FCC 47 CFR PART 15 SUBPART B TEST REPORT

for

Wireless Outdoor Lamp Speaker

MODEL: AW851

Test Report Number:
SZ100728B04-EF

Issued for

Uni-Art Precise Products Ltd
11-12/F, Yue Xiu Industrial Building,
87 Hung To Road, Kowloon, Hong Kong

Issued By:

Compliance Certification Services Inc.
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Issued Date: August 09, 2010

Testing Laboratory
0363

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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		August 09, 2010		Initial Issue	ALL	David Wang

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1 TEST RESULT CERTIFICATION

Product:	Wireless Outdoor Lamp Speaker
Model:	AW851
Brand:	Acoustic Research
Applicant:	**Uni-Art Precise Products Ltd** 11-12/F, Yue Xiu Industrial Building, 87 Hung To Road, Kowloon, Hong Kong
Manufacturer:	**Arkon (Sha Jing) Manufacturing Factory** NO. 50 Xin Sha Road Sha Jing Town, Baoan District, Shenzhen, China
Tested:	July 28 ~August 09, 2010
Test Voltage:	120VAC/ 60Hz

EMISSION			
Standard	**Item**	**Result**	**Remarks**
FCC 47 CFR Part 15 Subpart B ANSI C63.4-2003	Conducted (Power Port)	PASS	Meet Class B limit
	Radiated	PASS	Meet Class B limit

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
2. The information of measurement uncertainty is available upon the customer's request.

Deviation from Applicable Standard
None

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

David Wang
Manager
Compliance Certification Service Inc.

Reviewed by:

Aven Zhou
Supervisor of Report Dept.
Compliance Certification Service Inc.

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2 EUT DESCRIPTION

Product	Wireless Outdoor Lamp Speaker
Brand Name	Acoustic Research
Model	AW851
Applicant	Uni-Art Precise Products Ltd
Housing material	Plastic+Metal
EUT Type	☐ Engineering Sample, ☒ Product Sample, ☐ Mass Product Sample.
Serial Number	SZ100728B04-EF
EUT Power Rating	120VAC/ 60Hz
Received Date	August 10, 2010

I/O Port EUT

I/O PORT TYPES	Q'TY	TESTED WITH
1). Power Port	1	1

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3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the above additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

Pre-Test Mode		
Emission	Conducted Emission	**Mode 1:** Normal
	Radiated Emission	**Mode 1:** Normal

After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Conducted Emission	**Mode 1:** Normal
	Radiated Emission	**Mode 1:** Normal

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT SYSTEM OPERATION

1 Setup the EUT and simulators as shown on 4.2.

2 Turn on the power of all equipment.

3 The EUT will receive the signal and play music.

4 Repeat the above procedure (3).

Note: *Test program is self-repeating throughout the test.*

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4 SETUP OF EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	IPOD	A1238	JQ8070LBYMV	FCC DoC	APPLE	Shielded 1.68m	N/A
2	Wireless Outdoor Lamp Speaker (Transmitter)	AW851	N/A	MVASP3791-001T	Acoustic Research	Audio Cable: Unshielded,1.25m	Unshielded,1.70m

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

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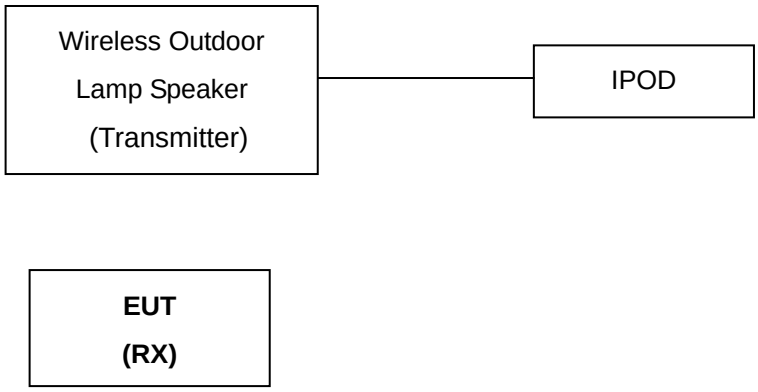
4.2. CONFIGURATION OF SYSTEM UNDER TEST



