Product Name:	Paging Receiver Unit (RX)
Model No.:	M-1000P4
Applicant:	Ototronix 26620 Interstate 45 North, Spring, TX-77386-1016, U.S.A
Date of Receipt:	May. 17, 2013
Finished date of Test:	Jun. 03, 2013
Applicable Standards:	47 CFR Part 15, Subpart C 47 CFR Part 15, Subpart B ANSI C63.4: 2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Richard Lin , Date: 6/14/2013
(Richard Lin)

Approved By : , Date: 6/14/2013
(Johnson Ho, Director)

Revisions History

Report No.	Issue Date	Revisions
FCCA13051706-01	Jun. 14, 2013	Initial issue

Table of Contents

1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power source from battery: DC power source, 1.5 Vdc, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Paging Receiver Unit (RX)
MODEL NO.	M-1000P4
POWER SUPPLY	Rx: DC 1.5V, power source from AAA battery
CABLE	NA
CARRIER FREQUENCY	433.92 MHz
NUMBER OF CHANNEL	1
RATED RF OUTPUT POWER	53.70 dBuV/m = -53.29 dBm = 4.69 μW
MODULATION TYPE	FSK
MODE OF OPERATION	Simplex
ANTENNA TYPE	Loop Antenna
ANTENNA GAIN	-6 dBi
OPERATING TEMPERATURE RANGE	-20 ~ 50°C

NOTE: For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.3 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
NA				

2.4 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. Set the EUT under continuous transmission condition, standby and link mode.
4. The EUT was set to the highest available power level.

2.5 DESCRIPTION OF TEST MODE

Mode			Frequency
1	Rx	Receiving	433.92 MHz
2		Standby	NA

NOTE: The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

2.6 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	PC Base Paging Control Unit (TX)	Ototronix	EM-898B	2AAEVEM-898B	Tx (433.92 MHz)

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

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C

47 CFR Part 15, Subpart B

ANSI C63.4: 2003

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

3.1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
15.33(a) 15.209	SPURIOUS RADIATED EMISSION	PASS

4. SPURIOUS RADIATED EMISSION TEST

4.1 LIMIT

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

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dBμV/m)
0.009 - 0.490	300	2400/F(KHz)
0.490 - 1.705	30	24000/F(KHz)
1.705 - 30	30	30
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

NOTE:

1. 30 dBuV (in 30m) = 70 dBuV (in 3m).
2. Transmitters that require Crystal Controlled Oscillators with values below 30 MHz requires the Test Report to show “Spurious Radiated Emissions” results below 30 MHz per FCC Part 15.33(a).

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

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

4.2 TEST EQUIPMENT

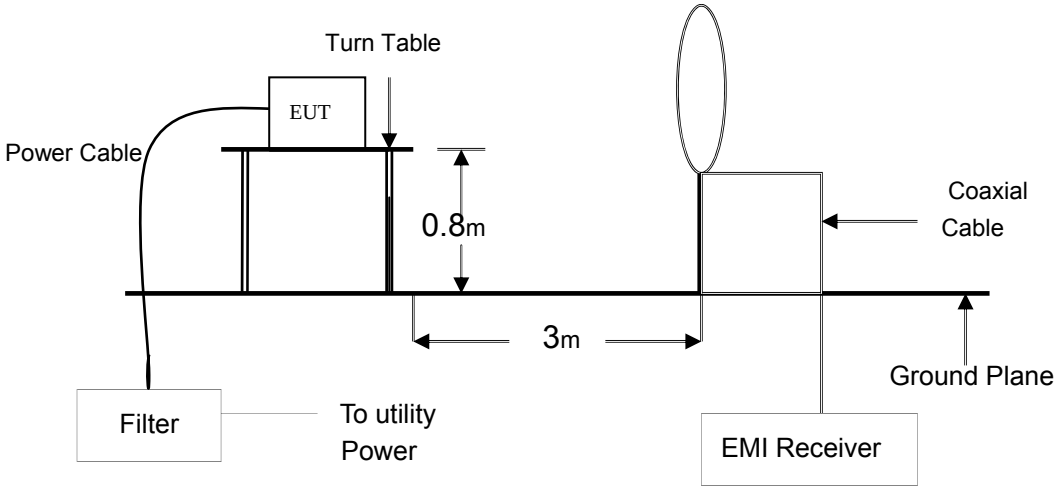
The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	DEC. 16, 2013 ETC
EMI TEST RECEIVER	20 MHz ~ 1000 MHz	ROHDE & SCHWARZ	ESVS30 / 841977/003	DEC. 02, 2013 ETC
SPECTRUM ANALYZER	9 kHz ~ 7GHz	ROHDE & SCHWARZ	FSP7 / 100289	APR. 12, 2014 ETC
LOOP ANTENNA	9 kHz ~ 30 MHz	ETS.LINDGREN	HFH2-Z3 /860 605/002(1162 1/2)	MAR. 06, 2014 ETC
BI-LOG ANTENNA	30 MHz ~ 2 GHz	SCHAFFNER	CBL6141A / 4181	JUN. 25, 2013 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	DEC. 21, 2013 ETC
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	MAR. 09, 2014 SRT
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	DEC. 18, 2013 ETC
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY. 13, 2014 SRT
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M (L1TCAB014)	MAY. 30, 2013 ETC
RF CABLE	UP TO 18 GHz 1.5 m	JYEBAO	A30A30-L 142 / EQF-0035(001)	DEC. 19, 2013 ETC
RF CABLE	UP TO 18 GHz 3.5 m	JYEBAO	A30A30-L 142 / EQF-0036(002)	DEC. 19, 2013 ETC
K-TYPE CABLE	UP TO 40 GHz 3 m	HUBER+SUHNER	SF102-46/2*11SK 252 /MY2611/2	MAR. 07, 2014 ETC
K-TYPE CABLE	UP TO 40 GHz, 1 m	HUBER+SUHNER	SF 102-40/2*11 /23934/2	OCT. 24, 2013 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR

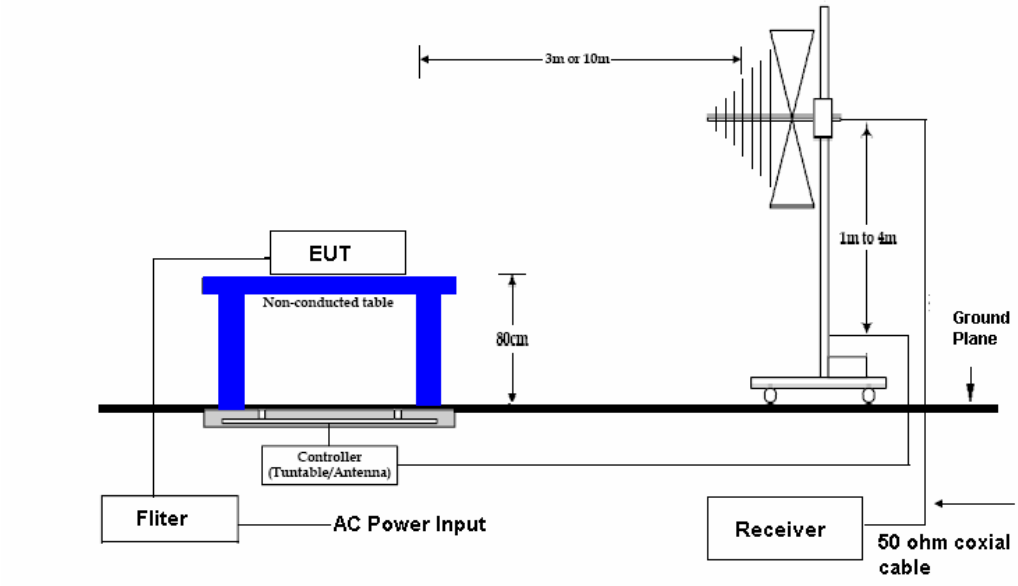
NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.3 TEST SET-UP

