FCC - TEST REPORT

Report Number	:	**68.920.11.002.01**	Date of Issue:	15 August 2011

Model	:	**MH BTS ON SO BT WW**
Product Type	:	Beats Wireless
Applicant	:	Monster, LLC
Address	:	7251 West Lake Mead Blvd, Suite 342, Las Vegas, NV 89128, United States
Production Facility	:	Charter Media (Dongguan) Co., Ltd.
Address	:	Daibandi Industrial Zone, Daning District, Humen Town, Dongguan City, Guangdong Province 523930, P. R. China
Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	51

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2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: Jiangsu TÜV Product Service Ltd. – Shenzhen Branch
6th Floor, H Hall,
Century Craftwork Culture Square,
No. 4001, Fuqiang Road,
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Telephone: 86 755 8828 6998
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Company name: Audix Technology (shenzhen) Co.,Ltd
Block Shenzhen, Science & Industry Park,
Nantou, Shenzhen,
Guangdong,
China

Telephone: 86 755 2663 9496
Fax: 86 755 2663 2877

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3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	Beats Wireless
Model no.:	MH BTS ON SO BT WW
Brand Name:	Monster
Options and accessories:	NIL
Rating:	3.7VDC (supplied by Battery) (or supplied by USB port of PC via USB cable)
RF Transmission Frequency:	2402-2480MHz
Description of the EUT:	NIL

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

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5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
15.207 Conducted Emission AC Power Port	8	☒	☐	☐
15.247 (b) (1) Conducted peak output power	12	☒	☐	☐
15.247(d) Band edge compliance of RF emissions	14	☒	☐	☐
15.247(d) Spurious RF conducted emissions	20	☒	☐	☐
15.247(d) 15.209 Spurious radiated emissions	25	☒	☐	☐
15.247(a)(1) 20dB bandwidth	29	☒	☐	☐
15.247(a)(1) Carrier frequency separation	35	☒	☐	☐
15.247(a)(1)(iii) Number of hopping frequencies	39	☒	☐	☐
15.247(a)(1)(iii) Dwell Time	43	☒	☐	☐

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6 General Remarks

Remarks
This submittal(s) (test report) is intended for FCC ID: RJE190396-00 complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

All the configurations of the product were tested and only the worst test results are listed in the report.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: 15 July 2011

Testing Start Date: 20 July 2011

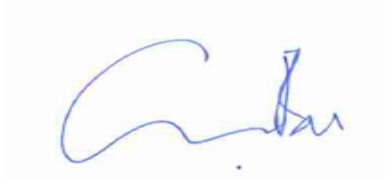
Testing End Date: 29 July 2011

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

Reviewed by:

Paul Yu
Assistant EMC Manager

Prepared by:



Cookies Bu
EMC Project Engineer

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7 Technical Requirement

7.1 Conducted Emission

Test Method

1 The EUT was placed on a table, which is 0.8m above ground plane
2 The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3 Maximum procedure was performed to ensure EUT compliance
4 A EMI test receiver is used to test the emissions from both sides of AC line

Limit

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

Remark: This test was carried out in all the test modes, here only the worst test result was shown.

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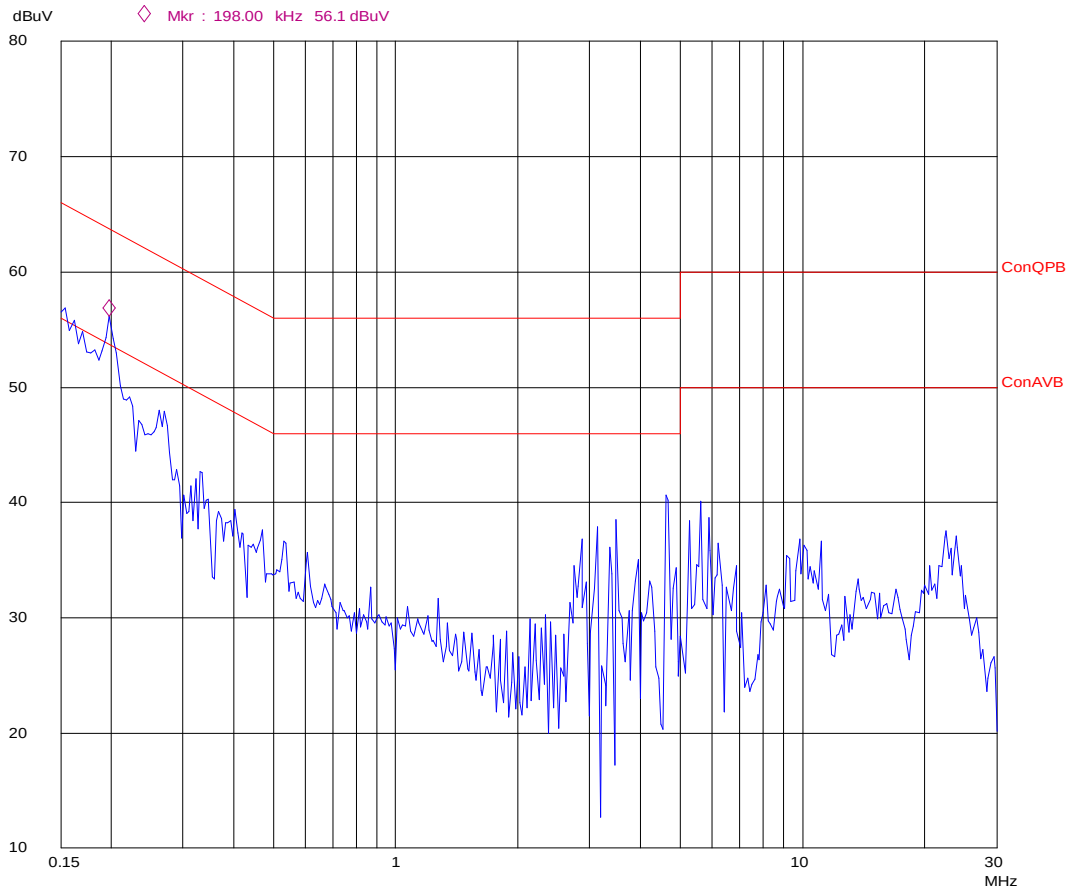
Conducted Emission

Test mode: Charging and transmitting
Test Spec: Live



Measurement result:

Frequency MHz	QP Test result dBµV	QP Limit dBµV	Margin dB
0.154	48.3	65.8	17.5
0.198	52.1	63.7	11.6

Frequency MHz	AV Test result dBµV	AV Limit dBµV	Margin dB
0.154	19.4	55.8	36.4
0.198	40.4	53.7	13.3

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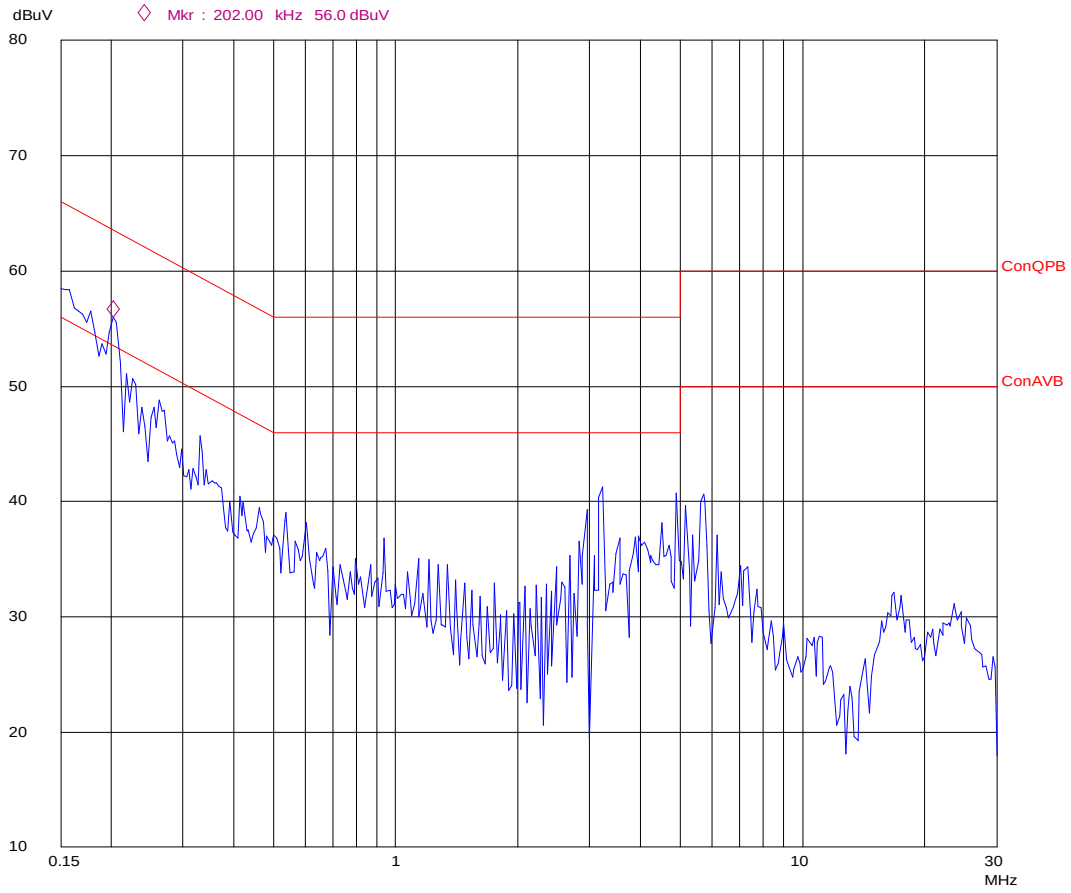
Conducted Emission

Test mode: Charging and transmitting
Test Spec: Neutral



Measurement result:

Frequency MHz	QP Test result dBµV	QP Limit dBµV	Margin dB
0.150	51.3	66.0	14.7
0.202	54.4	63.5	9.1

Frequency MHz	AV Test result dBµV	AV Limit dBµV	Margin dB
0.150	21.6	56.0	34.4
0.202	44.8	53.5	8.7

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Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	2012-01-20
AMN	Rohde & Schwarz	ESH3-Z5	100229	2012-01-20
AMN	Rohde & Schwarz	ENV216	100042	2012-01-20

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7.2 Conducted peak output power

Test Method
The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Limits for conducted peak output power measurements

Frequency Range MHz	Limit W	Limit dBm
2400-2483	≤1	≤30

Conducted peak output power

Bluetooth Mode GFSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH3 2402MHz	4.38	Pass
CH6 2441MHz	4.68	Pass
CH9 2480MHz	4.89	Pass

Bluetooth Mode 8DPSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
CH3 2402MHz	3.35	Pass
CH6 2441MHz	3.43	Pass
CH9 2480MHz	3.37	Pass

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Test Equipment

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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7.3 Band edge compliance of RF emissions

Test Method

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBW to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.
The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100kHz, to measure the conducted peak band edge.

