ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CERTIFICATION

Test report file number : E032R-041

Applicant : HANTEL CO., LTD.

Address : #518-8, YOO JIN B/D., Dogok-Dong, Kangnam-Ku, Seoul, 135-270, Korea

Manufacturer : HANTEL CO., LTD.

Address : #518-8, YOO JIN B/D., Dogok-Dong, Kangnam-Ku, Seoul, 135-270, Korea

Type of Equipment : Numeric Pocsag Pager (All other receiver subject to Part 15)

FCC ID : ODGS450PN

Model Name : ST800-P

Multiple Model Name : N/A

Serial number : N/A

Total page of Report : 10 pages (including this page)

Date of Incoming : January 23, 2003

Date of Issuing : February 21, 2003

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, SECTION 15.101.**

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : HANTEL CO., LTD.
-. ADDRESS : #518-8, YOO JIN B/D., Dogok-Dong, Kangnam-Ku, Seoul, 135-270, Korea
-. CONTACT PERSON : Mr. Kyoung-Kwon, Ko/ Manager
-. TELEPHONE NO : +82-2-571-4430
-. FCC ID : ODGS450PN
-. MODEL NO/NAME : ST800-P
-. SERIAL NUMBER : N/A
-. DATE : February 21, 2003

DEVICE TYPE	All other receiver subject to Part 15 - Unintentional Radiator
E.U.T. DESCRIPTION	Numeric Pocsag Pager
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The HANTEL CO., LTD., Model ST800-P (referred to as the EUT in this report) is a Numeric Pocsag Pager that consists of a radio-frequency(rf) circuit board and a microcomputer-controlled circuit board. Typically, a page is received via an rf carrier that is frequency-modulated by a coded binary sequence. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	12.8MHz, 20.945MHz on the main board
POWER REQUIREMENT	DC1.5V Battery
NUMBER OF LAYERS	4 Layers
TUNING FEQUENCY	454MHz ~ 463MHz
DETECT METHOD	Superheterodyne Detector

Model Differences:

The difference(s) compared to the EUT is as follows: none

2.2 Related Submittal(s) / Grant(s)

Original submittal only

2.3 Test System Details

The model numbers for all the equipments that were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
ST800-P	HANTEL CO., LTD.	ODGS450PN	Numeric Pocsag Pager (EUT)	N/A
TC-1101A	TESCOM	N/A	FLEX PAGER TESTER	N/A

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
RF BOARD	HANTEL CO., LTD.	ST 800 POCSAG LG	N/A
LOGIC BOARD	HANTEL CO., LTD.	RFN-800P RF	N/A

3.2 EUT exercise Software

-. During Radiated Emission Tests, TESCOM signal generator model no: TC-1101A was used to radiate an unmodulated CW signal to EUT at 1 near top and 1 near bottom frequency in order to stabilize the local oscillator of the EUT.

3.3 Cable Description

-. Not applicable

3.4 Noise Suppression Parts on Cable

-. Not applicable

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

"There were no Modified items during EMI test"

3.6 Configuration of Test System

Line Conducted Test : It does not need to test this requirement, because of the power of the EUT is supplied from a DC battery

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

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4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
N/A	N/A
It does not need to test this requirement, because of the power of the EUT is supplied from a DC battery.	

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Standby	
Receiving	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 48 % Temperature : 16 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)
Type of Test : All other receiver subject to Part 15
Result : PASSED BY –15.37 dB at 830.60 MHz at near bottom frequency
PASSED BY –15.38 dB at 820.80 MHz at near top frequency

EUT : Numeric Pocsag Pager Date: February 29, 2003
Operating Condition : Receiving mode
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter
Operating Condition : Receiving mode: Bottom frequency (Operating frequency: 454.025 MHz)

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
216.80	13.00	H	10.93	1.66	25.59	46.00	-20.41
353.90	5.60	H	14.48	2.30	22.38	46.00	-23.62
433.00	7.50	V	15.91	2.50	25.91	46.00	-20.09
552.70	5.30	H	18.10	2.78	26.18	46.00	-19.82
642.30	5.40	H	19.75	3.06	28.21	46.00	-17.79
830.60	4.90	H	21.96	3.77	30.63	46.00	-15.37
~2000	*	-	-	-	-	-	-

Radiated Emission Tabulated Data

Remark: The "*" means equal or less than 4dB

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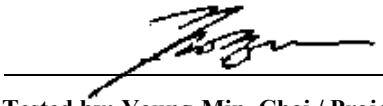
Operating Condition : Receiving mode: Top frequency (Operating frequency: 462.975 MHz)

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
221.40	12.10	V	10.93	1.68	24.71	46.00	-21.29
298.10	8.30	H	14.94	1.99	25.23	46.00	-20.77
442.10	7.10	V	16.12	2.53	25.75	46.00	-20.25
493.90	5.60	H	17.38	2.66	25.64	46.00	-20.36
612.90	5.80	H	18.99	2.95	27.74	46.00	-18.26
820.80	5.10	H	21.78	3.74	30.62	46.00	-15.38
~2000	*	-	-	-	-	-	-

Radiated Emission Tabulated Data

Remark: The "*" means equal or less than 4dB



Tested by: Young-Min, Choi / Project Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+	Meter reading	(dBuV)
+	Cable Loss	(dB)
+	Antenna Factor (Loss)	(dB/meter)
=	Corrected Reading	(dBuV/meter)
-	Specification Limit	(dBuV/meter)
=	dB Relative to Spec	(+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	APR/02	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	NOV/02	12MONTH	
3.	Spectrum analyzer	HP	8566B	3407A08547	AUG/02	12MONTH	■
4.	Spectrum analyzer	HP	8568B	3109A05456	APR/02	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/02	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/02	12MONTH	■
7.	Horn Antenna	Schwarzbeck	BBHA9120D	BBHA9120D294	JUN/02	12MONTH	■
8.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	APR/02	12MONTH	■
9.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	APR/02	12MONTH	■
11.	LISN	EMCO	3825/2	9109-1867 9109-1869	AUG/02	12MONTH	
13.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
14	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
15	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

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