



FCC Part 15C Test Report

FCC ID: 2AJWLYL8290

Product Name:	UHF Long Range/Mid Range Reader/Writer
Trademark:	N/A
Tested Model:	YL8290
Adding Model(s):	YL8280, YL8300
Prepared For :	SUNBESTRFID TECHNOLOGY CO., LTD
Address :	Rm409, B1, Fortune Plaza, Futian Bonded Zone, Shenzhen, 518031 China
Prepared By :	Shenzhen BCTC Technology Co., Ltd.
Address :	No.101, Yousong Road, Longhua New District, Shenzhen, China
Test Date:	Sep. 01 - Sep. 07. 2016
Date of Report :	Sep. 07. 2016
Report No.:	BCTC-FY160802009E



TEST RESULT CERTIFICATION

Applicant's name : SUNBESTRFID TECHNOLOGY CO., LTD
Address : Rm409, B1, Fortune Plaza, Futian Bonded Zone,
Shenzhen, 518031 China
Manufacture's Name : SUNBESTRFID TECHNOLOGY CO., LTD
Address : Rm409, B1, Fortune Plaza, Futian Bonded Zone,
Shenzhen, 518031 China

Product description

Product name : UHF Long Range/Mid Range Reader/Writer
Trademark : N/A
Tested Model : YL8290
Adding Model(s) : YL8280, YL8300
Standards : FCC Part15.249
ANSI C63.10:2013

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

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Testing Engineer :

Jack Bu

Reviewer
(Supervisor) :

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Approved &
Authorized
Signer(Manager) :

Carson Zhang



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.249 (a)	20dB Bandwidth	PASS	
15.249 (a)	Radiated Spurious Emission	PASS	
15.205 15.49 (d)	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

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



1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.

Add. : No.101,Yousong Road,Longhua New District, Shenzhen,China

FCC Registered No.: 187086

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	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	UHF Long Range/Mid Range Reader/Writer	
Trade Name	N/A	
Model Name	YL8290 YL8280, YL8300	
Model Difference	All the model are the same circuit and RF module, except model names.	
Product Description	The EUT is a UHF Long Range/Mid Range Reader/Writer	
	Operating Frequency:	902.5~927MHz
	Modulation Type:	GFSK
	Number Of Channel	50CH
	Antenna Designation:	Please see Note 2.
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an Remote Device. More details of EUT technical specification, please refer to the User's Manual.		
Channel List	Please refer to the Note 2.	
Power	DC 12V from Adapter External Adapter:AC 100-240V~ 50/60Hz 1.5A OutPut:DC 12V/3.0A	
hardware version	--	
Software version	--	
Serial number	--	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

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

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)		
00	902.5	27	915.5		
01	903.0	28	916.0		
02	903.5	29	916.5		
~	~	~	~		
08	906.0	35	919.5		
09	906.5	36	920.0		
~	~	~	~		
14	909.0	41	922.5		
~	~	~	~		
26	915	50	927.0		



3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
1	N/A	N/A	Internal Antenna	5	

2.2 DESCRIPTION OF TEST MODES

Pretest Mode	Description
Mode 1	TX Mode Low channel
Mode 2	TX Mode Middle channel
Mode 3	TX Mode High channel
Mode 4	Link Mode

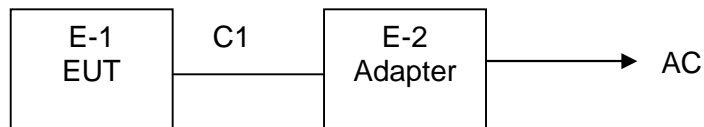
Conducted Emission	
Final Test Mode	Description
Mode 1	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX Mode Low channel
Mode 2	TX Mode Middle channel
Mode 3	TX Mode High channel



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission/ Radiated Emission Test



2.4 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	UHF Long Range/Mid Range Reader/Writer	N/A	YL8290	N/A	EUT
E-2	Adapter	GVE	AWT8000	GM50-120300-F	

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	1.5M	DC Cable

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.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	MY45109572	2016.08.25	2017.08.24
2	Test Receiver	R&S	ESPI	101396	2016.08.25	2017.08.24
3	Bilog Antenna	SCHWARZBECK	VULB9160	VULB9160-3369	2016.08.25	2017.08.24
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.07.06	2017.07.05
5	Spectrum Analyzer	Agilent	N9020A	MY5051041	2016.07.06	2017.07.05
6	Horn Antenna	SCHWARZBECK	9120D	9120D-1275	2016.08.25	2017.08.24
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05
8	Amplifier	SCHWARZBECK	BBV9718	9718-270	2016.08.25	2017.08.24
9	Amplifier	SCHWARZBECK	BBV9743	9743-119	2016.08.25	2017.08.24
10	Loop Antenna	ARA	PLKT-MR-U01W30/B	1029	2016.07.06	2017.07.05
11	Power Meter	R&S	NRVS	100696	2016.07.06	2017.07.05
12	Power Sensor	R&S	URV5-Z4	0395.1619.05	2016.07.06	2017.07.05
13	RF cables	R&S	N/A	N/A	2016.07.06	2017.07.05

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2016.08.25	2017.08.24
2	LISN	R&S	NSLK8126	8126466	2016.08.25	2017.08.24
3	LISN	R&S	NSLK8126	8126487	2016.08.25	2017.08.24
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.08.25	2017.08.24
5	RF cables	R&S	R204	R20X	2016.07.06	2017.07.05



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-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) 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

3.1.2 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.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1. Support units were connected to second LISN.

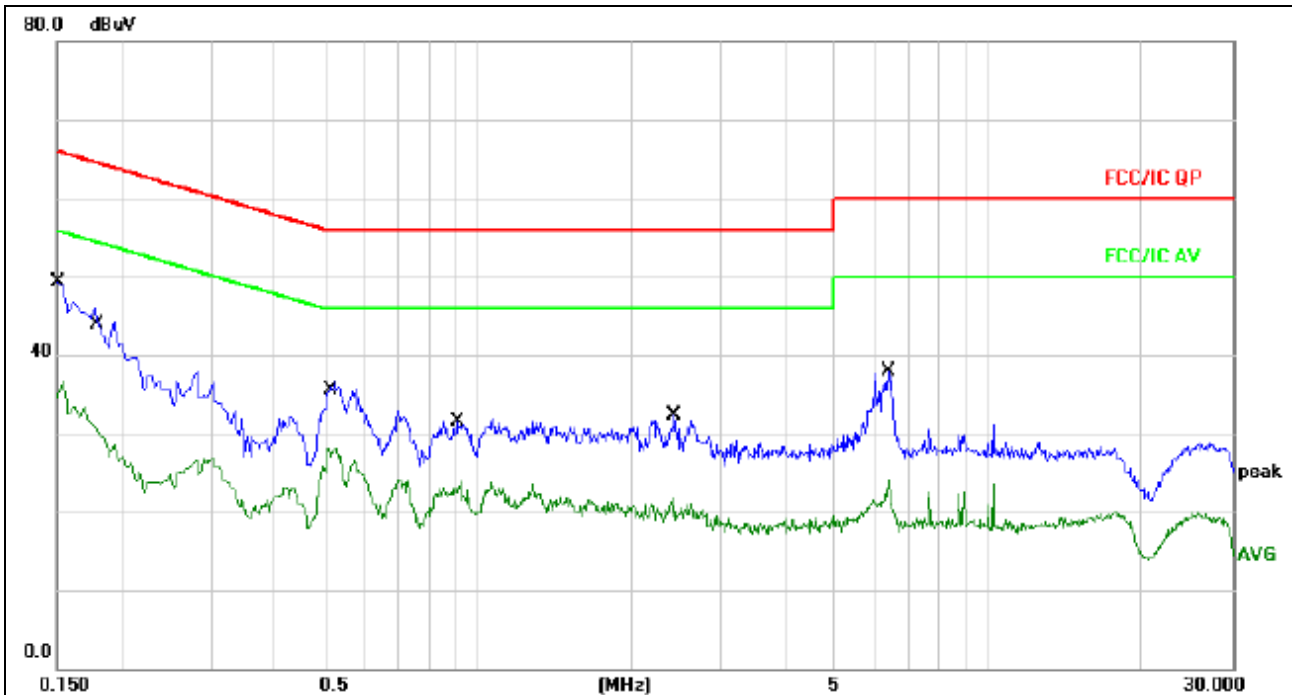
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.5 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.

