

FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : WIRELESS SCANNER

Model No. : 1260

FCC ID : Q3N-1260S

Filing Type : Certification

Applicant : **SYNTECH INFORMATION CO.,LTD**
7F,No,196,Ta-Tung Rd.,Sec,3,His-Chih,Taipei
Hsien, Taiwan

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SPORTON International Inc.

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

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CERTIFICATE OF COMPLIANCE

for

47 CFR Part 15 Subpart C

Equipment : WIRELESS SCANNER

Model No. : 1260

FCC ID : Q3N-1260S

Filing Type : Certification

Applicant : SYNTECH INFORMATION CO.,LTD
7F,No,196,Ta-Tung Rd.,Sec,3,His-Chih,Taipei Hsien,
Taiwan

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** 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 Nov. 26, 2003 at **SPORTON International Inc.** LAB.



Joe Yang
Director

SPORTON International Inc.

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

1. General Description of Equipment under Test

1.1. Applicant

SYNTECH INFORMATION CO.,LTD
7F,No,196,Ta-Tung Rd.,Sec,3,His-Chih,Taipei Hsien, Taiwan

1.2. Manufacturer

Same as 1.1

1.3. Basic Description of Equipment under Test

Equipment : WIRELESS SCANNER
Model No. : 1260
FCCID : Q3N-1260S
Trade Name : CIPHERLAB
Power Supply Type : Switching
AC Power Input : Wall-Mount, 0.8 meter, 2pin

1.4. Feature of Equipment under Test

Product Feature & Specification	
1. Type of Modulation	GFSK
2. Number of Channels	79 Channels
3. Frequency Band	2.4G ~2.4835GMHz
4. Carrier Frequency of each channel	2402+K MHz, K=0~78
5. Bandwidth of each channel	1MHz
6. Maximum Output Power to Antenna (Normal Condition)	-4.13dBm (Peak)
7. Type of Antenna Connector (Ex: SMA, TNC, MCX, MMCX, UFC.....etc)	N/A
8. Antenna Type / Class and Gain	Integral Patch Antenna / 0 dBi
9. Function Type	Transmitting
10. Power Rating (DC/AC , Voltage)	3.7V.
11. Duty Cycle	100 %
12. Basic function of product	Data Communication

Channel	Frequency	Channel	Frequency
00	2402	40	2442
01	2403	41	2443
02	2404	42	2444
03	2405	43	2445
04	2406	44	2446
05	2407	45	2447
06	2408	46	2448
07	2409	47	2449
08	2410	48	2450
09	2411	49	2451
10	2412	50	2452
11	2413	51	2453
12	2414	52	2454
13	2415	53	2455
14	2416	54	2456
15	2417	55	2457
16	2418	56	2458
17	2419	57	2459
18	2420	58	2460
19	2421	59	2461
20	2422	60	2462
21	2423	61	2463
22	2424	62	2464
23	2425	63	2465
24	2426	64	2466
25	2427	65	2467
26	2428	66	2468
27	2429	67	2469
28	2430	68	2470
29	2431	69	2471
30	2432	70	2472
31	2433	71	2473
32	2434	72	2474
33	2435	73	2475
34	2436	74	2476
35	2437	75	2477
36	2438	76	2478
37	2439	77	2479
38	2440	78	2480
39	2441		

2. Test Configuration of Equipment under Test

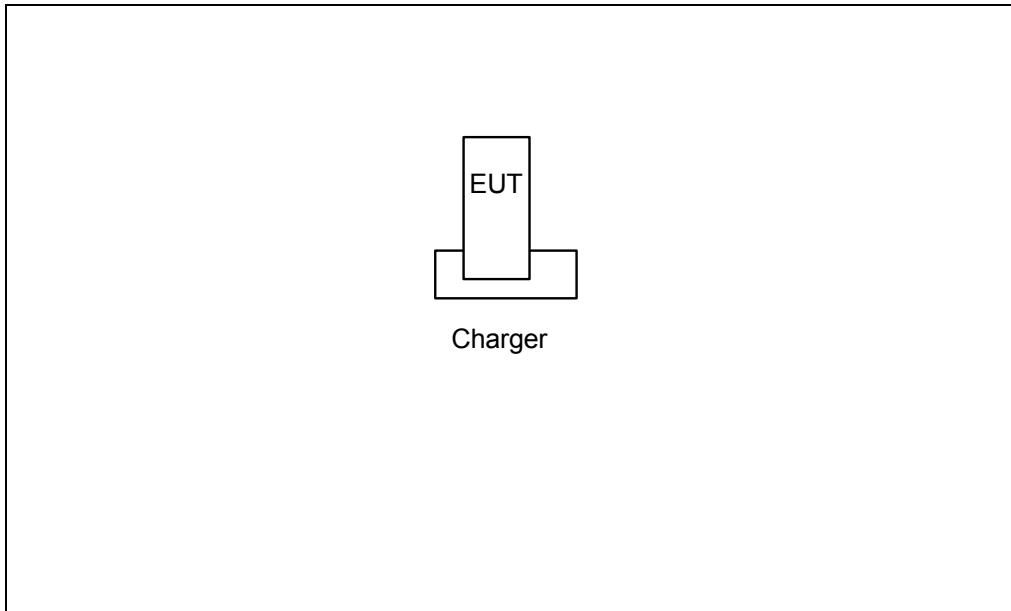
2.1. Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner, which tended to maximize its emission characteristics in a typical application.
- b. The complete test system included EPSON Printer and EUT for EMI test.
- c. The following test modes were pretested:
 - Mode 1: CH00 (2402MHz)
 - Mode 2: CH39 (2441MHz)
 - Mode 3: CH78 (2480MHz)
- d. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 25GHz.

2.2. Description of Test System

N/A

2.3. Connection Diagram of Test System



3. Test Software

The EUT kept transmitting signals at fixed frequency.

4. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055
Test Site No : CO01-HY, 03CH03-HY

4.1. Test Voltage

110V/60Hz

4.2. Standard for Methods of Measurement

ANSI C63.4-2001

4.3. Test in Compliance with

ANSI C63.4-2001 for conducted power line test and radiated emission test
DA 00-705 for test of hopping channel separation
DA 00-705 for test of number of hopping frequency used
DA 00-705 for test of hopping channel bandwidth
DA 00-705 for test of dwell time of each frequency within a 30 second period
DA 00-705 for test of output power
DA 00-705 for test of 100khz bandwidth of frequency band edges

4.4. Frequency Range Investigated

- a. Conduction: from 150 KHz to 30 MHz
- b. 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)(iii)	Hopping Channel Bandwidth	Pass
<u>15.247(a)(1)</u>	Hopping Channel Separation	Pass
<u>15.247(a)(1)(iii)</u>	Number of Hopping Frequency Used	Pass
<u>15.247(a)(1)(iii)</u>	Dwell Time of Each Frequency within a 30 Second Period	Pass
<u>15.247(b)</u>	Output Power	Pass
15.247(c)	100KHz Bandwidth of Frequency Band Edges	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Emission	Pass
<u>15.203</u>	Antenna Requirement	Pass

5.2. Hopping Channel Separation

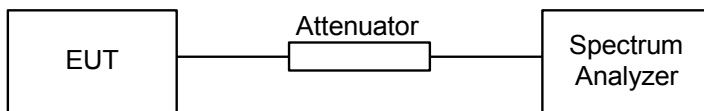
5.2.1. Measuring Instruments :

As described in chapter 10 of this test report.

5.2.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
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.

5.2.3. Test Setup Layout :



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

- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X = 100%

Channel	Frequency (MHz)	Hopping Channel Separation (KHz)	Limits (KHz)	Plot Ref. No.
00	2402	1000	0.556	Mode 1
39	2441	1000	0.556	Mode 2
78	2480	1000	0.596	Mode 3

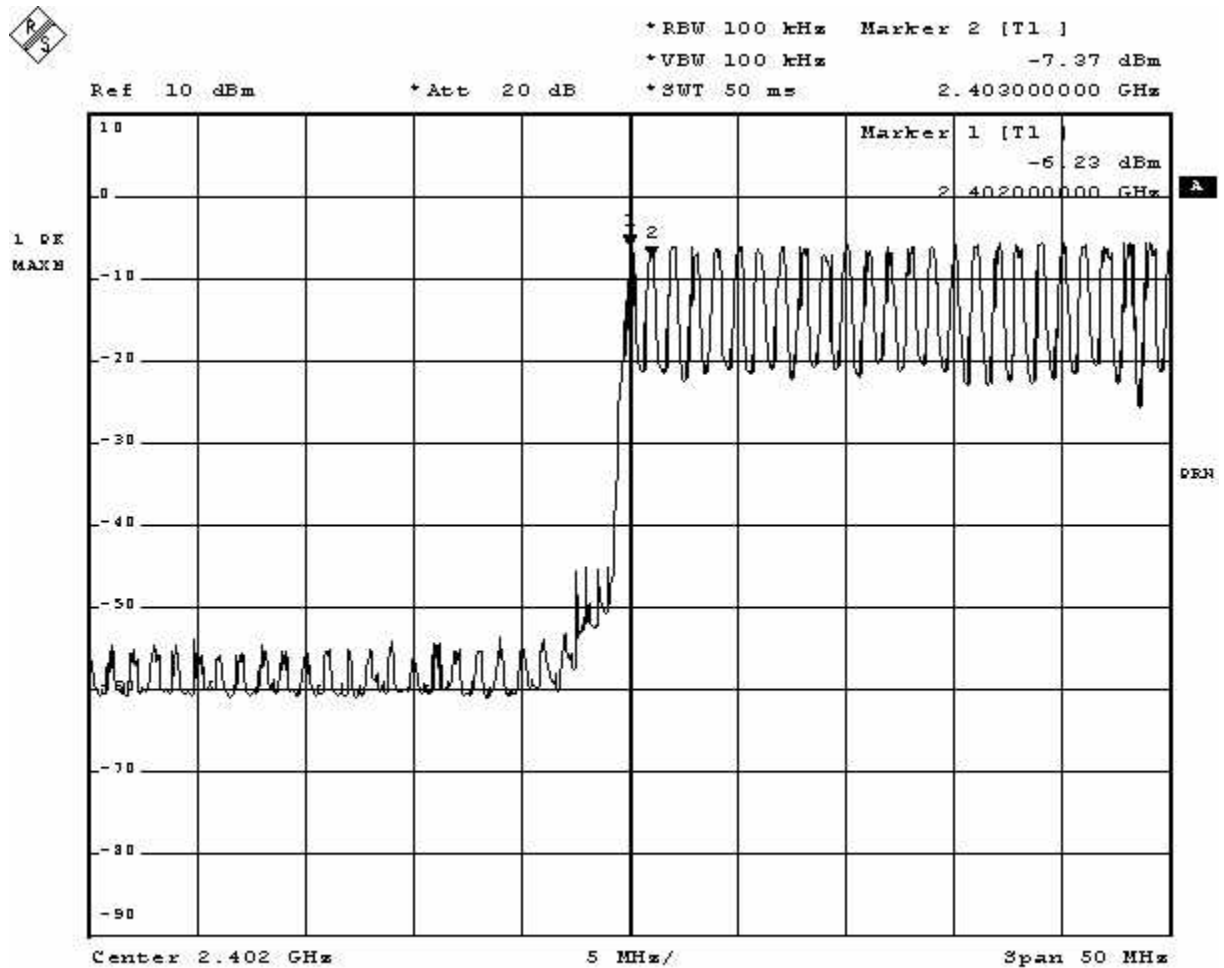
Comments: The limits determine from 25KHz or the 20dB bandwidth of the hopping channel, whichever is greater.

