



FCC TEST REPORT

Test report

On Behalf of

Xi'an Aerospace Automation Co., Ltd.

For

UHF RFID Eight-channel Industrial Reader

Model No.: ASAM-FRUH-GD05

Serial Model : N/A

FCC ID: 2ATM2-GD05

Prepared for: Xi'an Aerospace Automation Co., Ltd.
No. 8, First Electronic Road, Xi'an, Shaanxi China

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.
1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street,
Bao'an District, Shenzhen City, China

Date of Test: Jun. 10, 2019 ~ Jun. 15, 2019

Date of Report: Jun. 15, 2019

Report Number: HK1905051321E



TEST RESULT CERTIFICATION

Applicant's name : Xi'an Aerospace Automation Co., Ltd.
Address : No. 8, First Electronic Road, Xi'an, Shaanxi China
Manufacture's Name : Xi'an Aerospace Automation Co., Ltd.
Address : No. 8, First Electronic Road, Xi'an, Shaanxi China

Product description

Trade Mark:



Product name : UHF RFID Eight-channel Industrial Reader
Model and/or type reference : ASAM-FRUH-GD05
Standards : FCC Rules and Regulations Part 15 Subpart C Section 15.249
ANSI C63.10: 2013

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Date of Test :
Date (s) of performance of tests : Jun. 10, 2019 ~ Jun. 15, 2019
Date of Issue : Jun. 15, 2019
Test Result : **Pass**

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST		RESULT
15.207	Conducted Emission	COMPLIANT
15.249&15.209	Fundamental & Radiated Spurious Emission Measuremen	COMPLIANT
15.215	Bandwidth	COMPLIANT
15.205	Band Edge Emission	COMPLIANT
15.203	Antenna Requirement	COMPLIANT

1.2 TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	= 2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	= 3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	= 4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	= 4.06dB, k=2



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	UHF RFID Eight-channel Industrial Reader
Model Name	ASAM-FRUH-GD05
Serial No.	N/A
Trade Mark	
Model Difference	N/A
FCC ID	2ATM2-GD05
Antenna Type	SMA connect Antenna
Antenna Gain	8dBi
BT Operation frequency	902MHz-928MHz
Number of Channels	51CH
Modulation Type	ASK
Battery	N/A
Power Source	DC 12V



2.2 Carrier Frequency of Channels

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	902.5	15	909.5	29	916.5	43	923.5
2	903.0	16	910.0	30	917.0	44	924.0
3	903.5	17	910.5	31	917.5	45	924.5
4	904.0	18	911.0	32	918.0	46	925.0
5	904.5	19	911.5	33	918.5	47	925.5
6	905.0	20	912.0	34	919.0	48	926.0
7	905.5	21	912.5	35	919.5	49	926.5
8	906.0	22	913.0	36	920.0	50	927.0
9	906.5	23	913.5	37	920.5	51	927.5
10	907.0	24	914.0	38	921.0		
11	907.5	25	914.5	39	921.5		
12	908.0	26	915.0	40	922.0		
13	908.5	27	915.5	41	922.5		
14	909.0	28	916.0	42	923.0		

2.3 Operation of EUT during testing

Operating Mode

The mode is used: **Transmitting mode**

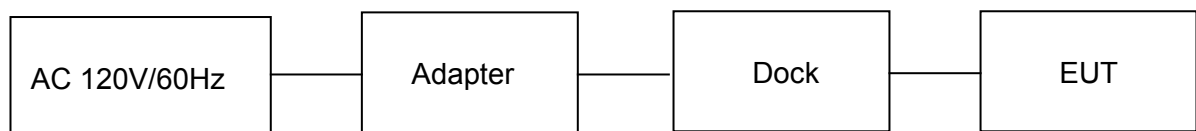
Low Channel: 902.5MHz

Middle Channel: 917.0MHz

High Channel: 927.5MHz

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted testing:



Note: Dock is only a connector, there is no extra circuit.

Operation of EUT during Radiation and Above1GHz Radiation testing:





2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 28, 2018	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 28, 2018	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 28, 2018	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 28, 2018	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2018	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 28, 2018	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 28, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 28, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 28, 2018	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 28, 2018	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Dec. 28, 2018	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 28, 2018	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JZOZtheBO T120-B Version	HKE-083	N/A	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 28, 2018	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2018	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 28, 2018	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 28, 2018	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 28, 2017	3 Year
19.	Hf antenna	Schwarzbeck	LB-180400- KF	HKE-031	Dec. 28, 2018	1 Year



3. CONDUCTED EMISSIONS TEST

3.1 Conducted Power Line Emission Limit

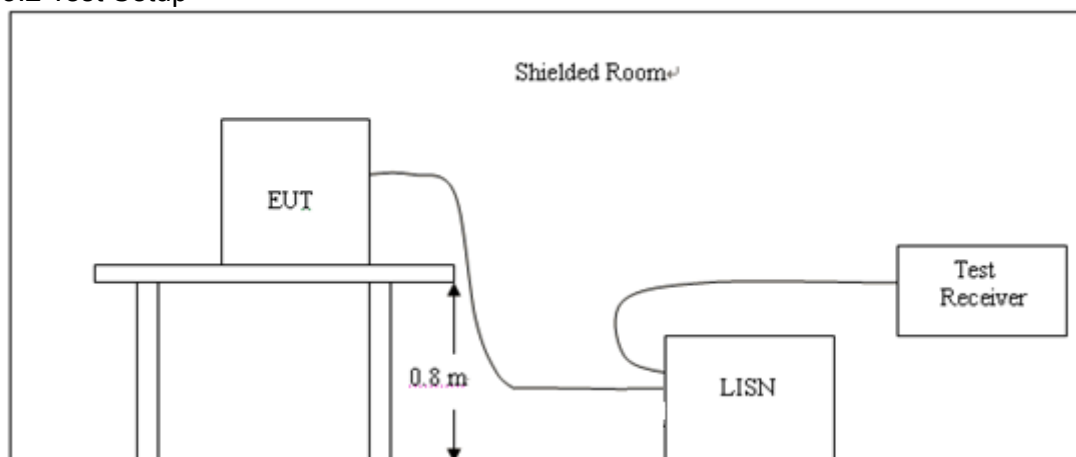
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



3.3 Test Procedure

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

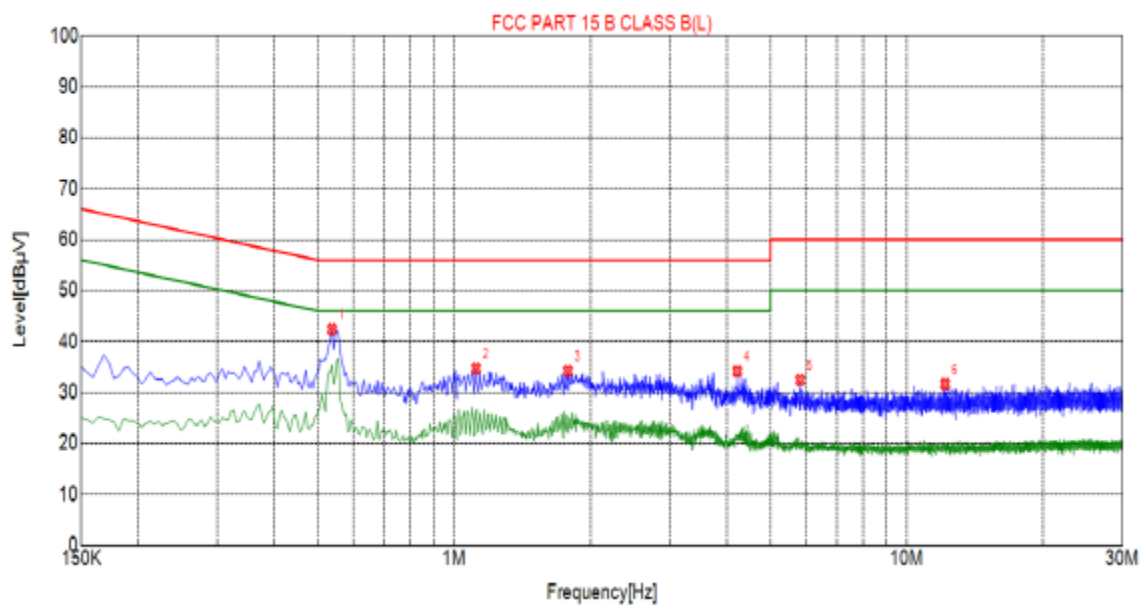
3.4 Test Result

Pass

All the test modes completed for test. Only the worst result was reported as below:



Test Specification: Line

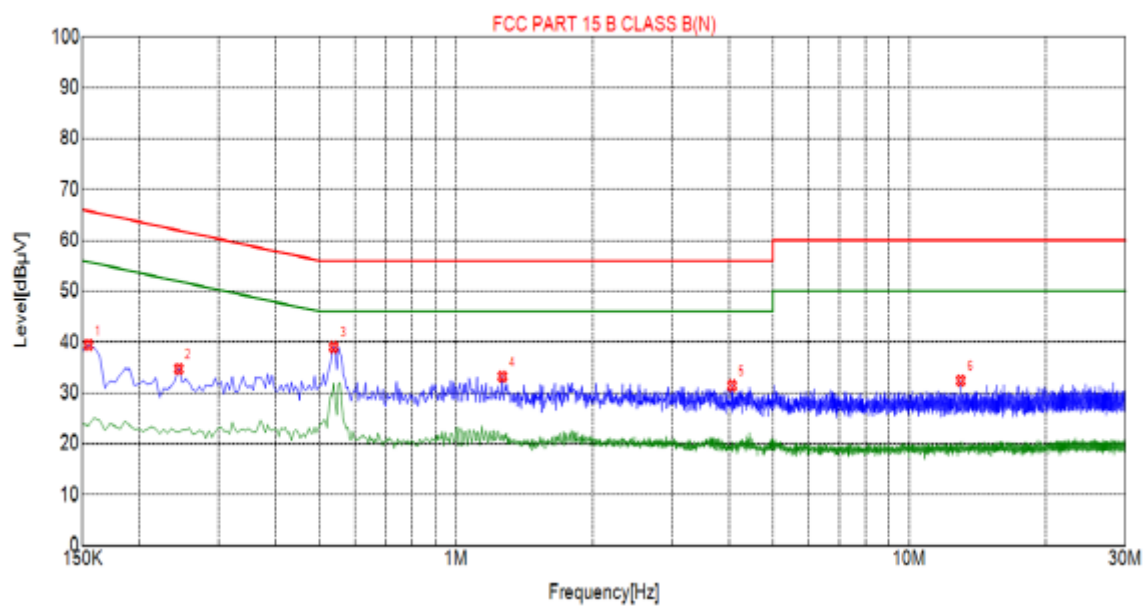


Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Detector
1	0.5370	42.44	10.05	56.00	13.56	PK
2	1.1175	34.74	10.08	56.00	21.26	PK
3	1.7835	34.21	10.14	56.00	21.79	PK
4	4.2225	34.16	10.25	56.00	21.84	PK
5	5.8155	32.43	10.24	60.00	27.57	PK
6	12.1605	31.67	9.99	60.00	28.33	PK



Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [$\text{dB}\mu\text{V}$]	Factor [dB]	Limit [$\text{dB}\mu\text{V}$]	Margin [dB]	Detector
1	0.1545	39.39	10.03	65.75	26.36	PK
2	0.2445	34.72	10.03	61.94	27.22	PK
3	0.5370	39.00	10.05	56.00	17.00	PK
4	1.2660	33.23	10.09	56.00	22.77	PK
5	4.0650	31.44	10.25	56.00	24.56	PK
6	12.9885	32.38	9.97	60.00	27.62	PK

4 RADIATED EMISSION TEST

4.1 Radiation Limit

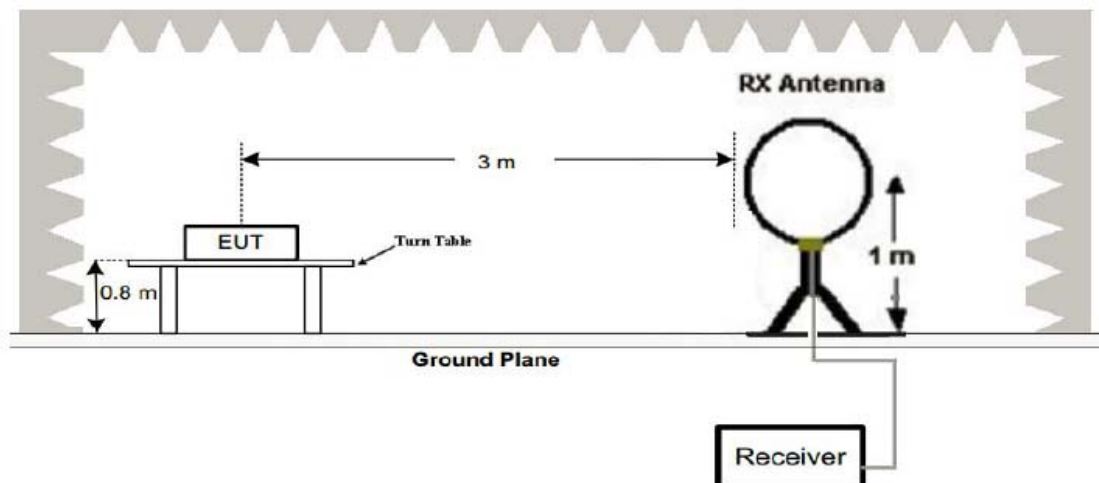
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

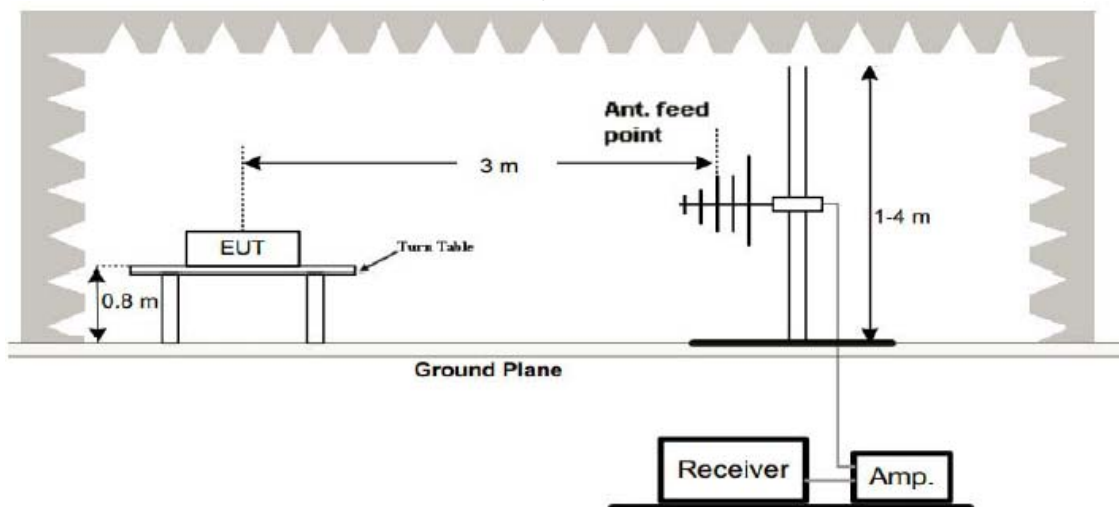
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

