

FCC TEST REPORT

for

47 CFR Part 15 Subpart C and IC RSS-210

Equipment : Portable Terminal

Trade Name : CIPHERLAB

Model No. : 8370

FCC ID : Q3N-8370

IC ID : 5121A-8370

Filing Type : Certification

Applicant : SYNTECH INFORMATION CO., LTD.

12F, 333 Dunhua . Rd., Sec. 2 Taipei , Taiwan 106

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- The data shown in this test report were carried out on May 17, 2005 at **Sporton International Inc. LAB.**
- Report No.: FR541419, Report Version: Rev. 01



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Report Version: Rev. 01



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History of this test report

Report Issue Date: Nov. 10, 2005

Report No.	Description



1. General Description of Equipment under Test

1.1. Applicant

SYNTECH INFORMATION CO., LTD.

12F, 333 Dunhua . Rd., Sec. 2 Taipei , Taiwan 106

1.2 Manufacturer

SYNTECH INFORMATION CO., LTD.

12F, 333 Dunhua . Rd., Sec. 2 Taipei , Taiwan 106

1.3 Basic Description of Equipment under Test

Equipment : Portable Terminal

Trade : CIPHERLAB

Model No. : 8370

Power Supply Type : DC 3.7V

1.4 Feature of Equipment under Test

Product Feature & Specification				
1. Modulation Type	DSSS with BPSK(1Mbps), QPSK(2Mbps), and CCK(5.5 and 11Mbps)			
2. Frequency Range	2400 MHz ~ 2483.5 MHz			
3. Number of Channels	11 Channels			
4. Carrier Frequency of each channel	2412 + (n-1) × 5 MHz; n = 1~11			
5. Channel Bandwidth	17MHz			
6. Maximum Output Power to Antenna (Normal condition)	14.59 dBm			
7. Type of Antenna Connector	N/A			
8. Antenna Type	PIFA Antenna			
9. Antenna Gain	0 dBi			
10. Function Type	Transmitter		Transceiver	V
11. Power Rating (DC/AC , Voltage)	DC 3.3V (3.0~3.6V)			
12. Temperature / Humidity Range	0°C to 70°C			



2 Test Configuration of Equipment under Test

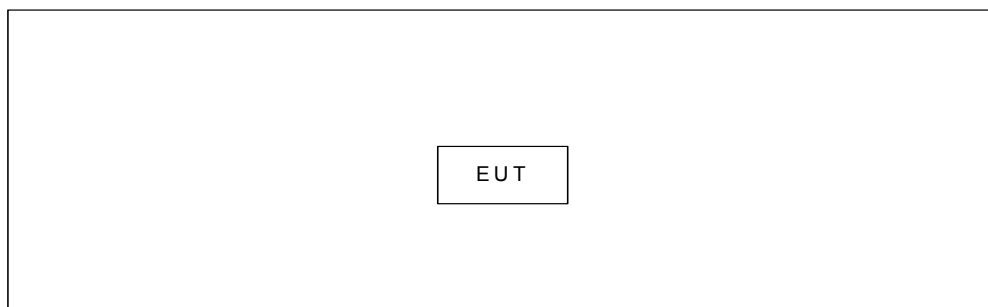
2.1 Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. For spurious emission below 1GHz, only one channel of each application was tested because it is not related to channel selection.
- c. The EUT is programmed to transmit signal continuously for all testings.
- d. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Test Mode

Application	802.11b
Radiated Emission	Mode 1: Tx Ch01(2412MHz) Mode 2: Tx Ch06(2437MHz) Mode 3: Tx Ch11(2462MHz)

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

N/A



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. 30-2, Neighborhood 6, Village Ding-Fu, Lin-Kou Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

Test Site No : CO02-LK

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

Test Site No : 03CH06-HY

4.1 Test Voltage

120V/ 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test in Compliance with

47 CFR Part 15 Subpart C 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

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

FCC Rule	IC RSS-210 Issue 6	Description of Test	Result	Section
15.247(a)(2)	Amendment 1	6dB Bandwidth	Pass	5.2
15.247(d)	§ 6.2.2 (o) (b) & Amendment 1	Power Spectral Density	Pass	5.3
15.247 (c)	§ 6.3	100kHz Bandwidth of Frequency Band Edges	Pass	5.4
15.247(b)	§ 6.2.2 (o) (b) & Amendement 1	Maximum Peak Output Power	Pass	5.5
15.207	§ 6.6	Conducted Emission	Pass	5.6
15.209(a)	§ 6.3	Radiated Emission	Pass	5.7
15.203 15.247(b)(4)	NA	Antenna Requirement	Pass	5.8

5.2 6dB Bandwidth Measurement

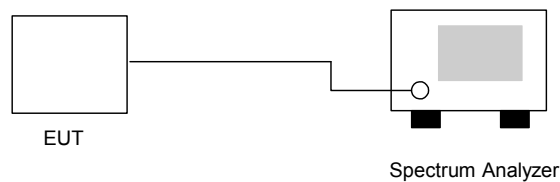
5.2.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.2.2 Test Procedure :

