



EMI REPORT (DoC)

PANTECH&CURITEL COMMUNICATIONS, INC.

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

Date of Issue: March 16, 2007

Test Report No.: HCT-SAR07-0307

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).

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 (0.279 W), PCS CDMA (0.263 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	0.279W ERP CDMA (24.5dBm) 0.263W EIRP PCS CDMA (24.2dBm)
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

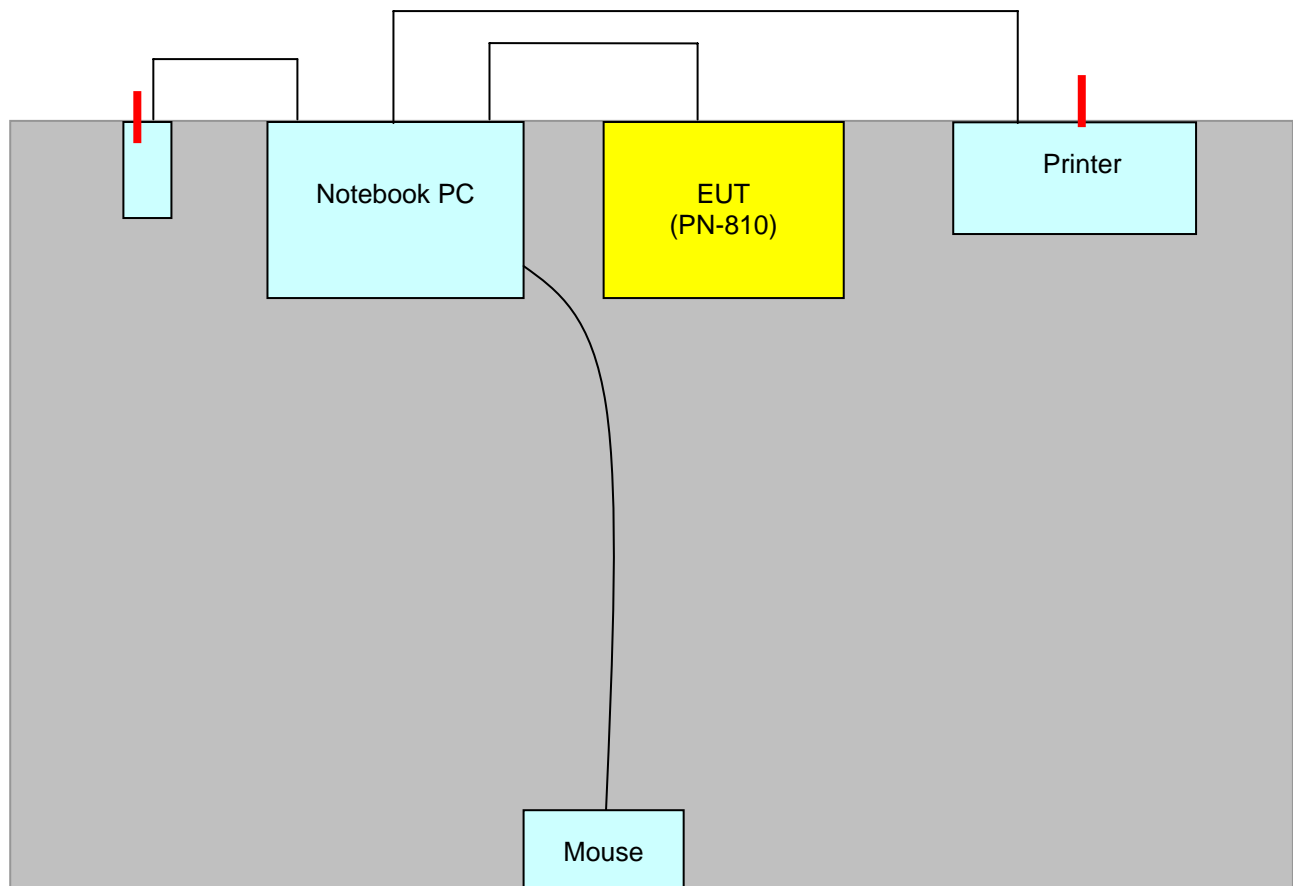
The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description 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. CONDUCTED 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	: 28 %	Temperature: 21.2 °C
Limit apply to	: CISPR 22 CLASS B	
Result	: PASSED BY – 4.6 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)
0.5825	50.4	HOT	Quasi-Peak	56	-5.6
0.4151	36.3	HOT	Average	48	-11.2
0.5775	51.4	NEUTRAL	Quasi-Peak	56	-4.6
0.6625	35.5	NEUTRAL	Average	46	-10.5

