



FCC TEST REPORT

FCC ID:2BNU3-W166

Applicant: Guangdong Stellar Craft Technology Co., LTD
Address: Renqian Road 19, Wushi, Sanxiang, Zhongshan, China
Manufacturer: Guangdong Stellar Craft Technology Co., LTD
Address: Renqian Road 19, Wushi, Sanxiang, Zhongshan, China
EUT: wireless charger
Trade Mark: N/A
Model Number: W166
Date of Receipt: Apr. 08, 2025
Test Date: Apr. 08, 2025 - Apr. 23, 2025
Date of Report: Apr. 23, 2025
Prepared By: Shenzhen DL Testing Technology Co., Ltd.
Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China
Applicable Standards: FCC CFR Title 47 Part 15 Subpart C
Test Result: Pass
Report Number: DLE-250512016R

Prepared (Test Engineer): Dimon Tan

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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**1. VERSION**

Report No.	Version	Description	Approved
DLE-250512016R	Rev.01	Initial issue of report	Apr. 23, 2025



2. TEST SUMMARY

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Spurious Emission	15.209(a)(f)	Pass
20dB Bandwidth	15.215	Pass

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



TEST FACILITY

Test lab: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Roa Baolong Industrial Zone, Baolong Street, Longgang Shenzhen, Guangdong, China

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 % .

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	$U=4.5\text{dB}$
2	3m camber Radiated spurious emission(30MHz-1GHz)	$U=4.8\text{dB}$
3	3m chamber Radiated spurious emission(1GHz-6GHz)	$U=4.9\text{dB}$
4	3m chamber Radiated spurious emission(6GHz-40GHz)	$U=5.0\text{dB}$
5	Conducted disturbance	$U=3.2\text{dB}$
6	RF Band Edge	$U=1.68\text{dB}$
7	RF power conducted	$U=1.86\text{dB}$
8	RF conducted Spurious Emission	$U=2.2\text{dB}$
9	RF Occupied Bandwidth	$U=1.8\text{dB}$
10	RF Power Spectral Density	$U=1.75\text{dB}$
11	humidity uncertainty	$U=5.3\%$
12	Temperature uncertainty	$U=0.59^\circ\text{C}$



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Wireless charger
Model No.:	W166
Serial No.:	N/A
Model Difference:	N/A
Hardware version:	H 1.0
Software version:	V 1.1
Operation Frequency:	ANT 1&2: 115kHz~205kHz ANT 3: 115kHz~360kHz
Modulation type:	ASK
Antenna Type:	ANT 1&2&3: Loop Coil Antenna
Antenna gain:	ANT 1&2&3: 0dBi
Ratings:	Input: 5V---3A, 9V---2A, 12V---2.5A Output-Phone: 7.5W, 10W, 15W AirPods: 3W Watch: 2.5W
Transmitting mode	Battery $\geq 98\%$, $= 50\%$ and $\leq 1\%$ are tested, and the worst is $\leq 1\%$.



3.2 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 Modes:			Description:	
Mode 1	Input:5V, 3A Phone Output:7.5W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 2	Input:5V, 3A Phone Output:10W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 3	Input:5V, 3A Phone Output:15W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 4	Input:5V, 3A Earphone Output:3W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 5	Input:5V, 3A Watch Output:2.5W	AC/DC Adapter +EUT+ Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 6	Input:5V, 3A Phone Output:7.5W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 7	Input:5V, 3A Phone Output:10W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 8	Input:5V, 3A Phone Output:7.5W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 9	Input:5V, 3A Phone Output:10W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 10	Input:5V, 3A Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	



Mode 11	Input:5V, 3A Phone Output:7.5W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 12	Input:9V, 2A Phone Output:7.5W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 13	Input:9V, 2A Phone Output:10W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 14	Input:9V, 2A Phone Output:15W	AC/DC Adapter +EUT+ iPhone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 15	Input:9V, 2A Earphone Output:3W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 16	Input:9V, 2A Watch Output:2.5W	AC/DC Adapter +EUT+ Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 17	Input:9V, 2A Phone Output:7.5W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 18	Input:9V, 2A Phone Output:10W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 19	Input:9V, 2A Phone Output:15W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 20	Input:9V, 2A Phone Output:7.5W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 21	Input:9V, 2A Phone Output:10W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 22	Input:9V, 2A Phone Output:15W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	



Mode 23	Input:9V, 2A Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 24	Input:9V, 2A Phone Output:7.5W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 25	Input:9V, 2A Phone Output:10W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 26	Input:12V, 2.5A Phone Output:7.5W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 27	Input:12V, 2.5A Phone Output:10W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 28	Input:12V, 2.5A Phone Output:15W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	Pretest
			Battery $\leq 1\%$	Record
Mode 29	Input:12V, 2.5A Earphone Output:3W	AC/DC Adapter +EUT+ Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	Pretest
			Battery $\leq 1\%$	Record
Mode 30	Input:12V, 2.5A Watch Output:2.5W	AC/DC Adapter +EUT+ Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	Pretest
			Battery $\leq 1\%$	Record
Mode 31	Input:12V, 2.5A Phone Output:7.5W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 32	Input:12V, 2.5A Phone Output:10W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 33	Input:12V, 2.5A Phone Output:15W Earphone Output:3W	AC/DC Adapter +EUT+ iPhone + Earphone	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 34	Input:12V, 2.5A Phone Output:7.5W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	



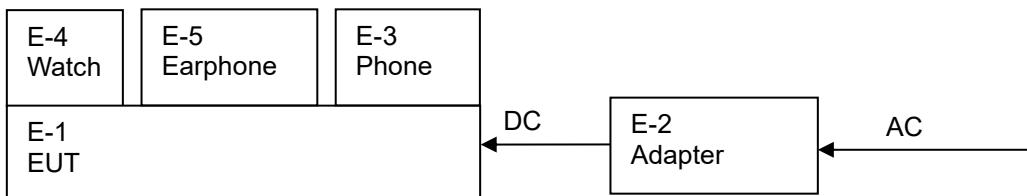
Mode 35	Input:12V, 2.5A Phone Output:10W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 36	Input:12V, 2.5A Phone Output:15W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 37	Input:12V, 2.5A Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 38	Input:12V, 2.5A Phone Output:7.5W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 39	Input:12V, 2.5A Phone Output:10W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	
			Battery $\leq 1\%$	
Mode 40	Input:12V, 2.5A Phone Output:15W Earphone Output:3W Watch Output:2.5W	AC/DC Adapter +EUT+ iPhone + Earphone + Watch	Battery $\geq 98\%$	Pretest
			Battery =50%	Pretest
			Battery $\leq 1\%$	Record

Note: All modes have been tested, and the report only reflects the worst case data.

