



FCC / IC TEST REPORT

for

47 CFR Part 15 Subpart C and IC RSS-210

Equipment : Notebook Computer
Trade Name : Fujitsu Siemens Computers, Fujitsu Limited
Model No. : E83XX (X maybe any alphanumeric character or blank)
FCC ID : EJE-WB0050
IC ID : 337J-WB0050
Filing Type : Certification
Applicant : Fujitsu Limited
4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki-shi, Kanagawa, 211-8588, Japan

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- The data shown in this test report were carried out on May 15, 2007 at **Sporton International Inc. LAB.**
- Report No.: FR6D2906-C, Report Version: Rev. 01

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Table of Contents

History of this test report.....	ii
1. General Description of Equipment under Test.....	1
1.1 Applicant	1
1.2 Manufacturer	1
1.3 Basic Description of Equipment under Test	1
1.4 Feature of Equipment under Test	2
2 Test Configuration of Equipment under Test	3
2.1 Test Manner	3
2.2 Test Mode	3
2.3 Connection Diagram of Test System	4
2.4 Ancillary Equipment List.....	4
3. RF Utility	5
4. General Information of Test.....	6
4.1 Test Voltage	6
4.2 Standard for Methods of Measurement.....	6
4.3 Test in Compliance with	6
4.4 Frequency Range Investigated	6
4.5 Test Distance	6
5. Test Data and Test Result.....	7
5.1 List of Measurements and Examinations	7
5.2 6dB Bandwidth Measurement	9
5.3 Power Spectral Density Measurement.....	28
5.4 Band Edges Measurement.....	48
5.5 Hopping Channel Separation.....	69
5.6 Number of Hopping Frequency.....	77
5.7 Hopping Channel Bandwidth.....	80
5.8 Dwell Time of Each Frequency	88
5.9 Peak Output Power Measurement	127
5.10 Conducted Emission	136
5.11 Radiated Emission Measurement	139
5.12 Antenna Requirements	361
6. List of Measuring Equipments Used	362
7. Uncertainty Evaluation.....	363
Appendix A. Photographs of EUT External	
Appendix B. Photographs of EUT Internal	
Appendix C. Photographs of Setup	



History of this test report

Report Issue Date: May 15, 2007

Report No.	Description



1. General Description of Equipment under Test

1.1 Applicant

Fujitsu Limited

4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki-shi, Kanagawa, 211-8588, Japan

1.2 Manufacturer

Fujitsu Siemens Computers GmbH

Buergermeister-Ulrich-Str. 100, 86199 Augsburg, Germany

1.3 Basic Description of Equipment under Test

Equipment	: Notebook Computer
Trade Name	: Fujitsu Siemens Computers, Fujitsu Limited
Model No.	: E83XX (X maybe any alphanumeric character or blank)
FCC ID	: EJE-WB0050
IC ID	: 337J-WB0050
Power Supply Type	: Switching
AC Power Cord	: AC 120V, 1.2 meter, 2 pin
Adapter	: FUJITSU LIMITED, SEC100P2-19.0
Battery	: FUJITSU LIMITED, FPCBP145

1.4 Feature of Equipment under Test

Product Feature & Specification				
1. Type of Modulation	WLAN : DSSS / OFDM BT : GFSK / ¼DQPSK / 8DPSK			
2. Number of Channels	802.11b/g : 11 Channels 802.11a : 5 Channels (Band III) / 4 Channels (Band I) 802.11n : 36-48 Channels, 149-165 Channels BT : 79 Channels			
3. Frequency Band	802.11b/g : 2400MHz ~ 2483.5MHz 802.11a : 5150 ~ 5250MHz (Band I) / 5725MHz ~ 5850MHz (Band III) 802.11n : 5150 ~ 5250MHz (Band I) / 5725MHz ~ 5850MHz (Band III) BT : 2400MHz ~ 2483.5MHz			
4. Carrier Frequency of each channel	802.11b/g : 2412MHz+(n-1)*5MHz, n=1~11 802.11a Band III : 5000+n*5 MHz, n=149, 153, 157, 161, 165 802.11a Band I : 5000+n*5 MHz, n=36, 40, 44, 48 802.11n : 5000 + (n-1)*5 n= 36, 40, 44, 48 BT : 2402MHz+n*1MHz, n=0~78			
5. Channel Spacing	802.11b/g : 5MHz 802.11a : 20MHz 802.11n : 20MHz / 40MHz BT : 1MHz			
6. Maximum Output Power to Antenna (Normal Condition)	802.11b : 19.76 dBm 802.11g : 22.91 dBm 802.11a : 16.22 dBm (Band I) / 19.29 dBm (Band III) 802.11n(g) : 22.81 dBm 802.11n(a) : 15.65 dBm (Band I, BW 20M) / 14.95 dBm (Band I, BW 40M) / 21.74 dBm (Band III, BW 20M) / 21.16 dBm (Band III, BW 40M) BT(EDR) : 1.27 dBm BT : 0.49 dBm			
7. Type of Antenna Connector	I-PEX			
8. Antenna Type	PIFA			
9. Antenna Gain	802.11b/g : 3 dBi 802.11a : 3 dBi 802.11n : 3 dBi BT : 3 dBi			
10. HW Version	A02			
11. SW Version	R15			
12. Function Type	Transmitter		Transceiver	V



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.

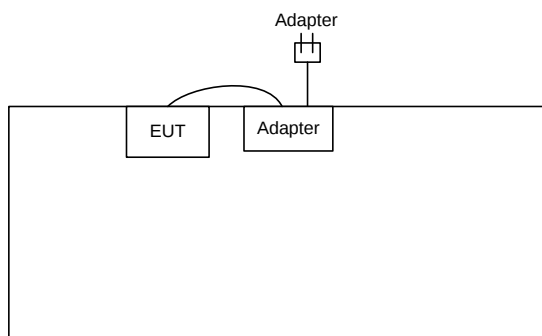
2.2 Test Mode

Application			
Radiated Emission	802.11b	802.11g	802.11a
	Mode 1: CH01_2412 MHz	Mode 4: CH01_2412 MHz	Mode 7: CH149_5745MHz
	Mode 2: CH06_2437 MHz	Mode 5: CH06_2437 MHz	Mode 8: CH157_5785MHz
	Mode 3: CH11_2462 MHz	Mode 6: CH11_2462 MHz	Mode 9: CH165_5825MHz
	BT	802.11n(g)	802.11n(a)
	Mode 10: CH00_EDR_2402 MHz	Mode 14: CH01_2412 MHz(BW 20M)	Mode 17: CH149_5745MHz(BW 20M)
	Mode 11: CH39_EDR_2441 MHz	Mode 15: CH06_2437 MHz(BW 20M)	Mode 18: CH157_5785MHz(BW 20M)
Conducted Emission	Mode 12: CH78_EDR_2480 MHz	Mode 16: CH11_2462 MHz(BW 20M)	Mode 19: CH165_5825MHz(BW 20M)
	Mode 13: CH78_2480 MHz		Mode 20: CH151_5755MHz(BW 40M)
			Mode 21: CH159_5795MHz(BW 40M)
	Mode 22: BT Tx CH78_2480 MHz + 802.11g Tx CH11_2462 MHz		
Conducted Emission	Mode 1: BT Link + WLAN Link + Adapter		

Remark:

- We chose the test mode 10 ~ 12 for Bluetooth test, as the EDR, 8DPSK with packet type 3-DH5 was the maximum output power than others, GFSK, and 1/4DQPSK.
- The test mode 13 was for data rate 1Mbps with DH 5 data format and chosen from the worst channel of mode 10 through 12, Bluetooth Enhance Data Rate (EDR).

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

Item	Asset	Model Name	Power Cord
1.	Bluetooth Earphone (Free Style)	JD-100	N/A
2.	WLAN AP (SMC)	SMC-100	AC 100-240V



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 : 886-3-318-0055
Test Site No : CO04-HY, 03CH06-HY, 03CH04-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 and IC RSS-210 Issue 6

4.4 Frequency Range Investigated

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation: from 30 MHz to 25000 MHz for 802.11b/g and Bluetooth
- c. Radiation: from 30 MHz to 40000MHz for 802.11a

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	IC Rule	Description of Test	Result
15.207	RSS-Gen 7.2.2	Conducted Emission	Pass
15.247(a)(2)	A8.2 (1)	6dB & 20dB Bandwidth	Pass
15.247(b)	A8.4 (4)	Maximum Peak Output Power	Pass
15.209(a)	2.6	Radiated Emission	Pass
15.247 (c)	A8.5	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	A8.2 (2)	Power Spectral Density	Pass
15.203 15.247(b)(4)	A8.4 (6)	Antenna Requirement	Pass

**The Emission Mode: Bluetooth**

FCC Rule	IC Rule	Description of Test	Result
15.207	A8.1 (2)	Conducted Emission	Pass
15.247(a) (1)	A8.1 (4)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	A8.1 (1)	Hopping Channel Separation	Pass
15.247(a)(1)(iii)	A8.1 (4)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(iii)	A8.4 (2)	Dwell Time of Each Frequency	Pass
15.247(b)	A8.5	Output Power	Pass
15.247(c)	RSS-Gen 7.2.2	100kHz Bandwidth of Frequency Band Edges	Pass
15.209(a)	2.6	Radiated Emission	Pass
15.203 15.247(b)(4)	A8.4 (6)	Antenna Requirement	Pass

5.2 6dB Bandwidth Measurement

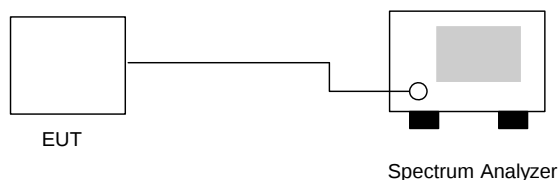
5.2.1 Measuring Instruments :

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 and 20 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/g
- Temperature : 23°C
- Relative Humidity : 47%
- Test Enginner : James

802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	13.24	> 0.5MHz	Mode 1
06	2437	13.92	> 0.5MHz	Mode 2
11	2462	12.76	> 0.5MHz	Mode 3

**802.11g**

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.44	> 0.5MHz	Mode 4
06	2437	16.48	> 0.5MHz	Mode 5
11	2462	16.44	> 0.5MHz	Mode 6

802.11a

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
149	5745	16.32	> 0.5MHz	Mode 7
159	5785	16.32	> 0.5MHz	Mode 8
165	5825	16.28	> 0.5MHz	Mode 9

802.11n(g) BW 20M

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	15.48	> 0.5MHz	Mode 10
06	2437	15.68	> 0.5MHz	Mode 11
11	2462	15.48	> 0.5MHz	Mode 12

802.11n(a) BW 20M

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
149	5745	17.72	> 0.5MHz	Mode 13
159	5785	17.68	> 0.5MHz	Mode 14
165	5825	17.68	> 0.5MHz	Mode 15

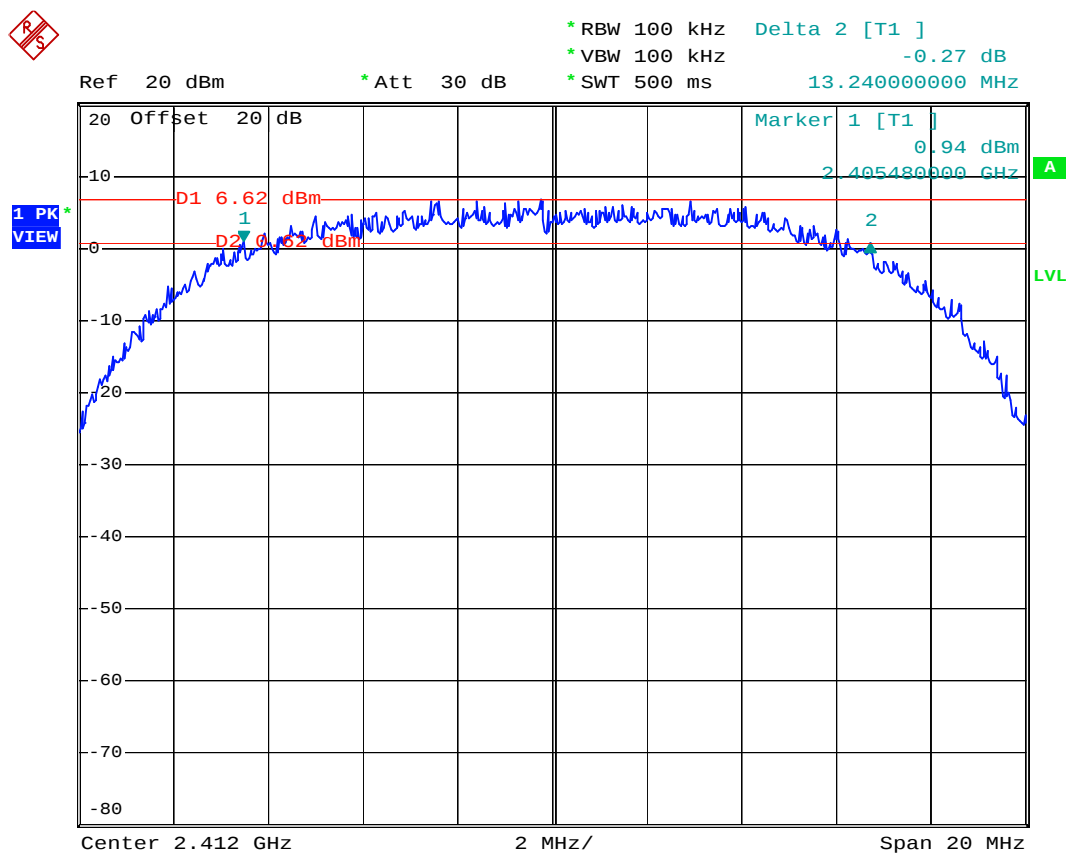
802.11n(a) BW 40M

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
151	5755	35.12	> 0.5MHz	Mode 16
159	5795	35.12	> 0.5MHz	Mode 17



5.2.5 6dB Bandwidth

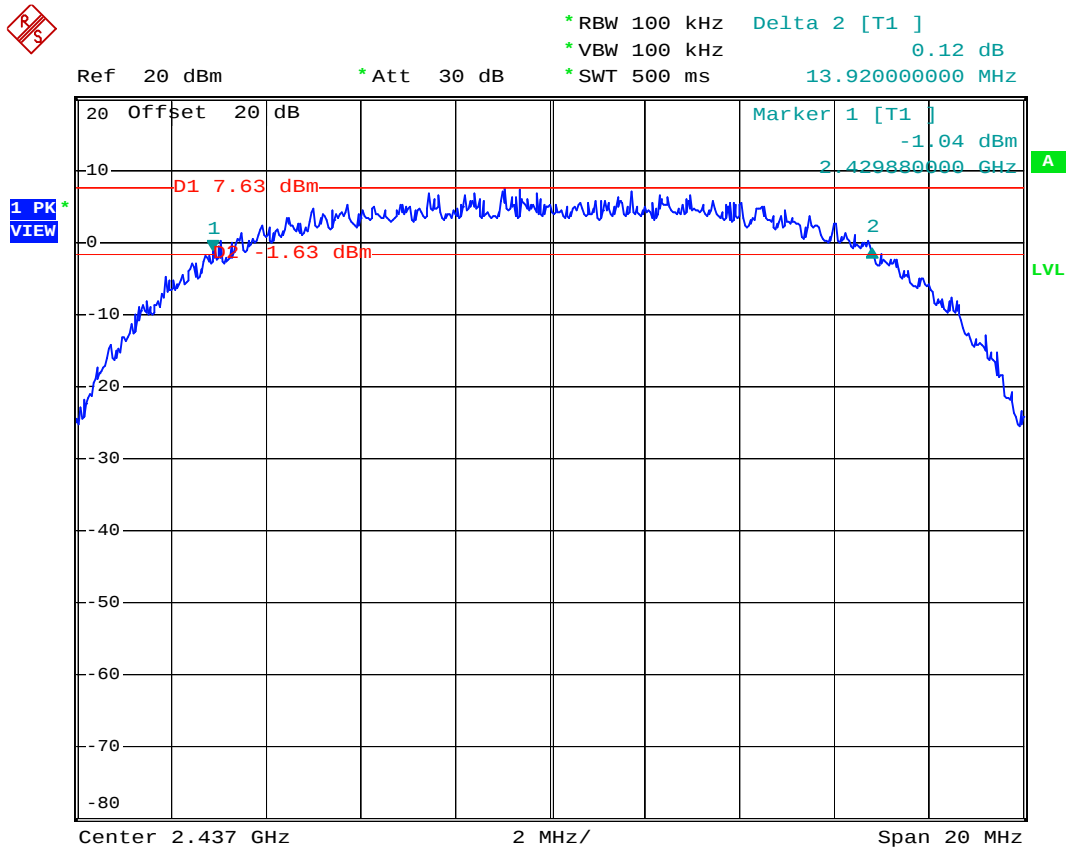
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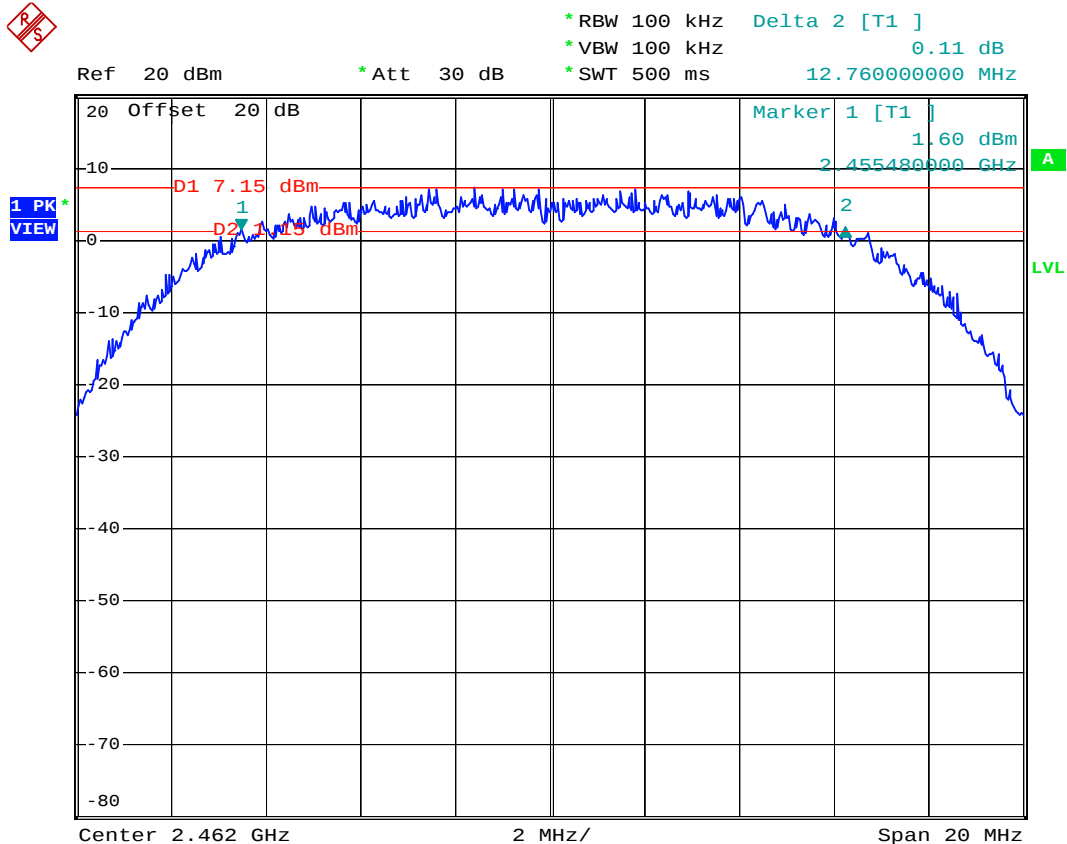
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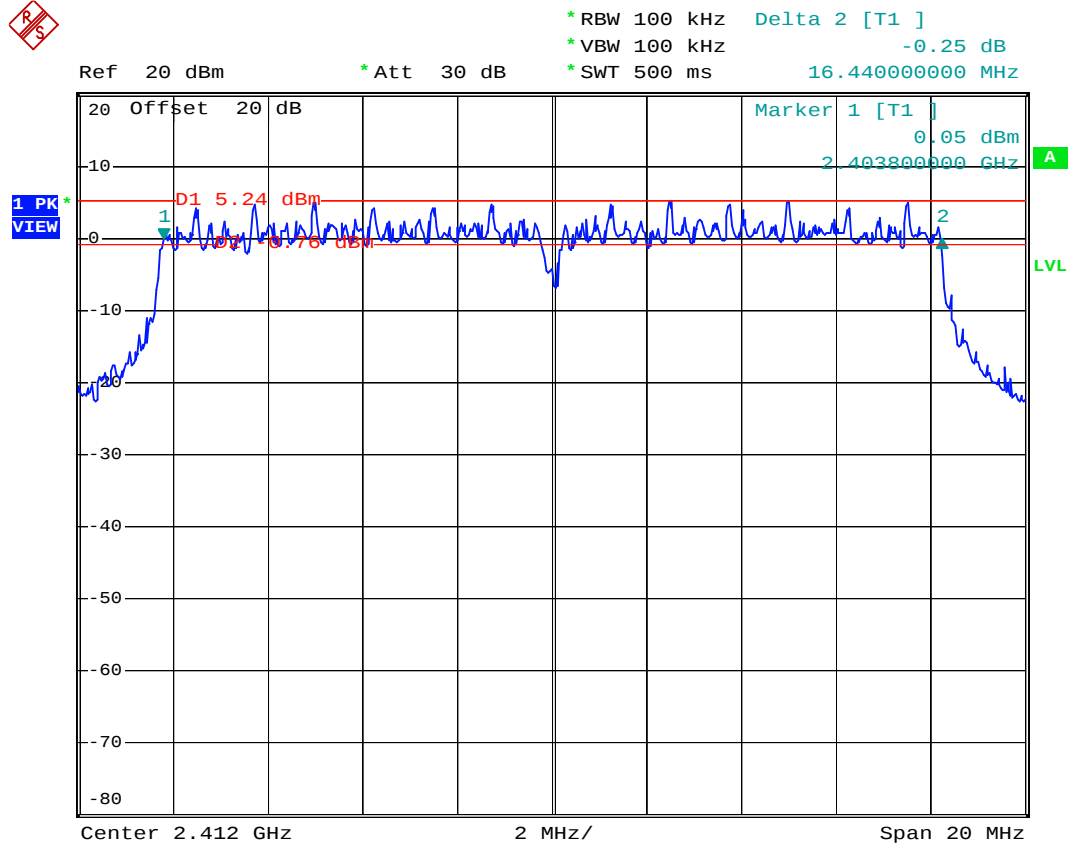
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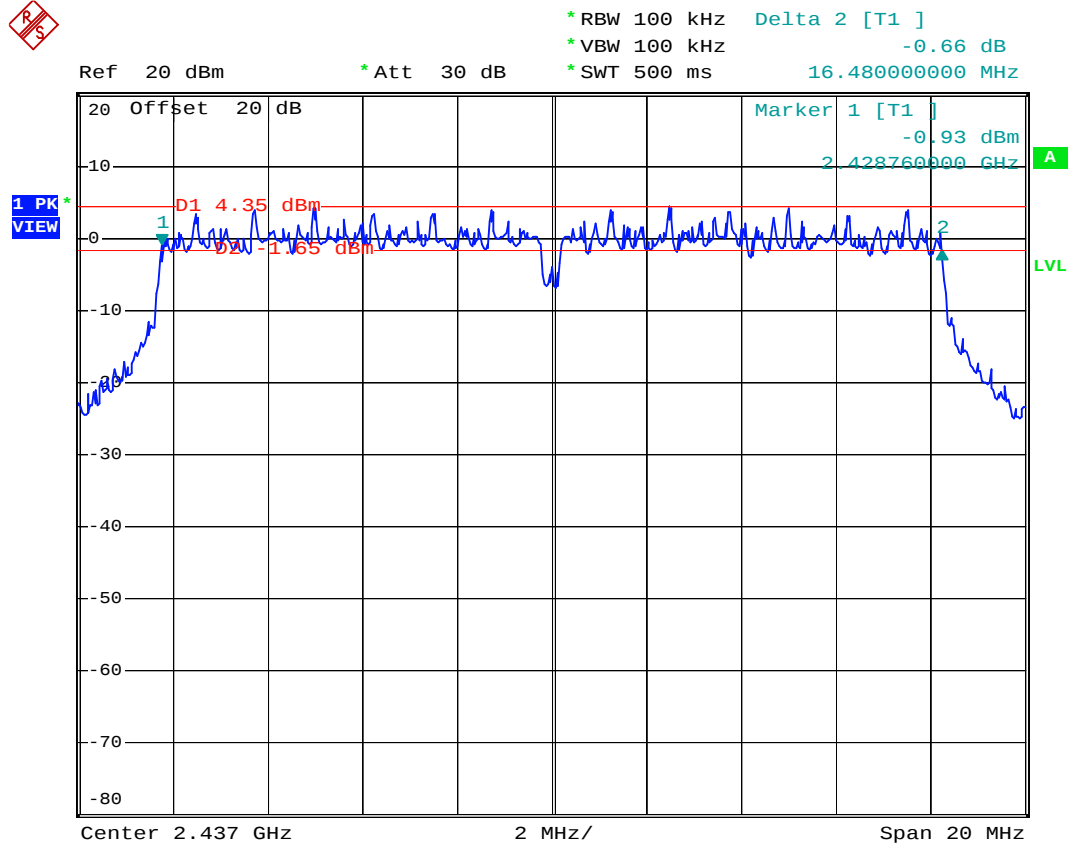
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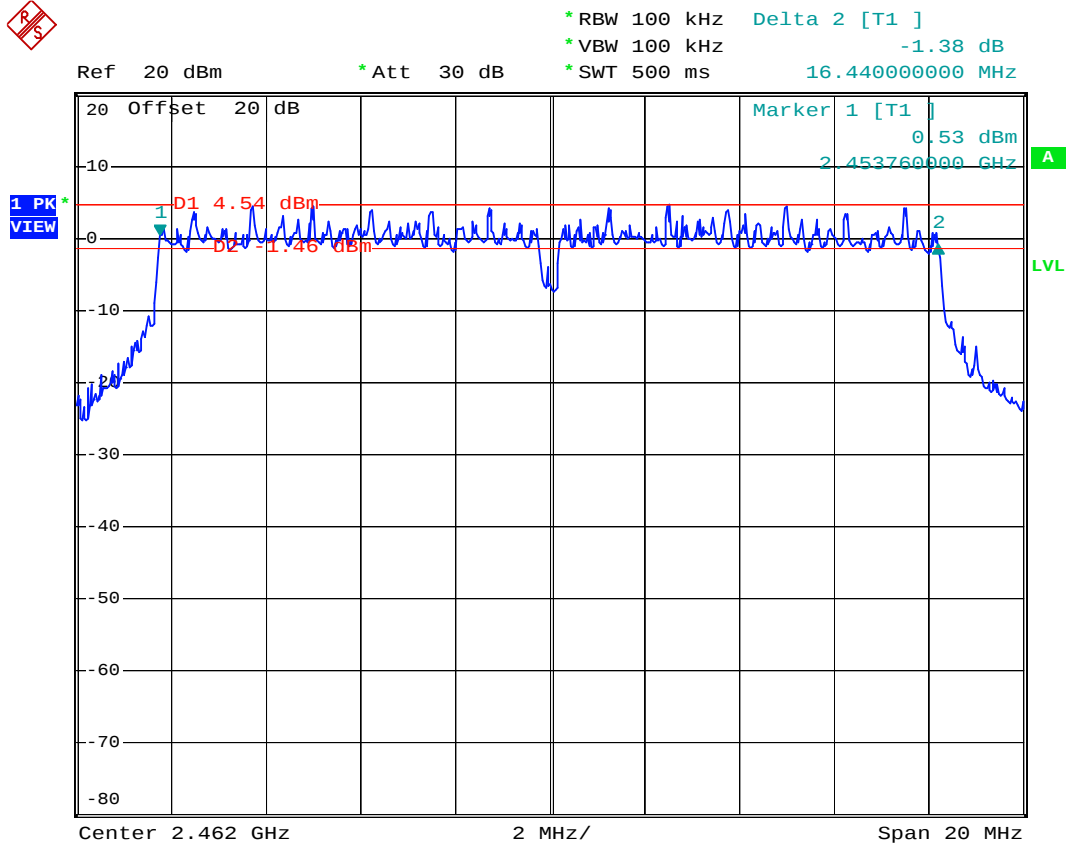
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Date: 1.MAY.2007 11:29:38



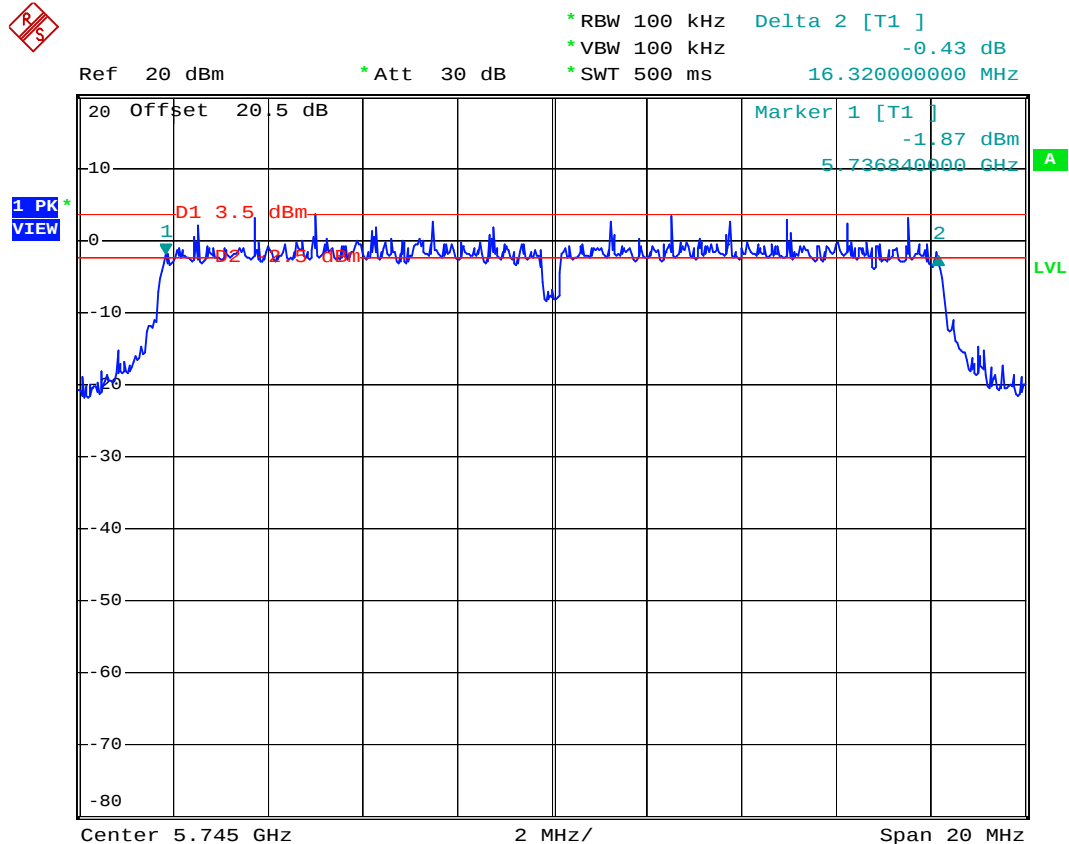
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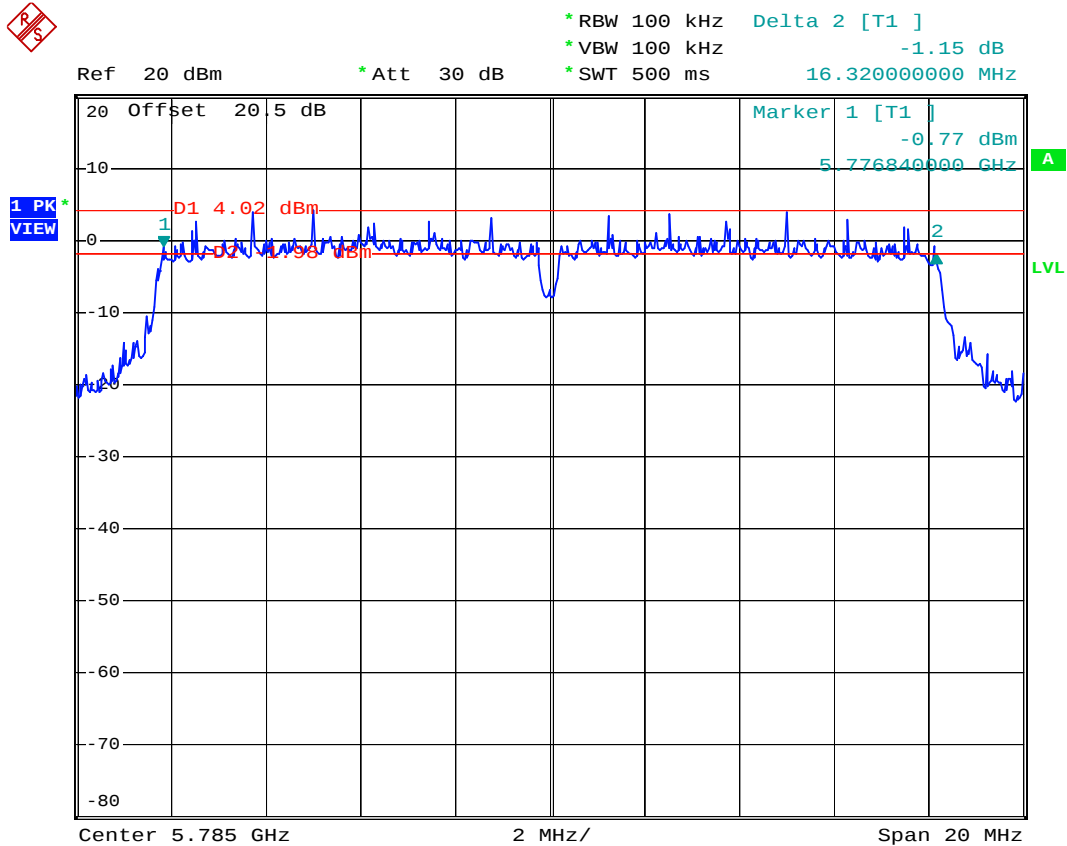
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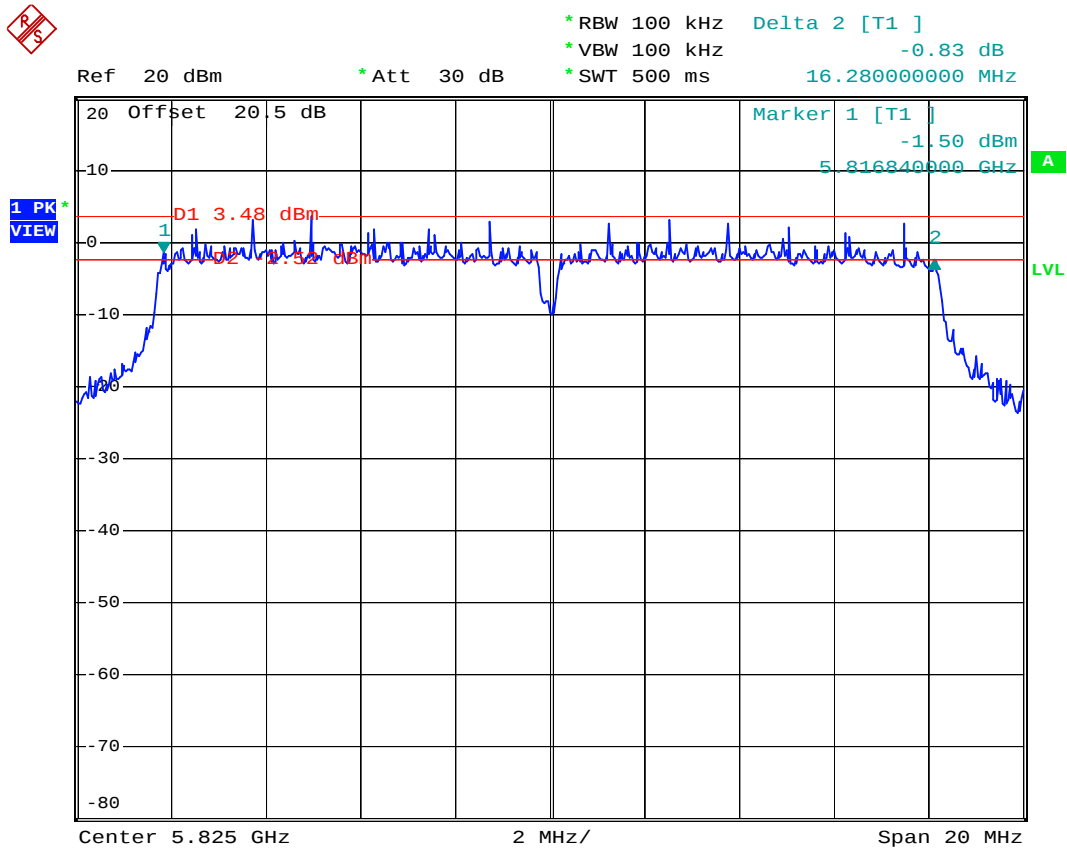
Mode 8



Date: 1.MAY.2007 11:41:29



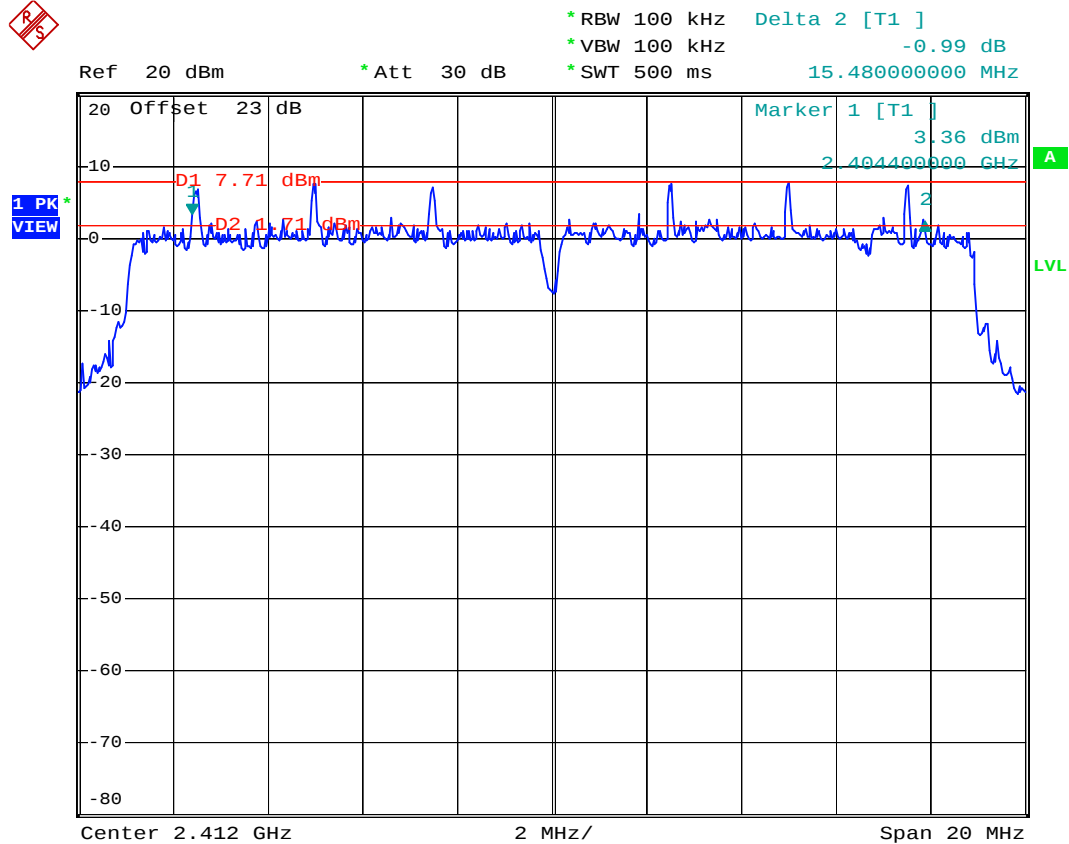
Mode 9



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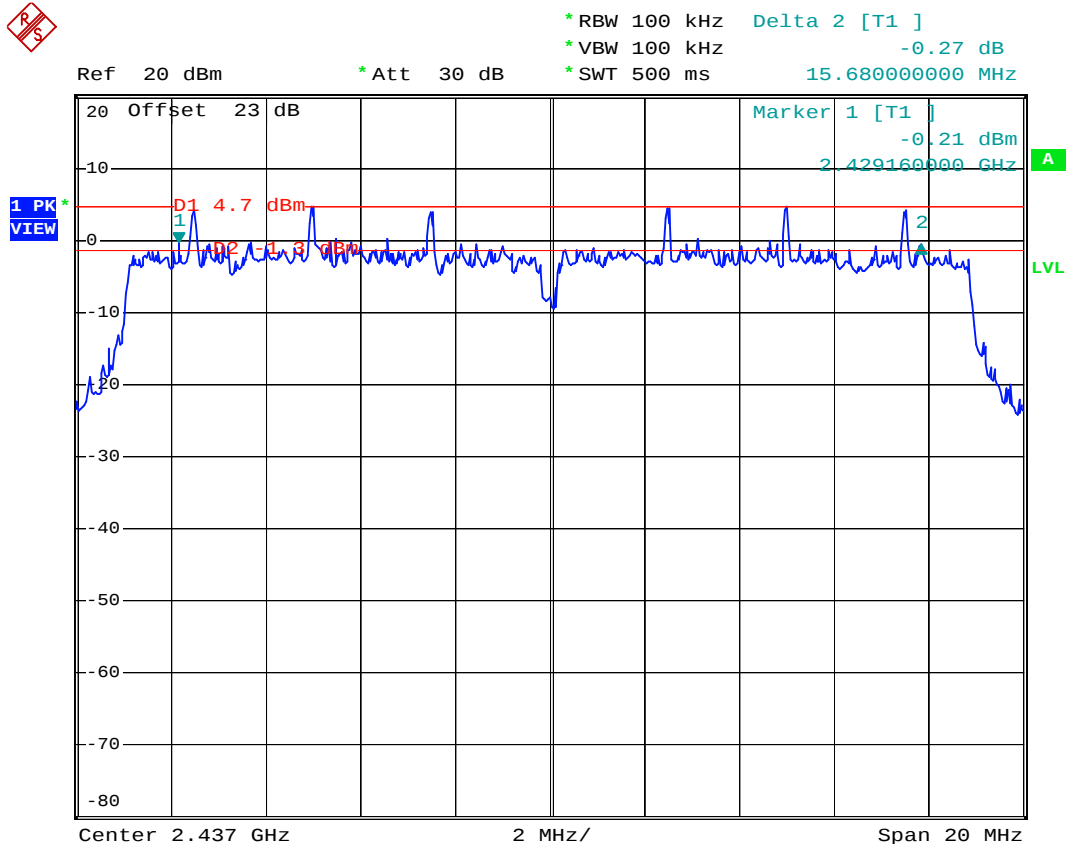
Mode 10



Date: 1.MAY.2007 16:41:25



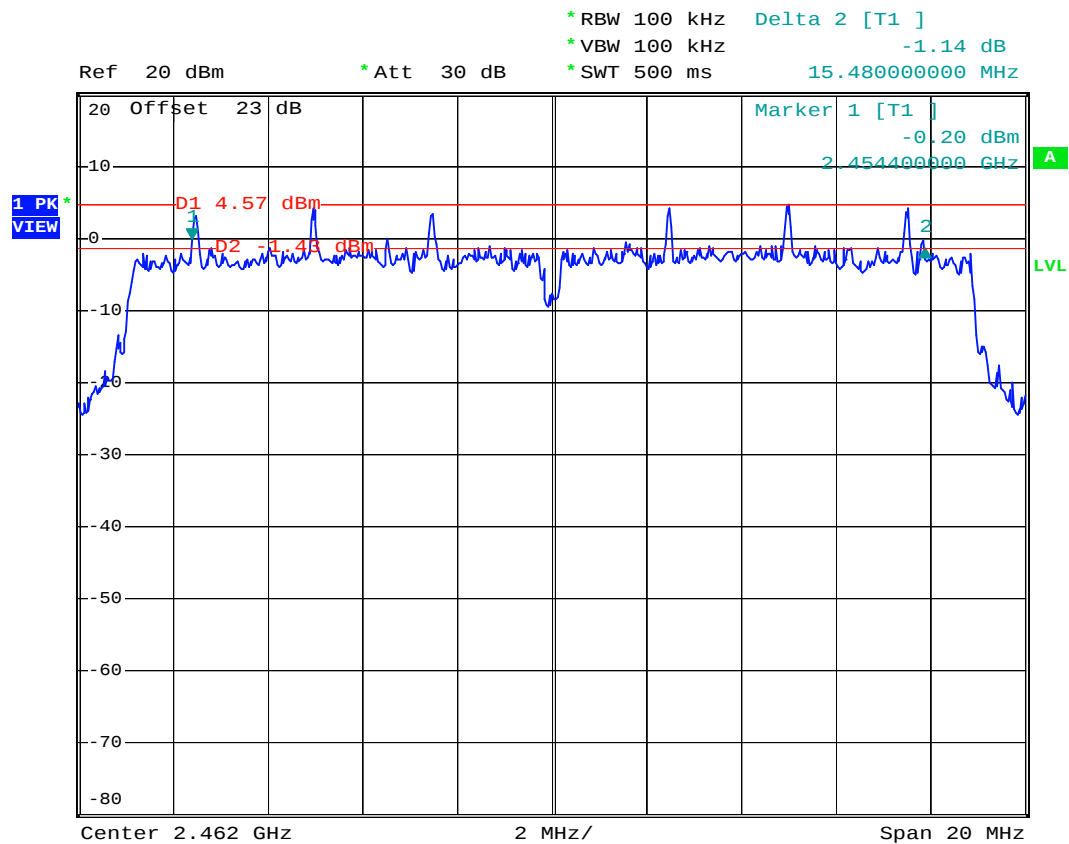
Mode 11



Date: 1.MAY.2007 16:47:05



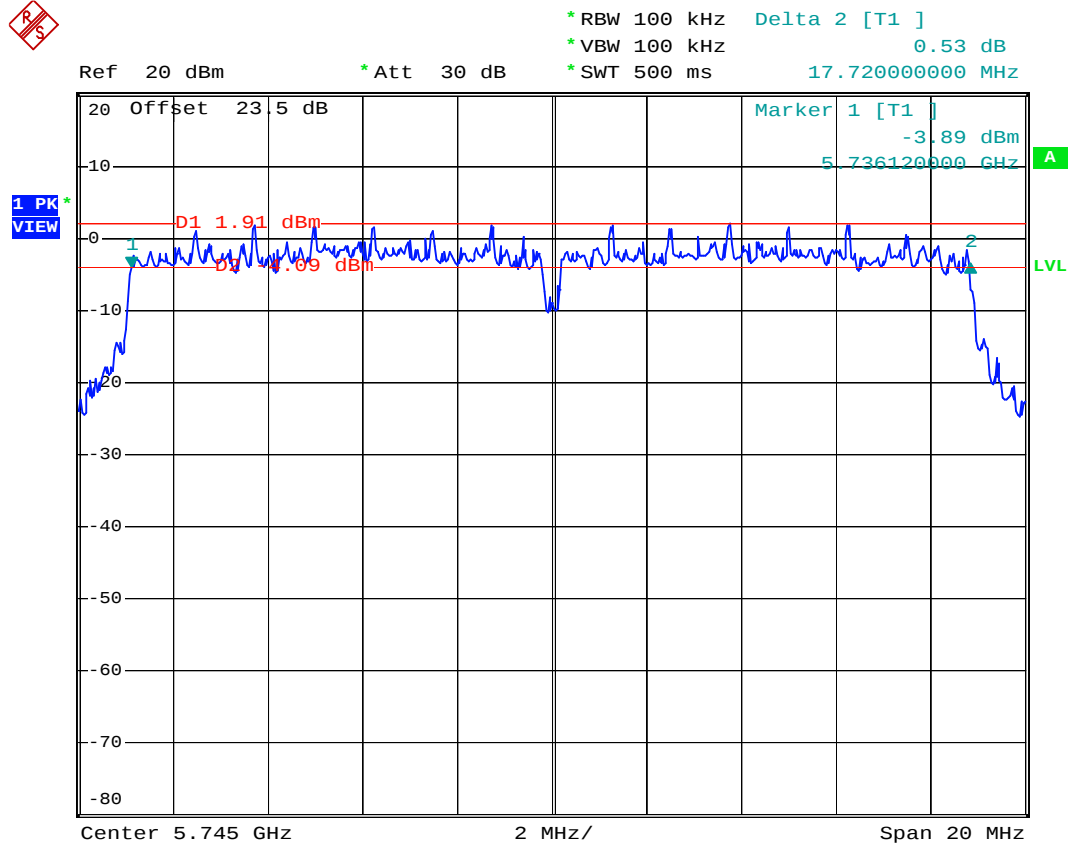
Mode 12



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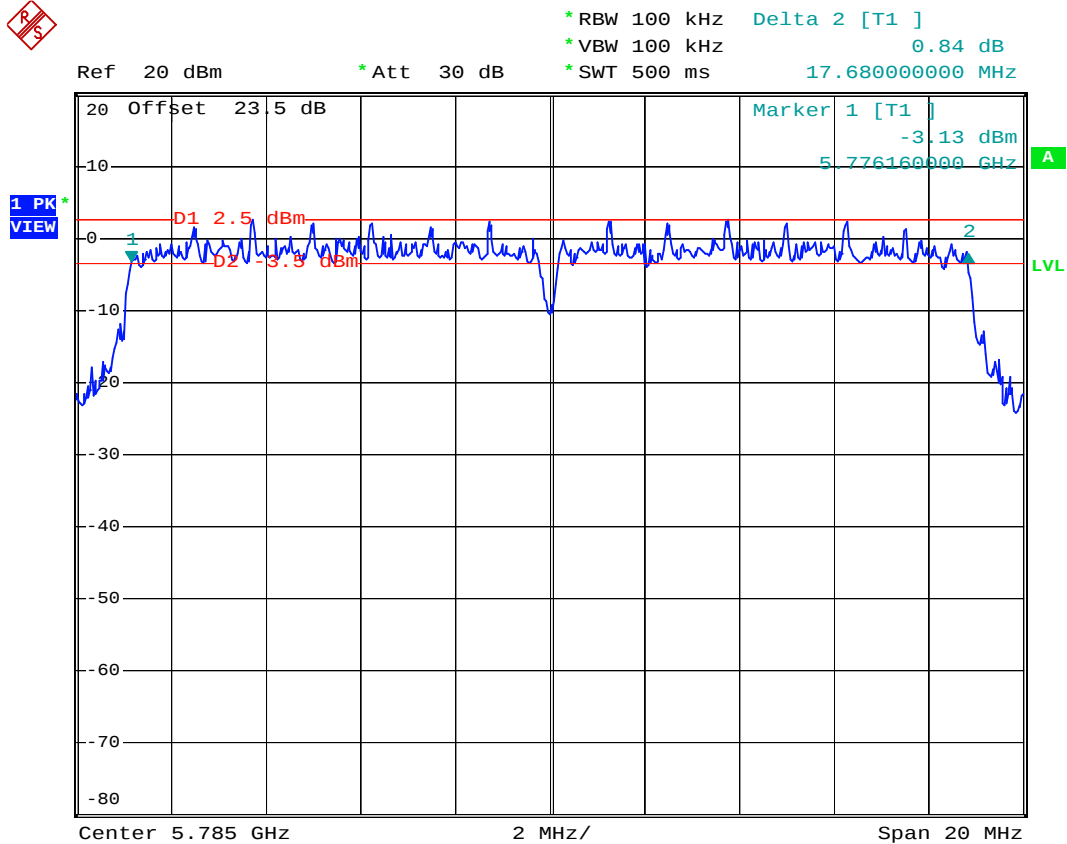
Mode 13



Date: 1.MAY.2007 18:02:28



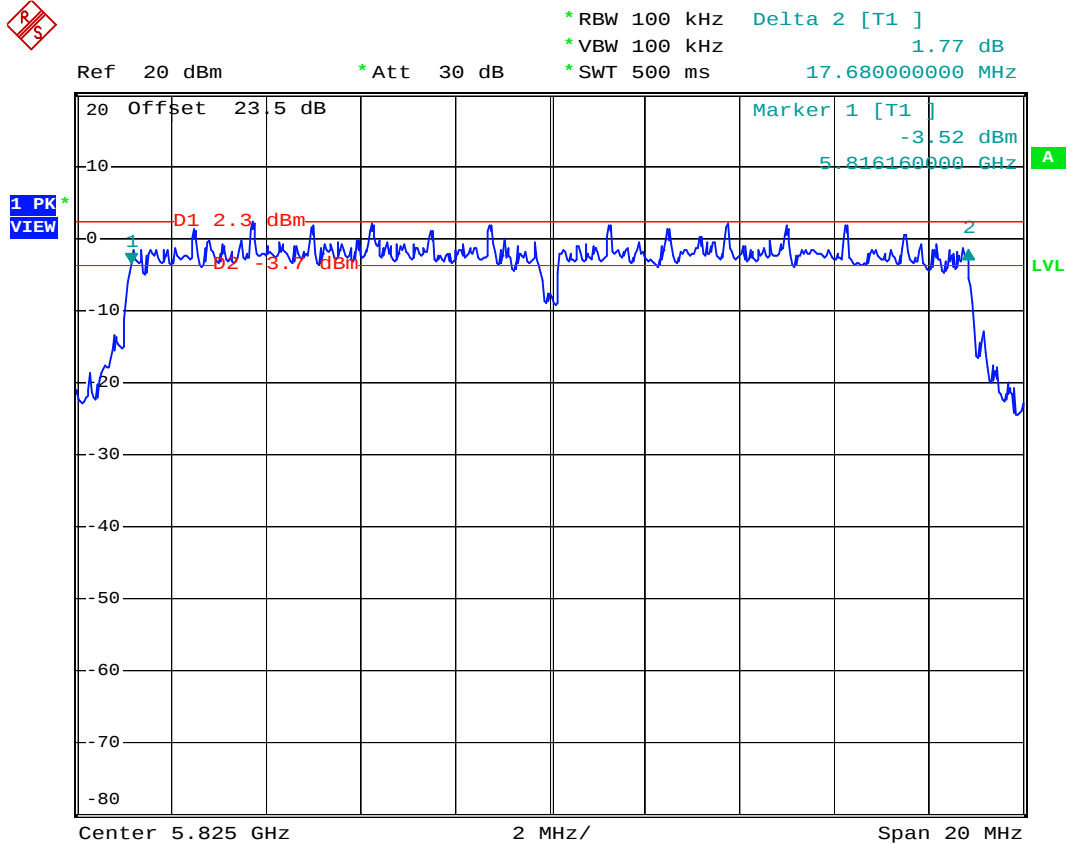
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Date: 1.MAY.2007 18:03:37



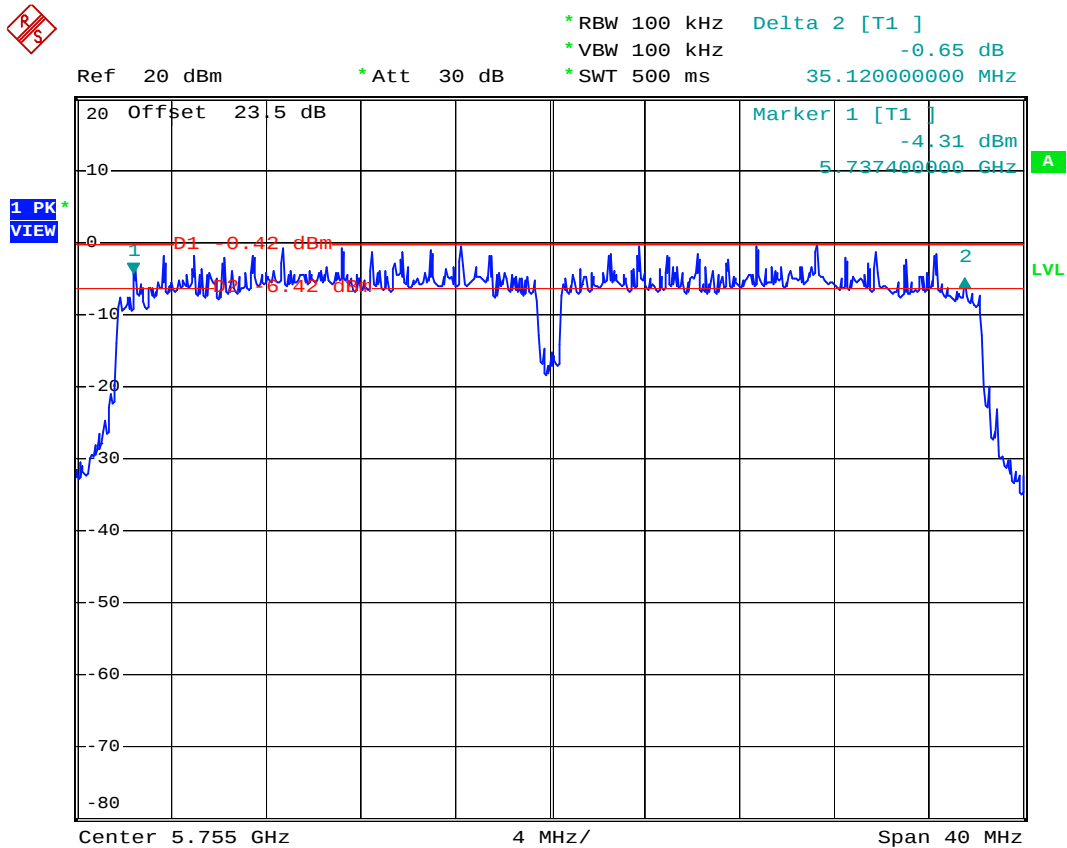
Mode 15



Date: 1.MAY.2007 18:04:10



Mode 16



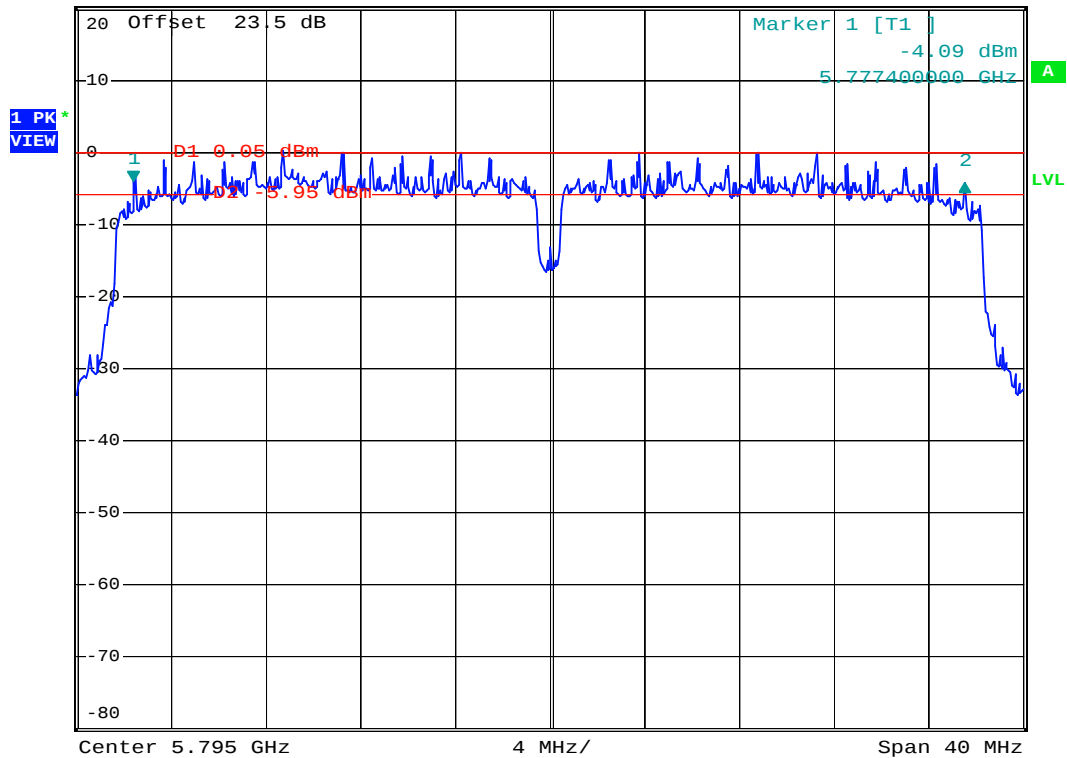
Date: 1.MAY.2007 18:05:22



Mode 17



Ref 20 dBm * Att 30 dB * RBW 100 kHz Delta 2 [T1]
* VBW 100 kHz -0.31 dB
* SWT 500 ms 35.120000000 MHz



Date: 1.MAY.2007 18:06:07

5.3 Power Spectral Density Measurement

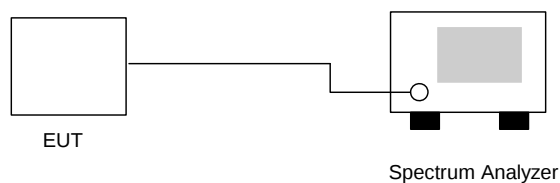
5.3.1 Measuring Instruments :

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/g
- Temperature : 23°C
- Relative Humidity : 47%
- Test Enginner : James

802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-6.69	8	Mode 1
06	2437	-7.40	8	Mode 2
11	2462	-7.80	8	Mode 3

802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-8.40	8	Mode 4
06	2437	-9.37	8	Mode 5
11	2462	-8.76	8	Mode 6

802.11a

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
149	5745	-9.72	8	Mode 7
157	5785	-8.88	8	Mode 8
165	5825	-9.42	8	Mode 9

802.11n(g) BW 20M

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-11.69	8	Mode 10
06	2437	-11.46	8	Mode 11
11	2462	-11.75	8	Mode 12

**802.11n(a) BW 20M**

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
149	5745	-12.75	8	Mode 13
157	5785	-11.67	8	Mode 14
165	5825	-11.93	8	Mode 15

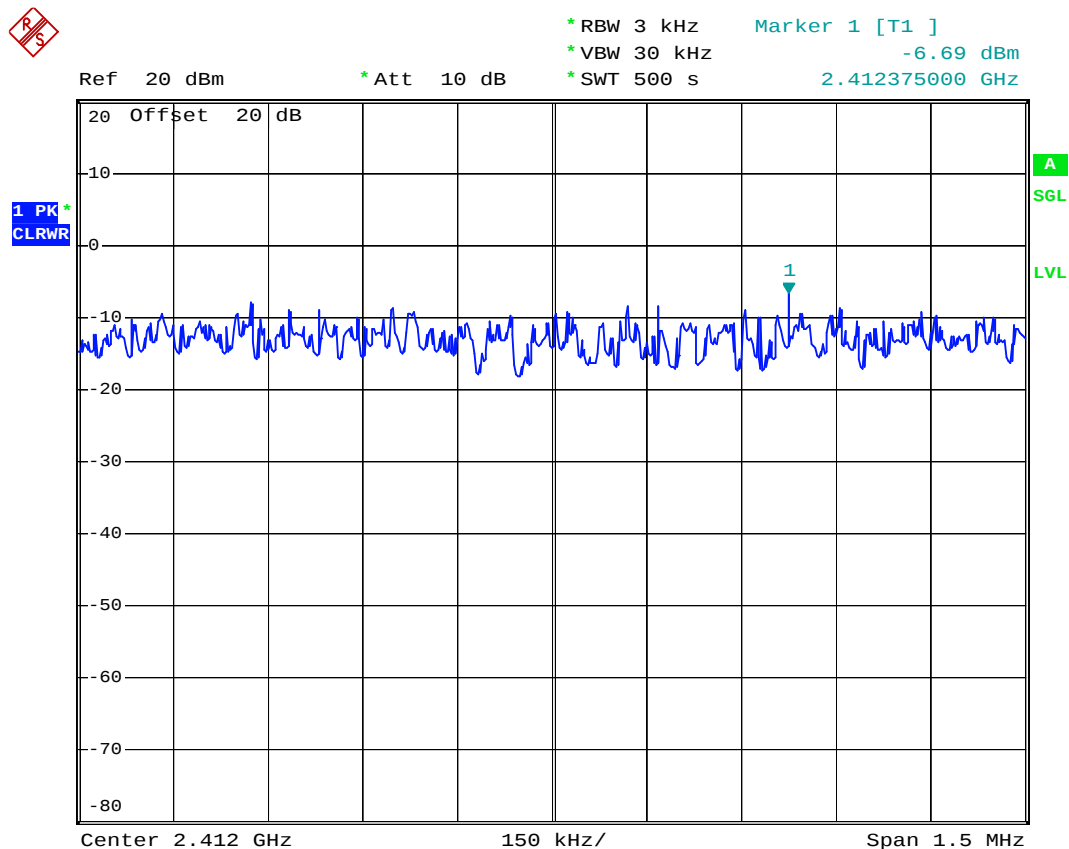
802.11n(a) BW 40M

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
151	5755	-16.00	8	Mode 16
159	5795	-15.03	8	Mode 17



5.3.5 Power Spectral Density

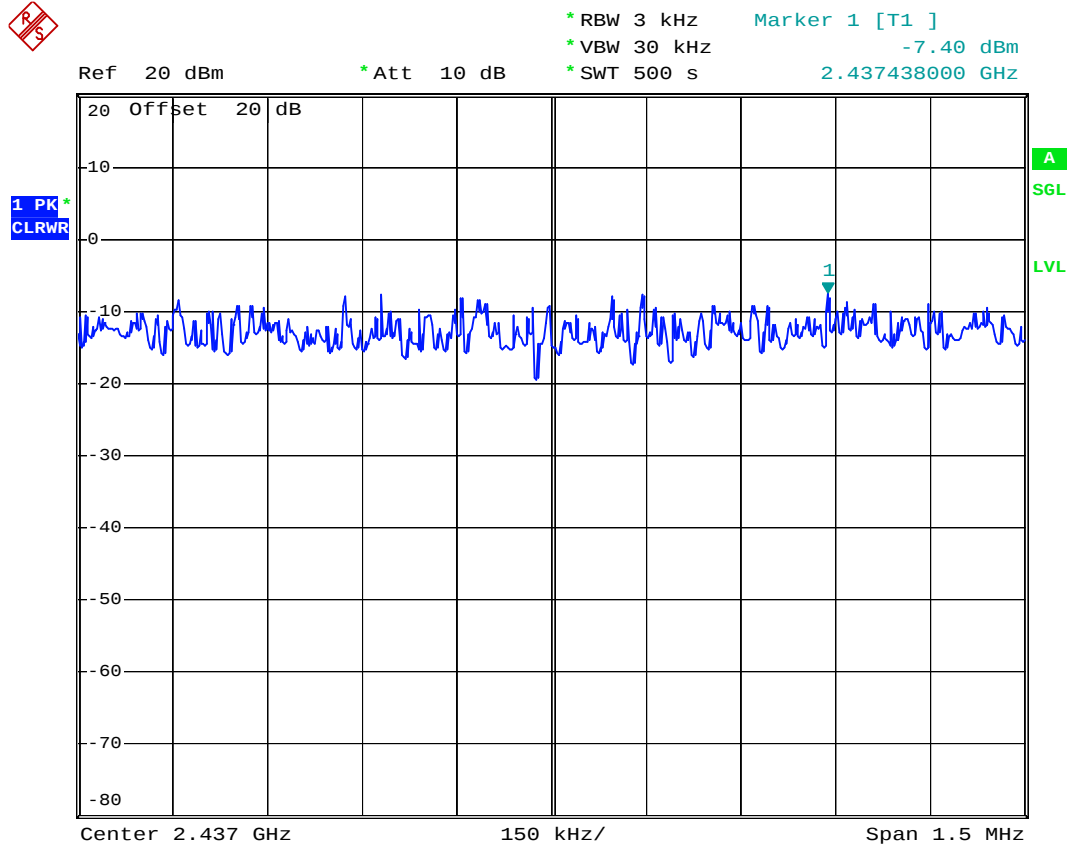
Mode 1



Date: 1.MAY.2007 10:13:32



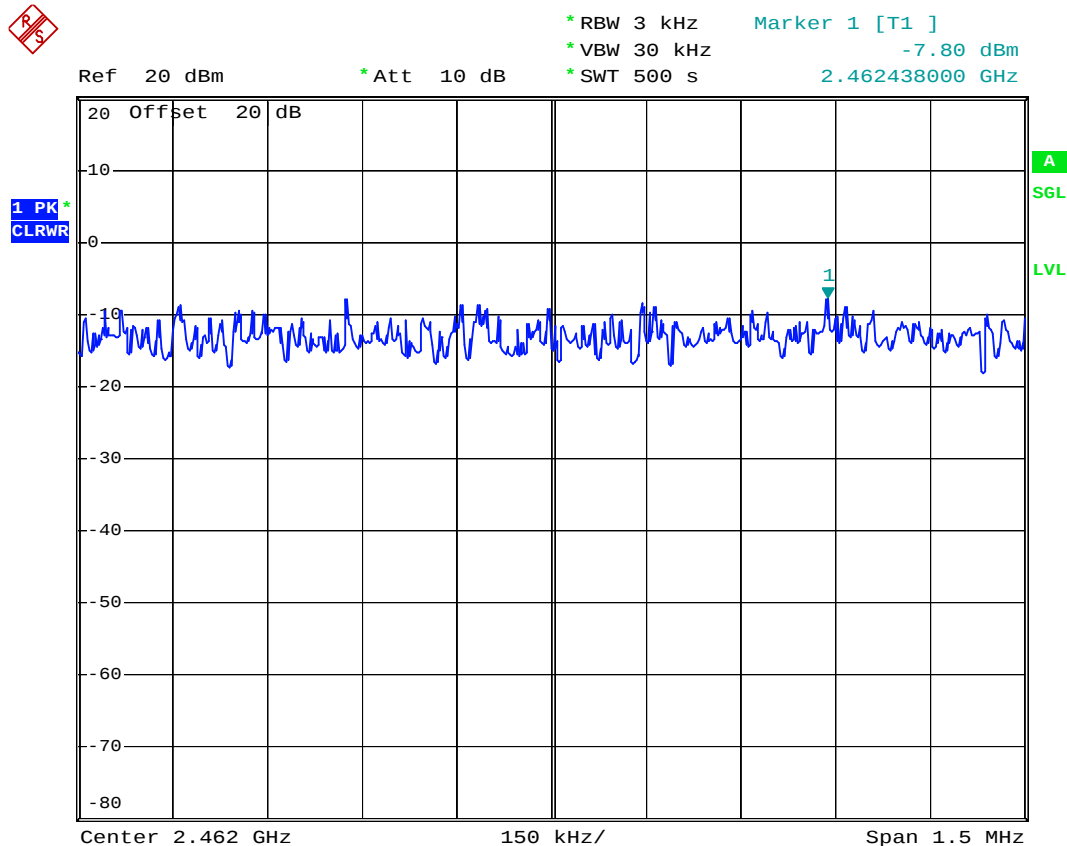
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Date: 1.MAY.2007 10:23:22



Mode 3



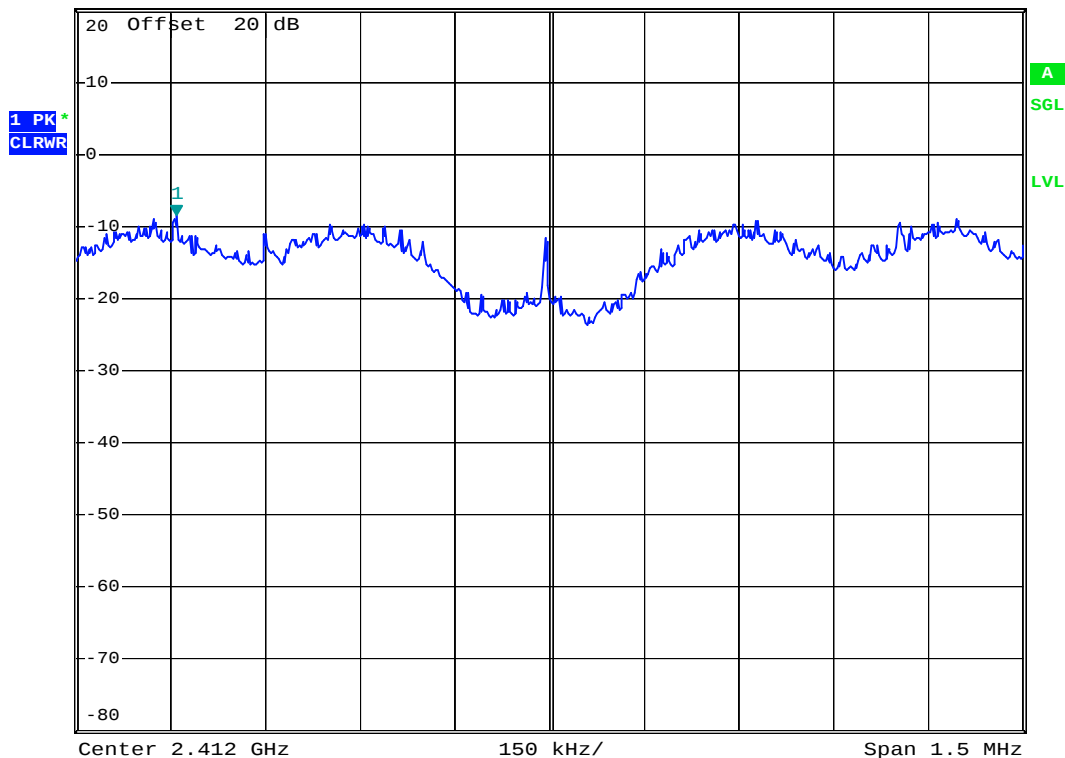
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Mode 4



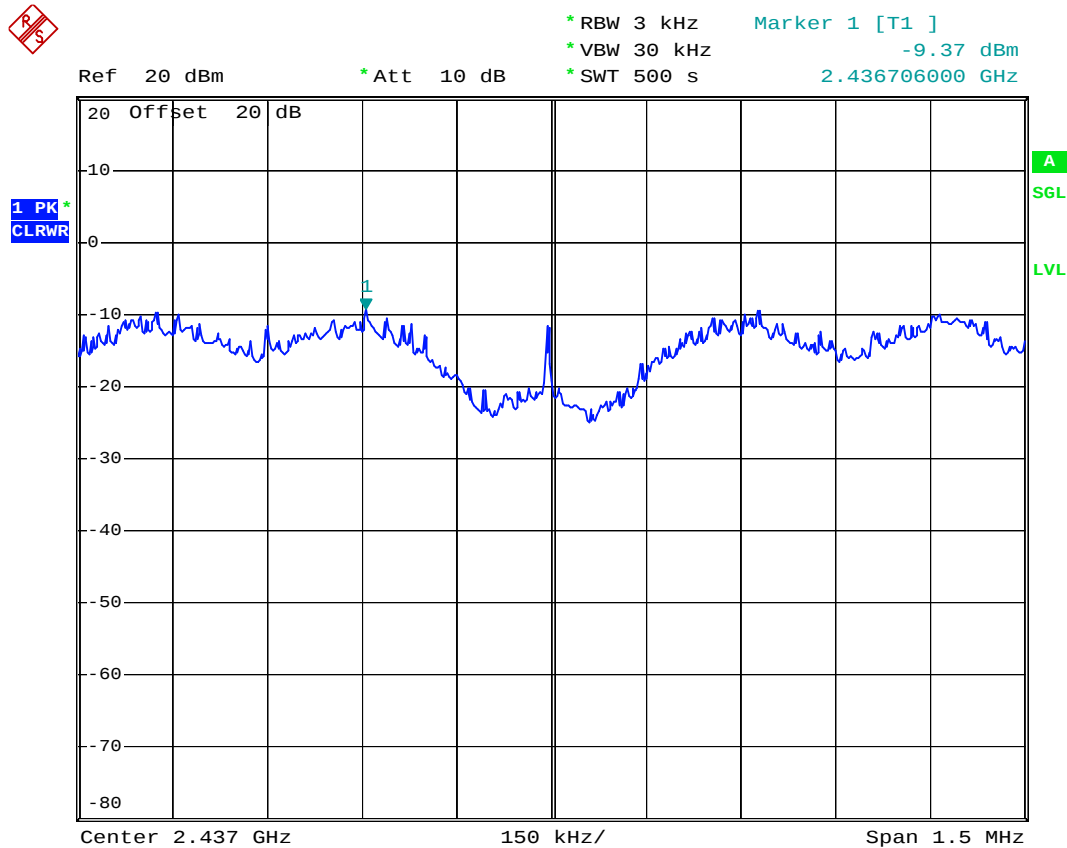
Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1] -8.40 dBm 2.411409000 GHz



