Product Name:	BT Audio Transmitter
Model Number:	MS-6868B, MS-6868F
Marking Name	FS-120
Applicant:	MICRO-STAR INT'L CO., LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan
Date of Receipt:	Aug. 18, 2005
Finished date of Test:	Aug. 26, 2005
Applicable Standards:	47 CFR Part 15, Subpart C 47 CFR Part 15, Subpart B ANSI C63.4: 2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Checked By : Nick Hsieh , Date: 2005-8-26
(Nick Hsieh)

Approved By: Johnson Ho , Date: Aug 26, 2005
(Johnson Ho, Director)

NVLAP®
Lab Code: 200099-0

TABLE OF CONTENTS

1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source, 120 VAC/60 Hz, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	BT Audio Transmitter
MODEL NO.	MS-6868B, MS-6868F
MARKING NAME	FS-120
POWER SUPPLY	DC 0.9~1.6 V, 150~350mA
FREQUENCY BAND	2.402~2.480GHz
CARRIER FREQUENCY	2.402~2.480GHz
NUMBER OF CHANNEL	79
CHANNEL SPACING	1 MHz
RATED RF OUTPUT POWER	-6~+4 dBm (0.25~2.3mW)
I.F. & L.O.	L.O.:12 MHz
MODULATION TYPE	GFSK
BIT RATE OF TRANSMISSION	1Mbps
DUTY CYCLE	Max 1600 hops/sec
ANTENNA TYPE	Multilayer Ceramic Antenna
ANTENNA GAIN	Max 2 dBi
OPERATING TEMPERATURE	0~65℃
CHANNEL BANDWIDTH	1MHz

NOTE：
The EUT has two model numbers as below on market. They are identical in all aspects except for the color of case.
For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF SUPPORT UNIT

The transmitter part of EUT was tested with a PC system and configured by the requirement of ANSI C63.4. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	NOTEBOOK	DELL	PP01L	DOC	2.0m unshielded power cord
2	PRINTER	EPSON	STYLUS C20SX	DOC	1.5m unshielded power cord 1.5m shielded data cord
3	BLUETOOTH DONGLE	MSI	MS-6970A	I4L-MS6970A	1.8m unshielded power cord 1.5m shielded data cord
4	DC POWER SUPPLY	LEADER	LPS-161A	N/A	1.8m unshielded power cord

NOTE： For the actual test configuration, please refer to the photos of testing.

2.3 DESCRIPTION OF TEST MODE

This EUT is a FHSS system, we use BlueTest to control the EUT with RS232, Let EUT hopping on and transmit at every channel with highest power, Only output power use conducted method, others are using radiated method. After Sirfdemo330R1 send the command to EUT, it can be removed, and the EUT keep hopping.79 channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

Channel	Frequency(MHz)
0	2402
39	2441
78	2480

NOTE :

1. Below 1 GHz, the channel 0, 39 and 78 were pre-tested in chamber. The channel 78, worst case one, was chosen for conducted and radiated emission test.
2. Above 1 GHz, the channel 0, 39 and 78 were tested individually.

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of wireless product and to be connected with a PC system for normal use. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C

47 CFR Part 15, Subpart B

ANSI C63.4: 2003

Public DA00-705 (March 2000)

All tests have been performed and recorded as the above standards.

4. TECHNICAL CHARACTERISTICS TEST

4.1 CHANNEL SEPARATION TEST

4.1.1 LIMIT

FCC Part15, Subpart C Section 15.247(a)(1). Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

FREQUENCY RANGE (MHz)	Limit(kHz)
902-928	>25kHz
2400-2483.5	>25kHz
5725-5850	>25kHz

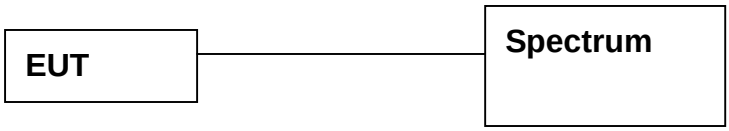
4.1.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.1.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.1.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.1.5 EUT OPERATING CONDITION

1. Under Windows XP ran “Media Player” program and PC sent "H" pattern or accessed the following peripherals directly or via EUT:

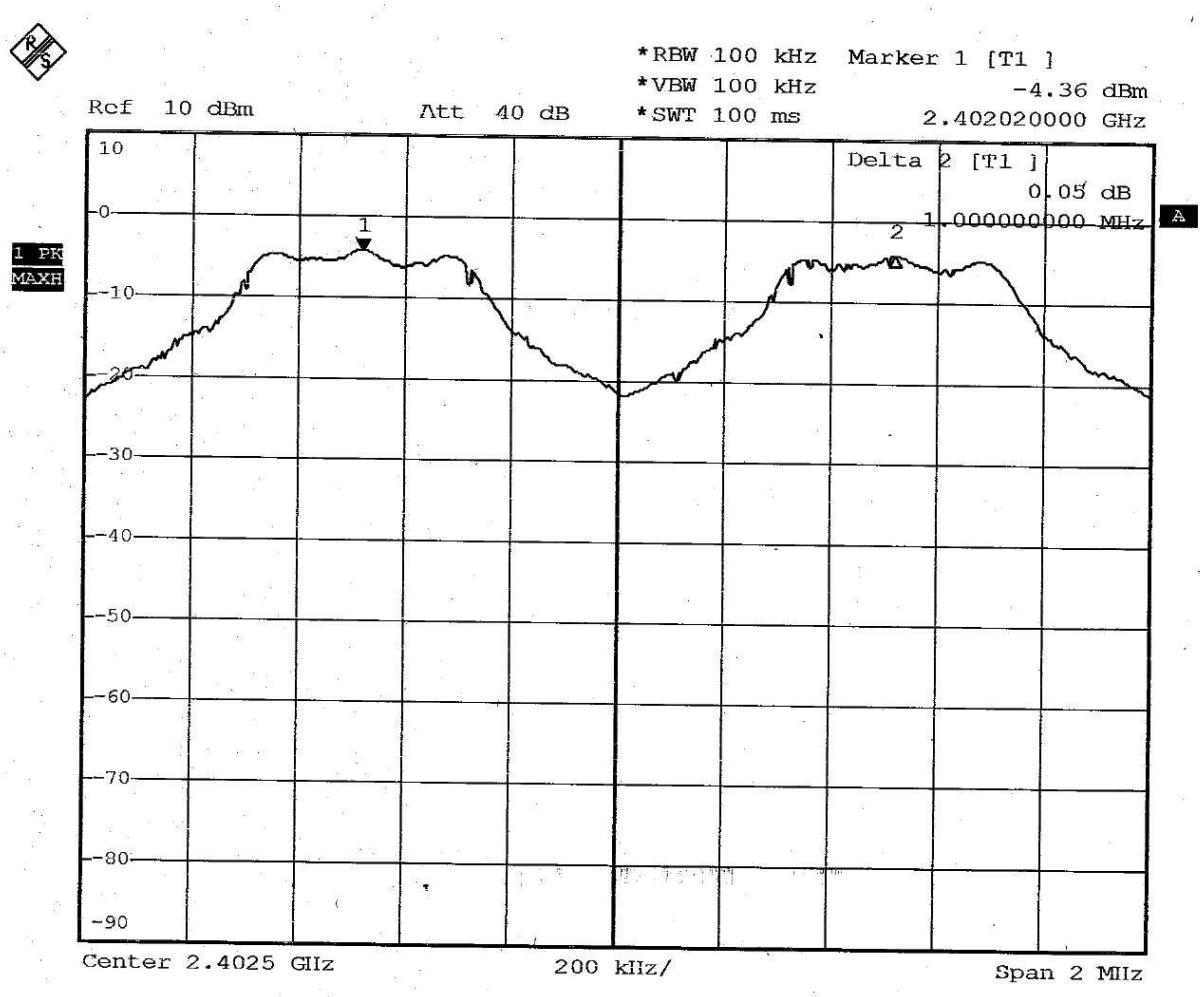
- Color Monitor
- RS232
- Printer
- FDD
- HDD