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

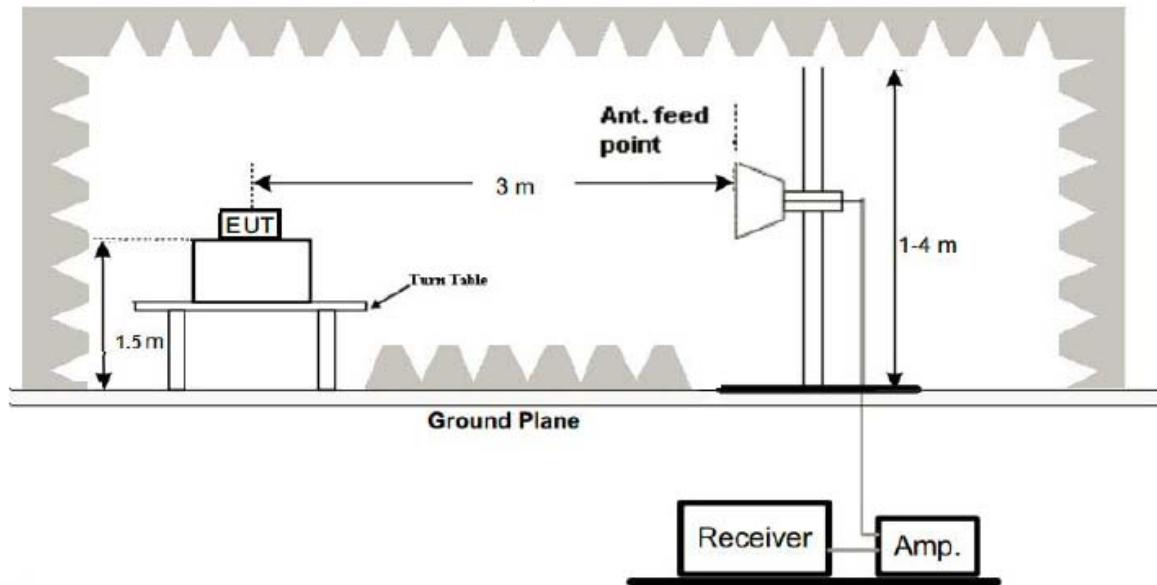


(2) Radiated Emission Test-Up Frequency 30MHz~1GHz





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



4.3 Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 Test Result

PASS

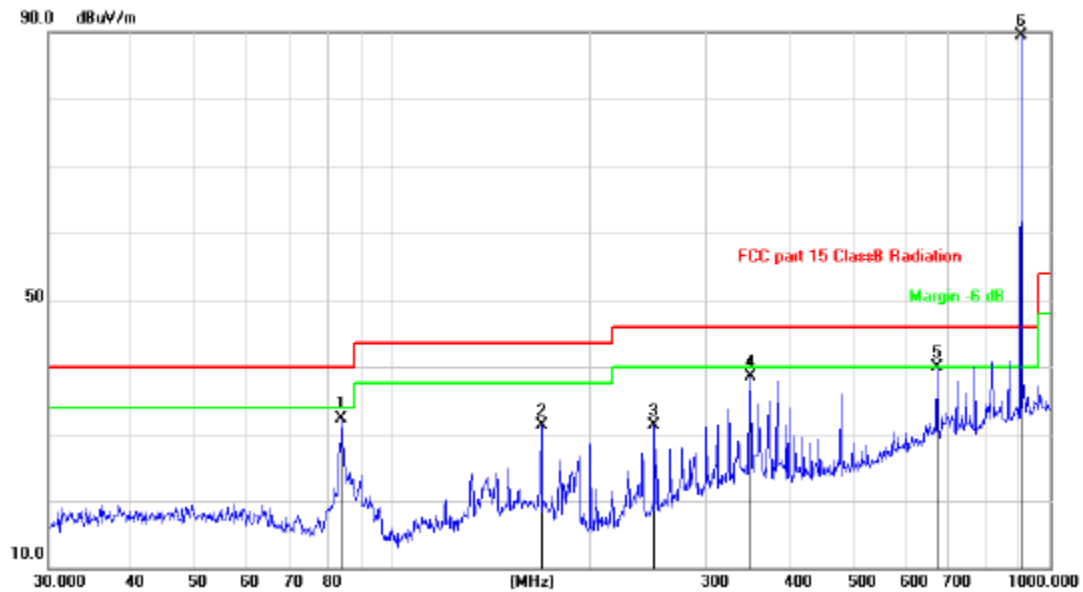
Remark:

1. All the test modes completed for test. The worst case of Radiated Emission is the first antenna, the test data of this mode was reported.
2. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, and test data recorded in this report.
3. Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9KHz to 30MHz and not recorded in this report.
4. This data is the worst case of Radiated Emission under the worst one of the Antenna.



Low channel below 1GHz Test Results:

Antenna polarity: H

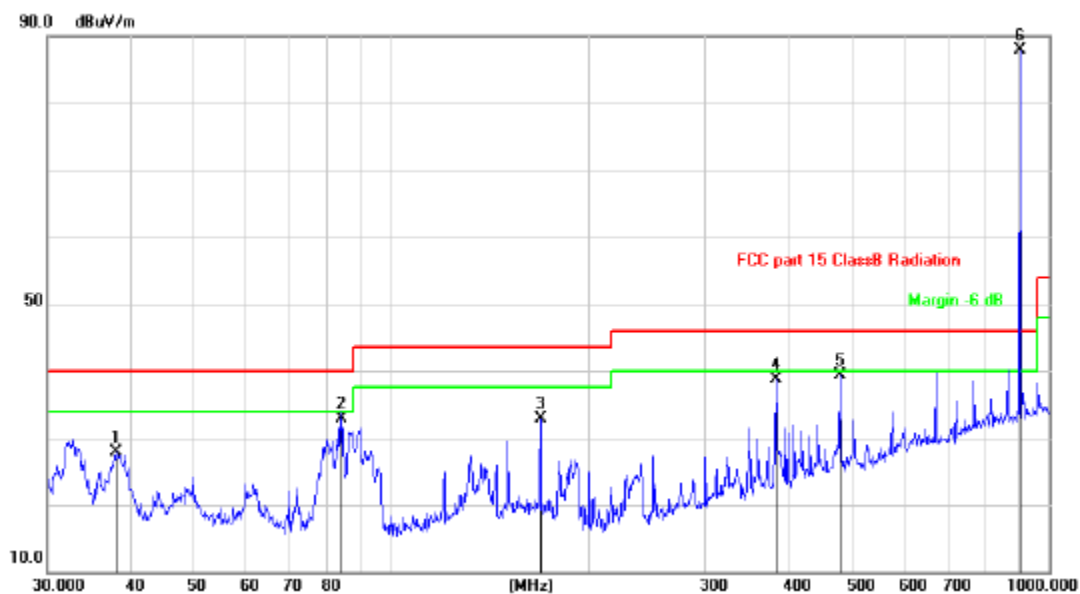


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		83.8156	49.24	-16.92	32.32	40.00	-7.68	QP	129	26
2		168.4138	43.63	-12.26	31.37	43.50	-12.13	QP	333	253
3		250.3009	45.05	-13.77	31.28	46.00	-14.72	QP	254	35
4		350.4768	48.57	-10.12	38.45	46.00	-7.55	QP	296	89
5		672.8444	42.00	-2.12	39.88	46.00	-6.12	QP	135	159
6	*	902.5000	88.40	1.12	89.52	94.00	-4.48	QP	189	99

Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level.
The frequency 902.5000MHz is main frequency.



Antenna polarity: V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree
1		38.0782	40.73	-12.76	27.97	40.00	-12.03	QP	100	122
2		84.1100	49.78	-16.93	32.85	40.00	-7.15	QP	100	236
3		168.4138	45.23	-12.26	32.97	43.50	-10.53	QP	100	89
4		383.9318	47.82	-9.15	38.67	46.00	-7.33	QP	100	35
5		480.5276	46.04	-6.71	39.33	46.00	-6.67	QP	100	158
6	*	902.5000	86.86	1.09	87.95	94.00	-6.05	QP	100	165

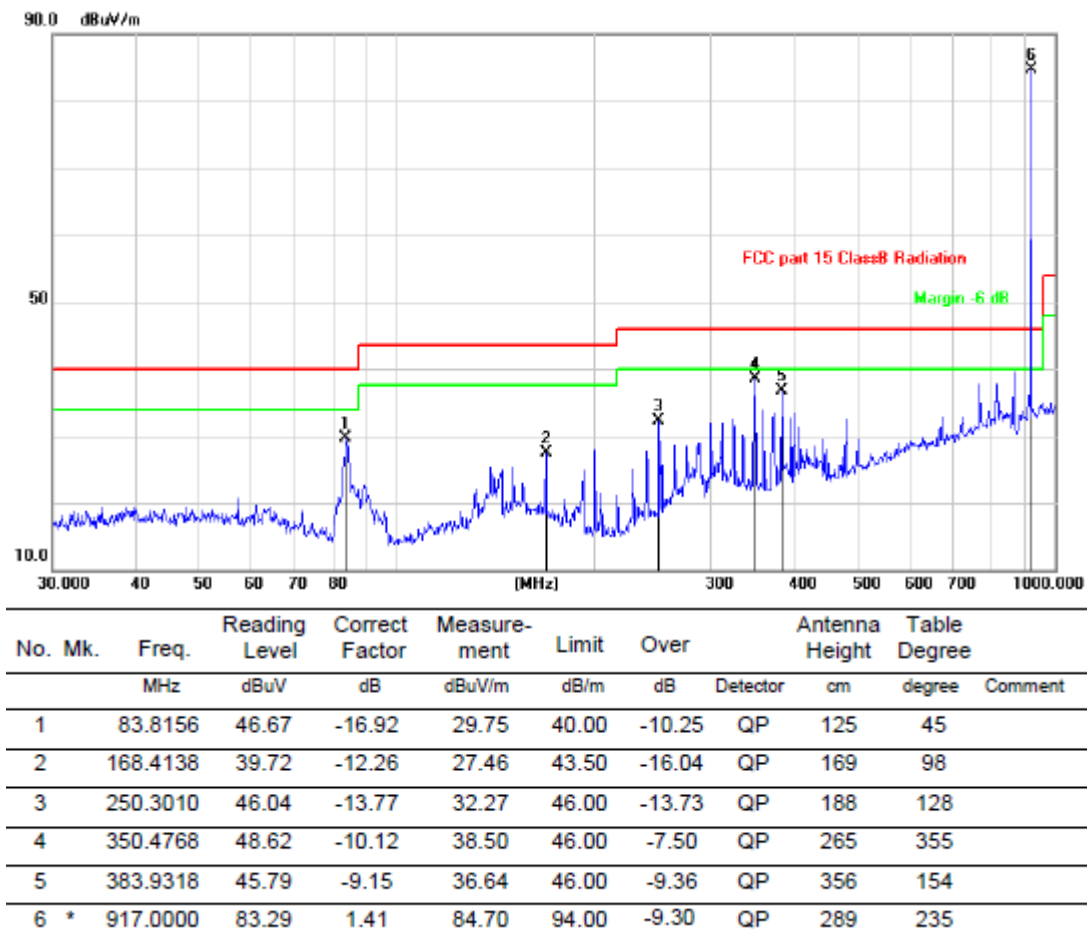
Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level

