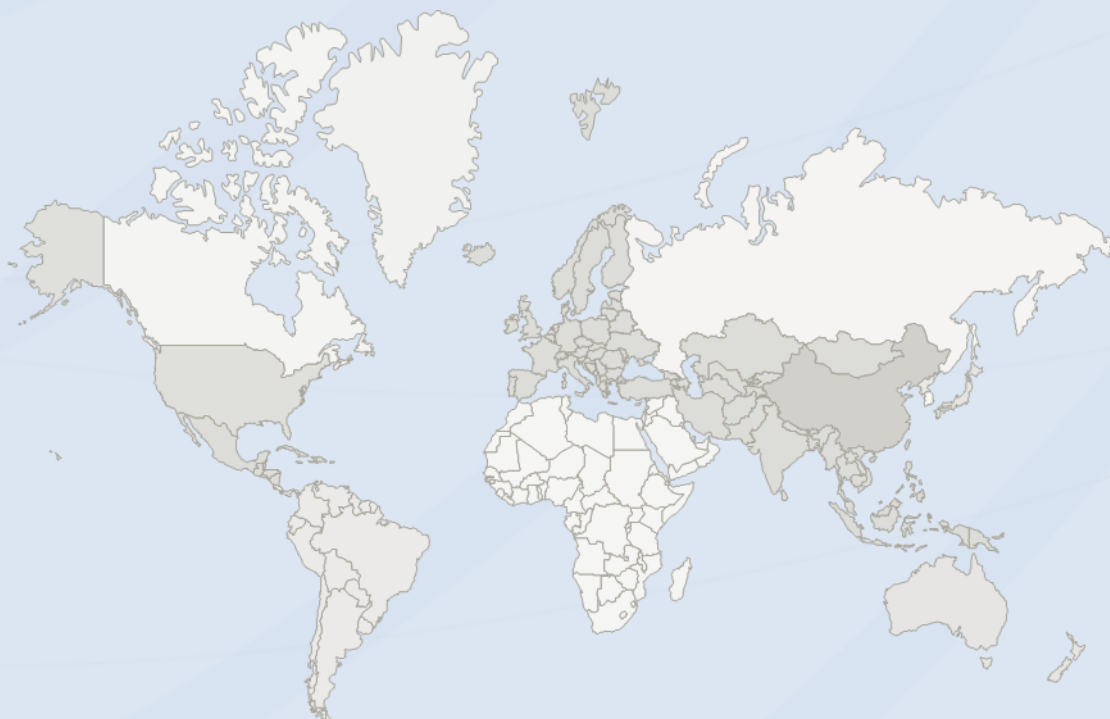


TEST REPORT

Report No. : NTC-ER2101024

Applicant's name : ETI Solid State Lighting (Zhuhai) Ltd

Address : No.1, Zhongzhu Road South, Science & Technology
Innovation Coast, High Tech District, Zhuhai City,
Guangdong Prov., China



DONGGUAN NEW TESTING CENTRE CO., LTD

Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China, 523808

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E-mail: dave@ntc-cert.com

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TEST REPORT DECLAREp

FCC ID	:	XZH-MC054V-RC-2D
Applicant	:	ETI Solid State Lighting (Zhuhai) Ltd
Address	:	No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China
EUT Name	:	Lighting Control Switch
Model No	:	MC054V-RC-2X, where "X=A to Z" (All the same except model name and way to install)
Trade mark	:	N/A
Manufacturer	:	ETI Solid State Lighting (Zhuhai) Ltd
Address	:	No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China
Test Laboratory	:	Dongguan New Testing Centre Co., Ltd
Address	:	3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China, 523808

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C 15.249: 2019, ANSI C63.10:2013.

We Declare:

The equipment described above is tested by Dongguan New Testing Centre Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan New Testing Centre Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above standards.

Report No.:	NTC-ER2101024		
Date of Test:	Dec.10, 2020 to Jan.18, 2021	Date of Report:	Jan.18, 2021

Prepared By:

Jeffrey Zhang
Jeffrey Zhang/Engineer



Dave Gao
Dave Gao/LAB Manager

pNote: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan New Testing Centre Co., Ltd

1. Summary of test results

Description of Test Item	Standard	Results
-20dB Bandwidth	15.215	PASS
Conducted emission test	15.207	PASS
Radiated emission test	15.209 15.249 a) d)	PASS
Antenna requirement	15.203	PASS

2. General test information

2.1. Description of EUT

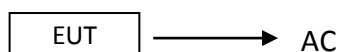
EUT* Name	:	Lighting Control Switch
Test model	:	MC054V-RC-2D
EUT function description	:	Please reference user manual of this device
Power supply	:	AC 120-277V 50/60Hz
Trade mark	:	N/A
Operation frequency	:	5735 – 5855 MHz
Antenna Type	:	PCB antenna
Antenna Gain	:	0 dBi
Hardware Version	:	V1.0
Software Version	:	V1.0

Note: 1,EUT is the ab. of equipment under test.

2.2. Description of test modes

Model	Rating	Note
MC054V-RC-2X	AC 120-277V 50/60Hz	where "X=A to Z" (All the same except model name and way to install)

2.3. Block diagram EUT configuration for test



2.4. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-24°C
Humidity range:	40-75%
Pressure range:	86-106kPa

2.5. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.44dB
Uncertainty for Radiation Emission test (30MHz – 1GHz)	3.14 dB (Polarize: V)
	3.16 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz – 26GHz)	4.27 dB (Polarize: V)
	4.51 dB (Polarize: H)
Uncertainty for Radiation Emission test (26GHz – 40GHz)	4.60 dB (Polarize: V)
	4.63 dB (Polarize: H)
Bandwidth	±1.2%
Stop Transmitting Time Test	±0.5%
Frequency error	5.8×10^{-8}

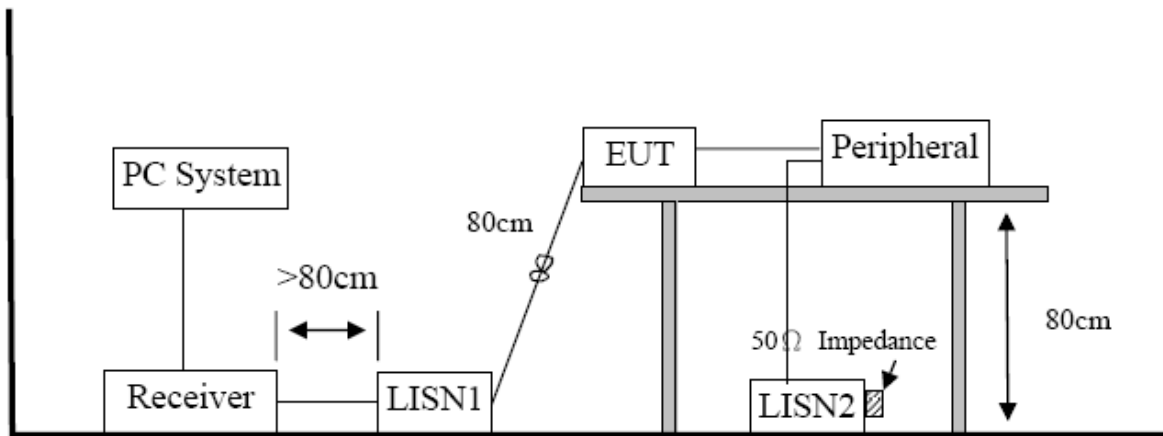
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Power Line Conducted Emission Test

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	R&S	ESPI	100146	2020-12-06	1 Year
2	LISN	R&S	ENV216	3650.6550.06	2020-05-25	1 Year
3	Pulse Limiter	R&S	ESH3-Z2	0357-8810.54	2020-05-25	1 Year
4	RF Cable	HUBER	SUCOFLEX100	30722/4E	2019-05-13	2 Year
5	MEASUREMENT SOFTWARE	FARAD	EZ-EMC(VER:1.1.4.2)	N/A	N/A	N/A

3.2. BLOCK DIAGRAM OF TEST SETUP



3.3. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

3.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 3.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

