

TEST REPORT

Reference No..... : STR18128309I
FCC ID : 2AILBDIGINET-ST
Applicant : ENPING ENBAO ELECTRONIC CO., LTD.
Address : B3, 3 Zone, Enping Park, Industrial Transfer Park of Jiangmen, Guangdong,
China
Product Name : stereo transmitter
Test Model. : DigiNet-ST
Standards : FCC Part 15.249
Date of Receipt sample : Aug.28, 2020
Date of Test..... : Aug.28, 2020 to Aug.31, 2020
Date of Issue : Aug.31, 2020
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

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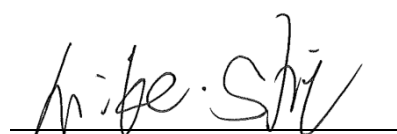
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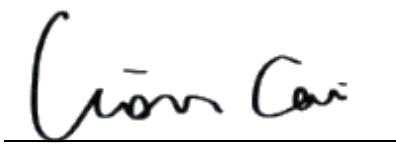
Tested by:

Reviewed By:

Approved & Authorized By:



Tested by:



Lion Cai / RF Manager



Silin Chen / Manager

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Report version

Version No.	Date of issue	Description
Rev.00	Aug.31, 2020	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ENPING ENBAO ELECTRONIC CO., LTD.
Address of applicant: B3, 3 Zone, Enping Park, Industrial Transfer Park of Jiangmen, Guangdong, China

Manufacturer: ENPING ENBAO ELECTRONIC CO., LTD.
Address of manufacturer: B3, 3 Zone, Enping Park, Industrial Transfer Park of Jiangmen, Guangdong, China

General Description of EUT	
Product Name:	stereo transmitter
Trade Name:	VOCOPRO
Model No.:	DigiNet-ST
Adding Model:	/
Rated Voltage:	Charging port:DC5V; Battery:DC3.7V
Battery capacity:	3400mAh
Power Adaptor:	/
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	903.400MHz-927.700MHz
Max. Field Strength:	70.88dBuV/m
Modulation:	DQPSK
Quantity of Channels:	16
Antenna Type:	External Antenna
Antenna Gain:	0dBi

Service Frequency Table			
No.	Frequency(MHz)	No.	Frequency(MHz)
1	903.400	9	915.300
2	904.900	10	916.600
3	906.100	11	919.100
4	907.800	12	920.400
5	909.100	13	923.100
6	911.000	14	925.100
7	912.500	15	926.300
8	913.600	16	927.700

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Low Channel	903.400MHz
TM2	Middle Channel	915.300MHz
TM3	High Channel	927.700MHz

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.0	Shielded	Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Adapter	/	EE5020-P17	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2020-04-28	2021-04-27
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2020-04-28	2021-04-27
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
SEMT-1042	Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2019-05-05	2021-05-04
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2020-04-28	2021-04-27
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2020-04-28	2021-04-27
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2020-04-28	2021-04-27
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2019-05-05	2021-05-04
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2020-04-28	2021-04-27
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2020-04-28	2021-04-27
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2020-04-28	2021-04-27
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	2020-03-17	2021-03-16
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	2020-03-17	2021-03-16
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	2020-03-17	2021-03-16
SEMT-C004	Cable	Zheng DI	2M0RFC	/	2020-03-17	2021-03-16
SEMT-C005	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16
SEMT-C006	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	Compliant
§15.209(a)(f)	Radiated Spurious Emissions	Compliant
§15.249(a)	Field Strength of Emissions	Compliant
§15.249(d)	Out of Band Emission	Compliant
§15.215(c)	Emission Bandwidth	Compliant

N/A: Not applicable

3. Antenna Requirements

3.1 Standard Applicable

According to FCC Part 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has two External antennas, fulfill the requirement of this section.

4. Radiated Emissions

4.1 Standard Applicable

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of Harmonics (micro-volts/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 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.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

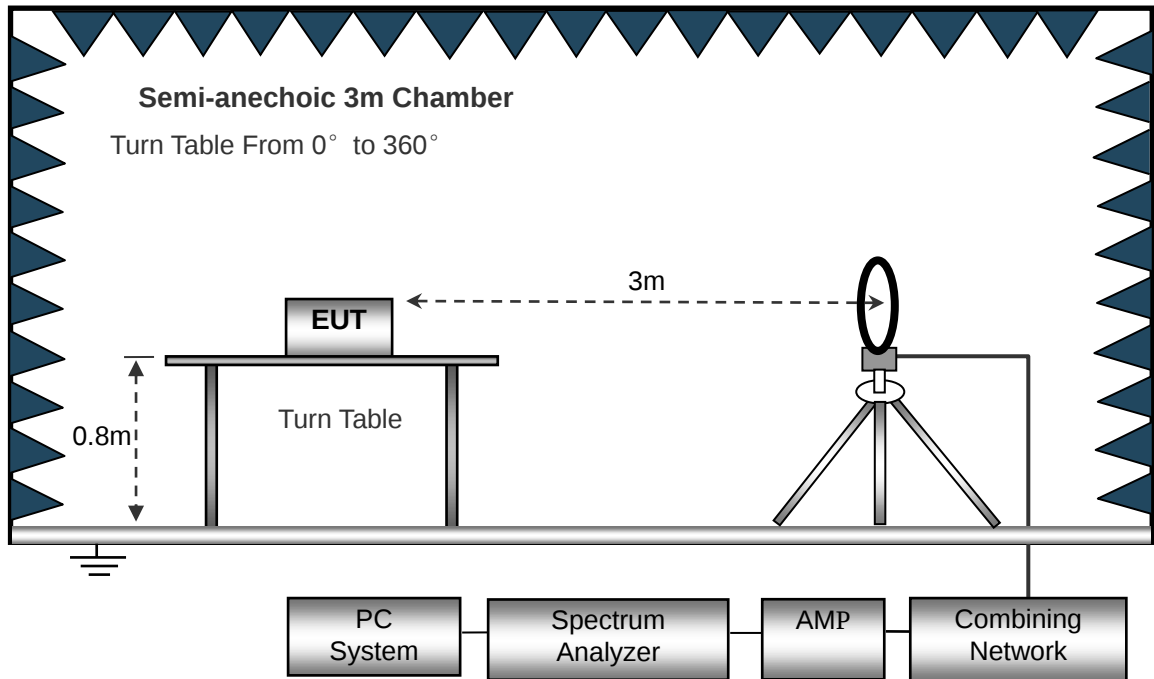
4.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.249(a) and FCC Part 15.209 Limit.

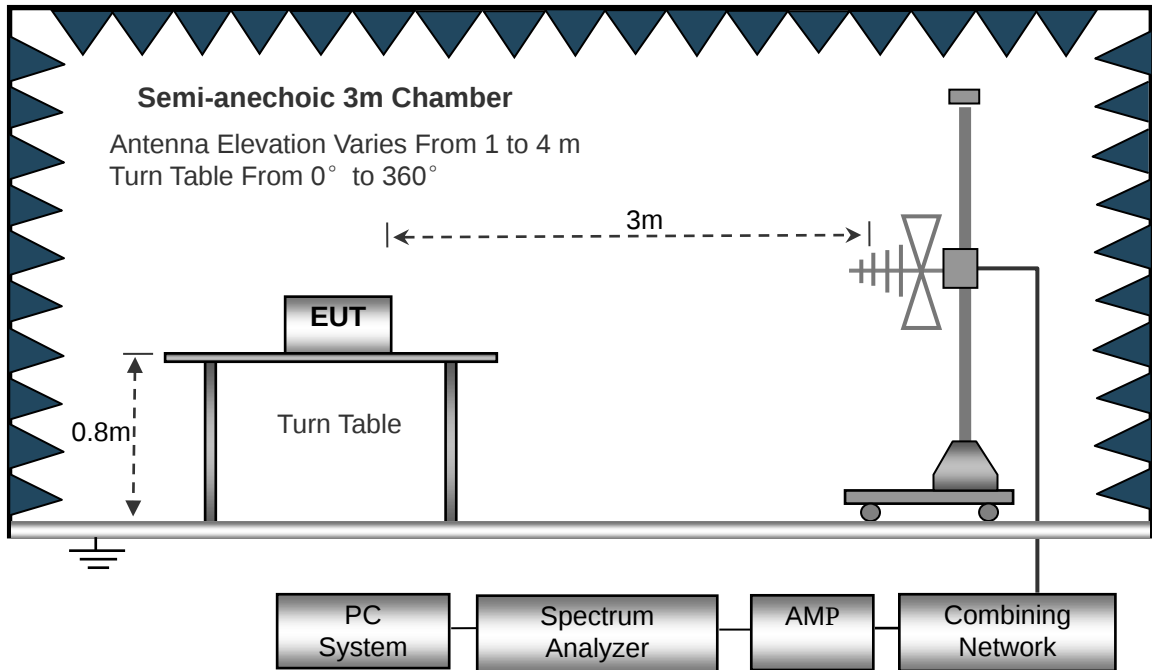
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

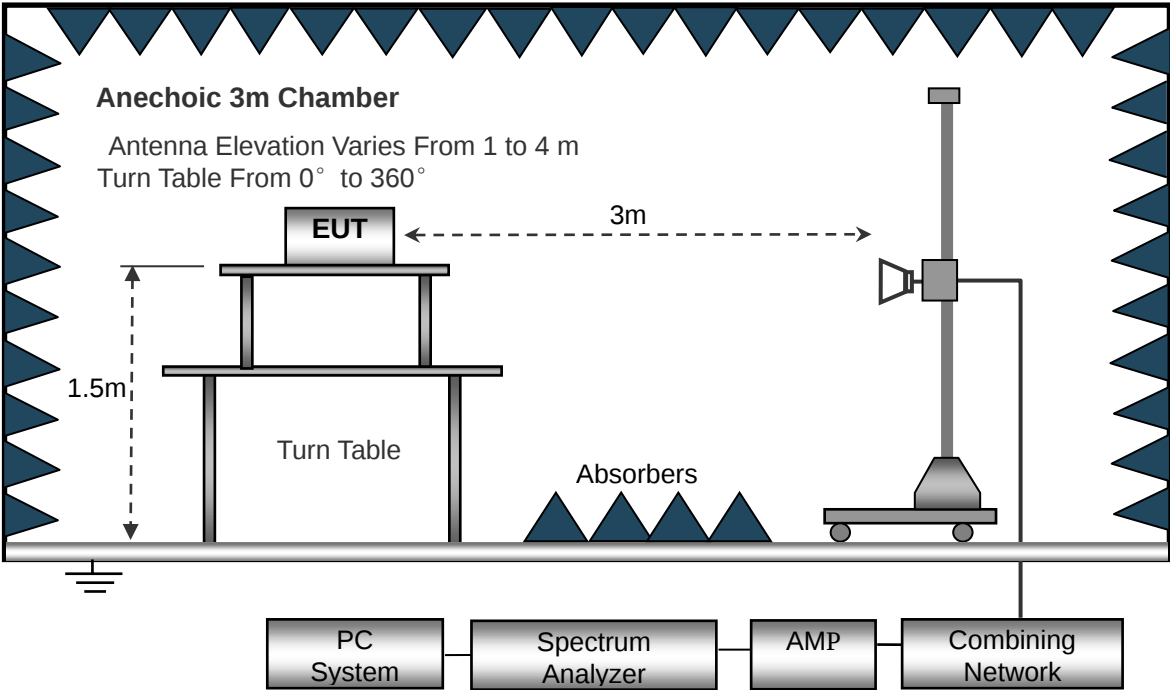
The test setup for emission measurement below 30MHz..



The test setup for emission measurement from 30 MHz to 1 GHz..



The test setup for emission measurement above 1 GHz..