Limits

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Frequency MHz	Limit Average dBuV/m	Limit Peak dBuV/m
Below 2390 Above 2483.5	54	74

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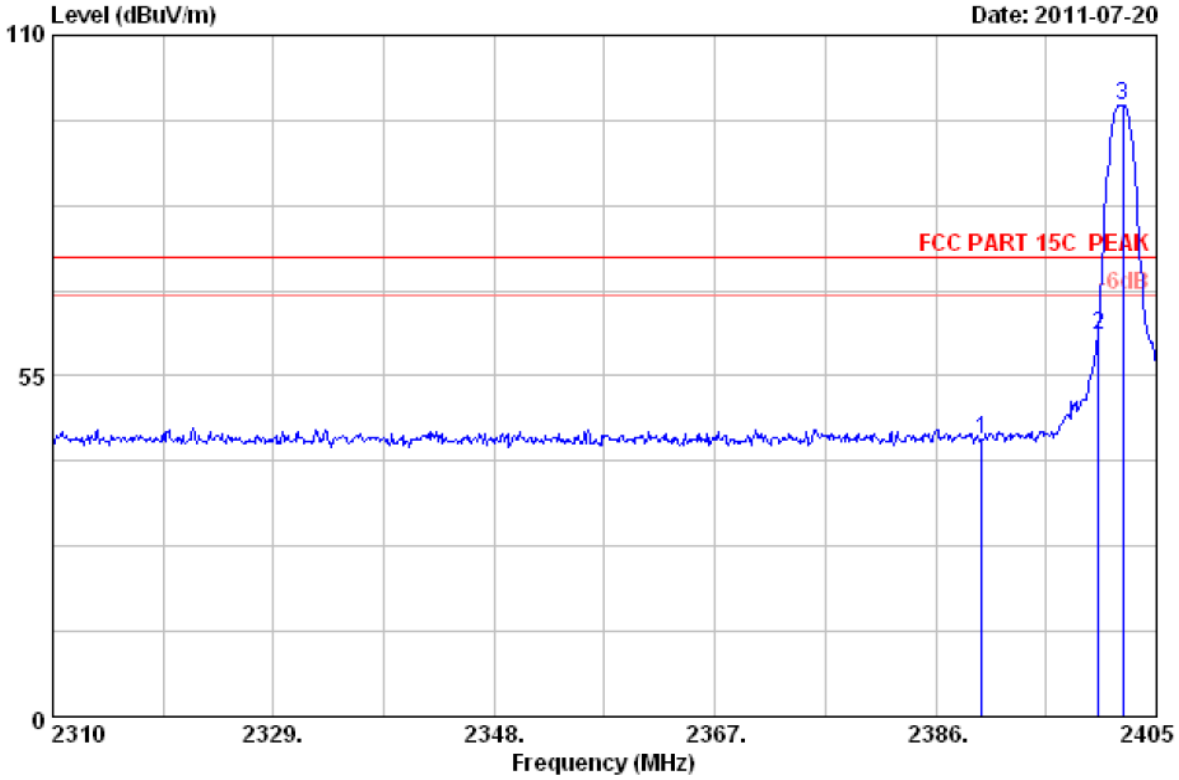
Band edge compliance of RF emissions

Bluetooth Mode GFSK Modulation Test Result:

Lower edge peak Plot:



Site no. : 3m Chamber
Dis. / Ant. : 3m 2011 3115 4580
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Bluetooth Headset
Power : DC 3.7V
Test mode : GFSK 2402MHz Tx
M/N : MH BTS ON SO BT WW

Data no. : 10
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2390.000	27.96	6.72	34.44	44.62	44.86	74.00	29.14	Peak
2	2400.000	27.96	6.75	34.44	61.30	61.57	74.00	12.43	Peak
3	2402.150	27.96	6.75	34.44	98.45	98.72	74.00	-24.72	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.

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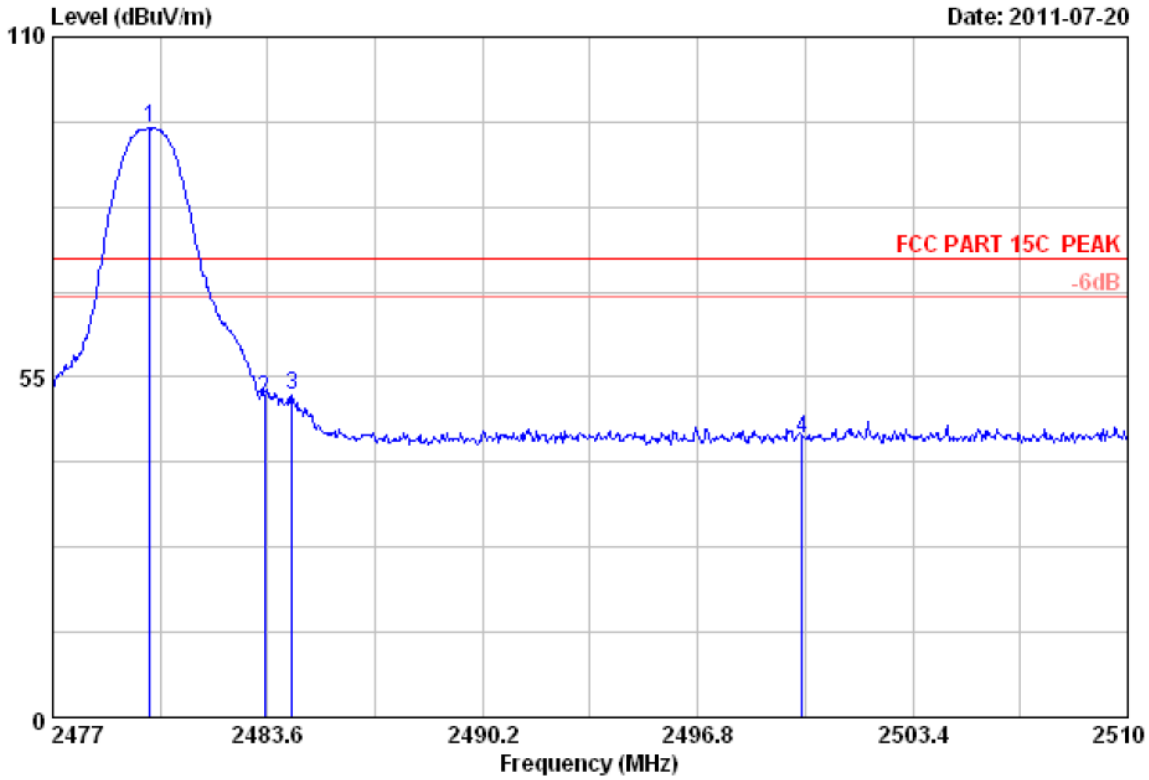
Upper edge peak Plot:



Site no. : 3m Chamber
Dis. / Ant. : 3m 2011 3115 4580
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Bluetooth Headset
Power : DC 3.7V
Test mode : GFSK 2480MHz Tx
M/N : MH BTS ON SO BT WW

Data no. : 11
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2479.970	28.08	6.87	34.45	94.70	95.20	74.00	-21.20	Peak
2	2483.500	28.08	6.90	34.45	51.09	51.62	74.00	22.38	Peak
3	2484.359	28.08	6.90	34.45	51.64	52.17	74.00	21.83	Peak
4	2500.000	28.10	6.90	34.45	44.42	44.97	74.00	29.03	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.

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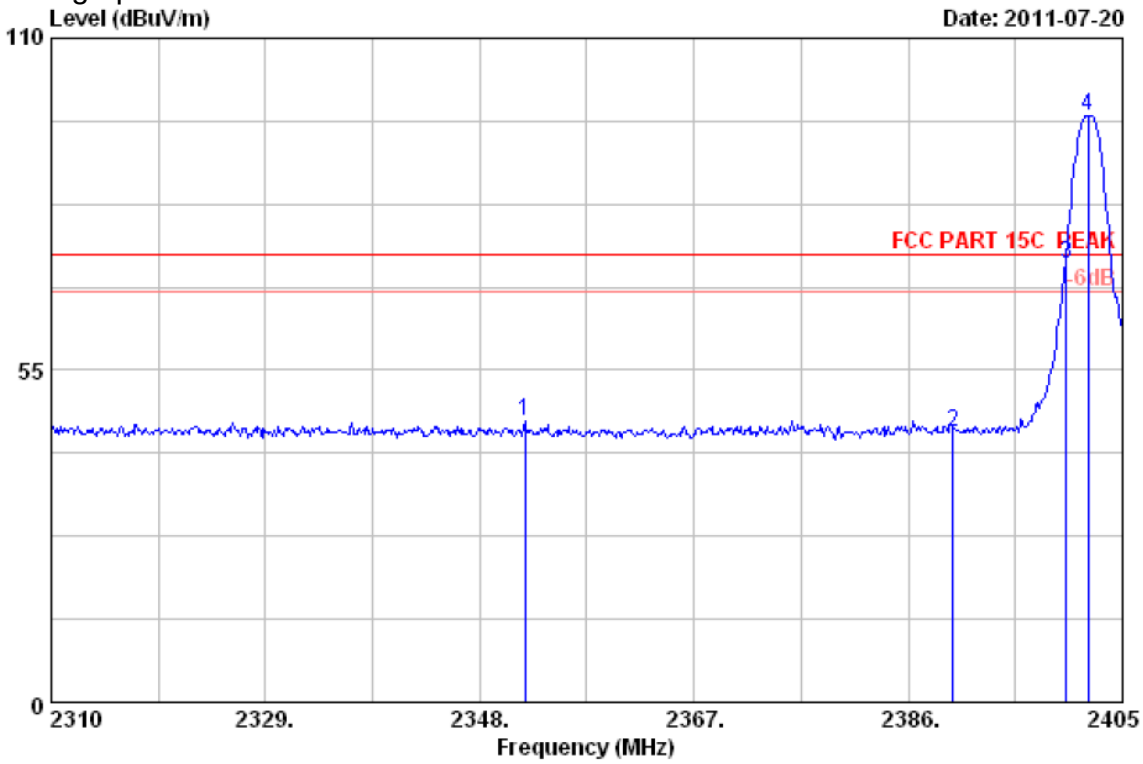
Band edge compliance of RF emissions

Bluetooth Mode 8DPSK Modulation Test Result:

Lower edge peak Plot:



Site no. : 3m Chamber
Dis. / Ant. : 3m 2011 3115 4580
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Bluetooth Headset
Power : DC 3.7V
Test mode : 8DPSK 2402MHz Tx
M/N : MH BTS ON SO BT WW

Data no. : 22
Ant. pol. : HORIZONTAL
Engineer : Leo-Li

	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	2351.990	27.91	6.65	34.44	46.40	46.52	74.00	27.48	Peak
2	2390.000	27.96	6.72	34.44	44.49	44.73	74.00	29.27	Peak
3	2400.000	27.96	6.75	34.44	72.31	72.58	74.00	1.42	Peak
4	2401.960	27.96	6.75	34.44	97.00	97.27	74.00	-23.27	Peak

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

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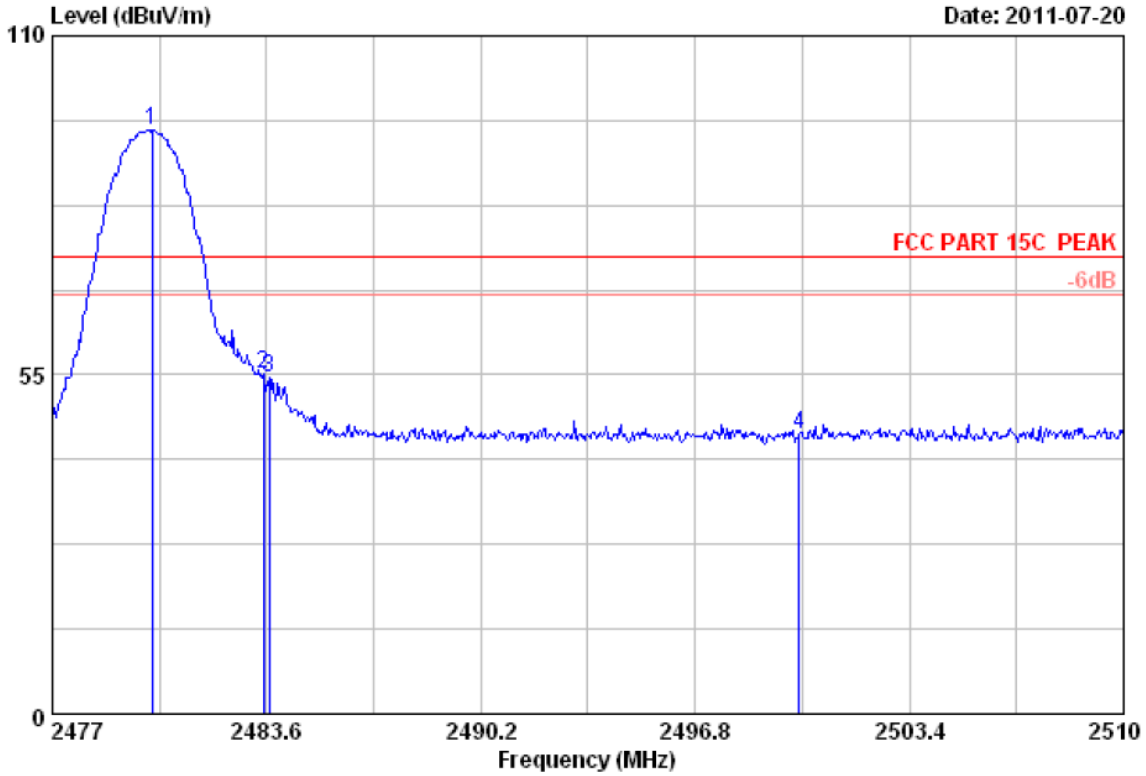
Upper edge peak Plot:



Site no. : 3m Chamber Data no. : 32
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : Bluetooth Headset
Power : DC 3.7V
Test mode : 8DPSK 2480MHz Tx
M/N : MH BTS ON SO BT WW

	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	2480.069	28.08	6.87	34.45	94.23	94.73	74.00	-20.73	Peak
2	2483.500	28.08	6.90	34.45	52.71	53.24	74.00	20.76	Peak
3	2483.666	28.08	6.90	34.45	51.94	52.47	74.00	21.53	Peak
4	2500.000	28.10	6.90	34.45	44.73	45.28	74.00	28.72	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.

