



REPORT No.: SZ25030399W03

TEST REPORT

APPLICANT : Suunto Sports
Technology(Dongguan)Co., Ltd.

PRODUCT NAME : Outdoor Watch

MODEL NAME : OW244

BRAND NAME : SUUNTO

FCC ID : 2BBLIOW244

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2025-03-31

TEST DATE : 2025-04-22 to 2025-05-30

ISSUE DATE : 2025-07-28

Edited by:

Zeng Xiaoying
Zeng Xiaoying (Rapporteur)

Approved by:

Shen Junsheng
Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd.
FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

Tel: 86-755-36698555

Http://www.morlab.cn

Fax: 86-755-36698525

E-mail: service@morlab.cn





DIRECTORY

1. Technical Information	3
1.1. Applicant and Manufacturer Information	3
1.2. Equipment Under Test (EUT) Description	3
1.3. Test Standards and Results	4
1.4. Environmental Conditions	4
2. 47 CFR Part 15C Requirements	5
2.1. Antenna Requirement	5
2.2. Conducted Emission	6
2.3. Radiated Emission	10
2.4. Frequency Tolerance	17
2.5. 20 dB Bandwidth	19
Annex A Test Uncertainty	21
Annex B Testing Laboratory Information	22

Change History		
Version	Date	Reason for change
1.0	2025-07-28	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Suunto Sports Technology(Dongguan)Co., Ltd.
Applicant Address:	Room 108, No. 5, Longxi Road, Nancheng Street, Dongguan City, Guangdong Province, China
Manufacturer:	Suunto Oy
Manufacturer Address:	Tammiston kauppatie 7 A, FIN-01510 Vantaa, Finland

1.2. Equipment Under Test (EUT) Description

Product Name:	Outdoor Watch	
Sample No.:	1#, 4#,15#	
Hardware Version:	MB244	
Software Version:	2.42.15	
Operating Frequency:	13.56MHz	
Modulation Type:	ASK	
Antenna Type:	Coil Antenna	
Field Strength@3m	61.86dBμV/m	
Accessory Information:	Battery	
	Brand Name:	VDL
	Model No.:	562827PN5
	Serial No.:	N/A
	Capacity:	620mAh
	Rated Voltage:	3.87V
	Charge Limit:	4.45V
	Manufacturer:	Chongqing VDL Electronics Co., LTD.
	USB Cable	
	Model No.:	CC246
	Manufacturer:	Suunto OY

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-15 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	/
2	15.207	Conducted Emission	May 30, 2025	Fan Shengquan	PASS	/
3	15.209 15.225(a) (b) (c)(d)	Radiated Emission	May 27, 2025	Gao Jianrou	PASS	/
4	15.225(e)	Frequency Tolerance	Apr. 29, 2025	Li Zikai	PASS	/
5	15.215(c)	20dB Bandwidth	May 27, 2025	Gao Jianrou	PASS	/

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013. The EUT has been tested under continuous operating condition.

Note 2: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

1.4. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106



2. 47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 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.

2.1.2. Test Result: Compliant

Antenna location	Antenna Type	Coupling Method
☒ Internal ☐ External	☐ FPC Antenna ☐ Spring Antenna ☐ Ceramic Antenna ☐ Integrated Antenna ☐ Dipole Antenna ☐ PCB Antenna ☐ PIFA Antenna ☒ Coil Antenna	☐ I-PEX Connector ☐ SMA Connector ☐ RP-SMA Connector ☒ Metal Shrapnel ☐ Layout