Frequency :9kHz-30MHz
RBW=10KHz,
VBW =30KHz
Sweep time= Auto
Trace = max hold
Detector function = peak

Frequency :30MHz-1GHz
RBW=120KHz,
VBW=300KHz
Sweep time= Auto
Trace = max hold
Detector function = peak, QP

Frequency :Above 1GHz
RBW=1MHz,
VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto
Trace = max hold
Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit. The equation for margin calculation is as follows:

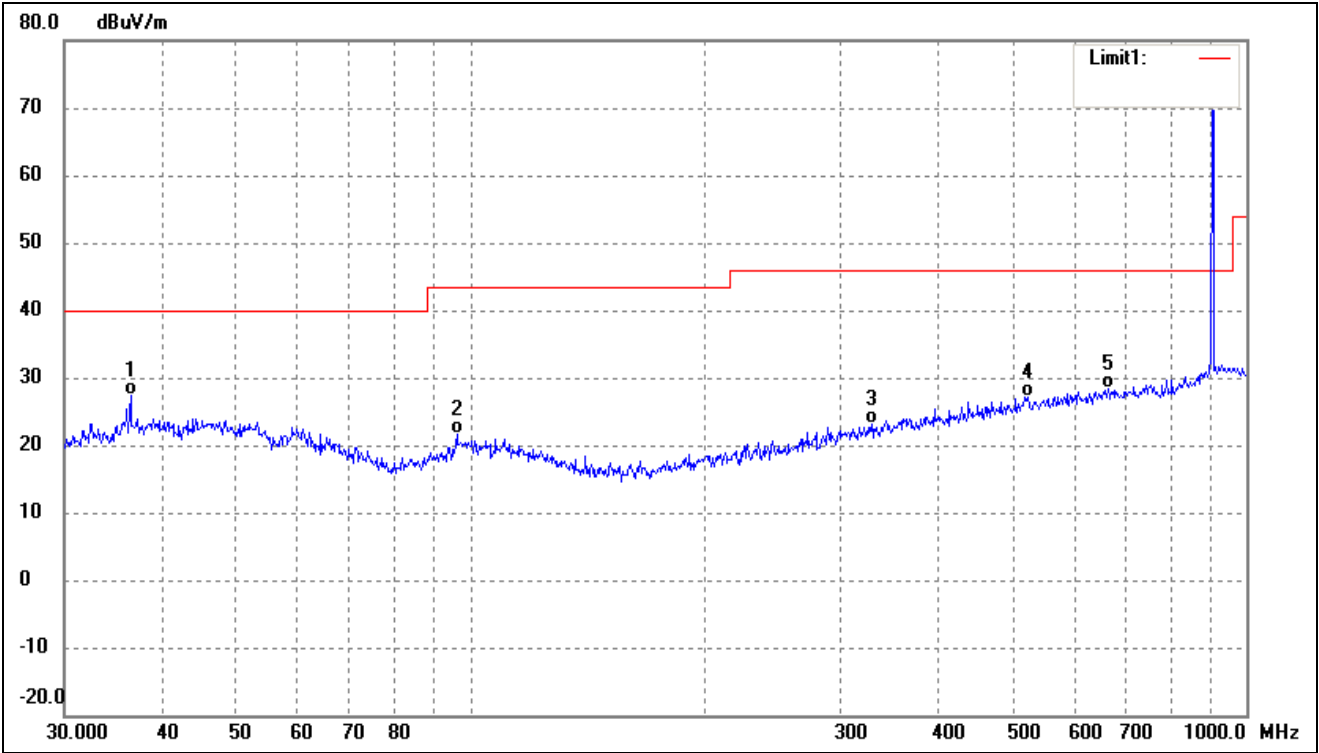
Margin = Corr. Ampl. – FCC Part 15C Limit

4.4 Summary of Test Results/Plots

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

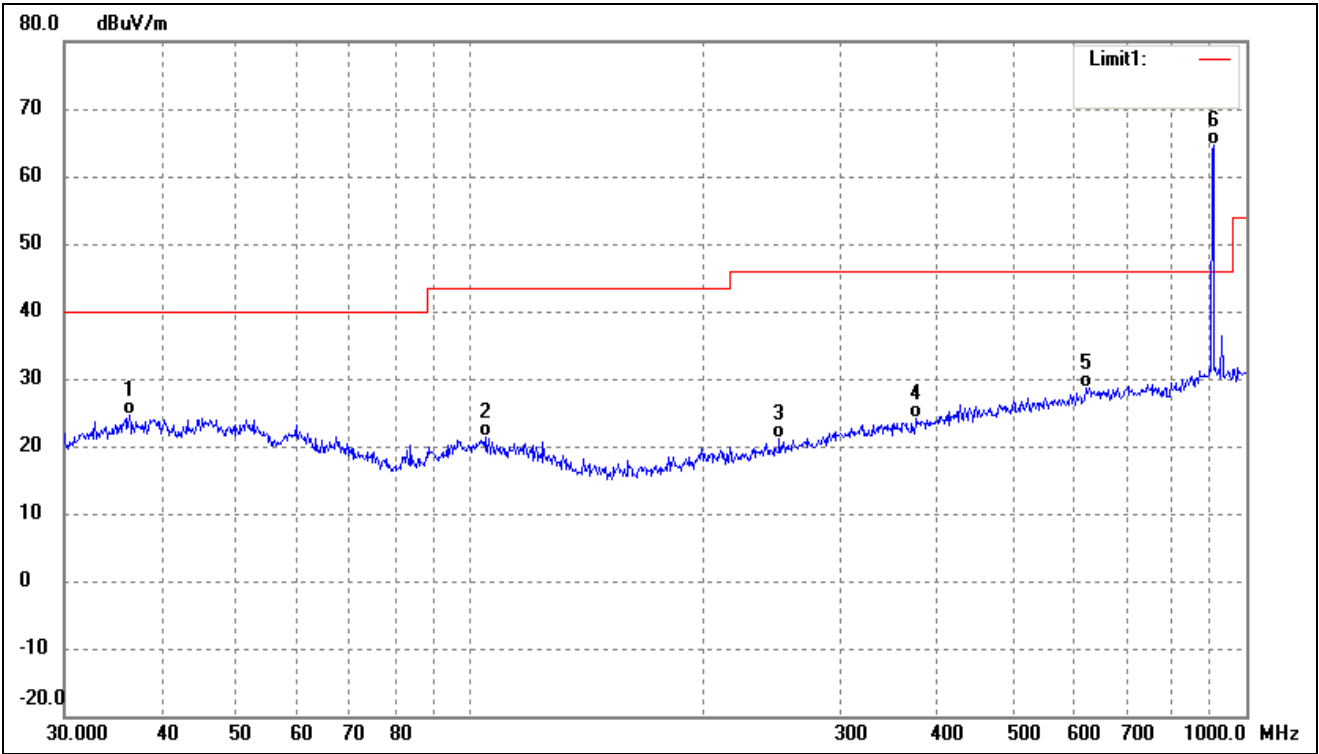
- Spurious Emissions Below 1GHz
- Left Antenna

Test Channel	Low	Polarity:	Horizontal
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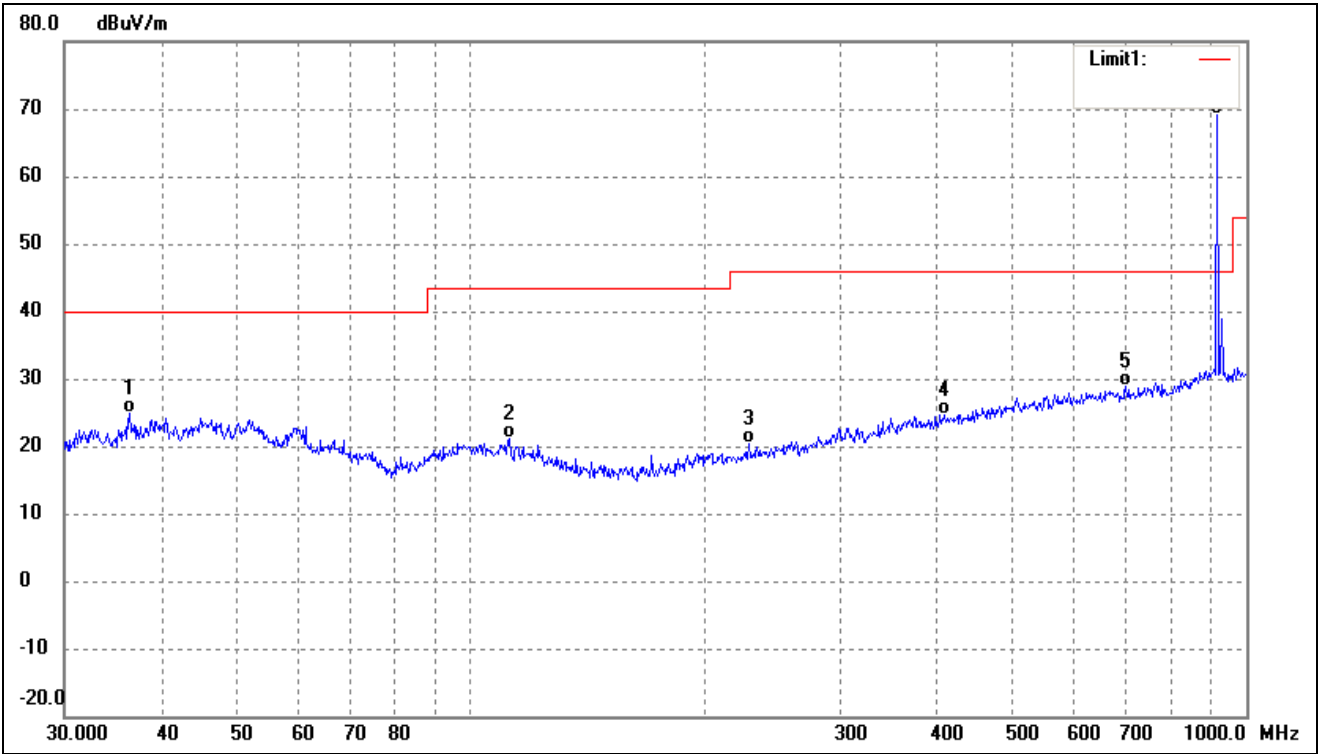
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.5092	40.76	-13.31	27.45	40.00	-12.55	-	-	QP
2	96.0986	35.57	-13.96	21.61	43.50	-21.89	-	-	QP
3	329.0390	31.79	-8.72	23.07	46.00	-22.93	-	-	QP
4	522.7180	31.26	-4.16	27.10	46.00	-18.90	-	-	QP
5	663.4729	30.48	-2.10	28.38	46.00	-17.62	-	-	QP
6	903.3094	68.04	1.60	69.64	94.00	-24.36	-	-	QP