4.1.6 TEST RESULT

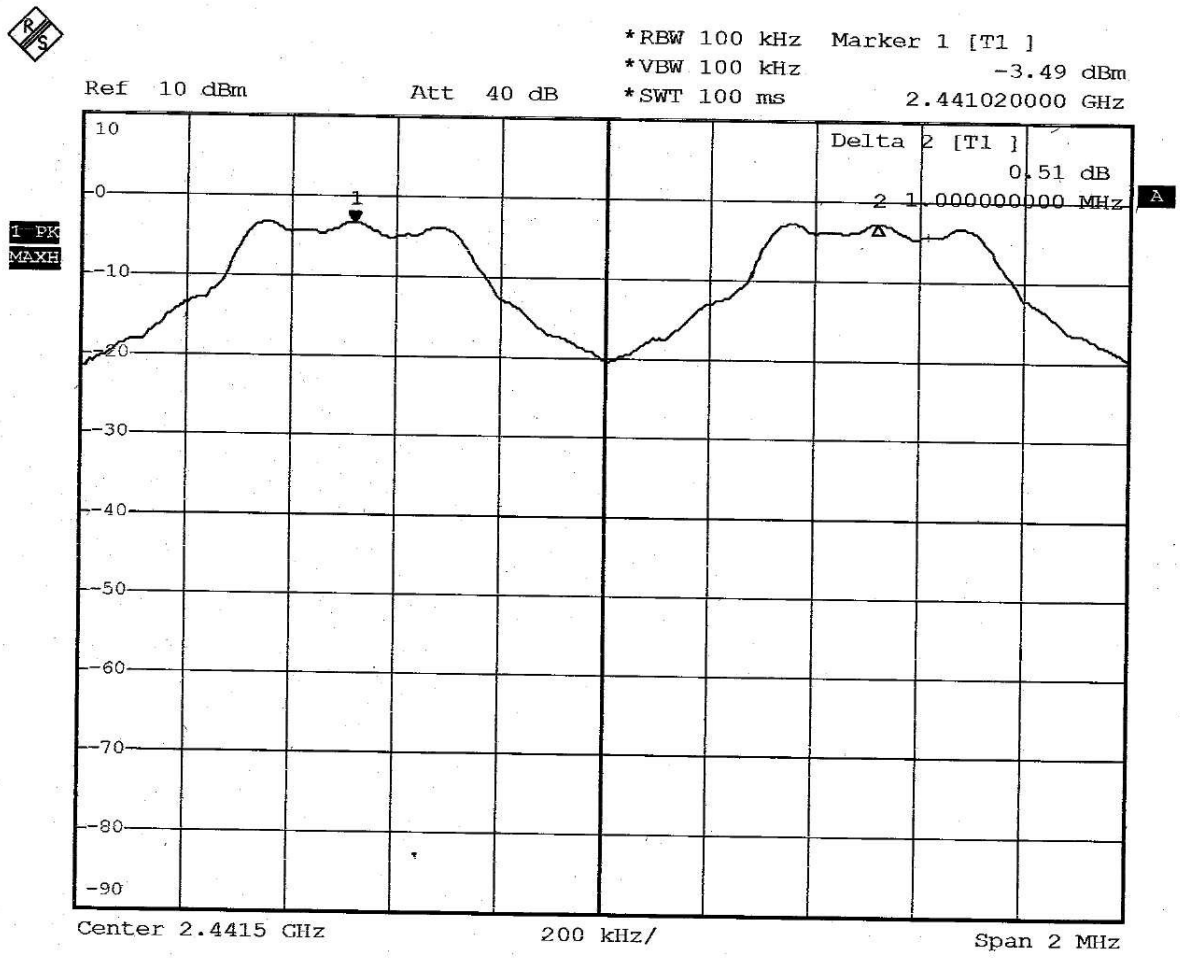
Temperature:	20°C	Humidity:	55%RH
Spectrum Detector:	PK	Tested by:	Julian Chiang
Test Result:	PASS	Tested Date:	Aug. 26, 2005

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	SEPARATION READ VALUE (kHz)	SEPARATION LIMIT (kHz)
0	2402	1000.000	>25kHz
39	2441	1000.000	>25kHz
78	2480	1004.000	>25kHz

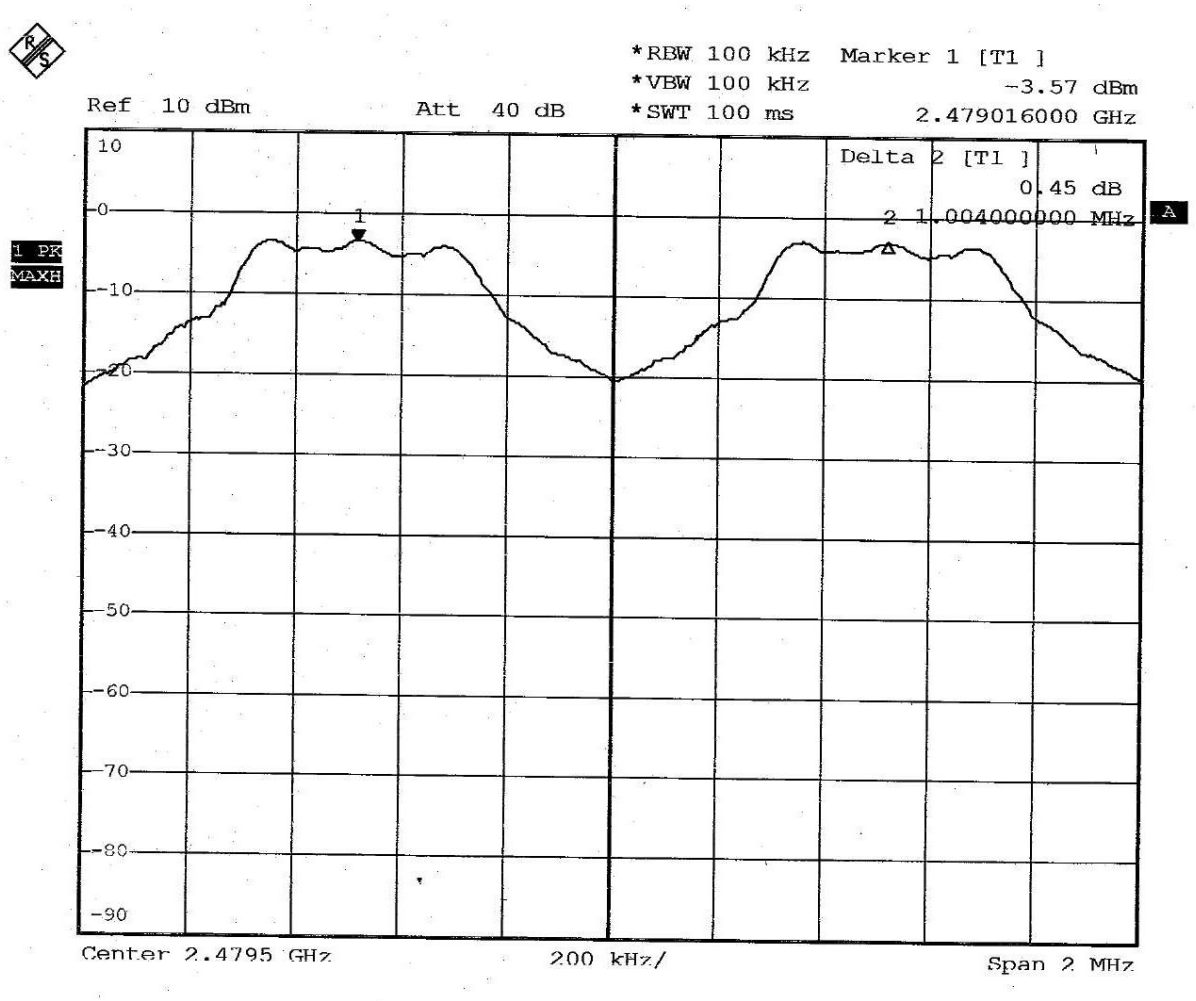
CH0:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-4.36 dBm
2.402020000 GHz
Rcf 10 dBm
Att 40 dB
Delta 2 [T1]
0.05 dB
1.000000000 MHz
1 PK
MAXH
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4025 GHz
200 kHz/
Span 2 MHz

