Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V04
Report Template Revision Date: 2018-07-06

FCC Test Report

Report No. :	CQASZ20200300113E-01
Applicant:	Shenzhen Hollyland Technology Co.,Ltd
Address of Applicant:	8F, 5D Building, Skyworth Innovation Valley, Tangtou, Shiyan, Baoan District Shenzhen, China.
Equipment Under Test (EUT):	
Product:	WIRELESS VIDEO TRANSMISSION SYSTEM
Model No.:	MARS X
Brand Name:	HOLLYLAND
FCC ID:	2ADZC-9816
Standards:	47 CFR Part 15, Subpart C
Date of Receipt:	2020-03-04
Date of Test:	2020-03-04 to 2020-03-18
Date of Issue:	2020-03-18
Test Result :	**PASS***

Tested By: Tom Chen.

(Tom Chen)

Reviewed By: Aaron Ma

(Aaron Ma)

Approved By:

(Jack Ai)

SHENZHEN HUAXIA TESTING TECHNOLOGY CO.,LTD APPROVED

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200300113E-01	Rev.01	Initial report	2020-03-18

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Shenzhen Hollyland Technology Co.,Ltd
Address of Applicant:	8F, 5D Building, Skyworth Innovation Valley, Tangtou, Shiyan, Baoan District Shenzhen, China.
Manufacturer:	Shenzhen Hollyland Technology Co.,Ltd
Address of Manufacturer:	8F, 5D Building, Skyworth Innovation Valley, Tangtou, Shiyan, Baoan District Shenzhen, China.

4.2 General Description of EUT

Name:	WIRELESS VIDEO TRANSMISSION SYSTEM
Model No.:	MARS X
Trade Mark :	HOLLYLAND
Hardware Version:	V1.2
Software Version:	V1.0.1.0
Frequency Range:	5735MHz ~ 5840MHz
Modulation Type:	OFDM
Number of Channels:	3(declared by the client)
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	External antenna with ipex connector
Antenna Gain:	ANT1: 3dBi ANT2: 3dBi
Power Supply:	lithium battery:DC3.85V, Charge by DC5V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5725MHz	157	5785MHz	165	5825MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest	5745MHz
The Middle	5785MHz
The Highest	5825MHz

4.3 Test Environment and Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	23.5 °C
Humidity:	50 % RH
Atmospheric Pressure:	1015 mbar
Conducted Emissions:	
Temperature:	24.5 °C
Humidity:	54 % RH
Atmospheric Pressure:	1015 mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	24.8 °C
Humidity:	62 % RH
Atmospheric Pressure:	1015 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

1）Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
PC	Lenovo	ThinkPad E450c	FCC	Client

4.5 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.,

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua New District, Shenzhen, Guangdong, China

4.6 Test Facility

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

- **CNAS (No. CNAS L5785)**

CNAS has accredited Shenzhen Huaxia Testing Technology Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 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. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen 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 No.:522263

4.7 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 Huaxia Testing Technology 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 CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10^{-8}	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8℃	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

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

4.8 Deviation from Standards

None.

4.9 Abnormalities from Standard Conditions

None.

4.10 Other Information Requested by the Customer

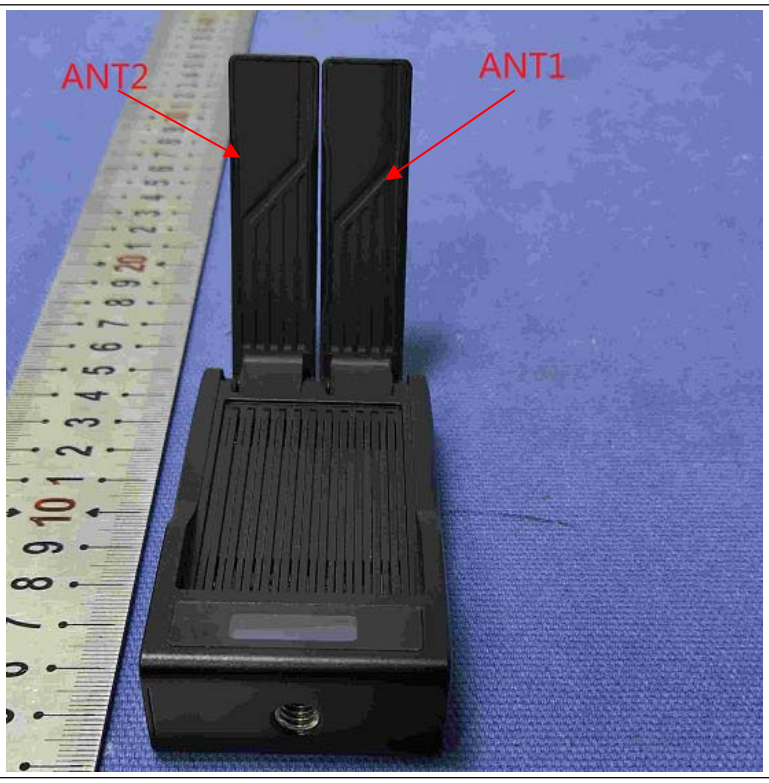
None.

4.11 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2019/10/25	2020/10/24
Spectrum analyzer	R&S	FSU26	CQA-038	2019/10/25	2020/10/24
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2019/10/25	2020/10/24
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2019/10/21	2020/10/20
Bilog Antenna	R&S	HL562	CQA-011	2019/9/26	2020/9/25
Horn Antenna	R&S	HF906	CQA-012	2019/9/26	2020/9/25
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2019/9/25	2020/9/24
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2019/9/26	2020/9/25
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2019/9/26	2020/9/25
Antenna Connector	CQA	RFC-01	CQA-080	2019/9/26	2020/9/25
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2019/9/26	2020/9/25
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2019/9/26	2020/9/25
EMI Test Receiver	R&S	ESR7	CQA-005	2019/10/25	2020/10/24
LISN	R&S	ENV216	CQA-003	2019/10/23	2020/10/22
Coaxial cable	CQA	N/A	CQA-C009	2019/9/26	2020/9/25
DC power	KEYSIGHT	E3631A	CQA-028	2019/9/26	2020/9/25

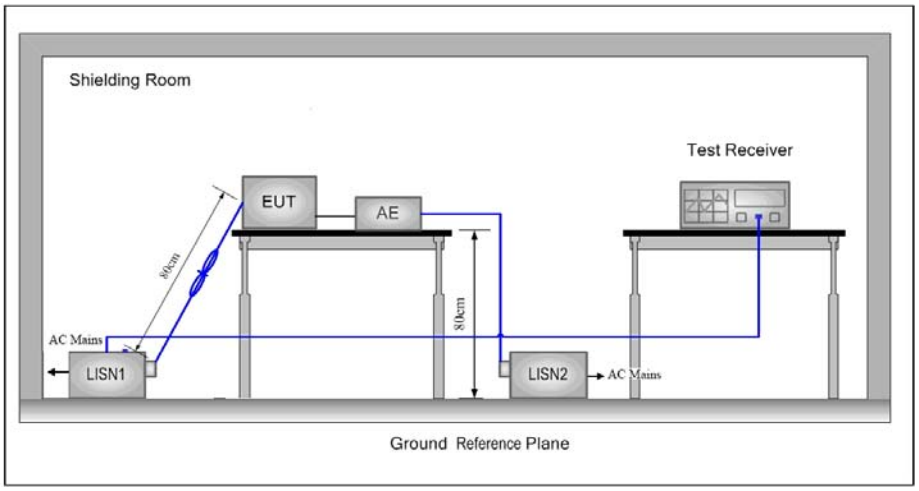
5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antenna is external antenna and no consideration of replacement. The best case gain of the antenna is 3dBi.	

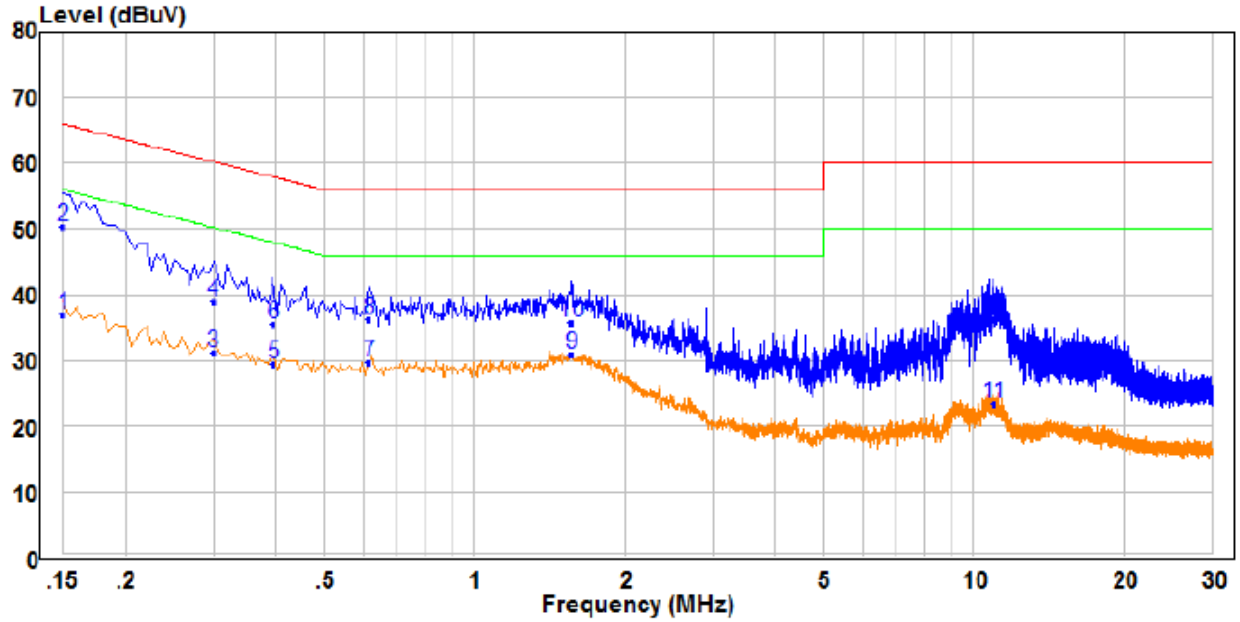
5.2 Conducted Emissions

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Test Frequency Range:</td><td>150kHz to 30MHz</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test Procedure:</td><td>1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference
plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a
single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</td></tr>
</table>

Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the ANT1 at highest channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Measurement Data

Live Line:

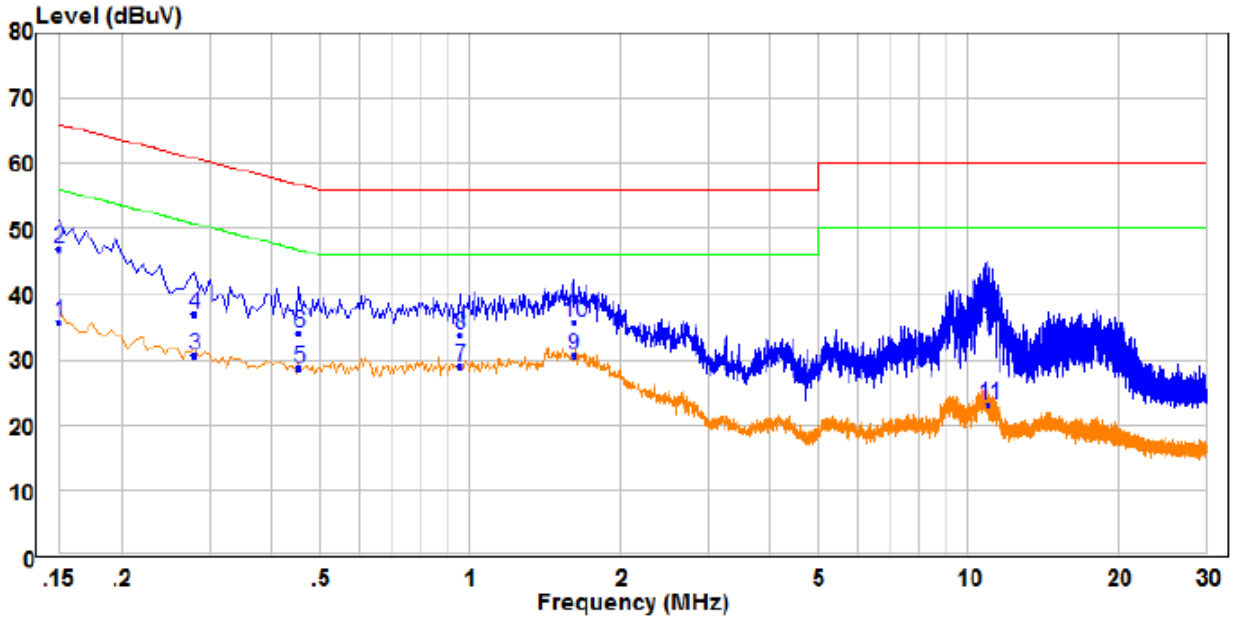


		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.150	27.60	9.49	37.09	56.00	-18.91	Average	Line
2	QP	0.150	40.78	9.49	50.27	66.00	-15.73	QP	Line
3		0.300	21.70	9.49	31.19	50.24	-19.05	Average	Line
4		0.300	29.39	9.49	38.88	60.24	-21.36	QP	Line
5		0.395	19.93	9.51	29.44	47.96	-18.52	Average	Line
6		0.395	25.94	9.51	35.45	57.96	-22.51	QP	Line
7		0.615	19.85	9.73	29.58	46.00	-16.42	Average	Line
8		0.615	26.42	9.73	36.15	56.00	-19.85	QP	Line
9	PP	1.565	21.35	9.53	30.88	46.00	-15.12	Average	Line
10		1.565	26.30	9.53	35.83	56.00	-20.17	QP	Line
11		10.970	13.63	9.83	23.46	50.00	-26.54	Average	Line
12		10.970	26.43	9.83	36.26	60.00	-23.74	QP	Line

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral Line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.150	26.32	9.48	35.80	56.00	-20.20	Average	Neutral
2	QP	0.150	37.53	9.48	47.01	66.00	-18.99	QP	Neutral
3		0.280	21.21	9.48	30.69	50.82	-20.13	Average	Neutral
4		0.280	27.52	9.48	37.00	60.82	-23.82	QP	Neutral
5		0.455	19.19	9.57	28.76	46.78	-18.02	Average	Neutral
6		0.455	24.43	9.57	34.00	56.78	-22.78	QP	Neutral
7		0.955	19.22	9.74	28.96	46.00	-17.04	Average	Neutral
8		0.955	24.12	9.74	33.86	56.00	-22.14	QP	Neutral
9	PP	1.620	21.05	9.72	30.77	46.00	-15.23	Average	Neutral
10		1.620	25.96	9.72	35.68	56.00	-20.32	QP	Neutral
11		10.985	13.05	9.95	23.00	50.00	-27.00	Average	Neutral
12		10.985	27.15	9.95	37.10	60.00	-22.90	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Radiated Emission

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.249 and 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Test Site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30KHz</td><td>Peak</td></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30KHz</td><td>Average</td></tr>
<tr><td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30KHz</td><td>Quasi-peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30KHz</td><td>Peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30KHz</td><td>Average</td></tr>
<tr><td>0.490MHz -30MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100 kHz</td><td>300KHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table>
Note: For fundamental frequency, RBW=5MHz, VBW=5MHz, Peak detector is for PK value, RMS detector is for Average value.
</td></tr>
<tr><td>Limit:
(Spurious Emissions and band edge)</td><td>
<table>
<tr><th>Frequency</th><th>Field strength (microvolt/meter)</th><th>Limit (dBuV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr>
</table>
Note: 1) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.
2) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.
</td></tr>
<tr><td>Limit:
(Field strength of the fundamental signal)</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td rowspan="2">5725MHz-5875MHz</td><td>94.0</td><td>Average Value</td></tr>
<tr><td>114.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
</table>

Test Setup:	

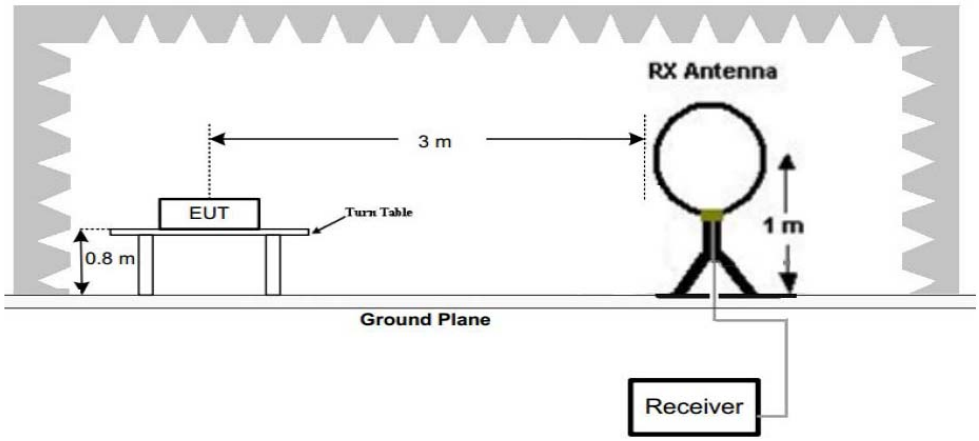


Figure 1. Below 30MHz

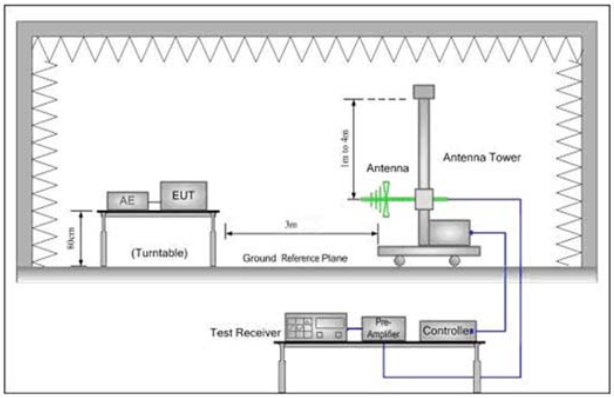


Figure 2. 30MHz to 1GHz

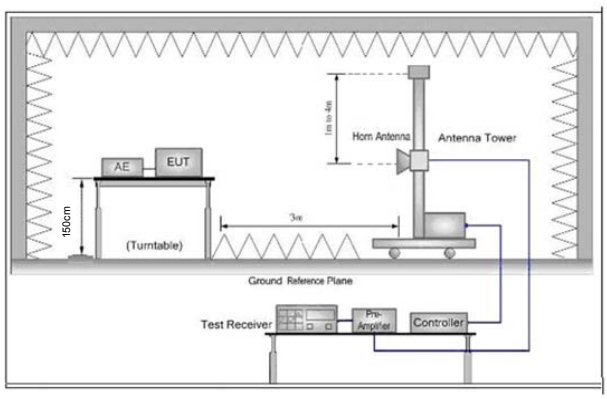


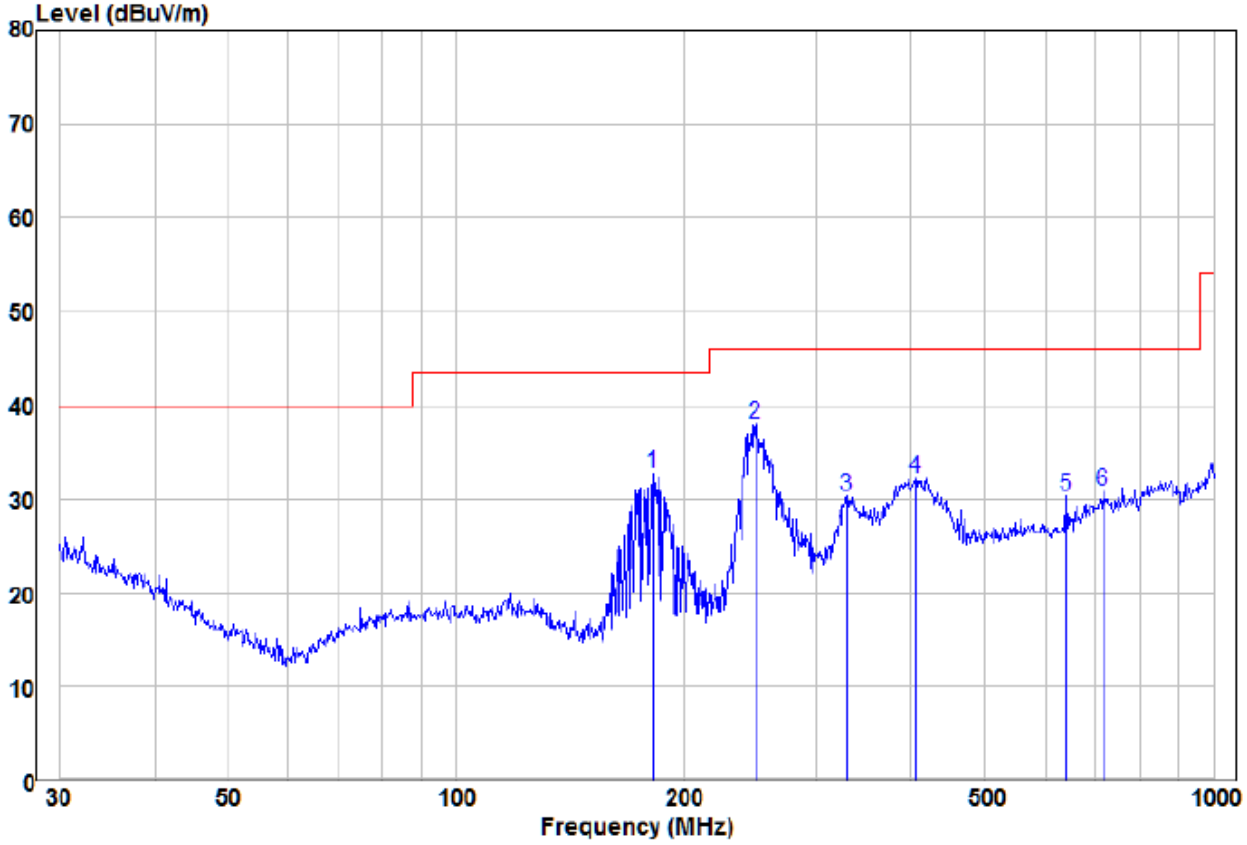
Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of

	below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel,the middle channel,the Highest channel h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case. i. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 5.11 for details
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Through Pre-scan, find the ANT1 is the worst case Pretest the EUT at Transmitting mode, For below 1GHz part, through pre-scan, the worst case is the highest channel. Only the worst case is recorded in the report.
Test Voltage:	DC3.85V
Test Results:	Pass

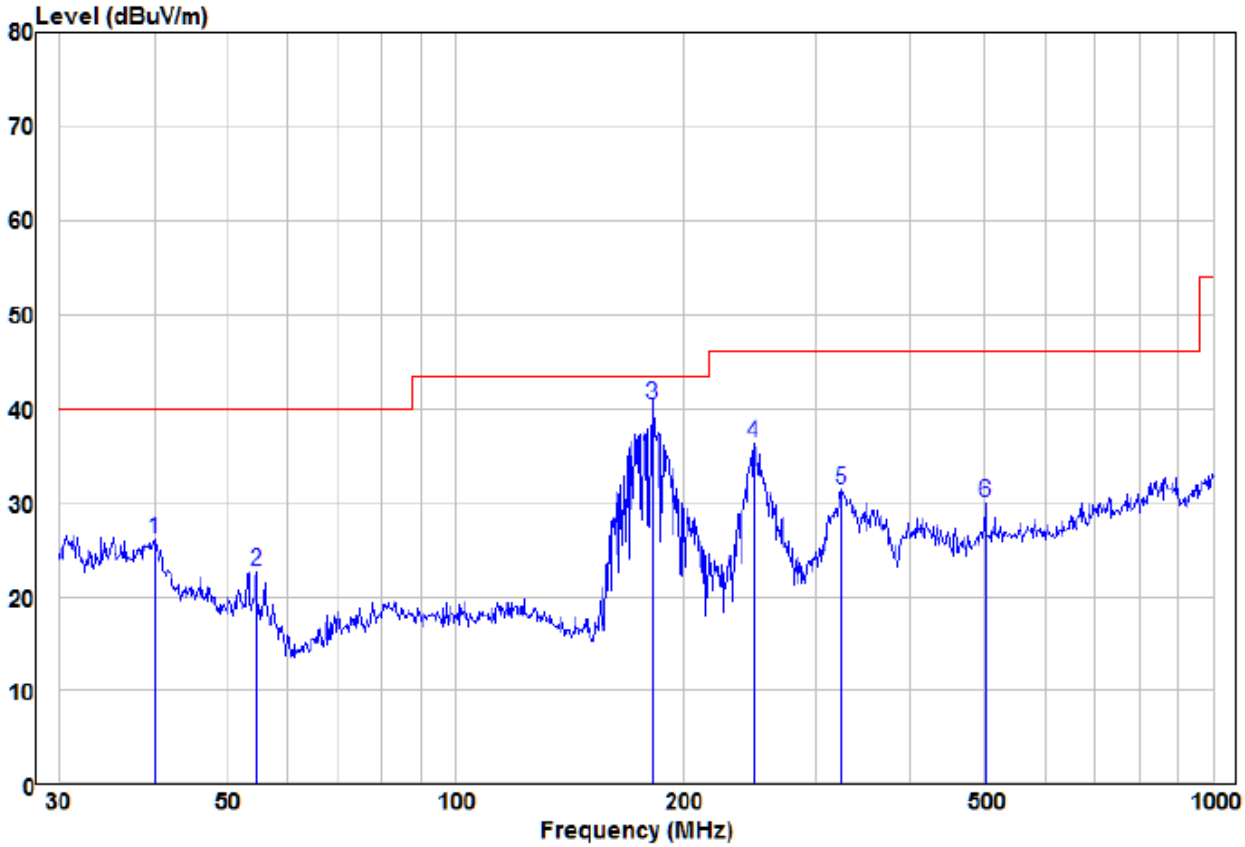
Measurement Data

30MHz~1GHz		
Test mode:	Transmitting (lowest channel)	Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	182.56	25.23	7.60	32.83	43.50	-10.67	Peak	HORIZONTAL
2 pp	249.43	26.68	11.33	38.01	46.00	-7.99	Peak	HORIZONTAL
3	327.89	16.77	13.54	30.31	46.00	-15.69	Peak	HORIZONTAL
4	404.67	17.90	14.34	32.24	46.00	-13.76	Peak	HORIZONTAL
5	640.61	12.15	18.19	30.34	46.00	-15.66	Peak	HORIZONTAL
6	716.68	11.14	19.80	30.94	46.00	-15.06	Peak	HORIZONTAL

Test mode:	Transmitting (lowest channel)	Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	40.13	13.74	12.43	26.17	40.00	-13.83	Peak	VERTICAL
2	54.64	15.79	6.83	22.62	40.00	-17.38	Peak	VERTICAL
3 pp	182.56	32.80	7.60	40.40	43.50	-3.10	QP	VERTICAL
4 pk	247.68	24.99	11.28	36.27	46.00	-9.73	Peak	VERTICAL
5	324.46	17.96	13.46	31.42	46.00	-14.58	Peak	VERTICAL
6	501.18	12.98	17.11	30.09	46.00	-15.91	Peak	VERTICAL

ANT1:

Above 1GHz			
Test mode:	Transmitting	Test channel:	Lowest

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5725	58.85	-2.77	56.08	74	-17.92	peak	H
5725	44.88	-2.77	42.11	54	-11.89	AVG	H
5745	95.12	-2.72	92.40	114	-21.60	peak	H
5745	85.77	-2.72	83.05	94	-10.95	AVG	H
11490	50.09	2.42	52.51	74	-21.49	peak	H
11490	37.28	2.42	39.70	54	-14.30	AVG	H
17235	49.13	3.92	53.05	74	-20.95	peak	H
17235	37.36	3.92	41.28	54	-12.72	AVG	H
5725	59.47	-2.77	56.70	74	-17.30	peak	V
5725	46.67	-2.77	43.90	54	-10.10	AVG	V
5745	100.77	-2.72	98.05	114	-15.95	peak	V
5745	90.26	-2.72	87.54	94	-6.46	AVG	V
11490	48.68	2.42	51.10	74	-22.90	peak	V
11490	39.47	2.42	41.89	54	-12.11	AVG	V
17235	48.27	3.92	52.19	74	-21.81	peak	V
17235	36.28	3.92	40.20	54	-13.80	AVG	V

Test mode:	Transmitting	Test channel:	Middle

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5785	93.44	-2.42	91.02	114	-22.98	peak	H
5785	82.12	-2.42	79.70	94	-14.30	AVG	H
11570	50.58	2.47	53.05	74	-20.95	peak	H
11570	36.41	2.47	38.88	54	-15.12	AVG	H
17355	49.68	3.96	53.64	74	-20.36	peak	H
17355	37.50	3.96	41.46	54	-12.54	AVG	H
5785	98.70	-2.42	96.28	114	-17.72	peak	V
5785	88.97	-2.42	86.55	94	-7.45	AVG	V
11570	48.61	2.47	51.08	74	-22.92	peak	V
11570	39.69	2.47	42.16	54	-11.84	AVG	V
17355	49.22	3.96	53.18	74	-20.82	peak	V
17355	36.39	3.96	40.35	54	-13.65	AVG	V

Test mode:	Transmitting	Test channel:	Highest

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5825	96.01	-2.42	93.59	114	-20.41	peak	H
5825	86.19	-2.42	83.77	94	-10.23	AVG	H
5875	57.62	-2.21	55.41	74	-18.59	peak	H
5875	45.52	-2.21	43.31	54	-10.69	AVG	H
11650	50.08	2.55	52.63	74	-21.37	peak	H
11650	36.60	2.55	39.15	54	-14.85	AVG	H
17475	49.21	4.01	53.22	74	-20.78	peak	H
17475	37.44	4.01	41.45	54	-12.55	AVG	H
5825	**101.30**	**-2.34**	**98.96**	**114**	**-15.04**	**peak**	**V**
5825	91.09	-2.34	88.75	94	-5.25	AVG	V
5875	57.87	-2.21	55.66	74	-18.34	peak	V
5875	44.19	-2.21	41.98	54	-12.02	AVG	V
11650	48.32	2.55	50.87	74	-23.13	peak	V
11650	38.47	2.55	41.02	54	-12.98	AVG	V
17475	48.93	4.01	52.94	74	-21.06	peak	V
17475	36.26	4.01	40.27	54	-13.73	AVG	V

ANT2:

Above 1GHz			
Test mode:	Transmitting	Test channel:	Lowest

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5725	58.57	-2.77	55.8	74	-18.2	peak	H
5725	44.56	-2.77	41.79	54	-12.21	AVG	H
5745	94.78	-2.72	92.06	114	-21.94	peak	H
5745	85.51	-2.72	82.79	94	-11.21	AVG	H
11490	49.79	2.42	52.21	74	-21.79	peak	H
11490	37	2.42	39.42	54	-14.58	AVG	H
17235	48.79	3.92	52.71	74	-21.29	peak	H
17235	37.04	3.92	40.96	54	-13.04	AVG	H
5725	59.13	-2.77	56.36	74	-17.64	peak	V
5725	46.39	-2.77	43.62	54	-10.38	AVG	V
5745	100.43	-2.72	97.71	114	-16.29	peak	V
5745	89.94	-2.72	87.22	94	-6.78	AVG	V
11490	48.34	2.42	50.76	74	-23.24	peak	V
11490	39.15	2.42	41.57	54	-12.43	AVG	V
17235	47.93	3.92	51.85	74	-22.15	peak	V
17235	36	3.92	39.92	54	-14.08	AVG	V

Test mode:	Transmitting	Test channel:	Middle

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5785	93.13	-2.42	90.71	114	-23.29	peak	H
5785	81.78	-2.42	79.36	94	-14.64	AVG	H
11570	50.26	2.47	52.73	74	-21.27	peak	H
11570	36.12	2.47	38.59	54	-15.41	AVG	H
17355	49.39	3.96	53.35	74	-20.65	peak	H
17355	37.2	3.96	41.16	54	-12.84	AVG	H
5785	98.35	-2.42	95.93	114	-18.07	peak	V
5785	88.64	-2.42	86.22	94	-7.78	AVG	V
11570	48.3	2.47	50.77	74	-23.23	peak	V
11570	39.39	2.47	41.86	54	-12.14	AVG	V
17355	48.87	3.96	52.83	74	-21.17	peak	V
17355	36.06	3.96	40.02	54	-13.98	AVG	V

Test mode:	Transmitting	Test channel:	Highest

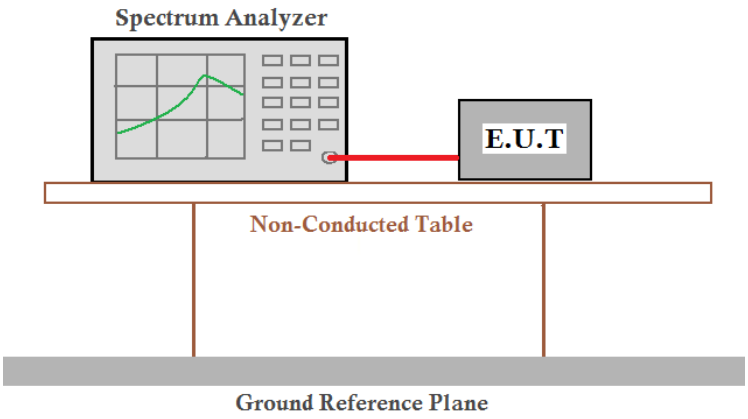
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5825	95.69	-2.42	93.27	114	-20.73	peak	H
5825	85.85	-2.42	83.43	94	-10.57	AVG	H
5875	57.32	-2.21	55.11	74	-18.89	peak	H
5875	45.22	-2.21	43.01	54	-10.99	AVG	H
11650	49.74	2.55	52.29	74	-21.71	peak	H
11650	36.26	2.55	38.81	54	-15.19	AVG	H
17475	48.91	4.01	52.92	74	-21.08	peak	H
17475	37.14	4.01	41.15	54	-12.85	AVG	H
5825	**101.02**	**-2.34**	**98.68**	**114**	**-15.32**	**peak**	**V**
5825	90.75	-2.34	88.41	94	-5.59	AVG	V
5875	57.57	-2.21	55.36	74	-18.64	peak	V
5875	43.89	-2.21	41.68	54	-12.32	AVG	V
11650	48.04	2.55	50.59	74	-23.41	peak	V
11650	38.21	2.55	40.76	54	-13.24	AVG	V
17475	48.63	4.01	52.64	74	-21.36	peak	V
17475	35.94	4.01	39.95	54	-14.05	AVG	V

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 40GHz,The disturbance above 20GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

5.4 20dB Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	
Instruments Used:	Refer to section 5.11 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	N/A
Test Results:	Pass

Measurement Data

ANT1:

Test channel	20dB bandwidth (MHz)	Results
Lowest	27.28	Pass
Middle	26.40	Pass
Highest	27.88	Pass

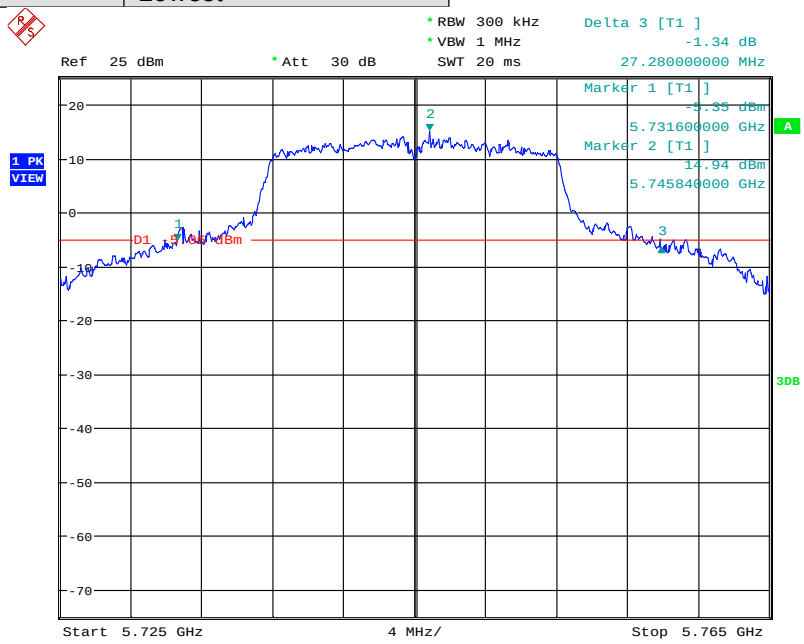
ANT2:

Test channel	20dB bandwidth (MHz)	Results
Lowest	29.52	Pass
Middle	27.88	Pass
Highest	27.08	Pass

Test plot as follows:

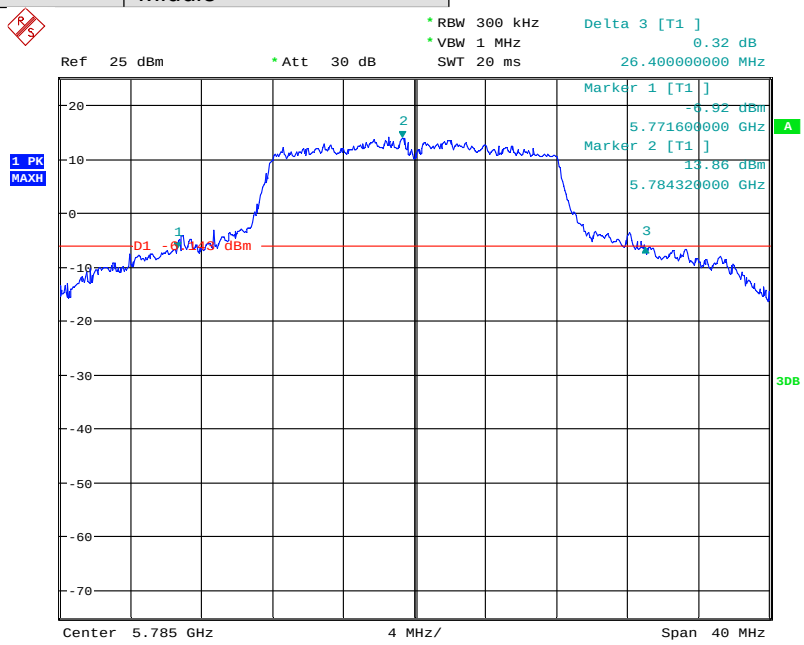
ANT1:

Test channel:	Lowest



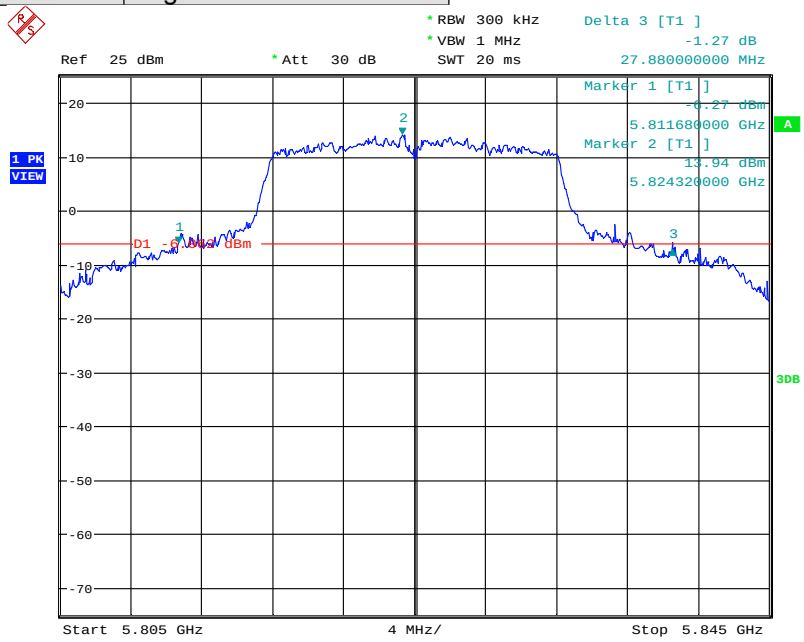
Date: 18.MAR.2020 18:05:51

Test channel:	Middle



Date: 18.MAR.2020 18:09:15

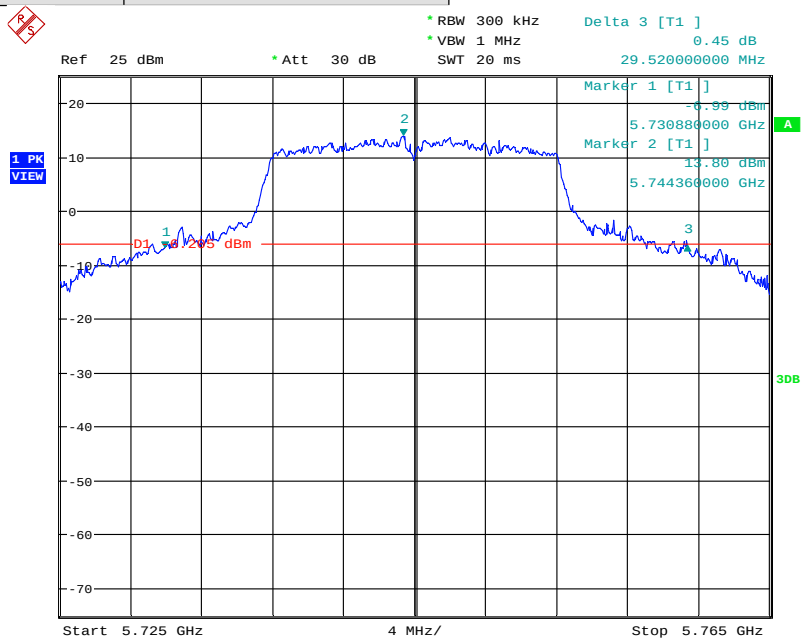
Test channel:	Highest



Date: 18.MAR.2020 18:15:11

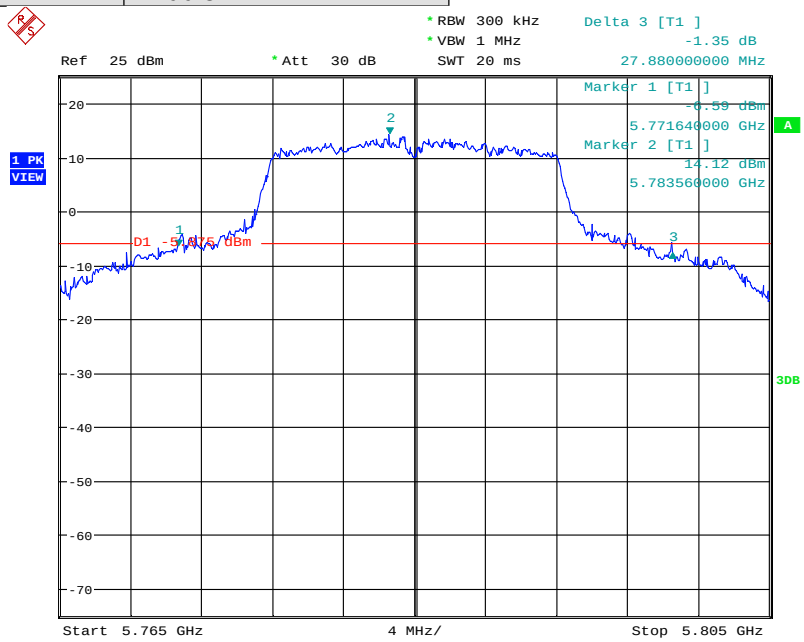
ANT2:

Test channel:	Lowest



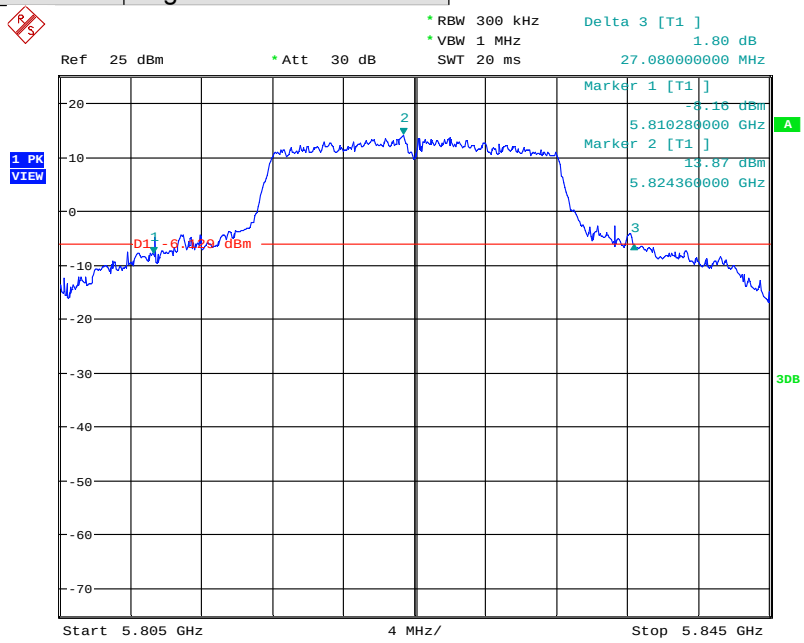
Date: 18.MAR.2020 18:06:30

Test channel:	Middle



Date: 18.MAR.2020 18:10:34

Test channel:	Highest

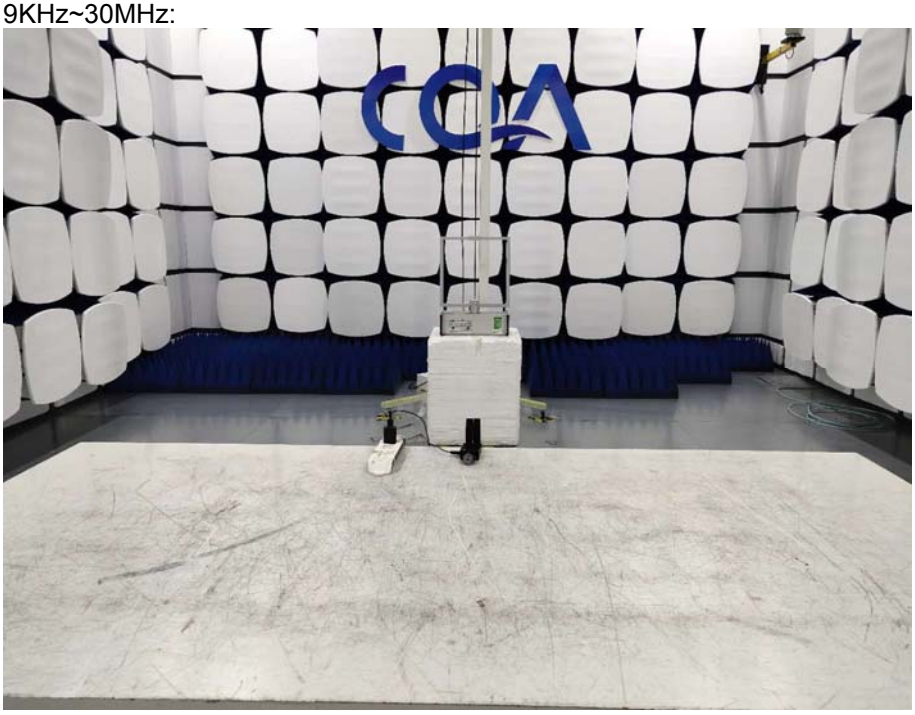


Date: 18.MAR.2020 18:15:50

6 Photographs

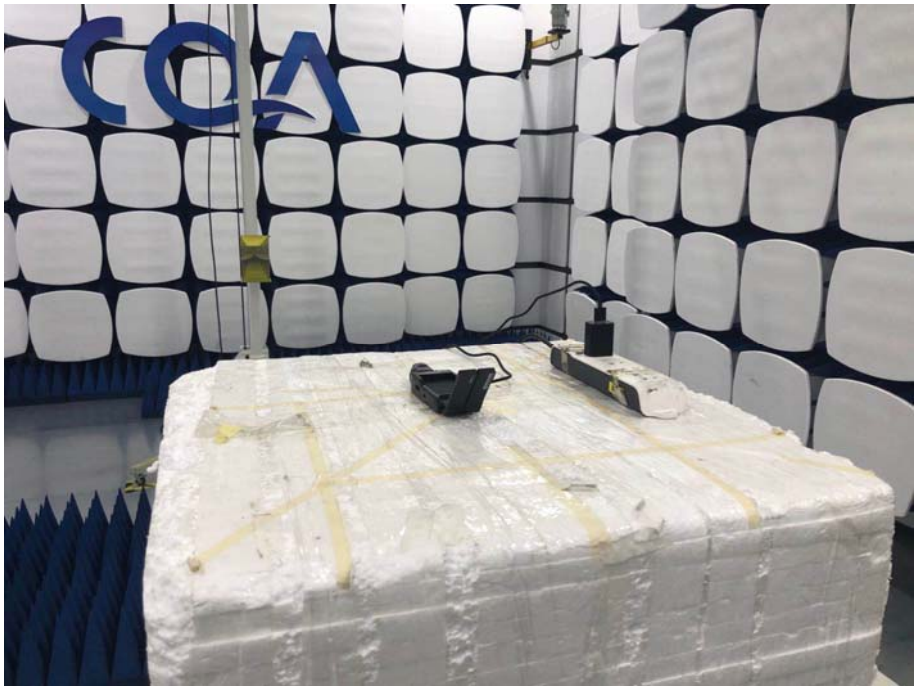
6.1 Radiated Emission Test Setup

9KHz~30MHz:



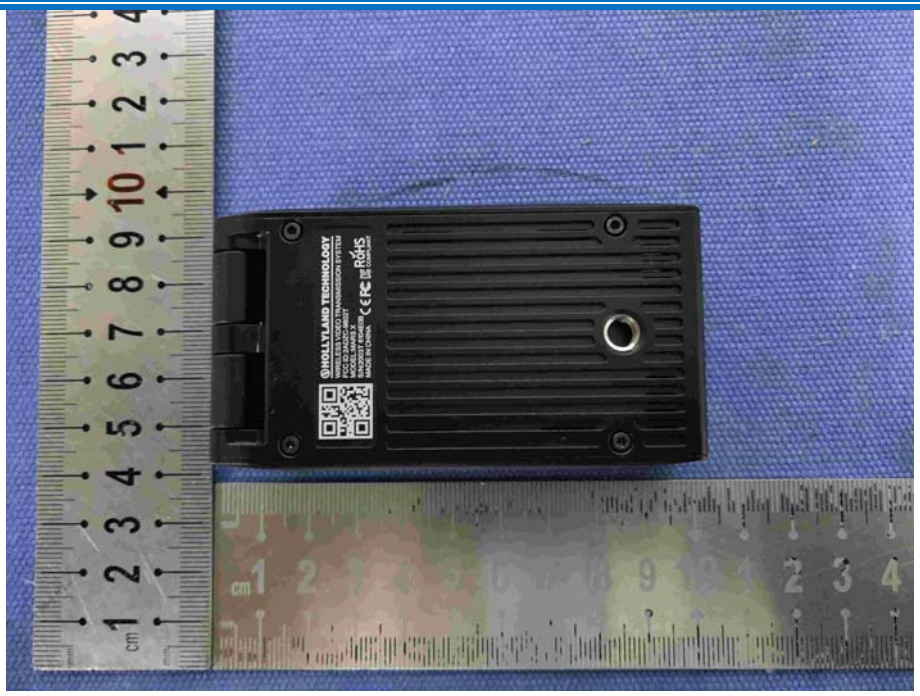
30MHz~1GHz:

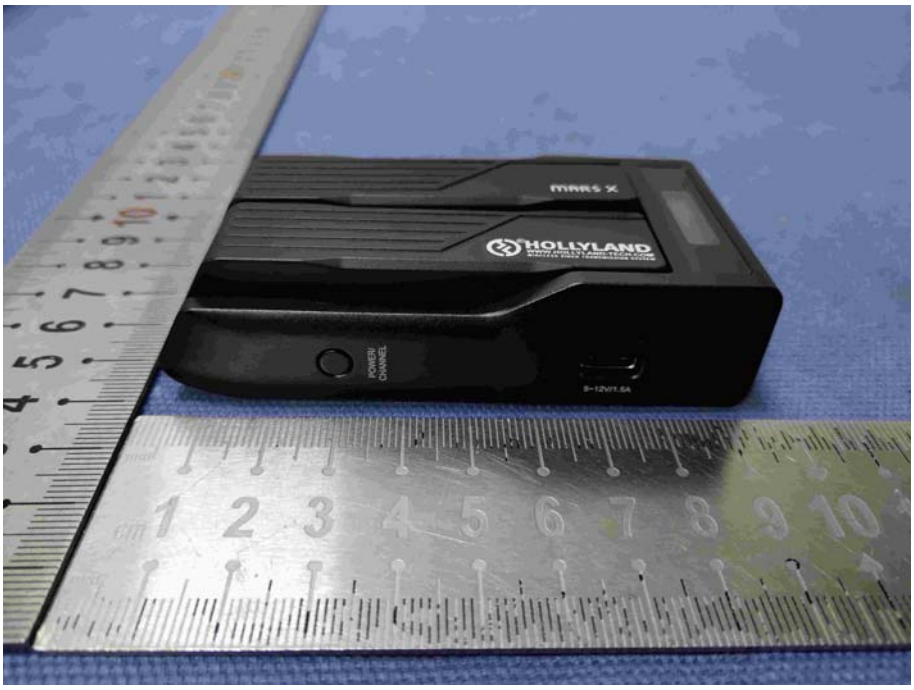
Above 1GHz:

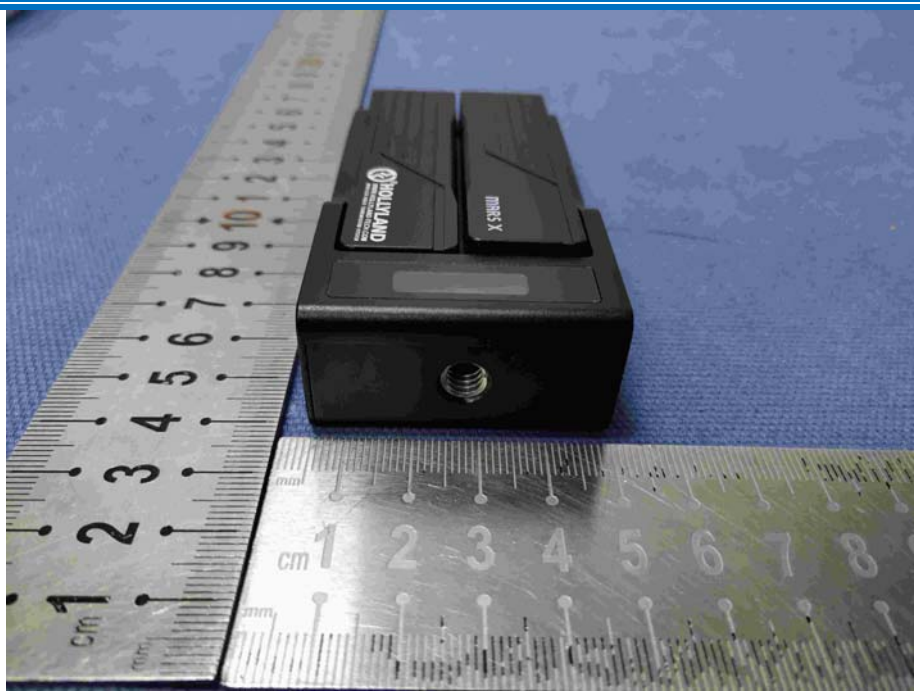


6.2 Conducted emission Test Setup

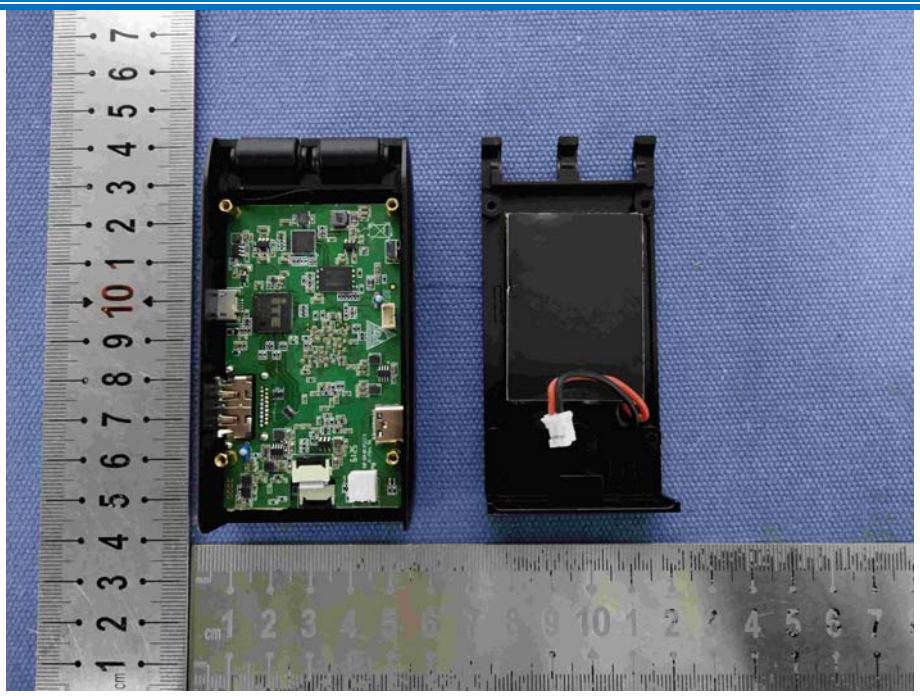
6.3 EUT Constructional Details

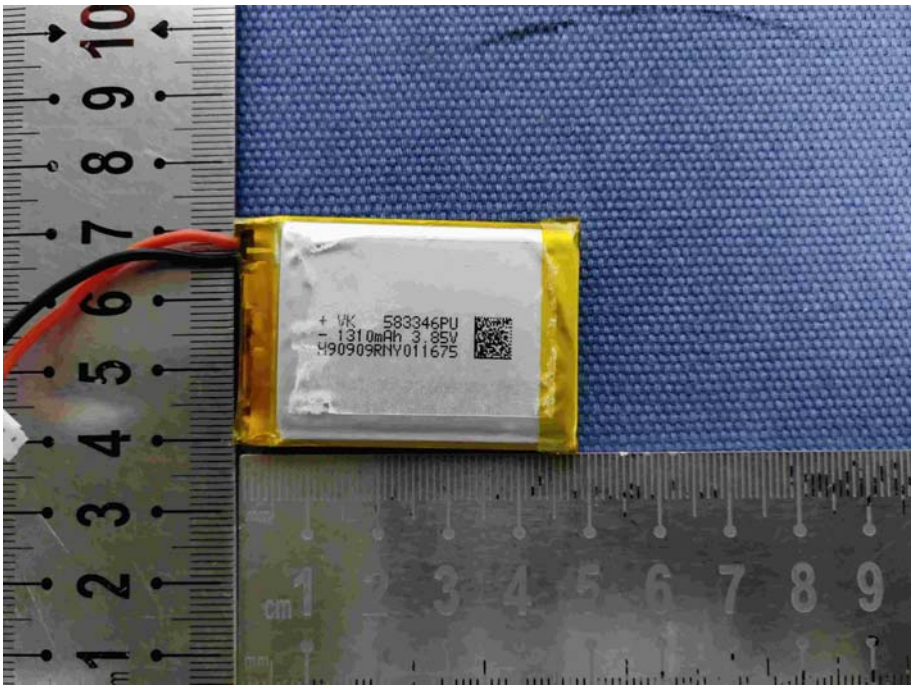

HOLLYLAND TECHNOLOGY
RoHS

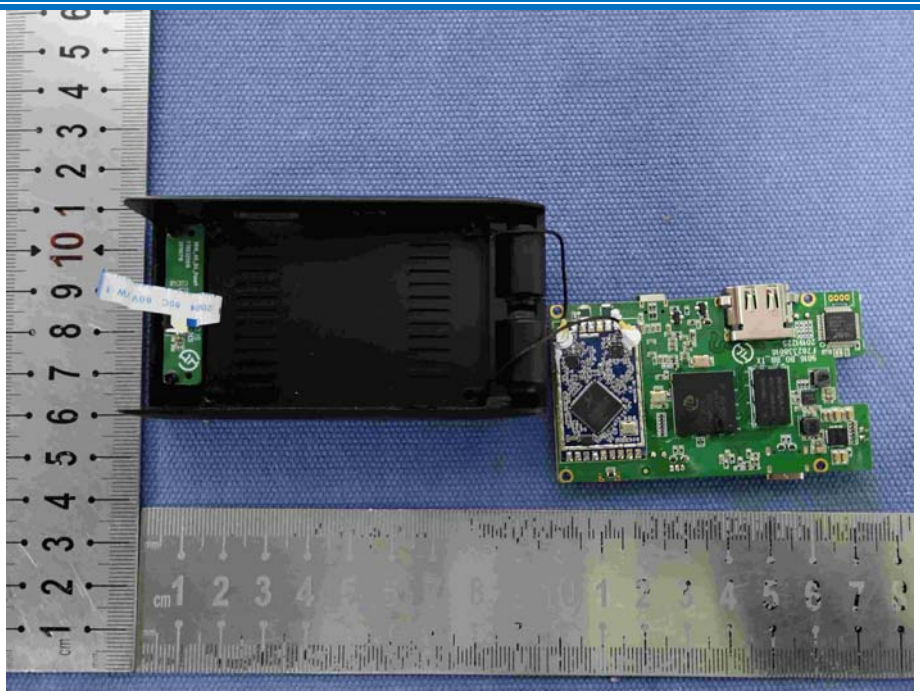

MARS X
HOLLYLAND

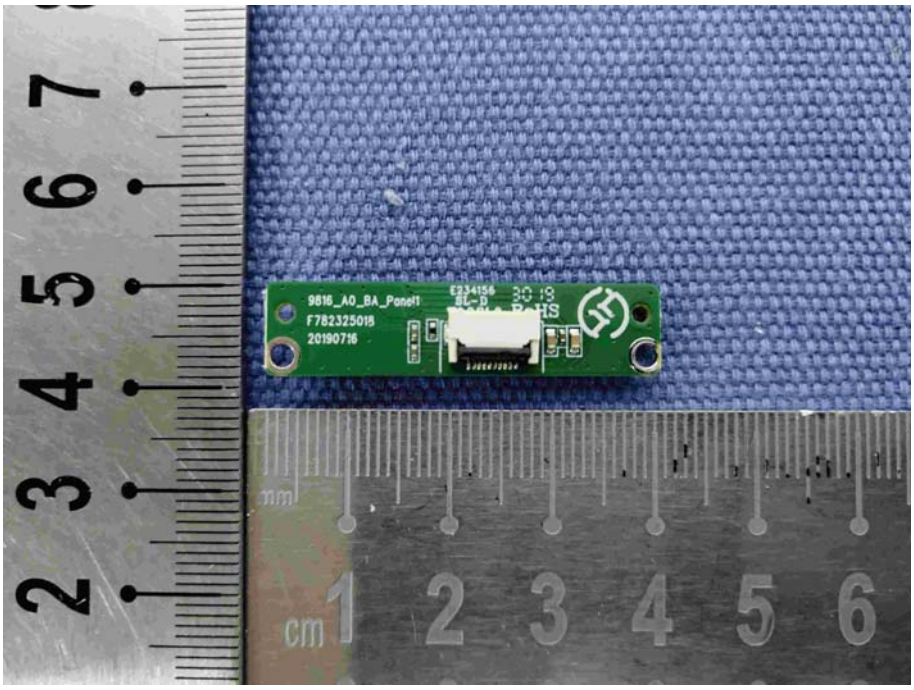

ROLLYLAND
MARS X

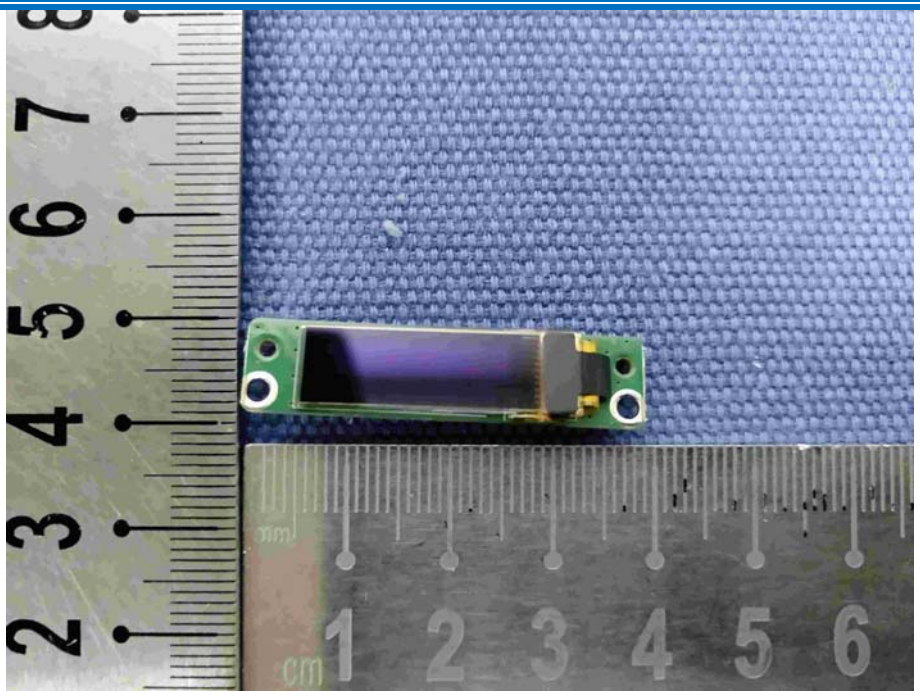

ROLLYLAND
MARS X

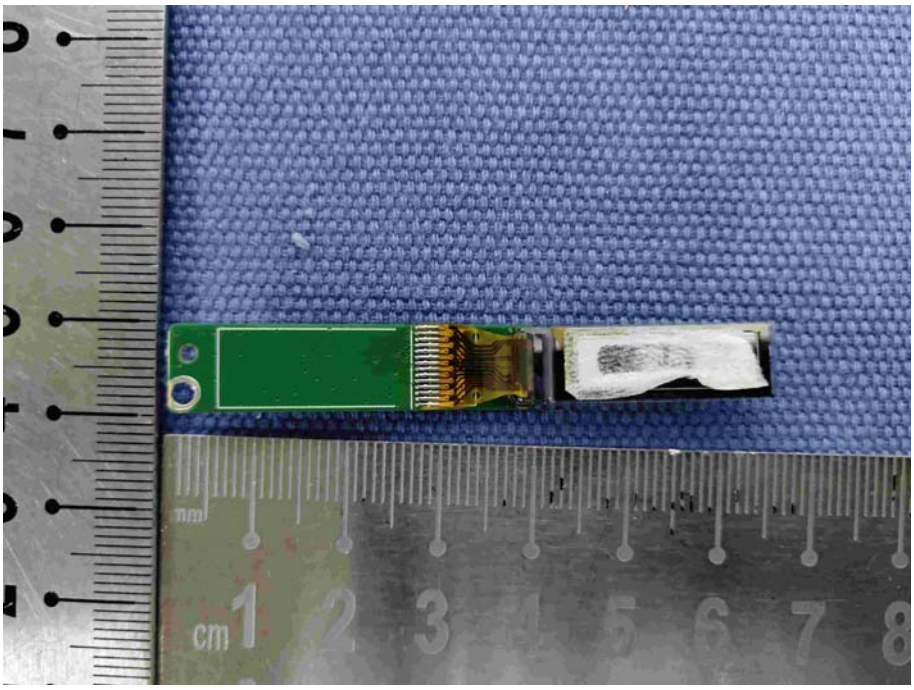


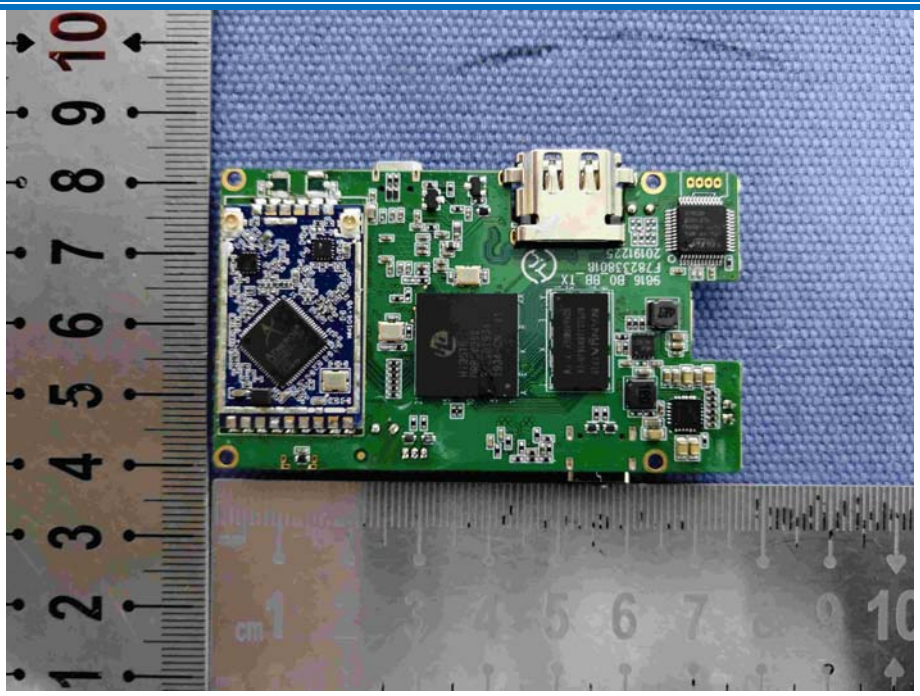

+ VK 583346PU
- 1310mAh 3.85V
Y90909RNV011675

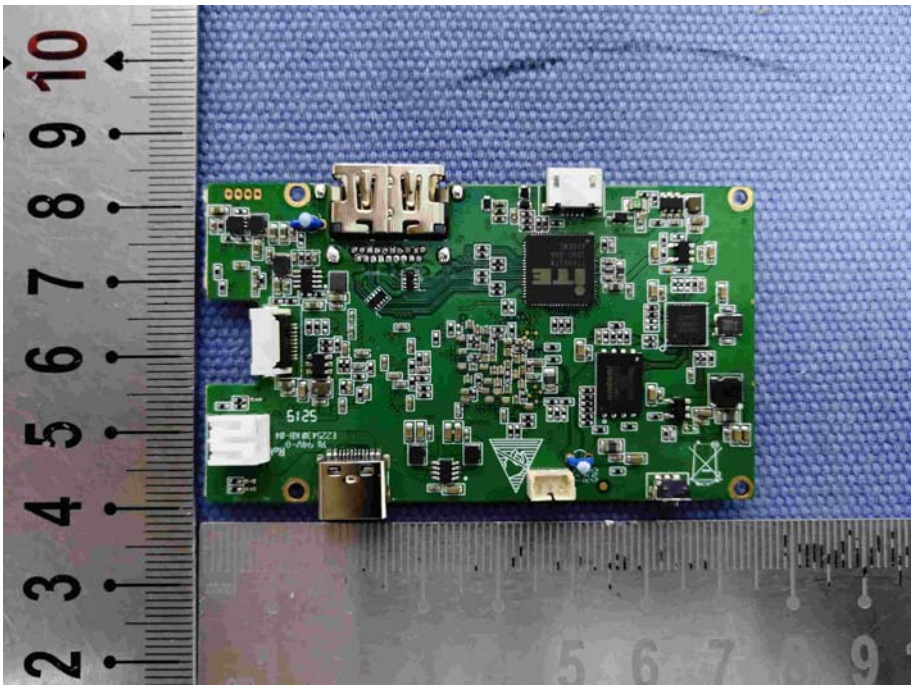


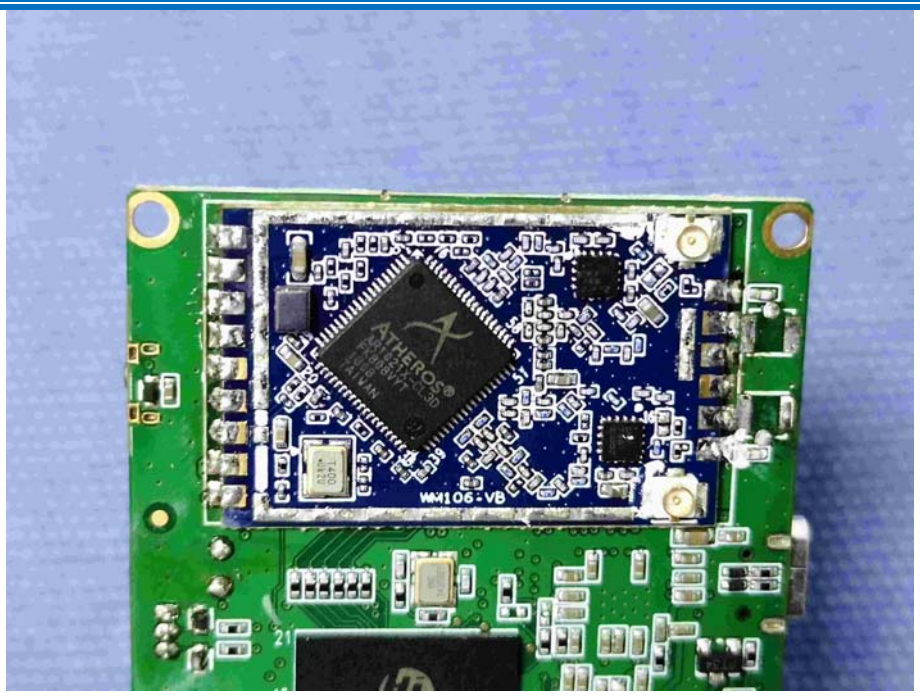

9816_A0_BA_Panel1
F782325018
20190716


cm
1 2 3 4 5 6


cm
1 2 3 5 6 7 8







END OF THE REPORT