



FCC RADIO TEST REPORT

Applicant : RosimITS Tech.CO.,Ltd.
Address : Room 201, Building A2, MinKang West Road
No.6, HuoJu Development District ,
ZhongShan City
Equipment : Wireless Vehicle Detector
Model No. : WVD-130X, WVD-230X, WVD-140X,
WVD-240X, wSensor
Trade Name : **ROSIMITS**
FCC ID : 2ANRPWVD

I HEREBY CERTIFY THAT :

The sample was received on Aug. 21, 2017 and the testing was carried out on Sep. 25, 2017 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao

Assistant Manager

Laboratory Accreditation:



CerpPASS Technology Corporation Test Laboratory

TAF LAB Code:

1439



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☐ Additional attachment as following record:

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1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.10: 2013

FCC Rules and Regulations Part 15 Subpart C §15.249

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	N/A
15.209 15.249	. Radiated Emission	Pass
-	. 20dB Bandwidth Measurement	Pass

Note: (1) "N/A" denotes test is not applicable in this test report.

(2) EUT is used new battery



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Modulation Type	FSK
Frequency Range	915MHz
Field Strength	68.89dBuV/m
Channel Number	1 Channels
Power Rating	DC 3.7V from battery

2.2 Carrier Frequency of Channels

Channel	Frequency(MHz)
*01	915

Note: Channels remarked * are selected to perform test.

2.3 Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- The complete test system included EUT for the test.
- The test mode was performed for Radiated Emission test.

2.4 Description of Test System

The EUT was tested alone. No support devices are needed for testing.



2.5 General Information of Test

☒	Test Site	Cerpass Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582
	FCC	TW1079, TW1061,390316, 228391, 641184
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-3428, R-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz
Frequency Range Investigated:		Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25000MHz
Test Distance:		The test distance of radiated emission from antenna to EUT is 3 M.

2.6 Measurement Uncertainty

Test results and Measurement uncertainty without any relationship in the test report.

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	9 kHz ~ 30 MHz	Vertical	±3.65dB
		Horizontal	±3.89dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz



3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Test Receiver	R&S	ESCI	100564	2017.02.14	2018.02.13
LISN	SCHWARZBEC K	NSLK 8127	8127748	2017.02.14	2018.02.13
LISN	SCHWARZBEC K	NSLK 8127	8127749	2017.02.14	2018.02.13
Pulse Limiter with 10dB Attenuation	SCHWARZBEC K	VTSD 9561-F	9561-F106	2017.02.14	2018.02.13
Temperature/ Humidity Meter	mingle	ETH529	N/A	2017.02.14	2018.02.13
AMPLIFIER	HP	8447F	3113A0591 5	2017.02.14	2018.02.13
Loop Antenna	R&S	HFH2-Z2	100150	2016.10.24	2017.10.23
BILOG Antenna	SCHAFFNER	CBL6112D	22241	2017.02.14	2018.02.13
Horn Antenna	Sunol	DRH-118	A072913	2016.10.12	2017.10.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-347	2017.05.26	2018.05.25
Preamplifier	COM-POWER	PA-840	711885	2017.02.14	2018.02.13
Temp&Humidity& barometer	mingle	ETH529	N/A	2017.02.14	2018.02.13
Preamplifier	EMCI	EMC051835	980085	2017.05.26	2018.05.25
EXA Signal Analyzer	Agilent	N9020A	US462202 90	2017.05.26	2018.05.25



4. Antenna Requirements

4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

4.2 Antenna Construction and Directional Gain

No.	Antenna Type	Antenna Gain
1	Loop Antenna	2.15dBi



5. Test of AC Power Line Conducted Emission

5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.10-2013. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 6.2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

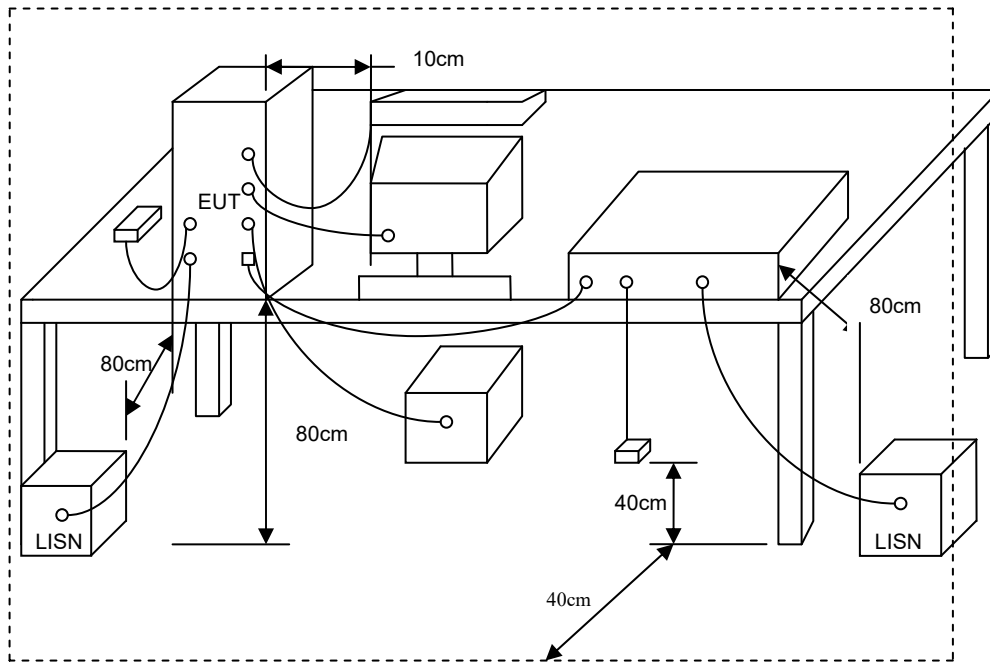
*Decreases with the logarithm of the frequency.

