TEST REPORT

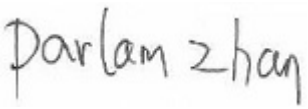
Application No.:	SHEM2009008088CR
FCC ID:	2AGOFRC451A
Applicant:	HCS (Suzhou) Limited
Address of Applicant:	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China
Manufacturer:	HCS (Suzhou) Limited
Address of Manufacturer:	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China
Factory:	WUJIANG CENTURY BILLION ELECTRONIC TECHNOLOGY CO., LTD
Address of Factory:	No.149 West Tun Cun Road Tongli Town Wujiang Suzhou Jiangsu People's Republic of China 215216
Equipment Under Test (EUT):	
EUT Name:	Remote Control
Model No.:	RC4513101/01BRP,RC451XXXX/XXRP,RC451XXXX/XXBRP("X"=0-9."B"means packed with battery)¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) :	47 CFR Part 15, Subpart B
Date of Receipt:	2020-09-21
Date of Test:	2020-09-23 to 2020-09-29
Date of Issue:	2020-10-09
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2020-10-09	/

Authorized for issue by:				
				
		Micheal Niu / Project Engineer		
				
		Parlam Zhan / Reviewer		

2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

InternalSource	UpperFrequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are the similar in electrical and electronic characters. Only the model RC4513101/01BRP was tested since their differences were the model number and the cosmestic (color /painting/printed).

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply: DC 3V By 2*AAA size batteries
Test voltage: DC 3V

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	ThinkPad X100e	/
Dongle	/	/	/

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	2.6dB (9kHz to 150kHz)
		2.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.8 dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.2 dB (150kHz to 30MHz)
4	Radiated Power	3.2dB
5	Radiated Emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
6	Radiated Disturbance (disturbance current in a LLAS)	2.4dB (9kHz to 30MHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L4354)

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 2541.01)

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC (Designation Number: CN1172)

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

• ISED (CAB identifier: CN0072)

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

CAB Identifier: CN0072.

• VCCI (Member No.: 1938)

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1600, C-1707, T-1499, G-10216 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	R&S	ESCI	101378	12/19/2019	12/18/2020
Antenna	TESEQ	CBL 6112D	35403	06/22/2019	06/21/2021

Radiated Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Spectrum Analyzer	R&S	FSU26	200789	04/22/2020	04/21/2021
Amplifier	COM-POWER	PAM-840A	461332	10/24/2019	10/23/2020
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	02/23/2019	02/22/2021
Amplifier	COM-POWER	PAM-118A	551044	12/19/2019	12/18/2020
Horn-antenna	SCHWARZBECK	BBHA9120D	266	02/25/2020	02/24/2021

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2018-01-25	2021-01-24
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2020-09-11	2021-09-10
Digital Multimeter	FLUKE	17B	SHEM043-3	2020-09-09	2021-09-08
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2019-12-20	2020-12-19

6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dBμV/m) quasi-peak
88MHz-216MHz	43.5(dBμV/m) quasi-peak
216MHz-960MHz	46.0(dBμV/m) quasi-peak
960MHz-1000MHz	54.0(dBμV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

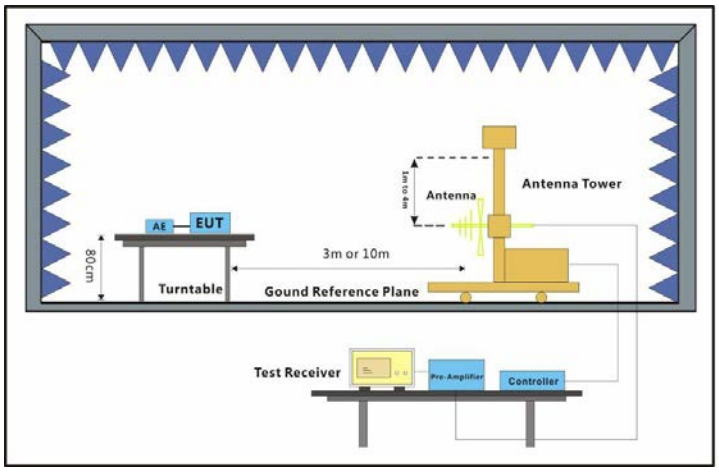
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