**3.1.6 TEST RESULTS**

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 4



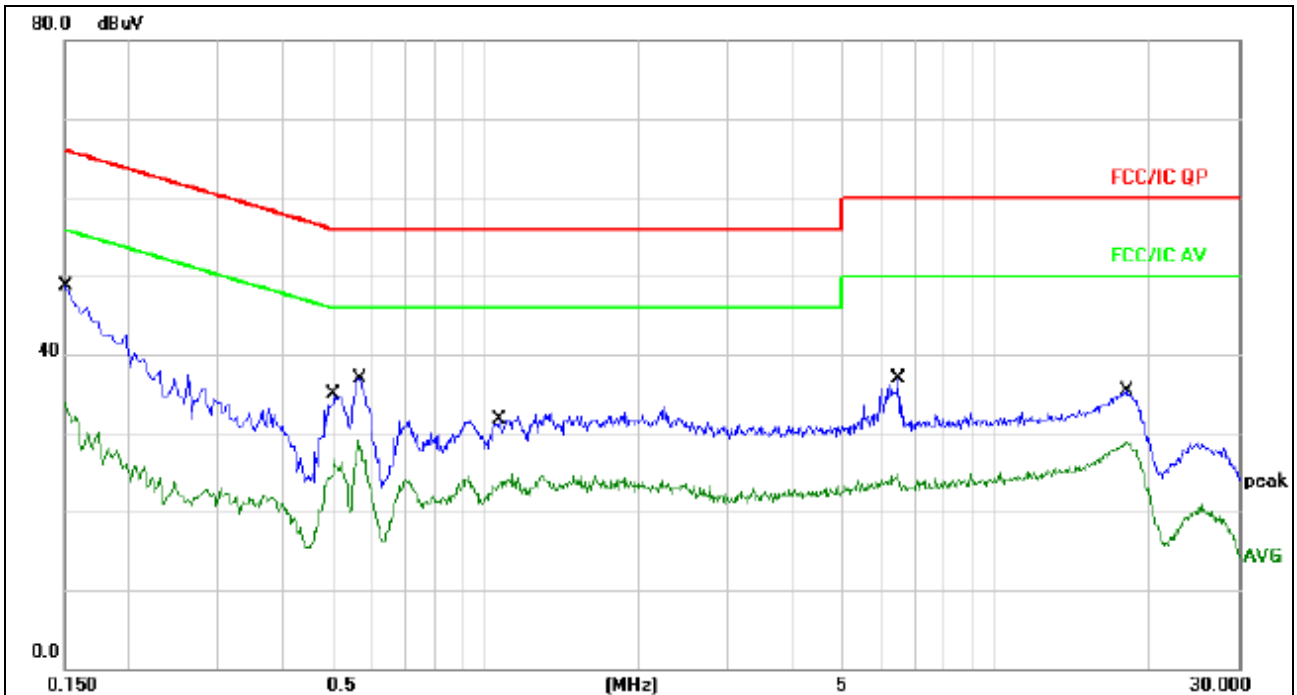
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	39.35	10.05	49.40	65.99	-16.59	QP	
2		0.1500	26.71	10.05	36.76	55.99	-19.23	AVG	
3		0.1825	34.29	10.06	44.35	64.37	-20.02	QP	
4		0.1825	19.55	10.06	29.61	54.37	-24.76	AVG	
5		0.5100	26.49	10.12	36.61	56.00	-19.39	QP	
6		0.5100	17.99	10.12	28.11	46.00	-17.89	AVG	
7		0.9140	21.27	10.16	31.43	56.00	-24.57	QP	
8		0.9140	13.84	10.16	24.00	46.00	-22.00	AVG	
9		2.4340	22.15	10.18	32.33	56.00	-23.67	QP	
10		2.4340	11.52	10.18	21.70	46.00	-24.30	AVG	
11		6.3740	27.81	10.09	37.90	60.00	-22.10	QP	
12		6.3740	13.93	10.09	24.02	50.00	-25.98	AVG	



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 4



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1499	38.63	10.05	48.68	66.00	-17.32	QP	
2	0.1499	23.92	10.05	33.97	56.00	-22.03	AVG	
3	0.5060	24.82	10.12	34.94	56.00	-21.06	QP	
4	0.5060	16.48	10.12	26.60	46.00	-19.40	AVG	
5	0.5660	26.86	10.12	36.98	56.00	-19.02	QP	
6 *	0.5660	18.90	10.12	29.02	46.00	-16.98	AVG	
7	1.0660	21.46	10.17	31.63	56.00	-24.37	QP	
8	1.0660	14.53	10.17	24.70	46.00	-21.30	AVG	
9	6.4379	26.89	10.09	36.98	60.00	-23.02	QP	
10	6.4379	14.63	10.09	24.72	50.00	-25.28	AVG	
11	18.1059	25.17	10.16	35.33	60.00	-24.67	QP	
12	18.1059	18.72	10.16	28.88	50.00	-21.12	AVG	



3.2 RADIATED EMISSION MEASUREMENT

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

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

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

Frequencies (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
900-928	50	500

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).

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

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

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre.
- Test the EUT in the TX mode.

Note:

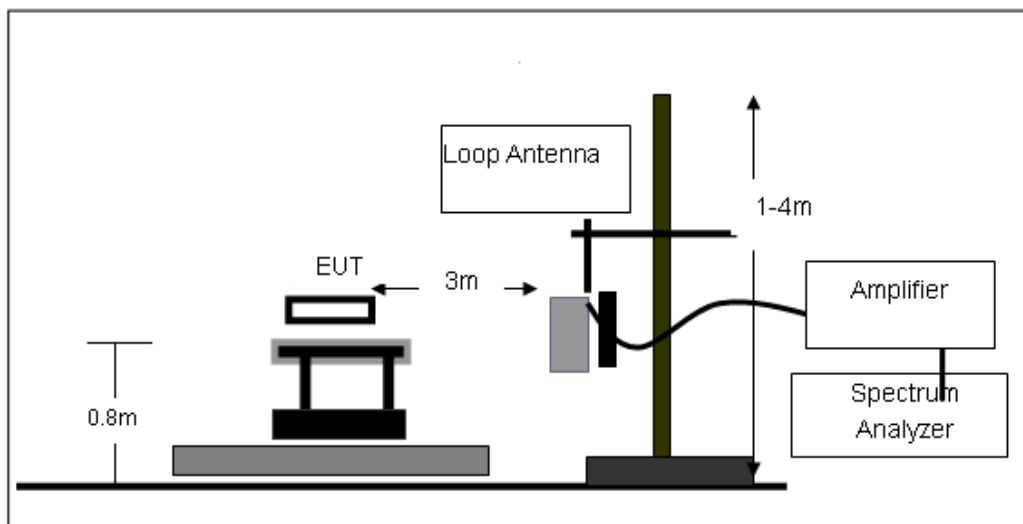
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

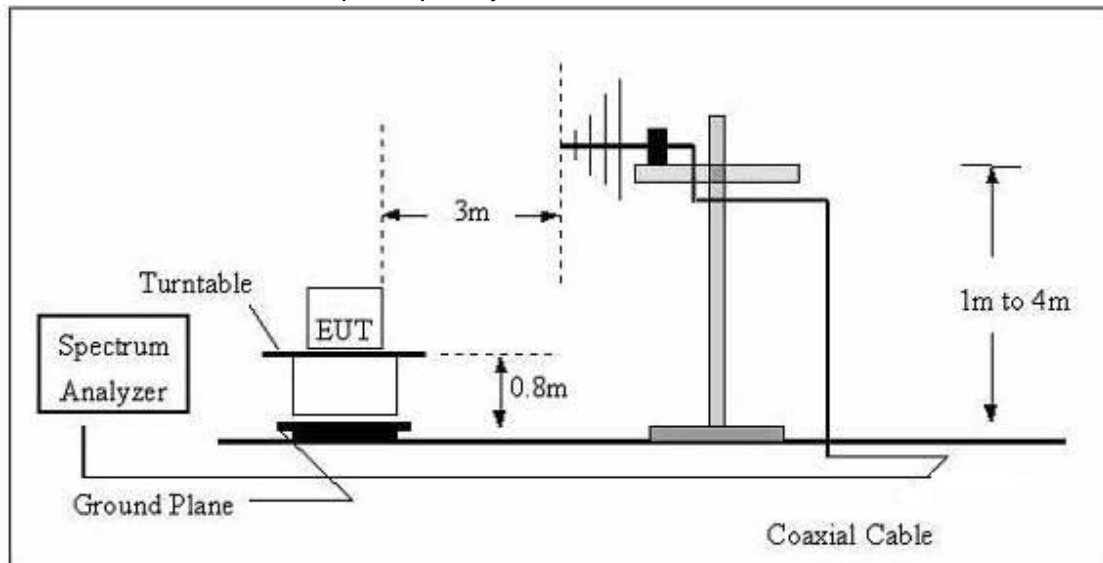
No deviation

3.2.4 TEST SETUP

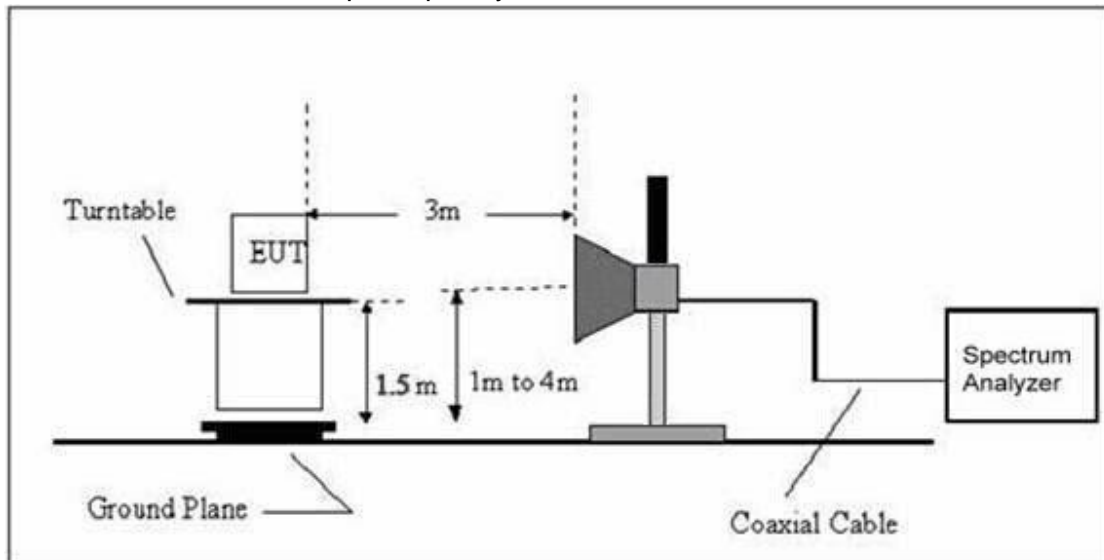
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)**

