



RADIO TEST REPORT

Applicant : BioSenseTek Corp.

Address : 6541 S.W. 127th Path Miami, FL 33183

Equipment : Wireless Vital Sign Transducer

Model No. : VM2B9D-3

Trade Name : BST

FCC ID. : 2ADB6-VM2B9D-3

I HEREBY CERTIFY THAT :

The sample was received on Jul. 19, 2016 and the testing was carried out on Jul. 20, 2016 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Tested by:

Ray Chou / Assistant Manager

Spree Yei / Engineer

Laboratory Accreditation:

☒ Cerpass Technology Corporation Test Laboratory



☐ Cerpass Technology(SuZhou) Co., Ltd.





Contents

1. Summary of Test Procedure and Test Results.....	4
1.1. Applicable Standards	4
2. Test Configuration of Equipment under Test.....	5
2.1. Feature of Equipment under Test.....	5
2.2. Carrier Frequency of Channels.....	5
2.3. Test Mode and Test Software	5
2.4. Description of Test System.....	5
2.5. General Information of Test.....	6
3. Test Equipment and Ancillaries Used for Tests	7
4. Test of Conducted Emission.....	8
5. Test of Radiated Emission	9
5.1. Test Limit	9
5.2. Test Procedures	10
5.3. Typical Test Setup Layout of Radiated Emission	11
5.4. Test Result and Data.....	12
5.5. Test Photographs (30MHz ~ 1GHz)	26
5.6. Test Photographs (1GHz ~ 10GHz)	27



History of this test report

Report No.	Issue Date	Description
TEFC1607113	Jul. 29, 2016	Original.



1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.4:2014

FCC Rules and Regulations Part 15 Subpart C §15.249

FCC Rule	Description of Test	Result
15.207	Conducted Emission	N/A
15.209 15.249	Radiated Emission	Pass



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Modulation Type	SRD
Operating Frequency	902MHz ~ 928MHz
Antenna Type/ gain	Loop Antenna / -8dBi

2.2. Carrier Frequency of Channels

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*1	922.8	*2	927.2

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 C63.4.
- The complete test system included EUT for RF 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-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz
☐	Test Site	Cerpass Technology (Suzhou) Co., Ltd Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China Tel: +86-512-6917-5888 Fax: +86-512-6917-5666
	FCC	916572, 331395
	IC	7290A-1, 7290A-2
	VCCI	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test G-227 for radiated disturbance above 1GHz
Frequency Range Investigated:		Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 10,000MHz
Test Distance:		The test distance of radiated emission from antenna to EUT is 3 M.



3. Test Equipment and Ancillaries Used for Tests

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100443	2016/03/28	2017/03/27
LISN	Schwarzbeck	NSLK 8127	8127-516	2016/03/11	2017/03/10
LISN	Schwarzbeck	NSLK 8127	8127-740	2015/09/03	2016/09/02
Pulse Limiter	R&S	ESH3-Z2	101934	2016/03/09	2017/03/08
Bilog Antenna	Schwarzbeck	VULB9168	369	2016/03/22	2017/03/21
Active Loop Antenna	EMCO	6507	40855	2016/03/11	2017/03/10
Horn Antenna	EMCO	3115	31601	2015/09/02	2016/09/01
Horn Antenna	EMCO	3116	31589	2016/03/22	2017/03/21
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2016/03/16	2017/03/15
Preamplifier	EM	EM330	060660	2016/03/16	2017/03/15
Preamplifier	Agilent	8449B	3008A01954	2016/03/04	2017/03/03
Preamplifier	MITEQ	AMF-7D-0010 100-30-10P	1860212	2016/03/16	2017/03/15
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2015/11/04	2016/11/03
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2016/03/18	2017/03/17
Spectrum Analyzer	R&S	FSP40	100219	2015/09/01	2016/08/31
Bluetooth Tester	R&S	CBT	101133	2016/03/18	2017/03/17
Attenuator	KEYSIGHT	8491B	MY39250703	2016/03/07	2017/03/06
Rotary Attenuator	Agilent	8494B	MY42154466	2016/03/08	2017/03/07
Rotary Attenuator	Agilent	8495B	MY42146680	2016/03/08	2017/03/07
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2015/09/08	2016/09/07
Series Power Meter	Anritsu	ML2495A	1224005	2016/03/03	2017/03/02
Power Sensor	Anritsu	MA2411B	1207295	2016/03/03	2017/03/02
Software	Farad	Ez-EMC	ver.ct3a1	N/A	N/A
Software	AUDIX	E3	vct-3a1	N/A	N/A
Software	Keysight	N7607B Signal Studio	v2.0.0.1	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A



4. Test of Conducted Emission

The power of EUT is DC source, so this item doesn't require testing.



5. Test of Radiated Emission

5.1. Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB 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(kHz)
0.490 ~ 1.705	30m	24000/ F(kHz)
1.705 ~ 30	30m	30
30 ~ 88	3m	100
88 ~ 216	3m	150
216 ~ 960	3m	200
Above 960	3m	500

Fundamental Frequency:

Fundamental Frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

15.215 Additional provisions to the general radiated emission limitations.:

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.



5.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. 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 beamwidth of the measurement antenna.