Date: 1.MAY.2007 11:22:24



Mode 5



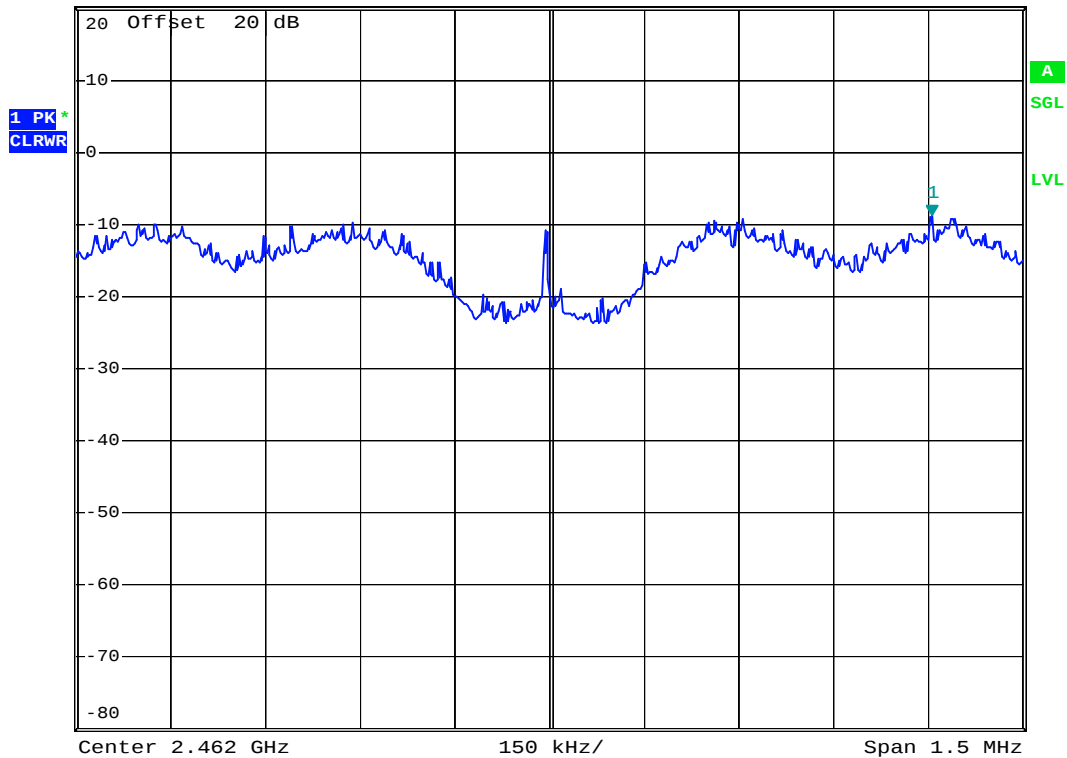
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Mode 6



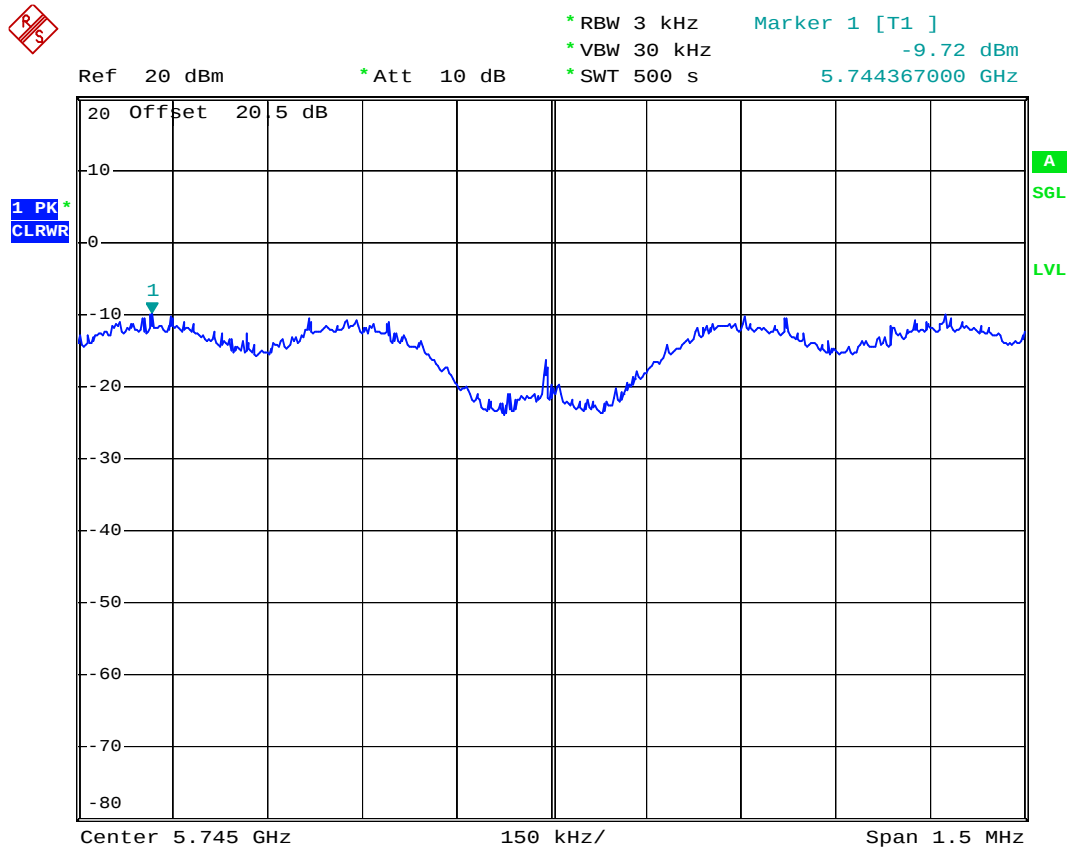
Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-8.76 dBm
2.462606000 GHz



Date: 1.MAY.2007 10:57:03



Mode 7



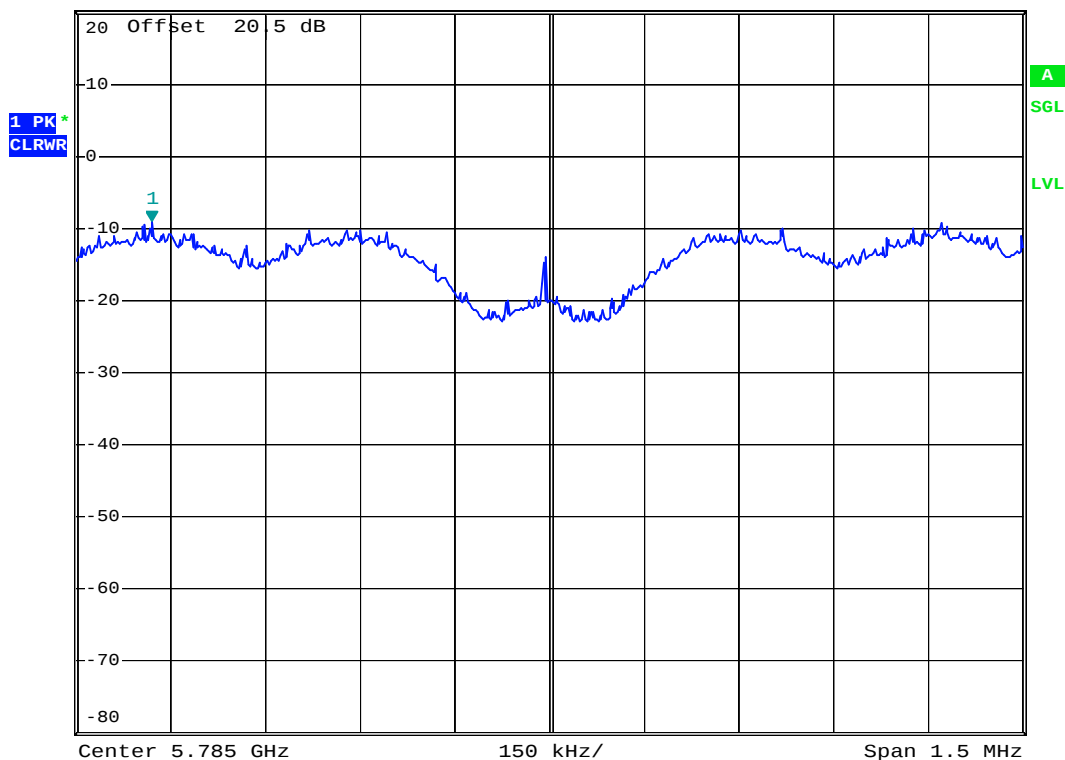
Date: 1.MAY.2007 12:01:50



Mode 8



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-8.88 dBm
5.784370000 GHz



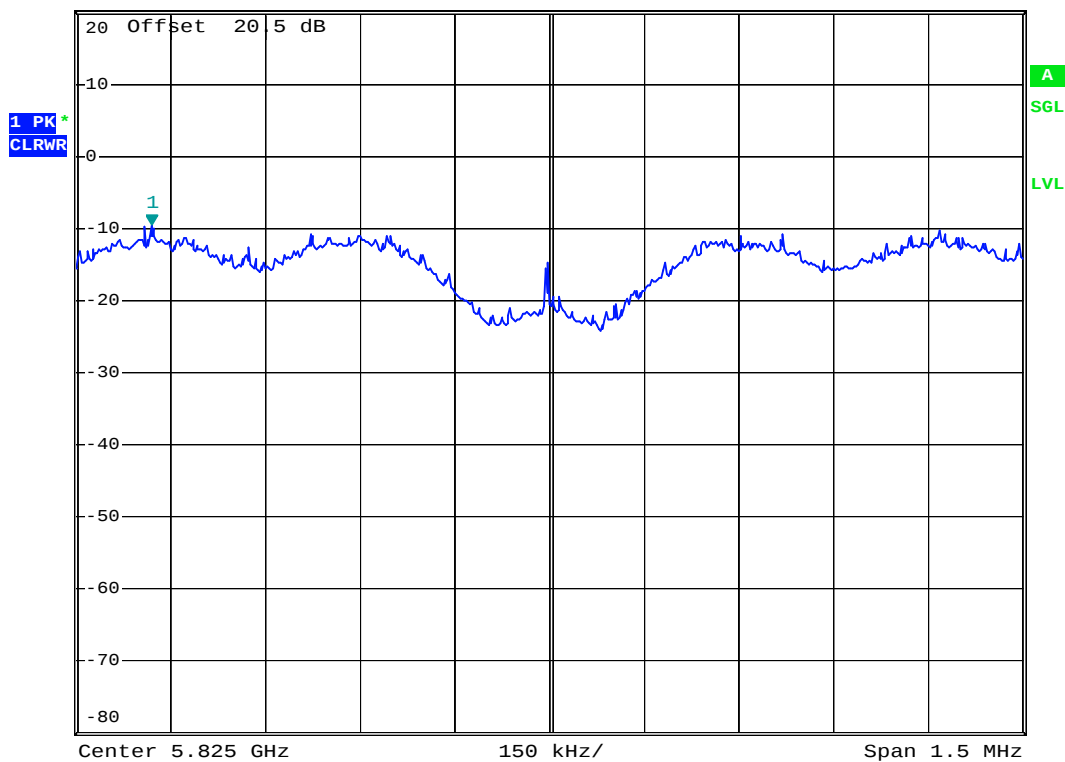
Date: 1.MAY.2007 12:13:33



Mode 9



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-9.42 dBm
5.824370000 GHz



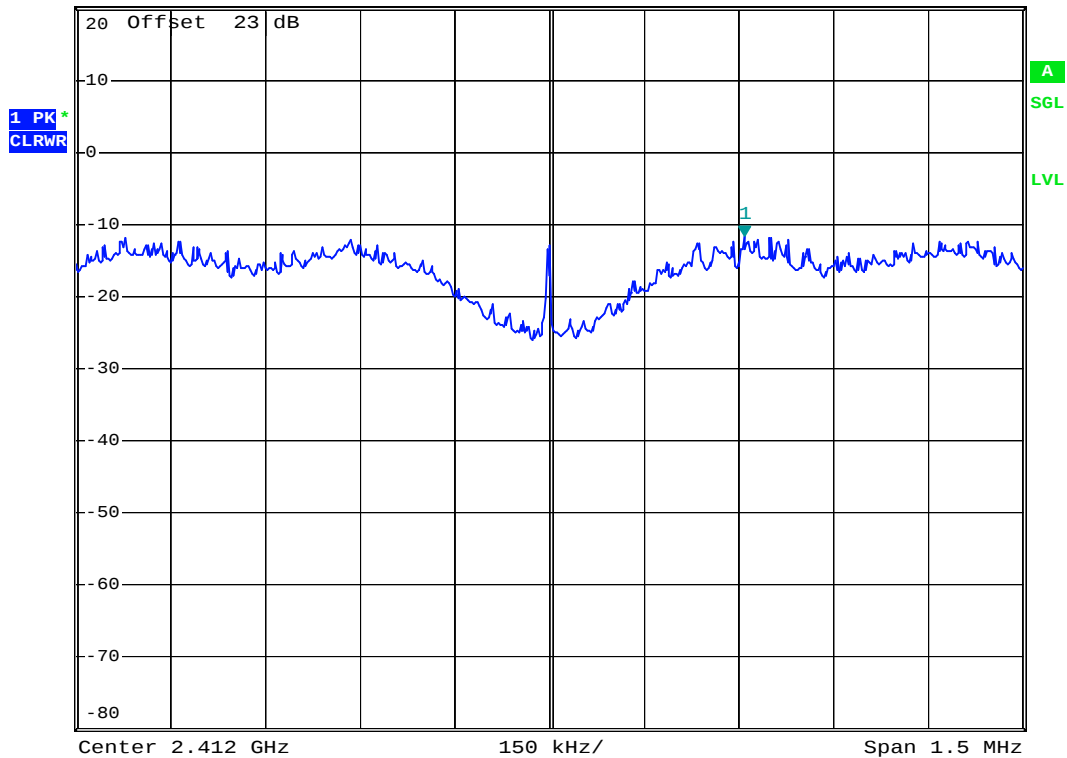
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Mode 10



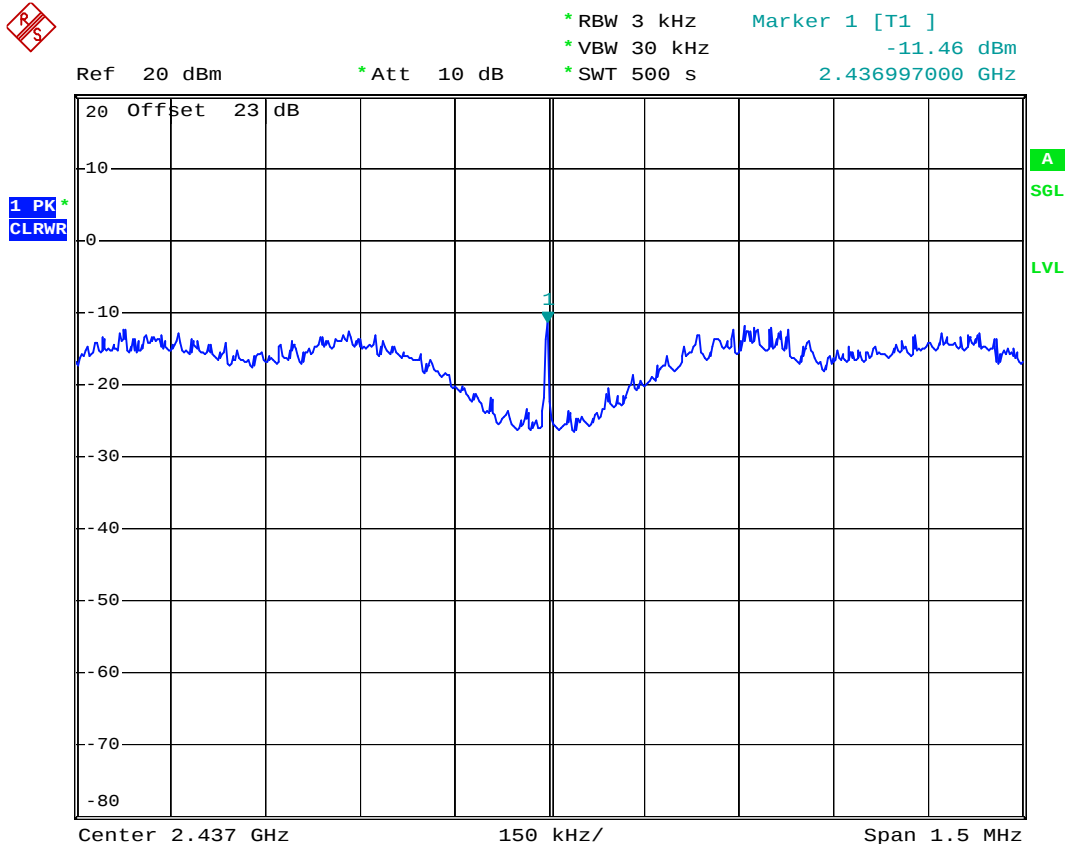
Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-11.69 dBm
2.412309000 GHz



Date: 1.MAY.2007 17:15:24



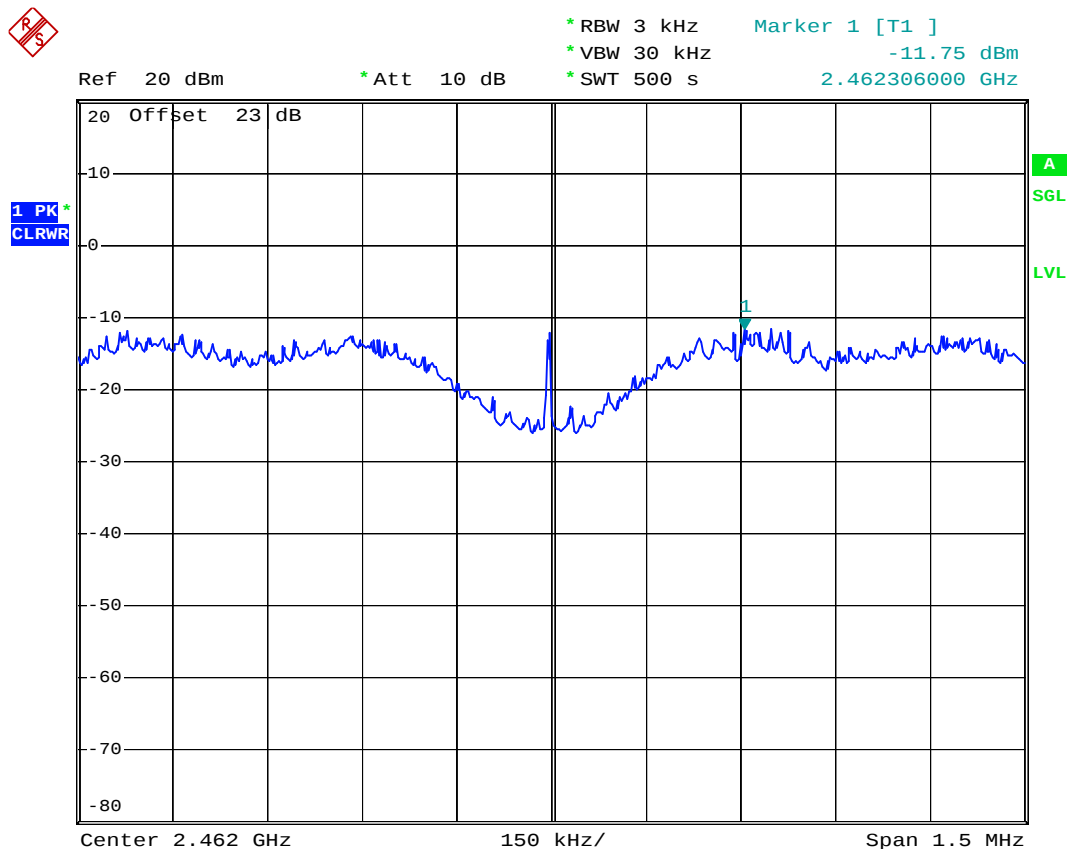
Mode 11



Date: 1.MAY.2007 17:24:34



Mode 12



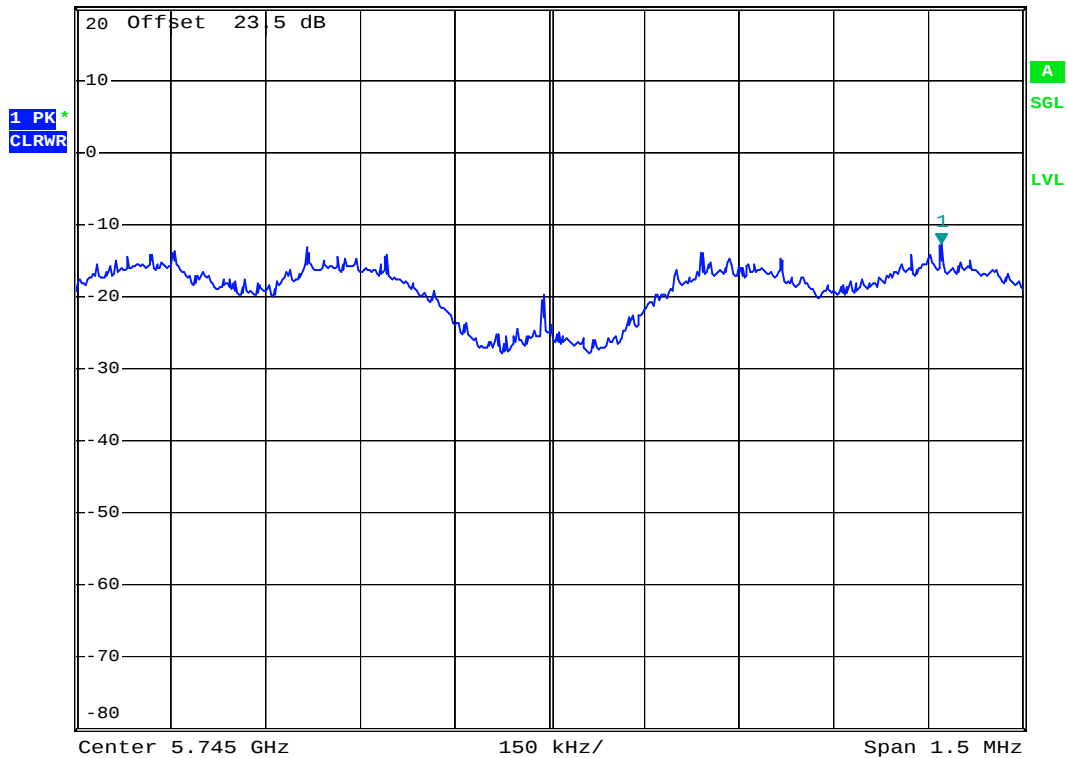
Date: 1.MAY.2007 17:33:38



Mode 13



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-12.75 dBm
5.745621000 GHz



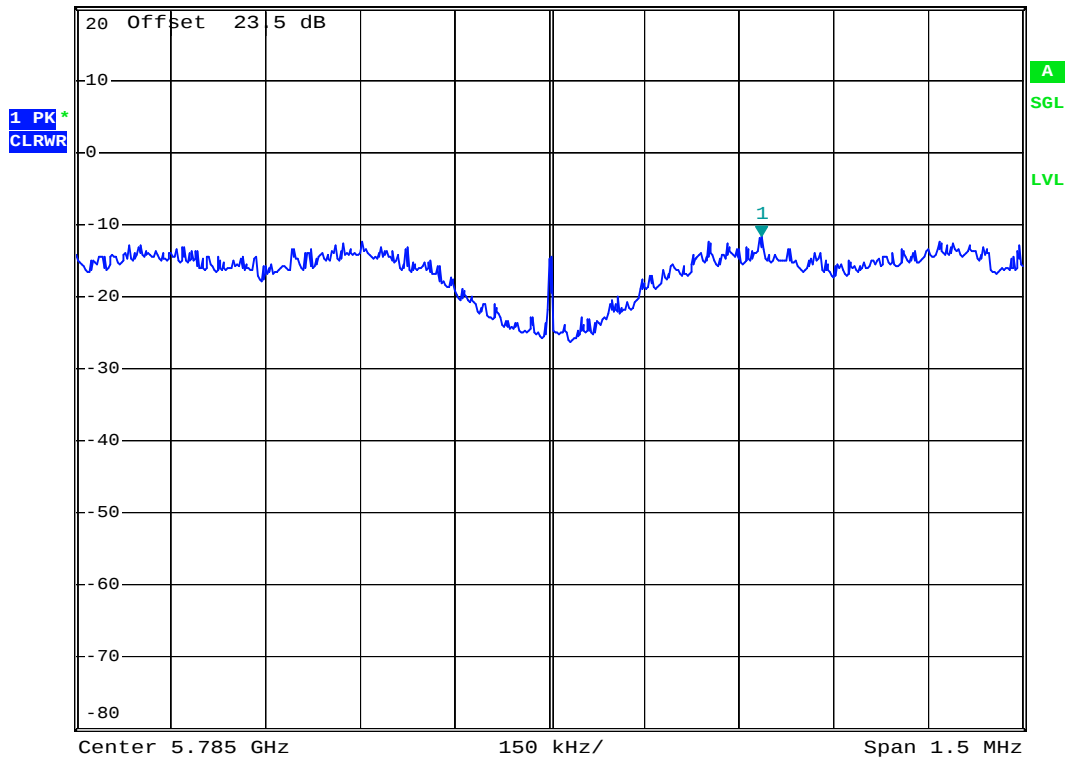
Date: 1.MAY.2007 18:27:41



Mode 14



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-11.67 dBm
5.785336000 GHz



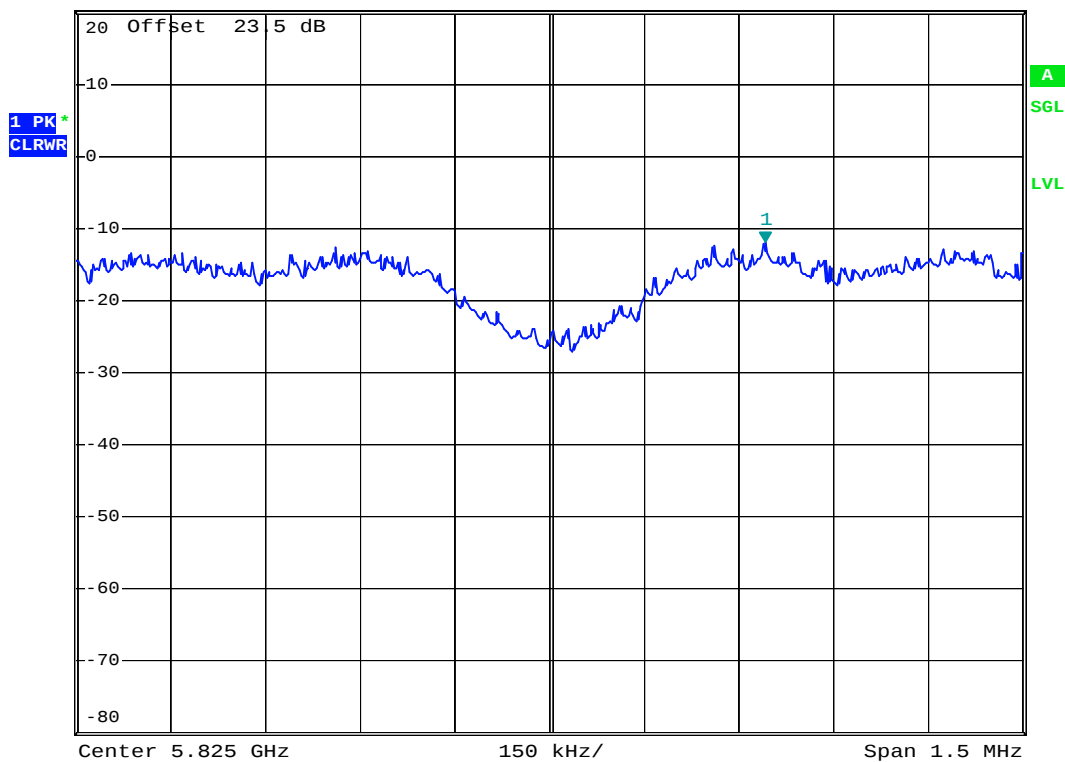
Date: 1.MAY.2007 18:37:23



Mode 15



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-11.93 dBm
5.825342000 GHz



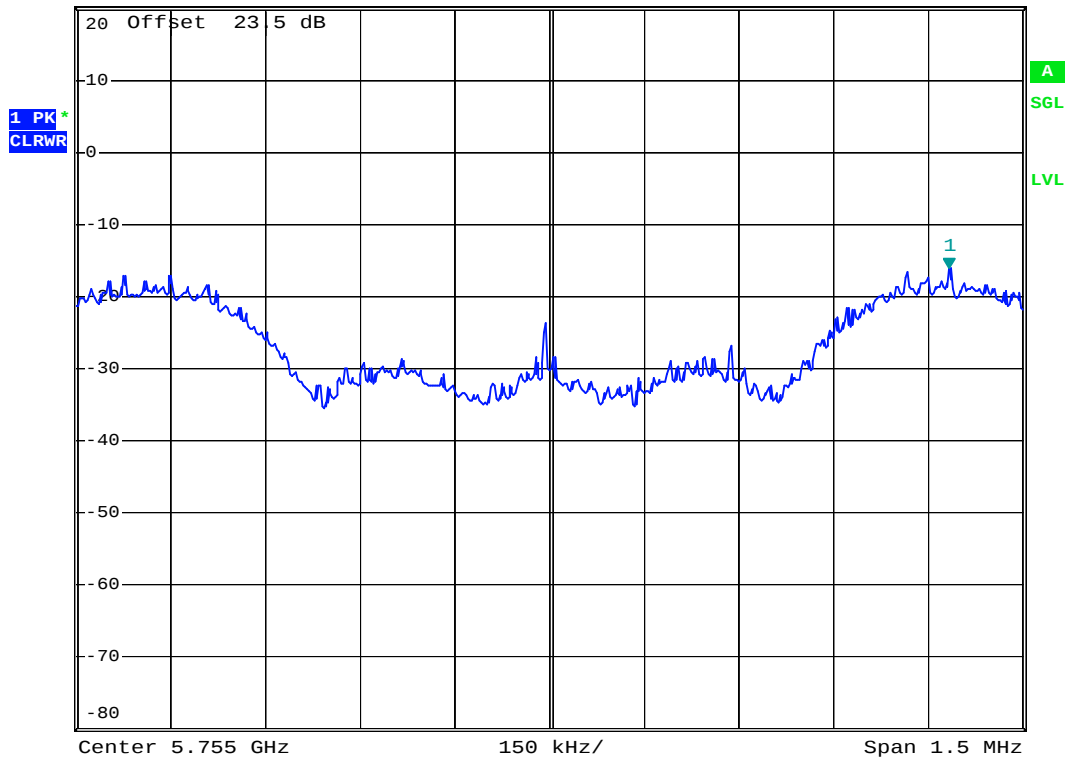
Date: 1.MAY.2007 18:46:50



Mode 16



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-16.00 dBm
5.755633000 GHz



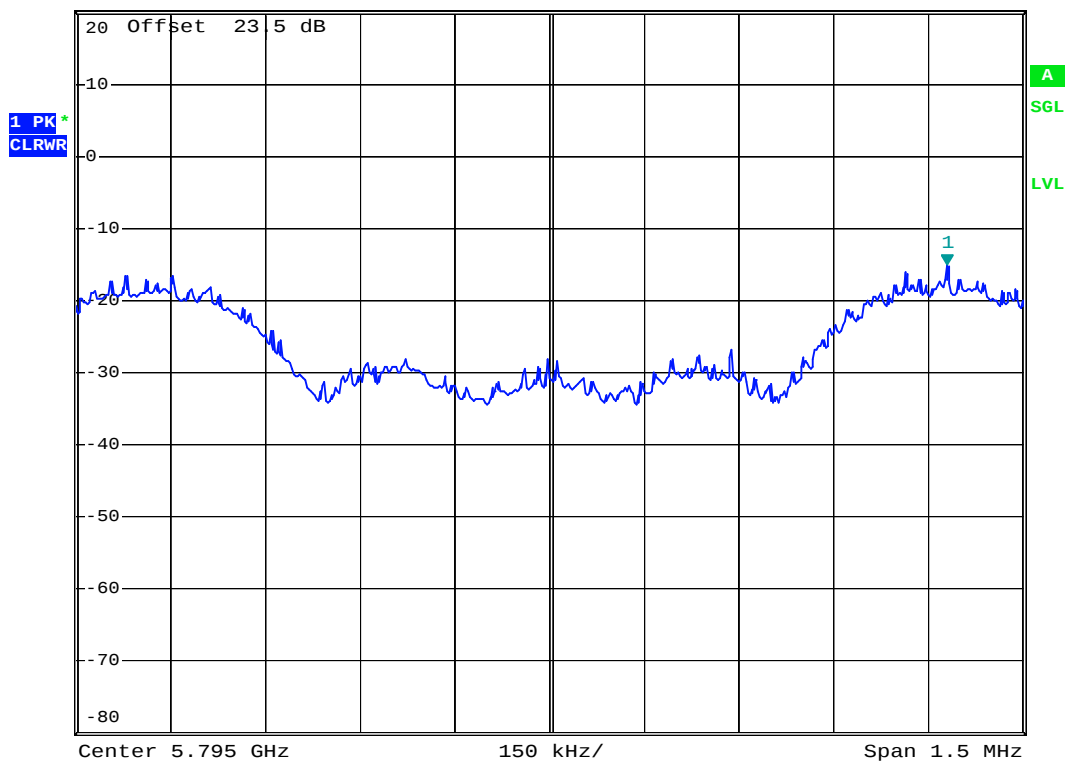
Date: 1.MAY.2007 18:56:22



Mode 17



Ref 20 dBm *Att 10 dB *RBW 3 kHz *VBW 30 kHz *SWT 500 s Marker 1 [T1]
-15.03 dBm
5.795630000 GHz



Date: 1.MAY.2007 19:05:39



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/g and BT
- Temperature : 23°C
- Relative Humidity : 47%
- Test Enginner : James

- Test Result in WLAN lower band (802.11b/g) : PASS
- Test Result in WLAN higher band (802.11b/g) : PASS
- Test Result in WLAN lower band (802.11a Band III) : PASS
- Test Result in WLAN higher band (802.11a Band III) : PASS
- Test Result in BT lower band : PASS
- Test Result in BT higher band : PASS
- Test Result in WLAN lower band (802.11n<g>_BW 20M) : PASS
- Test Result in WLAN higher band (802.11n<g>_BW 20M) : PASS
- Test Result in WLAN lower band (802.11n<a>_BW 20M) : PASS
- Test Result in WLAN higher band (802.11n<a>_BW 20M) : PASS
- Test Result in WLAN lower band (802.11n<a>_BW 40M) : PASS
- Test Result in WLAN higher band (802.11n<a>_BW 40M) : PASS

**5.4.4 Note on Band Edge Emission :****➤WLAN 802.11b****CH01 (Horizontal)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2388.16	64.31	-9.69	74.00	65.76	30.26	3.75	35.46	100	0	Peak
2388.16	50.62	-3.38	54.00	52.05	30.26	3.75	35.44	130	248	Average

CH01 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2389.92	60.07	-13.93	74.00	61.52	30.26	3.75	35.46	100	0	Peak
2389.92	46.54	-7.46	54.00	47.99	30.26	3.75	35.46	100	269	Average

CH11 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.70	64.42	-9.58	74.00	65.78	30.29	3.86	35.51	100	0	Peak
2483.70	49.22	-4.78	54.00	50.58	30.29	3.86	35.51	100	246	Average

CH11 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.53	59.25	-14.75	74.00	60.61	30.29	3.86	35.51	100	0	Peak
2483.53	45.58	-8.42	54.00	46.94	30.29	3.86	35.51	100	275	Average

➤WLAN 802.11g**CH01 (Horizontal)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2389.52	50.46	-3.54	54.00	51.89	30.26	3.75	35.44	100	250	Average
2389.52	71.08	-2.92	74.00	72.51	30.26	3.75	35.44	100	0	Peak

**CH01 (Vertical)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2389.92	48.88	-5.12	54.00	50.33	30.26	3.75	35.46	100	275	Average
2389.92	71.49	-2.51	74.00	72.93	30.26	3.75	35.46	100	0	Peak

CH11 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	49.64	-4.36	54.00	51.00	30.29	3.86	35.51	100	247	Average
2483.50	72.92	-1.08	74.00	74.28	30.29	3.86	35.51	100	0	Peak

CH11 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.70	70.13	-3.87	74.00	71.48	30.29	3.86	35.51	100	0	Peak
2483.70	45.67	-8.33	54.00	47.03	30.29	3.86	35.51	100	273	Average

➤BT_EDR**CH00 (Horizontal)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2324.00	31.25	-22.75	54.00	30.64	30.71	3.66	33.77	100	298	Average
2324.00	51.12	-22.88	74.00	50.51	30.71	3.66	33.77	100	0	Peak

CH00 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2326.00	36.12	-17.88	54.00	35.51	30.71	3.66	33.77	104	90	Average
2326.00	58.00	-16.00	74.00	57.39	30.71	3.66	33.77	100	0	Peak

**CH78 (Horizontal)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	41.52	-12.48	54.00	41.05	30.43	3.84	33.80	100	114	Average
2483.50	52.34	-21.66	74.00	51.87	30.43	3.84	33.80	100	0	Peak

CH78 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	62.06	-11.94	74.00	61.59	30.43	3.84	33.80	100	0	Peak
2483.50	49.84	-4.16	54.00	49.37	30.43	3.84	33.80	105	91	Average

➤BT**CH78 (Horizontal)**

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	52.27	-21.73	74.00	51.80	30.43	3.84	33.80	100	0	Peak
2483.50	45.77	-8.23	54.00	45.30	30.43	3.84	33.80	100	276	Average

CH78 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.50	57.36	-16.64	74.00	56.89	30.43	3.84	33.80	100	0	Peak
2483.50	50.44	-3.56	54.00	49.97	30.43	3.84	33.80	108	90	Average



➤WLAN 802.11n(g)_BW 20M

CH01 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2389.36	64.47	-9.53	74.00	65.92	30.26	3.75	35.46	100	0	Peak
2389.36	43.65	-10.35	54.00	45.08	30.26	3.75	35.46	100	298	Average

CH01 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2388.96	58.91	-15.09	74.00	60.36	30.26	3.75	35.46	100	0	Peak
2388.96	41.07	-12.93	54.00	42.50	30.26	3.75	35.44	105	267	Average

CH11 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.57	45.06	-8.94	54.00	46.42	30.29	3.86	35.51	100	245	Average
2483.57	69.52	-4.48	74.00	70.88	30.29	3.86	35.51	100	0	Peak

CH11 (Vertical)

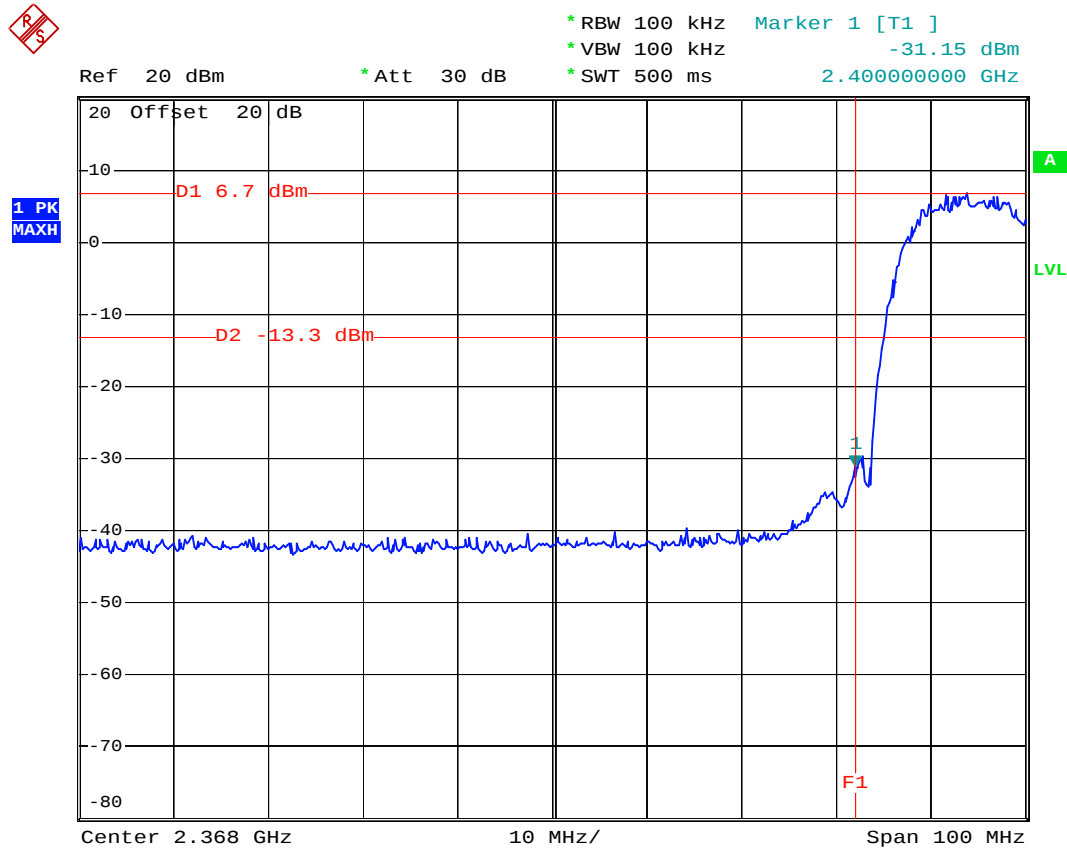
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.57	63.09	-10.91	74.00	64.45	30.29	3.86	35.51	100	0	Peak
2483.57	42.29	-11.71	54.00	43.65	30.29	3.86	35.51	100	267	Average



5.4.5 20dB Band Edge

WLAN 802.11b

CH01



Date: 1.MAY.2007 10:00:25

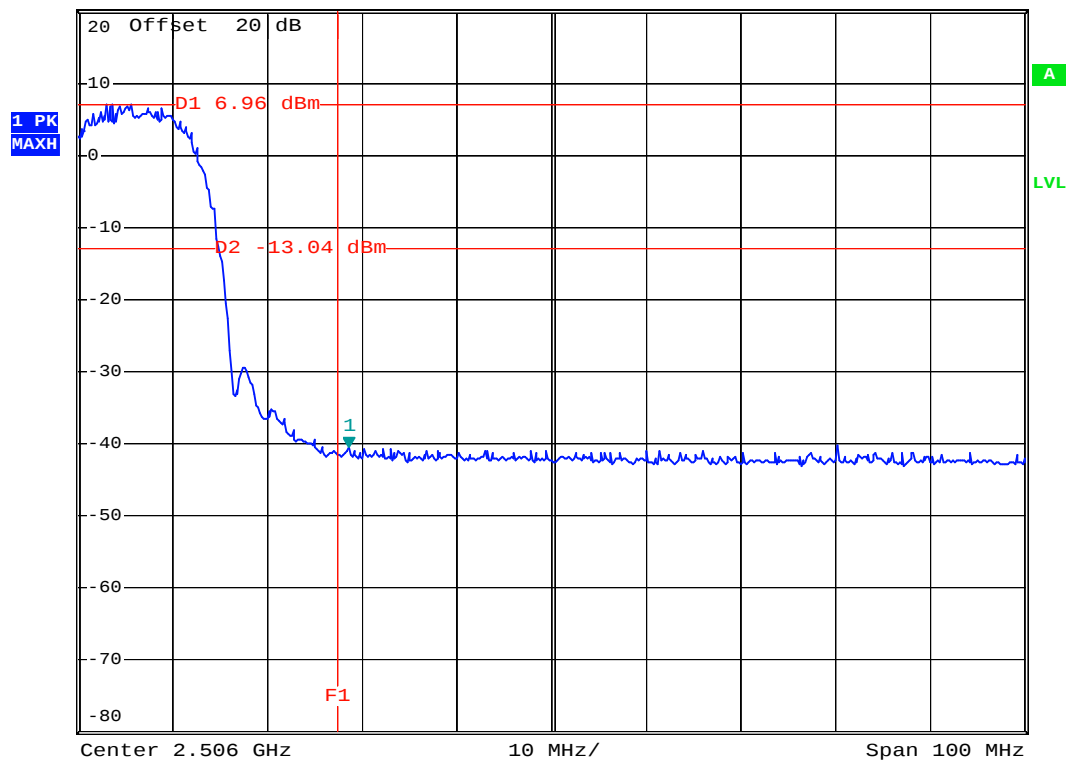


CH11



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -40.39 dBm
* SWT 500 ms 2.484600000 GHz

Ref 20 dBm * Att 30 dB

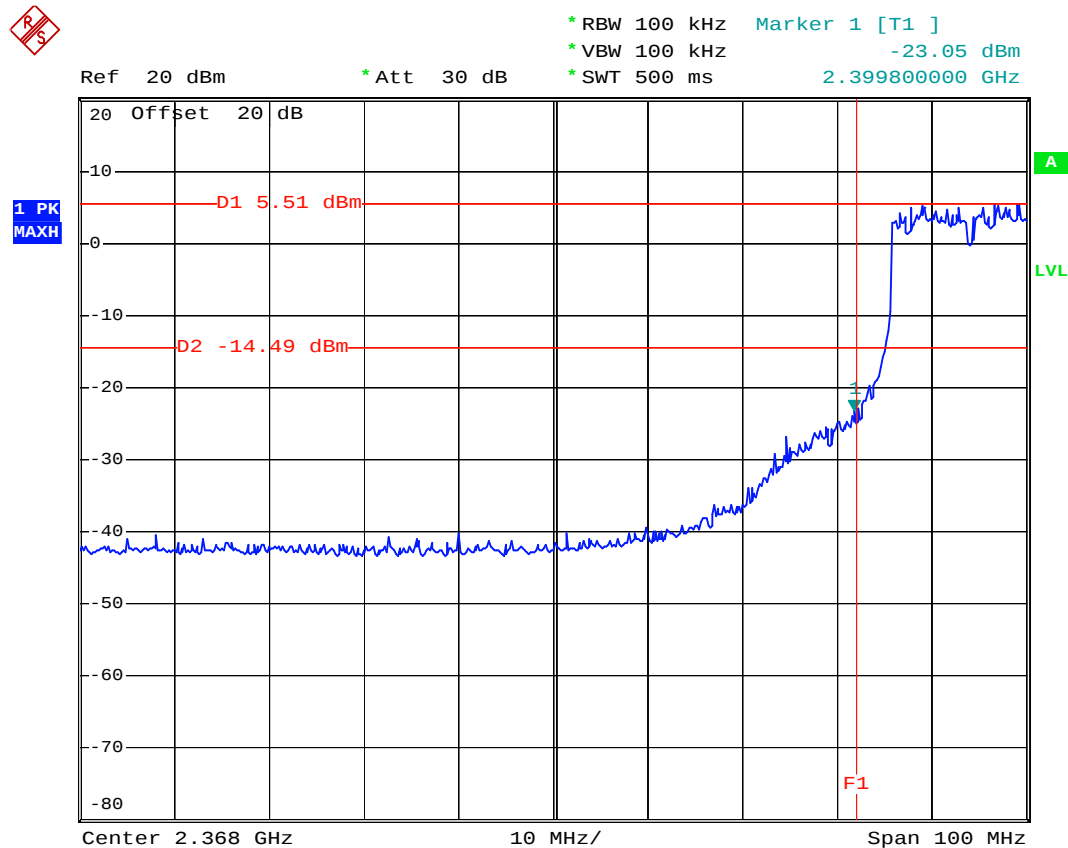


Date: 1.MAY.2007 10:03:38



WLAN 802.11g

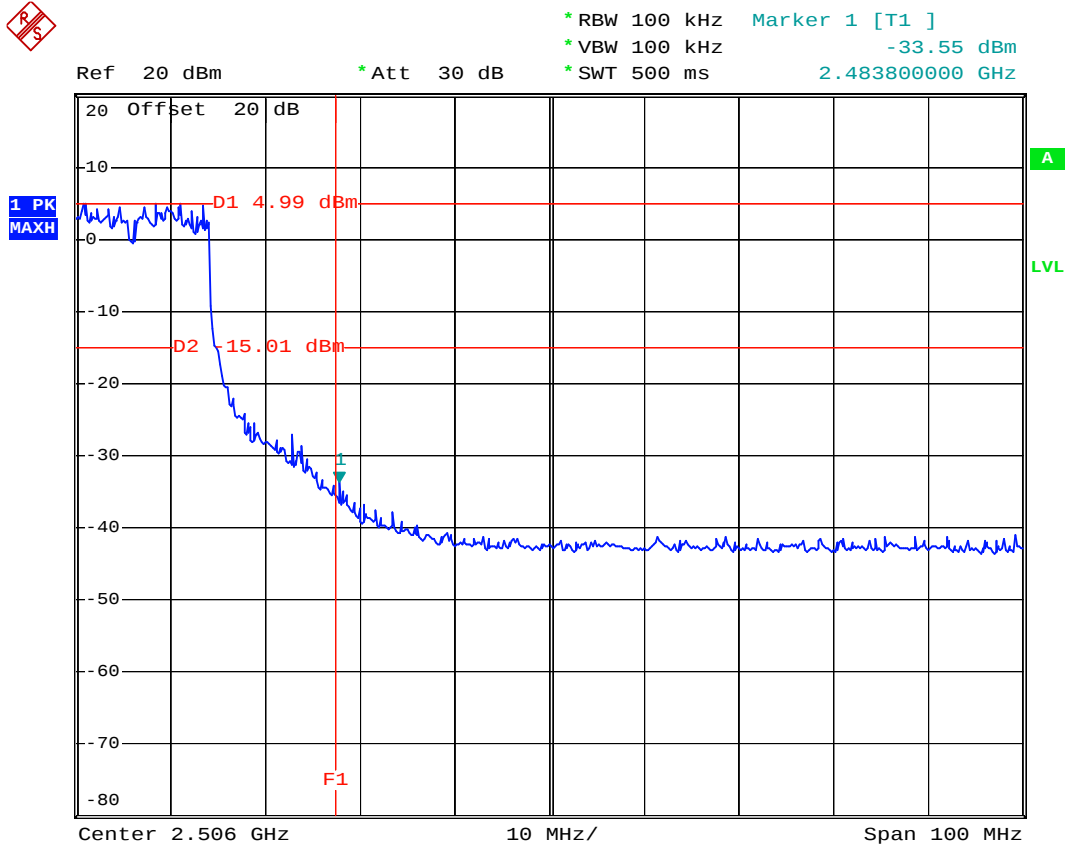
CH01



Date: 1.MAY.2007 11:24:51



CH11

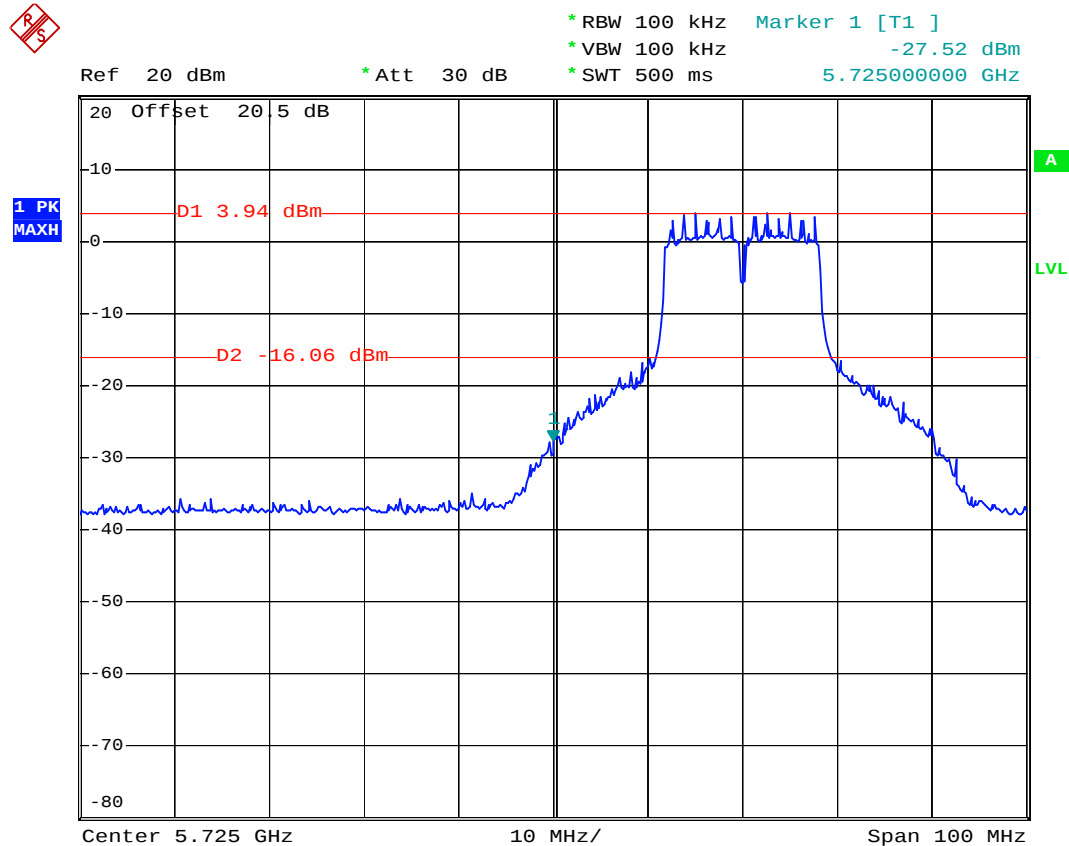


Date: 1.MAY.2007 11:26:28



WLAN 802.11a

CH149



Date: 1.MAY.2007 11:49:12

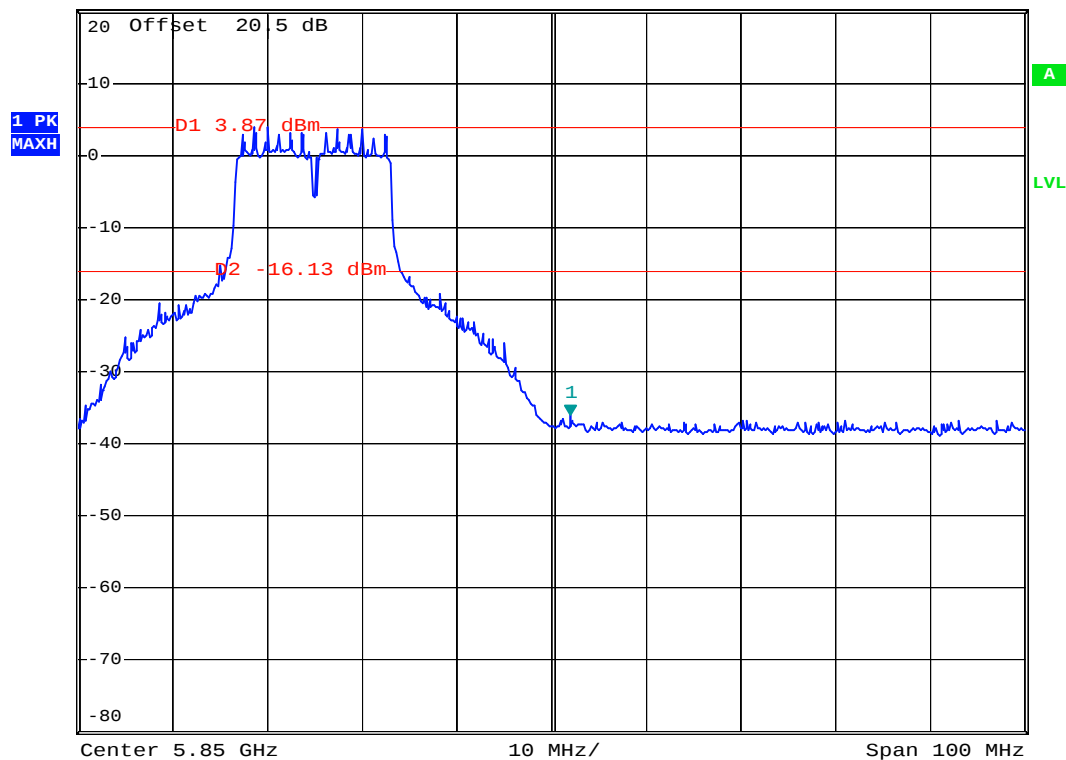


CH165



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -36.16 dBm
* SWT 500 ms 5.852000000 GHz

Ref 20 dBm * Att 30 dB

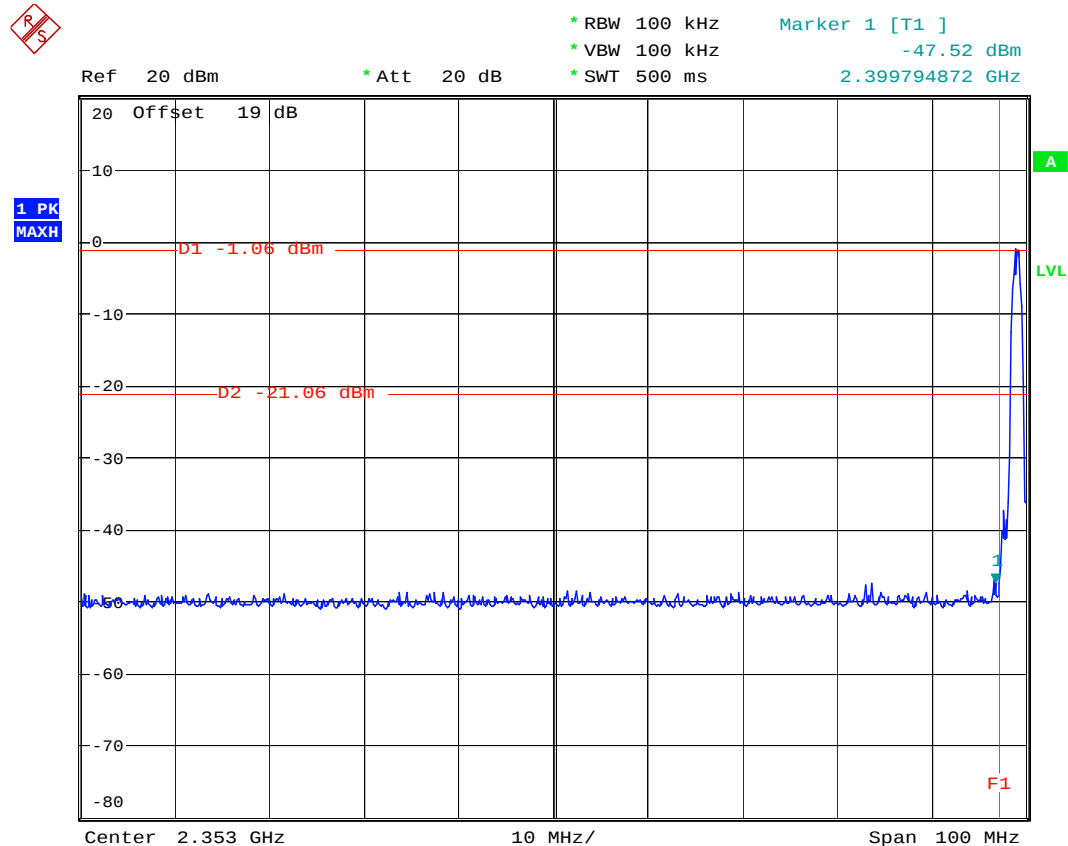


Date: 1.MAY.2007 11:52:07



Bluetooth_EDR

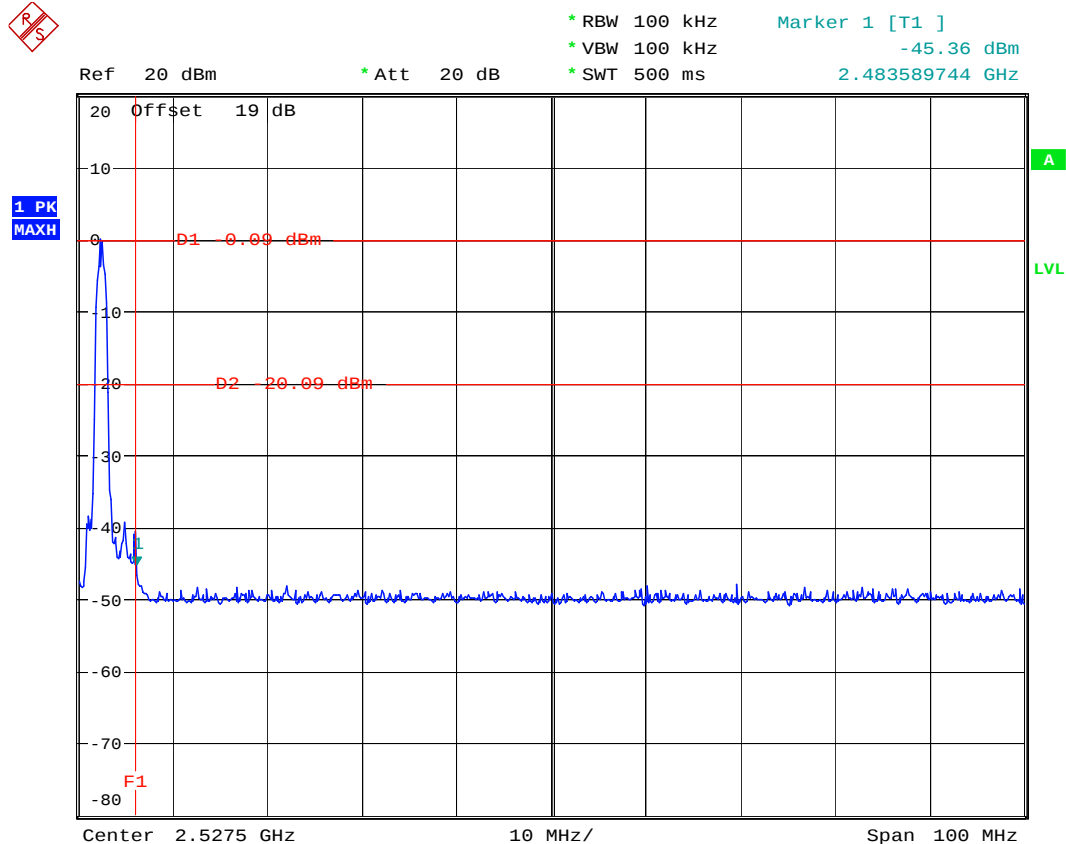
CH00



Date: 10.MAY.2007 15:49:18



CH78

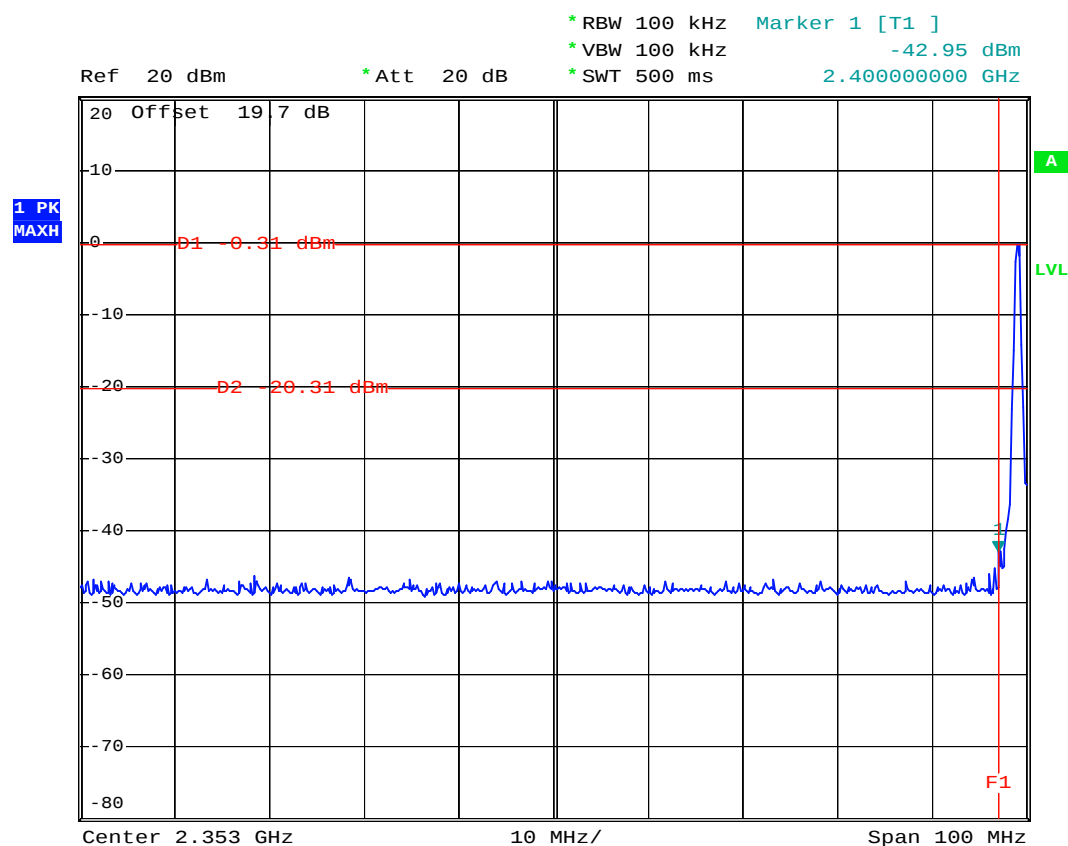


Date: 10.MAY.2007 15:50:26



Bluetooth

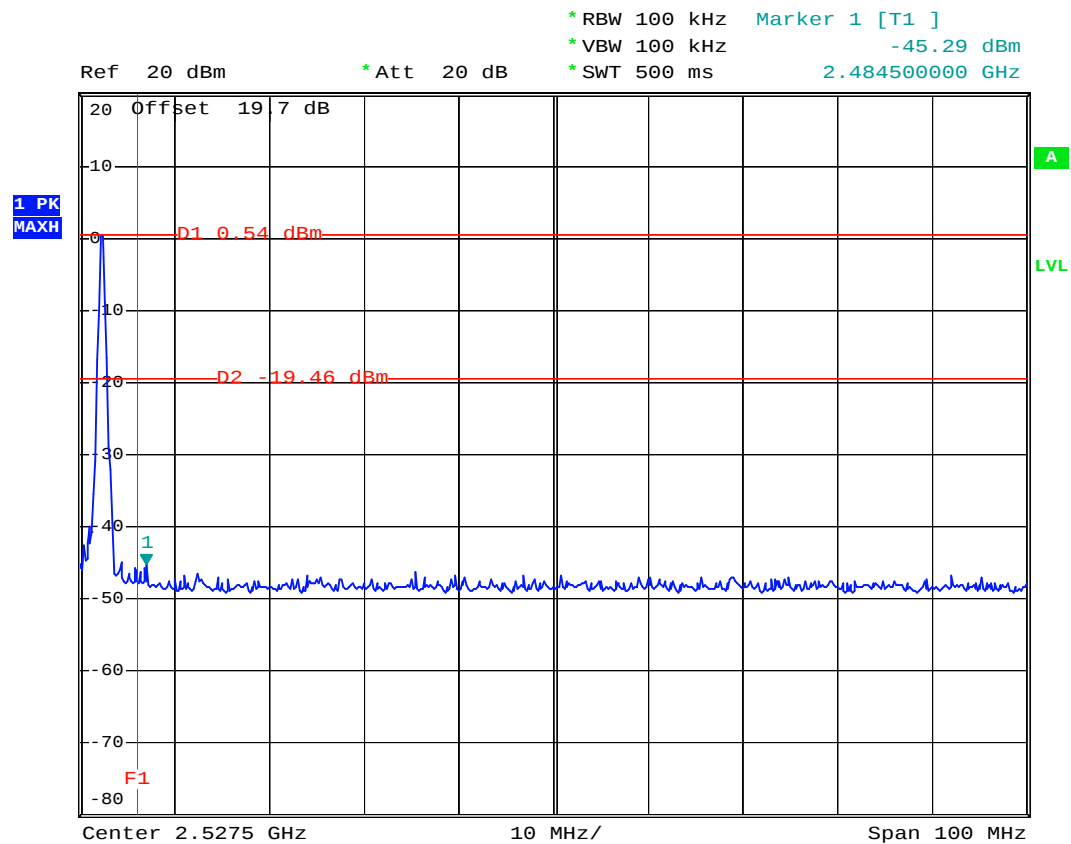
CH00



Date: 9.MAY.2007 22:45:19



CH78

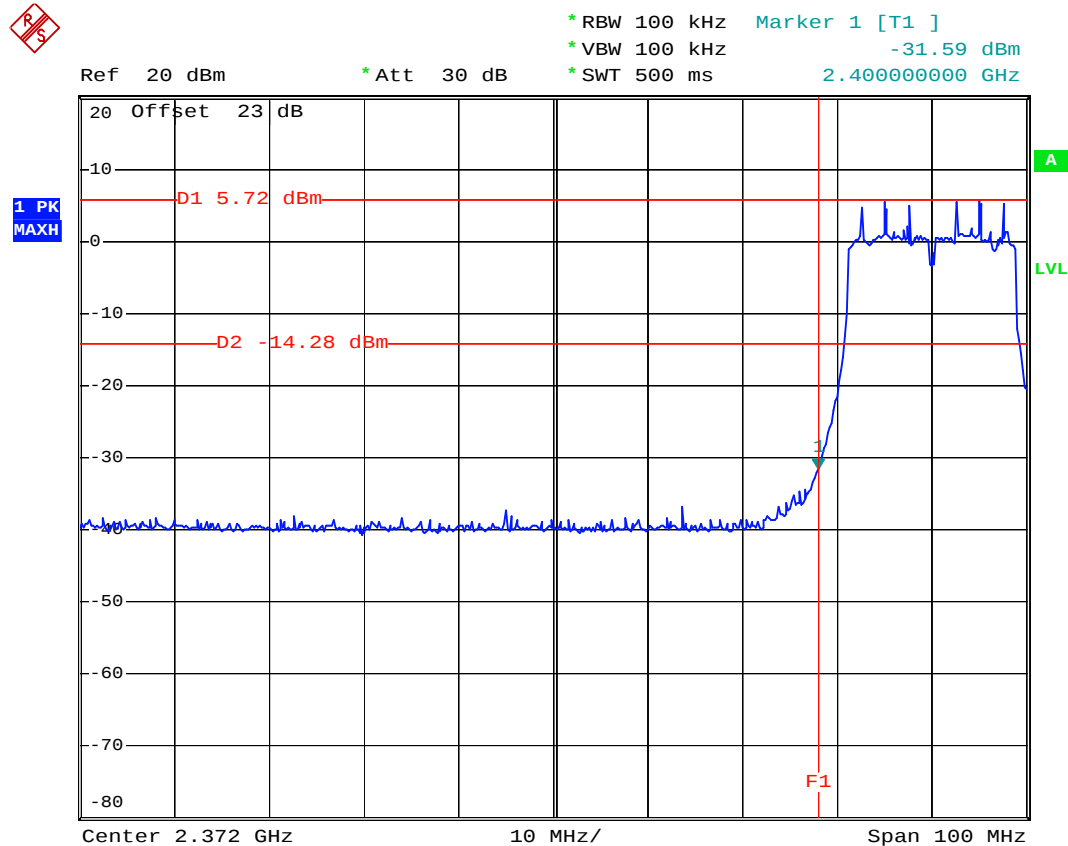


Date: 9.MAY.2007 22:46:30



WLAN 802.11n(g)_BW 20M

CH01



Date: 1.MAY.2007 16:54:14

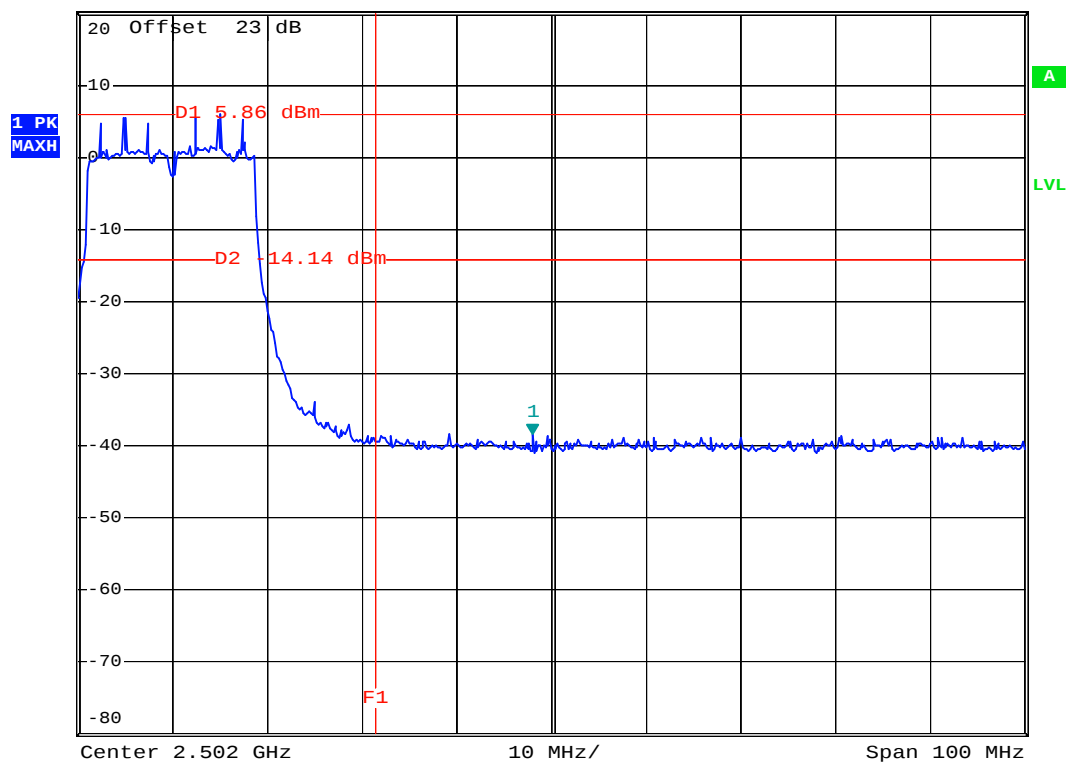


CH11



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -38.50 dBm
* SWT 500 ms 2.500000000 GHz