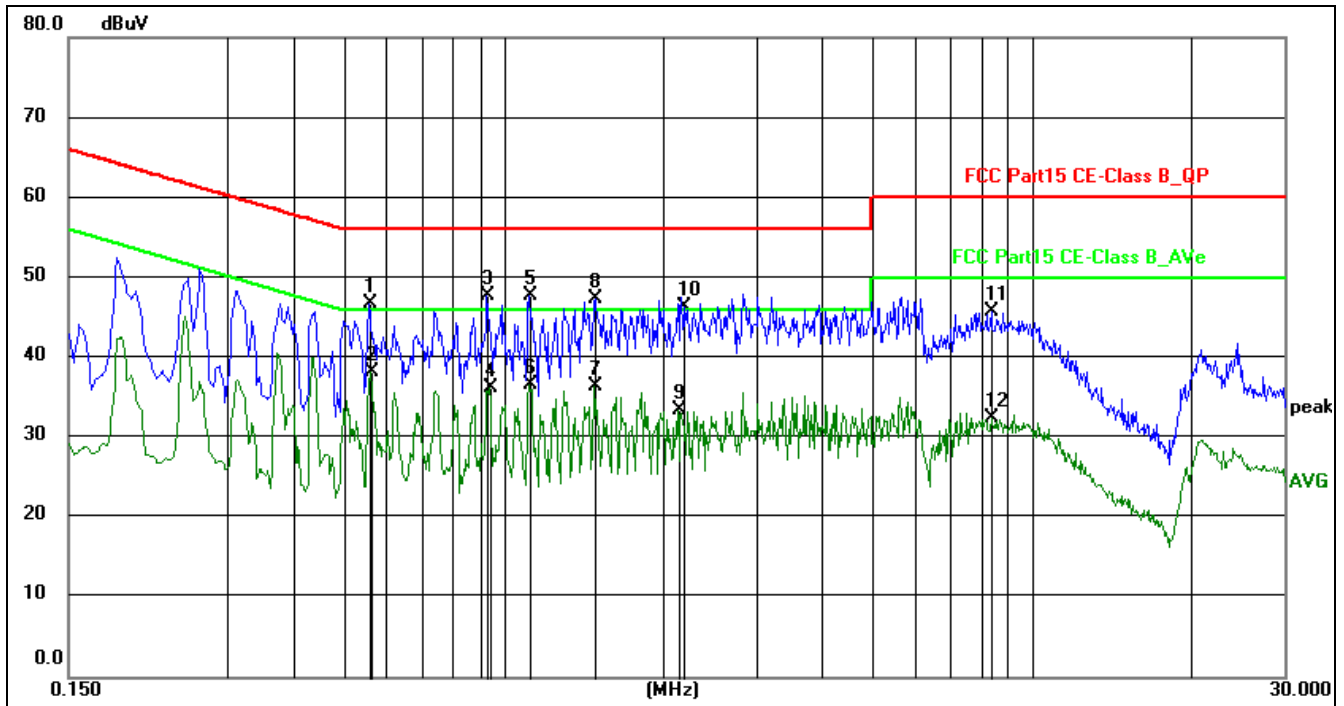
3.5. Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

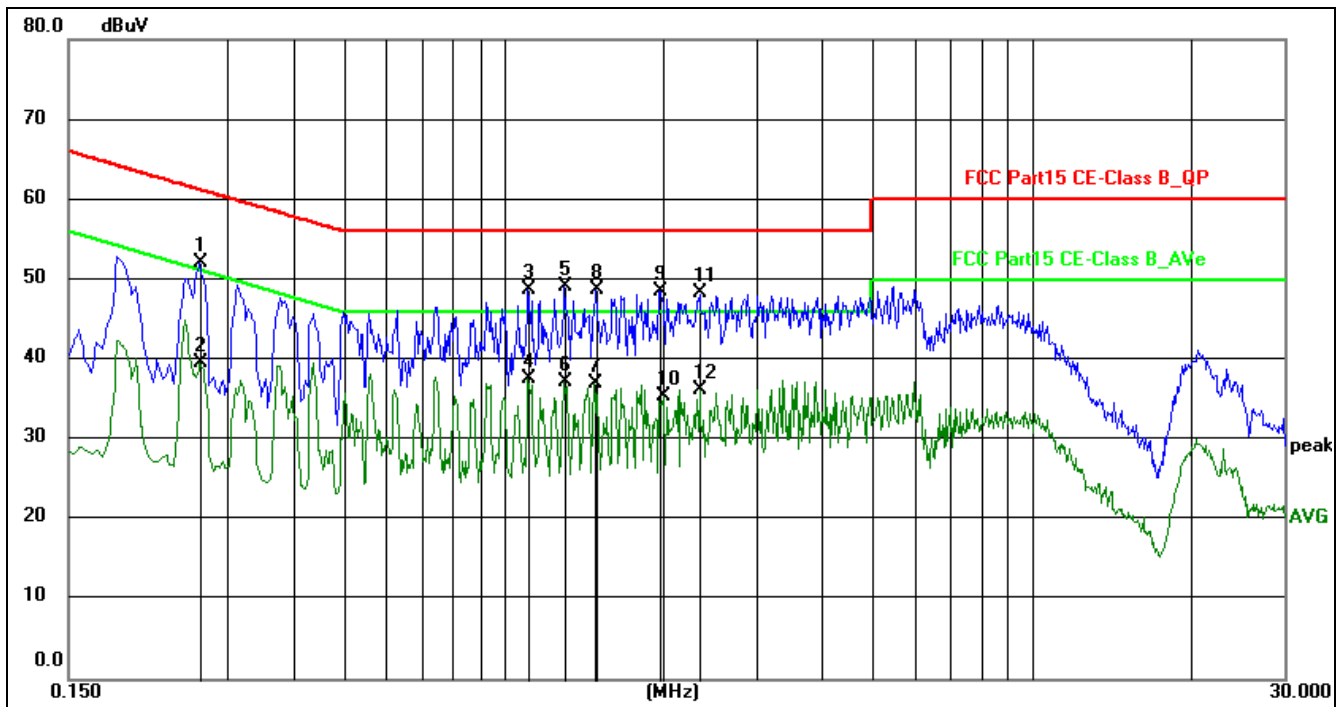
Note2: “-----” means Peak detection; “-----” means Average detection.

Note3: Measurement = Reading Level + Factor, Margin= Measurement-Limit.



Site:	FCC Part15 CE-Class B_QP	Phase:	N	Temperature(C):	24(C)
Limit:	FCC Part15 CE-Class B_QP	Test Time:	2020/12/19	Humidity(%):	63%
EUT:	Lighting Control Switch	Power Rating:	AC120V/60Hz		
M/N.:	MC054V-RC-2D	Test Engineer:			
Mode:	Tx				
Note:					

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1	0.5580	37.16	9.58	46.74	56.00	-9.26	peak	
2 *	0.5620	28.68	9.59	38.27	46.00	-7.73	AVG	
3	0.9300	38.03	9.64	47.67	56.00	-8.33	peak	
4	0.9420	26.67	9.64	36.31	46.00	-9.69	AVG	
5	1.1180	38.18	9.64	47.82	56.00	-8.18	peak	
6	1.1180	26.99	9.64	36.63	46.00	-9.37	AVG	
7	1.4860	26.85	9.66	36.51	46.00	-9.49	AVG	
8	1.4940	37.61	9.66	47.27	56.00	-8.73	peak	
9	2.1379	23.72	9.71	33.43	46.00	-12.57	AVG	
10	2.1900	36.54	9.72	46.26	56.00	-9.74	peak	
11	8.4100	35.86	9.97	45.83	60.00	-14.17	peak	
12	8.4100	22.47	9.97	32.44	50.00	-17.56	AVG	



Site:		Phase: L1	Temperature(C): 24(C)
Limit:	FCC Part15 CE-Class B_QP		Humidity(%): 63%
EUT:	Lighting Control Switch	Test Time:	2020/12/19
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1	0.2660	42.20	9.81	52.01	61.24	-9.23	peak	
2	0.2660	29.73	9.81	39.54	51.24	-11.70	AVG	
3	1.1140	39.17	9.62	48.79	56.00	-7.21	peak	
4	1.1140	28.05	9.62	37.67	46.00	-8.33	AVG	
5 *	1.3060	39.42	9.63	49.05	56.00	-6.95	peak	
6	1.3060	27.53	9.63	37.16	46.00	-8.84	AVG	
7	1.4860	27.33	9.63	36.96	46.00	-9.04	AVG	
8	1.5020	39.14	9.62	48.76	56.00	-7.24	peak	
9	1.9780	38.96	9.63	48.59	56.00	-7.41	peak	
10	2.0100	25.76	9.63	35.39	46.00	-10.61	AVG	
11	2.3500	38.61	9.63	48.24	56.00	-7.76	peak	
12	2.3500	26.62	9.63	36.25	46.00	-9.75	AVG	

