




# TEST REPORT

Report Reference No. .... : CHTEW19070101      Report verification: 

Project No. .... : SHT1904073004EW

FCC ID. .... : GVQS018

Applicant's name .... : Skyroam Technology Co., Ltd.

Address. .... : BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan, Guangdong

Manufacturer. .... : Skyroam Technology Co., Ltd.

Address. .... : BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan, Guangdong

Test item description .... : SOLIS X

Trade Mark .... : SKYROAM

Model/Type reference. .... : S018

Listed Model(s) .... : -

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

Date of receipt of test sample. .... : Apr 29, 2019

Date of testing. .... : Apr 30, 2019- Jul 18, 2019

Date of issue. .... : Jul 19, 2019

Result. .... : Pass

Compiled by  
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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, Gongming, Shenzhen, China

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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	2019-07-19	Original

## 2. TEST DESCRIPTION

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Emissions	15.107(a)	PASS	Kang Yang
Radiated Emissions	15.109(a)	PASS	Tony Duan

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

### 3. **SUMMARY**

#### 3.1. Client Information

Applicant:	Skyroam Technology Co., Ltd.
Address:	BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan, Guangdong
Manufacturer:	Skyroam Technology Co., Ltd.
Address:	BLK F, Room 710-717 Xihaimingzhu Building, Taoyuan, Guangdong

#### 3.2. Product Description

Name of EUT:	SOLIS X
Trade Mark:	SKYROAM
Model No.:	S018
Listed Model(s)	-
Power supply:	DC 3.7V

#### 3.3. EUT operation mode

Test mode	Describe
Camera recording mode	Keep the EUT in Camera recording status, connect the EUT to PC, open the control software on the PC to make the EUT recording.

## **4. TEST ENVIRONMENT**

### **4.1. Address of the test laboratory**

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

### **4.2. Test Facility**

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

#### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### **A2LA-Lab Cert. No. 3902.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### **FCC-Registration No.: 762235**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 762235.

#### **IC-Registration No.: 5377A**

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A.

#### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

### 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

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	4.90 dB	(1)
Radiated Emissions	1~18GHz	4.96 dB	(1)
Conducted Disturbance	0.15~30MHz	3.02 dB	(1)

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

#### 4.5. Equipments Used during the Test

● Conducted Emission						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	ESCI	101247	2018/10/27	2019/10/26
●	Artificial Mains	SCHWARZBECK	NNLK 8121	573	2018/10/27	2019/10/26
●	Pulse Limiter	R&S	ESH3-Z2	100499	2018/10/27	2019/10/26
●	RF Connection Cable	HUBER+SUHNER	EF400	N/A	2018/11/15	2019/11/14
●	Test Software	R&S	ES-K1	N/A	N/A	N/A
○	Single Balanced Telecom Pair ISN	FCC	FCC-TLISN-T2-02	20371	2018/10/28	2019/10/27
○	Two Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T4-02	20373	2018/10/28	2019/10/27
○	Four Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T8-02	20375	2018/10/28	2019/10/27
○	V-Network	R&S	ESH3-Z6	100211	2018/10/27	2019/10/26
○	V-Network	R&S	ESH3-Z6	100210	2018/10/27	2019/10/26
○	2-Line V-Network	R&S	ESH3-Z5	100049	2018/10/27	2019/10/26
● Radiated Emission-6th test site						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	SAC-3m-02	N/A	2018/09/30	2021/09/29
●	EMI Test Receiver	R&S	ESCI	100900	2018/10/28	2019/10/27
○	Loop Antenna	R&S	HFH2-Z2	100020	2017/11/20	2020/11/19
●	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	546	2017/04/05	2020/04/04
●	Pre-Amplifier	SCHWARZBECK	BBV 9742	N/A	2018/11/15	2019/11/14
●	RF Connection Cable	HUBER+SUHNER	N/A	N/A	2018/09/28	2019/09/27
●	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	2018/09/28	2019/09/27
●	Test Software	R&S	ES-K1	N/A	N/A	N/A
●	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
●	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
● Radiated emission-7th test site						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	SAC-3m-01	N/A	2018/09/30	2021/09/29
●	Spectrum Analyzer	R&S	FSP40	100597	2018/10/27	2019/10/26
●	Horn Antenna	SCHWARZBECK	9120D	1011	2017/03/27	2020/03/26
○	Pre-amplifier	BONN	BLWA0160-2M	1811887	2018/11/14	2019/11/13
●	Pre-amplifier	CD	PAP-0102	12004	2018/11/14	2019/11/13
●	Broadband Pre-amplifier	SCHWARZBECK	BBV 9718	9718-248	2019/04/26	2020/04/25
●	RF Connection Cable	HUBER+SUHNER	RE-7-FH	N/A	2018/11/15	2019/11/14
●	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	2018/11/15	2019/11/14
●	Test Software	Audix	E3	N/A	N/A	N/A
●	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
●	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A



## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Emissions Test

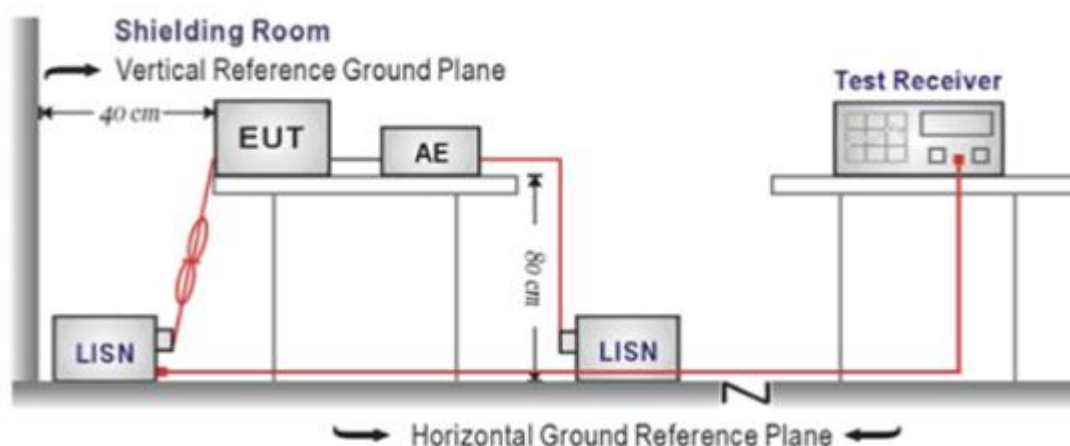
#### LIMIT

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 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:

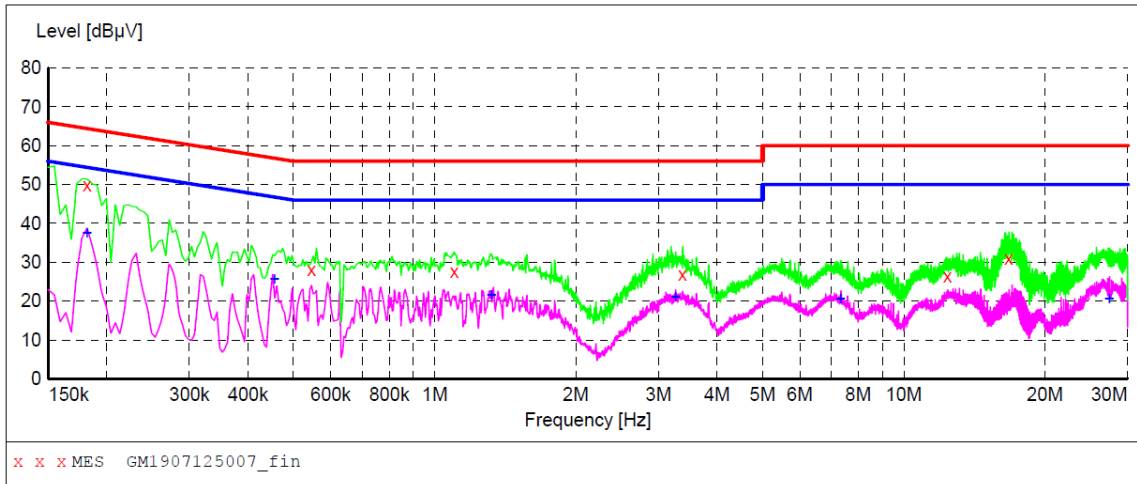
Please refer to the clause 3.3

#### TEST RESULTS

☒ Passed ☐ Not Applicable

Test Line:

L

**MEASUREMENT RESULT: "GM1907125007\_fin"**

7/12/2019 11:33AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.181500	49.80	9.9	64	14.6	QP	L1	GND
0.546000	28.10	9.9	56	27.9	QP	L1	GND
1.099500	27.60	9.9	56	28.4	QP	L1	GND
3.372000	26.90	9.9	56	29.1	QP	L1	GND
12.372000	26.40	10.1	60	33.6	QP	L1	GND
16.728000	31.10	10.2	60	28.9	QP	L1	GND

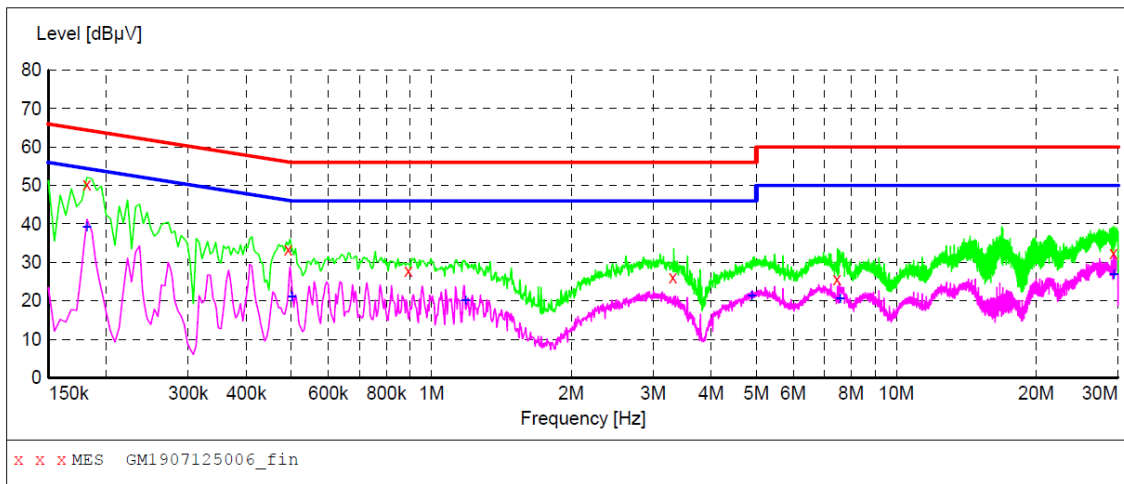
**MEASUREMENT RESULT: "GM1907125007\_fin2"**

7/12/2019 11:33AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.181500	37.60	9.9	54	16.8	AV	L1	GND
0.456000	25.70	9.9	47	21.1	AV	L1	GND
1.320000	21.50	9.9	46	24.5	AV	L1	GND
3.259500	21.10	9.9	46	24.9	AV	L1	GND
7.327500	20.50	10.0	50	29.5	AV	L1	GND
27.438000	20.50	10.3	50	29.5	AV	L1	GND

Test Line:

N

**MEASUREMENT RESULT: "GM1907125006\_fin"**

7/12/2019 11:30AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.181500	50.30	9.9	64	14.1	QP	N	GND
0.492000	33.40	9.9	56	22.7	QP	N	GND
0.892500	27.70	9.9	56	28.3	QP	N	GND
3.304500	26.20	9.9	56	29.8	QP	N	GND
7.453500	25.70	10.0	60	34.3	QP	N	GND
29.337000	32.50	10.4	60	27.5	QP	N	GND