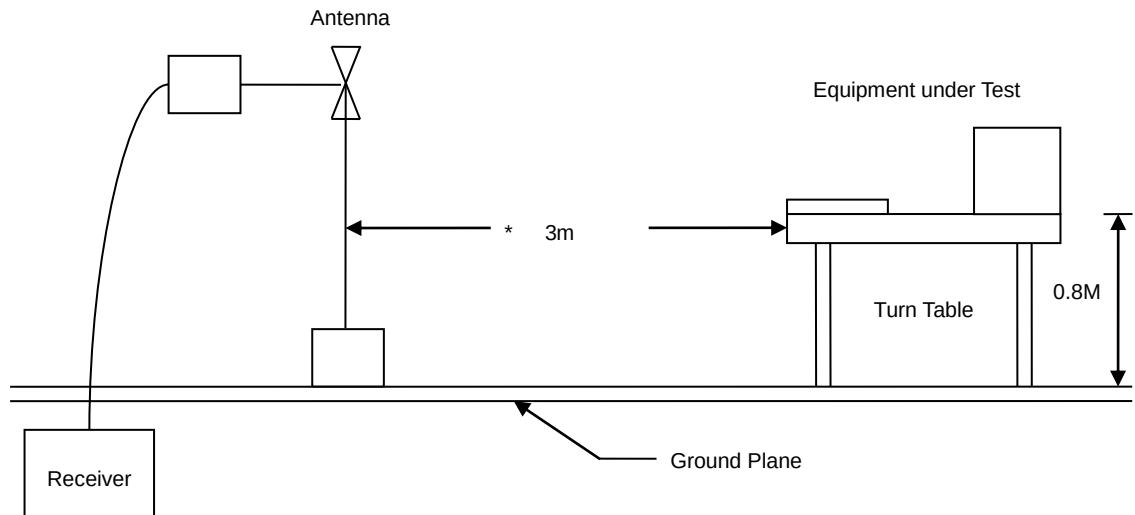
NOTE:

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 resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

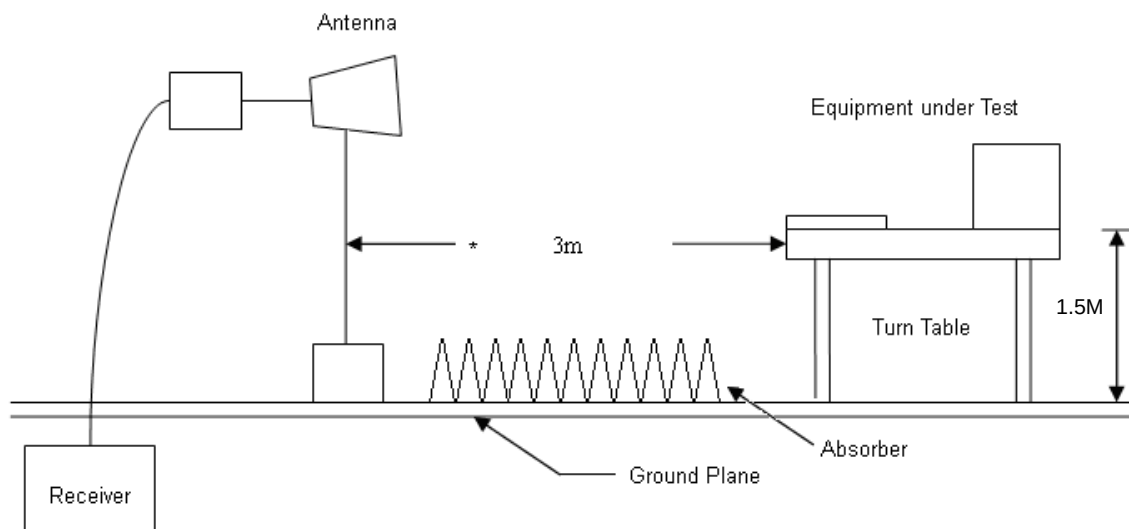


5.3. Typical Test Setup Layout of Radiated Emission

Below 1GHz Test Setup



Above 1GHz Test Setup

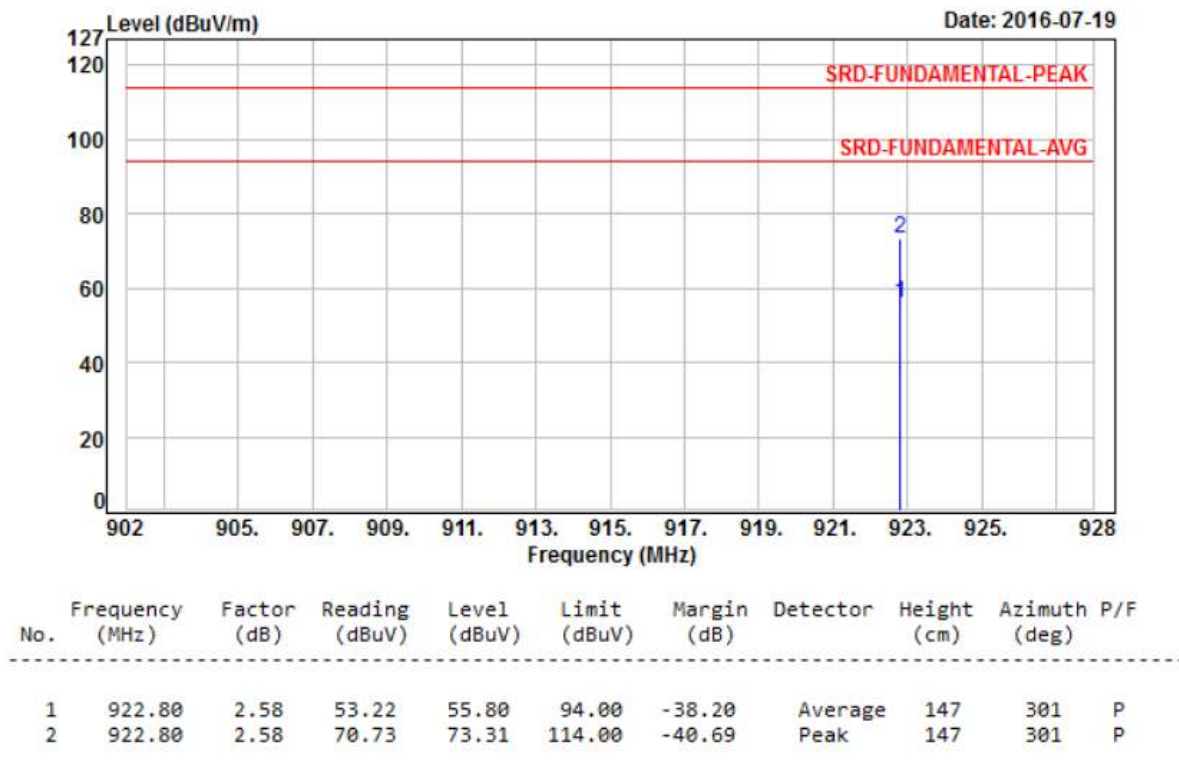




5.4. Test Result and Data

5.4.1. Test Result of Fundamental Emission

Power	: DC 3V	Pol/Phase	: VERTICAL
Test Mode	: TX, 922.8MHz	Temperature	: 20 °C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



