

TEST REPORT

Reference No...... : WTX25X05115543W001
FCC ID : 2BDC6-WAVEI4
Applicant : Shelly Europe Ltd.
Address : 51 Cherni Vrah Blvd., building 3, floor 2 and 3, Lozenetz Region, Sofia 1407,
Republic of Bulgaria
Manufacturer : The same as Applicant
Address : The same as Applicant
Product Name : 4 digital inputs controller
Model No...... : Wave i4
Standards : FCC Part 15.249
Date of Receipt sample : 2025-05-07
Date of Test..... : 2025-05-07 to 2025-05-23
Date of Issue : 2025-05-23
Test Report Form No. : WTX_Part 15_249W
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 approver.

Prepared By:

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

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Email: sem@waltek.com.cn

Tested by:

Tris Li

Tris Li/Project Engineer

Approved by:

Jason Su

Jason Su/Manager

TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND TEST MODE	6
1.6 MEASUREMENT UNCERTAINTY	7
1.7 TEST EQUIPMENT LIST AND DETAILS	8
2. SUMMARY OF TEST RESULTS.....	12
3. ANTENNA REQUIREMENTS	13
3.1 STANDARD APPLICABLE	13
3.2 TEST RESULT.....	13
4. RADIATED EMISSIONS	14
4.1 STANDARD APPLICABLE	14
4.2 TEST PROCEDURE	14
4.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	17
4.4 SUMMARY OF TEST RESULTS/PLOTS.....	17
5. OUT OF BAND EMISSIONS	23
5.1 STANDARD APPLICABLE	23
5.2 TEST PROCEDURE	23
5.3 SUMMARY OF TEST RESULTS/PLOTS.....	23
6. EMISSION BANDWIDTH.....	28
6.1 STANDARD APPLICABLE	28
6.2 TEST PROCEDURE	28
6.3 SUMMARY OF TEST RESULTS/PLOTS.....	28
7. CONDUCTED EMISSIONS	30
7.1 TEST PROCEDURE	30
7.2 BASIC TEST SETUP BLOCK DIAGRAM	30
7.3 TEST RECEIVER SETUP	30
7.4 SUMMARY OF TEST RESULTS/PLOTS.....	30
APPENDIX PHOTOGRAPHS.....	35

Report version

Version No.	Date of issue	Description
Rev.00	2025-05-23	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	4 digital inputs controller
Trade Name:	
Model No.:	Wave i4
Adding Model:	/
Rated Voltage:	110-240VAC, 50/60Hz
Battery capacity:	/
Power Adaptor:	/
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	908.42MHz, 912MHz, 920MHz
Max. Field Strength:	91.10dBuV/m
Modulation:	FSK
Quantity of Channels:	3
Channel Separation:	/
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi
<i>Note The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

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 and the CAB identifier is CN0057.

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	Transmit	912MHz
TM2	Transmit	920MHz

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45~75 %
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / 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
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	0.57dB
Occupied Bandwidth	Conducted	0.015MHz
Conducted Spurious Emission	Conducted	2.17dB
Conducted Emissions	Conducted	9-150kHz, 3.74dB
		0.15-30MHz, 3.34dB
Transmitter Spurious Emissions	Radiated	30-200MHz, 4.52dB
		0.2-1GHz 5.56dB
		1-6GHz, 3.84dB
		6-18GHz, 3.92dB

1.7 Test Equipment List and Details

Fixed asset Number	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041A 1001	Communication Tester	Rohde & Schwarz	CMW500	148650	2025-02-23	2026-02-22
WTXE1005A 1005	Spectrum Analyzer	Agilent	N9020A	US471401 02	2025-02-23	2026-02-22
WTXE1084A 1001	Spectrum Analyzer	Agilent	N9020A	MY543205 48	2025-02-23	2026-02-22
WTXE1004A 1-001	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2025-02-23	2026-02-22
WTXE1103A 1003	Attenuator	Pasternack	PE4007-4	/	2025-02-23	2026-02-22
WTXE1003A 1-005	Coaxial Cable	/	0M4RFC	/	2025-02-23	2026-02-22
☐ Chamber A: Below 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2025-02-23	2026-02-22
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2025-02-23	2026-02-22
WTXE1007A 1001	Amplifier	HP	8447F	2805A034 75	2025-02-23	2026-02-22
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2026-02-25
WTXE1010A 1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2025-02-23	2026-02-22
WTXE1104A 1032-1	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1032-2	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1032-3	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
☐ Chamber A: Above 1GHz						
WTXE1005A 1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/03 5	2025-02-23	2026-02-22
WTXE1001A 1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2025-02-23	2026-02-22
WTXE1065A 1001	Amplifier	C&D	PAP-1G18	2002	2025-02-23	2026-02-22
WTXE1010A 1005	Horn Antenna	ETS	3117	00086197	2025-02-23	2026-02-22

WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2026-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2025-02-23	2026-02-22
WTXE1104A 1033-1	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
WTXE1104A 1033-2	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
WTXE1104A 1033-3	Coaxial Cable	/	C16-07-07	/	2025-02-23	2026-02-22
☐ Chamber B:Below 1GHz						
WTXE1010A 1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
WTXE1038A 1001	Amplifier	Agilent	8447D	2944A104 57	2025-02-23	2026-02-22
WTXE1001A 1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2025-02-23	2026-02-22
WTXE1104A 1031-1	Coaxial Cable	/	1.5MRFC-LWB3	/	2025-02-23	2026-02-22
WTXE1104A 1031-2	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
WTXE1104A 1031-3	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
☒ Chamber C:Below 1GHz						
WTXE1093A 1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2025-02-23	2026-02-22
WTXE1010A 1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
WTXE1010A 1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2026-02-25
WTXE1007A 1002	Amplifier	HP	8447F	2944A038 69	2025-02-23	2026-02-22
WTXE1104A 1034-1	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1034-2	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1034-3	Coaxial Cable	/	RC_6G-N-M	/	2025-02-23	2026-02-22
☒ Chamber C: Above 1GHz						
WTXE1093A	EMI Test	Rohde &	ESIB 26	100401	2025-02-23	2026-02-22

1001	Receiver	Schwarz				
WTXE1103A 1005	Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
WTXE1103A 1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2025-02-23	2026-02-22
WTXE1010A 1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2026-03-16
WTXE1003A 1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2025-02-23	2026-02-22
WTXE1104A 1035-1	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1035-2	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
WTXE1104A 1035-3	Coaxial Cable	/	RC-18G-N-M	/	2025-02-23	2026-02-22
☐ Conducted Room 1#						
WTXE1104A 1029	EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2024-12-08	2025-12-07
WTXE1002A 1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2025-02-23	2026-02-22
WTXE1003A 1001	AC LISN	Schwarz beck	NSLK8126	8126-279	2025-02-23	2026-02-22
WTXE1104A 1036	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22
WTXE1104A 1038	Coaxial Cable	/	6MRFC-DP	/	2025-02-23	2026-02-22
☒ Conducted Room 2#						
WTXE1001A 1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2025-02-23	2026-02-22
WTXE1003A 1003	LISN	Rohde & Schwarz	ENV 216	100097	2025-02-23	2026-02-22
WTXE1104A 1037	Coaxial Cable	/	RG 316	/	2025-02-23	2026-02-22

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission A)	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission B)	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission C)	Farad	EZ-EMC	RA-03A1-2 (1.1.4.2)
EMI Test Software (Conducted Emission Room 1#)	Farad	EZ-EMC	3A1*CE-RE 1.1.4.3
EMI Test Software (Conducted Emission Room 2#)	Farad	EZ-EMC	3A1*CE-RE 1.1.4.3

*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

Class II Permissive Change: The two newly added frequency points (912MHz, 920MHz) can be started through software without the need for hardware modification.

Note: Report is for Class II Permissive Change only. Added test all Test Item of two frequency bands. The test data refer to Original equipment (FCC ID: 2BDC6-WAVEI4), the original FCC ID issue date: 06/18/2024.

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 an Integral antenna, 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)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	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.