5.2.5. Test Configuration (EUT Operating Condition) :

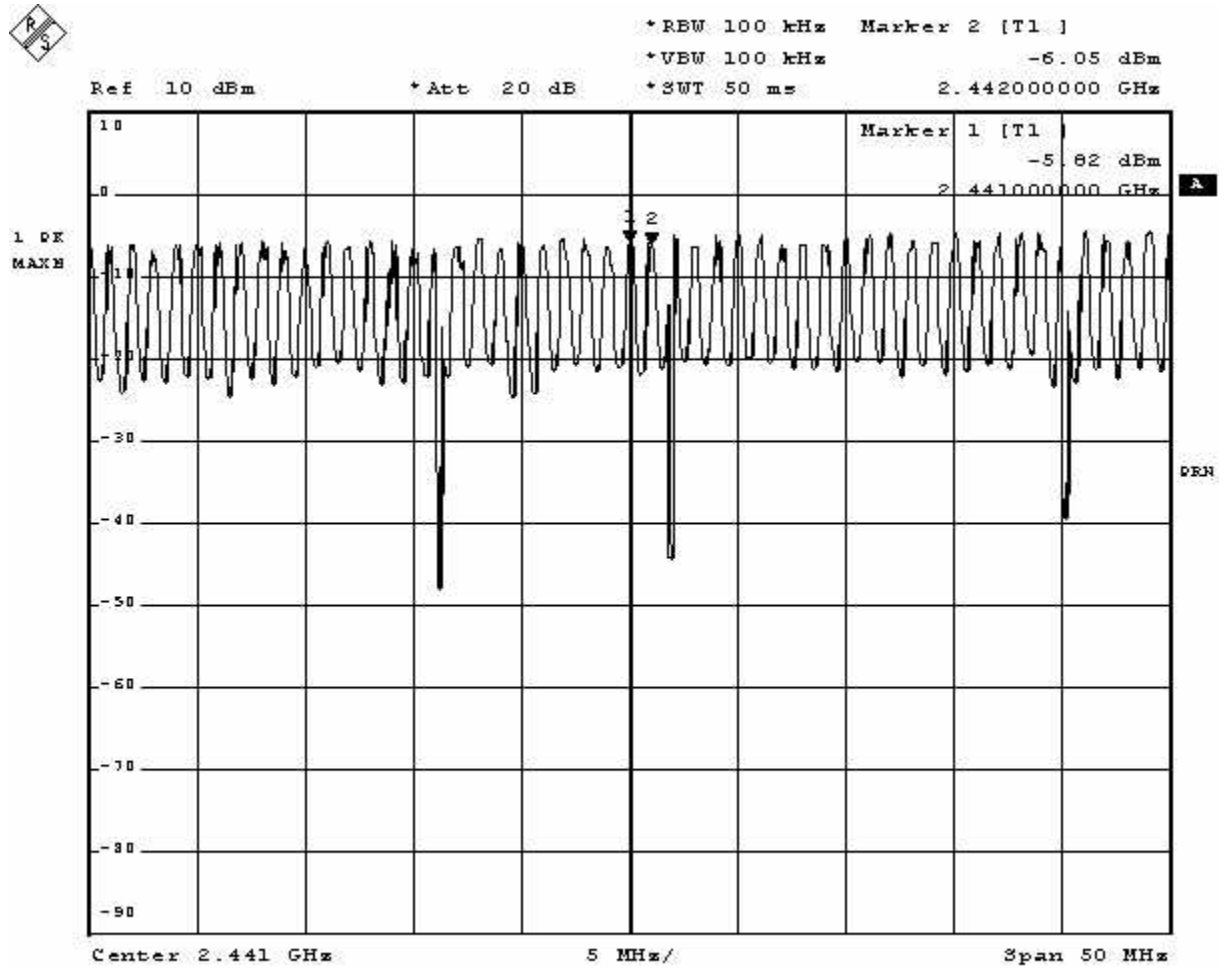
The software provided by client to enable the EUT under transmission condition.
The EUT have its hopping function enabled.

5.2.6. Hopping Channel Separation

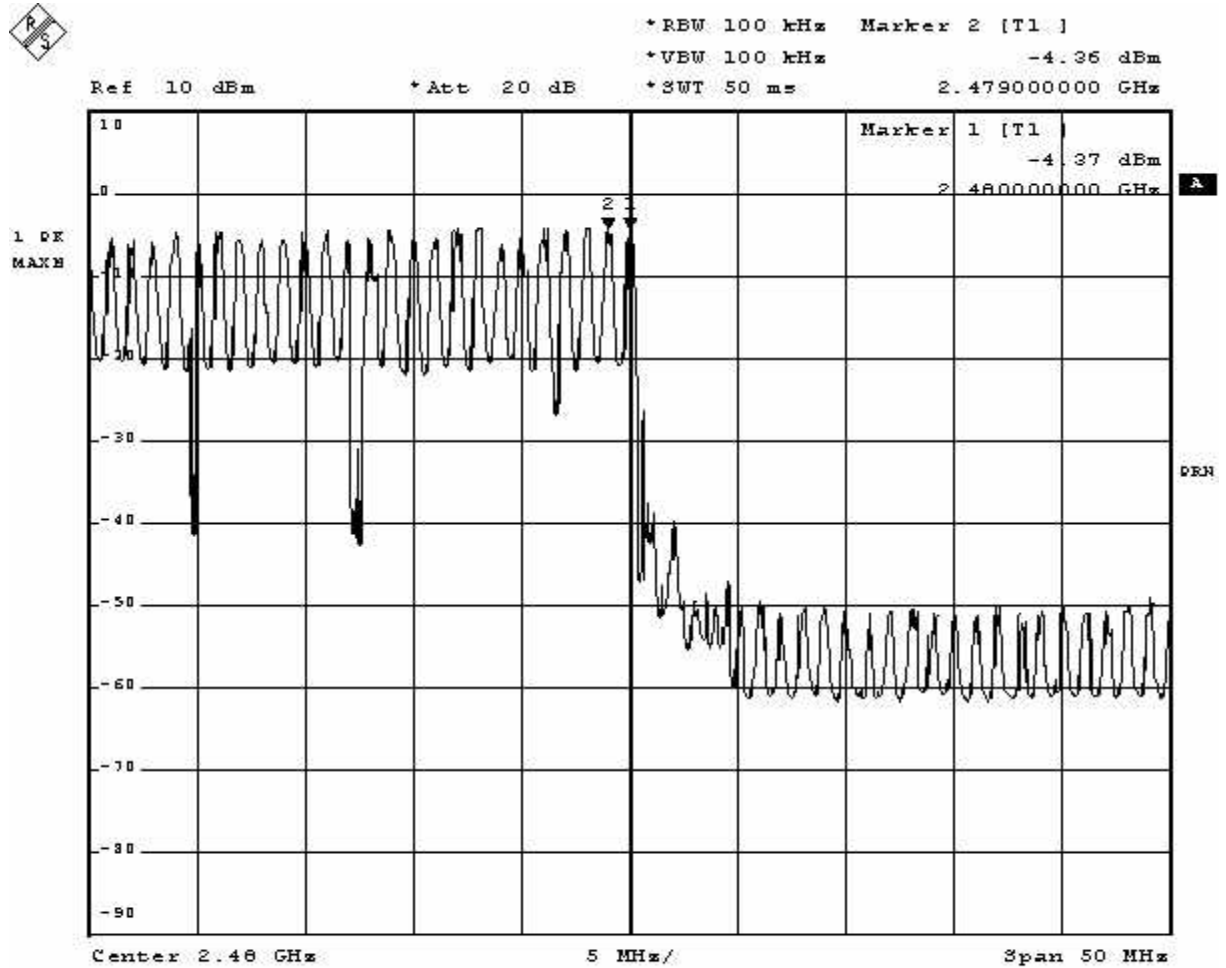
Mode 1: Channel 00 (2402MHz)



Mode 2: Channel 39 (2441 MHz)



Mode 3: Channel 78 (2480MHz)



5.3 Number of Hopping Frequency

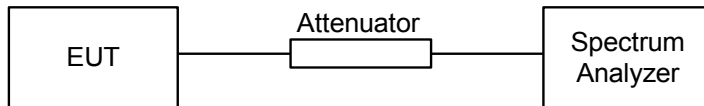
5.3.1. Measuring Instruments :

As described in chapter 10 of this test report.

5.3.2. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
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

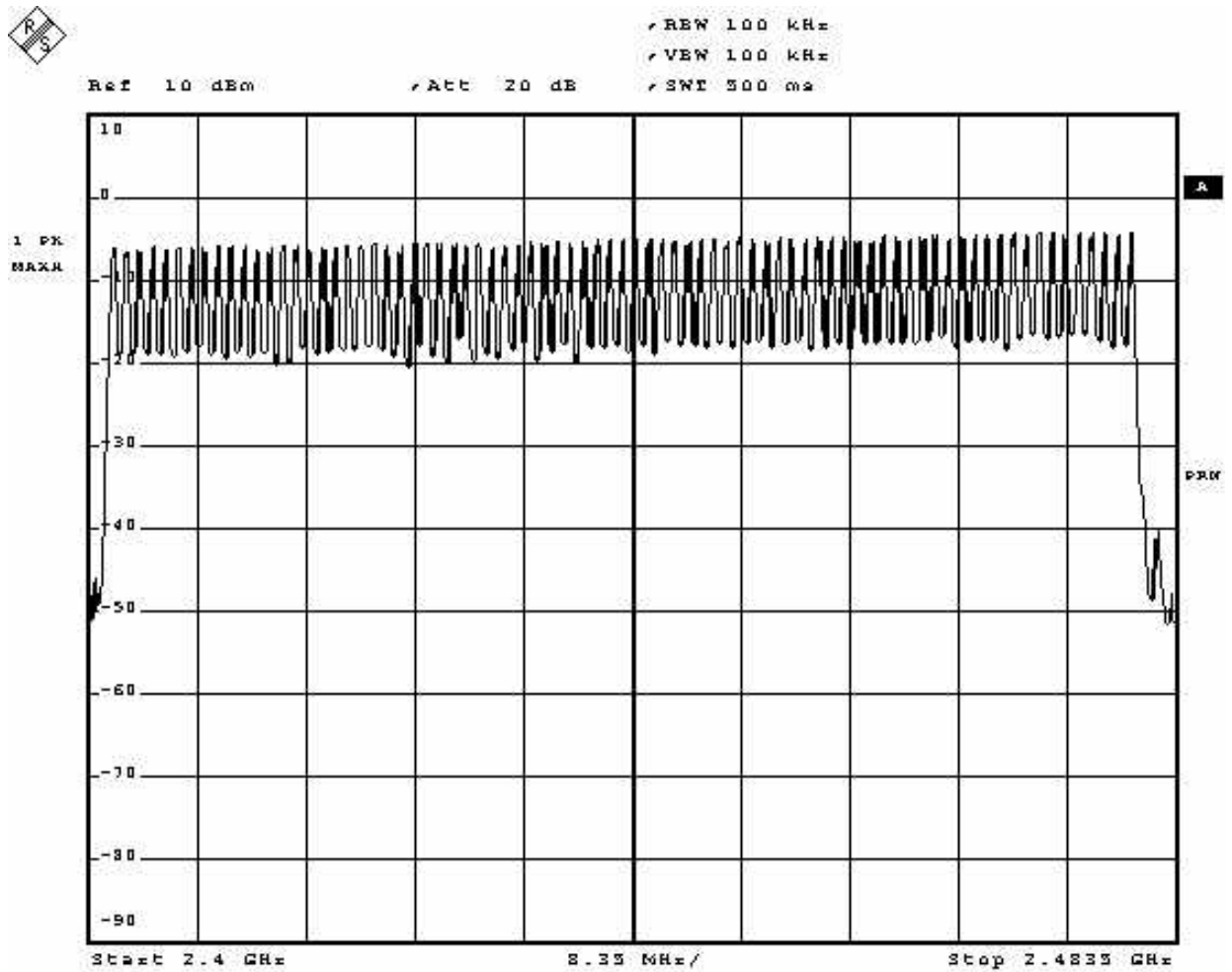
- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X = 100%

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

5.3.5. Test Configuration (EUT Operating Condition) :

The software provided by client to enable the EUT under transmission condition.
The EUT have its hopping function enabled.

5.3.6. Number of Hopping Frequency



5.4. Hopping Channel Bandwidth

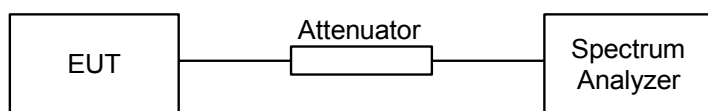
5.4.1 Measuring Instruments :

As described in chapter 10 of this test report.

