

TEST REPORT

For FCC Part15B

Report No.: **CHTEW22080210** Report verification: 

Project No.: **SHT2207080705EW**

FCC ID: **2A77C-B8U**

Applicant's name: **Sichuan Changhong Electric Co., Ltd.**

Address: **35 Mianxing East Road, HI-Tech Development Zone, Mianyang City**

Product Name: **Laser Theater Projector**

Trade Mark: **CHIQ**

Model No.: **B8U**

Listed Model(s): **-**

Standard: **47 CFR FCC Part 15 Subpart B**

Date of receipt of test sample: **Jul.22, 2022**

Date of testing: **Jul.22, 2022- Aug.09, 2022**

Date of issue: **Aug.10, 2022**

Result: **Pass**

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Testing Laboratory Name: **Shenzhen Huatongwei International Inspection Co., Ltd.**

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The test report merely corresponds to the test sample.

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1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2022-08-10	Original

2. TEST DESCRIPTION

Section	Test Item	Section in CFR 47	Result ^{#1}	Test Engineer
5.1	Conducted Emissions	15.107(a)	PASS	Junman Wang
5.2	Radiated Emissions	15.109(a)	PASS	Haoxin Luo

Note:

#1: The test result does not include measurement uncertainty value

3. SUMMARY

3.1. Client Information

Applicant:	Sichuan Changhong Electric Co.,Ltd.
Address:	35 Mianxing East Road, HI-Tech Development Zone, Mianyang City
Manufacturer:	Sichuan Changhong Electric Co.,Ltd.
Address:	35 Mianxing East Road, HI-Tech Development Zone, Mianyang City

3.2. Product Description

Main unit information:	
Product Name:	Laser Theater Projector
Trade Mark:	CHIQ
Model No.:	B8U
Listed Model(s):	-
Power supply:	AC 120V form AC power
Hardware version:	JUN7.820.5426
Software version:	V1.00001

3.3. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

4. TEST CONFIGURATION

4.1. Descriptions of test mode

Test mode O1	Working
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4.2. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Item	Equipment	Manufacturer	Model No.	FCC ID / FCC SDoC	Data Cable	Power Cord
1	Network set top box	Xiaomi	N/A	N/A	N/A	N/A
2	loudspeaker box	N/A	N/A	N/A	N/A	N/A
3	Keyboard	DELL	SK8115	FCC SDoC	Unshielded, 1.5m	N/A
4	Mouse	DELL	MS111-T	FCC SDoC	Unshielded, 1.5m	N/A

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

Test Items	MeasurementUncertainty
Conducted emission	3.25dB
Radiated emission	<1GHz: 4.22dB >1GHz:5.06ppm

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

● Conducted Emission

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	HTWE0114	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2021/09/14	2022/09/13
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2021/09/17	2022/09/16
●	Pulse Limiter	R&S	HTWE0193	ESH3-Z2	101447	2021/09/16	2022/09/15
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLEX 142	EF-NM-BNCM-2M	2021/09/17	2022/09/16
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated Emission-6th test site

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2022/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2021/09/14	2022/09/13
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2020/04/28	2023/04/27
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2021/11/05	2022/11/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2022/02/25	2023/02/24
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2018/09/27	2022/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2021/09/13	2022/09/12
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2022/02/28	2023/02/27
●	RF Connection Cable	HUBER+SUHNER	HTWE0126-01	RE-7-FH	N/A	2022/03/04	2023/03/03
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Conducted Emissions

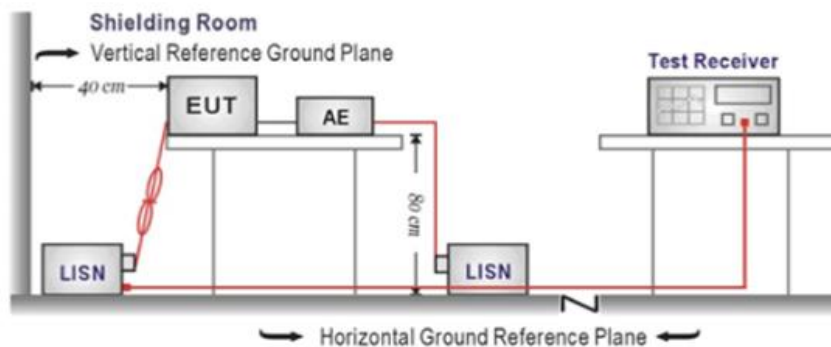
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

