



FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : Wireless Keyboard
Trade Name : Palm, Inc.
Model No. : 3245WW
FCC ID : O62G9
Filing Type : Certification
Applicant : Darfon Electronics Corp.
6, Feng-Shu Tsuen, Gueishan, Taoyuan 333, Taiwan, R.O.C.

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- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Jul. 08, 2006 at **Sporton International Inc. LAB.**
- Report No.: FR660605-A, Report Version: Rev. 04.

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Report Version: Rev. 04



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History of this test report

Report Issue Date: Aug. 15, 2006

Report No.	Description



1. General Description of Equipment under Test

1.1. Applicant

Darfon Electronics Corp.
6, Feng-Shu Tsuen, Gueishan, Taoyuan 333, Taiwan, R.O.C.

1.2. Manufacturer

Darfon Electronics (Suzhou) Co., Ltd.
99, Zhu Yuan Road, Suzhou New District, Jiangsu Province, China

1.3. Basic Description of Equipment under Test

Equipment : Wireless Keyboard
Trade Name : Palm, Inc.
Model No. : 3245WW
FCC ID : O62G9
Power Supply Type : From Battery 3V

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. Channel Spacing	1 MHz		
6. Maximum Output Power to Antenna (Normal condition)	2.53 dBm		
7. Type of Antenna Connector	N/A		
8. Antenna Type	PCB Antenna		
9. Antenna Gain	0 dBi		
10. Function Type	Transmitter		Transceiver V
11. Power Rating (DC/AC , Voltage)	DC 3V		

2. Test Configuration of Equipment under Test

2.1. Test Manner

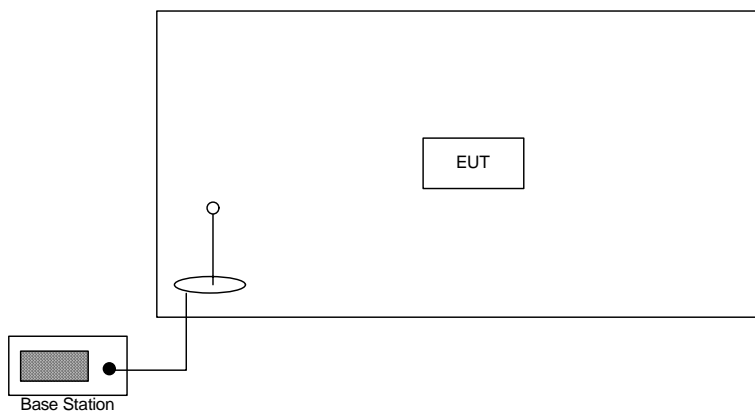
- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. For spurious emission below 1GHz, only one channel of each application was tested because it is not related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

2.2. Test Mode

Application	Bluetooth
Radiated Emission and conducted test items	Mode 1: Bluetooth Tx_CH00_2402 MHz Mode 2: Bluetooth Tx_CH39_2441 MHz Mode 3: Bluetooth Tx_CH78_2480 MHz

2.3. Connection Diagram of Test System

<Radiation Emission>



2.4. Ancillary Equipment List

Item	Equipment	Model No.	Power Cord
1.	Base Station (R&S)	CMU200	N/A



3. RF Utility

Programmed RF utility allows EUT links with base station to provide for Bluetooth continuous transmitting and receiving signal.



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 : 03CH06-HY

4.1. Test Voltage

DC 3V

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

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	NA	-
15.209	Radiated Emission	Pass	5.8
15.203	Antenna Requirement	Pass	5.9

5.2. Hopping Channel Separation

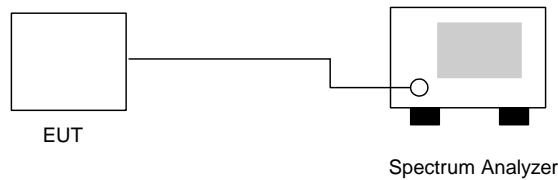
5.2.1. Measuring Instruments :

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: 26°C
- Relative Humidity: 53%
- Test Engineer : James

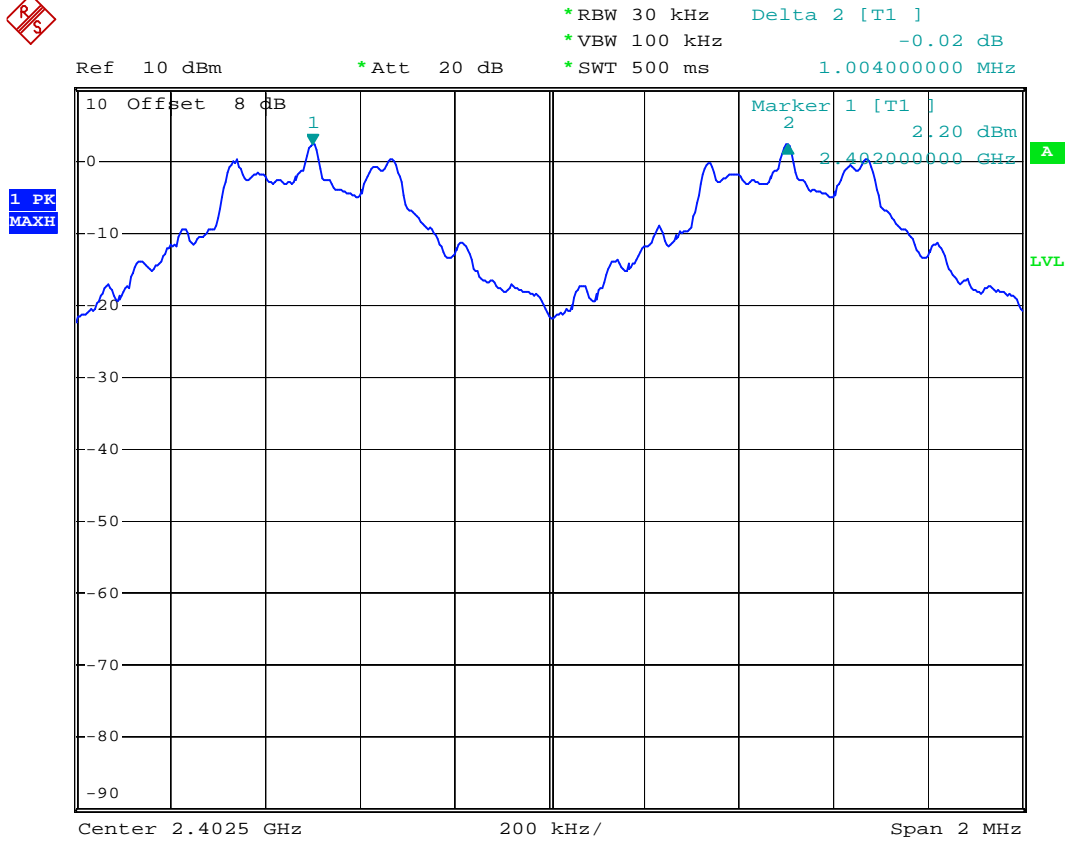
Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.004	0.854	Mode 1
39	2441	1.000	0.860	Mode 2
78	2480	1.000	0.852	Mode 3

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



5.2.5 Hopping Channel Separation

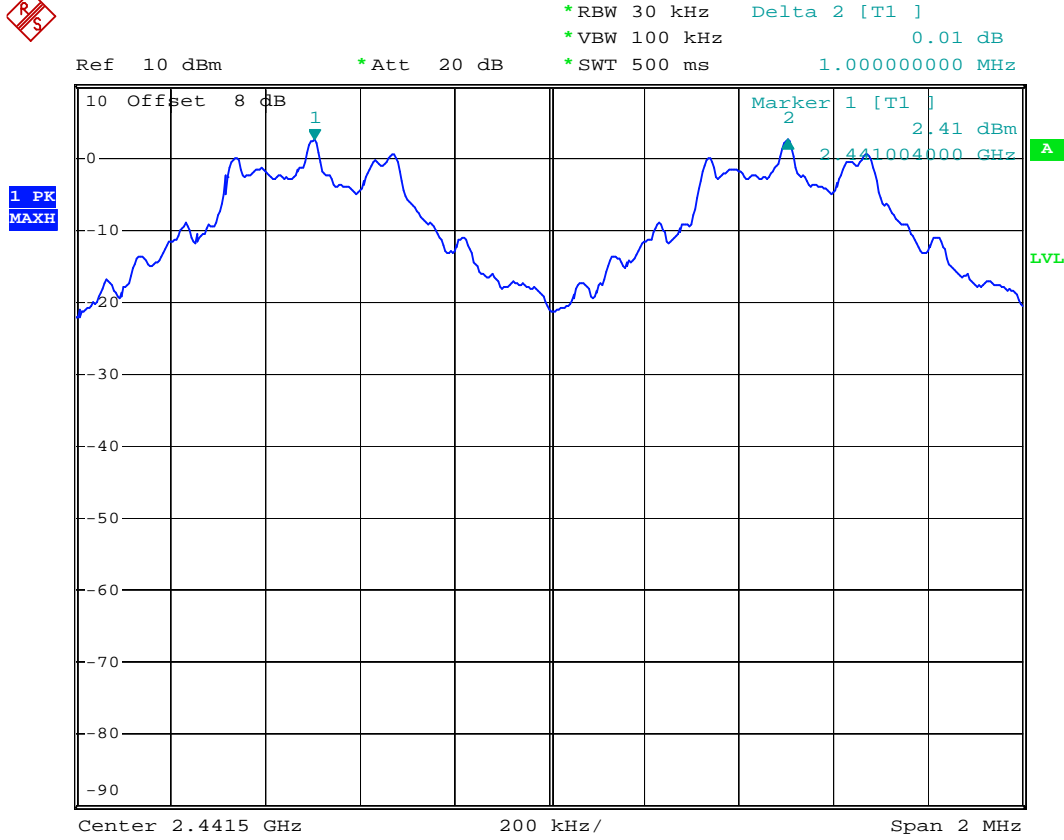
Mode 1: CH00 (2402MHz)



Date: 17.JUN.2006 08:47:07



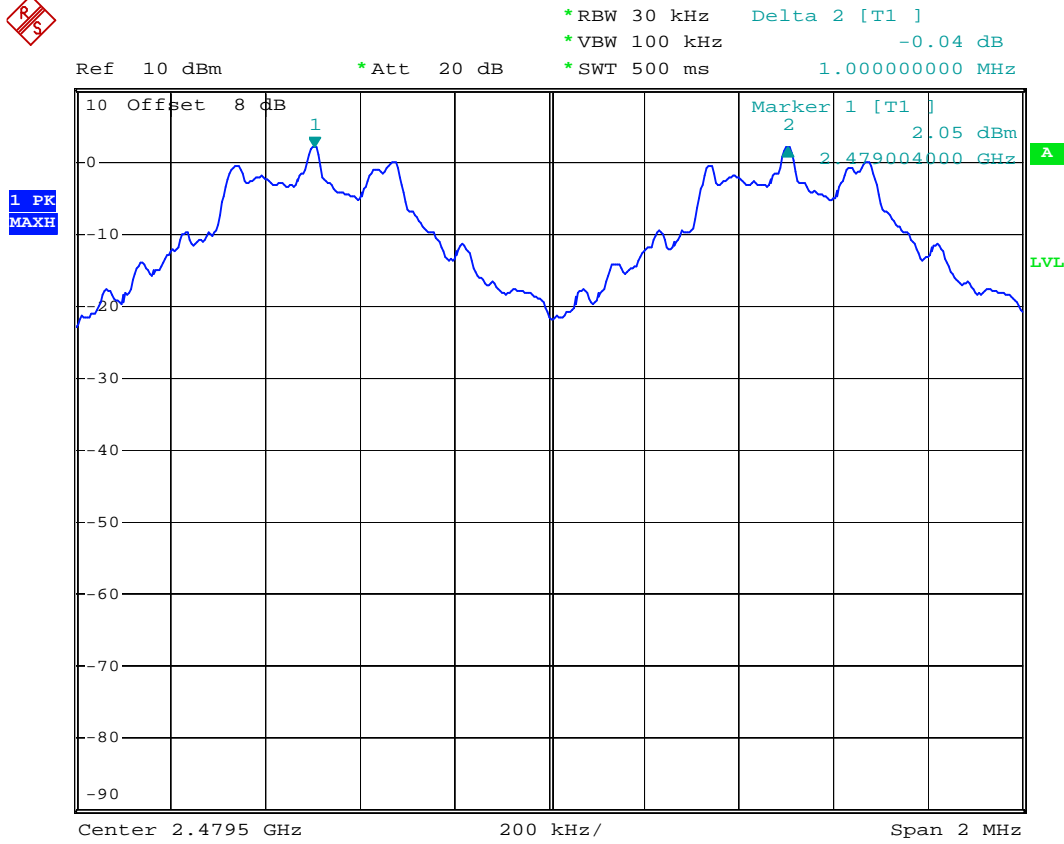
Mode 2: CH39 (2441MHz)



Date: 17.JUN.2006 08:47:47



Mode 3: CH78 (2480MHz)



Date: 17.JUN.2006 08:48:38

5.3. Number of Hopping Frequency

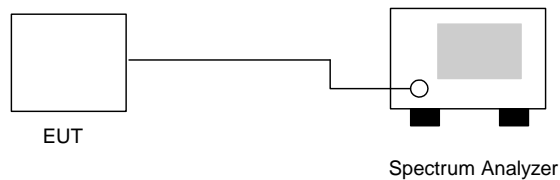
5.3.1. Measuring Instruments :

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 :



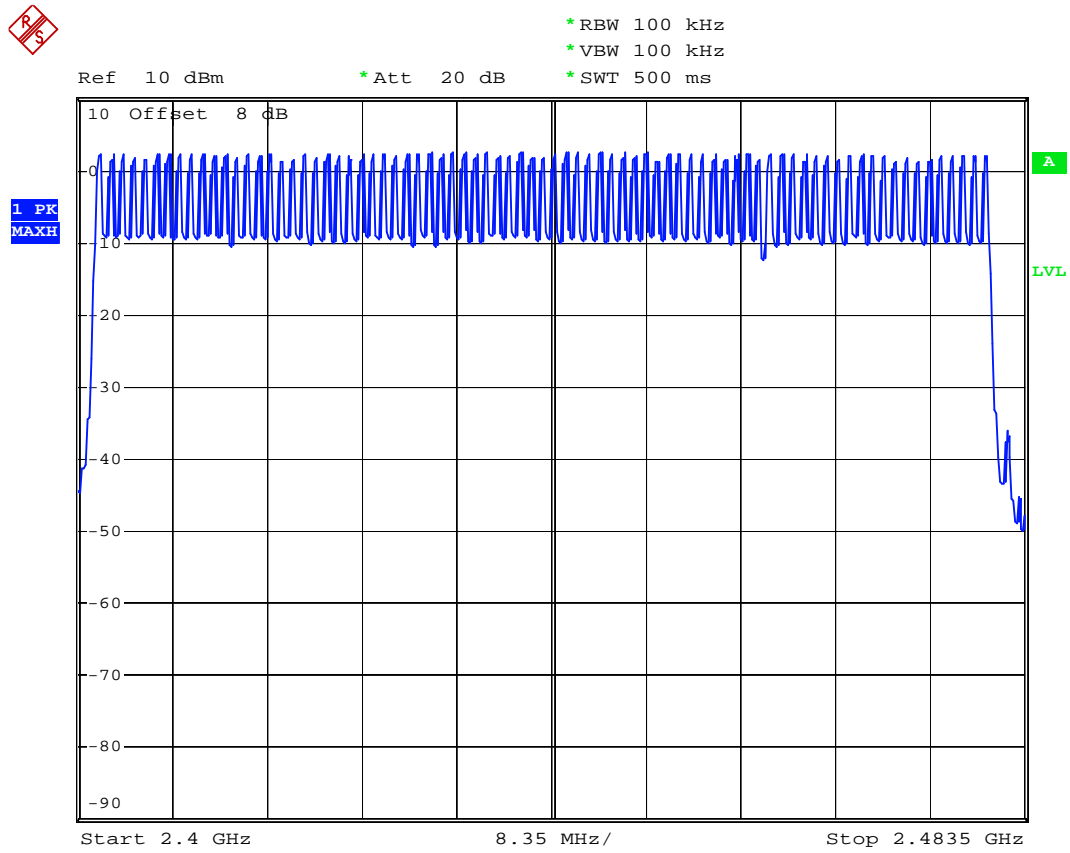
5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 26°C
- Relative Humidity: 53%
- Test Engineer : James

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



5.3.5 Number of Hopping Frequency



Date: 17.JUN.2006 09:16:16

5.4 Hopping Channel Bandwidth

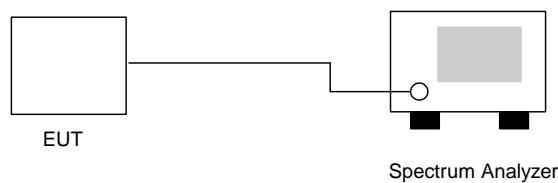
5.4.1 Measuring Instruments :

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: 26°C
- Relative Humidity: 53%
- Test Engineer : James

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.854	1.000	Mode 1
39	2441	0.860	1.000	Mode 2
78	2480	0.852	1.000	Mode 3



5.4.5 Hopping Channel Bandwidth

Mode 1: CH00 (2402MHz)



Date: 17.JUN.2006 08:43:55



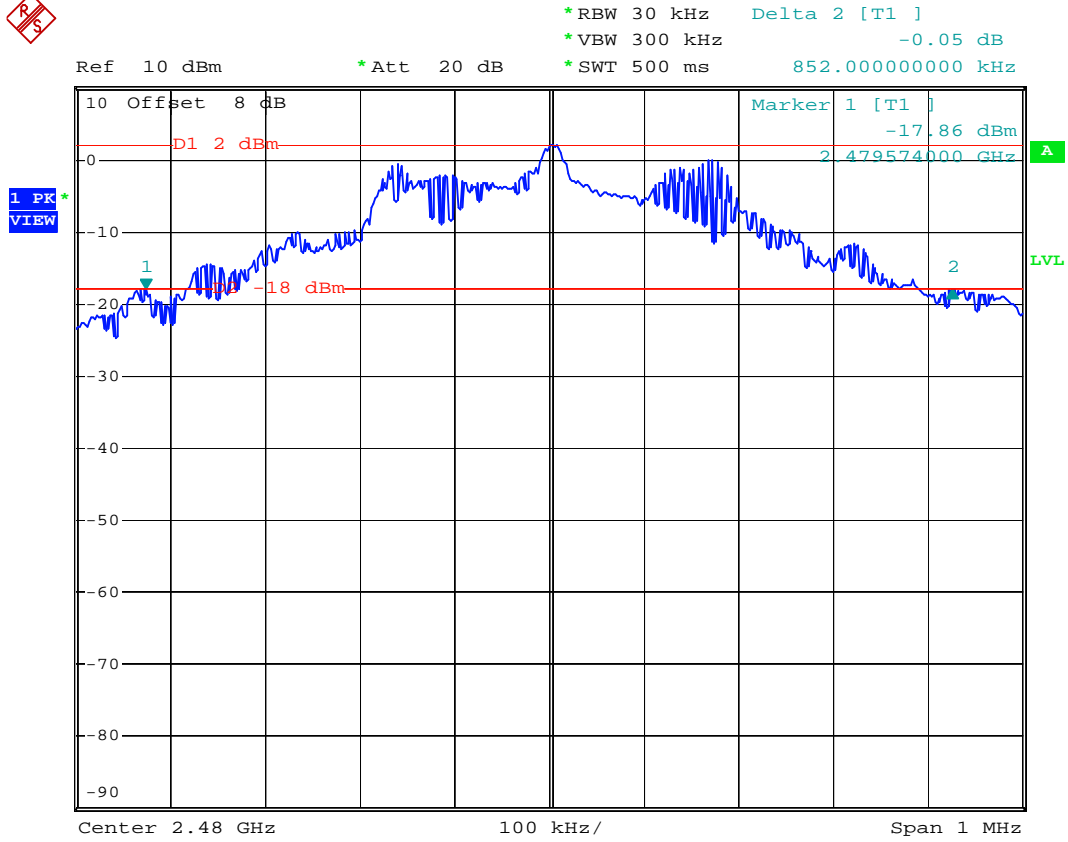
Mode 2: CH39 (2441MHz)



Date: 17.JUN.2006 08:42:37



Mode 3: CH78 (2480MHz)



