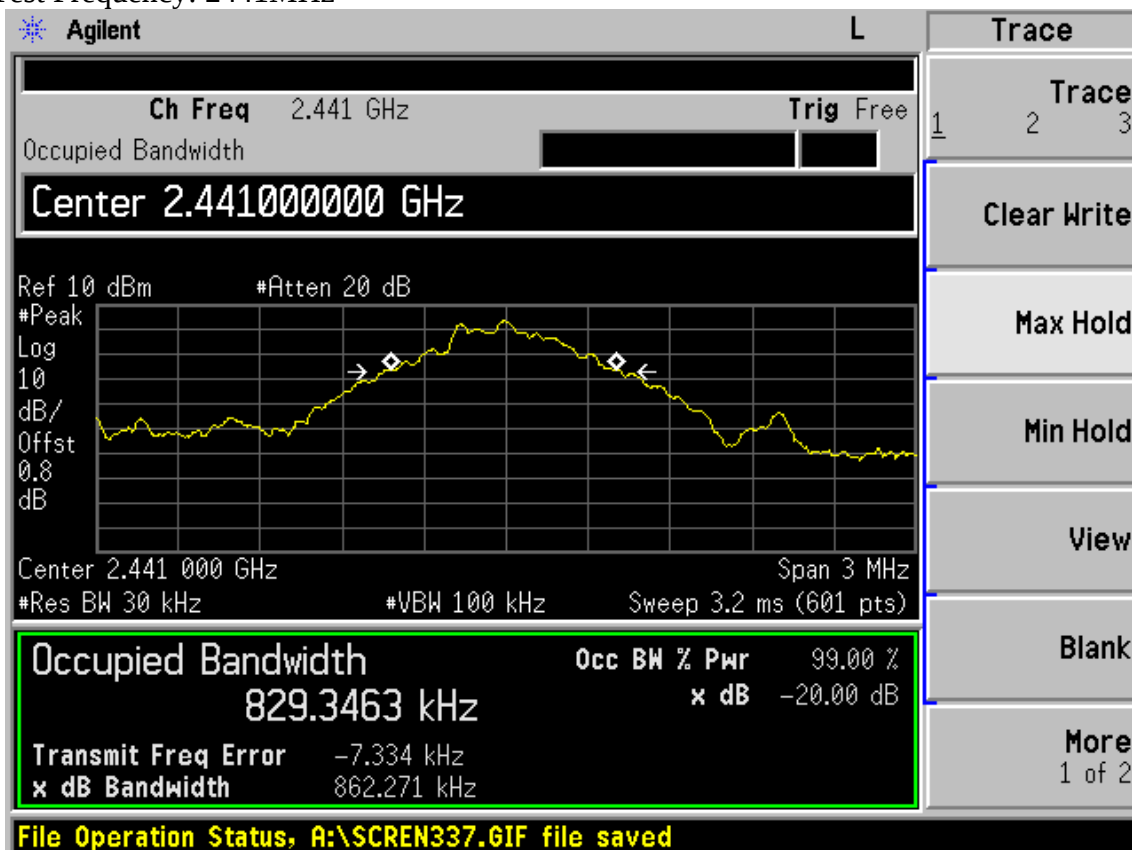
Cable loss: 0.8 dB		Attenuator loss: 20 dB	Antenna Gain: 0dBi
Test Mode	CH (MHz)	20dB bandwidth (MHz)	Limit (KHz)
GFSK	2402	0.839899	N/A
	2441	0.862271	N/A
	2480	0.857400	N/A
8-DPSK	2402	1.215	N/A
	2441	1.207	N/A
	2480	1.214	N/A
Conclusion : PASS			