Ref 20 dBm * Att 30 dB

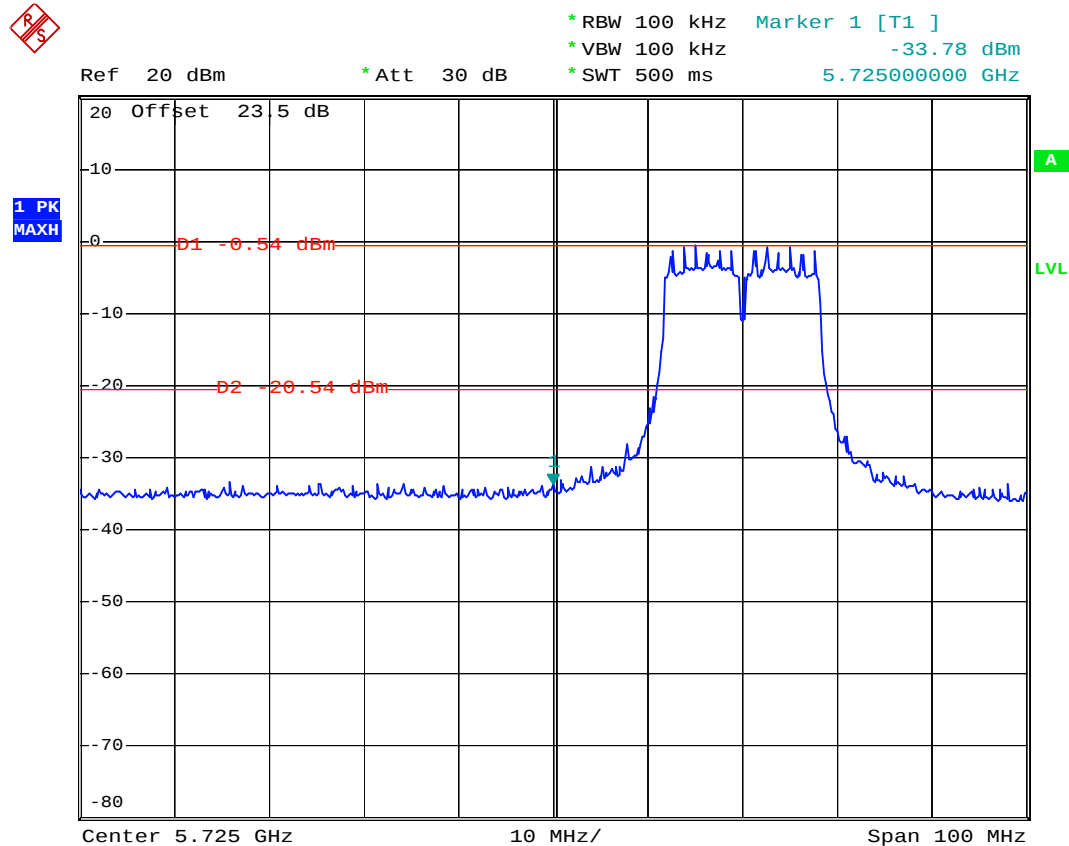


Date: 1.MAY.2007 16:56:33



WLAN 802.11n(a)_BW 20M

CH149



Date: 1.MAY.2007 18:08:13

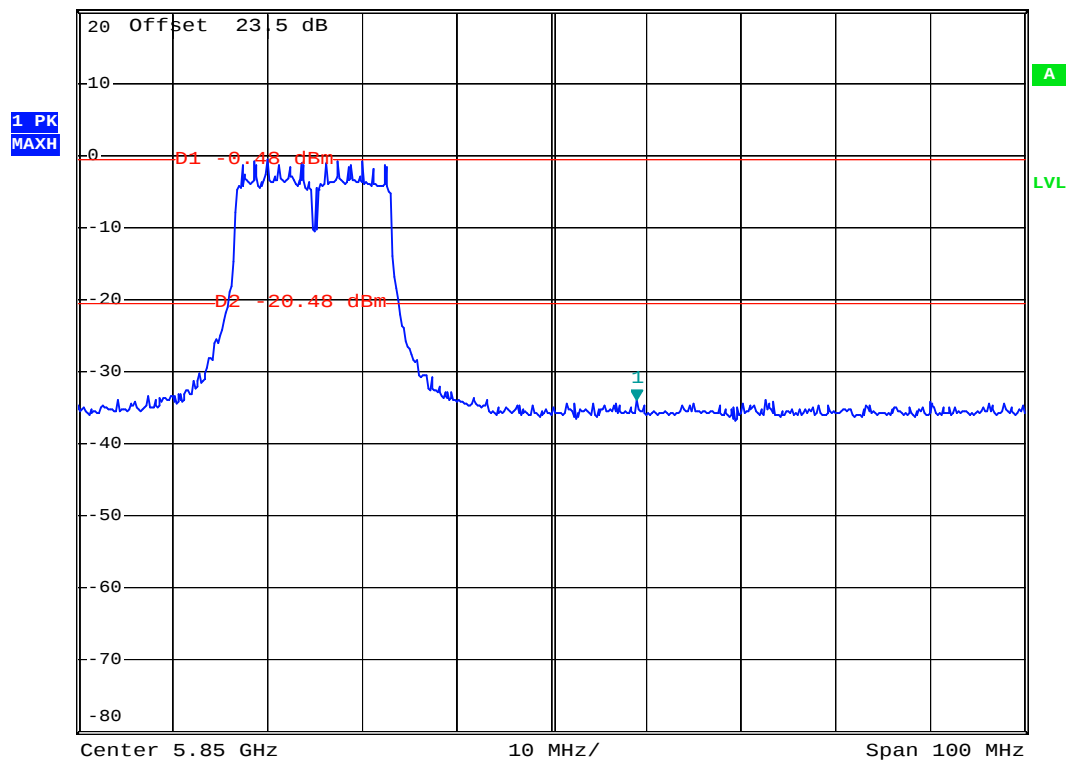


CH165



* RBW 100 kHz Marker 1 [T1]
* VBW 100 kHz -33.85 dBm
* SWT 500 ms 5.859000000 GHz

Ref 20 dBm * Att 30 dB

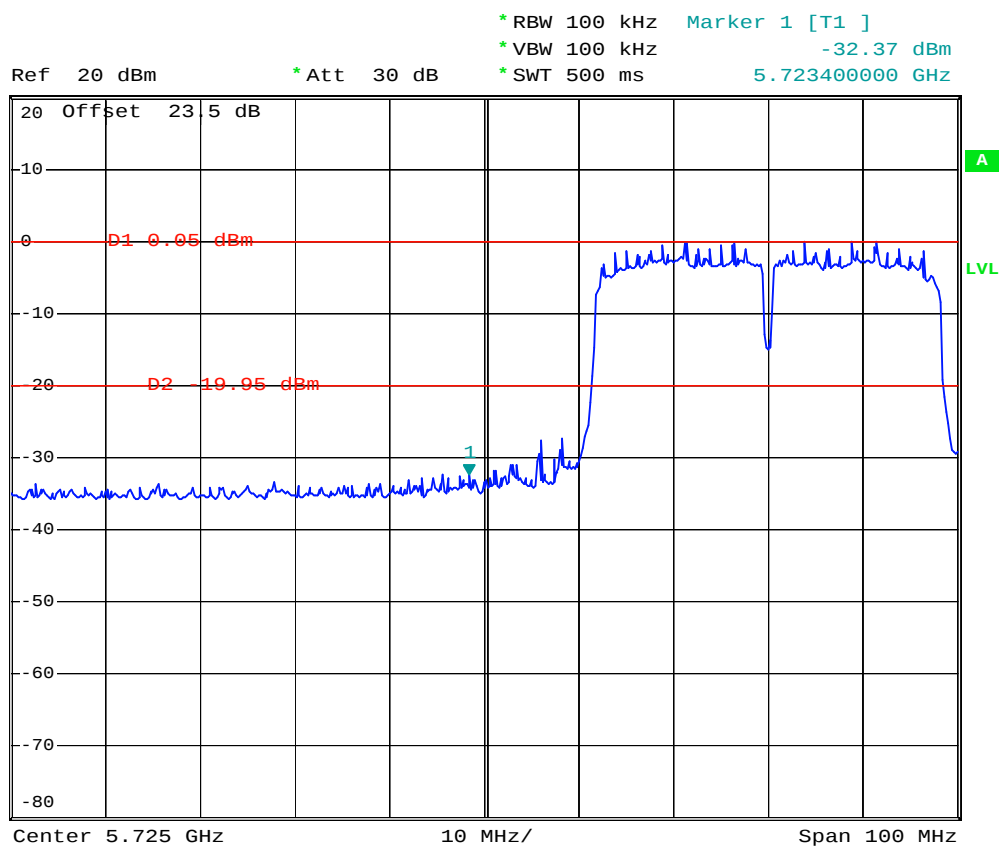


Date: 1.MAY.2007 18:09:24



WLAN 802.11n(a)_BW 40M

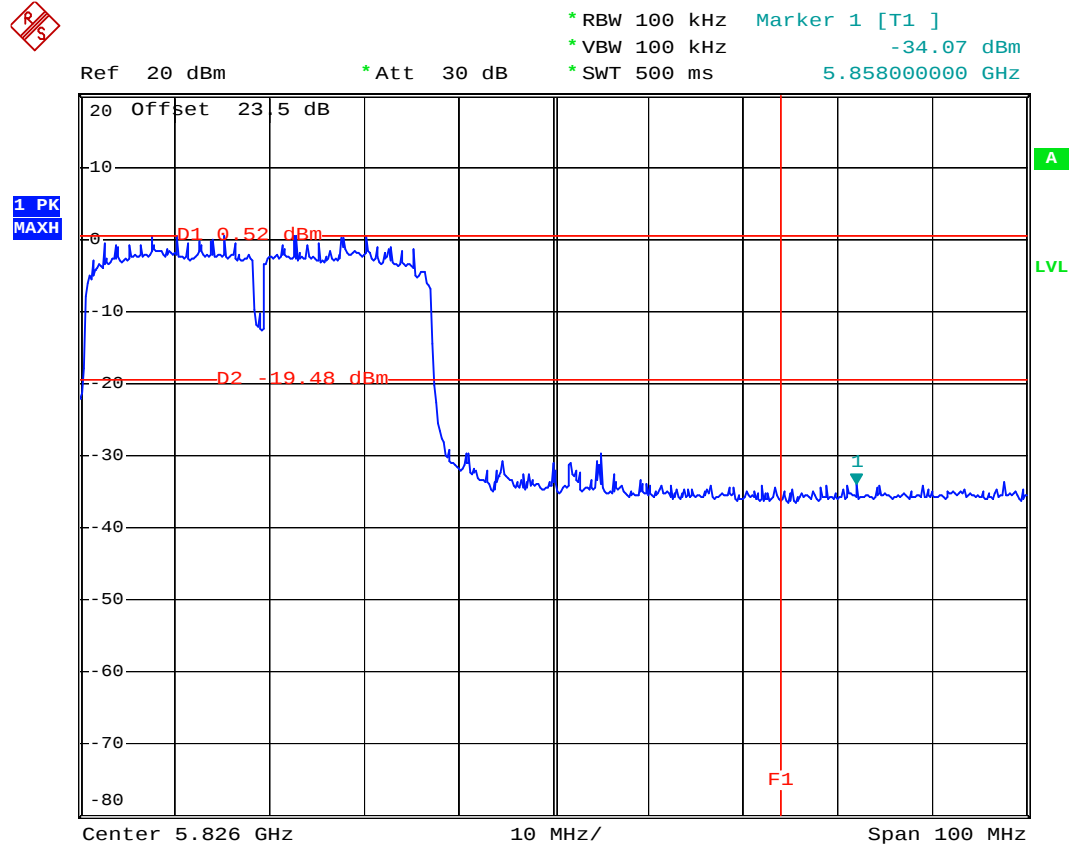
CH151



Date: 1.MAY.2007 18:10:55



CH159



Date: 1.MAY.2007 18:12:44

5.5 Hopping Channel Separation

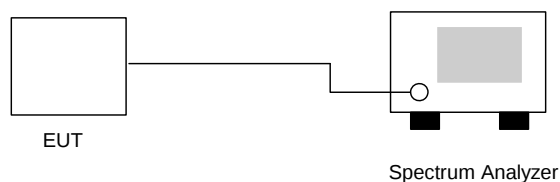
5.5.1 Measuring Instruments :

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 : 23°C
- Relative Humidity : 47%
- Test Enginner : James

➤ BT_EDR

Channel	Carrier Frequency		Limits	Plot
	Frequency (MHz)	Separation (MHz)		
00	2402	1.000	1.256	Mode 1
39	2441	1.000	1.250	Mode 2
78	2480	1.000	1.260	Mode 3

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

**➤ BT**

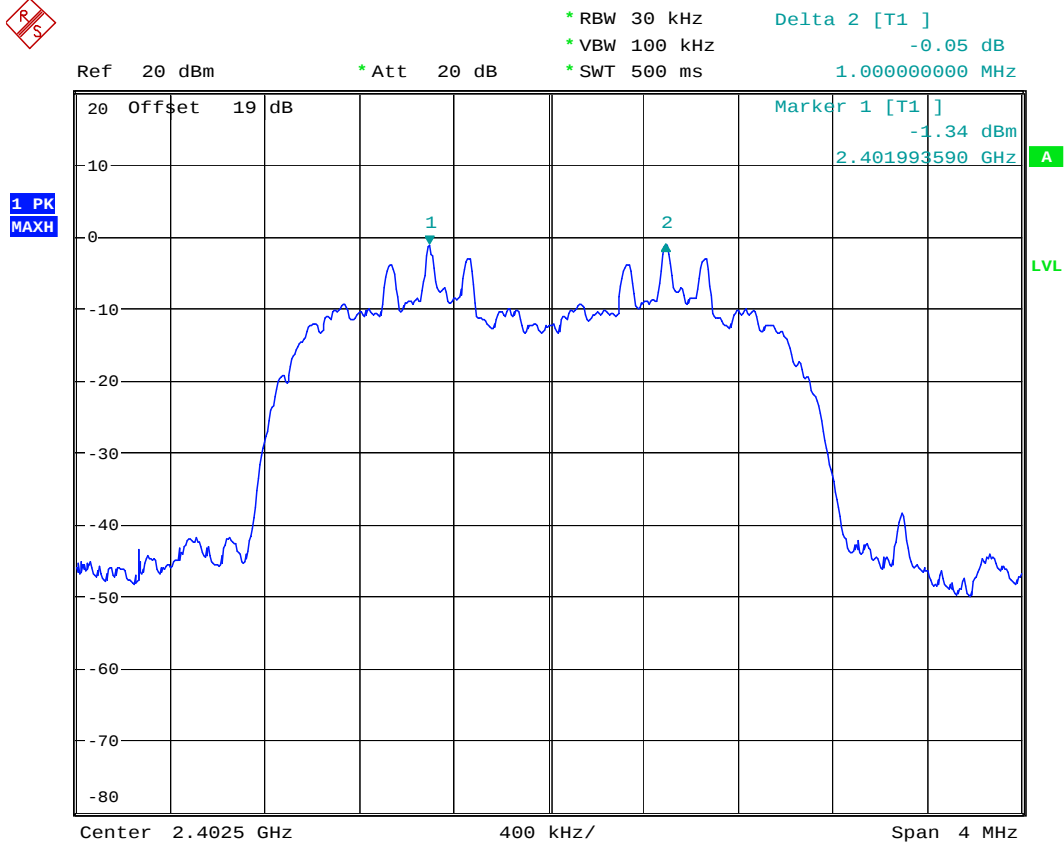
Channel	Carrier Frequency		Limits	Plot
	Frequency (MHz)	Separation (MHz)		
			(MHz)	Ref. No.
00	2402	1.000	0.828	Mode 4
39	2441	1.000	0.824	Mode 5
78	2480	1.004	0.814	Mode 6

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



5.5.5 Hopping Channel Separation

Mode 1



Date: 10.MAY.2007 16:56:36



Mode 2



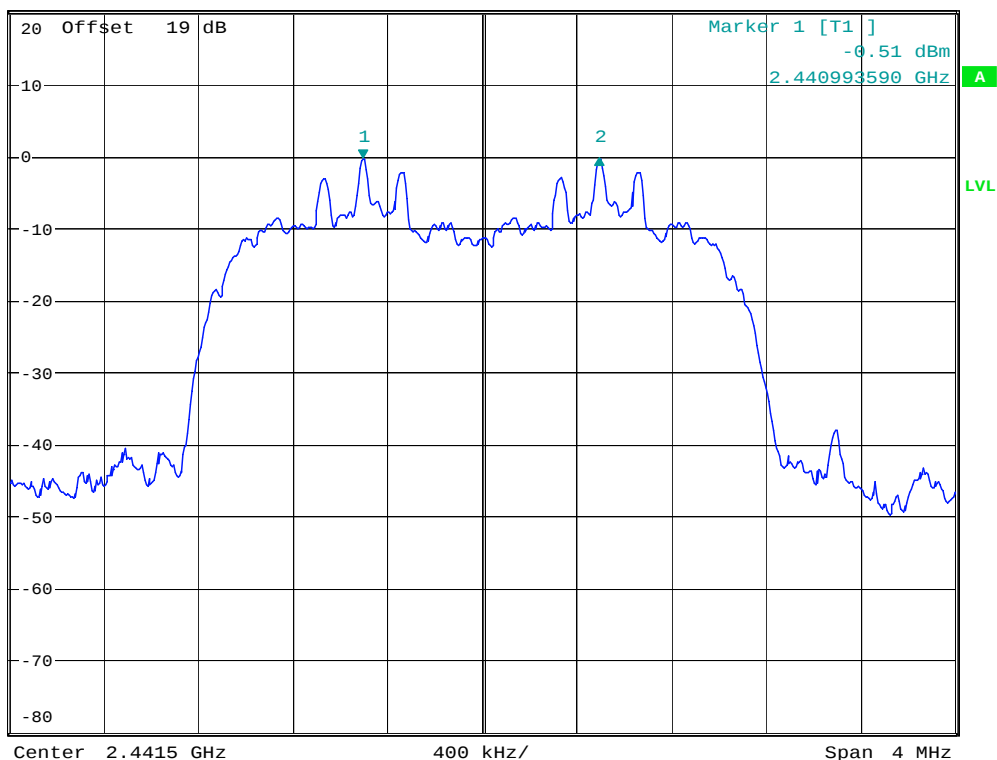
* RBW 30 kHz
* VBW 100 kHz
* SWT 500 ms

Delta 2 [T1]
0.04 dB
1.000000000 MHz

Ref 20 dBm

* Att 20 dB

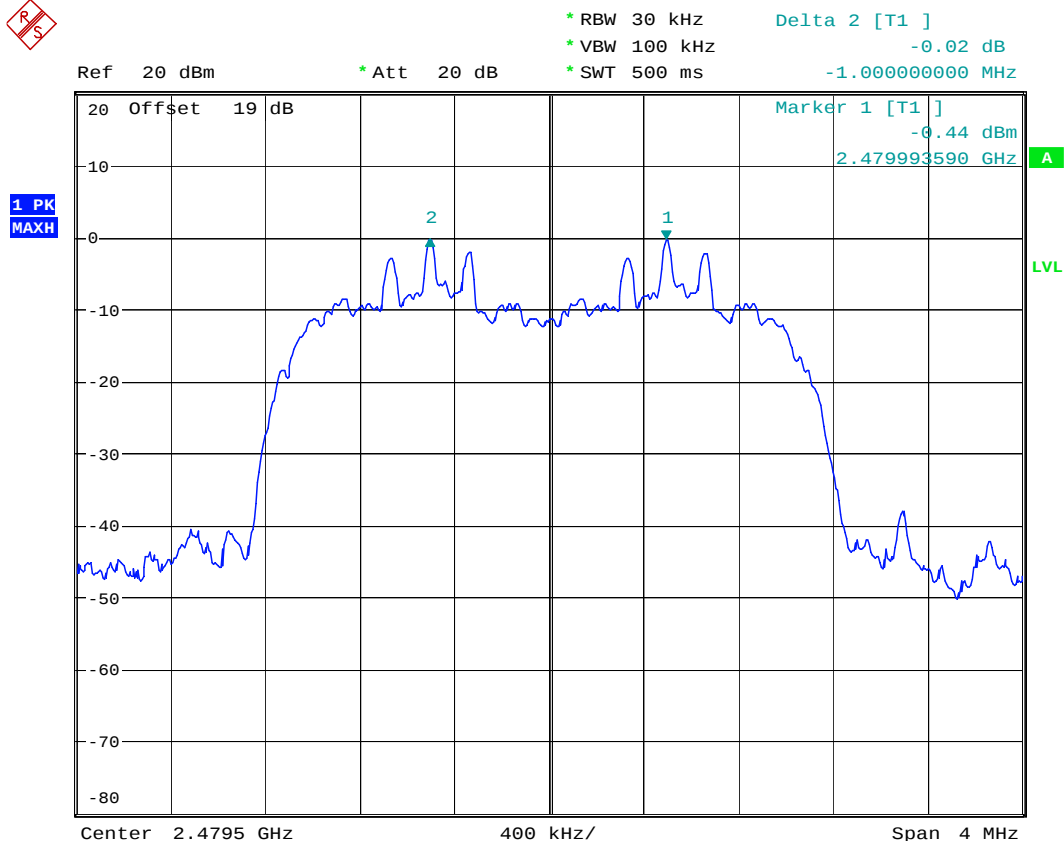
1 PK
MAXH



Date: 10.MAY.2007 16:57:16



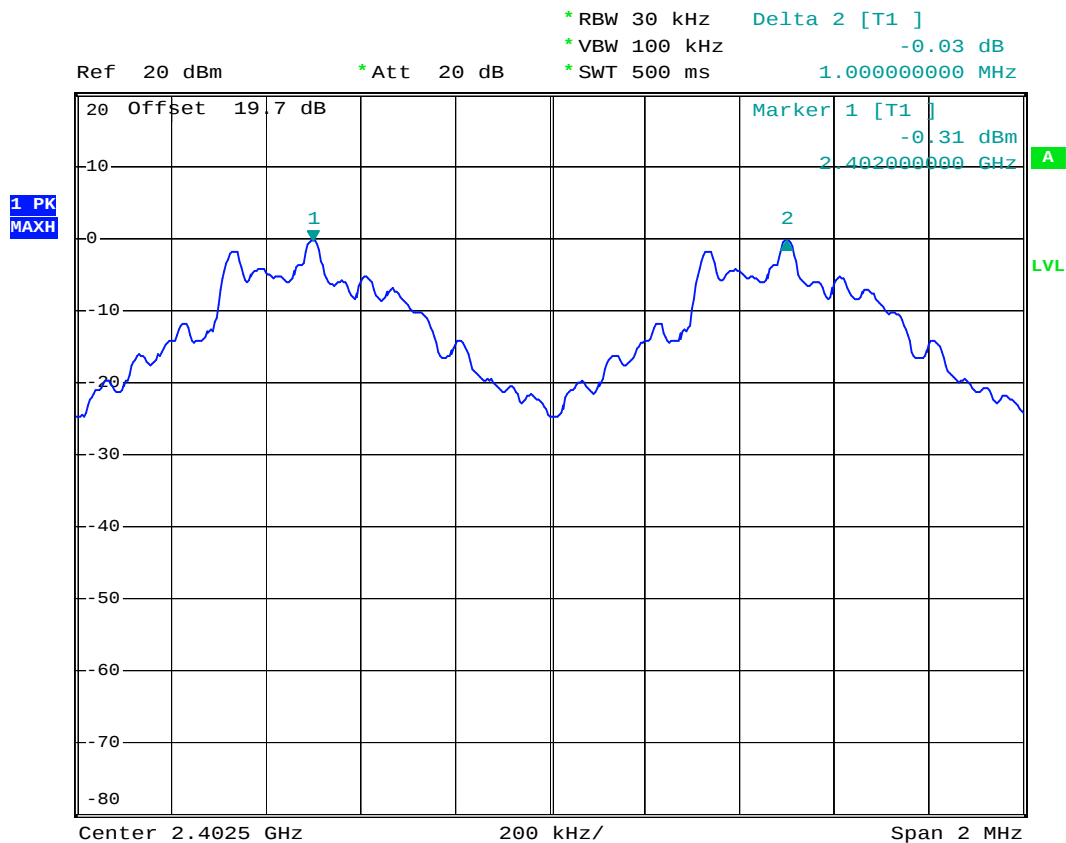
Mode 3



Date: 10.MAY.2007 16:57:56



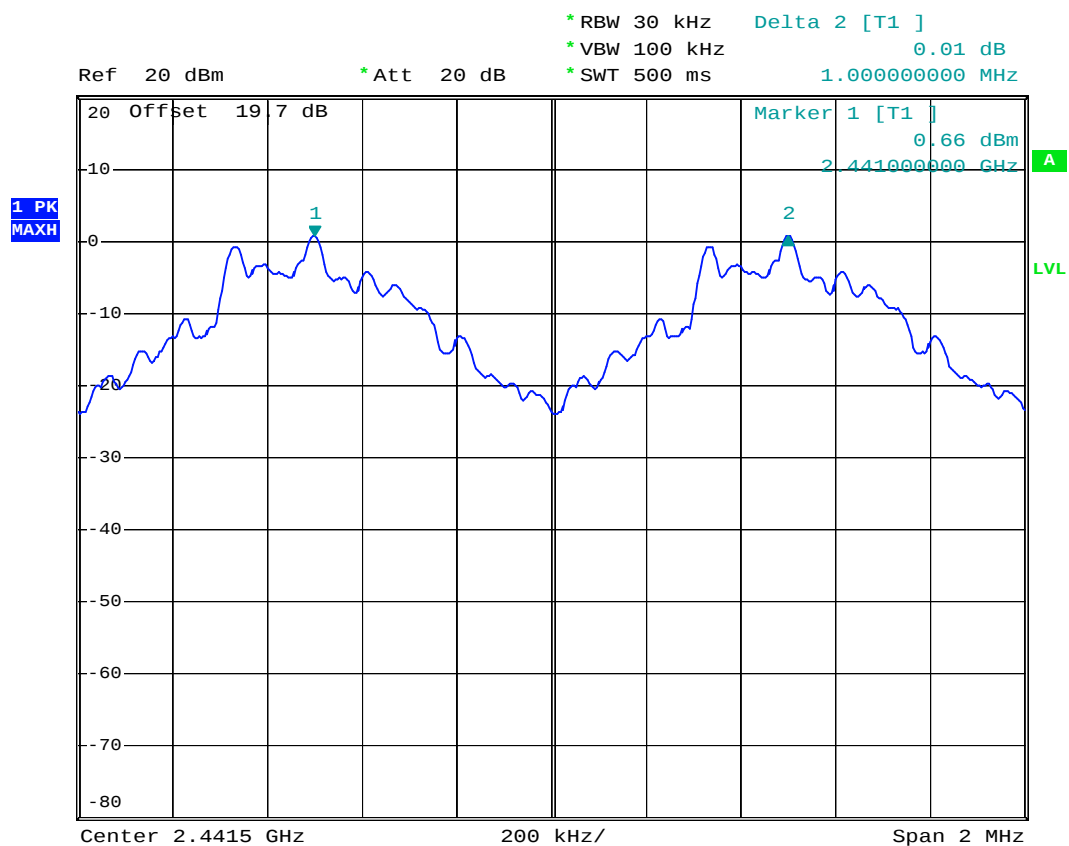
Mode 4



Date: 9.MAY.2007 22:47:44



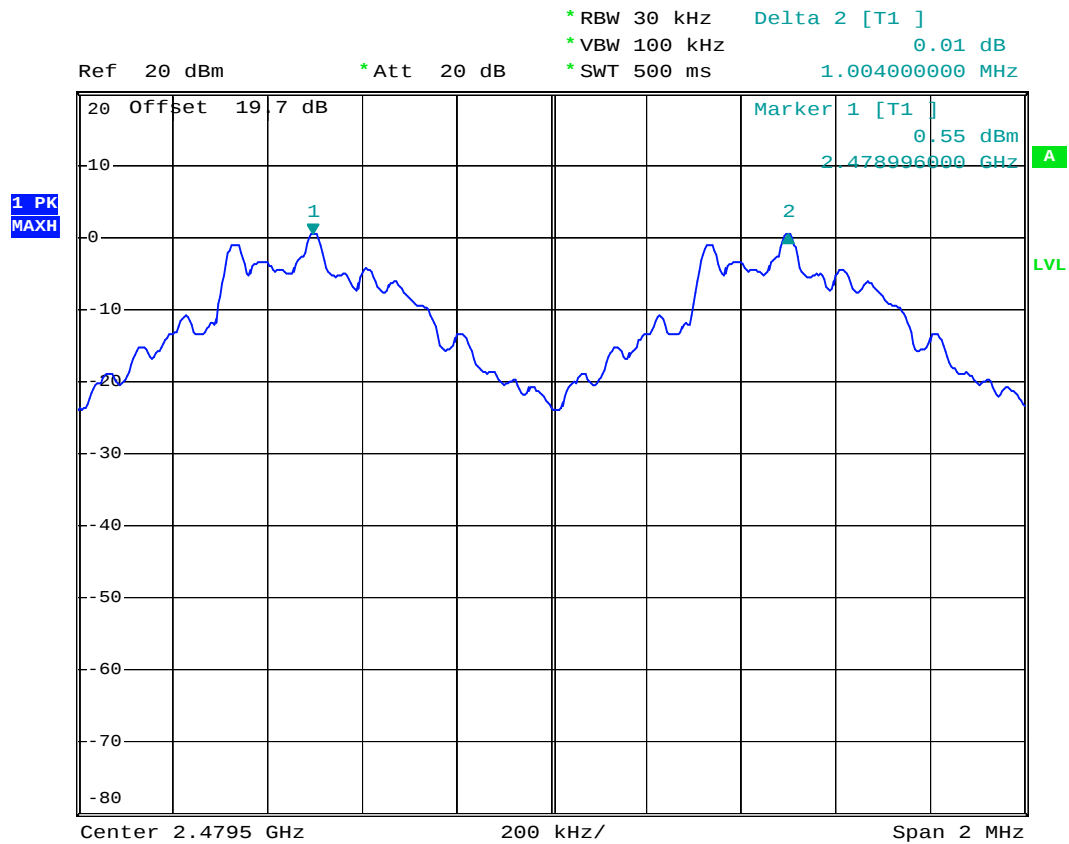
Mode 5



Date: 9.MAY.2007 22:48:16



Mode 6



Date: 9.MAY.2007 22:49:22

5.6 Number of Hopping Frequency

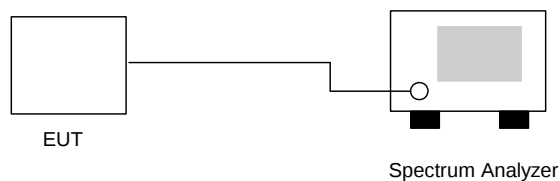
5.6.1 Measuring Instruments :

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 : 23°C
- Relative Humidity : 47%
- Test Enginner : James

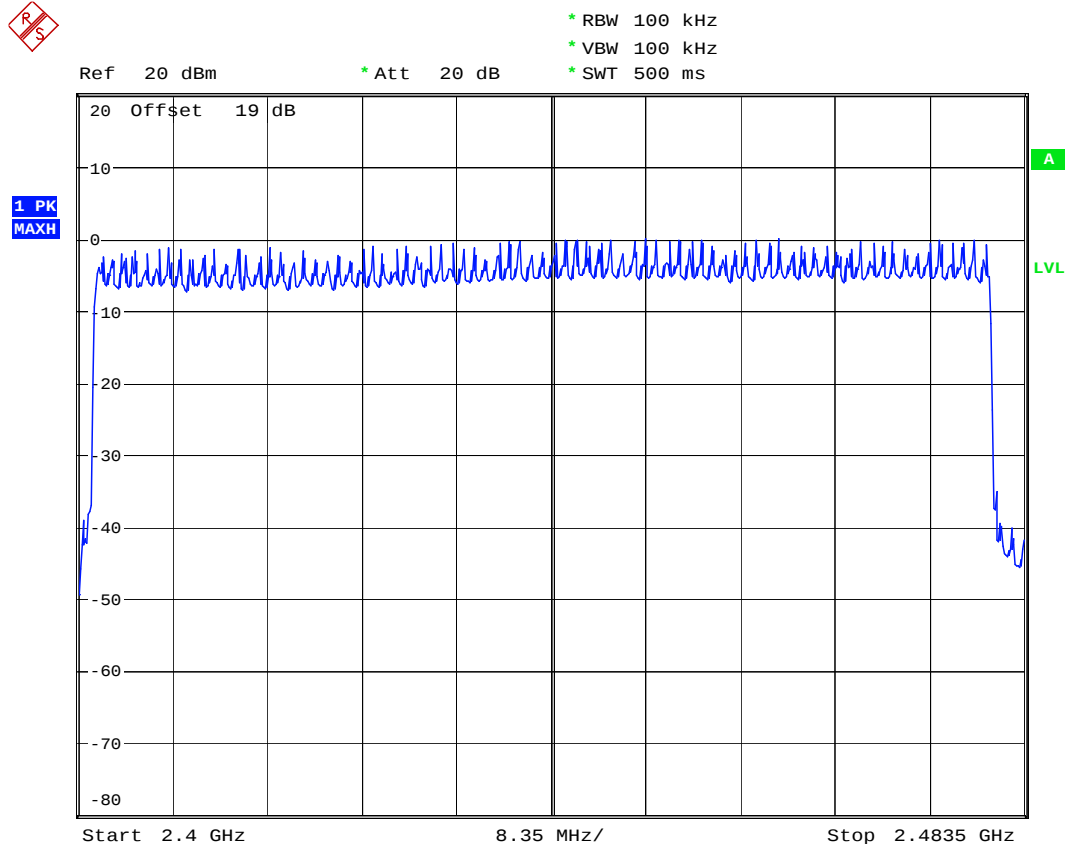
➤ BT_EDR & BT

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



5.6.5 Number of Hopping Frequency

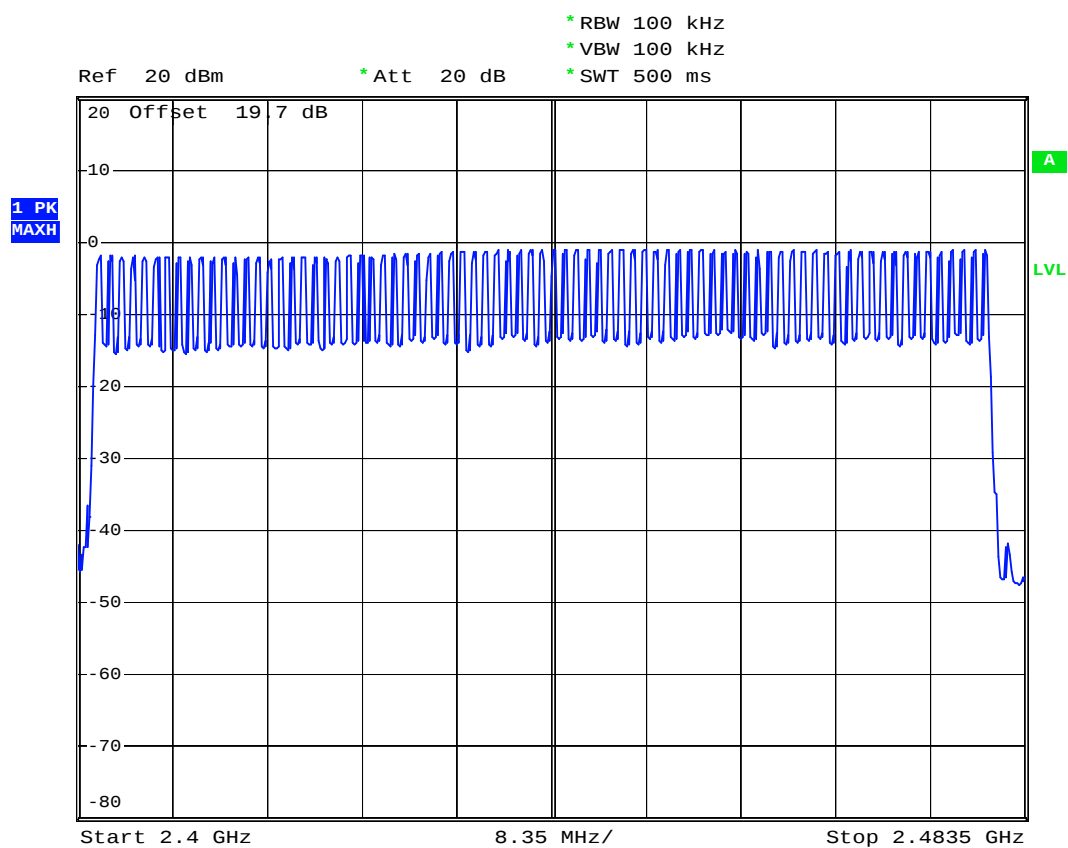
➤ BT_EDR



Date: 10.MAY.2007 16:46:41



➤ BT



Date: 9.MAY.2007 23:26:05

5.7 Hopping Channel Bandwidth

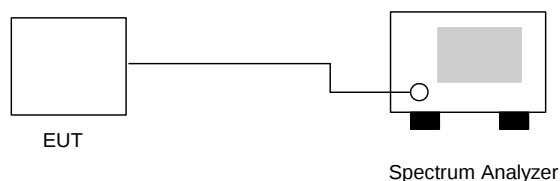
5.7.1 Measuring Instruments :

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 : 23°C
- Relative Humidity : 47%
- Test Enginner : James

➤ BT_EDR

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.256	1.000	Mode 1
39	2441	1.250	1.000	Mode 2
78	2480	1.260	1.000	Mode 3

**FCC / IC TEST REPORT****Report No. : FR6D2906-C**➤ **BT**

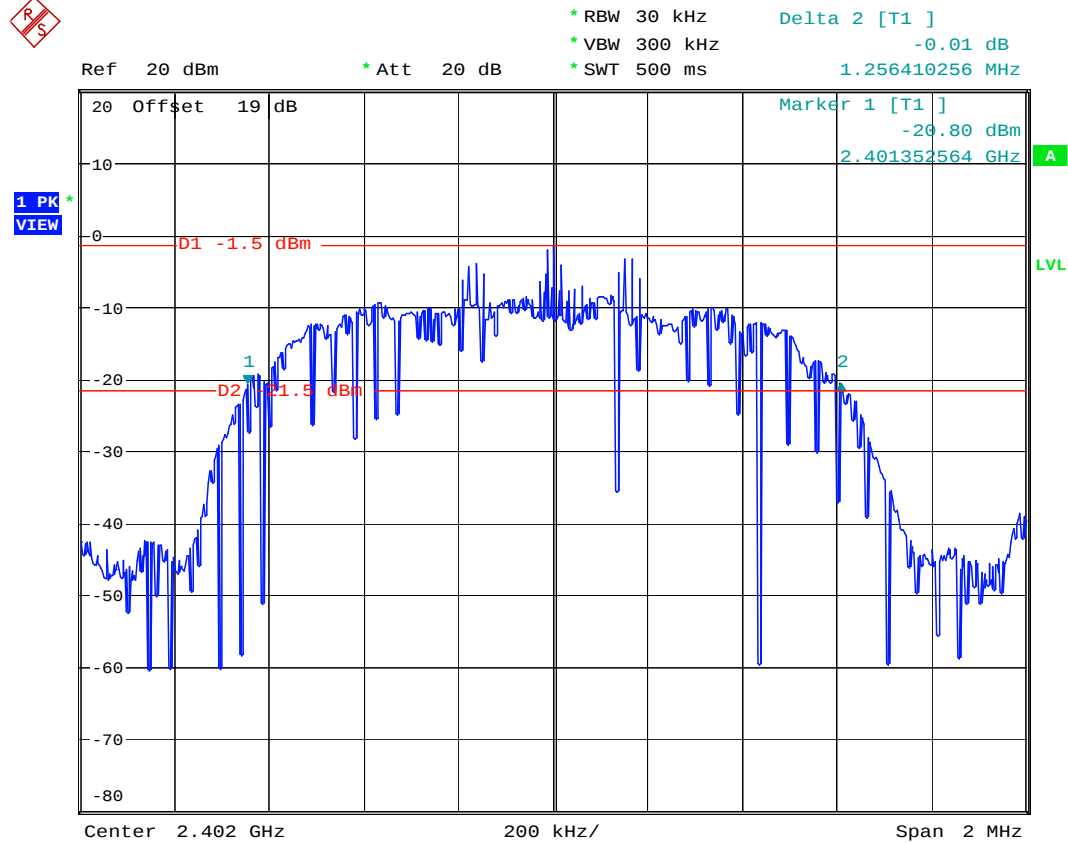
Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.828	1.000	Mode 4
39	2441	0.824	1.000	Mode 5
78	2480	0.814	1.000	Mode 6



5.7.5 Hopping Channel Bandwidth

➤ BT_EDR

Mode 1



Date: 10.MAY.2007 16:53:12

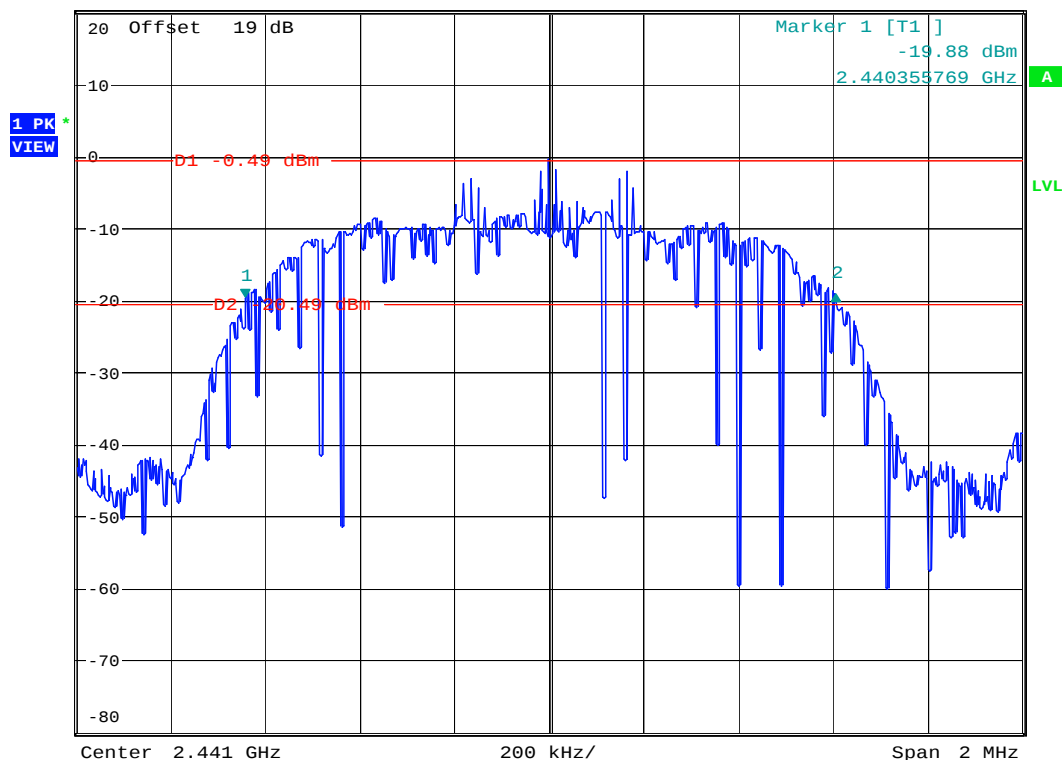


Mode 2



* RBW 30 kHz Delta 2 [T1] 0.39 dB
* VBW 300 kHz
* SWT 500 ms 1.250000000 MHz

Ref 20 dBm * Att 20 dB



Date: 10.MAY.2007 16:54:15



Mode 3



* RBW 30 kHz

Delta 2 [T1]

* VBW 100 kHz

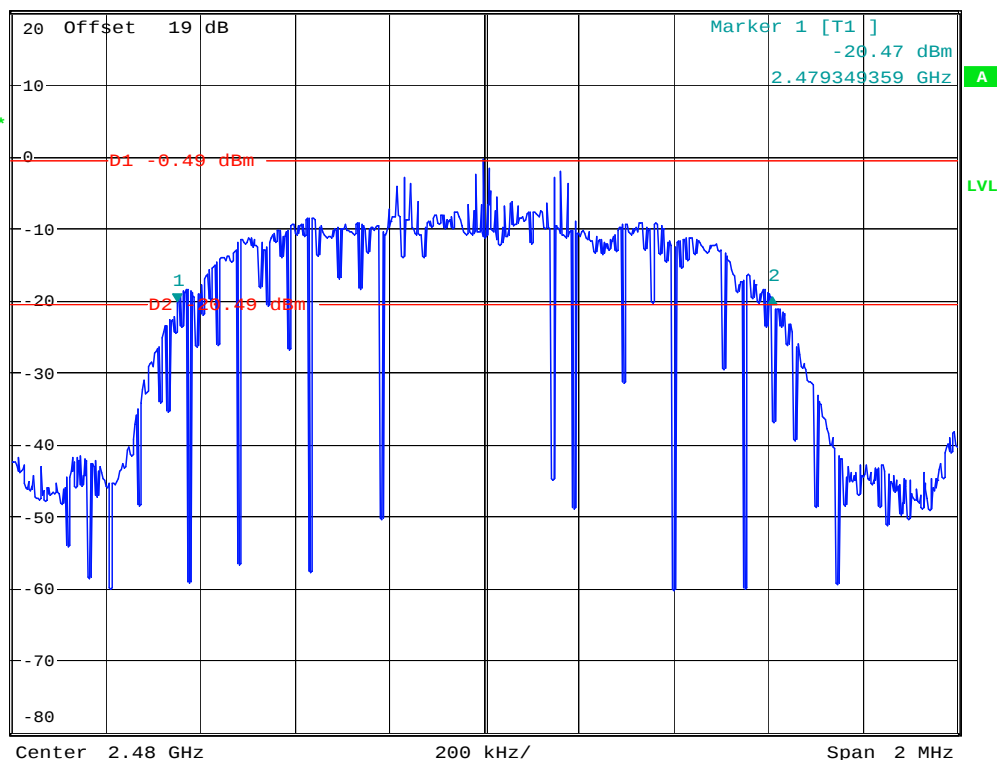
0.67 dB

* SWT 500 ms

1.259615385 MHz

Ref 20 dBm

* Att 20 dB

1 PK
VIEW

Date: 10.MAY.2007 16:51:32



➤ BT

Mode 4



Date: 9.MAY.2007 22:40:49



Mode 5



Date: 9.MAY.2007 22:42:08



Mode 6



Date: 9.MAY.2007 22:43:52

5.8 Dwell Time of Each Frequency

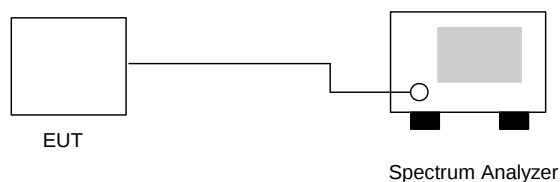
5.8.1 Measuring Instruments :

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 $= 79 * 0.4 * (1600/79) * t$ (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 : 23°C
- Relative Humidity : 47%
- Test Enginner : James

➤ BT_EDR

Ch00

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.3	477.56	0.1403	0.4
DH3	5.2	1758.00	0.2889	0.4
DH5	3.3	3064.10	0.3195	0.4

**CH39**

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.2	471.15	0.1370	0.4
DH3	5.4	1750.00	0.2986	0.4
DH5	3.2	3016.02	0.3050	0.4

CH78

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	467.95	0.1405	0.4
DH3	5.5	1750.00	0.3042	0.4
DH5	3.4	3080.12	0.3309	0.4

➤ BT**Ch00**

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	464.00	0.1393	0.4
DH3	5.1	1736.00	0.2798	0.4
DH5	3.4	3000.00	0.3223	0.4

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	472.00	0.1417	0.4
DH3	5.2	1746.00	0.2869	0.4
DH5	3.2	3060.00	0.3094	0.4



CH78

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.4	456.00	0.1355	0.4
DH3	5.4	1740.00	0.2969	0.4
DH5	3.5	3020.00	0.3340	0.4

Remark:

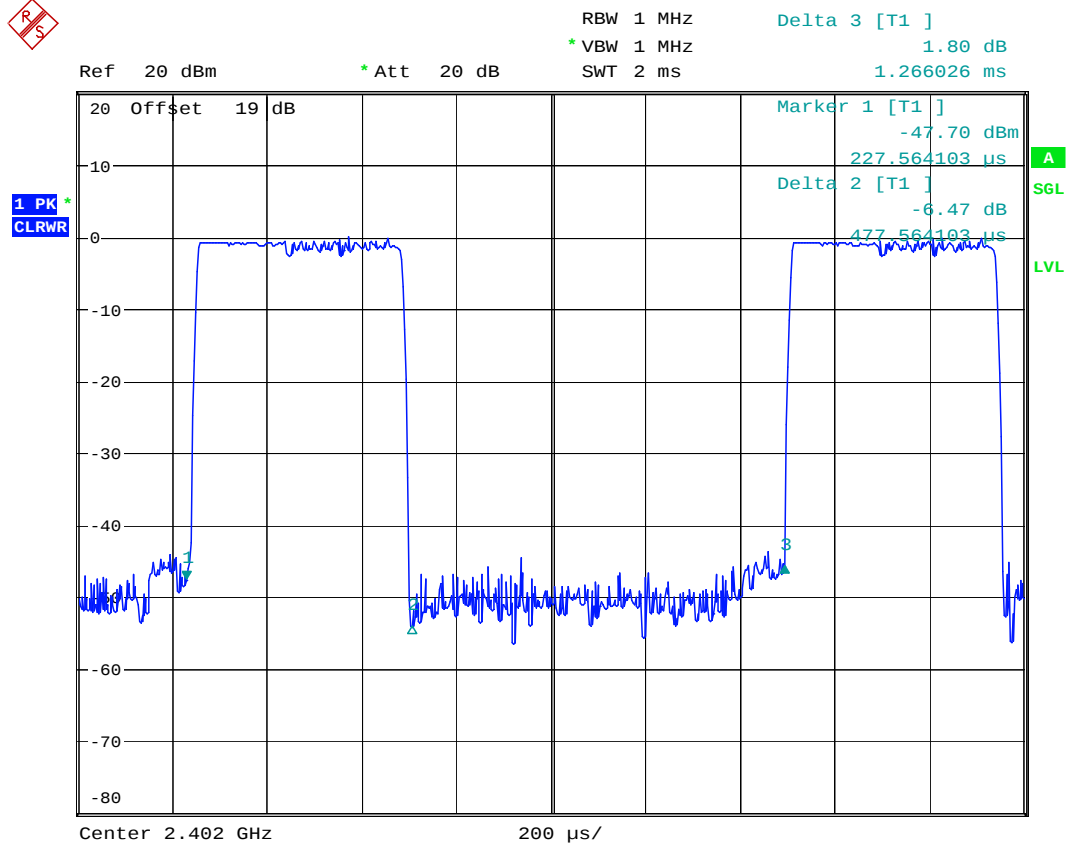
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)



5.8.5 Dwell Time

➤ BT_EDR

DH1 (CH00)

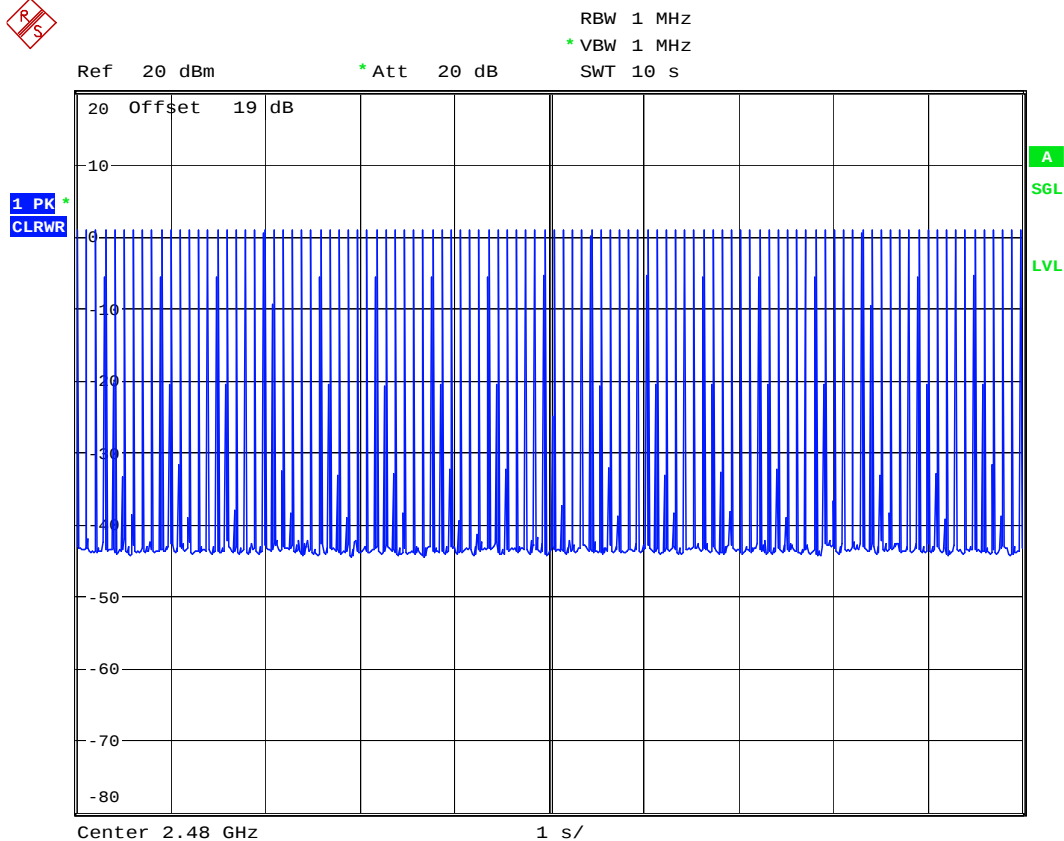


Date: 10.MAY.2007 14:51:06



FCC / IC TEST REPORT

Report No. : FR6D2906-C



Date: 10.MAY.2007 15:03:41

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

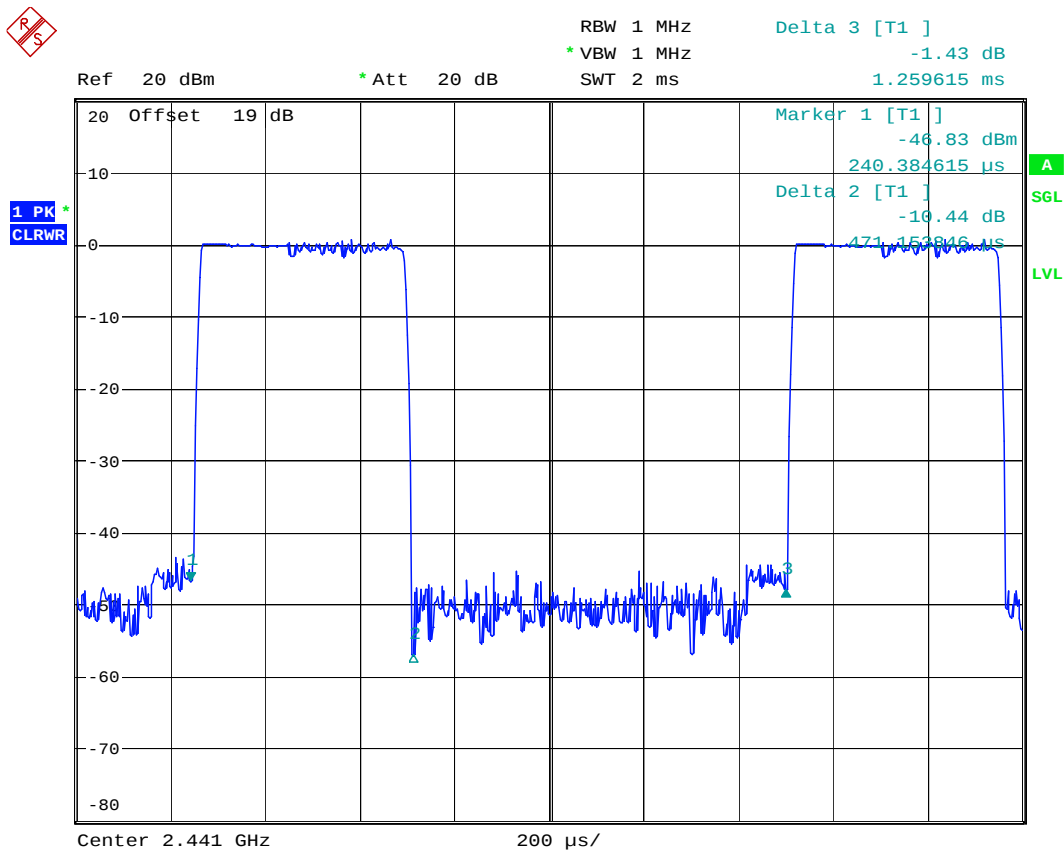
Page No. : 92 of 364

Report Issued Date : May 15, 2007

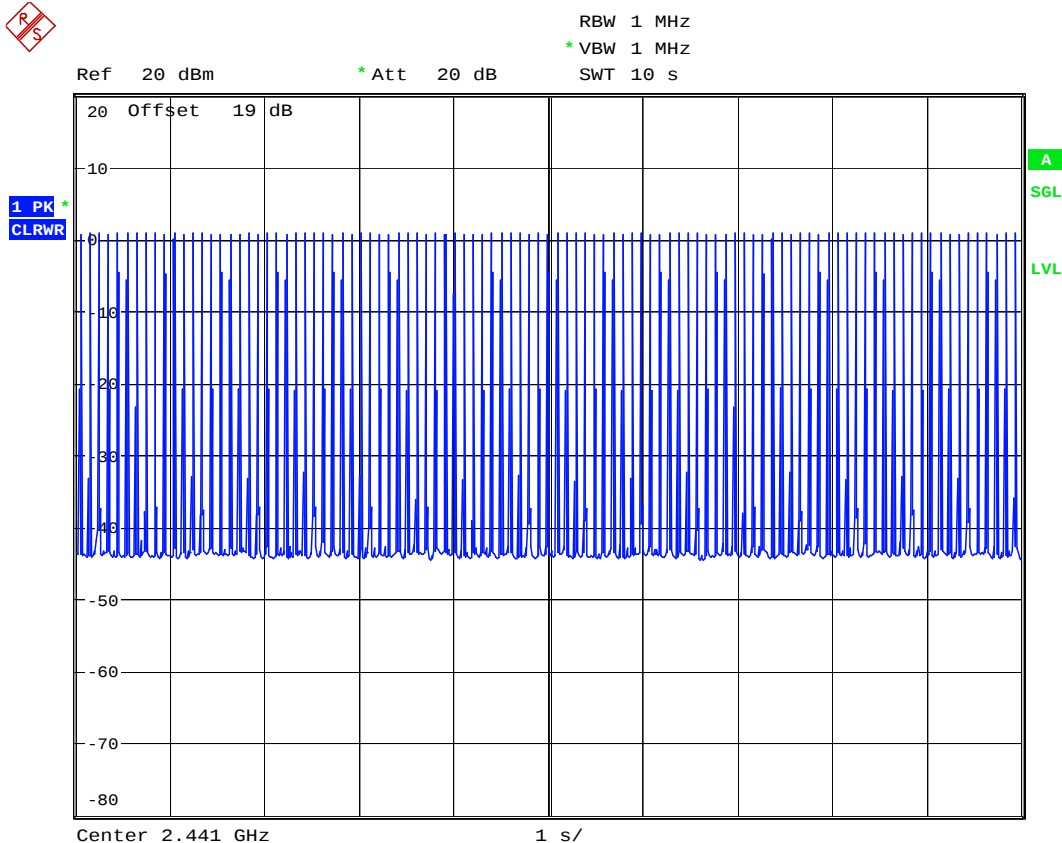
Report Version : Rev. 01



DH1 (CH39)



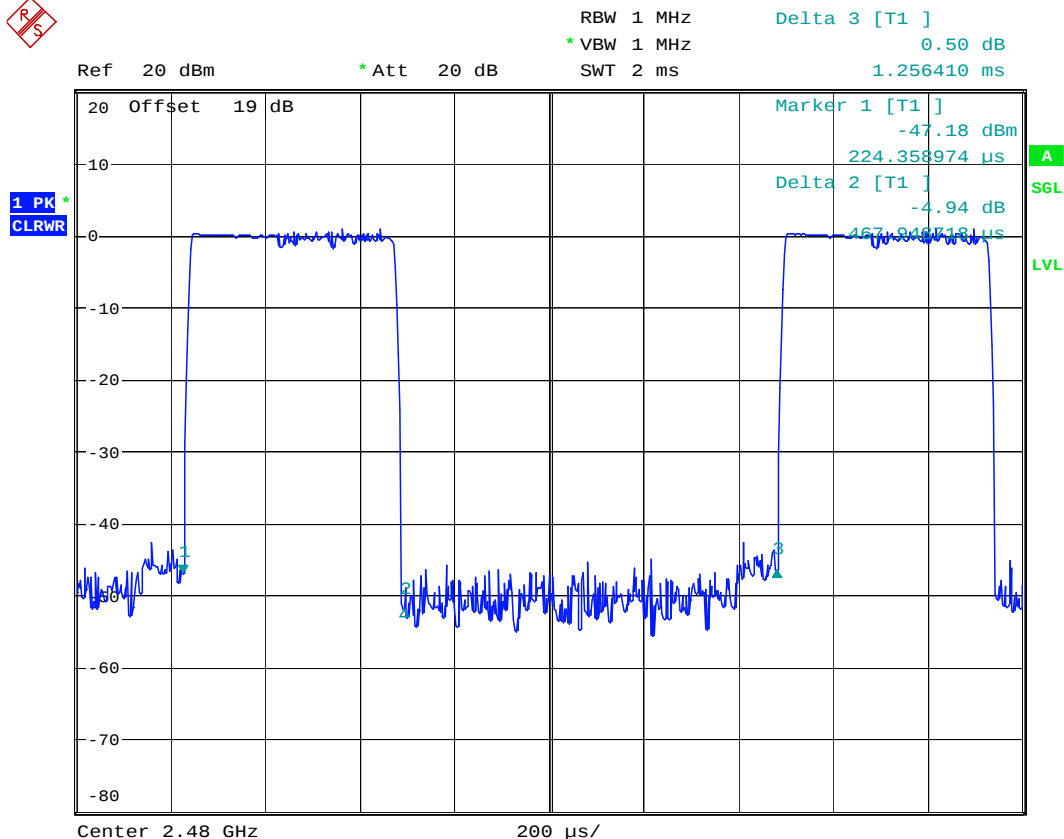
Date: 10.MAY.2007 14:51:52



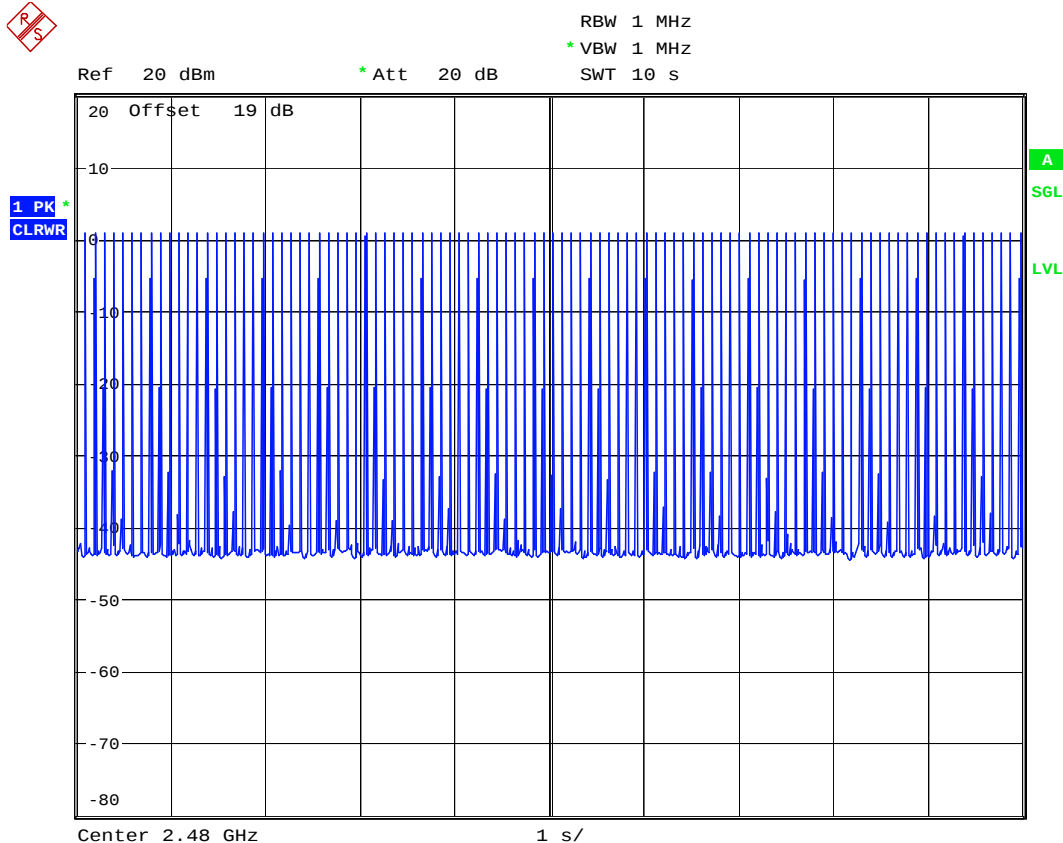
Date: 10.MAY.2007 15:04:41



DH1 (CH78)



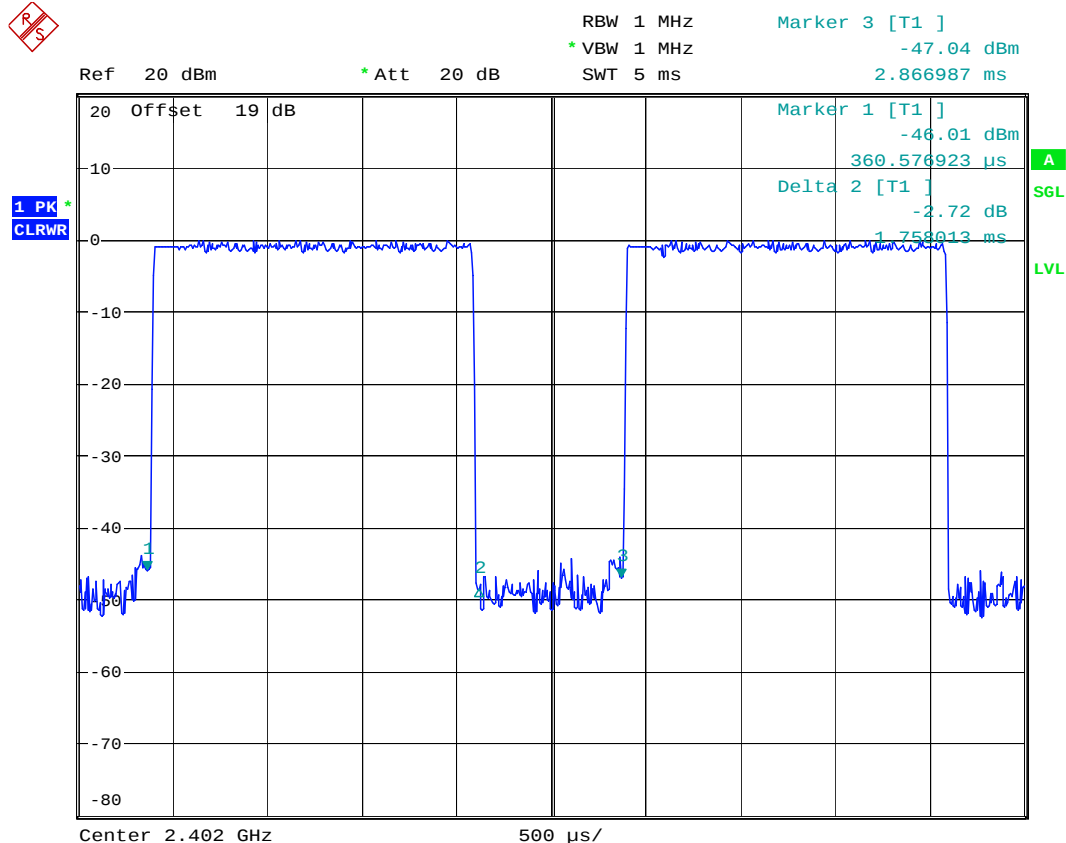
Date: 10.MAY.2007 14:52:50



Date: 10.MAY.2007 15:05:32



DH3 (CH00)

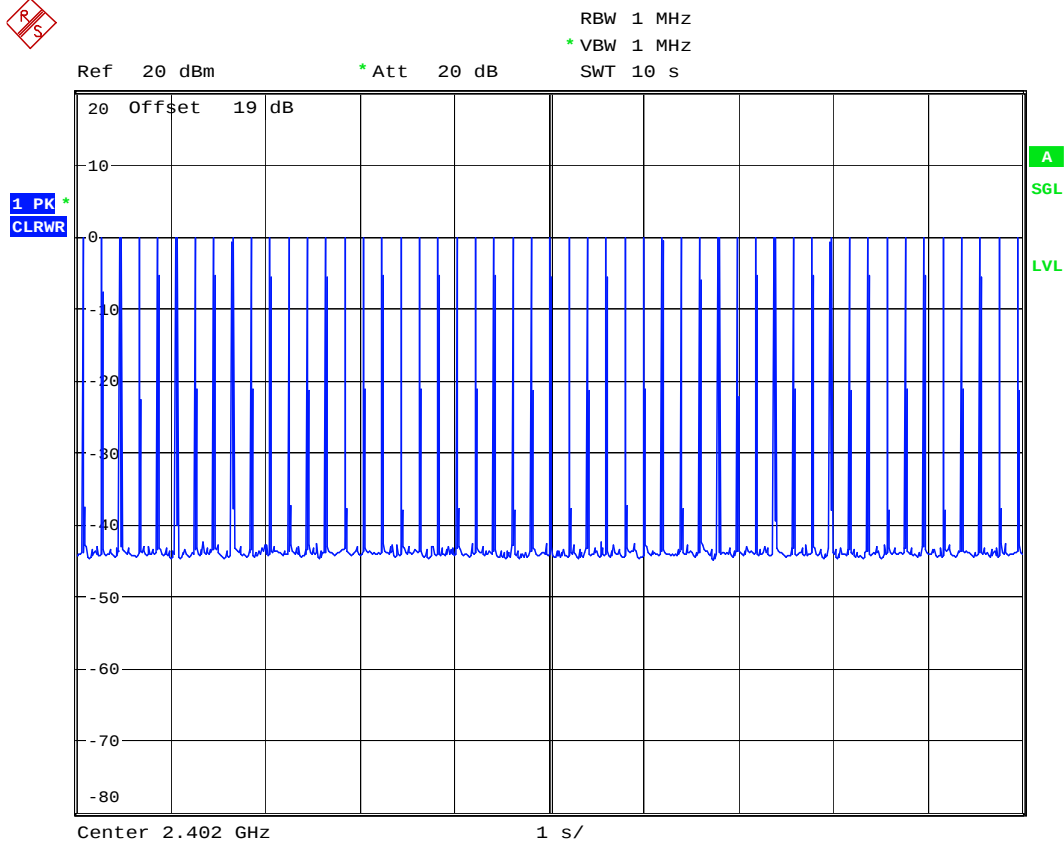


Date: 10.MAY.2007 14:54:35



FCC / IC TEST REPORT

Report No. : FR6D2906-C



Date: 10.MAY.2007 15:07:58

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

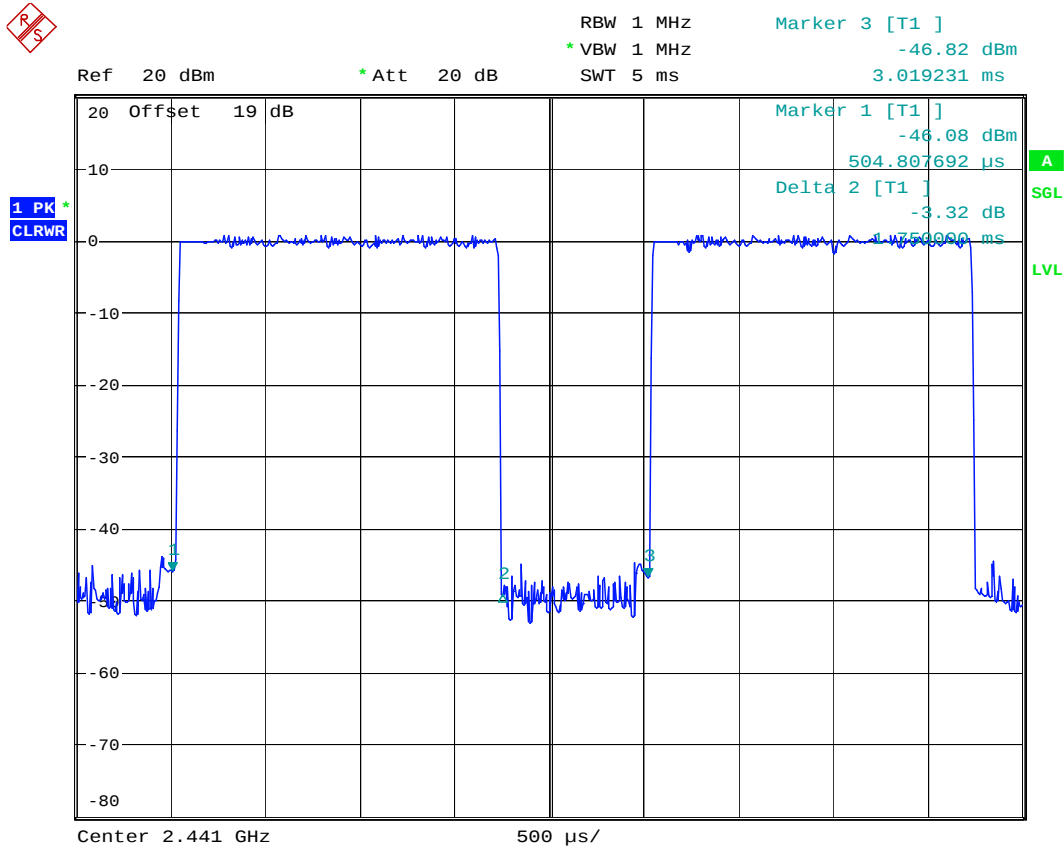
Page No. : 98 of 364

Report Issued Date : May 15, 2007

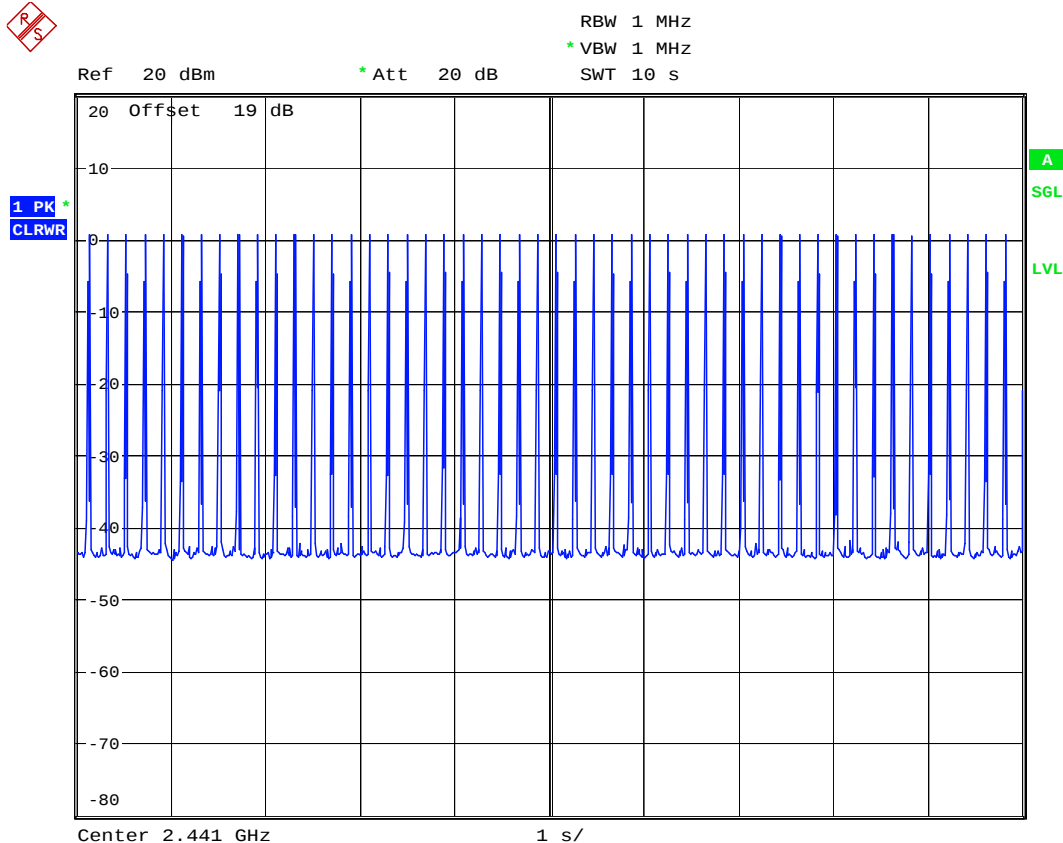
Report Version : Rev. 01



DH3 (CH39)