Temperature:	20℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 4	Polarization :	--

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

NOTE:

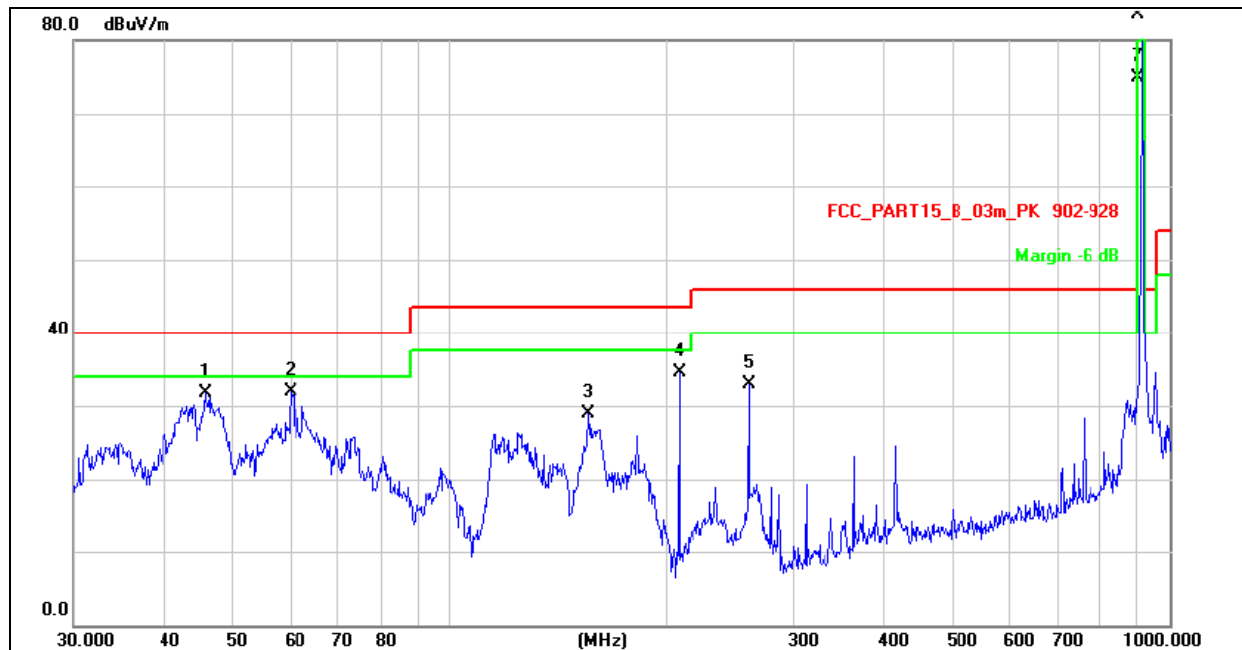
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

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

**3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)**

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 1		



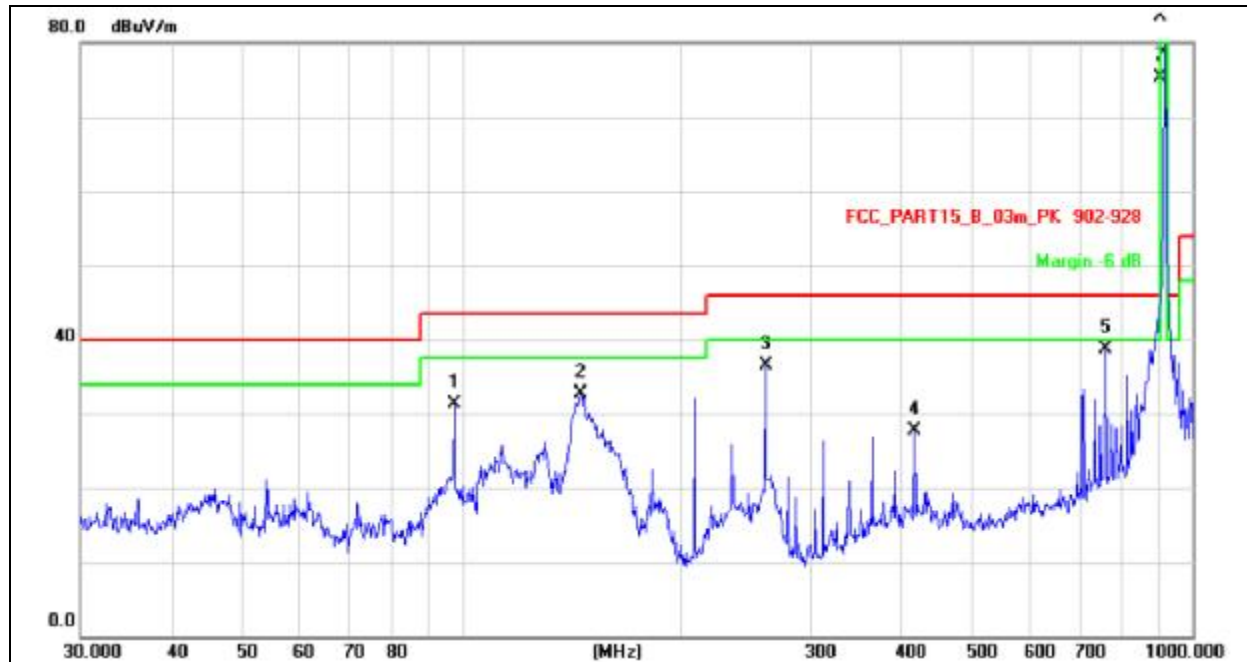
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		45.6948	41.32	-9.58	31.74	40.00	-8.26	QP
2	*	60.0691	43.43	-11.52	31.91	40.00	-8.09	QP
3		155.9101	41.81	-12.87	28.94	43.50	-14.56	QP
4		207.8501	50.57	-15.98	34.59	43.50	-8.91	QP
5		260.1444	46.72	-13.91	32.81	46.00	-13.19	QP
6		902.5000	85.15	-1.41	83.74	114.00	-30.26	peak
7		902.5000	76.36	-1.41	74.95	94.00	-19.05	AVG



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 1		



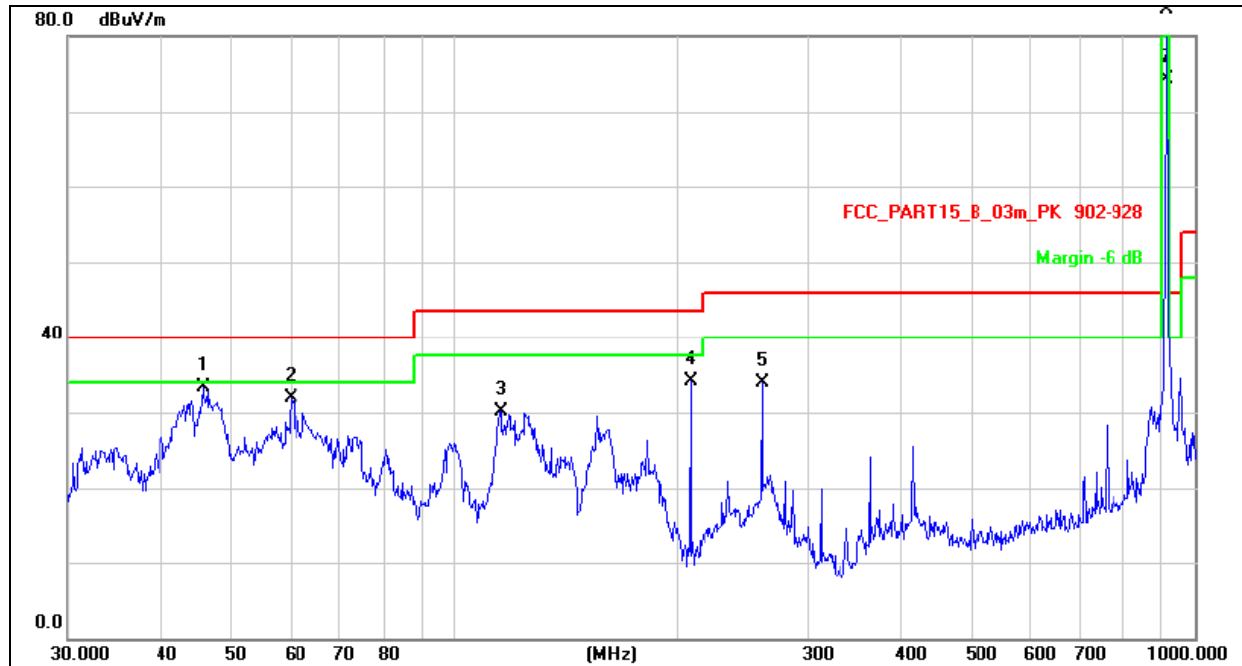
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		97.4560	48.13	-16.76	31.37	43.50	-12.13	QP
2		145.3506	45.73	-13.10	32.63	43.50	-10.87	QP
3		260.1444	50.38	-13.91	36.47	46.00	-9.53	QP
4		416.1791	37.49	-9.83	27.66	46.00	-18.34	QP
5	*	760.7036	41.87	-3.18	38.69	46.00	-7.31	QP
6		902.5000	85.16	-1.41	83.75	114.00	-30.25	peak
7		902.5000	76.75	-1.41	75.34	94.00	-18.66	AVG



