



Spectrum Research & Testing Lab., Inc.

No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A07061510
Report No.: FCCA07061510
FCCID: UDOBSH1310
Page: 1 of 63
Date: Jul. 20, 2007

Product Name: Bluetooth Stereo Headset and Car Kit
Model Number: BSH-1310
Applicant: Sunswell Technology Co., Ltd.
12F-5, No. 398, Huan-Pei Road, Chung-Li 320, Taoyuan,
Taiwan
Date of Receipt: Jun. 15, 2007
Finished date of Test: Jul. 19, 2007
Applicable Standards: 47 CFR Part 15, Subpart C
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.

Tested By:

John Yu
(John Yu)

Date: Jul. 20, 2007

Approved By:

Johnson Ho
(Johnson Ho, Director)

Date: Jul. 22, 2007



TEST REPORT

TABLE OF CONTENTS

1. DOCUMENT POLICY AND TEST STATEMENT.....	4
1.1 DOCUMENT POLICY	4
1.2 TEST STATEMENT	4
1.3 EUT MODIFICATION.....	4
2. DESCRIPTION OF EUT AND TEST MODE	5
2.1 GENERAL DESCRIPTION OF EUT	5
2.2 DESCRIPTION OF SUPPORT UNIT.....	5
2.3 DESCRIPTION OF TEST MODE	6
3. DESCRIPTION OF APPLIED STANDARDS	6
4. TECHNICAL CHARACTERISTICS TEST	7
4.1 CHANNEL SEPARATION TEST	7
4.1.1 LIMIT	7
4.1.2 TEST EQUIPMENT	7
4.1.3 TEST SET-UP.....	7
4.1.4 TEST PROCEDURE.....	7
4.1.5 EUT OPERATING CONDITION.....	8
4.1.6 TEST RESULT.....	8
4.2 20DB BANDWIDTH	12
4.2.2 LIMIT	12
4.2.2 TEST EQUIPMENT	12
4.2.3 TEST SET-UP.....	12
4.2.4 TEST PROCEDURE.....	12
4.2.5 TEST RESULT.....	13
4.3 QUANTITY OF HOPPING CHANNEL TEST	16
4.3.1 LIMIT	16
4.3.2 TEST EQUIPMENT	16
4.3.3 TEST SET-UP.....	16
4.3.4 TEST PROCEDURE.....	16
4.3.5 EUT OPERATING CONDITION.....	16
4.3.6 TEST RESULT.....	17
4.4 TIME OF OCCUPANCY (DWELL TIME).....	18
4.4.1 LIMIT	18
4.4.2 TEST EQUIPMENT	18
4.4.3 TEST SET-UP.....	18
4.4.4 TEST PROCEDURE.....	18
4.4.5 EUT OPERATING CONDITION.....	18
4.4.6 TEST RESULT.....	19
4.5 PEAK POWER TEST	23
4.5.1 LIMIT	23
4.5.2 TEST EQUIPMENT	23
4.5.3 TEST SET-UP.....	24



TEST REPORT

4.5.4	TEST PROCEDURE.....	24
4.5.5	EUT OPERATING CONDITION.....	24
4.5.6	TEST RESULT.....	24
4.6	BAND EDGE TEST	28
4.6.1	LIMIT	28
4.6.2	TEST EQUIPMENT	28
4.6.3	TEST SET-UP.....	29
4.6.4	TEST PROCEDURE.....	30
4.6.5	EUT OPERATING CONDITION.....	30
4.6.6	TEST RESULT.....	30
4.7	FUNDAMENTAL & SPURIOUS RADIATED EMISSION TEST	33
4.7.1	LIMIT	33
4.7.2	TEST EQUIPMENT	34
4.7.3	TEST SET-UP (30MHZ-1GHZ).....	35
4.7.4	TEST PROCEDURE.....	37
4.7.5	EUT OPERATING CONDITION.....	37
4.7.6	TEST RESULT.....	38
4.8	CONDUCTED EMISSION	43
4.8.1	LIMIT	43
4.8.2	TEST EQUIPMENT	43
4.8.3	TEST SETUP	44
4.8.4	TEST PROCEDURE	44
4.8.5	EUT OPERATING CONDITION.....	44
4.8.6	TEST RESULT.....	45
5	88-108MHz(FM) TEST	47
5.1	BANDWIDTH LESS THAN 200KHZ	47
5.1.2	LIMIT	47
5.1.2	TEST EQUIPMENT	47
5.1.3	TEST SET-UP.....	47
5.1.4	TEST PROCEDURE.....	47
5.1.5	TEST RESULT.....	48
5.2	FUNDAMENTAL & SPURIOUS RADIATED EMISSION TEST	51
5.2.1	LIMIT	51
5.2.2	TEST EQUIPMENT	52
5.2.3	TEST SET-UP (30MHZ-1GHZ).....	53
5.2.4	TEST PROCEDURE.....	53
5.2.5	EUT OPERATING CONDITION.....	53
5.2.6	TEST RESULT.....	54
6	ANTENNA APPLICATION	58
6.1	ANTENNA REQUIREMENT	58
6.2	RESULT.....	58
7.	Human Exposure to RF(OET Bulletin 65)	59
8.	PHOTOS OF TESTING	60
9.	TERMS OF ABBREVIATION	63

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:4 of 63 Date: Jul. 20, 2007
---	----------------------	--

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.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:5 of 63 Date: Jul. 20, 2007
---	----------------------	--

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Bluetooth Stereo Headset and Car Kit
MODEL NO.	BSH-1310
POWER SUPPLY	DC 12 V, 0.6A
FREQUENCY RANGE	2402-2480MHz/ FM Band 88-108MHz
MODULATION TECHNOLOGY	FHSS
NUMBER OF CHANNEL	79
CHANNEL SPACING	1 MHz
RATED RF OUTPUT POWER	4 dBm=2.5mW
MODULATION TYPE	GFSK
MODE OF OPERATION	duplex
BIT RATE OF TRANSMISSION	1M bits
ANTENNA TYPE	PCB pattern
ANTENNA GAIN	0 dBi
OPERATING TEMPERATURE	-40~105°C
CHANNEL BANDWIDTH	1MHz

NOTE :

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 mobile phone and FM radio, that 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	Mobile phone	Sony Ericsson	T630	PY7A1021012	N/A
2	DC power supply	Lurich	RPS-1512MB	N/A	1.5m unshielded power cord 1m nnshielded DC power cord
3	FM DC radio	Dong Yuan	DH-603B	N/A	N/A

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

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:6 of 63 Date: Jul. 20, 2007
---	----------------------	--

2.3 DESCRIPTION OF TEST MODE

79 channels are provided by EUT. Three channels of lower, medium and higher were chosen for test.

Channel	Frequency (MHz)
0	2402
39	2448
78	2480

NOTE :

- Below 1 GHz, the channel 0, 39 and 78 were pre-tested in chamber. The channel 78, worst case one, was chosen for radiated emission test.
- 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 mobile phone and FM radio 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

ANSI C63.4: 2003

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

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:7 of 63 Date: Jul. 20, 2007
---	----------------------	--

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

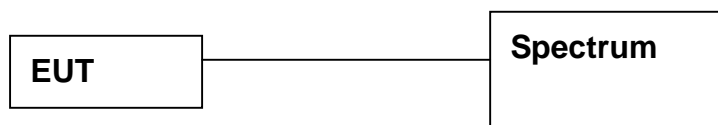
4.1.2 TEST EQUIPMENT

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	MAR. 2008 ETC

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

4.1.3 TEST SET-UP



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

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:8 of 63 Date: Jul. 20, 2007
---	----------------------	--

4.1.5 EUT OPERATING CONDITION

1. Set the EUT under transmission condition continuously at a specific channel frequency.
2. The EUT was set to the highest available power level.

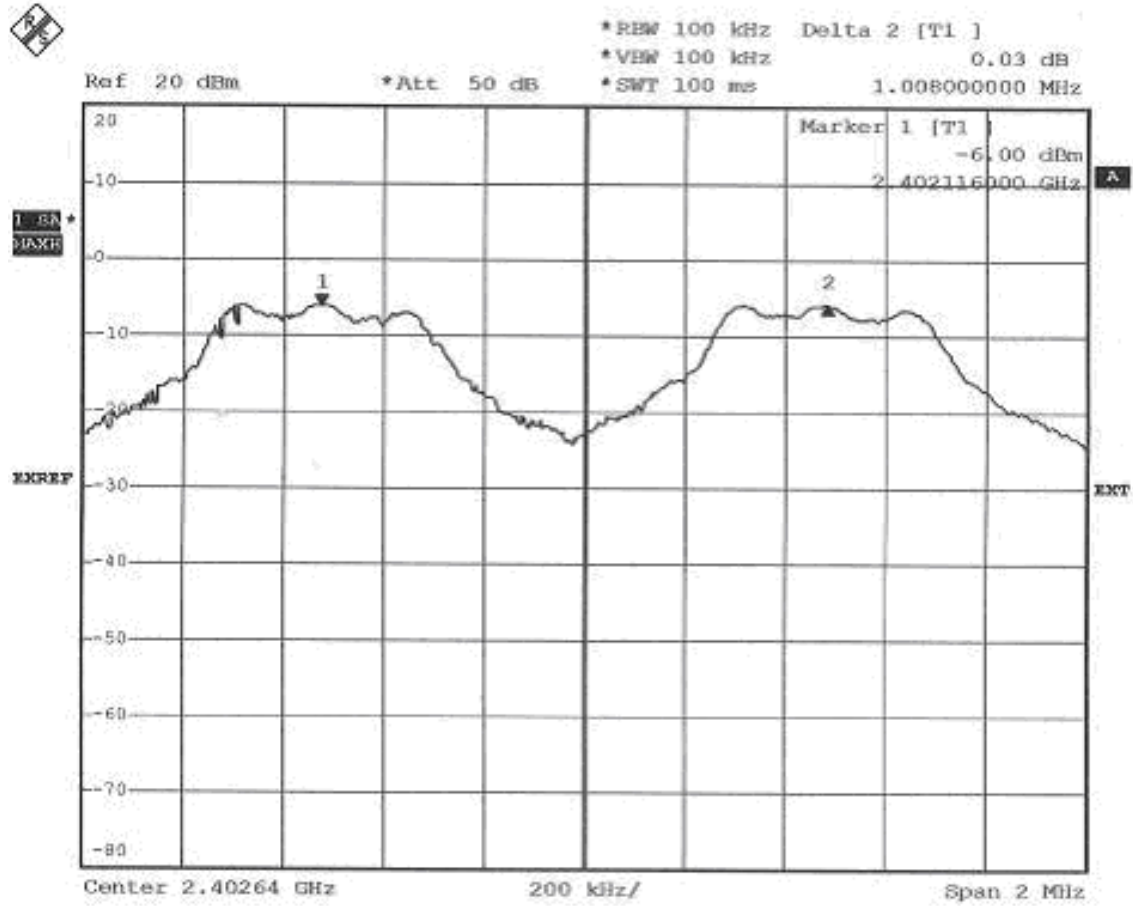
4.1.6 TEST RESULT

Temperature:	25°C	Humidity:	65%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jun. 25, 2007

Channel Number	Channel Frequency (MHz)	Separation Read Value (kHz)	Minimum Limit(20dB Bandwidth) (kHz)
0	2402	1008.000	25
39	2441	1000.000	25
78	2480	1000.000	25