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Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 08, 2012
Amp	HP	8449B	3008A02495	May 08, 2012
Antenna	EMCO	3115	9607-4877	May 17, 2012
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2011
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2012

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7.4 Spurious RF conducted emissions

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.
Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The resolution bandwidth(RBW) and the video bandwidth (VBW) of the spectrum analyzer were respectively set to 100kHz and 100kHz.

Limit

Frequency Range MHz	Limit (dBc)
1000-25000	-20

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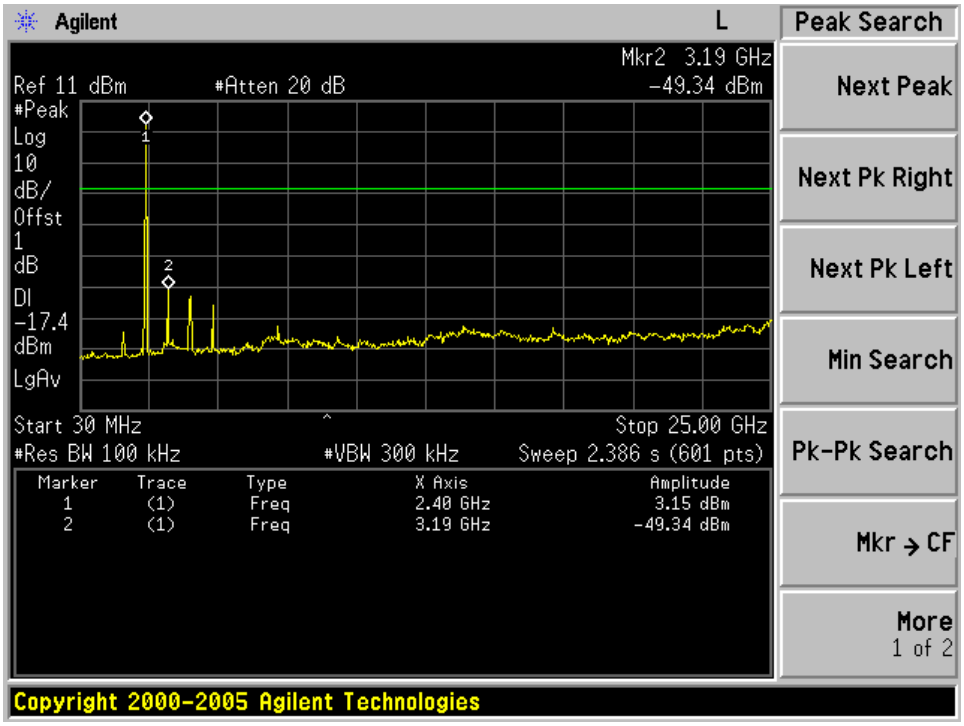
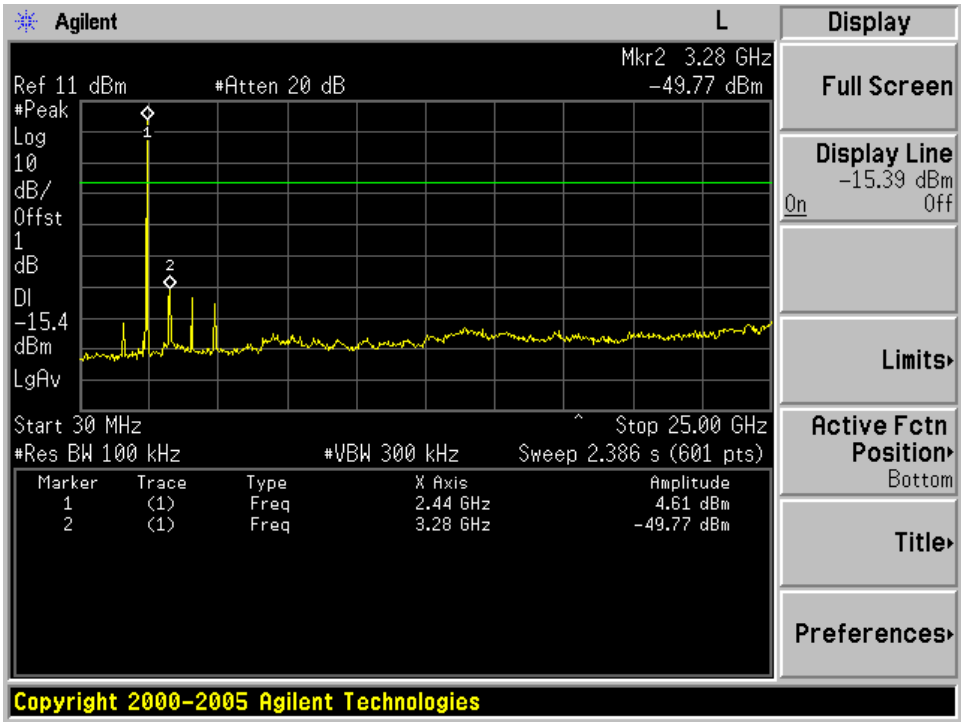
Spurious RF conducted emissions

Bluetooth Mode GFSK Modulation Test Result:

2402MHz



2441MHz



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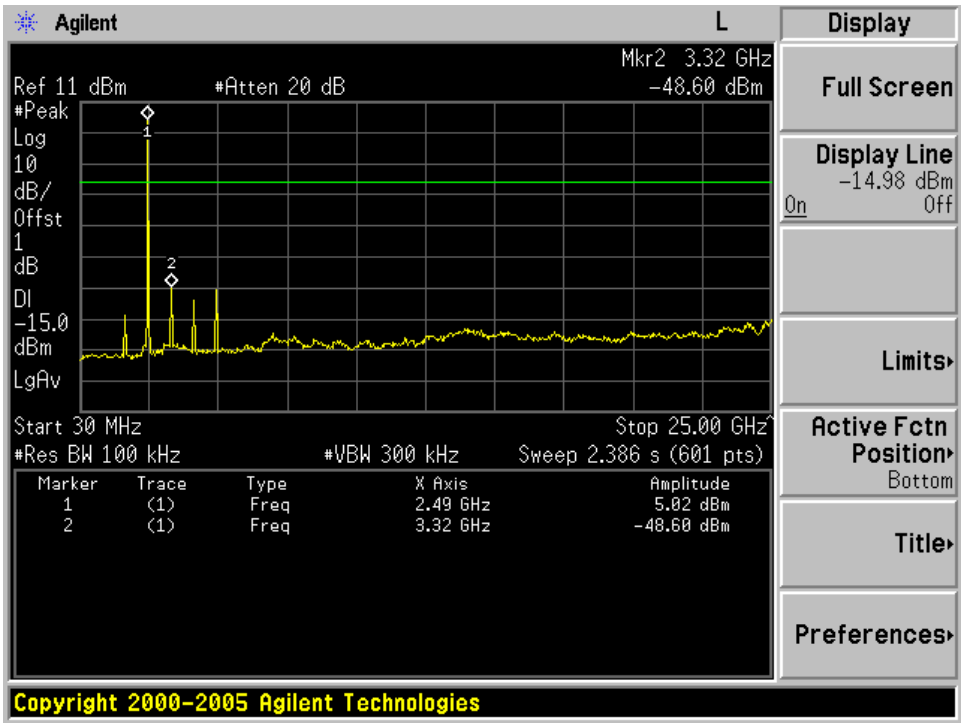
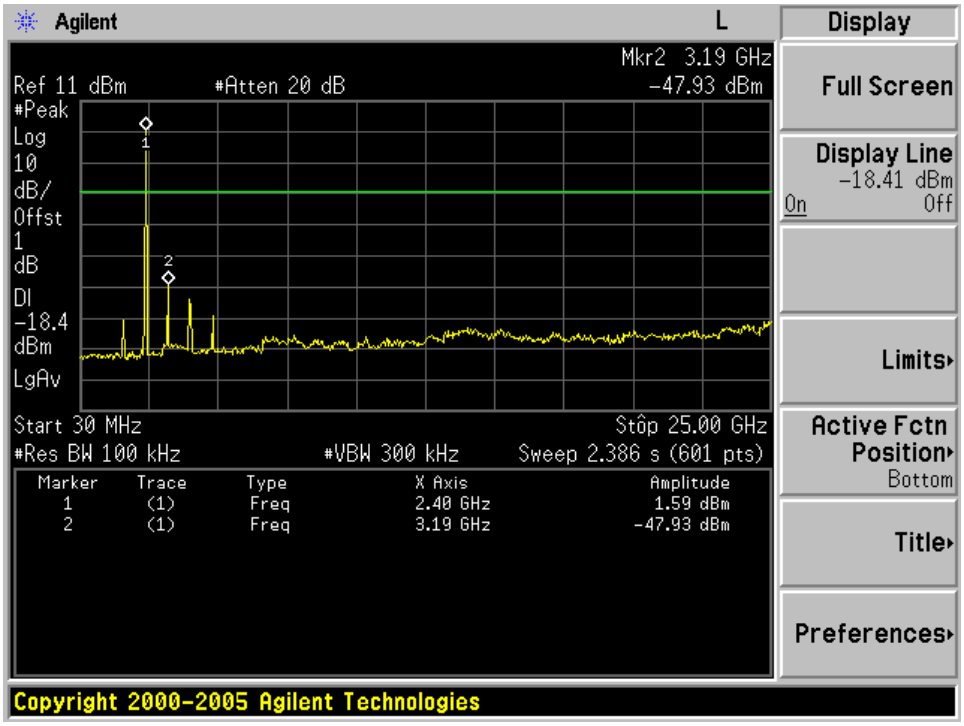
Spurious RF conducted emissions

2480MHz



Bluetooth Mode 8DPSK Modulation Test Result:

2402MHz



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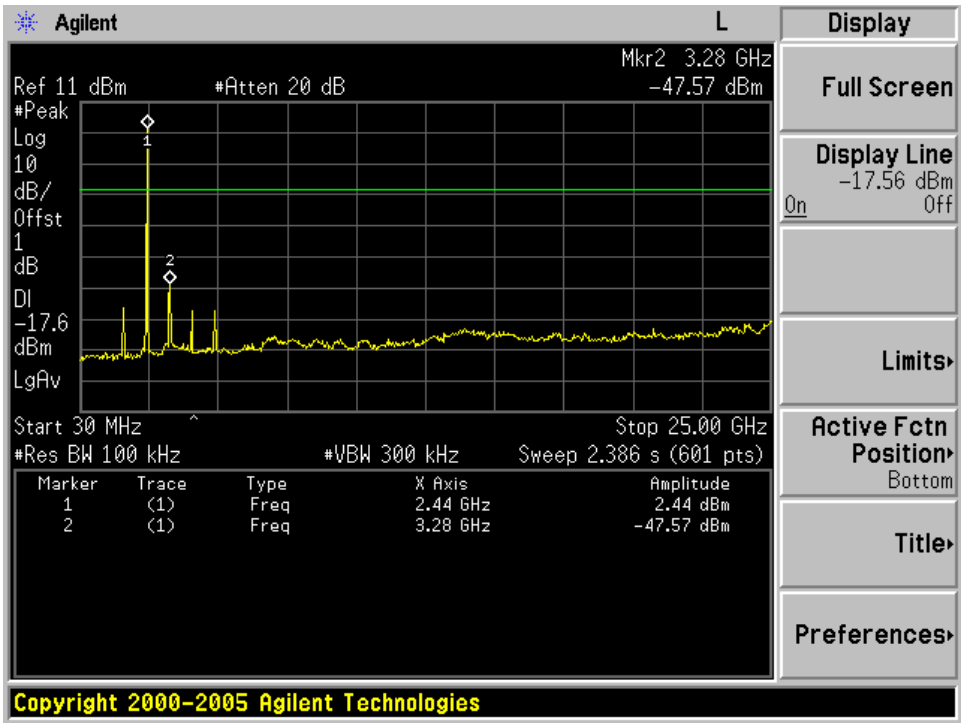
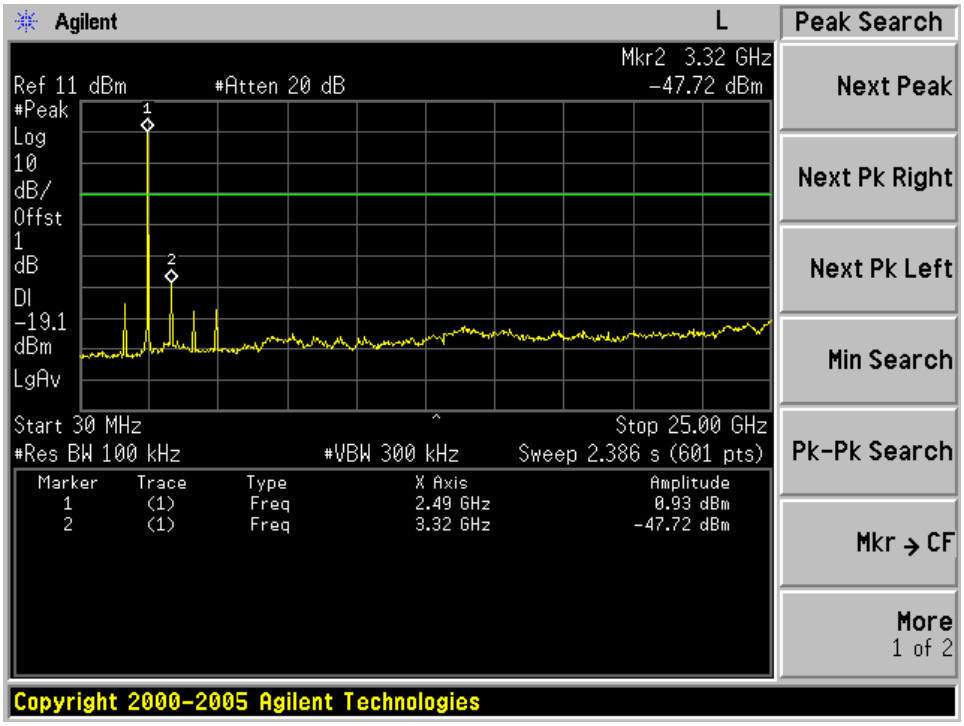
Spurious RF conducted emissions

2441MHz



2480MHz



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Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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7.5 Spurious radiated emissions

Test Method

1 The EUT is placed on a turntable, which is 0.8m above ground plane.
2 The turntable shall be 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 emissions.
4 Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5 Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Limit

Frequency MHz	Field Strength uV/m	Field Strength dBµV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

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Radiated Emission

Bluetooth Mode GFSK Modulation 2402MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
306.450	16.00	2.85	-	14.77	33.62	Vertical	43.5	QP	Pass
307.240	16.25	2.95	-	21.03	40.23	Horizontal	43.5	QP	Pass
4804.000	32.86	9.55	34.60	53.01	60.82	Horizontal	74	PK	Pass
4804.000	32.86	9.55	34.60	37.49	45.30	Horizontal	54	AV	Pass
4804.000	32.86	9.55	34.60	53.88	61.69	Vertical	74	PK	Pass
4804.000	32.86	9.55	34.60	37.68	45.49	Vertical	54	AV	Pass
7206.000	-	-		-	-	-	-	-	-
7206.000	-	-		-	-	-	-	-	-

Bluetooth Mode GFSK Modulation 2441MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
4882.000	32.98	9.62	34.60	52.98	60.98	Horizontal	74	PK	Pass
4882.000	32.98	9.62	34.60	37.53	45.53	Horizontal	54	AV	Pass
4882.000	32.98	9.62	34.60	53.53	61.53	Vertical	74	PK	Pass
4882.000	32.98	9.62	34.60	37.60	45.60	Vertical	54	AV	Pass
7323.000	-	-		-	-	-	-	-	-
7323.000	-	-		-	-	-	-	-	-

Bluetooth Mode GFSK Modulation 2480MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
4960.000	33.14	9.69	34.60	49.37	57.60	Horizontal	74	PK	Pass
4960.000	33.14	9.69	34.60	35.77	44.00	Horizontal	54	AV	Pass
4960.000	33.14	9.69	34.60	50.15	58.38	Vertical	74	PK	Pass
4960.000	33.14	9.69	34.60	36.43	44.66	Vertical	54	AV	Pass
1654.000	25.93	5.45	34.58	55.16	51.96	Horizontal	74	PK	Pass
1654.000	25.93	5.45	34.58	53.51	50.31	Horizontal	54	AV	Pass
1654.000	25.93	5.45	34.58	53.51	50.31	Vertical	74	PK	Pass
1654.000	25.93	5.45	34.58	50.73	47.53	Vertical	54	AV	Pass
7440.000	-	-		-	-	-	-	-	-
7440.000	-	-		-	-	-	-	-	-

Remark:

(1) Emission Level= Antenna Factor +Cable Loss - Amp. factor + Reading

(2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

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Radiated Emission

Bluetooth Mode 8DPSK Modulation 2402MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
306.510	16.00	2.85	-	15.08	33.93	Vertical	43.5	QP	Pass
307.253	16.25	2.95	-	20.13	39.33	Horizontal	43.5	QP	Pass
4804.000	32.86	9.55	34.60	50.04	57.85	Horizontal	74	PK	Pass
4804.000	32.86	9.55	34.60	35.51	43.32	Horizontal	54	AV	Pass
4804.000	32.86	9.55	34.60	49.64	57.45	Vertical	74	PK	Pass
4804.000	32.86	9.55	34.60	35.16	42.97	Vertical	54	AV	Pass
7206.000	-	-		-	-	-	-	-	-
7206.000	-	-		-	-	-	-	-	-

Bluetooth Mode 8DPSK Modulation 2441MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
4882.000	32.98	9.62	34.60	46.83	54.83	Horizontal	74	PK	Pass
4882.000	32.98	9.62	34.60	33.06	41.06	Horizontal	54	AV	Pass
4882.000	32.98	9.62	34.60	45.65	53.65	Vertical	74	PK	Pass
4882.000	32.98	9.62	34.60	33.48	41.48	Vertical	54	AV	Pass
7323.000	-	-		-	-	-	-	-	-
7323.000	-	-		-	-	-	-	-	-

Bluetooth Mode 8DPSK Modulation 2480MHz Test Result

Frequency	Antenna Factor	Cable Loss	Amp. Factor	Reading	Emission Level	Polarization	Limit	Detector	Result
MHz	dB/m	dB	dB	dBuV	dBuV/m		dBµV/m		
4960.000	33.14	9.69	34.60	44.55	52.78	Horizontal	74	PK	Pass
4960.000	33.14	9.69	34.60	32.89	41.12	Horizontal	54	AV	Pass
4960.000	33.14	9.69	34.60	44.38	52.79	Vertical	74	PK	Pass
4960.000	33.14	9.69	34.60	32.56	40.79	Vertical	54	AV	Pass
1654.000	25.93	5.45	34.58	53.81	50.61	Horizontal	74	PK	Pass
1654.000	25.93	5.45	34.58	50.83	47.63	Horizontal	54	AV	Pass
1654.000	25.93	5.45	34.58	55.64	52.44	Vertical	74	PK	Pass
1654.000	25.93	5.45	34.58	53.15	49.95	Vertical	54	AV	Pass
7440.000	-	-		-	-	-	-	-	-
7440.000	-	-		-	-	-	-	-	-

Remark:

(1) Emission Level= Antenna Factor +Cable Loss - Amp. factor + Reading

(2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

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Test Equipment List

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 08, 2012
Amp	HP	8449B	3008A02495	May 08, 2012
Antenna	EMCO	3115	9607-4877	May 17, 2012
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 2011
HF Cable	Hubersuhne	Sucoflex104	---	May 08, 2012

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7.6 20 dB bandwidth

Test Method

1 Place the EUT on the table and set it in the transmitting mode.
2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3 Mark the peak frequency and –20dB (upper and lower) frequency.

Limit

Limit [kHz]
N/A

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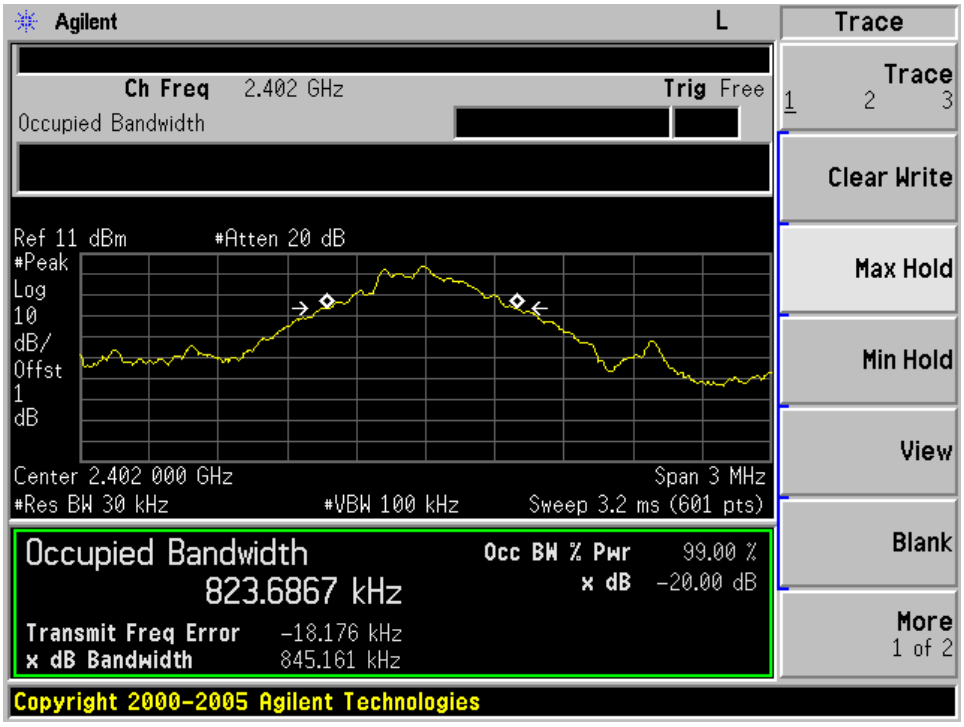
20 dB bandwidth

Bluetooth Mode GFSK Modulation test result

Frequency MHz	Bandwidth kHz	Result
2402	845.161	Pass
2441	833.251	Pass
2480	855.517	Pass



