

TEST REPORT

Reference No..... : WTX22X11221946W
FCC ID : 2A89H-ATMOS2
Applicant : OnBrand B.V.
Address : Singel 542, 1017 AZ Amsterdam, Netherlands
Manufacturer : OnBrand B.V.
Address : Singel 542, 1017 AZ Amsterdam, Netherlands
Product Name : Atmosbox
Model No..... : II
Standards : **FCC PART15 SUBPART B**
Date of Receipt sample : 2022-11-07
Date of Test..... : 2022-11-07 to 2022-11-16
Date of Issue : 2022-11-16
Test Report Form No. : WTX_FCC PART15B_001
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:

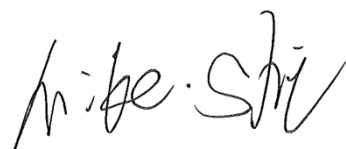
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Mike Shi



Silin Chen

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Report version

Version No.	Date of issue	Description
Rev.00	2022-11-16	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Atmosbox
Trade Name:	/
Model No.:	II
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC5V
Rated Current:	/
Rated Power:	/
Power Adapter Model:	MODEL:TQ-0503000u INPUT:AC100-240V~0.5A Max 50/60Hz OUTPUT:DC5.0V,3.0A
Lowest Internal Frequency:	40MHz
Highest Internal Frequency:	2480MHz
Classification of ITE:	Class B

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B:Unintentional Radiators.

ANSI C63.4-2014:American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result 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 C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

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 Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	The EUT was fully turned on and connected to the router.	The HDMI port, the Ethernet port, the USB port, and the audio port were all in use during the testing.	DC5V

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC cable	1.5	Unshielded	Without Ferrite
Audio cable	1.85	Unshielded	Without Ferrite
Network cable	1.0	Unshielded	Without Ferrite
HDMI	1.0	Shielded	With Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Computer	Lenovo	TP00067A	/
Wireless N300 Easy Setup Router	Tenda	N301	/
Display	Asus	VG28U	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Network cable 1	3.0	Unshielded	Without Ferrite
Network cable 2	1.5	Unshielded	Without Ferrite

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB
Radiated 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

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
☒ Chamber A:Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
Amplifier	Agilent	8447F	3113A06717	2022-01-07	2023-01-06
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19
☐ Chamber A:Above 1GHz					
Amplifier	C&D	PAP-1G18	2002	2022-03-22	2023-03-21
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
☐ Chamber B:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2022-03-25	2023-03-24
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2022-03-22	2023-03-21
☐ Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2022-01-07	2023-01-06
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2023-05-27
Amplifier	HP	8447F	2944A03869	2022-03-22	2023-03-21
☒ Conducted Room 1#					
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-03-25	2023-03-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2022-03-22	2023-03-21
AC LISN	Schwarz beck	NSLK8126	8126-224	2022-03-22	2023-03-21
☐ Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	10129	2022-03-22	2023-03-21
LISN	Rohde & Schwarz	ENV 216	100097	2022-03-22	2023-03-21

