



## TEST REPORT

**Product Name** : Satellite Radio Receiver

**Model Number** : SIR-SL1 ; ST1

**Brand Name** : BRIX LAB

**FCC ID** : NKRUPARK001

**Applicant** : Wistron NeWeb Corporation

**Address** : No. 10-1, Li-hsin Road I, Hsinchu Science Park,  
Hsinchu 300, Taiwan, R.O.C.

**Received Date** : October 29, 2004

**Tested Date** : October 29 ~ November 10, 2004

Notes :

1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to testing, and be invalid as seperately used.
3. This report is invalid without examination stamp and signature of this institute.
4. The tested specimen(s) will be preserved for thirty days from the data issued.
5. The report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.





**Ecom Sertech Corp.**

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TEL: 886-3-5918012 FAX: 886-3-5825720

FCC ID : NKRUPARK001  
Report No. : ER04-10-077FRF  
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## Test Report Certification

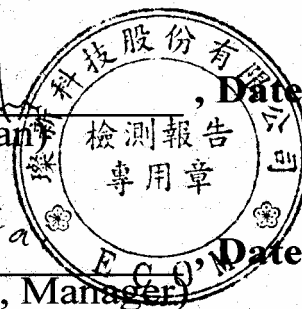
**Product Name** : Satellite Radio Receiver  
**Model Number** : SIR-SL1 ; ST1  
**Brand Name** : BRIX LAB  
**FCC ID** : NKRUPARK001  
**Applicant** : Wistron NeWeb Corporation

### Measurement Standard :

FCC 47 C.F.R. Part 15, Subpart B and Subpart C (2004)  
ANSI C63.4 (2003)

**Tested By** : Alan Fan, **Date** : November 12, 2004

**Approved By** : Chieh-De Tsai, **Date** : November 12, 2004  
(Chieh-De Tsai, Manager)



WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.



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# 1. GENERAL INFORMATION

## 1.1 General Statement

MEASUREMENT DEVIATION : Comply with standard in full

TRACEABILITY : This test result is traceable to National or International std.

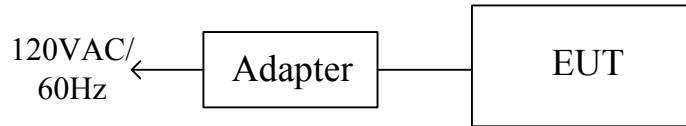
## 1.2 General Description of EUT & Power

<b>Product Name</b>	Satellite Radio Receiver
<b>Model Number</b>	SIR-SL1 ; ST1
<b>TX Frequency Range</b>	88MHz ~ 108MHz for Transmitting
<b>RX Frequency Range</b>	2320MHz~2332.5MHz for satellite Receiver
<b>Channel Number</b>	100
<b>Channel Spacing</b>	0.2MHz
<b>RX Frequency Channel</b>	88.1MHz + 0.2 × n (MHz), n=0, 1, 2,...,99
<b>Type of Modulation</b>	Frequency Modulation
<b>Frequency Selection</b>	Manual selection
<b>Transmitter Classification</b>	Mobile device
<b>EUT Description</b>	This EUT is a Satellite Radio receiver and FM transmitter that can receive satellite signal at 2320MHz~2332.5MHz and transmit signal within 88.1MHz ~ 107.9MHz
<b>Antenna Type</b>	Deformed Monopole Antenna , Antenna Gain : -7dBi.
<b>Power Source</b>	12VDC (From Adapter)
<b>Note</b>	Because of the market segmentation, the sample has different case and model names, SIR-SL1 and ST1, other main components are the same.

Power Adapter :

No.	Manufacturer	Model No.	Input Power	Output Power
1	Sunfone	ACTM-09	100-240VAC, 50-60Hz, 0.4A	12VDC, 1.2A

### 1.3 EUT & Peripherals Setup Diagram



### 1.4 EUT Operating Procedure

- (1) Set up all computers like the setup diagram.
- (2) Connect 120VAC/60Hz (12VDC) to EUT.
- (3) All of the function are under run.
- (4) Transmitting mode : Power On => MENU
  - ⇒ to select 『FM Transmitter』
  - ⇒ to select 『Frequency』
  - ⇒ to turn on the transmitting mode
- (5) Receiving mode : Power On => MENU
  - ⇒ to select 『FM Transmitter』
  - ⇒ to select 『FM Off』
  - ⇒ to turn on the receiving mode
- (6) Start test.



## Ecom Sertech Corp.

Rm. 258, Bldg. 17, NO.195, Sec.4 Chung Hsing Rd., ChuTugn Chen, Hsinchu, Taiwan 310, R.O.C  
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### 1.5 Description of Laboratory

#### SITE DESCRIPTION

FCC Certificate NO. : 90585  
BSMI Certificate NO. : SL2-IN-E-0002  
NVLAP Lab Code : 200118-0  
CNLA Certificate NO. : CNLA-ZL97018E  
VCCI Certificate NO. : R-1189, C-1250  
TÜV Rheinland Certificate NO. : 10008375

NAME OF SITE : Ecom Sertech Corp. Hsin-Chu Lab.  
(Spin-off from ITRI / ERSO on Apr. 01, 2003)  
SITE LOCATION : Rm.258, Bldg.17, NO.195 , Sec. 4, Chung Hsing Rd.,  
Chu-Tung Chen. Hsin-Chu, Taiwan 310 R.O.C.