5.2 Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



5.3 Typical Test Setup



5.4 Test Result and Data

Not applicable since the EUT supplied by battery.



6. Test of Spurious Emission (Radiated)

6.1 Test Limit

According to 15.247, operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/ meter)	Field strength of harmonics (microvolts/ meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

(d) Emissions radiated outside of the specified bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Distance	Limit ($\mu\text{V}/\text{m}$)
0.09 ~ 0.490	300m	$2400/F(\text{kHz})$
0.490 ~ 1.705	30m	$24000/ F(\text{kHz})$
1.705 ~ 30	30m	30
30 ~ 88	3m	100
88 ~ 216	3m	150
216 ~ 960	3m	200
Above 960	3m	500

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

6.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.



- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- i. "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The Average value = Peak value + 20log(Duty cycle)
4. Duty Factor = 20log(Duty Cycle)

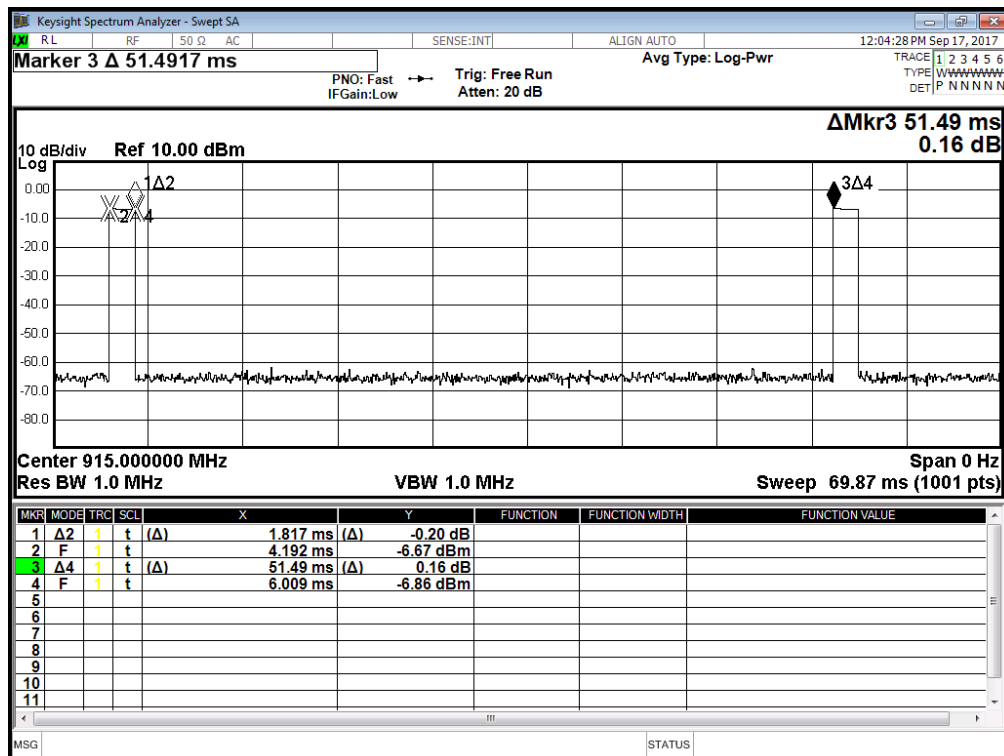
NATA& PLOT:

Duty Cycle=On Time/100

Ton: 1.817 ms

Duty Cycle=1.817/100=1.817%

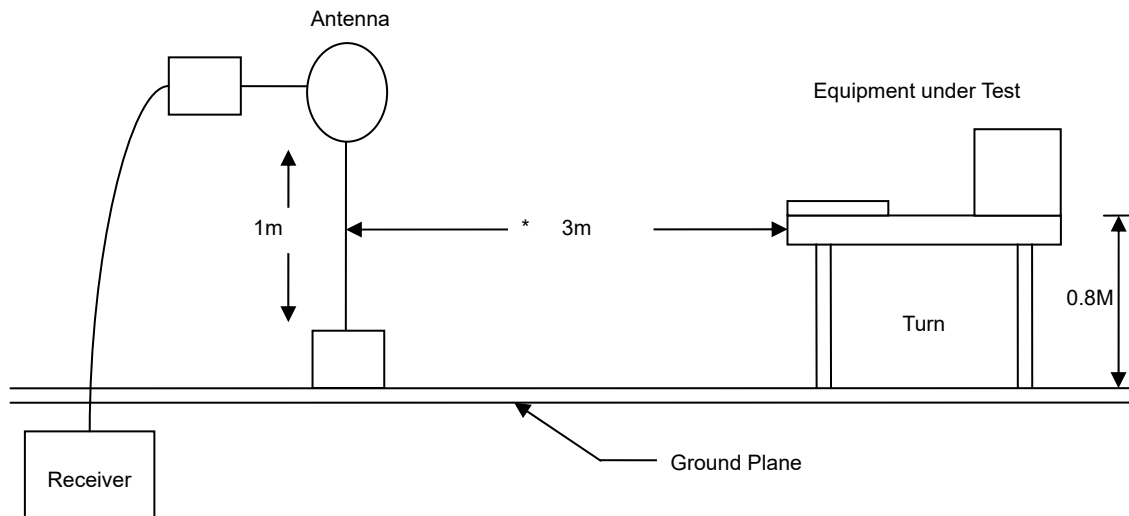
Average Reading=Peak value +20log(Duty Cycle),AV=Peak-34.81