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5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at
No. 81-1, Lane 210, Bade 2nd Rd., Lujhu Township Taoyuan County, Taiwan

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan	TAF
USA	A2LA

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Norway	Nemko
Japan	VCCI
Taiwan	BSMI
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, http://www.ccsrf.com

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	+/- 3.18dB
Radiated emissions	30MHz ~ 200MHz	+/- 3.79dB
	200MHz ~1000MHz	+/- 3.62dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
Consistent with industry standard (e.g. CISPR 22: 2006, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.
The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

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6 CONDUCTED EMISSION MEASUREMENT

6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 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 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
ESCI EMI TEST RECEIVE.ESCI	ROHDE&SCHWARZ	1166.5950 03	100783	03/21/2010	03/21/2011
LISN	FCC	FCC-LISN-50-50-2-M	01068	03/21/2010	03/21/2011
LISN	EMCO	3825/2	8901-1459	03/21/2010	03/21/2011
CDN	FCC	FCC-TILISN-T4	20182	03/21/2010	03/21/2011
CDN	FCC	FCC-TLISN-T8-02	20183	03/21/2010	03/21/2011
CDN	FCC	FCC-TLISN-T4-02	20382	03/21/2010	03/21/2011
CDN	FCC	FCC-TLISN-T4-02	20383	03/21/2010	03/21/2011
CDN	FCC	FCC-801-T8-RJ45	04030	03/21/2010	03/21/2011
Current Probe	STODDART AIRCRAFT	91550-1	345-73	03/21/2010	03/21/2011
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/30/2010	03/30/2011

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.

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6.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT received 120VAC/60Hz main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

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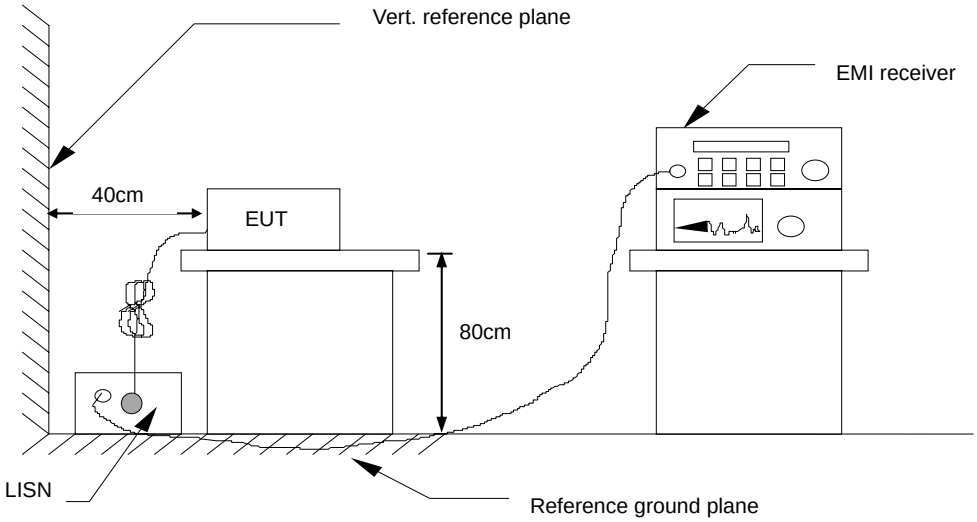
6.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.5. DATA SAMPLE:

Freq. (MHz)	Peak Level (dBuV)	Q.P. Level (dBuV)	AVG Level (dBuV)	Q.P. Limit (dBuV)	AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	Line (L1/L2)
XX.XX	55.14	52.88	42.11	61.87	51.87	-8.99	-9.76	L1

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB
Correction Factor (dB) = LISN Factor + Cable Loss
Result (dBuV) = Raw reading converted to dBuV and CF added
Limit (dBuV) = Limit stated in standard
Margin (dB) = Result (dBuV) – Limit (dBuV)

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6.6. TEST RESULTS

Model No.	AW851	Test Mode	Mode 1
Environmental Conditions	22°C, 48% RH	RBW,VBW	9 KHz
Tested by	Duke Yang		

(The chart below shows the highest readings taken from the final data.)