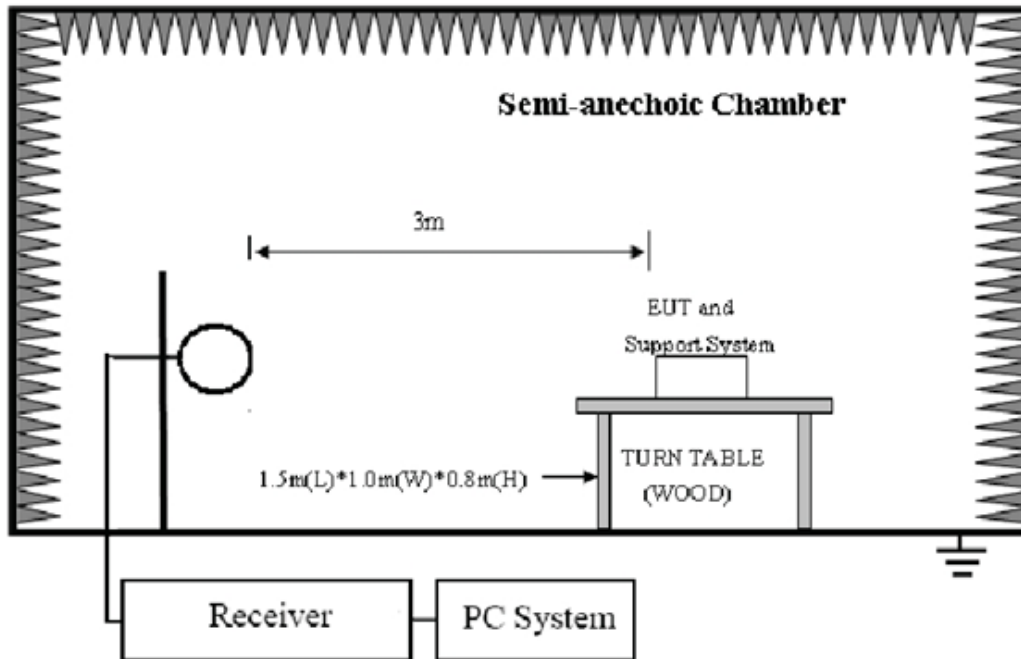
4. Radiated emission test

4.1. Test equipment

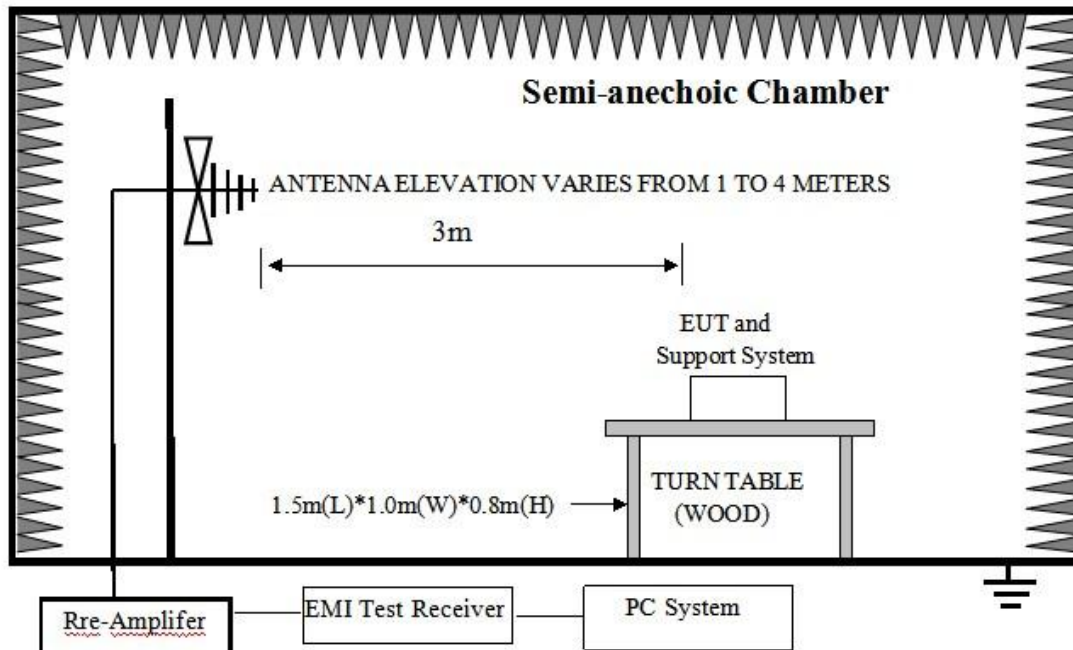
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESR	7250-30406 7528	2020-05-25	1 Year
2	Trilog Broadband Antenna	Schwarzbeck	VULB9168	00969	2019-03-28	2 Year
3	Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	2019-05-23	2 Year
4	Horn antenna	Schwarzbeck	BBHA9120D	453	2019-05-16	2 Year
5	Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	2019-05-16	2 Year
6	Pre-amplifier	R&S	SCU18	105326	2020-05-25	1 Year
7	RF Cable	GORE	OSQ01Q010 78.7	SN1545847 3	2019-05-23	2 Year
8	RF Cable	ESCO	ETS-LINGR EN	RFC-SMS-1 00-SMS-340 -IN	2019-05-23	2 Year
9	Measurement software	Farad	EZ-EMC(VE R:1.1.4.2)	N/A	N/A	N/A

4.2. Block diagram of test setup

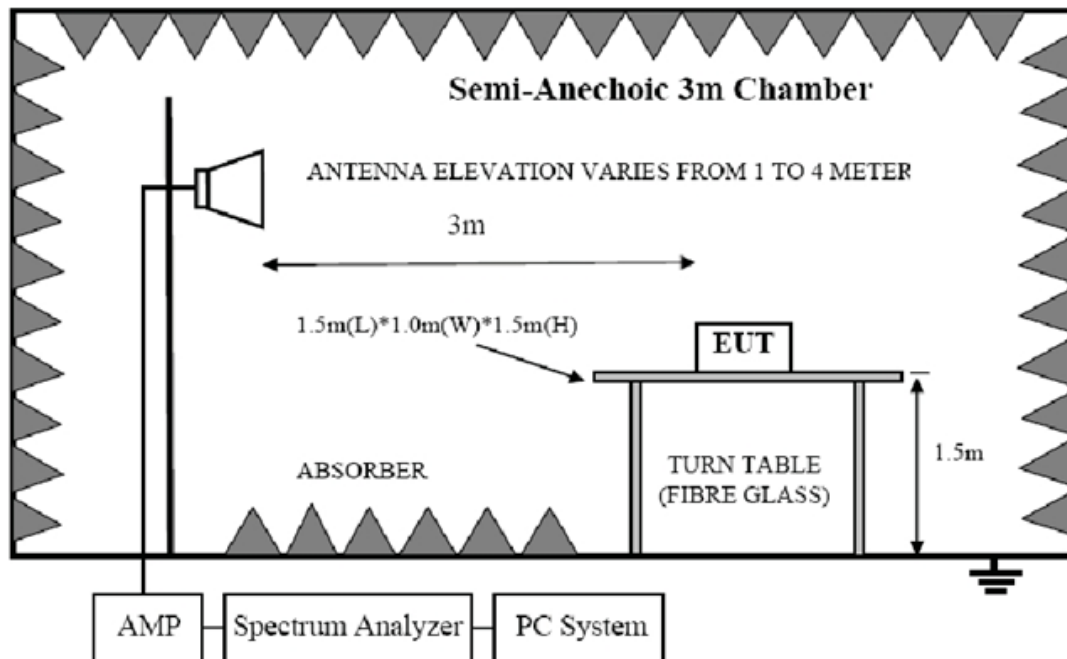
In 3m Anechoic Chamber Test Setup Diagram for 9KHz to 30MHz:



In 3m Anechoic Chamber Test Setup Diagram for 30MHz to 1GHz:



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz:



4.3. Limit

Rss-gen restricted frequency band:

Table 6 – Restricted Frequency Bands*

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

* Certain frequency bands listed in Table 6 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300-series of RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

FCC 15.205 Restricted frequency band:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

FCC 15.209 and rss-gen table 4 Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits dB(μV)/m
30--88	3	40.0
88--216	3	43.5
216--960	3	46.0
960--1000	3	54.0
Above 1GHz	3	Peak: 74.0
	3	Average:54.0

Note: (1) The smaller limit shall apply at the cross point between two frequency bands.