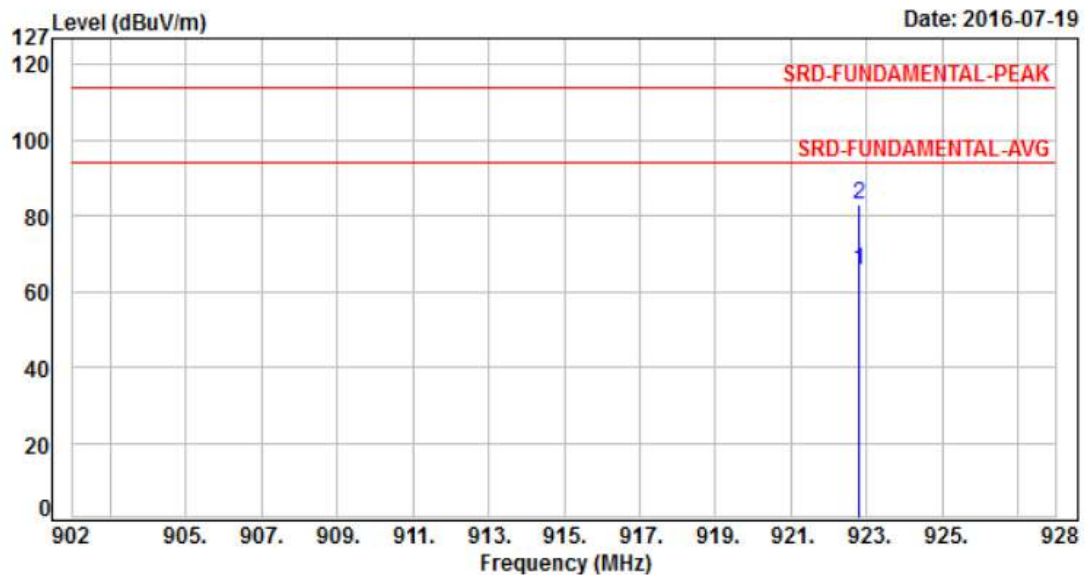
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 922.8MHz	Temperature	: 20 °C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	922.80	2.58	62.90	65.48	94.00	-28.52	Average	100	145	P
2	922.80	2.58	80.41	82.99	114.00	-31.01	Peak	100	145	P

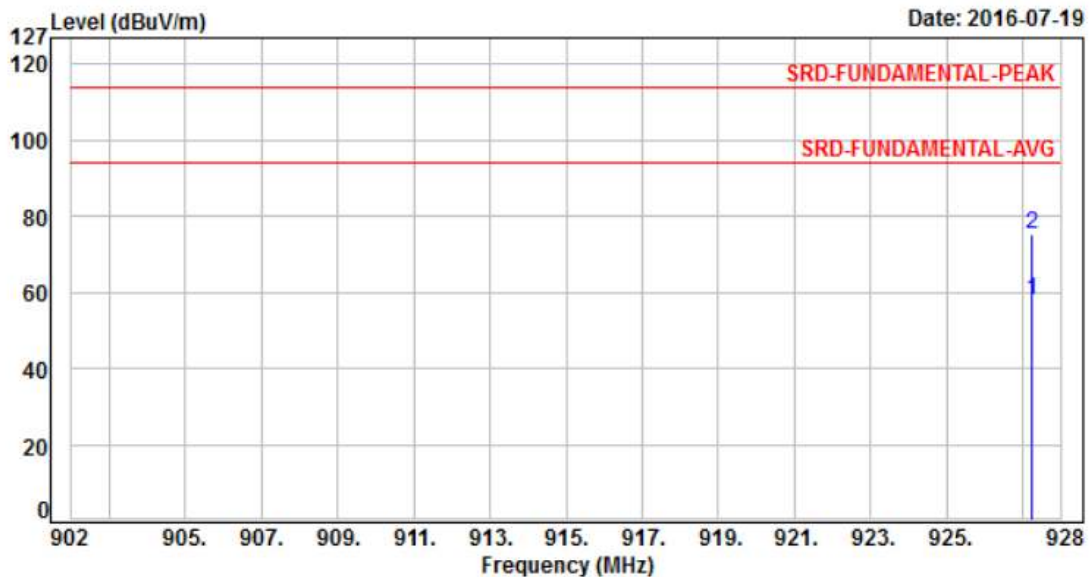
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: VERTICAL
Test Mode	: TX, 927.2MHz	Temperature	: 20°C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	927.20	2.66	55.13	57.79	94.00	-36.21	Average	145	269	P
2	927.20	2.66	72.64	75.30	114.00	-38.70	Peak	145	269	P

