

# TEST REPORT

Reference No..... : WTX21X02012955W-1  
FCC ID ..... : Z2G-PERIDUO-717  
Applicant ..... : Perixx Computer GmbH  
Address..... : Heerdter Landstrasse 189e 40549 Düsseldorf, Germany  
Product Name ..... : Wireless Desktop Set (Keyboard)  
Test Model. .... : PERIDUO-717  
Standards ..... : FCC Part 15.249  
Date of Receipt sample .... : Feb.24, 2021  
Date of Test..... : Feb.24, 2021 to Mar.16, 2021  
Date of Issue ..... : Mar.16, 2021  
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.

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**Report version**

Version No.	Date of issue	Description
Rev.00	Mar.16, 2021	Original
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Perixx Computer GmbH  
 Address of applicant: Heerdter Landstrasse 189e 40549 Düsseldorf, Germany

Manufacturer: Perixx Computer GmbH  
 Address of manufacturer: Heerdter Landstrasse 189e 40549 Düsseldorf, Germany

General Description of EUT	
Product Name:	Wireless Desktop Set (Keyboard)
Trade Name:	Perixx
Model No.:	PERIDUO-717
Adding Model(s):	/
Rated Voltage:	Battery DC 1.5 V
Battery Capacity	/
Power Adapter Model:	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	2402MHz-2480MHz
Max. Field Strength:	90.18dBuV/m
Modulation:	GFSK
Antenna Type:	Printed Antenna
Antenna Gain:	0dBi

## 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	2402MHz
TM2	Middle Channel	2440MHz
TM3	High Channel	2480MHz

Test Conditions	
Temperature:	24 °C
Relative Humidity:	48 %.
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
Notebook	Lenovo	E445	EB12648265
Wireless Dongle	Perixx	PERIDUO-717	/
Wireless Mouse	Perixx	PERIDUO-717	/

## 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 $\pm 3.84\text{dB}$
		6-26GHz $\pm 3.92\text{dB}$

**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)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/
SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/



<b>Software List</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Version</b>
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

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<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	N/A
§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**

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#### **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 a Printed antenna, fulfill the requirement of this section.

## 4. Radiated Emissions

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### 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.

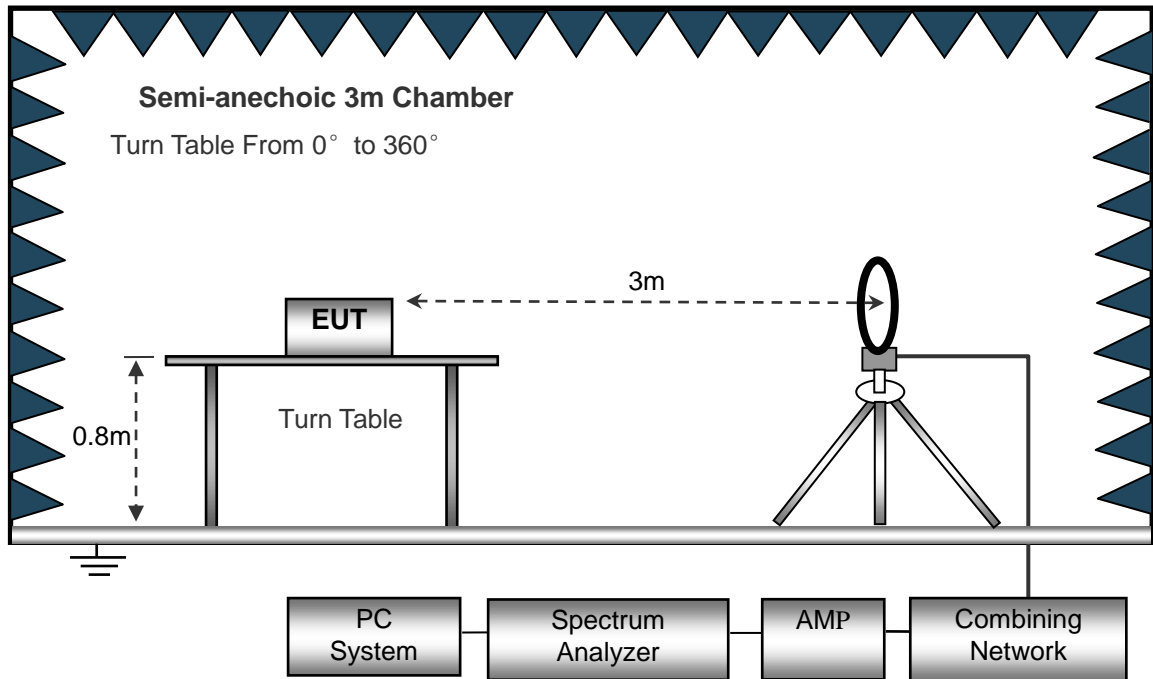
### 4.2 Test Procedure

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.

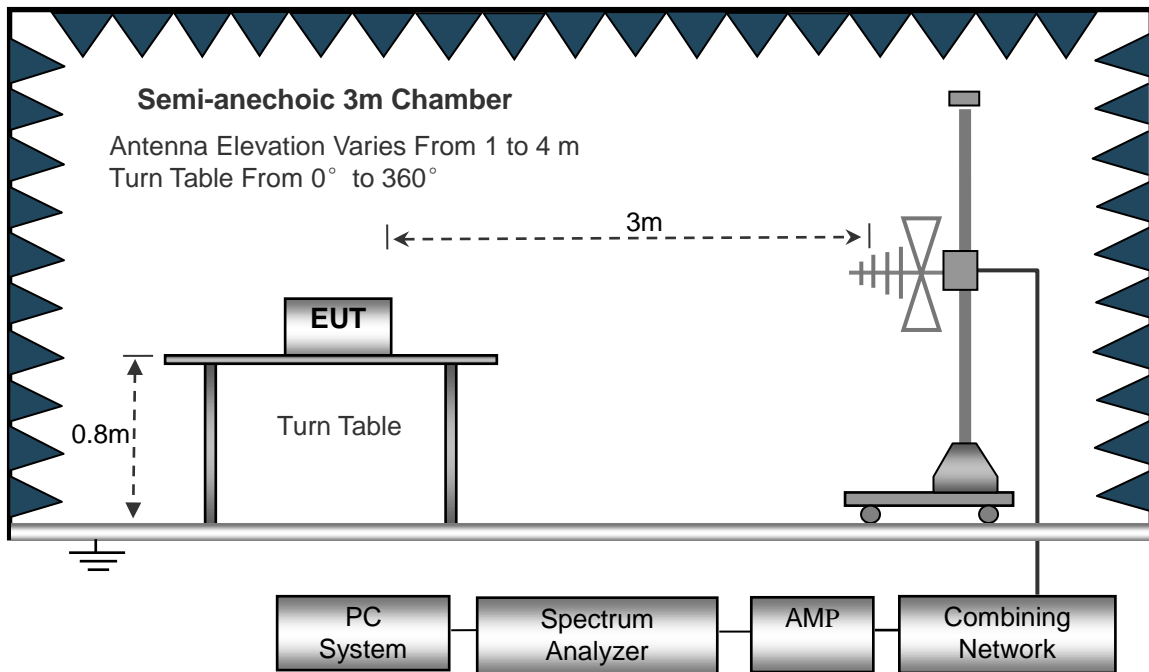
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