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

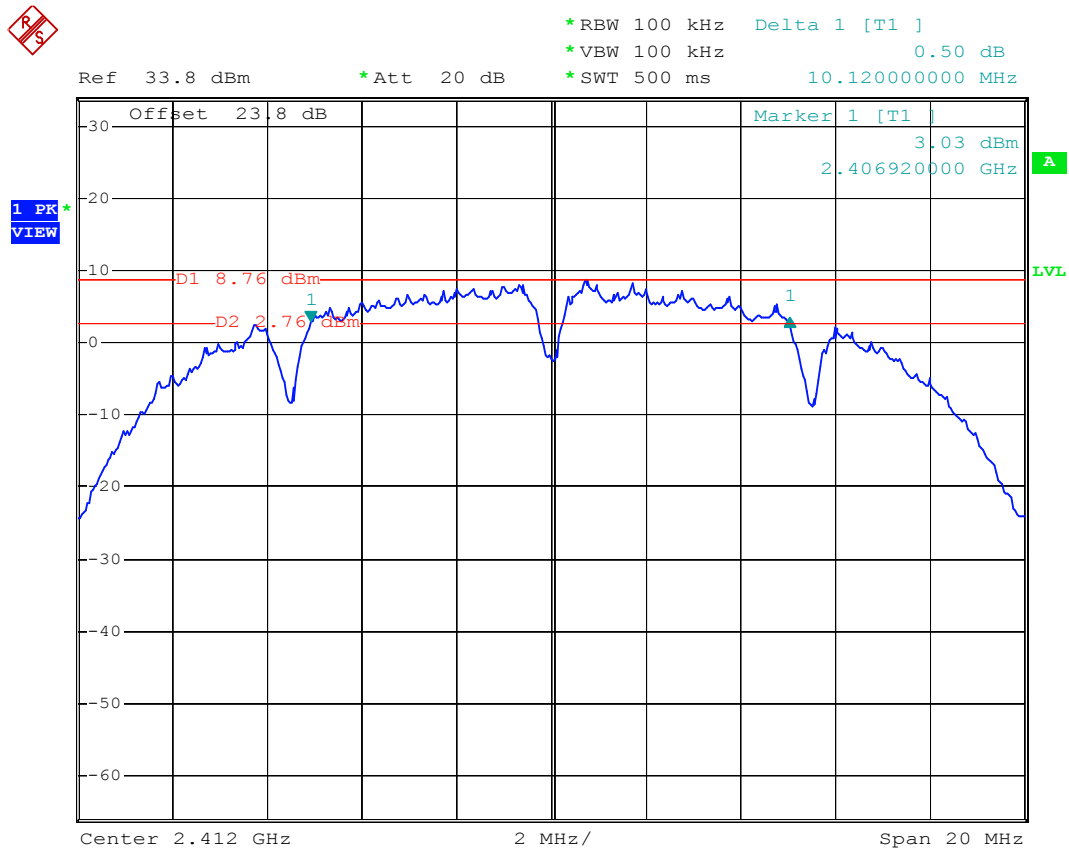
5.2.3 Test Setup Layout :



5.2.4 Test Result :

- Application Type : 802.11b
- Temperature : 26°C
- Relative Humidity : 60%
- Test Enginner : Jay

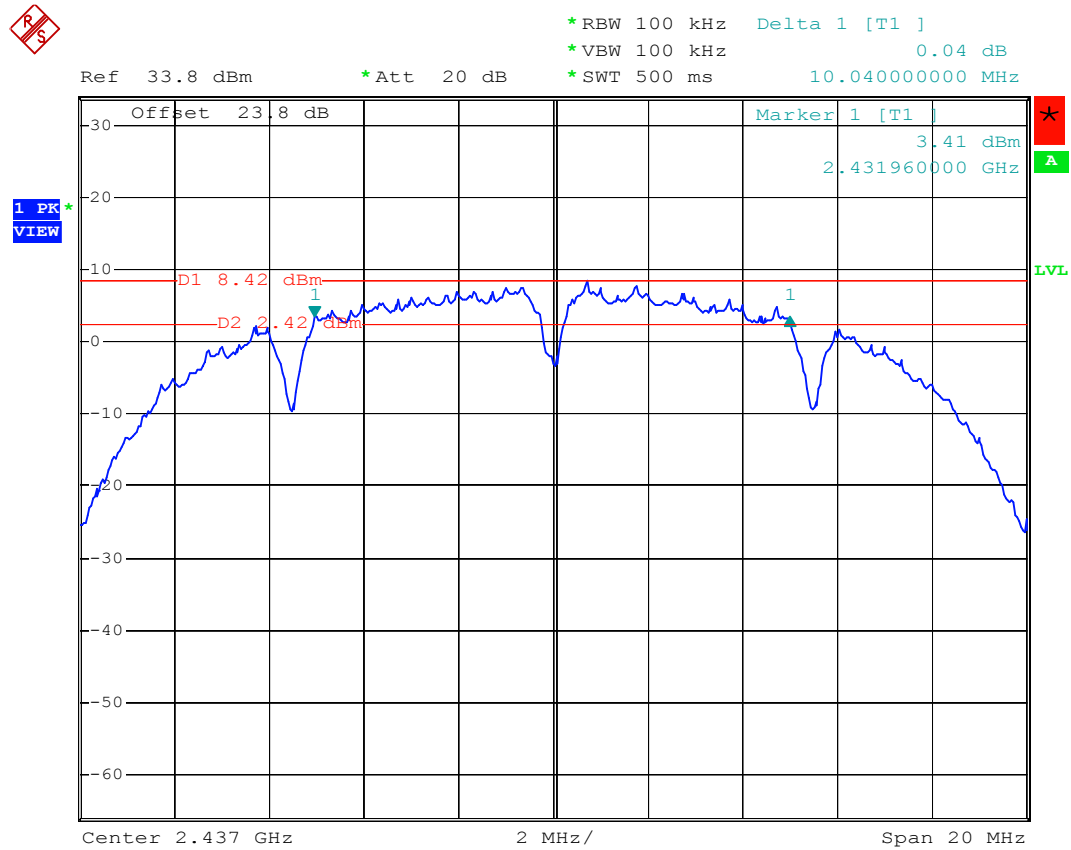
Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	10.12	0.5	Mode 1
06	2437	10.04	0.5	Mode 2
11	2462	10.04	0.5	Mode 3