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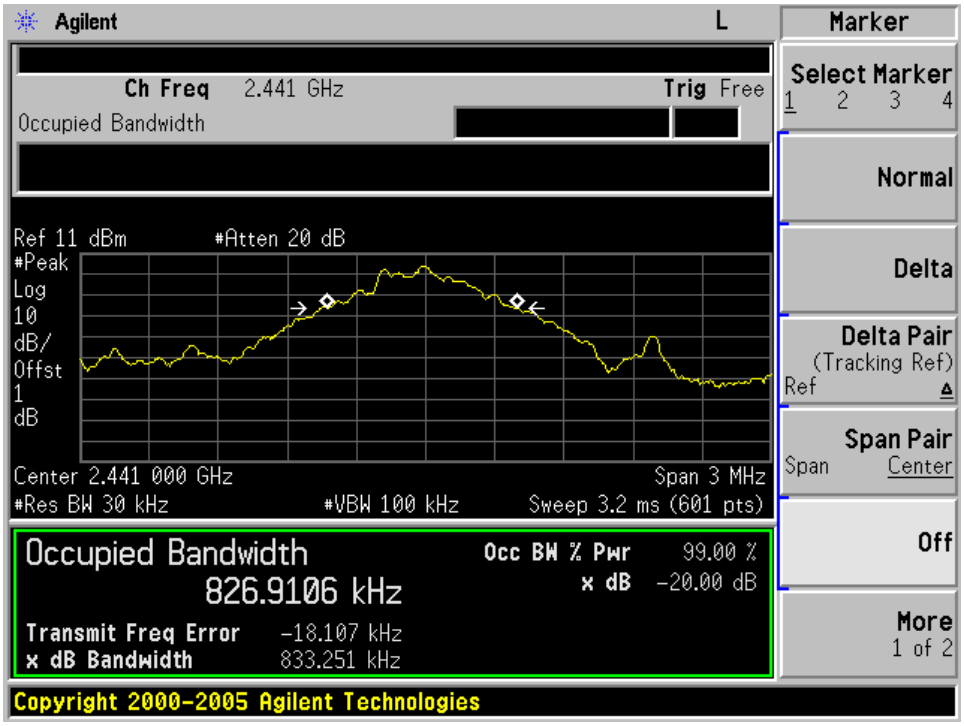
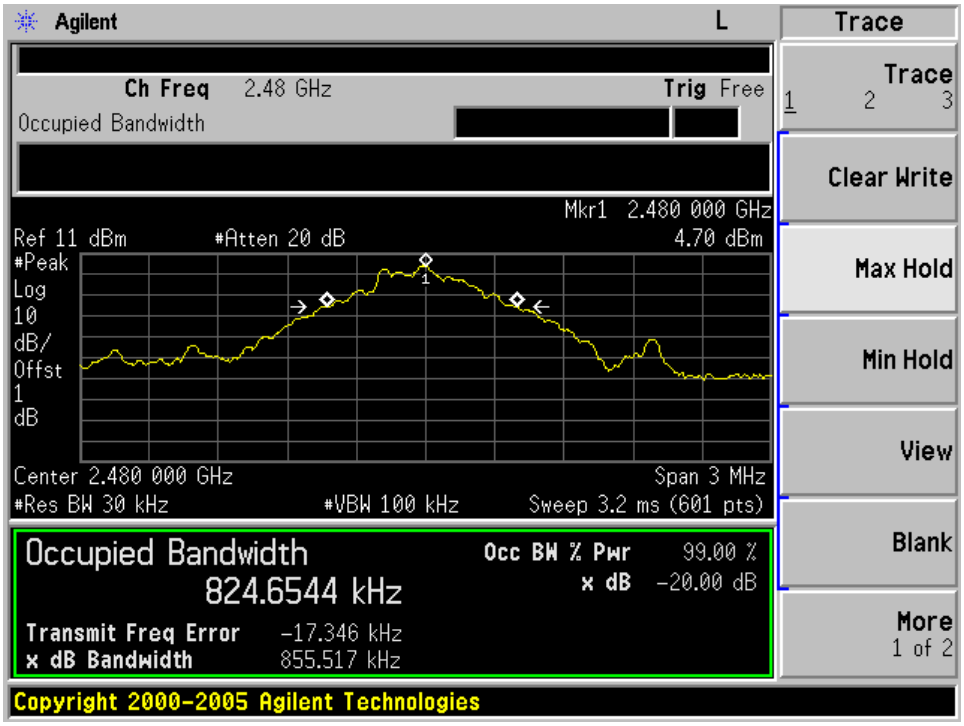
20 dB bandwidth





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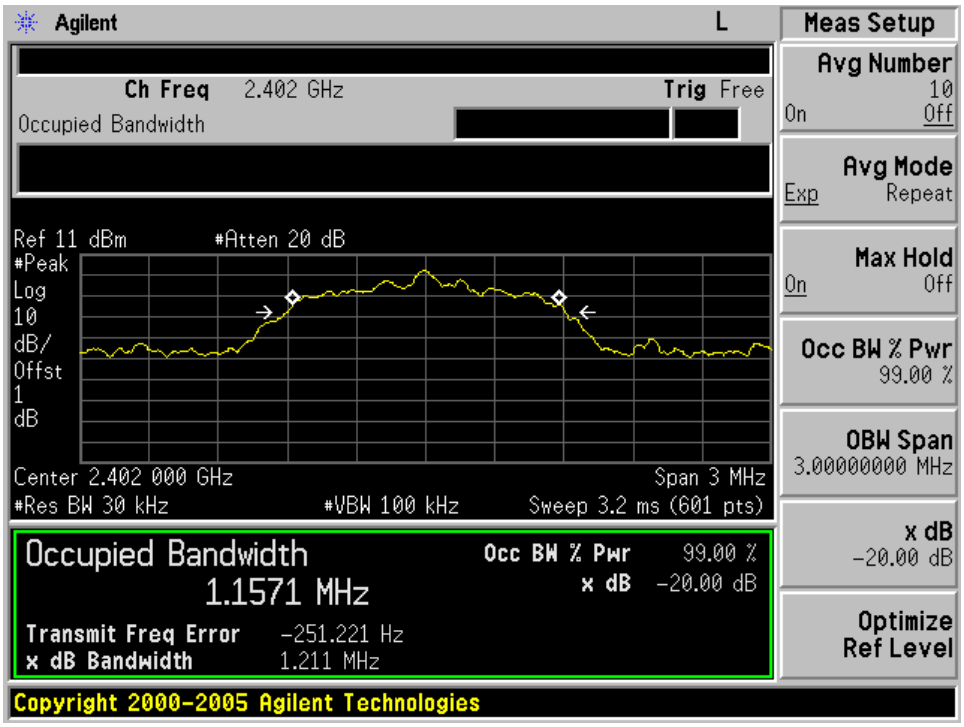
20 dB bandwidth

Bluetooth Mode 8DPSK Modulation test result

Frequency MHz	Bandwidth kHz	Result
2402	1211	Pass
2441	1209	Pass
2480	1208	Pass



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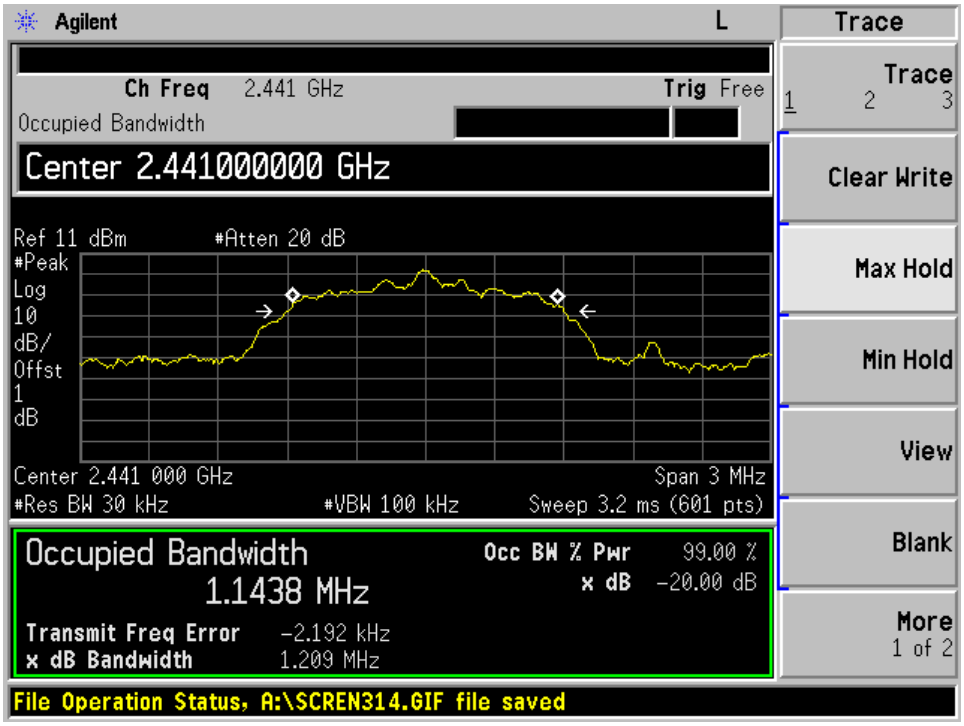
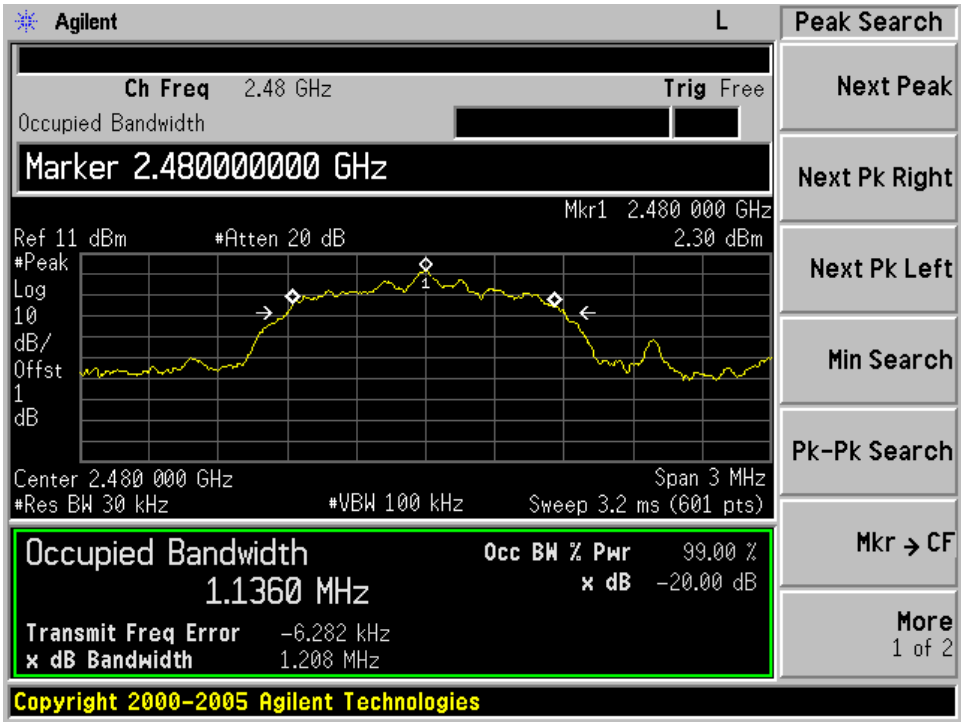
20 dB bandwidth





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Test Equipment

20 dB bandwidth Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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7.7 Carrier Frequency Separation

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
Equipment mode: Spectrum analyzer
RBW: 30KHz; VBW: 100KHz; SPAN:5MHz
2. By using the Max-Hold function record the separation of two adjacent channels.
3. Measure the frequency difference of these two adjacent channels by spectrum analyzer Marker function.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit kHz
⩾25KHz or 2/3 of the 20 dB bandwidth which is greater

GFSK Modulation Limit

Frequency MHz	2/3 of 20 dB Bandwidth kHz
2402	563.4407
2441	555.5007
2480	570.3447

8DPSK Modulation Limit

Frequency MHz	2/3 of 20 dB Bandwidth kHz
2402	807.3333
2441	806.0000
2480	805.3333

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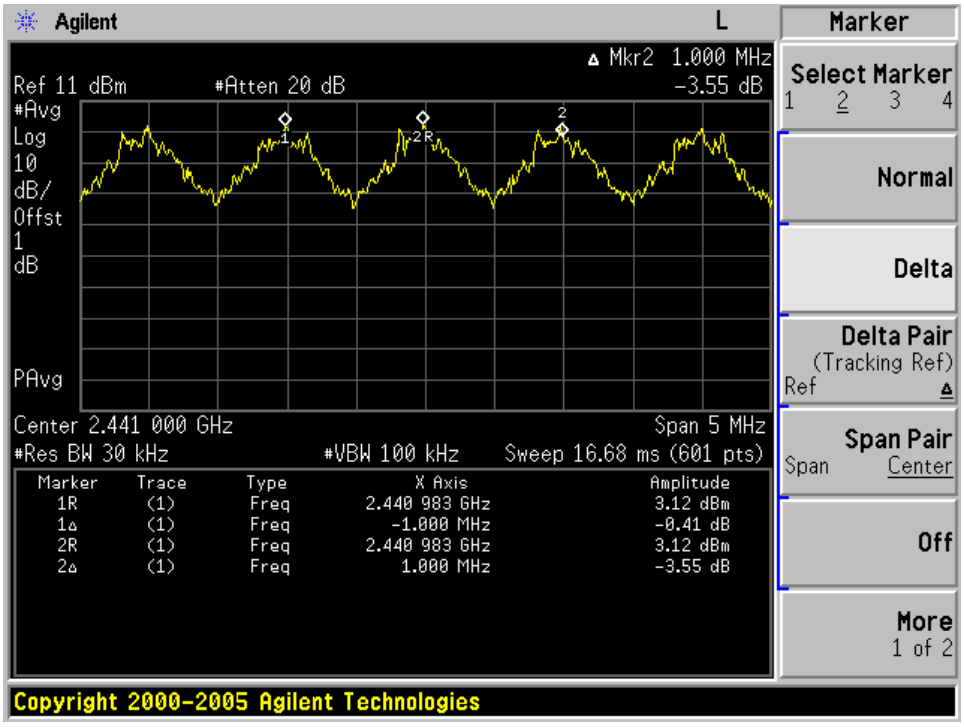
Carrier Frequency Separation