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 2		

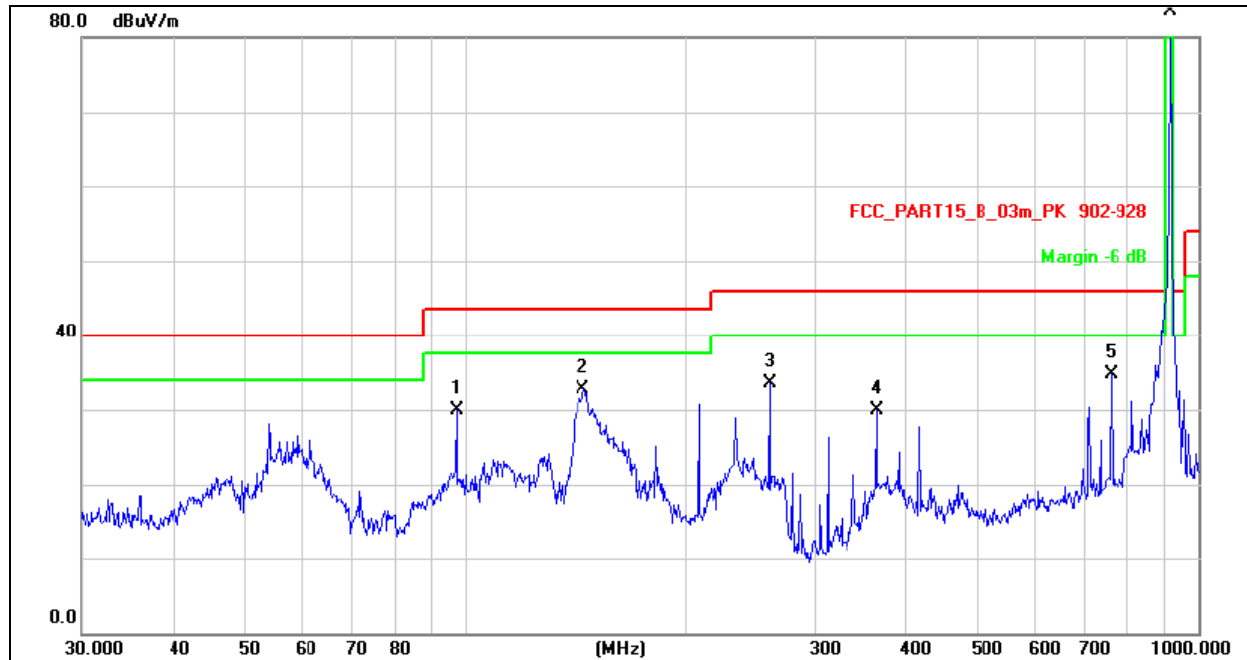


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	45.6580	42.81	-9.57	33.24	40.00	-6.76	QP
2		60.1320	43.45	-11.54	31.91	40.00	-8.09	QP
3		115.2140	45.31	-15.12	30.19	43.50	-13.31	QP
4		207.6545	50.08	-15.99	34.09	43.50	-9.41	QP
5		259.6354	47.74	-13.93	33.81	46.00	-12.19	QP
6		915.0000	84.92	-1.18	83.74	114.00	-30.26	peak
7		915.0000	75.45	-1.18	74.27	94.00	-19.73	AVG



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 2		



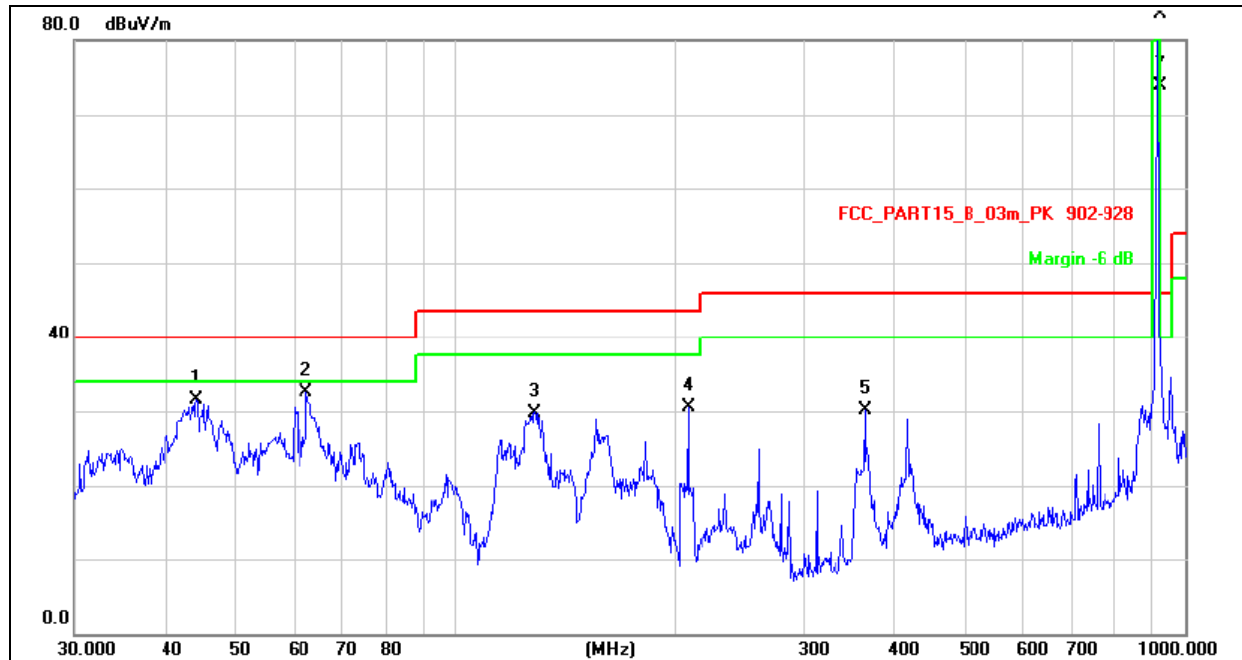
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		97.3250	46.64	-16.77	29.87	43.50	-13.63	QP
2	*	144.6720	45.77	-13.14	32.63	43.50	-10.87	QP
3		260.2130	47.38	-13.91	33.47	46.00	-12.53	QP
4		364.1570	40.95	-11.09	29.86	46.00	-16.14	QP
5		760.3210	37.88	-3.19	34.69	46.00	-11.31	QP
6		915.0000	84.93	-1.18	83.75	114.00	-30.25	peak
7		915.0000	75.56	-1.18	74.38	94.00	-19.62	AVG



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



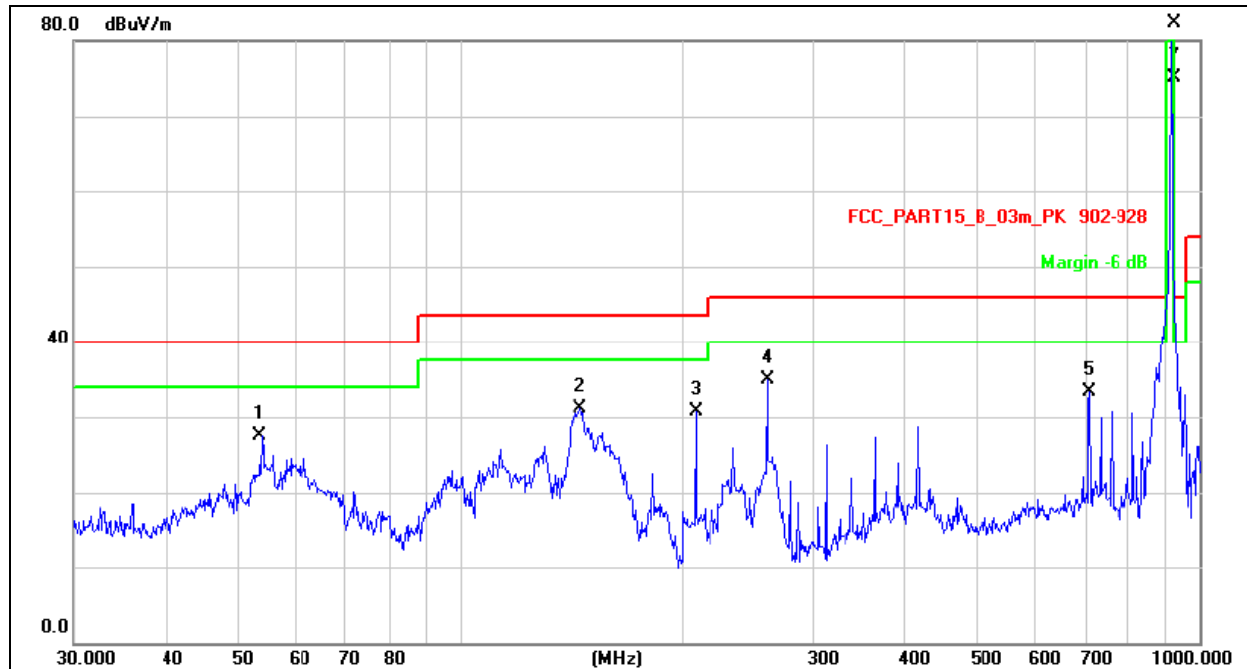
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		44.1024	40.95	-9.36	31.59	40.00	-8.41	QP
2	*	62.3517	44.43	-11.99	32.44	40.00	-7.56	QP
3		128.0694	44.02	-14.22	29.80	43.50	-13.70	QP
4		207.2639	46.58	-15.99	30.59	43.50	-12.91	QP
5		363.5476	41.13	-11.11	30.02	46.00	-15.98	QP
6		927.0000	84.70	-0.96	83.74	114.00	-30.26	peak
7		927.0000	74.85	-0.96	73.89	94.00	-20.11	AVG



