

# FCC TEST REPORT

for

## 47 CFR Part 15 Subpart C

**Equipment** : ASUS J202 Triple-Band GPRS Mobile Phone  
**Trade Name** : ASUS  
**Model No.** : J202  
**FCC ID** : MSQJ202  
**Filing Type** : Certification  
**Applicant** : ASUSTek COMPUTER INC.  
No. 15, Li-Te Rd., Peitou, Taipei, Taiwan

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- The data shown in this test report were carried out on Nov. 14, 2005 at **Sporton International Inc. LAB.**
- Report No.: FR5N0802, Report Version: Rev. 01.



Dr. Daniel Lee  
EMC/SAR Director

***SPORTON International Inc.***

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

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***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

ASUSTek COMPUTER INC.  
No. 15, Li-Te Rd., Peitou, Taipei, Taiwan

## 1.2. Manufacturer

ASUSTek COMPUTER INC.  
No. 15, Li-Te Rd., Peitou, Taipei, Taiwan

## 1.3. Basic Description of Equipment under Test

Equipment : ASUS J202 Triple-Band GPRS Mobile Phone  
Trade Name : ASUS  
Model No. : J202  
FCC ID : MSQJ202  
Power Supply Type : Switching, From Battery 3.7V  
AC Power Cord : AC 120V, Weave-Shielded, Wall-mount, 1.8 meter, 2 pin  
Battery : ASUS, SBP-01  
Adapter : I.T.E, MU03-5052043-A1

## 1.4. Feature of Equipment under Test

Product Feature & Specification	
1. Modulation Type/Data Rate	GFSK
2. Frequency Range.	2400 MHz ~ 2483.5 MHz
Number of Channels	79
3. Carrier Frequency of each channel	2402+ n*1 MHz, n= 0~78
4. Channel Spacing	1 MHz
5. Maximum Output Power to Antenna (Normal condition)	1.97 dBm
6. Type of Antenna Connector	N/A
7. Antenna Type	Chip Antenna
8. Antenna Gain	0 dBi
9. HW Version	R1.0.3
10. SW Version	V4.0.0
11. Function Type	Transmitter   Transceiver   V
12. Power Rating (DC/AC , Voltage)	3.8V/250mA
13. DUT Stage	Production Unit



## 2. Test Configuration of Equipment under Test

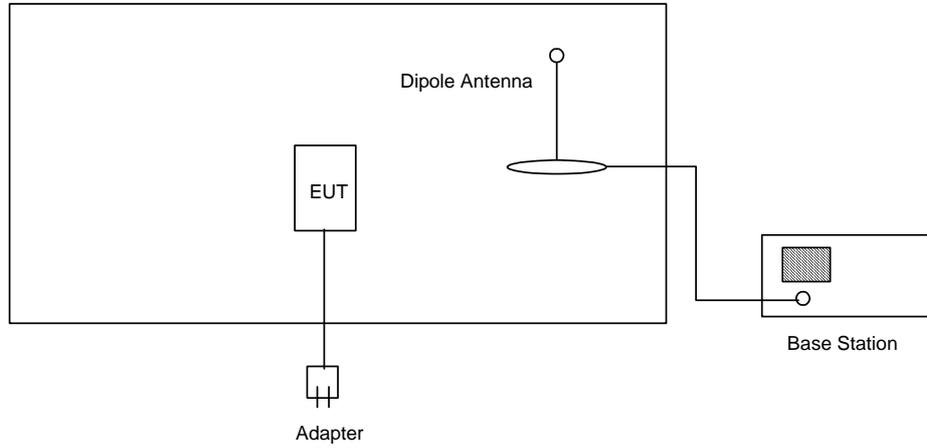
### 2.1. Test Manner

- 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 and conducted test items	Mode 1: Tx_CH00_2402 MHz Mode 2: Tx_CH39_2441 MHz Mode 3: Tx_CH78_2480 MHz
Conducted Emission	Mode 1: PCS 1900 Idle Mode + Camera + BT Link + Earphone Mode 2: PCS 1900 Idle Mode + MP3 Player + BT Link + Earphone Mode 3: PCS 1900 Idle Mode + Camera + USB Link + Earphone

**2.3. Connection Diagram of Test System**



**2.4. Ancillary Equipment List**

Item	Equipment	Model No.	Serial No.
1.	Base Station (R&S)	CMU200	105934
2.	BT Earphone (Free Style)	JD-100	N/A



### **3. RF Utility**

The EUT is in BT link mode with BT earphone for conducted emission or in BT continuous Tx Mode controlled by RF utility and base station simulator for radiated emission and other conducted tests.



## **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

### **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 within a 30 Second Period	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

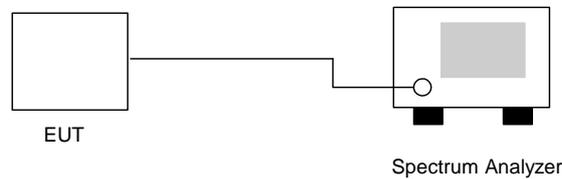
### 5.2.1. Measuring Instruments :

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: 60%
- Test Engineer :    Jay

Channel	Frequency ( MHz )	Hopping Channel Separation ( MHz )	Limits ( MHz )	Plot Ref. No.
00	2402	1.000	0.872	Mode 1
39	2441	1.003	0.877	Mode 2
78	2480	1.000	0.875	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)

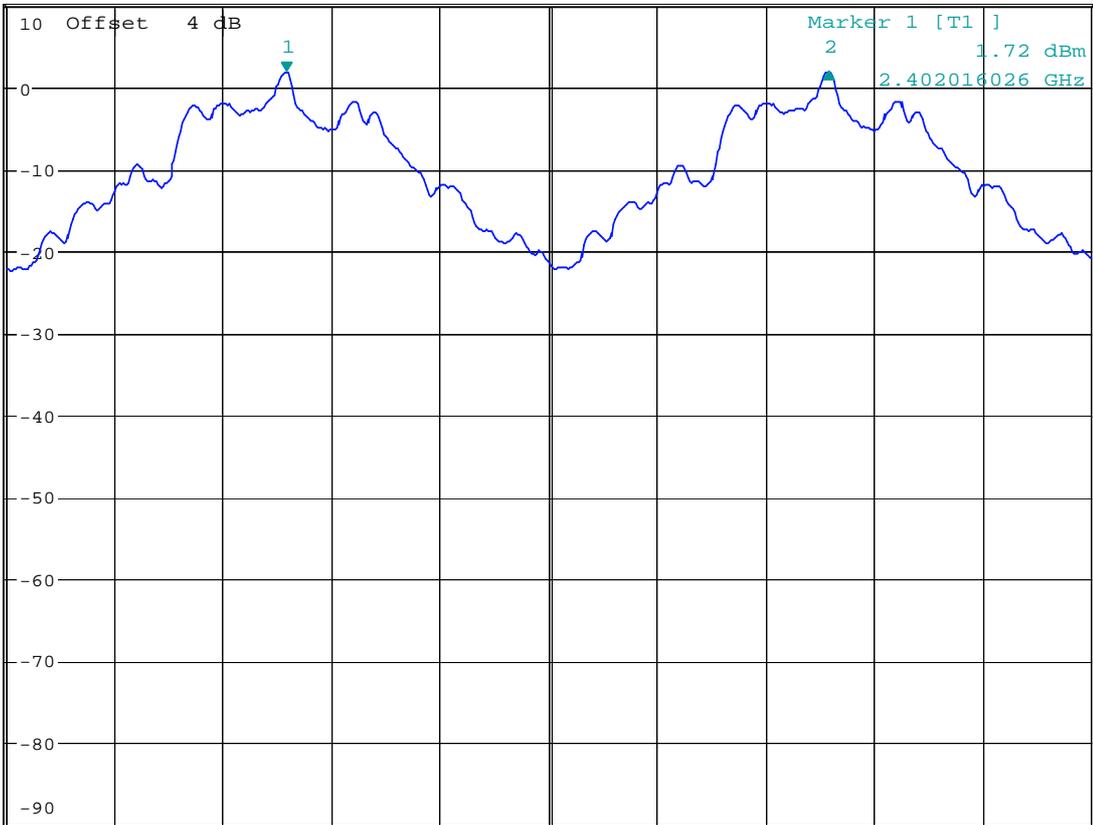


\*RBW 30 kHz      Delta 2 [T1 ]  
 \*VBW 100 kHz      0.03 dB  
 \*SWT 500 ms      1.000000000 MHz

Ref 10 dBm

\* Att 20 dB

1 PK  
MAXH



Center 2.4025 GHz

200 kHz/

Span 2 MHz

Date: 12.NOV.2005 12:24:00



Mode 2: CH39 (2441MHz)

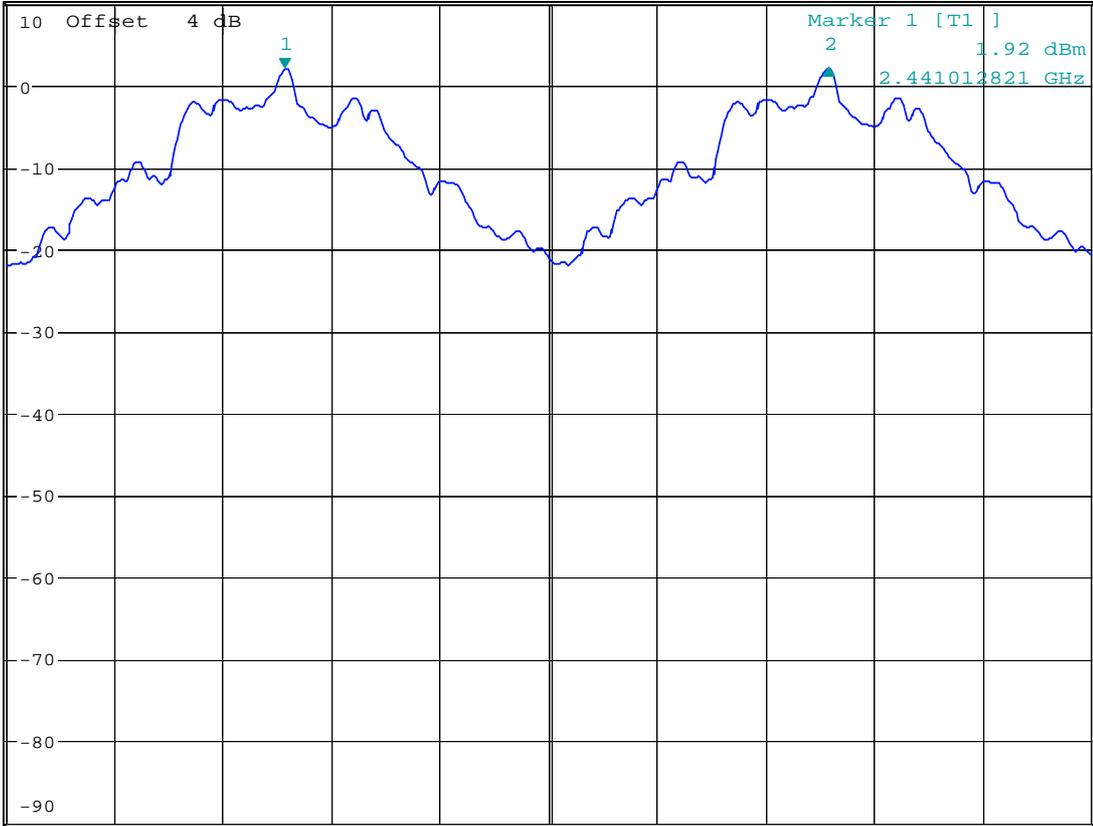


\*RBW 30 kHz      Delta 2 [T1 ]  
 \*VBW 100 kHz      -0.02 dB  
 \*SWT 500 ms      1.003205128 MHz

Ref 10 dBm

\* Att 20 dB

1 PK  
MAXH



Center 2.4415 GHz

200 kHz/

Span 2 MHz

Date: 12.NOV.2005 12:38:43



Mode 3: CH78 (2480MHz)

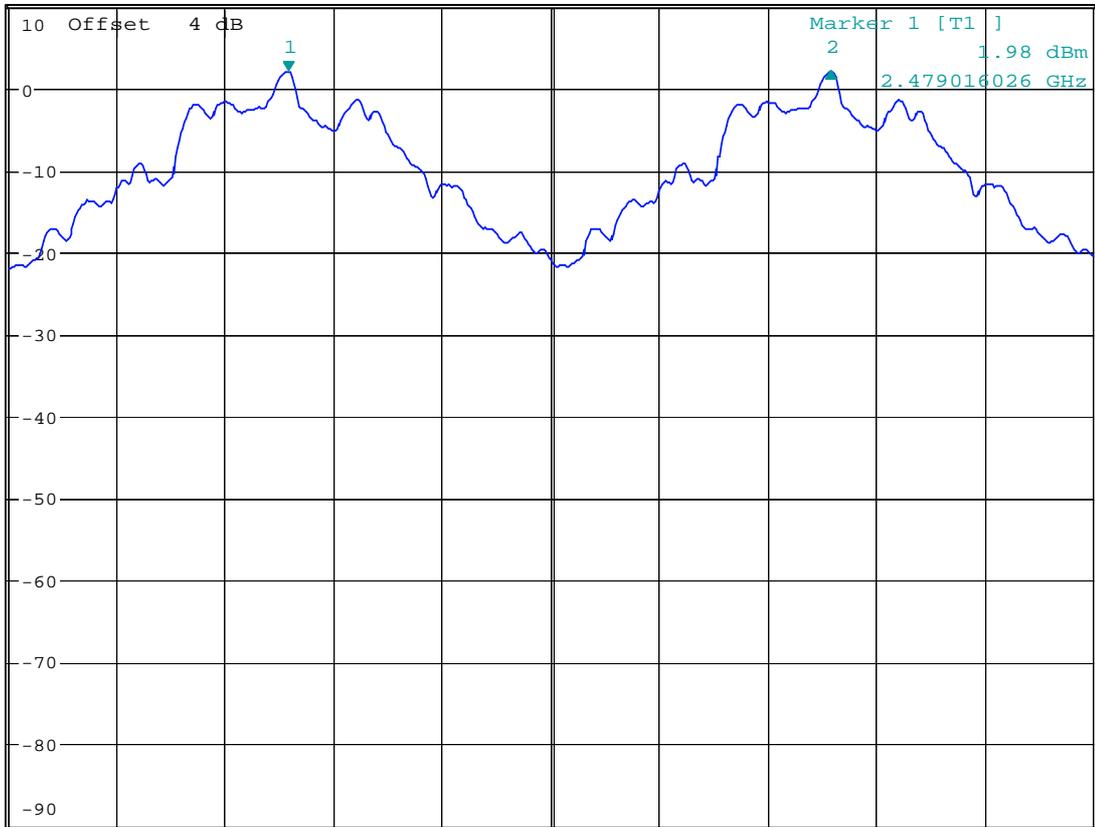


\* RBW 30 kHz      Delta 2 [T1 ]  
 \* VBW 100 kHz      -0.02 dB  
 \* SWT 500 ms      1.000000000 MHz

Ref 10 dBm

\* Att 20 dB

1 PK  
MAXH



Center 2.4795 GHz      200 kHz/      Span 2 MHz

Date: 12.NOV.2005 13:24:41

### 5.3. Number of Hopping Frequency

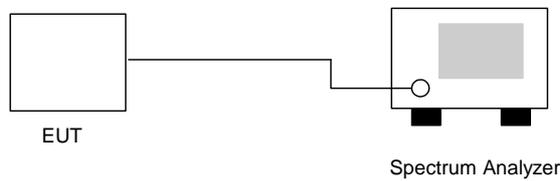
#### 5.3.1. Measuring Instruments :

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 :



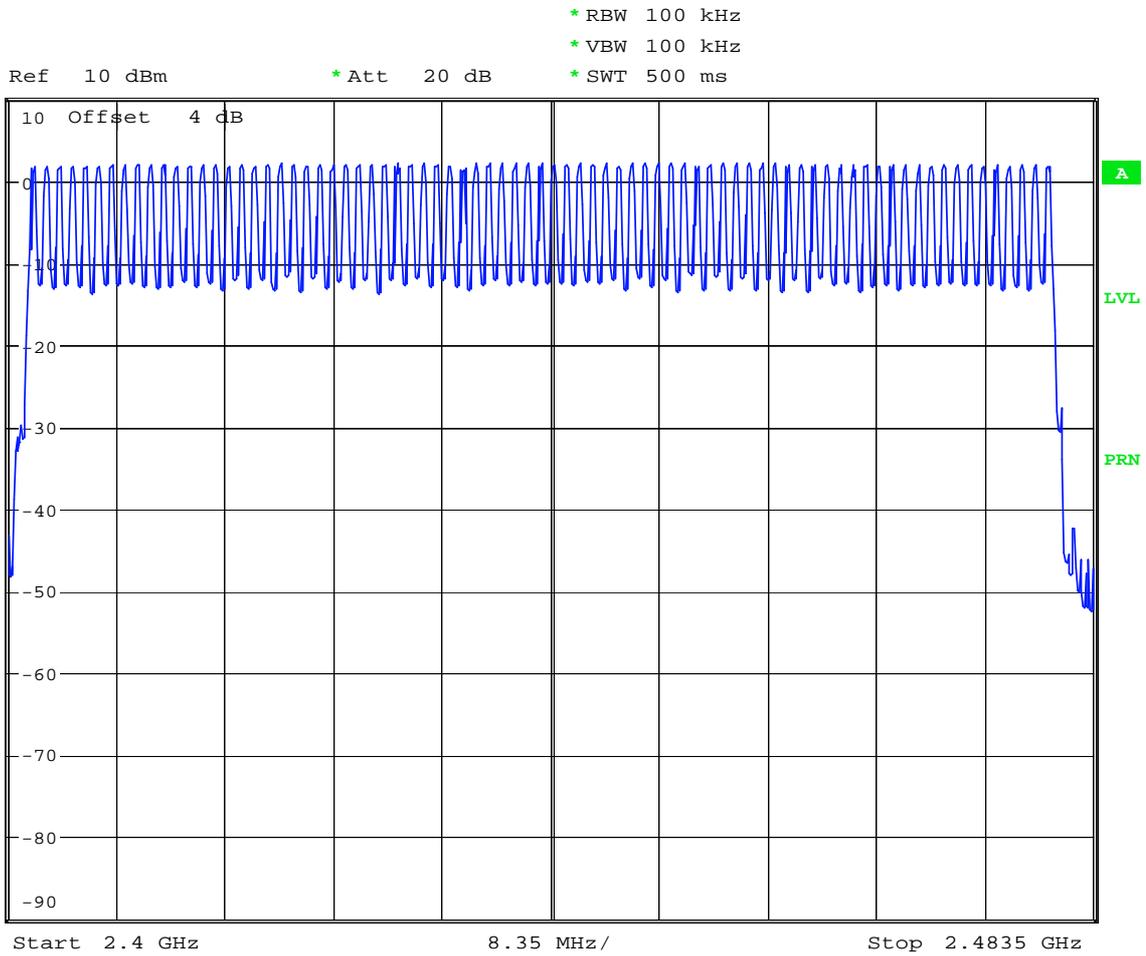
#### 5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 25°C
- Relative Humidity: 60%
- Test Engineer :   Jay

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



5.3.5 Number of Hopping Frequency



Date: 12.NOV.2005 13:54:22

## 5.4 Hopping Channel Bandwidth

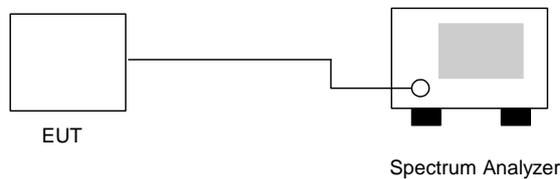
### 5.4.1 Measuring Instruments :