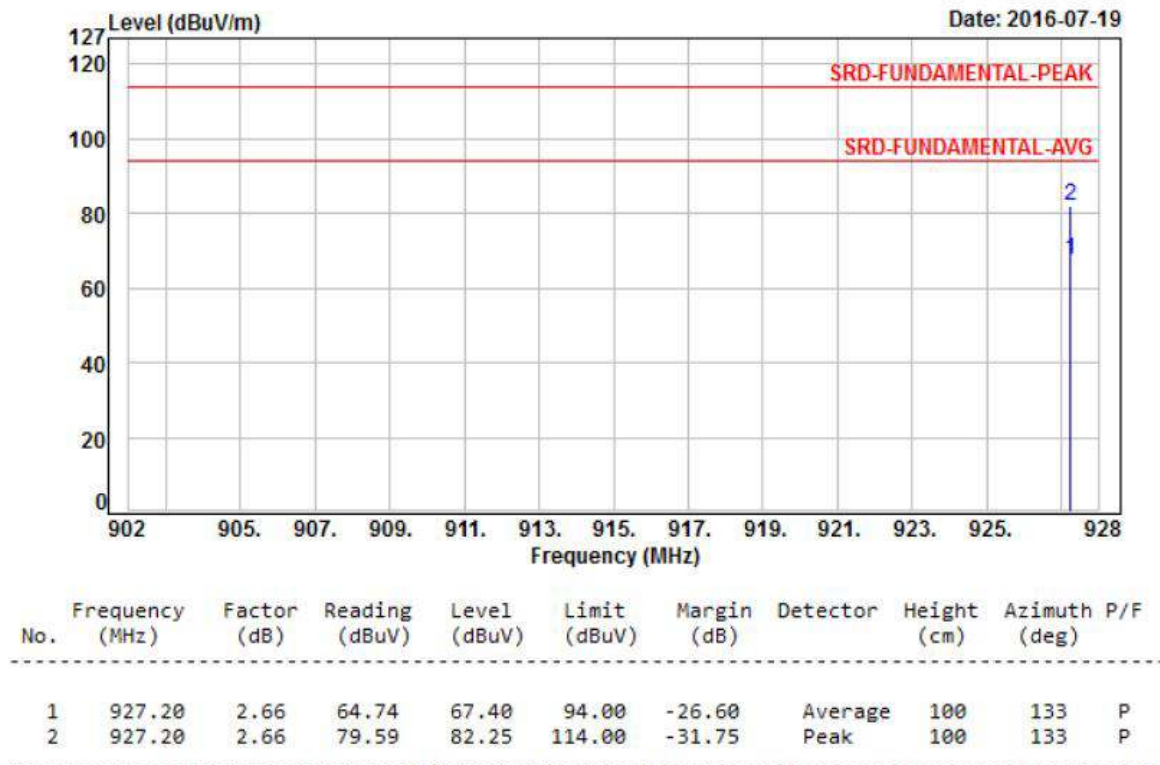
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 927.2MHz	Temperature	: 20 °C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



Note: Level = Reading + Factor

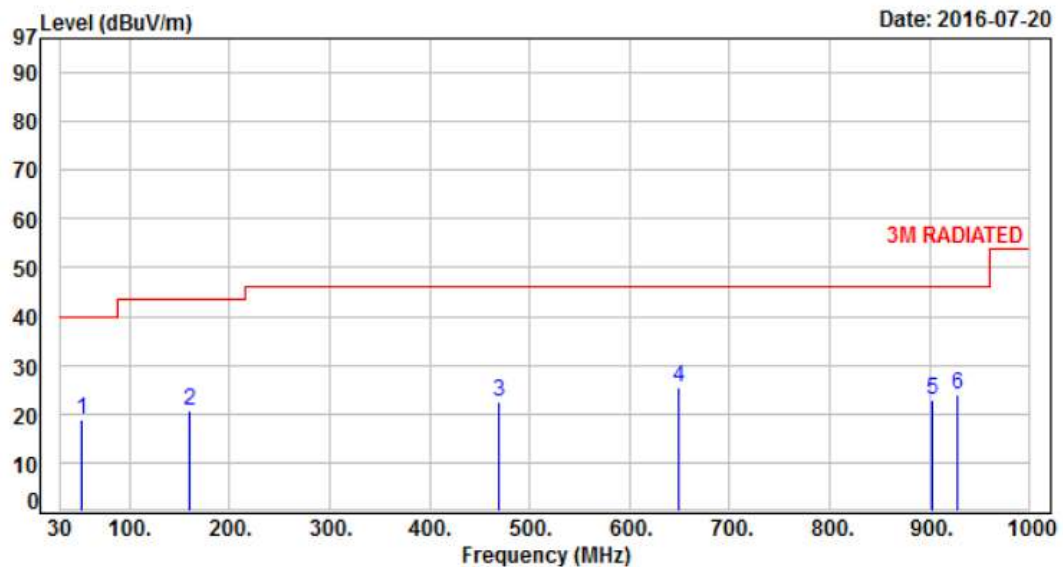
Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



5.4.2. Test Result of Unwanted Spurious emission (30MHz ~ 1GHz)

Power	: DC 3V	Pol/Phase	: VERTICAL
Test Mode	: TX, 922.8MHz	Temperature	: 20 °C
Test Date	: Jul. 20, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	51.34	-9.83	28.61	18.78	40.00	-21.22	Peak	147	301	P
2	159.98	-9.89	30.46	20.57	43.50	-22.93	Peak	147	301	P
3	468.44	-4.66	27.10	22.44	46.00	-23.56	Peak	147	301	P
4	648.86	-1.44	26.79	25.35	46.00	-20.65	Peak	147	301	P
5	902.00	2.17	20.79	22.96	46.00	-23.04	QP	147	301	P
6	928.00	2.68	21.12	23.80	46.00	-22.20	QP	147	301	P

