

FCC RADIO TEST REPORT

Applicant's company	Wistron NeWeb Corporation
Applicant Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.
FCC ID	NKRUPAST405
Manufacturer's company	Wistron NeWeb Corporation
Manufacturer Address	No. 10-1, Li-hsin Road I, Science-baded Industrial Park, Hsinchu 300, Taiwan, R.O.C.

Product Name	Satellite Radio PnP Receiver
Brand Name	SIRIUS
Model Name	Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R), Starmate 4(ST4-TK1, ST4-TK1C, ST4-TK1R)
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.239
Test Freq. Range	88 ~ 108MHz
Receive Date	Jul. 4, 2006
Final Test Date	Sep. 21, 2006
Submission Type	Original Equipment
Multiple Listing	Please refer to section 3.7



Statement

The device is only possible within the range 88.1-107.9MHz.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2003** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

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History of This Test Report

Original Issue Date: Sep. 29, 2006

Report No.: FR671325-01

☒ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description



1. CERTIFICATE OF COMPLIANCE

Product Name : Satellite Radio PnP Receiver
Brand Name : SIRIUS
Model Name : Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R), Starmate 4(ST4-TK1,
ST4-TK1C, ST4-TK1R)
Applicant : Wistron NeWeb Corporation
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart C § 15.239

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jul. 4, 2006 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sharon Jiang 29.9.06

Prepared By:

Sharon Jiang / Specialist

Steven Lu 29.9.06

Tested By:

Steven Lu / Engineer

Wayne Hsu 29.9.06

Reviewed By:

Wayne Hsu

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	Rule Section	Description of Test	Result	Under Limit
-	15.207	AC Power Line Conducted Emissions	-	-
4.1	15.239(b)	Field Strength of Fundamental Emissions	Complies	0.38 dB
4.2	15.239(a)	20dB Spectrum Bandwidth	Complies	-
4.3	15.239(c)	Radiated Emissions	Complies	0.29 dB
4.4	15.239(c)	Band Edge Emissions	Complies	6.08 dB
4.5	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	$\pm 2.26\text{dB}$	Confidence levels of 95%
Field Strength of Fundamental Emissions	$\pm 3.72\text{dB}$	Confidence levels of 95%
20dB Spectrum Bandwidth	$\pm 6.25 \times 10^{-7}$	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	$\pm 3.72\text{dB}$	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	Low Power Communication Device (FM Transmitter)
Radio Type	Intentional Transmitter
Power Type	Car charger
Interface Type	DC IN / Audio OUT / FM OUT / Antenna connect
Modulation	FM
Frequency Range	88 ~ 108MHz
Channel Number	100
Channel Band Width (99%)	124.00 kHz
Max. Field Strength	47.62 dBuV/m at 3m(Average)
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

Power	Brand	Model	Rating
Car charger	SIRIUS	CLA	Input: DC 9-16V Output: DC5.2V, 1.5A
Others			
Car dock / Remote control			

3.3. Table for Filed Antenna

Ant.	Description
1	Integrated (for FM transmitter)
2	External (for FM transmitter) – connector: Audio Jack (2.5mm)

3.4. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
88 ~ 108MHz	1	88.1 MHz
	2	88.3 MHz
	:	:
	50	97.9 MHz
	51	98.1 MHz
	52	98.3 MHz
	:	:
	99	107.7 MHz
	100	107.9 MHz

3.5. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Channel	Ant.
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX1 (Antenna without bundle of cable / Antenna with bundle of cable)	1/51/100	1/1+2
Radiated Emissions 9kHz~30MHz	CTX1 (Antenna without bundle of cable / Antenna with bundle of cable)	51	1/1+2
Radiated Emissions 30MHz~10 th Harmonic	CTX1 (Antenna without bundle of cable / Antenna with bundle of cable)	1/51/100	1/1+2
Band Edge Emissions	CTX1 (Antenna without bundle of cable / Antenna with bundle of cable)	1/100	1/1+2

Note:

CTX1 =Continuously transmitting and audio modulating content a range of 100 to 5000 Hz.

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Discrepancy table		
Model Name	LCM Color	Instant Replay
Starmate 3(ST3-TK1, ST3-TK1C, ST3-TK1R)	Amber	Without
Starmate 4(ST4-TK1, ST4-TK1C, ST4-TK1R)	Blue	With

3.8. Table for Supporting Units

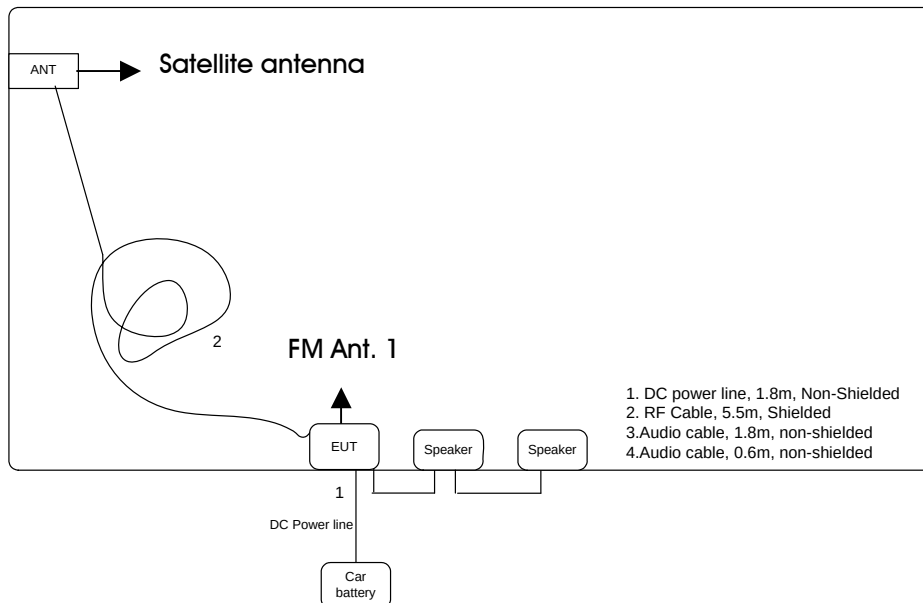
Support Unit	Brand	Model	FCC ID
Speaker	Dell	A125	DoC
Car battery	YUASA	YTX&A-BS	DOC

3.9. Test Configurations

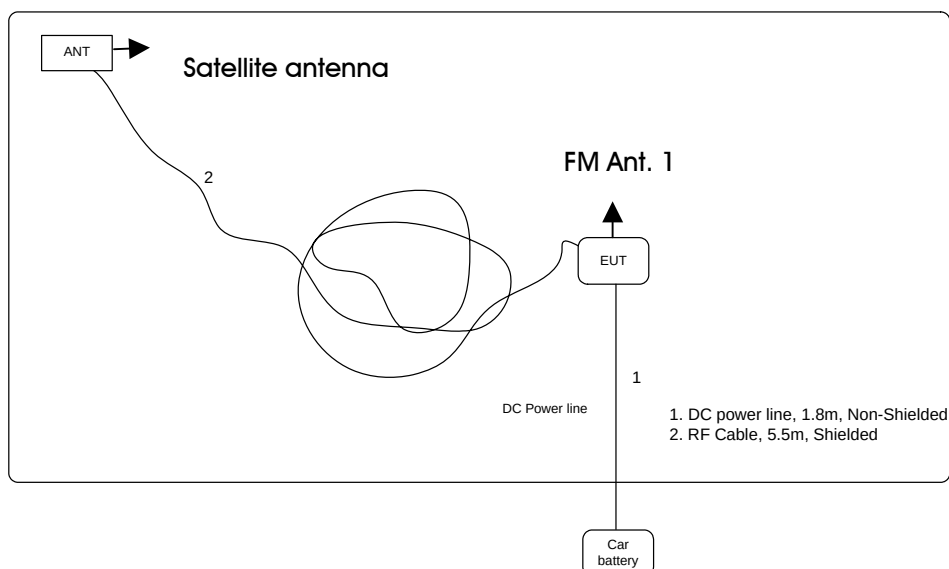
3.9.1. Radiation Emissions Test Configuration

