TEST REPORT

Application No.:	BTEK241009005AE
Applicant:	ZAGG INC.
Address of Applicant:	910 West Legacy Center Way Midvale,UT 84047
Manufacturer:	ZAGG INC.
Address of Manufacturer:	910 West Legacy Center Way Midvale,UT 84047
Equipment Under Test (EUT):	
EUT Name:	4-Port Hub with Wireless Charging
Test Model.:	ZHUBLPT4HW59
Adding Model(s):	/
Trade Mark:	ZAGG
FCC ID:	QTG-ZHUXFWC
Standard(s) :	47 CFR Part 15 Subpart C
Date of Receipt:	2024-10-10
Date of Test:	2024-10-11 to 2024-10-16
Date of Issue:	2024-10-17
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Lion Cai/ Approved & Authorized
EMC Laboratory Manager

ShenZhen BANTEK Testing Co.,Ltd.
Add：A5&A6, Building B1&B2, No.45 Gangtou Road, Bogang Community, Shajing Street
Bao'an District, Shenzhen, Guangdong, China 518104
Tel：+(86)755-2334 4200 E-mail：Service@btek-lab.com Web：www.btek-lab.com

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
V0		2024-10-17		*Original*

Authorized for issue by:				
		Zora Huang **Zora Huang /Project Engineer**		
		June Li **June Li /Reviewer**		

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Test Summary

Item	Document Title
47 CFR Part 15, Subpart C	Intentional Radiators
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Item	Standard	Result
Antenna Requirements	15.203	Pass
20dB Occupied Bandwidth	15.215c	Pass
AC Power Line Conducted Emissions	15.207	Pass
Spurious Emissions	15.209	Pass

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

3 Contents

3 General Information

3.1 Details of E.U.T.

Power Supply	Input: USB-C(In):DC 20V 5A Max. Output: USB-C(Out): DC 9V⎓ 2.2A, DC5V⎓ 1.5A USB-A: DC 5V⎓ 0.9A USB-C Cable: DC 20V⎓ 3A Max Wireless charging: 10W Max
Modulation Type	FSK
Operating frequency	112kHz-205kHz
Antenna Type	Induction Coil antenna
Hardware Version	V2.0
Software Version	V1.0
Sample number	BTEK241009004AE-01
Remark: The information in this section is provided by the applicant or manufacturer, BANTEK is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

3.2 Description of EUT Test Mode

Test Mode List		
Test Mode	Description	Remark
1	Wireless output:10W Load 1%	Keep the EUT Wireless output
2	Wireless output:10W Load 50%	Keep the EUT Wireless output
3	Wireless output:10W Load 99%	Keep the EUT Wireless output
Remark:1.Only show the worst case load 1% in the test report		

3.3 Description of Support Units

Auxiliary Equipment			
Description	Manufacturer	Model	Serial Number
Adapter	HUAWEI	HW-200440000	/

3.4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2 and TR100 028-1/-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Occupied Channel Bandwidth	69 KHz
RF output power, conducted	0.87 dB
Power Spectral Density, conducted	0.69 dB
Unwanted Emissions, conducted	0.94 dB
All emissions, radiated(<1GHz)	4.12 dB
All emissions, radiated(>1GHz)	4.16 dB
Temperature	0.82 °C
Humidity	4.1 %

3.5 Test Location

All tests were performed at:

Shenzhen BANTEK Testing Co., Ltd.
A5&A6, Building B1&B2, No.45 Gangtou Road, Bogang Community, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104
Tel: +86 0755-2334 4200 Fax: +86 0755-2334 4200
FCC Registration Number: 264293
Designation Number: CN1356
No tests were sub-contracted.

3.6 Deviation from Standards

None

3.7 Abnormalities from Standard Conditions

None

4 Equipment List

RF Conducted					
Equipment	Manufacturer	Model No	Serial No	Cal Date	Cal Due Date
Shielding Room	YIHENG ENECTRONIC	5.5*3.1*3	YH-BT-220304-03	2022-03-03	2025-03-02
EXA Signal Analyzer	KEYSIGHT	N9020A	MY54230486	2024-06-11	2025-06-10
DC Power Supply	E3632A	E3642A	KR75304416	2024-06-11	2025-06-10
Attenuator	RswTech	SMA-JK-6dB	N/A	2024-06-11	2025-06-10
Attenuator	RswTech	SMA-JK-3dB	N/A	2024-06-11	2025-06-10
RF Control Unit	Techy	TR1029-1	N/A	2024-06-11	2025-06-10
RF Sensor Unit	Techy	TR1029-2	N/A	2024-06-11	2025-06-10
MXG Vector Signal Generator	Agilent	N5182A	US46240522	2024-06-11	2025-06-10
Programmable Temperature&Humidity Chamber	GRT	GR-HWX1000	GR22051001	2024-06-11	2025-06-10
Measurement Software	TACHOY	RF TestSoft	N/A	N/A	N/A