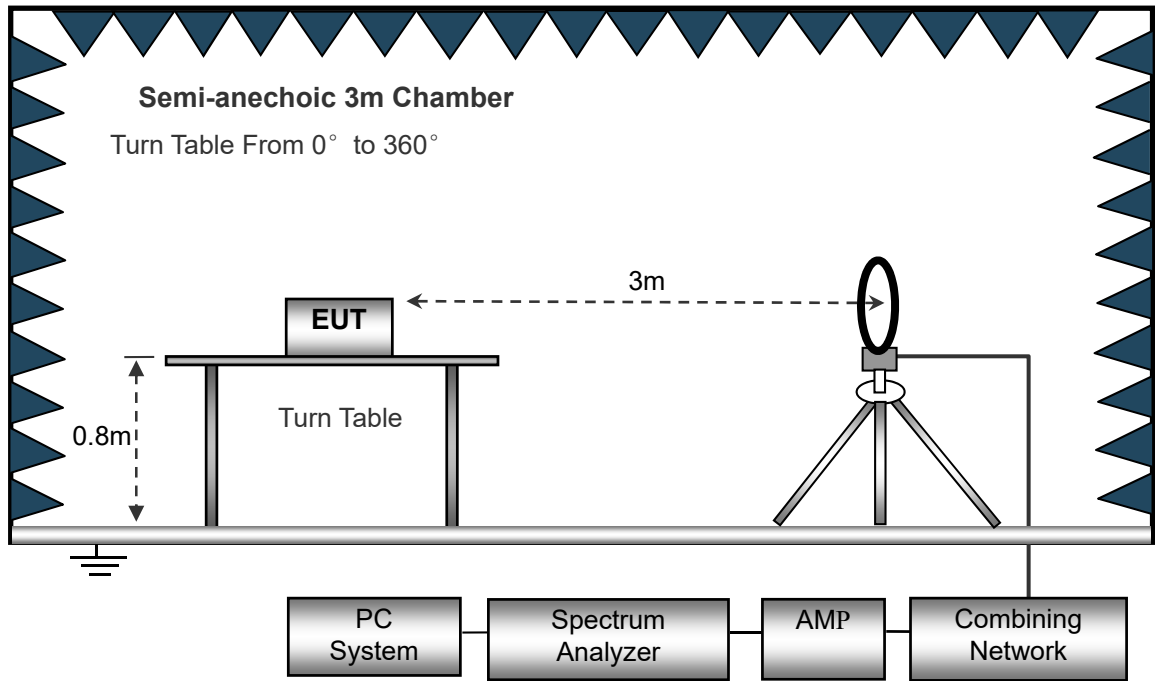
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

4.2 Test Procedure

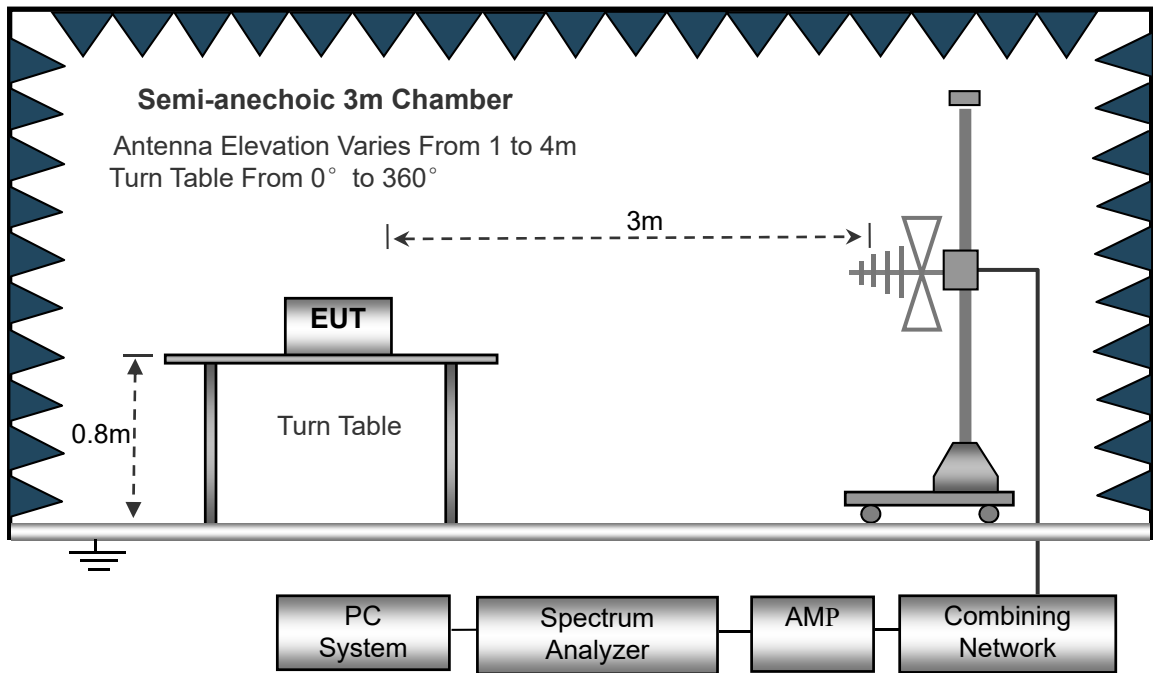
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.249(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle. The spacing between the peripherals was 10cm.

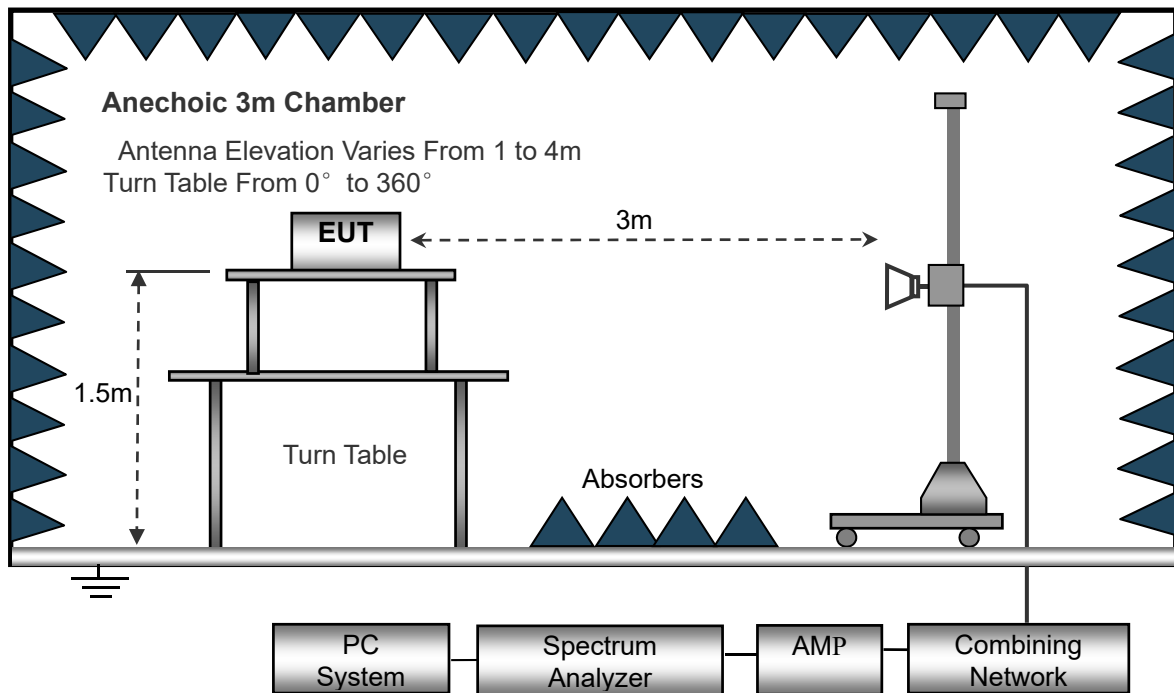
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1GHz.



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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

