



FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : Bluetooth Headset
Trade Name : MOTOROLA
Model No. : H800
FCC ID : OHH-H800
Filing Type : Certification
Applicant : **MOTOROLA INC.**
600 North US Highway 45, Libertyville, Illinois 60048, USA

- The test result refers exclusively to the test presented test model / sample.
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- The data shown in this test report were carried out on Aug. 19, 2006 at **Sporton International Inc. LAB.**
- Report No.: FR681410-01, Report Version: Rev. 01.

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Report Version: Rev. 01



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History of this test report

Report Issue Date: Sep. 27, 2006

Report No.	Description



1. General Description of Equipment under Test

1.1. Applicant

MOTOROLA INC.

600 North US Highway 45, Libertyville, Illinois 60048, USA

1.2. Manufacturer

Cal-Comp Electronics & Communications Company Limited

191/54, 57, 18th FL., Rachadapisek Rd., Klongtoey, Bangkok, Thailand

1.3. Basic Description of Equipment under Test

Equipment : Bluetooth Headset
Trade Name : MOTOROLA
Model No. : H800
FCC ID : OHH-H800
Power Supply Type : Switching
AC Power Cord : AC 120V, Wall-mount, 1.9 meter, 2 pin
Adapter : MOTOROLA, FMP5202A

1.4. Feature of Equipment under Test

Product Feature & Specification			
1. Modulation Type/Data Rate	GFSK		
2. Frequency Range.	2400 MHz ~ 2483.5 MHz		
3. Number of Channels	79		
4. Carrier Frequency of each channel	2402+ n*1 MHz, n= 0~78		
5. HW Version	VENUS-BC3-06		
6. SW Version	Venus-Build-0007-60830		
7. Maximum Output Power to Antenna (Normal condition)	1.34 dBm		
8. Type of Antenna Connector	N/A		
9. Antenna Type	Chip Antenna		
10. Antenna Gain	0 dBi		
11. Function Type	Transmitter		Transceiver V
12. Power Rating (DC/AC , Voltage)	Adapter : AC100-240V		
13. DUT Stage	Production Unit		

2. Test Configuration of Equipment under Test

2.1. Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. For spurious emission below 1GHz, only one channel of each application was tested because it is not related to channel selection.
- c. The EUT is programmed to transmit signal continuously for all testings.
- d. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2. Test Mode

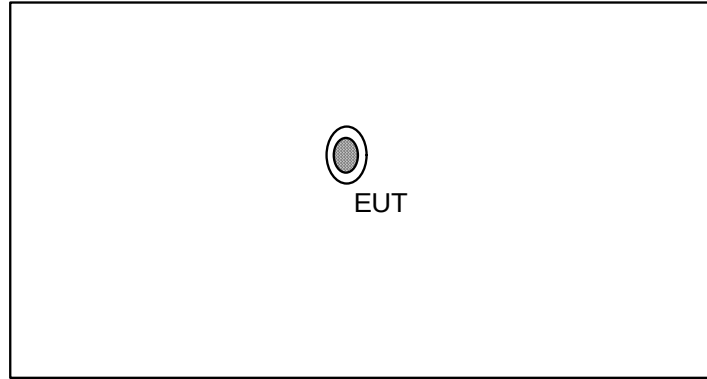
Application	Bluetooth
Radiated Emission	Mode 1: Tx_CH00_2402 MHz Mode 2: Tx_CH39_2441 MHz Mode 3: Tx_CH78_2480 MHz Mode 4: Adapter Charging Mode Mode 5: USB Charging Mode
Conducted Emission	Mode 1: Adapter Charging Mode Mode 2: USB Charging Mode

2.3. Ancillary Equipment List

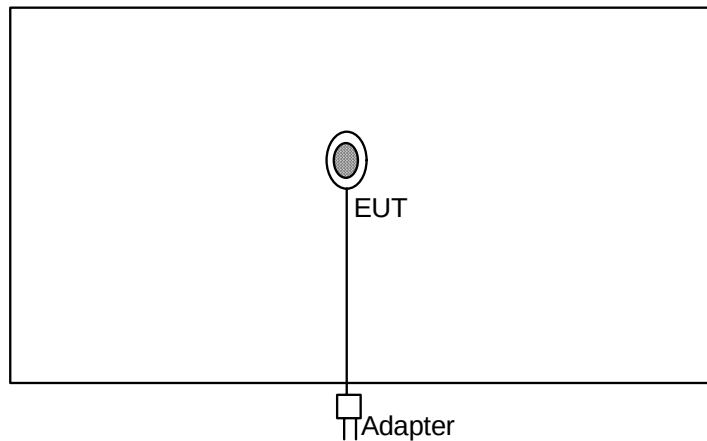
Item	Equipment	Trade Name	Model No.
1.	USB Cable	N/A	N/A
2.	Adapter	MOTOROLA	FMP5202A
3.	Notebook	DELL	D400

2.4. Connection Diagram of Test System

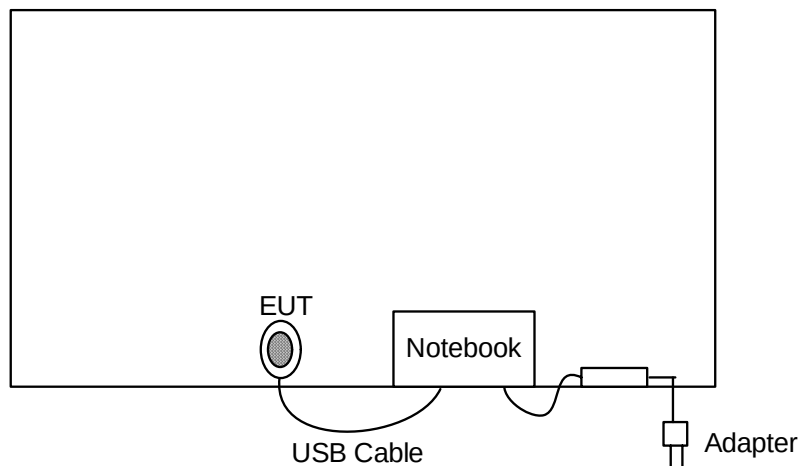
Bluetooth Tx Mode



Adapter Charging Mode



USB Charging Mode





3. RF Utility

The programmed RF Utility "BTtest 3" can allow EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testings.



4. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055
Test Site No : CO01-HY, 03CH06-HY

4.1. Test Voltage

AC 120V/60Hz

4.2. Standard for Methods of Measurement

ANSI C63.4-2003

4.3. Test in Compliance with

47 CFR Part 15 Subpart C

4.4. Frequency Range Investigated

Conduction: from 150 kHz to 30 MHz

Radiation: from 30 MHz to 25000MHz

4.5. Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

5. Report of Measurements and Examinations

5.1. List of Measurements and Examinations

FCC Rule	Description of Test	Result	Section
15.247(a)(1)	Hopping Channel Separation	Pass	5.2
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	5.3
15.247(a)(1)	Hopping Channel Bandwidth	Pass	5.4
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass	5.5
15.247(b)(1)	Output Power	Pass	5.6
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass	5.7
15.207	Conducted Emission	Pass	5.8
15.209	Radiated Emission	Pass	5.9
15.203	Antenna Requirement	Pass	5.10

5.2. Hopping Channel Separation

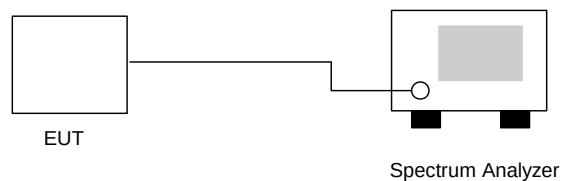
5.2.1. Measuring Instruments :

As described in chapter 6 of this test report.

5.2.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.2.3. Test Setup Layout :



5.2.4. Test Result : The spectrum analyzer plots are attached as below

- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

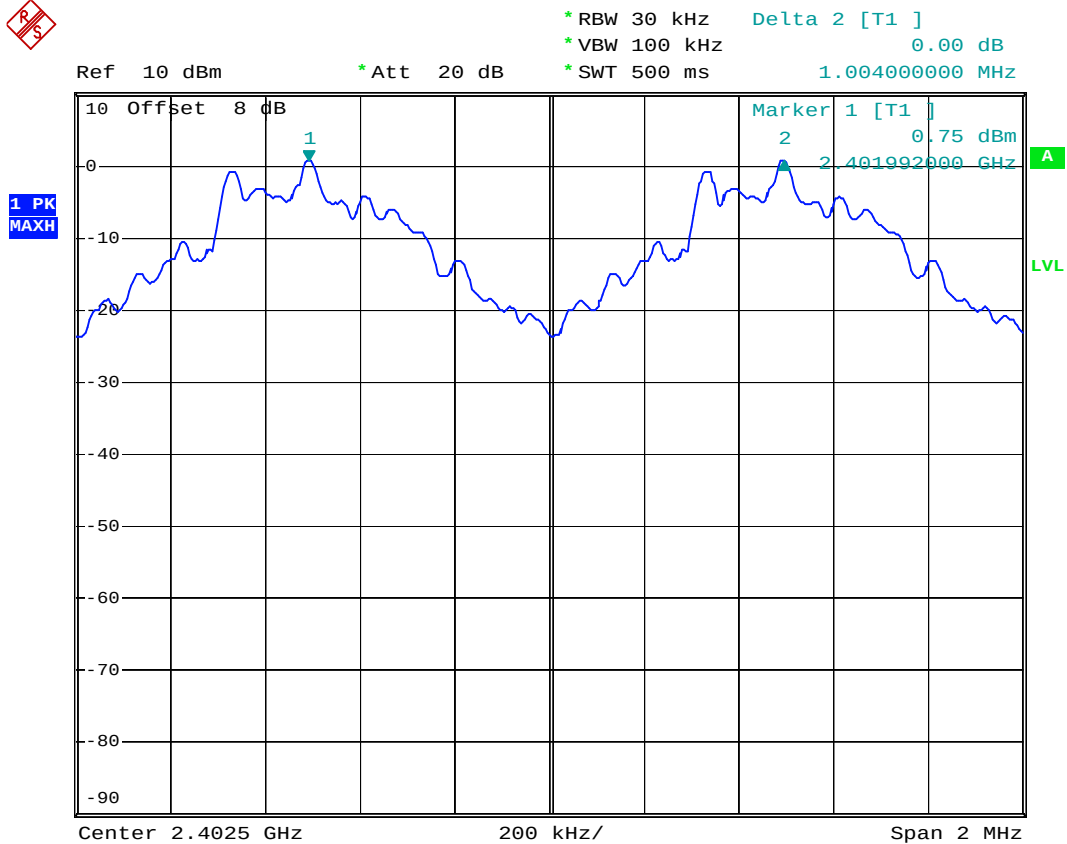
Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.004	0.822	Mode 1
39	2441	1.004	0.828	Mode 2
78	2480	1.008	0.830	Mode 3

Remark: Limit is the greater one of 25kHz or the 20dB bandwidth of the hopping channel.



5.2.5 Hopping Channel Separation

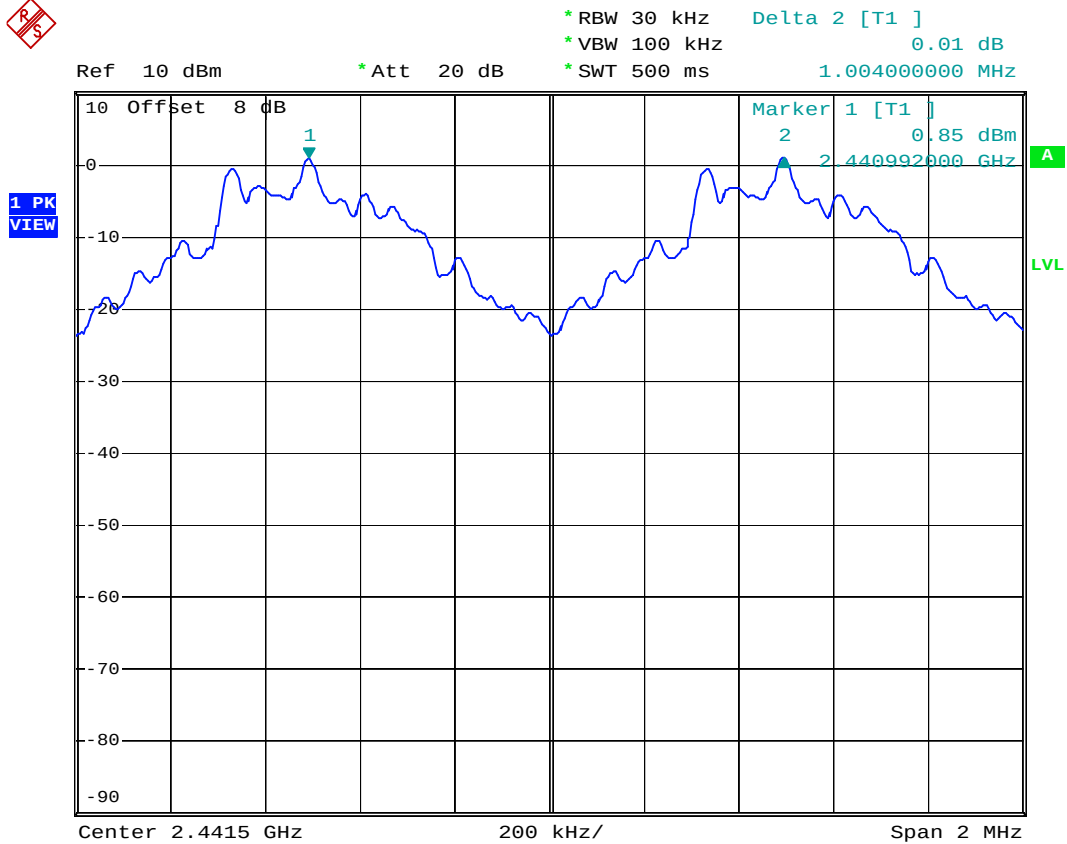
Mode 1: CH00 (2402MHz)



Date: 18.AUG.2006 20:35:56



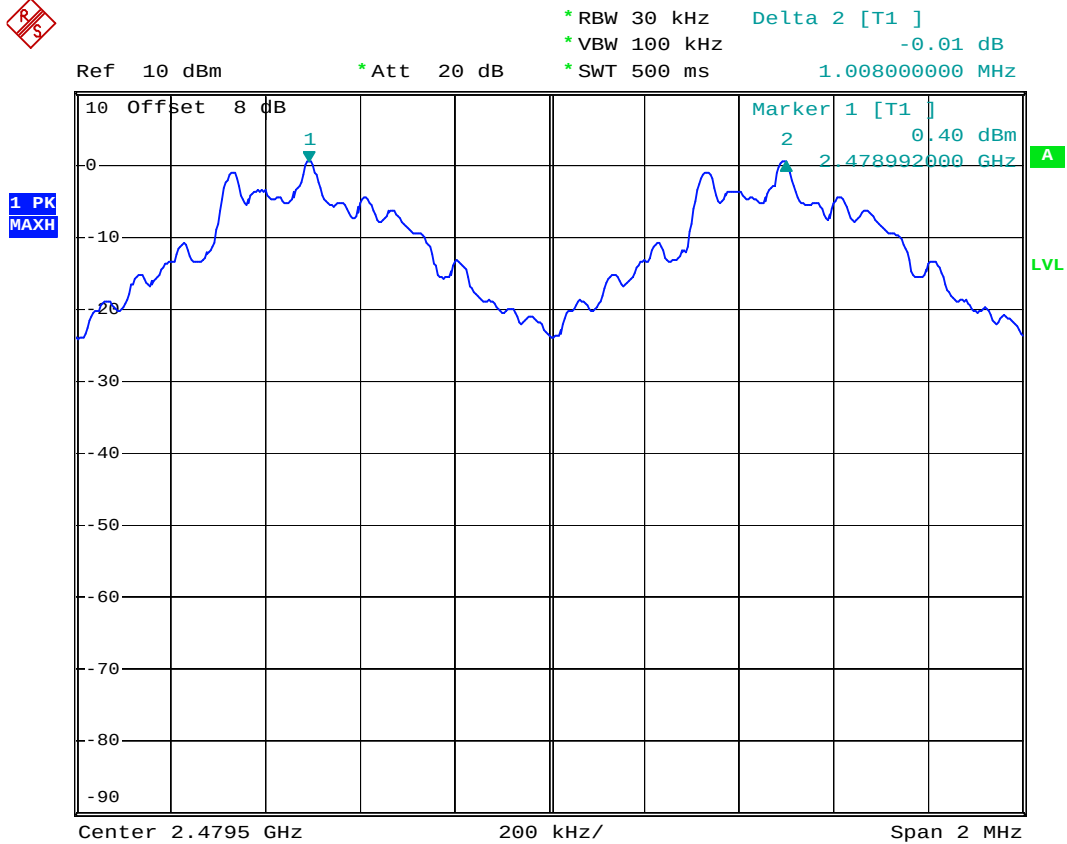
Mode 2: CH39 (2441MHz)



Date: 18.AUG.2006 20:35:00



Mode 3: CH78 (2480MHz)



Date: 18.AUG.2006 20:34:04

5.3. Number of Hopping Frequency

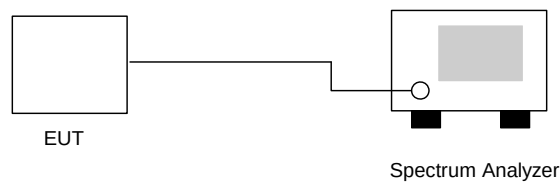
5.3.1. Measuring Instruments :

As described in chapter 6 of this test report.

5.3.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.3.3. Test Setup Layout :

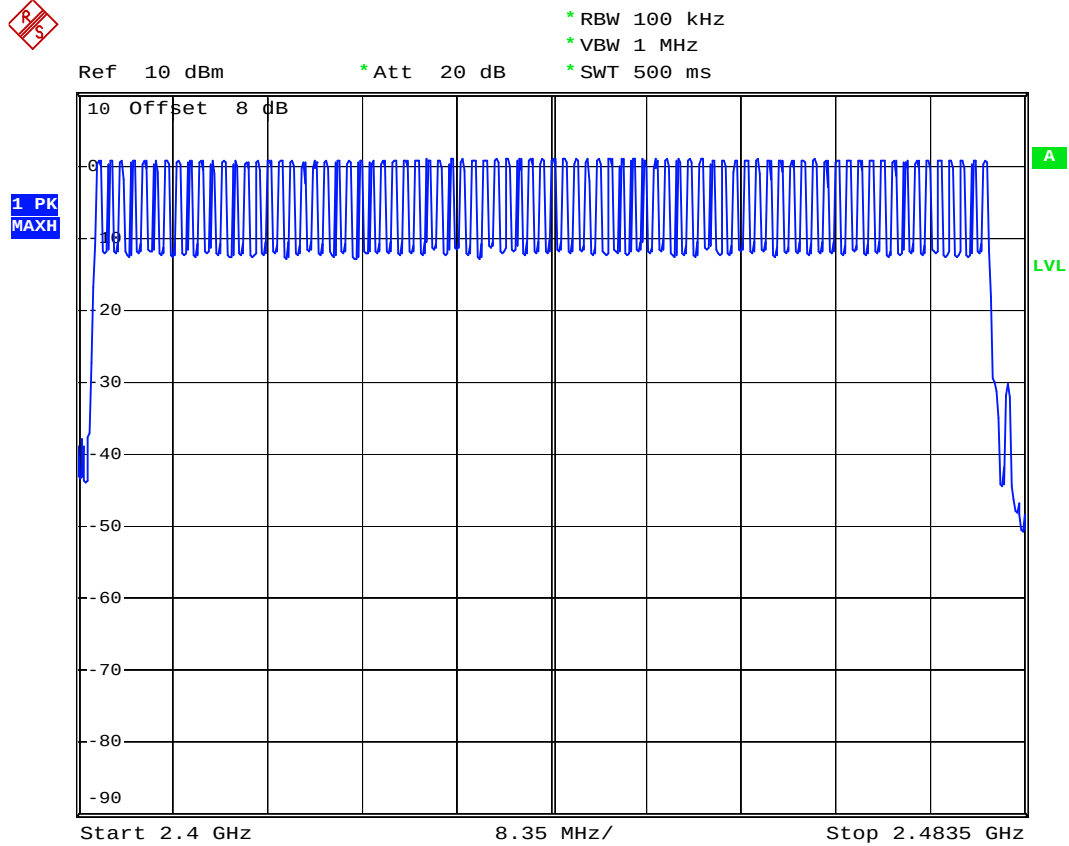


5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

Number of Hopping Frequency (Channel)	Limits (Channel)
79	15

5.3.5 Number of Hopping Frequency



Date: 18.AUG.2006 22:41:14

5.4 Hopping Channel Bandwidth

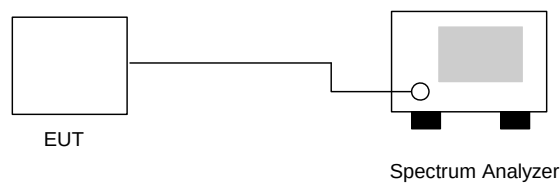
5.4.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.4.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 300kHz.
3. The Hopping Channel bandwidth is defined as the frequency range where the power is higher than peak power minus 20dB.

