



FCC TEST REPORT

Report No.: STS22204111W01

Issued for

Shenzhen junruicheng electronics co. LTD

Room2301, Building1, Commercial Building, Stylistic
Center, TangGang Street, ShajingTown, ShenZhen, China

Product Name:	2in1 wirelesscharger
Brand Name:	ZealSound
Model Name:	WG-215
Series Model:	N/A
FCC ID:	2AWJQWG-215
Test Standard:	FCC Part 15 Subpart C

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**TEST RESULT CERTIFICATION**

Applicant's Name: Shenzhen junruicheng electronics co. LTD
Address: Room2301, Building1, Commercial Building, Stylistic Center, TangGang Street, ShaJingTown, ShenZhen, China
Manufacturer's Name: Shenzhen junruicheng electronics co. LTD
Address: Room2301, Building1, Commercial Building, Stylistic Center, TangGang Street, ShaJingTown, ShenZhen, China

Product Description

Product Name: 2in1 wirelesscharger

Brand Name: ZealSound

Model Name: WG-215

Series Model: N/A

Test Standards: FCC Part 15 Subpart C

Test Procedure: ANSI C63.10-2013

This device described above has been tested by STS, 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.

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Date of Test:

Date of receipt of test item: 15 Apr. 2022

Date (s) of performance of tests: 15 Apr. 2022 ~ 26 Apr. 2022

Date of Issue: 26 Apr. 2022

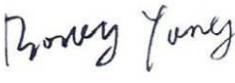
Test Result: **Pass**

Testing Engineer : 

(Chris Chen)

Technical Manager : 

(Sean She)

Authorized Signatory : 

(Bovey Yang)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	26 Apr. 2022	STS2204111W01	ALL	Initial Issue





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.209(a)	Radiated emission, Spurious Emission	PASS	
15.215	20 dB Bandwidth	PASS	
15.203	Antenna Requirement	PASS	

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 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	RF output power, conducted	$\pm 0.87\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.895\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 3.80\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 4.09\text{dB}$
5	All emissions, radiated 1G-6GHz	$\pm 4.92\text{dB}$
6	All emissions, radiated>6G	$\pm 5.49\text{dB}$
7	Conducted Emission (9KHz-30MHz)	$\pm 2.73\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	2in1 wirelesscharger
Trade Name	ZealSound
Model Name	WG-215
Series Model	N/A
Model Difference	N/A
Channel List	Please refer to the Note 2.
Antenna Type	Please refer to the Note 3.
Equipment Category	Non-ISM frequency
Operating frequency	110.5-205KHz
Modulation Type	Load modulation
Adapter	Input:100-240V ~ 50/60Hz 0.8A Output: DC 12V 2.0A
Hardware version number	REV:02
Software version number	V1.0
Connecting I/O Port(s)	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2.

Channel List					
Channel	Frequency (KHz)	Channel	Frequency (KHz)	Channel	Frequency (KHz)
00	128				

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Antenna Gain	Connector	NOTE
0	ZealSound	WG-215	Coil	0dBi	N/A	Antenna



2.2 DESCRIPTION OF THE TEST MODES

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.

Pretest Mode	Description
Mode 1	EUT Charing
Mode 2	EUT Charing+Phone WPT Mode
Mode 3	EUT Charing+Phone WPT Mode*2

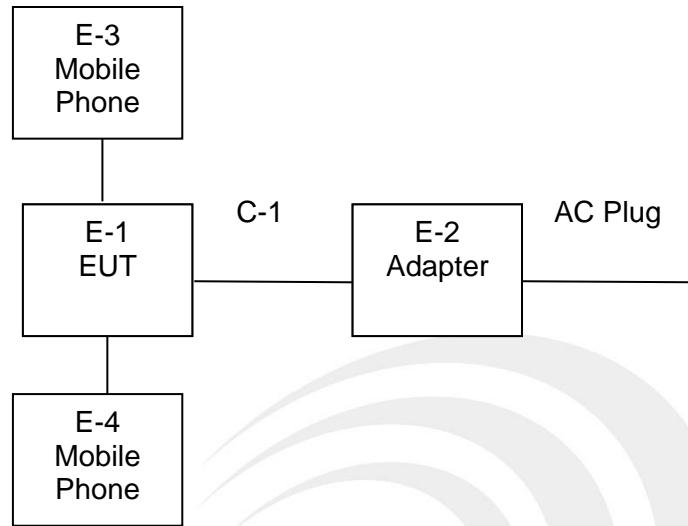
For Conducted Emission	
Final Test Mode	Description
Mode 3	EUT Charing+Phone WPT Mode*2

For Radiated Emission	
Final Test Mode	Description
Mode 3	EUT Charing+Phone WPT Mode*2

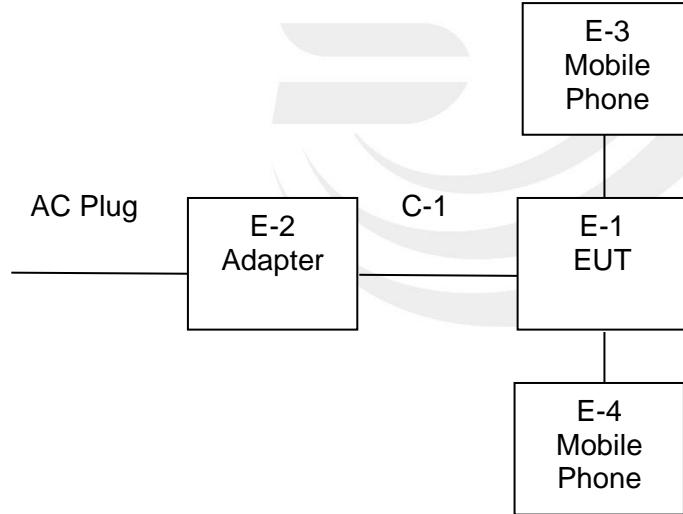
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Radiated Emission Test



Conducted Emission Test





2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-2	Adapter	JU YUAN HAI	JYH3Z-1200200-AA	N/A	N/A
C-1	DC Cable	N/A	N/A	175cm	NO

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-3	Mobile Phone	UNNECTO	k39tv1_64_bsp	N/A	N/A
E-4	Iphone	Iphone	Iphone 8	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (2) "YES" is means "with core"; "NO" is means "without core".



