Radio Test Report

Report No.:STS2501161W09

Issued for

Orbit Irrigation Product Inc.

845N. Overland Road, North Salt Lake, Utah 84054 USA

Product Name:	CMS Control Unit
Brand Name:	Hydro-Rain
Model Name:	CMS-CU
Series Model(s):	N/A
FCC ID:	ML6CMSCU2
Test Standards:	FCC Part15.247

TEST REPORT

Applicant's Name	:	Orbit Irrigation Product Inc.
Address	:	845N. Overland Road, North Salt Lake, Utah 84054 USA
Manufacturer's Name	:	GARDENA Inc.
Address	:	845 N Overland Road., North Salt Lake, Utah 84054 USA

Product Description

Product Name	:	CMS Control Unit
Brand Name	:	Hydro-Rain
Model Name	:	CMS-CU
Series Model(s)	:	N/A
Test Standards	:	FCC Part15.247
Test Procedure	:	ANSI C63.10-2020

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.
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

Date of Test	:	
Date of receipt of test item	:	22 Jan. 2025
Date (s) of performance of tests	:	22 Jan. 2025 ~ 09 May 2025
Date of Issue	:	09 May 2025
Test Result	:	**Pass**

Testing Engineer : Aaron Bu

(Aaron Bu)

Technical Manager : Skylar Li

(Skylar Li)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

Table of Contents

Table of Contents

Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	09 May 2025	STS2501161W09	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02.

FCC Part 15.247,Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	--
15.247 (a)(2)	6dB Bandwidth	PASS	--
15.247 (b)(3)	Output Power	PASS	--
15.209	Radiated Spurious Emission	PASS	--
15.247 (d)	Conducted Spurious & Band Edge Emission	PASS	--
15.247 (e)	Power Spectral Density	PASS	--
Part 15.247(d)/ Part 15.209(a)	Band Edge Emission	PASS	--
15.203	Antenna Requirement	PASS	--

NOTE:

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

(2) All tests are according to ANSI C63.10-2020.

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai 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** ± **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	±0.755dB
2	Unwanted Emissions, conducted	±2.874dB
3	All emissions, radiated 9K-30MHz	±3.80dB
4	All emissions, radiated 30M-1GHz	±4.18dB
5	All emissions, radiated 1G-6GHz	±4.90dB
6	All emissions, radiated>6G	±5.24dB
7	Conducted Emission (9KHz-150KHz)	±2.19dB
8	Conducted Emission (150KHz-30MHz)	±2.53dB
9	Occupied Channel Bandwidth	±3.5%
10	Power Spectral Density, conducted	±1.245dB
11	Duty Cycle	±3.2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name</td><td>CMS Control Unit</td></tr>
<tr><td>Brand Name</td><td>Hydro-Rain</td></tr>
<tr><td>Model Name</td><td>CMS-CU</td></tr>
<tr><td>Series Model(s)</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a CMS Control Unit
<table>
<tr><td>Operation Frequency:</td><td>923.3 – 927.5MHz</td></tr>
<tr><td>Modulation Type:</td><td>LORA</td></tr>
<tr><td>Number Of Channel:</td><td>8</td></tr>
<tr><td>Antenna Type:</td><td>FPC</td></tr>
<tr><td>Antenna Gain</td><td>0.2dBi</td></tr>
</table></td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 3.</td></tr>
<tr><td>Power Rating</td><td>Input: 3.3-6V DC, or
Battery: 6 Alkaline AA batteries</td></tr>
<tr><td>Adapter</td><td>N/A</td></tr>
<tr><td>Battery</td><td>N/A</td></tr>
<tr><td>Hardware version number</td><td>008</td></tr>
<tr><td>Software version number</td><td>1.0</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the Note 1.</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User Manual.
2. The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.

3.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	923.3	3	925.1	6	926.9
1	923.9	4	925.7	7	927.5
2	924.5	5	926.3	----	----

2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions
Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Worst Mode	Description	Data/Modulation
Mode 1	TX CH0	LORA
Mode 2	TX CH3	LORA
Mode 3	TX CH7	LORA

Note:
(1) We tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/ 60Hz is shown in the report.

For AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 4 : Keeping LoRa TX

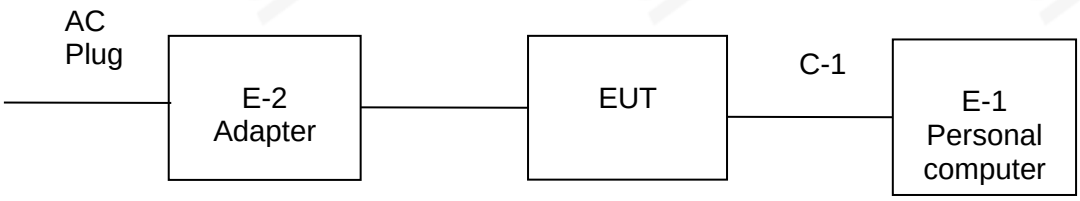
2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