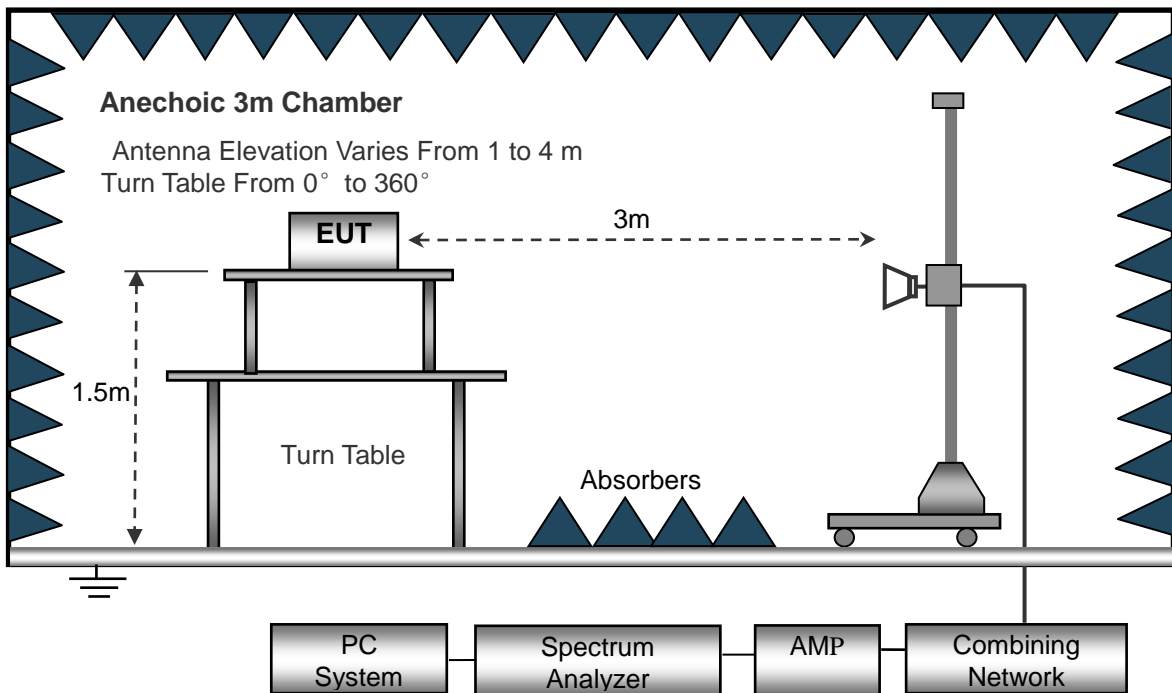
The test setup for emission measurement below 30MHz..



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:

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

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

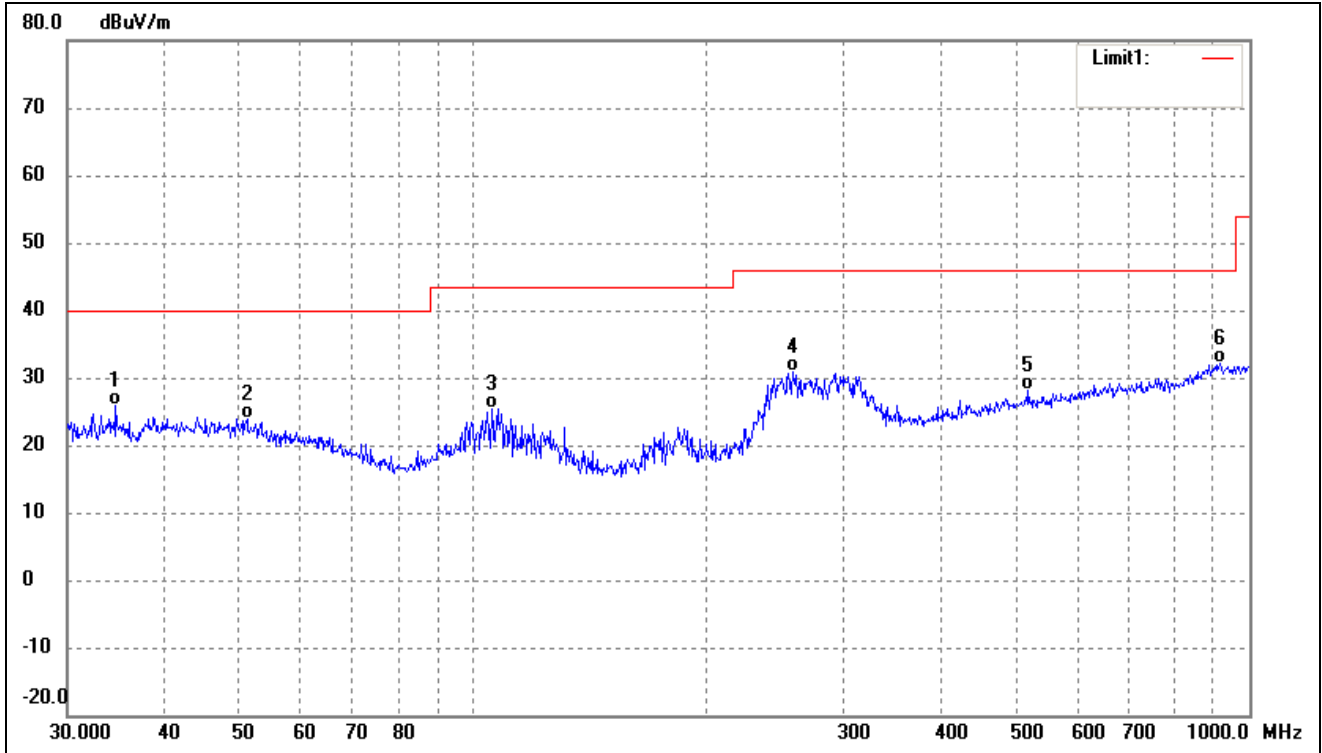
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15C Limit}$$