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

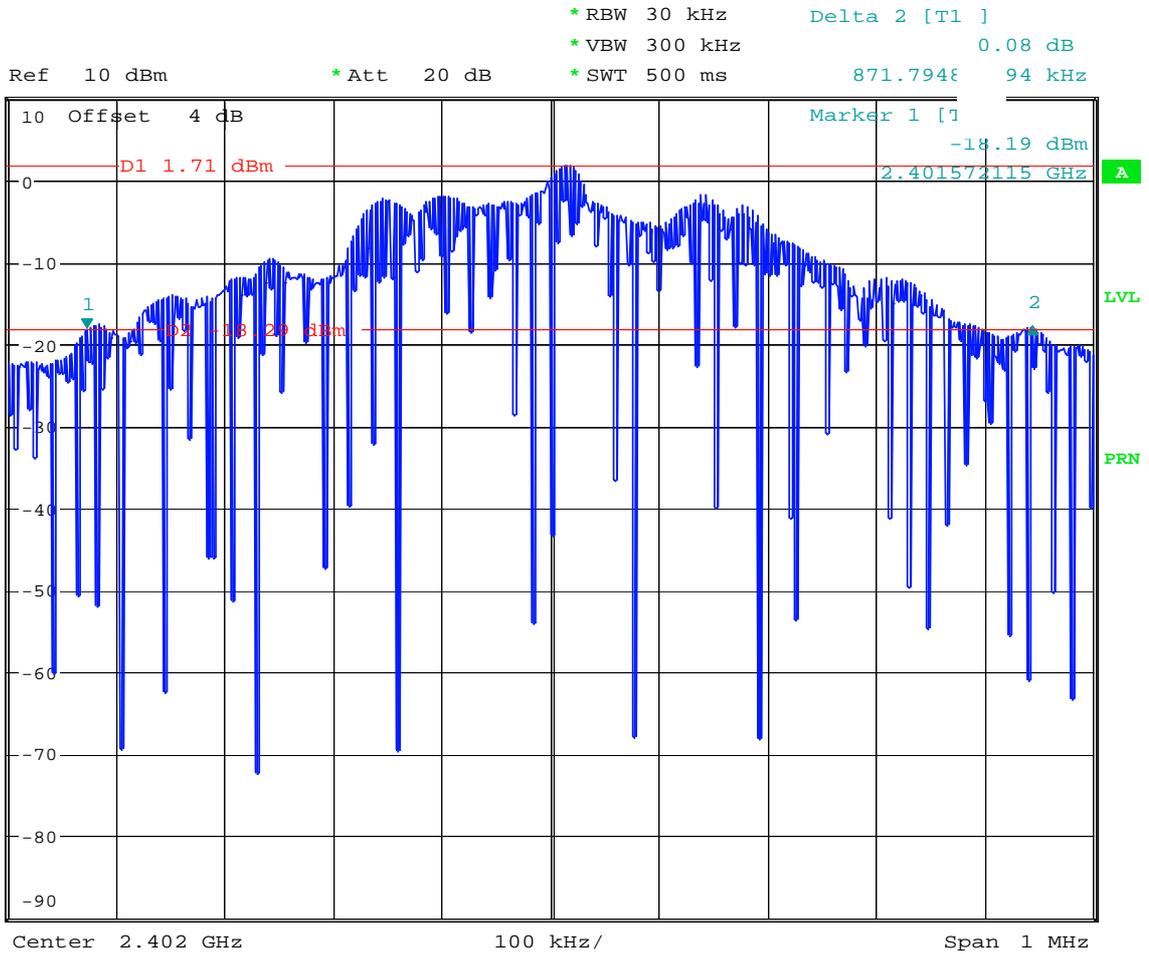
- Temperature: 25°C
- Relative Humidity: 60%
- Test Engineer :   Jay

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.872	1.0	Mode 1
39	2441	0.877	1.0	Mode 2
78	2480	0.875	1.0	Mode 3



5.4.5 Hopping Channel Bandwidth

Mode 1: CH00 (2402MHz)



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Mode 2: CH39 (2441MHz)

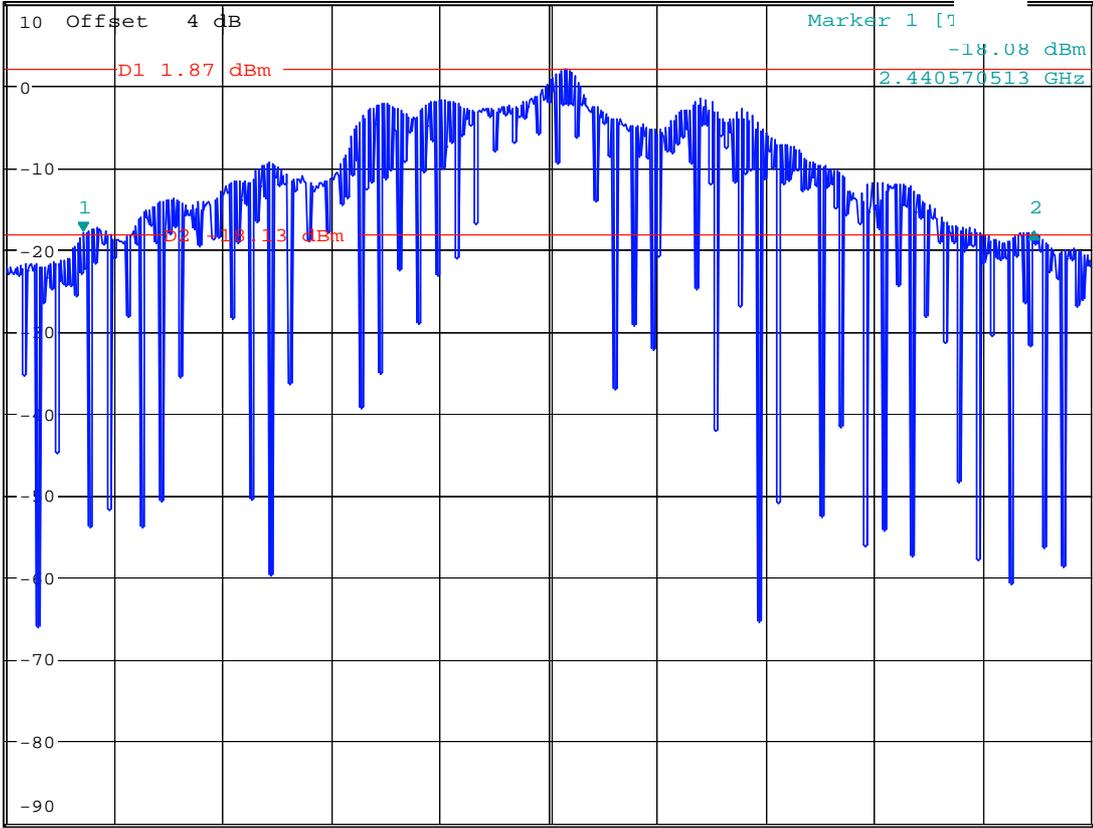


\*RBW 30 kHz      Delta 2 [T1 ]  
 \*VBW 300 kHz      -0.01 dB  
 \*SWT 500 ms      876.6025 : kHz

Ref 10 dBm

\* Att 20 dB

1 PK \*  
VIEW



Center 2.441 GHz      100 kHz/      Span 1 MHz

Date: 12.NOV.2005 12:26:26



Mode 3: CH78 (2480MHz)

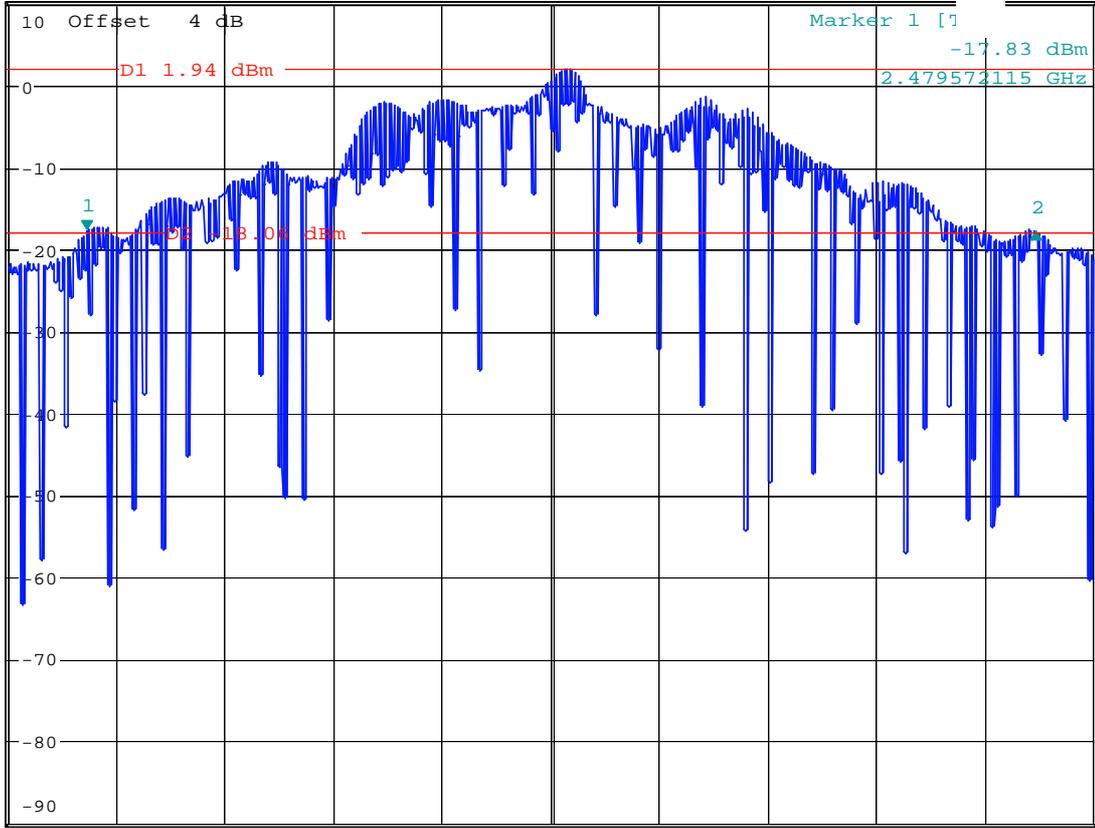


\*RBW 30 kHz      Delta 2 [T1 ]  
 \*VBW 300 kHz      -0.13 dB  
 \*SWT 500 ms      874.9999      98 kHz

Ref 10 dBm

\* Att 20 dB

1 PK \*  
VIEW



Center 2.48 GHz

100 kHz/

Span 1 MHz

Date: 12.NOV.2005 13:19:41

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

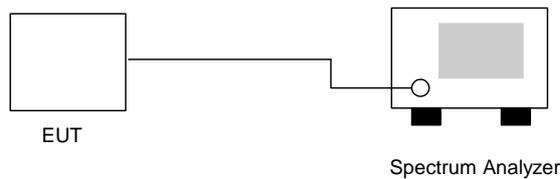
5.5.1 Measuring Instruments :

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 =  $30 \cdot (1600/79) \cdot t$  (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: 60%
- Test Engineer :   Jay

Ch00

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.3	543.3	0.160	0.4
DH3	4.6	1801.2	0.262	0.4
DH5	3.2	3067.3	0.310	0.4



CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.1	546.5	0.157	0.4
DH3	4.9	1802.8	0.279	0.4
DH5	3	3060.8	0.290	0.4

CH78

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.2	548.1	0.159	0.4
DH3	4.8	1806.8	0.274	0.4
DH5	3.9	3060.8	0.377	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)

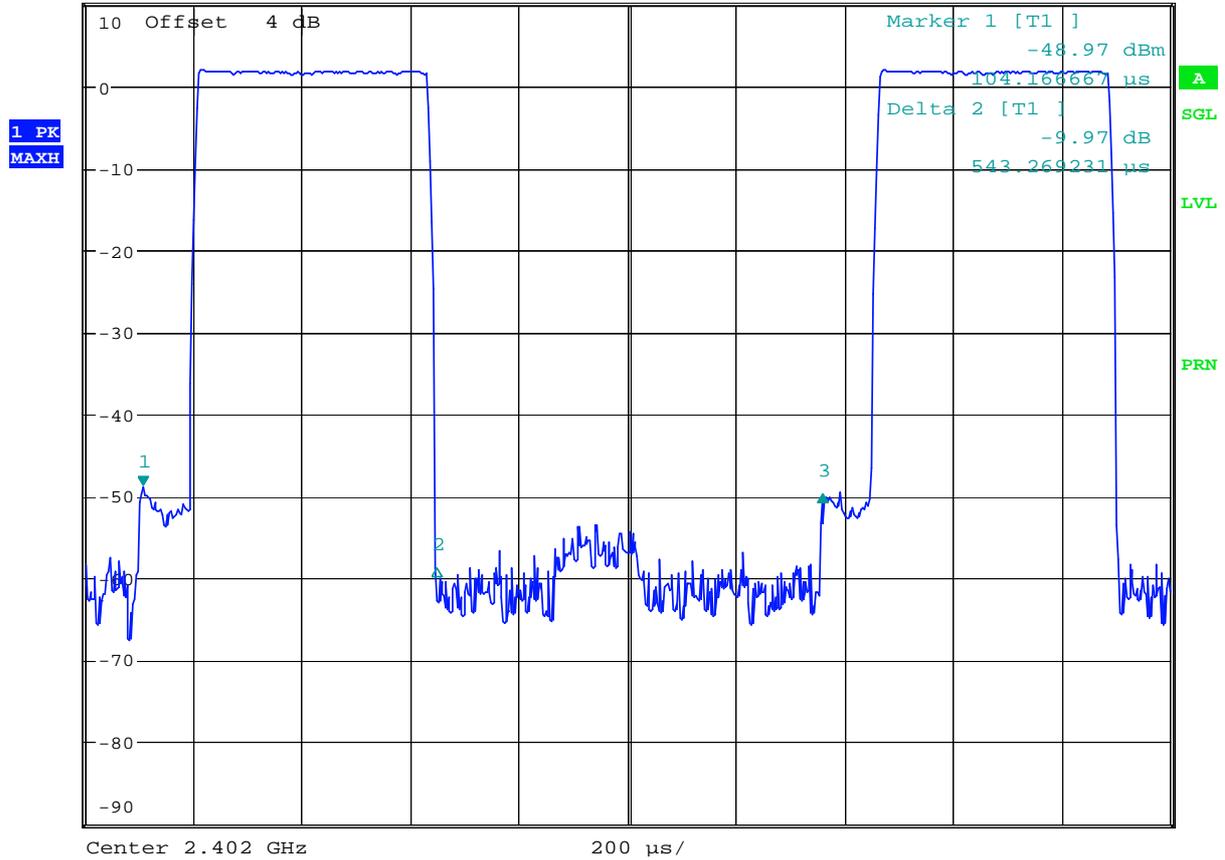


5.5.5 Dwell Time

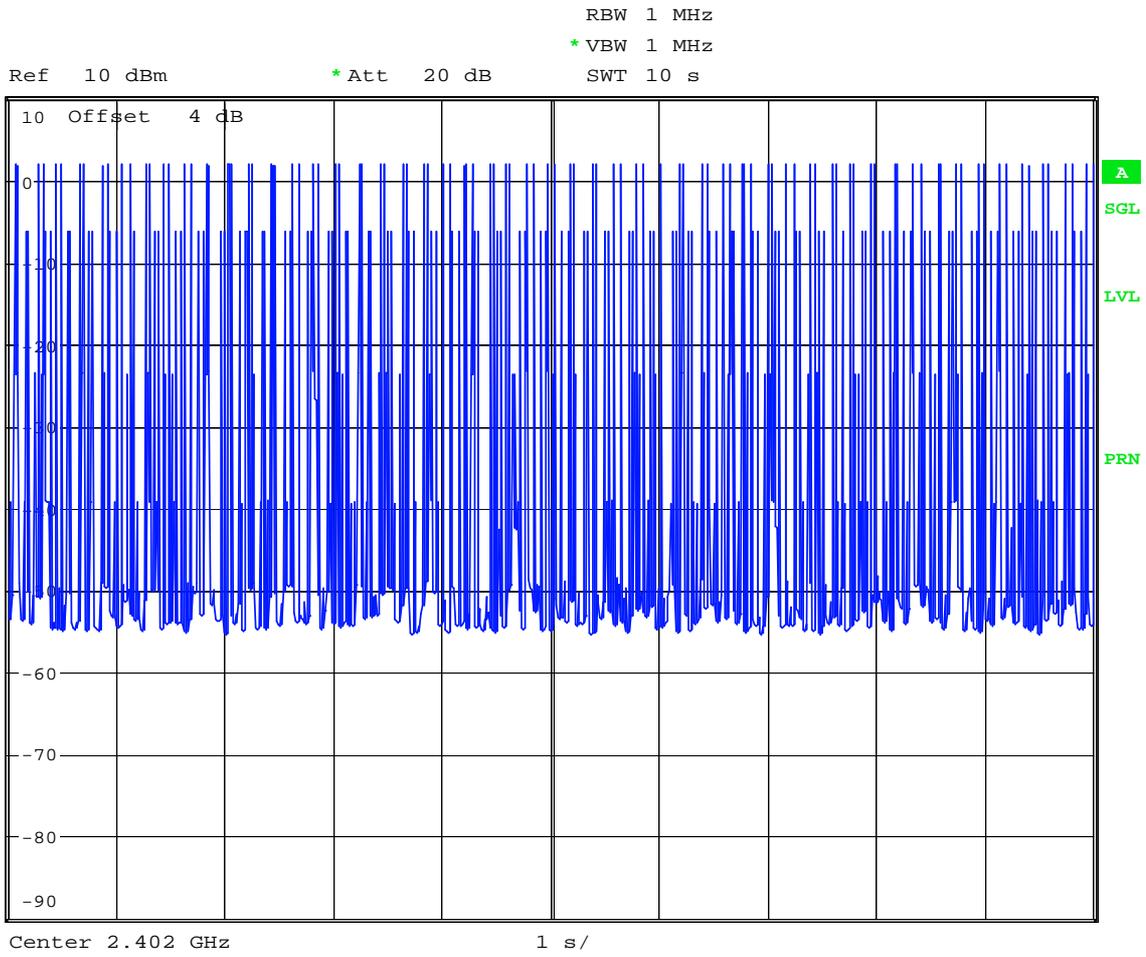
DH1 (CH00)



Ref 10 dBm      \* Att 20 dB      RBW 1 MHz      Delta 3 [T1 ]      -1.06 dB  
 \* VBW 1 MHz      SWT 2 ms      1.254808 ms