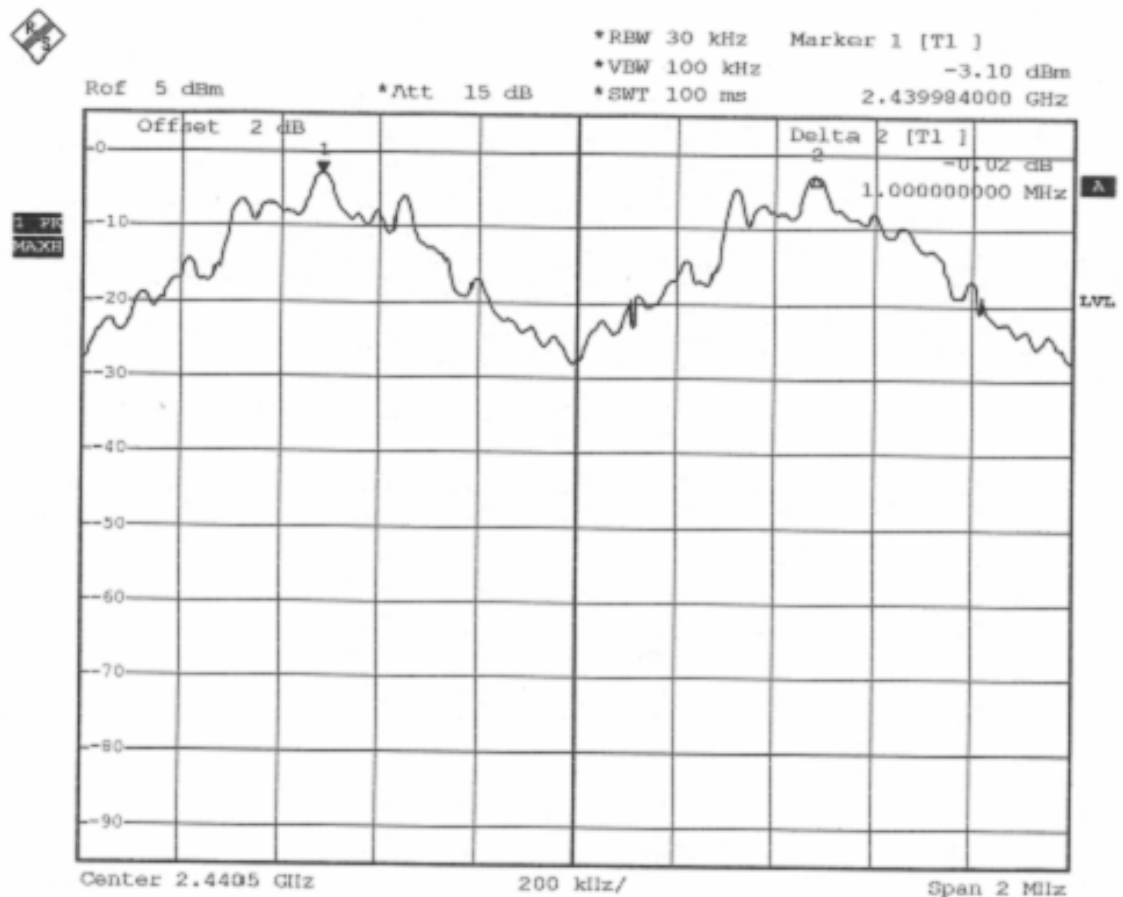
CH0:





TEST REPORT

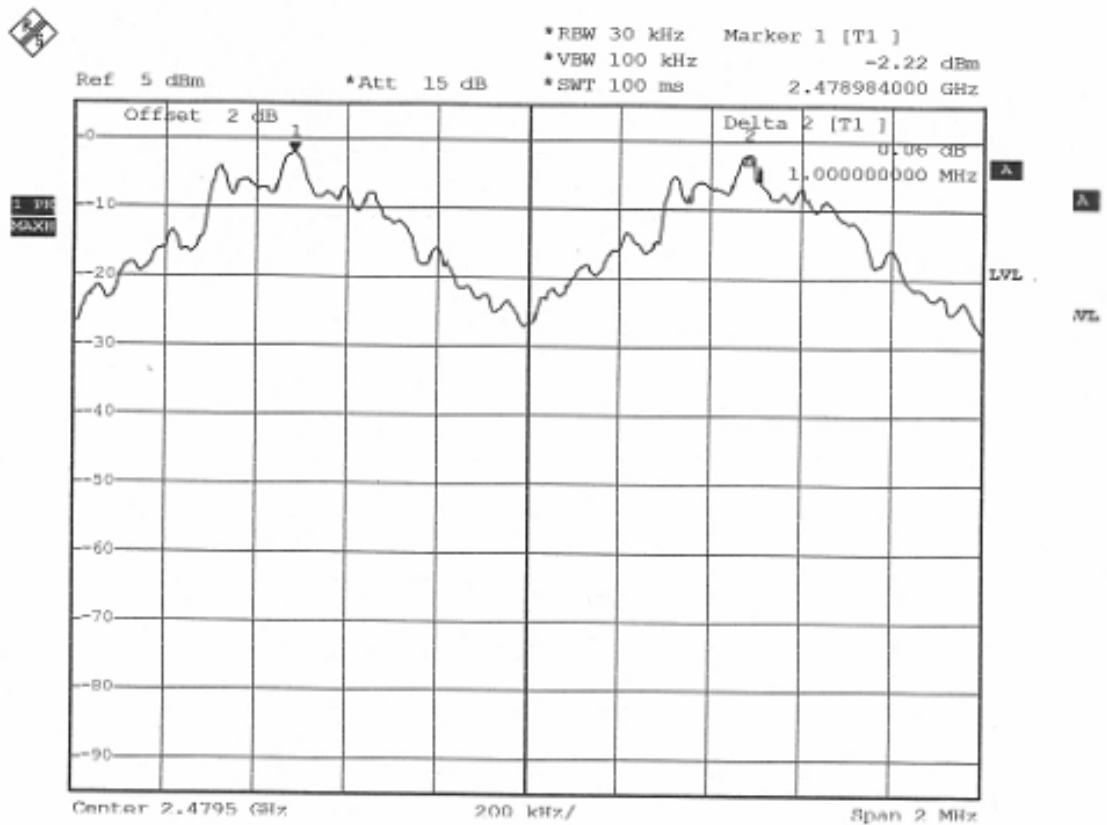
CH39:





TEST REPORT

CH78:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:12 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.2 20dB Bandwidth

4.2.2 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

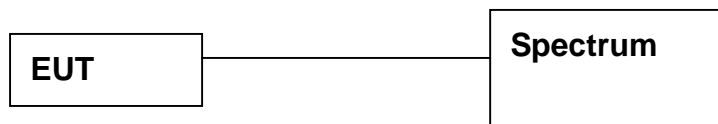
4.2.2 TEST EQUIPMENT

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. 2008 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 operated in hopping mode or any specific channel.
 Printed out the test result from the spectrum by hard copy function.



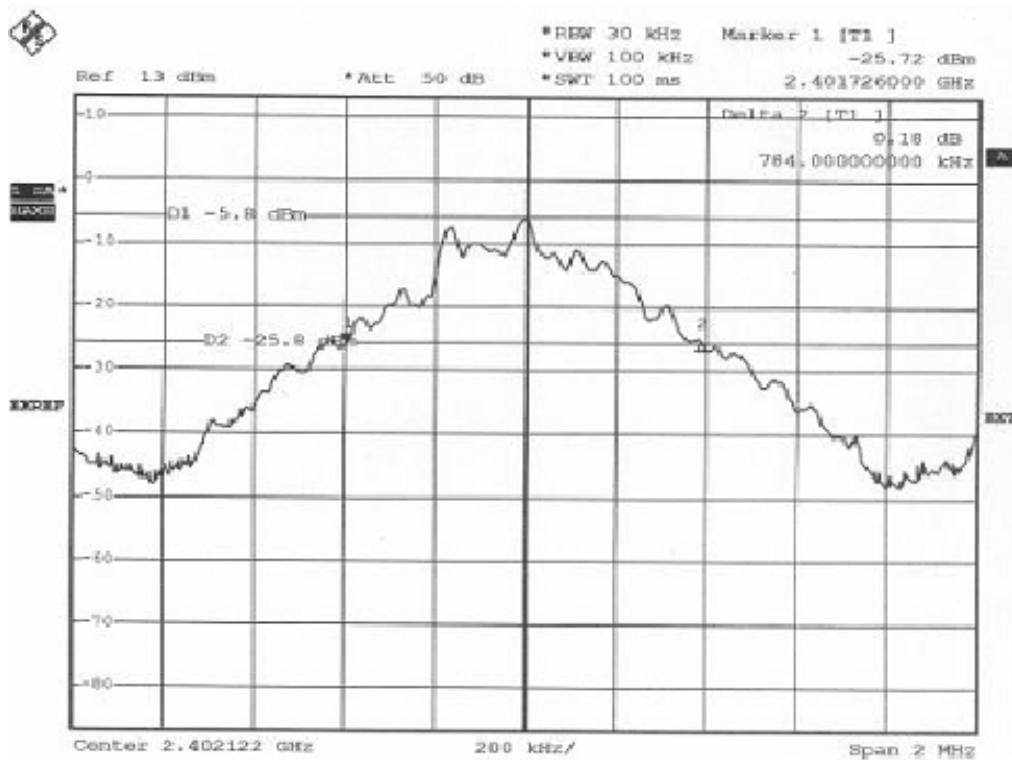
TEST REPORT

4.2.5 TEST RESULT

Temperature:	24°C	Humidity:	62%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jun.27, 2007

Channel Number	Channel Frequency (MHz)	20dB Down Bandwidth (kHz)
0	2402	784
39	2441	788
78	2480	804

CH0:





CH39:





TEST REPORT

CH78:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:16 of 63 Date: Jul. 20, 2007
---	----------------------	---

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

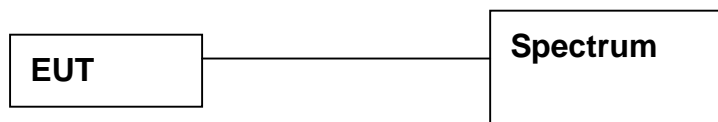
4.3.2 TEST EQUIPMENT

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	MAR. 2008 ETC

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

4.3.3 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

1. Set the EUT under frequency hopping transmission condition.
2. The EUT was set to the highest available power level.



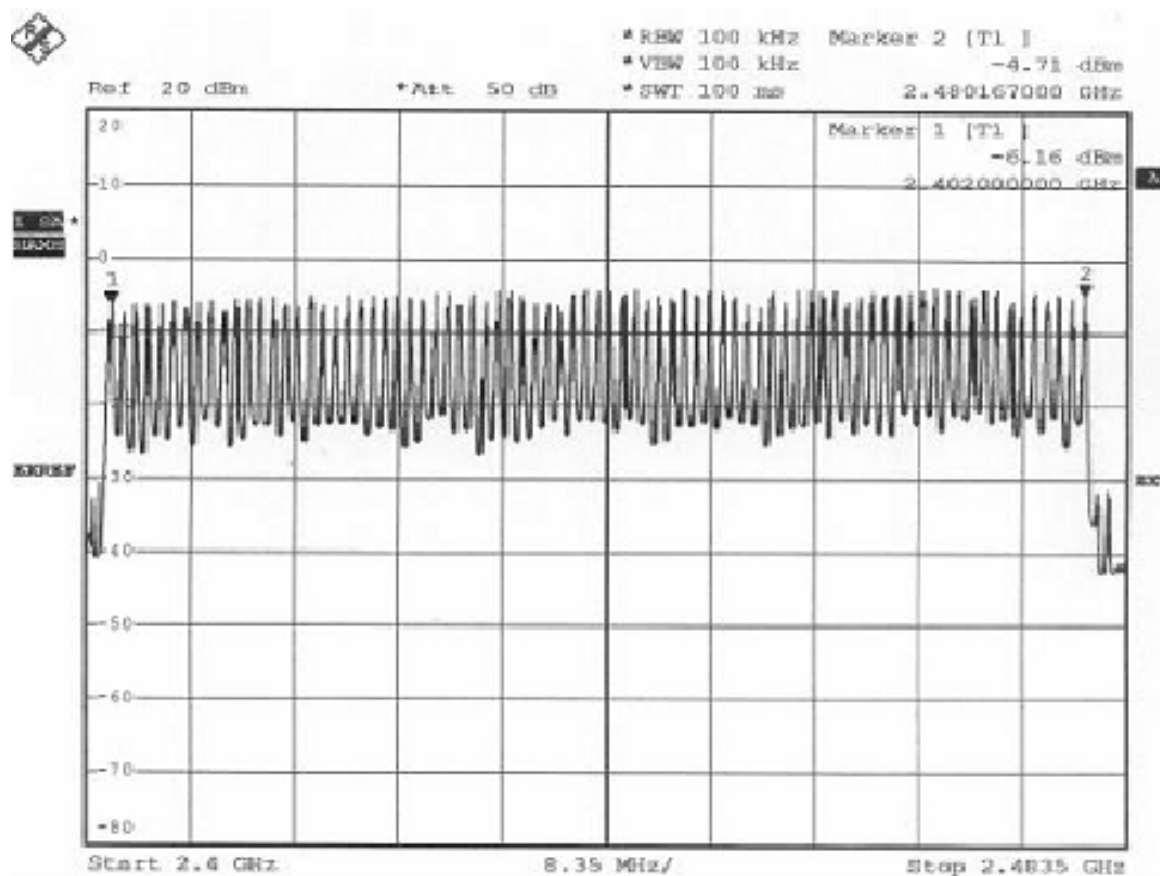
TEST REPORT

4.3.6 TEST RESULT

Temperature:	24°C	Humidity:	63%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jul. 02,2007

Hopping Channel Frequency Range(MHz)	Quantity of Hopping Channel Read Value	Quantity of Hopping Channel Limit
2402~2480	79	75

CH0-CH78



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:18 of 63 Date: Jul. 20, 2007
---	----------------------	---

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.

