




# TEST REPORT

**Report No.** ..... : **CHEW21020059**      Report verification: 

**Project No.**..... : **SHT2101018601EW**

**FCC ID**..... : **2AN5D-Y2087**

**Applicant's name** ..... : **Shenzhen Yunding Information Technology Co., Ltd.**

**Address**..... : 32G, Tower 3, Dachong Business Building (The Third Phase),  
Shennan Avenue North, Tong Gu Road West, Yuehai Street  
Communities, Nanshan District, Shenzhen, Guangdong, China.

**Test item description** ..... : **Oclean Smart Sonic Electric Toothbrush**

**Trade Mark** ..... : Oclean

**Model/Type reference**..... : Y2087

**Listed Model(s)** ..... : -

**Standard** ..... : **47 CFR FCC Part 18**

**Date of receipt of test sample**..... : Jan. 12, 2021

**Date of testing**..... : Jan. 13, 2021- Feb. 20, 2021

**Date of issue**..... : Feb. 22, 2021

**Result**..... : **Pass**

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

**Address**..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao,  
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*The test report merely corresponds to the test sample.*

## Contents

<b>1.</b>	<b><u>TEST STANDARDS AND REPORT VERSION .....</u></b>	<b><u>3</u></b>
1.1.	Test Standards	3
1.2.	Report version information	3
<b>2.</b>	<b><u>TEST DESCRIPTION .....</u></b>	<b><u>4</u></b>
<b>3.</b>	<b><u>SUMMARY.....</u></b>	<b><u>5</u></b>
3.1.	Client Information	5
3.2.	Product Description	5
3.3.	Test mode	5
3.4.	EUT configuration	5
3.5.	Modifications	5
<b>4.</b>	<b><u>TEST ENVIRONMENT .....</u></b>	<b><u>6</u></b>
4.1.	Testing Laboratory Information	6
4.2.	Environmental conditions	6
4.3.	Statement of the measurement uncertainty	6
4.4.	Equipments Used during the Test	7
<b>5.</b>	<b><u>TEST CONDITIONS AND RESULTS .....</u></b>	<b><u>8</u></b>
5.1.	Conducted Emissions Test	8
5.2.	Radiated Emissions Test	11
<b>6.</b>	<b><u>TEST SETUP PHOTOS OF THE EUT .....</u></b>	<b><u>14</u></b>
<b>7.</b>	<b><u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT .....</u></b>	<b><u>14</u></b>

## **1. TEST STANDARDS AND REPORT VERSION**

### **1.1. Test Standards**

The tests were performed according to following standards:

[47 CFR FCC Part 18](#) - Industrial, Scientific, and medical medical equipment.

[FCC/OST MP-5](#) -Methods of Measurements of Radio Noise Emissions from Industrial, Scientific and Medical equipment (February 1986)

### **1.2. Report version information**

Revision No.	Date of issue	Description
N/A	2021-02-22	Original

## 2. TEST DESCRIPTION

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Emissions	PART 18.307(b)	Pass	Jiongsheng Feng
Radiated Emissions	PART 18.305(b)	Pass	Pan Xie

Note: The measurement uncertainty is not included in the test result.

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	Shenzhen Yunding Information Technology Co., Ltd.
Address:	32G, Tower 3, Dachong Business Building (The Third Phase), Shennan Avenue North, Tong Gu Road West, Yuehai Street Communities, Nanshan District, Shenzhen, Guangdong, China.
Manufacturer:	Shenzhen Yunding Information Technology Co., Ltd.
Address:	32G, Tower 3, Dachong Business Building (The Third Phase), Shennan Avenue North, Tong Gu Road West, Yuehai Street Communities, Nanshan District, Shenzhen, Guangdong, China.

#### 3.2. Product Description

Name of EUT:	Oclean Smart Sonic Electric Toothbrush
Trade Mark:	Oclean
Model No.:	Y2087
Listed Model(s)	-
Power supply:	DC 3.7V
Adapter information:	-
Operation Frequency:	110kHz~205kHz
Category:	Consumer devices

#### 3.3. Test mode

Keep the EUT in wireless communication mode.

#### 3.4. EUT configuration

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

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?					
✓					
Item	Equipement	Trade Name	Model No.	FCC ID	Power cord
1	Adapter	Apple	A1443	-	-
2	Wireless Charger	Oclean	WP01	-	-

#### 3.5. Modifications

No modifications were implemented to meet testing criteria.

