

Test Report

FCC ID: 2AT2A-01001

Date of issue: Aug. 23, 2019

Report Number: MTi19051017-3E1

Sample Description: FLIhub + FLIcube

Model(s): 01001, 01009

Applicant: FLI Charge, LLC

Address: 191 E Deerpath Road, Lake Forest, IL, 60045

Date of Test: July 10, 2019 - July 18, 2019

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>

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Test Result Certification

Applicant's name: FLI Charge, LLC

Address: 191 E Deerpath Road, Lake Forest, IL, 60045

Manufacture's name: SHENZHEN TOPBAND CO., LTD

Address: Topband building, Liyuan industrial park, shiyan town, Bao'an district, Shenzhen, China.

Product name: FLIhub + FLIcube

Trademark: FLI Charge

Model name: 01001 ,01009

Standards: FCC Part 15C

Test Procedure: ANSI C63.10-2013

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:



Jone Lee

July 18, 2019

Reviewed by:



Blue Zheng

Aug. 23, 2019

Approved by:



Smith Chen

Aug. 23, 2019

1 GENERAL INFORMATION

1.1 Feature of equipment under test (EUT)

Product name:	FLIhub + FLIcube
Model name:	01001 ,01009
Model difference:	All the model are the same circuit and RF module, except the model No. and color.
Operation frequency:	115–205 kHz
Modulation type:	Load modulation
Antenna type:	Coil Antenna
Power supply:	DC 20V from adapter
Battery:	N/A
Adapter information:	MODEL:Q66A-200003250 INPUT:AC100-240V~50/60Hz OUTPUT:20.00V-3250mA

1.2 Test mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test mode	Description
Mode 1	Wireless charging

Note1: The test modes were carried out for all operation modes. The final test mode of the EUT was the worst test mode for EMI, and its test data was showed.

Note2: EUT is tested under full load and belongs to the worst mode.

1.3 EUT test setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.4 Ancillary equipment

Equipment	Model	S/N	Manufacturer
Adapter	/	/	/
Load	/	/	/

1.5 Measurement Uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	± 1 degree
Humidity	± 5 %

2 SUMMARY OF TEST RESULT

Item	FCC Part No.	Description of Test	Result
1	FCC PART 15.203	Antenna requirement	Pass
2	FCC PART 15.207	Conducted emission	Pass
3	FCC PART 15.209	Radiated emission	Pass
4	FCC Part 15.215	20dB bandwidth	Pass

2.1 Operation channel list

Channel List

Channel	Frequency (kHz)
Low	115
Middle	128
High	205

2.2 Test channel

Channel	Frequency (kHz)
Middle	128

3 TEST FACILITIES AND ACCREDITATIONS

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	15°C~35°C
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

RF frequency	1×10^{-7}
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	± 1 degree
Humidity	± 5 %

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

4 LIST OF TEST EQUIPMENT

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2018/09/18	2019/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2018/09/18	2019/09/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2018/09/18	2019/09/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2018/09/18	2019/09/17
MTI-E014	amplifier	America	8447D	3113A06150	2018/09/18	2019/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2018/09/18	2019/09/17
MTI-E016	Coupled decoupling network	Schloder	CND M2/M3	A2210332/2015	2018/09/18	2019/09/17
MTI-E034	amplifier	Agilent	8449B	3008A02400	2018/09/18	2019/09/17
MTI-E037	Artificial power network	Schwarzbeck	NSLK8127	#841	2018/09/18	2019/09/17
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2018/09/18	2019/09/17
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2018/09/18	2019/09/17
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/09/18	2019/09/17
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SN016	2018/09/18	2019/09/17
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/09/18	2019/09/17
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2018/09/18	2019/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/09/18	2019/09/17
MTI-E061	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/09/18	2019/09/17
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2018/09/18	2019/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2018/09/18	2019/09/17
MTI-E058	Artificial power network	Schwarzbeck	NSLK8127	#841	2018/09/18	2019/09/17
Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).						

5 TEST RESULTS

5.1 Antenna requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 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

5.1.2 EUT Antenna

The EUT antenna is Coil Antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

Radiated emission

5.1.3 Limits

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

The limit for radiated test was performed according to FCC PART 15C.

The tighter limit applies at the band edges.

Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

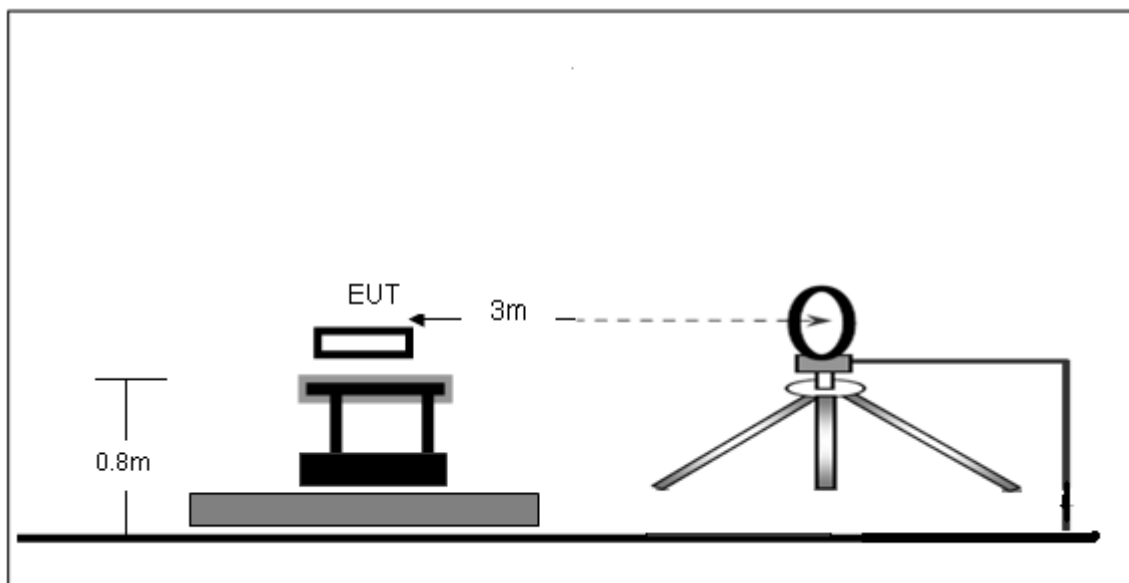
5.1.4 Test Procedures

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 25GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-chamber test. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8m; above 1GHz, the height was 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
- g. 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.
- h. 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.

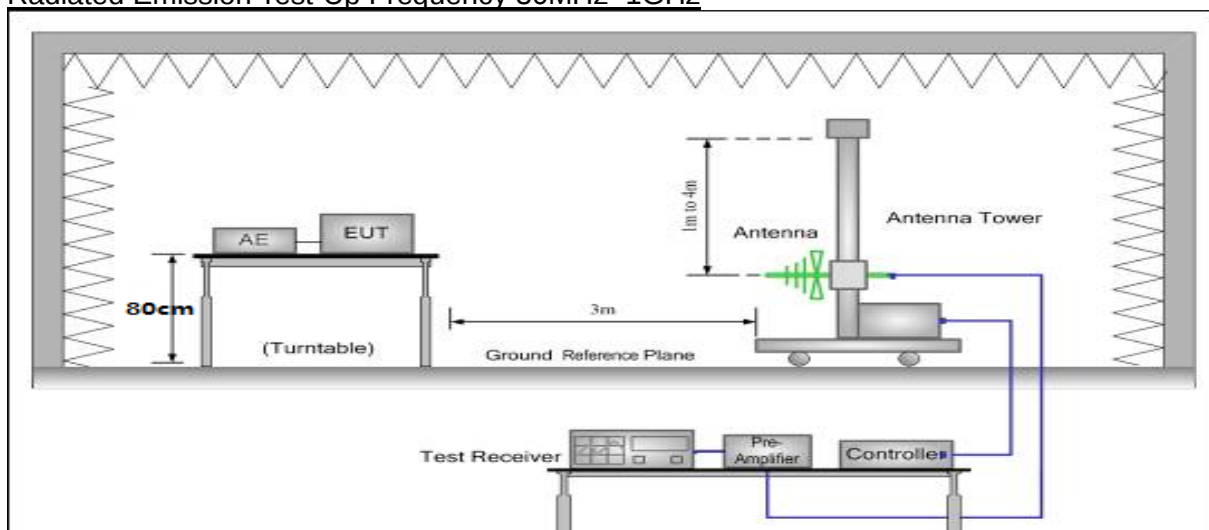
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