Mode 1: Antenna without bundle of cable / Ant.1

Test Configurations: 30MHz~1GHz

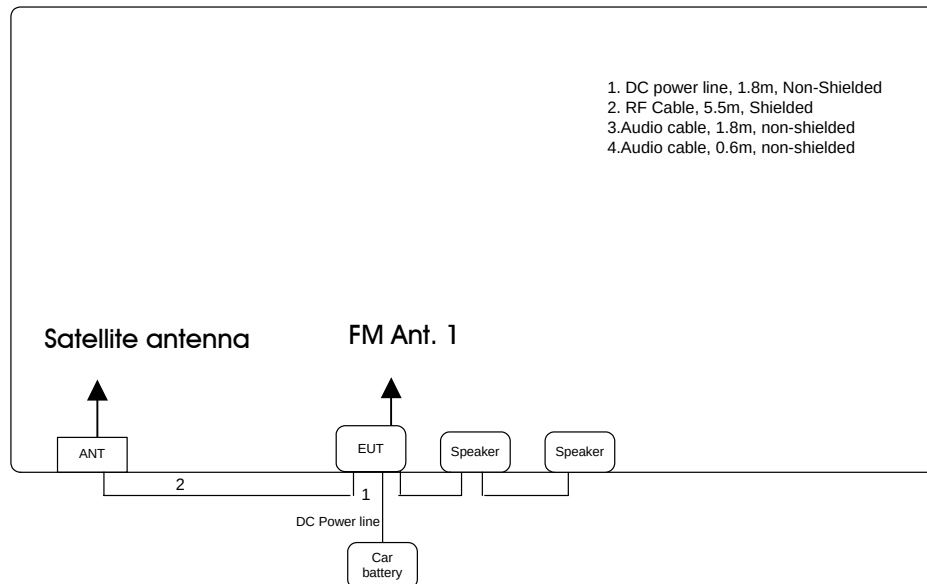


Test Configurations: 88~108MHz

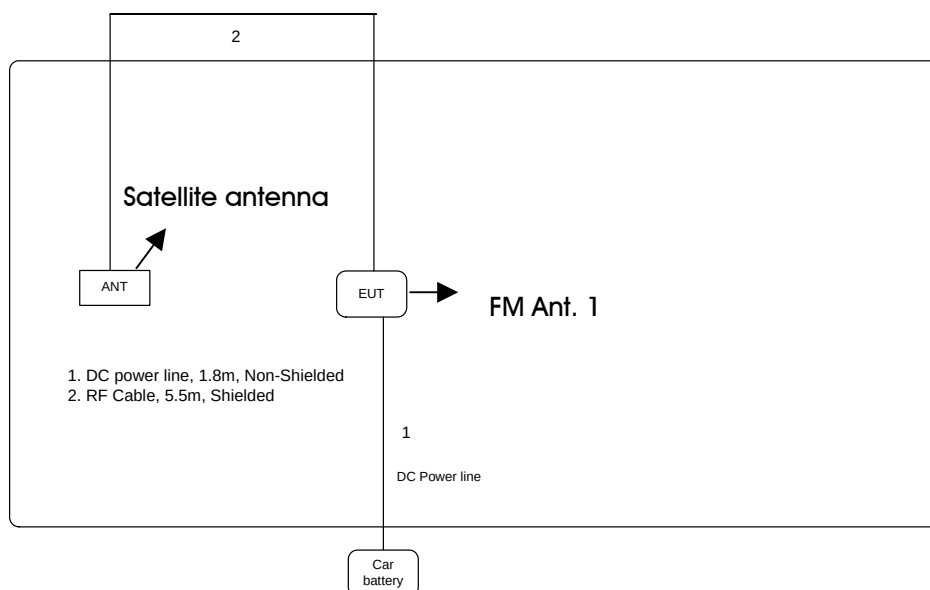


Mode 2: Antenna with bundle of cable / Ant.1

Test Configurations: 30MHz~1GHz

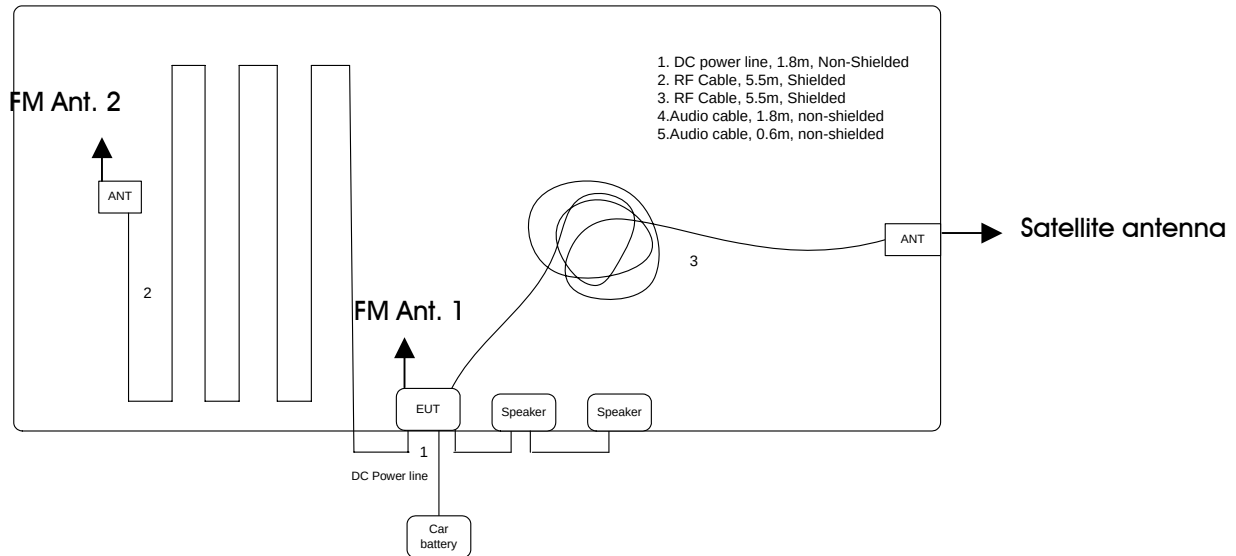


Test Configurations: 88~108MHz

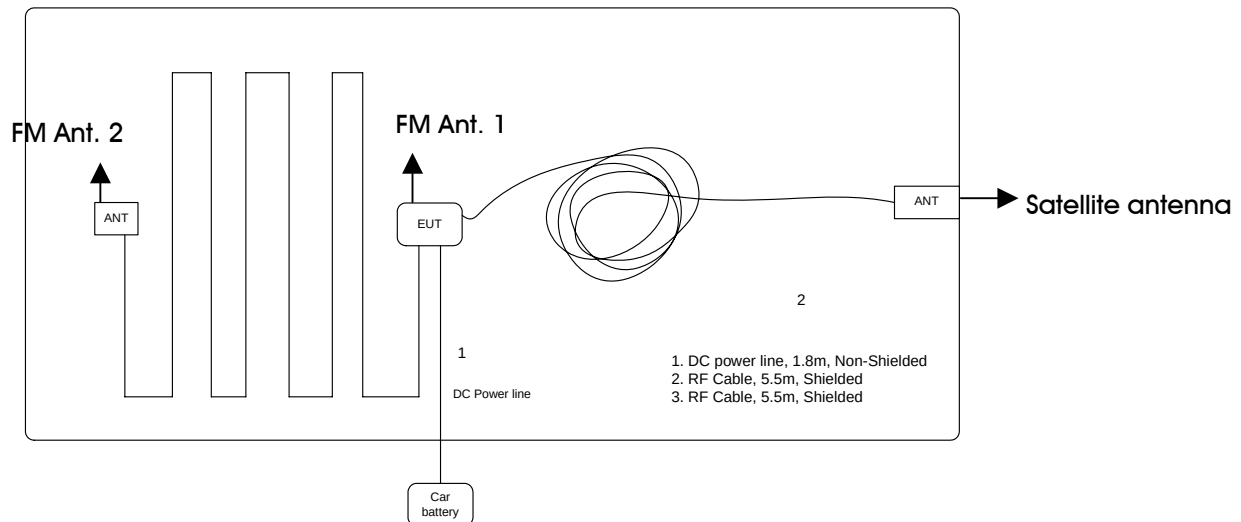


Mode 3: Antenna without bundle of cable / Ant. 1 + Ant.2

Test Configurations: 30MHz~1GHz

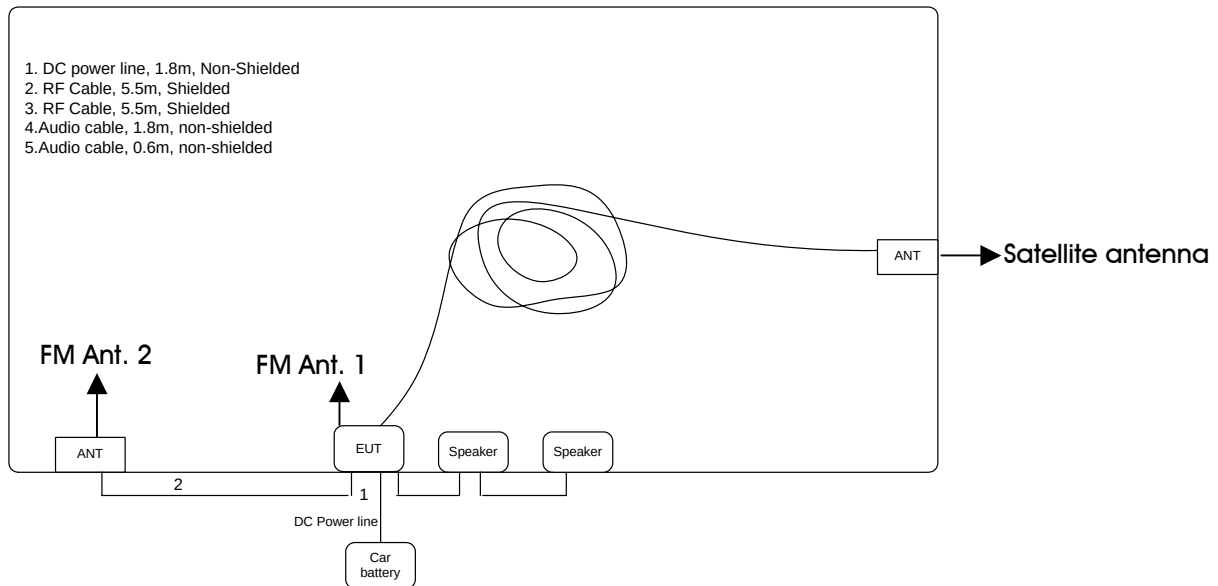


Test Configurations: 88~108MHz

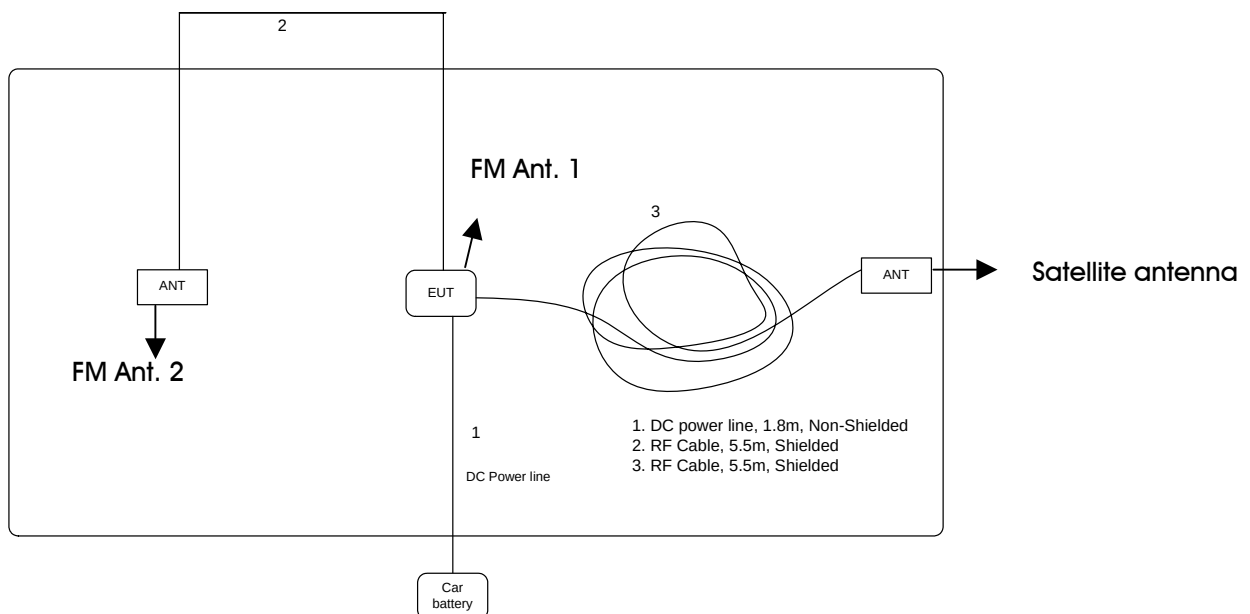


Mode 4: Antenna with bundle of cable / Ant. 1 + Ant.2

Test Configurations: 30MHz~1GHz



Test Configurations: 88~108MHz



4. TEST RESULT

4.1. Field Strength of Fundamental Emissions Measurement

4.1.1. Limit

The field strength of fundamental emissions shall comply with the following table.

