THRU Lab & Engineering.

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Kyunggi-Do,469-803, Korea
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Test Report

Product Name: Rechargeable Numeric Pager

FCCID: QBTLT-2004N

Applicant:
Lee Technology Korea Co., Ltd.

3rd FL #499-2 Sang 3-dong, Wonmi-gu,
Bucheon-city, Kyungki-do,
KOREA

Date Receipt: 04/27/2007

Date Tested: 05/09/2007

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APPLICANT: **Lee Technology Korea Co., Ltd.**

FCCID: QBTLT-2004N

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EMC Equipment List

No	Description	Manufacturer	Model No.	Serial No.	Due Cal.
1	Test Receiver	Rohde & Schwarz	ESVS10	830489/001	2007.04.23
2	Test Receiver	Rohde & Schwarz	ESHS 10	825832/014	2007.08.25
3	Test Receiver	Rohde & Schwarz	ESVS 10	826008/014	2007.05.24
4	Spectrum Analyzer	Hewlett Packard	8566B	2311A02394	2007.06.17
5	Spectrum Display	Hewlett Packard	85662A	2542A12429	2007.06.17
6	Quasi-peak Adapter	Hewlett Packard	85650A	2521A00887	2007.06.17
7	RF Preselector	Hewlett Packard	85685A	2648A00504	2007.06.17
8	Preamplifer	Hewlett Packard	8449B	3008A00375	2007.04.23
9	Preamplifer	Hewlett Packard	8447F	3113A05367	2007.05.09
10	Preamplifer	Hewlett Packard	8447F	2805A02570	None
11	Preamplifer	A.H. Systems	PAM-0118	164	2007.04.01
12	Biconical Antenna	Eaton Corp.	94455-1	0977	2007.04.01
13	Biconical Antenna	EMCO	3104C	9111-2468	2006.06.07
14	Log Periodic Antenna	EMCO	3146	2051	2007.05.11
15	Log Periodic Antenna	EMCO	3146	8901-2320	2006.03.28
16	Horn Antenna	A.H. Systems	SAS-571	414	2007.03.17
17	Horn Antenna	A.H. Systems	SAS-571	781	2006.01.07
18	Loop Antenna	Rohde & Schwarz	HFH2-Z2.335.4711.52	826532/006	2007.01.31
19	Dipole Antenna	Rohde & Schwarz	VHAP	574	2007.12.12
20	Dipole Antenna	Rohde & Schwarz	VHAP	575	2007.12.12
21	Dipole Antenna	Rohde & Schwarz	UHAP	546	2007.12.12
22	Dipole Antenna	Rohde & Schwarz	UHAP	547	2007.12.12
23	Signal Generator	Rohde & Schwarz	SMS	872165/100	2006.04.23
24	Signal Generator	Rohde & Schwarz	SMX	825459/030	2007.06.15
25	Spectrum Monitor	Rohde & Schwarz	EZM	862304/007	None
26	Panorama Monitor	Rohde & Schwarz	EPN	883707/207	None
27	Spectrum Analyzer	Advantest Corp.	R3261C	61720208	2007.06.05
28	Spcetrum Analyzer	Hewlett Packard	8591A	3205A02641	2007.12.12
29	LISN	EMCO	3825/2	9111-1912	2007.12.12
30	LISN	Solar	8012-50-R-24	8379121	2007.04.25
31	LISN	Kyoritsu	KNW-242	8-923-2	2007.05.28
32	Plotter	Hewlett Packard	7475A	2210A02802	None

33	Modulation Analyzer	Hewlett Packard	8901B	3438A05094	2007.05.19
34	Waveform Generator	Hewlett Packard	33120A	US34001190	2007.05.23
35	Audio analyzer	Hewlett Packard	8903B	3011A12915	2007.05.23
36	Universal counter	Hewlett Packard	5343A	3020A02978	2007.05.23
37	Frequency Counter	Tektronic	CMC251	TW52489	2007.04.23
38	Temperature & Humidity Chamber	TABAI EZPEC CORP.	MC711P	112000492	N/A
39	Antenna Mast	EMCO	1070-3	9109-1617	N/A
40	Turn Table	EMCO	1080-1,2	9203-1762	N/A
41	Positioning Controller	EMCO	1090	9111-1054	N/A
42	Antenna Power Supply	Rohde & Schwarz	HZ-9	920127	N/A
43	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	881052	N/A
44	Coaxial Take-up Reel	EMCO	100817	9109-1684	N/A

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TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of of THRU &ENGINEERING. Shielded interface cables were used in all cases except for cables connecting to the telephone line and the power cords. A test program was run which simulated a normal data transmission on a network.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using a HEWLETT PACKARD spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 21.7°C with a humidity of 34%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSIC63.4-2001 10.1.7 with the EUT 40 cm from the vertical ground wall.

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APPLICANT: **Lee Technology Korea Co., Ltd.**

FCCID: QBTLT-2004N

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.109,15.33(b)(3)

REQUIREMENTS:

30 to 88 MHz:	40.0 dBuV/M @ 3 METERS
88 to 216 MHz:	43.5 dBuV/M
216 to 960 MHz:	46.0 dBuV/M
ABOVE 960 MHz:	54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:
*** Tuning Frequency : 450.3750MHz**

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	47.67	13.6	V	11.4	1.0	25.9	-14.1	40.0
2	50.22	12.2	V	10.8	1.0	24.1	-15.9	40.0
3	75.32	10.2	H	6.9	1.3	18.3	-21.7	40.0
4	132.50	10.5	V	13.3	2.0	25.7	-17.8	43.5
5	230.00	10.3	V	10.9	2.9	24.0	-22.0	46.0
6	286.00	8.6	H	17.6	3.3	29.5	-16.5	46.0
7	317.90	9.8	H	15.8	3.6	29.1	-14.4	43.5
8	449.40	7.8	V	16.4	4.5	28.8	-14.7	43.5
9	546.40	8.6	H	18.2	5.2	32.0	-14.0	46.0
10	629.30	7.5	V	20.6	5.7	33.9	-12.1	46.0
11	694.30	7.9	H	21.3	6.2	35.4	-10.6	46.0
12	857.10	5.8	V	23.2	7.1	36.1	-9.9	46.0
13	875.95	“Not Detecable”						46.0
14	900.65							46.0
14	928.92							46.0

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY: Kyoung Moon Choi **DATE**: 05/09/2007

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APPLICANT: **Lee Technology Korea Co., Ltd.**

FCCID: QBTLT-2004N

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.109,15.33(b)(3)

REQUIREMENTS:
30 to 88 MHz: 40.0 dBuV/M @ 3 METERS
88 to 216 MHz: 43.5 dBuV/M
216 to 960 MHz: 46.0 dBuV/M
ABOVE 960 MHz: 54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:
*** Tuning Frequency :** 457.5750MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	48.40	12.0	H	11.2	1.0	24.2	-15.8	40.0
2	50.50	10.8	V	10.7	1.0	22.6	-17.4	40.0
3	70.52	10.9	V	5.6	1.2	17.7	-22.3	40.0
4	121.80	10.1	H	11.2	1.8	23.1	-20.4	43.5
5	230.00	9.3	H	10.9	2.9	23.0	-23.0	46.0
6	255.70	10.7	V	12.5	3.1	26.4	-19.6	46.0
7	449.90	9.4	V	16.4	4.5	30.4	-15.6	46.0
8	545.00	6.5	V	18.1	5.2	29.8	-16.2	46.0
9	575.00	7.5	H	18.5	5.4	31.4	-14.6	46.0
10	633.60	5.6	H	20.6	5.8	31.9	-14.1	46.0
11	730.00	7.0	H	21.2	6.4	34.6	-11.4	46.0
12	856.40	6.8	V	23.2	7.1	37.1	-8.9	46.0
13	872.35	"Not Detecable"						46.0
14	915.12							46.0
14	945.85							46.0

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.
TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

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APPLICANT: **Lee Technology Korea Co., Ltd.**

FCCID: QBTLT-2004N

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.109,15.33(b)(3)

REQUIREMENTS:

30 to 88 MHz:	40.0 dBuV/M @ 3 METERS
88 to 216 MHz:	43.5 dBuV/M
216 to 960 MHz:	46.0 dBuV/M
ABOVE 960 MHz:	54.0 dBuV/M

TEST RESULTS: A search was made of the spectrum from 30 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:
*** Tuning Frequency :** 462.7500MHz

No	Emission Frequency (MHz)	Meter Reading dBuV/m	Ant. Polaritry	Correction Factor dB	Cable Loss dB	Field Strength (dBuv/m)	Margin (dBuv)	Limit (dBuv/m)
1	49.06	9.7	V	11.1	1.0	21.8	-18.2	40.0
2	50.13	13.5	H	10.9	1.0	25.4	-14.6	40.0
3	126.16	8.5	V	12.0	1.9	22.3	-21.2	43.5
4	139.41	10.7	H	14.9	2.0	27.6	-15.8	43.4
5	212.90	8.3	V	10.8	2.7	21.7	-21.8	43.5
6	265.10	11.0	H	13.6	3.2	27.8	-18.2	46.0
7	449.90	8.4	H	16.4	4.5	29.4	-16.6	46.0
8	545.00	5.9	V	18.1	5.2	29.2	-16.8	46.0
9	633.60	6.6	H	20.6	5.8	32.9	-13.1	46.0
10	705.70	8.7	H	21.4	6.2	36.3	-9.7	46.0
11	857.10	8.5	V	23.2	7.1	38.8	-7.2	46.0
12	884.30	5.2	H	23.6	7.2	36.0	-10.0	46.0
13	882.70	"Not Detecable"						46.0
14	925.51							46.0
14	980.15							54.0

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-2003 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Pre-selector, a Hewlett Packard Model 85650A Quasi-Peak adapter, and an appropriate antenna – see the test equipment list. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

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APPLICANT: **Lee Technology Korea Co., Ltd.**

MODEL #: QBTLT-2004N

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NO.: 15.107

REQUIREMENTS:

	QUASI-PEAK	**AVERAGE**
.15 – 0.5 MHz	66-56 dBuV	56-46 dBuV
0.5 – 5.0	56	46
5.0 – 30.	60	50

TEST PROCEDURE: ANSI STANDARD C63.4-2003. The spectrum was scanned from .15 to 30 MHz.

TEST DATA:

THE HIGHEST EMISSION READ FOR LINE 1 WAS 18.5dBuV @ 0.161MHz

THE HIGHEST EMISSION READ FOR LINE 2 WAS 21.1dBuV @ 0.420MHz

THE GRAPHS ON THE FOLLOWING PAGE REPRESENT THE EMISSIONS TAKEN FOR THIS DEVICE.

TEST RESULTS: Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

PERFORMED BY: Kyoung Moon Choi **DATE**: 05/09/2007

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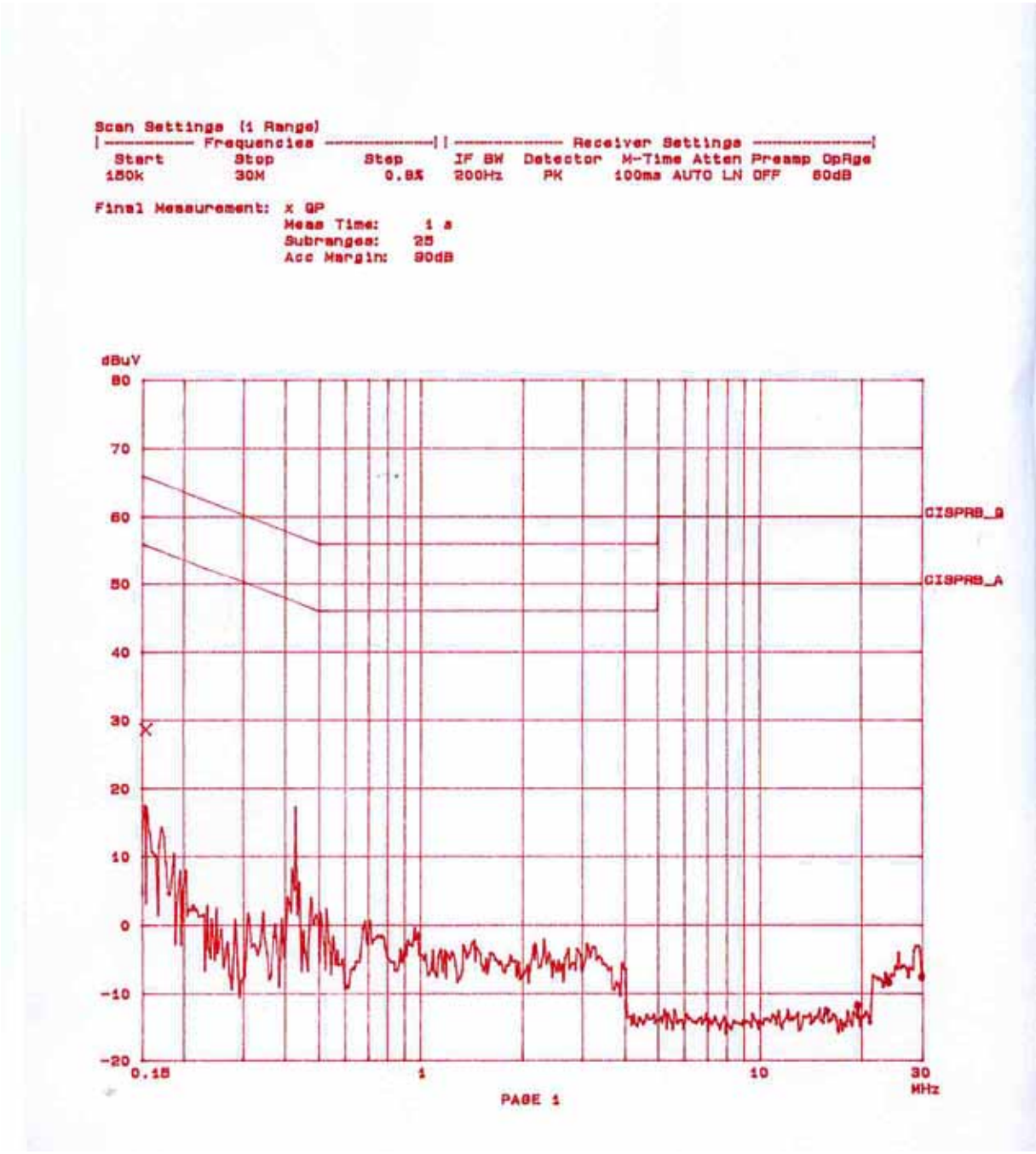
Scan Settings (1 Range)
Frequencies
Start
Stop
Step
Receiver Settings
IF BW
Detector
M-Time
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150k
30M
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200Hz
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Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 90dB
dBuV
80
70
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MHz
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