Date: 17.JUN.2006 08:41:22

5.5 Dwell Time of Each Frequency

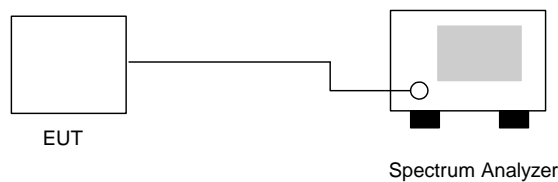
5.5.1 Measuring Instruments :

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: 26°C
- Relative Humidity: 53%
- Test Engineer : James

Ch00

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	8.4	480	0.127	0.4
DH3	4.7	1768	0.263	0.4



CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	8.2	488	0.126	0.4
DH3	5	1758	0.278	0.4

CH78

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	8.1	488	0.125	0.4
DH3	4.8	1778	0.270	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)

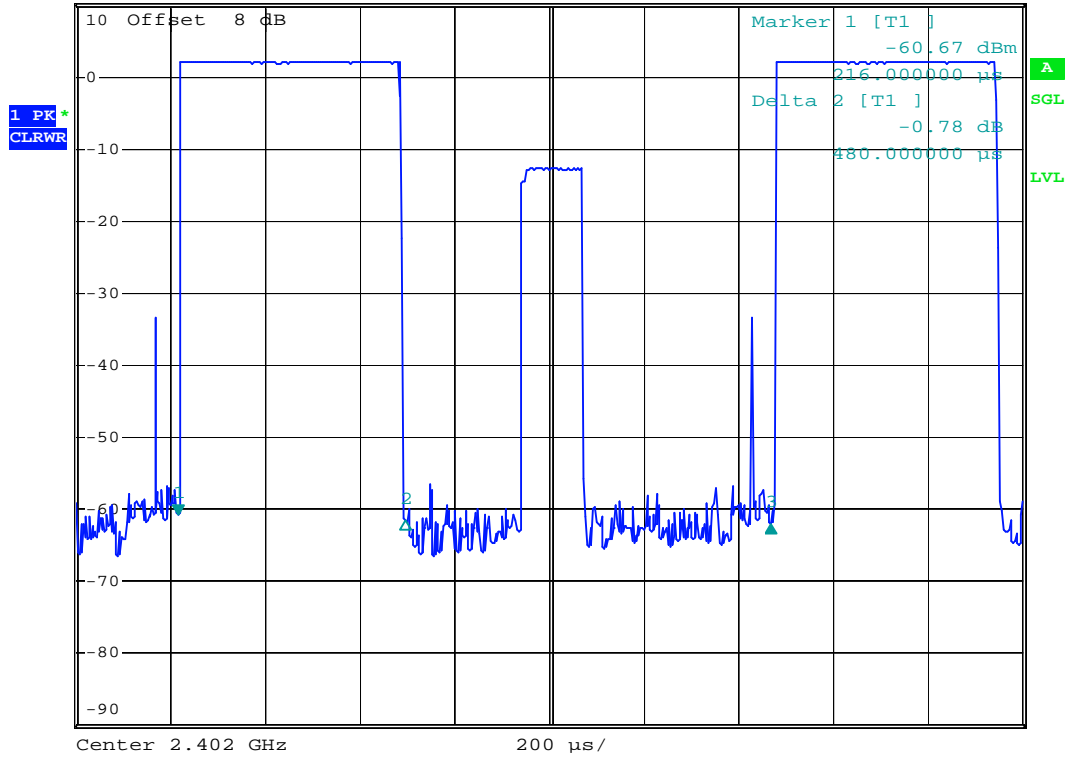


5.5.5 Dwell Time

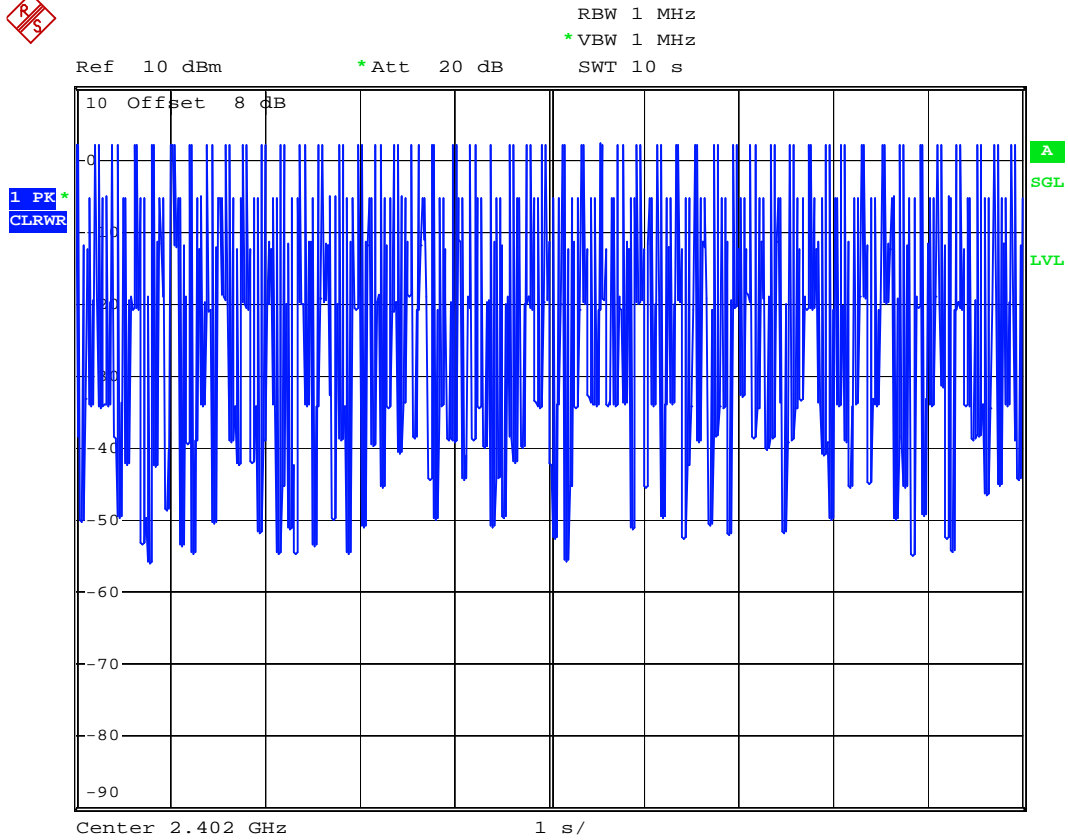
DH1 (CH00)



RBW 1 MHz Delta 3 [T1]
 *VBW 1 MHz -1.32 dB
 Ref 10 dBm *Att 20 dB SWT 2 ms 1.252000 ms



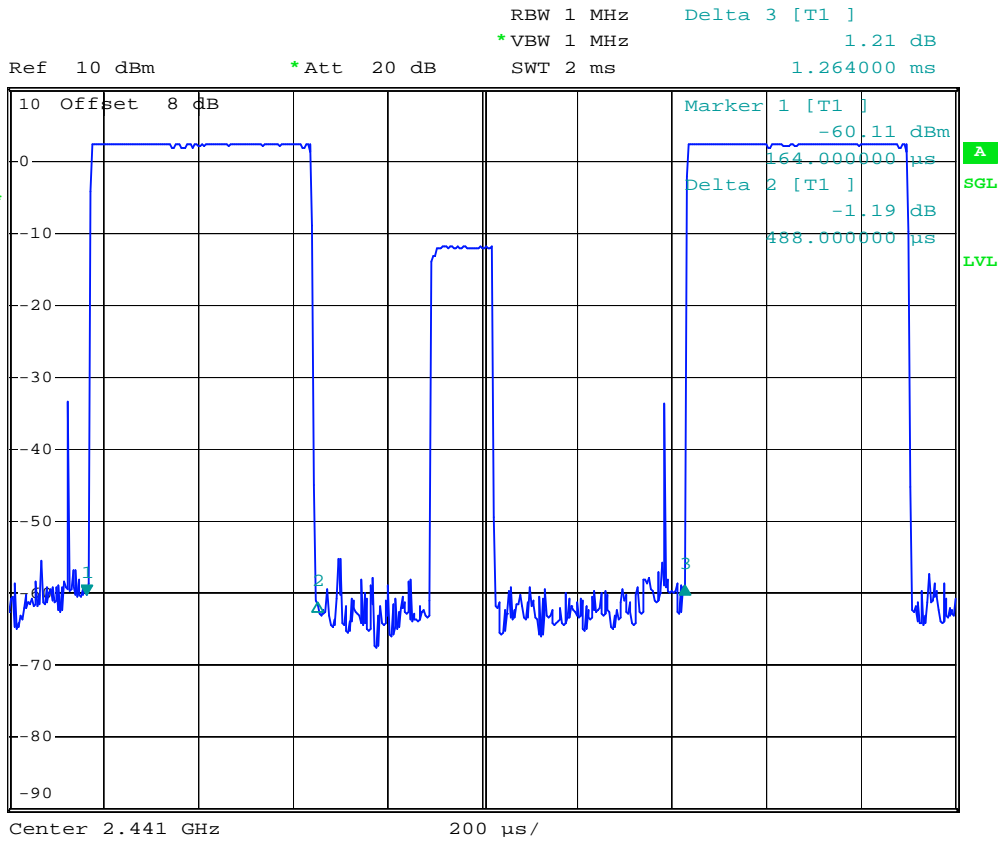
Date: 17.JUN.2006 08:50:33



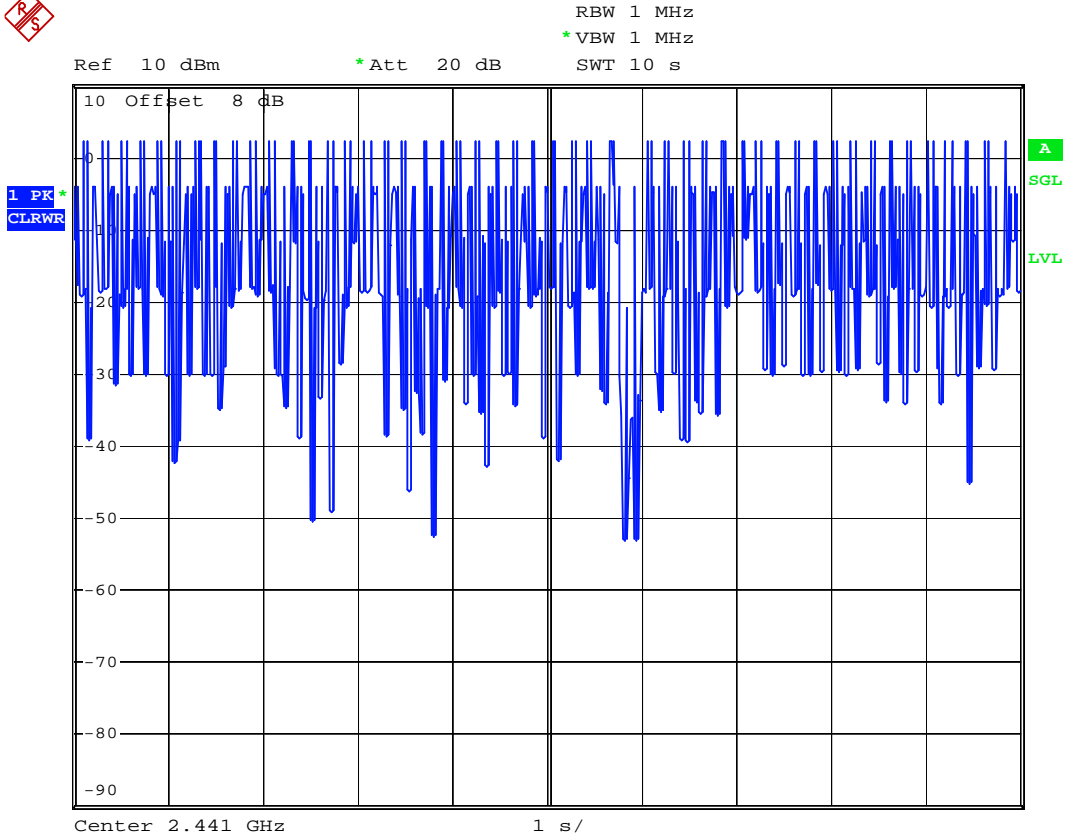
Date: 17.JUN.2006 08:57:10



DH1 (CH39)



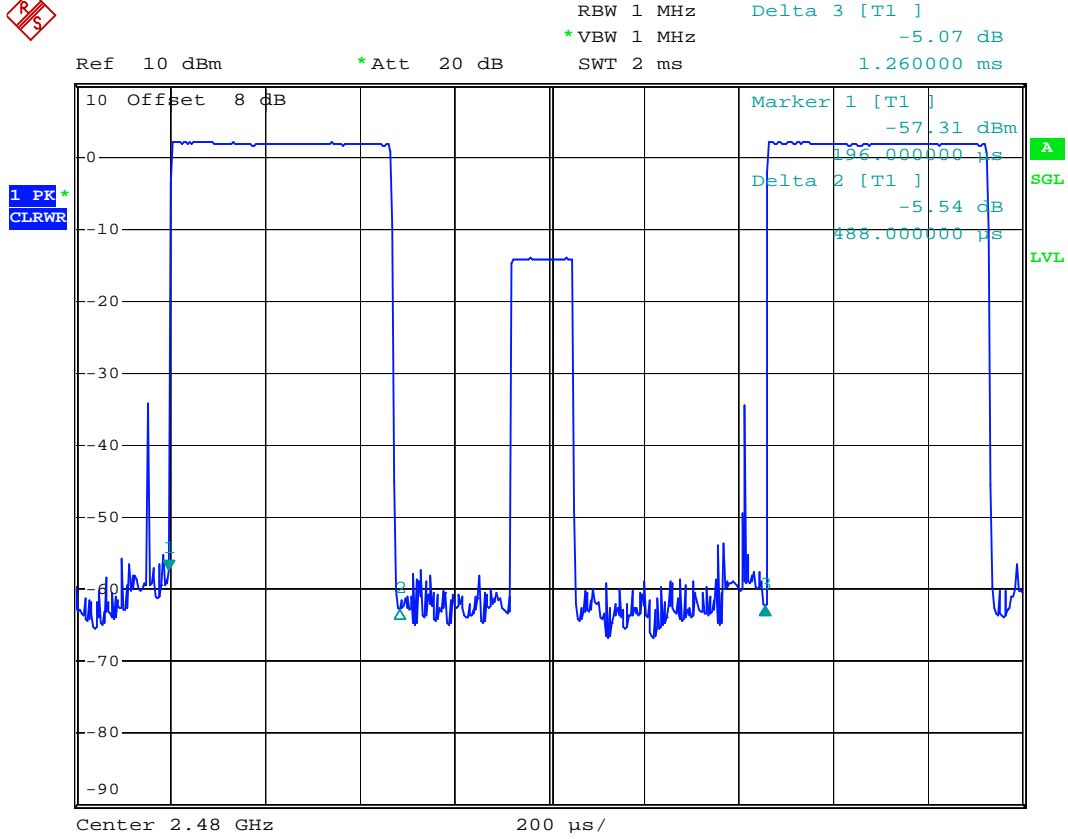
Date: 17.JUN.2006 08:51:07



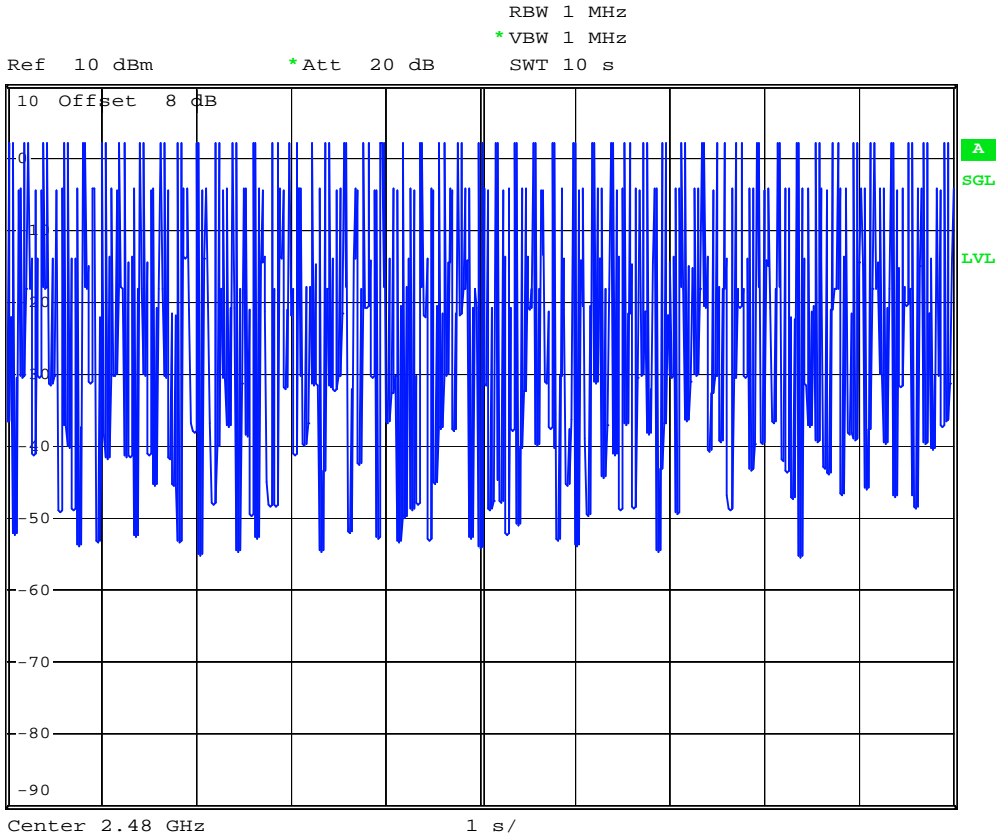
Date: 17.JUN.2006 08:57:28



DH1 (CH78)