CH39:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-3.49 dBm
2.441020000 GHz
Ref 10 dBm
Att 40 dB
Delta 2 [T1]
0.51 dB
2 1.000000000 MHz
1 PK
MAXH
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4415 GHz
200 kHz/
Span 2 MHz

CH78:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-3.57 dBm
2.479016000 GHz
Ref 10 dBm
Att 40 dB
Delta 2 [T1]
0.45 dB
2 1.004000000 MHz
1 PK
MAXH
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4795 GHz
200 kHz/
Span 2 MHz

4.2 20dB Bandwidth

4.2.1 LIMIT

Frequency Range (MHz)	Limit(kHz)				
	Quantity of Hopping Channel	50	25	15	75
902-928		<250	>250	NA	NA
2400-2483.5		NA	NA	>1000	<1000

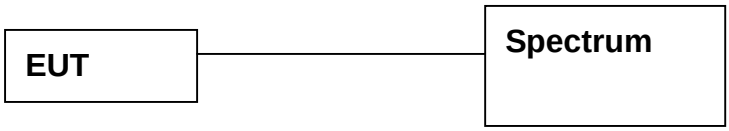
4.2.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.2.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.2.5 EUT OPERATING CONDITION

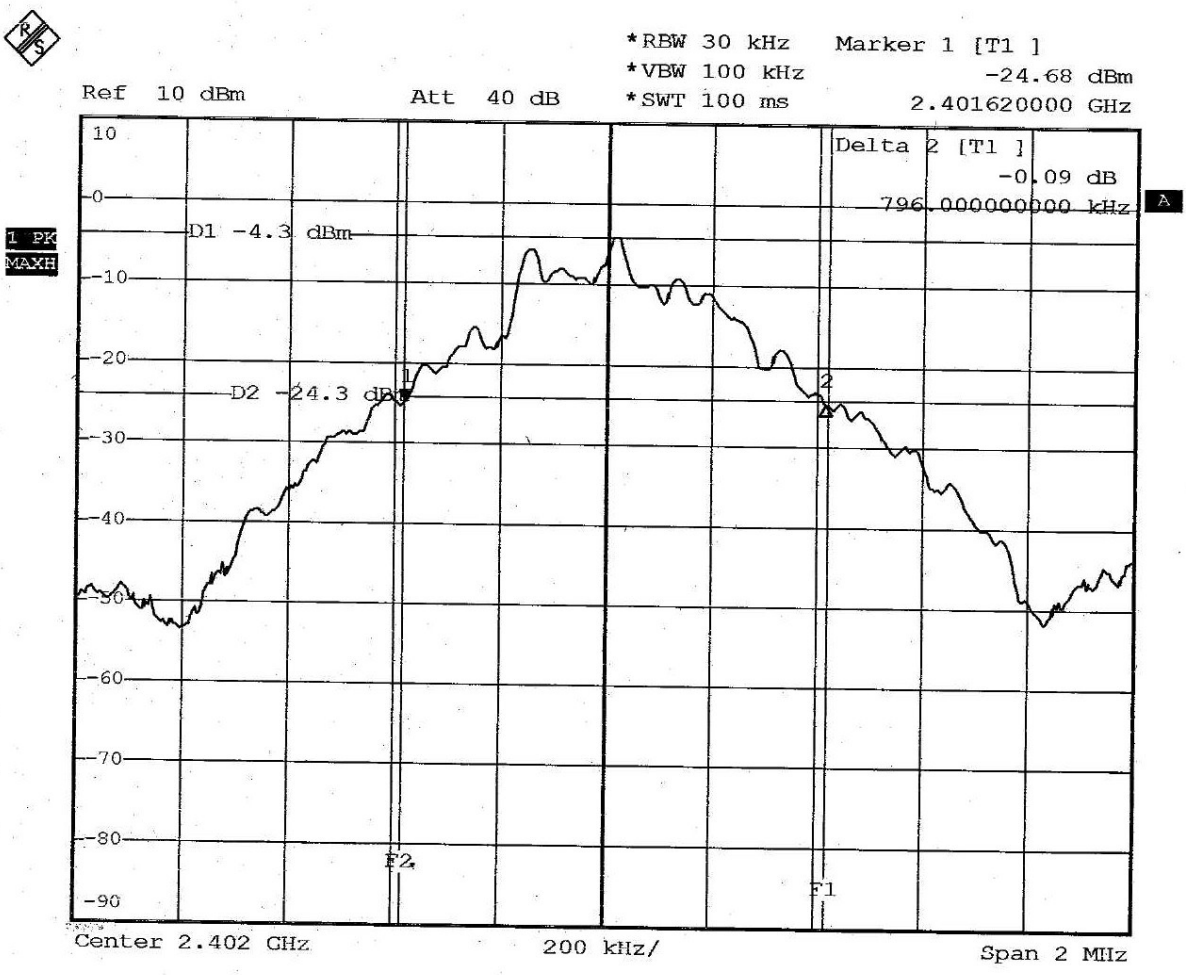
Same as section 4.1.5 of this report.

4.2.6 TEST RESULT

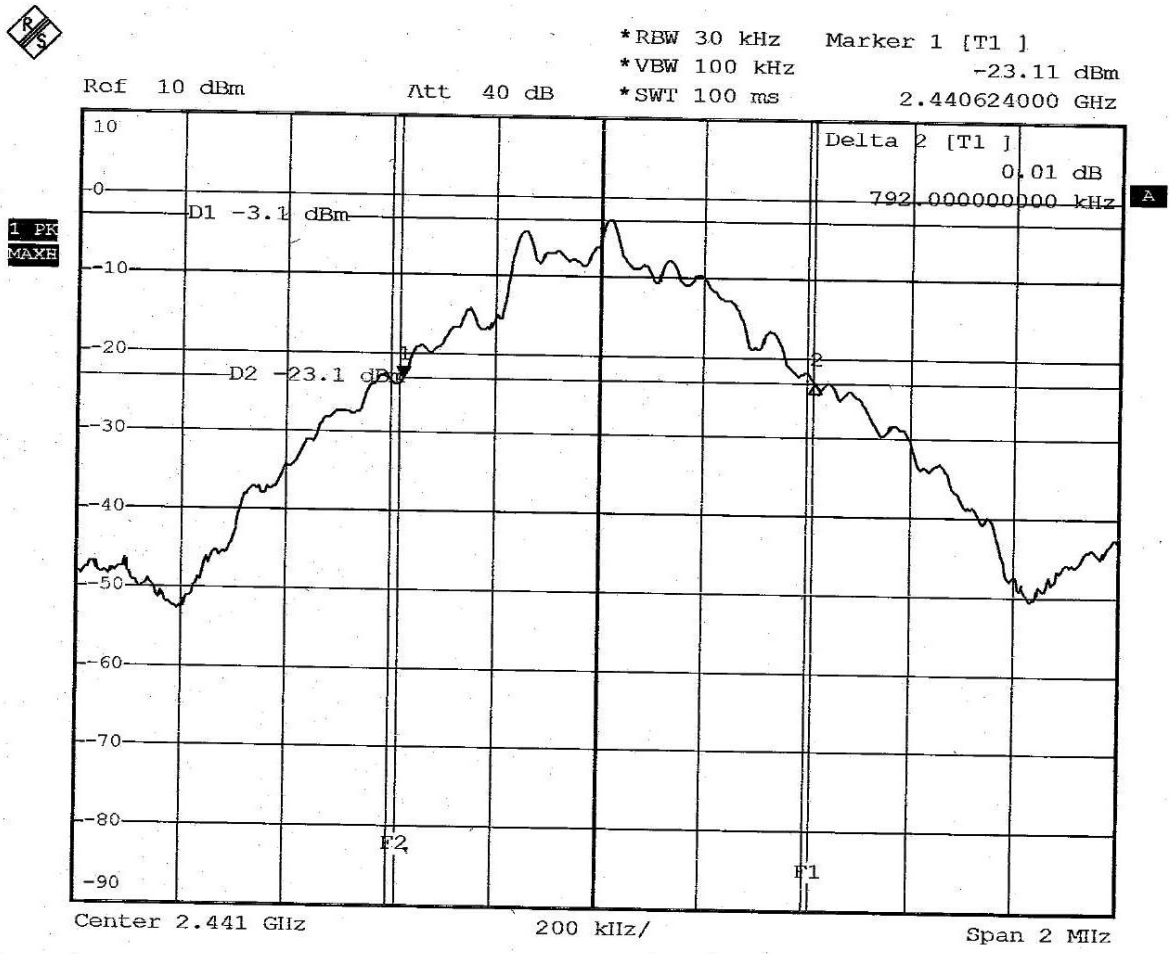
Temperature:	20°C	Humidity:	55%RH
Spectrum Detector:	PK	Tested by:	Julian Chiang
Test Result:	PASS	Tested Date:	Aug. 26, 2005

