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EMI CERTIFICATION REPORT

Applicant:
SHARP CORPORATION.
22-22 Nagaike-cho, Abeno-ku, Osaka
545-8522 Japan

Date of Issue: January 21, 2011
Test Report No.: HCTE1101FE43
Test Site: HCT CO., LTD.
HCT FRN: 0005-8664-21

FCC ID: **APYHRO00140**

Rule Part(s) / Standard(s)	: FCC PART 15 Subpart B / CISPR 22 Class B
Equipment Type	: CDMA Phone with BT/WLAN & NFC
Trade Name / Model Name	: SHARP CORPORATION / CDMA SHI05
Port / Connector(s)	: USB Data Port / Headset Port / HDMI 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.

Report prepared by
: Doo Hwan Ryu
Test Engineer of EMC Tech. Part

Approved by
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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **CDMA Phone with BT/WLAN & NFC, Model: CDMA SHI05** manufactured by **SHARP CORPORATION.** Its basic purpose is used for communications.

Model (s)	CDMA SHI05
FCC ID	APYHRO00140
E.U.T Type	CDMA Phone with BT/WLAN & NFC
TX Frequency	824.70 ㎒ to 848.31 ㎒ (CDMA 835)
RX Frequency	869.70 ㎒ to 893.31 ㎒ (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 Number/ Serial Number	FCC ID / DoC	Connected To
CDMA Phone with BT/WLAN & NFC	SHARP	CDMA SHI05	APYHRO 00140	Notebook PC TV Monitor
Notebook PC	SAMSUNG	NT-R519 *ZLA693AS900033M*	DoC	E.U.T
Notebook PC adaptor	DELTA (JIANG SU)	ADP-60ZH D AD-6019R *DA44-00242A*	-	Notebook PC
TV Monitor	LG	M1994D-PMJ.AKRXLP *810KCVU2D831*	-	E.U.T
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible *3902B008*	-	Notebook PC
USB Cable	-	-	-	E.U.T Notebook PC
HDMI cable	-	-	-	E.U.T TV monitor
Headset	-	-	-	E.U.T
SD card (2 GB)	SANDISK	-	-	E.U.T

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
CDMA Phone with BT/WLAN & NFC	Ear Jack	-	N	(D)1.2
	USB Data	Y	Y	(P,D)1.5
	HDMI	N	Y	(D)1.5
Notebook PC	USB (mouse)	-	Y	(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
CDMA Phone with BT/WLAN & NFC	Ear Jack	N	Not Applicable	Y	E.U.T End
	USB Data	Y	Both End	Y	Both End
	HDMI	N	Not Applicable	Y	Both End
Notebook PC	USB (mouse)	Y	Notebook PC End	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 10 m semi anechoic chamber used to collect the radiated data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, South Korea, and the conducted measurement facility used to measure the conducted data are located at San 136-1, Ami-Ri Bubal-Eup, Icheon-Si, Kyoungki-Do, 467-701, South Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (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^{th} harmonic of the highest frequency or 40 ㎓, whichever is lower

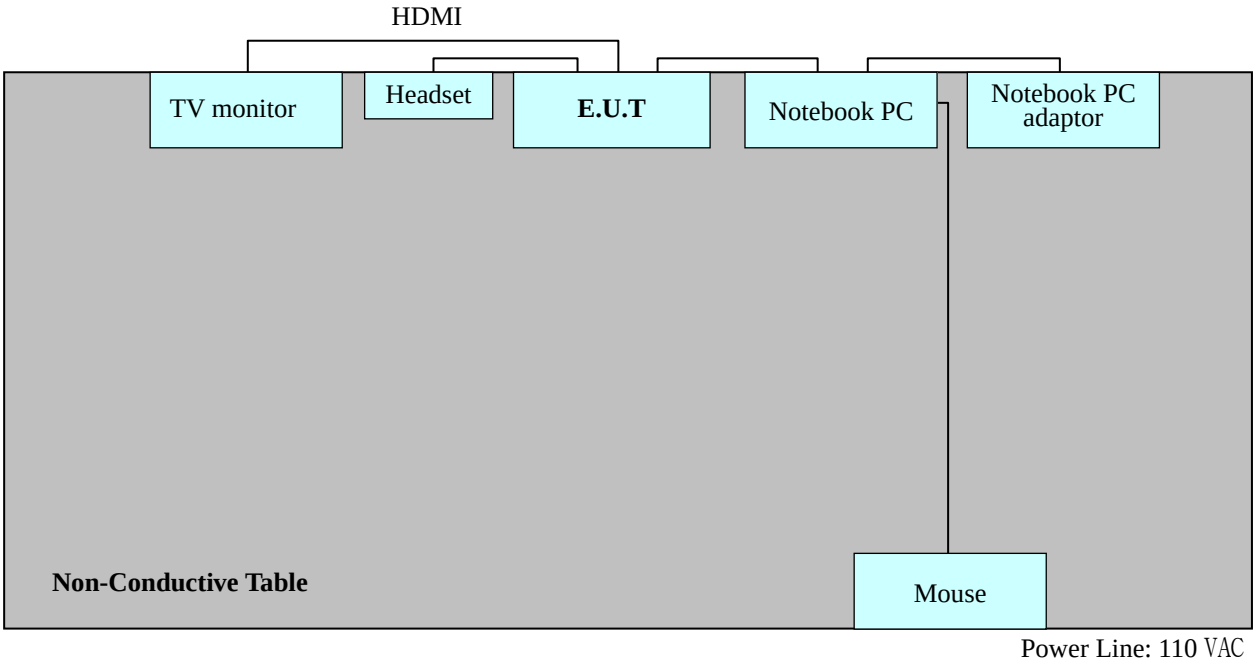
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor. 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]