5.1.5 Test Setup

Radiated Emission Test-Up Frequency Below 30MHz



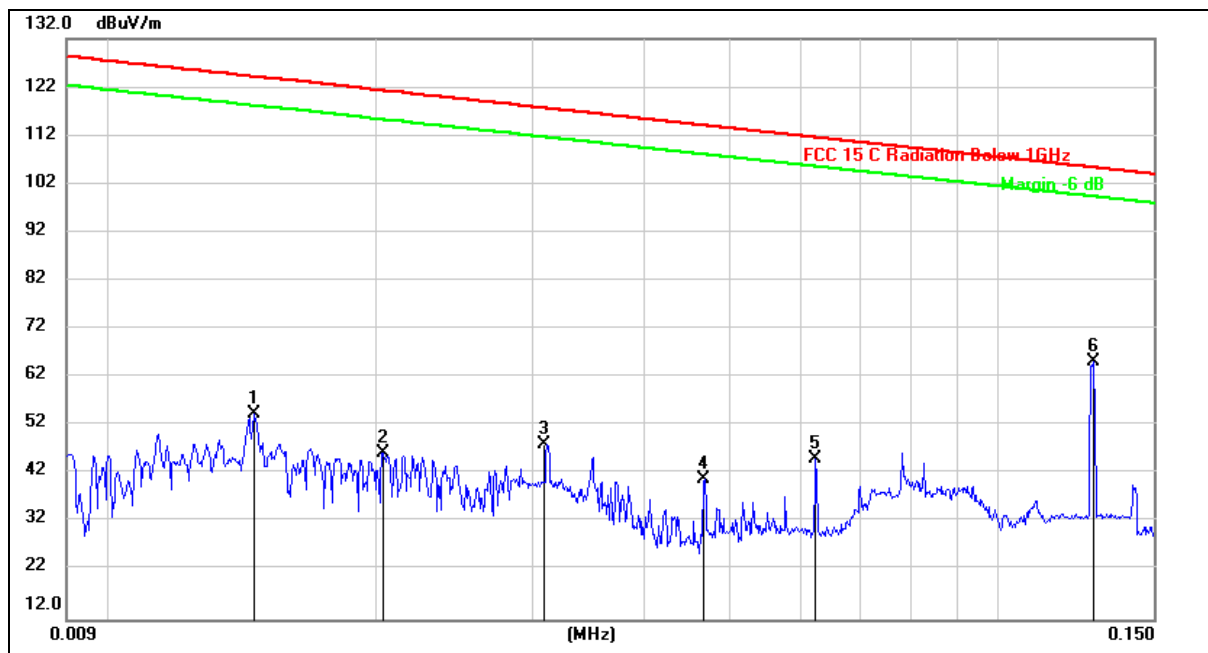
Radiated Emission Test-Up Frequency 30MHz~1GHz



5.1.6 Test Result

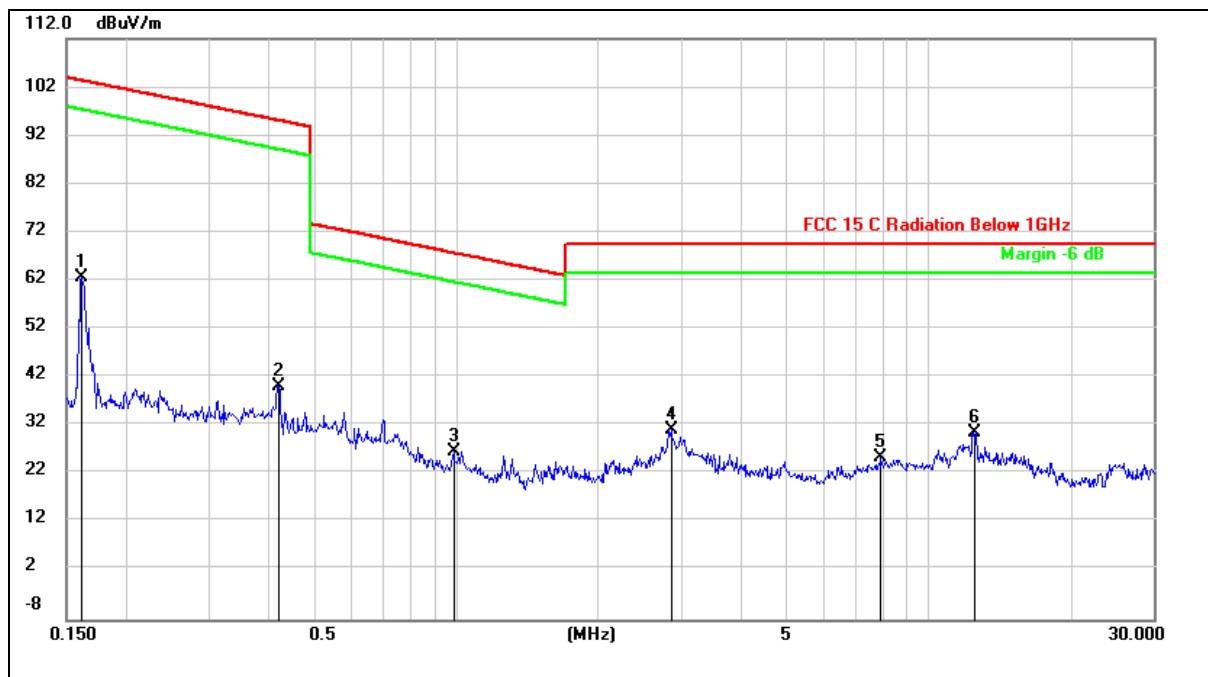
Frequency range (9kHz – 30MHz)

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Test mode:	Mode 1
Test voltage:	DC 20V from adapter AC 120V/60Hz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		0.0146	33.91	20.61	54.52	124.15	-69.63	peak
2		0.0204	25.83	20.41	46.24	121.26	-75.02	peak
3		0.0309	27.80	20.42	48.22	117.67	-69.45	peak
4		0.0468	20.47	20.43	40.90	114.09	-73.19	peak
5		0.0625	24.69	20.43	45.12	111.59	-66.47	peak
6	*	0.1280	44.72	20.42	65.14	105.39	-40.25	peak

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Test mode:	Mode 1
Test voltage:	DC 20V from adapter AC 120V/60Hz		