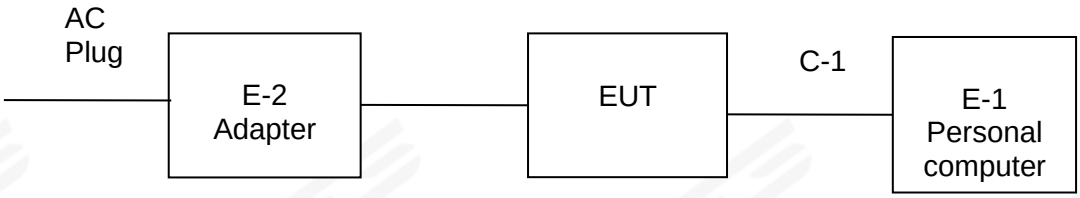
RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
SRD	LORA	LORA	0.2	22	commGui
				22	
				22	

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Emission Test



2.5 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E-1	Personal computer	DELL	Inspiron 3501	N/A
E-2	Adapter	Orbit Irrigation Product Inc.	ALT-0503	N/A
C-1	Serial port board	XES	WTYZK	N/A

Item	Shielded Type	Ferrite Core	Length	Note
N/A	N/A	N/A	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”.

2.6 EQUIPMENTS LIST

RF Radiation Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Pre-Amplifier(0.1M-3GHz)	EM	EM330	060665	2025.02.22	2026.02.21
Pre-Amplifier(1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2024.09.23	2025.09.22
Pre-Amplifier(18G-40GHz)	SKET	LNPA_1840-50	SK2018101801	2025.02.22	2026.02.21
Active loop Antenna	ZHINAN	ZN30900C	16035	2025.02.25	2026.02.24
Bilog Antenna	TESEQ	CBL6111D	34678	2024.09.30	2025.09.29
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2023.09.24	2025.09.23
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2023.10.10	2025.10.09
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2024.09.23	2025.09.22
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	SC100_1	60531	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC power supply	HONGSHENGFENG	DPS-305AF	17064939	2024.09.23	2025.09.22
Test SW	EZ-EMC	Ver.STSLAB-03A1 RE			
Conduction Test equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2024.09.24	2025.09.23
Limtter	CYBERTEK	EM5010	N/A	2024.09.24	2025.09.23
LISN	R&S	ENV216	101242	2024.09.24	2025.09.23
LISN	EMCO	3810/2NM	23625	2024.09.24	2025.09.23
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	EZ-EMC	Ver.STSLAB-03A1 CE			
RF Connected Test					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Analyzer	Agilent	N9020A	MY51510623	2025.02.22	2026.02.21
Power detector group	Keysight	NW2021031	N/A	2024.09.23	2025.09.22
Switch control box	MW	MW100-RFCB	N/A	N/A	N/A
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	MW	MTS 8310_2.0.0.0			

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 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)	Conducted Emission limit (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.

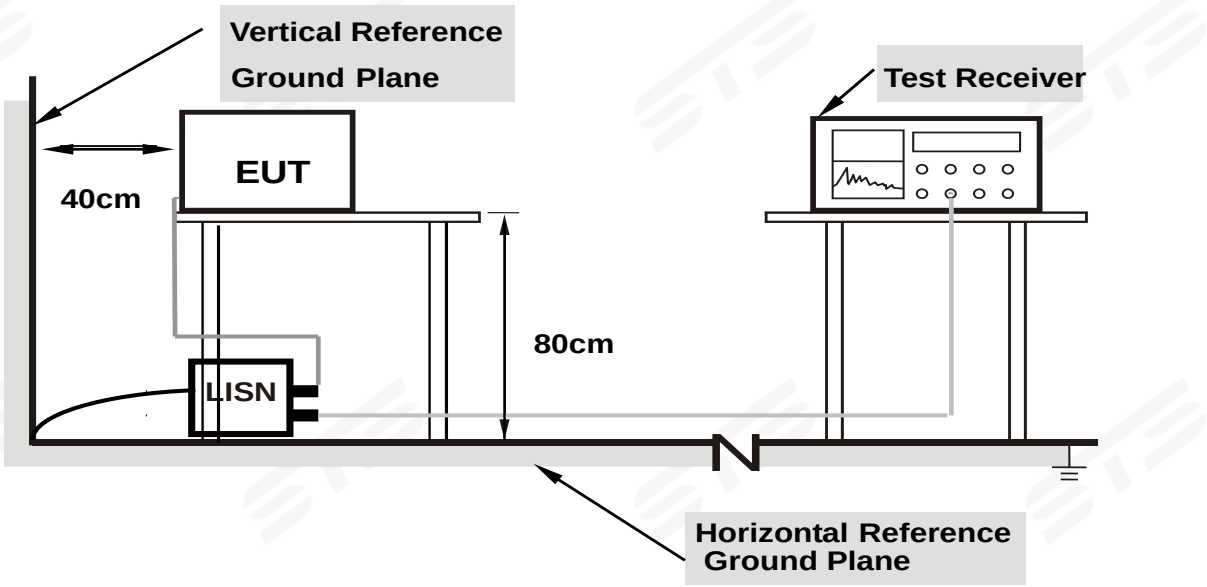
The following table is the setting of the receiver