FREQ MHz	PEAK RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.365	52.11	48.34	35.61	59.86	49.86	-11.52	-14.25	L1
0.583	47.85	44.53	30.46	56.00	46.00	-11.47	-15.54	L1
1.028	45.80	41.02	30.49	56.00	46.00	-14.98	-15.51	L1
1.729	47.37	41.92	31.20	56.00	46.00	-14.08	-14.80	L1
3.026	48.86	42.31	33.28	56.00	46.00	-13.69	-12.72	L1
23.378	40.97	34.84	28.26	60.00	50.00	-25.16	-21.74	L1
0.387	52.13	48.88	37.42	59.22	49.22	-10.34	-11.80	L2
0.609	41.90	38.54	28.89	56.00	46.00	-17.46	-17.11	L2
0.995	44.83	40.59	29.61	56.00	46.00	-15.41	-16.39	L2
1.877	45.57	40.83	31.17	56.00	46.00	-15.17	-14.83	L2
3.042	46.85	41.08	32.31	56.00	46.000	-14.92	-13.69	L2
22.480	42.20	34.77	27.91	60.00	50.000	-25.23	-22.09	L2

Remark:

1. The measuring frequencies range between 0.15 MHz and 30 MHz.

2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.

3. "---" denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.

4. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

5. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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7 RADIATED EMISSION MEASUREMENT

7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	dBuV/m (At 10m)	dBuV/m (At 3m)
	Class A	Class B
30 ~ 88	39.00	40.00
88 ~ 216	43.50	43.50
216 ~ 960	46.40	46.00
960 ~ 1000	49.50	54.00

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

7.2. TEST INSTRUMENTS

Radiated Emission Test Site 966（2）					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	E4446A	US44300399	03/21/2010	03/21/2011
Low Noise Amplifier	MITEQ	AM-1604-3000	1123808	03/21/2010	03/21/2011
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
High Noise Amplifier	Agilent	8449B	3008A01838	05/29/2010	05/29/2011
Bilog Antenna	SCHAFFNER	CBL6143	5082	06/26/2010	06/26/2011
Horn Antenna	SCHWARZBECK	BBHA9120D	D286	03/19/2010	03/19/2011
Signal Generator	Anritsu	MG3694A	#050125	03/21/2010	03/21/2011
Horn Antenna	TRC	HA0301	N/A	03/19/2010	03/19/2011
Loop Antenna	ARA	PLA-1030/B	1029	03/19/2010	03/19/2011
Power Sensor	Anritsu	MA2491A	030619	03/21/2010	03/21/2011
Temp. / Humidity Meter	VICTOR	VC230	N/A	03/30/2010	03/30/2011
SHF-EHF Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170171	02/24/2010	02/24/2011

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.

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7.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The test equipment EUT received 120VAC/60Hz power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.
- The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 or 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recording at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst-case condition(s) was recorded.