The frequency 902.5000MHz is main frequency.



Middle channel below 1GHz Test Results:

Antenna polarity: H

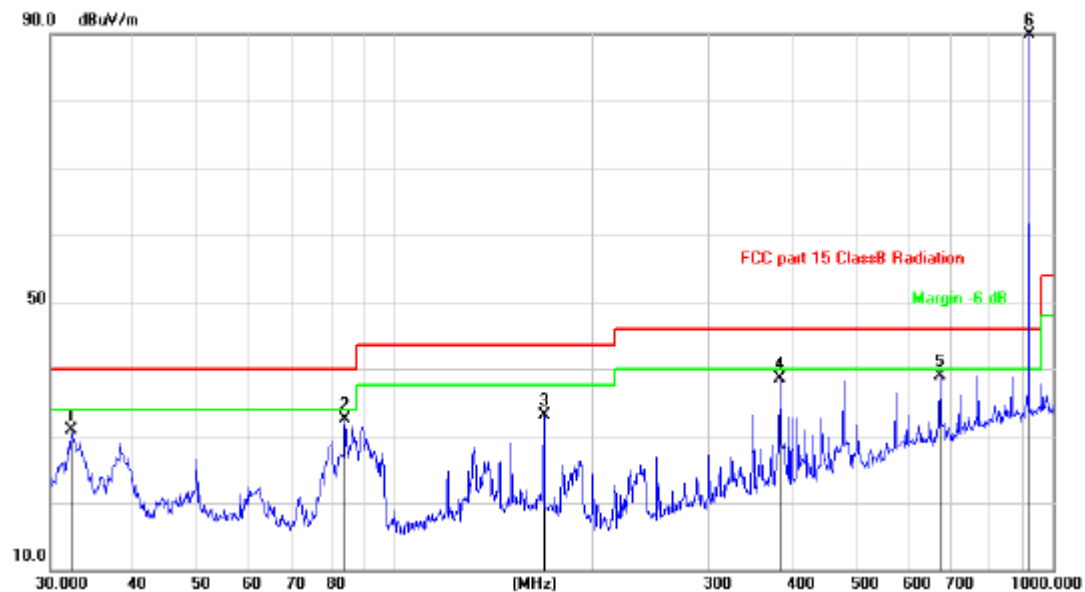


Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level

The frequency 917.0000MHz is main frequency.



Antenna polarity: V



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	Comment
			dBuV	dB	dBuV/m	dB/m	dB	cm	degree	
1		32.2924	44.46	-13.54	30.92	40.00	-9.08	QP	100	260
2		84.1100	49.47	-16.93	32.54	40.00	-7.46	QP	100	78
3		168.4138	45.39	-12.26	33.13	43.50	-10.37	QP	100	154
4		383.9318	47.67	-9.15	38.52	46.00	-7.48	QP	100	133
5		672.8444	41.03	-2.12	38.91	46.00	-7.09	QP	100	69
6	*	917.0000	88.48	1.47	89.95	94.00	-4.05	QP	100	324

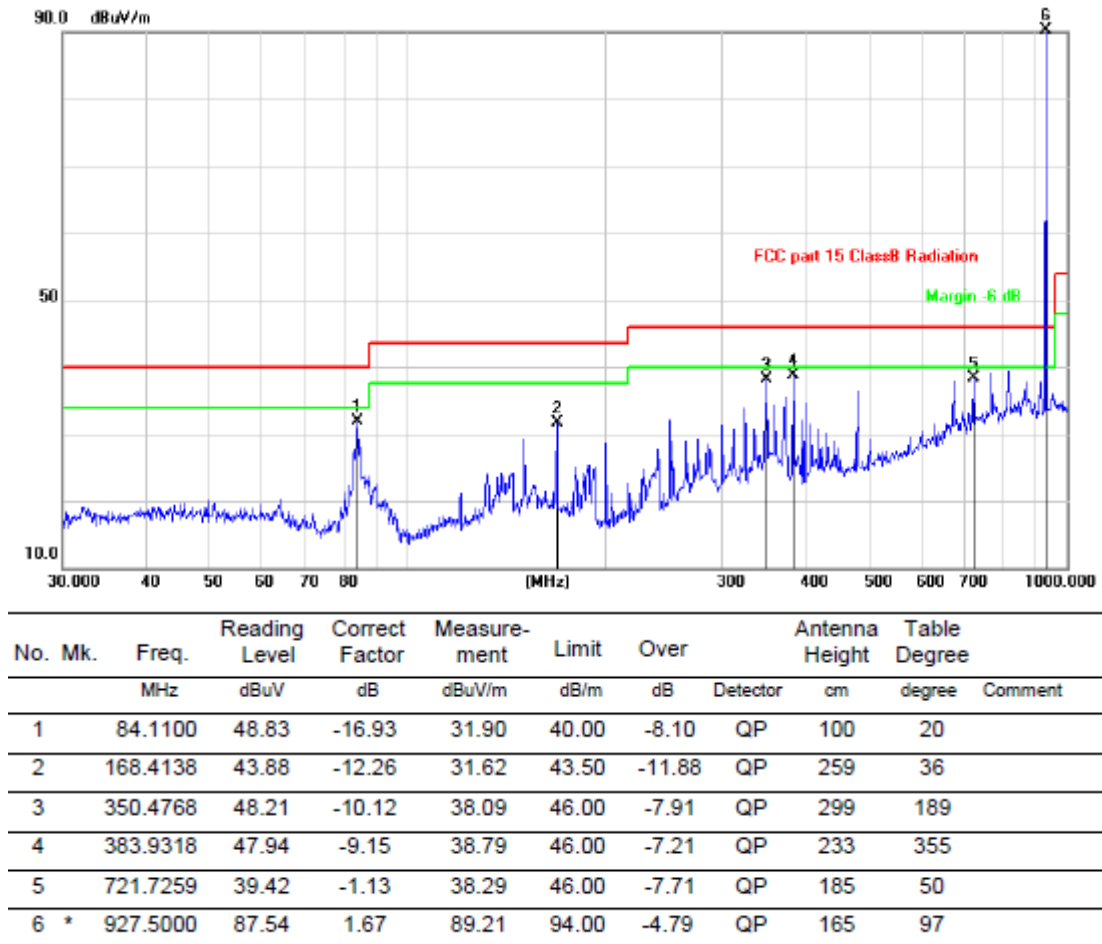
Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level

The frequency 917.0000MHz is main frequency.



