



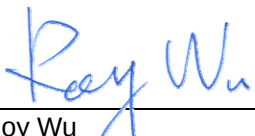
FCC Test Report

According to

47 CFR Part 15 Subpart C

Equipment : GPS Navigation System
Trade Name : TomTom
Model Name : GO740LIVE
FCC ID : S4L4CF7
Filing Type : Certification
Applicant : TomTom International BV
Rembrandtplein 35 1017 CT Amsterdam The Netherlands

- The test result refers exclusively to the tested model / sample.
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- The data shown in this test report were carried out on Aug. 15, 2008 at **Sporton International Inc. LAB.**
- Report No.: FR870721, Report Version: Rev.01



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Report Version: Rev.01

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History of This Test Report

Report Issue Date: Sep. 11, 2008

Report No.	Description

1. General Description of Equipment under Test

1.1 Applicant

TomTom International BV

Rembrandtplein 35 1017 CT Amsterdam The Netherlands

1.2 Manufacturer

Tech-Giant (Shanghai) Computer Co., Ltd.

C#,No.1, South Rongteng Road, Songjiang Export Processing Zone, Shanghai, China

1.3 Basic Description of Accessories

AC Adapter 1	Brand Name	TomTom
	Manufacturer	AKII
	Model Name	A05T2-05MU
	Power Rating	I/P: 100-240Vac, 47-63Hz, 0.2A; O/P: 5Vdc, 1A
AC Adapter 2	Brand Name	TomTom
	Manufacturer	Phihong
	Model Name	PSB05R-050Q
	Power Rating	I/P: 100-240Vac, 50-60Hz, 200mA; O/P: 5Vdc, 1A
Battery	Brand Name	Welldone
	Manufacturer	Welldone
	Cell	Maxell ICP553450AR
	P/N	AHL03711001
	Power Rating	3.7Vdc, 1100mAh
	Type	Li-ion
Car Charger	Brand Name	TomTom
	Manufacturer	Supa
	Model Name	GO Car Charger 1.2A
	P/N	4CZ0.001.02
	Power Rating	I/P: 12V/24V; O/P: 5Vdc, 1.2A
	Power Cord Type	1.4 meter non-shielded cable without ferrite core
Dock 1	Brand Name	TomTom
	Manufacturer	Foxlink
	Model Name	GO x40 Desk Dock
	P/N	4CF0.000.00
Dock 2	Brand Name	TomTom
	Manufacturer	Quanta
	Model Name	GO x40 Windscreen Dock non iPod
	P/N	4CF0.000.01
Dock 3	Brand Name	TomTom
	Manufacturer	Quanta
	Model Name	GO x40 Windscreen Dock w. iPod
	P/N	4CF0.000.02
Cable	Brand Name	TomTom
	Manufacturer	Foxlink
	Model Name	iPod Connect and Audio cable
	P/N	9V00.001

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

Product Feature & Specification			
EUT Type :	GPS Navigation System		
Trade Name :	TomTom		
Model Name :	GO740LIVE		
FCC ID :	S4L4CF7		
Tx Frequency :	2400 MHz ~ 2483.5 MHz		
Rx Frequency :	2400 MHz ~ 2483.5 MHz		
Number of Channels :	79		
Carrier Frequency of Each Channel :	2402+n*1 MHz; n=0~78		
Channel Spacing :	1 MHz		
Maximum Output Power to Antenna :	Bluetooth: 0.68 dBm (1Mbps) Bluetooth EDR: 0.83dBm (2Mbps) / 1.17dBm (3Mbps)		
Type of Antenna Connector :	N/A		
Antenna Type :	Chip Antenna		
Antenna Gain :	2 dBi		
HW Version :	Rev 1.0		
SW Version :	Rev.04		
Type of Modulation :	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK		
Function Type :	Transmitter	Transceiver	V
EUT Stage :	Identical Prototype		

2. Test Configuration of Equipment under Test

2.1 Test Manner

- 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.
- The data rate, 3Mbps, was chosen to being tested, due to the highest RF output power.

Channel	Frequency	Data Rate / Modulation		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	-4.96 dBm	-4.04 dBm	-3.77 dBm
Ch39	2441MHz	-1.80 dBm	-1.15 dBm	-0.82 dBm
Ch78	2480MHz	0.68 dBm	0.83 dBm	1.17 dBm

Bluetooth uses frequency hopping spread spectrum (FHSS) operation which also facilitates Bluetooth multiple access and coexistence among other types of wireless systems. The basic frequency-hopping pattern is a pseudo-random ordering of 79 channel frequencies in the ISM band and the hopping rate is nominally 1600 hops per second. The EDR modulation format uses one of two types of DPSK ($\pi/4$ -DQPSK or 8-DPSK) in the payload section of the packet. As shown in figure, the EDR packet begins using GFSK modulation during the access code and header portions of the packet but changes to DPSK modulation after the guard time. Changing to a DPSK format allows increased data rates of 2 Mb/s or 3 Mb/s.

- The EUT is programmed to transmit signal continuously for all testings.
- Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 25000 MHz.

2.2 Test Mode

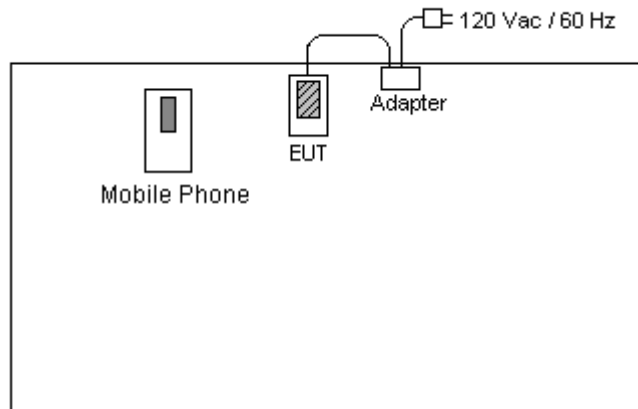
Test Item	Test Mode		
RF Conducted	Bluetooth (1Mbps)	Bluetooth EDR (2Mbps)	Bluetooth EDR (3Mbps)
	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz
	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz
Radiated Emission	n/a	n/a	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
Conducted Emission	Mode 1: BT Link Mode + Dock 1 + Adapter 1 Mode 2: BT Link Mode + Dock 1 + Adapter 2		

2.3 Ancillary Equipment List

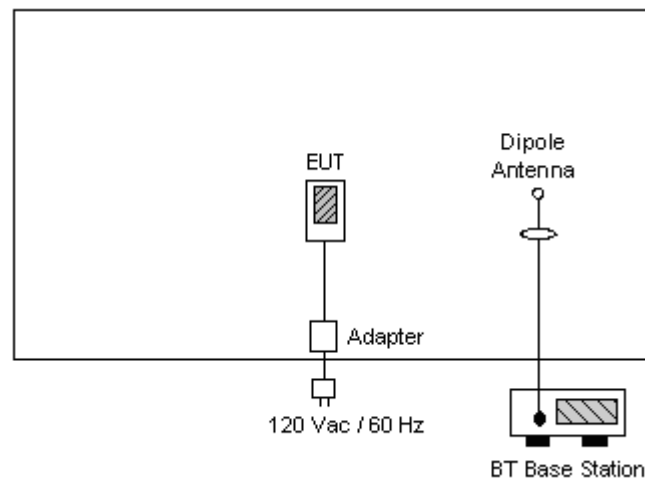
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	BT Base Station	Anritus	8852A	N/A	N/A	Unshielded, 1.8 m
2.	Mobile Phone	Philips	CT9A9R	RXSCT9A9R	N/A	N/A

2.4 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission >



3. RF Utility

The programmed RF Utility is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testings.

4. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-328-4978
Test Site No : CO05-HY, 03CH06-HY
FCC Designation No : TW1022

4.1 Test Voltage

AC 120V / 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test Compliance

47 CFR Part 15 Subpart C

4.4 Frequency Range

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation: from 30 MHz to 25000 MHz

4.5 Test Distance

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

5. Test Data and Test Result

5.1 List of Measurements and Examinations

The Emission Mode: Bluetooth

FCC Rule	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(1)(iii)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)(iii)	Number of Hopping Frequency	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass
15.247(b)(1)	Output Power	Pass
15.247(d)	100 KHz Bandwidth of Frequency Band Edges	Pass
15.209(a) 15.247(d)	Radiated Emission	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass

5.2 Band Edges Measurement

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 via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100 KHz with suitable frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.2.3 Test Result

- Application Type : Bluetooth
- Temperature : 21~26°C
- Relative Humidity : 49~51%
- Test Engineer : Sun

Test Result in Bluetooth EDR(3Mbps) lower band	:	PASS
Test Result in Bluetooth EDR(3Mbps) higher band	:	PASS

5.2.4 Note on Band Edge Emission

➤ Bluetooth EDR (3Mbps)

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)	Remark
2382.01	20.81	-23.19	74.00	50.84	31.78	3.86	35.67	100	0	Peak
2382.01	11.72	-42.28	54.00	11.64	31.83	3.92	35.68	106	36	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)	Remark
2380.68	47.84	-26.16	74.00	47.87	31.78	3.86	35.67	100	0	Peak
2380.68	8.75	-45.25	54.00	8.67	31.83	3.92	35.68	100	100	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)	Remark
2483.50	47.49	-26.51	74.00	47.16	31.98	4.05	35.70	100	0	Peak
2483.50	8.40	-45.60	54.00	8.07	31.98	4.05	35.70	125	44	Average

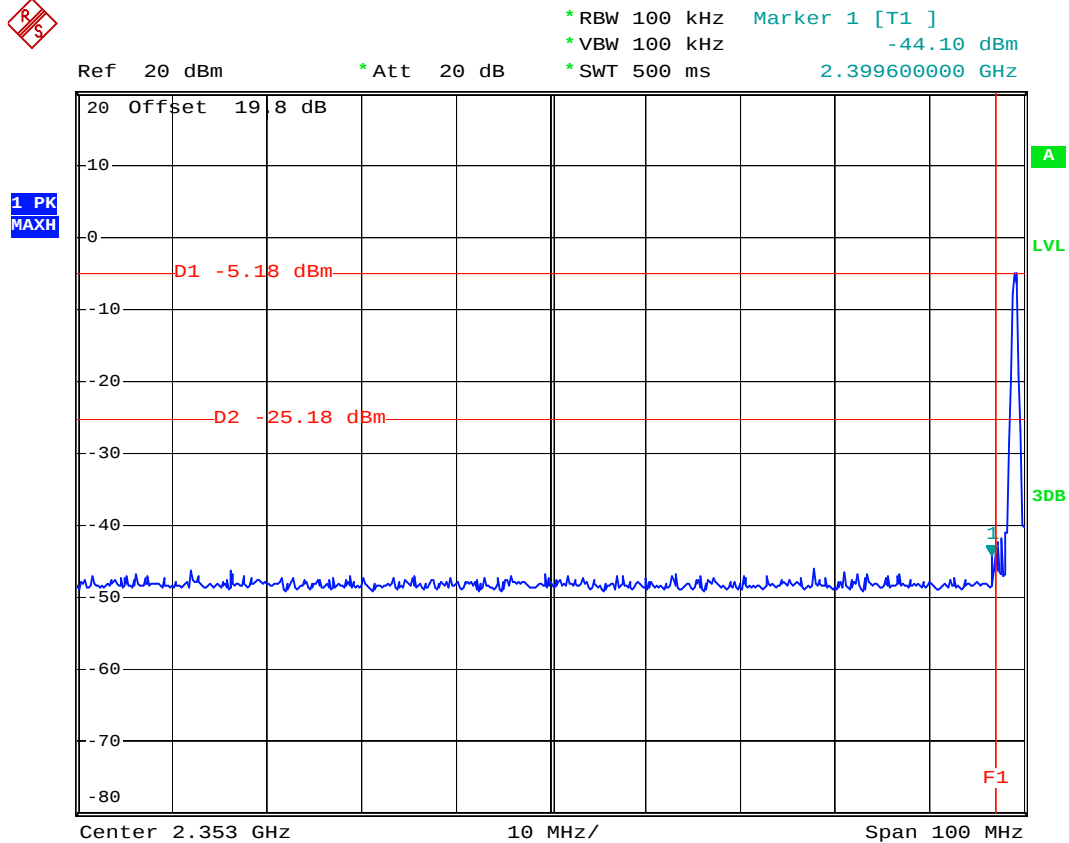
CH78 (Vertical)

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)	Remark
2483.50	44.25	-29.75	74.00	43.92	31.98	4.05	35.70	100	0	Peak
2483.50	5.16	-48.84	54.00	4.83	31.98	4.05	35.70	100	94	Average

5.2.5 20dB Band Edge

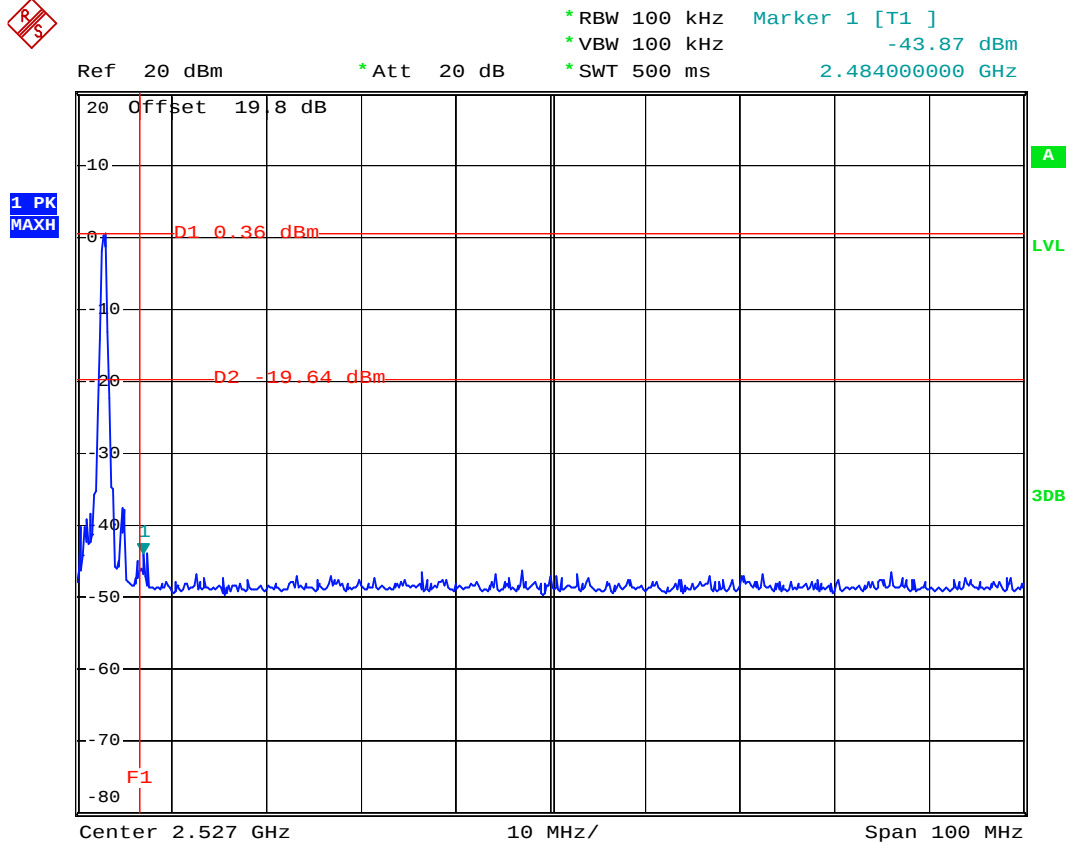
Bluetooth (1Mbps)

CH00



Date: 13.AUG.2008 02:19:19

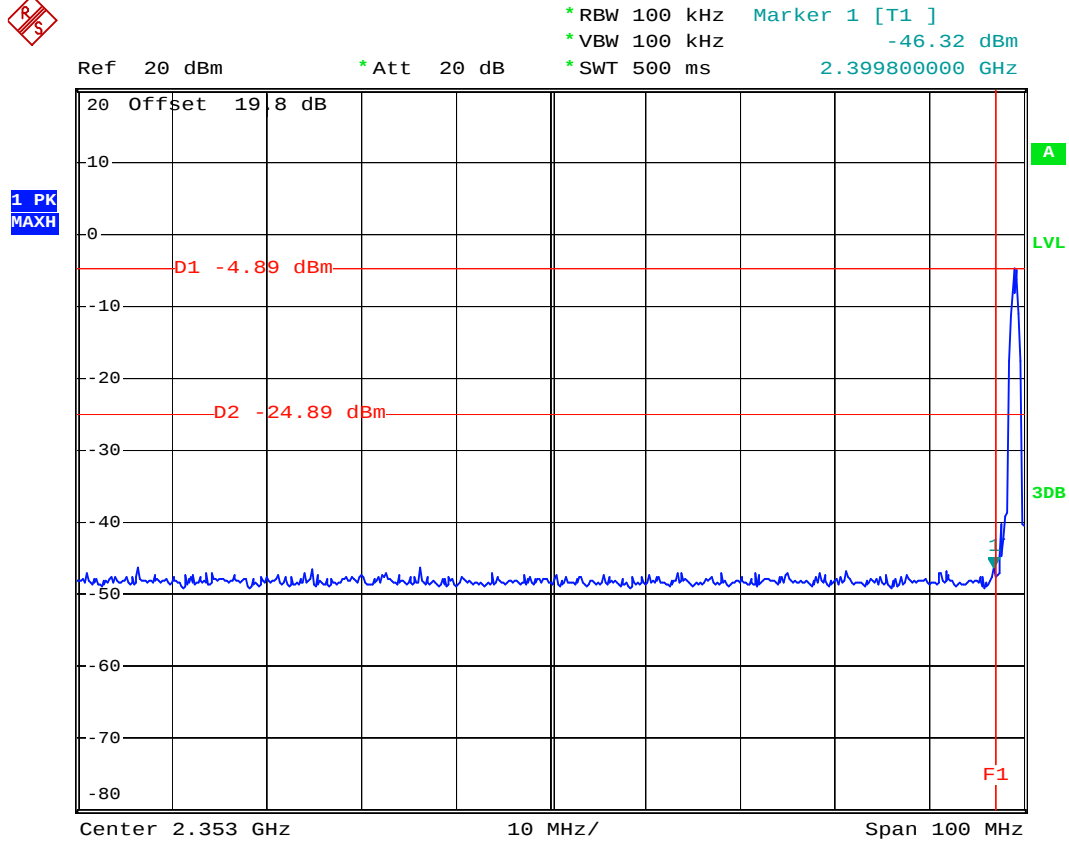
CH78



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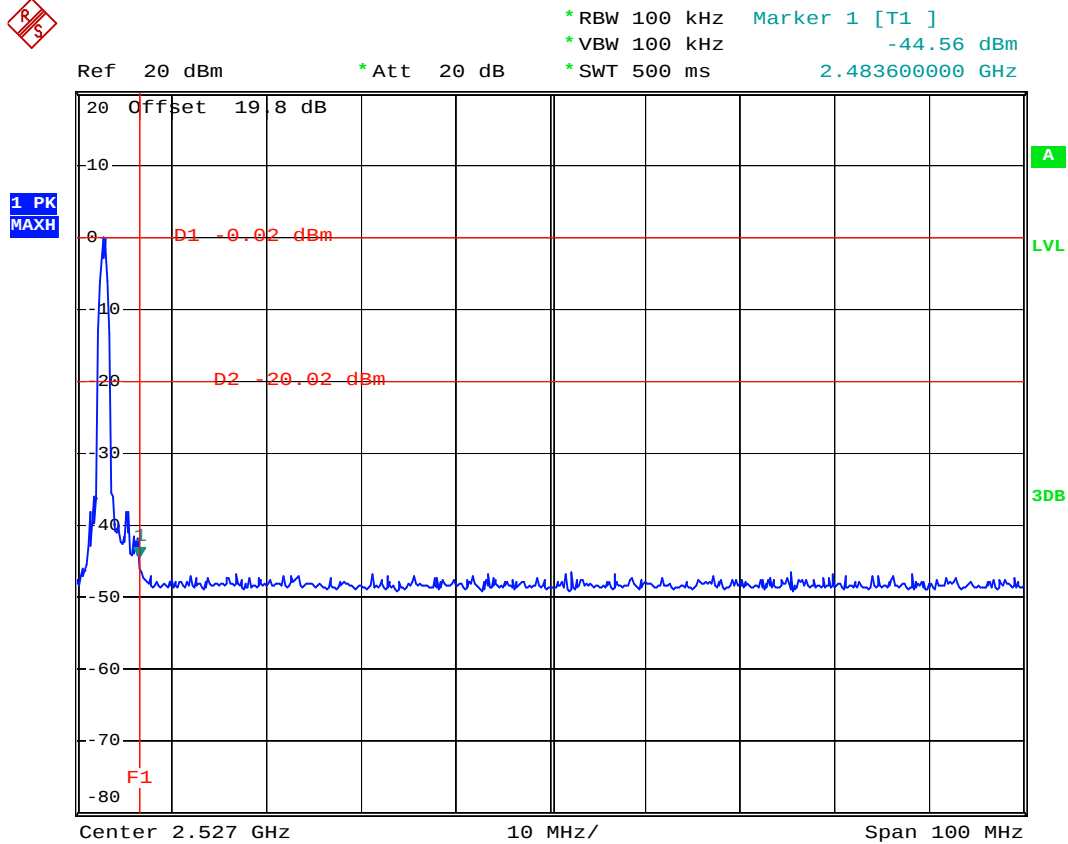
Bluetooth EDR (2Mbps)

CH00



Date: 13.AUG.2008 03:01:59

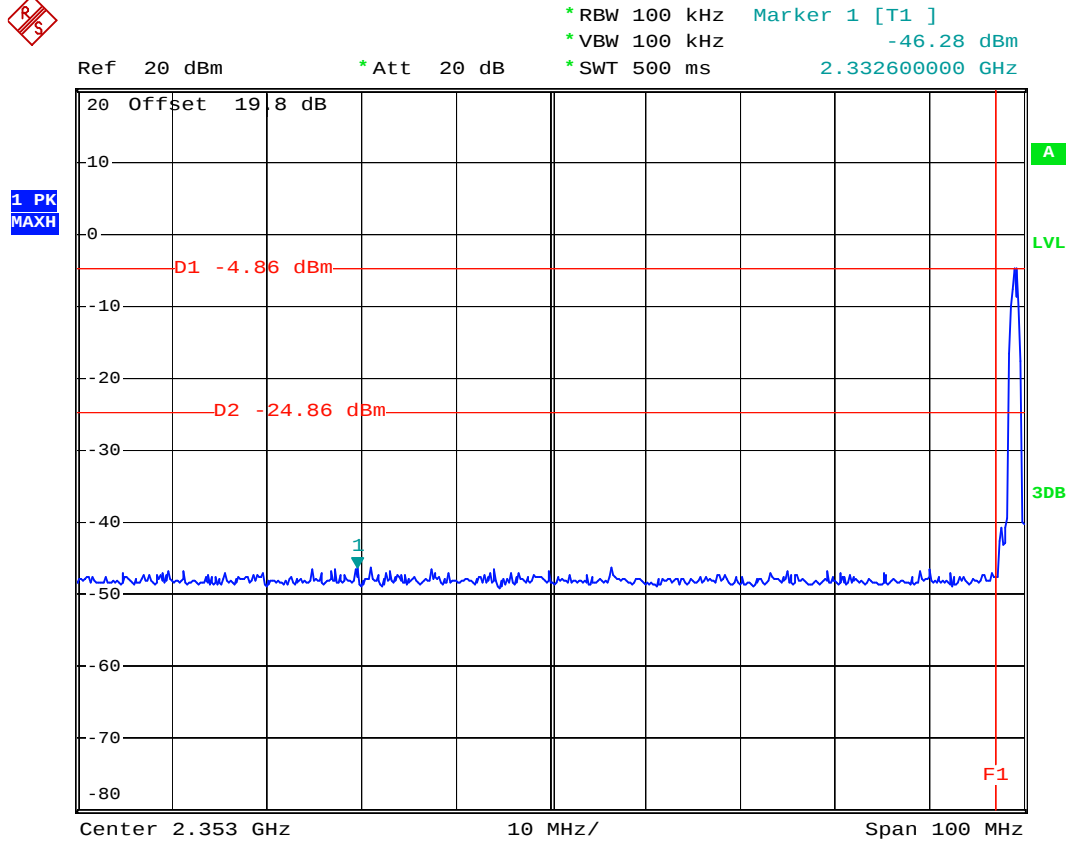
CH78



Date: 13.AUG.2008 03:00:46

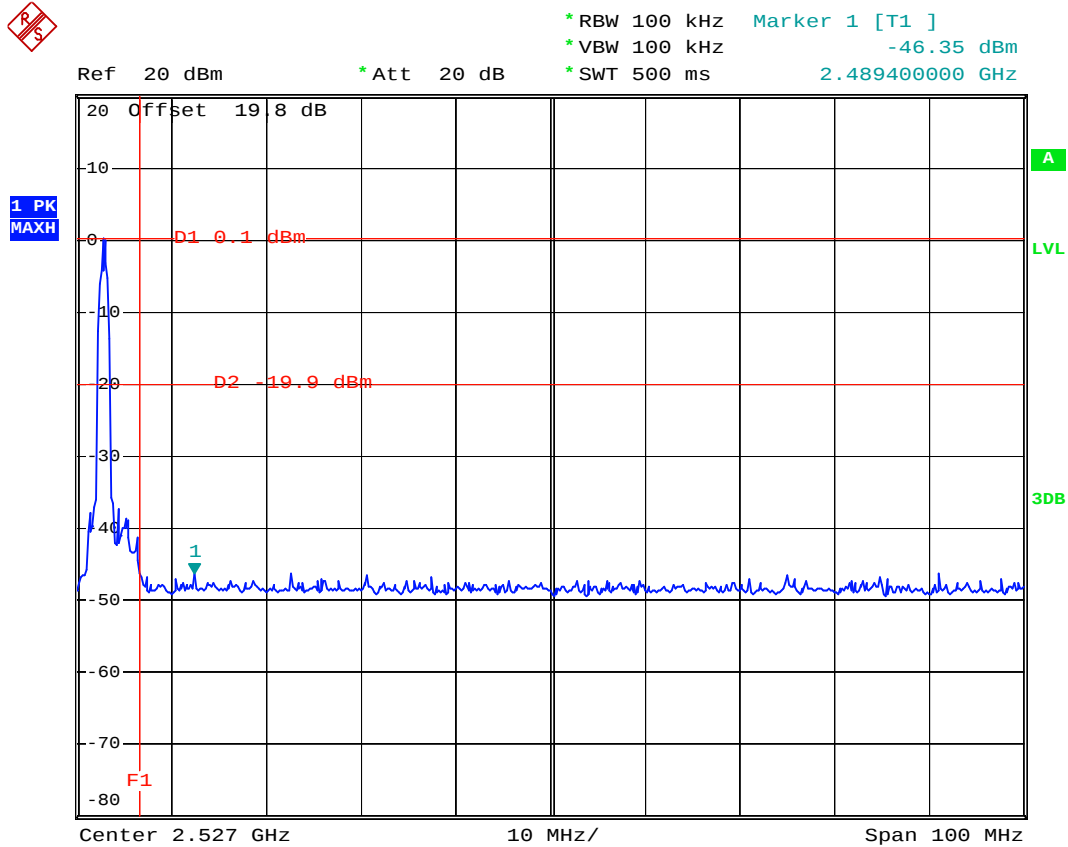
Bluetooth EDR (3Mbps)

CH00



Date: 13.AUG.2008 03:08:28

CH78



Date: 13.AUG.2008 03:07:00

5.3 Hopping Channel Separation

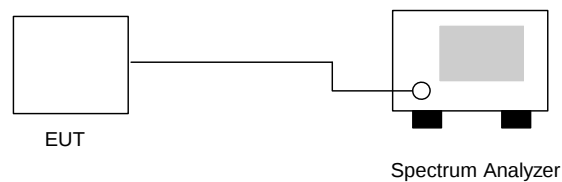
5.3.1 Measuring Instruments

As described in chapter 9 of this test report.