### 1.6 Summary of Test Results

The EUT has been tested according to the following specifications :

#### APPLIED STANDARD : FCC 47 C.F.R. Part 15, Subpart B and Subpart C

Standard Section	Test Item and Limit	Result	REMARK
15.107 15.207	AC Power Conducted Emission Limit : Sec 15.107	PASS	Meet the requirement of limit
15.239(b)	Spectrum Bandwidth Limit : Occupied bandwidth < 200KHz	PASS	Meet the requirement of limit
15.109 15.205 15.209 15.239(c)	Transmitter and receiver Radiated Emissions Limit : Table 15.109, 15.209	PASS	Meet the requirement of limit



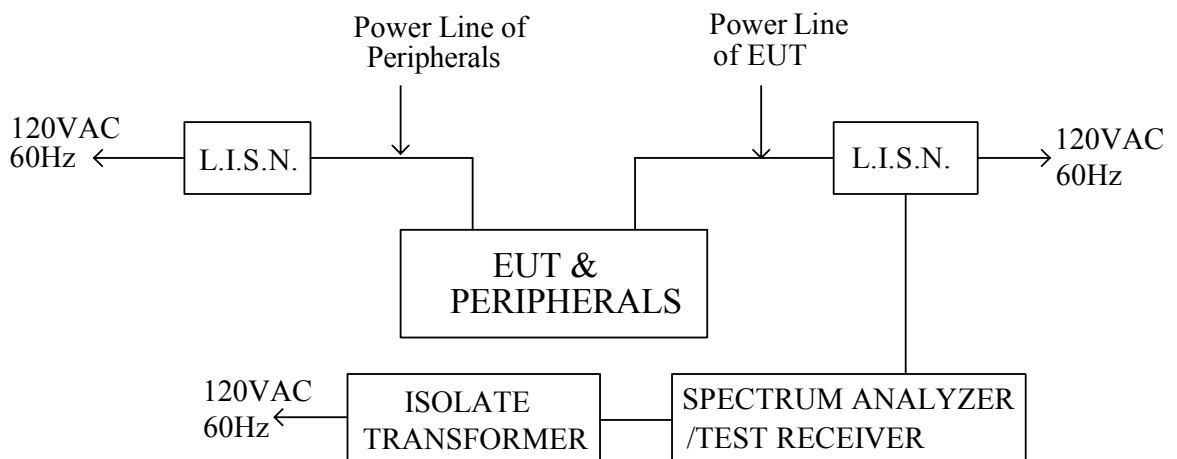
## 2. CONDUCTED POWERLINE TEST

### 2.1 Test Equipments

The following test equipments are used during the conducted powerline tests :

Manufacturer or Type	Model No.	Serial No.	Date of Calibration	Calibration Period	Remark
HP SPECTRUM ANALYZER & DISPLAY	8594E	3801A05627	April 26, 2004	1 Year	PRETEST
SOLAR ISOLATION TRANSFORMER	7032-1	N/A	N/A	N/A	FINAL
EMCO L.I.S.N.	3850/2	9311-1025 9401-1028	January 08, 2004 For Characteristic impedance	1 Year	FINAL
			May 18, 2004 For Insertion loss		
R & S TEST RECEIVER	ESHS 30	838550/003	February 11, 2004	1 Year	FINAL
KEENE SHIELDED ROOM	5983	No.1	N/A	N/A	FINAL
R & S PULSE LIMIT	EHS3Z2	357.8810.52	July 10, 2004	1 Year	FINAL
N TYPE COAXIAL CABLE	-----	-----	July 10, 2004	1 Year	FINAL
50Ω TERMINATOR	-----	-----	July 10, 2004	1 Year	FINAL

### 2.2 Test Setup







### 2.3 Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dB $\mu$ v)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56	56-46
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

For intentional device, according to § 15.207(a) Line Conducted Emission Limit is same as above table.

### 2.4 Test Procedure

The test procedure is performed in a 12ft×12ft×8ft(L×W×H) shielded room. The EUT along with its peripherals were placed on a 1.0m(W)× 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chasis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chasis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

### 2.5 Uncertainty of Conducted Emission

The uncertainty of conducted emission is  $\pm 1.36$ dB.