High channel below 1GHz Test Results:

Antenna polarity: H

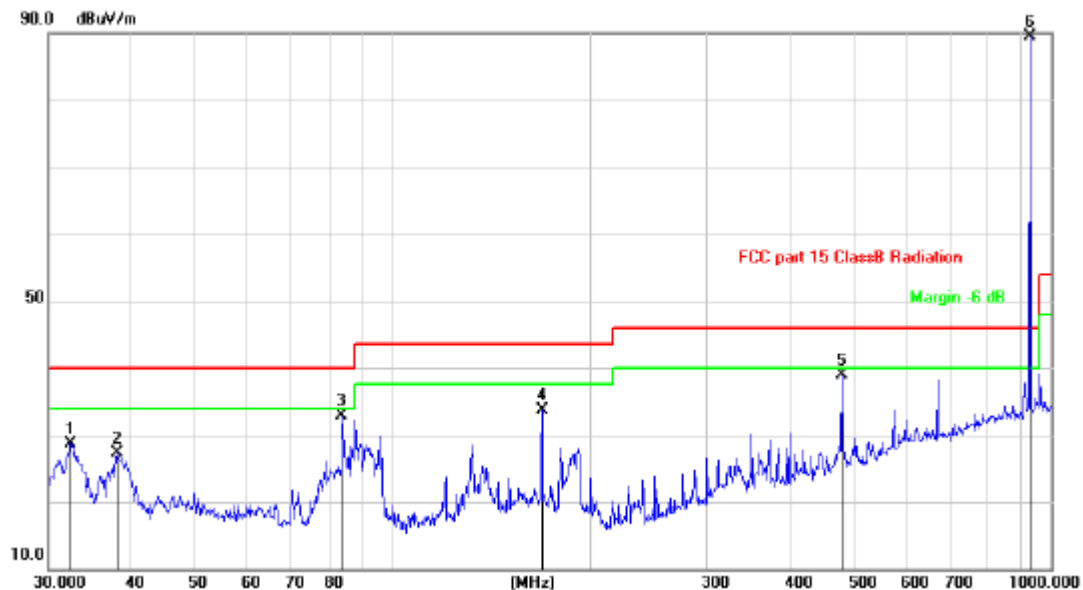


Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level

The frequency 927.5000MHz is main frequency.



Antenna polarity: V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		32.4059	42.33	-13.53	28.80	40.00	-11.20	QP	100	55
2		38.2120	40.09	-12.74	27.35	40.00	-12.65	QP	100	135
3		83.8156	49.92	-16.92	33.00	40.00	-7.00	QP	100	74
4		168.4138	45.91	-12.26	33.65	43.50	-9.85	QP	100	359
5		480.5276	45.61	-6.71	38.90	46.00	-7.10	QP	100	222
6	*	927.5000	87.84	1.67	89.51	94.00	-4.49	QP	100	65

Remark: Transd = Cableloss + Antenna factor - Pre-amplifier; Margin = Limit – Level
The frequency 927.5000MHz is main frequency.

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (4) The radiated Emission limit of the main frequency is 94dBuV/m, so it is pass.

Above 1 GHz Test Results:

CH Low

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1805	58.58	-5.82	52.76	74	-21.24	peak
1805	47.65	-5.82	41.83	54	-12.17	AVG
2707.5	56.02	-3.63	52.39	74	-21.61	peak
2707.5	46.83	-3.63	43.20	54	-10.80	AVG
3610	58.04	-0.96	57.08	74	-16.92	peak
3610	48.00	-0.96	47.04	54	-6.96	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1805	58.69	-5.82	52.87	74	-21.13	peak
1805	47.71	-5.82	41.89	54	-12.11	AVG
2707.5	56.30	-3.63	52.67	74	-21.33	peak
2707.5	47.06	-3.63	43.43	54	-10.57	AVG
3610	58.25	-0.96	57.29	74	-16.71	peak
3610	48.18	-0.96	47.22	54	-6.78	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

CH Middle

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1834	56.58	-5.72	50.86	74	-23.14	peak
1834	47.49	-5.72	41.77	54	-12.23	AVG
2751	55.96	-3.49	52.47	74	-21.53	peak
2751	46.83	-3.49	43.34	54	-10.66	AVG
3668	57.95	-0.81	57.14	74	-16.86	peak
3668	47.87	-0.81	47.06	54	-6.94	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1834	108.11	-5.72	52.69	74	-21.31	peak
1834	93.13	-5.72	42.68	54	-11.32	AVG
2751	56.11	-3.49	52.62	74	-21.38	peak
2751	46.99	-3.49	43.50	54	-10.50	AVG
3668	57.99	-0.81	57.18	74	-16.82	peak
3668	47.76	-0.81	46.95	54	-7.05	AVG

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



CH High

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1855	56.42	-5.62	50.80	74	-23.20	peak
1855	47.29	-5.62	41.67	54	-12.33	AVG
2782.5	56.26	-3.41	52.85	74	-21.15	peak
2782.5	47.46	-3.41	44.05	54	-9.95	AVG
3710	57.34	-0.74	56.60	74	-17.40	peak
3710	47.57	-0.74	46.83	54	-7.17	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1855	56.77	-5.62	53.66	74	-20.34	peak
1855	47.88	-5.62	45.62	54	-8.38	AVG
2782.5	55.96	-3.41	52.55	74	-21.45	peak
2782.5	47.52	-3.41	44.11	54	-9.89	AVG
3710	56.90	-0.74	56.16	74	-17.84	peak
3710	47.44	-0.74	46.70	54	-7.30	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Remark :

- (1) Measuring frequencies from 1 GHz to the 25 GHz .
- (2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.
- (7) All modes of operation were investigated and the worst-case emissions are reported.



5.1 Limits

FCC PART 15.249(d) 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.

5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz, to measure the conducted peak band edge.

5.3 Test Result

NOTE; This data is the worst case of Radiated Emission under the worst one of the Antenna.

PASS

Radiated Band Edge Test:

Operation Mode: TX CH Low

Horizontal (Worst case)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
850	35.65	-3.05	32.6	46	-13.4	QP
850	/	/	/	/	/	AVG
880	36.58	-3.08	33.5	46	-12.5	QP
880	/	/	/	/	/	AVG
902	38.02	-3.12	34.9	46	-11.1	QP
902	/	/	/	/	/	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
850	35.63	-3.05	32.58	46	-13.42	QP
850	/	/	/	/	/	AVG
880	36.37	-3.08	33.29	46	-12.71	QP
880	/	/	/	/	/	AVG
902	37.69	-3.12	34.57	46	-11.43	QP
902	/	/	/	/	/	AVG

Operation Mode: TX CH High
Horizontal (Worst case)

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
928.00	36.06	-3.18	32.88	46	-13.12	QP
928.00	/	/	/	/	/	AVG
950.00	37.18	-3.22	33.96	46	-12.04	QP
950.00	/	/	/	/	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
928.00	36.15	-3.18	32.97	46	-13.03	QP
928.00	/	/	/	/	/	AVG
950.00	37.19	-3.22	33.97	46	-12.03	QP
950.00	/	/	/	/	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						



6 OCCUPIED BANDWIDTH MEASUREMENT

6.1 Test Setup

Same as Radiated Emission Measurement

6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on ANSI C63.10 section 6.9.2: RBW= 1KHz. VBW= 3 KHz, Span=130KHz
4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

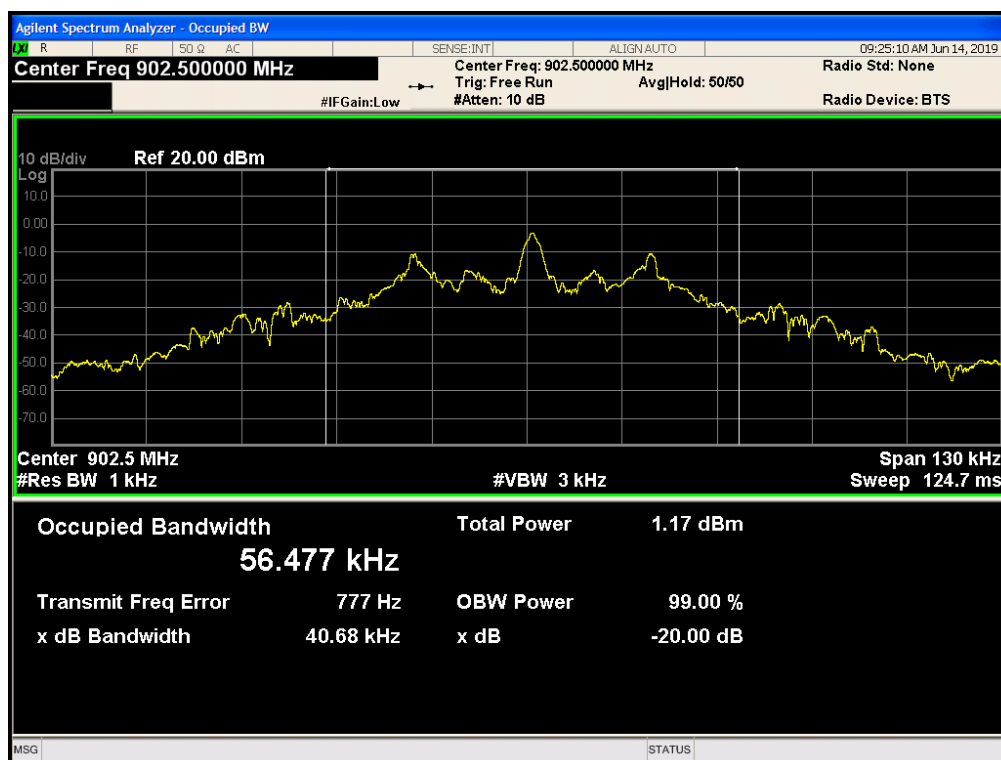
6.4 Test Result

Antenna 1

PASS

Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0407	PASS
917.0MHz	0.0437	PASS
927.5MHz	0.0384	PASS

