FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Cradle for Blackbird Portable Navigation System

Model: PMD-B200-CR

Trade Name: ALPINE

Issued to

Leadtek Research Inc.
18F, No. 166, Chien-Yi Rd., Chung-Ho,
Taipei Hsien, Taiwan, (235) R.O.C.

Issued by

Compliance Certification Services Inc.
No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang,
Taoyuan Shien, (338) Taiwan, R.O.C.
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ACCREDITED
No. 0824-01

Testing Laboratory
0363

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1. TEST RESULT CERTIFICATION

Applicant:	**Leadtek Research Inc.** 18F, No. 166, Chien-Yi Rd., Chung-Ho, Taipei Hsien, Taiwan, (235) R.O.C.
Equipment Under Test:	Cradle for Blackbird Portable Navigation System
Trade Name:	ALPINE
Model:	PMD-B200-CR
Date of Test:	August 20, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.239.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

S.C. Wang
Executive Vice President
Compliance Certification Services Inc.

Reviewed by:

Miller Lee
Deputy Manager of Linkou Laboratory
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Cradle for Blackbird Portable Navigation System
Trade Name	ALPINE
Model	PMD-B200-CR
Model Discrepancy	N/A
Power Supply	Powered form DC Battery
Operate Frequency	88.1, 88.3, 88.5, 88.7, 88.9, 106.7, 106.9, 107.1, 107.3, 107.5, 107.7, 107.9MHz
Number of Channels	12 Channel
Transmit Power	N/A
Modulation Technique	FM

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *The product is a Transmitter. This submittal(s) (test report) is intended for* ***FCC ID: I2ILR9710X*** *filing to comply with Section 15.239 of the FCC Part 15 Subpart C Rules.*
3. *The tuning controls were manually adjusted to verify maximum tuning range.*

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 Part 15 Subpart C.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode was programmed.

The worst case data rate is determined as the data rate with highest output power.

Channel Low (88.1 MHz)、Mid (106.7 MHz) and High (107.9 MHz) was chosen for full testing.

The PDA connects with EUT and use software of PDA to control EUT transmitter.

Download the audio signal (MP3 songs) to the PDA, and then through the PDA play MP3 songs during the20%BW test and the volume of audio was tuned to the max during the test.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilnet	E4411B	MY41440314	N.C.R
Spectrum Analyzer	R&S	FSP30	100112	10/10/2007
EMI Test Receiver	R&S	ESVS30	828488/004	03/12/2008
Pre-Amplifier	Anritsu	MH648A	M18767	08/31/2007
Pre-Amplifier	MITEQ	AFS42-00102650-42-10P-42	924206	04/27/2008
Bilog Antenna	CHASE	CBL 6112A	2307	03/09/2008
Horn Antenna	EMCO	3115	00022250	04/16/2008
Loop Antenna	EMCO	6502	2356	N.C.R
Turn Table	Chance Most	CM-T003-1	T807-6	N.C.R
Antenna Tower	Chance Most	CM-A003-1	A807-6	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
RF Switch	ANRITSU	MP59B	M53867	N.C.R
Site NSA	CCS	N/A	N/A	05/05/2008
Test S/W	LabVIEW 6.1 (CCS OATS EMI SW V2.6)			

Remark: *The measurement uncertainty is less than +/-2.0065dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☐ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No.81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	ACCREDITED No. 0824-01
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	93105, 90471
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	R-2541/2316/725/1868 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	ELA 124a ELA 124b ELA 124c
Taiwan	TAF	EN 300 328-1, EN 300 328-2, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	IC 2324C-3 IC 2324C-5

Note: *No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	DC Battery	YUASA	48D26R	N/A	N/A	N/A	Unshielded, 0.5m x 2
2.	PDA	ALPINE	PMD-B200	N/A	N/A	N/A	N/A