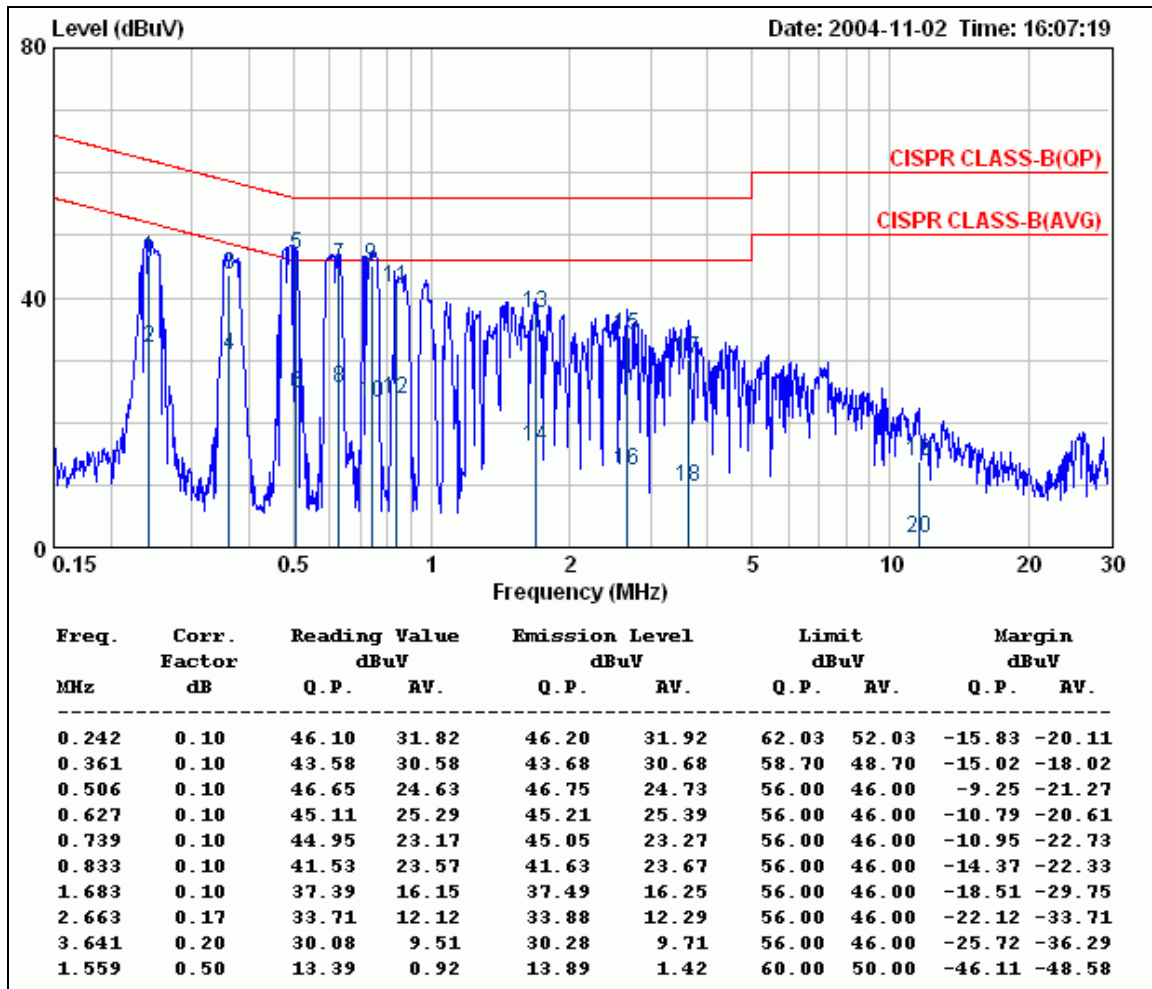


## 2.6 Conducted RF Voltage Measurement

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported are much lower than the prescribed limits.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/02
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	25.8°C, 55%

LINE



REMARKS :

1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value
3. TX mode.
4. The EUT can be operated in transmitting, stand-by and receiving mode. After preliminary scan, EUT in transmitting mode has highest emission. The EUT was set in transmitting mode at final test to get the worst case test results.



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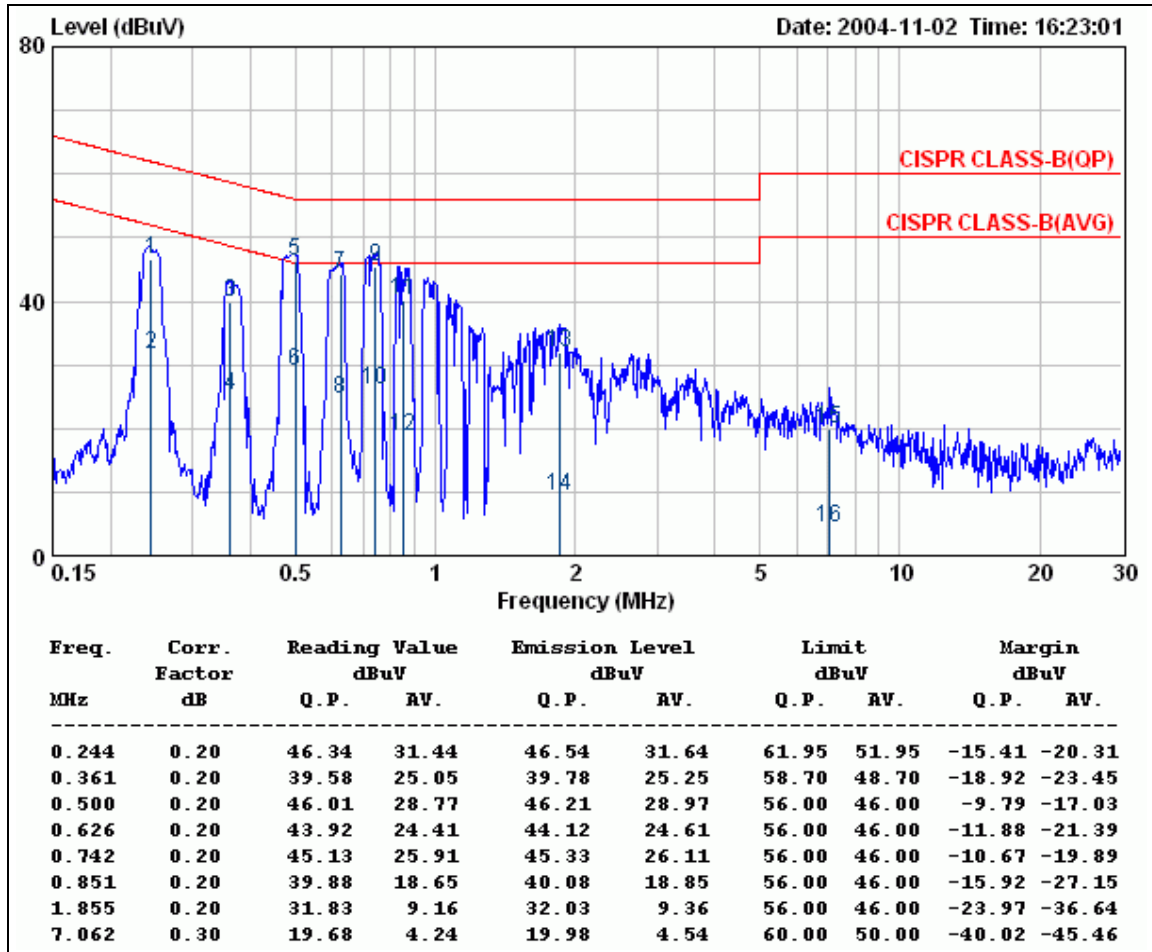
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The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported are much lower than the prescribed limits.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date:</b>	2004/11/02
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	25.8°C, 55%

NEUTRAL



REMARKS :

1. Correction Factor = Insertion loss + cable loss
2. Margin value = Emission level – Limit value
3. TX mode.
4. The EUT can be operated in transmitting, stand-by and receiving mode. After preliminary scan, EUT in transmitting mode has highest emission. The EUT was set in transmitting mode at final test to get the worst case test results.