Test Channel	Low	Polarity:	Vertical
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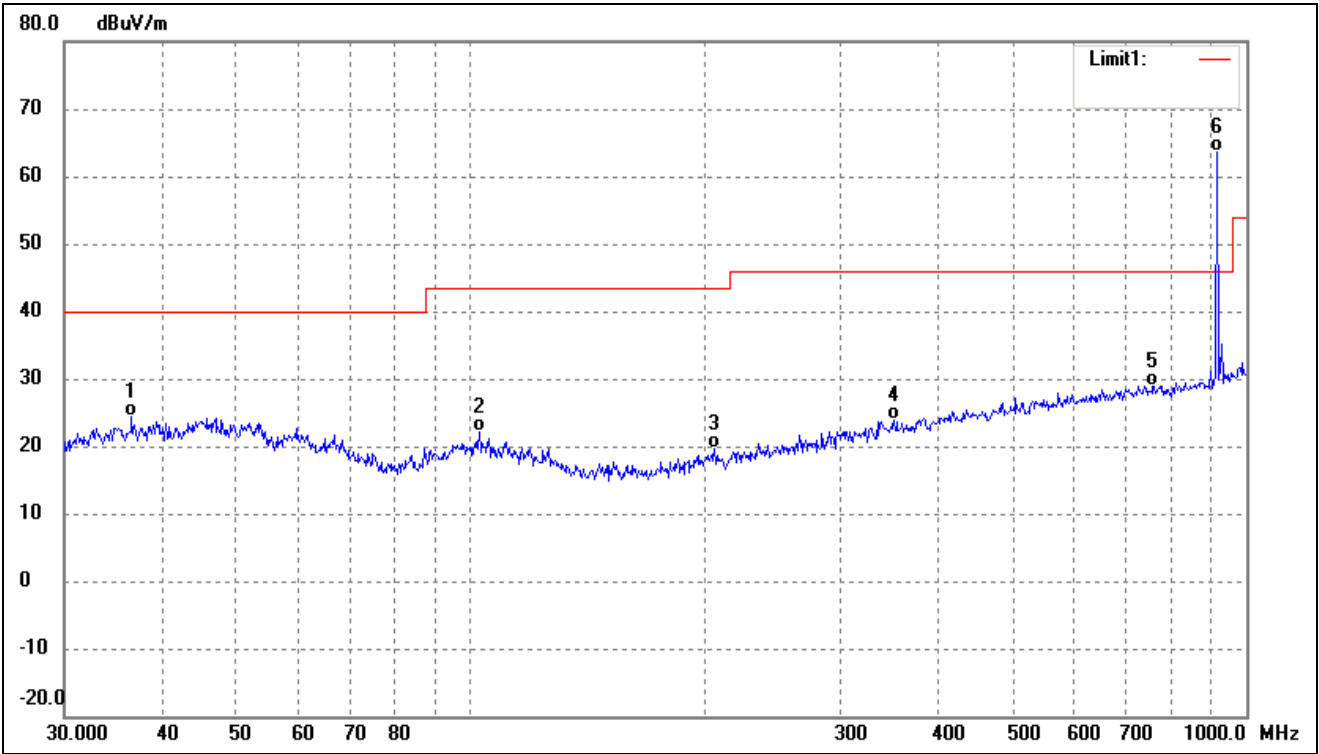
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	36.3814	37.96	-13.35	24.61	40.00	-15.39	-	-	QP
2	104.5361	34.59	-13.32	21.27	43.50	-22.23	-	-	QP
3	250.3012	32.03	-10.92	21.11	46.00	-24.89	-	-	QP
4	375.9385	31.34	-7.16	24.18	46.00	-21.82	-	-	QP
5	620.7096	30.75	-2.11	28.64	46.00	-17.36	-	-	QP
6	906.4824	62.94	1.62	64.56	94.00	-29.44	-	-	QP

Test Channel	Middle	Polarity:	Horizontal
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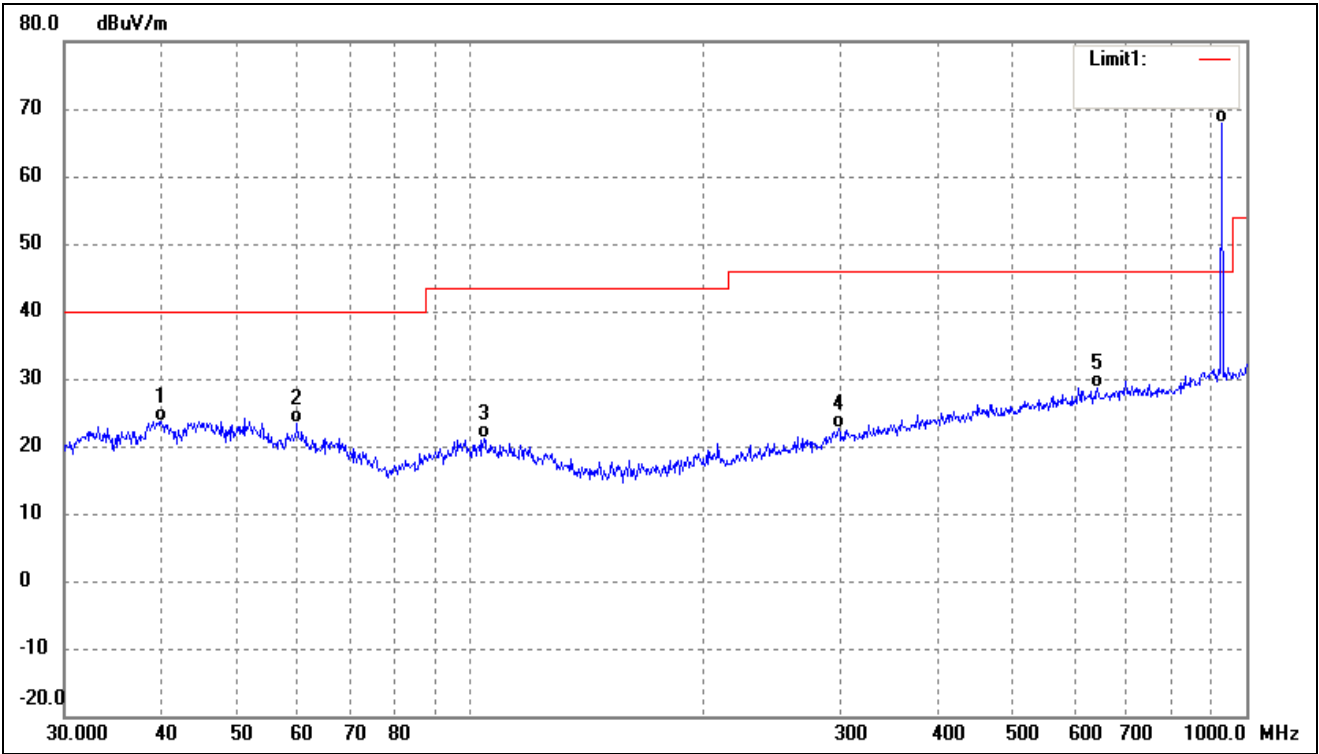
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.3814	38.25	-13.35	24.90	40.00	-15.10	-	-	QP
2	112.5244	34.60	-13.56	21.04	43.50	-22.46	-	-	QP
3	228.4904	32.28	-11.96	20.32	46.00	-25.68	-	-	QP
4	408.9460	30.85	-6.26	24.59	46.00	-21.41	-	-	QP
5	699.3046	30.79	-1.86	28.93	46.00	-17.07	-	-	QP
6	916.0687	67.50	1.75	69.25	94.00	-24.75	-	-	QP

Test Channel	Middle	Polarity:	Vertical
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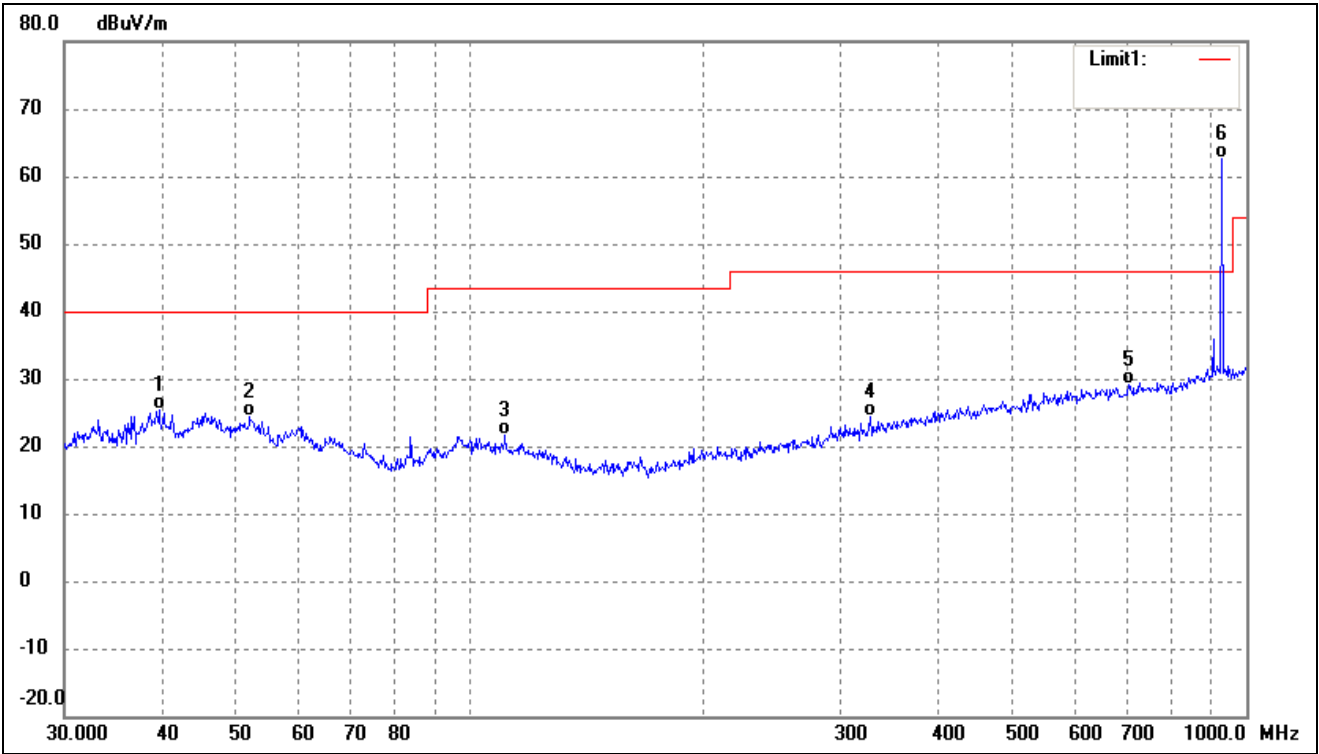
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	36.6375	37.68	-13.26	24.42	40.00	-15.58	-	-	QP
2	102.7192	35.49	-13.32	22.17	43.50	-21.33	-	-	QP
3	206.3976	31.90	-12.35	19.55	43.50	-23.95	-	-	QP
4	351.7079	31.39	-7.41	23.98	46.00	-22.02	-	-	QP
5	758.0408	30.22	-1.24	28.98	46.00	-17.02	-	-	QP
6	916.0687	61.95	1.75	63.70	94.00	-30.30	-	-	QP

Test Channel	High	Polarity:	Horizontal
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	39.9942	35.72	-11.98	23.74	40.00	-16.26	-	-	QP
2	59.8588	36.27	-12.99	23.28	40.00	-16.72	-	-	QP
3	104.1701	34.49	-13.31	21.18	43.50	-22.32	-	-	QP
4	298.2681	31.78	-9.05	22.73	46.00	-23.27	-	-	QP
5	642.8613	30.95	-2.31	28.64	46.00	-17.36	-	-	QP
6	929.0082	66.18	1.77	67.95	94.00	-26.05	-	-	QP