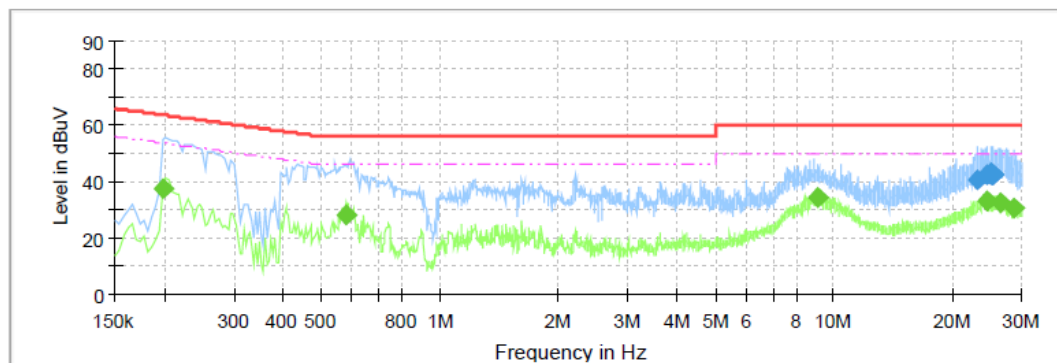
Please refer to the clause 3.3

TEST RESULTS

☒ Passed ☐ Not Applicable

Test Line:

L

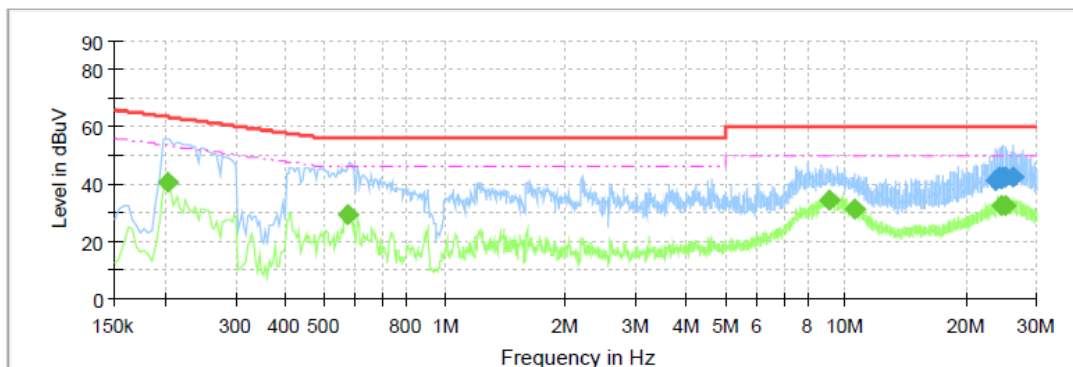


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.198500	---	37.62	53.67	16.05	L1	10.1
0.578500	---	28.26	46.00	17.74	L1	10.1
9.110500	---	34.11	50.00	15.89	L1	10.5
23.266500	40.49	---	60.00	19.51	L1	10.9
24.586500	---	33.14	50.00	16.86	L1	10.9
24.594500	42.27	---	60.00	17.73	L1	10.9
25.062500	42.52	---	60.00	17.48	L1	11.0
25.138500	43.15	---	60.00	16.85	L1	11.0
25.202500	42.39	---	60.00	17.61	L1	11.0
25.290500	42.69	---	60.00	17.31	L1	11.0
26.641500	---	32.30	50.00	17.70	L1	11.0
28.702500	---	30.45	50.00	19.55	L1	11.1

Test Line:

N



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.203500	---	40.74	53.47	12.73	N	10.1
0.571500	---	29.44	46.00	16.56	N	10.1
9.147500	---	34.14	50.00	15.86	N	10.3
10.495500	---	31.43	50.00	18.57	N	10.2
23.619500	41.02	---	60.00	18.98	N	10.8
24.160500	42.24	---	60.00	17.76	N	10.8
24.383500	---	32.80	50.00	17.20	N	10.8
24.423500	41.83	---	60.00	18.17	N	10.8
24.779500	42.52	---	60.00	17.48	N	10.8
25.075500	---	32.79	50.00	17.21	N	10.8
25.091500	42.65	---	60.00	17.35	N	10.8
26.207500	42.37	---	60.00	17.63	N	10.8