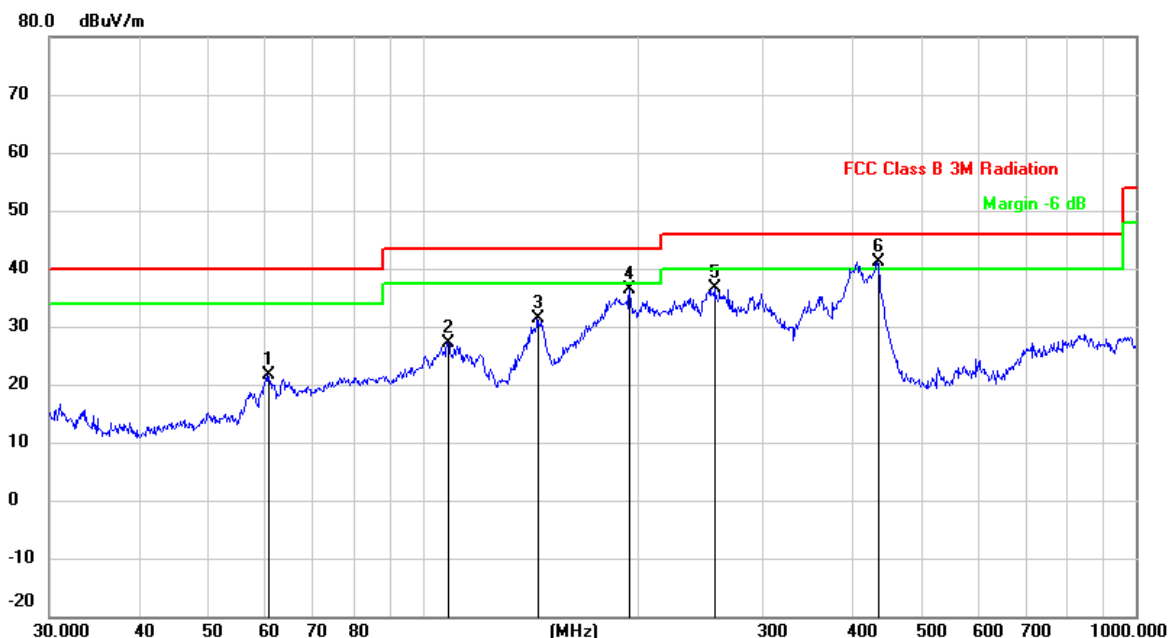


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		0.1615	42.38	20.39	62.77	103.39	-40.62	peak
2		0.4193	19.85	20.31	40.16	95.15	-54.99	peak
3		0.9889	6.47	20.26	26.73	67.72	-40.99	peak
4	*	2.8540	10.89	20.27	31.16	69.50	-38.34	peak
5		7.9352	4.96	20.35	25.31	69.50	-44.19	peak
6		12.4495	10.17	20.36	30.53	69.50	-38.97	peak

Frequency range (30MHz – 1GHz)

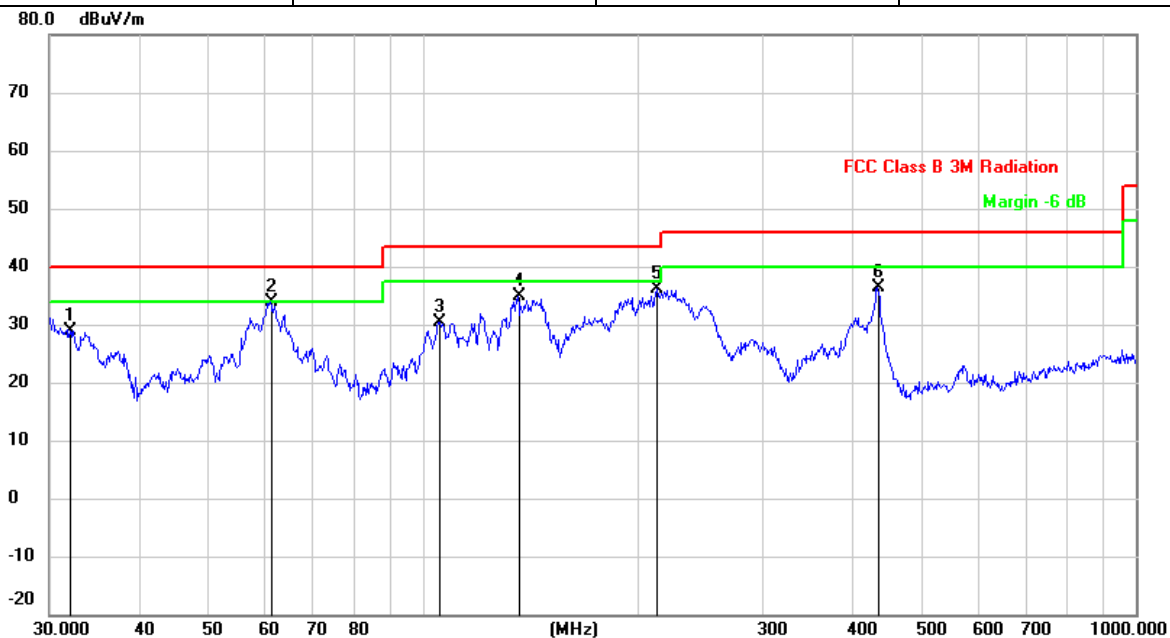
FLIhub +FLIhub:

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		60.7044	35.85	-14.30	21.55	40.00	-18.45	QP
2		108.6470	41.05	-13.83	27.22	43.50	-16.28	QP
3		144.8418	48.00	-16.63	31.37	43.50	-12.13	QP
4		195.1365	49.68	-13.39	36.29	43.50	-7.21	QP
5		256.5211	48.39	-11.75	36.64	46.00	-9.36	QP
6	*	434.0651	50.08	-8.91	41.17	46.00	-4.83	QP

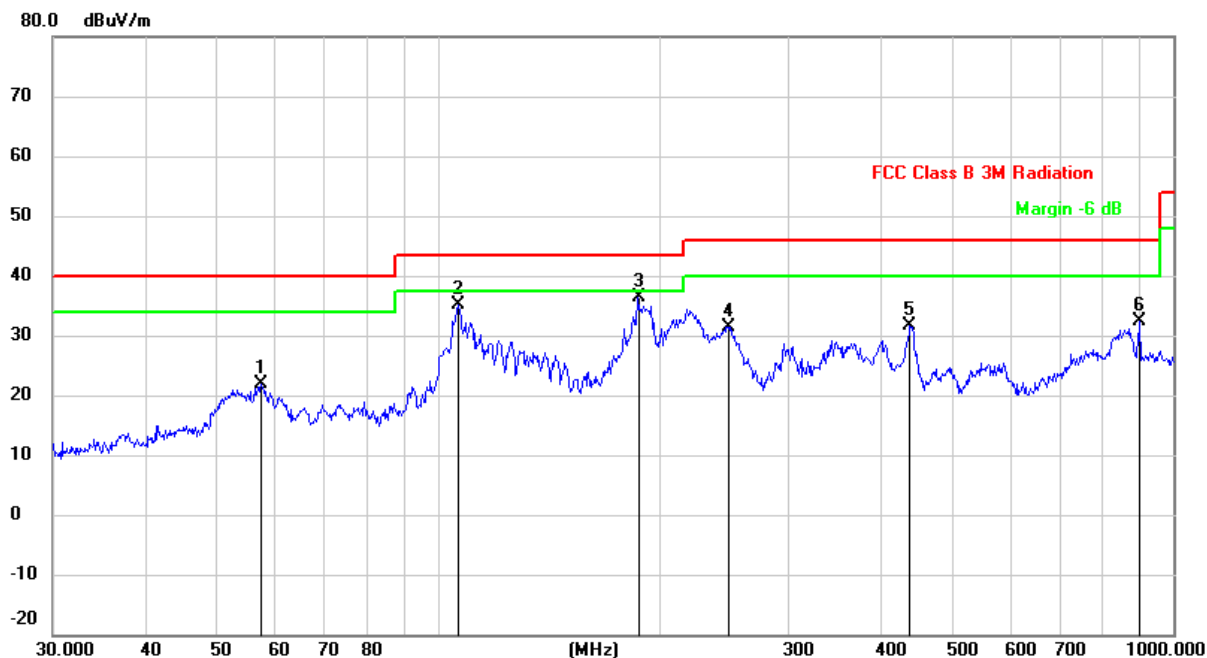
EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		32.0667	43.82	-14.88	28.94	40.00	-11.06	QP
2	*	61.1316	48.20	-14.37	33.83	40.00	-6.17	QP
3		105.2718	44.08	-13.80	30.28	43.50	-13.22	QP
4		135.9822	51.93	-16.94	34.99	43.50	-8.51	QP
5		213.0151	48.97	-12.96	36.01	43.50	-7.49	QP
6		434.0651	45.29	-8.91	36.38	46.00	-9.62	QP