2.2. Conducted Emission

2.2.1. Test Requirement

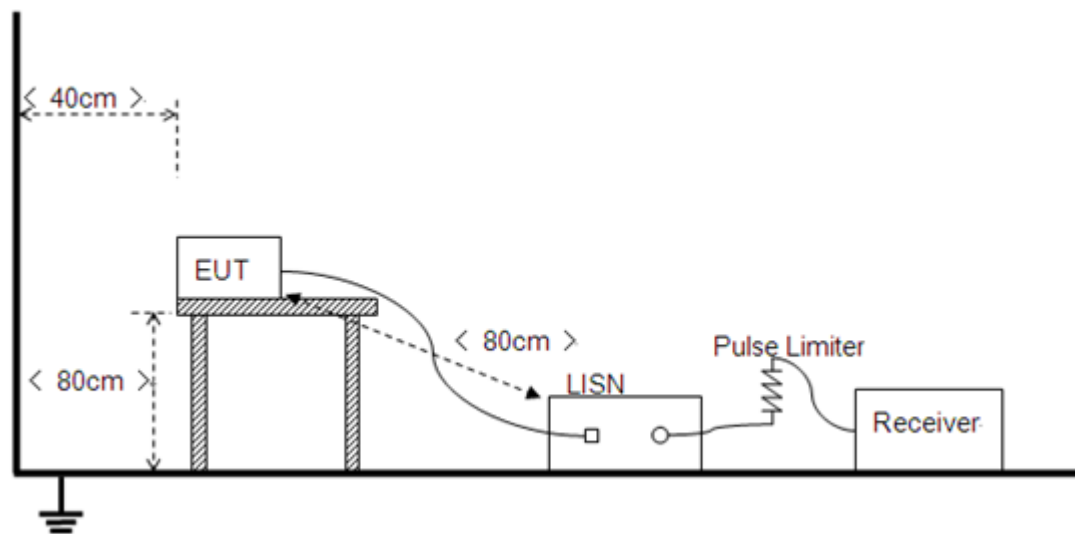
According to FCC section 15.207, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.2.2. Test Setup



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.



2.2.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A.Test Setup:

Test Mode: EUT+Adapter+Charging base+Mobile phone+13.56MHz TX

Test voltage: AC 120V/60Hz

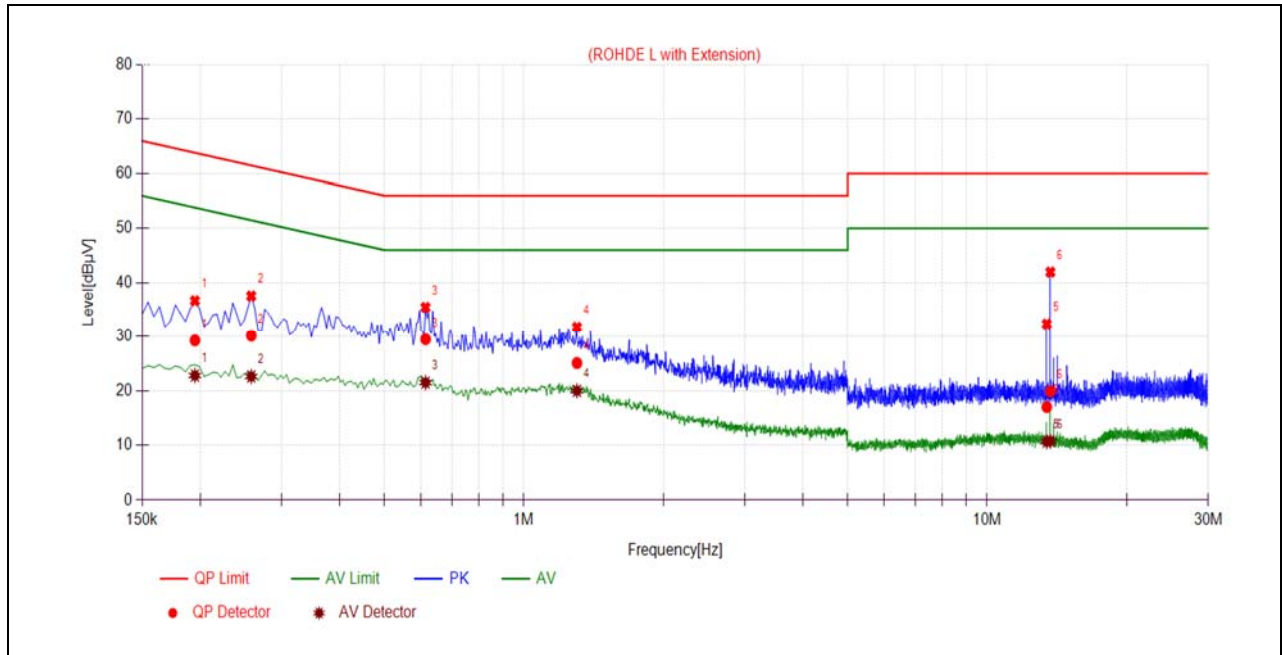
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