On Time & Total Time

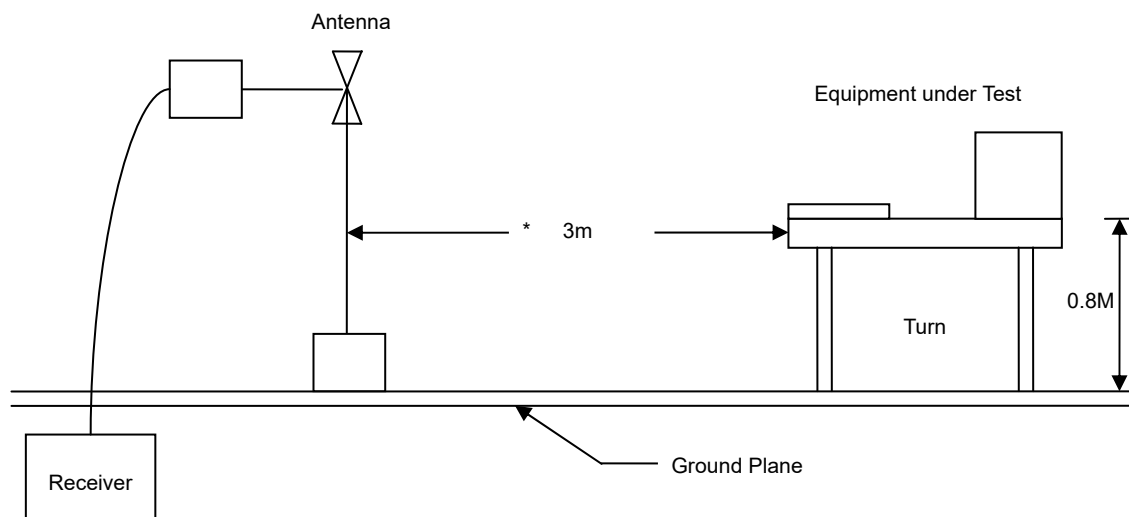


6.3 Typical Test Setup

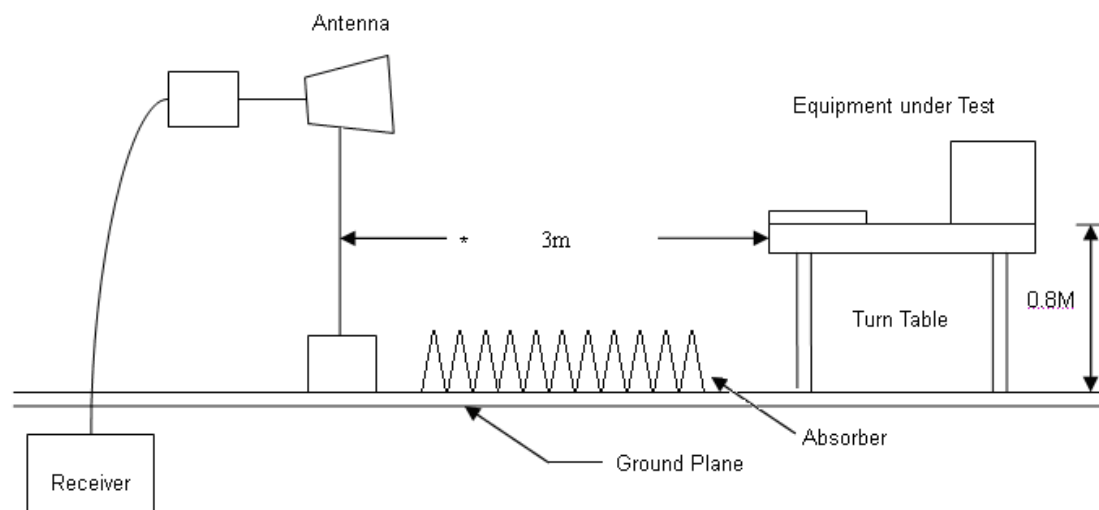
Below 30MHz test setup



30MHz- 1GHz Test Setup



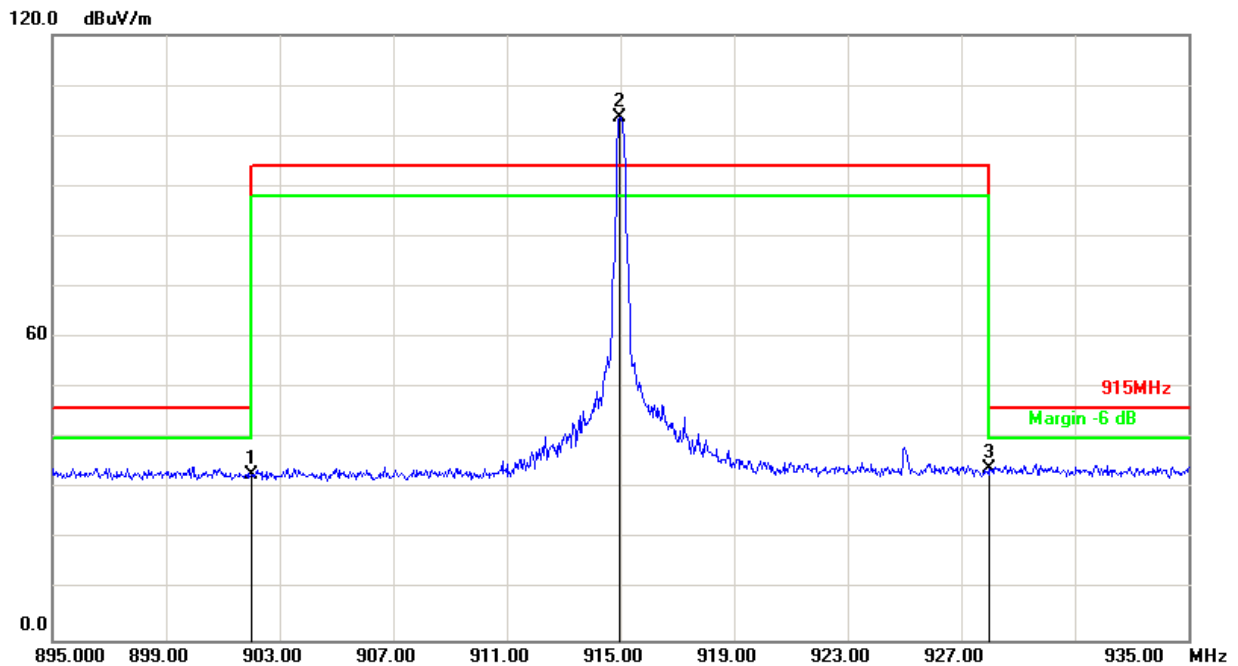
Above 1GHz Test Setup





6.4 Test Result of Fundamental Emission

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test Date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	: 1010 hpa



Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
902.0000	2.91	29.85	32.76	46.00	-13.24	peak
914.9600	3.33	100.37	103.70	94.00	9.70	peak
928.0000	3.60	30.32	33.92	46.00	-12.08	peak