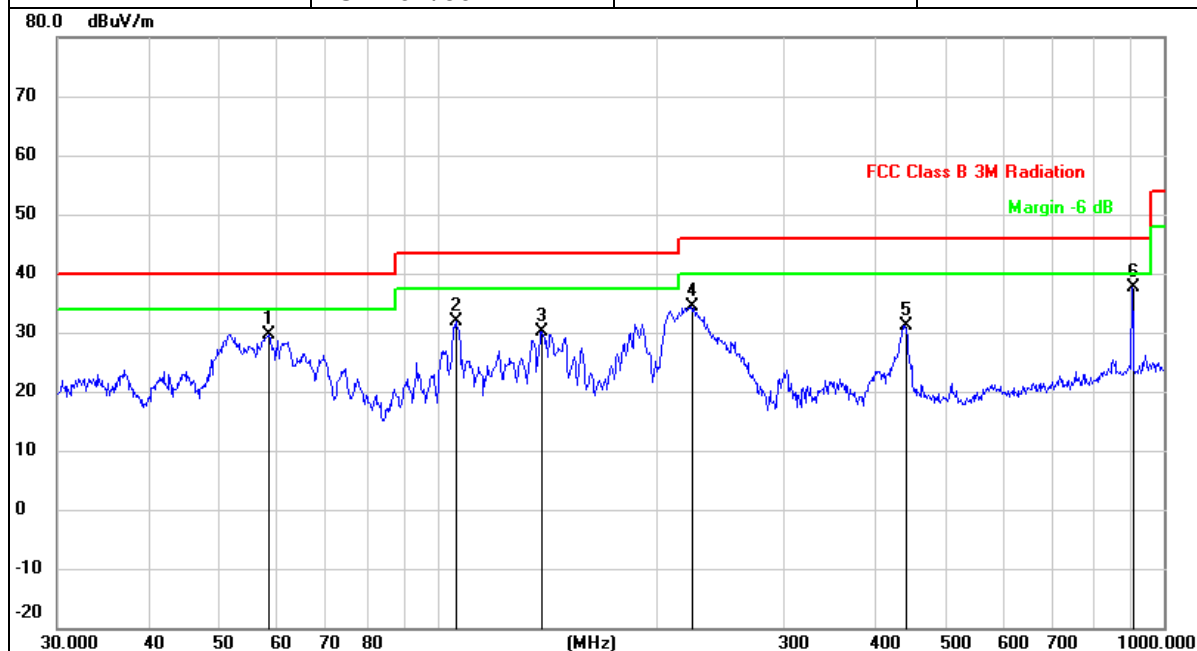
FLIhub:

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Polarization:	Horizontal
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		57.5939	35.55	-13.79	21.76	40.00	-18.24	QP
2		106.7587	48.84	-13.81	35.03	43.50	-8.47	QP
3	*	187.0958	50.52	-14.16	36.36	43.50	-7.14	QP
4		247.6819	43.16	-11.84	31.32	46.00	-14.68	QP
5		438.6554	40.52	-8.96	31.56	46.00	-14.44	QP
6		900.1474	34.72	-2.36	32.36	46.00	-13.64	QP

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Polarization:	Vertical
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		58.6126	43.67	-13.96	29.71	40.00	-10.29	QP
2		106.0126	45.67	-13.81	31.86	43.50	-11.64	QP
3		138.8735	47.05	-16.81	30.24	43.50	-13.26	QP
4		223.7334	47.27	-12.90	34.37	46.00	-11.63	QP
5		440.1963	40.04	-8.98	31.06	46.00	-14.94	QP
6	*	903.3094	39.96	-2.35	37.61	46.00	-8.39	QP

Conducted emission

5.1.7 Limits

For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.5 -5	56	46
5 -30	60	50

Note : the limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.1.8 Test Procedures

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

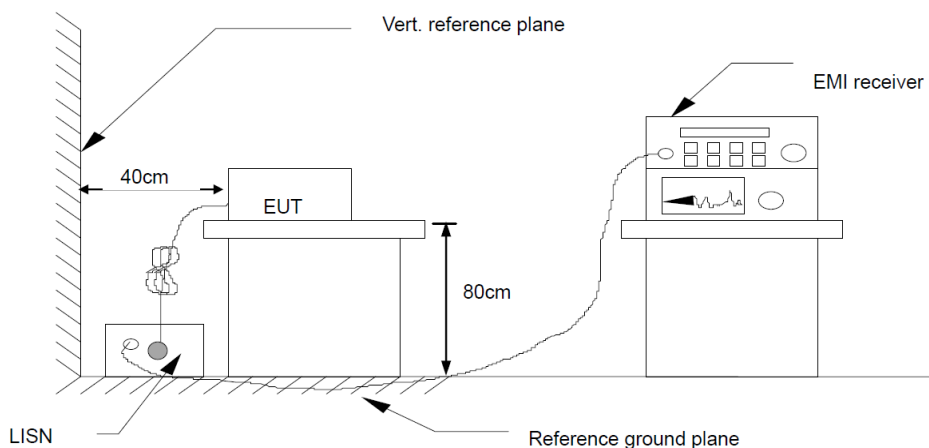
Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

For the actual test configuration, please refer to the related Item – photographs of the test setup.