5.3.2 Test Procedure

1. The output of EUT was connected to the spectrum analyzer by a low loss cable..
2. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.3.3 Test Setup Layout



5.3.4 Test Result : The spectrum analyzer plots are attached as below

- Temperature : 21~26℃
- Relative Humidity : 49~51%
- Test Engineer : Sun

Bluetooth (1Mbps)

Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.004	0.529	Mode 1
39	2441	1.004	0.529	Mode 2
78	2480	1.004	0.528	Mode 3

Bluetooth EDR (2Mbps)

Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.000	0.821	Mode 4
39	2441	1.000	0.811	Mode 5
78	2480	1.000	0.811	Mode 6

Bluetooth EDR (3Mbps)

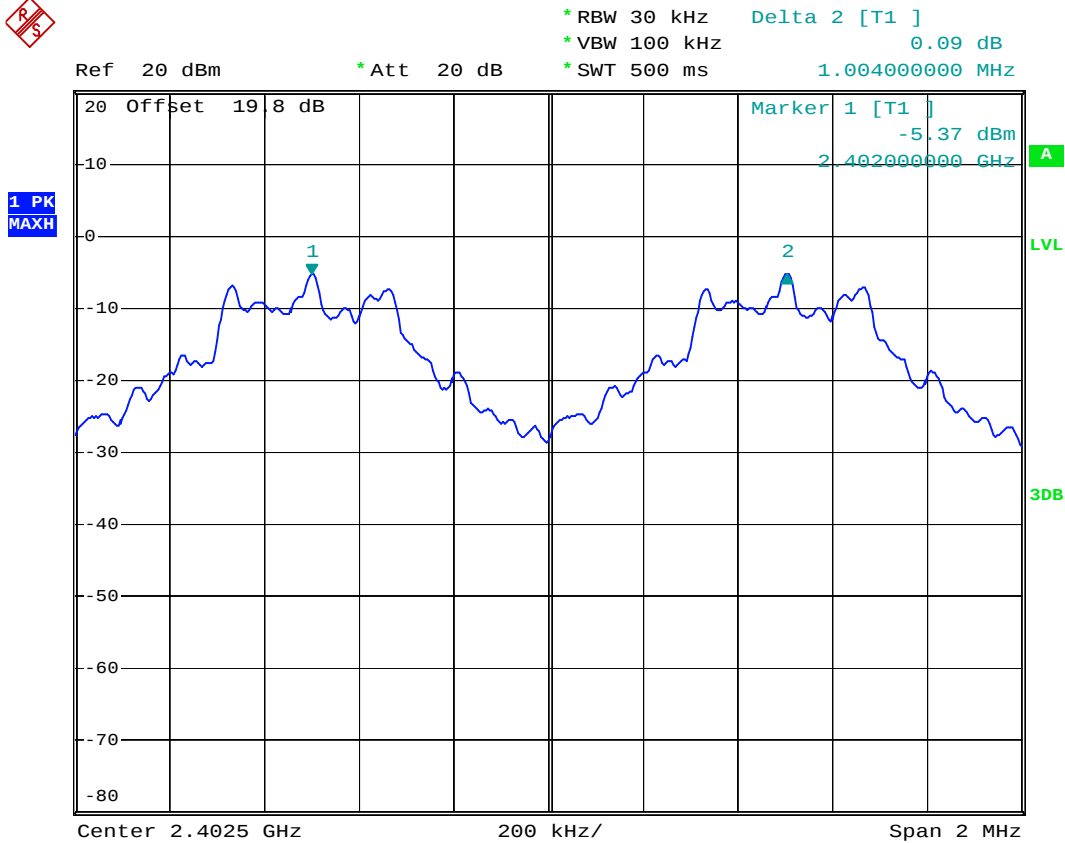
Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.000	0.840	Mode 7
39	2441	1.000	0.840	Mode 8
78	2480	1.000	0.837	Mode 9

Remark: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth.

5.3.5 Hopping Channel Separation

Bluetooth (1Mbps)

Mode 1

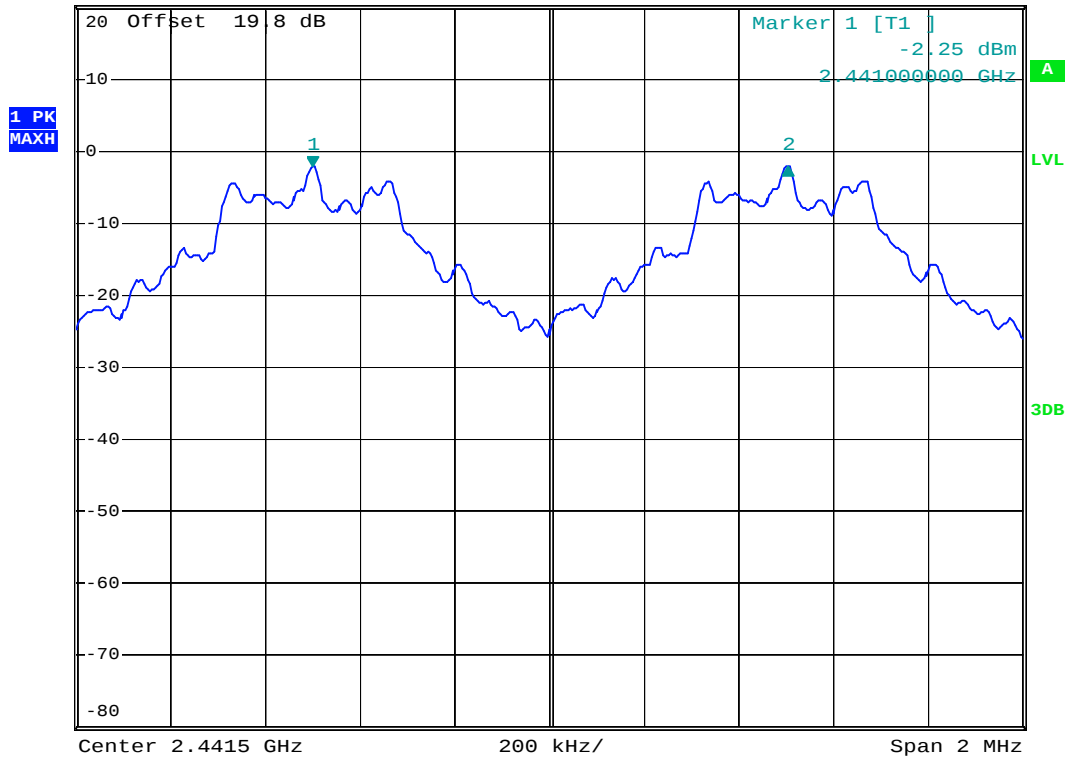


Date: 13.AUG.2008 02:19:46

Mode 2

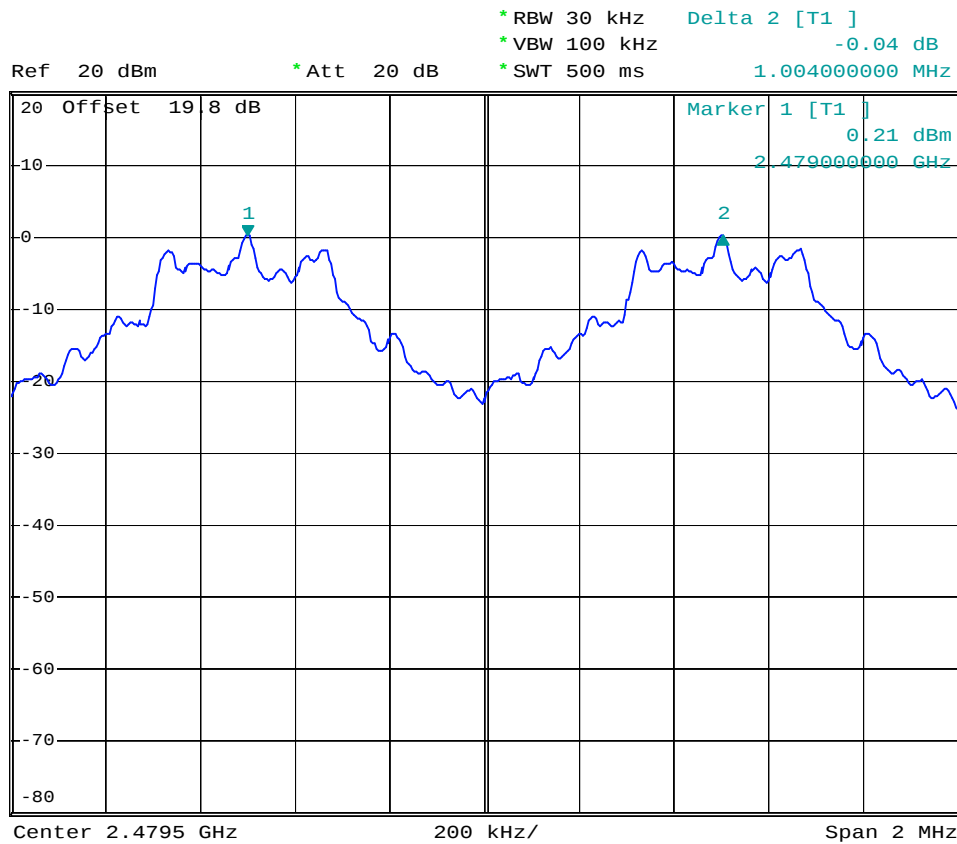


Ref 20 dBm * Att 20 dB * RBW 30 kHz Delta 2 [T1]
 * VBW 100 kHz 0.09 dB
 * SWT 500 ms 1.004000000 MHz



Date: 13.AUG.2008 02:20:16

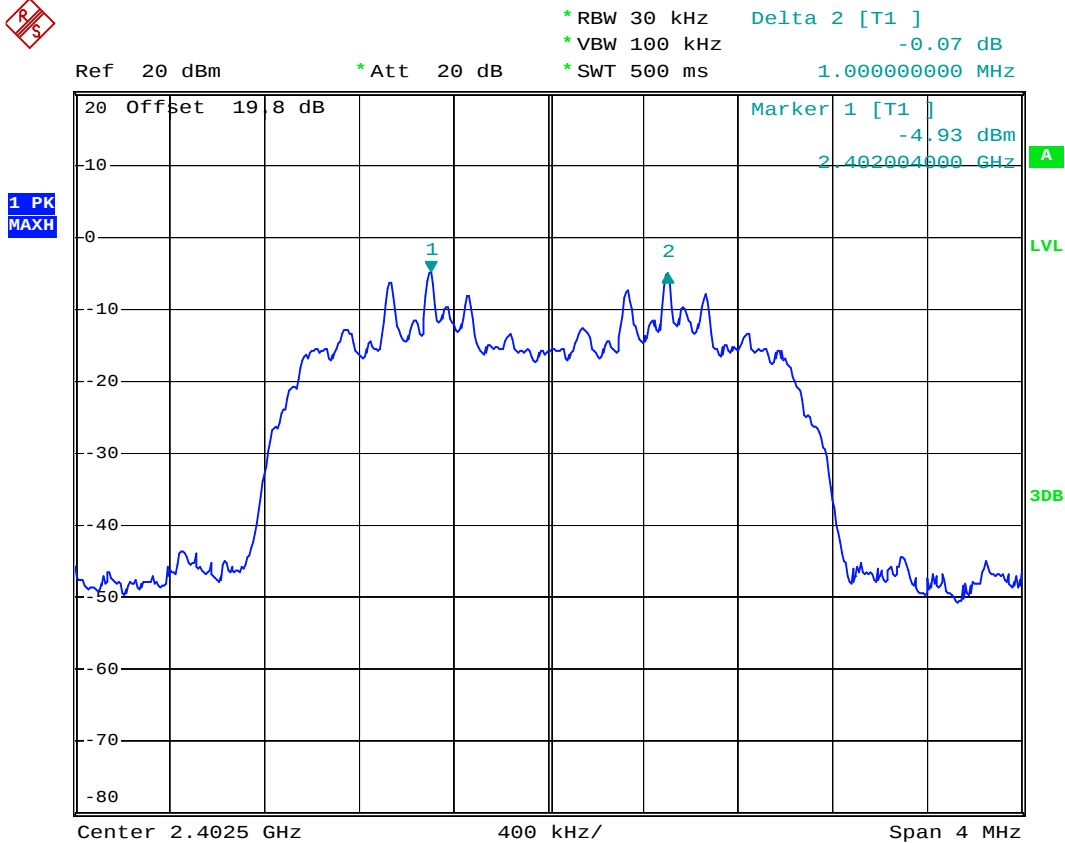
Mode 3



Date: 13.AUG.2008 02:20:44

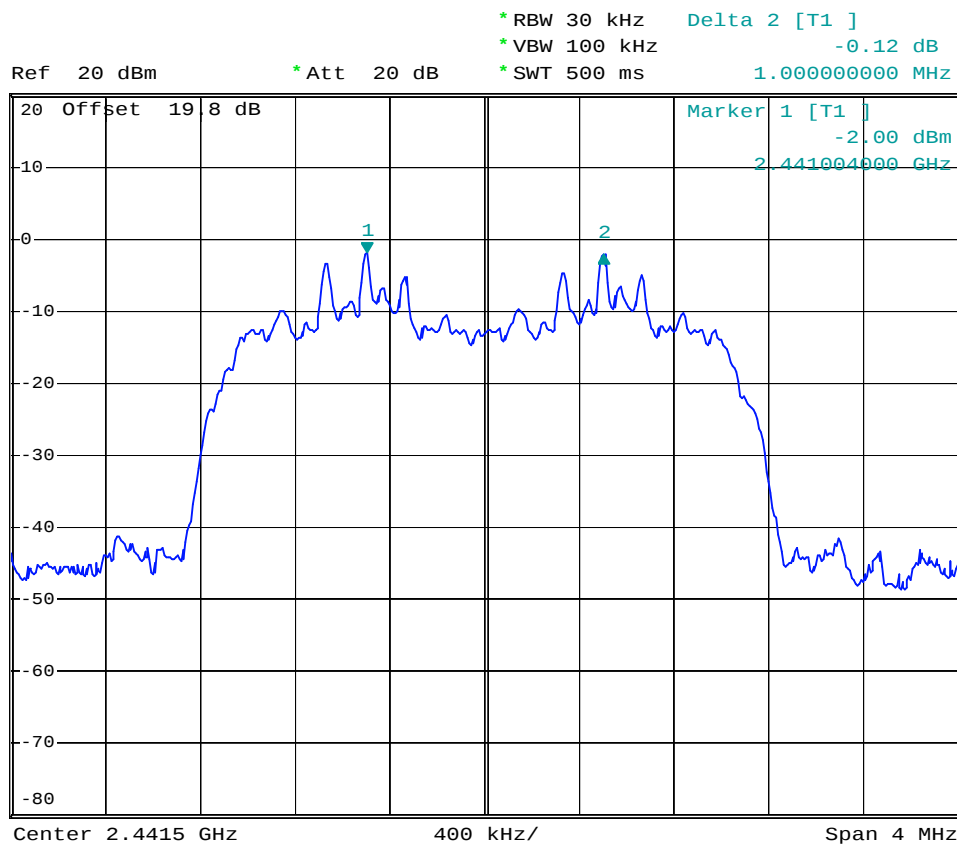
Bluetooth EDR (2Mbps)

Mode 4



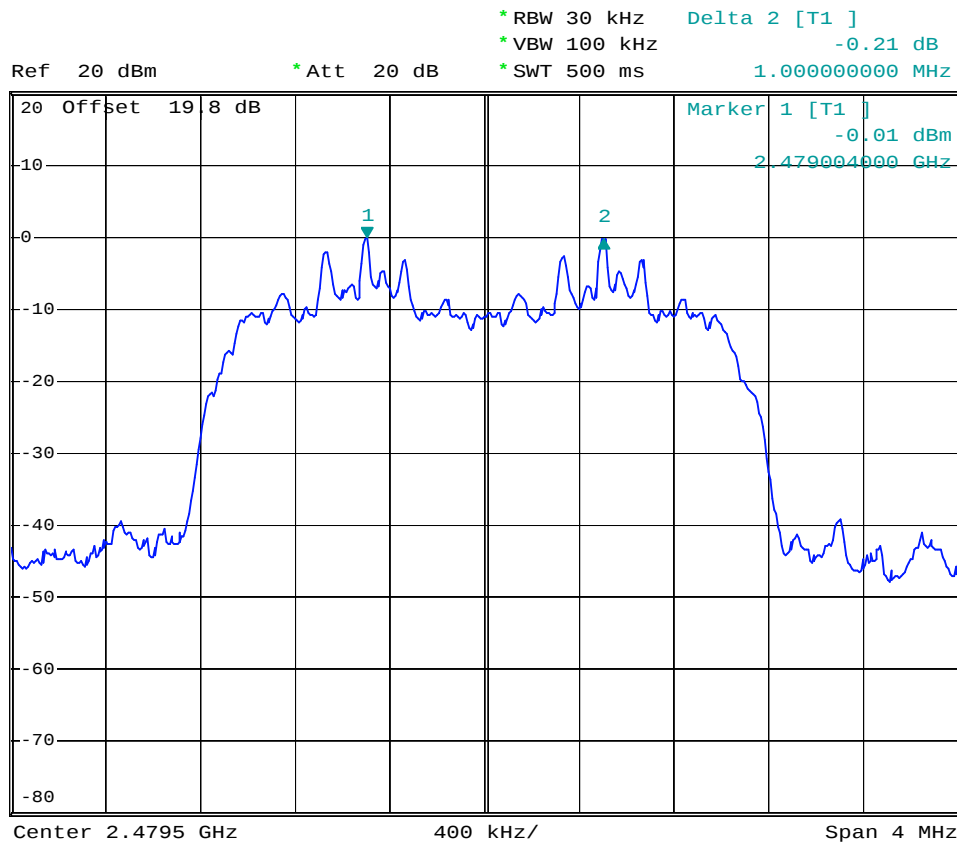
Date: 13.AUG.2008 03:02:56

Mode 5



Date: 13.AUG.2008 03:03:41

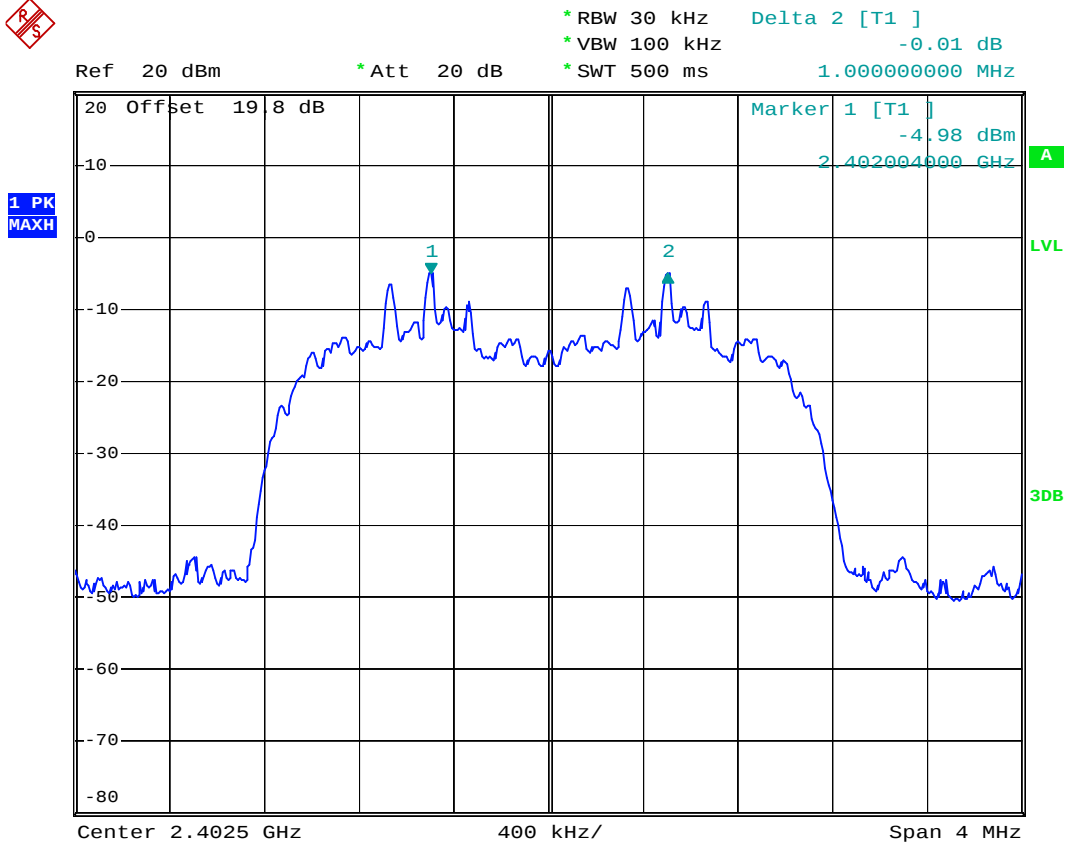
Mode 6



Date: 13.AUG.2008 03:04:37

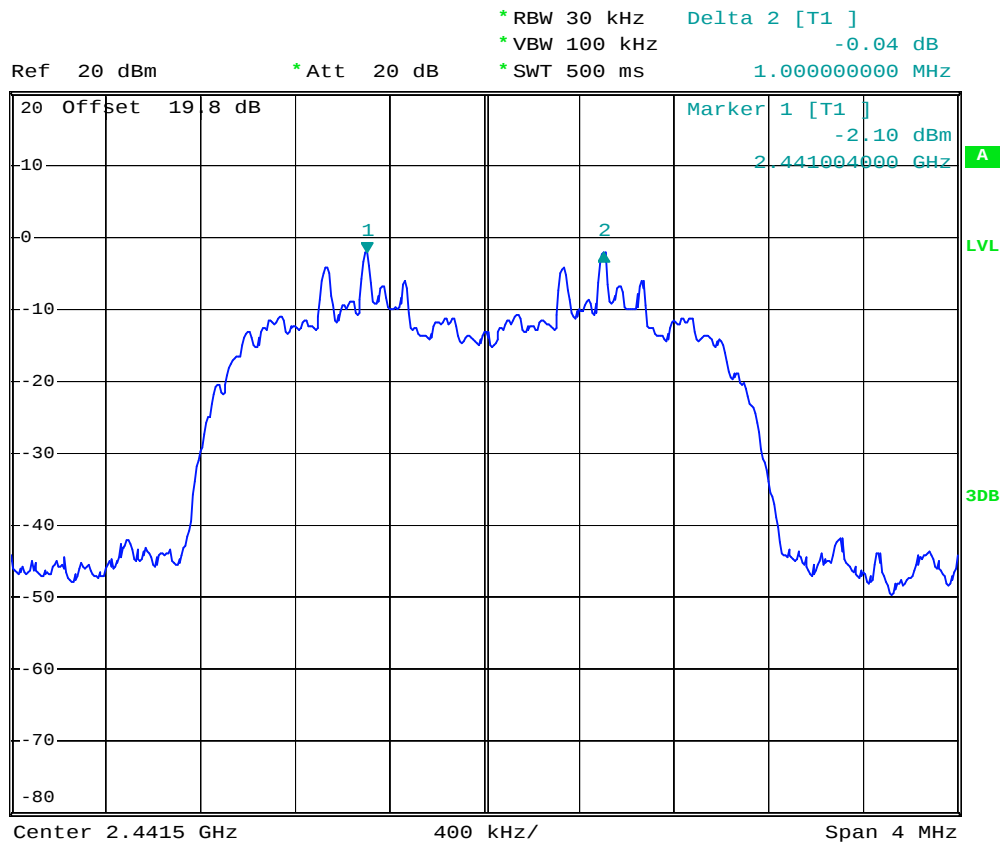
Bluetooth EDR (3Mbps)

Mode 7



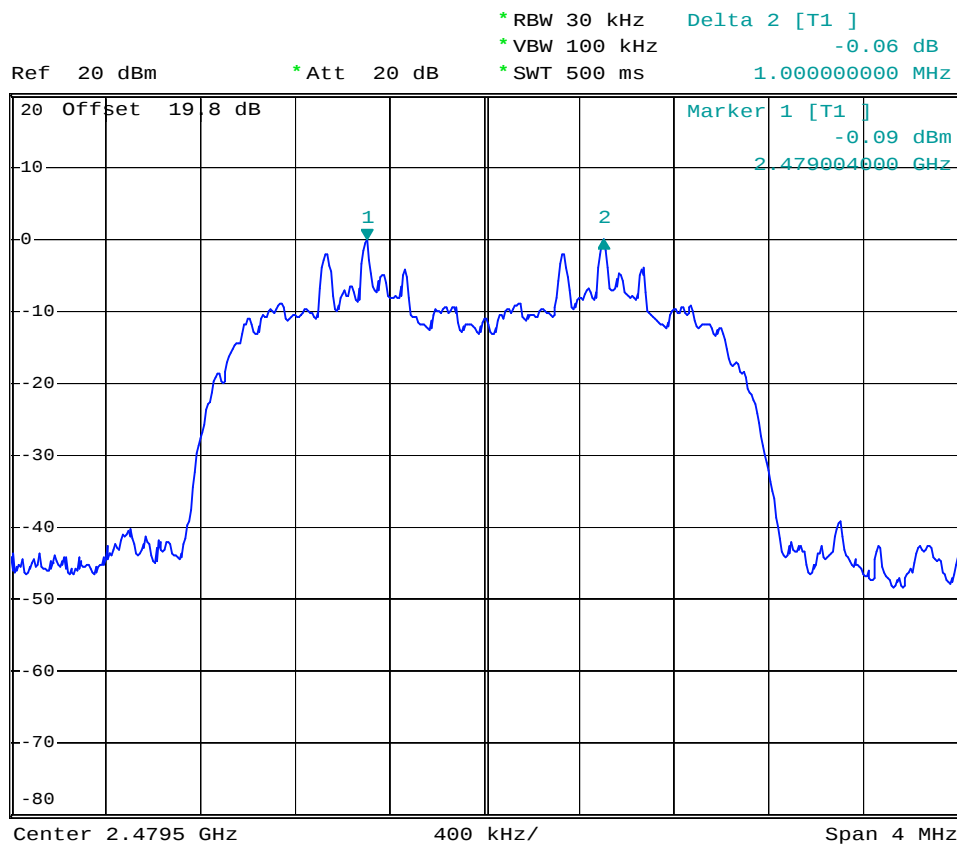
Date: 13.AUG.2008 03:09:01

Mode 8



Date: 13.AUG.2008 03:09:34

Mode 9



Date: 13.AUG.2008 03:10:12

5.4 Number of Hopping Frequency

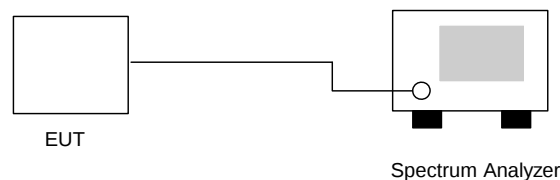
5.4.1 Measuring Instruments

As described in chapter 9 of this test report.

5.4.2 Test Procedure

- The output of EUT was connected to the spectrum analyzer by a low loss cable.
- Set RBW of spectrum analyzer to 100 KHz and VBW to 100 KHz.
- The number of hopping frequency used is defined as the device has the numbers of total channel.