Note: Level = Reading + Factor

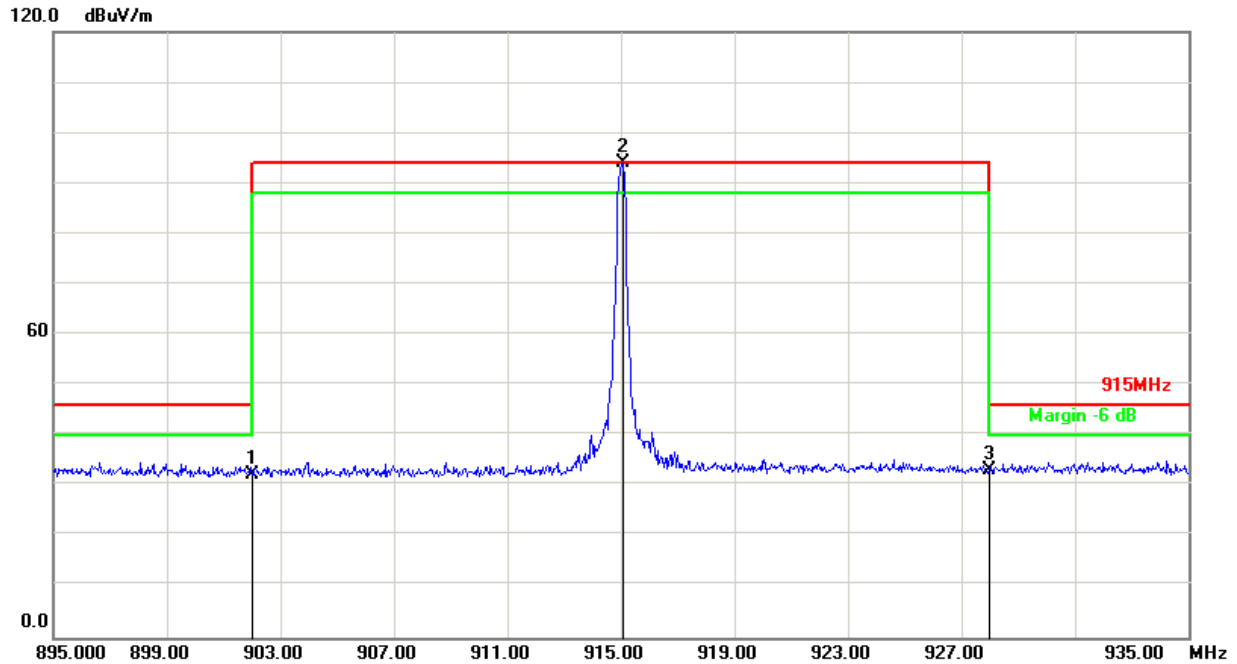
Margin = Level – Limit

QP Reading=Peak value +20log(Duty Cycle),

QP=103.70-34.81= 68.89 dBuV/m < Limit 94dBuV/m



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test Date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	: 1010 hpa



Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
902.0000	2.91	29.42	32.33	46.00	-13.67	peak
915.0800	3.34	90.72	94.06	94.00	0.06	peak
928.0000	3.60	29.45	33.05	46.00	-12.95	peak

Note: Level = Reading + Factor

Margin = Level – Limit

QP Reading=Peak value +20log(Duty Cycle),

QP=94.06-34.81= 59.25 dBuV/m < Limit 94dBuV/m

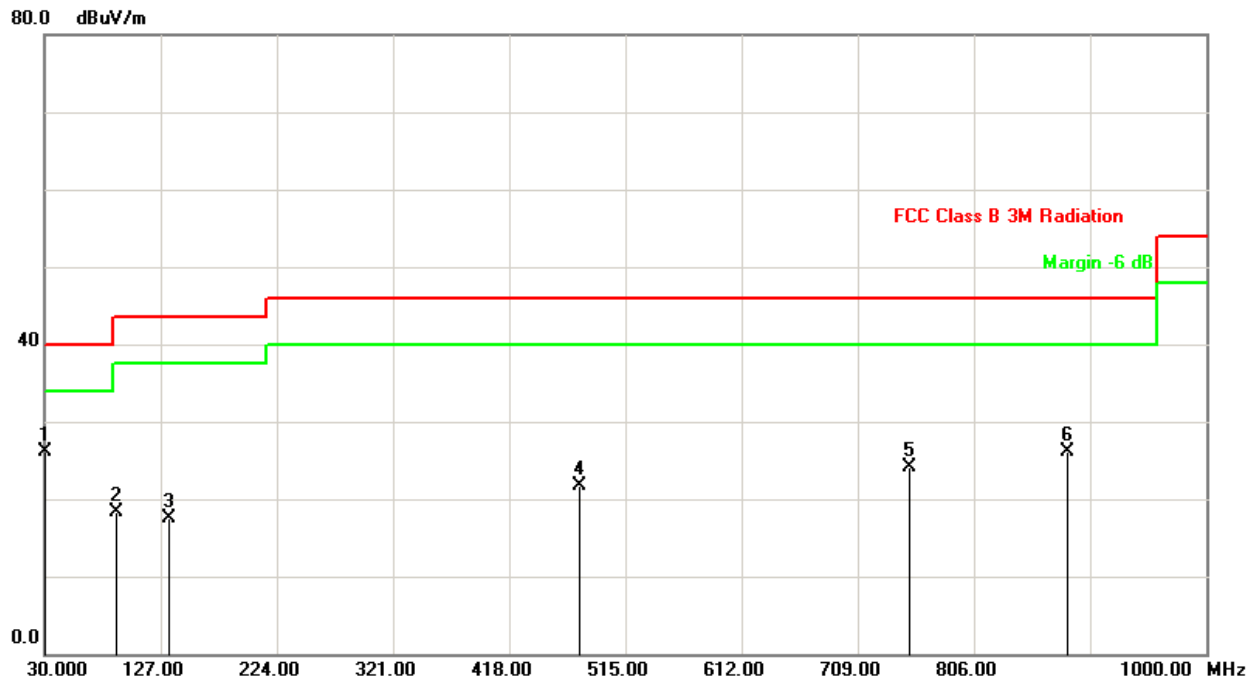


6.5 Test Result and Data (9KHz ~ 30MHz)

The 9kHz-30MHz spurious emission is under limit 20dB more.