GFSK

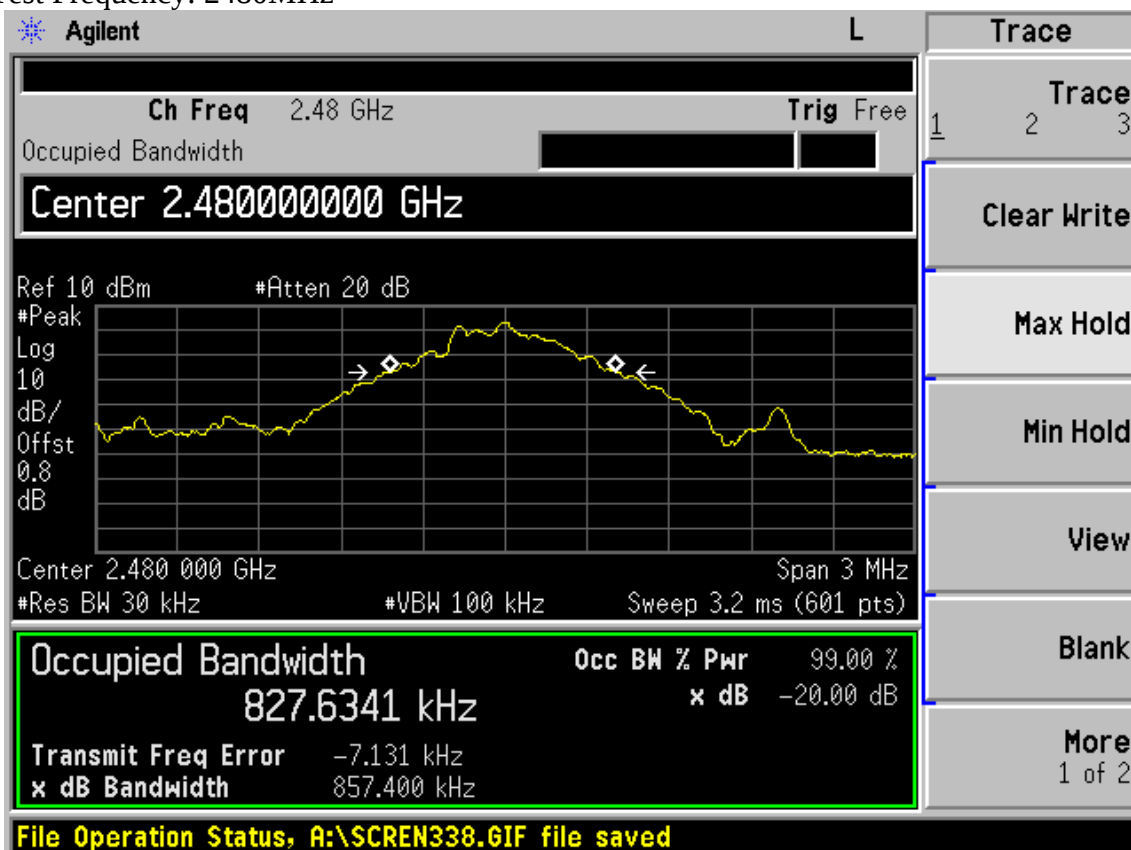
Test Frequency: 2402MHz



Test Frequency: 2441MHz

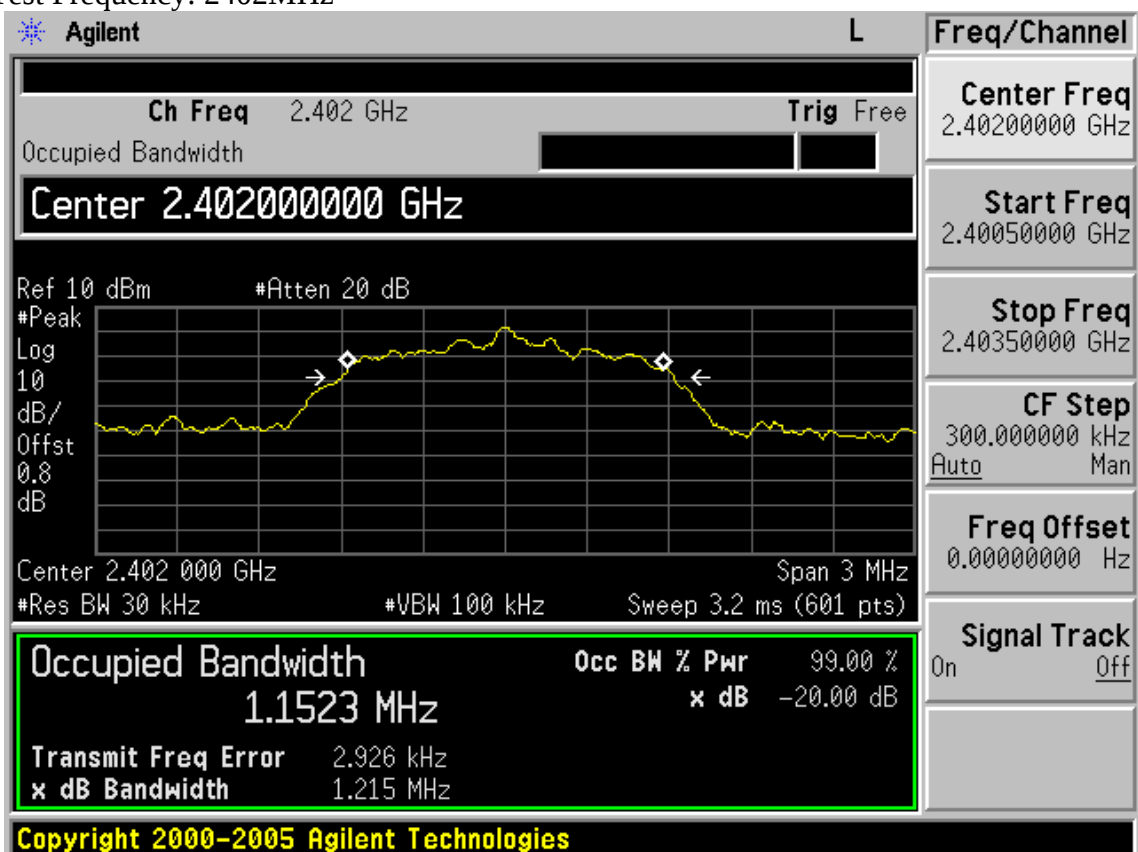


Test Frequency: 2480MHz

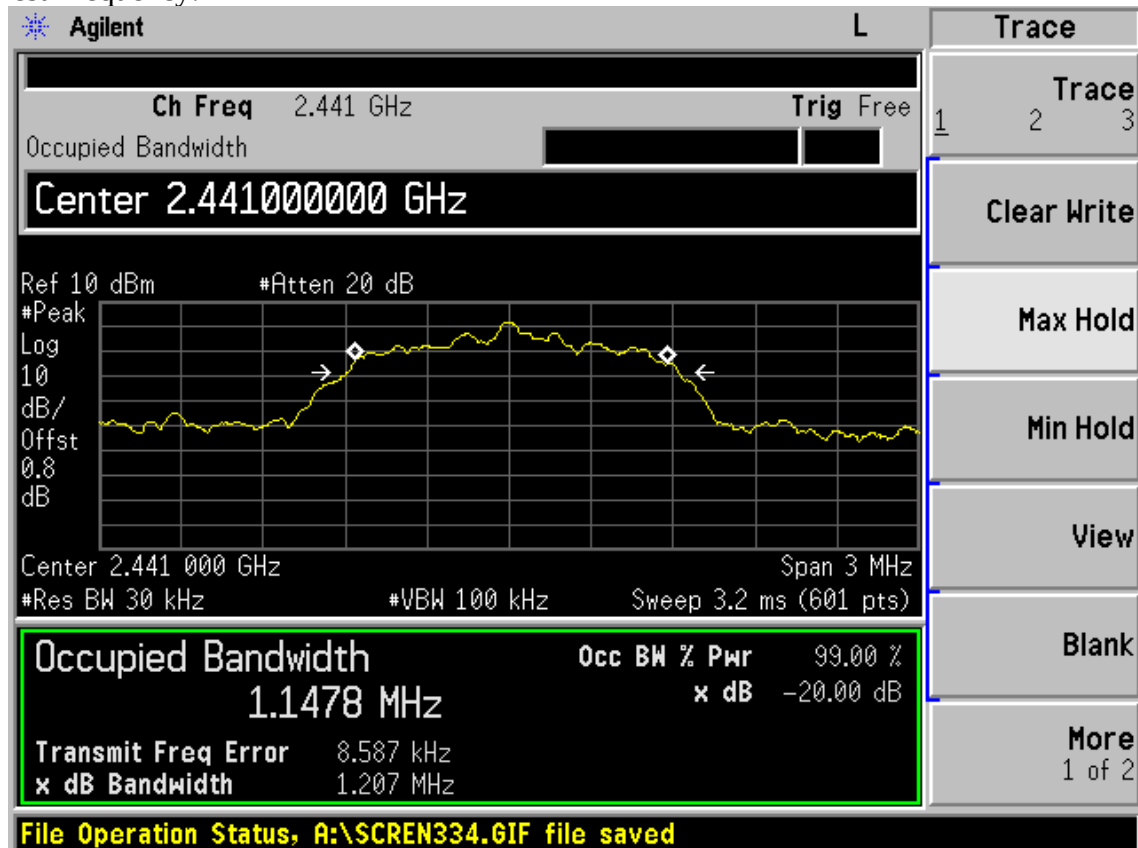


8-DPSK

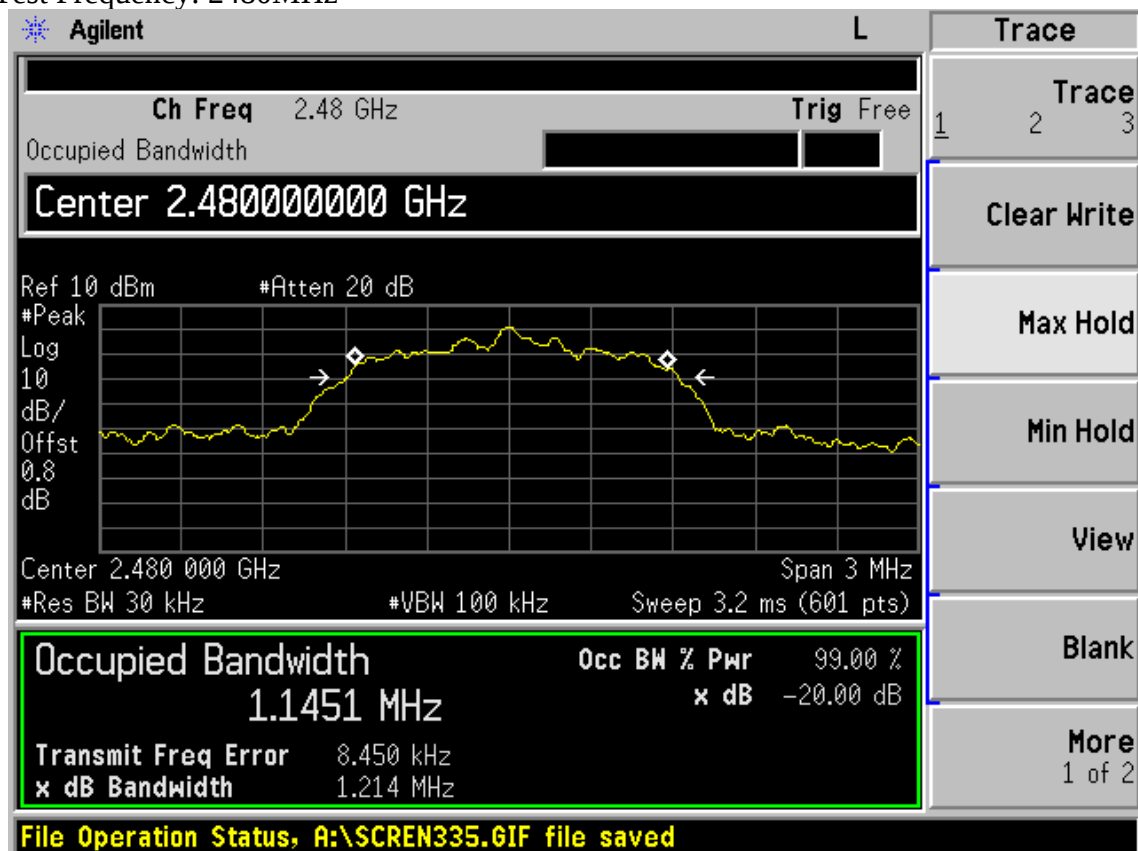
Test Frequency: 2402MHz



Test Frequency: 2441MHz



Test Frequency: 2480MHz



8. NUMBER OF HOPPING FREQUENCY 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

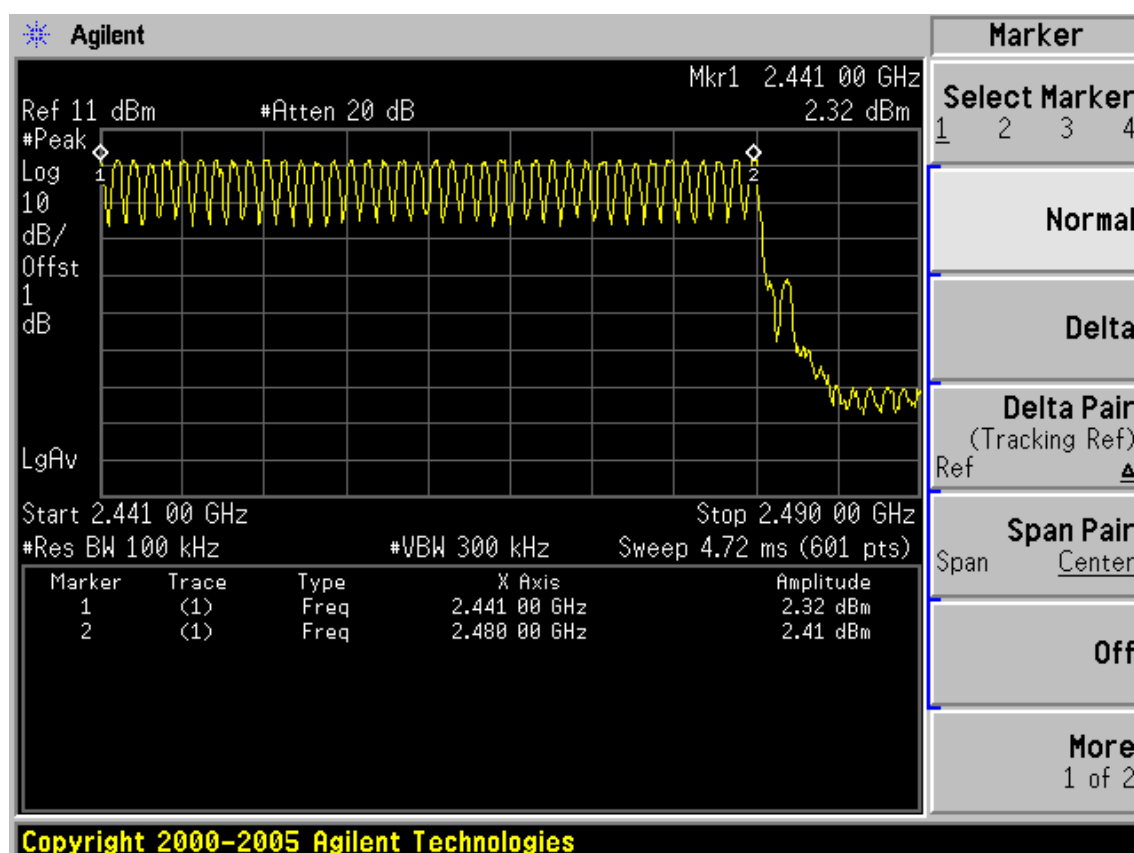
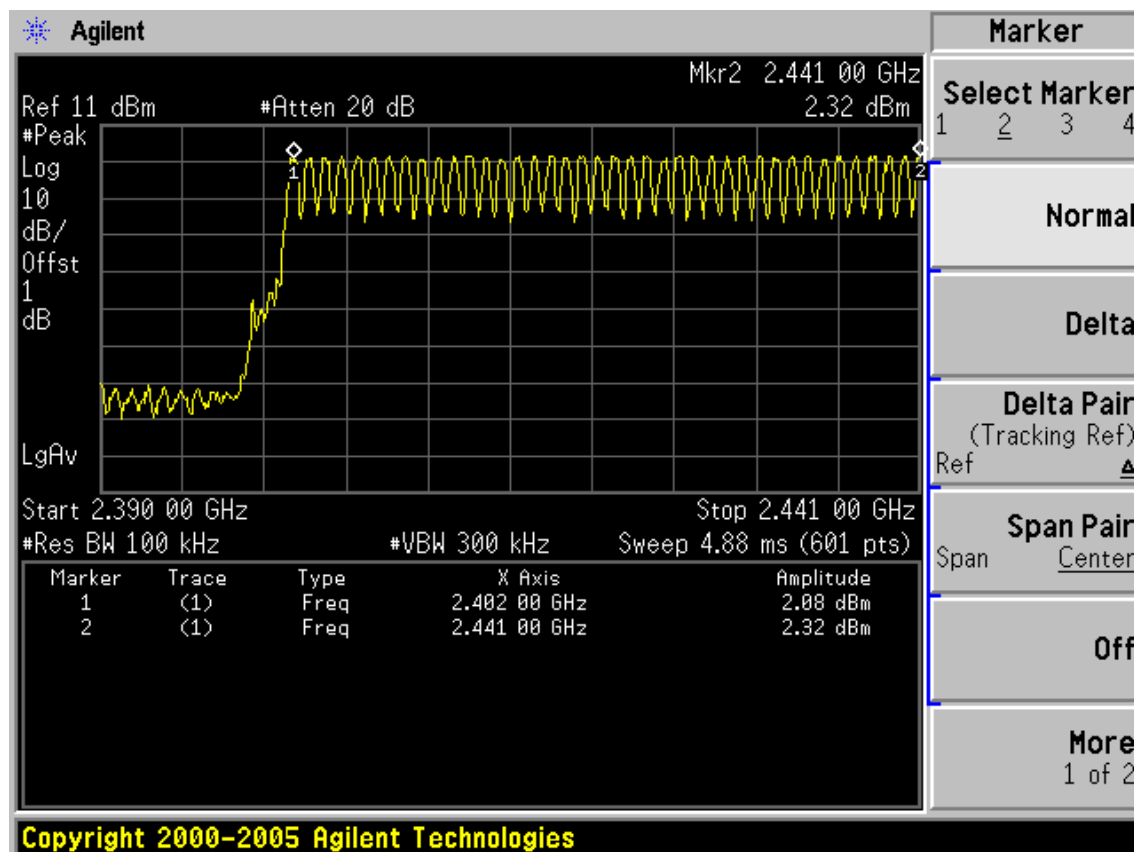
8.2. Limit

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

8.3. Test Results

EUT: Bluetooth Module		
M/N: BTM-S1		
Test date:2011-11-15	Pressure:100.6 kpa	Humidity:53%
Tested by:Leo-Li	Test site: RF site	Temperature:25 °C

Number of channel	Limit	Conclusion
79	≥ 15	PASS



9. DWELL TIME

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

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.

9.3. Test Results

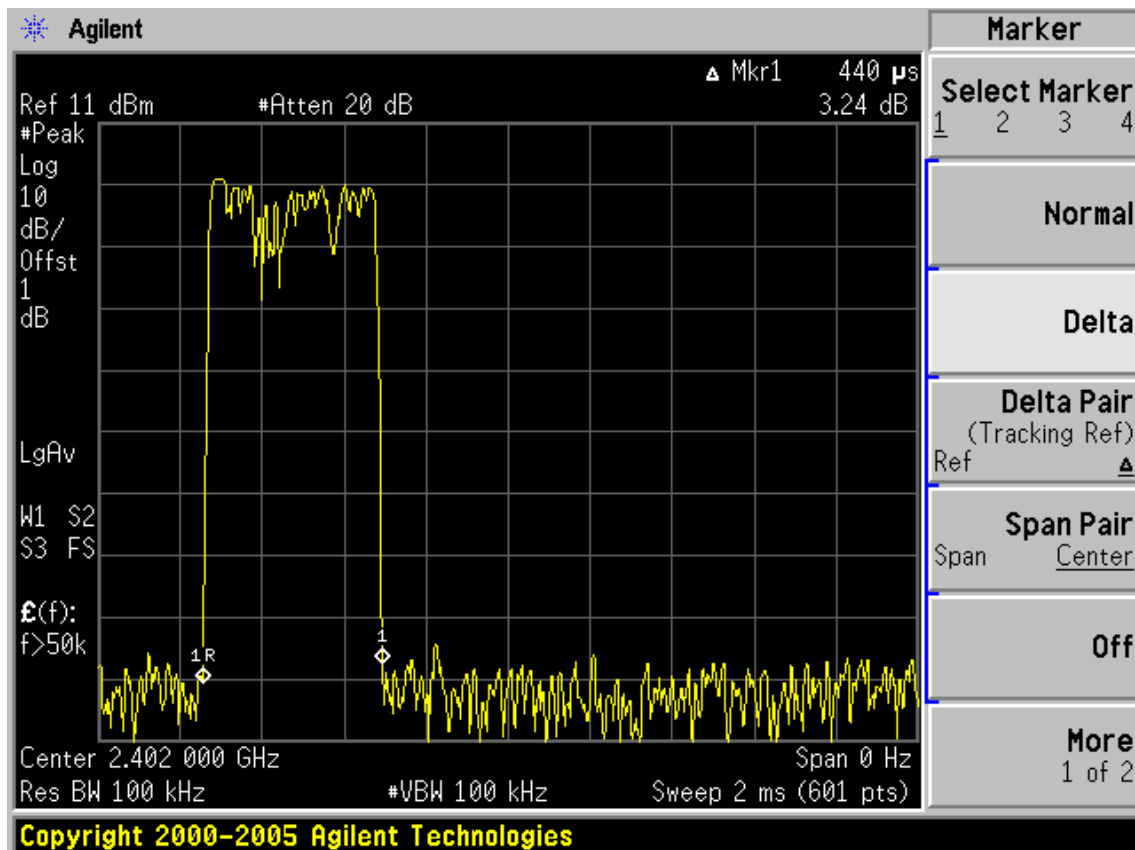
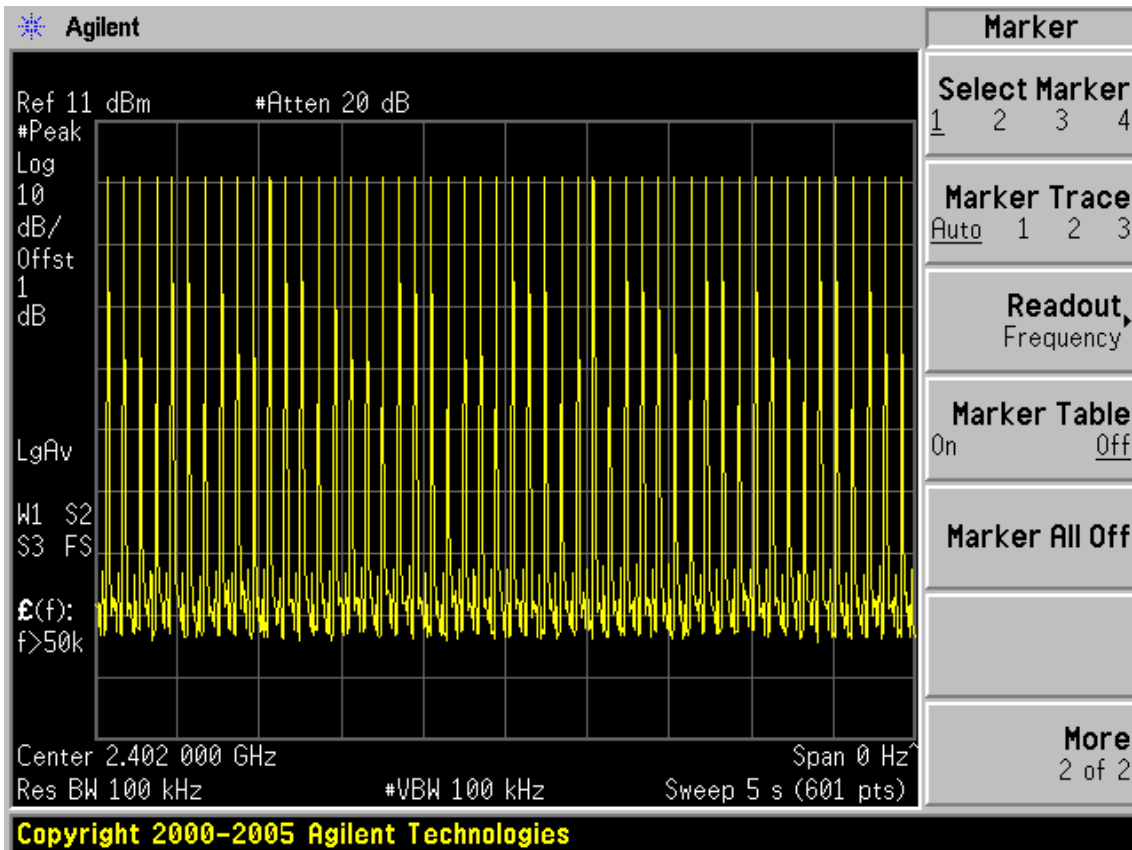
EUT: Bluetooth Module		
M/N: BTM-S1		
Test date:2011-11-15	Pressure:100.6 kpa	Humidity:53%
Tested by:Leo-Li	Test site: RF site	Temperature:25 °C

