

FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : PDA Phone

Model No. : P505

FCC ID. : MSQ-P505

Filing Type : Certification

Applicant : ASUSTek COMPUTER INC
No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

SPORTON International Inc.

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

Table of Contents

History of this test report.....	ii
CERTIFICATE OF COMPLIANCE.....	1
1. General Description of Equipment under Test.....	2
1.1. Applicant.....	2
1.2. Manufacturer.....	2
1.3. Basic Description of Equipment under Test.....	2
1.4. Feature of Equipment under Test.....	3
2. Test Configuration of Equipment under Test.....	4
2.1. Test Manner.....	4
2.2. Description of Test System.....	4
2.3. Connection Diagram of Test System.....	6
3. Operation of Equipment under Test.....	7
4. General Information of Test.....	8
4.1. Test Voltage.....	8
4.2. Standard for Methods of Measurement.....	8
4.3. Test in Compliance with.....	8
4.4. Frequency Range Investigated.....	8
4.5. Test Distance.....	8
5. Report of Measurements and Examinations.....	9
5.1. List of Measurements and Examinations.....	9
5.2. Hopping Channel Separation.....	10
5.3. Number of Hopping Frequency.....	14
5.5. Dwell Time of Each Frequency within a 30 Seconds Period.....	20
5.6. Output Power.....	24
5.7. 100kHz Bandwidth of Frequency Band Edges.....	28
5.8. Test of Conducted Emission.....	31
5.9. Test of Radiated Emission.....	36
6. Antenna Requirements.....	52
7. List of Measuring Equipments Used.....	53
8. Uncertainty of Test Site.....	54
Appendix A. External Product Photograph	
Appendix B. Internal Photograph	
Appendix C. Setup Photograph	

History of this test report

Original Report Issue Date: Oct. 18, 2004

No additional attachment.

Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

for

47 CFR Part 15 Subpart C

Equipment : PDA Phone

Model No. : P505

FCC ID. : MSQ-P505

Filing Type : Certification

Applicant : ASUSTek COMPUTER INC

No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2003** and the equipment under test was **passed** all test items required in FCC Part 15 subpart C, relative to the equipment under test. Testing was carried out on Sep. 13, 2004 at **SPORTON International Inc. LAB.**

Daniel Lee 10/28/2004

Daniel Lee
Manager

SPORTON International Inc.

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

SPORTON International Inc.

TEL : 886-2-2696-2468
FAX : 886-2-2696-2255

FCC ID. : MSQ-P505
Page No. : 1 of 55
Issued Date : Oct. 18, 2004

1. General Description of Equipment under Test

1.1. Applicant

ASUSTek COMPUTER INC

No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

1.2. Manufacturer

ASUSTek COMPUTER INC

No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

1.3. Basic Description of Equipment under Test

Equipment : PDA Phone
Model No. : P505
FCC ID : MSQ-P505
Trade Name : ASUS
Power Supply Type : Switching
AC Power Cord : AC 120V, Non-shielded, wall-mounted, 1.8meter, 2pin

1.4. Feature of Equipment under Test

Product Feature & Specification			
1. Type of Modulation	FHSS		
2. Frequency Band	2.400GHz ~ 2.4835GHz		
3. Carrier Frequency of each channel	2402+K MHz ; K=0 ~ 78		
4. Bandwidth of each channel	1MHz		
5. Maximum Output Power to Antenna	0 dBm		
6. Type of Antenna Connector	I-PEX		
7. Antenna Type	L-shape Antenna		
8. Antenna Gain	-1.9 dBi on 2.45GHz		
9. Function Type	Transmitter		Transceiver V

2. Test Configuration of Equipment under Test

2.1. Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner, which tended to maximize its emission characteristics in a typical application.
- b. The complete test system included COMPAQ PC, VIEWSONIC MONITOR, COMPAQ (PS2)Keyboard, COMPAQ (PS2)MOUSE, ACEEX MODEM, EPSON Printer and EUT for EMI test
- c. The following test modes were pretested for conduction test:
 - Mode 1: With Cradle mode
 - Mode 2: Without Cradle mode
- d. The following test modes were pretested for radiation test:
 - Mode 1: CH00 (2402MHz)
 - Mode 2: CH39 (2441MHz)
 - Mode 3: CH78 (2480MHz)
- e. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2. Description of Test System

Support Unit 1. – PC (COMPAQ)

FCC ID	: N/A
Model No.	: D380MX
Power Cord	: N/A
Serial No.	: SP0003
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. – MONITOR (VIEWSONIC)

FCC ID	: N/A
Model No.	: VCDTS21553-3P
Serial No.	: SP0007
Data Cable	: Shielded, 1.7m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 3. – (PS2)Keyboard (COMPAQ)

FCC ID	: N/A
Model No.	: 6511-VA
Power Cord	: Shielded, 1.5m
Serial No.	: SP0013
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 4. – (PS2)MOUSE (COMPAQ)

FCC ID : N/A
Model No. : M-S69
Power Cord : Shielded, 1.7m
Serial No. : SP0014
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

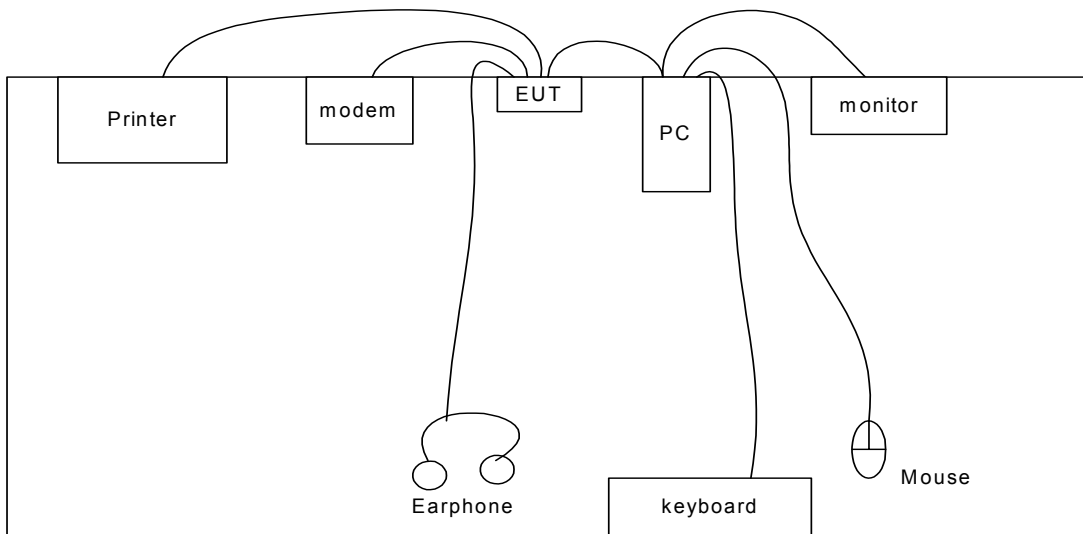
Support Unit 5. – MODEM (ACEEX)

FCC ID : N/A
Model No. : DM141
Power Cord : Shielded, 1.15m
Serial No. : SP0020
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 6. – Printer (EPSON)

FCC ID : N/A
Model No. : LQ-300
Power Cord : N/A
Serial No. : SP0034
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

2.3. Connection Diagram of Test System



3. Operation of Equipment under Test

An executive program, "Test Sync. Exe" sends continuous transmitting signal for radiation and conducted testing.

4. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055
Test Site No : CO01-HY, 03CH06-HY

4.1. Test Voltage

110V/60Hz or DC 3.7V

4.2. Standard for Methods of Measurement

ANSI C63.4-2003

4.3. Test in Compliance with

47 CFR Part 15 Subpart C

4.4. Frequency Range Investigated

Conduction: from 150 kHz to 30 MHz
Radiation: from 30 MHz to 25000MHz

4.5. Test Distance

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

5. Report of Measurements and Examinations

5.1. List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.247(a)(1)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency within a 30 Second Period	Pass
15.247(b)(1)	Output Power	Pass
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Emission	Pass
15.203	Antenna Requirement	Pass

5.2. Hopping Channel Separation

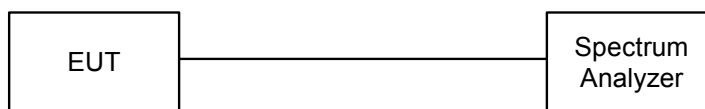
5.2.1. Measuring Instruments :

As described in chapter 7 of this test report.

5.2.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.2.3. Test Setup Layout :



5.2.4. Test Result : The spectrum analyzer plots are attached as below

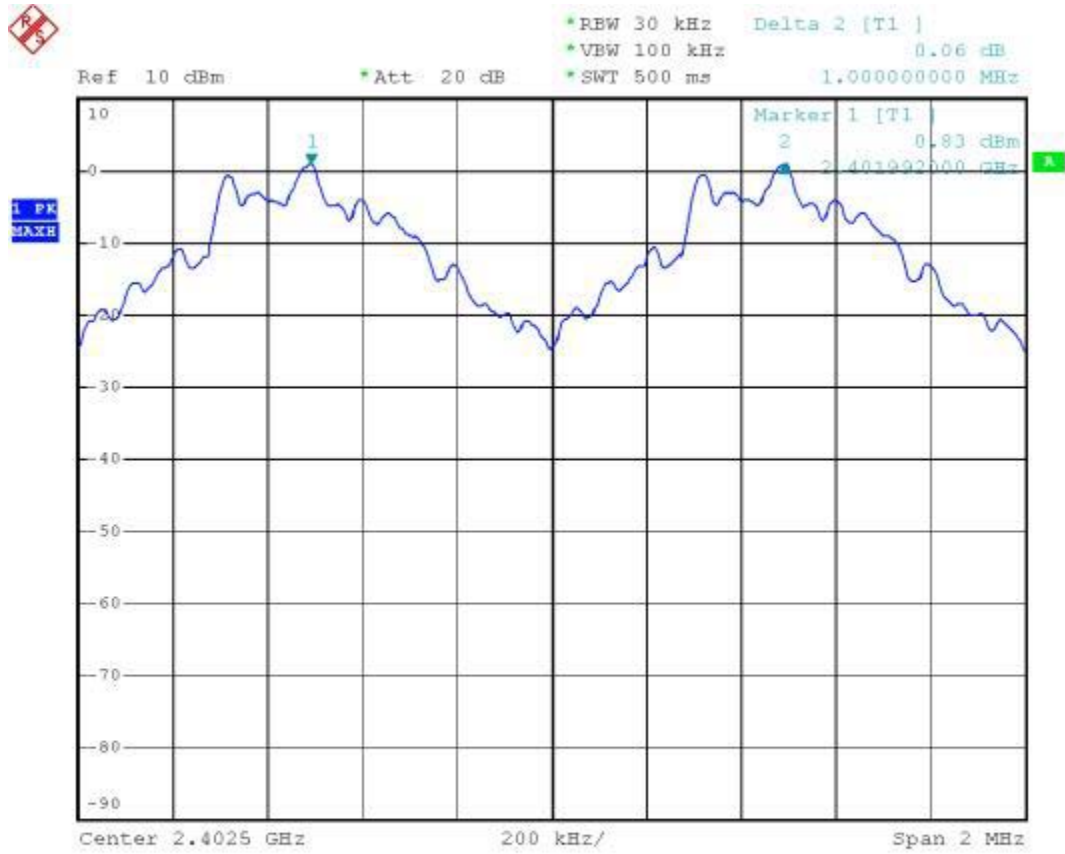
- Test Mode: Mode 1~Mode 3
- Temperature: 26°C
- Relative Humidity: 53 %

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.0	0.7680	Mode 1
39	2441	1.0	0.7600	Mode 2
78	2480	1.0	0.7720	Mode 3