GFSK Modulation test result

Frequency MHz	Carrier Frequency Separation kHz	Result
2402	1000	Pass
2441	1000	Pass
2480	1000	Pass



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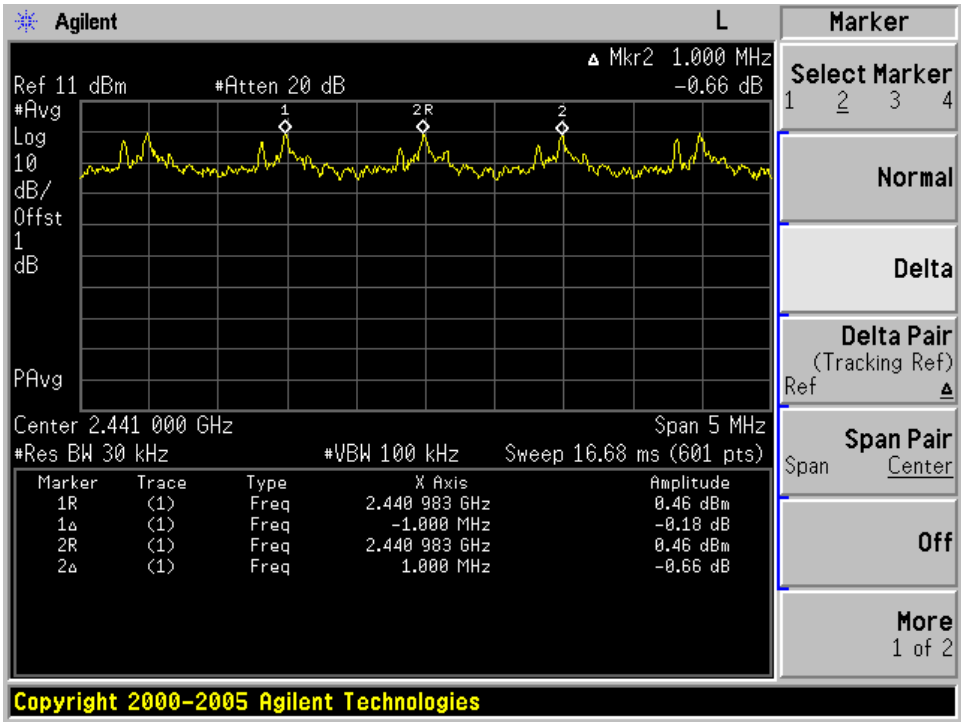
Carrier Frequency Separation

8DPSK Modulation test result

Frequency MHz	Carrier Frequency Separation kHz	Result
2402	1000	Pass
2441	1000	Pass
2480	1000	Pass



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Test Equipment

Carrier Frequency Separation Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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7.8 Number of hopping frequencies

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
Equipment mode: Spectrum analyzer
RBW: 30KHz; VBW: 100KHz
2. Set the spectrum analyzer on Max-Hold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
3. Repeat above procedures until all frequencies measured were complete.

Limit

Limit number
⩾ 15

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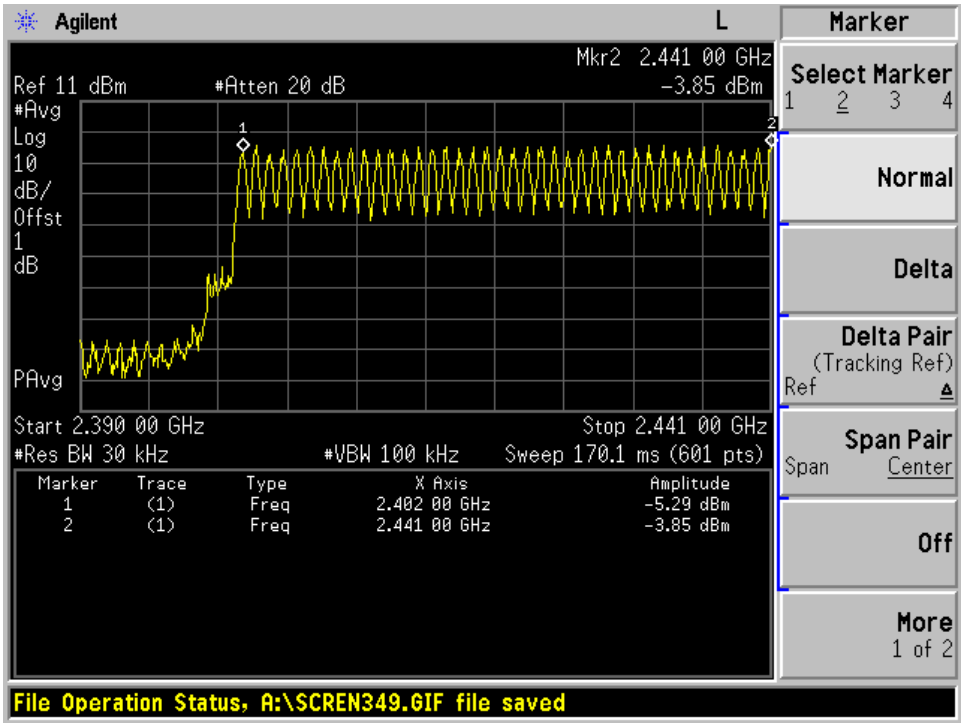
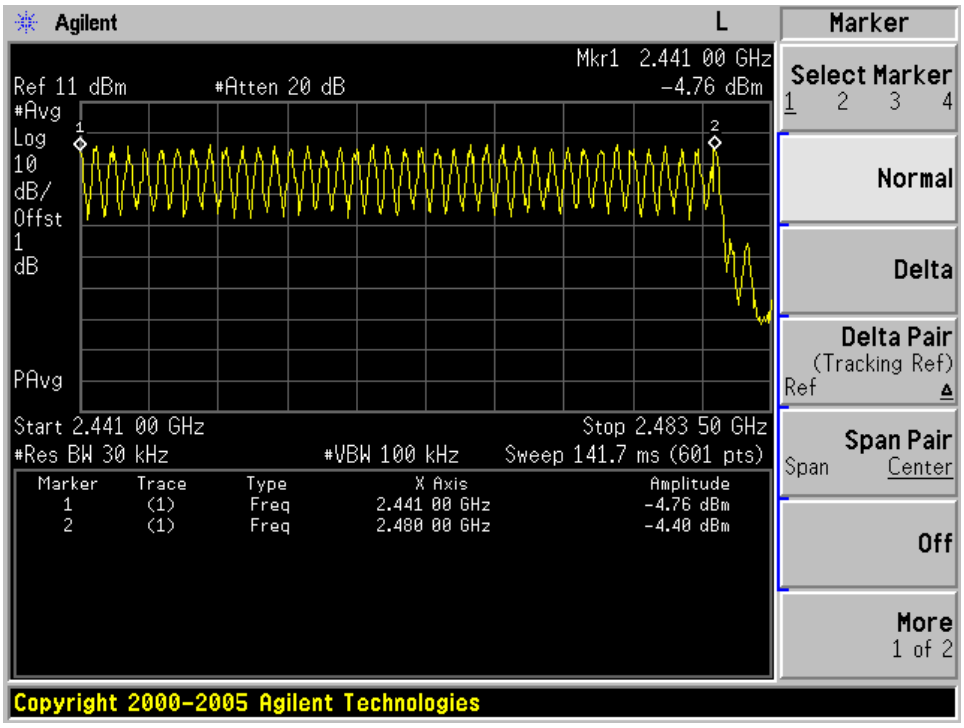
Number of hopping frequencies

Bluetooth Mode GFSK Modulation test result:

Number of hopping frequencies	Result
79	Pass





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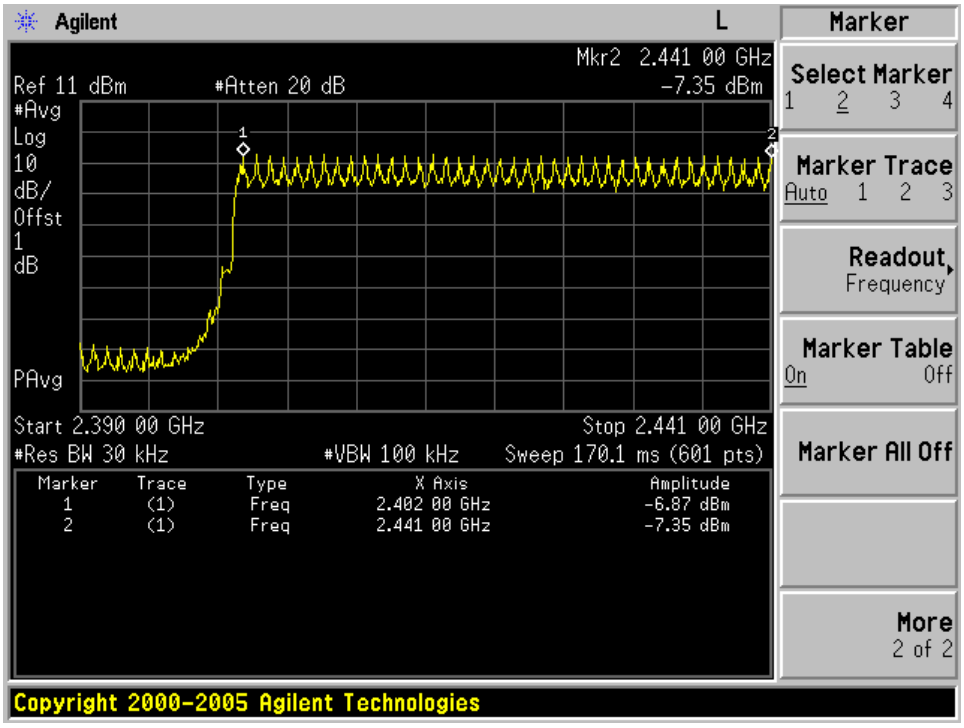
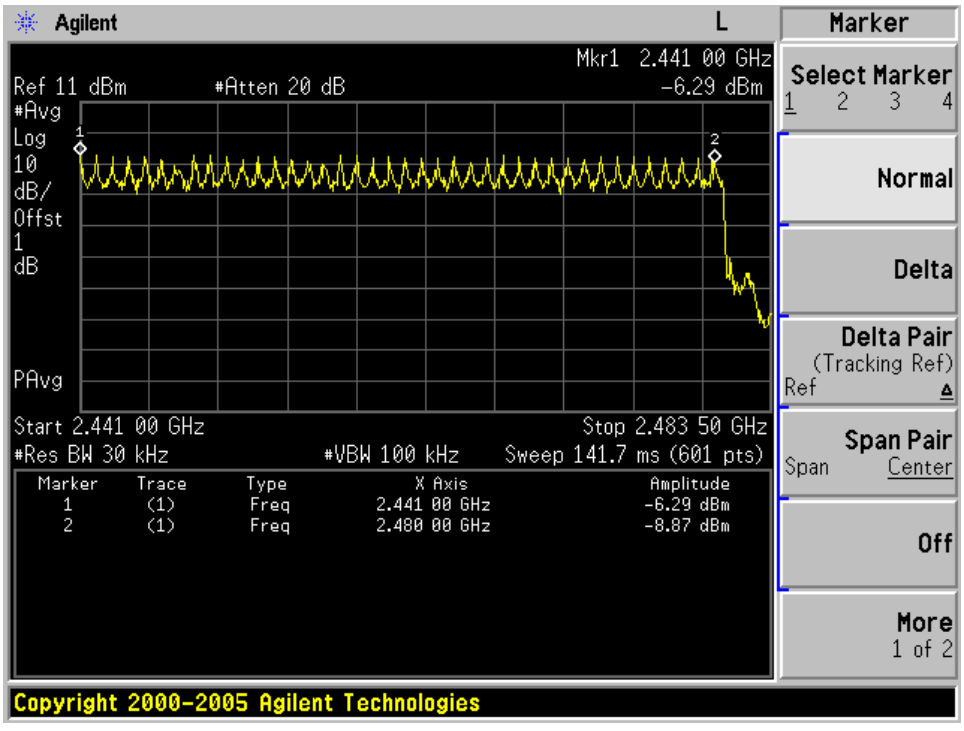
Number of hopping frequencies

Bluetooth Mode 8DPSK Modulation test result:

Number of hopping frequencies	Result
79	Pass





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Test Equipment

Number of hopping frequencies Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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7.9 Dwell Time

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
Equipment mode: Spectrum analyzer
RBW: 1MHz; VBW: 1MHz; SPAN: Zero Span
2. Adjust the center frequency of spectrum analyzer on any frequency be measured.
3. Measure the Dwell Time by spectrum analyzer Marker function.
4. Repeat above procedures until all frequencies measured were complete.