Mode		dwel time	Limit	Conclusion
GFSK	DH1	50hops/5s*0.4*79chanel*s*0.44ms =139.04ms	<400ms	PASS
	DH3	25hops/5s*0.4*79chanel*s*1.708ms =269.86ms	<400ms	PASS
	DH5	17hops/5s*0.4*79chanel*s*2.973ms=319.42ms	<400ms	PASS
8-DPSK	DH1	51hops/5s*0.4*79chanel*s*0.4567ms =147.2ms	<400ms	PASS
	DH3	26hops/5s*0.4*79chanel*s*1.717ms =282.14ms	<400ms	PASS
	DH5	17hops/5s*0.4*79chanel*s*2.973ms =319.41ms	<400ms	PASS

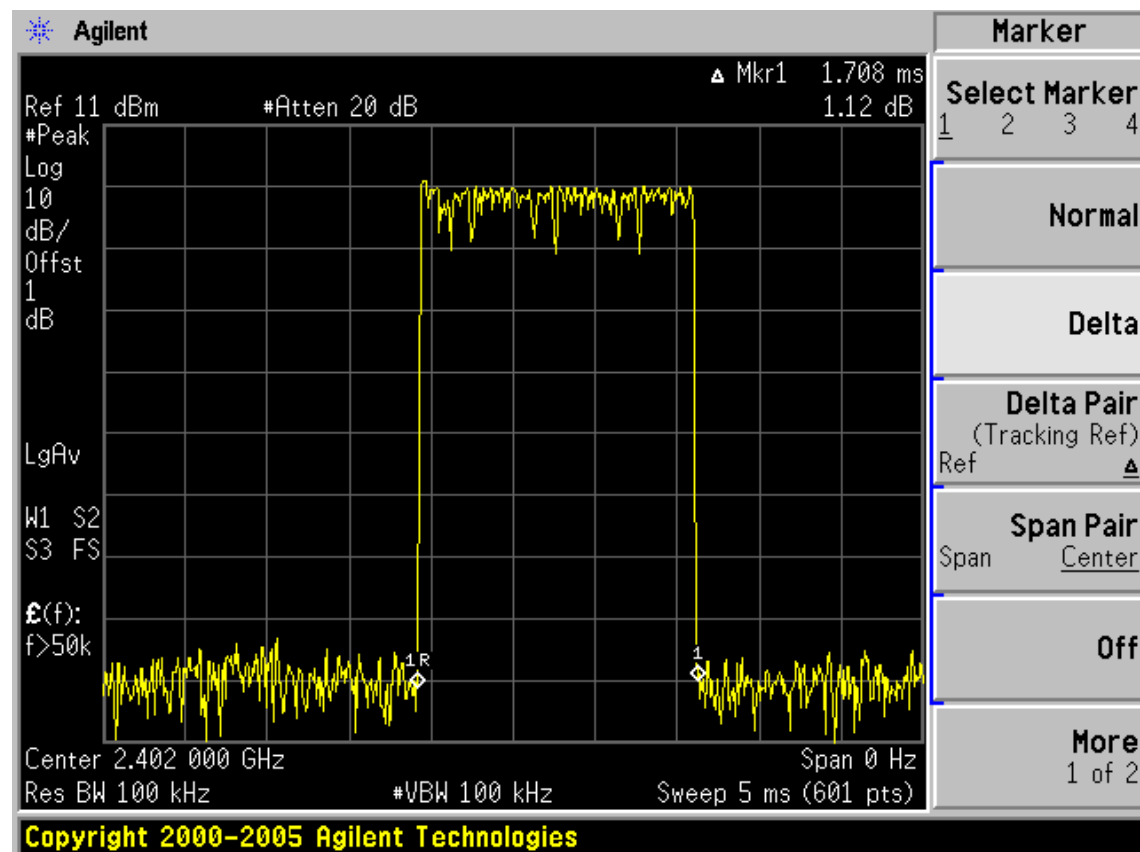
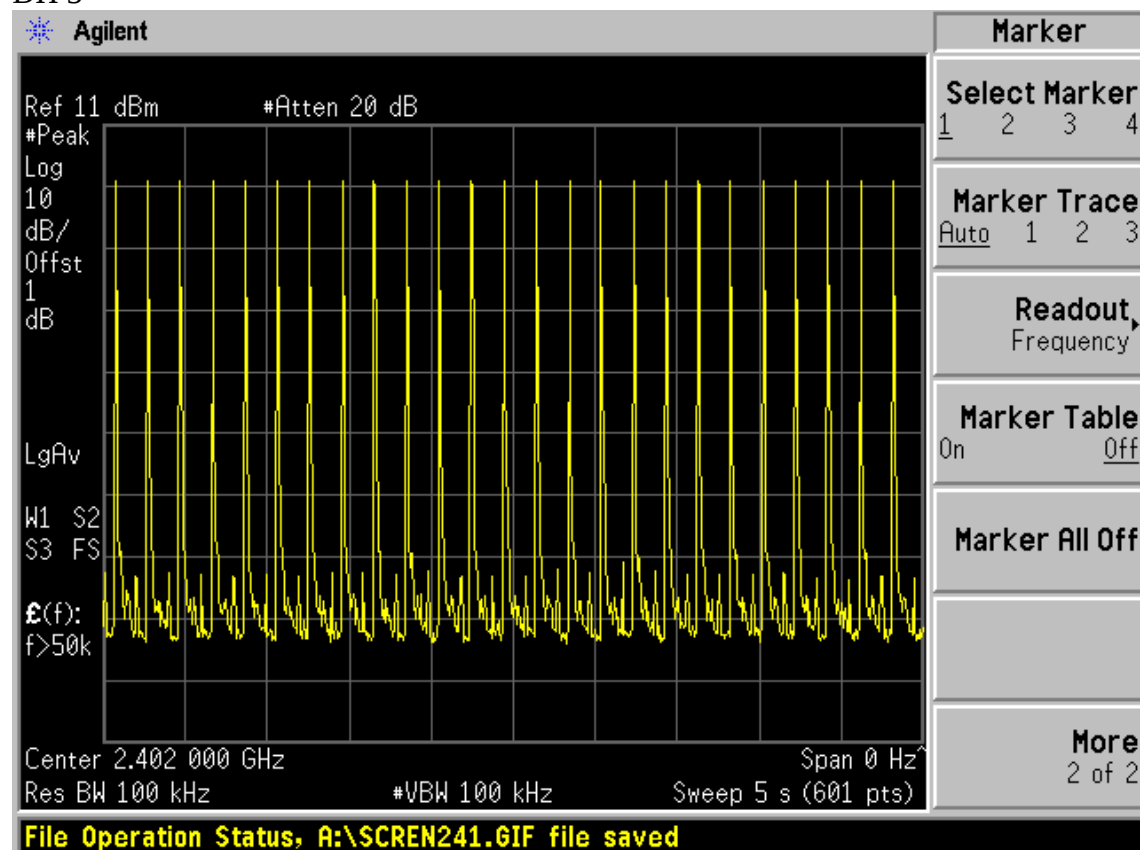
Note: All the lower levels were signal from receiver's, and should not considered in here.

GFSK

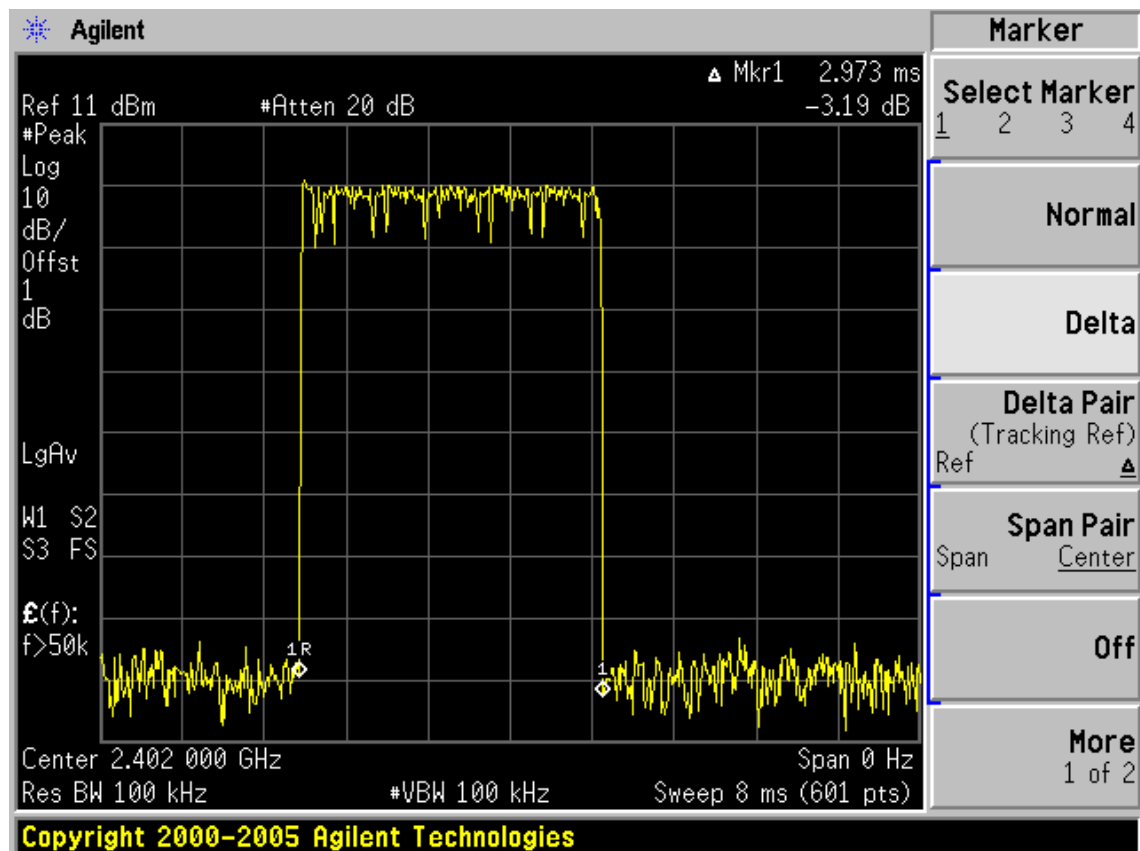
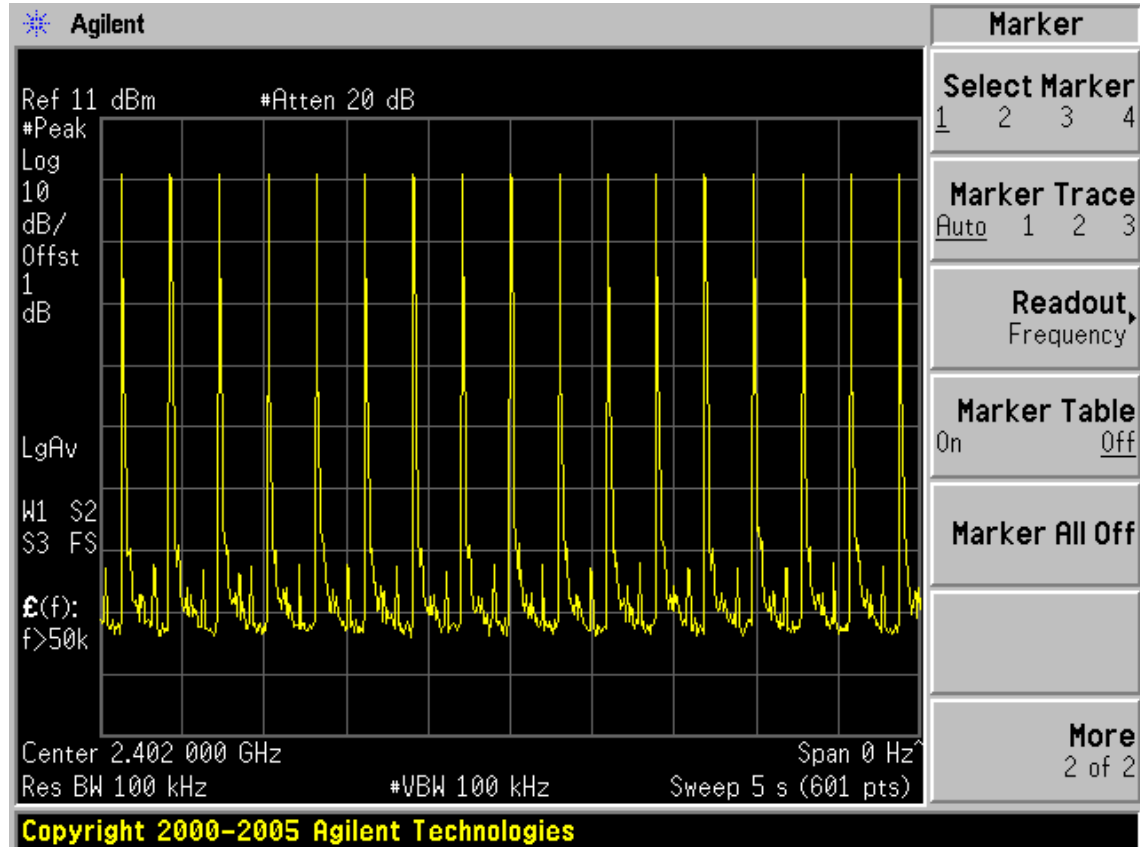
DH 1



