



## EMI REPORT (DoC)

PANTECH&CURITEL COMMUNICATIONS, INC.

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

Date of Issue: October 27, 2006

Test Report No.: HCT-SAR06-1006

Test Site: HYUNDAI CALIBRATION & CERTIFICATION  
TECHNOLOGIES CO., LTD.

FRN: 0005866421

**MODEL :**

**PN-810**

Classification/ Standard(s):	FCC PART 15 CLASS B / CISPR 22 CLASS B
Equipment (EUT) Type:	Dual-Band CDMA phone with Bluetooth- Prototype
Trade Name/Model(s):	PANTECH&CURITEL / PN-810
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. PN-810 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 (0.232W), PCS CDMA (0.217W).

FCC ID	PP4PN-810
EUT Type	Dual-Band CDMA Phone with Bluetooth- Prototype
Model	PN-810
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	0.232 W ERP CDMA (23.7dBm) 0.217 W EIRP PCS CDMA (23.4 dBm)
Modulation	CDMA/ PCS CDMA

### 1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

### 1.3 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	PN-810	PP4PN-810	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

### 1.4 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.

### 1.5 Test Facility

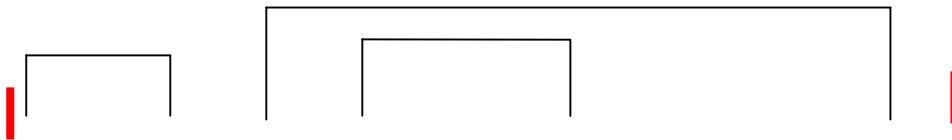
The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description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