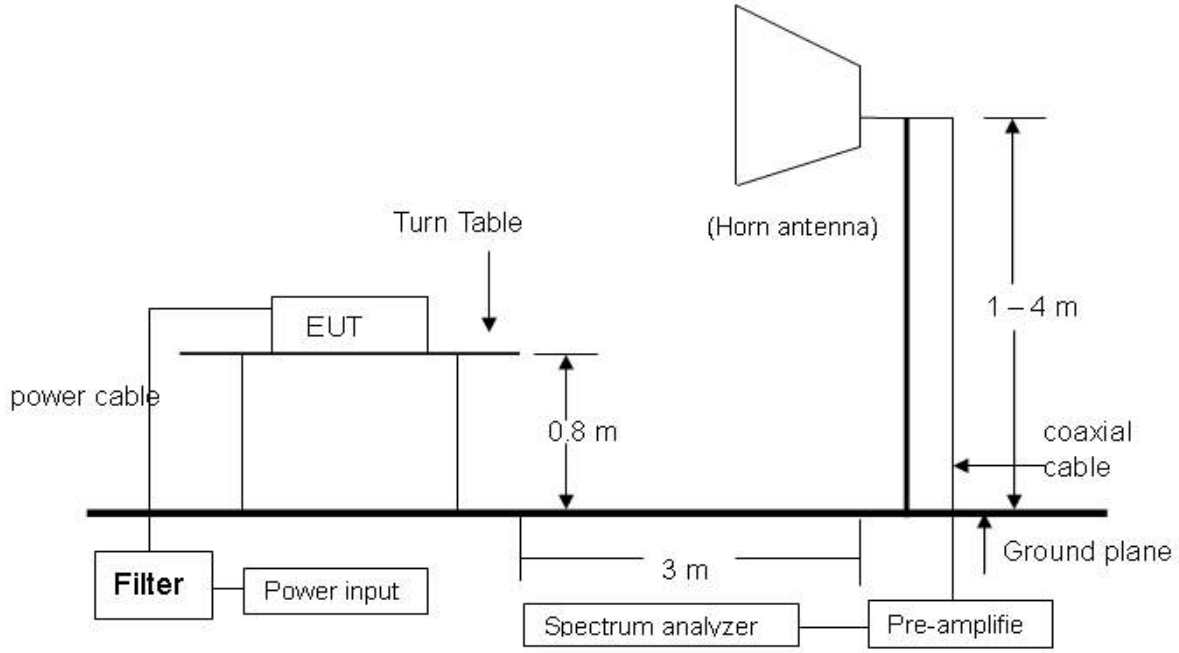
9KHz ~ 30MHz



30 MHz ~ 1 GHz



Above 1 GHz



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

4.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003.

The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz.

The frequency spectrum measured started from 9kHz to 30MHz and 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver.

Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver.

The EUT system was operated in all typical methods by users.

The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data.

The procedure is referred on the test procedure of SRT LAB.

4.5 TEST RESULT

Temperature:	22 °C	Humidity:	59 %RH
Frequency Range:	9 KHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	Receiving
Tested By:	Richard Lin	Tested Date:	May. 28, 2013

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
4.21	0.37	20.26	7.93	28.56	70.00	-41.44
6.31	0.45	20.35	7.91	28.71	70.00	-41.29
8.11	0.50	20.42	7.05	27.98	70.00	-42.02
10.60	0.57	20.53	7.92	29.02	70.00	-40.98
12.25	0.61	20.61	6.77	27.99	70.00	-42.01
28.65	0.89	21.43	5.58	27.90	70.00	-42.10

Temperature:	22 °C	Humidity:	59 %RH
Frequency Range:	9 KHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	Standby
Tested By:	Richard Lin	Tested Date:	May. 28, 2013

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
5.23	0.42	20.31	7.15	27.88	70.00	-42.12
10.30	0.57	20.51	8.09	29.17	70.00	-40.83
14.67	0.66	20.73	6.73	28.12	70.00	-41.88
20.73	0.77	21.04	6.13	27.94	70.00	-42.06
21.36	0.78	21.07	5.96	27.81	70.00	-42.19
28.65	0.89	21.43	6.31	28.63	70.00	-41.37

Temperature:	22 °C	Humidity:	59 %RH
Tested By:	Richard Lin	Tested Mode:	Receiving
Receiver Detector:	Q.P. or AV.	Modulation Type:	FSK
Frequency Range:	30 M – 1 GHz	Tested Date:	May. 28, 2013

Antenna Polarization：Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
411.38	3.28	16.68	9.25	29.20	46.0	-16.80	152	2.89
432.16	3.38	17.01	18.83	39.22	46.0	-6.78	263	2.75
755.43	4.80	21.94	3.41	30.15	46.0	-15.85	88	1.74
824.08	5.08	22.73	4.76	32.57	46.0	-13.43	94	1.52
893.18	5.31	23.29	3.62	32.22	46.0	-13.79	102	1.39
962.51	5.57	24.50	3.15	33.22	54.0	-20.78	211	1.14

Antenna Polarization：Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
342.26	2.95	14.99	12.81	30.75	46.0	-15.25	149	1.96
398.58	3.21	16.45	10.58	30.24	46.0	-15.76	172	2.12
411.34	3.28	16.68	9.85	29.80	46.0	-16.20	65	2.18
432.17	3.38	17.01	12.76	33.15	46.0	-12.85	159	2.25
824.05	5.08	22.73	3.96	31.77	46.0	-14.23	308	3.27
962.54	5.57	24.50	3.28	33.35	54.0	-20.65	240	3.46

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	22 °C	Humidity:	59 %RH
Tested By:	Richard Lin	Tested Mode:	Standby
Receiver Detector:	Q.P. or AV.	Modulation Type:	FSK
Frequency Range:	30 M – 1 GHz	Tested Date:	May. 28, 2013

Antenna Polarization：Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
411.52	3.28	16.68	9.34	29.29	46.0	-16.71	301	2.83
617.38	4.21	20.00	3.42	27.63	46.0	-18.37	264	2.11
745.60	4.76	21.79	3.57	30.12	46.0	-15.88	180	1.75
824.18	5.08	22.73	4.22	32.03	46.0	-13.97	57	1.53
893.08	5.31	23.29	3.18	31.78	46.0	-14.23	213	1.34
962.44	5.57	24.50	5.41	35.48	54.0	-18.52	119	1.17