(2)Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(3)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(4) At frequencies below 30MHz, measurement may be performed at a distance closer then that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit3m(dBuV/m)} = \text{Limit30m(dBuV/m)} + 40\text{Log}(30\text{m}/3\text{m})$$

(5)All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.4. Test Procedure

Procedure of Preliminary Test

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 4.2 of this report.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

EUT height should be 0.8m for below 1GHz and 1.5m for above 1GHz at ground with absorbers.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.10. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 25GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The X, Y, Z three axial are tested and the report only the worst case.

The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW:

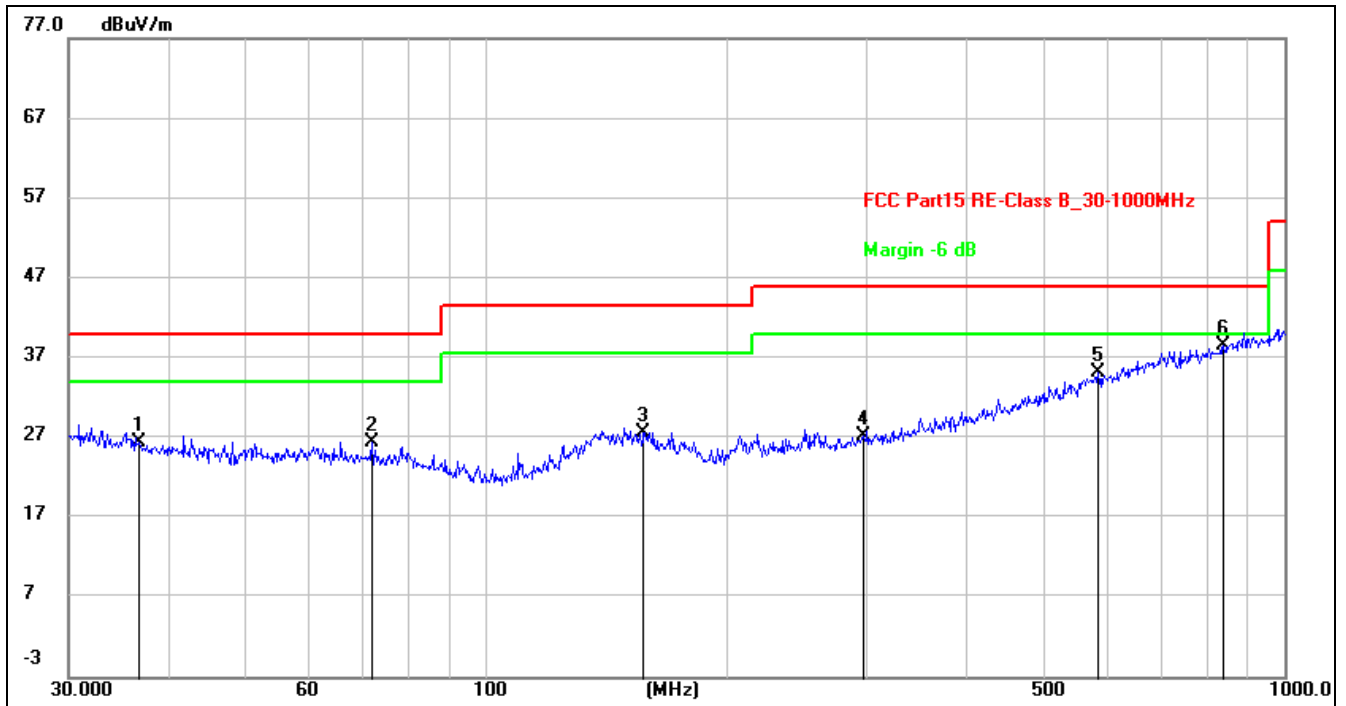
Frequency band	RBW
9KHz-150KHz	200Hz
150KHz-30MHz	9KHz
30MHz-1GHz	120KHz

For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RMS detector RBW 1MHz VBW 3MHz for Average measure.

4.5. Test result

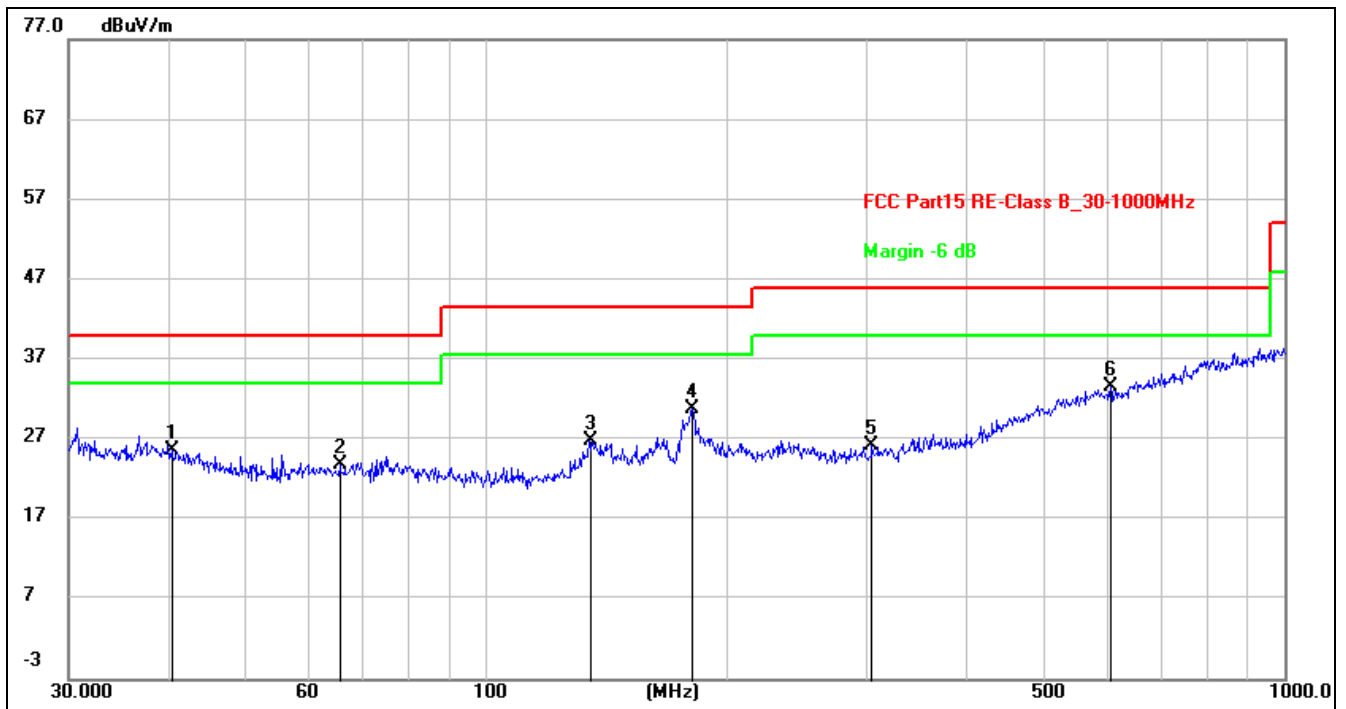
PASS. (See below detailed test result)

9K-30MHz: Emission detected are more than 20dB below the limit line.