Frequency Band (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
88~108	48 (Average)
88~108	68 (Peak)

4.1.2. Measuring Instruments and Setting

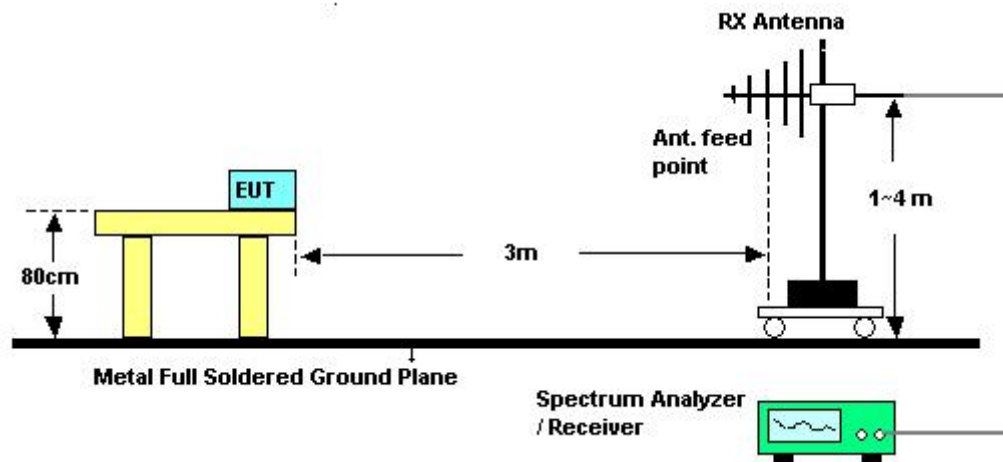
Please refer to section 5 in this report. The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	Auto
Center Frequency	Fundamental Frequency
RB	120 KHz
Detector	Peak / Average

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For Fundamental emissions, use the receiver to measure peak and average reading.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

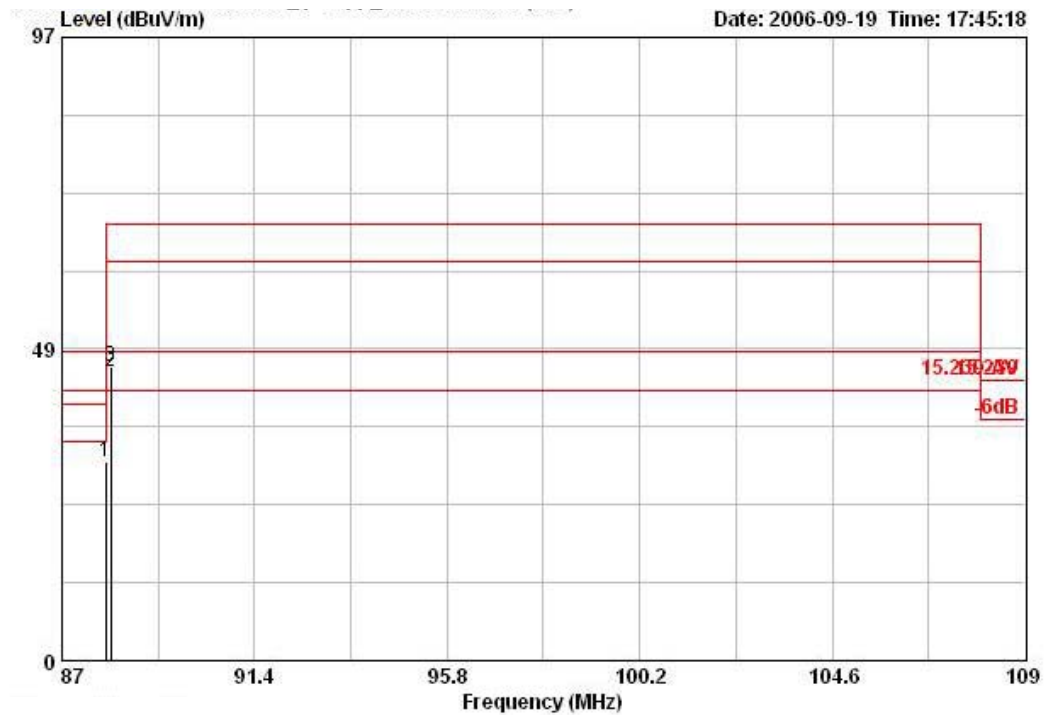
4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Field Strength of Fundamental Emissions

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 1 / Antenna without bundle of cable / Ant. 1

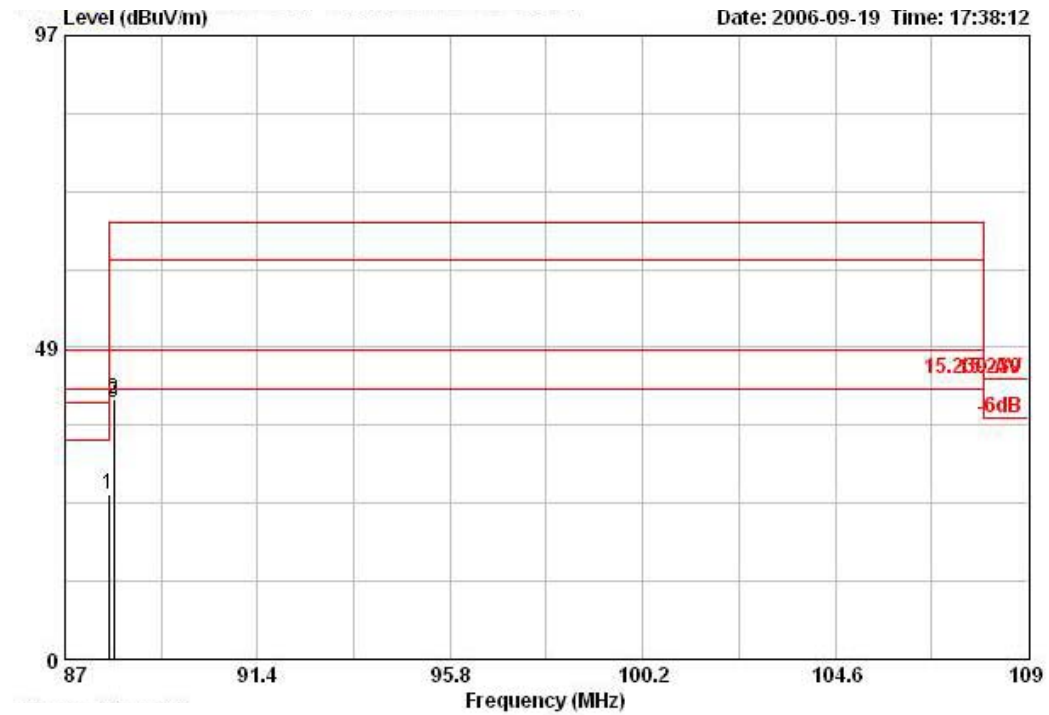
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2 @	88.106	45.06	-2.94	48.00	61.65	8.98	0.55	26.12	Average	100	152
3	88.106	45.68	-22.32	68.00	62.27	8.98	0.55	26.12	Peak	100	152

Item 2, 3 are fundamental frequency at 88.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.106	40.46	-27.54	68.00	57.05	8.98	0.55	26.12	PEAK	400	148
3 @	88.106	39.93	-8.07	48.00	56.52	8.98	0.55	26.12	AVERAGE	400	147

Item 2, 3 are fundamental frequency at 88.1 MHz.

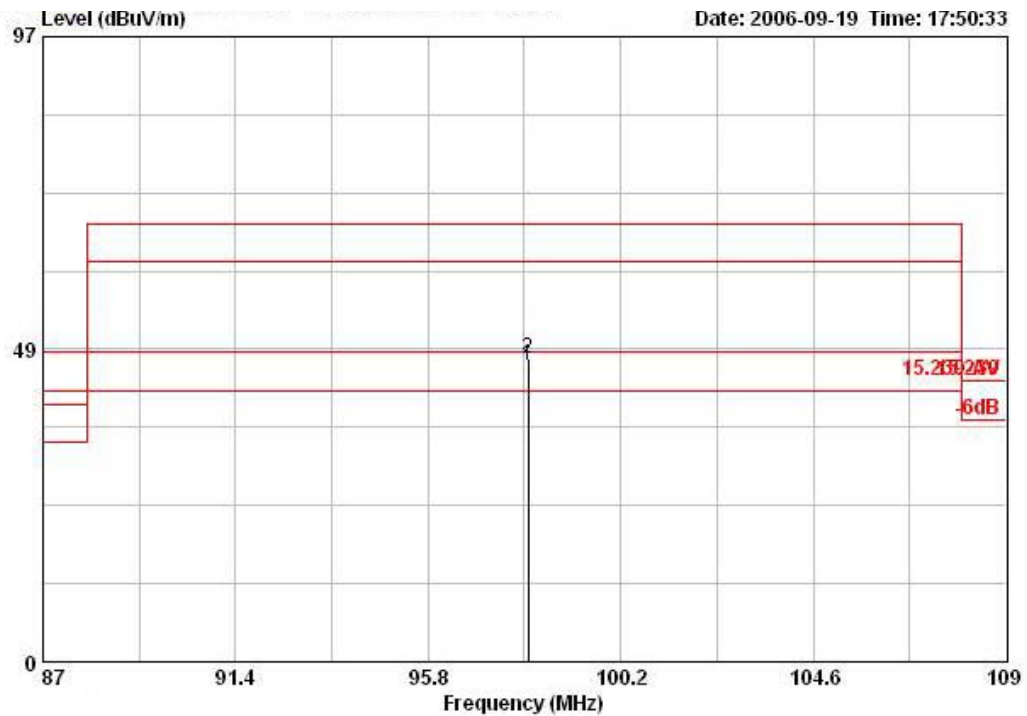
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 51 / Antenna without bundle of cable / Ant. 1

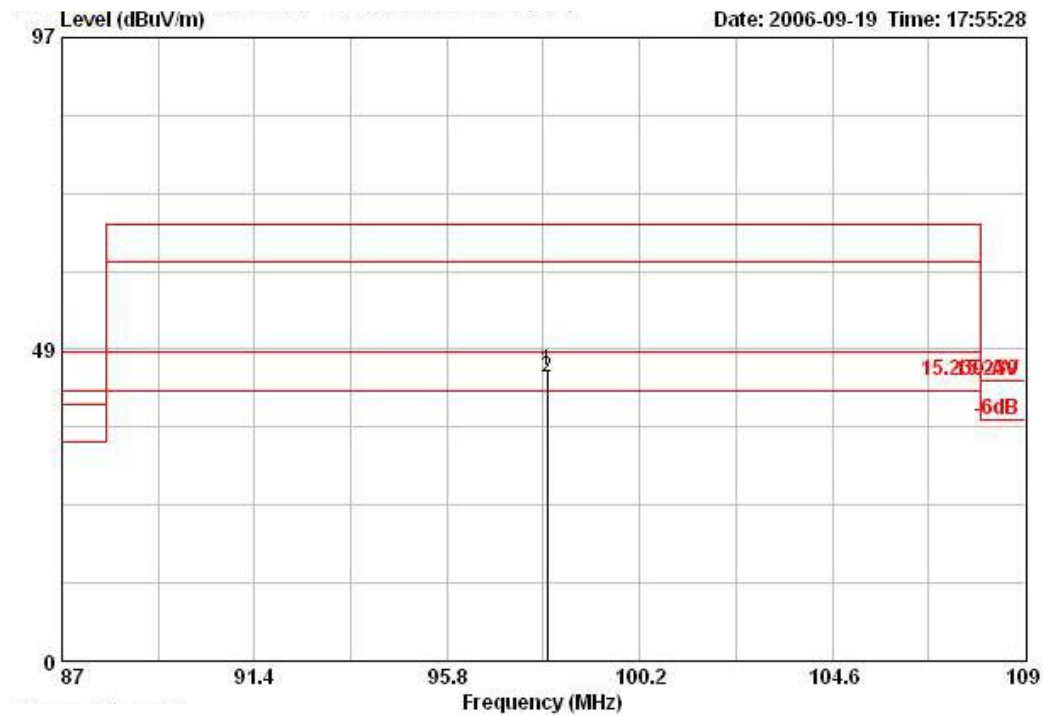
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	98.095	46.07	-1.93	48.00	60.82	10.82	0.42	26.00	Average	100	263
2	98.095	47.08	-20.92	68.00	61.83	10.82	0.42	26.00	Peak	100	263

Item 1, 2 are fundamental frequency at 98.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.092	45.07	-22.93	68.00	59.82	10.82	0.42	26.00	PEAK	400	123
2	98.092	44.24	-3.76	48.00	58.99	10.82	0.42	26.00	Average	400	123

Item 1, 2 are fundamental frequency at 98.1 MHz.