6.6 Test Result and Data (30MHz ~ 1GHz)

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	1010 hpa



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.0000	-3.01	29.13	26.12	40.00	-13.88	peak
2	90.1400	-11.37	29.60	18.23	43.50	-25.27	peak
3	133.7899	-9.38	26.90	17.52	43.50	-25.98	peak
4	476.2000	-1.25	22.93	21.68	46.00	-24.32	peak
5	751.6800	1.52	22.68	24.20	46.00	-21.80	peak
6	884.5700	2.67	23.50	26.17	46.00	-19.83	peak

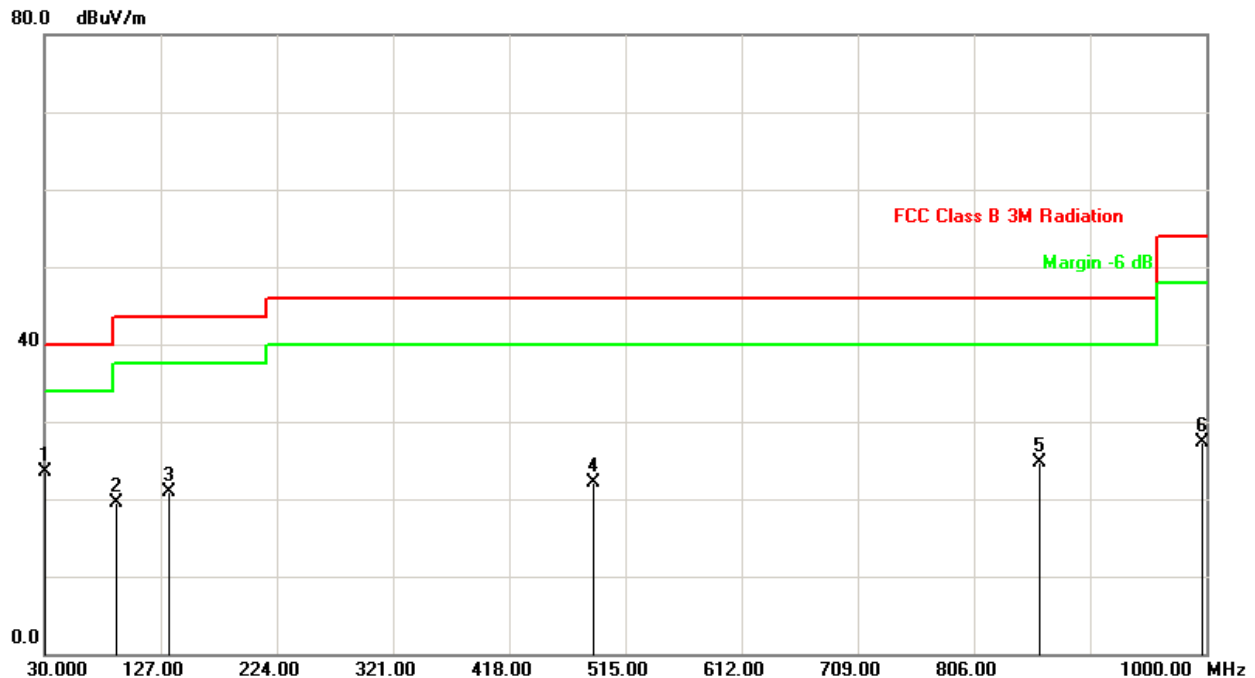
Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	1010 hpa



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.0000	-3.01	26.61	23.60	40.00	-16.40	peak
2	90.1400	-11.37	30.86	19.49	43.50	-24.01	peak
3	134.7599	-9.50	30.37	20.87	43.50	-22.63	peak
4	488.8100	-1.67	23.77	22.10	46.00	-23.90	peak
5	860.3200	2.70	21.91	24.61	46.00	-21.39	peak
6	997.0900	5.65	21.65	27.30	54.00	-26.70	peak

