



# FCC / IC TEST REPORT

for

## 47 CFR Part 15 Subpart C and RSS-210

**Equipment** : Bluetooth Go Remote  
**Trade Name** : TomTom  
**Model No.** : BT Remote Control  
**FCC ID** : HFS-ASTOM2  
**IC ID** : 1787B-ASTOM2  
**Filing Type** : Certification  
**Applicant** : **Quanta Computer Inc.**  
No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang,  
Tao Yuan Shien, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **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 Aug. 14, 2007 at **Sporton International Inc. LAB.**
- Report No.: FR763002, Report Version: Rev. 01.

A handwritten signature in blue ink that reads "Jones Tsai".

Jones Tsai  
Manager

***SPORTON International Inc.***

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

***SPORTON International Inc.***

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

Rev. 01



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# 1. General Description of Equipment under Test

## 1.1. Applicant

**Quanta Computer Inc.**

No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.

## 1.2. Manufacturer

**Tech-Pro (Shanghai) Computer Co., Ltd.**

No.6, Lane 58, San Zhuang Road, Songjiang Export Processing Zone, Shanghai, China

## 1.3. Basic Description of Equipment under Test

<b>Equipment</b>	Bluetooth Go Remote
<b>Trade Name</b>	TomTom
<b>Model No.</b>	BT Remote Control
<b>FCC ID</b>	HFS-ASTOM2
<b>IC ID</b>	1787B-ASTOM2

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.



1.4. Feature of Equipment under Test

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)	0.06 dBm			
7. Type of Antenna Connector	N/A			
8. Antenna Type	PCB			
9. Antenna Gain	2 dBi			
10. Function Type	Transmitter		Transceiver	V

## 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. The EUT is programmed to transmit signal continuously for all tests.
- c. Frequency range investigated: radiation 30 MHz to 25000MHz.
- d. The EUT is used DC power source, conducted emission is not necessary.

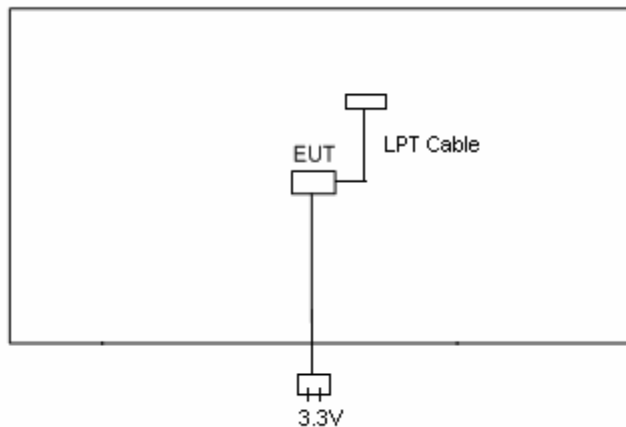
### 2.2. Test Mode

Application	Bluetooth
Radiated Emission	Mode 1: Tx_CH00_2402 MHz Mode 2: Tx_CH39_2441 MHz Mode 3: Tx_CH78_2480 MHz

### 2.3. Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Power Cord / Cable
1.	DC Power Supply	GW	GPC-60300	N/A	Unshielded, 1.8m

### 2.4. Connection Diagram of Test System





### **3. RF Utility**

The programmed RF Utility "BlueTest3.exe" is installed in EUT to provide channel selection and power level. The EUT is in BT Link mode for conducted emission or in BT continuous Tx Mode for radiation emission.



## **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 : 03CH04-HY

### **4.1. Test Voltage**

DC 3.3V

### **4.2. Standard for Methods of Measurement**

ANSI C63.4-2003

### **4.3. Test Compliance**

47 CFR Part 15 Subpart C and IC RSS-210 Issued 7

### **4.4. Frequency Range**

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	N/A	N/A
15.209	Radiated Emission	Pass	5.8
15.203	Antenna Requirement	Pass	5.9

Remark : The EUT is used DC power source, conducted emission is not necessary.

## 5.2. Hopping Channel Separation

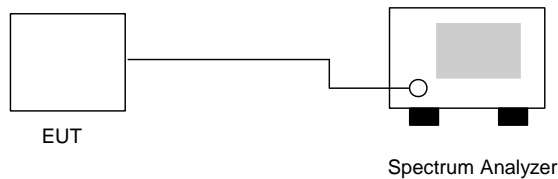
### 5.2.1. Measuring Instruments :

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: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

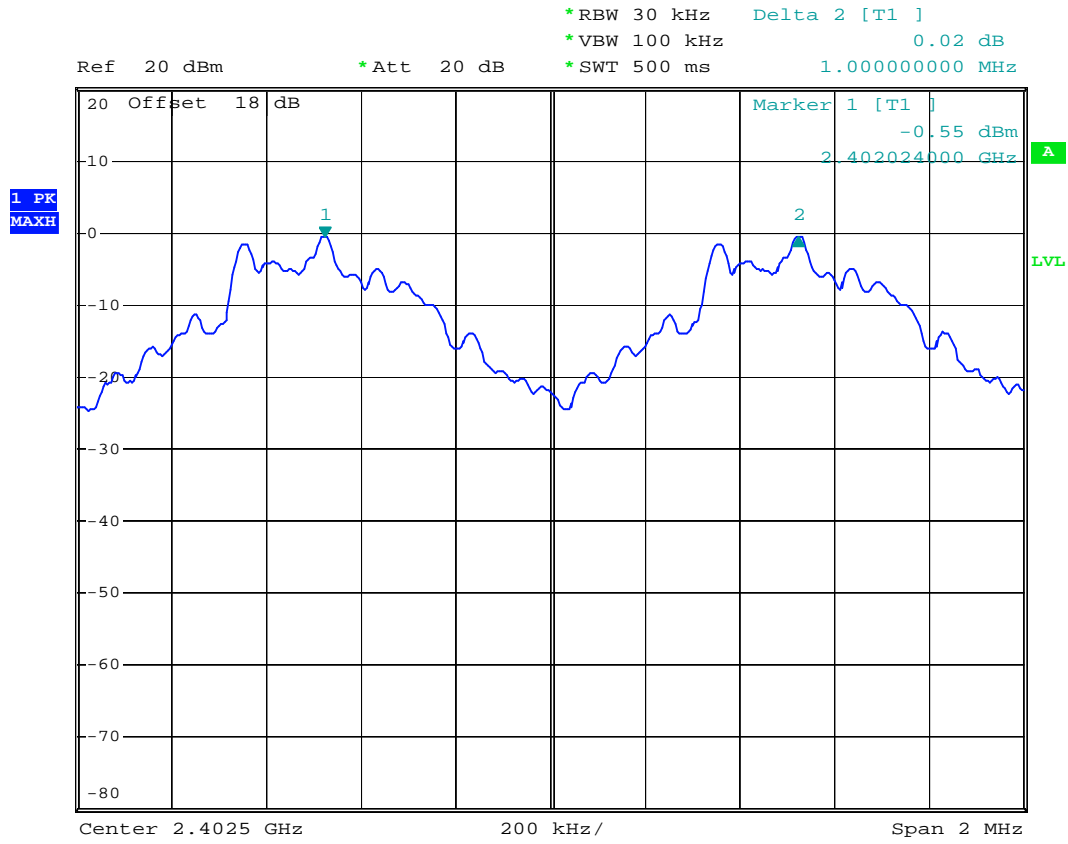
Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Limits (MHz)	Plot (Ref. No.)
00	2402	1.000	0.579	Mode 1
39	2441	1.000	0.553	Mode 2
78	2480	1.000	0.573	Mode 3

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



5.2.5. Hopping Channel Separation

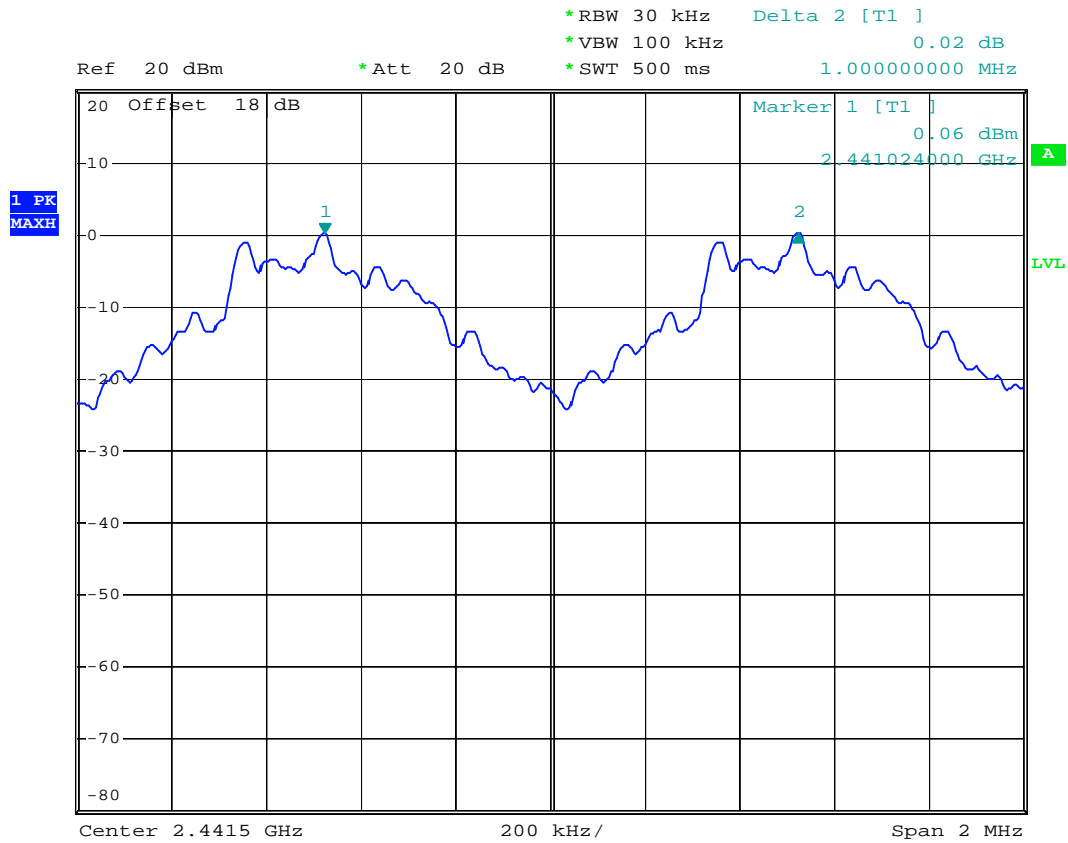
Mode 1: CH00 (2402MHz)