## 4. TEST ENVIRONMENT

### 4.1. 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: <a href="mailto:cs@szhtw.com.cn">cs@szhtw.com.cn</a> <a href="http://www.szhtw.com.cn">http://www.szhtw.com.cn</a>	
Qualifications	Type	Accreditation Number
	FCC	762235

### 4.2. 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

### 4.3. 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 Shenzhen Huatongwei International Inspection Co., Ltd 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.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emissions	30~1000MHz	4.28 dB	(1)
Radiated Emissions	1~18GHz	5.16 dB	(1)
Conducted Disturbance	0.15~30MHz	3.35 dB	(1)

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

#### 4.4. 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	2020/10/19	2021/10/18
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2020/10/15	2021/10/14
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2020/10/15	2021/10/14
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLE X_142	EF-NM-BNCM-2M	2020/10/15	2021/10/14
●	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	2021/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2020/10/19	2021/10/18
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2018/04/02	2021/04/01
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2018/04/04	2021/04/03
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2020/11/13	2021/11/12
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2020/05/27	2021/05/26
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2020/05/27	2021/05/26
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Emissions Test

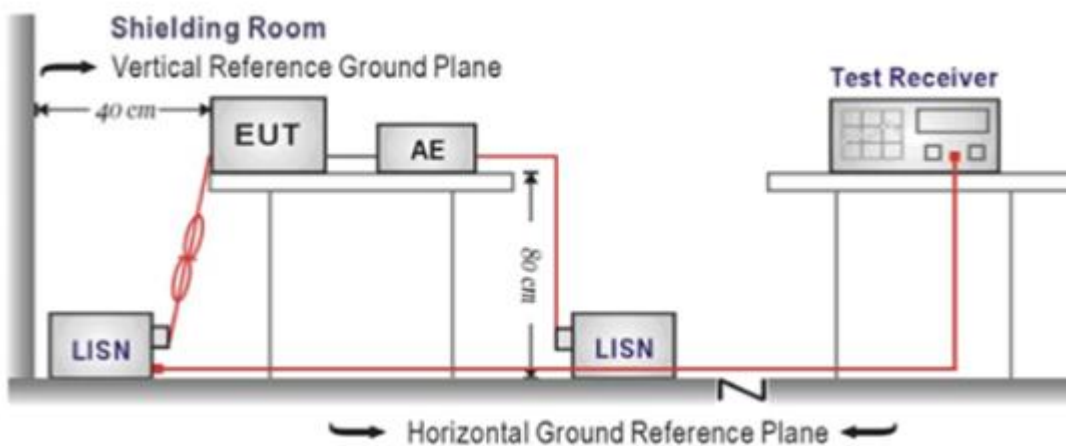
#### LIMIT

According to §18.307 (b):

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 test configuration
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 10 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 10 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

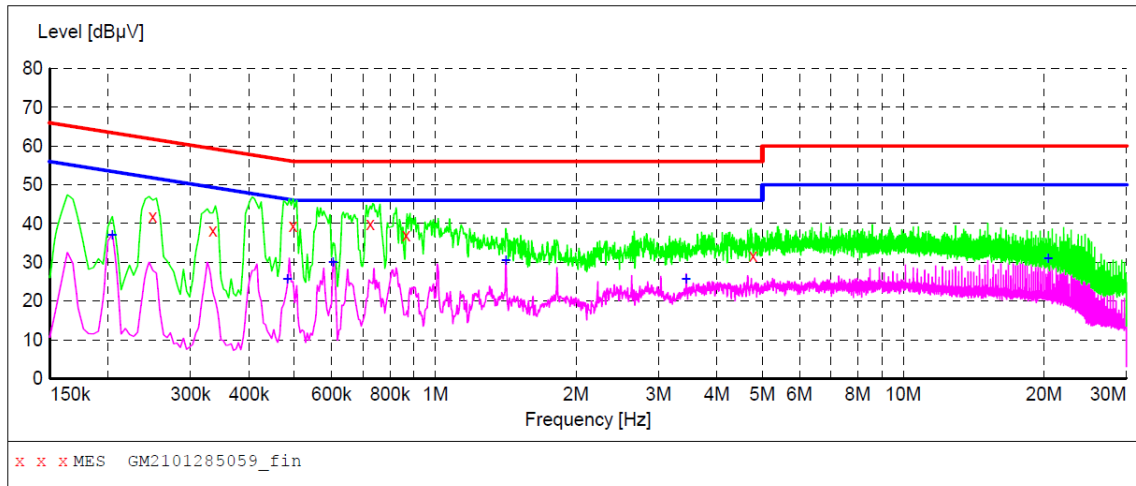
#### TEST RESULTS

Passed       Not Applicable



Test Line:

L



**MEASUREMENT RESULT: "GM2101285059\_fin"**

1/28/2021 6:50PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.249000	41.80	10.2	62	20.0	QP	L1	GND
0.334500	38.20	10.2	59	21.1	QP	L1	GND
0.496500	39.40	10.2	56	16.7	QP	L1	GND
0.726000	39.90	10.2	56	16.1	QP	L1	GND
0.865500	36.90	10.2	56	19.1	QP	L1	GND
4.771500	31.60	10.2	56	24.4	QP	L1	GND

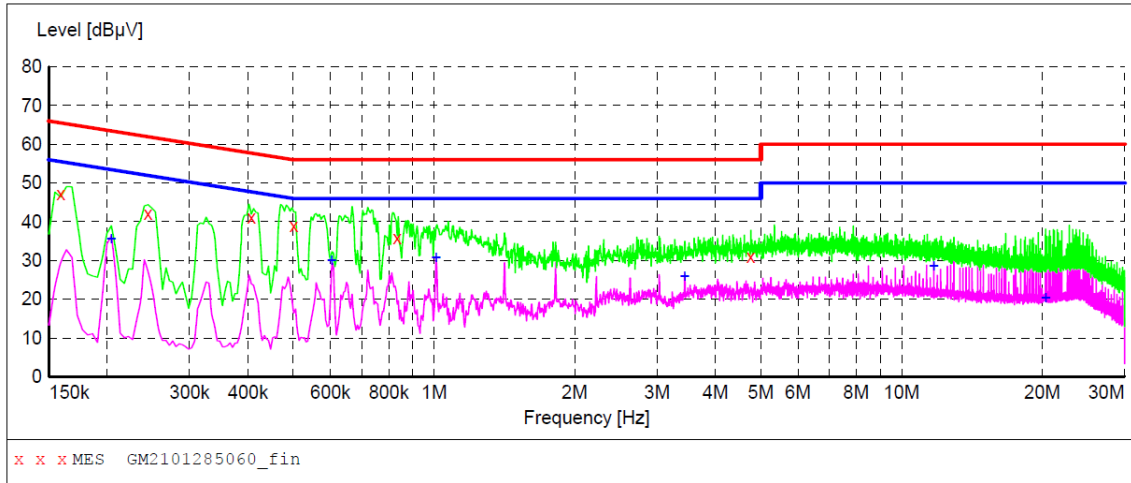
**MEASUREMENT RESULT: "GM2101285059\_fin2"**

1/28/2021 6:50PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.204000	36.90	10.2	53	16.5	AV	L1	GND
0.483000	25.70	10.2	46	20.6	AV	L1	GND
0.604500	30.10	10.2	46	15.9	AV	L1	GND
1.414500	30.60	10.2	46	15.4	AV	L1	GND
3.435000	25.70	10.2	46	20.3	AV	L1	GND
20.418000	31.00	10.5	50	19.0	AV	L1	GND

Test Line:

N



**MEASUREMENT RESULT: "GM2101285060\_fin"**

1/28/2021 6:53PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	47.10	10.2	66	18.4	QP	N	GND
0.244500	42.10	10.2	62	19.8	QP	N	GND
0.406500	41.00	10.2	58	16.7	QP	N	GND
0.501000	39.00	10.2	56	17.0	QP	N	GND
0.834000	35.90	10.2	56	20.1	QP	N	GND
4.753500	31.00	10.2	56	25.0	QP	N	GND

**MEASUREMENT RESULT: "GM2101285060\_fin2"**

1/28/2021 6:53PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.204000	35.60	10.2	53	17.8	AV	N	GND
0.604500	29.90	10.2	46	16.1	AV	N	GND
1.009500	30.80	10.2	46	15.2	AV	N	GND
3.435000	25.80	10.2	46	20.2	AV	N	GND
11.715000	28.60	10.5	50	21.4	AV	N	GND
20.323500	20.30	10.5	50	29.7	AV	N	GND