5.4.3 Test Setup Layout



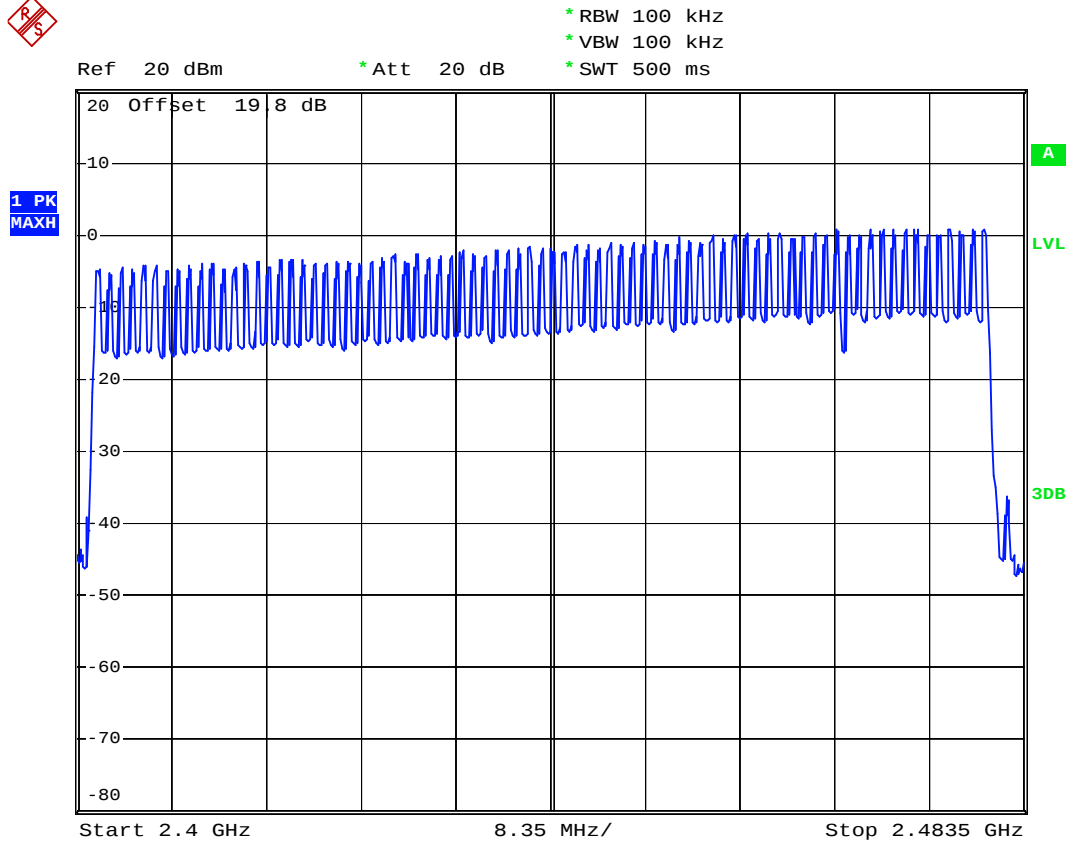
5.4.4 Test Result : See spectrum analyzer plots below

- Temperature : 21~26°C
- Relative Humidity : 49~51%
- Test Engineer : Sun

Mode	Number of Hopping Frequency (Channel)	Limits (Channel)
Bluetooth (1Mbps)	79	15
Bluetooth EDR (2Mbps)	79	15
Bluetooth EDR (3Mbps)	79	15

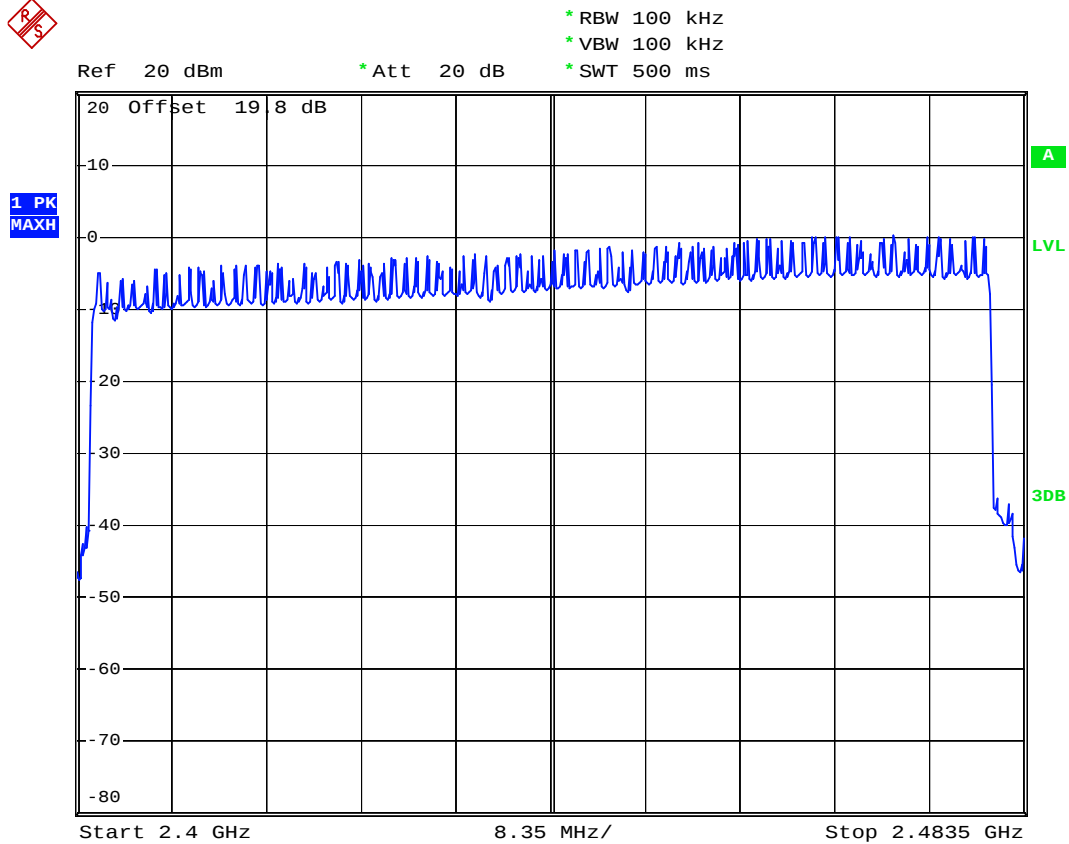
5.4.5 Number of Hopping Frequency

Bluetooth (1Mbps)



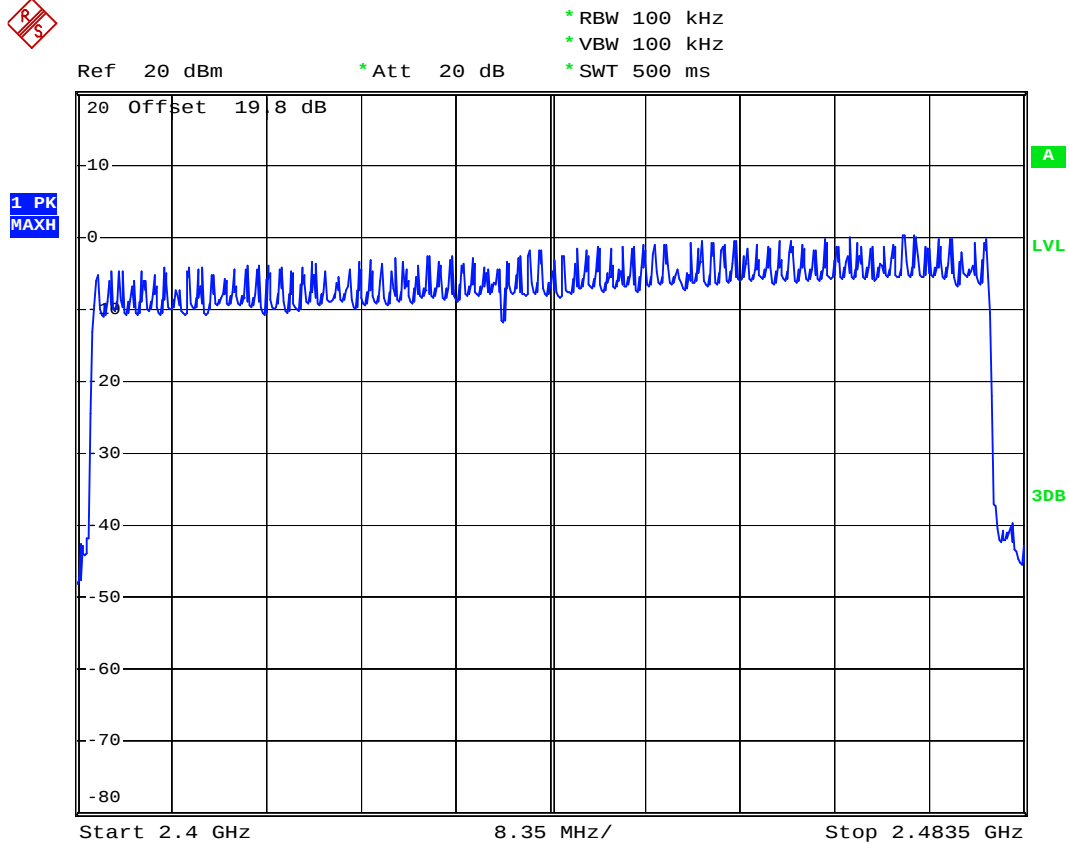
Date: 13.AUG.2008 02:35:27

Bluetooth EDR (2Mbps)



Date: 13.AUG.2008 02:40:32

Bluetooth EDR (3Mbps)



Date: 13.AUG.2008 02:44:03

5.5 Hopping Channel Bandwidth

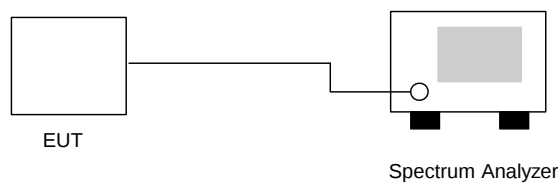
5.5.1 Measuring Instruments

As described in chapter 9 of this test report.

5.5.2 Test Procedure

- The transmitter output was connected to the spectrum analyzer by a low loss cable.
- Set RBW of spectrum analyzer to 30 KHz and VBW to 300 KHz.
- The Hopping Channel bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.5.3 Test Setup Layout



5.5.4 Test Result : See spectrum analyzer plots below

- Temperature : 21~26°C
- Relative Humidity : 49~51%
- Test Engineer : Sun

Bluetooth (1Mbps)

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	0.794	Mode 1
39	2441	0.794	Mode 2
78	2480	0.792	Mode 3

Bluetooth EDR (2Mbps)

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	1.232	Mode 4
39	2441	1.216	Mode 5
78	2480	1.216	Mode 6

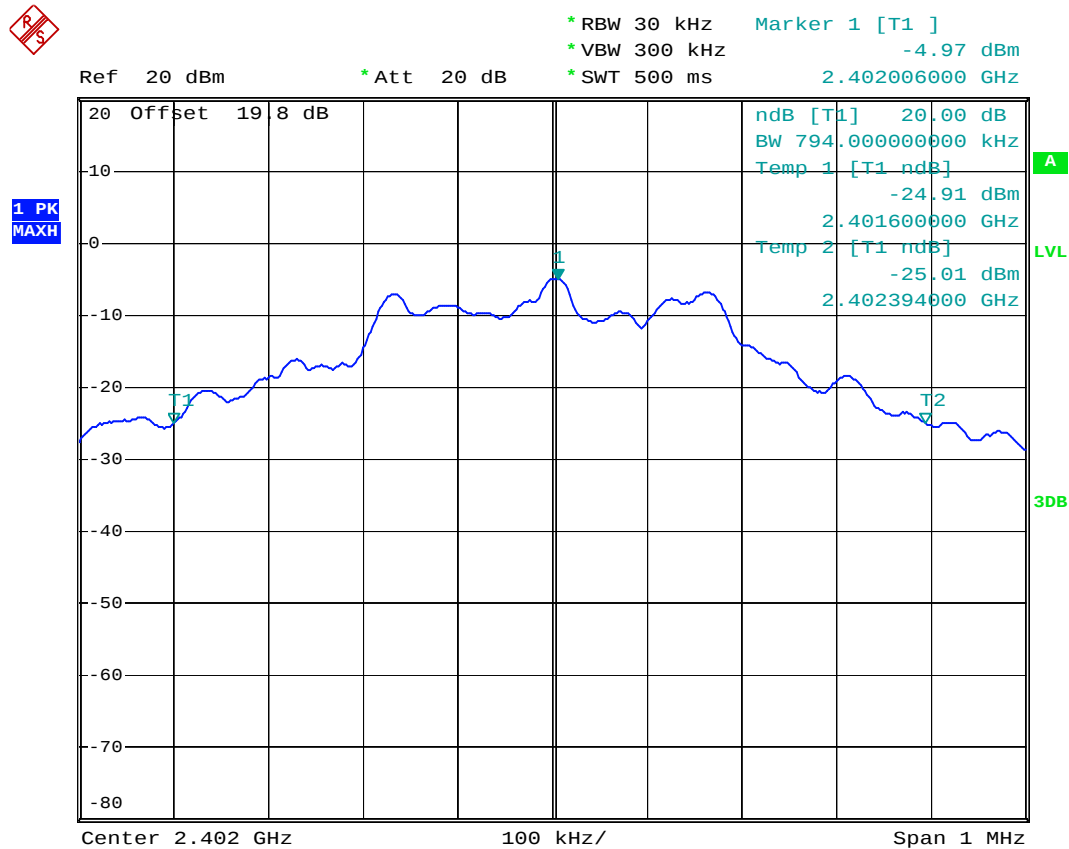
Bluetooth EDR (3Mbps)

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	1.260	Mode 7
39	2441	1.260	Mode 8
78	2480	1.256	Mode 9

5.5.5 Hopping Channel Bandwidth

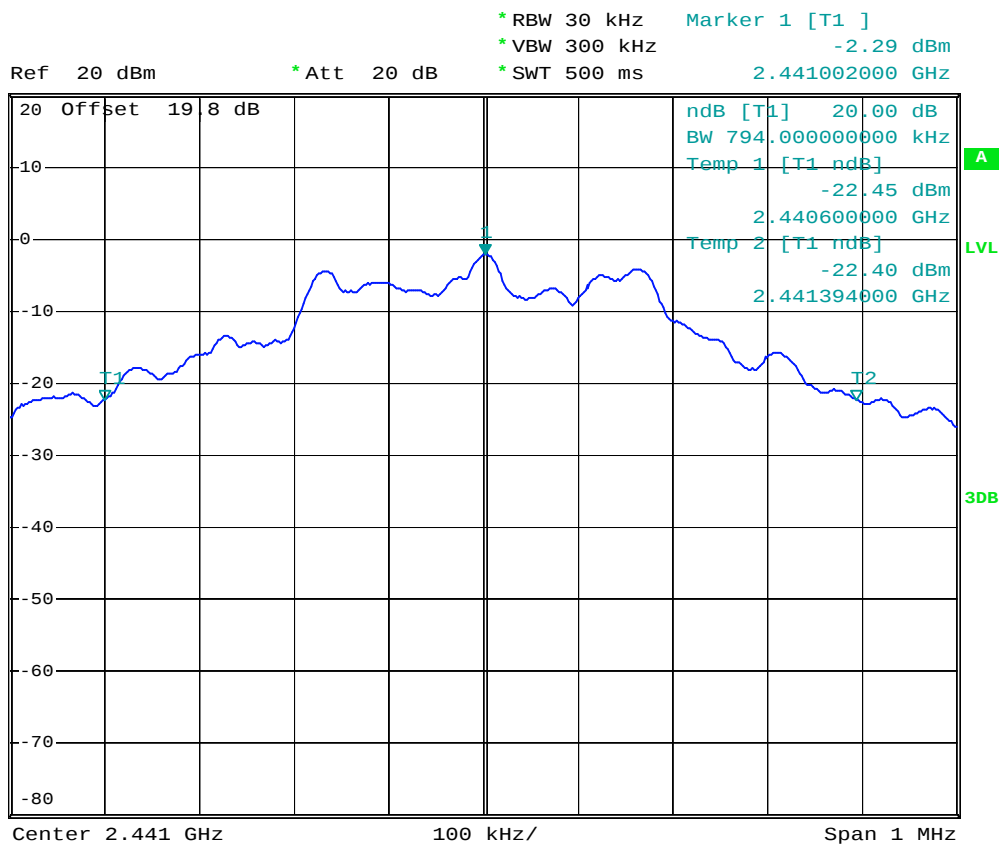
Bluetooth (1Mbps)

Mode 1



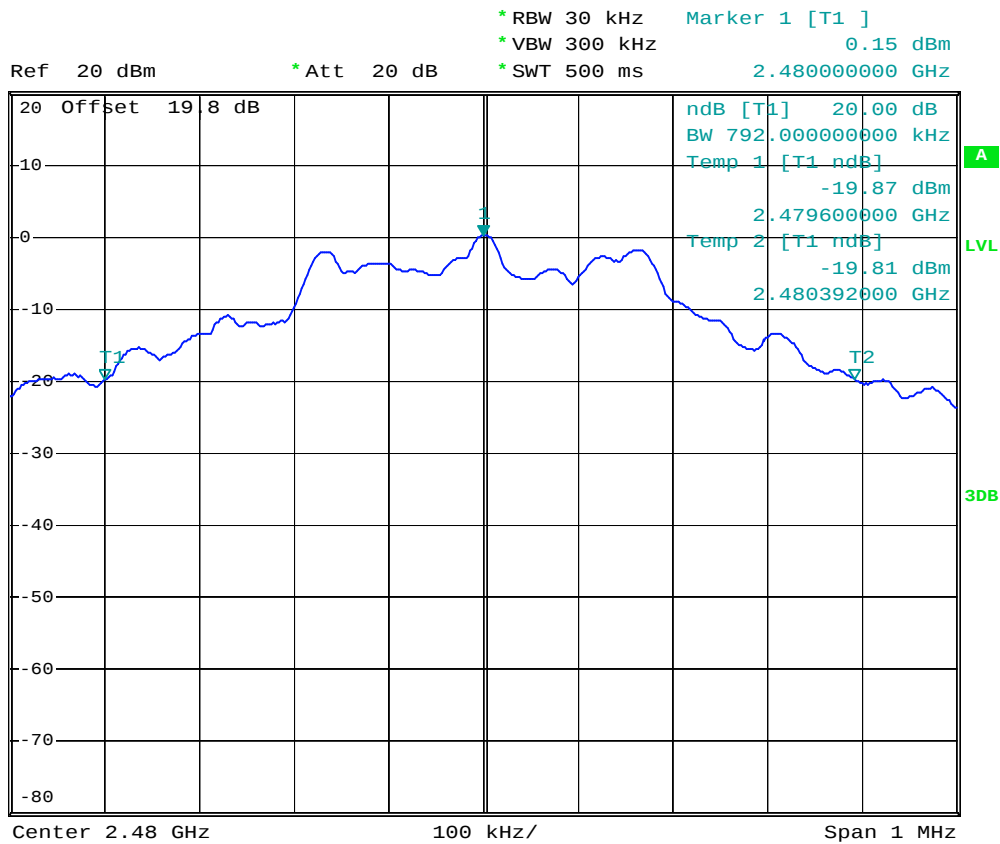
Date: 13.AUG.2008 02:16:47

Mode 2



Date: 13.AUG.2008 02:17:12

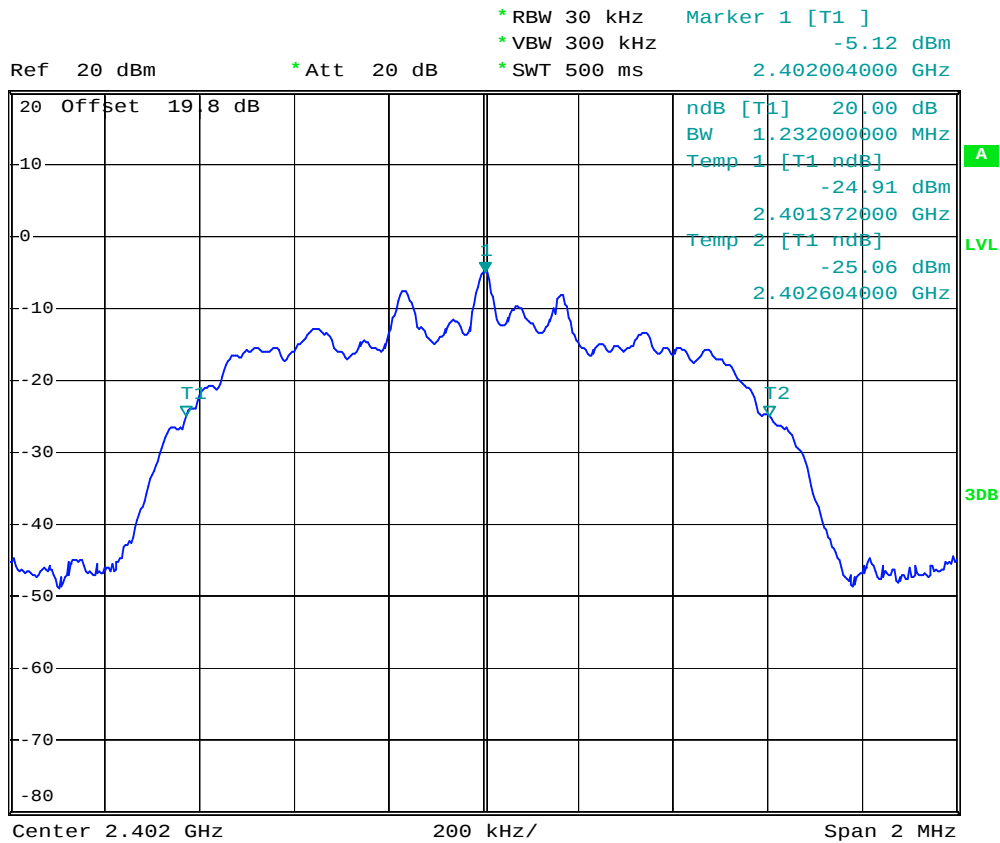
Mode 3



Date: 13.AUG.2008 02:17:35

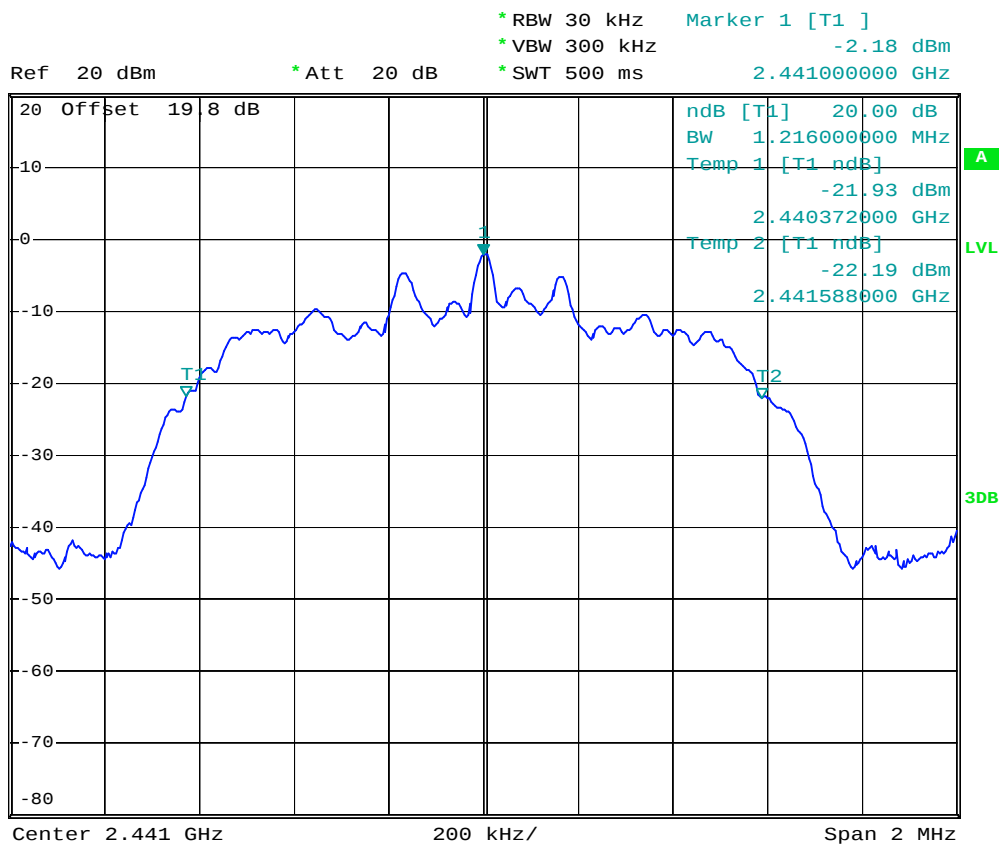
Bluetooth EDR (2Mbps)

Mode 4



Date: 13.AUG.2008 02:58:40

Mode 5

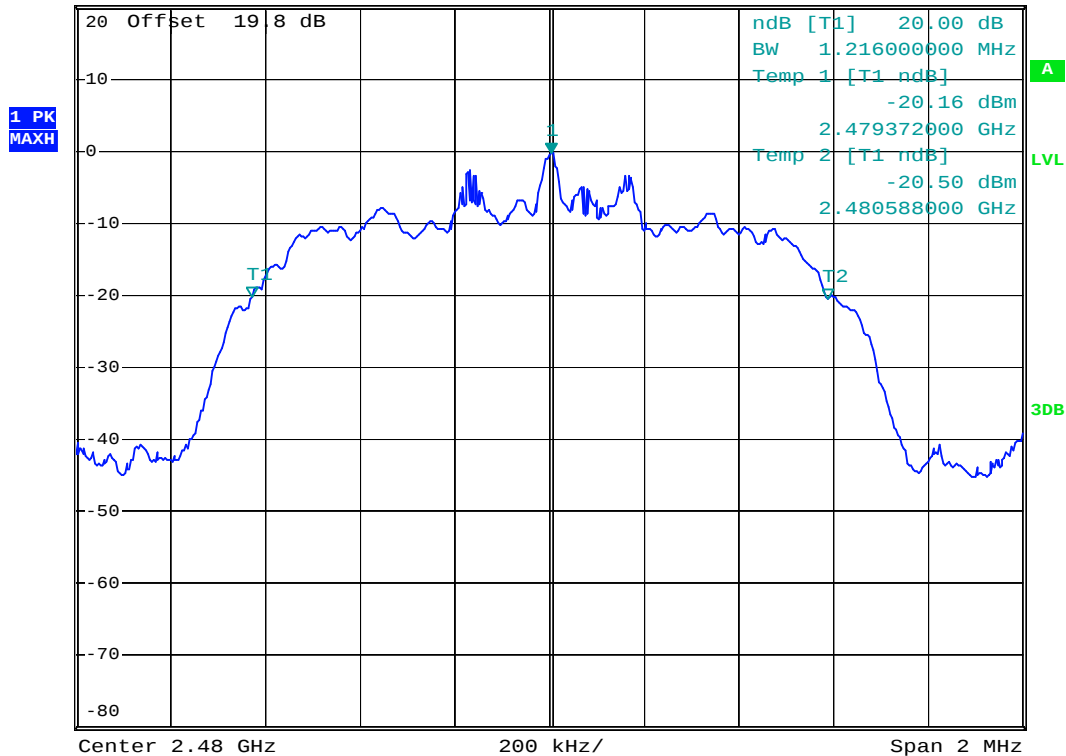


Date: 13.AUG.2008 02:59:25

Mode 6



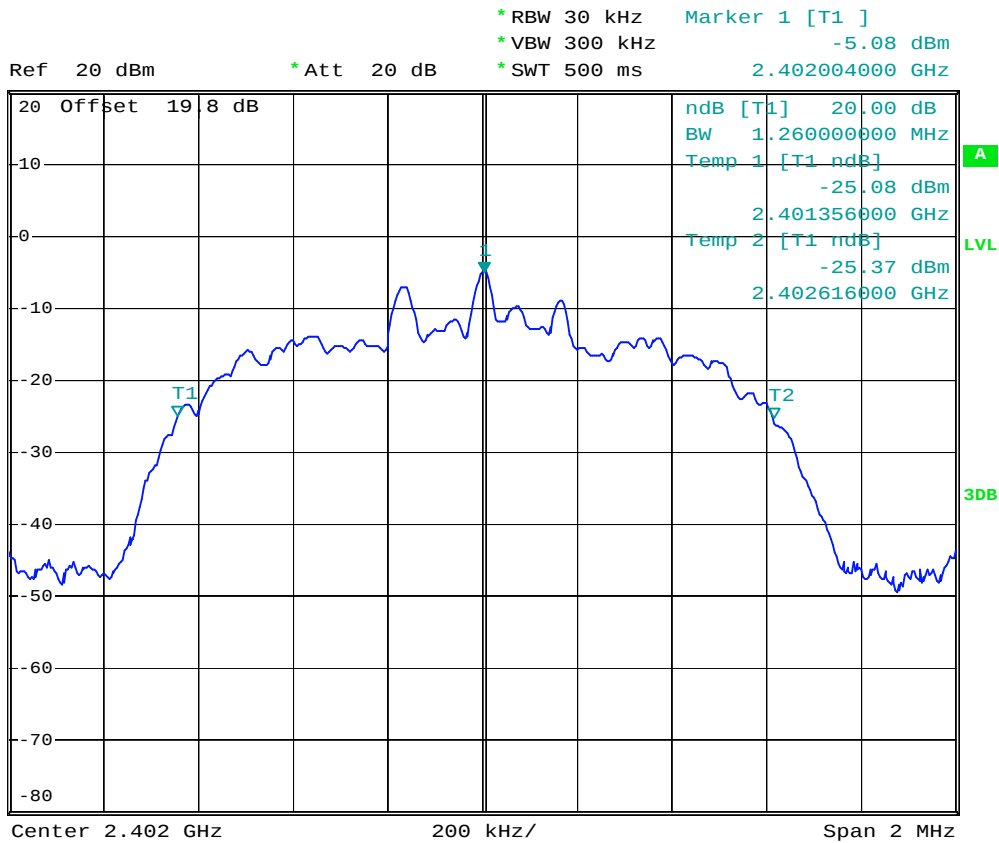
Ref 20 dBm *Att 20 dB *RBW 30 kHz Marker 1 [T1]
 *VBW 300 kHz -0.24 dBm
 *SWT 500 ms 2.480004000 GHz