Radiated Method Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
3m Semi-Anechoic Chamber	YIHENG ENECTRONIC	966	YH-BT-220304-01	2022-05-06	2025-05-05
EMI Test Receiver	Rohde&Schwarz	ESCI	100694	2024-06-11	2025-06-10
TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	01324	2024-06-16	2025-06-15
Pre-Amplifier	Schwarzbeck	BBV 9745	#180	2024-06-11	2025-06-10
Loop Antenna	ETS	6502	00201177	2024-06-15	2025-06-14
Measurement Software	Fara	EZ_EMC Ver. FA-03A2	N/A	N/A	N/A

Conducted Test					
Description	**Manufacturer**	**Model**	**Serial No.**	**Cal. Date**	**Cal. Due**
Shielding Room	YIHENG ENECTRONIC	9*5*3.3	YH-BT-220304-04	2022-03-03	2025-03-02
EMI Test Receiver	Rohde&Schwarz	ESCI	101021	2024-06-11	2025-06-10
Measurement Software	Fara	EZ_EMC Ver. FA-03A2	N/A	N/A	N/A
LISN	Rohde&Schwarz	ENV216	101472	2024-06-11	2025-06-10
LISN	Schwarzbeck	NSLK 8128	05127	2024-06-11	2025-06-10
Pulse Limiter	Schwarzbeck	VTSD 9561 F-N	00890	2024-06-11	2025-06-10

5 Radio Spectrum Technical Requirement

5.1 Antenna Requirement

5.1.1 Test Requirement:

Test Requirement FCC §15.203;

5.1.2 Conclusion

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with

§ 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

6 Radio Spectrum Matter Test Results

6.1 20dB Occupied Bandwidth

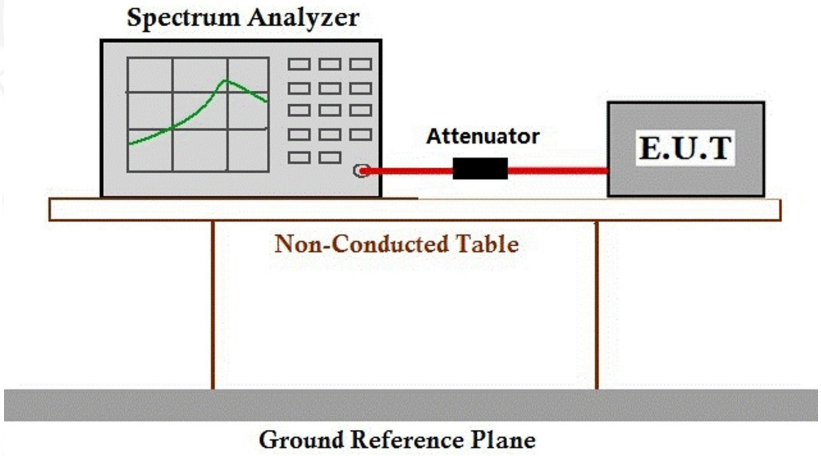
Test Requirement FCC Part 15.215c

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.7 °C Humidity: 53.2 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data

cable loss=0.9

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the pathloss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:

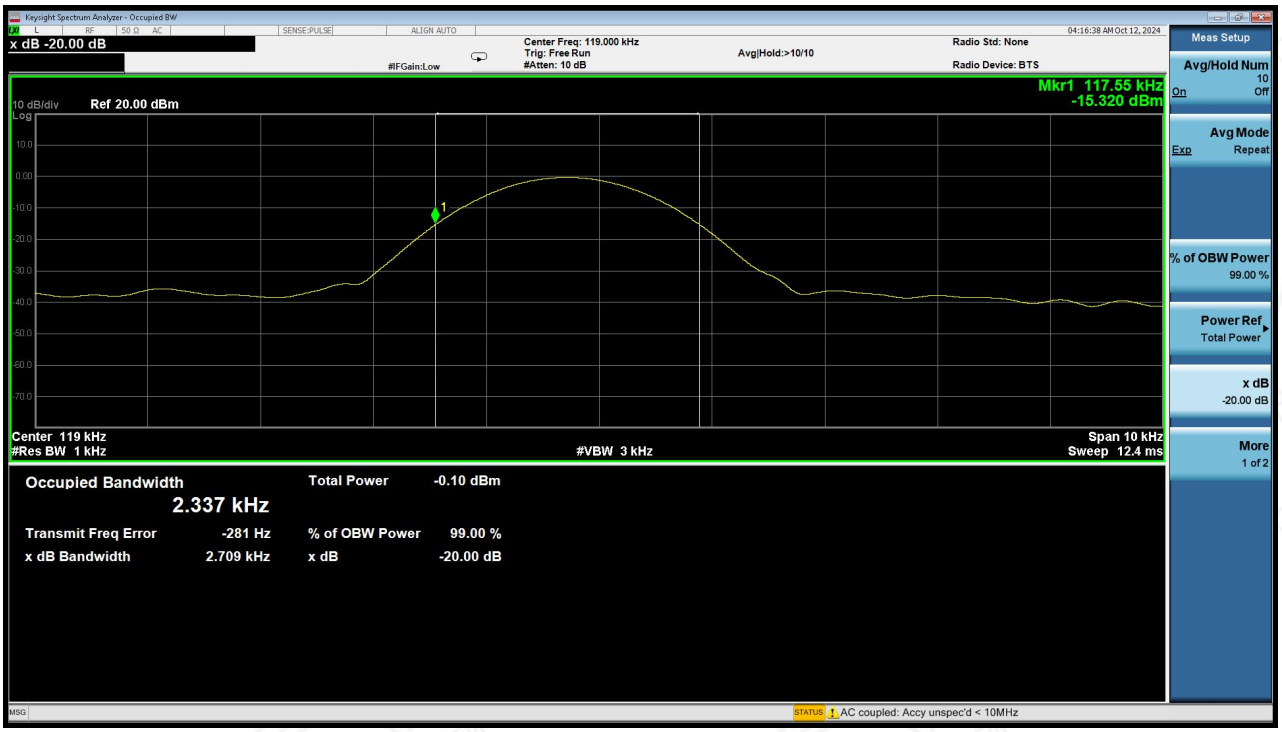
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

   RBW≥1% of the 20 dB bandwidth, VBW ≥ RBW

   Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

Worst case mode 1

Freq. (kHz)	20 dB bandwidth Result (kHz)	Conclusion
119.00	2.709	PASS



6.2 AC Power Line Conducted Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method:

Limit:

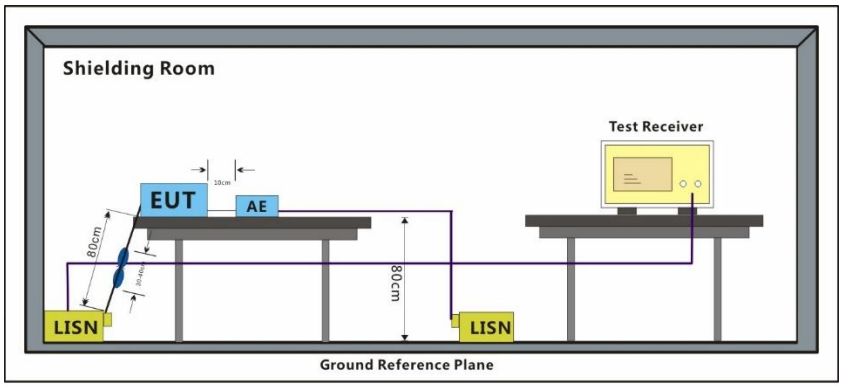
Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.7 °C Humidity: 57.2 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Setup Diagram