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

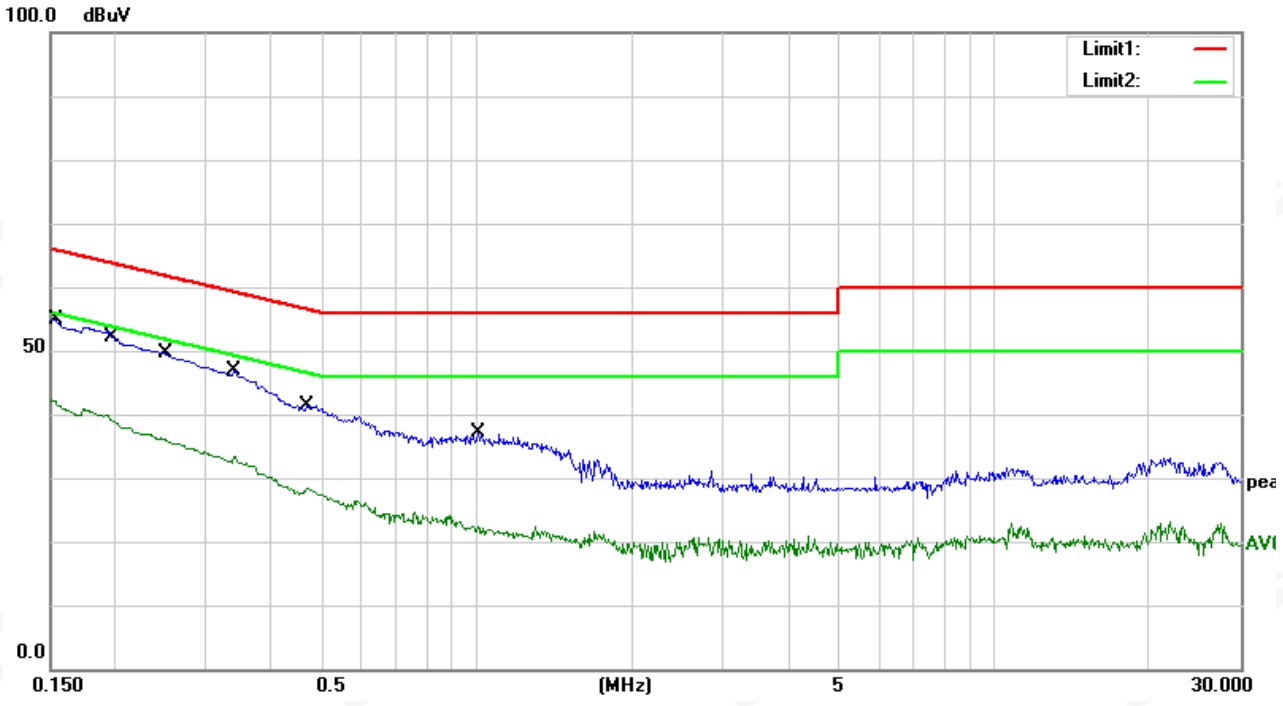
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.5 TEST RESULTS

Temperature:	26.1℃	Relative Humidity:	59%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 4		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1540	35.13	19.75	54.88	65.78	-10.90	QP
2	0.1540	22.53	19.75	42.28	55.78	-13.50	AVG
3	0.1985	32.19	19.86	52.05	63.67	-11.62	QP
4	0.1985	20.77	19.86	40.63	53.67	-13.04	AVG
5	0.2520	29.20	20.07	49.27	61.69	-12.42	QP
6	0.2520	16.19	20.07	36.26	51.69	-15.43	AVG
7	0.3392	26.76	20.17	46.93	59.22	-12.29	QP
8	0.3392	13.22	20.17	33.39	49.22	-15.83	AVG
9	0.4700	21.51	19.98	41.49	56.51	-15.02	QP
10	0.4700	8.44	19.98	28.42	46.51	-18.09	AVG
11	1.0060	17.36	19.77	37.13	56.00	-18.87	QP
12	1.0060	4.39	19.77	24.16	46.00	-21.84	AVG