Date: 9.AUG.2007 14:31:45



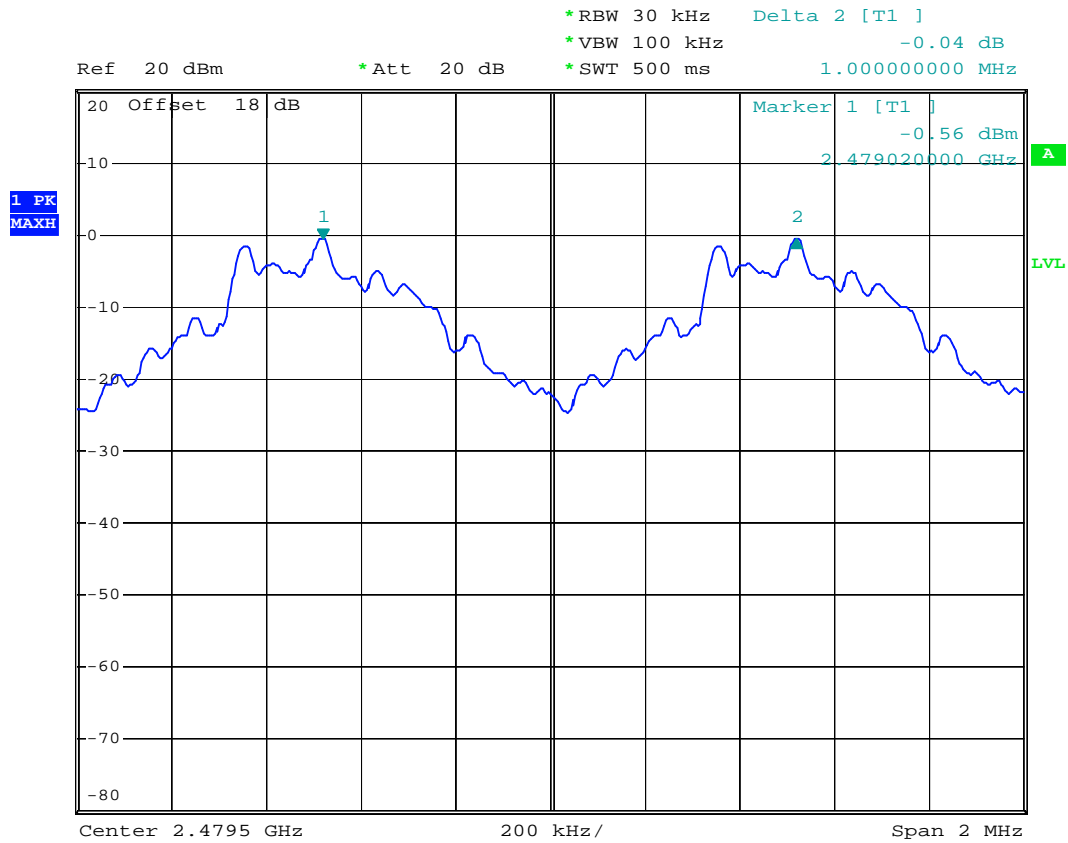
Mode 2: CH39 (2441MHz)



Date: 9.AUG.2007 14:33:25



Mode 3: CH78 (2480MHz)



Date: 9.AUG.2007 14:34:54

### 5.3. Number of Hopping Frequency

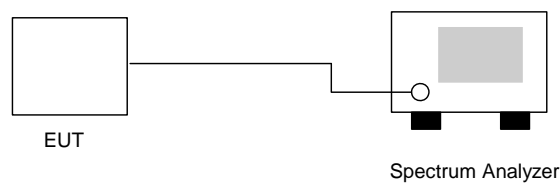
#### 5.3.1. Measuring Instruments :

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 :



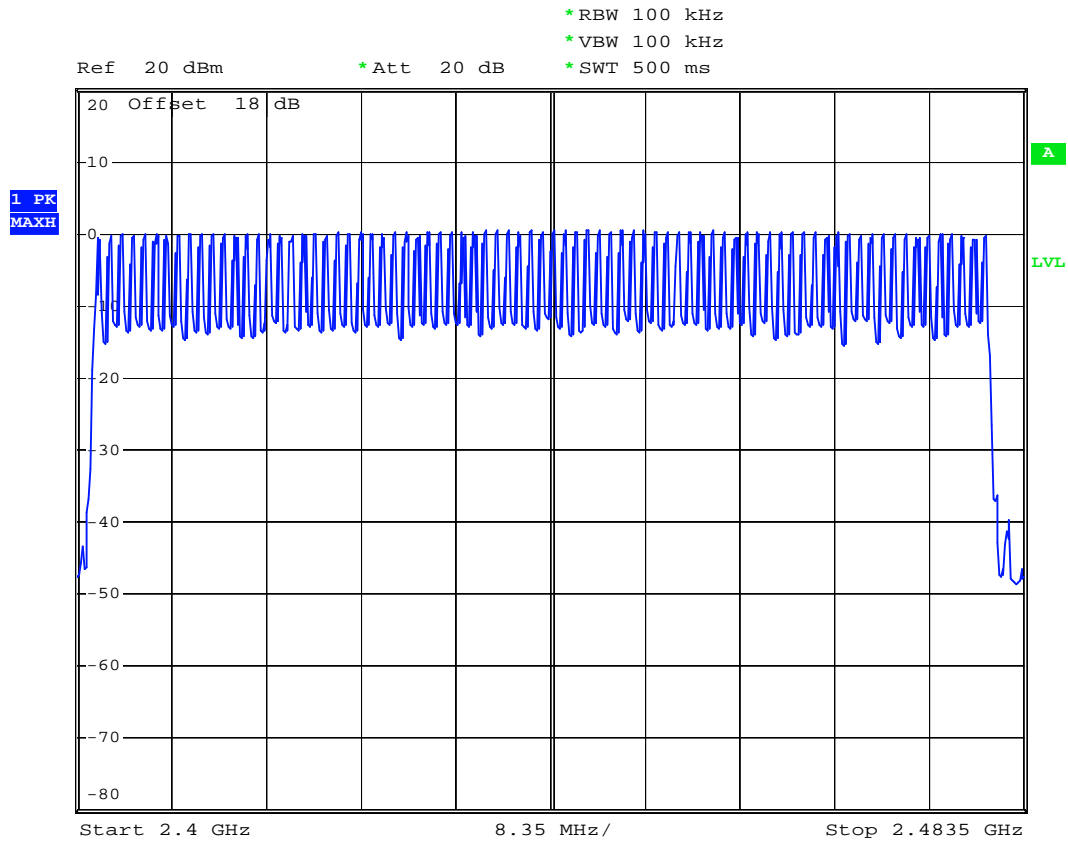
#### 5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

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



5.3.5. Number of Hopping Frequency



Date: 9.AUG.2007 14:58:17

## 5.4 Hopping Channel Bandwidth

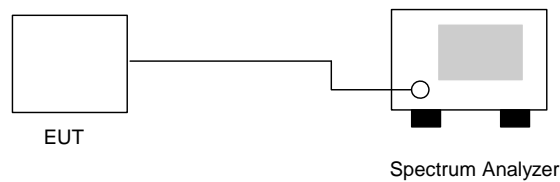
### 5.4.1 Measuring Instruments :

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: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot (Ref. No.)
00	2402	0.868	1.0	Mode 1
39	2441	0.830	1.0	Mode 2
78	2480	0.860	1.0	Mode 3





5.4.5 Hopping Channel Bandwidth

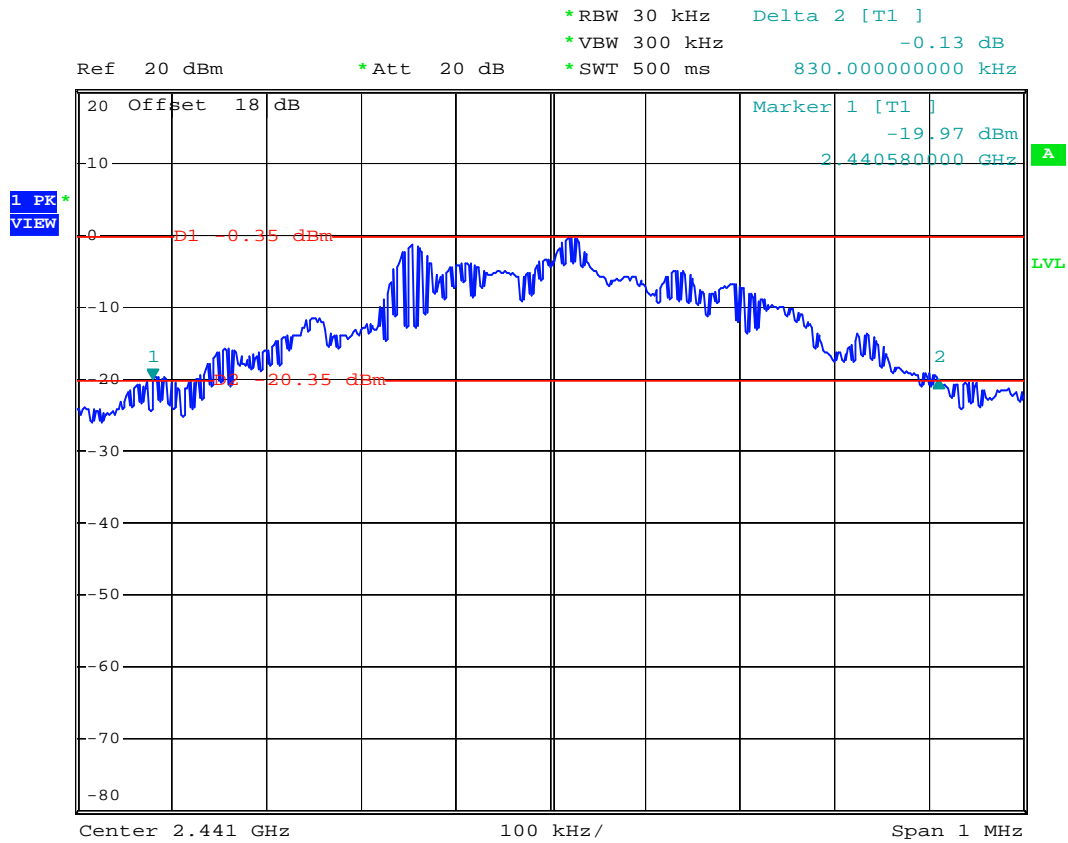
Mode 1: CH00 (2402MHz)



Date: 9.AUG.2007 15:30:40



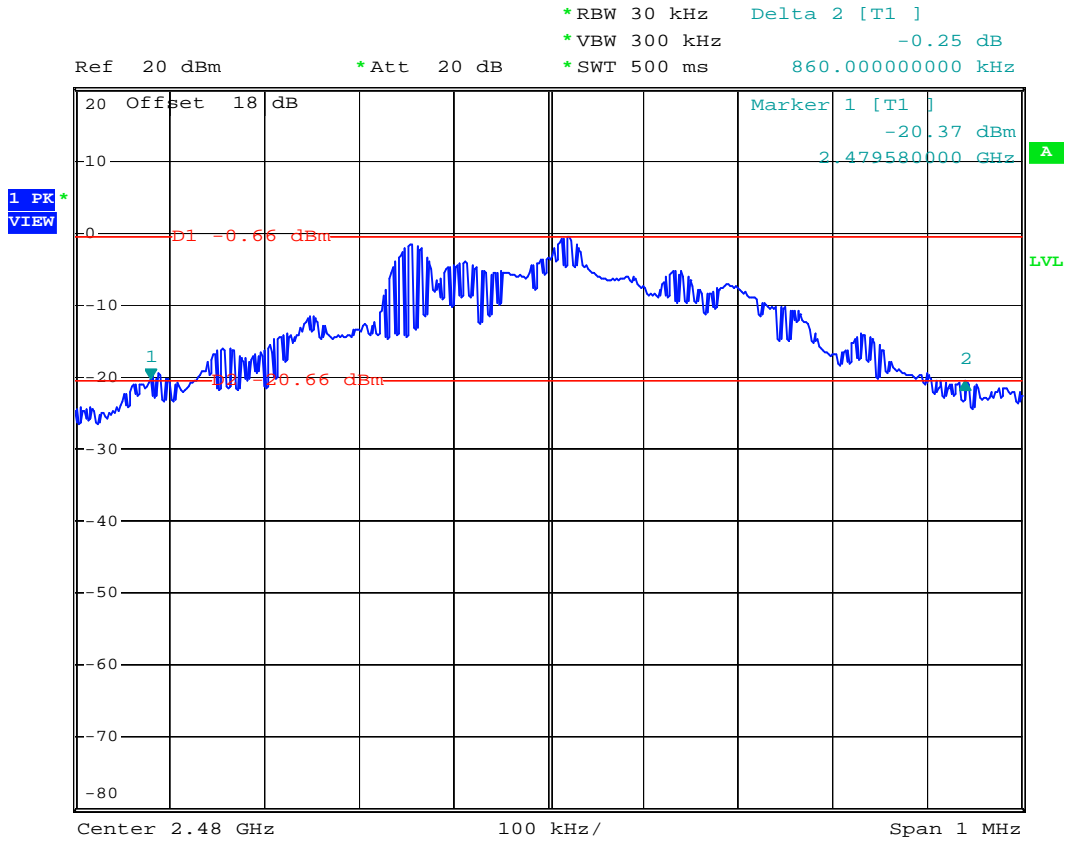
Mode 2: CH39 (2441MHz)