6.2.3 Measurement Procedure and Data

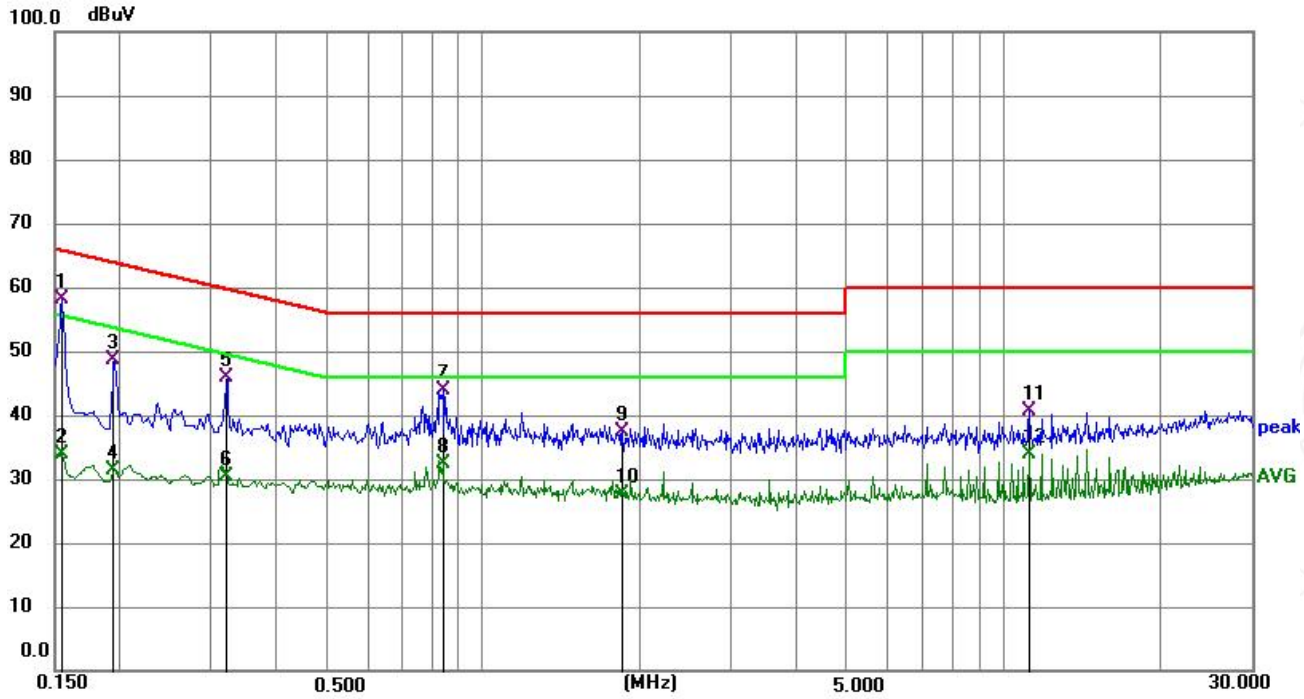
The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

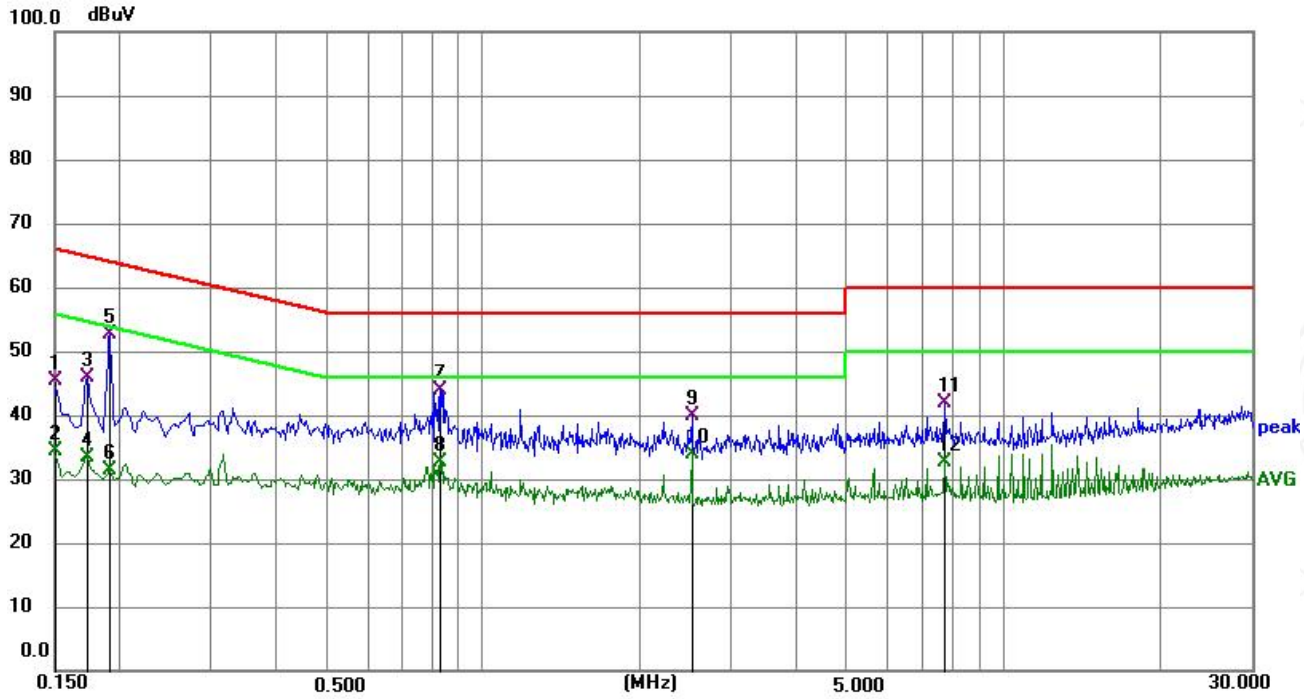
Note:Level (dBuV) = Reading (dBuV) + Factor (dB)

