

FCC Part 15 Subpart B, Class B

Neusoft Group (Dalian) Co., Ltd.

CONTROL UNIT-TEM

Test Model: GLM1908TB

Prepared for	:	Neusoft Group (Dalian) Co., Ltd.
Address	:	No. 901-7 Huangpu Road, Ganjingzi District, Dalian City, Liaoning Province, China
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample	:	March 01, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	March 01, 2021 ~ March 05, 2021
Date of Report	:	March 08, 2021



TEST REPORT

FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014

Report Reference No. : LCS210225041AE
Date Of Issue : March 08, 2021
FCCID : 2AZAX-GLM1908TB
Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ... : Full application of Harmonised standards ☒
 Partial application of Harmonised standards ☐
 Other standard testing method ☐
Applicant's Name : Neusoft Group (Dalian) Co., Ltd.
Address : No. 901-7 Huangpu Road, Ganjingzi District, Dalian City, Liaoning Province, China
Test Specification
Standard..... : FCC 47 CFR Part 15 Subpart B, Class B, ANSI C63.4 -2014
Test Report Form No. : LCSEMC-1.0
TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF : Dated 2011-03
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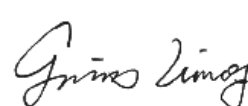
Test Item Description..... : CONTROL UNIT-TEM
Trade Mark..... : Lotus
Test Model : GLM1908TB
Ratings : Input: DC 6-16V, 2A
 DC 4.8V by Ni-MH Battery, 440mAh

Result : Positive
Compiled by:


Linda He/ File administrators

Supervised by:


Jin Wang/ Technique principal

Approved by:


Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS210225041AEMarch 08, 2021
Date of issue

Test Model..... : GLM1908TB

EUT..... : CONTROL UNIT-TEM

Applicant..... : Neusoft Group (Dalian) Co., Ltd.Address..... : No. 901-7 Huangpu Road, Ganjingzi District, Dalian City,
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Liaoning Province, China

Telephone..... : /

Fax..... : /

Factory..... : /

Address..... : /

Telephone..... : /

Fax..... : /

Test Result according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	March 08, 2021	Initial Issue	Gavin Liang

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	N/A
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Normal operation	Record
***Note: All test modes were tested, but we only recorded the worst case in this report.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : CONTROL UNIT-TEM

Trade Mark : Lotus

Test Model : GLM1908TB

Power Supply : Input: DC 6-16V, 2A
DC 4.8V by Ni-MH Battery, 440mAh

Highest internal frequency (Fx)	Highest measured frequency
Fx ≤ 108 MHz	1 GHz
108 MHz < Fx ≤ 500 MHz	2 GHz
500 MHz < Fx ≤ 1 GHz	5 GHz
Fx > 1 GHz	5 × Fx up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies. Where Fx is unknown, the radiated emission measurements shall be performed up to 6 GHz.	

2.2. Support Equipment List

Name	Manufacturers	M/N	S/N
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2.3. Description of Test Facility

Site Description
EMC Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.

2.4. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U_{lab})	Expanded Uncertainty (U_{cisp})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power Disturbance	Level accuracy (30MHz to 300MHz)	± 2.90 dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Mains Harmonic	Voltage	$\pm 0.510\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.510\%$	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. TEST RESULTS