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	20dB DOWN BW (kHz)
0	2402	796
39	2441	792
78	2480	792

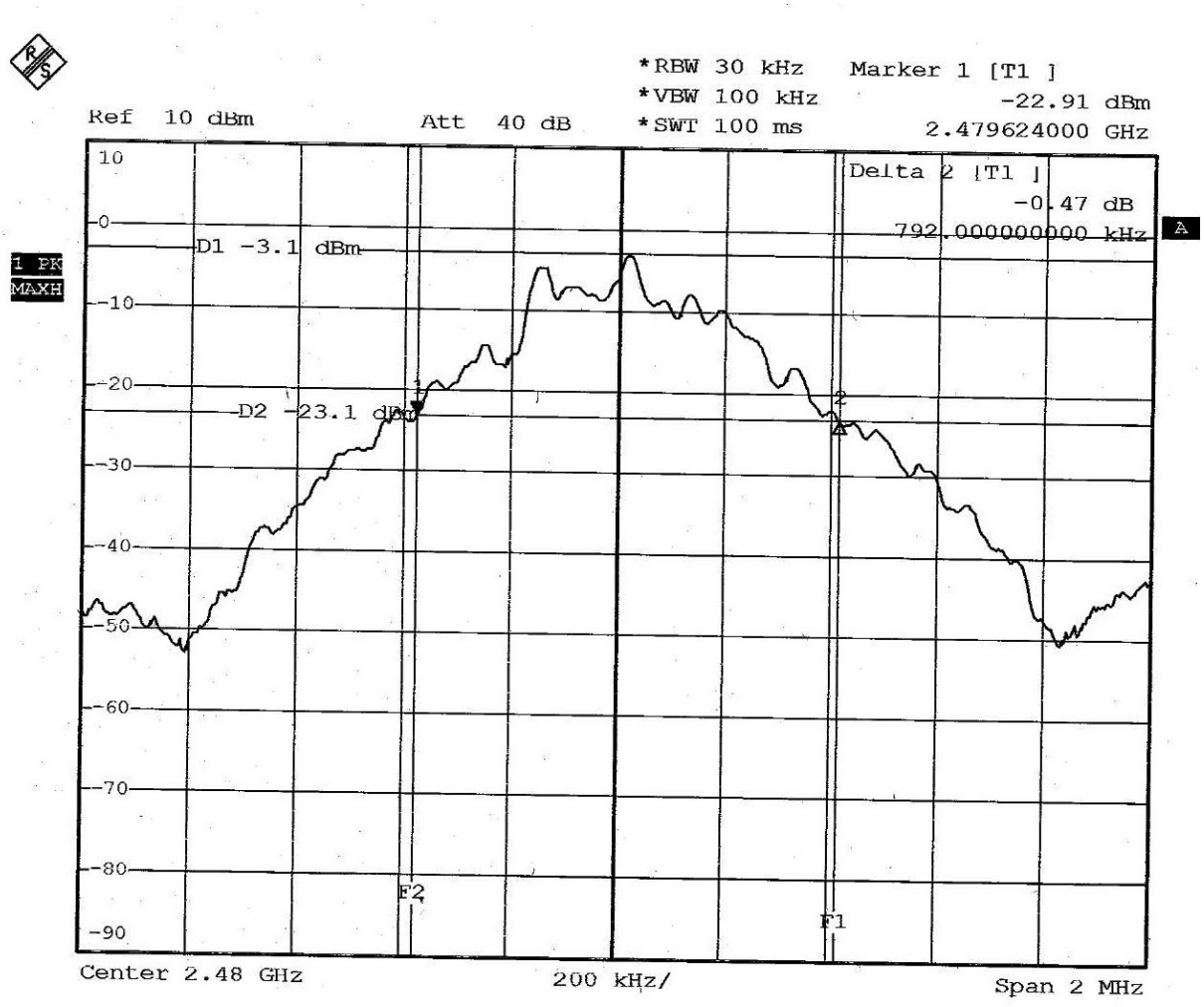
CH0:


*RBW 30 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-24.68 dBm
2.401620000 GHz
Ref 10 dBm
Att 40 dB
Delta 2 [T1]
-0.09 dB
796.000000000 kHz
1 PK
MAXH
A
D1 -4.3 dBm
D2 -24.3 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
F2
F1
Center 2.402 GHz
200 kHz/
Span 2 MHz

Ch39:


*RBW 30 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-23.11 dBm
2.440624000 GHz
Ref 10 dBm
Att 40 dB
Delta 2 [T1]
0.01 dB
792.000000000 kHz
D1 -3.1 dBm
D2 -23.1 dBm
1 PK
MAXH
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
F2
F1
Center 2.441 GHz
200 kHz/
Span 2 MHz

CH78:


*RBW 30 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-22.91 dBm
2.479624000 GHz
Ref 10 dBm
Att 40 dB
Delta 2 [T1]
-0.47 dB
792.000000000 kHz
1 PK
MAXH
A
D1 -3.1 dBm
D2 -23.1 dBm
F2
F1
Center 2.48 GHz
200 kHz/
Span 2 MHz

4.3 QUANTITY OF HOPPING CHANNEL TEST

4.3.1 LIMIT

FCC Part15, Subpart C Section 15.247.

