



FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : GSM Tri-band phone with GPRS, EDGE, Wi-Fi & Bluetooth
Trade Name : Xda
Model No. : Atom
FCC ID : HFS-Atom
Filing Type : Certification
Applicant : **Quanta Computer Inc.**
No. 188, Wen Hwa 2nd Road, Kuei Shan Hsiang Tao Yuan
Shien, Taiwan

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- The data shown in this test report were carried out on Oct. 15, 2005 at **Sporton International Inc. LAB.**
- Report No.: FR5O0501, Report Version: Rev. 01

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History of this test report

Report Issue Date: Oct. 17, 2005

Original Report Issue Date	Description



1. General Description of Equipment under Test

1.1 Applicant

Quanta Computer Inc.

No. 188, Wen Hwa 2nd Road, Kuei Shan Hsiang Tao Yuan Shien, Taiwan

1.2 Manufacturer

Quanta Computer Inc.

No. 188, Wen Hwa 2nd Road, Kuei Shan Hsiang Tao Yuan Shien, Taiwan

1.3 Basic Description of Equipment under Test

Equipment	: GSM Tri-band phone with GPRS, EDGE, Wi-Fi & Bluetooth
Trade Name	: Xda
Model No.	: Atom
FCC ID	: HFS-Atom
Power Supply Type	: From Battery 3.8V
Earphone	: Cotron Corp, RS061SEST
Battery	: Foxlink, 825-003550U
Charger	: Phihong, PSC05R-050

**1.4 Feature of Equipment under Test**

Product Feature & Specification			
1. Type of Modulation	PCS: GMSK WLAN:CCK(5.5 and 11Mbps), QPSK(2Mbps), BPSK(1Mbps) BT: GFSK		
2. Number of Channels	WLAN: 11 Channels BT: 79 Channels		
3. Frequency Band	PCS : 1850.2-1909.8 MHz(Tx), 1930.2-1989.8 MHz)(Rx) WLAN/BT: 2.4GHz~2.4835GHz		
4. Carrier Frequency of each channel	WLAN: 2412MHz+(n-1)*5MHz, n=1~11 BT: 2402MHz+n*1MHz, n=0~78		
5. Channel Spacing	WLAN: 5MHz BT: 1MHz		
6. Maximum Output Power to Antenna (Normal Condition)	PCS: 29.5 dBm WLAN: 16.9 dBm BT: -0.1 dBm		
7. Type of Antenna Connector	N/A		
8. Antenna Type	PCS : Fixed Internal WLAN/BT: Fixed Internal		
9. Antenna Gain	WLAN: -1dBi Bluetooth: 3dBi		
10. HW Version	MN1-B1-1		
11. SW Version	MOT0830_OS0905B1		
12. Function Type	Transmitter		Transceiver V
13. Duty Cycle	WLAN: 100% BT: 43.49%		
14. Power Rating (DC/AC Voltage) :	3.8V/300mA		



2 Test Configuration of Equipment under Test

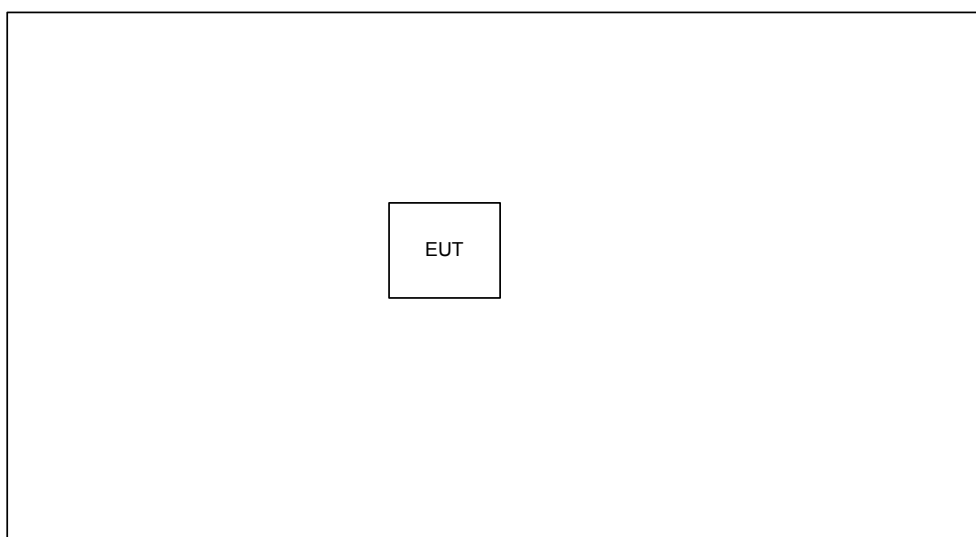
2.1 Test Manner

- 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.
- For spurious emission below 1GHz, only one channel of each application was tested because it is not related to channel selection.
- The EUT is programmed to transmit signal continuously for all testings.
- Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Test Mode

Application	802.11b	BT	Co-location
Radiated Emission	Mode 1: Tx_CH01_2412 MHz	Mode 4: Tx_CH00_2402 MHz	Mode 7: WLAN CH06 + BT CH39
	Mode 2: Tx_CH06_2437 MHz	Mode 5: Tx_CH39_2441 MHz	
	Mode 3: Tx_CH11_2462 MHz	Mode 6: Tx_CH78_2480 MHz	

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

N/A



3. RF Utility

The programmed RF Utility is either installed in EUT or Notebook 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. 30-2, Neighborhood 6, Village Ding-Fu, Lin-Kou Hsiag,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

Test Site No : CO02-LK

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

Test Site No : 03CH06-HY

4.1 Test Voltage

120V/ 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test in Compliance with

47 CFR Part 15 Subpart C

4.4 Frequency Range Investigated

a. 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: Wireless LAN

FCC Rule	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Maximum Peak Output Power	Pass
15.209(a)	Radiated Emission	Pass
15.247 (c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass

**The Emission Mode: Bluetooth**

FCC Rule	Description of Test	Result
<u>15.247(a) (1)</u>	Hopping Channel Bandwidth	Pass
<u>15.247(a)(1)</u>	Hopping Channel Separation	Pass
<u>15.247(a)(1)(iii)</u>	Number of Hopping Frequency Used	Pass
<u>15.247(a)(1)(iii)</u>	Dwell Time of Each Frequency	Pass
<u>15.247(b) (1)</u>	Output Power	Pass
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Emission	Pass
<u>15.203</u>	Antenna Requirement	Pass

5.2 6dB Bandwidth Measurement

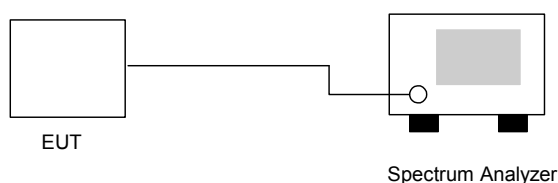
5.2.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.2.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The 6 dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6dB.

5.2.3 Test Setup Layout :



5.2.4 Test Result :

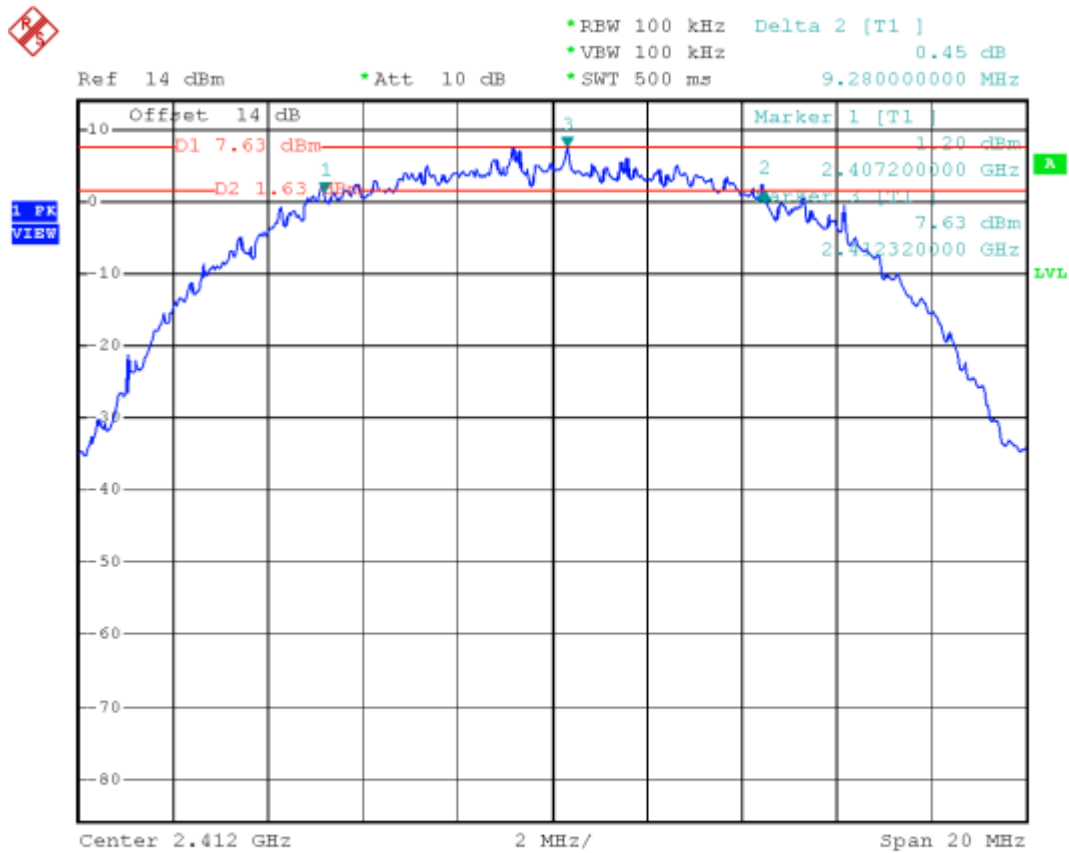
- Application Type : WLAN 802.11b
- Temperature : 27°C
- Relative Humidity : 58%
- Test Enginner : Jay

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	9.28	> 0.5MHz	Mode 1
06	2437	9.40	> 0.5MHz	Mode 2
11	2462	9.40	> 0.5MHz	Mode 3



5.2.5 6dB Bandwidth

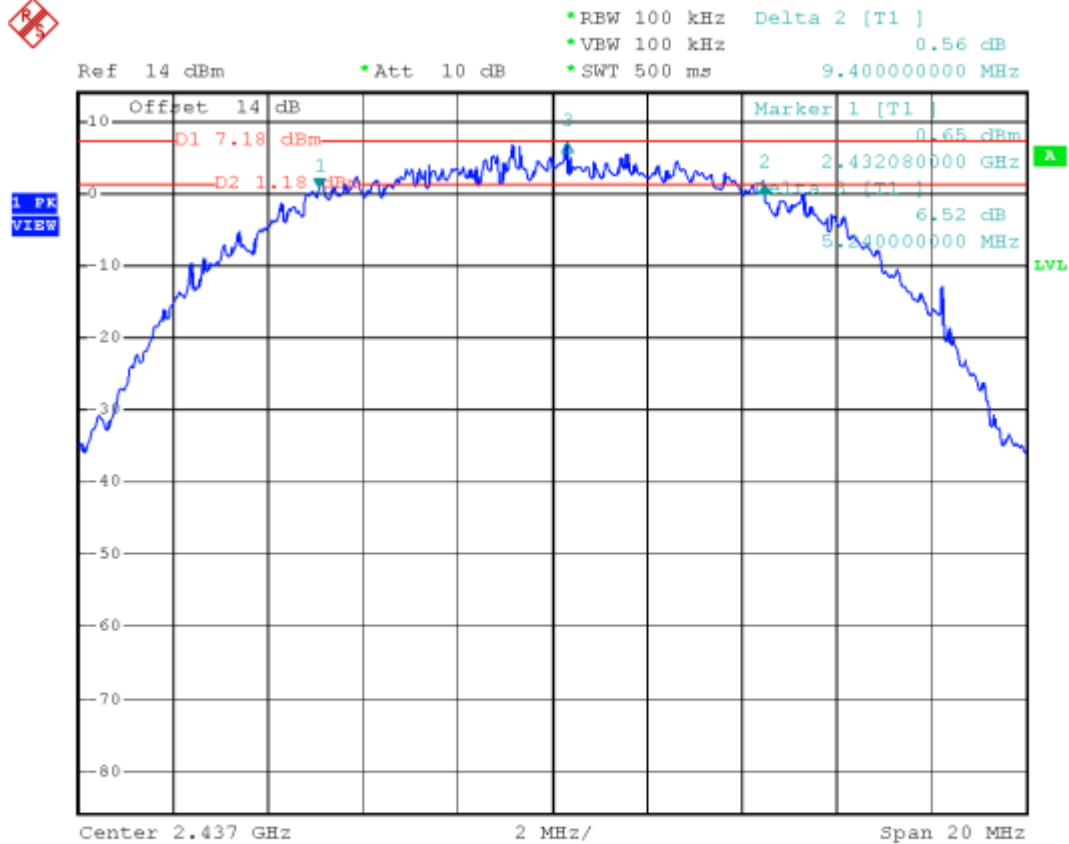
Mode 1



Date: 15.OCT.2005 20:02:35



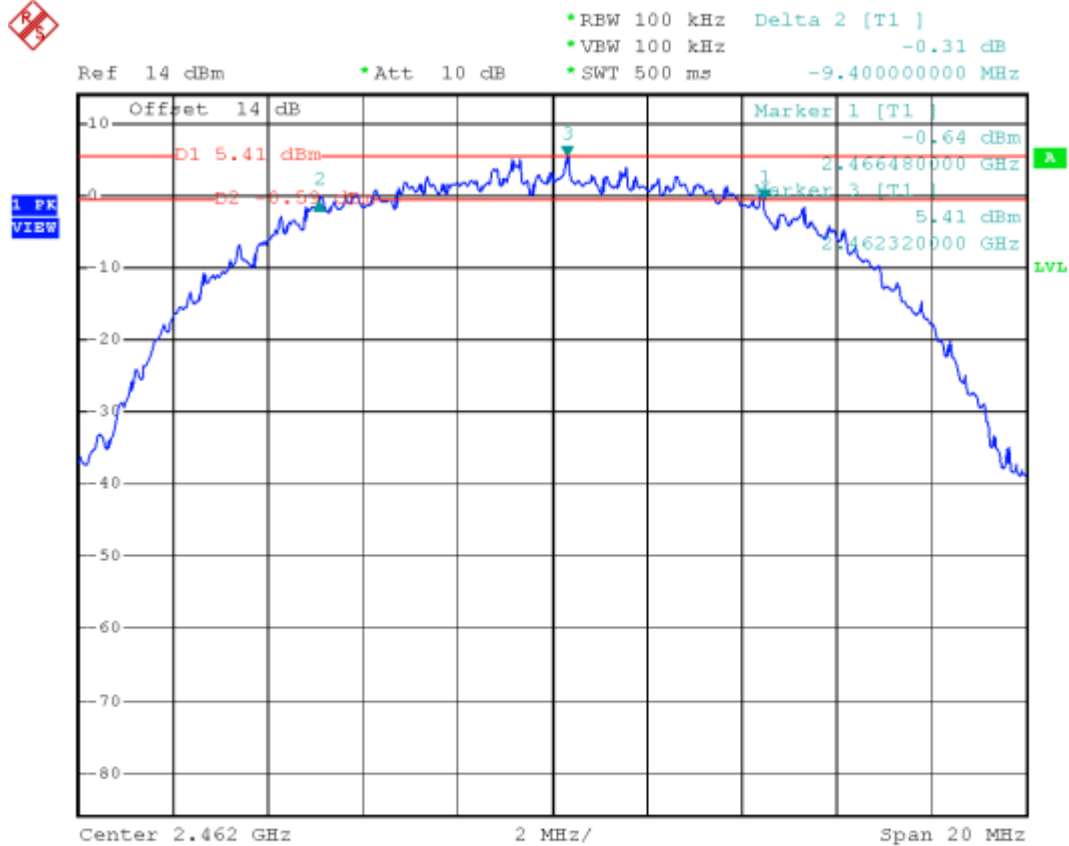
Mode 2



Date: 15.OCT.2005 15:17:35



Mode 3



Date: 15.OCT.2005 15:15:02

5.3 Power Spectral Density Measurement

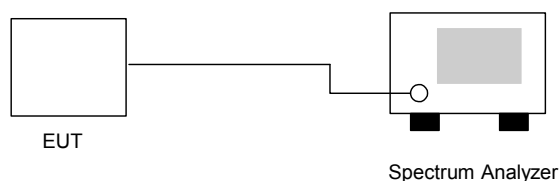
5.3.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.3.2 Test Procedure :

1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set at 3kHz RBW and 30kHz VBW as that of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