Date: 9.AUG.2007 15:19:09



Mode 3: CH78 (2480MHz)



Date: 9.AUG.2007 15:11:03

### 5.5 Dwell Time of Each Frequency within a 30 Seconds Period

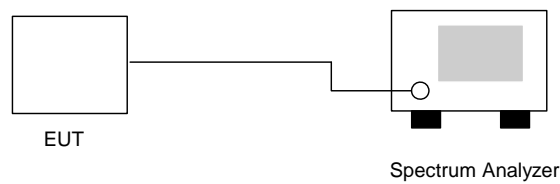
#### 5.5.1 Measuring Instruments :

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 =  $30 \times (1600/79) \times t$  (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: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	448	0.134	0.4
DH3	5.6	1720	0.304	0.4
DH5	3.9	3000	0.370	0.4

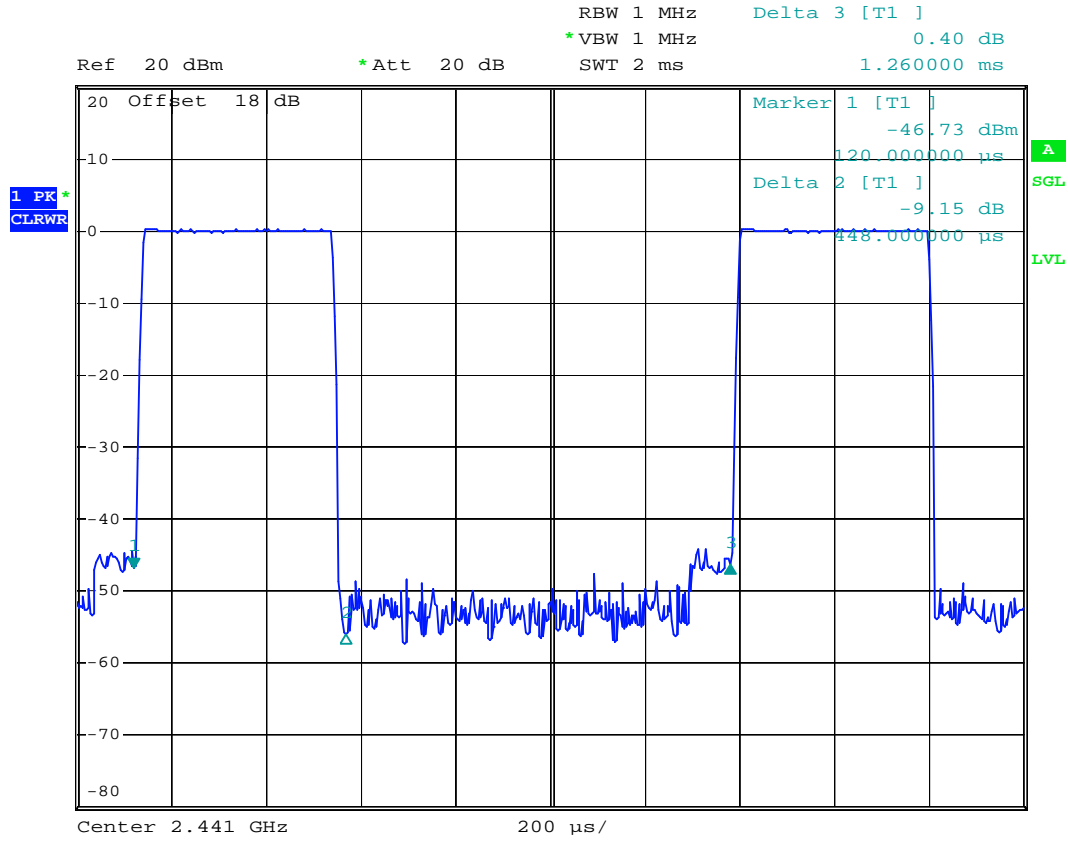
※ Remark:

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

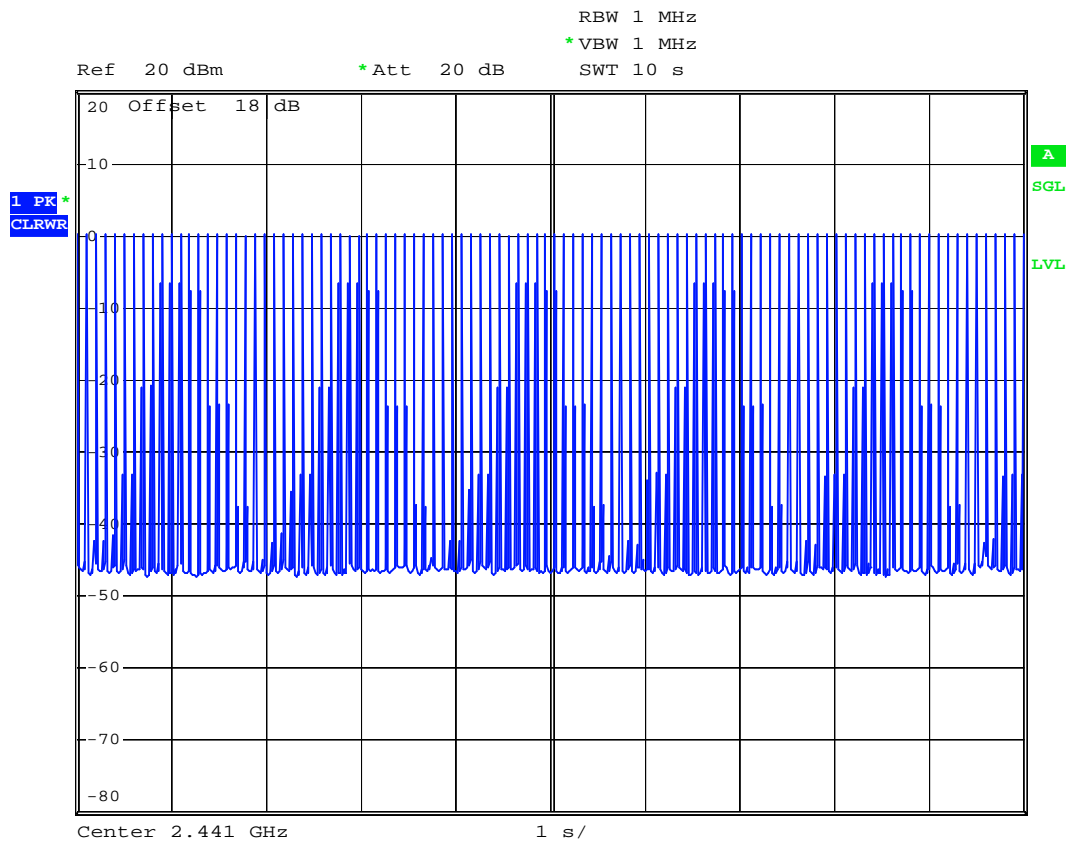


5.5.5 Dwell Time

DH1 (CH39)



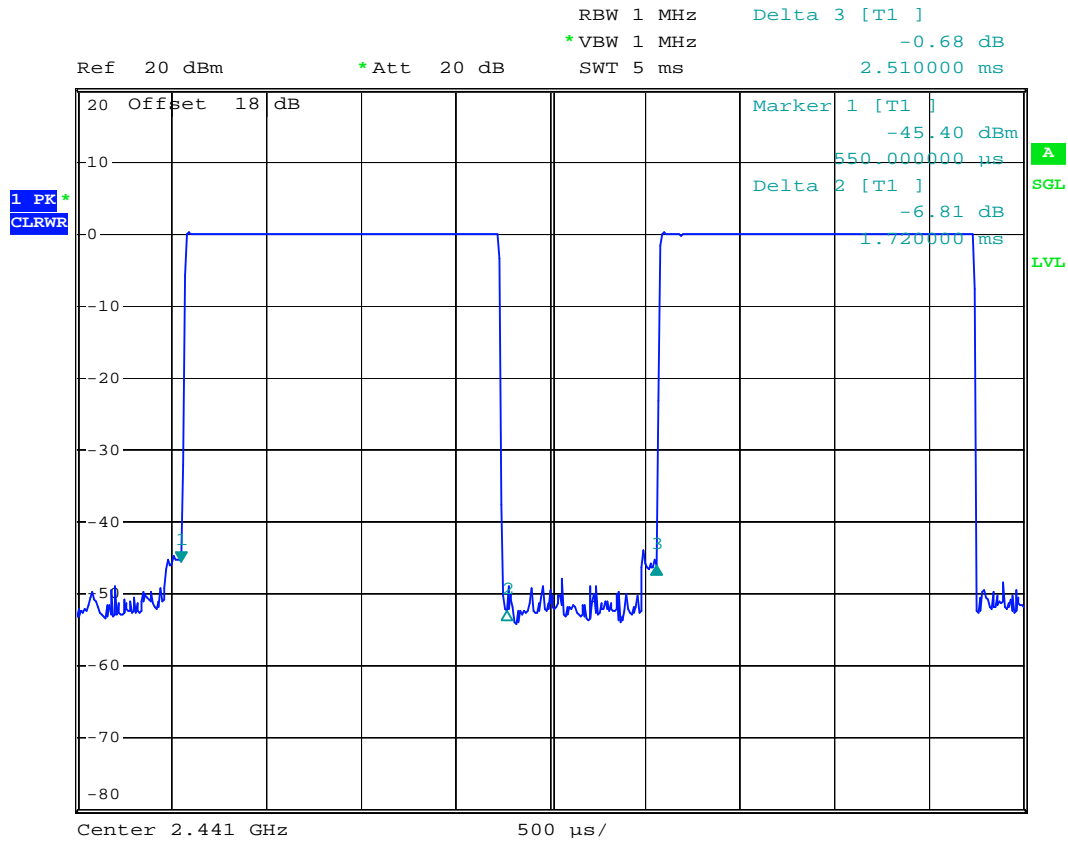
Date: 9.AUG.2007 14:40:09



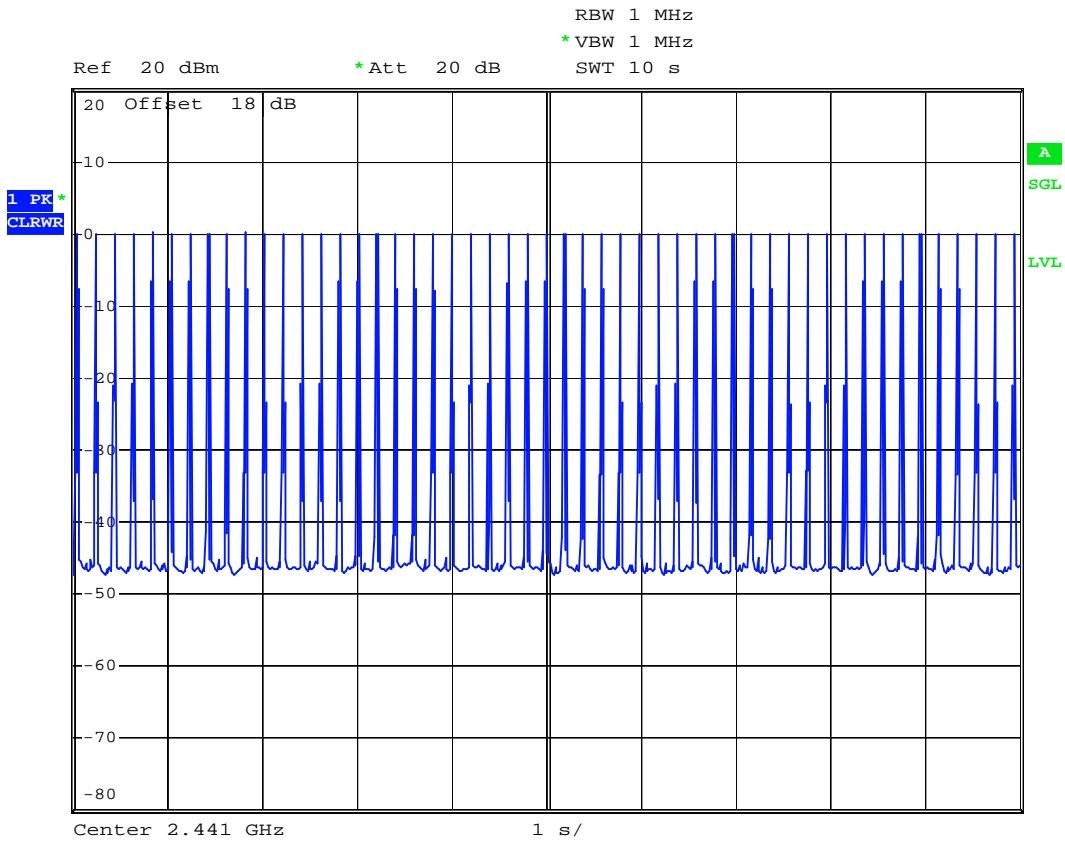
Date: 9.AUG.2007 14:48:44



DH3 (CH39)