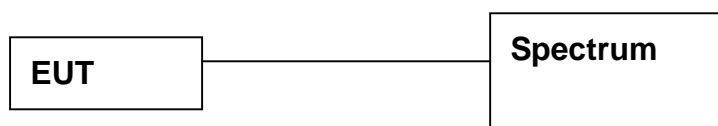
4.4.2 TEST EQUIPMENT

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	MAR. 2008 ETC

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

4.4.3 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

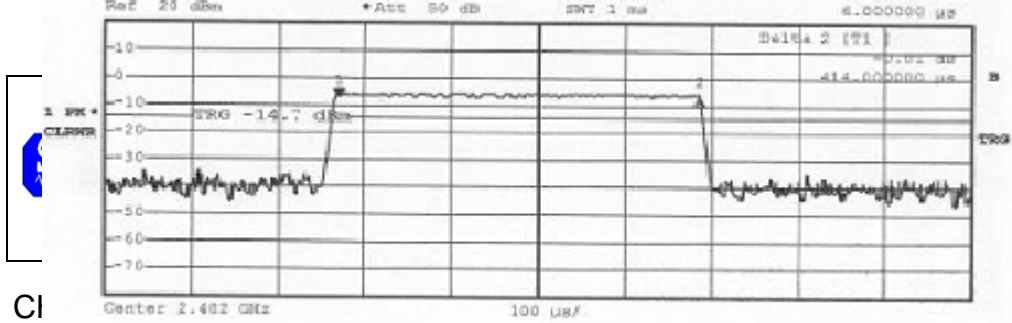
Same as section 4.1.5 of this report.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:19 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.4.6 TEST RESULT

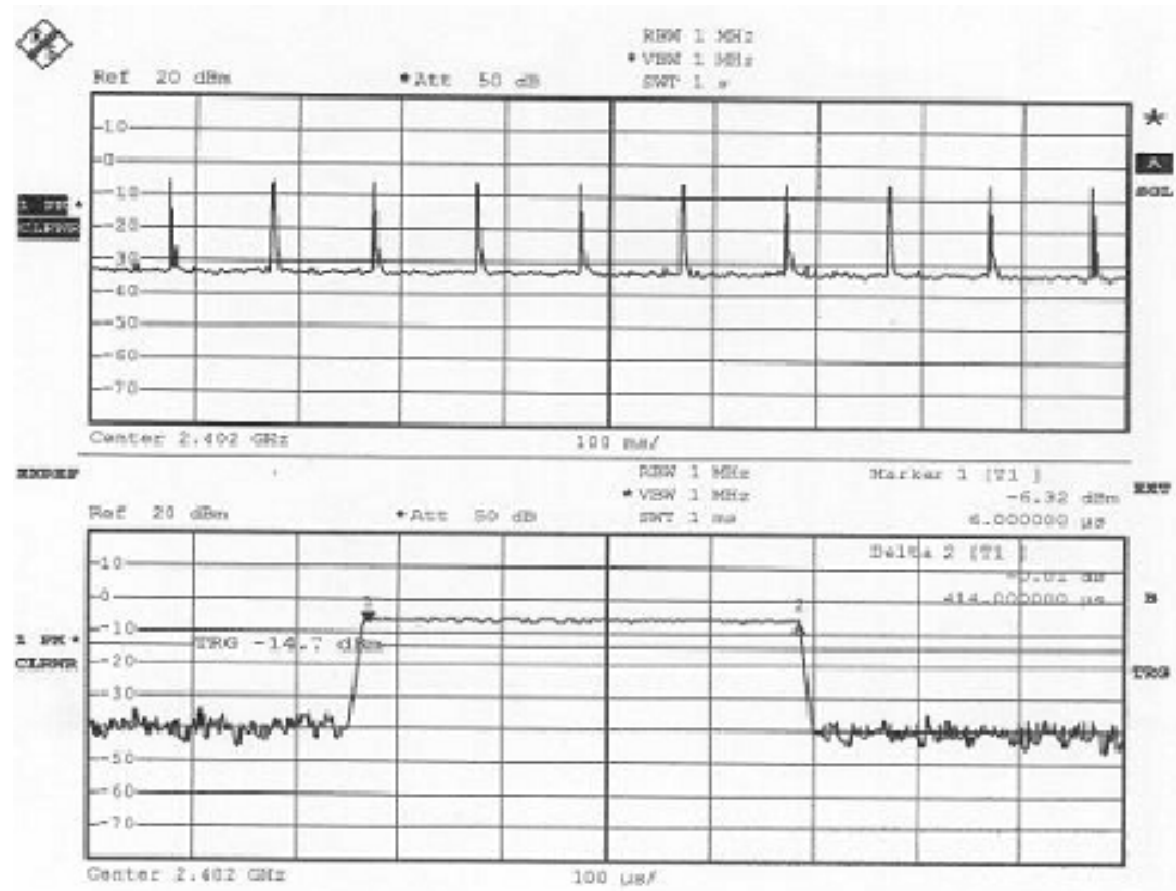
Temperature:	25°C	Humidity:	62%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jul. 09, 2007

Channel Number	Channel Frequency (MHz)	Pulse Time (μs)	Period Time (s)	Time of Occupancy (Dwell Time) (ms)	Average Time of Occupancy Limit (ms)
0	2402.00	414	31.6	130.8	400
39	2441.00	414	31.6	130.8	400
78	2480.00	414	31.6	130.8	400



07061510
A07061510
-1310

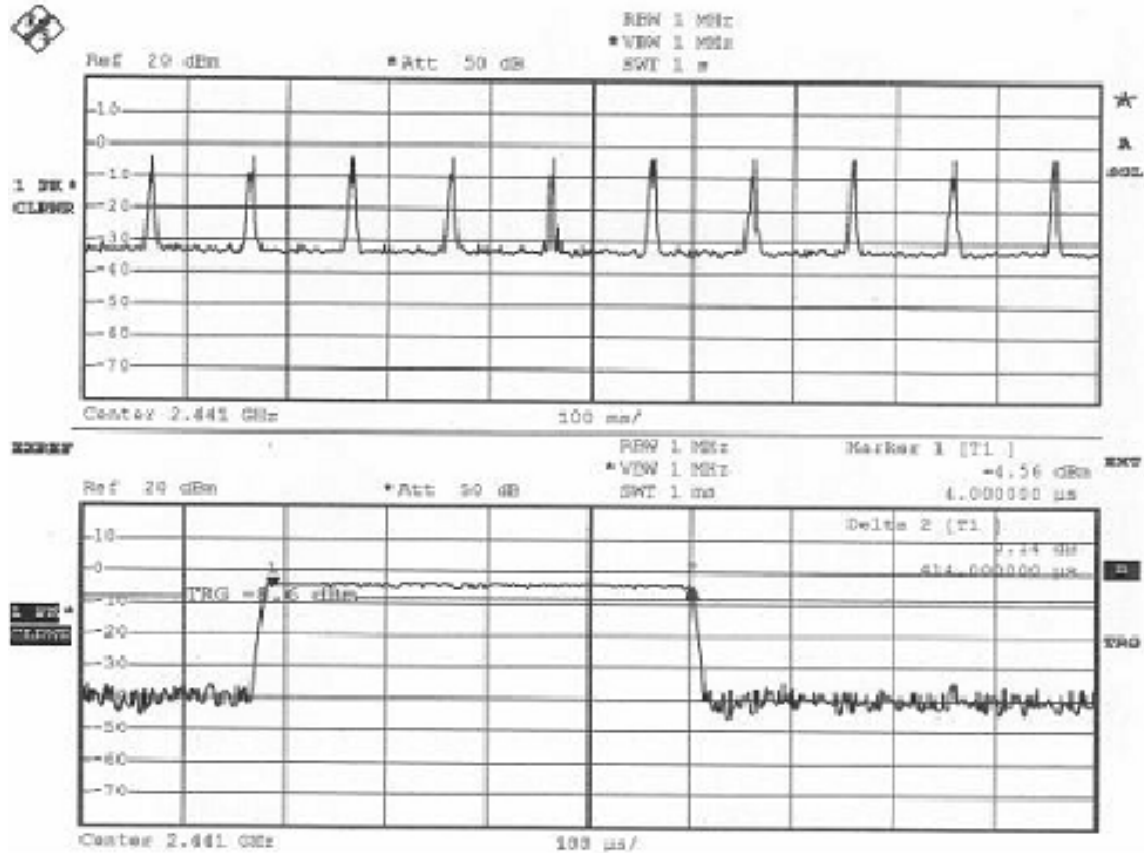
07





TEST REPORT

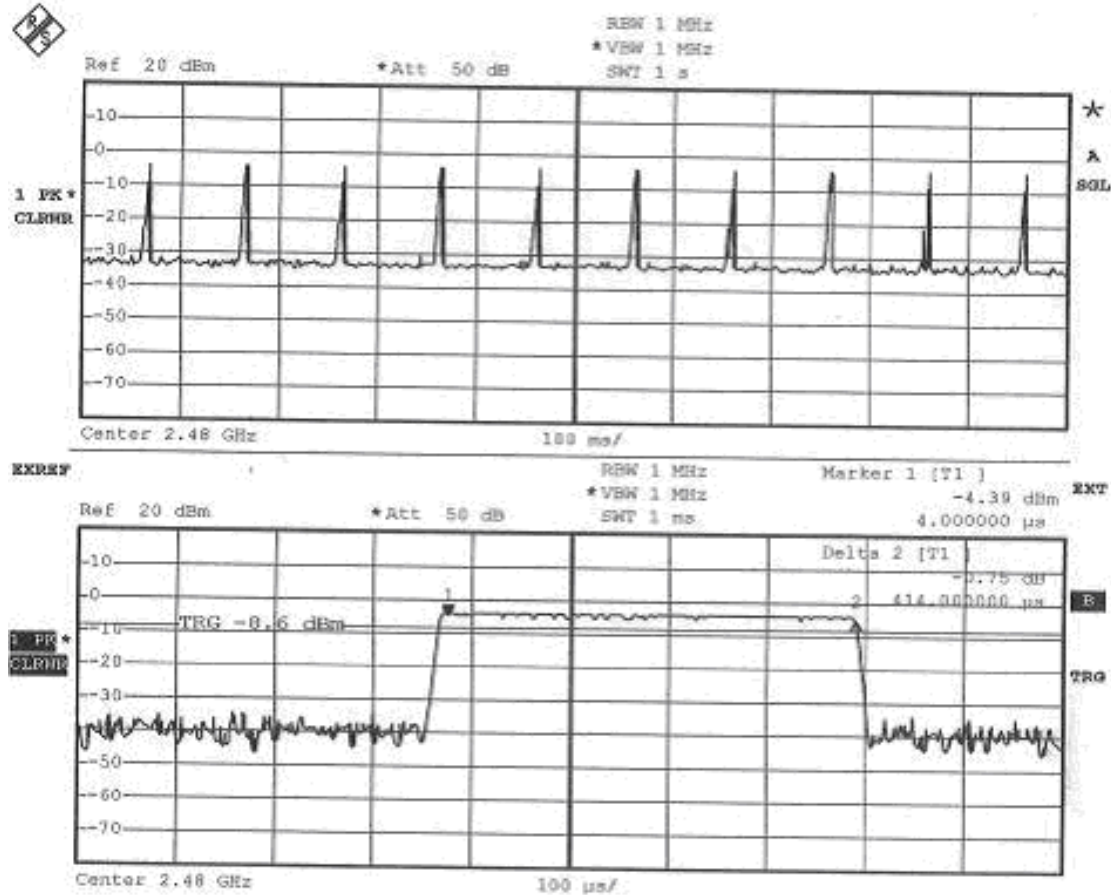
Ch39:





TEST REPORT

CH78:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:23 of 63 Date: Jul. 20, 2007
---	----------------------	---

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

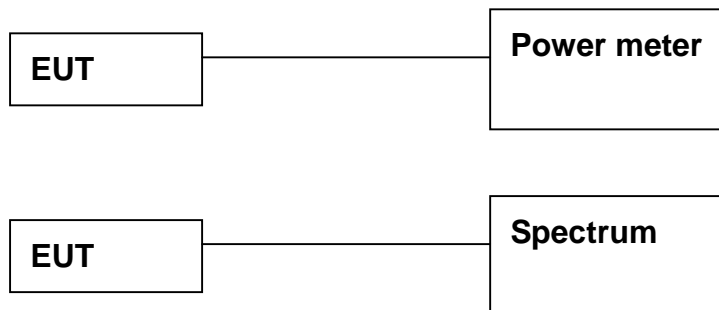
The following test equipment was used during the test :

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	MAR. 2008 ETC
POWER METER	N/A	BOONTON	4232A/ 29001	MAY 2008 ETC
POWER SENSOR	DC-18GHz 0.3 μ W-100mW 50 Ω	BOONTON	51011-EMC/ 31184	JUN. 2008 ETC

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

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:24 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.5.3 TEST SET-UP



The EUT was connected to a spectrum through a 50 Ω 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

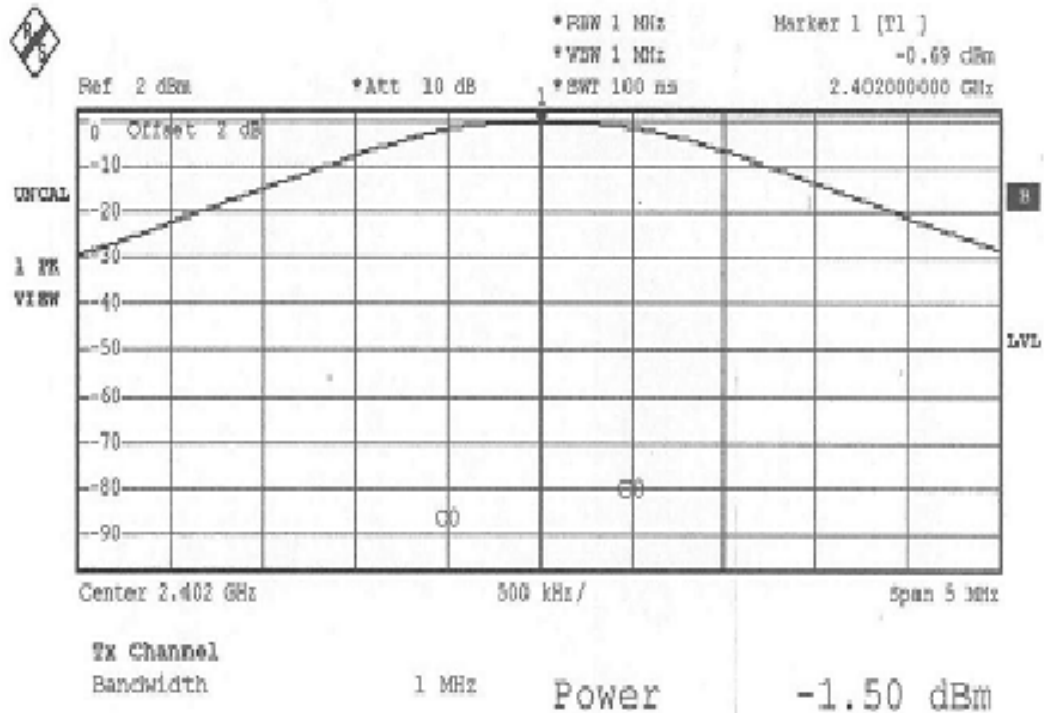
Temperature:	26°C	Humidity:	56%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jul.12, 2007

Channel Number	Channel Frequency (MHz)	Peak Output Power (dBm)	Peak Power Limit (dBm)
0	2402.0000	-1.50	30
39	2441.0000	-2.87	30
78	2480.0000	-2.19	30



TEST REPORT

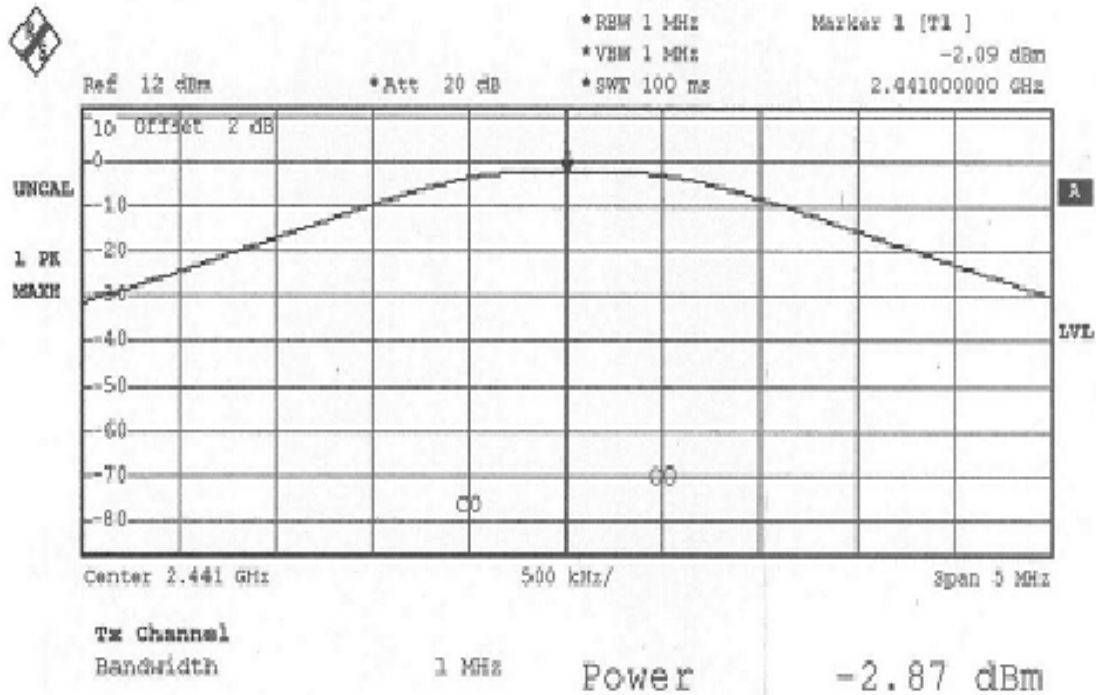
CH0:





TEST REPORT

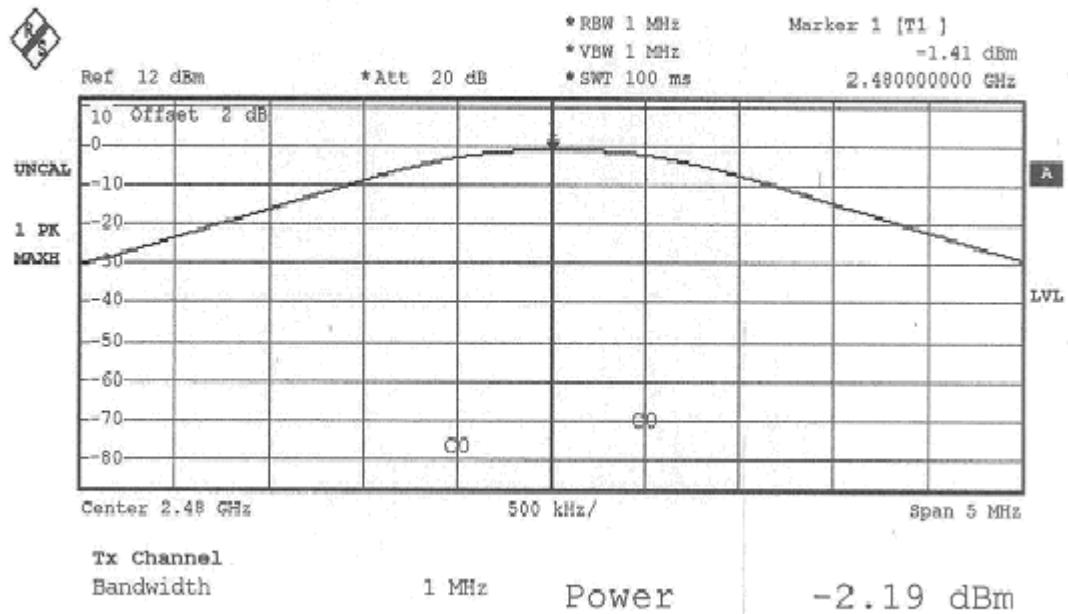
CH39:





TEST REPORT

CH78:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:28 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.6 BAND EDGE TEST

4.6.1 LIMIT

FCC Part15, Subpart C Section 15.249 (c), Emission radiated outside of the specified frequency bands, except for harmonics, shall attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Operating Frequency Range (MHz)	Limit (dBμV/m)	
	Peak	Average
902-928	74	54
2400-2483.5		
5725-5850		

4.6.2 TEST EQUIPMENT

The following test equipment was used during the test :

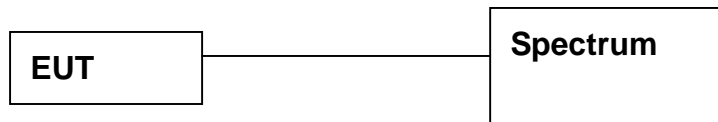
Equipment/ Facilities	Specification	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2007 ETC
SPECTRUM	9KHz-26.5GHz	HP	8953E/ 3710A03220	MAY 2008 ETC
PRE-AMPLIFIER	1GHz-26.5GHz Gain:30dB	HP	8449B/ 3008A01019	NOV. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3142/ 9701-1124	FEB. 2008 SRT
HORN ANTENNA	1GHz to 18GHz	EMCO	3115/ 9602-4681	DEC. 2007 ETC
OATS	3 - 10 M measurement	SRT	SRT-1	APR. 2008 SRT

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



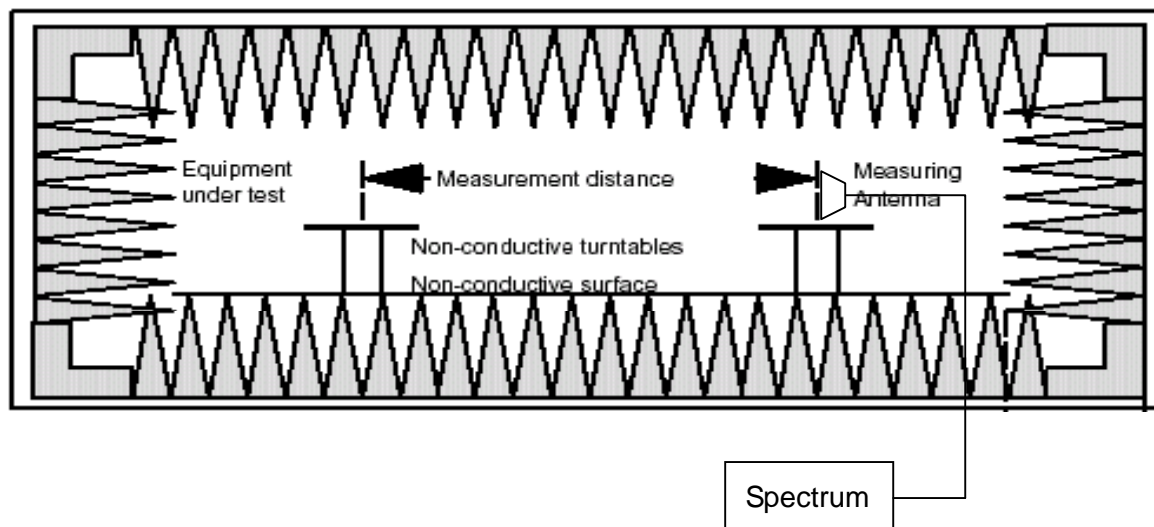
4.6.3 TEST SET-UP

FOR RF CONDUCTED TEST (dBc)