Date: 12.NOV.2005 13:32:39



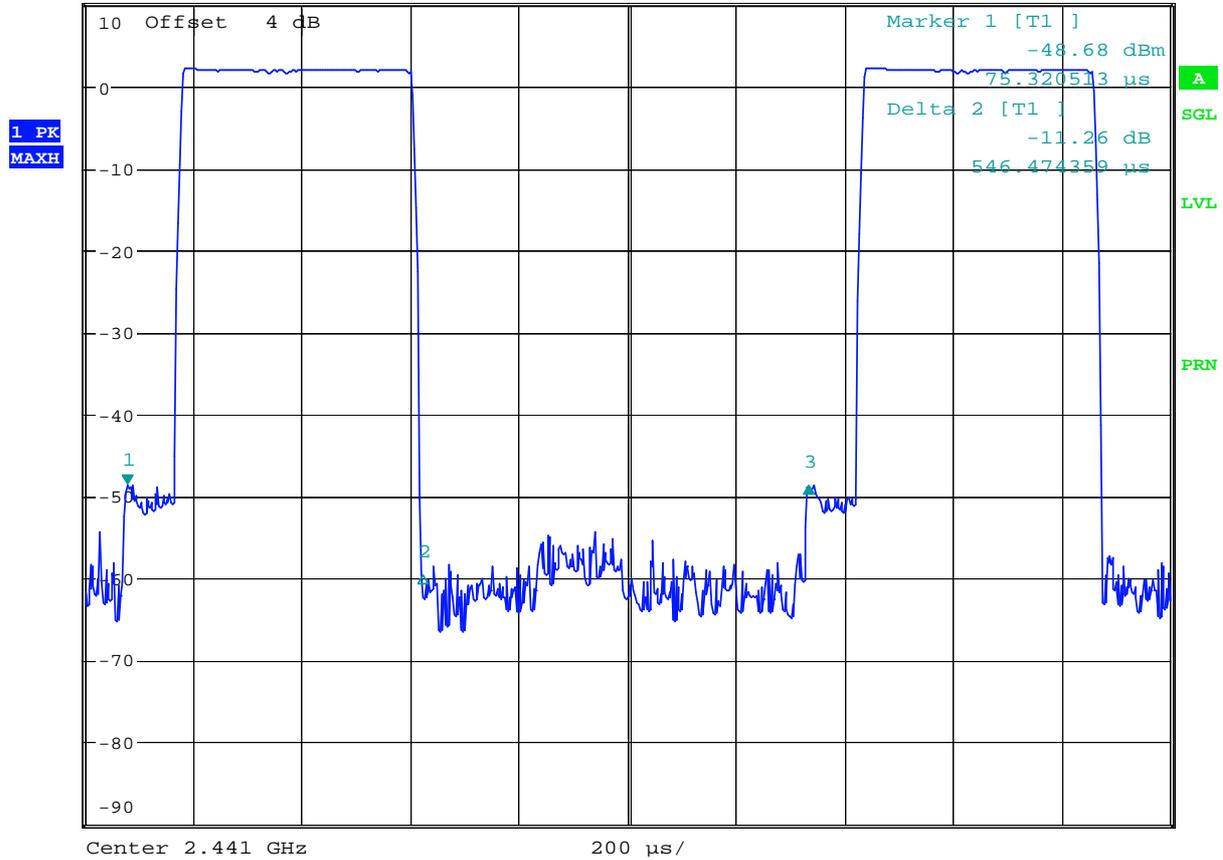
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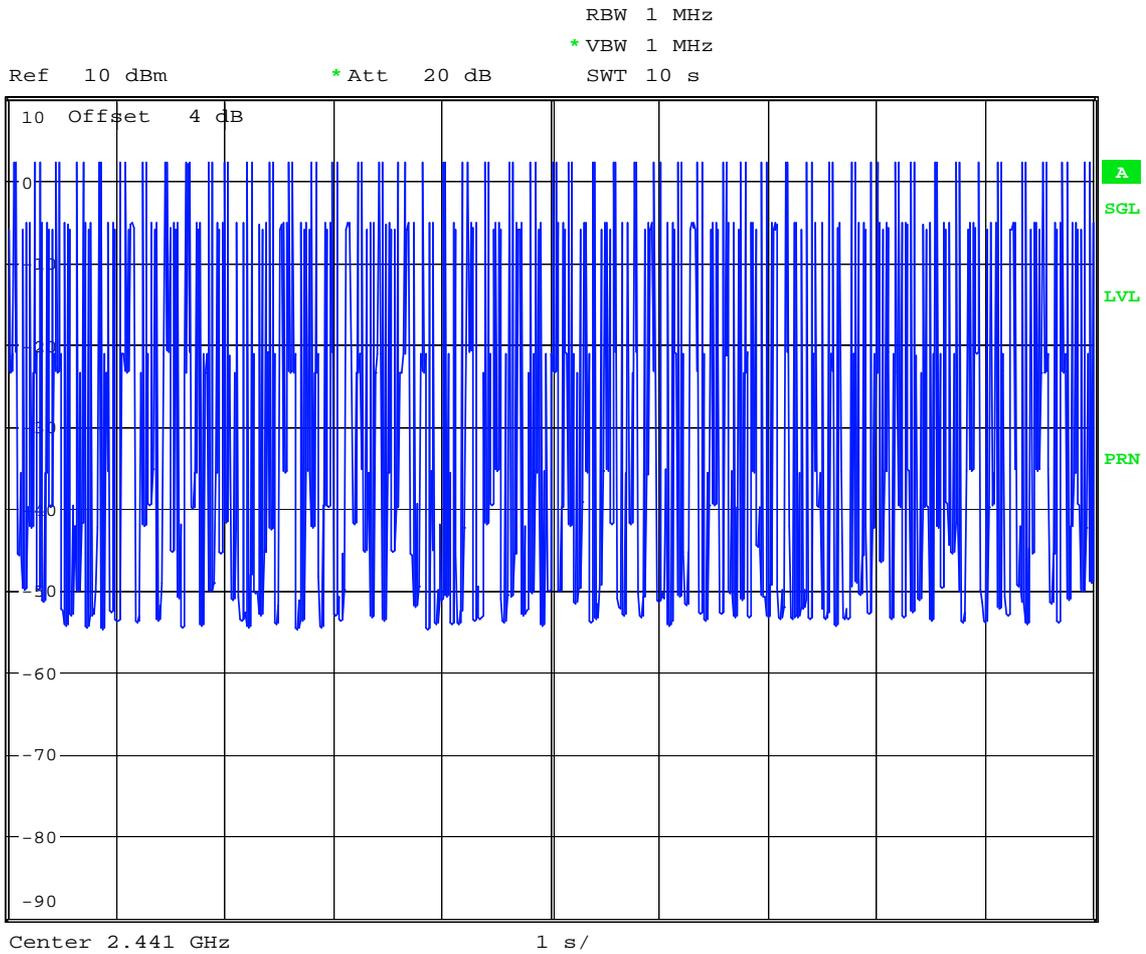
DH1 (CH39)



Ref 10 dBm      \* Att 20 dB      RBW 1 MHz      Delta 3 [T1 ]      -0.23 dB  
 \* VBW 1 MHz      SWT 2 ms      1.258013 ms



Date: 12.NOV.2005 13:31:52



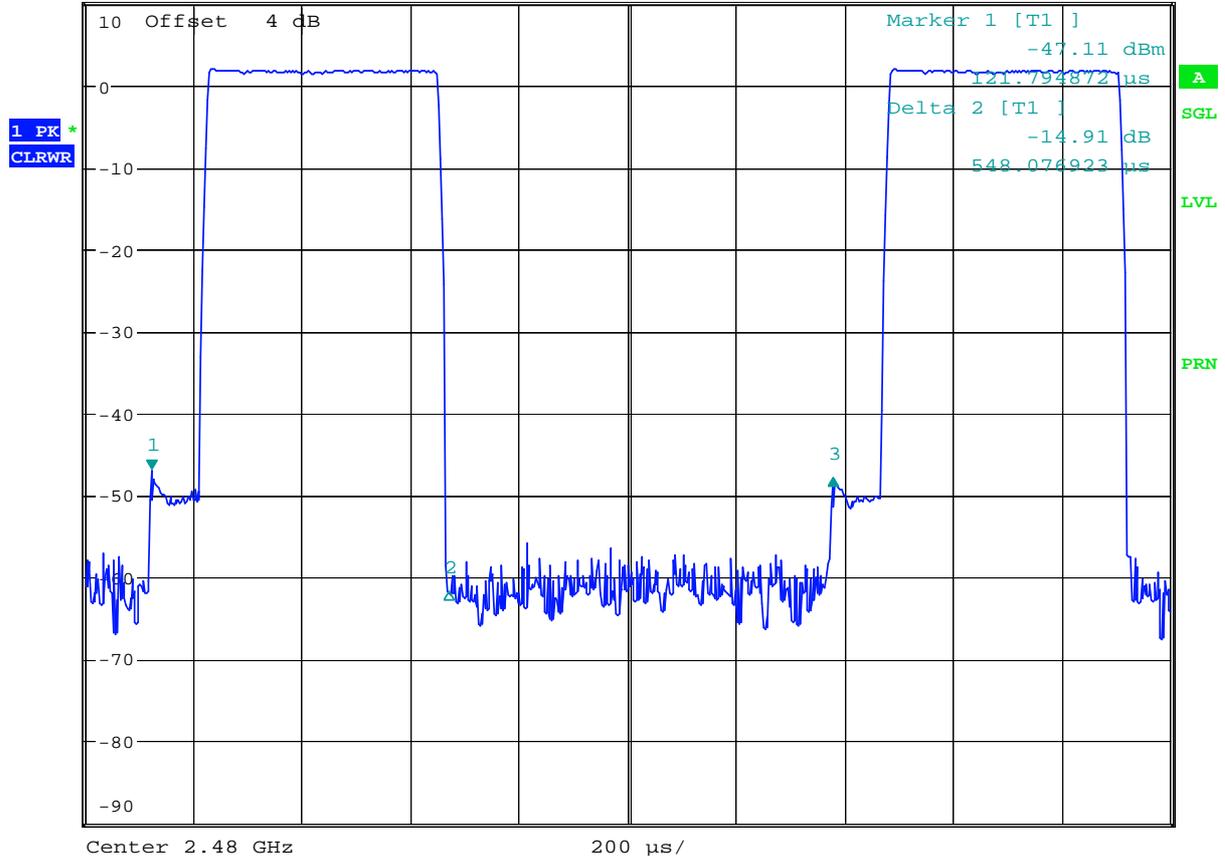
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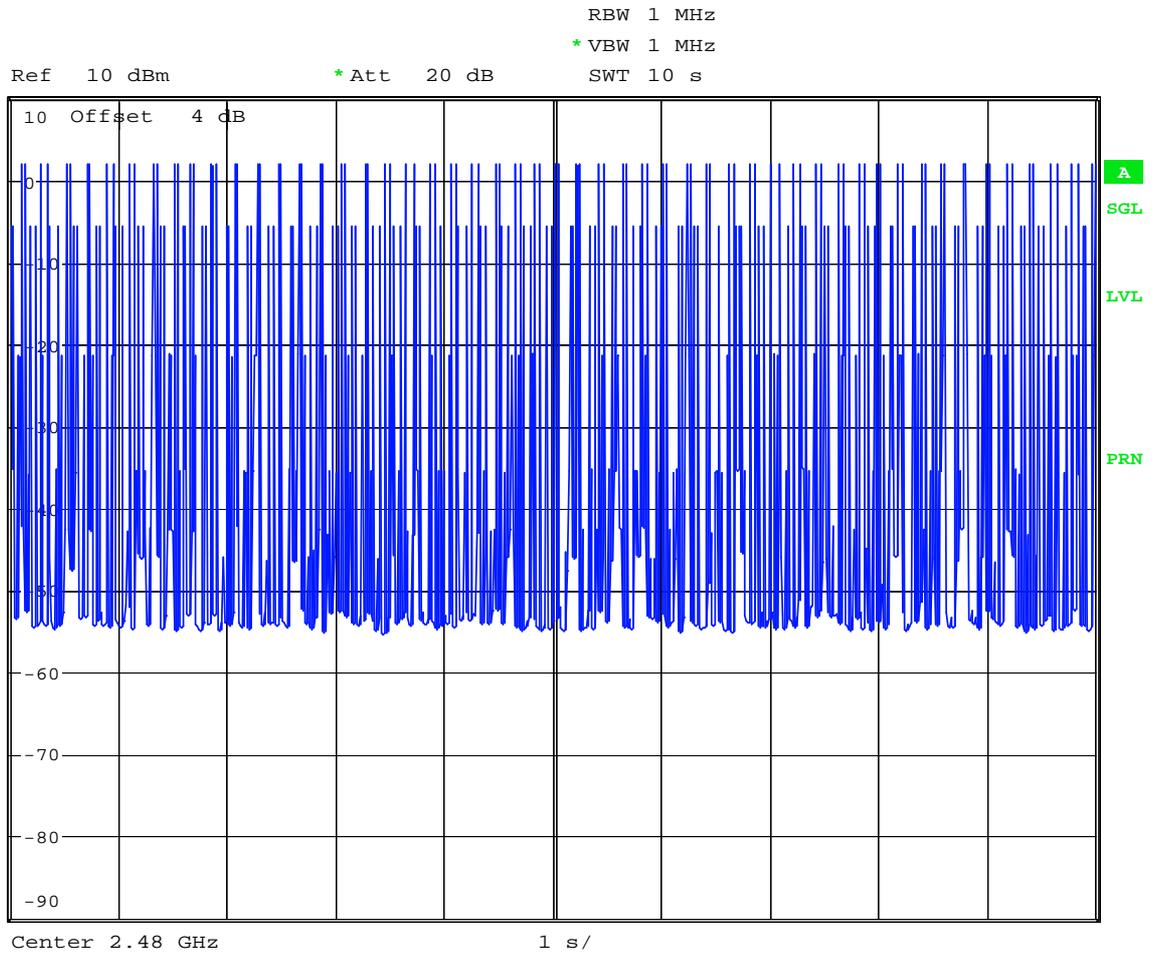
DH1 (CH78)



Ref 10 dBm      \* Att 20 dB      RBW 1 MHz      Delta 3 [T1 ]      -1.04 dB  
 \* VBW 1 MHz      SWT 2 ms      1.256410 ms



Date: 12.NOV.2005 13:59:49



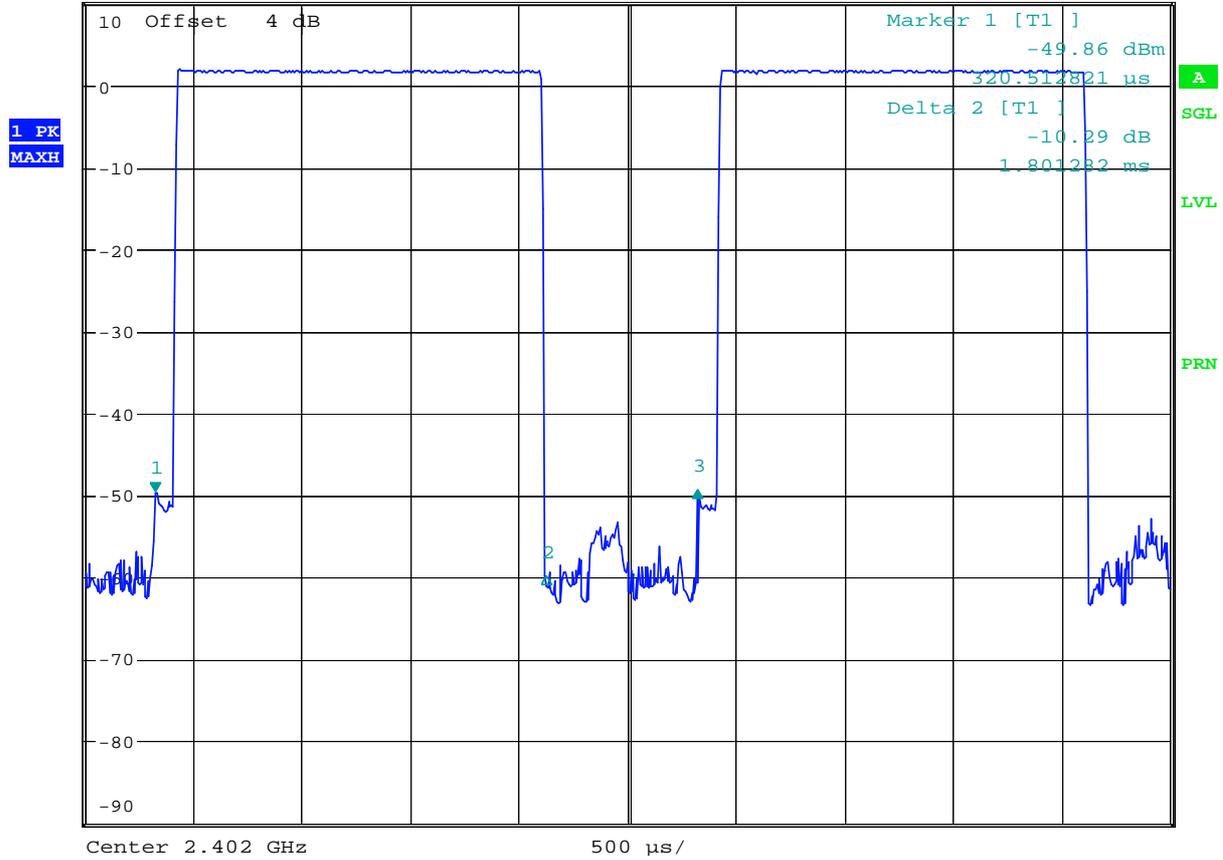
Date: 12.NOV.2005 13:41:14



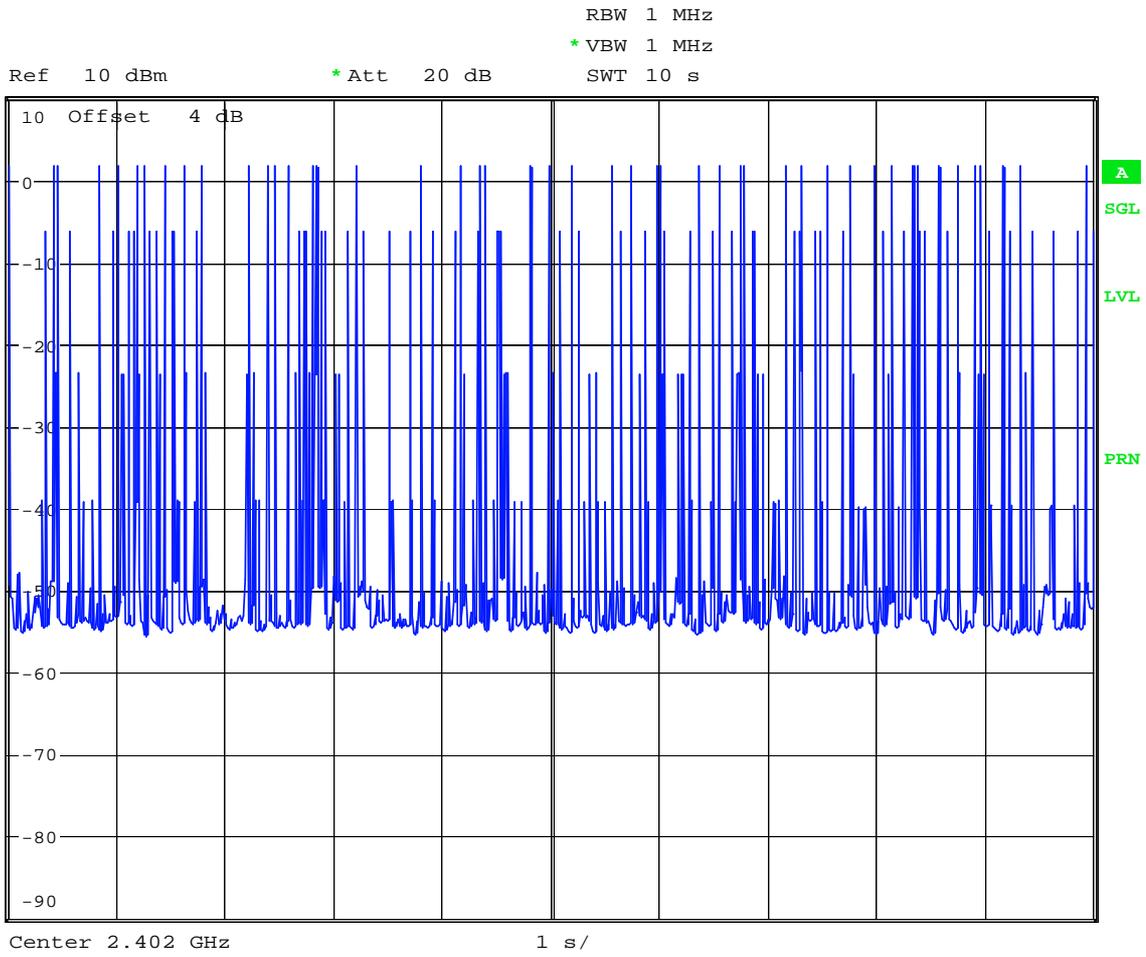
DH3 (CH00)



Ref 10 dBm      \* Att 20 dB      RBW 1 MHz      Delta 3 [T1 ]      0.39 dB  
 \* VBW 1 MHz      SWT 5 ms      2.496795 ms