5.4.3 Test Setup Layout :



5.4.4 Test Result : See spectrum analyzer plots below

- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.822	1.0	Mode 1
39	2441	0.828	1.0	Mode 2
78	2480	0.830	1.0	Mode 3



5.4.5 Hopping Channel Bandwidth

Mode 1: CH00 (2402MHz)



Date: 18.AUG.2006 20:29:07



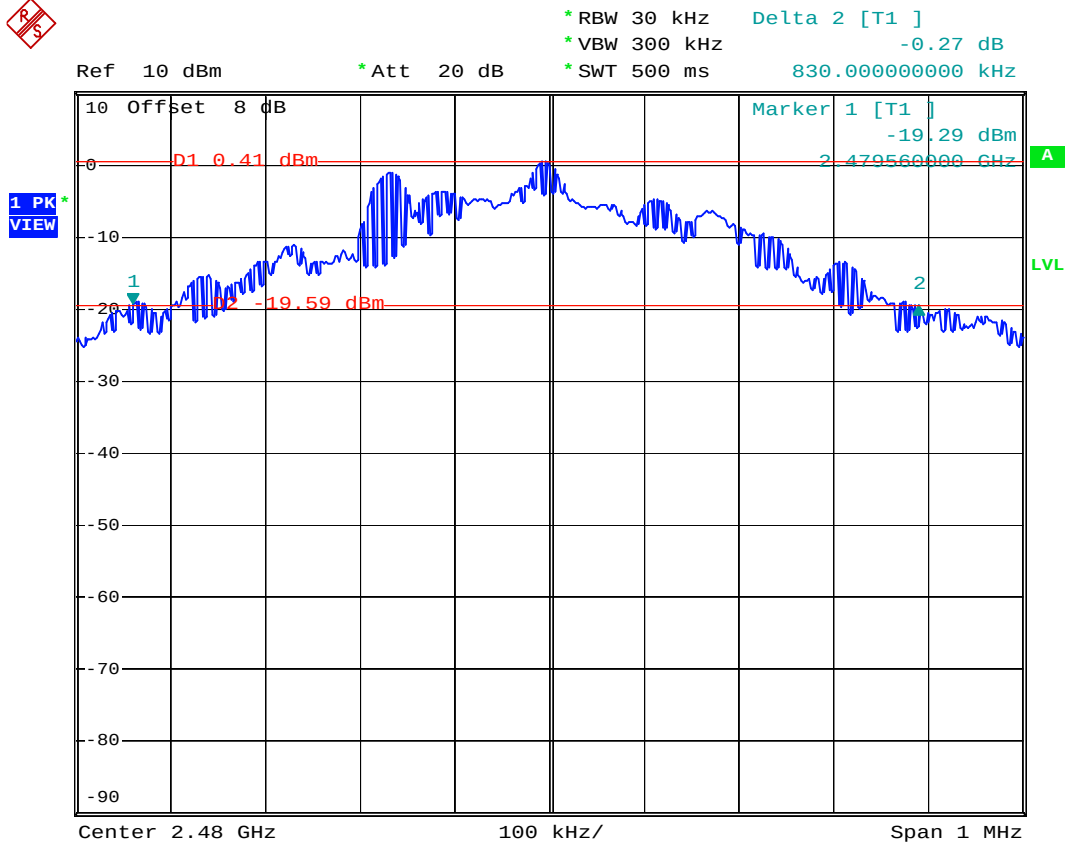
Mode 2: CH39 (2441MHz)



Date: 18.AUG.2006 20:27:08



Mode 3: CH78 (2480MHz)



Date: 18.AUG.2006 20:21:04

5.5 Dwell Time of Each Frequency

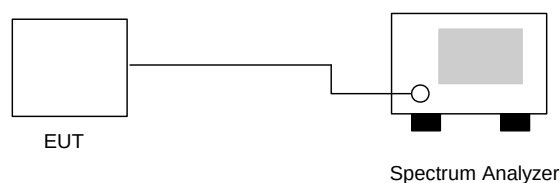
5.5.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.5.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measured and set the frequency span to zero span.
4. The equation = $79 \times 0.4 \times (1600/79) \times t$ (t = the time duration of one single pulse)

5.5.3 Test Setup Layout :



5.5.4 Test Result : See spectrum analyzer plots below

- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

Ch00

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	10	548	0.173	< 0.4
DH3	5.1	1830	0.295	< 0.4
DH5	3.4	3110	0.334	< 0.4

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	10.1	548	0.175	0.4
DH3	5.1	1820	0.293	0.4
DH5	3.3	3070	0.320	0.4

CH78

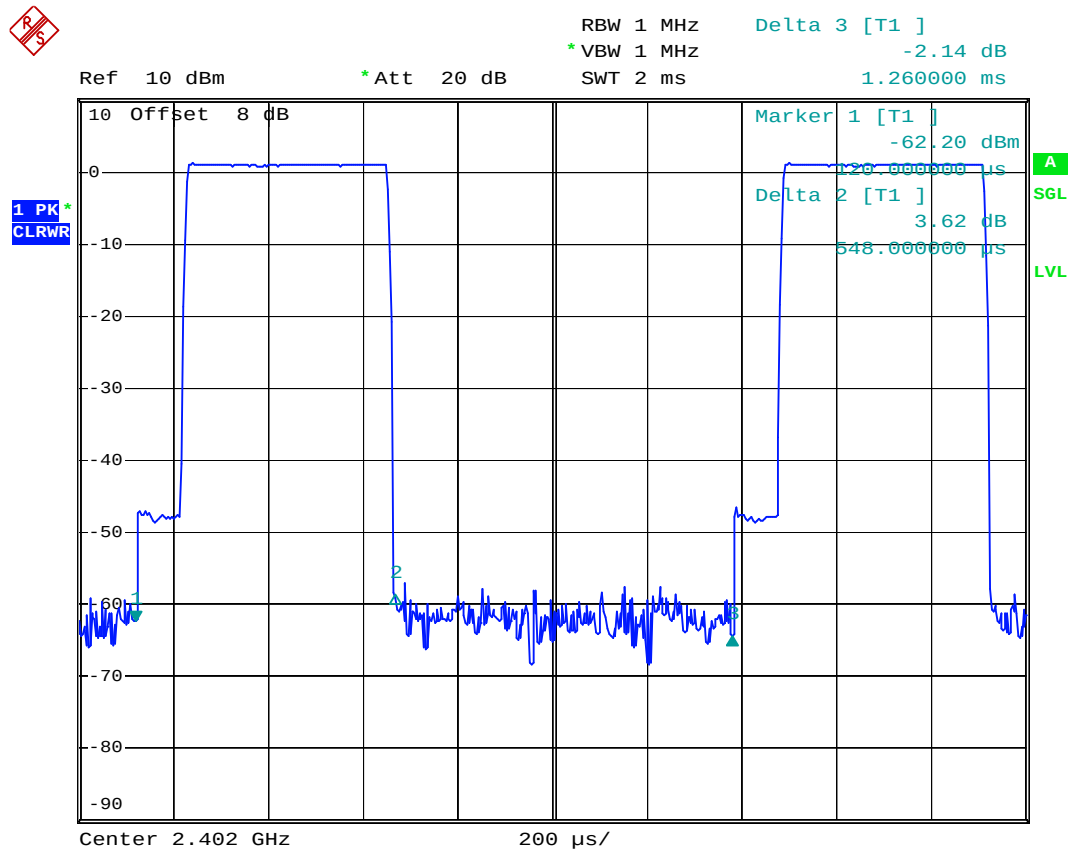
Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	10	552	0.174	0.4
DH3	5	1820	0.288	0.4
DH5	3.3	3070	0.320	0.4

※ Remark:

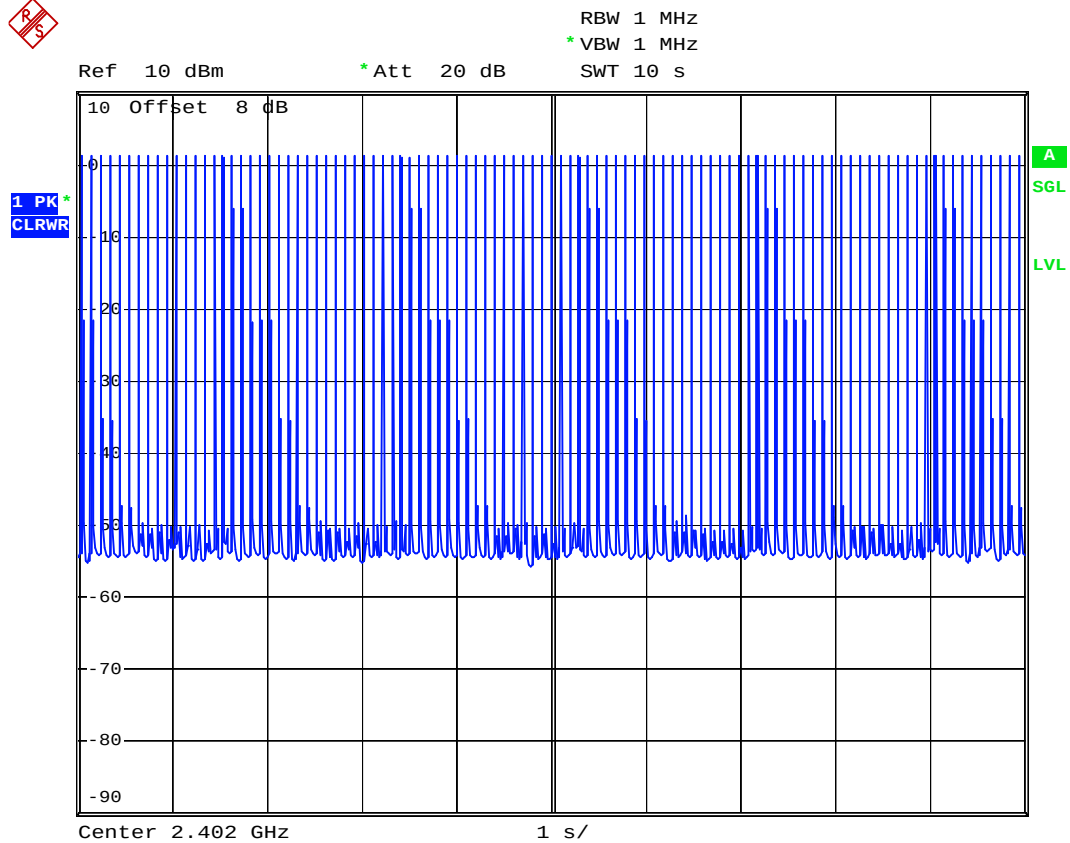
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)

5.5.5 Dwell Time

DH1 (CH00)



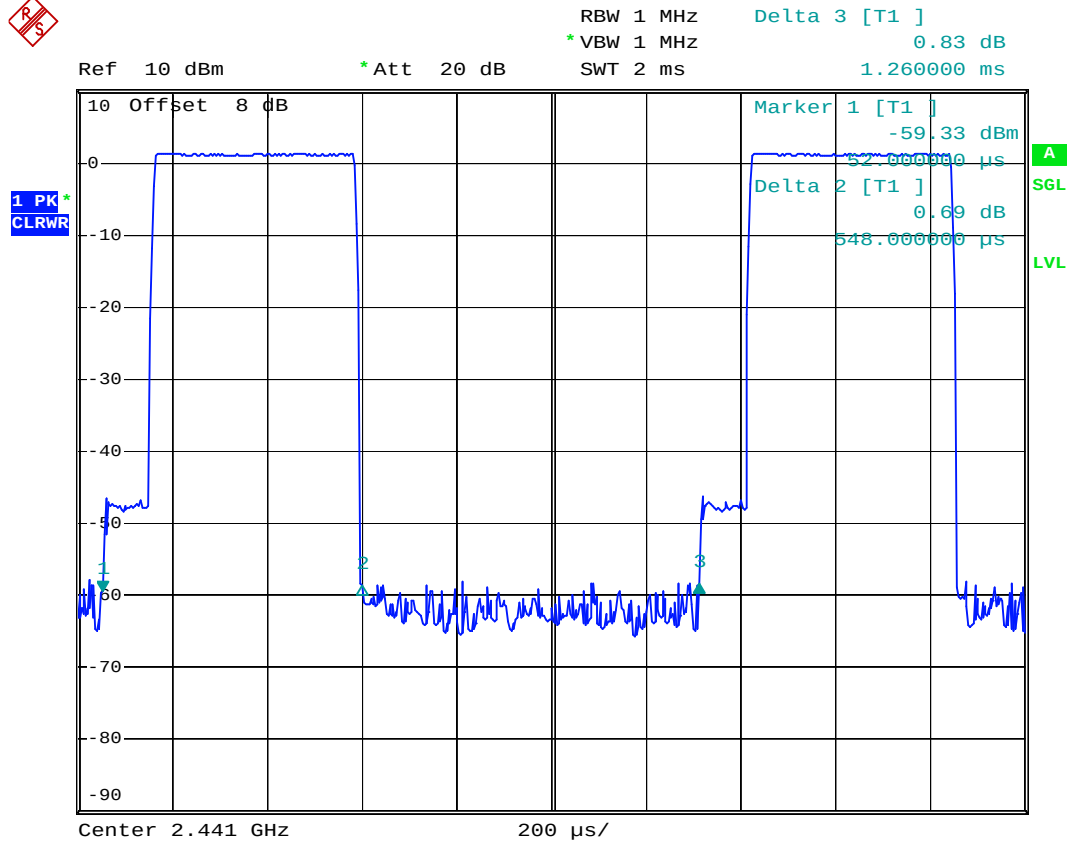
Date: 18.AUG.2006 20:37:53



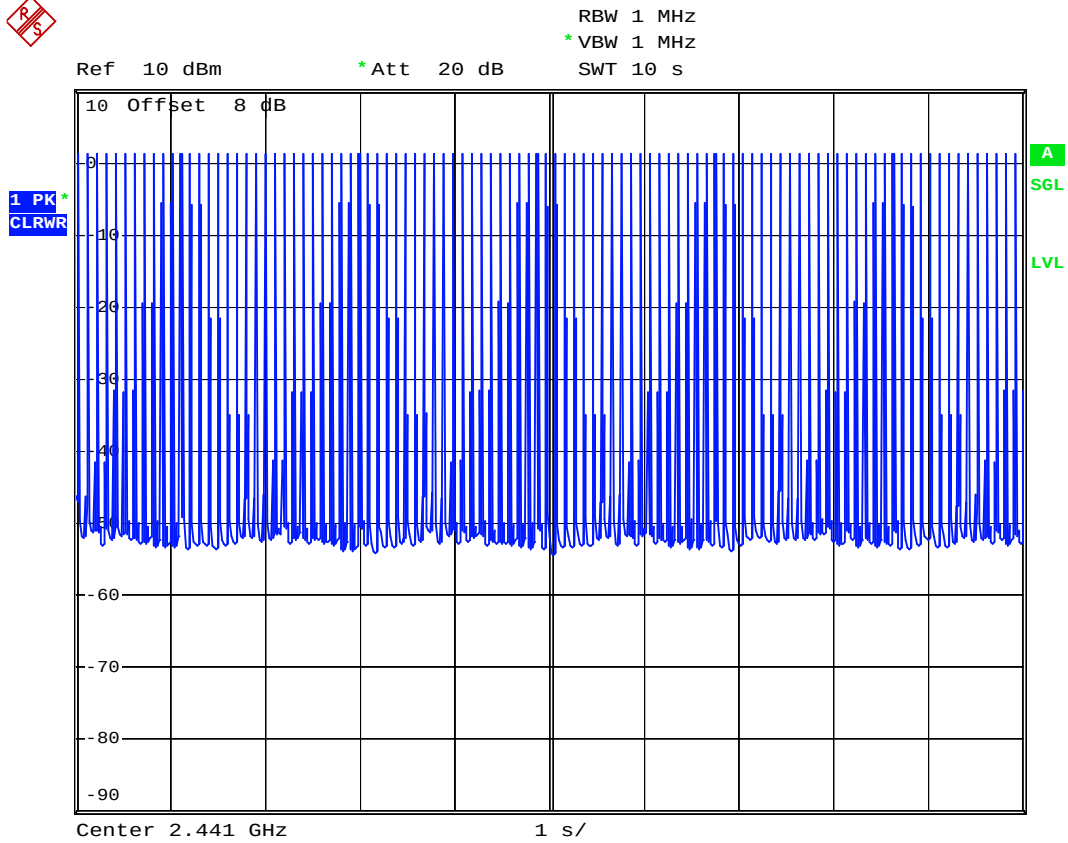
Date: 18.AUG.2006 20:42:25



DH1 (CH39)



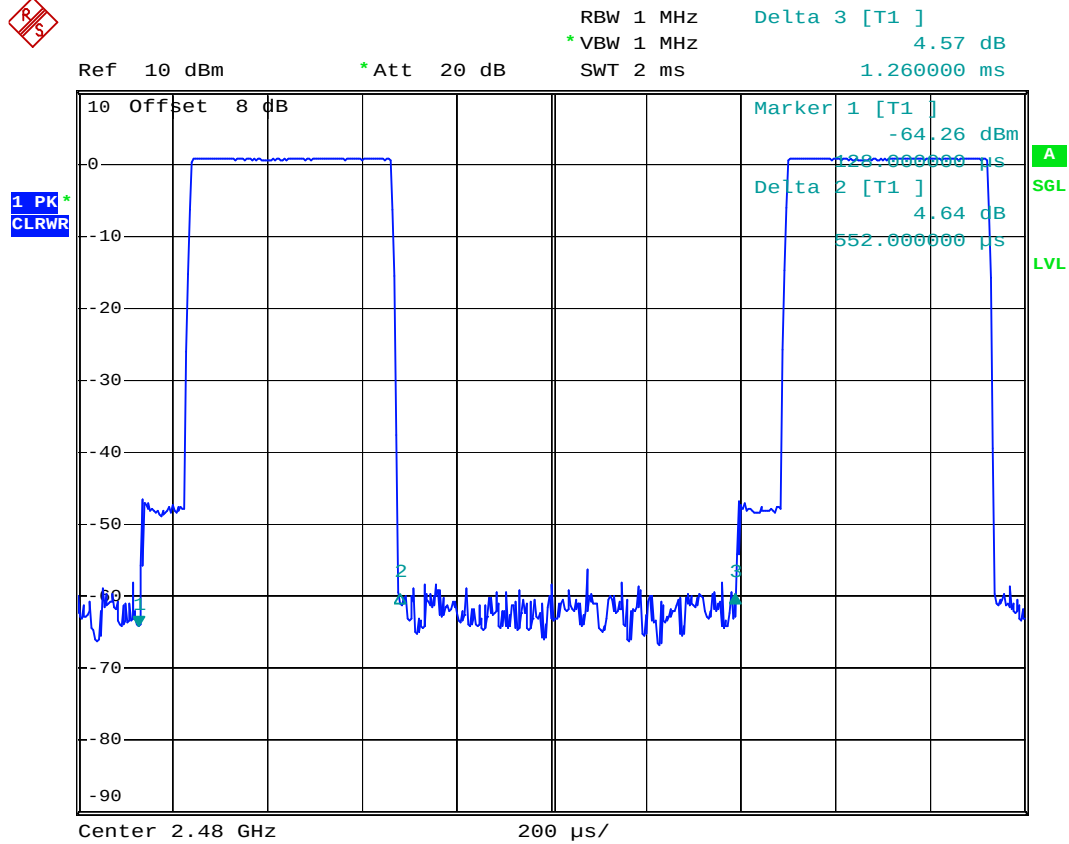
Date: 18.AUG.2006 20:39:00



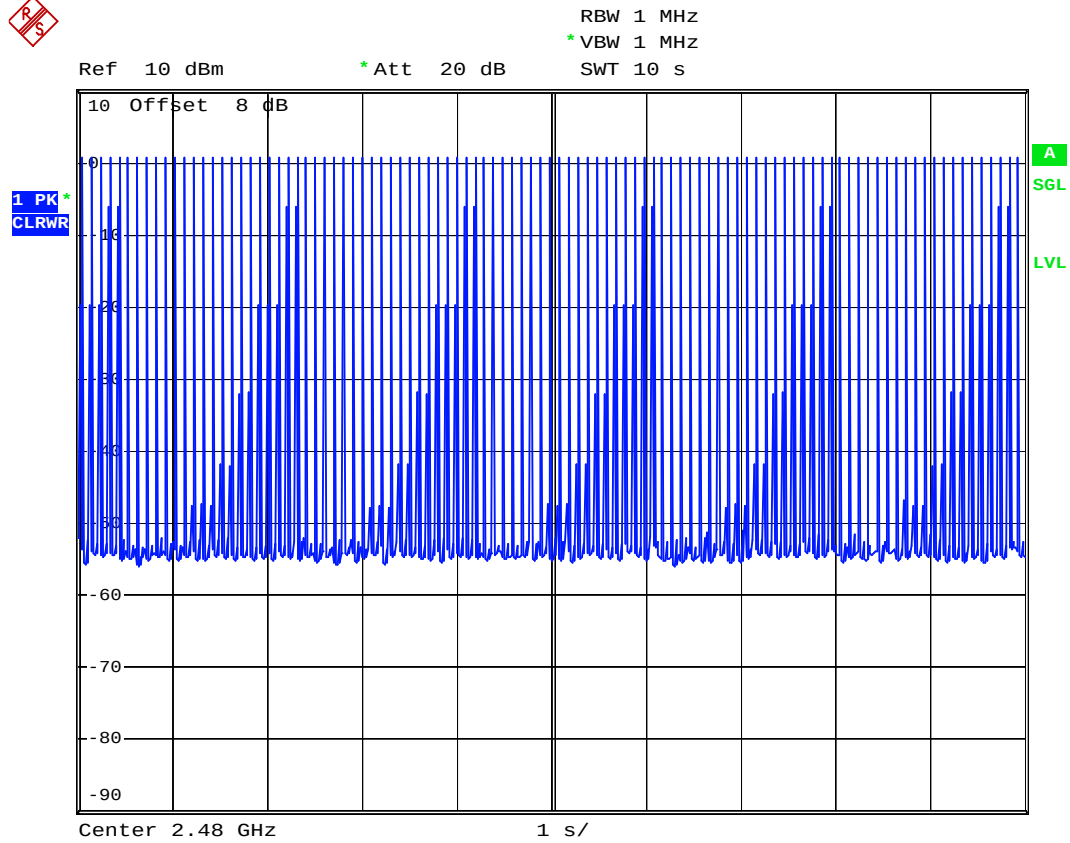
Date: 18.AUG.2006 20:41:41



DH1 (CH78)