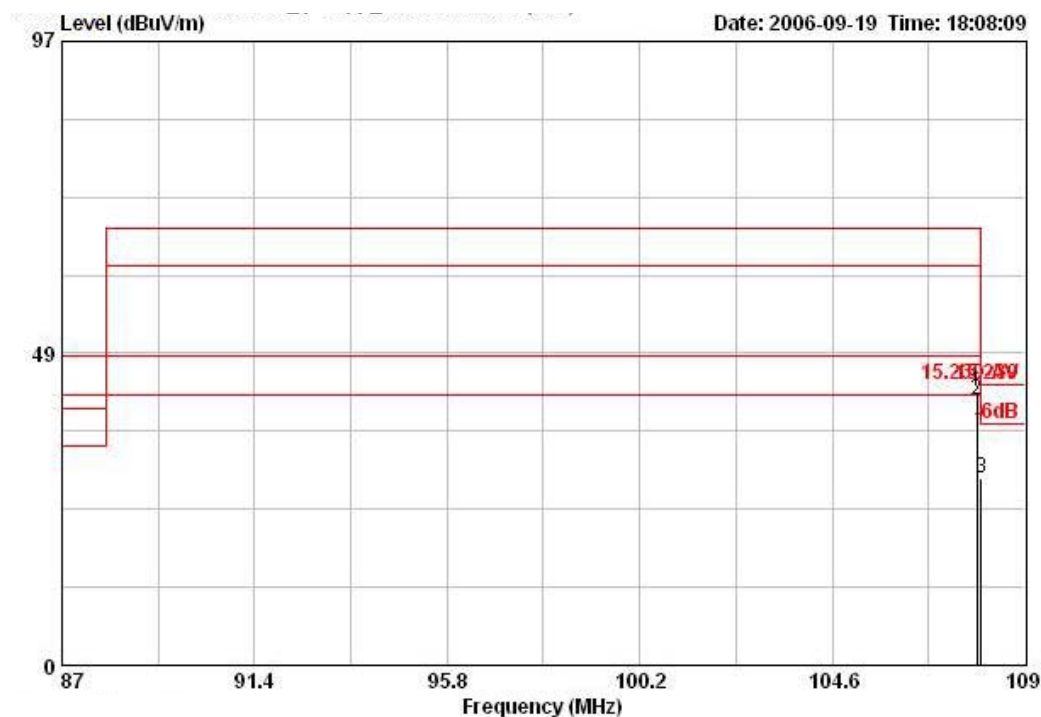
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 100 / Antenna without bundle of cable /Ant. 1

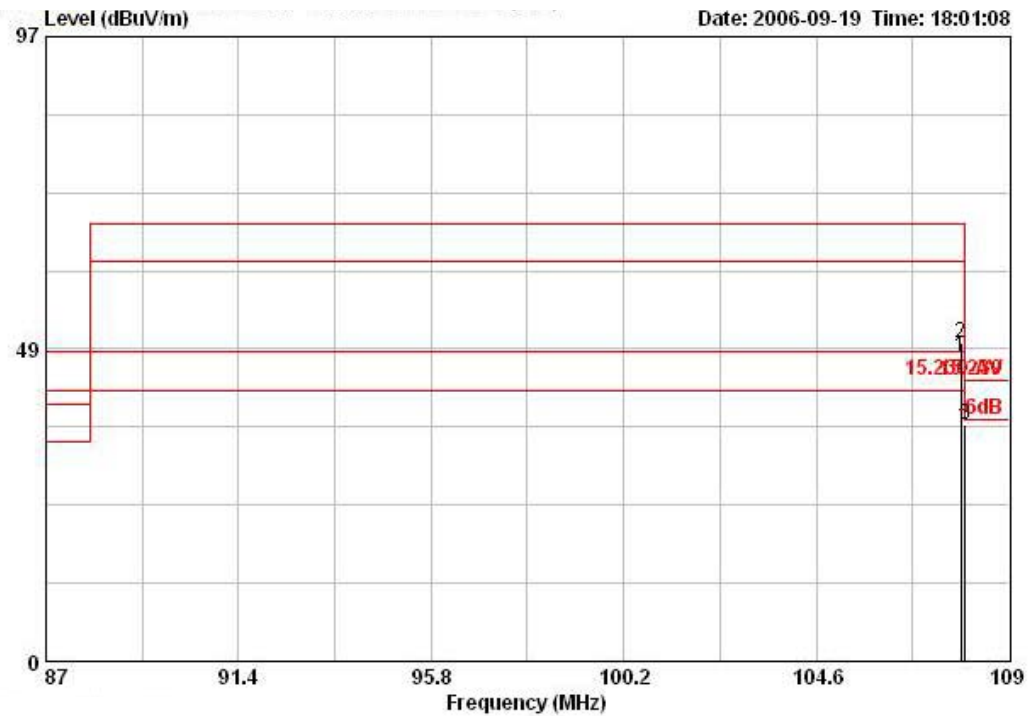
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.900	42.44	-25.56	68.00	55.62	12.24	0.53	25.95	PEAK	100	97
2	107.900	41.22	-6.78	48.00	54.40	12.24	0.53	25.95	Average	100	97

Item 1, 2 are fundamental frequency at 107.9 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	107.900	47.42	-0.58	48.00	60.60	12.24	0.53	25.95	Average	261	242
2	107.900	49.44	-18.56	68.00	62.62	12.24	0.53	25.95	Peak	261	242

Item 1, 2 are fundamental frequency at 107.9 MHz.

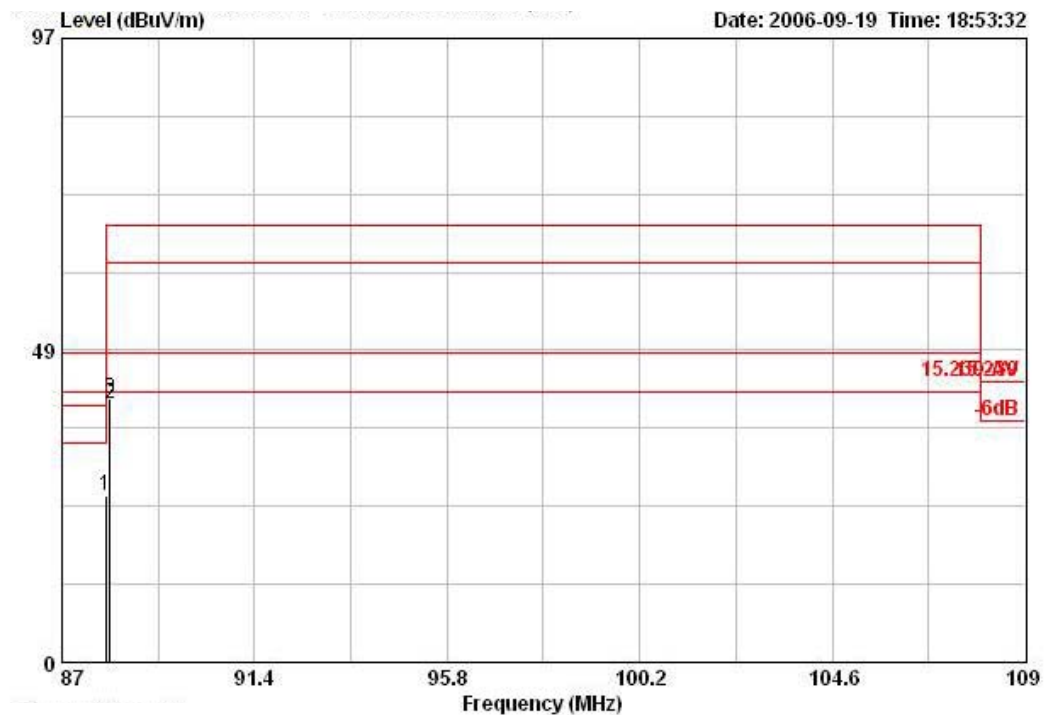
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 1 / Antenna with bundle of cable / Ant. 1

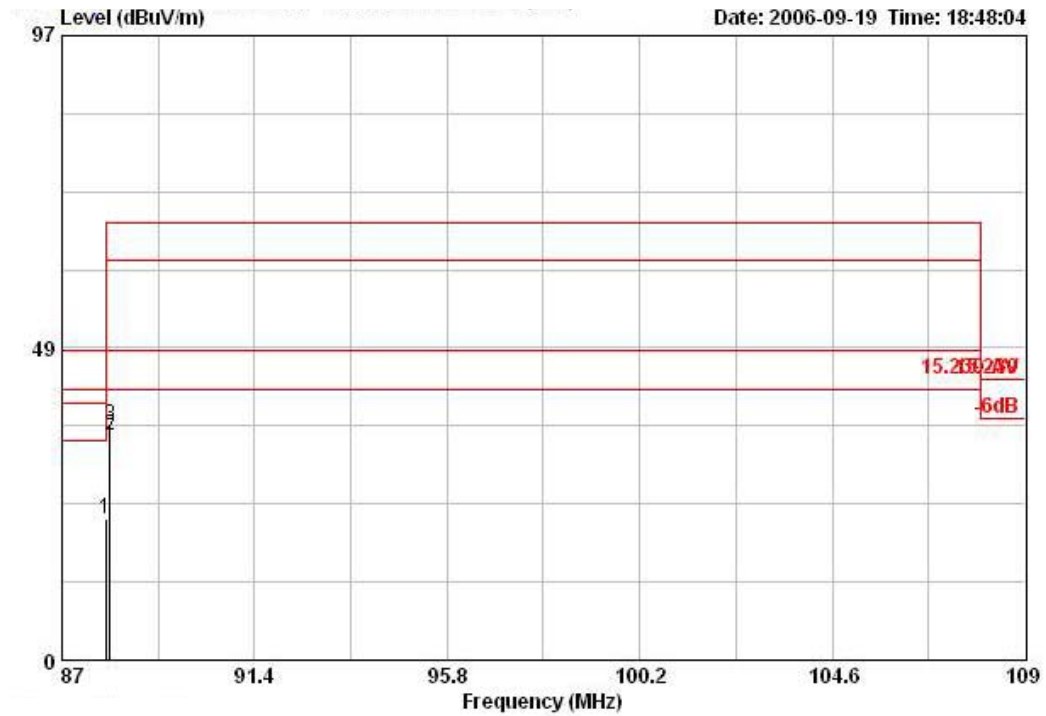
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.100	40.21	-7.79	48.00	56.80	8.98	0.55	26.12	Average	100	222
3	88.100	41.03	-26.97	68.00	57.62	8.98	0.55	26.12	PEAK	100	222

Item 2, 3 are fundamental frequency at 88.1 MHz.