Date: 9.AUG.2007 14:42:25

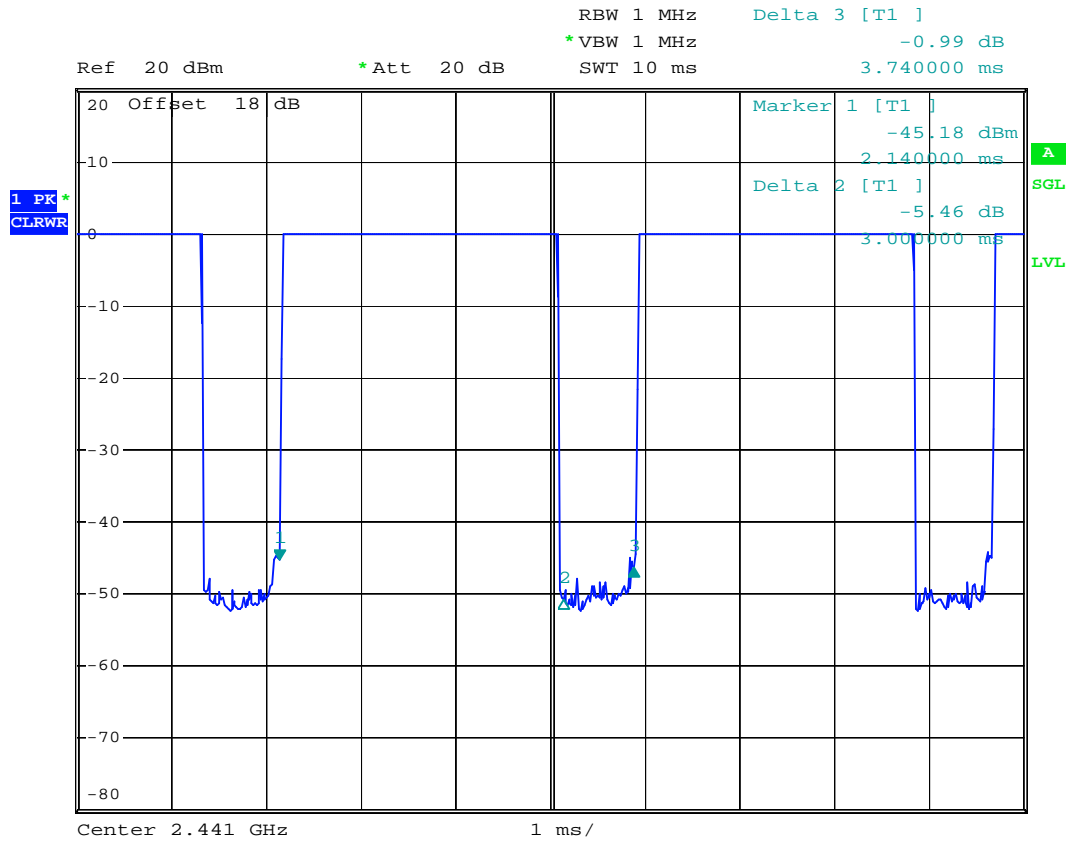


Date: 9.AUG.2007 14:50:22

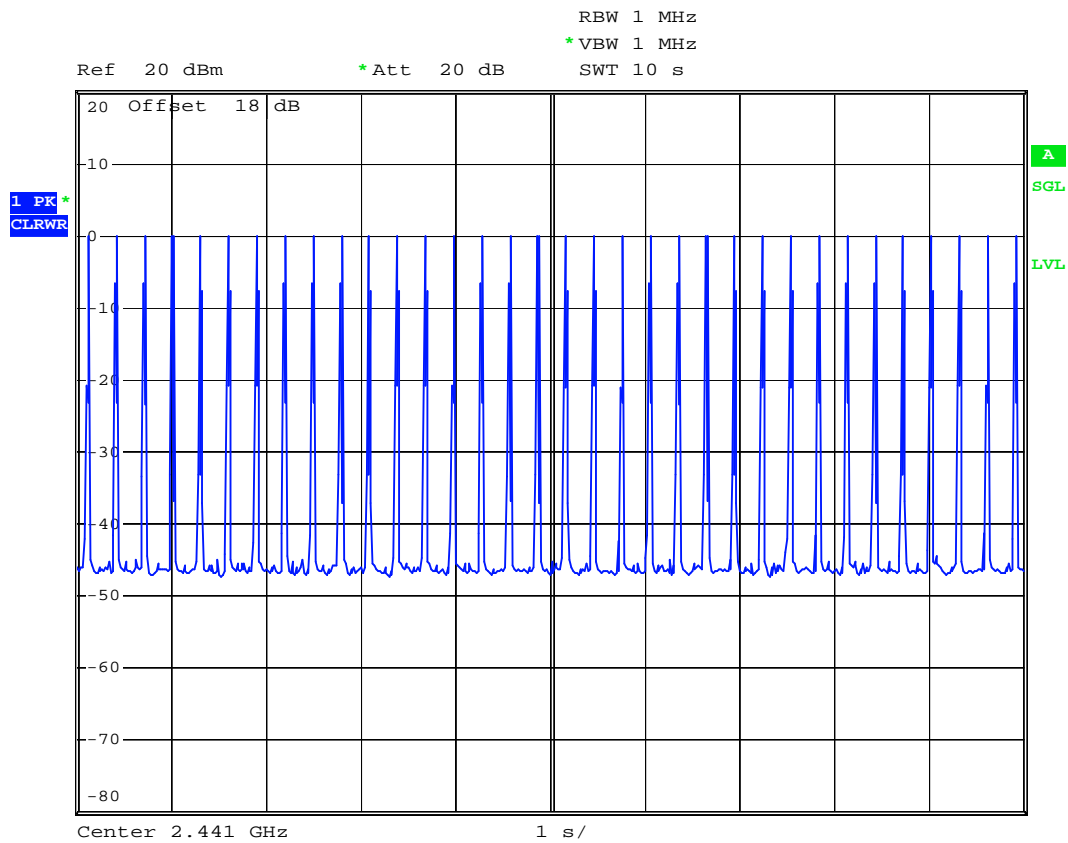




DH5 (CH39)



Date: 9.AUG.2007 14:44:16



Date: 9.AUG.2007 14:51:19

## 5.6 Output Power

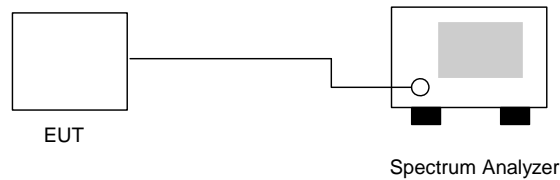
### 5.6.1 Measuring Instruments :

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

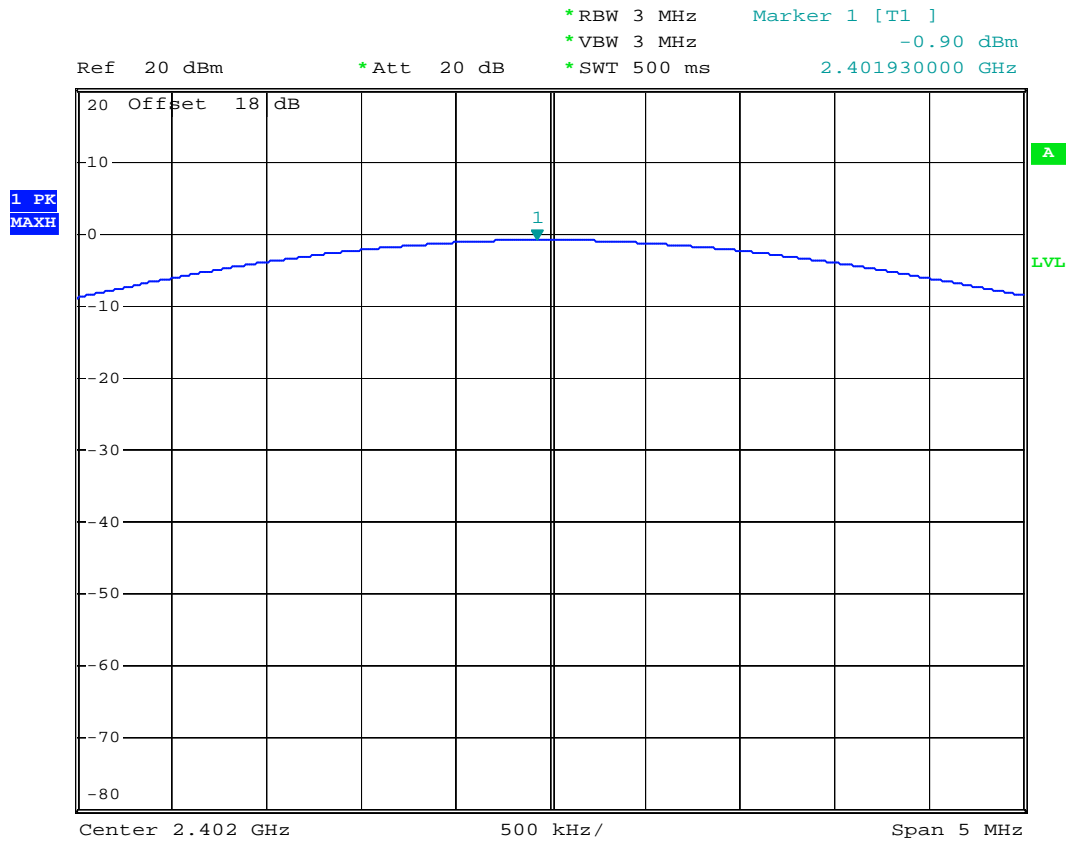
- Temperature: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)	Plot (Ref. No.)
00	2402	-0.9	1W/30 dBm	Mode 1
39	2441	0.06	1W/30 dBm	Mode 2
78	2480	-0.57	1W/30 dBm	Mode 3