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

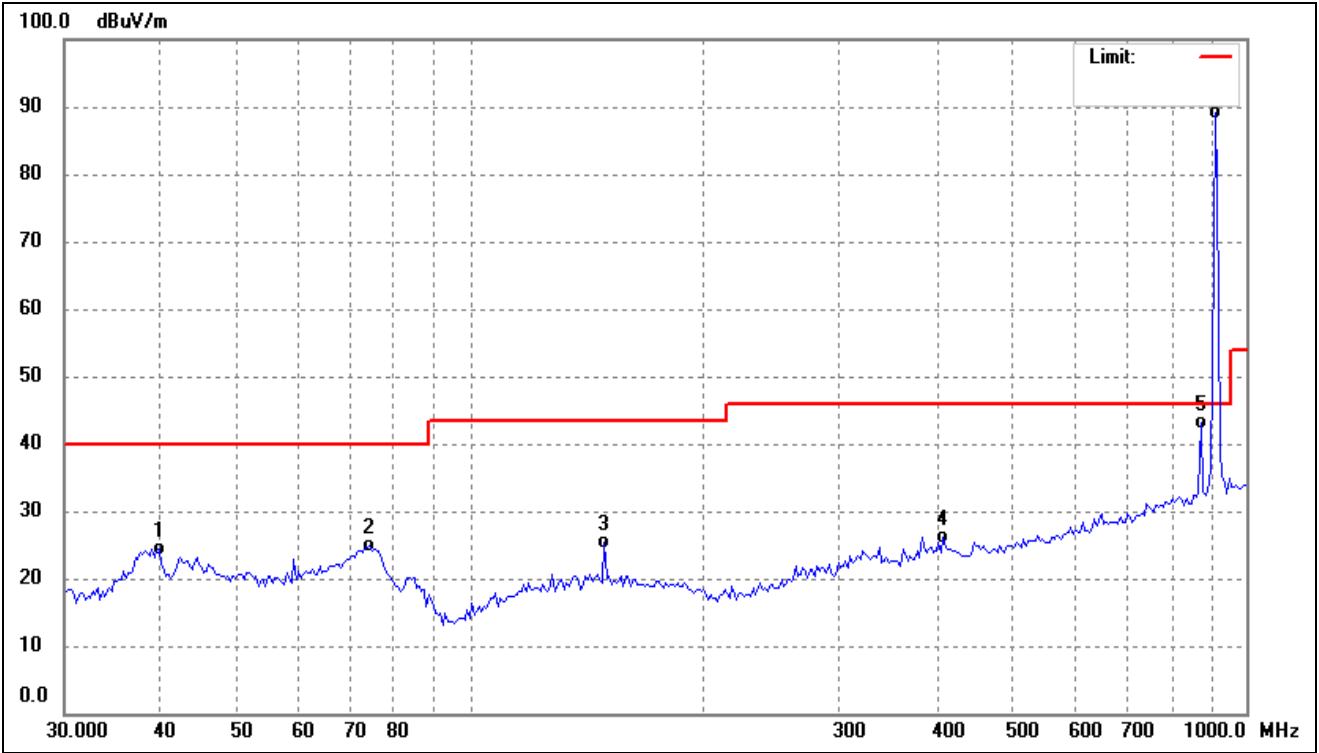
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15C Limit}$$

4.4 Summary of Test Results/Plots

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

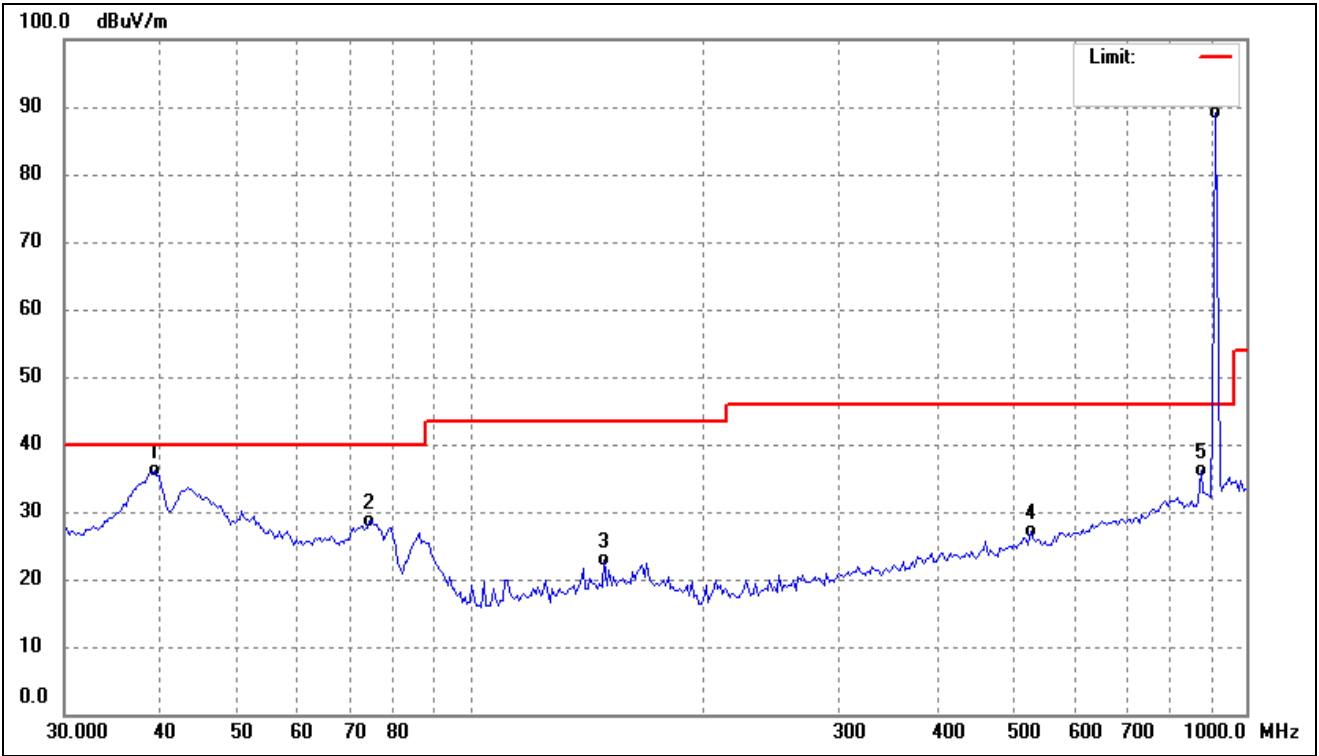
➤ Spurious Emissions Below 1GHz

Test Channel	912MHz	Polarity:	Horizontal
--------------	--------	-----------	------------



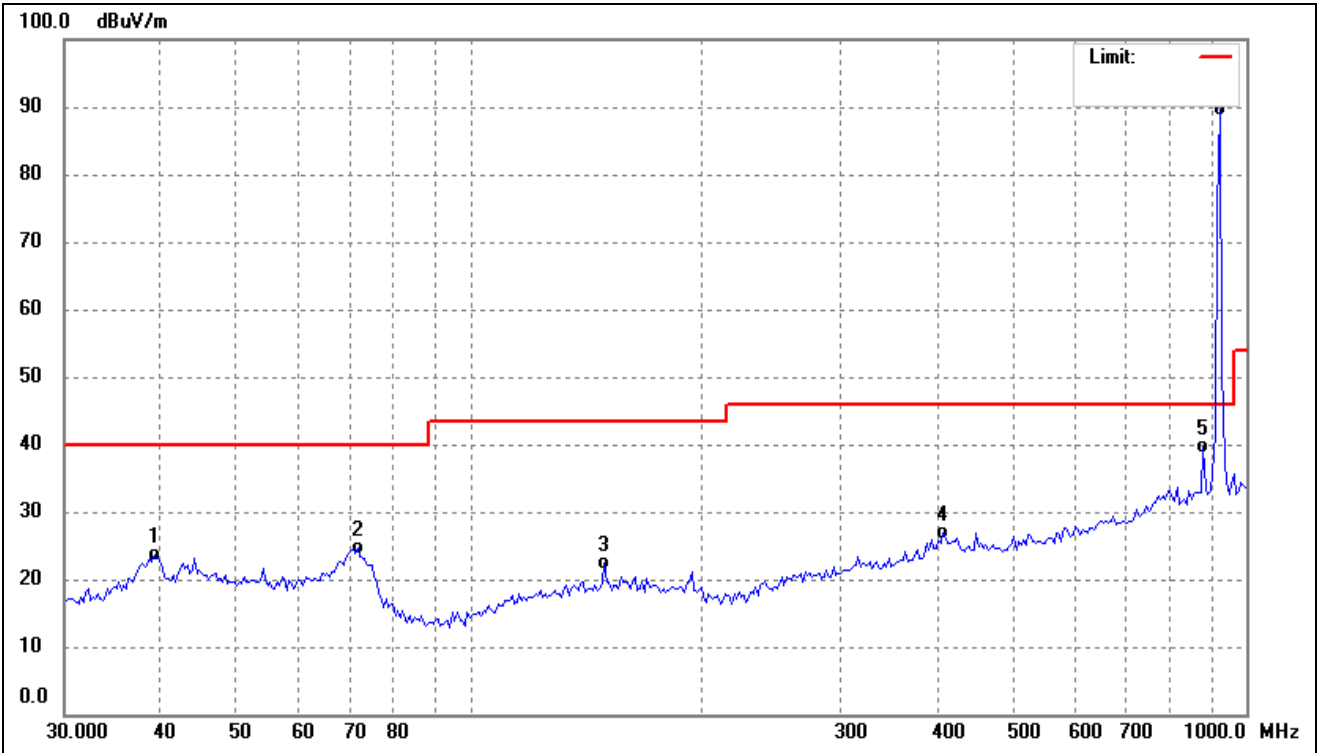
No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	39.7371	33.96	-9.61	24.35	40.00	-15.65	-	-	QP
2	74.2696	36.91	-11.92	24.99	40.00	-15.01	-	-	QP
3	148.9175	34.41	-8.91	25.50	43.50	-18.00	-	-	QP
4	406.7820	32.15	-6.01	26.14	46.00	-19.86	-	-	QP
5	875.0133	41.75	1.46	43.21	46.00	-2.79	-	-	QP
6	912.6953	87.00	2.22	89.22	Fundamental				

