



HCT CO., LTD.

CERTIFICATION DIVISION  
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## EMI CERTIFICATION REPORT

**Applicant:**

**PANTECH CO., LTD.**  
PANTECH Building, I-2, DMC, Sangam-dong  
Mapo-gu, Seoul, 121-792, Korea

**Date of Issue: August 21, 2012**

**Test Report No.: HCTE1208FE21**

**Test Site: HCT CO., LTD.**

**HCT FRN: 0005-8664-21**

**FCC ID:**

**JYCCDMAPTL21**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : GSM/WCDMA/CDMA Phone with Bluetooth/WLAN/NFC  
Model Name : CDMA PTL21  
Port / Connector(s) : USB Port / Headset 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.

Report prepared by  
: Jeong-Hyeon Choi  
Test Engineer of EMC Team

Approved by  
: Sang-Jun Lee  
Manager of EMC Team

## DOCUMENT HISTORY

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Report NO.	Date	Description
HCTE1208FE21	August 21, 2012	First approval report

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## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test (E.U.T) is **GSM/WCDMA/CDMA Phone with Bluetooth/WLAN/NFC**,  
**Model: CDMA PTL21** manufactured by **Pantech Co., Ltd.** Its basic purpose is used for communications.

<b>Model (s)</b>	CDMA PTL21
<b>FCC ID</b>	JYCCDMAPTL21
<b>E.U.T Type</b>	GSM/WCDMA/CDMA Phone with Bluetooth/ WLAN/NFC
<b>TX Frequency</b>	824.70 to 848.31 (CDMA 835) 824.20 to 848.80 (GSM 850) 1 850.20 to 1 909.80 (GSM 1 900) 826.40 to 846.60 (WCDMA 850) 1 852.4 to 1 907.6 (WCDMA 1 900)
<b>RX Frequency</b>	869.70 to 893.31 (CDMA 850) 869.20 to 893.80 (GSM 850) 1 930.20 to 1 989.80 (GSM 1 900) 871.40 to 891.60 (WCDMA 850) 1 932.4 to 1 987.6 (WCDMA 1 900)

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

Original submittal only.

### 1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Name	FCC ID / DoC	Connected to
E.U.T	Pantech	CDMA PTL21	JYCCDMAPTL21	Notebook PC
Notebook PC	H.P	ProBook 6560b	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	CHICONY POWER TECHNOLOGY	Series PPP012H-S	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
Mouse	Radio shack	Series 2-button mouse	FSUGMZE3	Notebook PC
SD card	SanDisk	8 GB	-	E.U.T
USB cable	HOSIDEN	0301PQA	-	E.U.T Notebook PC
Headset	HOSIDEN	0301PVA	-	E.U.T

## 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
E.U.T	Micro USB	-	Y	(P,D)1.1
	Headset jack	-	N	(D)1.1
Notebook PC	DC in	N	-	(P)1.8
	Serial (Mouse)	-	Y	(P)1.8
	USB (Mouse)	-	Y	(D)1.8
Notebook PC adaptor	AC in	N	-	(P)1.8

\* The marked "(D)" means the data cable and "(P)" means the power cable.

## 1.5 Noise Suppression Parts on Cable. (I/O cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
E.U.T	Micro USB	N	N/A	Y	Both End
	Headset jack	N	N/A	Y	E.U.T End
Notebook PC	DC in	Y	Notebook PC End	Y	Notebook PC End
	Serial (Mouse)	N	N/A	N	Notebook PC End
	USB (Mouse)	-	-	Y	Notebook PC End

## 1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 3

## 1.7 Test Facility

The 3 m semi anechoic chamber used to collect the test data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4.