**5.2.5 6dB Bandwidth****Mode 1 : Tx CH01 (2412MHz)**

Date: 22.APR.2005 18:13:50



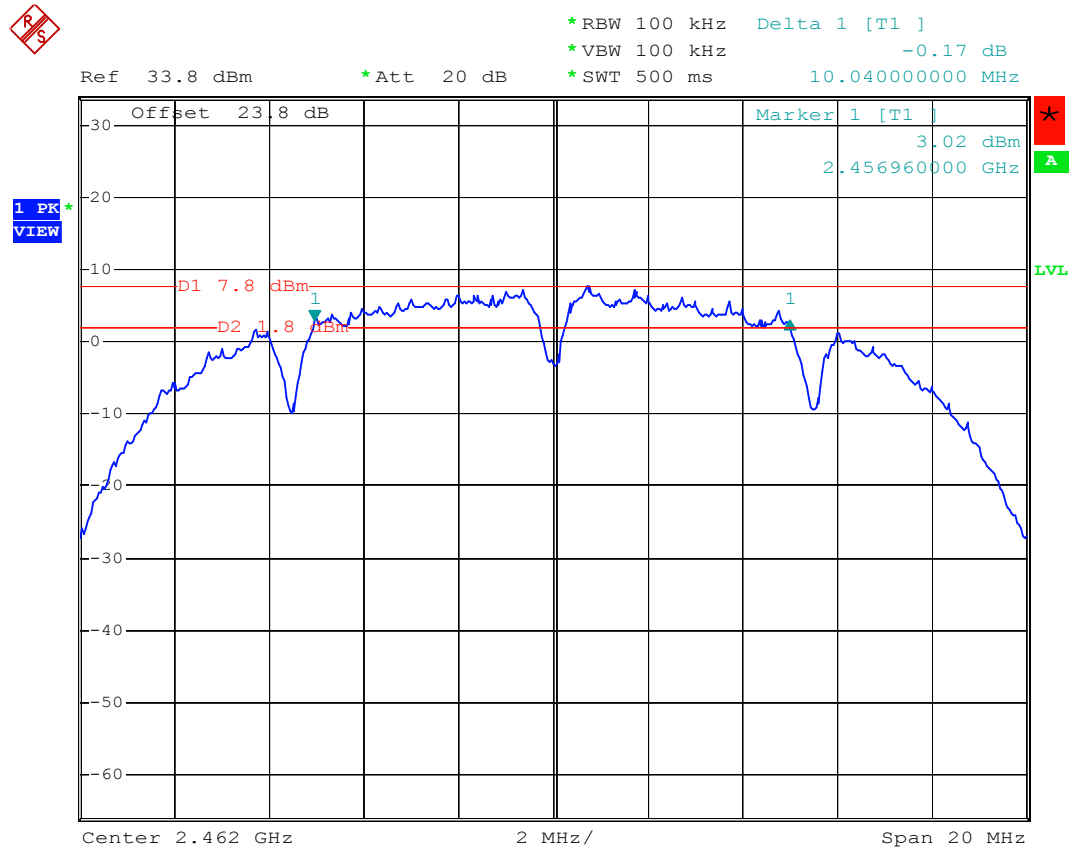
Mode 2 : Tx CH06 (2437MHz)



Date: 22.APR.2005 18:14:42



Mode 3 : Tx CH11(2462MHz)



Date: 22.APR.2005 18:15:28

5.3 Power Spectral Density Measurement

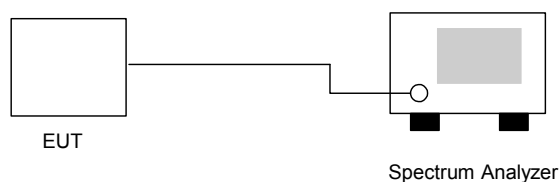
5.3.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.3.2 Test Procedure :

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

5.3.3 Test Setup Layout :



5.3.4 Test Result :

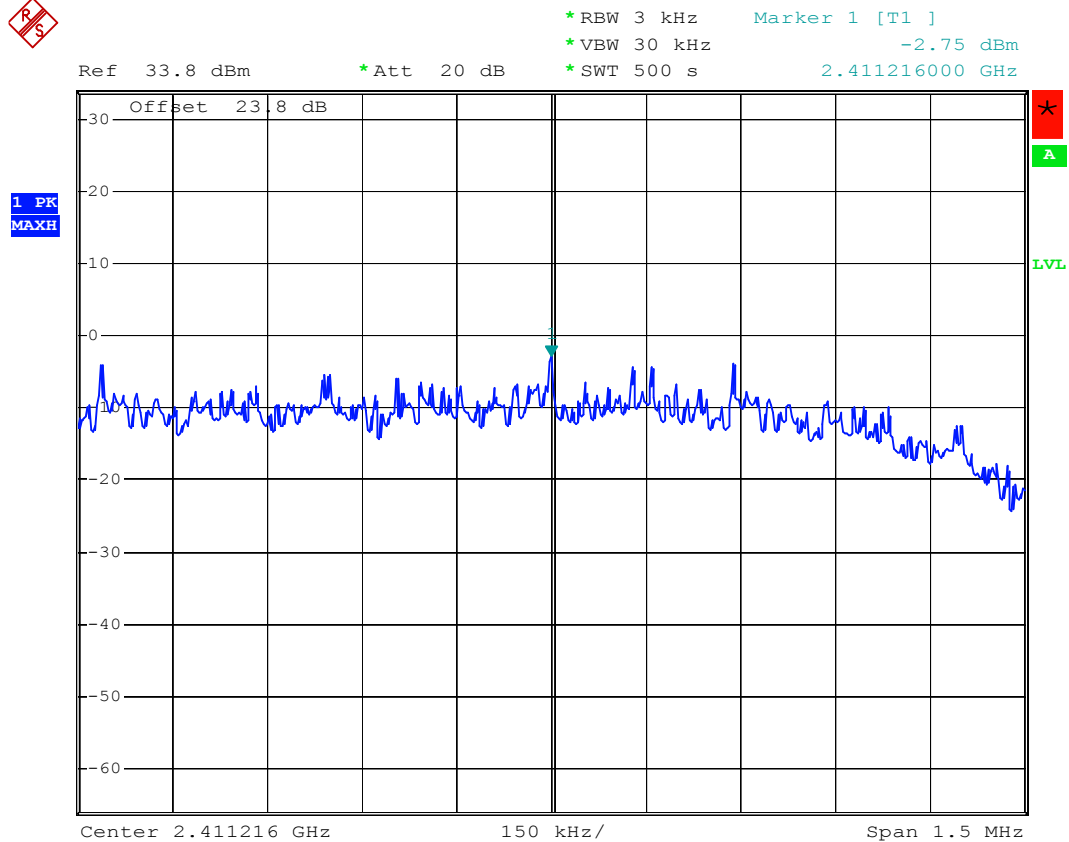
- Application Type : 802.11b
- Temperature : 26°C
- Relative Humidity : 60%
- Test Enginner : Jay

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-2.75	8	Mode 1
06	2437	-3.02	8	Mode 2
11	2462	-3.73	8	Mode 3



5.3.5 Power Spectral Density

Mode 1 : Tx CH01(2412MHz)