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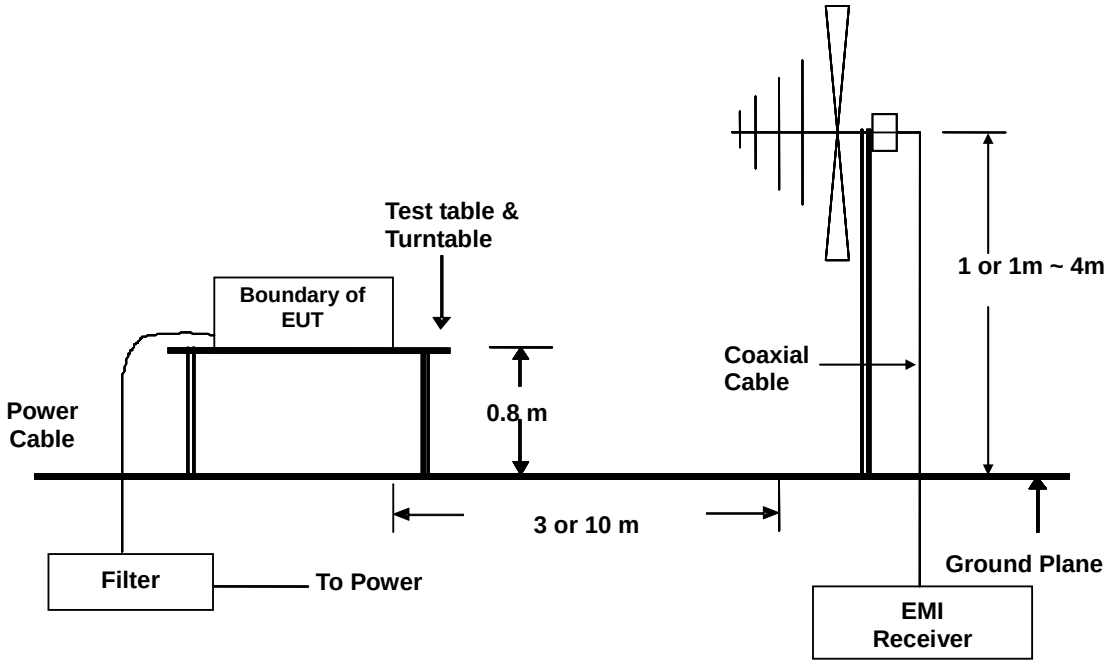
7.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.5. DATA SAMPLE:

Freq. (MHz)	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Ant. H/V	Mark
xx.xx	47.48	-10.31	37.17	40.00	-2.83	V	Q

Freq. = Emission frequency in MHz
Reading (dBuV) = Receiver reading
Corr. Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Measured (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Measured (dBuV/m) – Limits (dBuV/m)
Ant. H/V = Current carrying line of reading
Mark = Mark Peak Reading or Quasi-peak Reading

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7.6. TEST RESULTS

Model No.	AW851	**Test Mode**	Mode 1
Environmental Conditions	22°C, 48% RH	**RBW,VBW**	120 kHz
Antenna Pole	Vertical / Horizontal	**Antenna Distance**	3m
Detector Function:	Peak/Quasi-peak	**Tested by**	Duke Yang

(The chart below shows the highest readings taken from the final data.)

Frequency Range Investigated (30 MHz To 1000 MHz)							
Freq. (MHz)	**Reading (dBuV/m)**	**Factor (dB)**	**Result (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Detector (P/Q)**	**Pol (H/V)**
36.075	36.46	-11.30	25.16	40.00	-14.84	P	V
43.500	40.45	-14.00	26.45	40.00	-13.55	P	V
142.725	34.17	-14.37	19.80	43.50	-23.70	P	V
192.000	30.89	-12.57	18.32	43.50	-25.18	P	V
510.000	26.25	-4.21	22.04	46.00	-23.96	P	V
903.750	40.72	2.02	42.74	46.00	-3.26	P	V
36.075	34.01	-11.30	22.71	40.00	-17.29	P	H
44.175	36.10	-14.01	22.09	40.00	-17.91	P	H
135.975	31.06	-14.51	16.55	43.50	-26.95	P	H
188.625	29.36	-12.80	16.56	43.50	-26.94	P	H
216.975	28.25	-11.77	16.48	46.00	-29.52	P	H
903.750	40.91	2.02	42.93	46.00	-3.07	P	H

REMARKS: *1. P= Peak Reading; Q= Quasi-peak Reading*
2. The other emission levels were very low against the limit.

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