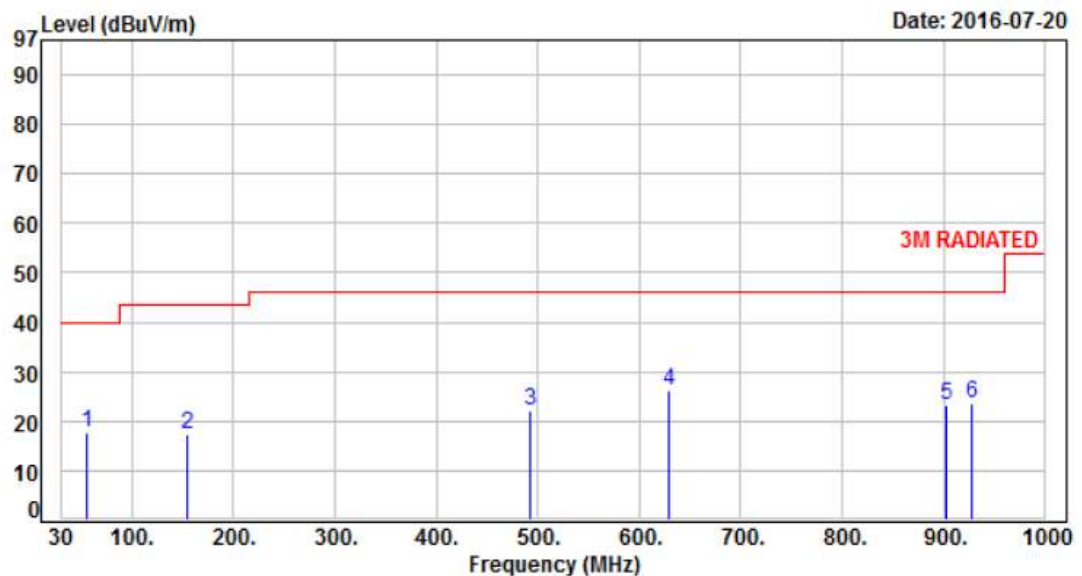
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 922.8MHz	Temperature	: 20 °C
Test Date	: Jul. 20, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	55.22	-10.11	27.65	17.54	40.00	-22.46	Peak	100	145	P
2	154.16	-9.97	27.36	17.39	43.50	-26.11	Peak	100	145	P
3	491.72	-4.31	26.30	21.99	46.00	-24.01	Peak	100	145	P
4	629.46	-1.66	27.68	26.02	46.00	-19.98	Peak	100	145	P
5	902.00	2.17	20.91	23.08	46.00	-22.92	QP	100	145	P
6	928.00	2.68	20.95	23.63	46.00	-22.37	QP	100	145	P

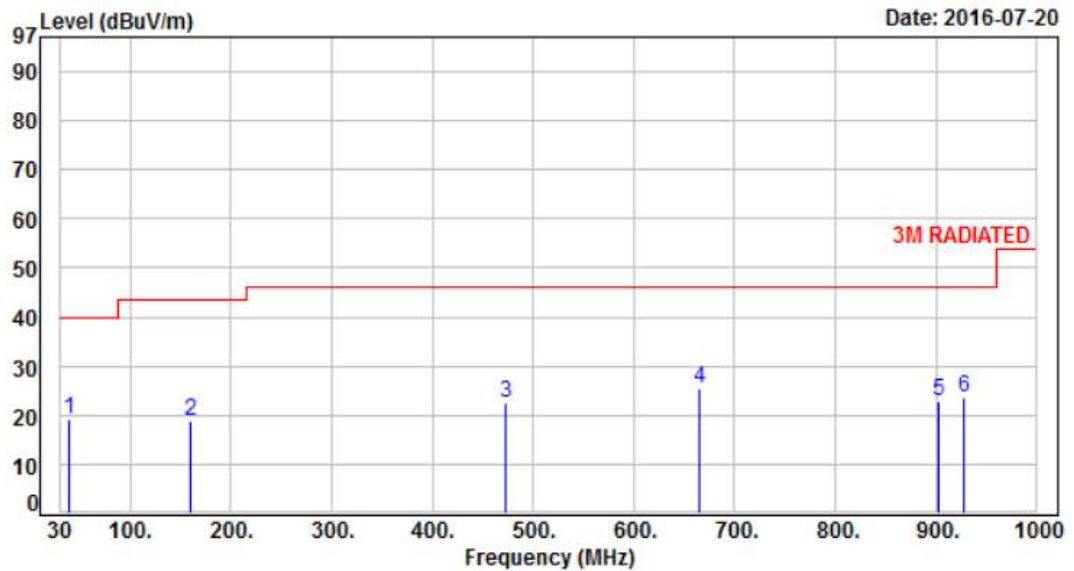
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: VERTICAL
Test Mode	: TX, 927.2MHz	Temperature	: 20°C
Test Date	: Jul. 20, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	39.70	-10.15	29.15	19.00	40.00	-21.00	Peak	145	269	P
2	159.98	-9.89	28.84	18.95	43.50	-24.55	Peak	145	269	P
3	472.32	-4.59	27.12	22.53	46.00	-23.47	Peak	145	269	P
4	664.38	-1.21	26.69	25.48	46.00	-20.52	Peak	145	269	P
5	902.00	2.17	20.80	22.97	46.00	-23.03	QP	145	269	P
6	928.00	2.68	21.05	23.73	46.00	-22.27	QP	145	269	P

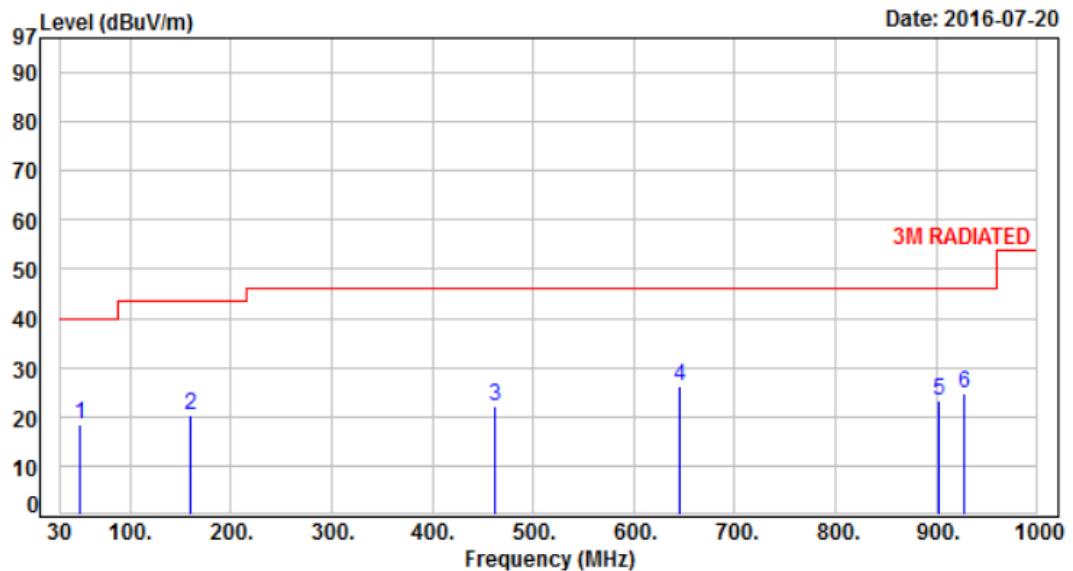
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 927.2MHz	Temperature	: 20 °C
Test Date	: Jul. 20, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.73	28.20	18.47	40.00	-21.53	Peak	100	133	P
2	159.98	-9.89	30.03	20.14	43.50	-23.36	Peak	100	133	P
3	462.62	-4.74	26.74	22.00	46.00	-24.00	Peak	100	133	P
4	644.98	-1.48	27.62	26.14	46.00	-19.86	Peak	100	133	P
5	902.00	2.17	20.90	23.07	46.00	-22.93	QP	100	133	P
6	928.00	2.68	21.88	24.56	46.00	-21.44	QP	100	133	P