Remark: *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

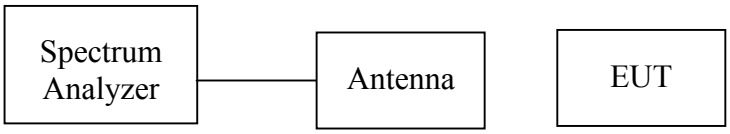
7. FCC PART 15.239 REQUIREMENTS

7.1 20 DB BANDWIDTH & FREQUENCY RANGE

LIMIT

According to §15.239(a), emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=10kHz, VBW = RBW, Span = 200kHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

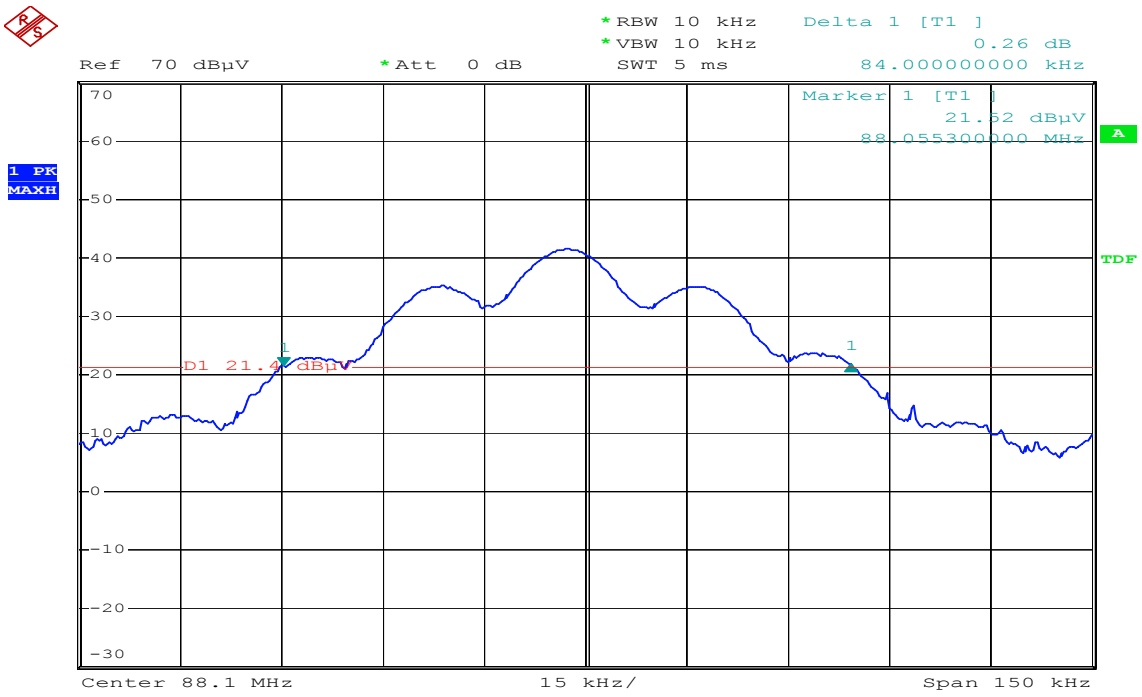
Test Data

Channel	Frequency (MHz)	Bandwidth (kHz)
Low	88.1	84.0
Mid	106.7	83.4
High	107.9	86.1