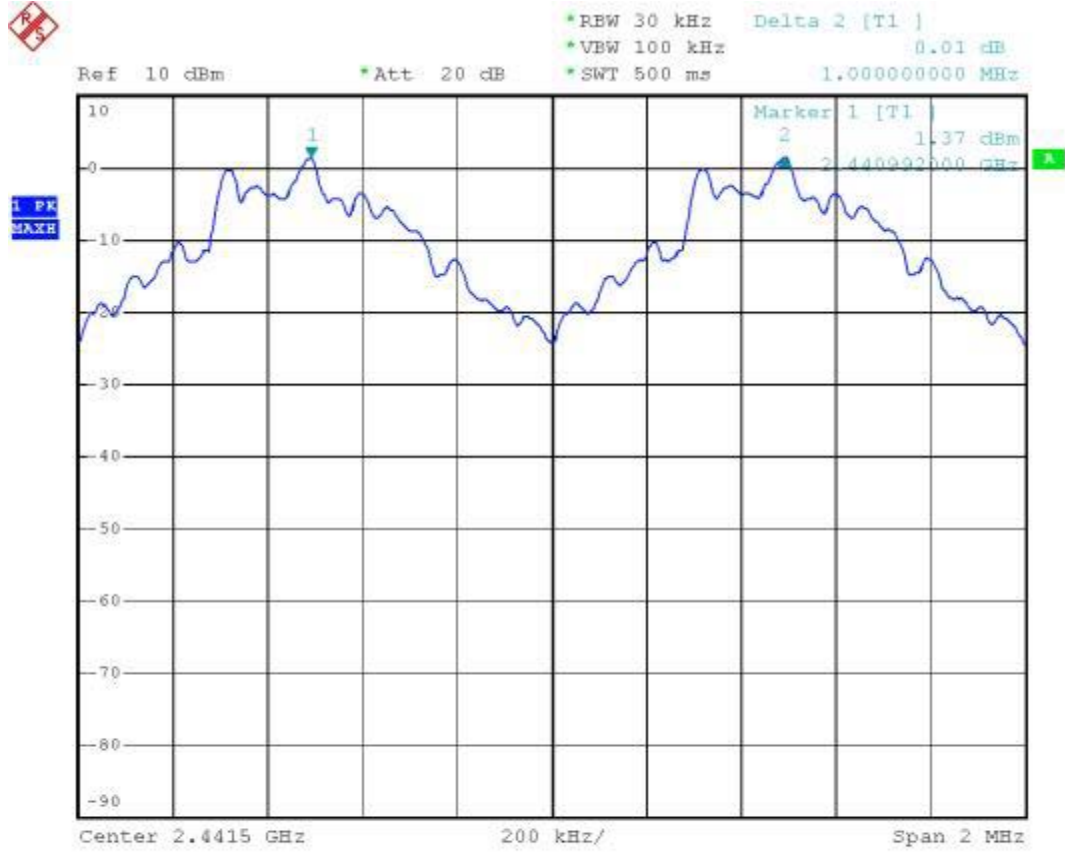
Remark: Limit is the greater one of 25kHz or the 20dB bandwidth of the hopping channel.

5.2.5 Hopping Channel Separation

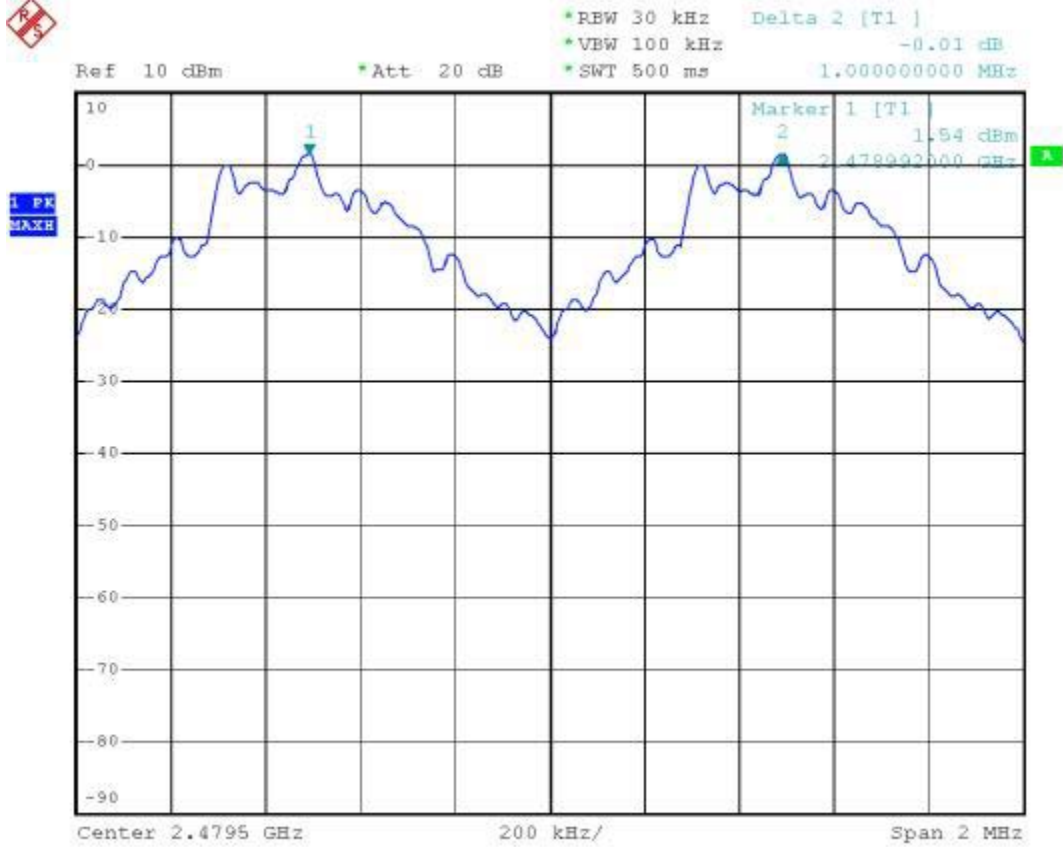
Mode 1: CH00 (2402MHz)



Mode 2: CH39 (2441MHz)



Mode 3: CH78 (2480MHz)



5.3. Number of Hopping Frequency

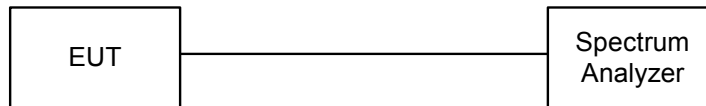
5.3.1. Measuring Instruments :

As described in chapter 7 of this test report.

5.3.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.3.3. Test Setup Layout :

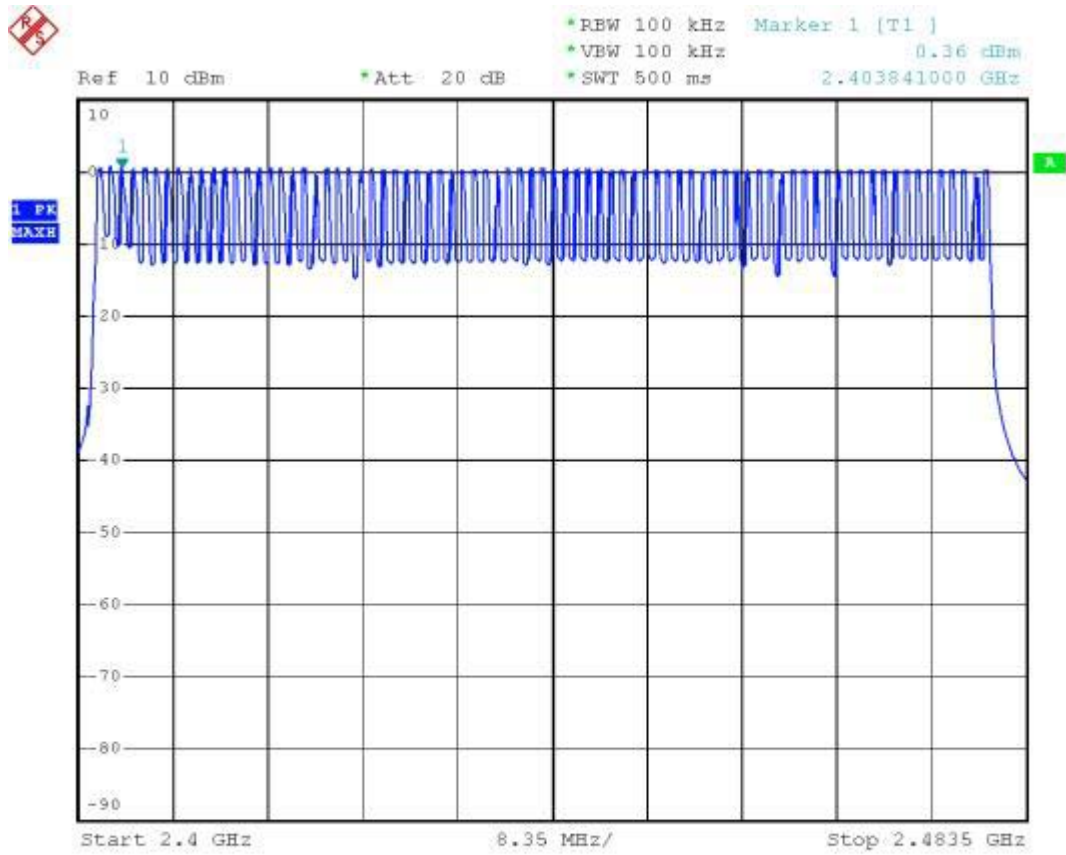


5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 26°C
- Relative Humidity: 53 %

Number of Hopping Frequency (Channel)	Limits (Channel)
79	75

5.3.5 Number of Hopping Frequency



Date: 16.SEP.2004 11:07:06

5.4 Hopping Channel Bandwidth

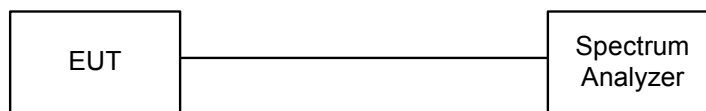
5.4.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.4.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 300kHz.
3. The Hopping Channel bandwidth is defined as the frequency range where the power is higher than peak power minus 20dB.

5.4.3 Test Setup Layout :



5.4.4 Test Result : See spectrum analyzer plots below

- Test Mode: Mode 1~Mode 3
- Temperature: 26°C
- Relative Humidity: 53 %

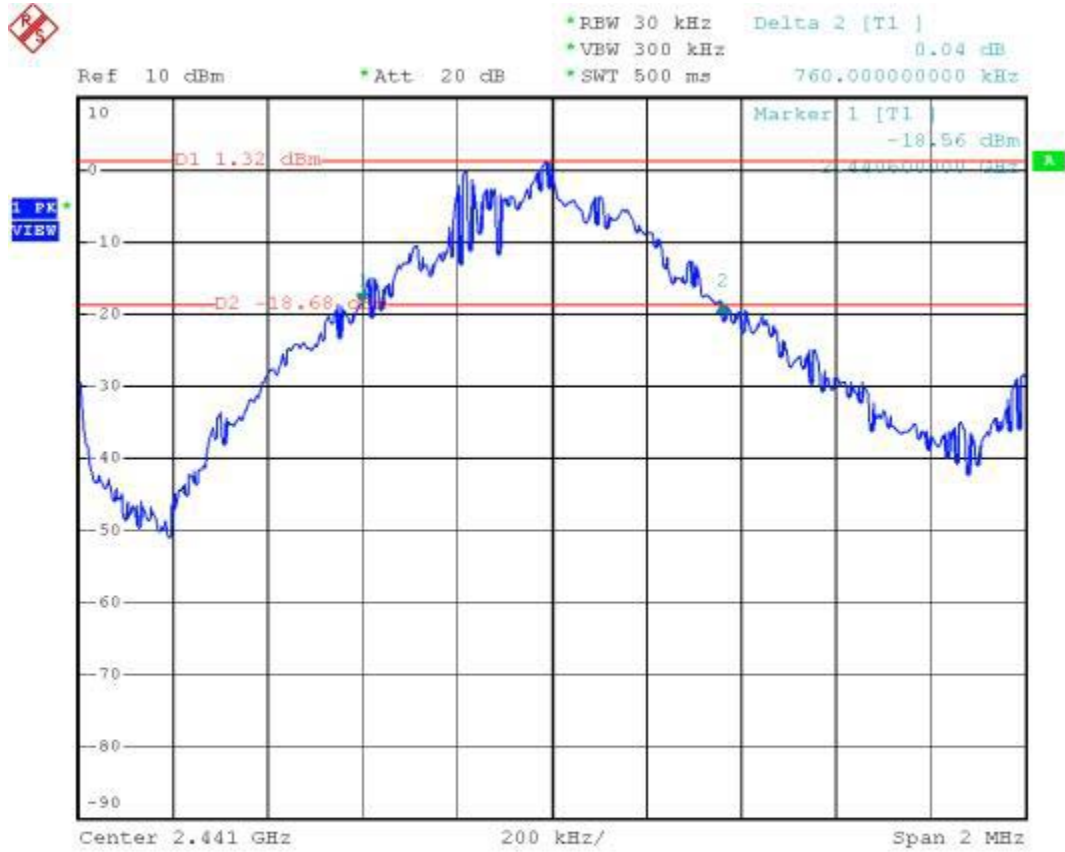
Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.7680	1.0	Mode 1
39	2441	0.7600	1.0	Mode 2
78	2480	0.7720	1.0	Mode 3