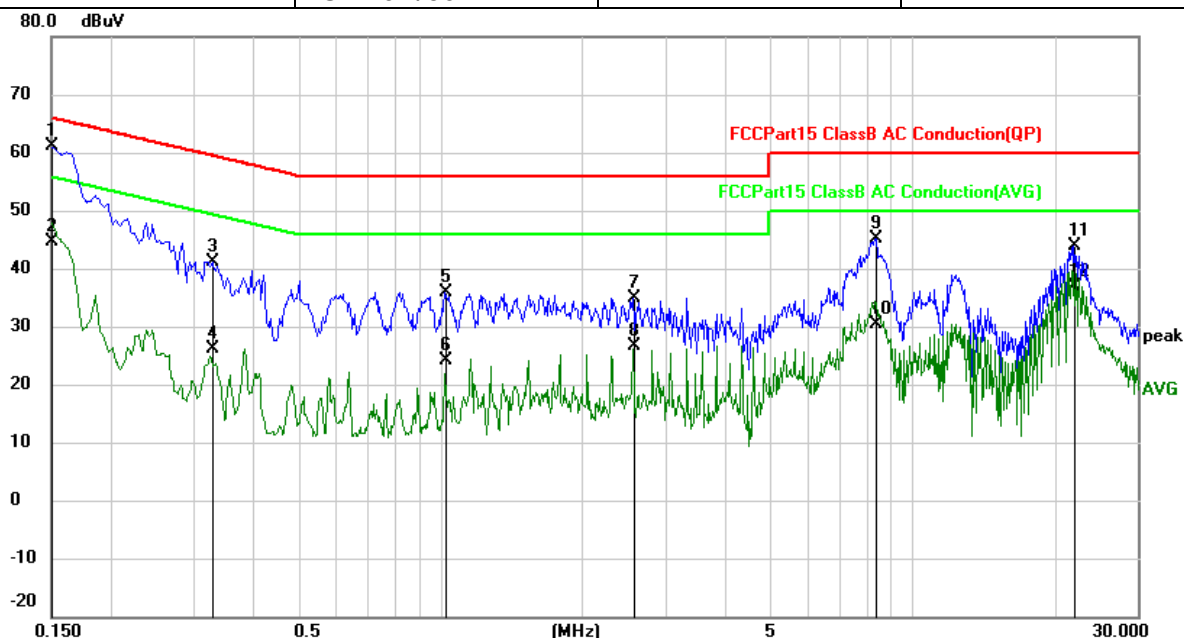
5.1.9 Test Setup



5.1.10 Test Result

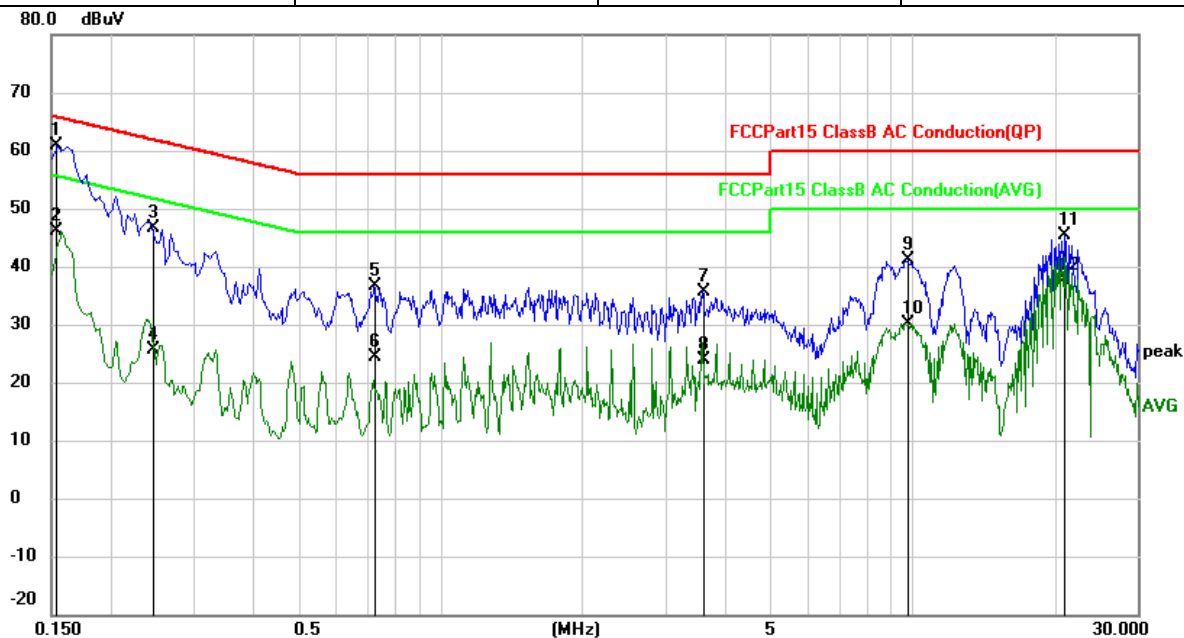
FLIhub +FLIhub:

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Phase:	L
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



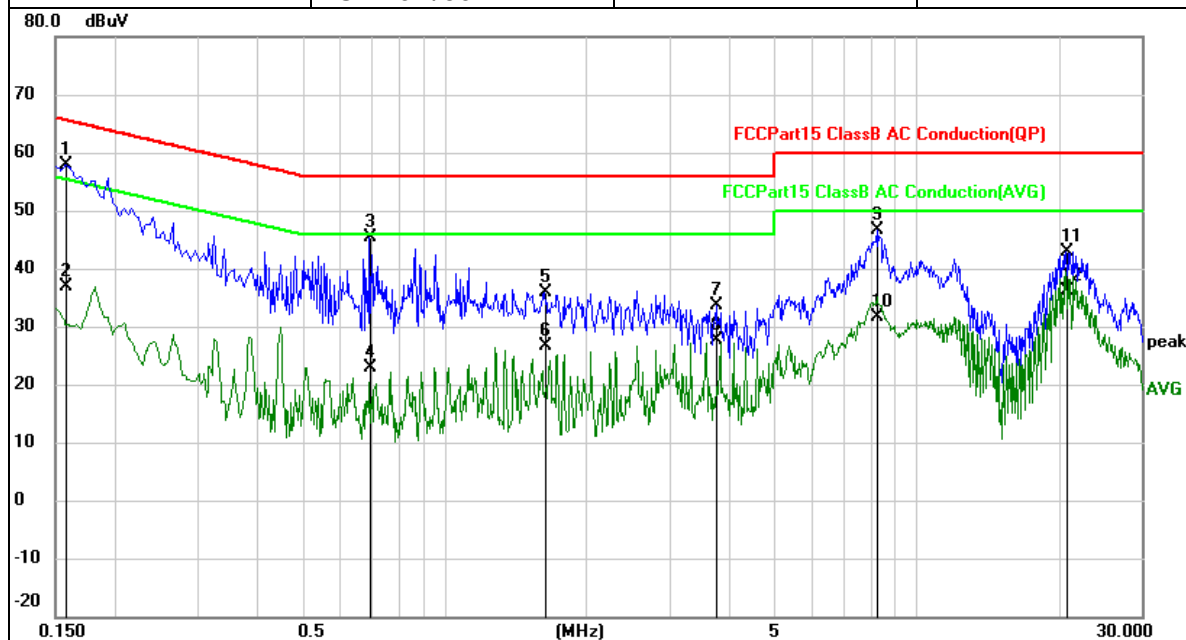
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	51.43	9.73	61.16	66.00	-4.84	QP	
2		0.1500	34.92	9.73	44.65	56.00	-11.35	AVG	
3		0.3300	31.36	9.78	41.14	59.45	-18.31	QP	
4		0.3300	16.23	9.78	26.01	49.45	-23.44	AVG	
5		1.0260	25.89	9.95	35.84	56.00	-20.16	QP	
6		1.0260	14.13	9.95	24.08	46.00	-21.92	AVG	
7		2.5620	24.94	9.99	34.93	56.00	-21.07	QP	
8		2.5620	16.67	9.99	26.66	46.00	-19.34	AVG	
9		8.3620	35.00	10.21	45.21	60.00	-14.79	QP	
10		8.3620	20.29	10.21	30.50	50.00	-19.50	AVG	
11		22.0340	33.67	10.15	43.82	60.00	-16.18	QP	
12		22.0340	26.73	10.15	36.88	50.00	-13.12	AVG	

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Phase:	N
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



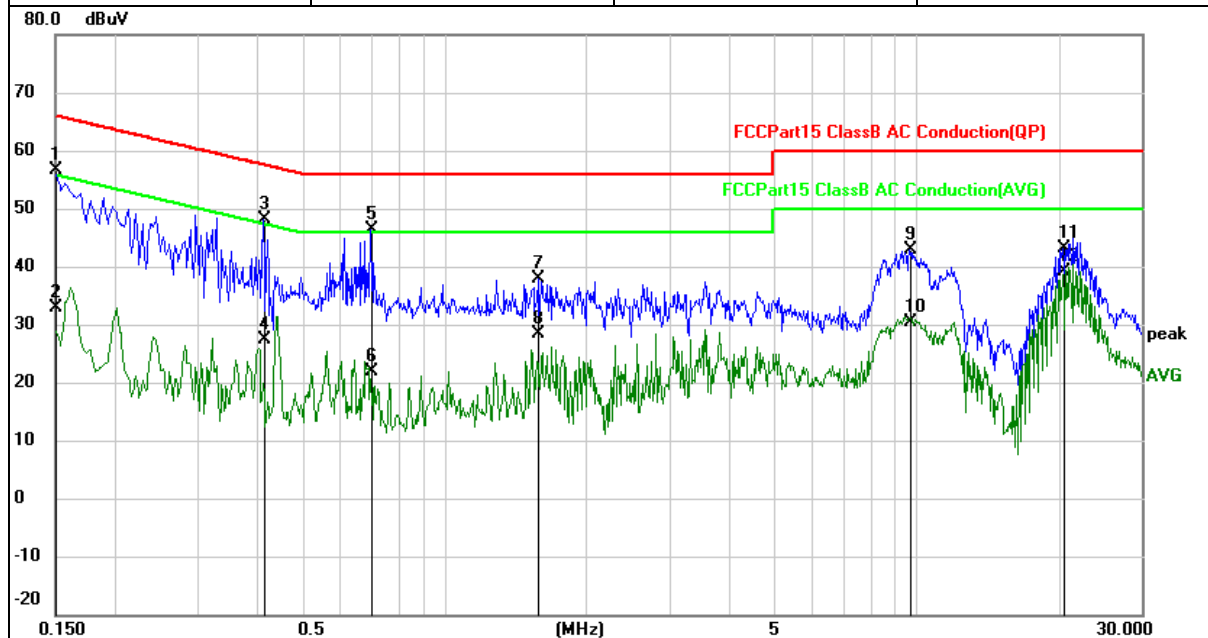
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1539	51.14	9.73	60.87	65.79	-4.92	QP	
2		0.1539	36.31	9.73	46.04	55.79	-9.75	AVG	
3		0.2460	36.96	9.73	46.69	61.89	-15.20	QP	
4		0.2460	16.02	9.73	25.75	51.89	-26.14	AVG	
5		0.7260	26.66	9.91	36.57	56.00	-19.43	QP	
6		0.7260	14.55	9.91	24.46	46.00	-21.54	AVG	
7		3.5860	25.73	10.02	35.75	56.00	-20.25	QP	
8		3.5860	13.81	10.02	23.83	46.00	-22.17	AVG	
9		9.7779	30.73	10.28	41.01	60.00	-18.99	QP	
10		9.7779	19.76	10.28	30.04	50.00	-19.96	AVG	
11		20.9940	35.19	10.12	45.31	60.00	-14.69	QP	
12		20.9940	27.41	10.12	37.53	50.00	-12.47	AVG	

EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Phase:	L
Test voltage:	DC 20V from adapter AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1580	48.16	9.73	57.89	65.57	-7.68	QP	
2		0.1580	27.06	9.73	36.79	55.57	-18.78	AVG	
3		0.6940	35.47	9.90	45.37	56.00	-10.63	QP	
4		0.6940	12.99	9.90	22.89	46.00	-23.11	AVG	
5		1.6340	25.96	9.96	35.92	56.00	-20.08	QP	
6		1.6340	16.74	9.96	26.70	46.00	-19.30	AVG	
7		3.7740	23.70	10.02	33.72	56.00	-22.28	QP	
8		3.7740	17.53	10.02	27.55	46.00	-18.45	AVG	
9		8.2500	36.50	10.20	46.70	60.00	-13.30	QP	
10		8.2500	21.36	10.20	31.56	50.00	-18.44	AVG	
11		20.7420	32.86	10.12	42.98	60.00	-17.02	QP	
12		20.7420	25.93	10.12	36.05	50.00	-13.95	AVG	

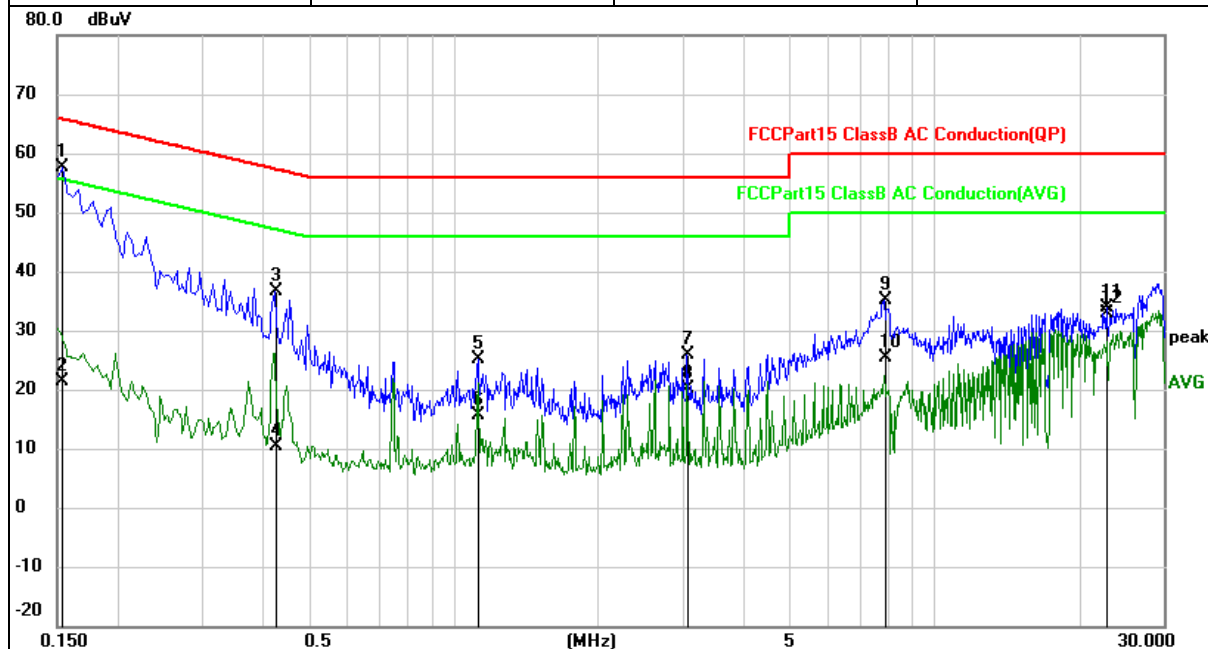
EUT	FLIhub + FLIcube	Model name:	01001
Pressure:	101kPa	Phase:	N
Test voltage:	DC 20V from adapter AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	46.89	9.73	56.62	66.00	-9.38	QP	
2		0.1500	23.24	9.73	32.97	56.00	-23.03	AVG	
3		0.4140	38.33	9.82	48.15	57.57	-9.42	QP	
4		0.4140	17.53	9.82	27.35	47.57	-20.22	AVG	
5		0.6980	36.46	9.90	46.36	56.00	-9.64	QP	
6		0.6980	11.89	9.90	21.79	46.00	-24.21	AVG	
7		1.5780	27.95	9.96	37.91	56.00	-18.09	QP	
8		1.5780	18.38	9.96	28.34	46.00	-17.66	AVG	
9		9.6580	32.67	10.27	42.94	60.00	-17.06	QP	
10		9.6580	20.14	10.27	30.41	50.00	-19.59	AVG	
11		20.4619	33.13	10.10	43.23	60.00	-16.77	QP	
12		20.4619	28.99	10.10	39.09	50.00	-10.91	AVG	

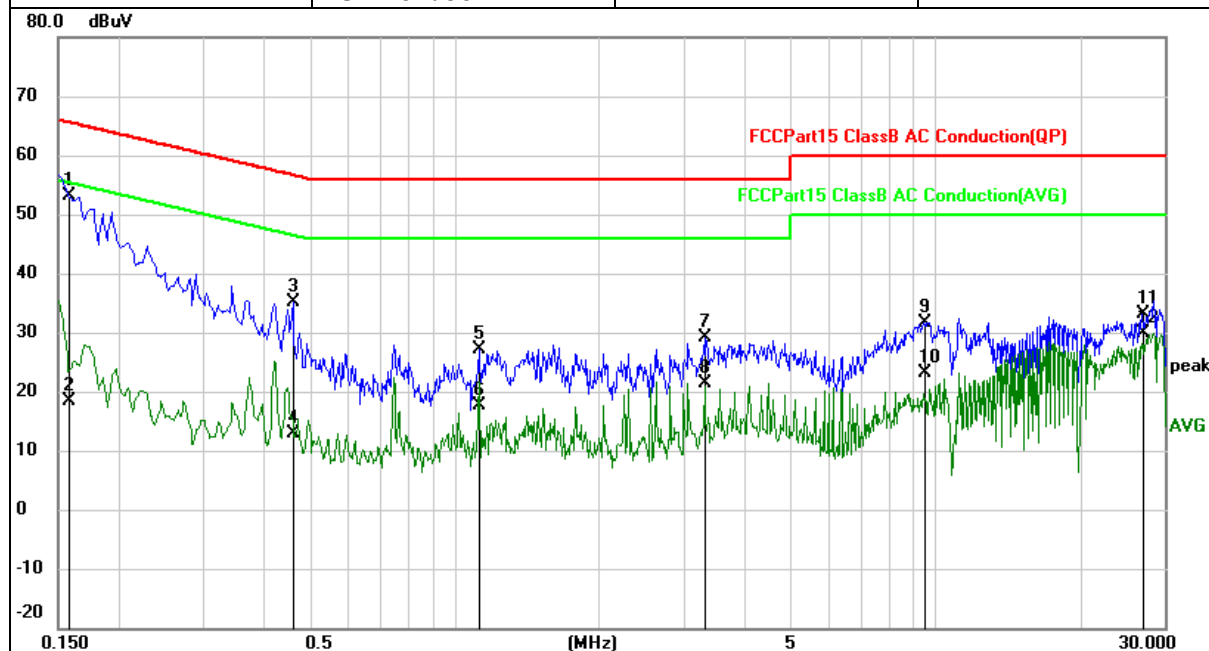
FLIhub:

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Phase:	L
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



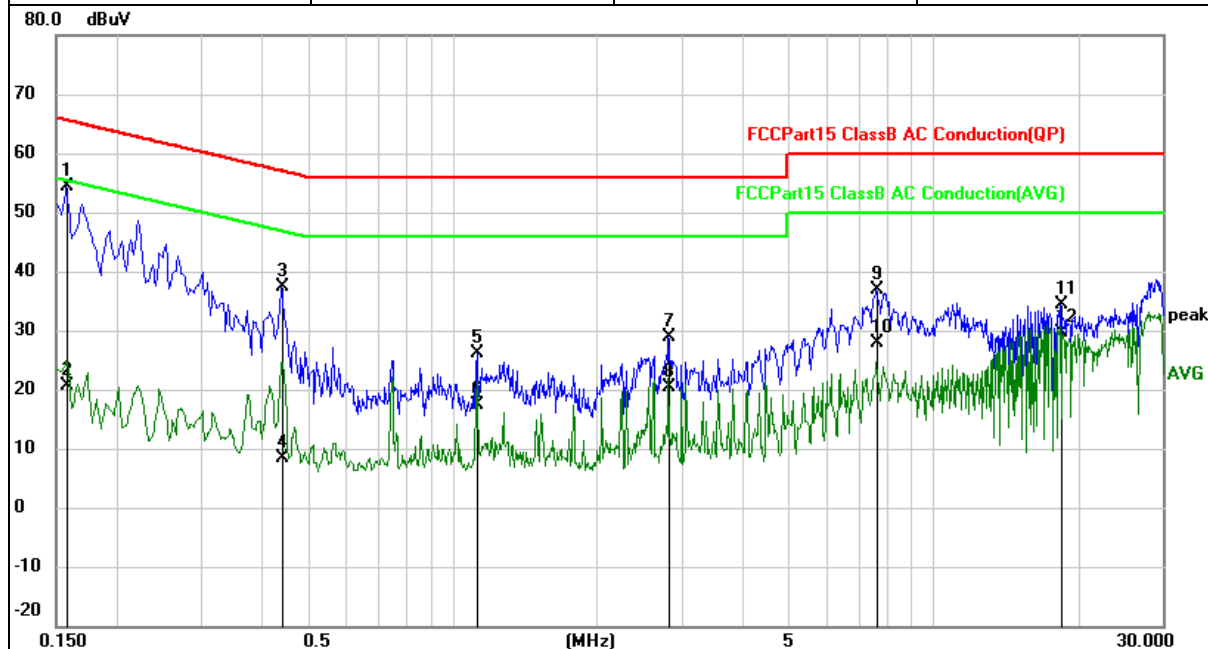
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1539	47.93	9.73	57.66	65.79	-8.13	QP
2		0.1539	11.66	9.73	21.39	55.79	-34.40	AVG
3		0.4260	26.90	9.83	36.73	57.33	-20.60	QP
4		0.4260	0.53	9.83	10.36	47.33	-36.97	AVG
5		1.1260	15.23	9.95	25.18	56.00	-30.82	QP
6		1.1260	5.73	9.95	15.68	46.00	-30.32	AVG
7		3.0700	15.84	10.01	25.85	56.00	-30.15	QP
8		3.0700	10.10	10.01	20.11	46.00	-25.89	AVG
9		7.8780	24.98	10.19	35.17	60.00	-24.83	QP
10		7.8780	15.20	10.19	25.39	50.00	-24.61	AVG
11		22.8900	23.59	10.18	33.77	60.00	-26.23	QP
12		22.8900	22.79	10.18	32.97	50.00	-17.03	AVG

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Phase:	N
Test voltage:	DC 20V from adapter AC 120V/60Hz	Test mode:	Mode 1



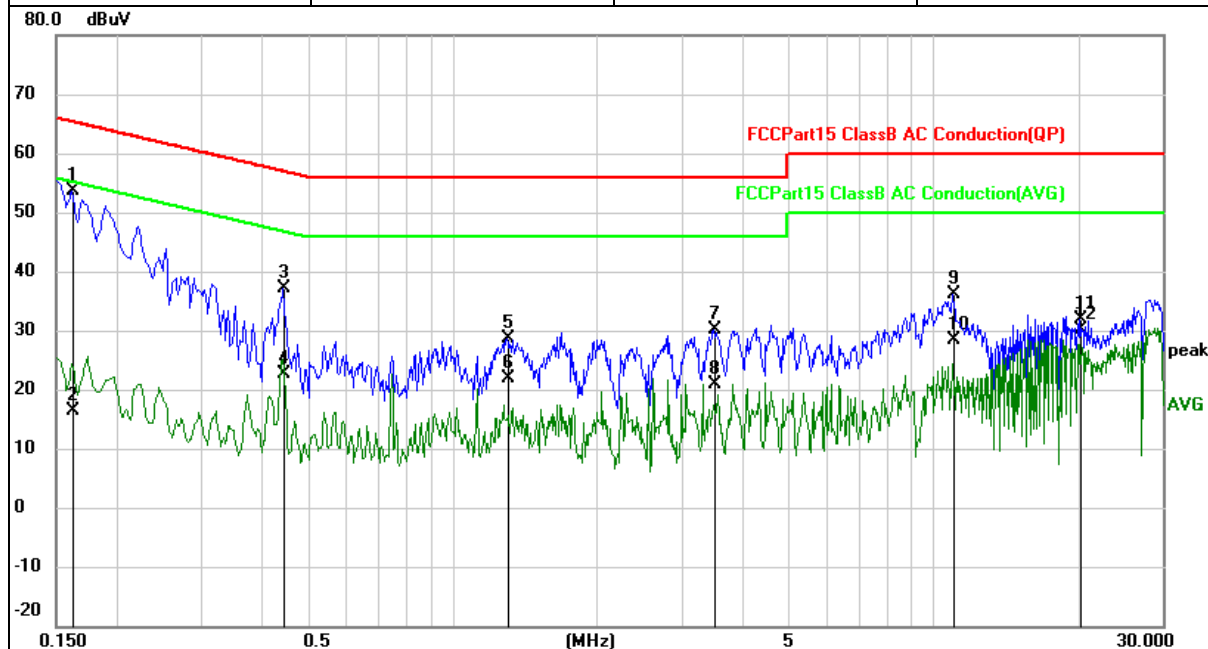
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1580	43.37	9.73	53.10	65.57	-12.47	QP
2		0.1580	8.77	9.73	18.50	55.57	-37.07	AVG
3		0.4620	25.28	9.86	35.14	56.66	-21.52	QP
4		0.4620	2.98	9.86	12.84	46.66	-33.82	AVG
5		1.1260	17.13	9.95	27.08	56.00	-28.92	QP
6		1.1260	7.75	9.95	17.70	46.00	-28.30	AVG
7		3.3260	19.01	10.01	29.02	56.00	-26.98	QP
8		3.3260	11.40	10.01	21.41	46.00	-24.59	AVG
9		9.4620	21.48	10.26	31.74	60.00	-28.26	QP
10		9.4620	12.76	10.26	23.02	50.00	-26.98	AVG
11		26.9780	22.75	10.30	33.05	60.00	-26.95	QP
12		26.9780	19.55	10.30	29.85	50.00	-20.15	AVG

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Phase:	L
Test voltage:	DC 20V from adapter AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1580	44.53	9.73	54.26	65.57	-11.31	QP
2		0.1580	10.86	9.73	20.59	55.57	-34.98	AVG
3		0.4420	27.41	9.85	37.26	57.02	-19.76	QP
4		0.4420	-1.50	9.85	8.35	47.02	-38.67	AVG
5		1.1260	16.30	9.95	26.25	56.00	-29.75	QP
6		1.1260	7.47	9.95	17.42	46.00	-28.58	AVG
7		2.8140	18.77	9.99	28.76	56.00	-27.24	QP
8		2.8140	10.43	9.99	20.42	46.00	-25.58	AVG
9		7.6260	26.77	10.17	36.94	60.00	-23.06	QP
10		7.6260	17.67	10.17	27.84	50.00	-22.16	AVG
11		18.4140	24.31	10.12	34.43	60.00	-25.57	QP
12		18.4140	19.59	10.12	29.71	50.00	-20.29	AVG