CH: LOW





CH: Middle



CH: High





Antenna 2

PASS

Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0408	PASS
917.0MHz	0.0403	PASS
927.5MHz	0.038	PASS

CH: Low





CH: Middle



CH: High



**PASS**

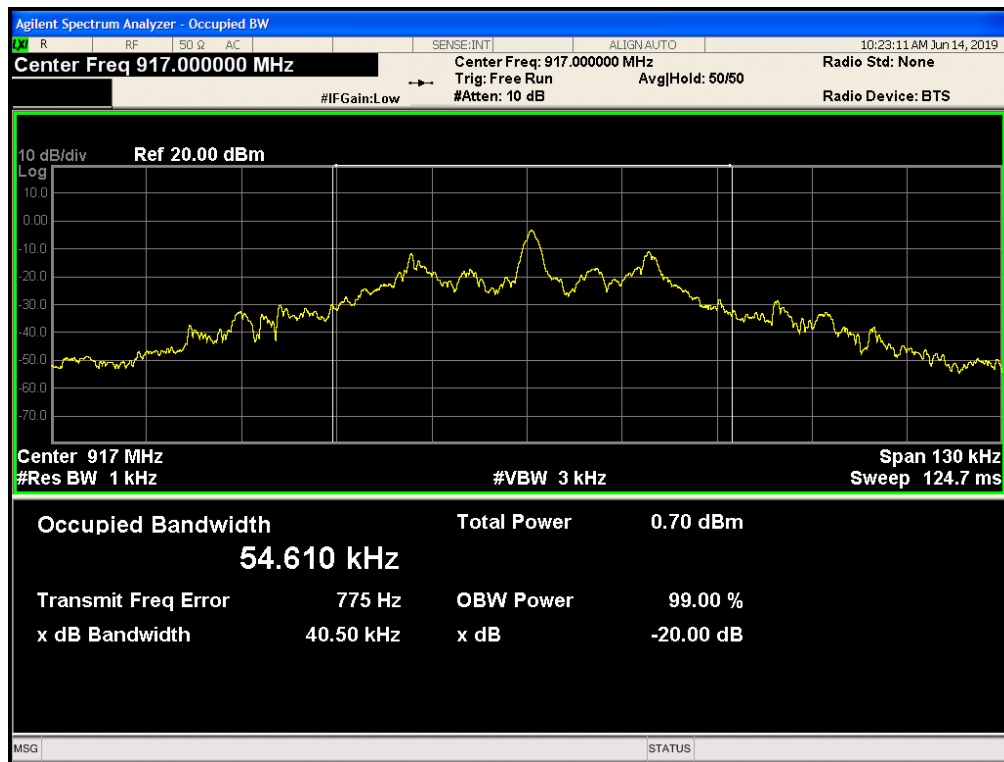
Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0406	PASS
917.0MHz	0.0405	PASS
927.5MHz	0.0401	PASS

CH: Low





CH: Middle



CH: High



**PASS**

Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0404	PASS
917.0MHz	0.0394	PASS
927.5MHz	0.0419	PASS

CH: Low





CH: Middle



CH: High



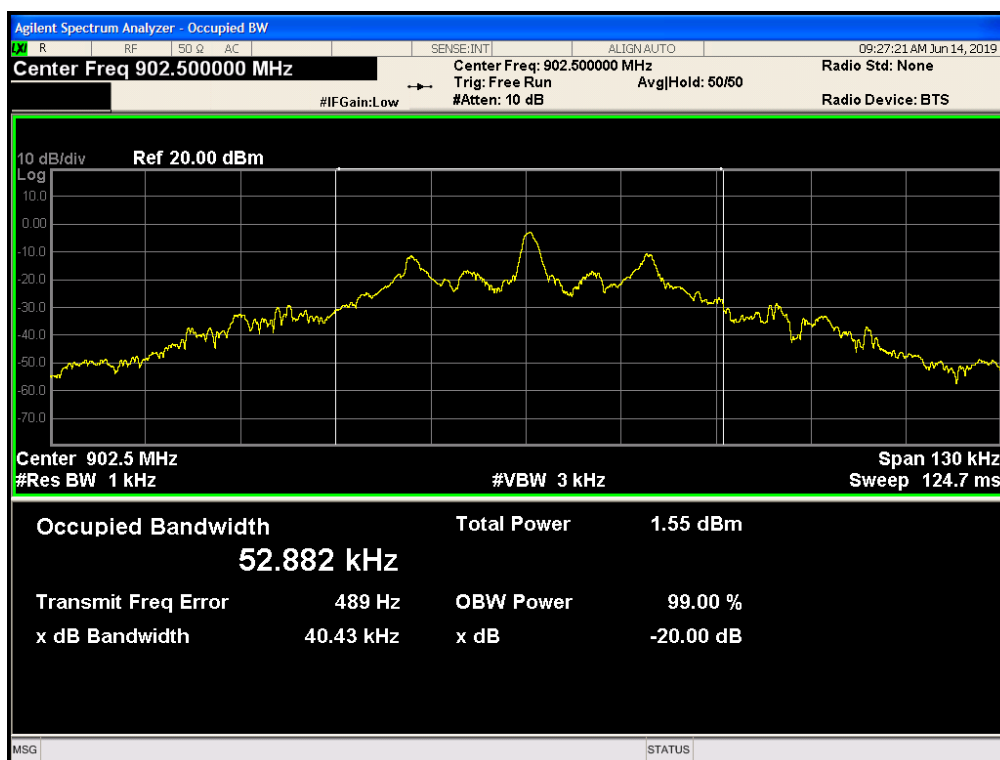


Antenna 5

PASS

Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0404	PASS
917.0MHz	0.0395	PASS
927.5MHz	0.0421	PASS

CH: Low





CH: Middle



CH: High





Antenna 6

PASS

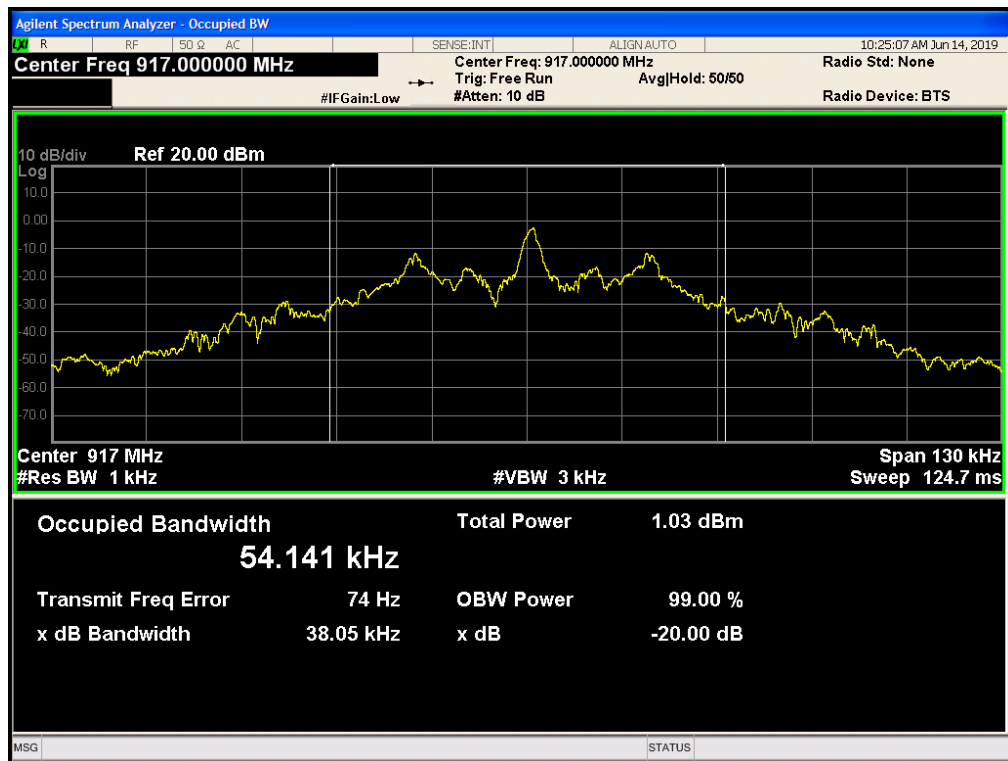
Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0409	PASS
917.0MHz	0.038	PASS
927.5MHz	0.0399	PASS