5.4.5 Hopping Channel Bandwidth

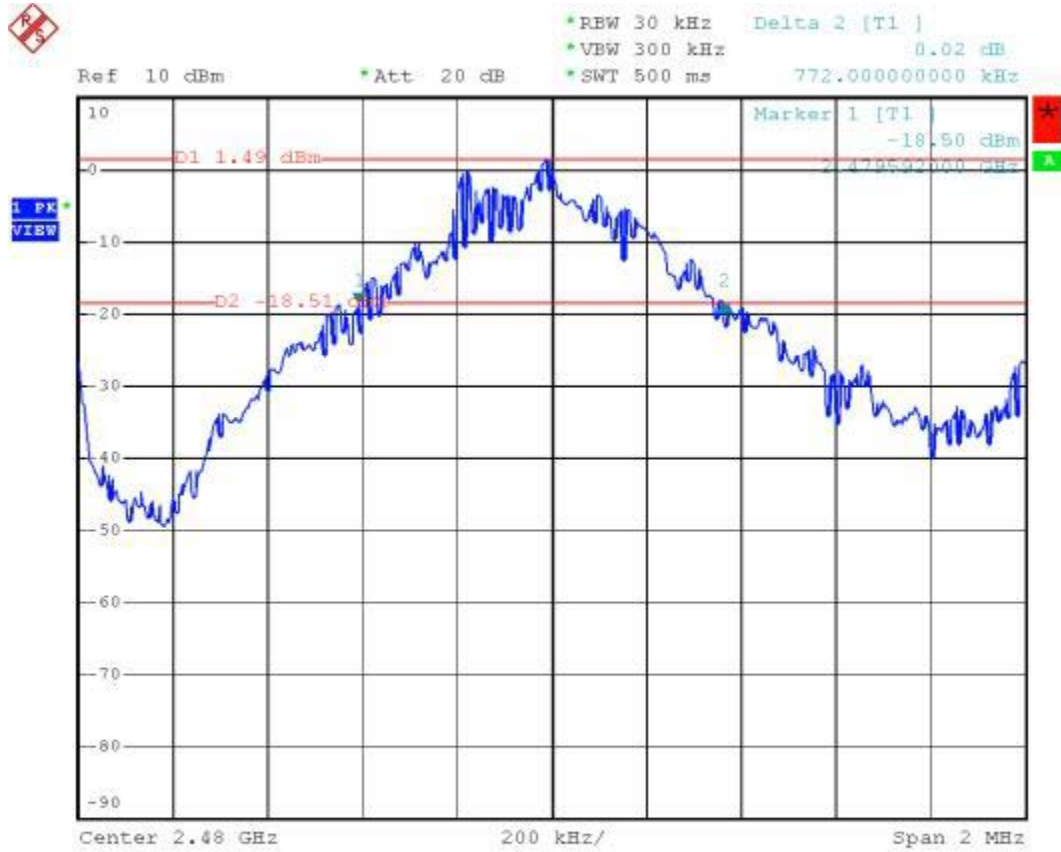
Mode 1: CH00 (2402MHz)



Mode 2: CH39 (2441MHz)



Mode 3: CH78 (2480MHz)



5.5 Dwell Time of Each Frequency within a 30 Seconds Period

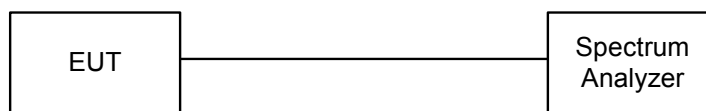
5.5.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.5.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measured and set the frequency span to zero span.
4. The equation = $30 \cdot (1600/79) \cdot t$ (t = the time duration of one single pulse)

5.5.3 Test Setup Layout :



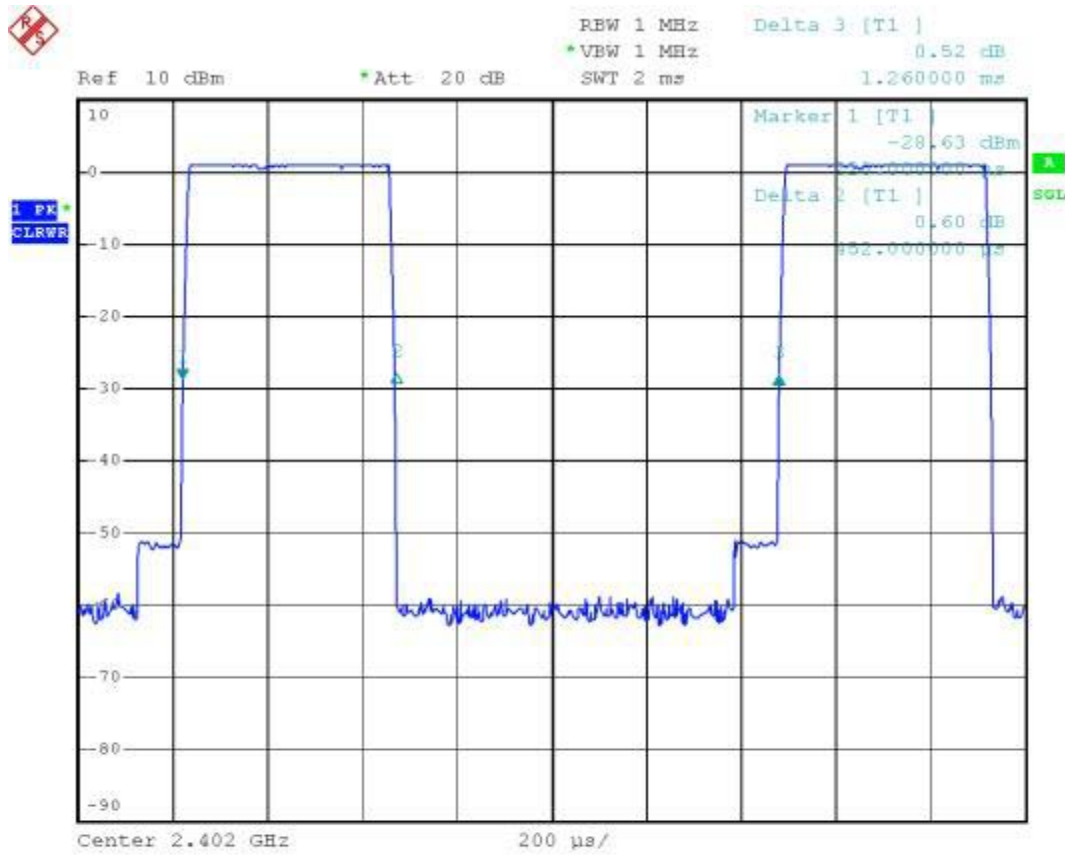
5.5.4 Test Result : See spectrum analyzer plots below

- Test Mode: Mode 1~Mode 3
- Temperature: 26°C
- Relative Humidity: 53 %

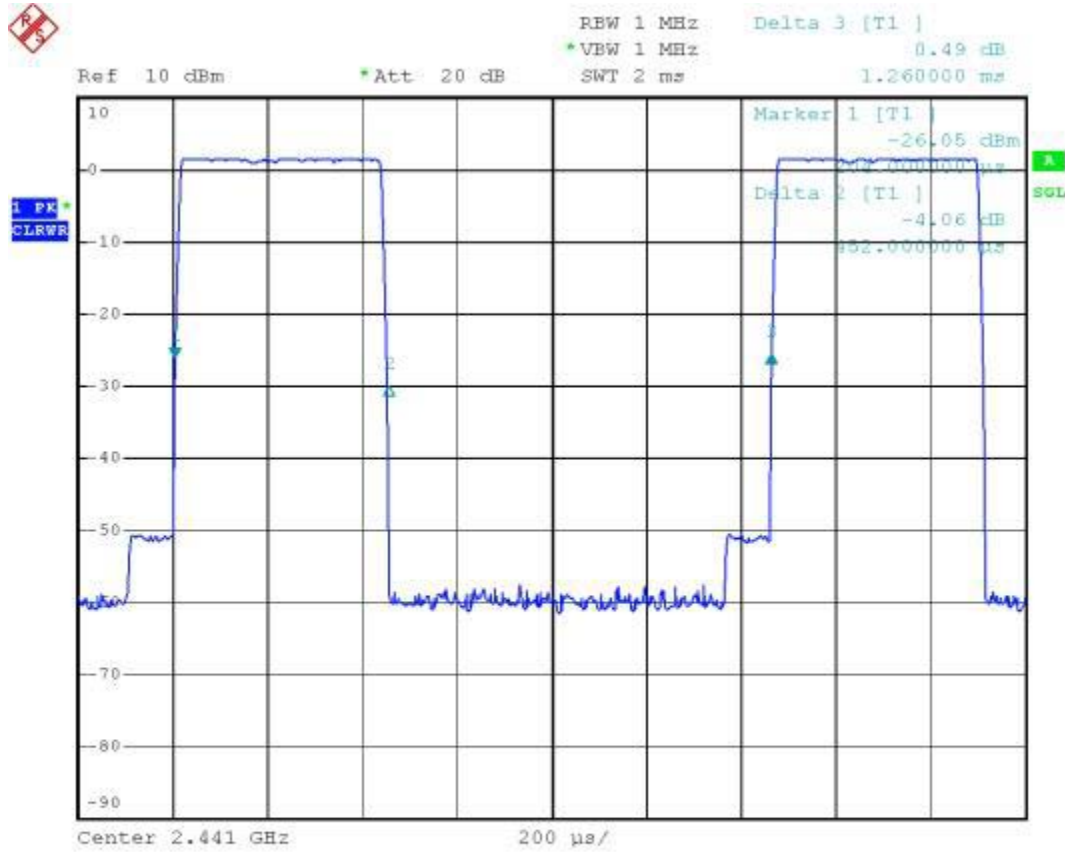
Channel	Frequency (MHz)	Dwell Time (s)	Limits (s)	Plot Ref. No.
00	2402	0.27	0.4	Mode 1
39	2441	0.27	0.4	Mode 2
78	2480	0.27	0.4	Mode 3

5.5.5 Dwell Time of Each Frequency

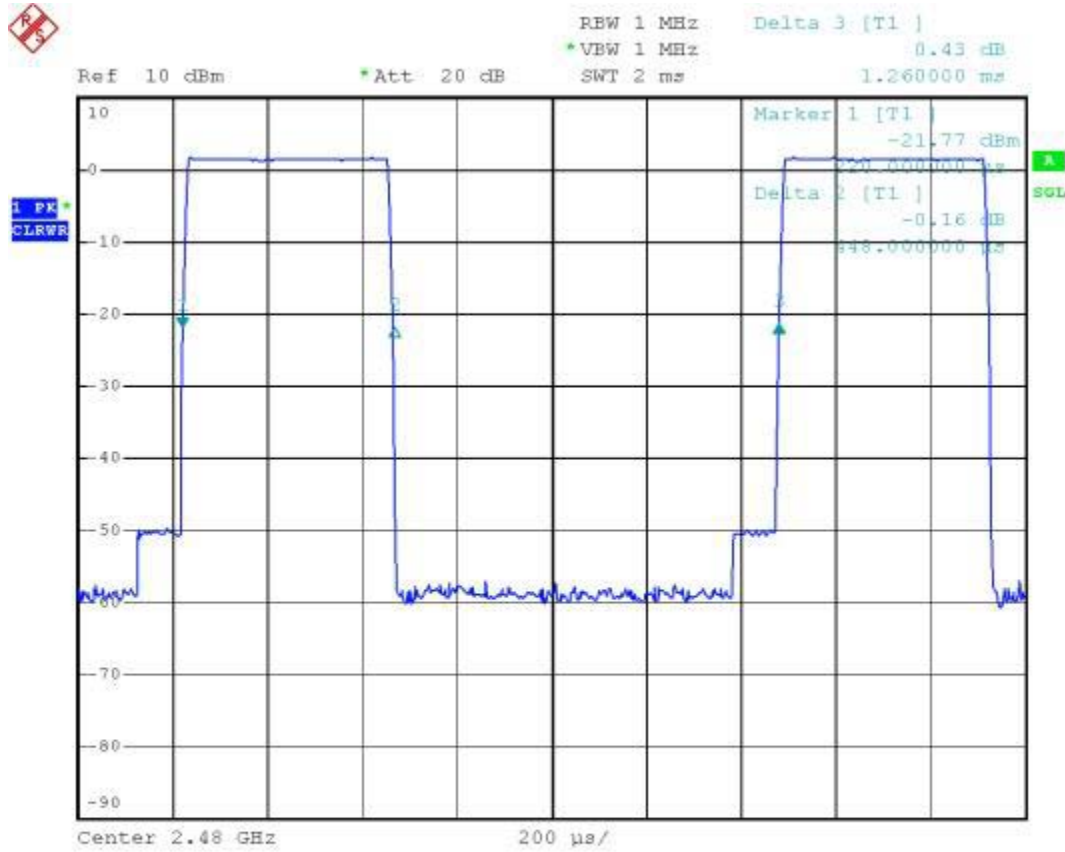
Mode 1: CH00 (2402MHz)



Mode 2: CH39 (2441MHz)



Mode 3: CH78 (2480MHz)



5.6 Output Power

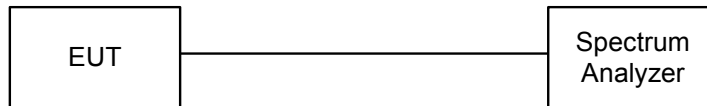
5.6.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.6.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. The center frequency of the spectrum analyzer was set to the fundamental frequency and set RBW to 3MHz and VBW to 3MHz.