DH 3

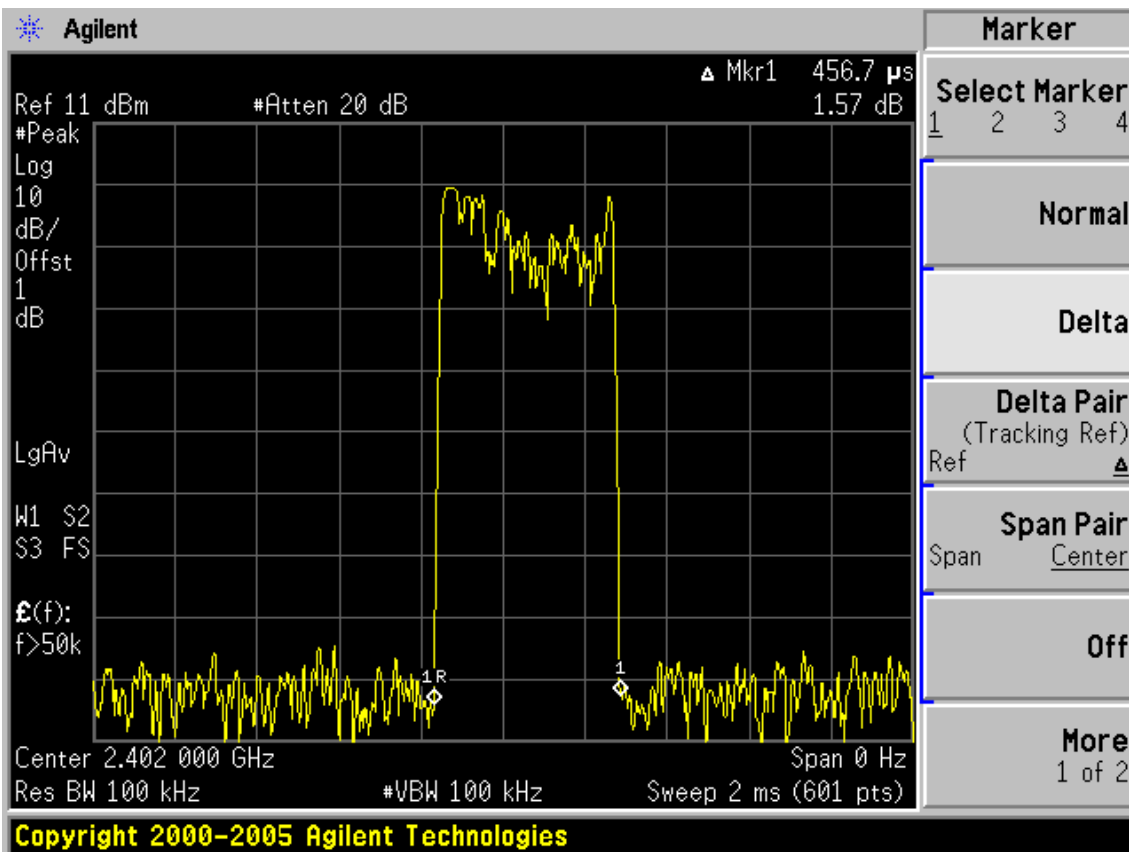
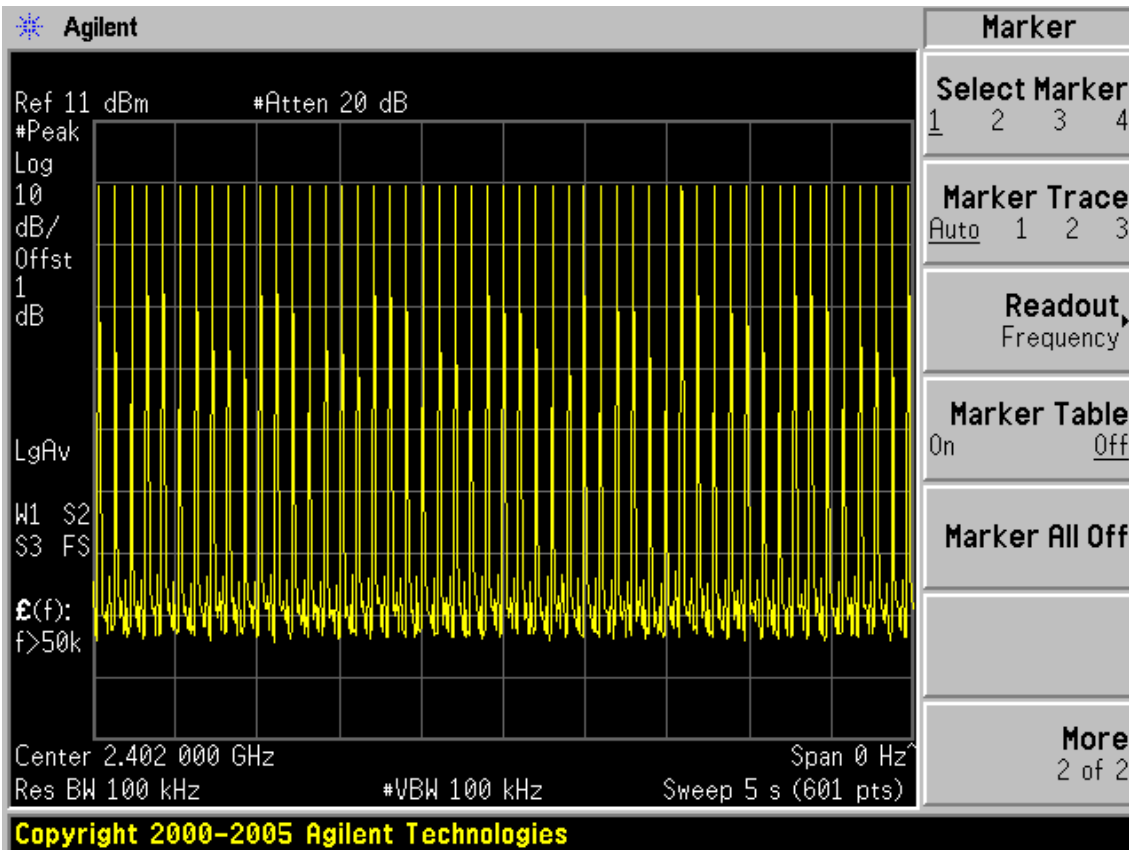


DH 5

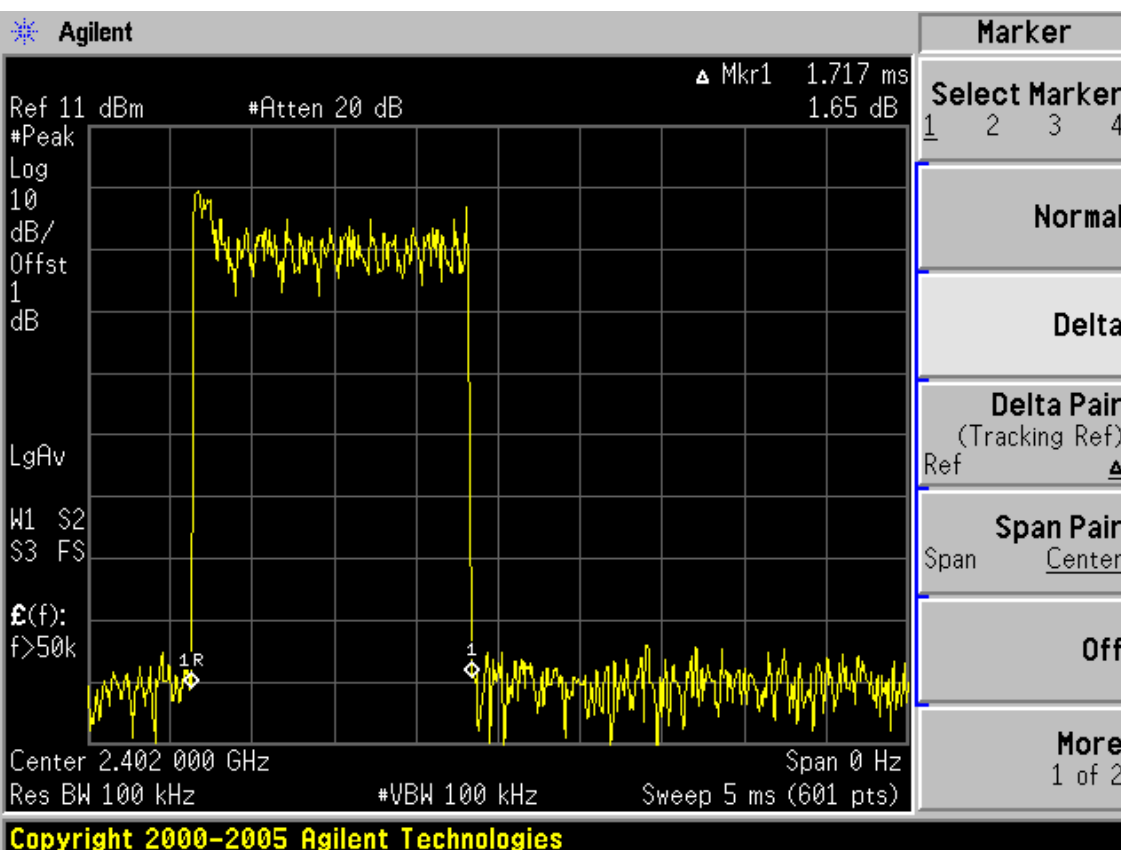
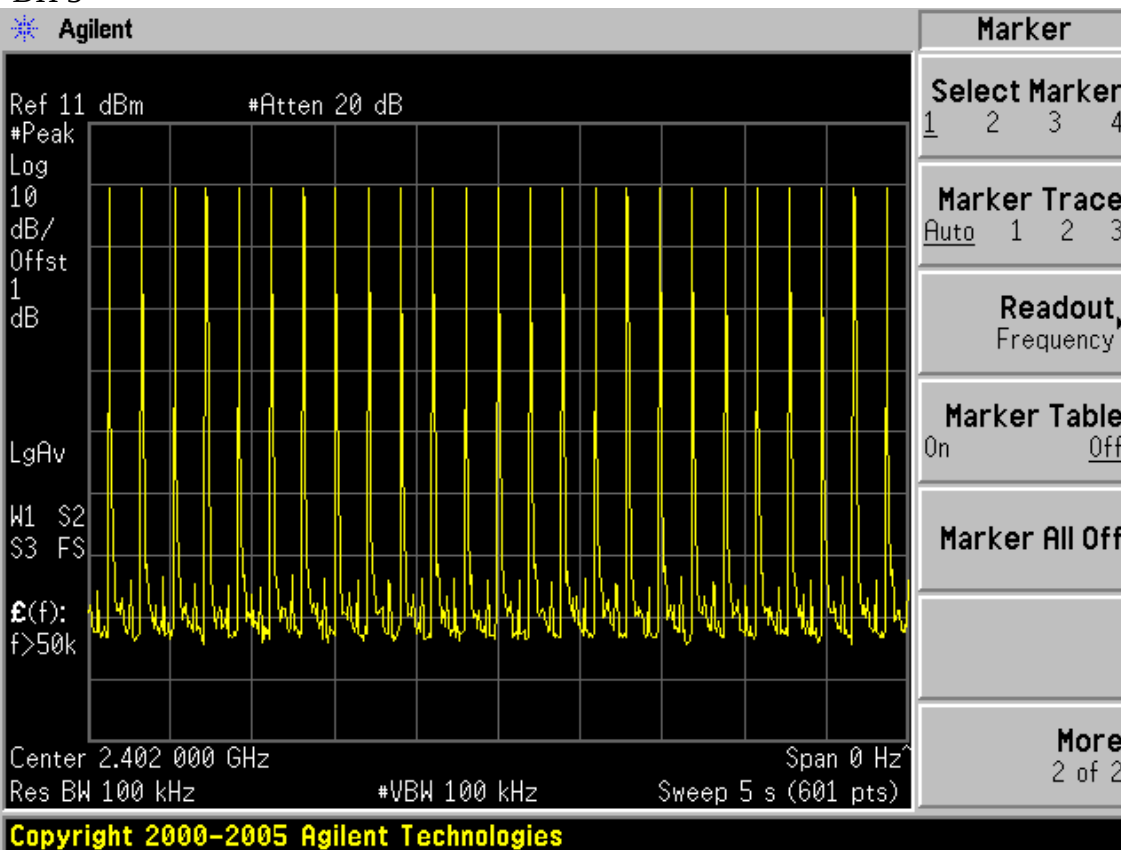