Site:		Antenna:: Horizontal	Temperature(C): 24(C)
Limit:	FCC Part15 RE-Class B_30-1000MHz		Humidity(%): 60%
EUT:	Lighting Control Switch	Test Time:	2020/12/27
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	36.7661	9.87	16.63	26.50	40.00	-13.50	peak	100	190	
2	72.0843	12.50	13.95	26.45	40.00	-13.55	peak	100	244	
3	157.5588	11.22	16.42	27.64	43.50	-15.86	peak	100	237	
4	297.2240	11.79	15.53	27.32	46.00	-18.68	peak	200	158	
5	584.7894	13.58	21.72	35.30	46.00	-10.70	peak	200	123	
6 *	839.1818	13.25	25.32	38.57	46.00	-7.43	peak	200	123	



Site:		Antenna:: Vertical	Temperature(C): 24(C)
Limit:	FCC Part15 RE-Class B_30-1000MHz		Humidity(%): 60%
EUT:	Lighting Control Switch	Test Time:	2020/12/27
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	40.4172	10.61	15.07	25.68	40.00	-14.32	peak	100	99	
2	65.5727	11.08	12.73	23.81	40.00	-16.19	peak	100	300	
3	134.5592	14.11	12.78	26.89	43.50	-16.61	peak	100	3	
4	181.2834	17.93	12.84	30.77	43.50	-12.73	peak	100	149	
5	304.6099	12.04	14.21	26.25	46.00	-19.75	peak	100	99	
6 *	605.6592	13.59	20.04	33.63	46.00	-12.37	peak	100	3	

Site:	966 LAB	Antenna::H / V	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Lighting Control Switch	Test Time:	2020/12/28
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx mode (5735MHz)	Test Engineer:	
Note:			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarizat ion
5150.00	49.40	31.32	40.32	11.21	51.61	74.00	-22.39	Peak	H
5150.00	40.85	31.32	40.32	11.21	43.06	54.00	-10.94	Average	H
5725.00	45.05	31.96	40.28	11.64	48.37	74.00	-25.63	Peak	H
5725.00	40.34	31.96	40.28	11.64	43.66	54.00	-10.34	Average	H
5735.00	73.67	32.11	40.26	11.68	77.20	114.00	-36.80	Peak	H
5735.00	65.75	32.11	40.26	11.68	69.28	94.00	-24.72	Average	H
5875.00	40.43	32.26	40.15	12.14	44.68	74.00	-29.32	Peak	H
5875.00	37.60	32.26	40.15	12.14	41.85	54.00	-12.15	Average	H
11470.00	32.23	39.81	40.37	16.81	48.48	74.00	-25.52	Peak	H
11470.00	26.75	39.81	40.37	16.81	43.00	54.00	-11.00	Average	H
5150.00	46.02	31.32	40.32	11.21	48.23	74.00	-25.77	Peak	V
5150.00	40.85	31.32	40.32	11.21	43.06	54.00	-10.94	Average	V
5725.00	43.27	31.96	40.28	11.64	46.59	74.00	-27.41	Peak	V
5725.00	34.99	31.96	40.28	11.64	38.31	54.00	-15.69	Average	V
5735.00	68.92	32.11	40.26	11.68	72.45	114.00	-41.55	Peak	V
5735.00	62.97	32.11	40.26	11.68	66.50	94.00	-27.50	Average	V
5875.00	46.10	32.26	40.15	12.14	50.35	74.00	-23.65	Peak	V
5875.00	36.01	32.26	40.15	12.14	40.26	54.00	-13.74	Average	V
11470.00	35.22	39.81	40.37	16.81	51.47	74.00	-22.53	Peak	V
11470.00	23.74	39.81	40.37	16.81	39.99	54.00	-14.01	Average	V

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

3. Other emissions from 1 GHz to 40 GHz are considered as ambient noise. No recording in the test report.

Site:	966 LAB	Antenna::H / V	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Lighting Control Switch	Test Time:	2020/12/28
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx mode (5800MHz)	Test Engineer:	
Note:			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarization
5150.00	49.40	31.32	40.32	11.21	51.61	74.00	-22.39	Peak	H
5150.00	42.18	31.32	40.32	11.21	44.39	54.00	-9.61	Average	H
5725.00	45.56	31.96	40.28	11.64	48.88	74.00	-25.12	Peak	H
5725.00	38.50	31.96	40.28	11.64	41.82	54.00	-12.18	Average	H
5800.00	74.13	32.11	40.26	11.68	77.66	114.00	-36.34	Peak	H
5800.00	67.29	32.11	40.26	11.68	70.82	94.00	-23.18	Average	H
5875.00	42.27	32.26	40.15	12.14	46.52	74.00	-27.48	Peak	H
5875.00	33.22	32.26	40.15	12.14	37.47	54.00	-16.53	Average	H
11600.00	34.77	39.81	40.37	16.81	51.02	74.00	-22.98	Peak	H
11600.00	25.21	39.81	40.37	16.81	41.46	54.00	-12.54	Average	H
5150.00	47.56	31.32	40.32	11.21	49.77	74.00	-24.23	Peak	V
5150.00	42.69	31.32	40.32	11.21	44.90	54.00	-9.10	Average	V
5725.00	38.89	31.96	40.28	11.64	42.21	74.00	-31.79	Peak	V
5725.00	37.53	31.96	40.28	11.64	40.85	54.00	-13.15	Average	V
5800.00	69.25	32.11	40.26	11.68	72.78	114.00	-41.22	Peak	V
5800.00	63.48	32.11	40.26	11.68	67.01	94.00	-26.99	Average	V
5875.00	43.72	32.26	40.15	12.14	47.97	74.00	-26.03	Peak	V
5875.00	39.39	32.26	40.15	12.14	43.64	54.00	-10.36	Average	V
11600.00	33.38	39.81	40.37	16.81	49.63	74.00	-24.37	Peak	V
11600.00	25.07	39.81	40.37	16.81	41.32	54.00	-12.68	Average	V

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

3. Other emissions from 1 GHz to 40 GHz are considered as ambient noise. No recording in the test report.

Site:	966 LAB	Antenna::H / V	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Lighting Control Switch	Test Time:	2020/12/28
M/N.:	MC054V-RC-2D	Power Rating:	AC120V/60Hz
Mode:	Tx mode (5855MHz)	Test Engineer:	
Note:			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarization
5150.00	49.40	31.32	40.32	11.21	51.61	74.00	-22.39	Peak	H
5150.00	42.31	31.32	40.32	11.21	44.52	54.00	-9.48	Average	H
5725.00	43.72	31.96	40.28	11.64	47.04	74.00	-26.96	Peak	H
5725.00	40.34	31.96	40.28	11.64	43.66	54.00	-10.34	Average	H
5855.00	74.98	32.11	40.26	11.68	78.51	114.00	-35.49	Peak	H
5855.00	67.63	32.11	40.26	11.68	71.16	94.00	-22.84	Average	H
5875.00	38.89	32.26	40.15	12.14	43.14	74.00	-30.86	Peak	H
5875.00	35.76	32.26	40.15	12.14	40.01	54.00	-13.99	Average	H
11710.00	36.61	39.81	40.37	16.81	52.86	74.00	-21.14	Peak	H
11710.00	24.21	39.81	40.37	16.81	40.46	54.00	-13.54	Average	H
5150.00	47.56	31.32	40.32	11.21	49.77	74.00	-24.23	Peak	V
5150.00	39.18	31.32	40.32	11.21	41.39	54.00	-12.61	Average	V
5725.00	42.27	31.96	40.28	11.64	45.59	74.00	-28.41	Peak	V
5725.00	37.53	31.96	40.28	11.64	40.85	54.00	-13.15	Average	V
5855.00	73.10	32.11	40.26	11.68	76.63	114.00	-37.37	Peak	V
5855.00	64.82	32.11	40.26	11.68	68.35	94.00	-25.65	Average	V
5875.00	47.10	32.26	40.15	12.14	51.35	74.00	-22.65	Peak	V
5875.00	35.01	32.26	40.15	12.14	39.26	54.00	-14.74	Average	V
11710.00	33.38	39.81	40.37	16.81	49.63	74.00	-24.37	Peak	V
11710.00	22.20	39.81	40.37	16.81	38.45	54.00	-15.55	Average	V

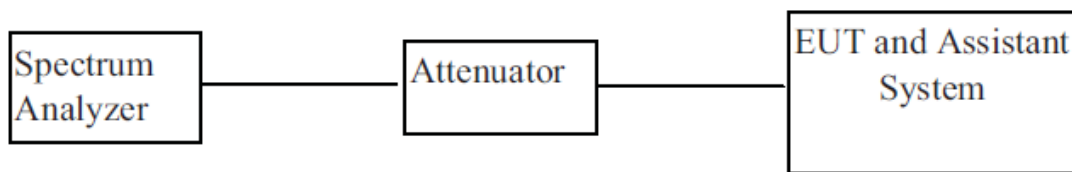
- Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.
2. Antenna polarization: “H” means Horizontal, “V” means Vertical.
3. Other emissions from 1 GHz to 40 GHz are considered as ambient noise. No recording in the test report.