### 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

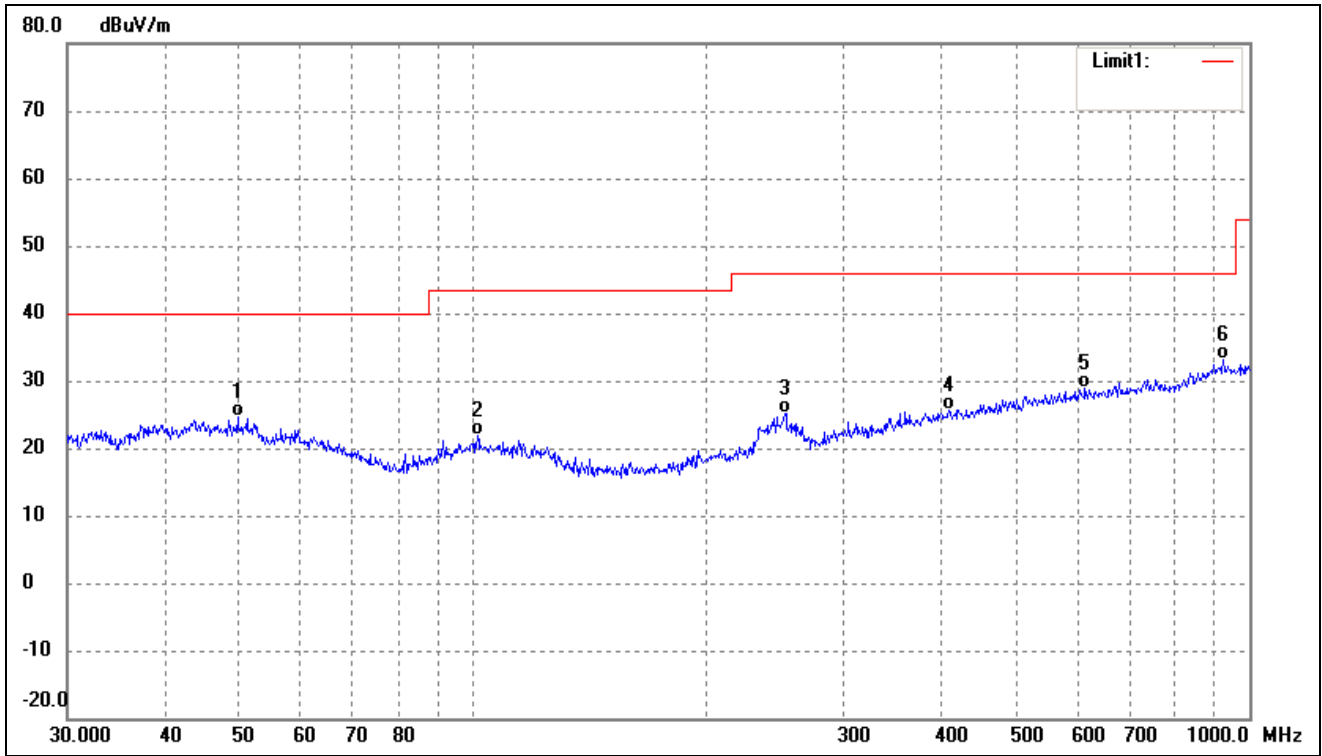
Test Channel	Low	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	34.6385	39.70	-13.89	25.81	40.00	-14.19	-	-	QP
2	51.1209	35.71	-11.85	23.86	40.00	-16.14	-	-	QP
3	105.6415	38.73	-13.31	25.42	43.50	-18.08	-	-	QP
4	258.3264	41.77	-10.85	30.92	46.00	-15.08	-	-	QP
5	519.0649	32.37	-4.15	28.22	46.00	-17.78	-	-	QP
6	916.0687	30.30	1.75	32.05	46.00	-13.95	-	-	QP