Test Channel	912MHz	Polarity:	Vertical
--------------	--------	-----------	----------



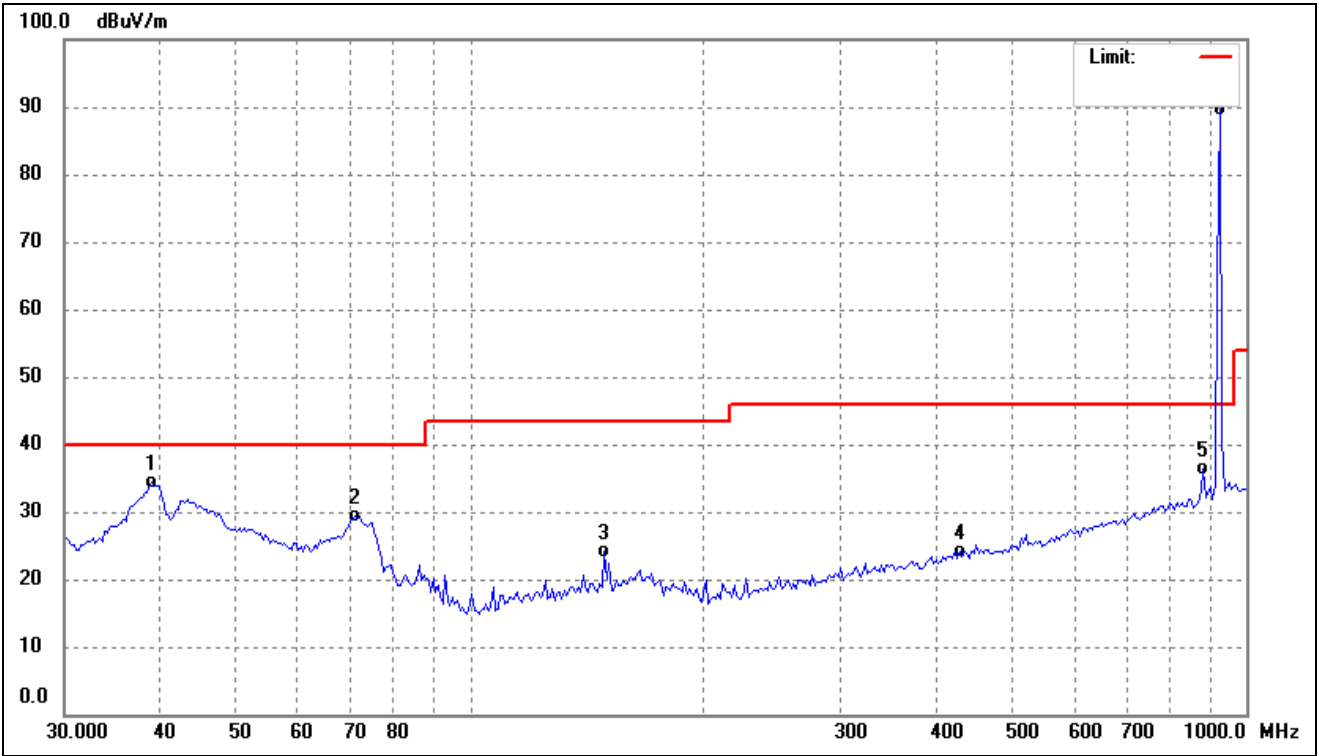
No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	39.1825	45.68	-9.66	36.02	40.00	-3.98	-	-	QP
2	74.2696	40.55	-11.92	28.63	40.00	-11.37	-	-	QP
3	148.9175	31.75	-8.91	22.84	43.50	-20.66	-	-	QP
4	527.5707	30.98	-3.81	27.17	46.00	-18.83	-	-	QP
5	875.0133	34.55	1.46	36.01	46.00	-9.99	-	-	QP
6	912.6953	87.02	2.22	89.24	Fundamental				

Test Channel	920MHz	Polarity:	Horizontal
--------------	--------	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	39.1825	33.26	-9.66	23.60	40.00	-16.40	-	-	QP
2	71.7054	36.15	-11.42	24.73	40.00	-15.27	-	-	QP
3	148.9175	31.21	-8.91	22.30	43.50	-21.20	-	-	QP
4	406.7820	32.90	-6.01	26.89	46.00	-19.11	-	-	QP
5	881.1838	37.93	1.58	39.51	46.00	-6.49	-	-	QP
6	920.0000	87.18	2.36	89.54	Fundamental				

Test Channel	920MHz	Polarity:	Vertical
--------------	--------	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Corr. dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	38.9081	44.02	-9.69	34.33	40.00	-5.67	-	-	QP
2	71.2033	40.84	-11.34	29.50	40.00	-10.50	-	-	QP
3	148.9175	33.04	-8.91	24.13	43.50	-19.37	-	-	QP
4	427.2920	29.90	-5.70	24.20	46.00	-21.80	-	-	QP
5	881.1838	34.72	1.58	36.30	46.00	-9.70	-	-	QP
6	920.0000	87.19	2.36	89.55	Fundamental				

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

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
912MHz							
1824.000	54.76	-21.11	33.65	74.00	-40.35	H	PK
2734.474	64.77	-18.48	46.29	74.00	-27.71	H	PK
1824.000	54.97	-21.11	33.86	74.00	-40.14	V	PK
2734.474	67.23	-18.48	48.75	74.00	-25.25	V	PK
920MHz							
1838.777	58.65	-21.03	37.62	74.00	-36.38	H	PK
2759.826	64.61	-18.42	46.19	74.00	-27.81	H	PK
1840.000	54.20	-21.02	33.18	74.00	-40.82	V	PK
2759.826	66.55	-18.42	48.13	74.00	-25.87	V	PK

*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 50dB 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.