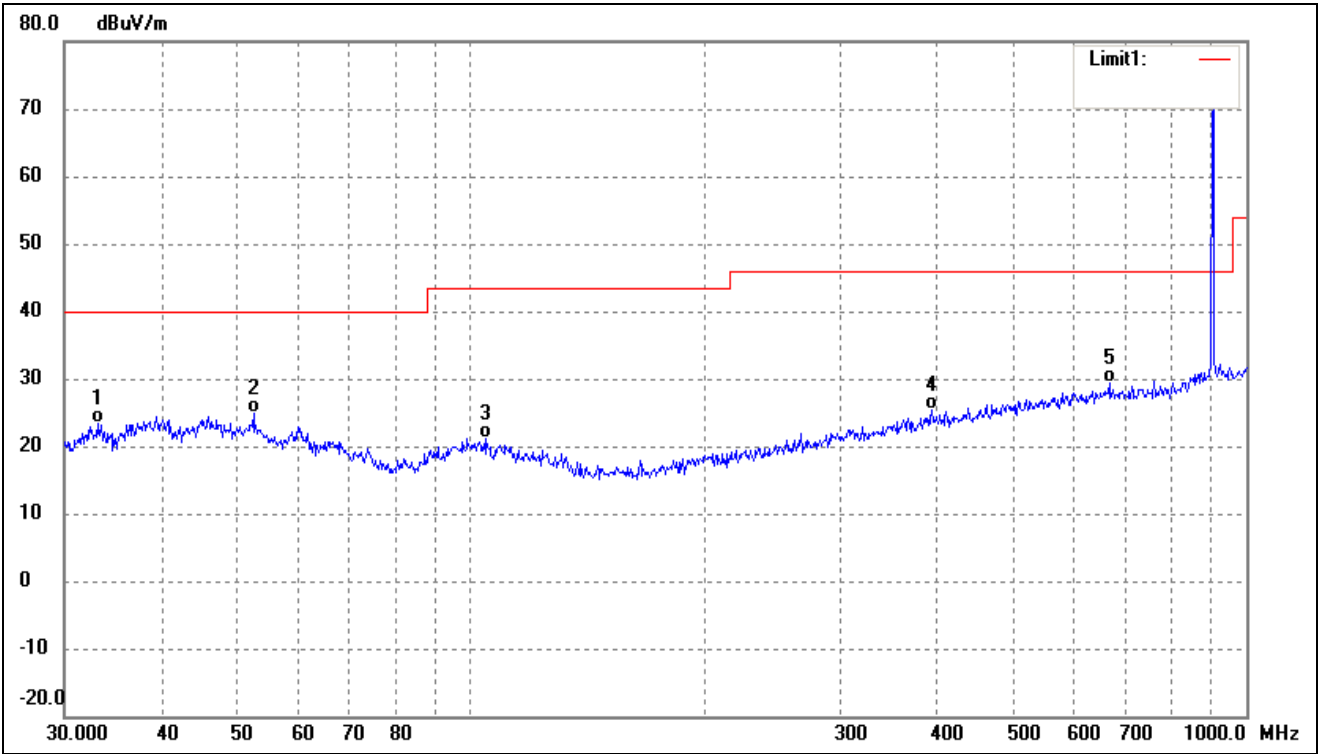
Test Channel	High	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.7147	37.35	-12.09	25.26	40.00	-14.74	-	-	QP
2	52.0251	36.55	-12.10	24.45	40.00	-15.55	-	-	QP
3	110.9571	34.93	-13.41	21.52	43.50	-21.98	-	-	QP
4	327.8873	33.16	-8.78	24.38	46.00	-21.62	-	-	QP
5	704.2261	30.75	-1.71	29.04	46.00	-16.96	-	-	QP
6	929.0082	60.98	1.77	62.75	94.00	-31.25	-	-	QP

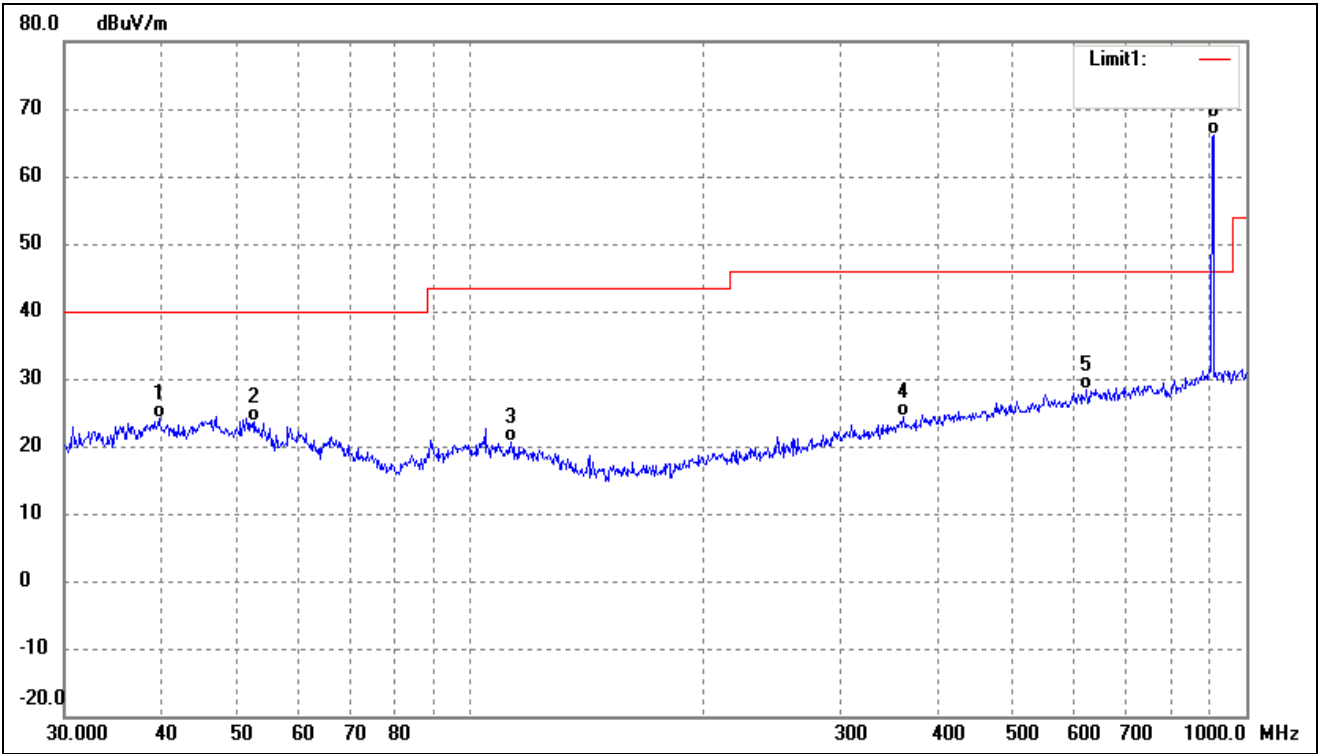
➤ Right Antenna

Test Channel	Low	Polarity:	Horizontal
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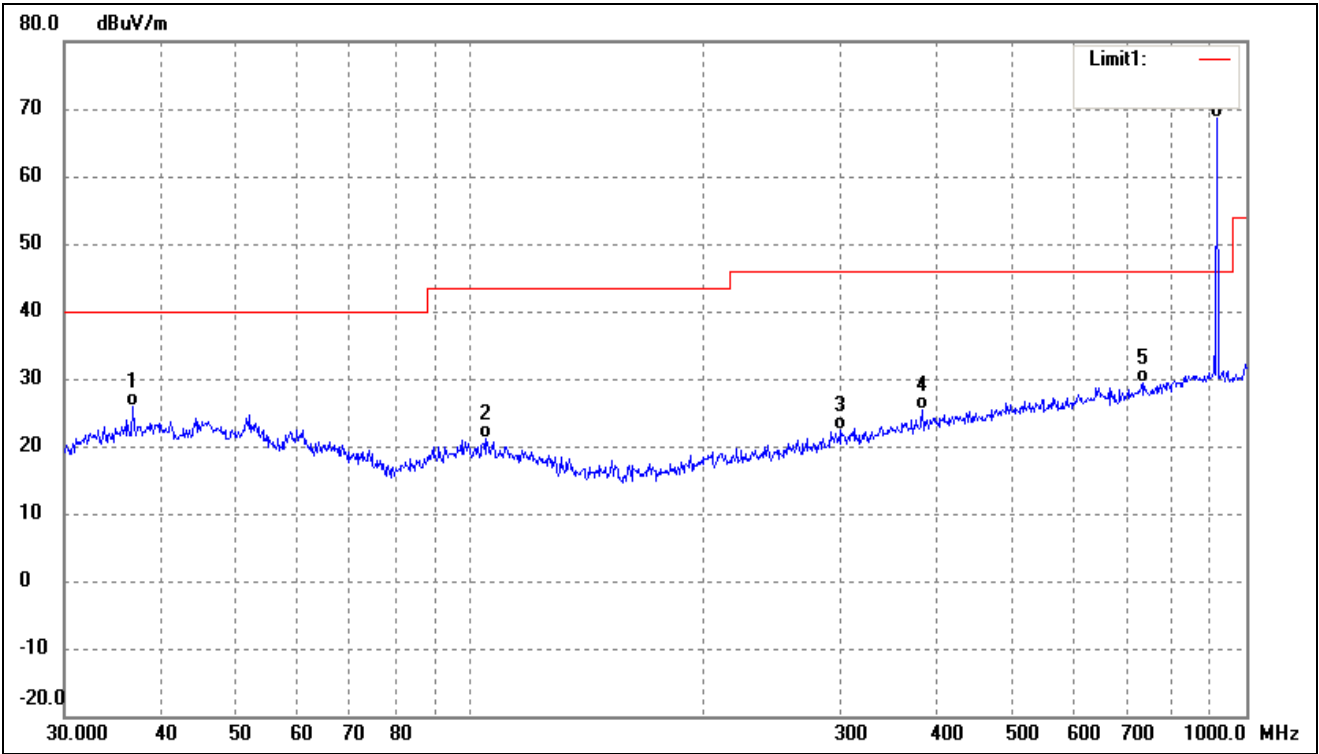
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	33.0950	37.41	-13.98	23.43	40.00	-16.57	-	-	QP
2	52.5753	37.13	-12.25	24.88	40.00	-15.12	-	-	QP
3	104.9033	34.41	-13.32	21.09	43.50	-22.41	-	-	QP
4	393.4724	31.99	-6.65	25.34	46.00	-20.66	-	-	QP
5	665.8035	31.44	-2.05	29.39	46.00	-16.61	-	-	QP
6	906.4824	68.24	1.62	69.86	94.00	-24.14	-	-	QP

Test Channel	Low	Polarity:	Vertical
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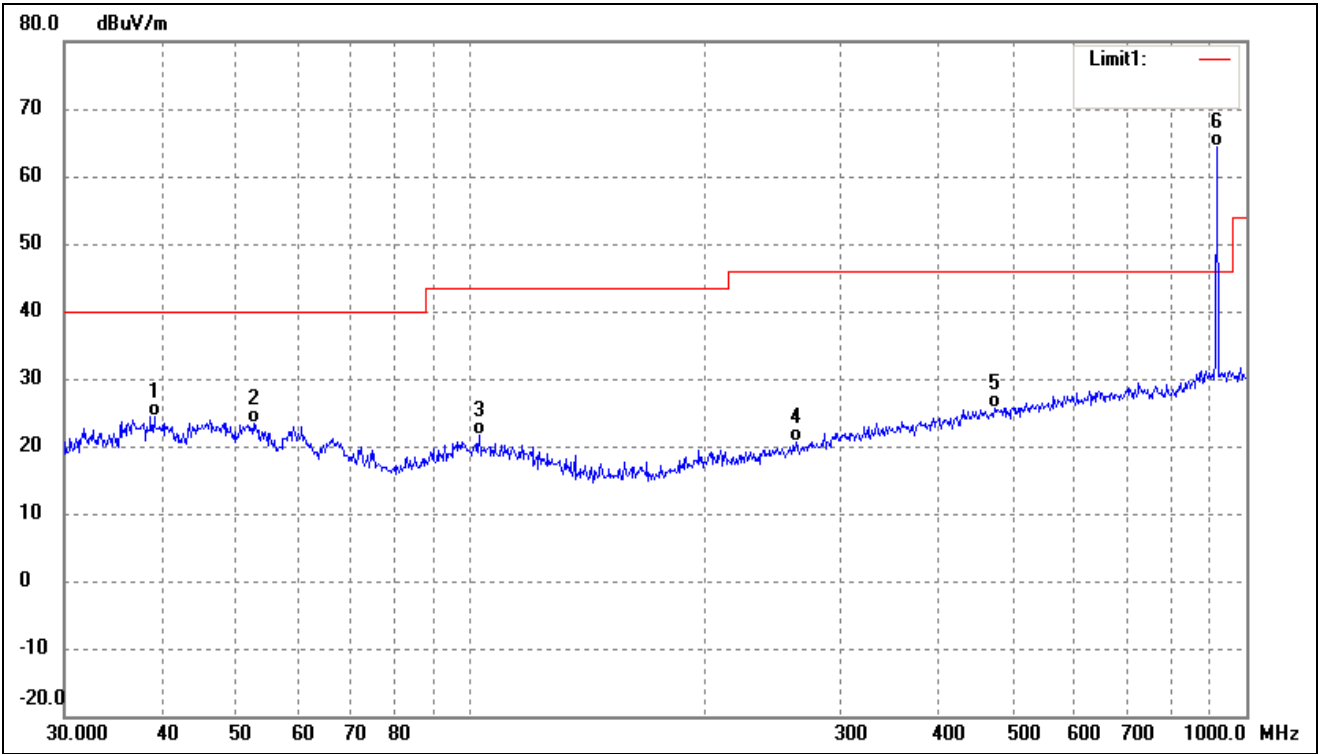
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	39.7147	36.10	-12.09	24.01	40.00	-15.99	-	-	QP
2	52.7600	35.87	-12.31	23.56	40.00	-16.44	-	-	QP
3	112.9196	34.22	-13.60	20.62	43.50	-22.88	-	-	QP
4	361.7139	31.66	-7.32	24.34	46.00	-21.66	-	-	QP
5	622.8900	30.52	-2.14	28.38	46.00	-17.62	-	-	QP
6	906.4824	64.46	1.62	66.08	94.00	-27.92	-	-	QP