Test mode	c:IR mode:Pressing the IR Button to keep EUT working continuously with IR function d:BLE key mode: Establish the communication between EUT and Doogle via BT function and pressing the BLE key. e:BLE voice mode: Establish the communication between EUT and Doogle via BT function and pressing the voice key. f:IR standby mode:Keep EUT power on and working on IR standby mode. g:BLE standby mode: Keep EUT power on and working on BLE standby mode.
Prescan all the mode and found the worst case mode:	d:BLE key mode: Establish the communication between EUT and Doogle via BT function and pressing the BLE key.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

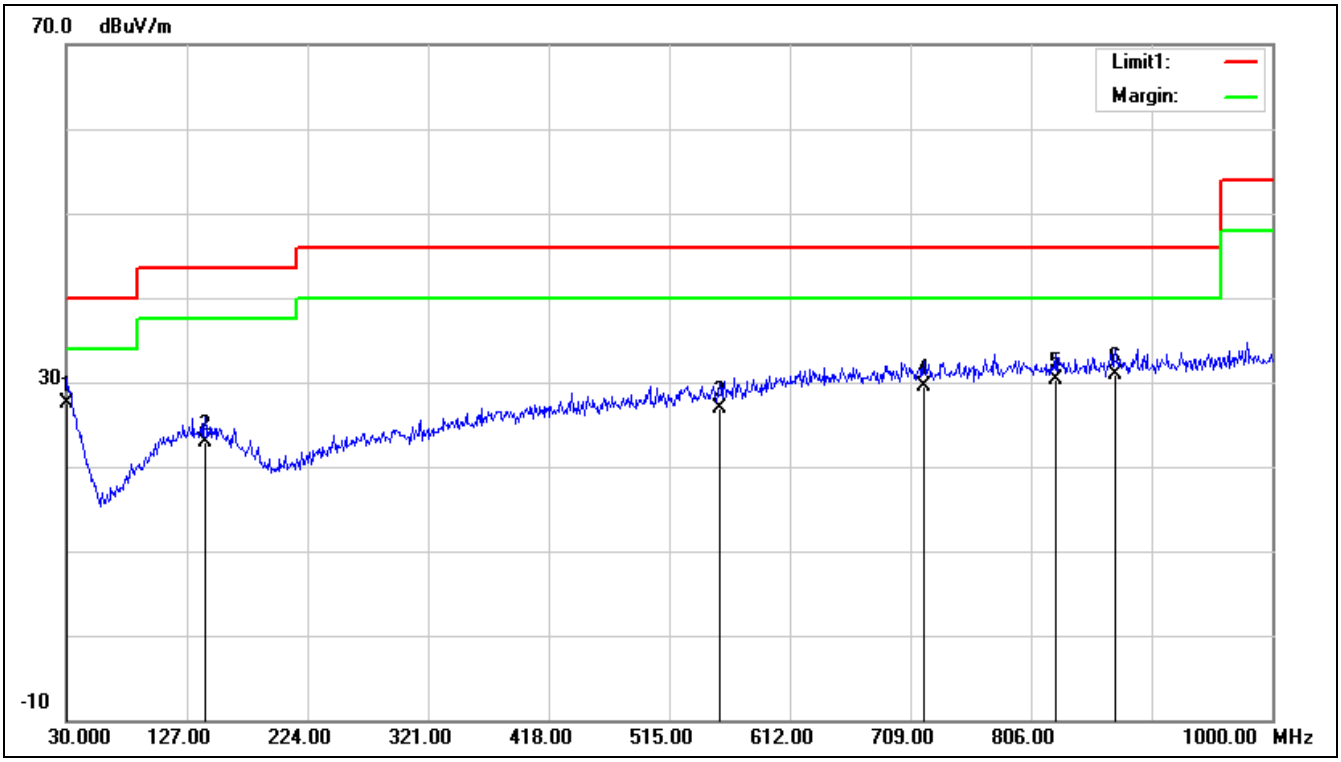
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Notes：

1.Result (dBuV/m) = Reading(dBuV/m) + Correction Factor (dB/m)