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2021.09.30	2022.09.29
Signal Analyzer	R&S	FSV 40-N	101823	2021.09.30	2022.09.29
Active loop Antenna	ZHINAN	ZN30900C	16035	2021.04.11	2023.04.10
Bilog Antenna	TESEQ	CBL6111D	34678	2020.10.12	2022.10.11
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2021.10.08	2022.10.07
Temperature & Humidity	HH660	Mieo	N/A	2021.10.09	2022.10.08
Test SW	BALUN	BL410-E/18.905			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2021.09.30	2022.09.29
LISN	R&S	ENV216	101242	2021.09.30	2022.09.29
LISN	EMCO	3810/2NM	23625	2021.09.30	2022.09.29
Temperature & Humidity	HH660	Mieo	N/A	2021.10.09	2022.10.08
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			



3. CONDUCTED EMISSION TEST RESULT (SECTION 15.207)

3.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “*” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

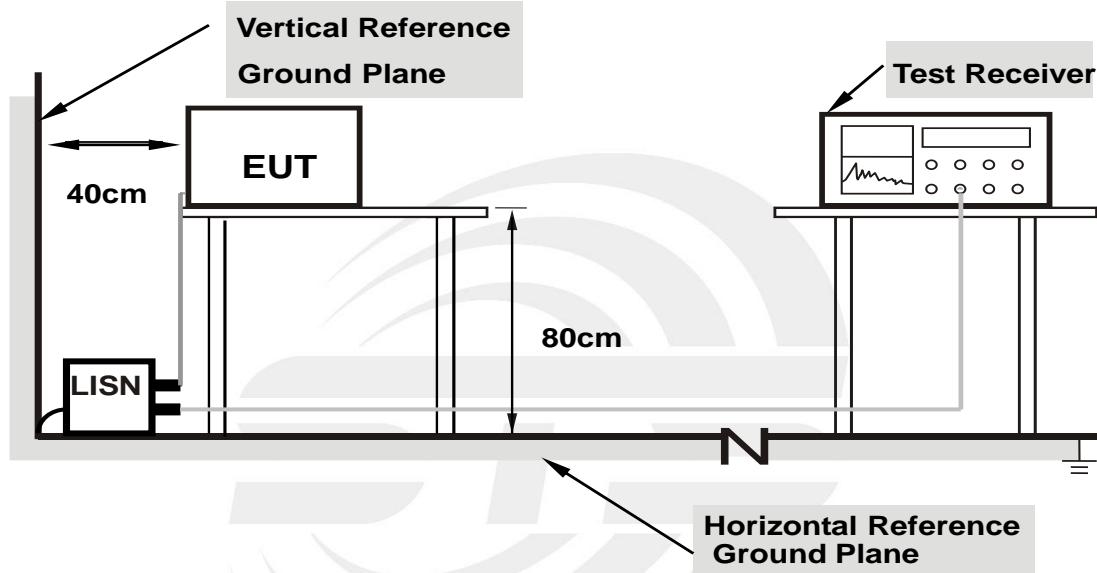
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 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 is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 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 support units.

3.4 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.

