

EMI VERIFICATION REPORT

Applicant:

LG Electronics Inc.
Cheongho-ri, Jinwi-myeon, Pyeongtaek-si,
Gyeonggi-do, Korea 151-713

Date of Issue: April 26, 2011

Test Report No.: HCTE1104FE39

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

MODEL:

IC:

AN-TD200
2703H-ANTD200

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Pentogh Dongle
Trade Name : LG Electronics Inc
Manufacturer : OHSUNG Electronics Co., Ltd
Address : 181, Gong Dan-dong, Gumi-si, Gyeonsangbuk-do, Korea
Port / Connector(s) : USB Port
FCC Listing No : 90661
IC Recognition No : IC 5944A-3

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
: Kyoung-Hee Yoon
Test Engineer of EMC Team



Approved by
: Sang-Jun Lee
Manager of EMC Team

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1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **Pentogh Dongle, Model: AN-TD200** manufactured by **OHSUNG Electronics Co., Ltd.** Its basic purpose is used for communications.

FCC / IC Model	AN-TD200
IC	2703H-ANTD200
E.U.T Type	Pentogh Dongle
TX Frequency	2 402 MHz to 2 480 MHz
RX Frequency	2 402 MHz to 2 480 MHz

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	FCC ID / DoC	Connected to
Pentogh Dongle	OH-SUNG	AN-TD200	-	-
Notebook PC	SAMSUNG	NT-R519	DoC	Notebook PC adaptor
Notebook PC adaptor	DELTA	ADP-60ZH D AD-6019R	-	Notebook PC

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
Pentogh Dongle	USB	-	-	-
Notebook PC	USB	-	-	-

* 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
Pentogh Dongle	USB	N	-	Y	Both end
Notebook PC	USB	N	-	Y	Notebook PC end

1.6 Test Methodology

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 10 m

1.7 Test Facility

The 10 m semi anechoic chamber used to collect the test is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyungki-Do, 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 (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. DESCRIPTION OF TESTS

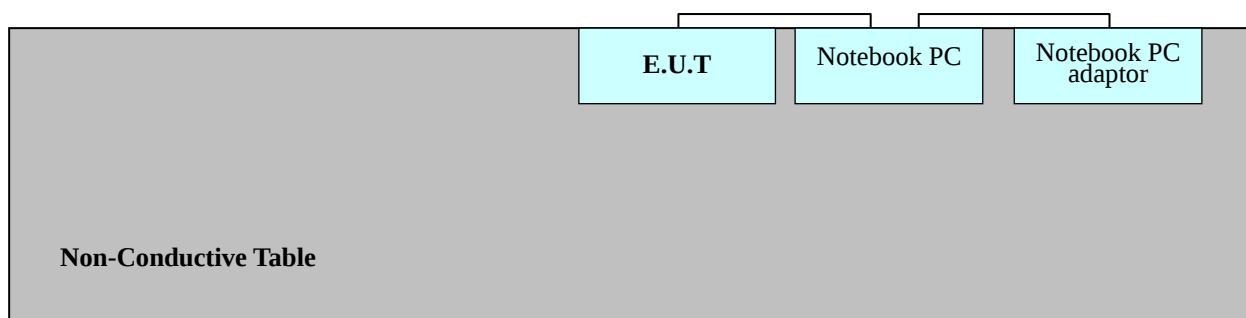
2.1 Radiated Emission Test

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 10 m semi anechoic chamber test site.

[CISPR 22 Class Limits]

Freq. Range	Quasi-Peak
30 MHz to 230 MHz	30 dB μ V
230 MHz to 1 000 MHz	37 dB μ V

[Configuration of Tested System]



3. PRELIMINARY TEST

3.1 Radiated Emission Test

During preliminary tests, the following operating mode was investigated:

Operation Mode: ☒ Idle

Test Configuration: ☒ E.U.T + Notebook PC

4. RADIATED EMISSION TEST SUMMARY

4.1 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 / CISPR 22 Class B

-For measurement below 1 GHz

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

Operation Mode : Idle mode

-For measurement above 1 GHz

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

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

Temperature : 22.8 °C

Humidity Level : 42.0 %

Test Date : April 14, 2011

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB/m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
33.6	2.9	12.5	1.0	H	16.4	30.0	13.6
51.7	4.7	13.5	1.2	V	19.4	30.0	10.6
184.6	6.5	11.2	2.3	V	20.0	30.0	10.0
220.4	6.8	10.6	2.6	H	20.0	30.0	10.0
984.6	0.6	24.0	5.8	V	30.4	37.0	6.6
998.4	0.4	24.1	5.8	V	30.3	37.0	6.7

- ※ **NOTE:** 1. Measurement above 1 GHz performed from 1 GHz to the 5th harmonic of highest fundamental frequency.
2. For measurement above 1 GHz, noise level is more than 14 dB below the limit, specified in FCC Part 15.35.

4.3 Test Setup Photos



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 $21.5 \text{ dB}\mu\text{V}$ is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The $30 \text{ dB}\mu\text{V/m}$ value is mathematically converted to its corresponding level in $\mu\text{V/m}$.

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

6. TEST EQUIPMENT

Type	Manufacturer	Model Number	Serial Number	Next CAL Date
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Conducted Emission

☐ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2011.05.28
☐ LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
☐ LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
☐ Attenuator	Rohde & Schwarz	ESH3-Z2	375.8810.352	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	VULB9168	255	2011.05.28
☒ 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	2012.02.16
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13

7. CONCLUSION

The data collected shows that the **E.U.T type: Pentogh Dongle, Model: AN-TD200** complies with §15.107 and §15.109 of the FCC rules.

IC Model: AN-TD200, IC: 2703H-ANT200 complies with ICES-003 Issue 4 of the IC rule.