5.3.3 Test Setup Layout :



5.3.4 Test Result :

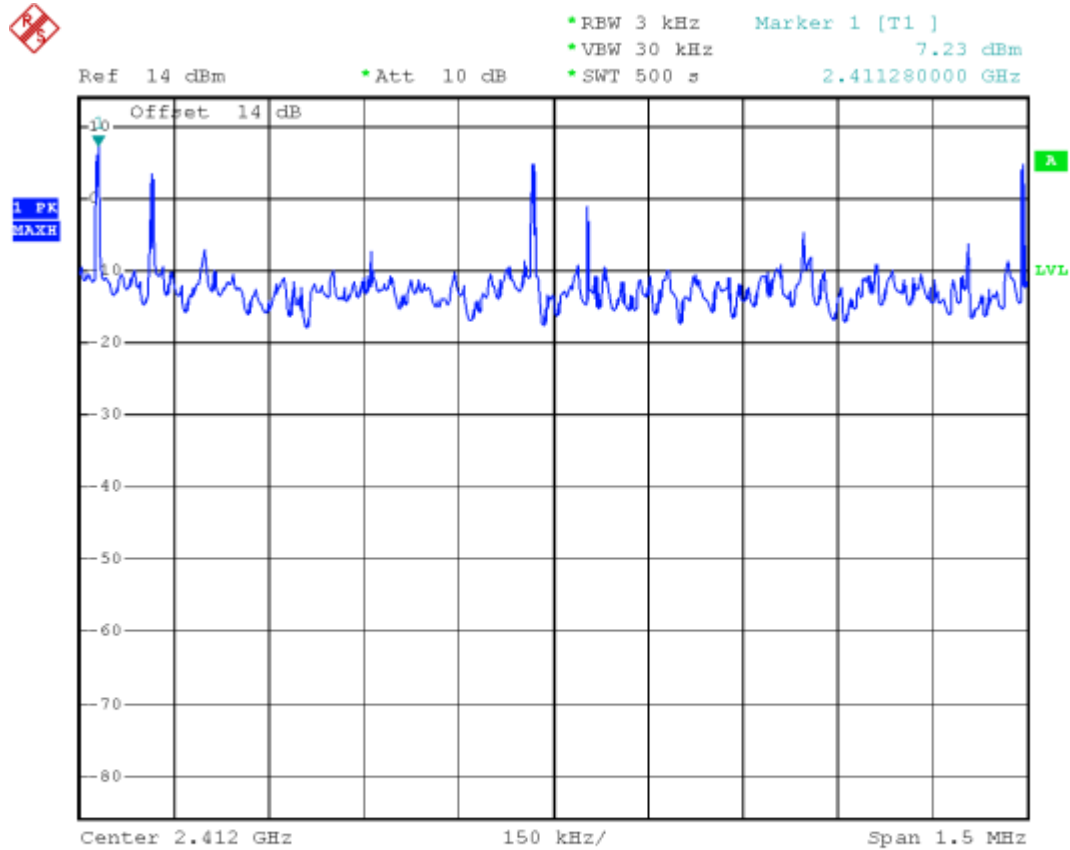
- Application Type : 802.11b
- Temperature : 27°C,
- Relative Humidity : 58%
- Test Enginner : Jay

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	7.23	8	Mode 1
06	2437	7.29	8	Mode 2
11	2462	6.09	8	Mode 3



5.3.5 Power Spectral Density

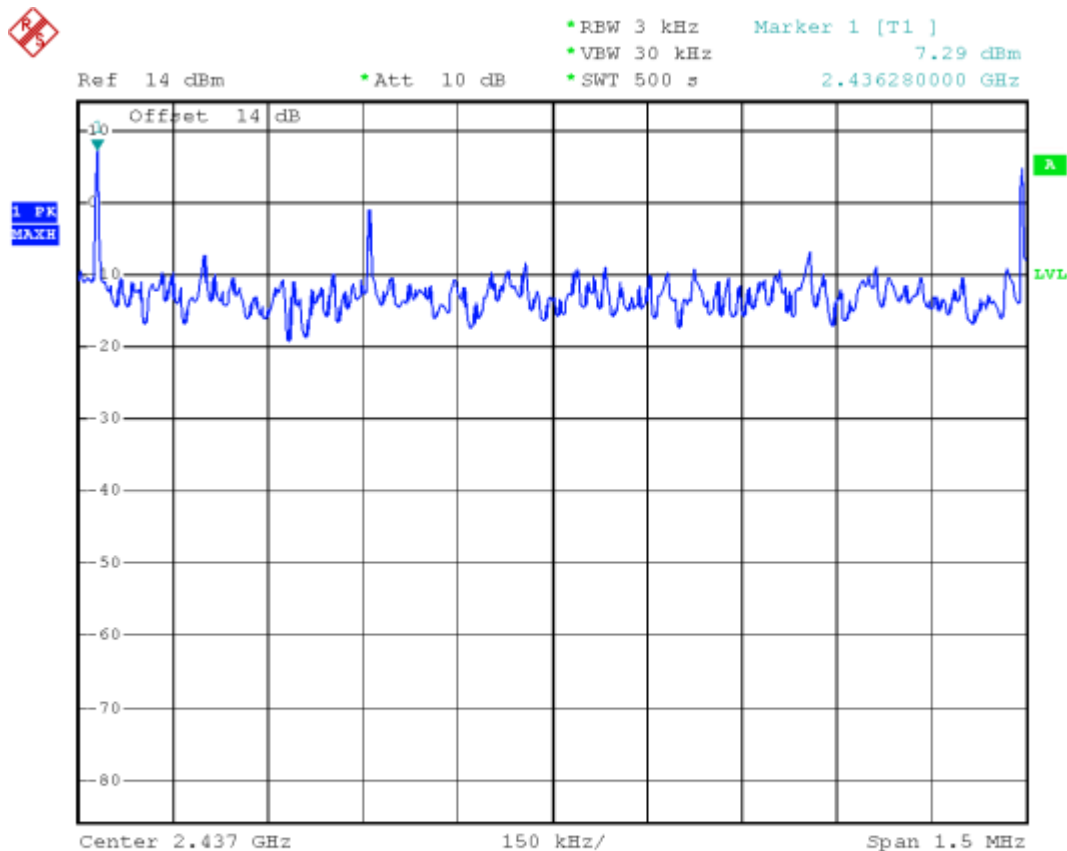
Mode 1



Date: 15.OCT.2005 20:08:35



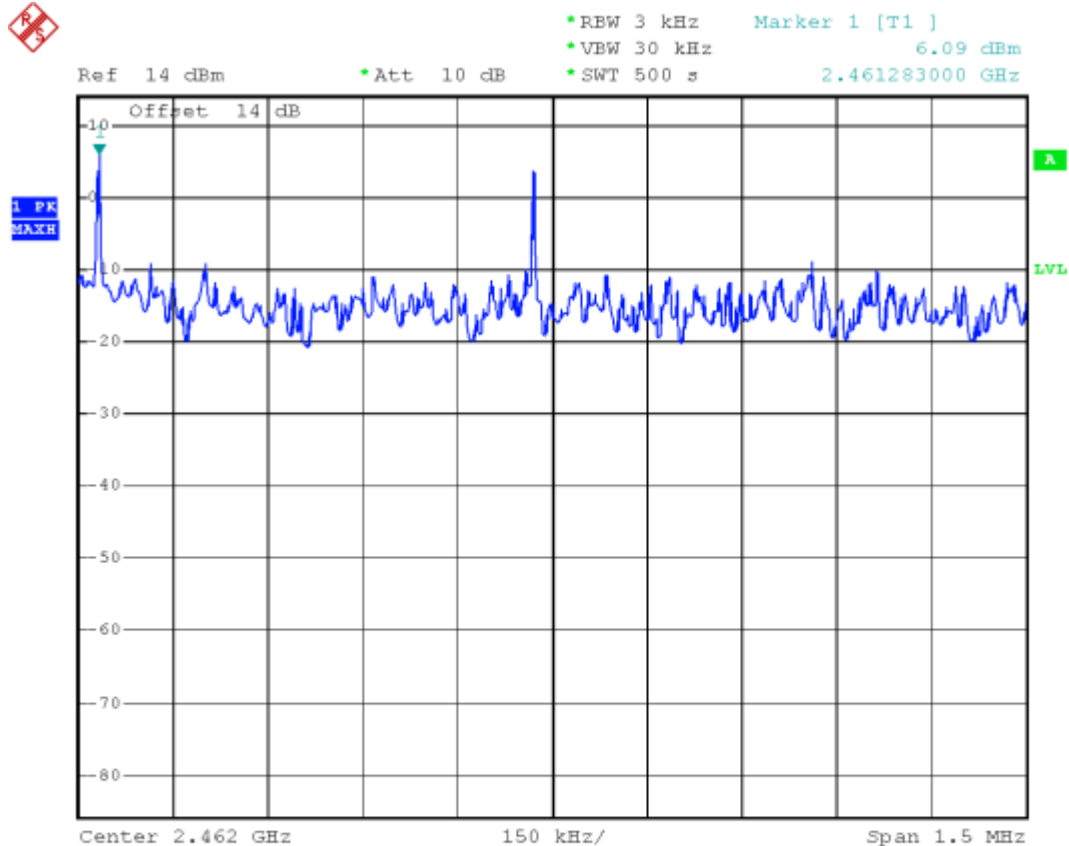
Mode 2



Date: 15.OCT.2005 20:31:45



Mode 3



Date: 15.OCT.2005 20:15:28

5.4 Band Edges Measurement

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

5.4.3 Test Result :

- Application Type : WLAN 802.11b and BT
- Temperature : 27°C,
- Relative Humidity : 58%
- Test Enginner : Jay
- Test Result in WLAN lower band (Channel 1) : PASS
- Test Result in WLAN higher band (Channel 11) : PASS
- Test Result in BT lower band (Channel 00) : PASS
- Test Result in BT higher band (Channel 78) : PASS

5.4.4 Note on Band Edge Emission :

➤WLAN 802.11b

CH01 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Preamp	Cable	Detect
(MHz)	(dBuV/m)	Limit	Line	Level	Factor	Factor	Loss	Mode
(dB)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	
2390.00	58.34	-15.66	74.00	59.05	-0.71	4.26	35.46	Peak
2390.00	42.35	-11.65	54.00	43.06	-0.71	4.26	35.46	Average

CH01 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Preamp	Cable	Detect
(MHz)	(dBuV/m)	Limit	Line	Level	Factor	Factor	Loss	Mode
(dB)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	
2390.00	55.15	-18.85	74.00	55.86	-0.71	4.26	35.46	Peak
2390.00	41.08	-12.92	54.00	41.76	-0.71	4.26	35.46	Average

**CH11 (Horizontal)**

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2483.50	51.15	-22.85	74.00	51.88	-0.74	4.36	35.51	Peak
2483.50	40.40	-13.60	54.00	41.14	-0.74	4.36	35.51	Average

CH11 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2484.00	51.81	-22.19	74.00	52.55	-0.74	4.36	35.51	Peak
2484.00	40.00	-14.00	54.00	40.74	-0.74	4.36	35.51	Average

➤BT**CH00 (Horizontal)**

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2390.00	39.21	-14.79	54.00	39.92	-0.71	4.26	35.46	Average
2390.00	49.90	-24.10	74.00	50.61	-0.71	4.26	35.46	Peak

CH00 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2390.00	39.27	-14.73	54.00	39.98	-0.71	4.26	35.46	Average
2390.00	48.67	-25.33	74.00	49.38	-0.71	4.26	35.46	Peak

CH78 (Horizontal)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2483.50	48.32	-5.68	54.00	49.65	-0.74	4.36	35.51	Average
2483.50	62.91	-11.09	74.00	63.65	-0.74	4.36	35.51	Peak



CH78 (Vertical)

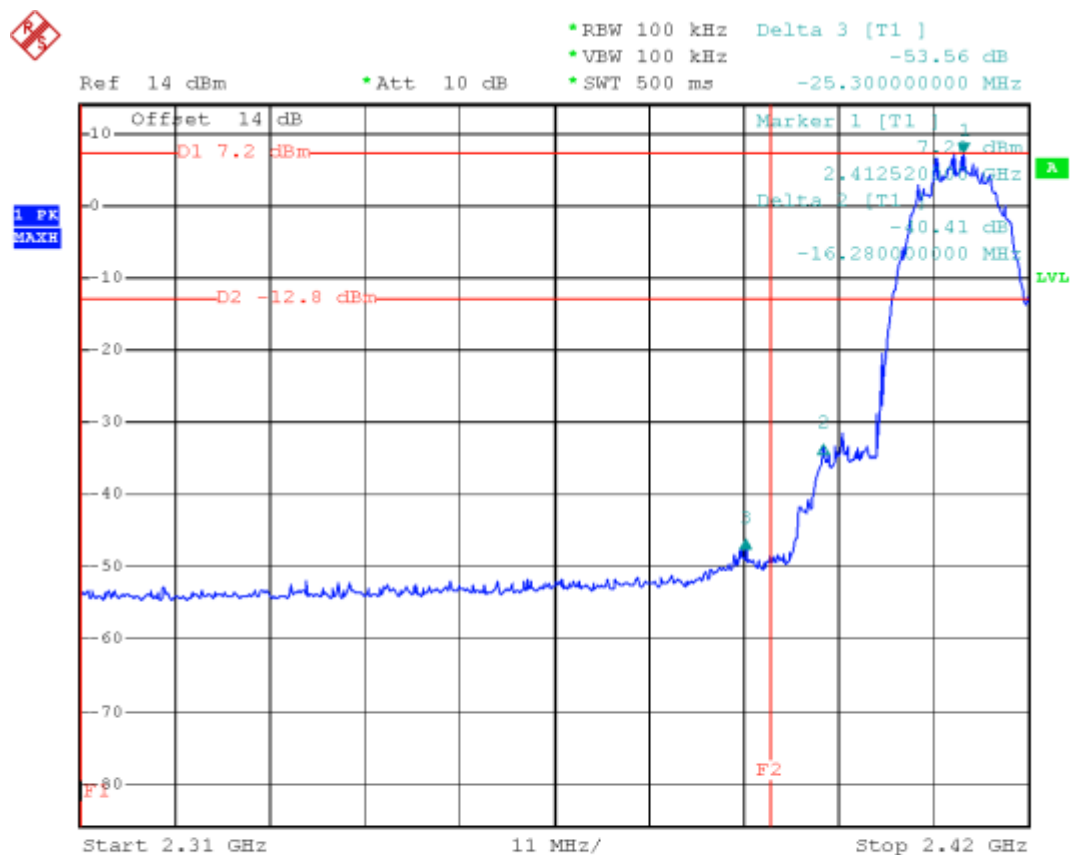
Frequency	Level	Over	Limit	Read	Antenna	Preamp	Cable	Detect
(MHz)	(dBuV/m)	Limit	Line	Level	Factor	Factor	Loss	Mode
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	Mode
2483.50	73.88	-0.12	74.00	74.61	-0.74	4.36	35.51	Peak
2483.50	47.35	-6.65	5400	48.09	-0.74	4.36	35.51	Average



5.4.5 20dB Band Edge

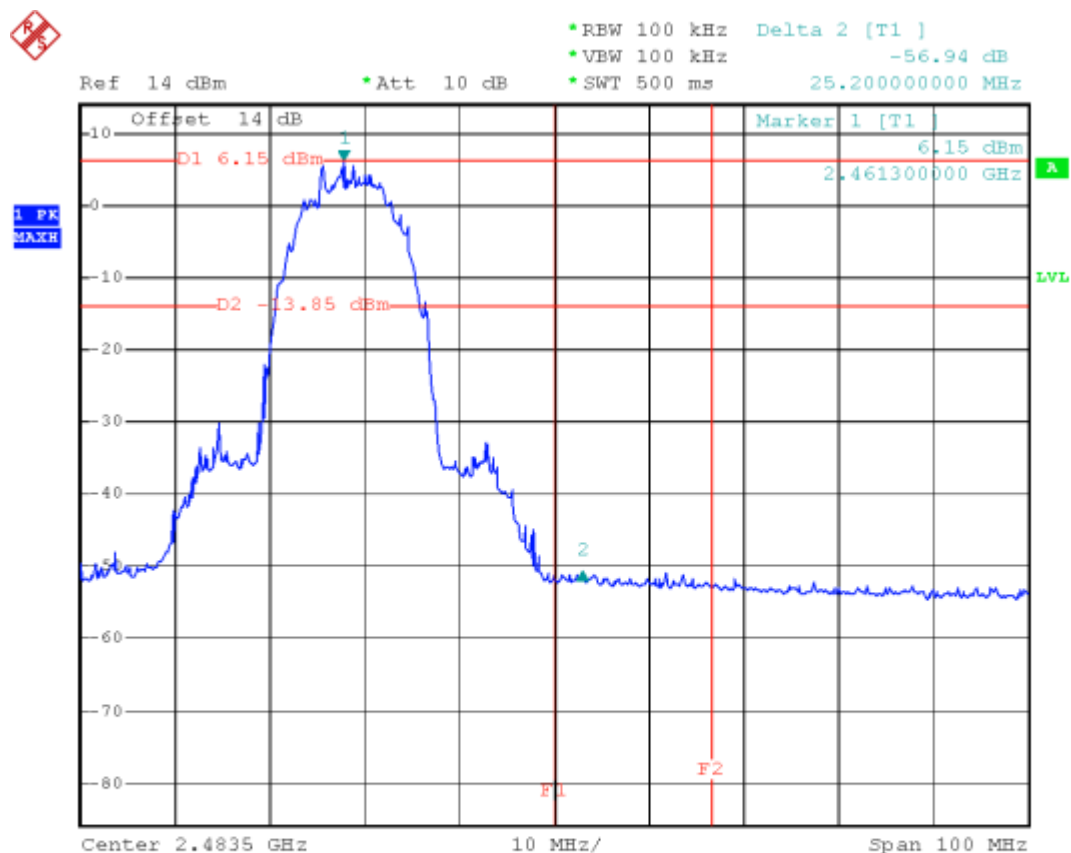
WLAN 802.11b:

CH01



Date: 15.OCT.2005 15:01:17

CH11

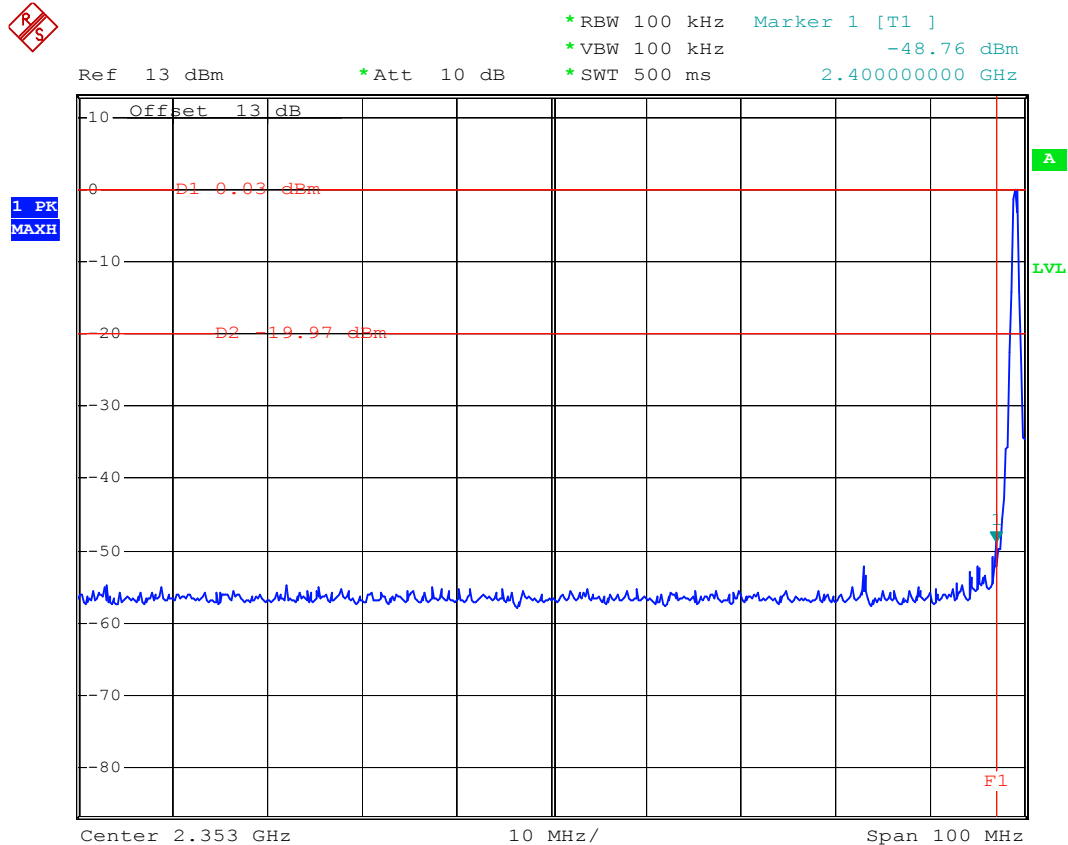


Date: 15.OCT.2005 15:05:35



Bluetooth:

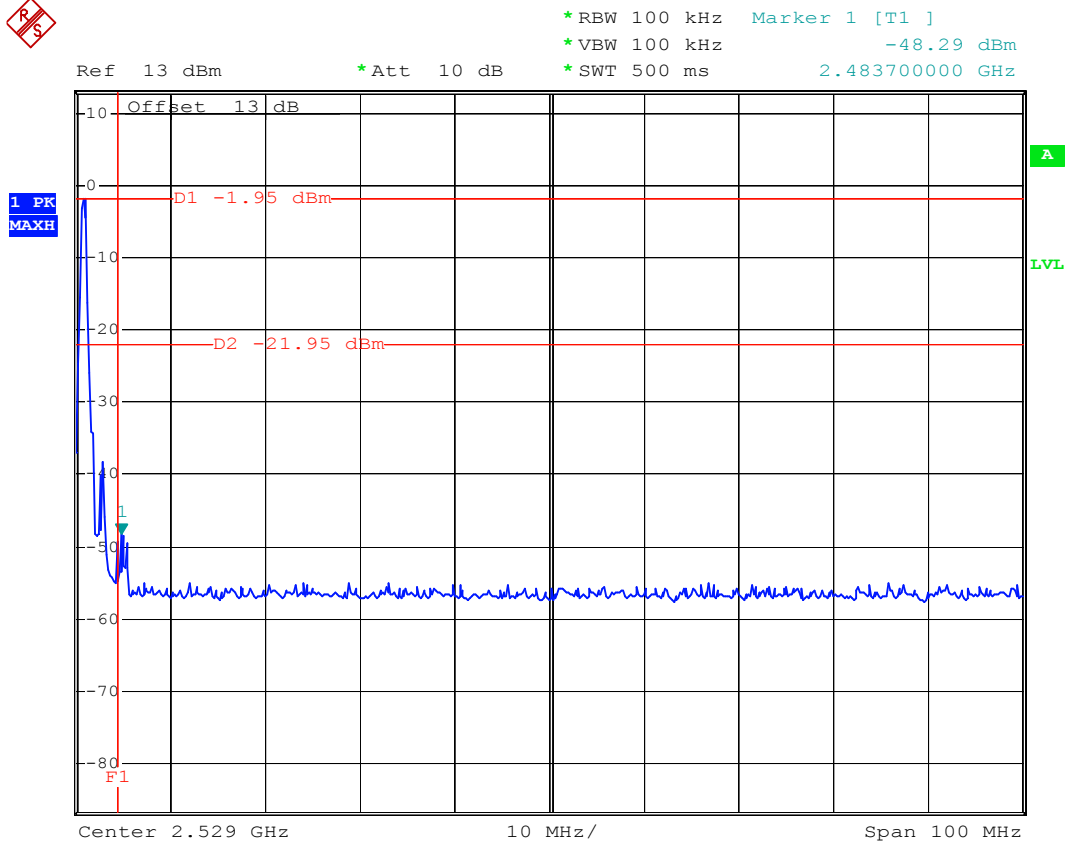
CH00



Date: 14.OCT.2005 23:40:26



CH78



Date: 14.OCT.2005 23:44:54

5.5 Hopping Channel Separation

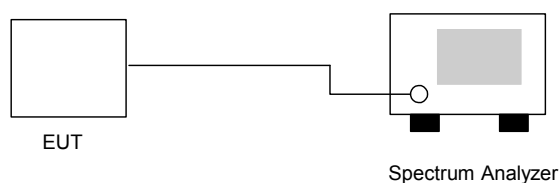
5.5.1 Measuring Instruments :

As described in chapter 9 of this test report.

5.5.2 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 100kHz and VBW to 100kHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.5.3 Test Setup Layout :



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

- Application Type : BT
- Temperature : 27°C
- Relative Humidity : 58%
- Test Enginner : Jay

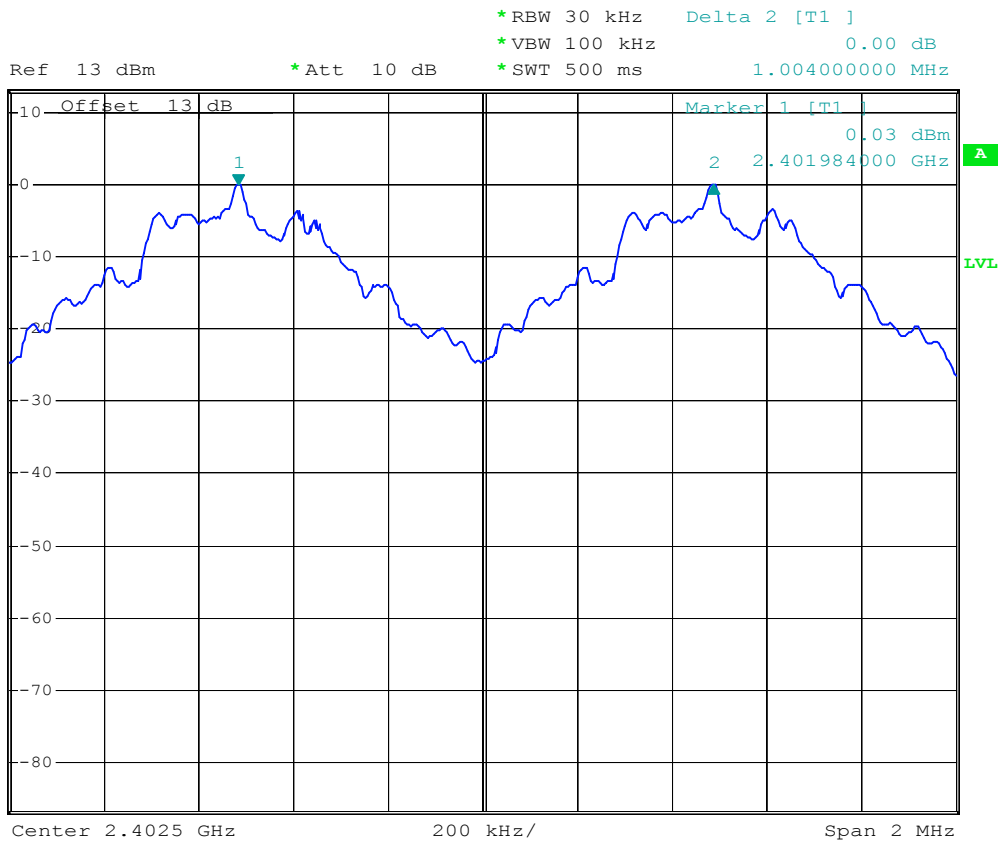
		Carrier Frequency		Limits	Plot
Channel	Frequency (MHz)	Separation (MHz)		(MHz)	Ref. No.
00	2402	1.004		0.876	Mode 1
39	2441	1.004		0.868	Mode 2
78	2480	1		0.872	Mode 3

Note: Limits =25kHz or the 20dB bandwidth of the hopping channel, which ever is greater



5.5.5 Hopping Channel Separation

Mode 1



Date: 14.OCT.2005 23:40:54



Mode 2

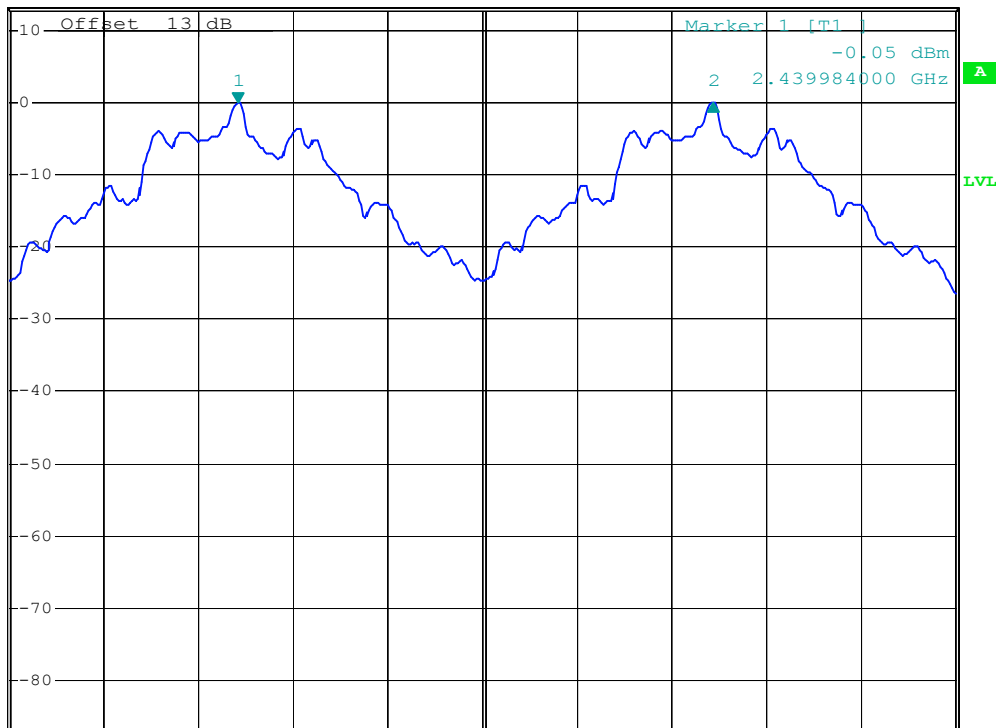


*RBW 30 kHz Delta 2 [T1]
*VBW 100 kHz -0.01 dB
*SWT 500 ms 1.004000000 MHz

Ref 13 dBm

*Att 10 dB

1 PR
MAXH



Center 2.4405 GHz

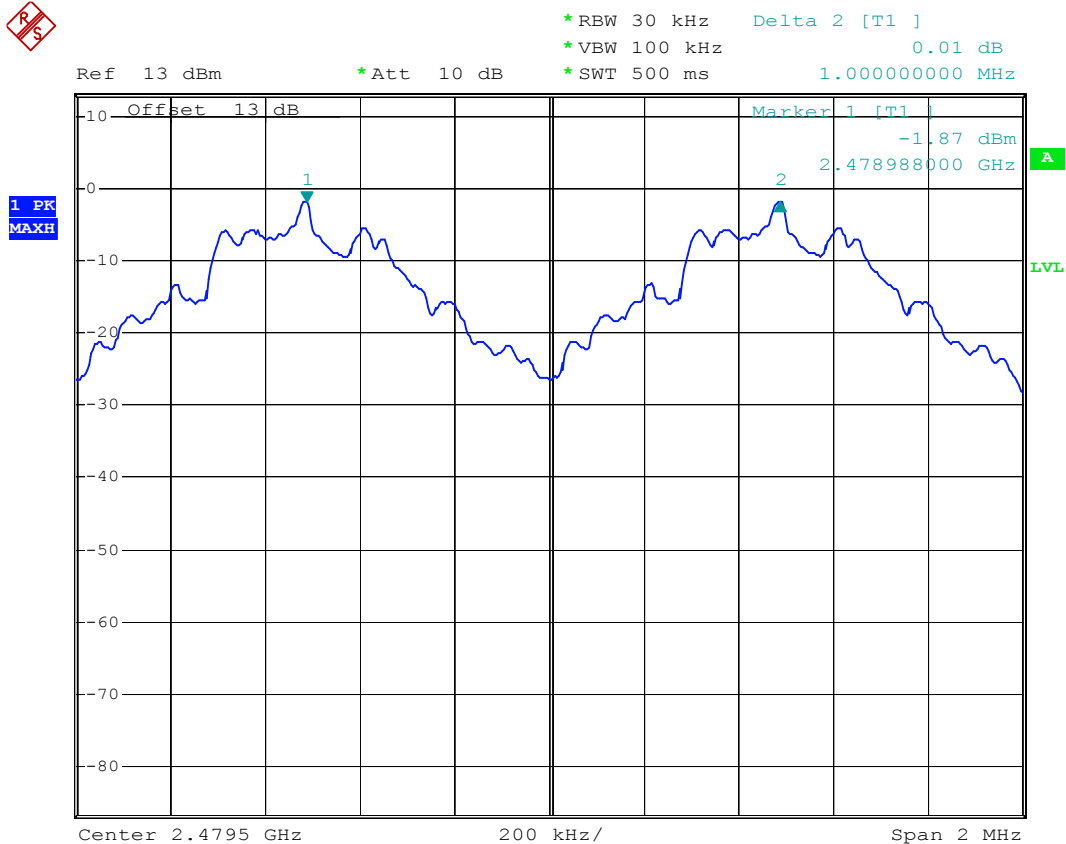
200 kHz/

Span 2 MHz

Date: 14.OCT.2005 23:41:14



Mode 3



Date: 14.OCT.2005 23:43:41

5.6 Number of Hopping Frequency

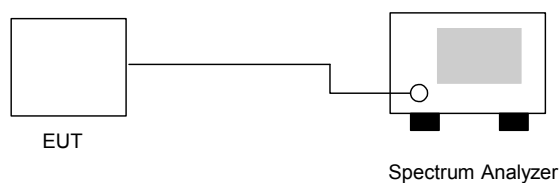
5.6.1 Measuring Instruments :

As described in chapter 9 of this test report.

5.6.2 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 100kHz and VBW to 100kHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.6.3 Test Setup Layout :



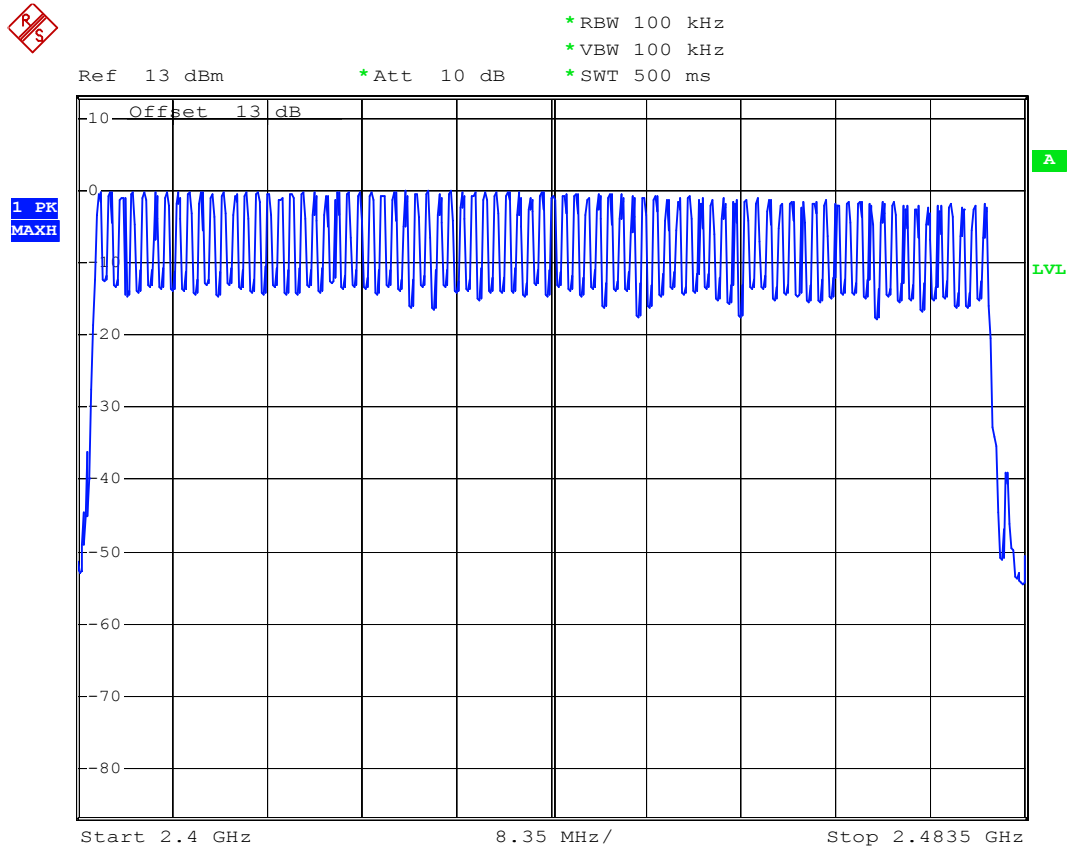
5.6.4 Test Result : See spectrum analyzer plots below

- Application Type : BT
- Temperature : 27°C,
- Relative Humidity : 58%
- Test Enginner : Jay

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



5.6. Number of Hopping Frequency



Date: 14.OCT.2005 23:57:33

5.7 Hopping Channel Bandwidth

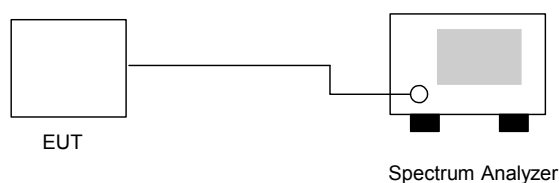
5.7.1 Measuring Instruments :

As described in chapter 9 of this test report.