Date: 13.AUG.2008 02:59:42

Bluetooth EDR (3Mbps)

Mode 7

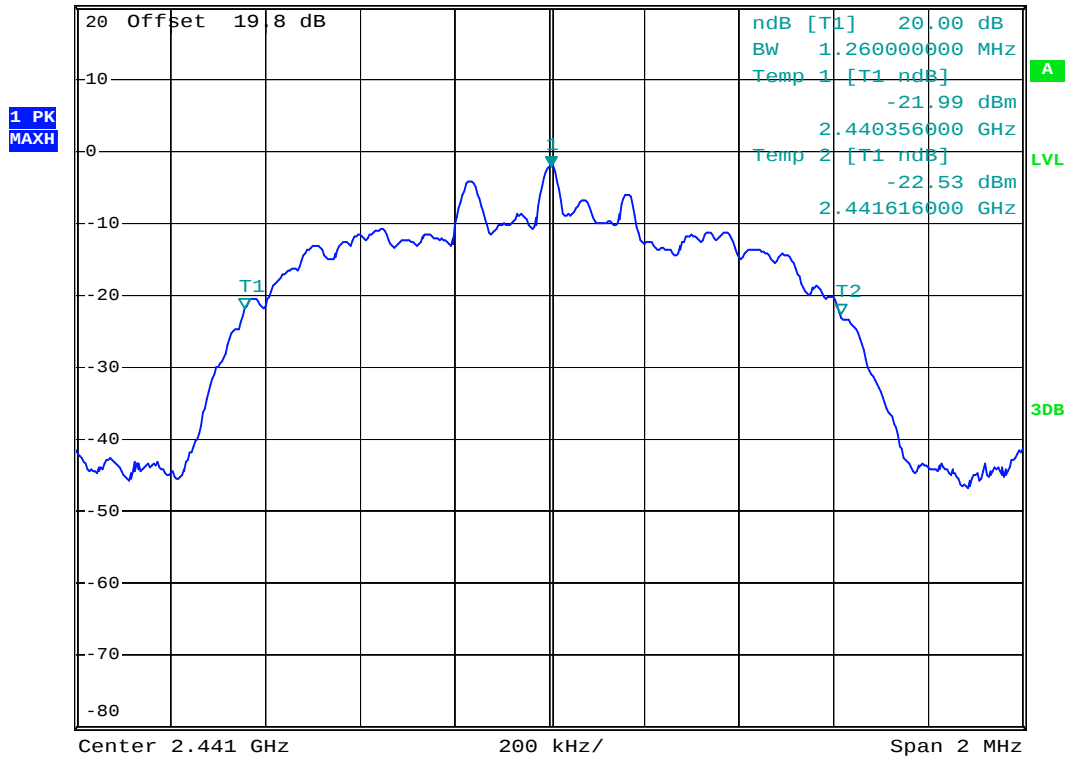


Date: 13.AUG.2008 03:05:13

Mode 8



Ref 20 dBm *Att 20 dB *RBW 30 kHz Marker 1 [T1]
 *VBW 300 kHz -2.19 dBm
 *SWT 500 ms 2.441004000 GHz

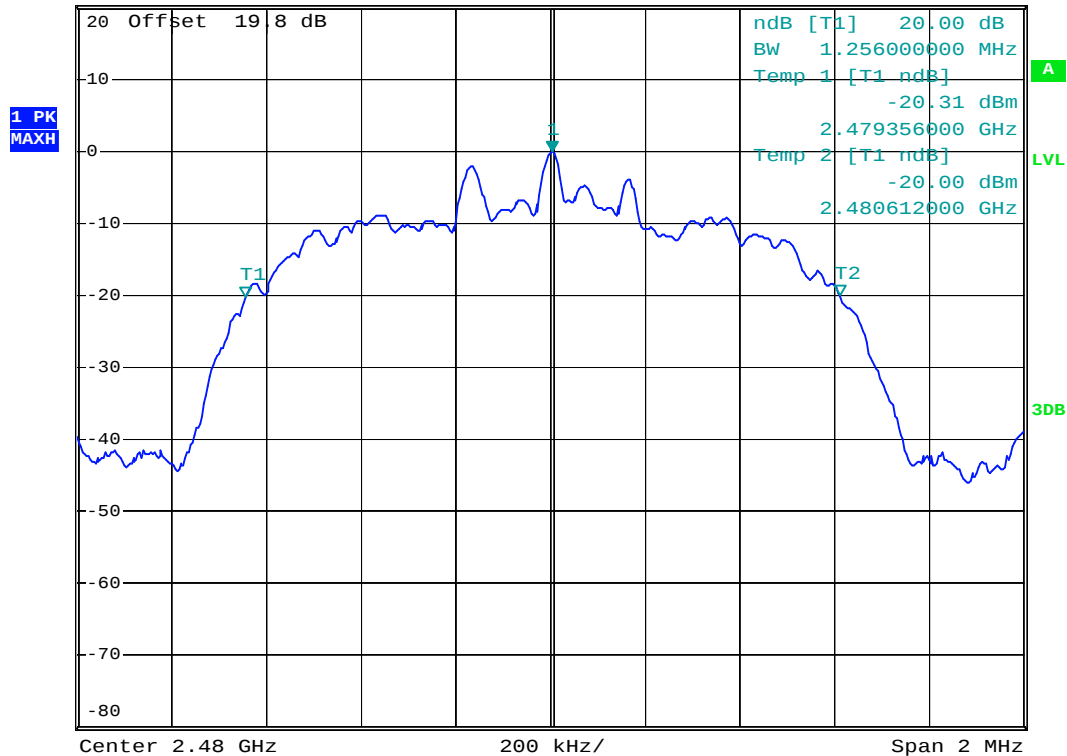


Date: 13.AUG.2008 03:05:40

Mode 9



Ref 20 dBm *Att 20 dB *RBW 30 kHz Marker 1 [T1]
*VBW 300 kHz -0.19 dBm
*SWT 500 ms 2.480004000 GHz



Date: 13.AUG.2008 03:06:00

5.6 Dwell Time of Each Frequency

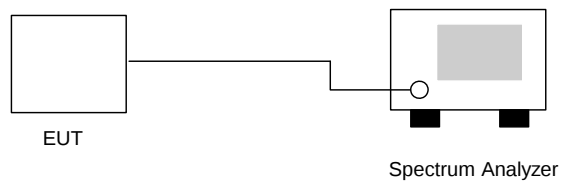
5.6.1 Measuring Instruments

As described in chapter 9 of this test report.

5.6.2 Test Procedure

- a. The transmitter output was connected to the spectrum analyzer by a low loss cable.
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- d. The calculate $= 79 * 0.4 * (1600/79) * t$ (t = the time duration of one single pulse)

5.6.3 Test Setup Layout



5.6.4 Test Result : See spectrum analyzer plots below

- Application Type :
- Temperature : 21~26°C
- Relative Humidity : 49~51%
- Test Engineer : Sun

Bluetooth (1Mbps) CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.60	432.00	0.13	0.4
DH3	4.90	1732.00	0.27	0.4
DH5	3.20	3040.00	0.31	0.4

Bluetooth EDR (2Mbps) CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.10	452.00	0.13	0.4
DH3	4.40	1732.00	0.24	0.4
DH5	3.90	3032.00	0.37	0.4

Bluetooth EDR (3Mbps) CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	8.60	464.00	0.13	0.4
DH3	5.50	1710.00	0.30	0.4
DH5	3.70	3000.00	0.35	0.4

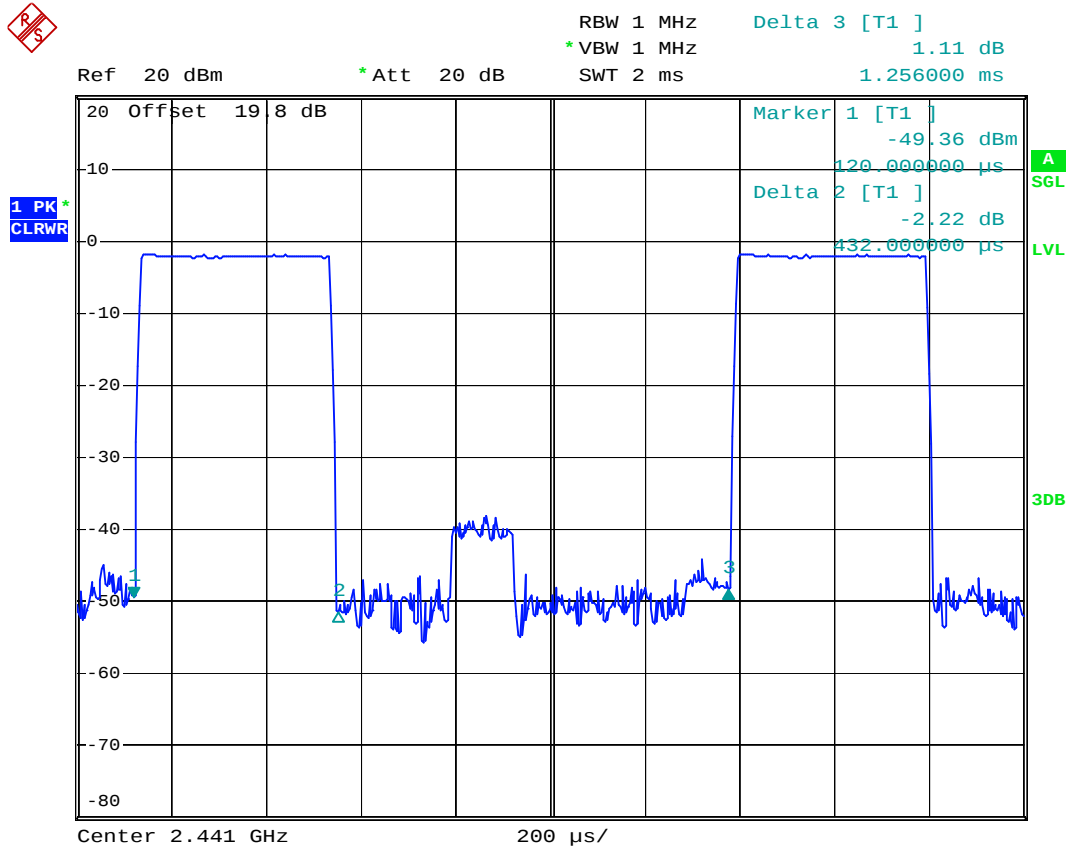
※ Remark:

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

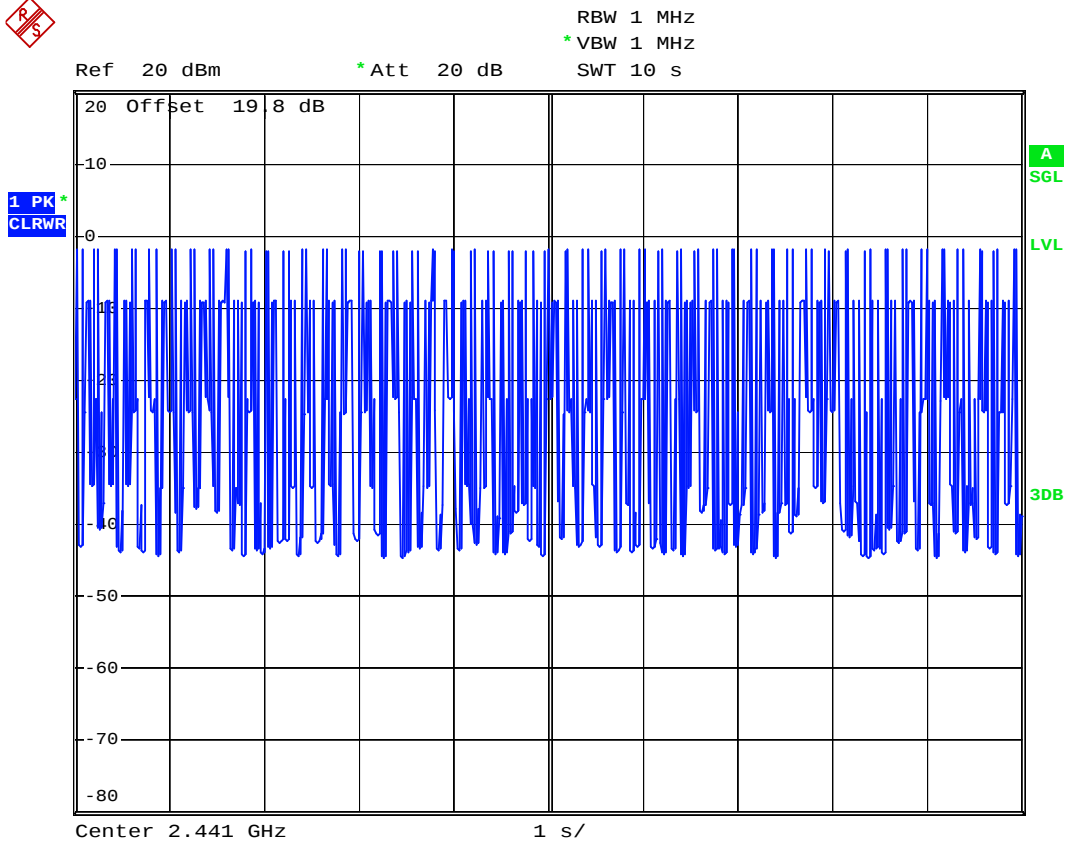
5.6.5 Dwell Time

Bluetooth (1Mbps)

DH1 (CH39)

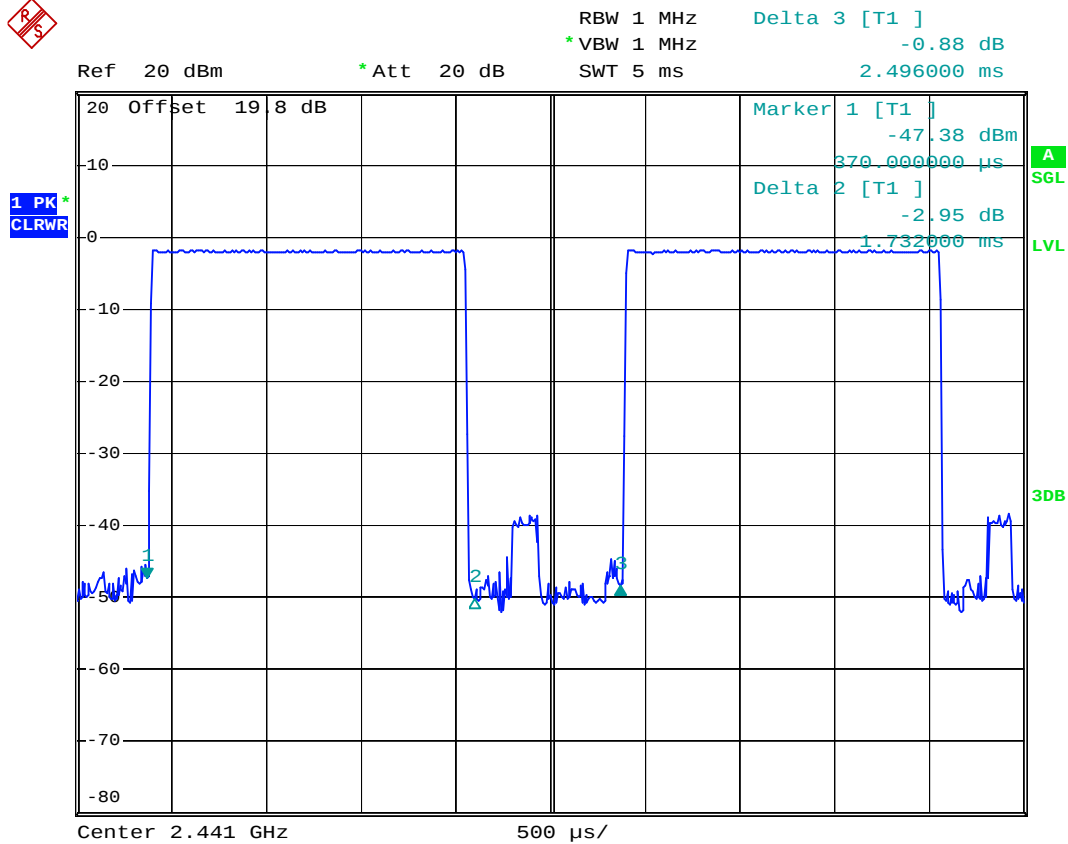


Date: 13.AUG.2008 02:21:26

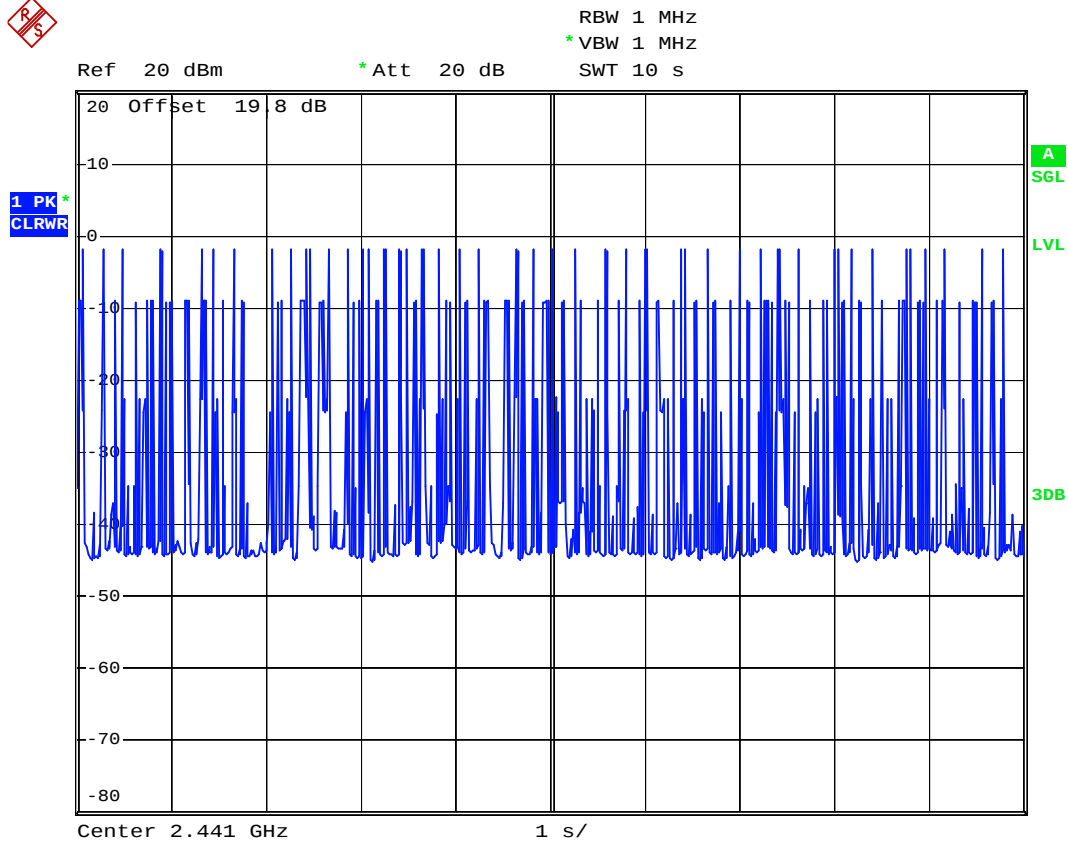


Date: 13.AUG.2008 02:23:20

DH3 (CH39)

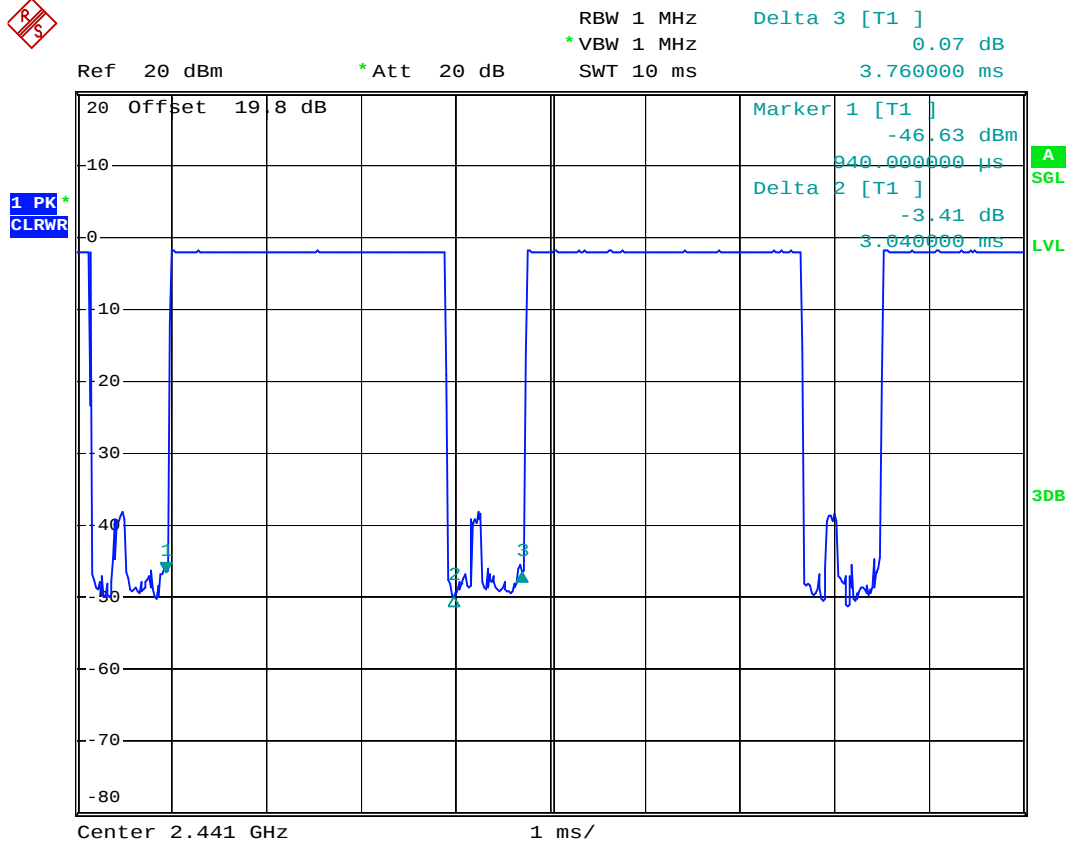


Date: 13.AUG.2008 02:21:52

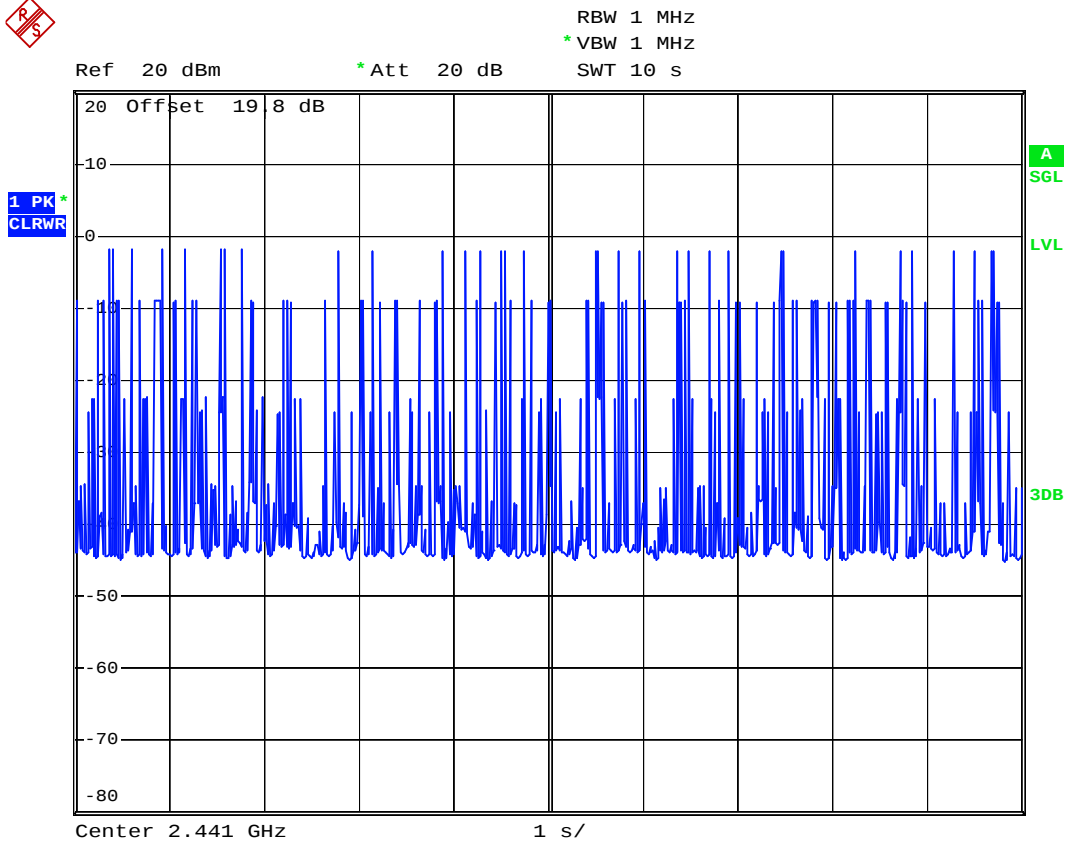


Date: 13.AUG.2008 02:23:40

DH5 (CH39)