Horizontal



	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.100	34.85	-13.15	48.00	51.44	8.98	0.55	26.12	Average	190	50
3	88.100	36.56	-31.44	68.00	53.15	8.98	0.55	26.12	Peak	190	50

Item 2, 3 are fundamental frequency at 88.1 MHz.

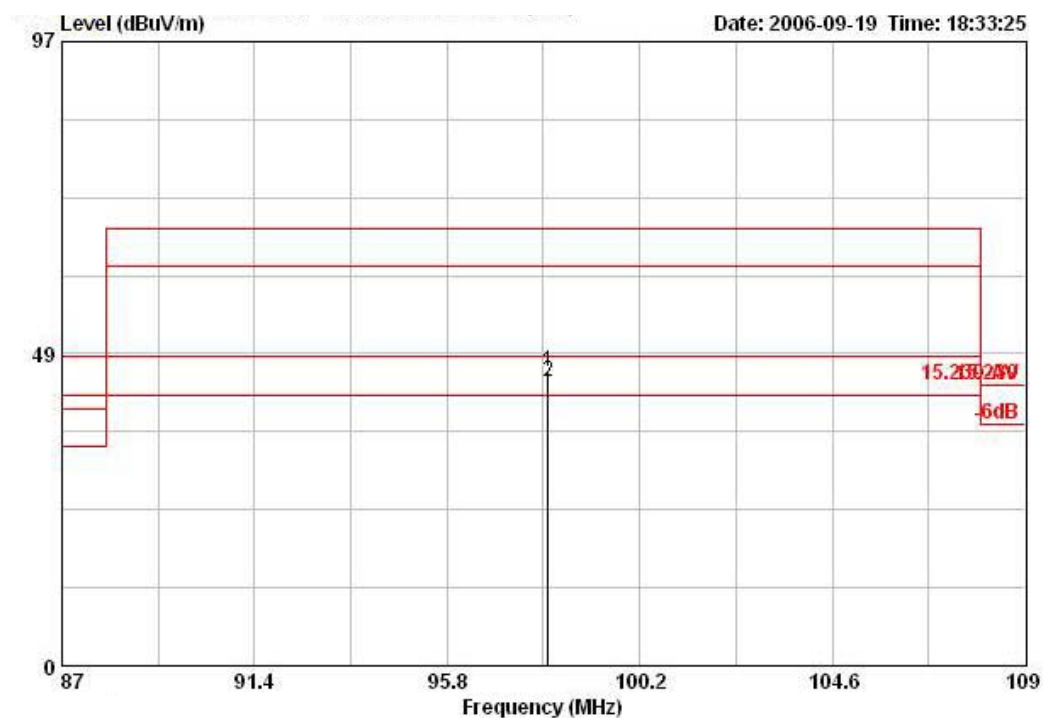
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 51 / Antenna with bundle of cable / Ant. 1

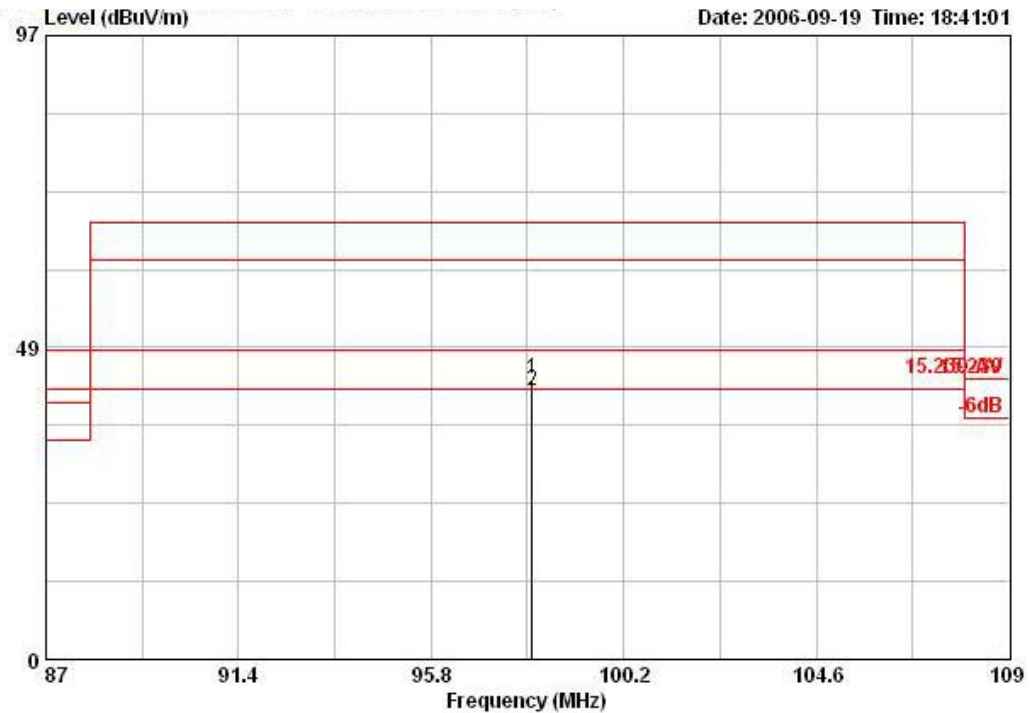
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.102	45.61	-22.39	68.00	60.36	10.82	0.42	26.00	PEAK	100	157
2 !	98.102	44.25	-3.75	48.00	59.00	10.82	0.42	26.00	Average	100	157

Item 1, 2 are fundamental frequency at 98.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.102	43.49	-24.51	68.00	58.24	10.82	0.42	26.00	Peak	400	241
2	98.102	41.86	-6.14	48.00	56.61	10.82	0.42	26.00	Average	400	241

Item 1, 2 are fundamental frequency at 98.1 MHz.

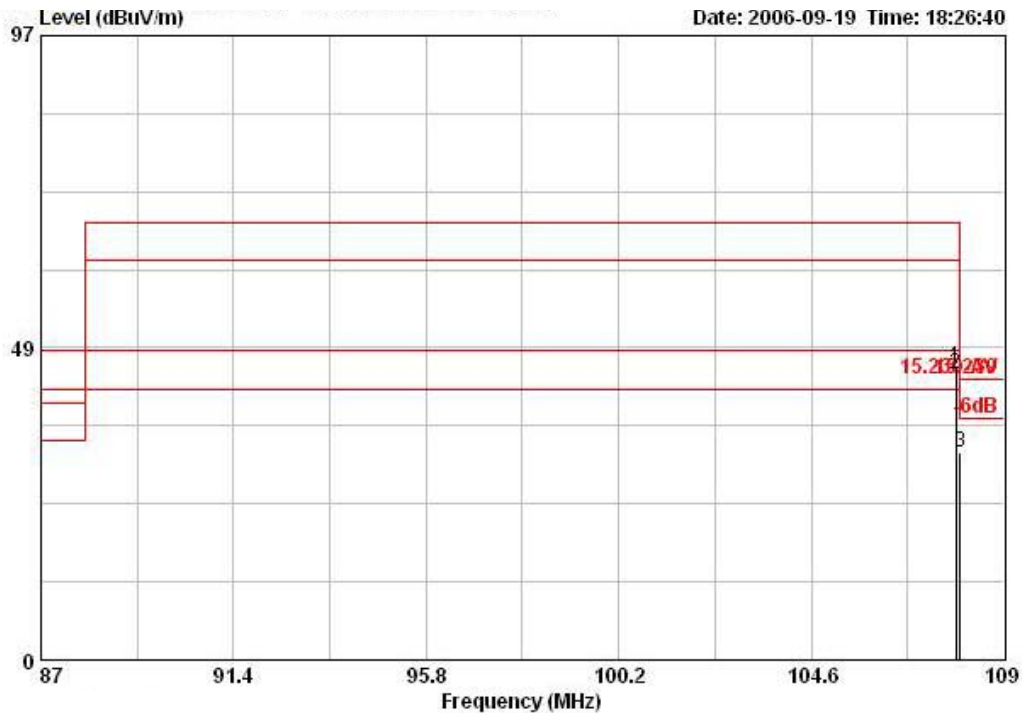
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 100 / Antenna with bundle of cable / Ant. 1

Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.900	45.46	-22.54	68.00	58.64	12.24	0.53	25.95	PEAK	100	171
2 !	107.900	44.45	-3.55	48.00	57.63	12.24	0.53	25.95	Average	100	171

Item 1, 2 are fundamental frequency at 107.9 MHz.