Test mode:	Worst case 1	Polarity:	Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1545	38.43	19.77	58.20	65.75	-7.55	QP	P	
2	0.1545	14.17	19.77	33.94	55.75	-21.81	AVG	P	
3	0.1949	28.81	19.81	48.62	63.83	-15.21	QP	P	
4	0.1949	11.61	19.81	31.42	53.83	-22.41	AVG	P	
5	0.3209	26.05	19.83	45.88	59.68	-13.80	QP	P	
6	0.3209	10.49	19.83	30.32	49.68	-19.36	AVG	P	
7	0.8385	23.84	19.95	43.79	56.00	-12.21	QP	P	
8	0.8385	12.36	19.95	32.31	46.00	-13.69	AVG	P	
9	1.8510	17.27	20.07	37.34	56.00	-18.66	QP	P	
10	1.8510	7.67	20.07	27.74	46.00	-18.26	AVG	P	
11	11.2470	19.80	20.89	40.69	60.00	-19.31	QP	P	
12	11.2470	13.04	20.89	33.93	50.00	-16.07	AVG	P	

Test mode:	Worst case 1	Polarity:	Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	25.58	19.74	45.32	66.00	-20.68	QP	P	
2	0.1500	14.63	19.74	34.37	56.00	-21.63	AVG	P	
3	0.1725	26.20	19.78	45.98	64.84	-18.86	QP	P	
4	0.1725	13.70	19.78	33.48	54.84	-21.36	AVG	P	
5 *	0.1905	32.78	19.79	52.57	64.01	-11.44	QP	P	
6	0.1905	11.51	19.79	31.30	54.01	-22.71	AVG	P	
7	0.8295	24.05	19.95	44.00	56.00	-12.00	QP	P	
8	0.8295	12.57	19.95	32.52	46.00	-13.48	AVG	P	
9	2.5170	19.66	20.13	39.79	56.00	-16.21	QP	P	
10	2.5170	13.78	20.13	33.91	46.00	-12.09	AVG	P	
11	7.6965	21.31	20.65	41.96	60.00	-18.04	QP	P	
12	7.6965	11.91	20.65	32.56	50.00	-17.44	AVG	P	

NOTE:
1.Level (dBuV) = Reading (dBuV) + Factor (dB)
2.Factor = Insertion Loss + Cable Loss.
3.Margin = Level – Limit.

6.3 Radiated Spurious Emissions

Test Requirement FCC §15.209

Test Method:

Limit:

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a). According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

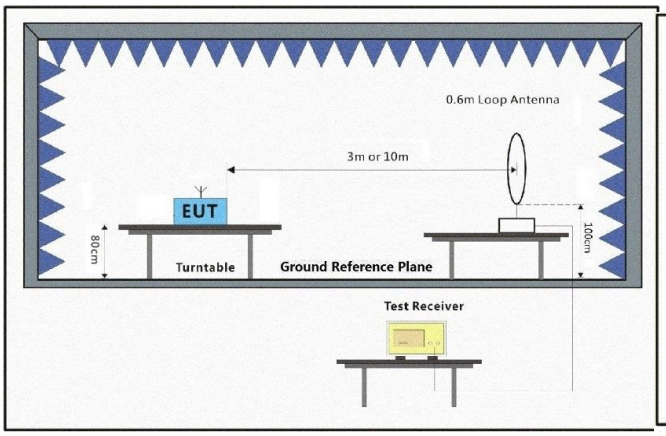
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.3.1 E.U.T. Operation