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

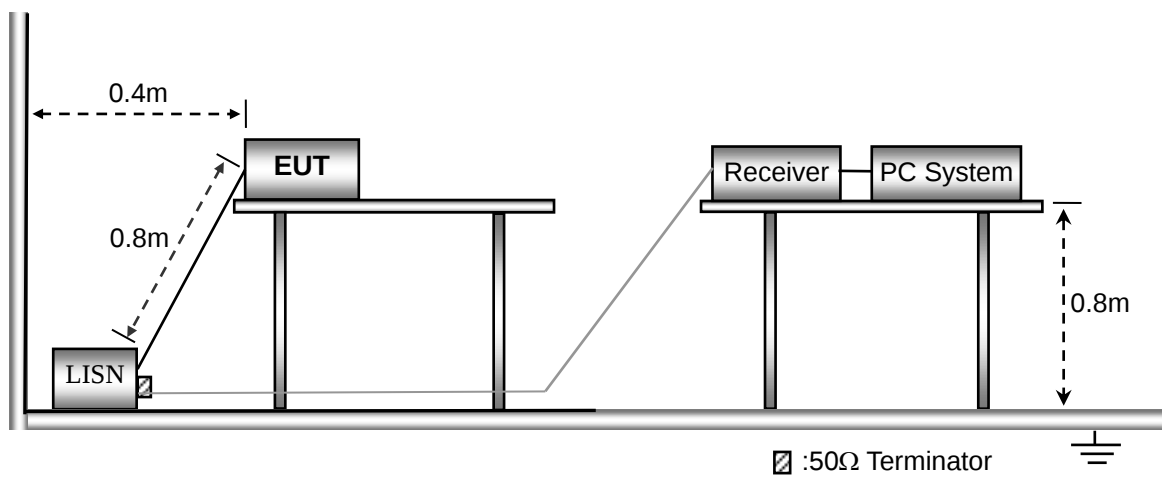
Description of Test	Result
§15.107(a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. Conducted Emissions

3.1 Test Procedure

Test is conducted under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



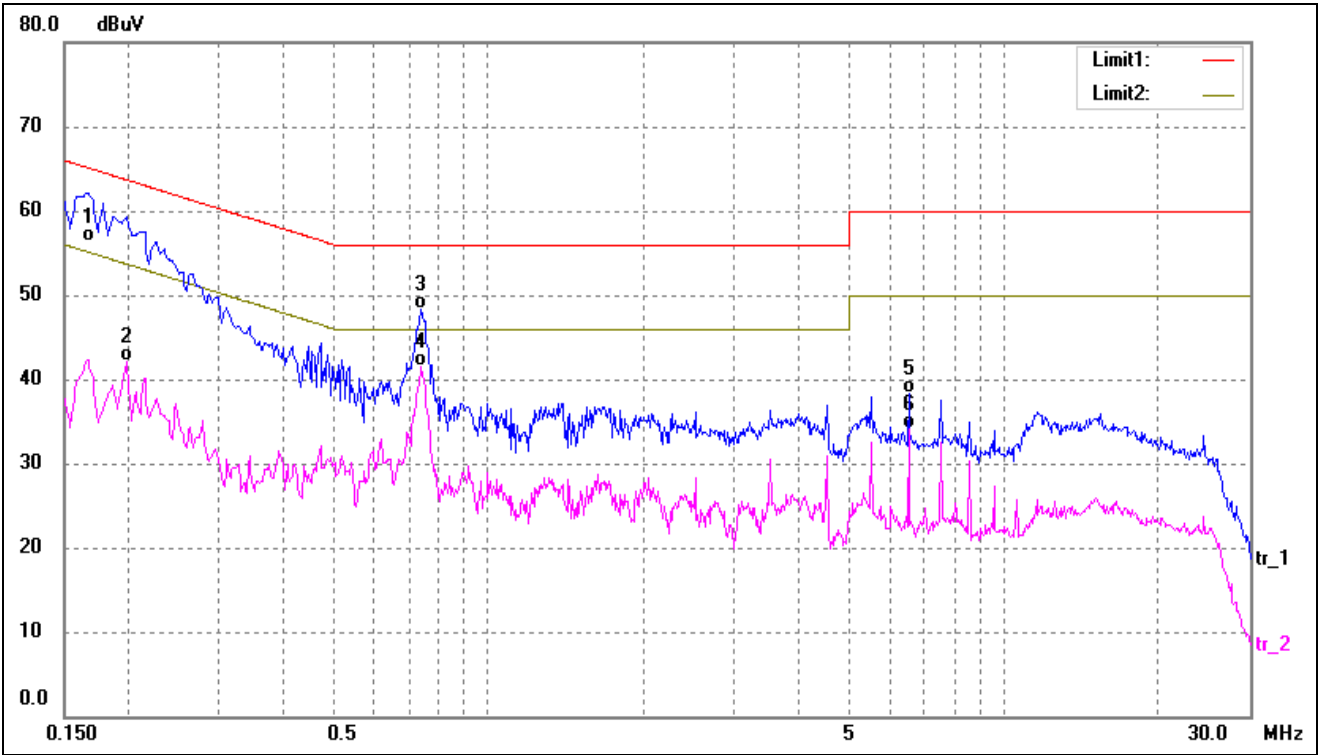
3.3 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