Line Conducted Emissions Tabulated Data



Measured by : Keun-Ho Park / Engineer

Date : March 9, 2007

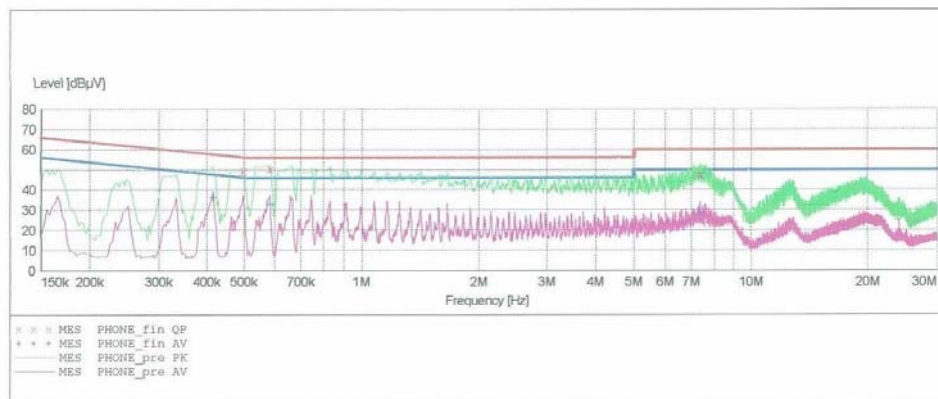
HCT

EMC TEST LAB

EUT: OVAL (Class II)
 Manufacturer: PANTECH & CURITEL
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: KEUN-HO PARK
 Test Specification: CISPR22 CLAA B
 Comment: H

SCAN TABLE: "KN22 CLASSB"

Short Description:	EN 55022 Voltage	Detector	Meas. Time	IF Bandw.	Transducer
Start Stop	Frequency Width				
150.1 kHz 500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
		Average			
500.0 kHz 5.0 MHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
		Average			
5.0 MHz 30.0 MHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
		Average			



MEASUREMENT RESULT: "PHONE_fin QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.497600	49.20	0.2	56	6.9	---	---
0.582500	50.40	0.3	56	5.6	---	---
7.355000	47.40	1.0	60	12.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.415100	36.30	0.2	48	11.2	---	---
0.582500	33.10	0.3	46	12.9	---	---
7.350000	28.80	1.0	50	21.2	---	---

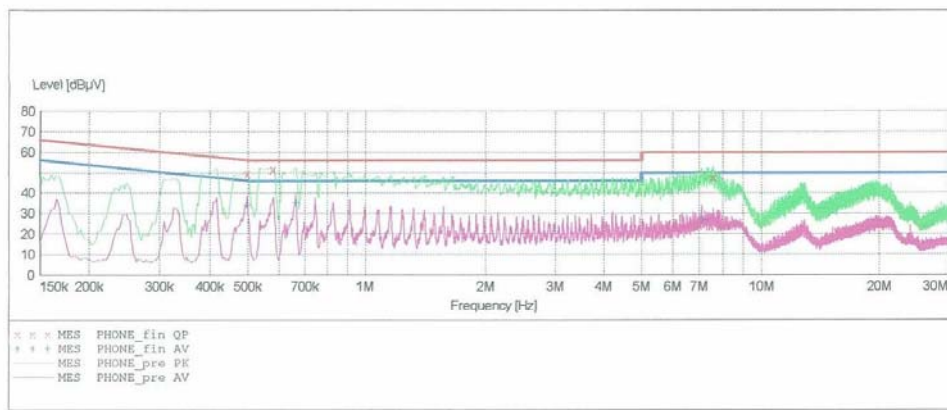
Page 1/1 3/9/2007 2:45PM HCT EMC LAB

HCT
EMC TEST LAB

EUT: OVAL (Class II)
 Manufacturer: PANTECH & CURITEL
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: KEUN-HO PARK
 Test Specification: CISPR22 CLAA B
 Comment: N