5.2. Radiated Emissions

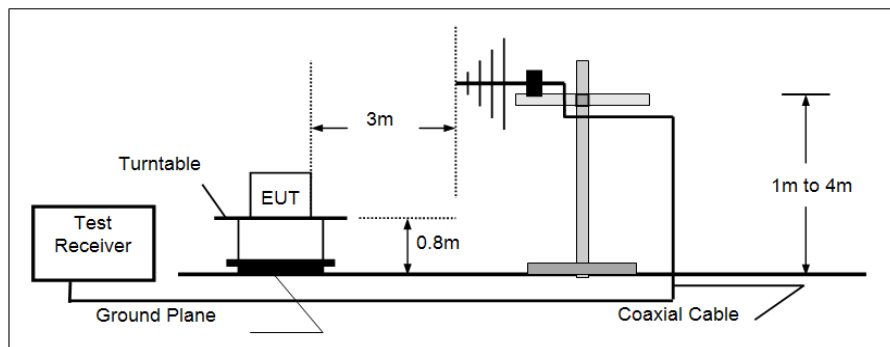
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.109

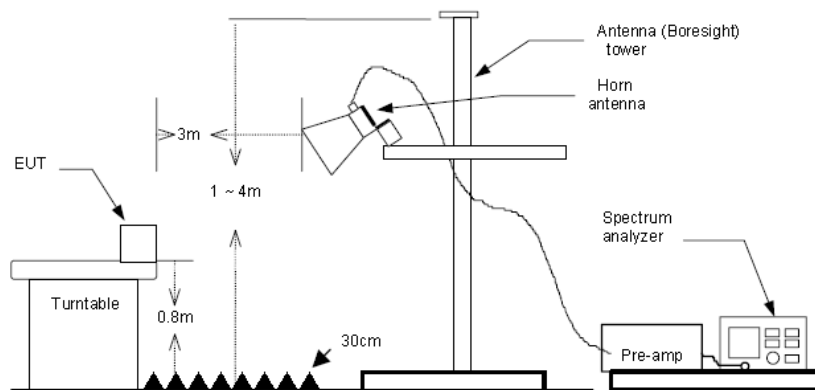
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

➤ 30MHz ~ 1GHz



➤ Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.4:2014.
2. The EUT is placed on a turn table which is 0.8 meter above ground.
3. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
4. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
5. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
6. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Below 1GHz,
RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - (3) From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

TEST MODE:

Please refer to the clause 3.3

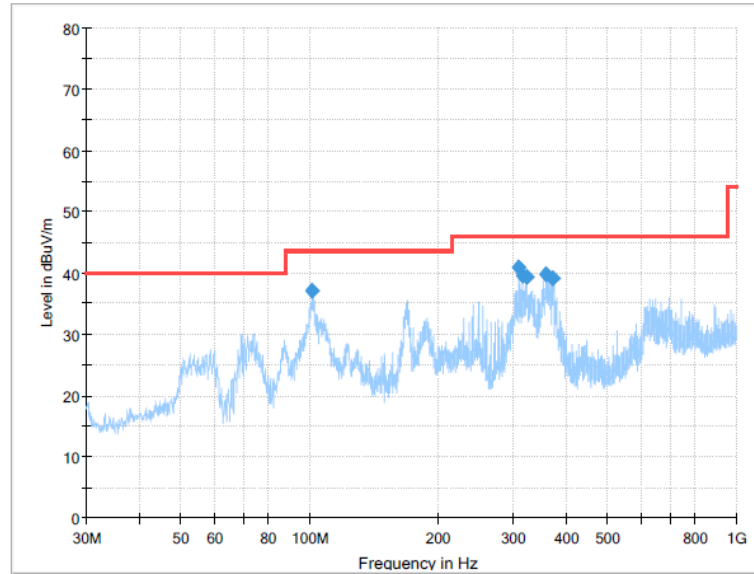
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