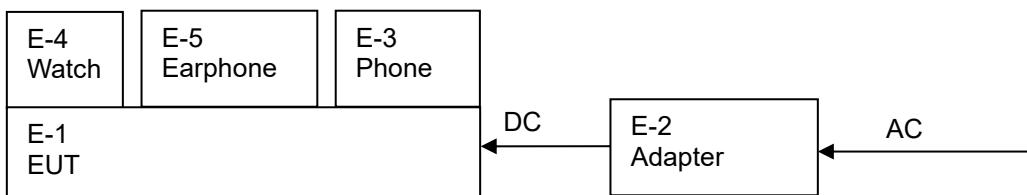


3.3 Block Diagram of EUT Configuration

Conducted Emission



Radiated Emission



3.4 Test Conditions

Temperature: 23~26°C

Relative Humidity: 54~63 %

3.5 Description Of Support Units (Conducted Mode)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless charger	N/A	W166	N/A	EUT
E-2	Adapter	Aohai	A895-200150C-CN1	N/A	Auxiliary
E-3	Phone	Apple	iPhone 13	N/A	Auxiliary
E-4	Watch	Apple	iWatch S2	N/A	Auxiliary
E-5	Earphone	Apple	AirPods 2	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	0.8M	DC cable unshielded

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in [Length] column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".



3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sep. 30, 2024	Sep. 29, 2025
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 30, 2024	Sep. 29, 2025
3	Test Cable	N/A	C-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Sep. 29, 2024	Sep. 28, 2025
5	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 29, 2024	Sep. 28, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 30, 2024	Sep. 29, 2025
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Sep. 29, 2024	Sep. 28, 2025
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 30, 2024	Sep. 29, 2025
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 30, 2024	Sep. 29, 2025
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2024	Sep. 29, 2025
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Oct. 11, 2024	Oct. 10, 2025
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 29, 2024	Sep. 28, 2025
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 29, 2024	Sep. 28, 2025
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Sep. 30, 2024	Sep. 29, 2025
11	Test Cable	N/A	R-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
12	Test Cable	N/A	R-02	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
13	Test Cable	N/A	R-03	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
14	D.C. Power Supply	LongWei	TPR-6405D	GQ7516	N/A	Sep. 29, 2024	Sep. 28, 2025
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\



RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 29, 2024	Sep. 28, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 30, 2024	Sep. 29, 2025
3	Test Cable	N/A	RF-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
4	Test Cable	N/A	RF-02	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
5	Test Cable	N/A	RF-03	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
6	ESG Signal Generator	Agilent	E4421B	GB40051203	B.03.84	Sep. 29, 2024	Sep. 28, 2025
7	Signal Generator	Agilent	N5182A	MY47420215	A.01.87	Sep. 29, 2024	Sep. 28, 2025
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Sep. 29, 2024	Sep. 28, 2025
9	Van der Hoofden measuring head	Schwarzbeck Mess-elektronik	VDHH 9502	9502-039	N/A	Sep. 30, 2024	Sep. 29, 2025
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 30, 2024	Sep. 29, 2025
11	MWRF Power Meter Test system	MW	MW100-RF CB	10371	N/A	Sep. 29, 2024	Sep. 28, 2025
12	Power Meter	KEYSIGHT	N1912AP	926431	A.05.00	Sep. 29, 2024	Sep. 28, 2025
13	D.C. Power Supply	LongWei	TPR-6405D	GQ7516	N/A	Sep. 29, 2024	Sep. 28, 2025
14	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\



4. CONDUCTED EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

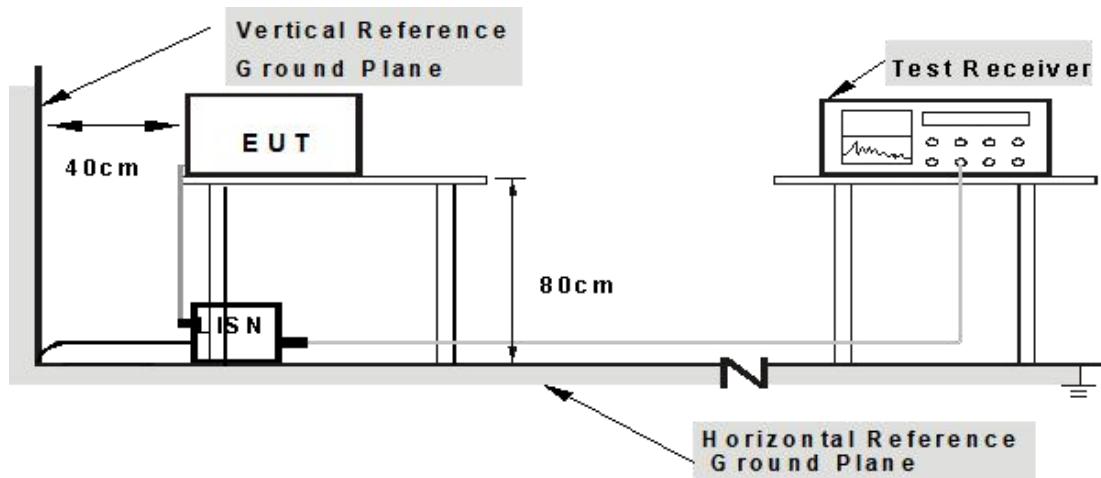
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



Note:

1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

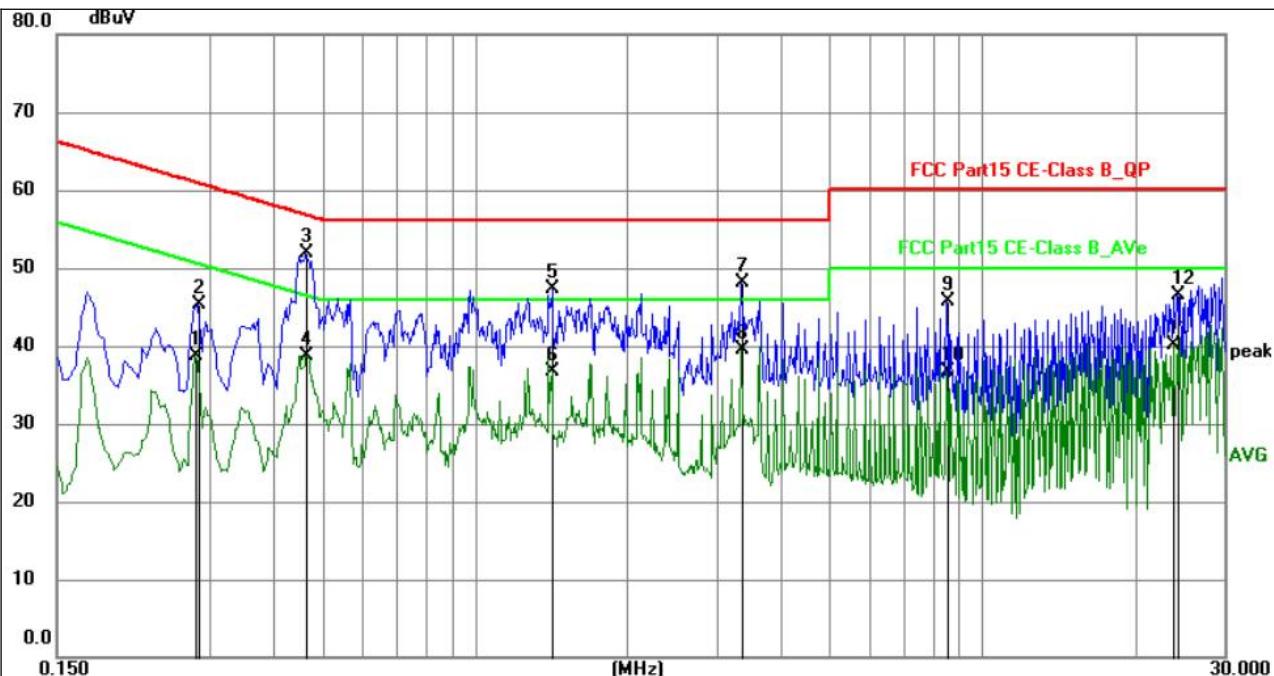
4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



4.1.6 Test Result

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 40



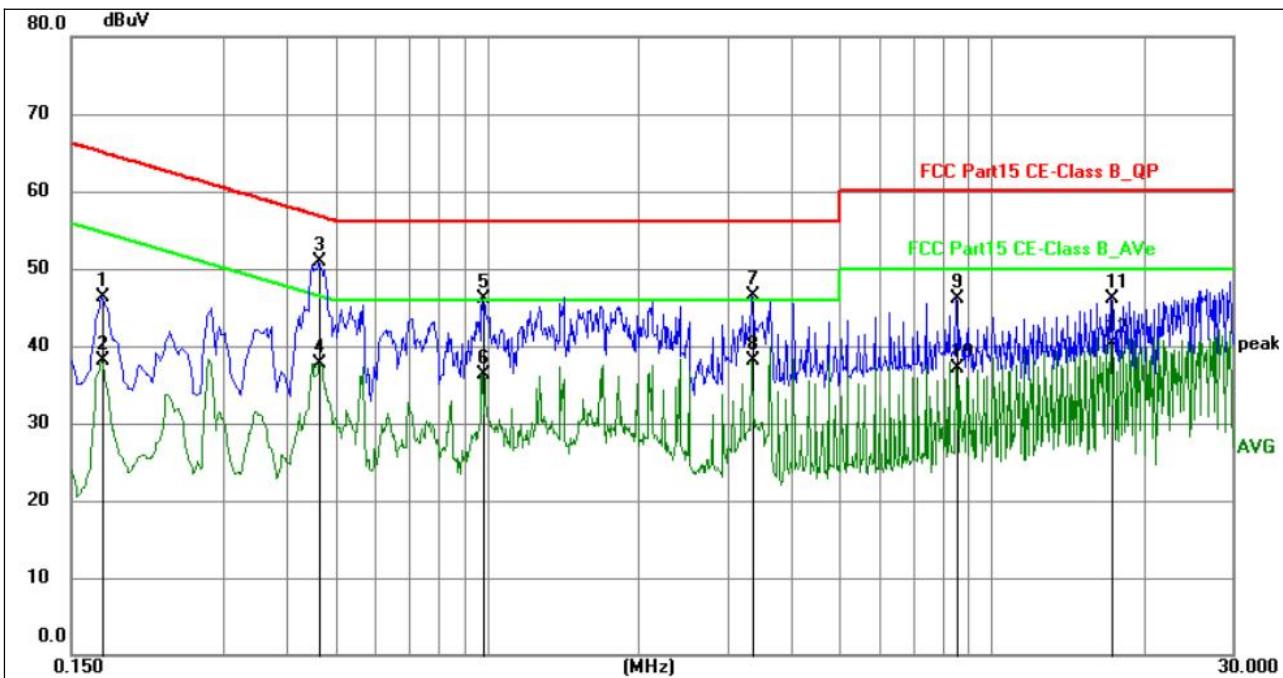
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2805	18.43	20.35	38.78	50.80	-12.02	AVG	P	
2	0.2849	25.02	20.35	45.37	60.67	-15.30	QP	P	
3	0.4650	31.59	20.31	51.90	56.60	-4.70	QP	P	
4	0.4661	18.32	20.31	38.63	46.58	-7.95	AVG	P	
5	1.4189	26.97	20.31	47.28	56.00	-8.72	QP	P	
6	1.4189	16.43	20.31	36.74	46.00	-9.26	AVG	P	
7	3.3629	27.73	20.33	48.06	56.00	-7.94	QP	P	
8	3.3629	19.24	20.33	39.57	46.00	-6.43	AVG	P	
9	8.5424	25.26	20.43	45.69	60.00	-14.31	QP	P	
10	8.5424	16.23	20.43	36.66	50.00	-13.34	AVG	P	
11	23.8064	19.56	20.60	40.16	50.00	-9.84	AVG	P	
12	24.2294	25.87	20.61	46.48	60.00	-13.52	QP	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lsln factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. All test modes were tested, with only the worst Mode 40 recorded.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 40