5.6.3 Test Setup Layout :



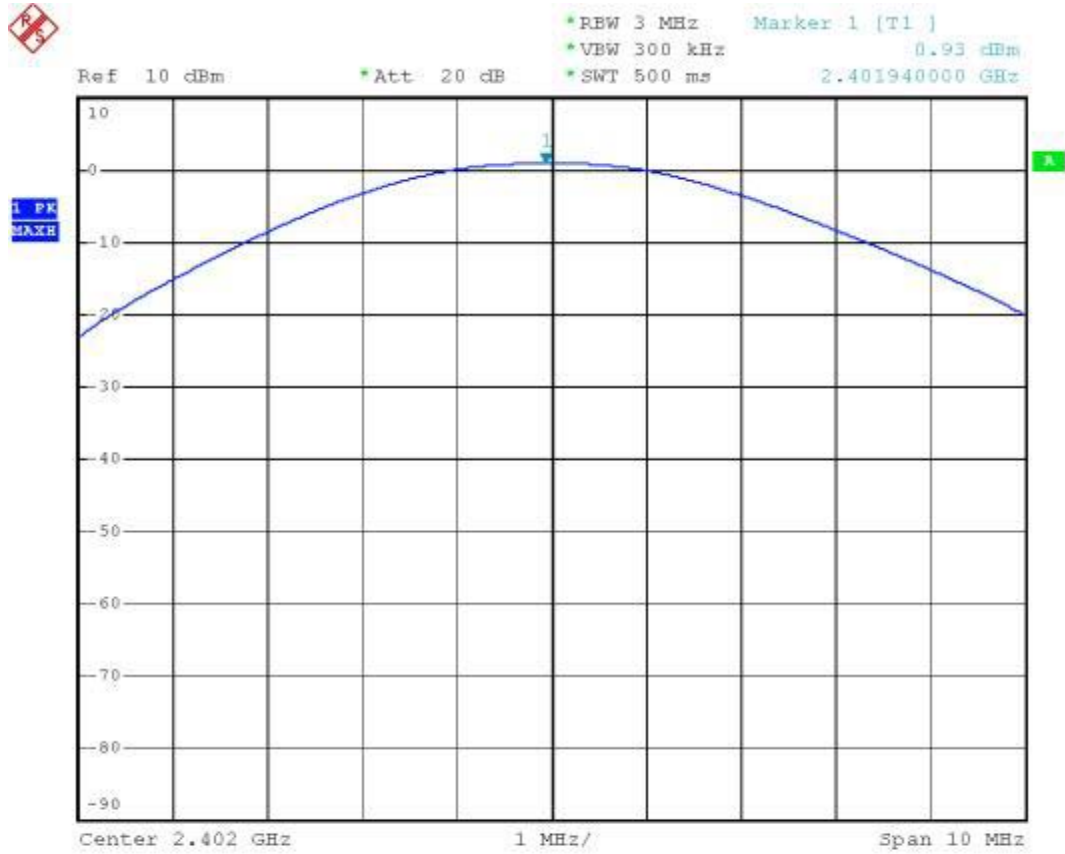
5.6.4 Test Result : See spectrum analyzer plots below

- Test Mode: Mode 1~Mode 3
- Temperature: 26°C
- Relative Humidity: 53 %

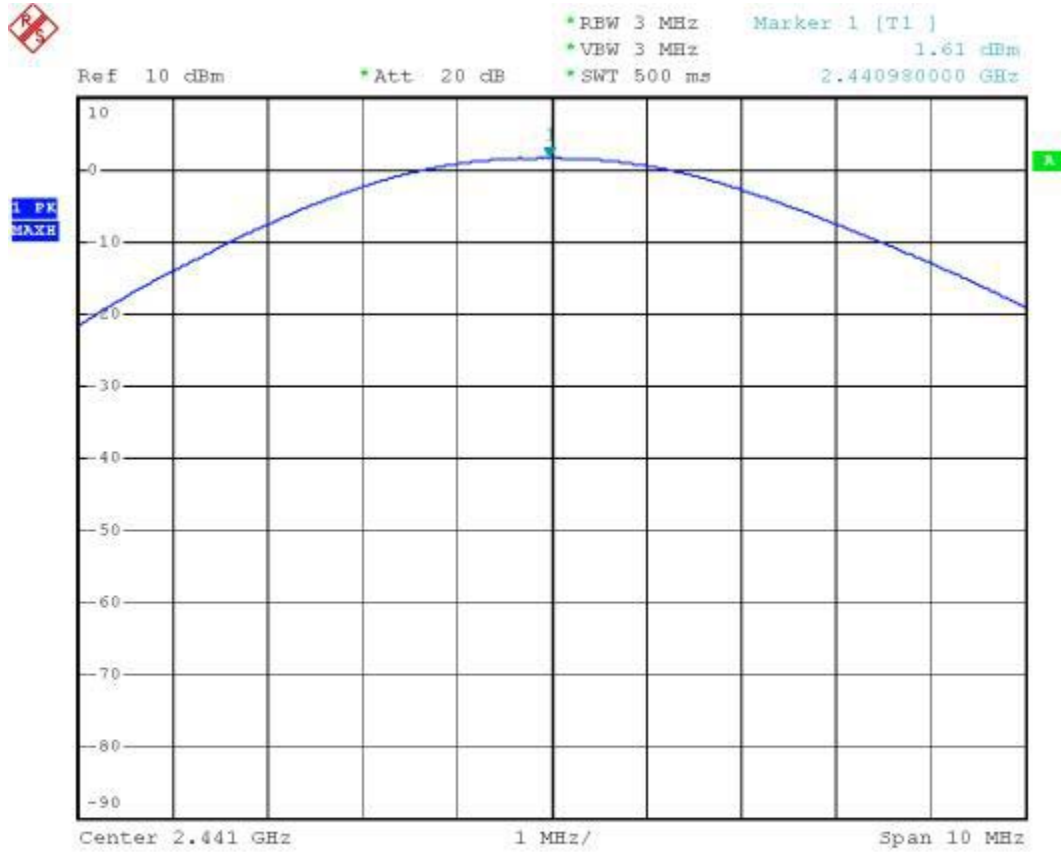
Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)	Plot Ref. No.
00	2402	0.93	1W/30 dBm	Mode 1
39	2441	1.61	1W/30 dBm	Mode 2
78	2480	1.82	1W/30 dBm	Mode 3

5.6.5 Output Power

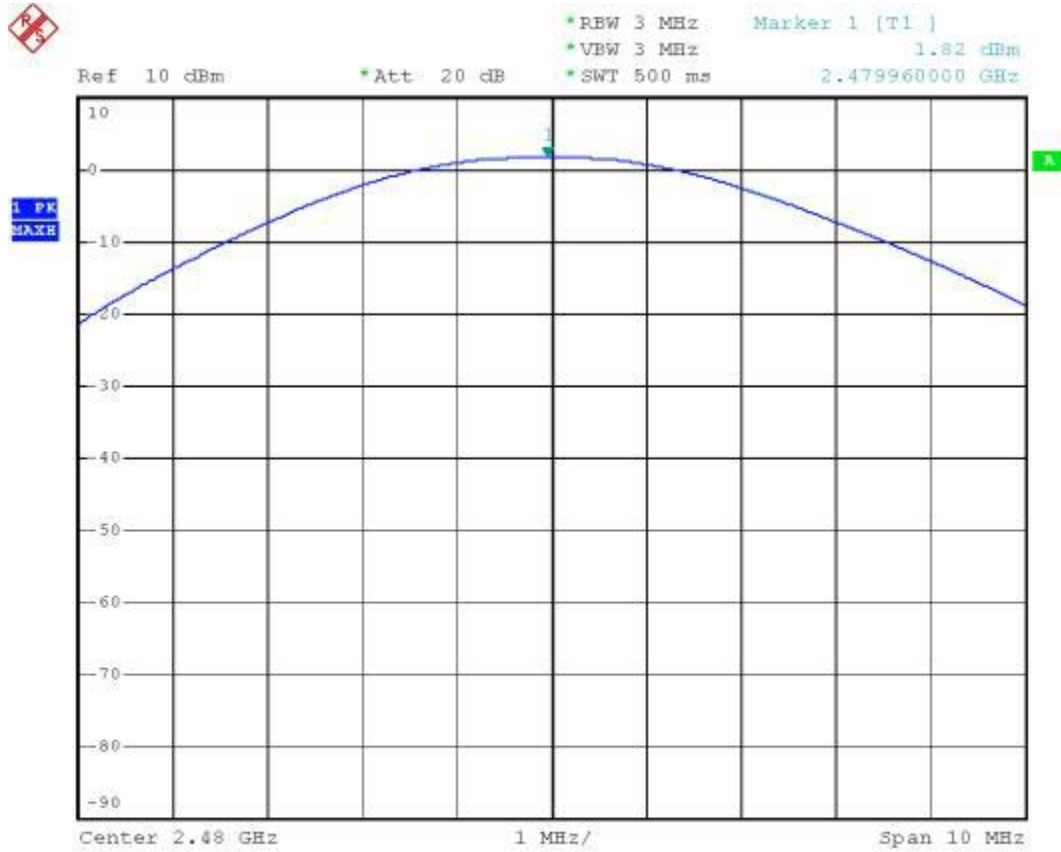
Mode 1: CH00 (2402MHz)



Mode 2: CH39 (2441MHz)



Mode 3: CH78 (2480MHz)



5.7 100kHz Bandwidth of Frequency Band Edges

5.7.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.7.2 Test Procedure :

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

5.7.3 Test Result :

- Test Mode: Mode 1 and Mode 3
- Temperature: 26°C
- Relative Humidity: 53 %

Test Result in lower band (Channel 00) : PASS

Test Result in higher band(Channel 78) : PASS

5.7.4 Note on Band edge Emission

The delta between fundamental and peak spurious emission (2400MHz) for CH00 is 42.74dB.

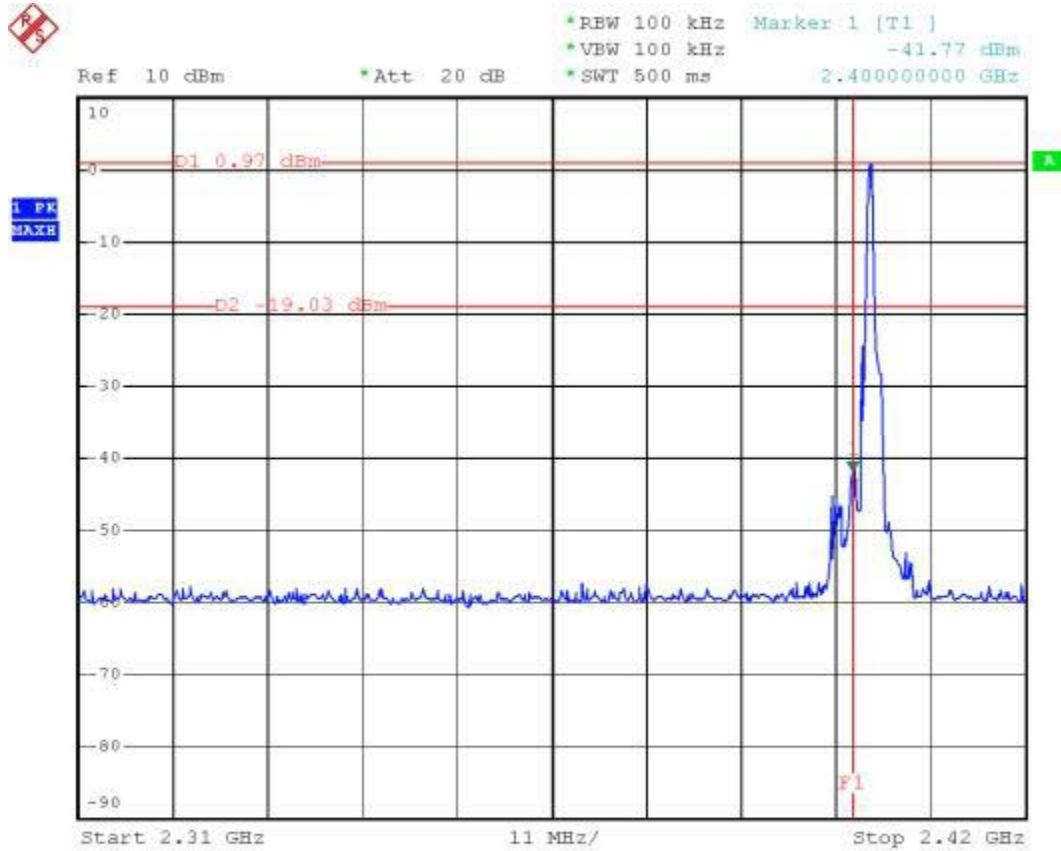
The delta between fundamental and peak spurious emission (2483.7MHz) for CH78 is 55.010dB.