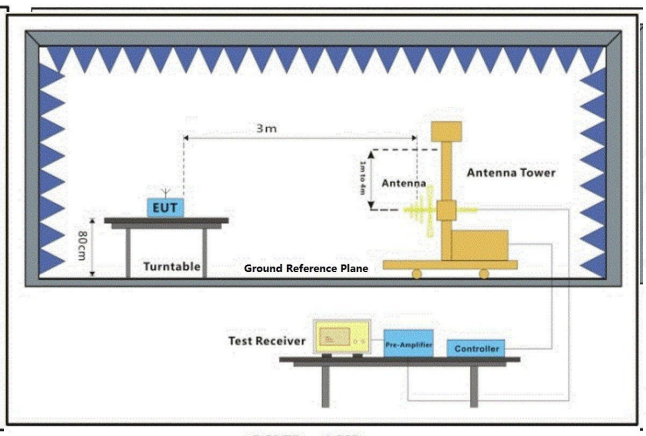
Operating Environment:

Temperature: 25.3 °C Humidity: 57.4 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Setup Diagram



9KHz~30MHz



30MHz-1GHz

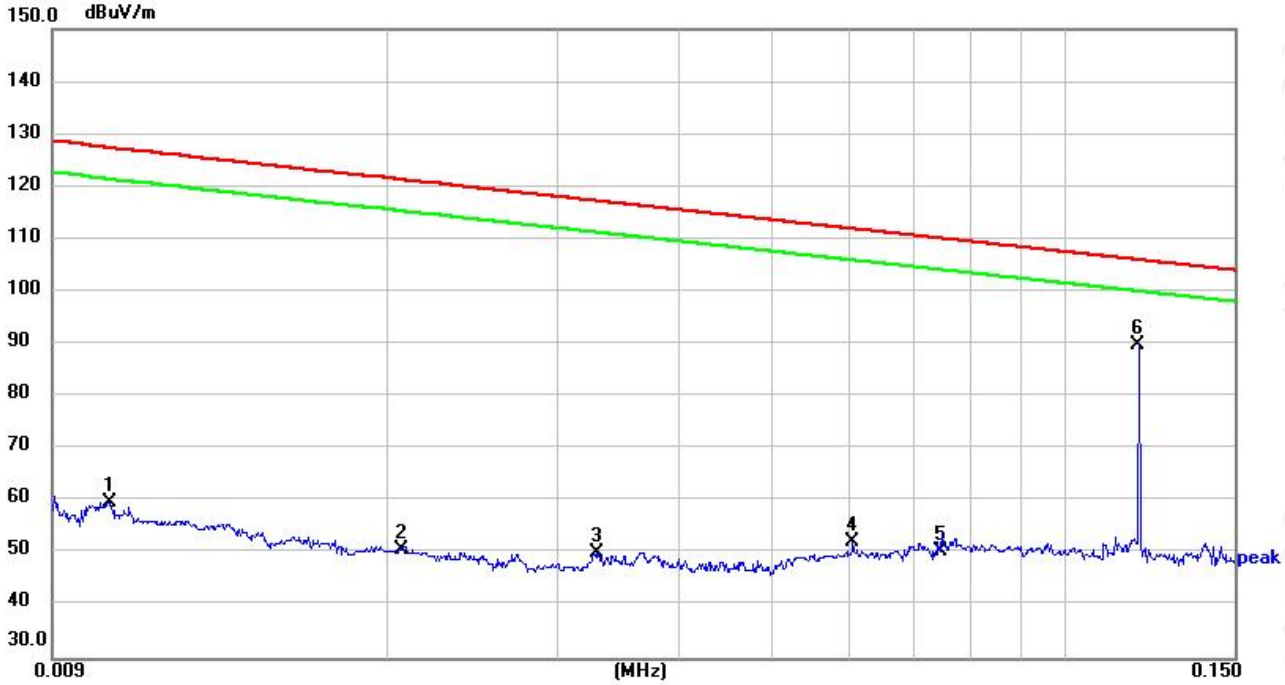
6.3.3 Measurement Procedure and Data

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.