Detailed description of test facilities was submitted to the Commission and accepted dated Mar 02, 2011 (Registration Number: 90661)

## 1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes	Upper frequency of measurement range
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 <sup>th</sup> harmonic of the highest frequency or 40 , whichever is lower

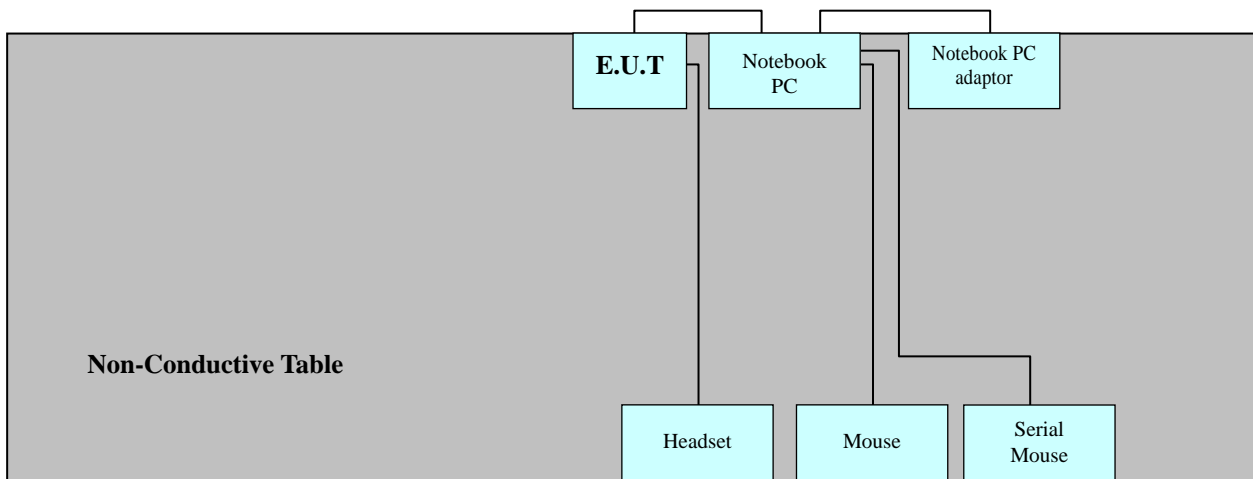
## 2. SYSTEM TEST CONFIGURATION

### 2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN, all other peripheral 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 worst operating conditions.

Radiated Emission test : Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 3 semi anechoic chamber test site.

[Configuration of Tested System]



Power Line: 120



### **3. PRELIMINARY TEST**

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#### **3.1 Conducted Emission Test**

During preliminary tests, the following operating mode was investigated:

**Operation Mode:** Data Communication mode

#### **3.2 Radiated Emission Test**

During preliminary tests, the following operating mode was investigated:

**Operation Mode:** Data Communication mode

## 4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

### 4.1 Conducted Emission Test

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

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 Bandwidth: 9 )

Operation Mode : Data communication mode

Temperature : 26.5 °C

Humidity Level : 46.4 %

Test Date : August 03, 2012

Frequency (MHz)	Transd (dB)	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.182	9.9	N	64	19.9	29.8	54	4.00	13.90
0.215	9.7	H	63	26.7	36.4	53	11.90	21.60
0.217	9.7	H	63	26.8	36.5	53	-	-
0.219	9.7	H	63	26.7	36.4	53	-	-
1.904	10.1	N	56	22.7	32.8	46	-	-
25.248	12.4	N	60	24.2	36.6	50	-	-