## 2.7 Photos of Conduction Test



### 3. RADIATED EMISSION TEST

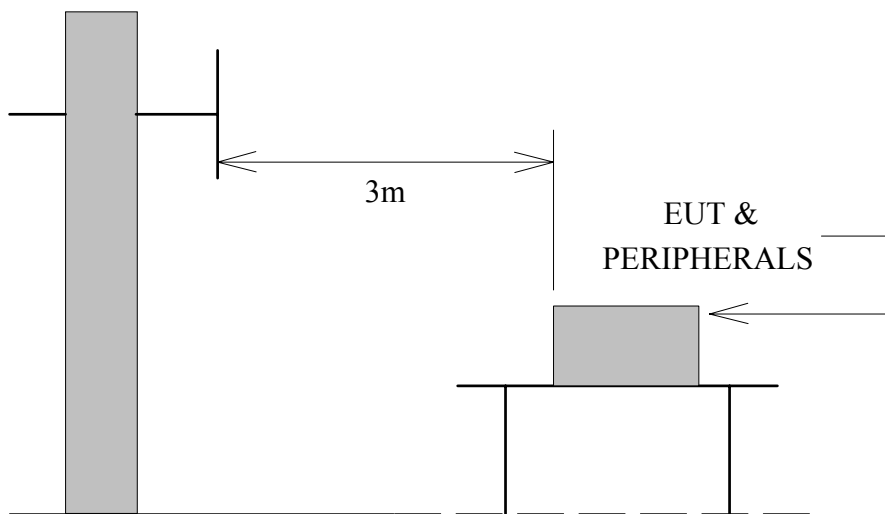
#### 3.1 Test Equipments

The following test equipments are utilized in making the measurements contained in this report.

Manufacturer or Type	Model No	Serial No	Date of Calibration	Calibration Period	Remark
CHASE BI-LOG ANTENNA	CBL6112B	2421	May 07, 2004	1 Year	FINAL
R/S SPECTRUM ANALYZER	FSEK30	835253/002	June 17, 2004	1 Year	FINAL
OPEN SITE	-----	No.2	May 07, 2004	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	4	July 13, 2004	1 Year	FINAL
Horn Antenna	AH-118	10089	February 25, 2004	1 Year	FINAL
HP Pre-amplifier	8449B	3008A01471	November 18, 2003	1 Year	FINAL
HP High pass filter	84300/80038	011	CAL. ON USE	1 Year	FINAL
Horn Antenna	AH-840	03077	February 25, 2004	1 Year	FINAL

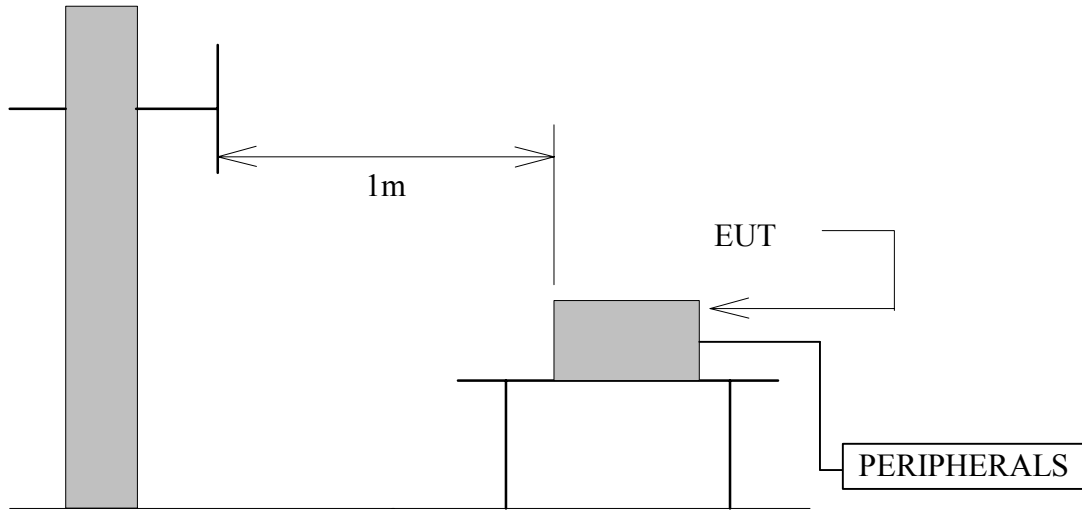
#### 3.2 Test Setup

The diagram below shows the test setup that is utilized to make the measurements for emission below 1GHz.



Antenna Elevation Variable

The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



Antenna Elevation Variable

### 3.3 Radiation Limit

For unintentional device, according to § 15.109(a) and 15.239, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/M)	Radiated (µV/M)
30-88	3	40.0	100
88-108	3	48.0	250
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table. According to § 15.239(b). The field strength of any emissions within the permitted 200kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.



### **3.4 Test Procedures**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. During performing radiated emission, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE :

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

### **3.5 Uncertainty of Radiated Emission**

The uncertainty of radiated emission is  $\pm 2.72$ dB.