5.7.2 Test Procedure :

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

5.7.3 Test Setup Layout :



5.7.4 Test Result : See spectrum analyzer plots below

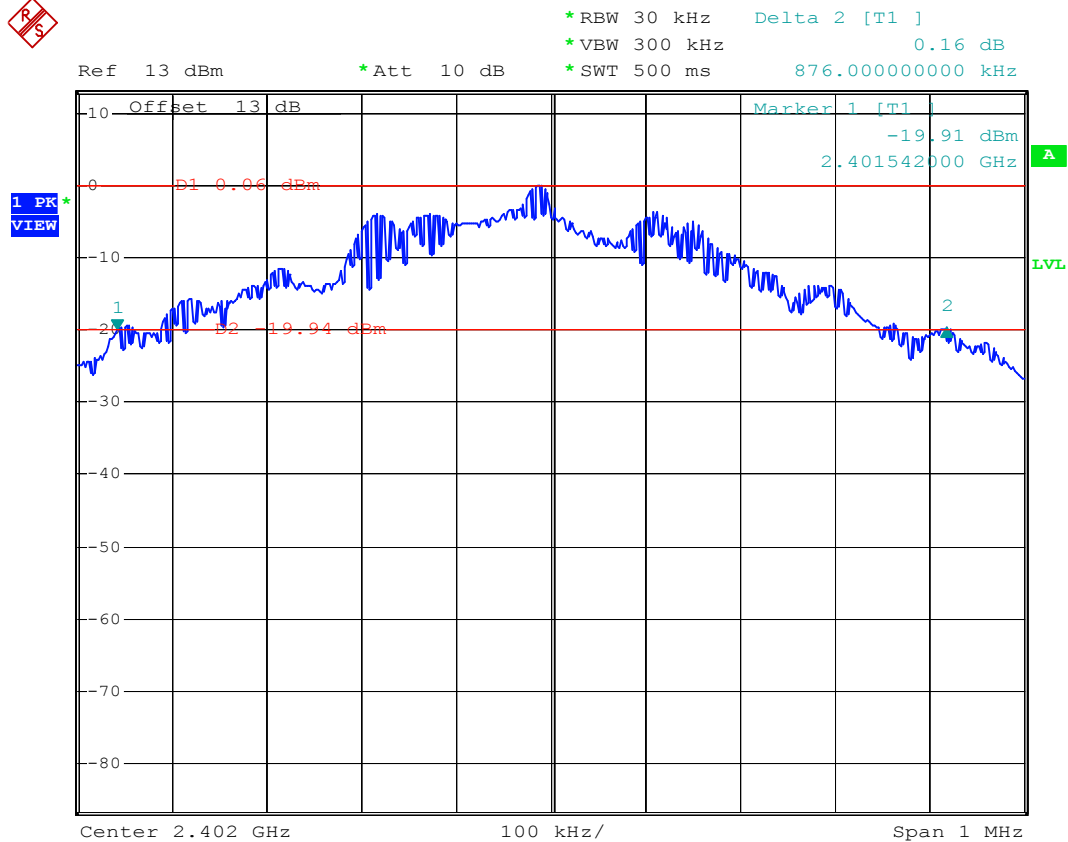
- Application Type : BT
- Temperature : 27°C,
- Relative Humidity : 58%
- Test Enginner : Jay

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.876	1.0	Mode 1
39	2441	0.868	1.0	Mode 2
78	2480	0.872	1.0	Mode 3



5.7.5 Hopping Channel Bandwidth

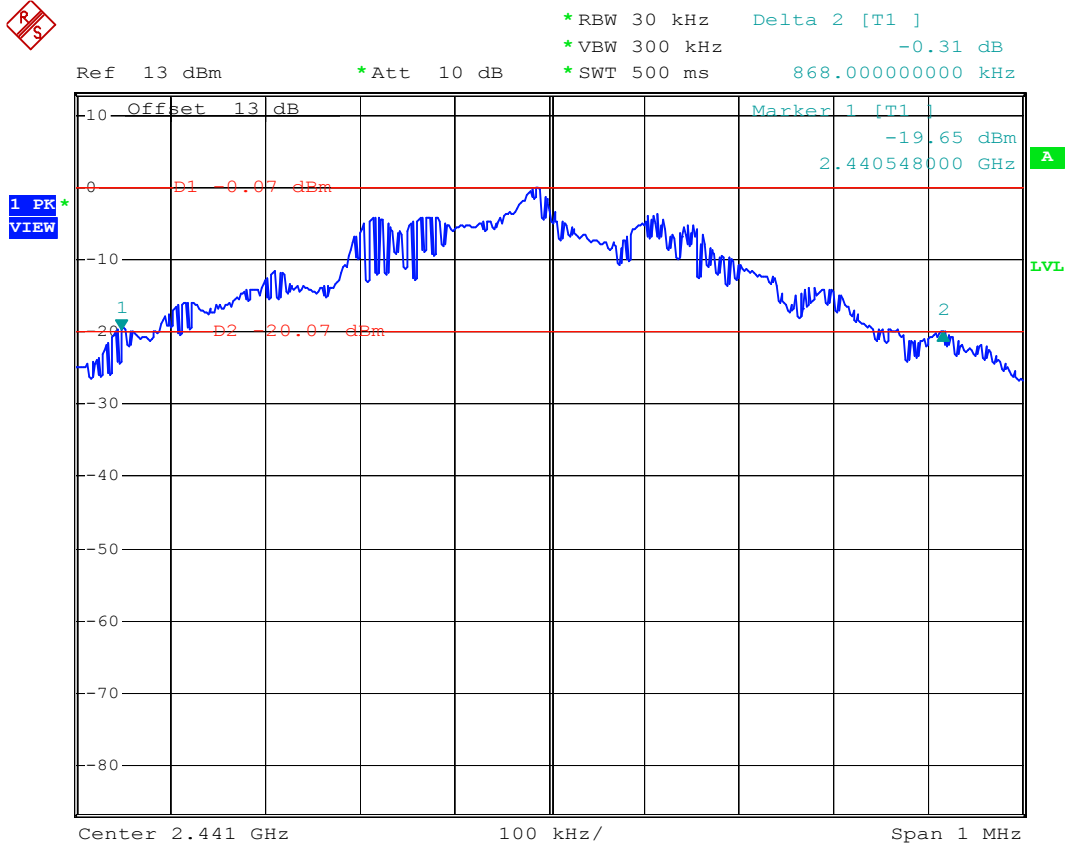
Mode 1



Date: 14.OCT.2005 23:39:49



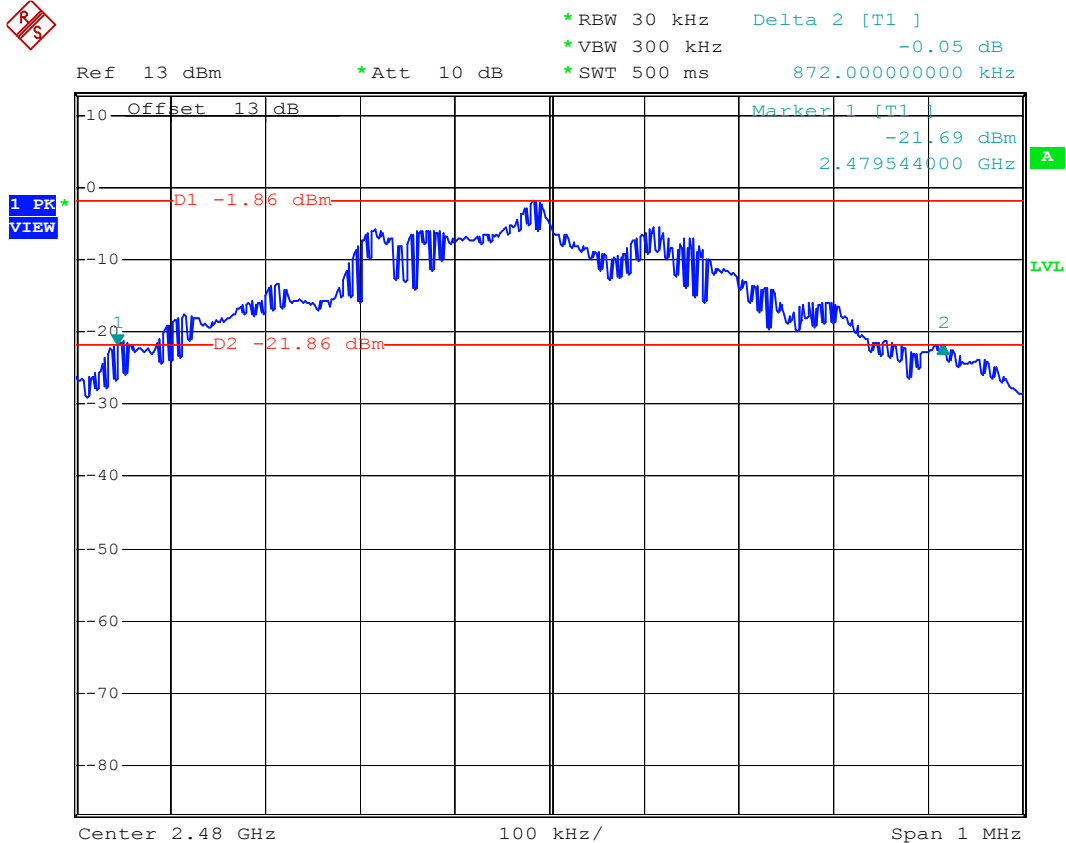
Mode 2



Date: 14.OCT.2005 23:42:06



Mode 3



Date: 14.OCT.2005 23:44:16

5.8 Dwell Time of Each Frequency within a 30 Seconds Period

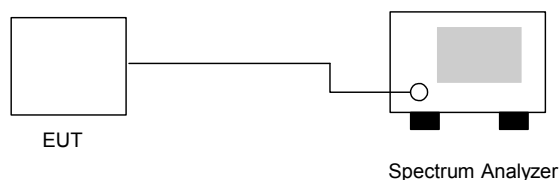
5.8.1 Measuring Instruments :

As described in chapter 9 of this test report.

5.8.2 Test Procedure :

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

5.8.3 Test Setup Layout :



5.8.4 Test Result : See spectrum analyzer plots below

- Application Type : BT
- Temperature : 27°C,
- Relative Humidity : 58%
- Test Enginner : Jay

Ch00

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.3	548	0.16	0.4
DH3	4.8	1808	0.27	0.4
DH5	3.3	3088	0.32	0.4

**CH39**

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9	544	0.15	0.4
DH3	4.2	1808	0.24	0.4
DH5	3.8	3068	0.37	0.4

CH78

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.1	544	0.16	0.4
DH3	4.7	1808	0.27	0.4
DH5	3.5	3088	0.34	0.4

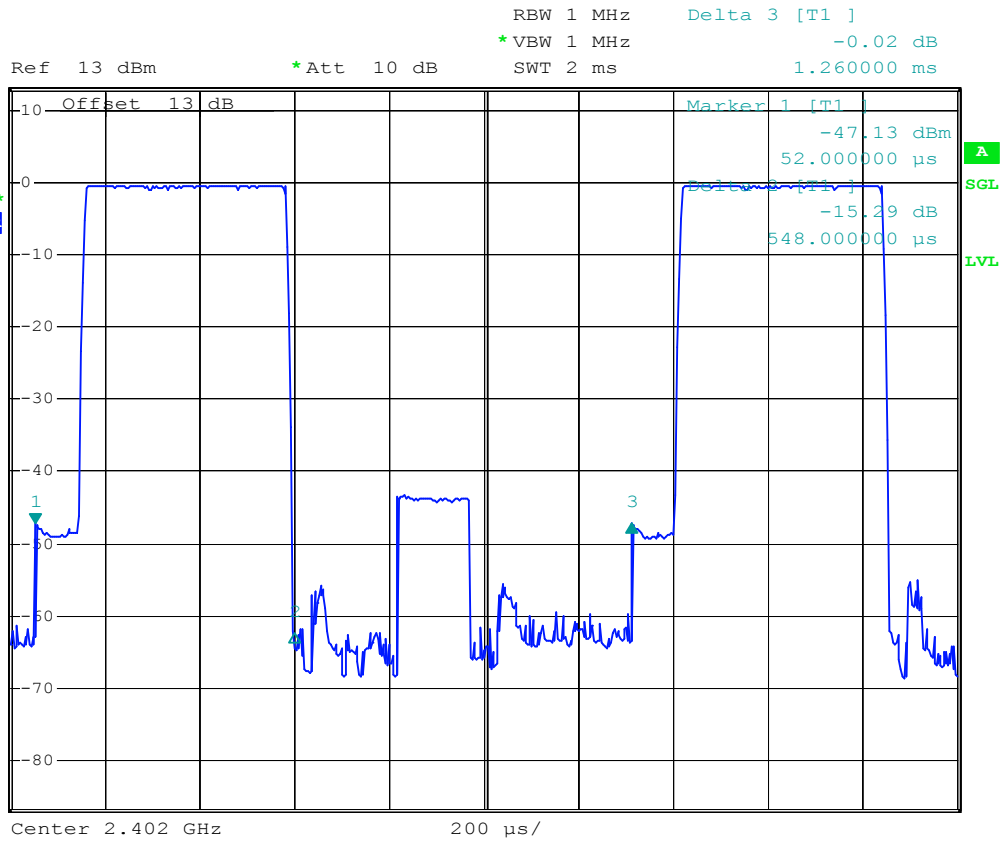
※ Remark:

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)



5.8.5 Dwell Time

DH1 (CH00)