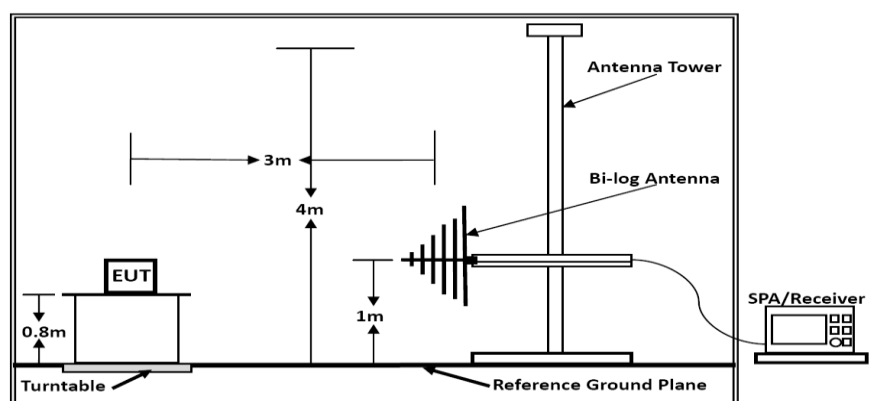
3.1. Radiated Emission Measurement

3.1.1. Test Equipment

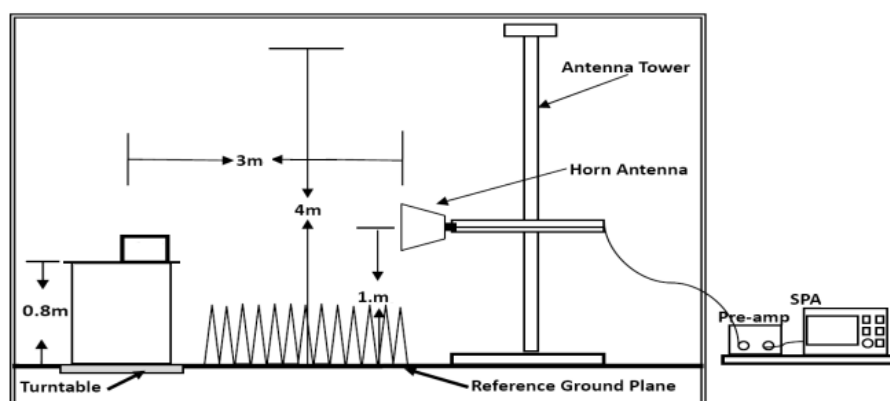
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	By-log Antenna	SCHWARZBEC K	VULB9163	9163-470	2018-07-26	2021-07-25
3	Horn Antenna	SCHWARZBEC K	BBHA 9120D	9120D-192 5	2018-07-02	2021-07-01
4	EMI Test Receiver	R&S	ESR 7	101181	2020-06-22	2021-06-21
5	Broadband Preamplifier	/	BP-01M18G	P190501	2020-06-22	2021-06-21

3.1.2. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

3.1.3. Radiated Emission Limit (Class B)

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark: (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Limits for Radiated Emission Above 1GHz

Frequency (MHz)	Distance (Meters)	Peak Limit ($\text{dB}\mu\text{V/m}$)	Average Limit ($\text{dB}\mu\text{V/m}$)
Above 1000	3	74	54

***Note: The lower limit applies at the transition frequency.

3.1.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.1.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown in Section 3.2.

3.5.2. Let the EUT work in test Mode (Mode 1) and measure it.

3.1.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.

The bandwidth of the EMI test receiver is set at 120kHz, 300kHz.

The frequency range from 30MHz to 1000MHz is checked.

The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

3.1.7. Test Results

PASS.

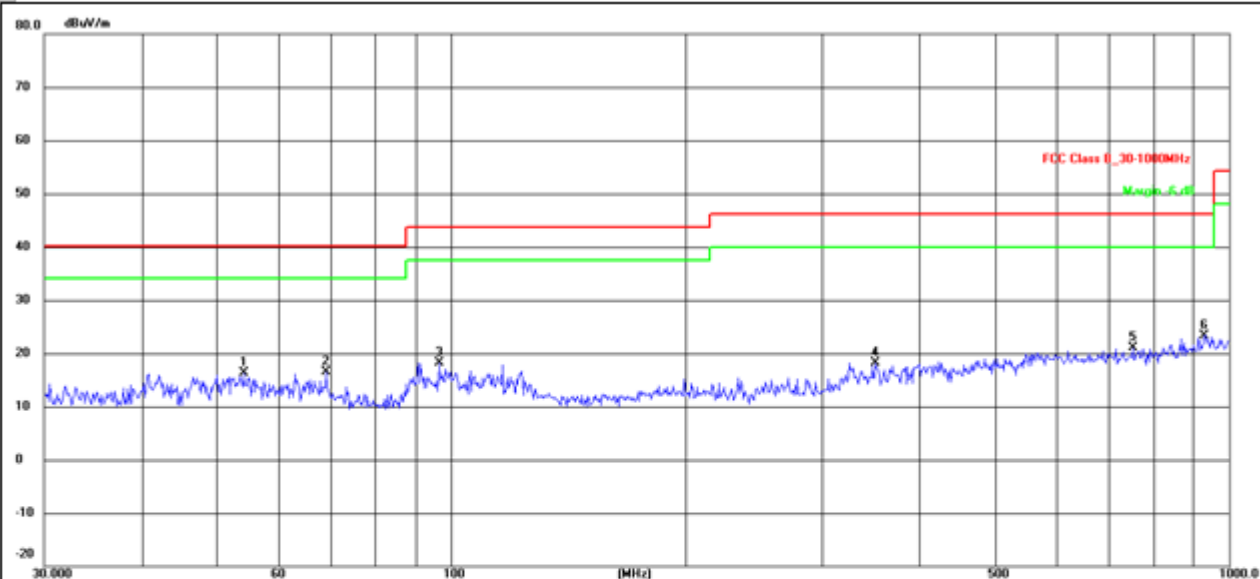
The test result please refer to the next page.