5. -20dB Bandwidth

5.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Signal Analyzer	Agilent	N9020A	MY54510476	2020-05-25	1 Year

5.2. BLOCK DIAGRAM OF TEST SETUP



5.3. Limit

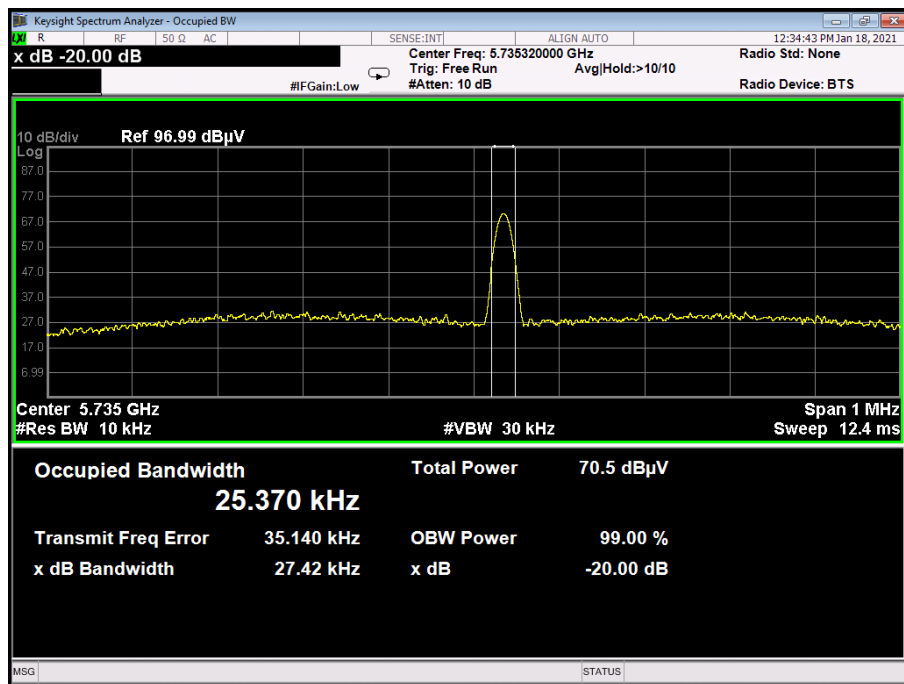
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

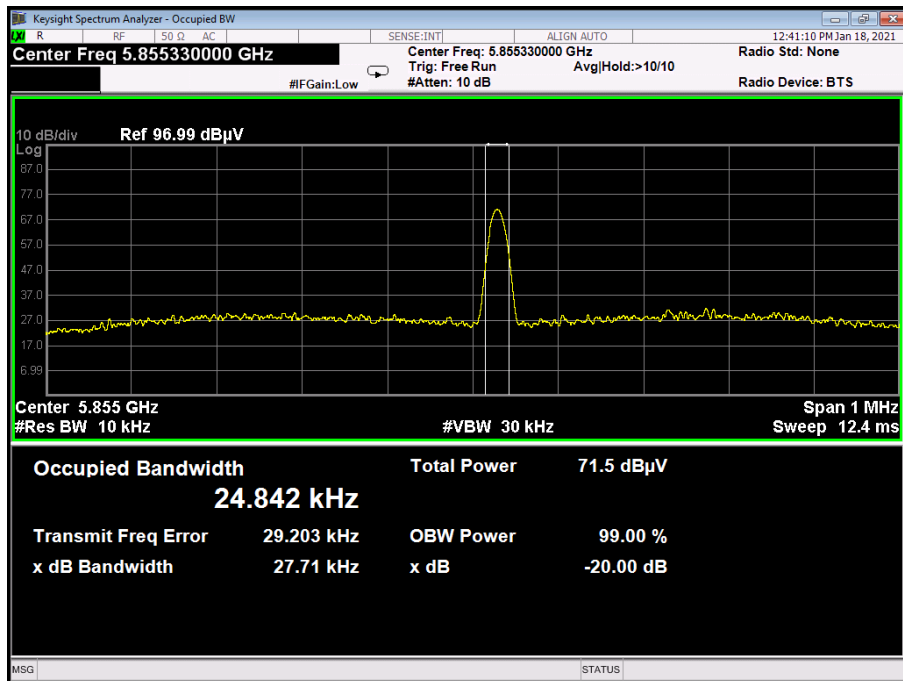
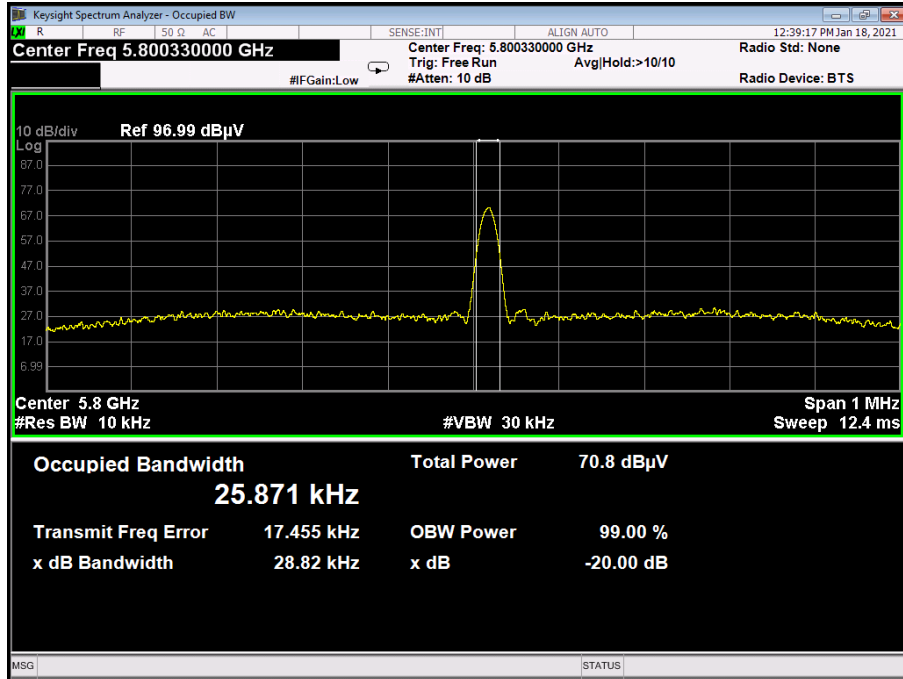
5.4. Test Procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10 kHz RBW and 30 kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.5. Test result

Frequency	-20dB bandwidth
(MHz)	Result (KHz)
5735	27.42
5800	28.82
5855	27.71





6. Antenna Requirements

6.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203 and RSS-GEN, 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. And according to FCC 47 CFR Section 15.249 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

6.2. Result

The EUT has an internal PCB antenna permanently soldering on the printed circuit board, which complied with 15.203 and RSS-GEN, the maximum gain was 0 dBi.