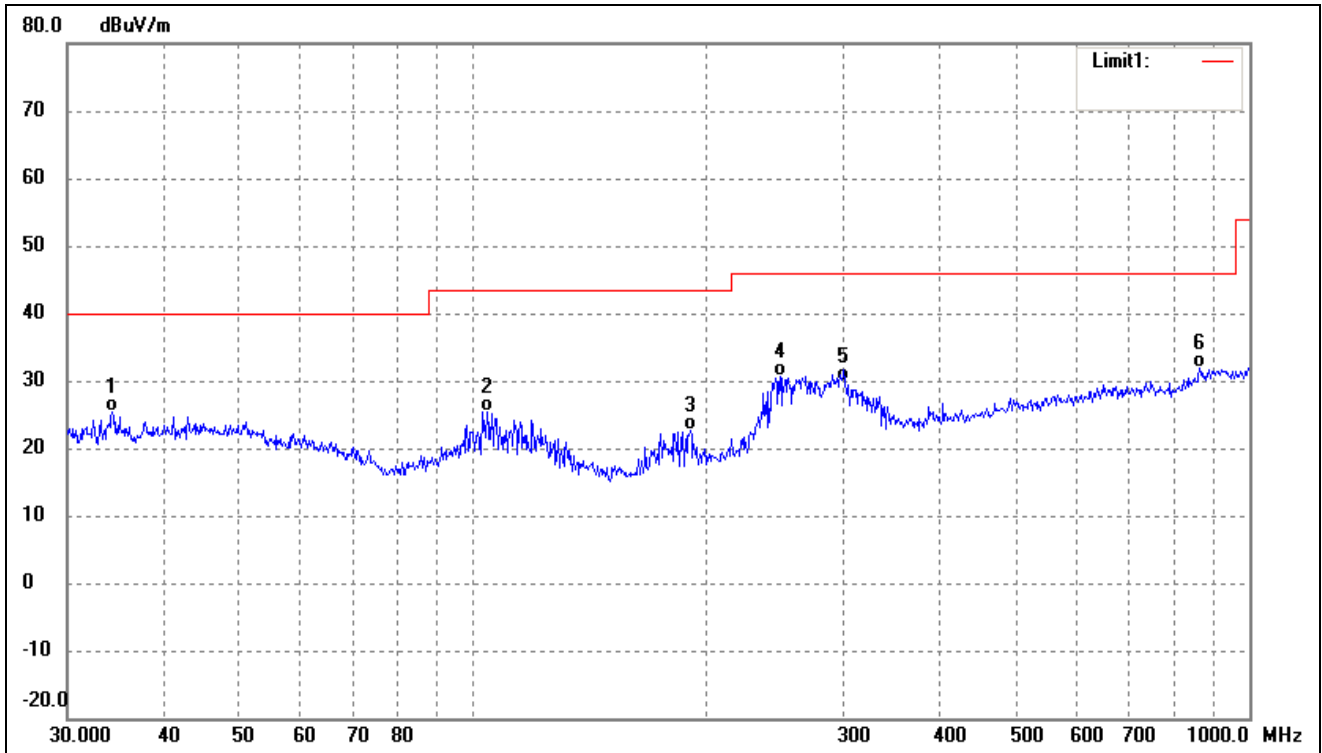


Test Channel	Low	Polarity:	Vertical
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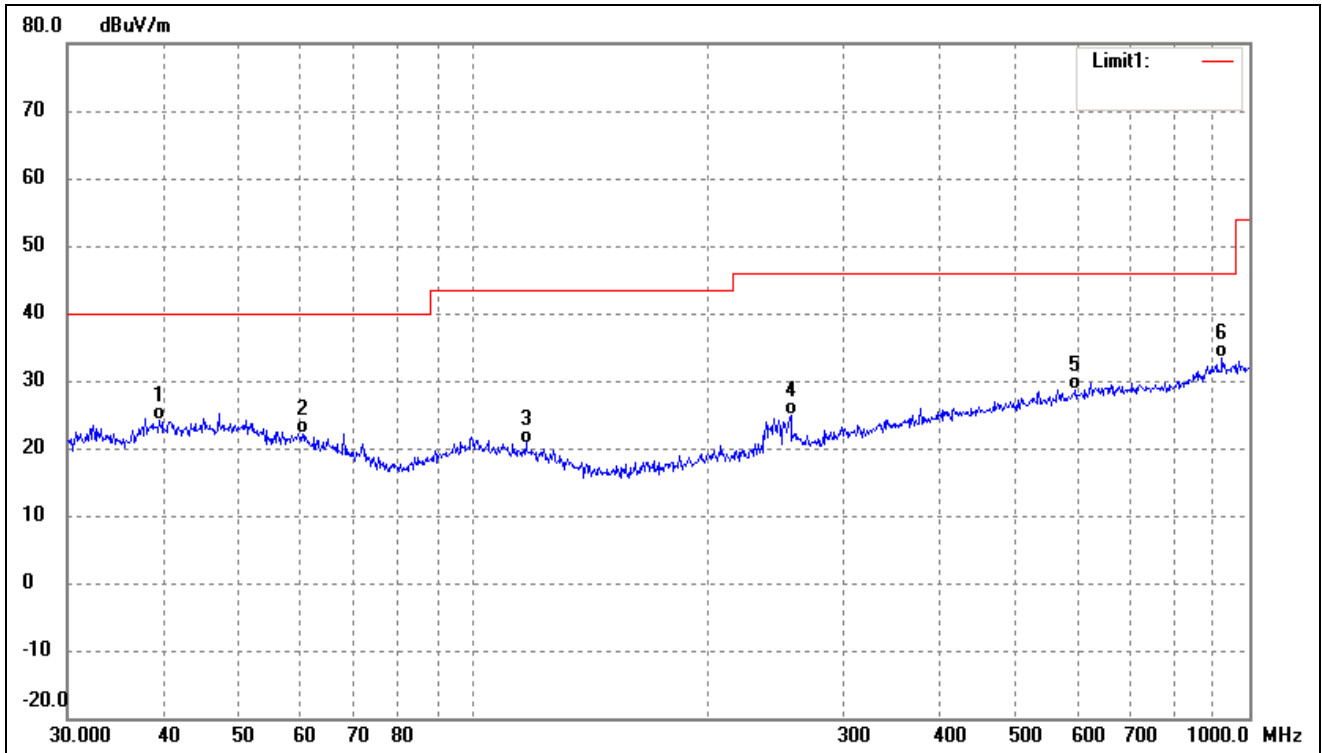
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	49.7068	36.23	-11.55	24.68	40.00	-15.32	-	-	QP
2	101.2885	35.23	-13.31	21.92	43.50	-21.58	-	-	QP
3	252.0627	36.11	-10.91	25.20	46.00	-20.80	-	-	QP
4	410.3825	31.92	-6.22	25.70	46.00	-20.30	-	-	QP
5	614.2142	30.92	-2.05	28.87	46.00	-17.13	-	-	QP
6	925.7563	31.32	1.84	33.16	46.00	-12.84	-	-	QP

Test Channel	Middle	Polarity:	Horizontal
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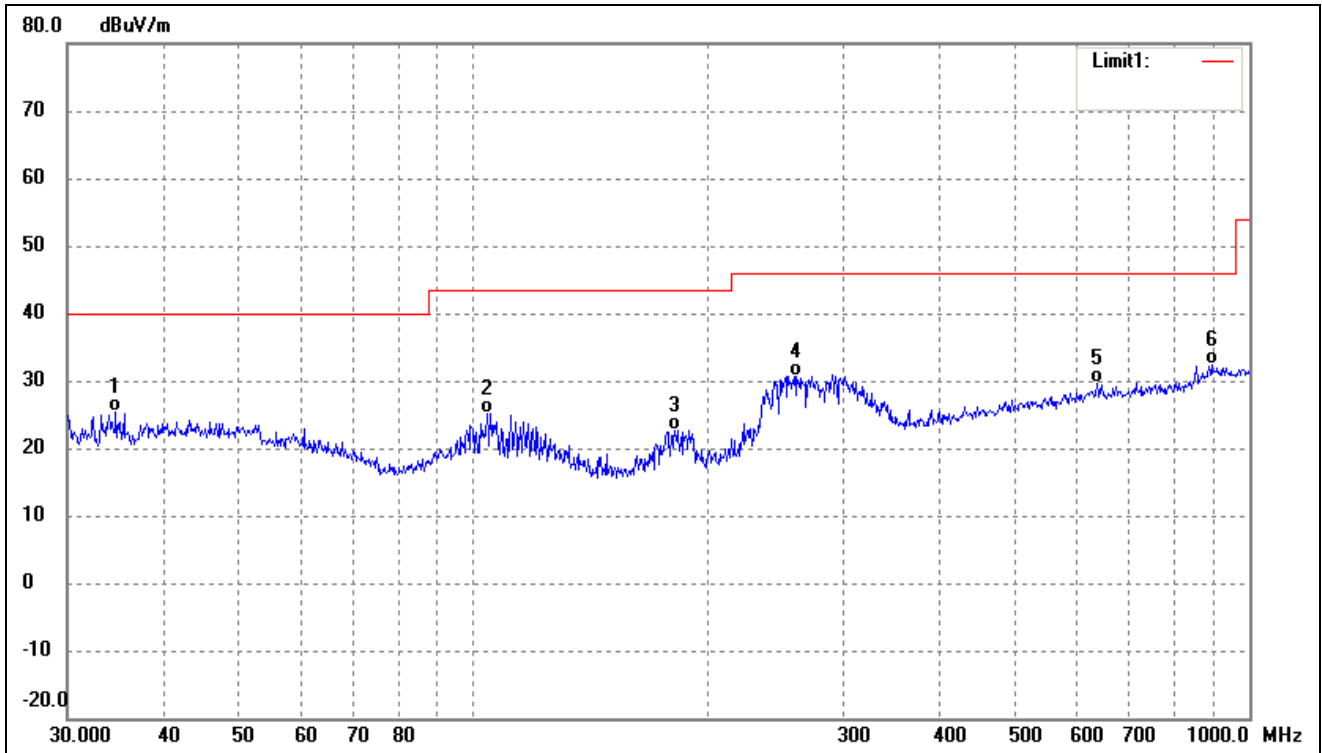
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	34.2760	39.24	-13.91	25.33	40.00	-14.67	-	-	QP
2	104.1701	38.77	-13.31	25.46	43.50	-18.04	-	-	QP
3	190.4050	35.77	-13.09	22.68	43.50	-20.82	-	-	QP
4	248.5519	41.62	-10.99	30.63	46.00	-15.37	-	-	QP
5	301.4224	38.78	-8.92	29.86	46.00	-16.14	-	-	QP
6	863.0562	31.42	0.43	31.85	46.00	-14.15	-	-	QP