**MEASUREMENT RESULT: "GM1907125006\_fin2"**

7/12/2019 11:30AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.181500	39.20	9.9	54	15.2	AV	N	GND
0.501000	21.00	9.9	46	25.0	AV	N	GND
1.185000	20.10	9.9	46	25.9	AV	N	GND
4.893000	21.40	10.0	46	24.6	AV	N	GND
7.570500	20.50	10.0	50	29.5	AV	N	GND
29.341500	26.90	10.4	50	23.1	AV	N	GND

## 5.2. Radiated Emissions Test

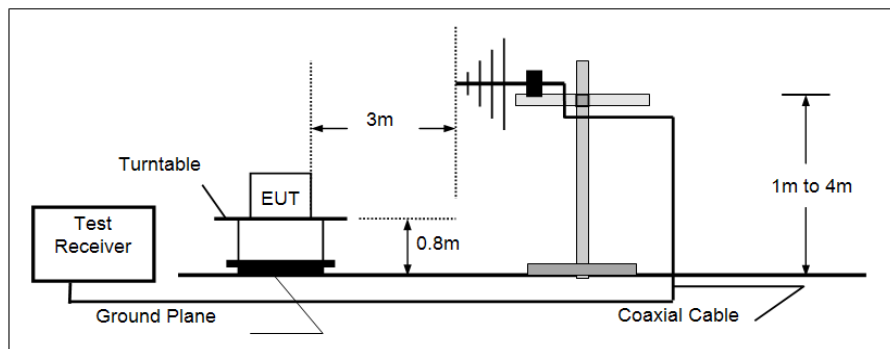
### LIMIT

#### FCC CFR Title 47 Part 15 Subpart B Section 15.109

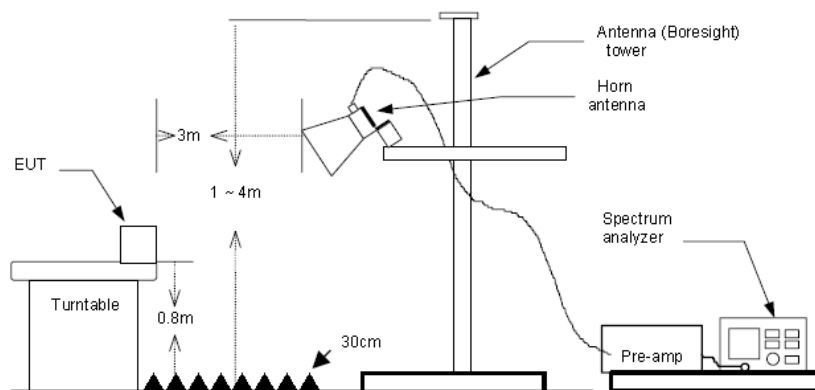
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### 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:**