5.6.5 Output Power

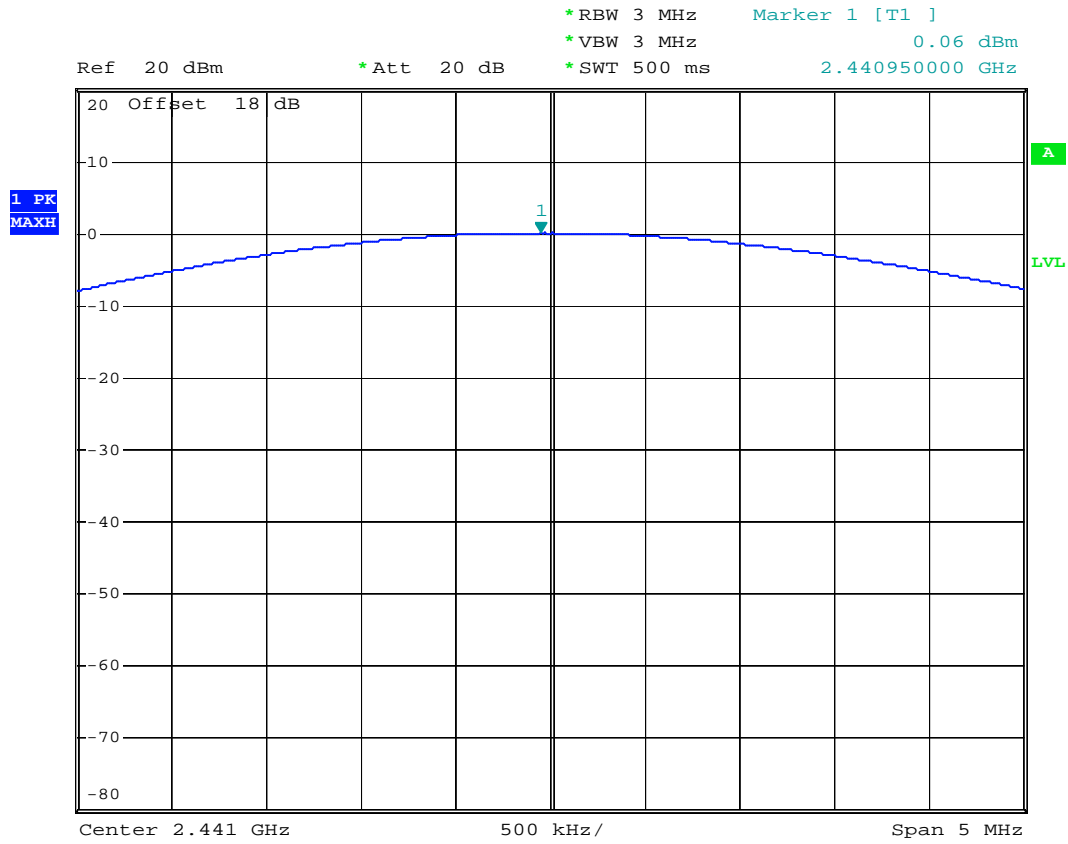
Mode 1: CH00 (2402MHz)



Date: 9.AUG.2007 14:10:47



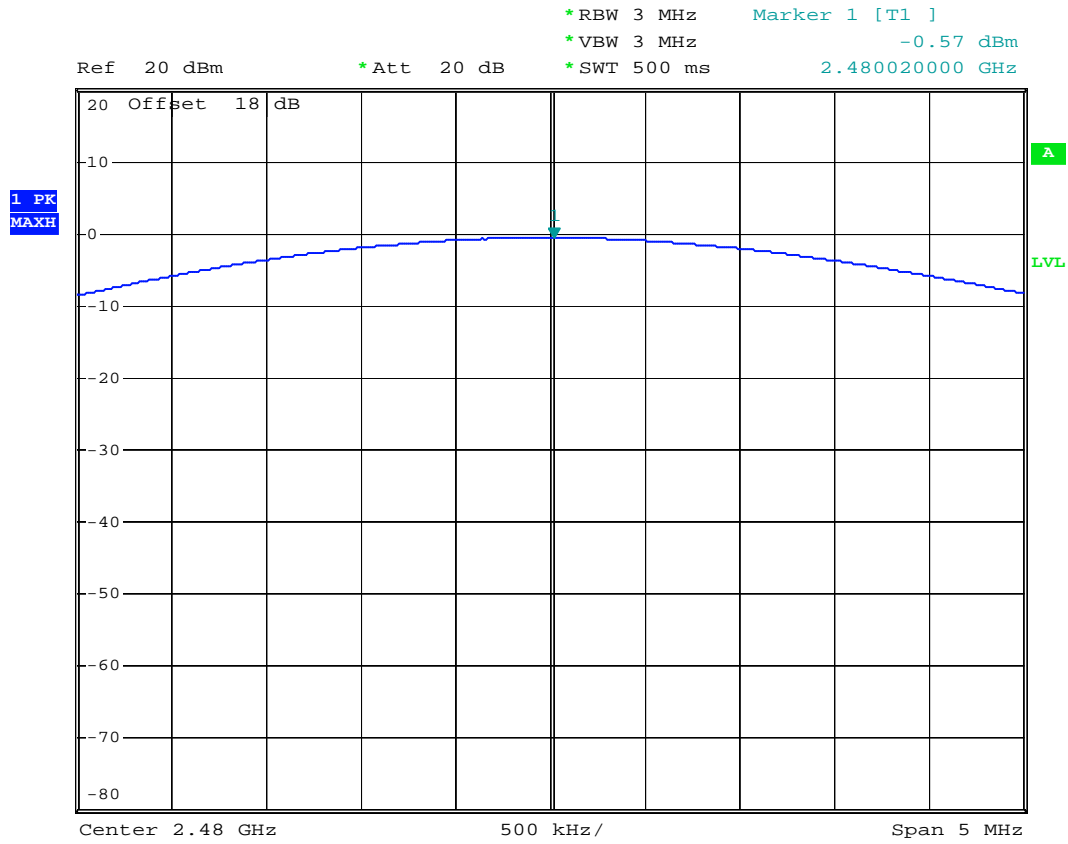
Mode 2: CH39 (2441MHz)



Date: 9.AUG.2007 14:12:04



Mode 3: CH78 (2480MHz)



Date: 9.AUG.2007 14:12:52



### 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: 26~27°C
- Relative Humidity: 53~54%
- Test Engineer :  Tony

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
2385.810	44.93	-29.07	74.00	46.89	28.07	3.74	33.78	100	0	Peak
2385.810	35.07	-18.93	54.00	37.03	28.07	3.74	33.78	100	39	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
2385.810	41.77	-32.23	74.00	43.83	28.00	3.71	33.77	100	0	Peak
2385.810	31.16	-22.84	54.00	33.12	28.07	3.74	33.78	109	227	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
2483.500	61.02	-12.98	74.00	62.72	28.26	3.84	33.80	100	0	Peak
2483.500	51.31	-2.69	54.00	53.01	28.26	3.84	33.80	100	43	Average

CH78 (Vertical)

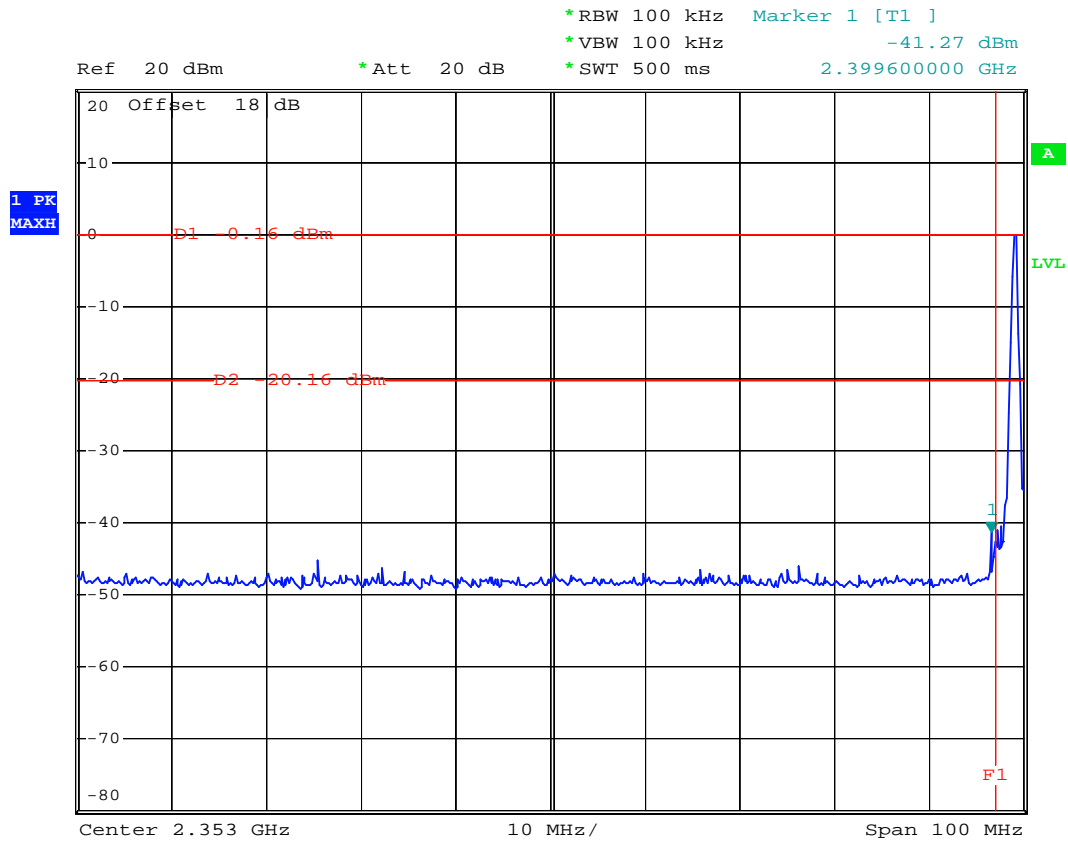
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Detect Mode
2483.500	55.40	-18.60	74.00	57.10	28.26	3.84	33.80	100	0	Peak
2483.500	45.60	-8.40	54.00	47.30	28.26	3.84	33.80	102	306	Average





5.7.5 Frequency Band Edge

CH00 (2402 MHz)



Date: 9.AUG.2007 14:24:52





## **5.8 Radiated Emission Measurement**

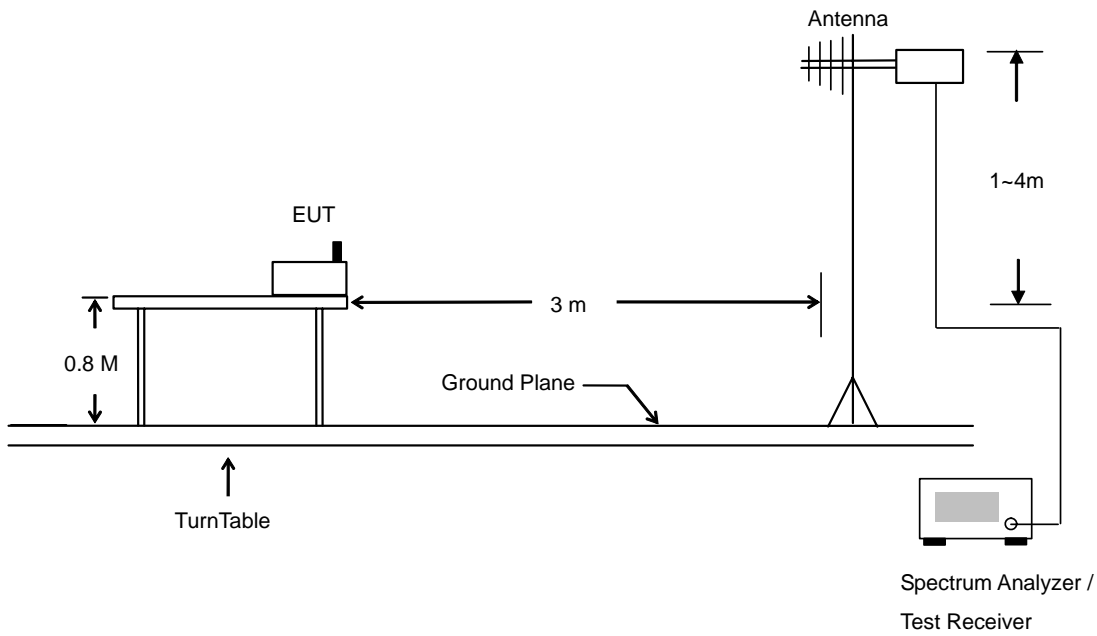
### **5.8.1 Measuring Instruments**

As described in chapter 6 of this Report.