Date: 17.JUN.2006 08:51:41



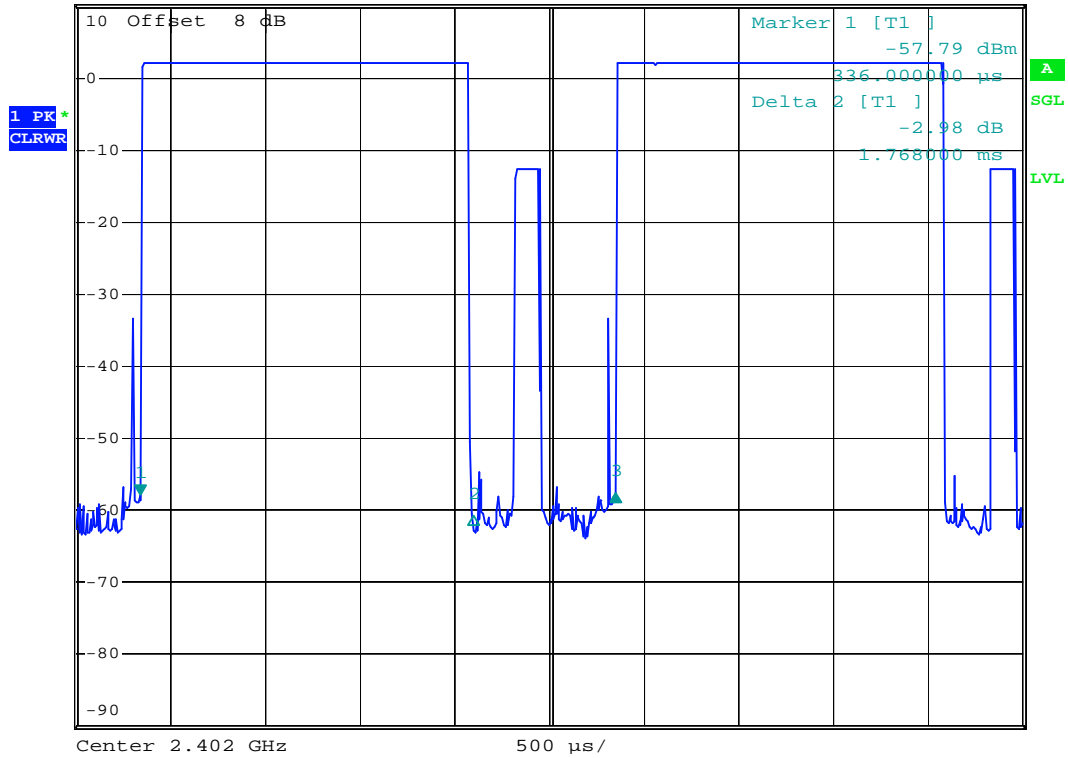
Date: 17.JUN.2006 08:57:48



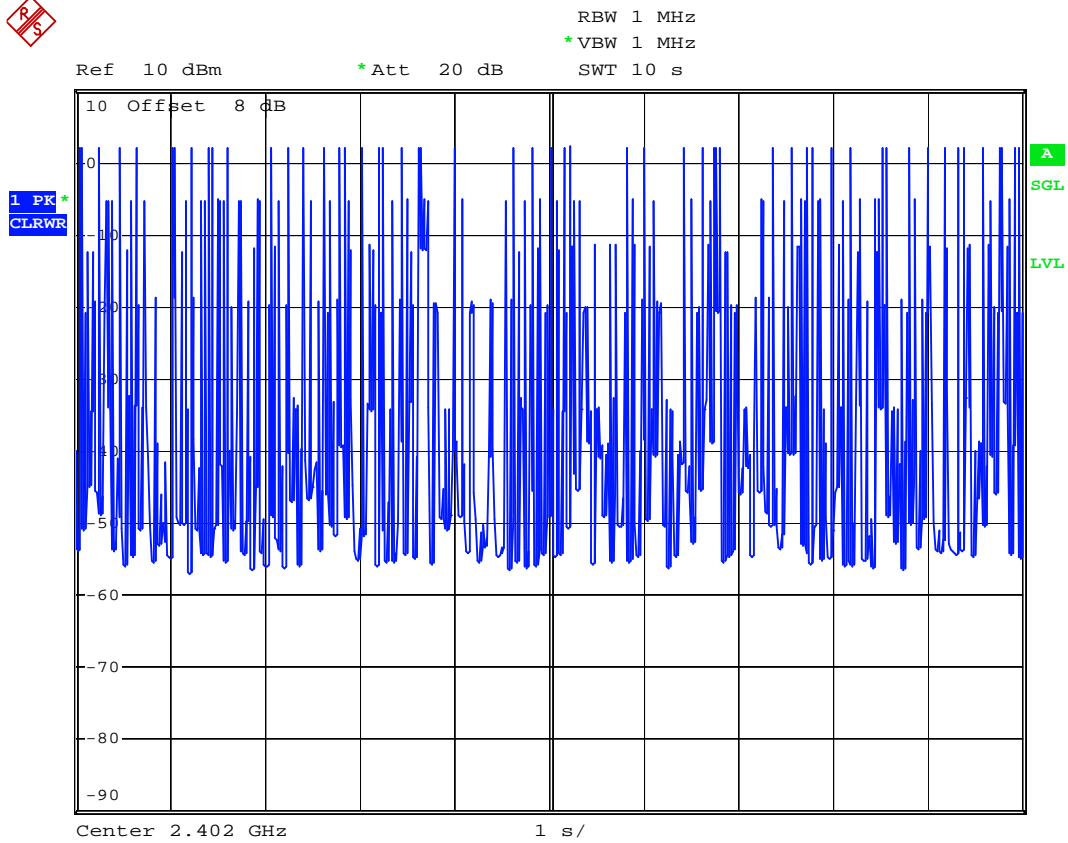
DH3 (CH00)



Ref 10 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] 0.32 dB
 *VBW 1 MHz SWT 5 ms 2.510000 ms



Date: 17.JUN.2006 08:52:41



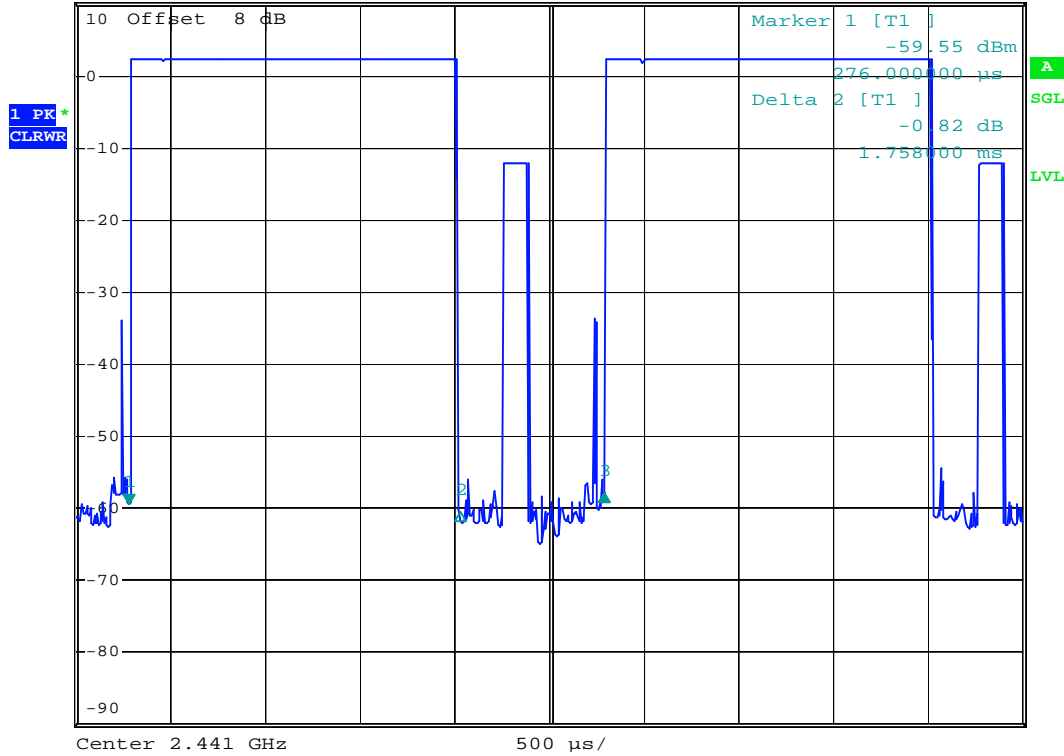
Date: 17.JUN.2006 08:58:20



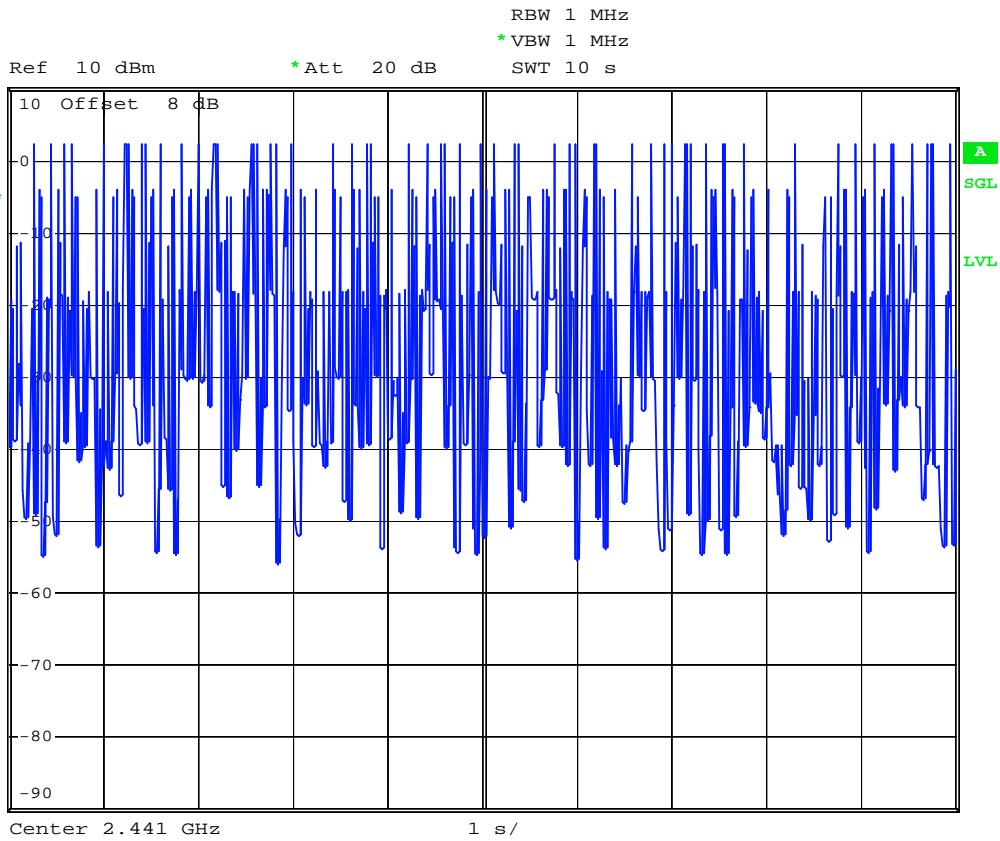
DH3 (CH39)



Ref 10 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] 1.79 dB
 *VBW 1 MHz SWT 5 ms 2.510000 ms



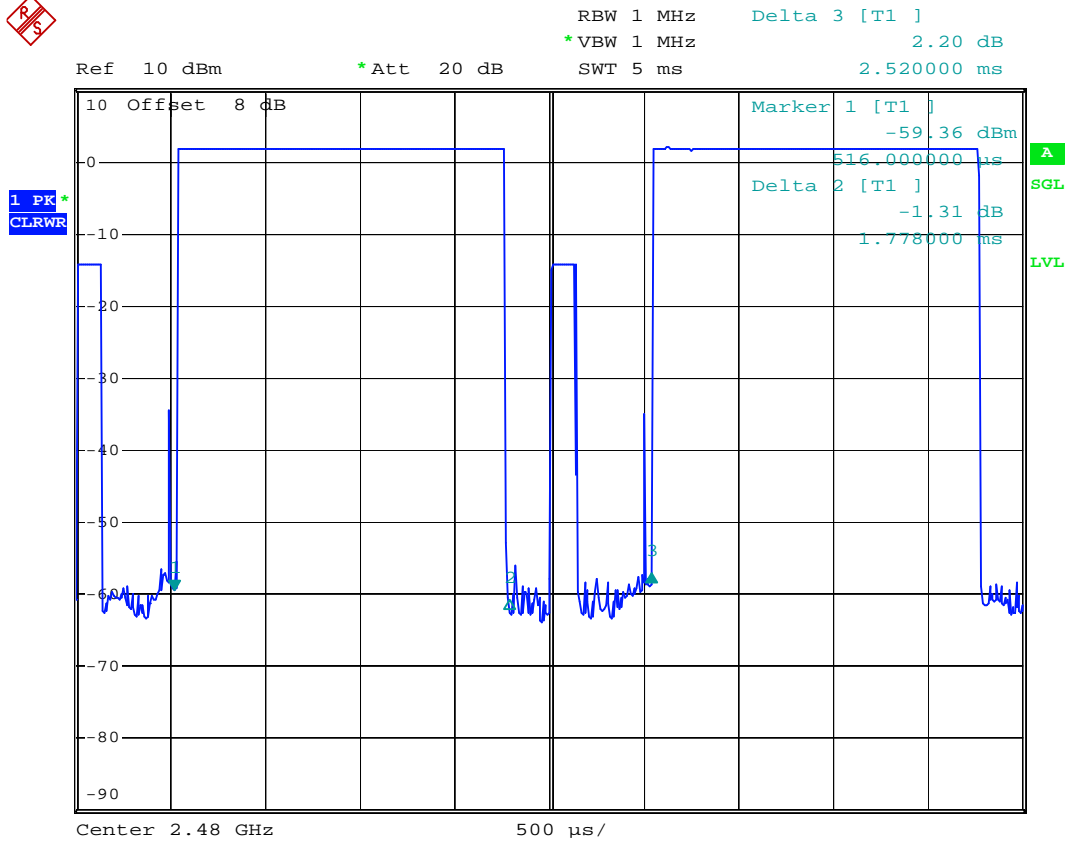
Date: 17.JUN.2006 08:53:09



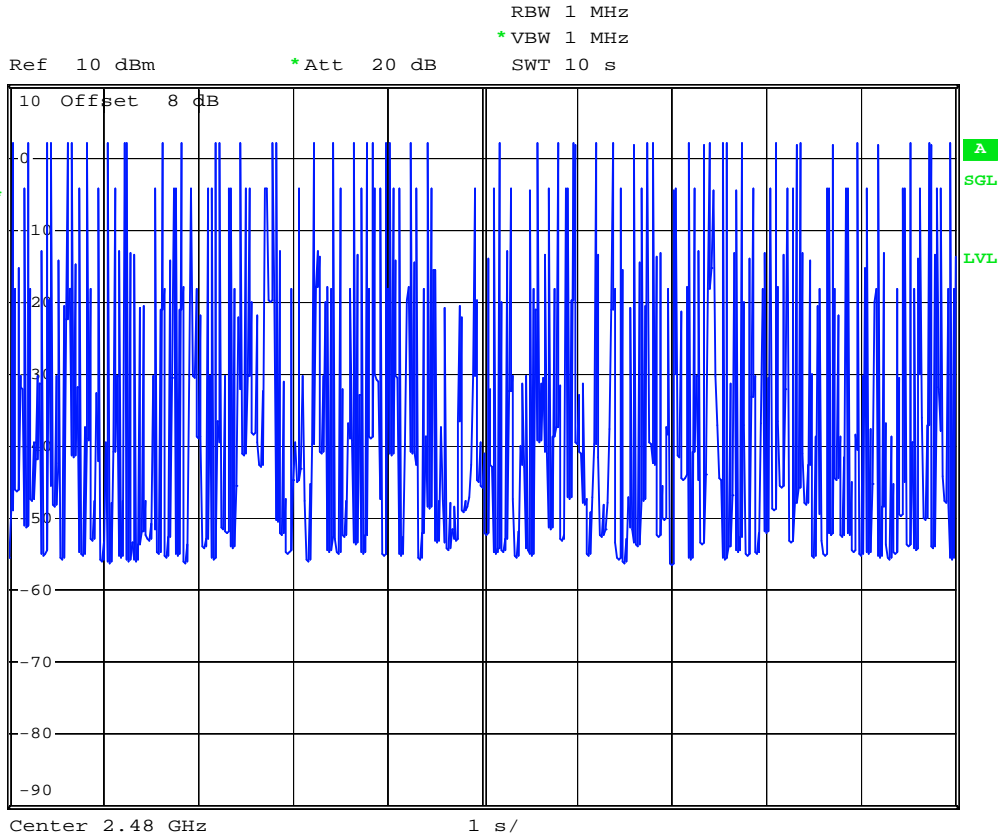
Date: 17.JUN.2006 08:58:41



DH3 (CH78)



Date: 17.JUN.2006 08:53:34



Date: 17.JUN.2006 08:59:06

5.6 Output Power

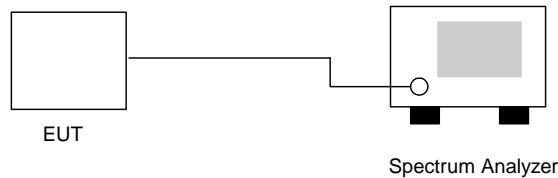
5.6.1 Measuring Instruments :

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

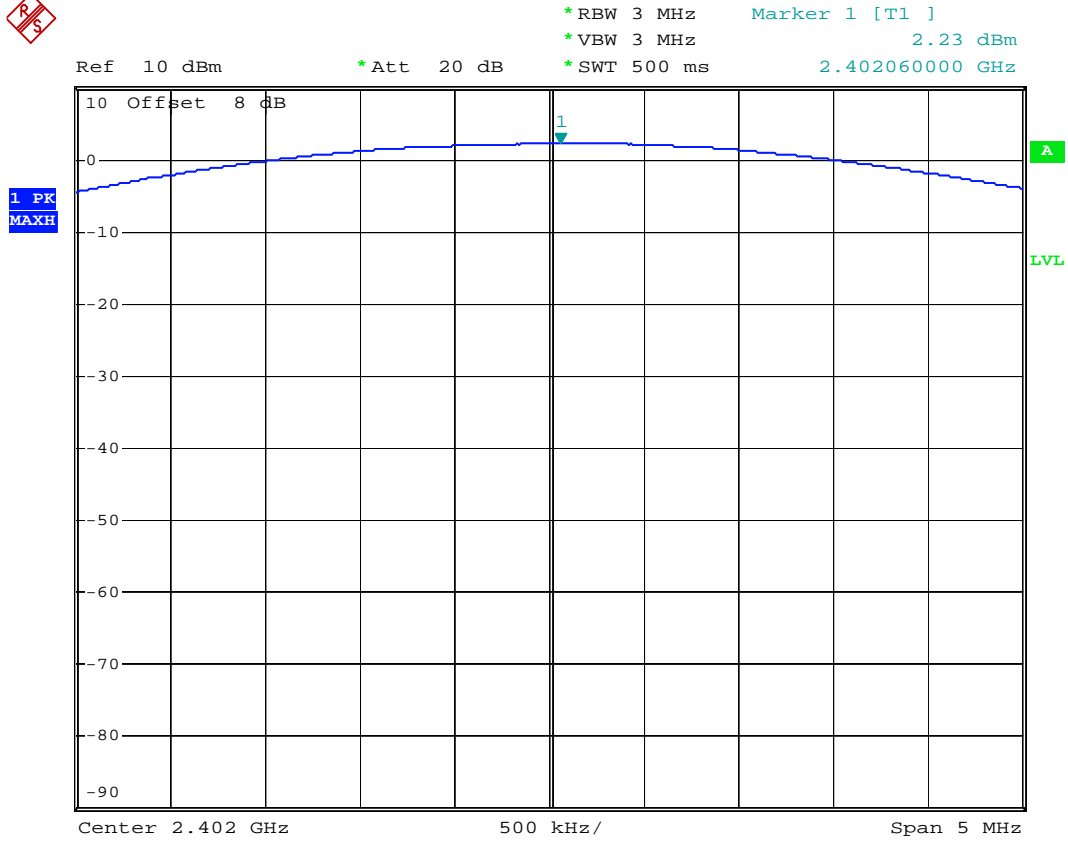
- Temperature: 26°C
- Relative Humidity: 53%
- Test Engineer : James

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)	Plot Ref. No.
00	2402	2.23	1W/30 dBm	Mode 1
39	2441	2.53	1W/30 dBm	Mode 2
78	2480	2.12	1W/30 dBm	Mode 3



5.6.5 Output Power

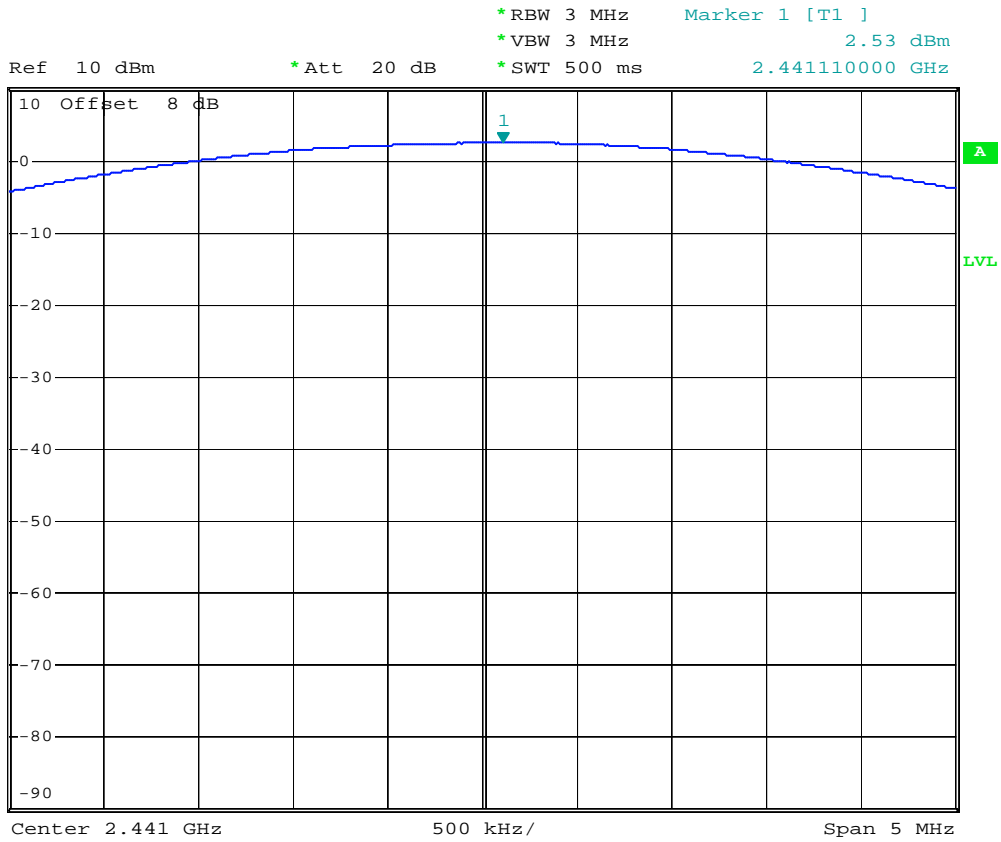
Mode 1: CH00 (2402MHz)