20 DB BANDWIDTH

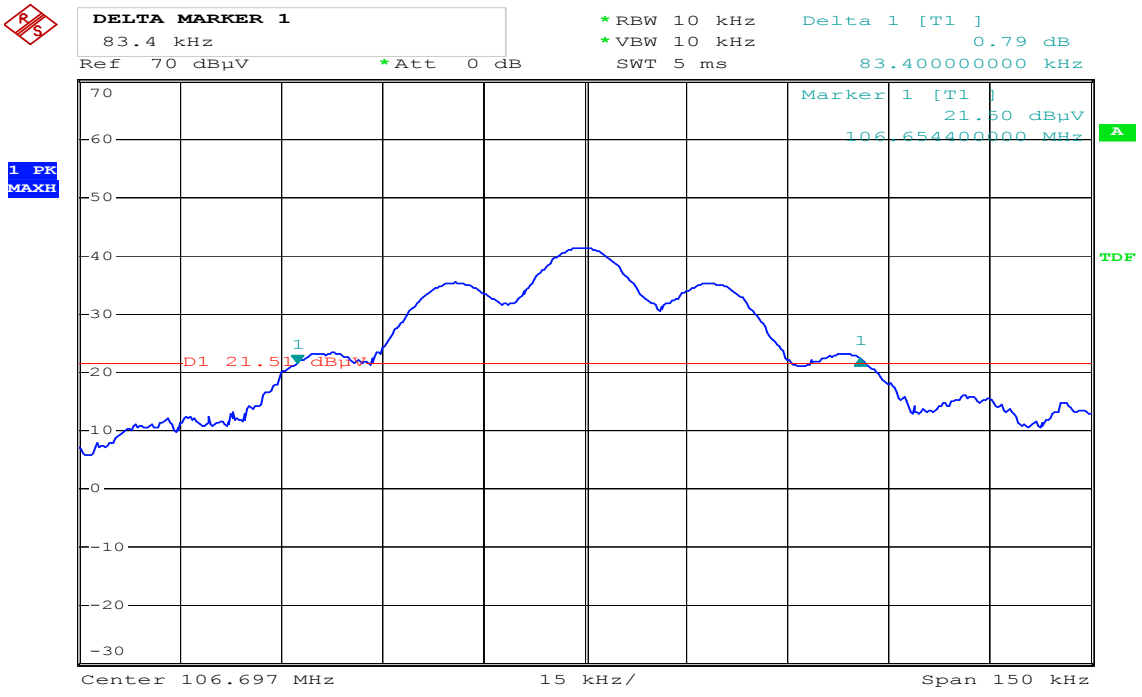
Test Plot

CH Low



Date: 20.AUG.2007 11:36:50

CH Mid



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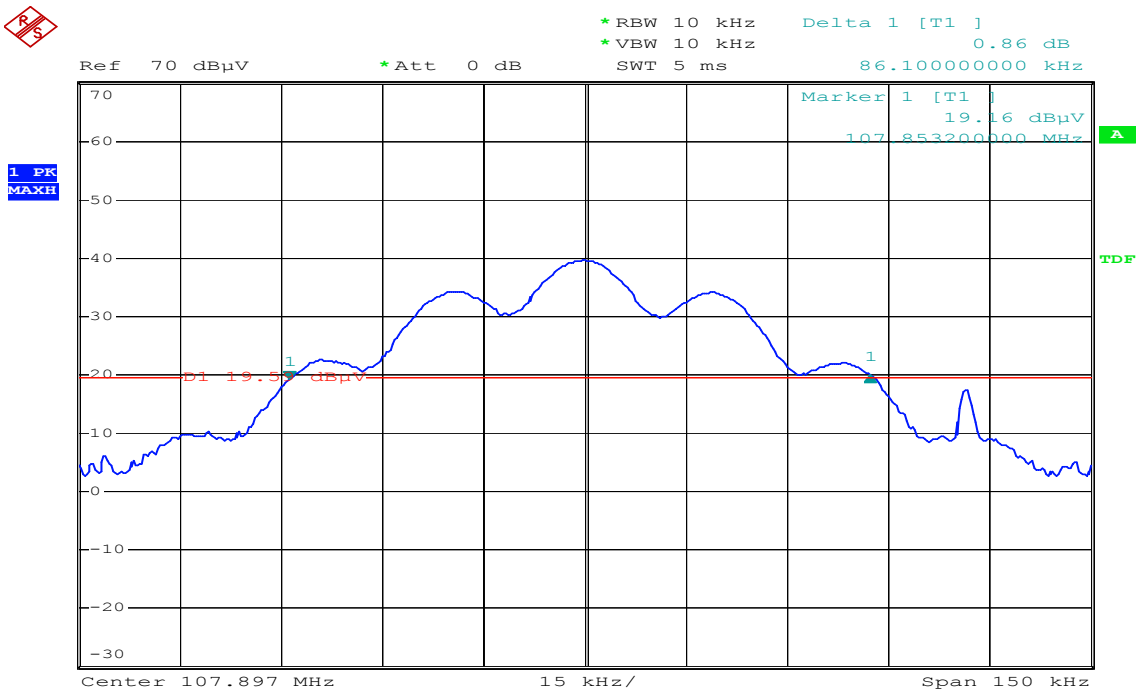
CH High