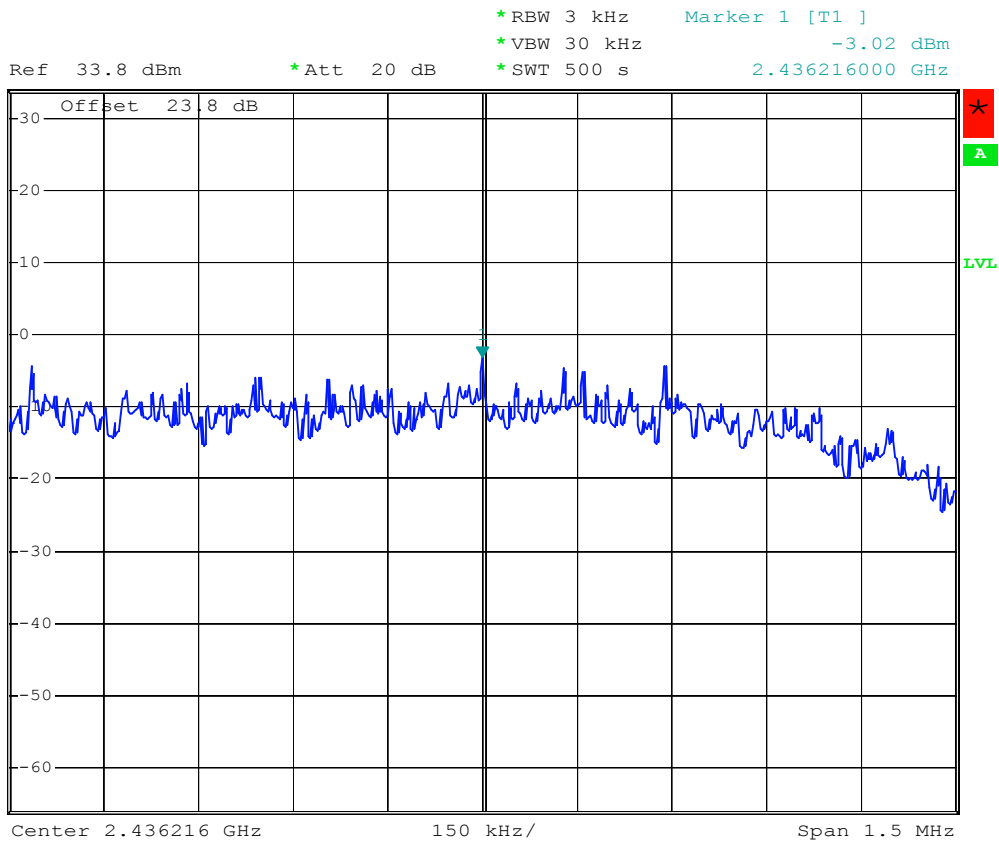
Date: 22.APR.2005 18:23:33



Mode 2 : Tx CH06 (2437MHz)



1 PK
MAXH



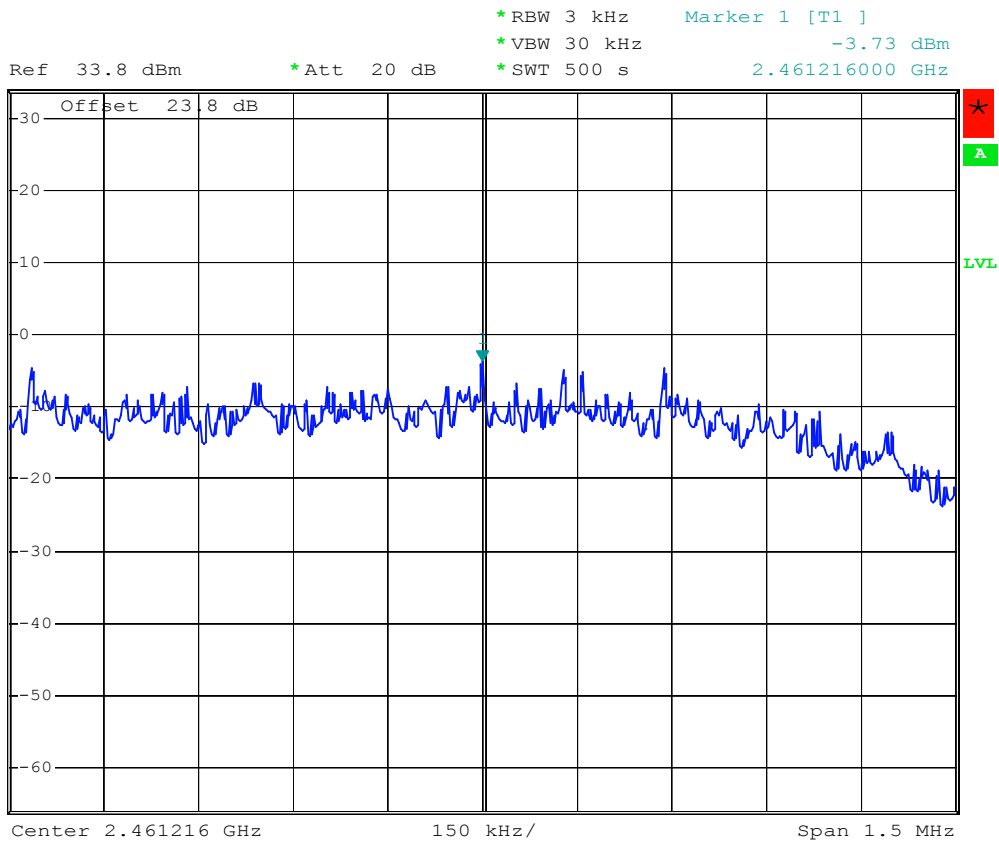
Date: 22.APR.2005 18:22:43



Mode 3 : Tx CH11 (2462MHz)



1 PK
MAXH



Date: 22.APR.2005 18:21:37



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 : 802.11b
- Temperature : 26°C
- Relative Humidity : 60%
- Test Enginner : Jay

- Test Result in lower band (Channel 1) : PASS
- Test Result in higher band (Channel 11) : PASS

5.4.4 Note on Band Edge Emission

➤802.11b

CH01 (Horizontal)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	Mode
2390.00	62.53	-11.47	74.00	62.76	30.48	35.14	4.43	Peak
2390.00	46.92	-7.08	54.00	47.15	30.48	35.14	4.43	Average

CH01 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	Mode
2390.00	66.27	-7.73	74.00	66.50	30.48	35.14	4.43	Peak
2390.00	48.86	-5.14	54.00	49.09	30.48	35.14	4.43	Average



CH11 (Horizontal)

Frequency	Level	Over	Limit	Read	Antenna	Preamp	Cable	Detect
(MHz)	(dBuV/m)	Limit	Line	Level	Factor	Factor	Loss	Mode
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	Mode
2483.50	55.45	-18.55	74.00	55.70	30.41	35.19	4.52	Peak
2483.50	46.50	-7.50	54.00	46.75	30.41	35.19	4.52	Average

CH11 (Vertical)

Frequency	Level	Over	Limit	Read	Antenna	Preamp	Cable	Detect
(MHz)	(dBuV/m)	Limit	Line	Level	Factor	Factor	Loss	Mode
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	Mode
2483.50	57.32	-16.68	74.00	57.57	30.41	35.19	4.52	Peak
2483.50	47.27	-6.73	54.00	47.52	30.41	35.19	4.52	Average

*Remark: The data above can refer to radiated emission in section 5.7.