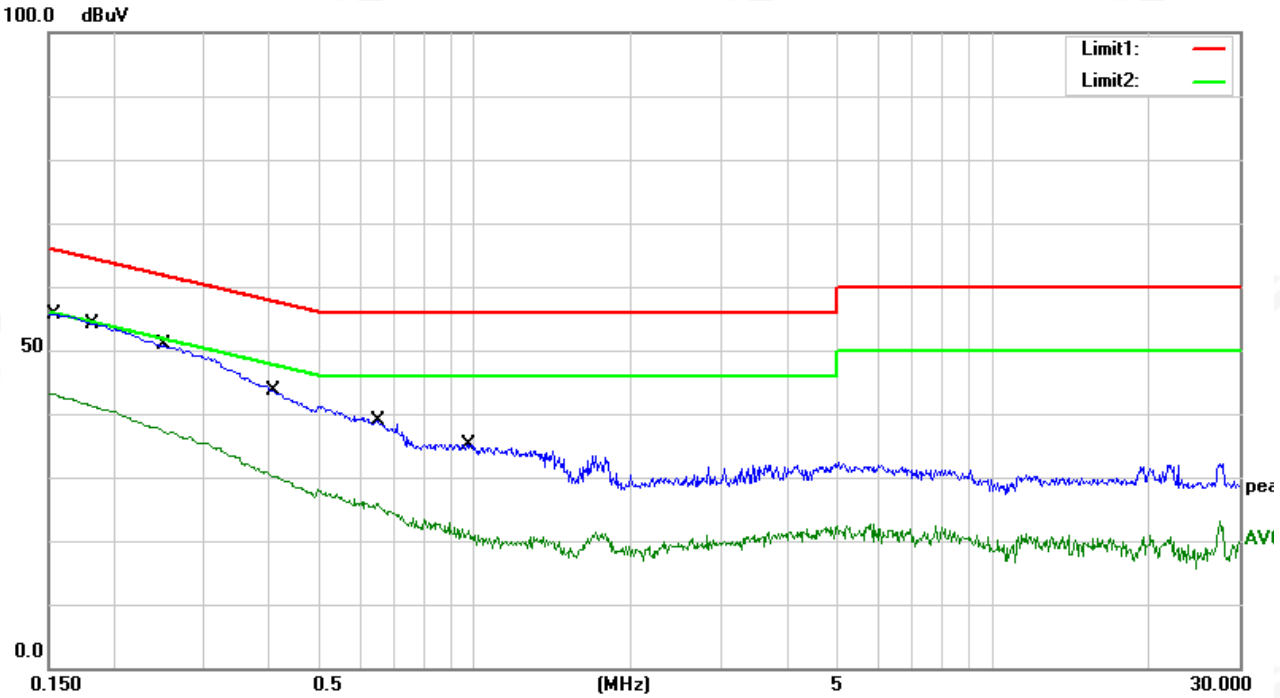
Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)



Temperature:	25.1℃	Relative Humidity:	59%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 4		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1540	35.92	19.75	55.67	65.78	-10.11	QP
2	0.1540	23.43	19.75	43.18	55.78	-12.60	AVG
3	0.1844	34.27	19.82	54.09	64.29	-10.20	QP
4	0.1844	21.76	19.82	41.58	54.29	-12.71	AVG
5	0.2500	30.73	20.06	50.79	61.76	-10.97	QP
6	0.2500	17.98	20.06	38.04	51.76	-13.72	AVG
7	0.4140	23.16	20.03	43.19	57.57	-14.38	QP
8	0.4140	11.22	20.03	31.25	47.57	-16.32	AVG
9	0.6500	19.07	19.87	38.94	56.00	-17.06	QP
10	0.6500	6.82	19.87	26.69	46.00	-19.31	AVG
11	0.9740	15.46	19.78	35.24	56.00	-20.76	QP
12	0.9740	2.97	19.78	22.75	46.00	-23.25	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)



4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2020 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (Frequency Range 9kHz-1000MHz)

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)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(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).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP/AV
Start Frequency	9 KHz/150KHz(Peak/QP/AV)
Stop Frequency	150KHz/30MHz(Peak/QP/AV)
RB / VB (emission in restricted band)	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz); 200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP
Start Frequency	30 MHz(Peak/QP)
Stop Frequency	1000 MHz (Peak/QP)
RB / VB (emission in restricted band)	120 KHz / 300 KHz

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG)