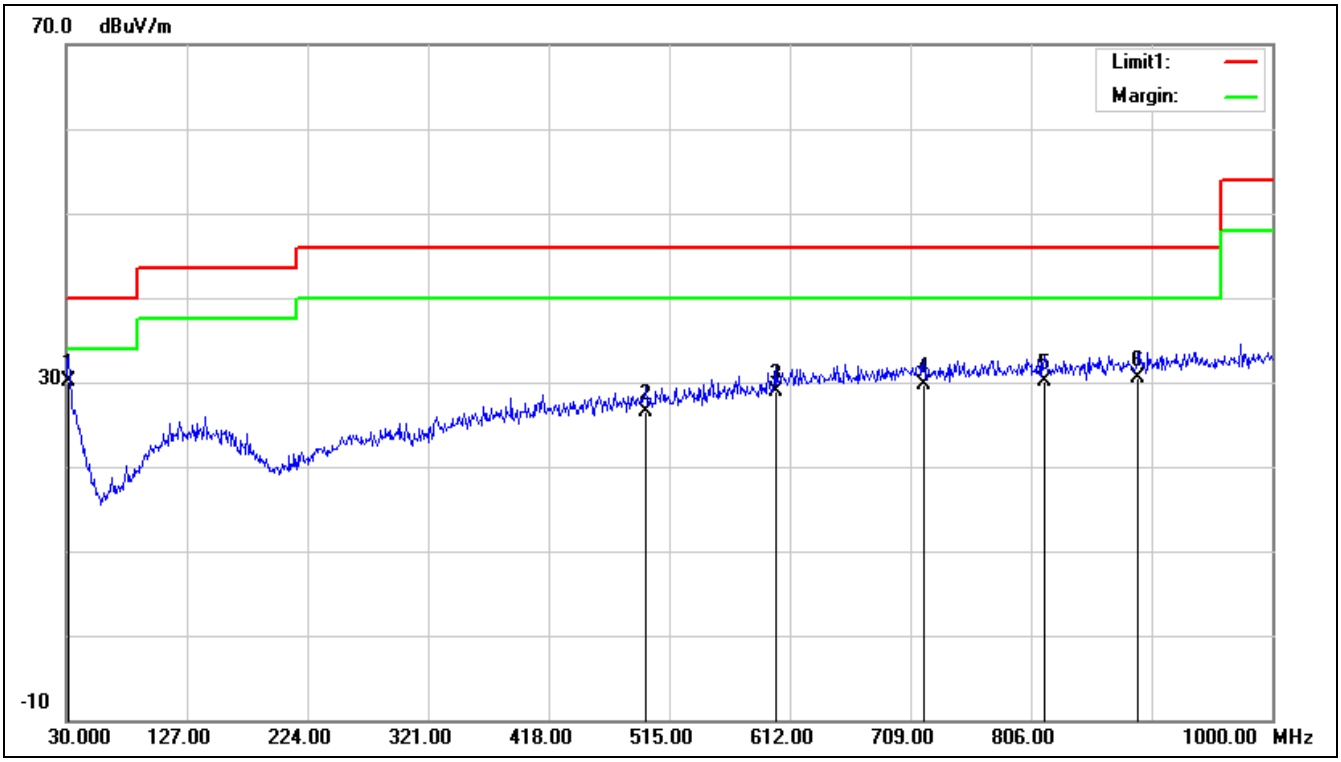
2.Correction Factor (dB/m)=Antenna Factor (dB/m)+Cable Loss (dB)- Amplifier (dB)

Mode:d; Polarization:Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	1.99	25.50	27.49	40.00	-12.51	400	0	QP
2	141.5500	3.01	19.93	22.94	43.50	-20.56	100	217	QP
3	555.7400	0.89	25.99	26.88	46.00	-19.12	200	124	QP
4	719.6700	1.67	27.80	29.47	46.00	-16.53	200	346	QP
5	825.4000	1.98	28.34	30.32	46.00	-15.68	200	259	QP
6	873.9000	2.29	28.60	30.89	46.00	-15.11	100	360	QP

Mode:d; Polarization:Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	31.9400	5.22	24.92	30.14	40.00	-9.86	100	74	QP
2	496.5700	1.28	25.15	26.43	46.00	-19.57	100	244	QP
3	600.3600	2.23	26.59	28.82	46.00	-17.18	100	72	QP
4	719.6700	1.95	27.80	29.75	46.00	-16.25	100	171	QP
5	816.6700	1.82	28.29	30.11	46.00	-15.89	100	163	QP
6	892.3300	1.90	28.70	30.60	46.00	-15.40	200	231	QP