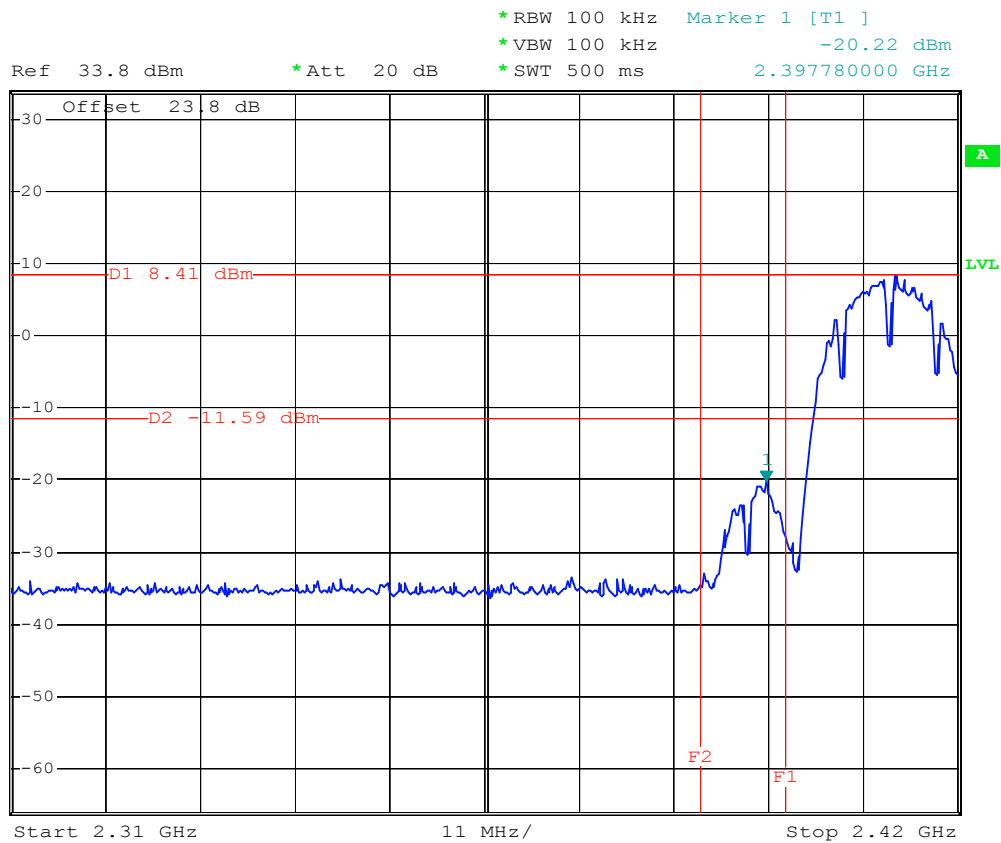


5.4.5 20dB Band Edge

Tx CH01 (2412MHz)



1 PK
MAXH



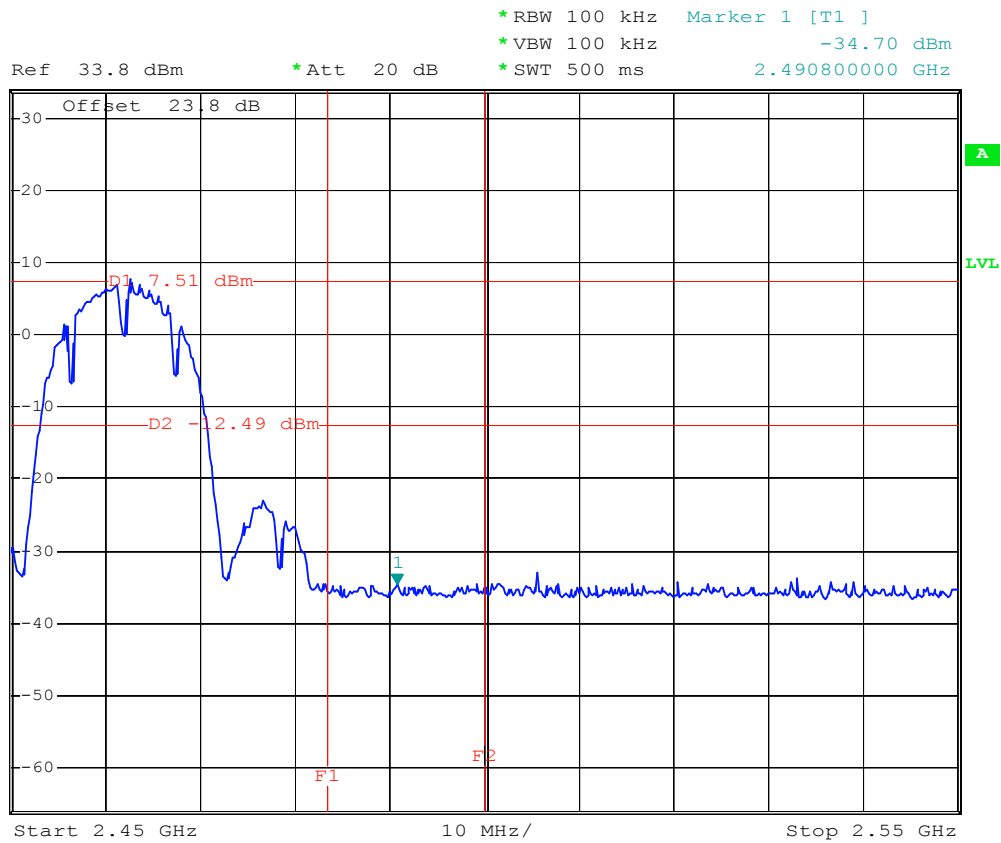
Date: 22.APR.2005 18:26:18



Tx CH11 (2462MHz)



1 PK
MAXH



Date: 22.APR.2005 18:27:29

5.5 Peak Output Power Measurement

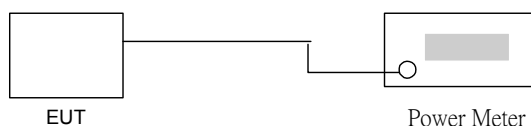
5.5.1 Measuring Instruments :

As described in chapter 6 of this test report.