Date: 14.OCT.2005 23:48:29

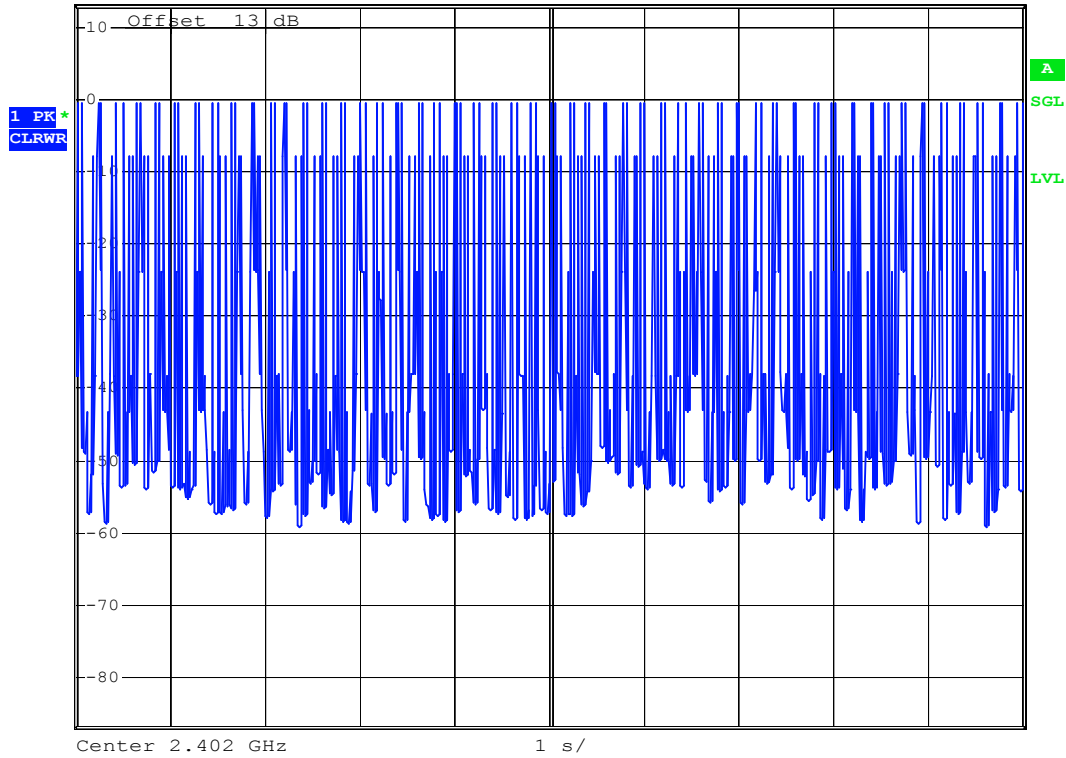


FCC TEST REPORT

Report No. : FR500501



Ref 13 dBm RBW 1 MHz
*Att 10 dB *VBW 1 MHz
SWT 10 s



Date: 14.OCT.2005 23:52:27

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

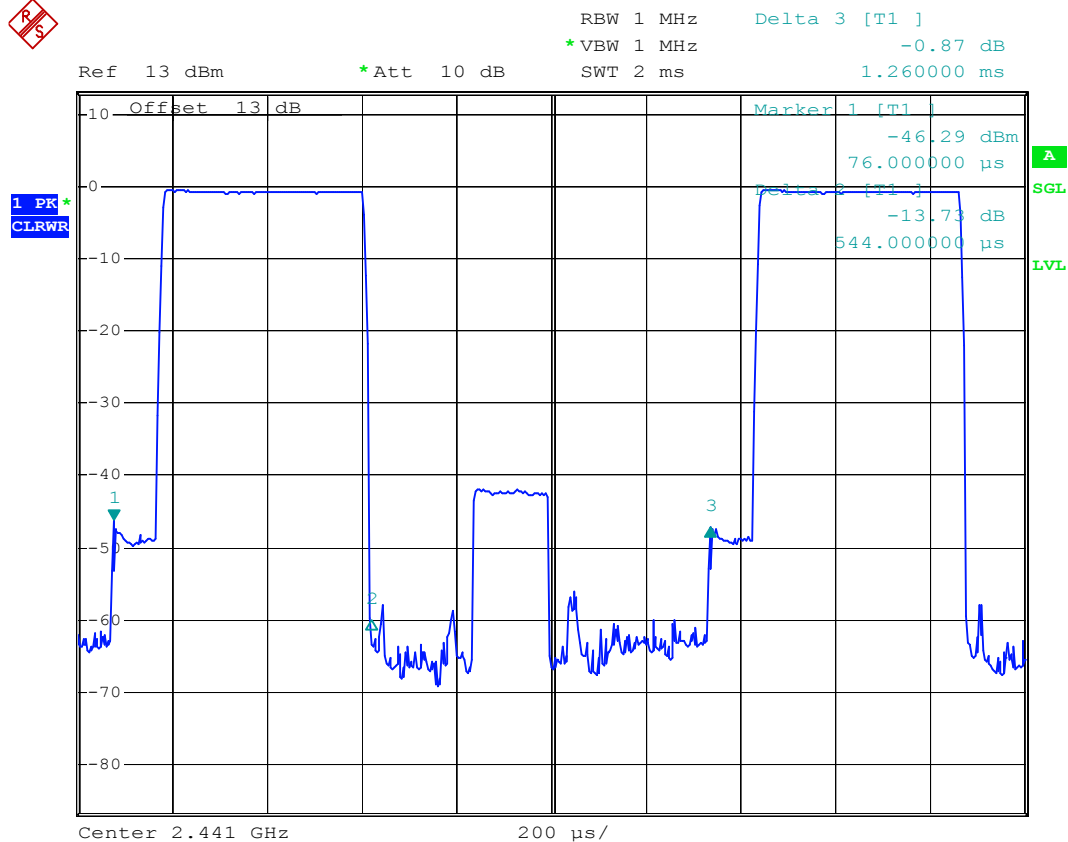
Page No. : 36 of 72

Report Issued Date : Oct. 17, 2005

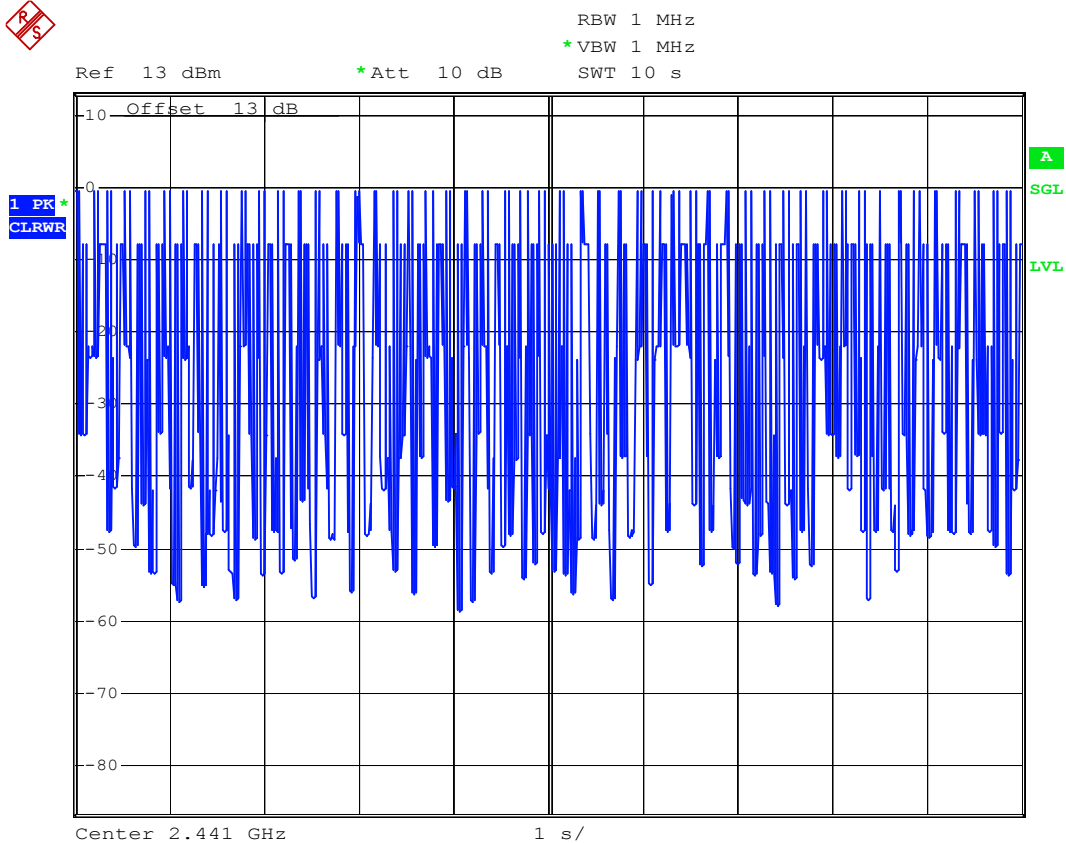
Report Version : Rev. 01



DH1 (CH39)

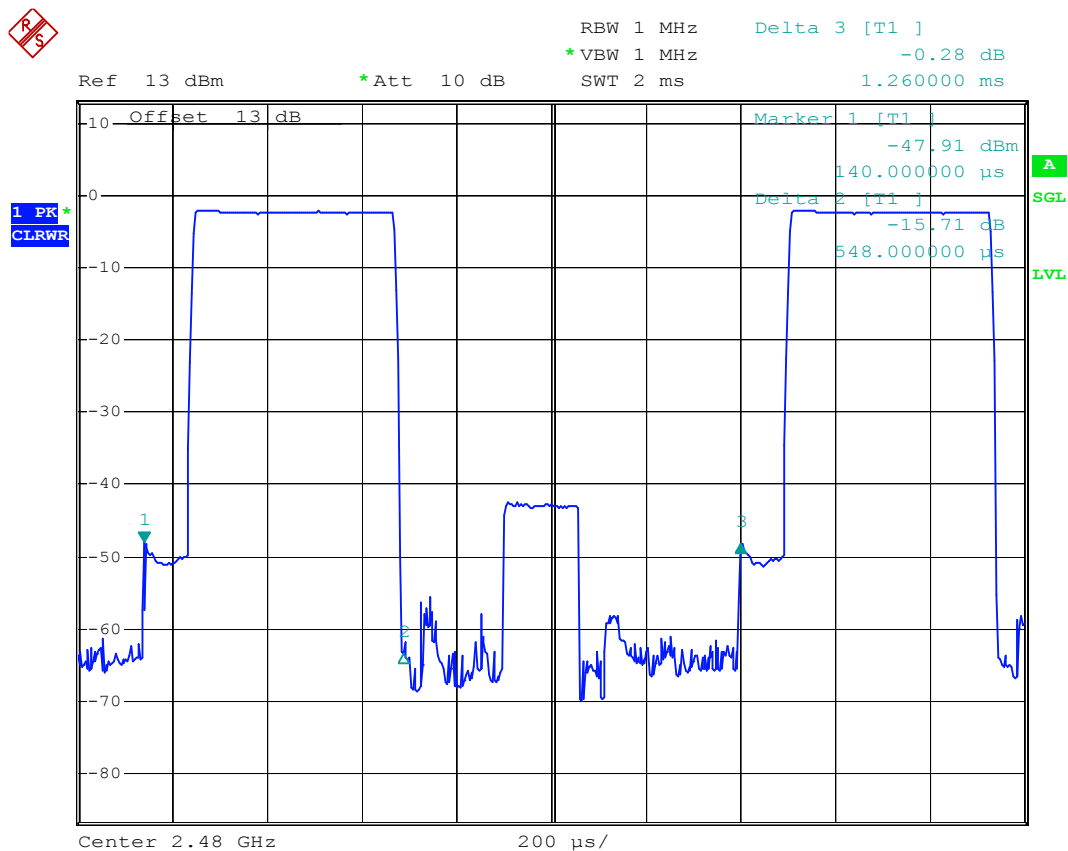


Date: 14.OCT.2005 23:48:01



Date: 14.OCT.2005 23:52:50

DH1 (CH78)

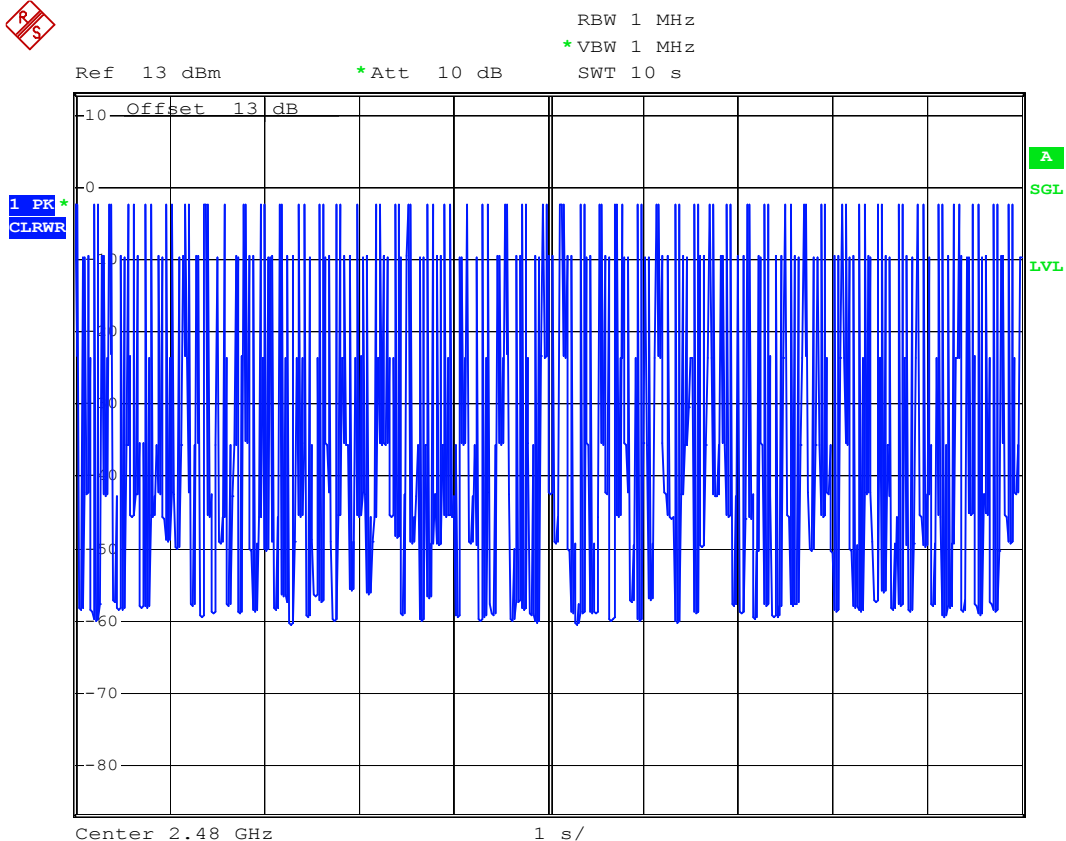


Date: 14.OCT.2005 23:45:49



FCC TEST REPORT

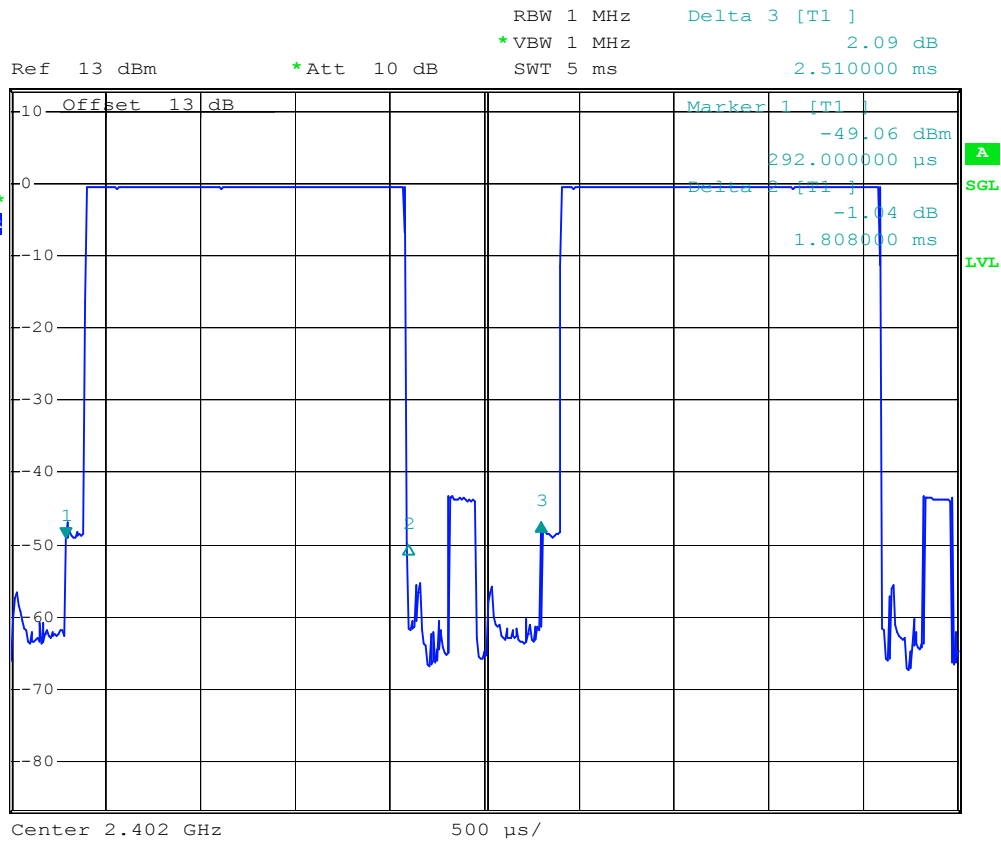
Report No. : FR500501



Date: 14.OCT.2005 23:53:14



DH3 (CH00)



Date: 14.OCT.2005 23:48:59

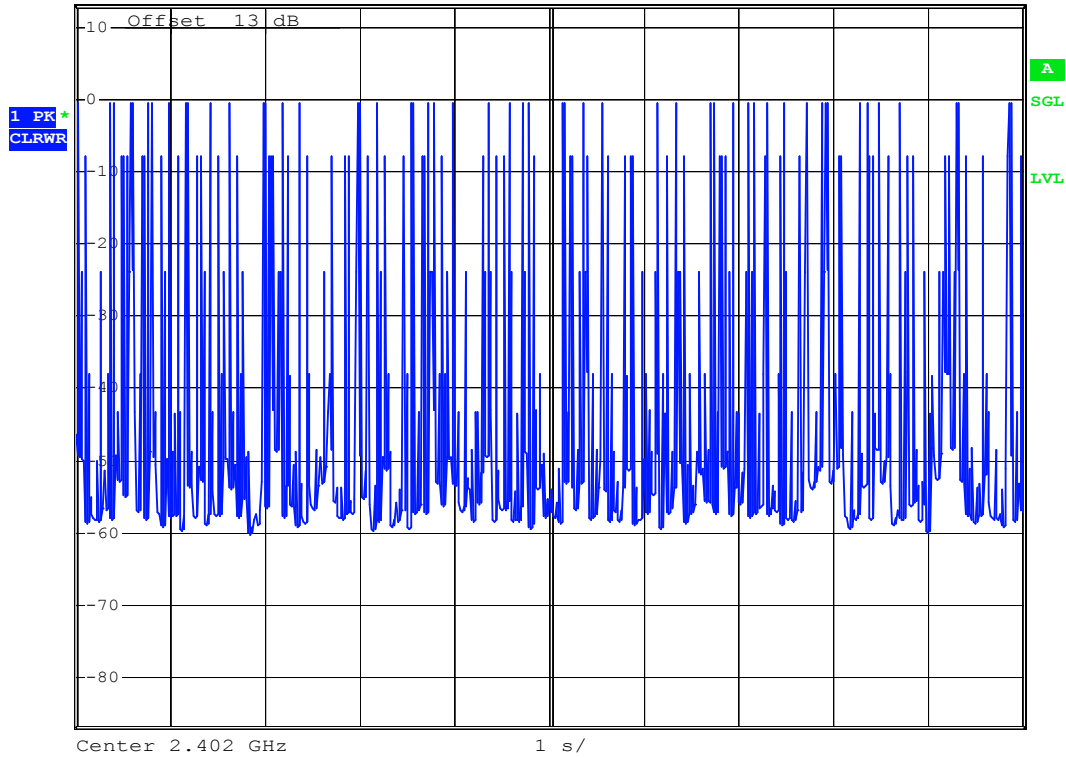


FCC TEST REPORT

Report No. : FR500501



Ref 13 dBm RBW 1 MHz
*Att 10 dB *VBW 1 MHz
SWT 10 s



Date: 14.OCT.2005 23:52:06

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

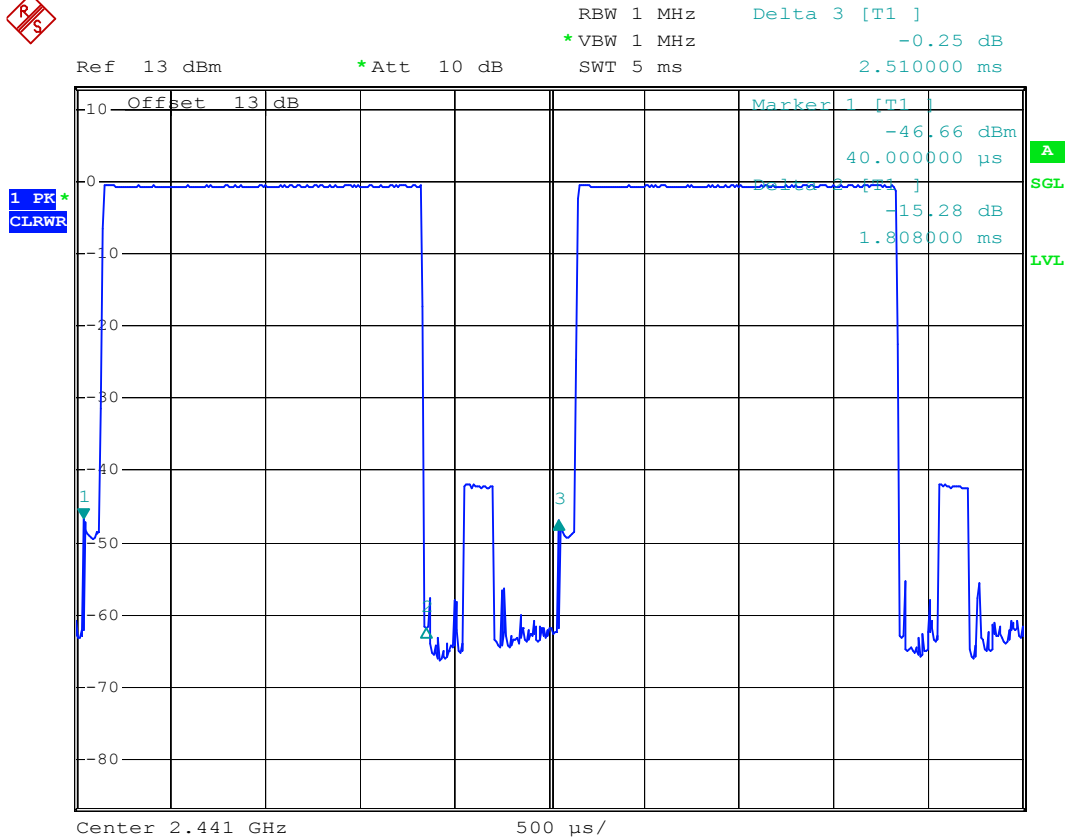
Page No. : 42 of 72

Report Issued Date : Oct. 17, 2005

Report Version : Rev. 01



DH3 (CH39)