8-DPSK

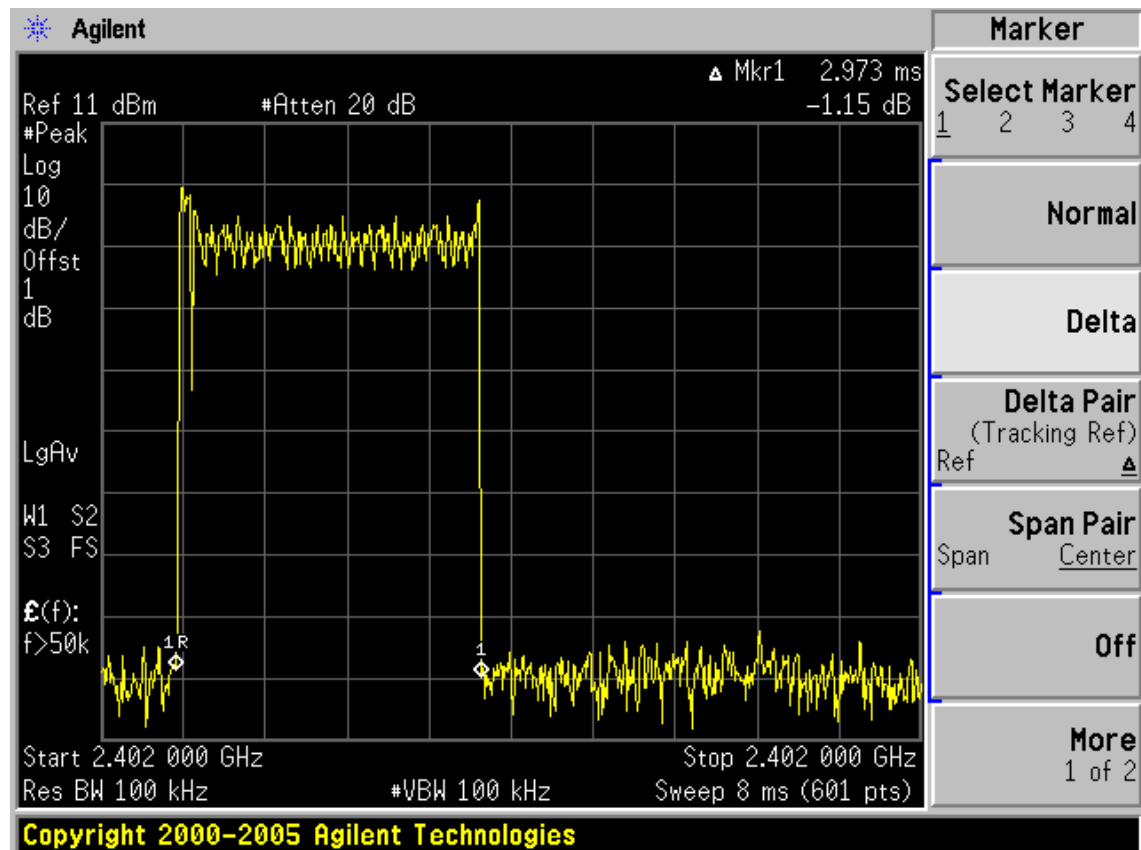
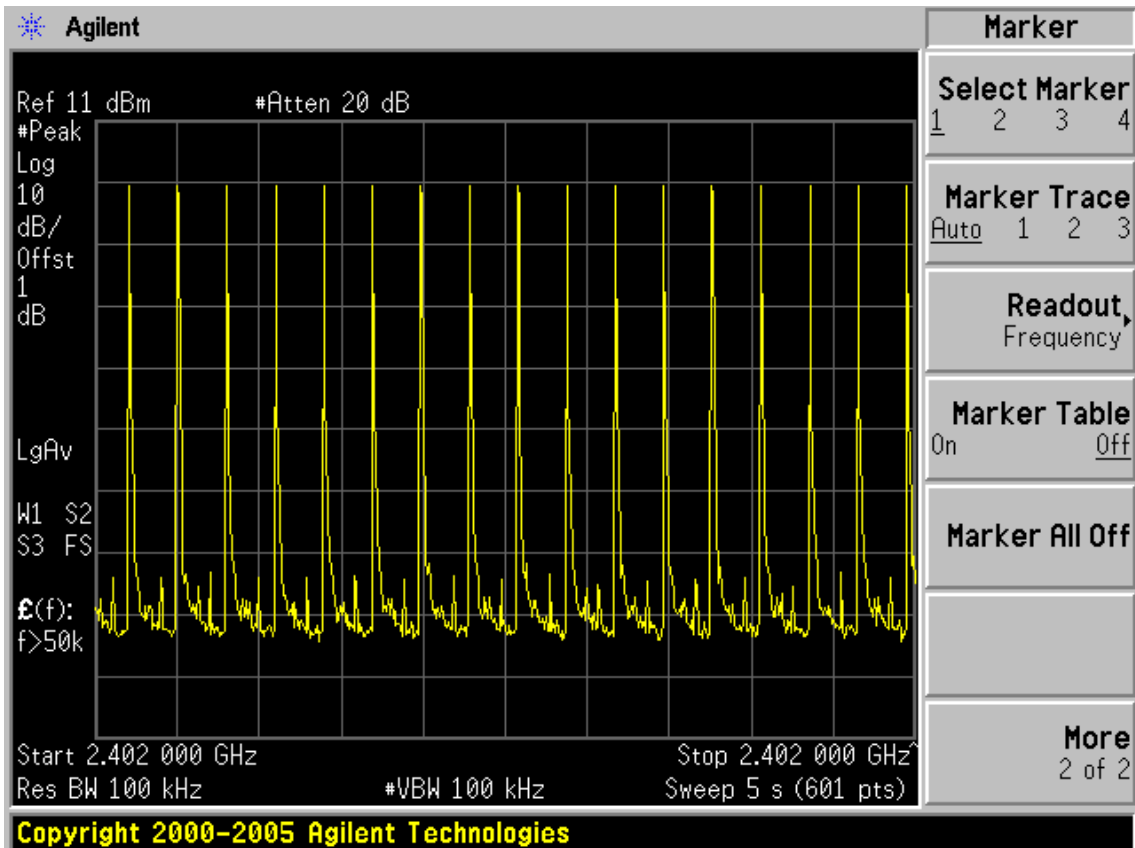
DH 1



DH 3



DH 5



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

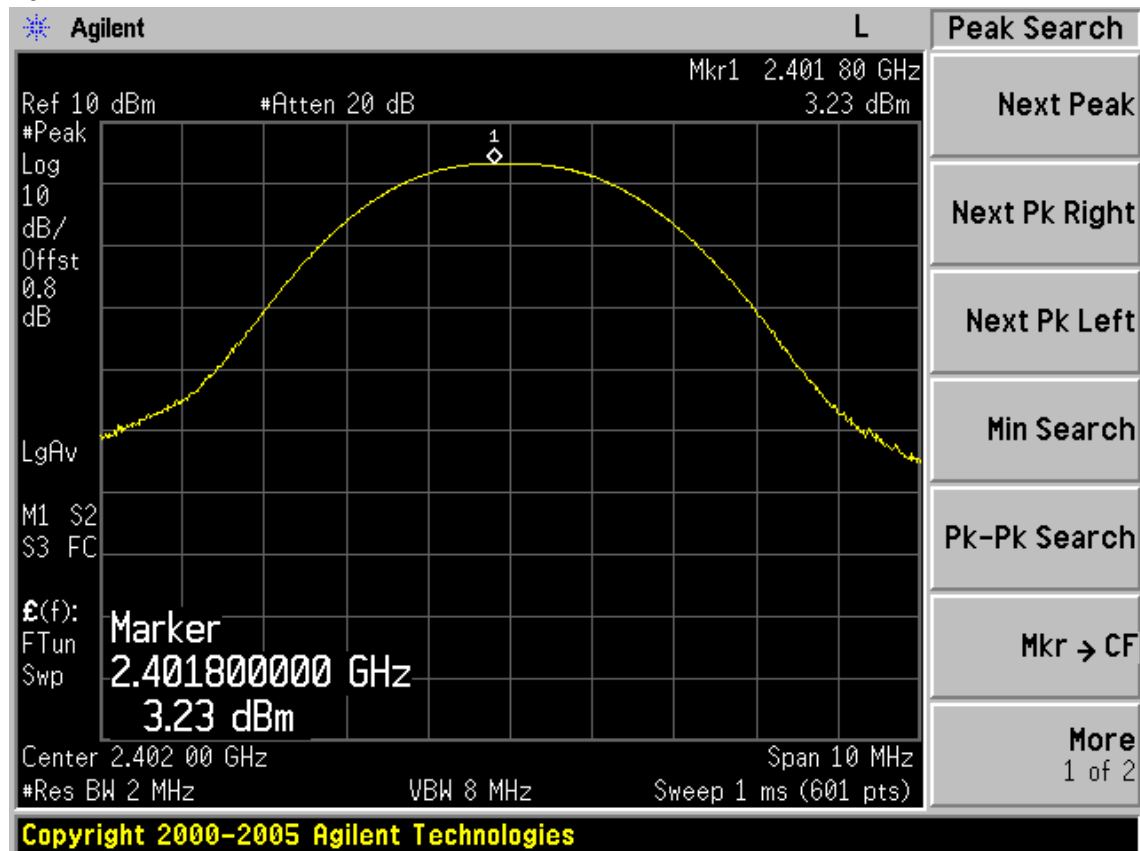
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.4.Test Results

