



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: June 25, 2012

Test Report No.: HCTE1206FE28-1

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

JYCCDMAPT003

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Cellular CDMA Phone
Model Name : CDMA PT003
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.

HCT certifies that no party to application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

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This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

REVISION HISTORY

Report NO.	Date	Description
HCTE1206FE28	June 22, 2012	First Approval Report
HCTE1206FE28-1	June 25, 2012	1. The marked "Y" has been changed to " – " about E.U.T power cord cable description of Section 1.4 2. Average level was recorded at 0.286 MHz.

TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	4
1.1 Product Description.....	4
1.2 Related Submittal(s) / Grant(s).....	4
1.3 Tested System Details.....	5
1.4 Cable Description.....	6
1.5 Noise Suppression Parts on Cable. (I/O cable)	6
1.6 Test Methodology.....	7
1.7 Test Facility	7
1.8 Frequency Range of Radiated Measurements	7
2. SYSTEM TEST CONFIGURATION.....	8
2.1 Configuration of Test System.....	8
3. PRELIMINARY TEST.....	9
3.1 Conducted Emission Test	9
3. 2 Radiated Emission Test	9
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	10
4.1 Conducted Emission Test	10
4.2 Radiated Emission Test	11
5. FIELD STRENGTH CALCULATION	16
6. TEST EQUIPMENT.....	17
7. CONCLUSION	18

ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is **Cellular CDMA Phone, Model: CDMA PT003** manufactured by **PANTECH CO., LTD.** Its basic purpose is used for communications.

Model	CDMA PT003
FCC ID	JYCCDMAPT003
E.U.T Type	Cellular CDMA Phone
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 835)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 835)

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 PT003	JYCCDMAPT003	Notebook PC
USB cable	-	-	-	E.U.T Notebook PC
Notebook PC	SAMSUNG	NT-R519	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA	SADP-90FH BAD-9019S	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
SD card	SanDisk	8GB	-	E.U.T
Net HDD	LG	N1A1DD1	Doc	Notebook PC Net HDD adaptor
Net HDD adaptor	Yang Ming Industrial	DA-60M12	-	Net HDD
RJ45 cable	-	-	-	Net HDD Notebook PC

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)0.2
Notebook PC	RJ45	-	N	(D)1.5
	USB (Mouse)	-	Y	(D)1.8
Notebook PC adaptor	Power	N	-	(D)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
Notebook PC	RJ45	N	N/A	N	Both 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 m

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, Republic of 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 (MHz)	Upper frequency of measurement range (MHz)
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 th harmonic of the highest frequency or 40 GHz, whichever is lower

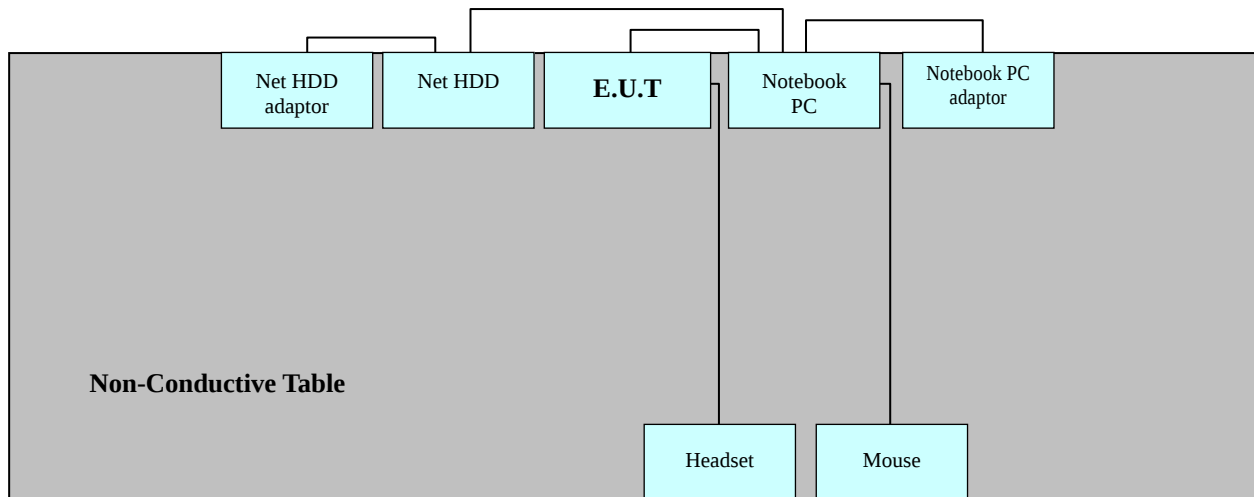
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor and Base Station. 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 m semi-anechoic chamber.