## 5.2. Radiated Emissions Test

### LIMIT

According to §18.305 (b):

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500	25	300
		500 or more	$25 \times \text{SQRT}(\text{power}/500)$	<sup>1</sup> 300
	Any non-ISM frequency	Below 500	15	300
		500 or more	$15 \times \text{SQRT}(\text{power}/500)$	<sup>1</sup> 300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ( <sup>2</sup> )	1,600 ( <sup>2</sup> )
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25	300
			15	300
Ultrasonic	Below 490 kHz	Below 500	$2,400/F(\text{kHz})$	300
		500 or more	$2,400/F(\text{kHz}) \times \text{SQRT}(\text{power}/500)$	<sup>3</sup> 300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	$24,000/F(\text{kHz})$	30
			15	30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any	1,500	<sup>4</sup> 30
		Any	300	<sup>4</sup> 30

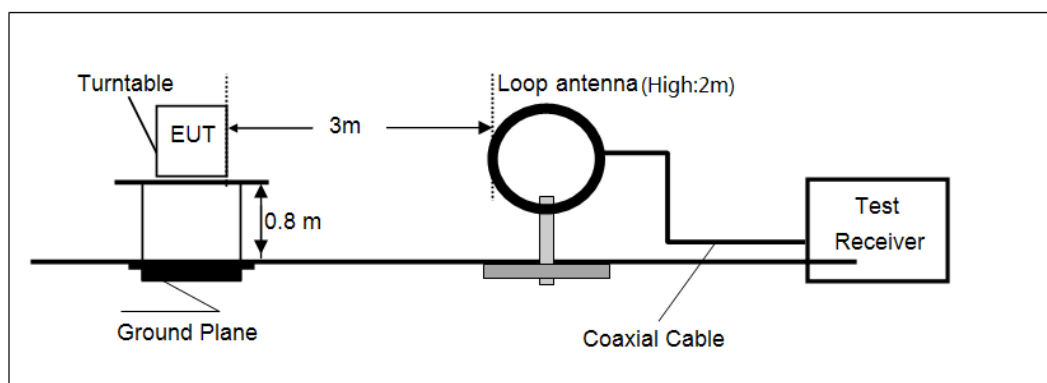
<sup>1</sup>Field strength may not exceed 10  $\mu\text{V}/\text{m}$  at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

<sup>2</sup>Reduced to the greatest extent possible.

<sup>3</sup>Field strength may not exceed 10  $\mu\text{V}/\text{m}$  at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.

<sup>4</sup>Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

### TEST CONFIGURATION



**TEST PROCEDURE**

1. The EUT is placed on a turn table which is 0.8 meter above ground.
2. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 2m.
5. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 30MHz  
RBW=9kHz, VBW=30kHz Sweep=auto, Detector function=peak, Trace=max hold;