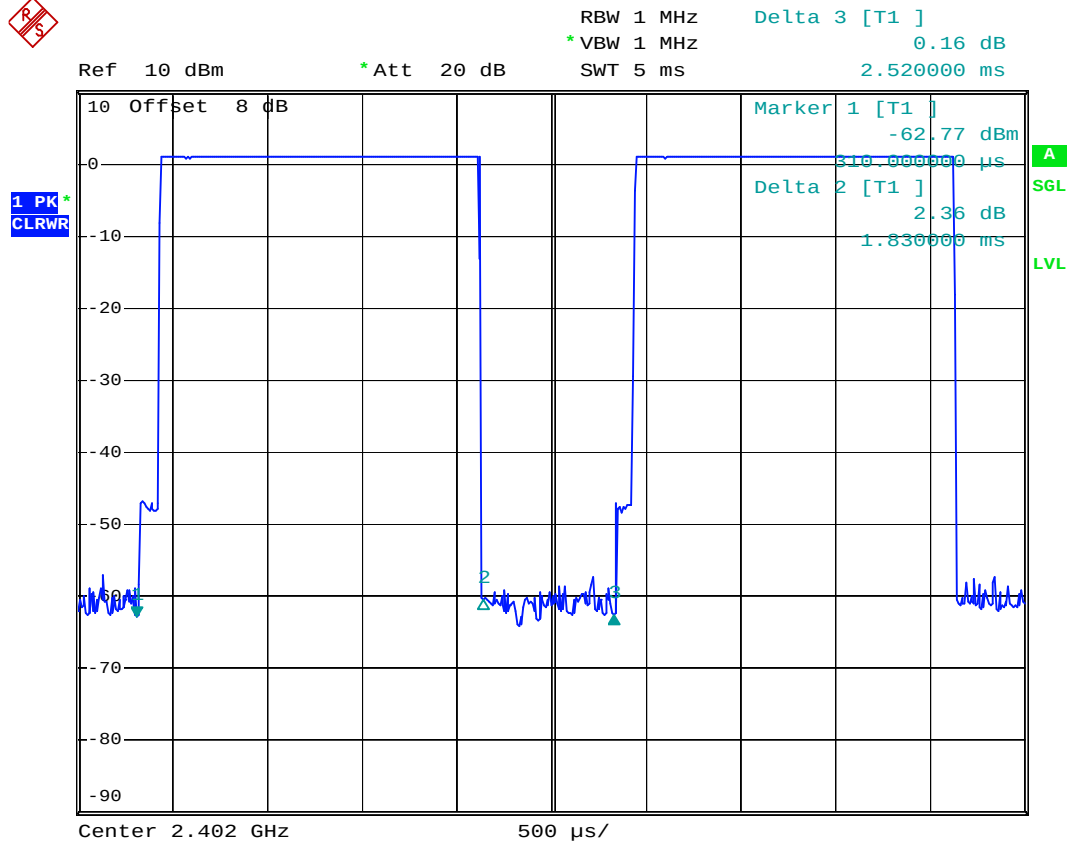
Date: 18.AUG.2006 20:39:54



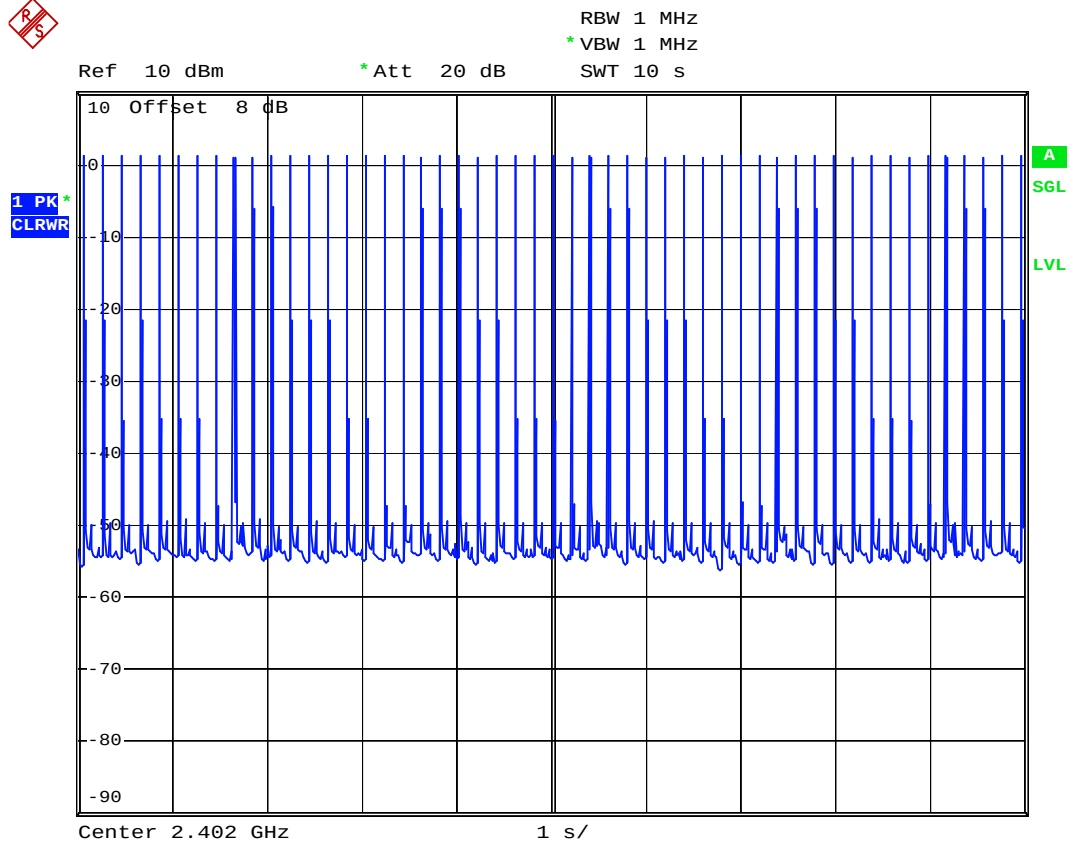
Date: 18.AUG.2006 20:41:00



DH3 (CH00)



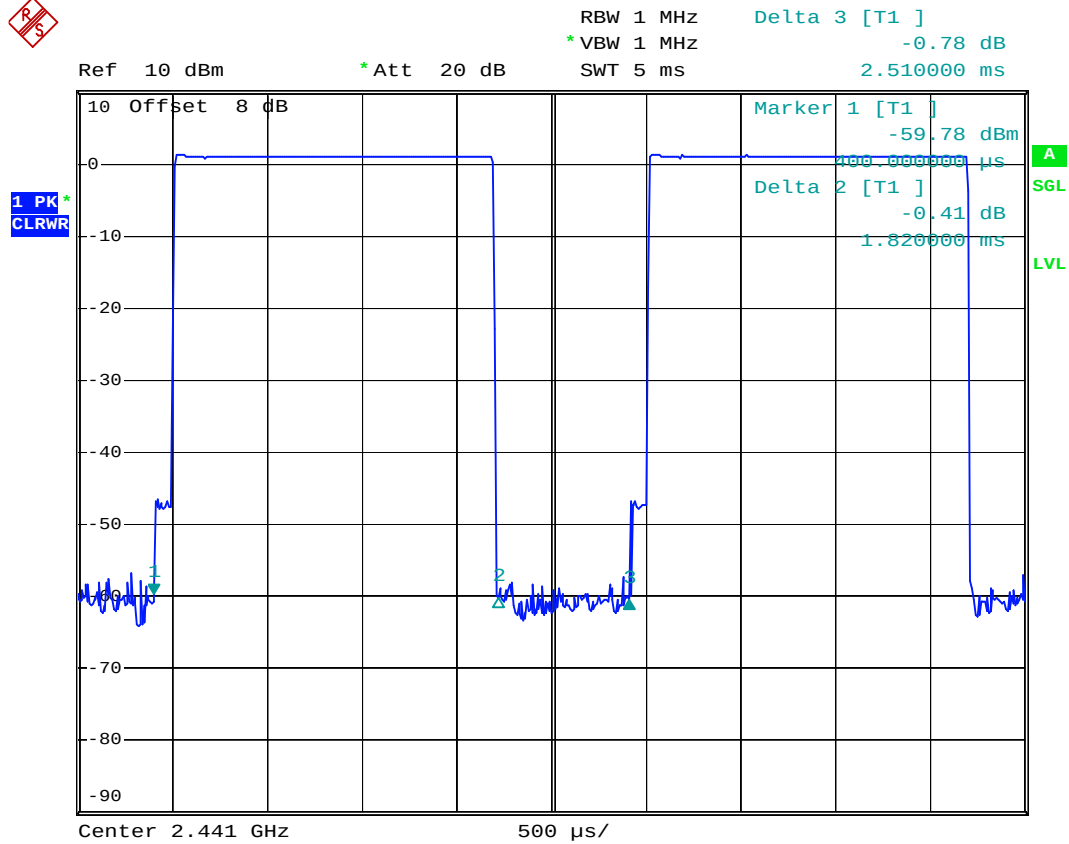
Date: 18.AUG.2006 20:48:51



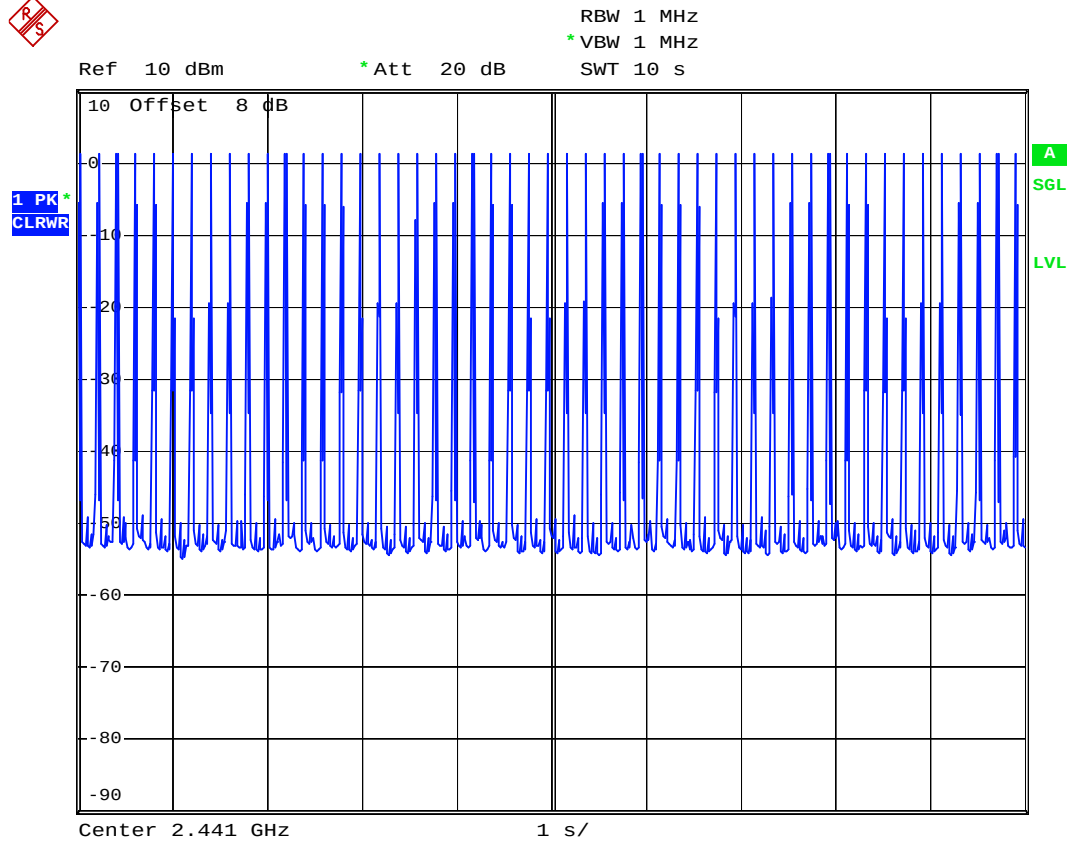
Date: 18.AUG.2006 20:43:56



DH3 (CH39)



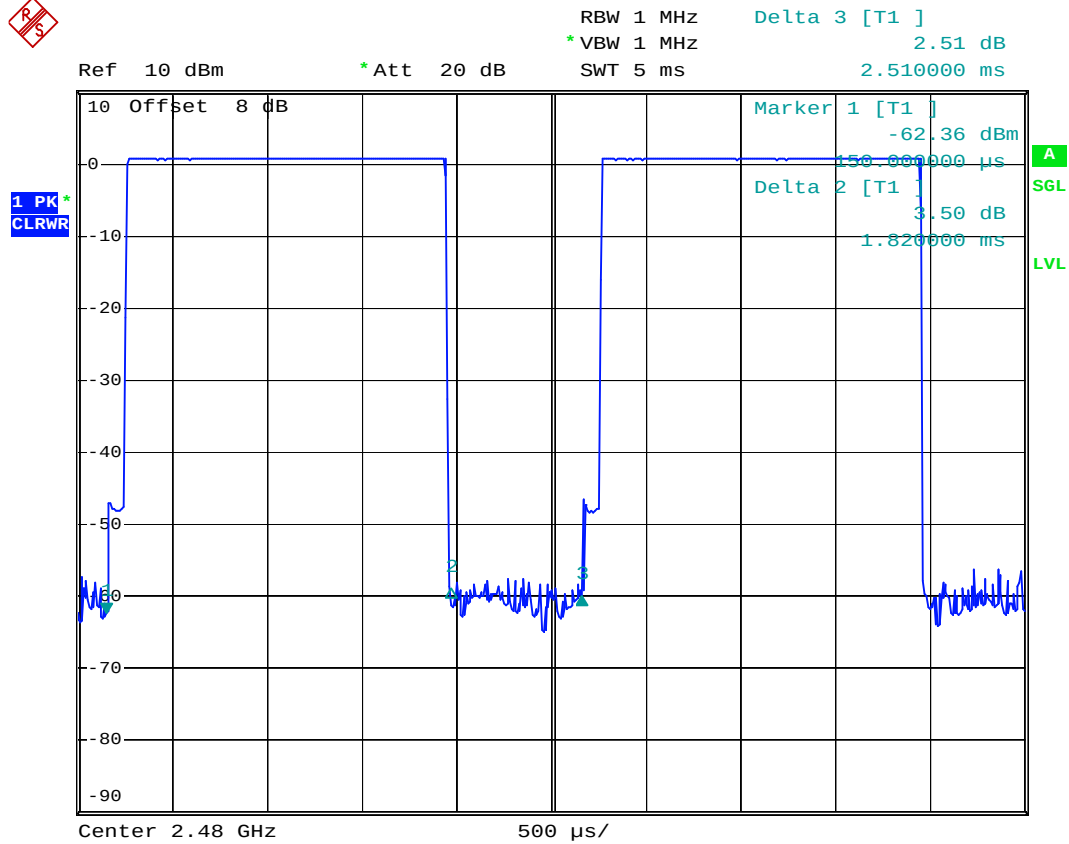
Date: 18.AUG.2006 20:47:56



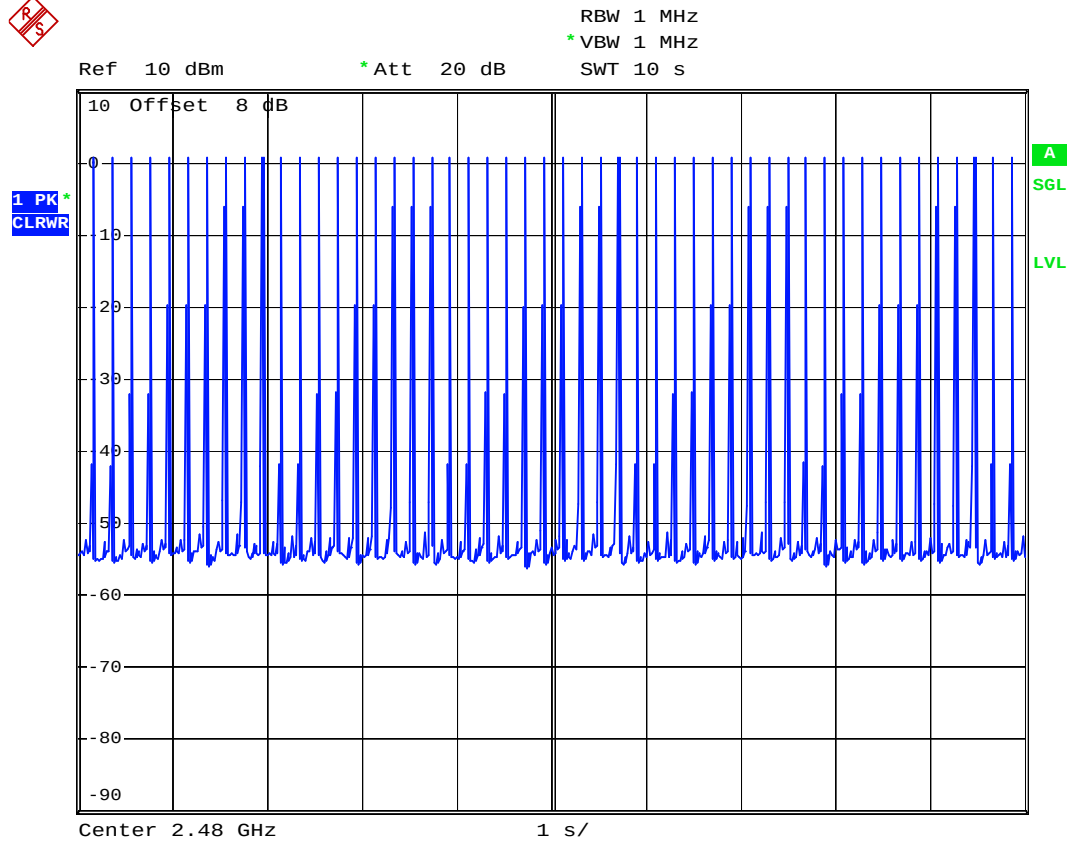
Date: 18.AUG.2006 20:44:35



DH3 (CH78)