3. PRELIMINARY TEST

3.1 Conducted Emission Test

■ Test E.U.T with Data Communication mode, after connecting all peripheral devices.

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
Data Communication	○

3. 2 Radiated Emission Test

■ Test E.U.T with Data Communication mode, after connecting all peripheral devices.

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
Data Communication	○

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	: CISPR 22 Class B
Detector	: Quasi-Peak, Average (6 ㏈ Bandwidth: 9 ㎑)
Operating condition	: Camera mode
Temperature	: 24.7 °C
Humidity level	: 44.8 %
Test date	: January 17, 2011

※ **NOTE:** Refer to page 10 to page 13 for details

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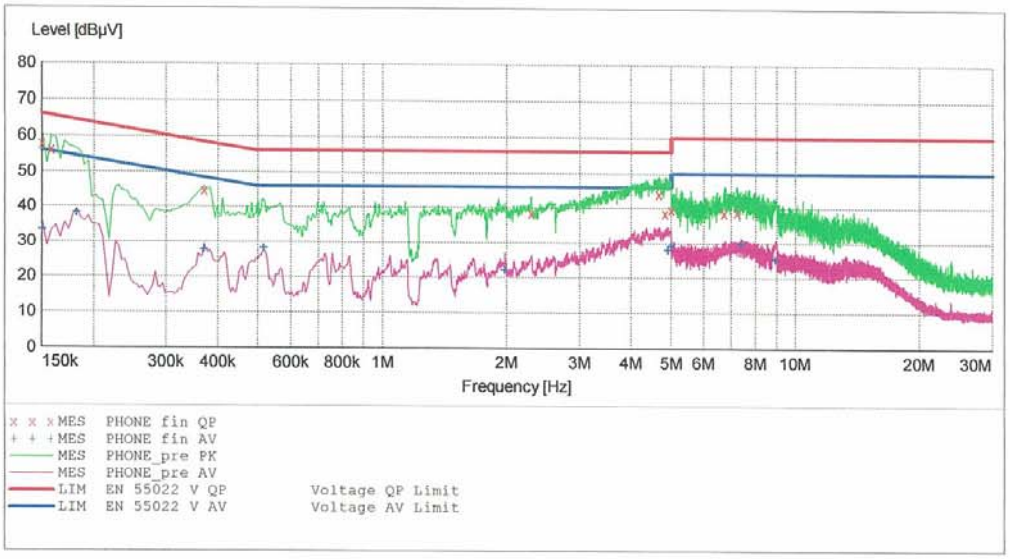
EUT: CDMA SHI05
Manufacturer: SHARP CORPORATION
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: CISPR22 CLASS B
Comment: H

SCAN TABLE: "CISPR22 CLASS B"

Short Description: CISPR 22 CLASS B

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "PHONE_fin QP"

1/17/2011 3:40PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150010	57.80	10.1	66	8.2	---	---
0.158010	56.20	10.1	66	9.4	---	---
0.370010	44.70	10.1	59	13.8	---	---
2.292000	38.50	10.3	56	17.5	---	---
4.668000	44.10	10.5	56	11.9	---	---
4.836000	38.60	10.5	56	17.4	---	---
5.000000	39.60	10.5	56	16.4	---	---
6.740000	38.70	10.6	60	21.3	---	---
7.240000	39.00	10.6	60	21.0	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

1/17/2011 3:40PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150010	33.40	10.1	56	22.6	---	---
0.182010	38.20	10.1	54	16.1	---	---
0.370010	27.70	10.1	49	20.8	---	---
0.516000	28.30	10.1	46	17.7	---	---
1.980000	22.10	10.3	46	23.9	---	---
4.920000	28.00	10.5	46	18.0	---	---
5.000000	29.10	10.5	46	16.9	---	---
7.400000	29.80	10.6	50	20.2	---	---
8.948000	25.30	10.7	50	24.7	---	---