Date: 17.JUN.2006 08:39:41



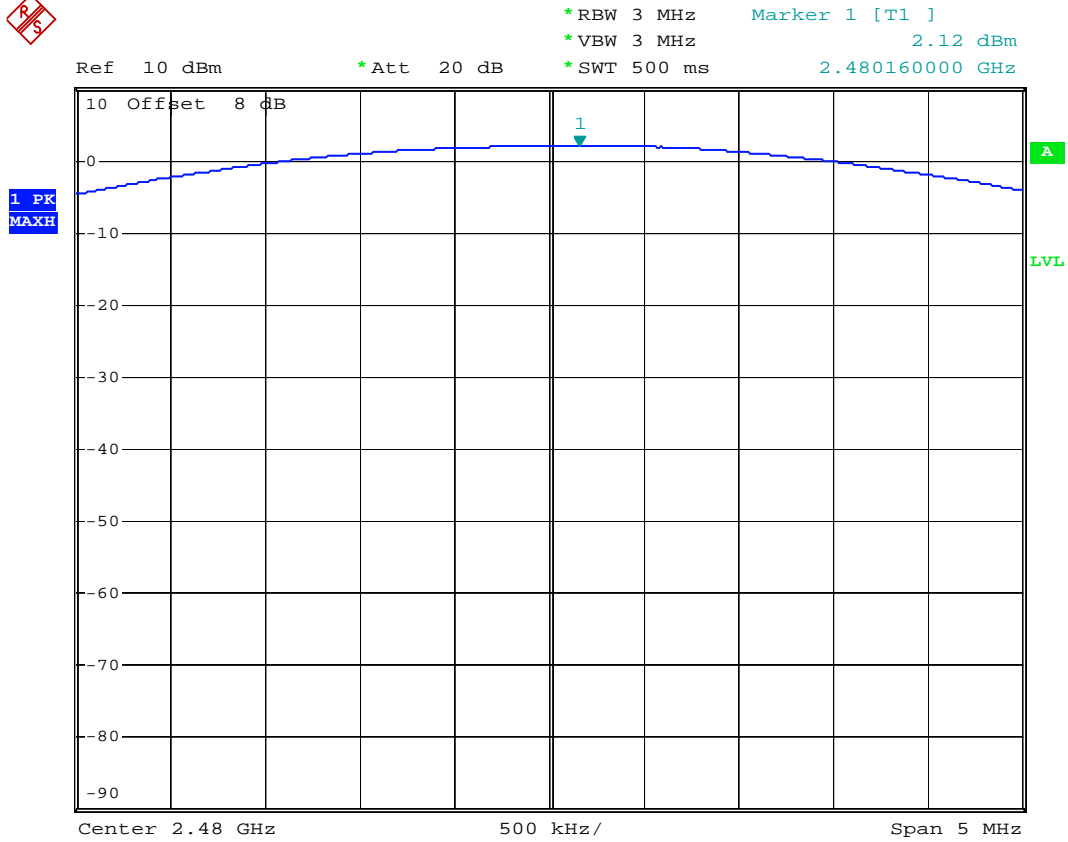
Mode 2: CH39 (2441MHz)



Date: 17.JUN.2006 08:40:00



Mode 3: CH78 (2480MHz)



Date: 17.JUN.2006 08:40:17



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: 26°C
- Relative Humidity: 53%
- Test Engineer : James

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 (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Detect Mode
2378.00	50.20	-23.80	74.00	51.16	30.25	4.23	35.44	100	0	Peak
2378.00	40.22	-13.78	54.00	41.18	30.25	4.23	35.44	100	269	Average

CH00 (Vertical)

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Detect Mode
2378.00	49.54	-24.46	74.00	50.50	30.25	4.23	35.44	100	0	Peak
2378.00	40.20	-13.80	54.00	41.16	30.25	4.23	35.44	100	270	Average



CH78 (Horizontal)

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Detect Mode
2483.50	56.64	-17.36	74.00	57.50	30.29	4.36	35.51	100	0	Peak
2483.50	44.26	-9.74	54.00	45.12	30.29	4.36	35.51	100	269	Average

CH78 (Vertical)

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Detect Mode
2483.50	51.09	-22.91	74.00	51.95	30.29	4.36	35.51	100	360	Peak
2483.50	41.96	-12.04	54.00	42.82	30.29	4.36	35.51	100	195	Average

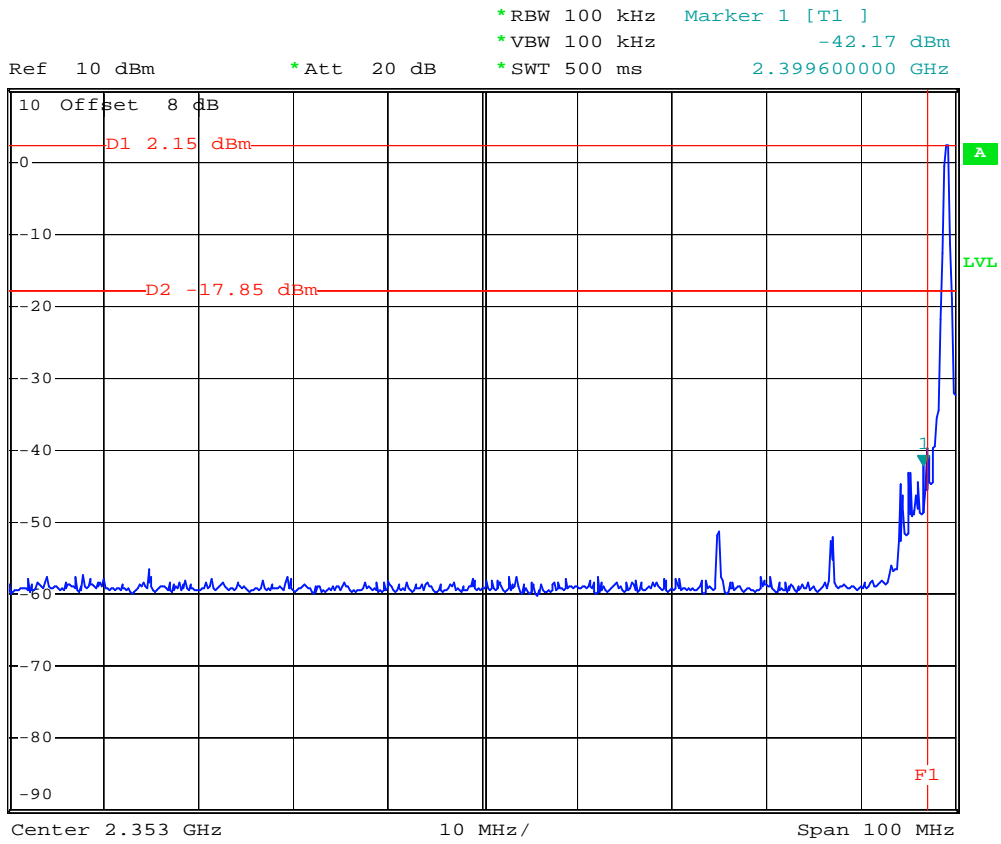


5.7.5 Frequency Band Edge

Mode 1: CH00 (2402 MHz)



1 PK
MAXH



Date: 17.JUN.2006 08:44:51



Mode 3: CH78 (2480 MHz)

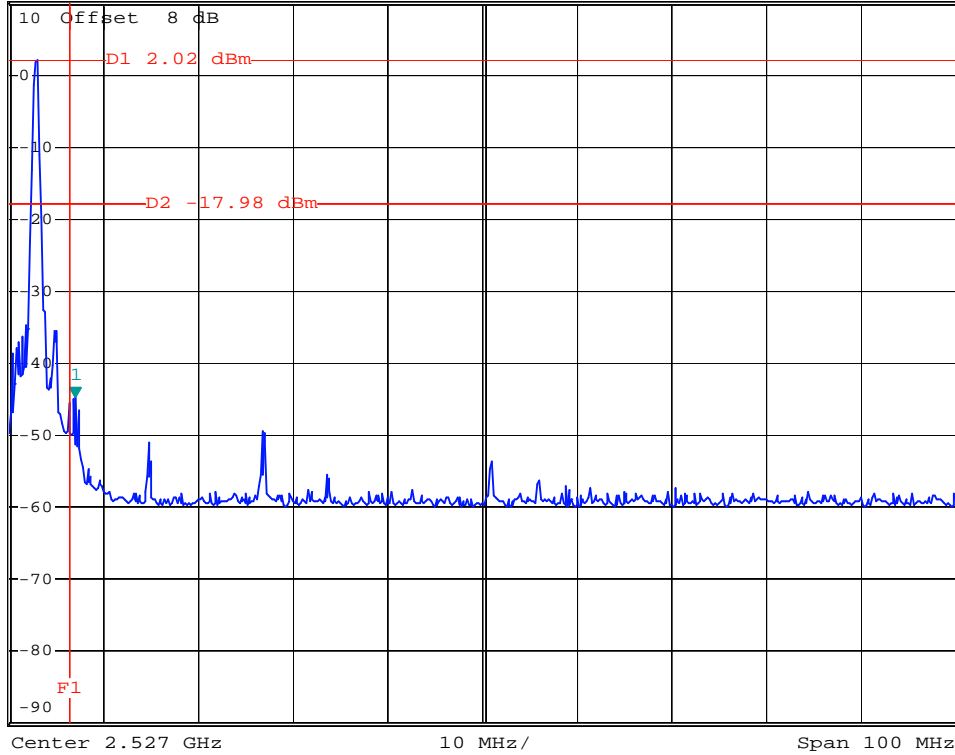


*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -44.66 dBm
*SWT 500 ms 2.484000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
MAXH



Date: 17.JUN.2006 08:45:58

5.8 Radiated Emission Measurement

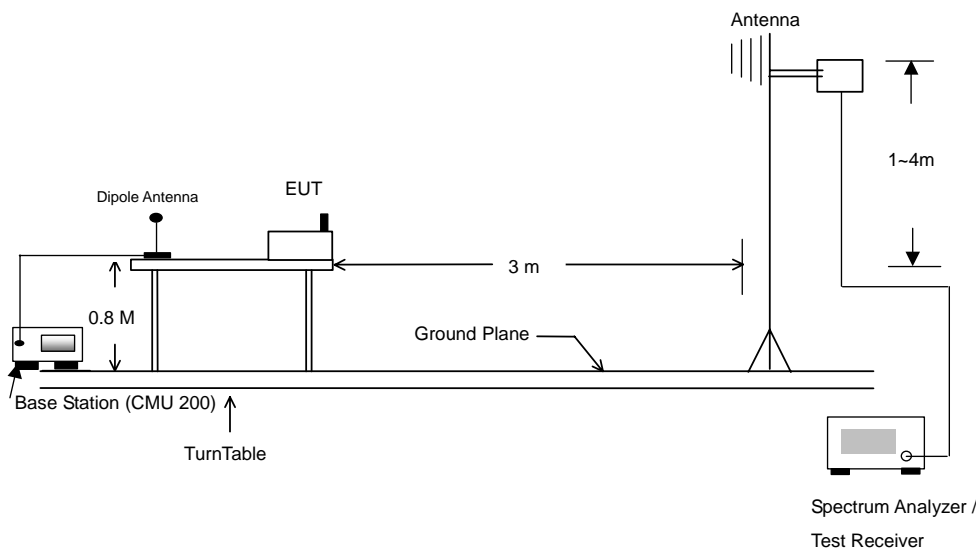
5.8.1 Measuring Instruments

As described in chapter 6 of this Report.

5.8.2 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.

5.8.3 Typical Test Setup Layout of Radiated Emission





5.8.4 Test Data

Temperature : 26°C

Relating Humidity : 53%

Test Mode : Mode 1

Test Enginner : Andy

Remark:

Duty Cycle = 0.0095

*Average = Peak + Duty Correction Factor

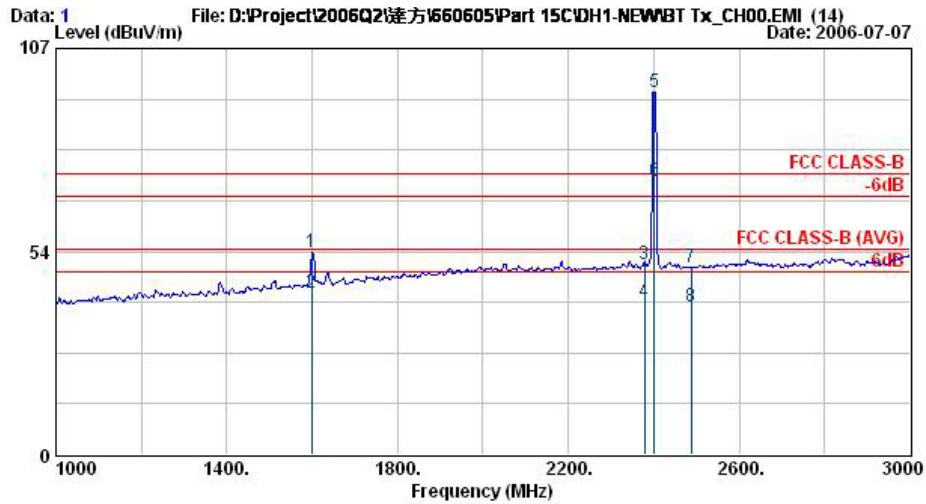
**Duty Correction Factor = 20*log(Duty Cycle)

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Duty Correction Factor (dB)	Remark	Polarization
1598	53.19	-20.81	74.00	58.45	26.90	3.46	35.62		Peak	Horizontal
1598	42.39	-11.61	54.00	47.65	26.90	3.46	35.62		Average	Horizontal
2378	50.20	-23.80	74.00	51.16	30.25	4.23	35.44		Peak	Horizontal
2378	40.22	-13.78	54.00	41.18	30.25	4.23	35.44		Average	Horizontal
2402	95.43	***	***	96.36	30.27	4.26	35.46		Peak	Horizontal
2402	72.20	***	***	73.13	30.27	4.26	35.46		Average	Horizontal
2488	49.42	-24.58	74.00	50.27	30.30	4.36	35.51		Peak	Horizontal
2488	39.16	-14.84	54.00	40.01	30.30	4.36	35.51		Average	Horizontal
4806	50.93	-23.07	74.00	47.94	32.88	6.21	36.10		Peak	Horizontal
4806	10.48	-43.52	54.00	50.93				-40.45	Average	Horizontal
1604	52.17	-21.83	74.00	57.25	27.03	3.48	35.59		Peak	Vertical
1604	42.56	-11.44	54.00	47.64	27.03	3.48	35.59		Average	Vertical
2378	49.54	-24.46	74.00	50.50	30.25	4.23	35.44		Peak	Vertical
2378	40.20	-13.80	54.00	41.16	30.25	4.23	35.44		Average	Vertical
2402	94.89	***	***	95.82	30.27	4.26	35.46		Peak	Vertical
2402	72.02	***	***	72.95	30.27	4.26	35.46		Average	Vertical
2488	39.67	-34.33	74.00	40.52	30.30	4.36	35.51		Peak	Vertical
2488	39.16	-14.84	54.00	40.01	30.3	4.36	35.51		Average	Vertical
4806	57.63	-16.37	74.00	54.64	32.88	6.21	36.10		Peak	Vertical
4806	17.18	-36.82	54.00	57.63				-40.45	Average	Vertical
7206	58.84	-15.16	74.00	48.64	38.26	7.82	35.88		Peak	Vertical
7026	18.39	-35.61	54.00	58.84				-40.45	Average	Vertical

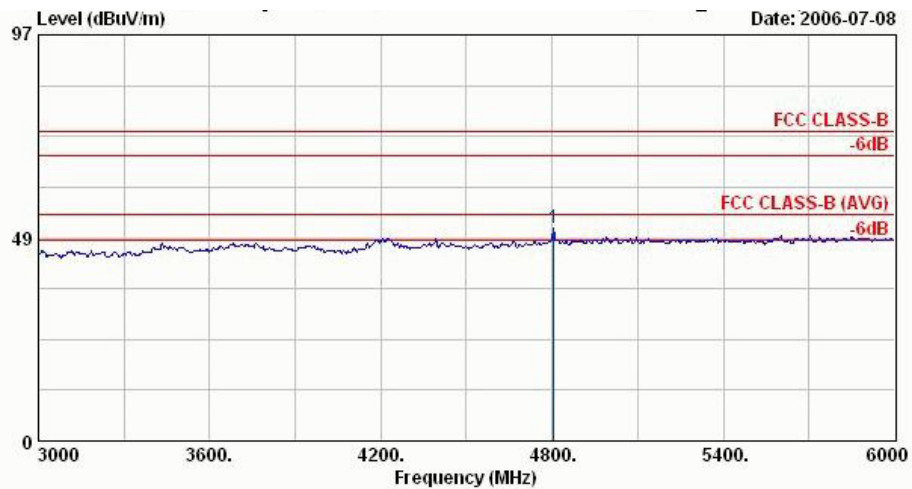


- Test Mode : Mode 1
- Polarization : Horizontal

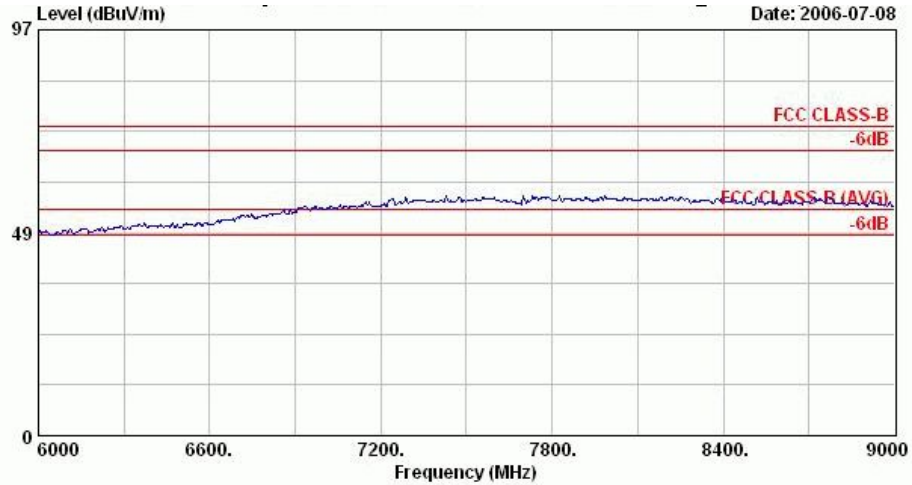
■ The test that passed at the minimum margin was marked by the frame in the following test record



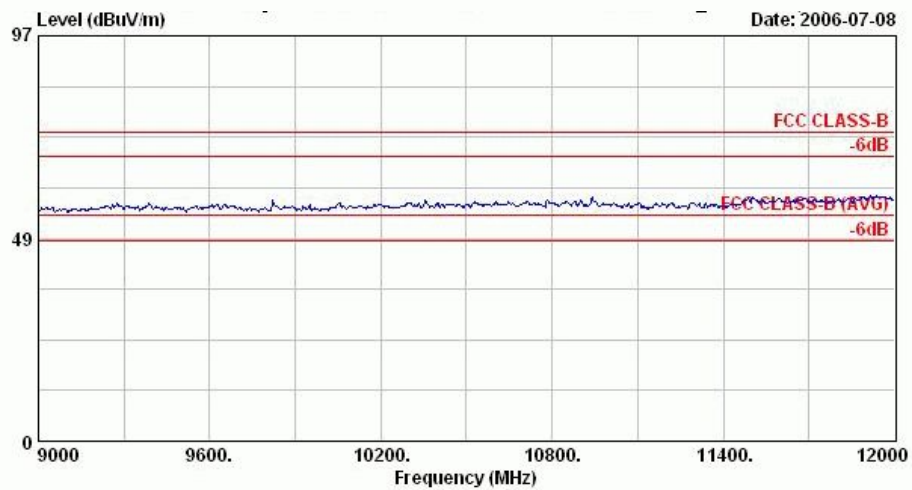
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