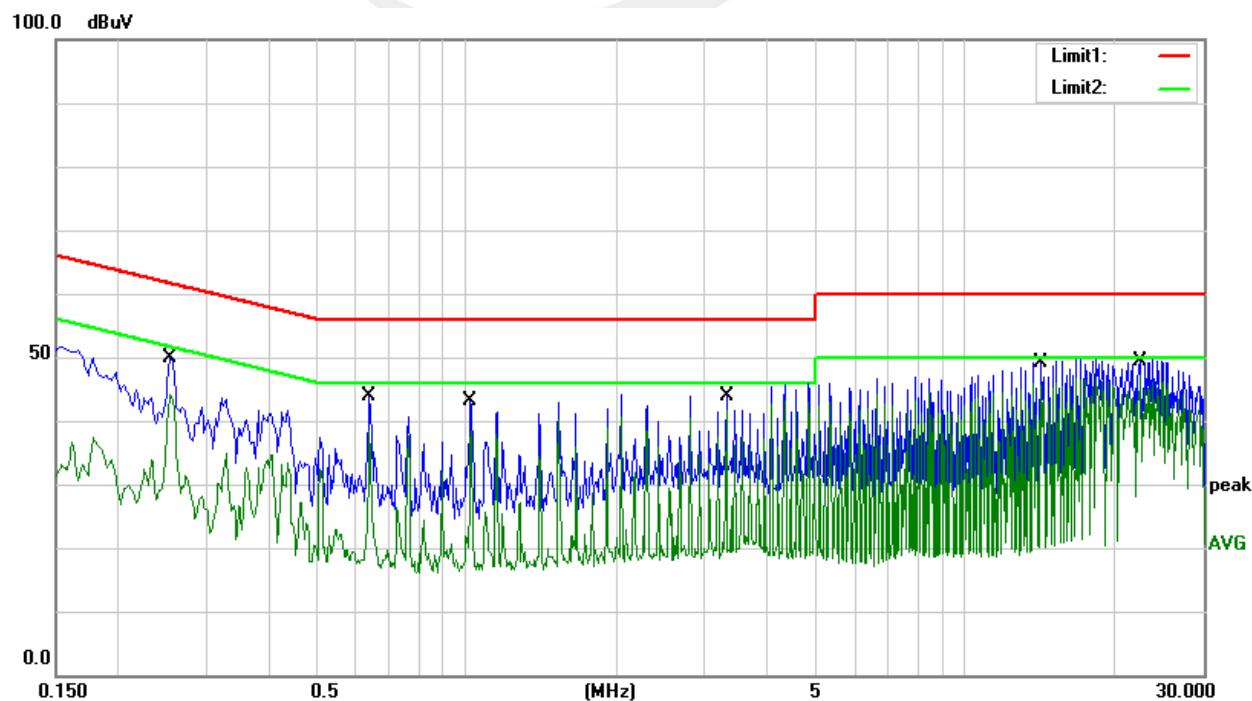
3.5 TEST RESULTS

Temperature:	3.5 °C	Relative Humidity:	62%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 3		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2540	29.34	20.54	49.88	61.63	-11.75	QP
2	0.2540	23.54	20.54	44.08	51.63	-7.55	AVG
3	0.6380	23.50	20.41	43.91	56.00	-12.09	QP
4	0.6380	17.91	20.41	38.32	46.00	-7.68	AVG
5	1.0180	22.77	20.30	43.07	56.00	-12.93	QP
6	1.0180	17.96	20.30	38.26	46.00	-7.74	AVG
7	3.3180	23.63	20.37	44.00	56.00	-12.00	QP
8	3.3180	21.16	20.37	41.53	46.00	-4.47	AVG
9	14.1580	27.38	21.64	49.02	60.00	-10.98	QP
10	14.1580	22.79	21.64	44.43	50.00	-5.57	AVG
11	22.4540	25.53	22.75	48.28	60.00	-11.72	QP
12	22.4540	22.72	22.75	45.47	50.00	-4.53	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)



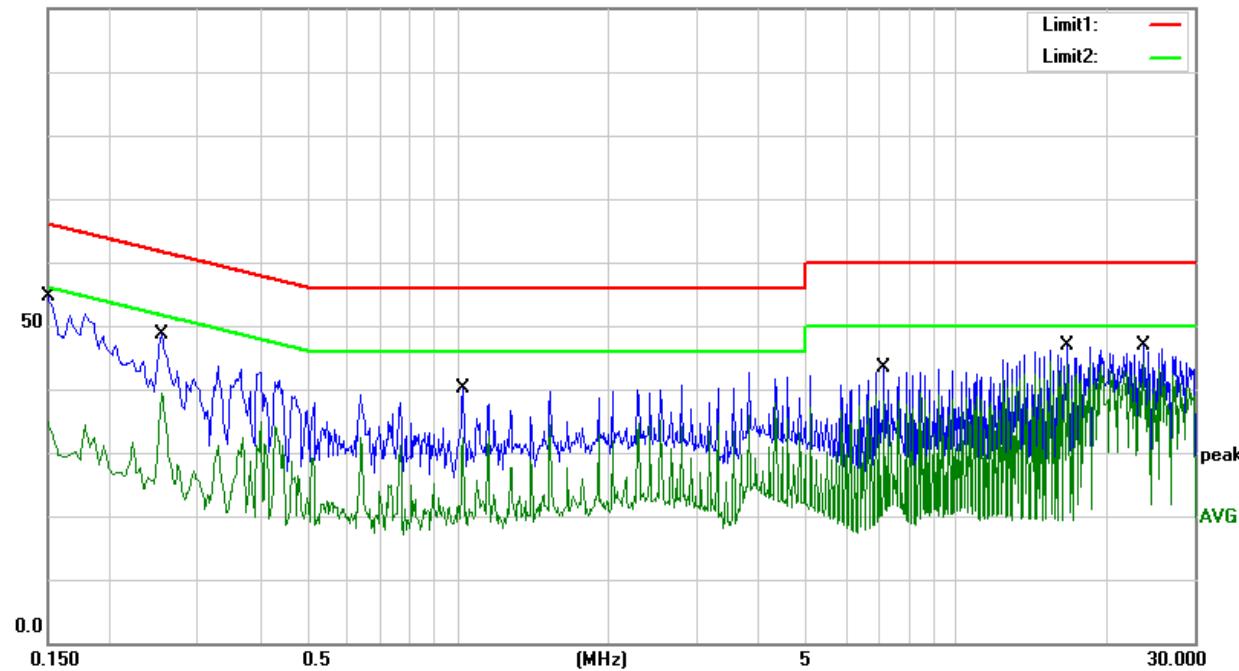
Temperature:	3.5 °C	Relative Humidity:	62%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 3		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1500	34.17	20.33	54.50	66.00	-11.50	QP
2	0.1500	14.47	20.33	34.80	56.00	-21.20	AVG
3	0.2540	28.05	20.54	48.59	61.63	-13.04	QP
4	0.2540	18.84	20.54	39.38	51.63	-12.25	AVG
5	1.0220	19.93	20.30	40.23	56.00	-15.77	QP
6	1.0220	12.28	20.30	32.58	46.00	-13.42	AVG
7	7.1420	22.75	20.60	43.35	60.00	-16.65	QP
8	7.1420	18.45	20.60	39.05	50.00	-10.95	AVG
9	16.7020	24.65	22.12	46.77	60.00	-13.23	QP
10	16.7020	22.18	22.12	44.30	50.00	-5.70	AVG
11	23.7220	24.29	22.67	46.96	60.00	-13.04	QP
12	23.7220	20.42	22.67	43.09	50.00	-6.91	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