### **5.8.2 Test Procedures**

1. The EUT was placed on a turntable with 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

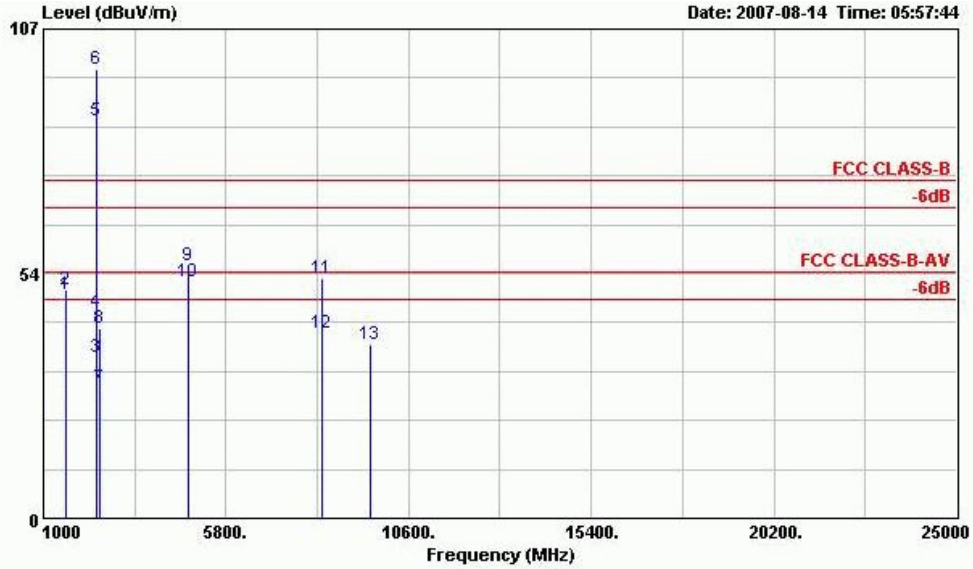
- Temperature : 25°C
- Relating Humidity : 54%
- Test Engineer : Andrew
- Test Mode : Mode 1
- Polarization : Horizontal

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



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 HORIZONTAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOMIE : Bluetooth Tx\_CH00;2402MHz  
 Data Rate: DH5

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB	cm	deg	
1	79.410	27.29	-12.71	40.00	51.91	6.93	1.26	32.81	---	---	Peak
2	111.810	33.68	-9.82	43.50	55.55	9.54	1.43	32.84	100	265	Peak
3	127.740	33.66	-9.84	43.50	53.35	11.64	1.53	32.86	---	---	Peak
4	335.000	25.73	-20.27	46.00	42.69	13.51	2.35	32.82	---	---	Peak
5	940.500	26.16	-19.84	46.00	29.06	24.55	3.98	31.42	---	---	Peak
6	982.500	26.94	-27.06	54.00	28.46	25.61	3.99	31.12	---	---	Peak



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m HF-ANT-6903 HORIZONTAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Wdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH00;2402MHz  
 Data Rate: DH5

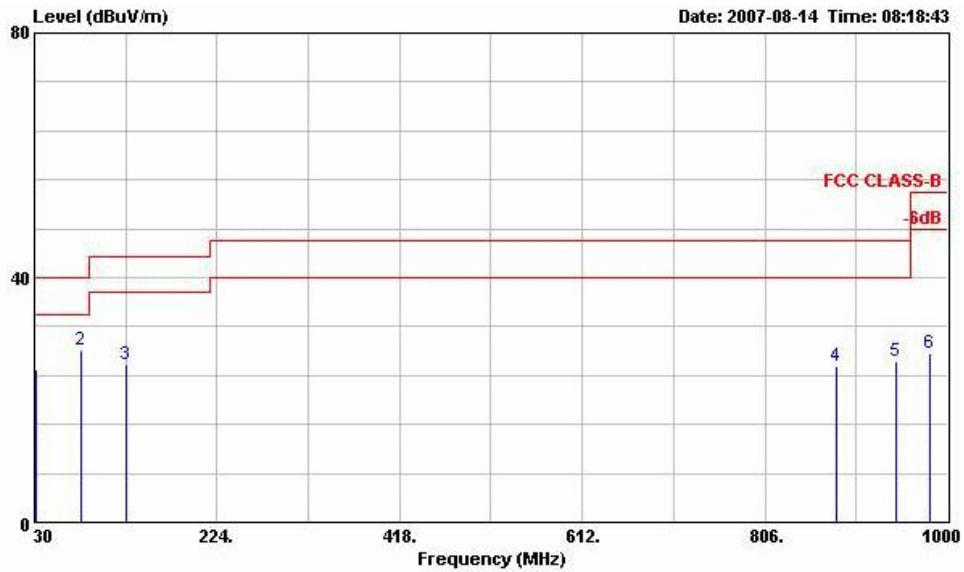
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
					Factor	Factor		cm	deg	
1 @	1598.000	48.81	-5.19	54.00	53.94	25.68	2.89	33.70	100	99 Average
2	1598.000	49.96	-24.04	74.00	55.09	25.68	2.89	33.70	100	0 Peak
3	2385.810	35.07	-18.93	54.00	37.03	28.07	3.74	33.78	100	39 Average
4	2385.810	44.93	-29.07	74.00	46.89	28.07	3.74	33.78	100	0 Peak
5 @	2402.000	---	---	54.00	88.83	28.07	3.74	33.78	100	39 Average
6 @	2402.000	---	---	74.00	100.16	28.11	3.74	33.78	100	0 Peak
7	2492.000	28.68	-25.32	54.00	30.34	28.30	3.84	33.80	100	39 Average
8	2492.000	41.50	-32.50	74.00	43.16	28.30	3.84	33.80	100	0 Peak
9	4804.000	55.21	-18.79	74.00	50.77	32.86	5.88	34.30	100	0 Peak
10 @	4804.000	51.73	-2.27	54.00	47.31	32.86	5.86	34.30	100	49 Average
11	8334.000	52.60	-21.40	74.00	42.55	37.26	6.93	34.15	100	0 Peak
12	8334.000	40.55	-13.45	54.00	30.50	37.26	6.93	34.15	100	265 Average
13	9608.000	38.01	-35.99	74.00	75.58	-10.16	7.59	35.00	100	0 Peak

Remark: #5 and #6 Fundamental Signal



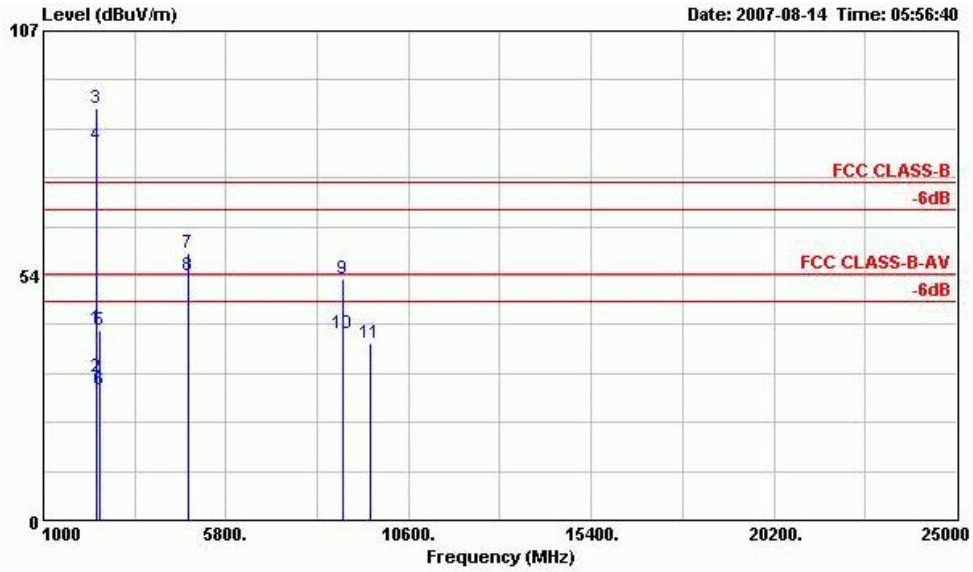
- Test Mode : Mode 1
- Polarization : Vertical

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



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 VERTICAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOHE : Bluetooth Tx\_CH00;2402MHz  
 Data Rate:DH5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	Remark
1	31.620	24.89	-15.11	40.00	40.65	16.34	0.88	32.98	---	---	Peak
2	79.410	28.17	-11.83	40.00	52.79	6.93	1.26	32.81	100	306	Peak
3	127.740	25.73	-17.77	43.50	45.42	11.64	1.53	32.86	---	---	Peak
4	881.700	25.48	-20.52	46.00	30.31	22.83	3.93	31.59	---	---	Peak
5	945.400	26.33	-19.67	46.00	29.10	24.67	3.98	31.42	---	---	Peak
6	981.800	27.50	-26.50	54.00	29.05	25.58	3.99	31.13	---	---	Peak



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m HF-ANT-6903 VERTICAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH00;2402MHz  
 Data Rate:DH5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2385.810	41.77	-32.23	74.00	43.83	28.00	3.71	33.77	100	0	Peak
2	2385.810	31.16	-22.84	54.00	33.12	28.07	3.74	33.78	109	277	Average
3 @	2402.000			74.00	91.97	28.11	3.74	33.78	100	0	Peak
4 @	2402.000			54.00	84.01	28.07	3.74	33.78	109	277	Average
5	2486.000	41.66	-32.34	74.00	43.36	28.26	3.84	33.80	100	0	Peak
6	2486.000	28.61	-25.39	54.00	30.31	28.26	3.84	33.80	109	277	Average
7	4804.000	58.35	-15.65	74.00	53.91	32.86	5.88	34.30	100	0	Peak
8 @	4804.000	53.47	-0.53	54.00	49.05	32.86	5.86	34.30	100	271	Average
9	8877.000	52.82	-21.18	74.00	42.37	37.94	7.21	34.70	100	0	Peak
10	8877.000	40.80	-13.20	54.00	30.35	37.94	7.21	34.70	100	322	Average
11	9608.000	38.63	-35.37	74.00	76.20	-10.16	7.59	35.00	100	0	Peak

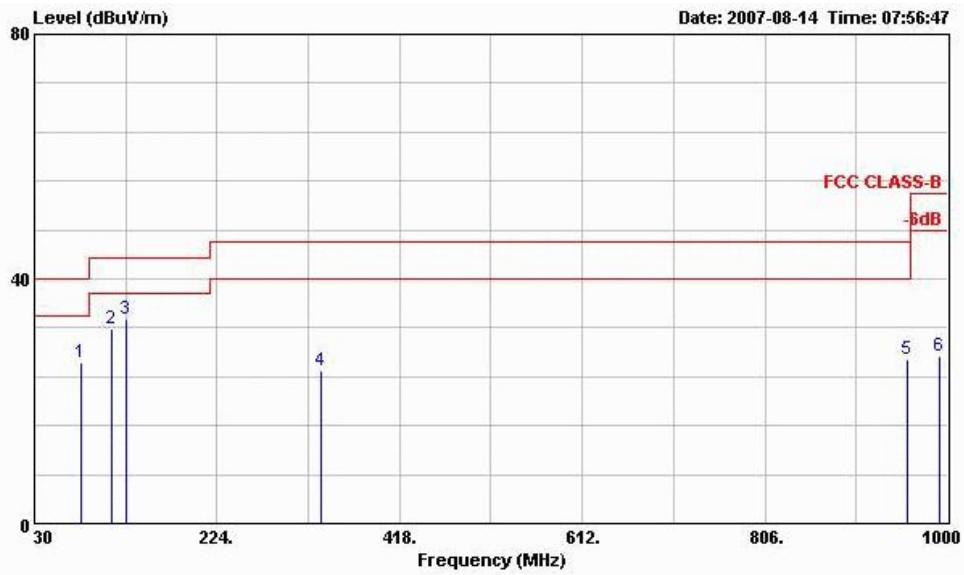
Remark: #3 and #4 Fundamental Signal





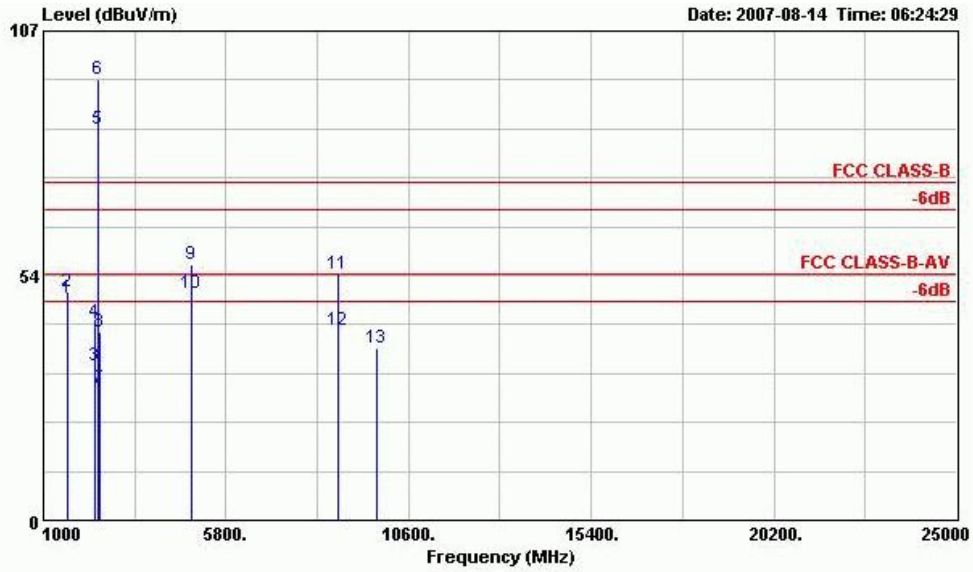
- Test Mode : Mode 2
- Polarization : Horizontal