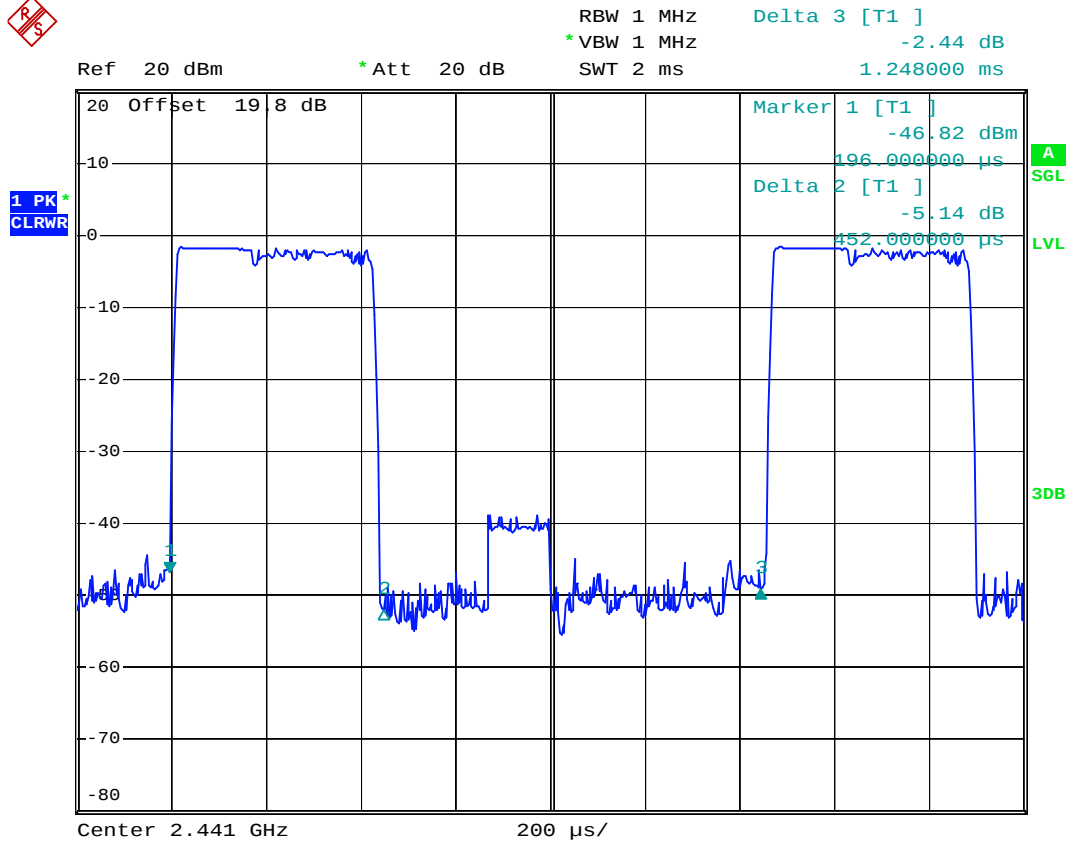
Date: 13.AUG.2008 02:22:17



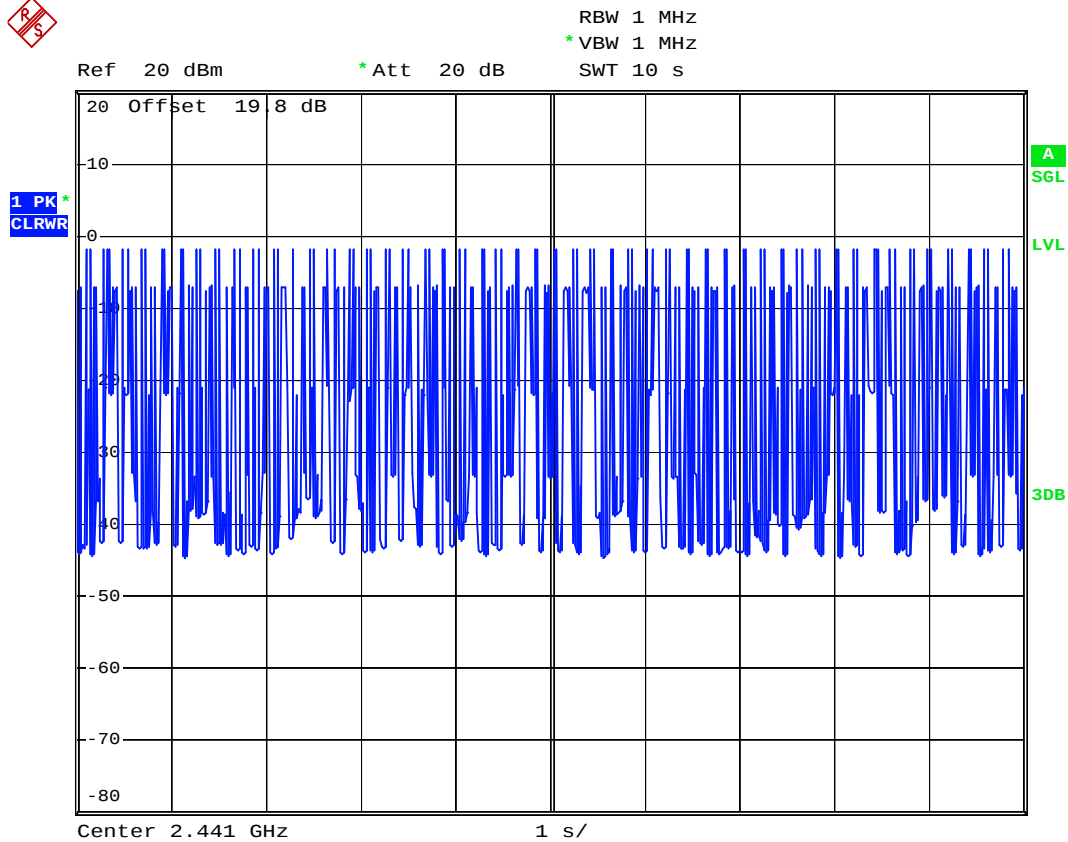
Date: 13.AUG.2008 02:22:55

Bluetooth EDR (2Mbps)

2DH1 (CH39)

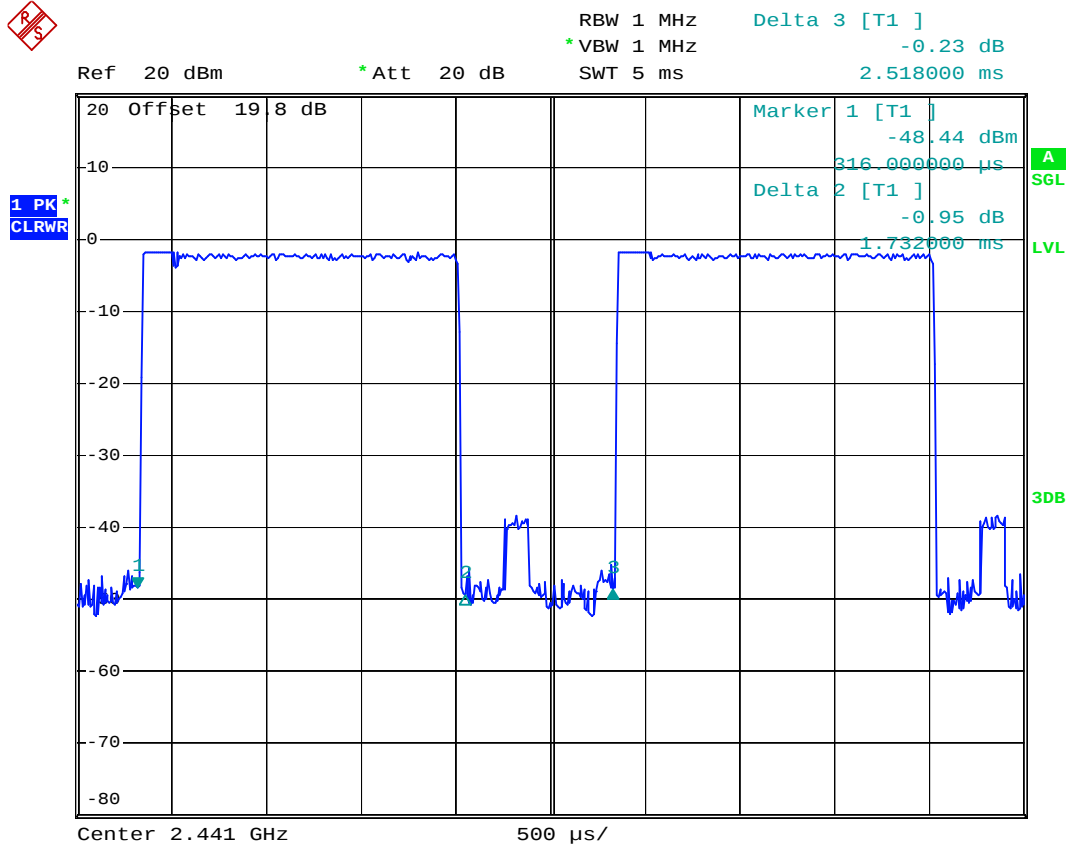


Date: 13.AUG.2008 02:57:10

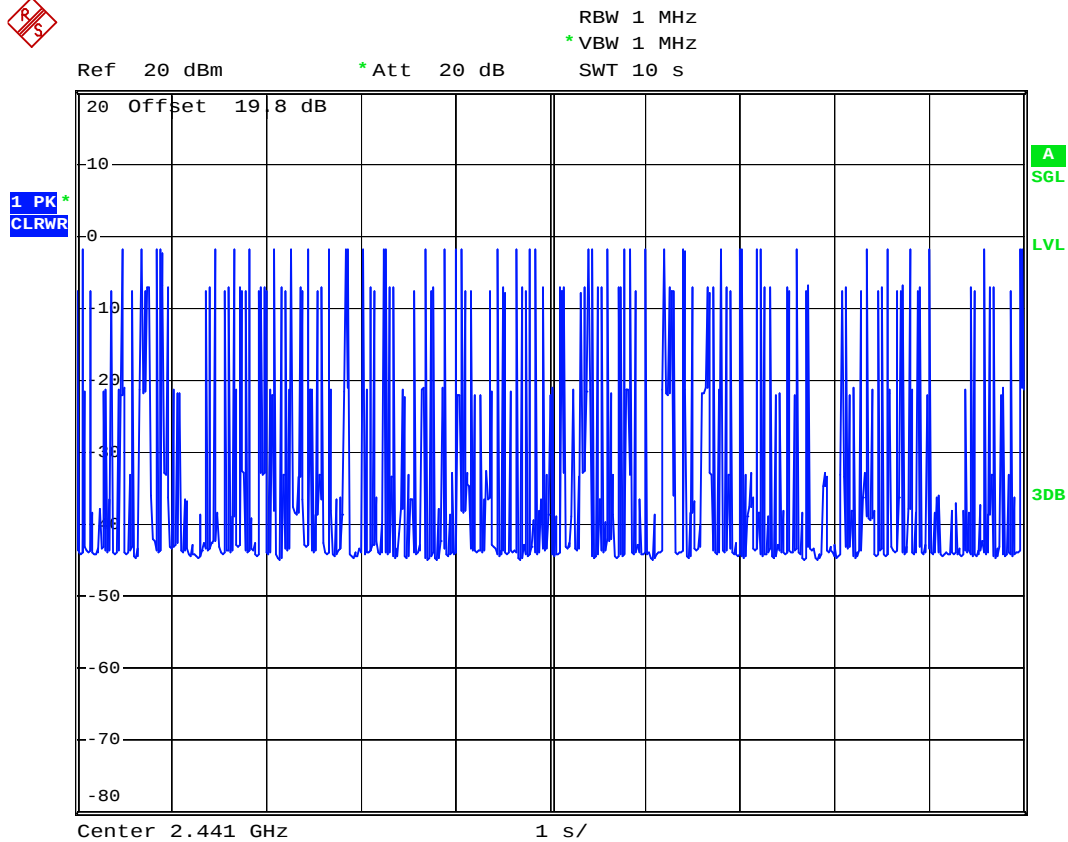


Date: 13.AUG.2008 02:54:41

2DH3 (CH39)

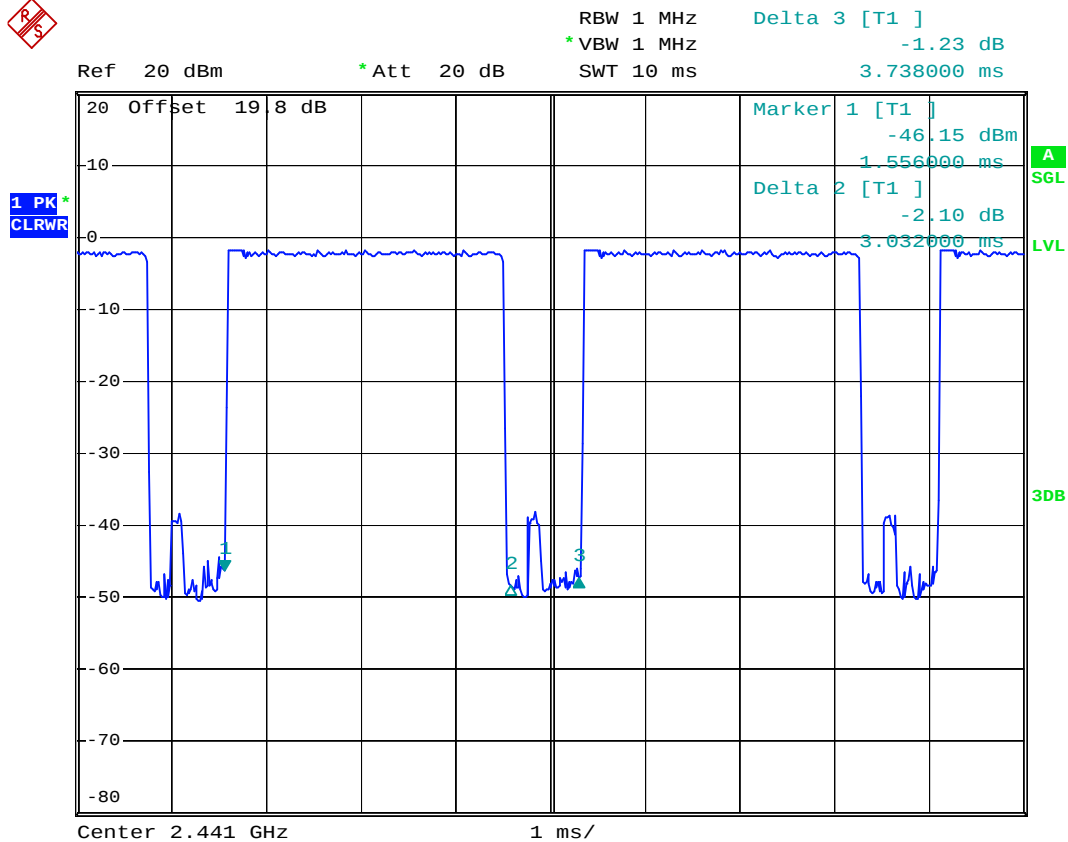


Date: 13.AUG.2008 02:57:34

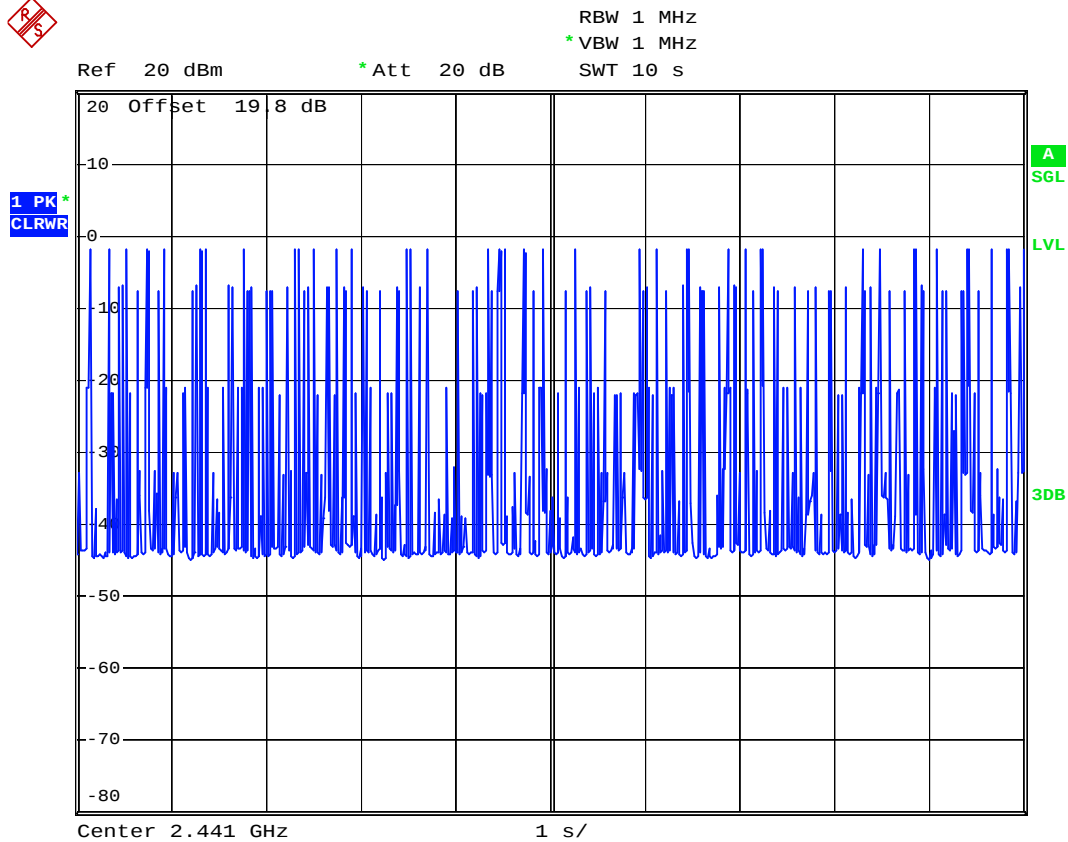


Date: 13.AUG.2008 02:55:22

2DH5 (CH39)



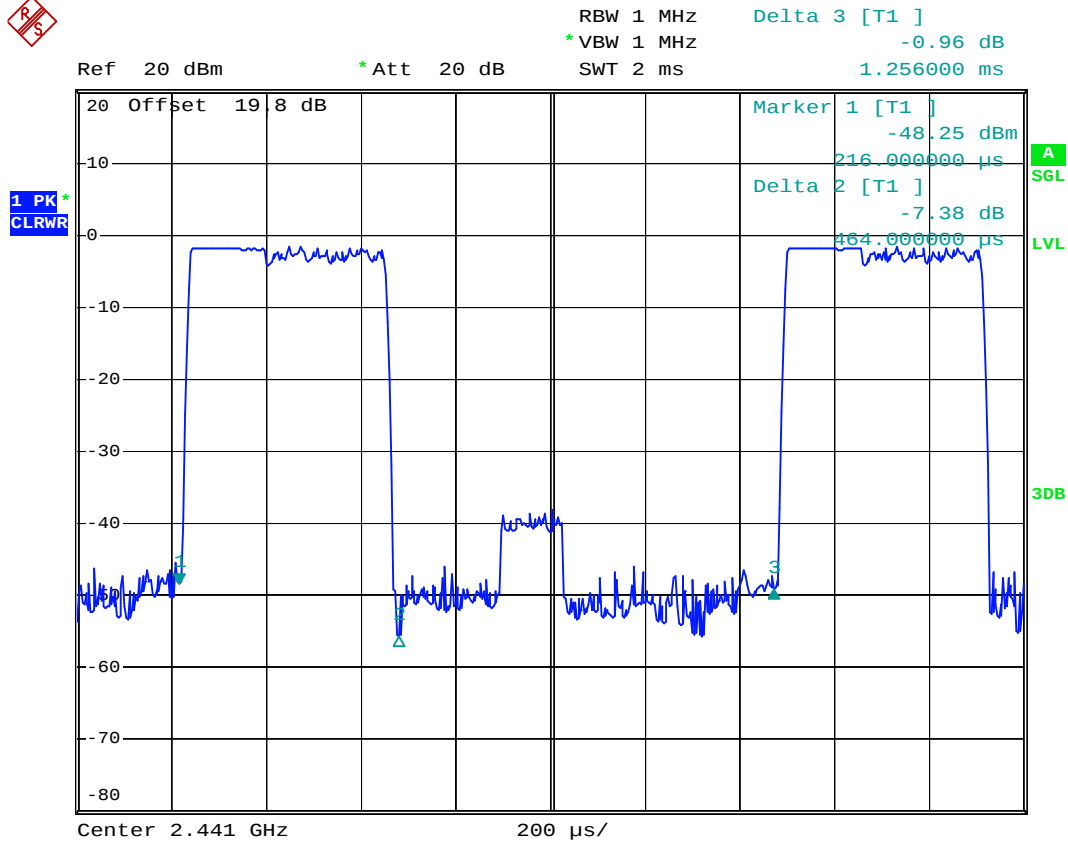
Date: 13.AUG.2008 02:58:06



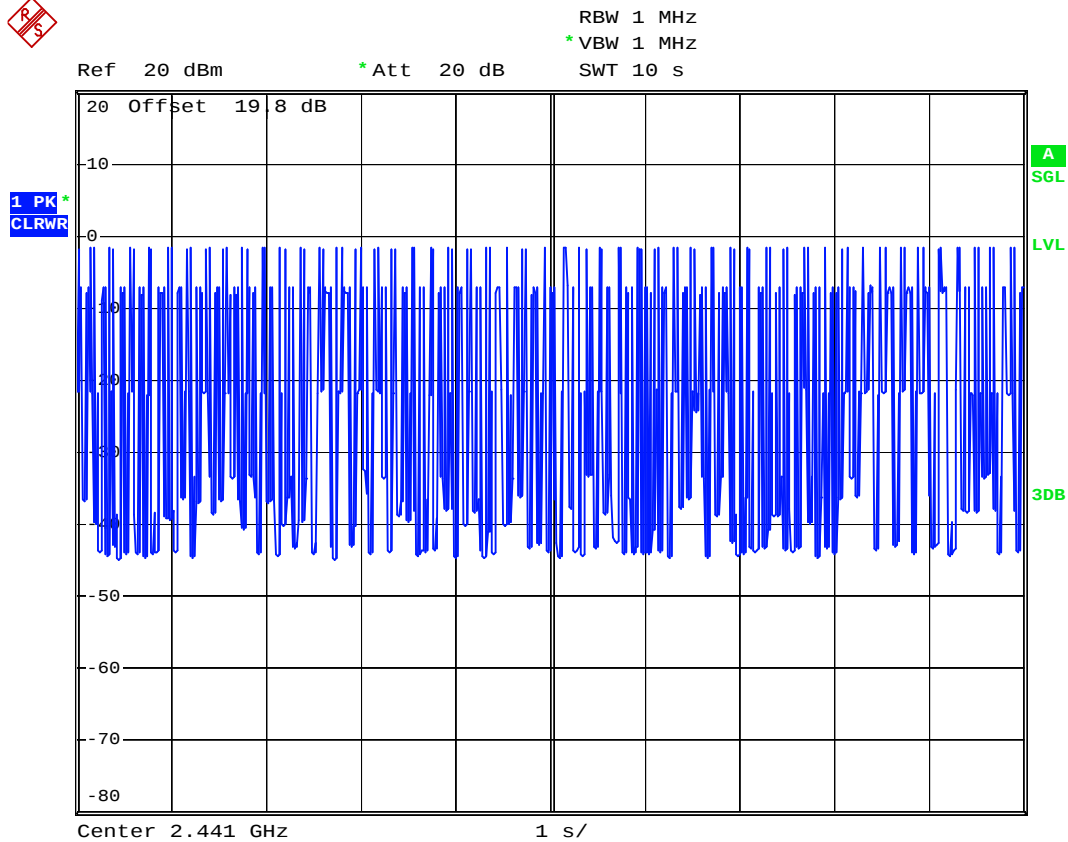
Date: 13.AUG.2008 02:56:04

Bluetooth EDR (3Mbps)

3DH1 (CH39)

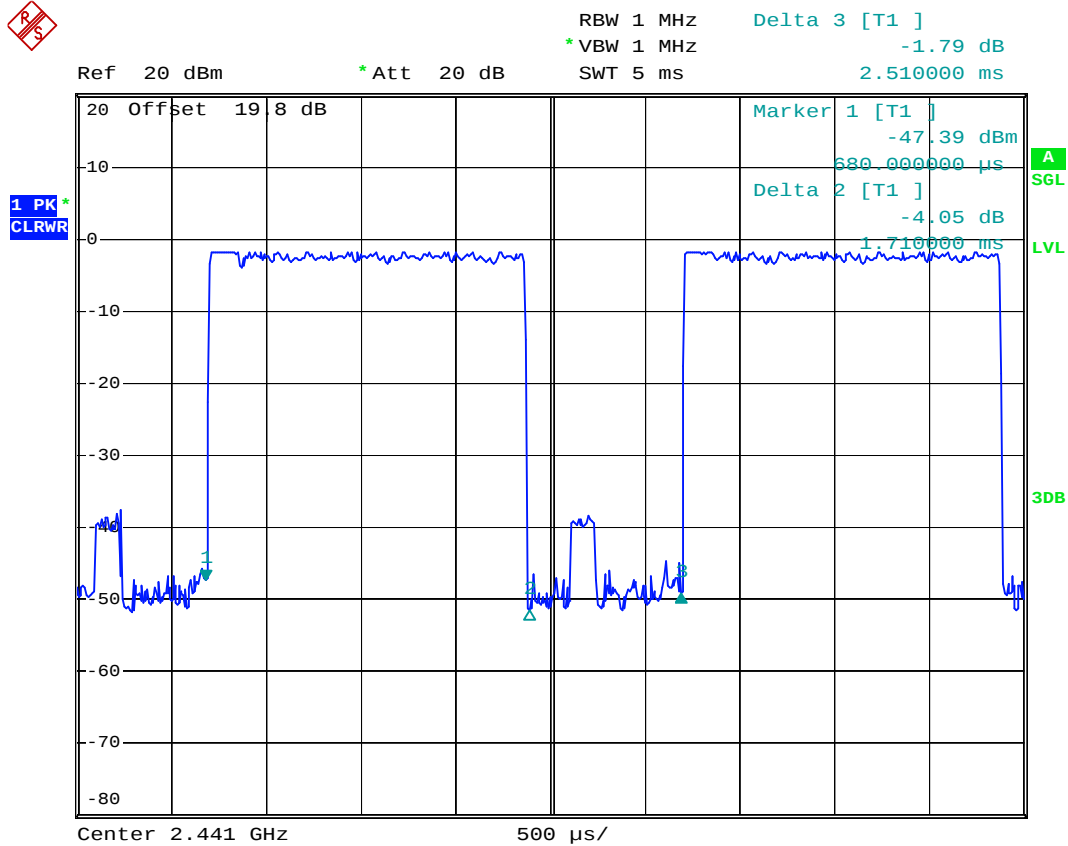


Date: 13.AUG.2008 02:49:26

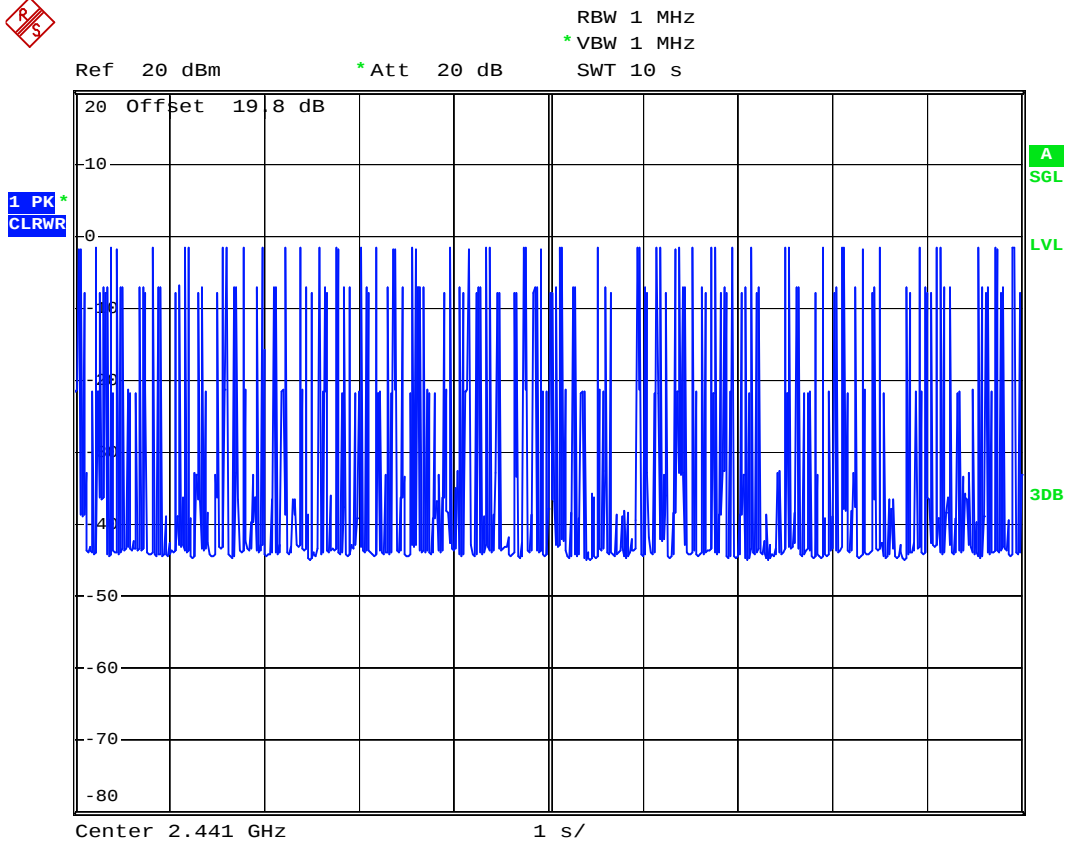


Date: 13.AUG.2008 02:51:05

3DH3 (CH39)