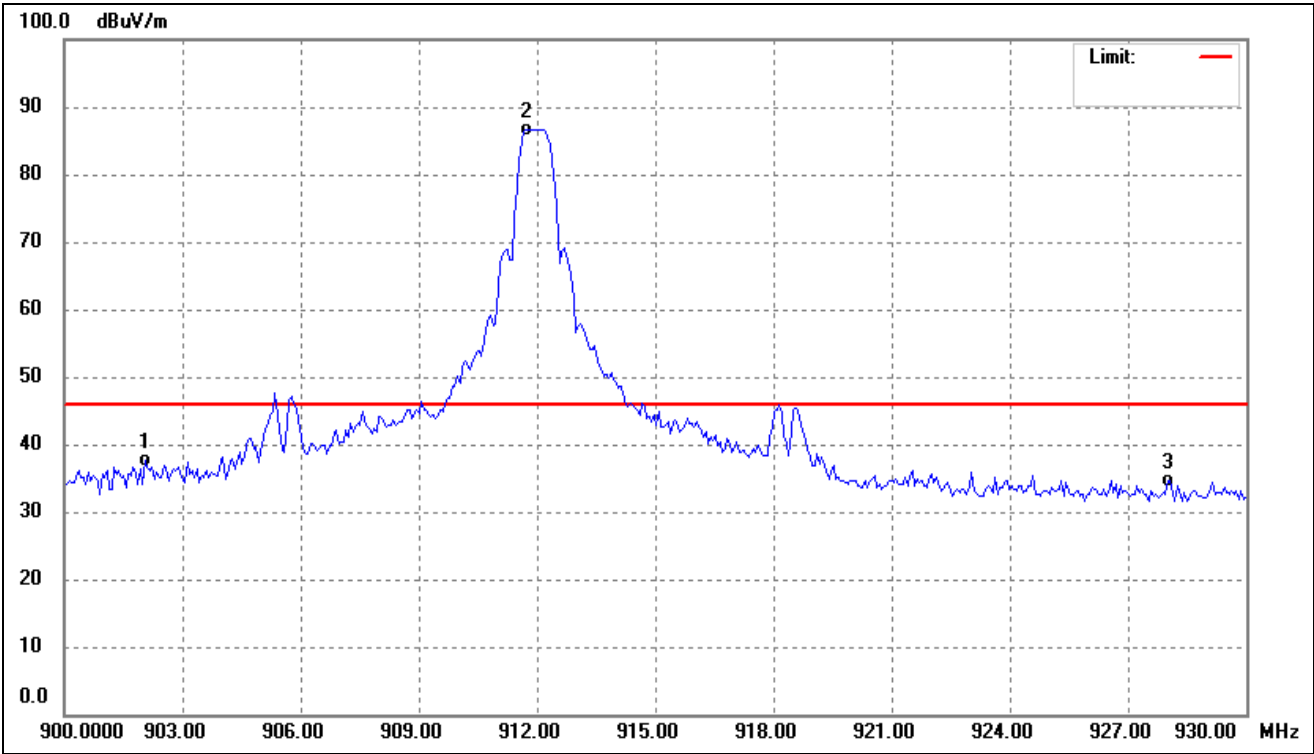
5.3 Summary of Test Results/Plots

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

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

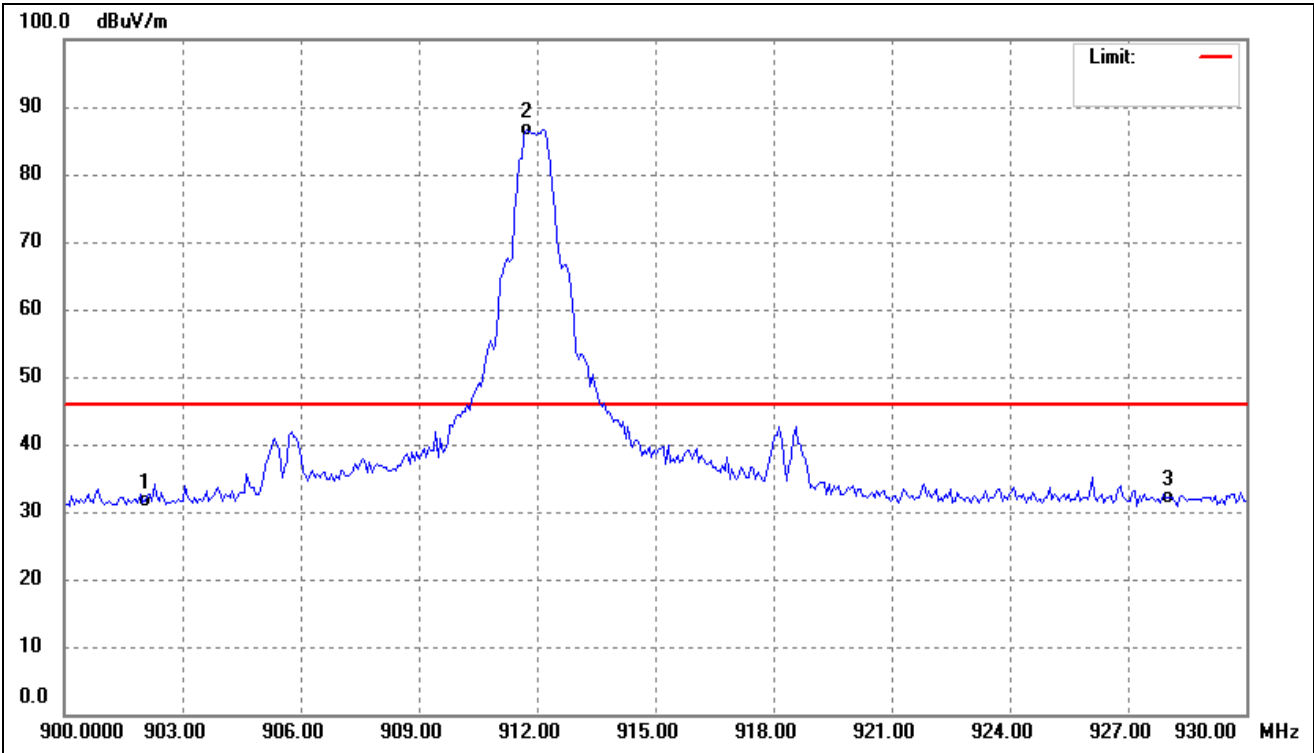
Please refer to the test plots as below.

Test Channel	912MHz	Polarity:	Horizontal(worst case)
--------------	--------	-----------	------------------------



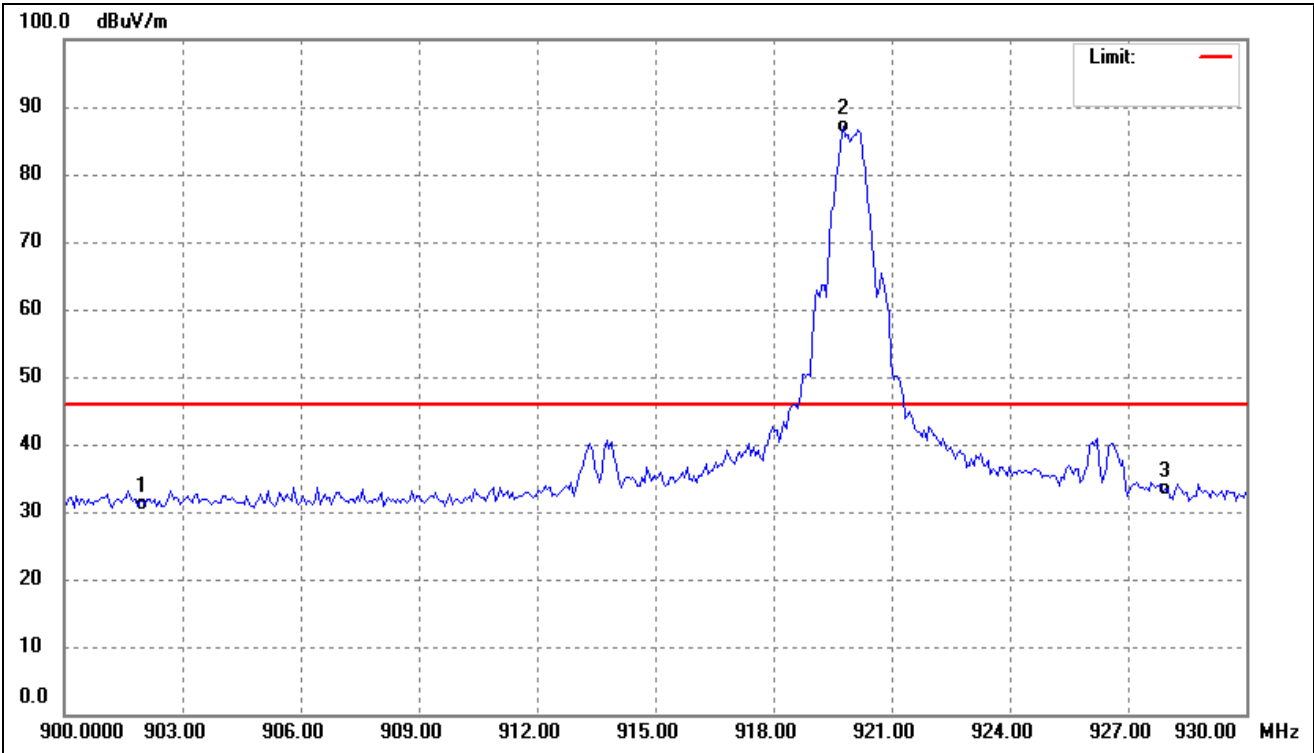
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	35.61	1.99	37.60	46.00	-8.40	Peak Detector
2	911.7234	84.48	2.19	86.67	/	/	Fundamental
3	928.0000	32.12	2.52	34.64	46.00	-11.36	Peak Detector

Test Channel	912MHz	Polarity:	Vertical(worst case)
--------------	--------	-----------	----------------------