Channel	Polarity	The emission of carrier power strength	Frequency	The maximum field strength in band edge	Limit	Margin	Remark	Result
		(dB μ V/m)	(GHz)	(dB μ V/m)	(dB μ V/m)	(dB)		
00	H	83.01	2.4000	40.27	74	-33.73	Peak	Pass
	H	58.93	2.4000	16.19	54	-37.81	Average	Pass
	V	75.42	2.4000	32.68	74	-41.32	Peak	Pass
	V	55.33	2.4000	12.59	54	-41.41	Average	Pass
78	H	88.49	2.4837	33.48	74	-40.52	Peak	Pass
	H	63.46	2.4837	8.45	54	-45.55	Average	Pass
	V	86.15	2.4837	31.14	74	-42.86	Peak	Pass
	V	63.08	2.4837	8.07	54	-45.93	Average	Pass

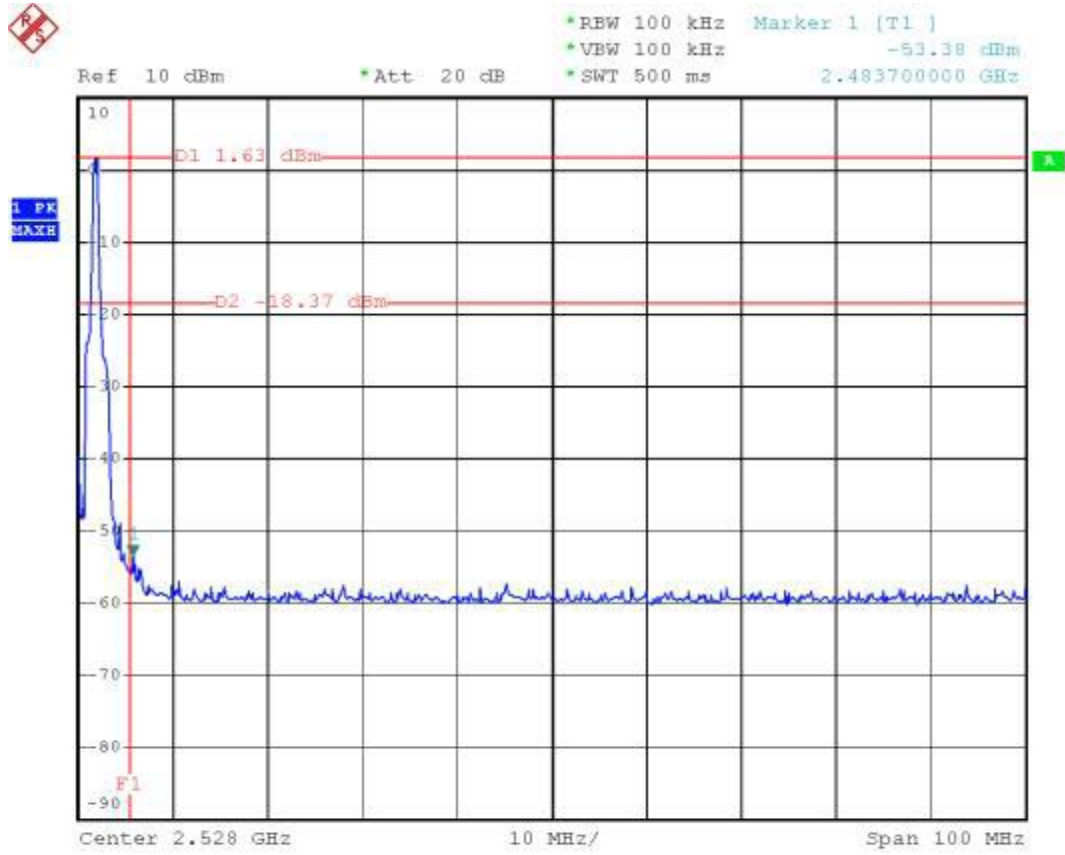
*Remark: The data above can refer to radiated emission in section 5.9.

5.7.5 Frequency Band Edge

Mode 1: CH00 (2402 MHz)



Mode 3: CH78 (2480 MHz)



5.8 Test of Conducted Emission

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

5.8.1 Major Measuring Instruments :

• Test Receiver	(R&S ESCS 30)
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

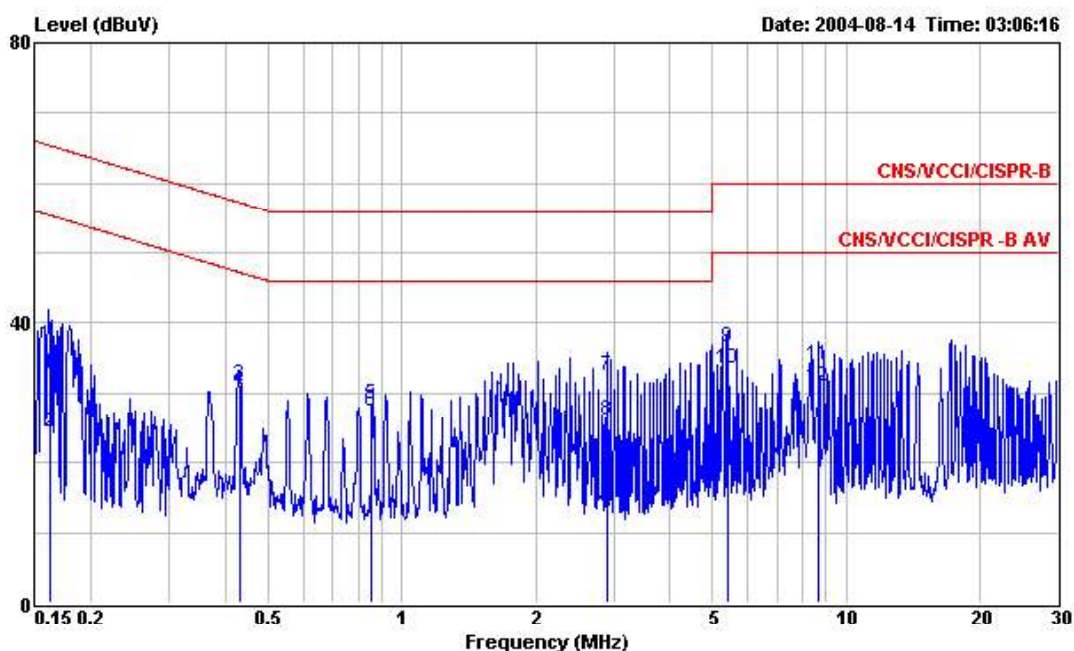
5.8.2 Test Procedures :

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.8.3 Test Result of Conducted Emission :

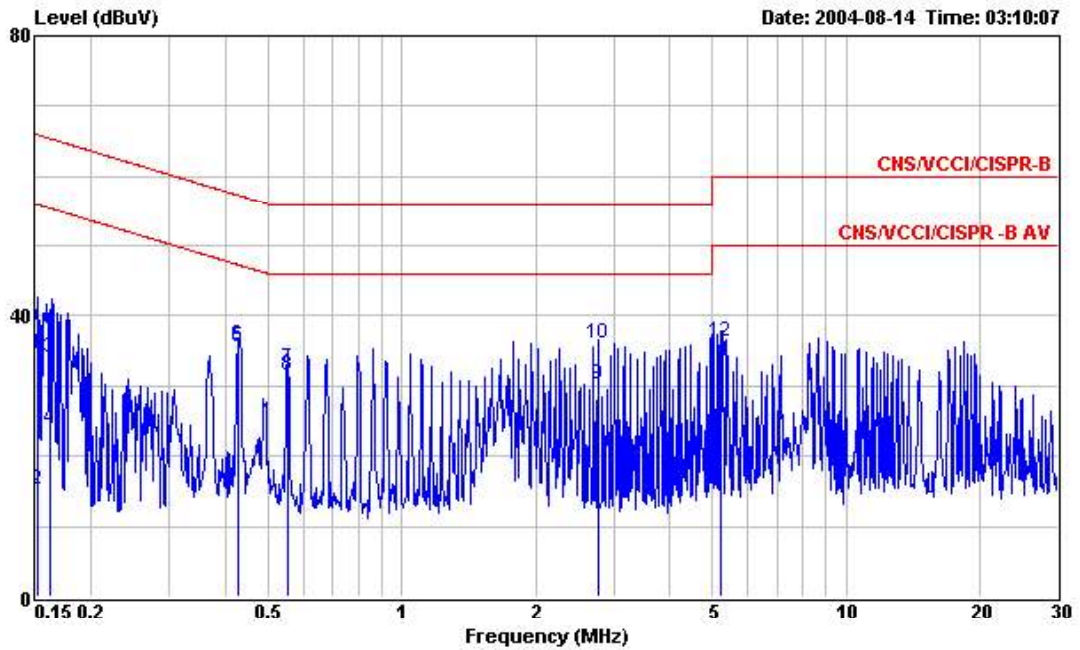
- Test Mode: Mode 1
- Frequency Range of Test: from 150KHz to 30 MHz
- Temperature: 24°C
- Relative Humidity: 47 %
- Test Date: Sep. 13, 2004

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



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
 EUT :
 Power : 120Vac/60Hz
 Model :
 Memo : PCS Idle Mode + Bluetooth Active +
 Window Media + Camera Active +
 USB Test Sync + Cradle

	Over	Limit	Read	Probe	Cable		
Freq	Level	Limit	Line	Level	Factor	Loss Remark	
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.161	32.89	-32.52	65.41	32.76	0.10	0.03 QP
2	0.161	24.51	-30.90	55.41	24.38	0.10	0.03 Average
3	0.431	31.35	-25.88	57.23	31.22	0.10	0.03 QP
4	0.431	30.50	-16.73	47.23	30.37	0.10	0.03 Average
5	0.857	28.53	-27.47	56.00	28.38	0.10	0.05 QP
6	0.857	27.52	-18.48	46.00	27.37	0.10	0.05 Average
7	2.890	32.39	-23.61	56.00	32.21	0.10	0.08 QP
8	2.890	26.18	-19.82	46.00	26.00	0.10	0.08 Average
9	5.404	36.67	-23.33	60.00	36.44	0.13	0.10 QP
10	5.404	33.42	-16.58	50.00	33.19	0.13	0.10 Average
11	8.657	34.15	-25.85	60.00	33.85	0.18	0.12 QP
12	8.657	30.89	-19.11	50.00	30.59	0.18	0.12 Average



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
 EUT :
 Power : 120Vac/60Hz
 Model :
 Memo : PCS Idle Mode + Bluetooth Active +
 Window Media + Camera Active +
 USB Test Sync + Cradle