Limit

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

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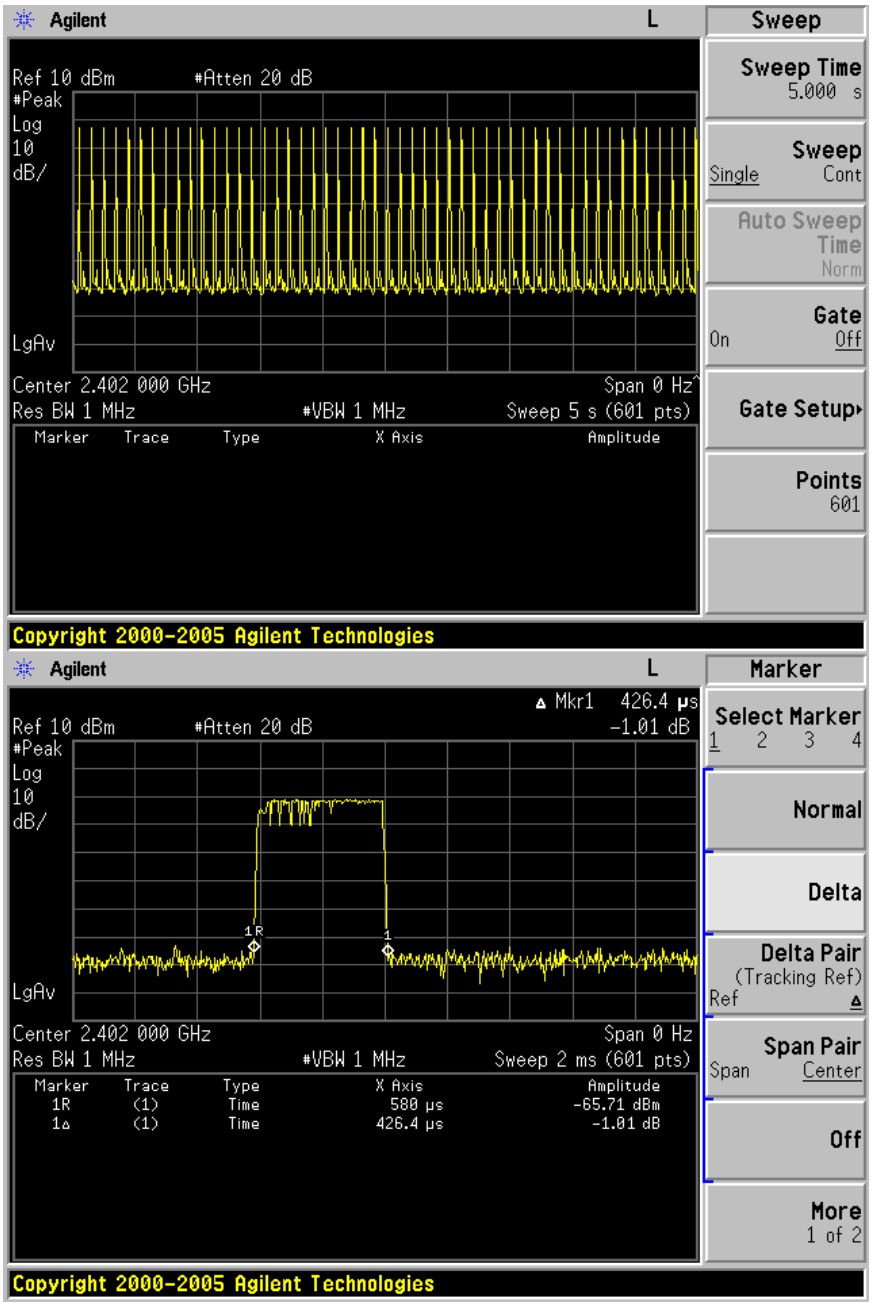
Dwell Time

Dwell time

The maximum dwell time shall be 0,4 s.
Bluetooth Mode GFSK Modulation:

Test Result

Mode	Reading (μs)	Test Result (ms)	Limit (ms)	Result
DH1	426.4	137.44	< 400	Pass
DH3	1784	281.87	< 400	Pass
DH5	2942	316.62	< 400	Pass



DH1

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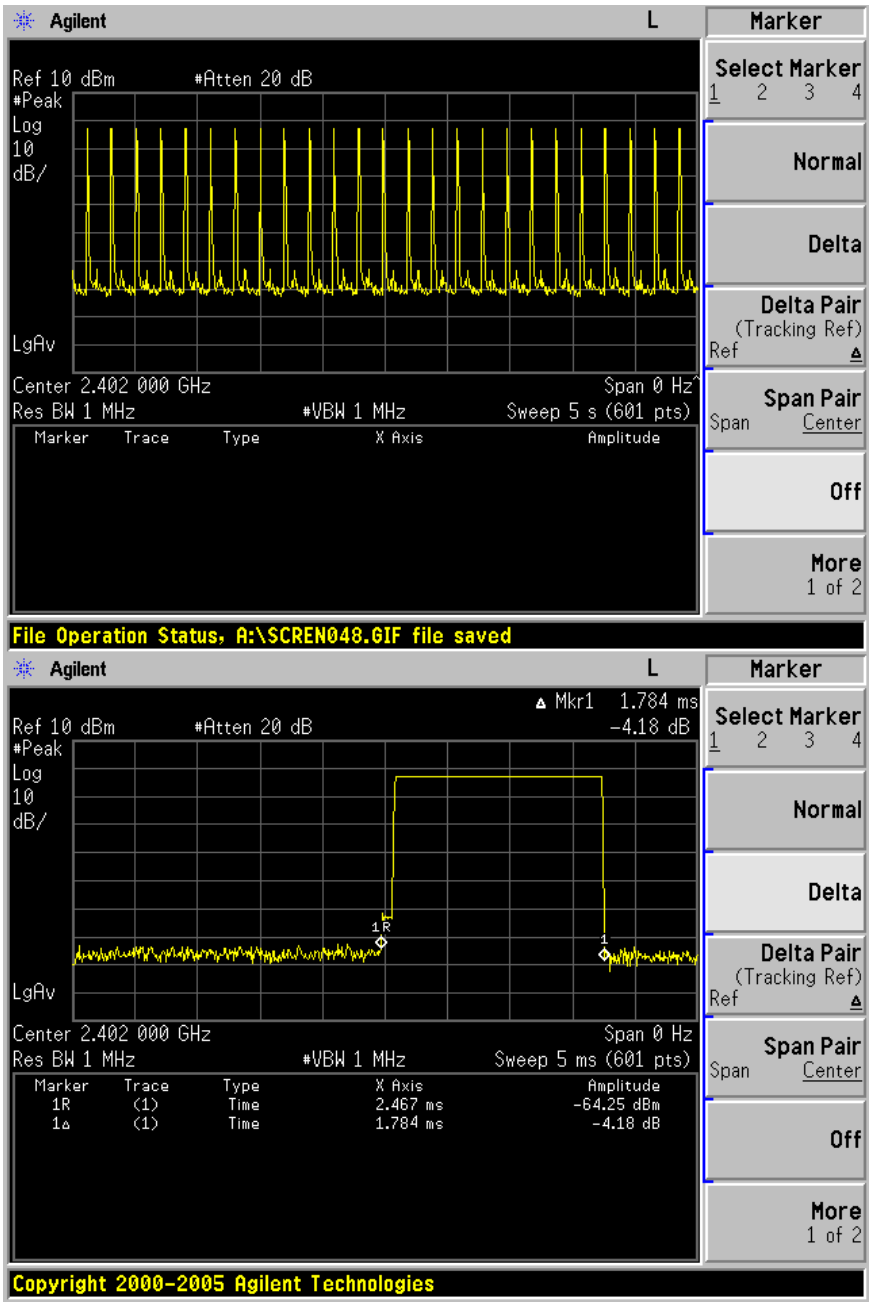

DH3

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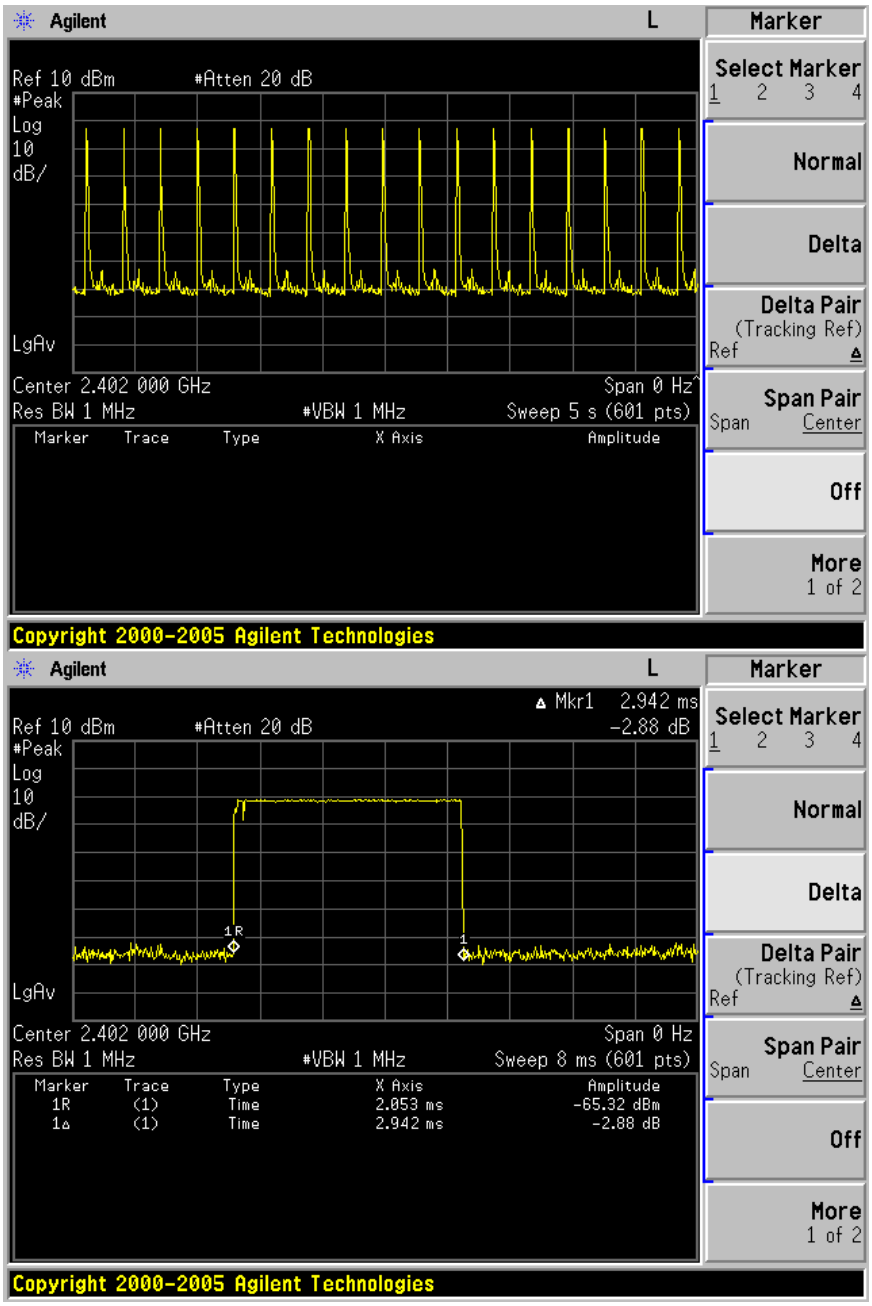

DH5

Note:
A period time=79x0.4(s)=31.6(s)