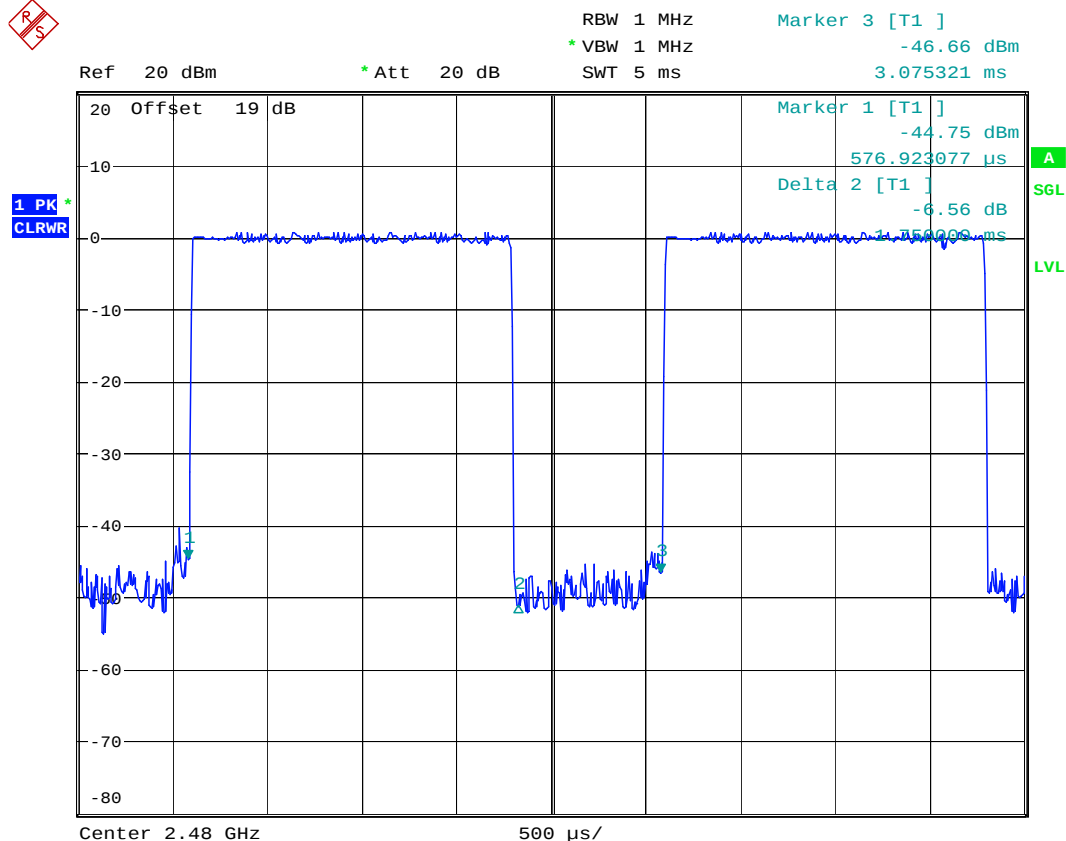
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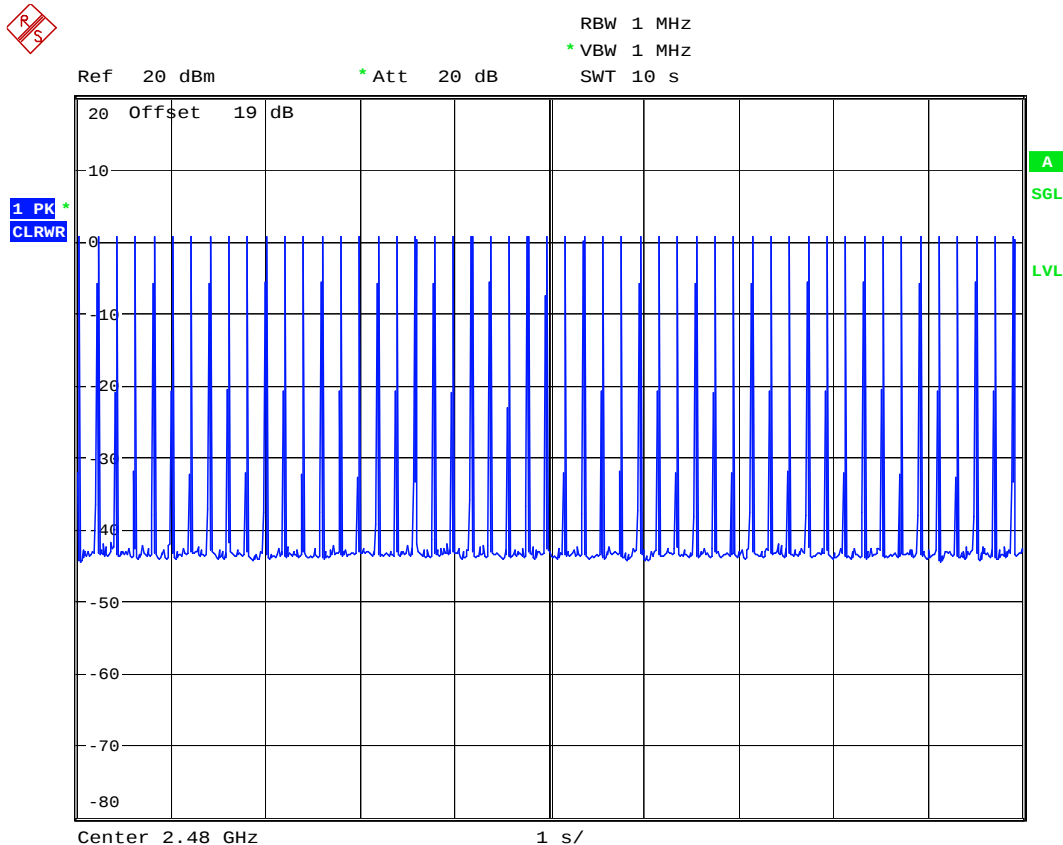
Date: 10.MAY.2007 15:08:38



DH3 (CH78)



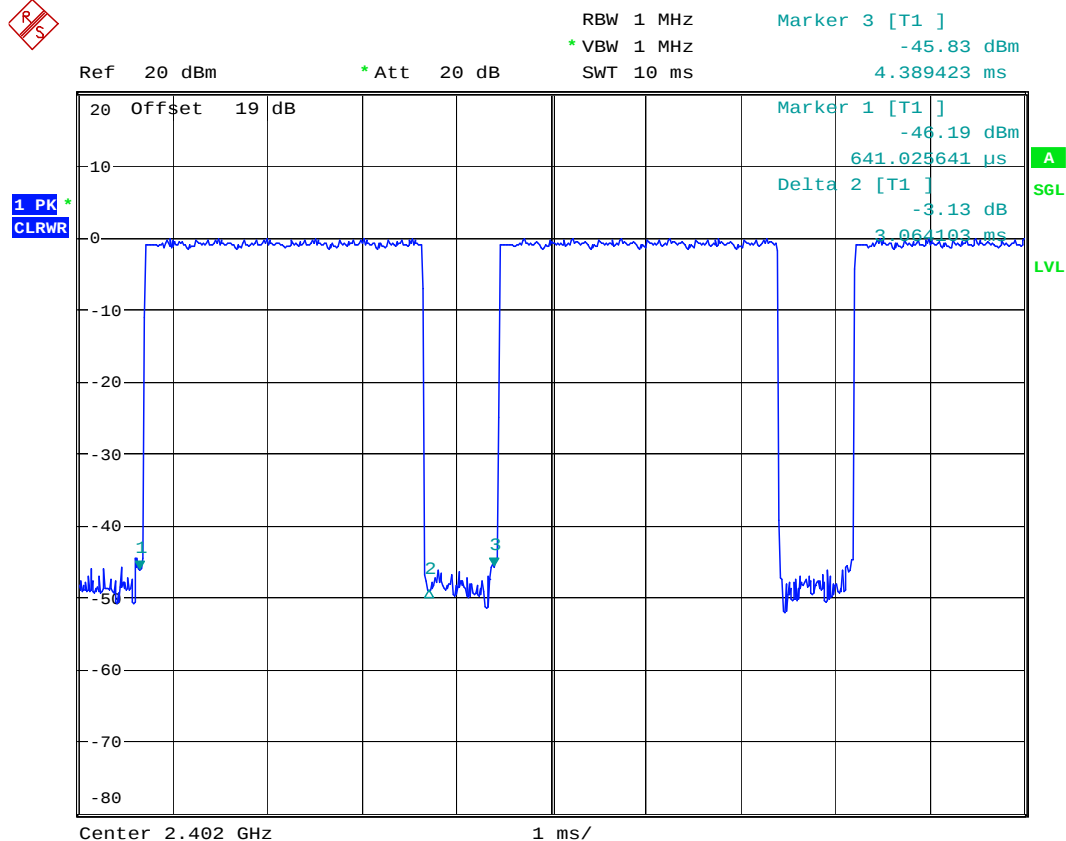
Date: 10.MAY.2007 14:56:50



Date: 10.MAY.2007 15:09:26



DH5 (CH00)

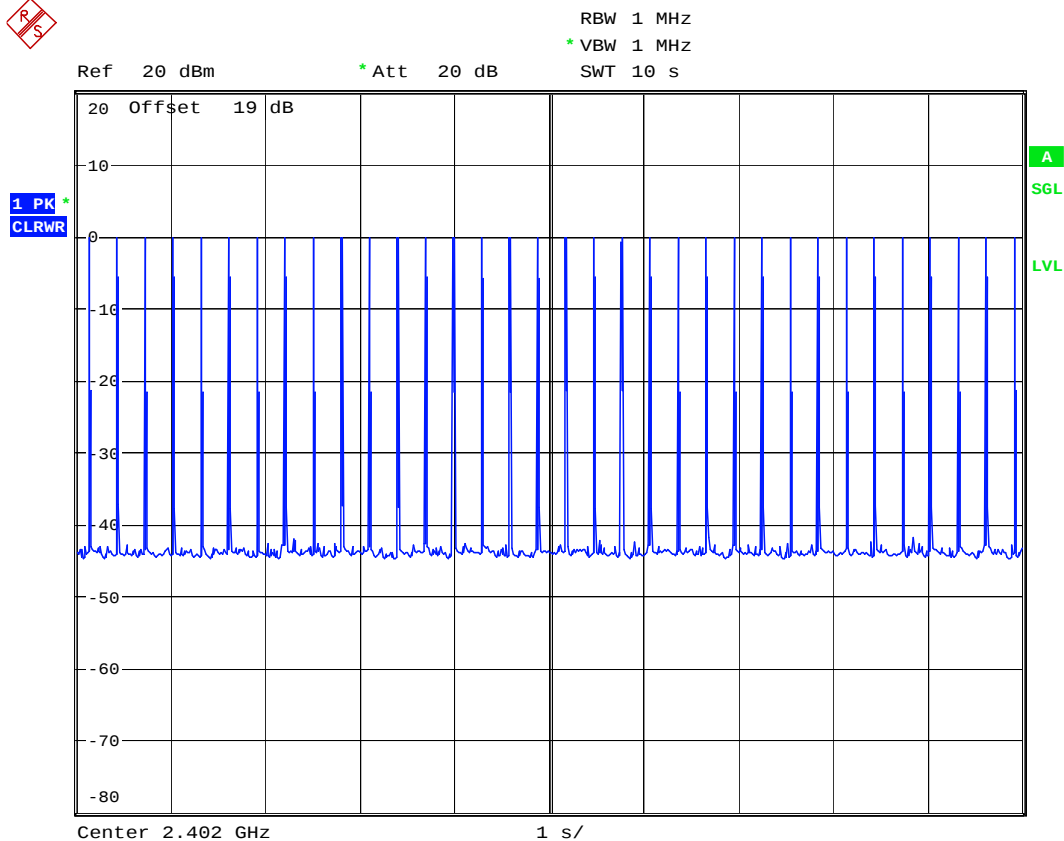


Date: 10.MAY.2007 14:58:27



FCC / IC TEST REPORT

Report No. : FR6D2906-C



Date: 10.MAY.2007 15:10:51

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

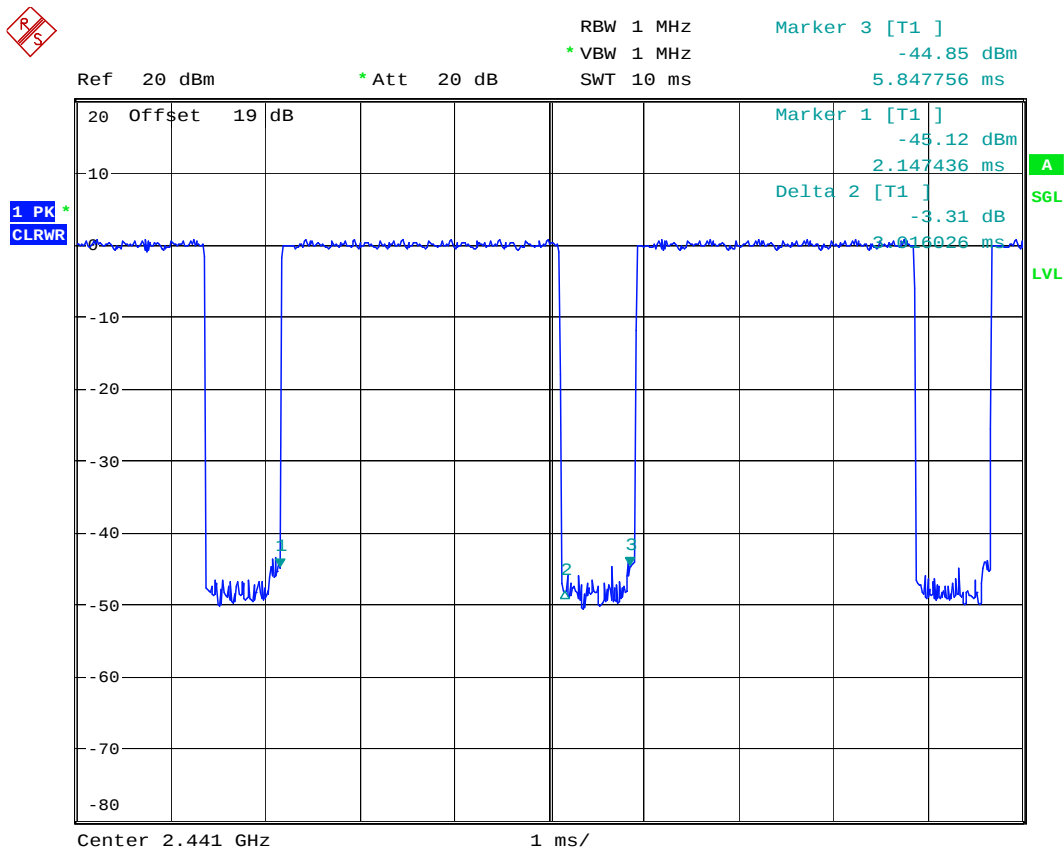
Page No. : 104 of 364

Report Issued Date : May 15, 2007

Report Version : Rev. 01



DH5 (CH39)

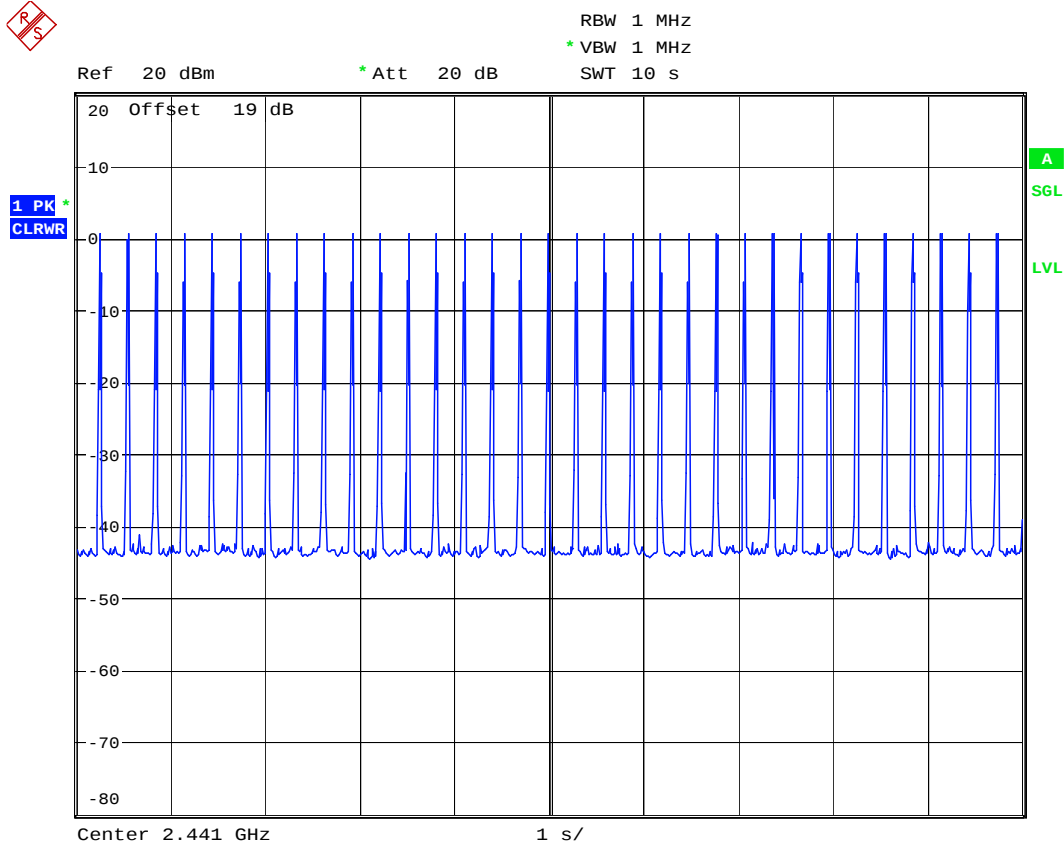


Date: 10.MAY.2007 14:59:46



FCC / IC TEST REPORT

Report No. : FR6D2906-C



Date: 10.MAY.2007 15:11:30

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

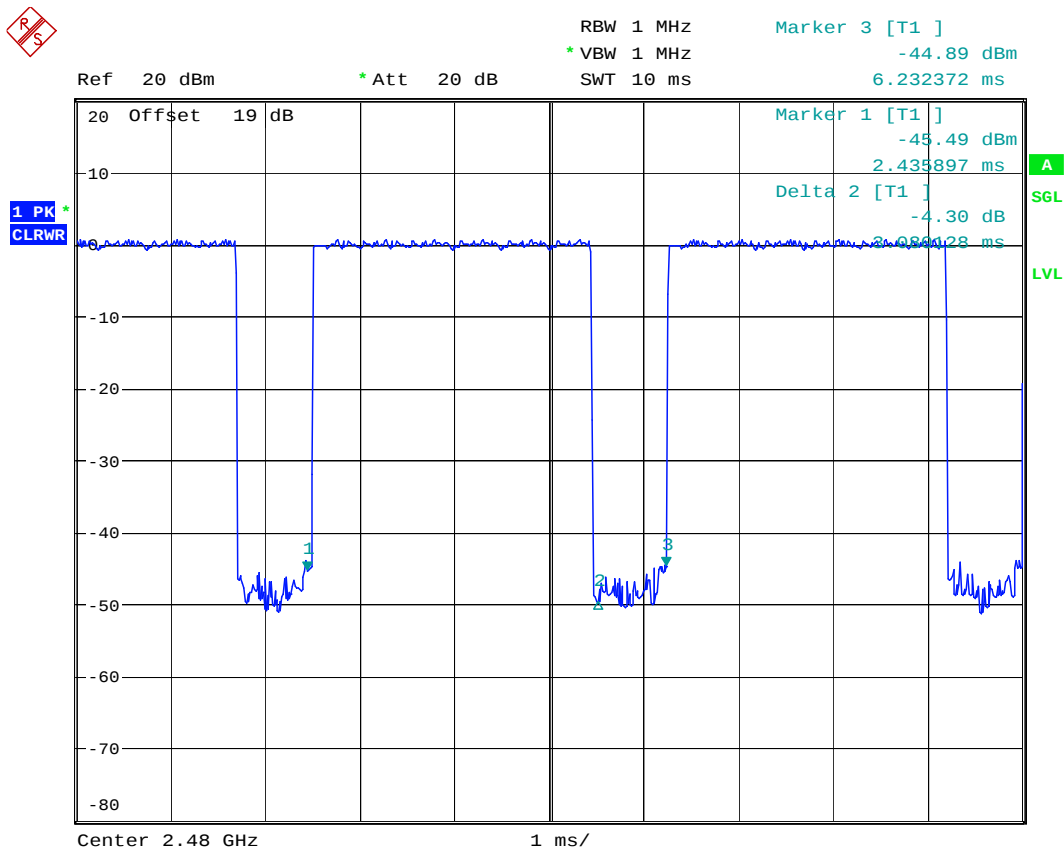
Page No. : 106 of 364

Report Issued Date : May 15, 2007

Report Version : Rev. 01



DH5 (CH78)

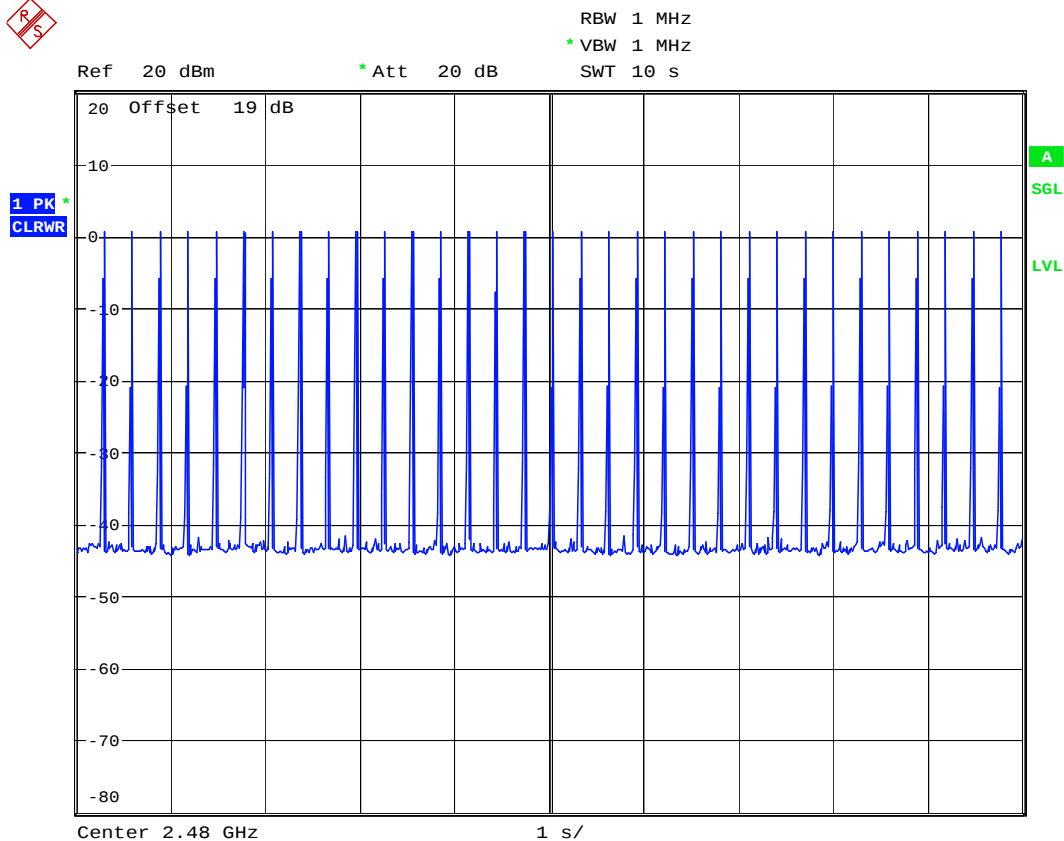


Date: 10.MAY.2007 15:00:30



FCC / IC TEST REPORT

Report No. : FR6D2906-C



Date: 10.MAY.2007 15:12:29

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

Page No. : 108 of 364

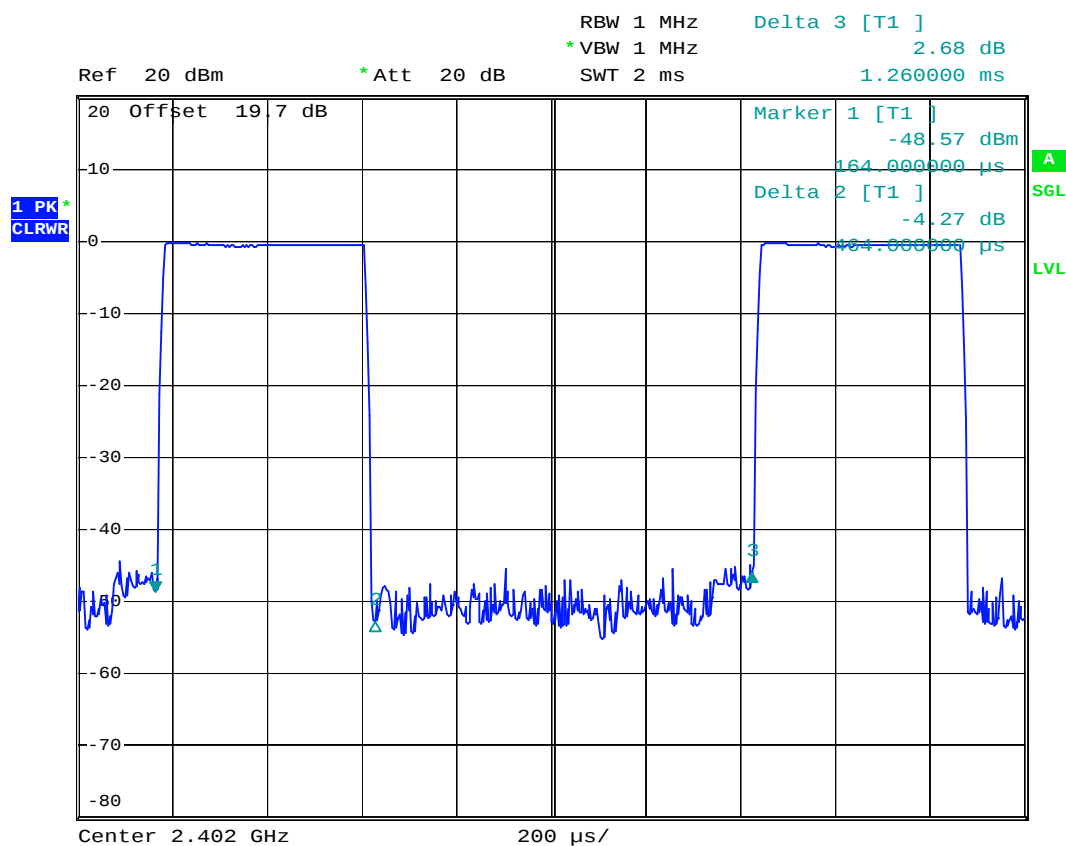
Report Issued Date : May 15, 2007

Report Version : Rev. 01

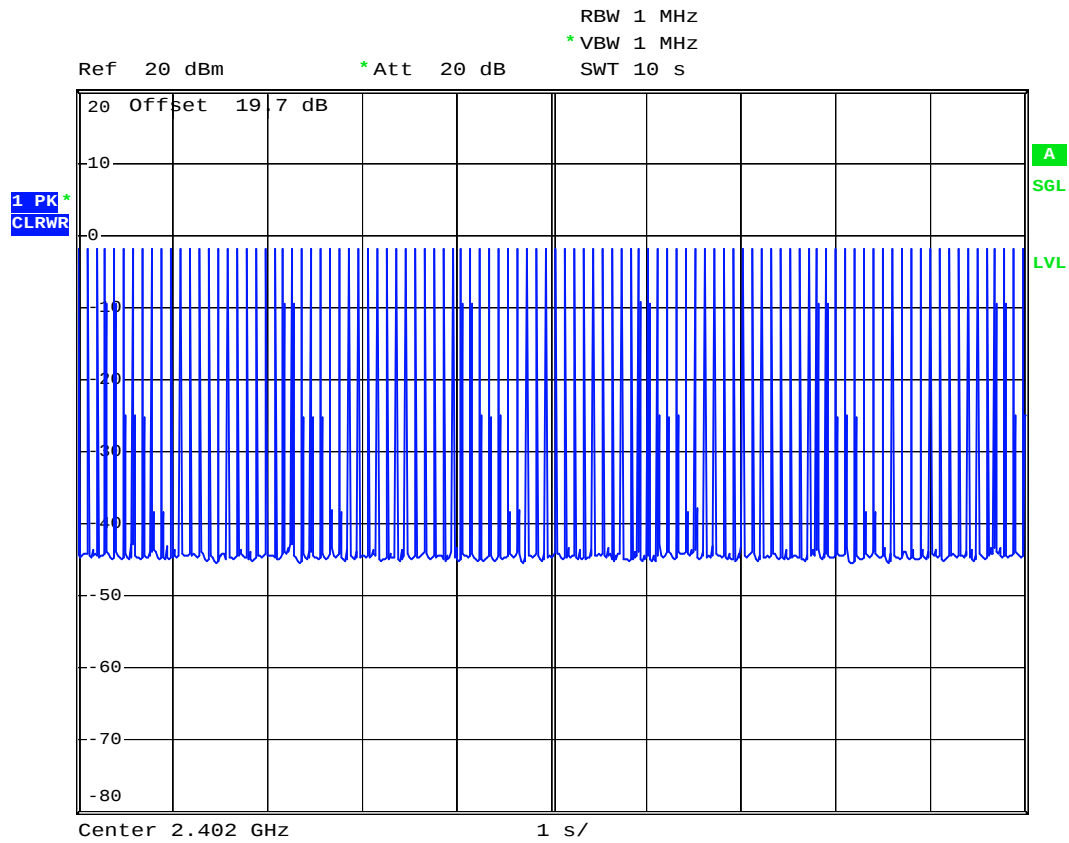


➤ BT

DH1 (CH00)



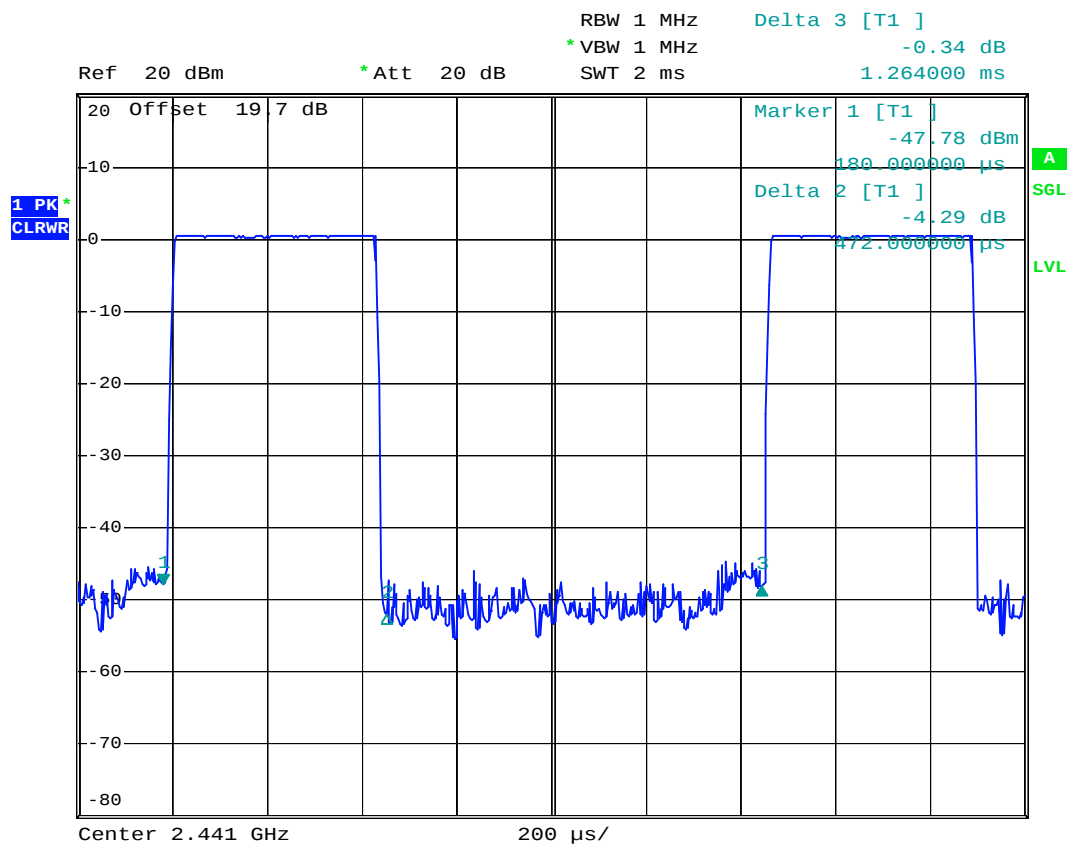
Date: 9.MAY.2007 22:51:07



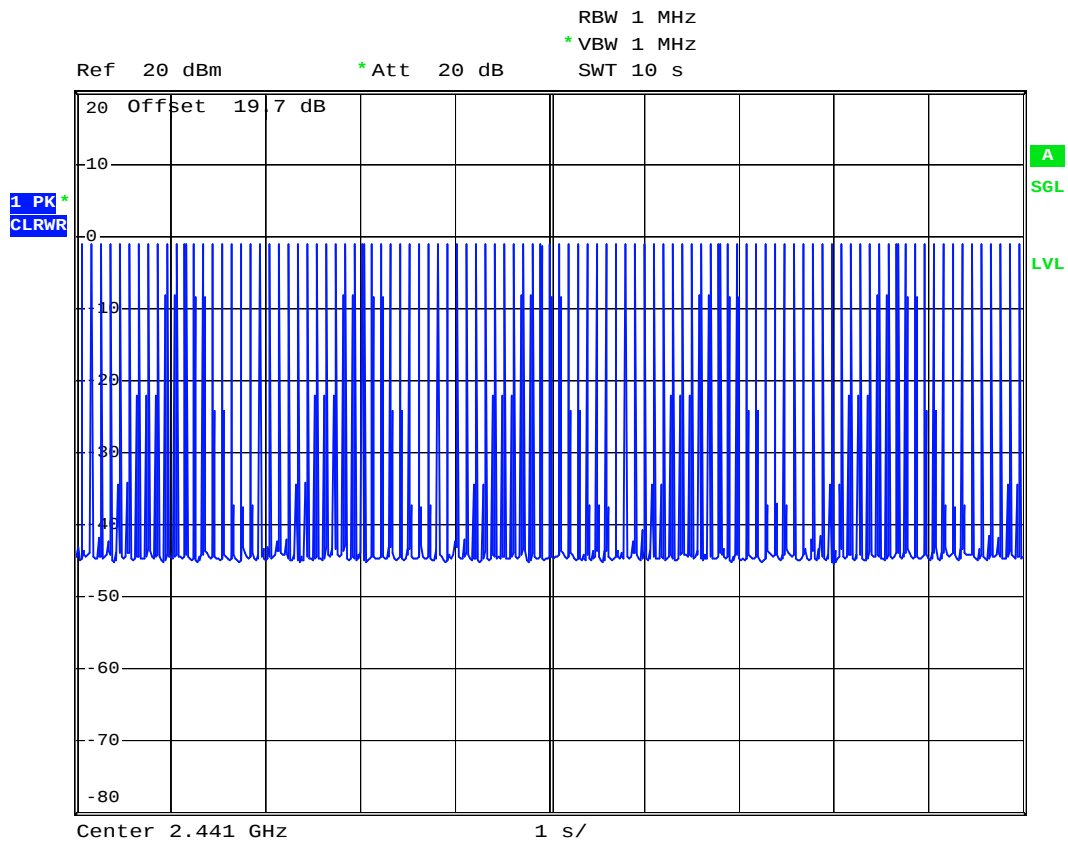
Date: 9.MAY.2007 23:09:59



DH1 (CH39)



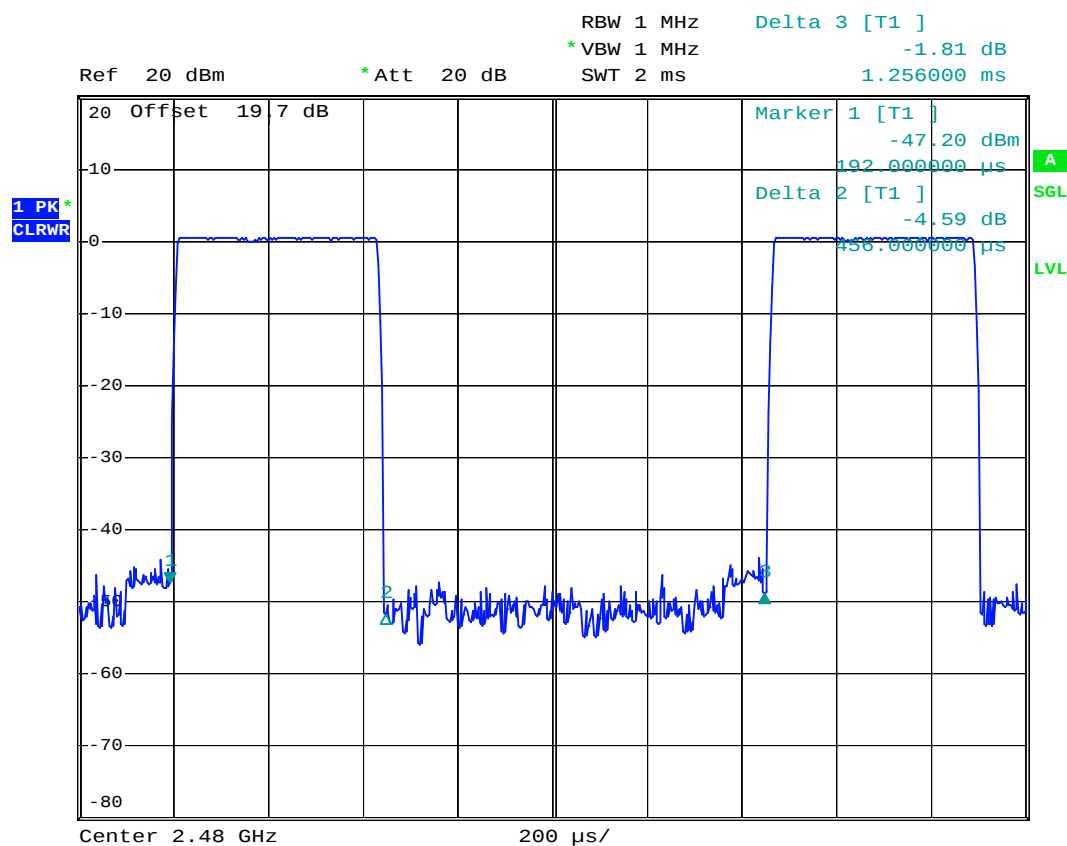
Date: 9.MAY.2007 22:52:08



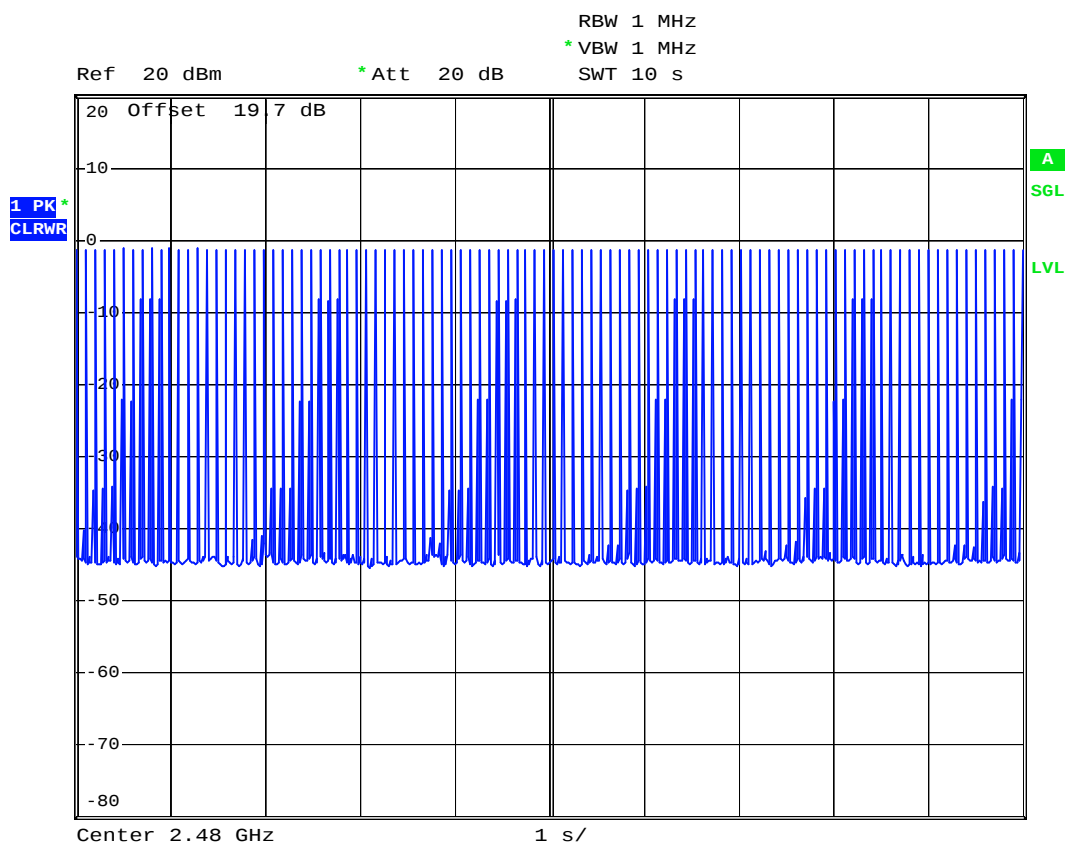
Date: 9.MAY.2007 23:10:28



DH1 (CH78)



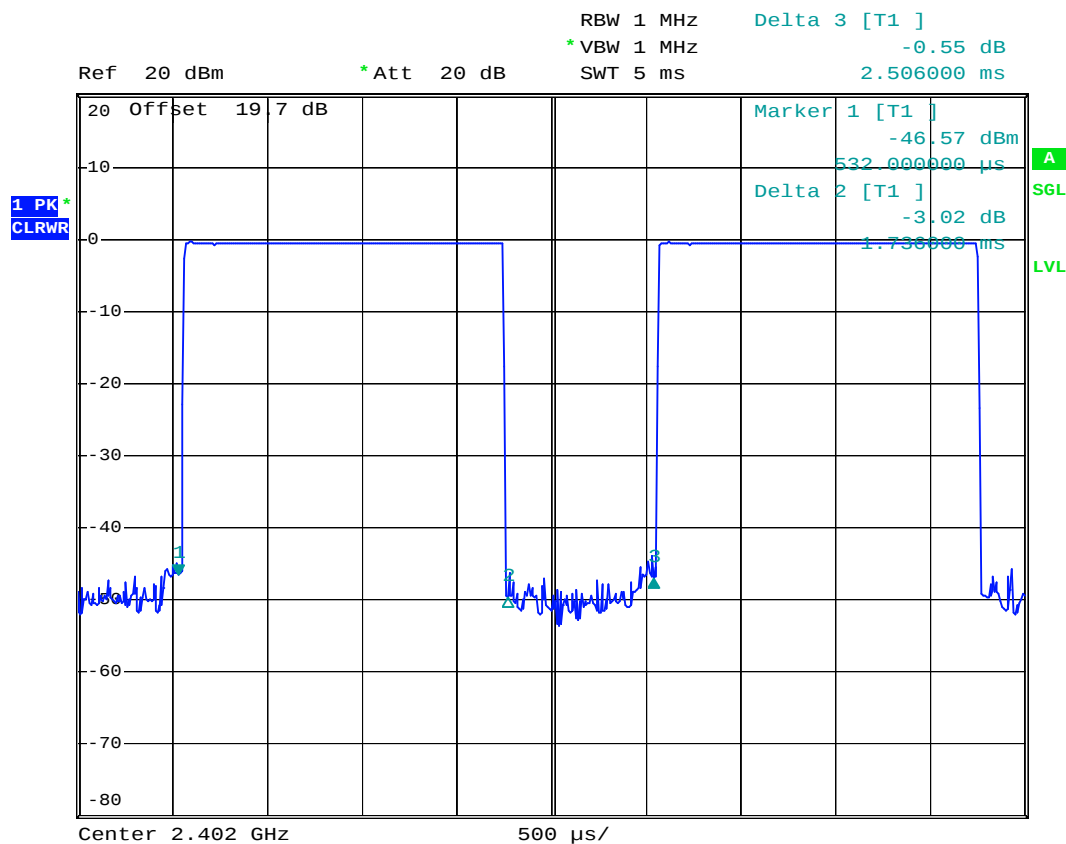
Date: 9.MAY.2007 22:52:49



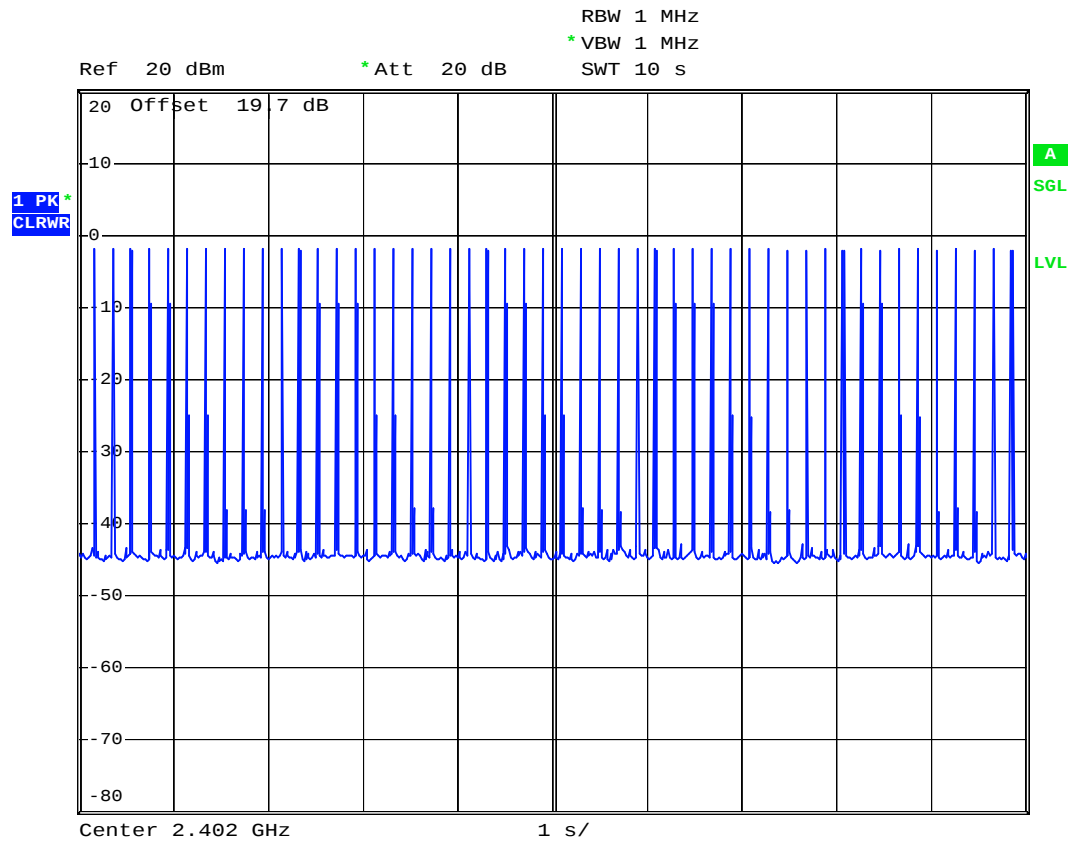
Date: 9.MAY.2007 23:10:52



DH3 (CH00)



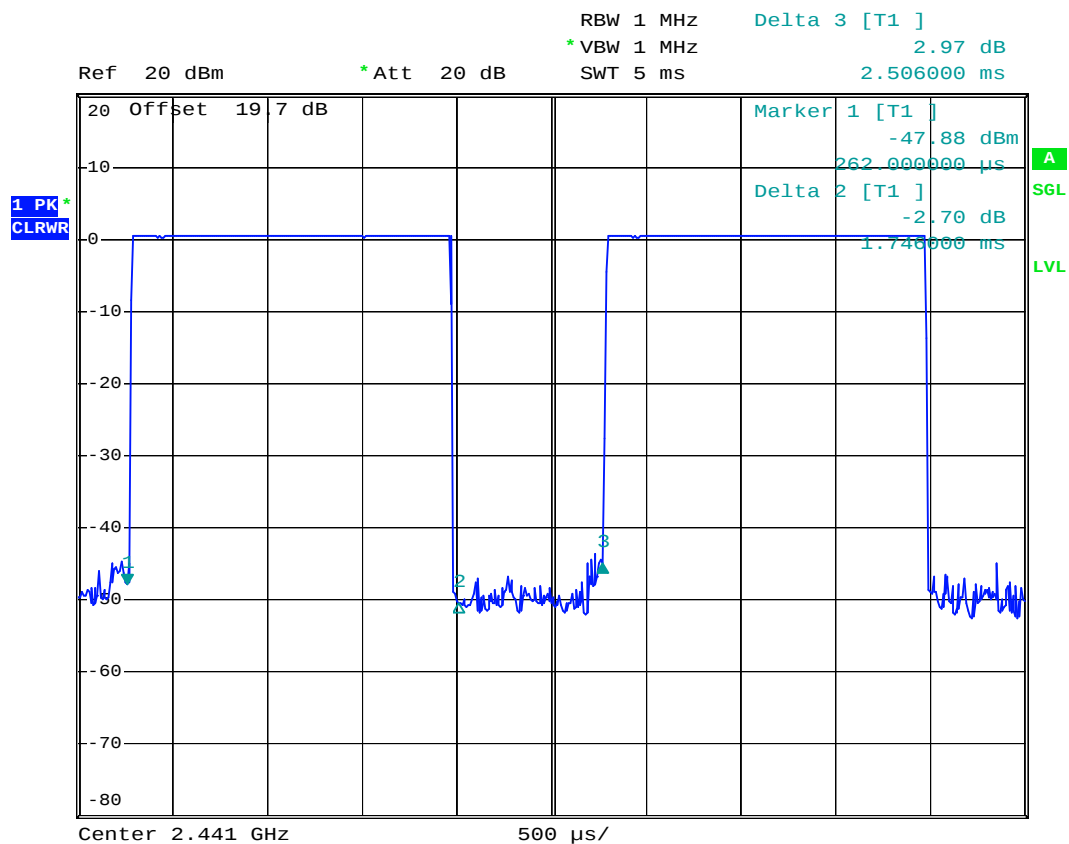
Date: 9.MAY.2007 22:54:06



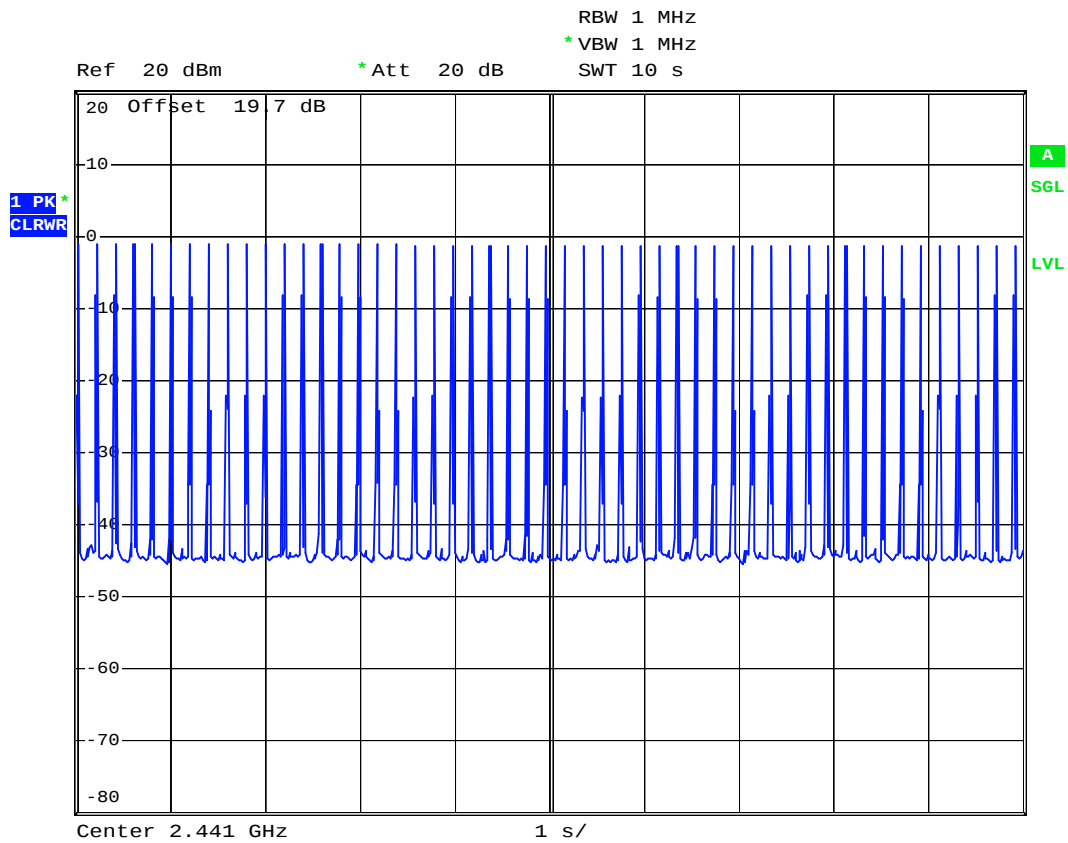
Date: 9.MAY.2007 23:11:43



DH3 (CH39)



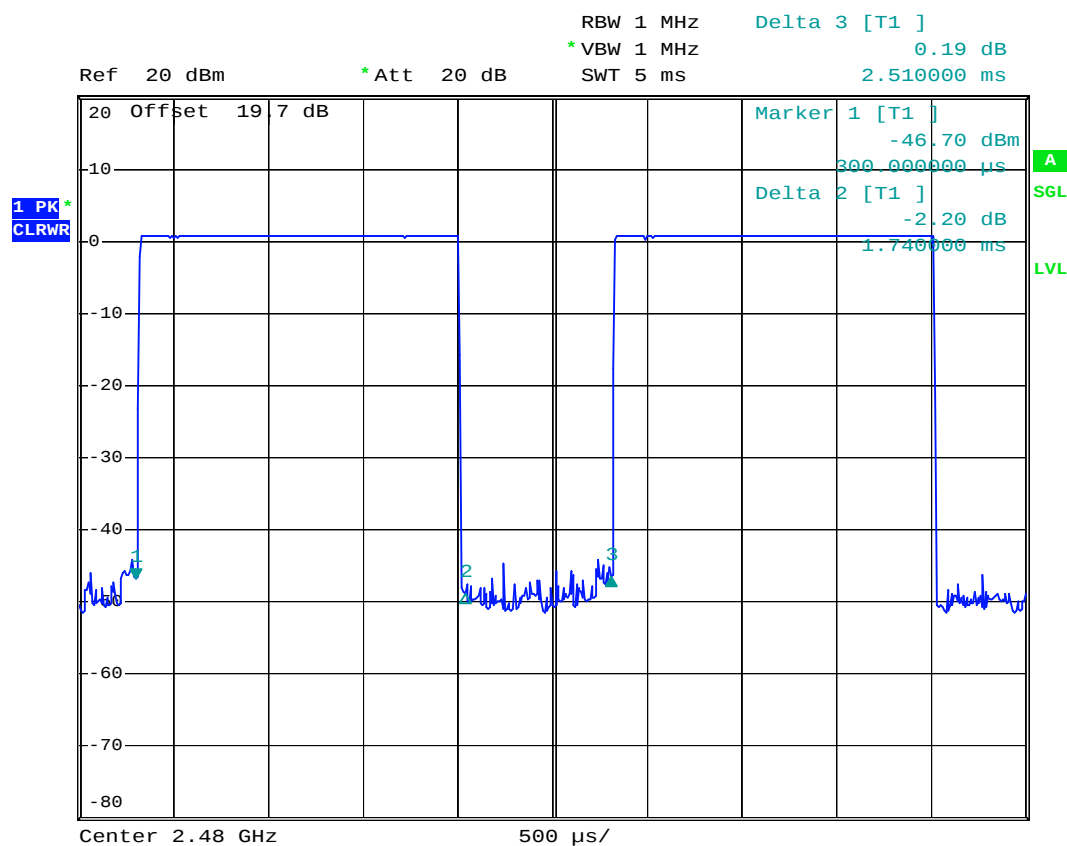
Date: 9.MAY.2007 22:54:57



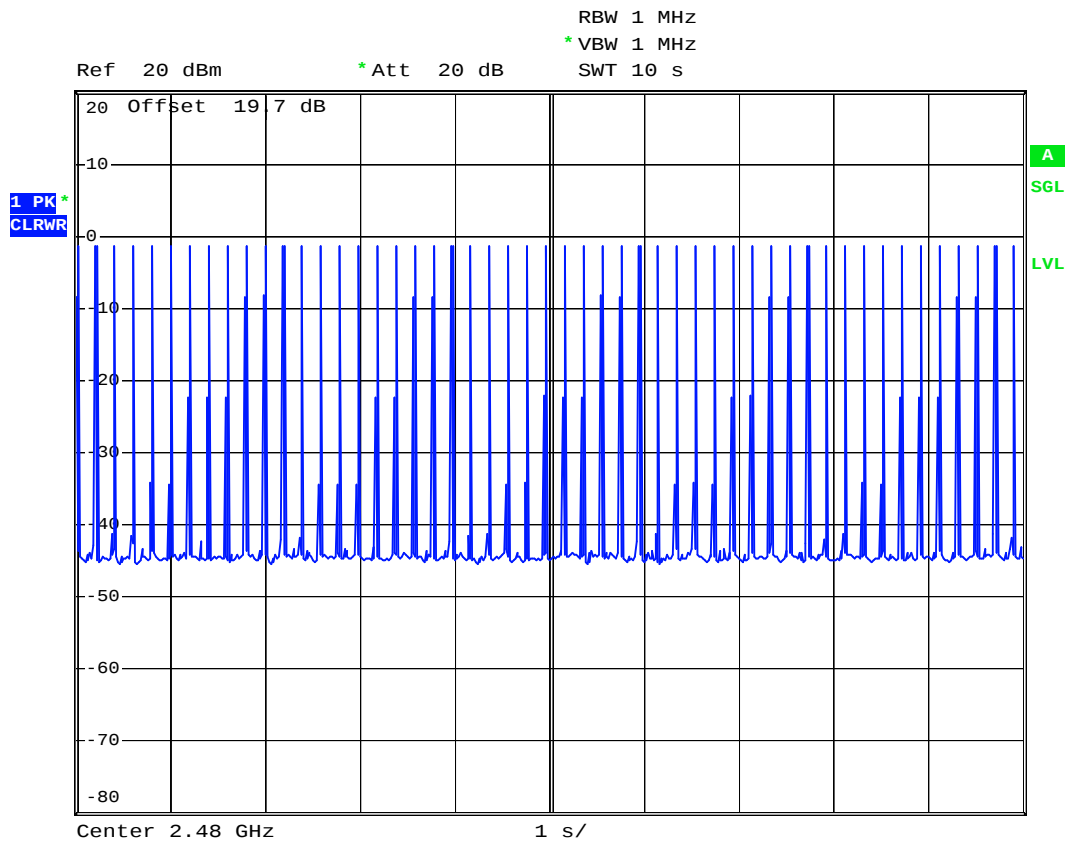
Date: 9.MAY.2007 23:12:08



DH3 (CH78)



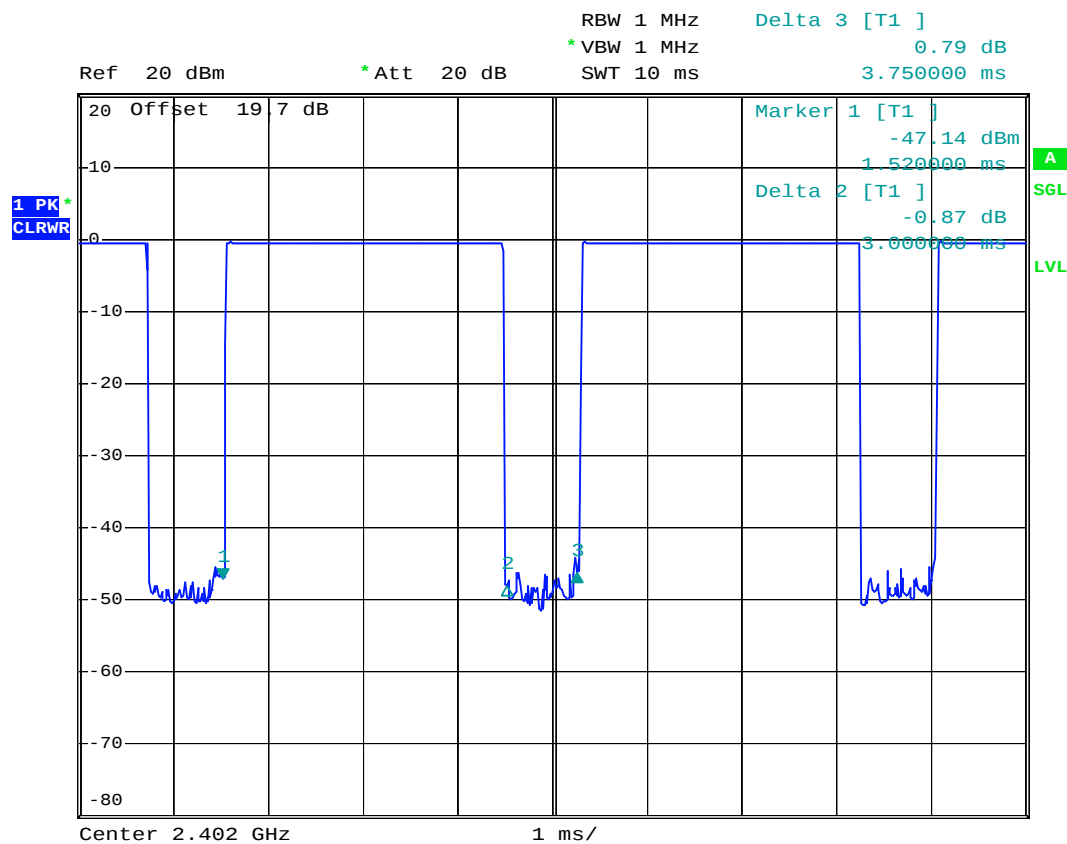
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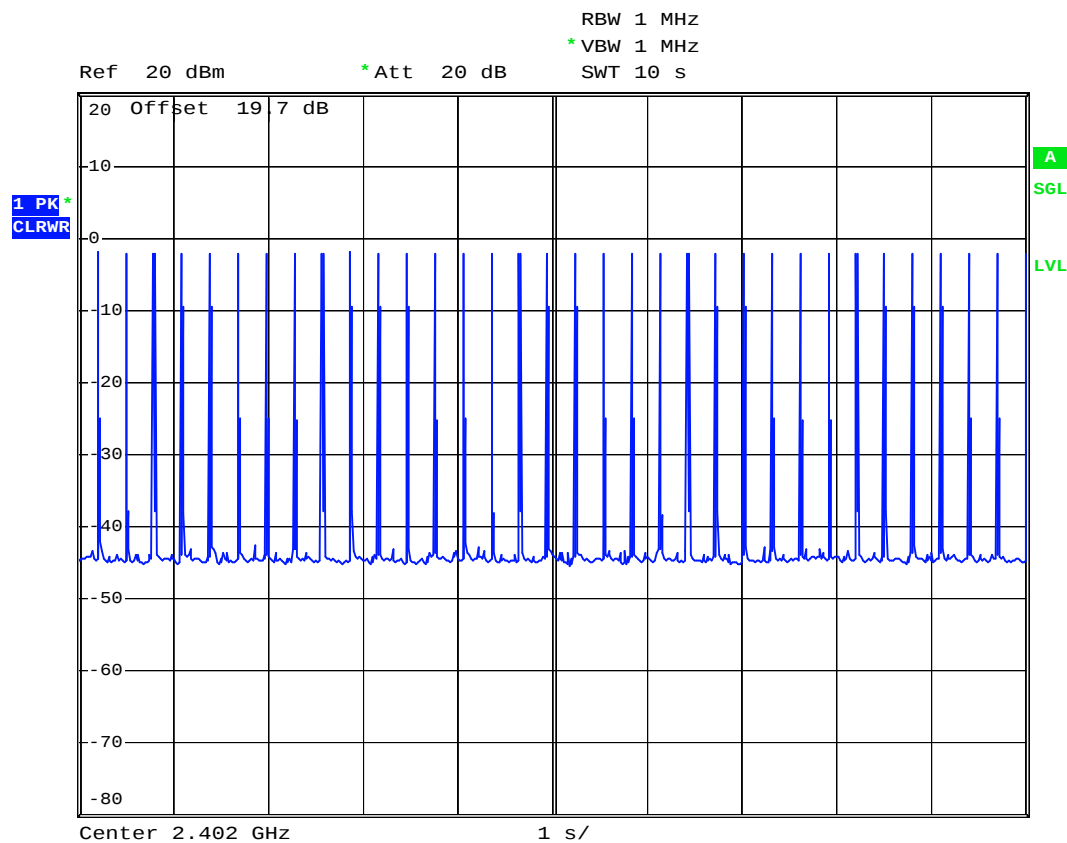
Date: 9.MAY.2007 23:12:30



DH5 (CH00)



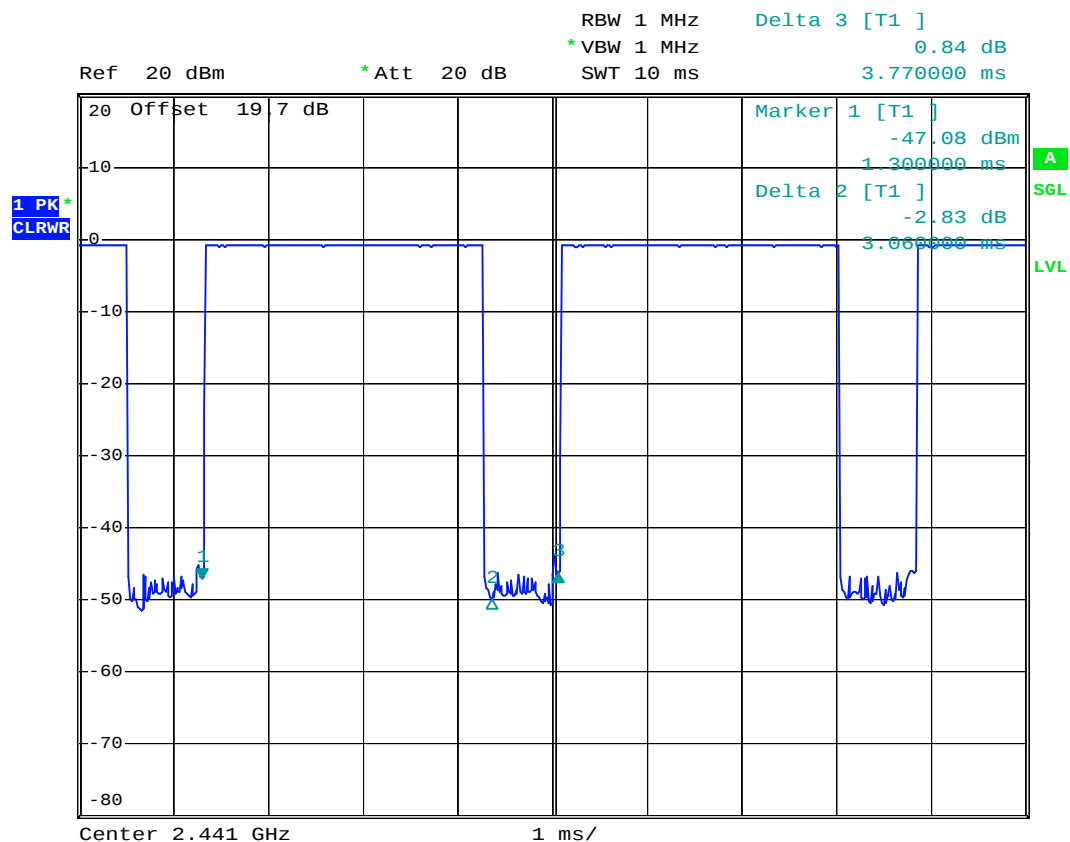
Date: 9.MAY.2007 22:56:36



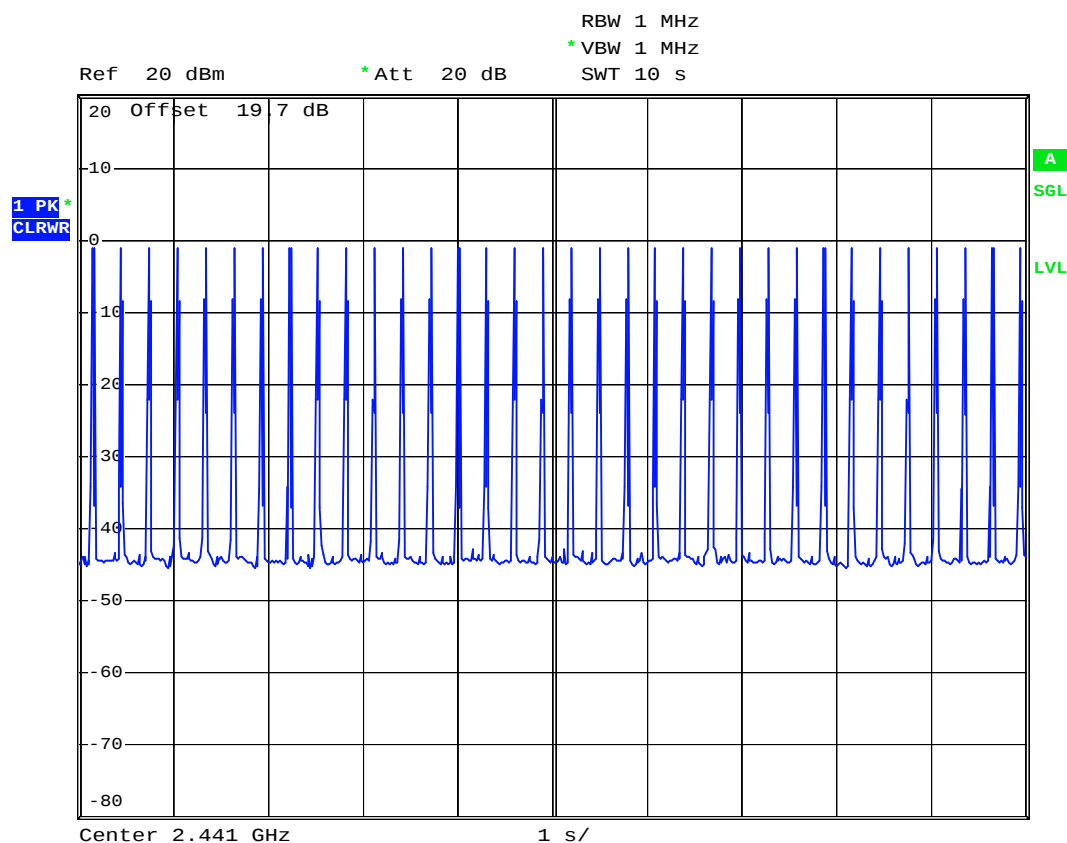
Date: 9.MAY.2007 23:13:44



DH5 (CH39)



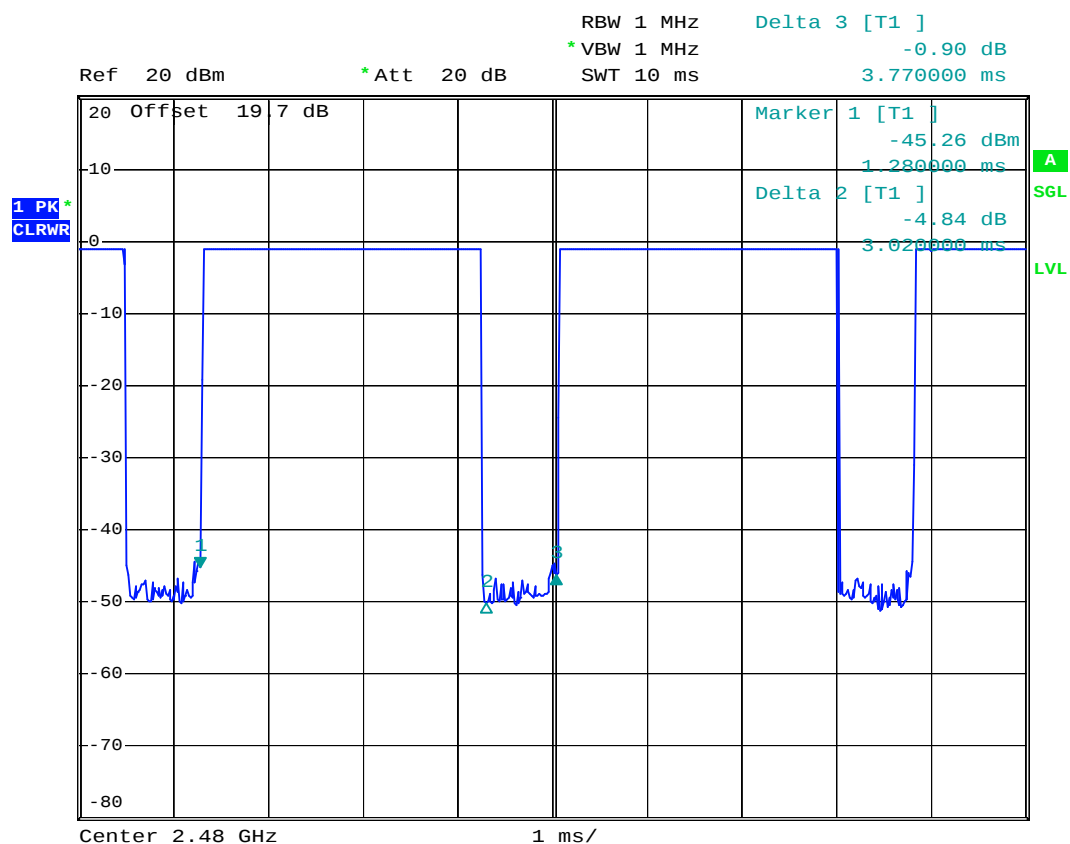
Date: 9.MAY.2007 22:57:35



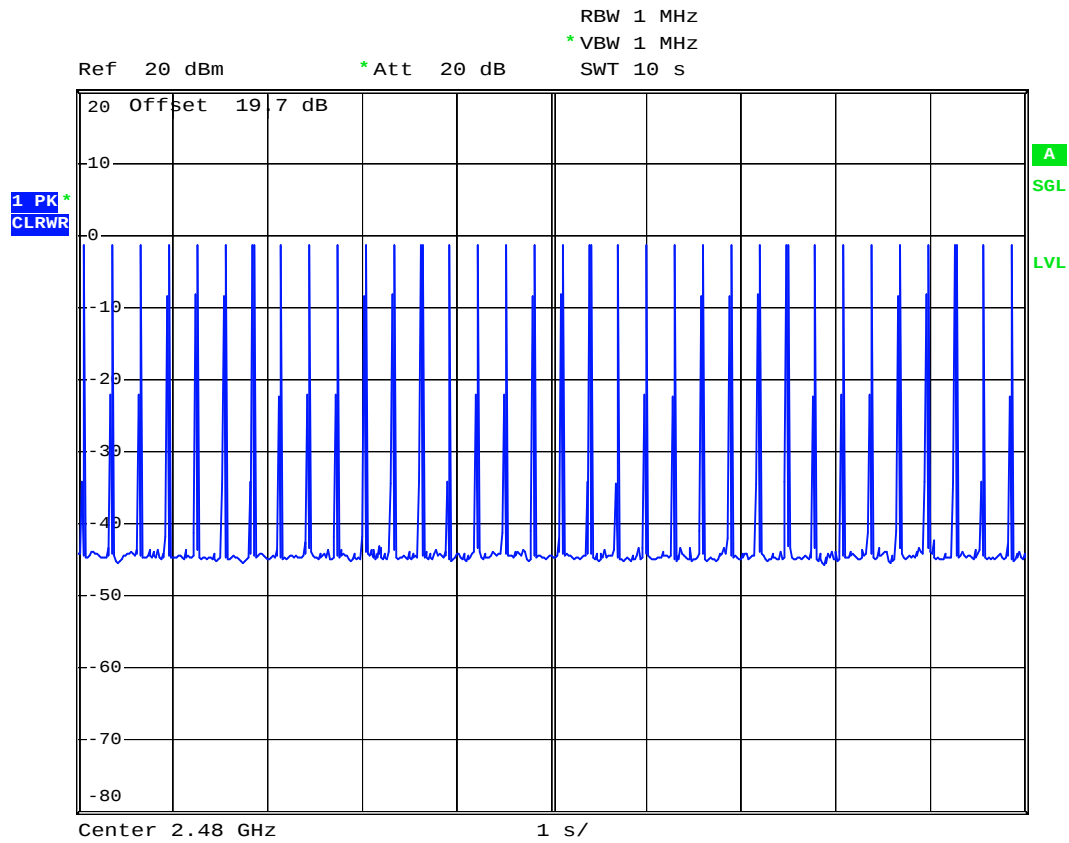
Date: 9.MAY.2007 23:15:56



DH5 (CH78)



Date: 9.MAY.2007 22:58:33



Date: 9.MAY.2007 23:16:30

5.9 Peak Output Power Measurement

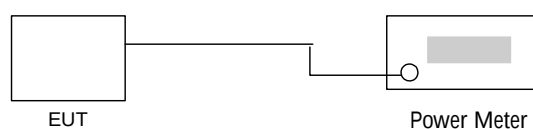
5.9.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.9.2 Test Procedure :

1. The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter for WLAN measurement. The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.
2. The antenna port(RF output) of the EUT was connected to the input (RF input) of a spectrum analyzer for BT measurement. The cable loss has been offset before testing.