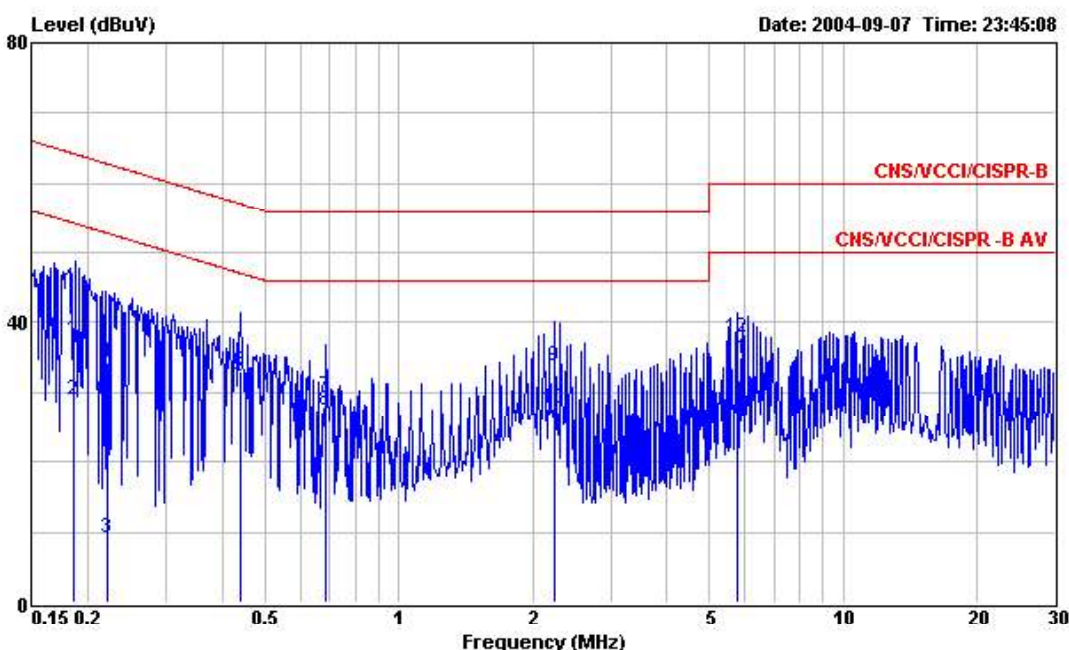
	Freq	Level	Over	Limit	Read	Probe	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.151	34.46	-31.48	65.94	34.33	0.10	0.03	QP
2	0.151	15.29	-40.65	55.94	15.16	0.10	0.03	Average
3	0.162	33.99	-31.37	65.36	33.86	0.10	0.03	QP
4	0.162	23.87	-31.49	55.36	23.74	0.10	0.03	Average
5	0.428	35.48	-21.81	57.29	35.35	0.10	0.03	QP
6	0.428	35.79	-11.50	47.29	35.66	0.10	0.03	Average
7	0.555	32.42	-23.58	56.00	32.28	0.10	0.04	QP
8	0.555	31.42	-14.58	46.00	31.28	0.10	0.04	Average
9	2.760	30.13	-15.87	46.00	29.90	0.15	0.08	Average
10	2.760	36.06	-19.94	56.00	35.83	0.15	0.08	QP
11	5.218	33.41	-16.59	50.00	33.11	0.20	0.10	Average
12	5.218	36.39	-23.61	60.00	36.09	0.20	0.10	QP

Test Engineer: Jay
 Jay

5.8.4 Test Result of Conducted Emission :

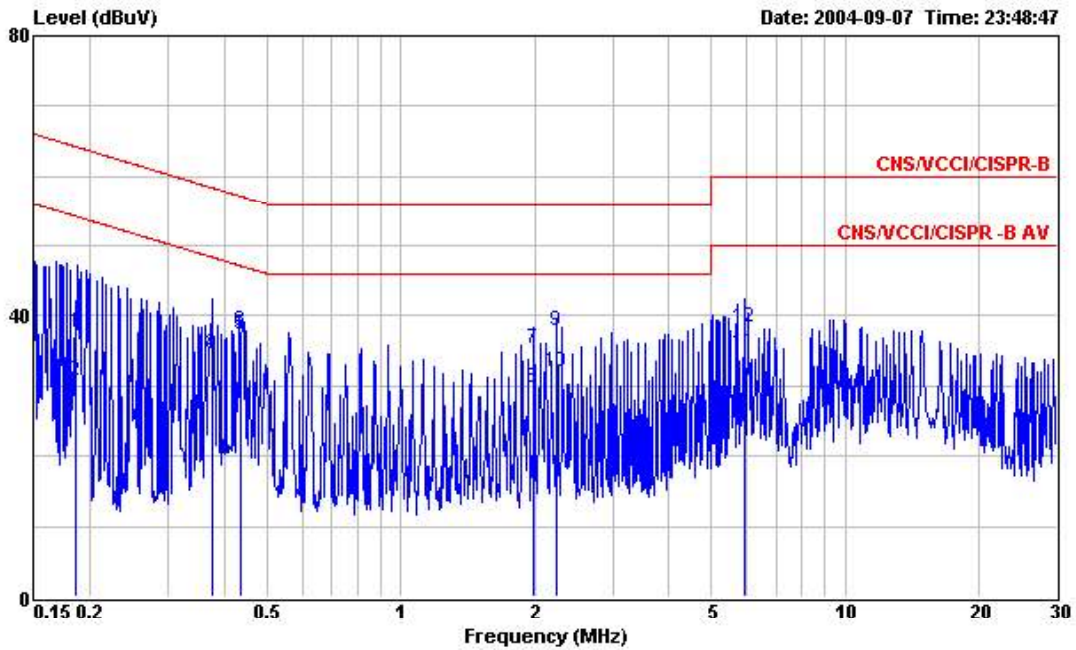
- Test Mode: Mode 2
- Frequency Range of Test: from 150KHz to 30 MHz
- Temperature: 24°C
- Relative Humidity: 47 %
- Test Date: Sep. 13, 2004

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



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
 EUT :
 Power : 120Vac/60Hz
 Model :
 Memo : PCS Idle Mode + Bluetooth Active +
 : Window Media + Camera Active +
 : USB Test Sync

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.186	37.68	-26.53	64.21	37.55	0.10	0.03	QP
2	0.186	28.99	-25.22	54.21	28.86	0.10	0.03	Average
3	0.220	9.22	-43.60	52.82	9.09	0.10	0.03	Average
4	0.220	34.22	-28.60	62.82	34.09	0.10	0.03	QP
5	0.440	32.35	-14.71	47.06	32.22	0.10	0.03	Average
6	0.440	33.02	-24.04	57.06	32.89	0.10	0.03	QP
7	0.686	29.48	-26.52	56.00	29.33	0.10	0.05	QP
8	0.686	27.55	-18.45	46.00	27.40	0.10	0.05	Average
9	2.250	33.76	-22.24	56.00	33.59	0.10	0.07	QP
10	2.250	27.68	-18.32	46.00	27.51	0.10	0.07	Average
11	5.800	34.89	-15.11	50.00	34.64	0.14	0.11	Average
12	5.800	37.92	-22.08	60.00	37.67	0.14	0.11	QP



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
 EUT :
 Power : 120Vac/60Hz
 Model :
 Memo : PCS Idle Mode + Bluetooth Active +
 : Window Media + Camera Active +
 : USB Test Sync

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.185	37.60	-26.64	64.24	37.47	0.10	0.03	QP
2	0.185	30.80	-23.44	54.24	30.67	0.10	0.03	Average
3	0.375	34.61	-23.78	58.39	34.48	0.10	0.03	QP
4	0.375	34.61	-13.78	48.39	34.48	0.10	0.03	Average
5	0.436	37.28	-19.85	57.13	37.15	0.10	0.03	QP
6	0.436	37.82	-9.31	47.13	37.69	0.10	0.03	Average
7	1.996	35.40	-20.60	56.00	35.23	0.10	0.07	QP
8	1.996	29.83	-16.17	46.00	29.66	0.10	0.07	Average
9	2.245	37.76	-18.24	56.00	37.57	0.12	0.07	QP
10	2.245	32.07	-13.93	46.00	31.88	0.12	0.07	Average
11	5.927	34.71	-15.29	50.00	34.40	0.20	0.11	Average
12	5.927	38.26	-21.74	60.00	37.95	0.20	0.11	QP

Test Engineer: Jay

Jay

5.9 Test of Radiated Emission

Radiated emissions from 30 MHz to 26.5 GHz were measured according to the methods defined in ANSI C63.4-2003. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 5.9.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

5.9.1 Major Measuring Instruments

- Amplifier (MITEQ AFS44)
 - RF Gain 40 dB
 - Signal Input 100 MHz to 26.5 GHz

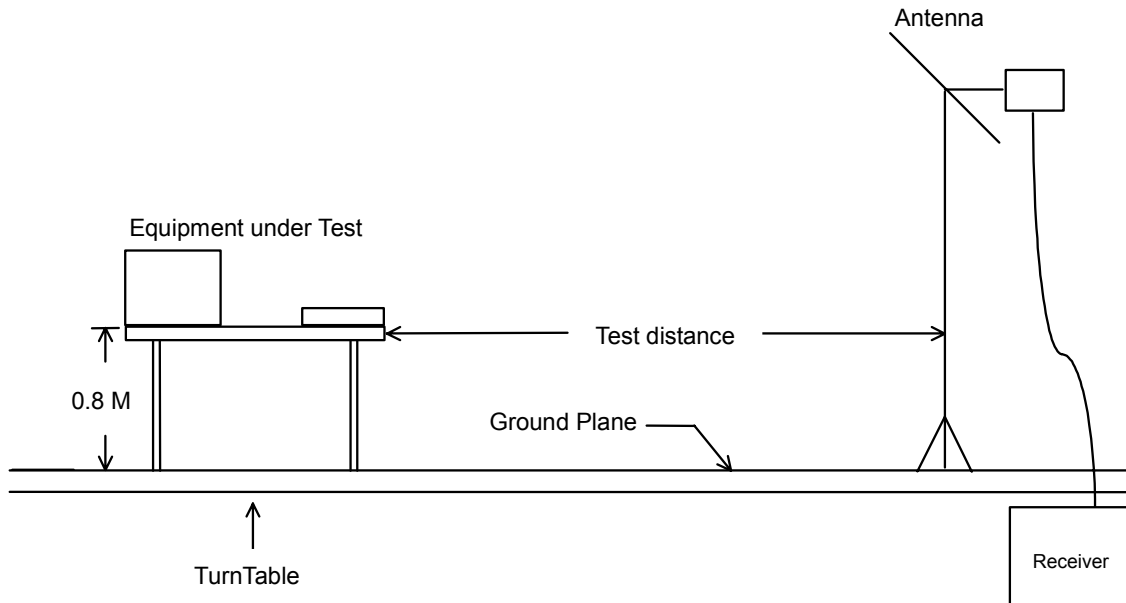
- Amplifier (HP 8447D)
 - RF Gain 30 dB
 - Signal Input 100 kHz to 1.3 GHz

- Spectrum analyzer (R&S FSP40)
 - Attenuation 10 dB
 - Start Frequency 1 GHz
 - Stop Frequency 24 GHz
 - Resolution Bandwidth 1 MHz
 - Video Bandwidth 1 MHz
 - Signal Input 9 kHz to 40 GHz

5.9.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. 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.

5.9.3 Typical Test Setup Layout of Radiated Emission

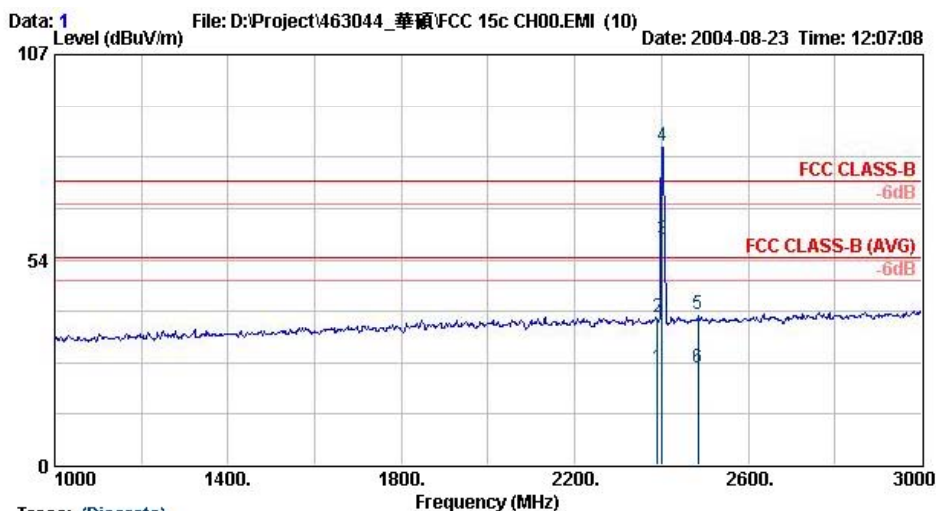


5.9.4 Test Result of Radiated Emission

- Test Mode: Mode 1
- Test Distance: 3 m
- Temperature: 26°C
- Relative Humidity: 53 %
- Test Date: Sep. 13, 2004
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

■ Spurious Emission

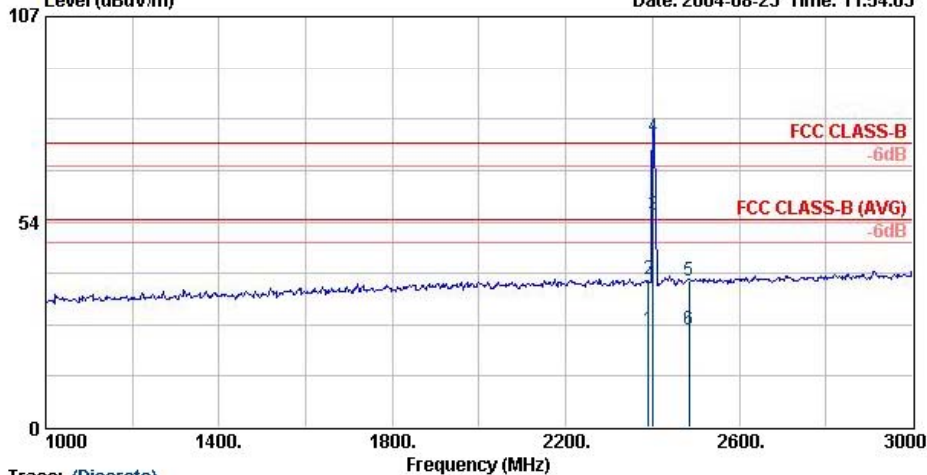


Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 188deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH00 2402MHz

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Preamp	Cable	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1 @	2390.00	25.40	-28.60	54.00	38.02	28.40	44.34	Average	100	190
2 @	2390.00	38.62	-35.38	74.00	51.24	28.40	44.34	Peak	100	190
3 @	2401.90	58.93			71.55	28.40	44.34	Average	100	190
4 @	2401.90	83.01			95.63	28.40	44.34	Peak	100	190
5 @	2483.50	39.22	-34.78	74.00	51.67	28.48	44.31	Peak	100	190
6 @	2483.50	25.51	-28.49	54.00	37.96	28.48	44.31	Average	100	190

Remark: #3 and #4 represent a fundamental frequency.