Test Channel	Middle	Polarity:	Horizontal
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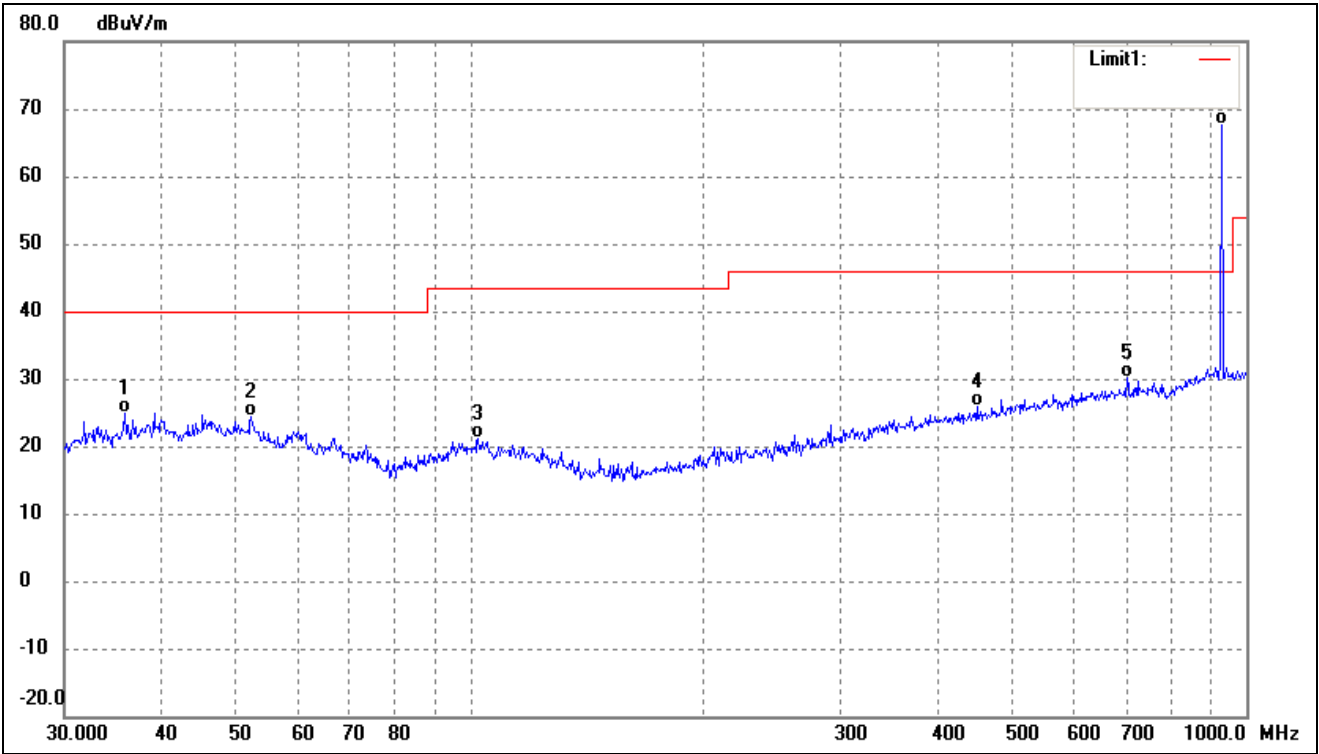
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.7662	39.20	-13.20	26.00	40.00	-14.00	-	-	QP
2	104.9033	34.43	-13.32	21.11	43.50	-22.39	-	-	QP
3	300.3673	31.19	-8.92	22.27	46.00	-23.73	-	-	QP
4	382.5879	32.26	-6.96	25.30	46.00	-20.70	-	-	QP
5	734.4913	30.47	-1.10	29.37	46.00	-16.63	-	-	QP
6	916.0687	66.95	1.75	68.70	94.00	-25.30	-	-	QP

Test Channel	Middle	Polarity:	Vertical
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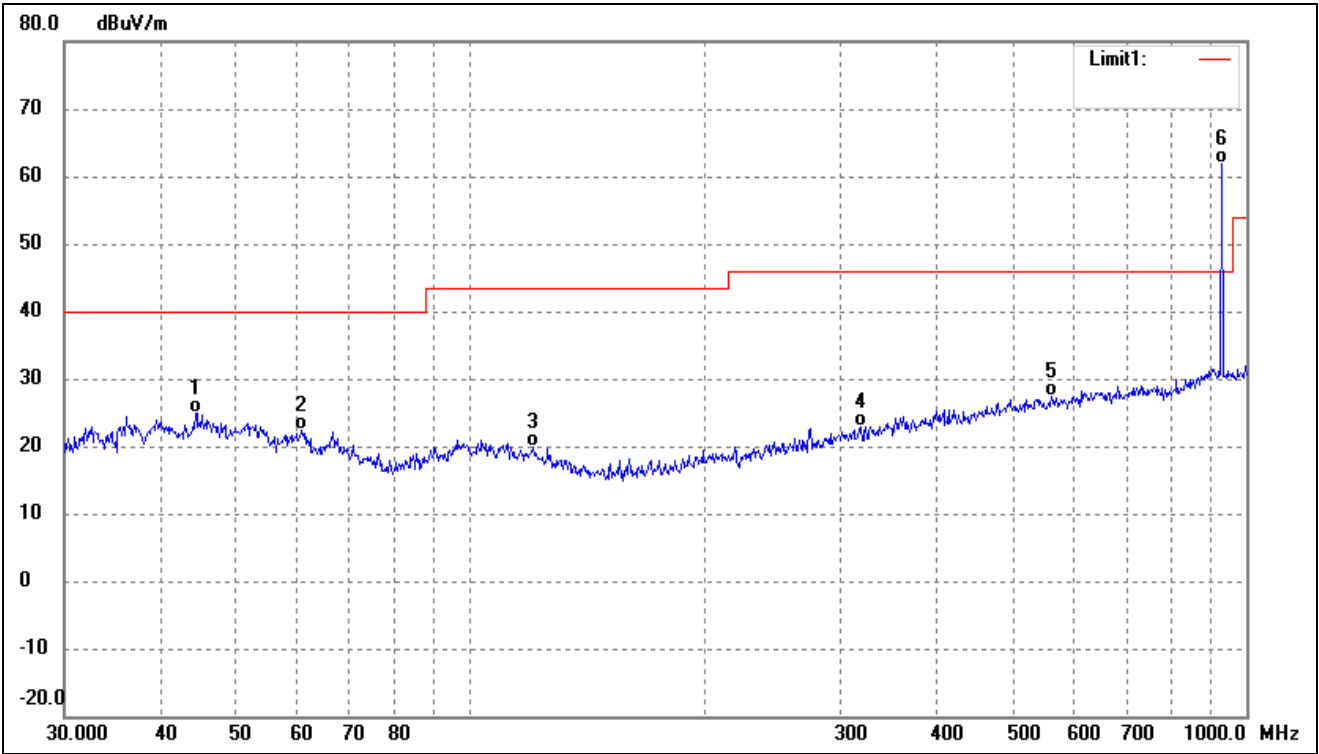
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	39.1616	36.72	-12.30	24.42	40.00	-15.58	-	-	QP
2	52.5753	35.66	-12.25	23.41	40.00	-16.59	-	-	QP
3	102.7192	34.86	-13.32	21.54	43.50	-21.96	-	-	QP
4	262.8955	31.33	-10.82	20.51	46.00	-25.49	-	-	QP
5	473.8347	30.40	-4.85	25.55	46.00	-20.45	-	-	QP
6	916.0687	62.56	1.75	64.31	94.00	-29.69	-	-	QP

Test Channel	High	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	35.8747	38.52	-13.54	24.98	40.00	-15.02	-	-	QP
2	52.2079	36.56	-12.15	24.41	40.00	-15.59	-	-	QP
3	102.3597	34.53	-13.31	21.22	43.50	-22.28	-	-	QP
4	449.5558	31.57	-5.59	25.98	46.00	-20.02	-	-	QP
5	701.7610	32.05	-1.81	30.24	46.00	-15.76	-	-	QP
6	929.0082	65.78	1.77	67.55	94.00	-26.45	-	-	QP

Test Channel	High	Polarity:	Vertical
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	44.2752	36.67	-11.83	24.84	40.00	-15.16	-	-	QP
2	60.7044	35.47	-13.12	22.35	40.00	-17.65	-	-	QP
3	120.6991	34.36	-14.50	19.86	43.50	-23.64	-	-	QP
4	318.8170	31.81	-8.96	22.85	46.00	-23.15	-	-	QP
5	560.6928	30.58	-3.27	27.31	46.00	-18.69	-	-	QP
6	929.0082	60.13	1.77	61.90	94.00	-32.10	-	-	QP

Remark: ‘-’Means’ the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emissions Above 1GHz
- Right antenna(worst case)

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-903.400MHz							
1896.706	40.79	-8.58	32.21	54.00	-21.79	H	AV
2387.811	53.56	-9.50	44.06	74.00	-29.94	H	PK
3614.099	56.18	-7.09	49.09	74.00	-24.91	H	PK
3614.099	44.04	-7.09	36.95	54.00	-17.05	H	AV
6081.350	52.05	-2.88	49.17	74.00	-24.83	H	PK
6652.732	39.76	-2.27	37.49	54.00	-16.51	H	AV
1896.706	40.55	-8.58	31.97	54.00	-22.03	V	AV
1931.968	52.82	-9.11	43.71	74.00	-30.29	V	PK
3614.099	58.30	-7.09	51.21	74.00	-22.79	V	PK
3614.099	45.92	-7.09	38.83	54.00	-15.17	V	AV
7852.356	51.45	-0.98	50.47	74.00	-23.53	V	PK
8165.824	39.14	-0.44	38.70	54.00	-15.30	V	AV
Middle Channel-915.300MHz							
1892.344	53.18	-8.63	44.55	74.00	-29.45	H	PK
1896.706	40.56	-8.58	31.98	54.00	-22.02	H	AV
3664.376	57.36	-7.05	50.31	74.00	-23.69	H	PK
3664.376	45.47	-7.05	38.42	54.00	-15.58	H	AV
6652.732	39.75	-2.27	37.48	54.00	-16.52	H	AV
6698.846	52.09	-2.28	49.81	74.00	-24.19	H	PK
1896.706	53.17	-8.58	44.59	74.00	-29.41	V	PK
1909.853	40.73	-8.72	32.01	54.00	-21.99	V	AV
3664.376	58.21	-7.05	51.16	74.00	-22.84	V	PK
3664.376	45.21	-7.05	38.16	54.00	-15.84	V	AV
6870.684	51.91	-2.27	49.64	74.00	-24.36	V	PK
8053.784	38.83	-0.49	38.34	54.00	-15.66	V	AV
High Channel-927.700MHz							
1874.995	52.47	-8.77	43.70	74.00	-30.30	H	PK
1874.995	40.61	-8.77	31.84	54.00	-22.16	H	AV
3715.352	55.70	-7.00	48.70	74.00	-25.30	H	PK
3715.352	43.11	-7.00	36.11	54.00	-17.89	H	AV
7227.698	51.83	-2.20	49.63	74.00	-24.37	H	PK
7906.786	39.16	-0.81	38.35	54.00	-15.65	H	AV
1853.532	52.20	-8.97	43.23	74.00	-30.77	V	PK
1896.706	40.54	-8.58	31.96	54.00	-22.04	V	AV
3715.352	56.96	-7.00	49.96	74.00	-24.04	V	PK

3715.352	42.98	-7.00	35.98	54.00	-18.02	V	AV
6412.096	51.83	-2.41	49.42	74.00	-24.58	V	PK
6652.732	39.76	-2.27	37.49	54.00	-16.51	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz..