3.4 Summary of Test Results

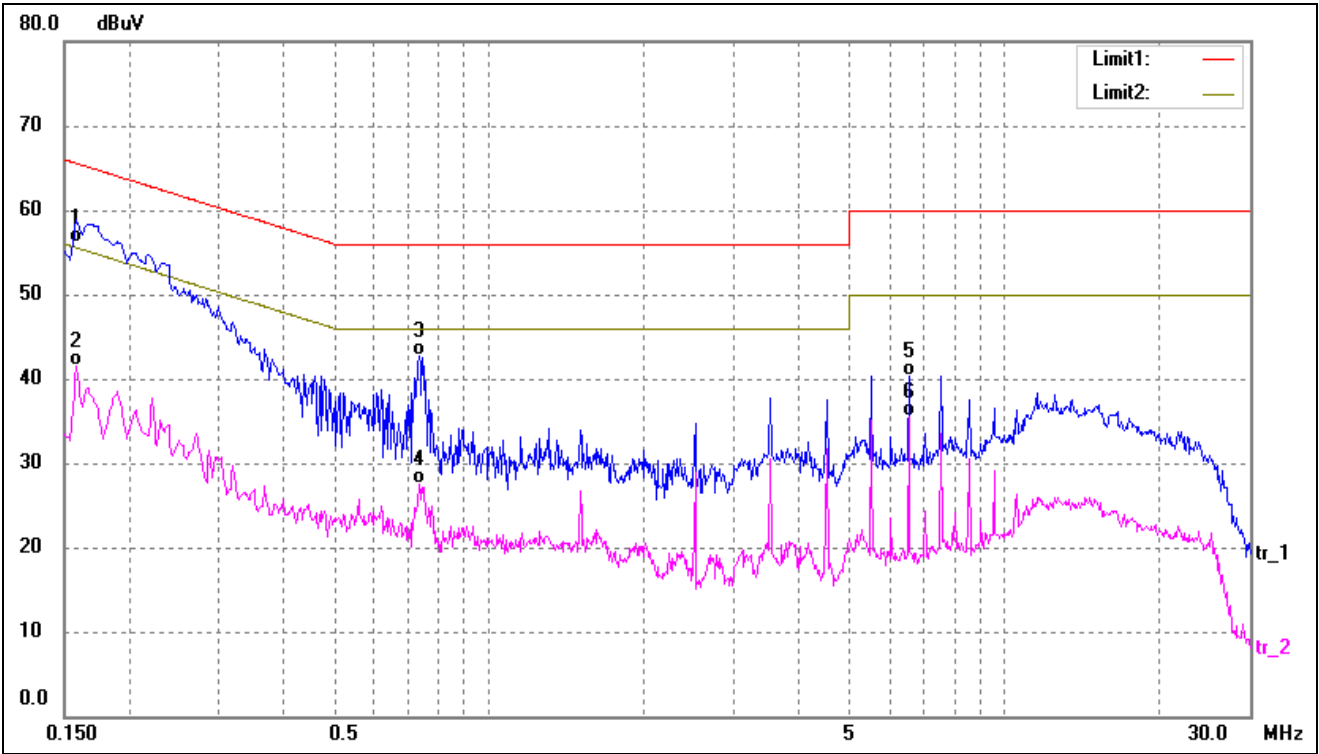
Look at the graphs and data below:

Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	46.06	10.31	56.37	65.16	-8.79	QP
2	0.1980	31.76	10.30	42.06	53.69	-11.63	AVG
3	0.7380	38.19	10.19	48.38	56.00	-7.62	QP
4*	0.7420	31.30	10.19	41.49	46.00	-4.51	AVG
5	6.5420	27.89	10.34	38.23	60.00	-21.77	QP
6	6.5420	23.77	10.34	34.11	50.00	-15.89	AVG

Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1580	45.80	10.31	56.11	65.57	-9.46	QP
2	0.1580	31.12	10.31	41.43	55.57	-14.14	AVG
3	0.7340	32.47	10.19	42.66	56.00	-13.34	QP
4	0.7340	17.24	10.19	27.43	46.00	-18.57	AVG
5	6.5380	29.89	10.34	40.23	60.00	-19.77	QP
6	6.5380	25.16	10.34	35.50	50.00	-14.50	AVG

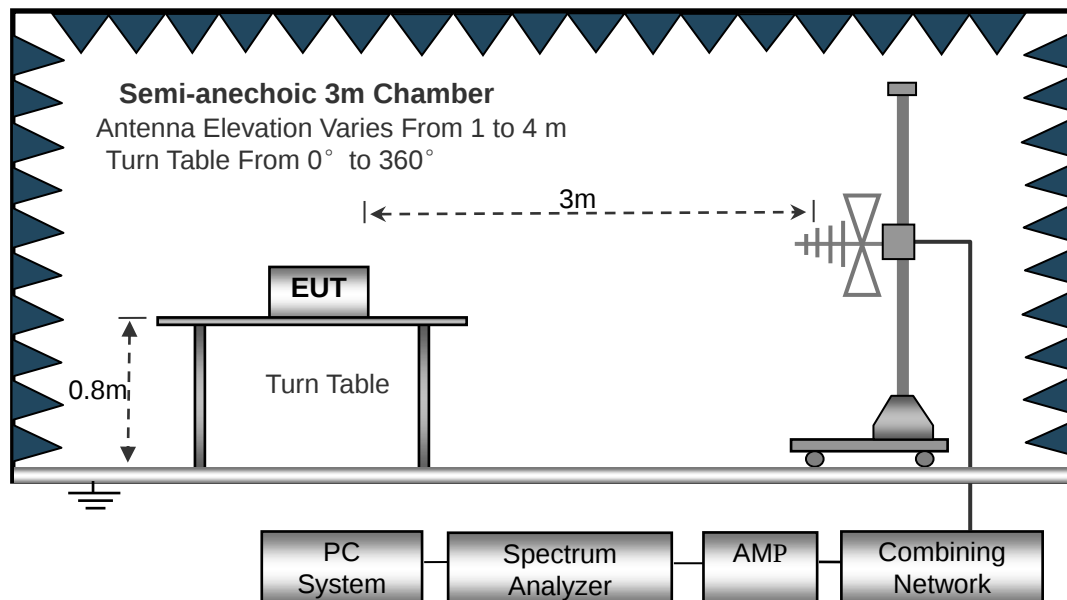
4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 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.

4.2 Block Diagram of Test Setup



4.3 Test Receiver Setup

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

4.4 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:

$$\begin{aligned}\text{Corr. Ampl.} &= \text{Indicated Reading} + \text{Correct} \\ \text{Correct} &= \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}\end{aligned}$$

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 for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.5 Environmental Conditions