SCAN TABLE: "KN22 CLASSB"

Short Description:				EN 55022 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				


MEASUREMENT RESULT: "PHONE_fin QP"

3/9/2007 2:50PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.497600	49.30	0.2	56	6.8	---	---
0.577500	51.40	0.3	56	4.6	---	---
7.580000	47.50	1.0	60	12.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/9/2007 2:50PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.497600	34.20	0.2	46	11.8	---	---
0.662500	35.50	0.3	46	10.5	---	---
7.107500	27.30	1.0	50	22.7	---	---

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 – 5.3 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
66.40	24.3	6.7	1.8	V	32.8	40	-7.2
97.00	24.7	9.7	2.2	V	36.6	43.5	-6.9
180.10	19.3	15.9	3.0	V	38.2	43.5	-5.3
241.60	18.5	17.3	3.5	V	39.3	46	-6.7
253.70	15.8	17.5	3.6	V	36.9	46	-9.1
346.80	17.5	16.4	4.3	V	38.2	46	-7.8
168.20	16.6	15.6	3.0	H	35.2	43.5	-8.3
265.40	14.0	17.8	3.7	H	35.5	46	-10.5
277.90	14.8	18.2	3.8	H	36.9	46	-9.1
314.20	15.3	16.3	4.1	H	35.7	46	-10.3
338.90	14.3	16.4	4.2	H	34.9	46	-11.1
418.30	12.9	17.5	4.7	H	35.1	46	-10.9



Measured by : Keun-Ho Park / Engineer

Date : March 9, 2007

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.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(30 \text{ dBuV/m})/20] = 31.6 \text{ uV/m}$$

5.1 Test Equipment

Manufacturer	Model / Equipment	Calibration Date	Cal Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESI40/ EMI Test Receiver	11/06/2006	Annual	11/06/2007	831564103
Rohde & Schwarz	ESCI/ EMI Test Receiver	08/24/ 2006	Annual	08/24/ 2007	100033
Rohde & Schwarz	ESH2-Z5/ LISN	04/26/2006	Annual	04/26/2007	861741/013
EMCO	703125/ LISN	04/26/2006	Annual	04/26/2007	1357
Schwarzbeck	VULB 9160/ TRILOG Antenna	04/17/2006	Annual	04/17/2007	9160-3150
HD	MA240/ Antenna Position Tower	N/A	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	N/A	114
Voltech	PM 3300/ Power Analyzer	03/22/2006	Annual	03/22/2007	AK06/8896
Voltech	IEC555/ReferenceNetwork Impedance	N/A	N/A	N/A	IC0618898
PACIFIC	Magnetic Module/ AC Power Source	N/A	N/A	N/A	212
PACIFIC	360-AMX/ AC Power Source	12/28/2006	Annual	12/28/2007	212
HD GmbH	HD 100/ Controller	N/A	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	N/A	12
Rohde & Schwarz	ESH3-Z2/ PULSE LIMITER	10/30/2006	Annual	10/30/2007	375.8810.352
MITEQ	AMF-6D-001180-35-209/ AMP	04/26/2006	Annual	04/26/2007	567624
Schwarzbeck	BBHA 9120D/ Horn Antenna	03/30/2006	Annual	03/30/2007	147
Rohde & Schwarz	HFH2-Z2/Loop Antenna	01/10/2007	Annual	01/10/2008	881056/070
ADVANTEST	R3273/Spectrum Analyzer	06/15/2006	Annual	06/15/2007	J004821
Agilent	E4416A /Power Meter	01/22/2007	Annual	01/22/2008	GB41291412
Weinschel	2/Attenuator	01/24/2007	Annual	01/24/2008	BR0554
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	06/28/2006	Annual	06/28/2007	1

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.