5.4.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 10KHz and VBW to 30KHz.
3. The Hopping Channel bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.4.3 Test Setup Layout :



5.4.4 Test Result : See spectrum analyzer plots below

- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X = 100%

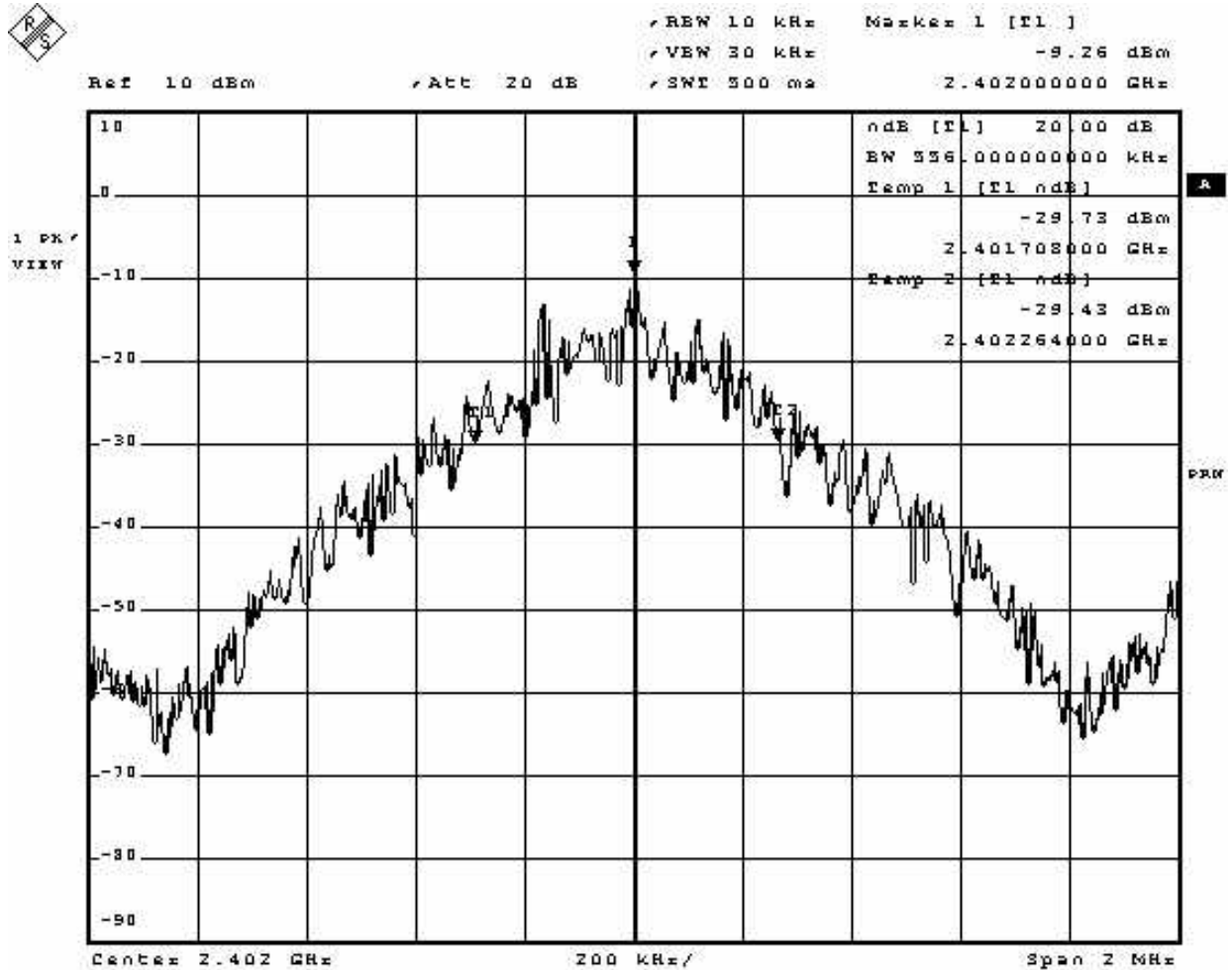
Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.556	1.0	Mode 1
39	2441	0.556	1.0	Mode 2
78	2480	0.596	1.0	Mode 3

5.4.5 Test Configuration (EUT Operating Condition) :

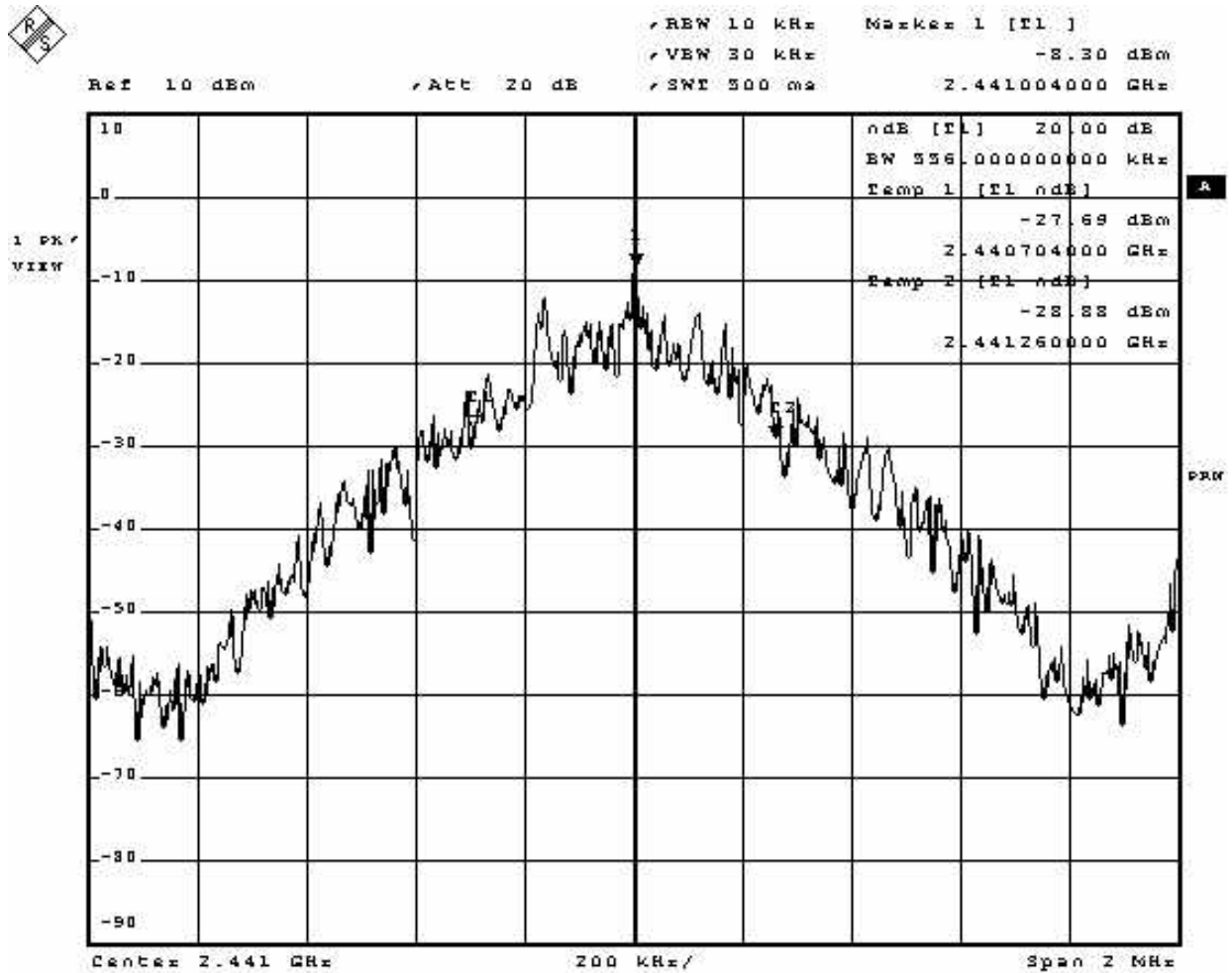
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies respectively.

5.4.6 Hopping Channel Bandwidth

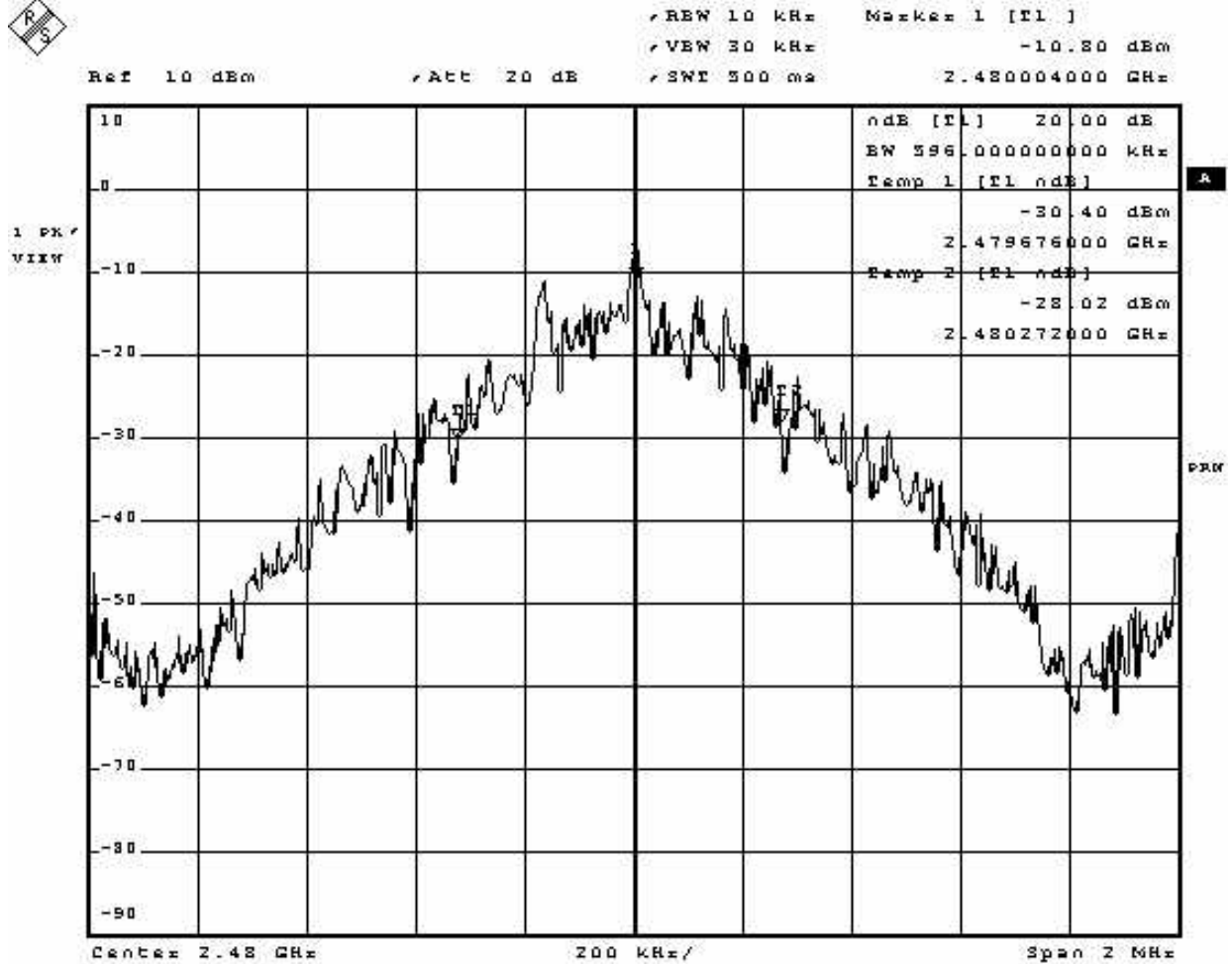
Mode 1: Channel 00 (2402MHz)



Mode 2: Channel 39 (2441MHz)



Mode 3: Channel 78 (2480MHz)



5.5. Dwell Time of Each Frequency within a 30 Seconds Period

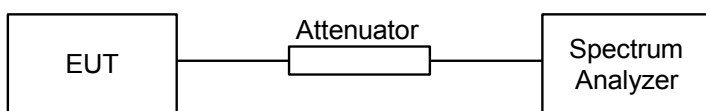
5.5.1 Measuring Instruments :

As described in chapter 10 of this test report.