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



Remark:

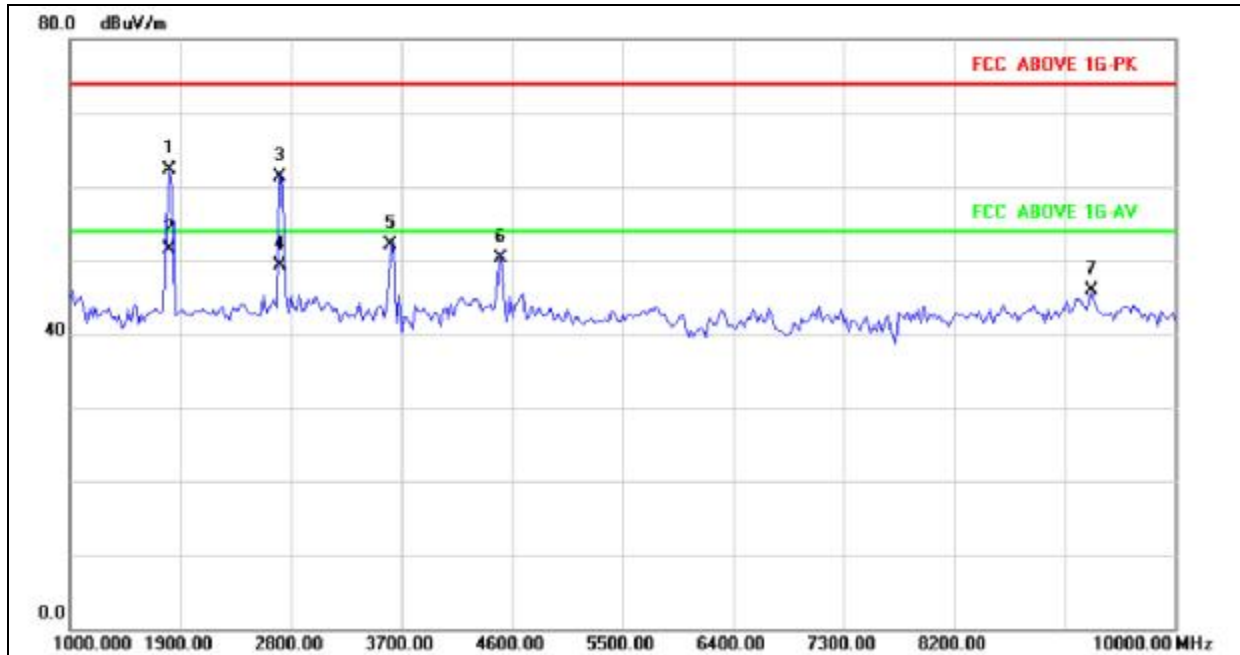
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		53.3626	38.39	-10.85	27.54	40.00	-12.46	QP
2		145.2153	44.24	-13.11	31.13	43.50	-12.37	QP
3		207.8635	46.60	-15.98	30.62	43.50	-12.88	QP
4	*	260.1421	48.88	-13.91	34.97	46.00	-11.03	QP
5		709.2152	37.41	-4.20	33.21	46.00	-12.79	QP
6		927.0000	83.21	-0.96	82.25	114.00	-31.75	peak
7		927.0000	75.98	-0.96	75.02	94.00	-18.98	AVG



3.2.8 TEST RESULTS (1GHZ~10GHZ)

Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 1		



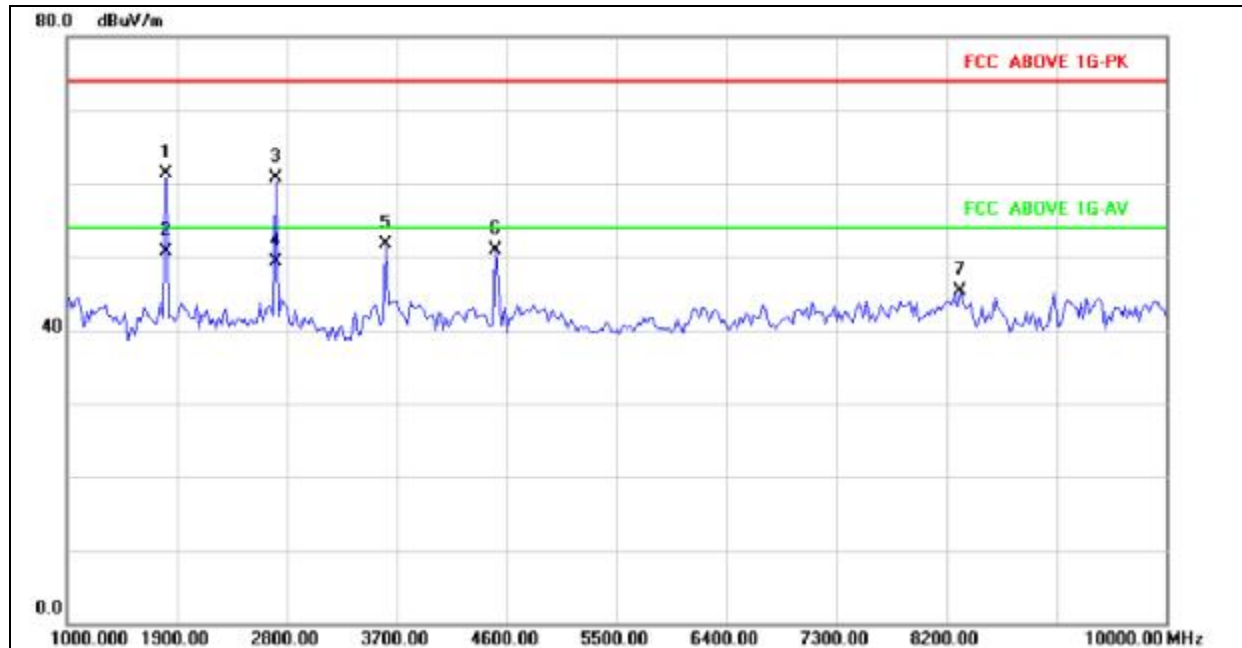
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1805.000	49.46	12.86	62.32	74.00	-11.68	peak
2	*	1805.000	38.61	12.86	51.47	54.00	-2.53	AVG
3		2707.500	46.79	14.48	61.27	74.00	-12.73	peak
4		2707.500	34.87	14.48	49.35	54.00	-4.65	AVG
5		3610.000	35.00	17.12	52.12	74.00	-21.88	peak
6		4512.500	31.36	18.99	50.35	74.00	-23.65	peak
7		9325.000	29.02	16.98	46.00	74.00	-28.00	peak