Test Channel	Middle	Polarity:	Vertical
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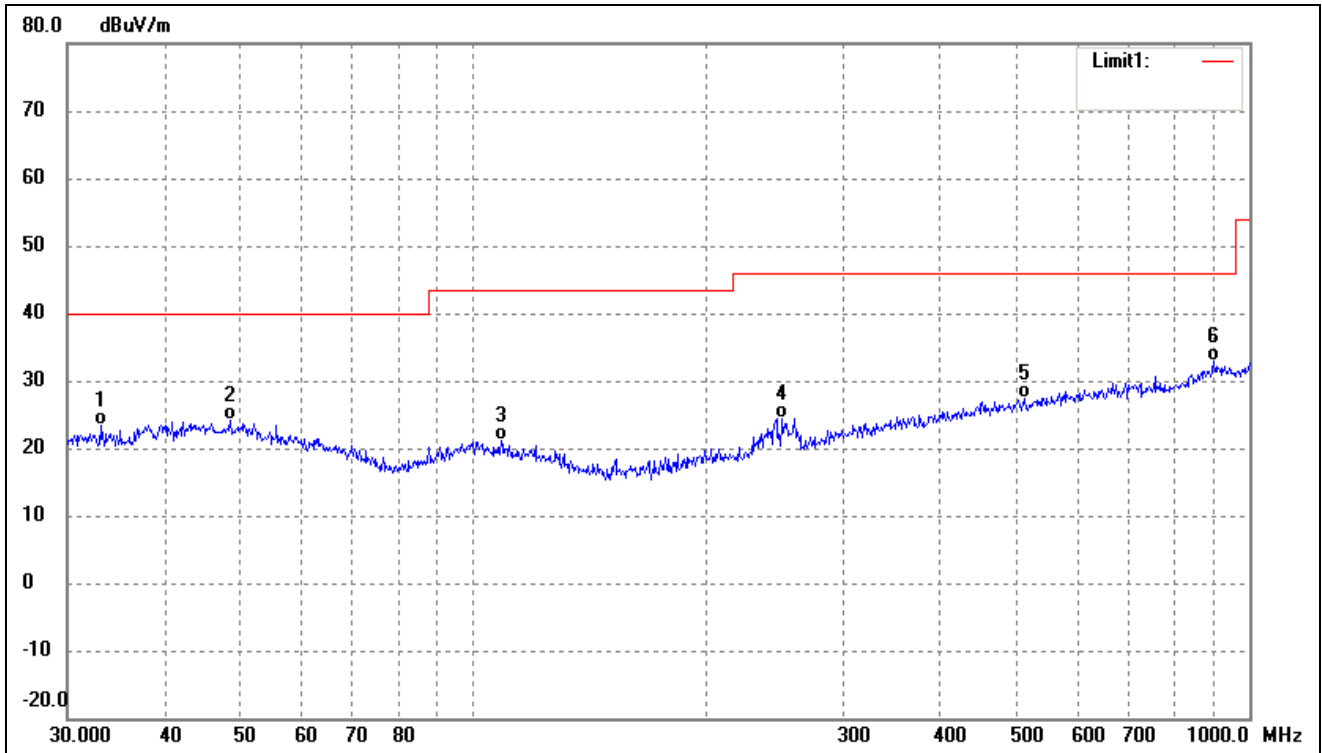
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	39.4372	36.31	-12.19	24.12	40.00	-15.88	-	-	QP
2	60.2801	35.24	-13.04	22.20	40.00	-17.80	-	-	QP
3	116.9495	34.74	-13.99	20.75	43.50	-22.75	-	-	QP
4	256.5211	35.78	-10.87	24.91	46.00	-21.09	-	-	QP
5	597.2234	30.75	-2.01	28.74	46.00	-17.26	-	-	QP
6	922.5157	31.51	1.83	33.34	46.00	-12.66	-	-	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	34.6385	39.25	-13.89	25.36	40.00	-14.64	-	-	QP
2	104.1701	38.34	-13.31	25.03	43.50	-18.47	-	-	QP
3	181.9202	36.81	-14.08	22.73	43.50	-20.77	-	-	QP
4	261.0583	41.56	-10.83	30.73	46.00	-15.27	-	-	QP
5	636.1340	31.78	-2.24	29.54	46.00	-16.46	-	-	QP
6	893.8567	31.02	1.30	32.32	46.00	-13.68	-	-	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	33.0949	37.29	-13.98	23.31	40.00	-16.69	-	-	QP
2	48.6719	35.81	-11.60	24.21	40.00	-15.79	-	-	QP
3	108.6470	34.40	-13.31	21.09	43.50	-22.41	-	-	QP
4	250.3011	35.40	-10.92	24.48	46.00	-21.52	-	-	QP
5	513.6331	31.39	-4.12	27.27	46.00	-18.73	-	-	QP
6	900.1473	31.43	1.55	32.98	46.00	-13.02	-	-	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*

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2402MHz							
2402.300	99.65	-9.47	90.18	114	-23.82	H	PK
2402.200	99.11	-9.47	89.64	94	-4.36	H	AV
4804.000	70.66	-4.52	66.14	74.00	-7.86	H	PK
4804.173	40.48	-4.52	35.96	54.00	-18.04	H	AV
7206.000	50.78	-2.20	48.58	74.00	-25.42	H	PK
9608.000	50.64	1.73	52.37	74.00	-21.63	H	PK
2402.157	98.55	-9.47	89.08	114	-24.92	V	PK
2402.079	97.9	-9.47	88.43	94	-5.57	V	AV
4803.949	39.90	-4.52	35.38	54.00	-18.62	V	AV
4804.000	64.27	-4.52	59.75	74.00	-14.25	V	PK
7206.000	50.57	-2.20	48.37	74.00	-25.63	V	PK
9608.000	48.96	1.73	50.69	74.00	-23.31	V	PK
Middle Channel-2440MHz							
2440.118	95.41	-9.4	86.01	114	-27.99	H	PK
2440.505	93.89	-9.39	84.5	94	-9.5	H	AV
4880.000	72.21	-4.47	67.74	74.00	-6.26	H	PK
4880.051	40.48	-4.47	36.01	54.00	-17.99	H	AV
7320.000	48.47	-2.17	46.30	74.00	-27.70	H	PK
9760.000	50.13	1.95	52.08	74.00	-21.92	H	PK
2440.118	92.94	-9.4	83.54	114	-30.46	V	PK
2439.949	91.71	-9.39	82.32	94	-11.68	V	AV
4880.000	69.27	-4.47	64.80	74.00	-9.20	V	PK
4880.092	39.76	-4.47	35.29	54.00	-18.71	V	AV
7320.000	48.83	-2.17	46.66	74.00	-27.34	V	PK
9760.000	50.33	1.95	52.28	74.00	-21.72	V	PK

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
High Channel-2480MHz							
2479.412	97.77	-9.32	88.45	114	-25.55	H	PK
2478.997	97.2	-9.32	87.88	94	-6.12	H	AV
4958.678	71.80	-4.41	67.39	74.00	-6.61	H	PK
4959.178	39.61	-4.41	35.20	54.00	-18.80	H	AV
7451.566	54.21	-2.12	52.09	74.00	-21.91	H	PK
9935.052	35.93	2.21	38.14	54.00	-15.86	H	AV
9935.053	54.38	2.21	56.59	74.00	-17.41	H	PK
2478.53	95.49	-9.33	86.16	114	-27.84	V	PK
2479.023	94.16	-9.32	84.84	94	-9.16	V	AV
4958.678	64.19	-4.41	59.78	74.00	-14.22	V	PK
4959.178	38.76	-4.41	34.35	54.00	-19.65	V	AV
7451.566	55.13	-2.12	53.01	74.00	-20.99	V	PK
9920.000	51.08	2.19	53.27	74.00	-20.73	V	PK

*Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics (25GHz), which 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

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### 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 2400MHz to 2483.5MHz, than mark the higher-level emission for comparing with the FCC rules.