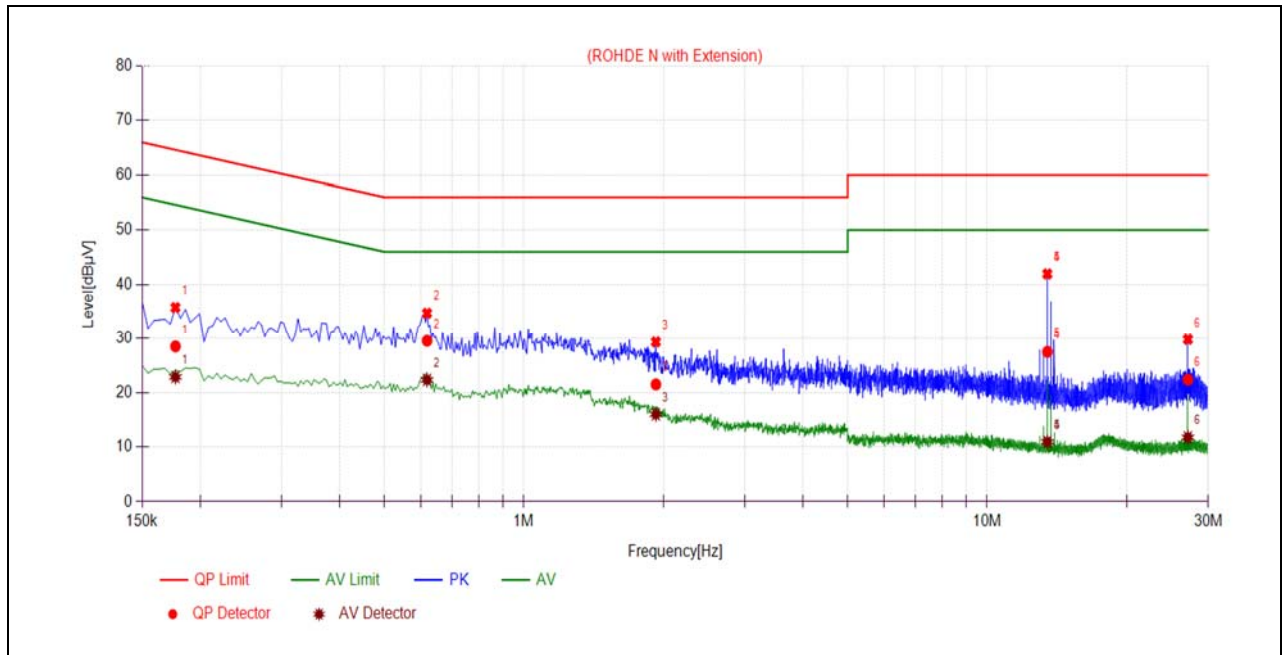
A_{Factor} : Voltage division factor of LISN

B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1950	29.25	22.77	63.82	53.82	Line	PASS
2	0.2580	30.14	22.59	61.50	51.50		PASS
3	0.6136	29.46	21.47	56.00	46.00		PASS
4	1.3019	25.07	19.96	56.00	46.00		PASS
5	13.4467	16.99	10.62	60.00	50.00		PASS
6	13.6917	19.86	10.74	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1770	28.50	22.85	64.62	54.62	Neutral	PASS
2	0.6180	29.54	22.31	56.00	46.00		PASS
3	1.9275	21.49	15.97	56.00	46.00		PASS
4	13.4891	27.50	10.90	60.00	50.00		PASS
5	13.5019	27.97	10.92	60.00	50.00		PASS
6	27.1201	22.36	11.74	60.00	50.00		PASS