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



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 HORIZONTAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH39;2441MHz  
 Data Rate: DH5

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
					dBuV	dB	dB	cm	deg	
1	79.410	26.28	-13.72	40.00	50.90	6.93	1.26	32.81	---	--- Peak
2	111.810	31.85	-11.65	43.50	53.72	9.54	1.43	32.84	100	266 Peak
3	127.740	33.42	-10.08	43.50	53.11	11.64	1.53	32.86	---	--- Peak
4	335.000	25.03	-20.97	46.00	41.99	13.51	2.35	32.82	---	--- Peak
5	957.300	26.84	-19.16	46.00	29.24	24.96	3.98	31.35	---	--- Peak
6	990.900	27.46	-26.54	54.00	28.68	25.83	3.99	31.04	---	--- Peak



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m HF-ANT-6903 HORIZONTAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH39;2441MHz  
 Data Rate:DH5

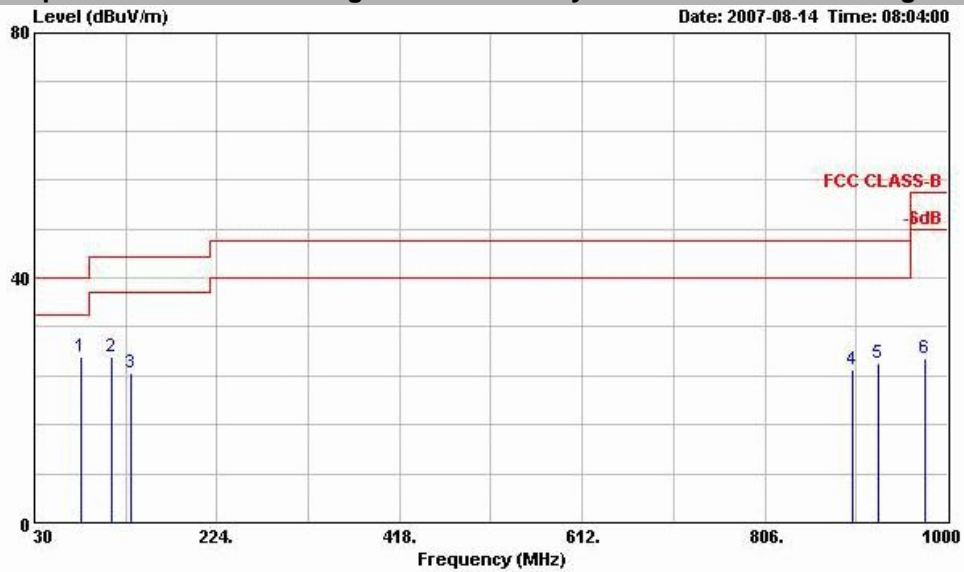
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 @	1628.000	48.72	-5.28	54.00	53.70	25.81	2.92	33.70	100	72 Average
2	1628.000	49.81	-24.19	74.00	54.79	25.81	2.92	33.70	100	0 Peak
3	2342.000	33.89	-20.11	54.00	36.01	27.96	3.69	33.77	100	40 Average
4	2342.000	43.23	-30.77	74.00	45.35	27.96	3.69	33.77	100	0 Peak
5 @	2441.000			54.00	87.24	28.19	3.79	33.79	100	40 Average
6 @	2441.000			74.00	98.39	28.19	3.79	33.79	100	0 Peak
7	2486.000	28.90	-25.10	54.00	30.60	28.26	3.84	33.80	100	40 Average
8	2486.000	41.14	-32.86	74.00	42.84	28.26	3.84	33.80	100	0 Peak
9	4882.000	55.91	-18.09	74.00	51.31	32.98	5.92	34.30	100	0 Peak
10 @	4882.000	49.56	-4.44	54.00	44.96	32.98	5.92	34.30	100	46 Average
11	8730.000	53.78	-20.22	74.00	43.45	37.78	7.13	34.58	100	0 Peak
12	8730.000	41.53	-12.47	54.00	31.20	37.78	7.13	34.58	100	266 Average
13	9764.000	37.63	-36.37	74.00	74.79	-9.83	7.67	35.00	100	0 Peak

Remark: #5 and #6 Fundamental Signal



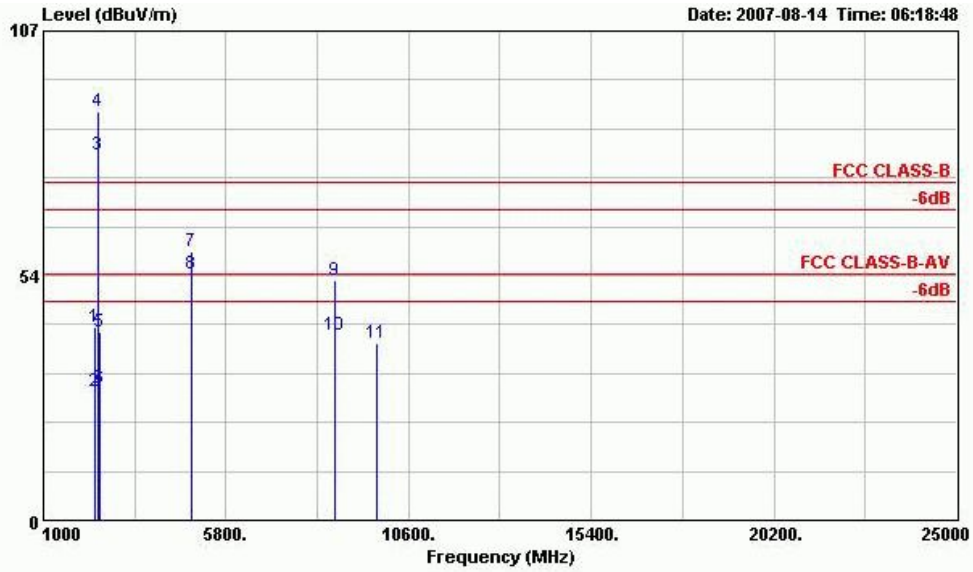
- Test Mode : Mode 2
- Polarization : Vertical

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



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 VERTICAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOHE : Bluetooth Tx\_CH39;2441MHz  
 Data Rate: DH5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	Remark
1	79.410	27.10	-12.90	40.00	51.72	6.93	1.26	32.81	100	305	Peak
2	111.810	27.10	-16.40	43.50	48.97	9.54	1.43	32.84	---	---	Peak
3	132.060	24.54	-18.96	43.50	44.56	11.28	1.56	32.87	---	---	Peak
4	898.500	25.05	-20.95	46.00	29.11	23.44	3.95	31.45	---	---	Peak
5	925.800	25.99	-20.01	46.00	29.27	24.18	3.97	31.42	---	---	Peak
6	976.900	26.96	-27.04	54.00	28.68	25.46	3.99	31.17	---	---	Peak



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m HF-ANT-6903 VERTICAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH39;2441MHz  
 Data Rate:DH5

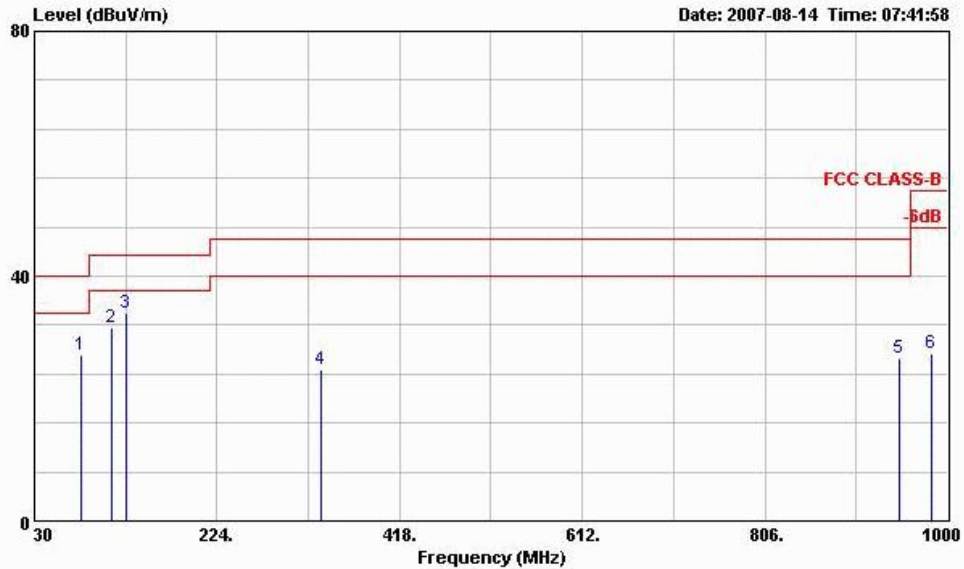
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2350.000	42.31	-31.69	74.00	44.43	27.96	3.69	33.77	100	0	Peak
2	2350.000	28.11	-25.89	54.00	30.23	27.96	3.69	33.77	109	277	Average
3 @	2441.000			54.00	81.65	28.19	3.79	33.79	109	277	Average
4 @	2441.000			74.00	91.08	28.19	3.79	33.79	100	0	Peak
5	2492.000	41.26	-32.74	74.00	42.92	28.30	3.84	33.80	100	0	Peak
6	2492.000	28.70	-25.30	54.00	30.36	28.30	3.84	33.80	109	277	Average
7	4882.000	58.70	-15.30	74.00	54.10	32.98	5.92	34.30	100	0	Peak
8 @	4882.000	53.90	-0.10	54.00	49.30	32.98	5.92	34.30	102	226	Average
9	8682.000	52.42	-21.58	74.00	42.13	37.72	7.11	34.54	100	0	Peak
10	8682.000	40.53	-13.47	54.00	30.24	37.72	7.11	34.54	100	305	Average
11	9764.000	38.72	-35.28	74.00	75.88	-9.83	7.67	35.00	100	0	Peak

Remark: #3 and #4 Fundamental Signal



- Test Mode : Mode 3
- Polarization : Horizontal

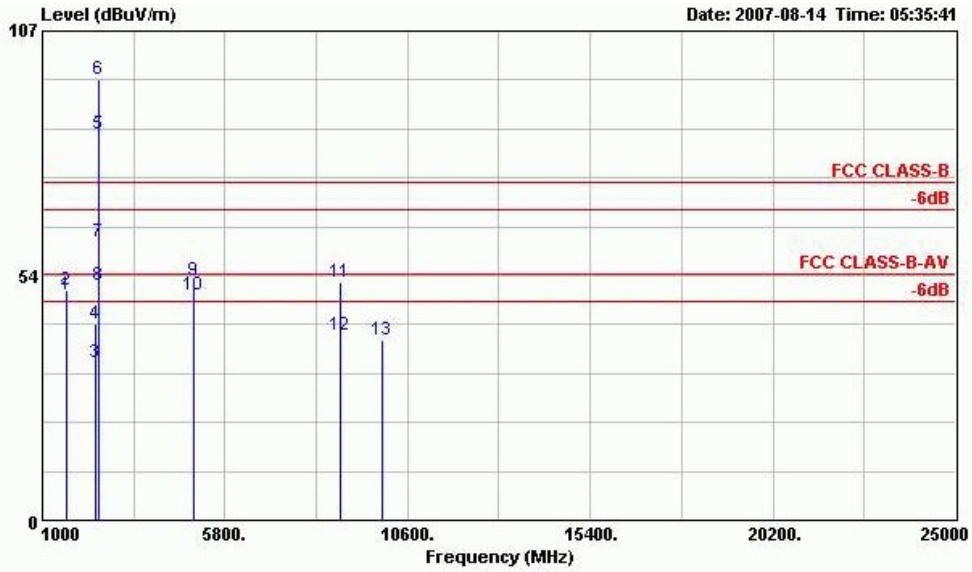
■ The test that passed at minimum margin was marked by the frame in the following table.