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

FOR RADIATED EMISSION TEST



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:30 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.6.4 TEST PROCEDURE

1. 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.
2. The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.6.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.6.6 TEST RESULT

Temperature:	25°C	Humidity:	61%RH
Spectrum Detector:	PK & AV	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jul. 14, 2007

1. Conducted test

Frequency (MHz)	PEAK POWER OUTPUT (dBm)	Emission read Value(dBm)	Result of Band edge (dBc)	Band edge LIMIT (dBc)
<2400	-7.89	-37.65	34.40	>20dBc
>2483.5	-5.69	-42.36	37.53	>20dBc

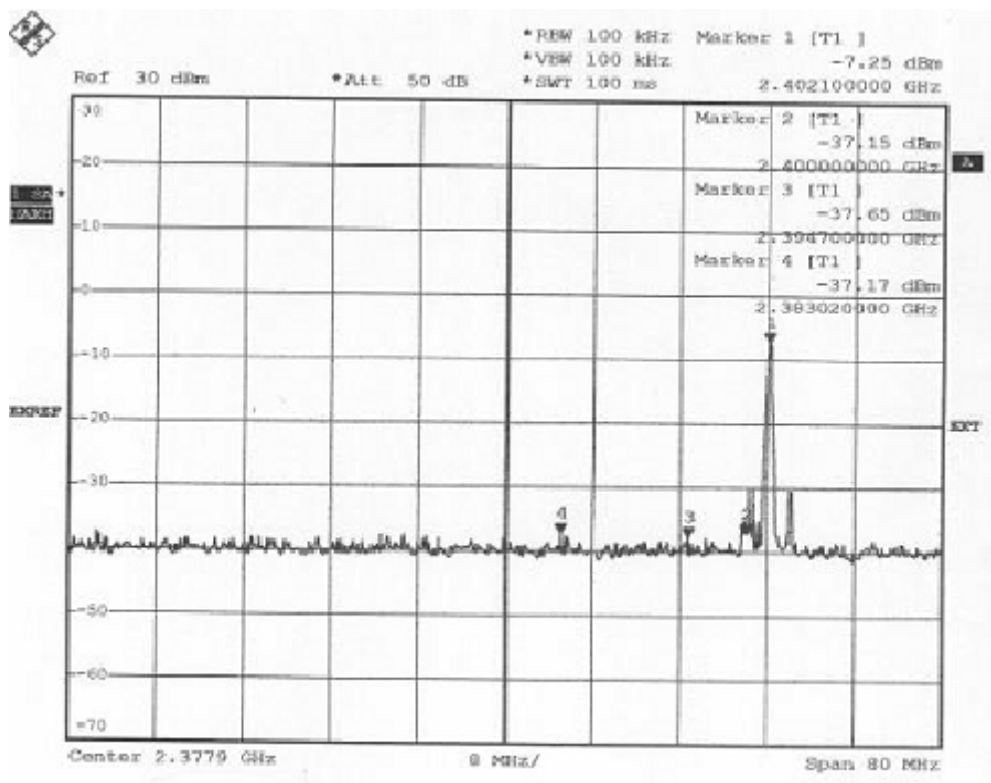
2. Radiated emission test

Frequency (MHz)	Antenna polarization (H/V)	PEAK POWER OUTPUT (dBuV/m)		Emission read Value(dBuV/m)		Band edge Limit (dBuV/m)	
		PK	AV	PK	AV	PK	AV
CH0	H	54.5	44.4	50.3	40.2	74.0	54.0
CH78	V	56.0	43.8	52.0	39.8	74.0	54.0



TEST REPORT

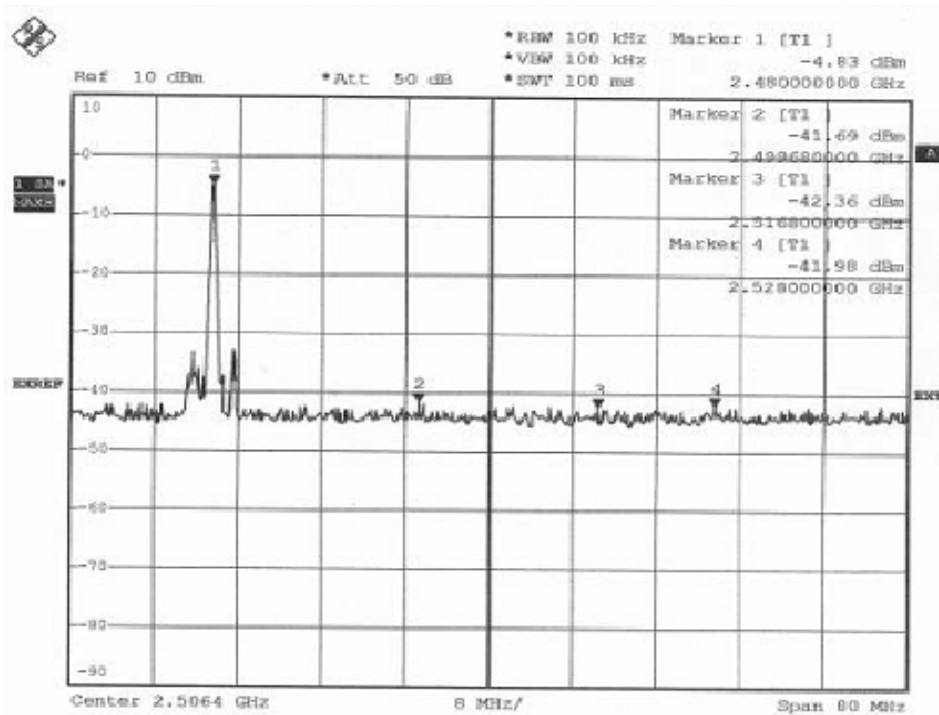
Ch0:





TEST REPORT

Ch78:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:33 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.7 FUNDAMENTAL & SPURIOUS RADIATED EMISSION TEST

4.7.1 LIMIT

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Distance (m)	Field Strength (dB μ V/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

NOTE : 1. In the emission tables above , the tighter limit applies at the band edges.

2. Distance refers to the distance between measuring instrument , antenna , and the closest point of any part of the device or system.

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

Frequency (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

FCC Part 15, Subpart C Section 15.249. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Filed Strength of Fundamental (dBuV/m) (at 3m)		Field Strength of Harmonics (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
902-928	114	94	74.0	54.0
2400-2483.5	114	94	74.0	54.0
5725-5875	114	94	74.0	54.0
24000-24250	128	108	88.0	68.0

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:34 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.7.2 TEST EQUIPMENT

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

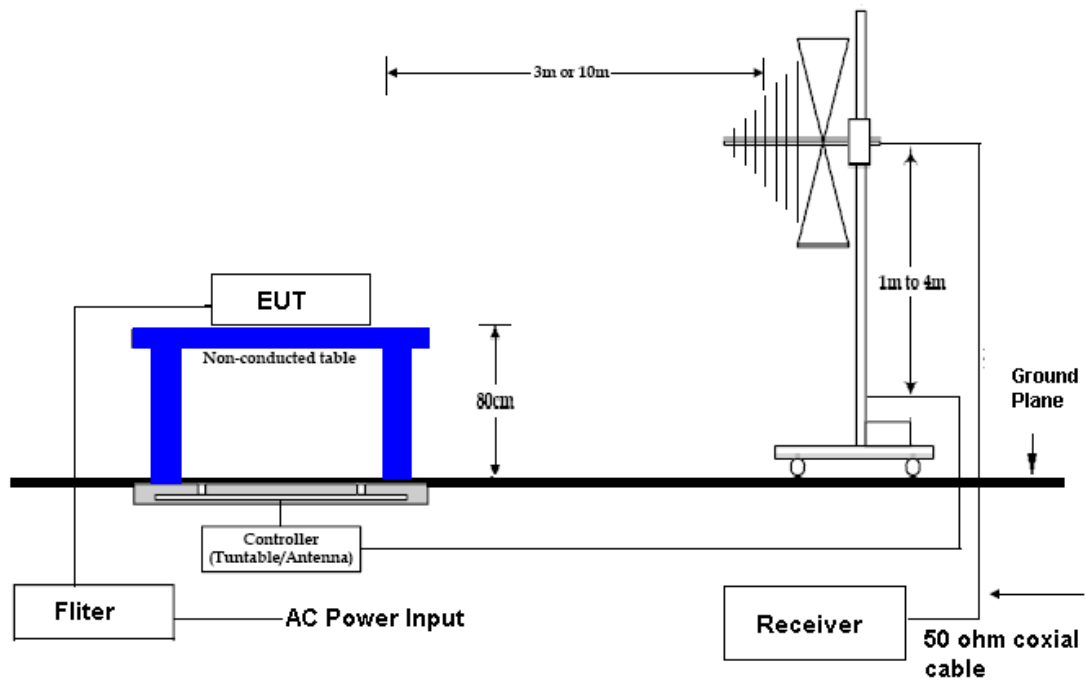
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2007 ETC
SPECTRUM ANALYZER	9KHz TO 26.5GHz	HP	8593E/ 3710A03220	JULY, 2008 ETC
HORN ANTENNA	1GHz TO 18GHz	EMCO	3115/9012-3619	JAN, 2008 ETC
PREAMPLIFIER	1GHz TO 26.5GHz	HP	8449B/ 3008A01019	SEP. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3143 9509-1152	NOV. 2007 SRT
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2007 SRT
COAXIAL CABLE	25M	SUNCITY	J400/ 25M	JUN. 2008 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943/ 869	N/A

NOTE:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.



4.7.3 TEST SET-UP (30MHz-1GHz)

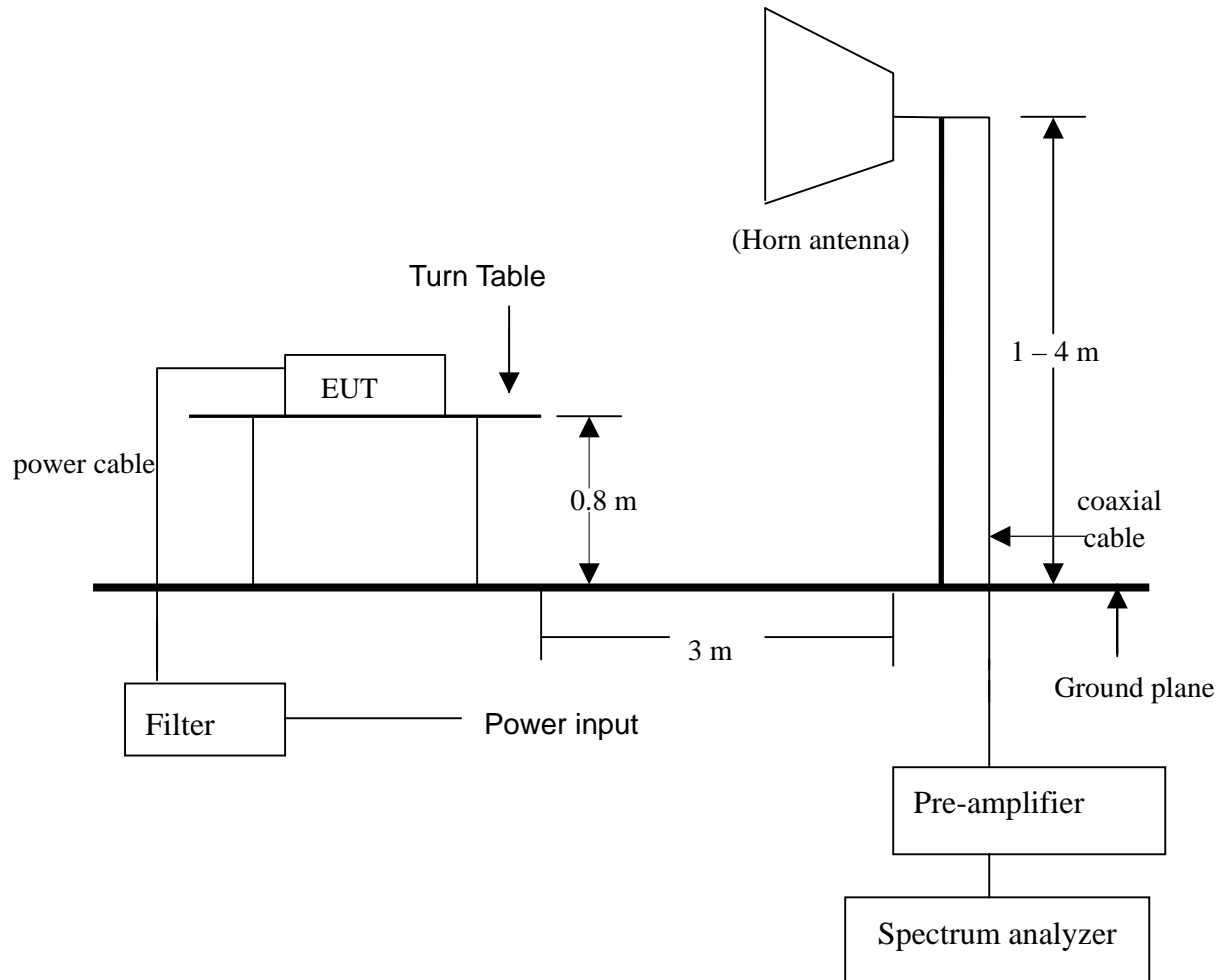


NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.