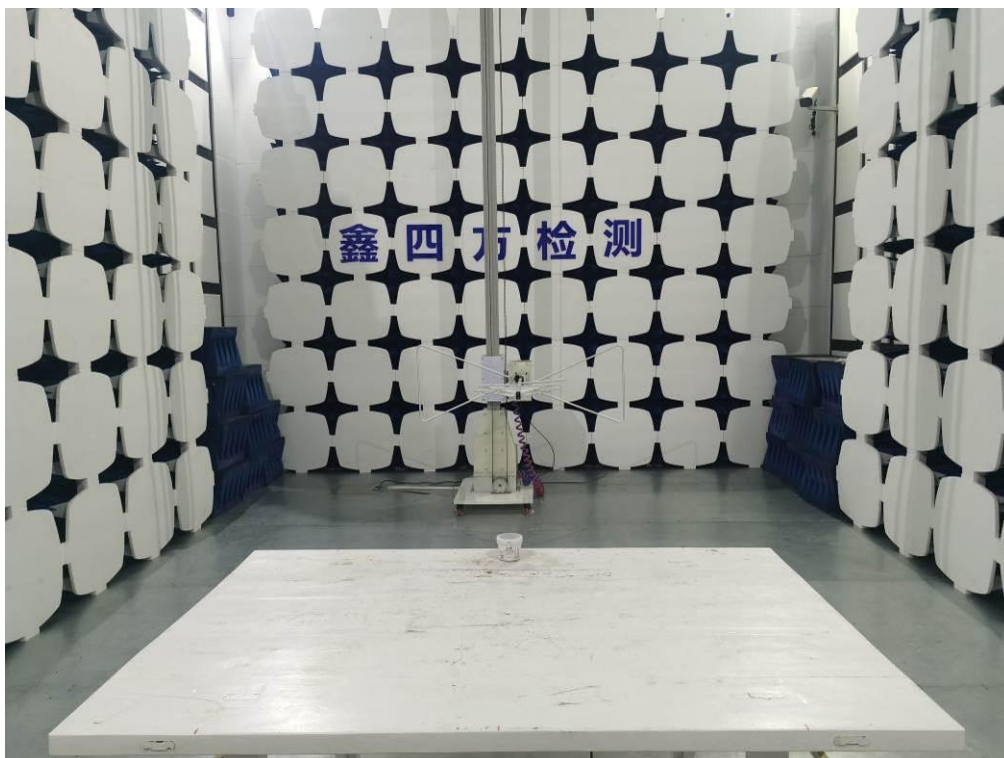
7. Test setup photograph

7.1. Photos of radiated emission test



7.2. Photos of radiated emission test

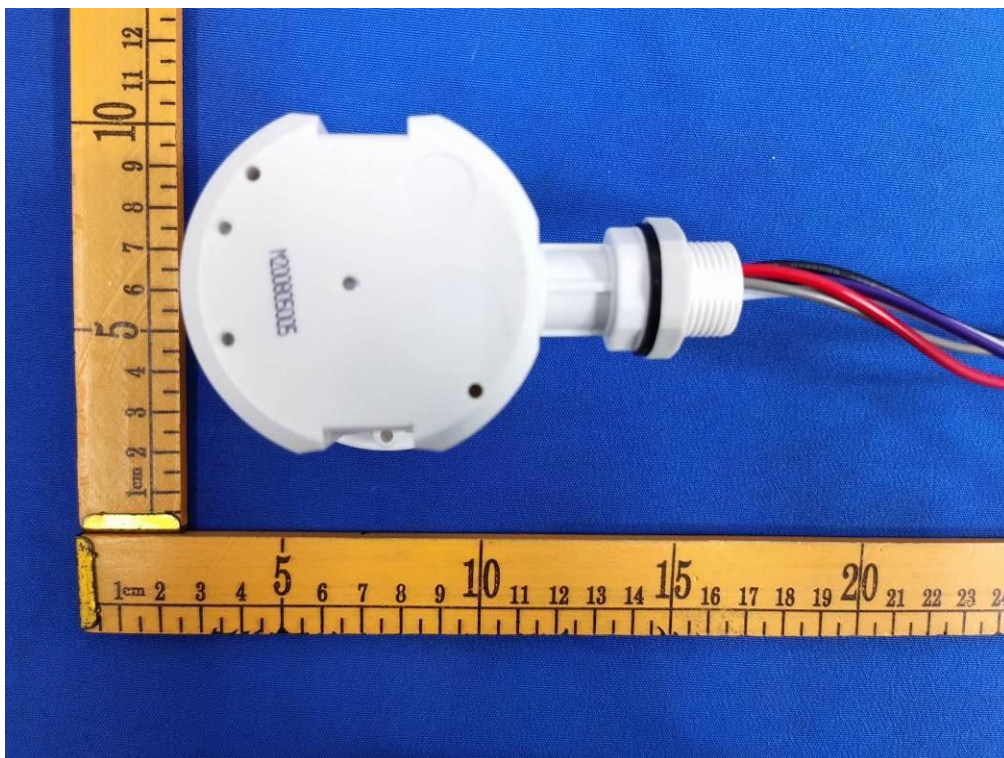
30MHz – 1GHz

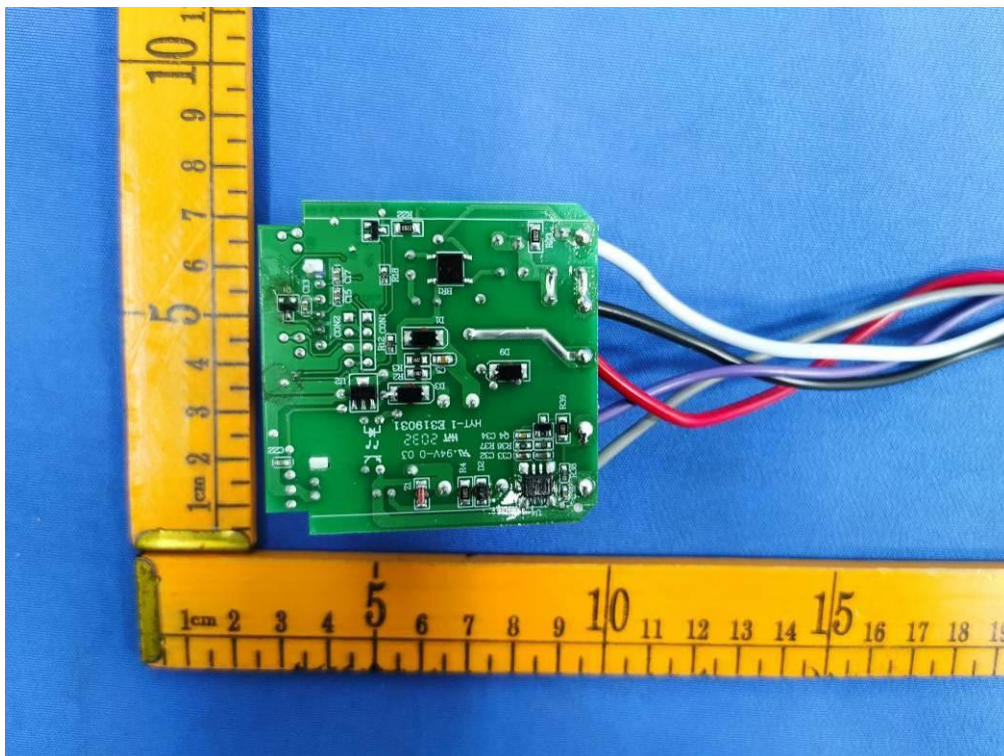
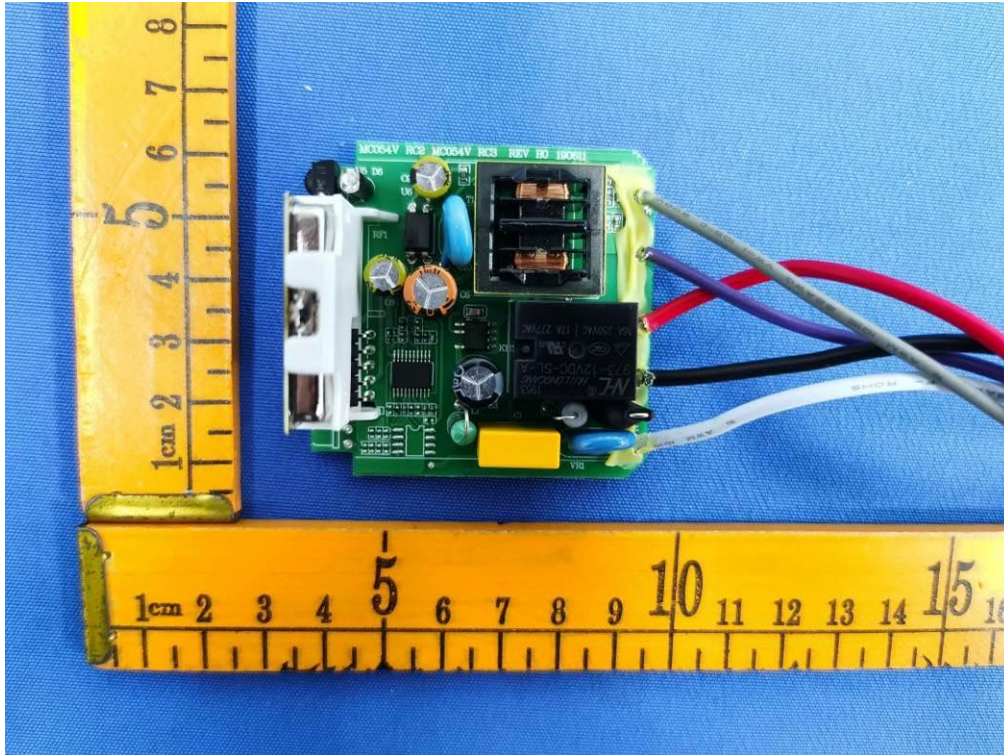