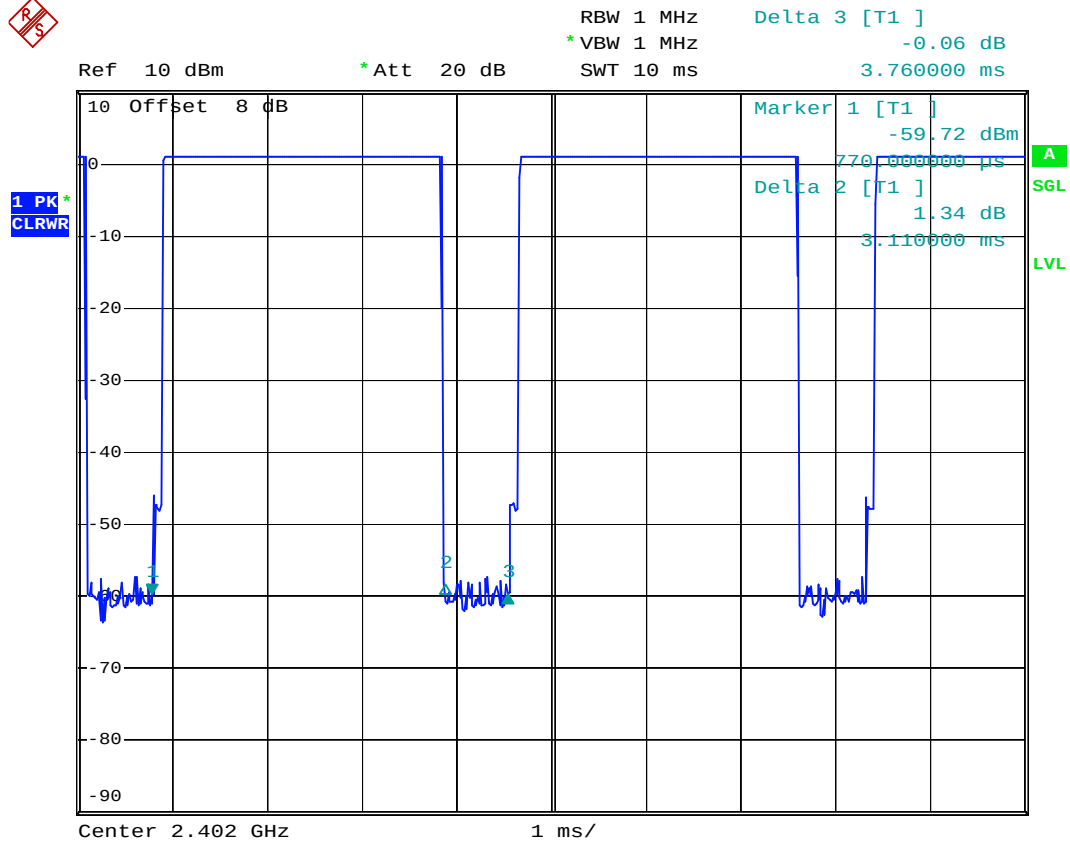
Date: 18.AUG.2006 20:46:49



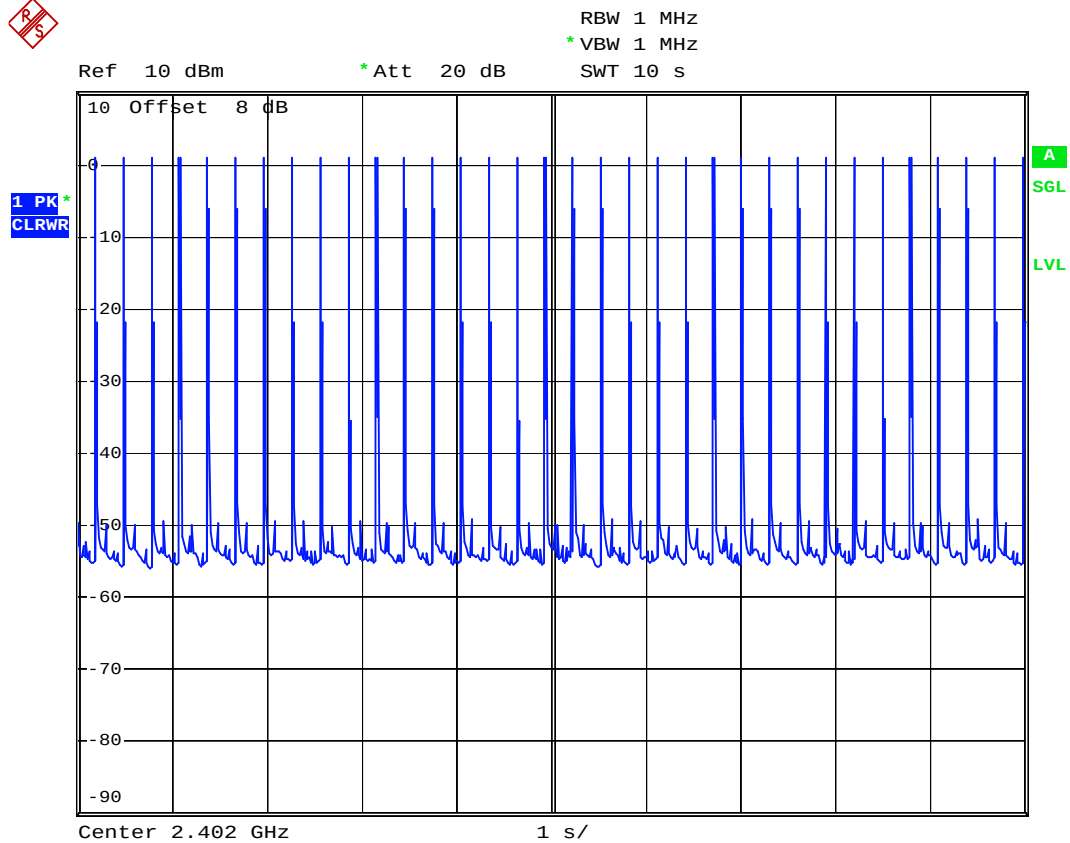
Date: 18.AUG.2006 20:45:15



DH5 (CH00)

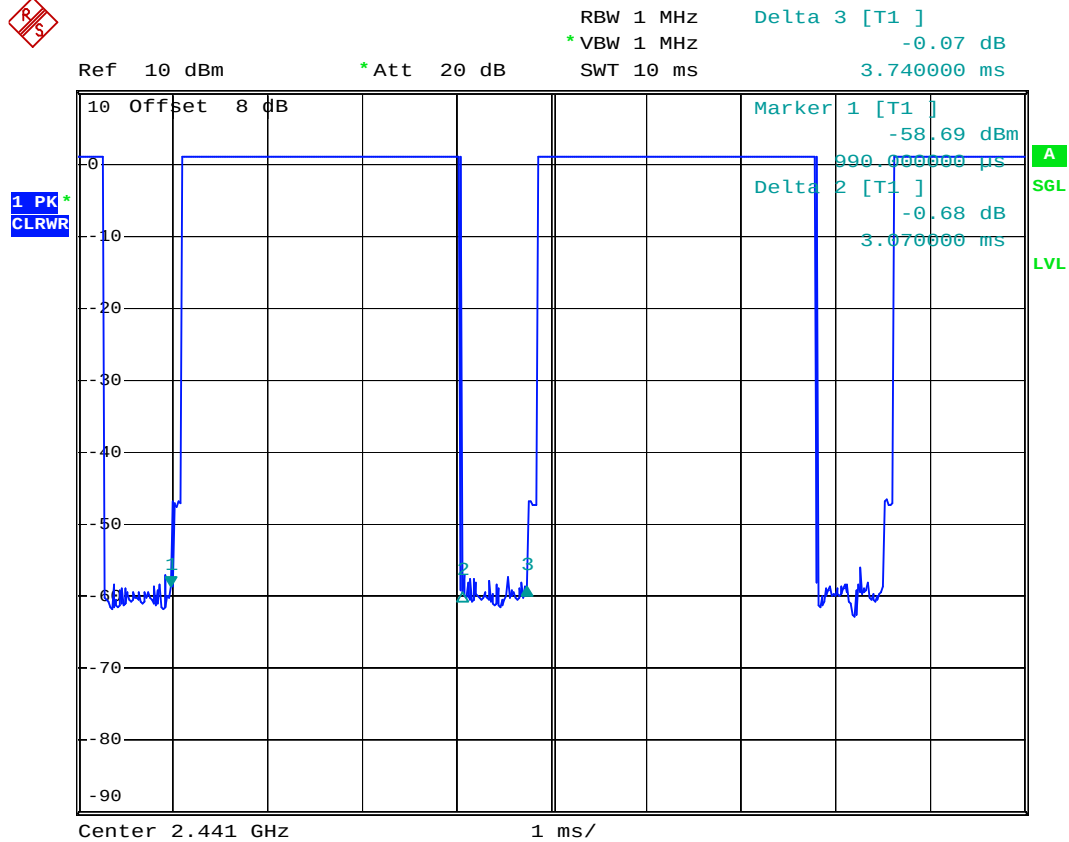


Date: 18.AUG.2006 20:50:14

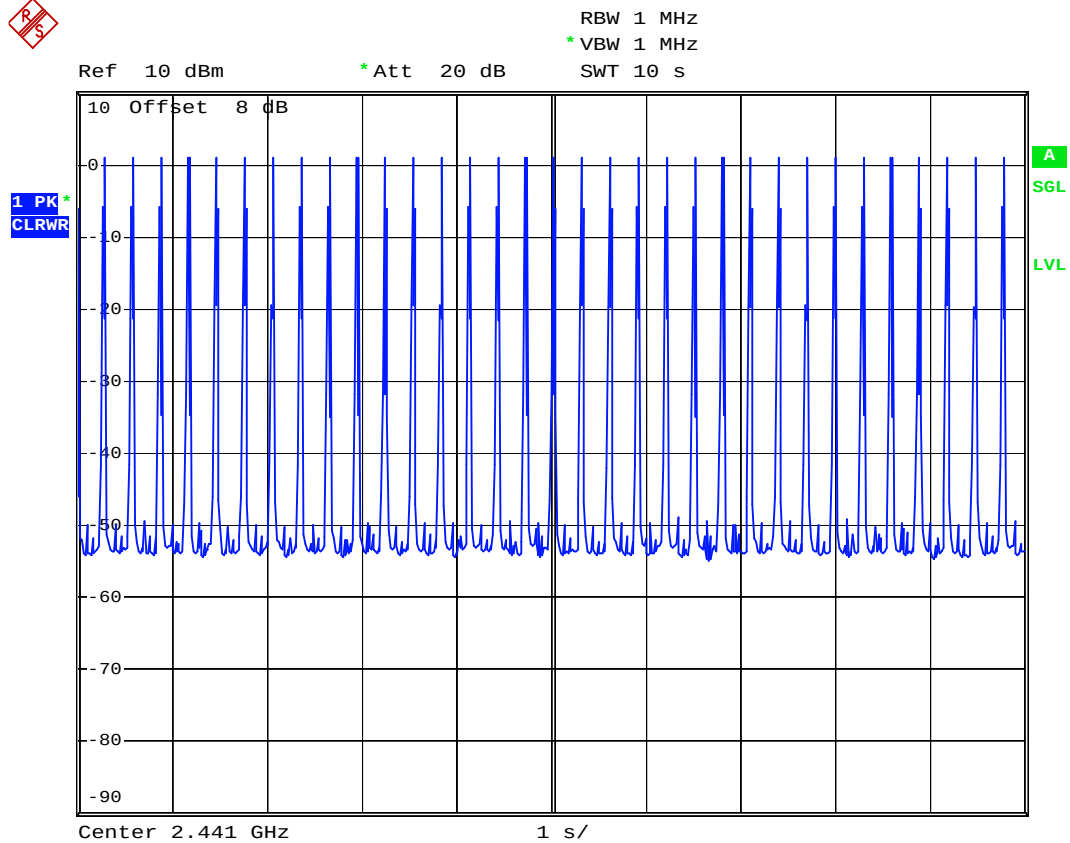


Date: 18.AUG.2006 20:54:31

DH5 (CH39)

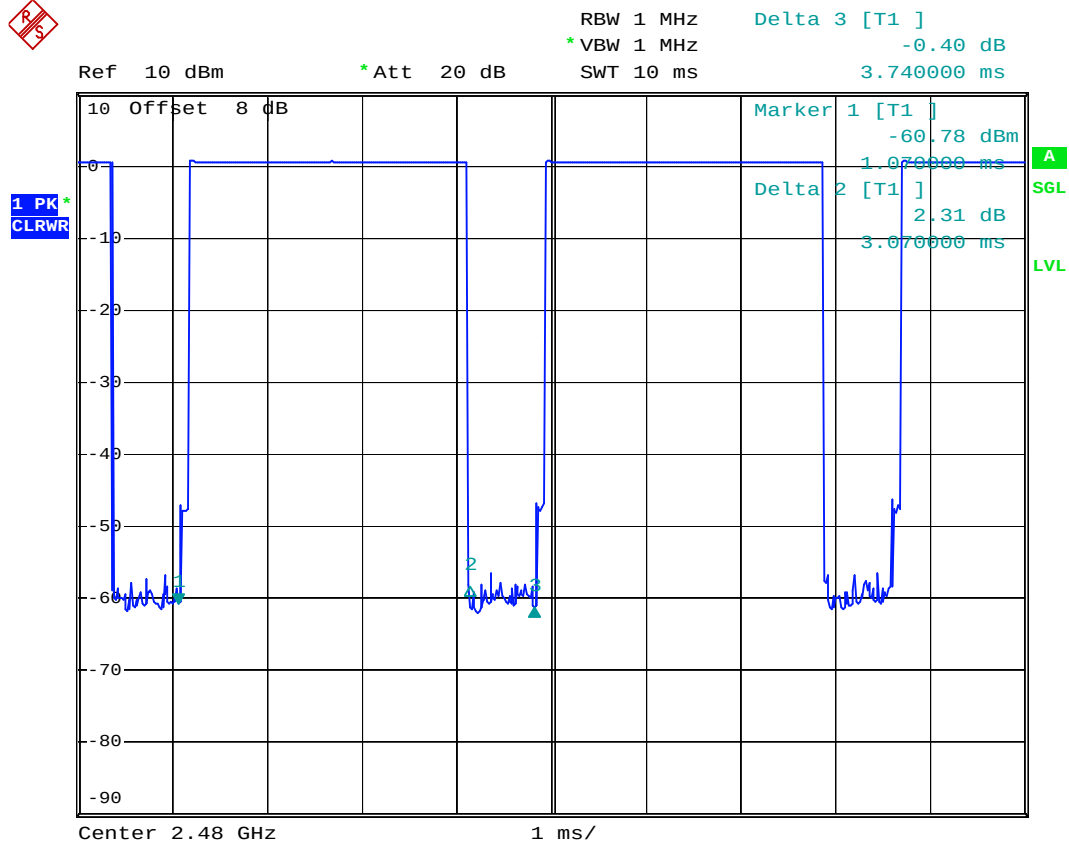


Date: 18.AUG.2006 20:51:21

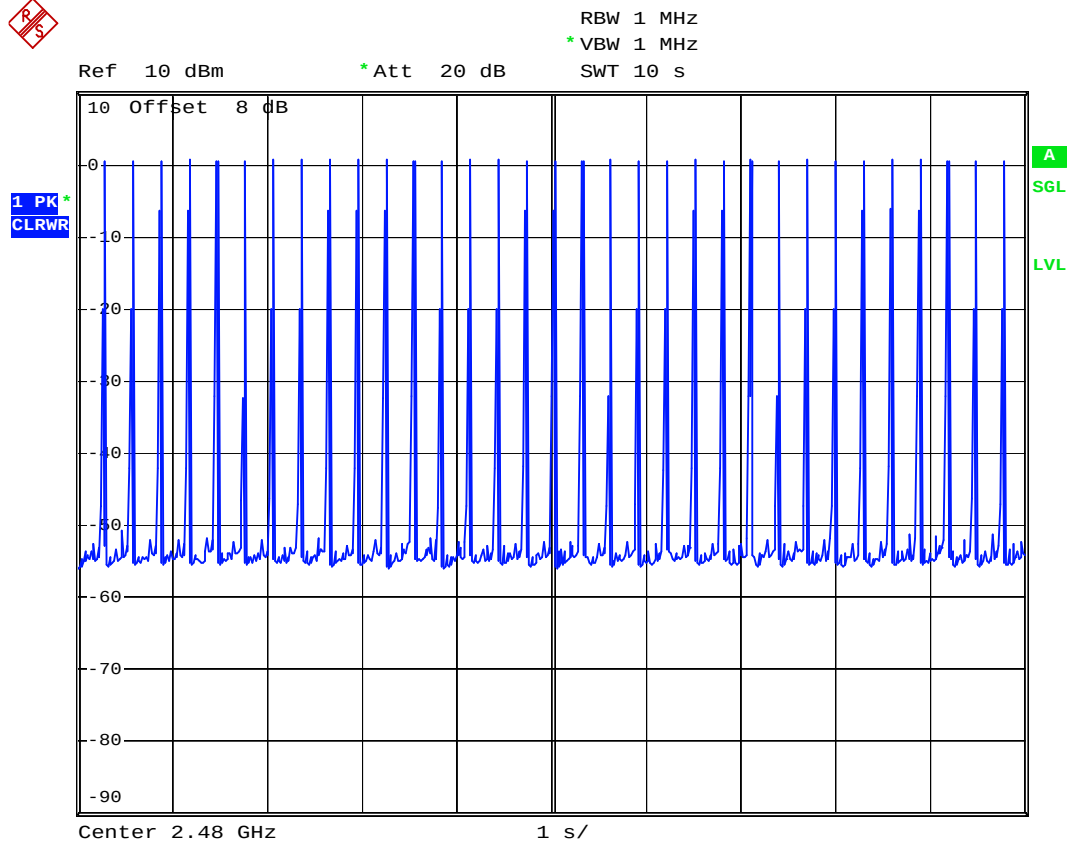


Date: 18.AUG.2006 20:53:58

DH5 (CH78)



Date: 18.AUG.2006 20:52:23



Date: 18.AUG.2006 20:53:14

5.6 Output Power

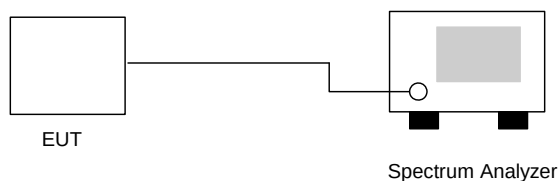
5.6.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.6.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. The center frequency of the spectrum analyzer was set to the fundamental frequency and set RBW to 3MHz and VBW to 3MHz.

5.6.3 Test Setup Layout :



5.6.4 Test Result : See spectrum analyzer plots below

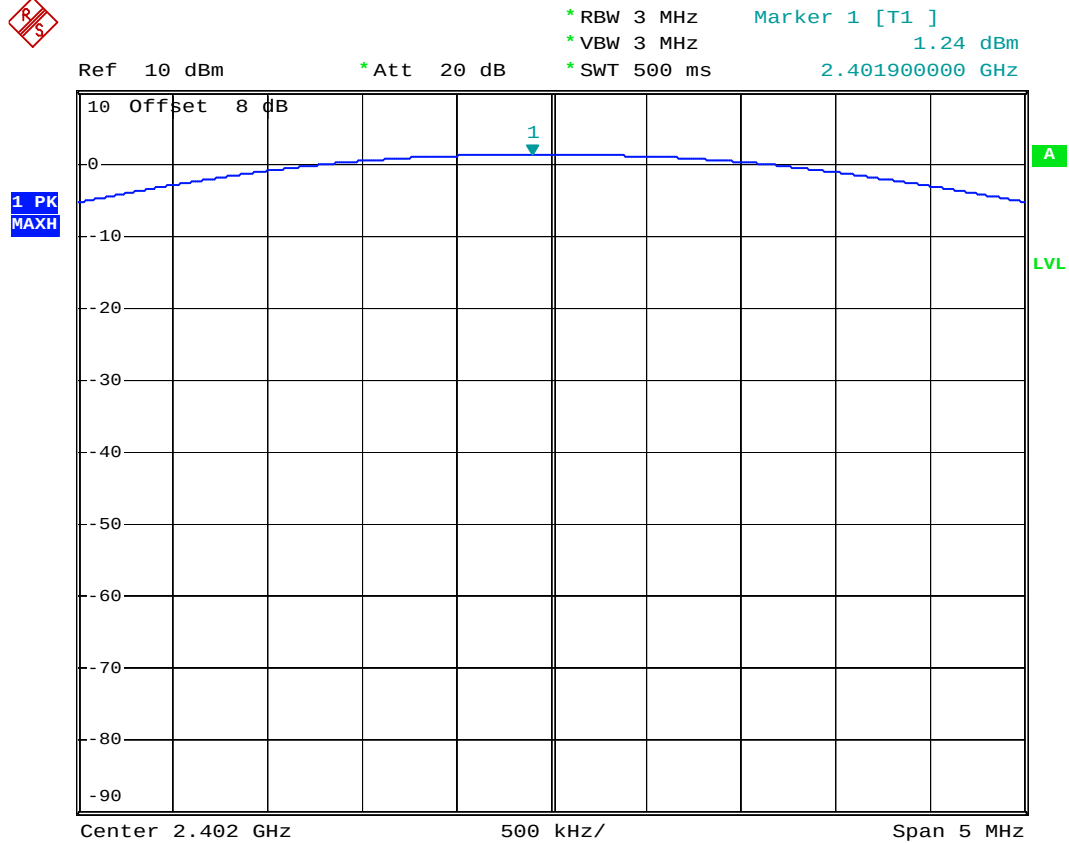
- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)	Plot Ref. No.
00	2402	1.24	1W/30 dBm	Mode 1
39	2441	1.34	1W/30 dBm	Mode 2
78	2480	0.85	1W/30 dBm	Mode 3