100.0 dBuV





4. RADIATED& FIELD EMISSION TEST RESULT (SECTIOU 15.209)

4.1 LIMIT

Frequency [MHz]	Field Strength [uV/m]	Measurement Distance [Meters]
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

§ 15.209(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.2 TEST PROCEDURE

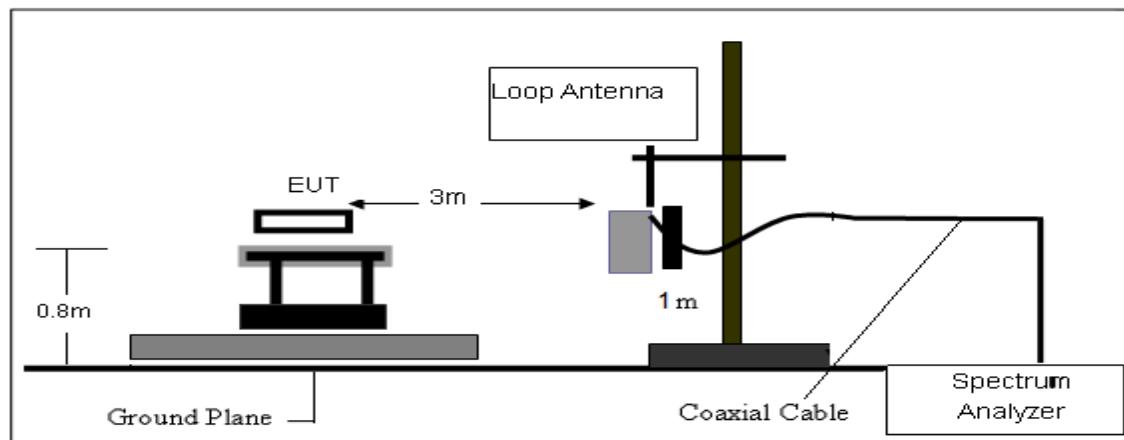
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. 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.
- d. 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.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

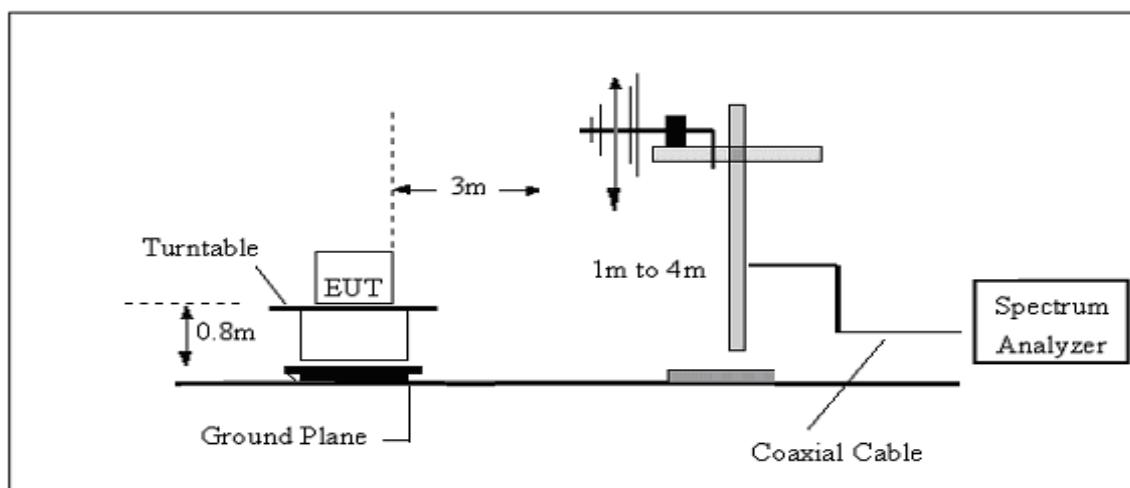
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