Date: 12.NOV.2005 13:33:47



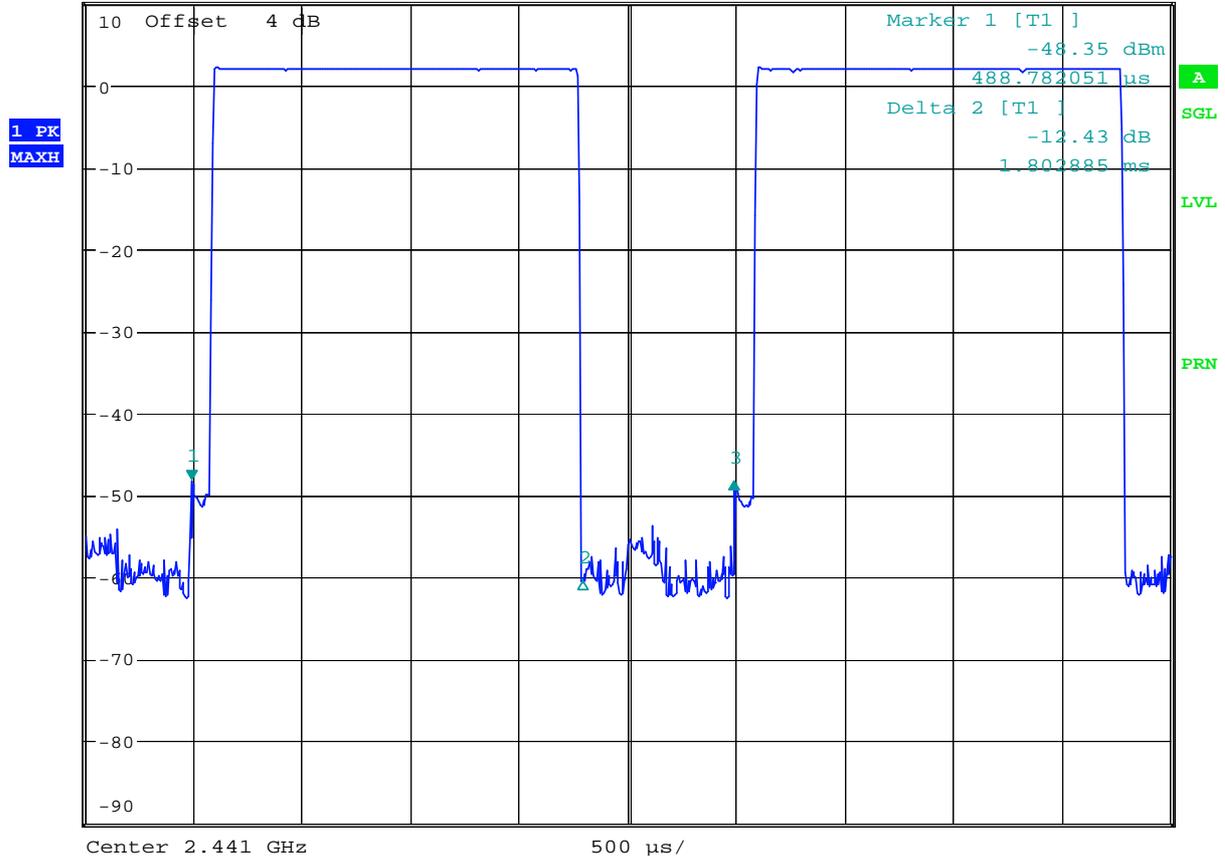
Date: 12.NOV.2005 13:38:21



DH3 (CH39)



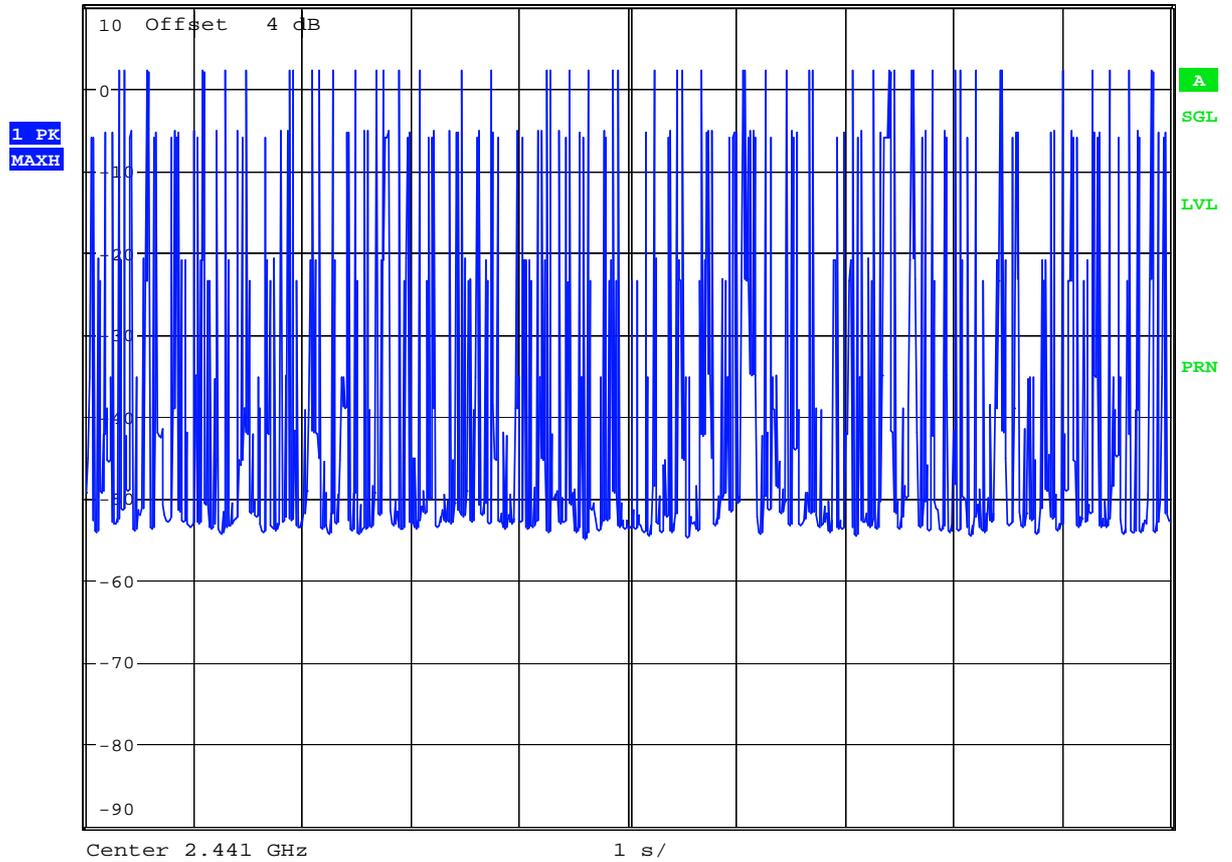
Ref 10 dBm      \* Att 20 dB      RBW 1 MHz      Delta 3 [T1 ]      -0.26 dB  
 \* VBW 1 MHz      SWT 5 ms      2.500000 ms



Date: 12.NOV.2005 13:30:38



Ref 10 dBm      \* Att 20 dB      RBW 1 MHz  
\* VBW 1 MHz      SWT 10 s

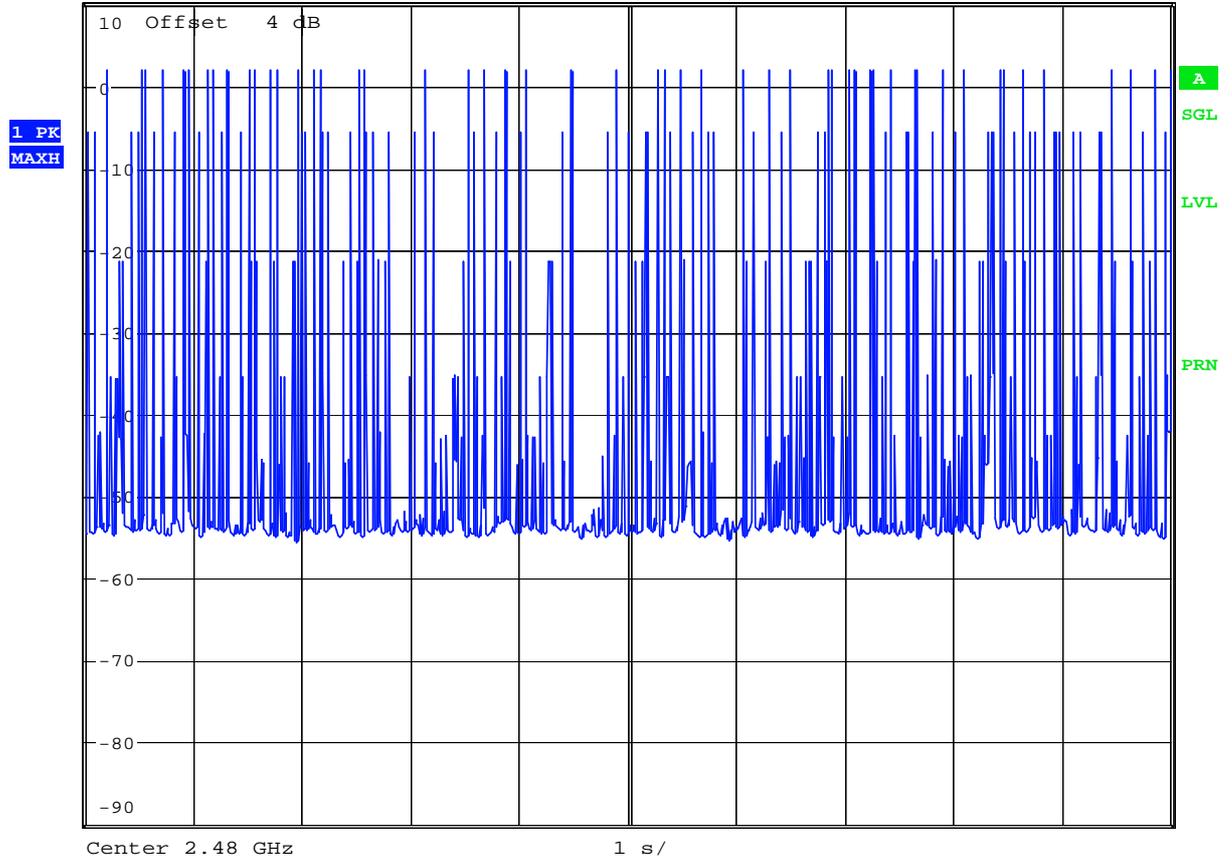


Date: 12.NOV.2005 13:37:50



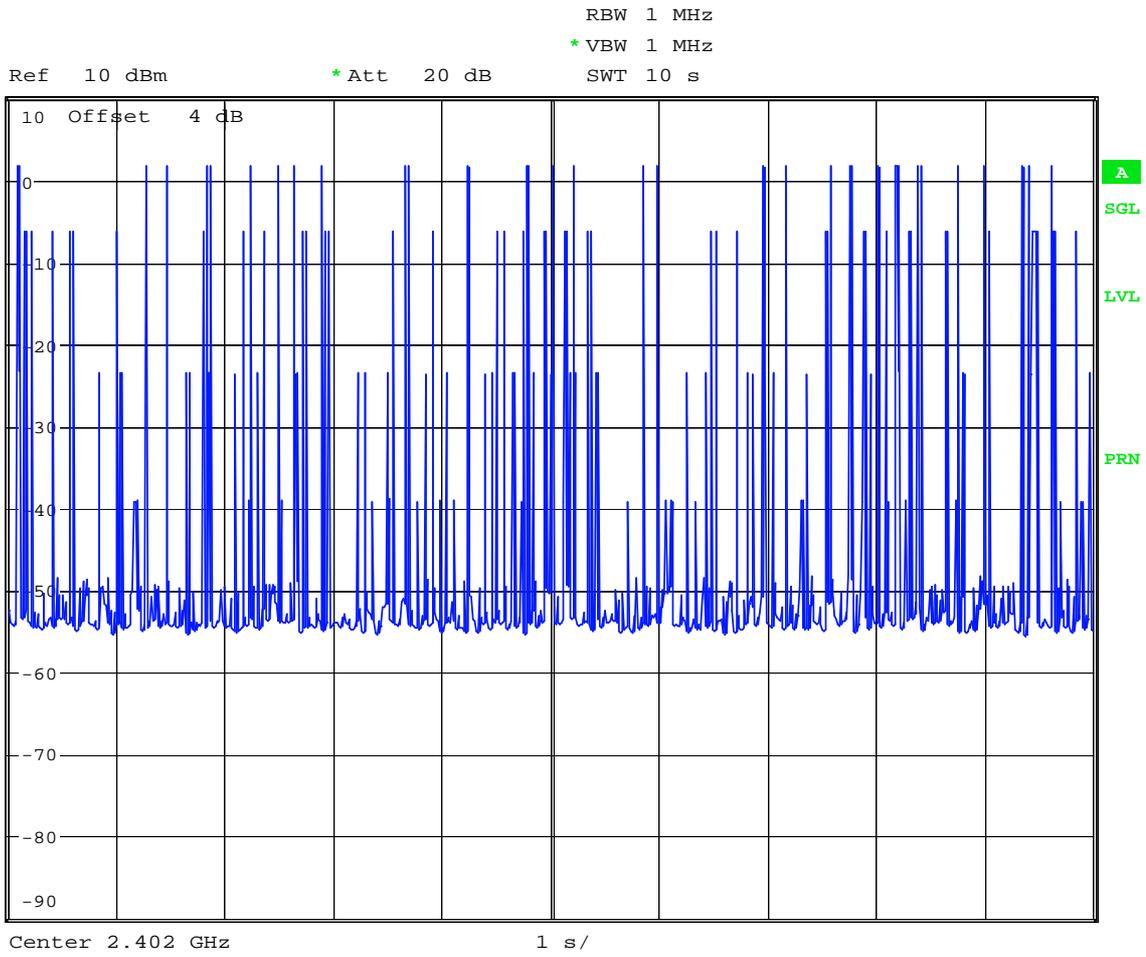


Ref 10 dBm      \* Att 20 dB      RBW 1 MHz  
\* VBW 1 MHz      SWT 10 s



Date: 12.NOV.2005 13:37:25

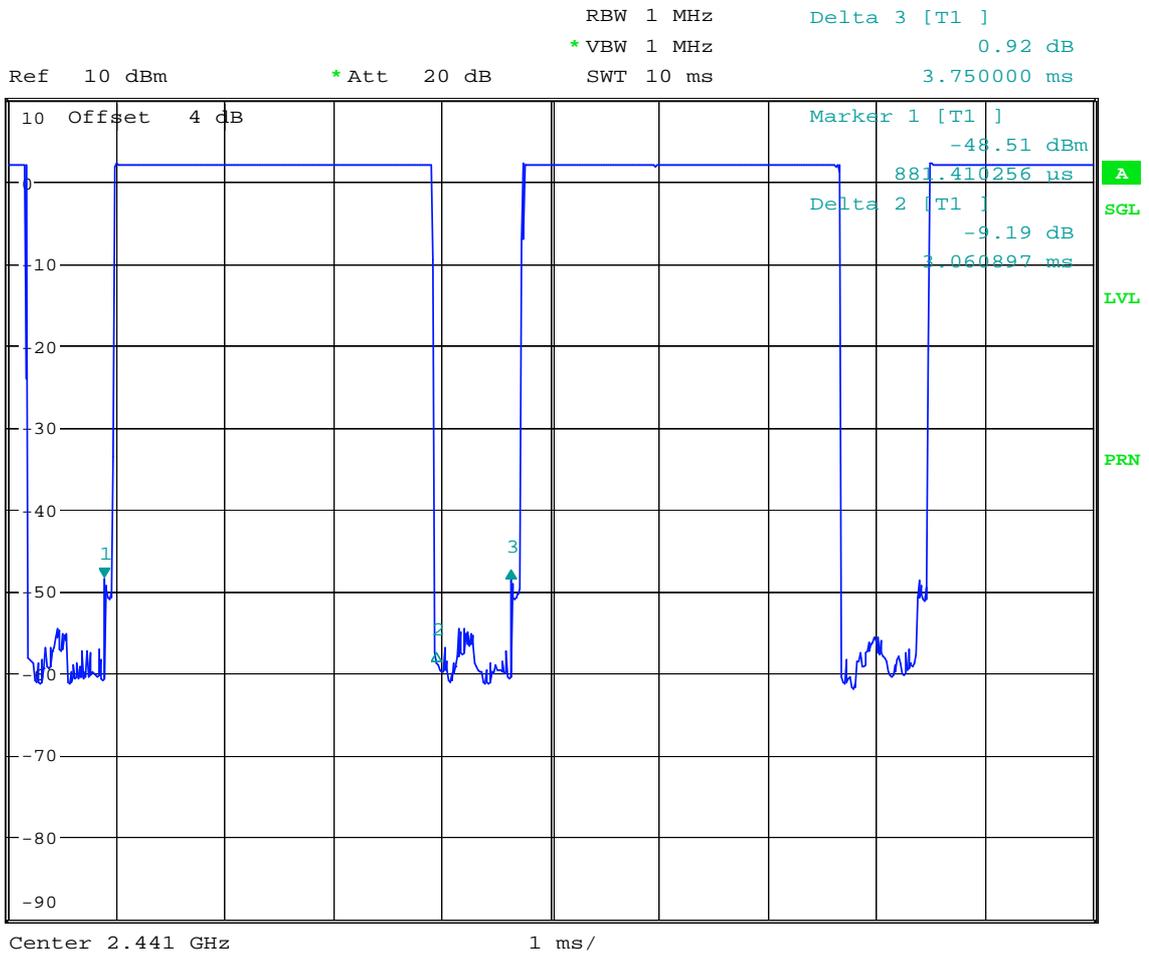




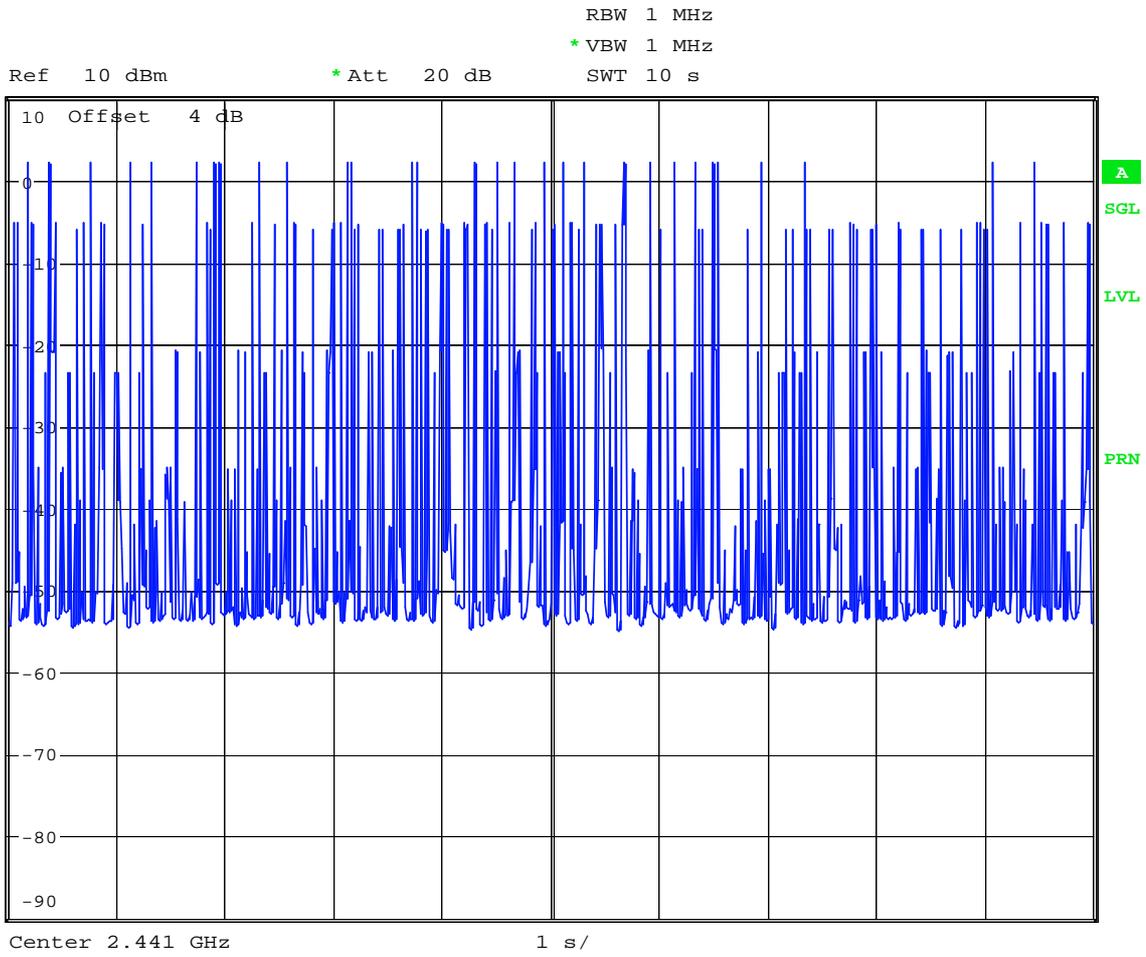
Date: 12.NOV.2005 13:35:44



DH5 (CH39)