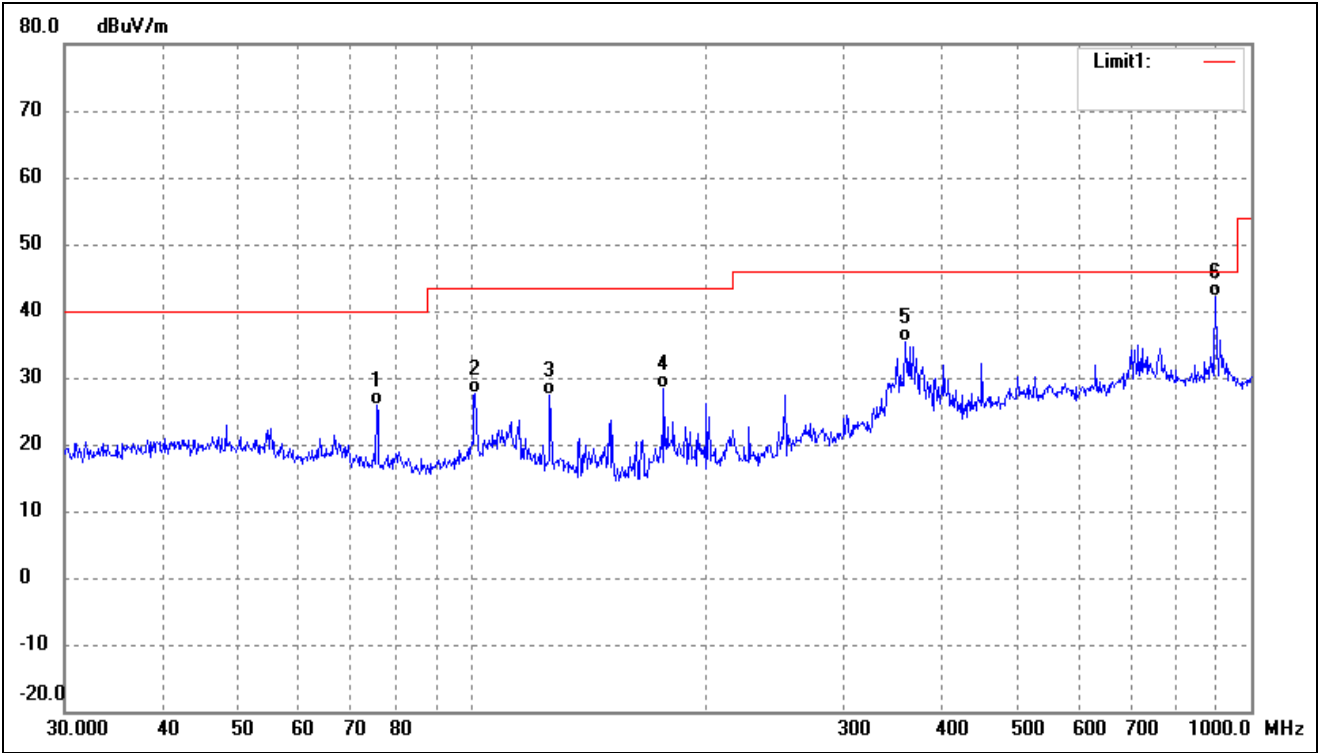
Temperature:	22.5 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

4.6 Summary of Test Results

Look at the graphs and data below:

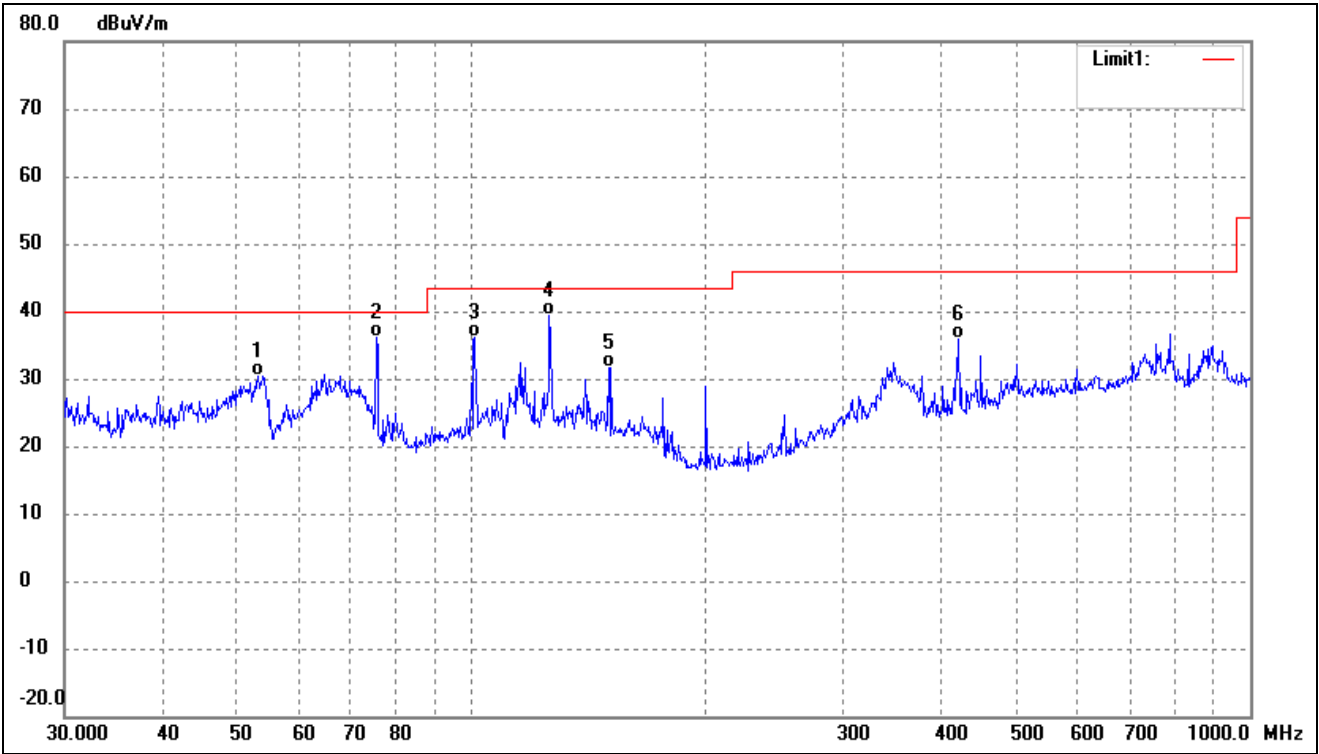
➤ Below 1GHz

Test mode:	TM1	Polarity:	Horizontal
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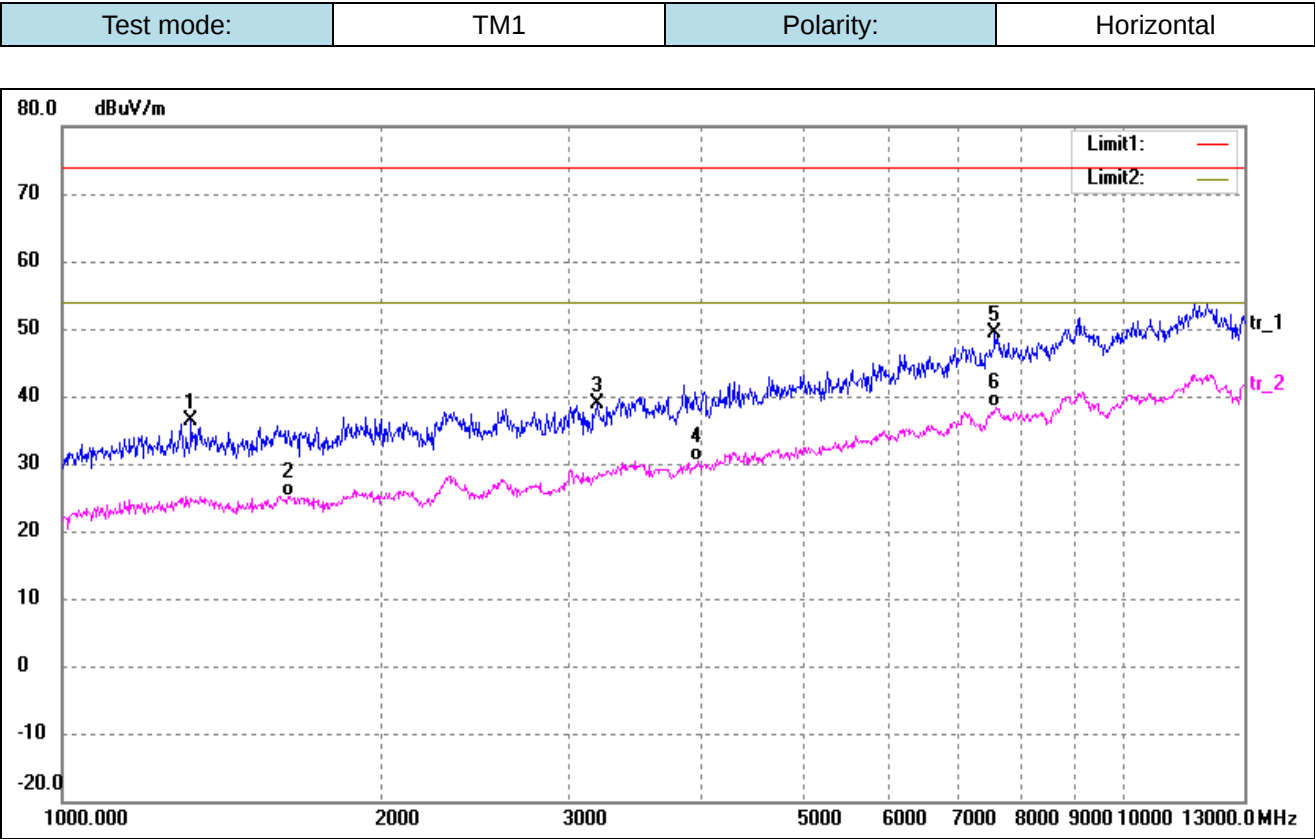
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	75.4464	35.78	-9.87	25.91	40.00	-14.09	-	-	QP
2	100.9340	35.77	-8.17	27.60	43.50	-15.90	-	-	QP
3	125.8864	37.50	-10.16	27.34	43.50	-16.16	-	-	QP
4	176.2686	39.28	-11.00	28.28	43.50	-15.22	-	-	QP
5	359.1860	40.24	-4.79	35.45	46.00	-10.55	-	-	QP
6	900.1474	39.21	2.89	42.10	46.00	-3.90	-	-	QP