5.5.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
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 = $30 \cdot (1600/79) \cdot t$ (ie: t = the time duration of one single pulse)

5.5.3 Test Setup Layout :



5.5.4 Test Result : See spectrum analyzer plots below

- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X = 100%

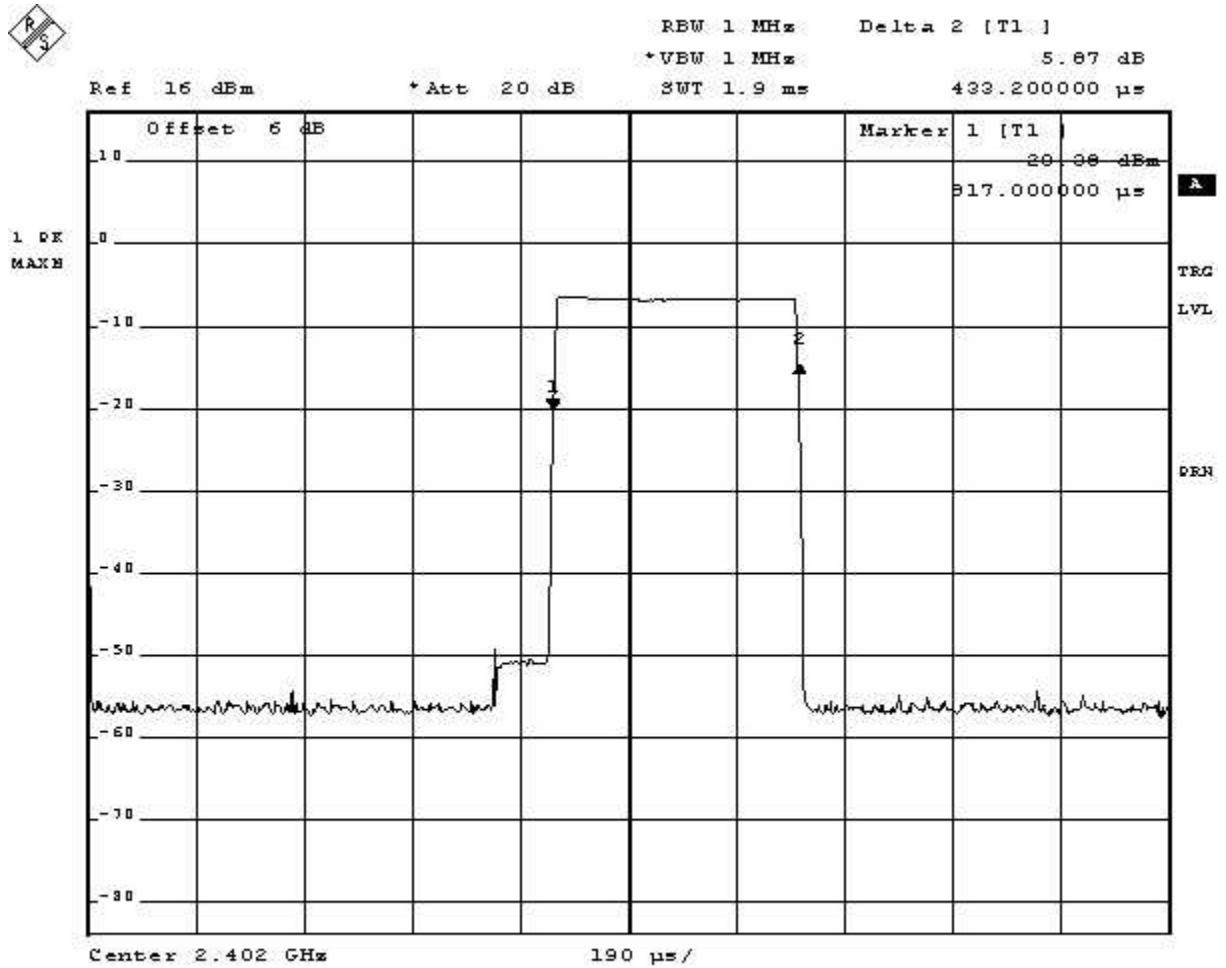
Channel	Frequency (MHz)	Dwell Time (s)	Limits (s)	Plot Ref. No.
00	2402	0.26	0.4	Mode 1
39	2441	0.26	0.4	Mode 2
78	2480	0.27	0.4	Mode 3

5.5.5 Test Configuration (EUT Operating Condition) :

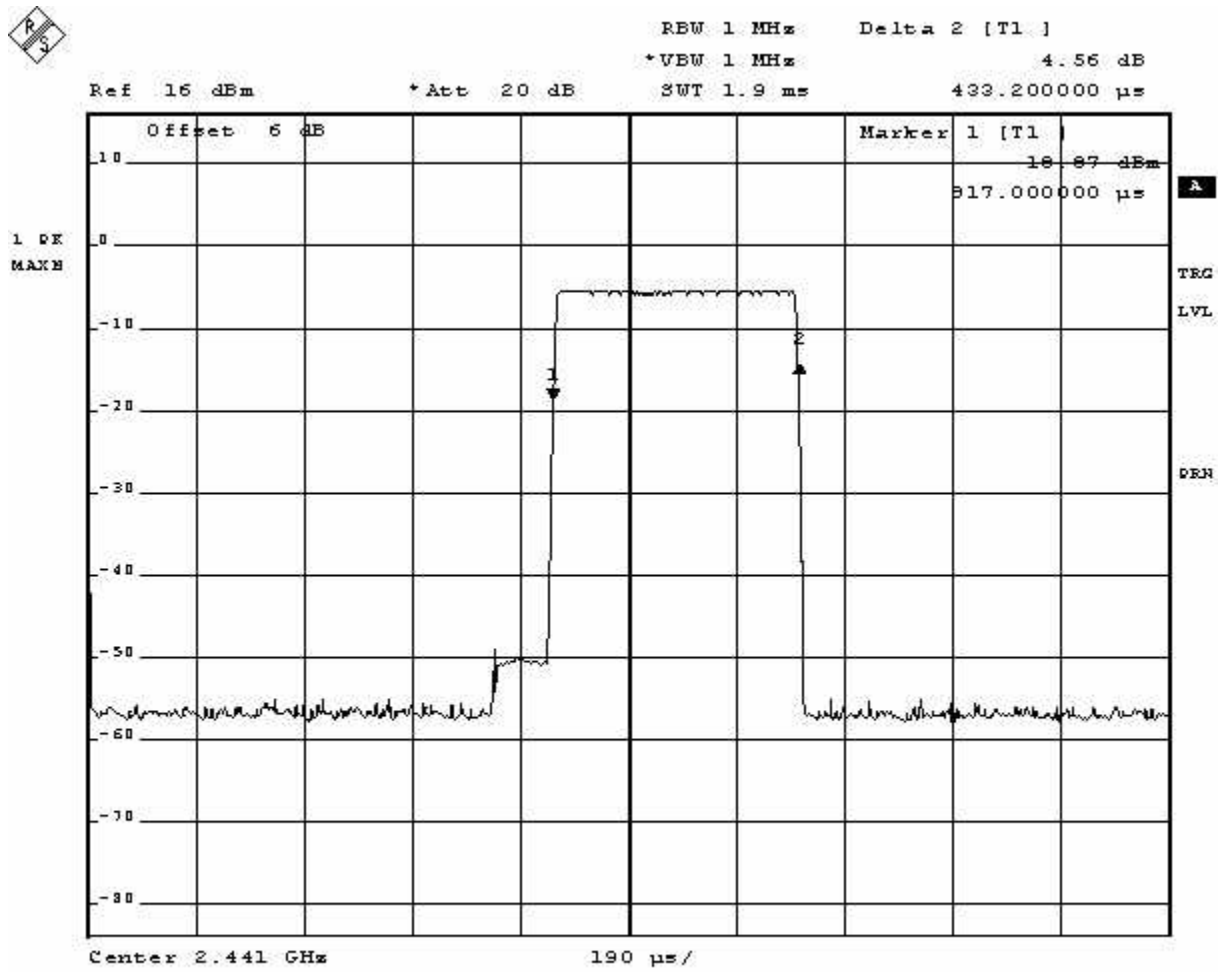
Same as Section 5.2.5.

5.5.6 Dwell Time of Each Frequency within a 30 Seconds Period

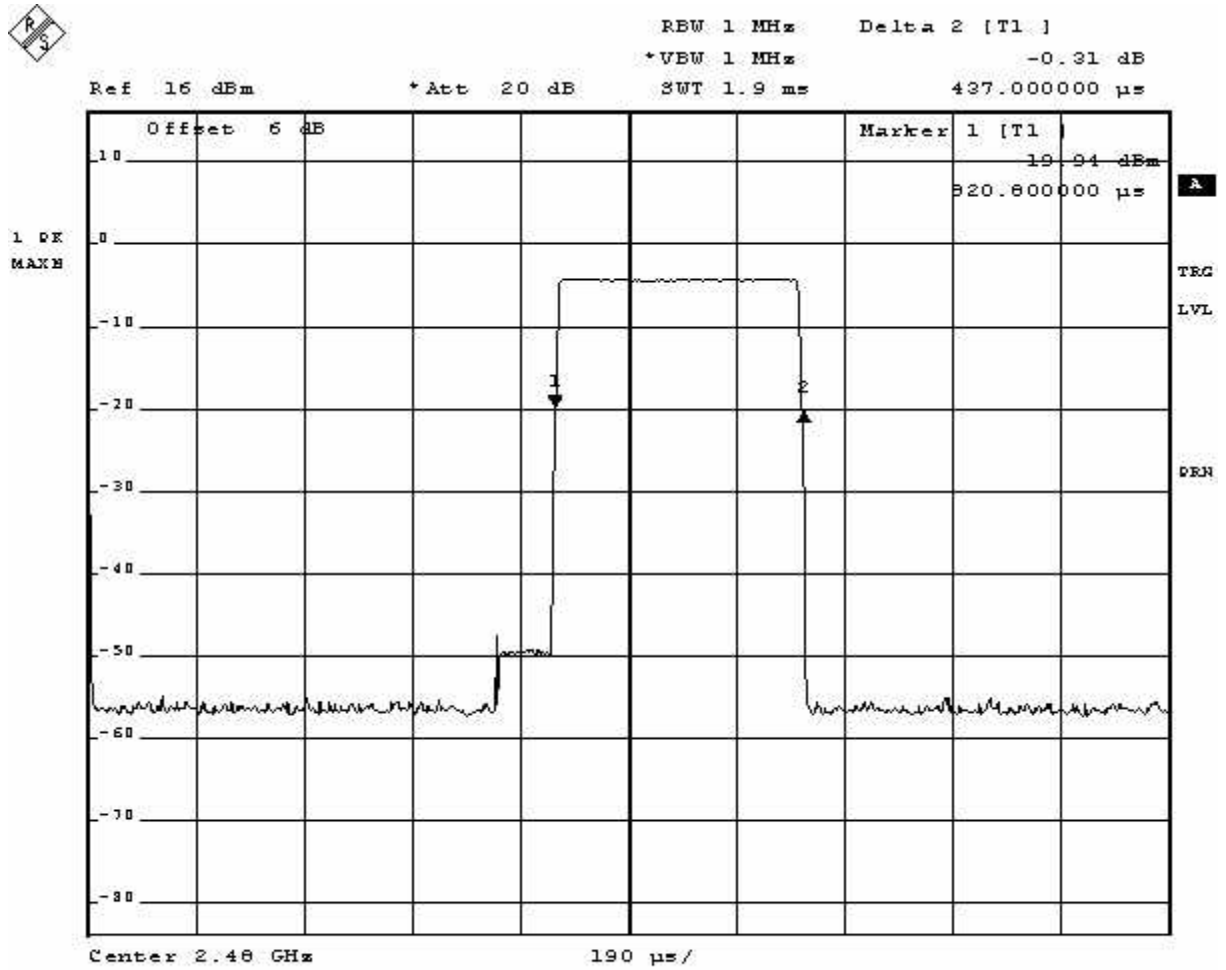
Mode 1: Channel 00 (2402MHz)



Mode 2: Channel 39 (2441MHz)



Mode 3: Channel 78 (2480MHz)



5.6 Output Power

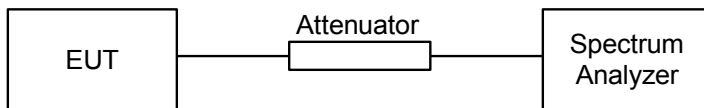
5.6.1 Measuring Instruments :

As described in chapter 10 of this test report.