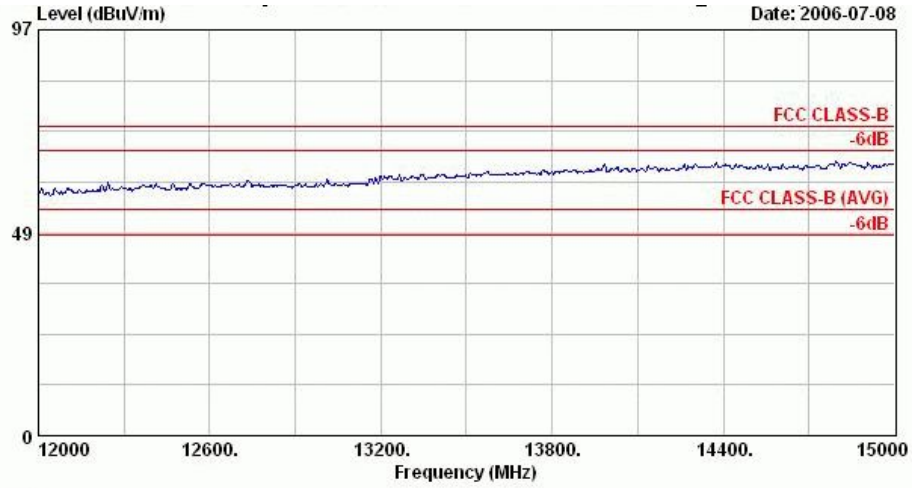
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



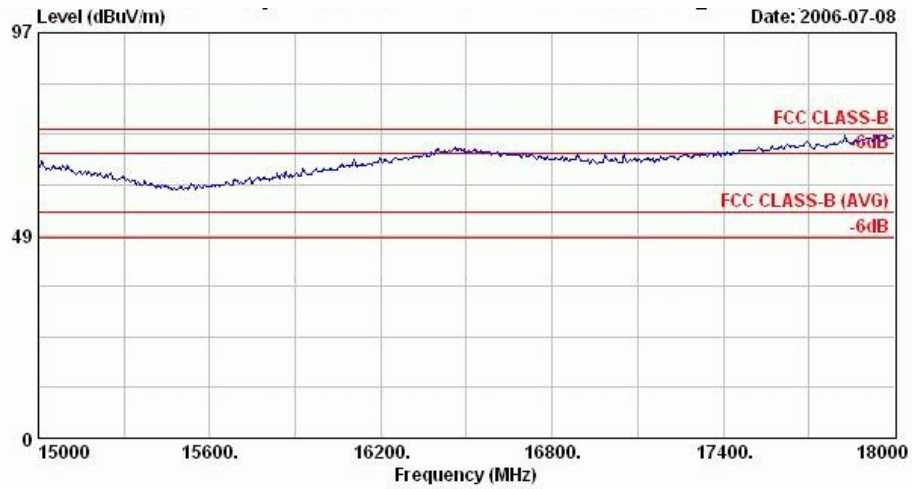
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



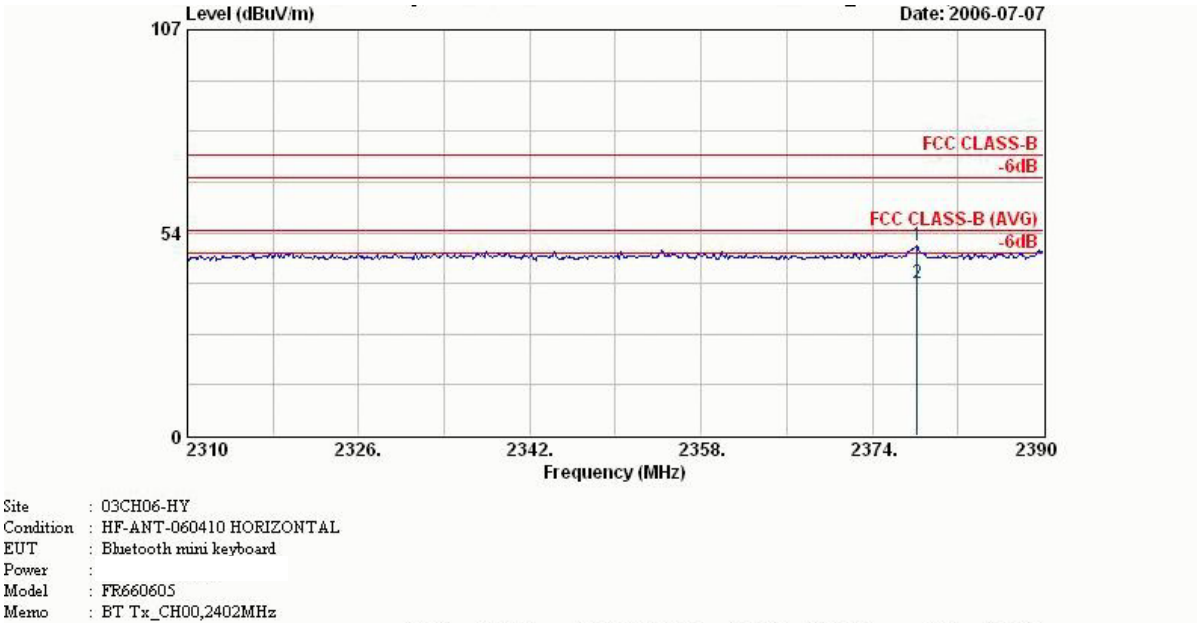
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



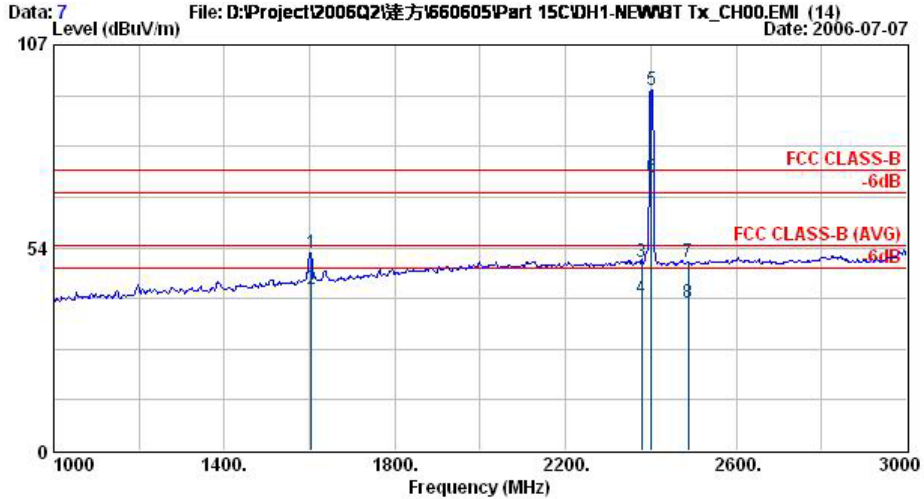
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Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



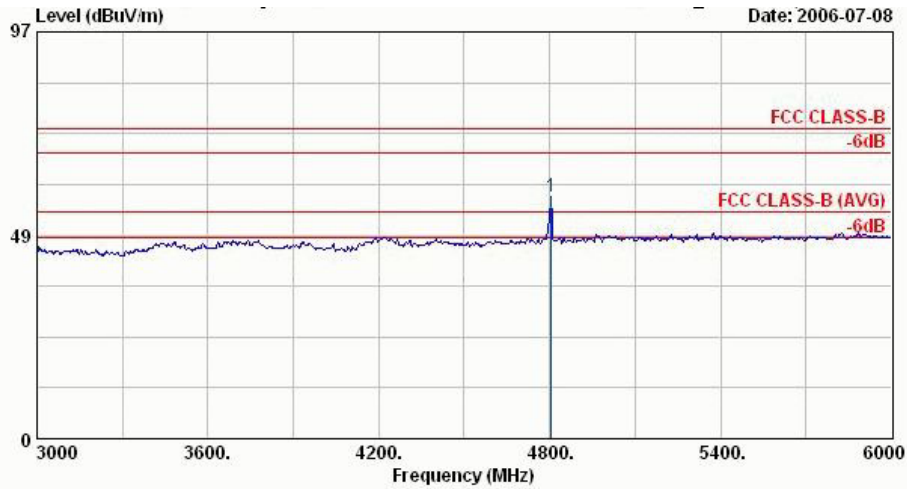


- Test Mode : Mode 1
- Polarization : Vertical

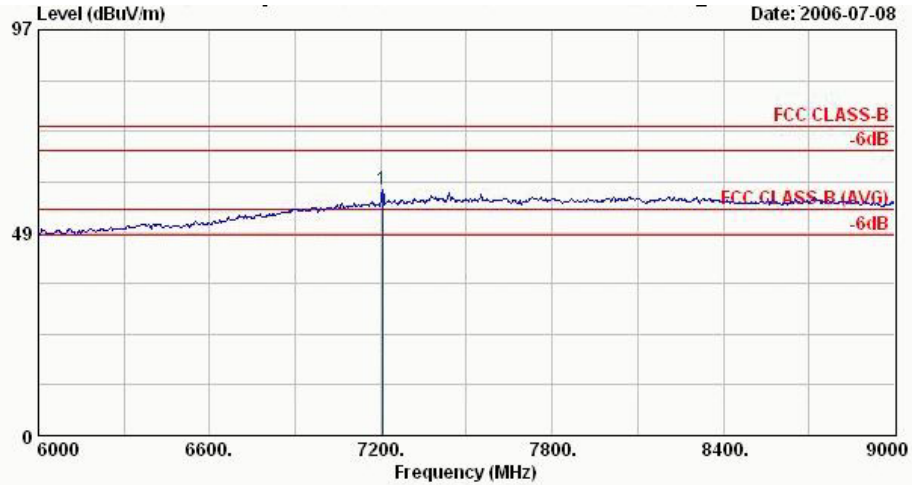
The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH06-HY
 Condition : HF-ANT-060410 VERTICAL
 EUT : Bluetooth mini keyboard
 Power :
 Model : FR660605
 Memo : BT Tx_CH00,2402MHz

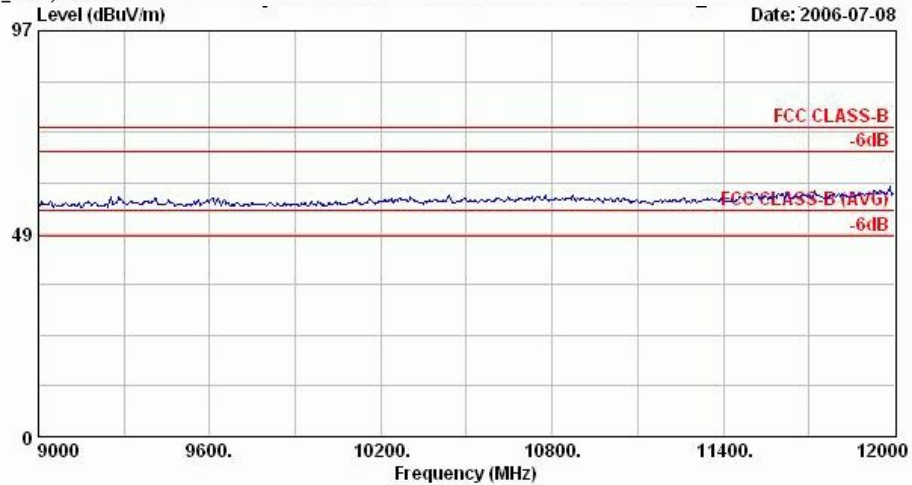


Site : 03CH06-HY
 Condition : HF-ANT-060410 VERTICAL
 EUT : Bluetooth mini keyboard
 Power :
 Model : FR660605
 Memo : BT Tx_CH00,2402MHz



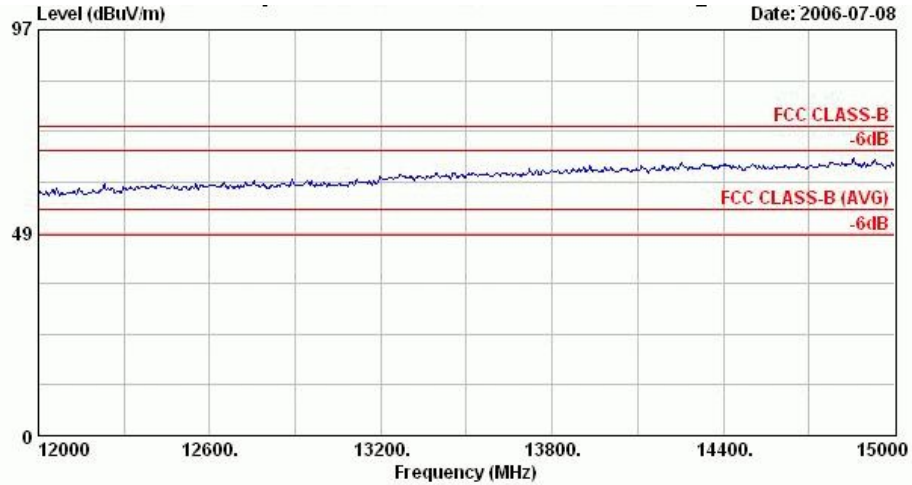
Date: 2006-07-08

Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz

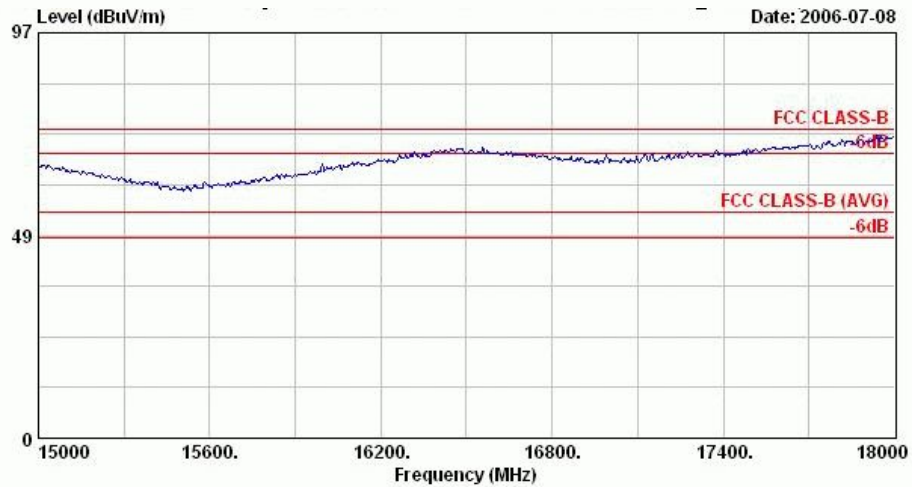


Date: 2006-07-08

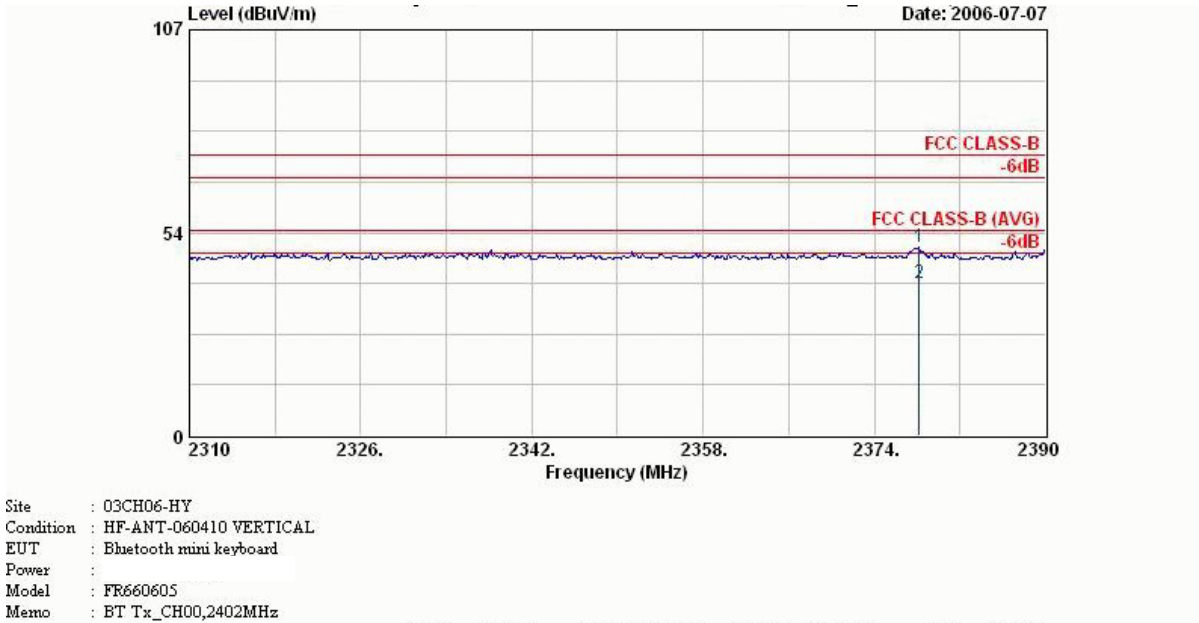
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH00,2402MHz





Temperature : 26°C
Relating Humidity : 53%
Test Mode : Mode 2
Test Enginner : ___ Andy ___

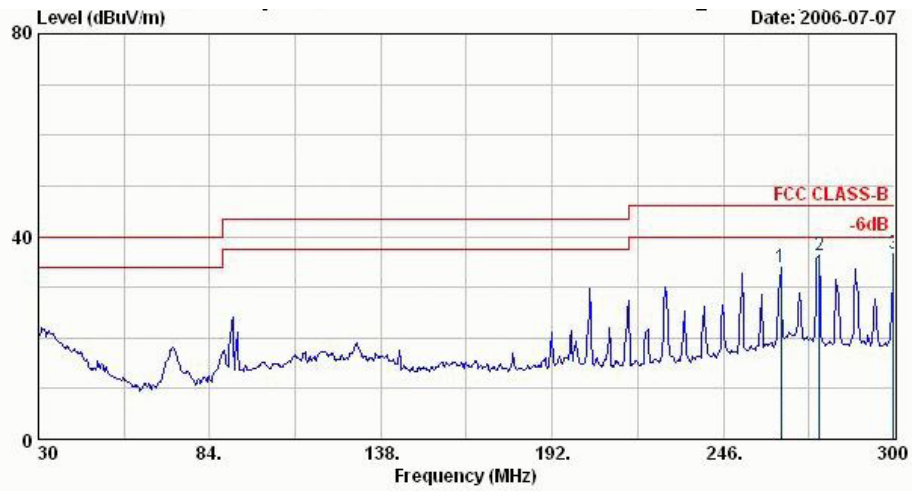
Remark:
Duty Cycle = 0.0095
*Average = Peak + Duty Correction Factor
**Duty Correction Factor = 20*log(Duty Cycle)

Table with 11 columns: Frequency (MHz), Level (dBuV), Over Limit (dB), Limit (dBuV/m), Read Level (dBuV/m), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Duty Correction Factor (dB), Remark, Polarization. It contains 30 rows of test data.