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1723	26.08	20.27	46.35	64.85	-18.50	QP	P	
2	0.1723	17.79	20.27	38.06	54.85	-16.79	AVG	P	
3	0.4650	30.59	20.31	50.90	56.60	-5.70	QP	P	
4	0.4650	17.32	20.31	37.63	46.60	-8.97	AVG	P	
5	0.9824	25.85	20.30	46.15	56.00	-9.85	QP	P	
6	0.9824	15.99	20.30	36.29	46.00	-9.71	AVG	P	
7	3.3628	26.23	20.33	46.56	56.00	-9.44	QP	P	
8	3.3628	17.74	20.33	38.07	46.00	-7.93	AVG	P	
9	8.5424	25.76	20.43	46.19	60.00	-13.81	QP	P	
10	8.5424	16.73	20.43	37.16	50.00	-12.84	AVG	P	
11	17.2770	25.62	20.50	46.12	60.00	-13.88	QP	P	
12	17.2770	19.75	20.50	40.25	50.00	-9.75	AVG	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi - Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lsln factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. All test modes were tested, with only the worst Mode 40 recorded.



5. RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 1GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

5.1 Radiated Emission Limits

Limits for frequency below 30MHz

Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.490	2400/F(kHz)	300	Quasi-peak Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

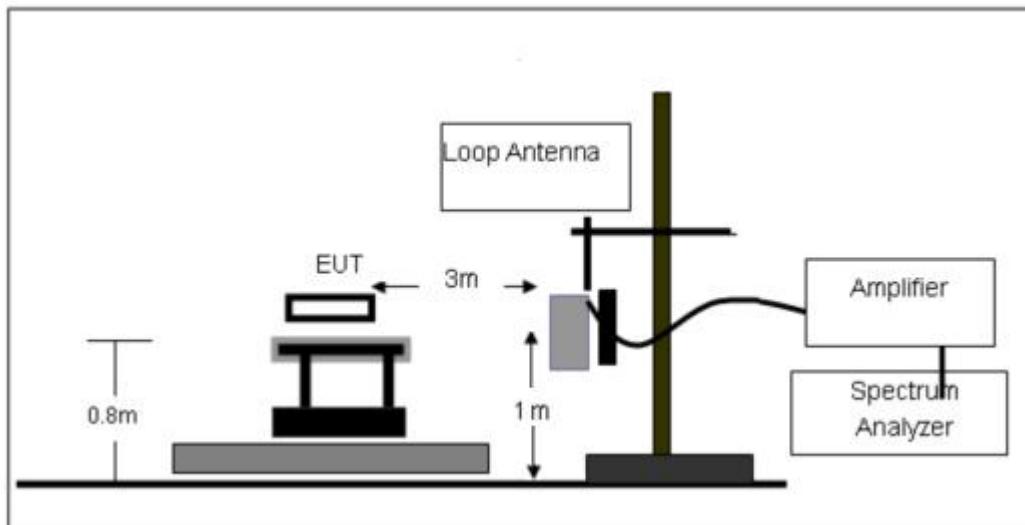
Limits for frequency Above 30MHz

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

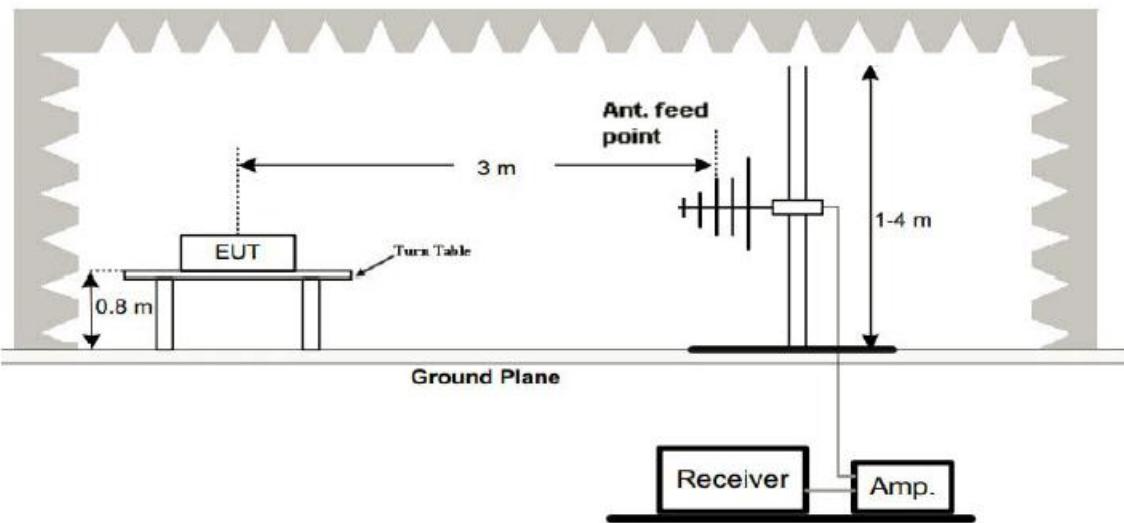


5.2 Anechoic Chamber Test Setup Diagram

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.