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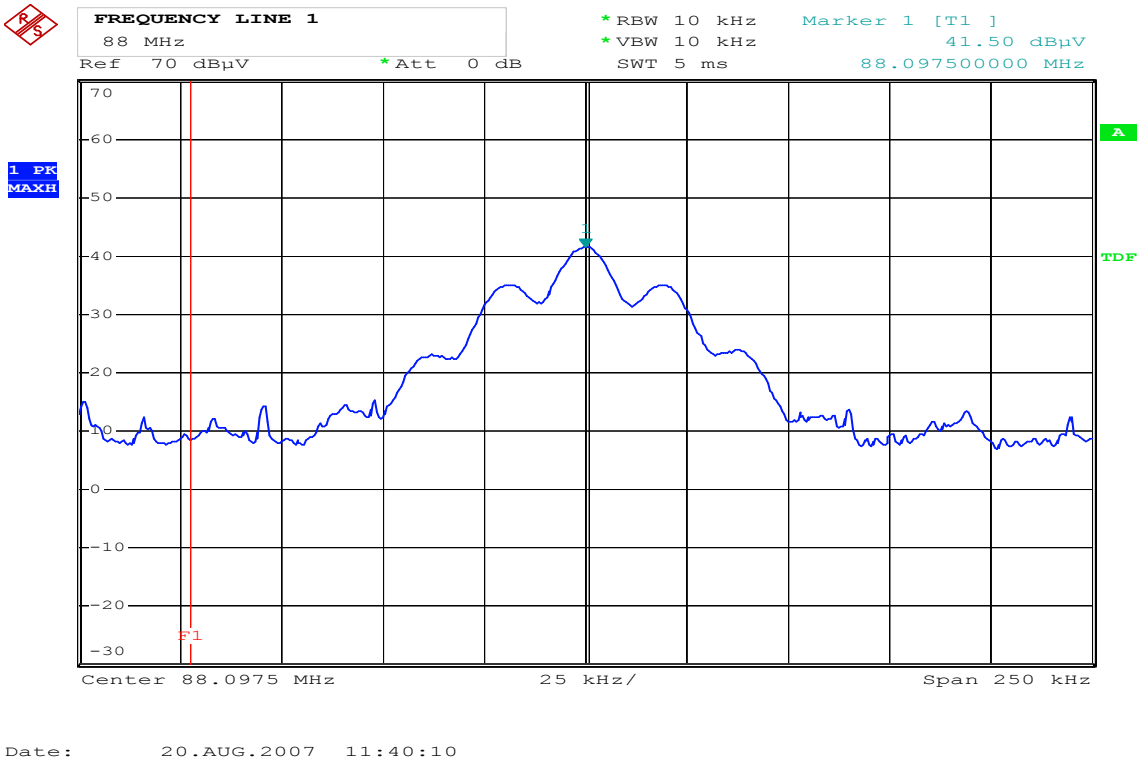