Date: 12.NOV.2005 13:29:51

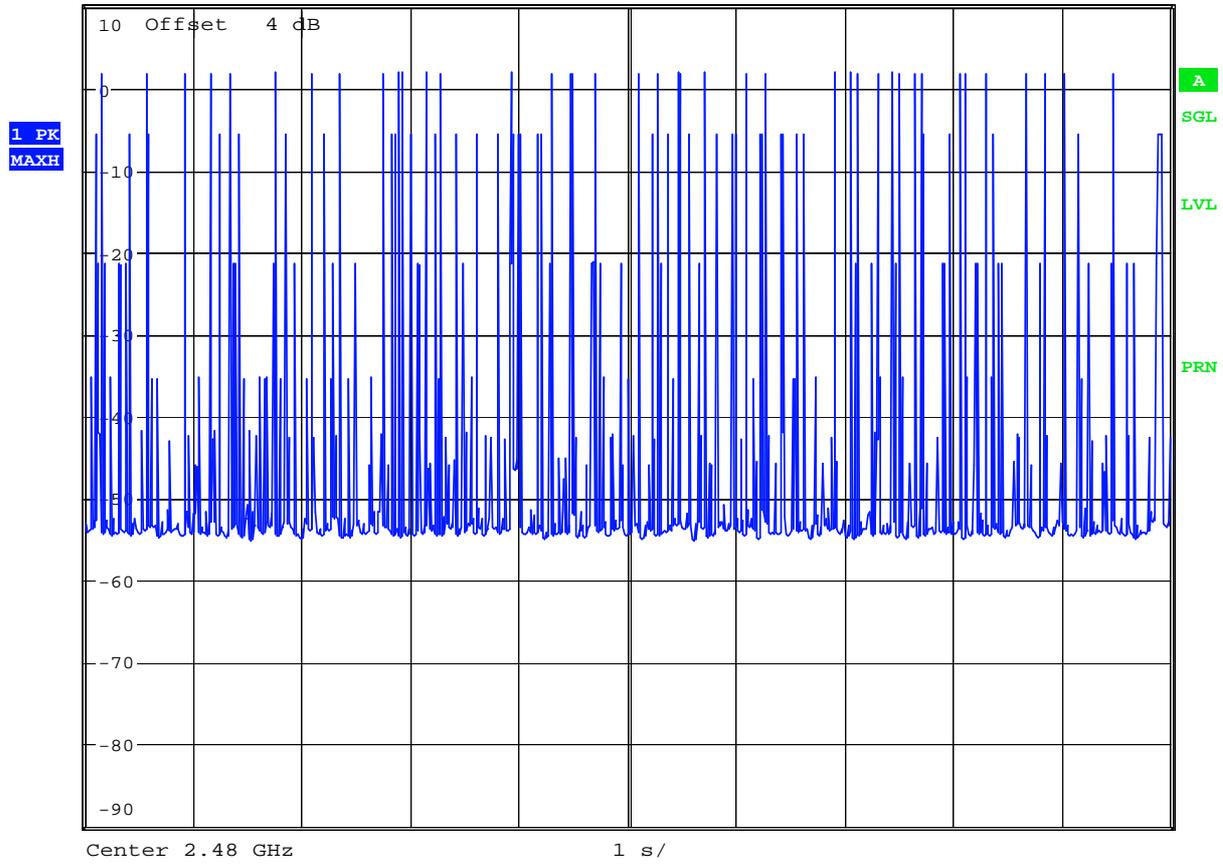


Date: 12.NOV.2005 13:36:18





Ref 10 dBm      \* Att 20 dB      RBW 1 MHz  
 \* VBW 1 MHz      SWT 10 s



Date: 12.NOV.2005 13:36:47

## 5.6 Output Power

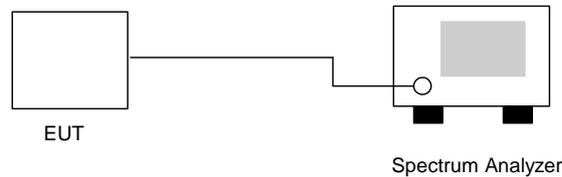
### 5.6.1 Measuring Instruments :

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: 60%
- Test Engineer :   Jay

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm )	Plot Ref. No.
00	2402	1.68	1W/30 dBm	Mode 1
39	2441	1.87	1W/30 dBm	Mode 2
78	2480	1.97	1W/30 dBm	Mode 3

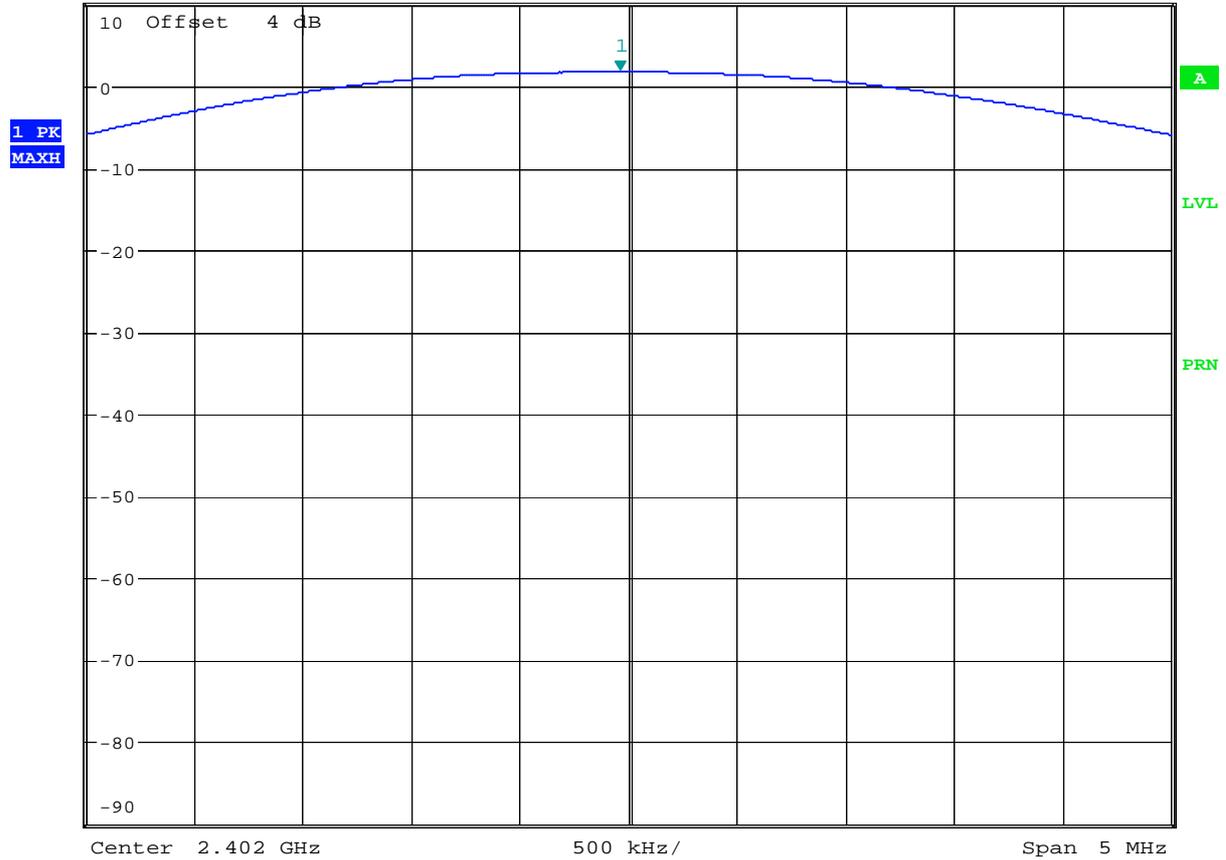


5.6.5 Output Power

Mode 1: CH00 (2402MHz)



\* RBW 3 MHz      Marker 1 [T1 ]  
 \* VBW 3 MHz      1.68 dBm  
 \* SWT 500 ms     2.401959936 GHz  
 Ref 10 dBm      \* Att 20 dB



Date: 12.NOV.2005 12:25:01





Mode 3: CH78 (2480MHz)

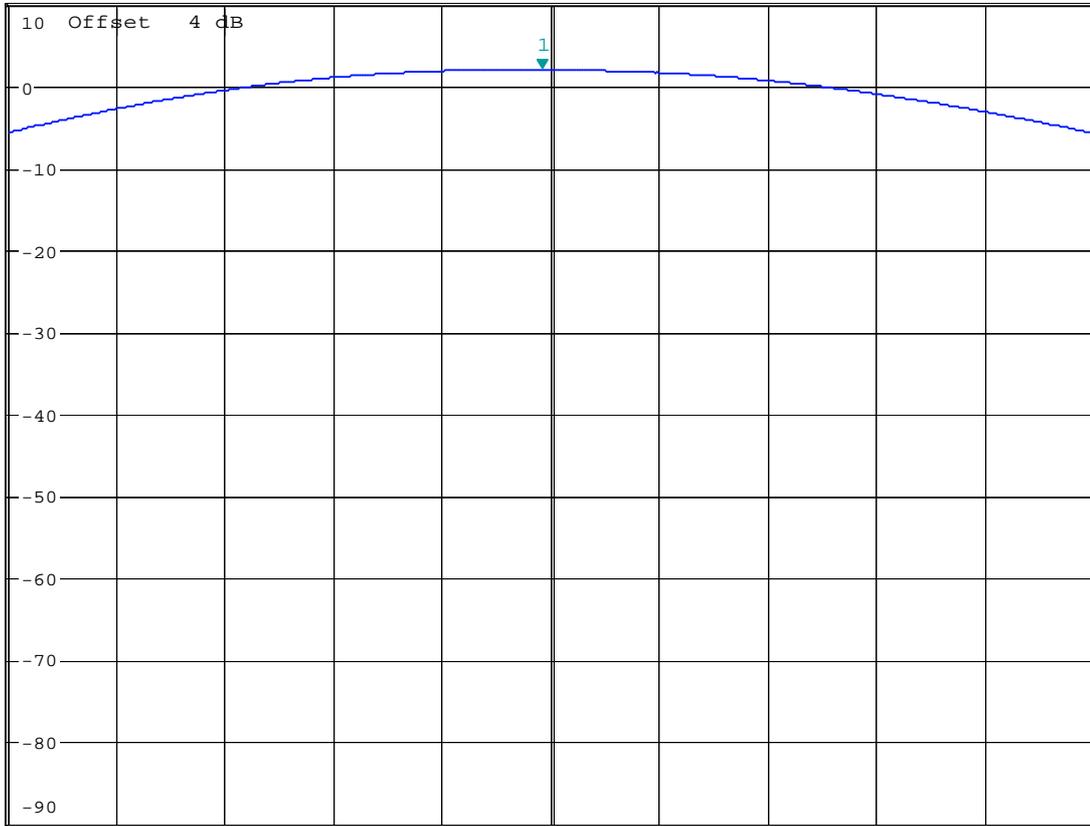


\* RBW 3 MHz      Marker 1 [T1 ]  
 \* VBW 3 MHz      1.97 dBm  
 \* SWT 500 ms      2.479959936 GHz

Ref 10 dBm

\* Att 20 dB

1 PK  
MAXH



Center 2.48 GHz      500 kHz/      Span 5 MHz

Date: 12.NOV.2005 13:25:22



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: 60%
Test Engineer : Jay

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)

Table with 11 columns: Frequency, Level, Over Limit, Limit Line, Read Level, Antenna Factor, Cable Loss, Preamp Factor, Ant Pos, Table Pos, Detect Mode. Rows for 2324.00 MHz showing Peak and Average measurements.

CH00 (Vertical)

Table with 11 columns: Frequency, Level, Over Limit, Limit Line, Read Level, Antenna Factor, Cable Loss, Preamp Factor, Ant Pos, Table Pos, Detect Mode. Rows for 2368.00 MHz showing Peak and Average measurements.



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	73.36	-0.64	74.00	74.10	30.41	4.36	35.51	100	359	Peak
2483.50	46.67	-7.33	54.00	47.41	30.41	4.36	35.51	100	359	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	73.16	-0.84	74.00	73.90	30.41	4.36	35.51	100	1	Peak
2483.50	47.56	-6.44	54.00	48.30	30.41	4.36	35.51	100	1	Average

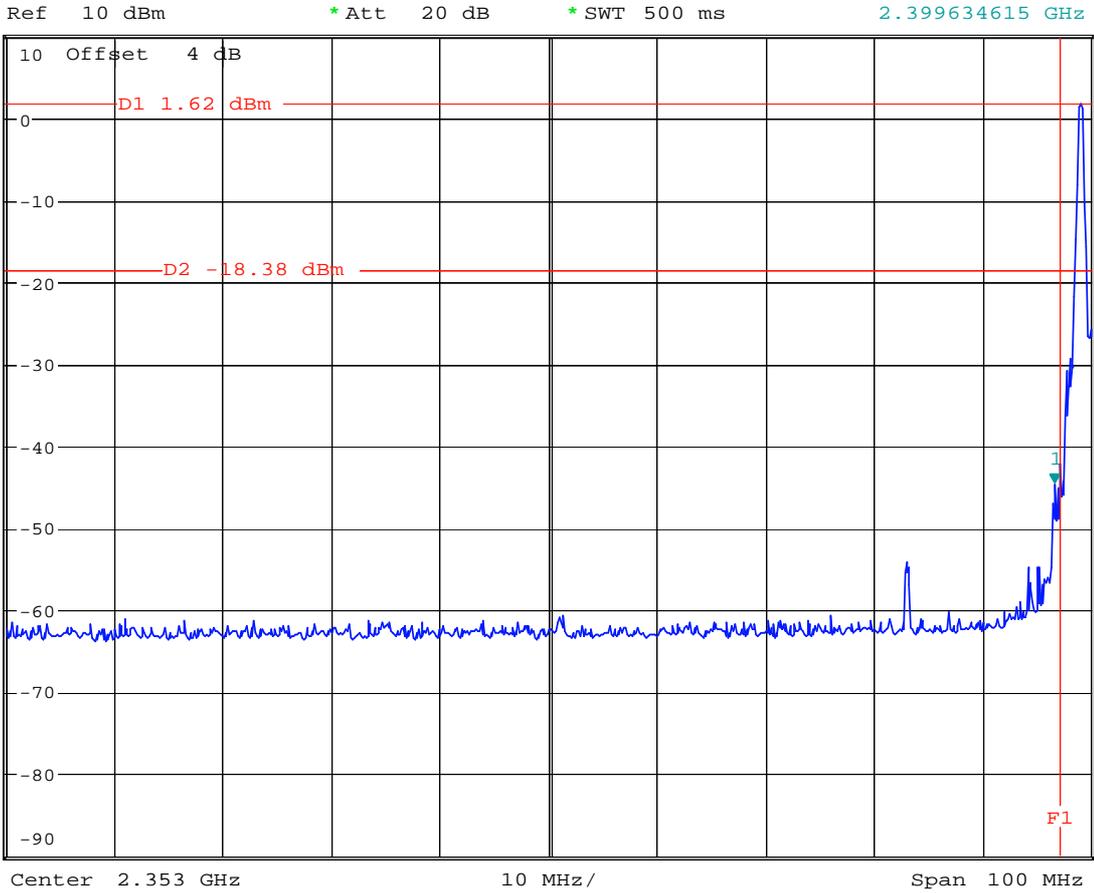


5.7.5 Frequency Band Edge

Mode 1: CH00 (2402 MHz)



\*RBW 100 kHz      Marker 1 [T1 ]  
 \*VBW 100 kHz      -44.83 dBm  
 \*SWT 500 ms      2.399634615 GHz



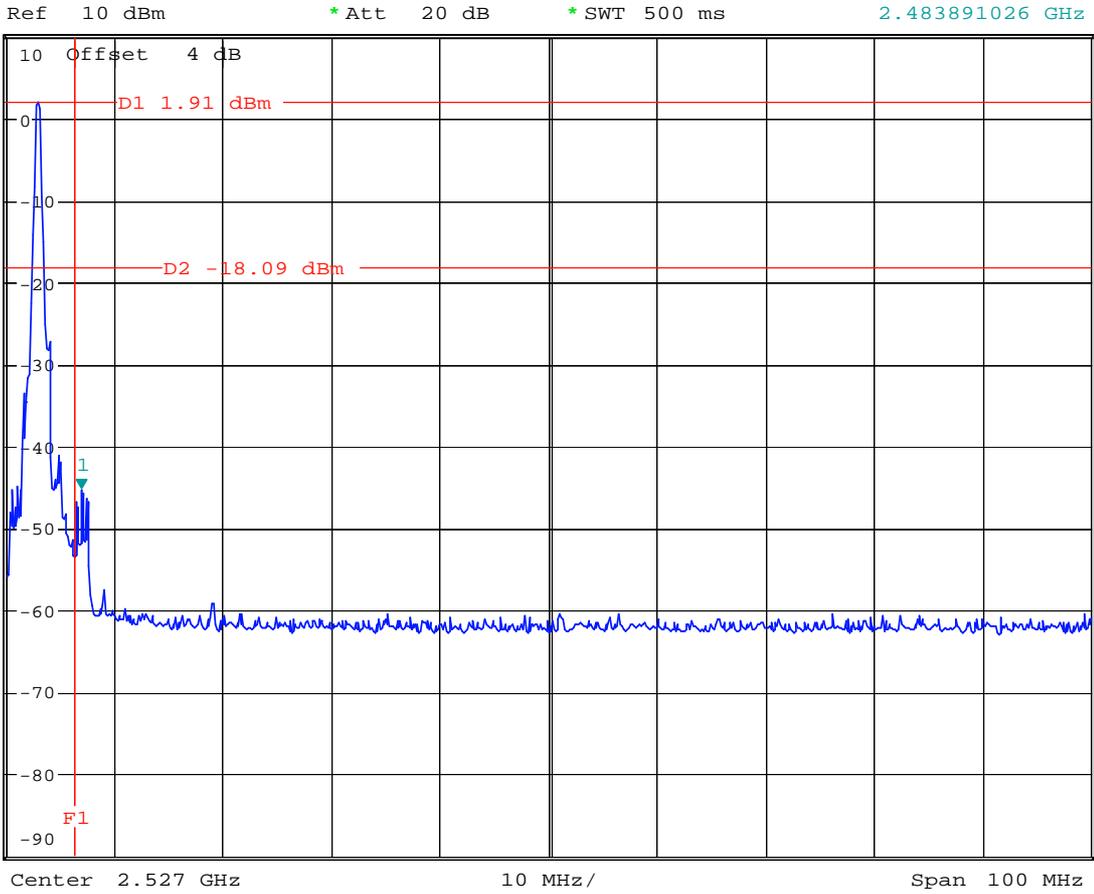
Date: 12.NOV.2005 12:22:54



Mode 3: CH78 (2480 MHz)



\* RBW 100 kHz      Marker 1 [T1 ]  
 \* VBW 100 kHz      -45.34 dBm  
 \* SWT 500 ms      2.483891026 GHz



Date: 12.NOV.2005 13:22:58



## **5.8 Conducted Emission**

### **5.8.1 Measuring Instruments**

As described in chapter 6 of this test Report.