5.3 Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5 Test Result

Measurement data:

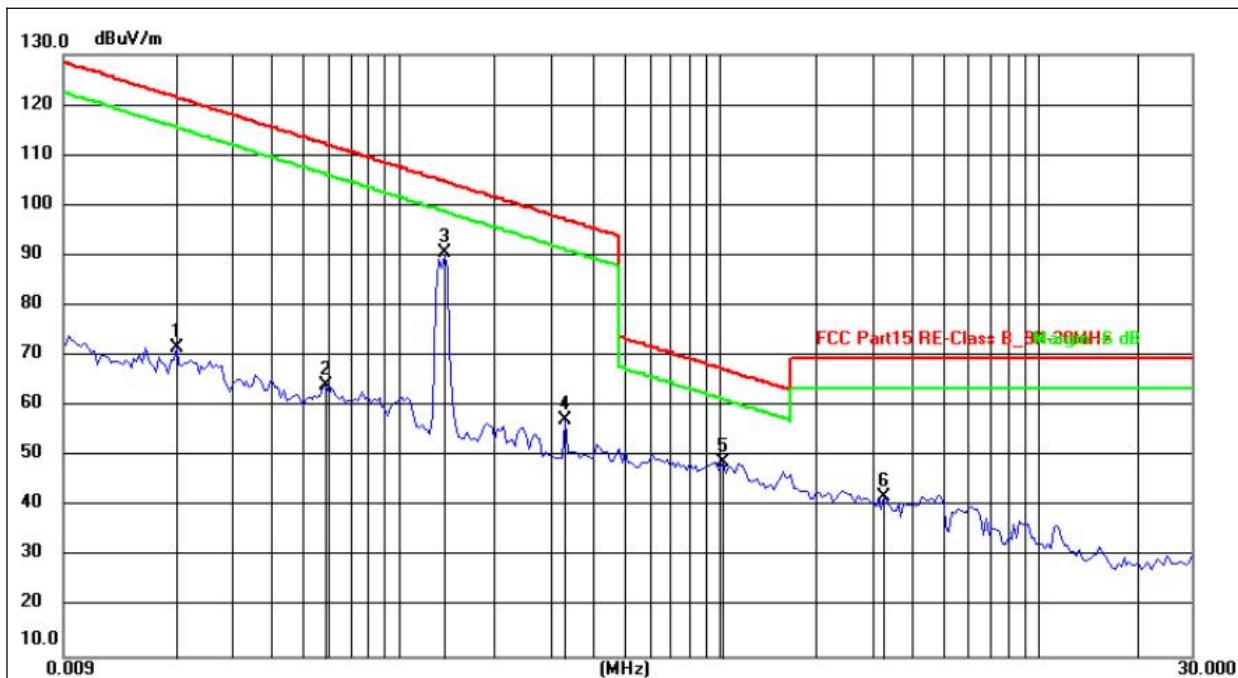
Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40



9 kHz~30 MHz:

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	coaxial
Test Voltage:	DC 12V	Test Mode:	Mode 28



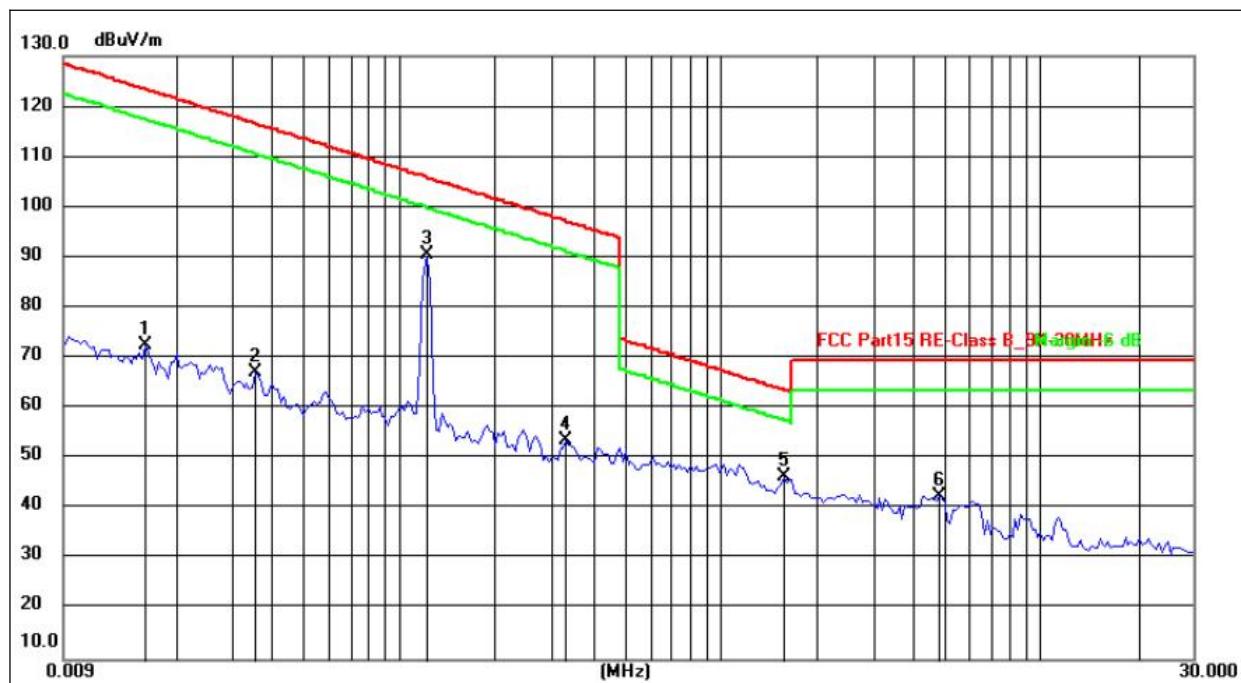
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0200	51.06	20.45	71.51	121.58	-50.07	peak
2	0.0592	44.44	19.80	64.24	112.16	-47.92	peak
3	0.1384	70.58	19.99	90.57	104.78	-14.21	peak
4	0.3326	37.09	20.13	57.22	97.17	-39.95	peak
5	1.0354	29.01	19.94	48.95	67.30	-18.35	peak
6	3.2894	22.32	19.63	41.95	69.54	-27.59	peak

Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	coaxial
Test Voltage:	DC 12V	Test Mode:	Mode 29