6.2 Radiated Emissions (above 1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
Above 1GHz	74(dBμV/m) peak, 54(dBμV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

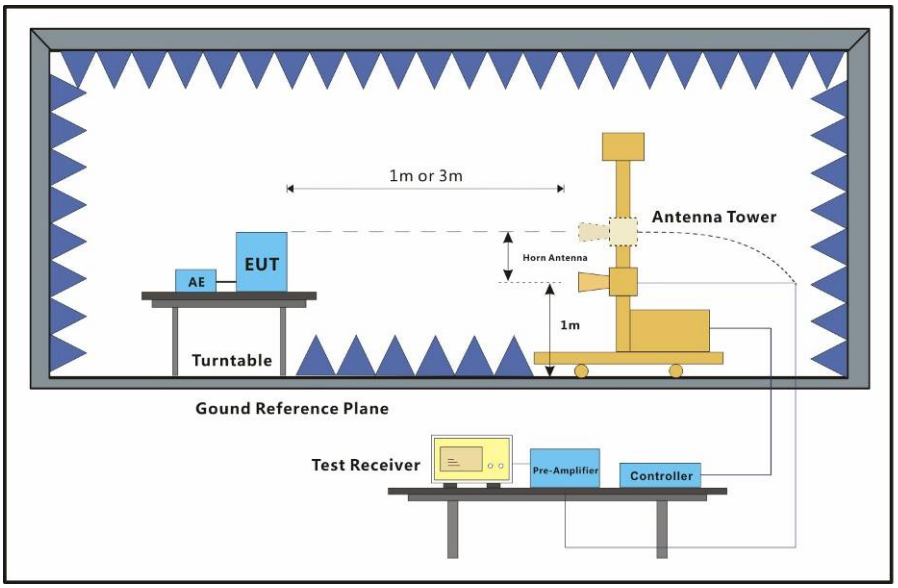
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

Test mode	c:IR mode:Pressing the IR Button to keep EUT working continuously with IR function d:BLE key mode: Establish the communication between EUT and Doogle via BT function and pressing the BLE key. e:BLE voice mode: Establish the communication between EUT and Doogle via BT function and pressing the voice key. f:IR standby mode:Keep EUT power on and working on IR standby mode. g:BLE standby mode: Keep EUT power on and working on BLE standby mode.
Prescan all the mode and found the worst case mode:	d:BLE key mode: Establish the communication between EUT and Doogle via BT function and pressing the BLE key.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