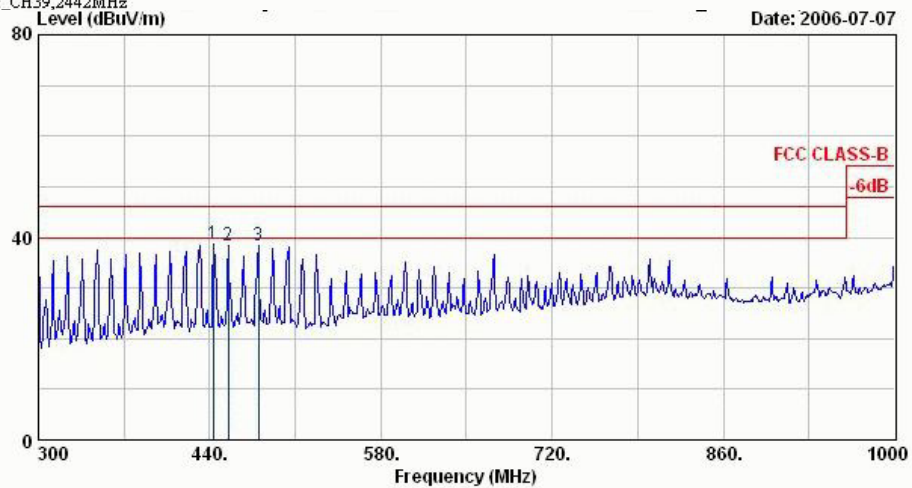


- Test Mode : Mode 2
- Polarization : Horizontal

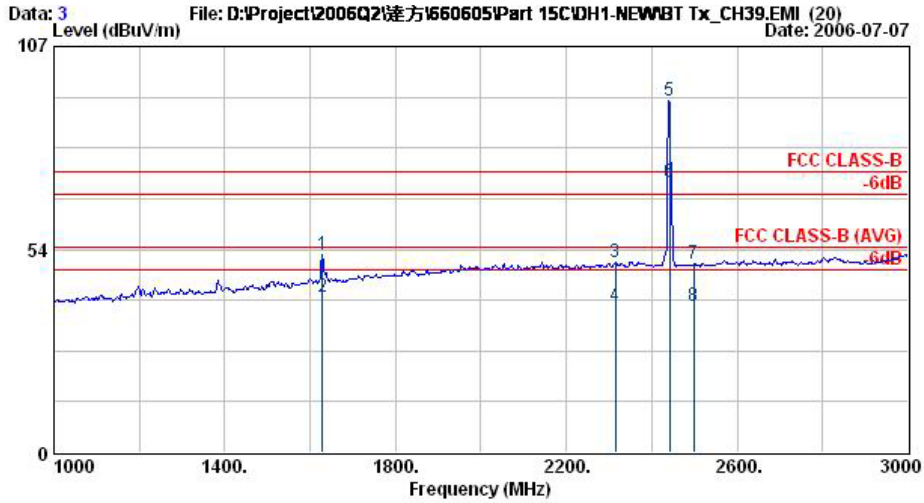
The test that passed at minimum margin was marked by the frame in the following table.



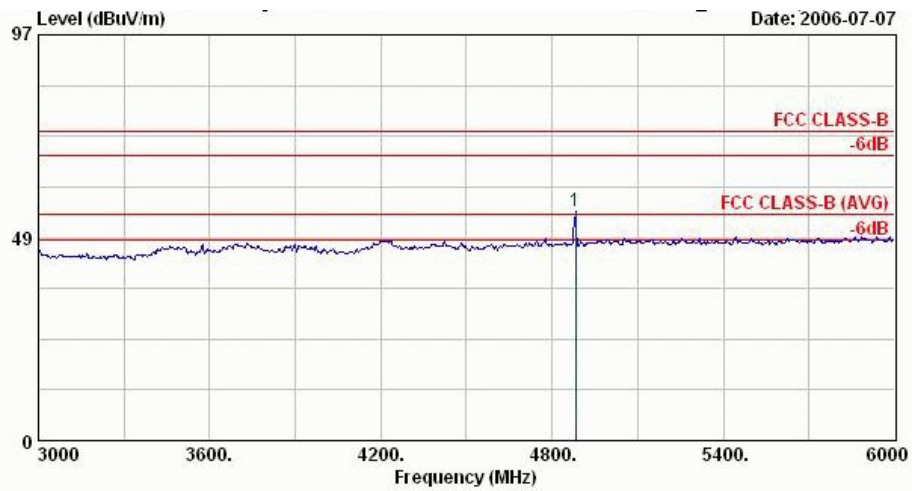
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



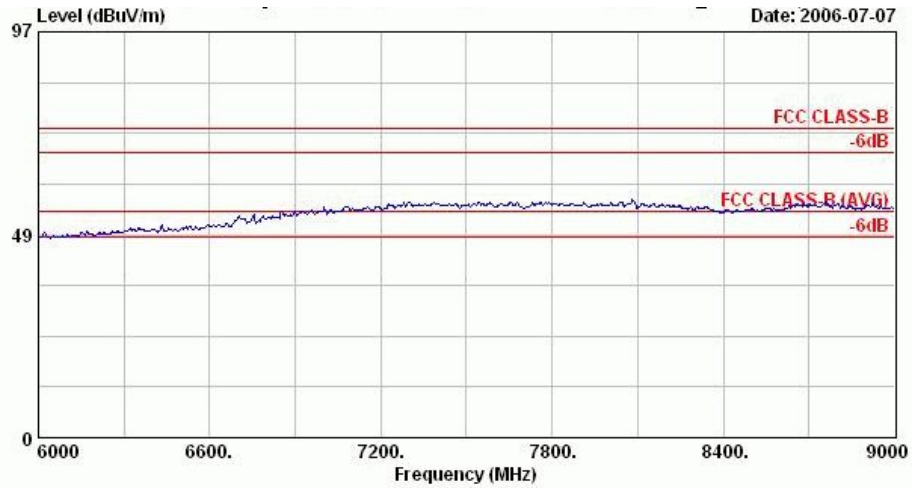
Site : 03CH06-HY
Condition : BI-LOG-2004-1122 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



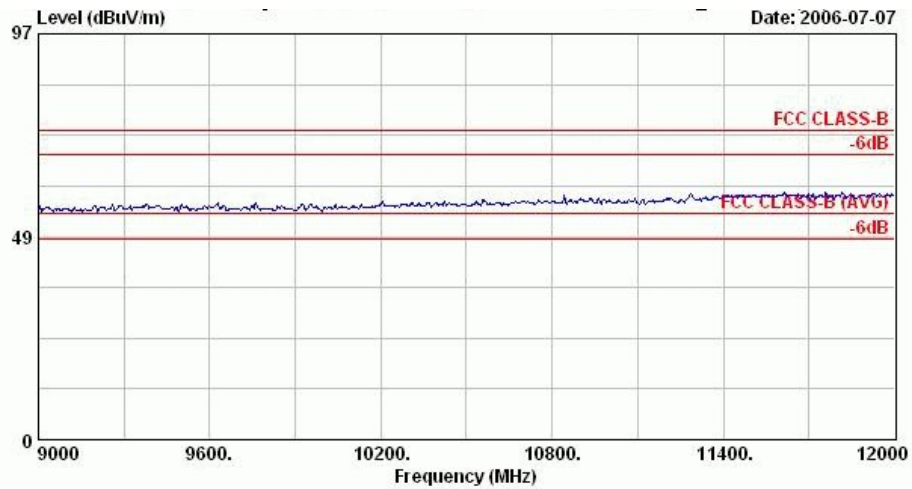
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



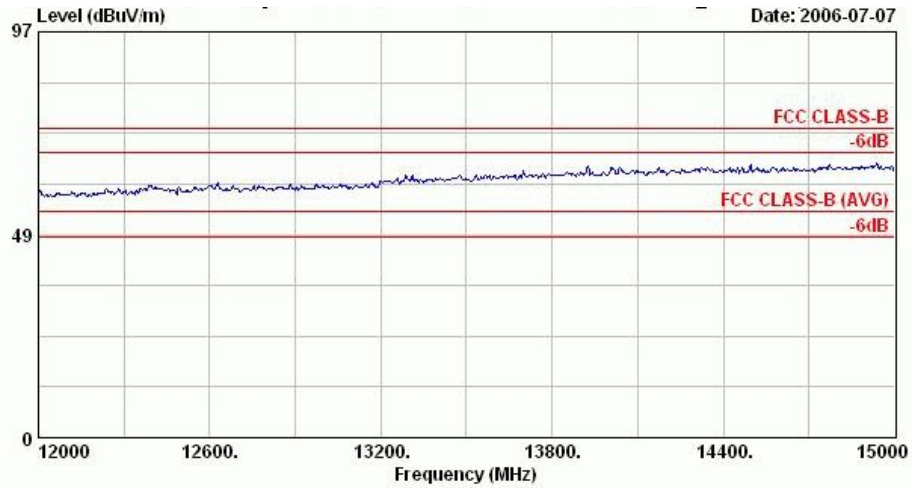
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



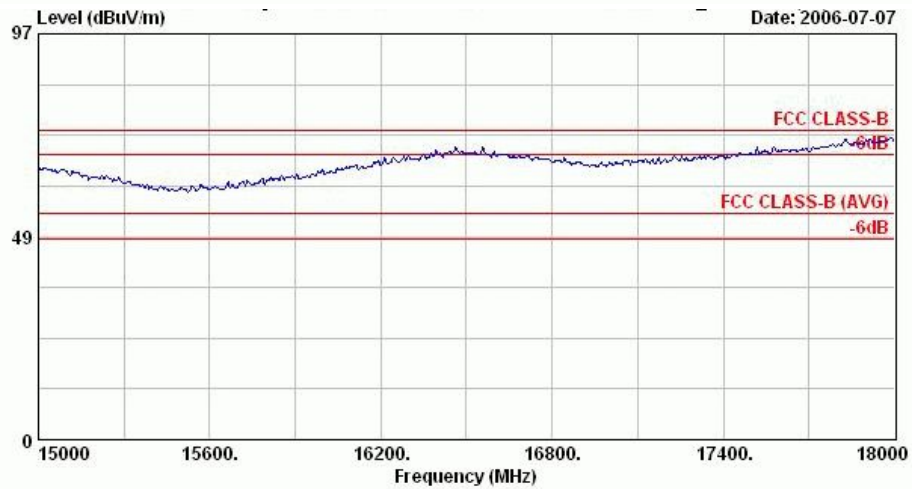
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



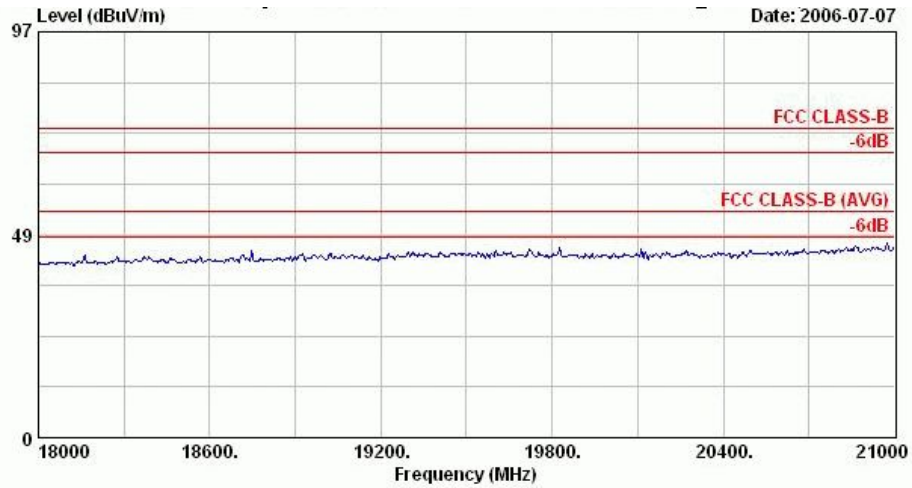
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



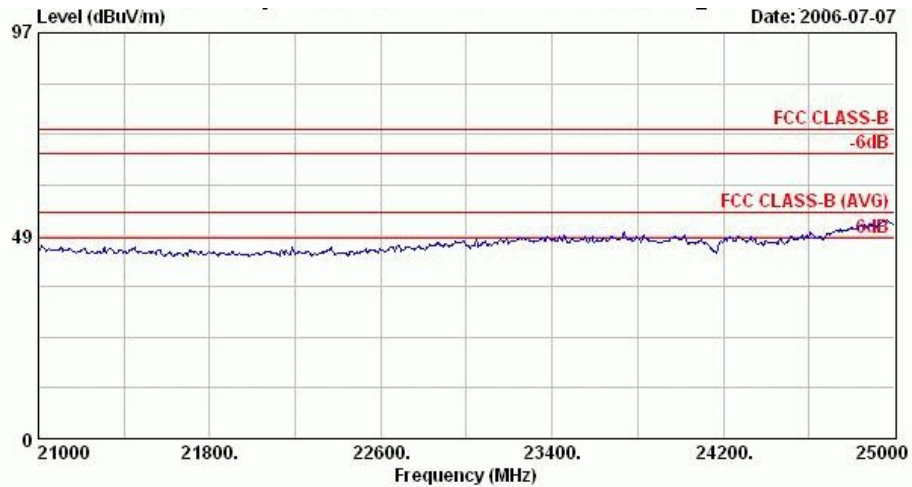
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Site : 03CH06-HY
Condition : SHF-EHF HORN HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz

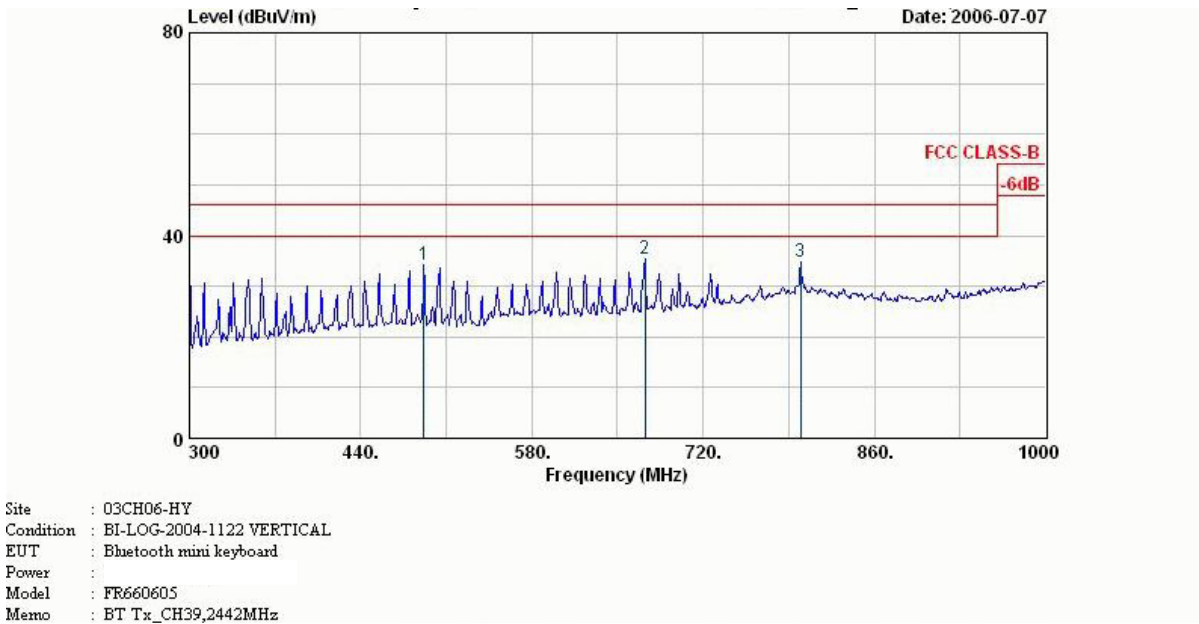
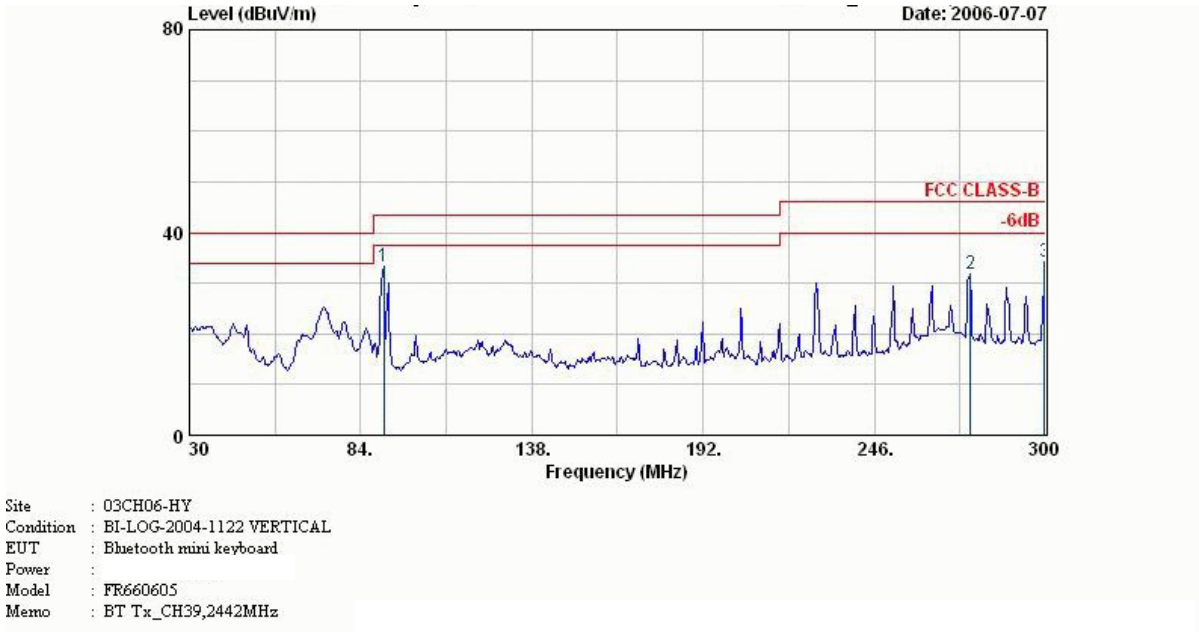


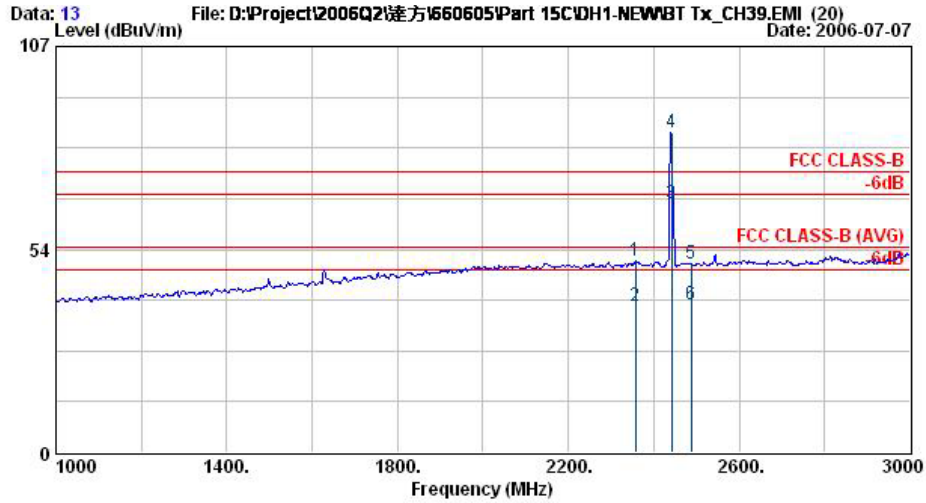
Site : 03CH06-HY
Condition : SHF-EHF HORN HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



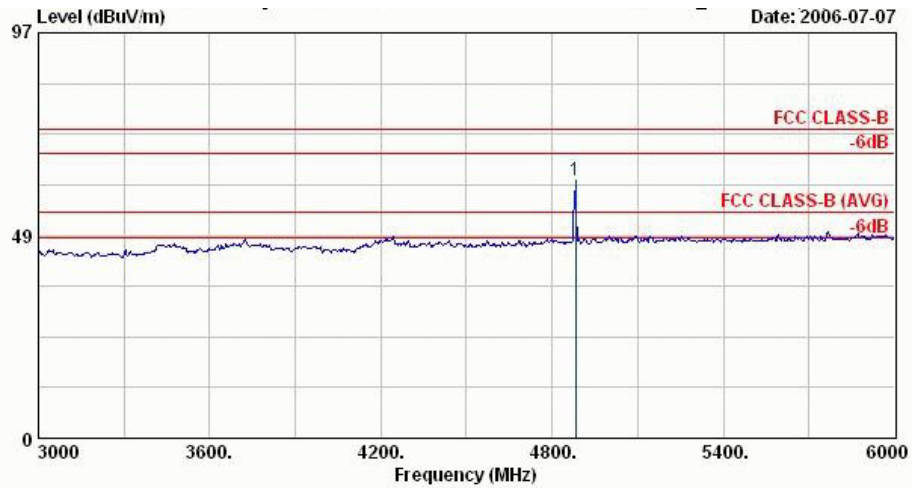
- Test Mode : Mode 2
- Polarization : Vertical