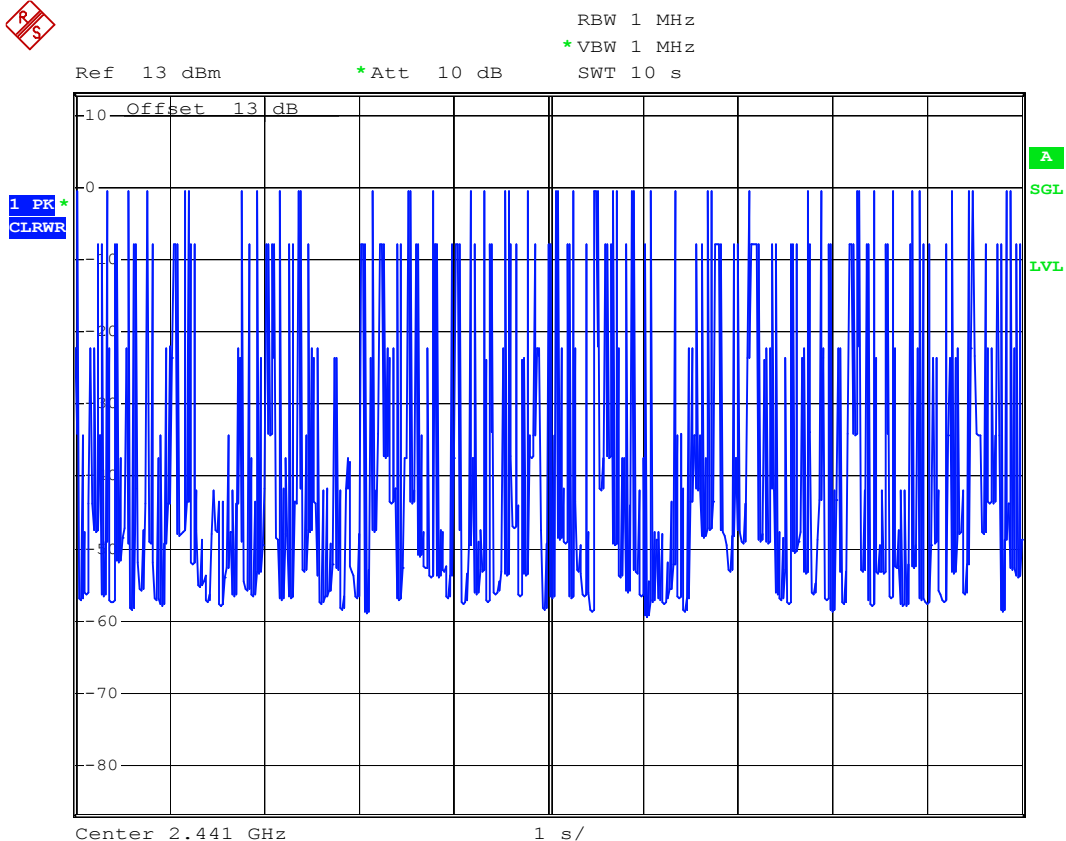


Date: 14.OCT.2005 23:47:30



FCC TEST REPORT

Report No. : FR500501



Date: 14.OCT.2005 23:51:46

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

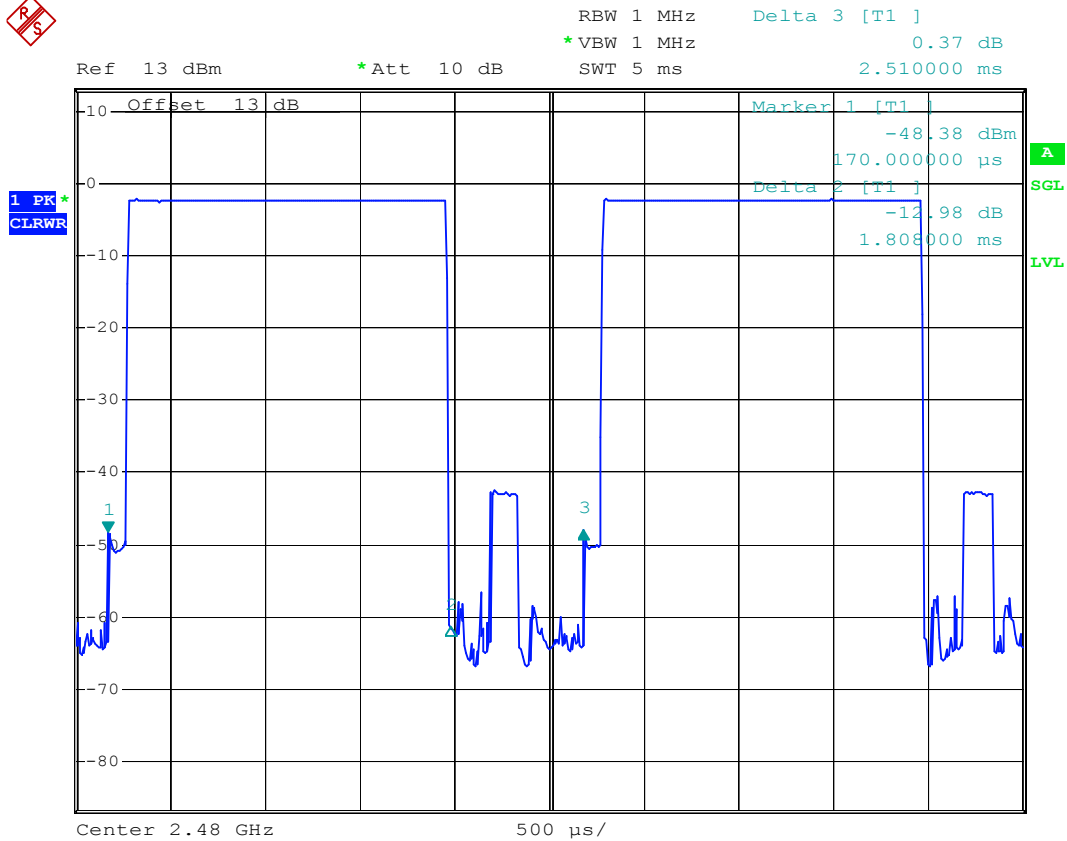
Page No. : 44 of 72

Report Issued Date : Oct. 17, 2005

Report Version : Rev. 01



DH3 (CH78)

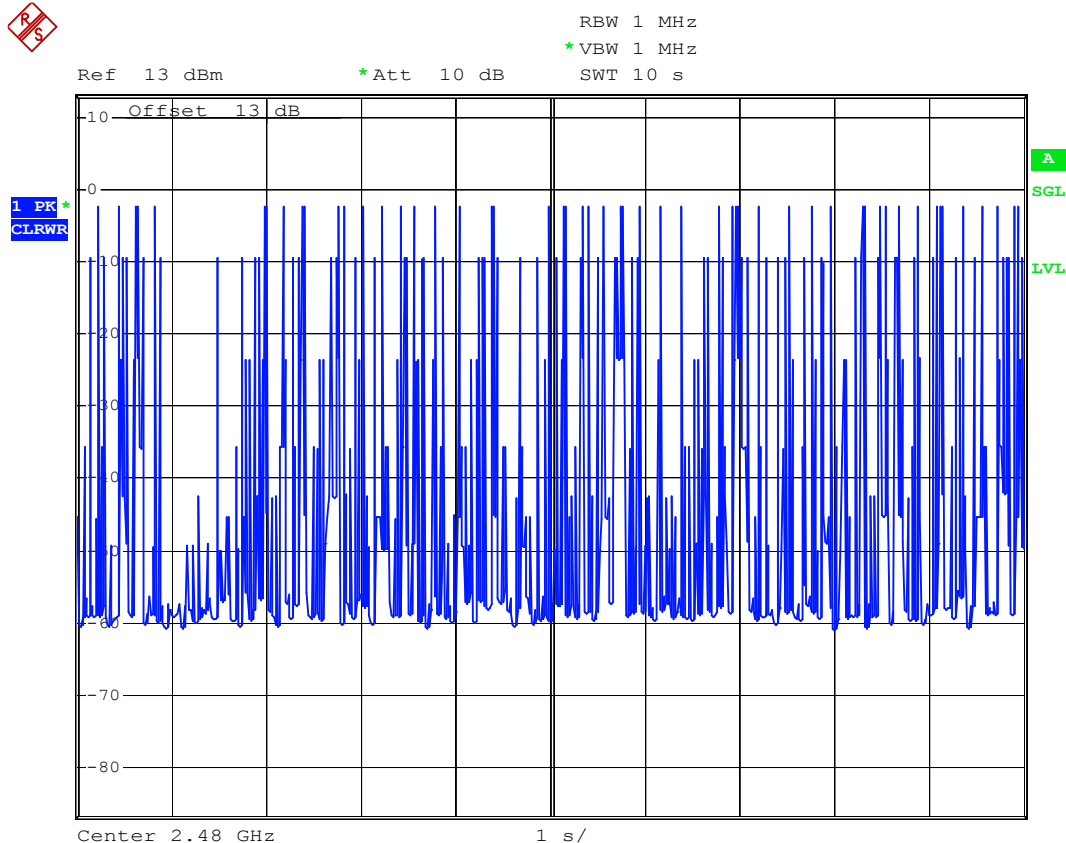


Date: 14.OCT.2005 23:46:13



FCC TEST REPORT

Report No. : FR500501



Date: 14.OCT.2005 23:51:15

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

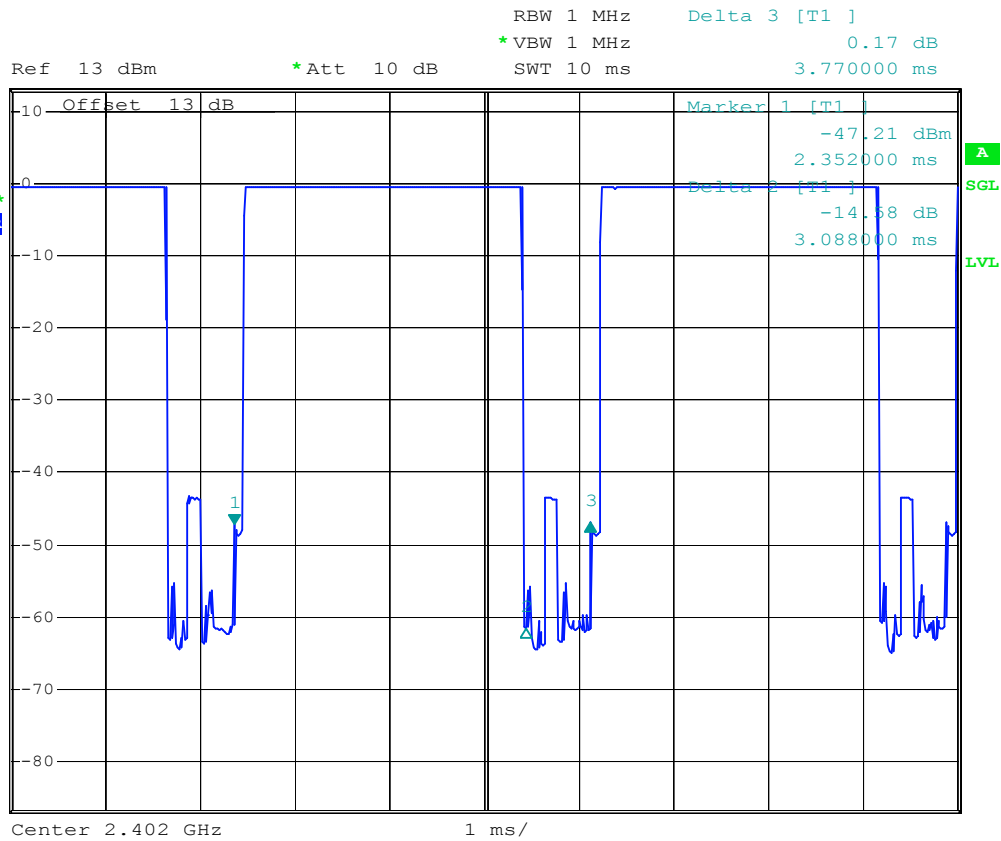
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Report Issued Date : Oct. 17, 2005

Report Version : Rev. 01



DH5 (CH00)



Date: 14.OCT.2005 23:49:26

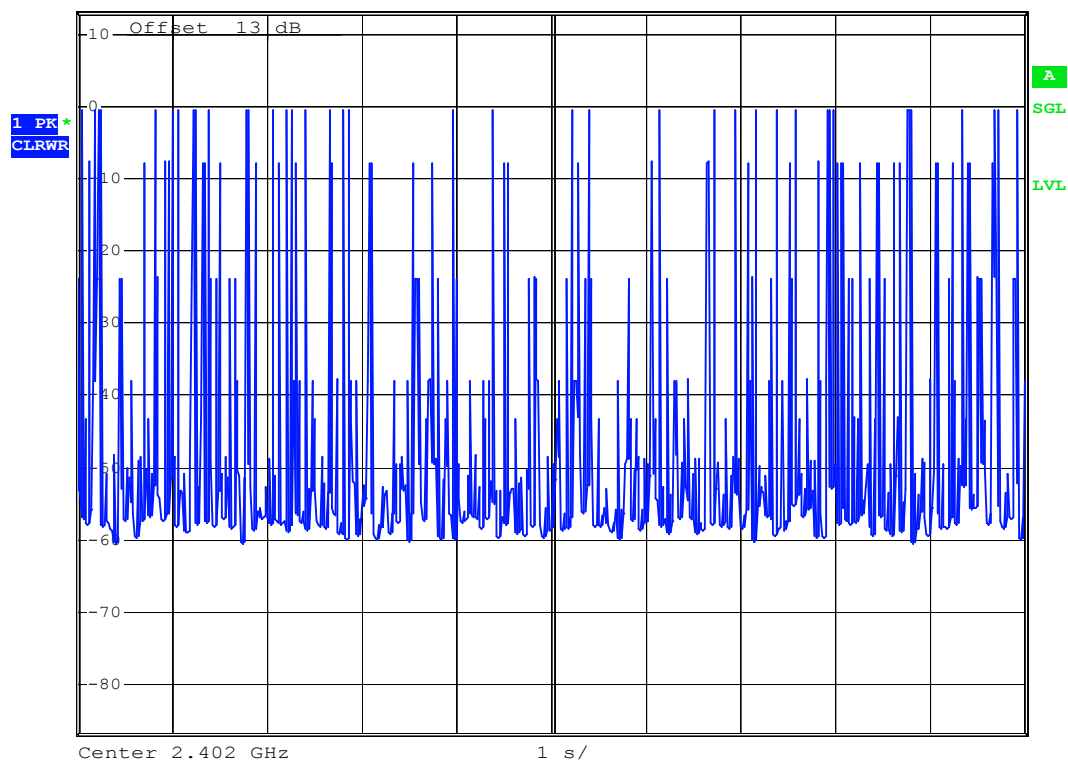


FCC TEST REPORT

Report No. : FR500501



Ref 13 dBm *Att 10 dB RBW 1 MHz
*VBW 1 MHz SWT 10 s



Date: 14.OCT.2005 23:49:54

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

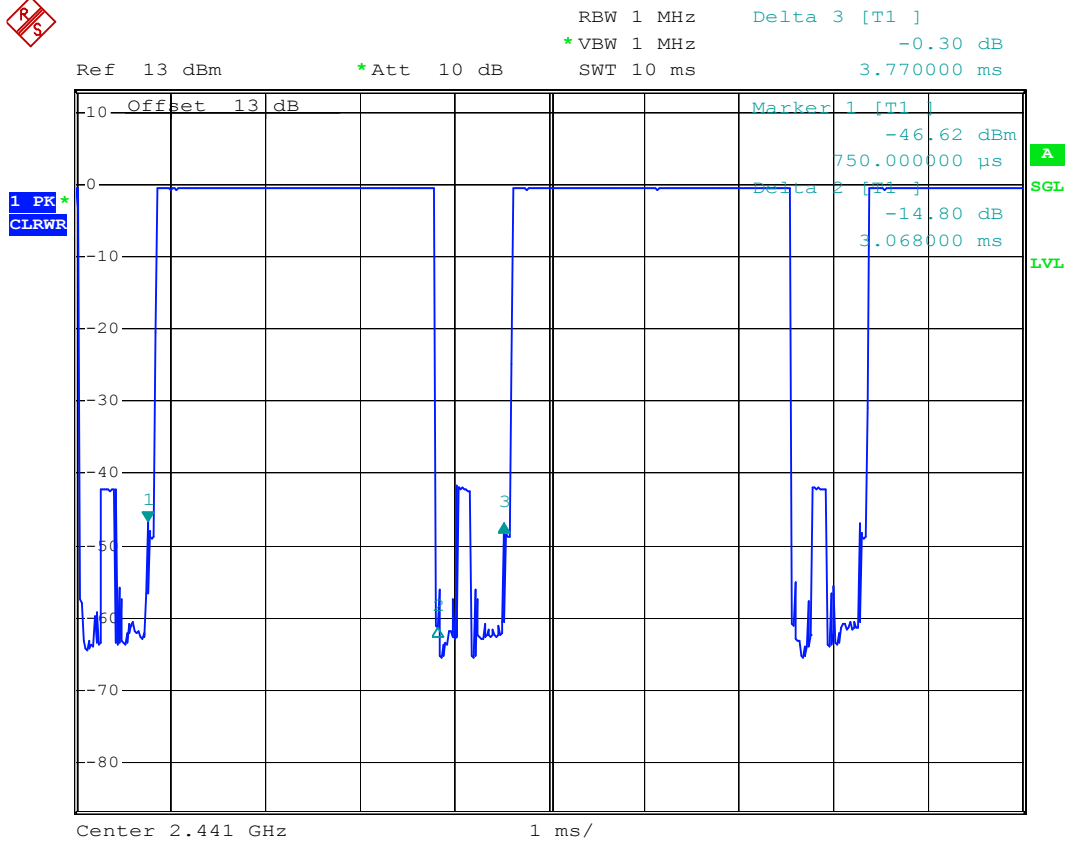
Page No. : 48 of 72

Report Issued Date : Oct. 17, 2005

Report Version : Rev. 01



DH5 (CH39)