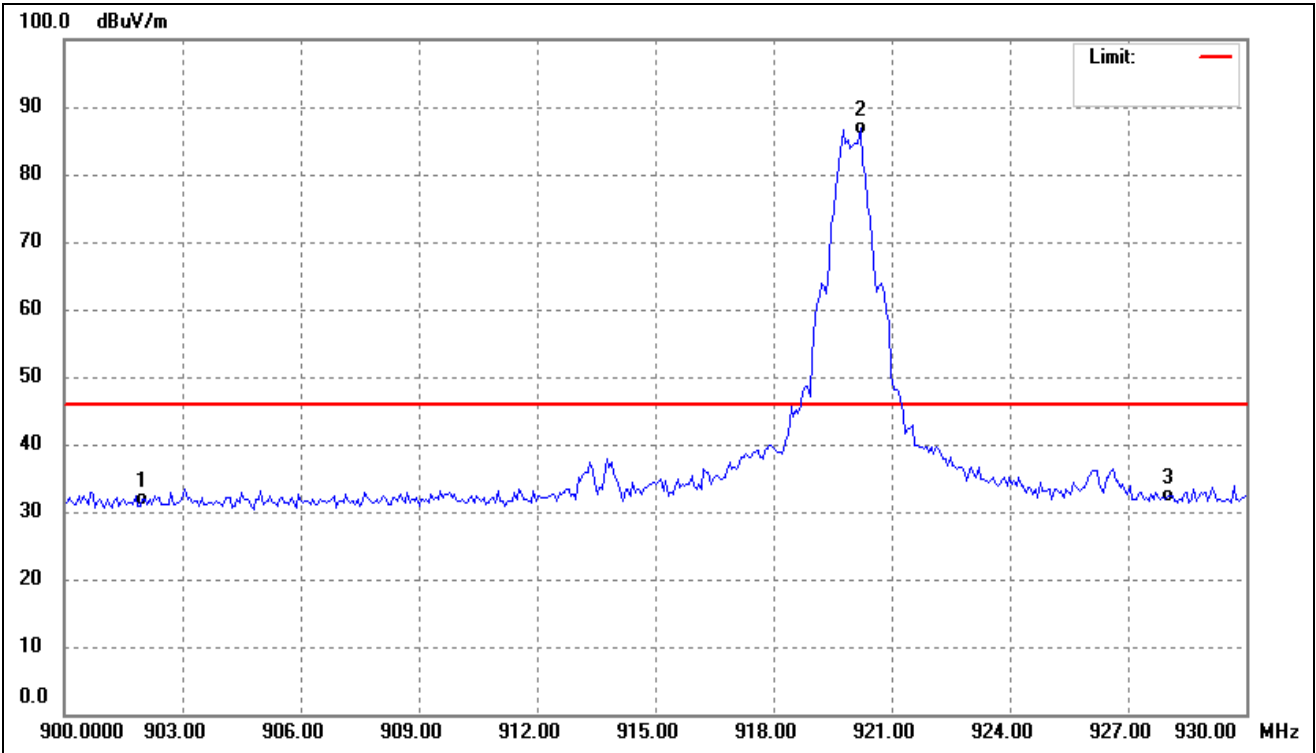
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	29.68	1.99	31.67	46.00	-14.33	Peak Detector
2	911.7234	84.52	2.19	86.71	/	/	Fundamental
3	928.0000	29.64	2.52	32.16	46.00	-13.84	Peak Detector

Test Channel	920MHz	Polarity:	Horizontal(worst case)
--------------	--------	-----------	------------------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	29.16	1.99	31.15	46.00	-14.85	Peak Detector
2	919.7796	84.85	2.35	87.20	/	/	Fundamental
3	928.0000	30.93	2.52	33.45	46.00	-12.55	Peak Detector

Test Channel	920MHz	Polarity:	Vertical(worst case)
--------------	--------	-----------	----------------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	902.0000	29.77	1.99	31.76	46.00	-14.24	Peak Detector
2	920.2004	84.40	2.36	86.76	/	/	Fundamental
3	928.0000	29.94	2.52	32.46	46.00	-13.54	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

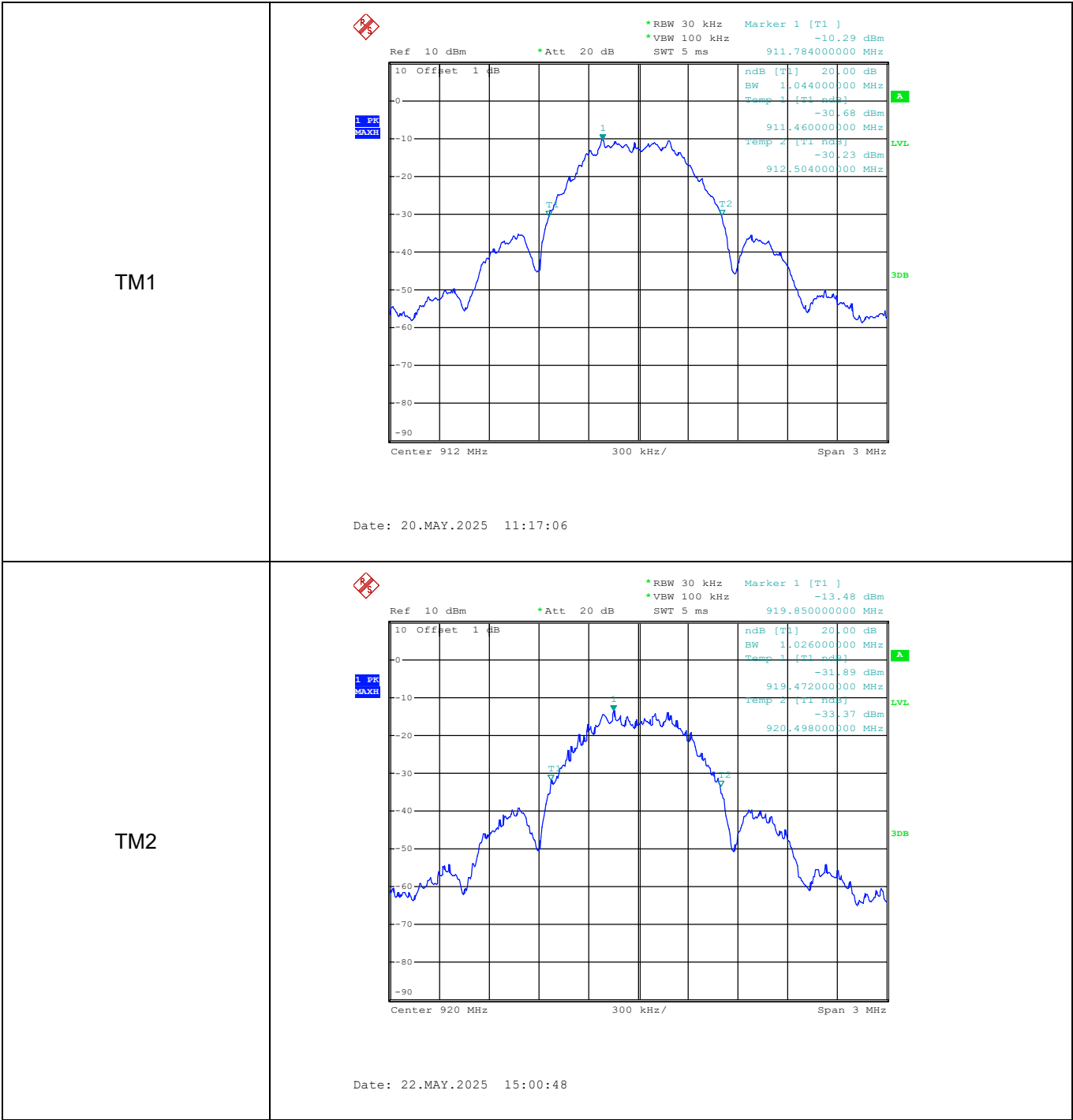
Trace = max hold

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

Test Mode	Frequency MHz	20dB Bandwidth MHz
TM1	912	1.044
TM2	920	1.026

Please refer to the following test plots:



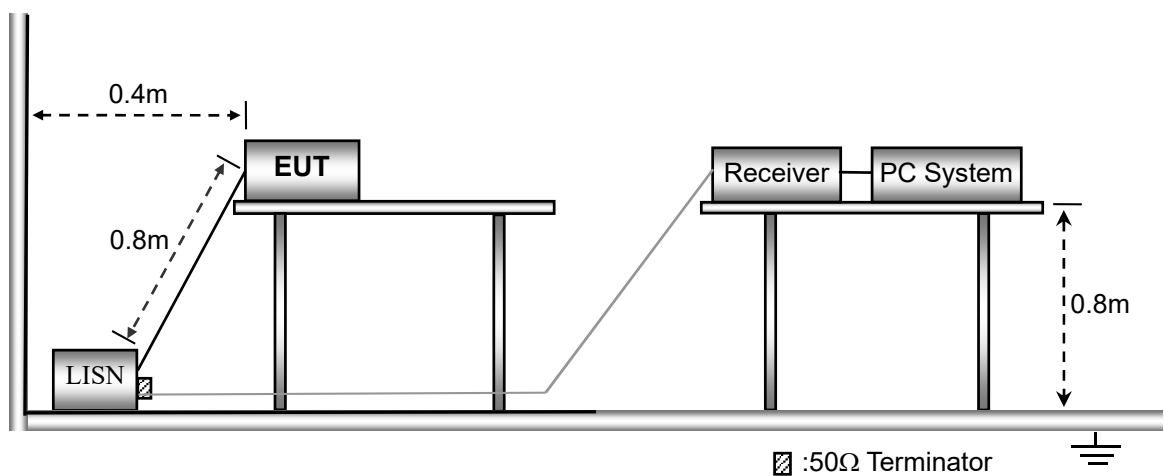
7. Conducted Emissions

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 40cm long in the middle. The spacing between the peripherals was 10cm.