### 5.3 Summary of Test Results/Plots

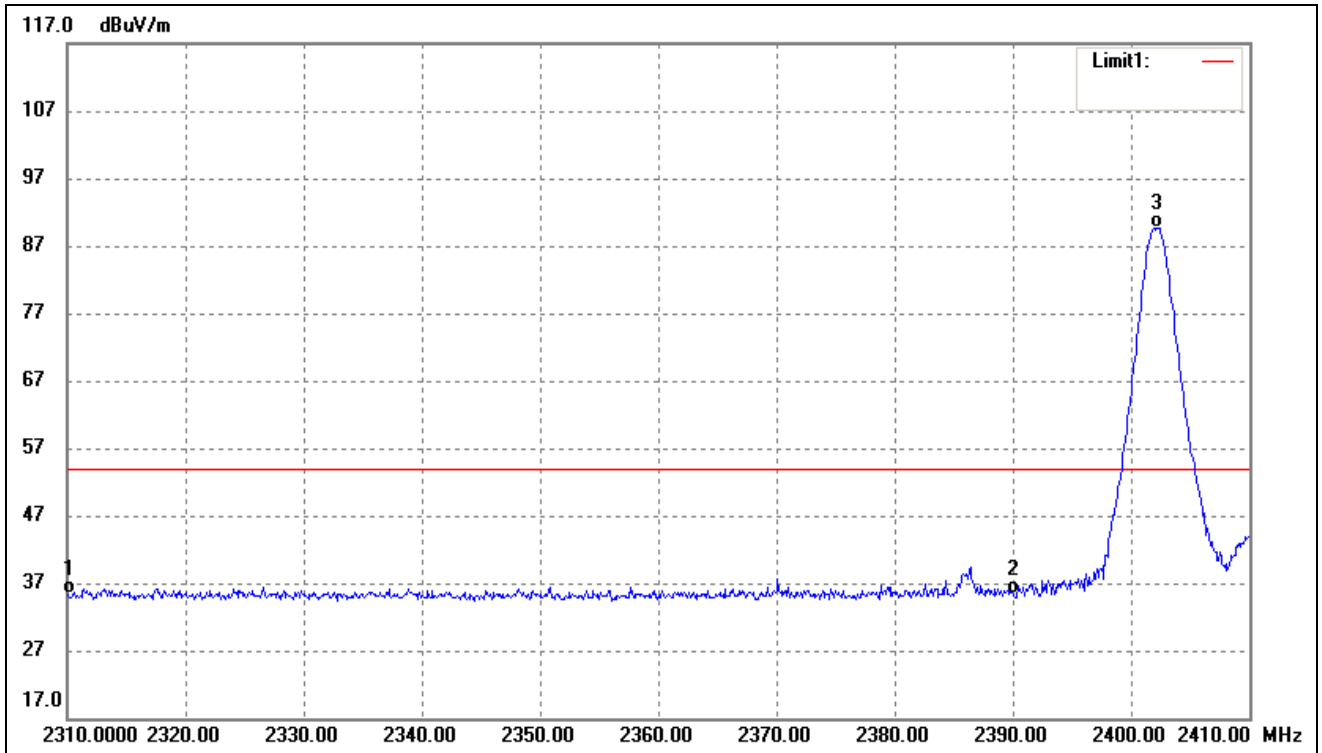
Test mode	Frequency	Limit	Result
	MHz	dBuV / dBc	
Lowest	2310.00	<54 dBuV	Pass
	2390.00	<54 dBuV	Pass
	2400.00	<54 dBuV	Pass
Highest	2483.50	<54 dBuV	Pass
	2500.00	<54 dBuV	Pass

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.

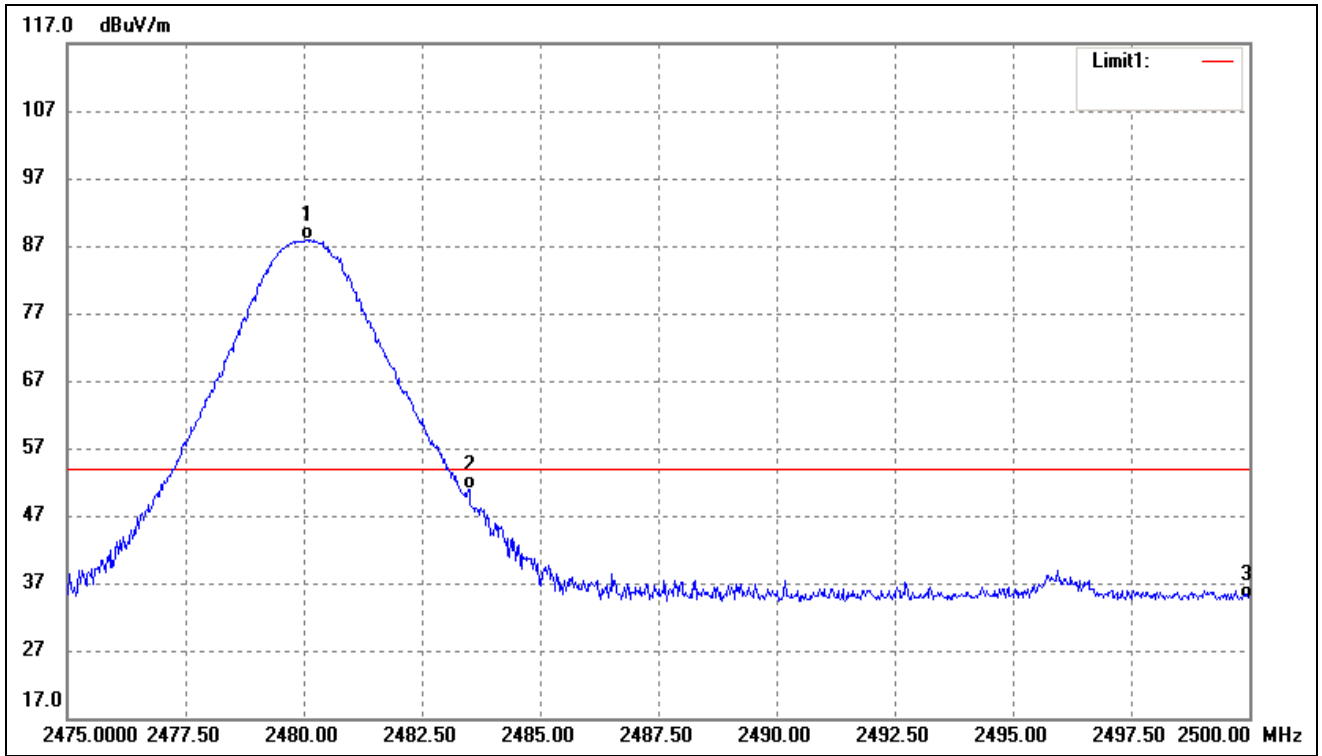


Test Channel	Low	Polarity:	Horizontal (worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	44.95	-9.66	35.29	54.00	-18.71	Ave Detector
	2310.000	53.35	-9.66	43.69	74.00	-30.31	Peak Detector
2	2390.000	44.76	-9.50	35.26	54.00	-18.74	Ave Detector
	2390.000	65.44	-9.50	55.94	74.00	-18.06	Peak Detector
3	2402.200	99.11	-9.47	89.64	/	/	Ave Detector
	2402.300	99.65	-9.47	90.18	/	/	Peak Detector