4.2 TEST PROCEDURE

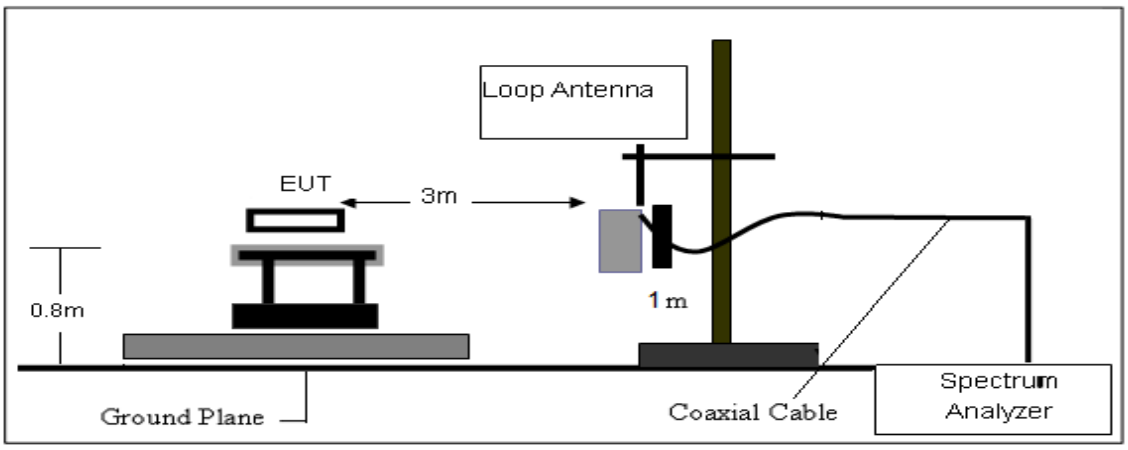
a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization 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 QuasiPeak detector mode will be re-measured.
e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

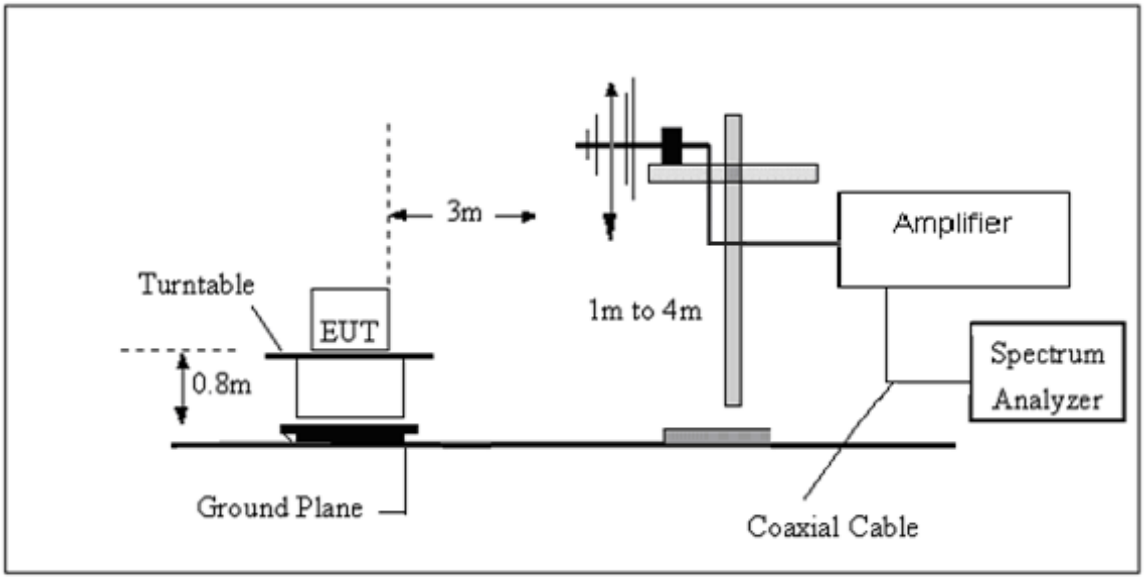
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

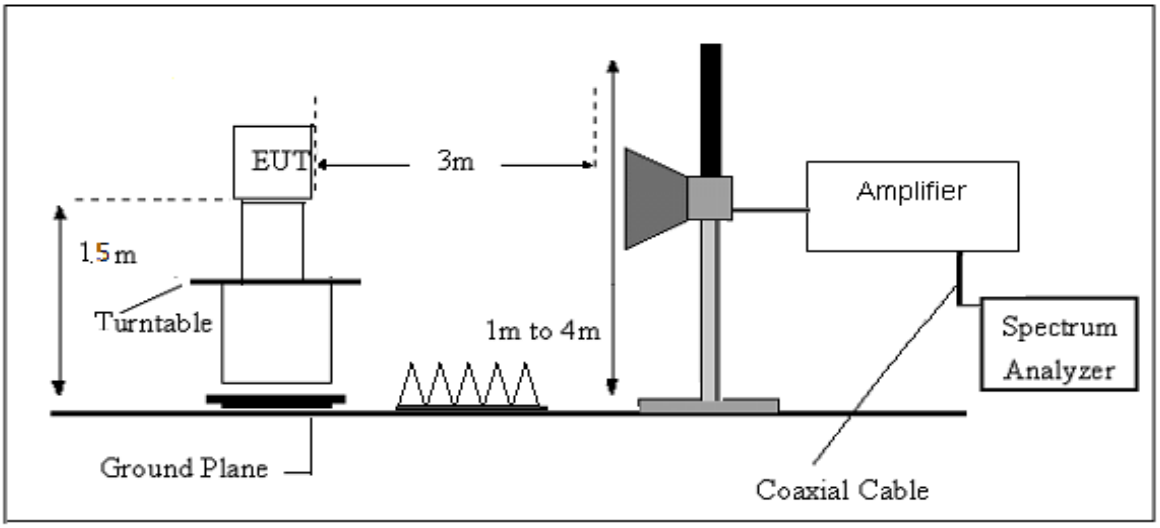
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.4 EUT OPERATING CONDITIONS

Please refer to section 3.4 of this report.