**TEST MODE:**

Please refer to the clause 3.3

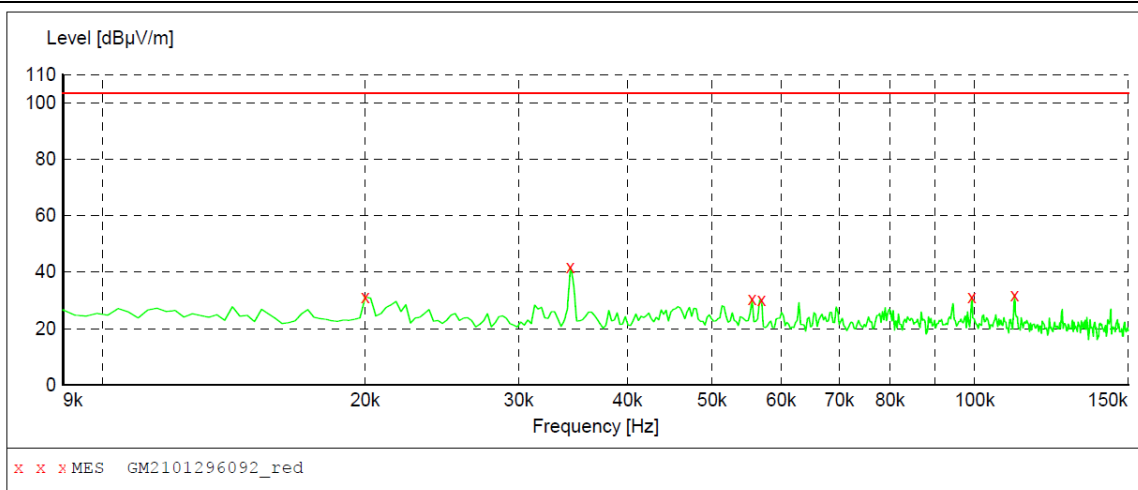
**TEST RESULTS**

**Passed**       **Not Applicable**

Note:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. This product belong to any non-ISM frequency equipment, the field strength limit is 15uV/m at 300 meter
3. Emission level dBuV/m for 0.009~30MHz = 20log (15) + 40log (300/3) dBuV/m;

9K-150K

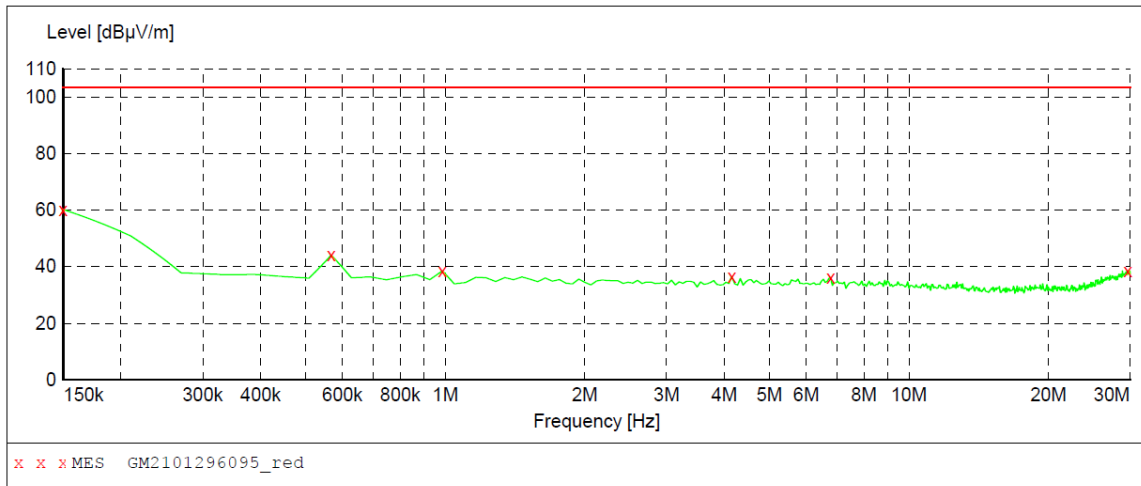


**MEASUREMENT RESULT: "GM2101296092\_red"**

1/29/2021 4:30PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.019998	31.20	24.5	103.5	72.3	Peak	0.0	360.00	HORIZONTAL
0.034380	41.80	24.3	103.5	61.7	Peak	0.0	360.00	HORIZONTAL
0.055530	30.50	24.1	103.5	73.0	Peak	0.0	360.00	HORIZONTAL
0.056940	30.30	24.1	103.5	73.2	Peak	0.0	360.00	HORIZONTAL
0.099240	31.30	24.0	103.5	72.2	Peak	0.0	360.00	HORIZONTAL
0.111084	32.00	24.0	103.5	71.5	Peak	0.0	360.00	HORIZONTAL

0.15M-30M



**MEASUREMENT RESULT: "GM2101296095\_red"**

1/29/2021 4:38PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.150000	60.20	23.8	103.5	43.3	Peak	0.0	360.00	HORIZONTAL
0.567900	44.10	23.5	103.5	59.4	Peak	0.0	360.00	HORIZONTAL
0.985800	38.60	23.3	103.5	64.9	Peak	0.0	360.00	HORIZONTAL
4.149900	36.50	23.0	103.5	67.0	Peak	0.0	360.00	HORIZONTAL
6.776700	36.30	22.6	103.5	67.2	Peak	0.0	360.00	HORIZONTAL
29.641800	38.60	27.1	103.5	64.9	Peak	0.0	360.00	HORIZONTAL

## 6. TEST SETUP PHOTOS OF THE EUT

Conducted Emissions (AC Mains)



Radiated Emissions (Below 30MHz)



## 7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Reference to the test report No. CHTEW21020058

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