2.3. Radiated Emission

2.3.1. Test Requirement

Radiated Emission <30MHz (9 kHz-30MHz, E-field)

According to FCC section 15.225, for <30MHz, Radiated emissions were measured according to ANSIC63.4. The EUT was set to transmit at the highest output power. The EUT was set 30 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the center of the loop. The measuring bandwidth was set to 10KHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT)

There was no detected Restricted bands and Radiated Spurious emission below 30MHz. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;

$$3 \text{ m Limit(dBuV/m)} = 20\log(X)+40\log(30/3)= 20\log(15848)+40\log(30/3) = 124\text{dBuV}$$

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency Range (MHz)	Field Strength@30m		Field Strength@3m
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
Below 13.110	30	29.5	69.5
13.110 ~ 13.410	106	40.5	80.5
13.410 ~ 13.553	334	50.5	90.5
13.553 ~13.567	15.848	84	124
13.567 ~ 13.710	334	50.5	90.5
13.710 ~14.010	106	40.5	80.5
Above 14.010	30	29.5	69.5

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $20*\log[\text{Field Strength } (\mu\text{V/m})]$.

b) In the emission tables above, the tighter limit applies at the band edges.

Radiated Emission >30MHz (30MHz-1GHz, E-field)

According to FCC section 15.205, the field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

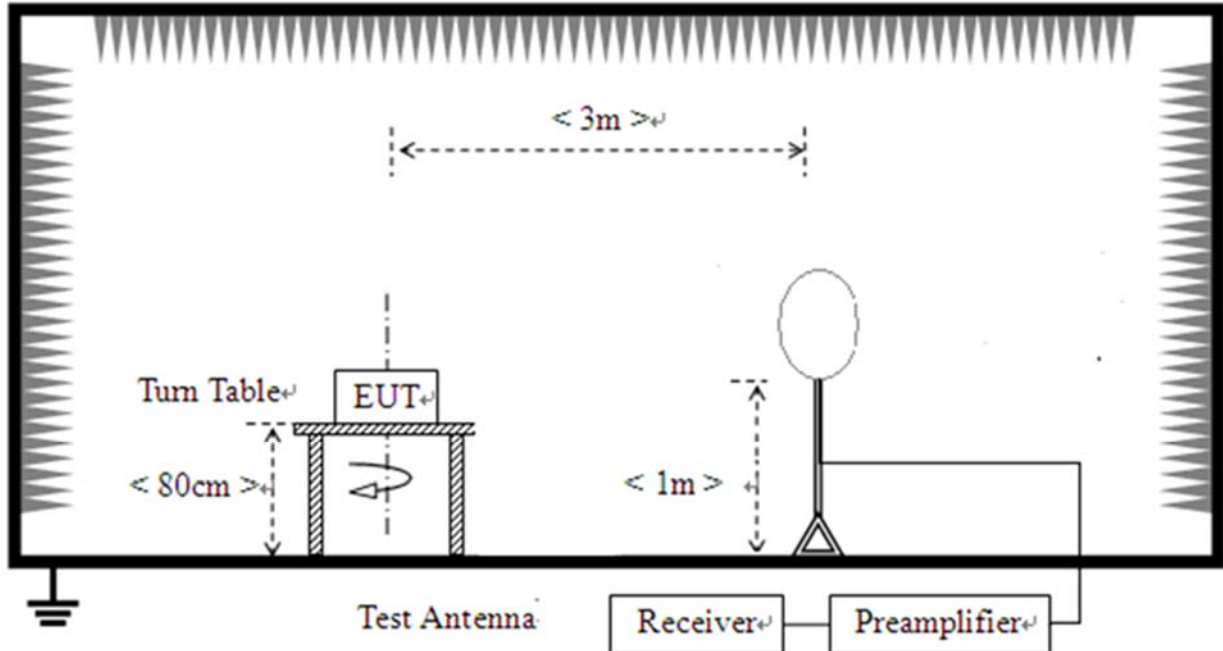
Frequency Range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $20*\log[\text{Field Strength } (\mu\text{V/m})]$.