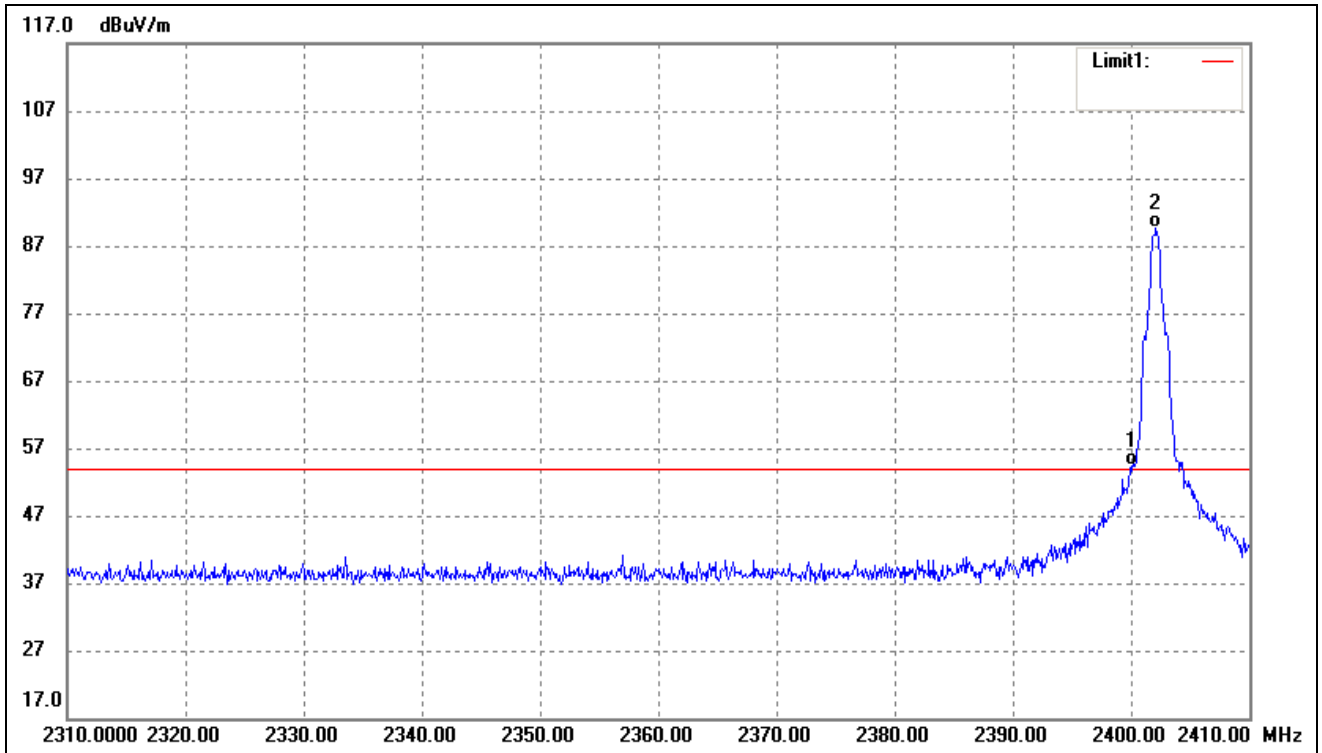
Test Channel	High	Polarity:	Horizontal (worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.075	97.20	-9.32	87.88	/	/	Ave Detector
	2480.375	97.77	-9.32	88.45	/	/	Peak Detector
2	2483.500	60.15	-9.31	50.84	54.00	-3.16	Ave Detector
	2483.500	76.20	-9.31	66.89	74.00	-7.11	Peak Detector
3	2500.000	43.88	-9.28	34.60	54.00	-19.40	Ave Detector
	2500.000	59.39	-9.28	50.11	74.00	-23.89	Peak Detector

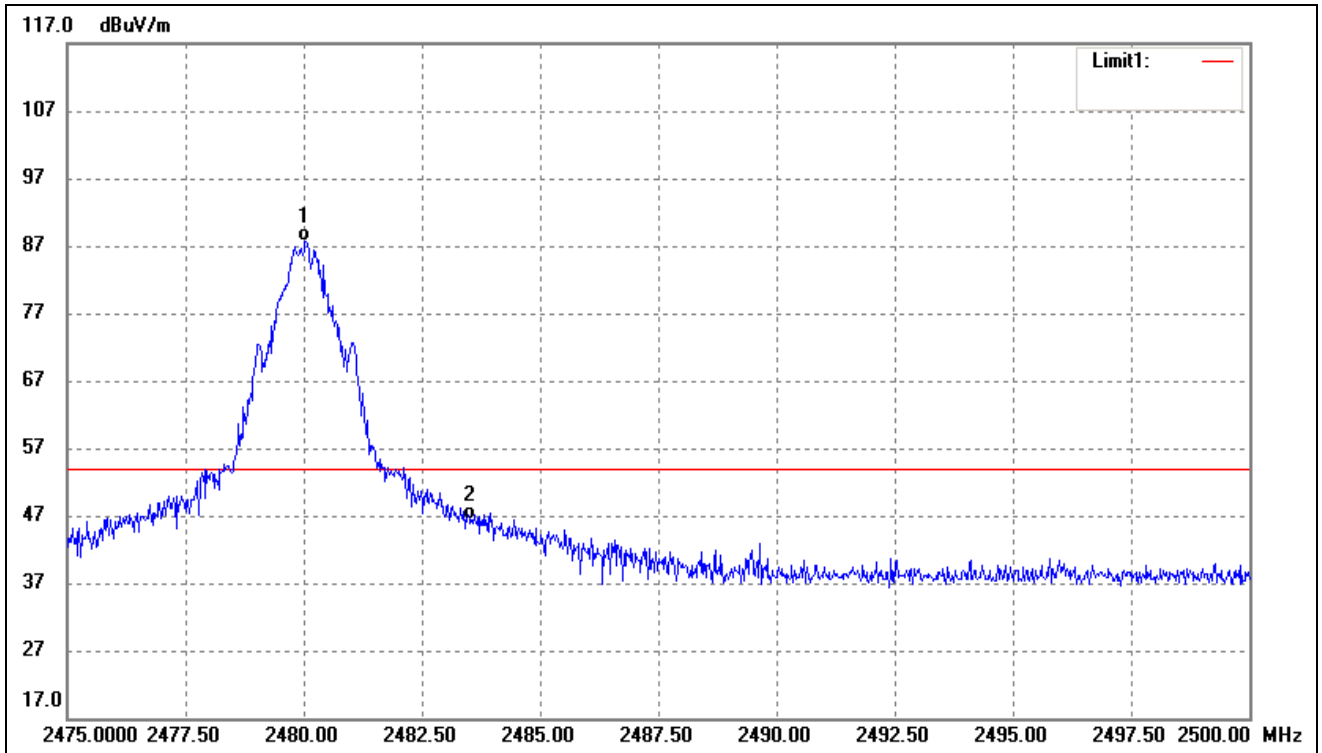
Band edge

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	2400.000	62.52	-9.48	53.04	/	/	Ave Detector
	2400.000	63.74	-9.48	54.26	/	/	Peak Detector
2	2402.100	98.98	-9.47	89.51	/	/	Ave Detector
	2402.100	99.01	-9.47	89.54	/	/	Peak Detector