CH: Low

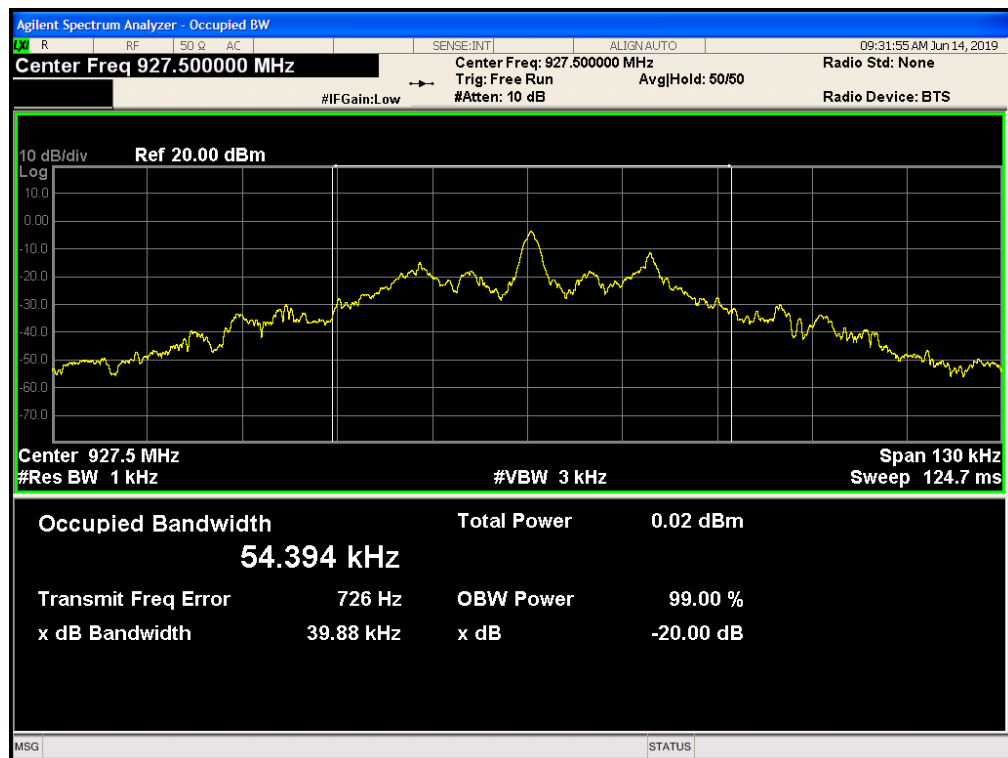




CH: Middle



CH: High



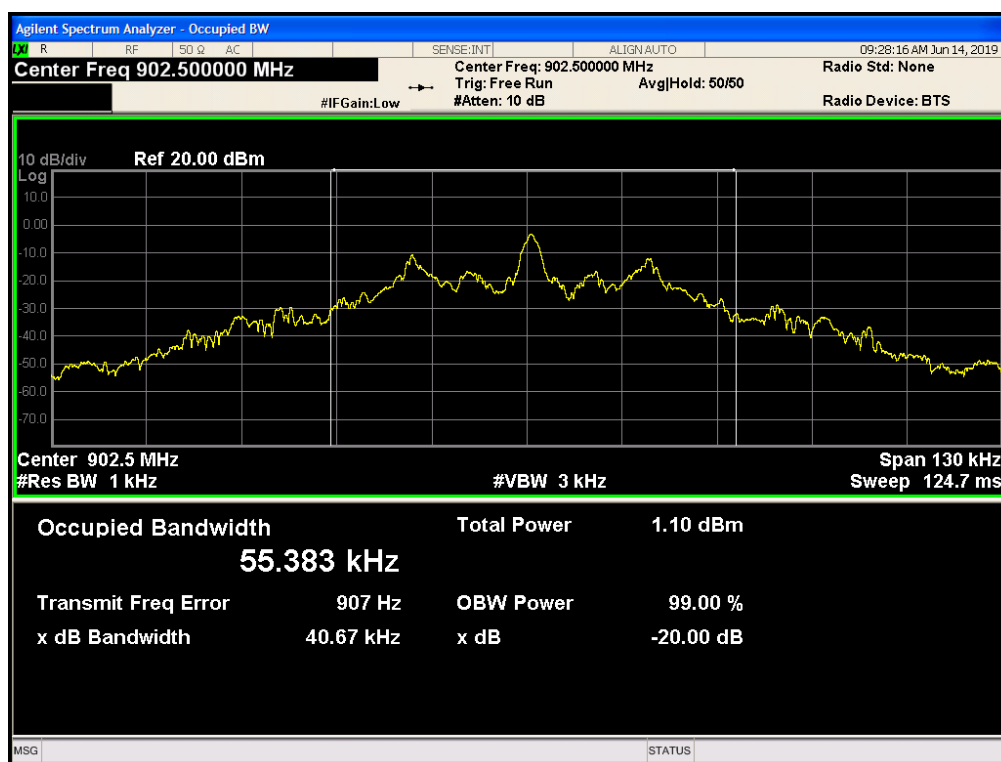


Antenna 7

PASS

Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0407	PASS
917.0MHz	0.0404	PASS
927.5MHz	0.0376	PASS