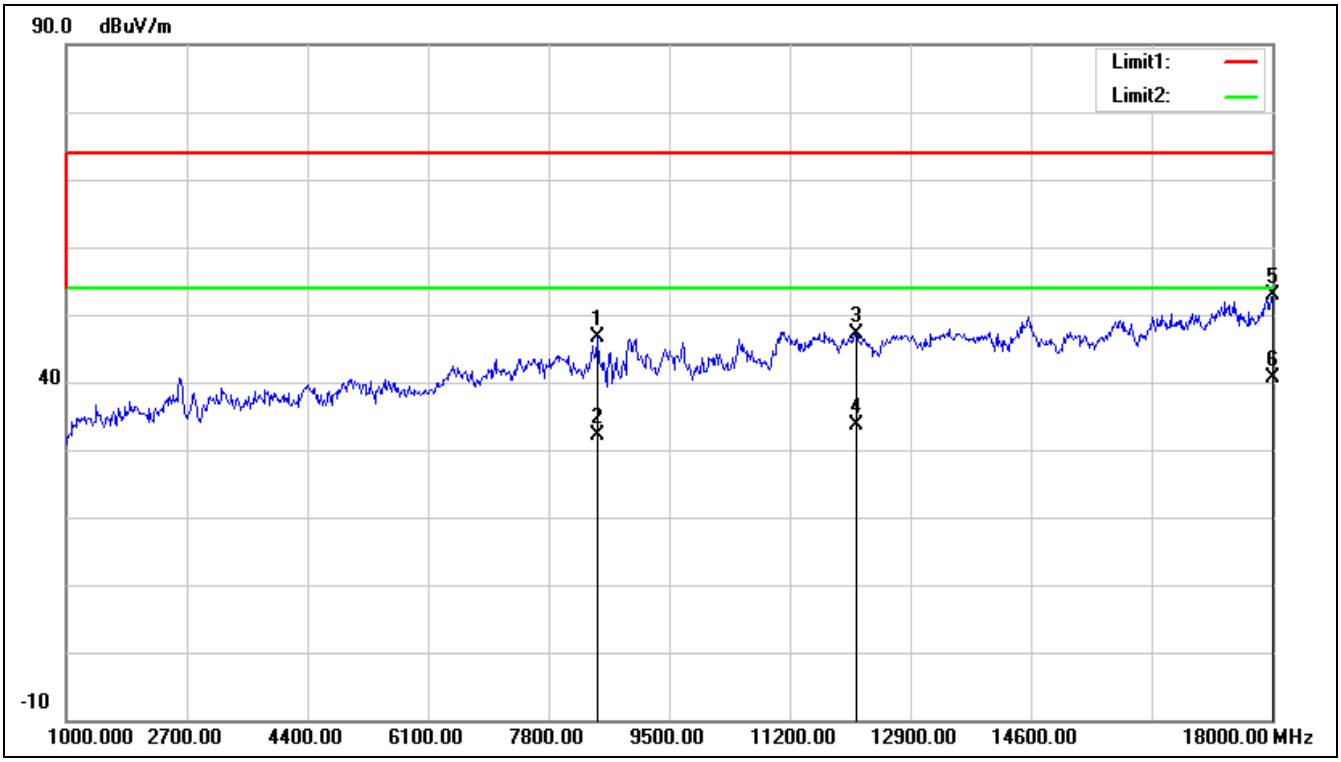
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

Notes：

1.Result (dBuV/m) = Reading(dBuV/m) + Correction Factor (dB/m)

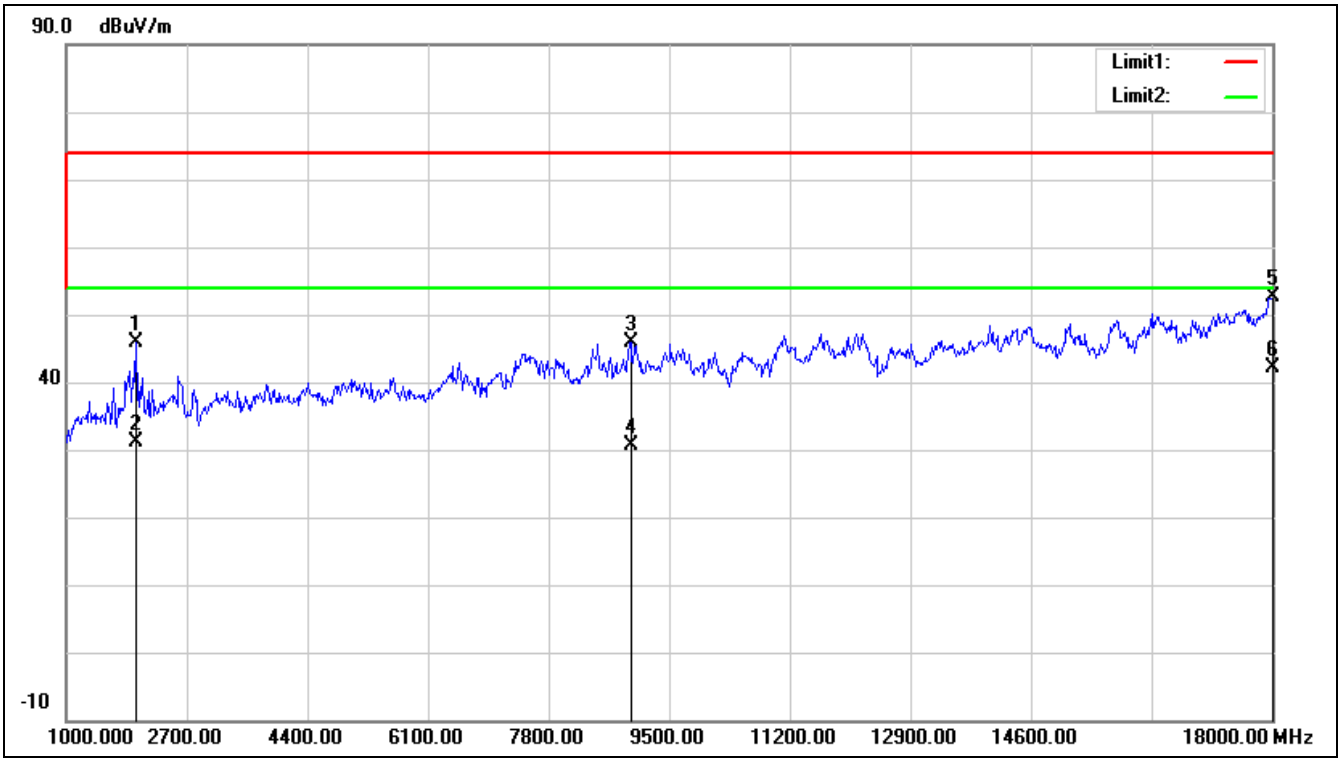
2.Correction Factor (dB/m)=Antenna Factor (dB/m)+Cable Loss (dB)- Amplifier (dB)