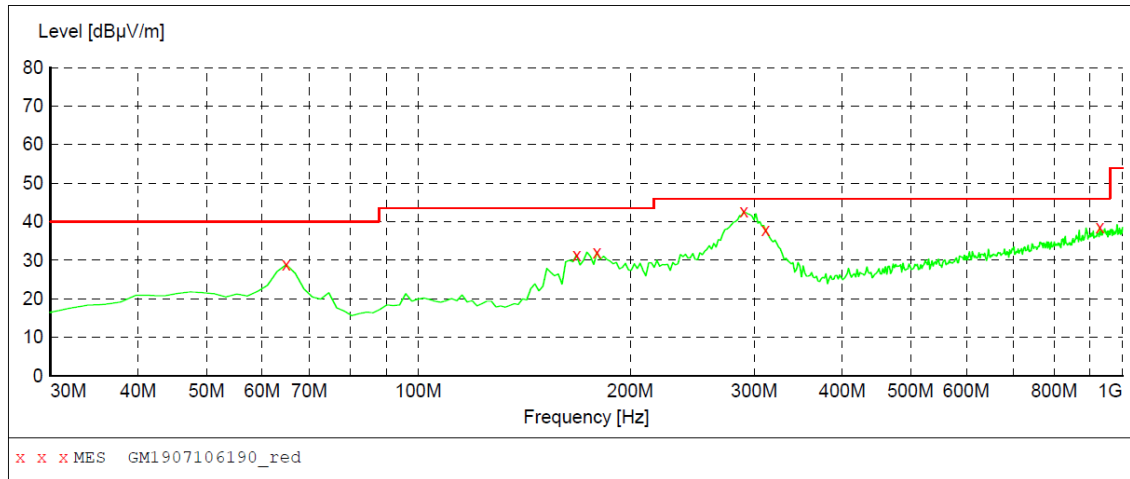
Please refer to the clause 3.3

**TEST RESULTS**

☒ **Passed**      ☐ **Not Applicable**

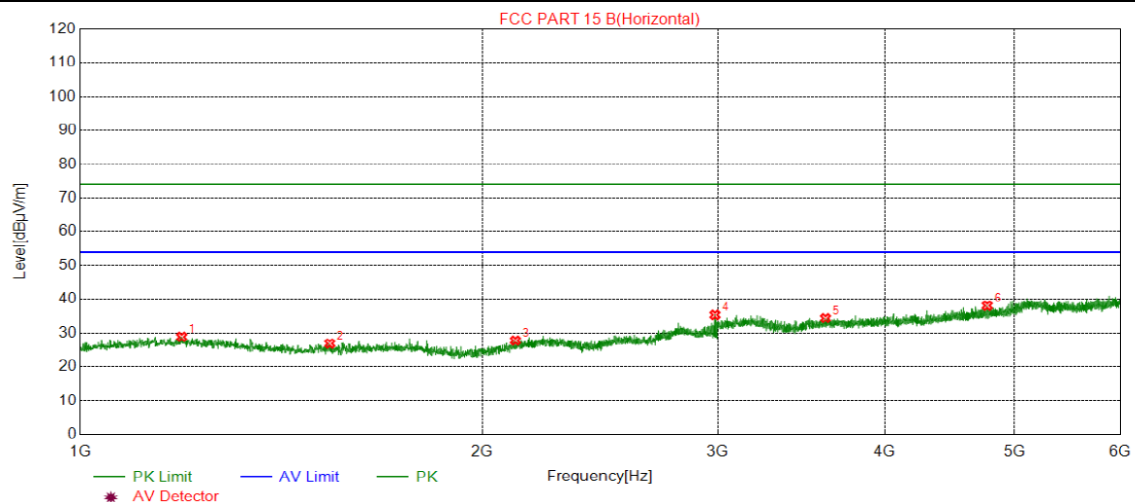
Polarization:

Horizontal

**MEASUREMENT RESULT: "GM1907106190\_red"**

7/10/2019 8:29PM

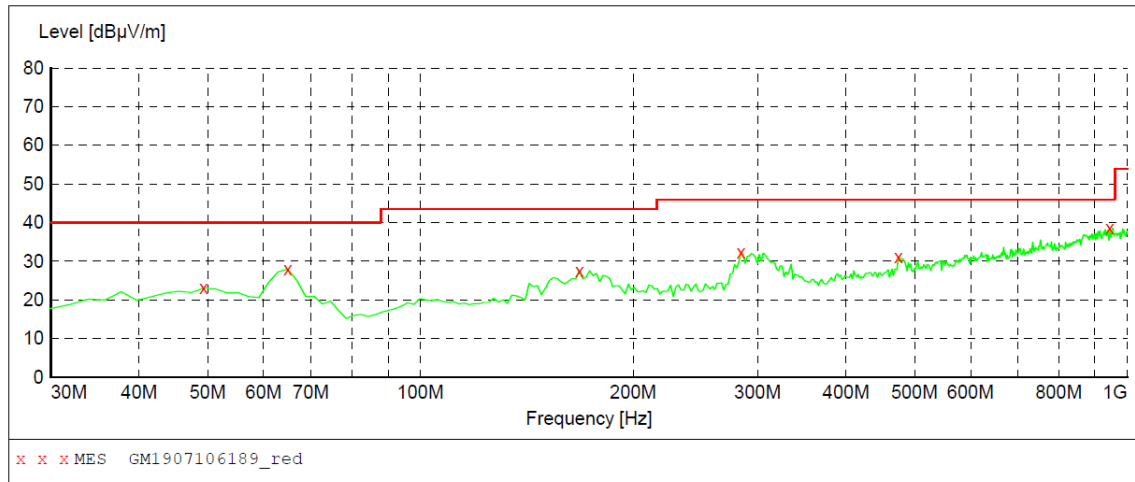
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
64.920000	28.90	-7.5	40.0	11.1	QP	100.0	204.00	HORIZONTAL
167.740000	31.40	-9.3	43.5	12.1	QP	100.0	232.00	HORIZONTAL
179.380000	32.10	-8.5	43.5	11.4	QP	100.0	232.00	HORIZONTAL
289.960000	42.60	-3.7	46.0	3.4	QP	100.0	349.00	HORIZONTAL
311.300000	37.80	-3.3	46.0	8.2	QP	100.0	349.00	HORIZONTAL
928.220000	38.50	10.7	46.0	7.5	QP	100.0	181.00	HORIZONTAL

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1191.250	34.81	-5.92	28.89	74.00	45.11	Horizontal	PK
2	1537.500	32.75	-5.87	26.88	74.00	47.12	Horizontal	PK
3	2116.875	31.62	-3.83	27.79	74.00	46.21	Horizontal	PK
4	2985.625	35.48	-0.04	35.44	74.00	38.56	Horizontal	PK
5	3611.875	32.97	1.47	34.44	74.00	39.56	Horizontal	PK
6	4772.500	31.22	6.87	38.09	74.00	35.91	Horizontal	PK

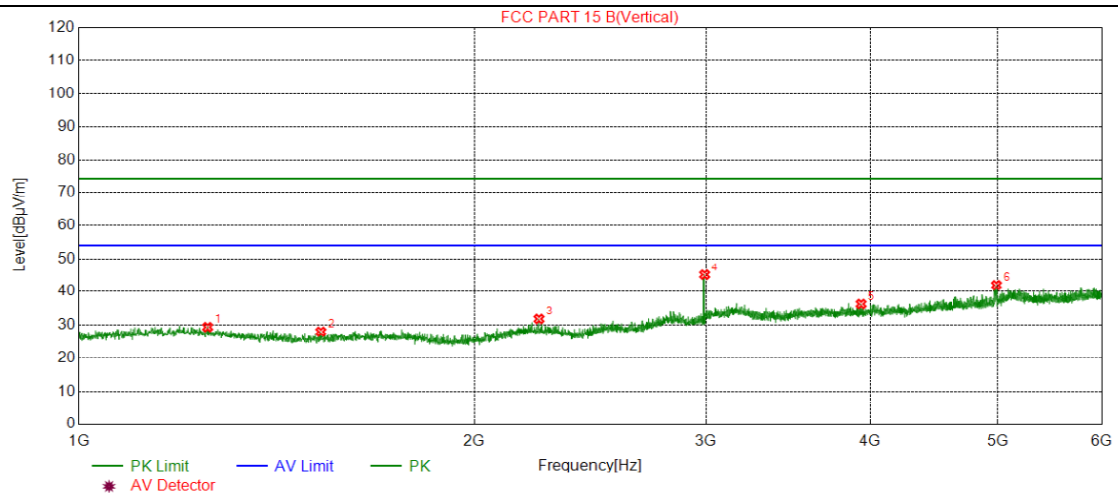
Polarization:

Vertical

**MEASUREMENT RESULT: "GM1907106189\_red"**

7/10/2019 8:26PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	23.10	-4.8	40.0	16.9	QP	100.0	108.00	VERTICAL
64.920000	28.00	-7.5	40.0	12.0	QP	100.0	292.00	VERTICAL
167.740000	27.60	-9.3	43.5	15.9	QP	100.0	239.00	VERTICAL
284.140000	32.40	-3.8	46.0	13.6	QP	100.0	188.00	VERTICAL
474.260000	31.10	1.0	46.0	14.9	QP	100.0	228.00	VERTICAL
943.740000	38.70	10.8	46.0	7.3	QP	100.0	14.00	VERTICAL

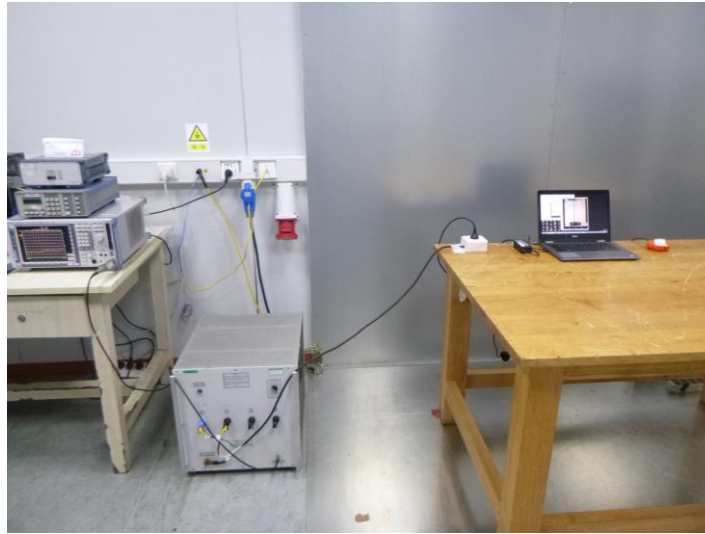
**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1253.125	35.02	-5.69	29.33	74.00	44.67	Vertical	PK
2	1528.125	33.76	-5.81	27.95	74.00	46.05	Vertical	PK
3	2239.375	34.46	-2.72	31.74	74.00	42.26	Vertical	PK
4	2993.125	45.14	-0.08	45.06	74.00	28.94	Vertical	PK
5	3936.875	33.52	2.80	36.32	74.00	37.68	Vertical	PK
6	4990.000	34.13	7.78	41.91	74.00	32.09	Vertical	PK



## 6. TEST SETUP PHOTOS OF THE EUT

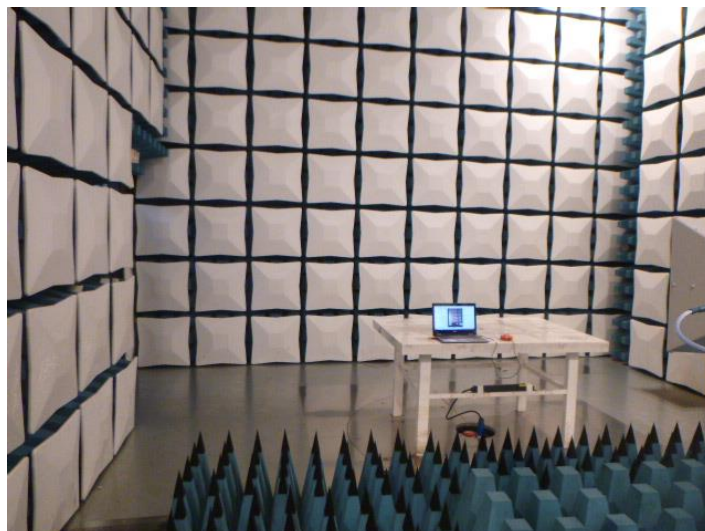
### Conducted Emissions (AC Mains)



### Radiated Emissions (30MHz-1GHz)



### Radiated Emissions (Above 1GHz)





## **7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT**

Reference to the test report No.: CHTEW19070094

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