### 3.6 Radiated RF Noise Measurement

**For FM transmitter mode :**

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported are much lower than the prescribed limits. All readings are quasi-peak values except the 88MHz~108MHz readings. This frequency spectrum above 1GHz was investigated, readings are both peak and Average values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/05
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.6°C, 55%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	21.39	0.90	-----	-----	40.00	-----	-----
88.10	10.54	1.83	30.80	38.40	68.00	43.17(PK)	50.77(PK)
88.10	10.54	1.83	19.50	32.30	48.00	31.87(AVG)	44.67(AVG)
176.20	10.43	2.83	4.70	6.70	43.50	17.96	19.96
264.30	12.95	4.09	0.80	1.50	46.00	17.84	18.54
352.40	16.08	4.59	0.10	0.50	46.00	20.77	21.17
440.50	18.18	4.99	0.30	0.30	46.00	23.46	23.46
528.60	18.07	5.32	0.50	0.70	46.00	23.89	24.09
599.99	18.67	5.65	0.60	3.20	46.00	24.92	27.52
616.70	18.81	5.75	0.20	0.50	46.00	24.76	25.06
659.99	19.16	6.02	0.40	3.20	46.00	25.58	28.38
704.80	19.55	6.30	0.70	0.40	46.00	26.55	26.25
779.98	20.51	6.69	0.40	4.20	46.00	27.61	31.41
792.90	20.68	6.76	0.70	0.30	46.00	28.14	27.74
881.00	21.26	7.16	1.00	0.80	46.00	29.42	29.22
1000.000	21.27	4.00	-----	-----	54.00	-----	-----

REMARKS :

1. The measurement was searched to 10th harmonic, remark “---” means that the emissions level is too low to be measured.
2. Emission level (dBμV/m) = Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).
3. The test limit distance is 3m.
4. The test data marked in gray background is the emission data of the fundamental frequency for the EUT at 88.1MHz.
5. The emission value of fundamental emission are peak value and average value.  
 PK : Peak value ; AVG : Average value.





**For FM transmitter mode :**

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported are much lower than the prescribed limits. All readings are quasi-peak values except the 88MHz~108MHz readings. This frequency spectrum above 1GHz was investigated, Readings are both peak and Average values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/05
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.6°C, 55%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	21.39	0.90	-----	-----	40.00	-----	-----
98.10	12.22	1.95	48.22	50.20	68.00	62.39(PK)	64.37(PK)
98.10	12.22	1.95	27.30	32.80	48.00	41.47(AVG)	46.97(AVG)
196.20	9.98	3.09	0.50	7.20	43.50	13.57	20.27
294.50	13.42	4.27	20.60	15.30	46.00	38.29	32.99
392.40	18.04	4.81	0.50	2.00	46.00	23.35	24.85
490.70	17.88	5.16	0.40	0.60	46.00	23.44	23.64
588.60	18.57	5.60	0.30	0.90	46.00	24.47	25.07
599.99	18.67	5.65	0.70	3.00	46.00	25.02	27.32
659.99	19.16	6.02	0.90	3.60	46.00	26.08	28.78
686.70	19.38	6.19	0.40	0.70	46.00	25.97	26.27
779.98	20.51	6.69	0.50	4.50	46.00	27.71	31.71
784.80	20.58	6.72	0.60	0.40	46.00	27.89	27.69
882.90	21.28	7.16	0.30	0.20	46.00	28.74	28.64
981.00	21.75	7.58	0.10	0.30	54.00	29.43	29.63
1000.000	21.27	4.00	-----	-----	54.00	-----	-----

**REMARKS :**

1. The measurement was searched to 10th harmonic, remark “---” means that the emissions level is too low to be measured.
2. Emission level (dBμV/m) = Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).
3. The test limit distance is 3m.
4. The test data marked in gray background is the emission data of the fundamental frequency for the EUT at 98.1MHz.
5. The emission value of fundamental emission are peak value and average value.  
PK : Peak value ; AVG : Average value.



**For FM transmitter mode :**

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported are much lower than the prescribed limits. All readings are quasi-peak values except the 88MHz~108MHz readings. This frequency spectrum above 1GHz was investigated, readings are both peak and Average values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/05
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.6°C, 55%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	21.39	0.90	-----	-----	40.00	-----	-----
107.90	12.85	2.05	22.60	26.10	68.00	37.50(PK)	41.00(PK)
107.90	12.85	2.05	10.60	19.80	48.00	25.50(AVG)	34.70(AVG)
215.80	10.72	3.41	3.50	5.00	43.50	17.64	19.14
323.70	14.67	4.43	0.30	0.50	46.00	19.40	19.60
431.60	18.23	4.96	0.80	0.40	46.00	23.98	23.58
539.50	18.16	5.37	0.30	0.50	46.00	23.83	24.03
599.99	18.67	5.65	0.60	2.80	46.00	24.92	27.12
647.40	19.06	5.94	0.40	0.20	46.00	25.40	25.20
659.99	19.16	6.02	0.80	3.40	46.00	25.98	28.58
755.30	20.20	6.56	0.40	0.80	46.00	27.16	27.56
779.98	20.51	6.69	0.60	4.50	46.00	27.81	31.71
863.20	21.16	7.08	0.30	0.50	46.00	28.53	28.73
971.10	21.71	7.54	0.80	0.20	54.00	30.05	29.45
1079.000	22.54	7.95	-----	-----	54.00	-----	-----

REMARKS :

1. The measurement was searched to 10th harmonic, remark “---” means that the emissions level is too low to be measured.
2. Emission level (dBμV/m) = Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).
3. The test limit distance is 3m.
4. The test data marked in gray background is the emission data of the fundamental frequency for the EUT at 107.9MHz.
5. The emission value of fundamental emission are peak value and average value.  
PK : Peak value ; AVG : Average value.