FREQUENCY RANGE (MHz)	Limit (Quantity of Hopping Channel)			
	20dB bandwidth <250kHZ	20dB bandwidth >250kHZ	20dB bandwidth <1MHz	20dB bandwidth >1MHz
902-928	50	25	N/A	N/A
2400-2483.5	N/A	N/A	75	15
5725-5850	N/A	N/A	75	N/A

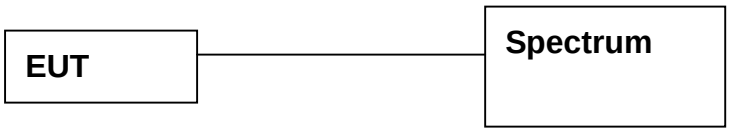
4.3.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.3.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.3.5 EUT OPERATING CONDITION

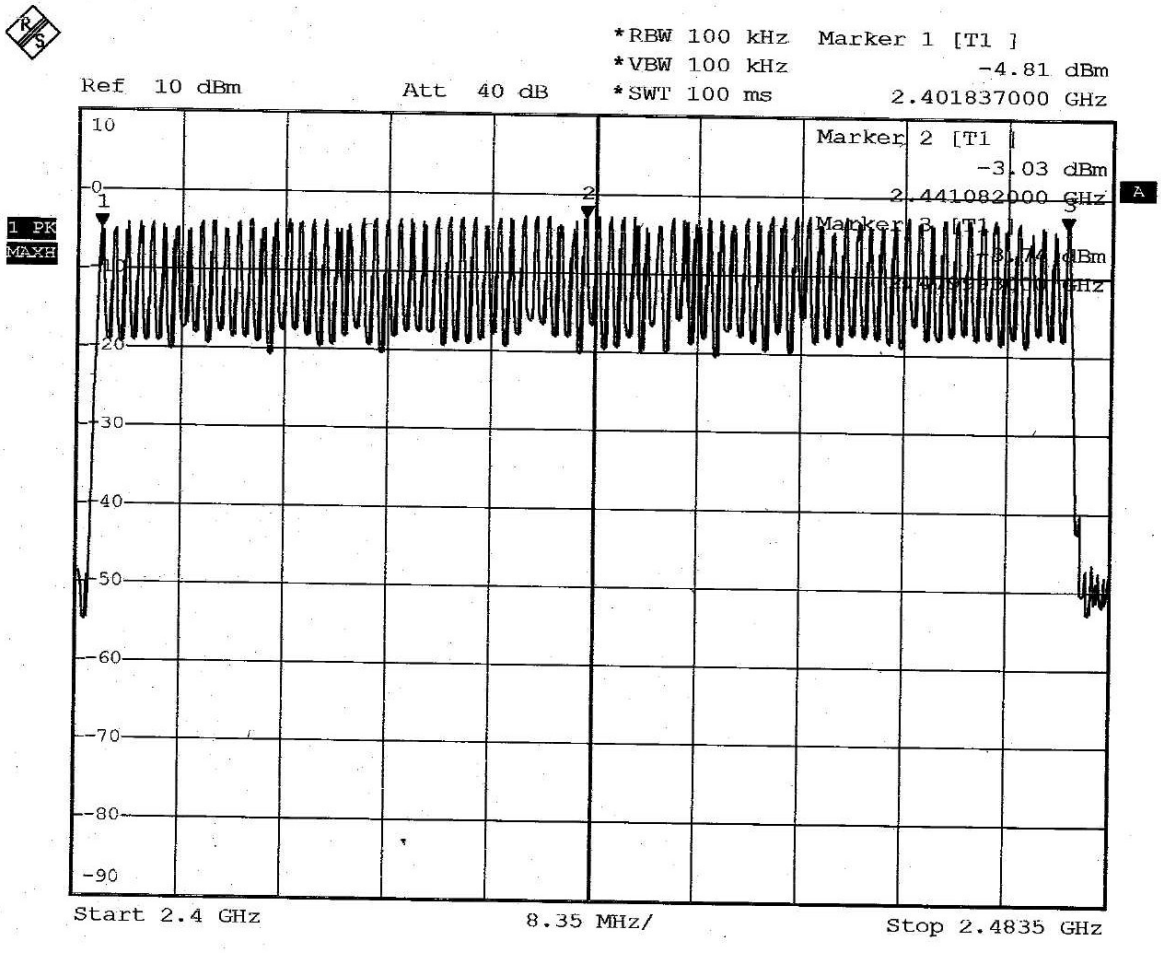
Same as section 4.1.5 of this report.

4.3.6 TEST RESULT

Temperature:	20°C	Humidity:	55%RH
Spectrum Detector:	PK	Tested by:	Julian Chiang
Test Result:	PASS	Tested Date:	Aug. 26, 2005

HOPPING CHANNEL FREQUENCY RANGE	QUANTITY OF HOPPING CHANNEL READ VALUE	QUANTITY OF HOPPING CHANNEL LIMIT
2402~2480	79	75

CH0-CH78



4.4 Time of occupancy (Dwell Time)

4.4.1 LIMIT

FCC Part15, Subpart C Section 15.247.

FREQUENCY RANGE (MHz)	LIMIT (ms)		
	20dB bandwidth <250kHZ(50Channel)	20dB bandwidth >250kHZ(25Channel)	20dB bandwidth <1MHz(75Channel)
902-928	400(20s)	400(10s)	NA
2400-2483.5	NA	NA	400(30s)
5725-5850	NA	NA	400(30s)

NOTE: The "()" is all channel's average time of occupancy.

4.4.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST SET-UP

The EUT was connected to a spectrum through a 50Ω RF cable.

4.4.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.4.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.4.6 TEST RESULT

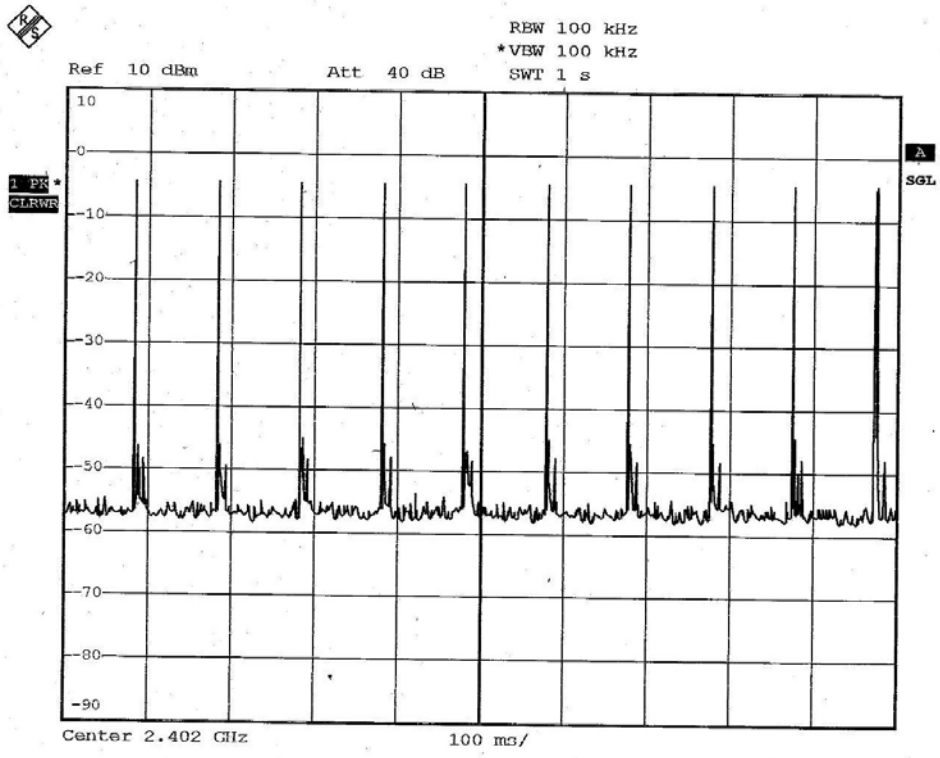
Temperature:	20°C	Humidity:	55%RH
Spectrum Detector:	PK	Tested by:	Julian Chiang
Test Result:	PASS	Tested Date:	Aug.26, 2005