[Configuration of Tested System]



Power Line: 110 VAC

3. PRELIMINARY TEST

3.1 Conducted Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode: ☒ Data communication mode

3. 2 Radiated Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

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 dB Bandwidth: 9 kHz)
Operation Mode	: Data communication mode
Temperature	: 26.0 °C
Humidity Level	: 47.3 %
Test Date	: June 21, 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)
0.194	10.1	N	64	37.5	47.6	54	-	-
0.222	10.1	H	63	35.3	45.4	53	-	-
0.286	10.1	N	61	41.4	51.5	51	24.5	34.6
0.604	10.1	N	56	29.6	39.7	46	-	-
3.888	10.4	H	56	28.8	39.2	46	-	-
4.388	10.4	H	56	30.0	40.4	46	-	-

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

1. The worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

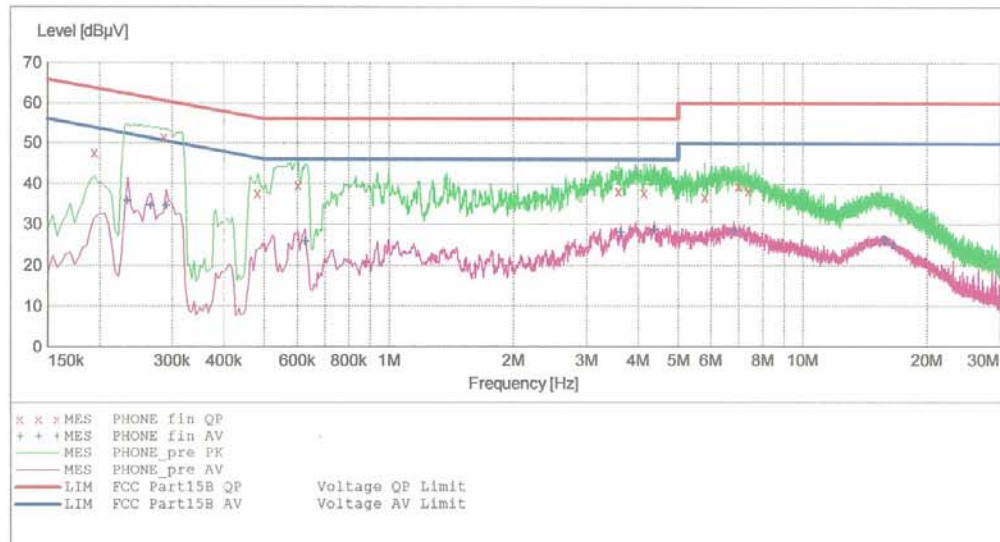
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EUT: PT003
Manufacturer: PANTECH
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15 CLASS B
Comment: N

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

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
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"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.194010	47.60	10.1	64	16.3	---	---
0.286010	51.50	10.1	61	9.2	---	---
0.482010	37.70	10.0	56	18.6	---	---
0.604000	39.70	10.1	56	16.3	---	---
3.592000	38.20	10.3	56	17.8	---	---
4.136000	37.90	10.4	56	18.1	---	---
5.804000	36.80	10.6	60	23.2	---	---
6.996000	39.50	10.7	60	20.5	---	---
7.388000	38.30	10.7	60	21.7	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

6/21/2012 10:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.234010	35.80	10.1	52	16.5	---	---
0.266010	34.60	10.1	51	16.6	---	---
0.290010	34.60	10.0	51	15.9	---	---
0.628000	25.80	10.1	46	20.2	---	---
3.640000	28.00	10.3	46	18.0	---	---
4.384000	28.80	10.4	46	17.2	---	---
6.820000	28.40	10.7	50	21.6	---	---
15.784000	26.10	11.1	50	23.9	---	---
16.568000	25.00	11.2	50	25.0	---	---