Data: 6 File: D:\Project\463044_華碩\FCC 15c CH00.EMI (10) Date: 2004-08-23 Time: 11:54:03



Trace: (Discrete)

Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 360deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH00 2402MHz

	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Remark	Ant	Table
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	2390.00	25.27	-28.73	54.00	37.89	28.40	44.34	Average	100	120
2	2390.00	38.42	-35.58	74.00	51.04	28.40	44.34	Peak	100	120
3 X	2402.10	55.33			67.95	28.40	44.34	Average	100	120
4 @	2402.10	75.42			88.04	28.40	44.34	Peak	100	120
5	2483.50	38.25	-35.75	74.00	50.70	28.48	44.31	Peak	100	120
6	2483.50	25.61	-28.39	54.00	38.06	28.48	44.31	Average	100	120


Remark: #3 and #4 represent a fundamental frequency.

- For 3GHz ~ 25GHz
 Remark: Frequency from 3000MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2401.900	H	28.40	3.32	95.63	44.34	-	83.01	-	Peak
2401.900	H	28.40	3.32	71.55	44.34	-	58.93	-	A.V.
2402.100	V	28.40	3.32	88.04	44.34	-	75.42	-	Peak
2402.100	V	28.40	3.32	67.95	44.34	-	55.33	-	A.V.
4804.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
7206.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
9608.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
12010.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
14412.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
16814.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
19216.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
21618.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
24020.000	V/H	-	-	-	-	-	-	-	Peak, A.V.

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above

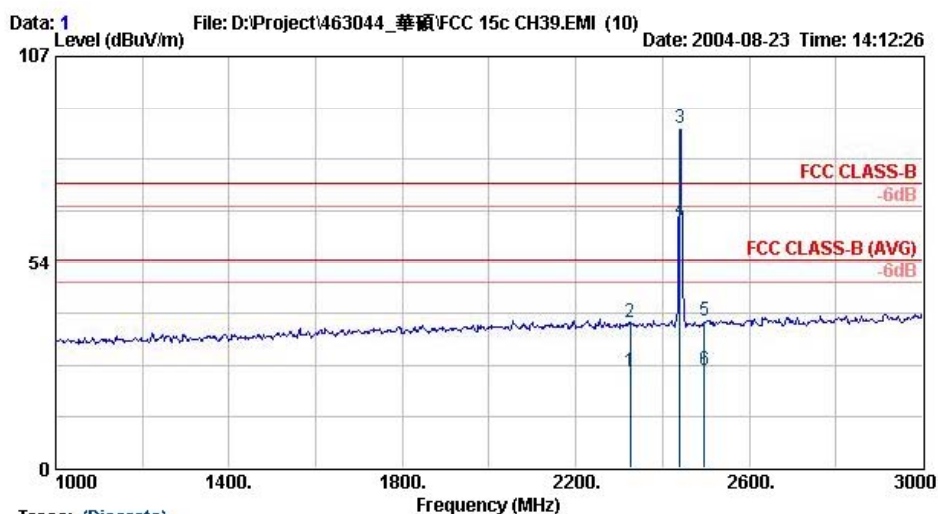
Test Engineer:  _____

Jay

- Test Mode: Mode 2
- Test Distance: 3 M
- Temperature: 26 °C
- Relative Humidity: 53 %
- Test Date: Sep. 13, 2004
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

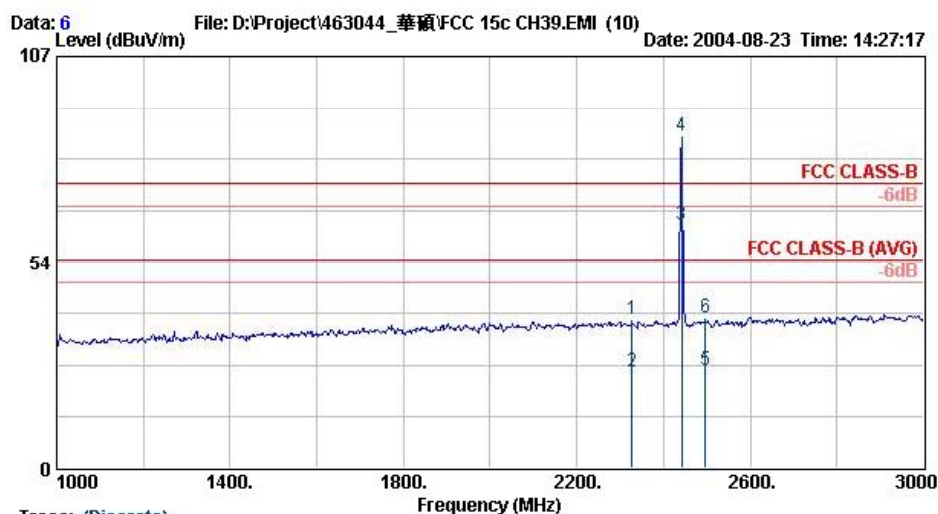
■ Spurious Emission



Trace: (Discrete)
 Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 360deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH39 2441MHz

	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Remark	Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss		Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	2324.80	25.01	-28.99	54.00	37.78	28.33	44.37	Average	105	3
2	2324.80	37.65	-36.35	74.00	50.42	28.33	44.37	Peak	105	3
3 @	2440.80	88.16			100.67	28.45	44.32	Peak	105	3
4 X	2440.80	64.37			76.88	28.45	44.32	Average	105	3
5	2495.90	38.05	-35.95	74.00	50.46	28.50	44.30	Peak	105	3
6	2495.90	25.48	-28.52	54.00	37.89	28.50	44.30	Average	105	3

Remark: #3 and #4 represent a fundamental frequency.



Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 360deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH39 2441MHz

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	2327.10	38.61	-35.39	74.00	51.38	28.33	44.37	Peak	105	119
2	2327.10	25.12	-28.88	54.00	37.89	28.33	44.37	Average	105	119
3 X	2441.00	63.09			75.60	28.45	44.32	Average	105	119
4 @	2441.00	86.36			98.87	28.45	44.32	Peak	105	119
5	2495.70	25.39	-28.61	54.00	37.80	28.50	44.30	Average	105	119
6	2495.70	39.14	-34.86	74.00	51.55	28.50	44.30	Peak	105	119

Remark: #3 and #4 represent a fundamental frequency.


➤ For 3GHz ~ 25GHz

Remark: Frequency from 3000MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Antenna Polarity	Cable Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Limits Factor (dB)	Emission (dBuV/m)	Margin (dB)	Detect Mode	
2440.800	H	28.45	3.36	100.67	44.32	-	88.16	-	Peak
2440.800	H	28.45	3.36	76.88	44.32	-	64.37	-	A.V.
2441.000	V	28.45	3.36	98.87	44.32	-	86.36	-	Peak
2441.000	V	28.45	3.36	75.60	44.32	-	63.09	-	A.V.
4882.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
7323.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
9764.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
12205.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
14646.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
17087.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
19528.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
21969.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
24410.000	V/H	-	-	-	-	-	-	-	Peak, A.V.

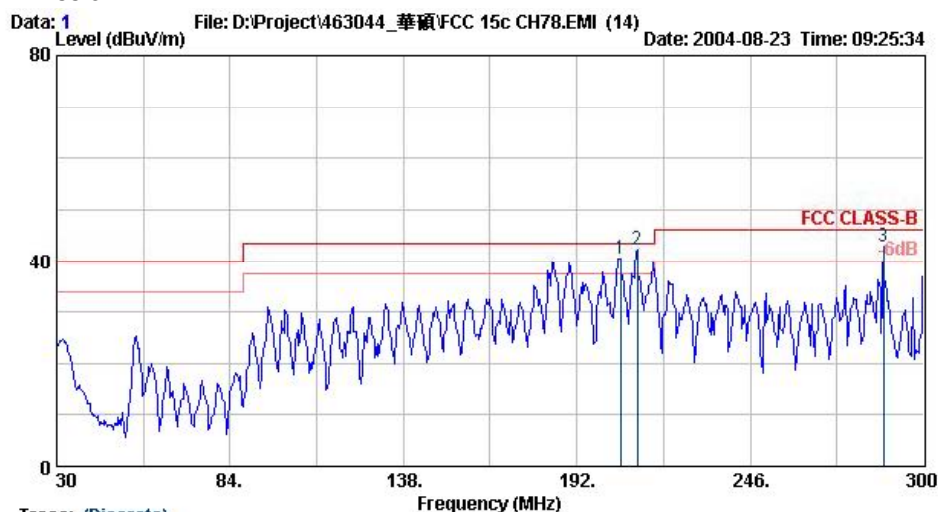
Remark: The emission emitted by the EUT is too low to be measured except the emission listed above

Test Engineer: 
Jay

- Test Mode: Mode 3
- Test Distance: 3 M
- Temperature: 26 °C
- Relative Humidity: 53 %
- Test Date: Sep. 13, 2004
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

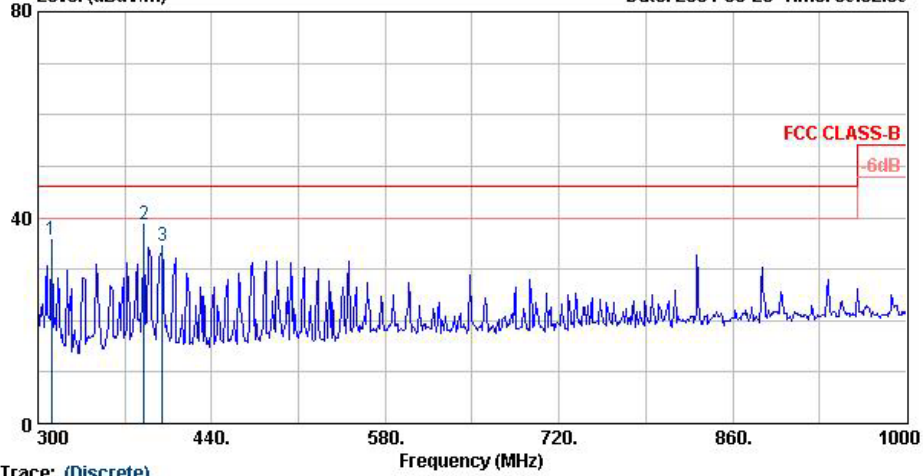
■ Spurious Emission



Site : 03CH06
 Condition : FCC CLASS-B 3m BI LOG 2004 0629 HORIZONTAL 314cm 190deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Preamp	Cable	Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	205.50	40.58	-2.92	43.50	62.61	8.70	31.99	1.26	Peak	314	190
2 @	210.90	42.34	-1.16	43.50	64.30	8.68	31.92	1.27	Peak	314	190
3	287.58	42.93	-3.07	46.00	60.70	12.72	31.97	1.47	Peak	314	190

Data: 2 File: D:\Project\463044_華碩\FCC 15c CH78.EMI (14) Date: 2004-08-23 Time: 09:32:59