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**For Satellite Receiver mode :**

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported are much lower than the prescribed limits. All readings are quasi-peak values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/05
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.6°C, 55%

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading at 3m(dBμV)		Limits (dBμV/m)	Emission Level at 3m(dBμV/m)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	21.39	0.90	*	*	40.00	*	*
119.99	13.33	2.16	11.20	14.20	43.50	26.69	29.69
179.99	10.74	2.88	2.20	9.60	43.50	15.82	23.22
239.84	12.13	3.83	3.00	5.50	46.00	18.96	21.46
299.99	13.51	4.30	3.30	8.30	46.00	21.11	26.11
359.99	16.45	4.63	2.90	9.70	46.00	23.98	30.78
419.99	18.29	4.92	1.50	5.50	46.00	24.71	28.71
479.99	17.95	5.12	1.90	5.80	46.00	24.97	28.87
539.99	18.17	5.37	0.50	4.20	46.00	24.04	27.74
599.99	18.67	5.65	0.80	3.90	46.00	25.12	28.22
659.99	19.16	6.02	1.00	4.20	46.00	26.18	29.38
719.99	19.75	6.38	0.30	3.20	46.00	26.42	29.32
779.99	20.51	6.69	0.40	3.00	46.00	27.61	30.21
839.99	21.01	6.98	0.20	1.00	46.00	28.19	28.99
899.99	21.38	7.24	1.50	3.10	46.00	30.12	31.72
959.98	21.66	7.49	0.40	2.90	46.00	29.55	32.05
1000.000	21.58	7.00	*	*	54.00	*	*

## REMARKS :

- \* Undetectable
- Emission level (dBμV/m) = Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).
- For receiving mode below 1GHz.



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## For Satellite Receiver mode :

The frequency spectrum above 1 GHz was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/08
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.1°C , 59%

RX				Measurement Distance at 1m				Horizontal polarity		
Freq.	Reading	AF	Cable	Pre-amp	Dist	Level	Limit	Margin	Mark	Height
(MHz)	(dBμV)	(dBμV)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	(Meter)
1439.98	46.21	27.72	2.83	35.74	9.50	31.51	74.00	-42.49	P	1.00
1439.98	36.60	27.72	2.83	35.74	9.50	21.90	54.00	-32.10	A	1.00
1559.94	44.62	28.59	2.95	35.56	9.50	31.10	74.00	-42.90	P	1.00
1559.94	35.41	28.59	2.95	35.56	9.50	21.89	54.00	-32.11	A	1.00
1679.91	44.94	29.58	3.07	35.49	9.50	32.60	74.00	-41.40	P	1.00
1679.91	34.14	29.58	3.07	35.49	9.50	21.80	54.00	-32.20	A	1.00
1979.89	43.87	32.04	3.38	35.31	9.50	34.47	74.00	-39.53	P	1.00
1979.89	32.32	32.04	3.38	35.31	9.50	22.92	54.00	-31.08	A	1.00
2011.76	54.06	32.19	3.41	35.30	9.50	44.85	74.00	-29.15	P	1.00
2011.76	51.90	32.19	3.41	35.30	9.50	42.69	54.00	-11.31	A	1.00
2099.92	44.08	32.10	3.44	35.30	9.50	34.82	74.00	-39.18	P	1.00
2099.92	33.56	32.10	3.44	35.30	9.50	24.30	54.00	-29.70	A	1.00
2339.93	45.28	31.86	3.55	35.30	9.50	35.89	74.00	-38.11	P	1.00
2339.93	33.03	31.86	3.55	35.30	9.50	23.64	54.00	-30.36	A	1.00
3119.94	43.94	31.63	3.96	35.78	9.50	34.25	74.00	-39.75	P	1.00
3119.94	34.02	31.63	3.96	35.78	9.50	24.33	54.00	-29.67	A	1.00
3239.89	43.22	31.56	4.08	35.66	9.50	33.69	74.00	-40.31	P	1.00
3239.89	32.20	31.56	4.08	35.66	9.50	22.67	54.00	-31.33	A	1.00
4022.41	43.91	32.59	4.83	34.90	9.50	36.92	74.00	-37.08	P	1.07
4022.41	35.15	32.59	4.83	34.90	9.50	28.16	54.00	-25.84	A	1.07
6033.67	44.52	37.17	6.41	34.30	9.50	44.29	74.00	-29.71	P	1.05
6033.67	33.90	37.17	6.41	34.30	9.50	33.67	54.00	-20.33	A	1.05
8044.91	47.33	39.56	7.29	36.76	9.50	47.91	74.00	-26.09	P	1.00
8044.91	39.82	39.56	7.29	36.76	9.50	40.40	54.00	-13.60	A	1.00
10056.02	42.97	38.57	8.44	36.88	9.50	43.60	74.00	-30.40	P	1.00
10056.02	32.73	38.57	8.44	36.88	9.50	33.36	54.00	-20.64	A	1.00
12067.50	-----	41.31	9.23	35.73	9.50	-----	74.00	-----	P	1.00
12067.50	-----	41.31	9.23	35.73	9.50	-----	54.00	-----	A	1.00

### Note :

- The measurement was searched to 18GHz, Remark “---” means that the emissions level is too low to be measured.
- AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain.
- Analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
- Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
- The result basic equation calculation is as follow:  
Level = Reading + AF + Cable - Preamp - Dist, Margin = Level - Limit
- The other emission levels were very low against the limit.
- The test limit distance is 3M limit.
- For receiving mode above 1GHz.



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**For Satellite Receiver mode :**

The frequency spectrum above 1 GHz was investigated. All emissions not reported are much lower than the prescribed limits. Readings are both peak and average values.