5.9.3 Test Setup Layout :



5.9.4 Test Result :

- Application Type : WLAN 802.11b/g and BT
- Temperature : 23°C
- Relative Humidity : 47 %
- Test Enginner : James

WLAN 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	19.76	1W/30 dBm
06	2437	19.59	1W/30 dBm
11	2462	19.27	1W/30 dBm

**WLAN 802.11g**

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	22.91	1W/30 dBm
06	2437	22.42	1W/30 dBm
11	2462	22.83	1W/30 dBm

WLAN 802.11a

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
149	5745	19.08	1W/30 dBm
157	5785	19.29	1W/30 dBm
165	5825	18.79	1W/30 dBm

Bluetooth_EDR

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	0.29	1W/30 dBm
39	2441	1.15	1W/30 dBm
78	2480	1.27	1W/30 dBm

Bluetooth

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	0.49	1W/30 dBm
39	2441	-0.55	1W/30 dBm
78	2480	0.13	1W/30 dBm

WLAN 802.11n(g)_ BW 20M

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	22.45	1W/30 dBm
06	2437	21.84	1W/30 dBm
11	2462	22.81	1W/30 dBm

WLAN 802.11n(a)_ BW 20M

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
149	5745	21.14	1W/30 dBm
157	5785	21.74	1W/30 dBm
165	5825	21.47	1W/30 dBm

WLAN 802.11n(a)_ BW 40M

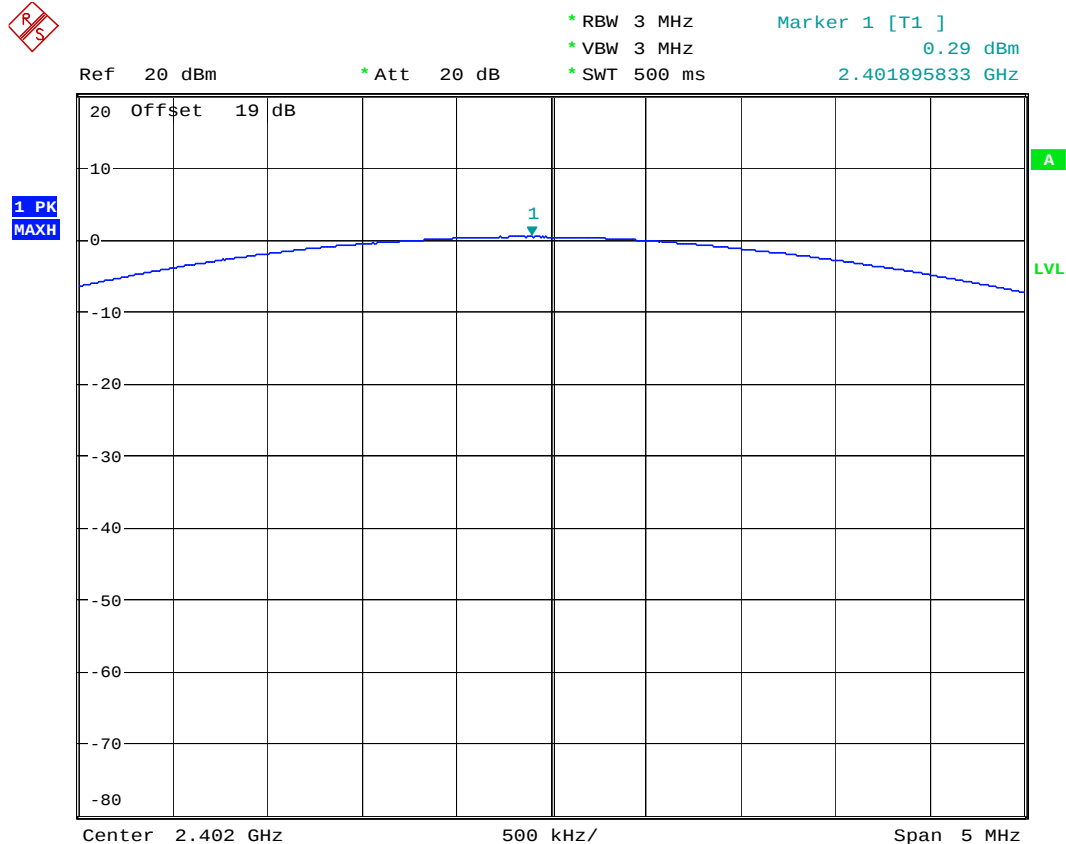
Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
151	5755	21.02	1W/30 dBm
159	5795	21.16	1W/30 dBm



5.9.5 Output Power

➤ BT_EDR

BT Mode : CH00 (2402MHz)



Date: 10.MAY.2007 16:47:47



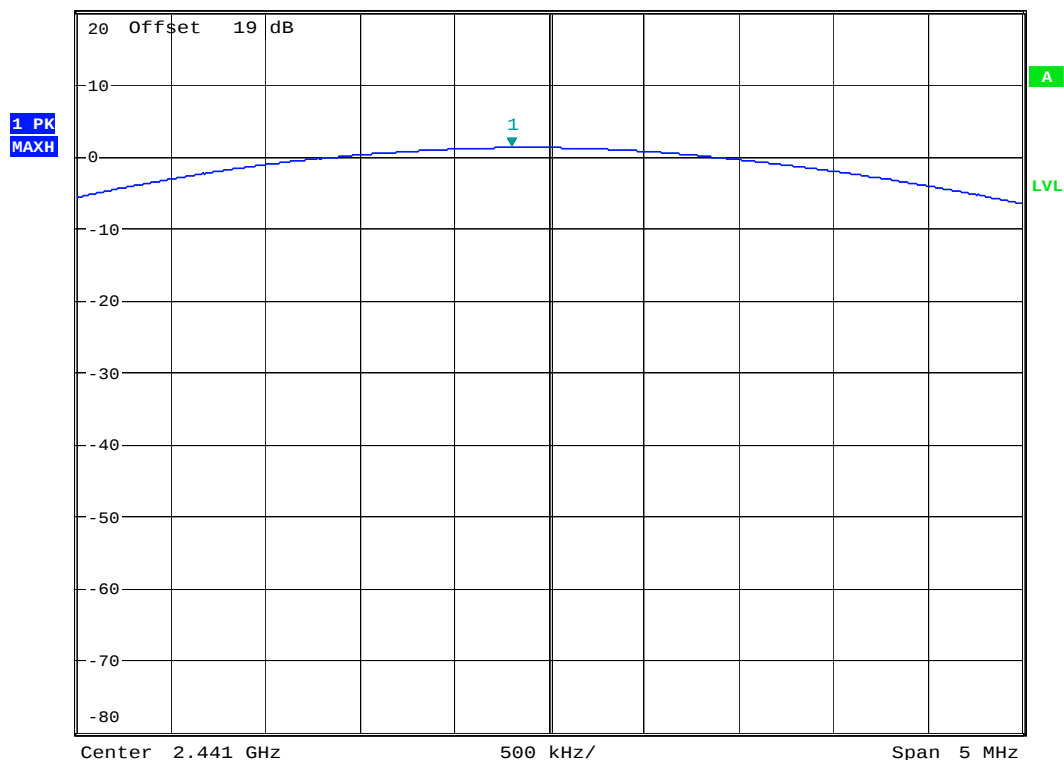
FCC / IC TEST REPORT

Report No. : FR6D2906-C

BT Mode : CH39 (2441MHz)



Ref 20 dBm * Att 20 dB * RBW 3 MHz * VBW 3 MHz * SWT 500 ms Marker 1 [T1] 1.15 dBm 2.440799679 GHz



Date: 10.MAY.2007 16:48:09

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : EJE-WB0050

IC ID : 337J-WB0050

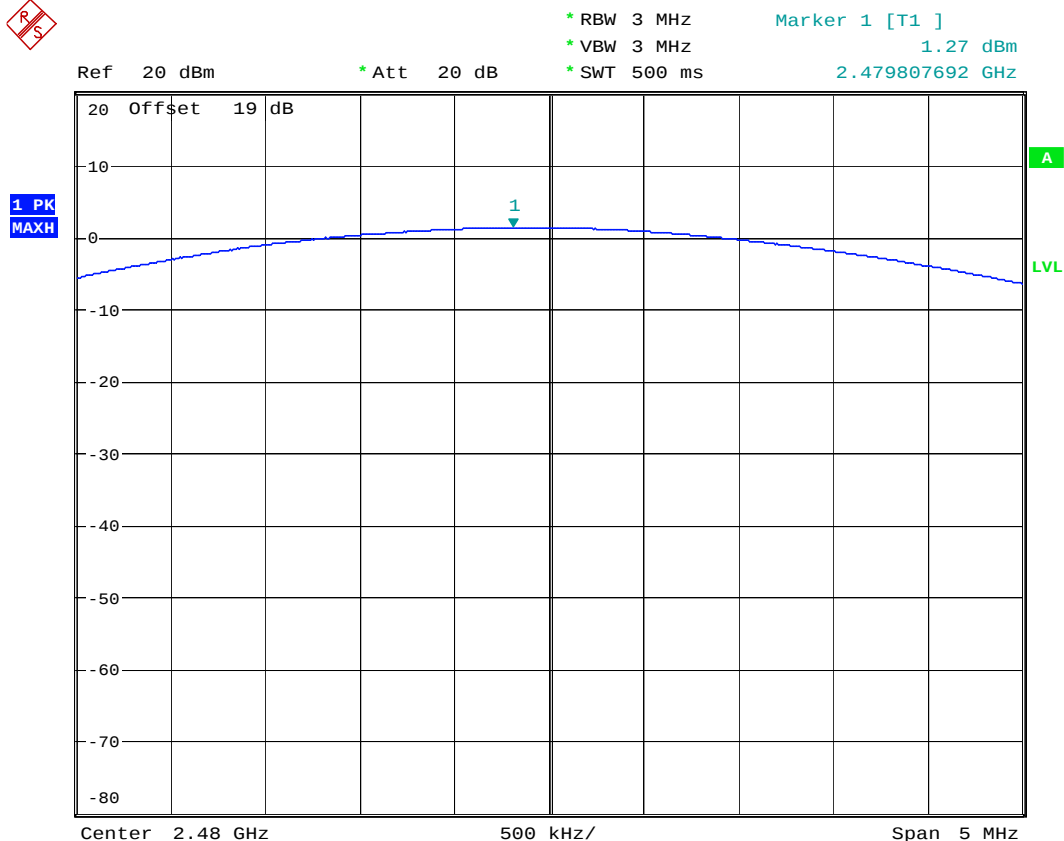
Page No. : 131 of 364

Report Issued Date : May 15, 2007

Report Version : Rev. 01



BT Mode : CH78 (2480MHz)

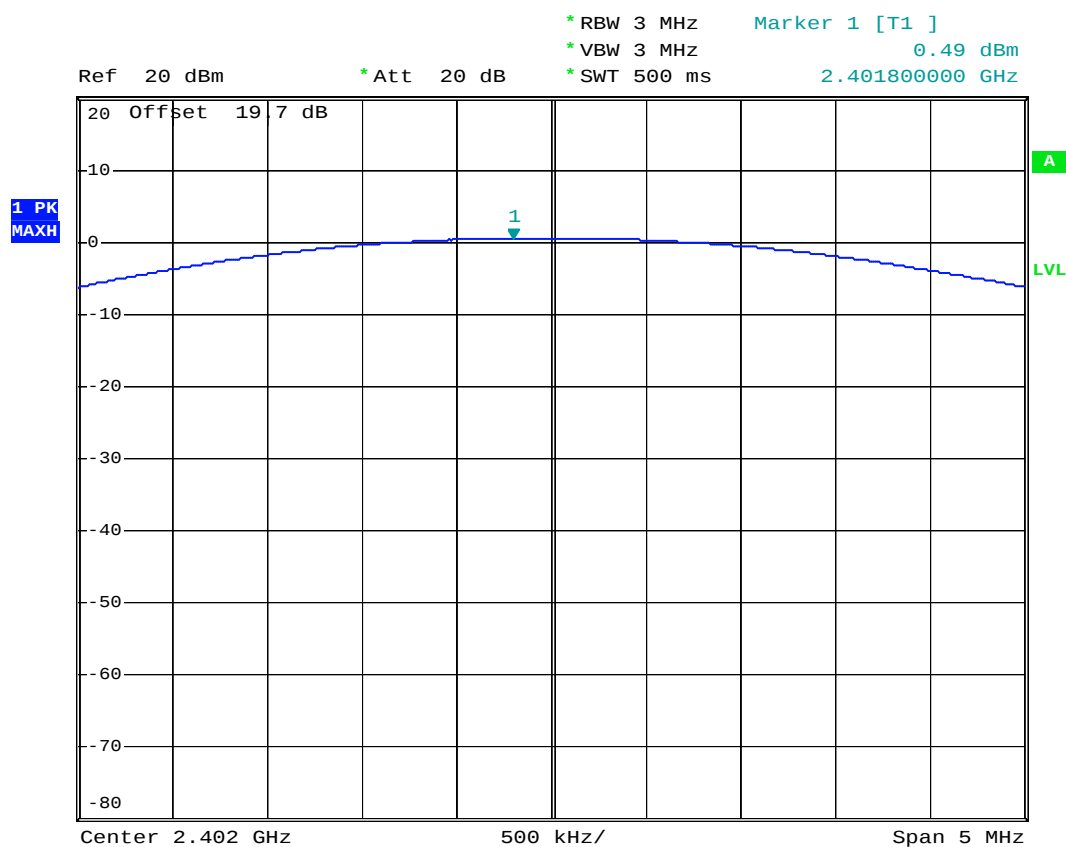


Date: 10.MAY.2007 16:48:32



➤ BT

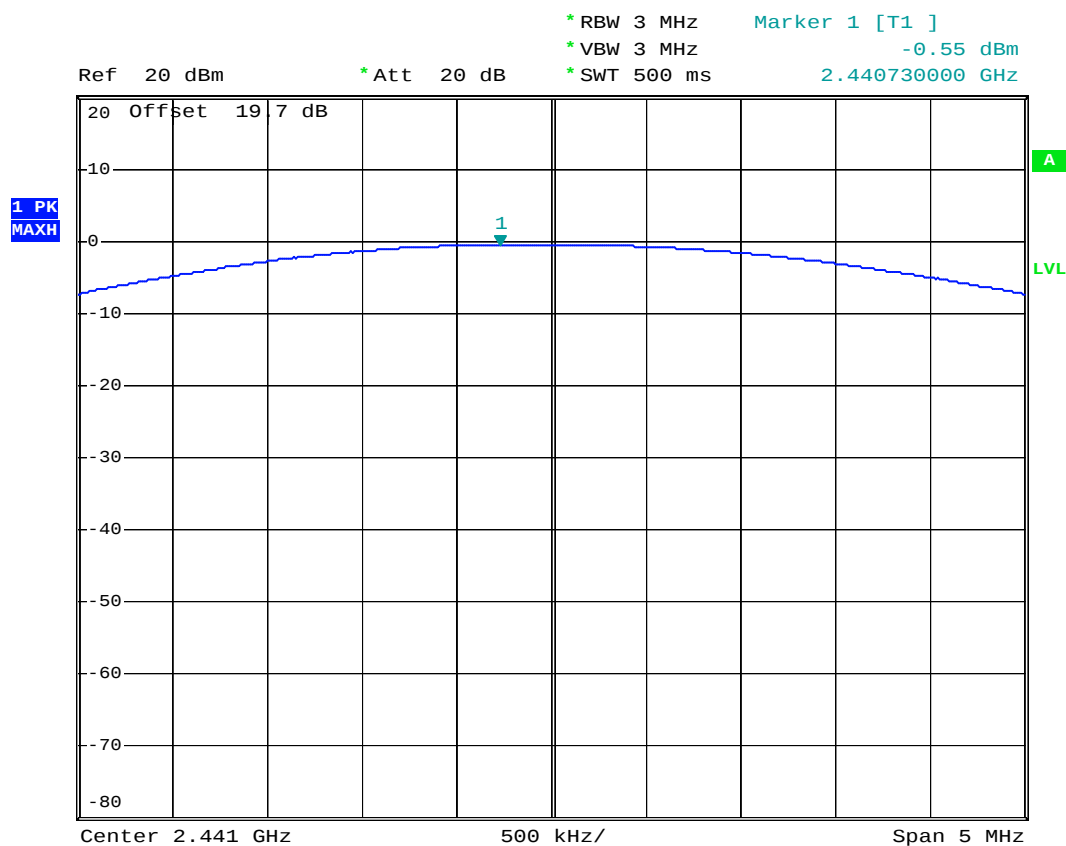
BT Mode : CH00 (2402MHz)



Date: 9.MAY.2007 22:37:42



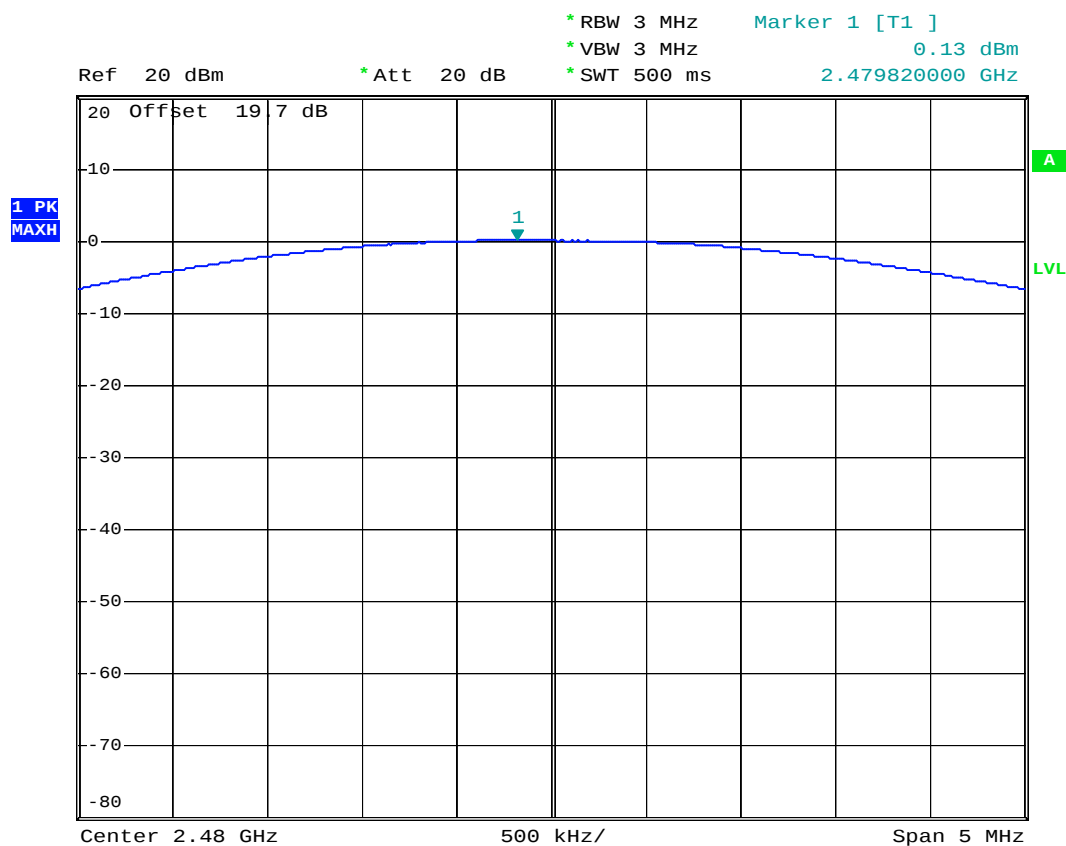
BT Mode : CH39 (2441MHz)



Date: 9.MAY.2007 22:38:05



BT Mode : CH78 (2480MHz)



Date: 9.MAY.2007 22:38:34



5.10 Conducted Emission

5.10.1 Measuring Instruments

As described in chapter 6 of this test Report.

5.10.2 Test Procedures :

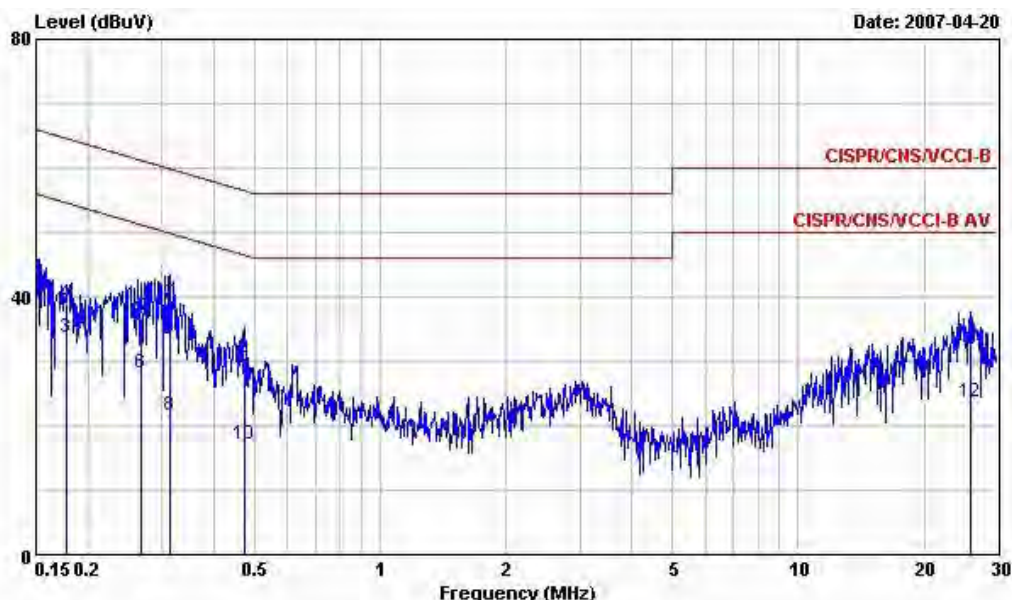
- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.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

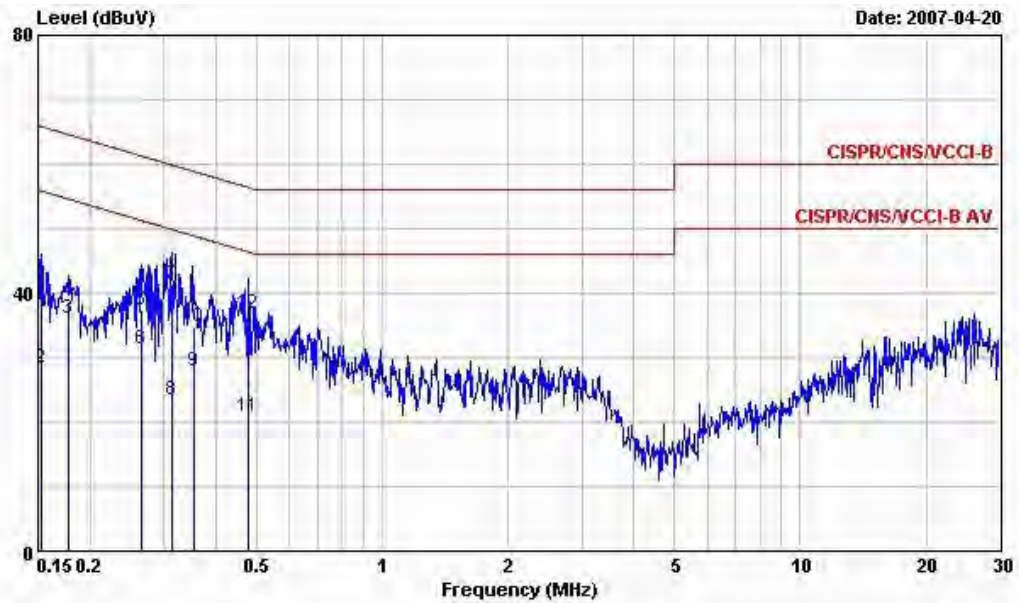
- Temperature : 23 °C
- Relative Humidity : 47 %
- Test Engineer : James
- Test Mode : Mode 1

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



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200604 99041 LINE
EUT : Notebook
POWER: AC 120V/60Hz
Model : FR6D2906
Memo : BT Link + WLAN Link + Adapter

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.150000	29.02	-26.98	56.00	28.22	0.10	0.70	Average
2	0.150000	42.06	-23.94	66.00	41.26	0.10	0.70	QP
3	0.177396	33.77	-20.84	54.61	33.09	0.10	0.58	Average
4	0.177396	38.96	-25.65	64.61	38.28	0.10	0.58	QP
5	0.266727	36.89	-24.33	61.22	36.33	0.10	0.46	QP
6	0.266727	28.09	-23.13	51.22	27.53	0.10	0.46	Average
7	0.314946	38.94	-20.90	59.84	38.44	0.10	0.40	QP
8	0.314946	21.65	-28.19	49.84	21.15	0.10	0.40	Average
9	0.473603	30.63	-25.82	56.45	30.08	0.10	0.45	QP
10	0.473603	17.15	-29.30	46.45	16.60	0.10	0.45	Average
11	25.730	32.15	-27.85	60.00	30.91	0.32	0.92	QP
12	25.730	23.71	-26.29	50.00	22.47	0.32	0.92	Average



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200604 99041 NEUTRAL
EUT : Notebook
POWER: AC 120V/60Hz
Model : FR6D2906
Memo : BT Link + WLAN Link + Adapter

	Freq	Level	Over Limit		Read Level	LISN Factor	Cable Loss	Remark
			Limit	Line				
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1524030	41.38	-24.49	65.87	40.59	0.10	0.69	QP
2	0.1524030	28.46	-27.41	55.87	27.67	0.10	0.69	Average
3	0.1767760	36.11	-18.53	54.64	35.42	0.10	0.59	Average
4	0.1767760	38.65	-25.99	64.64	37.96	0.10	0.59	QP
5	0.2658290	37.24	-24.01	61.25	36.67	0.10	0.47	QP
6	0.2658290	31.44	-19.81	51.25	30.87	0.10	0.47	Average
7	0.3149460	41.36	-18.48	59.84	40.86	0.10	0.40	QP
8	0.3149460	23.33	-26.51	49.84	22.83	0.10	0.40	Average
9	0.3558320	27.81	-21.02	48.83	27.31	0.10	0.40	Average
10	0.3558320	34.86	-23.97	58.83	34.36	0.10	0.40	QP
11	0.4761190	20.88	-25.53	46.41	20.34	0.10	0.44	Average
12	0.4761190	36.94	-19.47	56.41	36.40	0.10	0.44	QP



5.11 Radiated Emission Measurement

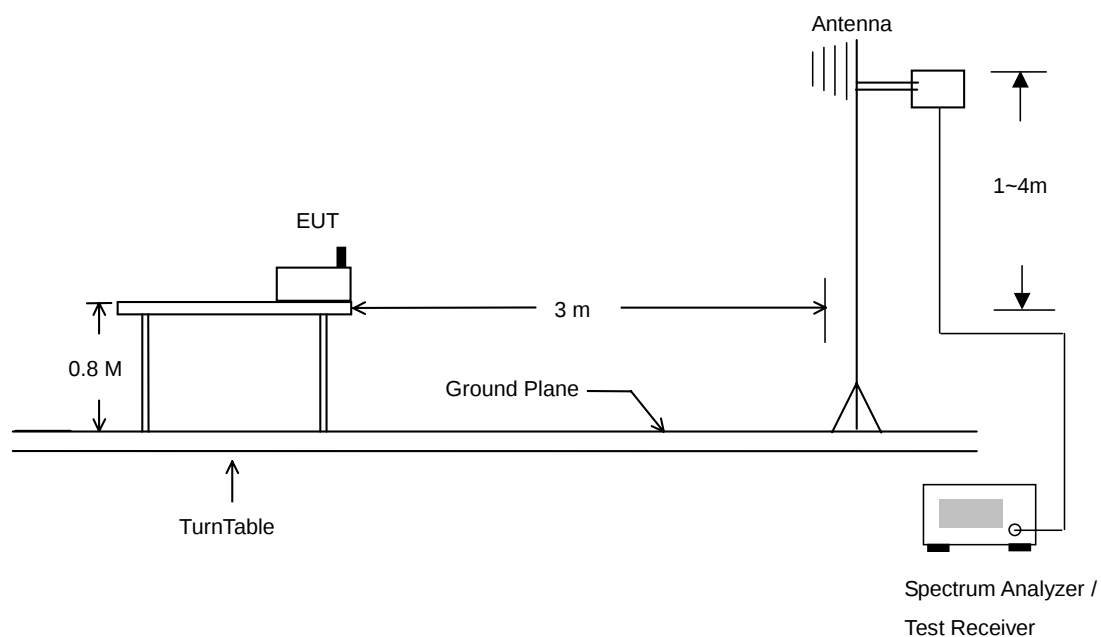
5.11.1 Measuring Instruments

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

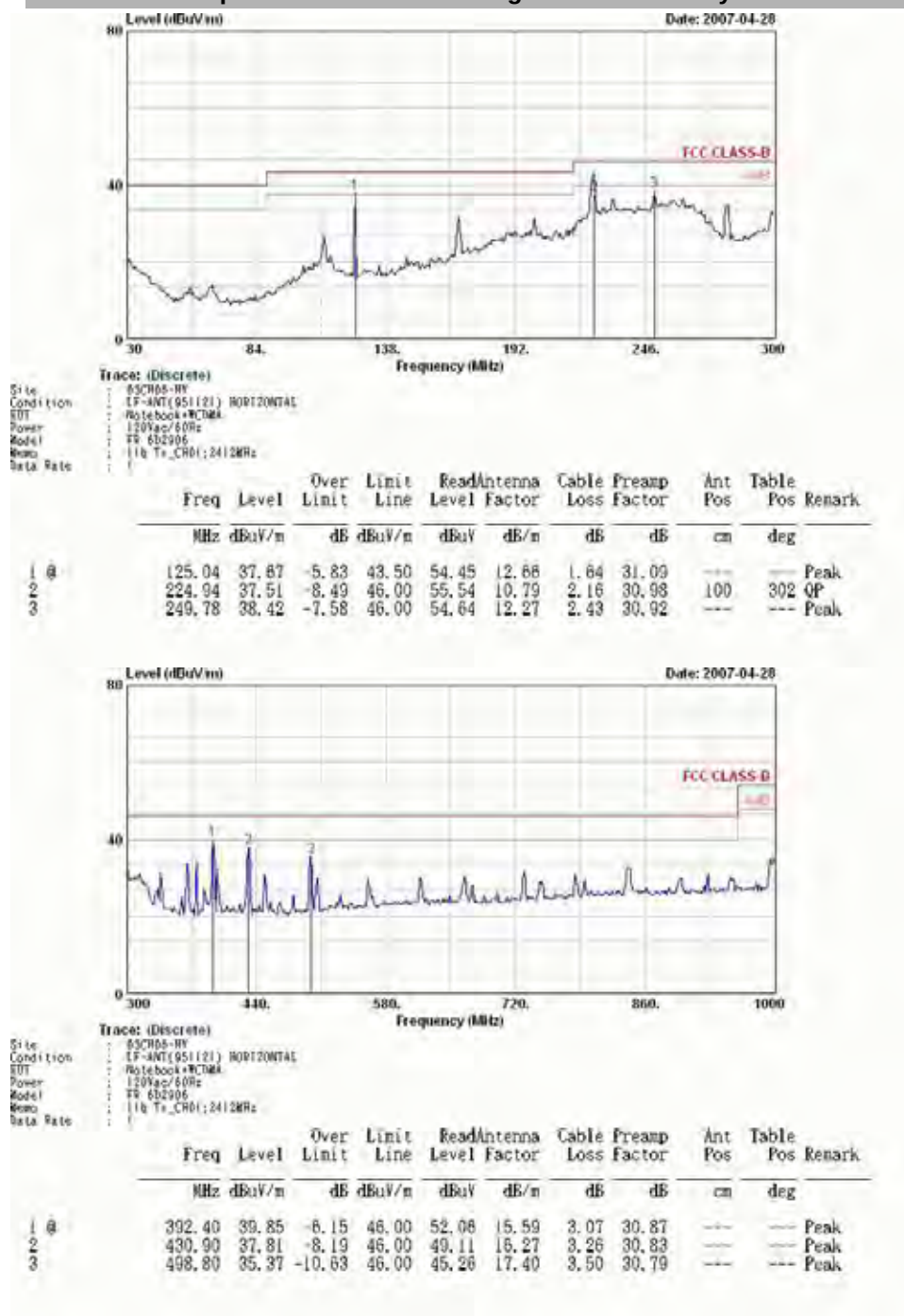


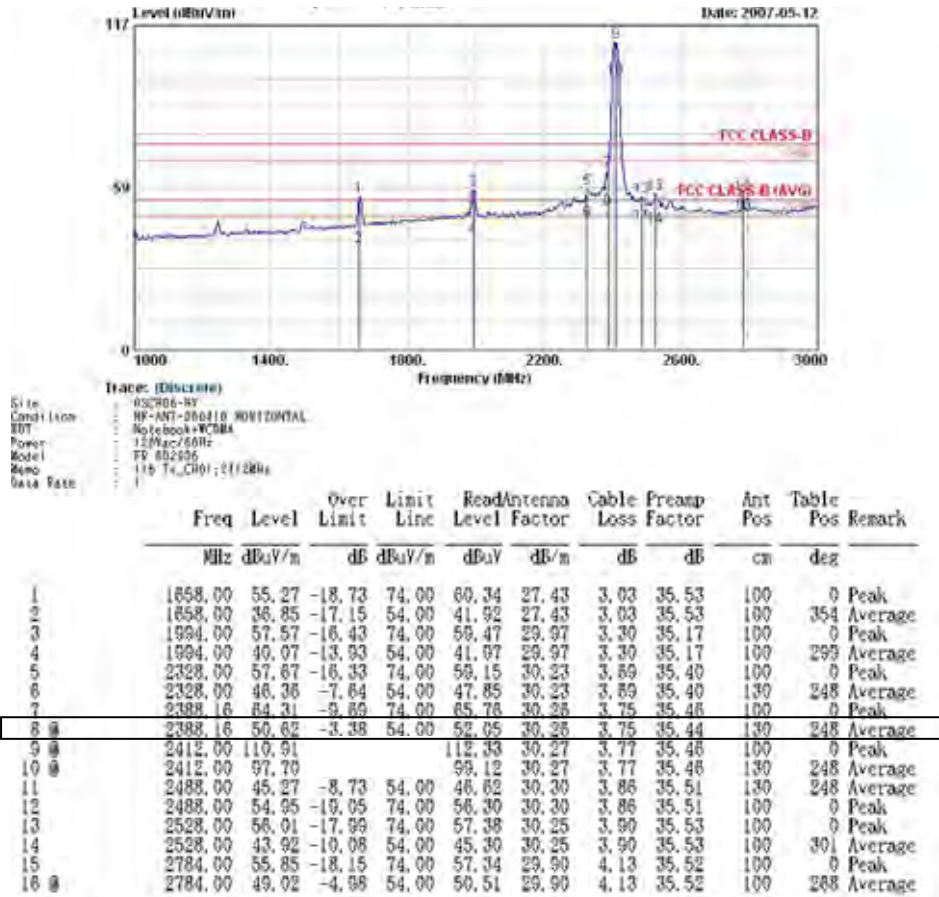


5.11.4 Test Data

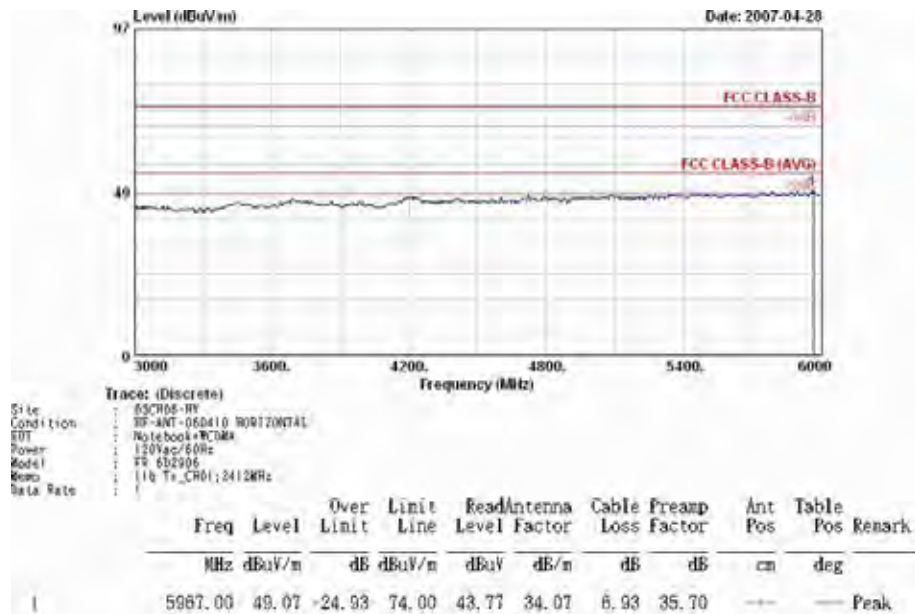
- Temperature : 24°C
- Relative Humidity : 52%
- Test Engineer : Andrew
- Test Mode : Mode 1
- Polarization : Horizontal

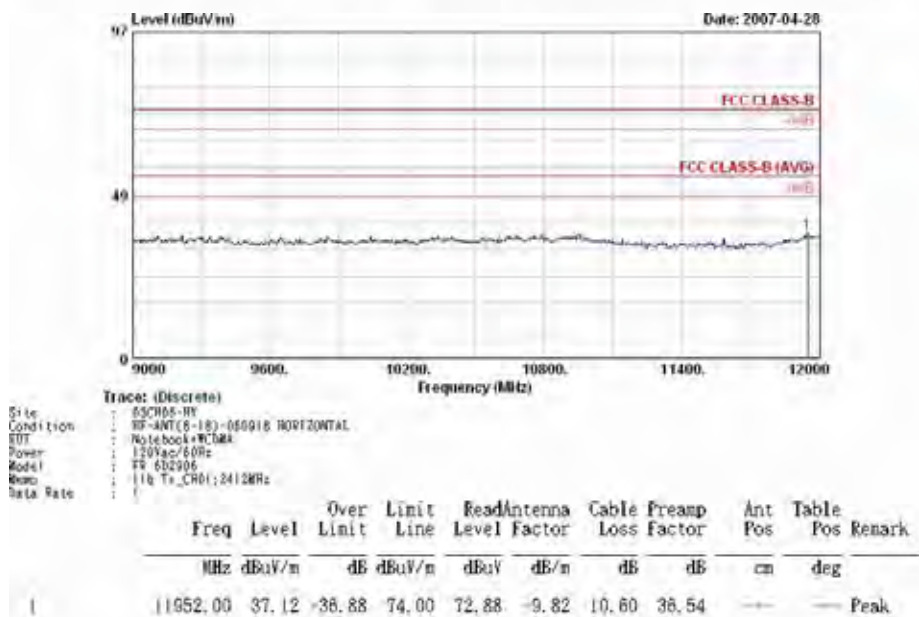
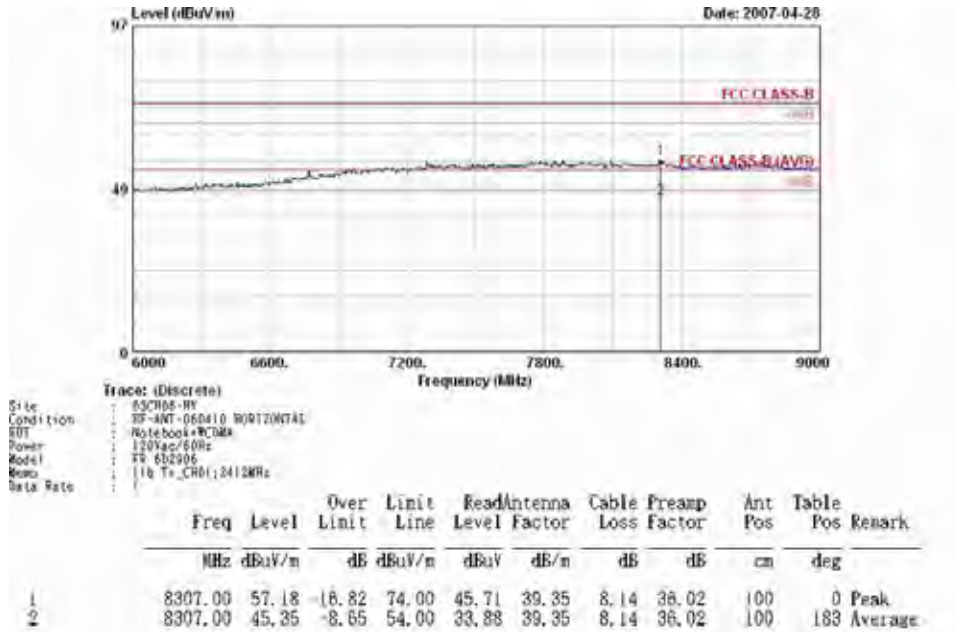
■ The test that passed at minimum margin was marked by the frame in the following table.

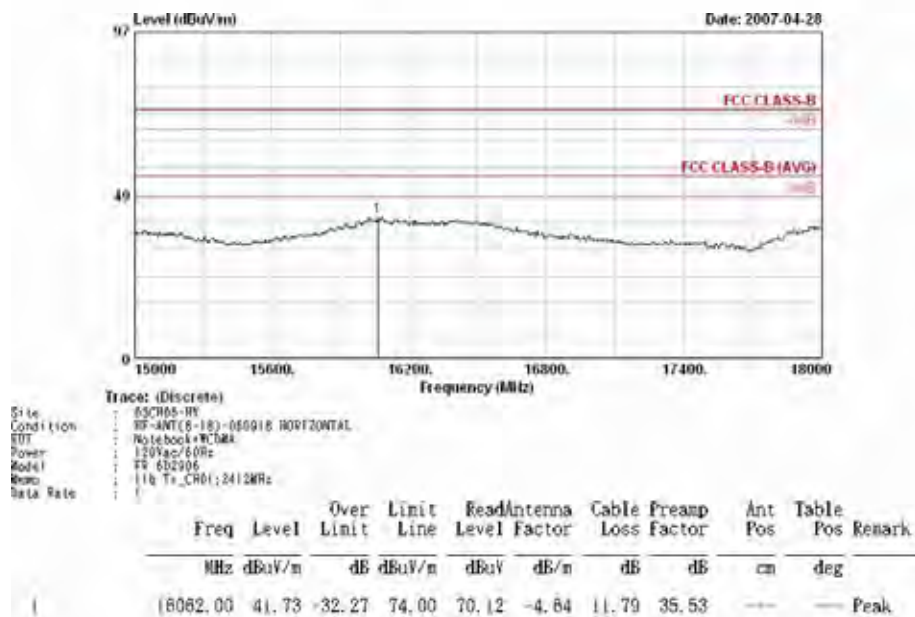
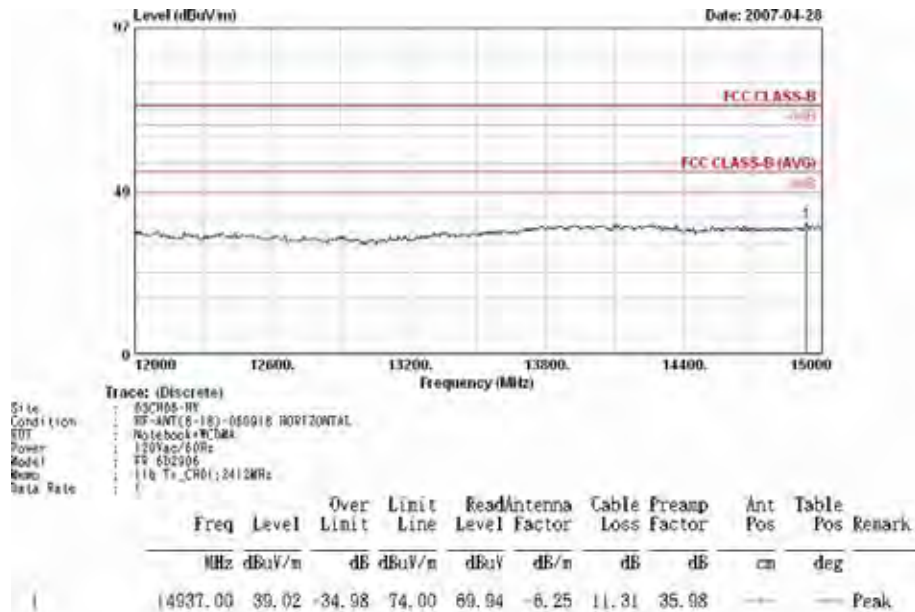


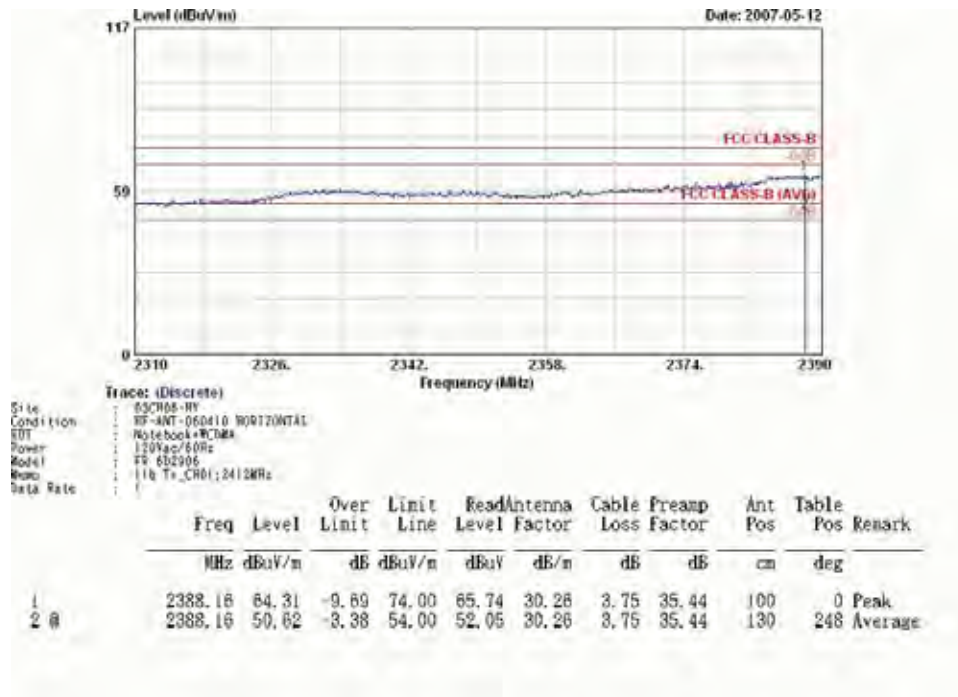


Remark: #9 and #10 Fundamental Signal





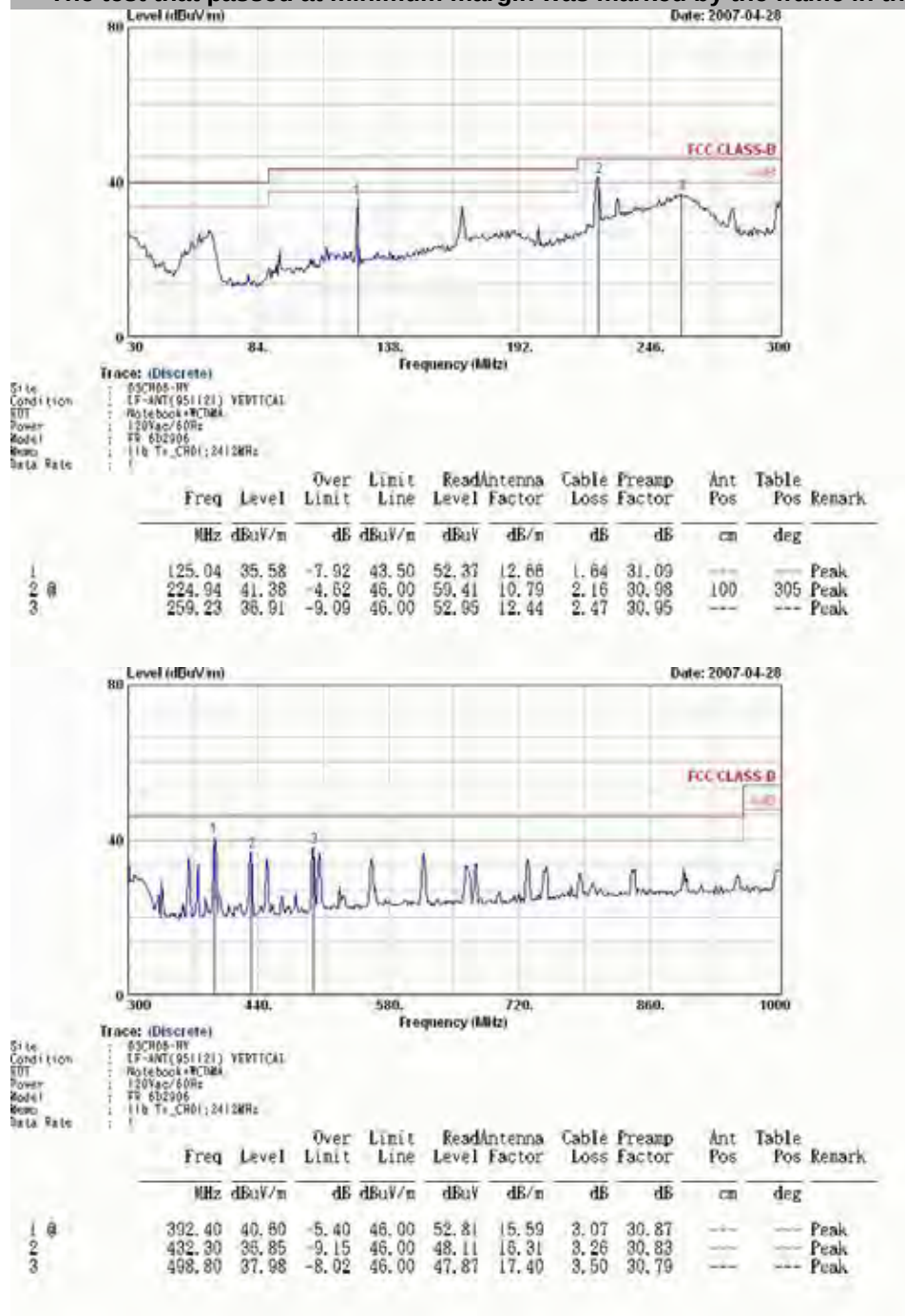


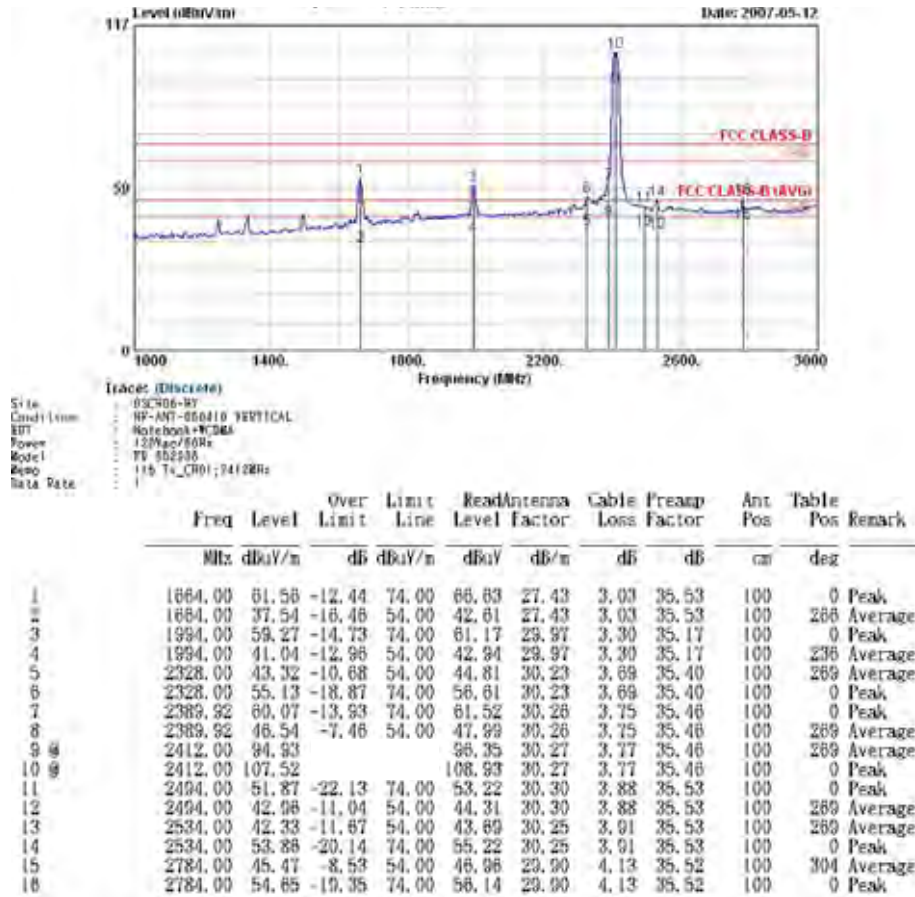




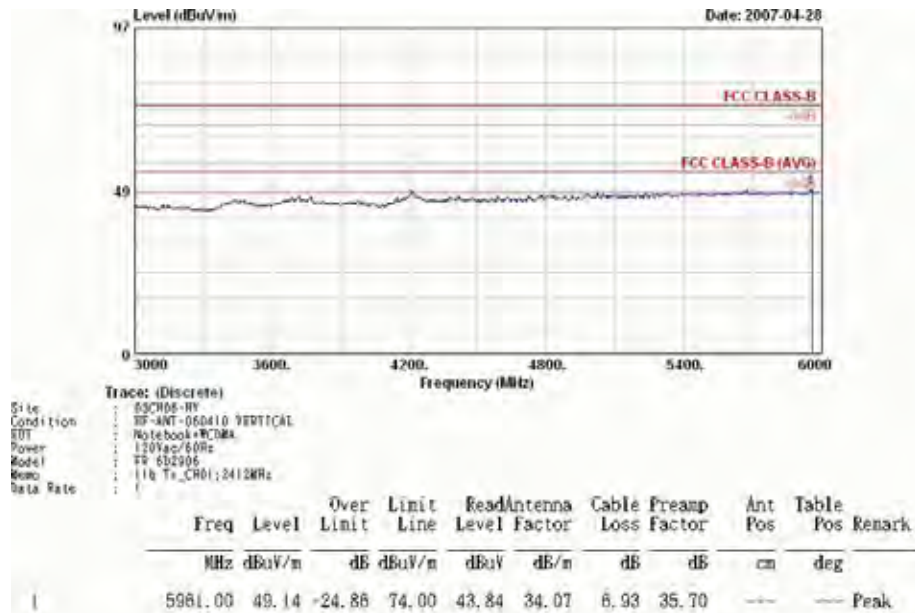
- Polarization : Vertical

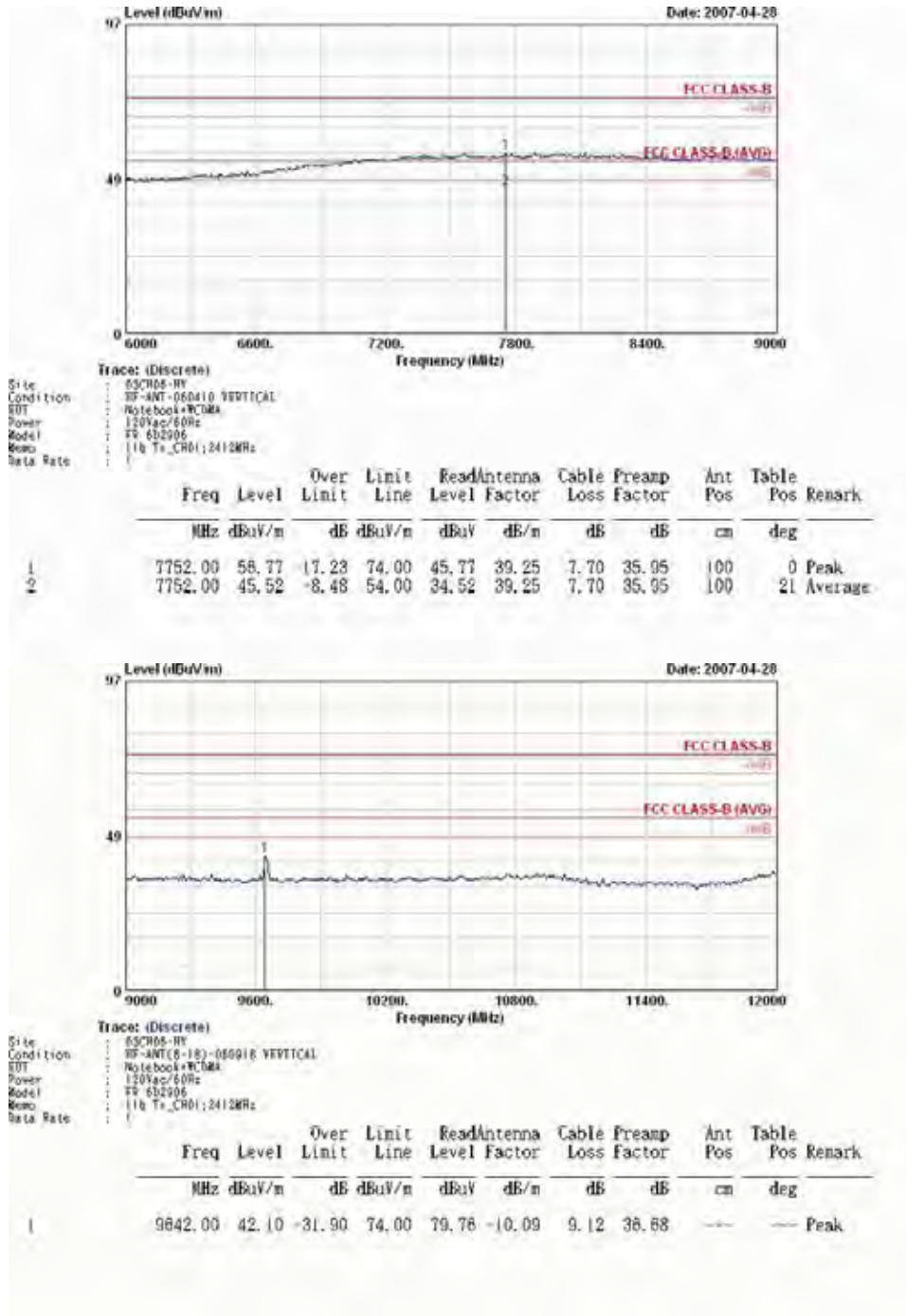
■ The test that passed at minimum margin was marked by the frame in the following table.

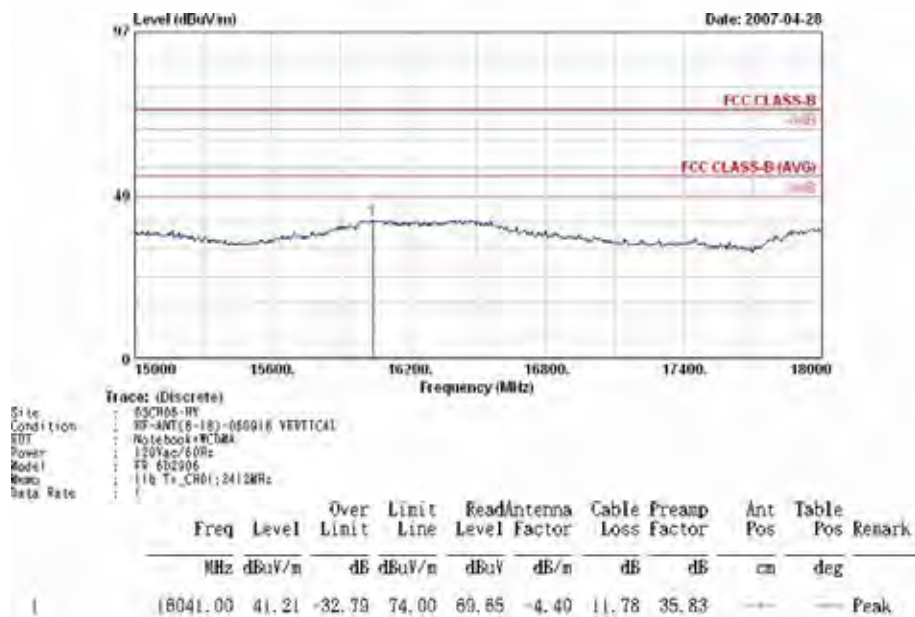
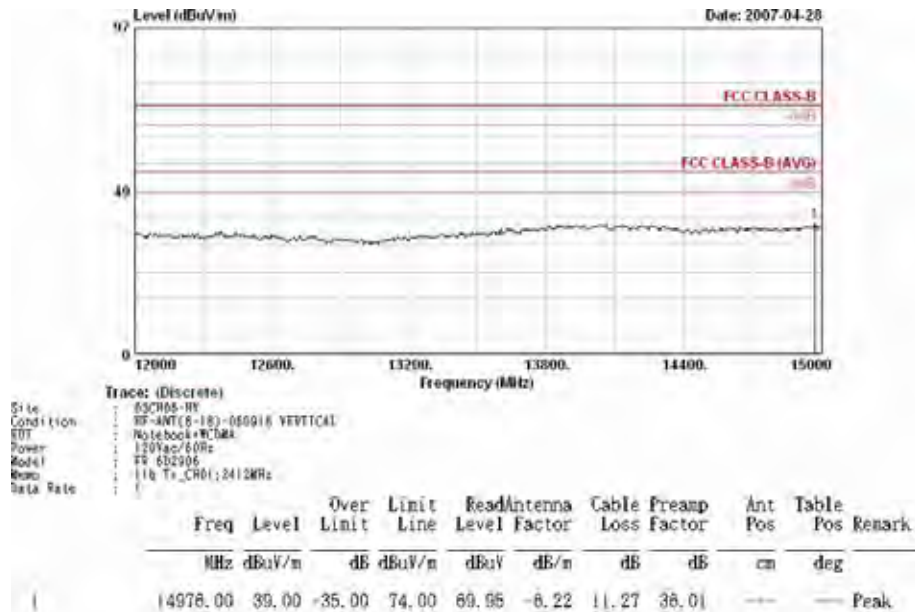


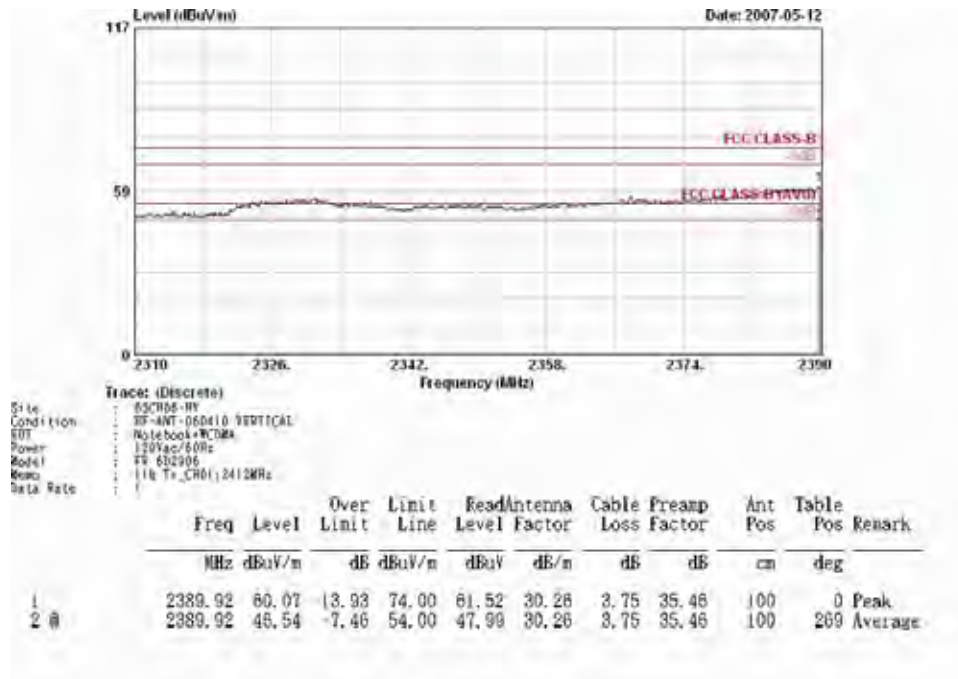


Remark: #9 and #10 Fundamental Signal







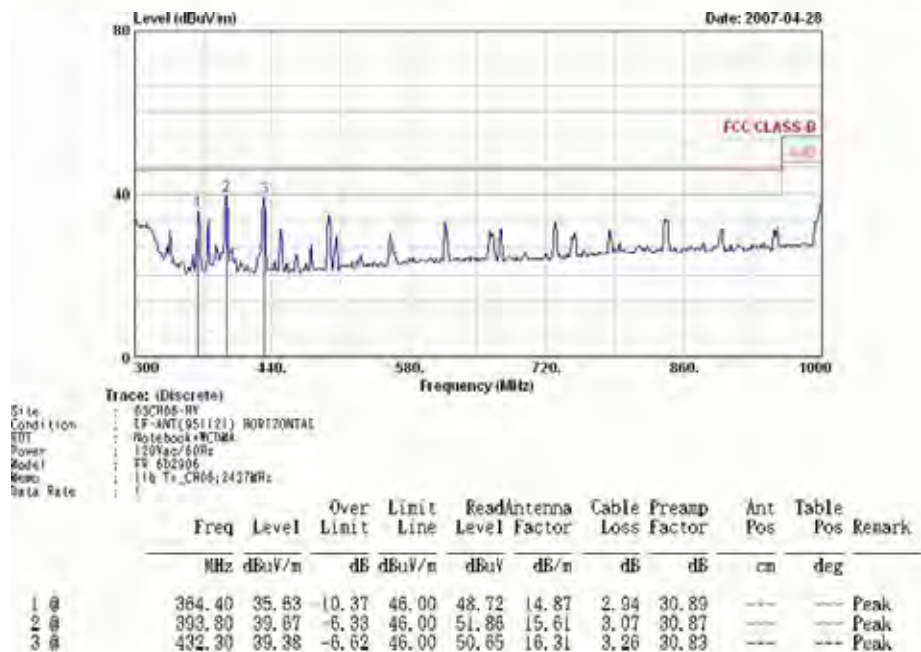


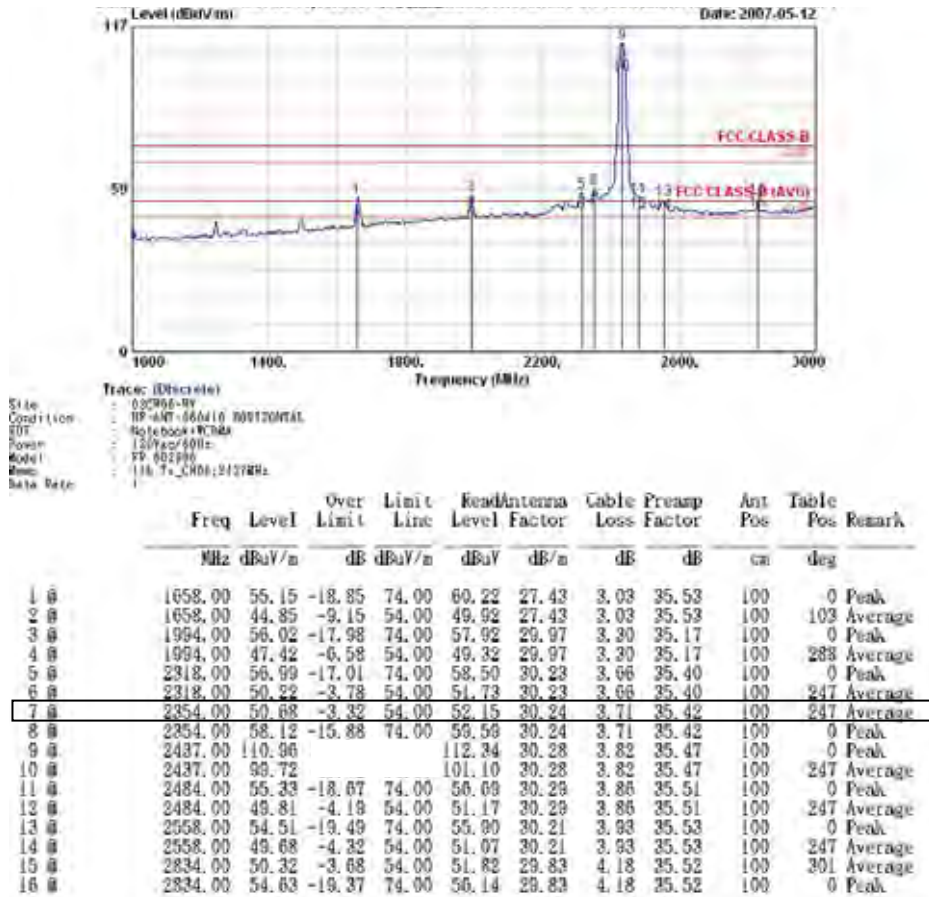
Remark : Frequency from 18GHz to 25GHz, the emission emitted by the EUT is too low to be measured.



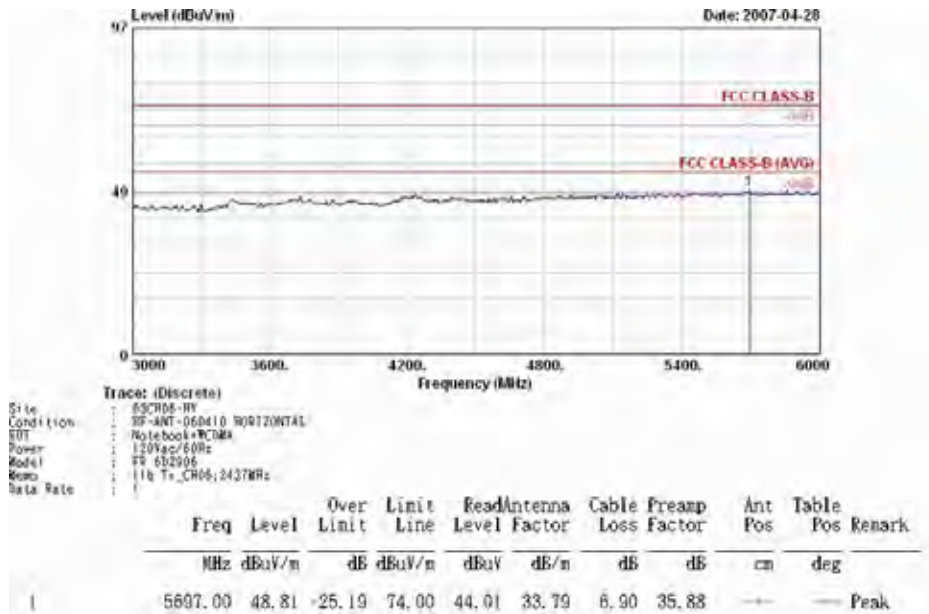
- Test Mode : Mode 2
- Polarization : Horizontal

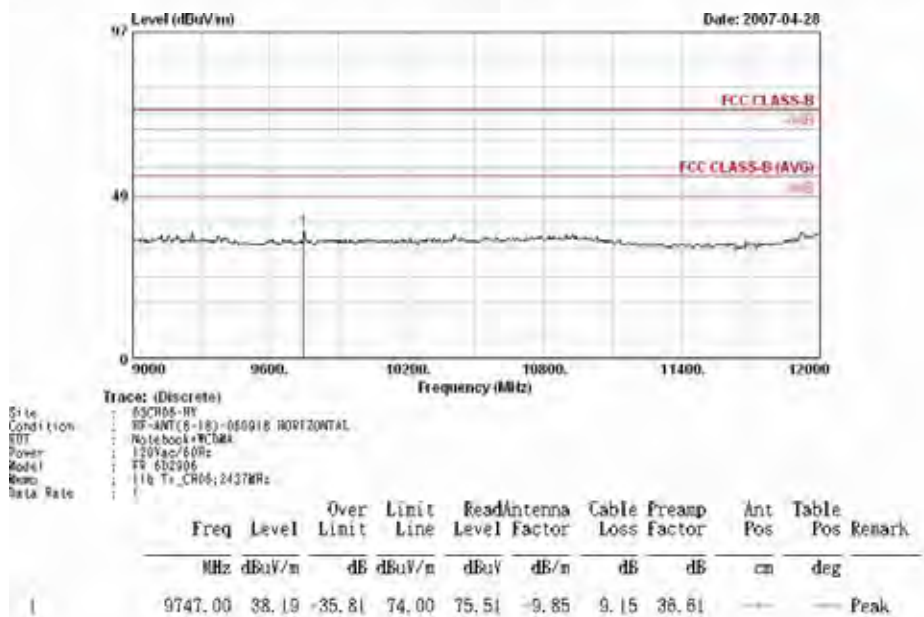
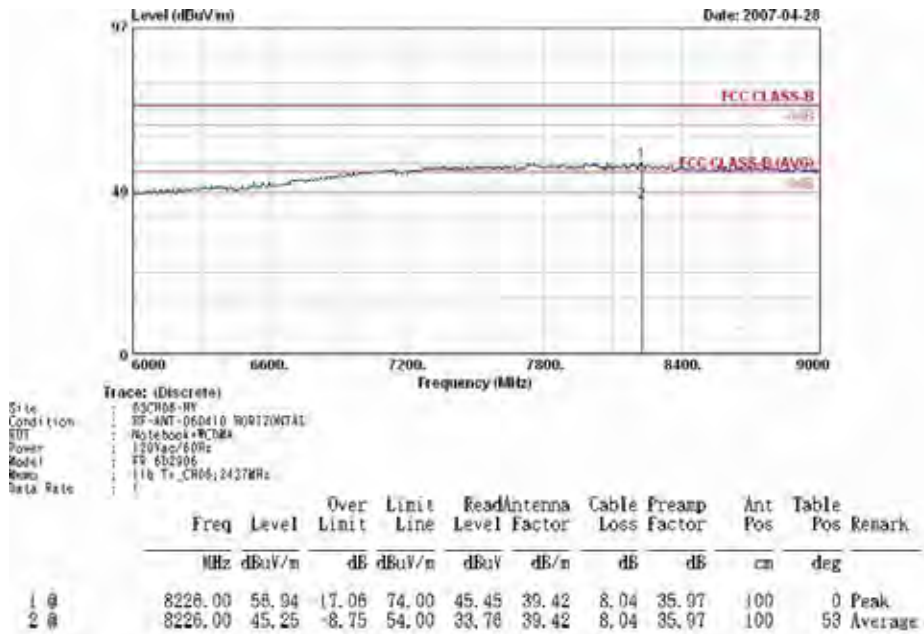
■ The test that passed at minimum margin was marked by the frame in the following table.