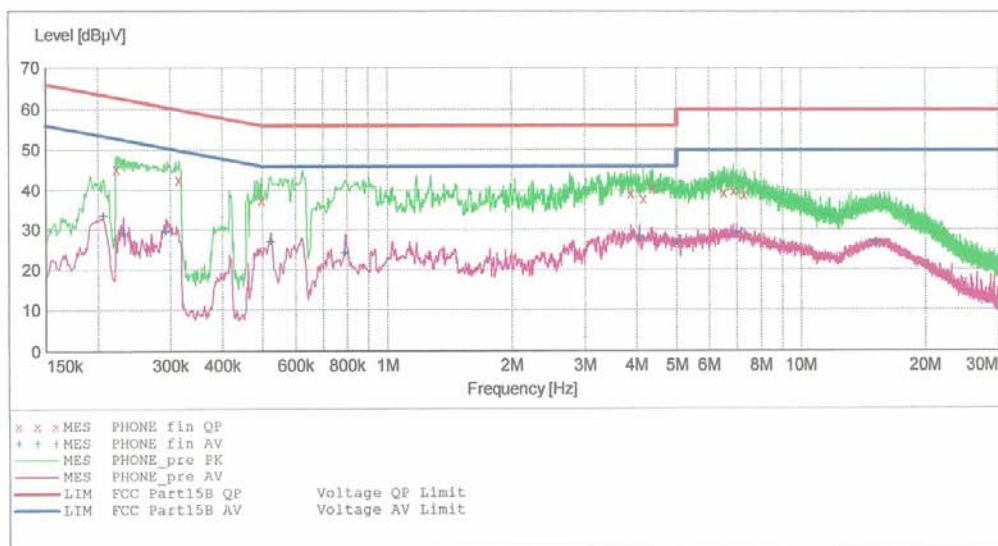
HCT

EMC

EUT: PT003
Manufacturer: PANTECH
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: JH CHOI
Test Specification: FCC PART15 CLASS B
Comment: H

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

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	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"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.222010	45.40	10.1	63	17.3	---	---
0.314010	42.60	10.1	60	17.3	---	---
0.497010	37.60	10.1	56	18.4	---	---
3.888000	39.20	10.4	56	16.8	---	---
4.160000	37.90	10.4	56	18.1	---	---
4.388000	40.40	10.4	56	15.6	---	---
6.508000	39.30	10.7	60	20.7	---	---
6.884000	39.90	10.8	60	20.1	---	---
7.300000	38.90	10.8	60	21.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.206010	33.50	10.1	53	19.8	---	---
0.231010	28.90	10.1	52	23.5	---	---
0.292010	29.60	10.1	51	20.8	---	---
0.524000	27.00	10.1	46	19.0	---	---
0.792000	24.20	10.1	46	21.8	---	---
4.068000	28.00	10.4	46	18.0	---	---
5.000000	26.80	10.5	46	19.2	---	---
6.992000	29.40	10.8	50	20.6	---	---
15.152000	26.80	11.2	50	23.2	---	---

4.2 Radiated Emission Test

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

Limit Apply to : FCC PART 15 Subpart B Class B

-For measurement below 1 GHz

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data communication mode

-For measurement above 1 GHz

Detector : Peak mode: Peak (RBW: 1 MHz / VBW: 1 MHz)

: Average mode: Peak (RBW: 1 MHz / VBW: 10 Hz)

Operation Mode : Data communication mode

Temperature : 24.5 °C

Humidity Level : 52.8 %

Test Date : June 21, 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)			
36.200	15.87	V	1.0	11.81	3.42	40.0	31.1	8.9
55.200	17.86	V	1.1	12.14	3.60	40.0	33.6	6.4
68.900	16.50	V	1.0	10.61	3.69	40.0	30.8	9.2
78.500	20.28	V	1.2	8.33	3.78	40.0	32.4	7.6
142.700	17.31	V	1.0	12.86	4.03	43.5	34.2	9.3
249.900	22.63	H	1.1	11.77	4.50	46.0	38.9	7.1

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th harmonic of highest fundamental frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

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 dB μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$

[Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	μ V/m	dB μ V/m
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 Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
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Conducted Emission

☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2013.05.02
☒ LISN	Rohde & Schwarz	ESH3-Z5	100282	2013.02.03
☐ LISN	Rohde & Schwarz	ENV216	100073	2013.02.09
☒ LISN	EMCO	3816/2SH	9706-1070	2013.05.02
☒ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01

Radiated Emission

☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2013.05.03
☐ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
☐ Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
☒ Antenna master	HD GmbH	MA240	240/520	-
☐ Antenna master controller	HD GmbH	HD100	100/637BJ:00	
☒ Turn Table	HD GmbH	2090	9702/1224	-
☒ Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
☐ Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17

7. CONCLUSION

The data collected shows that the **Cellular CDMA Phone, FCC ID: JYCCDMAPT003, Model: CDMA PT003** complies with §15.107 and §15.109 of the FCC rules.