Level (dBuV/m)

Date: 2006-09-19 Time: 18:19:47

97

49

0

87 91.4 95.8 100.2 104.6 109

Frequency (MHz)

15.2352 MHz

49 dBuV/m

6 dB

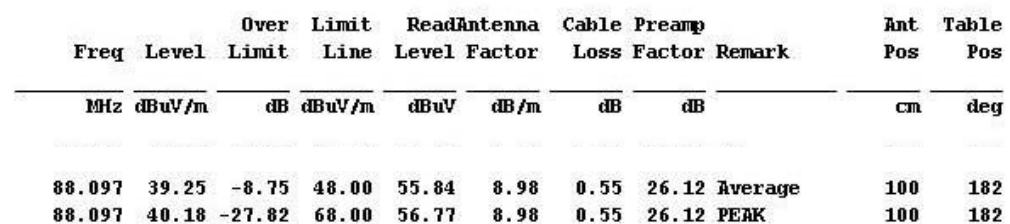
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.900	45.76	-22.24	68.00	58.94	12.24	0.53	25.95	PEAK	274	234
2 @	107.900	44.92	-3.08	48.00	58.10	12.24	0.53	25.95	Average	274	234

Note:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

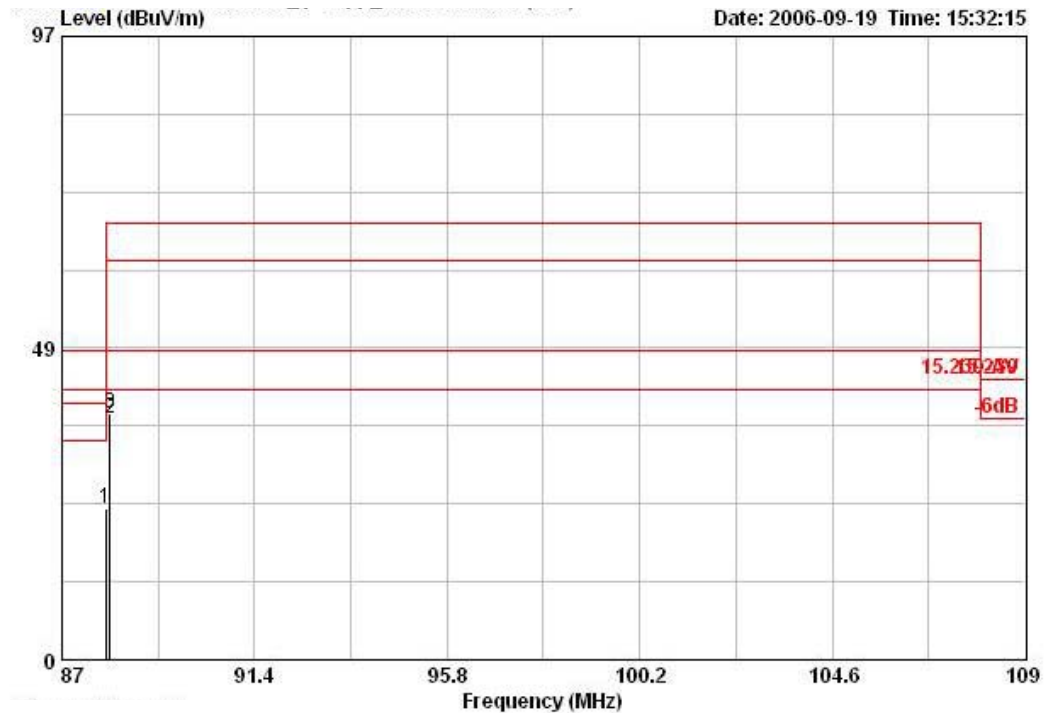


Vertical



Item 2, 3 are fundamental frequency at 88.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.097	37.49	-10.51	48.00	54.08	8.98	0.55	26.12	AVERAGE	400	182
3	88.097	38.22	-29.78	68.00	54.81	8.98	0.55	26.12	PEAK	400	182

Item 2, 3 are fundamental frequency at 88.1 MHz.

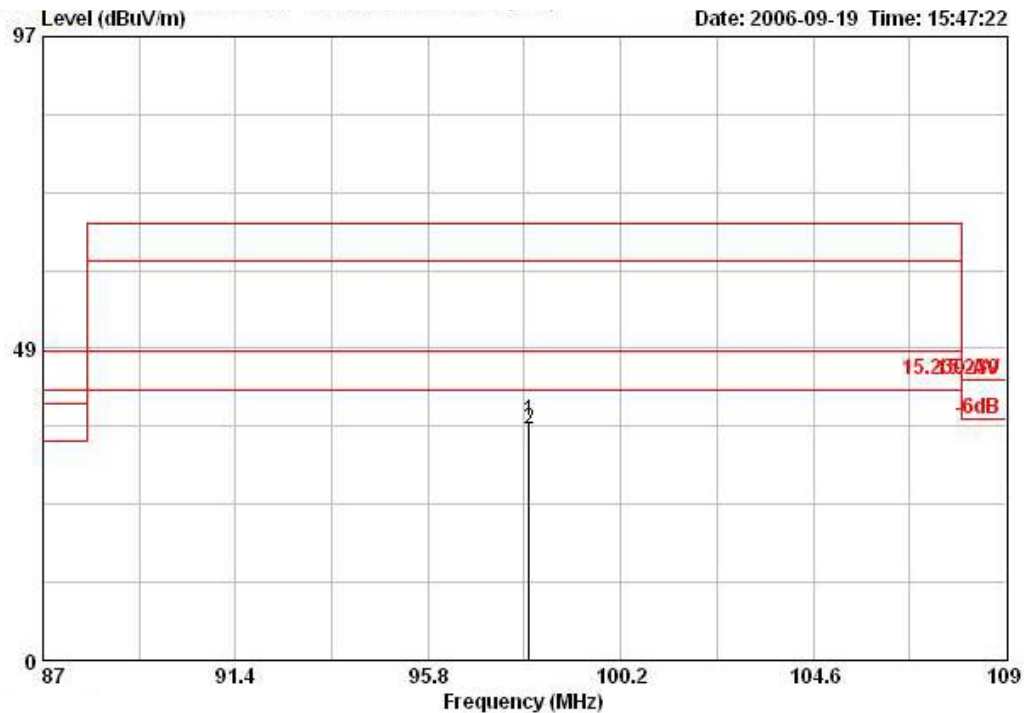
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 51 / Antenna without bundle of cable / Ant. 1 + Ant. 2

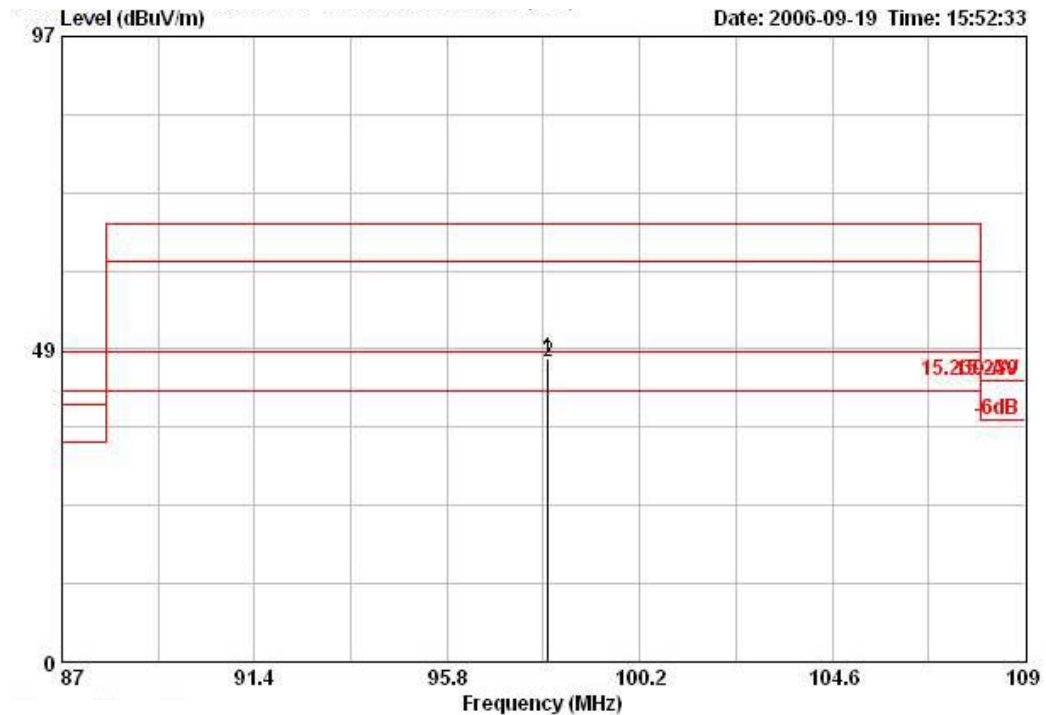
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.100	37.29	-30.71	68.00	52.04	10.82	0.42	26.00	PEAK	100	195
2	98.100	36.05	-11.95	48.00	50.80	10.82	0.42	26.00	Average	100	195

Item 1, 2 are fundamental frequency at 98.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.100	47.14	-20.86	68.00	61.89	10.82	0.42	26.00	PEAK	199	208
2 @	98.100	46.55	-1.45	48.00	61.30	10.82	0.42	26.00	Average	199	208

Item 1, 2 are fundamental frequency at 98.1 MHz.

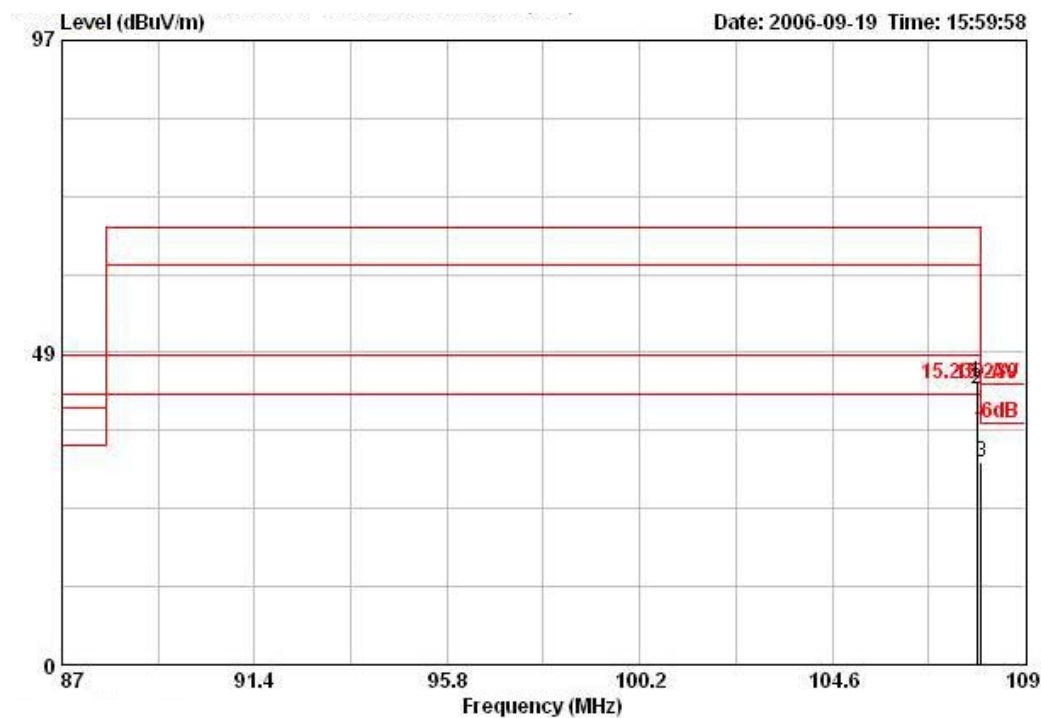
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 100 / Antenna without bundle of cable / Ant. 1 + Ant. 2