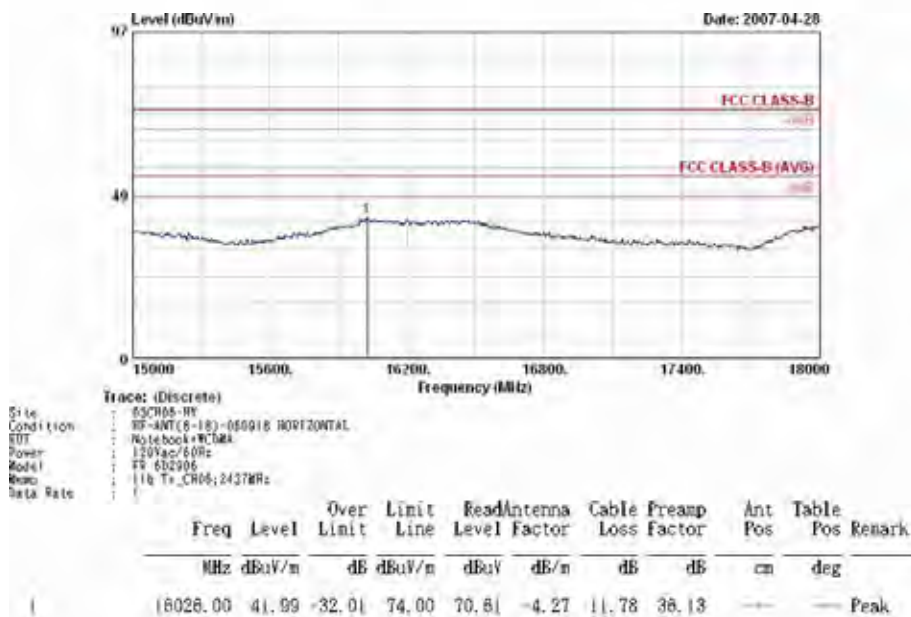
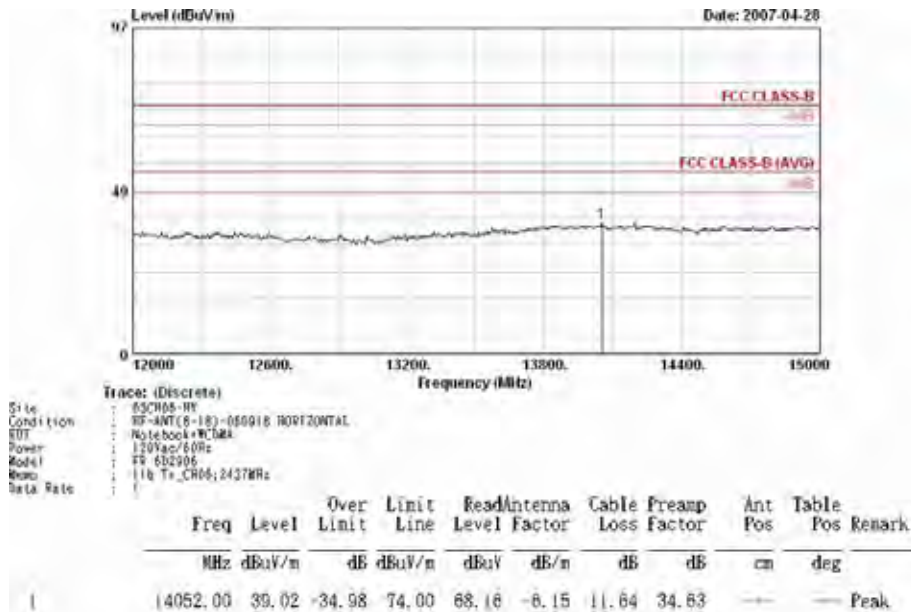


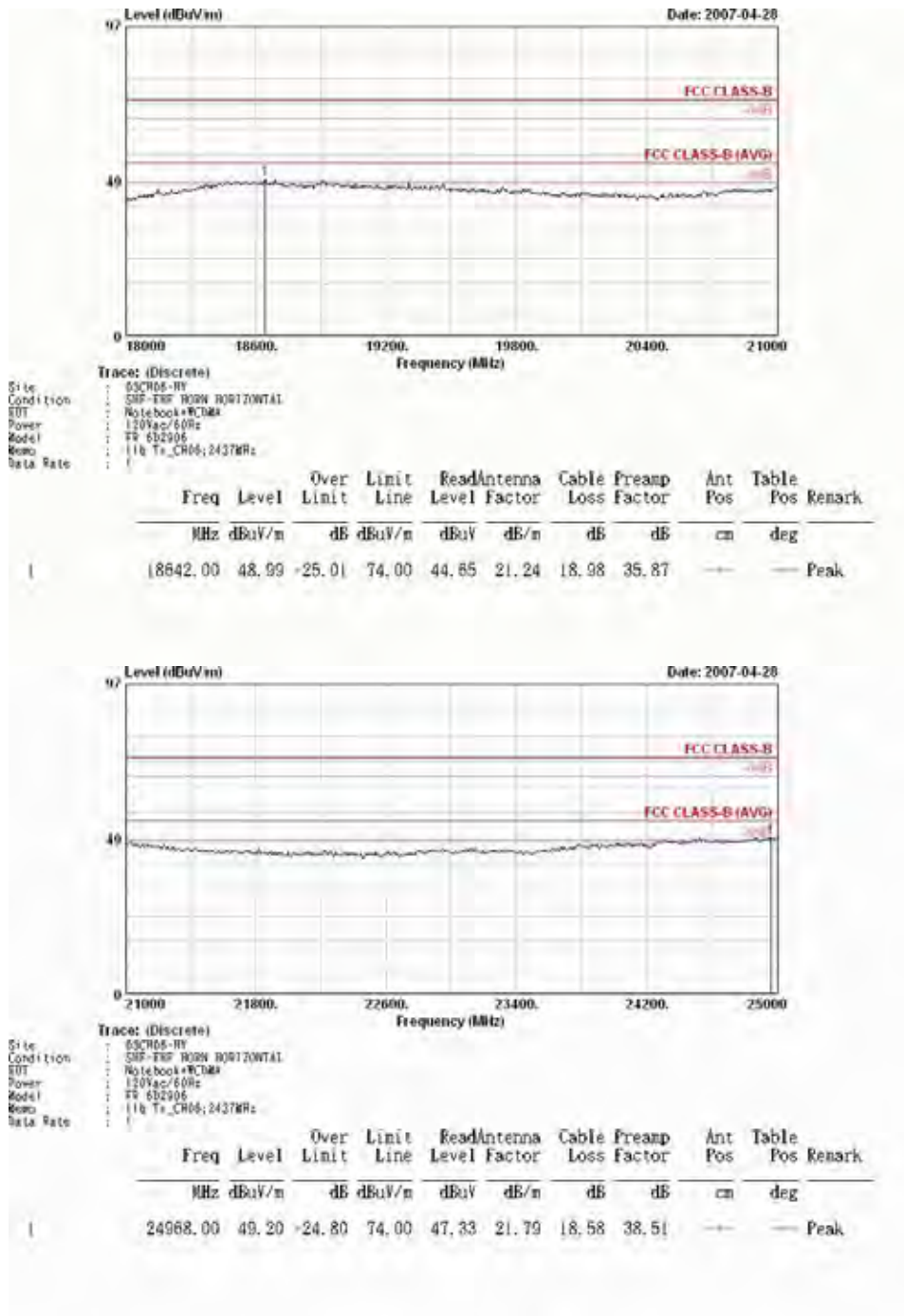


Remark: #9 and #10 Fundamental Signal





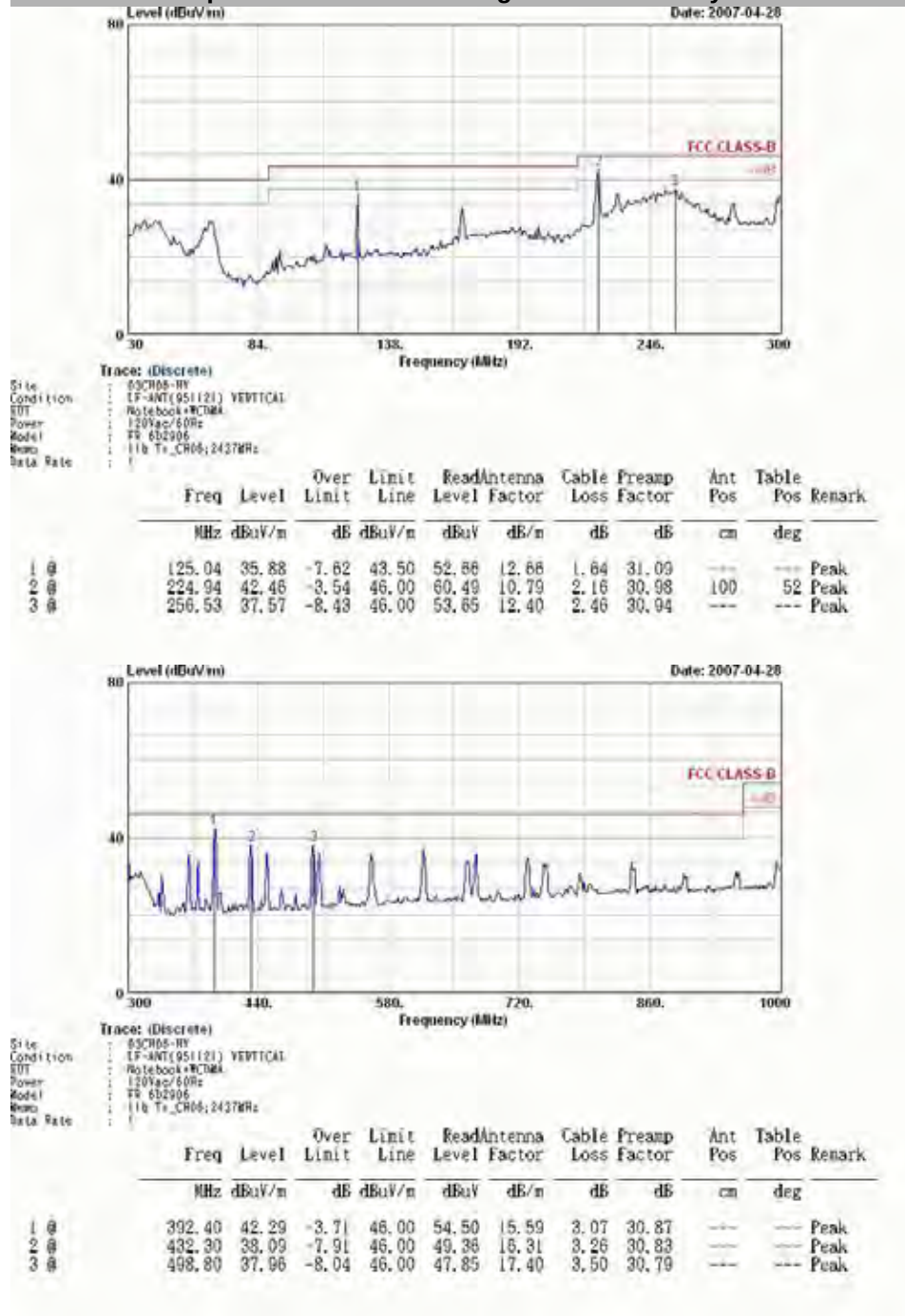


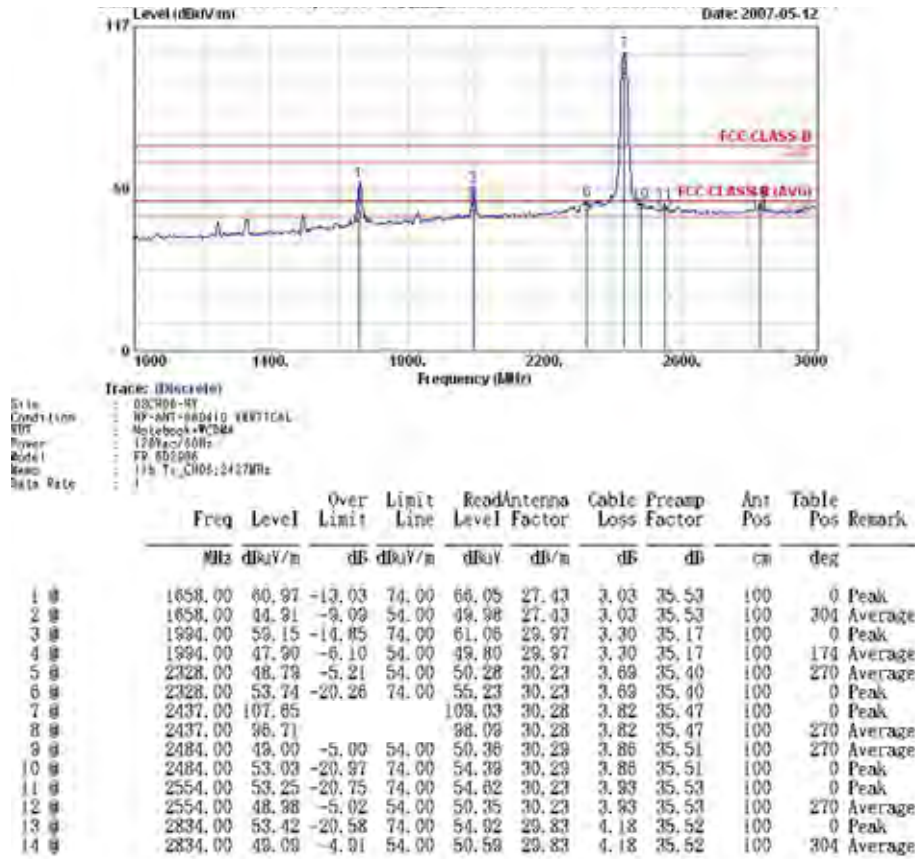




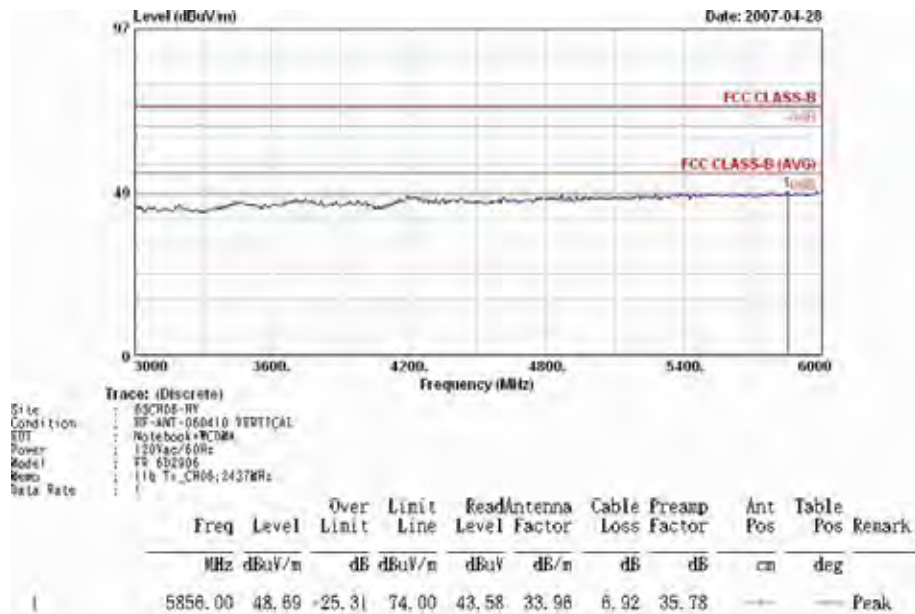
- Polarization : Vertical

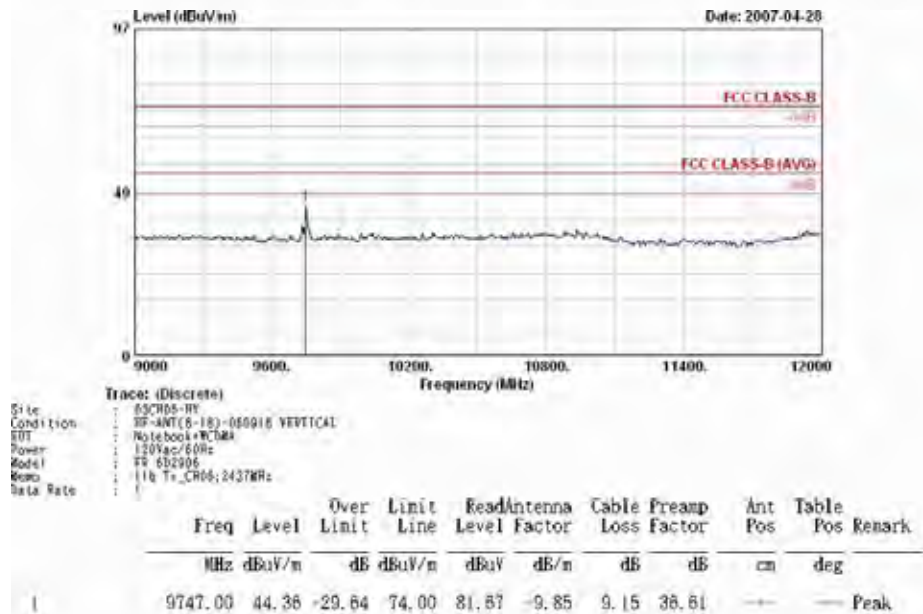
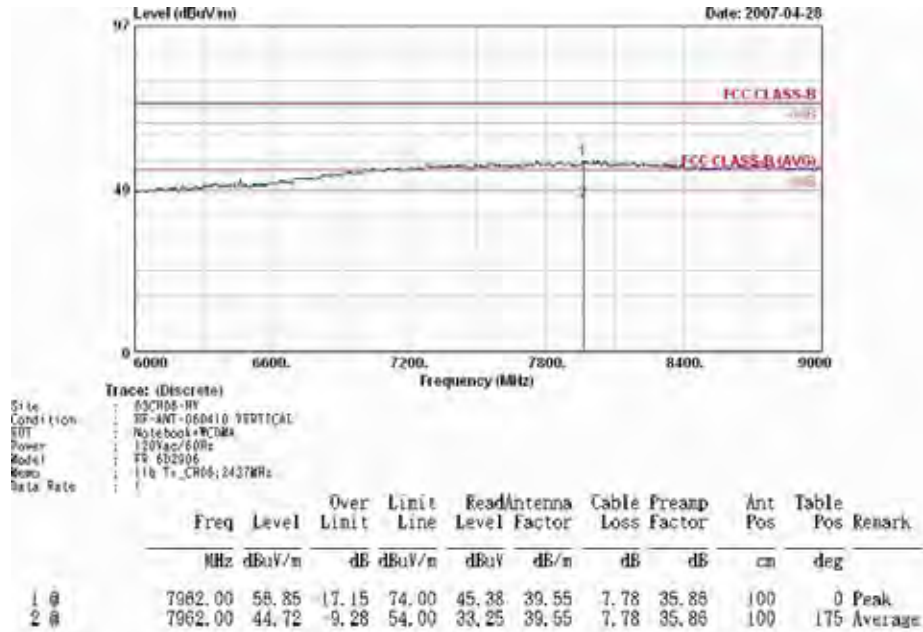
■ The test that passed at minimum margin was marked by the frame in the following table.

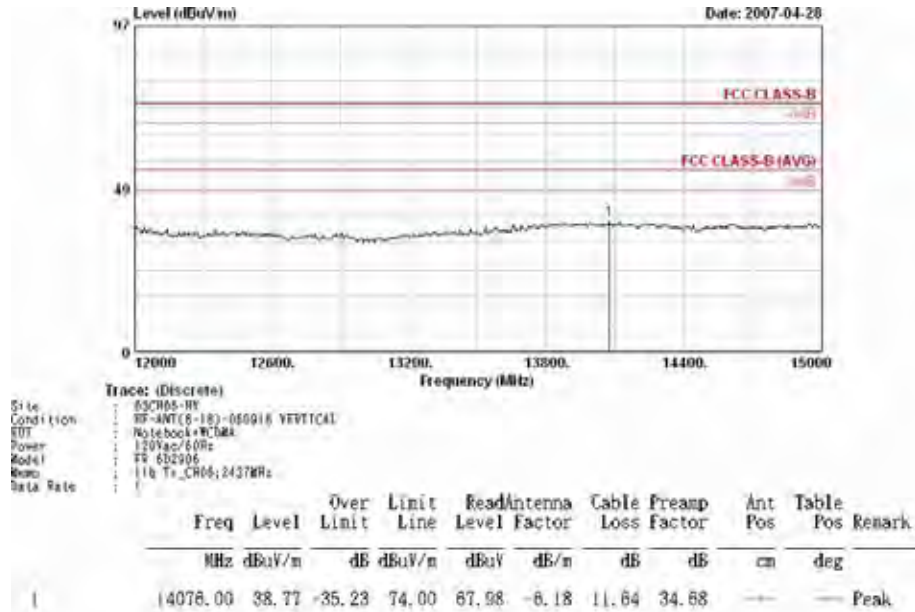


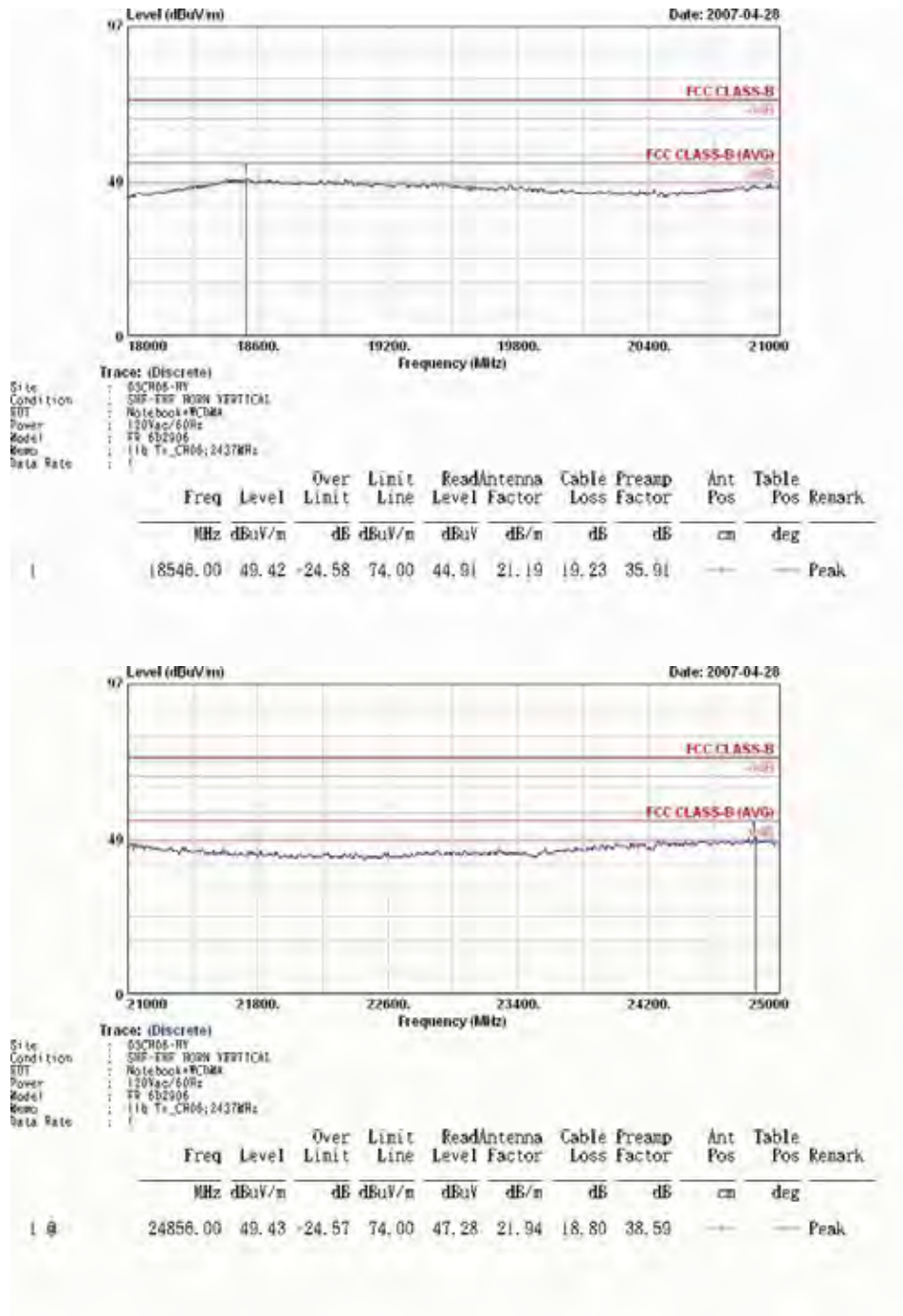


Remark: #7 and #8 Fundamental Signal



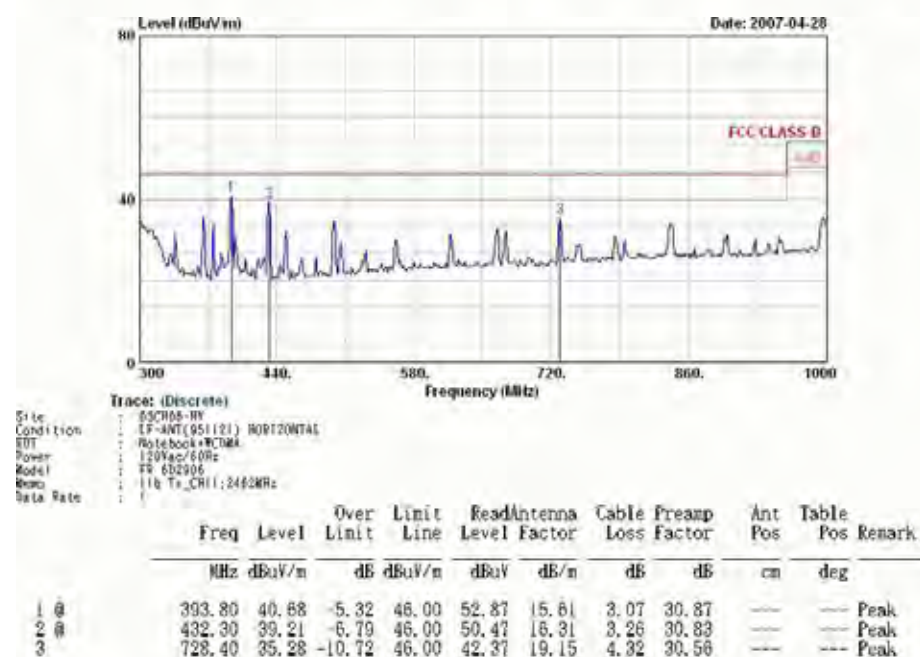


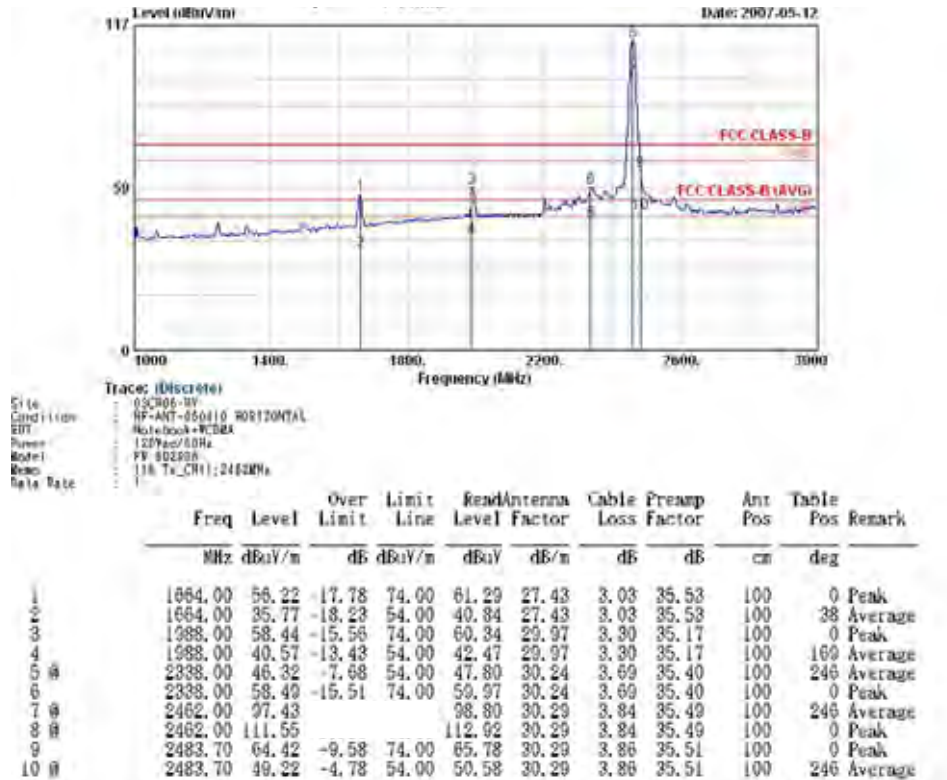




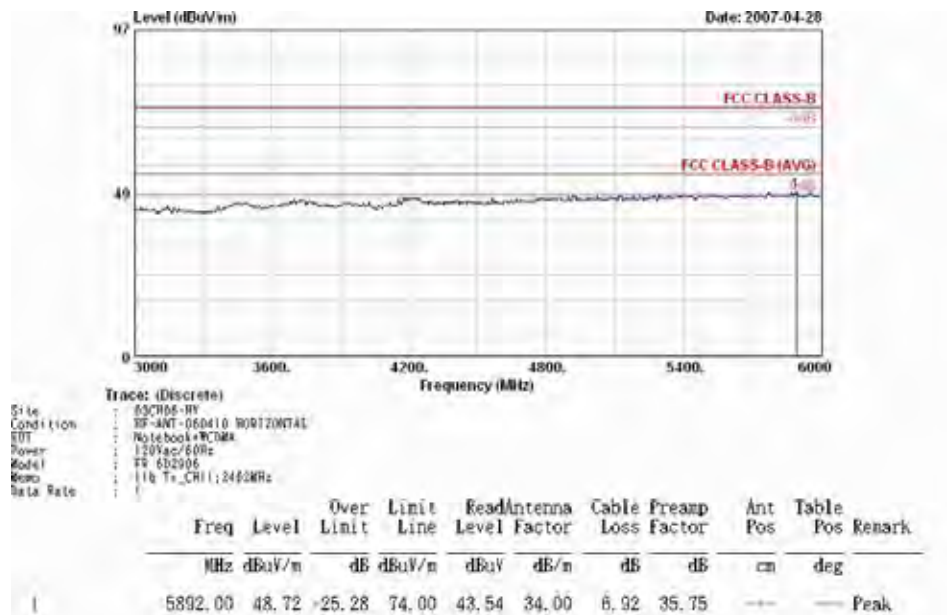
- Test Mode : Mode 3
- Polarization : Horizontal

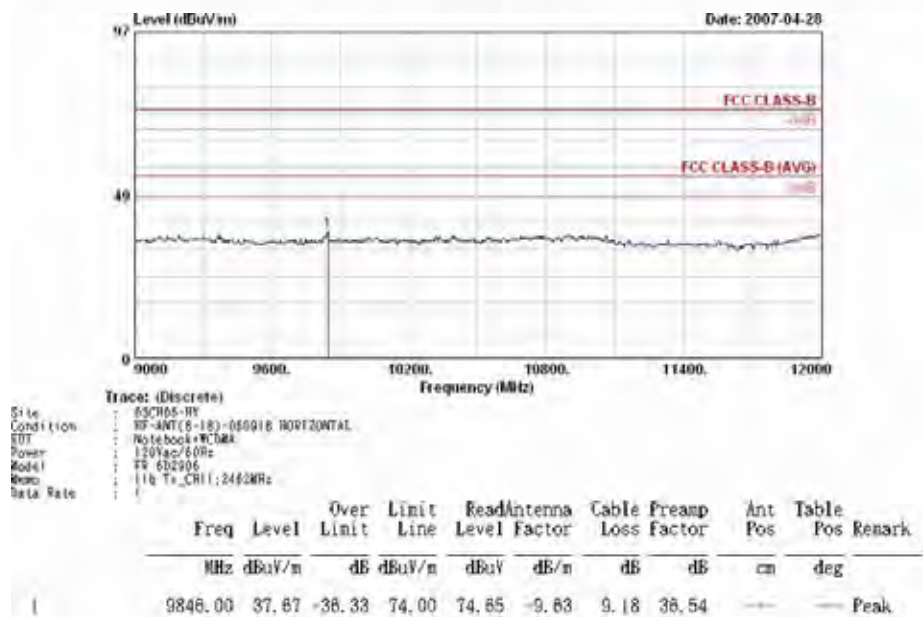
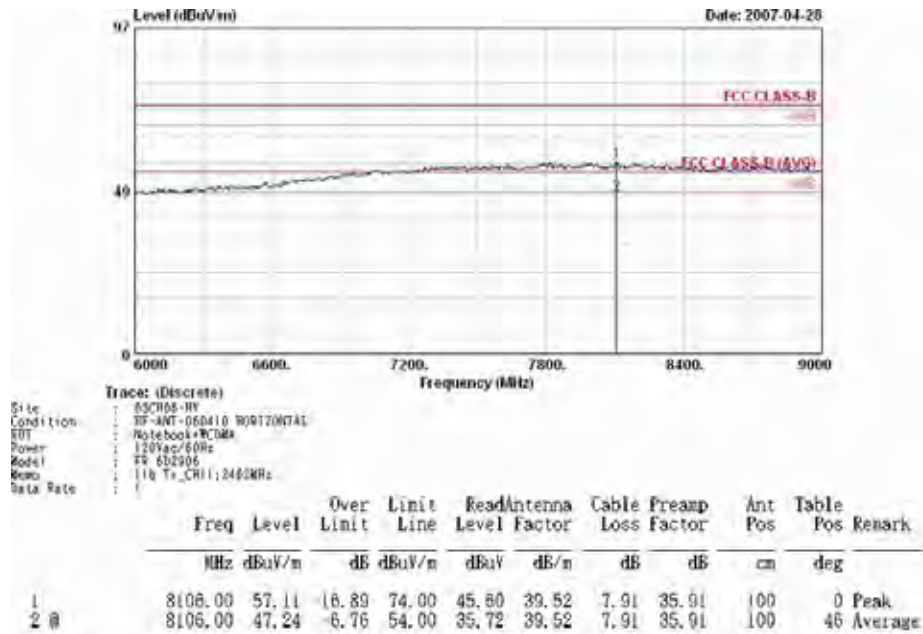
■ The test that passed at minimum margin was marked by the frame in the following table.

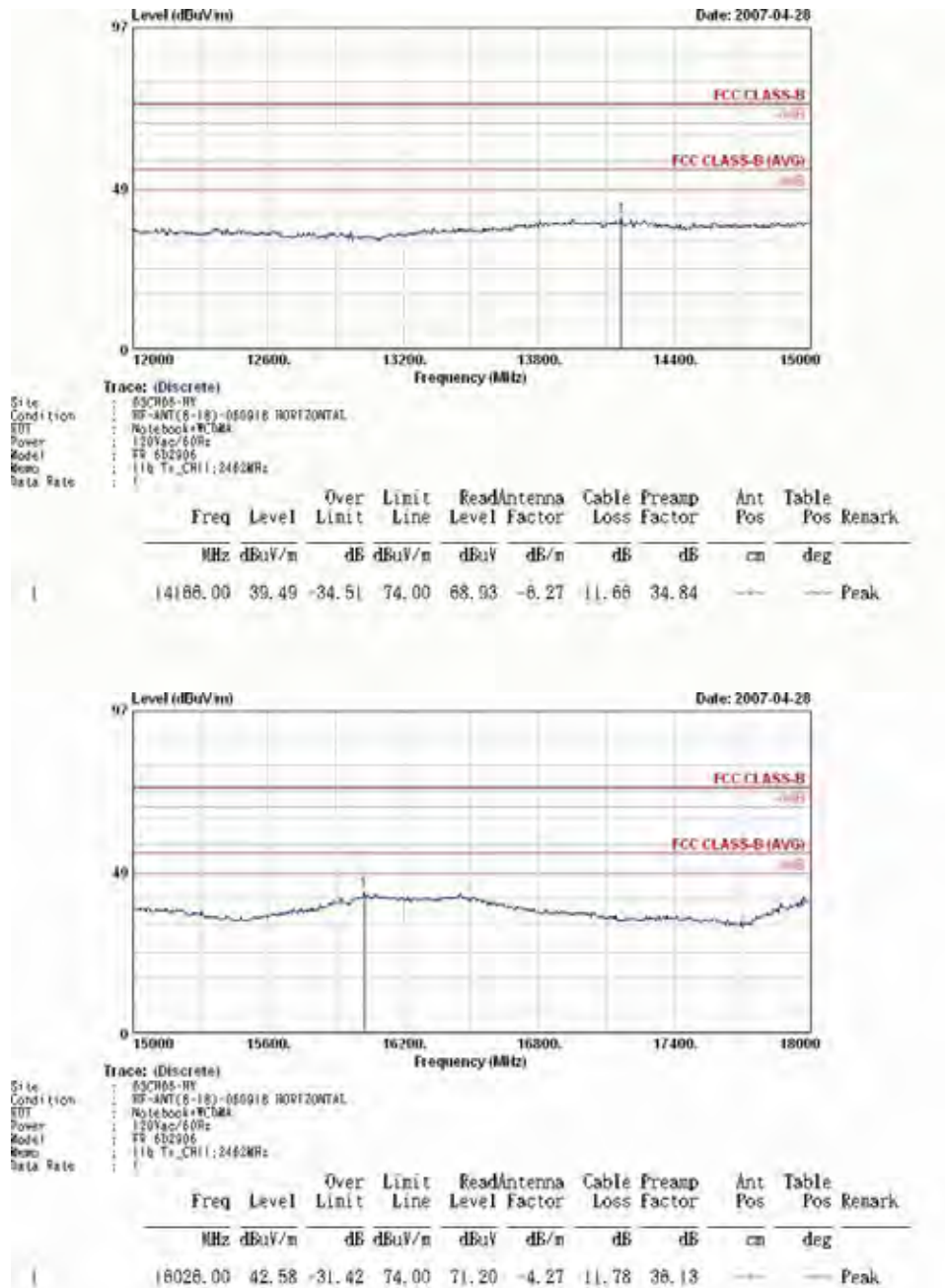


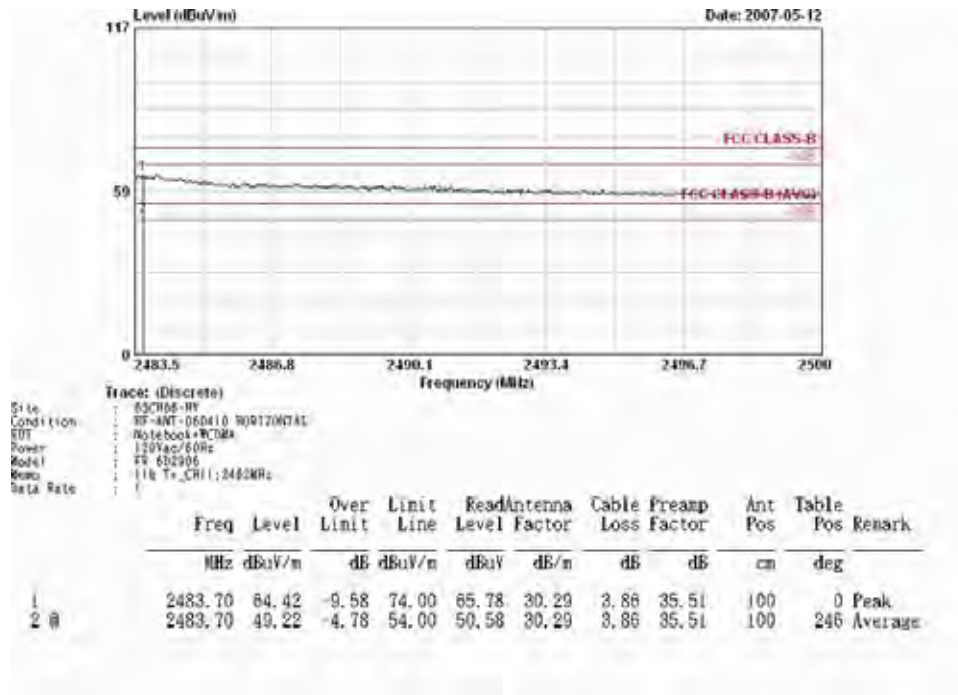


Remark: #7 and #8 Fundamental Signal





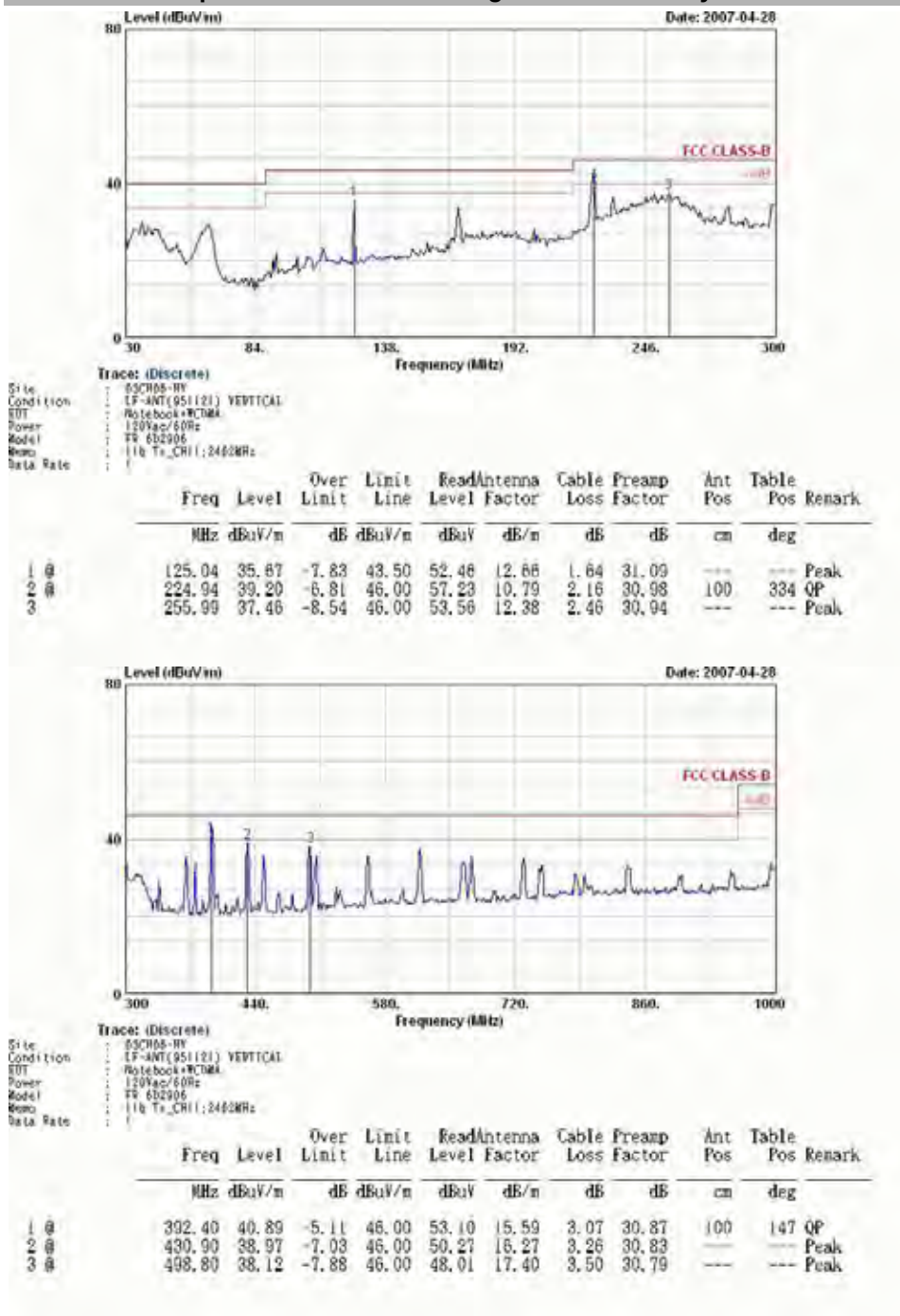


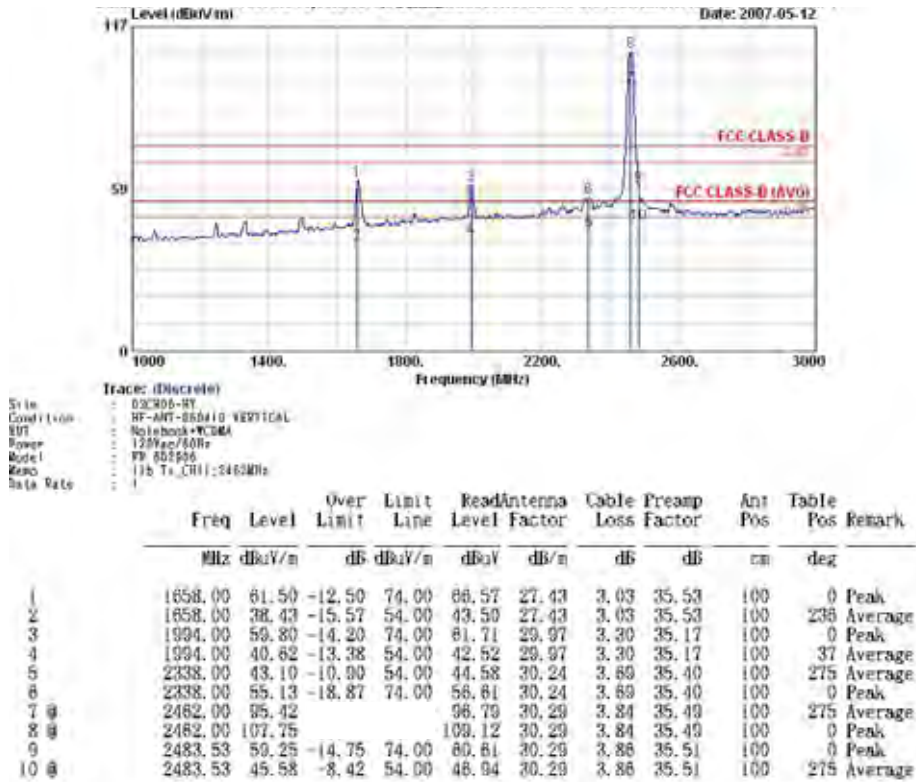




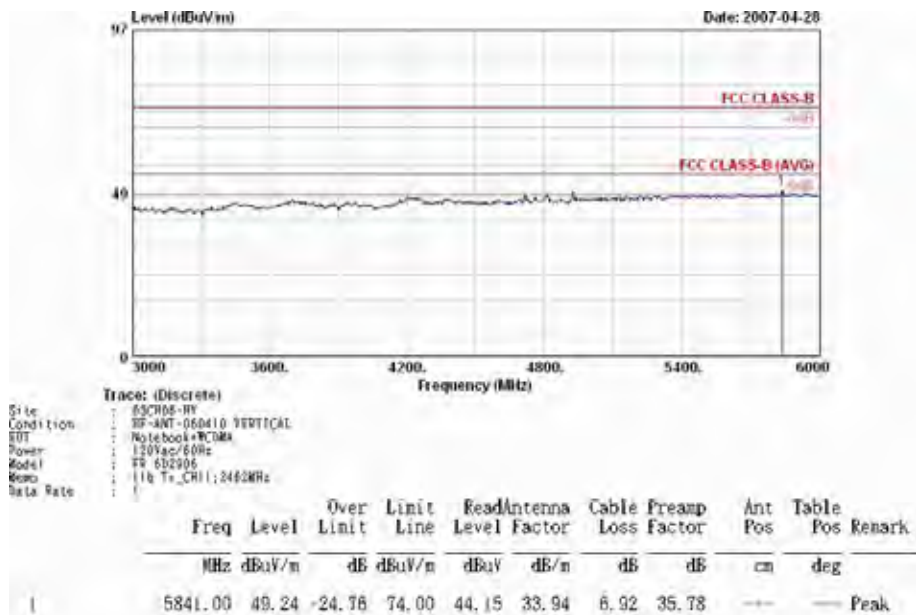
- Polarization : Vertical

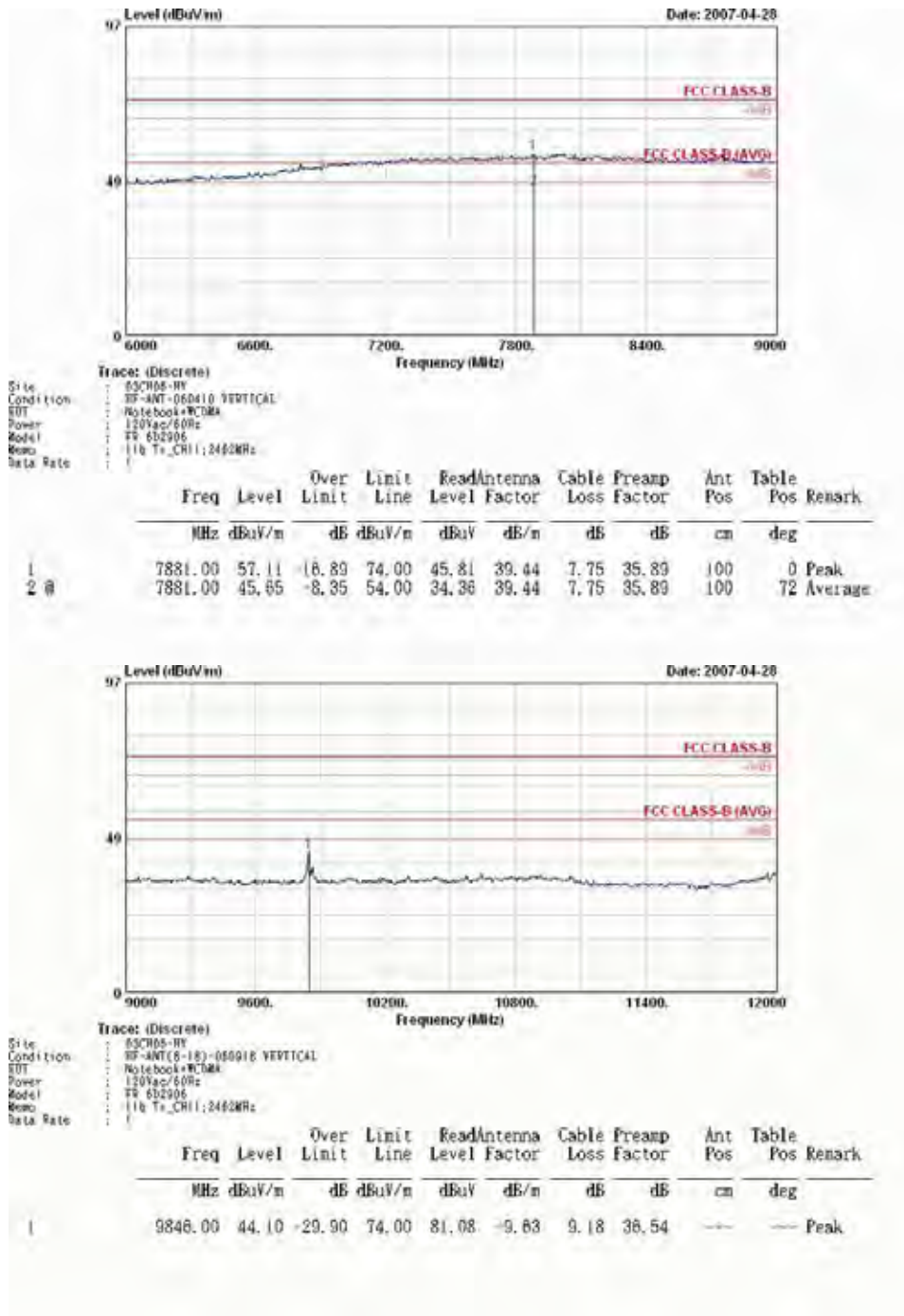
■ The test that passed at minimum margin was marked by the frame in the following table.

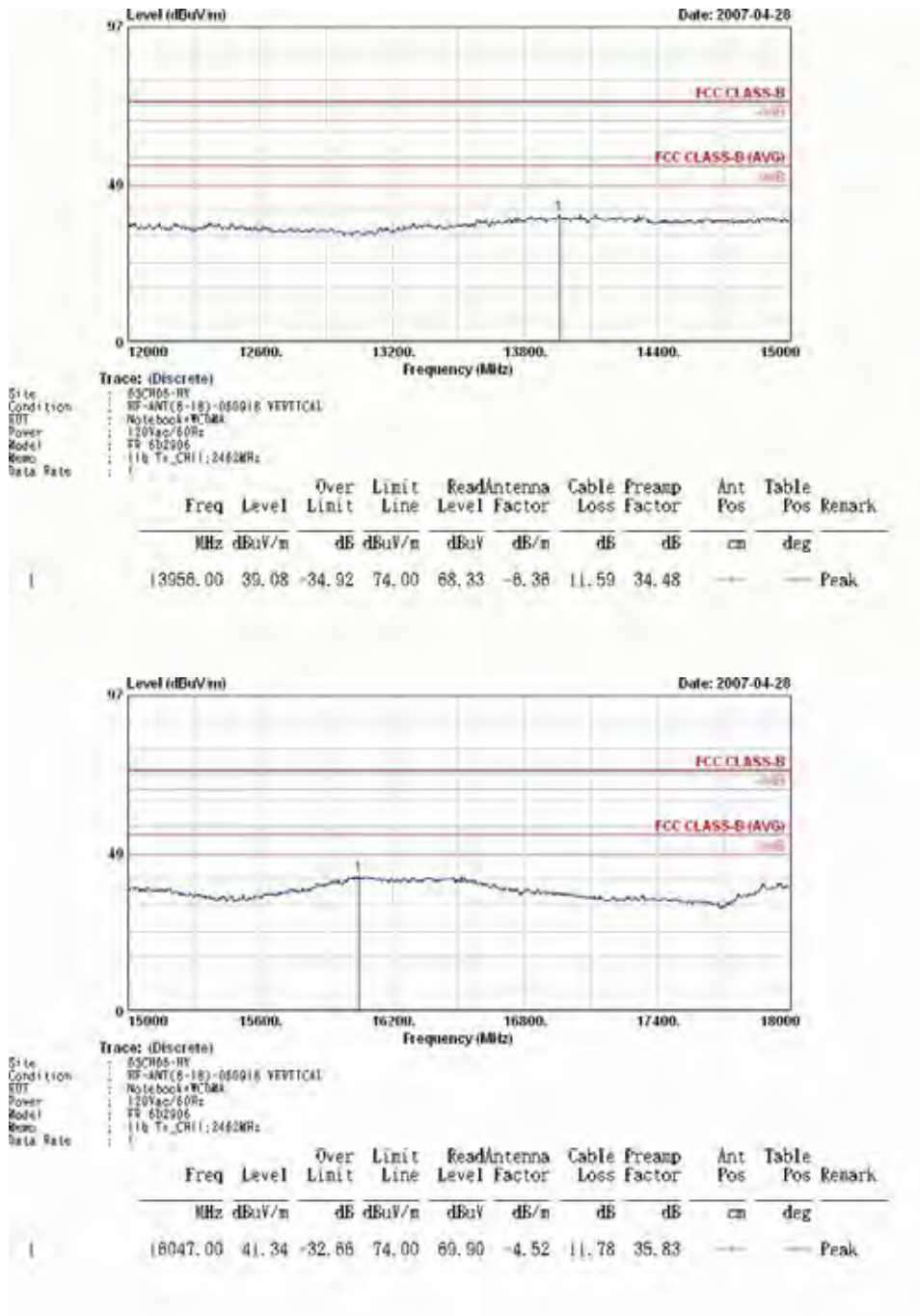


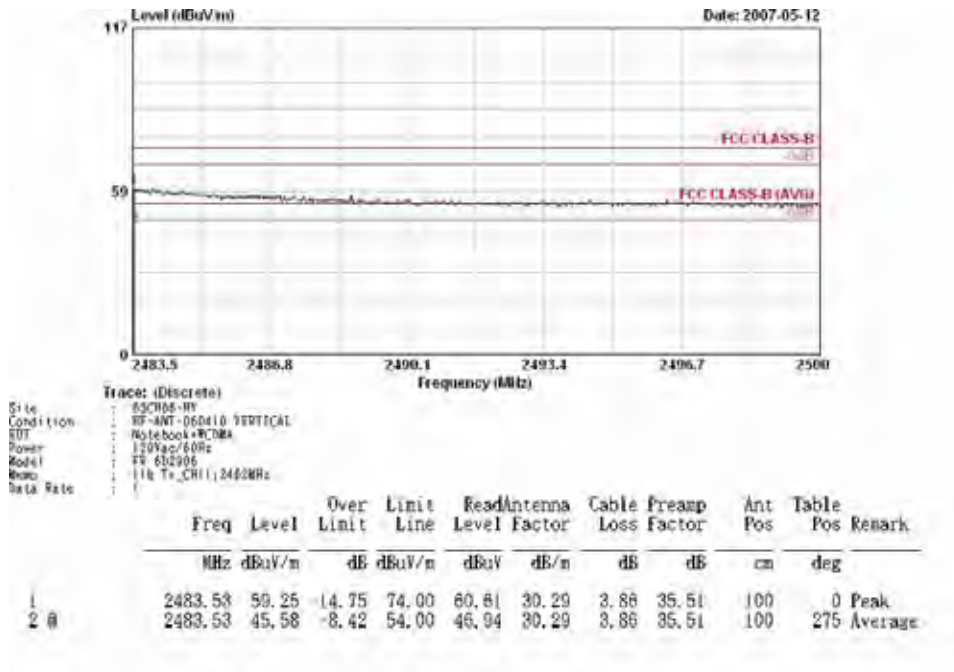


Remark: #7 and #8 Fundamental Signal







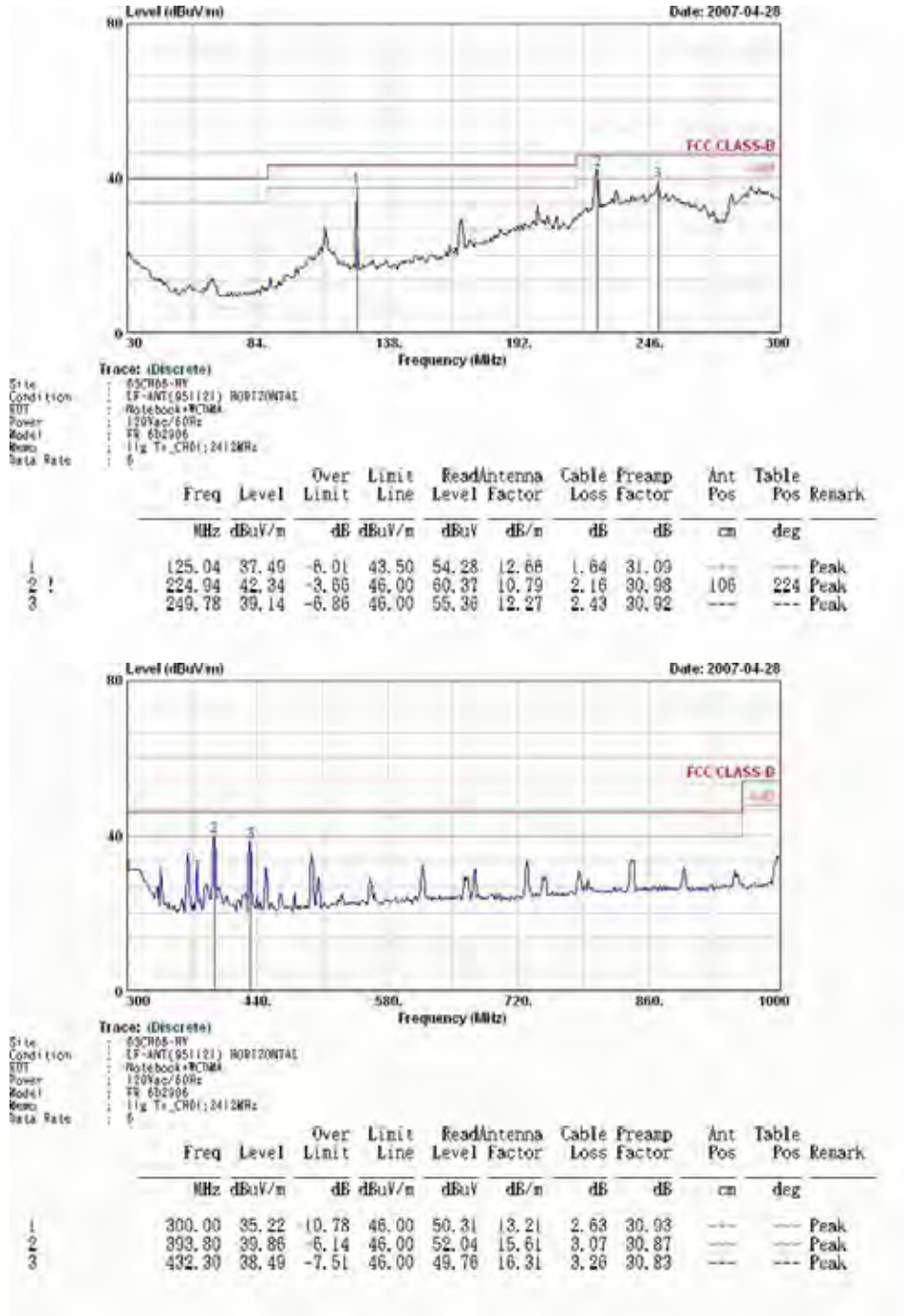


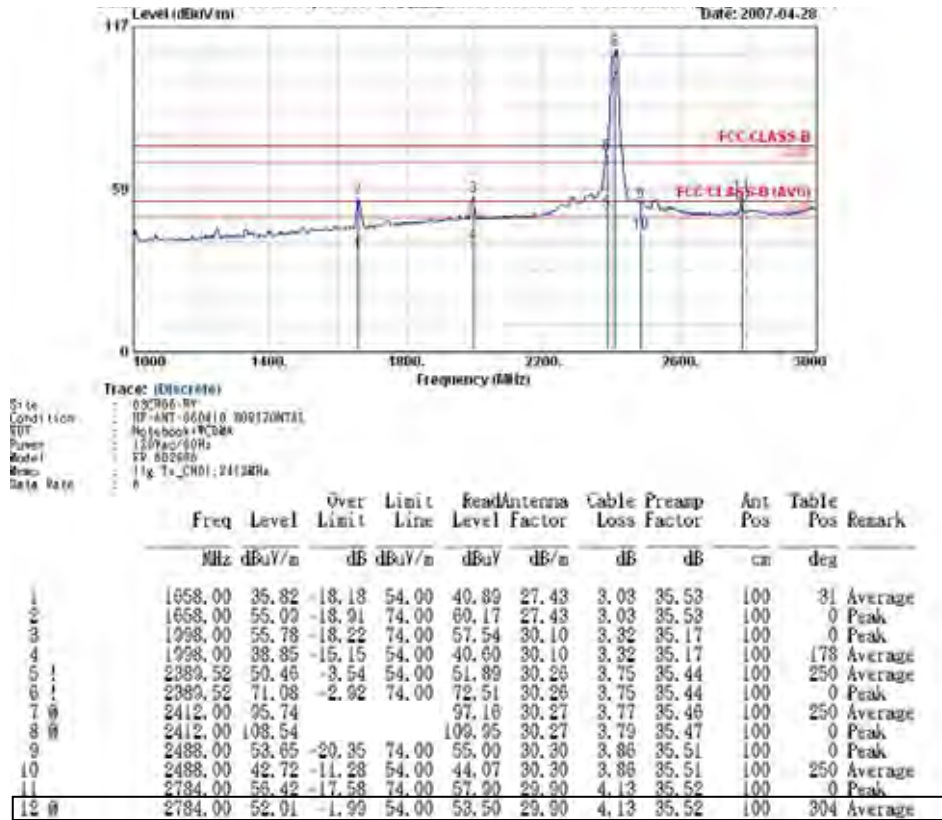
Remark : Frequency from 18GHz to 25GHz, the emission emitted by the EUT is too low to be measured.



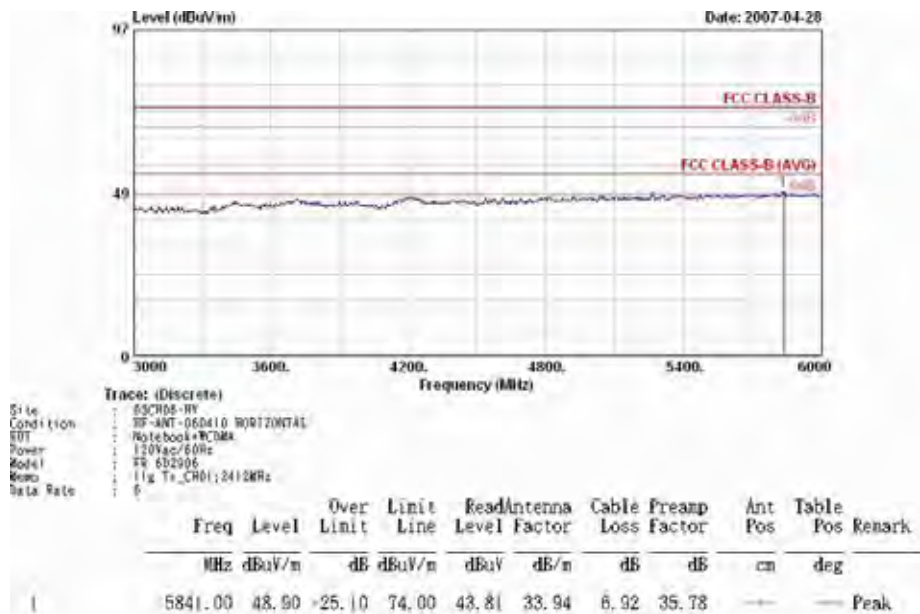
- Test Mode : Mode 4
- Polarization : Horizontal

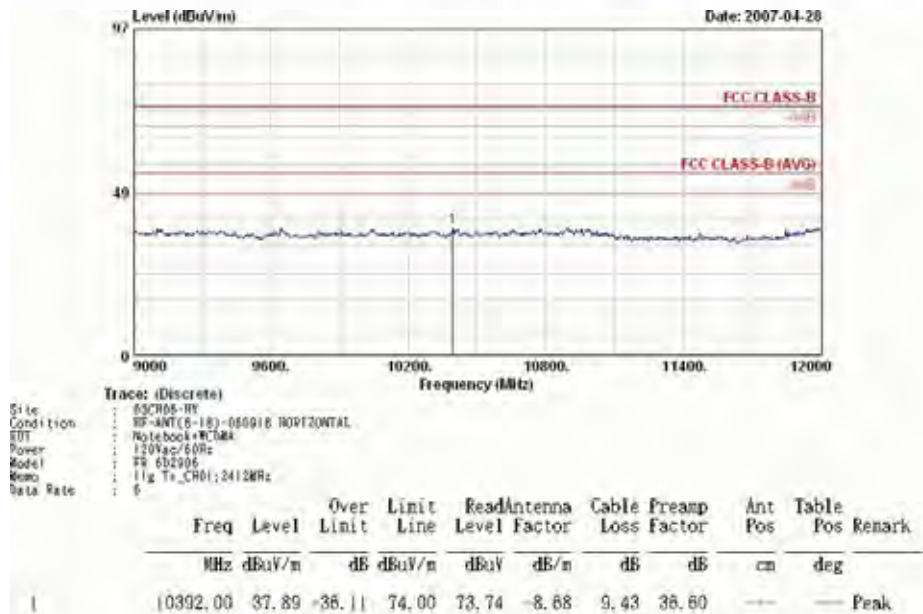
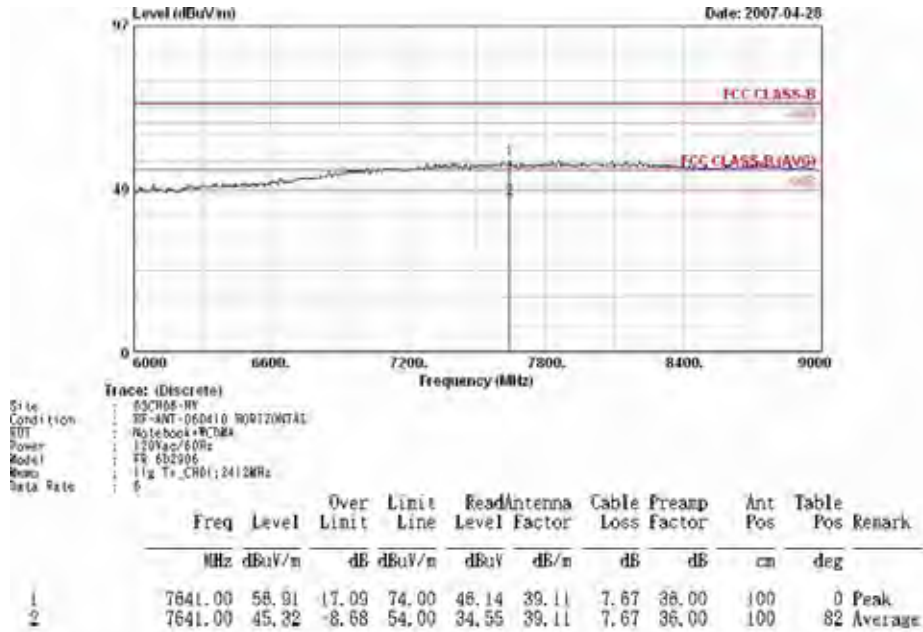
■ The test that passed at minimum margin was marked by the frame in the following table.

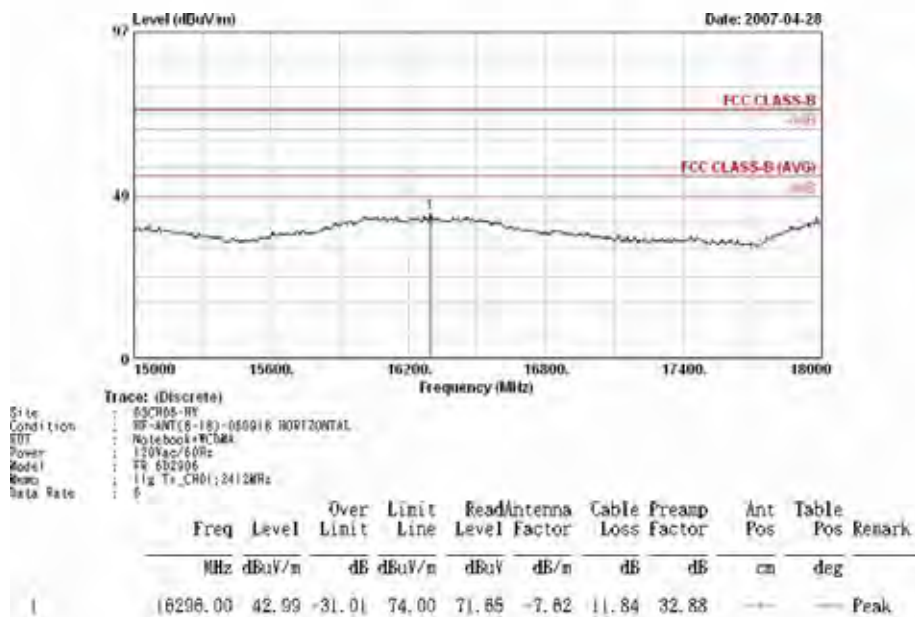
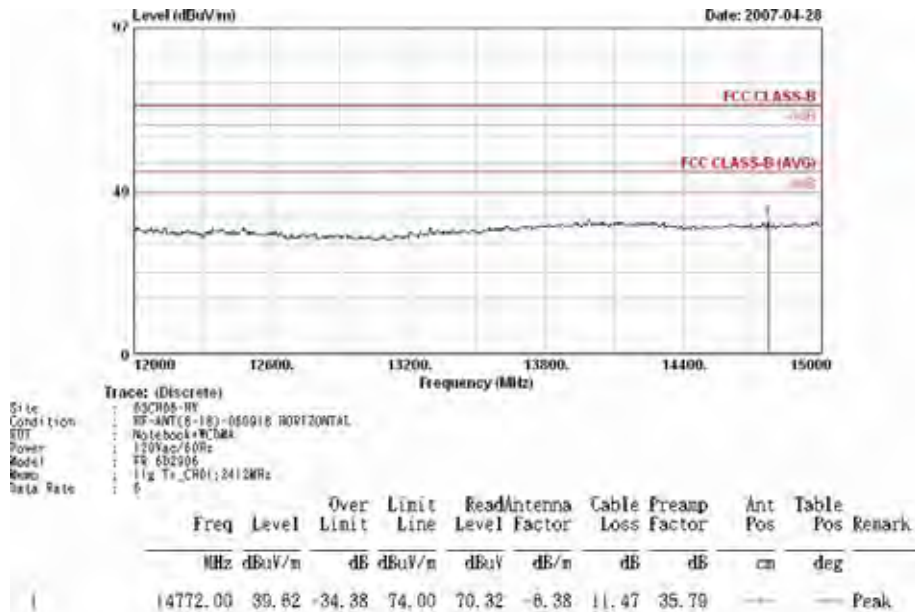


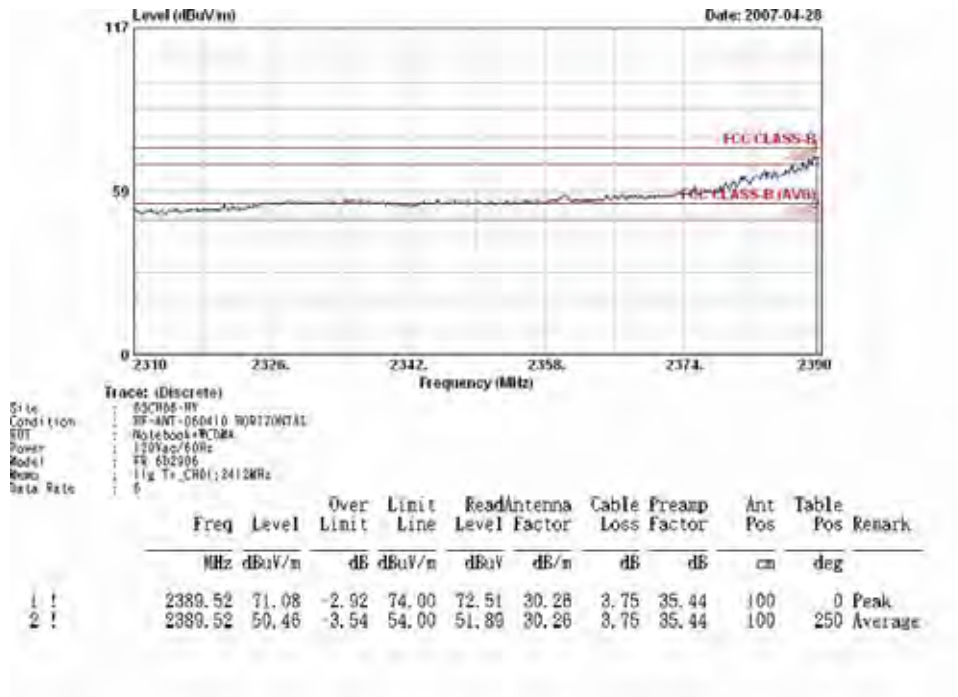


Remark: #7 and #8 Fundamental Signal





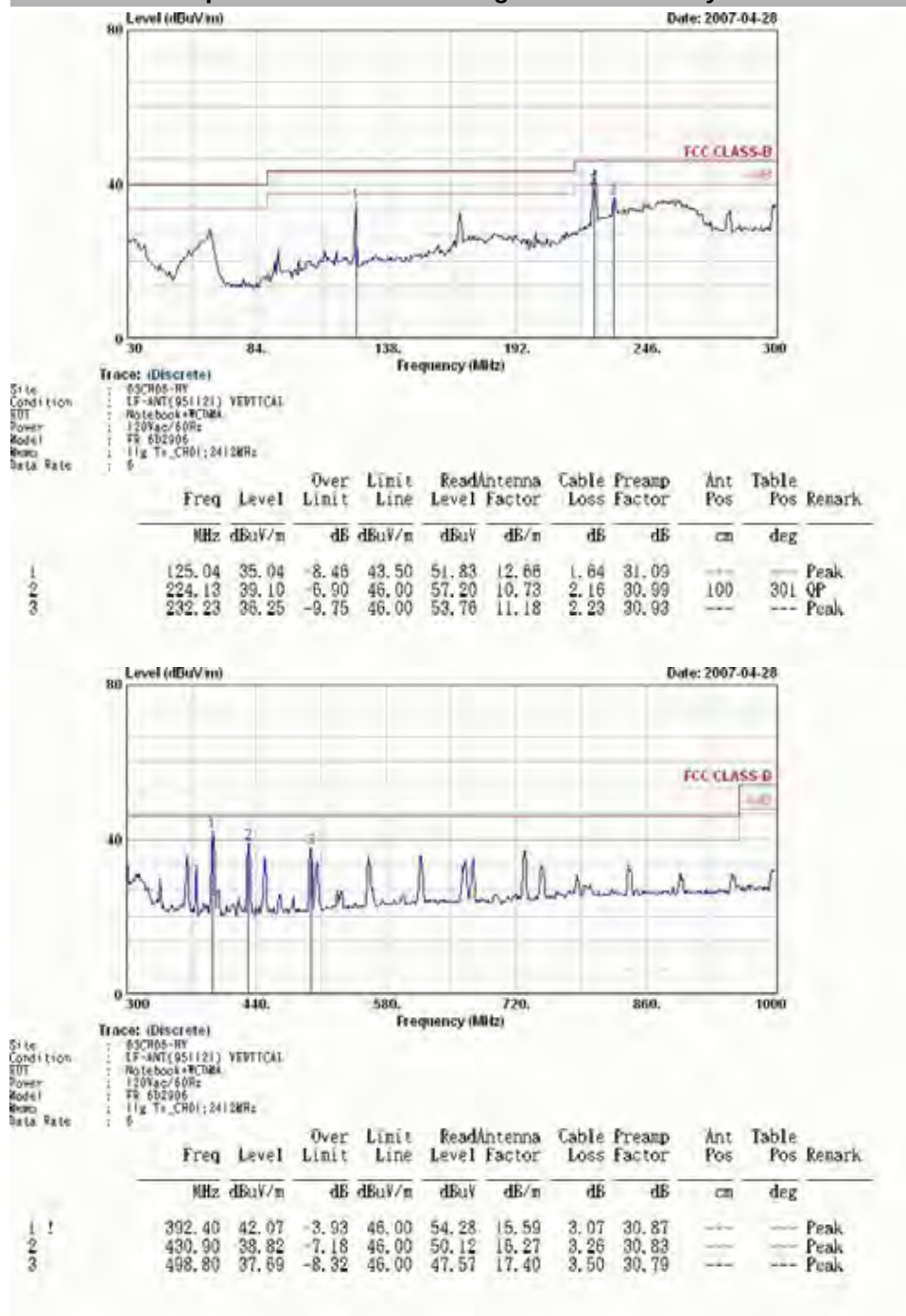


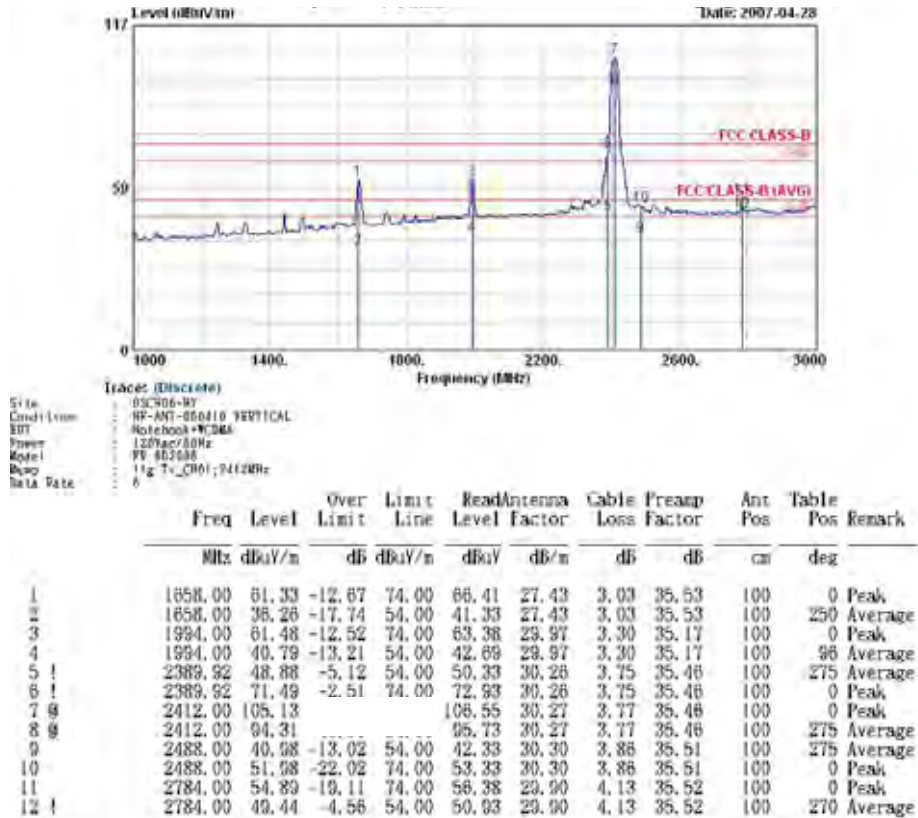




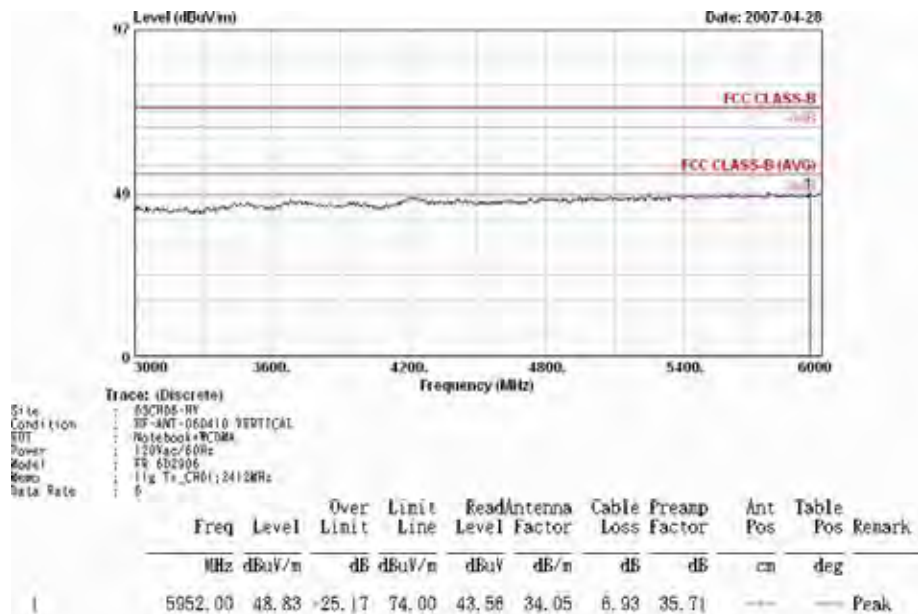
- Polarization : Vertical

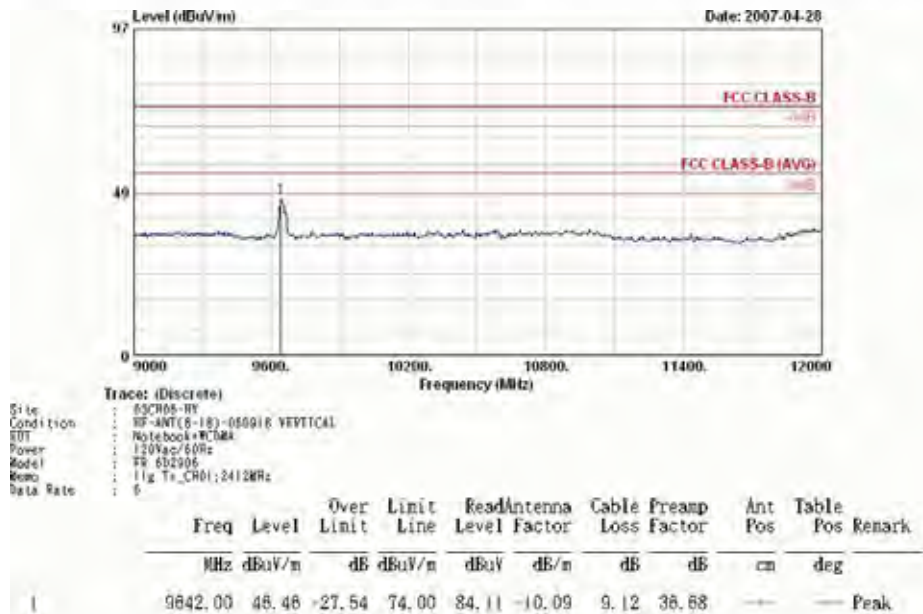
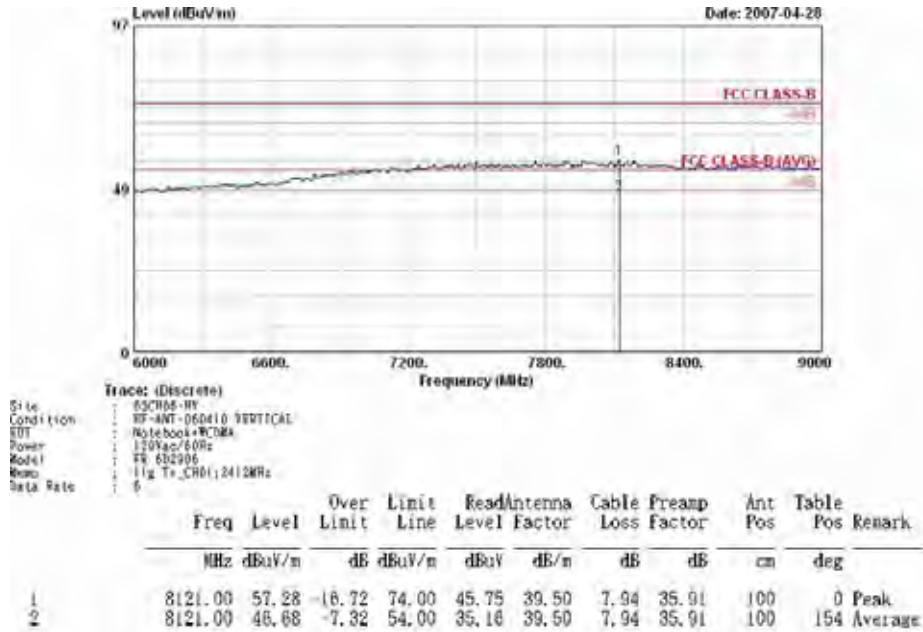
■ The test that passed at minimum margin was marked by the frame in the following table.