Test mode:	TM1	Polarity:	Vertical
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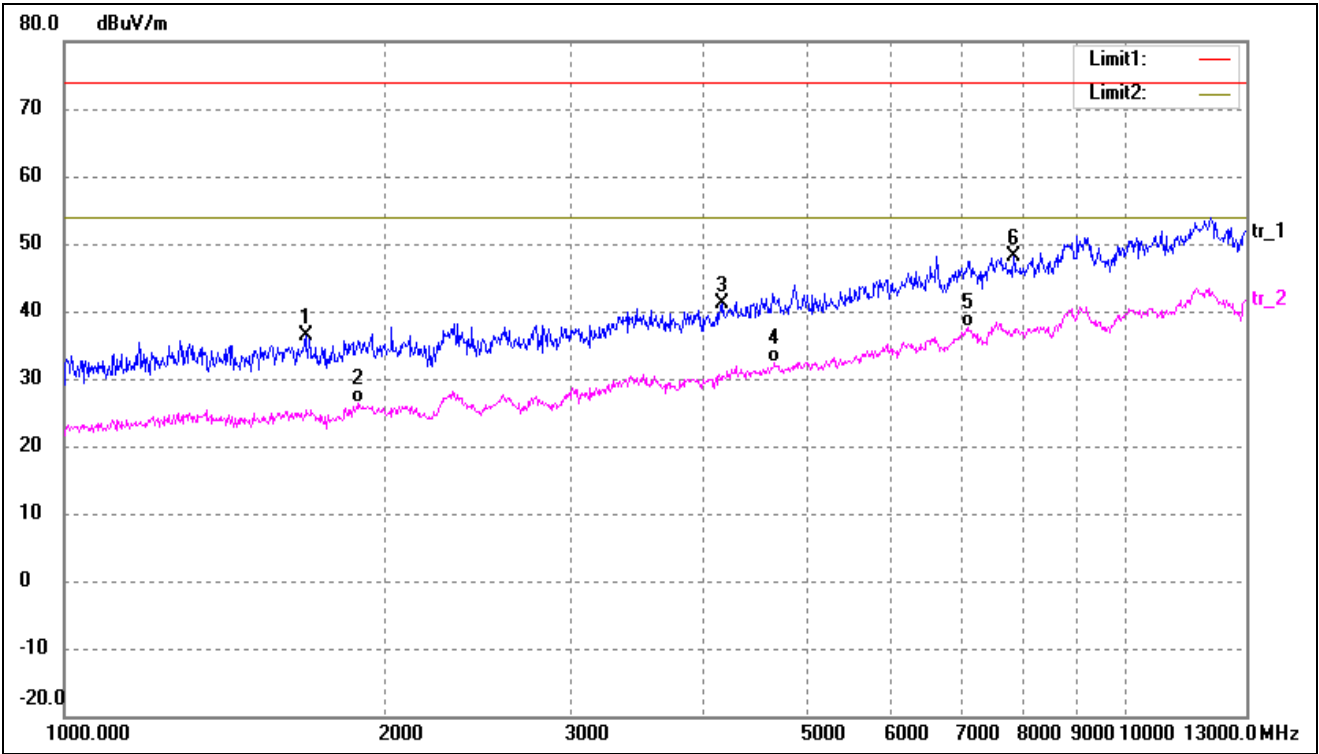
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	53.1313	37.18	-6.78	30.40	40.00	-9.60	-	-	QP
2	75.4464	45.88	-9.87	36.01	40.00	-3.99	-	-	QP
3	100.9340	44.25	-8.17	36.08	43.50	-7.42	-	-	QP
4	125.8864	49.49	-10.16	39.33	43.50	-4.17	-	-	QP
5	150.0108	43.78	-12.15	31.63	43.50	-11.87	-	-	QP
6	422.0577	38.99	-3.03	35.96	46.00	-10.04	-	-	QP

Above 1GHz



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	1322.573	48.70	-12.36	36.34	74.00	-37.66	-	-	peak
2	1636.353	36.30	-11.12	25.18	54.00	-28.82	-	-	AVG
3	3187.883	45.63	-6.79	38.84	74.00	-35.16	-	-	peak
4	3974.674	36.00	-5.69	30.31	54.00	-23.69	-	-	AVG
5	7566.609	45.65	3.66	49.31	74.00	-24.69	-	-	peak
6	7586.042	34.86	3.63	38.49	54.00	-15.51	-	-	AVG

Test mode:	TM1	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	1687.503	47.45	-10.96	36.49	74.00	-37.51	-	-	peak
2	1893.965	36.53	-10.27	26.26	54.00	-27.74	-	-	AVG
3	4173.174	45.98	-4.93	41.05	74.00	-32.95	-	-	peak
4	4671.754	35.55	-3.12	32.43	54.00	-21.57	-	-	AVG
5	7114.865	35.19	2.40	37.59	54.00	-16.41	-	-	AVG
6	7843.258	45.02	3.23	48.25	74.00	-25.75	-	-	peak

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

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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