5.6.2 Test Procedure :

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

5.6.3 Test Setup Layout :



5.6.4 Test Result : See spectrum analyzer plots below

- Temperature: 26°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X = 100%

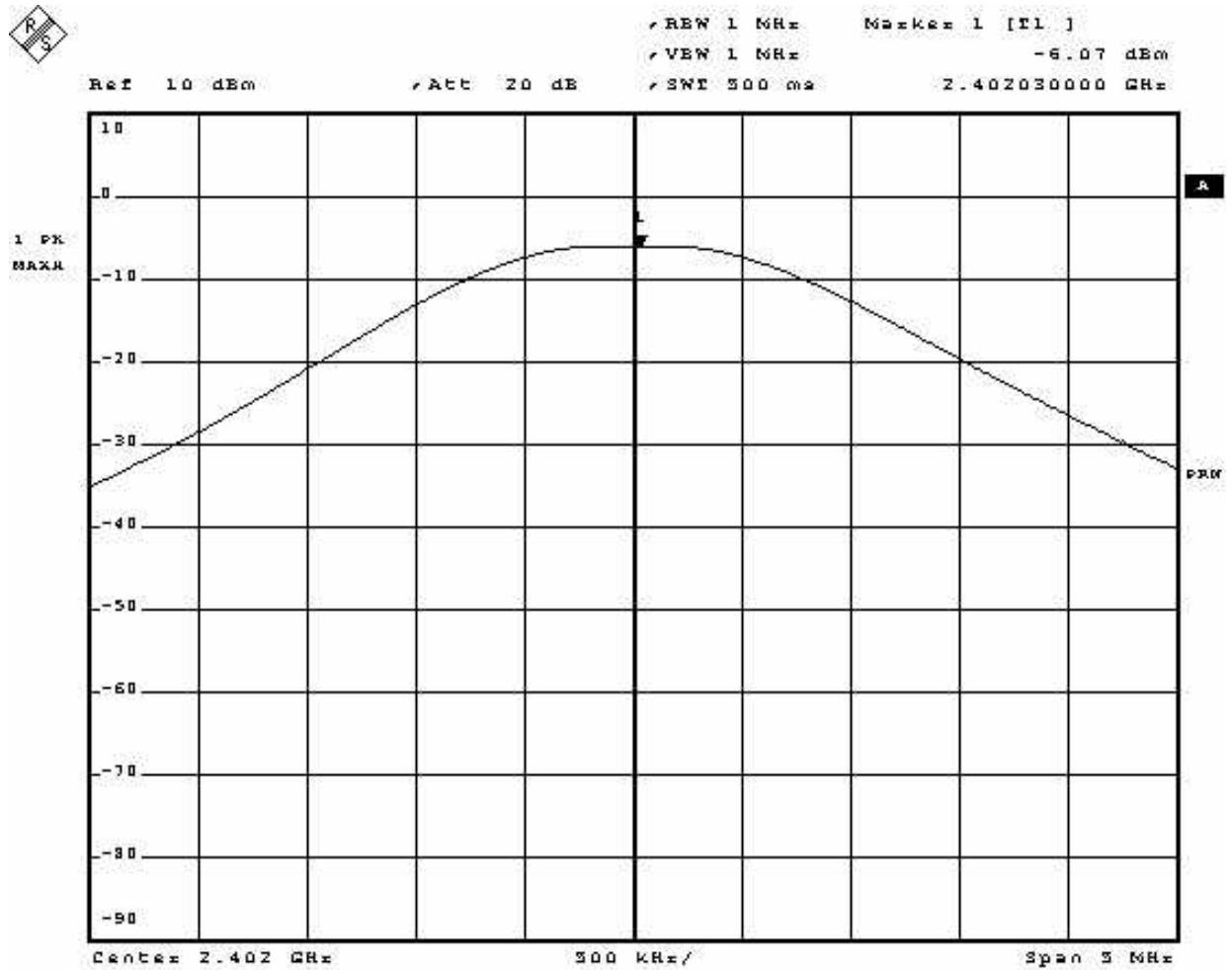
Channel	Frequency (MHz)	Measured Output Power (dBm)	Measured Output Power (mWatt)	Limits (Watt/dBm)
00	2402	-6.07	0.25	1W/30 dBm
39	2441	-5.13	0.31	1W/30 dBm
78	2480	-4.13	0.39	1W/30 dBm

5.6.5 Test Configuration (EUT Operating Condition) :

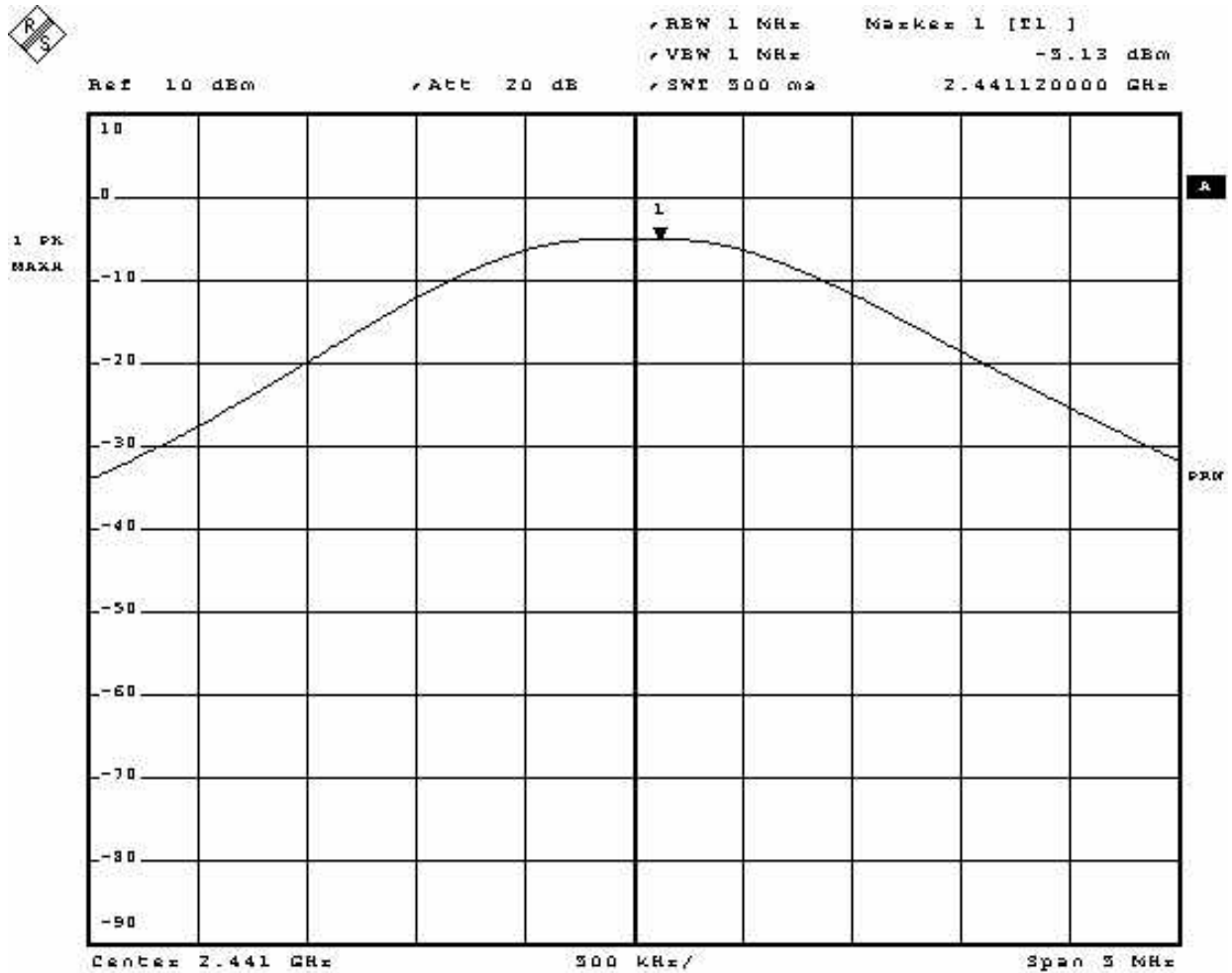
Same as Section 5.4.5.

5.6.6 Output Power

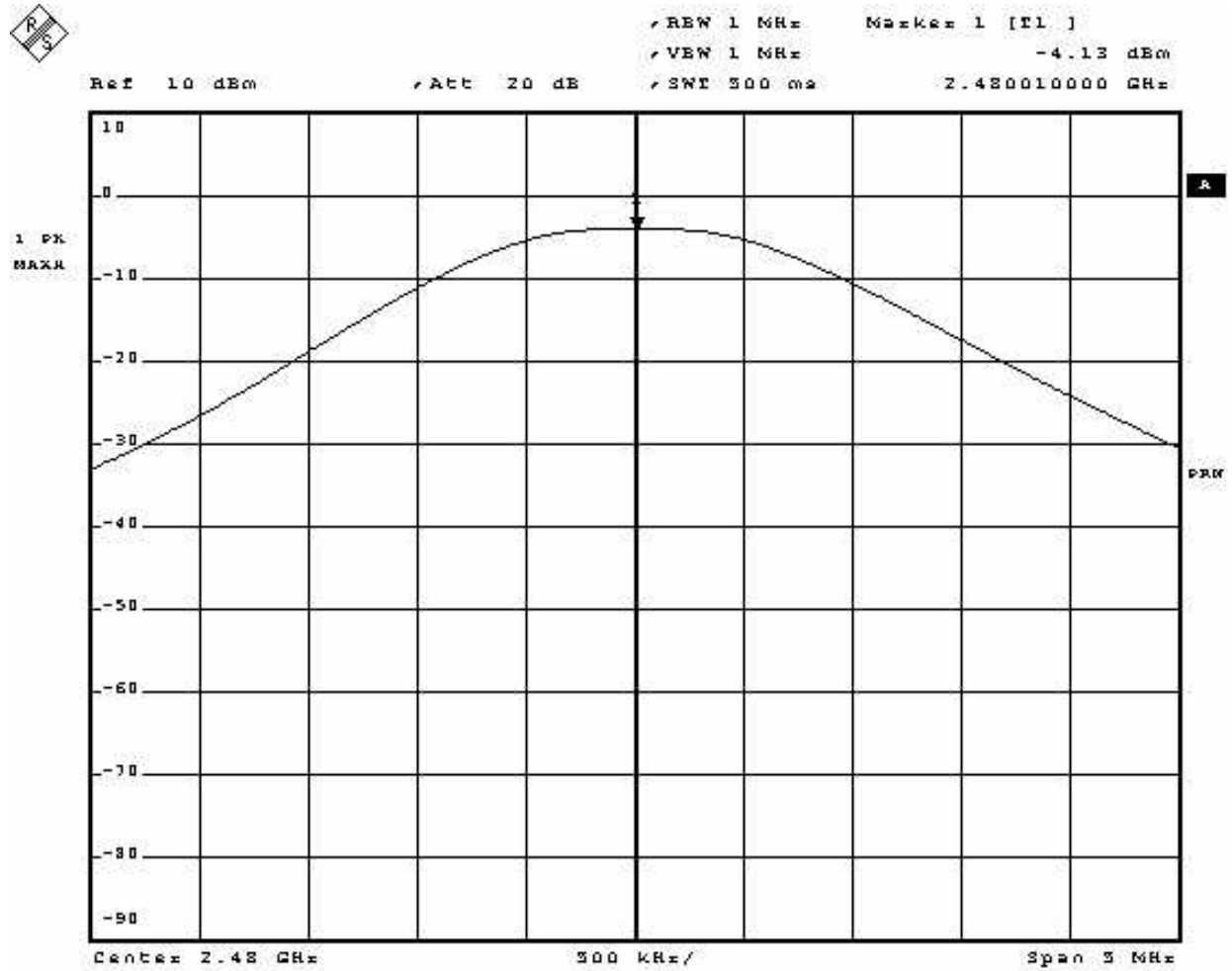
Mode 1: Channel 00 (2402MHz)



Mode 2: Channel 39 (2441MHz)



Mode 3: Channel 78 (2480MHz)



5.7 100KHz Bandwidth of Frequency Band Edges

5.7.1 Measuring Instruments :

As described in chapter 10 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 convenient frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.7.3 Test Result :

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 band edge emission plot shows 52.4 dB delta between carrier maximum power and local maximum emission in the restricted band (2.39951GHz).