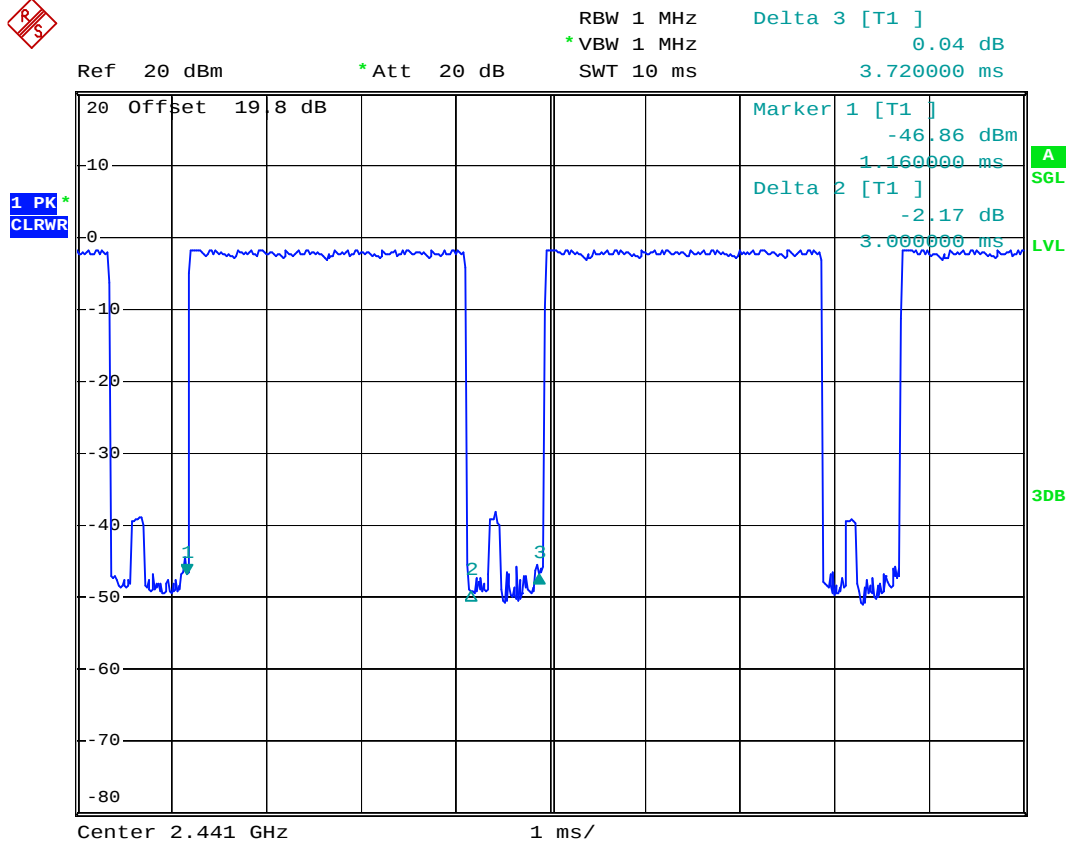


Date: 13.AUG.2008 02:49:55

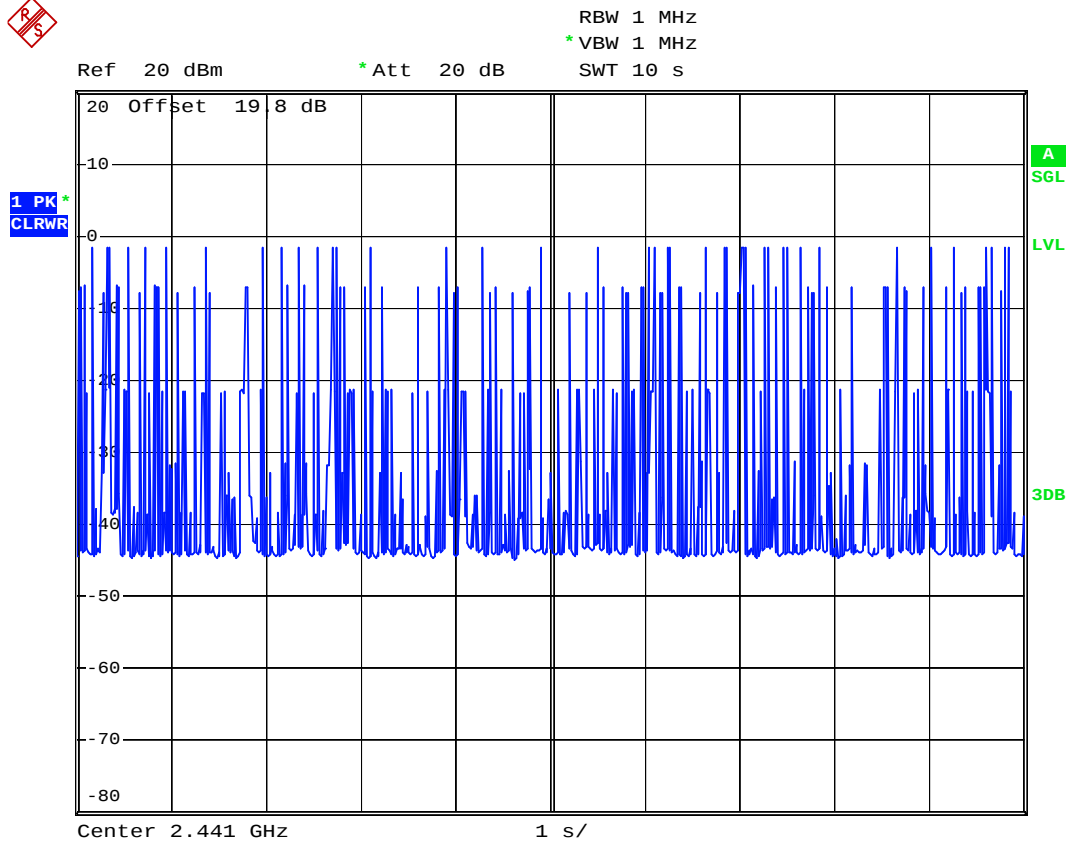


Date: 13.AUG.2008 02:52:30

3DH5 (CH39)



Date: 13.AUG.2008 02:48:32



Date: 13.AUG.2008 02:53:52

5.7 Peak Output Power Measurement

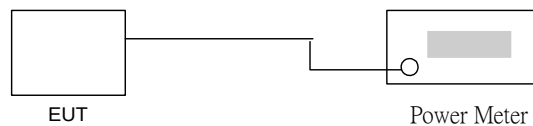
5.7.1 Measuring Instruments

As described in chapter 6 of this test report.

5.7.2 Test Procedure

The antenna port (RF output) of the EUT was connected to the input (RF input) of a spectrum analyzer for Bluetooth measurement. RBW and VBW are set to 3MHz. The cable loss has been offset before testing.

5.7.3 Test Setup Layout



5.7.4 Test Result

- Application Type : Bluetooth
- Temperature : 21~26°C
- Relative Humidity : 49~51%
- Test Engineer : Sun

▪ Bluetooth (1Mbps)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limit (dBm)
00	2402	-4.96	30
39	2441	-1.80	30
78	2480	0.68	30

▪ Bluetooth EDR (2Mbps)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limit (dBm)
00	2402	-4.04	30
39	2441	-1.15	30
78	2480	0.83	30

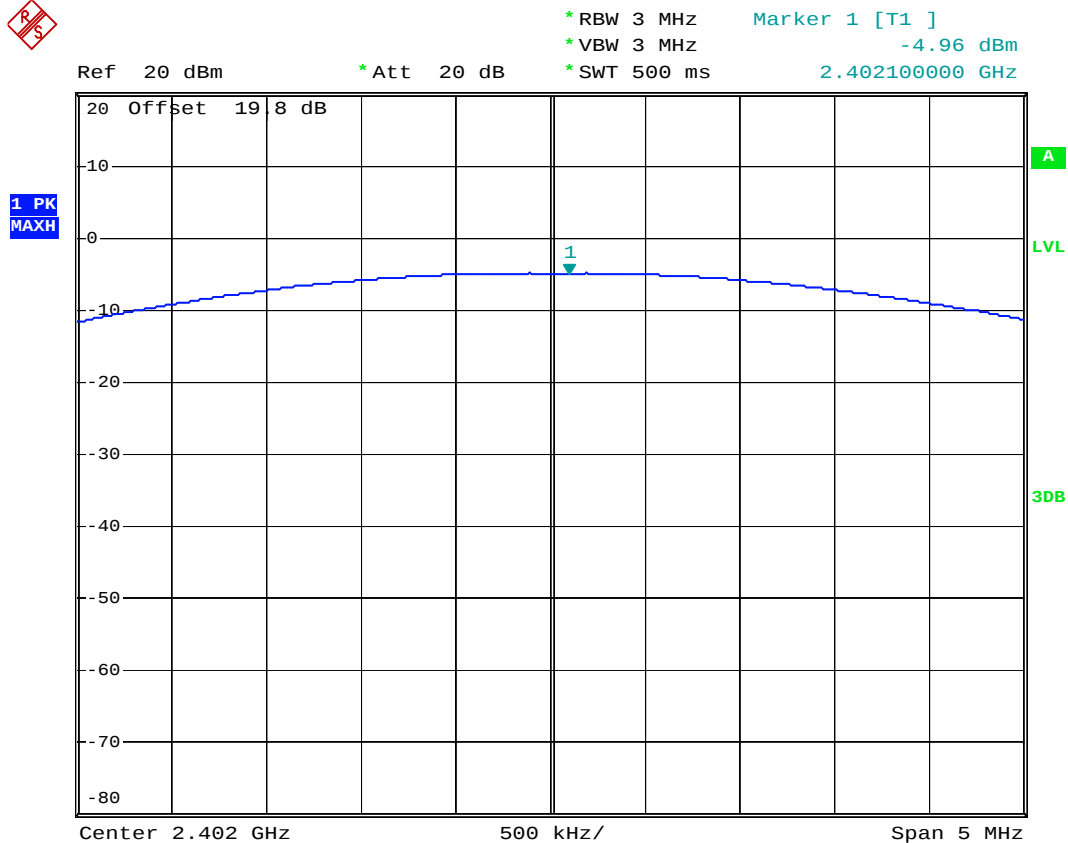
• Bluetooth EDR (3Mbps)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limit (dBm)
00	2402	-3.77	30
39	2441	-0.82	30
78	2480	1.17	30

5.7.5 Output Power

Bluetooth (1Mbps)

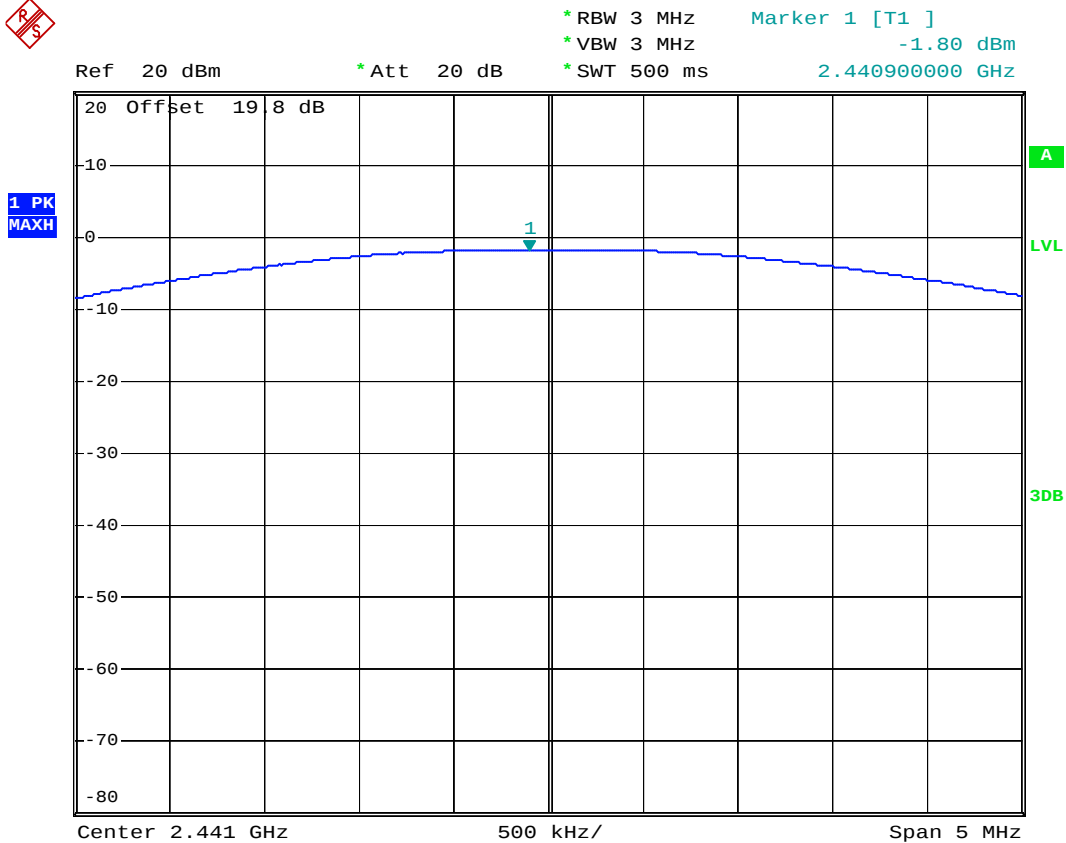
Mode : CH00 (2402MHz)



Date: 13.AUG.2008 01:48:48

Bluetooth (1Mbps)

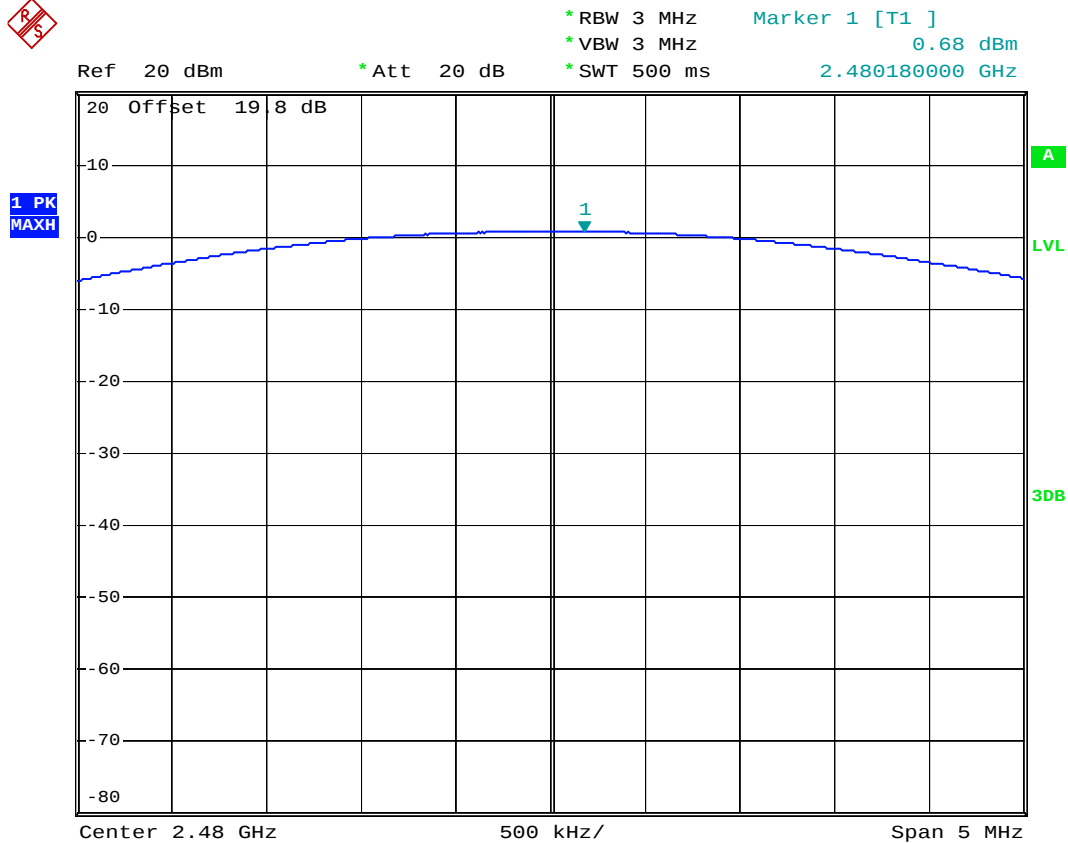
Mode : CH39 (2441MHz)



Date: 13.AUG.2008 01:49:05

Bluetooth (1Mbps)

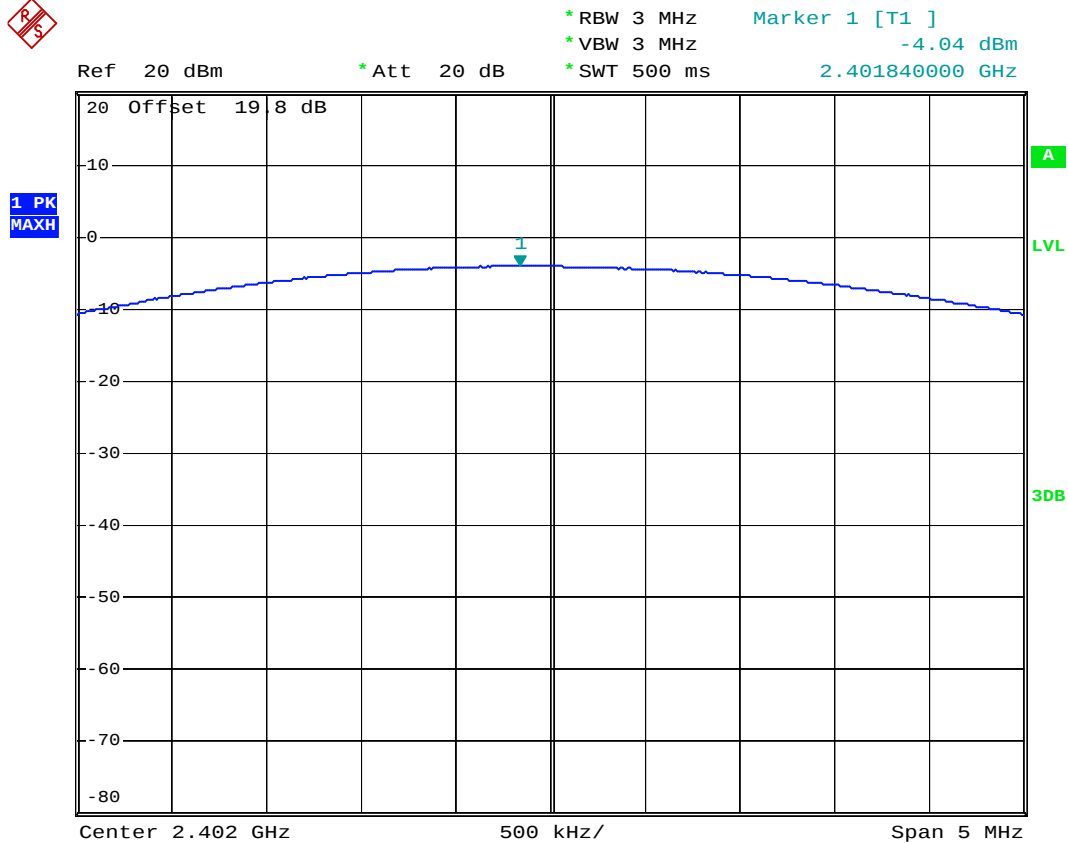
Mode : CH78 (2480MHz)



Date: 13.AUG.2008 01:49:26

Bluetooth EDR (2Mbps)

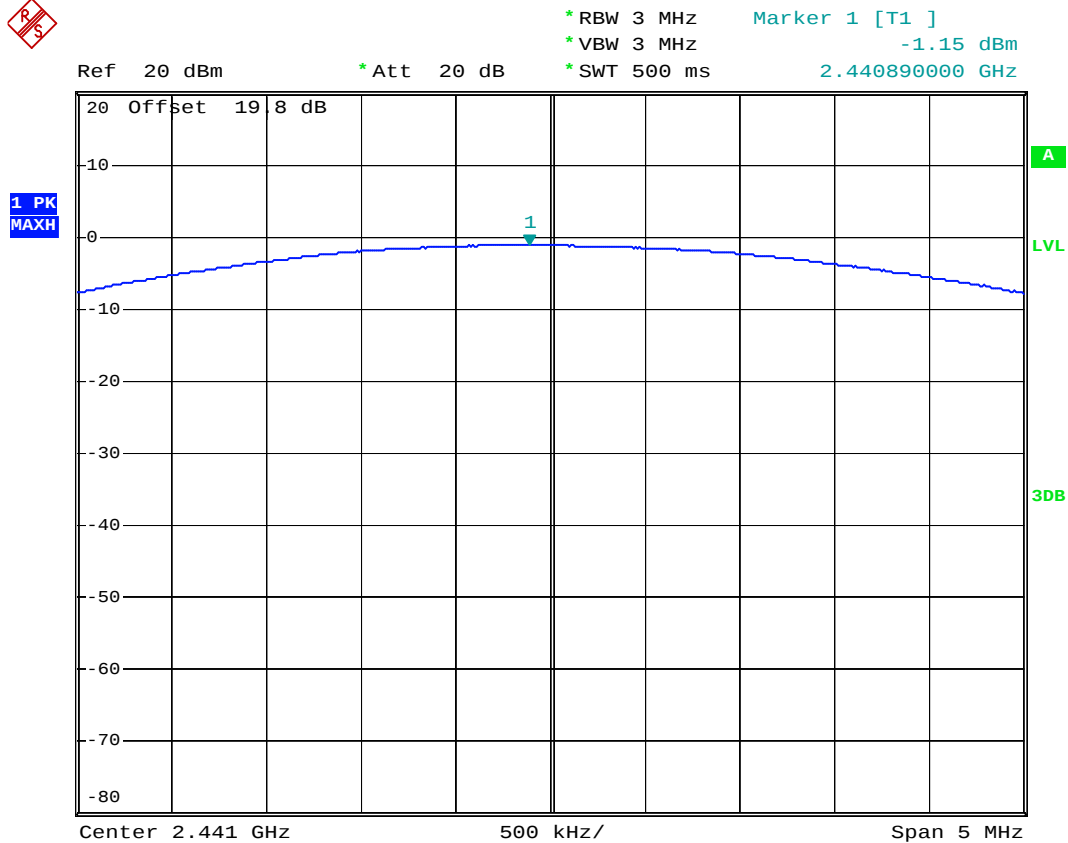
Mode : CH00 (2402MHz)



Date: 13.AUG.2008 02:01:42

Bluetooth EDR (2Mbps)

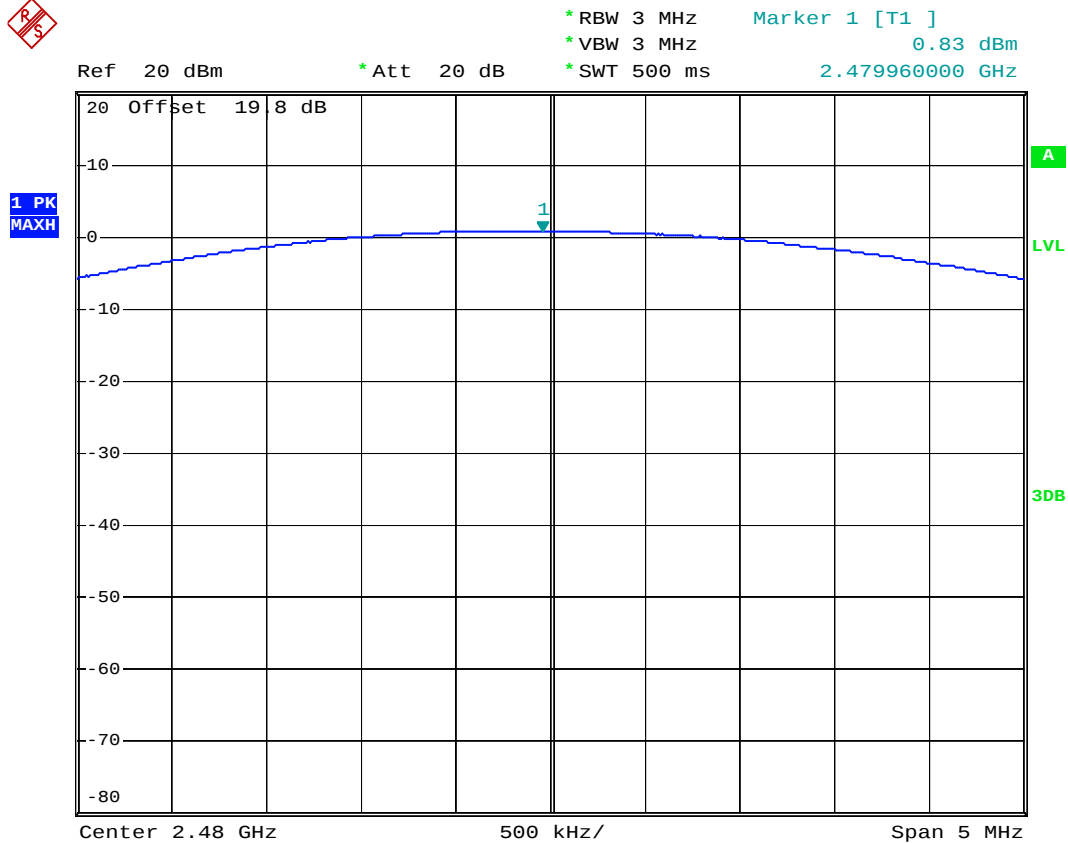
Mode : CH39 (2441MHz)



Date: 13.AUG.2008 02:01:54

Bluetooth EDR (2Mbps)

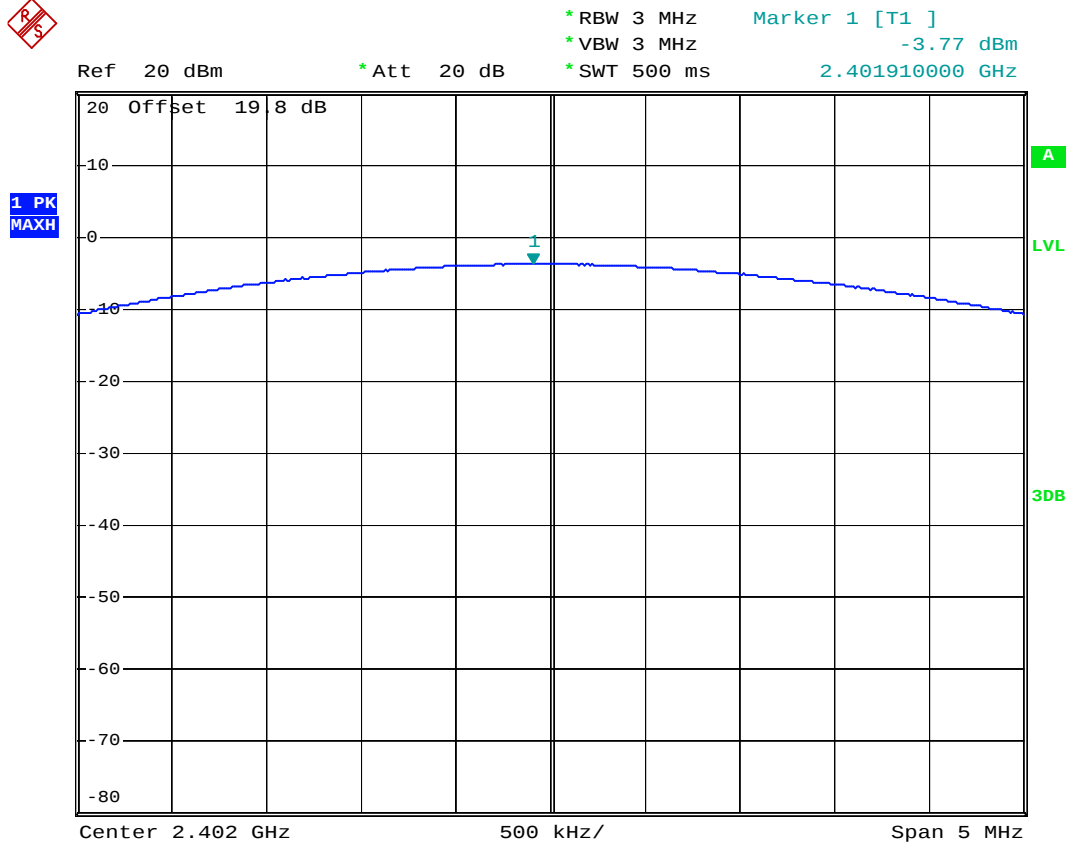
Mode : CH78 (2480MHz)