9 kHz ~ 30 MHz

Below 1GHz

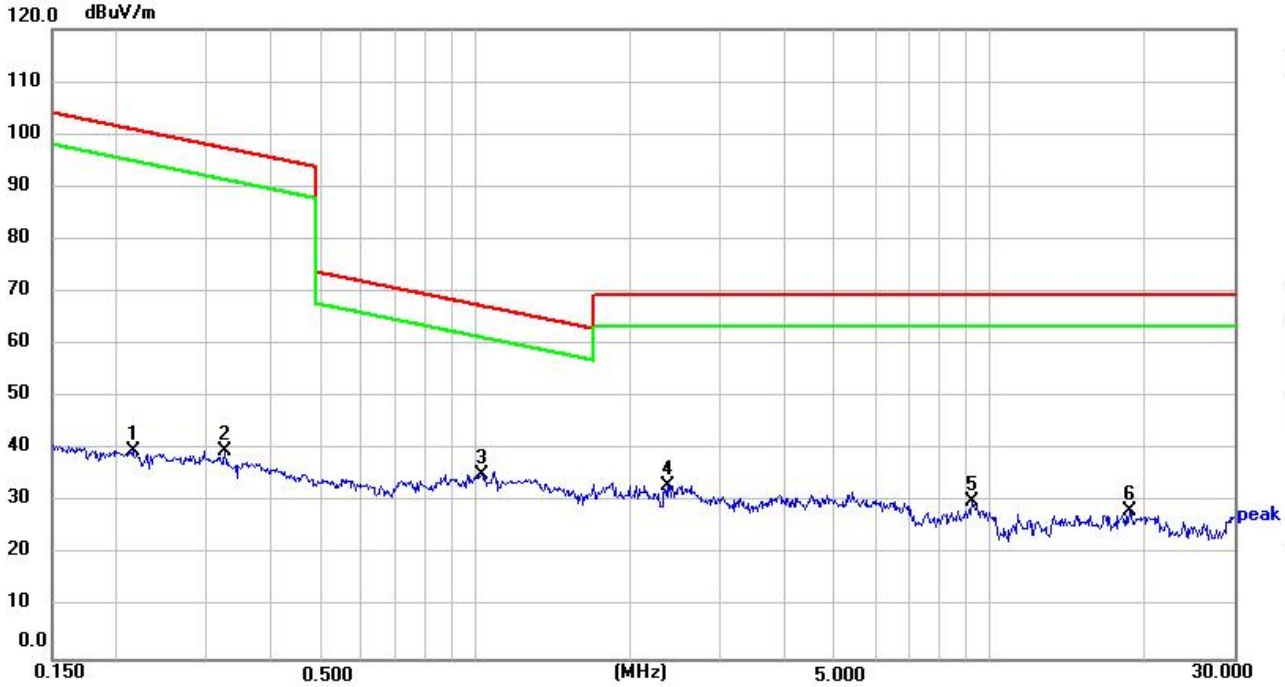
Test mode:	Worst case 1	Polarity:	X



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0103	90.18	-30.32	59.86	127.35	-67.49	peak
2	0.0206	81.28	-30.40	50.88	121.33	-70.45	peak
3	0.0330	80.82	-30.51	50.31	117.23	-66.92	peak
4	0.0604	83.21	-30.80	52.41	111.98	-59.57	peak
5	0.0743	81.63	-30.94	50.69	110.18	-59.49	peak
6 *	0.1190	121.07	-31.20	89.87	106.09	-16.22	peak

Below 1GHz

Test mode:	Worst case 1	Polarity:	X



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2150	70.82	-31.15	39.67	100.96	-61.29	peak
2	0.3251	70.78	-31.11	39.67	97.36	-57.69	peak
3 *	1.0262	66.12	-30.82	35.30	67.38	-32.08	peak
4	2.3584	64.09	-30.83	33.26	69.54	-36.28	peak
5	9.2530	60.85	-30.65	30.20	69.54	-39.34	peak
6	18.7210	59.10	-30.61	28.49	69.54	-41.05	peak