Date: 14.OCT.2005 23:47:04

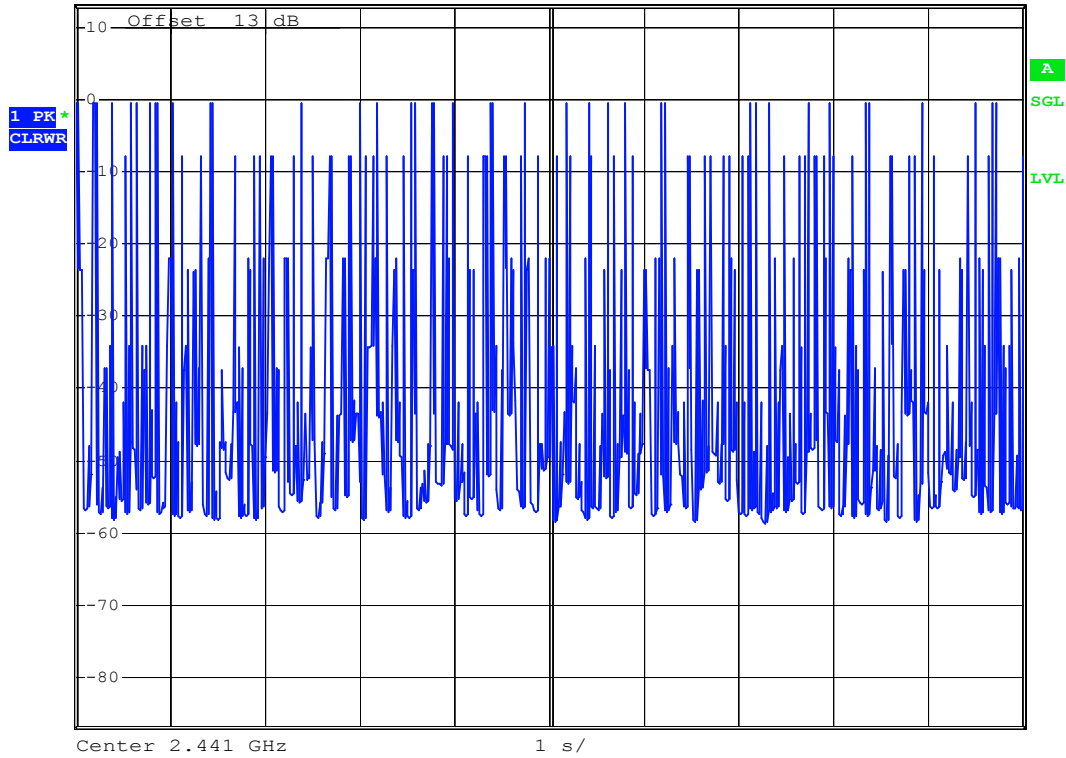


FCC TEST REPORT

Report No. : FR500501



Ref 13 dBm RBW 1 MHz
*Att 10 dB *VBW 1 MHz
SWT 10 s



Date: 14.OCT.2005 23:50:29

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

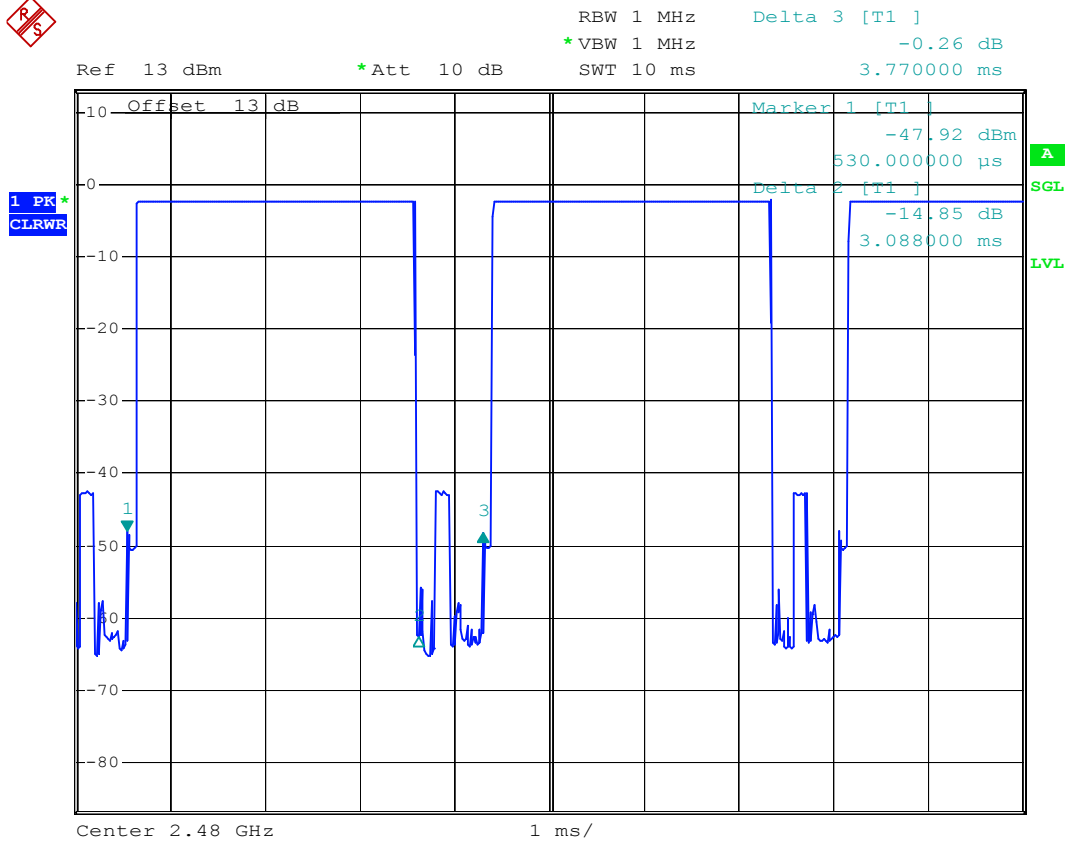
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Report Issued Date : Oct. 17, 2005

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DH5 (CH78)



Date: 14.OCT.2005 23:46:38

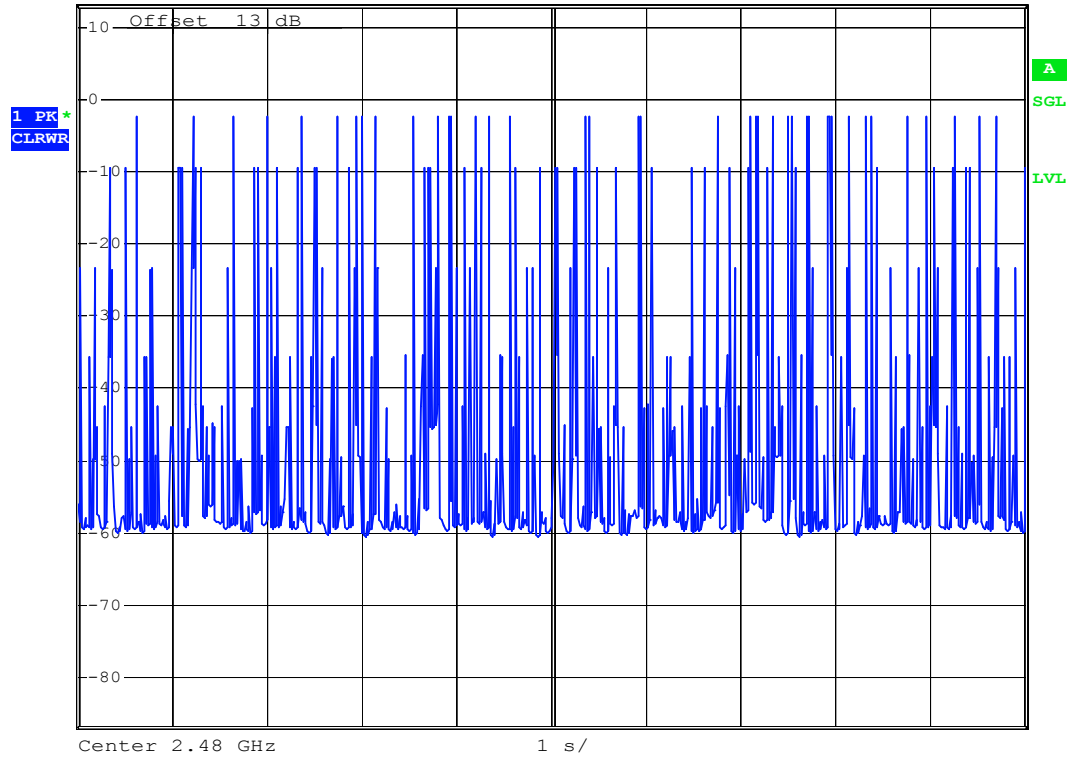


FCC TEST REPORT

Report No. : FR500501



Ref 13 dBm *Att 10 dB RBW 1 MHz
*VBW 1 MHz SWT 10 s



Date: 14.OCT.2005 23:50:50

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : HFS-Atom

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Report Issued Date : Oct. 17, 2005

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5.9 Peak Output Power Measurement

5.9.1 Measuring Instruments :

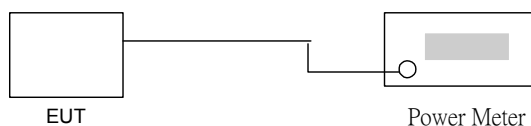
As described in chapter 6 of this test report.

5.9.2 Test Procedure :

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter.

The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

5.9.3 Test Setup Layout :



5.9.4 Test Result :

- Application Type : WLAN 802.11b and BT
- Temperature : 27°C
- Relative Humidity : 58 %
- Test Enginner : Jay

WLAN 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	16.7	1W/30 dBm
06	2437	16.9	1W/30 dBm
11	2462	16.6	1W/30 dBm

BT

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	-0.1	1W/30 dBm
39	2441	-0.39	1W/30 dBm
78	2480	-2.01	1W/30 dBm



5.10 Conducted Emission

5.10.1 Measuring Instruments

As described in chapter 6 of this test Report.

5.10.2 Test Procedures :

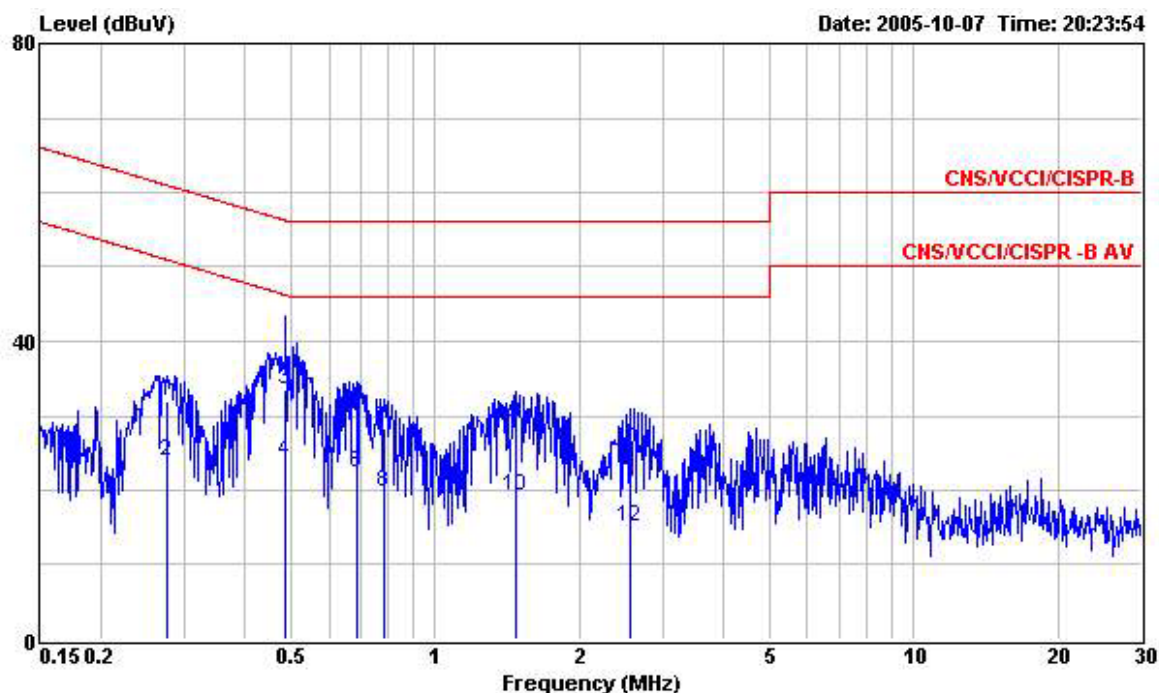
- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.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



5.10.3 Test Data

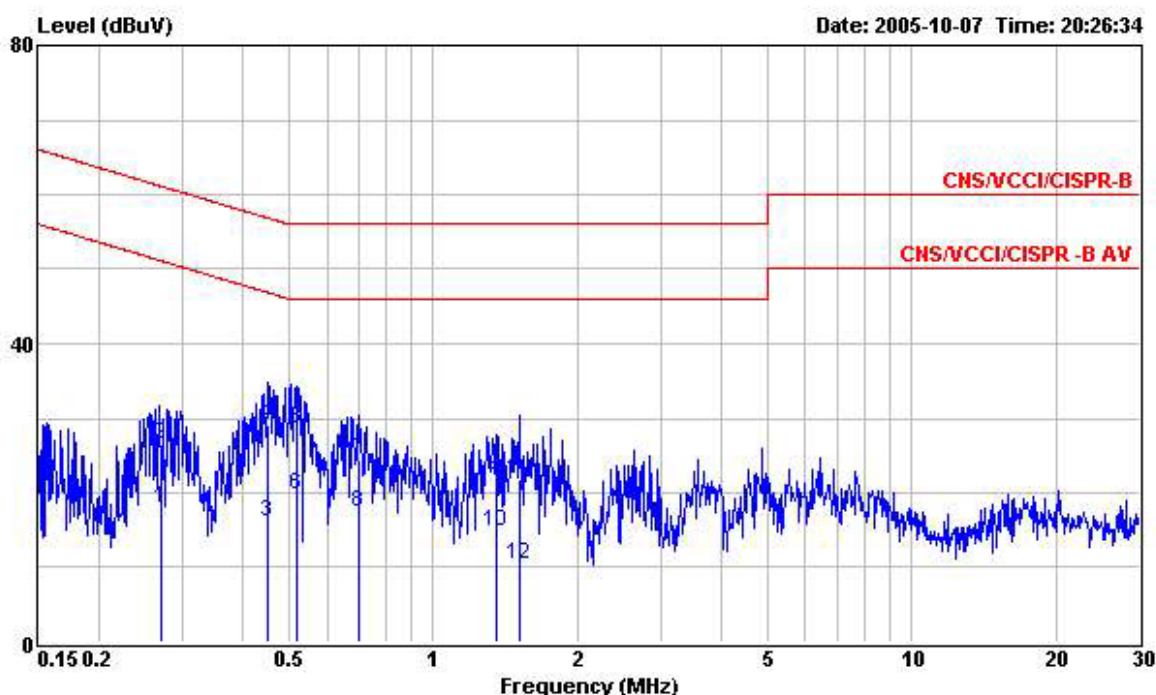
- Temperature : 26 °C
- Relating Humidity : 53 %
- Test Enginner : Jay
- Test Mode : Mode 1

■ 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 : Mobile Phone (GSM/GPRS/EDGE)
 Power : 120V/60Hz
 Model : FR500501
 Memo : PCS1900 IDLE Mode +MPEG4+Camera
 Memo : +Earphone+BT LINK +WLAN LINK+Charger
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.276	31.99	-28.95	60.94	31.83	0.06	0.10	QP
2	0.276	23.80	-27.14	50.94	23.64	0.06	0.10	Average
3	0.486	33.52	-22.72	56.24	33.40	0.07	0.05	QP
4	0.486	23.77	-22.47	46.24	23.65	0.07	0.05	Average
5	0.686	30.86	-25.14	56.00	30.71	0.09	0.06	QP
6	0.686	22.39	-23.61	46.00	22.24	0.09	0.06	Average
7	0.783	28.27	-27.73	56.00	28.10	0.10	0.07	QP
8	0.783	19.72	-26.28	46.00	19.55	0.10	0.07	Average
9	1.480	28.71	-27.29	56.00	28.50	0.11	0.10	QP
10	1.480	19.28	-26.72	46.00	19.07	0.11	0.10	Average
11	2.550	25.71	-30.29	56.00	25.43	0.15	0.13	QP
12	2.550	15.01	-30.99	46.00	14.73	0.15	0.13	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL
EUT : Mobile Phone (GSM/GPRS/EDGE)
Power : 120V/60Hz
Model : FR500501
Memo : PCS1900 IDLE Mode +MPEG4+Camera
Memo : +Earphone+BT LINK +WLAN LINK+Charger
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.269	18.05	-33.10	51.15	17.83	0.11	0.11	Average
2	0.269	26.54	-34.61	61.15	26.32	0.11	0.11	QP
3	0.452	16.00	-30.84	46.84	15.82	0.13	0.05	Average
4	0.452	29.09	-27.75	56.84	28.91	0.13	0.05	QP
5	0.518	28.68	-27.32	56.00	28.49	0.14	0.05	QP
6	0.518	19.70	-26.30	46.00	19.51	0.14	0.05	Average
7	0.697	24.32	-31.68	56.00	24.08	0.18	0.06	QP
8	0.697	17.36	-28.64	46.00	17.12	0.18	0.06	Average
9	1.350	22.23	-33.77	56.00	21.90	0.23	0.10	QP
10	1.350	14.68	-31.32	46.00	14.35	0.23	0.10	Average
11	1.510	21.85	-34.15	56.00	21.52	0.23	0.10	QP
12	1.510	10.36	-35.64	46.00	10.03	0.23	0.10	Average