Mode:d; Polarization:Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	8497.000	47.54	-0.93	46.61	74.00	-27.39	200	145	peak
2	8497.000	33.02	-0.93	32.09	54.00	-21.91	200	145	AVG
3	12135.000	40.62	6.62	47.24	74.00	-26.76	200	336	peak
4	12135.000	27.02	6.62	33.64	54.00	-20.36	200	336	AVG
5	18000.000	32.16	20.70	52.86	74.00	-21.14	100	327	peak
6	18000.000	20.02	20.70	40.72	54.00	-13.28	100	327	AVG

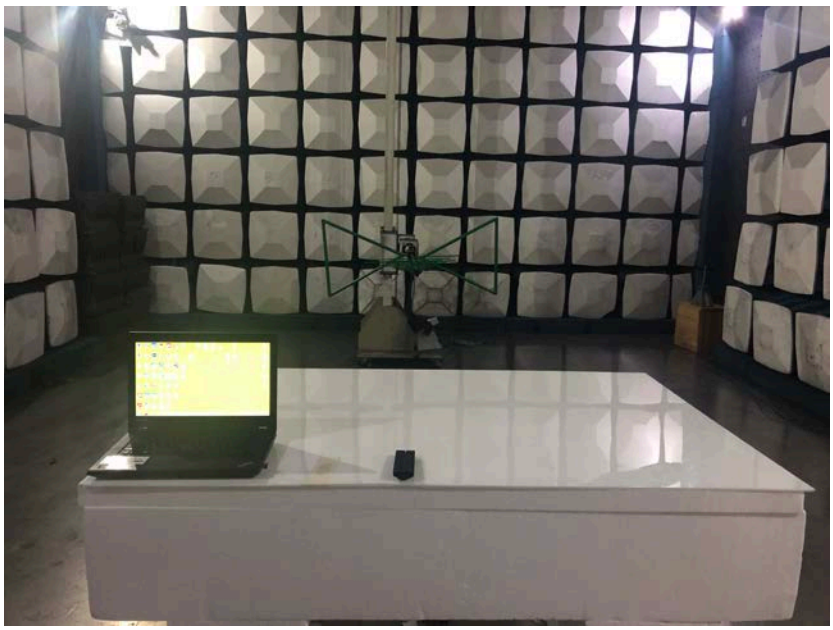
Mode:d; Polarization:Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	1986.000	62.72	-16.73	45.99	74.00	-28.01	200	63	peak
2	1986.000	47.75	-16.73	31.02	54.00	-22.98	200	63	AVG
3	8956.000	46.41	-0.48	45.93	74.00	-28.07	100	135	peak
4	8956.000	31.21	-0.48	30.73	54.00	-23.27	100	135	AVG
5	18000.000	32.03	20.70	52.73	74.00	-21.27	100	87	peak
6	18000.000	21.36	20.70	42.06	54.00	-11.94	100	87	AVG