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 1		



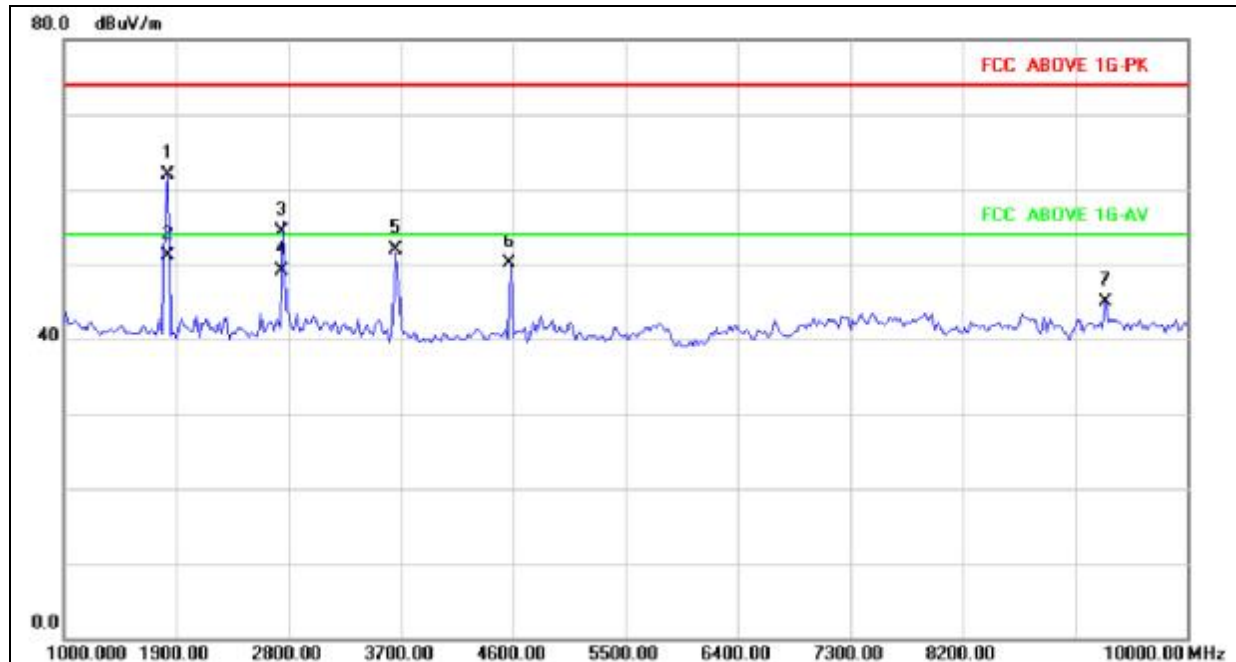
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1805.000	48.49	12.86	61.35	74.00	-12.65	peak
2	*	1805.000	37.88	12.86	50.74	54.00	-3.26	AVG
3		2707.500	46.19	14.48	60.67	74.00	-13.33	peak
4		2707.500	34.74	14.48	49.22	54.00	-4.78	AVG
5		3610.000	34.65	17.12	51.77	74.00	-22.23	peak
6		4512.500	31.82	18.99	50.81	74.00	-23.19	peak
7		8312.500	28.30	17.05	45.35	74.00	-28.65	peak



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 2		



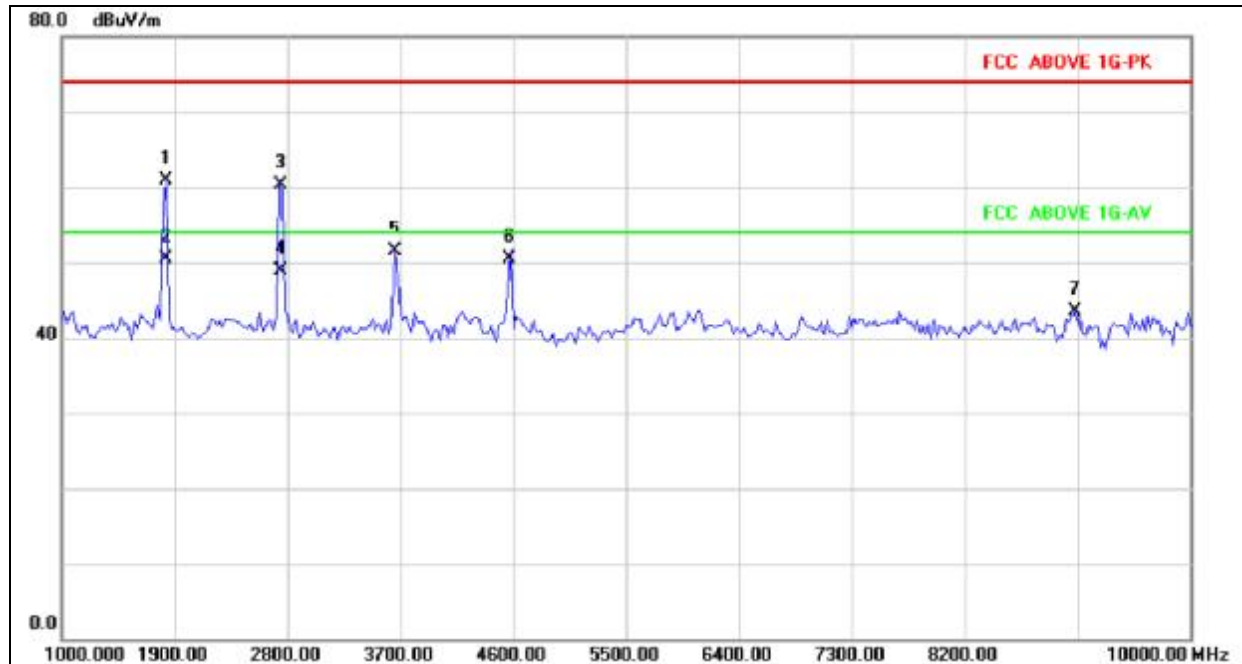
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1830.000	49.01	12.88	61.89	74.00	-12.11	peak
2	*	1830.000	38.25	12.88	51.13	54.00	-2.87	AVG
3		2745.000	39.76	14.56	54.32	74.00	-19.68	peak
4		2745.000	34.49	14.56	49.05	54.00	-4.95	AVG
5		3660.000	34.54	17.28	51.82	74.00	-22.18	peak
6		4575.000	31.01	19.07	50.08	74.00	-23.92	peak
7		9347.500	27.81	17.03	44.84	74.00	-29.16	peak



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode2		



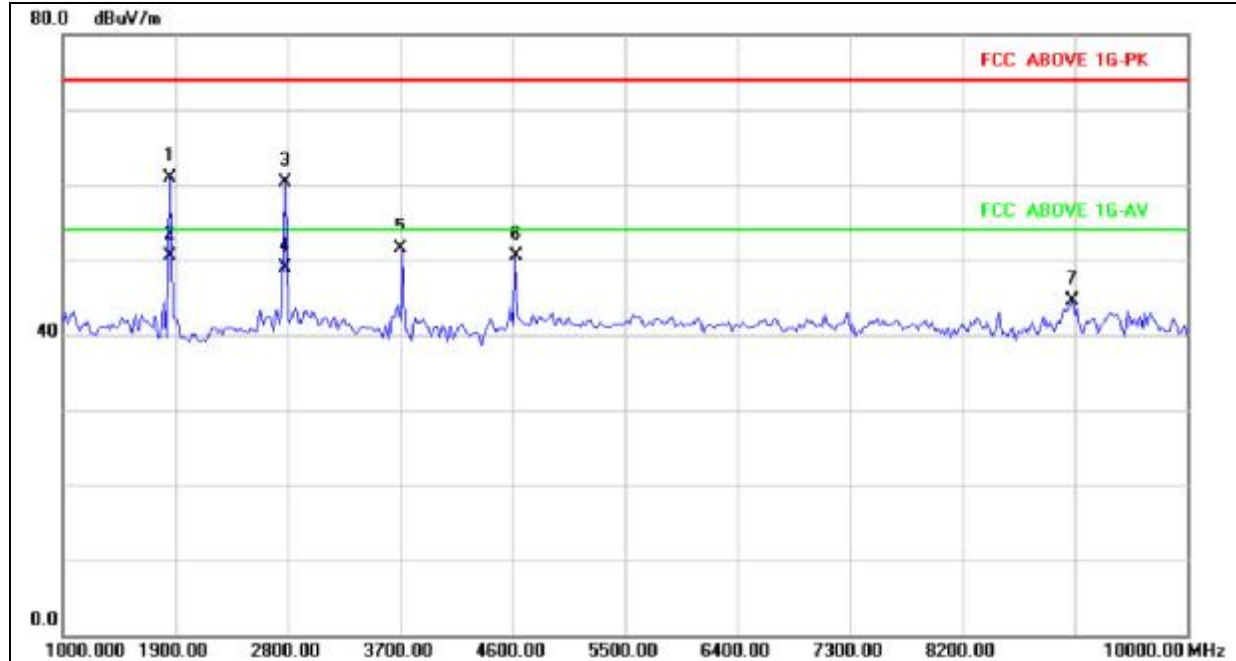
Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1830.000	48.05	12.88	60.93	74.00	-13.07	peak
2	*	1830.000	37.53	12.88	50.41	54.00	-3.59	AVG
3		2745.000	45.71	14.56	60.27	74.00	-13.73	peak
4		2745.000	34.36	14.56	48.92	54.00	-5.08	AVG
5		3660.000	34.19	17.28	51.47	74.00	-22.53	peak
6		4575.000	31.46	19.07	50.53	74.00	-23.47	peak
7		9077.500	27.21	16.38	43.59	74.00	-30.41	peak



