THRU Lab. & Engineering

FCC PART 15 CLASS B
EMI MEASUREMENT AND TEST REPORT

FOR

Lee Technology Korea Co., Ltd.
#24-2 Samjeong-dong, Ojeong-gu,
Puchon-city,Kyunggi-do, Koera

Model Number :LTK-2003

Issued Date: MAY 16, 2003
Report No.: THRU-F030516B

This Report Concerns:	Equipment Type:
☑ Original Report	Crystal Clear Call Paging System LTK-2003

Test Date: May 15, 2003

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1. General Information

1.1 Test Facility

The open area test site (OATS) used by Thru Lab. & Engineering to collect radiated and conducted emissions measurement data is located in the 389 JeArm-Rhi, HyangNam-Myun, HwaSung-Gun, KyungKi-Do, Korea.

Test sites at Thru Lab. & Engineering has been fully described in reports submitted to the Federal Communication Commission and the details of the reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The test facility also complies with the radiated and AC line conducted test site criterion in ANSI C63.4-1992. The Federal Communications Commission has the reports on file and is listed under Registration Number 92583. The scope of the accreditation covers the FCC Method - 47 CFR Part 15 or 18 of the Commission's Rules.

1.2 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-1992. All radiated and conducted emission measurements were performed at Thru Lab. & Engineering. The radiated testing was performed at an antenna-to-EUT distance of 10 meters for Class A devices and 3 meters for Class B devices.

1.3 Test Equipment List

Description	Model No.	Serial No.	Manufacturer	Cal. Due	Used
EMI Test Receiver	ESVS 10	830489/001	Rodhe&Schwarz	04/25/2004	RE
Biconical Antenna	94455-1	0977	Eaton	04/25/2004	RE
Log Periodic Antenna	3146	2051	EMCO	04/25/2004	RE
Spectrum Analyzer	8566B	2311A02394	Hewlett Packard	03/17/2004	RE
Spectrum Display	85662A	2542A12429	Hewlett Packard	03/17/2004	RE
Quasi-Peak Adapter	85650A	2521A00887	Hewlett Packard	03/17/2004	RE
RF Preselector	85685A	2648A00504	Hewlett Packard	03/17/2004	RE
Pre-Amplifier	8447F	3113A05367	Hewlett Packard	03/17/2004	
Horn Antenna	SAS-571	414	A.H. Systems	05/09/2004	
Dipole Antenna Set	TDA25/.1/.2	176/200/200	Electro Metrics	10/04/2002	
Signal Generator	SMS	872165/100	Rodhe&Schwarz	04/25/2004	
Spectrum Analyzer	R3261C	71720189	Advantest	04/25/2004	CE
LISN	KNW-242	8-923-2	Kyoritsu	N/A	CE
LISN	8012-50-R-24	8379121	Solar	N/A	CE
Plotter	7475A	2210A02802	Hewlett Packard	N/A	CE
Positioner Set	N/A	N/A	Dongsung Prec.	N/A	RE

1.4 Product Description for Equipment Under Test (EUT)

Lee Technology Korea Co., Ltd.'s LTK-2003 or the "EUT" as referred to in this report is Rechargeable Paging System. By using a vibrator and LED, it's alarmed the state of group call or individual call or out of range.

Main Features of EUT are:

- Frequency Range 457.5750㎒
- Sensitivity 90dB
- Modulation Scheme F S K
- Baud Rate 1200 BPS
- Power Supply AAA Rechageable Battery(Nimh) 2EA.
- Battery Life 3.5month
- Low Battery Level 2.4 Volts
- Dimensions(H.W.D) 75.5 x 55 x18 mm
- Code Format POCSAG

1.5 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Rechargeable Paging System	LTK-2003	none	Lee Technology Co., LTD.	EUT

1.6 Support Equipment

Description	Model Number	Serial Number	Manufacturer	Remarks
none	-	-	-	-
none	-	-	-	-

1.7 External I/O Cabling

Description	Length (m)	Port/From	Port/To	Remarks
none	-	-	-	-
none	-	-	-	-
none	-	-	-	-

2. System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user). Worst case conducted and radiated emissions are presented in section 4.6 of this report.

The test was performed with Tuned Frequency 457.5750 MHz of Rechargeable Paging System (EUT) on the Wooden turn Table.

2.2 EUT Exercise

No EUT exercising program was used during testing.