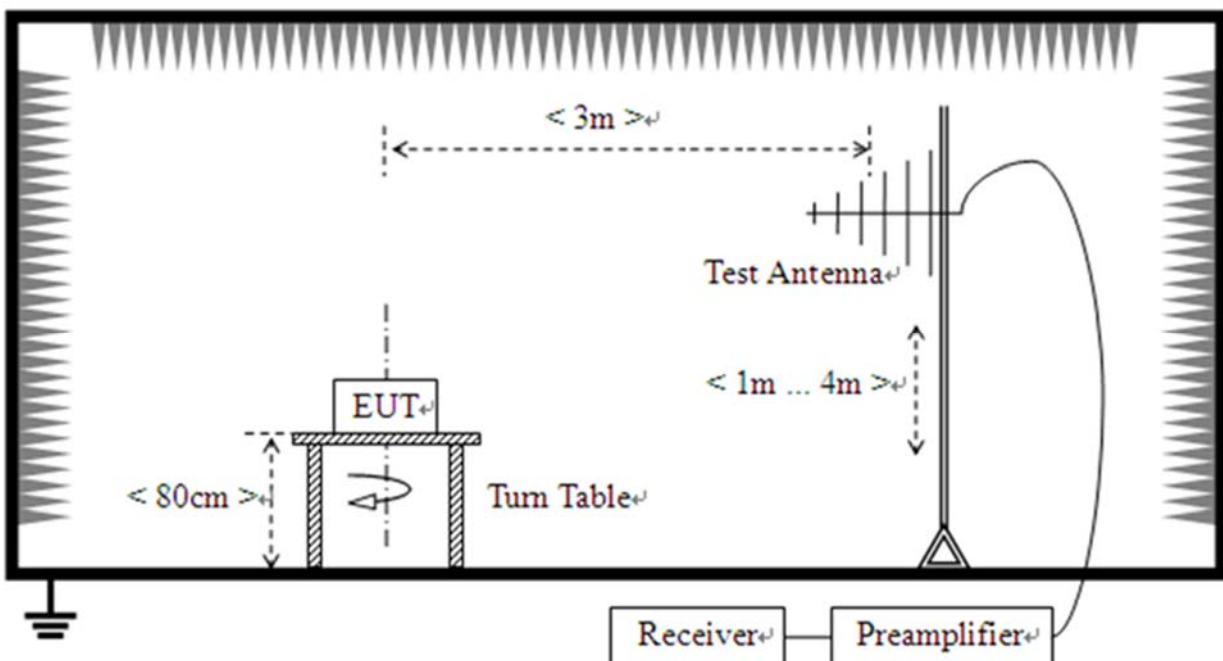
b) In the emission tables above, the tighter limit applies at the band edges.

2.3.2. Test Setup

1) For radiated emissions below 30MHz



2) For radiated emissions from 30MHz to 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating



Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range of 9 kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) was used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