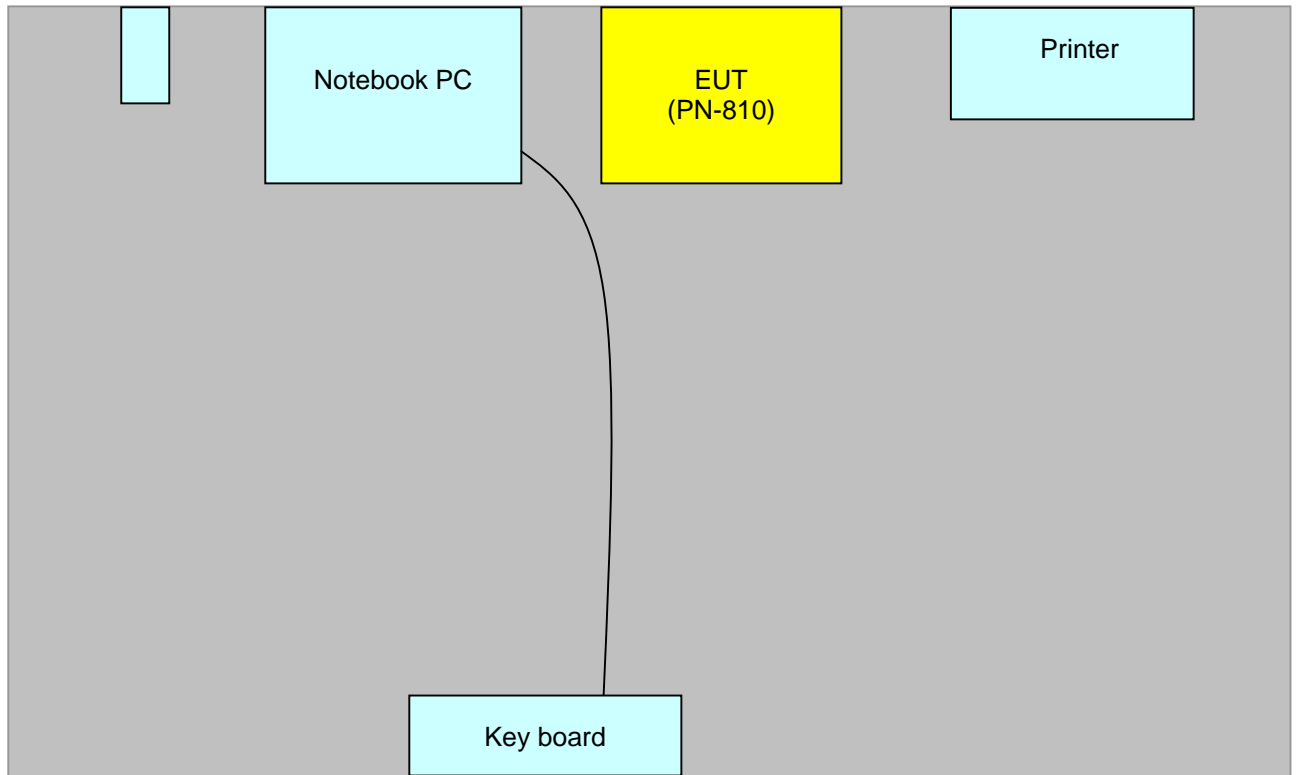
## 2.SYSTEM TEST CONFIGURATION

### 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.





[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	: 37 %	Temperature: 24.8 °C
Limit apply to	: CISPR 22 CLASS B	
Result	: PASSED BY – 8.8 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)
0.530	47.2	HOT	Quasi-Peak	56	-8.8
0.605	30.7	HOT	Average	46	-15.3
0.565	45.0	NEUTRAL	Quasi-Peak	56	-11.0
0.565	32.5	NEUTRAL	Average	46	-13.5

Line Conducted Emissions Tabulated Data



Measured by : Keun-Ho Park / Engineer

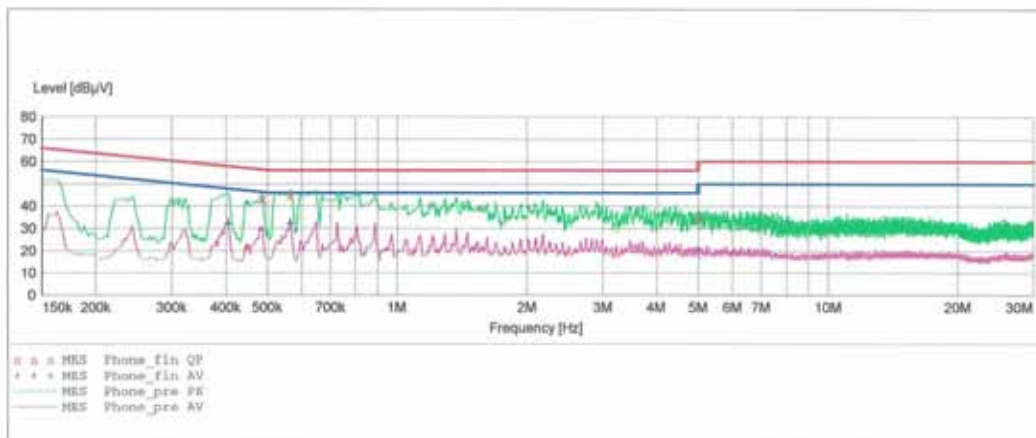
Date :October 19, 2006

**HCT****EMC TEST LAB.**

EUT: PN-810  
Manufacturer: PANTECH@CURITEL  
Operating Condition: Charging mode  
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	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			

**MEASUREMENT RESULT: "Phone\_fin QP"**

10/19/2006 8:57AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.485100	43.00	10.1	56	13.2	---	---
0.565000	45.00	10.1	56	11.0	---	---
5.000000	34.50	10.3	56	21.5	---	---

**MEASUREMENT RESULT: "Phone\_fin AV"**

10/19/2006 8:57AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.405100	32.20	10.1	48	15.6	---	---
0.565000	32.50	10.1	46	13.5	---	---
5.000000	21.10	10.3	46	24.9	---	---

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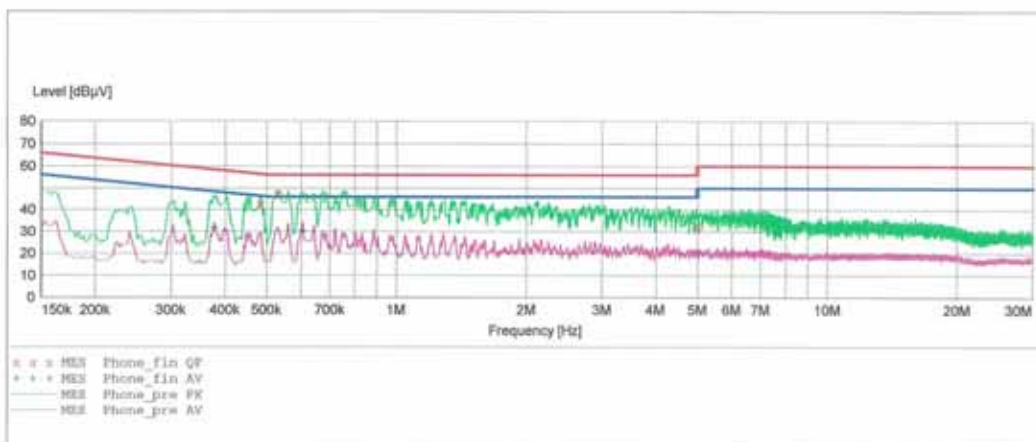