Temperature :	26°C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		

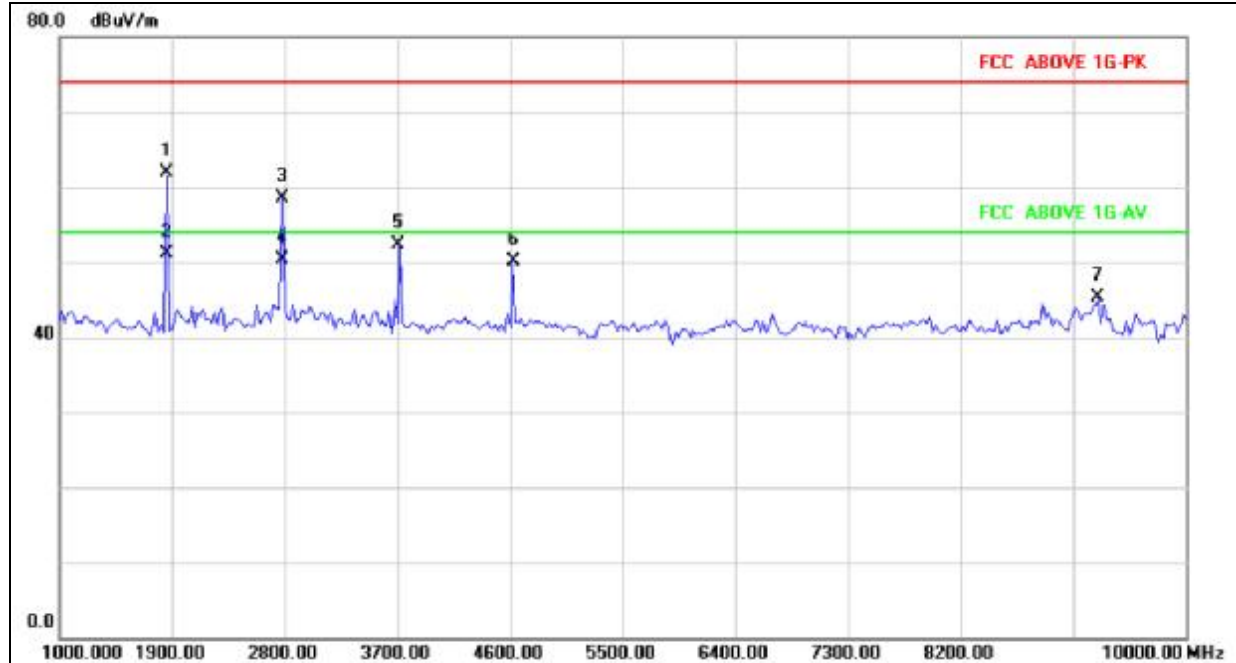


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1854.000	48.03	12.90	60.93	74.00	-13.07	peak
2	*	1854.000	37.51	12.90	50.41	54.00	-3.59	AVG
3		2781.000	45.63	14.64	60.27	74.00	-13.73	peak
4		2781.000	34.28	14.64	48.92	54.00	-5.08	AVG
5		3708.000	34.02	17.45	51.47	74.00	-22.53	peak
6		4635.000	31.39	19.14	50.53	74.00	-23.47	peak
7		9077.500	28.21	16.38	44.59	74.00	-29.41	peak



Temperature :	26℃	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		1854.000	48.99	12.90	61.89	74.00	-12.11	peak
2	*	1854.000	38.23	12.90	51.13	54.00	-2.87	AVG
3		2781.000	43.85	14.64	58.49	74.00	-15.51	peak
4		2781.000	35.60	14.64	50.24	54.00	-3.76	AVG
5		3708.000	34.76	17.45	52.21	74.00	-21.79	peak
6		4635.000	30.94	19.14	50.08	74.00	-23.92	peak
7		9302.500	28.34	16.92	45.26	74.00	-28.74	peak



3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)
	QP
Below 1000	43.5

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).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	900MHz
Stop Frequency	940MHz
RB / VB (emission in restricted band)	100kHz /300kHz

3.3.2 TEST PROCEDURE

test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 0.8meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in theTX Mode

Note:

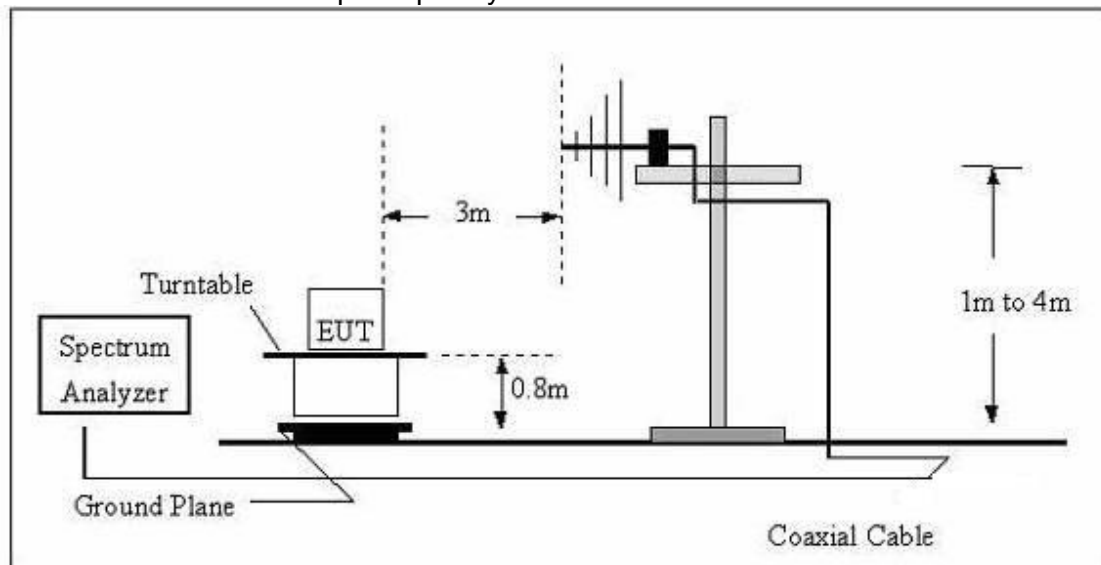
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported If Peak Emission below the QP limit, No QP emission was recording.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



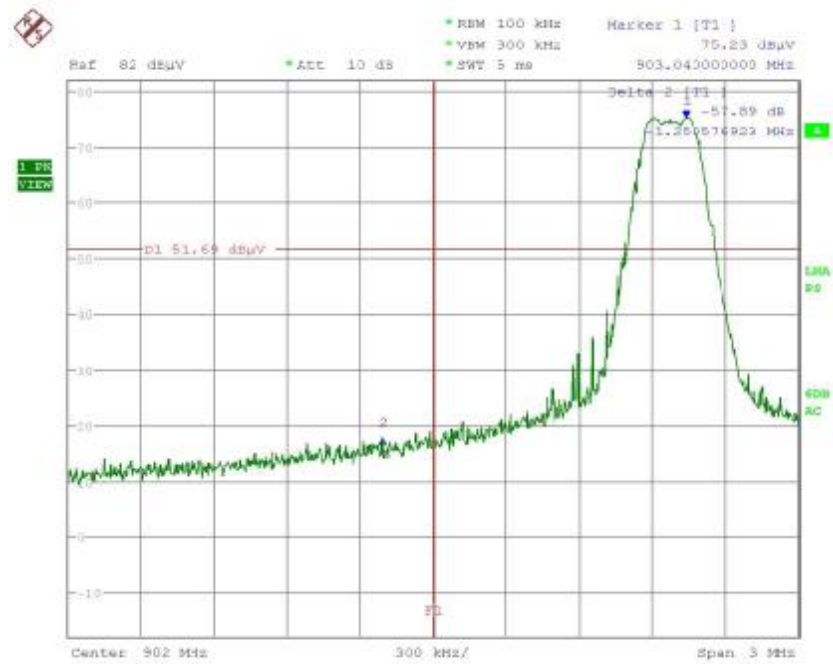
3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

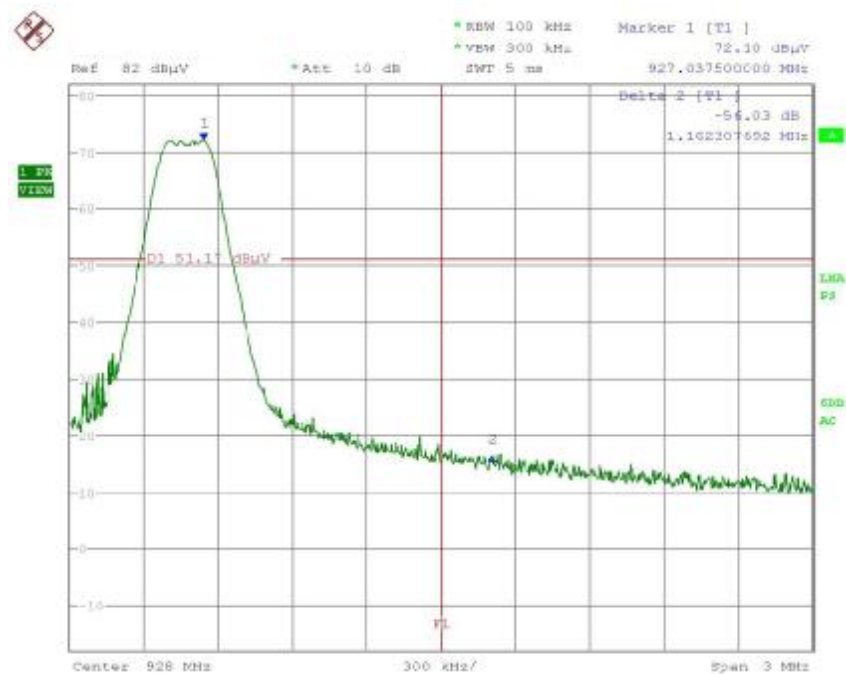
3.3.6 TEST RESULT



Low channel



High channel





4. BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.249) , Subpart C		
Section	Test Item	Frequency Range (MHz)
15.249	Bandwidth	902~928