5.11 Radiated Emission Measurement

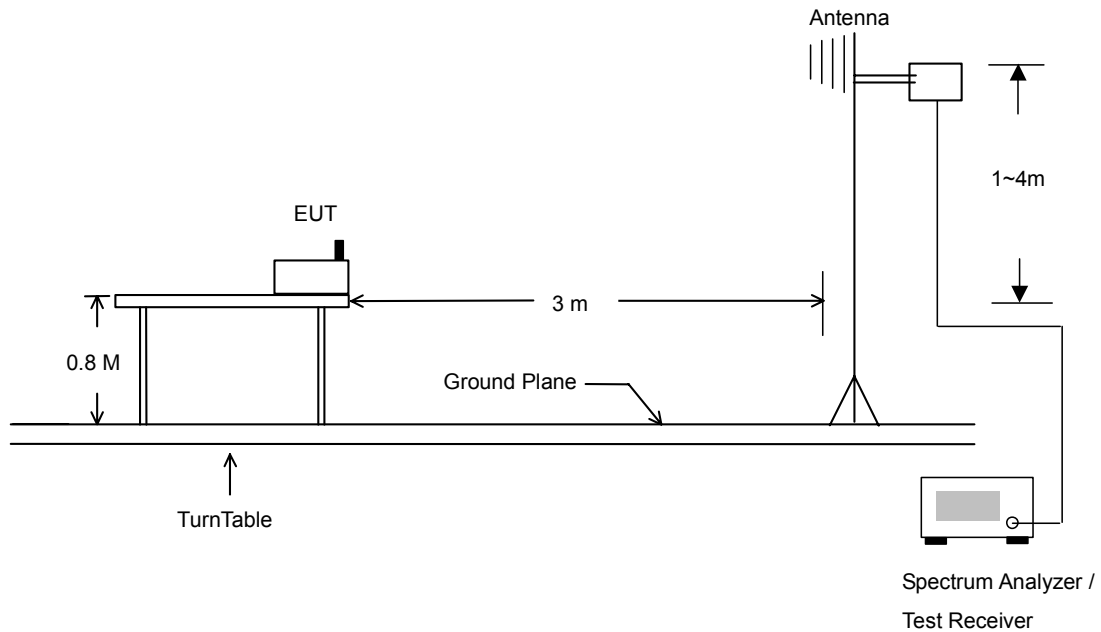
5.11.1 Measuring Instruments

As described in chapter 6 of this Report.

5.11.2 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. 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.
- e. 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.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. 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.
- h. 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.

5.11.3 Typical Test Setup Layout of Radiated Emission





5.11.4 Test Data

- Temperature : 27°C
- Relative Humidity : 58%
- Test Engineer : Jay
- Test Mode : Mode 1
- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2390.00	58.34	-15.66	74.00	59.05	-0.71	4.26	35.46	100	8	Peak
2 @	2390.00	42.35	-11.65	54.00	43.06	-0.71	4.26	35.46	100	192	Average
3 @	2412.00	107.13			107.85	-0.72	4.26	35.46	100	8	Peak
4 @	2412.00	91.18			91.90	-0.72	4.26	35.46	100	192	Average
5 @	2484.00	49.71	-24.29	74.00	50.45	-0.74	4.36	35.51	100	8	Peak
6 @	2484.00	38.80	-15.20	54.00	39.54	-0.74	4.36	35.51	100	192	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamplifier	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2390.00	55.15	-18.85	74.00	55.86	-0.71	4.26	35.46	100	0	Peak
2 @	2390.00	41.08	-12.92	54.00	41.79	-0.71	4.26	35.46	100	151	Average
3 @	2412.00	104.27			105.00	-0.72	4.26	35.46	100	0	Peak
4 @	2412.00	88.54			89.26	-0.72	4.26	35.46	100	151	Average
5 @	2494.00	49.96	-24.04	74.00	50.70	-0.74	4.39	35.53	100	0	Peak
6 @	2494.00	38.66	-15.34	54.00	39.40	-0.74	4.39	35.53	100	151	Average

Remark: #3 and #4 Fundamental Signal



- Test Mode : Mode 2
- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	159.33	34.22	-9.28	43.50	53.95	-19.73	1.69	31.64	400	0	Peak
2 @	211.44	35.89	-7.61	43.50	55.51	-19.62	2.05	31.35	178	226	QP
3 @	239.79	37.54	-8.46	46.00	55.58	-18.04	2.22	31.20	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	306.30	31.84	-14.16	46.00	46.97	-15.13	2.57	30.84	100	0	Peak
2 @	336.40	36.24	-9.76	46.00	50.34	-14.11	2.68	30.80	100	0	Peak
3 @	372.80	30.19	-15.81	46.00	43.17	-12.99	2.85	30.91	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2384.00	51.11	-22.89	74.00	51.82	-0.71	4.23	35.44	100	360	Peak
2 @	2384.00	39.89	-14.11	54.00	40.60	-0.71	4.23	35.44	100	187	Average
3 @	2437.00	106.16			106.90	-0.74	4.29	35.47	100	360	Peak
4 @	2437.00	90.61			91.35	-0.74	4.29	35.47	100	187	Average
5 @	2498.00	50.52	-23.48	74.00	51.26	-0.74	4.39	35.53	100	360	Peak
6 @	2498.00	38.96	-15.04	54.00	39.70	-0.74	4.39	35.53	100	187	Average

Remark: #3 and #4 Fundamental Signal



- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	30.00	36.22	-3.78	40.00	48.10	-11.88	0.88	31.49	100	241	QP
2 @	33.78	34.01	-5.99	40.00	47.30	-13.29	0.92	31.61	122	142	QP
3 @	41.88	35.90	-4.10	40.00	53.25	-17.35	0.60	31.69	400		0 Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	306.30	29.19	-16.81	46.00	44.32	-15.13	2.57	30.84	100		0 Peak
2 @	336.40	32.29	-13.71	46.00	46.40	-14.11	2.68	30.80	100		0 Peak
3 @	989.50	29.92	-24.08	54.00	31.45	-1.53	6.13	30.31	100		0 Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2390.00	39.80	-14.20	54.00	40.51	-0.71	4.26	35.46	100	98	Average
2 @	2390.00	53.69	-20.31	74.00	54.40	-0.71	4.26	35.46	100		0 Peak
3 @	2437.00	103.03			103.77	-0.74	4.29	35.47	100		0 Peak
4 @	2437.00	89.66			90.40	-0.74	4.29	35.47	100	98	Average
5 @	2484.00	51.29	-22.71	74.00	52.03	-0.74	4.36	35.51	100		0 Peak
6 @	2484.00	39.22	-14.78	54.00	39.96	-0.74	4.36	35.51	100	98	Average

Remark: #3 and #4 Fundamental Signal



Test Mode : Mode 3

- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2374.00	51.49	-22.51	74.00	52.20	-0.71	4.23	35.44	100	0	Peak
2 @	2374.00	39.20	-14.80	54.00	39.91	-0.71	4.23	35.44	100	193	Average
3 @	2462.00	105.72			106.46	-0.74	4.33	35.49	100	0	Peak
4 @	2462.00	90.31			91.05	-0.74	4.33	35.49	100	193	Average
5 @	2483.50	51.15	-22.85	74.00	51.88	-0.74	4.36	35.51	100	0	Peak
6 @	2483.50	40.40	-13.60	54.00	41.14	-0.74	4.36	35.51	100	193	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2354.00	50.53	-23.47	74.00	51.25	-0.71	4.20	35.42	100	0	Peak
2 @	2354.00	39.27	-14.73	54.00	39.98	-0.71	4.20	35.42	100	209	Average
3 @	2462.00	102.99			103.72	-0.74	4.33	35.49	100	0	Peak
4 @	2462.00	88.45			89.19	-0.74	4.33	35.49	100	209	Average
5 @	2483.50	51.81	-22.19	74.00	52.55	-0.74	4.36	35.51	100	0	Peak
6 @	2483.50	40.00	-14.00	54.00	40.74	-0.74	4.36	35.51	100	209	Average

Remark: #3 and #4 Fundamental Signal



Test Mode : Mode 4

Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1	2390.00	39.21	-14.79	54.00	39.92	-0.71	4.26	35.46	100	253	Average
2	2390.00	49.90	-24.10	74.00	50.61	-0.71	4.26	35.46	100	360	Peak
3 @	2402.00	96.64			97.35	-0.71	4.26	35.46	100	360	Peak
4 X	2402.00	69.19			69.90	-0.71	4.26	35.46	100	253	Average
5	2483.50	49.93	-24.07	74.00	50.67	-0.74	4.36	35.51	100	360	Peak
6	2483.50	39.01	-14.99	54.00	39.75	-0.74	4.36	35.51	100	253	Average

Remark: #3 and 4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1	4804.00	50.56	-23.44	74.00	47.29	3.27	6.21	36.10	200	0	Peak
2	4804.00	40.52	-13.48	54.00	37.25	3.27	6.21	36.10	168	211	Average

Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1	2390.00	39.27	-14.73	54.00	39.98	-0.71	4.26	35.46	100	328	Average
2	2390.00	48.67	-25.33	74.00	49.38	-0.71	4.26	35.46	100	360	Peak
3 @	2402.00	98.80			99.51	-0.71	4.26	35.46	100	360	Peak
4 X	2402.00	70.42			71.13	-0.71	4.26	35.46	100	328	Average
5	2483.50	47.83	-26.17	74.00	48.57	-0.74	4.36	35.51	100	360	Peak
6	2483.50	39.02	-14.98	54.00	39.76	-0.74	4.36	35.51	100	328	Average

Remark: #3 and #4 Fundamental Signal



Test Mode : Mode 5

- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	159.33	37.05	-6.45	43.50	56.79	-19.73	1.69	31.64	172	214	Peak
2 @	233.58	38.16	-7.84	46.00	56.69	-18.53	2.20	31.23	400	0	Peak
3 @	239.79	38.69	-7.31	46.00	56.74	-18.04	2.22	31.20	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	336.40	36.14	-9.86	46.00	50.24	-14.11	2.68	30.80	100	0	Peak
2 @	799.80	32.25	-13.75	46.00	35.57	-3.33	4.90	30.12	100	0	Peak
3 @	959.40	32.29	-13.71	46.00	35.02	-2.73	5.92	30.38	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	1628.00	50.17	-23.83	74.00	54.59	-4.42	3.50	35.56	100	360	Peak
2 @	1628.00	40.42	-13.58	54.00	44.84	-4.42	3.50	35.56	117	193	Average
3 @	2390.00	49.45	-24.55	74.00	50.16	-0.71	4.26	35.46	100	360	Peak
4 @	2390.00	38.73	-15.27	54.00	39.44	-0.71	4.26	35.46	121	252	Average
5 @	2441.00	93.70			94.44	-0.74	4.29	35.47	100	360	Peak
6 @	2441.00	67.45			68.18	-0.73	4.33	35.49	121	252	Average

Remark: #5 and 6 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	4882.00	51.94	-22.06	74.00	48.41	3.53	6.30	36.16	200	0	Peak
2 @	4882.00	40.83	-13.17	54.00	37.30	3.53	6.30	36.16	170	215	Average



- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	30.00	34.92	-5.08	40.00	46.80	-11.88	0.88	31.49	121	239	QP
2 @	54.84	33.17	-6.83	40.00	55.41	-22.24	1.02	31.44	400	0	Peak
3 @	239.79	33.84	-12.16	46.00	51.88	-18.04	2.22	31.20	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	306.30	32.22	-13.78	46.00	47.35	-15.13	2.57	30.84	100	0	Peak
2 @	726.30	32.92	-13.08	46.00	39.19	-6.27	4.47	30.53	100	0	Peak
3 @	799.80	34.06	-11.94	46.00	37.38	-3.33	4.90	30.12	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	1628.00	49.58	-24.42	74.00	54.00	-4.42	3.50	35.56	100	360	Peak
2 @	1628.00	41.73	-12.27	54.00	46.15	-4.42	3.50	35.56	137	269	Average
3 @	2390.00	49.12	-24.88	74.00	49.83	-0.71	4.26	35.46	100	360	Peak
4 @	2390.00	39.21	-14.79	54.00	39.92	-0.71	4.26	35.46	100	333	Average
5 @	2441.00	96.69			97.43	-0.74	4.29	35.47	100	360	Peak
6 @	2441.00	69.07			69.80	-0.73	4.33	35.49	100	333	Average

Remark: #5 and #6 Fundamental Signal

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Test Mode : Mode 6

- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	1654.00	50.01	-23.99	74.00	54.24	-4.23	3.51	35.53	100	360	Peak
2 @	1654.00	41.04	-12.96	54.00	45.27	-4.23	3.51	35.53	162	193	Average
3 @	2390.00	48.73	-25.27	74.00	49.44	-0.71	4.26	35.46	100	360	Peak
4 @	2390.00	38.76	-15.24	54.00	39.47	-0.71	4.26	35.46	116	186	Average
5 @	2480.00	99.22			99.96	-0.74	4.36	35.51	100	360	Peak
6 @	2480.00	69.93			70.67	-0.74	4.36	35.51	116	186	Average
7 @	2483.50	48.32	-5.68	54.00	49.06	-0.74	4.36	35.51	116	186	Average
8 @	2483.50	62.91	-11.09	74.00	63.65	-0.74	4.36	35.51	100	360	Peak

Remark: #5 and #6 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	4960.00	54.52	-19.48	74.00	50.68	3.85	6.39	36.23	200	0	Peak
2 @	4960.00	42.61	-11.39	54.00	38.76	3.85	6.39	36.23	166	216	Average

- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	1654.00	50.46	-23.54	74.00	54.69	-4.23	3.51	35.53	100	360	Peak
2 @	1654.00	42.01	-11.99	54.00	46.24	-4.23	3.51	35.53	100	326	Average
3 @	2390.00	48.67	-25.33	74.00	49.38	-0.71	4.26	35.46	100	360	Peak
4 @	2390.00	39.15	-14.85	54.00	39.86	-0.71	4.26	35.46	100	326	Average
5 @	2480.00	96.45			97.19	-0.74	4.36	35.51	100	360	Peak
6 @	2480.00	69.21			69.95	-0.74	4.36	35.51	100	326	Average
7 @	2483.50	73.88	-0.12	74.00	74.61	-0.74	4.36	35.51	100	360	Peak
8 @	2483.50	47.35	-6.65	54.00	48.09	-0.74	4.36	35.51	100	326	Average

Remark: #5 and #6 Fundamental Signal

**FCC TEST REPORT****Report No. : FR500501**

Test Mode : Mode 7

- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	100.74	32.37	-11.13	43.50	52.04	-19.67	1.05	31.29	400	0	Peak
2 @	233.58	34.80	-11.20	46.00	53.33	-18.53	2.20	31.23	400	0	Peak
3 @	239.79	36.55	-9.45	46.00	54.59	-18.04	2.22	31.20	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	336.40	34.72	-11.28	46.00	48.82	-14.11	2.68	30.80	100	0	Peak
2 @	799.80	30.80	-15.20	46.00	34.13	-3.33	4.90	30.12	100	0	Peak
3 @	999.30	32.85	-21.15	54.00	34.30	-1.45	6.20	30.60	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2390.00	60.86	-13.14	74.00	61.57	-0.71	4.26	35.46	100	0	Peak
2 @	2390.00	39.00	-15.00	54.00	39.71	-0.71	4.26	35.46	100	351	Average
3 @	2438.00	102.04			102.78	-0.74	4.29	35.47	100	0	Peak
4 @	2438.00	81.25			81.99	-0.74	4.29	35.47	100	351	Average
5 @	2483.50	60.35	-13.65	74.00	61.08	-0.74	4.36	35.51	100	0	Peak
6 @	2483.50	38.91	-15.09	54.00	39.65	-0.74	4.36	35.51	100	351	Average

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	4878.00	54.18	-19.82	74.00	50.65	3.53	6.30	36.16	200	0	Peak
2 @	4878.00	49.07	-4.93	54.00	45.54	3.53	6.30	36.16	124	203	Average



- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	43.23	37.64	-2.36	40.00	56.10	-18.46	0.53	31.64	100	302	QP
2 @	56.19	35.68	-4.32	40.00	58.20	-22.52	1.06	31.44	100	302	QP
3 @	217.38	32.06	-13.94	46.00	51.67	-19.61	2.09	31.26	400		0 Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	336.40	30.79	-15.21	46.00	44.90	-14.11	2.68	30.80	100		0 Peak
2 @	378.40	27.61	-18.39	46.00	40.39	-12.77	2.88	30.90	100		0 Peak
3 @	799.80	32.30	-13.70	46.00	35.63	-3.33	4.90	30.12	100		0 Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	2390.00	57.74	-16.26	74.00	58.45	-0.71	4.26	35.46	100		1 Peak
2 @	2390.00	38.90	-15.10	54.00	39.61	-0.71	4.26	35.46	100	184	Average
3 @	2438.00	97.36			98.10	-0.74	4.29	35.47	100		1 Peak
4 @	2438.00	83.34			84.08	-0.74	4.29	35.47	100	184	Average
5 @	2483.50	54.69	-19.31	74.00	55.43	-0.74	4.36	35.51	100		1 Peak
6 @	2483.50	38.78	-15.22	54.00	39.52	-0.74	4.36	35.51	100	184	Average

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 @	4884.00	50.53	-23.47	74.00	47.00	3.53	6.30	36.16	200	360	Peak
2 @	4884.00	42.90	-11.10	54.00	39.37	3.53	6.30	36.16	131	104	Average



5.12 Antenna Requirements

5.12.1 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.

5.12.2 Antenna Connected Construction

The antennas used in this product are fixed internal for WLAN and BT with without connector and it is considered to meet antenna requirement of FCC.

**6. List of Measuring Equipments Used**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 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
combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

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

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

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

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