**NOTE:** Refer to page 11 to page 14 for details.

1. Transd = Cable loss factor + LISN loss factor
2. Line H = Hot, Line N = Neutral

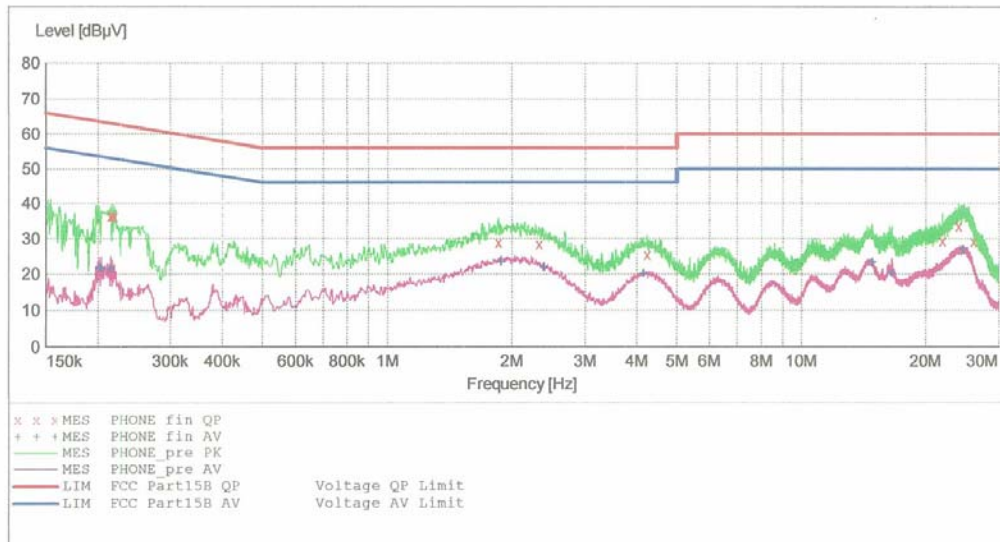
**HCT**

**EMC**

EUT: CDMA PLT21  
 Manufacturer: PANTECH  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART 15 B  
 Comment: H

**SCAN TABLE: "FCC PART 15 B(H)"**

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	1.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PHONE\_fin\_QP"**

8/3/2012 7:02PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.215010	36.40	9.7	63	26.6	---	---
0.217010	36.50	9.7	63	26.4	---	---
0.219010	36.40	9.7	63	26.4	---	---
1.856000	29.00	9.9	56	27.0	---	---
2.324000	28.50	10.0	56	27.5	---	---
4.244000	25.60	10.1	56	30.4	---	---
21.936000	29.40	11.8	60	30.6	---	---
23.984000	33.60	11.9	60	26.4	---	---
26.080000	29.20	12.0	60	30.8	---	---

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

8/3/2012 7:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202010	21.80	9.7	54	31.8	---	---
0.204010	21.70	9.7	53	31.8	---	---
0.215010	21.60	9.7	53	31.4	---	---
1.880000	23.50	9.9	46	22.5	---	---
2.392000	22.00	10.0	46	24.0	---	---
4.160000	20.20	10.1	46	25.8	---	---
14.856000	23.50	10.9	50	26.5	---	---
16.552000	20.40	11.2	50	29.6	---	---
24.624000	26.90	12.0	50	23.1	---	---

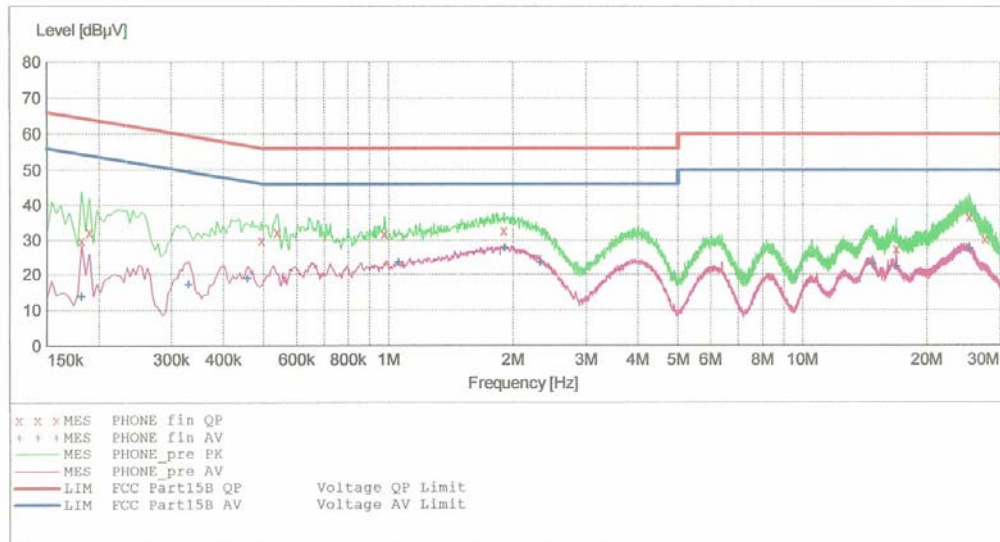
**HCT**

**EMC**

EUT: CDMA PLT21  
 Manufacturer: PANTECH  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART 15 CLASS B  
 Comment: N