5.6.5 Output Power

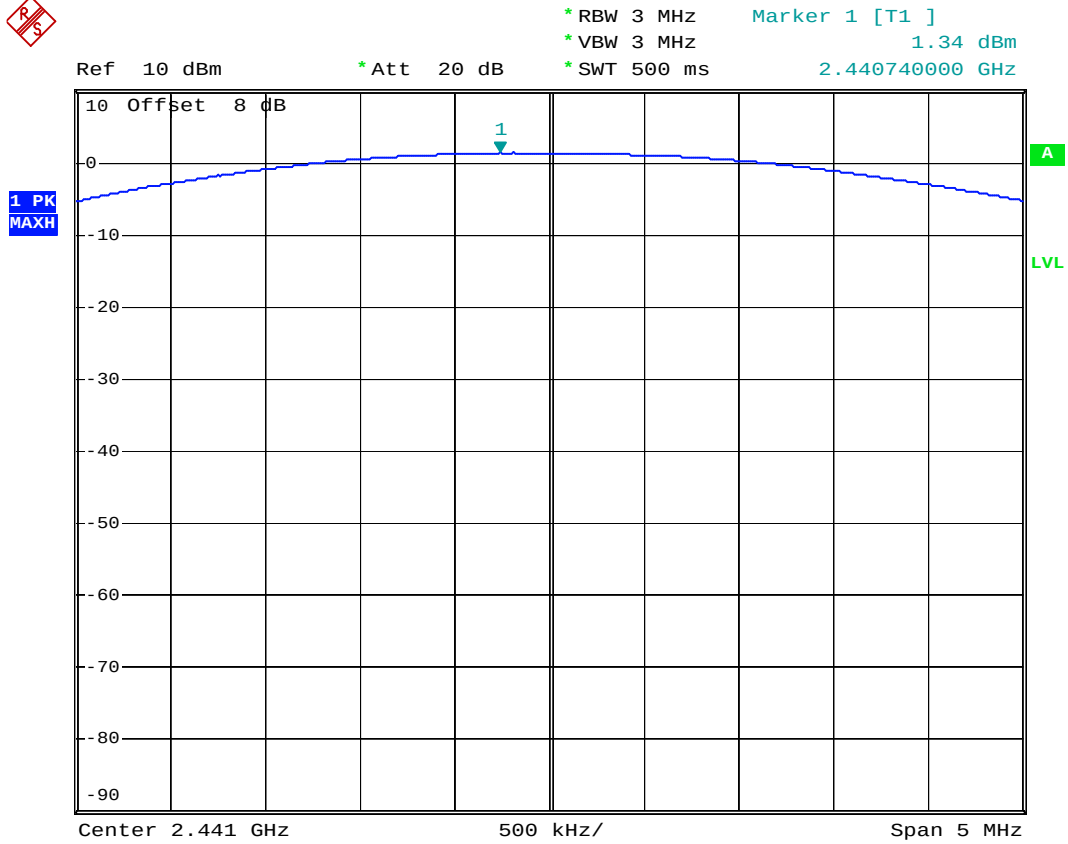
Mode 1: CH00 (2402MHz)



Date: 18.AUG.2006 20:17:44



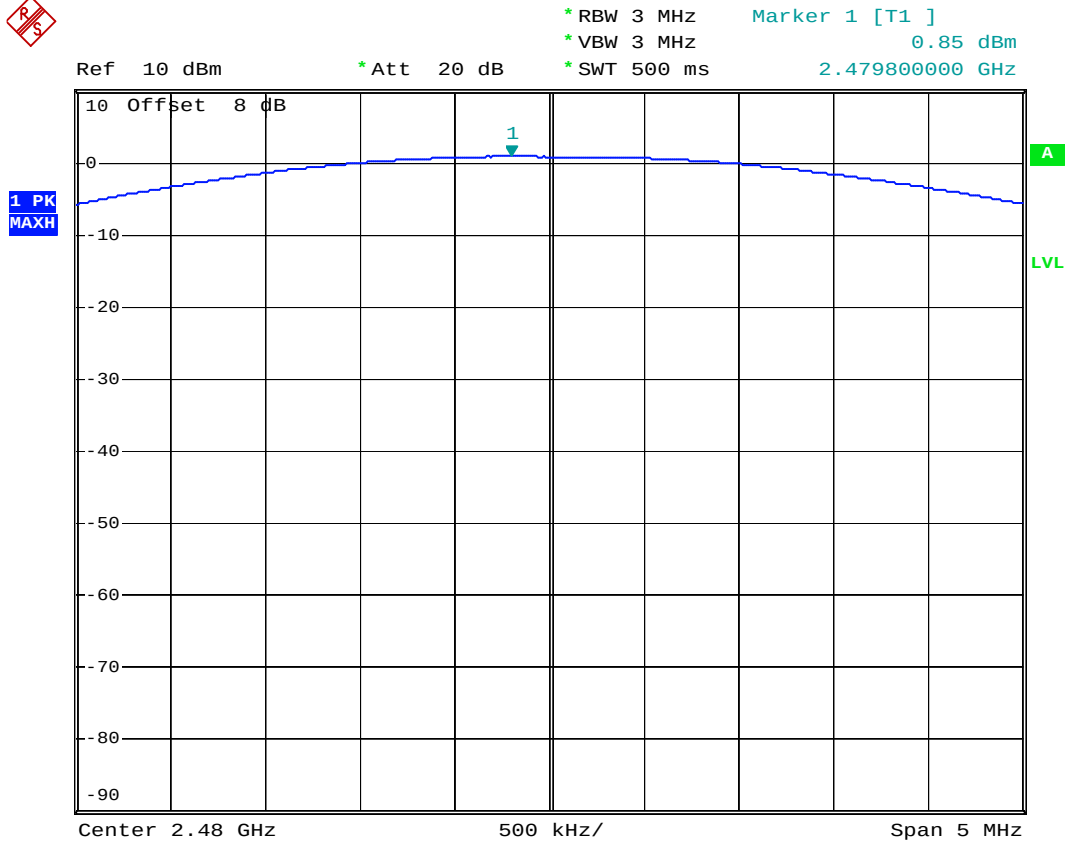
Mode 2: CH39 (2441MHz)



Date: 18.AUG.2006 20:18:27



Mode 3: CH78 (2480MHz)



Date: 18.AUG.2006 20:18:57

5.7 100kHz Bandwidth of Frequency Band Edges

5.7.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.7.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span for the conducted measurement, and RBW/VBW=1MHz/1MHz for peak measurement and RBW/VBW=1MHz/300Hz for average measurement in the radiated measurement.
3. The band edges was measured and recorded.

5.7.3 Test Result :

- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer : Louis

Test Result in lower band (Channel 00) : PASS

Test Result in higher band(Channel 78) : PASS

5.7.4 Note on Band edge Emission

CH00 (Horizontal)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2386.00	50.48	-23.52	74.00	51.43	30.26	4.23	35.44	100	360	Peak
2386.00	40.42	-13.58	54.00	41.37	30.26	4.23	35.44	100	153	Average

CH00 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2318.00	50.03	-23.97	74.00	50.97	30.26	4.26	35.46	100	360	Peak
2318.00	39.42	-14.58	54.00	10.42	30.23	4.17	35.40	136	151	Average

**CH78 (Horizontal)**

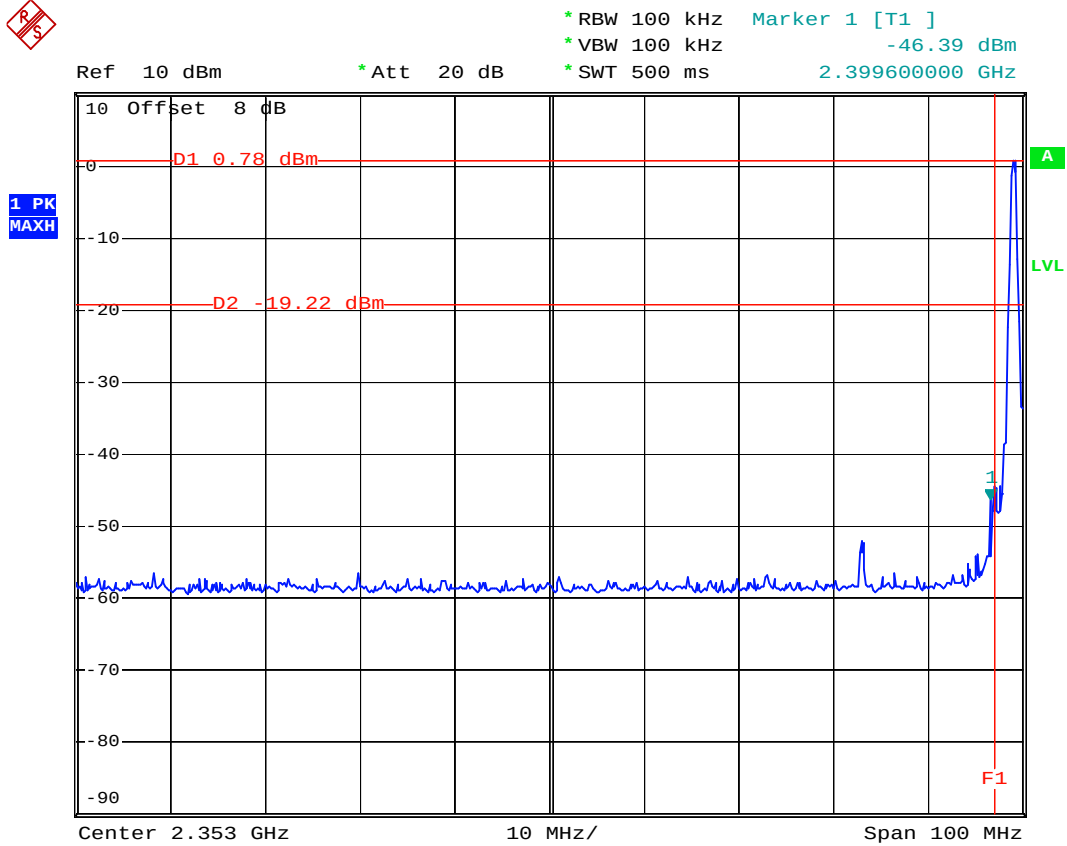
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	59.15	-14.85	74.00	60.01	30.29	4.36	35.51	100	360	Peak
2483.50	52.69	-1.31	54.00	53.55	30.29	4.36	35.51	100	150	Average

CH78 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	48.40	-5.60	54.00	49.26	30.29	4.36	35.51	100	149	Average
2483.50	55.05	-18.95	74.00	55.91	30.29	4.36	35.51	100	0	Peak

5.7.5 Frequency Band Edge

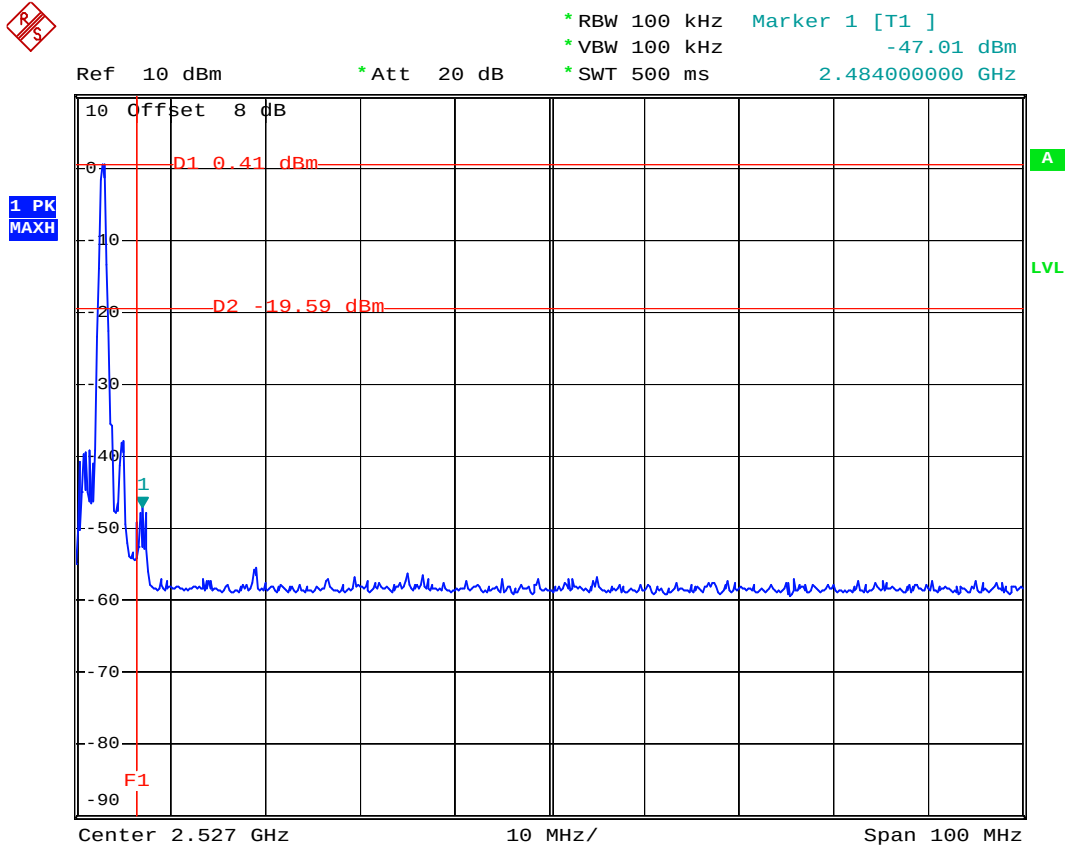
Mode 1: CH00 (2402 MHz)



Date: 18.AUG.2006 20:30:49



Mode 3: CH78 (2480 MHz)



Date: 18.AUG.2006 20:32:37



5.8 Conducted Emission

5.8.1 Measuring Instruments

As described in chapter 6 of this test Report.

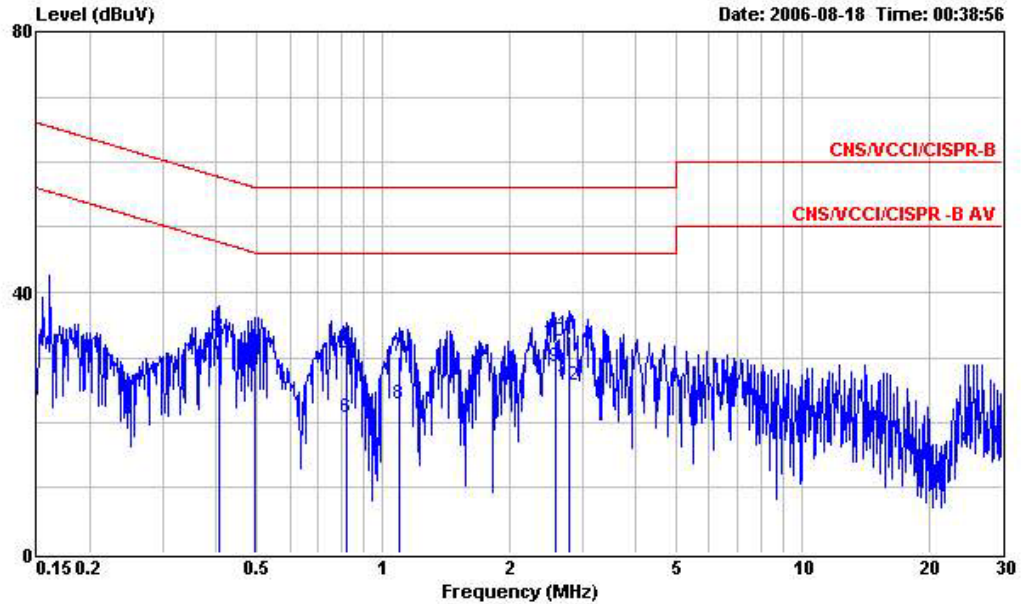
5.8.2 Test Procedures :

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.8.3 Test Data Test Mode 1

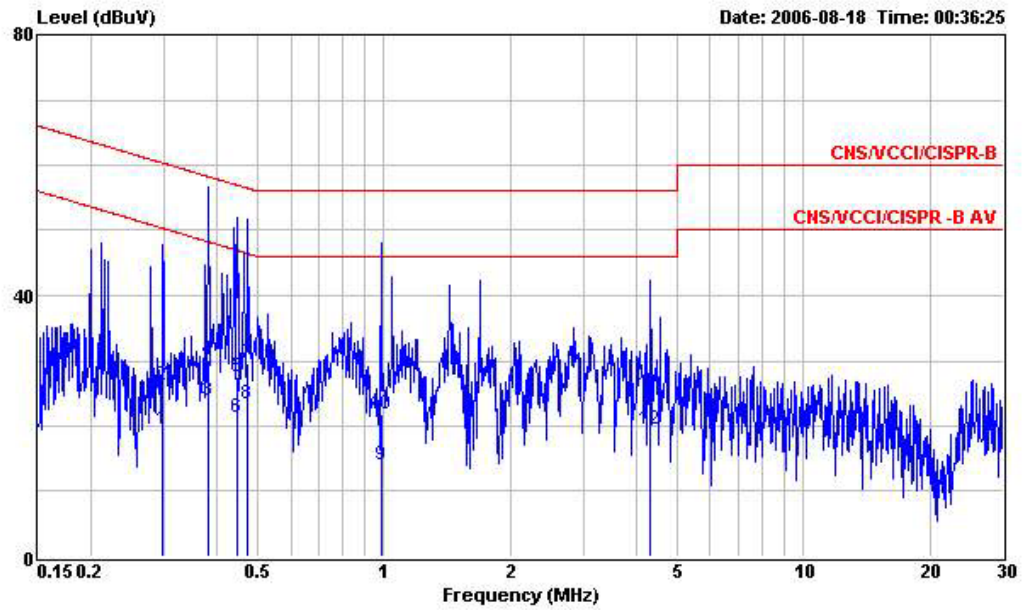
- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer: Louis

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : BLUETOOTH HEADSET
Power : 120V/60Hz
Model : FR681410
Memo : CHARGING
Memo :
Memo :

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.408	28.87	-18.82	47.69	28.49	0.10	0.28	Average
2	0.408	33.20	-24.49	57.69	32.82	0.10	0.28	QP
3	0.494	27.95	-18.15	46.10	27.61	0.10	0.24	Average
4	0.494	31.71	-24.39	56.10	31.37	0.10	0.24	QP
5	0.817	30.74	-25.26	56.00	30.53	0.10	0.11	QP
6	0.817	20.86	-25.14	46.00	20.65	0.10	0.11	Average
7	1.090	30.17	-25.83	56.00	29.99	0.10	0.08	QP
8	1.090	22.77	-23.23	46.00	22.59	0.10	0.08	Average
9	2.570	28.53	-17.47	46.00	28.13	0.14	0.26	Average
10	2.570	32.47	-23.53	56.00	32.07	0.14	0.26	QP
11	2.780	33.62	-22.38	56.00	33.21	0.15	0.26	QP
12	2.780	25.83	-20.17	46.00	25.42	0.15	0.26	Average



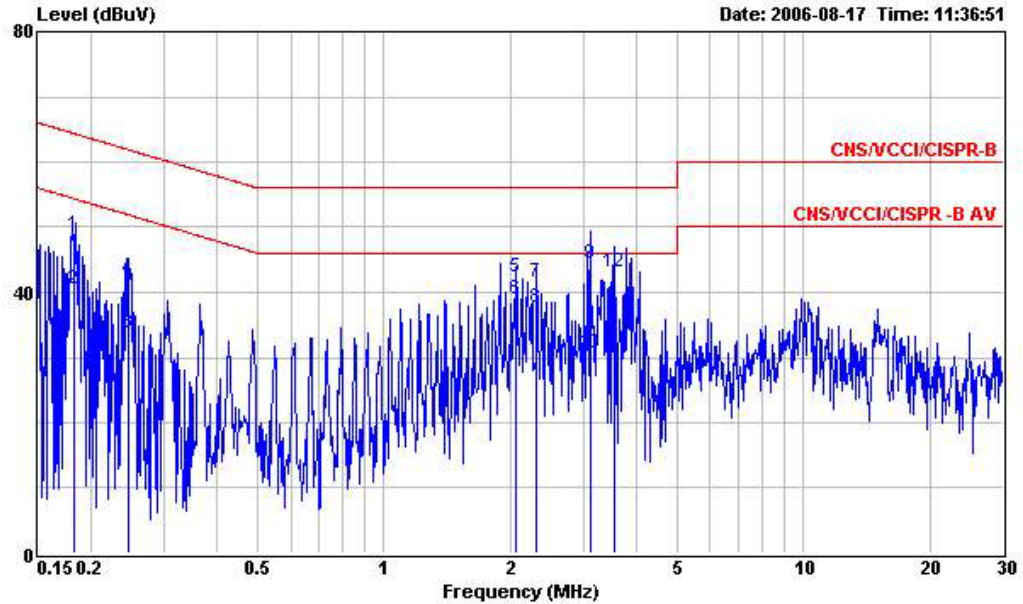
Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
 EUT : BLUETOOTH HEADSET
 Power : 120V/60Hz
 Model : FR681410
 Memo : CHARGING
 Memo :
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV		dBuV	dBuV	dB	dB	
1	0.297	19.44	-30.89	50.33	19.17	0.10	0.17	Average
2	0.297	26.29	-34.04	60.33	26.02	0.10	0.17	QP
3	0.382	23.90	-24.33	48.23	23.53	0.10	0.27	Average
4	0.382	30.10	-28.13	58.23	29.73	0.10	0.27	QP
5	0.447	27.58	-29.35	56.93	27.22	0.10	0.26	QP
6	0.447	21.27	-25.66	46.93	20.91	0.10	0.26	Average
7	0.474	29.56	-26.88	56.44	29.21	0.10	0.25	QP
8	0.474	23.50	-22.94	46.44	23.15	0.10	0.25	Average
9	0.984	14.04	-31.96	46.00	13.88	0.10	0.06	Average
10	0.984	21.75	-34.25	56.00	21.59	0.10	0.06	QP
11	4.310	24.84	-31.16	56.00	24.48	0.11	0.25	QP
12	4.310	19.52	-26.48	46.00	19.16	0.11	0.25	Average