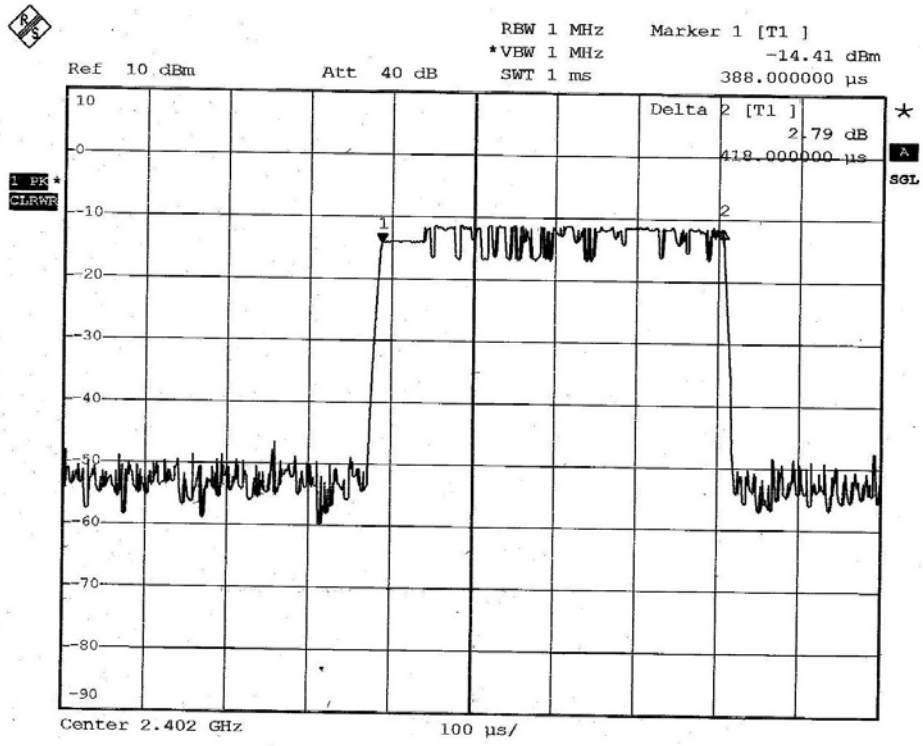
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	Pulse Time (µs)	Burts (in 1 sec.)	Time of occupancy (Dwell Time) (ms)	Average time of occupancy LIMIT (ms)
0	2402.00	418	10	125.4	400
39	2441.00	414	10	124.2	400
78	2480.00	418	10	125.4	400

Note:
Dwell Time:

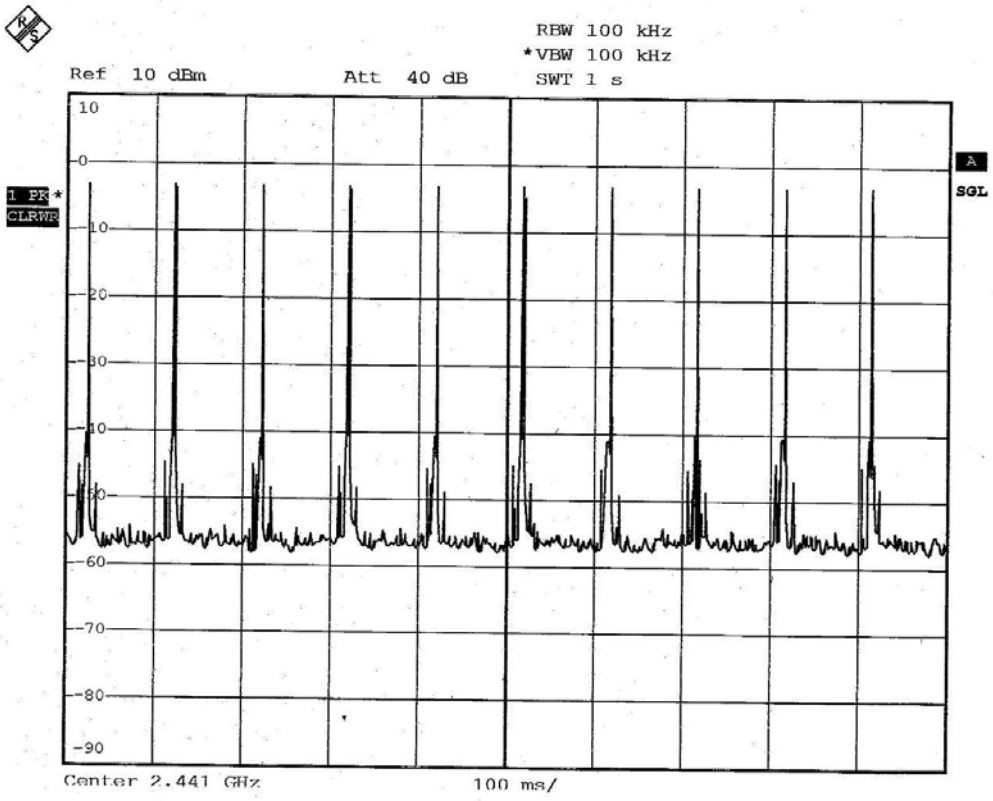
Pulse Time*Burts*0.4*79

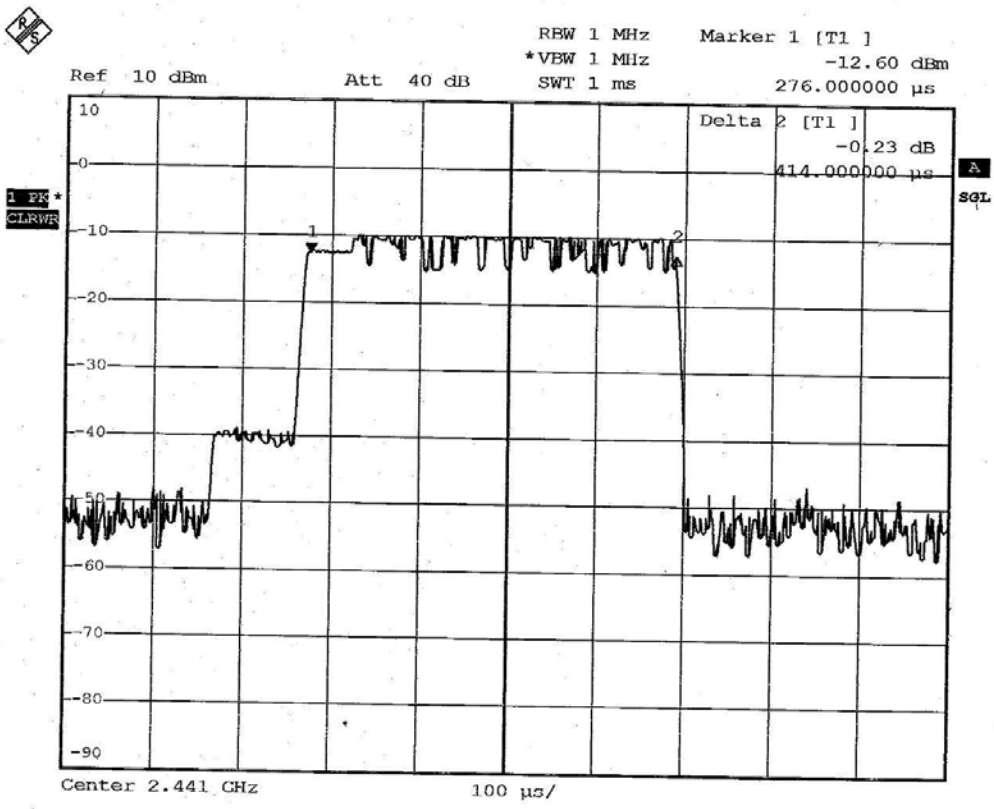
CH0:


RBW 100 kHz
*VBW 100 kHz
Ref 10 dBm
Att 40 dB
SWT 1 s
1 PK*
CLRWR
A
SGL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.402 GHz
100 ms/