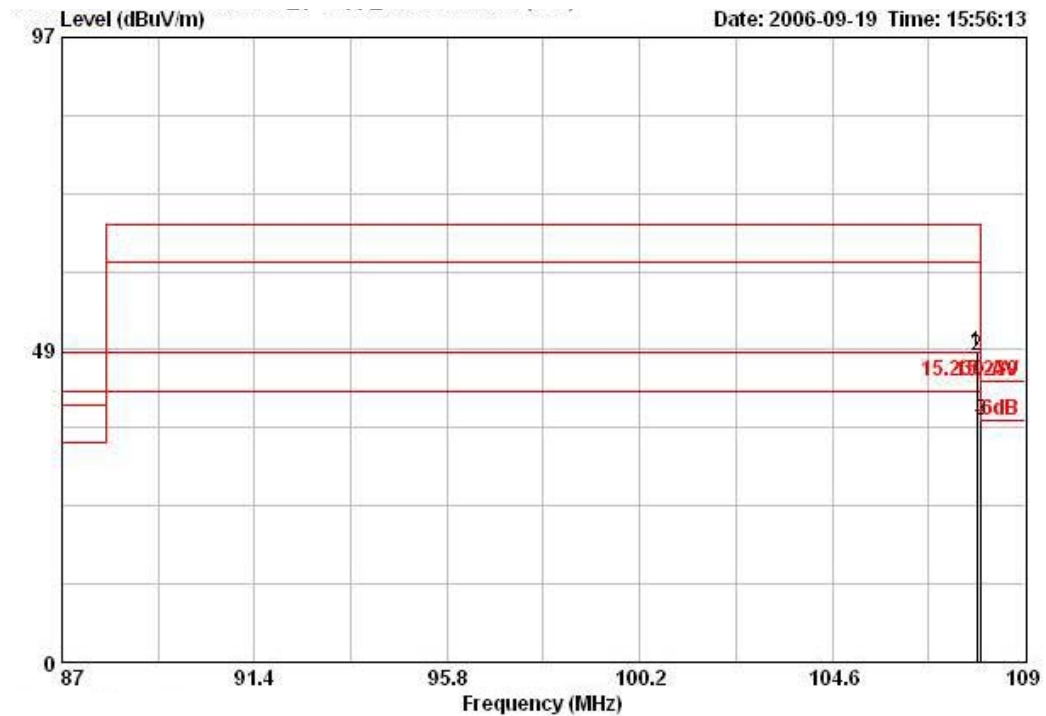
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable Preamp	Loss Factor	Remark	Ant Pos	Table Pos
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB	cm	deg
1	107.901	43.98	-24.02	68.00	57.16	12.24	0.53	25.95 PEAK	100	76
2 @	107.901	42.71	-5.29	48.00	55.89	12.24	0.53	25.95 Average	100	76

Item 1, 2 are fundamental frequency at 107.9 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.901	48.22	-19.78	68.00	61.40	12.24	0.53	25.95	PEAK	284	204
2 @	107.901	47.62	-0.38	48.00	60.80	12.24	0.53	25.95	Average	284	204

Item 1, 2 are fundamental frequency at 107.9 MHz.

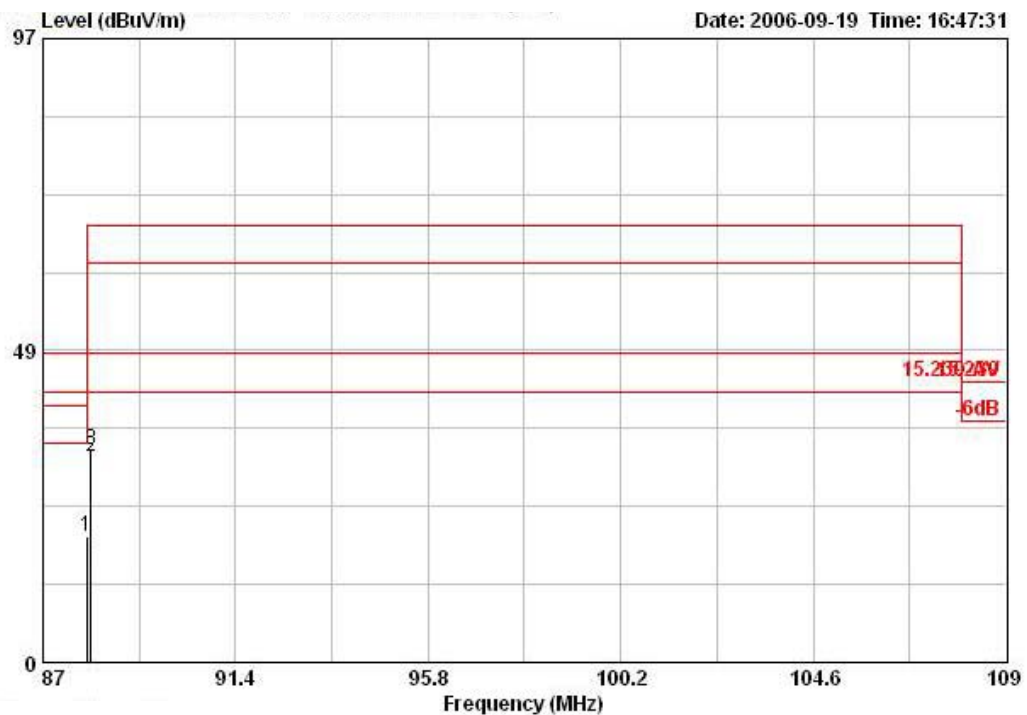
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 1 / Antenna with bundle of cable / Ant. 1 + Ant. 2

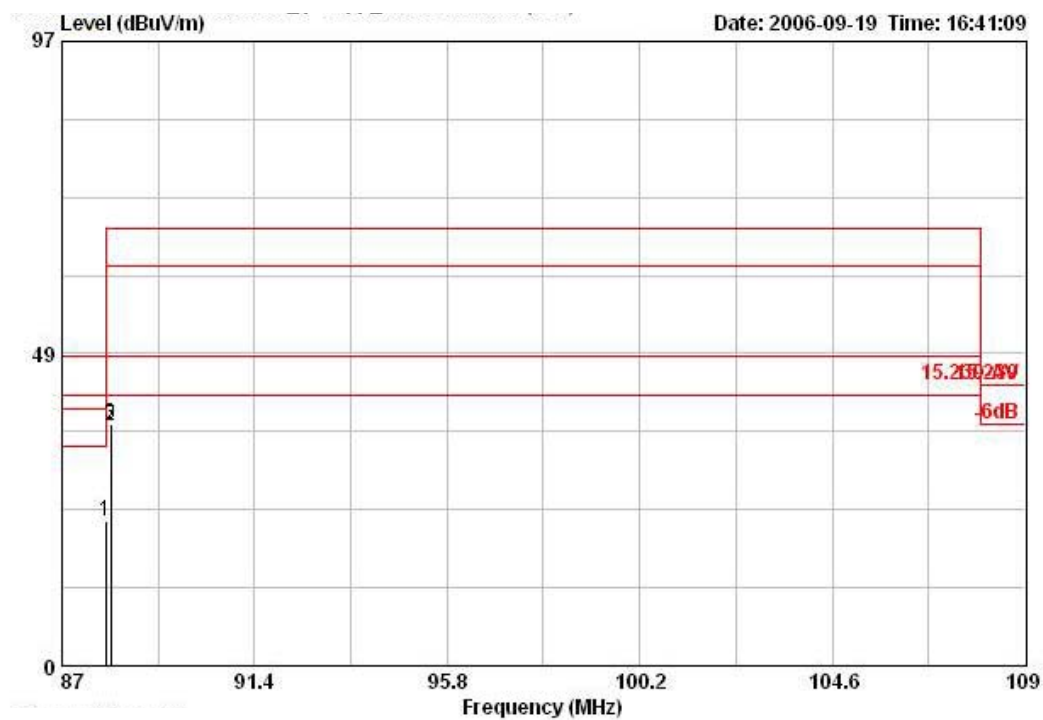
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
2	88.103	32.01	-15.99	48.00	48.60	8.98	0.55	26.12	AVERAGE	100	245
3	88.103	33.04	-34.96	68.00	49.63	8.98	0.55	26.12	Peak	100	245

Item 2, 3 are fundamental frequency at 88.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
2	88.106	37.21	-10.79	48.00	53.80	8.98	0.55	26.12 AVERAGE	383	20
3	88.106	37.65	-30.35	68.00	54.24	8.98	0.55	26.12 Peak	383	20

Item 2, 3 are fundamental frequency at 88.1 MHz.

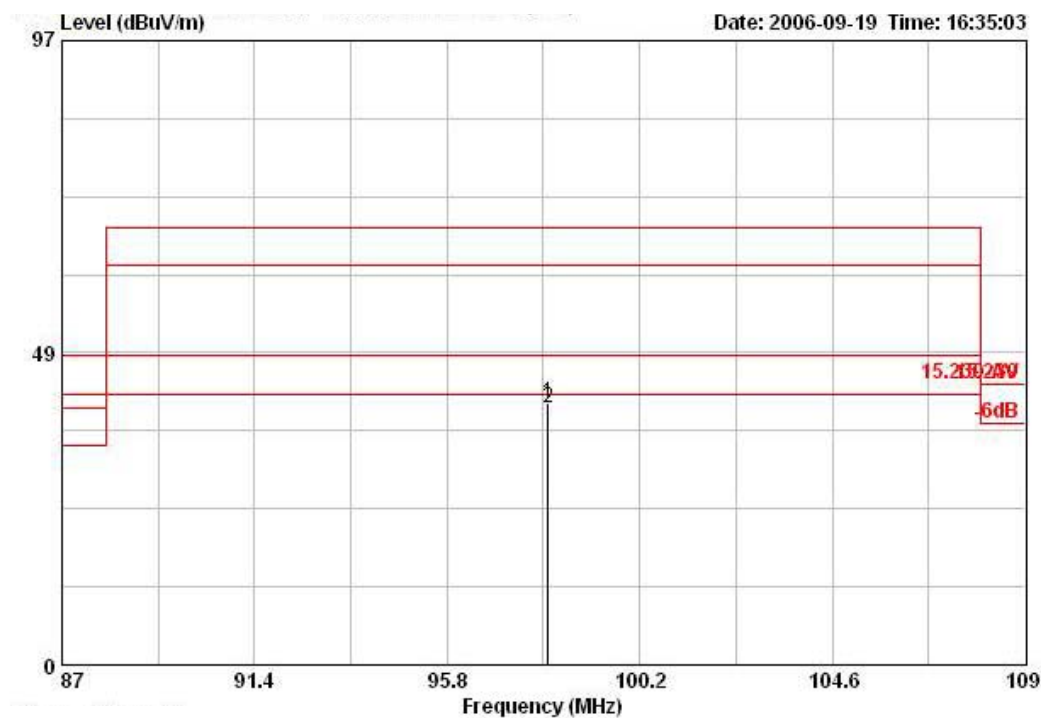
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 51 / Antenna with bundle of cable / Ant. 1 + Ant. 2