Note: Level = Reading + Factor

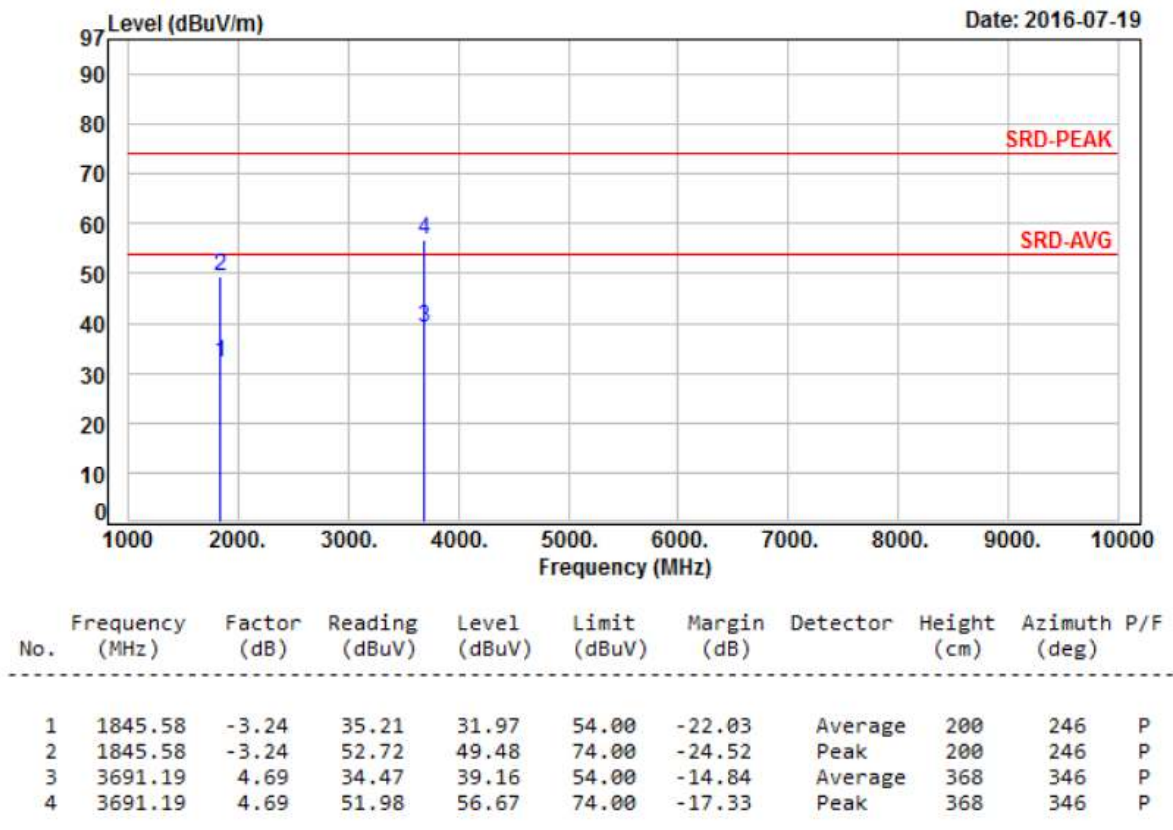
Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



5.4.3. Test Result of Unwanted Spurious emission (1GHz ~ 10GHz)

Power	:	DC 3V	Pol/Phase	:	VERTICAL
Test Mode	:	TX, 922.8MHz	Temperature	:	20 °C
Test Date	:	Jul. 19, 2016	Humidity	:	45 %
Modulation Type	:		Atmospheric Pressure	:	1009 hPa



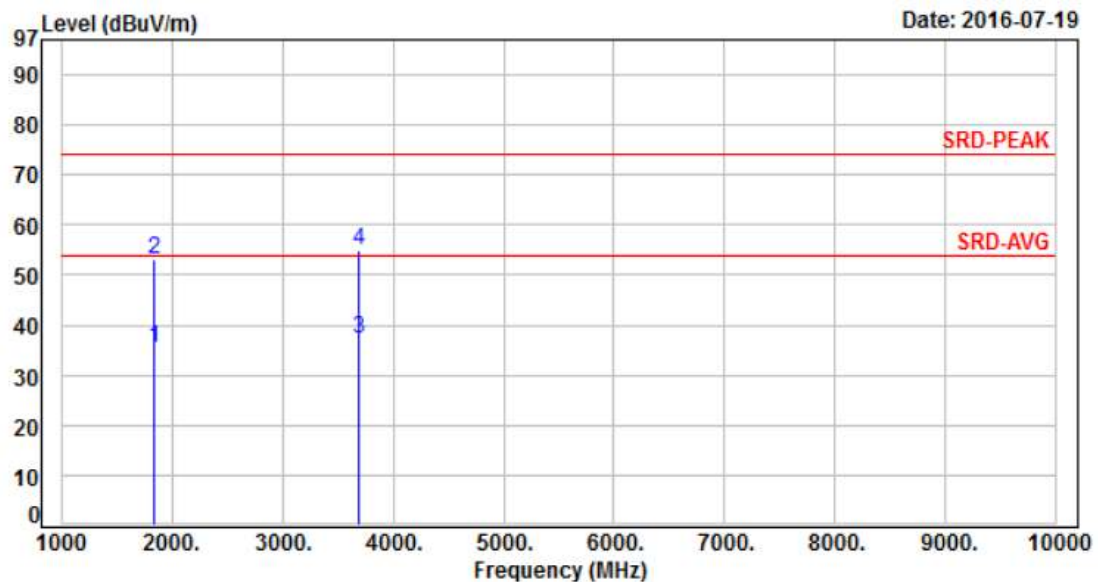
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 922.8MHz	Temperature	: 20 °C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1845.54	-3.24	38.77	35.53	54.00	-18.47	Average	347	328	P
2	1845.54	-3.24	56.28	53.04	74.00	-20.96	Peak	347	328	P
3	3691.01	4.68	32.70	37.38	54.00	-16.62	Average	246	312	P
4	3691.01	4.68	50.21	54.89	74.00	-19.11	Peak	246	312	P