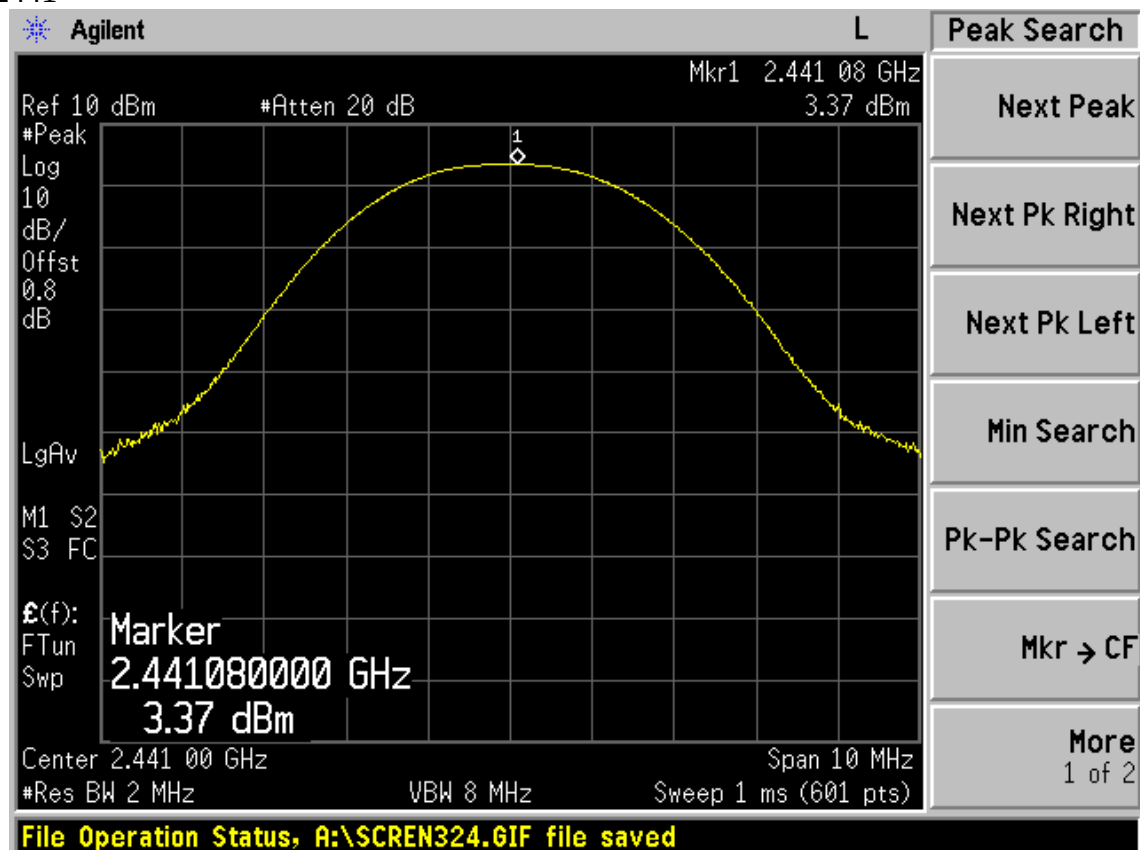
EUT: Bluetooth Module			
M/N: BTM-S1			
Test date: 2011-11-15		Pressure: 101.7 kpa	Humidity: 52%
Tested by: Gary		Test site: RF site	Temperature: 24.3 °C
Cable loss: 0.8 dB		Attenuator loss: 20 dB	Antenna Gain: 0 dBi
Test Mode	CH (MHz)	Peak output Power (dBm)	Limit (dBm)
8-DPSK	2402	2.55	30
	2441	2.70	30
	2480	2.02	30
GFSK	2402	3.23	30
	2441	3.37	30
	2480	2.90	30
Conclusion: PASS			

GFSK

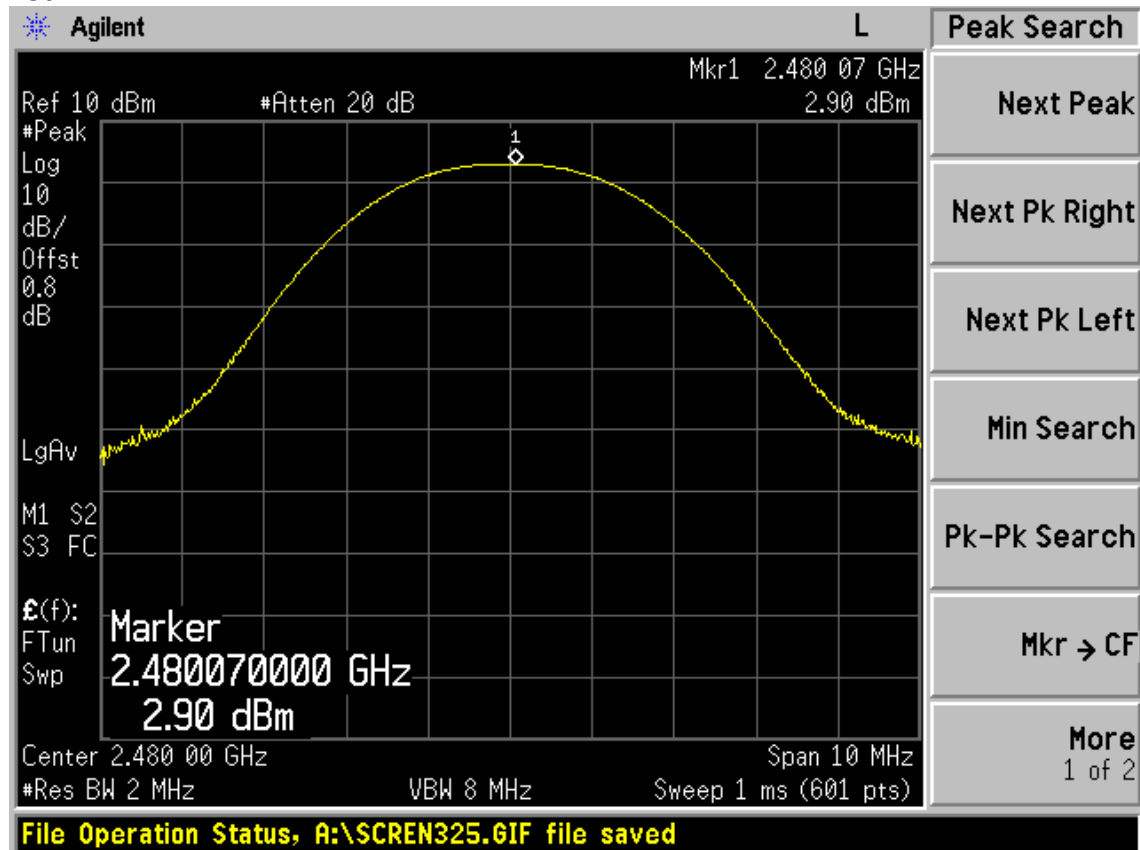
2402



2441

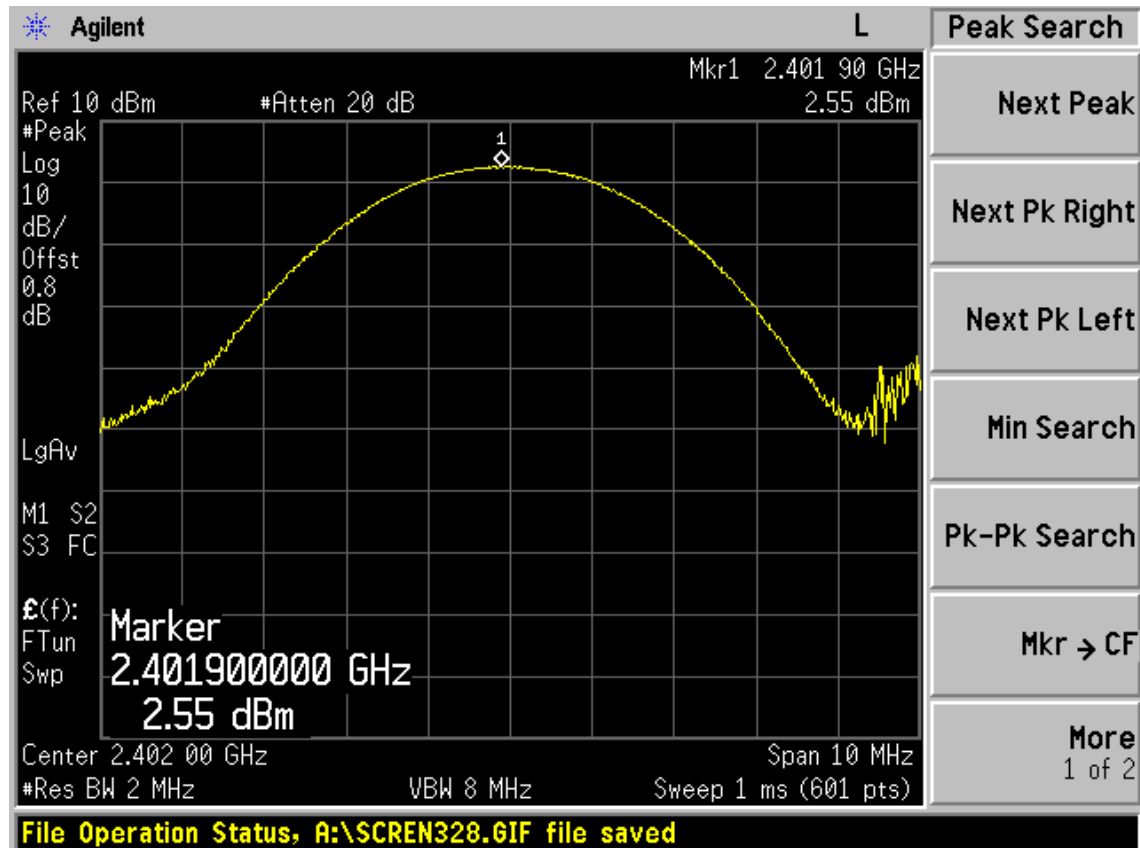


2480

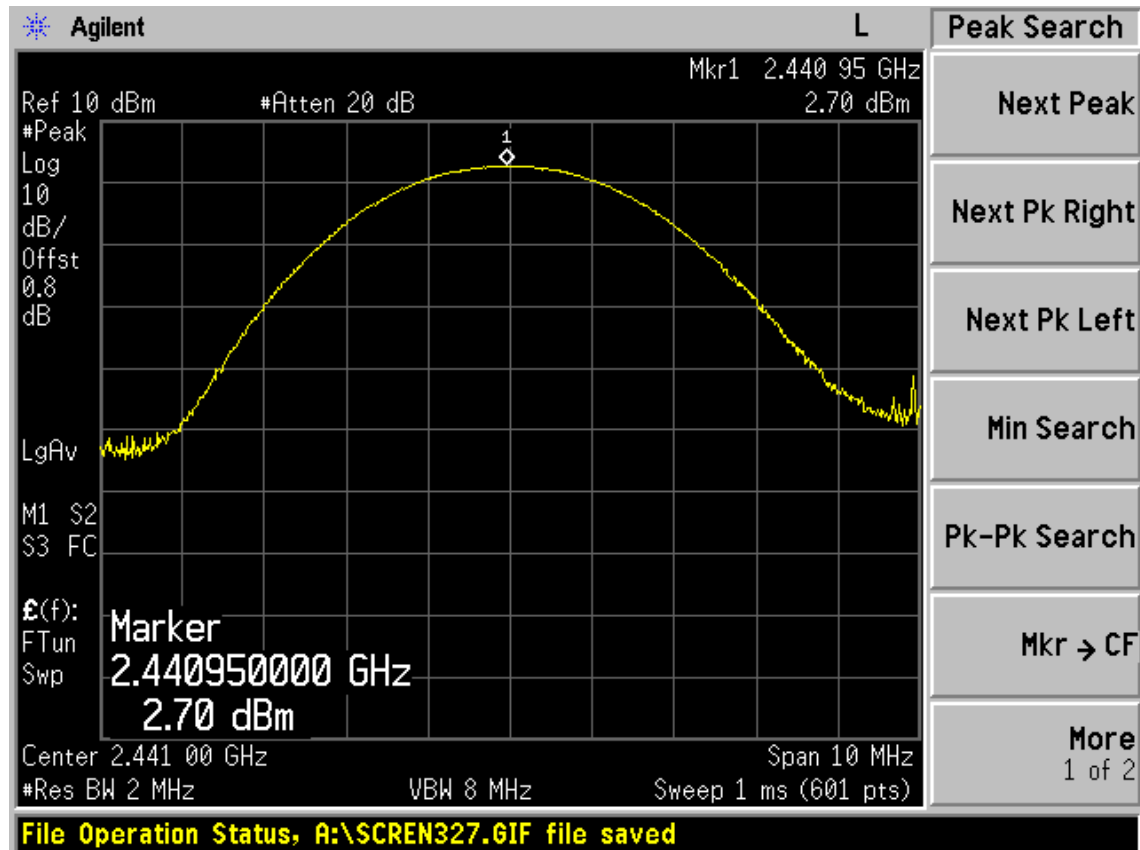


8-DPSK

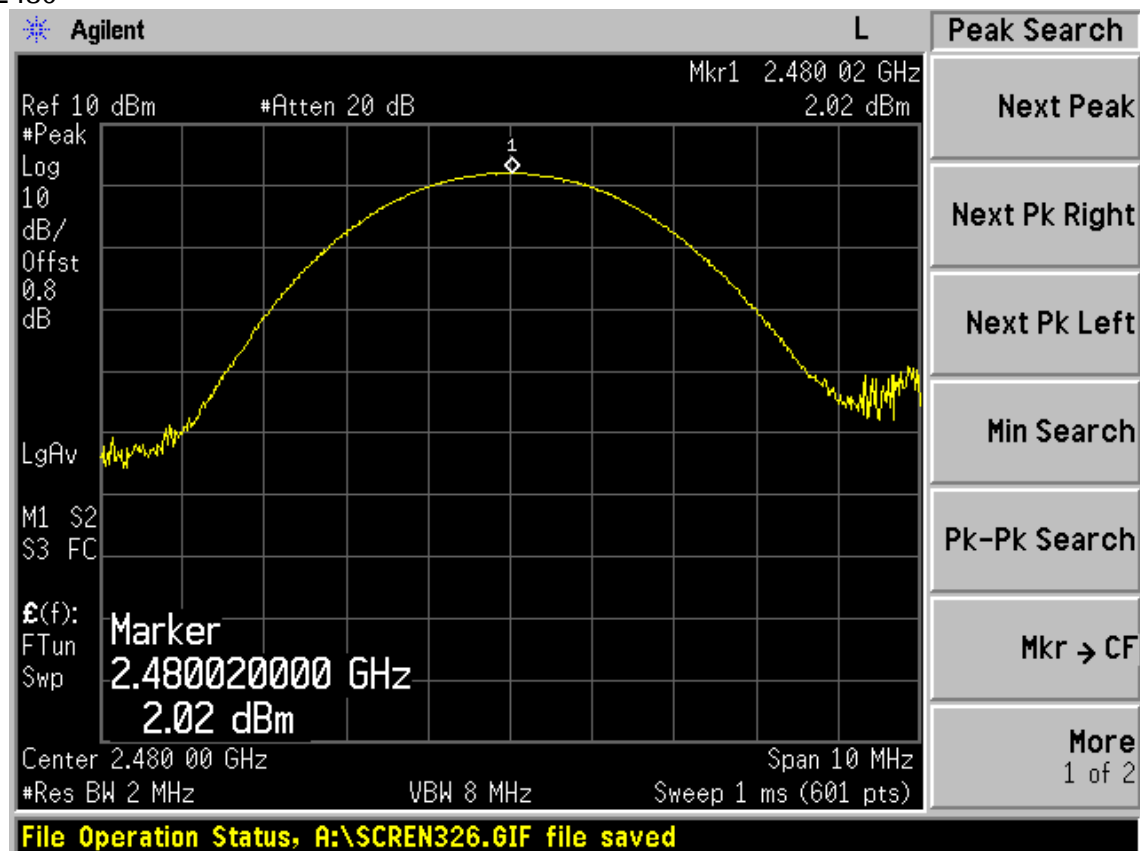
2402



2441



2480



11.BAND EDGE COMPLIANCE TEST

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
2.	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 10	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

11.2.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.