7.2 Basic Test Setup Block Diagram



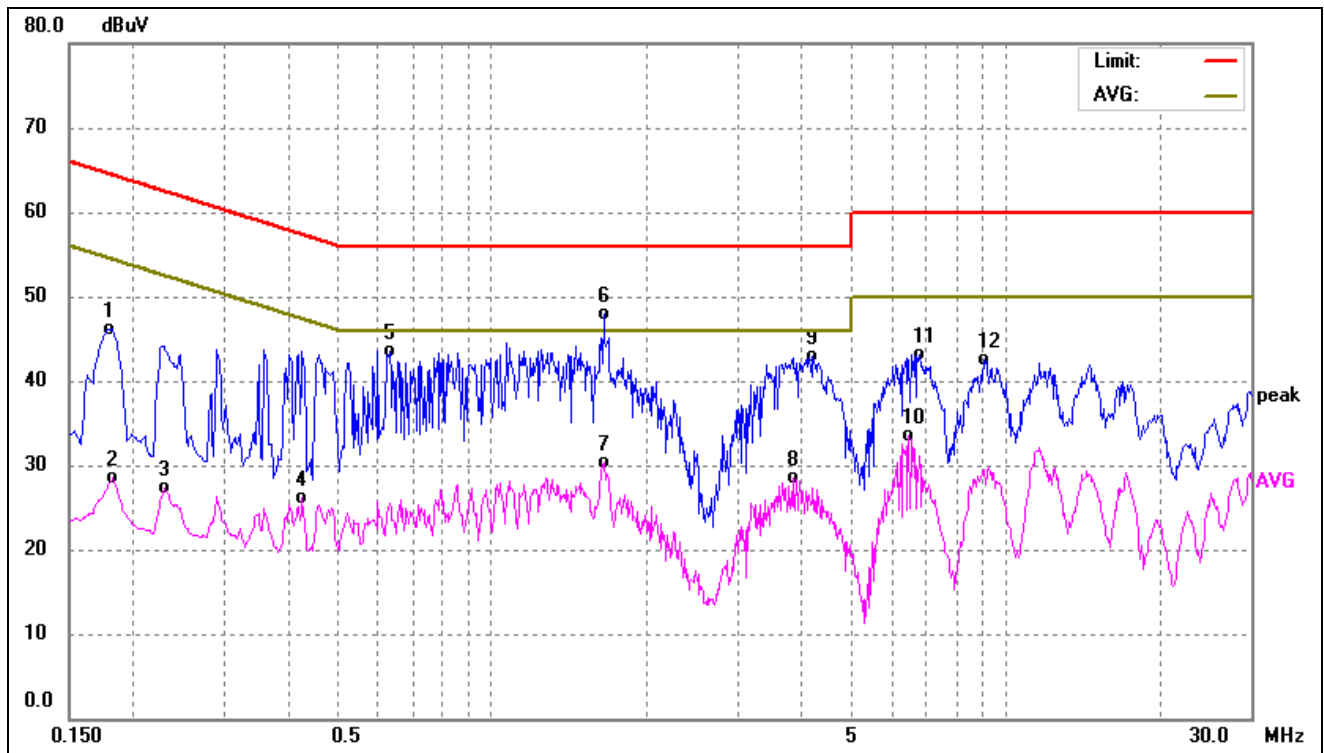
7.3 Test Receiver Setup

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

Start Frequency	150kHz
Stop Frequency	30MHz
Sweep Speed	Auto
IF Bandwidth.....	10kHz
Quasi-Peak Adapter Bandwidth	9kHz
Quasi-Peak Adapter Mode	Normal

