HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

PRODUCT COMPLIANCE DIVISION
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EMI REPORT (DoC)

PANTECH&CURITEL COMMUNICATIONS, INC.

110-1, ONGJEONG-RI, TONGJIN-EUP, GIMPO-SI,
GYOUNGGI-DO, 415-865, KOREA

Date of Issue: December 14, 2006
Test Report No.: HCT-SAR06-1210
Test Site: HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.

MODEL **:** **OVAL**

Classification/ Standard(s):	FCC PART 15 CLASS B / CISPR 22 CLASS B
Equipment (EUT) Type:	Dual- Mode CDMA Phone with Bluetooth - Prototype
Trade Name/Model(s):	PANTECH&CURITEL / OVAL
Port/ Connector(s)	DC Input Port / Ear Phone Port

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003.(See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HYUNDAI C-Tech. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse of 1988,21 U.S.C.853(a).

Ki Soo Kim

Report prepared by : Ki-Soo Kim
Manager of Product Compliance Team

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1. GENERAL INFORMATION

1.1 Product Description

The PANTECH&CURITEL. OVAL Dual- Band CDMA Phone with Bluetooth phone. Its basic purpose is used for communications. It transmits from CDMA (824.70~848.31), PCS CDMA (1851.25~1908.75) MHz and receives from CDMA (869.70~893.31), PCS CDMA (1931.25~1988.75) MHz. The RF power is rated at CDMA (0.285 W), PCS CDMA (0.272 W).

FCC ID	PP4OVAL
EUT Type	Dual- Mode CDMA Phone with Bluetooth - Prototype
Model	OVAL
TX Frequency	824.70 — 848.31 MHz (CDMA) 1851.25 — 1908.75 MHz (PCS CDMA)
RX Frequency	869.70 — 893.31 MHz (CDMA) 1931.25 — 1988.75 MHz (PCS CDMA)
FCC Classification	Licensed Portable Transmitter Held to Ear (PCE)
Max RF. Output Power	0.285W ERP CDMA (24.6dBm) 0.272W EIRP PCS CDMA (24.3dBm)
Modulation	CDMA/ PCS CDMA

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

1.2 Tested System Details

The Model names for all equipment, plus descriptions used in the tested system (including inserted cards) are:

DEVICE TYPE	MANUFACTURER	MODEL NUMBER/ PART NUMBER	FCC ID / DoC	CONNECTED TO
Dual-Band CDMA Phone with Bluetooth	PANTECH&CURITEL	OVAL	PP4OVAL	Adaptor/ P.C
Charger	UTStarcom	PTA-5070C4US	DoC	Adaptor/ P.C
Notebook P.C	SAMSUND Co., Ltd.	S830	DoC	N/A
Adapter	SAMSUND Co., Ltd.	AD-6019	DoC	Notebook P.C
Key board	SAMSUND Co., Ltd.	K652VL	DoC	Notebook P.C
PRINTER	H/P	C4569A	DoC	Notebook P.C

1.3 Test Methodology

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

1.4 Test Facility

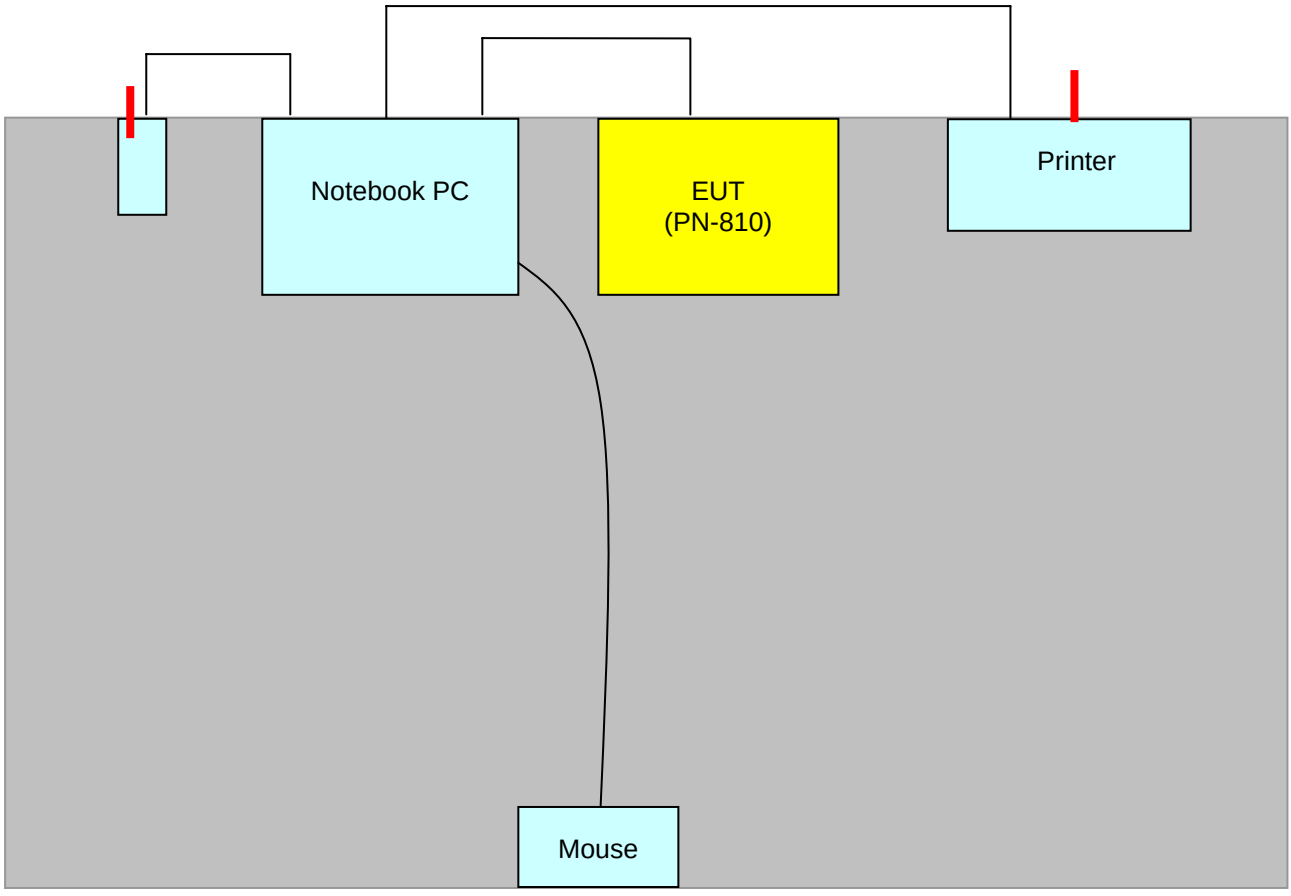
The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1,Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 6, 2006(Registration Number: 90661)

2.SYSTEM TEST CONFIGURATION

2.1 Configuration of Test system

Line Conducted Test : EUT was connected to LISN, all other supporting equipment were Connected to another LISN. Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary Radiated Emissions tests were conducted using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worse perating condition. Final Radiated Emission tests were conducted at 3 meter open area test site.



Power Line: 110V AC

[Configuration of Tested System]

3. CONDUCETD AND RADIATED EMISSION TESTS SUMMARY

3.1 Conducted Emissions Tests

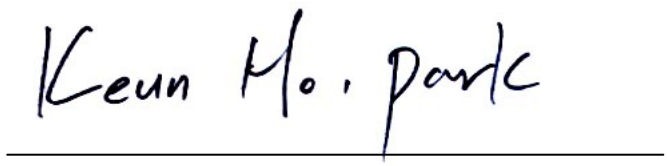
The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

==========

Humidity Level : 31 % Temperature: 20.4 °C
Limit apply to : CISPR 22 CLASS B
Result : PASSED BY – 5.8 dB
Operating Condition : CHARGING BATTERY
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 KHz)

Power Line Conducted Emissions				FCC Class B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Result	Limit (dBuv)	Margin (dB)
0.5700	50.2	HOT	Quasi-Peak	56	-5.8
0.5750	35.3	HOT	Average	46	-10.7
0.6900	49.4	NEUTRAL	Quasi-Peak	56	-6.6
0.4276	37.1	NEUTRAL	Average	47	-10.2

Line Conducted Emissions Tabulated Data



Measured by : Keun-Ho Park / Engineer Date : December 19, 2006

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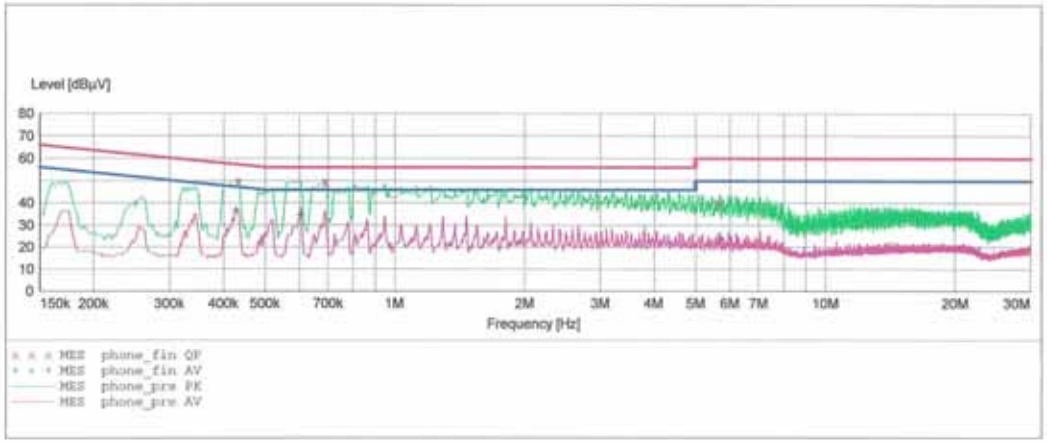
EMC TEST LAB.

EUT: OVAL
Manufacturer: PANTECH@CURITEL
Operating Condition: CHARGING
Test Site: SHIELD ROOM
Operator: KEUN-HO PARK
Test Specification: CISPR 22 CLASS B
Comment: N

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "phone_fin QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.432600	49.60	10.1	57	7.6	---	---
0.690000	49.40	10.2	56	6.6	---	---
5.690000	40.00	10.3	60	20.0	---	---

MEASUREMENT RESULT: "phone_fin AV"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.427600	37.10	10.1	47	10.2	---	---
0.605000	35.00	10.2	46	11.0	---	---
5.685000	24.40	10.3	50	25.6	---	---

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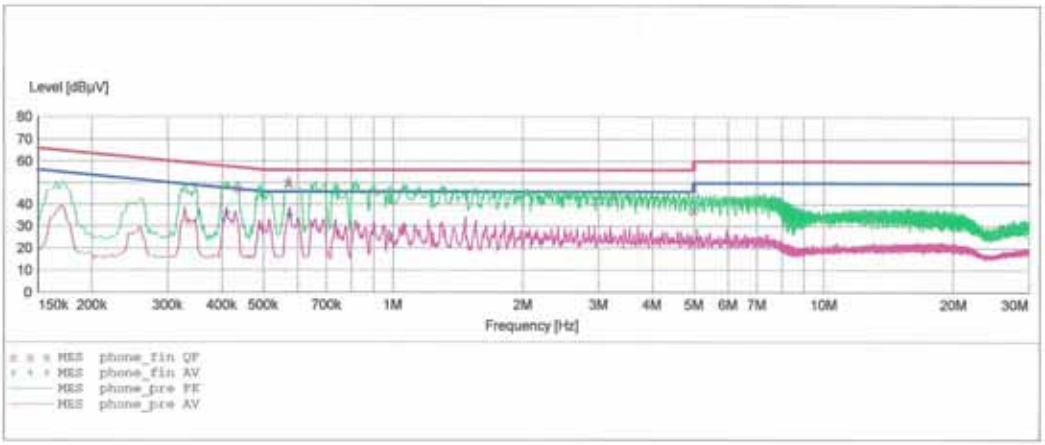
EMC TEST LAB.

EUT: OVAL
Manufacturer: PANTECH@CURITEL
Operating Condition: CHARGING
Test Site: SHIELD ROOM
Operator: KEUN-HO PARK
Test Specification: CISPR 22 CLASS B
Comment: H

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "phone_fin QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.435100	47.60	10.1	57	9.6	---	---
0.570000	50.20	10.1	56	5.8	---	---
5.000000	37.60	10.3	56	18.4	---	---

MEASUREMENT RESULT: "phone_fin AV"

12/19/2006 7:29PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.410100	36.50	10.1	48	11.2	---	---
0.575000	35.30	10.1	46	10.7	---	---
5.075000	24.80	10.3	50	25.2	---	---

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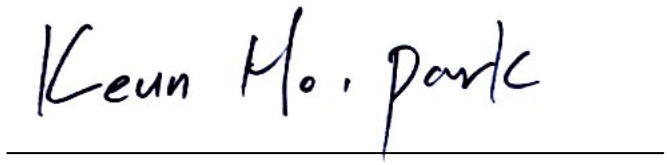
3.2 Radiated Emissions Tests

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

==========

Limit apply to : FCC PART 15 CLASS B
Result : PASSED – 4.5 dB
Operating Condition : Idle/ USB Data Transfer
Detector : Quasi-Peak (Bandwidth: 120 KHz)

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
92.10	21.9	9.1	2.1	V	33.1	43.5	-10.4
97.00	23.3	9.7	2.2	V	35.2	43.5	-8.3
241.70	17.7	17.3	3.5	V	38.5	46	-7.5
296.30	18.1	19.5	4.0	V	41.5	46	-4.5
385.40	15.2	16.8	4.5	V	36.5	46	-9.5
462.90	13.9	18.6	4.9	V	37.4	46	-8.6
279.60	13.0	18.4	3.8	H	35.2	46	-10.8
354.10	13.8	16.5	4.3	H	34.6	46	-11.4
417.50	13.7	17.4	4.7	H	35.8	46	-10.2
462.50	10.6	18.6	4.9	H	34.1	46	-11.9
582.50	7.2	20.8	5.5	H	33.5	46	-12.5
623.10	8.9	21.9	5.7	H	36.5	46	-9.5



Measured by : Keun-Ho Park / Engineer Date : December 19, 2006

3.3.1 Conducted Radiated Emission

3.3.2 Radiated Emission

4.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.
The basic equation with a sample calculation is as follows:

FS = RA + AF + CF

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The 30 dBuV/m value was mathematically converted to its corresponding level in uV/m.

FS = 21.5 + 7.4 + 1.1 = 30 dBuV/m

Level in uV/m = Common Antilogarithm [(30 dBuV/m)/20] = 31.6 uV/m

5.1 Test Equipment

Type	Manufacture	Model Number	CAL Due Date
EMI Test Receiver	Rohde & Schwarz	ESI40	2007.11.16
EMI Test Receiver	Rohde & Schwarz	ESCI	2007.08.24
LISN	Rohde & Schwarz	ESH2-Z5	2007.04.26
LISN	EMCO	703125	2007.04.26
Loop Antenna	Rohde & Schwarz	HFH2-Z2	2006.12.20
TRILOG Antenna	Schwarzbeck	VULB 9160	2007.04.17
Antenna Position Tower	HD	MA240	N/A
Turn Table	EMCO	1050	N/A
Power Analyzer	Voltech	PM 3300	2007.03.22
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360-AMX	2007.11.25
Controller	HD GmbH	HD 100	N/A
SlideBar	HD GmbH	KMS 560	N/A
PULSE LIMITER	Rohde & Schwarz	ESH3-Z2	2007.11.16

6.1 Conclusion

The data collected shows that the PANTECH&CURITEL COMMUNICATIONS, INC. Dual- Mode CDMA Phone. FCC ID: PP4OVAL. Complies with §15.107 and §15.109 of the FCC Rules.