4.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

4.6 TEST RESULTS

(Between 9KHz – 30 MHz)

Temperature:	23.4℃	Relative Humidtity:	
Test Voltage:	AC 120V/60Hz	Polarization:	
Test Mode:	TX Mode		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

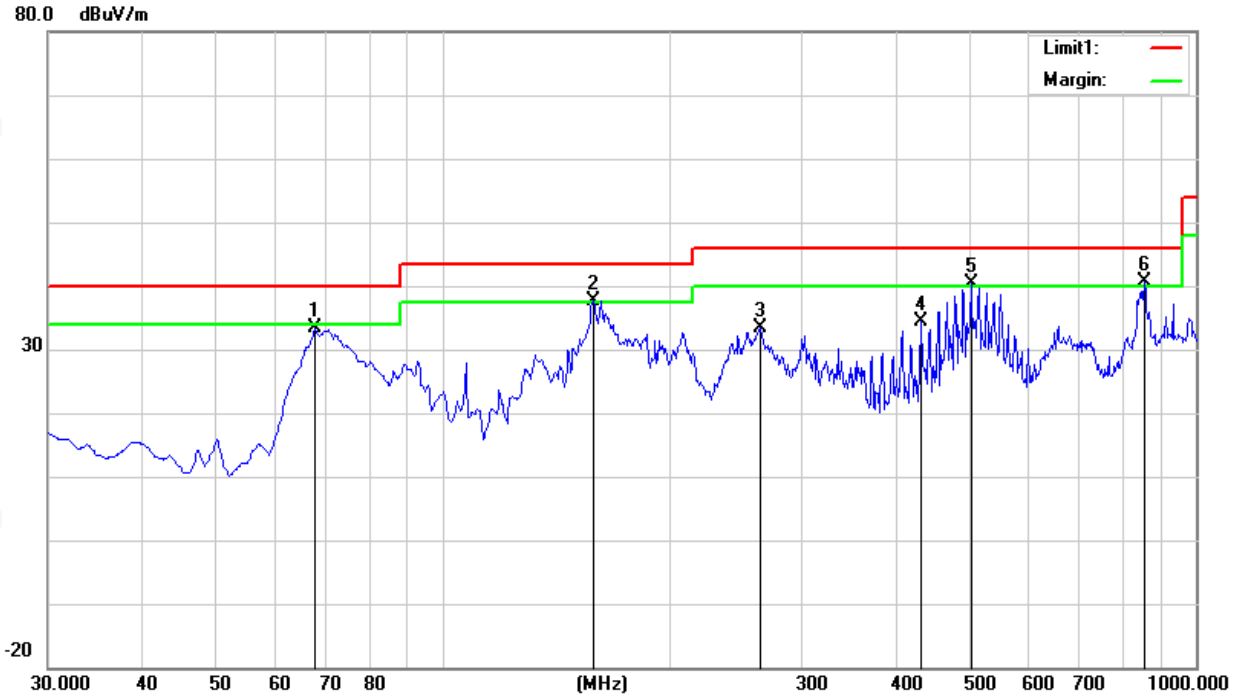
Limit line = specific limits(dBuv) + distance extrapolation factor.

(30MHz -1000MHz)

Temperature:	23.4℃	Relative Humidity:	
Test Voltage:	AC 120V/60Hz	Phase:	Horizontal
Test Mode:	Mode 1/2/3 (Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	67.8300	58.70	-25.28	33.42	40.00	-6.58	Peak
2	159.0100	56.41	-18.77	37.64	43.50	-5.86	Peak
3	264.7400	48.05	-14.75	33.30	46.00	-12.70	Peak
4	431.5800	44.40	-10.13	34.27	46.00	-11.73	Peak
5	504.3300	48.33	-7.98	40.35	46.00	-5.65	Peak
6	855.4700	41.31	-0.57	40.74	46.00	-5.26	peak