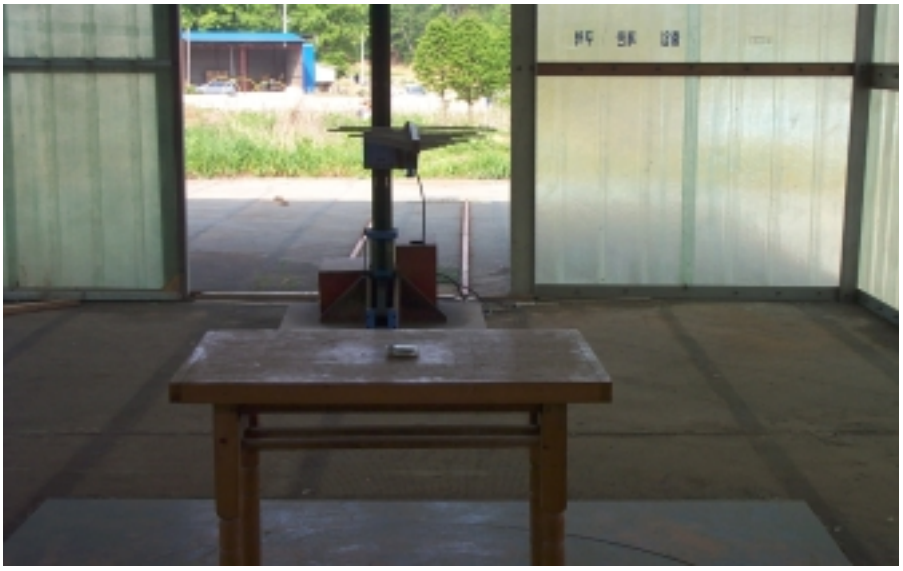
2.3 Special Accessories

As shown in section 2.5, all interface cables used for compliance testing are non-shielded as normally supplied or by use respective component manufacturers.

2.4 Schematics/Block Diagram

The EUT schematic or block diagram is presented in Appendix B as reference.

2.5 Configuration of Test System



2.6 Conducted Emission Test Setup Block Diagram

N/A

3. Conducted Emission Test Not Applicable

3.1 EUT Setup

The measurement was performed in the screen room of test site, using the setup in accordance with ANSI C63.4-1992 conducted emission measurement procedure.

Due to the EUT is operated only from 2.4 volts vehicle battery, which no provisions for connection to the public AC powerlines to operate the EUT, AC powerline conducted emission test are not applicable according to Part 15.107(f) of the FCC Rules.

3.2 Test Equipment Setup

The spectrum analyzer was configured during the conduction test in as follows:

Start Frequency	450kHz
Stop Frequency	30MHz
Resolution Bandwidth	9kHz
Sweep Time	Auto
Detector Mode	QP

3.3 Test Procedure

N/A

3.4 Summary of Test Results

N/A

3.5 Conducted Emission Test Data

N/A

3.6 Plot of Conducted Emission Test Data

N/A

4. Radiated Emission Test

4.1 EUT Setup

The radiated emission tests were performed in the open area test site, using the setup in accordance with ANSI C63.4-1992 radiated emission measurement procedure.

The EUT was placed on the center of the test table.

4.2 Test Equipment Setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer was set with the following configurations:

Start Frequency	30MHz
Stop Frequency	1000MHz
IF Bandwidth	120kHz
Sweep Time	10msec
Detector Mode	QP
and Start Frequency	1000MHz
Stop Frequency	5000MHz

4.3 Test Procedure

For the radiated emission test, Tuned Frequency 457.5750 MHz of Rechargeable Paging System (EUT) on the Wooden turn Table.

Maximizing procedure was performed on the highest emissions to verify that the EUT complied with all installation combination.

The radiated emission test was performed with EUT exercise program loaded, and the emissions were scanned between 30MHz to 1000MHz. Above 1Ghz, horn antennas were used. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum emission levels. Measurements were taken using both HORIZONTAL and VERTICAL antenna polarization. The final test data for this test configuration is recorded in the table listed under section 4.6 of this report.

4.4 Corrected Amplitude and Margin Calculation

The Corrected Amplitude is calculated by adding the antenna and cable Correction Factor from the Indicated Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Amplitude + Antenna Factor + Cable Factor

The Margin column of the data table in section 4.6 indicates the degree of compliance with the applicable limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Applicable Limit

4.5 Summary of Test Results

According to the data in section 4.6, the EUT complied with the FCC Part 15 Class B standards, and had the worst margin of:

-16.0dB at 611.20MHz in the HORIZONTAL polarization at an antenna-to-EUT distance of 3 meters.

4.6 Radiated Emission Test Result Data

Indicated		Antenna		Table	Correction Factor		Corrected Amplitude	FCC Part15 Class B		
Freq. (MHz)	Ampl. (dBuV/m)	Polar. (H/V)	Height (m)	Angle (deg.)	Ant. (dB)	Cable (dB)	(dBuV/m)	Applicable Limit (dBuV/m)	Applicable Limit (uV/m)	Margin (dB)
49.14	11.0	H	1.5	120	11.1	1.5	23.6	40.0	100	-16.4
65.45	10.1	H	2.0	130	6.3	1.8	18.2	40.0	100	-21.8
253.10	4.5	V	1.1	200	12.2	4.2	20.9	46.0	200	-25.1
300.65	2.5	H	2.3	300	16.2	4.6	23.3	46.0	200	-22.7
405.60	4.5	H	1.3	310	15.5	5.7	25.7	46.0	200	-20.3
611.20	2.6	H	1.9	100	19.8	7.6	30	46.0	200	-16.0
650-5000	-	-	-	-	-	-	-	54.0	500	-