5.5.2 Test Procedure :

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter.
The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

5.5.3 Test Setup Layout :



5.5.4 Test Result :

- Application Type : 802.11b
- Temperature : 26°C
- Relative Humidity : 60%
- Test Enginner : Jay

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	14.37	1W/30 dBm
06	2437	14.59	1W/30 dBm
11	2462	14.5	1W/30 dBm



5.6 Conducted Emission Measurement

5.6.1 Measuring Instruments

As described in chapter 6 of this test Report.

5.6.2 Test Procedures

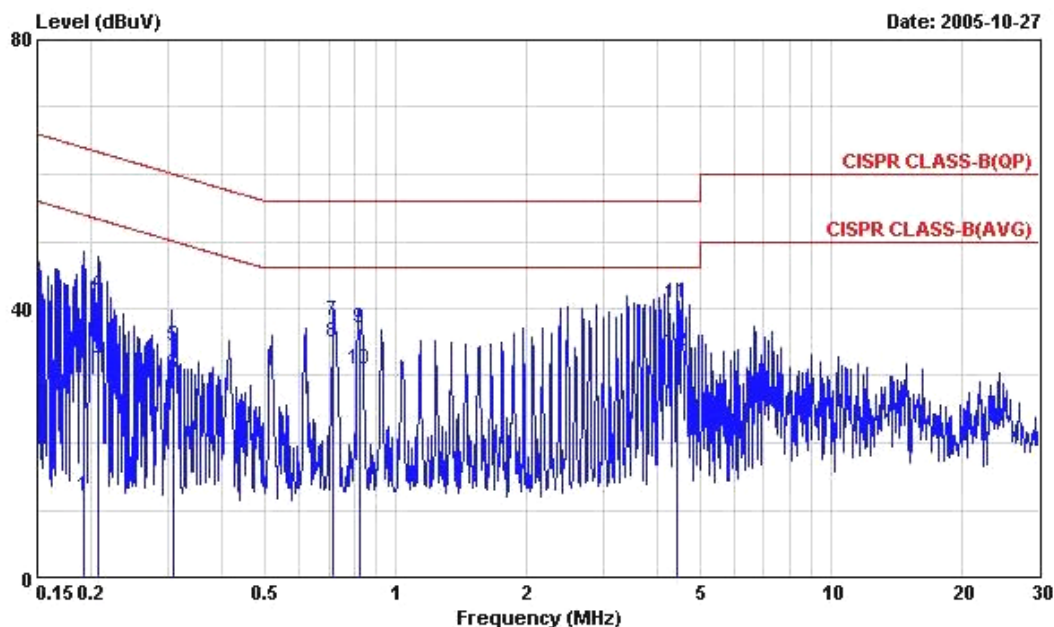
- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of the line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.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



5.6.3 Test Data

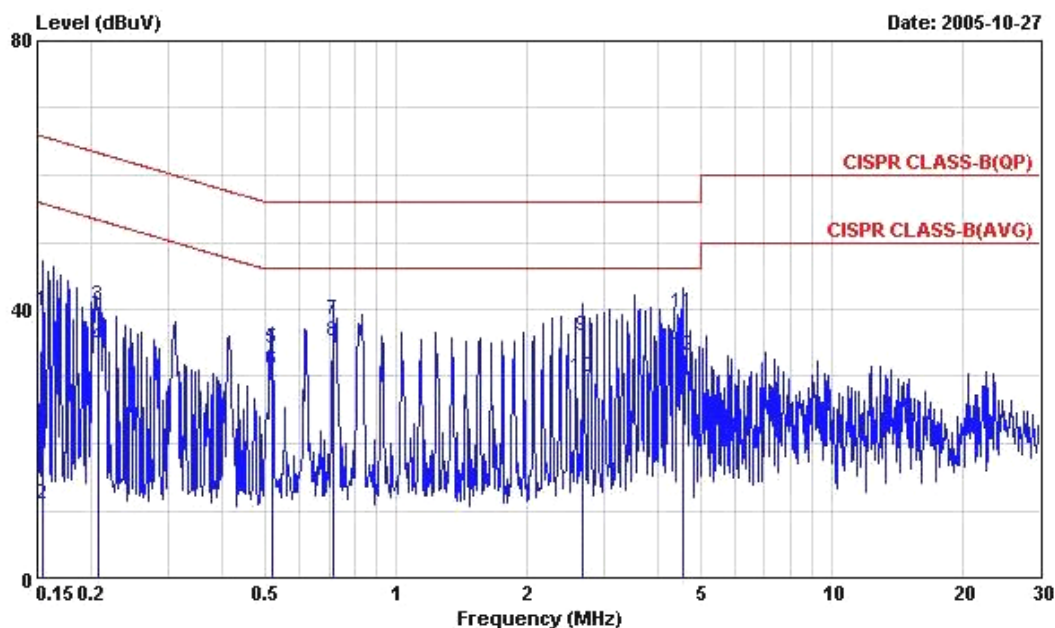
- Temperature : 26 °C
- Relative Humidity : 53 %
- Test Engineer : Jay
- Test Mode : Mode 1

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



Site : CO02-LK
 Condition : CISPR CLASS-B(QP) LISN02/10070-940902 LINE
 EUT: : Portable Terminal
 MODEL: : 8370 Terminal
 POWER: : 120Vac60Hz
 MEMO: :
 : 39KEY CCD