5.8.4 Test Data Test Mode 2

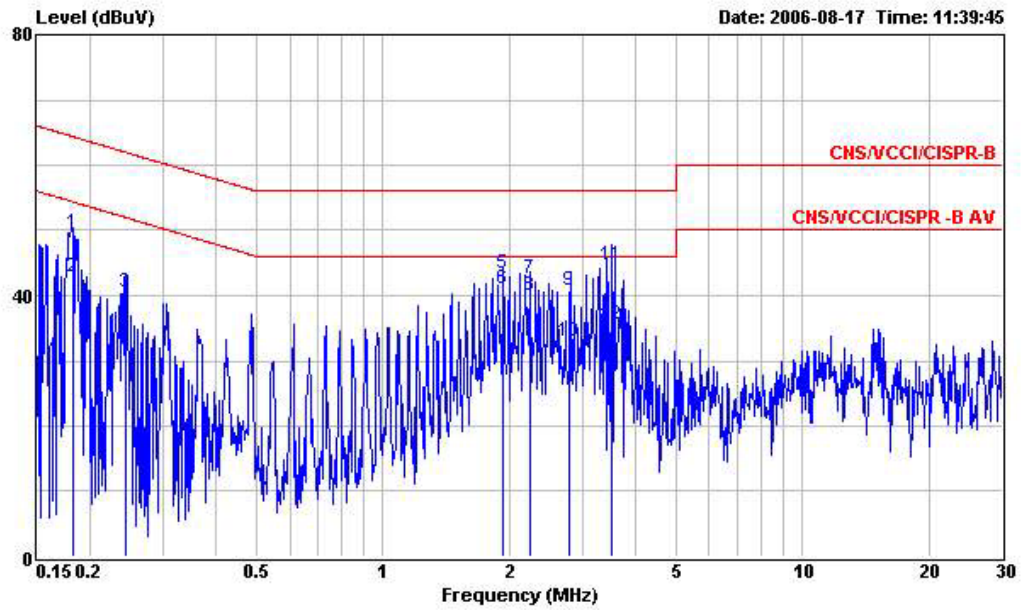
- Temperature: 25°C
- Relative Humidity: 53%
- Test Engineer: Louis

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : BLUETOOTH HEADSET
Power : 120V/60Hz
Model : FD681410
Memo : USB CHARGING
Memo :
Memo :

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.182	48.79	-15.60	64.39	48.67	0.10	0.02	QP
2	0.182	40.62	-13.77	54.39	40.50	0.10	0.02	Average
3	0.246	33.88	-18.01	51.89	33.68	0.10	0.10	Average
4	0.246	42.13	-19.76	61.89	41.93	0.10	0.10	QP
5	2.064	42.40	-13.60	56.00	42.04	0.10	0.26	QP
6	2.064	38.99	-7.01	46.00	38.63	0.10	0.26	Average
7	2.307	41.56	-14.44	56.00	41.18	0.12	0.26	QP
8	2.307	37.79	-8.21	46.00	37.41	0.12	0.26	Average
9	3.103	44.49	-11.51	56.00	44.08	0.16	0.25	QP
10	3.103	30.63	-15.37	46.00	30.22	0.16	0.25	Average
11	3.527	28.33	-17.67	46.00	27.90	0.18	0.25	Average
12	3.527	43.00	-13.00	56.00	42.57	0.18	0.25	QP



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
 EUT : BLUETOOTH HEADSET
 Power : 120V/60Hz
 Model : FD681410
 Memo : USB CHARGING
 Memo :
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.182	49.58	-14.81	64.39	49.46	0.10	0.02	QP
2	0.182	42.75	-11.64	54.39	42.63	0.10	0.02	Average
3	0.244	40.61	-21.35	61.96	40.41	0.10	0.10	QP
4	0.244	33.53	-18.43	51.96	33.33	0.10	0.10	Average
5	1.936	43.33	-12.67	56.00	42.98	0.10	0.25	QP
6	1.936	41.00	-5.00	46.00	40.65	0.10	0.25	Average
7	2.239	42.72	-13.28	56.00	42.36	0.10	0.26	QP
8	2.239	40.10	-5.90	46.00	39.74	0.10	0.26	Average
9	2.777	40.83	-15.17	56.00	40.47	0.10	0.26	QP
10	2.777	32.92	-13.08	46.00	32.56	0.10	0.26	Average
11	3.510	44.67	-11.33	56.00	44.32	0.10	0.25	QP
12	3.510	35.70	-10.30	46.00	35.35	0.10	0.25	Average

5.9 Radiated Emission Measurement

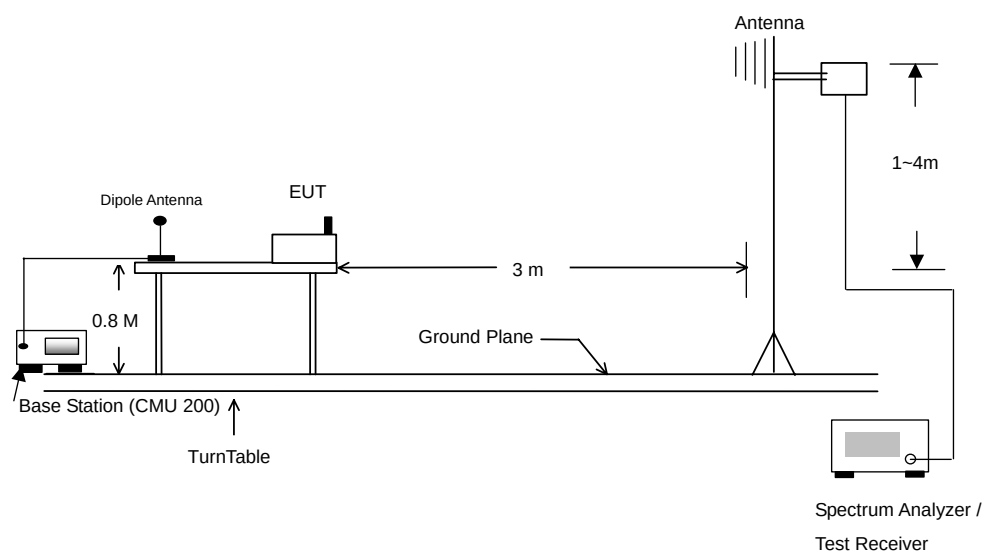
5.9.1 Measuring Instruments

As described in chapter 6 of this Report.

5.9.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.9.3 Typical Test Setup Layout of Radiated Emission

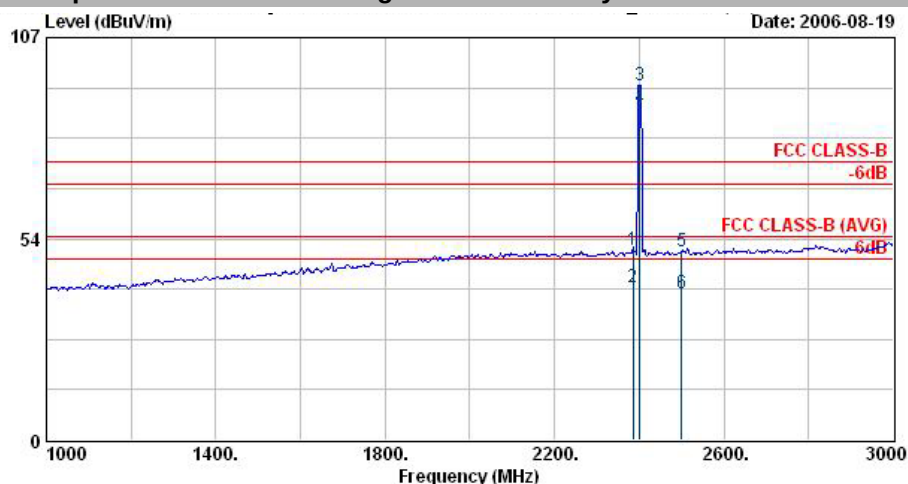




5.9.4 Test Data

- Temperature : 26 °C
- Relative Humidity : 58 %
- Test Engineer : Anderson
- Test Mode : Mode 1
- Polarization : Horizontal

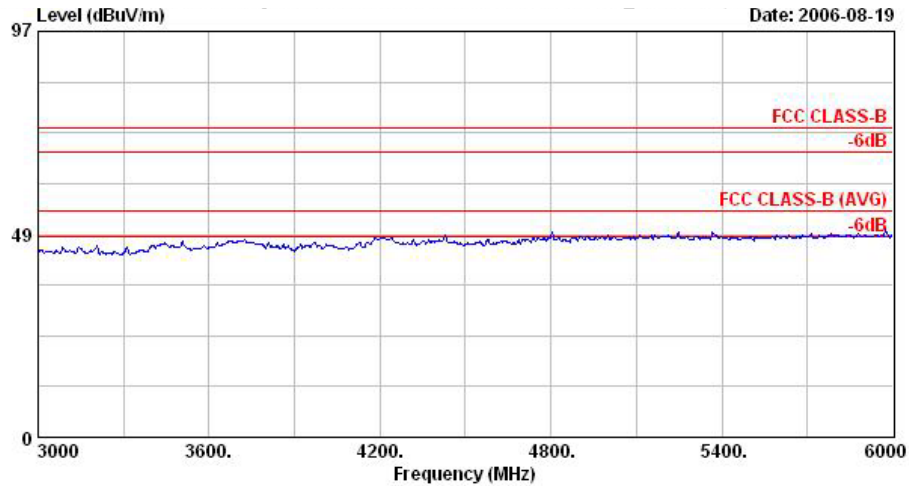
■ The test that passed at minimum margin was marked by the frame in the following table.



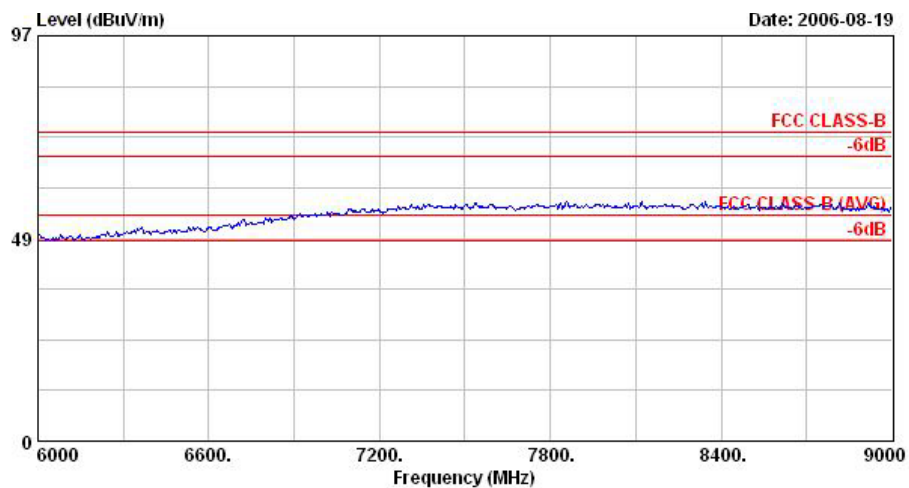
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00:2402MHz
Data Rate : DH5
Plane : E2

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Factor	Loss	Factor	Pos	Pos	Remark
					dBuV	dB/m	dB	dB	cm	deg	
1	2386.00	50.48	-23.52	74.00	51.43	30.26	4.23	35.44	100	360	Peak
2	2386.00	40.42	-13.58	54.00	41.37	30.26	4.23	35.44	100	153	Average
3 X	2402.00	94.39			95.33	30.26	4.26	35.46	100	360	Peak
4 @	2402.00	88.20			89.14	30.26	4.26	35.46	100	153	Average
5	2500.00	50.11	-23.89	74.00	50.95	30.30	4.39	35.53	100	360	Peak
6	2500.00	39.14	-14.86	54.00	39.98	30.30	4.39	35.53	100	153	Average

Remark: #3 and #4 Fundamental Signal



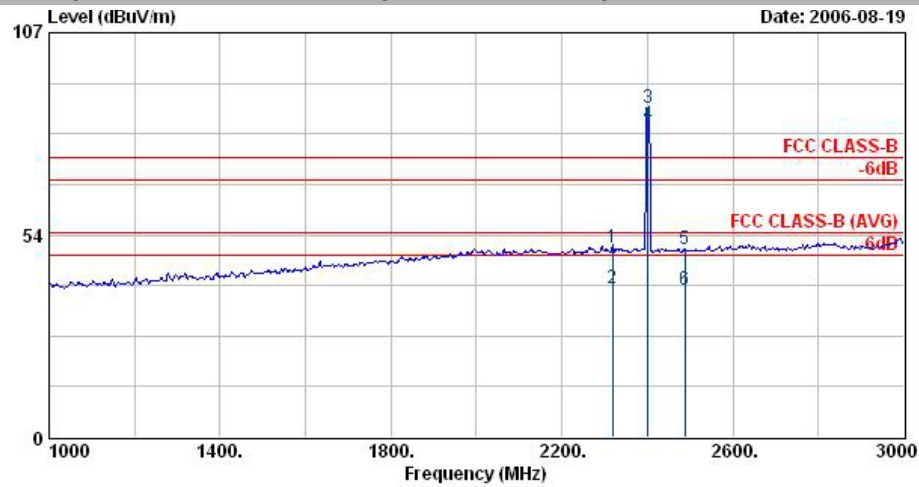
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00,2402MHz
Data Rate : DH5
Plane : E2



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00,2402MHz
Data Rate : DH5
Plane : E2



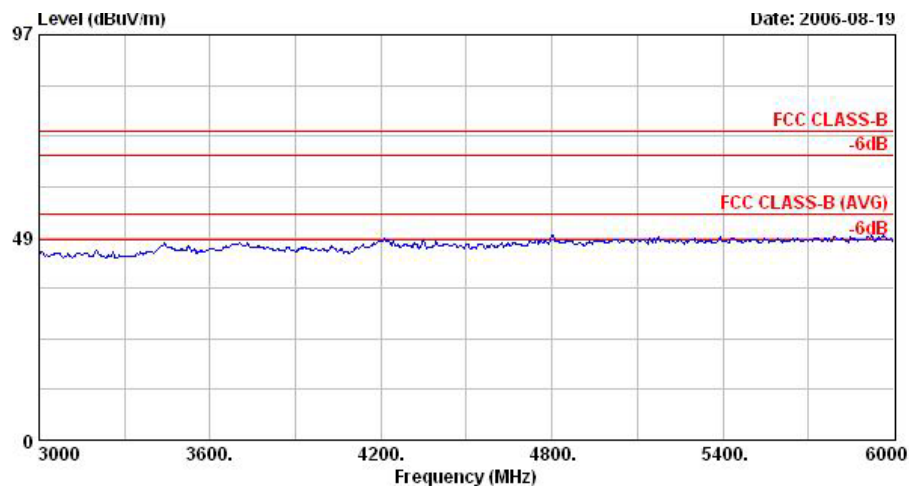
Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

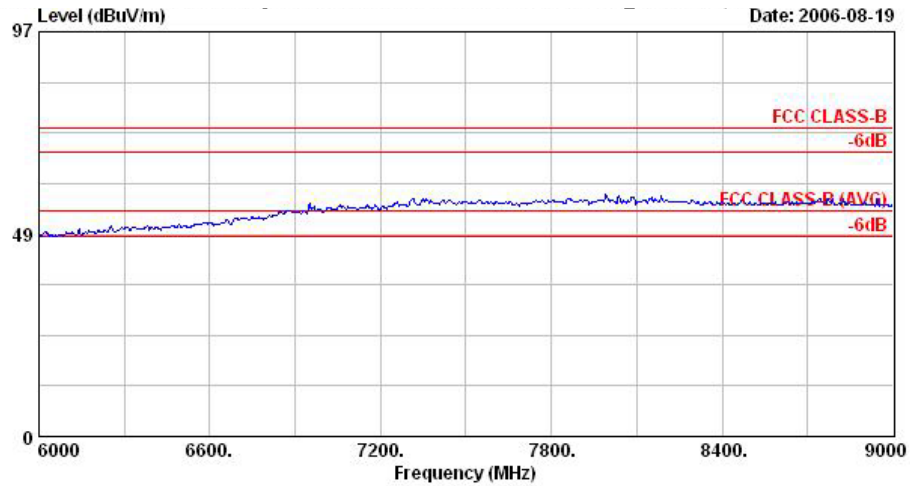
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00,2402MHz
Data Rate : DH5
Plane : E2

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable Preamp	Ant Table	Table	Remark		
	MHz	dBuV/m	dB	dBuV/m	Level Factor	Loss Factor	Pos	Pos			
					dBuV	dB/m	dB	dB	cm	deg	
1	2318.00	50.03	-23.97	74.00	50.97	30.26	4.26	35.46	100	360	Peak
2	2318.00	39.42	-14.58	54.00	40.42	30.23	4.17	35.40	136	151	Average
3 X	2402.00	87.26			88.19	30.26	4.26	35.46	100	360	Peak
4 X	2402.00	82.55			83.49	30.26	4.26	35.46	136	151	Average
5	2488.00	49.67	-24.33	74.00	50.52	30.30	4.36	35.51	100	360	Peak
6	2488.00	39.04	-14.96	54.00	39.89	30.30	4.36	35.51	136	151	Average

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00,2402MHz
Data Rate : DH5
Plane : E2

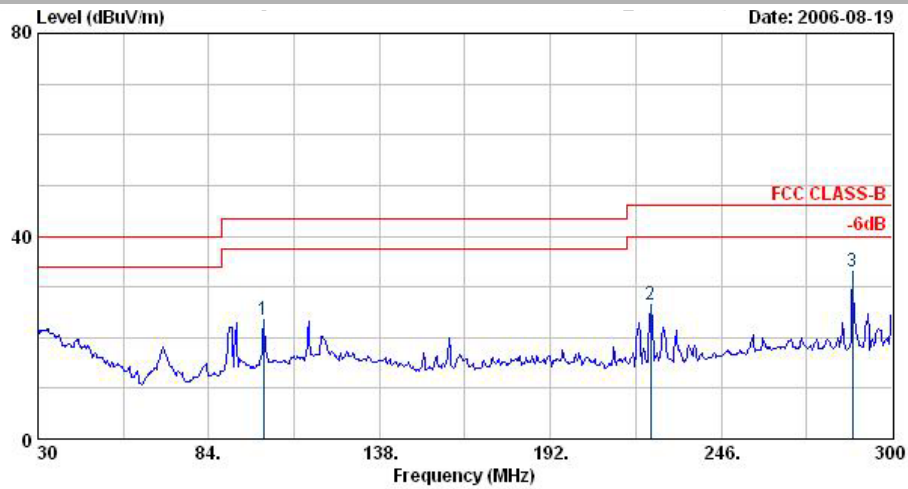


Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch00,2402MHz
Data Rate : DH5
Plane : E2

Remark: There is no more obvious spurious emission except the listings above.

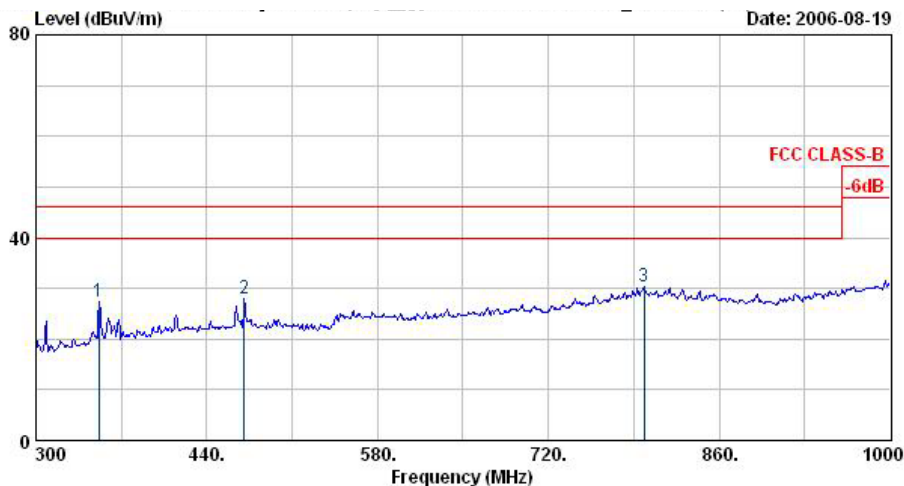
- Test Mode : Mode 2
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.