4.1.1 TEST PROCEDURE

1. Set RBW = 100kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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 6 dB relative to the maximum level measured in the fundamental emission.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

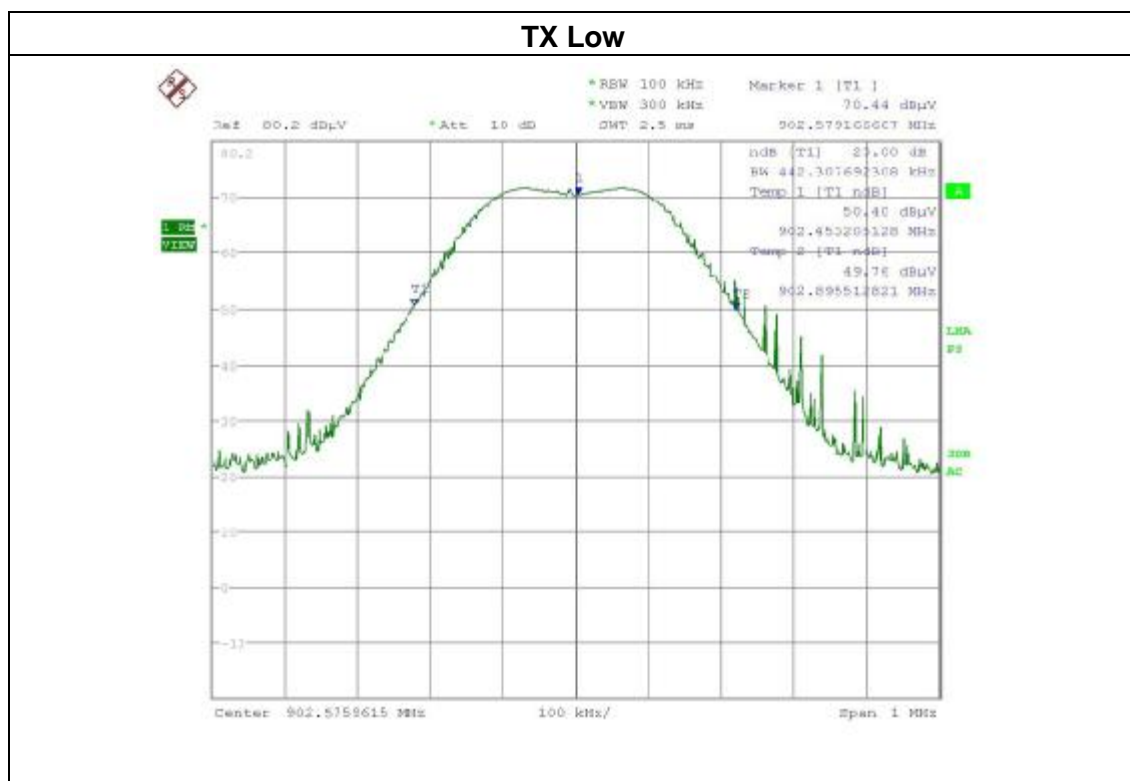
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



4.1.5 TEST RESULTS

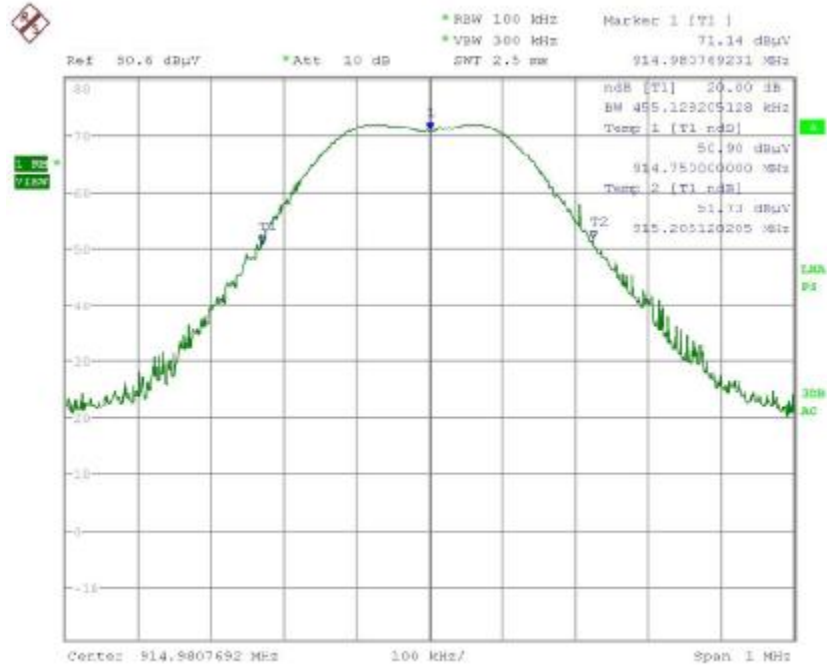
Temperature :	25°C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX Mode		

Channel	Frequency (MHz)	20dB bandwidth (MHz)
Low	902.5	0.442
Middle	915.0	0.455
High	927.0	0.420

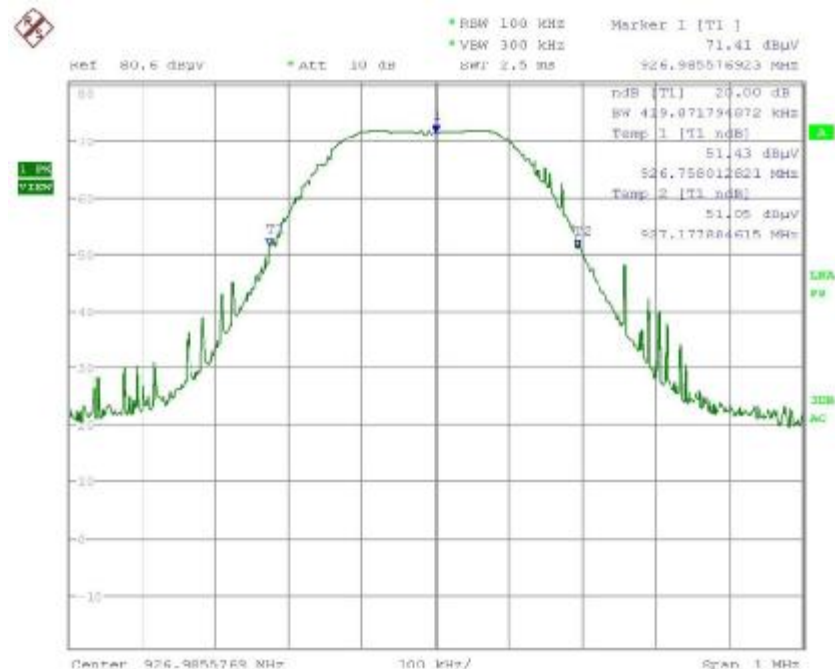




TX Middle



TX High





5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2 EUT ANTENNA

The EUT antenna is internal antenna, use of anti thread antenna, It comply with the standard requirement.

6. EUT TEST PHOTO

Radiated Measurement Photos



Radiated Measurement Photos

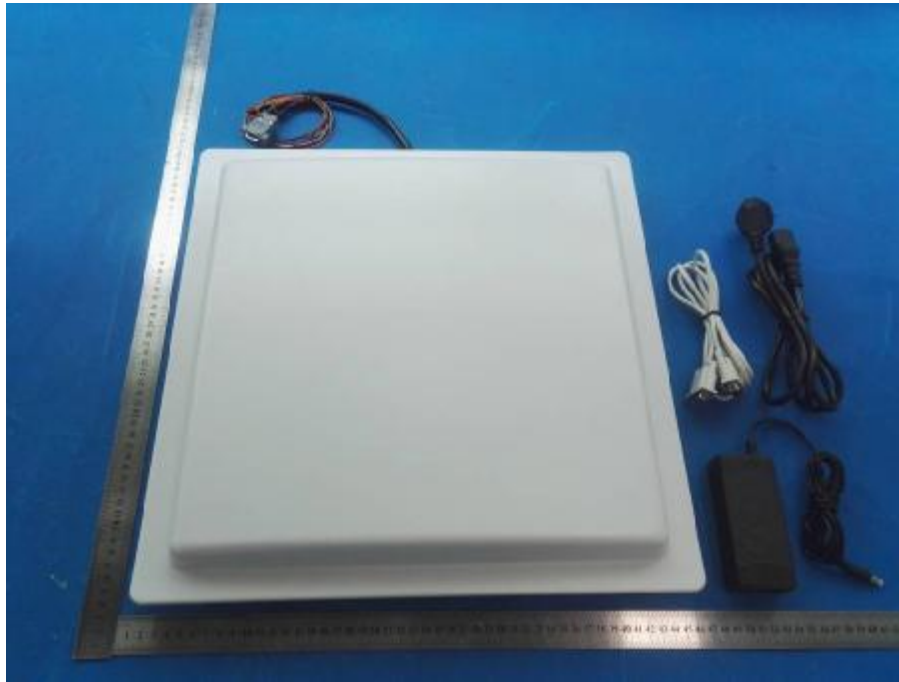




Conducted Measurement Photos



7. EUT PHOTO



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