The band edge emission plot shows 52.94 dB delta between carrier maximum power and local maximum emission in the restricted band (2.48448GHz) Frequency Band Edges

Channel	Polarity	Frequency	The emission of carrier power strength	The maximum field strength in restrict band	Limit	Margin	Detector
			(dB μ V/m)	(dB μ V/m)	(dB μ V/m)	(dB)	
CH00	V	2404.000	88.69	36.29	74	-37.71	Peak
	V	2404.000	66.57	14.17	54	-39.83	Average
	H	2401.980	84.49	32.09	74	-41.91	Peak
	H	2401.980	62.59	10.19	54	-43.81	Average
Ch78	V	2480.360	93.86	40.92	74	-33.08	Peak
	V	2480.360	71.30	18.36	54	-35.64	Average
	H	2480.000	93.09	40.15	74	-33.85	Peak
	H	2480.000	69.94	17.00	54	-37.00	Average

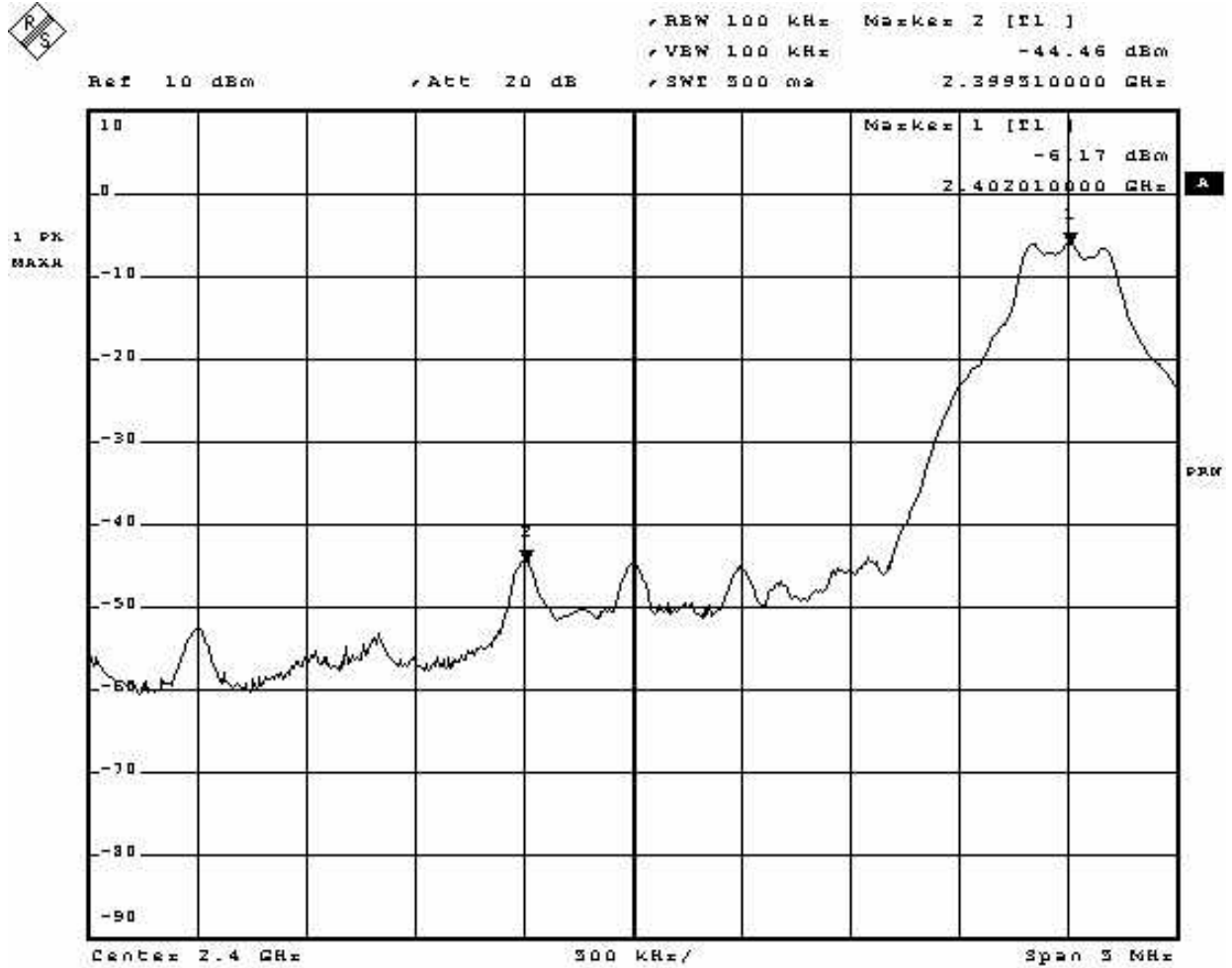
* The maximum field strength in restricted band is the emission of carrier power strength subtract to the delta between carrier maximum power and local maximum emission in the restricted band.

5.7.5 Test Configuration (EUT Operating Condition) :

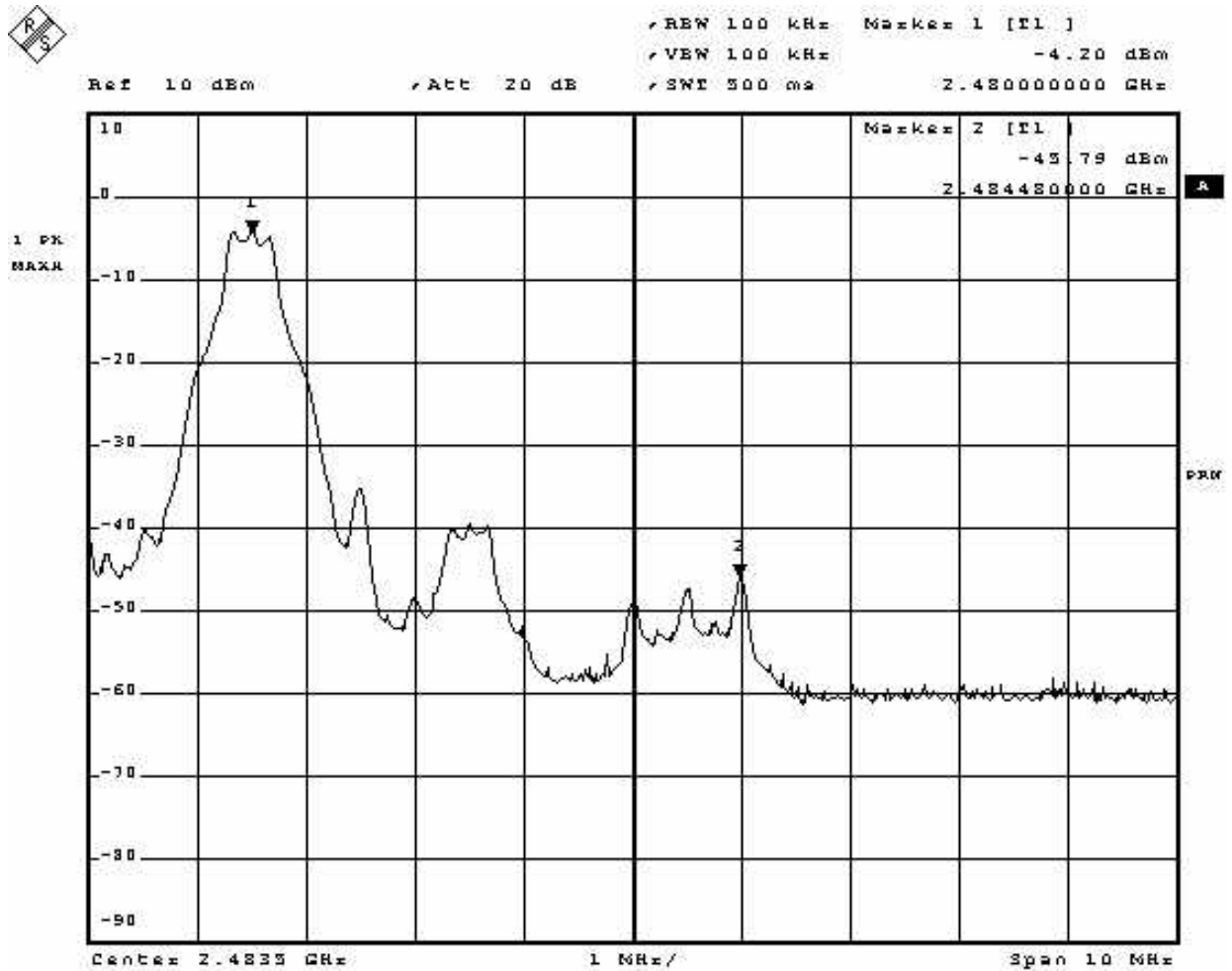
The software provided by client to enable the EUT under transmission condition continuously at lowest, and highest channel frequencies respectively.

5.7.6 100KHz Bandwidth of Frequency Band Edges

Mode 1: Channel 00 (2402 MHz)



Mode 2: Channel 78 (2480MHz)



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 C63.4-2001 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 mains through a 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.

5.8.3 Test Result of Conducted Emission :

- Test Mode: Mode 1
- Frequency Range of Test: from 150KHz to 30 MHz
- Temperature: 25°C
- Relative Humidity: 50 %
- Test Date: Nov. 06, 2003

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

Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 00 2400MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.200	42.26	-21.36	63.62	41.98	0.10	0.18	QP
2	0.200	37.74	-15.88	53.62	37.46	0.10	0.18	Average
3	0.300	36.18	-24.06	60.24	35.95	0.10	0.13	QP
4	0.300	34.90	-15.34	50.24	34.67	0.10	0.13	Average
5	0.601	32.74	-13.26	46.00	32.58	0.10	0.06	Average
6	0.601	33.32	-22.68	56.00	33.16	0.10	0.06	QP
7	0.901	34.64	-11.36	46.00	34.51	0.10	0.03	Average
8	0.901	35.45	-20.55	56.00	35.32	0.10	0.03	QP
9	4.007	34.82	-21.18	56.00	34.56	0.10	0.16	QP
10	4.007	27.97	-18.03	46.00	27.71	0.10	0.16	Average
11	22.660	40.12	-19.88	60.00	39.26	0.41	0.45	QP
12	22.660	26.60	-23.40	50.00	25.74	0.41	0.45	Average

Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 00 2400MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.201	46.36	-17.21	63.57	46.08	0.10	0.18	QP
2	0.201	34.62	-18.95	53.57	34.34	0.10	0.18	Average
3	0.301	38.70	-21.52	60.22	38.47	0.10	0.13	QP
4	0.301	30.61	-19.61	50.22	30.38	0.10	0.13	Average
5	0.801	34.54	-21.46	56.00	34.40	0.10	0.04	QP
6	0.801	33.28	-12.72	46.00	33.14	0.10	0.04	Average
7	0.902	33.98	-22.02	56.00	33.85	0.10	0.03	QP
8	0.902	32.46	-13.54	46.00	32.33	0.10	0.03	Average
9	4.411	35.77	-20.23	56.00	35.40	0.20	0.17	QP
10	4.411	29.09	-16.91	46.00	28.72	0.20	0.17	Average
11	23.025	28.30	-21.70	50.00	27.41	0.43	0.46	Average
12	23.025	38.10	-21.90	60.00	37.21	0.43	0.46	QP

Test Engineer: Jones Tsai Jones Tsai

- Test Mode: Mode 2
- Frequency Range of Test: from 150KHz to 30 MHz
- Temperature: 25°C
- Relative Humidity: 50 %
- Test Date: Nov. 06, 2003

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

Site : CO01-HY
 Condition : CNS/WCCI/CISPR-B 2003 2001/008 LINE
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 39 2441MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.200	42.26	-21.35	63.61	41.98	0.10	0.18	QP
2	0.200	37.74	-15.87	53.61	37.46	0.10	0.18	Average
3	0.300	36.18	-24.07	60.25	35.95	0.10	0.13	QP
4	0.300	34.99	-15.26	50.25	34.76	0.10	0.13	Average
5	0.601	32.79	-13.21	46.00	32.63	0.10	0.06	Average
6	0.601	33.28	-22.72	56.00	33.12	0.10	0.06	QP
7	0.900	34.64	-11.36	46.00	34.51	0.10	0.03	Average
8	0.900	35.85	-20.15	56.00	35.72	0.10	0.03	QP
9	4.006	34.86	-21.14	56.00	34.60	0.10	0.16	QP
10	4.006	28.26	-17.74	46.00	28.00	0.10	0.16	Average
11	22.419	37.93	-22.07	60.00	37.08	0.40	0.45	QP
12	22.419	24.53	-25.47	50.00	23.68	0.40	0.45	Average

Site : CO01-HY
 Condition : CNS/WCCI/CISPR-B 2003 2001/008 NEUTRAL
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 39 2441MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.200	46.30	-17.31	63.61	46.02	0.10	0.18	QP
2	0.200	34.54	-19.07	53.61	34.26	0.10	0.18	Average
3	0.300	38.66	-21.57	60.23	38.43	0.10	0.13	QP
4	0.300	30.68	-19.55	50.23	30.45	0.10	0.13	Average
5	0.800	33.04	-12.96	46.00	32.90	0.10	0.04	Average
6	0.800	34.44	-21.56	56.00	34.30	0.10	0.04	QP
7	0.901	32.89	-13.11	46.00	32.76	0.10	0.03	Average
8	0.901	34.32	-21.68	56.00	34.19	0.10	0.03	QP
9	4.601	36.25	-19.75	56.00	35.87	0.20	0.18	QP
10	4.601	30.61	-15.39	46.00	30.23	0.20	0.18	Average
11	22.878	42.36	-17.64	60.00	41.48	0.42	0.46	QP
12	22.878	29.76	-20.24	50.00	28.88	0.42	0.46	Average