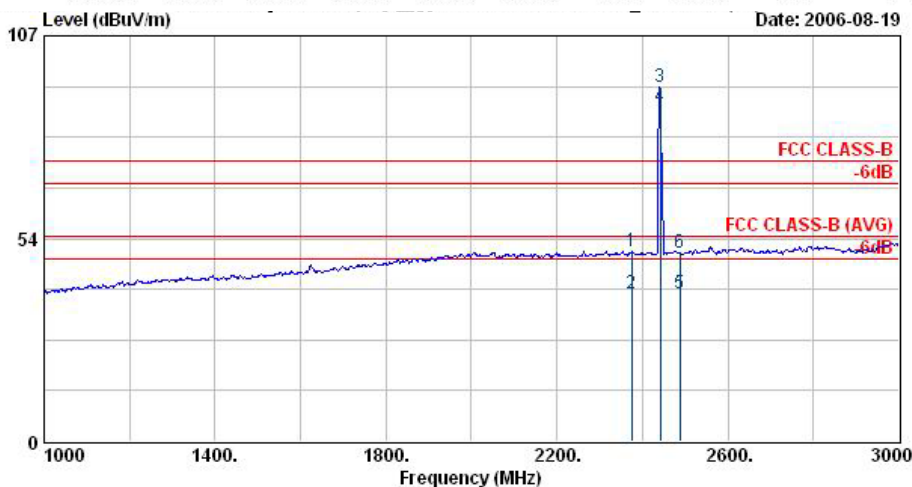
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DHS
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	101.28	23.41	-20.09	43.50	40.06	10.57	1.65	28.87	400	0 Peak
2	223.59	26.58	-19.42	46.00	42.92	9.79	2.70	28.83	400	0 Peak
3 @	287.58	33.01	-12.99	46.00	45.88	12.93	3.11	28.92	127	304 Peak



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DHS
Plane : E2

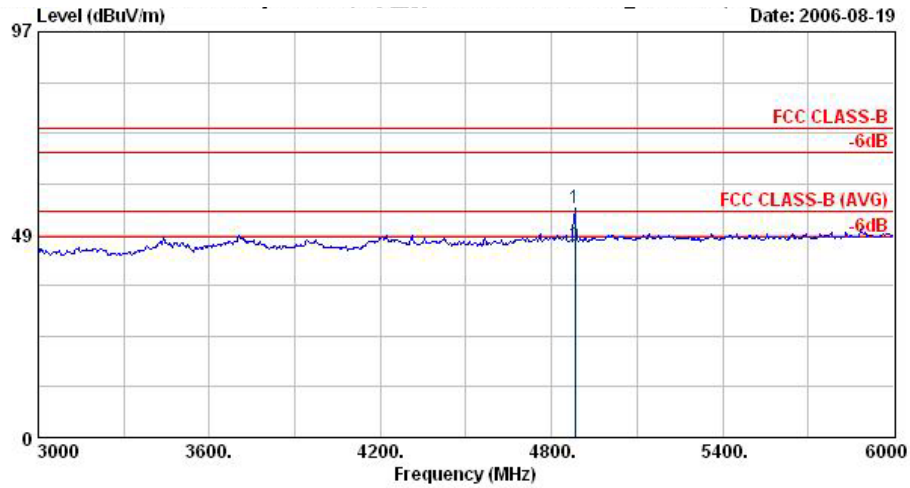
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
					dBuV	dB/m	dB	cm	deg	
1	351.80	27.37	-18.63	46.00	38.32	14.48	3.59	29.02	100	0 Peak
2	470.80	27.95	-18.05	46.00	35.75	16.76	4.26	28.82	100	0 Peak
3	798.40	30.37	-15.63	46.00	31.79	21.84	5.60	28.87	100	0 Peak



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DHS
Plane : E2

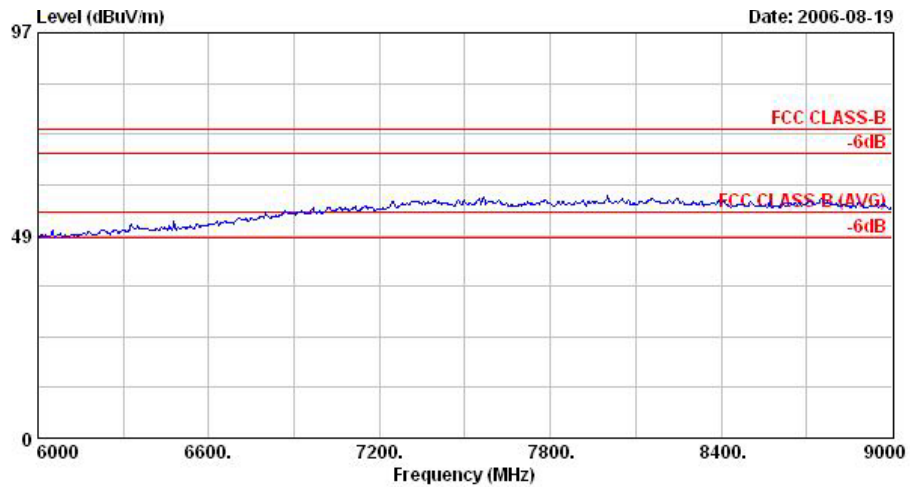
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
					dBuV	dB/m	dB	cm	deg	
1	2374.00	50.18	-23.82	74.00	51.13	30.25	4.23	35.44	100	360 Peak
2	2374.00	38.88	-15.12	54.00	39.84	30.25	4.23	35.44	100	152 Average
3 @	2441.00	93.41			94.31	30.28	4.29	35.47	100	360 Peak
4 @	2441.00	88.25			89.14	30.28	4.33	35.49	100	152 Average
5	2488.00	39.12	-14.88	54.00	39.97	30.30	4.36	35.51	100	152 Average
6	2488.00	49.79	-24.21	74.00	50.64	30.30	4.36	35.51	100	360 Peak

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
 Condition : HF-ANT-060410 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : BT TX_Ch39,2441MHz
 Memo : DHS
 Plane : E2

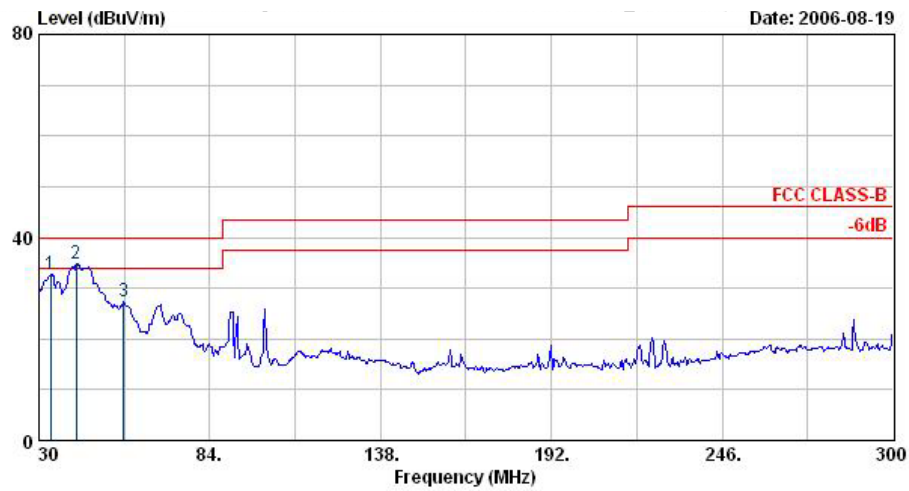
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	4882.00	54.74	-19.26	74.00	51.46	33.14	6.30	36.16	200	0 Peak
2 @	4882.00	45.79	-8.21	54.00	42.51	33.14	6.30	36.16	100	176 Average



Site : 03CH06-HY
 Condition : HF-ANT-060410 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : BT TX_Ch39,2441MHz
 Memo : DHS
 Plane : E2

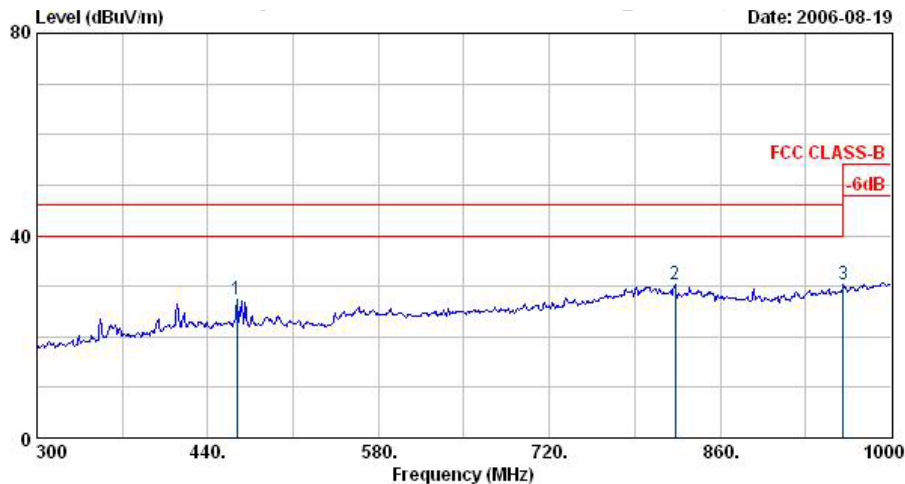
- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.



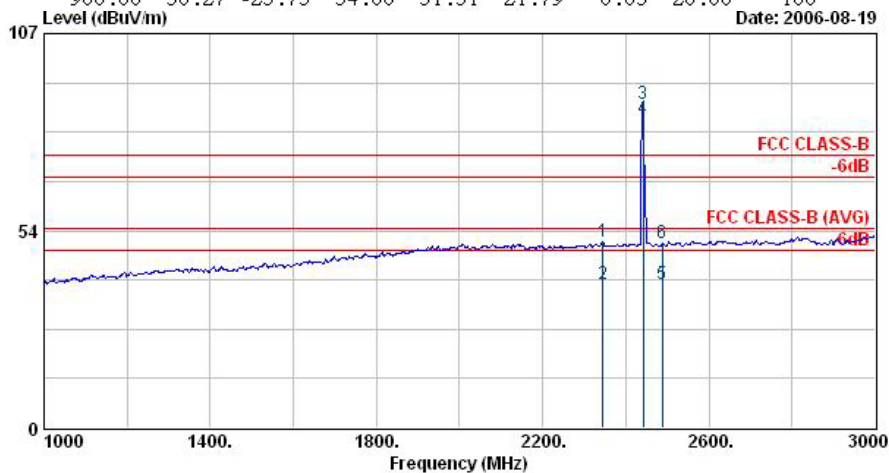
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ck39,2441MHz
Memo : DH5
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 @	33.78	32.74	-7.26	40.00	42.94	17.40	1.04	28.64	400	0 Peak
2 @	41.88	34.85	-5.15	40.00	48.59	13.74	1.18	28.65	107	259 Peak
3 @	56.73	27.33	-12.67	40.00	47.25	7.54	1.18	28.64	400	0 Peak



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DH5
Plane : E2

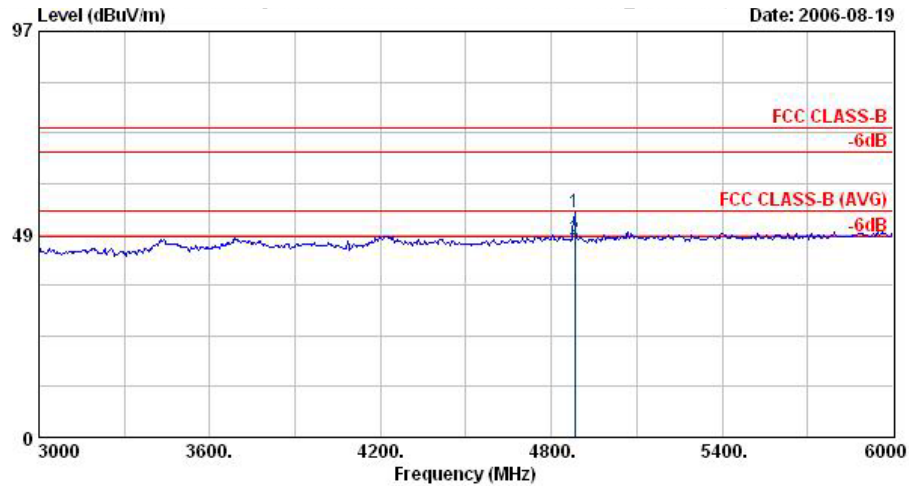
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	463.80	27.33	-18.67	46.00	35.39	16.64	4.11	28.81	100	0 Peak
2	822.90	30.39	-15.61	46.00	32.38	21.46	5.54	28.99	100	0 Peak
3	960.80	30.27	-23.73	54.00	31.31	21.79	6.03	28.86	100	0 Peak



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DH5
Plane : E2

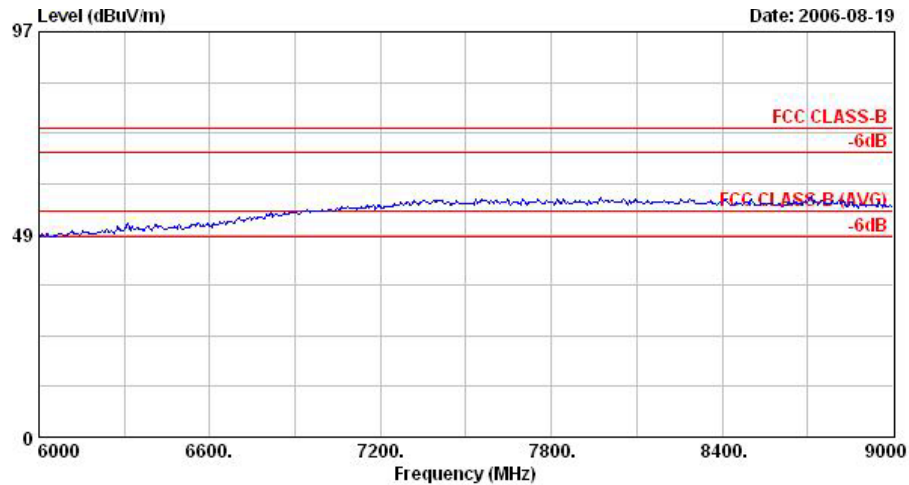
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2344.00	50.43	-23.57	74.00	51.42	30.24	4.20	35.42	100	360 Peak
2	2344.00	39.01	-14.99	54.00	39.99	30.24	4.20	35.42	110	81 Average
3 @	2441.00	87.85	13.85	74.00	88.75	30.28	4.29	35.47	100	360 Peak
4 @	2441.00	83.73			84.62	30.28	4.33	35.49	110	81 Average
5	2488.00	39.17			40.02	30.30	4.36	35.51	110	81 Average
6	2488.00	50.26	-23.74	74.00	51.11	30.30	4.36	35.51	100	360 Peak

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DH5
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	4882.00	53.67	-20.33	74.00	50.39	33.14	6.30	36.16	200	360
2 @	4882.00	47.36	-6.64	54.00	44.08	33.14	6.30	36.16	100	268

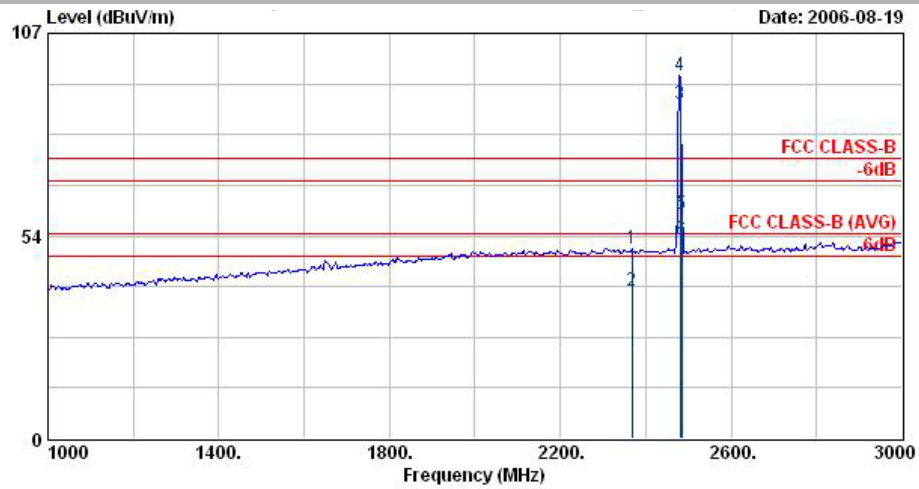


Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch39,2441MHz
Memo : DH5
Plane : E2

Remark: There is no more obvious spurious emission except the listings above.

- Test Mode : Mode 3
- Polarization : Horizontal

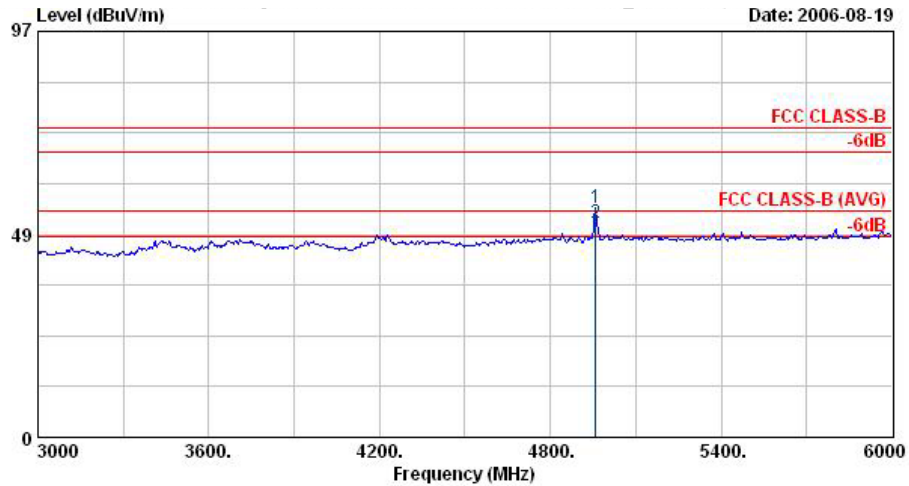
■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch78,2480MHz
Data Rate : DH5
Plane : E2

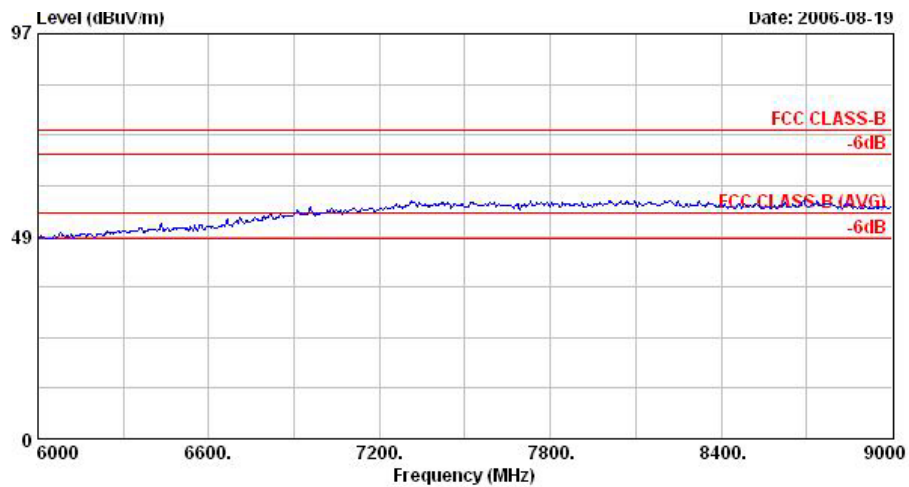
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	2368.00	50.28	-23.72	74.00	51.24	30.24	4.23	35.44	100	360 Peak
2	2368.00	38.79	-15.21	54.00	39.75	30.24	4.23	35.44	100	150 Average
3 @	2480.00	88.37			89.23	30.29	4.36	35.51	100	150 Average
4 X	2480.00	95.89			96.75	30.29	4.36	35.51	100	360 Peak
5	2483.50	59.15	-14.85	74.00	60.01	30.29	4.36	35.51	100	360 Peak
6 I	2483.50	52.69	-1.31	54.00	53.55	30.29	4.36	35.51	100	150 Average

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch78,2480MHz
Data Rate : DH5
Plane : E2