Test Model	GLM1908TB	Test Mode	Mode 1
Environmental Conditions	24.6°C, 54.1% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Carl Fu	Test Voltage	DC 12V



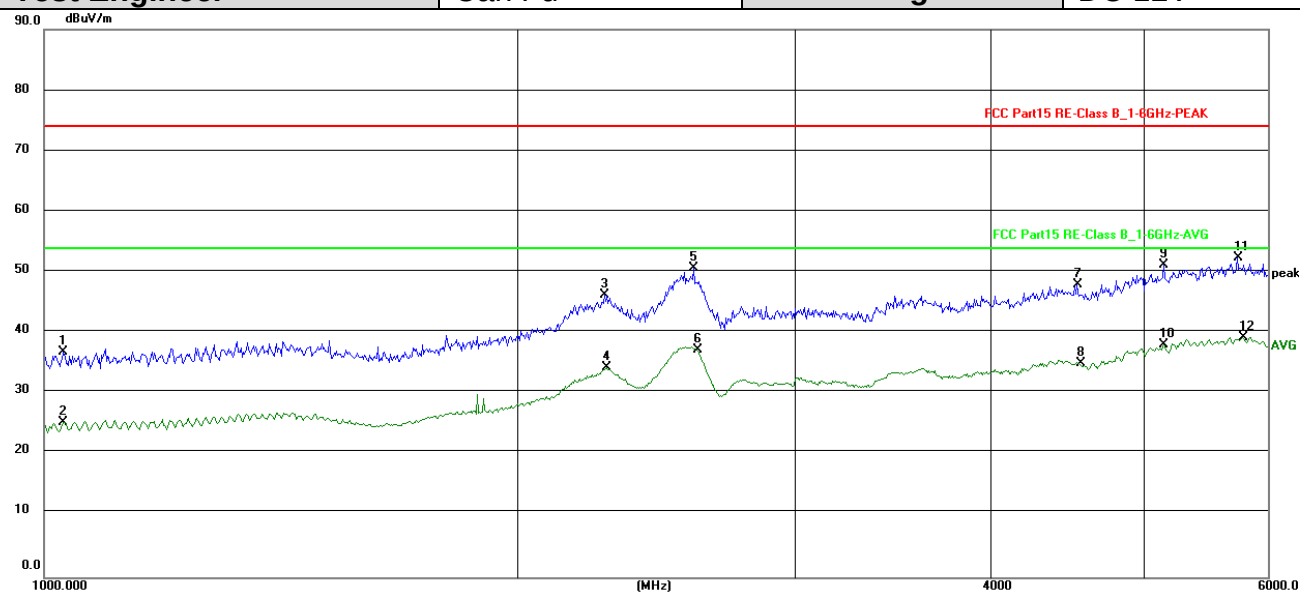
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	49.1865	47.36	-28.81	18.55	40.00	-21.45	QP
2	91.8162	49.05	-28.62	20.43	43.50	-23.07	QP
3	114.1137	45.95	-28.42	17.53	43.50	-25.97	QP
4	289.0020	46.46	-28.45	18.01	46.00	-27.99	QP
5	431.0315	43.62	-25.28	18.34	46.00	-27.66	QP
6	824.5968	43.66	-19.24	24.42	46.00	-21.58	QP

Test Model	GLM1908TB	Test Mode	Mode 1
Environmental Conditions	24.6°C, 54.1% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Carl Fu	Test Voltage	DC 12V