Antenna Polarization：Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
342.14	2.95	14.99	12.94	30.88	46.0	-15.12	77	1.96
398.78	3.21	16.45	8.81	28.47	46.0	-17.53	145	2.15
411.56	3.28	16.68	9.92	29.87	46.0	-16.13	66	2.17
824.15	5.08	22.73	6.27	34.08	46.0	-11.92	332	3.22
893.03	5.31	23.29	3.45	32.05	46.0	-13.96	239	3.41
962.47	5.57	24.50	3.52	33.59	54.0	-20.41	142	3.54

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	22 °C	Humidity:	59 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	Receiving
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	May. 28, 2013

Antenna Polarization：Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1927.06	-31.74	26.94	57.61	47.13	52.81	42.33	74.00	54.00	-21.19	-11.67	128	2.21
2439.11	-31.10	28.43	55.08	44.54	52.41	41.87	74.00	54.00	-21.59	-12.13	232	2.06
3133.58	-30.44	30.87	46.72	36.28	47.14	36.70	74.00	54.00	-26.86	-17.30	217	1.84
3641.79	-29.63	31.94	47.25	36.81	49.56	39.12	74.00	54.00	-24.44	-14.88	115	1.73
4568.37	-28.67	32.96	46.38	35.94	50.68	40.24	74.00	54.00	-23.32	-13.76	104	1.46
5552.91	-26.92	34.69	45.61	35.22	53.38	42.99	74.00	54.00	-20.62	-11.01	78	1.14

Antenna Polarization：Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2688.43	-30.90	29.35	47.12	36.72	45.57	35.17	74.00	54.00	-28.43	-18.83	129	1.52
3002.70	-30.69	30.60	46.93	36.45	46.85	36.37	74.00	54.00	-27.15	-17.63	257	1.66
3634.33	-29.64	31.92	47.44	36.91	49.72	39.19	74.00	54.00	-24.28	-14.81	311	1.78
3896.14	-29.40	32.55	46.85	36.34	50.00	39.49	74.00	54.00	-24.00	-14.51	209	1.88
4619.53	-28.62	33.09	46.67	36.15	51.13	40.61	74.00	54.00	-22.87	-13.39	95	2.04
5343.23	-27.28	34.48	46.06	35.67	53.26	42.87	74.00	54.00	-20.74	-11.13	47	2.32

NOTE :

1. Measurement uncertainty is +/- 3.92dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	22 °C	Humidity:	59 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	Standby
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	FSK
Tested By:	Richard Lin	Tested Date:	May. 28, 2013

Antenna Polarization：Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1232.73	-33.34	24.97	53.47	42.95	45.10	34.58	74.00	54.00	-28.90	-19.42	242	2.42
2739.30	-30.87	29.56	46.58	36.10	45.27	34.79	74.00	54.00	-28.73	-19.21	218	1.95
3948.16	-29.35	32.68	46.21	35.73	49.54	39.06	74.00	54.00	-24.46	-14.94	109	1.63
4247.08	-29.01	32.80	46.22	35.82	50.01	39.61	74.00	54.00	-23.99	-14.39	152	1.57
4693.25	-28.57	33.26	46.73	36.35	51.43	41.05	74.00	54.00	-22.57	-12.95	189	1.38
5767.74	-27.39	34.65	46.45	35.91	53.70	43.16	74.00	54.00	-20.30	-10.84	211	1.09

Antenna Polarization：Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3029.25	-30.64	30.66	47.38	36.85	47.40	36.87	74.00	54.00	-26.60	-17.13	323	1.62
3278.06	-30.17	31.16	46.66	36.07	47.64	37.05	74.00	54.00	-26.36	-16.95	270	1.69
3486.30	-29.79	31.57	46.41	35.94	48.20	37.73	74.00	54.00	-25.80	-16.27	127	1.74
4289.58	-28.96	32.80	46.25	35.81	50.09	39.65	74.00	54.00	-23.91	-14.35	291	1.98
5382.20	-27.17	34.53	45.08	34.57	52.45	41.94	74.00	54.00	-21.55	-12.06	302	2.23
5767.77	-27.39	34.65	46.09	35.44	53.34	42.69	74.00	54.00	-20.66	-11.31	85	2.41

NOTE :

1. Measurement uncertainty is +/- 3.92dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

5. PHOTOS OF TESTING

- Radiated test (below 30M , Receiving & Standby)

- Radiated test (below 1G , Receiving & Standby)

- Radiated test (above 1G , Receiving & Standby)

6. TERMS OF ABBREVIATION

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