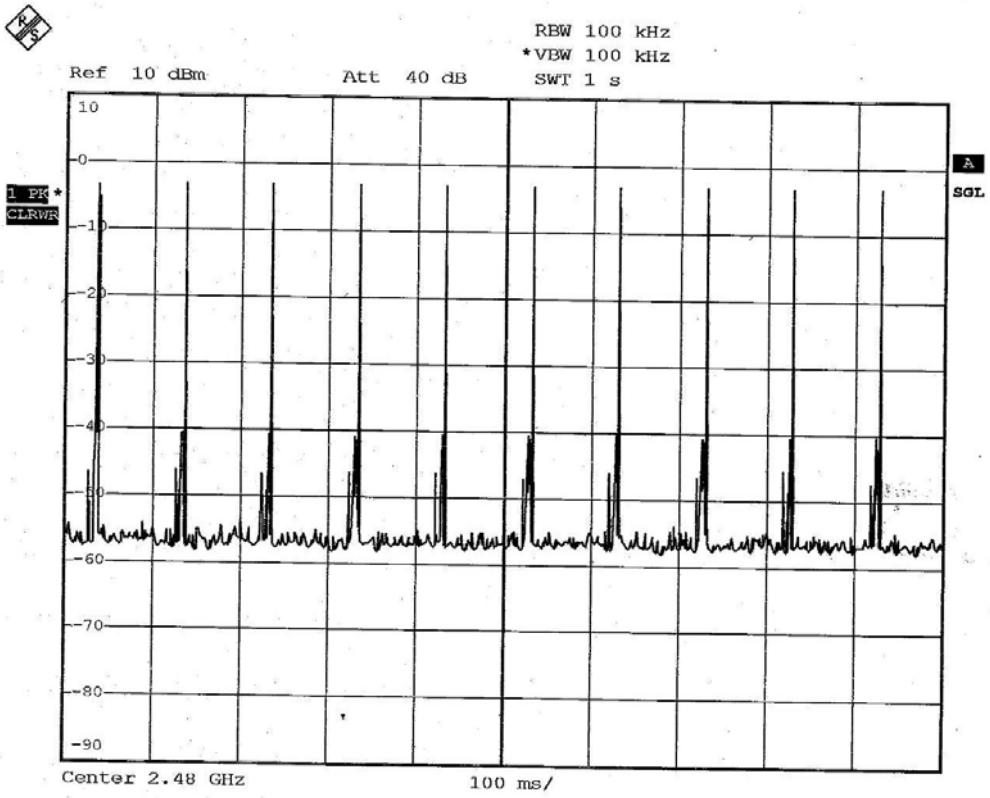

RBW 1 MHz
*VBW 1 MHz
SWT 1 ms
Marker 1 [T1]
-14.41 dBm
388.000000 µs
Delta 2 [T1]
2.79 dB
418.000000 µs
Ref 10 dBm
Att 40 dB
1 PK*
CLRWR
A
SGL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.402 GHz
100 µs/

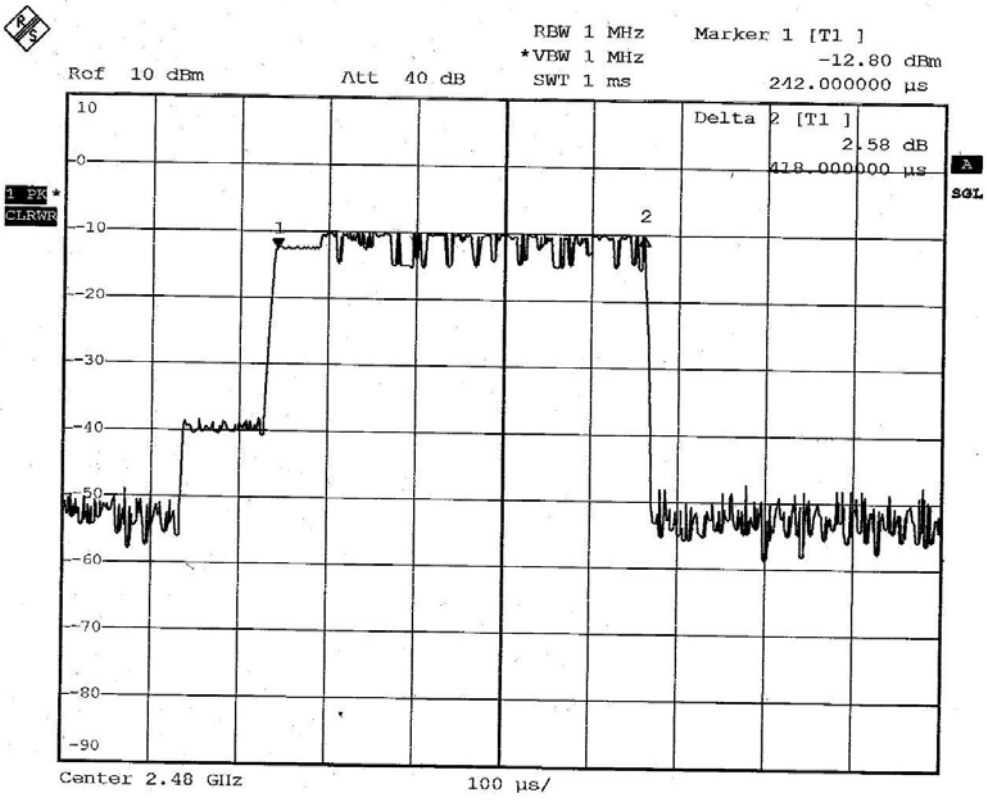
Ch39:


RBW 100 kHz
*VBW 100 kHz
Ref 10 dBm
Att 40 dB
SWT 1 s
1 PK*
CLRWR
A
SGL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.441 GHz
100 ms/


RBW 1 MHz
*VBW 1 MHz
SWT 1 ms
Marker 1 [T1]
-12.60 dBm
276.000000 µs
Delta 2 [T1]
-0.23 dB
414.000000 µs
Ref 10 dBm
Att 40 dB
1 PK*
CLRWR
A
SGL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.441 GHz
100 µs/

CH78:


RBW 100 kHz
*VBW 100 kHz
Ref 10 dBm
Att 40 dB
SWT 1 s
1 PK*
CLRWR
A
SGL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.48 GHz
100 ms/


RBW 1 MHz
*VBW 1 MHz
SWT 1 ms
Marker 1 [T1]
-12.80 dBm
242.000000 µs
Delta 2 [T1]
2.58 dB
418.000000 µs
Ref 10 dBm
Att 40 dB
1 PK*
CLRWR
A
SGL
1
2
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.48 GHz
100 µs/

4.5 PEAK POWER TEST

4.5.1 LIMIT

FCC Part15, Subpart C Section 15.247.

FREQUENCY RANGE (MHz)	LIMIT (W)				
	Quantity of Hopping Channel	50	25	15	75
902-928		1(30dBm)	0.125(21dBm)	NA	NA
2400-2483.5		NA	NA	0.125(21dBm)	1(30dBm)
5725-5850		NA	NA	NA	1(30dBm)

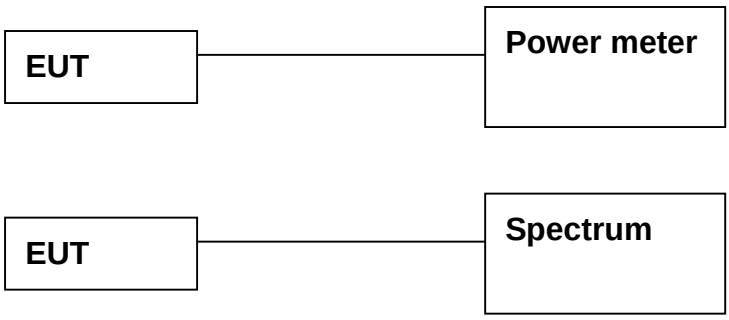
4.5.2 TEST EQUIPMENT

The following test equipment was used during the test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S
POWER METER	N/A	BOONTON	4232A/ 29001	MAY 2006 ETC
POWER SENSOR	DC-18GHz 0.3μW-100mW 50Ω	BOONTON	51011-EMC/ 31184	JUN. 2006 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.5.4 TEST PROCEDURE

The EUT was operating in hopping mode or could control its channel.
Printed out the test result from the spectrum by hard copy function.
Recorded the read value of the power meter.