### **5.8.2 Test Procedures :**

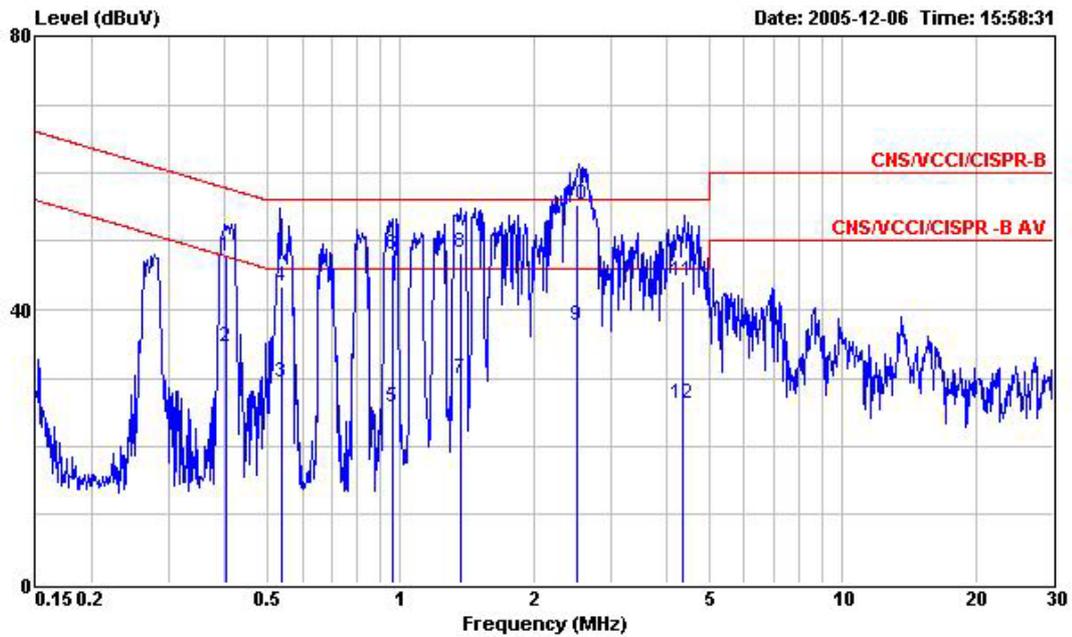
- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.
- 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

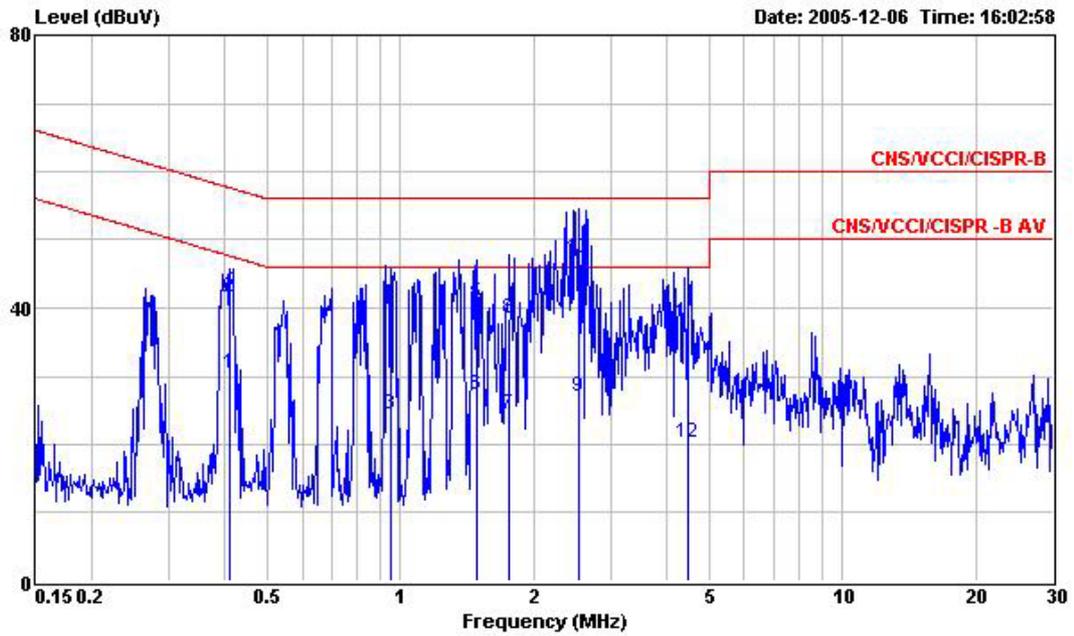
- Temperature: 25°C
- Relative Humidity: 60%
- Test Engineer :    Jay
- Test Mode : Mode 1

**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 200505 LINE  
 EUT : GSM Tri Band Mobile Phone (Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 Idie +CAMERA+BT LINK  
 Memo : +Earphone+Charger  
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.402	47.91	-9.91	57.82	47.81	0.06	0.04	QP
2	0.402	34.46	-13.36	47.82	34.36	0.06	0.04	Average
3	0.540	29.32	-16.68	46.00	29.19	0.08	0.05	Average
4	0.540	43.27	-12.73	56.00	43.14	0.08	0.05	QP
5	0.957	25.62	-20.38	46.00	25.45	0.11	0.06	Average
6	0.957	48.12	-7.88	56.00	47.95	0.11	0.06	QP
7	1.369	29.84	-16.16	46.00	29.66	0.11	0.07	Average
8	1.369	48.24	-7.76	56.00	48.06	0.11	0.07	QP
9	2.509	37.76	-8.24	46.00	37.51	0.14	0.11	Average
10	2.509	55.33	-0.67	56.00	55.08	0.14	0.11	QP
11	4.345	44.28	-11.72	56.00	43.90	0.21	0.17	QP
12	4.345	26.30	-19.70	46.00	25.92	0.21	0.17	Average



Site : CO01-HY  
 Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 Idle +CAMERA+BT LINK  
 Memo : +Earphone+Charger  
 Memo :

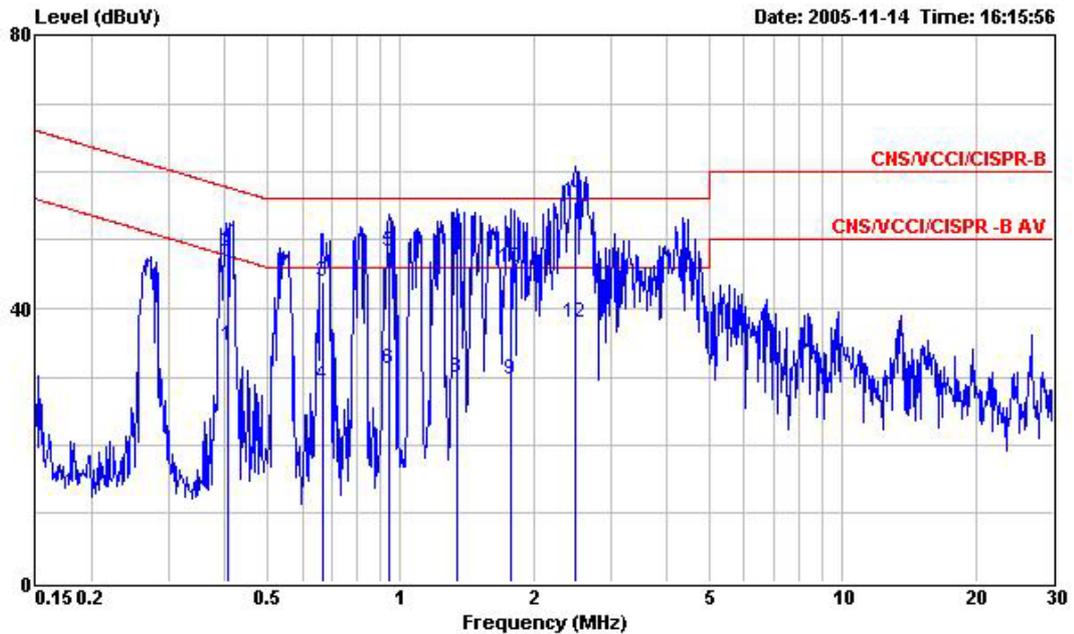
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.410	30.32	-17.32	47.64	30.17	0.11	0.04	Average
2	0.410	41.58	-16.06	57.64	41.43	0.11	0.04	QP
3	0.953	24.43	-21.57	46.00	24.15	0.22	0.06	Average
4	0.953	40.84	-15.16	56.00	40.56	0.22	0.06	QP
5	1.489	40.70	-15.30	56.00	40.40	0.23	0.07	QP
6	1.489	27.40	-18.60	46.00	27.10	0.23	0.07	Average
7	1.760	24.37	-21.63	46.00	24.06	0.23	0.08	Average
8	1.760	38.40	-17.60	56.00	38.09	0.23	0.08	QP
9	2.529	27.13	-18.87	46.00	26.79	0.23	0.11	Average
10	2.529	47.25	-8.75	56.00	46.91	0.23	0.11	QP
11	4.480	37.90	-18.10	56.00	37.49	0.24	0.17	QP
12	4.480	20.25	-25.75	46.00	19.84	0.24	0.17	Average



5.8.4 Test Data Test Mode 2

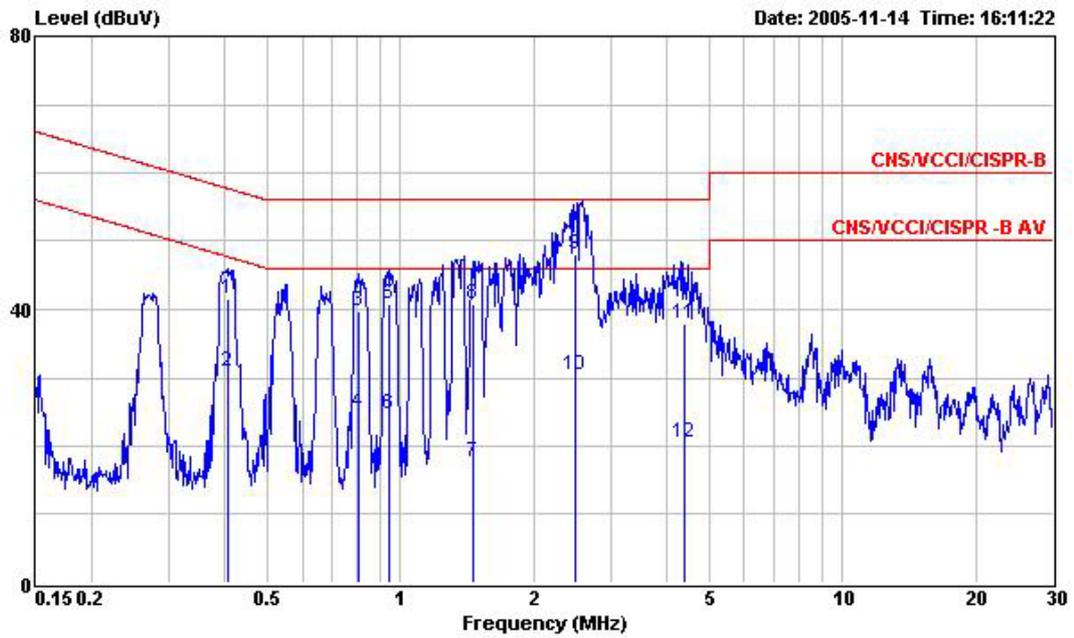
- Temperature: 25°C
- Relative Humidity: 60%
- Test Engineer :    Jay
- Test Mode : Mode 1

**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 200505 LINE  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 Idle +MP3 PLAY+BT LINK  
 Memo : +Earphone+Charger  
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.408	34.54	-13.15	47.69	34.44	0.06	0.04	Average
2	0.408	48.29	-9.40	57.69	48.19	0.06	0.04	QP
3	0.668	43.85	-12.15	56.00	43.71	0.09	0.05	QP
4	0.668	28.77	-17.23	46.00	28.63	0.09	0.05	Average
5	0.941	48.20	-7.80	56.00	48.03	0.11	0.06	QP
6	0.941	31.09	-14.91	46.00	30.92	0.11	0.06	Average
7	1.340	48.26	-7.74	56.00	48.08	0.11	0.07	QP
8	1.340	29.76	-16.24	46.00	29.58	0.11	0.07	Average
9	1.780	29.67	-16.33	46.00	29.48	0.11	0.08	Average
10	1.780	46.09	-9.91	56.00	45.90	0.11	0.08	QP
11	2.490	55.55	-0.45	56.00	55.30	0.14	0.11	QP
12	2.492	38.05	-7.95	46.00	37.80	0.14	0.11	Average



Site : CO01-HY  
 Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 Idle +MP3 PLAY+BT LINK  
 Memo : +Earphone+Charger  
 Memo :

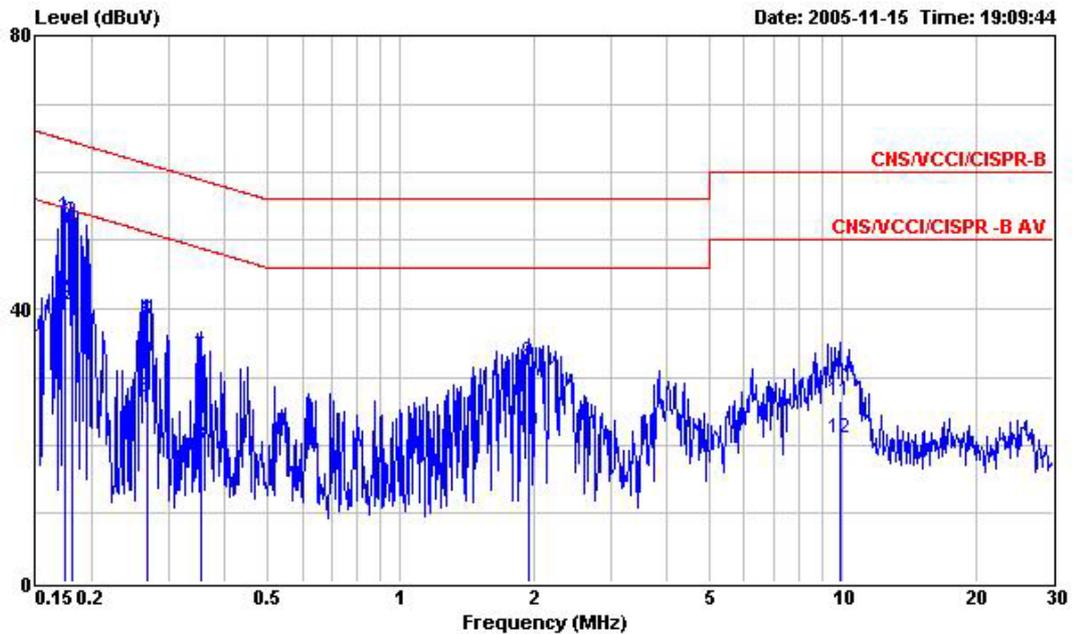
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.408	41.58	-16.11	57.69	41.43	0.11	0.04	QP
2	0.408	30.81	-16.88	47.69	30.66	0.11	0.04	Average
3	0.804	39.62	-16.38	56.00	39.36	0.20	0.06	QP
4	0.804	24.82	-21.18	46.00	24.56	0.20	0.06	Average
5	0.938	40.90	-15.10	56.00	40.62	0.22	0.06	QP
6	0.938	24.56	-21.44	46.00	24.28	0.22	0.06	Average
7	1.460	17.63	-28.37	46.00	17.33	0.23	0.07	Average
8	1.460	40.89	-15.11	56.00	40.59	0.23	0.07	QP
9	2.486	48.01	-7.99	56.00	47.67	0.23	0.11	QP
10	2.490	30.47	-15.53	46.00	30.13	0.23	0.11	Average
11	4.400	37.93	-18.07	56.00	37.52	0.24	0.17	QP
12	4.400	20.48	-25.52	46.00	20.07	0.24	0.17	Average



5.8.5 Test Data Test Mode 3

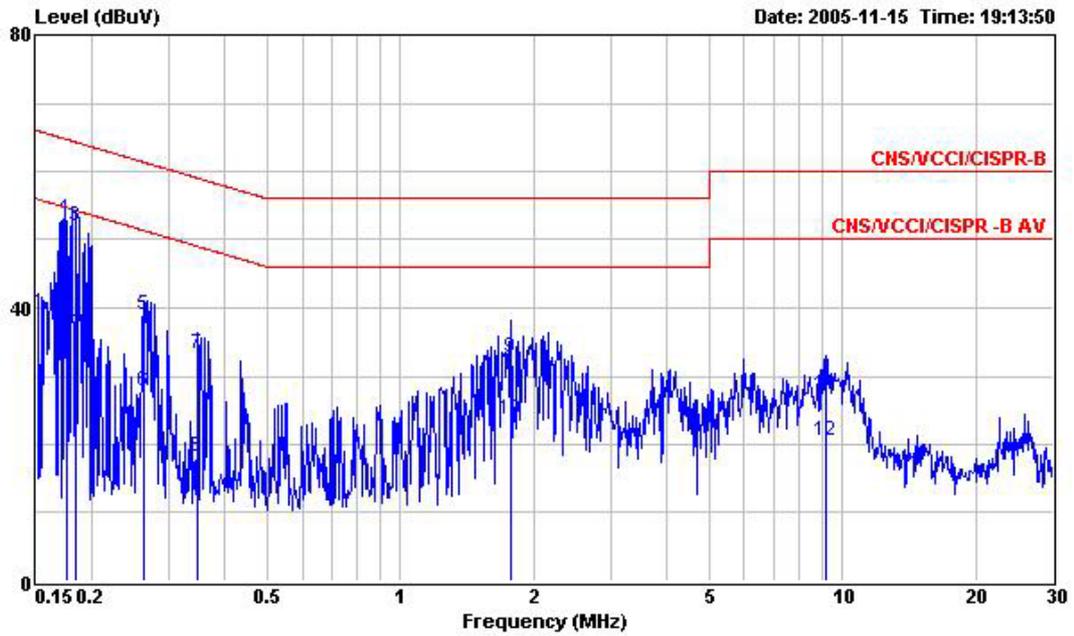
- Temperature: 25°C
- Relative Humidity: 60%
- Test Engineer :    Jay
- Test Mode : Mode 1

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 200505 LINE  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 IDLE+USB LINK+CAMERA  
 Memo : +Earphone  
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.174	53.49	-11.28	64.77	53.39	0.06	0.04	QP
2	0.174	41.49	-13.28	54.77	41.39	0.06	0.04	Average
3	0.180	52.75	-11.74	64.49	52.65	0.06	0.04	QP
4	0.180	39.95	-14.54	54.49	39.85	0.06	0.04	Average
5	0.267	38.11	-23.11	61.22	38.00	0.06	0.05	QP
6	0.267	27.07	-24.15	51.22	26.96	0.06	0.05	Average
7	0.354	32.98	-25.89	58.87	32.88	0.06	0.04	QP
8	0.354	20.09	-28.78	48.87	19.99	0.06	0.04	Average
9	1.949	32.28	-23.72	56.00	32.09	0.11	0.08	QP
10	1.949	22.00	-24.00	46.00	21.81	0.11	0.08	Average
11	9.910	26.46	-33.54	60.00	26.01	0.21	0.24	QP
12	9.910	20.99	-29.01	50.00	20.54	0.21	0.24	Average



Site : CO01-HY  
 Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120V/60Hz  
 Model : FD5N0802  
 Memo : PCS1900 IDLE+USB LINK+CAMERA  
 Memo : +Earphone  
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.176	53.06	-11.60	64.66	52.91	0.11	0.04	QP
2	0.176	38.83	-15.83	54.66	38.68	0.11	0.04	Average
3	0.184	51.99	-12.29	64.28	51.83	0.11	0.05	QP
4	0.184	36.44	-17.84	54.28	36.28	0.11	0.05	Average
5	0.261	38.97	-22.42	61.39	38.81	0.11	0.05	QP
6	0.261	27.68	-23.71	51.39	27.52	0.11	0.05	Average
7	0.347	33.33	-25.71	59.04	33.18	0.11	0.04	QP
8	0.347	18.14	-30.90	49.04	17.99	0.11	0.04	Average
9	1.779	32.65	-23.35	56.00	32.34	0.23	0.08	QP
10	1.779	23.70	-22.30	46.00	23.39	0.23	0.08	Average
11	9.195	27.32	-32.68	60.00	26.77	0.32	0.23	QP
12	9.195	20.62	-29.38	50.00	20.07	0.32	0.23	Average