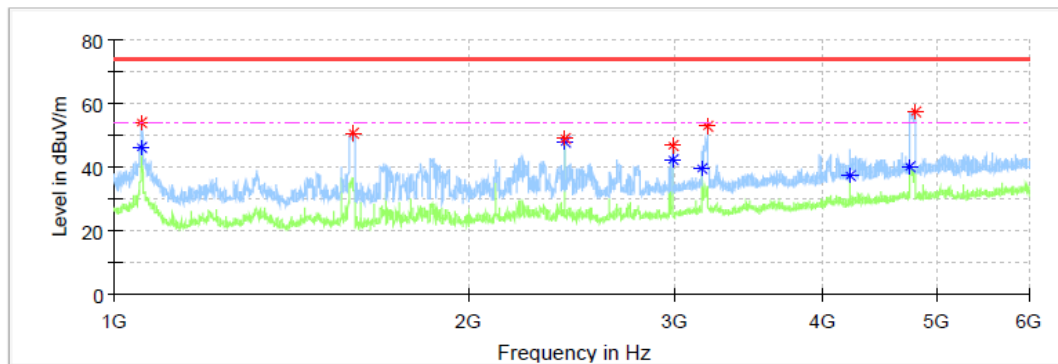
Note: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
The emission levels of frequency above 6GHz are very lower than limit and not show in test report.

Polarization:

Horizontal

**Final Result**

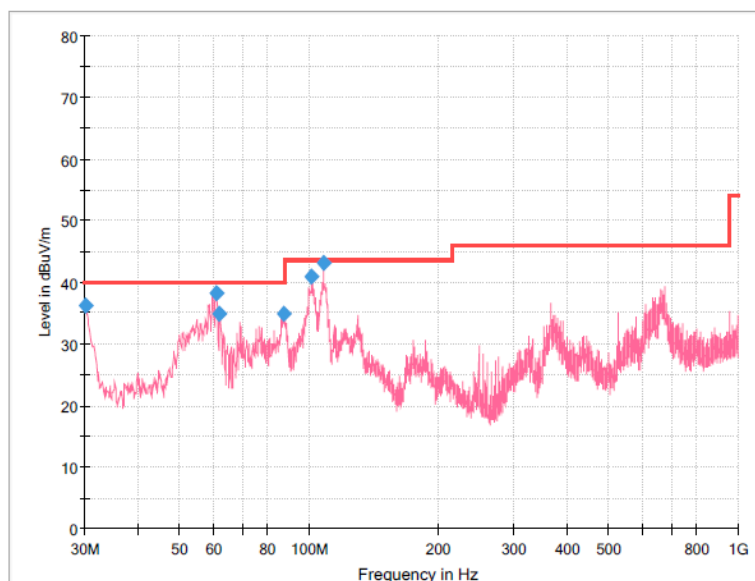
Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
101.295000	36.99	43.50	6.51	100.0	H	33.0	-10.9
310.208750	40.83	46.00	5.17	100.0	H	94.0	-7.1
316.392500	39.46	46.00	6.54	100.0	H	83.0	-6.9
322.576250	39.29	46.00	6.71	100.0	H	76.0	-6.7
358.708750	39.79	46.00	6.21	100.0	H	153.0	-5.6
372.531250	39.00	46.00	7.00	100.0	H	141.0	-5.2

**Critical Freqs**

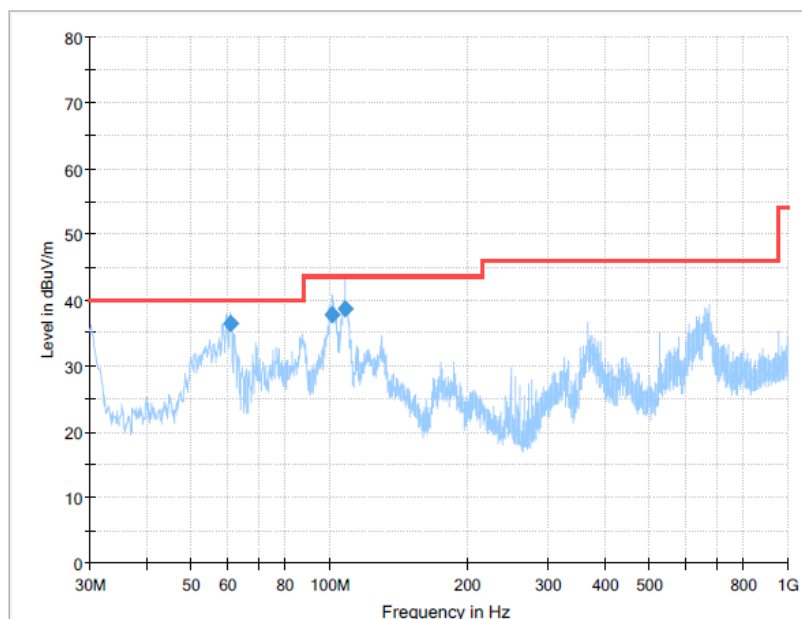
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2416.250000	---	48.03	54.00	5.97	150.0	H	0.0	-4.5
2416.250000	49.12	---	74.00	24.88	150.0	H	0.0	-4.5
4756.250000	---	39.78	54.00	14.22	150.0	H	0.0	5.4
1055.000000	---	46.28	54.00	7.72	150.0	H	19.0	-8.6
4800.000000	57.29	---	74.00	16.71	150.0	H	33.0	5.5
1595.625000	50.81	---	74.00	23.19	150.0	H	47.0	-7.6
1054.375000	53.98	---	74.00	20.02	150.0	H	61.0	-8.6
3200.000000	52.95	---	74.00	21.05	150.0	H	75.0	-2.1
3165.000000	---	39.58	54.00	14.42	150.0	H	238.0	-2.2
2982.500000	46.48	---	74.00	27.52	150.0	H	252.0	-3.0
2982.500000	---	42.26	54.00	11.74	150.0	H	252.0	-3.0
4220.000000	---	37.04	54.00	16.96	150.0	H	266.0	2.2