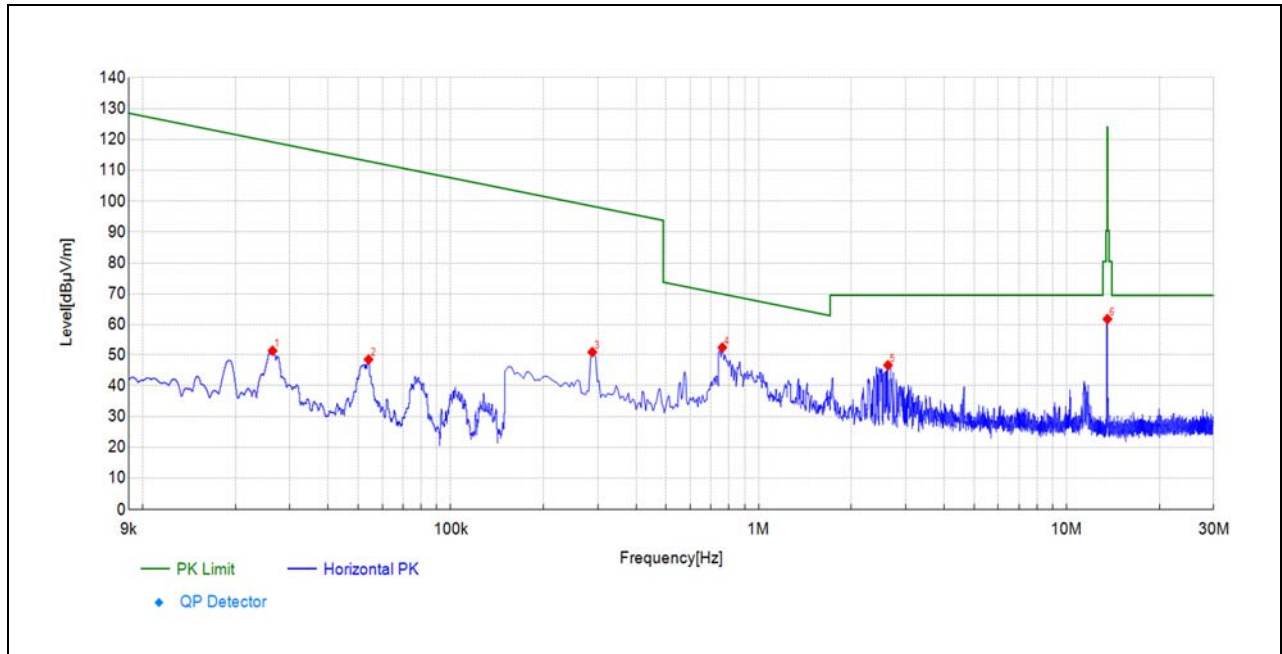
For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector. For measurements frequency range from 0.009MHz to 0.15MHz, the resolution bandwidth is set to 200Hz. For measurements frequency range from 0.15MHz to 30MHz the resolution bandwidth is set to 9kHz.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidth is set to 3MHz for peak measurements and as applicable for average measurements.