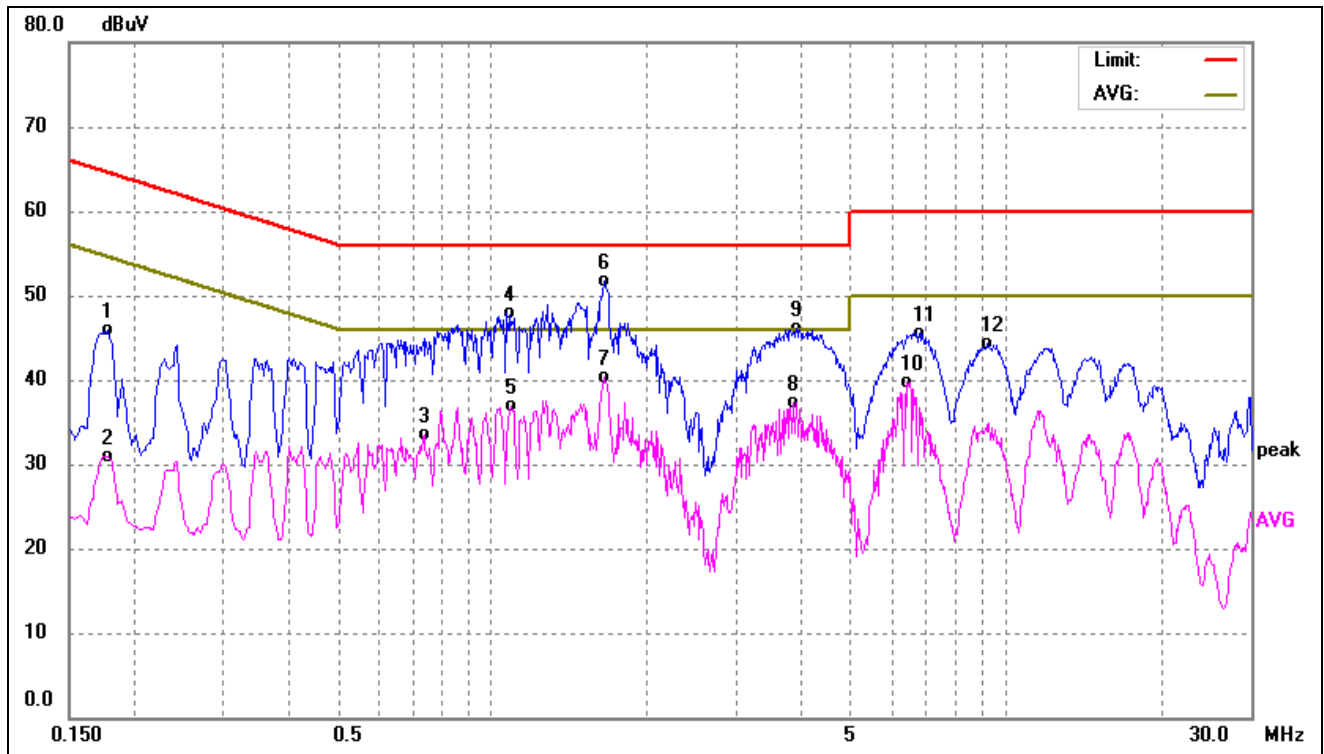
7.4 Summary of Test Results/Plots

Test Mode	TM1	Polarity:	Neutral
-----------	-----	-----------	---------



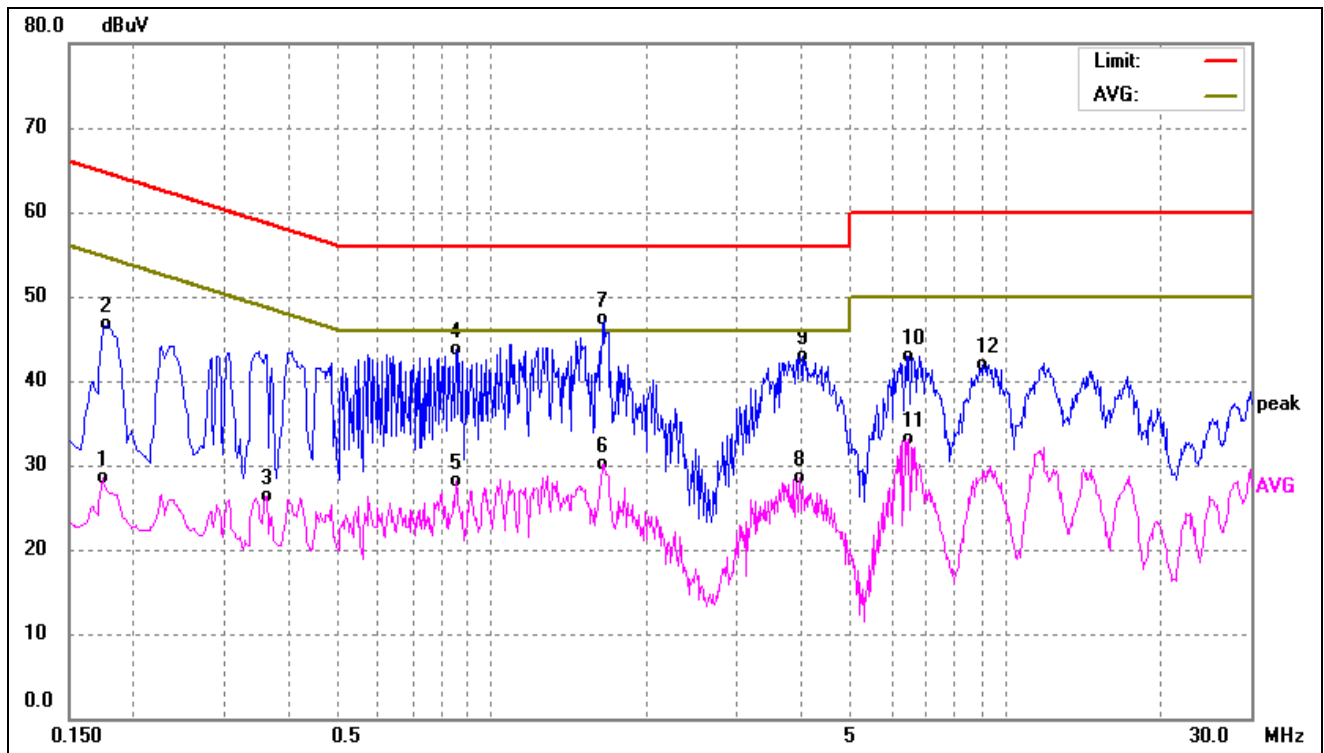
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1780	36.58	9.54	46.12	64.57	-18.45	QP
2	0.1819	18.96	9.56	28.52	54.39	-25.87	AVG
3	0.2300	17.70	9.63	27.33	52.45	-25.12	AVG
4	0.4260	16.45	9.64	26.09	47.33	-21.24	AVG
5	0.6300	33.75	9.70	43.45	56.00	-12.55	QP
6	1.6500	38.35	9.50	47.85	56.00	-8.15	QP
7	1.6620	20.85	9.50	30.35	46.00	-15.65	AVG
8	3.8500	19.07	9.45	28.52	46.00	-17.48	AVG
9	4.2100	33.46	9.48	42.94	56.00	-13.06	QP
10	6.4780	23.68	9.73	33.41	50.00	-16.59	AVG
11	6.7700	33.39	9.77	43.16	60.00	-16.84	QP
12	9.0980	32.65	9.80	42.45	60.00	-17.55	QP

Test Mode	TM1	Polarity:	Line
-----------	-----	-----------	------



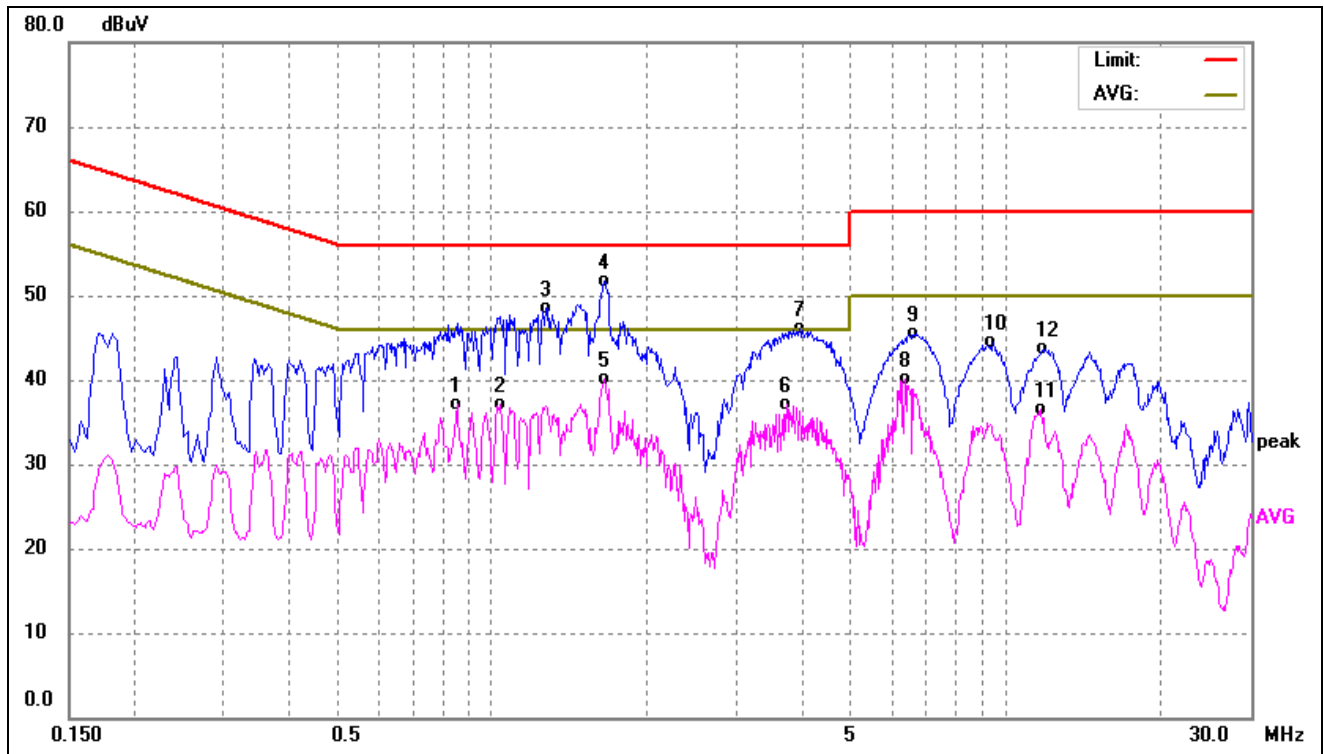
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1780	36.35	9.54	45.89	64.57	-18.68	QP
2	0.1780	21.38	9.54	30.92	54.57	-23.65	AVG
3	0.7380	23.81	9.74	33.55	46.00	-12.45	AVG
4	1.0700	38.17	9.73	47.90	56.00	-8.10	QP
5	1.0900	27.11	9.72	36.83	46.00	-9.17	AVG
6	1.6460	42.22	9.50	51.72	56.00	-4.28	QP
7	1.6460	30.79	9.50	40.29	46.00	-5.71	AVG
8	3.8580	27.86	9.45	37.31	46.00	-8.69	AVG
9	3.9180	36.58	9.46	46.04	56.00	-9.96	QP
10	6.4260	30.05	9.72	39.77	50.00	-10.23	AVG
11	6.8420	35.72	9.77	45.49	60.00	-14.51	QP
12	9.2460	34.52	9.80	44.32	60.00	-15.68	QP

Test Mode	TM2	Polarity:	Neutral
-----------	-----	-----------	---------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1740	18.94	9.53	28.47	54.76	-26.29	AVG
2	0.1780	37.22	9.54	46.76	64.57	-17.81	QP
3	0.3620	16.76	9.64	26.40	48.68	-22.28	AVG
4	0.8500	33.94	9.75	43.69	56.00	-12.31	QP
5	0.8500	18.26	9.75	28.01	46.00	-17.99	AVG
6	1.6420	20.66	9.50	30.16	46.00	-15.84	AVG
7	1.6460	37.88	9.50	47.38	56.00	-8.62	QP
8	3.9700	18.98	9.46	28.44	46.00	-17.56	AVG
9	4.0300	33.50	9.46	42.96	56.00	-13.04	QP
10	6.4780	33.18	9.73	42.91	60.00	-17.09	QP
11	6.4780	23.35	9.73	33.08	50.00	-16.92	AVG
12	9.0500	32.11	9.80	41.91	60.00	-18.09	QP

Test Mode	TM2	Polarity:	Line
-----------	-----	-----------	------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.8540	27.38	9.75	37.13	46.00	-8.87	AVG
2	1.0380	27.32	9.74	37.06	46.00	-8.94	AVG
3	1.2860	38.81	9.65	48.46	56.00	-7.54	QP
4	1.6460	42.12	9.50	51.62	56.00	-4.38	QP
5	1.6460	30.68	9.50	40.18	46.00	-5.82	AVG
6	3.7420	27.73	9.45	37.18	46.00	-8.82	AVG
7	3.9740	36.65	9.46	46.11	56.00	-9.89	QP
8	6.3659	30.35	9.72	40.07	50.00	-9.93	AVG
9	6.6660	35.71	9.76	45.47	60.00	-14.53	QP
10	9.4740	34.60	9.81	44.41	60.00	-15.59	QP
11	11.6940	26.82	9.71	36.53	50.00	-13.47	AVG
12	11.9819	33.95	9.69	43.64	60.00	-16.36	QP

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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