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	Cable Loss	LISN Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.192	11.96	-41.99	53.95	11.86	0.10	0.00	0.10	Average
2	0.192	33.49	-30.46	63.95	33.39	0.10	0.00	0.10	QP
3	0.207	32.41	-20.91	53.32	32.31	0.10	0.00	0.10	Average
4	0.207	42.18	-21.14	63.32	42.08	0.10	0.00	0.10	QP
5	0.307	34.36	-25.69	60.05	34.22	0.14	0.04	0.10	QP
6	0.307	30.16	-19.89	50.05	30.02	0.14	0.04	0.10	Average
7	0.720	38.19	-17.81	56.00	38.07	0.12	0.02	0.10	QP
8	0.720	35.06	-10.94	46.00	34.94	0.12	0.02	0.10	Average
9	0.826	37.08	-18.92	56.00	36.95	0.13	0.03	0.10	QP
10	0.826	31.03	-14.97	46.00	30.90	0.13	0.03	0.10	Average
11	4.430	40.68	-15.32	56.00	40.32	0.36	0.14	0.22	QP
12	4.430	33.50	-12.50	46.00	33.14	0.36	0.14	0.22	Average



Site : CO02-LK
Condition : CISPR CLASS-B(QP) LISN02/10070-940902 NEUTRAL
EUT: : Portable Terminal
MODEL: : 8370 Terminal
POWER: : 120Vac60Hz
MEMO: :
: 39KEY CCD

	Freq	Level	Over	Limit	Read		Cable	LISN	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Factor	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	dB	
1	0.154	39.79	-25.99	65.78	39.67	0.12	0.02	0.10	QP
2	0.154	11.06	-44.72	55.78	10.94	0.12	0.02	0.10	Average
3	0.207	40.48	-22.85	63.33	40.38	0.10	0.00	0.10	QP
4	0.207	34.37	-18.96	53.33	34.27	0.10	0.00	0.10	Average
5	0.518	34.24	-21.76	56.00	34.14	0.10	0.00	0.10	QP
6	0.518	30.98	-15.02	46.00	30.88	0.10	0.00	0.10	Average
7	0.720	38.49	-17.51	56.00	38.37	0.12	0.02	0.10	QP
8	0.720	35.14	-10.86	46.00	35.02	0.12	0.02	0.10	Average
9	2.680	36.11	-19.89	56.00	35.87	0.24	0.10	0.14	QP
10	2.680	29.83	-16.17	46.00	29.59	0.24	0.10	0.14	Average
11	4.537	39.42	-16.58	56.00	39.05	0.37	0.14	0.23	QP
12	4.537	32.93	-13.07	46.00	32.56	0.37	0.14	0.23	Average

5.7 Radiated Emission Measurement

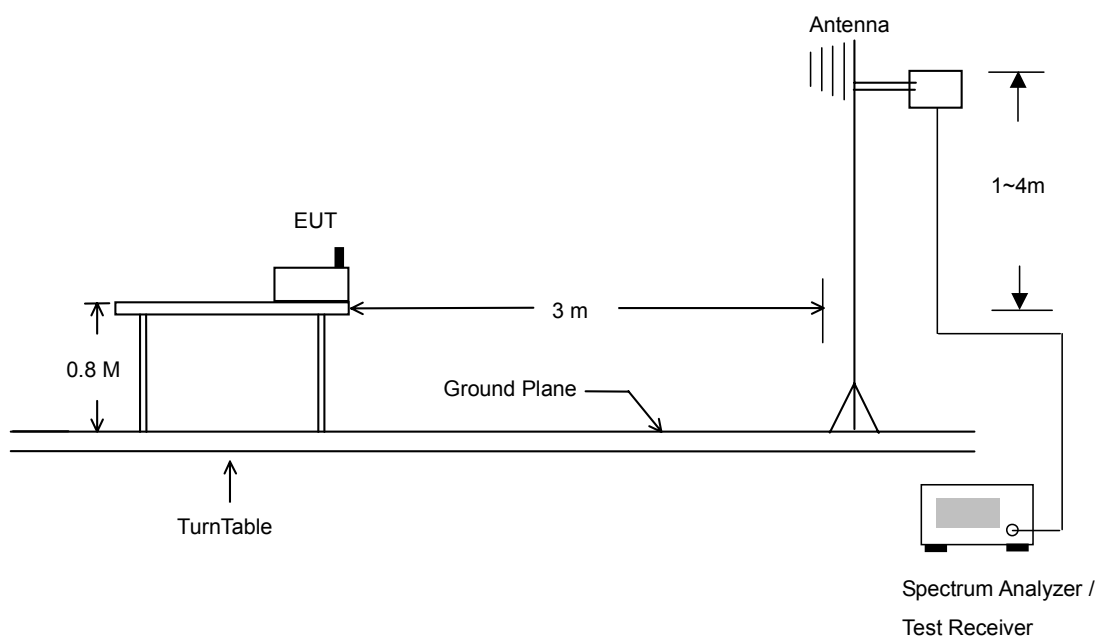
5.7.1 Measuring Instruments

As described in chapter 6 of this Report.

5.7.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.7.3 Typical Test Setup Layout of Radiated Emission





5.7.4 Test Data

- Temperature : 26C
- Relating Humidity : 60
- Test Enginner : Jay
- Test Mode : Mode 1
- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2390.00	62.53	-11.47	74.00	62.76	30.48	35.14	4.43	Peak	---	---
2 @	2390.00	46.92	-7.08	54.00	47.15	30.48	35.14	4.43	Average	123	342
3 @	2414.00	102.05			102.29	30.47	35.14	4.43	Peak	---	---
4 @	2414.00	98.79			99.03	30.47	35.14	4.43	Average	123	342
5 @	2488.00	55.55	-18.45	74.00	55.81	30.40	35.19	4.52	Peak	---	---
6 @	2488.00	43.10	-10.90	54.00	43.37	30.40	35.19	4.52	Average	123	342

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4824.00	55.88	-18.12	74.00	51.14	33.21	35.09	6.61	Peak	---	---
2 @	4824.00	53.42	-0.58	54.00	48.69	33.21	35.09	6.61	Average	130	57

- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2390.00	66.27	-7.73	74.00	66.50	30.48	35.14	4.43	Peak	---	---
2 @	2390.00	48.86	-5.14	54.00	49.09	30.48	35.14	4.43	Average	104	0
3 @	2410.00	106.06			106.30	30.47	35.14	4.43	Peak	---	---
4 @	2410.00	102.26			102.50	30.47	35.14	4.43	Average	104	0
5 @	2494.00	54.32	-19.68	74.00	54.57	30.40	35.20	4.55	Peak	---	---
6 @	2494.00	43.50	-10.50	54.00	43.75	30.40	35.20	4.55	Average	104	0