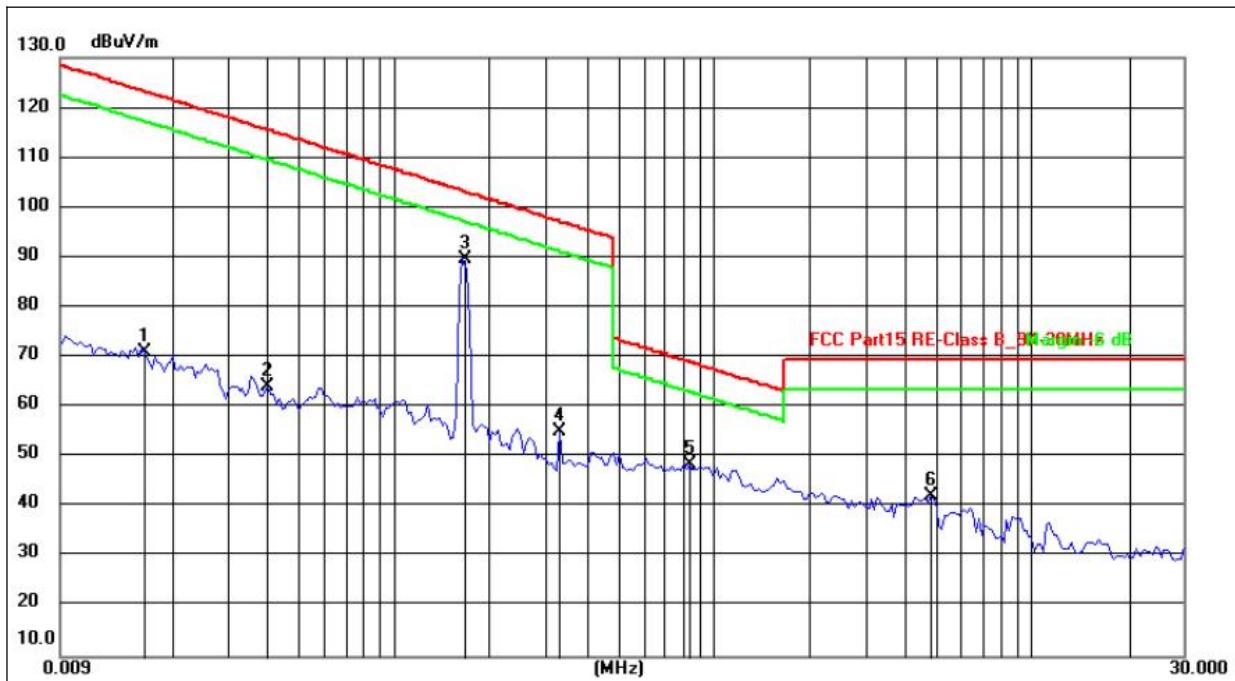
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0160	52.07	20.49	72.56	123.52	-50.96	peak
2	0.0357	47.11	20.08	67.19	116.55	-49.36	peak
3	0.1211	70.70	19.89	90.59	105.94	-15.35	peak
4	0.3326	33.59	20.13	53.72	97.17	-43.45	peak
5	1.5846	26.56	19.86	46.42	63.61	-17.19	peak
6	4.8357	23.14	19.49	42.63	69.54	-26.91	peak

Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	coaxial
Test Voltage:	DC 12V	Test Mode:	Mode 30



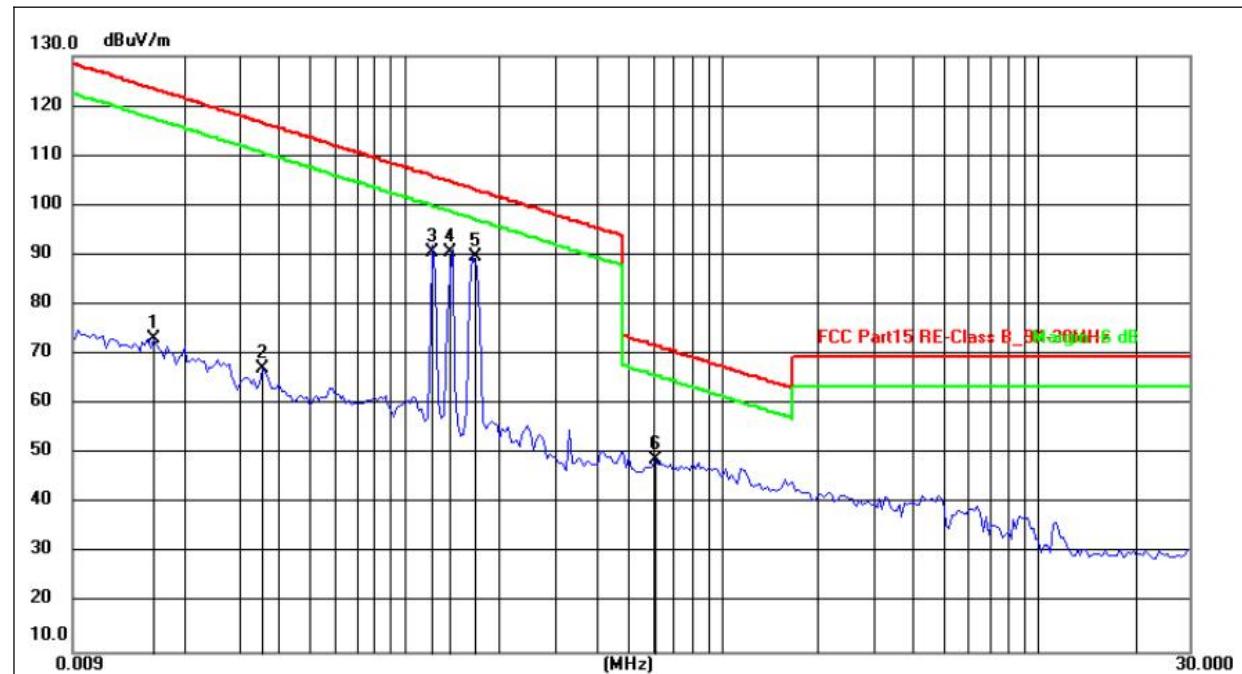
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0165	50.50	20.48	70.98	123.26	-52.28	peak
2	0.0403	44.31	19.98	64.29	115.50	-51.21	peak
3	0.1642	69.64	20.07	89.71	103.30	-13.59	peak
4	0.3326	35.09	20.13	55.22	97.17	-41.95	peak
5	0.8453	28.37	20.24	48.61	69.06	-20.45	peak
6	4.8357	22.64	19.49	42.13	69.54	-27.41	peak

Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	coaxial
Test Voltage:	DC 12V	Test Mode:	Mode 40



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0160	52.57	20.49	73.06	123.52	-50.46	peak
2	0.0357	47.11	20.08	67.19	116.55	-49.36	peak
3	0.1211	70.70	19.89	90.59	105.94	-15.35	peak
4	0.1384	70.58	19.99	90.57	104.78	-14.21	peak
5	0.1642	69.64	20.07	89.71	103.30	-13.59	peak
6	0.6236	28.53	20.31	48.84	71.71	-22.87	peak

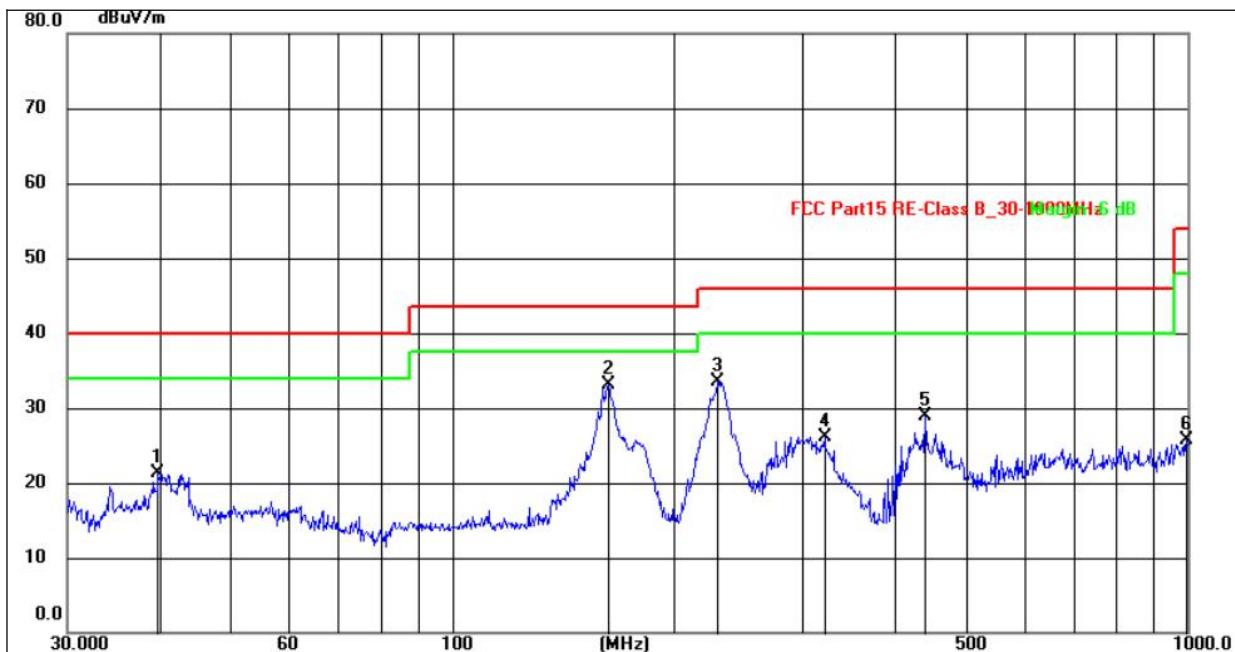
Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.



30MHz-1GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 12V	Test Mode:	Mode 40



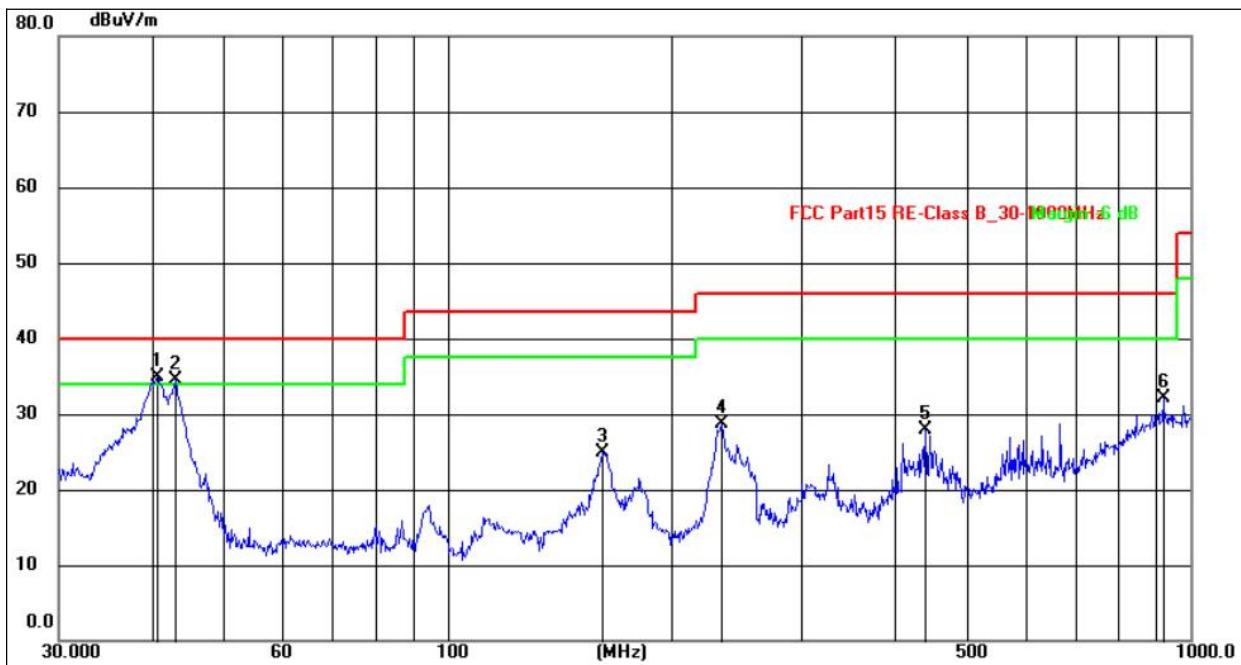
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	39.8541	35.42	-14.06	21.36	40.00	-18.64	QP
2	163.1817	49.27	-16.22	33.05	43.50	-10.45	QP
3	230.0985	50.16	-16.68	33.48	46.00	-12.52	QP
4	321.0605	42.62	-16.45	26.17	46.00	-19.83	QP
5	440.1961	42.98	-14.04	28.94	46.00	-17.06	QP
6	996.4995	30.32	-4.63	25.69	54.00	-28.31	QP

Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. All test modes were tested, with only the worst Mode 40 recorded.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 12V	Test Mode:	Mode 40



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.7014	51.68	-16.80	34.88	40.00	-5.12	QP
2	43.0504	51.32	-16.89	34.43	40.00	-5.57	QP
3	162.0413	44.80	-19.92	24.88	43.50	-18.62	QP
4	234.1682	48.57	-19.96	28.61	46.00	-17.39	QP
5	440.1961	41.03	-13.10	27.93	46.00	-18.07	QP
6	919.2865	32.42	-0.33	32.09	46.00	-13.91	QP

Remarks:

1. An initial pre-scan was performed on the peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin= Measurement Level-Limit.
7. All test modes were tested, with only the worst Mode 40 recorded.



6. 20DB BANDWIDTH TEST

1. Se span = 1.5 ~ 5 times OBW.
2. Set RBW = 1KHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. 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.

TEST SETUP

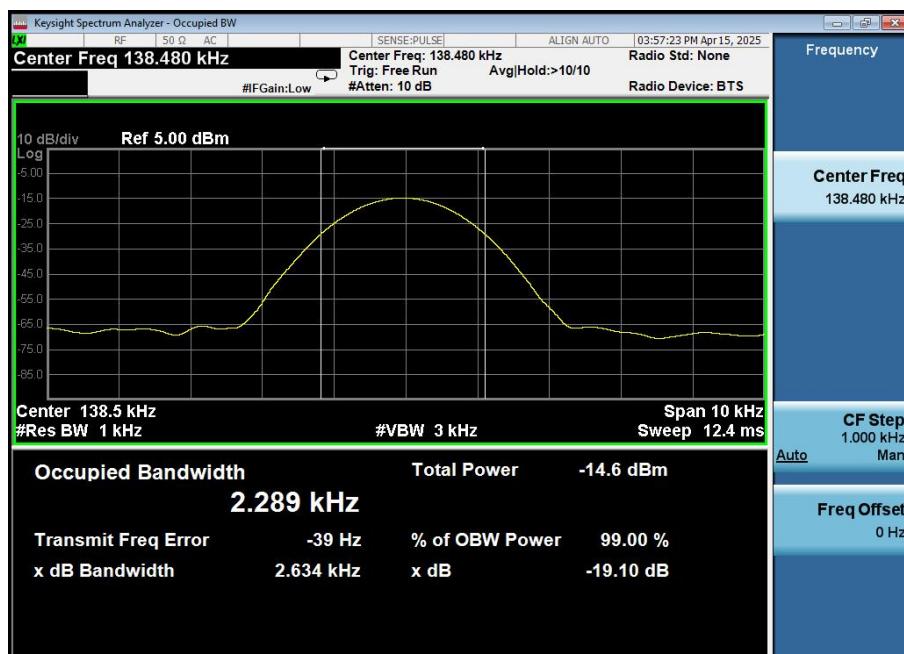




Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 12V

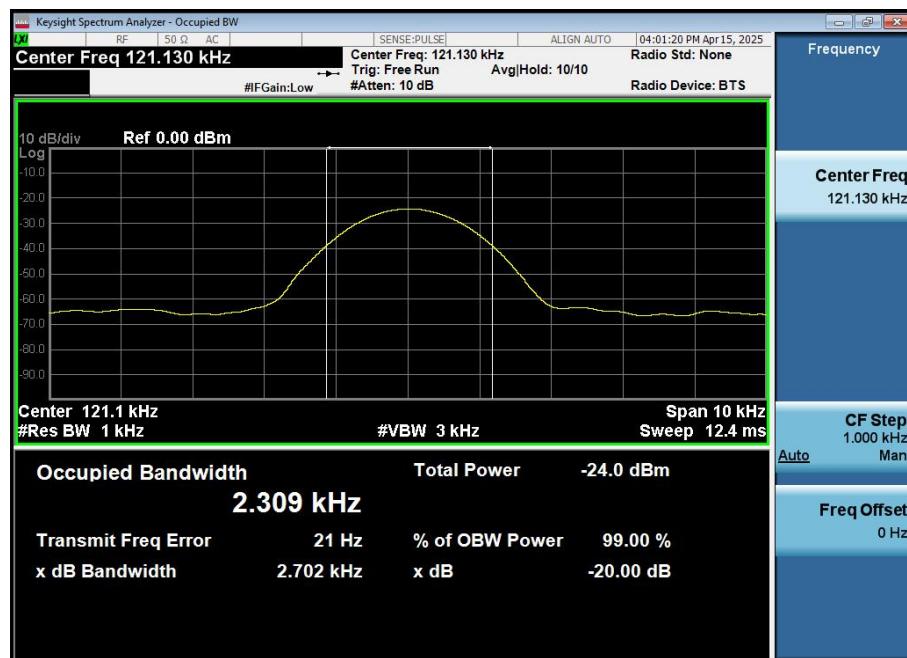
Test Coil	Frequency (kHz)	20dB Bandwidth (kHz)	Result
ANT 1	138.480	2.634	Pass
ANT 2	121.130	2.702	Pass
ANT 3	164.250	3.082	Pass

ANT 1:





ANT 2:



ANT 3:





7. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C 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 Loop Coil antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details	



8. TEST SETUP PHOTO

Reference to the appendix I for details.

9. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****