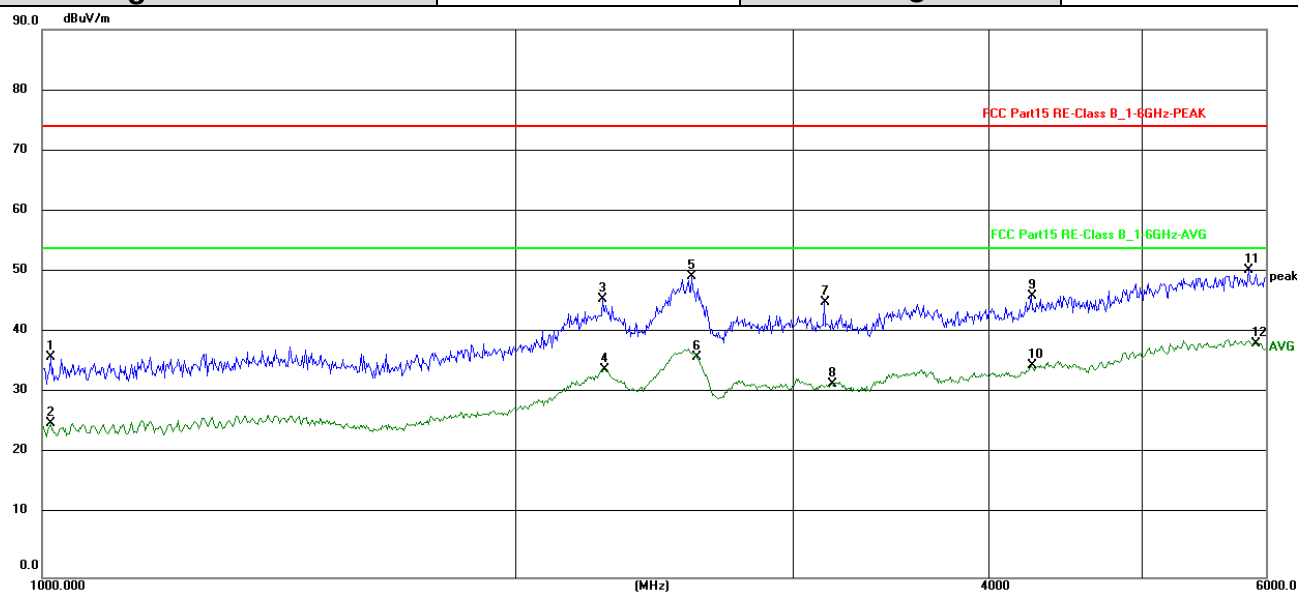
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	54.2609	45.67	-29.36	16.31	40.00	-23.69	QP
2	69.1140	48.33	-31.76	16.57	40.00	-23.43	QP
3	96.7749	46.12	-27.88	18.24	43.50	-25.26	QP
4	351.7079	45.30	-27.01	18.29	46.00	-27.71	QP
5	752.7431	41.13	-20.18	20.95	46.00	-25.05	QP
6	929.0081	41.35	-18.00	23.35	46.00	-22.65	QP

Test Model	GLM1908TB	Test Mode	Mode 1
Environmental Conditions	24.6°C, 54.1% RH	Detector Function	Peak/AVG
Pol	Vertical	Distance	3m
Test Engineer	Carl Fu	Test Voltage	DC 12V



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1029.083	52.92	-15.74	37.18	74.00	-36.82	peak
2	1029.083	41.37	-15.74	25.63	54.00	-28.37	AVG
3	2271.921	53.39	-6.90	46.49	74.00	-27.51	peak
4	2280.077	41.36	-6.81	34.55	54.00	-19.45	AVG
5	2589.395	54.99	-4.21	50.78	74.00	-23.22	peak
6	2598.691	41.65	-4.19	37.46	54.00	-16.54	AVG
7	4536.905	53.33	-5.21	48.12	74.00	-25.88	peak
8	4553.192	40.41	-5.16	35.25	54.00	-18.75	AVG
9	5152.386	54.04	-2.65	51.39	74.00	-22.61	peak
10	5152.386	40.86	-2.65	38.21	54.00	-15.79	AVG
11	5737.167	53.48	-0.85	52.63	74.00	-21.37	peak
12	5778.433	40.40	-0.86	39.54	54.00	-14.46	AVG

Test Model	GLM1908TB	Test Mode	Mode 1
Environmental Conditions	24.6°C, 54.1% RH	Detector Function	Peak/AVG
Pol	Horizontal	Distance	3m
Test Engineer	Carl Fu	Test Voltage	DC 12V



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1012.621	51.99	-15.76	36.23	74.00	-37.77	peak
2	1012.621	41.19	-15.76	25.43	54.00	-28.57	AVG
3	2271.921	52.68	-6.90	45.78	74.00	-28.22	peak
4	2280.077	41.06	-6.81	34.25	54.00	-19.75	AVG
5	2589.395	53.76	-4.21	49.55	74.00	-24.45	peak
6	2608.020	40.87	-4.60	36.27	54.00	-17.73	AVG
7	3142.235	53.83	-8.53	45.30	74.00	-28.70	peak
8	3176.198	40.44	-8.57	31.87	54.00	-22.13	AVG
9	4253.498	52.33	-6.09	46.24	74.00	-27.76	peak
10	4253.498	40.93	-6.09	34.84	54.00	-19.16	AVG
11	5851.364	51.44	-0.87	50.57	74.00	-23.43	peak
12	5904.021	39.35	-0.87	38.48	54.00	-15.52	AVG

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

Level=Reading + Factor

Margin=Level-Limit

4. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

5. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

6. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

-----THE END OF TEST REPORT-----