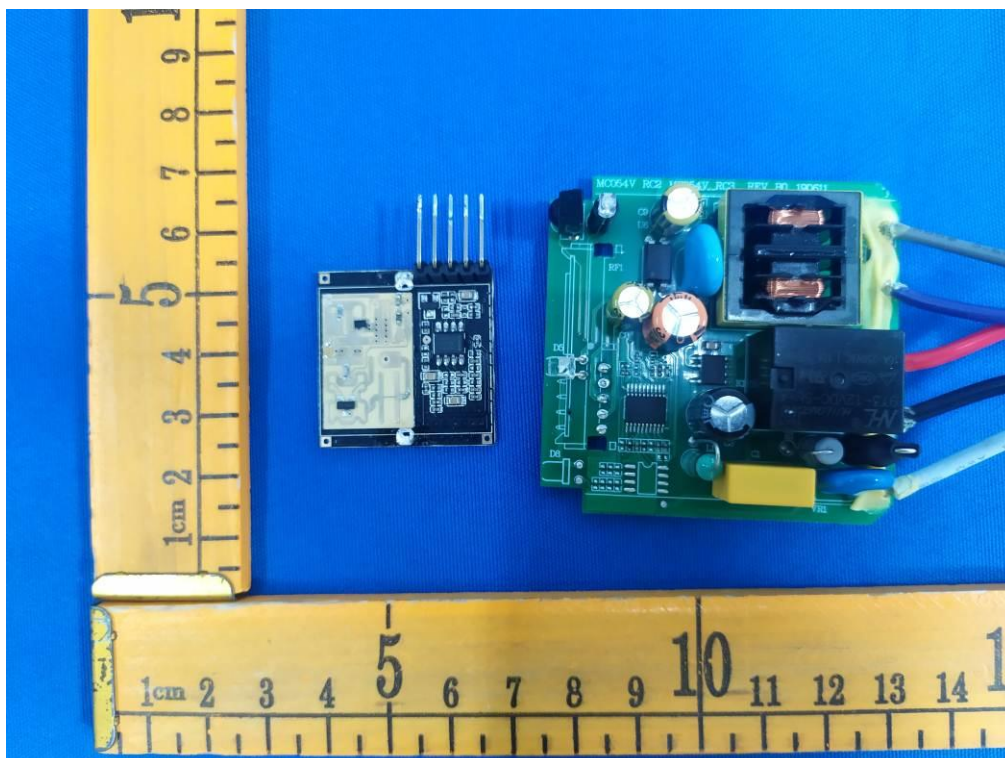
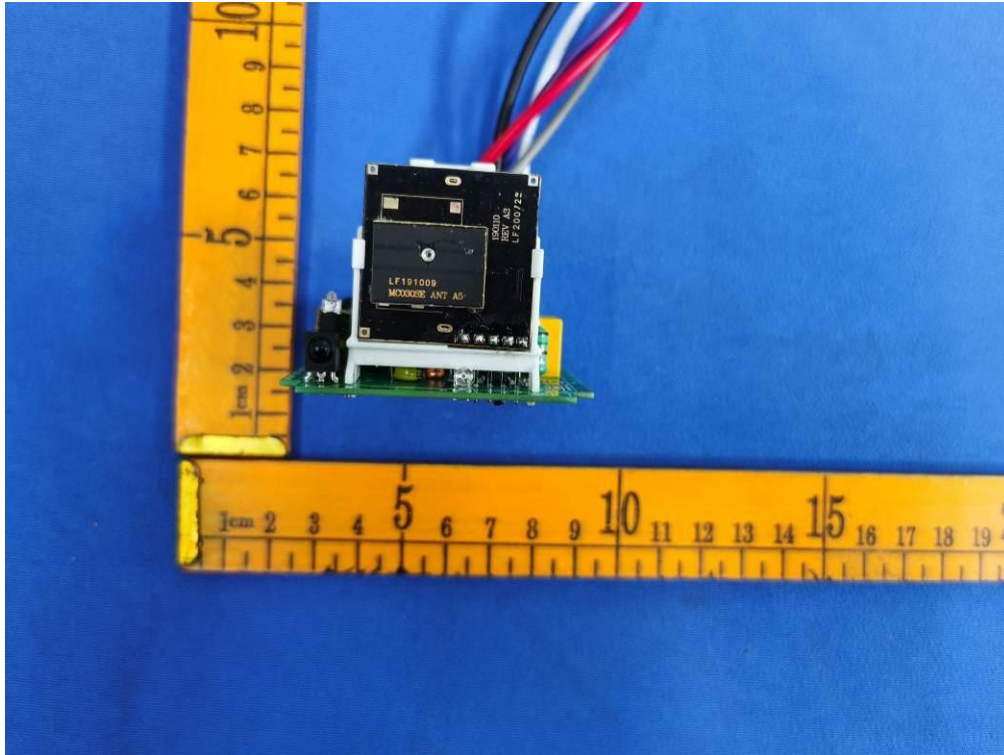
Above 1GHz

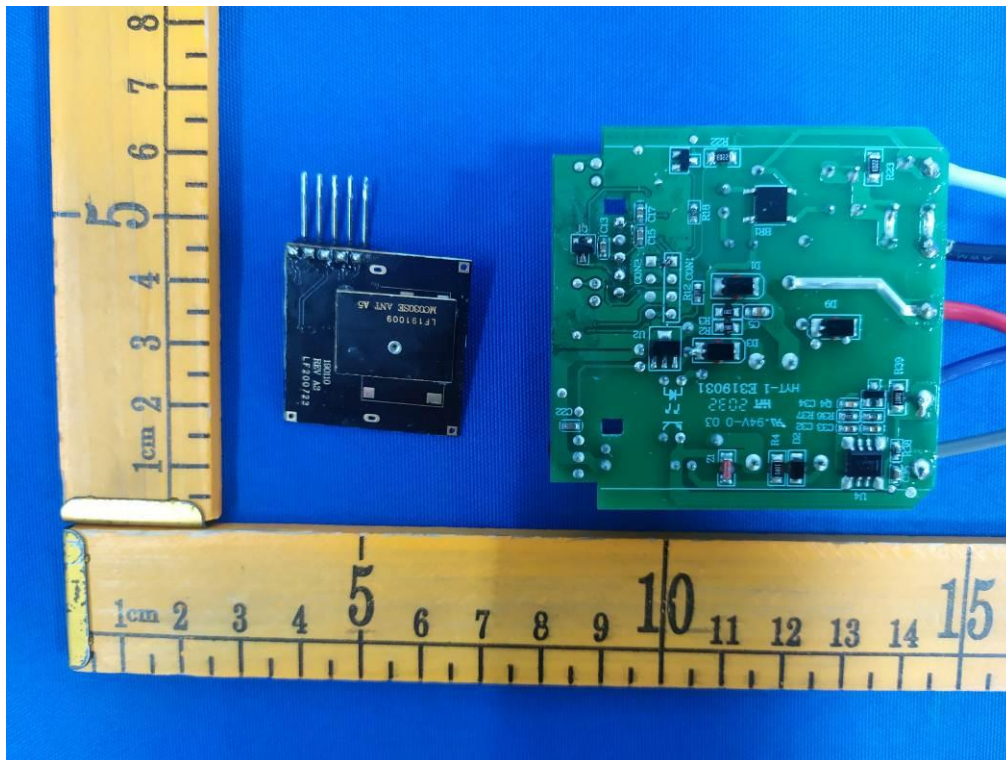


8. Photos of the EUT









--END OF REPORT--