CH: Low





CH: Middle



CH: High



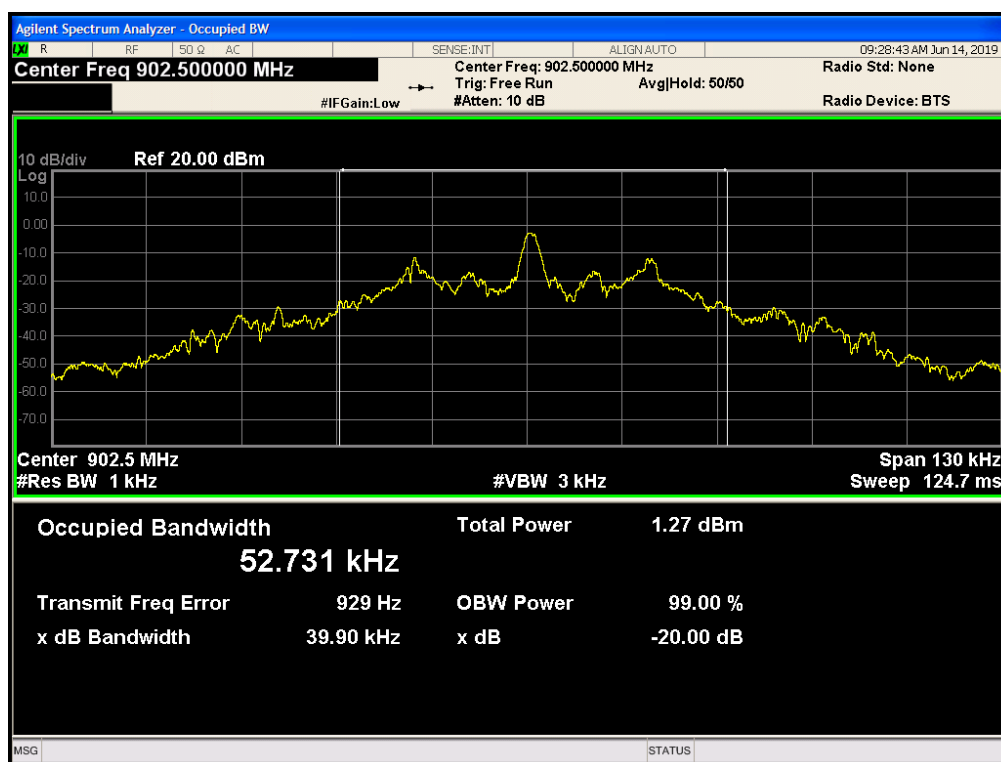


Antenna 8

PASS

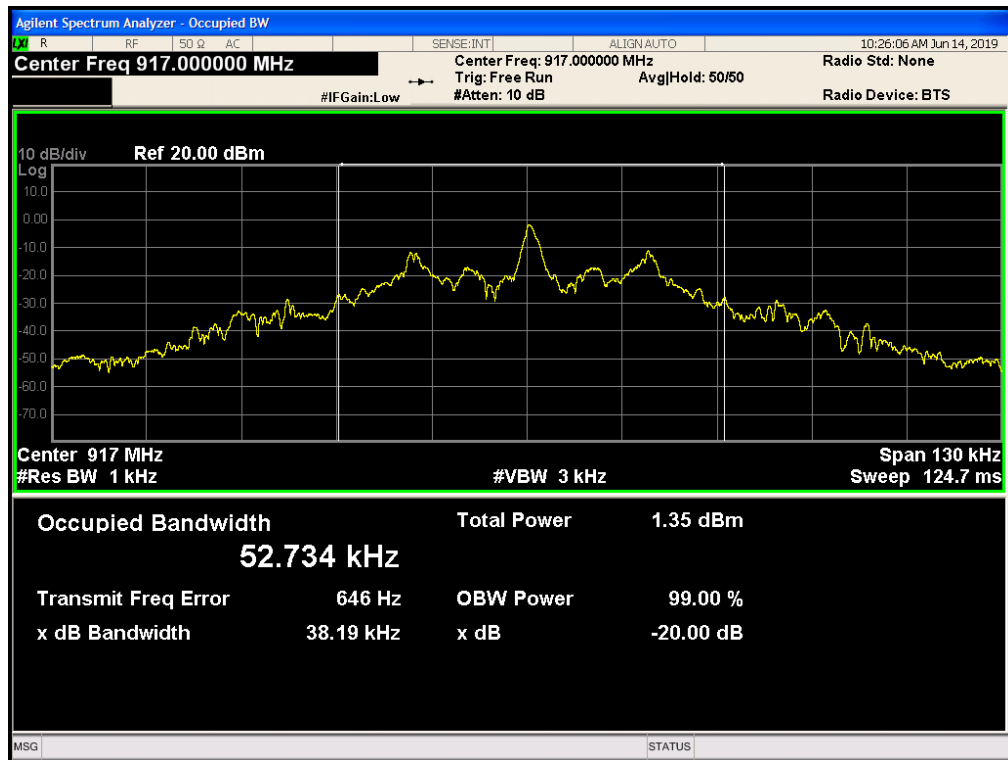
Frequency	20dB Bandwidth (MHz)	Result
902.5MHz	0.0399	PASS
917.0MHz	0.0382	PASS
927.5MHz	0.0397	PASS

CH: Low





CH: Middle



CH: High





7 ANTENNA REQUIREMENT

Standard Applicable

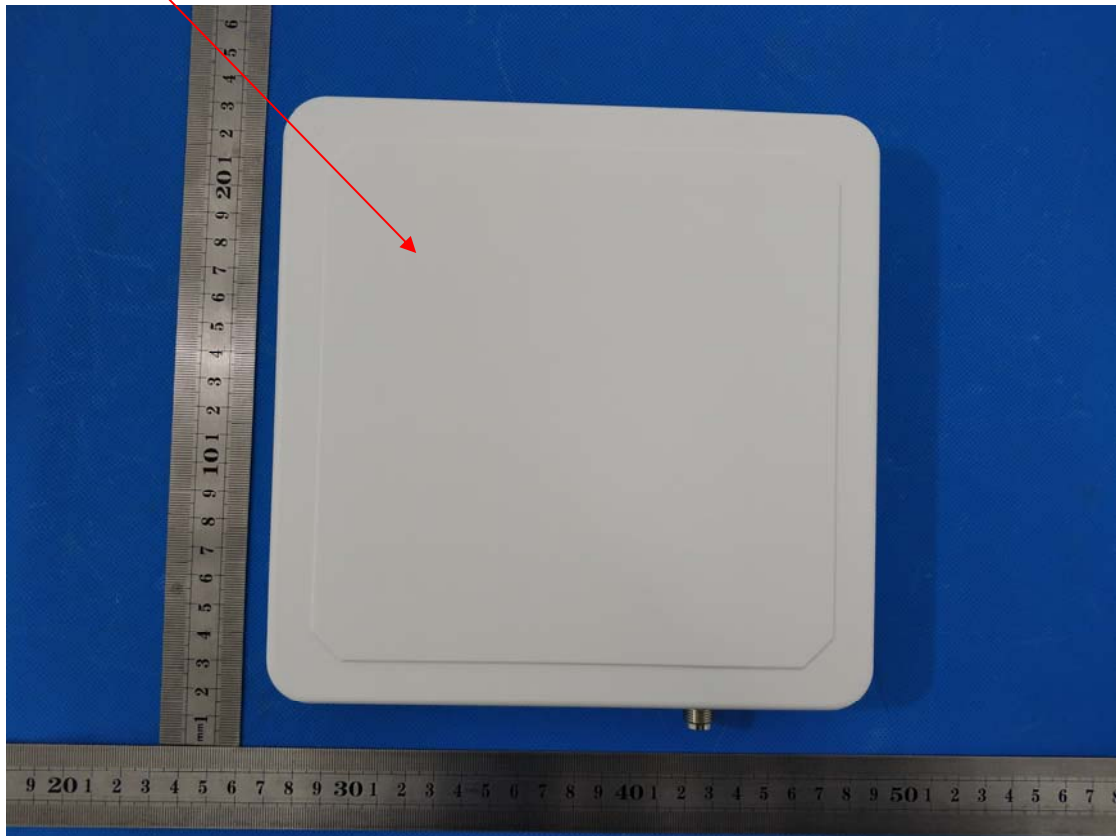
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Connected Construction

The antenna used in this product is External Antenna. The directional gains of antenna used for transmitting is 8dBi.

The product is professionally installed. The installer will be responsible for ensuring that the proper antenna is employed.

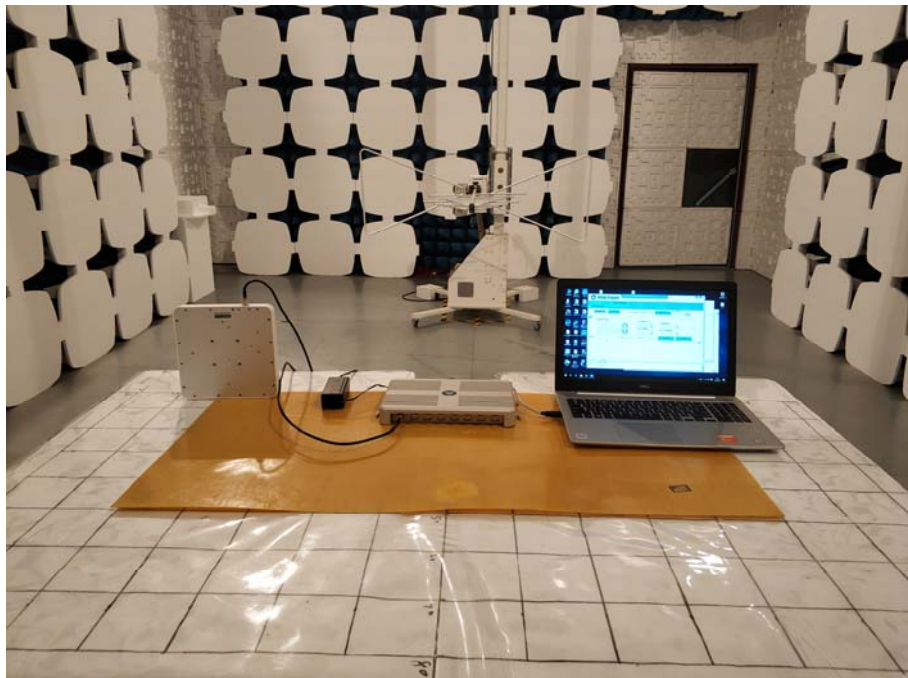
External Antenna





8 PHOTOGRAPH OF TEST

Radiated Emission





Conducted Emission



End of Report