5. Out of Band Emissions

5.1 Standard Applicable

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

As the radiation test, set the Lowest and Highest Transmitting Channel, observed the outside band of 902MHz to 928MHz, than mark the higher-level emission for comparing with the FCC rules.

5.3 Summary of Test Results/Plots

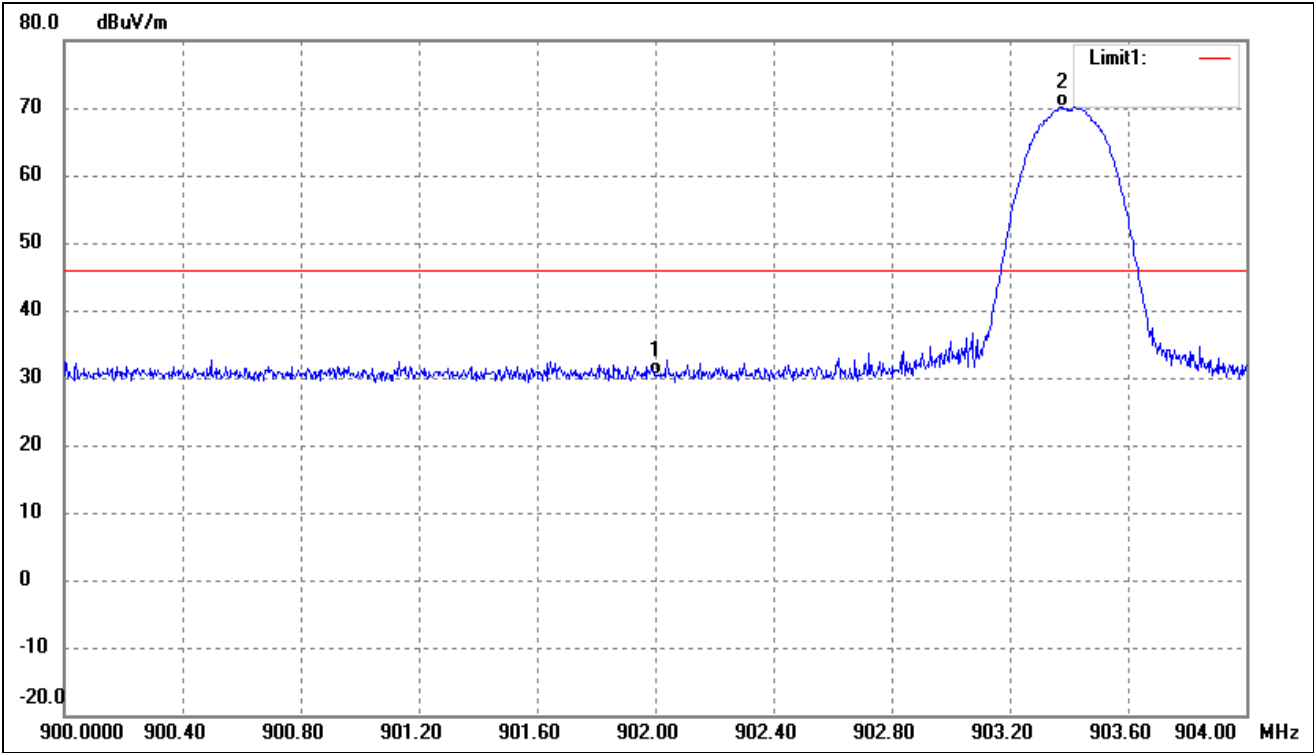
Test mode	Frequency	Limit	Result
	MHz	dBuV / dBc	
Lowest	902.00	<46 dBuV	Pass
Highest	928.00	<46 dBuV	Pass

The edge emissions are below the FCC 15.209 Limits or complies with the 15.249 requirements.

Please refer to the test plots as below.

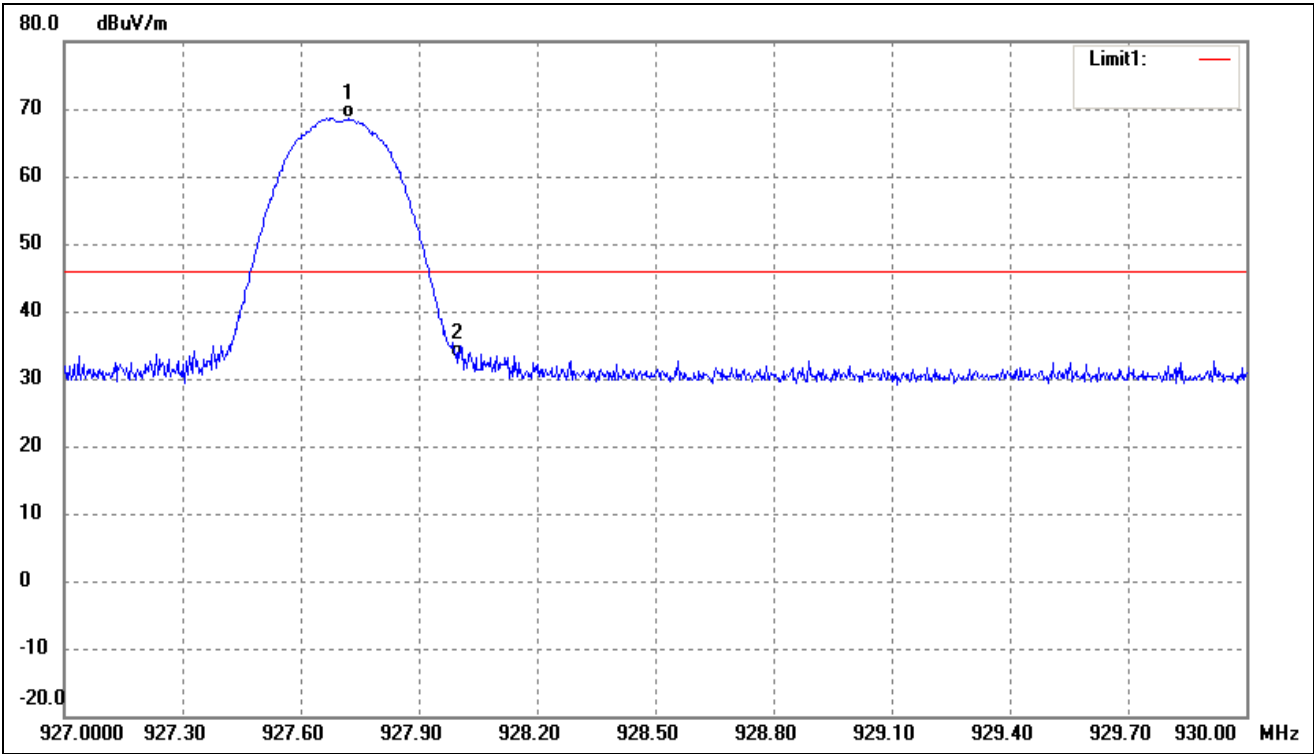
➤ Left

Test Channel	Low	Polarity:	Horizontal (worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	28.92	1.57	30.49	46.00	-15.51	Peak Detector
2	903.3760	68.51	1.60	70.11	/	/	Fundamental

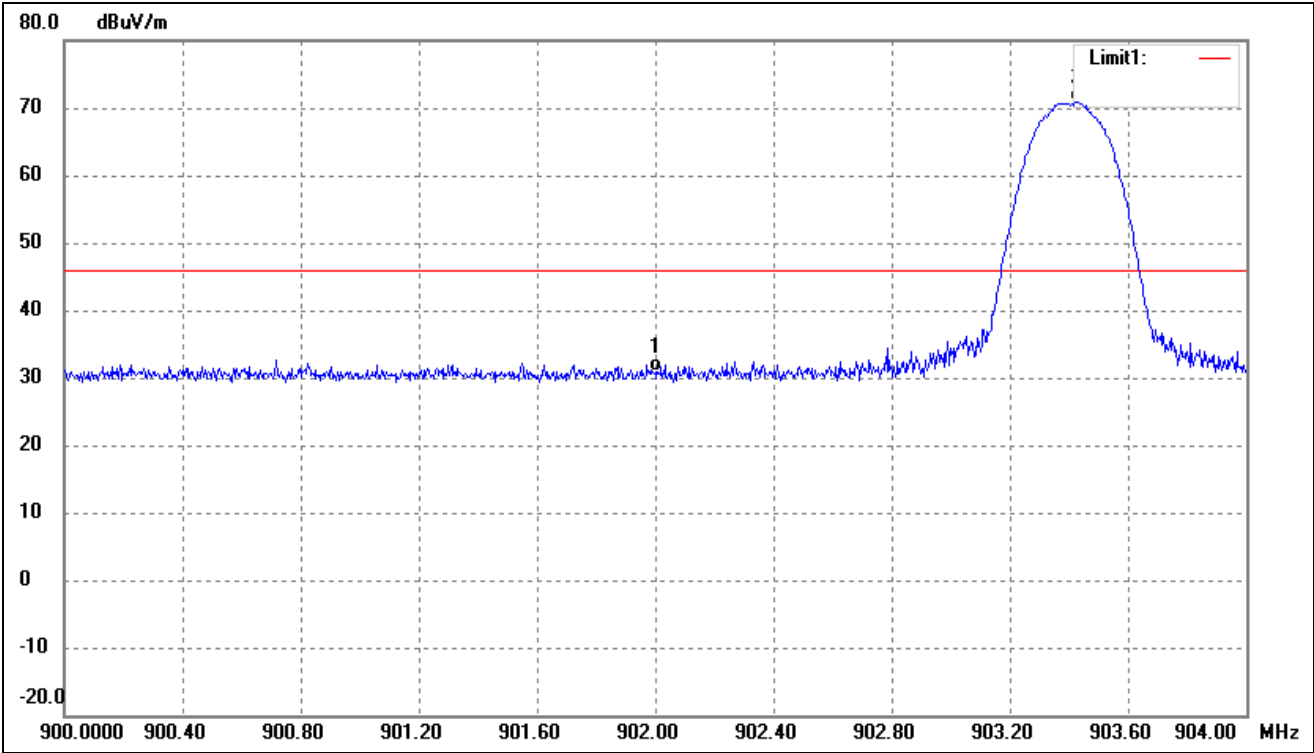
Test Channel	High	Polarity:	Vertical(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	927.7200	66.76	1.80	68.56	/	/	Fundamental
2	928.0000	31.22	1.80	33.02	46.00	-12.98	Peak Detector