<b>Company</b>	Wistron NeWeb Corporation	<b>Test Date</b>	2004/11/08
<b>Product Name</b>	Satellite Radio Receiver	<b>Test By</b>	Alan Fan
<b>Model Name</b>	SIR-SL1 ; ST1	<b>TEMP &amp; Humidity</b>	31.1°C , 59%

RX				Measurement Distance at 1m				Vertical polarity		
Freq.	Reading	AF	Cable	Pre-amp	Dist	Level	Limit	Margin	Mark	Height
(MHz)	(dBμV)	(dBμV)	(dB)	(dB)	dB	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	(Meter)
1438.87	47.56	27.71	2.83	35.75	9.50	32.85	74.00	-41.15	P	1.00
1438.87	40.61	27.71	2.83	35.75	9.50	25.90	54.00	-28.10	A	1.00
1559.89	47.72	28.59	2.95	35.56	9.50	34.20	74.00	-39.80	P	1.00
1559.89	40.72	28.59	2.95	35.56	9.50	27.20	54.00	-26.80	A	1.00
1679.85	48.48	29.57	3.07	35.49	9.50	36.14	74.00	-37.86	P	1.00
1679.85	42.97	29.57	3.07	35.49	9.50	30.63	54.00	-23.37	A	1.00
1979.89	50.48	32.04	3.38	35.31	9.50	41.08	74.00	-32.92	P	1.00
1979.89	46.00	32.04	3.38	35.31	9.50	36.60	54.00	-17.40	A	1.00
2011.22	59.87	32.19	3.40	35.30	9.50	50.66	74.00	-23.34	P	1.02
2011.22	58.58	32.19	3.40	35.30	9.50	49.37	54.00	-4.63	A	1.02
2099.94	48.90	32.10	3.44	35.30	9.50	39.64	74.00	-34.36	P	1.00
2099.94	44.32	32.10	3.44	35.30	9.50	35.06	54.00	-18.94	A	1.00
2339.91	47.57	31.86	3.55	35.30	9.50	38.18	74.00	-35.82	P	1.00
2339.91	41.16	31.86	3.55	35.30	9.50	31.77	54.00	-22.23	A	1.00
3119.91	48.03	31.63	3.96	35.78	9.50	38.34	74.00	-35.66	P	1.05
3119.91	41.62	31.63	3.96	35.78	9.50	31.93	54.00	-22.07	A	1.05
3239.93	46.73	31.56	4.08	35.66	9.50	37.20	74.00	-36.80	P	1.05
3239.93	40.13	31.56	4.08	35.66	9.50	30.60	54.00	-23.40	A	1.05
4022.52	46.53	32.59	4.83	34.90	9.50	39.54	74.00	-34.46	P	1.05
4022.52	40.50	32.59	4.83	34.90	9.50	33.51	54.00	-20.49	A	1.05
6033.70	45.30	37.17	6.41	34.30	9.50	45.07	74.00	-28.93	P	1.00
6033.70	38.22	37.17	6.41	34.30	9.50	37.99	54.00	-16.01	A	1.00
8044.85	44.74	39.56	7.29	36.76	9.50	45.32	74.00	-28.68	P	1.00
8044.85	36.08	39.56	7.29	36.76	9.50	36.66	54.00	-17.34	A	1.00
10056.01	43.97	38.57	8.44	36.88	9.50	44.60	74.00	-29.40	P	1.00
10056.01	32.87	38.57	8.44	36.88	9.50	33.50	54.00	-20.50	A	1.00
12067.50	-----	41.31	9.23	35.73	9.50	-----	74.00	-----	P	1.00
12067.50	-----	41.31	9.23	35.73	9.50	-----	54.00	-----	A	1.00

Note :

- The measurement was searched to 18GHz, Remark “---” means that the emissions level is too low to be measured.
- AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain.
- Analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
- Dist : correction to extra plate reading to 3m specification distance 1m measurement distance = -9.5dB
- The result basic equation calculation is as follow:  
 $Level = Reading + AF + Cable - Preamp - Dist, Margin = Level - Limit$
- The other emission levels were very low against the limit.
- The test limit distance is 3M limit.
- For receiving mode above 1GHz.

### 3.7 Photos of Open Site







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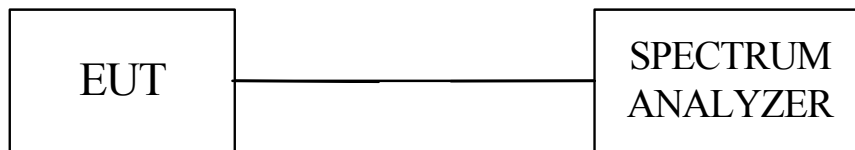
## 4. OCCUPIED BANDWIDTH MEASUREMENT

### 4.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	June 17, 2004

- Note :
1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.2 Test Setup



### 4.3 Limits of 6dB Bandwidth Measurement

The max of Occupied Bandwidth Measurement is < 200KHz

### 4.4 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10 KHz RBW and 10KHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

### 4.5 Uncertainty of Conducted Emission

The uncertainty of conducted emission is ± 20KHz.