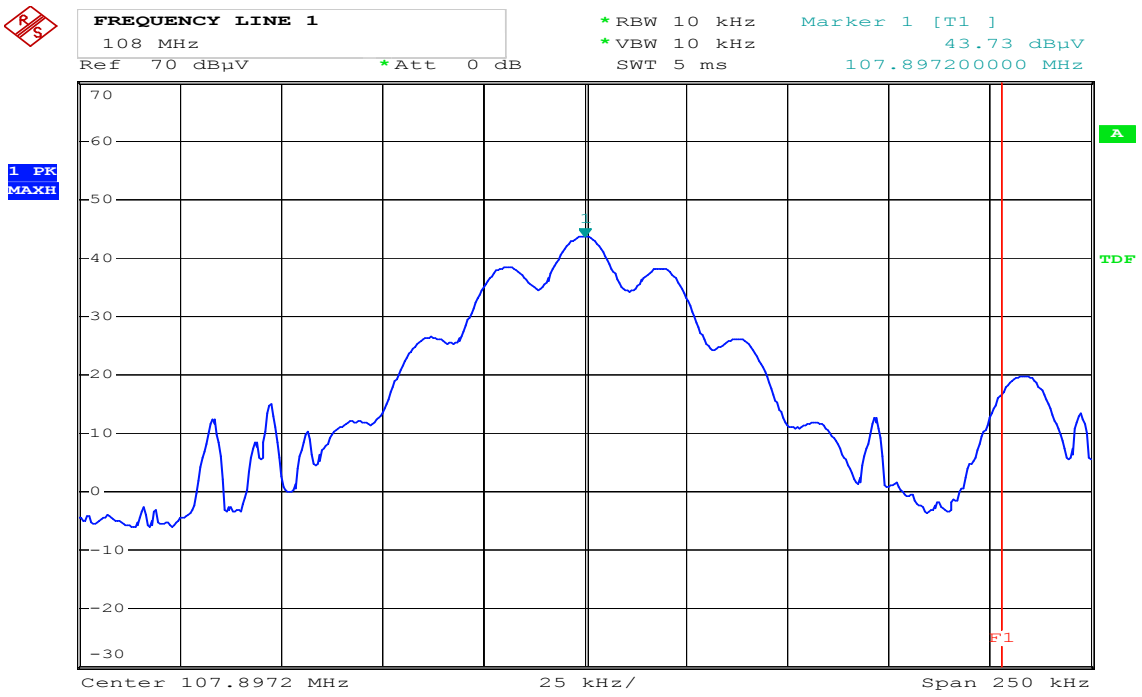
FREQUENCY RANGE