Test Channel	High	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	2480.025	96.87	-9.32	87.55	/	/	Ave Detector
	2480.050	97.12	-9.32	87.80	/	/	Peak Detector
2	2483.500	55.80	-9.31	46.49	54.00	-7.51	Ave Detector
	2483.500	56.16	-9.31	46.85	74.00	-27.15	Peak Detector

## 6. Emission Bandwidth

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### 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

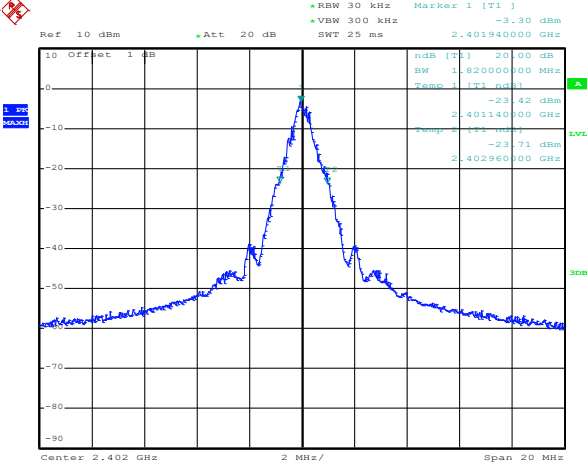
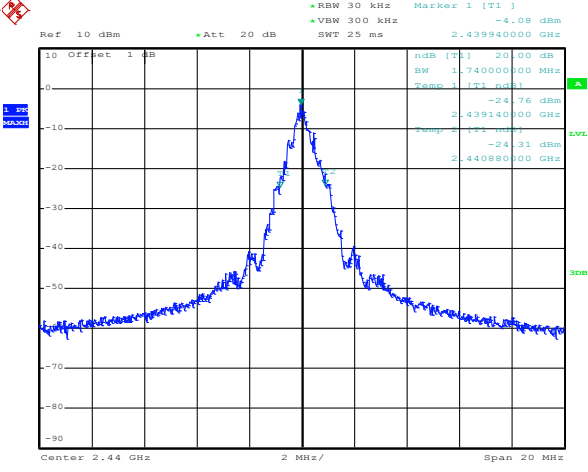
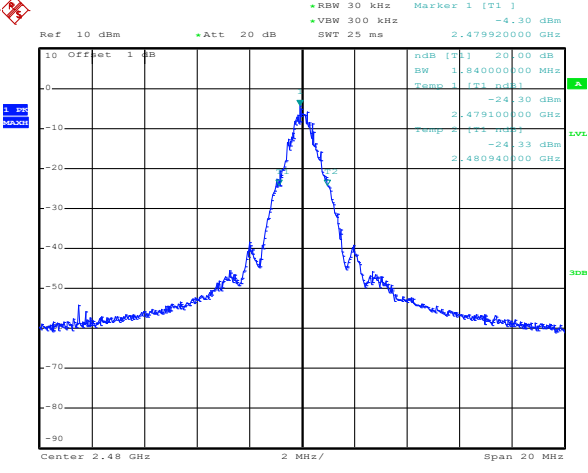
Trace = max hold

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 Channel	20dB Bandwidth(kHz)
Low Channel	1820
Middle Channel	1740
High Channel	1840

*Please refer to the following test plots*

<p>Low Channel</p>	 <p>Ref 10 dBm    *Att 20 dB    RBW 30 kHz    Marker 1 [T1]    -3.30 dBm          VBW 300 kHz    2.401940000 GHz</p> <p>ndB [T1] 20.00 dB          BW 1.820000000 MHz          Temp 1 [T1] ndB1          -23.42 dBm          2.401140000 GHz          Temp 2 [T2] ndB1          -23.71 dBm          2.402960000 GHz</p> <p>Center 2.402 GHz    2 MHz/    Span 20 MHz</p> <p>Date: 4.MAR.2021 15:53:01</p>
<p>Middle Channel</p>	 <p>Ref 10 dBm    *Att 20 dB    RBW 30 kHz    Marker 1 [T1]    -4.08 dBm          VBW 300 kHz    2.439940000 GHz</p> <p>ndB [T1] 20.00 dB          BW 1.740000000 MHz          Temp 1 [T1] ndB1          -24.76 dBm          2.439140000 GHz          Temp 2 [T2] ndB1          -24.31 dBm          2.440880000 GHz</p> <p>Center 2.44 GHz    2 MHz/    Span 20 MHz</p> <p>Date: 4.MAR.2021 15:53:30</p>
<p>High Channel</p>	 <p>Ref 10 dBm    *Att 20 dB    RBW 30 kHz    Marker 1 [T1]    -4.30 dBm          VBW 300 kHz    2.479920000 GHz</p> <p>ndB [T1] 20.00 dB          BW 1.840000000 MHz          Temp 1 [T1] ndB1          -24.30 dBm          2.479100000 GHz          Temp 2 [T2] ndB1          -24.33 dBm          2.480940000 GHz</p> <p>Center 2.48 GHz    2 MHz/    Span 20 MHz</p> <p>Date: 4.MAR.2021 15:55:14</p>

## 7. Conducted Emissions

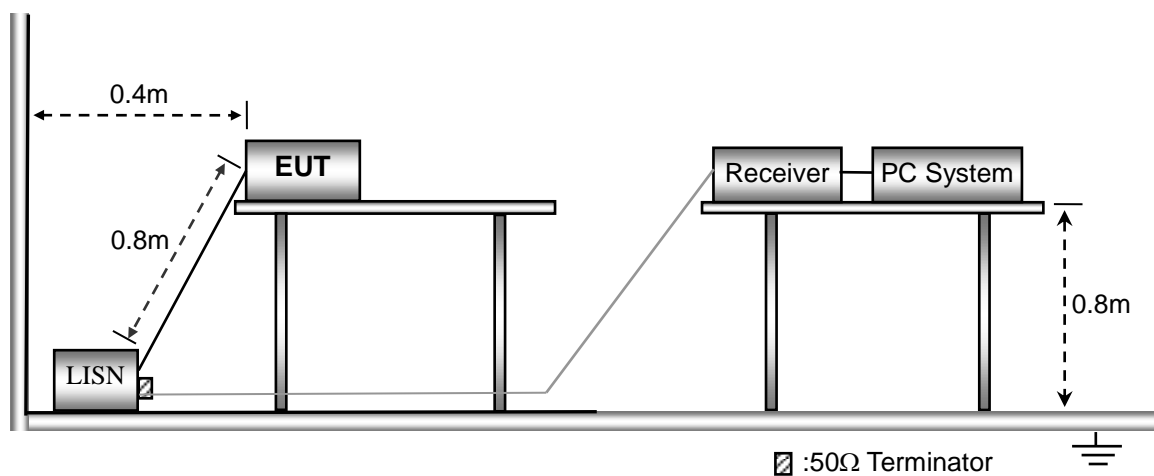
### 7.1 Test Procedure

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

Not applicable

## **APPENDIX PHOTOGRAPHS**

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**Please refer to “ANNEX”**

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