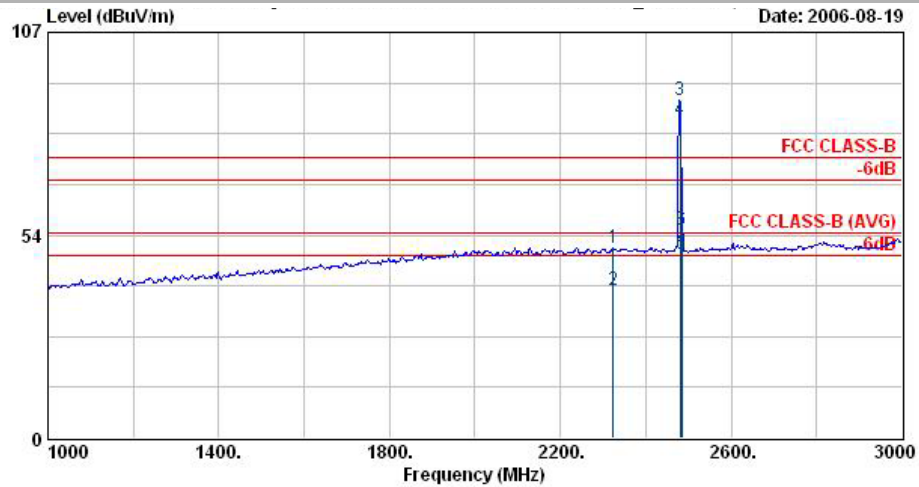
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	4960.00	54.74	-19.26	74.00	51.10	33.47	6.39	36.23	200	0 Peak
2 !	4960.00	51.18	-2.82	54.00	47.55	33.47	6.39	36.23	193	146 Average



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch78,2480MHz
Data Rate : DH5
Plane : E2

▪ Polarization : Vertical

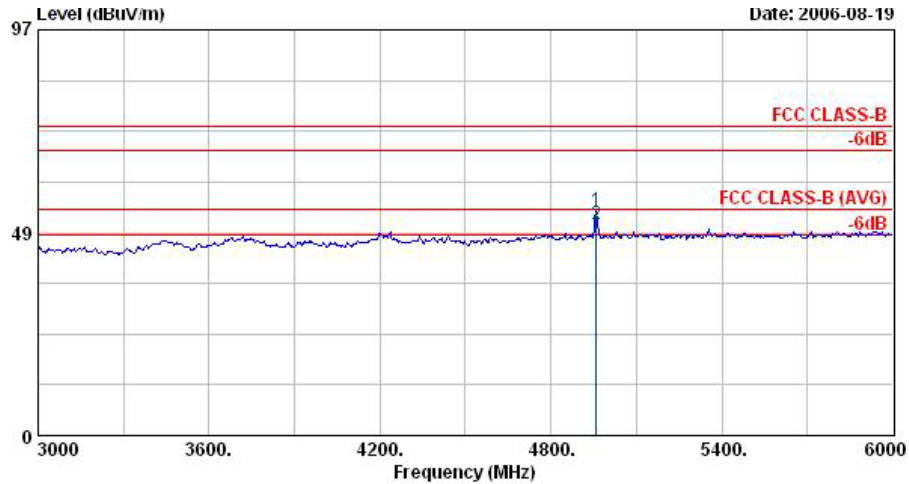
■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
 Condition : HF-ANT-060410 VERTICAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : BT TX_Ch78,2480MHz
 Data Rate : DH5
 Plane : E2

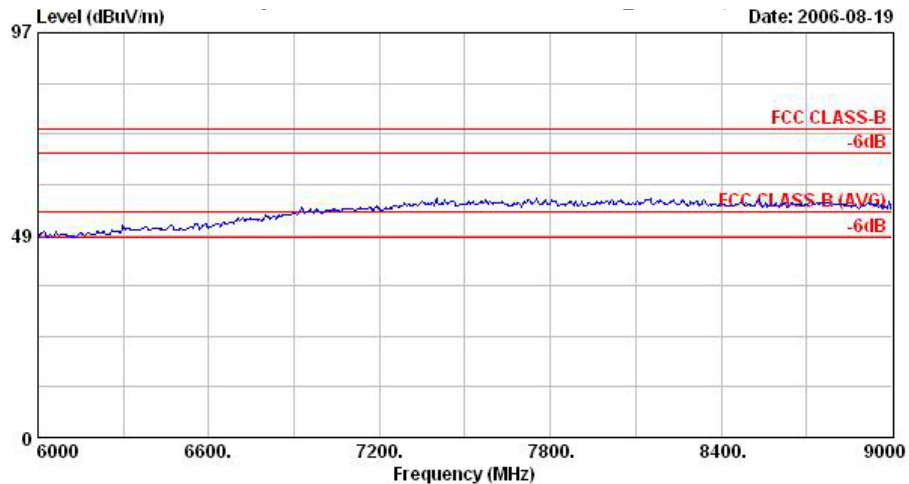
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2324.00	50.04	-23.96	74.00	51.04	30.23	4.17	35.40	100	0 Peak
2	2324.00	39.03	-14.97	54.00	40.03	30.23	4.17	35.40	100	149 Average
3 X	2480.00	89.03			89.89	30.29	4.36	35.51	100	0 Peak
4 X	2480.00	83.76			84.62	30.29	4.36	35.51	100	149 Average
5 !	2483.50	48.40	-5.60	54.00	49.26	30.29	4.36	35.51	100	149 Average
6	2483.50	55.05	-18.95	74.00	55.91	30.29	4.36	35.51	100	0 Peak

Remark: #3 and #4 Fundamental Signal



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch78,2480MHz
Data Rate : DH5
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	4960.00	53.74	-20.26	74.00	50.11	33.47	6.39	36.23	200	360 Peak
2 !	4960.00	50.60	-3.40	54.00	46.97	33.47	6.39	36.23	166	283 Average



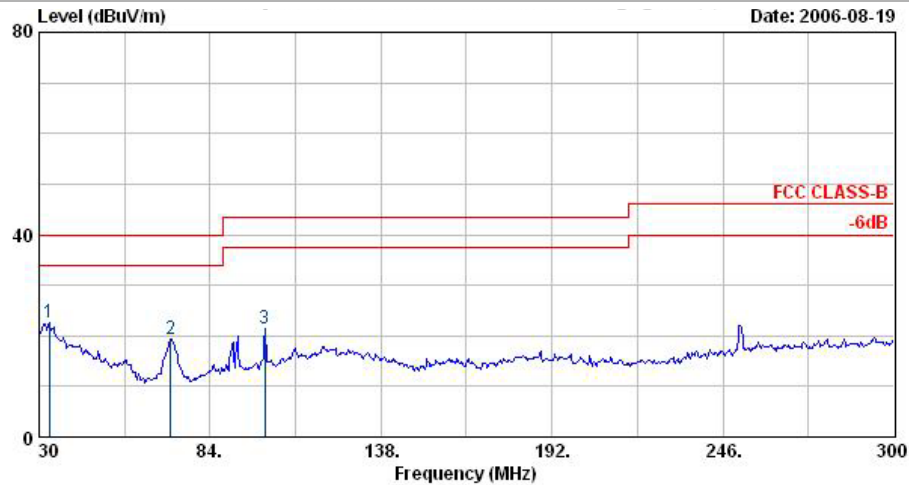
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : BT TX_Ch78,2480MHz
Data Rate : DH5
Plane : E2

Remark: There is no more obvious spurious emission except the listings above.



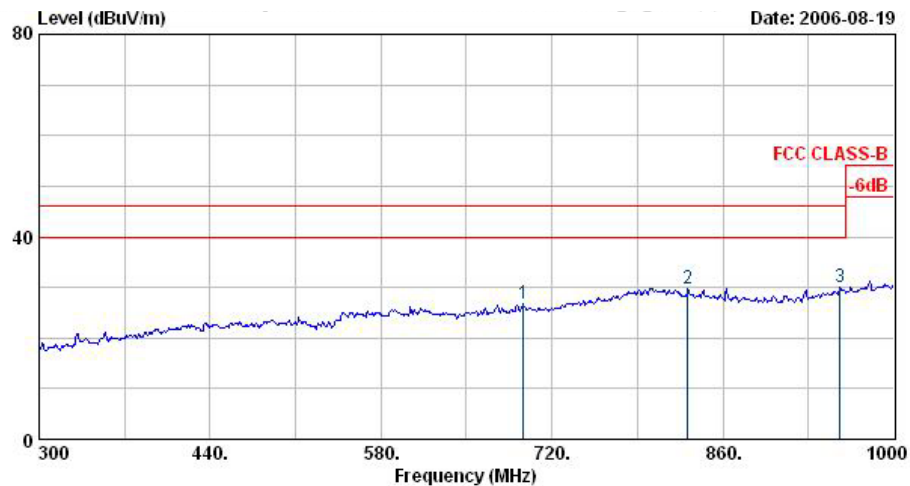
- Test Mode : Mode 4
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
 Condition : BI-LOG-2004-1122 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : Charging Mode
 Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	33.24	22.55	-17.45	40.00	32.44	17.73	1.01	28.63	400	0 Peak
2	71.58	19.46	-20.54	40.00	40.36	6.41	1.39	28.69	400	0 Peak
3	101.28	21.45	-22.05	43.50	38.10	10.57	1.65	28.87	400	0 Peak

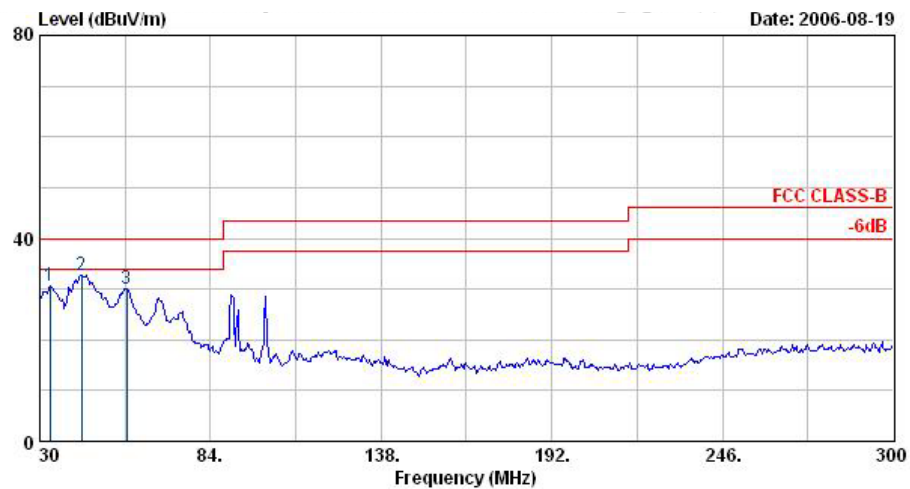


Site : 03CH06-HY
 Condition : BI-LOG-2004-1122 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : Charging Mode
 Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	696.90	26.84	-19.16	46.00	31.49	19.01	5.13	28.78	100	0 Peak
2	831.30	29.79	-16.21	46.00	31.98	21.29	5.56	29.04	100	0 Peak
3 @	955.90	29.98	-16.02	46.00	31.13	21.65	6.07	28.87	114	29 Peak

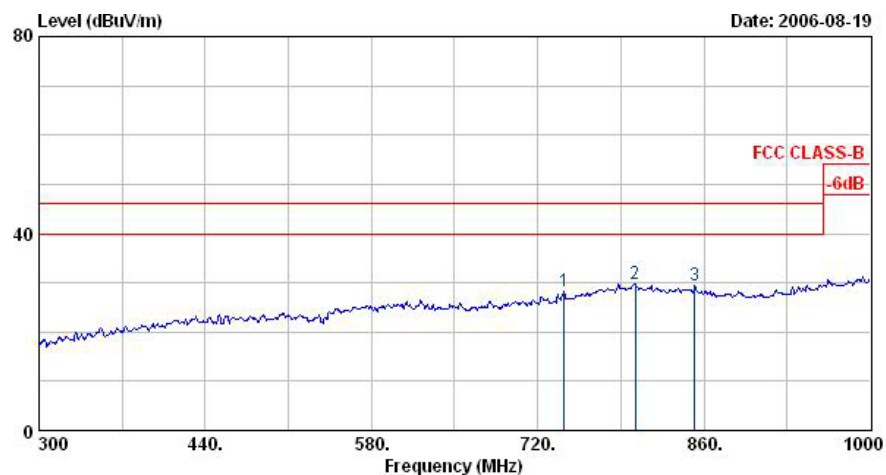
- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : Charging Mode
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 @	33.24	30.76	-9.24	40.00	40.65	17.73	1.01	28.63	400	0 Peak
2 @	43.23	32.86	-7.14	40.00	47.70	12.65	1.14	28.64	106	321 Peak
3 @	57.54	30.18	-9.82	40.00	50.10	7.54	1.18	28.64	400	0 Peak



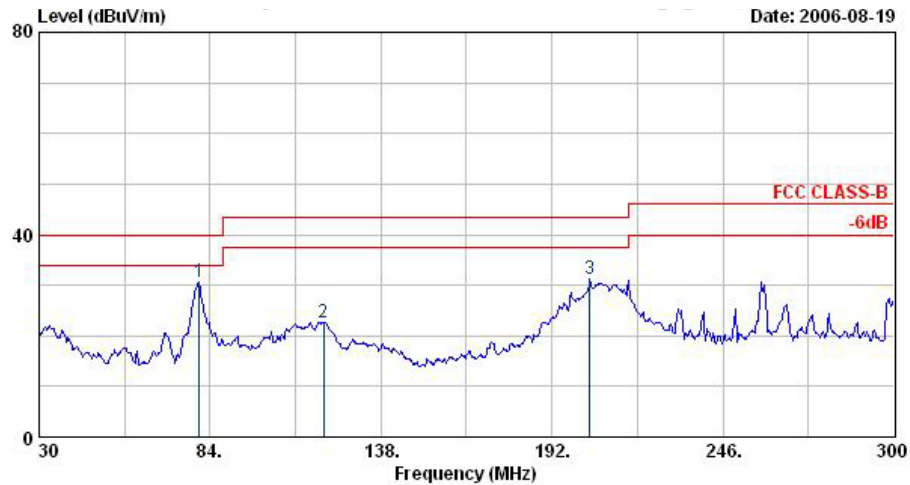
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : Charging Mode
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	742.40	28.30	-17.70	46.00	31.75	20.23	5.26	28.94	100	0 Peak
2 @	801.90	29.79	-16.21	46.00	31.20	21.86	5.61	28.88	100	0 Peak
3	852.30	29.42	-16.58	46.00	31.89	20.87	5.79	29.12	100	0 Peak



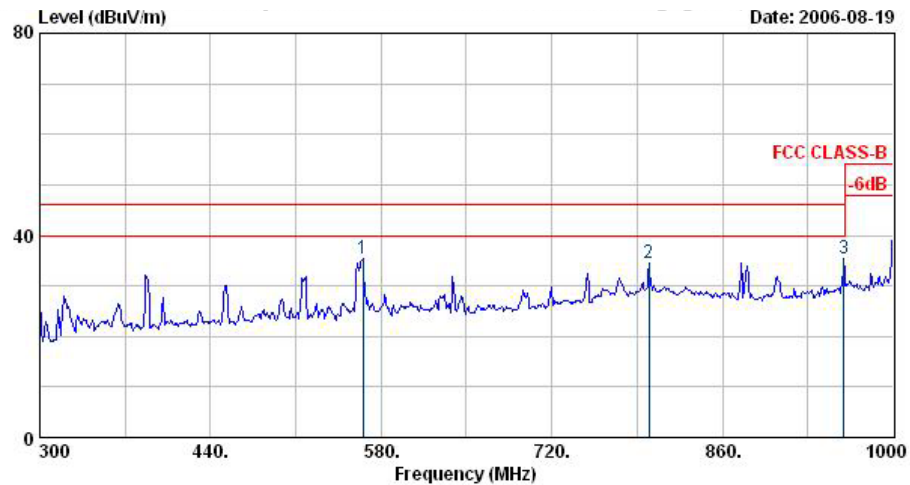
- Test Mode : Mode 5
- Polarization : Horizontal

The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
 Condition : BI-LOG-2004-1122 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : USB Charging Mode
 Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	80.49	30.77	-9.23	40.00	50.87	7.07	1.57	28.74	106	154 Peak
2	119.91	22.69	-20.81	43.50	36.87	12.83	1.89	28.90	400	0 Peak
3	203.88	31.30	-12.20	43.50	47.57	9.85	2.59	28.70	400	0 Peak

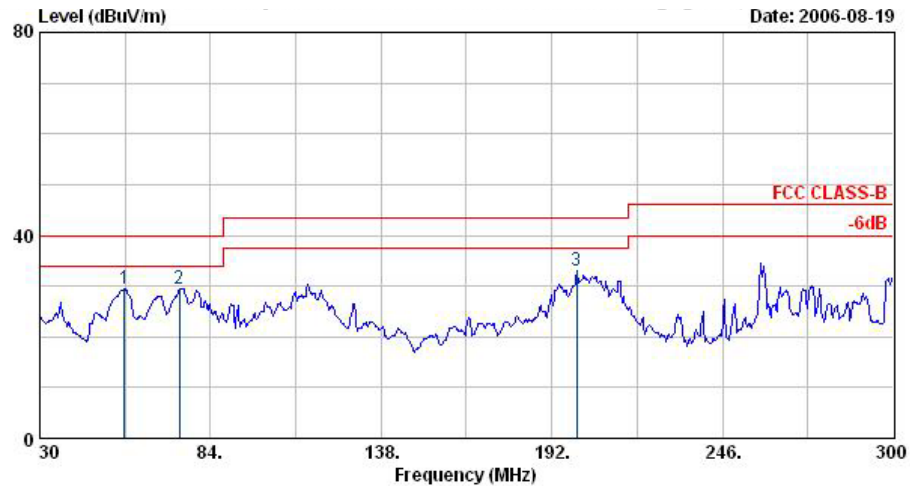


Site : 03CH06-HY
 Condition : BI-LOG-2004-1122 HORIZONTAL
 EUT : Bluetooth Headset
 Power : 120Vac/60Hz
 Model : FR 681410
 Memo : USB Charging Mode
 Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	565.30	35.27	-10.73	46.00	41.36	18.46	4.45	29.00	100	0 Peak
2	799.80	34.43	-11.57	46.00	35.78	21.90	5.62	28.87	100	0 Peak
3	959.40	35.38	-10.62	46.00	36.46	21.73	6.05	28.87	100	0 Peak

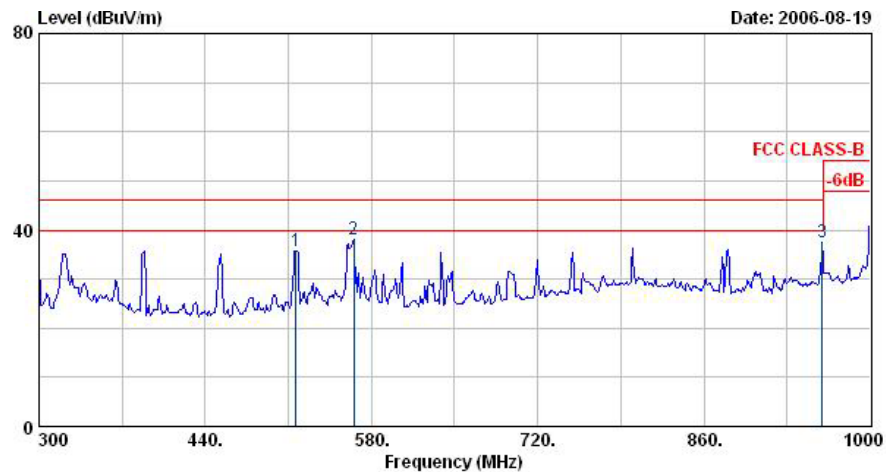
• Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : USB Charging Mode
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	56.73	29.38	-10.62	40.00	49.30	7.54	1.18	28.64	400	0 Peak
2	74.28	29.58	-10.42	40.00	50.20	6.63	1.45	28.70	400	0 Peak
3	199.83	32.96	-10.54	43.50	49.19	9.93	2.52	28.68	400	0 Peak



Site : 03CH06-HY
Condition : BI-LOG-2004-1122 VERTICAL
EUT : Bluetooth Headset
Power : 120Vac/60Hz
Model : FR 681410
Memo : USB Charging Mode
Plane : E2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	516.30	35.66	-10.34	46.00	43.44	16.90	4.24	28.92	100	0 Peak
2 @	565.30	38.16	-7.84	46.00	44.25	18.46	4.45	29.00	118	255 Peak
3 @	959.40	37.36	-8.64	46.00	38.44	21.73	6.05	28.87	100	0 Peak



5.10 Antenna Requirements

5.10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.10.2 Antenna Connected Construction

The antenna used in this product is a Chip antenna without connector and it is considered to meet antenna requirement of FCC.

5.10.3 Antenna Gain

The antenna gain of EUT is less than 6dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

6. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 22, 2006	Feb. 22, 2007	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Mar. 29, 2006	Mar. 29, 2007	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Apr. 19, 2006	Apr. 19, 2007	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 22, 2005	Dec. 22, 2006	Conduction (CO01-HY)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 25, 2006	Jul. 24, 2007	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jun. 28, 2006	Jun. 27, 2007	Radiation (03CH06-HY)
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 22, 2004	Nov. 22, 2006	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 1, 2005	Feb. 1, 2007	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jul. 21, 2006	Jul. 20, 2007	Radiation (03CH06-HY)
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jul. 21, 2006	Jul. 20, 2007	Radiation (03CH06-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

7. Uncertainty Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72				