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

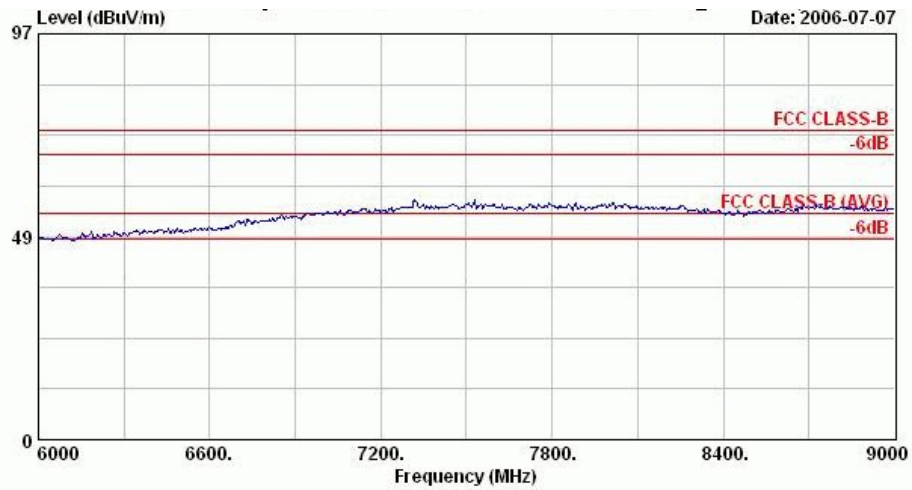




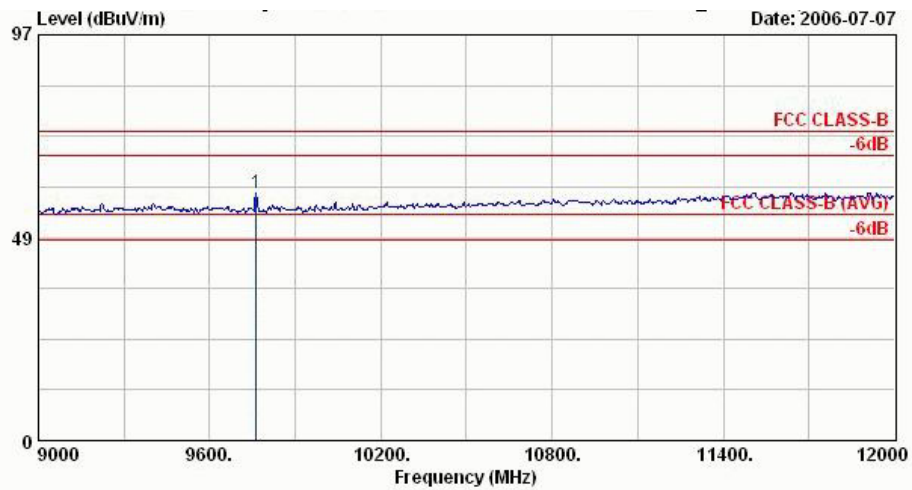
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



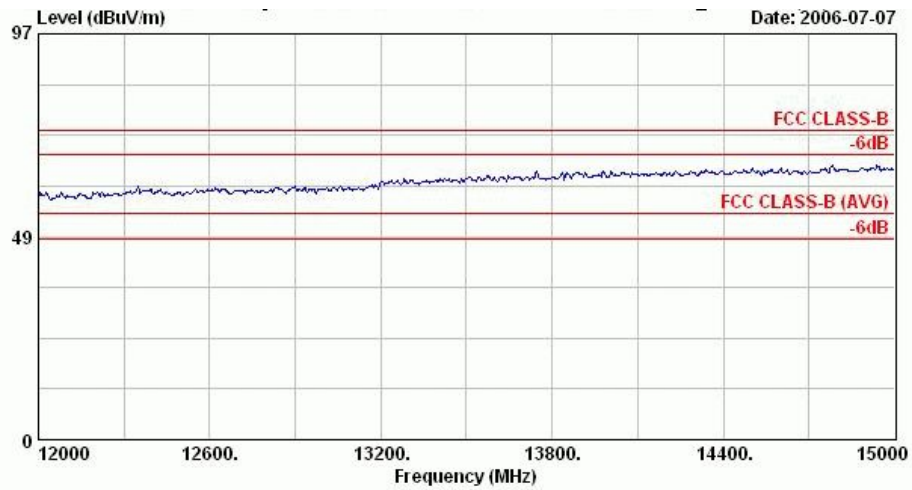
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



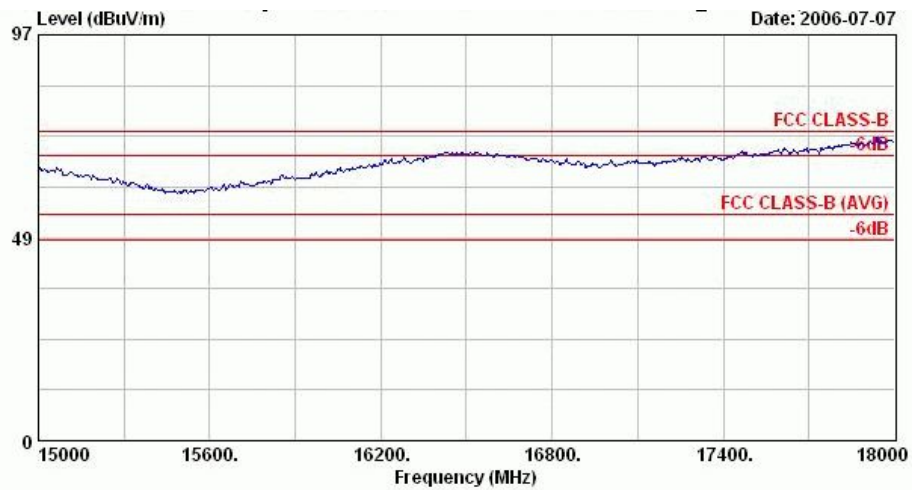
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



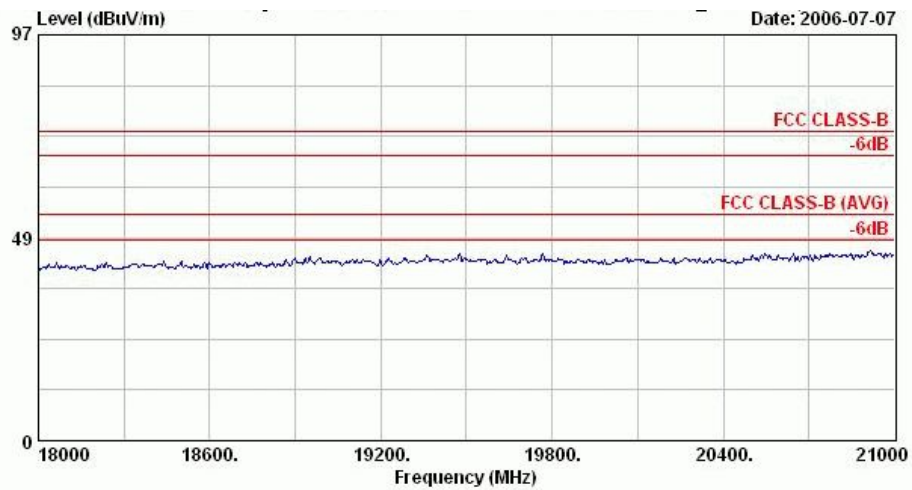
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



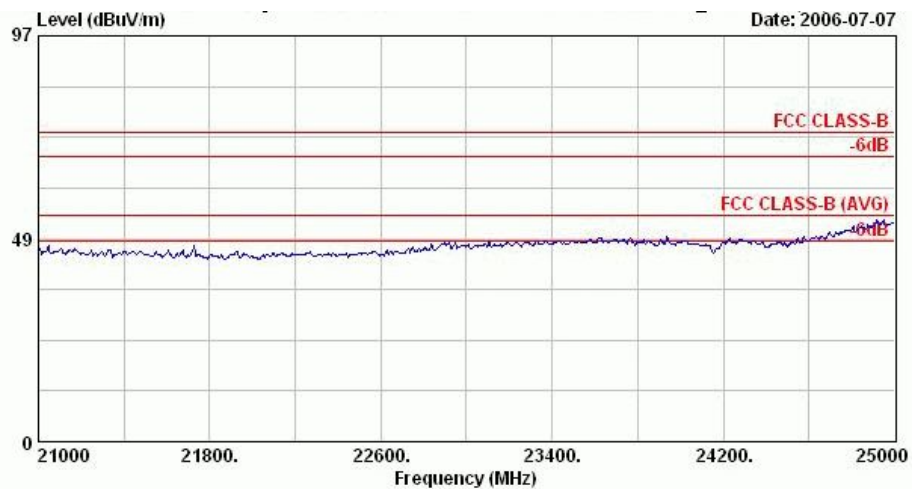
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Site : 03CH06-HY
Condition : SHF-EHF HORN VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Site : 03CH06-HY
Condition : SHF-EHF HORN VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH39,2442MHz



Temperature : 26°C
Relating Humidity : 53%
Test Mode : Mode 3
Test Enginner : ___ Andy ___

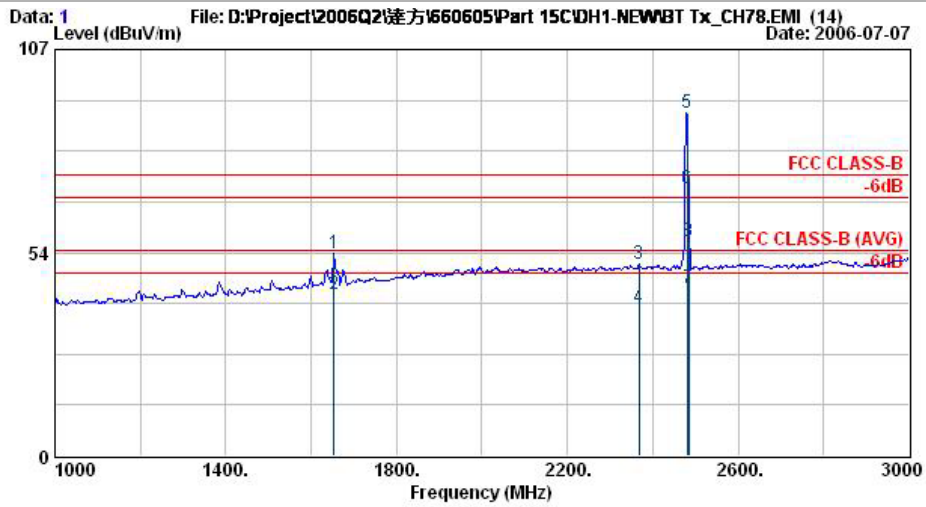
Remark:
Duty Cycle = 0.0095
*Average = Peak + Duty Correction Factor
**Duty Correction Factor = 20*log(Duty Cycle)

Table with 11 columns: Frequency (MHz), Level (dBuV), Over Limit (dB), Limit (dBuV/m), Read Level (dBuV/m), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Duty Correction Factor (dB), Remark, Polarization. It contains 20 rows of test data for various frequencies including 1654, 2368, 2480, 2483, 4956, 2378, and 49.56 MHz.

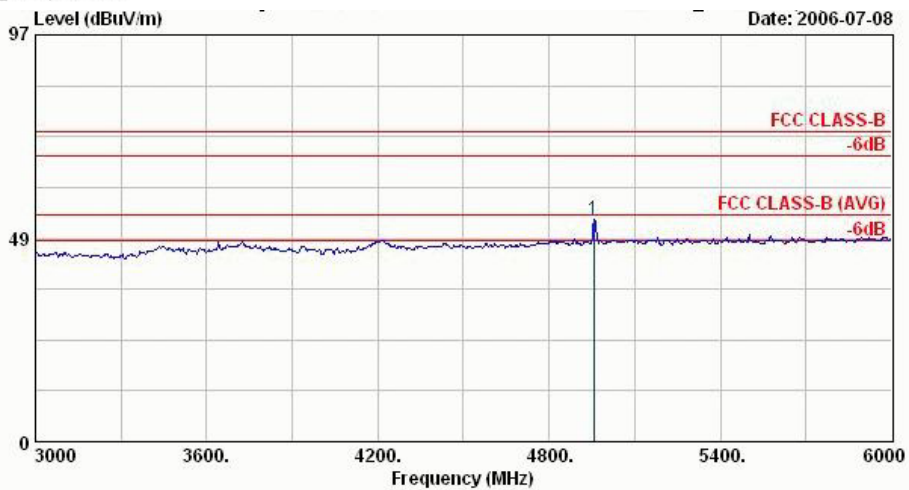


- Test Mode : Mode 3
- Polarization : Horizontal

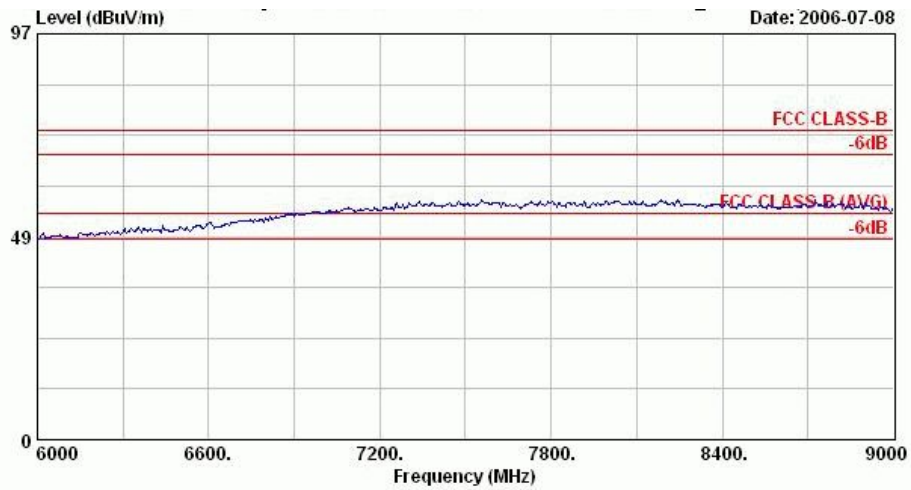
■ The test that passed at minimum margin was marked by the frame in the following table.



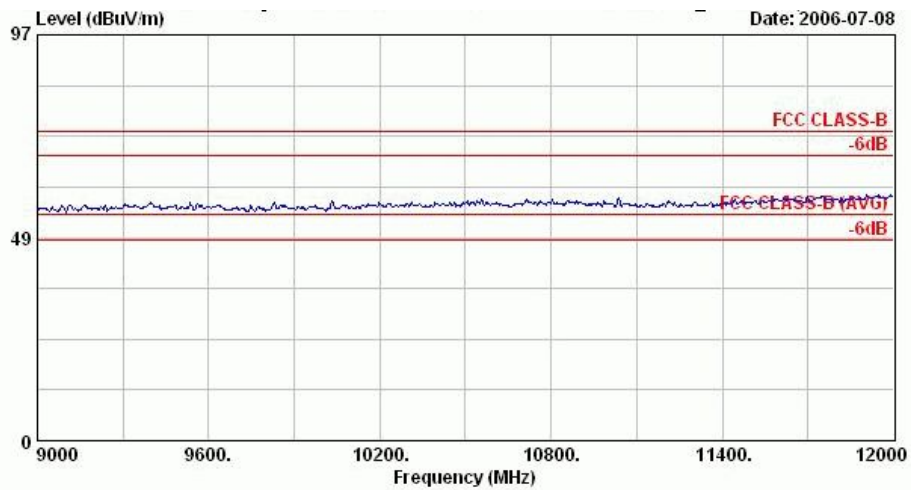
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



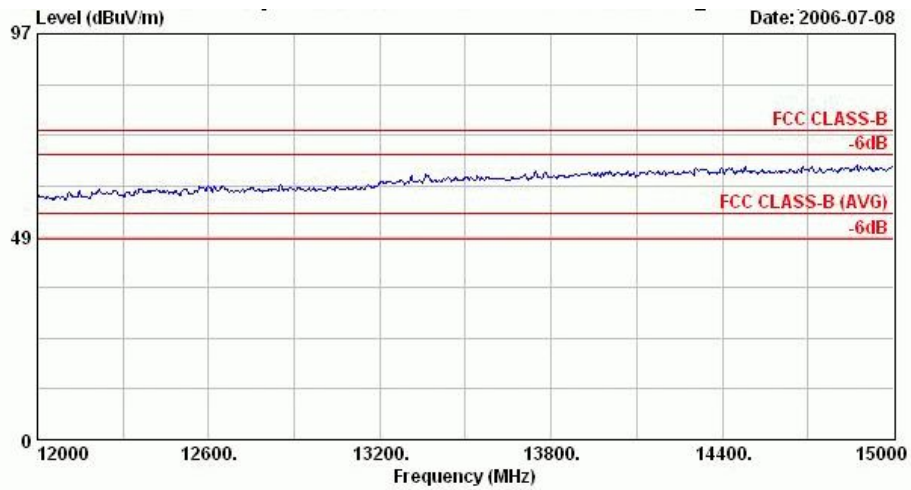
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



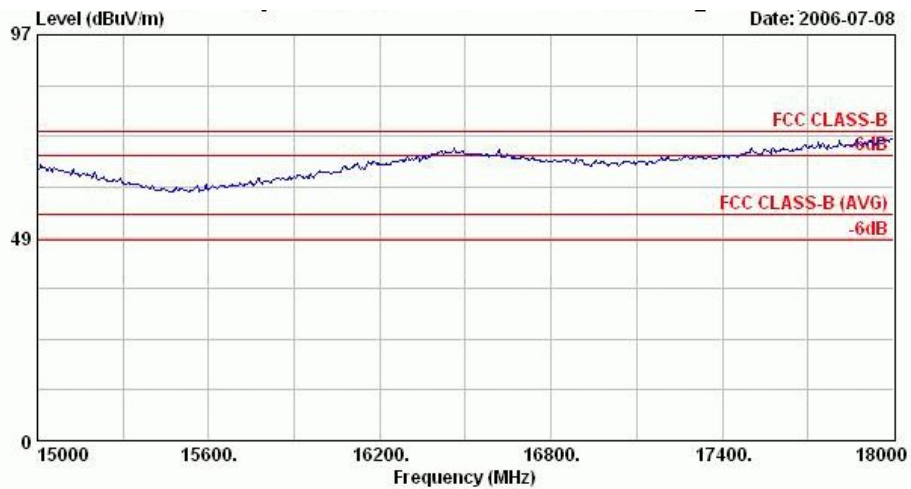
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



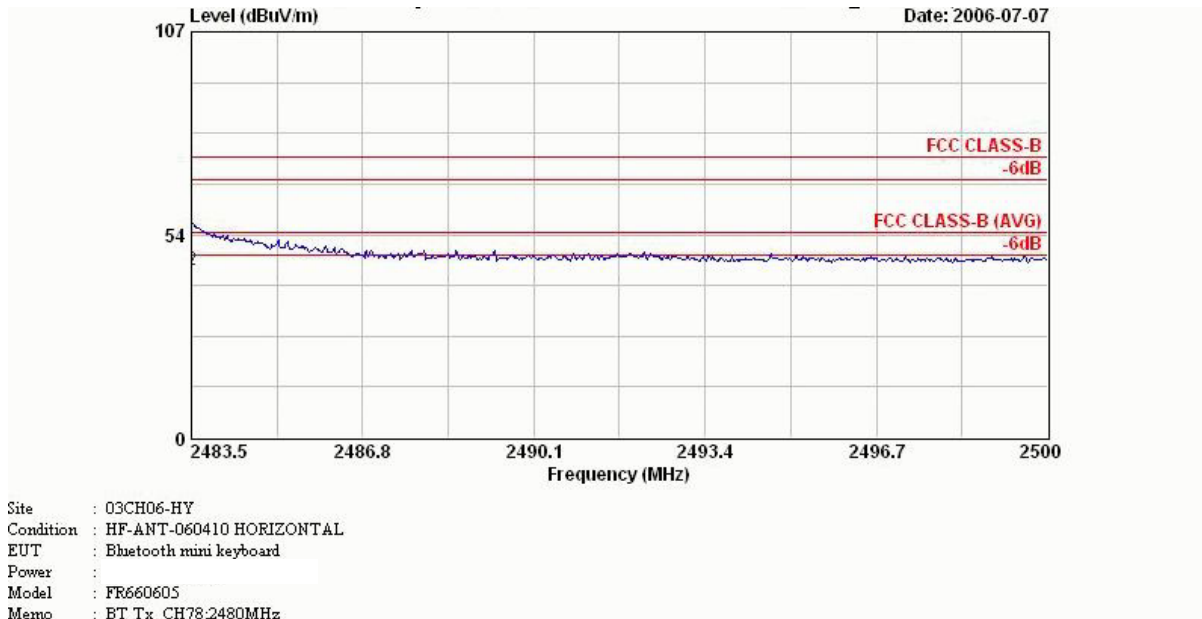
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