TEST SET- UP (1GHz – 12.5GHz)



NOTE :

- 1.The EUT system was put on a wooden table with 0.8m heights above a ground plane.
- 2.For the actual test configuration, please refer to the photos of testing.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:37 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.7.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.7.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:38 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.7.6 TEST RESULT

Temperature:	22°C	Humidity:	64 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	Link
Tested By:	John Yu	Tested Date:	Jul. 16, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
164.6100	2.24	9.91	8.8	20.9	43.5	-22.6	224	1.12
196.7400	2.52	10.04	7.4	20.0	43.5	-23.5	256	1.11
232.7300	2.68	11.28	8.0	22.0	46.0	-24.0	287	1.21
349.1300	3.34	19.68	5.9	28.9	46.0	-17.1	127	1.51
666.2200	4.99	20.52	6.8	32.3	46.0	-13.7	213	1.32
733.3850	5.14	22.62	4.3	32.1	46.0	-13.9	115	1.22

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
164.9300	2.24	9.91	7.2	19.3	43.5	-24.2	13	1.46
230.6900	2.66	11.17	6.2	20.0	46.0	-26.0	243	1.34
298.8900	3.03	13.95	5.5	22.5	46.0	-23.5	121	1.22
499.3800	3.89	18.00	5.6	27.5	46.0	-18.5	143	1.14
565.3100	4.41	19.35	5.1	28.9	46.0	-17.1	221	1.21
697.3600	5.09	21.34	5.1	31.5	46.0	-14.5	33	1.11

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	22°C	Humidity:	64 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	Charge
Tested By:	John Yu	Tested Date:	Jul. 16, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
196.7300	2.52	10.04	5.6	18.2	43.5	-25.3	42	1.21
292.7700	2.97	13.47	5.6	22.0	46.0	-24.0	55	1.22
419.8400	3.69	25.19	4.9	33.8	46.0	-12.2	125	1.13
490.6500	3.93	18.00	5.3	27.2	46.0	-18.8	155	1.14
662.3400	4.95	20.44	5.4	30.8	46.0	-15.2	257	1.15
800.0800	5.32	22.80	3.8	31.9	46.0	-14.1	265	1.01

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
231.6600	2.67	11.23	6.4	20.3	46.0	-25.7	11	1.14
298.5900	3.03	13.95	5.5	22.5	46.0	-23.5	325	1.12
491.6500	3.93	18.00	5.3	27.2	46.0	-18.8	245	1.23
597.3500	4.60	19.20	5.4	29.2	46.0	-16.8	44	1.24
733.1500	5.14	22.62	4.3	32.1	46.0	-13.9	156	1.31
842.7000	5.58	23.24	3.6	32.4	46.0	-13.6	22	1.15

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	22°C	Humidity:	64 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch0-TX
Tested By:	John Yu	Tested Date:	Jul. 16, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2402.00	-32.16	28.00	80.5	80.2	76.3	76.0	N/A	N/A	N/A	N/A	24	1.11
4804.00	-30.47	33.64	57.5	41.2	60.7	44.4	74.0	54.0	-13.3	-9.6	2	1.04
7206.00	-28.90	36.26	61.5	40.6	68.9	48.0	74.0	54.0	-5.1	-6.0	111	1.12
2400.00	-32.16	28.00	56.2	51.5	52.0	47.3	74.0	54.0	-22.0	-6.7	235	1.05
2396.00	-32.18	27.99	54.5	44.4	50.3	40.2	74.0	54.0	-23.7	-13.8	124	1.11
2406.00	-32.17	28.01	54.2	44.0	50.0	39.8	74.0	54.0	-24.0	-14.2	211	1.06

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2402.00	-32.16	28.00	89.8	86.5	85.6	82.3	N/A	N/A	N/A	N/A	54	1.02
4804.00	-30.47	33.64	56.9	40.1	60.1	43.3	74.0	54.0	-13.9	-10.7	242	1.05
7206.00	-28.90	36.26	60.0	39.8	67.4	47.2	74.0	54.0	-6.6	-6.8	133	1.04
2400.00	-32.16	28.00	64.1	45.2	59.9	41.0	74.0	54.0	-14.1	-13.0	232	1.04
2396.00	-32.18	27.99	55.1	43.8	50.9	39.6	74.0	54.0	-23.1	-14.4	43	1.03
2406.00	-32.17	28.01	55.4	45.4	51.2	41.2	74.0	54.0	-22.8	-12.8	254	1.06

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	22°C	Humidity:	64 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch39-TX
Tested By:	John Yu	Tested Date:	Jul. 16, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2441.00	-32.23	28.08	74.0	72.9	69.9	68.8	N/A	N/A	N/A	N/A	153	1.43
4880.00	-30.27	33.70	57.9	42.5	61.3	45.9	74.0	54.0	-12.7	-8.1	321	1.32
7320.00	-29.05	36.36	58.0	40.7	65.3	48.0	74.0	54.0	-8.7	-6.0	332	1.22
2437.00	-32.22	28.07	54.1	44.3	50.0	40.2	74.0	54.0	-24.0	-13.8	221	1.09
2436.00	-32.22	28.07	55.4	44.4	51.3	40.3	74.0	54.0	-22.7	-13.7	223	1.13
2442.00	-32.23	28.08	55.2	44.1	51.1	40.0	74.0	54.0	-22.9	-14.0	112	1.11

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2441.00	-32.23	28.08	75.7	67.6	71.6	63.5	N/A	N/A	N/A	N/A	32	1.02
4880.00	-30.27	33.70	57.2	44.7	60.6	48.1	74.0	54.0	-13.4	-5.9	346	1.04
7320.00	-29.05	36.36	58.3	43.2	65.6	50.5	74.0	54.0	-8.4	-3.5	221	1.06
2437.00	-32.22	28.07	55.0	44.2	50.9	40.1	74.0	54.0	-23.1	-13.9	257	1.02
2436.00	-32.22	28.07	55.3	43.9	51.2	39.8	74.0	54.0	-22.8	-14.2	311	1.07
2442.00	-32.23	28.08	56.0	43.7	51.9	39.6	74.0	54.0	-22.1	-14.4	302	1.01

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A07061510
Report No.: FCCA07061510
FCCID: UDOBSH1310
Page: 42 of 63
Date: Jul. 20, 2007

Temperature:	22°C	Humidity:	64 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch78-TX
Tested By:	John Yu	Tested Date:	Jul. 16, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2480.00	-32.19	28.16	74.0	72.4	70.0	68.4	N/A	N/A	N/A	N/A	132	1.22
4996.00	-30.29	33.80	57.9	46.7	61.4	50.2	74.0	54.0	-12.6	-3.8	224	1.32
7440.00	-28.95	36.45	58.0	42.3	65.5	49.8	74.0	54.0	-8.5	-4.2	276	1.09
2483.00	-32.19	28.17	54.0	44.2	50.0	40.2	74.0	54.0	-24.0	-13.8	44	1.04
2474.00	-32.20	28.15	55.4	44.1	51.3	40.0	74.0	54.0	-22.7	-14.0	112	1.02
2486.00	-32.18	28.17	55.2	44.2	51.2	40.2	74.0	54.0	-22.8	-13.8	32	1.01

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2480.00	-32.19	28.16	75.1	67.6	71.1	63.6	N/A	N/A	N/A	N/A	143	1.05
4996.00	-30.29	33.80	57.2	42.0	60.7	45.5	74.0	54.0	-13.3	-8.5	114	1.09
7440.00	-28.95	36.45	58.3	38.0	65.8	45.5	74.0	54.0	-8.2	-8.5	154	1.12
2483.00	-32.19	28.17	55.0	44.5	51.0	40.5	74.0	54.0	-23.0	-13.5	212	1.16
2474.00	-32.20	28.15	55.2	43.5	51.1	39.4	74.0	54.0	-22.9	-14.6	244	1.18
2486.00	-32.18	28.17	56.0	44.1	52.0	40.1	74.0	54.0	-22.0	-13.9	43	1.21

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:43 of 63 Date: Jul. 20, 2007
---	----------------------	---

4.8 CONDUCTED EMISSION

4.8.1 LIMIT

FREQUENCY (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

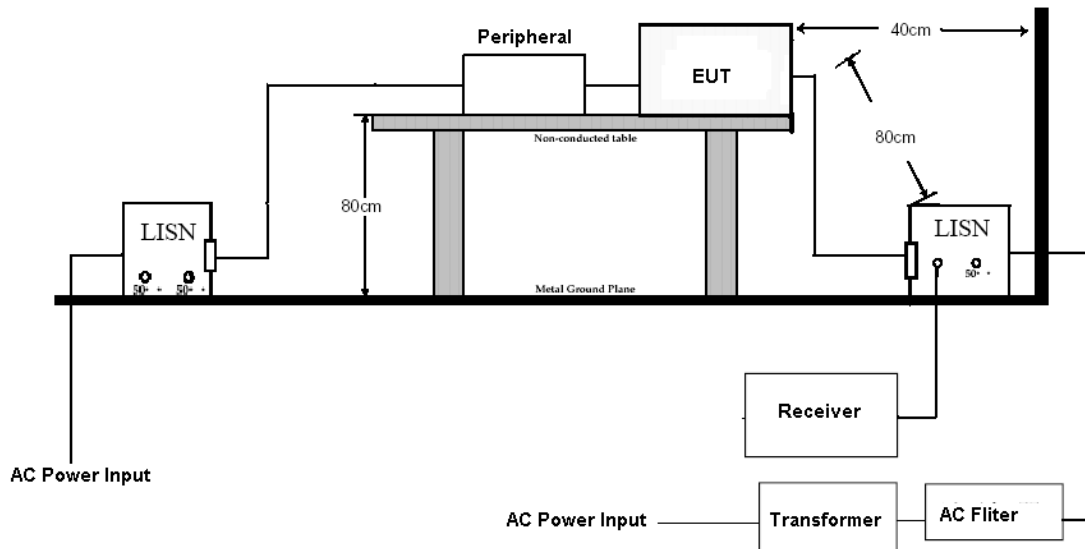
4.8.2 TEST EQUIPMENT

The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 KHZ TO 30 MHZ	ROHDE & SCHWARZ	ESHS30/ 826003/008	OCT. 2007 ETC
LISN (for EUT)	50 μ H, 50 ohm	FCC	FCC-LISN-50-25-2/ 01017	OCT. 2007 ETC
LISN (for Peripheral)	50 μ H, 50 ohm	FCC	FCC-LISN-50-25-2/ 01018	NOV. 2007 ETC
50 ohm TERMINATOR	50 ohm	HP	11593A/ 2	OCT. 2007 ETC
COAXIAL CABLE	5m	SUNCITY	CABLE 05/ #5-5M	NOV. 2007 SRT
ISOLATION TRANSFORMER	N/A	APC	AFC-11015/ F102040016	N/A
FILTER	2 LINE, 30A	FIL.COIL	FC-943/ 771	N/A
GROUND PLANE	2.3M (H) x 2.4M (W)	SRT	N/A	N/A
GROUND PLANE	2.4M (H) x 2.4M (W)	SRT	N/A	N/A

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

4.8.3 TEST SETUP



NOTE:

1. The EUT was put on a wooden table with 0.8m height above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.
3. The serial no. of the LISN connected to EUT is 951318.
4. The serial no. of the LISN connected to support units is 924839.