Date: 13.AUG.2008 02:02:16

Bluetooth EDR (3Mbps)

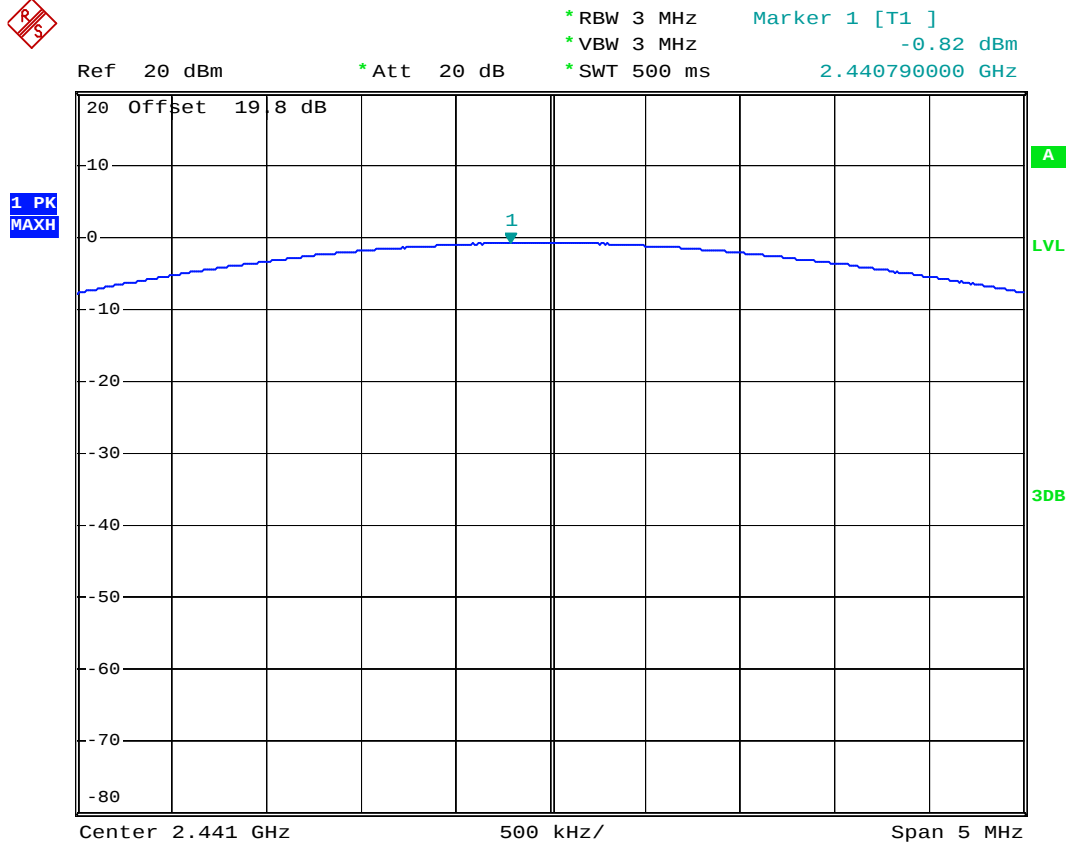
Mode : CH00 (2402MHz)



Date: 13.AUG.2008 02:03:43

Bluetooth EDR (3Mbps)

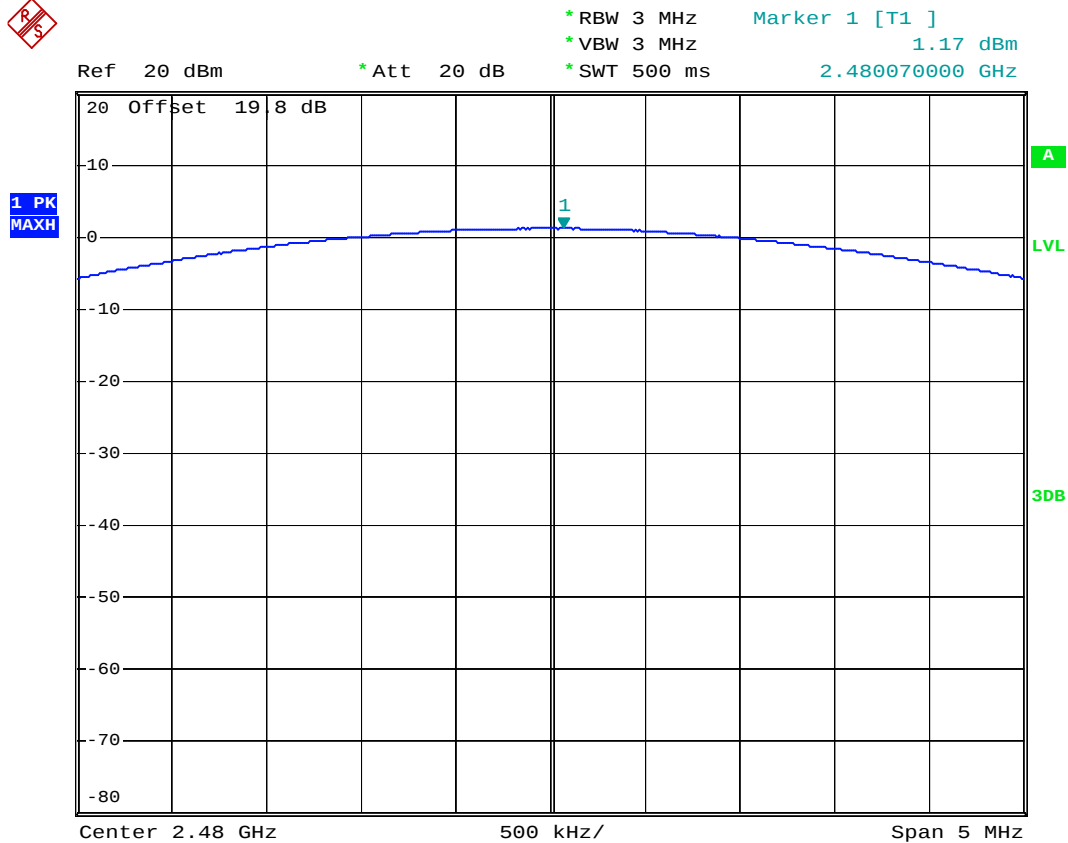
Mode : CH39 (2441MHz)



Date: 13.AUG.2008 02:03:57

Bluetooth EDR (3Mbps)

Mode : CH78 (2480MHz)



Date: 13.AUG.2008 02:04:32

5.8 Conducted Emission

5.8.1 Measuring Instruments

As described in chapter 6 of this test Report.

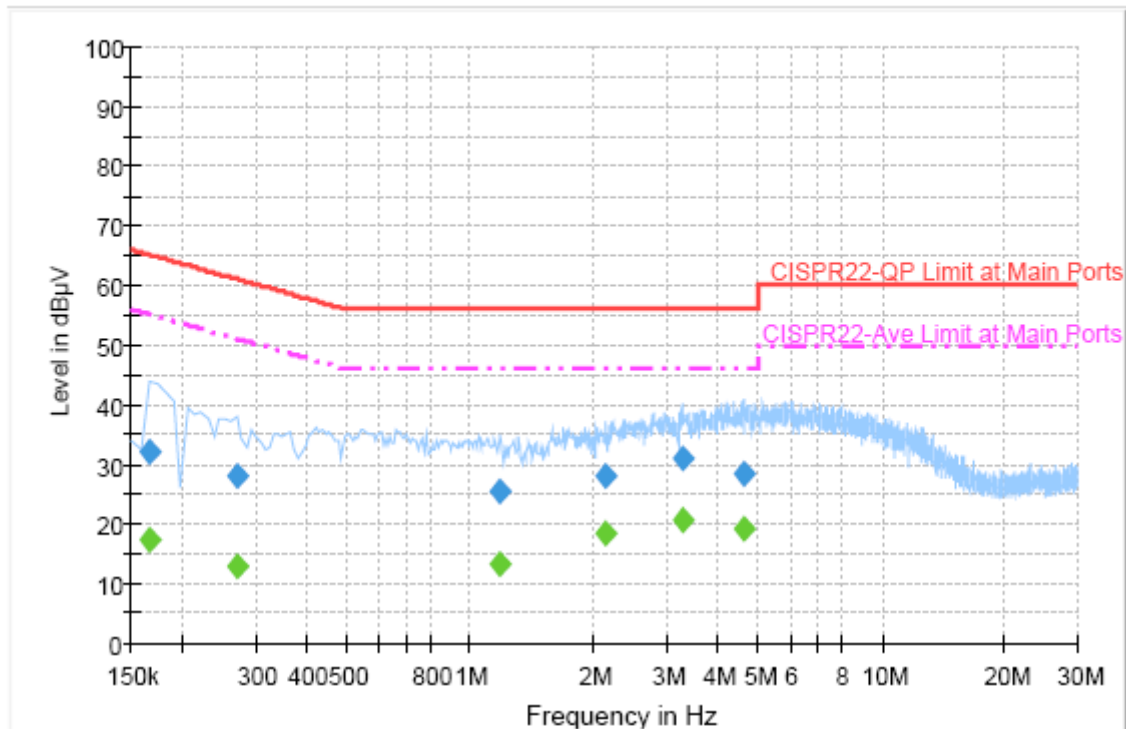
5.8.2 Test Procedures

1. 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.
2. Connect EUT to the power port of a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 KHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.8.3 Test Data

- Test Mode : Mode 1
- Temperature : 21~26℃
- Relative Humidity : 49~51%
- Test Engineer: Sun
- Test Condition : Line

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


Final Result 1

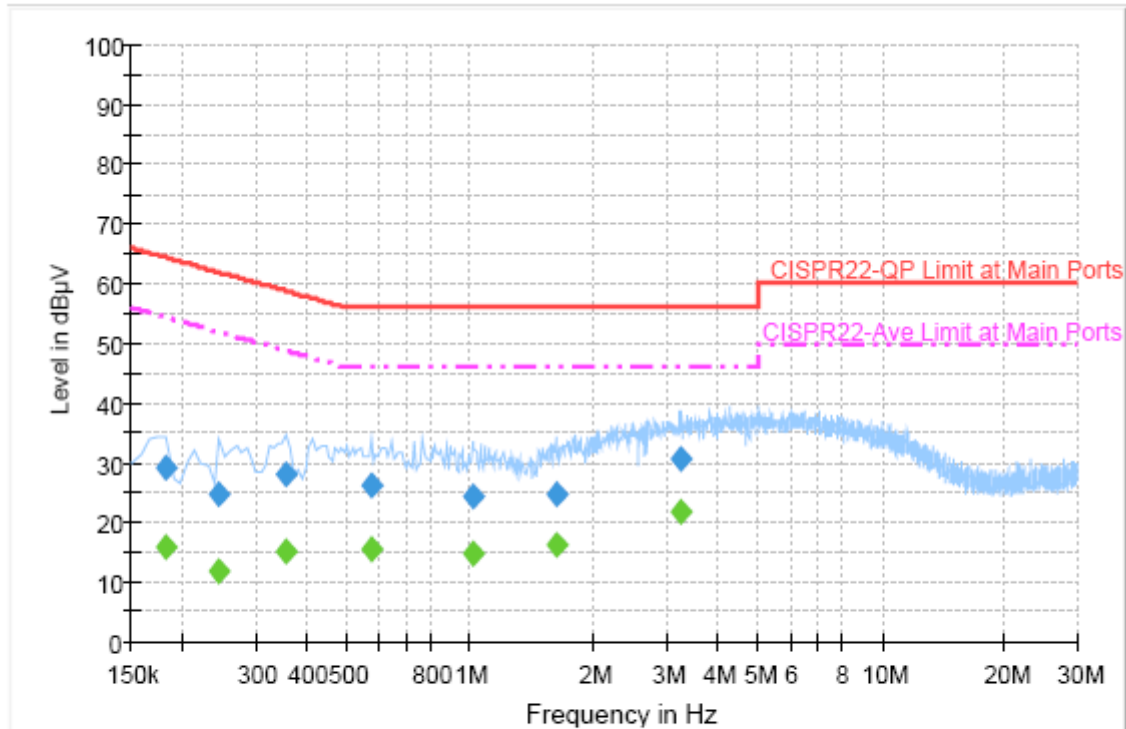
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	32.2	Off	L1	19.3	33.0	65.2
0.270000	28.2	Off	L1	19.3	32.9	61.1
1.182000	25.3	Off	L1	19.4	30.7	56.0
2.142000	28.1	Off	L1	19.4	27.9	56.0
3.286000	30.8	Off	L1	19.5	25.2	56.0
4.606000	28.5	Off	L1	19.6	27.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	17.5	Off	L1	19.3	37.7	55.2
0.270000	13.1	Off	L1	19.3	38.0	51.1
1.182000	13.2	Off	L1	19.4	32.8	46.0
2.142000	18.5	Off	L1	19.4	27.5	46.0
3.286000	20.7	Off	L1	19.5	25.3	46.0
4.606000	19.3	Off	L1	19.6	26.7	46.0

- Test Condition: Neutral

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



Final Result 1

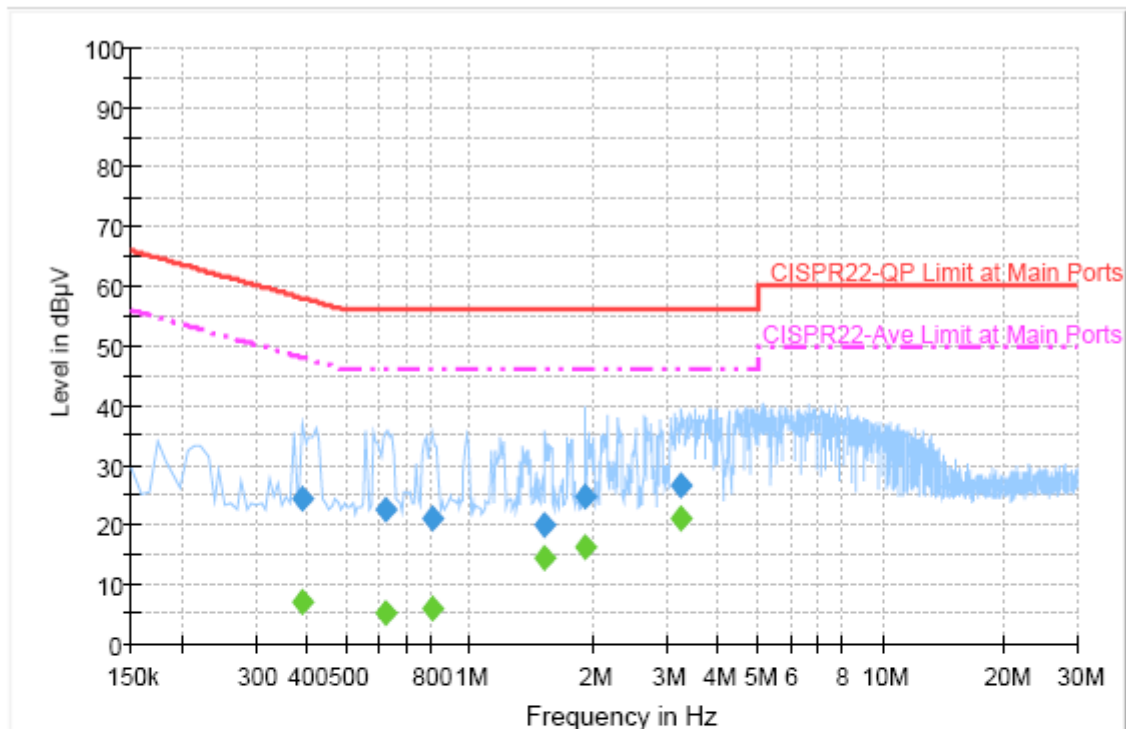
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	29.0	Off	N	19.4	35.4	64.4
0.246000	24.8	Off	N	19.4	37.1	61.9
0.358000	28.0	Off	N	19.3	30.8	58.8
0.574000	26.3	Off	N	19.3	29.7	56.0
1.014000	24.4	Off	N	19.5	31.6	56.0
1.614000	24.7	Off	N	19.4	31.3	56.0
3.270000	30.7	Off	N	19.5	25.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	15.8	Off	N	19.4	38.6	54.4
0.246000	11.7	Off	N	19.4	40.2	51.9
0.358000	15.2	Off	N	19.3	33.6	48.8
0.574000	15.5	Off	N	19.3	30.5	46.0
1.014000	14.9	Off	N	19.5	31.1	46.0
1.614000	16.1	Off	N	19.4	29.9	46.0
3.270000	21.7	Off	N	19.5	24.3	46.0

- Test Mode : Mode 2
- Temperature : 21~26℃
- Relative Humidity : 49~51%
- Test Condition : Line
- Test Engineer: Sun

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



Final Result 1

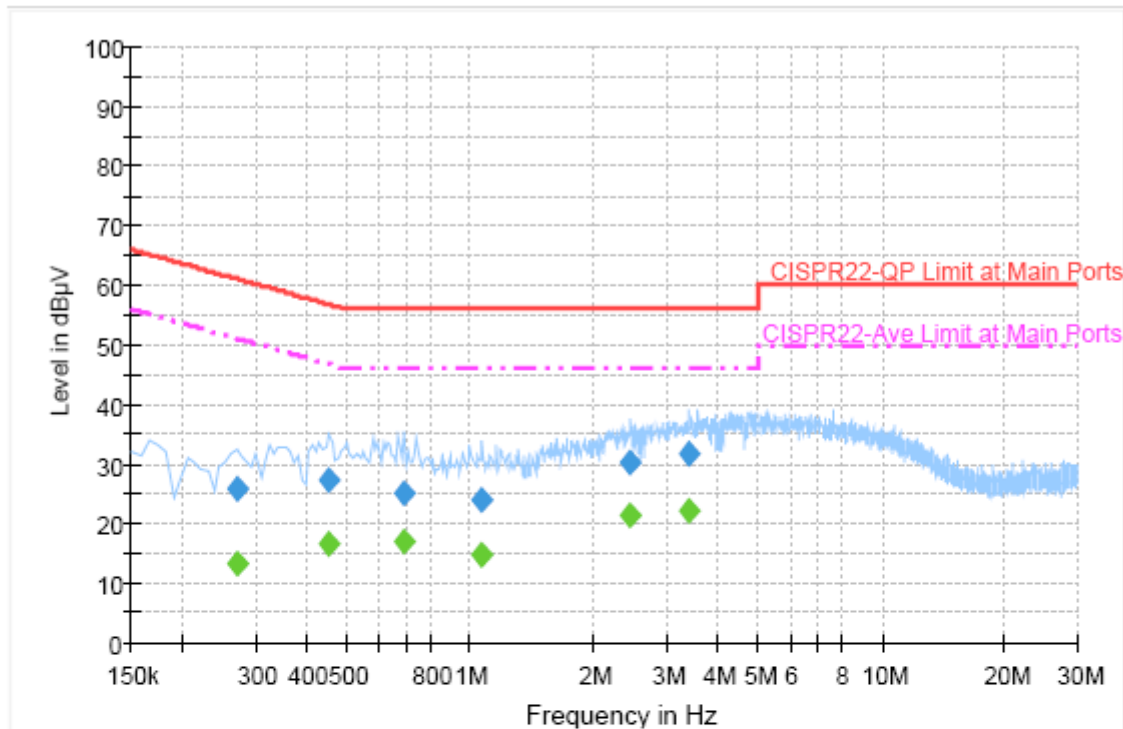
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.390000	24.5	Off	L1	19.4	33.6	58.1
0.622000	22.5	Off	L1	19.3	33.5	56.0
0.806000	21.2	Off	L1	19.4	34.8	56.0
1.518000	20.0	Off	L1	19.4	36.0	56.0
1.902000	24.8	Off	L1	19.5	31.2	56.0
3.270000	26.7	Off	L1	19.5	29.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.390000	7.2	Off	L1	19.4	40.9	48.1
0.622000	5.2	Off	L1	19.3	40.8	46.0
0.806000	5.9	Off	L1	19.4	40.1	46.0
1.518000	14.3	Off	L1	19.4	31.7	46.0
1.902000	16.1	Off	L1	19.5	29.9	46.0
3.270000	20.9	Off	L1	19.5	25.1	46.0

- Test Condition: Neutral

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



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.270000	25.8	Off	N	19.3	35.3	61.1
0.454000	27.2	Off	N	19.3	29.6	56.8
0.694000	25.3	Off	N	19.5	30.7	56.0
1.070000	23.9	Off	N	19.4	32.1	56.0
2.454000	30.1	Off	N	19.5	25.9	56.0
3.398000	31.8	Off	N	19.5	24.2	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.270000	13.4	Off	N	19.3	37.7	51.1
0.454000	16.5	Off	N	19.3	30.3	46.8
0.694000	17.0	Off	N	19.5	29.0	46.0
1.070000	14.8	Off	N	19.4	31.2	46.0
2.454000	21.5	Off	N	19.5	24.5	46.0
3.398000	22.0	Off	N	19.5	24.0	46.0

5.9 Radiated Emission Measurement

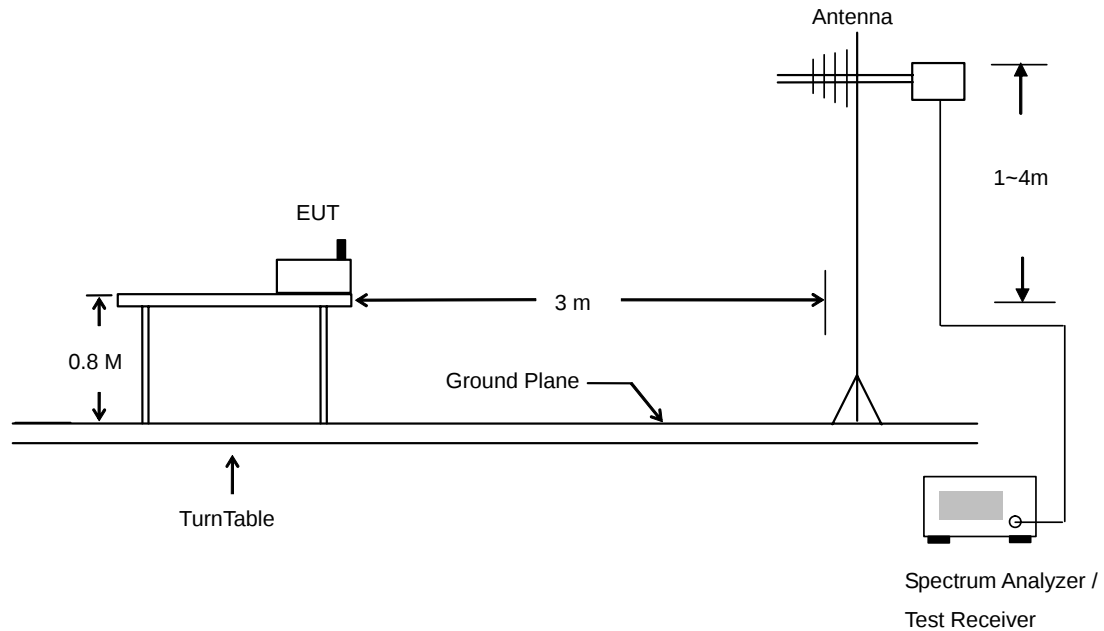
5.9.1 Measuring Instruments

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.

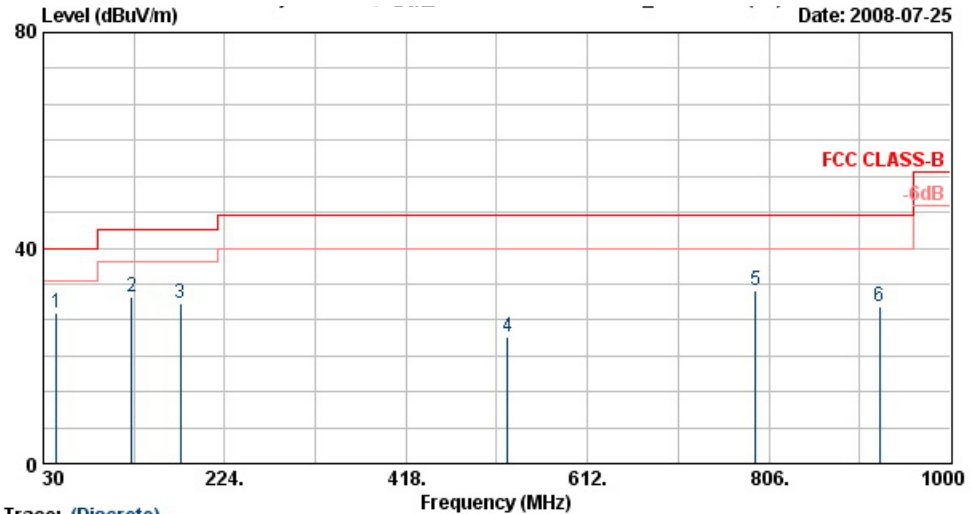
5.9.3 Typical Test Setup Layout of Radiated Emission



5.9.4 Test Data

- Test Mode : Mode 1
- Temperature : 21~26°C
- Relating Humidity : 49~57%
- Test Engineer : Sun
- Polarization : Horizontal (30MHz-1GHz)

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



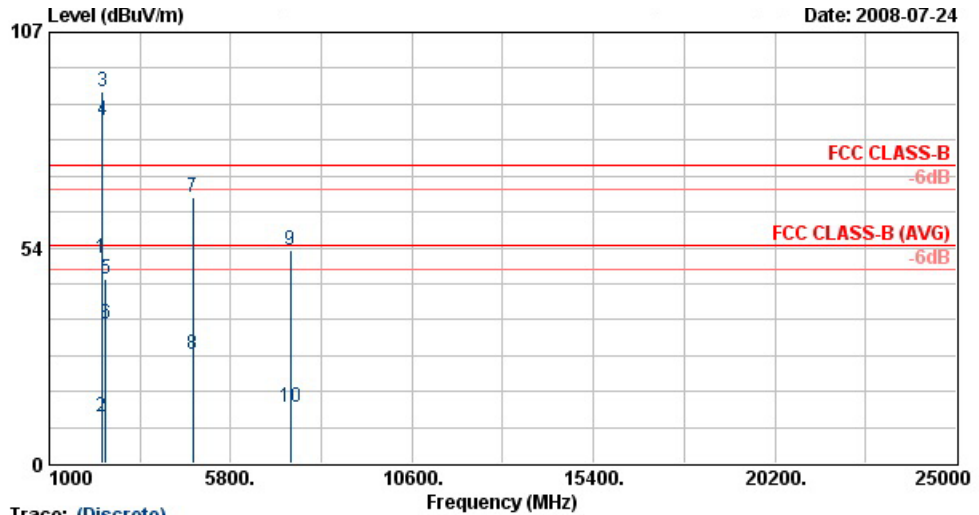
Trace: (Discrete)

Site : D3CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
Model : FR 870721
Name : Mode 1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	44.04	27.89	-12.11	40.00	47.79	11.52	0.30	31.71	100	181
2	124.23	30.80	-12.70	43.50	49.37	12.64	0.50	31.71	---	---
3	176.88	29.85	-13.65	43.50	51.57	9.69	0.60	32.02	---	---
4	526.80	23.37	-22.63	46.00	36.83	17.70	0.93	32.10	---	---
5	791.40	32.11	-13.89	46.00	43.33	19.74	1.20	32.16	---	---
6	924.40	29.16	-16.84	46.00	38.81	20.70	1.20	31.55	---	---

- Polarization : Horizontal (1GHz-25GHz)