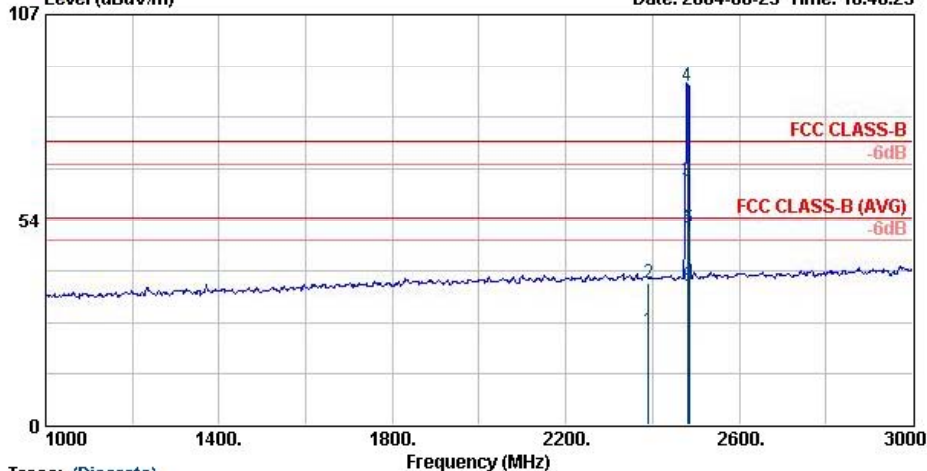


Trace: (Discrete)

Site : 03CH06
 Condition : FCC CLASS-B 3m BI LOG 2004 0629 HORIZONTAL 0cm 0deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Remark	Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss		Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	310.50	35.67	-10.33	46.00	52.87	13.41	32.14	1.53 Peak	0	0
2	385.40	38.77	-7.23	46.00	53.17	15.26	31.44	1.78 Peak	0	0
3	400.10	34.63	-11.37	46.00	48.41	15.90	31.51	1.83 Peak	0	0

Data: 3 File: D:\Project\463044_華碩\FCC 15c CH78.EMI (14) Date: 2004-08-23 Time: 10:46:25
 Level (dBuV/m)

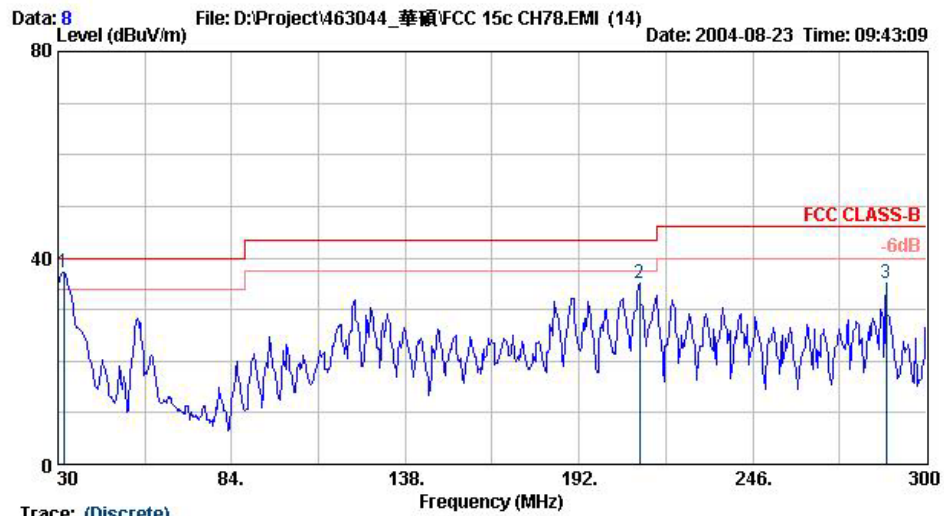


Trace: (Discrete)

Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 0deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

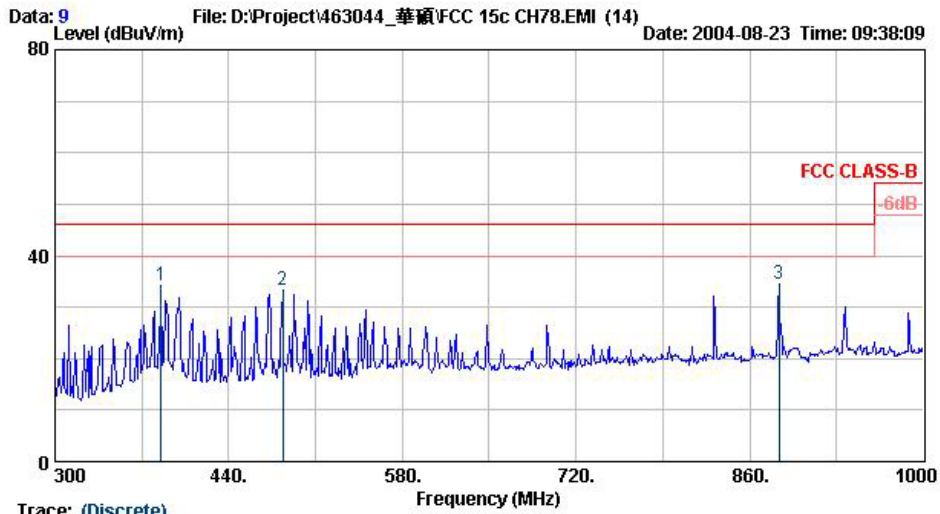
	Freq	Level	Over Limit	Limit Line	ReadAntenna	Preamp	Cable	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	2390.00	24.86	-29.14	54.00	37.48	28.40	44.34	Average	100	195
2	2390.00	37.12	-36.88	74.00	49.74	28.40	44.34	Peak	100	195
3 @	2480.20	63.46			75.91	28.48	44.31	Average	100	195
4 @	2480.20	88.49			100.94	28.48	44.31	Peak	100	195
5	2483.50	51.39	-22.61	74.00	63.84	28.48	44.31	Peak	100	195
6	2483.50	36.36	-17.64	54.00	48.81	28.48	44.31	Average	100	195

Remark: #3 and #4 represent a fundamental frequency.



Site : 03CH06
 Condition : FCC CLASS-B 3m BI LOG 2004 0629 VERTICAL 114cm 0deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

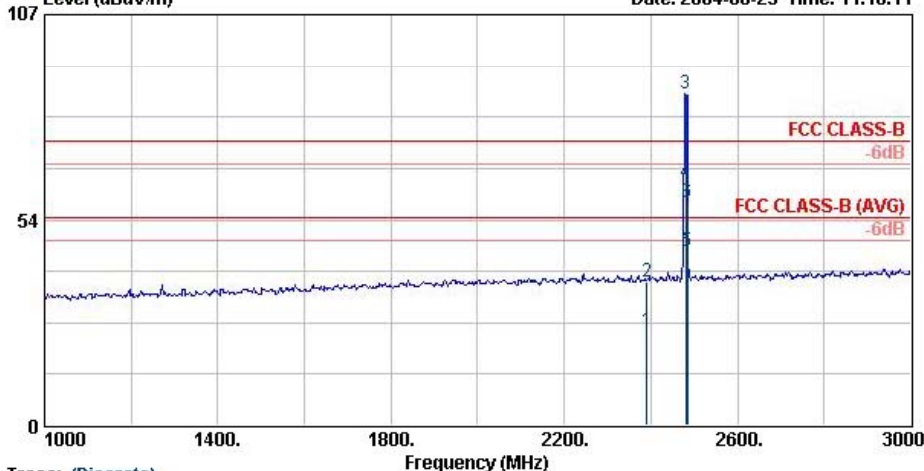
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	31.89	37.23	-2.77	40.00	52.09	16.77	32.13	0.51 Peak	114	0
2	210.90	34.95	-8.55	43.50	56.92	8.68	31.92	1.27 Peak	114	0
3	287.58	35.12	-10.88	46.00	52.89	12.72	31.97	1.47 Peak	114	0



Site : 03CH06
 Condition : FCC CLASS-B 3m BI LOG 2004 0629 VERTICAL 400cm 0deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Remark	Ant	Table
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	385.40	34.08	-11.92	46.00	48.47	15.26	31.44	1.78 Peak	400	0
2	483.40	33.37	-12.63	46.00	45.95	17.17	31.77	2.03 Peak	400	0
3	883.80	34.44	-11.56	46.00	41.90	20.53	30.97	2.98 Peak	400	0

Data: 10 File: D:\Project\463044_華碩\FCC 15c CH78.EMI (14) Date: 2004-08-23 Time: 11:16:11
 Level (dBuV/m)



Trace: (Discrete)

Site : 03CH06
 Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 215cm 360deg
 EUT : Tri-Band PDA Phone with Bluetooth
 Power : AC 120V / 60Hz
 Model : A8100
 Memo : 15c TX CH78 2480MHz

	Freq	Level	Over	Limit	ReadAntenna	Preamp	Cable	Remark	Ant	Table
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		cm	deg
1	2390.00	24.82	-29.18	54.00	37.44	28.40	44.34	Average	100	7
2	2390.00	37.48	-36.52	74.00	50.10	28.40	44.34	Peak	100	7
3 @	2480.00	86.15			98.60	28.48	44.31	Peak	100	7
4 @	2480.00	63.08			75.53	28.48	44.31	Average	100	7
5	2483.50	45.28	-8.72	54.00	57.73	28.48	44.31	Average	100	7
6	2483.50	58.25	-15.75	74.00	70.70	28.48	44.31	Peak	100	7


Remark: #3 and #4 represent a fundamental frequency.

- For 3GHz ~ 25GHz
 Remark: Frequency from 3000MHz to 25000MHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Antenna Polarity	Cable Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2480.200	H	28.48	3.38	100.94	44.31	-	88.49	-	Peak
2480.200	H	28.48	3.38	75.91	44.31	-	63.46	-	A.V.
2480.000	V	28.48	3.38	98.60	44.31	-	86.15	-	Peak
2480.000	V	28.48	3.38	75.53	44.31	-	63.08	-	A.V.
4960.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
7440.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
9920.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
12400.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
14880.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
17360.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
19840.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
22320.000	V/H	-	-	-	-	-	-	-	Peak, A.V.
24800.000	V/H	-	-	-	-	-	-	-	Peak, A.V.

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above

Test Engineer: 
Jay

6. Antenna Requirements

The EUT use a L-shape antenna with I-PEX Connector. It is considered to meet antenna requirement of FCC.

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that 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 greater than 6dBi are used, the power shall be reduced by the same amount in unit dB comparing to the directional gain of the antenna minus 6dBi.

Antenna Connected Construction

The antenna used in this product is a L-shape antenna with I-PEX connector.

7. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 23, 2004	Jun. 23, 2005	Conduction
LISN	MessTec	NNB-2/16Z	2001/008	9 KHz – 30 MHz	May 03, 2004	May 03, 2005	Conduction
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9 KHz – 30 MHz	Apr. 19, 2004	Apr. 19, 2005	Conduction
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	N/A	Conduction
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	N/A	Conduction
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Dec. 24, 2003	Dec. 24, 2004	Conduction
Spectrum analyzer	R&S	FSP40	100057	9KHz-40GHz	Feb. 26, 2004	Feb. 26, 2005	Radiation
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 18, 2003	Dec. 18, 2004	Radiation
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 11, 2004	Feb. 11, 2005	Radiation
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jun. 22, 2004	Jun. 22, 2005	Radiation
PreAmplifier	Com-Power	PA-103	161055	1MHz - 1000MHz	Apr. 26, 2004	Apr. 26, 2005	Radiation
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	May. 20, 2004	May. 20, 2005	Radiation
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jun. 24, 2004	Jun. 24, 2005	Radiation
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation
Wireless Communications Test Set	Agilent	8960	E5515C	Qual-band	N/A	N/A	Radiation

8. Uncertainty of Test Site

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

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 Receiver VSWR Γ_1= LISN VSWR Γ_2= Uncertainty=20log(1-Γ_1*Γ_2)	+0.34/-0.3 5	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 (150kHz ~ 30MHz)

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 Receiver VSWR Γ_1 = 0.20 Antenna VSWR Γ_2 = 0.23 Uncertainty=20log(1- Γ_1 * Γ_2)	+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		

$$U = \sqrt{\{(1/2)^2 + (0.3/2)^2 + (2^2 + 0.5^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}} = 2.2 \text{ for 10m test distance}$$

$$U = \sqrt{\{(1/2)^2 + (0.3/2)^2 + (2^2 + 3^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}} = 2.7 \text{ for 3m test distance}$$

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

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u$
	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 Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72				

$$U = \sqrt{\{(0.3/2)^2 + (2^2 + 1.5^2 + 0.2^2)/3 + (0.2)^2/2\}} = 1.66$$