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



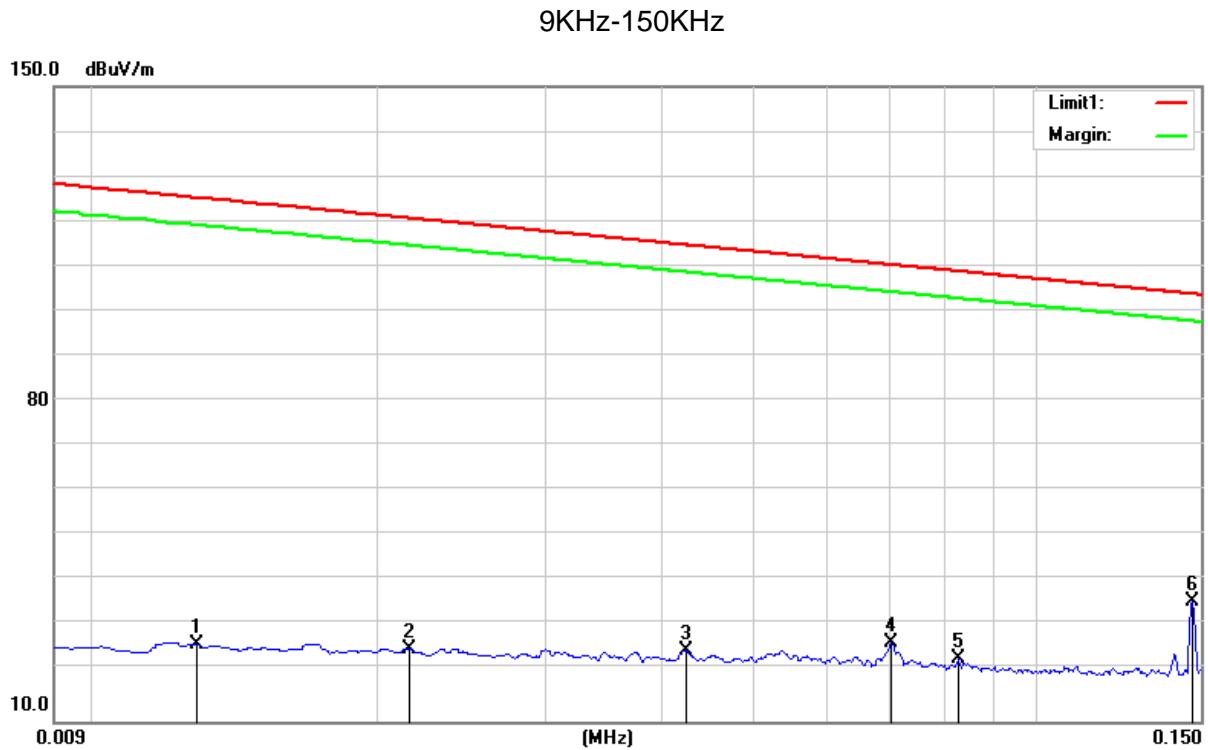
(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



4.4 TEST RESULTS

4.4.1 Spurious Radiated Emission Below 30 MHz

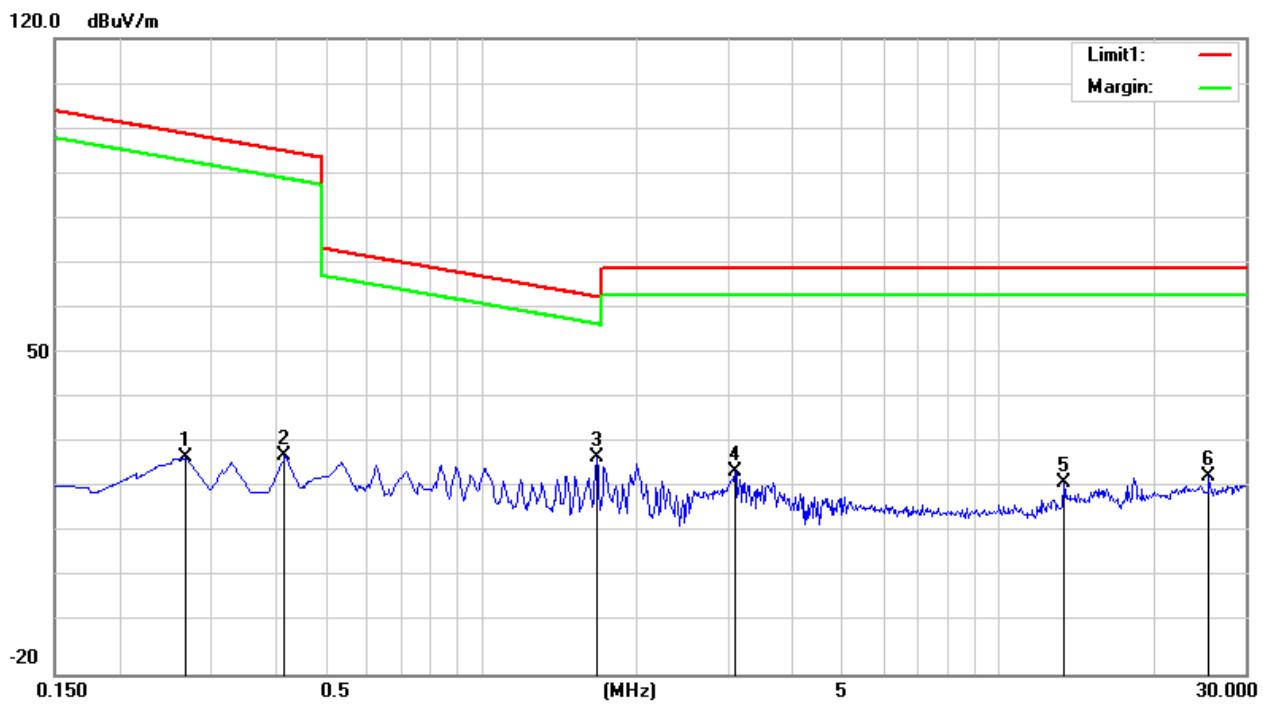
Temperature :	23.1 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 3
ANT Positon:	Coaxial		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0120	7.92	19.52	27.44	126.02	-98.58	peak
2	0.0212	6.00	20.08	26.08	121.08	-95.00	peak
3	0.0424	7.01	19.65	26.66	115.06	-88.40	peak
4	0.0704	7.13	18.93	26.06	110.65	-84.59	peak
5	0.1408	9.23	17.52	26.75	104.63	-77.88	peak
6	0.1470	17.97	17.51	35.48	104.26	-68.78	peak