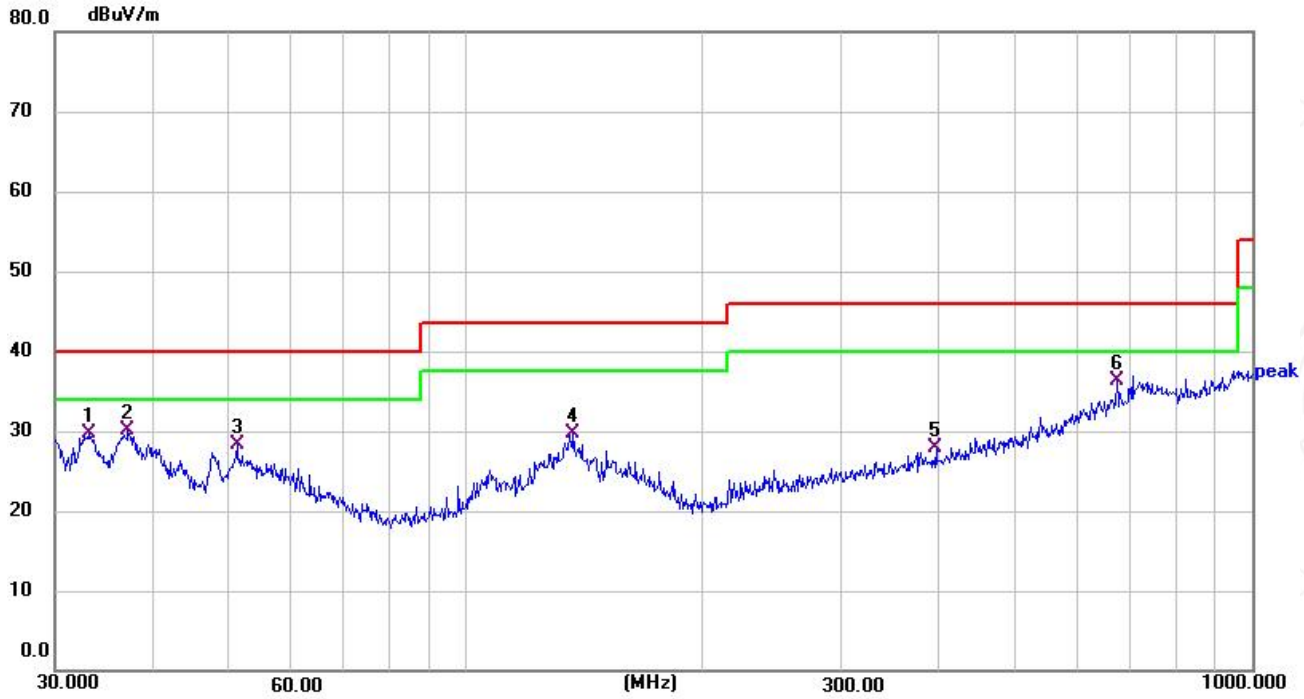
Note:
1). Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)
2). Factor(dB/m)=Antenna Factor(dB/m)+Cable loss(dB)-Pre Amplifier gain(dB)
3). Margin(dB)=Limit(dBuV/m)-Level(dBuV/m)
4). This EUT was tested in 3 orthogonal positions and the worst case position data was reported.
5).Pre-scan coaxial and coplanar polar, only show the worst case coaxial in the test report.

Below 1GHz

Test mode:	Worst case 1	Polarity:	Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	40.8444	42.59	-17.06	25.53	40.00	-14.47	QP	200	360	P	
2	57.7961	42.64	-18.13	24.51	40.00	-15.49	QP	200	360	P	
3	97.7980	48.40	-21.11	27.29	43.50	-16.21	QP	200	360	P	
4	126.7723	49.98	-18.35	31.63	43.50	-11.87	QP	200	360	P	
5	141.3296	50.50	-17.43	33.07	43.50	-10.43	QP	200	360	P	
6 *	672.8442	45.97	-10.36	35.61	46.00	-10.39	QP	200	360	P	

Test mode:	Worst case 1	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	33.0950	47.48	-17.72	29.76	40.00	-10.24	QP	100	0	P	
2	37.1550	47.34	-17.19	30.15	40.00	-9.85	QP	100	0	P	
3	51.1210	46.00	-17.64	28.36	40.00	-11.64	QP	100	0	P	
4	136.9390	47.47	-17.68	29.79	43.50	-13.71	QP	100	0	P	
5	396.2412	43.32	-15.50	27.82	46.00	-18.18	QP	100	0	P	
6 *	672.8442	46.64	-10.36	36.28	46.00	-9.72	QP	100	0	P	

NOTE:
1.Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)
The reading level is calculated by software which is not shown in the sheet
2.Factor = Antenna Factor+ Cable Loss-Preamp Factor
3.Margin = Level – Limit.

7 Test Setup Photo

Please refer to the Appendix test setup Photos.

8 EUT Constructional Details (EUT Photos)

Please refer to the Appendix EUT Photos.

- End of the Report -