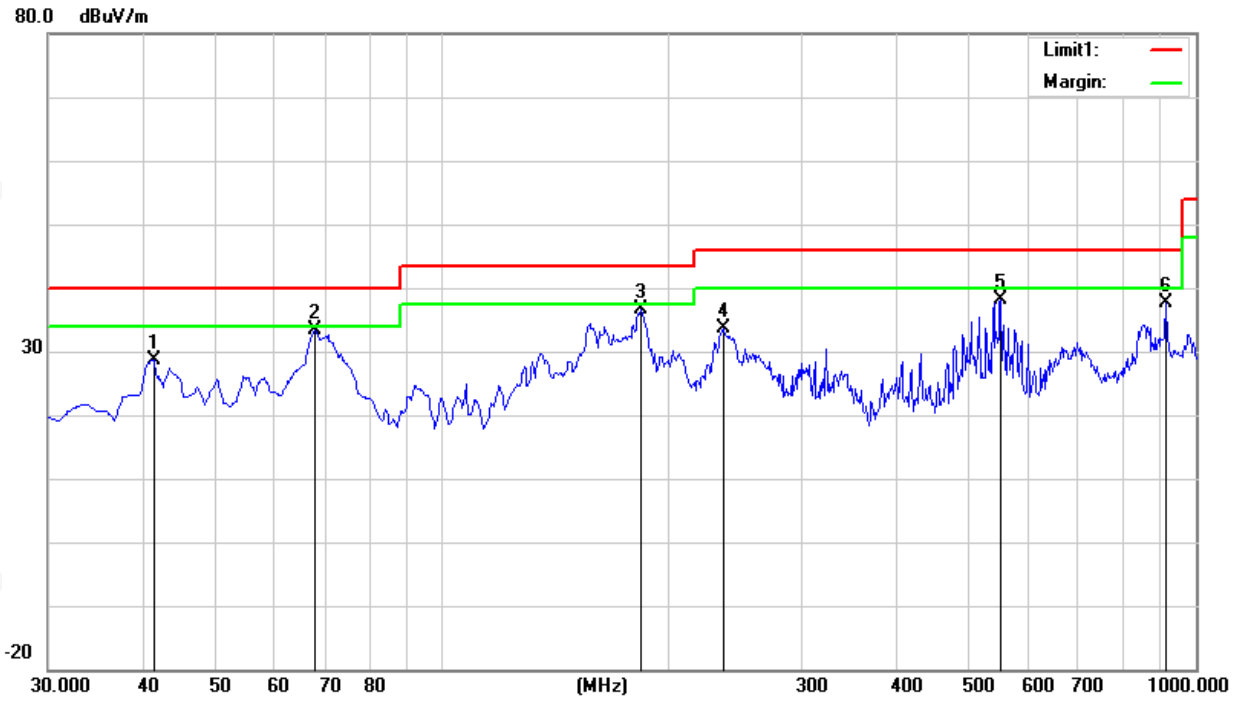
Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.



Temperature:	23.4℃	Relative Humidity:	60%RH
Test Voltage:	AC 120V/60Hz	Phase:	Vertical
Test Mode:	Mode 1/2/3 (Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.6400	47.57	-18.93	28.64	40.00	-11.36	peak
2	67.8300	58.72	-25.28	33.44	40.00	-6.56	peak
3	183.2600	56.87	-20.26	36.61	43.50	-6.89	peak
4	236.6100	52.10	-18.48	33.62	46.00	-12.38	peak
5	551.8600	43.76	-5.72	38.04	46.00	-7.96	peak
6	915.6100	37.73	-0.09	37.64	46.00	-8.36	peak

Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.