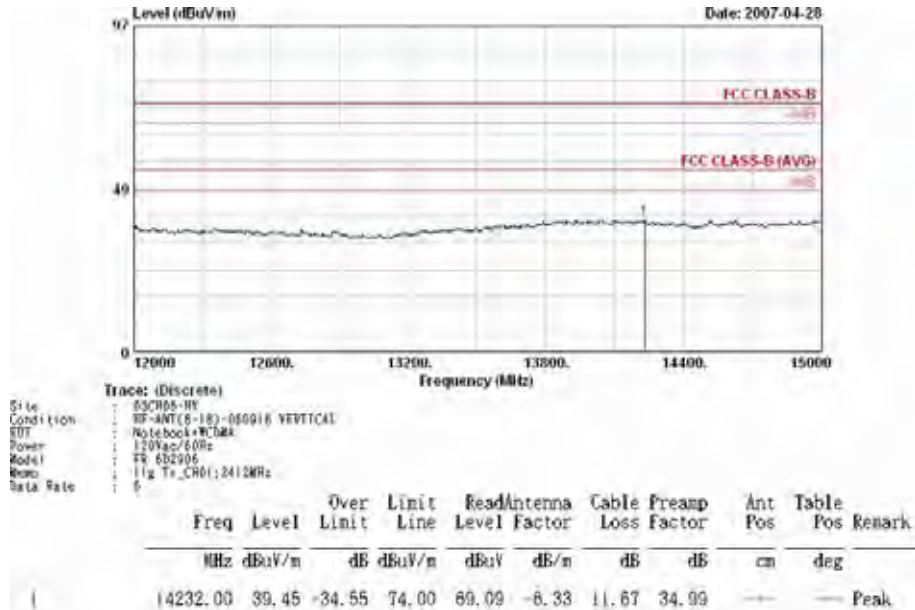


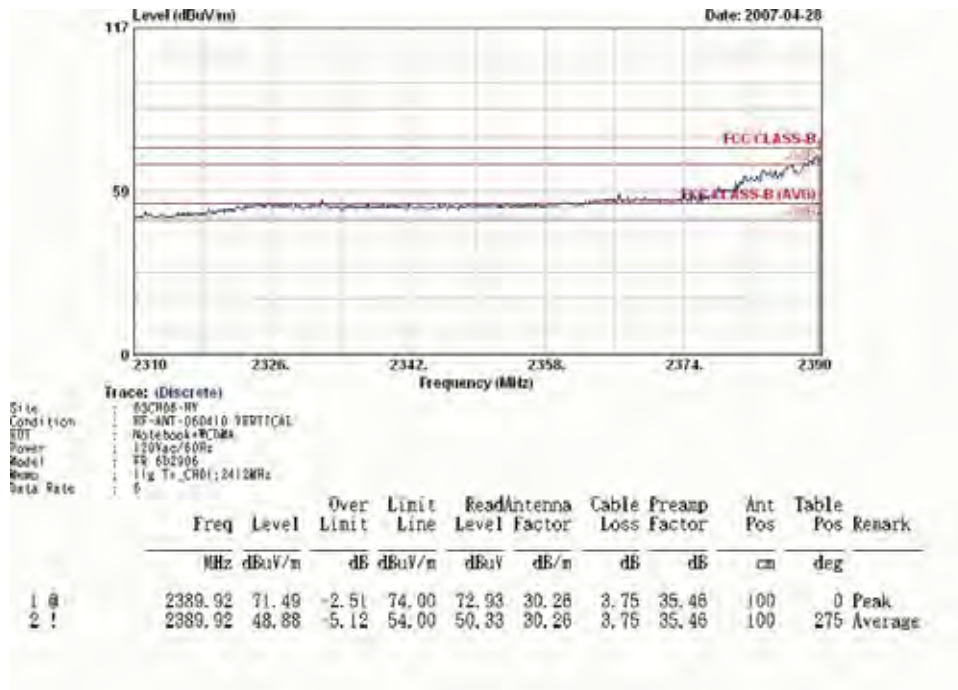


Remark: #7 and #8 Fundamental Signal





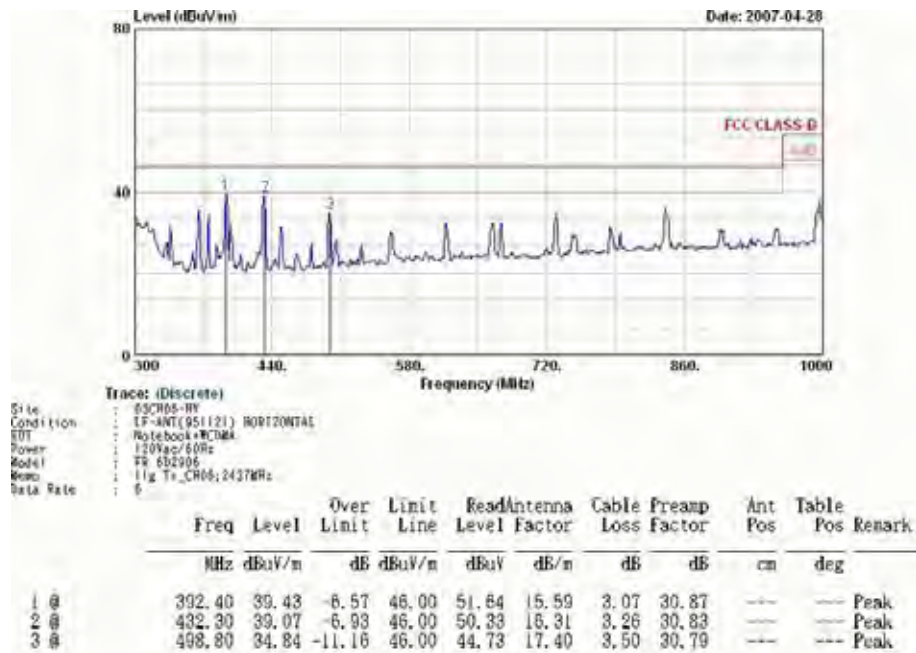


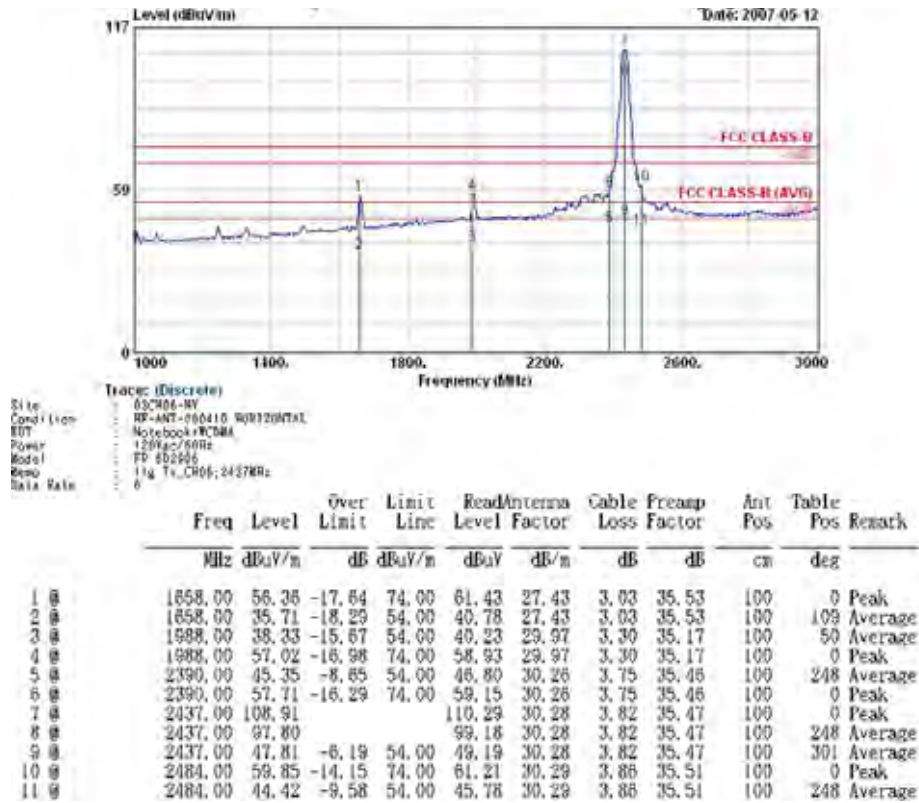


Remark : Frequency from 18GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

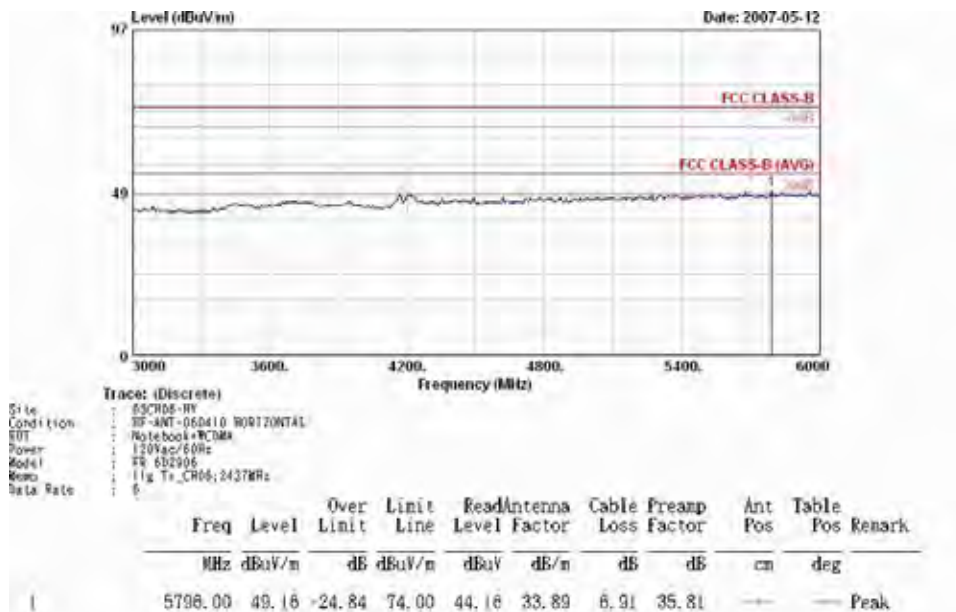
- Test Mode : Mode 5
- Polarization : Horizontal

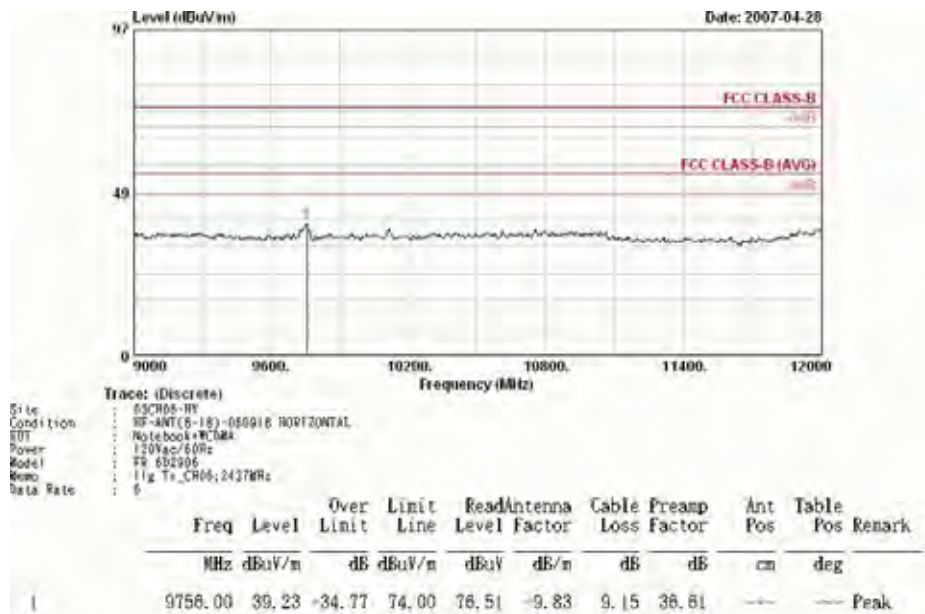
■ The test that passed at minimum margin was marked by the frame in the following table.

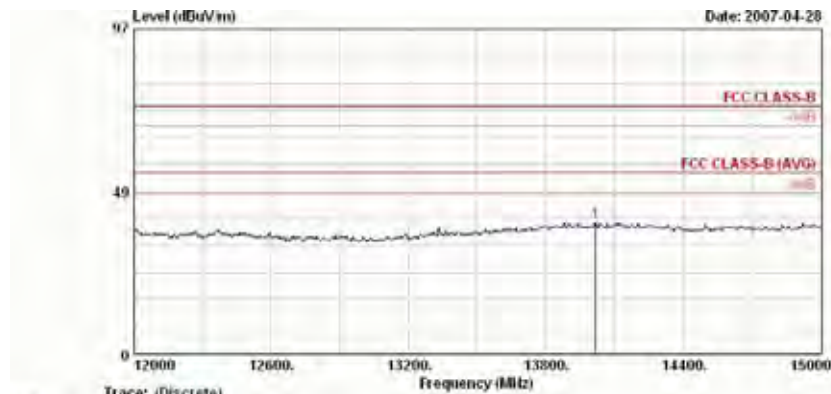




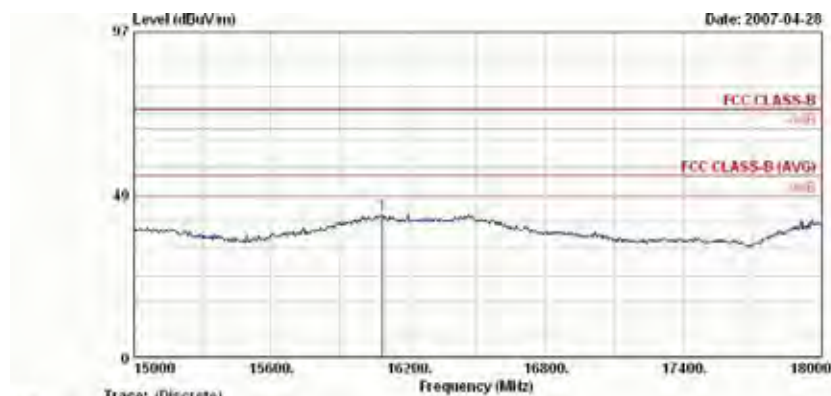
Remark: #7 and #8 Fundamental Signal



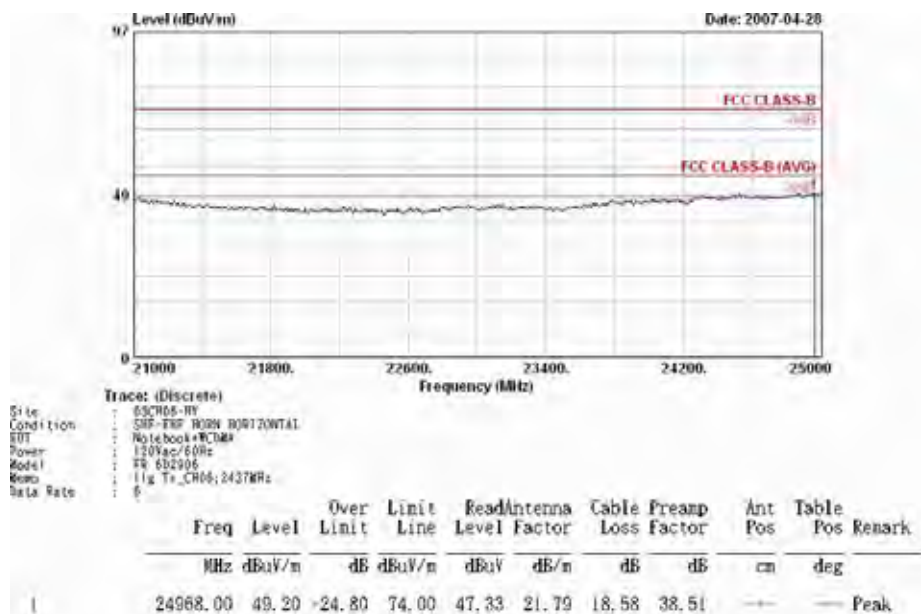
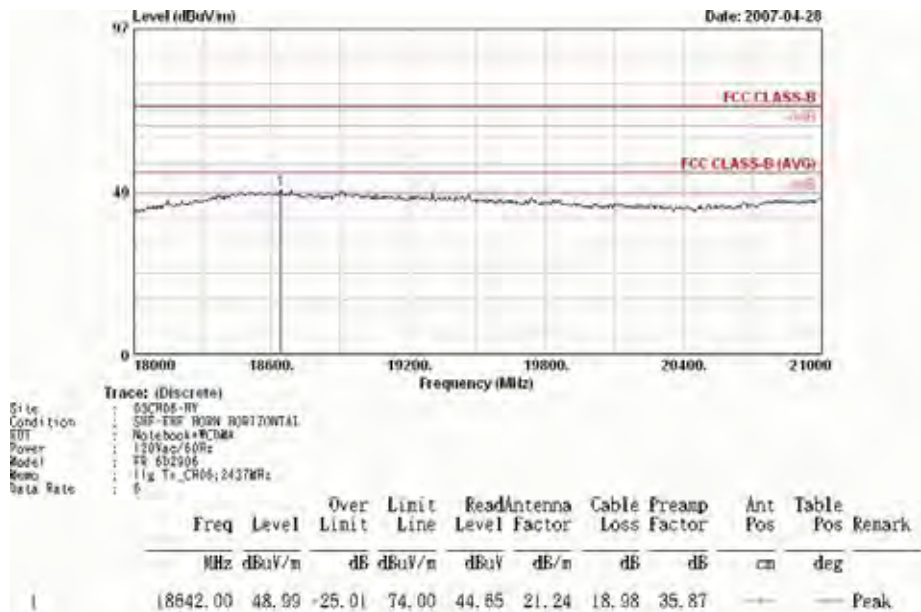




Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
				Factor			cm	deg	
14018.00	39.27	-34.73	74.00	68.29	-6.12	11.63	34.53	---	Peak



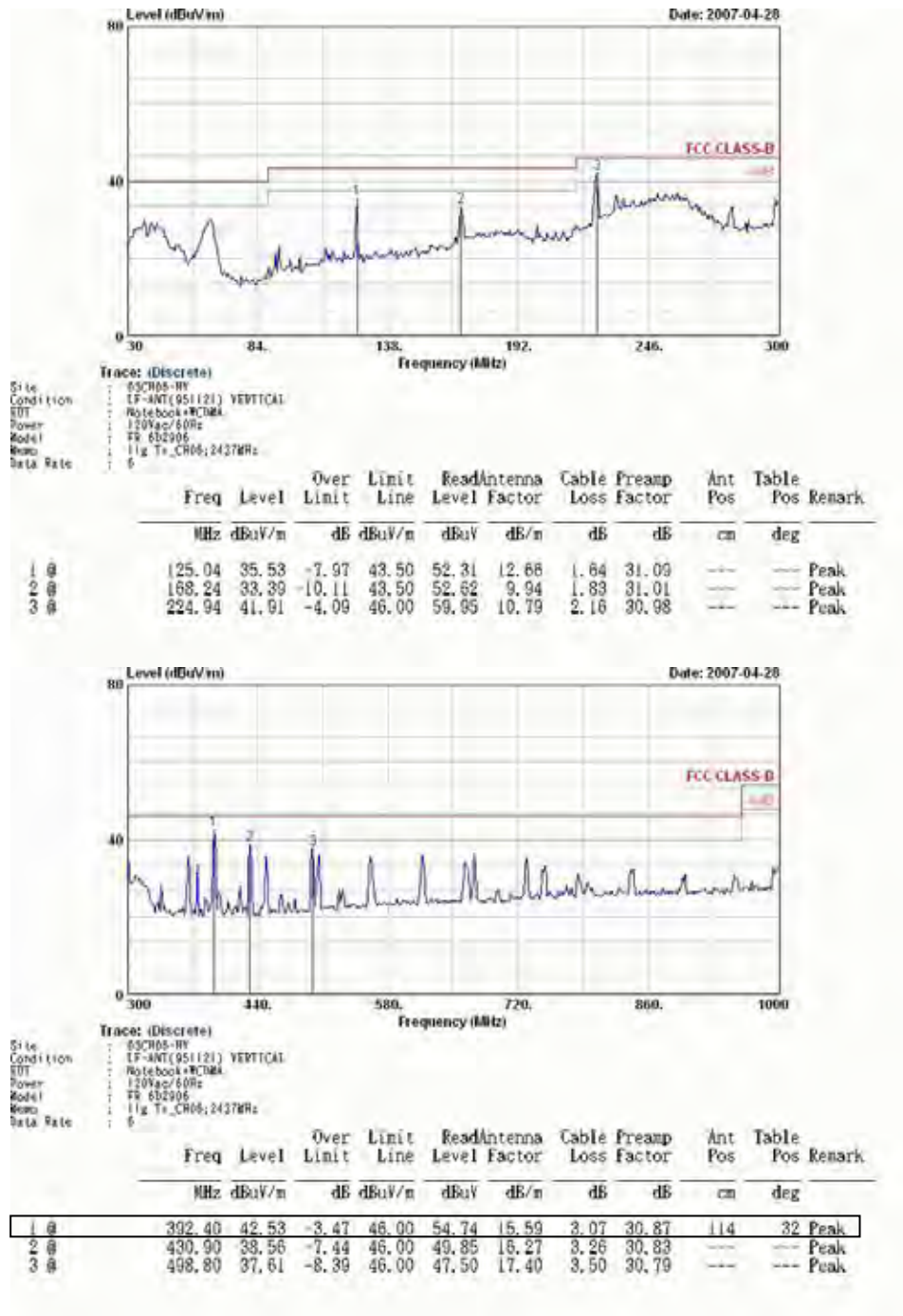
Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	Remark
				Factor			cm	deg	
18088.00	42.50	-31.50	74.00	70.97	-5.02	11.79	35.24	---	Peak

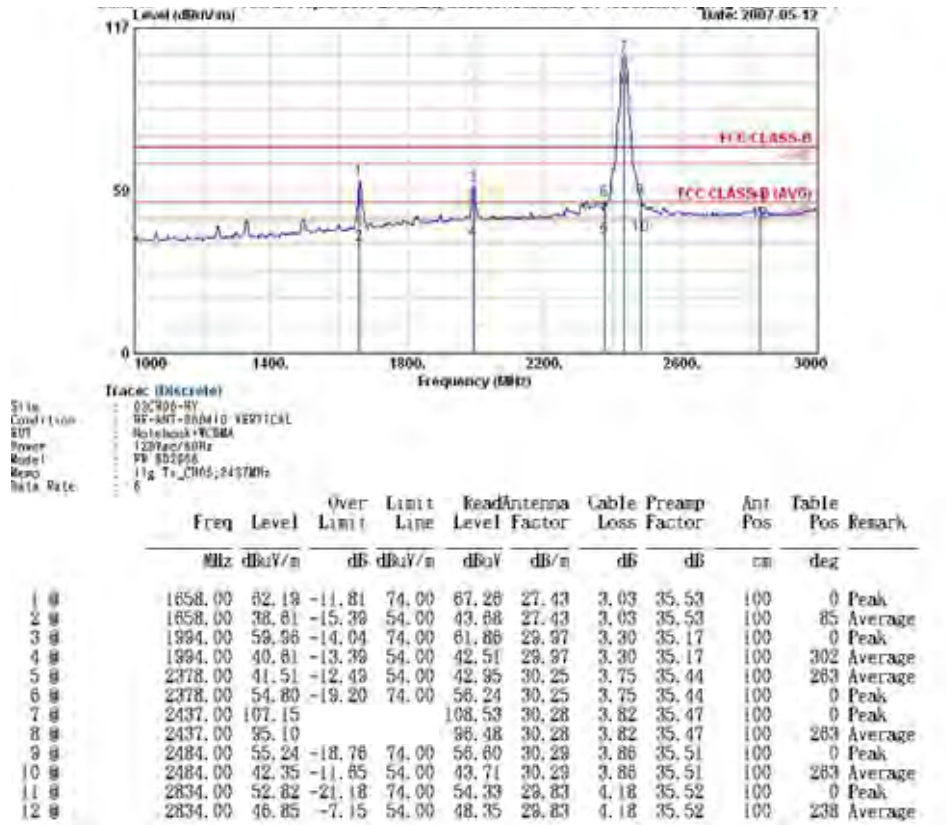




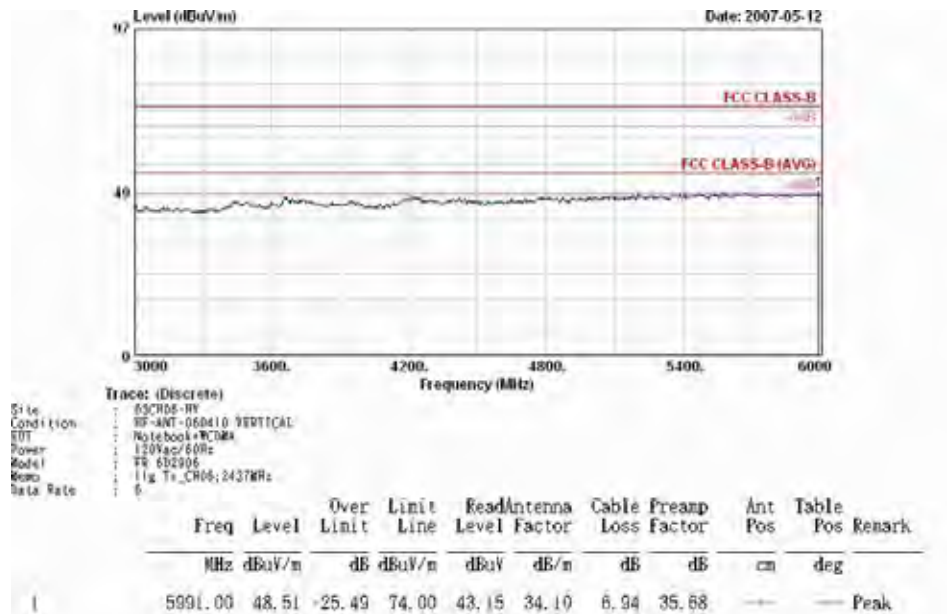
- Polarization : Vertical

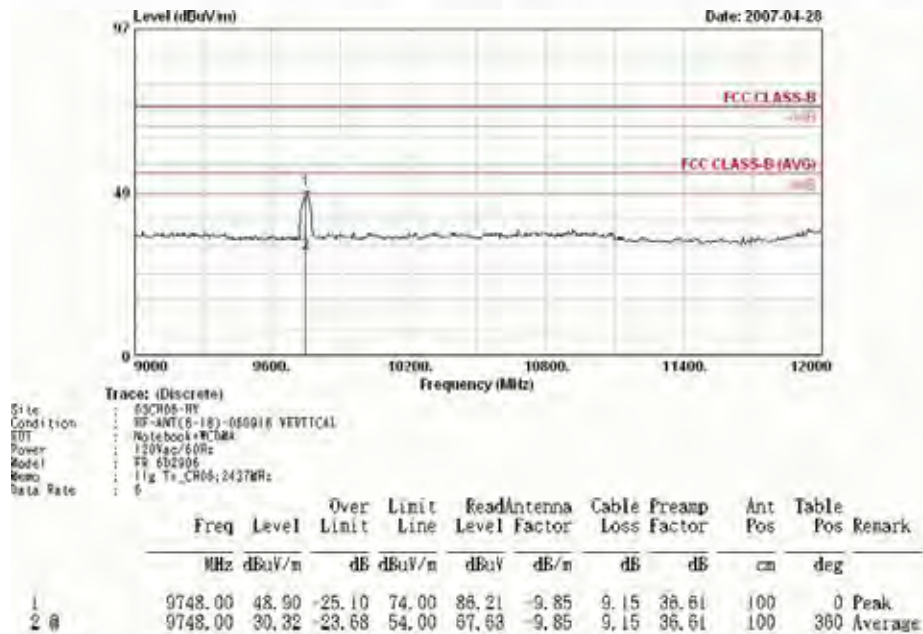
■ The test that passed at minimum margin was marked by the frame in the following table.

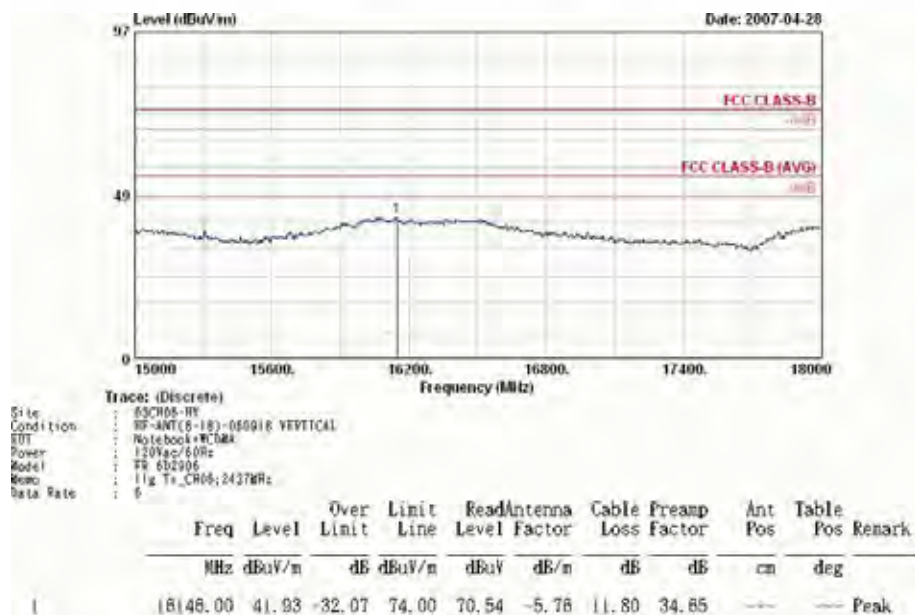
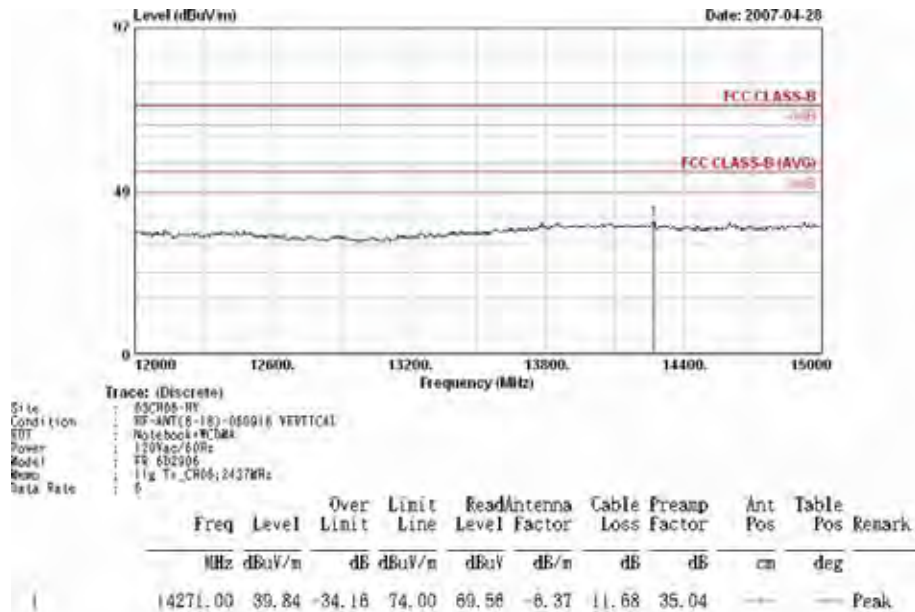


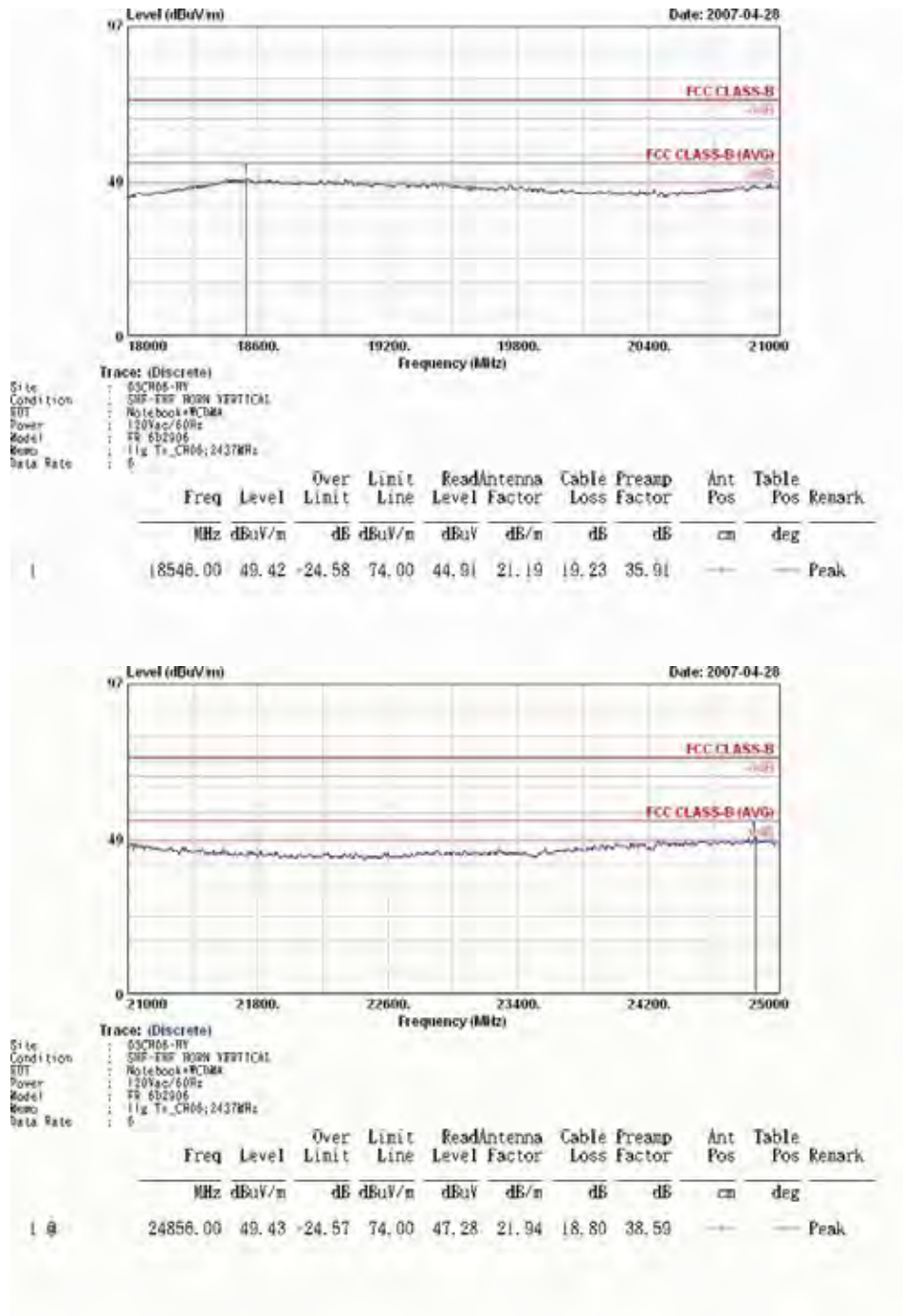


Remark: #7 and #8 Fundamental Signal



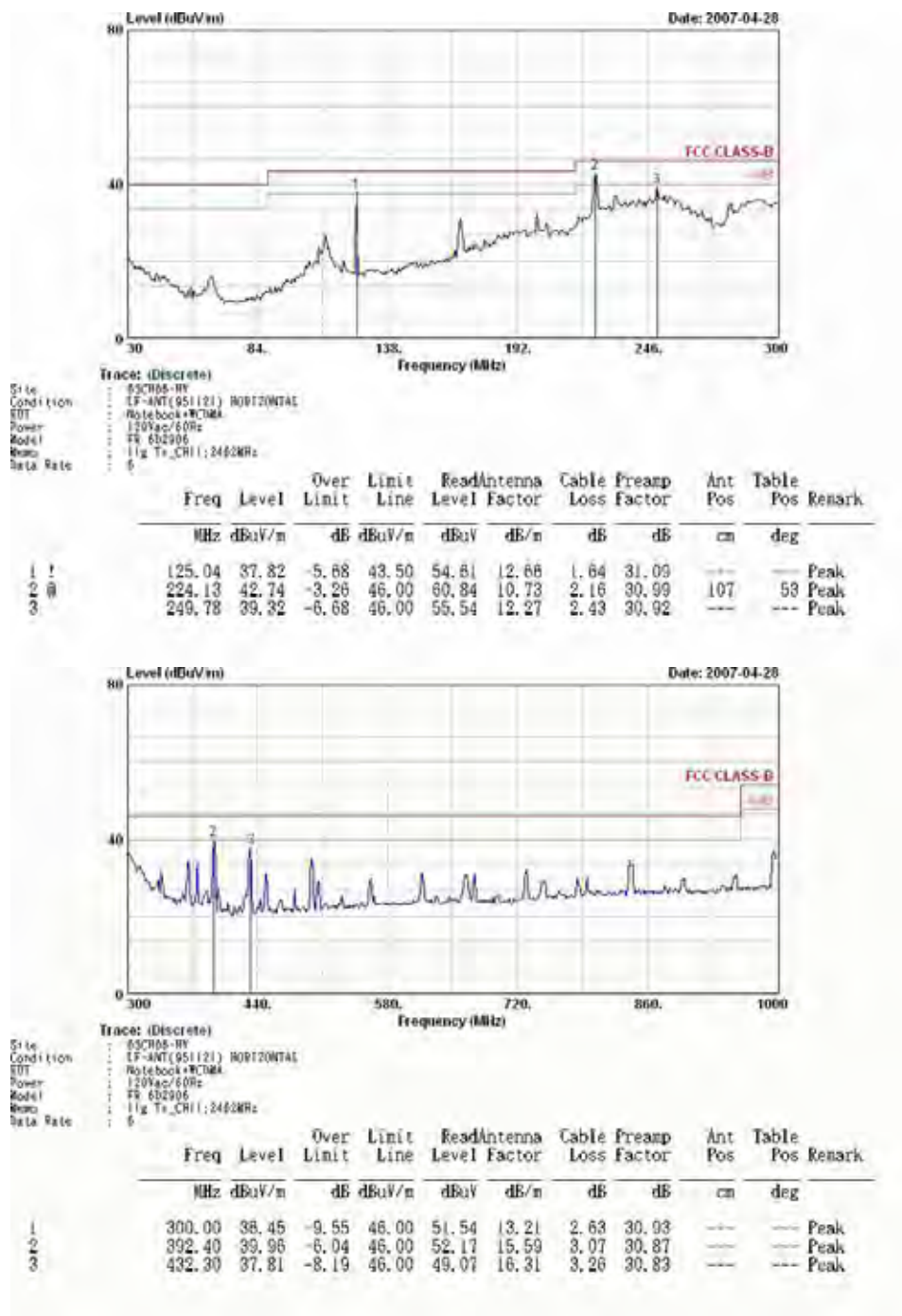


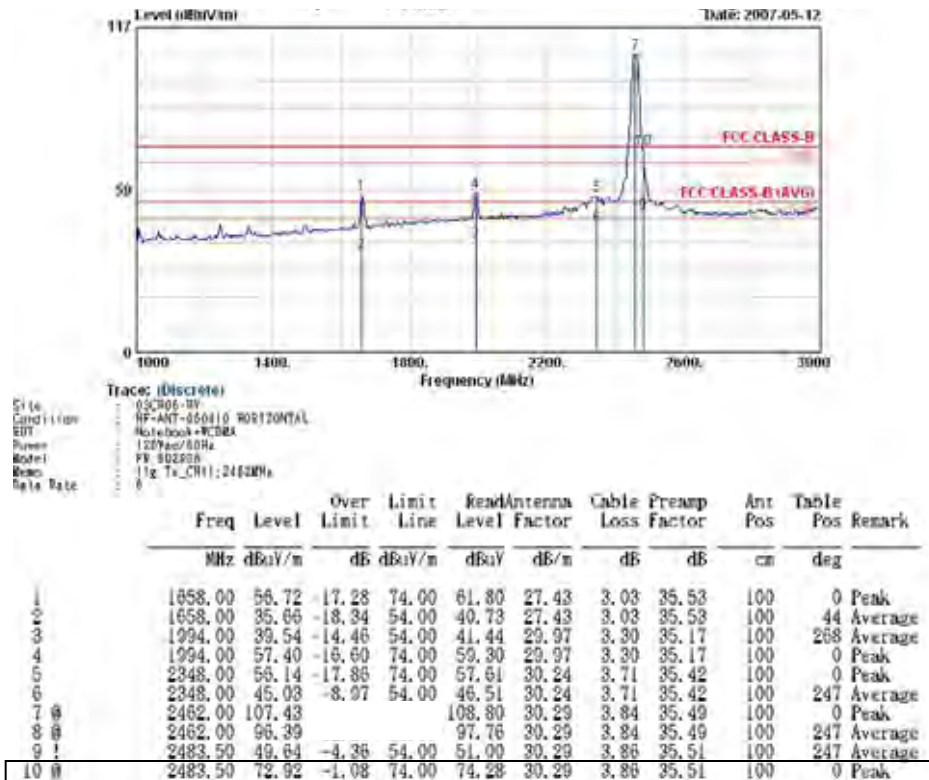




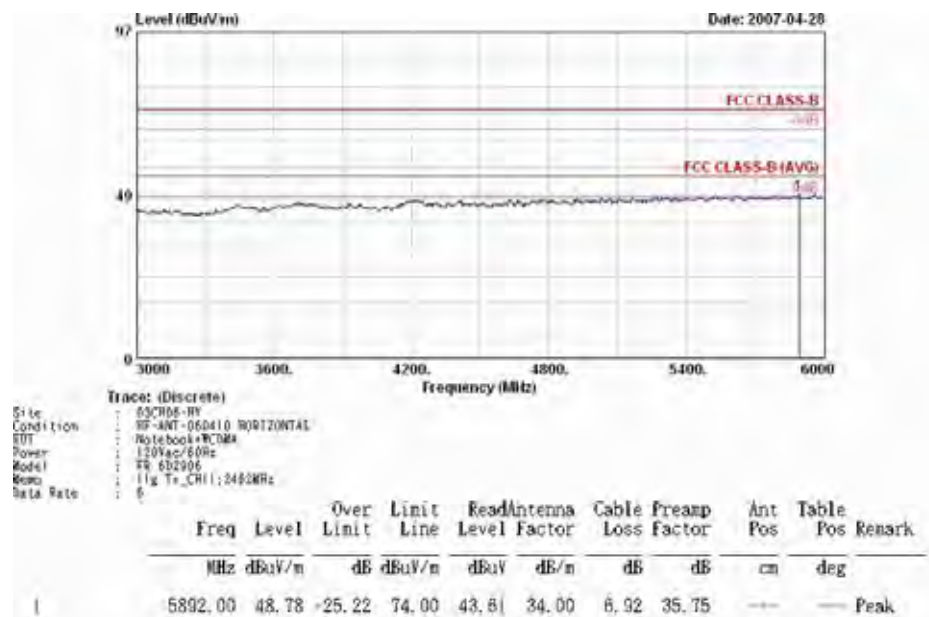
- Test Mode : Mode 6
- Polarization : Horizontal

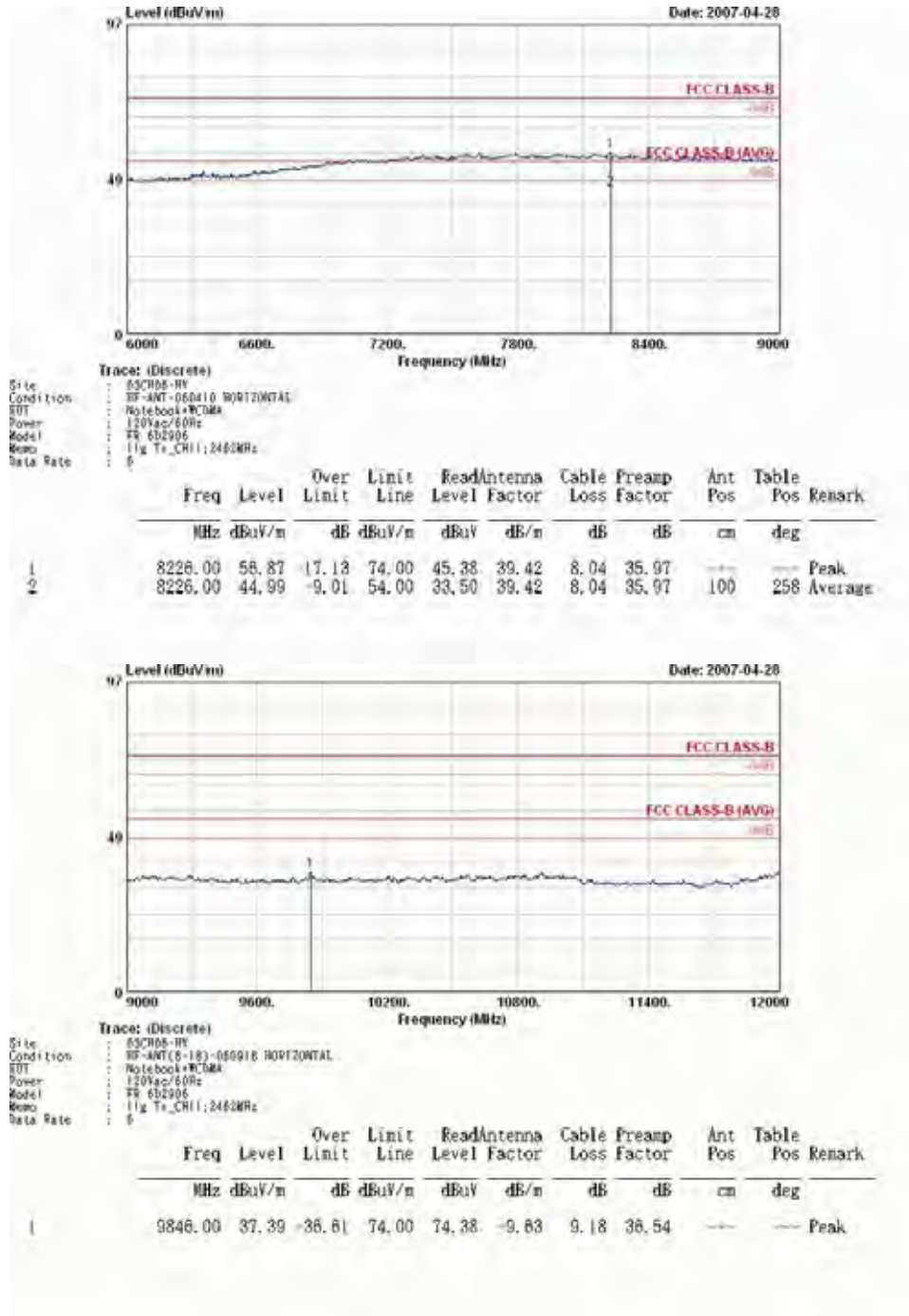
■ The test that passed at minimum margin was marked by the frame in the following table.

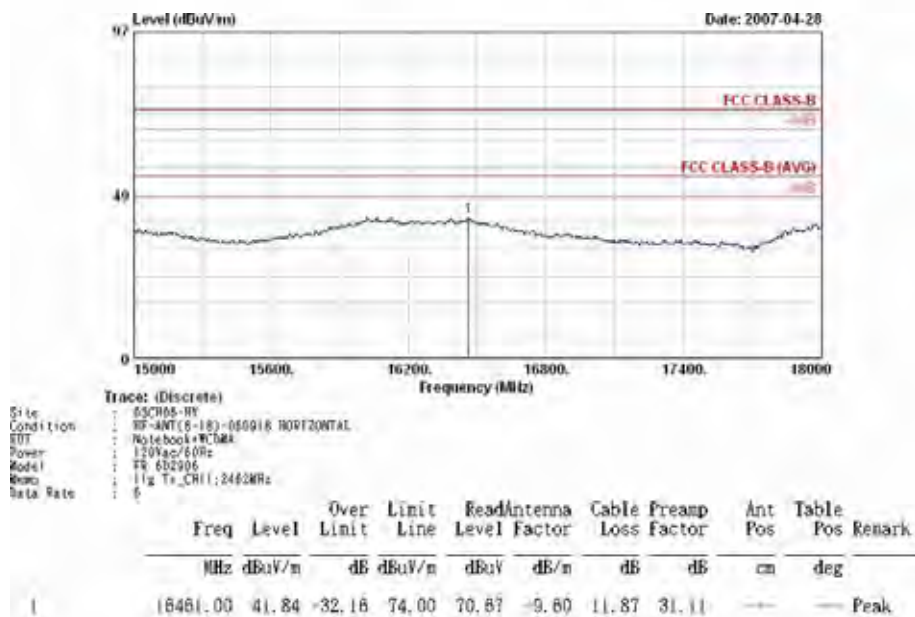
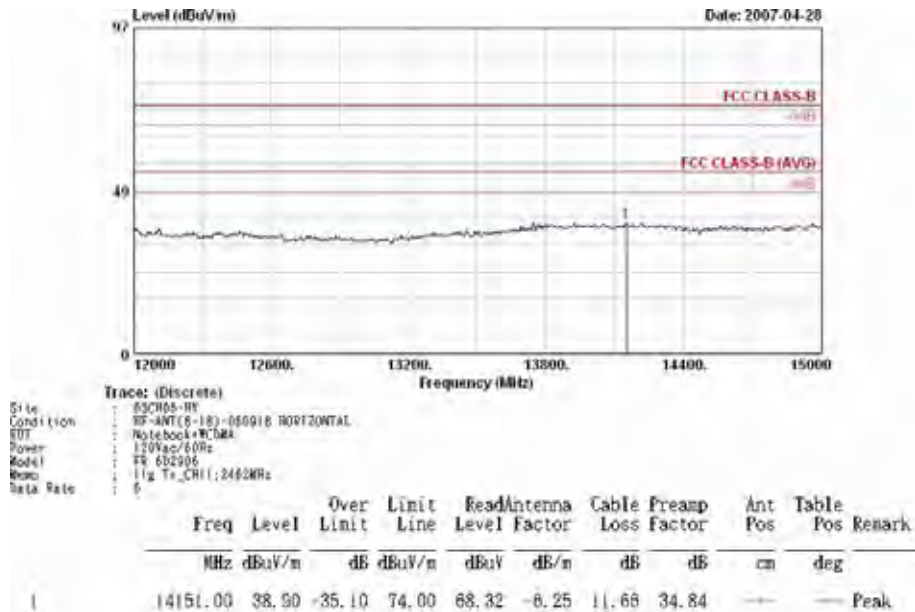


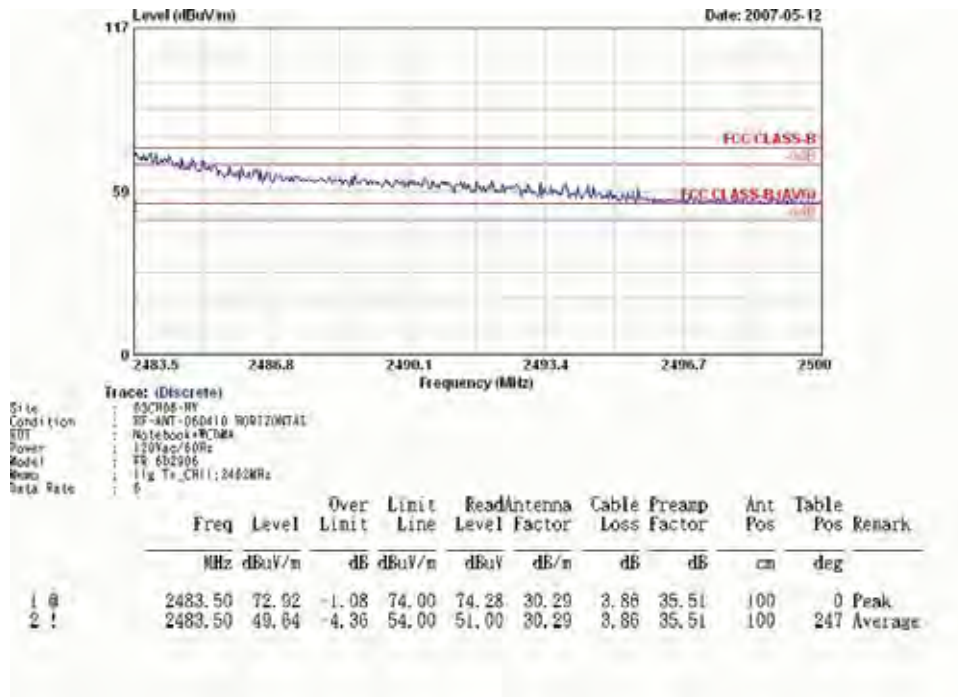


Remark: #7 and #8 Fundamental Signal





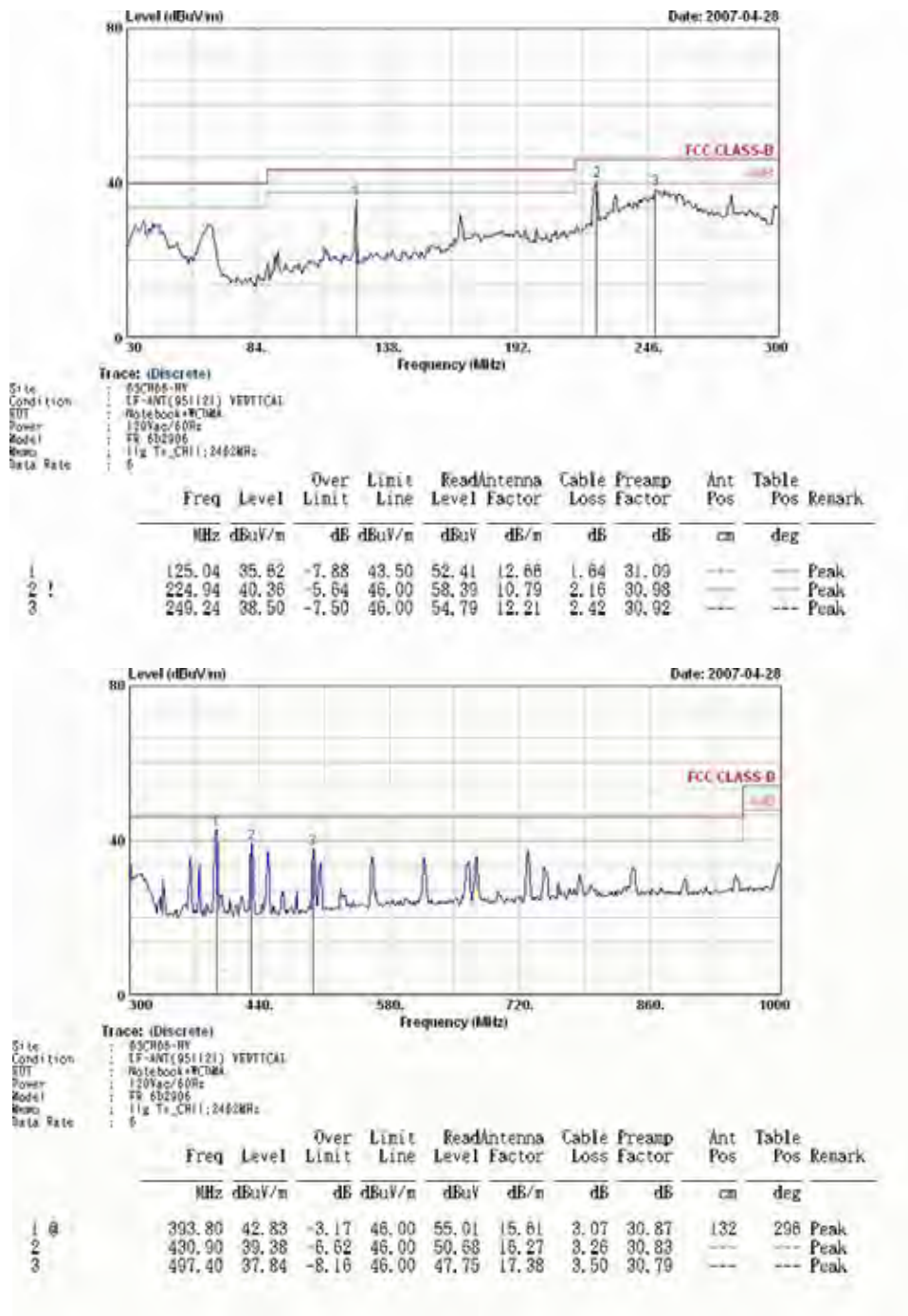


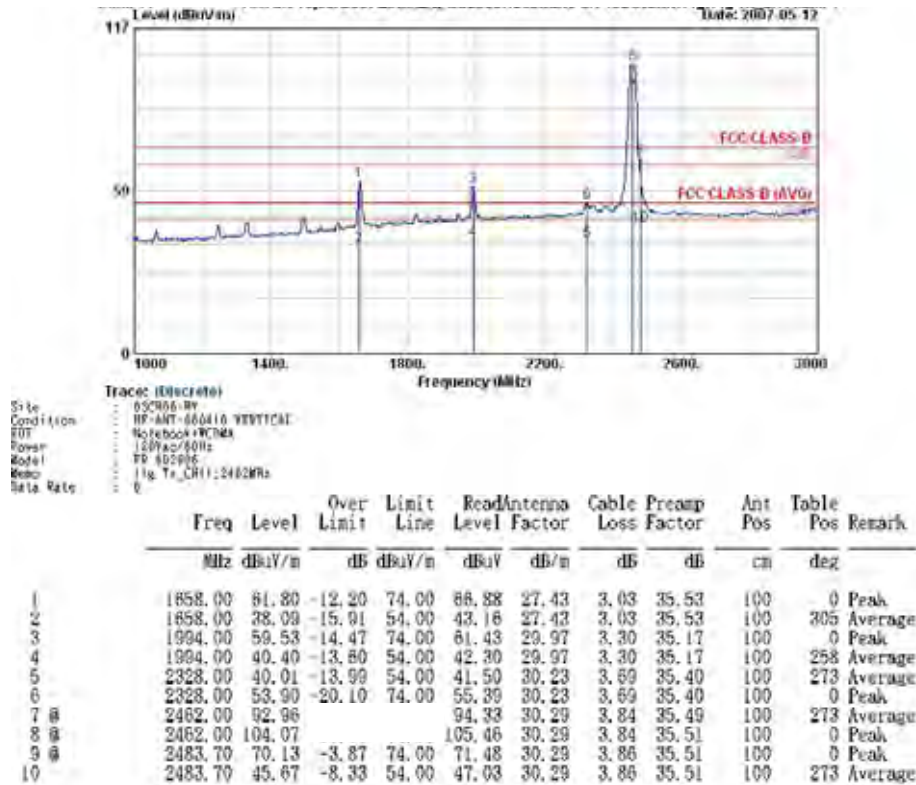




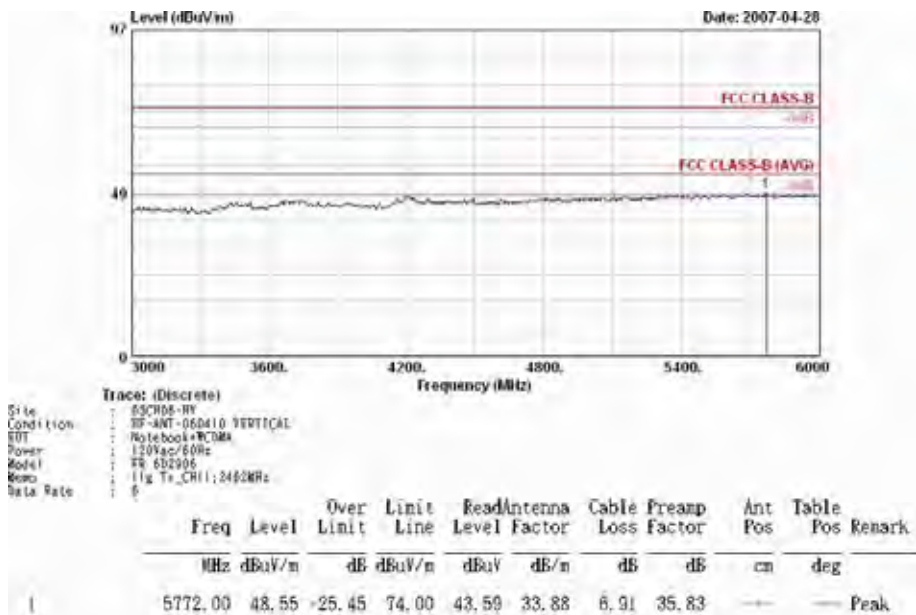
- Polarization : Vertical

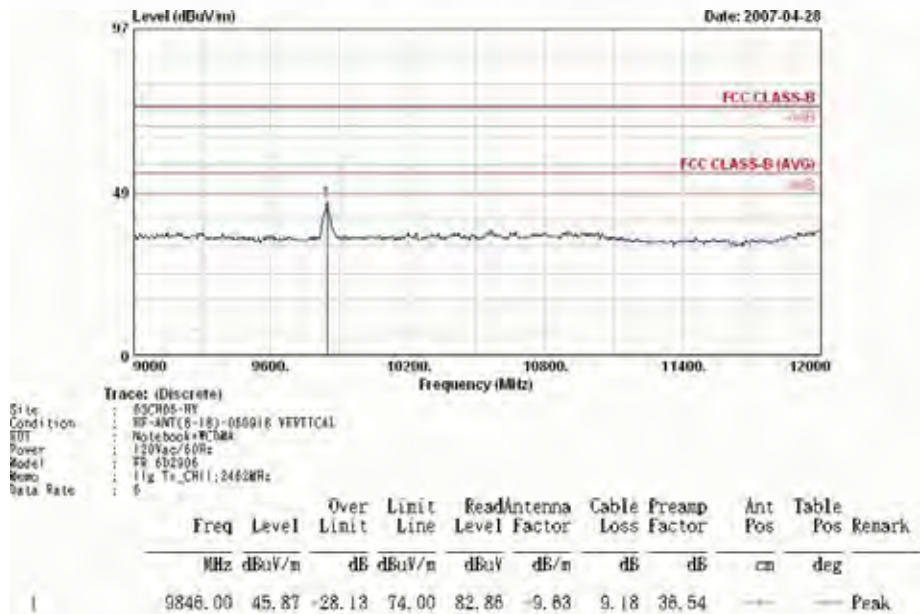
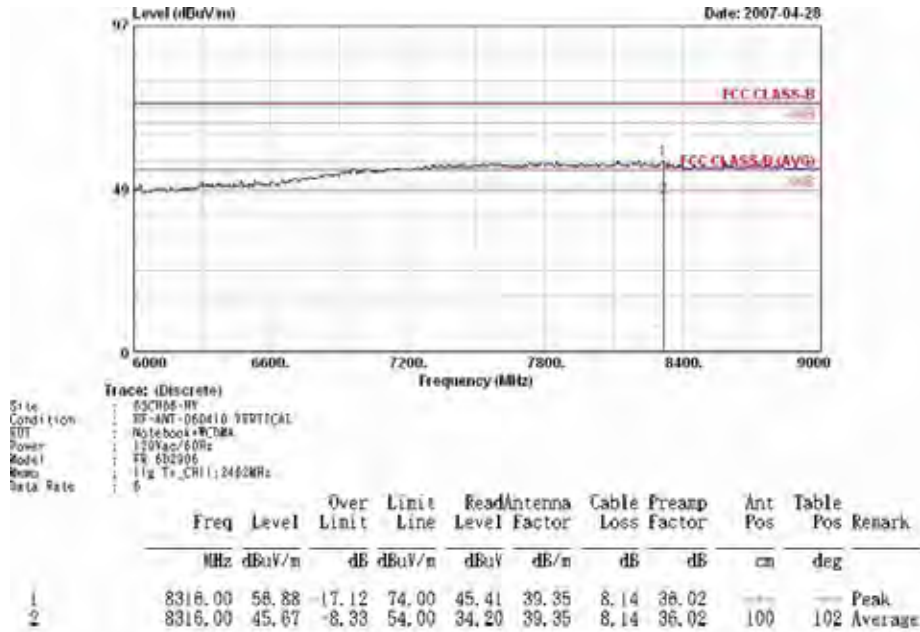
■ The test that passed at minimum margin was marked by the frame in the following table.