DH1	time slot= 51(times)/5(s) *426.4 (μs) *31.6(s)= 137.44 (ms)
DH3	time slot= 25(times)/5(s) *1784 (μs) *31.6(s)= 281.87 (ms)
DH5	time slot= 17(times)/5(s) *2942 (μs) *31.6(s)= 316.09 (ms)

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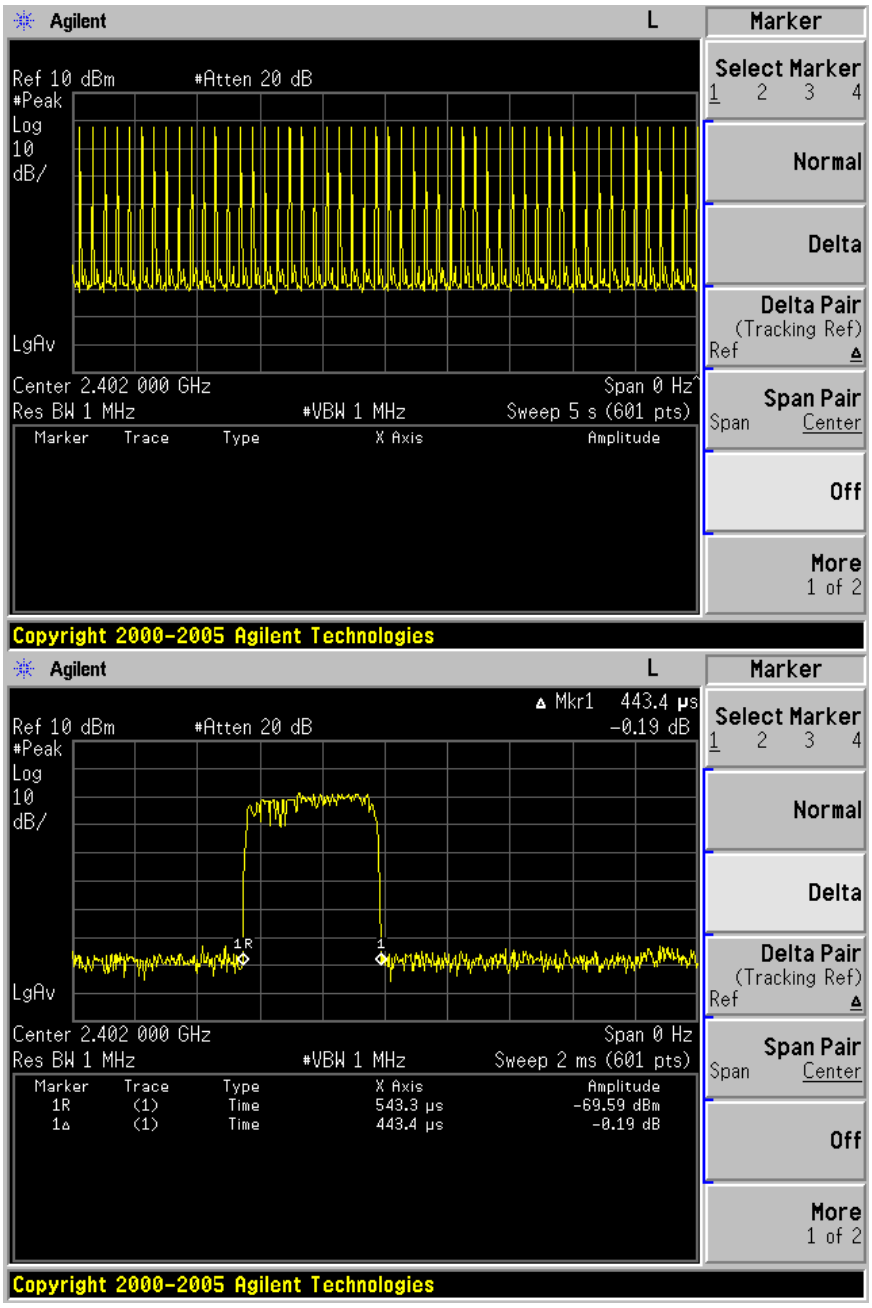
Bluetooth Mode 8DPSK Modulation:

Test Result

Mode	Reading (μs)	Test Result (ms)	Limit (ms)	Result
DH1	443.4	142.92	< 400	Pass
DH3	1600	262.91	< 400	Pass
DH5	2972	319.31	< 400	Pass



DH1

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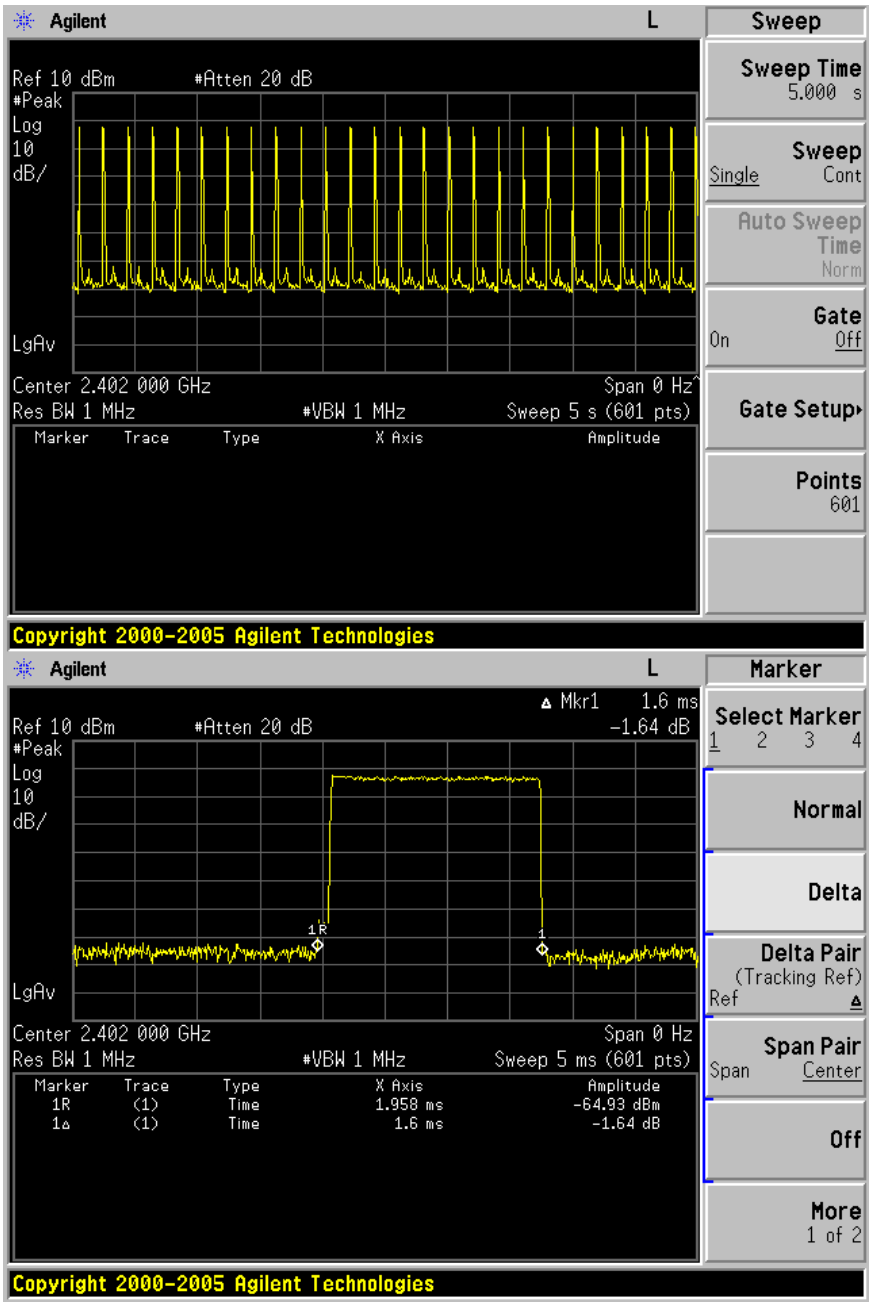

DH3

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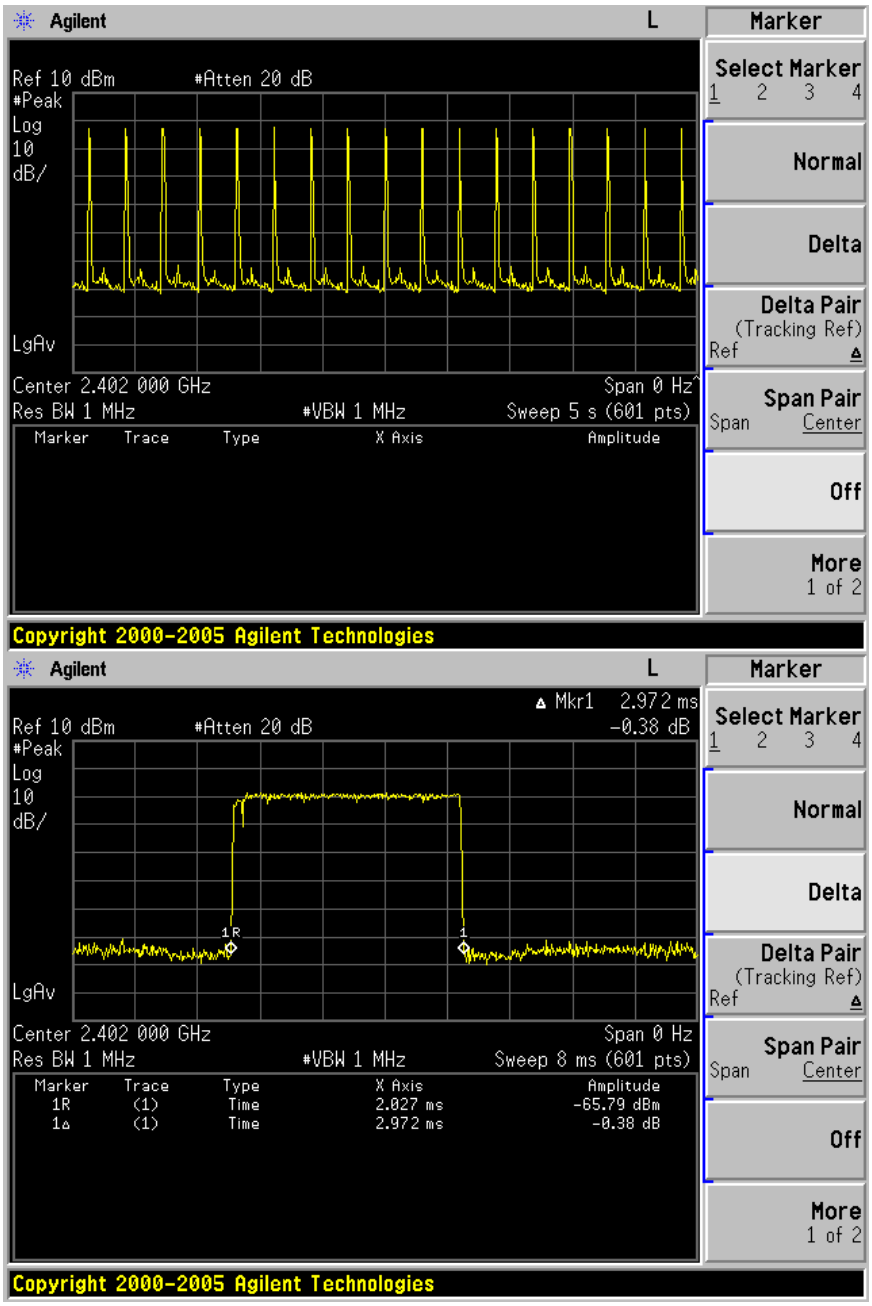

DH5

Note:
A period time=79x0.4(s)=31.6(s)

DH1	time slot= 51(times)/5(s) *443.4 (μs) *31.6(s)= 142.92(ms)
DH3	time slot= 26(times)/5(s) *1600 (μs) *31.6(s)= 262.91(ms)
DH5	time slot= 17(times)/5(s) *2972 (μs) *31.6(s)=3 19.31 (ms)

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Test Equipment

Dwell Time Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 08, 2012

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8 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dBμV/m)	U=4.32dB (30MHz-25GHz)
CE	Disturbance Voltage (dBμV)	U=2.4dB

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