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



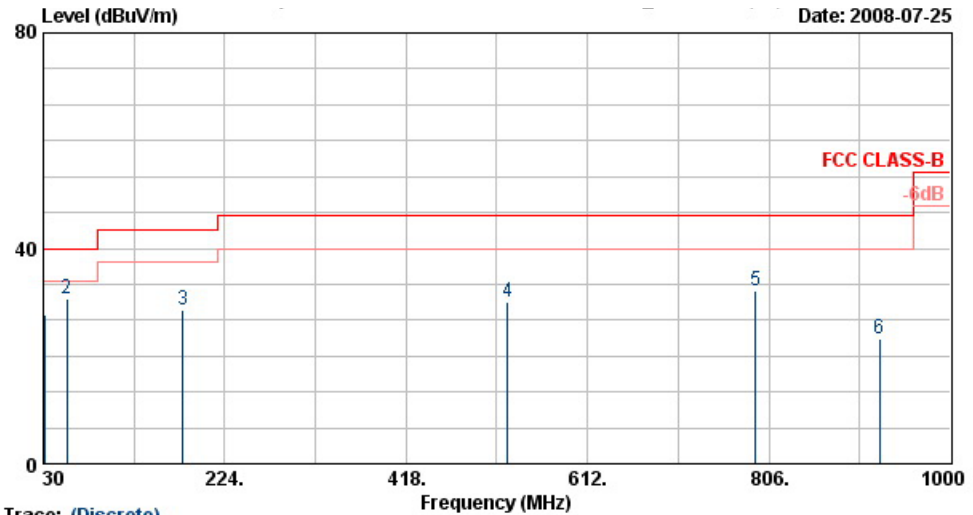
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Model : FR 870721
 Name : Mode 1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2382.01	50.81	-23.19	74.00	50.84	31.78	3.86	35.67	100	0 Peak
2	2382.01	11.72	-42.28	54.00	11.64	31.83	3.92	35.68	106	36 Average
3 @	2402.00	92.23			92.14	31.86	3.92	35.68	100	0 Peak
4 @	2402.00	84.93			84.83	31.86	3.92	35.68	106	36 Average
5	2500.00	45.80	-28.20	74.00	45.45	32.00	4.05	35.70	100	0 Peak
6	2500.00	34.46	-19.54	54.00	34.11	32.00	4.05	35.70	106	36 Average
7 @	4806.00	66.18	-7.82	74.00	61.97	34.12	5.77	35.68	100	0 Peak
8	4806.00	27.09	-26.91	54.00	22.88	34.12	5.77	35.68	102	48 Average
9	7371.00	53.07	-20.93	74.00	46.36	35.65	7.22	36.15	100	0 Peak
10	7371.00	13.98	-40.02	54.00	7.26	35.65	7.22	36.15	100	104 Average

Remark: #3 and #4 are Fundamental Signals

- Polarization : Vertical (30MHz-1GHz)

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

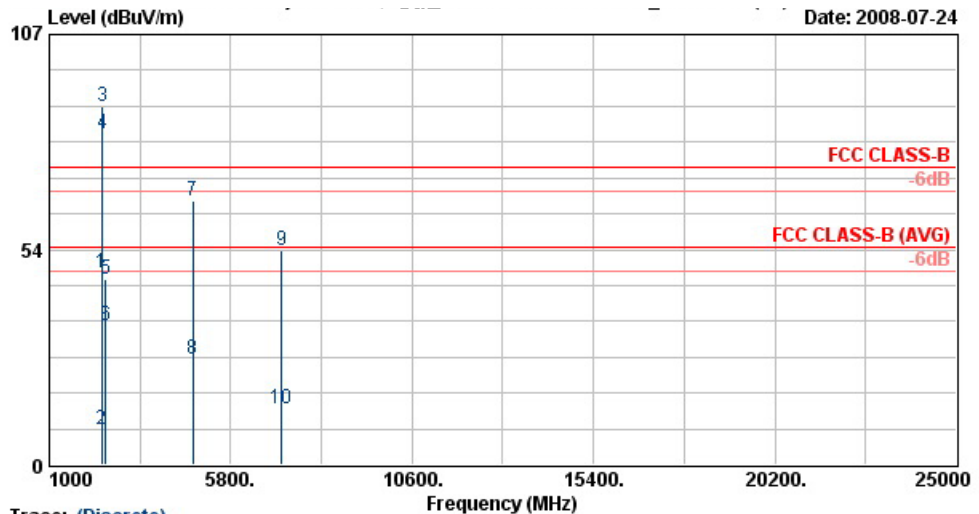


Site : 03CH06-HY
Condition : FCC CLASS-B 3m LP-ANT(951121) VERTICAL
Model : FR 870721
Name : Mode 1

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.08	27.59	-12.41	40.00	39.95	18.95	0.30	31.61	---	---	Peak
2 @	55.38	30.59	-9.41	40.00	54.74	7.35	0.40	31.90	100	279	Peak
3	179.58	28.69	-14.81	43.50	50.66	9.50	0.60	32.07	---	---	Peak
4	526.80	30.00	-16.00	46.00	43.46	17.70	0.93	32.10	---	---	Peak
5	791.40	32.09	-13.91	46.00	43.31	19.74	1.20	32.16	---	---	Peak
6	924.40	23.24	-22.76	46.00	32.89	20.70	1.20	31.55	---	---	Peak

- Polarization : Vertical (1GHz-25GHz)

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



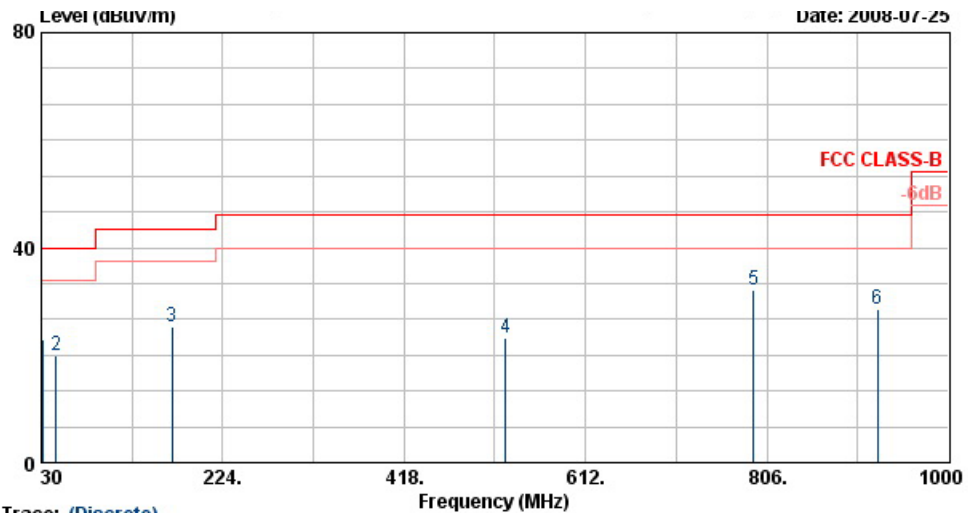
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 870721
Mode : Mode 1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	2380.68	47.84	-26.16	74.00	47.87	31.78	3.86	35.67	100	0 Peak
2	2380.68	8.75	-45.25	54.00	8.67	31.83	3.92	35.68	100	100 Average
3 @	2402.00	89.26			89.17	31.86	3.92	35.68	100	0 Peak
4 @	2402.00	82.28			82.18	31.86	3.92	35.68	100	100 Average
5	2488.00	46.00	-28.00	74.00	45.64	32.00	4.05	35.70	100	0 Peak
6	2488.00	34.47	-19.54	54.00	34.11	32.00	4.05	35.70	100	100 Average
7 @	4806.00	65.46	-8.54	74.00	61.25	34.12	5.77	35.68	100	0 Peak
8	4806.00	26.37	-27.63	54.00	22.16	34.12	5.77	35.68	132	106 Average
9	7152.00	53.10	-20.90	74.00	46.28	35.74	7.14	36.06	100	0 Peak
10	7152.00	14.01	-39.99	54.00	7.19	35.74	7.14	36.06	100	193 Average

Remark: #3 and #4 are Fundamental Signals

- Test Mode : Mode 2
- Temperature : 21~26°C
- Relative Humidity : 49~57%
- Test Engineer: Sun
- Polarization : Horizontal (30MHz-1GHz)

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

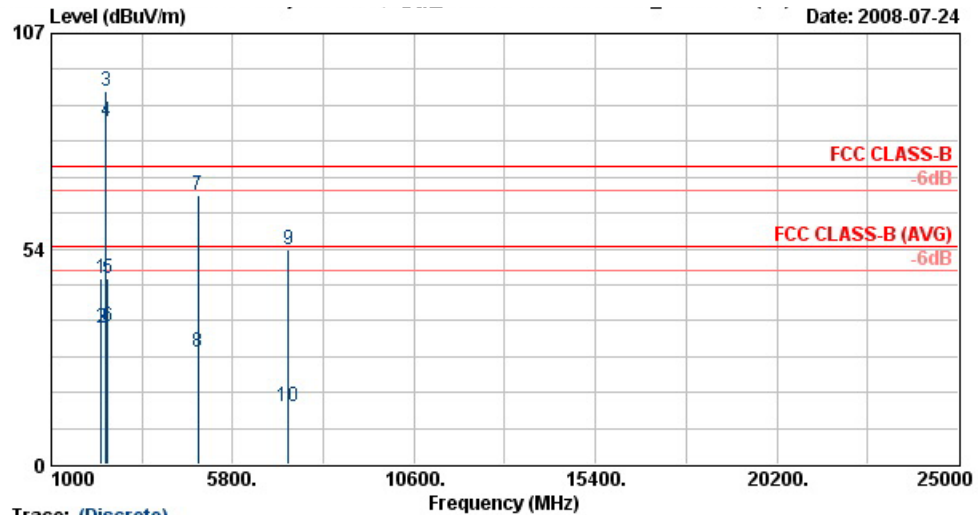


Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
 Model : FR 870721
 Memo : Mode 2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB	dB	cm	deg	
1 @	31.08	22.78	-17.22	40.00	35.14	18.95	0.30	31.61	---	Peak
2 @	45.93	19.90	-20.10	40.00	40.84	10.53	0.30	31.77	---	Peak
3 @	169.59	25.26	-18.24	43.50	46.62	9.92	0.60	31.89	---	Peak
4 @	526.80	23.07	-22.93	46.00	36.54	17.70	0.93	32.10	---	Peak
5 @	791.40	32.15	-13.85	46.00	43.37	19.74	1.20	32.16	100	Peak
6 @	924.40	28.65	-17.35	46.00	38.30	20.70	1.20	31.55	---	Peak

- Polarization : Horizontal (1GHz-25GHz)

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



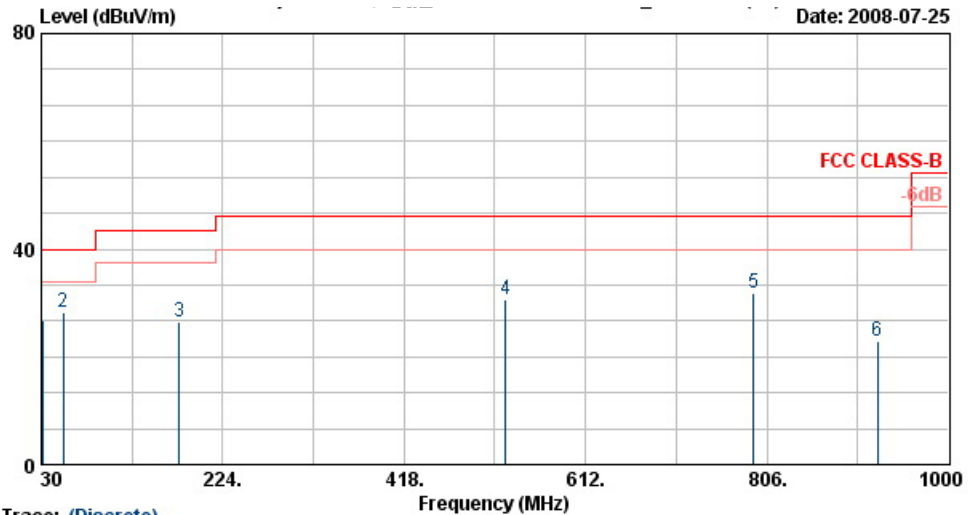
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR 870721
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Preamp Loss Factor	Ant Pos	Table Pos	Remark		
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2314.00	46.23	-27.77	74.00	46.34	31.73	3.82	35.67	100	0	Peak
2 @	2314.00	33.94	-20.06	54.00	34.05	31.73	3.82	35.67	107	38	Average
3 @	2441.00	92.73			92.50	31.93	3.99	35.69	100	0	Peak
4 @	2441.00	85.29			85.07	31.93	3.99	35.69	107	38	Average
5 @	2494.00	46.29	-27.71	74.00	45.94	32.00	4.05	35.70	100	0	Peak
6 @	2494.00	34.37	-19.63	54.00	34.02	32.00	4.05	35.70	107	38	Average
7 @	4881.00	66.88	-7.12	74.00	62.56	34.15	5.82	35.65	100	0	Peak
8 @	4881.00	27.79	-26.21	54.00	23.47	34.15	5.82	35.65	100	50	Average
9 @	7272.00	53.27	-20.73	74.00	46.51	35.69	7.18	36.11	100	0	Peak
10 @	7272.00	14.18	-39.82	54.00	7.42	35.69	7.18	36.11	100	215	Average

Remark: #3 and #4 are Fundamental Signals

- Polarization : Vertical (30MHz-1GHz)

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



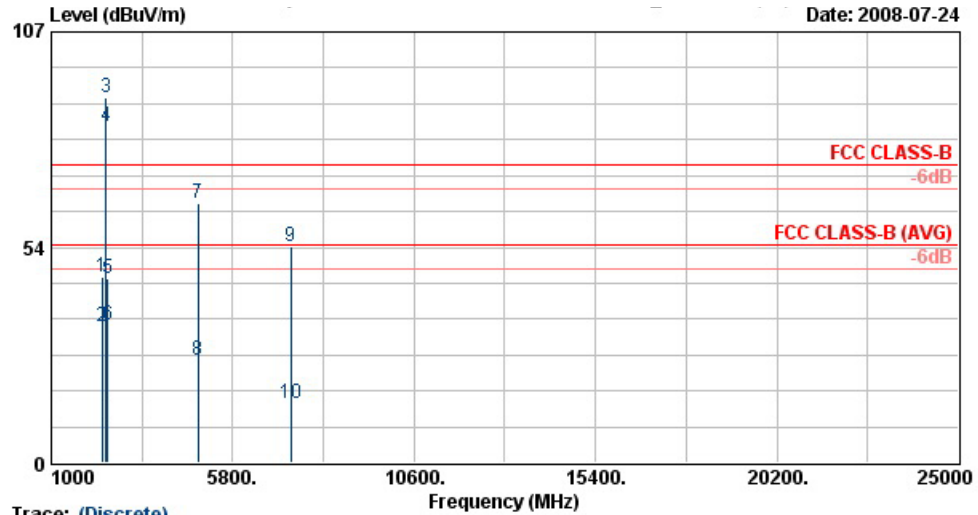
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LP-ANT(051121) VERTICAL
Model : FR 870721
Memo : Mode 2

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	31.08	26.72	-13.28	40.00	39.08	18.95	0.30	31.61	---	---	Peak
2 @	53.49	28.12	-11.88	40.00	52.07	7.64	0.36	31.94	100	245	Peak
3 @	177.69	26.36	-17.14	43.50	48.17	9.63	0.60	32.04	---	---	Peak
4 @	526.80	30.73	-15.27	46.00	44.20	17.70	0.93	32.10	---	---	Peak
5 @	791.40	31.84	-14.16	46.00	43.06	19.74	1.20	32.16	---	---	Peak
6 @	924.40	22.93	-23.07	46.00	32.58	20.70	1.20	31.55	---	---	Peak

- Polarization : Vertical (1GHz-25GHz)

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



Trace: (Discrete)

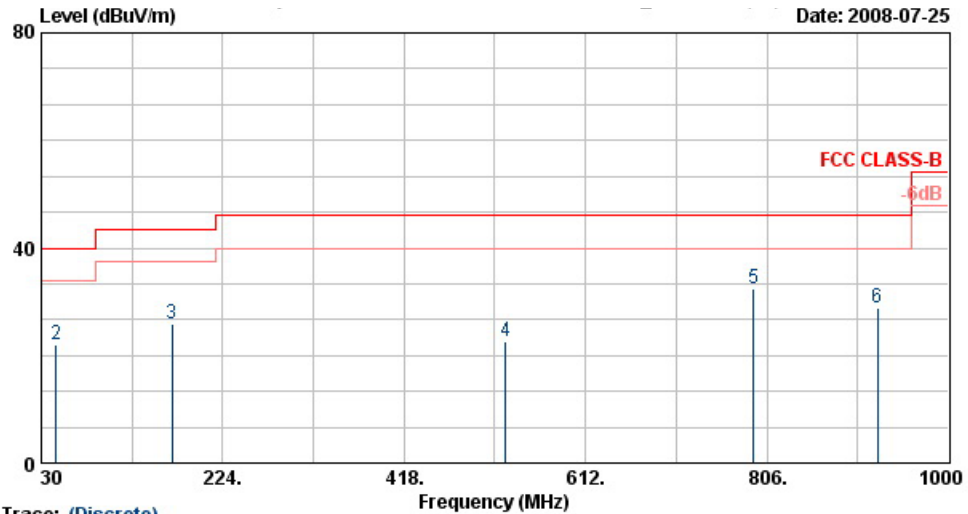
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 870721
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 @	2354.00	45.98	-28.02	74.00	45.99	31.81	3.86	35.67	100	0 Peak
2 @	2354.00	34.00	-20.00	54.00	34.01	31.81	3.86	35.67	103	214 Average
3 @	2441.00	90.61			90.38	31.93	3.99	35.69	100	0 Peak
4 @	2441.00	83.45			83.23	31.93	3.99	35.69	103	214 Average
5 @	2484.00	45.73	-28.27	74.00	45.40	31.98	4.05	35.70	100	0 Peak
6 @	2484.00	34.34	-19.66	54.00	34.01	31.98	4.05	35.70	103	214 Average
7 @	4881.00	64.62	-9.38	74.00	60.30	34.15	5.82	35.65	100	0 Peak
8 @	4881.00	25.53	-28.47	54.00	21.21	34.15	5.82	35.65	129	105 Average
9 @	7347.00	53.67	-20.33	74.00	46.94	35.66	7.21	36.14	100	0 Peak
10 @	7347.00	14.58	-39.42	54.00	7.85	35.66	7.21	36.14	100	65 Average

Remark: #3 and #4 are Fundamental Signals

- Test Mode : Mode 3
- Temperature : 21~26°C
- Relative Humidity : 49~57%
- Test Engineer: Sun
- Polarization : Horizontal (30MHz-1GHz)

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



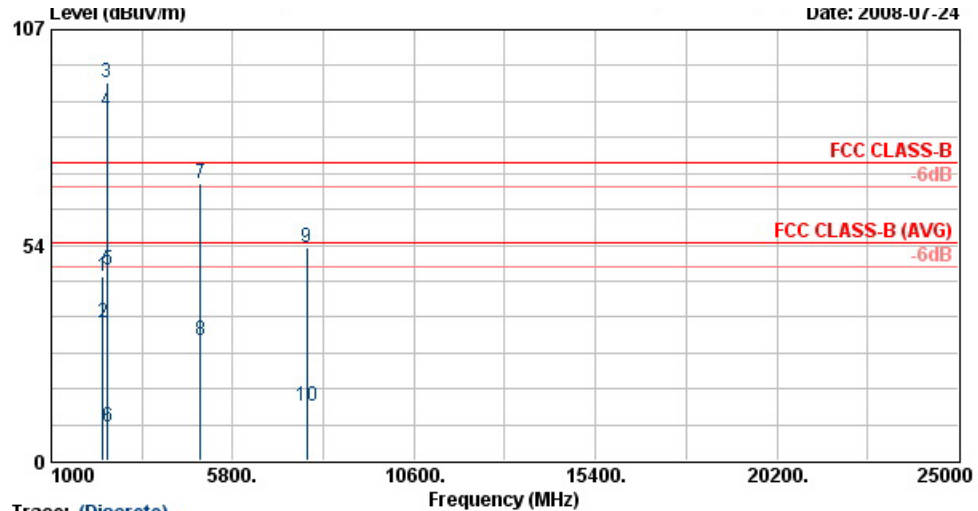
Trace: (Discrete)

Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(051121) HORIZONTAL
 Model : FR 870721
 Mode : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.54	25.88	-14.12	40.00	38.24	18.95	0.30	31.61	---	---	Peak
2	45.93	22.16	-17.84	40.00	43.09	10.53	0.30	31.77	---	---	Peak
3	169.59	25.76	-17.74	43.50	47.13	9.92	0.60	31.89	---	---	Peak
4	526.80	22.64	-23.36	46.00	36.10	17.70	0.93	32.10	---	---	Peak
5	791.40	32.38	-13.62	46.00	43.60	19.74	1.20	32.16	100	11	Peak
6	924.40	28.87	-17.13	46.00	38.52	20.70	1.20	31.55	---	---	Peak

- Polarization : Horizontal (1GHz-25GHz)

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



Trace: (Discrete)

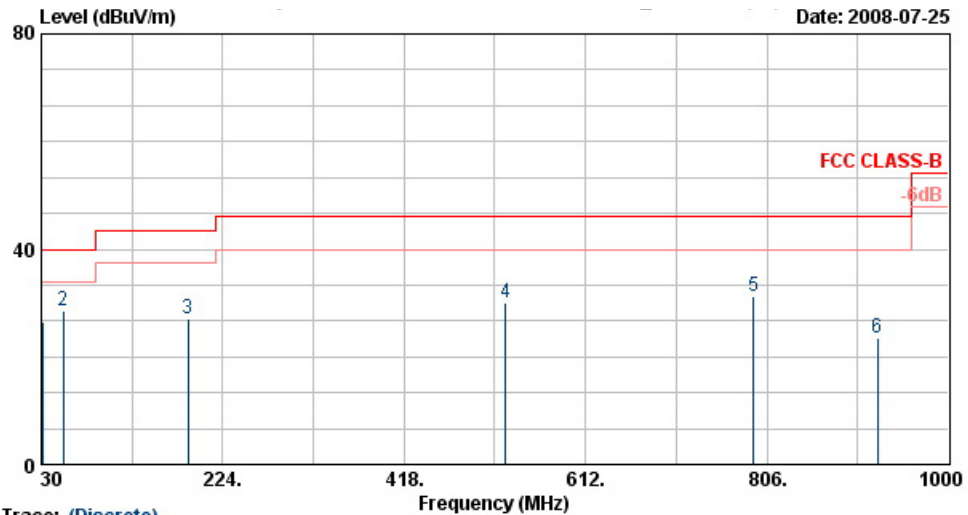
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR 870721
Name : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2358.00	45.83	-28.17	74.00	45.81	31.81	3.89	35.67	100	0	Peak
2	2358.00	34.11	-19.89	54.00	34.09	31.81	3.89	35.67	125	44	Average
3 @	2480.00	93.94			93.61	31.98	4.05	35.70	100	0	Peak
4 @	2480.00	86.78			86.45	31.98	4.05	35.70	125	44	Average
5	2483.50	47.49	-26.51	74.00	47.16	31.98	4.05	35.70	100	0	Peak
6	2483.50	8.40	-45.60	54.00	8.07	31.98	4.05	35.70	125	44	Average
7 @	4956.00	68.96	-5.04	74.00	64.53	34.19	5.87	35.62	100	0	Peak
8	4956.00	29.87	-24.13	54.00	25.44	34.19	5.87	35.62	101	47	Average
9	7761.00	52.77	-21.23	74.00	45.97	35.65	7.40	36.25	100	0	Peak
10	7761.00	13.68	-40.32	54.00	6.88	35.65	7.40	36.25	100	182	Average

Remark: #3 and #4 are Fundamental Signals

- Polarization : Vertical (30MHz-1GHz)

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

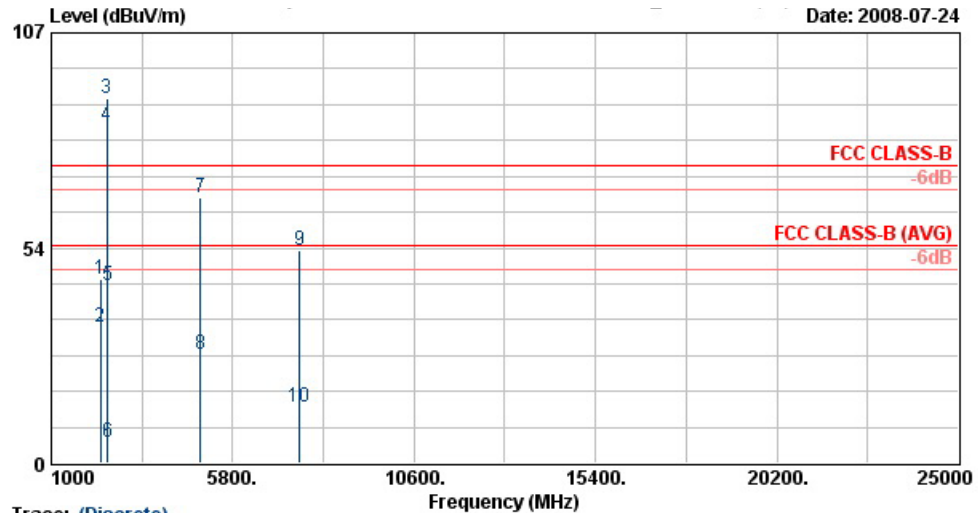


Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
Model : FR 870721
Name : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.08	26.48	-13.52	40.00	38.84	18.95	0.30	31.61	---	---	Peak
2	53.49	28.42	-11.58	40.00	52.36	7.64	0.36	31.94	100	247	Peak
3	187.14	27.04	-16.46	43.50	49.09	9.39	0.60	32.04	---	---	Peak
4	526.80	30.04	-15.96	46.00	43.50	17.70	0.93	32.10	---	---	Peak
5	791.40	31.32	-14.68	46.00	42.54	19.74	1.20	32.16	---	---	Peak
6	924.40	23.52	-22.48	46.00	33.17	20.70	1.20	31.55	---	---	Peak

- Polarization : Vertical (1GHz-25GHz)

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



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 870721
Name : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2310.00	45.65	-28.35	74.00	45.75	31.73	3.82	35.66	100	0	Peak
2	2310.00	33.92	-20.08	54.00	34.02	31.73	3.82	35.66	100	94	Average
3 @	2480.00	90.70			90.37	31.98	4.05	35.70	100	0	Peak
4 @	2480.00	83.89			83.56	31.98	4.05	35.70	100	94	Average
5	2483.50	44.25	-29.75	74.00	43.92	31.98	4.05	35.70	100	0	Peak
6	2483.50	5.16	-48.84	54.00	4.83	31.98	4.05	35.70	100	94	Average
7	4956.00	66.08	-7.92	74.00	61.64	34.19	5.87	35.62	100	0	Peak
8	4956.00	26.99	-27.01	54.00	22.56	34.19	5.87	35.62	131	107	Average
9	7581.00	52.91	-21.09	74.00	46.21	35.62	7.31	36.22	100	0	Peak
10	7581.00	13.82	-40.18	54.00	7.11	35.62	7.31	36.22	100	251	Average

Remark: #3 and #4 are Fundamental Signals

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 antennas used in this product is Chip Antenna and it is considered to meet antenna requirement of FCC.

5.10.3 Antenna Gain

The antenna gain of EUT is less than 6 dBi. 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
EMI Receiver	R&S	ESCS 30	100356	9kHz – 2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz – 30MHz	Dec. 06, 2007	Dec. 05, 2008	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz – 30MHz	Dec. 06, 2007	Dec. 05, 2008	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000485	0.1MHz-200MHz	Feb. 04, 2008	Feb. 03, 2009	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000484	0.1MHz-200MHz	Feb. 04, 2008	Feb. 03, 2009	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211028	9KHz-26.5GHz	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 01, 2007	Nov. 30, 2008	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1G~18G	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AF-0801	95119	8G~18G	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-251	14G - 40G	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 22, 2007	Nov. 21, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 21, 2008	Apr. 20, 2009	Radiation (03CH06-HY)

7. Uncertainty Evaluation

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

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

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.11	Normal(k=2)	0.06
Antenna factor calibration	0.91	Normal(k=2)	0.46
Cable loss calibration	0.12	Normal(k=2)	0.06
Pre Amplifier Gain calibration	0.15	Normal(k=2)	0.08
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.52	Rectangular	0.88
Mismatch	+0.45/-0.48	U-shaped	0.33
Combined standard uncertainty Uc(y)	1.30		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.60		

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

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 $U_c(y)$	2.36				
Measuring uncertainty for a level of confidence of 95% $U = 2U_c(y)$	4.72				

The measured result is : $y \text{ dBuV} \pm U \text{ dB}$
for a level of confidence of approximately 95% , ($k = 2$)

Appendix A. Photographs of EUT

Please refer to Sporton report number EP870721 as below.