Test Engineer: Jones Tsai Jones Tsai

- Test Mode: Mode 3
- Frequency Range of Test: from 150KHz to 30 MHz
- Temperature: 25°C
- Relative Humidity: 50 %
- Test Date: Nov. 06, 2003

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

Site : CO01-HY
 Condition : CNS/WCCI/CISPR-B 2003 2001/008 LINE
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.201	42.10	-21.47	63.57	41.82	0.10	0.18	QP
2	0.201	37.56	-16.01	53.57	37.28	0.10	0.18	Average
3	0.300	36.26	-24.00	60.26	36.03	0.10	0.13	QP
4	0.300	34.99	-15.27	50.26	34.76	0.10	0.13	Average
5	0.601	32.90	-13.10	46.00	32.74	0.10	0.06	Average
6	0.601	33.38	-22.62	56.00	33.22	0.10	0.06	QP
7	0.900	35.05	-10.95	46.00	34.92	0.10	0.03	Average
8	0.900	36.04	-19.96	56.00	35.91	0.10	0.03	QP
9	4.399	34.08	-21.92	56.00	33.80	0.11	0.17	QP
10	4.399	27.81	-18.19	46.00	27.53	0.11	0.17	Average
11	22.878	41.45	-18.55	60.00	40.57	0.42	0.46	QP
12	22.878	31.33	-18.67	50.00	30.45	0.42	0.46	Average

Site : CO01-HY
 Condition : CNS/WCCI/CISPR-B 2003 2001/008 NEUTRAL
 EUT : Wireless Scanner
 Power : AC 110 V / 60 Hz
 Model : 1260
 Memo : TX CH 78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.199	46.30	-17.35	63.65	46.02	0.10	0.18	QP
2	0.199	34.62	-19.03	53.65	34.34	0.10	0.18	Average
3	0.299	38.74	-21.53	60.27	38.51	0.10	0.13	QP
4	0.299	30.77	-19.50	50.27	30.54	0.10	0.13	Average
5	0.800	34.44	-21.56	56.00	34.30	0.10	0.04	QP
6	0.800	33.04	-12.96	46.00	32.90	0.10	0.04	Average
7	0.899	34.89	-21.11	56.00	34.76	0.10	0.03	QP
8	0.899	32.94	-13.06	46.00	32.81	0.10	0.03	Average
9	4.397	38.75	-17.25	56.00	38.38	0.20	0.17	QP
10	4.397	32.53	-13.47	46.00	32.16	0.20	0.17	Average
11	23.749	40.16	-19.84	60.00	39.24	0.45	0.47	QP
12	23.749	27.37	-22.63	50.00	26.45	0.45	0.47	Average

Test Engineer: Jones Tsai Jones Tsai

5.9 Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2001. 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

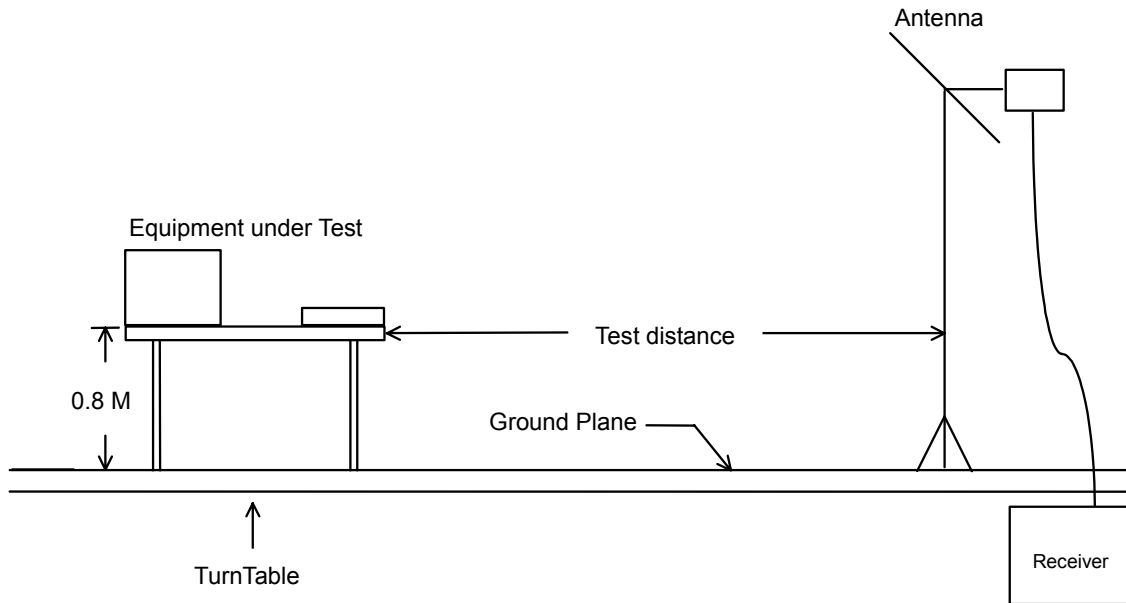
- Spectrum analyzer (R&S FSP40)
 - Attenuation 10 dB
 - Start Frequency 1 GHz
 - Stop Frequency 25 GHz
 - Resolution Bandwidth 1 MHz
 - Video Bandwidth 1 MHz
 - Signal Input 9 KHz to 40 GHz

- Test Receiver (SCHAFFNER SCR3501)
 - Resolution Bandwidth 120 KHz
 - Frequency Band 9 K – 1 GHz
 - Quasi-Peak Detector ON for Quasi-Peak Mode
OFF for Peak Mode

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 both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
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 turn table (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 which do not have 3 dB margin 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 peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.9.3 Typical Test Setup Layout of Radiated Emission



5.9.4 Test Result of Radiated Emission

- Test Mode: Mode 1
- Test Distance: 3 M
- Temperature: 24 °C
- Relative Humidity 52 %
- Test Date: Dec. 05, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

■ Spurious Emission

Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
2	179.940	25.62	-17.88	43.50	37.42	13.55	2.39	27.74	QP	100	7
4	183.340	25.97	-17.53	43.50	37.41	13.90	2.39	27.73	QP	100	12
5	192.180	24.33	-19.17	43.50	35.02	14.62	2.40	27.71	QP	100	5
6 !	192.180	40.46	-3.04	43.50	51.15	14.62	2.40	27.71	Peak	100	5

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	214.400	38.56	-4.94	43.50	49.18	14.47	2.55	27.64	Peak	100	232
2	275.200	28.53	-17.47	46.00	40.28	12.73	2.92	27.40	Peak	100	18
3	326.400	32.11	-13.89	46.00	41.78	14.67	3.09	27.43	Peak	100	13

FCC TEST REPORT

Report No. : F3N0308

Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	33.910	34.37	-5.63	40.00	48.10	13.27	1.04	28.04	Peak	---	---
2	52.950	30.47	-9.53	40.00	47.58	10.15	0.73	27.99	Peak	---	---
3	99.020	34.64	-8.86	43.50	51.09	9.71	1.74	27.90	Peak	---	---

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.800	30.92	-12.58	43.50	41.20	14.86	2.52	27.66	Peak	100	12
2	275.200	27.10	-18.90	46.00	38.85	12.73	2.92	27.40	Peak	100	19
3	320.000	36.41	-9.59	46.00	46.41	14.37	3.03	27.40	Peak	100	13

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1201.600	41.91	-32.09	74.00	53.36	24.61	4.25	40.31	Peak	100	188
2	1201.600	37.33	-16.67	54.00	48.78	24.61	4.25	40.31	Average	100	188
3	2370.000	41.99	-32.01	74.00	48.79	28.16	6.17	41.13	Peak	132	287
4	2370.000	30.57	-23.43	54.00	37.37	28.16	6.17	41.13	Average	132	287
5 X	2401.980	62.59	8.59	54.00	69.31	28.22	6.21	41.15	Average	101	292
6 X	2401.980	84.49	10.49	74.00	91.21	28.22	6.21	41.15	Peak	101	292
7	2434.120	34.68	-19.32	54.00	41.31	28.29	6.25	41.17	Average	101	286
8	2434.120	45.60	-28.40	74.00	52.23	28.29	6.25	41.17	Peak	101	286

FCC TEST REPORT

Report No. : F3N0308

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4803.700	51.69	-22.31	74.00	51.95	33.03	9.05	42.34	Peak	100	331
2	4803.700	40.07	-13.93	54.00	40.33	33.03	9.05	42.34	Average	100	331

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1201.560	44.80	-29.20	74.00	56.25	24.61	4.25	40.31	Peak	100	87
2	1201.560	41.48	-12.52	54.00	52.93	24.61	4.25	40.31	Average	100	87
3	2370.000	31.19	-22.81	54.00	37.99	28.16	6.17	41.13	Average	100	17
4	2370.000	41.91	-32.09	74.00	48.71	28.16	6.17	41.13	Peak	100	17
5 X	2404.000	88.69	14.69	74.00	95.40	28.23	6.21	41.15	Peak	130	275
6 X	2404.000	66.57	12.57	54.00	73.28	28.23	6.21	41.15	Average	130	275
7	2432.240	47.57	-26.43	74.00	54.20	28.29	6.25	41.17	Peak	100	21
8	2432.240	36.84	-17.16	54.00	43.47	28.29	6.25	41.17	Average	100	21

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH00 2402 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4804.260	53.40	-20.60	74.00	53.66	33.03	9.05	42.34	Peak	100	219
2	4804.260	42.26	-11.74	54.00	42.52	33.03	9.05	42.34	Average	100	219

- For 4.804GHz ~ 25GHz
 Remark: Frequency from 4804.26MHz 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)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2401.980	H	28.22	6.21	50.06	-	84.49	-	Peak
2401.980	H	28.22	6.21	28.16	-	62.59	-	A.V.
2404.000	V	28.23	6.21	54.25	-	88.69	-	Peak
2404.000	V	28.23	6.21	32.13	-	66.57	-	A.V.
4803.700	H	33.03	9.05	9.61	74.00	51.69	-22.31	Peak
4803.700	H	33.03	9.05	-2.01	54.00	40.07	-13.93	A.V.
4804.260	V	33.03	9.05	11.32	74.00	53.40	-20.60	Peak
4804.260	V	33.03	9.05	0.18	54.00	42.26	-11.74	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: *Jones Tsai*

Jones Tsai

- Test Mode: Mode 2
- Test Distance: 3 M
- Temperature: 24 °C
- Relative Humidity 52 %
- Test Date: Dec. 05, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

■ Spurious Emission

Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	169.910	30.05	-13.45	43.50	42.56	13.25	2.00	27.76	Peak	100	12
2	173.820	30.22	-13.28	43.50	42.44	13.37	2.16	27.75	Peak	100	15
3 !	178.070	38.86	-4.64	43.50	50.76	13.50	2.34	27.74	Peak	100	9

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.800	32.25	-11.25	43.50	42.53	14.86	2.52	27.66	Peak	100	20
2	275.200	28.79	-17.21	46.00	40.54	12.73	2.92	27.40	Peak	100	18
3	342.400	30.77	-15.23	46.00	39.75	15.30	3.23	27.51	Peak	100	16

FCC TEST REPORT

Report No. : F3N0308

Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	35.100	32.94	-7.06	40.00	46.91	13.02	1.05	28.04	Peak	100	12
2	38.670	32.35	-7.65	40.00	47.30	12.00	1.08	28.03	Peak	100	16
3	52.780	27.52	-12.48	40.00	44.63	10.14	0.74	27.99	Peak	100	7

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.800	30.72	-12.78	43.50	41.00	14.86	2.52	27.66	Peak	100	13
2	275.200	27.82	-18.18	46.00	39.57	12.73	2.92	27.40	Peak	100	18
3	326.400	35.62	-10.38	46.00	45.29	14.67	3.09	27.43	Peak	100	16

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1221.040	42.18	-31.82	74.00	53.57	24.66	4.28	40.33	Peak	270	35
2	1221.040	37.38	-16.62	54.00	48.77	24.66	4.28	40.33	Average	270	35
3 X	2441.200	89.93	15.93	74.00	96.53	28.31	6.26	41.17	Peak	132	278
4 X	2441.200	67.51	13.51	54.00	74.11	28.31	6.26	41.17	Average	132	278
5	2473.120	48.11	-25.89	74.00	54.63	28.37	6.30	41.19	Peak	100	287
6	2473.120	37.33	-16.67	54.00	43.85	28.37	6.30	41.19	Average	100	287

