



# FCC REPORT

**Report Reference No.** ..... : **TRE1711007804** R/C.....: 48346

**Applicant's name** ..... : **Zhuhai Ltl Acorn Electronics Co., Ltd.**

**Address** ..... : 3F, Bldg. B, Kindly Medical Industrial Park, No. 288 Airport East Rd., Sanzao Town, Jinwan Dist., Zhuhai, Guangdong, China.

**Manufacturer**..... : Zhuhai Ltl Acorn Electronics Co., Ltd.

**Address**..... : 3F, Bldg. B, Kindly Medical Industrial Park, No. 288 Airport East Rd., Sanzao Town, Jinwan Dist., Zhuhai, Guangdong, China.

**Test item description**..... : **Infrared Digital Scouting Camera**

**Trade Mark**..... : LTL ACORN

**Model/Type reference** ..... : Ltl-6511W-4G(EXT.LCD)

**Listed Model(s)**..... : Ltl-6511-4G(EXT.LCD)

**Standard**..... : **47 CFR FCC Part 15 Subpart B - Unintentional Radiators**  
**ANSI C63.4: 2014**

**Date of receipt of test sample**..... : Nov.14,2017

**Date of testing**..... : Nov.15,2017 - Nov.27, 2017

**Date of issue**..... : Nov.28, 2017

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

Compiled by

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Approved by

( position+printed name+signature) . : RF Manager Hans Hu

**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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## **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**

Version No.	Date of issue	Description
00	Nov.28, 2017	Original

## **2. Test Description**

Test Item	FCC Rule	Result
Conducted Emissions Test	15.107	Pass
Radiated Emission Test	15.109	Pass

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

### **3. SUMMARY**

#### **3.1. Client Information**

Applicant:	Zhuhai Ltl Acorn Electronics Co., Ltd.
Address:	3F,Bldg. B,Kindly Medical Industrial Park, No. 288 Airport East Rd.,Sanzao Town,Jinwan Dist., Zhuhai, Guangdong, China.
Manufacturer:	Zhuhai Ltl Acorn Electronics Co., Ltd.
Address:	3F,Bldg. B,Kindly Medical Industrial Park, No. 288 Airport East Rd.,Sanzao Town,Jinwan Dist., Zhuhai, Guangdong, China.

#### **3.2. Product Description**

Name of EUT:	Infrared Digital Scouting Camera
Trade Mark:	LTL ACORN
Model No.:	Ltl-6511W-4G(EXT.LCD)
Listed Model(s):	Ltl-6511-4G(EXT.LCD)
IMEI 1:	014339000140166
Power supply:	DC 6.0V(4*AA size battery) or 6 x DC3.7V 18650 Lithium Battery
Adapter information:	Input: 100-240Va.c., 50/60Hz, 0.45A Output: 6Vd.c.,2A
Hardware version:	LTL-6511-4G-01
Software version:	T1.2.159D_170925a-E

### 3.3. EUT operation mode

Test mode	Camera	AV out	Adapter
1	■		■
2		■	■

Note:

1. ■ is operation mode.

Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
Conducted emission	Mode 1
Radiated emission	Mode 1

### 3.4. EUT configuration

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

- - supplied by the manufacturer
- - supplied by the lab

		Length (m) :	
		Shield :	
		Detachable :	
		Manufacturer :	
		Model No. :	-

## **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/IEC 17025: 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.

#### **IC-Registration No.: 5377B-1**

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. 5377B-1.

#### **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. Equipments Used during the Test

Conducted Emission						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	11/11/2017	11/10/2018
3	Pulse Limiter	R&S	ESH3-Z2	101488	11/11/2017	11/10/2018
4	Test Software	R&S	ES-K1	N/A	N/A	N/A

Radiated Emission						
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal. (mm/dd/yy)	Next Cal. (mm/dd/yy)
1	Spectrum Analyzer	Rohde&Schwarz	FSW26	103440	11/11/2017	11/10/2018
2	HORNANTENNA	ShwarzBeck	9120D	1011	03/27/2017	03/26/2020
3	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	04/05/2017	04/04/2020
4	TURNTABLE	MATURO	TT2.0	----		N/A
5	ANTENNA MAST	MATURO	TAM-4.0-P	----		N/A
6	EMI Test Software	Audix	E3	N/A		N/A
7	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
8	High pass filter	Compliance Direction systems	BSU-6	34202	11/21/2017	11/20/2018
9	Preamplifier	ShwarzBeck	BBV 9718	9718-248	10/18/2017	10/17/2018
10	Broadband Preamplifier	ShwarzBeck	BBV 9743	9743-0022	10/18/2017	10/17/2018
11	Signal Generator	Rohde&Schwarz	SMB100A	114360	06/13/2017	06/12/2018
12	Pre-amplifier	SCHWARZBECK	BBV 9742	N/A	11/22/2017	11/21/2018
13	Turntable	Maturo Germany	TT2.0-1T	/	N/A	N/A
14	Antenna Mast	Maturo Germany	CAM-4.0-P-12	/	N/A	N/A
15	Test Software	R&S	ES-K1	/	N/A	N/A
16	Loop Antenna	R&S	HFH2-Z2	100020	11/20/2017	11/19/2020
17	RF Connection Cable	HUBER+SUHNER	N/A	N/A	11/21/2017	11/20/2018
18	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	11/21/2017	11/20/2018
19	RF Connection Cable	HUBER+SUHNER	MULTIFLEX 141	N/A	11/21/2017	11/20/2018
20	Spectrum Analyzer	R&S	FSP40	100597	11/11/2017	11/10/2018
21	RF Connection Cable	HUBER+SUHNER	3m 18GHz S Serisa	N/A	11/21/2017	11/20/2018
22	RF Connection Cable	HUBER+SUHNER	3m 3GHz S Serisa	N/A	11/21/2017	11/20/2018
23	RF Connection Cable	HUBER+SUHNER	3m 3GHz RG Serisa	N/A	11/21/2017	11/20/2018
24	RF Connection Cable	HUBER+SUHNER	6m 18GHz S Serisa	N/A	11/21/2017	11/20/2018

The calibration interval was one year.



#### 4.4. 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

#### 4.5. 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 according 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 according 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 Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Emissions Test

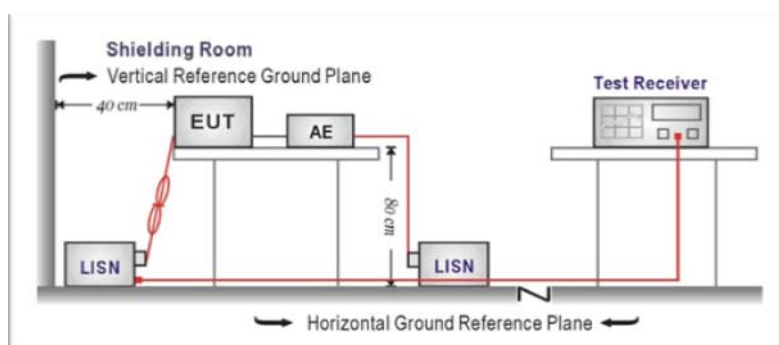
#### LIMIT

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 platform 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 50 ohm /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 0.15 MHz to 30 MHz 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

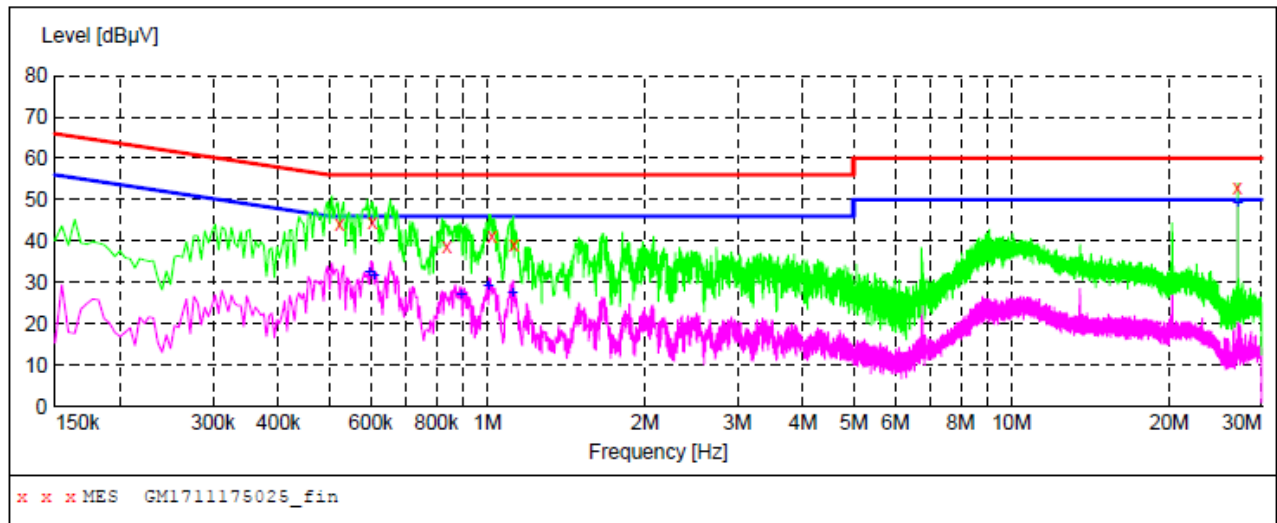
#### TEST RESULTS

☒ Passed ☐ Not Applicable

Note: Transd = Cable loss + PULSE LIMITER factor + ARTIFICIAL MAINS factor; Margin = Limit - Level

Test Line:

L

**MEASUREMENT RESULT: "GM1711175025\_fin"**

11/17/2017 1:55PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.523500	44.30	10.2	56	11.7	QP	L1	GND
0.604500	44.70	10.2	56	11.3	QP	L1	GND
0.838500	38.50	10.1	56	17.5	QP	L1	GND
1.023000	41.40	10.2	56	14.6	QP	L1	GND
1.126500	39.00	10.2	56	17.0	QP	L1	GND
27.001500	52.80	10.7	60	7.2	QP	L1	GND

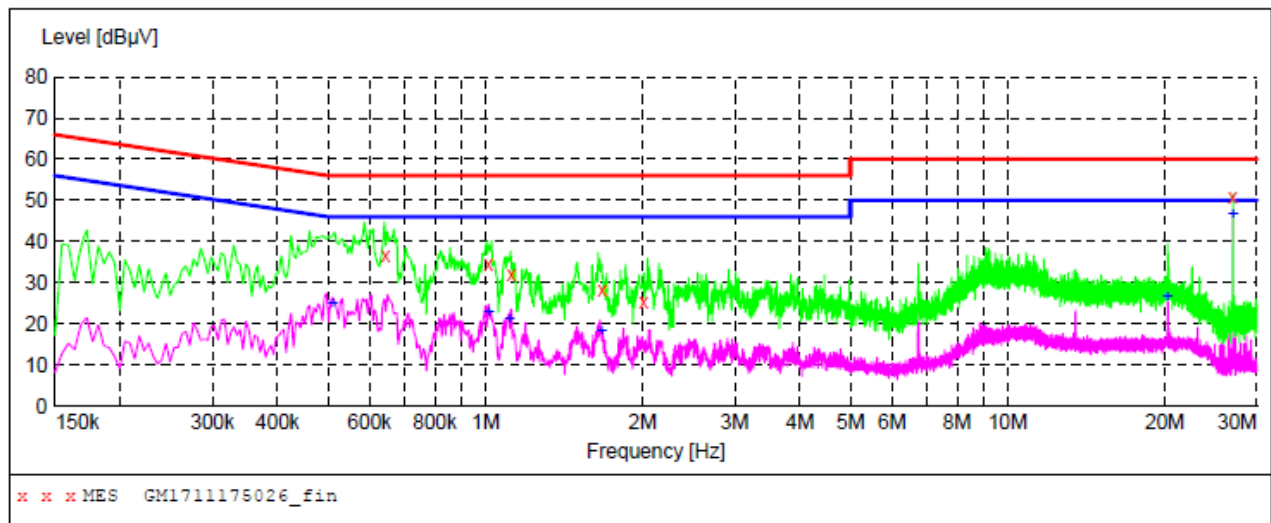
**MEASUREMENT RESULT: "GM1711175025\_fin2"**

11/17/2017 1:55PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.595500	32.60	10.2	46	13.4	AV	L1	GND
0.609000	31.40	10.2	46	14.6	AV	L1	GND
0.892500	27.00	10.1	46	19.0	AV	L1	GND
1.005000	29.00	10.2	46	17.0	AV	L1	GND
1.117500	27.30	10.2	46	18.7	AV	L1	GND
27.001500	49.20	10.7	50	0.8	AV	L1	GND

Test Line:

N

**MEASUREMENT RESULT: "GM1711175026\_fin"**

11/17/2017 1:58PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.645000	36.40	10.2	56	19.6	QP	N	GND
1.014000	34.30	10.2	56	21.7	QP	N	GND
1.122000	32.20	10.2	56	23.8	QP	N	GND
1.675500	28.10	10.2	56	27.9	QP	N	GND
2.008500	25.30	10.2	56	30.7	QP	N	GND
27.001500	50.80	10.7	60	9.2	QP	N	GND

**MEASUREMENT RESULT: "GM1711175026\_fin2"**

11/17/2017 1:58PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.510000	24.90	10.2	46	21.1	AV	N	GND
1.014000	22.60	10.2	46	23.4	AV	N	GND
1.113000	21.30	10.2	46	24.7	AV	N	GND
1.666500	18.30	10.2	46	27.7	AV	N	GND
20.251500	26.70	10.6	50	23.3	AV	N	GND
27.001500	46.50	10.7	50	3.5	AV	N	GND

## 5.2. Radiated Emission Test

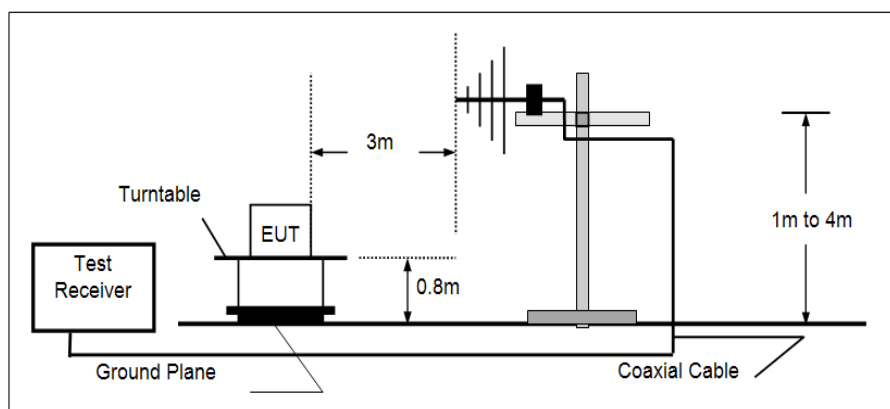
### LIMIT

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

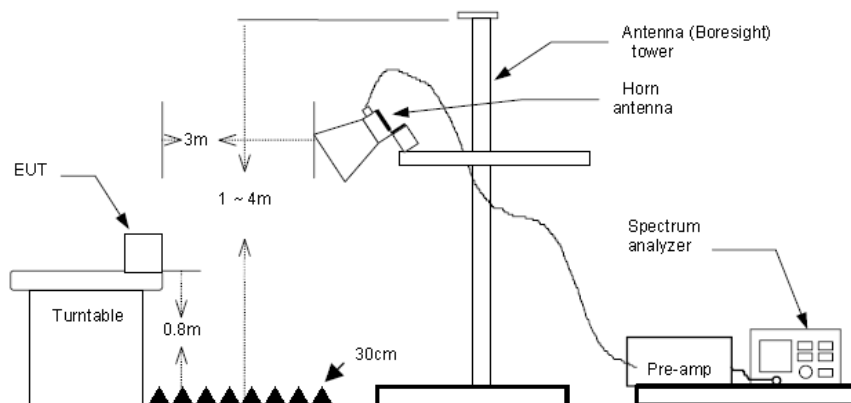
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### 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. 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 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. 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) Above 1GHz, RBW=1MHz, VBW=3MHz

**TEST MODE:**

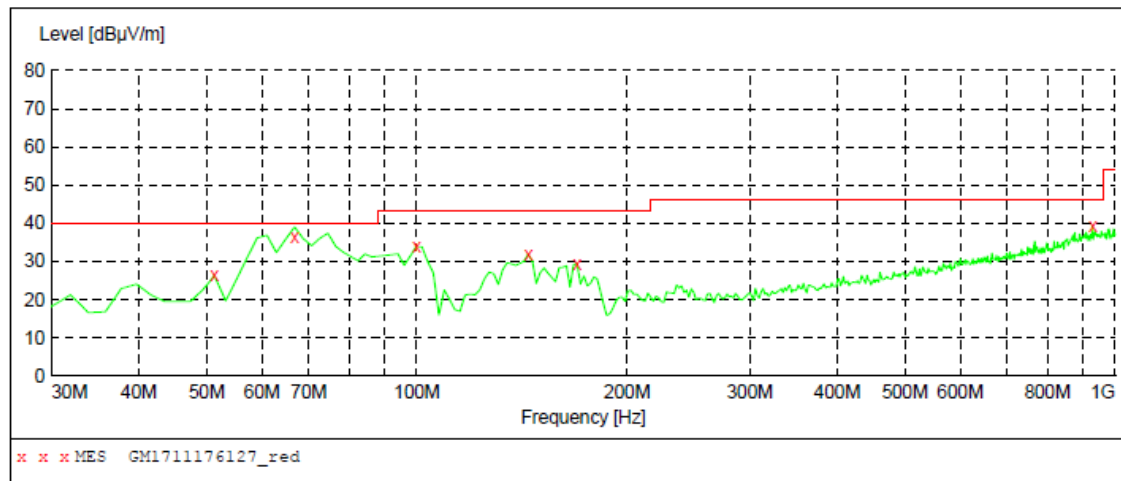
Please refer to the clause 3.3

**TEST RESULTS**

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

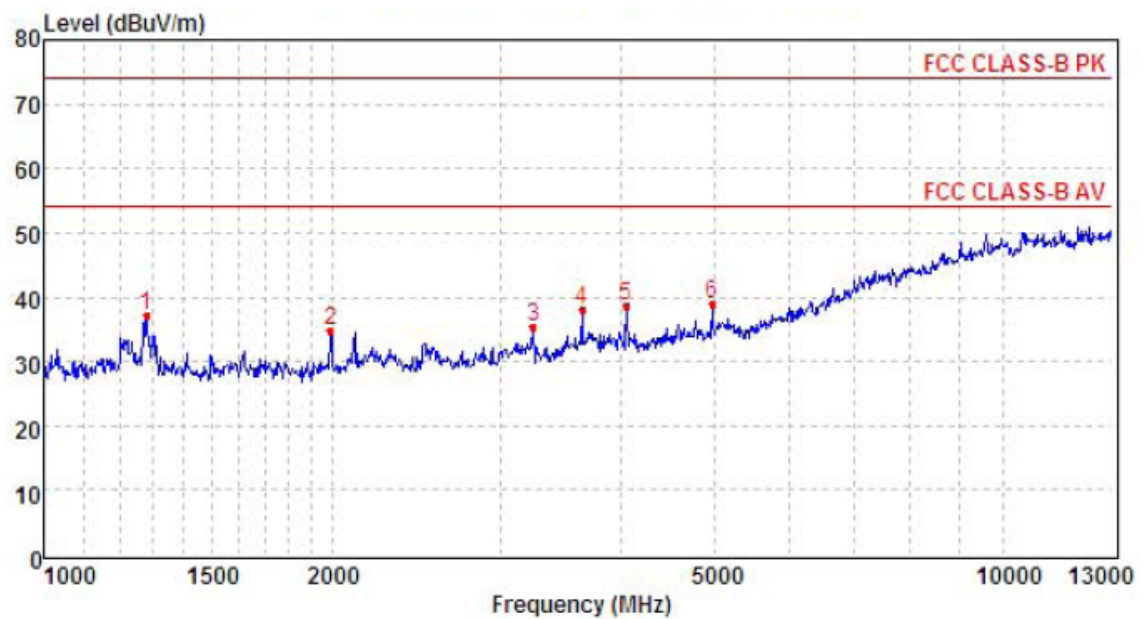
Note: Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

## ➤ Vertical

**MEASUREMENT RESULT: "GM1711176127\_red"**

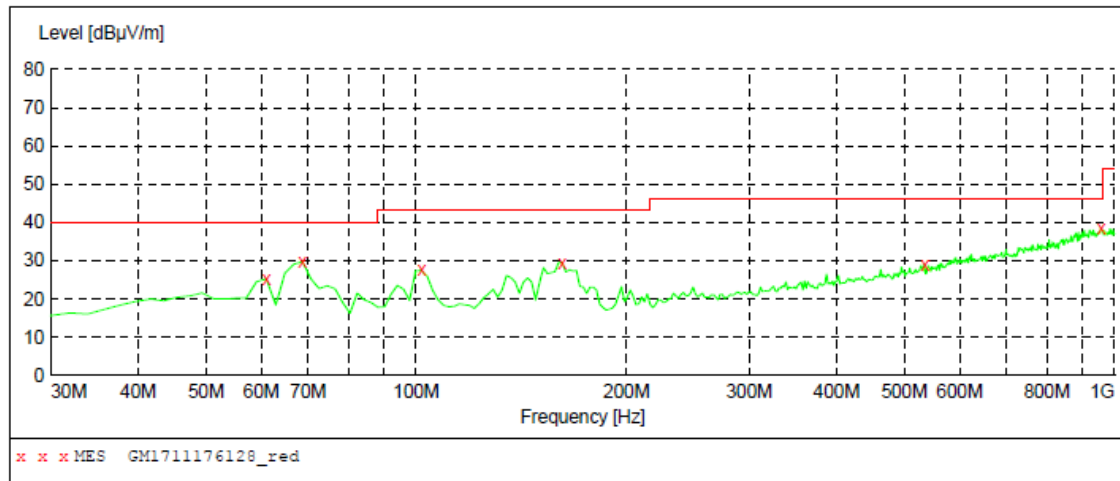
11/17/2017 11:22PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	26.30	-8.8	40.0	13.7	QP	100.0	346.00	VERTICAL
66.860000	36.10	-12.0	40.0	3.9	QP	100.0	346.00	VERTICAL
99.840000	33.90	-10.6	43.5	9.6	QP	100.0	76.00	VERTICAL
144.460000	31.90	-13.9	43.5	11.6	QP	100.0	219.00	VERTICAL
169.680000	29.50	-13.0	43.5	14.0	QP	100.0	322.00	VERTICAL
928.220000	39.20	7.1	46.0	6.8	QP	100.0	0.00	VERTICAL



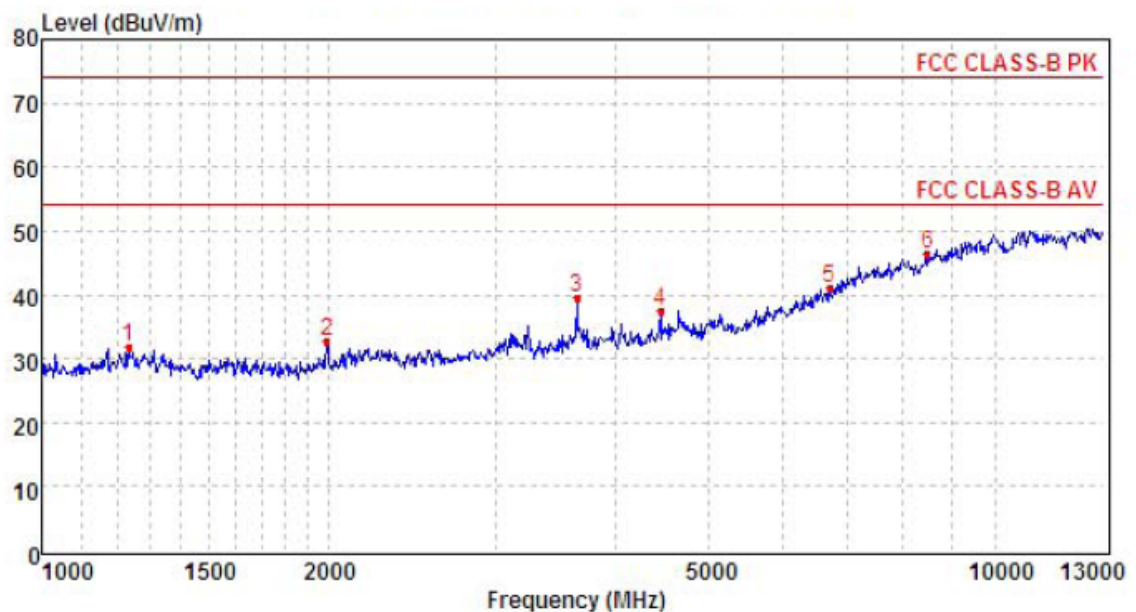
Mark	Frequency MHz	Reading dbuv/m	Antenna db	Cable db	Preamp db	Level dbuv/m	Limit dbuv/m	Over limit	Remark
1	1279.20	42.8	26.2	4.8	36.5	37.3	74.0	-36.7	Peak
2	1993.66	39.7	26.2	6.3	37.3	34.9	74.0	-39.1	Peak
3	3237.32	37.2	28.6	7.8	38.3	35.3	74.0	-38.7	Peak
4	3642.73	38.9	29.3	8.3	38.3	38.2	74.0	-35.8	Peak
5	4046.68	37.9	29.8	8.8	38.0	38.5	74.0	-35.5	Peak
6	4981.14	34.4	31.5	9.7	36.5	39.1	74.0	-34.9	Peak

## ➤ Horizontal

**MEASUREMENT RESULT: "GM1711176128\_red"**

11/17/2017 11:25PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
61.040000	25.30	-10.3	40.0	14.7	QP	300.0	253.00	HORIZONTAL
68.800000	29.80	-12.6	40.0	10.2	QP	300.0	229.00	HORIZONTAL
101.780000	27.50	-10.5	43.5	16.0	QP	300.0	202.00	HORIZONTAL
161.920000	29.60	-13.3	43.5	13.9	QP	100.0	215.00	HORIZONTAL
534.400000	29.00	-1.1	46.0	17.0	QP	100.0	51.00	HORIZONTAL
957.320000	38.30	7.3	46.0	7.7	QP	100.0	254.00	HORIZONTAL



Mark	Frequency MHz	Reading dbuv/m	Antenna db	Cable db	Preamp db	Level dbuv/m	Limit dbuv/m	Over limit	Remark
1	1234.08	37.5	26.3	4.7	36.6	31.9	74.0	-42.1	Peak
2	1993.66	37.4	26.2	6.3	37.3	32.6	74.0	-41.4	Peak
3	3642.73	40.4	29.3	8.3	38.3	39.7	74.0	-34.3	Peak
4	4460.97	35.3	30.6	9.2	37.5	37.6	74.0	-36.4	Peak
5	6707.27	30.5	34.2	11.5	35.2	41.0	74.0	-33.0	Peak
6	8492.37	31.0	36.9	12.9	34.4	46.4	74.0	-27.6	Peak



## 6. Test Setup Photos of the EUT

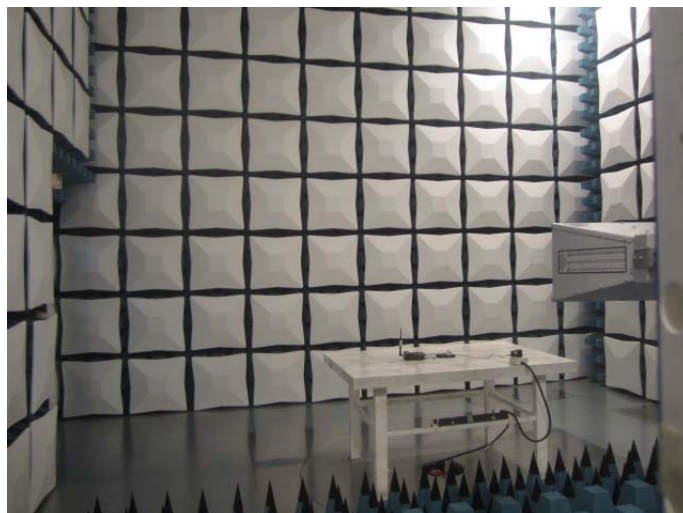
Conducted Emission



Radiated Emission (30MHz-1GHz)



Radiated Emission (above 1GHz)



## **7. External and Internal photos of the EUT**

Reference to the test report No.: TRE1711007801.

.....End of Report.....