4.8.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4: 2003 and CISRP22:2006. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.8.5 EUT OPERATING CONDITION

Set the EUT under transmission condition continuously at a specific channel frequency.



TEST REPORT

4.8.6 TEST RESULT

Temperature:	26°C	Humidity:	60%RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	Charge-Link with Radio
Receiver Detector:	Q.P. and AV.	Tested By:	JohnYu
		Tested Date:	Jul. 04, 2007

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.228	0.28	42.72	16.00	43.00	16.28	63.77	53.77	-21.05	-37.77
0.234	0.28	41.06	14.37	41.34	14.65	63.60	53.60	-22.54	-39.23
0.538	0.24	19.00	-1.88	19.24	-1.64	56.00	46.00	-37.00	-47.88
1.309	0.15	1.64	-5.31	1.79	-5.16	56.00	46.00	-54.36	-51.31
12.237	0.24	3.90	1.22	4.14	1.46	60.00	50.00	-56.10	-48.78
25.517	0.40	17.08	9.33	17.48	9.73	60.00	50.00	-42.92	-40.67

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.234	0.28	42.64	13.62	42.92	13.90	63.60	53.60	-20.96	-39.98
0.240	0.28	42.64	12.64	42.92	12.92	63.43	53.43	-20.79	-40.79
0.534	0.24	23.82	0.93	24.06	1.17	56.00	46.00	-32.18	-45.07
1.416	0.15	10.44	7.30	10.59	7.45	56.00	46.00	-45.56	-38.70
9.578	0.23	10.68	0.95	10.91	1.18	60.00	50.00	-49.32	-49.05
18.352	0.28	19.86	18.95	20.14	19.23	60.00	50.00	-40.14	-31.05

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.



TEST REPORT

Temperature: 26°C
Frequency Range: 0.15 – 30 MHz
Receiver Detector: Q.P. and AV.

Humidity: 60%RH
Tested Mode: Charge-Link with Earphone
Tested By: Jeff Yu
Tested Date: Jul. 04, 2007

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.228	0.28	44.04	16.03	44.32	16.31	63.77	53.77	-19.73	-37.74
0.231	0.28	44.00	13.97	44.28	14.25	63.69	53.69	-19.69	-39.72
0.538	0.24	24.84	-2.74	25.08	-2.50	56.00	46.00	-31.16	-48.74
1.22	0.14	1.32	-5.29	1.46	-5.15	56.00	46.00	-54.68	-51.29
9.578	0.23	4.28	1.33	4.51	1.56	60.00	50.00	-55.72	-48.67
25.25	0.39	19.40	12.33	19.79	12.72	60.00	50.00	-40.60	-37.67

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.222	0.28	45.00	14.38	45.28	14.66	63.94	53.94	-18.94	-39.56
0.237	0.28	43.94	14.18	44.22	14.46	63.51	53.51	-19.57	-39.33
0.543	0.24	25.12	0.16	25.36	0.40	56.00	46.00	-30.88	-45.84
1.200	0.14	1.38	-5.99	1.52	-5.85	56.00	46.00	-54.62	-51.99
12.237	0.24	5.42	1.38	5.66	1.62	60.00	50.00	-54.58	-48.63
18.352	0.28	21.16	19.97	21.44	20.25	60.00	50.00	-38.84	-30.03

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:47 of 63 Date: Jul. 20, 2007
---	----------------------	---

5 88-108MHz(FM) TEST

5.1 Bandwidth less than 200kHz

5.1.2 LIMIT

Frequency Range (MHz)	Limit(kHz)
88-108	<200

NOTE: It follows FCC Part15, Subpart C Section 15.209

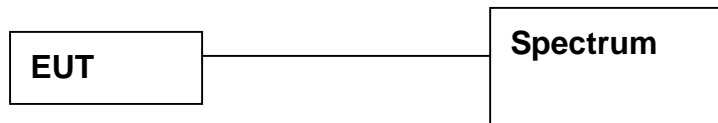
5.1.2 TEST EQUIPMENT

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. 2008 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.

5.1.3 TEST SET-UP



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

5.1.4 TEST PROCEDURE

The EUT was operated in hopping mode or any specific channel.
 Printed out the test result from the spectrum by hard copy function.

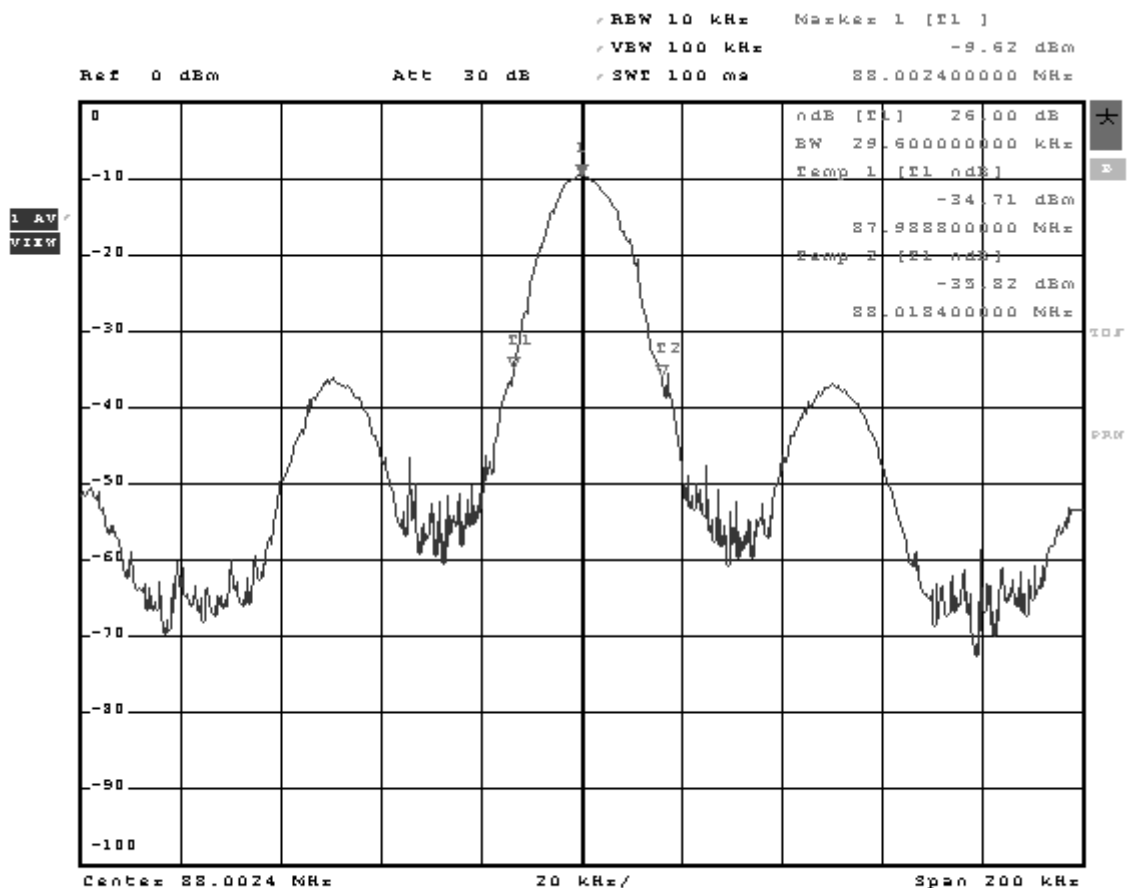


5.1.5 TEST RESULT

Temperature:	24°C	Humidity:	62%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Jun.28, 2007

Channel Frequency (MHz)	20dB Down Bandwidth (kHz)
88	29.6
98	30
107.9	35.2

88 MHz:



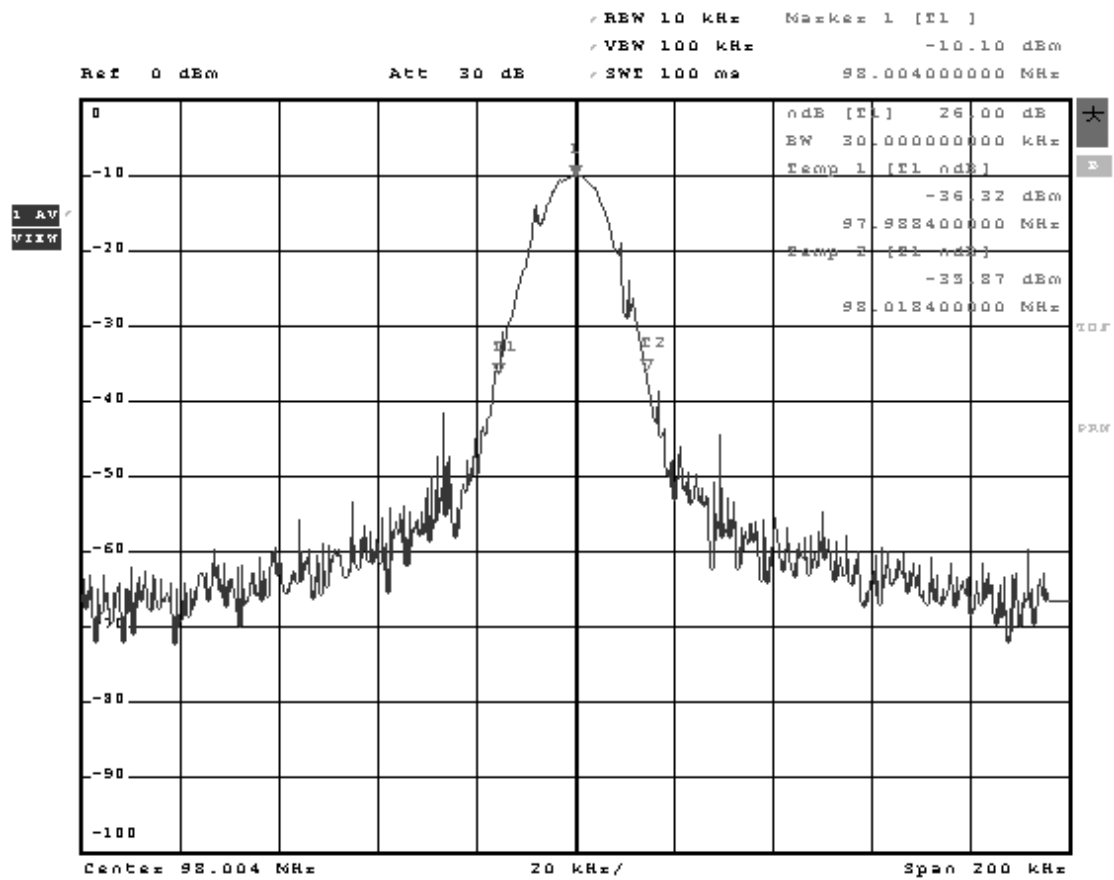


**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A07061510
Report No.: FCCA07061510
FCCID: UDOBSH1310
Page:49 of 63
Date: Jul. 20, 2007