FCC TEST REPORT

Report No. : F3N0308

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4882.040	52.37	-21.63	74.00	52.55	33.18	9.09	42.45	Peak	100	349
2	4882.040	41.05	-12.95	54.00	41.23	33.18	9.09	42.45	Average	100	349

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1220.960	38.08	-15.92	54.00	49.49	24.65	4.27	40.33	Average	154	127
2	1220.960	42.82	-31.18	74.00	54.23	24.65	4.27	40.33	Peak	154	127
3	2409.020	44.81	-29.19	74.00	51.50	28.24	6.22	41.15	Peak	100	8
4	2409.020	33.93	-20.07	54.00	40.62	28.24	6.22	41.15	Average	100	8
5 X	2441.220	91.15	17.15	74.00	97.75	28.31	6.26	41.17	Peak	100	8
6 X	2441.220	69.43	15.43	54.00	76.03	28.31	6.26	41.17	Average	100	8
7	2472.980	49.69	-24.31	74.00	56.21	28.37	6.30	41.19	Peak	100	8
8	2472.980	38.85	-15.15	54.00	45.37	28.37	6.30	41.19	Average	100	8

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH39 2441 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4882.020	53.89	-20.11	74.00	54.07	33.18	9.09	42.45	Peak	101	201
2	4882.020	42.52	-11.48	54.00	42.70	33.18	9.09	42.45	Average	101	201

- For 4.88204GHz ~ 25GHz
 Remark: Frequency from 4882.04MHz 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	Reading Loss	Limits	Emission	Margin	Detect	
(dBuV)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Mode	
2441.200	H	28.31	6.26	55.36	-	89.93	-	Peak
2441.200	H	28.31	6.26	32.94	-	67.51	-	A.V.
2441.220	V	97.75	28.31	-34.91	-	91.15	-	Peak
2441.220	V	76.03	28.31	-34.91	-	69.43	-	A.V.
4882.040	H	33.18	9.09	10.10	74.00	52.37	-21.63	Peak
4882.040	H	33.18	9.09	-1.22	54.00	41.05	-12.95	A.V.
4882.020	V	33.18	9.09	11.62	74.00	53.89	-20.11	Peak
4882.020	V	33.18	9.09	0.25	54.00	42.52	-11.48	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: *Jones Tsai*
 Jones Tsai

- Test Mode: Mode 3
- Test Distance: 3 M
- Temperature: 24 °C
- Relative Humidity 52 %
- Test Date: Dec. 05, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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

■ Spurious Emission

Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	53.630	24.73	-15.27	40.00	41.85	10.17	0.70	27.99	Peak	100	11
2	94.940	27.90	-15.60	43.50	44.78	9.36	1.67	27.91	Peak	100	12
3	173.820	29.41	-14.09	43.50	41.63	13.37	2.16	27.75	Peak	100	9

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.800	34.17	-9.33	43.50	44.45	14.86	2.52	27.66	Peak	100	16
2	275.200	28.73	-17.27	46.00	40.48	12.73	2.92	27.40	Peak	100	18
3	326.400	31.73	-14.27	46.00	41.40	14.67	3.09	27.43	Peak	100	13

FCC TEST REPORT

Report No. : F3N0308

Condition : 3m BIC-9124--301 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	33.230	34.72	-5.28	40.00	48.34	13.40	1.02	28.04	Peak	100	13
2	38.500	29.87	-10.13	40.00	44.78	12.04	1.08	28.03	Peak	100	7
3	104.460	32.21	-11.29	43.50	48.24	10.08	1.78	27.89	Peak	100	15

Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.800	31.93	-11.57	43.50	42.21	14.86	2.52	27.66	Peak	100	20
2	275.200	25.78	-20.22	46.00	37.53	12.73	2.92	27.40	Peak	100	18
3	320.000	34.63	-11.37	46.00	44.63	14.37	3.03	27.40	Peak	100	15

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1195.240	42.57	-31.43	74.00	54.04	24.60	4.24	40.31	Peak	---	---
2	1596.000	42.61	-31.39	74.00	52.63	25.75	4.89	40.66	Peak	100	196
3	2446.000	47.78	-26.22	74.00	54.37	28.31	6.27	41.17	Peak	104	127
4	2446.000	36.69	-17.31	54.00	43.28	28.31	6.27	41.17	Average	104	127
5 X	2480.000	93.09	19.09	74.00	99.59	28.38	6.31	41.19	Peak	104	122
6 X	2480.000	69.94	15.94	54.00	76.44	28.38	6.31	41.19	Average	104	122
7	2483.500	41.45	-12.55	54.00	47.94	28.39	6.32	41.20	Average	104	139
8	2483.500	54.68	-19.32	74.00	61.17	28.39	6.32	41.20	Peak	104	139
9	2510.000	37.75	-16.25	54.00	44.12	28.47	6.36	41.20	Average	104	130
10	2510.000	48.44	-25.56	74.00	54.81	28.47	6.36	41.20	Peak	104	130

FCC TEST REPORT

Report No. : F3N0308

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 HORIZONTAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4960.440	52.82	-21.18	74.00	52.90	33.34	9.14	42.56	Peak	106	7
2	4960.440	41.75	-12.25	54.00	41.83	33.34	9.14	42.56	Average	106	7

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1595.440	46.63	-27.37	74.00	56.65	25.75	4.89	40.66	Peak	100	31
2	1862.000	41.43	-32.57	74.00	49.98	26.85	5.42	40.82	Peak	---	---
3	2448.000	46.43	-27.57	74.00	53.02	28.32	6.27	41.18	Peak	100	225
4	2448.000	35.62	-18.38	54.00	42.21	28.32	6.27	41.18	Average	100	225
5 X	2480.360	93.86	19.86	74.00	100.36	28.38	6.31	41.19	Peak	116	58
6 X	2480.360	71.30	17.30	54.00	77.80	28.38	6.31	41.19	Average	116	58
7	2483.500	42.38	-11.62	54.00	48.87	28.39	6.32	41.20	Average	116	62
8	2483.500	56.48	-17.52	74.00	62.97	28.39	6.32	41.20	Peak	116	62
9	2511.970	48.84	-25.16	74.00	55.20	28.47	6.37	41.20	Peak	116	59
10	2511.970	38.46	-15.54	54.00	44.82	28.47	6.37	41.20	Average	116	59

Site : 03CH03-HY
 Condition : 3m HORN-ANT-6741 VERTICAL
 EUT : Wireless scanner
 Power : AC 110 V / 60 Hz
 MODEL : 1260
 MEMO : TX CH78 2480 MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	4960.200	52.38	-21.62	74.00	52.46	33.34	9.14	42.56	Peak	100	27
2	4960.200	40.10	-13.90	54.00	40.18	33.34	9.14	42.56	Average	100	27

➤ For 4.960.2GHz ~ 25GHz

Remark: Frequency from 4960.2MHz 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	Reading Loss	Limits (dBuV)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2480.000	H	28.38	60.31	4.40	-	93.09	Peak
2480.000	H	28.38	6.31	35.25	-	69.94	A.V.
2480.360	V	28.38	60.31	5.17	-	93.86	Peak
2480.360	V	28.38	6.31	36.61	-	71.30	A.V.
4960.440	H	33.34	9.14	10.34	74.00	52.82	Peak
4960.440	H	33.34	9.14	-0.73	54.00	41.75	A.V.
4960.200	V	33.34	9.14	9.90	74.00	52.38	Peak
4960.200	V	33.34	9.14	-2.38	54.00	40.10	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: *Jones Tsai*
 Jones Tsai

6 EMI Suppression Component List

No EMI suppression components.

7 Antenna Requirements

The EUT use on undetectable patch antenna. It is considered 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 furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Connected Construction

The maximum gain antenna, 0dBi, antenna used in this product is patch antenna without any external connector.

8 RF Exposure

FCC Rules and Regulations Part 1.1307,1.1310,2.1091,2.1093:

RF Exposure Compliance

8.8.1 Limit For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

F=frequency in MHz

*Plane-wave equivalent power density

8.8.2 MPE Calculations

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (mW/cm}^2\text{)} = \frac{E^2}{3770}$$

- E=Electric field (V/m)
- P=Peak output power (mW)
- G=Antenna numeric gain (numeric)
- d=Separation distance (m)

Because the EUT is belong to General Population/ Uncontrolled Exposure. So the Limit of Power Density is 10 W/m². We can change the formula to:

$$d = \sqrt{\frac{30 \times P \times G}{3770}}$$

Channel NO.	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (m W)	Calculated RF Exposure Separation Distance (cm)	Minimum RF Exposure Separation Distance (cm)
Channel 00	0.00	1.00	-6.07	0.2472	0.1402	20.00
Channel 39	0.00	1.00	-5.13	0.3069	0.1563	20.00
Channel 78	0.00	1.00	-4.13	0.3864	0.1753	20.00

8.8.3 FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation. Proposed RF exposure safety information to include in User's Manual.

9 Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	14.47	0.92	1000	24.10	3.92
35	13.08	1.05	2000	27.40	5.66
40	11.70	1.08	3000	30.00	7.20
45	10.64	1.15	4000	32.60	9.36
50	10.14	0.89	5000	33.40	9.16
55	10.21	0.63	6000	34.20	10.70
60	10.21	1.3	7000	35.30	12.16
65	9.35	1.36	8000	36.90	13.12
70	8.91	1.43	9000	38.10	13.81
75	9.12	1.48	10000	39.00	14.83
80	9.50	1.53	11000	38.60	15.83
85	9.71	1.61	12000	39.50	17.11
90	9.30	1.69	13000	39.30	17.62
95	9.36	1.67	14000	41.60	18.37
100	9.80	1.76	15000	40.60	19.10
110	9.80	1.80	16000	37.20	19.72
120	10.44	1.90	17000	40.20	21.98
130	10.58	1.61	18000	48.90	21.22
140	11.74	2.14	19000	35.30	23.90
150	12.38	2.16	20000	36.90	24.07
160	12.68	2.16	21000	38.10	25.49
170	13.26	1.99	22000	39.00	24.92
180	13.56	2.39	23000	38.60	25.60
190	14.57	2.38	24000	39.50	25.70
200	14.80	2.46	25000	39.30	26.54
220	14.08	2.59			
240	12.85	2.68			
260	12.46	2.91			
280	12.91	2.92			
300	13.21	2.99			
320	14.37	3.03			
340	15.31	3.22			
360	15.23	3.28			
380	15.39	2.80			
400	15.79	2.80			
450	16.52	3.70			
500	17.35	3.93			
550	17.77	4.23			
600	19.00	4.15			
650	18.78	4.57			
700	19.80	4.73			
750	20.01	4.87			
800	20.38	4.99			
850	20.86	5.05			
900	21.08	5.28			
950	21.83	5.50			
1000	22.23	5.62			

10 List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 12, 2003	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001-008	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001-009	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Jan. 07, 2003	Conduction (CO01-HY)
50 ohm BNC type Terminal	NOBLE	50ohm	TM009	50 ohm	Apr. 24, 2003	Conduction (CO01-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHZ	Aug. 07, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	AH-118	10094	1GHz – 18GHz	Apr. 10, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Mar. 14, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP7	838858/014	9KHZ~7GHZ	Sep. 03, 2003	Conducted
Power meter	R&S	NRVS	100444	DC~40GHz	May 28, 2003	Conducted
Power sensor	R&S	NRV-Z55	100049	DC~40GHz	May 28, 2003	Conducted
Power Sensor	R&S	NRV-Z32	100057	30MHz-6GHz	May 28, 2003	Conducted
AC power source	HPC	HPA-500W	HPA-9100024	AC 0~300V	May 27, 2003	Conducted
AC power source	G.W.	GPC-6030D	C671845	DC 1V~60V	Nov. 06, 2003	Conducted
Temp. and Humidity	KSON	THS-C3L	612	N/A	Oct. 01, 2003	Conducted
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz~7GHz	Jan. 01, 2003	Conducted
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz~1GHz	Jan. 01, 2003	Conducted

※ Calibration Interval of instruments listed above is one year.

11 Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR $\Gamma_1=0.09$ Antenna VSWR $\Gamma_2=0.67$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2)$	U-shaped	±0.54
combined standard uncertainty $U_e(y)$	normal	±2.7
Measuring uncertainty for a level of confidence of 95% $U=2U_e(y)$	normal (k=2)	±5.4

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

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

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR $\Gamma_1=0.09$ LISN VSWR $\Gamma_2=0.33$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2)$	U-shaped	0.2
combined standard uncertainty $U_e(y)$	normal	±1.66
Measuring uncertainty for a level of confidence of 95% $U=2U_e(y)$	normal (k=2)	±3.32

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