## **5.9 Radiated Emission Measurement**

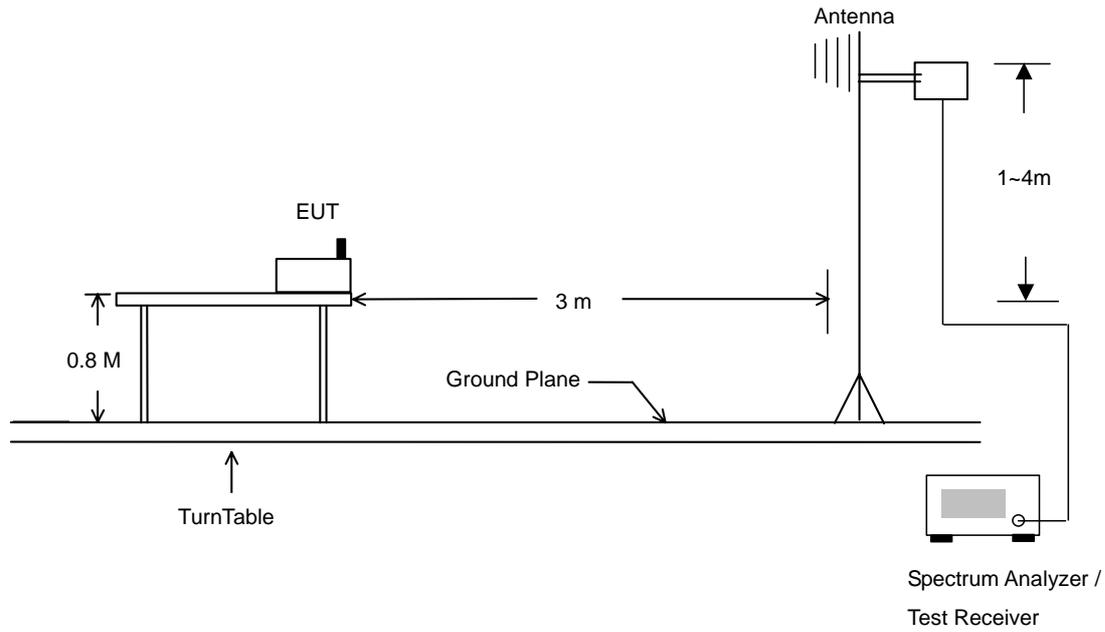
### **5.9.1 Measuring Instruments**

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

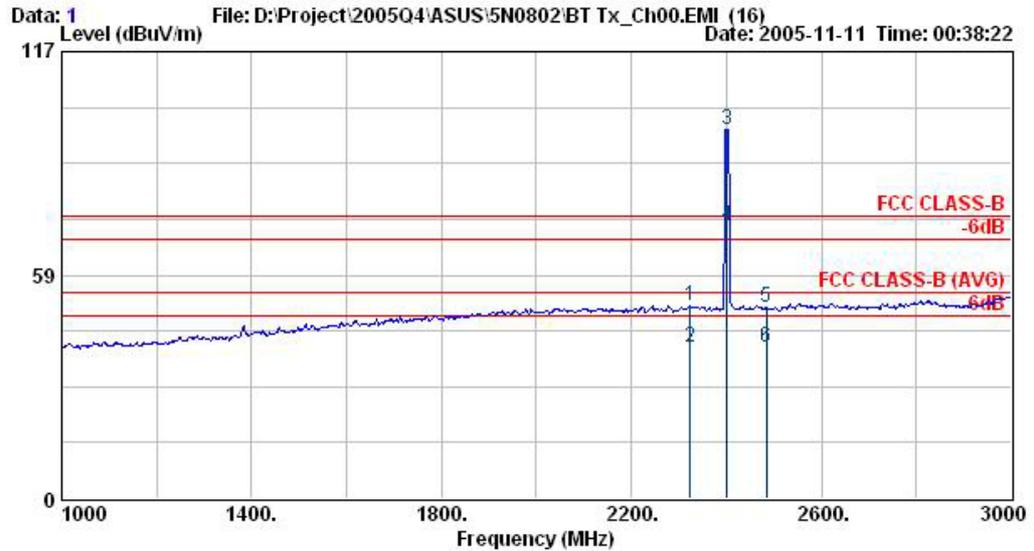




5.9.4 Test Data

- Temperature : 30 °C
- Relating Humidity : 58 %
- Test Engineer : Jay
- Test Mode : Mode 1
- Polarization : Horizontal

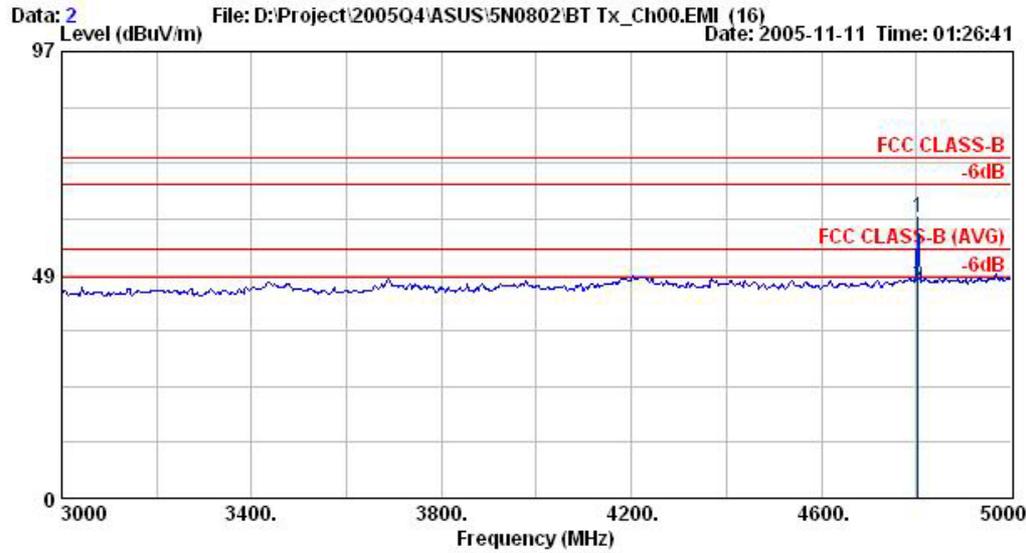
The test that passed at the minimum margin was marked by the frame in the following test record



Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch00,2402MHz  
 Plane : E1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2324.00	50.34	-23.66	74.00	51.04	30.54	4.17	35.40	100	3 Peak
2 @	2324.00	39.58	-14.42	54.00	40.28	30.54	4.17	35.40	100	4 Average
3 @	2402.00	96.38			97.09	30.48	4.26	35.46	100	3 Peak
4 @	2402.00	71.12			71.83	30.48	4.26	35.46	100	4 Average
5	2484.00	49.87	-24.13	74.00	50.61	30.41	4.36	35.51	100	3 Peak
6 @	2484.00	39.46	-14.54	54.00	40.20	30.41	4.36	35.51	100	4 Average

Remark: #3 and #4 Fundamental Signal



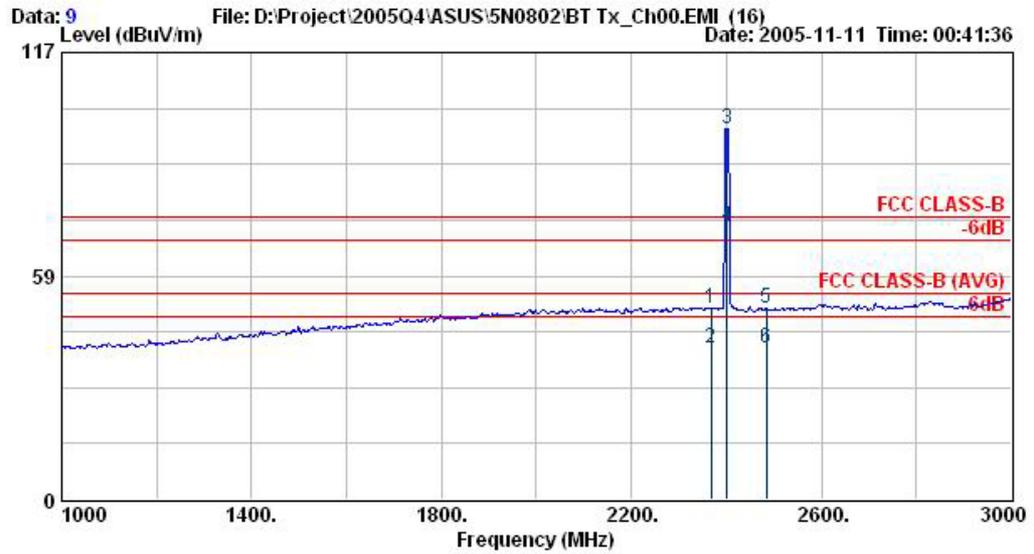
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch00,2402MHz  
 Plane : E1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	4804.00	60.97	-13.03	74.00	57.70	33.16	6.21	36.10	200	0 Peak
2 @	4804.00	46.15	-7.85	54.00	42.88	33.16	6.21	36.10	176	42 Average



- Test Mode : Mode 1
- Polarization : Vertical

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



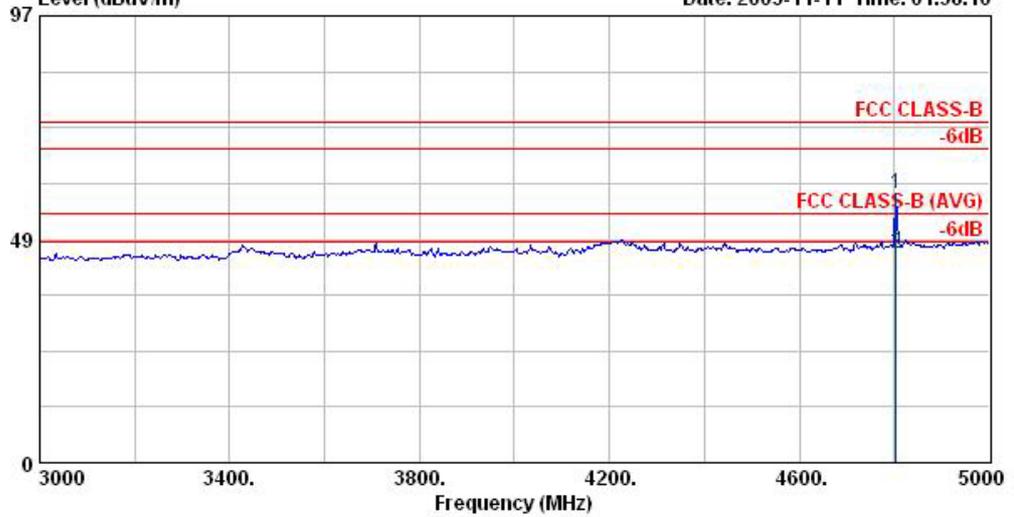
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch00,2402MHz  
 Plane : E1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2368.00	50.21	-23.79	74.00	50.91	30.51	4.23	35.44	100	358	Peak
2 @	2368.00	39.54	-14.46	54.00	40.24	30.51	4.23	35.44	100	155	Average
3 @	2402.00	96.91			97.63	30.48	4.26	35.46	100	358	Peak
4 @	2402.00	71.24			71.95	30.48	4.26	35.46	100	155	Average
5	2484.00	50.14	-23.86	74.00	50.88	30.41	4.36	35.51	100	358	Peak
6 @	2484.00	39.43	-14.57	54.00	40.17	30.41	4.36	35.51	100	155	Average

Remark: #3 and #4 Fundamental Signal



Data: 10 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch00.EMI (16) Date: 2005-11-11 Time: 01:38:10  
 Level (dBuV/m)



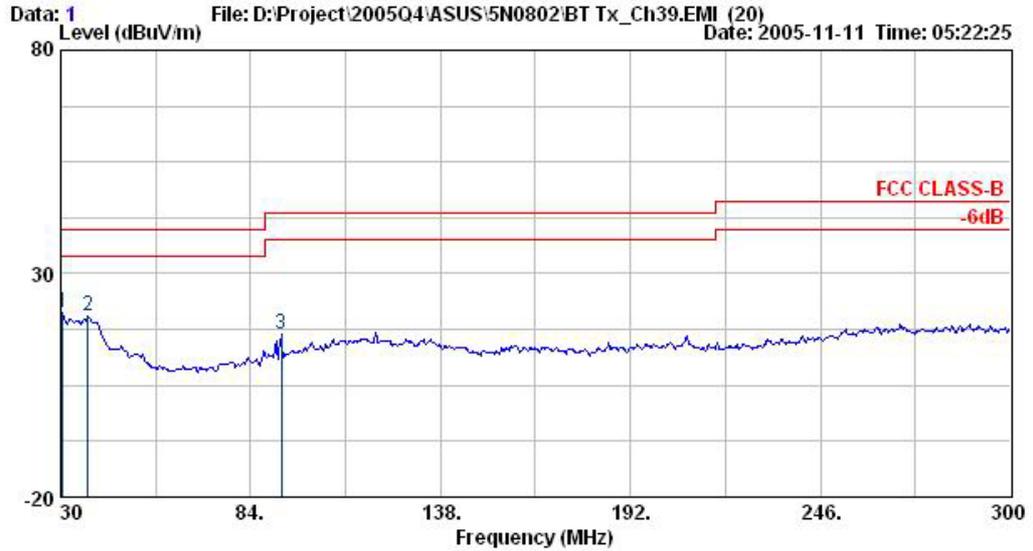
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch00,2402MHz  
 Plane : E1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	4804.00	58.29	-15.71	74.00	55.02	33.16	6.21	36.10	200	360	Peak
2 @	4804.00	45.56	-8.44	54.00	42.29	33.16	6.21	36.10	100	285	Average



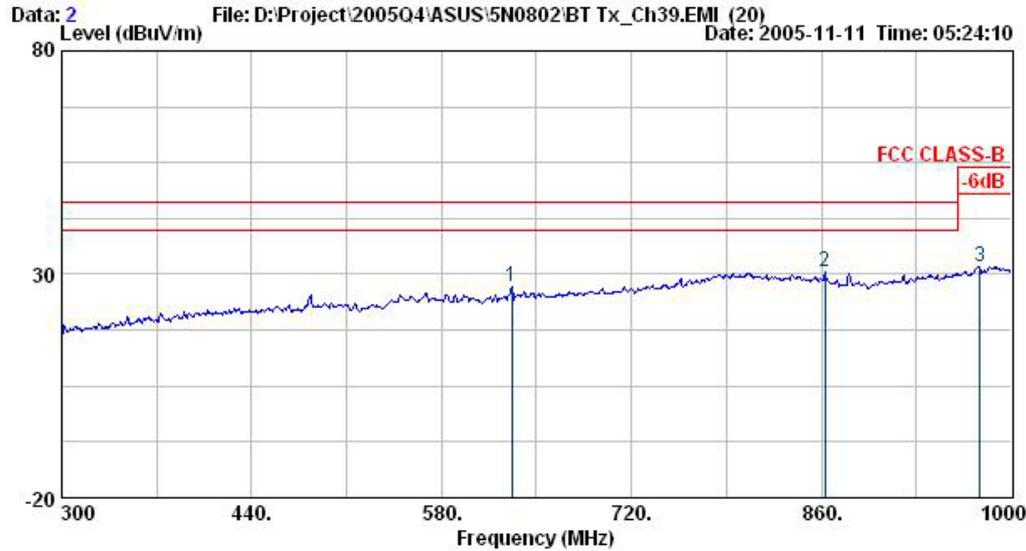
- Temperature : 30 °C
- Relating Humidity : 58 %
- Test Enginner : Jay
- Test Mode : Mode 2
- Polarization : Horizontal

**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 : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39,2441MHz  
 Plane : E1

	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 @	30.54	21.38	-18.62	40.00	33.13	18.40	1.37	31.52	111	15	Peak
2 @	37.83	20.58	-19.42	40.00	35.09	15.73	1.49	31.73	111	15	Peak
3 @	92.64	16.27	-27.23	43.50	35.93	9.47	2.34	31.47	111	15	Peak

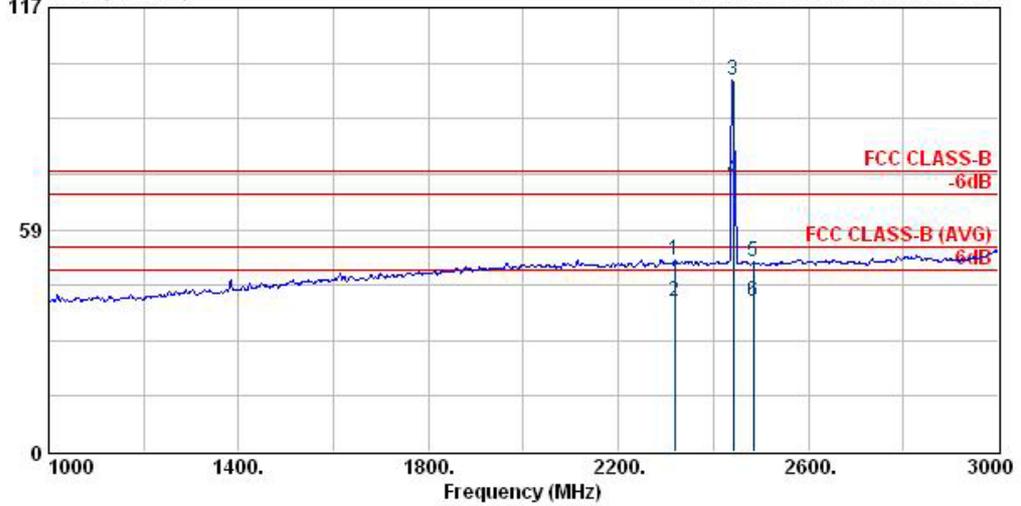


Site : 03CH06-HY  
 Condition : BI-LOG-2004-1122 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39,2441MHz  
 Plane : E1

	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 @	631.80	27.35	-18.65	46.00	33.25	18.28	6.53	30.72	200	16	Peak
2 @	862.80	30.49	-15.51	46.00	32.12	20.66	7.78	30.08	124	332	Peak
3 @	976.90	31.64	-22.36	54.00	31.31	22.26	8.34	30.27	200	16	Peak



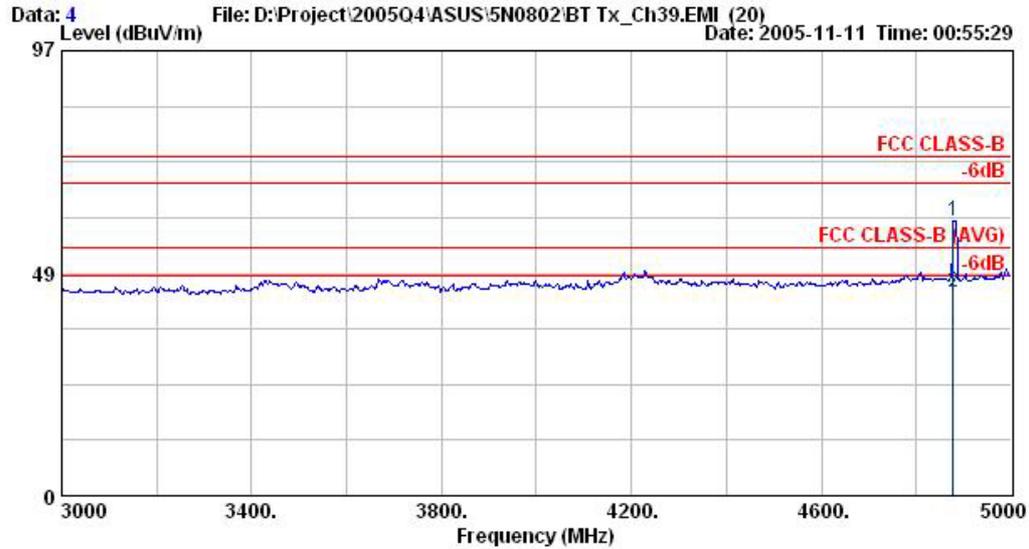
Data: 3 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch39.EMI (20) Date: 2005-11-11 Time: 00:49:17  
 Level (dBuV/m)



Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39;2441MHz  
 Plane : E1

	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	dB	cm	deg
1 @	2318.00	50.39	-23.61	74.00	51.09	30.54	4.17	35.40	100	7 Peak
2 @	2318.00	39.41	-14.59	54.00	40.11	30.54	4.17	35.40	100	7 Average
3 @	2441.00	97.84			98.56	30.44	4.33	35.49	100	7 Peak
4 @	2441.00	71.67			72.40	30.44	4.33	35.49	100	7 Average
5 @	2484.00	49.87	-24.13	74.00	50.61	30.41	4.36	35.51	100	7 Peak
6 @	2484.00	39.47	-14.53	54.00	40.21	30.41	4.36	35.51	100	7 Average