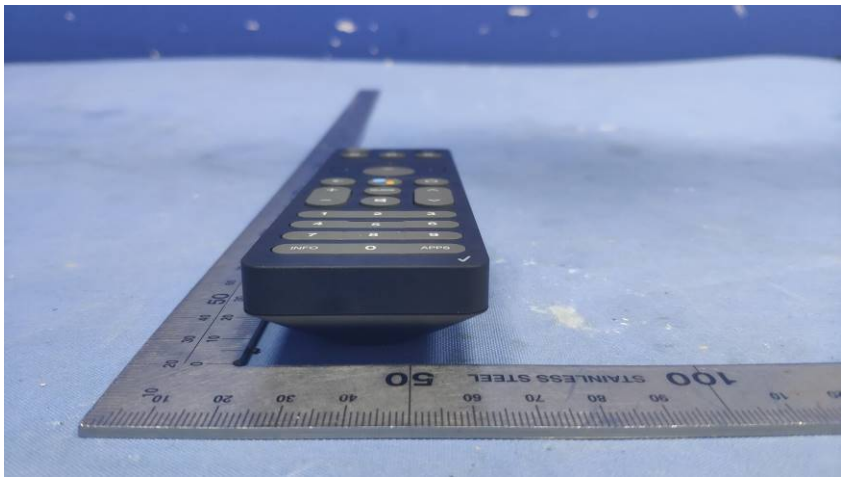
7 Photographs

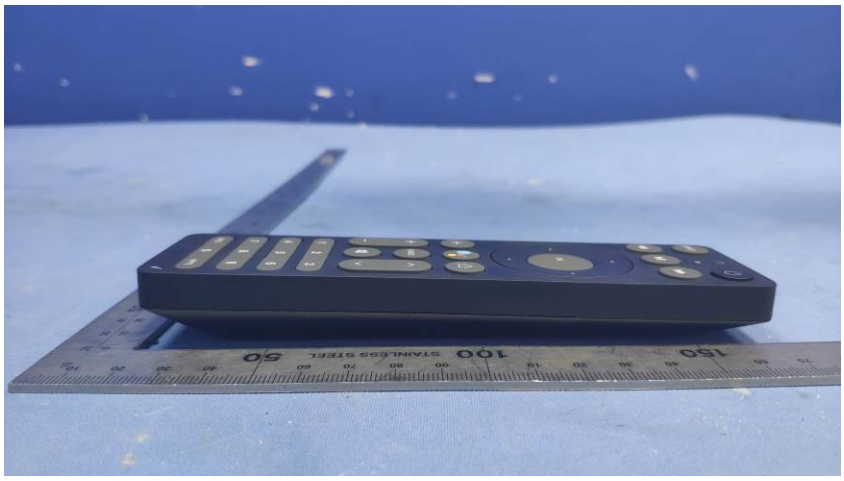
7.1 Radiated Emissions (30MHz-1GHz) Test Setup

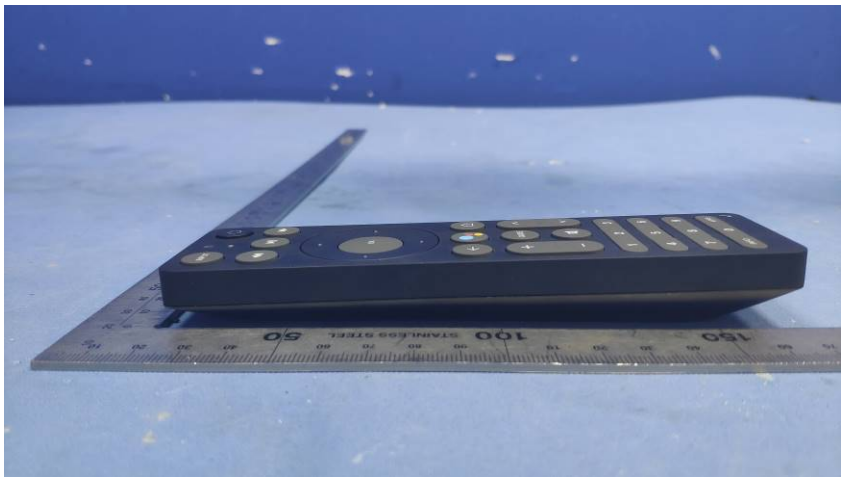


7.2 Radiated Emissions (above 1GHz) Test Setup

7.3 EUT Constructional Details (EUT Photos)







- End of the Report -