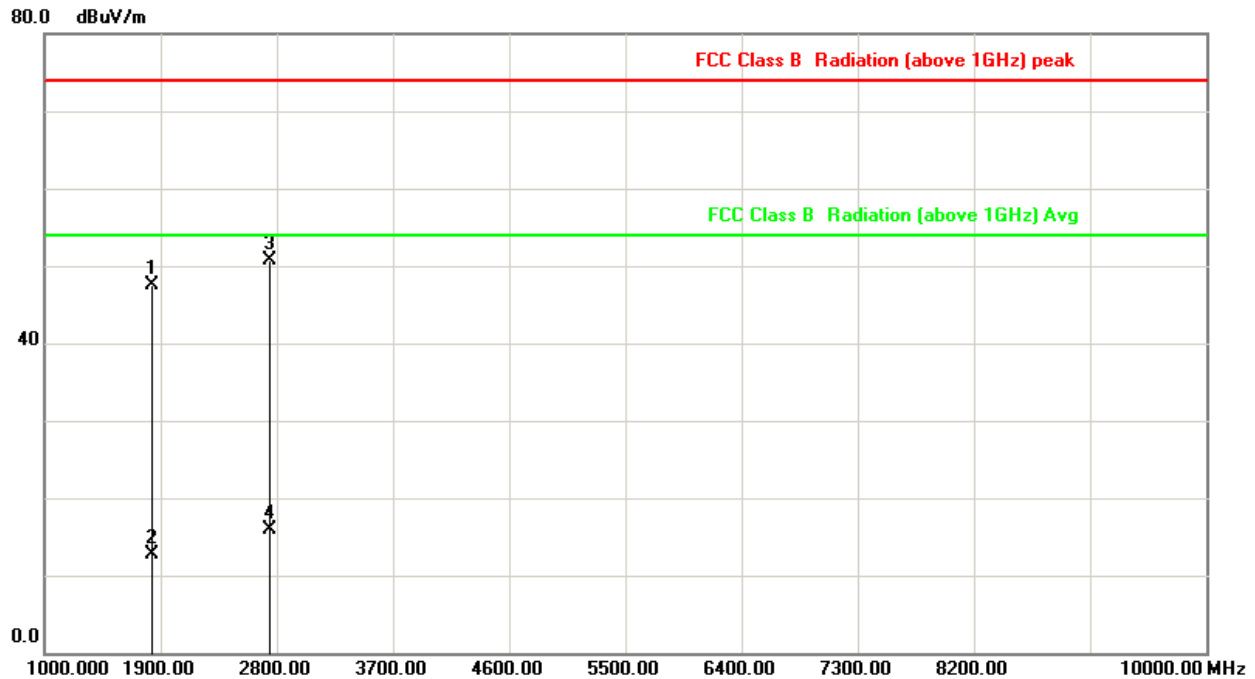
Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor

**6.7 Test Result and Data (Above 1GHz)**

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	1010 hpa



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1830.000	-5.71	53.26	47.55	74.00	-26.45	peak
2	1830.000	-5.71	18.45	12.74	54.00	-41.26	AVG
3	2745.000	-0.94	51.68	50.74	74.00	-23.26	peak
4	2745.000	-0.94	16.87	15.93	54.00	-38.07	AVG

Note: Level = Reading + Factor

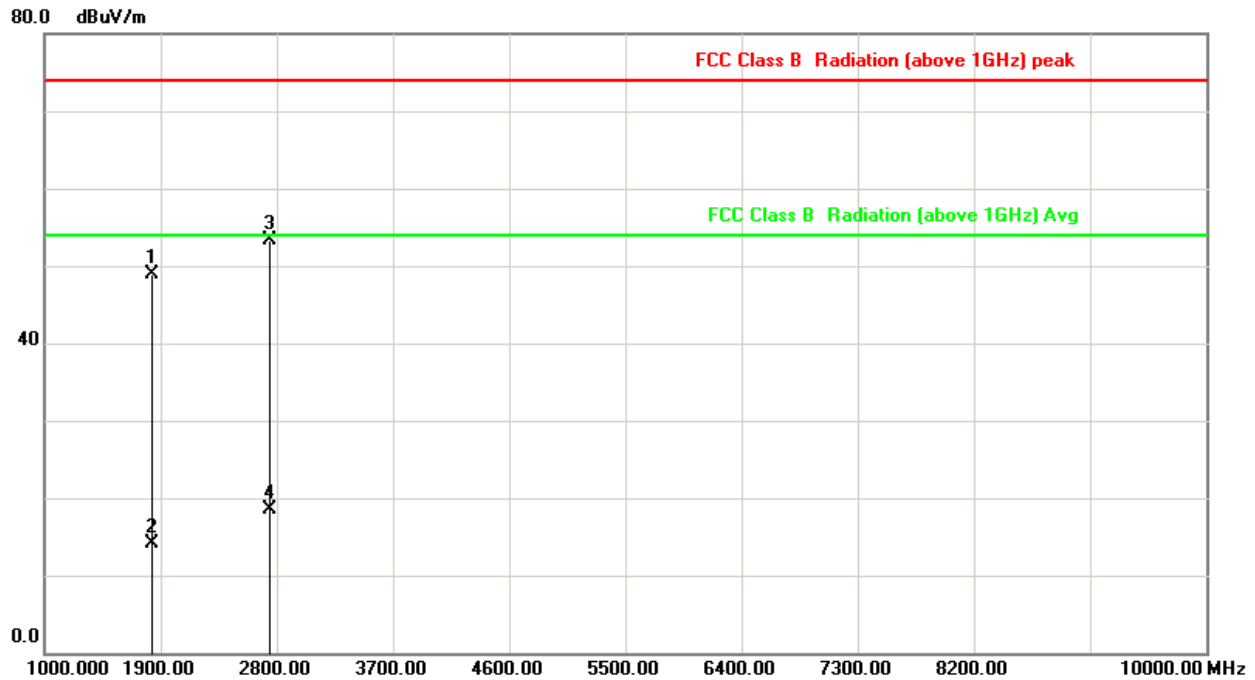
Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor

Average Reading=Peak value +20log(Duty Cycle),AV=Peak-34.81



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: TX Mode	Temperature	: 24 °C
Test date	: Sep. 25, 2017	Humidity	: 54 %
Memo	:	Atmospheric Pressure	1010 hpa



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1830.000	-5.71	54.57	48.86	74.00	-25.14	peak
2	1830.000	-5.71	19.76	14.05	54.00	-39.95	AVG
3	2745.000	-0.94	54.21	53.27	74.00	-20.73	peak
4	2745.000	-0.94	19.40	18.46	54.00	-35.54	AVG

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor

Average Reading=Peak value +20log(Duty Cycle),AV=Peak-34.81



7. 20dB Bandwidth Measurement Data

7.1 Test Limit

None; for reporting purposes only.

7.2 Test Procedure

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 30 KHz and VBW to 100KHz.
- The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

7.3 Test Setup Layout



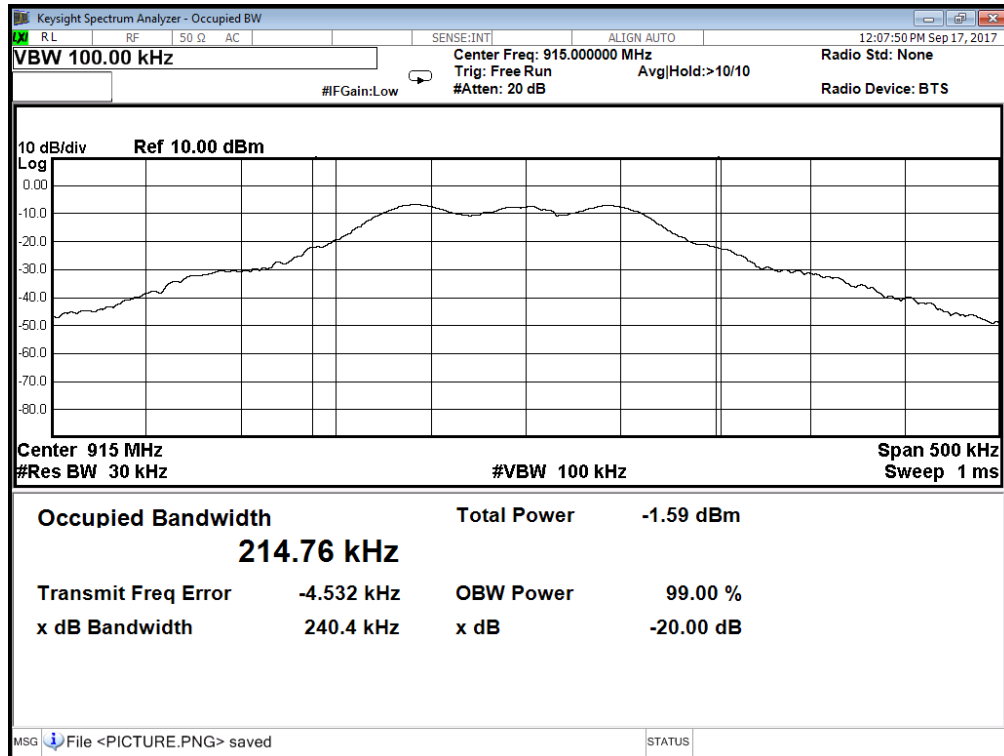
7.4 Test Result and Data

Power	: AC 120V	Temperature	: 24 °C
Test Mode	TX-Mode	Humidity	: 54 %
Test date	: Sep. 17, 2017	Atmospheric Pressure	: 1010 hpa

Frequency (MHz)	20dB Bandwidth (KHz)	99% Bandwidth (KHz)
915	240.4	214.76



Frequency: 915MHz





8. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

8.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.