Remark: #3 and #4 Fundamental Signal



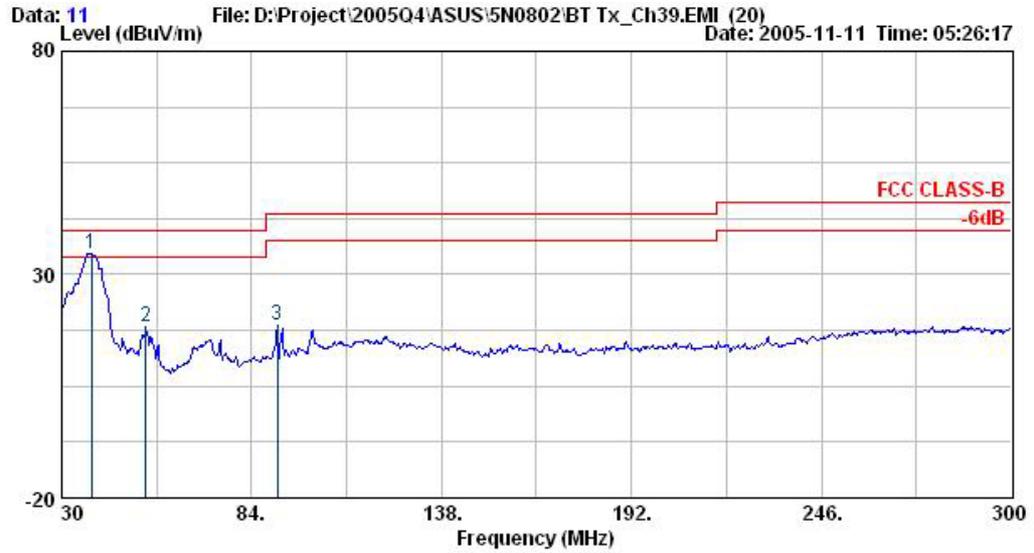
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39;2441MHz  
 Plane : E1

	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 @	4878.00	59.80	-14.20	74.00	56.27	33.39	6.30	36.16	200	0	Peak
2 @	4878.00	44.34	-9.66	54.00	40.81	33.39	6.30	36.16	100	177	Average



- Test Mode : Mode 2
- Polarization : Vertical

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

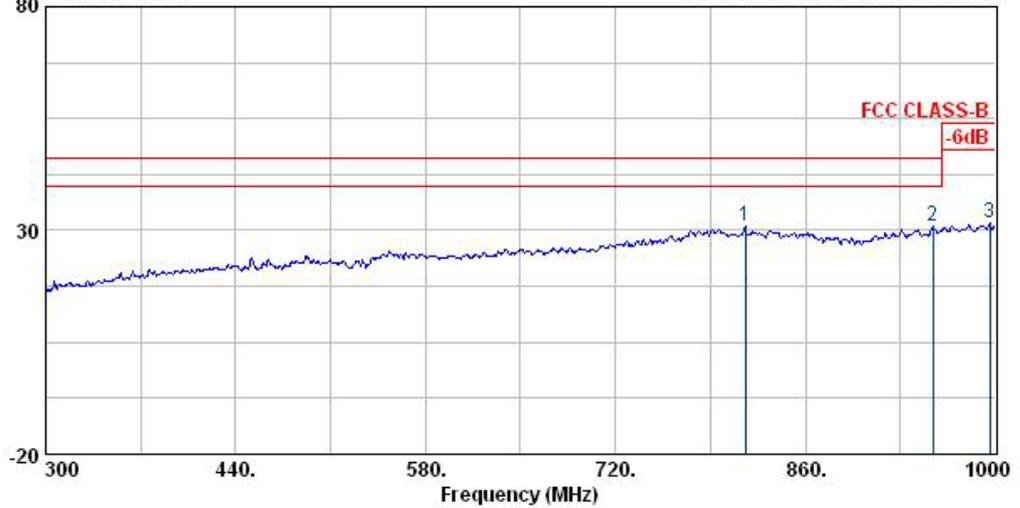


Site : 03CH06-HY  
 Condition : BI-LOG-2004-1122 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bhuetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bhuetooth Tx\_Ch39;2441MHz  
 Plane : E1

	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 @	38.37	34.56	-5.44	40.00	49.54	15.28	1.50	31.76	114	97	Peak
2 @	54.03	18.23	-21.77	40.00	39.37	8.53	1.77	31.44	101	2	Peak
3 @	91.29	18.66	-24.84	43.50	38.67	9.18	2.33	31.52	101	2	Peak



Data: 12 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch39.EMI (20) Date: 2005-11-11 Time: 05:27:47  
 Level (dBuV/m)

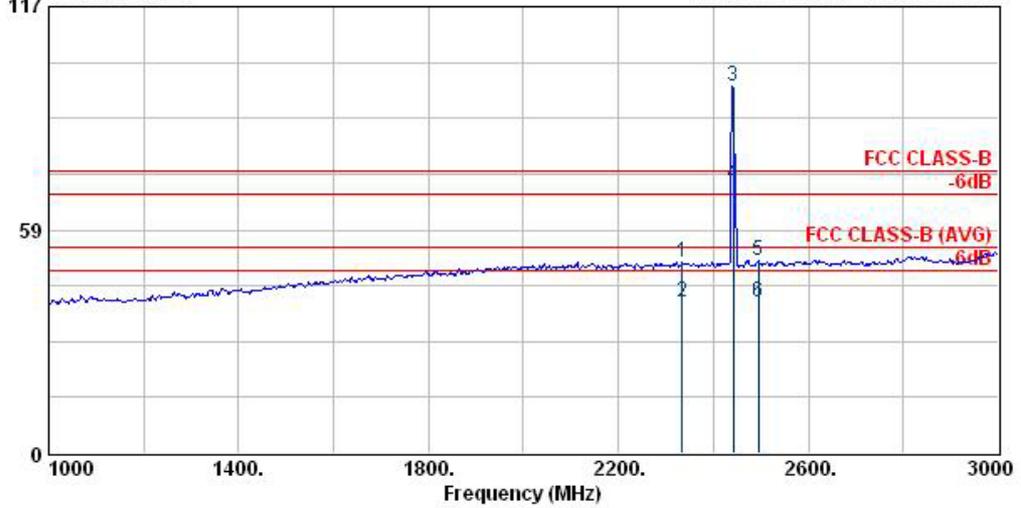


Site : 03CH06-HY  
 Condition : BI-LOG-2004-1122 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39,2441MHz  
 Plane : E1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	815.90	30.98	-15.02	46.00	32.26	21.60	7.53	30.41	199	321	Peak
2 @	953.80	30.93	-15.07	46.00	31.52	21.56	8.30	30.44	199	321	Peak
3 @	995.80	31.63	-22.37	54.00	30.88	22.85	8.41	30.51	199	321	Peak



Data: 13 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch39.EMI (20) Date: 2005-11-11 Time: 00:46:55  
 Level (dBuV/m)



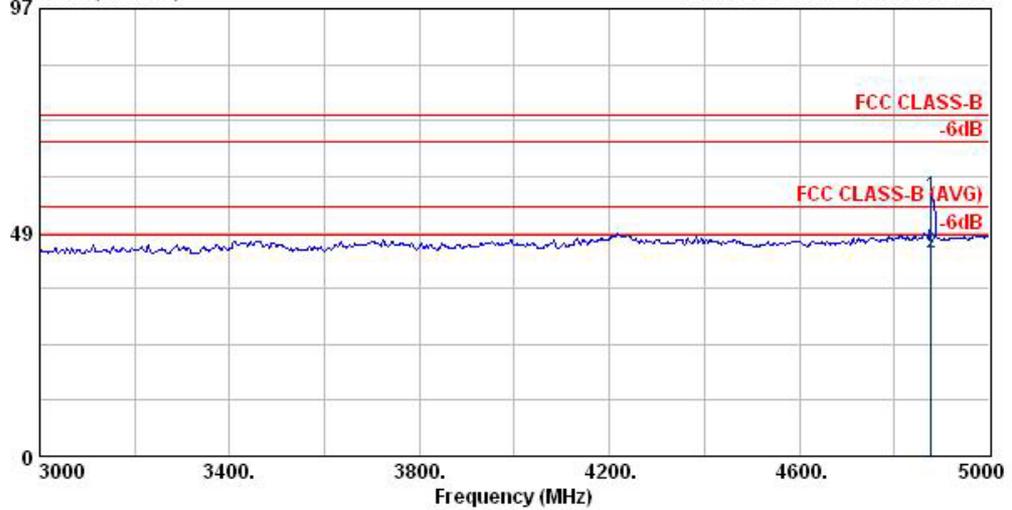
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39;2441MHz  
 Plane : E1

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	2334.00	50.04	-23.96	74.00	50.74	30.54	4.17	35.40	100	155 Peak
2 @	2334.00	39.61	-14.39	54.00	40.31	30.54	4.17	35.40	100	155 Average
3 @	2441.00	96.00			96.73	30.44	4.33	35.49	100	155 Peak
4 @	2441.00	70.52			71.25	30.44	4.33	35.49	100	155 Average
5 @	2494.00	50.39	-23.61	74.00	51.13	30.40	4.39	35.53	100	155 Peak
6 @	2494.00	39.46	-14.54	54.00	40.20	30.40	4.39	35.53	100	155 Average

Remark: #3 and #4 Fundamental Signal



Data: 14 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch39.EMI (20) Date: 2005-11-11 Time: 01:06:58  
 Level (dBuV/m)



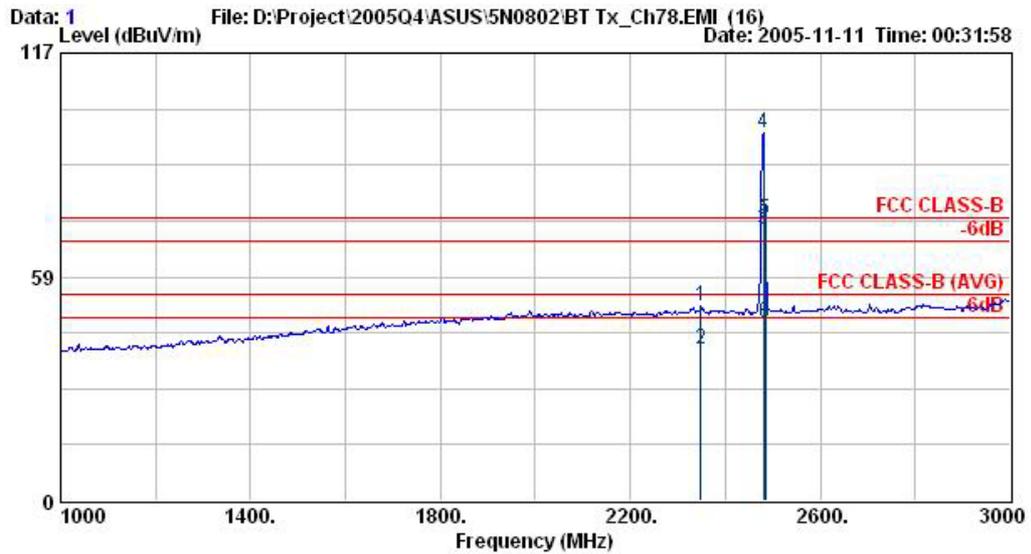
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch39,2441MHz  
 Plane : E1

	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 @	4878.00	56.10	-17.90	74.00	52.57	33.39	6.30	36.16	200	360	Peak
2 @	4878.00	43.90	-10.10	54.00	40.37	33.39	6.30	36.16	100	282	Average



- Temperature : 30 °C
- Relating Humidity : 58 %
- Test Enginner : Jay
- Test Mode : Mode 3
- Polarization : Horizontal

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



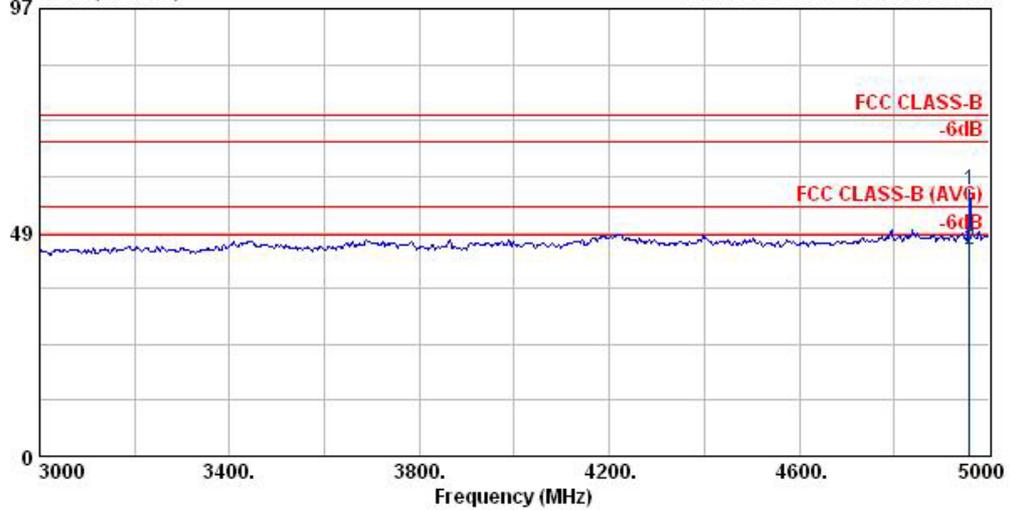
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch78,2480MHz  
 Plane : E1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	cm	deg	
1	2348.00	50.69	-23.31	74.00	51.39	30.52	4.20	35.42	100	359 Peak
2	2348.00	39.64	-14.36	54.00	40.34	30.52	4.20	35.42	100	359 Average
3 X	2480.00	70.97			71.71	30.41	4.36	35.51	100	359 Average
4 @	2480.00	96.04			96.78	30.41	4.36	35.51	100	359 Peak
<b>5 !</b>	<b>2483.50</b>	<b>73.36</b>	<b>-0.64</b>	<b>74.00</b>	<b>74.10</b>	<b>30.41</b>	<b>4.36</b>	<b>35.51</b>	<b>100</b>	<b>359 Peak</b>
6	2483.50	46.67	-7.33	54.00	47.41	30.41	4.36	35.51	100	359 Average

Remark: #3 and #4 Fundamental Signal.



Data: 2 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch78.EMI (16) Date: 2005-11-11 Time: 01:56:07  
 Level (dBuV/m)



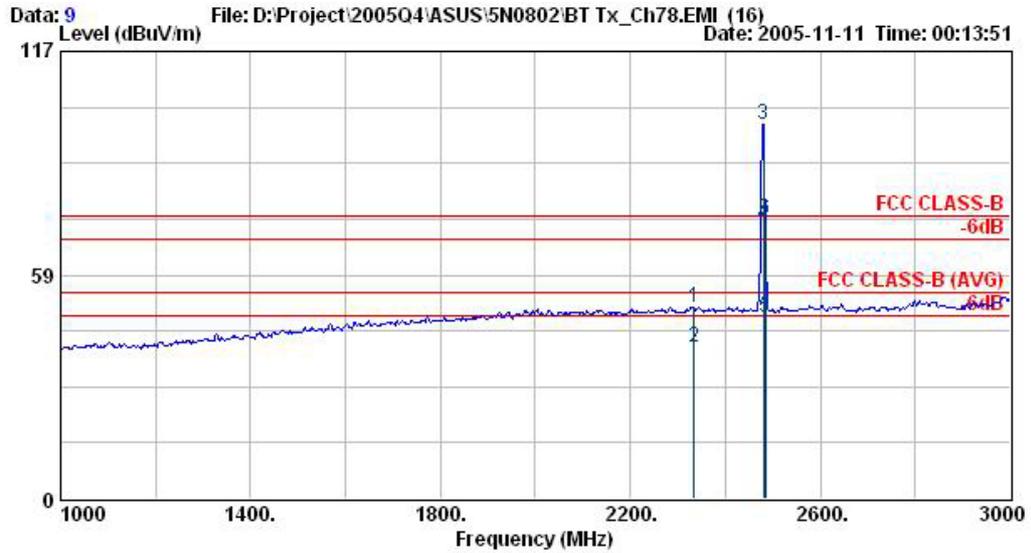
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 HORIZONTAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch78,2480MHz  
 Plane : E1

	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	4958.00	57.86	-16.14	74.00	54.01	33.68	6.39	36.23	200	0	Peak
2	4958.00	44.89	-9.11	54.00	41.04	33.68	6.39	36.23	152	53	Average



- Test Mode : Mode 3
- Polarization : Vertical

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



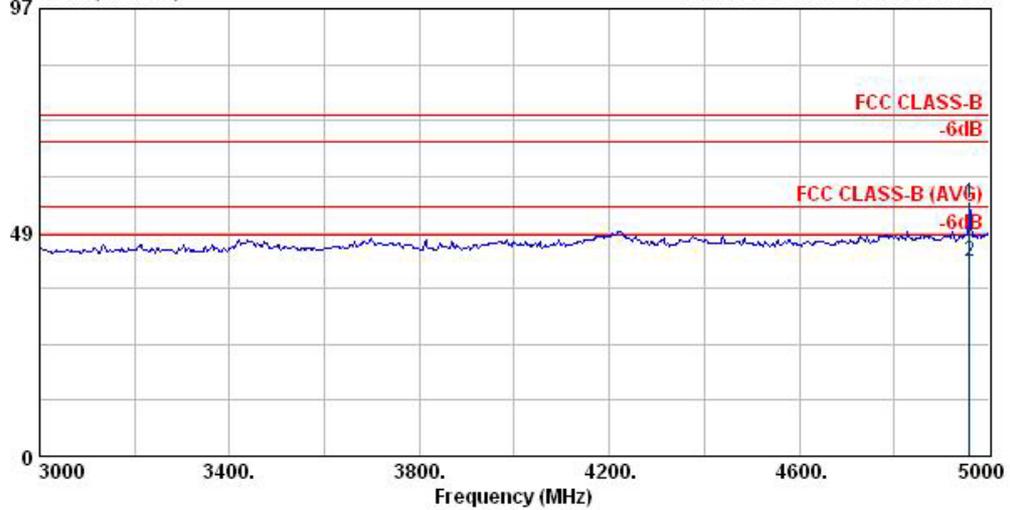
Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch78,2480MHz  
 Plane : E1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	2334.00	50.20	-23.80	74.00	50.89	30.54	4.17	35.40	100	1 Peak
2	2334.00	39.65	-14.35	54.00	40.35	30.54	4.17	35.40	100	1 Average
3 @	2480.00	97.90			98.64	30.41	4.36	35.51	100	1 Peak
4 X	2480.00	71.66			72.40	30.41	4.36	35.51	100	1 Average
5	2483.50	47.56	-6.44	54.00	48.30	30.41	4.36	35.51	100	1 Average
6 !	2483.50	73.16	-0.84	74.00	73.90	30.41	4.36	35.51	100	1 Peak

Remark: #3 and #4 Fundamental Signal



Data: 10 File: D:\Project\2005Q4\ASUS\5N0802\BT Tx\_Ch78.EMI (16) Date: 2005-11-11 Time: 02:07:37  
 Level (dBuV/m)



Site : 03CH06-HY  
 Condition : HF-ANT-071025-940201 VERTICAL  
 EUT : GSM Tri Band Mobile Phone(Bluetooth)  
 Power : 120Vac/60Hz  
 Model : FG 5N0802  
 Memo : Bluetooth Tx\_Ch78,2480MHz  
 Plane : E1

	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	4958.00	54.81	-19.19	74.00	50.96	33.68	6.39	36.23	200	360	Peak
2	4958.00	42.24	-11.76	54.00	38.39	33.68	6.39	36.23	100	262	Average

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



## **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 PIFA 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. 19, 2005	Feb. 19, 2006	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Apr. 26, 2005	Apr. 26, 2006	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/008	9kHz – 30MHz	May 06, 2005	May 06, 2006	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. 23, 2004	Dec. 23, 2005	Conduction (CO01-HY)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 27, 2004	Jul. 27, 2006	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 09,2004	Jul. 09,2006	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, 2005	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 22, 2005	Feb. 22, 2006	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	Dec. 17, 2004	Dec. 17, 2005	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 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 <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring uncertainty for a level of confidence of 95% <math>U = 2U_c(y)</math></b>	<b>4.72</b>				