CH Low



Date: 20.AUG.2007 11:40:10

CH Hing



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7.2 RADIATED EMISSIONS

LIMIT

1. The field strength of any emission within this band (section 15.239 frequency between 88 MHz –108 MHz) shall not exceed 250 microvolts /meter at 3 meters. (48dBμV/m at 3m) 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.

   The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit), as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

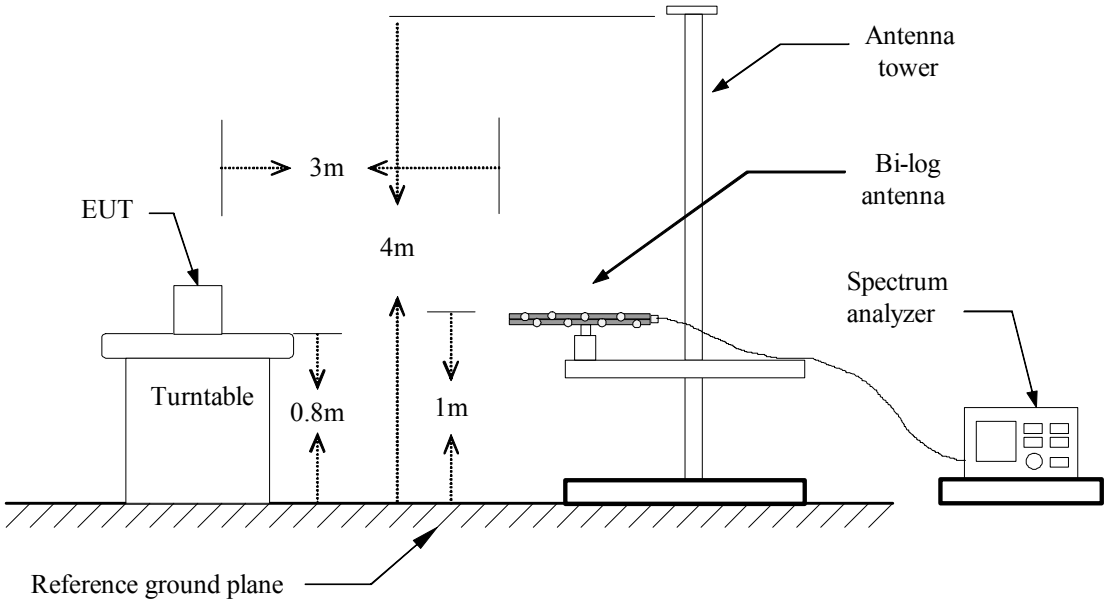
   Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the above emission table, the tighter limit applies at the band edges.

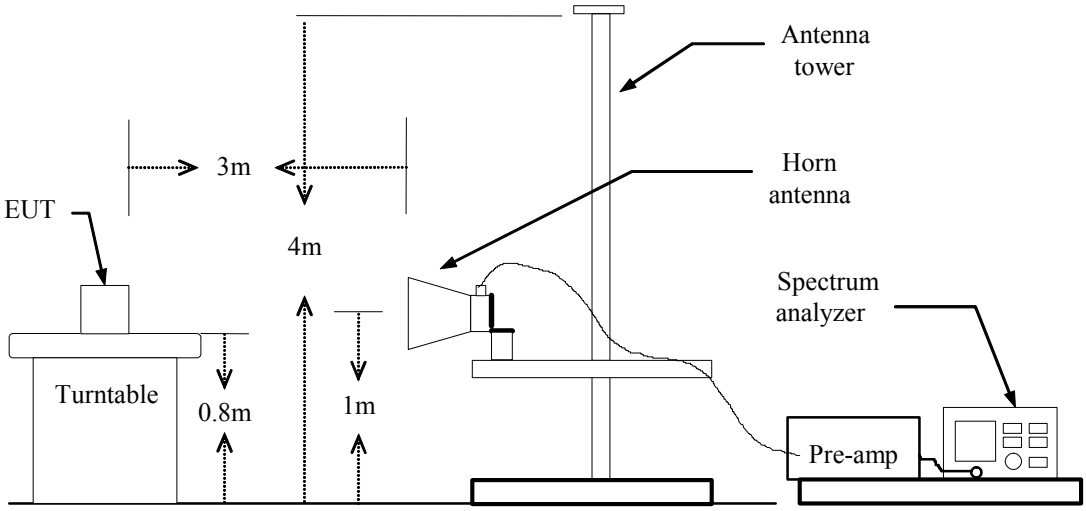
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
1.705-30	30	69.54
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted

Test Data

Operation Mode:	CH Low	**Test Date:**	August 20, 2007
Temperature:	24°C	**Tested by:**	Arno Hsieh
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/AVG)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)
88.10	V	Peak	28.00	12.63	40.63	67.90	-27.27
88.10	V	AVG	27.12	12.63	39.75	47.90	-8.15
432.14	V	Peak	14.21	18.16	32.37	46.00	-13.63
485.23	V	Peak	7.94	19.23	27.17	46.00	-18.83
627.00	V	Peak	5.92	21.91	27.83	46.00	-18.17
687.00	V	Peak	13.32	22.19	35.51	46.00	-10.49
833.00	V	Peak	11.81	24.10	35.91	46.00	-10.09
898.00	V	Peak	7.37	24.87	32.24	46.00	-13.76
88.10	H	Peak	32.51	12.63	45.14	67.90	-22.76
88.10	H	AVG	31.97	12.63	44.60	47.90	-3.30
338.00	H	Peak	14.24	16.44	30.68	46.00	-15.32
432.14	H	Peak	21.60	18.16	39.76	46.00	-6.24
528.41	H	Peak	13.60	20.17	33.77	46.00	-12.23
553.24	H	Peak	12.70	20.69	33.39	46.00	-12.61
658.00	H	Peak	5.21	22.14	27.36	46.00	-18.64
833.00	H	Peak	6.17	24.10	30.27	46.00	-15.73

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

Operation Mode:	CH Mid	**Test Date:**	August 20, 2007
Temperature:	24°C	**Tested by:**	Arno Hsieh
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/AVG)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)
106.70	V	Peak	28.31	13.70	42.01	67.90	-25.89
106.70	V	AVG	26.85	13.70	40.55	47.90	-7.35
432.04	V	Peak	13.95	18.16	32.10	46.00	-13.90
540.00	V	Peak	14.50	20.41	34.91	46.00	-11.09
630.00	V	Peak	8.28	21.94	30.22	46.00	-15.78
648.00	V	Peak	13.00	22.11	35.11	46.00	-10.89
756.05	V	Peak	7.39	22.95	30.35	46.00	-15.65
823.35	V	Peak	4.42	24.00	28.43	46.00	-17.57
106.70	H	Peak	31.71	13.70	45.41	67.90	-22.49
106.70	H	AVG	30.58	13.70	44.28	47.90	-3.62
157.10	H	Peak	22.20	10.39	32.58	43.50	-10.92
432.00	H	Peak	20.00	18.16	38.16	46.00	-7.84
540.03	H	Peak	18.19	20.41	38.60	46.00	-7.40
553.00	H	Peak	14.68	20.68	35.36	46.00	-10.64
648.02	H	Peak	16.43	22.11	38.54	46.00	-7.46
864.04	H	Peak	6.79	24.45	31.24	46.00	-14.76

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

Operation Mode:	CH High	**Test Date:**	August 20, 2007
Temperature:	24°C	**Tested by:**	Arno Hsieh
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/AVG)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)
107.90	V	Peak	28.15	13.57	41.72	67.90	-26.18
107.90	V	AVG	26.79	13.57	40.36	47.90	-7.54
479.00	V	Peak	13.08	19.08	32.16	46.00	-13.84
485.53	V	Peak	5.64	19.23	24.87	46.00	-21.13
503.72	V	Peak	13.72	19.66	33.38	46.00	-12.62
627.00	V	Peak	5.61	21.91	27.52	46.00	-18.48
648.27	V	Peak	10.50	22.11	32.61	46.00	-13.39
823.00	V	Peak	5.32	24.00	29.32	46.00	-16.68
107.90	H	Peak	32.62	13.57	46.19	67.90	-21.71
107.90	H	AVG	31.67	13.57	45.24	47.90	-2.66
540.22	H	Peak	13.56	20.42	33.98	46.00	-12.02
553.00	H	Peak	14.76	20.68	35.44	46.00	-10.56
611.00	H	Peak	8.54	21.76	30.30	46.00	-15.70
629.00	H	Peak	6.89	21.93	28.82	46.00	-17.18
743.00	H	Peak	3.06	22.75	25.81	46.00	-20.19
808.00	H	Peak	5.17	23.84	29.01	46.00	-16.99

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

7.3 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

***** *Decreases with the logarithm of the frequency.*

Test Configuration

Since this EUT is DC battery powered, this test item is not applicable.

TEST PROCEDURE

Since this EUT is DC battery powered, this test item is not applicable.

TEST RESULTS

Since this EUT is DC battery powered, this test item is not applicable.