**HCT****EMC TEST LAB.**

EUT: PN-810  
Manufacturer: PANTECH@CURITEL  
Operating Condition: Charging mode  
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	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			

**MEASUREMENT RESULT: "Phone\_fin QP"**

10/19/2006 9:01AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.482600	42.70	10.1	56	13.6	---	---
0.530000	47.20	10.1	56	8.8	---	---
5.000000	32.80	10.3	56	23.2	---	---

**MEASUREMENT RESULT: "Phone\_fin AV"**

10/19/2006 9:01AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.377600	32.00	10.1	48	16.3	---	---
0.605000	30.70	10.2	46	15.3	---	---
5.000000	19.90	10.3	46	26.1	---	---

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## 6.2 Radiated Emissions Tests

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

=====

Humidity Level	: 37 %	Temperature: 24.8 °C
Limit apply to	: FCC PART 15 CLASS B	
Result	: PASSED BY – 5.2 dB	
Operating Condition	: Charging Battery	
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 120 KHz)	

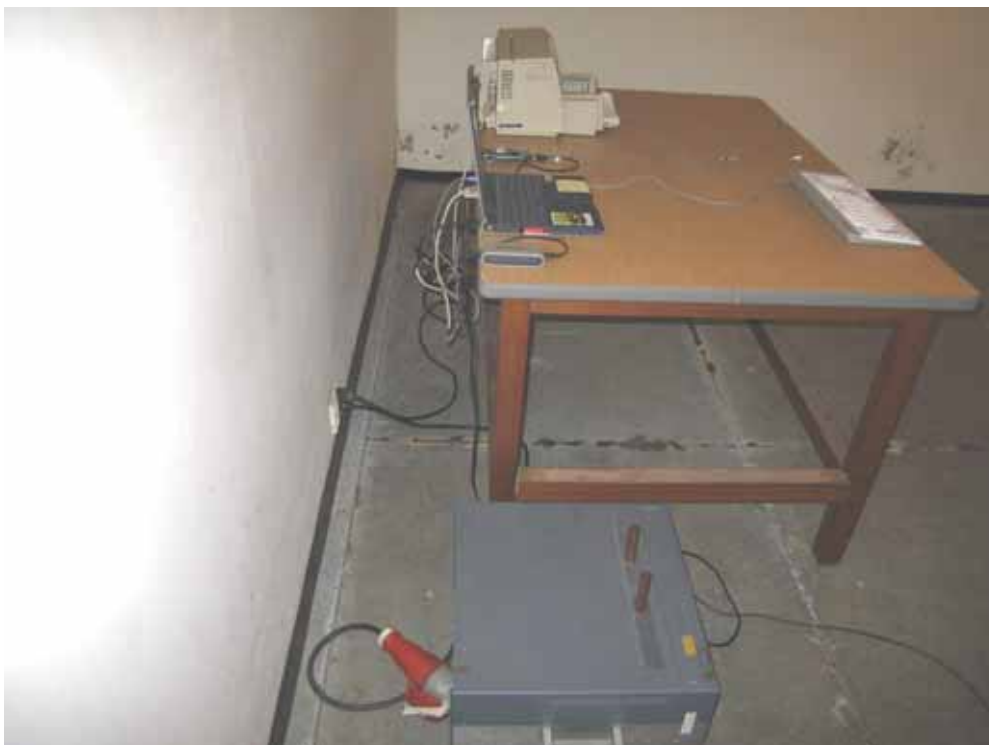
Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
84.70	22.6	7.8	2.0	V	32.5	40	-7.5
97.00	22.7	9.7	2.2	V	34.6	43.5	-8.9
263.10	14.1	17.8	3.7	V	35.6	46	-10.4
352.40	20.0	16.5	4.3	V	40.8	46	-5.2
419.60	15.3	17.5	4.7	V	37.5	46	-8.5
453.20	13.2	18.5	4.9	V	36.5	46	-9.5
326.50	14.0	16.3	4.2	H	34.5	46	-11.5
395.60	14.3	16.9	4.6	H	35.8	46	-10.2
436.70	11.3	18.0	4.8	H	34.1	46	-11.9
485.20	8.7	18.9	5.0	H	32.6	46	-13.4
546.30	9.9	20.1	5.3	H	35.4	46	-10.6
614.80	8.7	21.6	5.7	H	35.9	46	-10.1