Polarization:

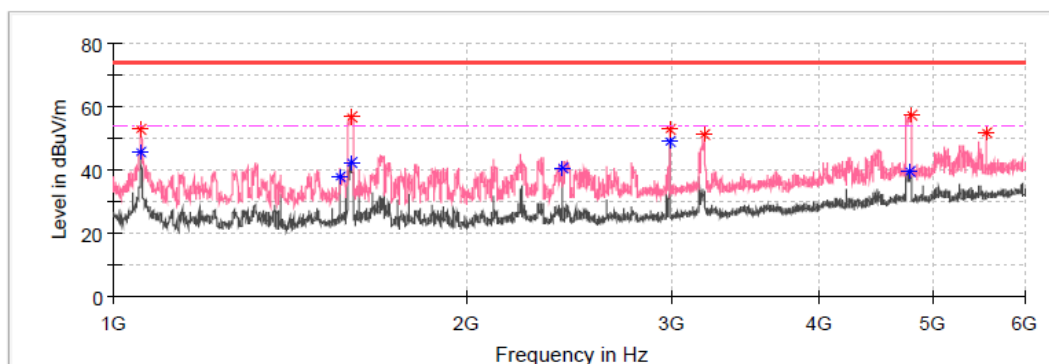
Vertical

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.242500	36.21	40.00	3.79	100.0	V	328.0	-12.7
60.918750	38.15	40.00	1.85	100.0	V	178.0	-10.3
62.010000	34.83	40.00	5.17	100.0	V	248.0	-10.6
87.230000	34.95	40.00	5.05	100.0	V	60.0	-13.5
101.780000	40.87	43.50	2.63	100.0	V	78.0	-11.0
108.327500	43.20	43.50	0.30	100.0	V	92.0	-11.8

**Final Result**

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
60.978750	36.53	40.00	3.47	100.0	V	228.0	-10.3
101.480000	37.71	43.50	5.79	112.0	V	109.0	-10.9
108.347500	38.63	43.50	4.87	100.0	V	72.0	-11.8



Critical Freqs

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1560.000000	---	37.70	54.00	16.30	150.0	V	0.0	-7.6
2416.250000	---	40.71	54.00	13.29	150.0	V	0.0	-4.5
3199.375000	51.38	---	74.00	22.62	150.0	V	0.0	-2.1
4780.625000	---	39.70	54.00	14.30	150.0	V	0.0	5.5
4800.000000	57.40	---	74.00	16.60	150.0	V	0.0	5.5
5568.750000	51.62	---	74.00	22.38	150.0	V	0.0	7.5
1599.375000	56.40	---	74.00	17.60	150.0	V	10.0	-7.7
1596.875000	---	42.39	54.00	11.61	150.0	V	24.0	-7.6
1055.000000	---	45.75	54.00	8.25	150.0	V	43.0	-8.6
1055.000000	52.65	---	74.00	21.35	150.0	V	43.0	-8.6
2982.500000	52.69	---	74.00	21.31	150.0	V	164.0	-3.0
2982.500000	---	49.96	54.00	4.04	150.0	V	164.0	-3.0

6. TEST SETUP PHOTOS

Conducted Emissions (AC Mains)



Radiated Emissions





7. EXTERNAL AND INTERNAL PHOTOS

Refer to the test report No.: CHTEW22080206

-----End of Report-----