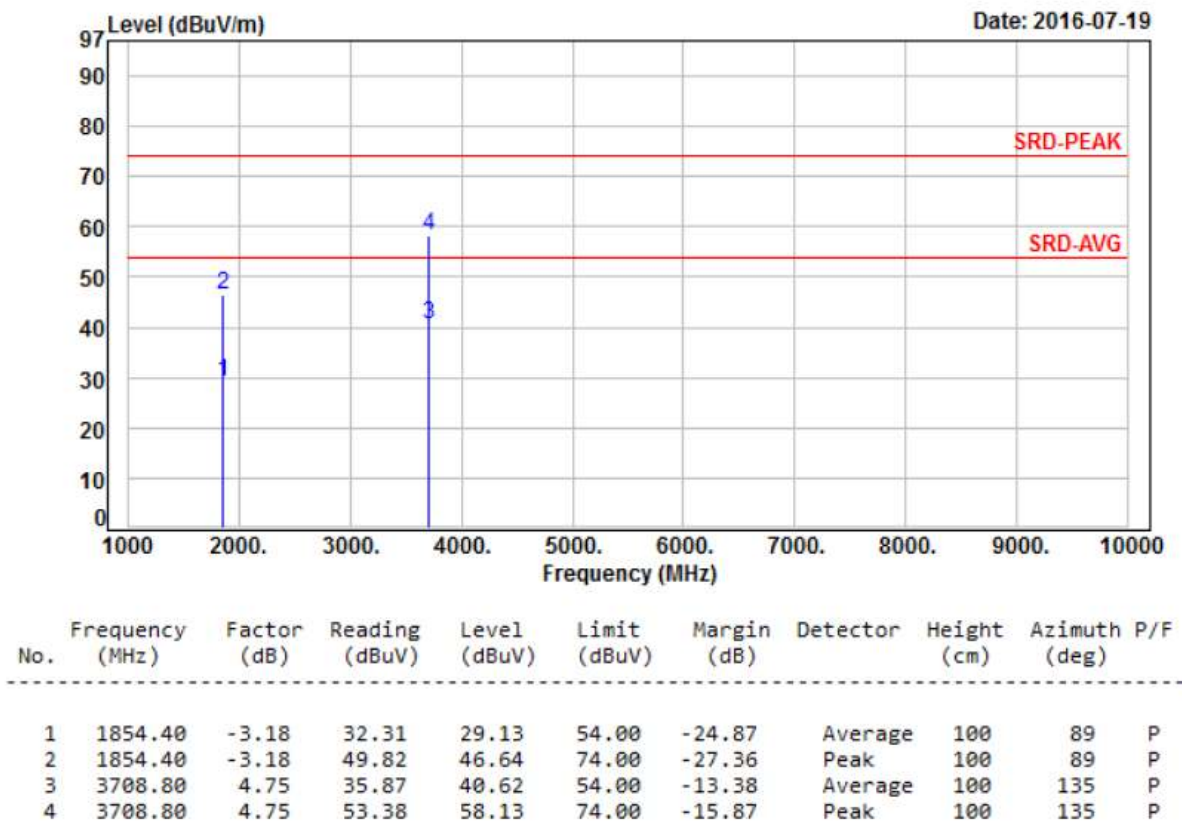
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: VERTICAL
Test Mode	: TX, 927.2MHz	Temperature	: 20°C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



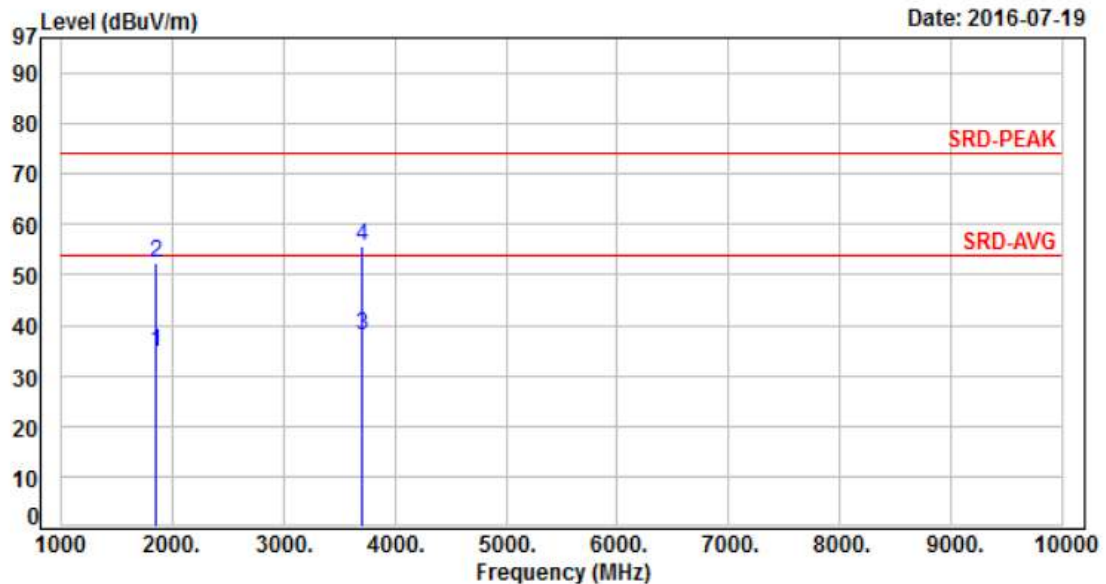
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor



Power	: DC 3V	Pol/Phase	: HORIZONTAL
Test Mode	: TX, 927.2MHz	Temperature	: 20 °C
Test Date	: Jul. 19, 2016	Humidity	: 45 %
Modulation Type	:	Atmospheric Pressure	: 1009 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1854.40	-3.18	37.93	34.75	54.00	-19.25	Average	208	142	P
2	1854.40	-3.18	55.44	52.26	74.00	-21.74	Peak	208	142	P
3	3708.80	4.75	33.32	38.07	54.00	-15.93	Average	115	16	P
4	3708.80	4.75	50.83	55.58	74.00	-18.42	Peak	115	16	P

Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor

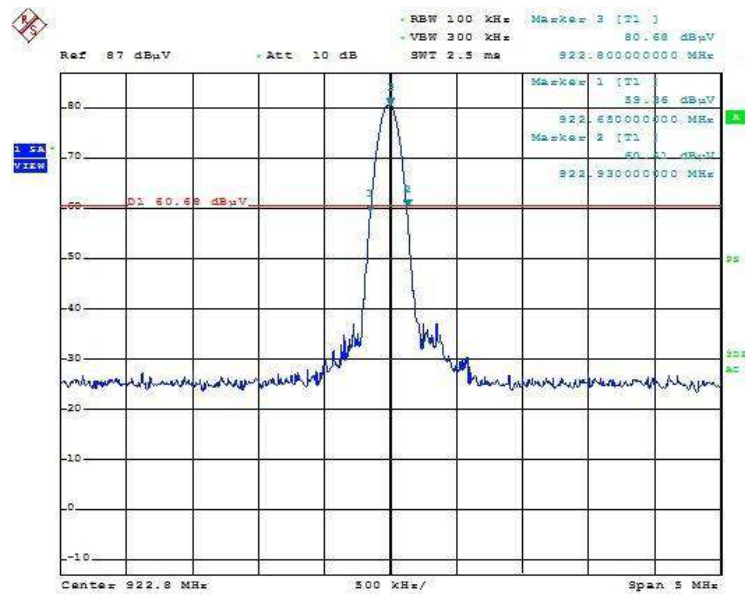


5.4.4. 20dB Bandwidth & 99% Occupied BW

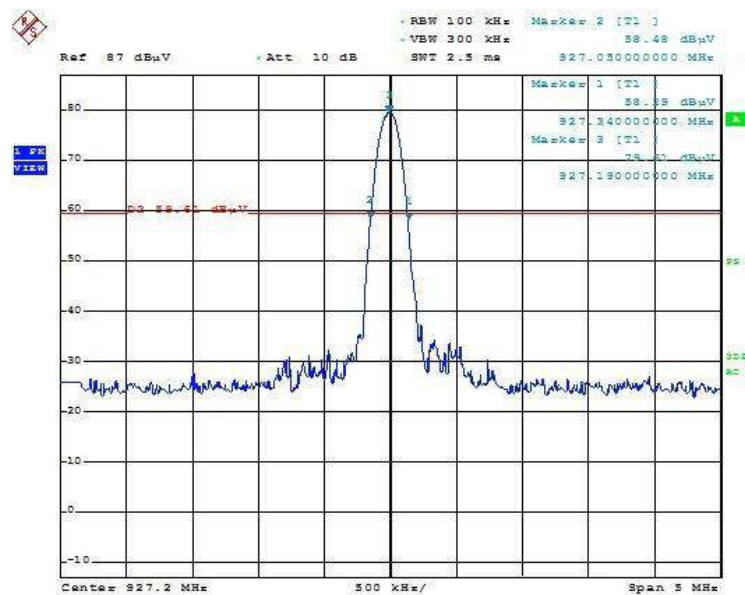
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Frequency range MHz (20dB Down) fL > 902 MHz	Frequency range MHz (20dB Down) fH < 928 MHz
922.800	0.28	0.23	922.6500	-
927.200	0.15	0.23	-	927.1900

20dB Bandwidth

922.8 MHz



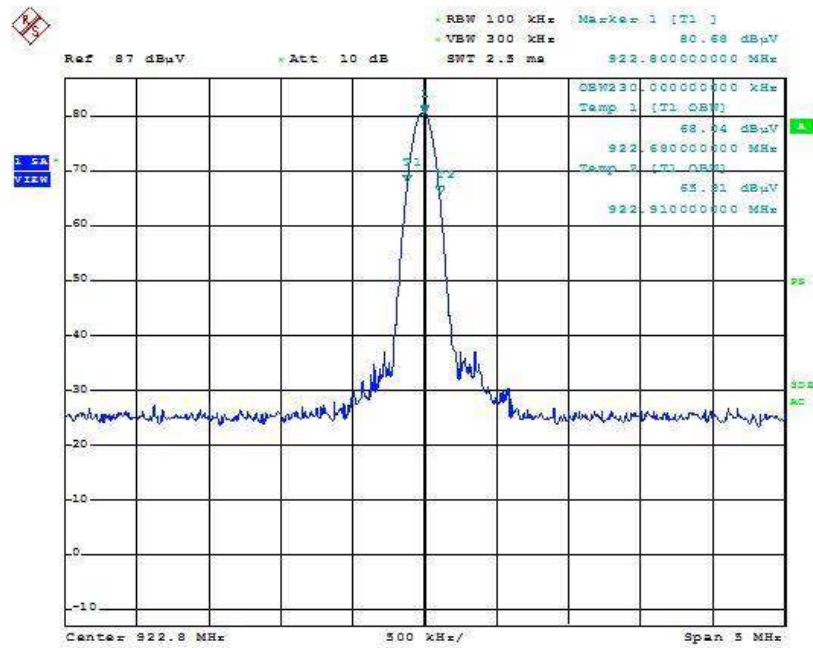
927.2 MHz





99% Occupied BW

922.8 MHz



927.2 MHz