150KHz-30MHz

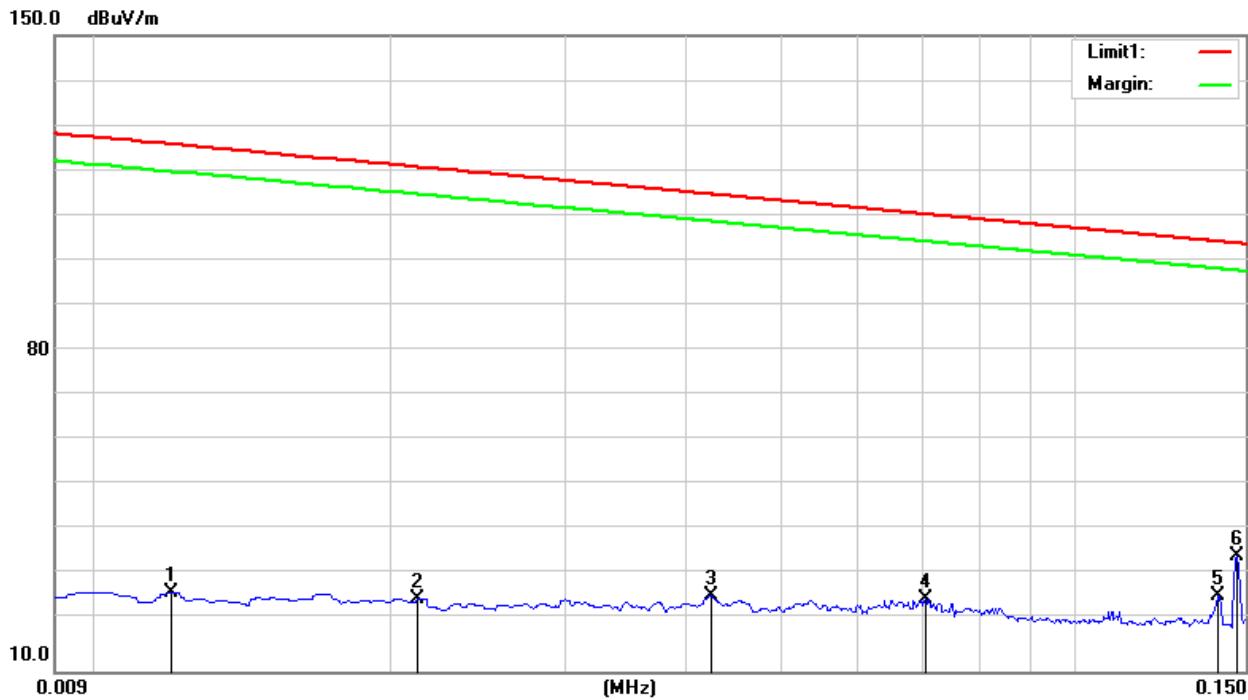


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2692	7.50	20.11	27.61	99.00	-71.39	peak
2	0.4187	8.08	20.17	28.25	95.17	-66.92	peak
3	1.6724	7.58	20.33	27.91	63.14	-35.23	peak
4	3.1051	4.60	20.13	24.73	69.50	-44.77	peak
5	13.3437	1.20	20.94	22.14	69.50	-47.36	peak
6	25.4628	2.85	20.56	23.41	69.50	-46.09	peak



Temperature :	23.1 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 3
ANT Positon:	Coplanar		