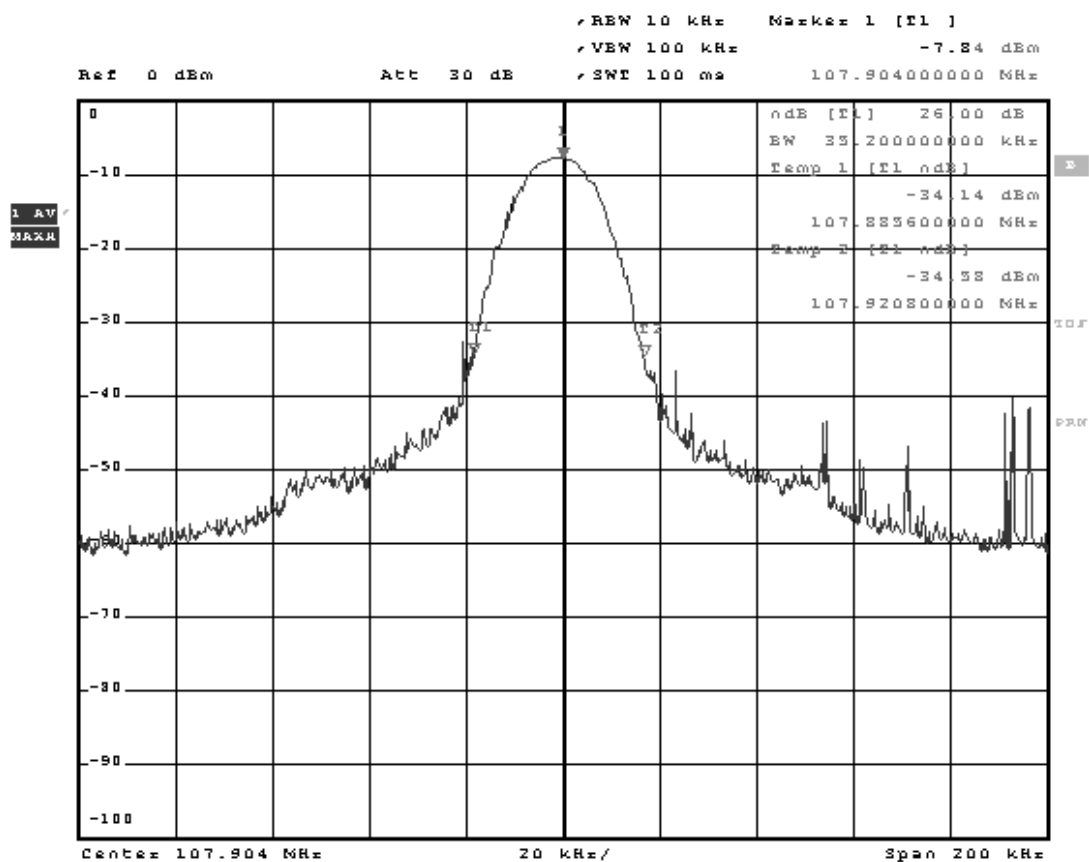
98 MHz:





TEST REPORT

107.9 MHz:



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:51 of 63 Date: Jul. 20, 2007
---	----------------------	---

5.2 FUNDAMENTAL & SPURIOUS RADIATED EMISSION TEST

5.2.1 LIMIT

FCC Part15, Subpart C Section 15.239 limit of the field strength that within the permitted 200KHz band shall not exceed 250uv/m at 3m,

Frequency (MHz)	Distance (m)	Field Strength (μV/m)
87.8 - 108.2	3	250 (Average)

and the field strength on any frequency outside of the specified 200KHz band shall follow the Section 15.209. Please check it in the following table :

Frequency (MHz)	Distance (m)	Field Strength (dBμV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

- NOTE** :
1. In the emission tables above , the tighter limit applies at the band edges.
 2. Distance refers to the distance between measuring instrument , antenna , and the closest point of any part of the device or system.

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

Frequency (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

FCC Part 15, Subpart C Section 15.249. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Filed Strength of Fundamental (dBuV/m) (at 3m)		Field Strength of Harmonics (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
902-928	114	94	74.0	54.0
2400-2483.5	114	94	74.0	54.0
5725-5875	114	94	74.0	54.0
24000-24250	128	108	88.0	68.0

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	<h1>TEST REPORT</h1>	Reference No.: A07061510 Report No.: FCCA07061510 FCCID: UDOBSH1310 Page:52 of 63 Date: Jul. 20, 2007
---	----------------------	---

5.2.2 TEST EQUIPMENT

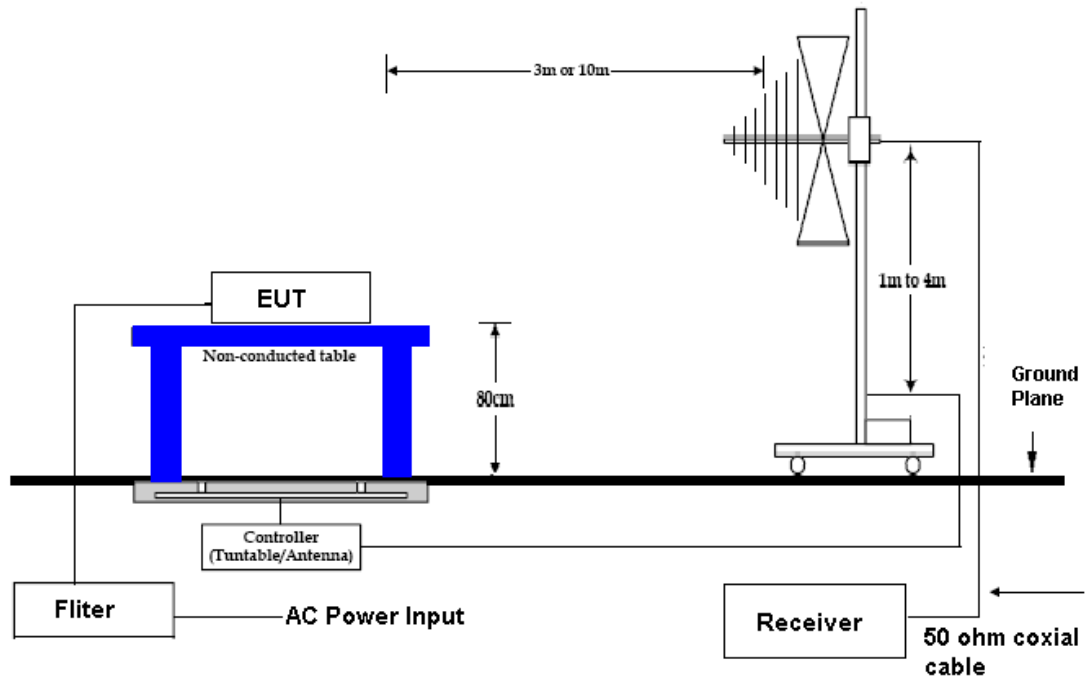
The following test equipment was used during the radiated emission test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/830245/012	OCT. 2007 ETC
SPECTRUM ANALYZER	9KHz TO 26.5GHz	HP	8593E/3710A03220	JULY, 2008 ETC
HORN ANTENNA	1GHz TO 18GHz	EMCO	3115/9012-3619	JAN, 2008 ETC
PREAMPLIFIER	1GHz TO 26.5GHz	HP	8449B/3008A01019	SEP. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3143 9509-1152	NOV. 2007 SRT
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2007 SRT
COAXIAL CABLE	25M	SUNCITY	J400/25M	JUN. 2008 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943/869	N/A

NOTE:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.

5.2.3 TEST SET-UP (30MHz-1GHz)



NOTE :

3. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
4. For the actual test configuration, please refer to the photos of testing.

5.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

5.2.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.



TEST REPORT

5.2.6 TEST RESULT

Temperature:	26°C	Humidity:	66 %RH
Frequency Range:	within 200KHz	Measured Distance:	3m
Receiver Detector:	Average.	Tested Mode:	3 Main Strength Emissions
Tested By:	John Yu	Tested Date:	Jul. 15, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
88.0000	1.60	7.27	33.5	42.4	47.9	-5.5	214	1.31
98.0000	1.69	7.65	32.4	41.7	47.9	-6.2	113	1.25
107.9000	1.78	6.93	31.2	39.9	47.9	-8.0	234	1.12

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
88.0000	1.60	7.27	31.9	40.8	47.9	-7.1	136	1.11
98.0000	1.69	7.65	29.8	39.1	47.9	-8.8	178	1.07
107.9000	1.78	6.93	29.7	38.4	47.9	-9.5	276	1.02

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "N/A": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.
5. 250uv/m=47.9dBuv/m



TEST REPORT

Temperature:	26°C	Humidity:	66 %RH
Frequency Range:	88MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	88MHz
Tested By:	John Yu	Tested Date:	Jul. 15, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
176.0000	2.33	9.38	21.5	33.2	43.5	-10.3	334	1.01
264.0000	2.81	12.33	18.8	33.9	46.0	-12.1	254	1.11
352.0000	3.35	20.15	14.1	37.6	46.0	-8.4	212	1.03
455.8640	3.95	17.80	11.6	33.3	46.0	-12.7	113	1.04
601.5438	4.59	19.22	10.4	34.2	46.0	-11.8	342	1.05
675.9864	5.02	20.75	11.3	37.1	46.0	-8.9	22	1.01

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
176.0000	2.33	9.38	18.9	30.6	43.5	-12.9	276	1.03
264.0000	2.81	12.33	17.7	32.8	46.0	-13.2	114	1.02
352.0000	3.35	20.15	13.3	36.8	46.0	-9.2	143	1.05
459.7355	3.97	17.80	12.7	34.5	46.0	-11.5	54	1.12
598.8762	4.60	19.20	12.4	36.2	46.0	-9.8	233	1.02
674.9866	5.02	20.72	9.6	35.3	46.0	-10.7	224	1.03

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	26°C	Humidity:	66 %RH
Frequency Range:	98MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	98MHz
Tested By:	John Yu	Tested Date:	Jul. 15, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
196.0000	2.52	10.04	19.5	32.1	43.5	-11.4	142	1.04
294.0000	2.99	13.63	19.7	36.3	46.0	-9.7	24	1.43
392.0000	3.60	20.92	14.3	38.8	46.0	-7.2	335	1.22
302.4588	3.07	14.14	11.6	28.8	46.0	-17.2	115	1.02
409.2563	3.69	22.74	10.1	36.5	46.0	-9.5	331	1.07
455.9723	3.95	17.80	11.2	32.9	46.0	-13.1	246	1.01

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
196.0000	2.52	10.04	17.5	30.1	43.5	-13.4	74	1.03
294.0000	2.99	13.63	15.8	32.4	46.0	-13.6	34	1.07
392.0000	3.60	20.92	13.1	37.6	46.0	-8.4	165	1.01
315.3249	3.15	14.26	10.3	27.7	46.0	-18.3	197	1.02
407.3257	3.68	22.27	11.3	37.3	46.0	-8.7	54	1.02
519.3255	4.31	18.57	8.4	31.3	46.0	-14.7	158	1.01

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



TEST REPORT

Temperature:	26°C	Humidity:	66 %RH
Frequency Range:	107.9MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	107.9MHz
Tested By:	John Yu	Tested Date:	Jul. 15, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
215.8000	2.60	10.59	17.3	30.4	43.5	-13.1	65	1.05
323.7000	3.17	14.83	16.6	34.6	46.0	-11.4	165	1.21
431.6000	3.84	25.44	9.4	38.7	46.0	-7.3	244	1.18
244.9752	2.76	11.96	13.4	28.1	46.0	-17.9	324	1.02
337.9671	3.26	17.44	10.1	30.8	46.0	-15.2	331	1.04
759.9000	5.17	23.21	9.1	37.5	46.0	-8.5	39	1.02

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
215.8000	2.60	10.59	15.7	28.9	43.5	-14.6	45	1.07
323.7000	3.17	14.83	15.3	33.3	46.0	-12.7	235	1.02
431.6000	3.84	25.44	10.2	39.5	46.0	-6.5	331	1.03
243.9567	2.75	11.90	12.5	27.2	46.0	-18.8	134	1.06
335.1964	3.24	17.09	12.7	33.0	46.0	-13.0	44	1.03
702.3618	5.14	21.48	9.9	36.5	46.0	-9.5	117	1.03

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A07061510
Report No.: FCCA07061510
FCCID: UDOBSH1310
Page:58 of 63
Date: Jul. 20, 2007

6 ANTENNA APPLICATION

6.1 Antenna requirement

The EUT's antenna is met the requirement of FCC part15C section15.203 and 15.204.

6.2 Result

The EUT's antenna used a chip antenna and integrated on PCB. The antenna's gain is 0 dBi and meets the requirement.



TEST REPORT

7. Human Exposure to RF(OET Bulletin 65)

Test	Test Requirement	Test Method	Limit	Result
Human Exposure to RF	OET Bulletin 65	OET Bulletin 65	<20cm & >13.8dBm	N/A

1. It is a portable device, the distance is less than 20cm, but the RF O/P Power is -1.50dBm only.
2. It is unnecessary to test.



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A07061510
Report No.: FCCA07061510
FCCID: UDOBSH1310
Page:63 of 63
Date: Jul. 20, 2007

9. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction