Shenzhen Huatongwei International Inspection Co., Ltd.
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TEST REPORT

Report No. ..... :	**CHTEW19120128**	Report Verification :
Project No……:	**SHT1912027502EW**	
FCC ID ..... :	**SIP-5695-C**	
Applicant's name ..... :	**MegaGain International Ltd.**	
Address.....:	Rm 904-905, Greenfield Tower, Concordia Plaza,1 Science Museum Road, T.S.T. East. Kowloon. HongKong	
Manufacturer.....:	MegaGain International Ltd.	
Address.....:	Rm 904-905, Greenfield Tower, Concordia Plaza,1 Science Museum Road, T.S.T. East. Kowloon. HongKong	
Test item description ..... :	**CARS STRM RC BSTR PK S20**	
Trade Mark .....:	Disney	
Model/Type reference.....:	5695-C	
Listed Model(s) .....:	-	
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart C Section 15.249**	
Date of receipt of test sample……..:	Dec.11, 2019	
Date of testing……...:	Dec.11, 2019 - Dec.19, 2019	
Date of issue……...:	Dec.20, 2019	
Result..... ……..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators Yueming Li	Yueming.Li
Supervised by (position+printedname+signature)....:	Project Engineer Kiki Kong	Kiki Kong
Approved by (position+printedname+signature)....:	RF Manager Hans Hu	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

Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2019-12-20	Original

2 . TEST DESCRIPTION

Report clause	Test Item	Standard Requirement	Result	Test Engineer
5.1	Antenna Requirement	15.203	PASS	Jiongsheng Feng
5.2	AC Conducted Emission	15.207	N/A	N/A
5.3	20dB Bandwidth	15.215/15.249	PASS	Jiongsheng Feng
5.4	Field strength of the Fundamental signal	15.249(a)	PASS	Jiongsheng Feng
5.5	Radiated Band Edge Emission	15.249(a)15.205/15.209	PASS	Pan Xie
5.6	Radiated Spurious Emission	15.249(d)15.205/15.209	PASS	Pan Xie

Note:

– The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	MegaGain International Ltd.
Address:	Rm 904-905, Greenfield Tower, Concordia Plaza,1 Science Museum Road, T.S.T. East. Kowloon. HongKong
Manufacturer:	MegaGain International Ltd.
Address:	Rm 904-905, Greenfield Tower, Concordia Plaza,1 Science Museum Road, T.S.T. East. Kowloon. HongKong

3.2. Product Description

Name of EUT:	CARS STRM RC BSTR PK S20
Trade Mark:	Disney
Model No.:	5695-C
Listed Model(s):	-
Power supply:	DC 6.0V
Adapter information:	-
Hardware Version:	V1
Software Version:l	V1

3.3. Radio Specification Description

Operation frequency:	2420~2462MHz
Channel number:	21
Modulation Type:	GFSK
Antenna type:	Monopole antenna
Antenna gain:	0dBi

3.4. 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	
Qualifications	Type	Accreditation Number
	CNAS	L1225
	A2LA	3902.01
	FCC	762235
	Canada	5377A

4. TEST CONFIGURATION

4.1. Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the below gray bottom.

Channel	Frequency (MHz)
CH_L	2420
CH_M	2440
CH_H	2462

4.2. Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For Radiated spurious emissions test item:
The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data recorded in the report. During all testing, the product is powered by new batterys.

4.3. 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.

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

Whether support unit is used?					
✓ No					
Item	Equipement	Trade Name	Model No.	FCC ID	Power cord
1					
2					

4.4. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

4.5. Measurement uncertainty

Test Item	Measurement Uncertainty
AC Conducted Emission (150kHz~30MHz)	3.02 dB
Radiated Emission (30MHz~1000MHz	4.90 dB
Radiated Emissions (1GHz~25GHz)	4.96 dB
Peak Output Power	0.51 dB
Power Spectral Density	0.51 dB
Conducted Spurious Emission	0.51 dB
6dB Bandwidth	70 Hz

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

4.6. Equipment 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	2019/10/26	2020/10/25
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2019/10/23	2020/10/22
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2019/10/23	2020/10/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLEX_142	EF-NM-BNCM-2M	2019/10/23	2020/10/22
●	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	2019/10/26	2020/10/25
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2018/04/02	2021/04/01
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2017/04/05	2020/04/04
●	Pre-Amplifer	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2019/11/14	2020/11/13
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2019/08/21	2020/08/20
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX 104	501184/4	2019/05/27	2020/05/26
●	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	N/A	2018/09/27	2021/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2019/10/26	2020/10/25
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2017/04/01	2020/03/31
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	25841	2017/03/27	2020/03/26
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2018/10/11	2021/10/10
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2019/11/14	2020/11/13
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2019/05/23	2020/05/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

●	RF Conducted Method					
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	FSV40	100048	2019/10/26	2020/10/25
●	Spectrum Analyzer	Agilent	N9020A	MY50510187	2019/10/26	2020/10/25
○	Radio communication tester	R&S	CMW500	137688-Lv	2019/10/26	2020/10/25

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

Requirement

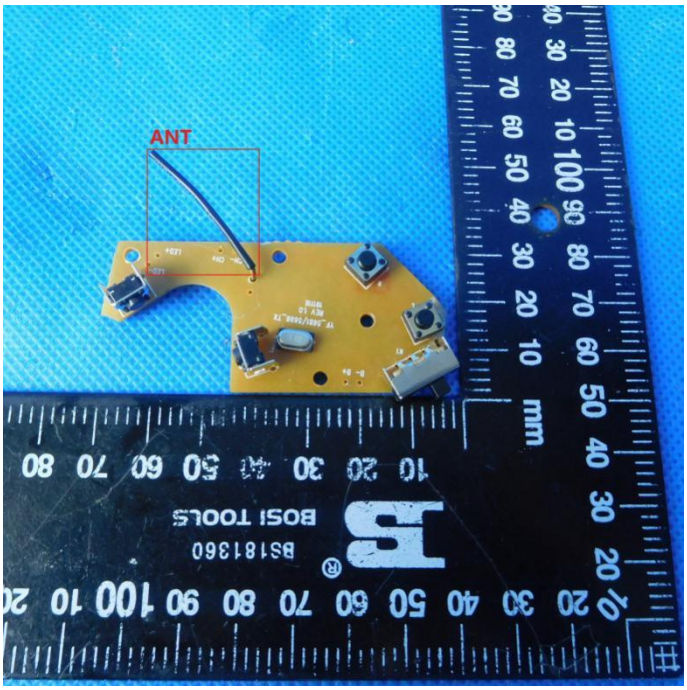
FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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.

\TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

The antenna type is a monopole antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. AC Conducted Emissions

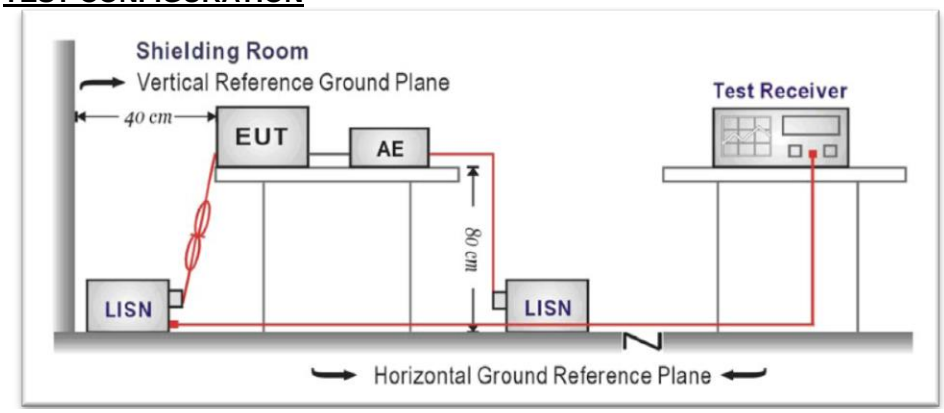
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

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 C63.10:2013
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 4.2

TEST RESULTS

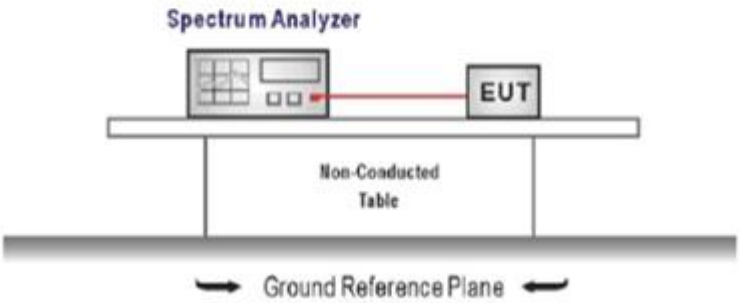
☐ **Passed** ☒ **Not Applicable**

5.3. 20 dB bandwidth

Limit

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
   Center Frequency = channel center frequency
   Span= approximately 2 to 3 times the 20 dB bandwidth
   RBW = 100 kHz, VBW ≥ 3 × RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

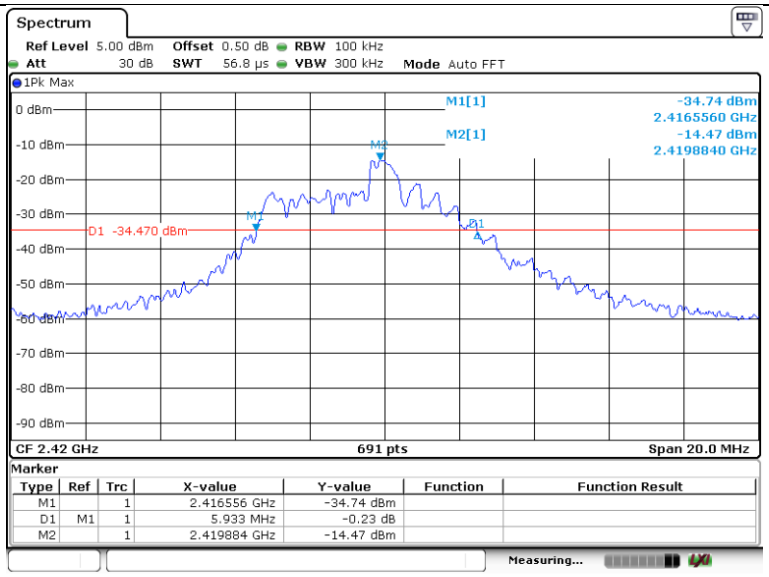
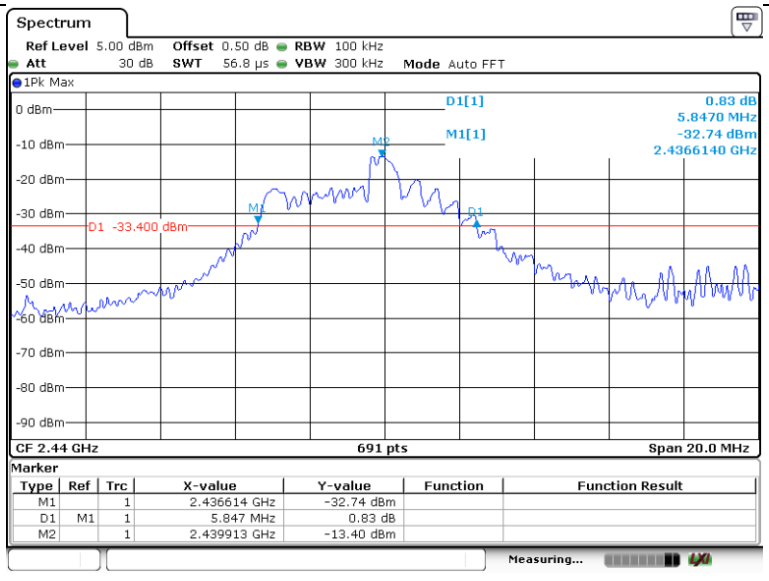
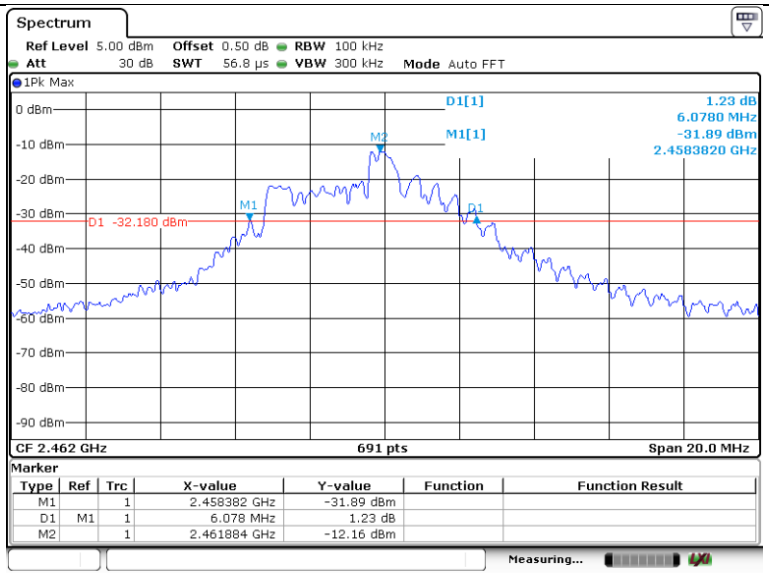
TEST MODE:

Please refer to the clause 4.2

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Test Channel	20dB Bandwidth (MHz)	Limit (MHz)	Result
CH_L	5.933	-	Pass
CH_M	5.847	-	Pass
CH_H	6.078	-	Pass

CH_L	 Spectrum Ref Level 5.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 56.8 µs VBW 300 kHz Mode Auto FFT 1Pk Max M1[1] -34.74 dBm 2.4165560 GHz M2[1] -14.47 dBm 2.4198840 GHz D1 -34.470 dBm CF 2.42 GHz 691 pts Span 20.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.416556 GHz -34.74 dBm D1 M1 1 5.933 MHz -0.23 dB M2 1 2.419884 GHz -14.47 dBm Measuring... Date: 19.DEC.2019 13:44:57
CH_M	 Spectrum Ref Level 5.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 56.8 µs VBW 300 kHz Mode Auto FFT 1Pk Max D1[1] 0.83 dB 5.8470 MHz M1[1] -32.74 dBm 2.4366140 GHz D1 -33.400 dBm CF 2.44 GHz 691 pts Span 20.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.436614 GHz -32.74 dBm D1 M1 1 5.847 MHz 0.83 dB M2 1 2.439913 GHz -13.40 dBm Measuring... Date: 19.DEC.2019 13:50:05
CH_H	 Spectrum Ref Level 5.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 56.8 µs VBW 300 kHz Mode Auto FFT 1Pk Max D1[1] 1.23 dB 6.0780 MHz M1[1] -31.89 dBm 2.4583820 GHz D1 -32.180 dBm CF 2.462 GHz 691 pts Span 20.0 MHz Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.458382 GHz -31.89 dBm D1 M1 1 6.078 MHz 1.23 dB M2 1 2.461884 GHz -12.16 dBm Measuring... Date: 19.DEC.2019 13:54:17

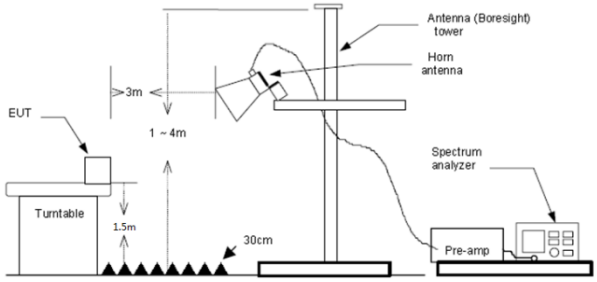
5.4. Radiated field strength of the fundamental signal

LIMIT

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
2400-2483.5 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
5725-5875 MHz	50 (94dBuV/m @3m)	500 (54dBuV/m @3m)
24.0-24.25 GHz	250 (108dBuV/m @3m)	2500 (68dBuV/m @3m)

Frequencies above 1000 MHz, the field strength limits are based on average limits

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned 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. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. Use the following spectrum analyzer settings:

   RBW=10MHz, VBW=10MHz Peak detector for Peak value.
   RBW=10MHz, VBW=10MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 4.2

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level

CHL

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2419.782	55.42	35.42	90.84	114.00	23.16	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2420.000	54.89	35.42	90.31	94.00	3.69	Horizontal	AV

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2419.660	50.57	35.42	85.99	114.00	28.01	Vertical	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2419.665	49.61	35.42	85.03	94.00	8.97	Vertical	AV

CHM

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2440.005	56.49	35.39	91.88	114.00	22.12	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2440.172	55.55	35.39	90.94	94.00	3.06	Horizontal	AV

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2439.875	52.71	35.39	88.10	114.00	25.90	Vertical	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2439.640	52.00	35.39	87.39	94.00	6.61	Vertical	AV

CH$_H$

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2461.877	56.54	35.35	91.89	114.00	22.11	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2461.665	56.36	35.35	91.71	94.00	2.29	Horizontal	AV

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2461.602	51.56	35.35	86.91	114.00	27.09	Vertical	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2461.612	51.04	35.35	86.39	94.00	7.61	Vertical	AV

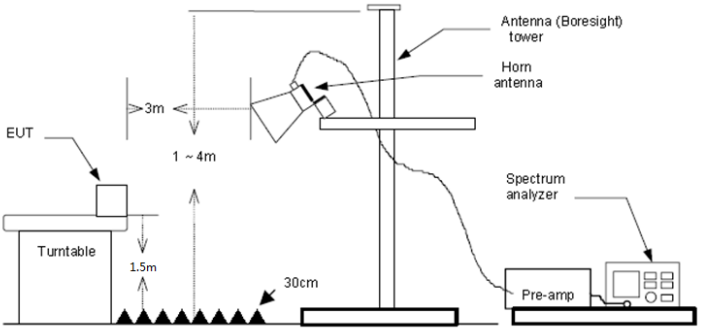
5.5. Radiated Band edge Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, Radiated Emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the Radiated Emissions limits specified in §15.209(a) (see §15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned 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. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.
5. Use the following spectrum analyzer settings:
   a) Span shall wide enough to fully capture the emission being measured
   b) Set RBW=100kHz for <1GHz, VBW=3*RBW, Sweep time=auto, Detector=peak, Trace=max hold
   c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

      For average measurement:

      – VBW=10Hz, When duty cycle is no less than 98 percent
      – VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting .

TEST MODE:

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

Note:

3) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
4) Margin = Limit – Level
5) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m).

CHL

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2310.000	22.51	35.78	58.29	74.00	15.71	Horizontal	PK
2	2390.028	22.65	35.50	58.15	74.00	15.85	Horizontal	PK

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2310.000	12.31	35.78	48.09	54.00	5.91	Horizontal	AV
2	2390.028	11.96	35.50	47.46	54.00	6.54	Horizontal	AV

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2310.000	22.11	35.78	57.89	74.00	16.11	Vertical	PK
2	2390.028	22.07	35.50	57.57	74.00	16.43	Vertical	PK

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	2310.000	12.39	35.78	48.17	54.00	5.83	Vertical	AV
2	2390.028	12.14	35.50	47.64	54.00	6.36	Vertical	AV

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
3	2400.090	22.31	35.46	57.77	74.00	16.23	Horizontal	PK
3	2400.090	11.93	35.46	47.39	54.00	6.61	Horizontal	AV

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
3	2400.090	23.30	35.46	58.76	74.00	15.24	Vertical	PK
3	2400.090	11.87	35.46	47.33	54.00	6.67	Vertical	AV

CH$_H$

Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2483.531	22.76	35.31	58.07	74.00	15.93	Horizontal	PK
2	2500.000	22.07	35.28	57.35	74.00	16.65	Horizontal	PK

Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2483.531	11.91	35.31	47.22	54.00	6.78	Horizontal	AV
2	2500.000	11.64	35.28	46.92	54.00	7.08	Horizontal	AV

Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2483.531	23.36	35.31	58.67	74.00	15.33	Vertical	PK
2	2500.000	23.37	35.28	58.65	74.00	15.35	Vertical	PK

Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	2483.531	11.85	35.31	47.16	54.00	6.84	Vertical	AV
2	2500.000	11.83	35.28	47.11	54.00	6.89	Vertical	AV

5.6. Radiated Spurious Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

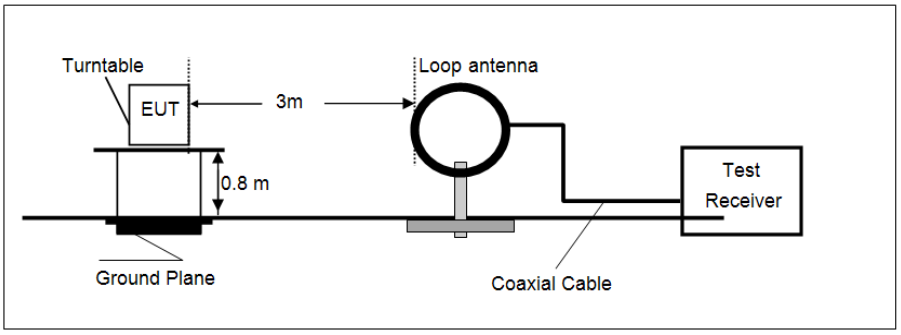
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

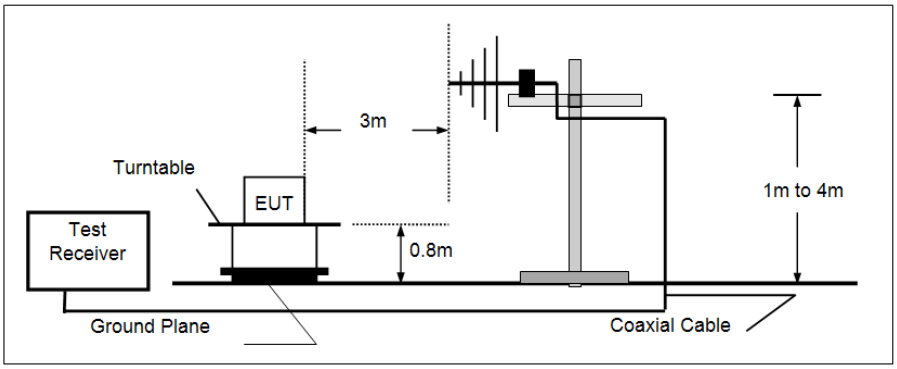
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

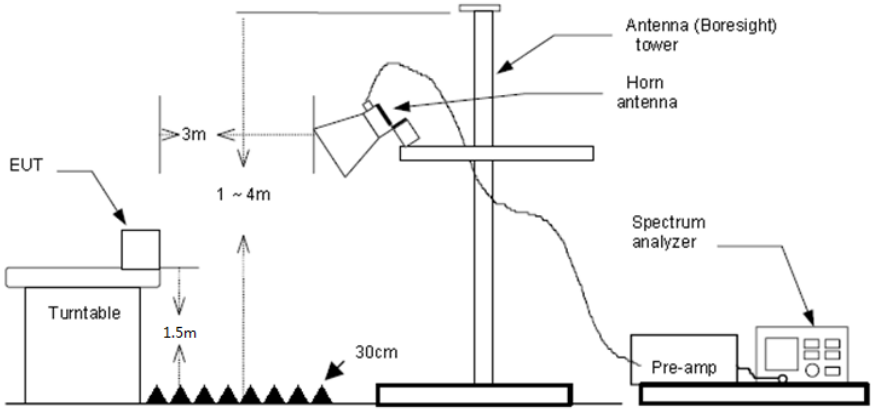
- 9 kHz ~ 30 MHz



- 30 MHz ~ 1 GHz



- Above 1 GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Below 1 GHz:
   RBW=120 kHz, VBW=300 kHz, 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) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement
   For average measurement:
   – VBW=10Hz, When duty cycle is no less than 98 percent

VBW≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting.

TEST MODE:

Please refer to the clause 4.2

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

Note:

1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level
3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

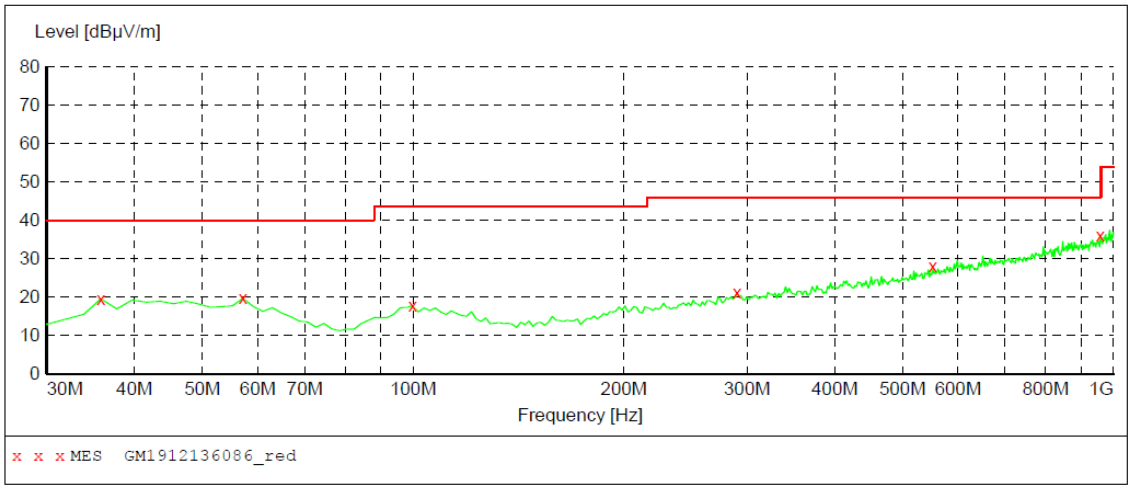
TEST DATA FOR 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

TEST DATA FOR 30 MHz ~ 1000 MHz

Have pre-scan all test channel, found CH_H which it was worst case, so only show the worst case's data on this report.

Polarization:	Vertical

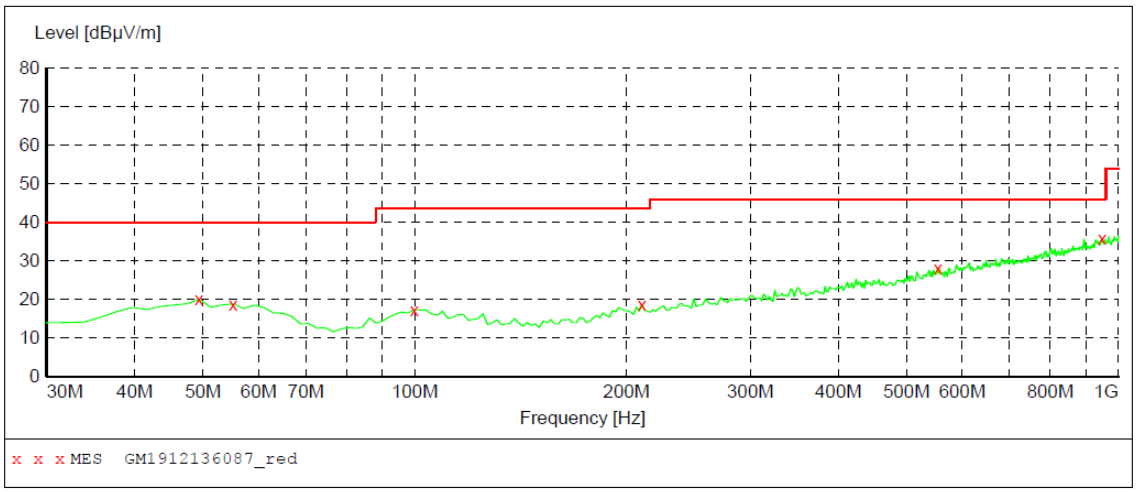


MEASUREMENT RESULT: "GM1912136086_red"

12/13/2019 6:17PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	19.50	-11.2	40.0	20.5	QP	100.0	219.00	VERTICAL
57.160000	19.70	-8.7	40.0	20.3	QP	100.0	196.00	VERTICAL
99.840000	17.70	-10.3	43.5	25.8	QP	100.0	257.00	VERTICAL
289.960000	21.10	-6.6	46.0	24.9	QP	100.0	168.00	VERTICAL
551.860000	28.10	0.2	46.0	17.9	QP	100.0	132.00	VERTICAL
957.320000	36.00	8.3	46.0	10.0	QP	100.0	82.00	VERTICAL

Polarization:	Horizontal



MEASUREMENT RESULT: "GM1912136087_red"

12/13/2019 6:21PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	20.00	-8.9	40.0	20.0	QP	100.0	261.00	HORIZONTAL
55.220000	18.80	-8.4	40.0	21.2	QP	300.0	39.00	HORIZONTAL
99.840000	17.30	-10.3	43.5	26.2	QP	100.0	165.00	HORIZONTAL
210.420000	18.80	-9.9	43.5	24.7	QP	100.0	107.00	HORIZONTAL
553.800000	28.00	0.2	46.0	18.0	QP	100.0	277.00	HORIZONTAL
947.620000	35.80	8.1	46.0	10.2	QP	300.0	102.00	HORIZONTAL

TEST DATA FOR 1 GHz ~ 25 GHz

CH$_L$

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1177.718	36.07	-6.07	30.00	74.00	44.00	Horizontal	PK
2	3173.750	34.02	0.70	34.72	74.00	39.28	Horizontal	PK
3	4718.875	31.35	6.51	37.86	74.00	36.14	Horizontal	PK
4	6753.093	31.39	13.33	44.72	74.00	29.28	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1195.343	35.50	-5.88	29.62	74.00	44.38	Vertical	PK
2	3060.656	34.74	0.15	34.89	74.00	39.11	Vertical	PK
3	4527.937	32.07	5.47	37.54	74.00	36.46	Vertical	PK
4	6654.687	31.70	13.33	45.03	74.00	28.97	Vertical	PK

CH$_M$

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1215.906	35.30	-5.79	29.51	74.00	44.49	Horizontal	PK
2	3156.125	34.32	0.61	34.93	74.00	39.07	Horizontal	PK
3	4878.968	34.44	7.15	41.59	74.00	32.41	Horizontal	PK
4	7085.031	31.25	14.39	45.64	74.00	28.36	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1212.968	35.76	-5.80	29.96	74.00	44.04	Vertical	PK
2	3204.593	33.48	0.79	34.27	74.00	39.73	Vertical	PK
3	4848.125	31.41	7.11	38.52	74.00	35.48	Vertical	PK
4	6720.781	31.43	13.41	44.84	74.00	29.16	Vertical	PK

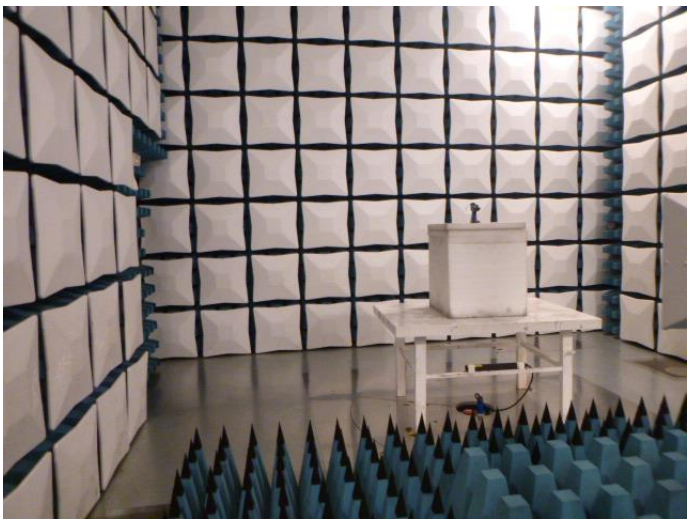
CH$_H$

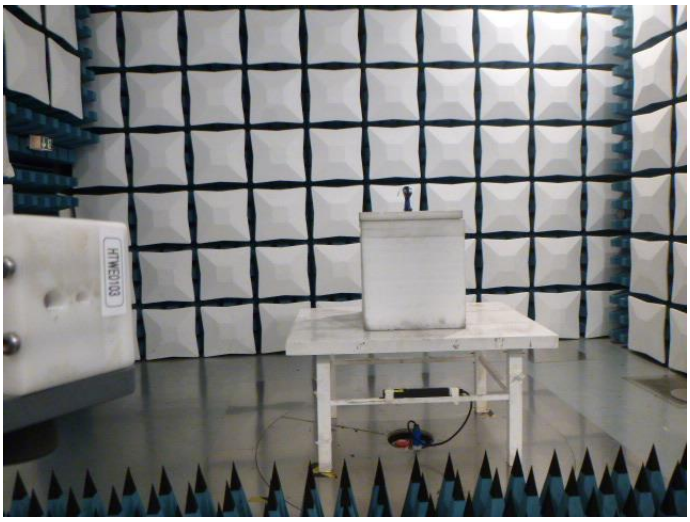
Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1198.281	35.15	-5.85	29.30	74.00	44.70	Horizontal	PK
2	3106.187	33.88	0.35	34.23	74.00	39.77	Horizontal	PK
3	4924.500	33.10	7.34	40.44	74.00	33.56	Horizontal	PK
4	6927.875	31.00	14.12	45.12	74.00	28.88	Horizontal	PK

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	1177.718	35.69	-6.07	29.62	74.00	44.38	Vertical	PK
2	3142.906	33.57	0.54	34.11	74.00	39.89	Vertical	PK
3	4889.250	31.39	7.17	38.56	74.00	35.44	Vertical	PK
4	6626.781	31.49	13.24	44.73	74.00	29.27	Vertical	PK

6. TEST SETUP PHOTOS OF THE EUT

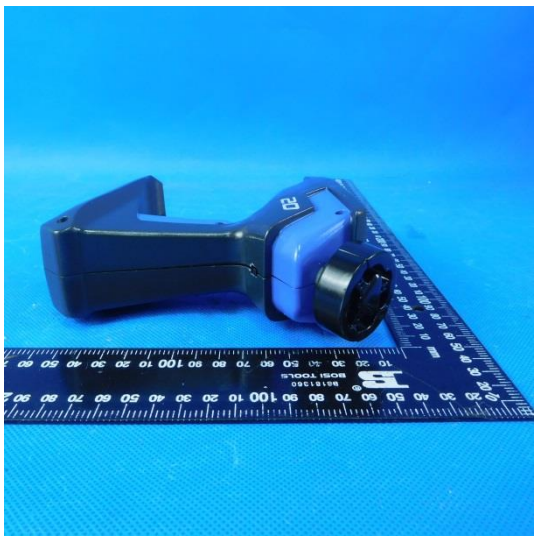
Radiated Emissions

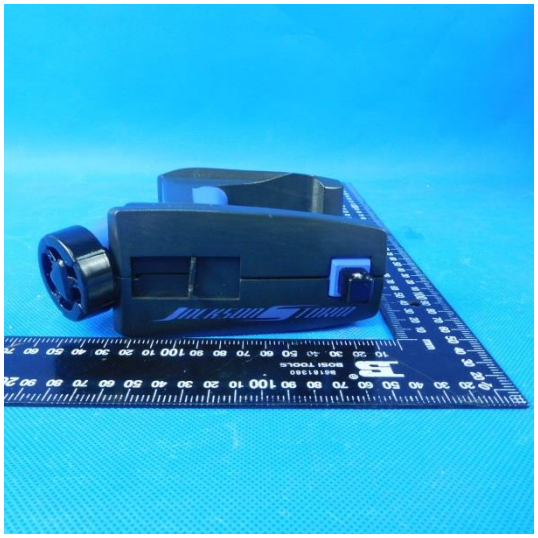


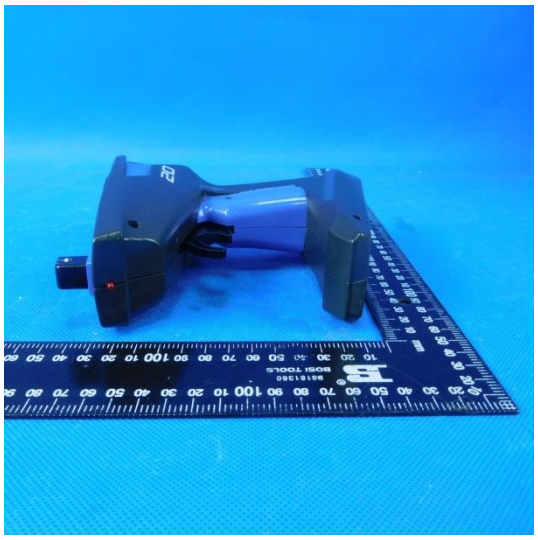


7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

External Photos





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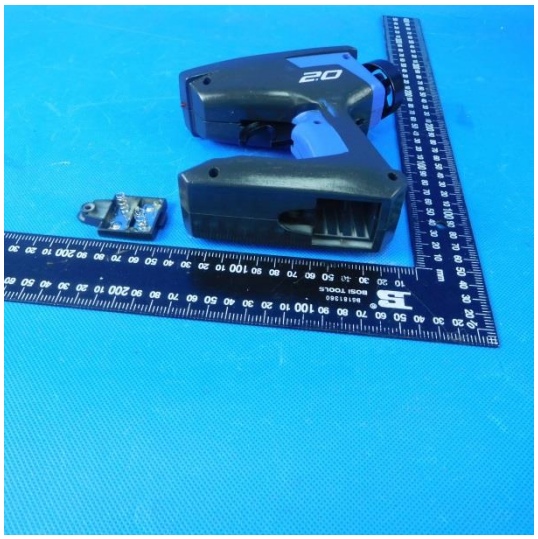
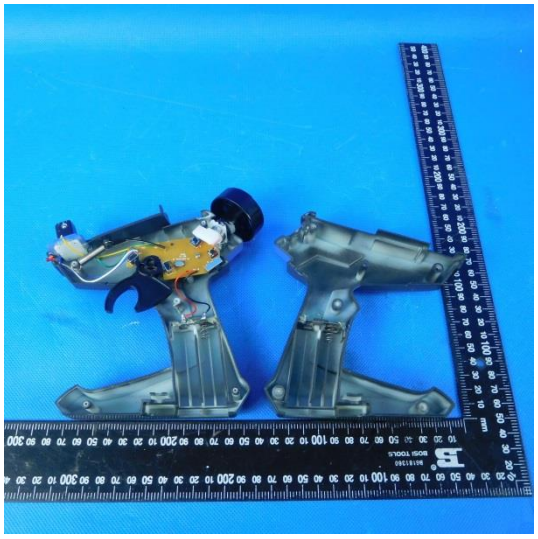
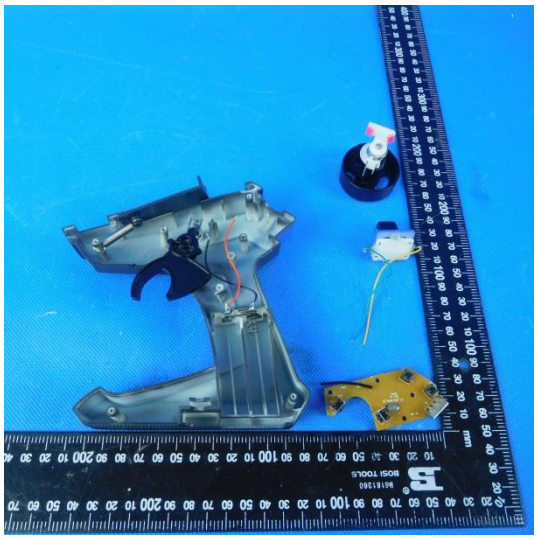
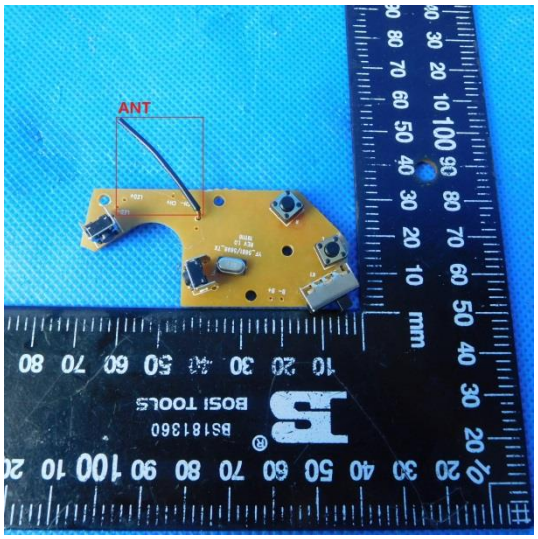
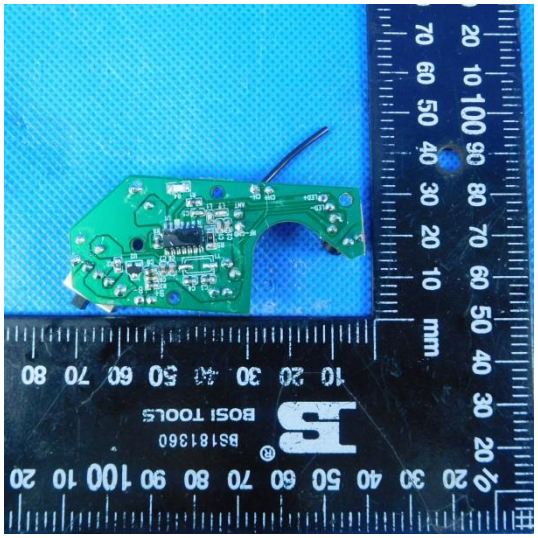
Internal Photos











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