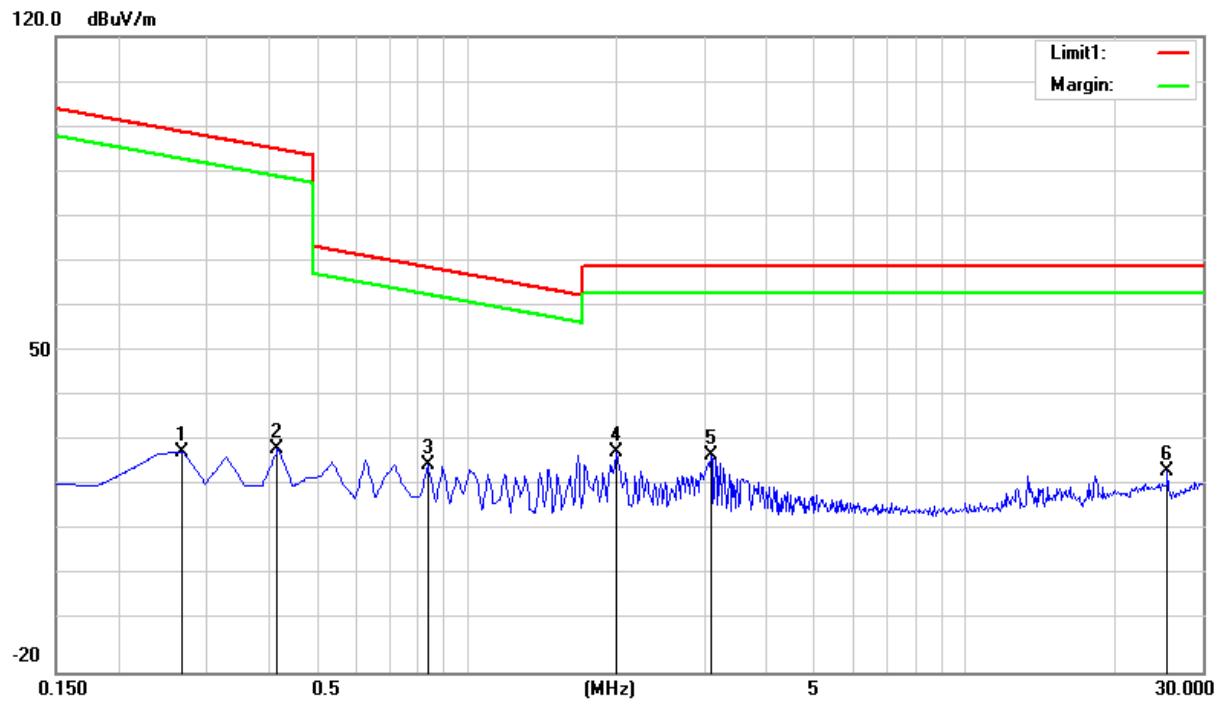
9KHz-150KHz



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
							Result Limit Margin
1	0.0128	7.43	19.58	27.01	125.46	-98.45	peak
2	0.0215	6.01	20.07	26.08	120.96	-94.88	peak
3	0.0424	6.01	19.65	25.66	115.06	-89.40	peak
4	0.0702	8.43	18.93	27.36	110.68	-83.32	peak
5	0.0827	5.23	18.43	23.66	109.25	-85.59	peak
6	0.1470	18.97	17.51	36.48	104.26	-67.78	peak



150KHz-30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2694	8.50	20.11	28.61	99.00	-70.39	peak
2	0.4187	9.08	20.17	29.25	95.17	-65.92	peak
3	0.8366	5.31	20.27	25.58	69.15	-43.57	peak
4	2.0007	8.11	20.40	28.51	69.50	-40.99	peak
5	3.1052	7.60	20.13	27.73	69.50	-41.77	peak
6	25.4628	3.85	20.56	24.41	69.50	-45.09	peak

4.4.2 Spurious Radiated Emission below 1 GHz

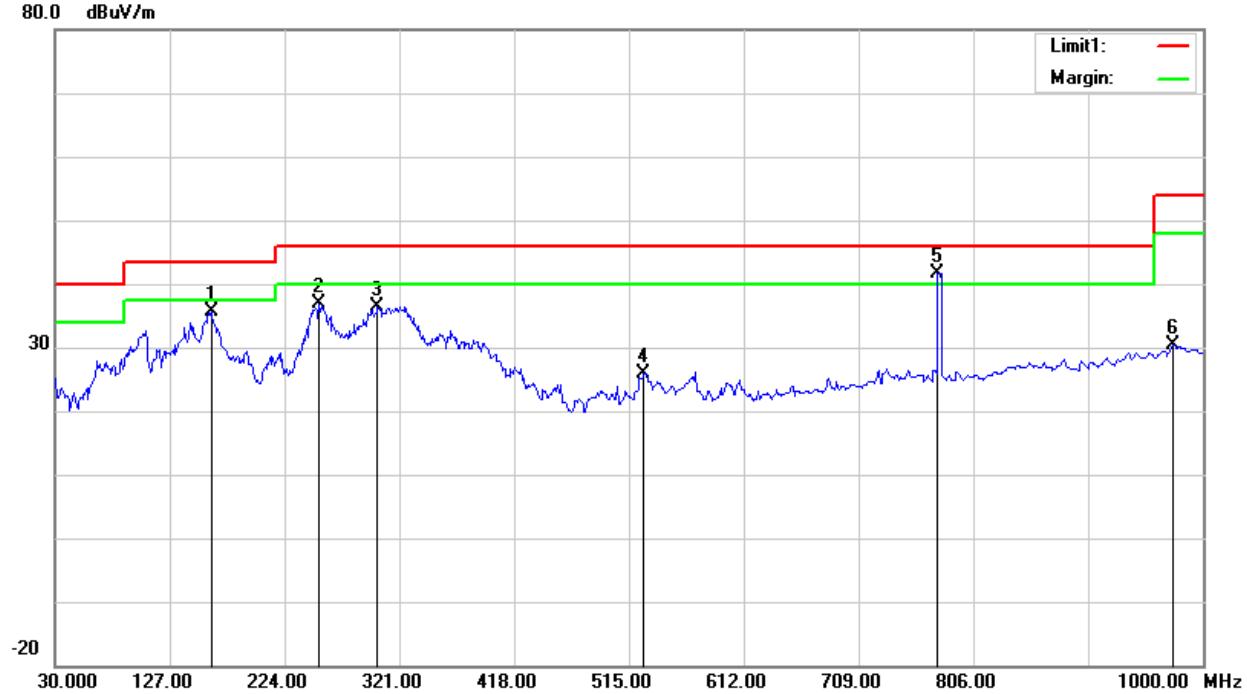
Temperature :	23.1 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 3

The following table shows the highest levels of radiated emissions on polarizations of vertical

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
161.9200	54.57	-19.01	35.56	43.50	-7.94	peak
253.1000	52.46	-15.65	36.81	46.00	-9.19	peak
302.5700	51.20	-14.72	36.48	46.00	-9.52	peak
527.6100	33.41	-7.54	25.87	46.00	-20.13	peak
775.9300	43.88	-2.26	41.62	46.00	-4.38	peak
974.7800	28.16	2.32	30.48	54.00	-23.52	peak