EUT	FLIhub	Model name:	01009
Pressure:	101kPa	Phase:	N
Test voltage:	DC 20V from adapter AC 240V/60Hz	Test mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1620	43.83	9.73	53.56	65.36	-11.80	QP
2		0.1620	6.60	9.73	16.33	55.36	-39.03	AVG
3		0.4460	27.31	9.85	37.16	56.95	-19.79	QP
4		0.4460	12.85	9.85	22.70	46.95	-24.25	AVG
5		1.2980	18.55	9.96	28.51	56.00	-27.49	QP
6		1.2980	11.99	9.96	21.95	46.00	-24.05	AVG
7		3.5020	20.06	10.02	30.08	56.00	-25.92	QP
8		3.5020	10.92	10.02	20.94	46.00	-25.06	AVG
9		10.9980	25.97	10.27	36.24	60.00	-23.76	QP
10		10.9980	18.03	10.27	28.30	50.00	-21.70	AVG
11		20.2099	21.84	10.09	31.93	60.00	-28.07	QP
12		20.2099	19.92	10.09	30.01	50.00	-19.99	AVG

5.2 Occupied bandwidth

5.2.1 Test method

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW $\geq 1\%$ of the 20 dB bandwidth

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

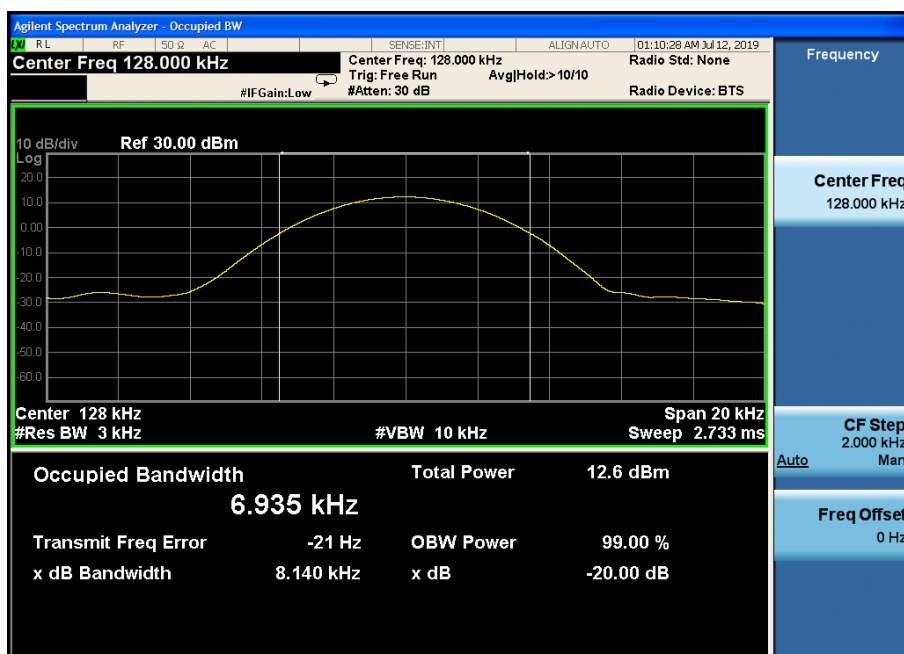
Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth and 99% occupied bandwidth of the emission.

5.2.2 Test result

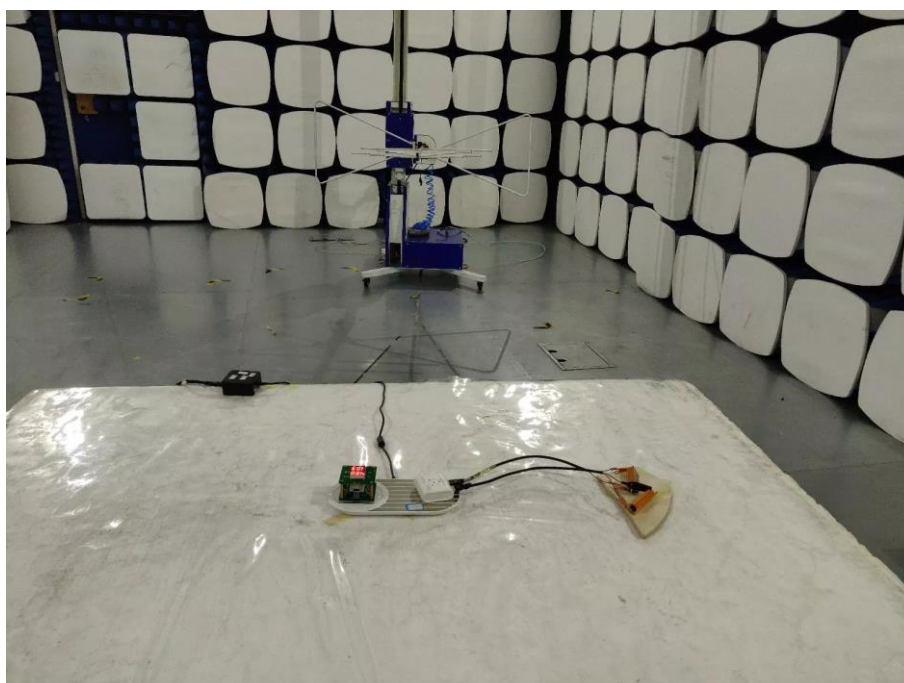
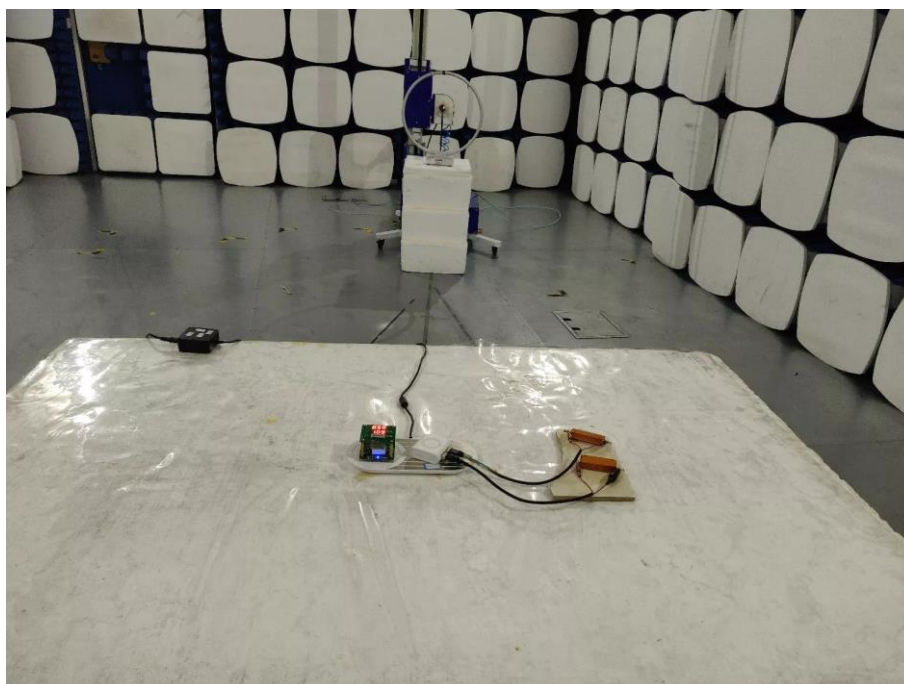
Frequency (kHz)	20dB emission bandwidth (kHz)	99% occupied bandwidth (kHz)
128	8.140	6.935

Test plots as below



Photographs of the Test Setup

Radiated emission



Conducted emission



Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi19051017-3E1-1.

----END OF REPORT----