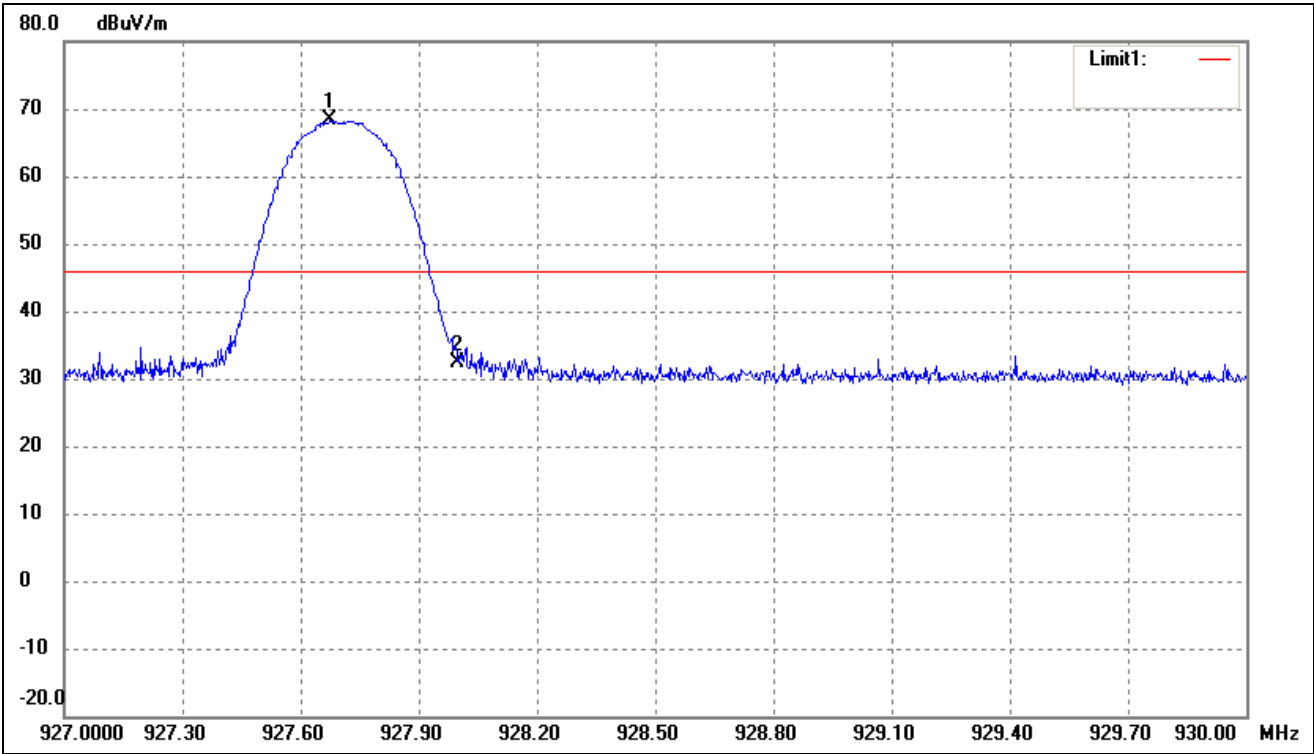
➤ Right

Test Channel	Low	Polarity:	Horizontal (worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	29.21	1.57	30.78	46.00	-15.22	Peak Detector
2	903.4240	69.28	1.60	70.88	/	/	Fundamental

Test Channel	High	Polarity:	Vertical(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	927.6750	66.45	1.81	68.26	/	/	Fundamental
2	928.0000	30.63	1.80	32.43	46.00	-13.57	Peak Detector

6. Emission Bandwidth

6.1 Standard Applicable

According to 15.215(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. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.2 Test Procedure

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Set span = 1MHz, centered on a transmitting channel

RBW $\geq 1\%$ 20dB Bandwidth, VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down and 99% bandwidth of the emission.

6.3 Summary of Test Results/Plots

Left antenna

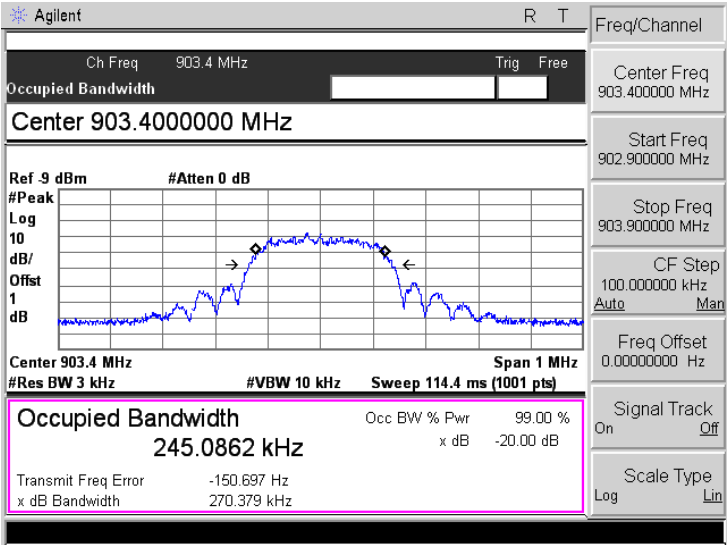
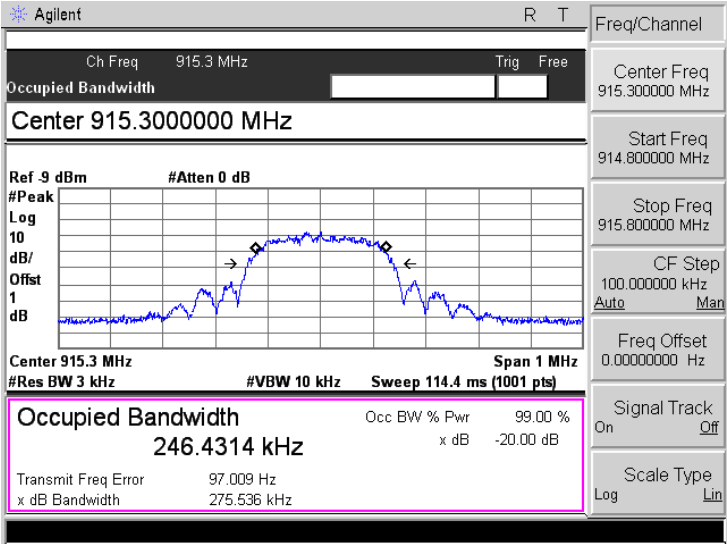
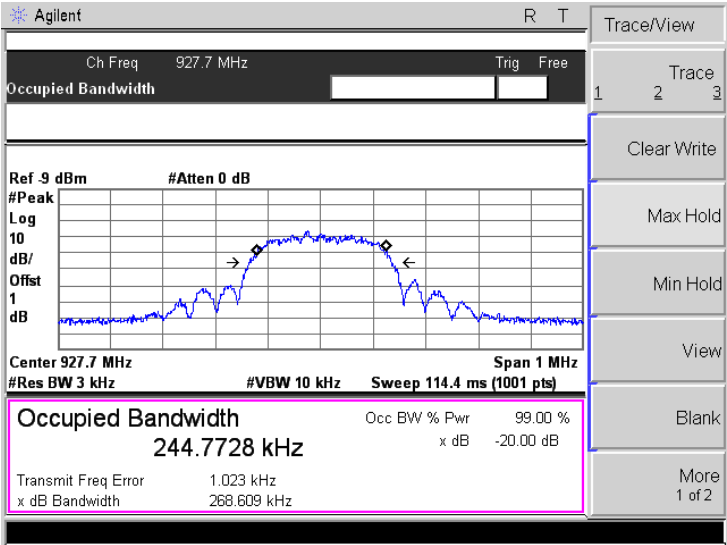
Channel	Frequency MHz	20dB Bandwidth kHz
Low Channel	903.400	270.379
Middle Channel	915.300	275.536
High Channel	927.700	268.609

Right antenna

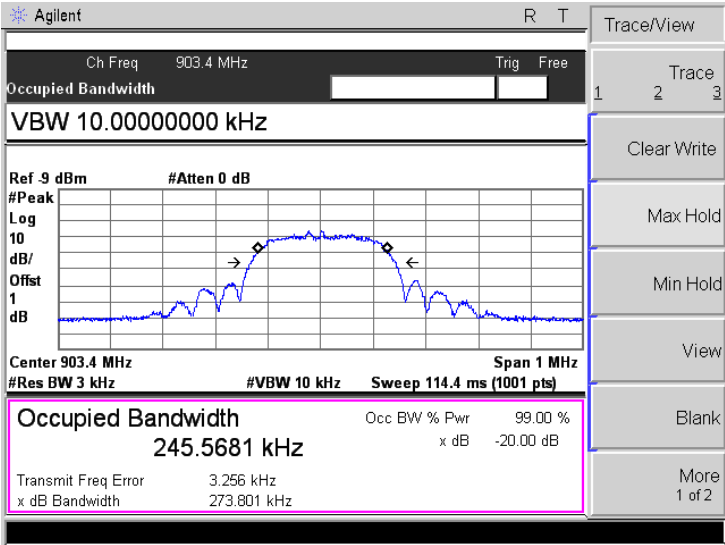
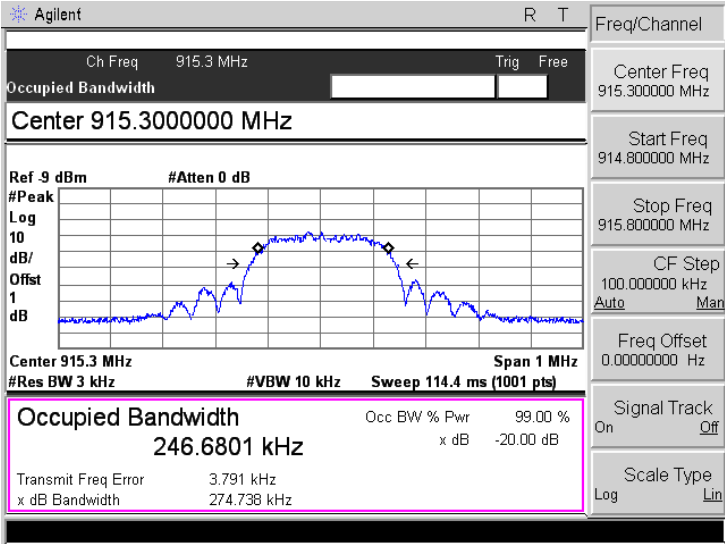
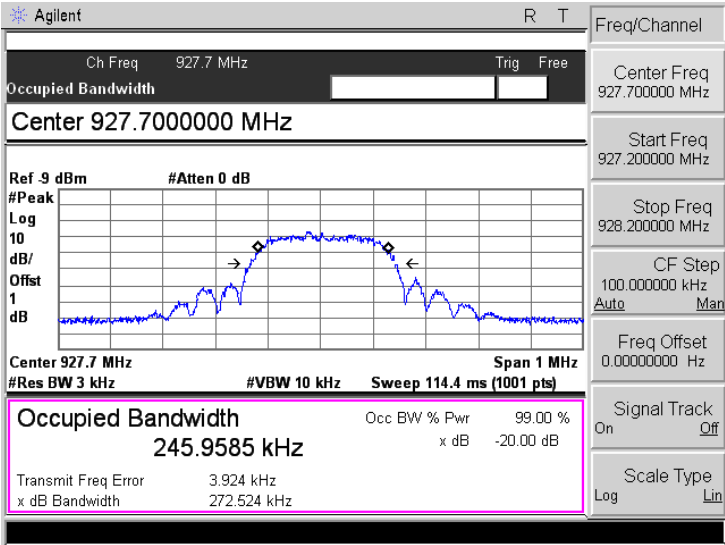
Channel	Frequency MHz	20dB Bandwidth kHz
Low Channel	903.400	273.801
Middle Channel	915.300	274.738
High Channel	927.700	272.524