4.5.5 EUT OPERATING CONDITION

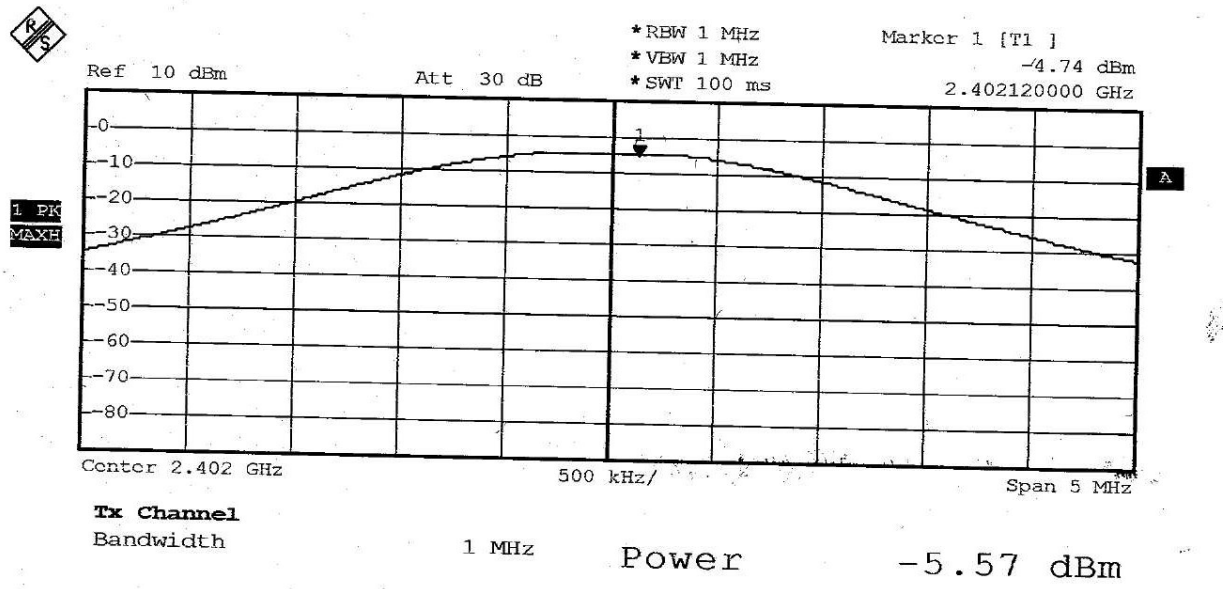
Same as section 4.1.5 of this report.

4.5.6 TEST RESULT

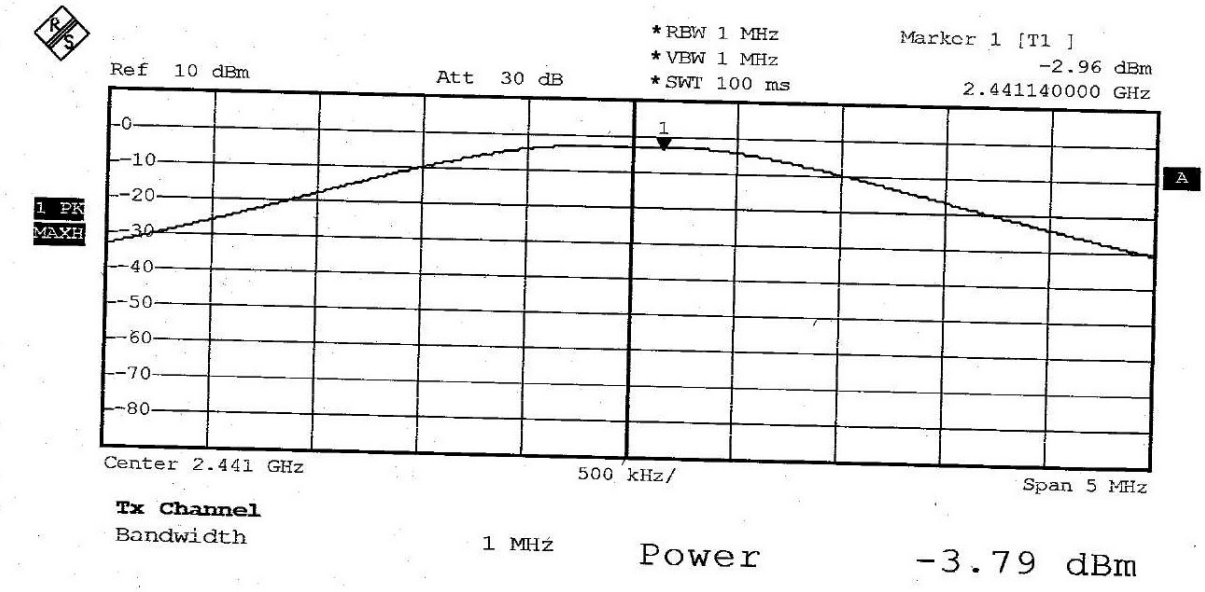
Temperature:	20°C	Humidity:	55%RH
Spectrum Detector:	PK	Tested by:	Julian Chiang
Test Result:	PASS	Tested Date:	Aug. 26, 2005

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)
0	2402.0000	-5.57	30
39	2441.0000	-3.79	30
78	2480.0000	-4.32	30

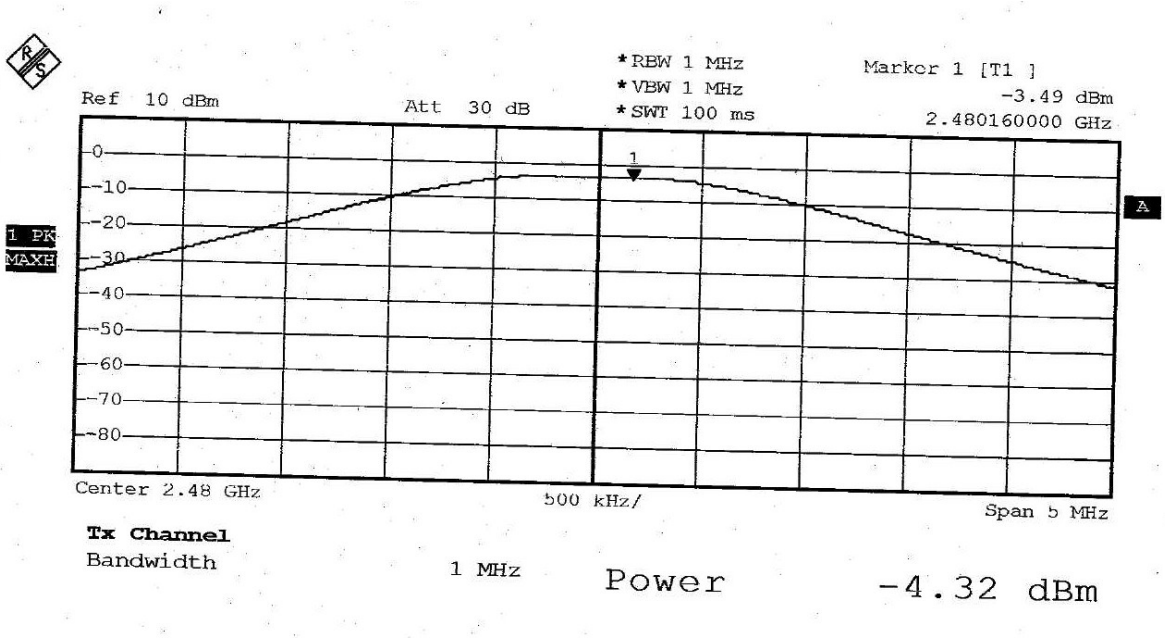
CH0:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-4.74 dBm
2.402120000 GHz
Ref 10 dBm
Att 30 dB
1 PK
MAXH
A
Center 2.402 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-5.57 dBm

CH39:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-2.96 dBm
2.441140000 GHz
Ref 10 dBm
Att 30 dB
1 PK
MAXH
A
Center 2.441 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-3.79 dBm

CH78:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-3.49 dBm
2.480160000 GHz
Ref 10 dBm
Att 30 dB
1 PK
MAXH
A
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.48 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-4.32 dBm