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### 4.6 Test Results

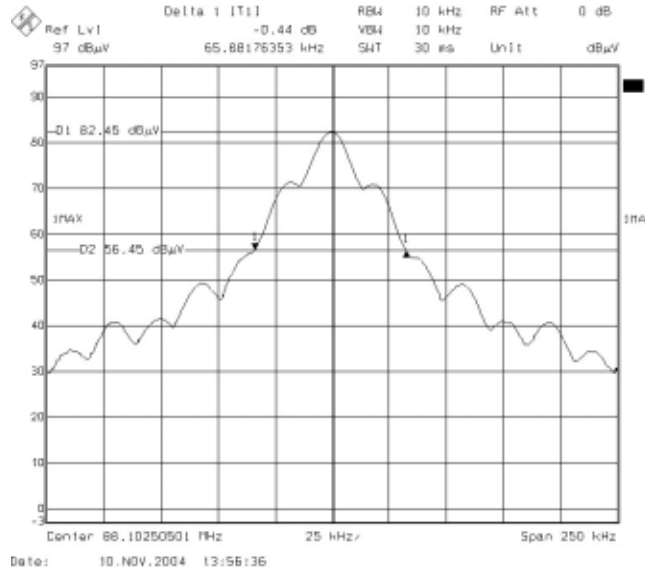
<b>Input Power (System)</b>	12VDC (From Adapter)	<b>Environmental Conditions</b>	32.5°C, 50%RH
<b>Tested By</b>	Alan Fan		

	<b>Frequency (MHz)</b>	<b>26dB Bandwidth (kHz)</b>	<b>Maximum Limit (kHz)</b>	<b>Pass / Fail</b>
Lowest	88.10	65.88	200	PASS
Middle	98.10	87.17	200	PASS
Upper	107.90	67.25	200	PASS

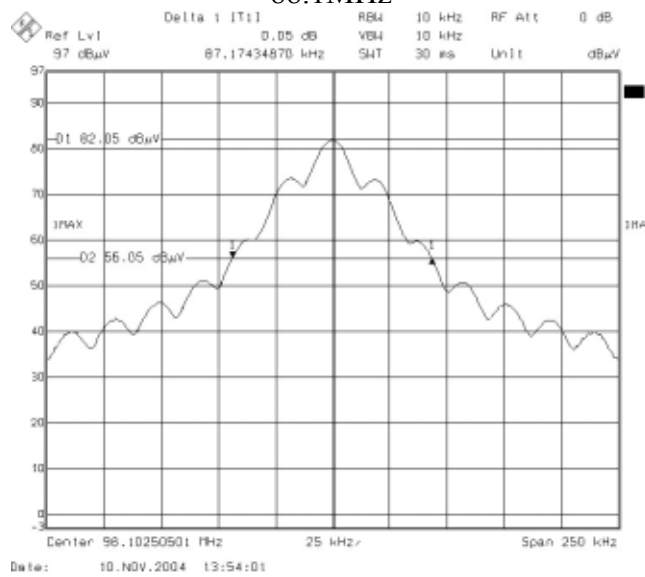
Note : For Transmitting Mode.



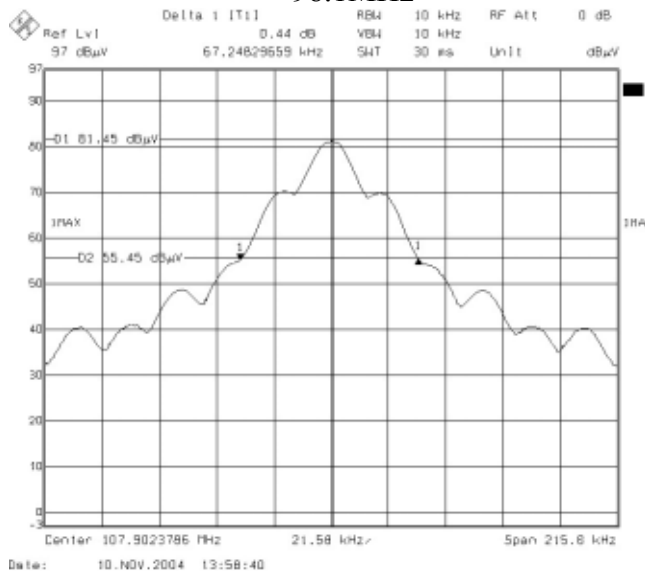
### 4.7 Photo of 26db Bandwidth Measurement



88.1MHz



98.1MHz



107.9MHz



## 5. MAXIMUM PEAK OUTPUT POWER

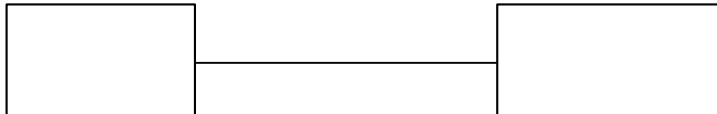
### 5.1 Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	June 17, 2004
Anritsu	ML2487A	6K00001783	May 24, 2004

Note : 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 5.2 Test Setup



### 5.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector ( conducted measurement ) while EUT was operating in transmit mode at the appropriate center frequency.

### 5.4 Uncertainty of Conducted Emission

The uncertainty of conducted emission is  $\pm 1.82$ dB.



### 5.5 Test Results

<b>Input Power (System)</b>	12VDC (From Adaptor)	<b>Environmental Conditions</b>	32.5°C, 50%RH
<b>Tested By</b>	Alan Fan		

<b>Channel</b>	<b>Channel Frequency (MHz)</b>	<b>Peak Power Reading (dBm)</b>	<b>Cable Closs (dB)</b>	<b>Peak Power Output (dBm)</b>
Lowest	88.10	-23.56	0.5	-23.06
Middle	98.10	-23.89	0.5	-23.39
Upper	107.9	-24.29	0.5	-23.79

- Note : 1. For TX Mode.  
2. Cable loss = 0.5dB  
3. The results are calculated as the following equation :  
Peak Power Output = Peak Power Reading + Cable loss



## **6. ANTENNA REQUIREMENT**

### **6.1 Standard Applicable**

According to 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. The use of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section

### **6.2 Antenna Connected Construction**

The antenna used for EUT is Deformed Monopole antenna. The maximum Gain of this antenna is only -7dBi.