*Keun Ho. Park*

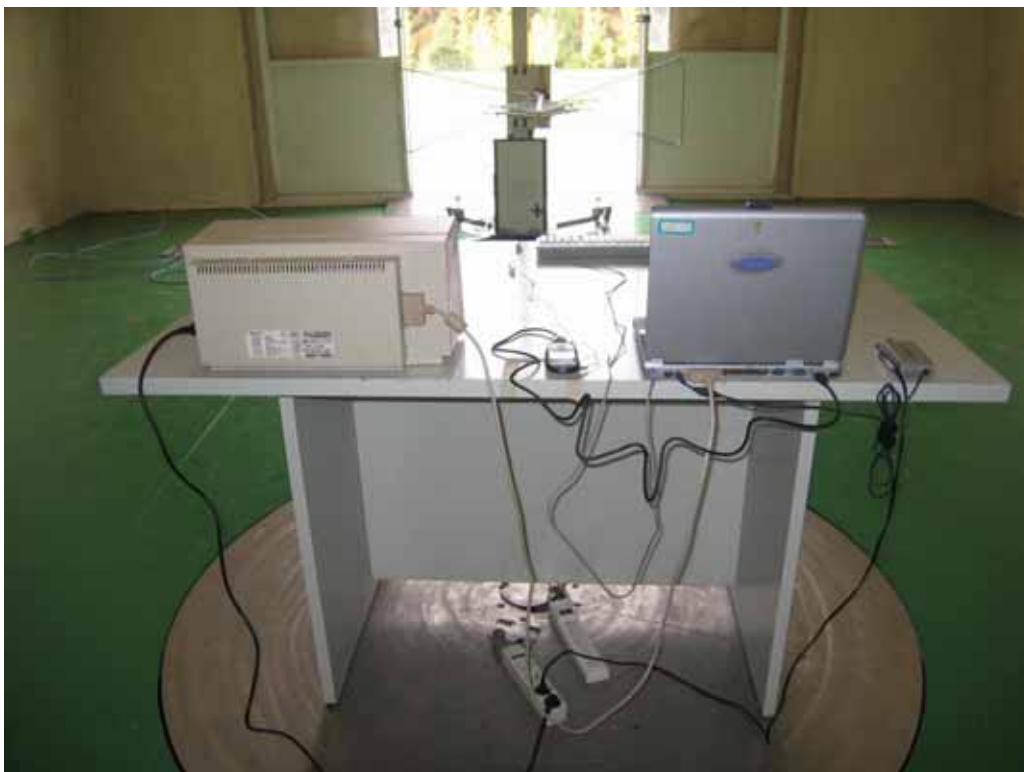
Measured by : Keun-Ho Park / Engineer

Date : October 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.

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

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

## 5.1 Test Equipment

Type	Manufacture	Model Number	CAL Date
EMI Test Receiver	Rohde & Schwarz	ESI40	2005.11.16
EMI Test Receiver	Rohde & Schwarz	ESVS30	2006.07.16
LISN	Rohde & Schwarz	ESH2-Z5	2006.07.28
LISN	EMCO	ESH3-Z5	2006.07.28
Attenuator	Rohde & Schwarz	ESH3-Z2	2005.11.16
Amplifier	Hewlett-Packard	8447E	2006.08.23
TRILOG Antenna	Schwarzbeck	9160	2006.04.06
Antenna Position Tower	EMCO	1051-12	N/A
Turn Table	EMCO	1060-06	N/A
Power Analyzer	Voltech	PM 3300	2006.02.15
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360-AMX	2005.11.25
Controller	HD GmbH	HD 100	N/A
SlideBar	HD GmbH	KMS 560	N/A

## 6.1 Conclusion

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The data collected shows that the PANTECH&CURITEL Dual- Band CDMA Phone with Bluetooth.  
FCC ID: PP4PN-810 Complies with §15.107 and §15.109 of the FCC Rules.