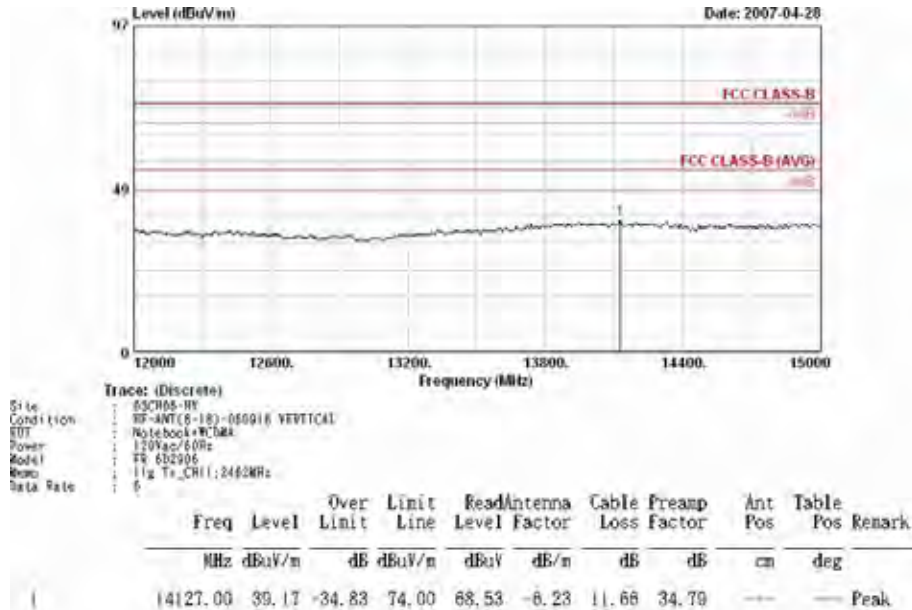




Remark: #7 and #8 Fundamental Signal







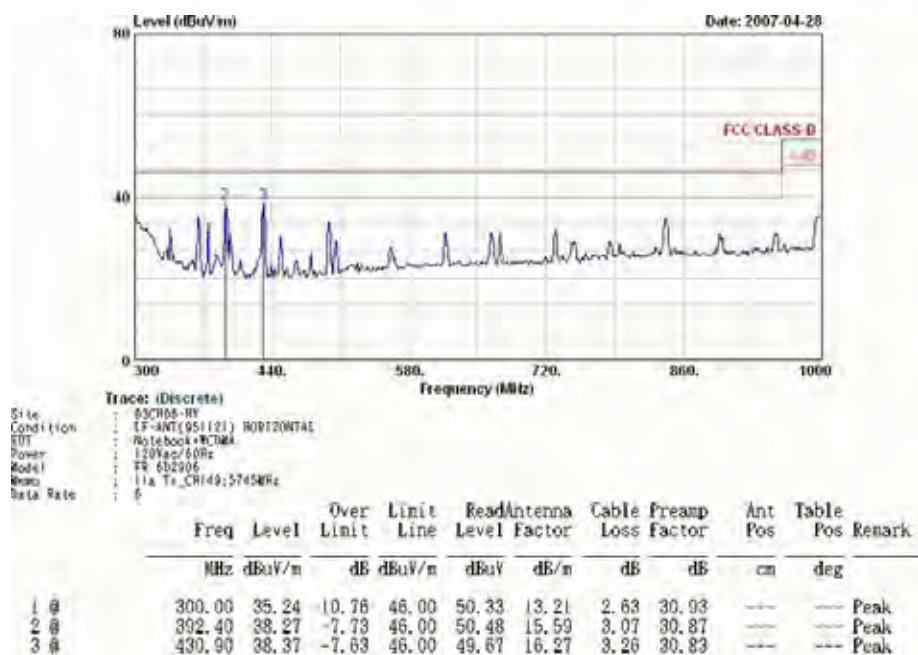


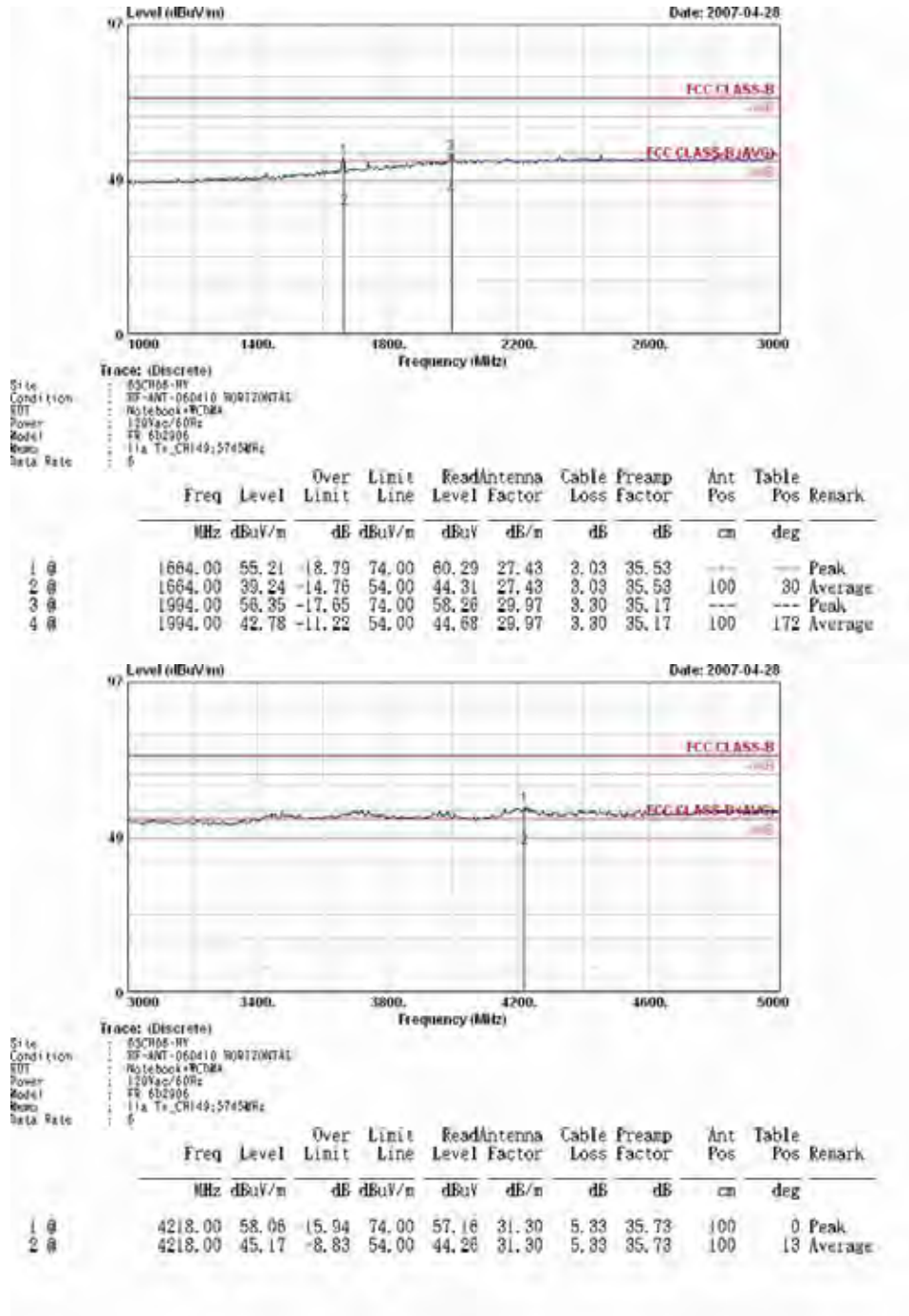
Remark : Frequency from 18GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

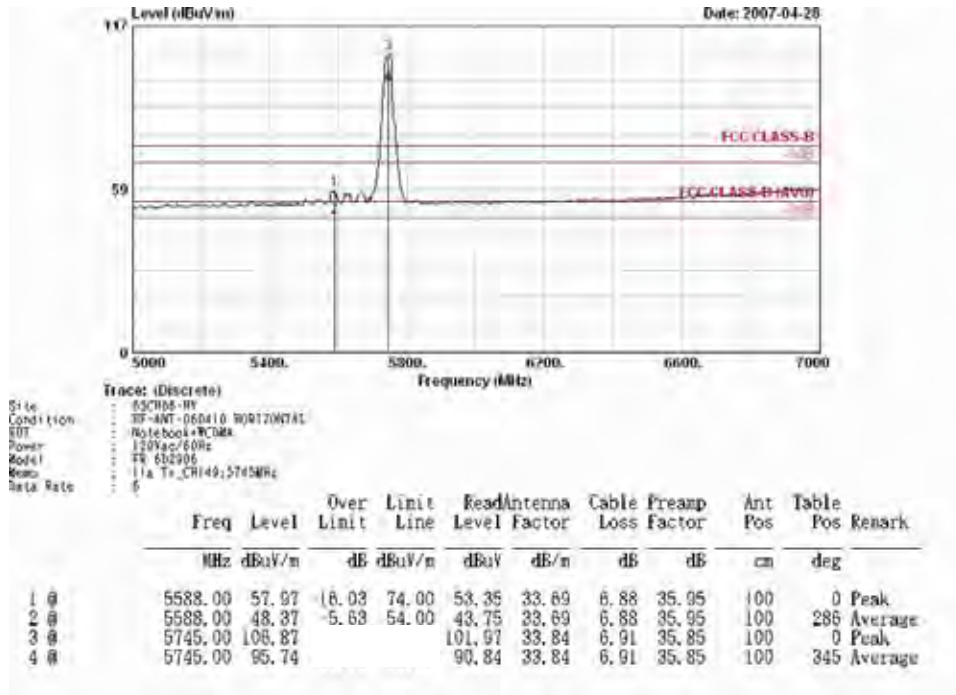


- Test Mode : Mode 7
- Polarization : Horizontal

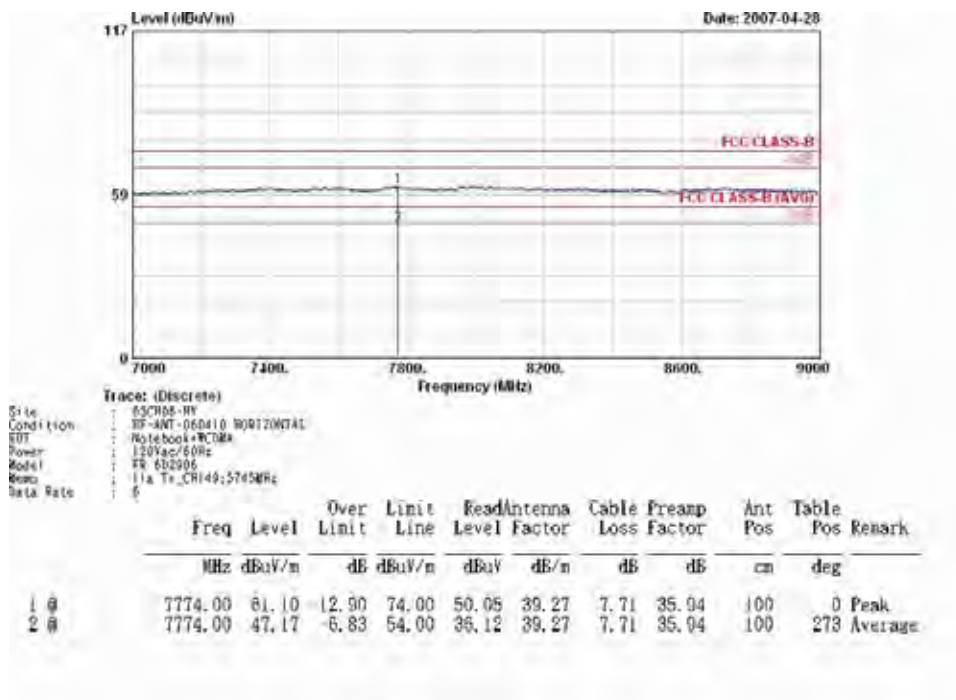
■ The test that passed at minimum margin was marked by the frame in the following table.

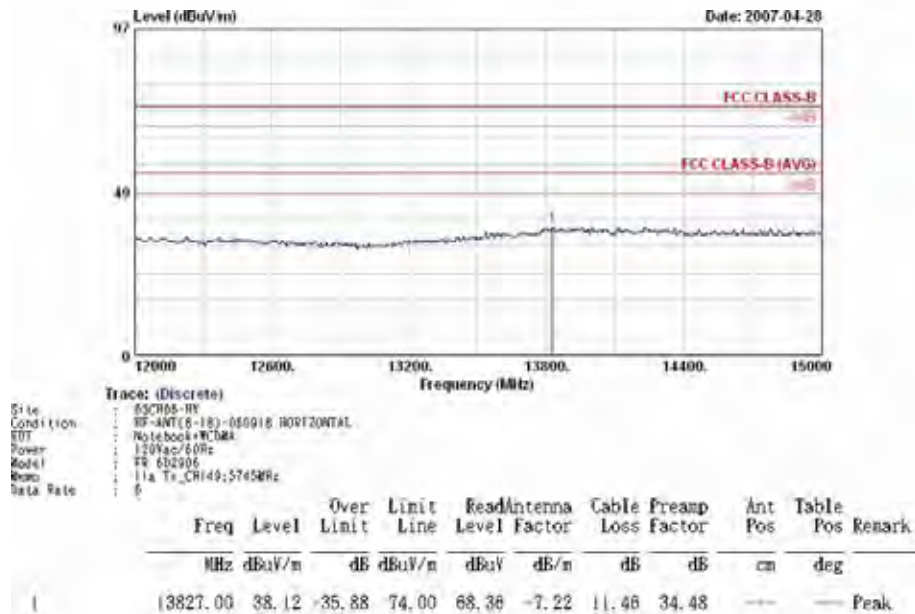
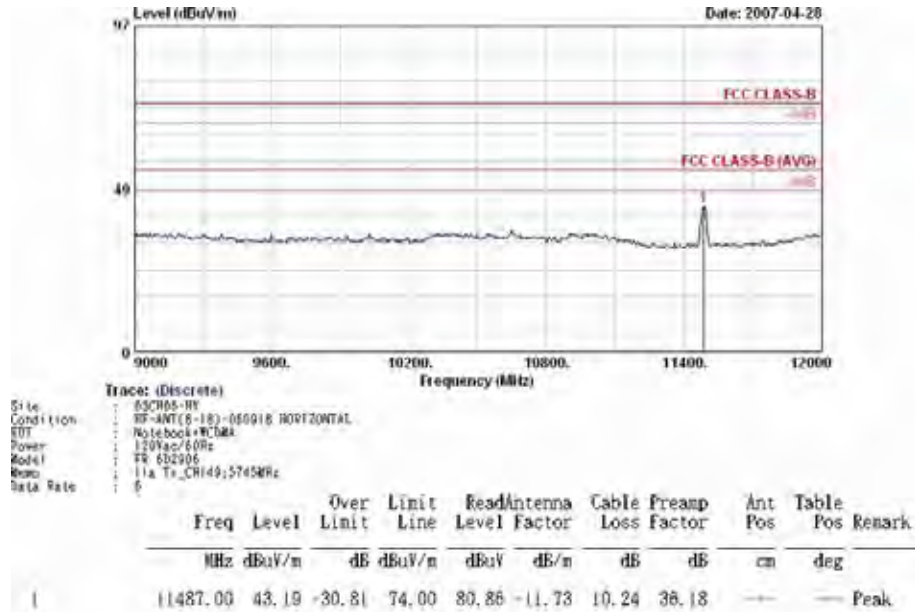






Remark: #3 and #4 Fundamental Signal

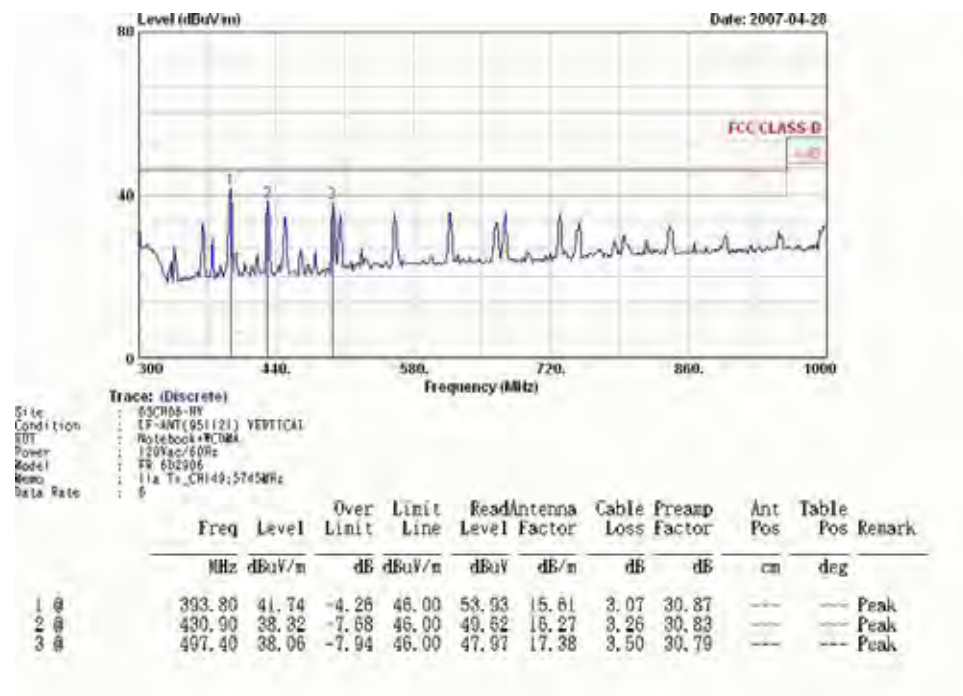


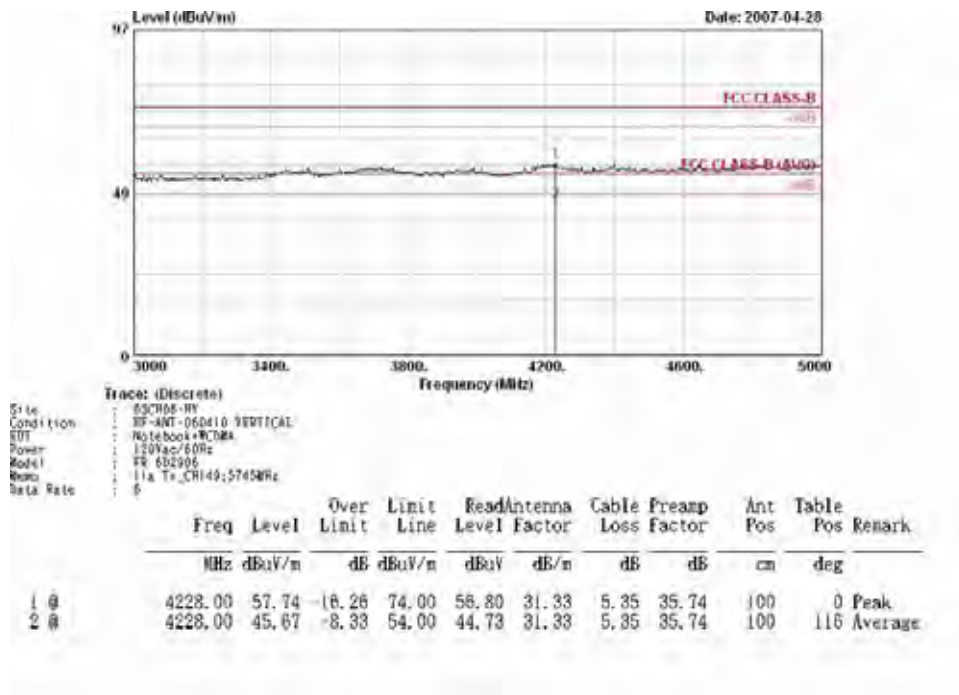
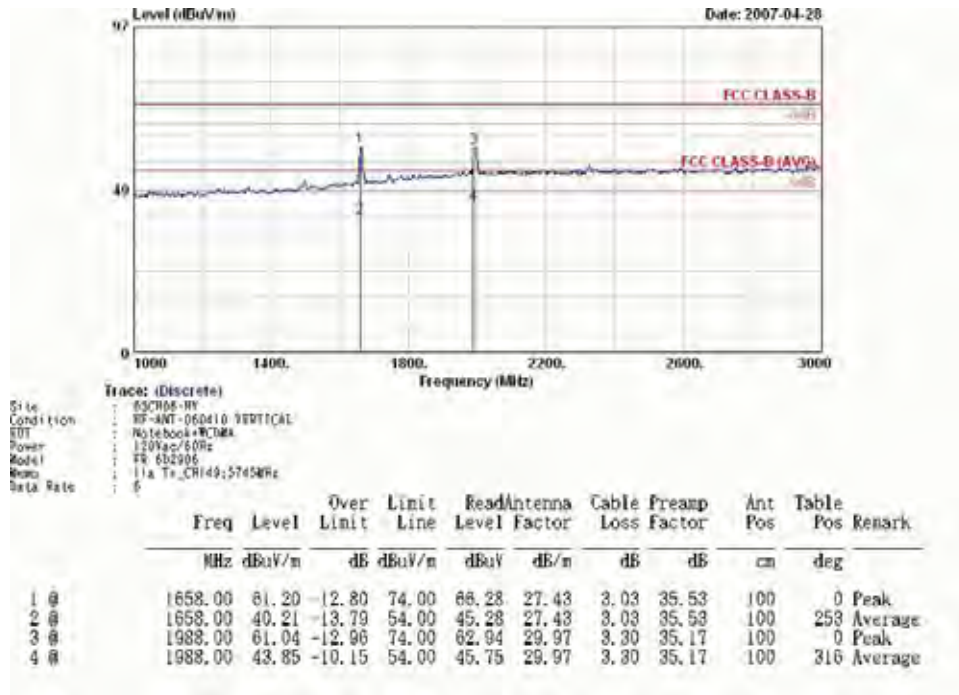


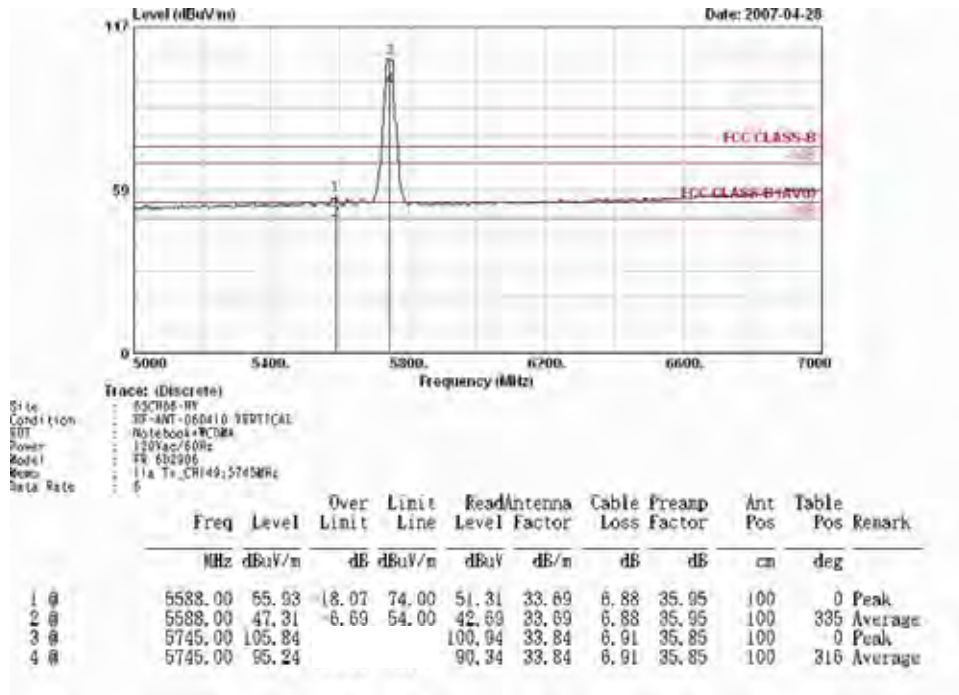


- Polarization : Vertical

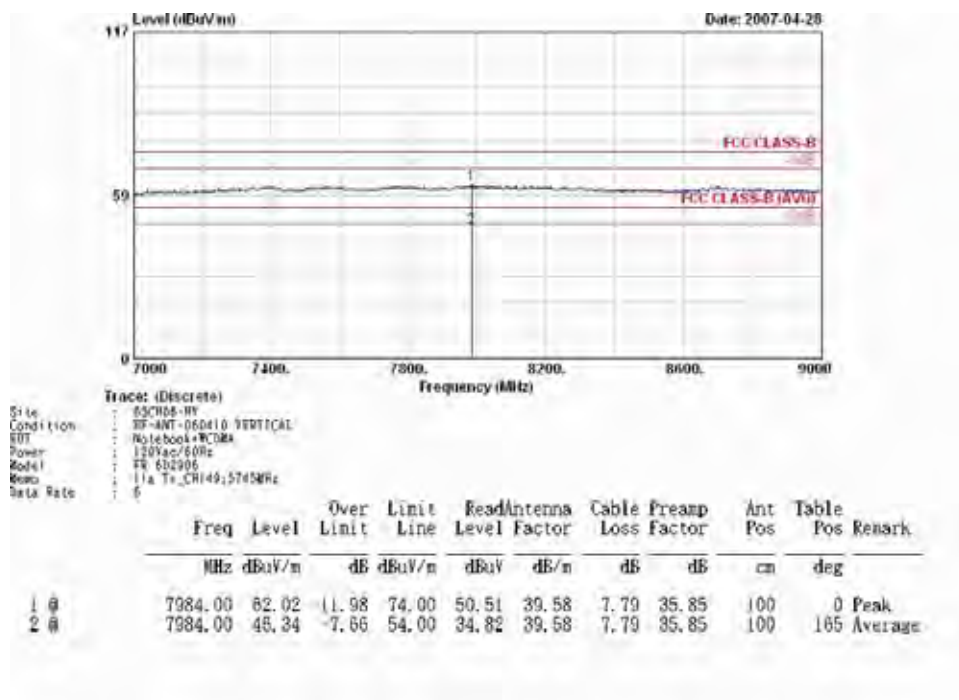
■ The test that passed at minimum margin was marked by the frame in the following table.

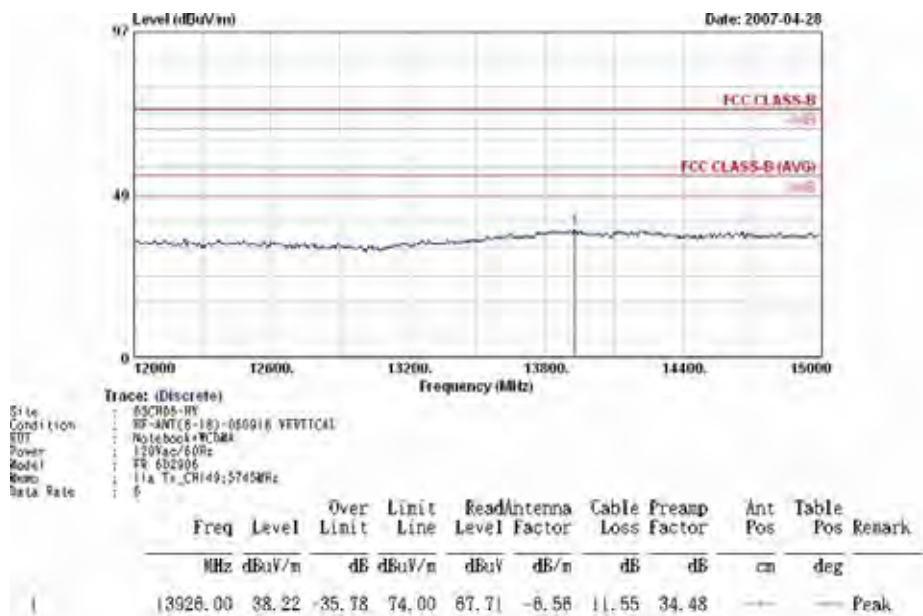
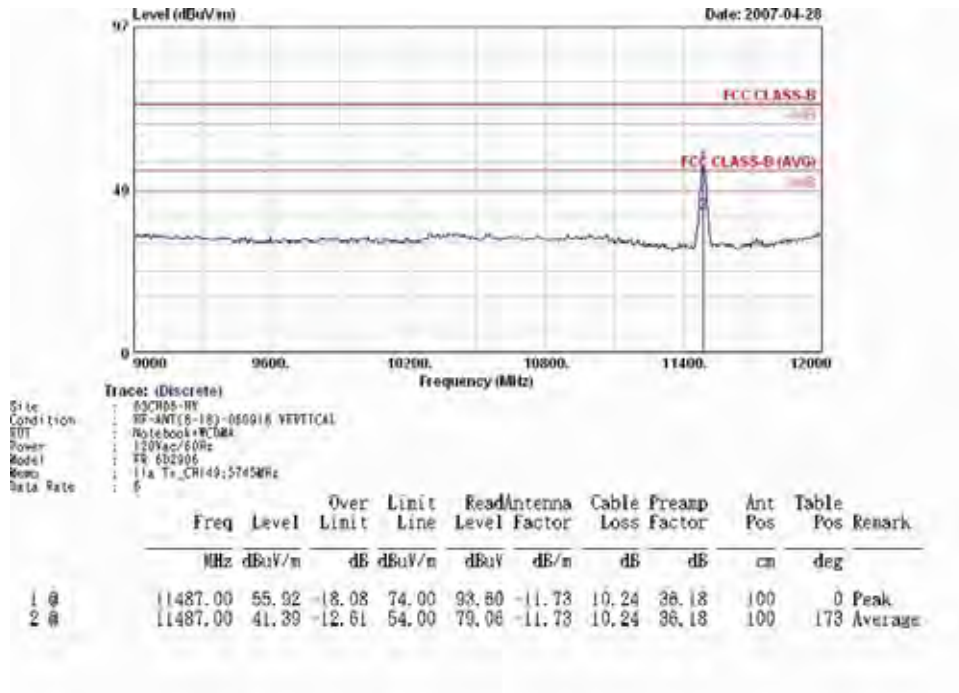


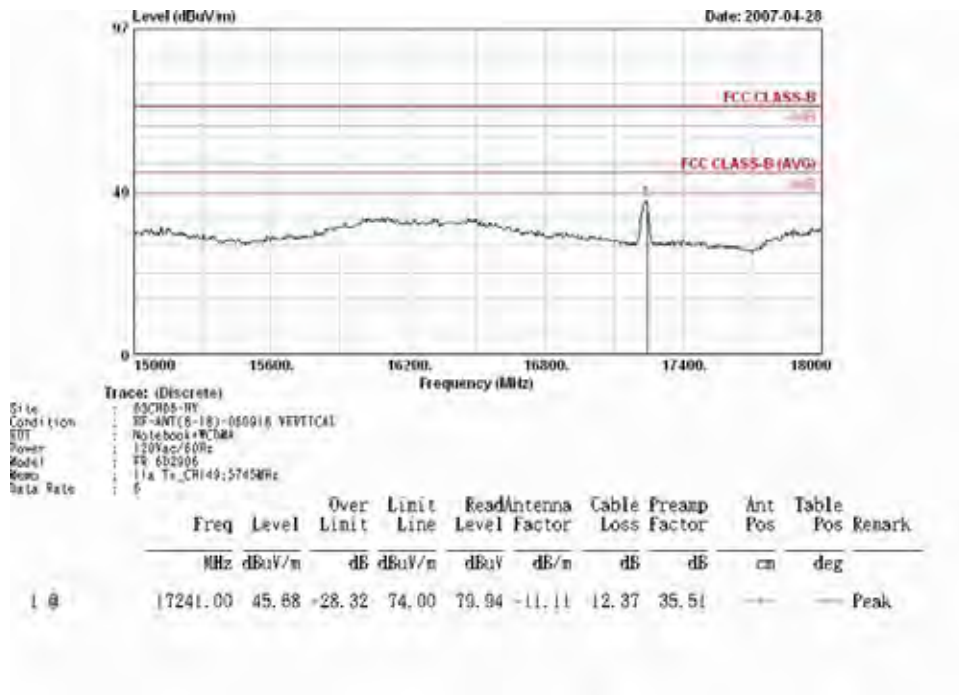




Remark: #3 and #4 Fundamental Signal





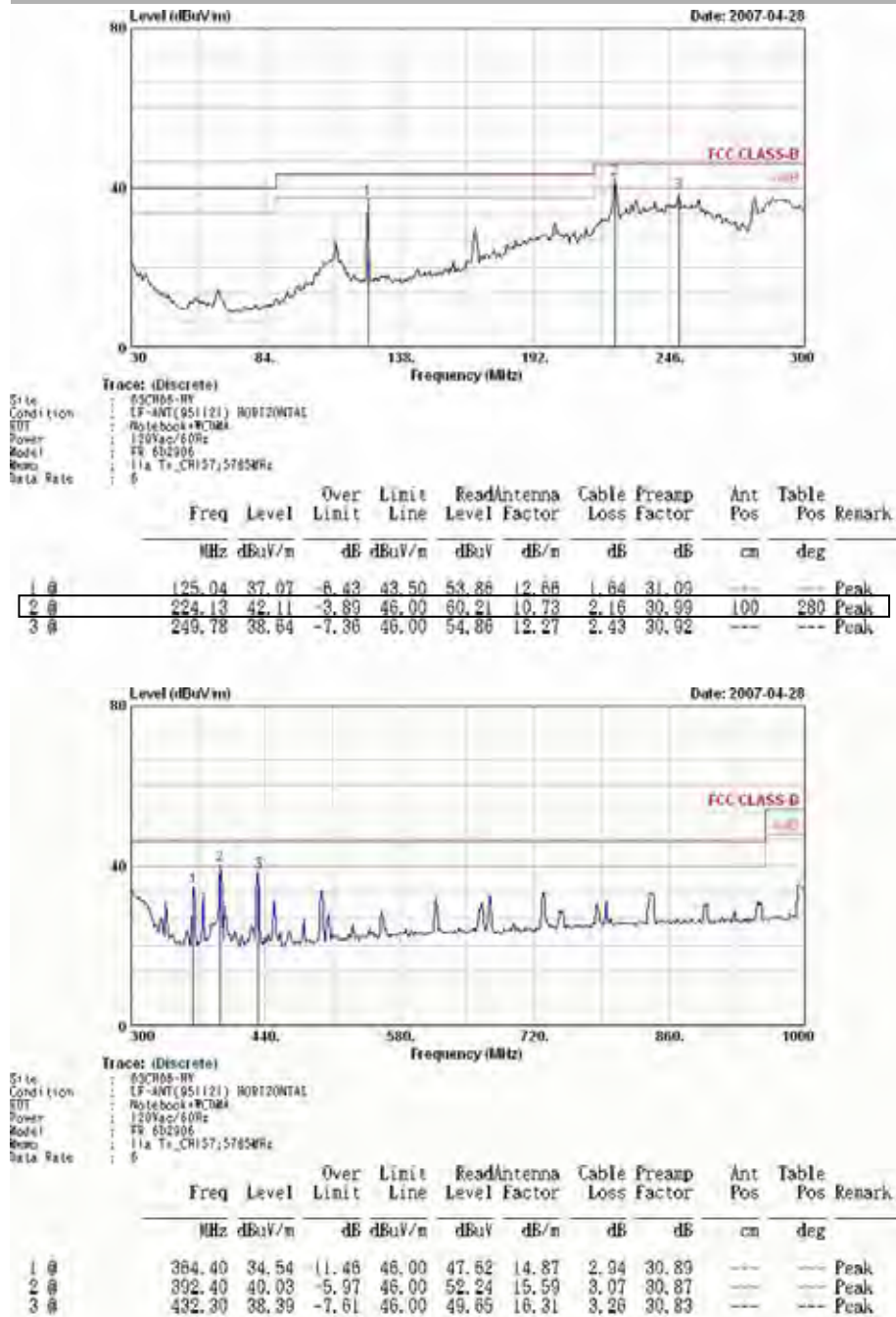


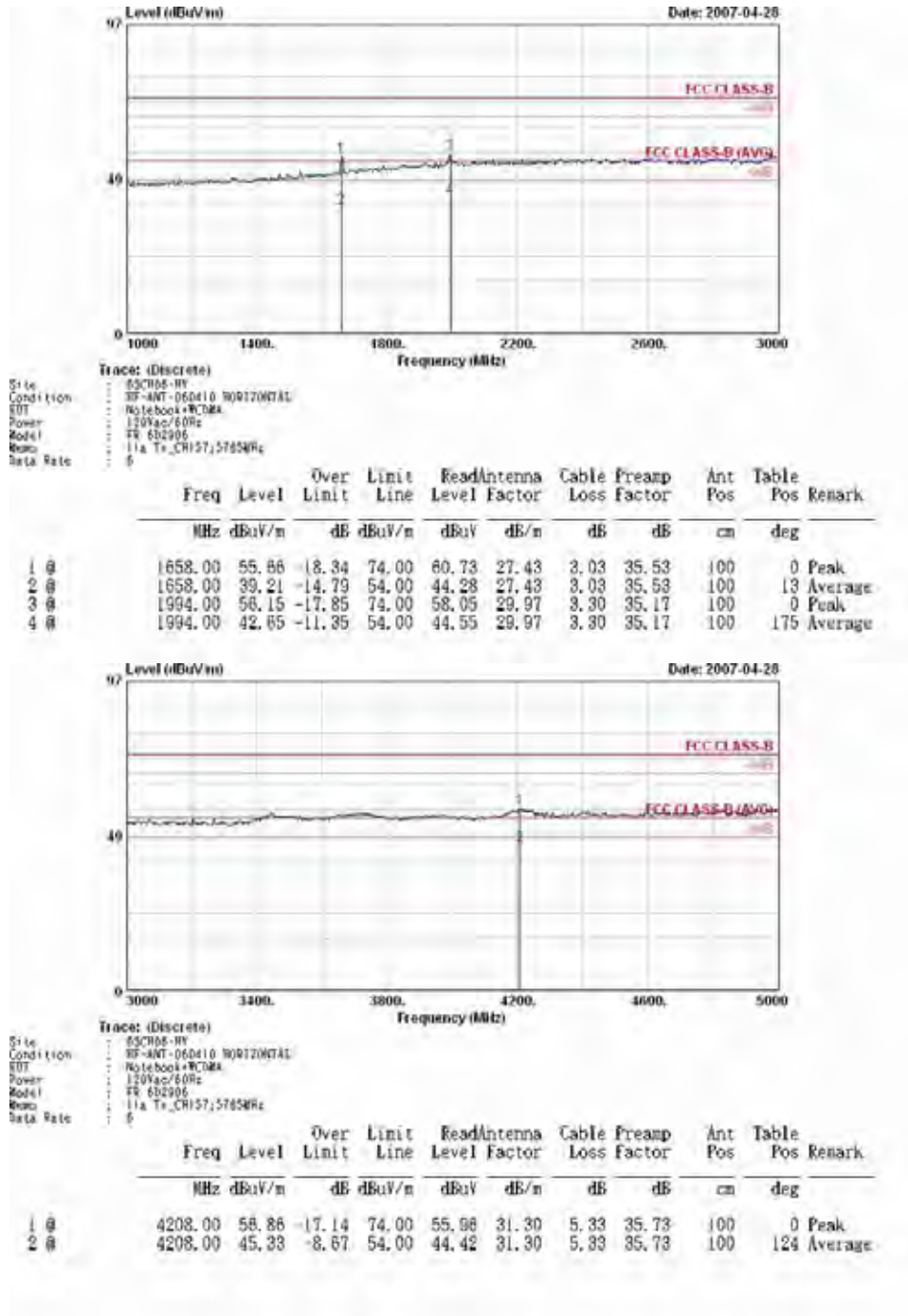
Remark : Frequency from 18GHz to 40GHz, the emission emitted by the EUT is too low to be measured.

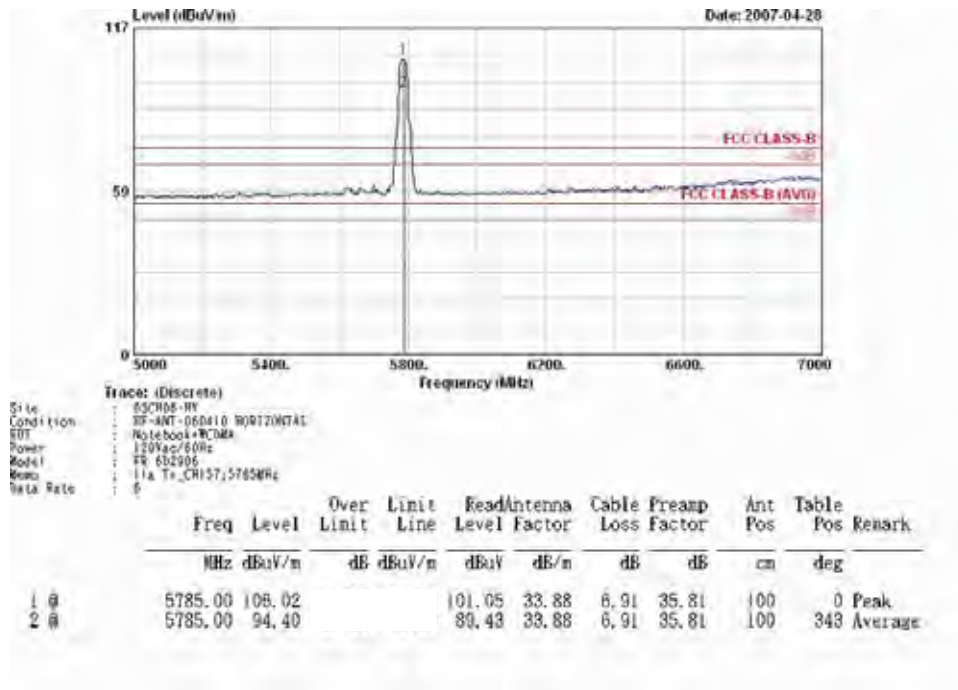


- Test Mode : Mode 8
- Polarization : Horizontal

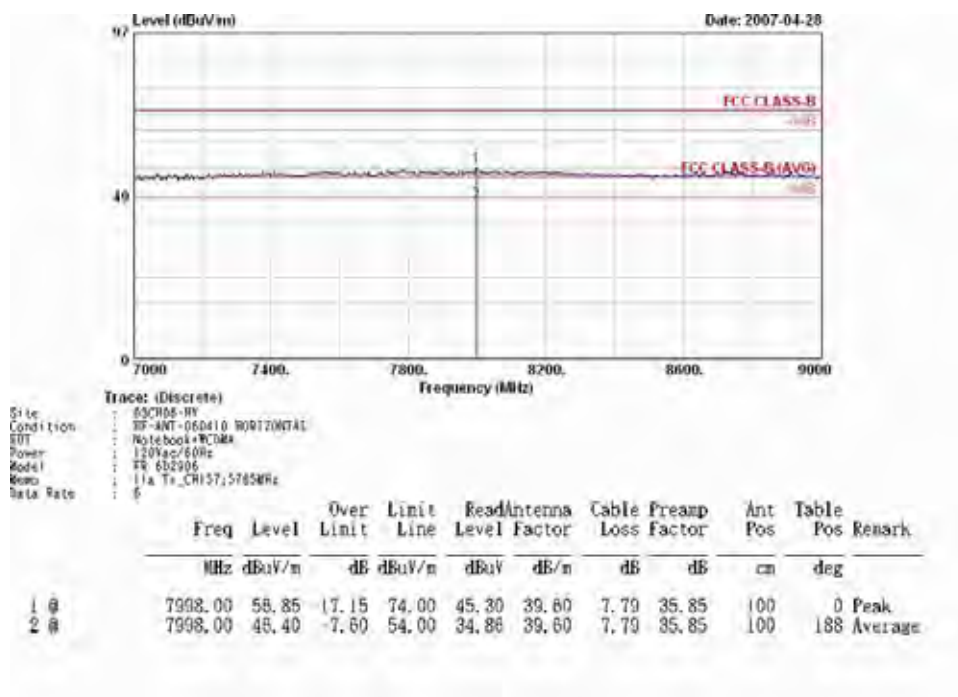
■ The test that passed at minimum margin was marked by the frame in the following table.

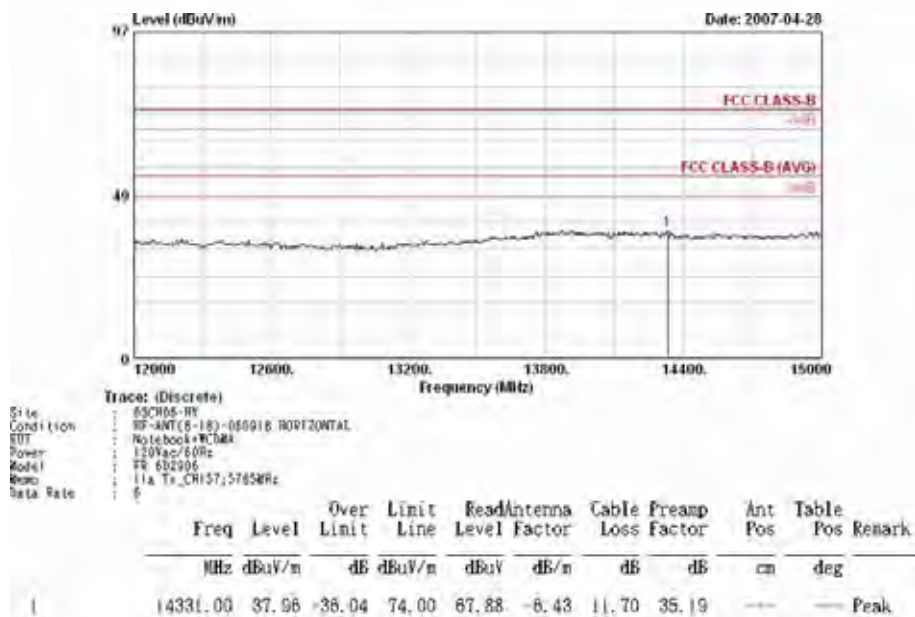
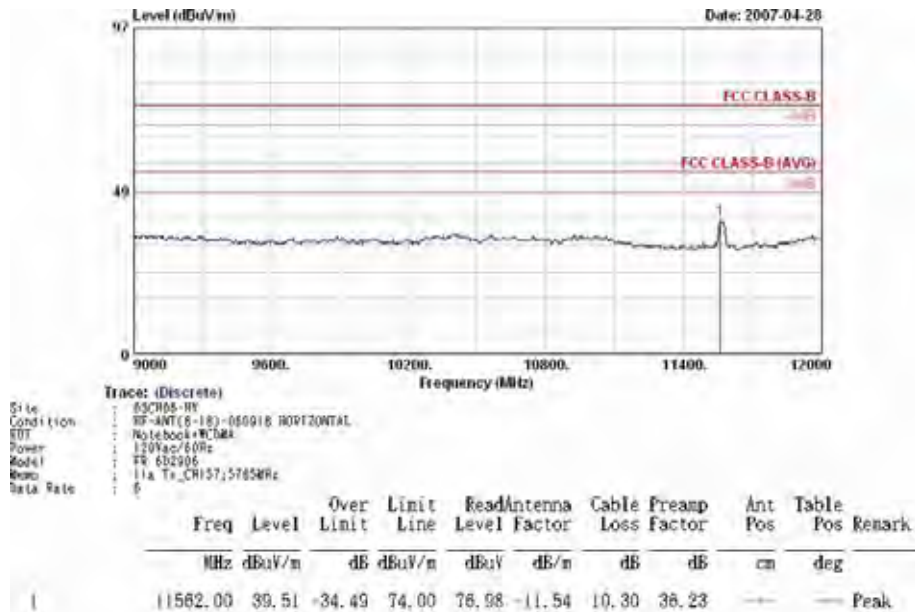


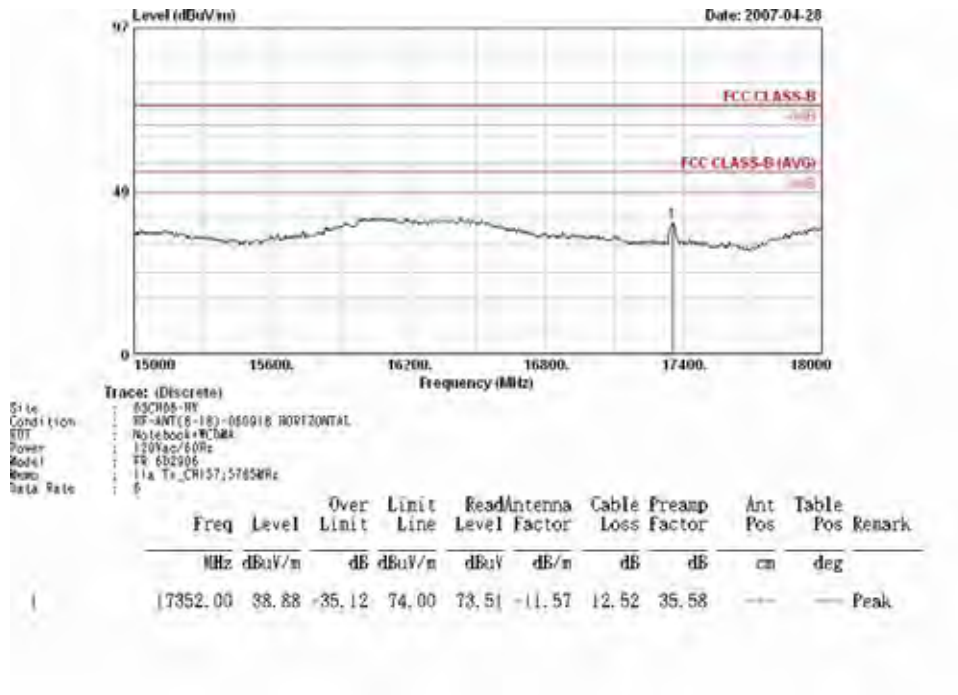




Remark: #1 and #2 Fundamental Signal





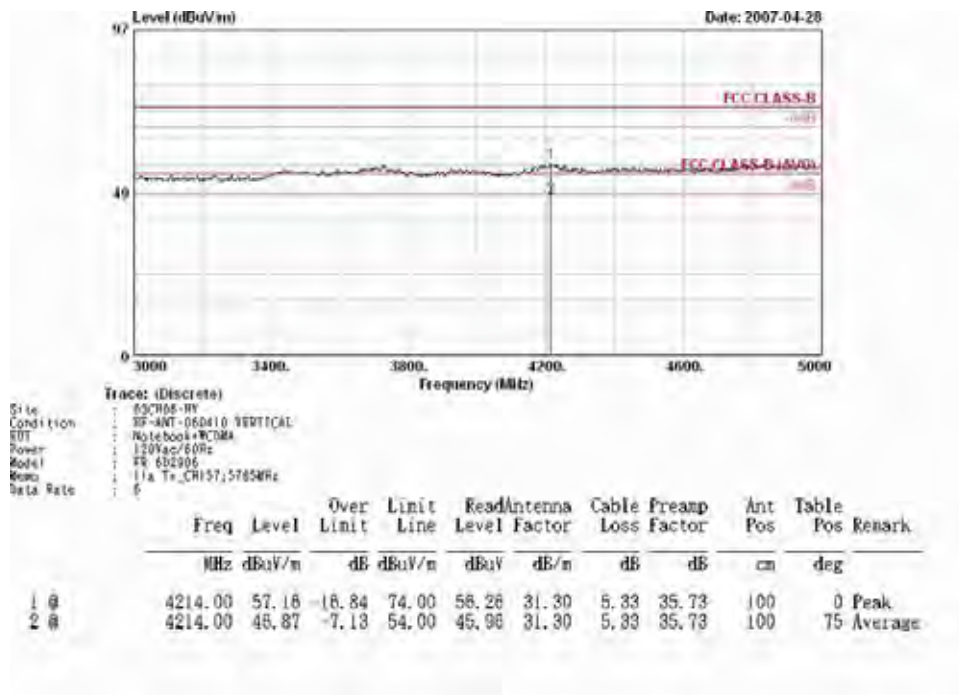
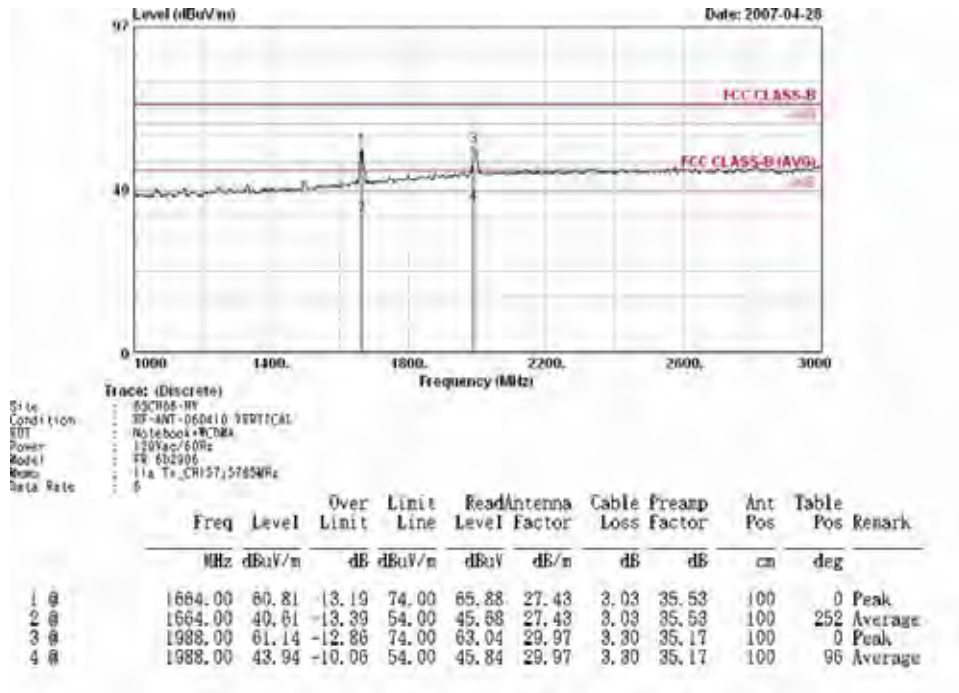


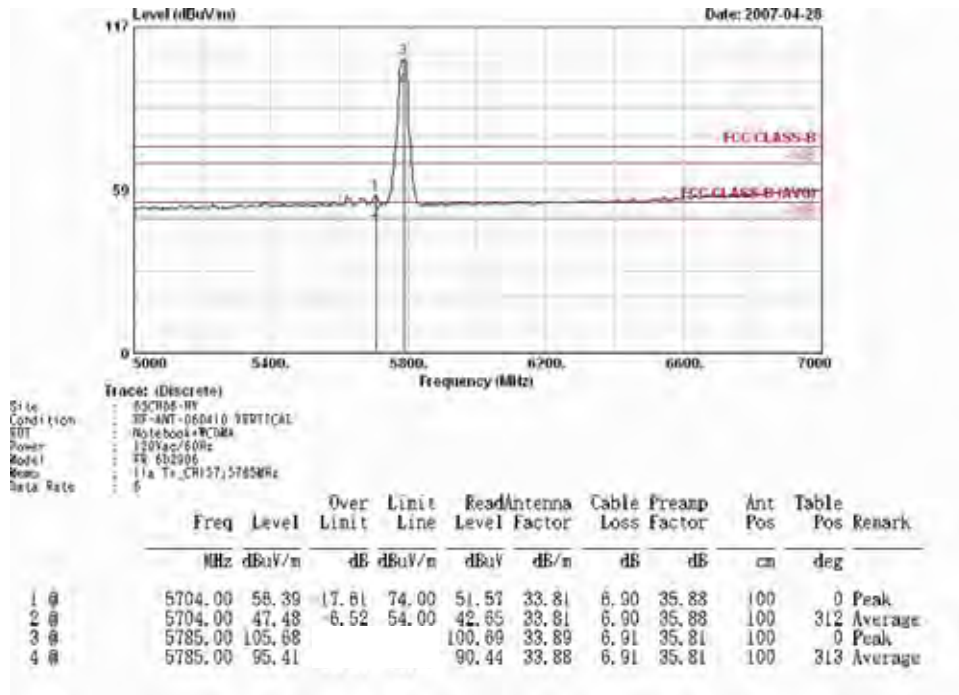


- Polarization : Vertical

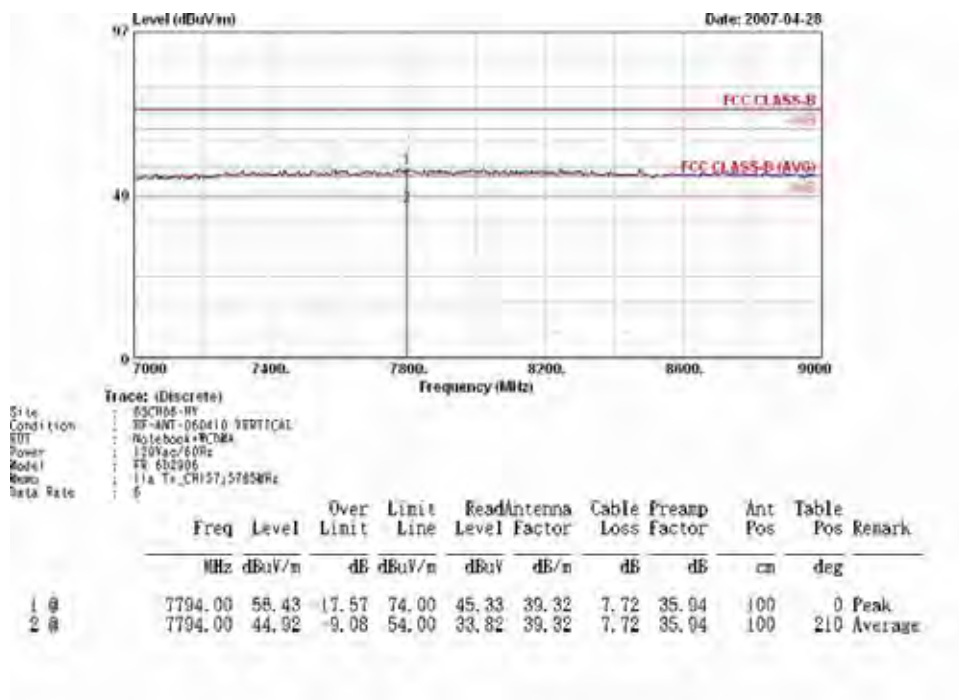
■ The test that passed at minimum margin was marked by the frame in the following table.

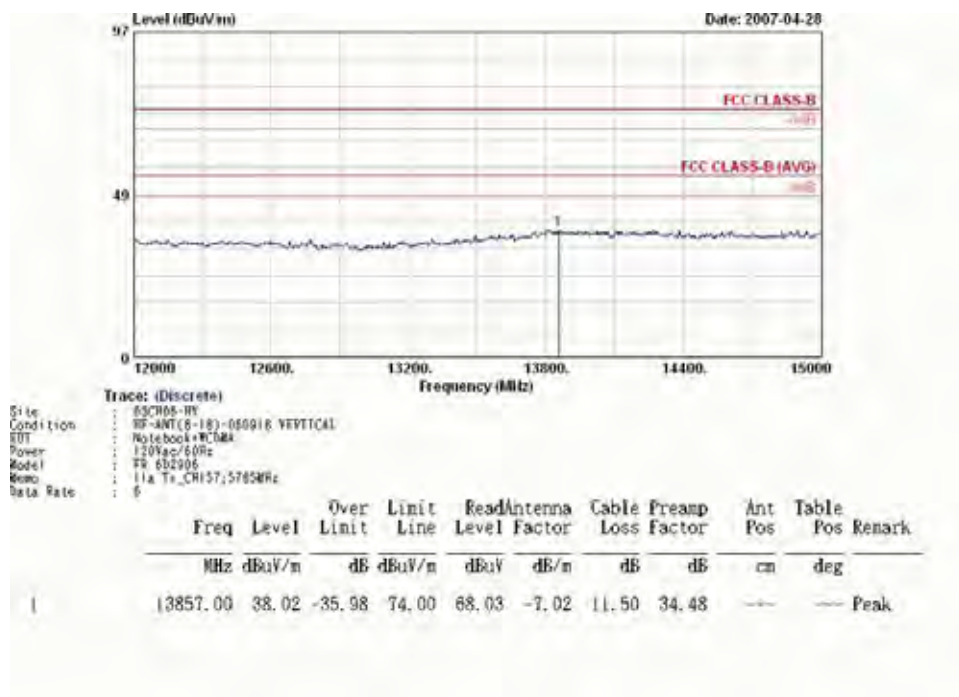
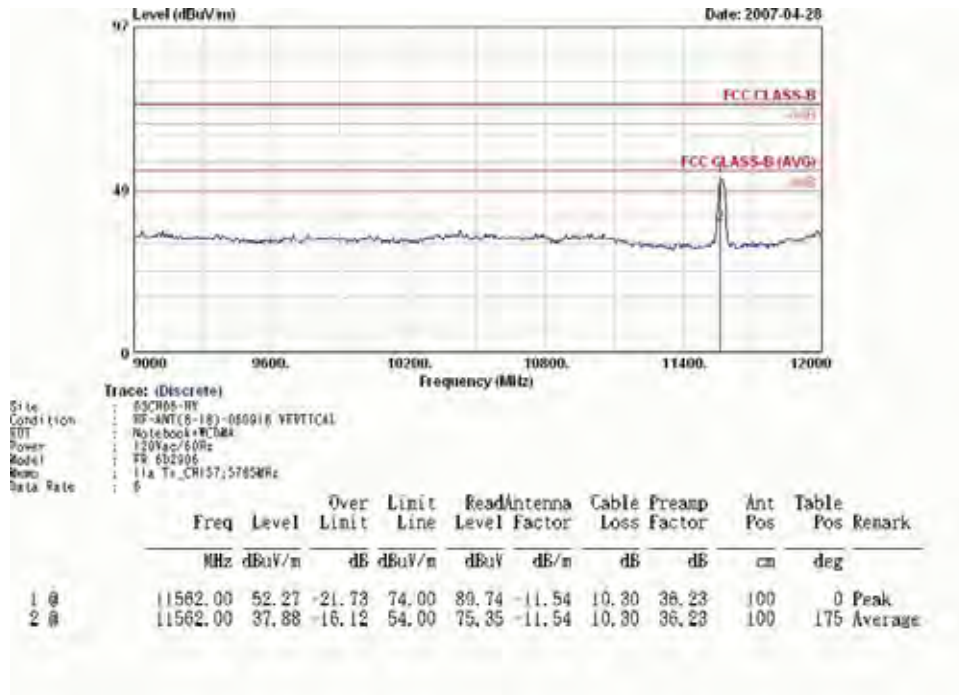


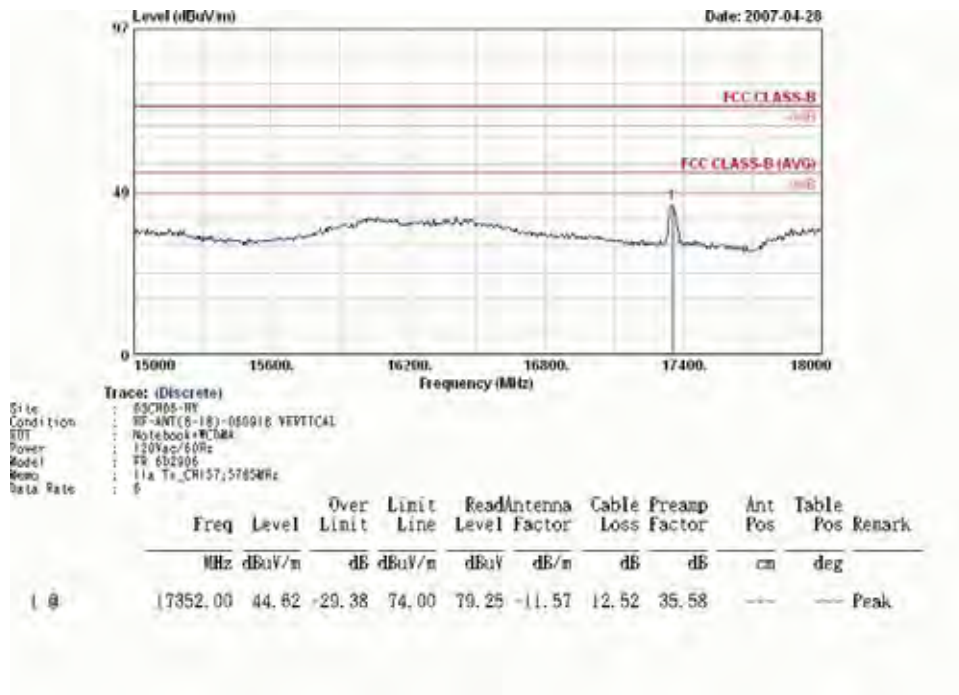




Remark: #3 and #4 Fundamental Signal





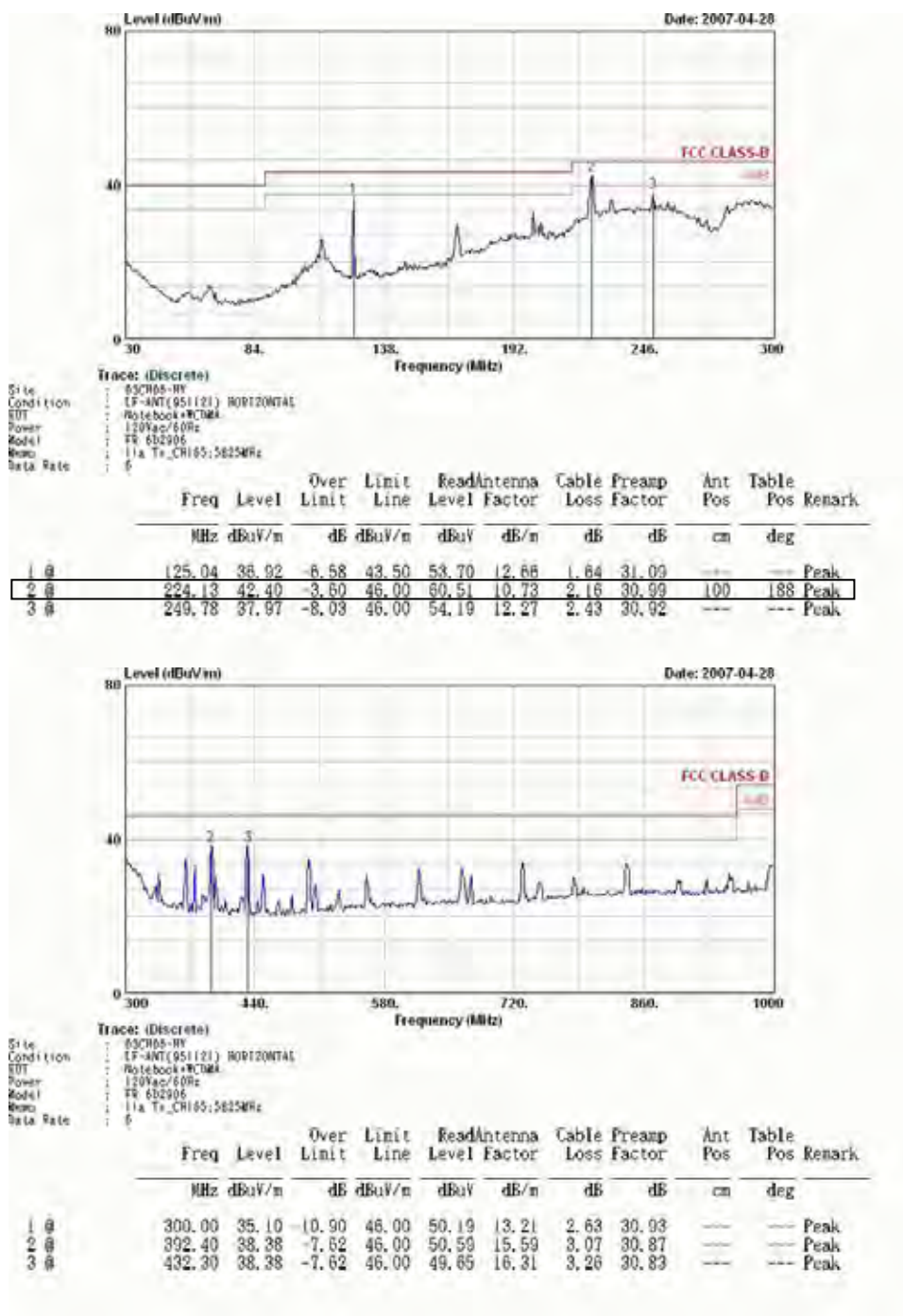


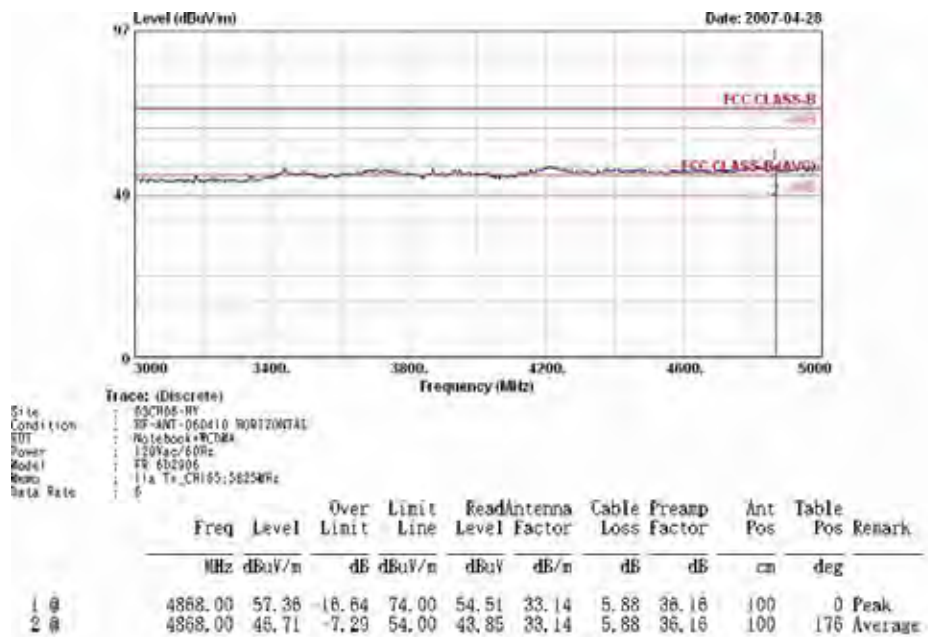
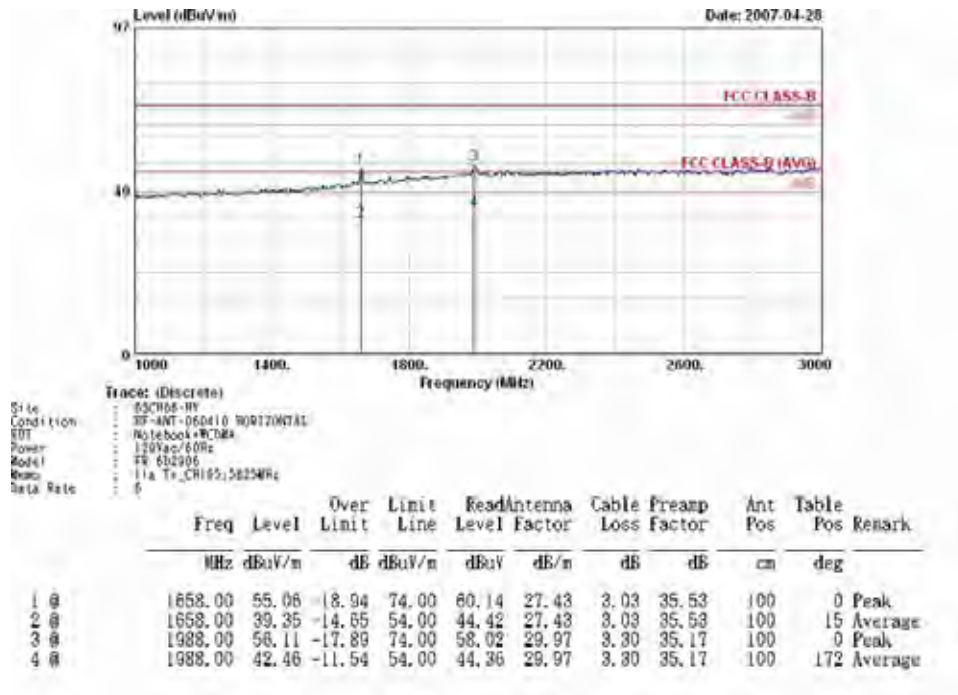
Remark : Frequency from 18GHz to 40GHz, the emission emitted by the EUT is too low to be measured.

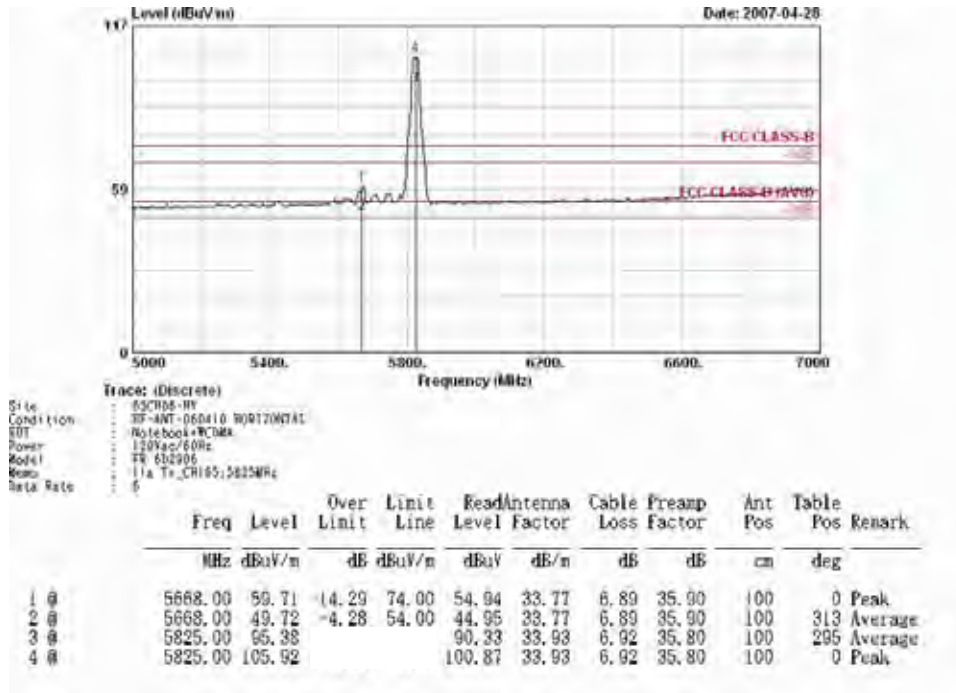


- Test Mode : Mode 9
- Polarization : Horizontal

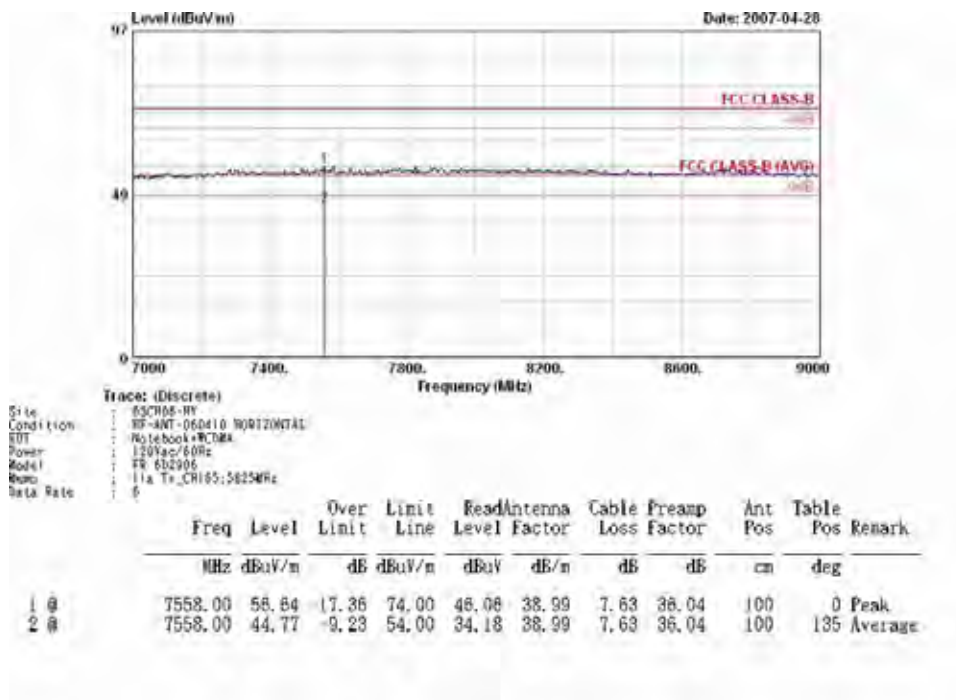
■ The test that passed at minimum margin was marked by the frame in the following table.

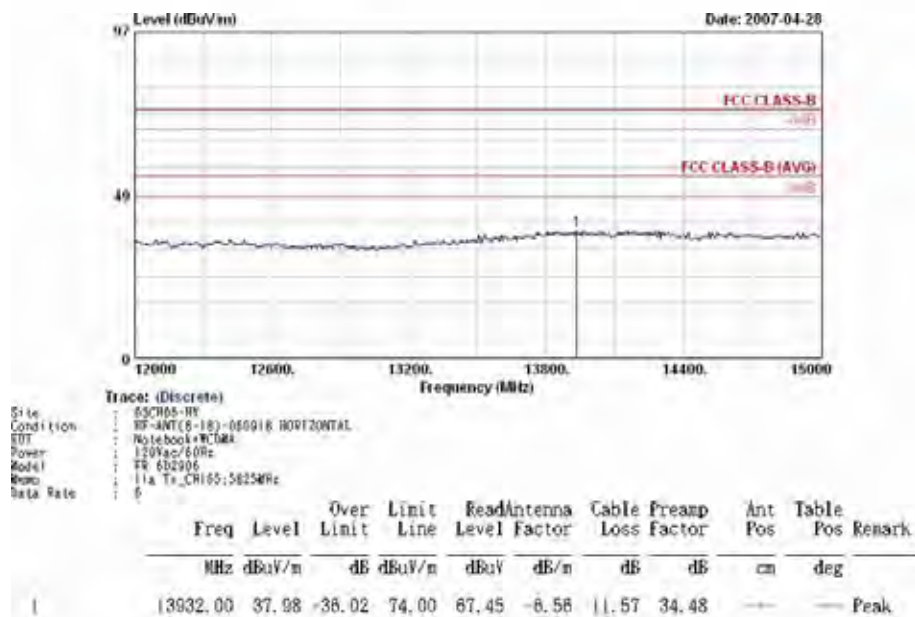
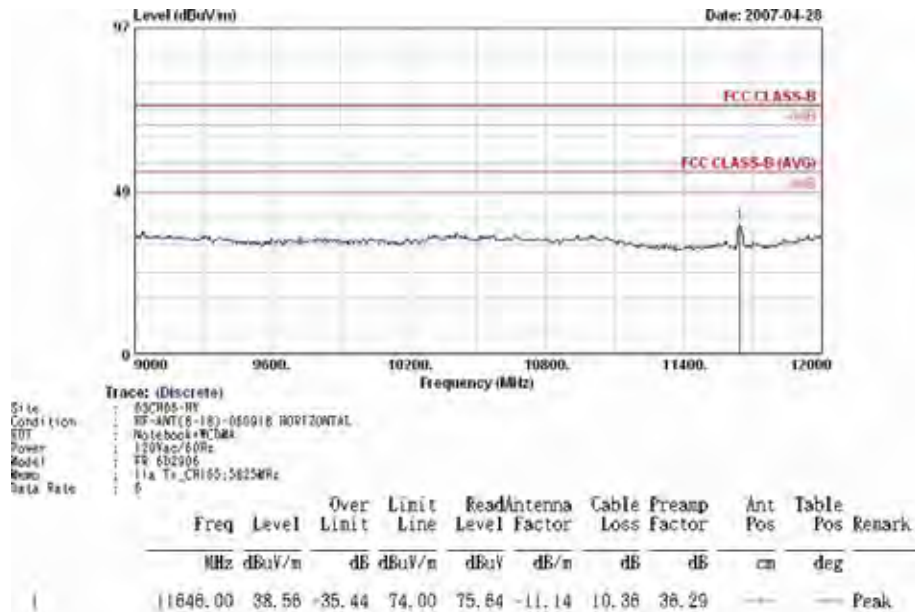


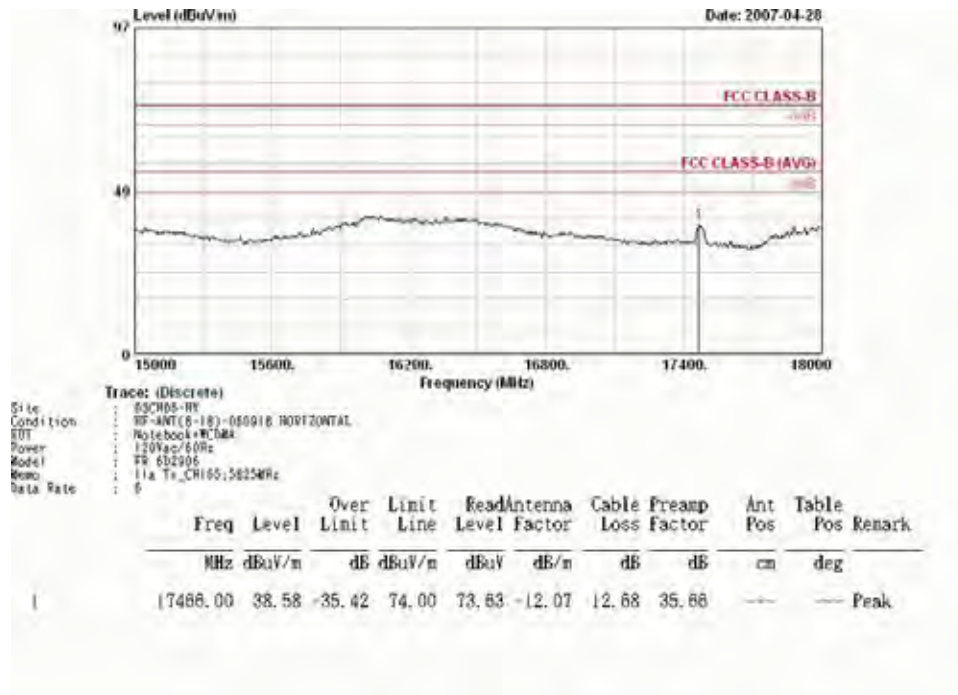




Remark: #3 and #4 Fundamental Signal







- Polarization : Vertical

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