(1GHz-25GHz) Spurious emission Requirements

Frequency (MHz)	Meter Reading (dBμV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (GFSK/923.3 MHz)										
1254.92	61.69	44.70	6.70	28.20	-9.80	51.89	74.00	-22.11	PK	Vertical
1254.92	51.32	44.70	6.70	28.20	-9.80	41.52	54.00	-12.48	AV	Vertical
1254.92	61.04	44.70	6.70	28.20	-9.80	51.24	74.00	-22.76	PK	Horizontal
1254.92	50.37	44.70	6.70	28.20	-9.80	40.57	54.00	-13.43	AV	Horizontal
1846.78	58.65	44.20	9.04	31.60	-3.56	55.09	74.00	-18.91	PK	Vertical
1846.78	49.83	44.20	9.04	31.60	-3.56	46.27	54.00	-7.73	AV	Vertical
1846.82	59.19	44.20	9.04	31.60	-3.56	55.63	74.00	-18.37	PK	Horizontal
1846.82	50.08	44.20	9.04	31.60	-3.56	46.52	54.00	-7.48	AV	Horizontal
2060.24	48.90	44.20	9.86	32.00	-2.34	46.56	74.00	-27.44	PK	Vertical
2060.24	40.20	44.20	9.86	32.00	-2.34	37.85	54.00	-16.15	AV	Vertical
2060.27	48.35	44.20	9.86	32.00	-2.34	46.01	74.00	-27.99	PK	Horizontal
2060.27	39.31	44.20	9.86	32.00	-2.34	36.97	54.00	-17.03	AV	Horizontal
2769.79	54.78	43.50	11.40	35.50	3.40	58.18	74.00	-15.82	PK	Vertical
2769.79	43.69	43.50	11.40	35.50	3.40	47.09	54.00	-6.91	AV	Vertical
2769.81	53.50	43.50	11.40	35.50	3.40	56.90	74.00	-17.10	PK	Horizontal
2769.81	44.03	43.50	11.40	35.50	3.40	47.43	54.00	-6.57	AV	Horizontal
Middle Channel (GFSK/925.1 MHz)										
1257.36	61.26	44.70	6.70	28.20	-9.80	51.46	74.00	-22.54	PK	Vertical
1257.36	51.68	44.70	6.70	28.20	-9.80	41.88	54.00	-12.12	AV	Vertical
1257.38	60.79	44.70	6.70	28.20	-9.80	50.99	74.00	-23.01	PK	Horizontal
1257.38	50.85	44.70	6.70	28.20	-9.80	41.05	54.00	-12.95	AV	Horizontal
1850.41	59.27	44.20	9.04	31.60	-3.56	55.71	74.00	-18.29	PK	Vertical
1850.41	50.36	44.20	9.04	31.60	-3.56	46.80	54.00	-7.20	AV	Vertical
1850.36	59.26	44.20	9.04	31.60	-3.56	55.70	74.00	-18.30	PK	Horizontal
1850.36	49.24	44.20	9.04	31.60	-3.56	45.68	54.00	-8.32	AV	Horizontal
2064.25	48.91	44.20	9.86	32.00	-2.34	46.57	74.00	-27.43	PK	Vertical
2064.25	40.24	44.20	9.86	32.00	-2.34	37.90	54.00	-16.10	AV	Vertical
2064.20	47.29	44.20	9.86	32.00	-2.34	44.95	74.00	-29.05	PK	Horizontal
2064.20	38.67	44.20	9.86	32.00	-2.34	36.33	54.00	-17.67	AV	Horizontal
2775.24	54.98	43.50	11.40	35.50	3.40	58.38	74.00	-15.62	PK	Vertical
2775.24	43.86	43.50	11.40	35.50	3.40	47.26	54.00	-6.74	AV	Vertical
2775.24	53.65	43.50	11.40	35.50	3.40	57.05	74.00	-16.95	PK	Horizontal
2775.24	44.37	43.50	11.40	35.50	3.40	47.77	54.00	-6.23	AV	Horizontal

High Channel (GFSK/927.5 MHz)										
1260.69	60.94	44.70	6.70	28.20	-9.80	51.14	74.00	-22.86	PK	Vertical
1260.69	50.30	44.70	6.70	28.20	-9.80	40.50	54.00	-13.50	AV	Vertical
1260.64	62.11	44.70	6.70	28.20	-9.80	52.31	74.00	-21.69	PK	Horizontal
1260.64	50.45	44.70	6.70	28.20	-9.80	40.65	54.00	-13.35	AV	Horizontal
1855.15	59.32	44.20	9.04	31.60	-3.56	55.76	74.00	-18.24	PK	Vertical
1855.15	49.27	44.20	9.04	31.60	-3.56	45.71	54.00	-8.29	AV	Vertical
1855.15	59.22	44.20	9.04	31.60	-3.56	55.66	74.00	-18.34	PK	Horizontal
1855.15	50.13	44.20	9.04	31.60	-3.56	46.57	54.00	-7.43	AV	Horizontal
2069.62	49.37	44.20	9.86	32.00	-2.34	47.02	74.00	-26.98	PK	Vertical
2069.62	39.38	44.20	9.86	32.00	-2.34	37.04	54.00	-16.96	AV	Vertical
2069.58	47.97	44.20	9.86	32.00	-2.34	45.63	74.00	-28.37	PK	Horizontal
2069.58	38.94	44.20	9.86	32.00	-2.34	36.59	54.00	-17.41	AV	Horizontal
2782.46	54.13	43.50	11.40	35.50	3.40	57.53	74.00	-16.47	PK	Vertical
2782.46	44.87	43.50	11.40	35.50	3.40	48.27	54.00	-5.73	AV	Vertical
2782.48	54.68	43.50	11.40	35.50	3.40	58.08	74.00	-15.92	PK	Horizontal
2782.48	43.57	43.50	11.40	35.50	3.40	46.97	54.00	-7.03	AV	Horizontal

Note:

1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
   Emission Level = Reading + Factor

2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

5. CONDUCTED SPURIOUS & BAND EDGE EMISSION

5.1 LIMIT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 807.9 – 907.9MHz Upper Band Edge: 910.9-1010.9 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

5.3 TEST SETUP

The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna termina is 50 Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

5.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.

5.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.

6. POWER SPECTRAL DENSITY TEST

6.1 LIMIT

FCC Part 15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	≤8 dBm (RBW≥3KHz)	902-928	PASS

6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to: 100 kHz ≥ RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 TEST SETUP

6.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.

6.5 TEST RESULTS

Note: The test data please refer to APPENDIX 1.