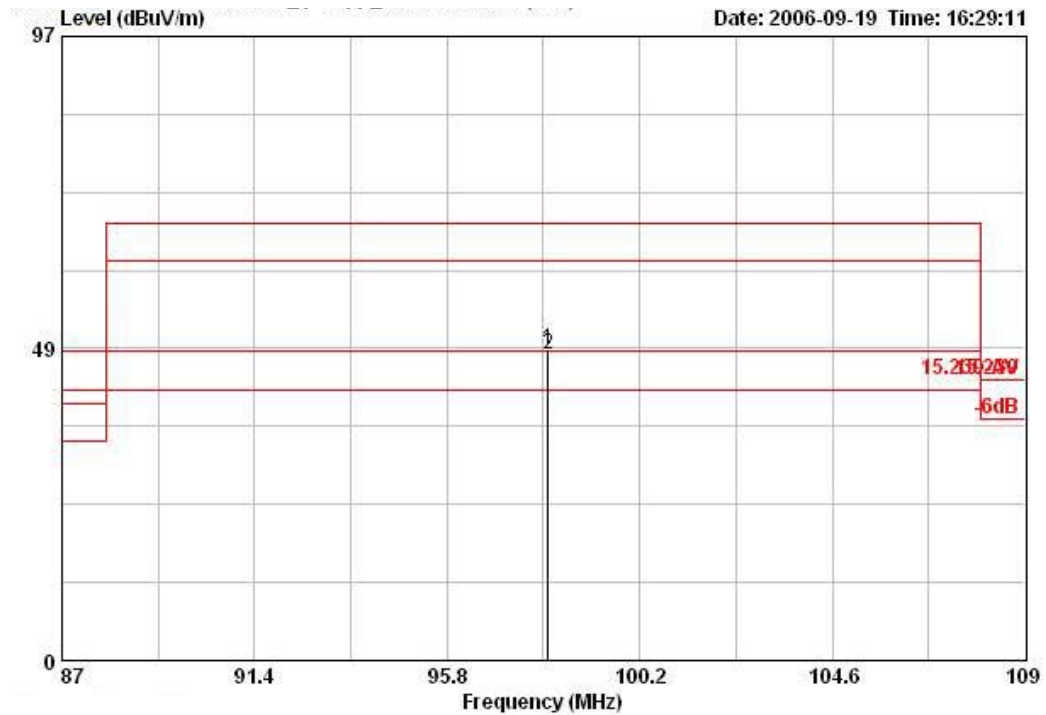
Vertical



	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.105	40.83	-27.17	68.00	55.58	10.82	0.42	26.00	Peak	100	184
2	98.105	39.85	-8.15	48.00	54.60	10.82	0.42	26.00	Average	100	184

Item 1, 2 are fundamental frequency at 98.1 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.100	48.40	-19.60	68.00	63.15	10.82	0.42	26.00	Peak	207	214
2	98.100	47.45	-0.55	48.00	62.20	10.82	0.42	26.00	AVERAGE	207	214

Item 1, 2 are fundamental frequency at 98.1 MHz.

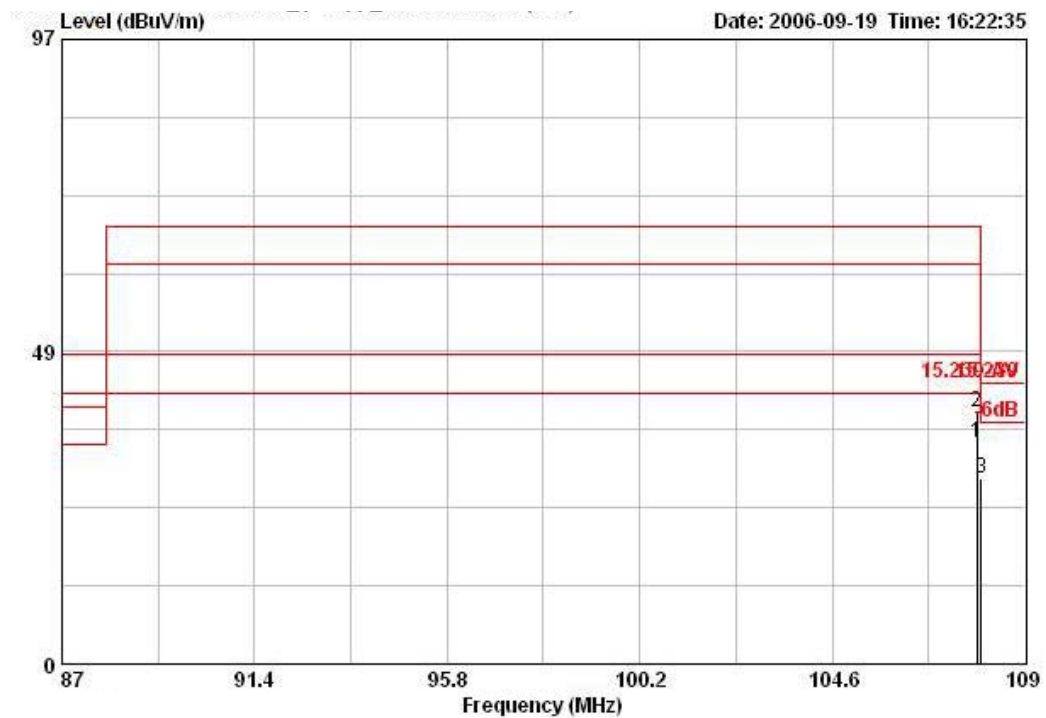
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	64%
Test Engineer	Beck Wu	Configurations	Channel 100 / Antenna with bundle of cable / Ant. 1+Ant. 2

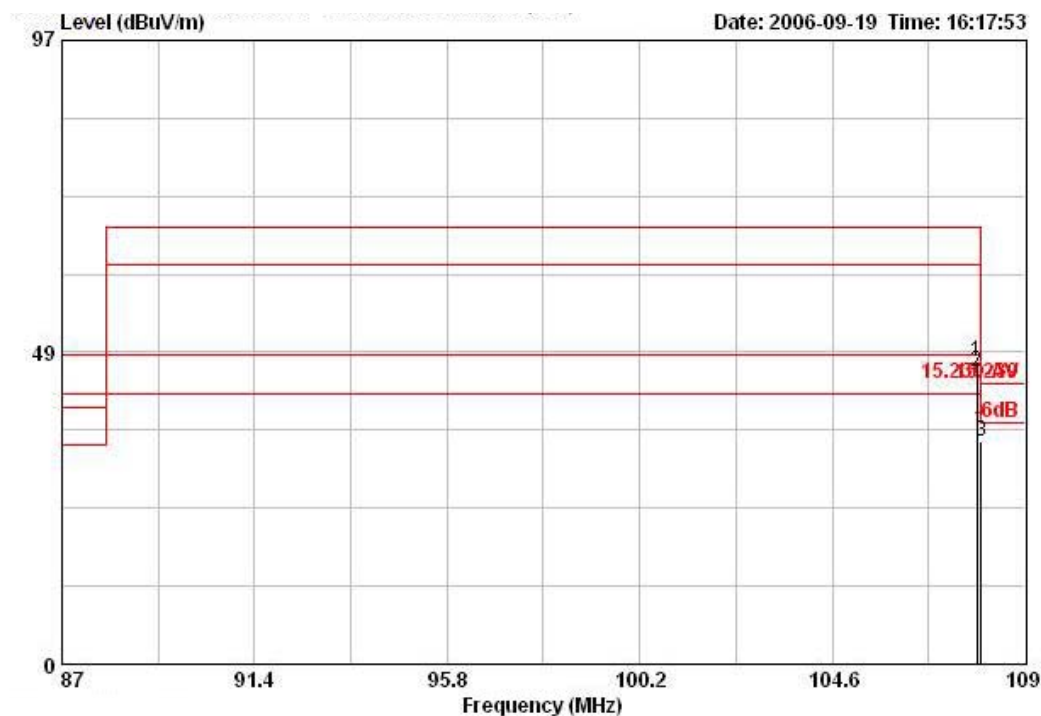
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	107.901	34.28	-13.72	48.00	47.46	12.24	0.53	25.95	Average	100	76
2	107.901	38.99	-29.01	68.00	52.17	12.24	0.53	25.95	Peak	100	76

Item 1, 2 are fundamental frequency at 107.9 MHz.

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	107.901	46.94	-21.06	68.00	60.12	12.24	0.53	25.95	257	322
2 @	107.901	45.37	-2.63	48.00	58.55	12.24	0.53	25.95	257	322

Item 1, 2 are fundamental frequency at 107.9 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.2. 20dB Spectrum Bandwidth Measurement

4.2.1. Limit

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency.

4.2.2. Measuring Instruments and Setting

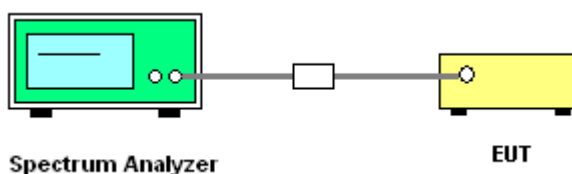
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.
4. Maximum internal modulation was used since the radio does not have an external audio input. The modulator audio input level control was set to maximum to perform this test. All OBW measurements are made at maximum audio input levels.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

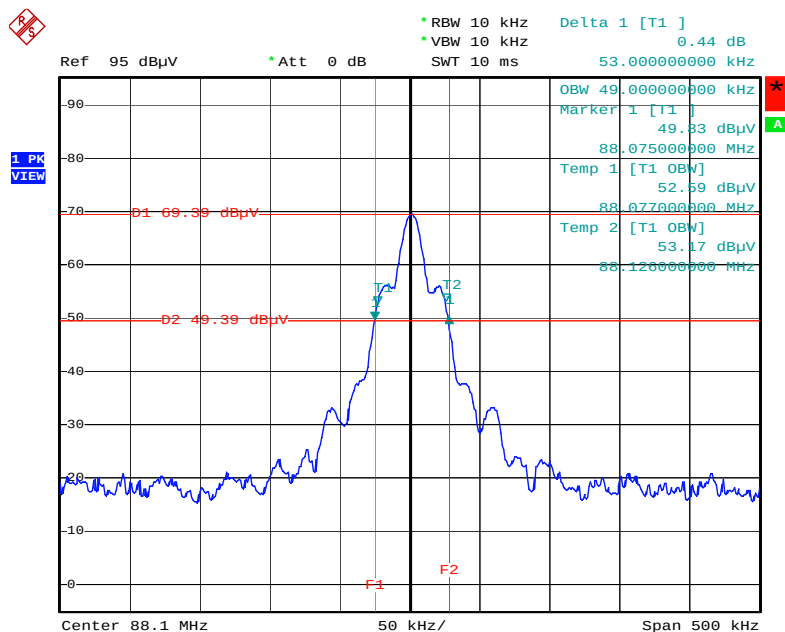
The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 20dB Spectrum Bandwidth

Temperature	24°C	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1/51/100

Frequency	20dB BW (kHz)	99% OBW (kHz)	Frequency range (MHz) $f_L > 88\text{MHz}$	Frequency range (MHz) $f_H < 108\text{MHz}$	Test Result
88.1 MHz	53.00	49.00	88.0750	-	Complies
98.1 MHz	56.00	53.00	-	-	Complies
107.9 MHz	59.00	124.00	-	107.9660	Complies

20 dB/99% Bandwidth Plot on 88.1 MHz



Date: 6.JUL.2006 14:11:25