11.3.Test Produce

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz) from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

For emissions above two bandwidths away from the band-edge use below 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) AV: RBW=1MHz ;VBW=10Hz, Sweep=AUTO

11.4.Test Results

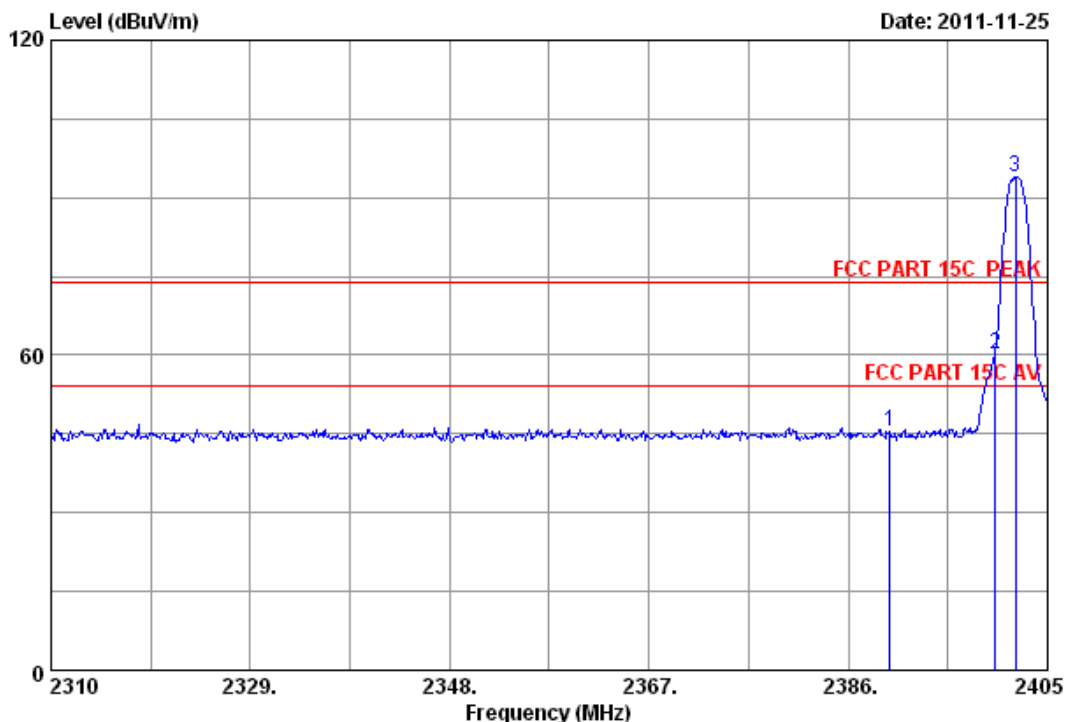
Pass (The testing data was attached in the next pages.)

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

Data: 5

File: E:\2011 report data\S\sony\ACS1102188 Module.EM6 (68)

Date: 2011-11-25

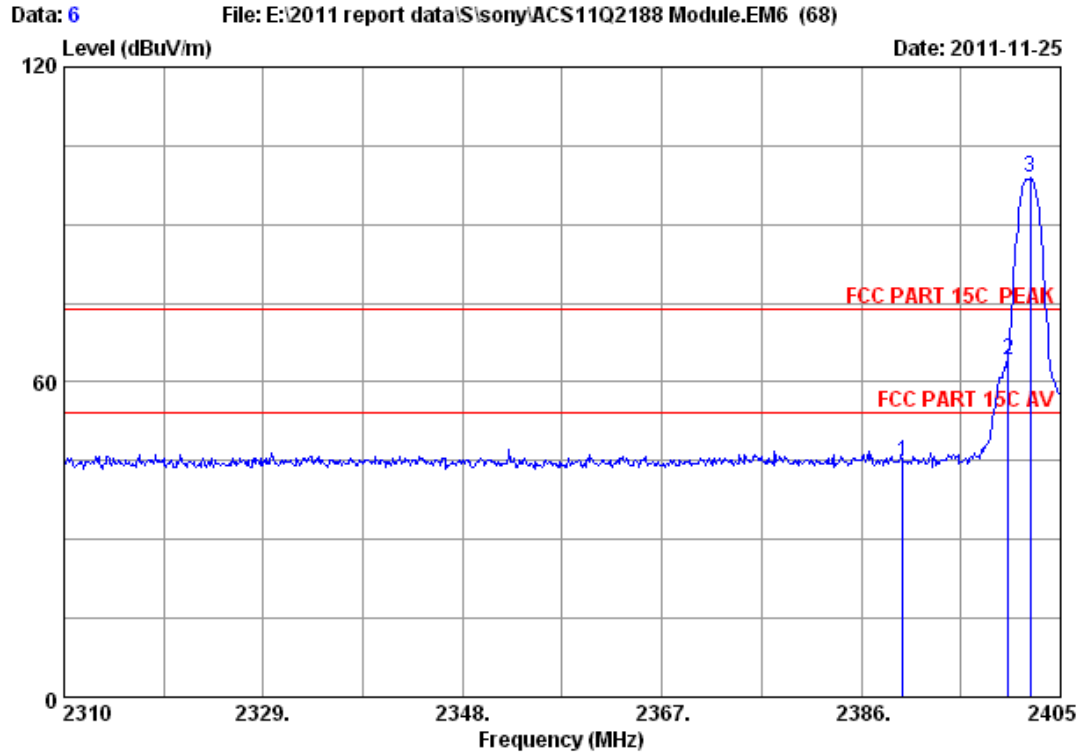


Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : GFSK 2402MHz Tx
 M/N : BTM-S1

	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	2390.000	27.96	6.72	34.44	45.20	45.44	74.00	28.56	Peak
2	2400.000	27.96	6.75	34.44	59.75	60.02	74.00	13.98	Peak
3	2401.960	27.96	6.75	34.44	93.53	93.80	74.00	-19.80	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.

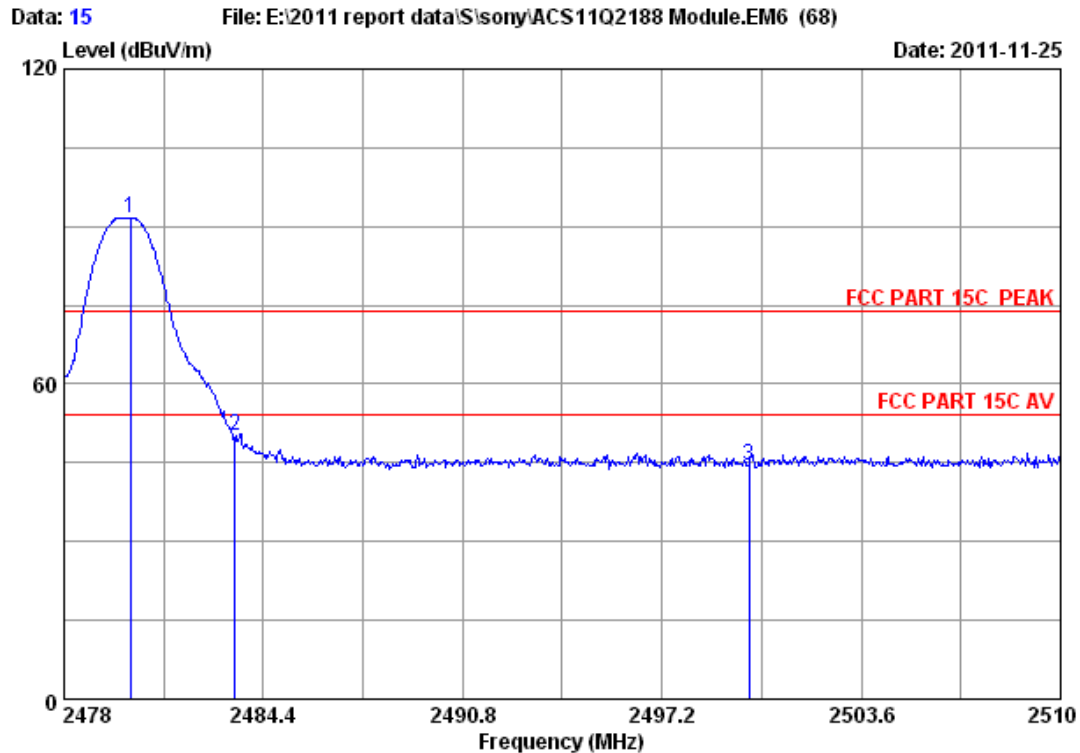


Site no.	: 3m Chamber	Data no.	: 6
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2402MHz Tx		
M/N	: BTM-S1		

	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	2390.000	27.96	6.72	34.44	44.65	44.89	74.00	29.11	Peak
2	2400.000	27.96	6.75	34.44	63.92	64.19	74.00	9.81	Peak
3	2402.150	27.96	6.75	34.44	98.51	98.78	74.00	-24.78	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.	: 15
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: GFSK 2480MHz Tx		
M/N	: BTM-S1		

	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	2480.144	28.08	6.87	34.45	91.22	91.72	74.00	-17.72	Peak
2	2483.500	28.08	6.90	34.45	49.57	50.10	74.00	23.90	Peak
3	2500.000	28.10	6.90	34.45	43.91	44.46	74.00	29.54	Peak

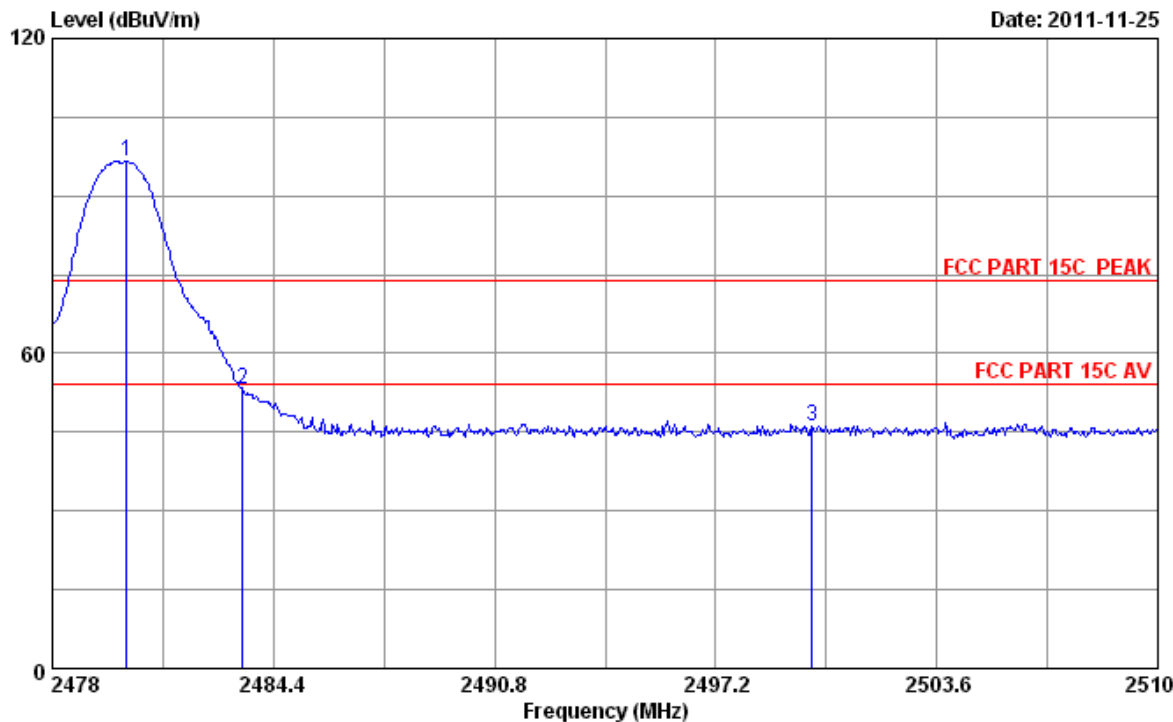
Remarks:

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

Data: 16

File: E:\2011 report data\S\sony\ACS11Q2188 Module.EM6 (68)

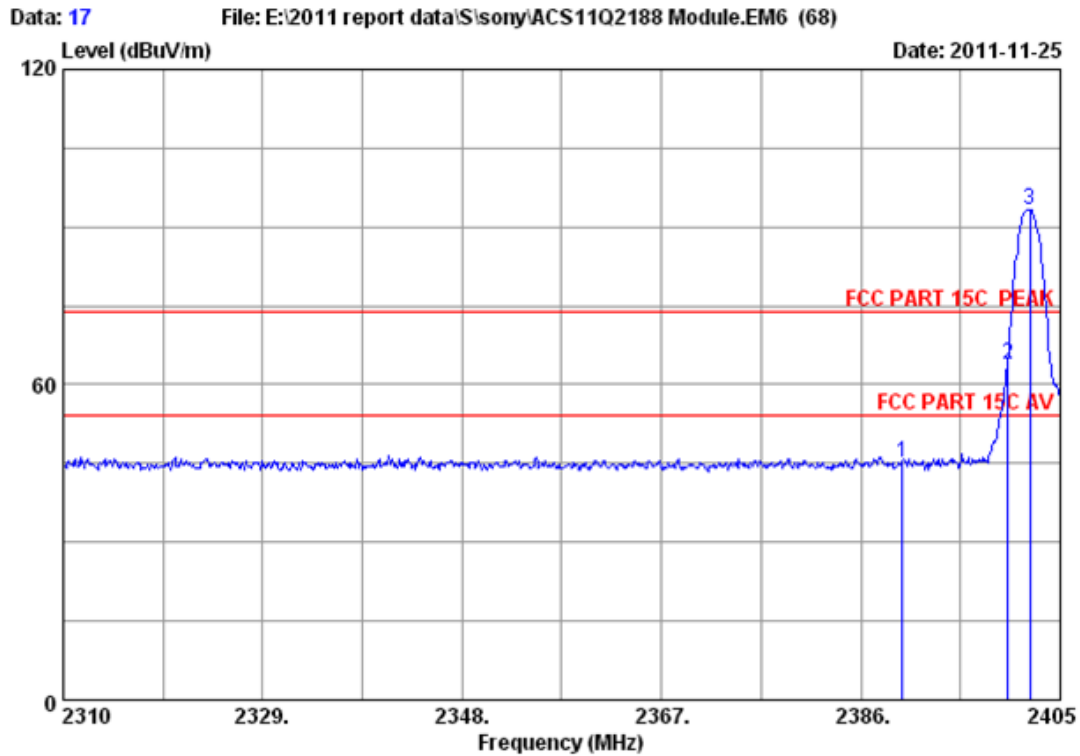
Date: 2011-11-25



Site no.	: 3# Chamber	Data no.	: 16
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/56%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power Rating	: DC 3.3V		
Test Mode	: GFSK 2480MHz Tx		
M/N	: BTM-S1		

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dBuV)	Emission				Remark
					Reading (dBuV/m)	Level (dBuV/m)	Limits (dB)	Margin (dB)	
1	2480.144	28.08	6.87	34.45	95.98	96.48	74.00	-22.48	Peak
2	2483.500	28.08	6.90	34.45	52.78	53.31	74.00	20.69	Peak
3	2500.000	28.10	6.90	34.45	45.44	45.99	74.00	28.01	Peak

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

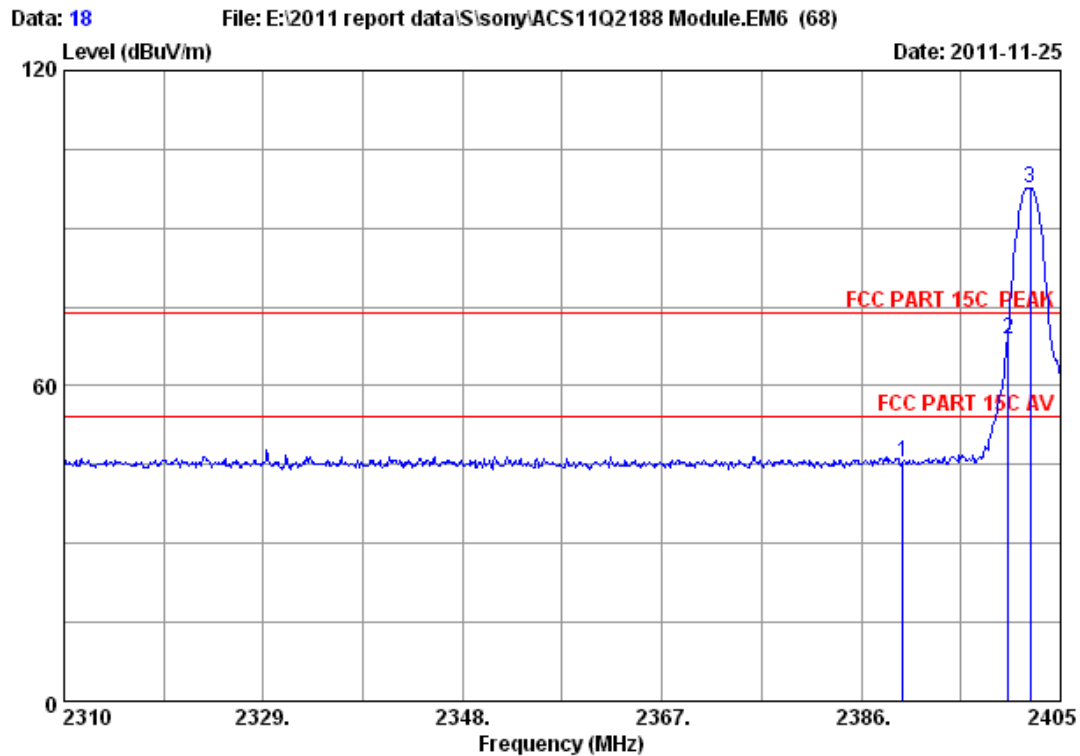


Site no.	: 3m Chamber	Data no.	: 17
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 24°C/66%	Engineer	: Leo-Li
EUT	: Bluetooth Module		
Power supply	: DC 3.3V		
Test mode	: 8DPSK 2402MHz Tx		
M/N	: BTM-S1		

	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	2390.000	27.96	6.72	34.44	44.81	45.05	74.00	28.95	Peak
2	2400.000	27.96	6.75	34.44	63.64	63.91	74.00	10.09	Peak
3	2402.150	27.96	6.75	34.44	93.05	93.32	74.00	-19.32	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.

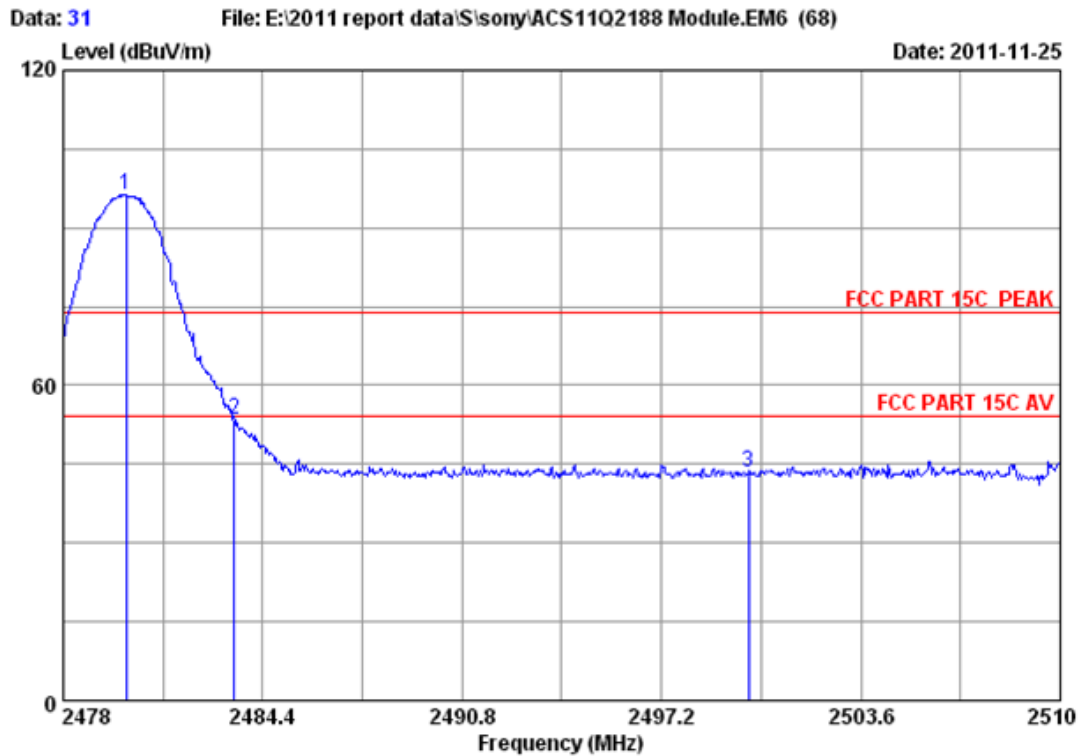


Site no. : 3m Chamber Data no. : 18
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2402MHz Tx
 M/N : BTM-S1

	Ant.	Cable	Amp.		Emission				
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2390.000	27.96	6.72	34.44	45.30	45.54	74.00	28.46	Peak
2	2400.000	27.96	6.75	34.44	68.68	68.95	74.00	5.05	Peak
3	2402.150	27.96	6.75	34.44	97.32	97.59	74.00	-23.59	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.

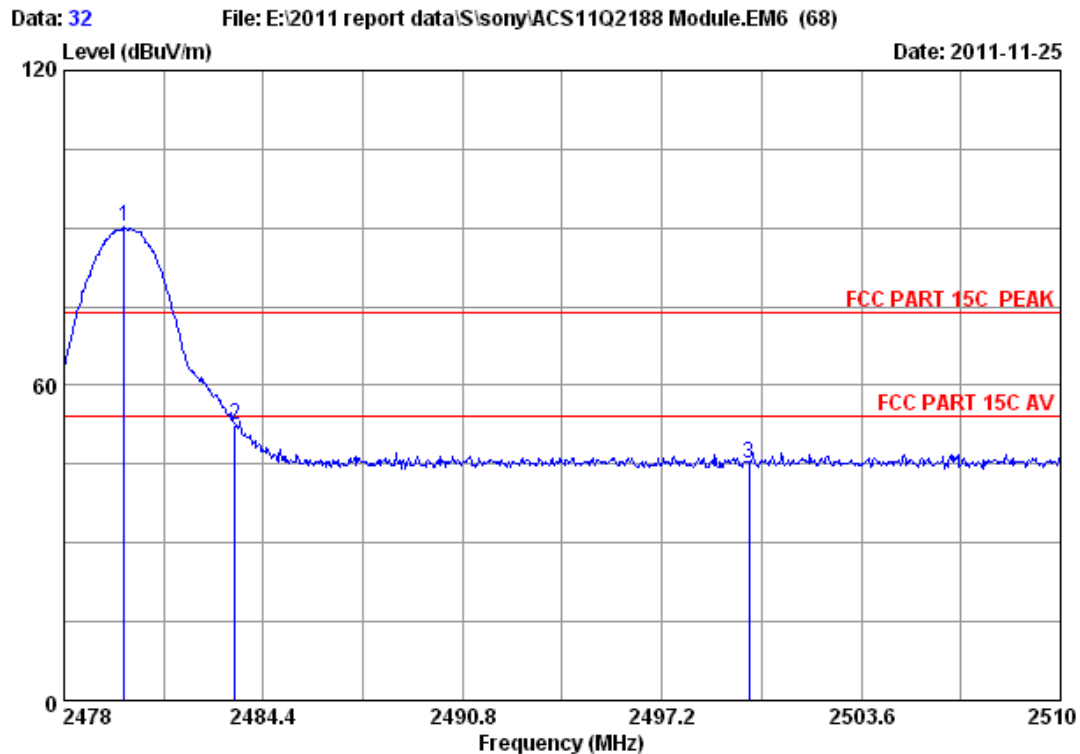


Site no. : 3m Chamber Data no. : 31
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2480MHz Tx
 M/N : BTM-S1

	Ant. Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.016	28.08	6.87	34.45	95.83	96.33	74.00	-22.33	Peak
2	2483.500	28.08	6.90	34.45	52.84	53.37	74.00	20.63	Peak
3	2500.000	28.10	6.90	34.45	42.87	43.42	74.00	30.58	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. : 32
 Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/66% Engineer : Leo-Li
 EUT : Bluetooth Module
 Power supply : DC 3.3V
 Test mode : 8DPSK 2480MHz Tx
 M/N : BTM-S1

	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	2479.920	28.08	6.87	34.45	89.66	90.16	74.00	-16.16	Peak
2	2483.500	28.08	6.90	34.45	51.93	52.46	74.00	21.54	Peak
3	2500.000	28.10	6.90	34.45	44.61	45.16	74.00	28.84	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.

12.DEVIATION TO TEST SPECIFICATIONS

[NONE]