**SCAN TABLE: "FCC PART 15 B(N)"**

Short Description:		FCC PART 15 CLASS B					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
Frequency	Frequency	Width					
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				



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

8/3/2012 7:06PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.182010	29.80	9.9	64	34.6	---	---
0.190010	32.30	9.9	64	31.7	---	---
0.494010	29.90	10.0	56	26.2	---	---
0.540000	32.30	10.0	56	23.7	---	---
0.980000	31.80	10.0	56	24.2	---	---
1.904000	32.80	10.1	56	23.2	---	---
16.836000	27.50	11.5	60	32.5	---	---
25.248000	36.60	12.4	60	23.4	---	---
27.536000	30.30	12.5	60	29.7	---	---

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

8/3/2012 7:06PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.182010	13.90	9.9	54	40.5	---	---
0.330010	17.20	9.9	50	32.3	---	---
0.458010	19.00	10.0	47	27.8	---	---
1.060000	23.60	10.0	46	22.4	---	---
1.916000	27.60	10.1	46	18.4	---	---
2.328000	23.50	10.2	46	22.5	---	---
14.760000	23.10	11.2	50	26.9	---	---
16.848000	22.20	11.6	50	27.8	---	---
25.288000	27.50	12.4	50	22.5	---	---

## 4.2 Radiated Emission Test

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

### -For measurement below 1

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak (6 Bandwidth: 120 )

Operation Mode : Data communication mode

Temperature : 24.3 °C

Humidity Level : 60.0 %

Test Date : August 13, 2012

Frequency (MHz)	Reading (dBUV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBUV/m)	Level (dBUV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
141.100	21.16	V	1.0	12.83	4.01	43.5	38.0	5.5
243.500	28.50	H	1.2	11.53	4.47	46.0	44.5	1.5
280.500	21.18	H	1.0	12.76	4.56	46.0	38.5	7.5
409.000	16.17	H	1.0	15.81	5.03	46.0	37.0	9.0
512.000	14.04	H	1.0	17.94	5.32	46.0	37.3	8.7
720.000	10.63	H	1.0	21.17	5.70	46.0	37.5	8.5

**-For measurement above 1**

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 VBW: 1 )  
 : Average mode: Peak (RBW: 1 VBW: 1 )

Operation Mode : Data communication mode

Temperature : 24.3 °C

Humidity Level : 60.0 %

Test Date : August 13, 2012

Frequency ( )	Peak			POL	Average		
	Total ( /m)	Limit ( /m)	Margin ( )		Total ( /m)	Limit ( /m)	Margin ( )
1.5900	41.80	74	32.2	V	29.70	54	24.3
1.8200	42.40	74	31.6	V	30.20	54	23.8

NOTE:

1. Measurement above 1 was performed from 1 to the 5<sup>th</sup> harmonic of highest fundamental frequency. Test was measured by 12 .



## 5. 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 is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The 30 value is mathematically converted to its corresponding level in .

$$FS = 21.5 + 7.4 + 1.1 = 30$$

### [Radiated Emission Limits]

Frequency of Emission	Field Strength	
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

## 6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>Next CAL Date</u>
<b><u>Conducted Emission</u></b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2013.05.02
<input type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2013.07.04
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	2013.02.09
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	9706-1070	1 year	2013.05.02
<input type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2013.07.31
<b><u>Radiated Emission</u></b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	N/A	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	1 year	2012.09.19
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.02.20

## **7. CONCLUSION**

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The data collected shows that the **GSM/WCDMA/CDMA Phone with Bluetooth/WLAN/NFC, Model: CDMA PTL21, FCC ID: JYCCDMAPTL21** complies with §15.107 and §15.109 of the FCC rules.