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



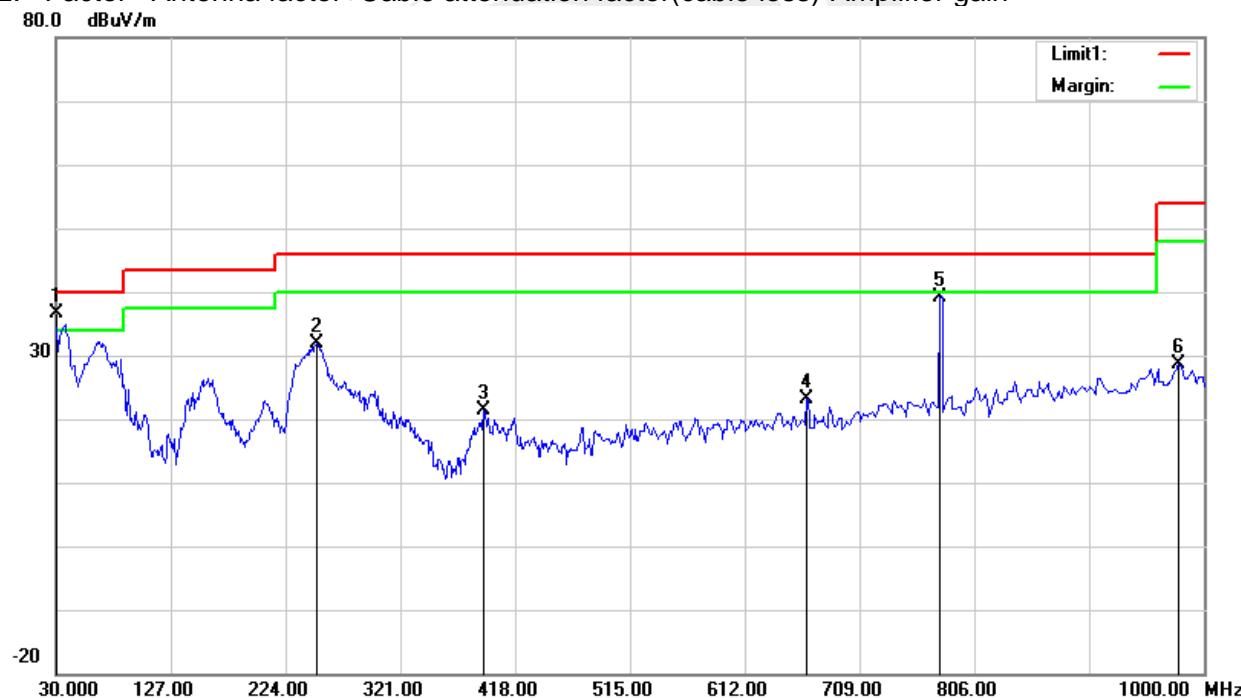
Temperature :	23.1 °C	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 3

The following table shows the highest levels of radiated emissions on polarizations of horizontal

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
30.0000	49.36	-12.85	36.51	40.00	-3.49	peak
250.1900	47.96	-16.10	31.86	46.00	-14.14	peak
390.8400	33.00	-11.54	21.46	46.00	-24.54	peak
664.3800	27.74	-4.71	23.03	46.00	-22.97	peak
776.9000	41.50	-2.25	39.25	46.00	-6.75	peak
978.6600	25.93	2.58	28.51	54.00	-25.49	peak

Remark:

- Margin = Result (Result =Reading + Factor)-Limit
- Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



5. 20 DB BANDWIDTH TEST

5.1 Limit

FCC Part 15.215, Only applicable to report.

5.2 TEST SETUP

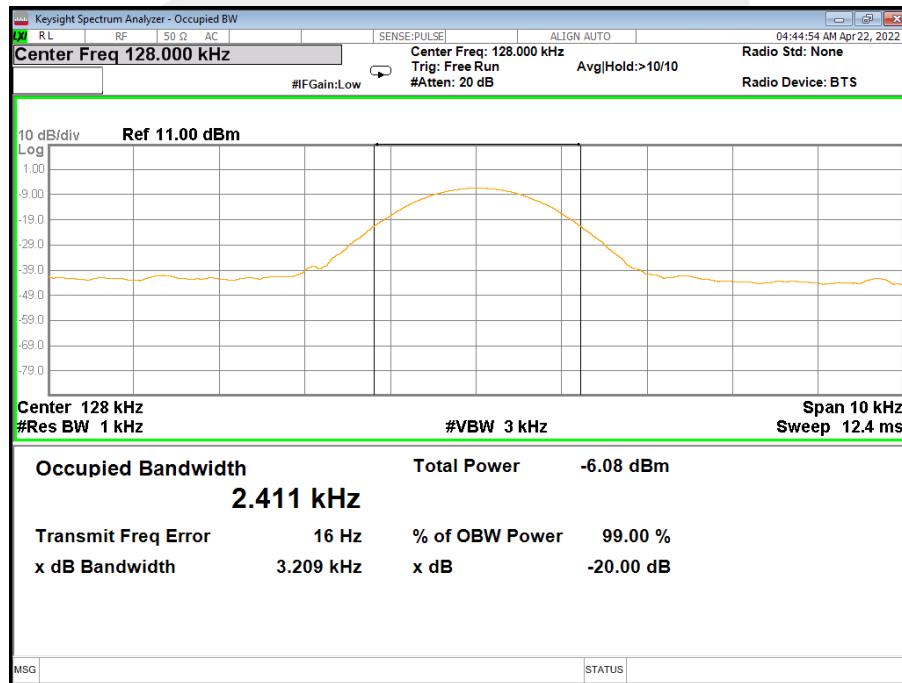
Spectrum Parameter	Setting
Span Frequency	2 to 5 times of the OBW
RB	1 % to 5 % of the OBW
VB	At least three times RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

The test program and configuration, Refer to 4.2 and 4.3

5.3 TEST RESULTS

OperatingFrequency (kHz)	20 dB Bandwidth(kHz)
128	3.209

CH00





6. ANTENNA REQUIREMENT

6.1 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.

6.2 EUT ANTENNA

The EUT antenna is Coil Antenna. It comply with the standard requirement.





APPENDIX-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

END OF THE REPORT