Remark: # 3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4824.00	52.42	-21.58	74.00	47.69	33.21	35.09	6.61	Peak	---	---
2 @	4824.00	48.38	-5.62	54.00	43.65	33.21	35.09	6.61	Average	100	248



- Test Mode : Mode 2
- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	74.28	28.92	-11.08	40.00	53.53	6.63	32.29	1.05	Peak	---	---
2 @	264.09	35.10	-10.90	46.00	51.90	12.90	31.91	2.20	Peak	---	---
3 @	285.69	25.61	-20.39	46.00	42.43	12.93	31.97	2.23	Peak	---	---

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	308.40	33.66	-12.34	46.00	50.18	13.20	32.10	2.38	Peak	---	---
2 @	336.40	32.34	-13.66	46.00	47.74	14.02	31.87	2.45	Peak	---	---
3 @	351.80	32.93	-13.07	46.00	47.62	14.48	31.59	2.41	Peak	---	---

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2338.00	55.40	-18.60	74.00	55.63	30.52	35.10	4.34	Peak	---	---
2 @	2338.00	43.70	-10.30	54.00	43.93	30.52	35.10	4.34	Average	147	306
3 @	2436.00	101.08			101.32	30.46	35.16	4.46	Peak	---	---
4 @	2436.00	98.71			98.95	30.46	35.16	4.46	Average	147	306
5 @	2498.00	55.74	-18.26	74.00	55.99	30.40	35.20	4.55	Peak	---	---
6 @	2498.00	43.47	-10.53	54.00	43.72	30.40	35.20	4.55	Average	147	306

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4874.00	55.10	-18.90	74.00	50.23	33.39	35.09	6.57	Peak	---	---
2 @	4874.00	53.95	-0.05	54.00	49.08	33.39	35.09	6.57	Average	118	313



- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	31.08	27.60	-12.40	40.00	40.63	18.40	32.13	0.70	Peak	---	---
2 @	125.04	34.81	-8.69	43.50	53.42	11.97	32.06	1.47	Peak	---	---
3 @	264.09	34.38	-11.62	46.00	51.19	12.90	31.91	2.20	Peak	---	---

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	308.40	29.63	-16.37	46.00	46.16	13.20	32.10	2.38	Peak	---	---
2 @	351.80	31.63	-14.37	46.00	46.32	14.48	31.59	2.41	Peak	---	---
3 @	376.30	32.57	-13.43	46.00	46.22	15.19	31.41	2.57	Peak	---	---

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2318.00	55.54	-18.46	74.00	55.76	30.54	35.10	4.34	Peak	---	---
2 @	2318.00	43.41	-10.59	54.00	43.63	30.54	35.10	4.34	Average	103	360
3 @	2438.00	106.87			107.13	30.44	35.16	4.46	Peak	---	---
4 @	2438.00	103.14			103.40	30.44	35.16	4.46	Average	103	360
5 @	2483.50	55.15	-18.85	74.00	55.41	30.41	35.19	4.52	Peak	---	---
6 @	2483.50	43.96	-10.04	54.00	44.21	30.41	35.19	4.52	Average	103	360

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4874.00	52.33	-21.67	74.00	47.46	33.39	35.09	6.57	Peak	---	---
2 @	4874.00	50.23	-3.77	54.00	45.36	33.39	35.09	6.57	Average	112	248



- Test Mode : Mode 3
- Polarization : Horizontal

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2338.00	55.31	-18.69	74.00	55.54	30.52	35.10	4.34	Peak	---	---
2 @	2338.00	43.60	-10.40	54.00	43.83	30.52	35.10	4.34	Average	117	317
3 @	2460.00	99.13			99.38	30.43	35.17	4.49	Peak	---	---
4 @	2460.00	97.59			97.84	30.43	35.17	4.49	Average	117	317
5 @	2483.50	55.45	-18.55	74.00	55.70	30.41	35.19	4.52	Peak	---	---
6 @	2483.50	46.50	-7.50	54.00	46.75	30.41	35.19	4.52	Average	117	317

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4924.00	56.90	-17.10	74.00	51.90	33.57	35.08	6.52	Peak	---	---
2 @	4924.00	52.88	-1.12	54.00	47.87	33.57	35.08	6.52	Average	100	31

- Polarization : Vertical

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

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	2338.00	55.32	-18.68	74.00	55.56	30.52	35.10	4.34	Peak	---	---
2 @	2338.00	43.51	-10.49	54.00	43.74	30.52	35.10	4.34	Average	103	161
3 @	2460.00	101.96			102.21	30.43	35.17	4.49	Peak	---	---
4 @	2460.00	98.76			99.01	30.43	35.17	4.49	Average	103	161
5 @	2483.50	57.32	-16.68	74.00	57.57	30.41	35.19	4.52	Peak	---	---
6 @	2483.50	47.27	-6.73	54.00	47.52	30.41	35.19	4.52	Average	103	161

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	4924.00	52.94	-21.06	74.00	47.93	33.57	35.08	6.52	Peak	---	---
2 @	4924.00	49.91	-4.09	54.00	44.90	33.57	35.08	6.52	Average	100	172

Remark: The spurious emission except listed above is too low to be taken.



5.8 Antenna Requirements

5.8.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.8.2 Antenna Connected Construction

The antenna used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement of FCC.

5.8.3 Antenna Gain

The antenna gain of EUT is less than 6dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

**6. List of Measuring Equipments Used**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Receiver	R&S	ESCS 30	100168	9 kHz - 2.75 GHz	Dec. 09, 2004	Dec. 09, 2005	Conduction (CO02-LK)
LISN	Rolf Heine	NNB-2/16Z	02/10070	9 kHz - 30 MHz	Nov. 2, 2004	Nov. 2, 2005	Conduction (CO02-LK)
RF Cable-CON	Suhner Switzerland	RG223/U	CB018	9 kHz - 30 MHz	Feb. 04, 2005	Feb. 04, 2006	Conduction (CO02-LK)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 27, 2004	Jul. 27, 2006	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 09,2004	Jul. 09,2006	Radiation (03CH06-HY)
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 22, 2004	Nov. 22, 2005	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 22, 2005	Feb. 22, 2006	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	Dec. 17, 2004	Dec. 17, 2005	Radiation (03CH06-HY)
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

7. Uncertainty Evaluation

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.15	Normal(k=2)	0.08
Cable loss	0.19	Normal(k=2)	0.10
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.67	Rectangular	0.96
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	1.26		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.52		

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

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

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

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