Please refer to the following test plots

Left antenna

Low Channel	 Agilent R T Ch Freq 903.4 MHz Trig Free Occupied Bandwidth Center 903.400000 MHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/Offset 1 dB Center 903.4 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 245.0862 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error -150.697 Hz x dB Bandwidth 270.379 kHz Freq/Channel Center Freq 903.400000 MHz Start Freq 902.900000 MHz Stop Freq 903.900000 MHz CF Step 100.000000 kHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Scale Type Log Lin
Middle Channel	 Agilent R T Ch Freq 915.3 MHz Trig Free Occupied Bandwidth Center 915.300000 MHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/Offset 1 dB Center 915.3 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 246.4314 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error 97.009 Hz x dB Bandwidth 275.536 kHz Freq/Channel Center Freq 915.300000 MHz Start Freq 914.800000 MHz Stop Freq 915.800000 MHz CF Step 100.000000 kHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Scale Type Log Lin
High Channel	 Agilent R T Ch Freq 927.7 MHz Trig Free Occupied Bandwidth Center 927.7 MHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/Offset 1 dB Center 927.7 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 244.7728 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error 1.023 kHz x dB Bandwidth 268.609 kHz Trace/View Trace 1 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2

Right antenna

Low Channel	 Agilent R T Ch Freq 903.4 MHz Trig Free Occupied Bandwidth VBW 10.0000000 kHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/ Offst 1 dB Center 903.4 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 245.5681 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error 3.256 kHz x dB Bandwidth 273.801 kHz Trace/View 1 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2
Middle Channel	 Agilent R T Ch Freq 915.3 MHz Trig Free Occupied Bandwidth Center 915.3000000 MHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/ Offst 1 dB Center 915.3 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 246.6801 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error 3.791 kHz x dB Bandwidth 274.738 kHz Freq/Channel Center Freq 915.300000 MHz Start Freq 914.800000 MHz Stop Freq 915.800000 MHz CF Step 100.000000 kHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Scale Type Log Lin
High Channel	 Agilent R T Ch Freq 927.7 MHz Trig Free Occupied Bandwidth Center 927.7000000 MHz Ref 9 dBm #Atten 0 dB #Peak Log 10 dB/ Offst 1 dB Center 927.7 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 114.4 ms (1001 pts) Occupied Bandwidth 245.9585 kHz Occ BW % Pwr 99.00 % x dB -20.00 dB Transmit Freq Error 3.924 kHz x dB Bandwidth 272.524 kHz Freq/Channel Center Freq 927.700000 MHz Start Freq 927.200000 MHz Stop Freq 928.200000 MHz CF Step 100.000000 kHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Scale Type Log Lin

7. Conducted Emissions

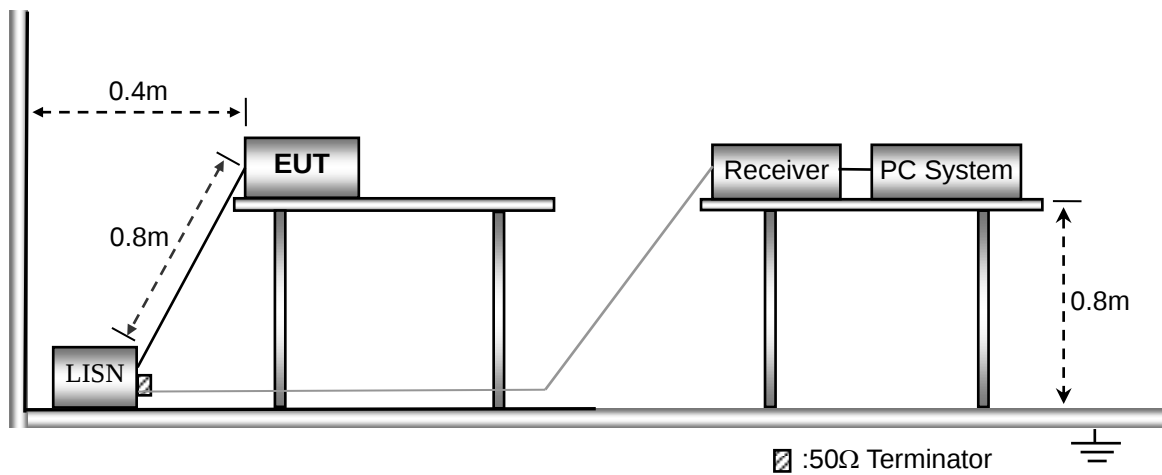
7.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

7.2 Basic Test Setup Block Diagram



7.3 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz

Stop Frequency 30 MHz

Sweep Speed Auto

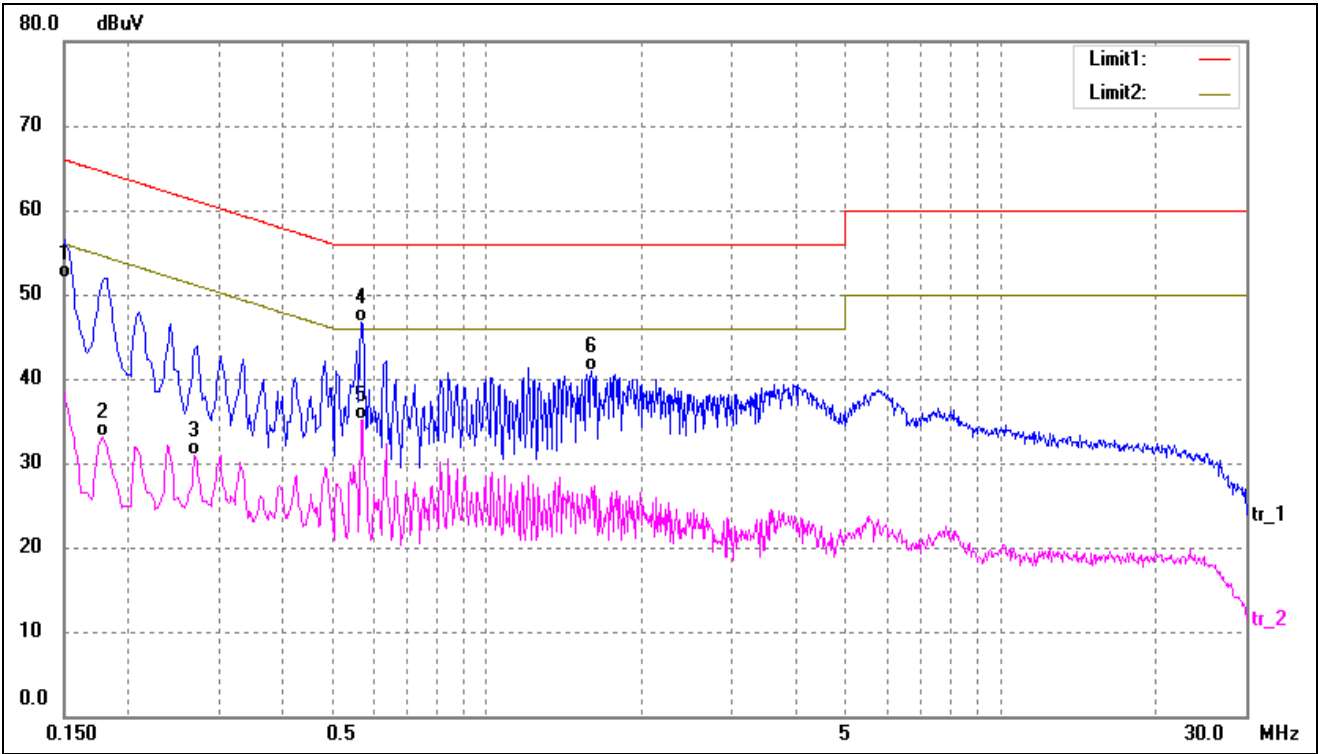
IF Bandwidth..... 10 kHz

Quasi-Peak Adapter Bandwidth 9 kHz

Quasi-Peak Adapter Mode Normal

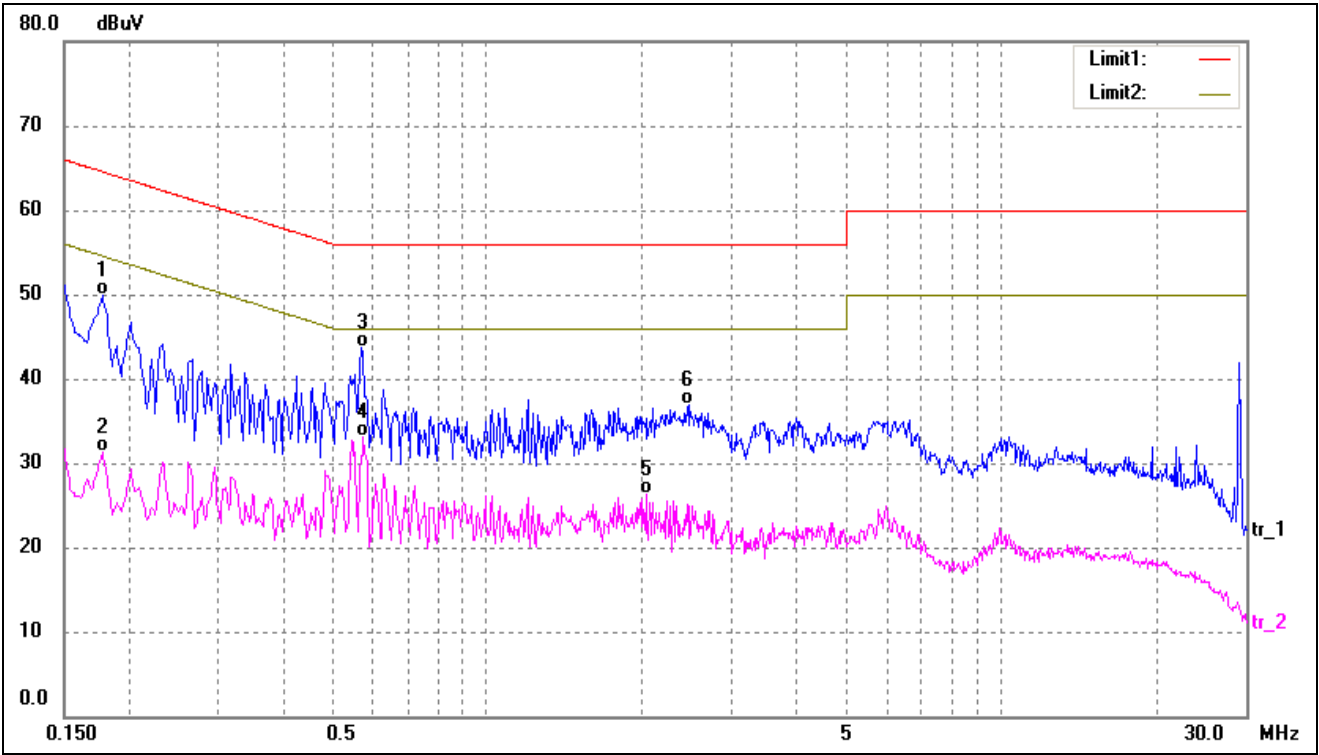
7.4 Summary of Test Results/Plots

Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	41.65	10.25	51.90	66.00	-14.10	QP
2	0.1780	22.93	10.26	33.19	54.58	-21.39	AVG
3	0.2700	20.58	10.25	30.83	51.12	-20.29	AVG
4*	0.5700	36.41	10.21	46.62	56.00	-9.38	QP
5	0.5700	24.87	10.21	35.08	46.00	-10.92	AVG
6	1.5940	30.71	10.24	40.95	56.00	-15.05	QP

Test Mode	Communication	AC120V 60Hz	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1780	39.60	10.26	49.86	64.58	-14.72	QP
2	0.1780	21.13	10.26	31.39	54.58	-23.19	AVG
3*	0.5700	33.47	10.21	43.68	56.00	-12.32	QP
4	0.5740	22.87	10.21	33.08	46.00	-12.92	AVG
5	2.0420	16.10	10.29	26.39	46.00	-19.61	AVG
6	2.4820	26.56	10.29	36.85	56.00	-19.15	QP

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