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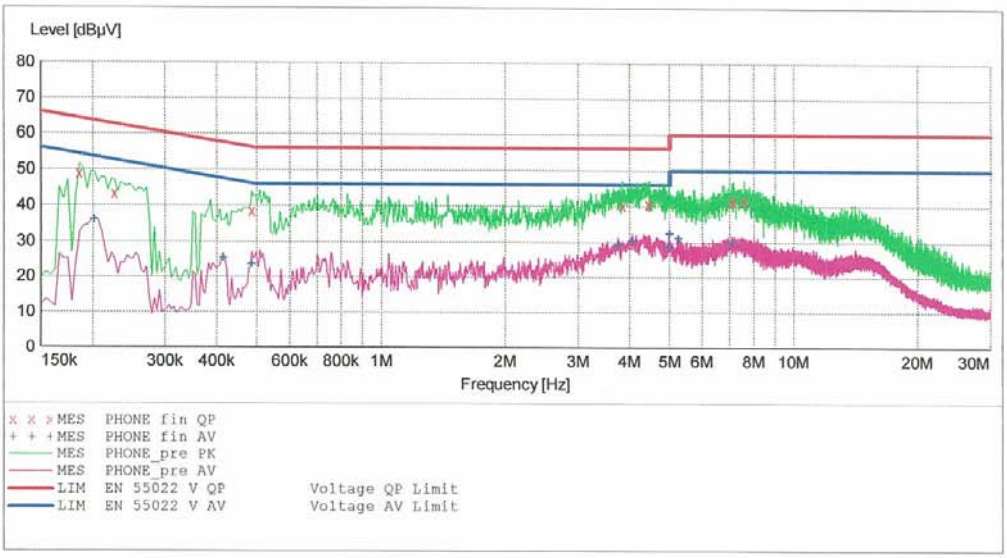
EUT: CDMA SHI05
Manufacturer: SHARP CORPORATION
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: CISPR22 CLASS B
Comment: N

SCAN TABLE: "CISPR22 CLASS B"

Short Description: CISPR 22 CLASS B

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "PHONE_fin QP"

1/17/2011 3:43PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.186010	48.90	10.1	64	15.3	---	---
0.226010	43.40	10.1	63	19.2	---	---
0.486010	38.60	10.1	56	17.6	---	---
3.840000	40.20	10.4	56	15.8	---	---
4.448000	40.80	10.4	56	15.2	---	---
4.472000	40.50	10.5	56	15.5	---	---
7.100000	41.80	10.6	60	18.2	---	---
7.148000	41.20	10.6	60	18.8	---	---
7.588000	41.70	10.7	60	18.3	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.202010	36.10	10.1	54	17.4	---	---
0.414010	25.50	10.1	48	22.1	---	---
0.486010	23.80	10.1	46	22.5	---	---
3.752000	29.40	10.4	46	16.6	---	---
4.060000	30.50	10.4	46	15.5	---	---
4.984000	29.00	10.5	46	17.0	---	---
5.000000	32.40	10.5	46	13.6	---	---
5.264000	31.10	10.5	50	18.9	---	---
7.080000	29.90	10.6	50	20.1	---	---

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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
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 19.0 °C
Humidity level	: 46.0 %
Test date	: January 18, 2011

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dBμV	dB/m	dB	(H/V)	dBμV/m	dBμV/m	dB
65.5	8.9	11.2	1.0	V	21.1	40.0	18.9
113.1	13.1	10.8	1.3	V	25.2	43.5	18.3
172.2	9.6	12.4	1.7	H	23.7	43.5	19.8
265.2	12.0	12.1	2.1	H	26.2	46.0	19.8
300.7	6.7	13.4	2.3	V	22.4	46.0	23.6
400.7	6.8	15.6	2.6	H	25.0	46.0	21.0

※ **NOTE:**

1. For measurement above 1 GHz, noise level is more than 10 dB below the limit, specified in FCC Part 15.35

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

FS = 21.5 + 7.4 + 1.1 = 30 dBμV/m

[Radiated Emission Limits]

Frequency of Emission (㎒)	Field Strength	
	μV/m	dBμV/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

	Type	Manufacturer	Model Number	Serial Number	Next CAL Date
	Conducted Emission				
☒	EMI Test Receiver	Rohde & Schwarz	ESCI	100033	2011.02.19
☒	LISN	Rohde & Schwarz	ESH3-Z5	100282	2011.02.05
☐	LISN	Rohde & Schwarz	ENV216	3560.6550.02	2011.04.06
☒	Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.52	2011.10.25
	Radiated Emission				
☐	EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2011.10.29
☒	EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2011.09.01
☒	Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
☒	Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
☒	Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
☒	Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
☐	RF-Amplifier	MITEQ	AMF-6D-0010 1800-35.20P.PS	-	2011.05.20
☐	Base Station	Rohde & Schwarz	CMU 200	1100000802	2011.02.17

7. CONCLUSION

The data collected shows that the **SHARP CORPORATION, CDMA Phone with BT/WLAN & NFC, Model: CDMA SHI05, FCC ID: APYHRO00140** complies with §15.107 and §15.109 of the FCC rules.