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 HORIZONTAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 MOME : Bluetooth Tx\_CH78;2480MHz  
 Data Rate: DH5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	79.410	27.19	-12.81	40.00	51.81	6.93	1.26	32.81	---	---	Peak
2	111.810	31.56	-11.94	43.50	53.43	9.54	1.43	32.84	---	---	Peak
3 @	127.740	33.88	-9.62	43.50	53.57	11.64	1.53	32.86	100	206	Peak
4	335.000	24.84	-21.16	46.00	41.80	13.51	2.35	32.82	---	---	Peak
5	948.200	26.47	-19.53	46.00	29.17	24.74	3.98	31.42	---	---	Peak
6	982.500	27.39	-26.61	54.00	28.91	25.61	3.99	31.12	---	---	Peak





Site :03CH04-HY  
 Condition:FCC CLASS-B 3m HF-ANT-6903 HORIZONTAL  
 EUT :BLUETOOTH GO REMOTE  
 POWER :3.3Vdc  
 MODEL :FR 763002  
 MOMM :Bluetooth Tx\_CH78;2480MHz  
 Data Rate:DH5

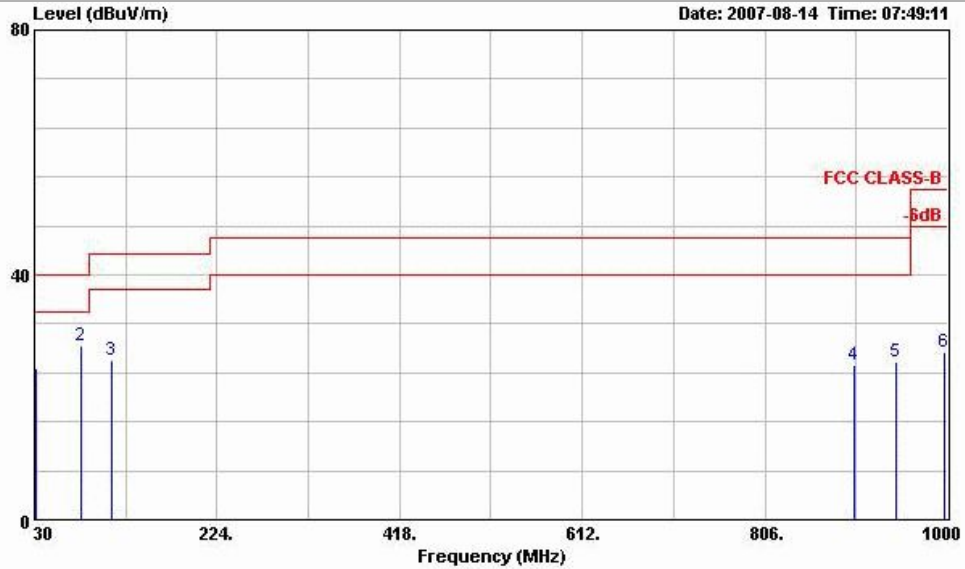
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	1652.000	49.21	-4.79	54.00	54.10	25.87	2.94	33.70	100	73	Average
2	1652.000	50.44	-23.56	74.00	55.33	25.87	2.94	33.70	100	0	Peak
3	2382.000	34.33	-19.67	54.00	36.33	28.03	3.74	33.78	100	43	Average
4	2382.000	42.81	-31.19	74.00	44.81	28.03	3.74	33.78	100	0	Peak
5 @	2480.000			54.00	86.17	28.26	3.84	33.80	100	43	Average
6 @	2480.000			74.00	97.98	28.26	3.84	33.80	100	0	Peak
7	2483.500	61.02	-12.98	74.00	62.72	28.26	3.84	33.80	100	0	Peak
8 @	2483.500	51.31	-2.69	54.00	53.01	28.26	3.84	33.80	100	43	Average
9	4960.000	52.35	-21.65	74.00	47.55	33.14	5.96	34.30	100	0	Peak
10 @	4960.000	49.32	-4.68	54.00	44.52	33.14	5.96	34.30	100	102	Average
11	8838.000	52.20	-21.80	74.00	41.76	37.90	7.20	34.66	100	0	Peak
12	8838.000	40.64	-13.36	54.00	30.20	37.90	7.20	34.66	100	266	Average
13	9920.000	39.59	-34.41	74.00	76.31	-9.48	7.75	35.00	100	0	Peak

Remark: #5 and #6 Fundamental Signal



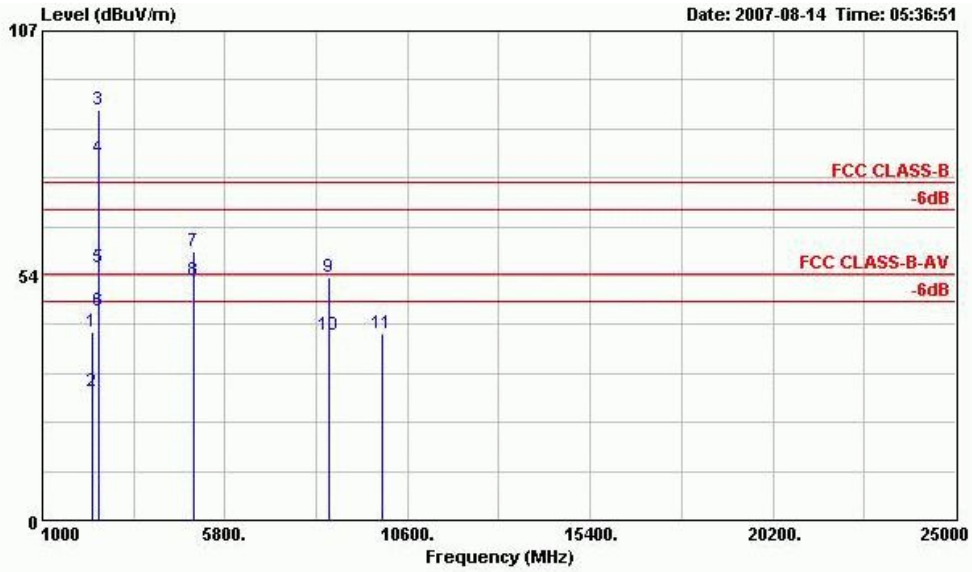
- Test Mode : Mode 3
- Polarization : Vertical

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



Site : 03CH04-HY  
 Condition: FCC CLASS-B 3m ANT2724 VERTICAL  
 EUT : BLUETOOTH GO REMOTE  
 POWER : 3.3Vdc  
 MODEL : FR 763002  
 HOME : Bluetooth Tx\_CH78;2480MHz  
 Data Rate: DH5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.620	24.67	-15.33	40.00	40.43	16.34	0.88	32.98	---	---	Peak
2	79.410	28.37	-11.63	40.00	52.99	6.93	1.26	32.81	100	299	Peak
3	111.810	26.11	-17.39	43.50	47.98	9.54	1.43	32.84	---	---	Peak
4	900.600	25.27	-20.73	46.00	29.21	23.53	3.96	31.43	---	---	Peak
5	946.100	25.89	-20.11	46.00	28.66	24.67	3.98	31.42	---	---	Peak
6	996.500	27.49	-26.51	54.00	28.54	25.95	4.00	31.00	---	---	Peak



Site :03CH04-HY  
 Condition:FCC CLASS-B 3m HF-ANT-6903 VERTICAL  
 EUT :BLUETOOTH GO REMOTE  
 POWER :3.3Vdc  
 MODEL :FR 763002  
 MOME :Bluetooth Tx\_CH78;2480MHz  
 Data Rate:DH5

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2318.000	41.05	-32.95	74.00	43.23	27.92	3.66	33.77	100	0	Peak
2	2318.000	28.26	-25.74	54.00	30.44	27.92	3.66	33.77	102	306	Average
3 @	2480.000			74.00	91.33	28.26	3.84	33.80	100	0	Peak
4 @	2480.000			54.00	80.88	28.26	3.84	33.80	102	306	Average
5	2483.500	55.40	-18.60	74.00	57.10	28.26	3.84	33.80	100	0	Peak
6 @	2483.500	45.60	-8.40	54.00	47.30	28.26	3.84	33.80	102	306	Average
7	4960.000	58.69	-15.31	74.00	53.89	33.14	5.96	34.30	100	0	Peak
8 @	4960.000	52.58	-1.42	54.00	47.78	33.14	5.96	34.30	100	226	Average
9	8538.000	53.01	-20.99	74.00	42.88	37.54	7.03	34.44	100	0	Peak
10	8538.000	40.33	-13.67	54.00	30.20	37.54	7.03	34.44	100	268	Average
11	9920.000	40.73	-33.27	74.00	77.45	-9.48	7.75	35.00	100	0	Peak

Remark: #3 and #4 Fundamental Signal





## **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**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
3m Semi Anechoic	TDK	SAC-3M	03CH04-HY	30 MHz - 1 GHz 3m	Oct. 30, 2006	Oct. 29, 2007	Radiation (03CH04-HY)
Amplifier	Schaffner	CPA9231A	3564	9 kHz - 2 GHz	Aug.31, 2006	Aug.30, 2007	Radiation (03CH04-HY)
Spectrum Analyzer	R&S	FSP7	100641	9 kHz – 7GHz	Sep. 08, 2006	Sep. 07, 2007	Radiation (03CH04-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2724	30 MHz - 1 GHz	Aug. 13, 2007	Aug. 12, 2008	Radiation (03CH04-HY)
Turn Table	HD	Deis HD 2000	420/610	0 - 360 degree	N/A	N/A	Radiation (03CH04-HY)
Antenna Mast	Chaintek	3000	-	1 m - 4 m	N/A	N/A	Radiation (03CH04-HY)
RF Cable-R03m	Suhner Switzerland +	RG223/U +RG8/U	CB024	30 MHz - 1 GHz	Sep. 21, 2006	Sep. 20, 2007	Radiation (03CH04-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
<b>Combined standard uncertainty Uc(y)</b>	<b>1.13</b>		
<b>Measuring uncertainty for a level of confidence of 95% U=2Uc(y)</b>	<b>2.26</b>		

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

Contribution	Uncertainty of $x_i$		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.15	Normal(k=2)	0.08
Antenna factor calibration	1.12	Normal(k=2)	0.56
Cable loss calibration	0.12	Normal(k=2)	0.06
Pre Amplifier Gain calibration	0.13	Normal(k=2)	0.07
RCV/SPA specification	2.5	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1	Rectangular	0.29
Site imperfection	2.1	Rectangular	1.21
Mismatch	+0.39/-0.41	U-shaped	0.28
<b>Combined standard uncertainty Uc(y)</b>	<b>1.58</b>		
<b>Measuring uncertainty for a level of confidence of 95% U=2Uc(y)</b>	<b>3.16</b>		



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
<b>Combined standard uncertainty Uc(y)</b>			<b>2.36</b>		
<b>Measuring uncertainty for a level of confidence of 95% U=2Uc(y)</b>			<b>4.72</b>		