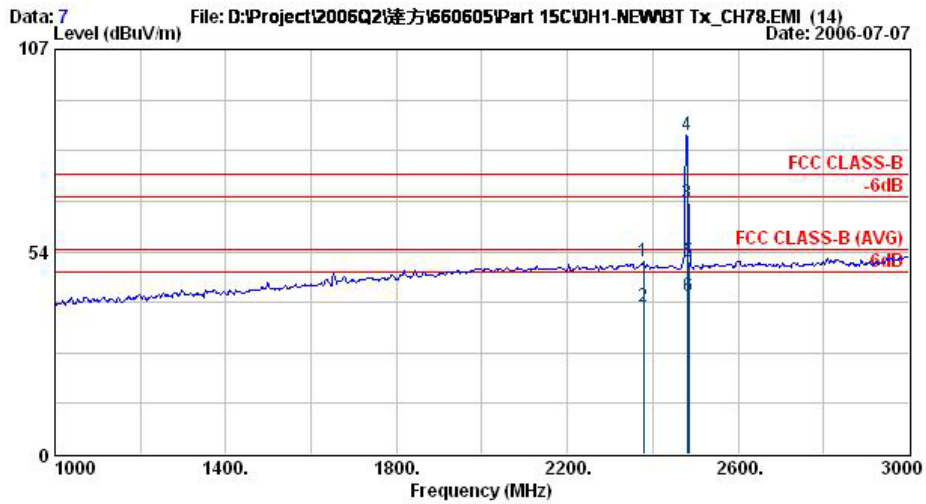
Site : 03CH06-HY
Condition : HF-ANT-060410 HORIZONTAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



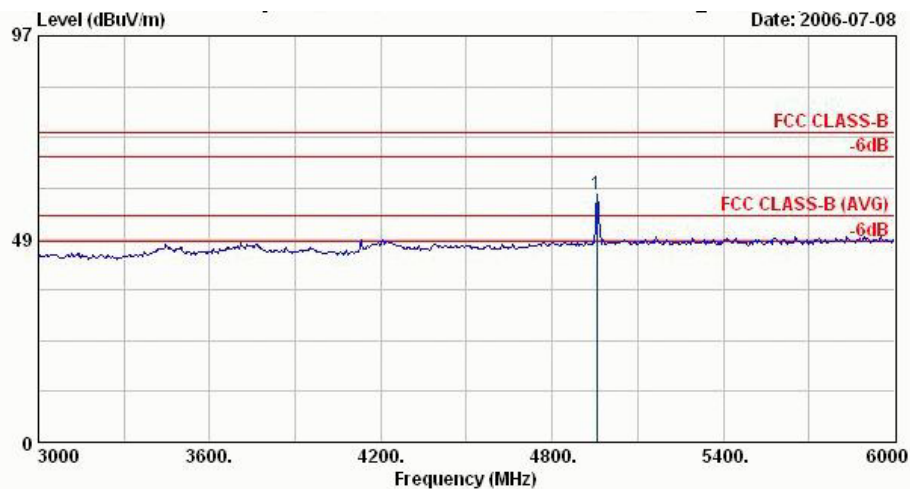


- Test Mode : Mode 3
- Polarization : Vertical

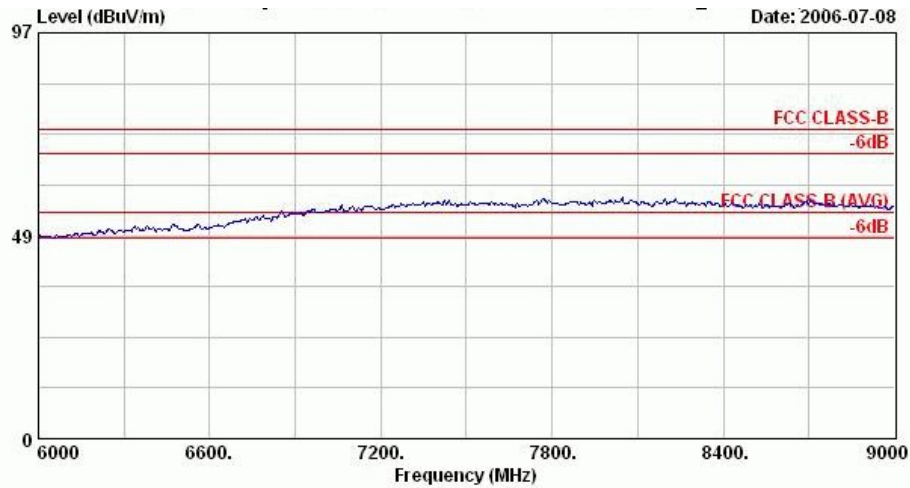
The test that passed at minimum margin was marked by the frame in the following table.



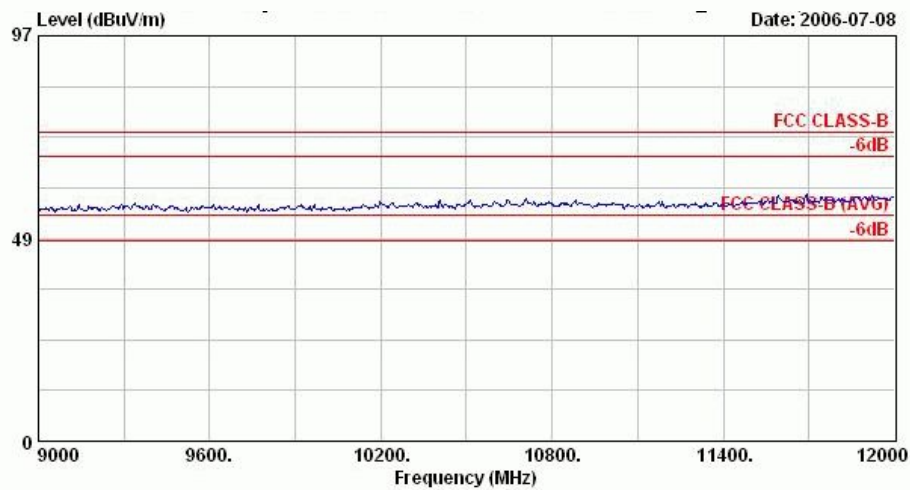
Site : 03CH06-HY
 Condition : HF-ANT-060410 VERTICAL
 EUT : Bluetooth mini keyboard
 Power :
 Model : FR660605
 Memo : BT Tx_CH78;2480MHz



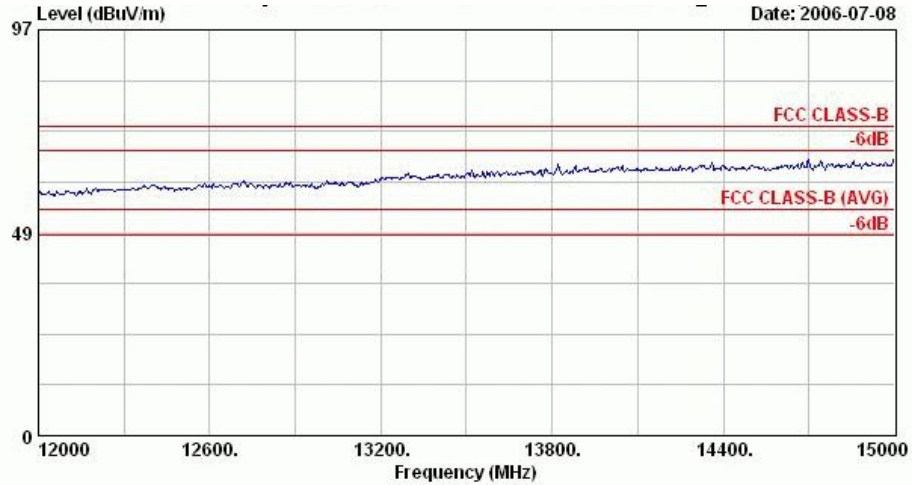
Site : 03CH06-HY
 Condition : HF-ANT-060410 VERTICAL
 EUT : Bluetooth mini keyboard
 Power :
 Model : FR660605
 Memo : BT Tx_CH78;2480MHz



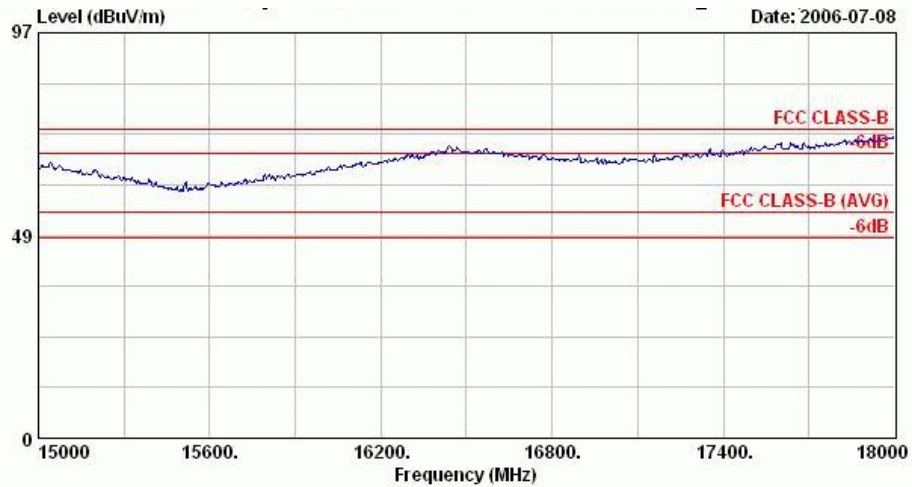
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



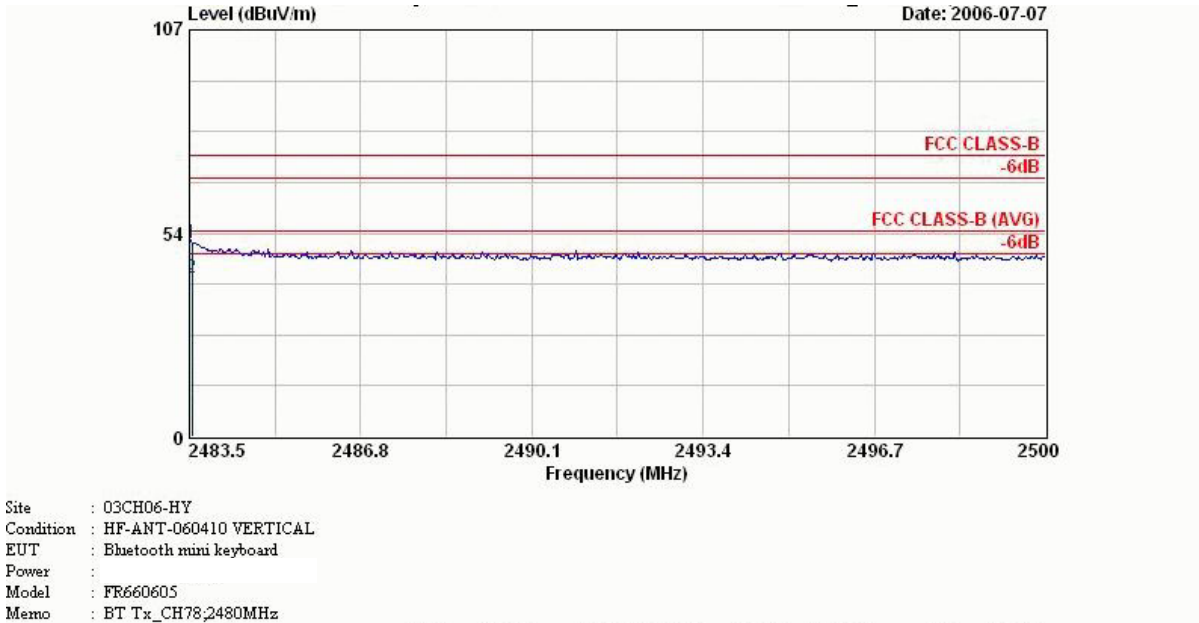
Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz



Site : 03CH06-HY
Condition : HF-ANT-060410 VERTICAL
EUT : Bluetooth mini keyboard
Power :
Model : FR660605
Memo : BT Tx_CH78,2480MHz

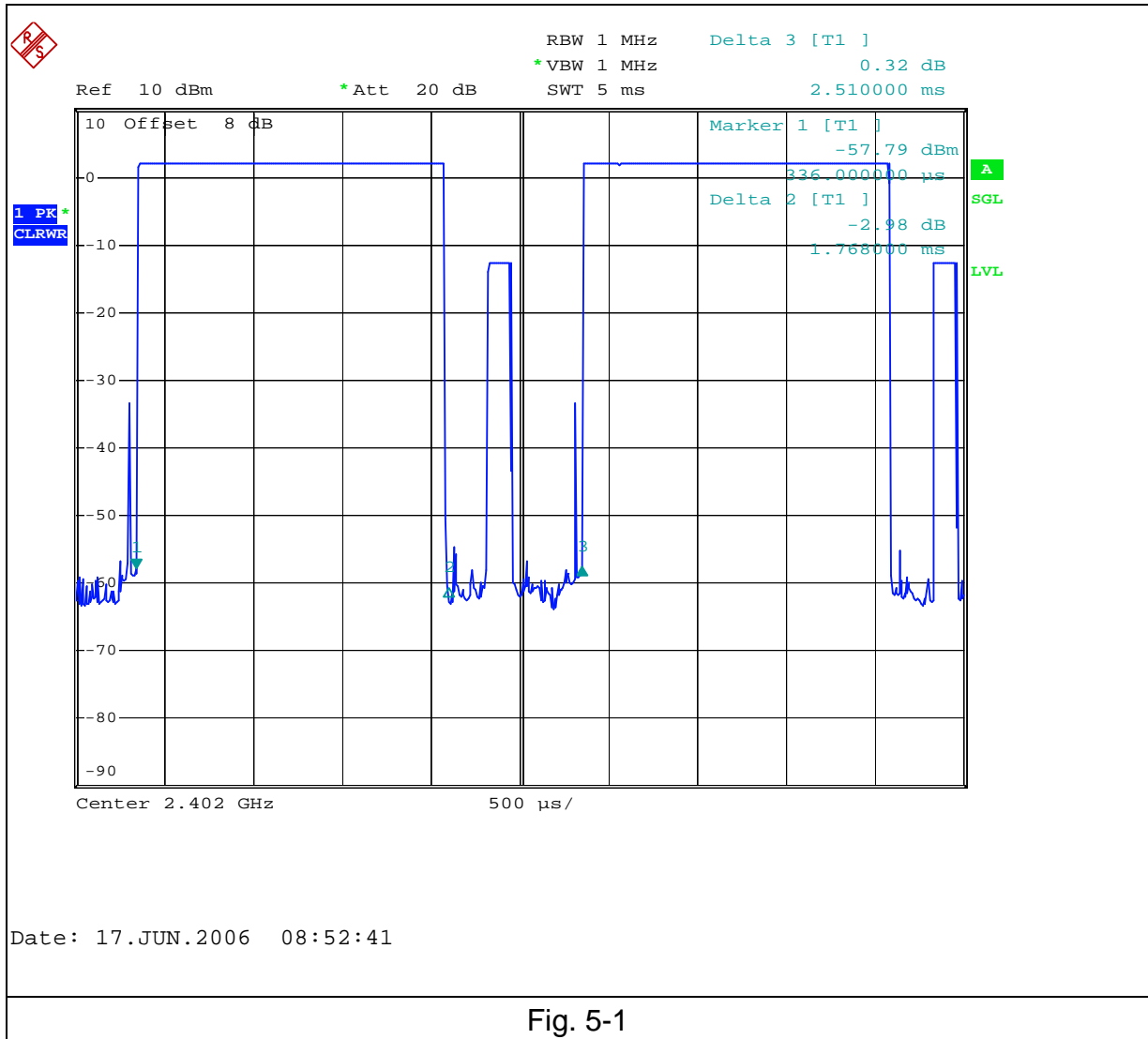




5.8.5 Duty Correction Factor

For average radiated measurements; the measured level was compensated by a factor - 40.45dB to account for the duty cycle of the EUT. The time of duty on is 1.768ms within one transmission time, 2.51ms, as shown in figure 5-1. The dwell time is 1.768ms*0.54, as the signal hops 54 times within 10s, as shown in figure 5-2.

The duty correction factor is determined using the formula: $20\log(\text{Dwell time}/100\text{ms}) = -40.45 \text{ dB}$.



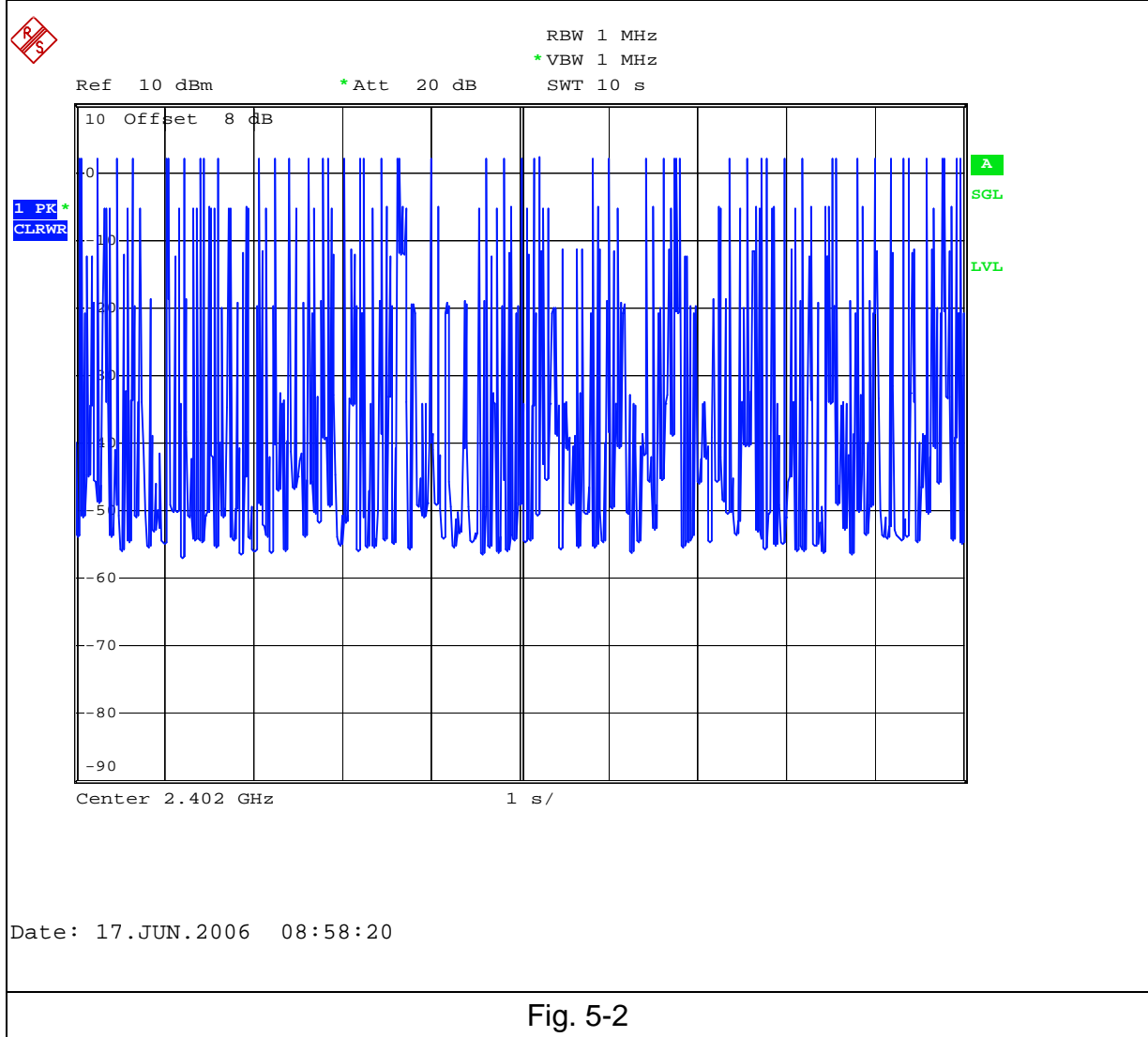


Fig. 5-2



5.9 Antenna Requirements

5.9.1 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.

5.9.2 Antenna Connected Construction

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

5.9.3 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
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 25, 2005	Jul. 24, 2006	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, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jul. 21, 2005	Jul. 20, 2006	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 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				