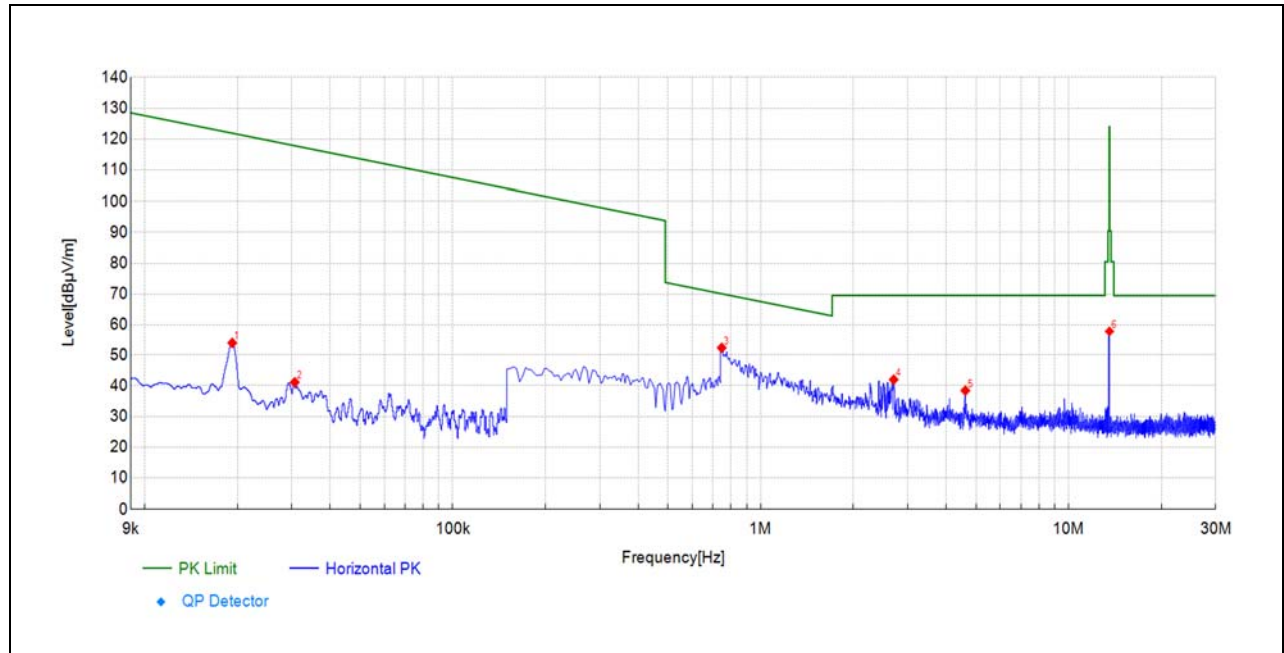
2.3.3. Test Result

A.Radiated Emission <30MHz (9kHz-30MHz, parallel)



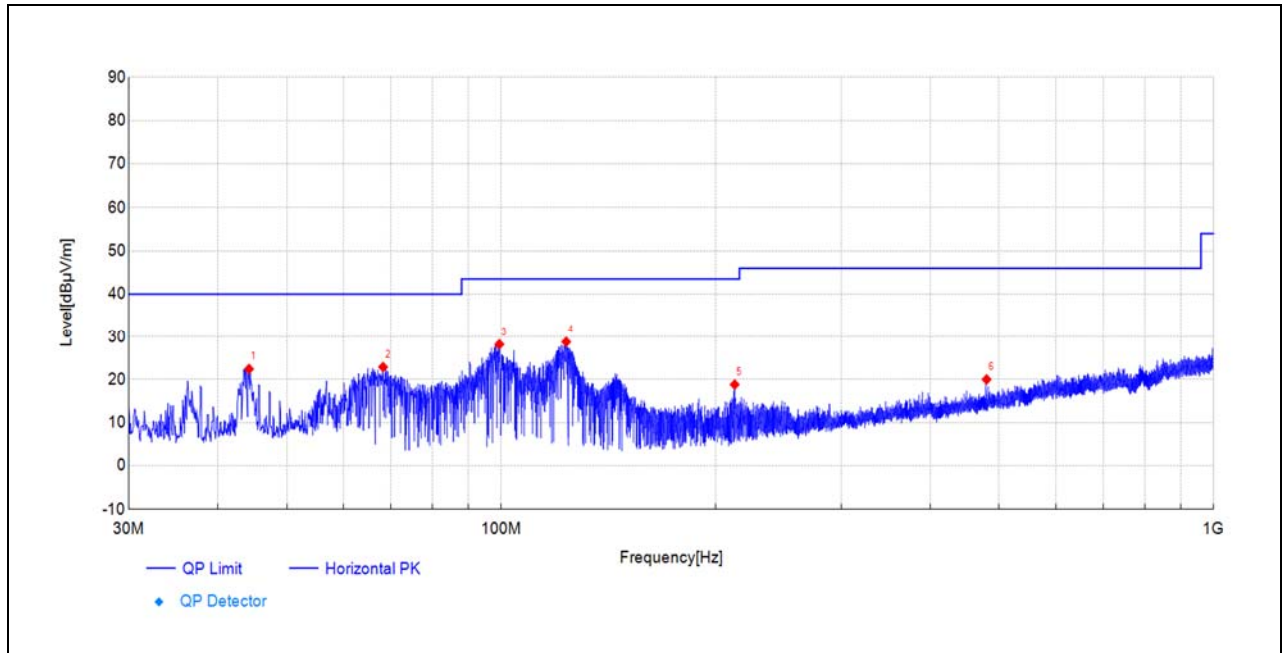
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
0.03	31.7	51.27	19.570	127.26	75.99	100	350	PK	PASS
0.05	28.6	48.42	19.860	125.27	76.85	100	360	PK	PASS
0.29	30.9	50.82	19.890	108.38	57.56	100	70	PK	PASS
0.76	32.3	52.32	20.020	71.38	19.06	100	40	PK	PASS
2.63	26.3	46.58	20.240	69.54	22.96	100	300	PK	PASS
13.56	41.5	61.86	20.350	124.00	62.14	100	250	PK	PASS

B.Radiated Emission <30MHz (9kHz-30MHz, perpendicular)



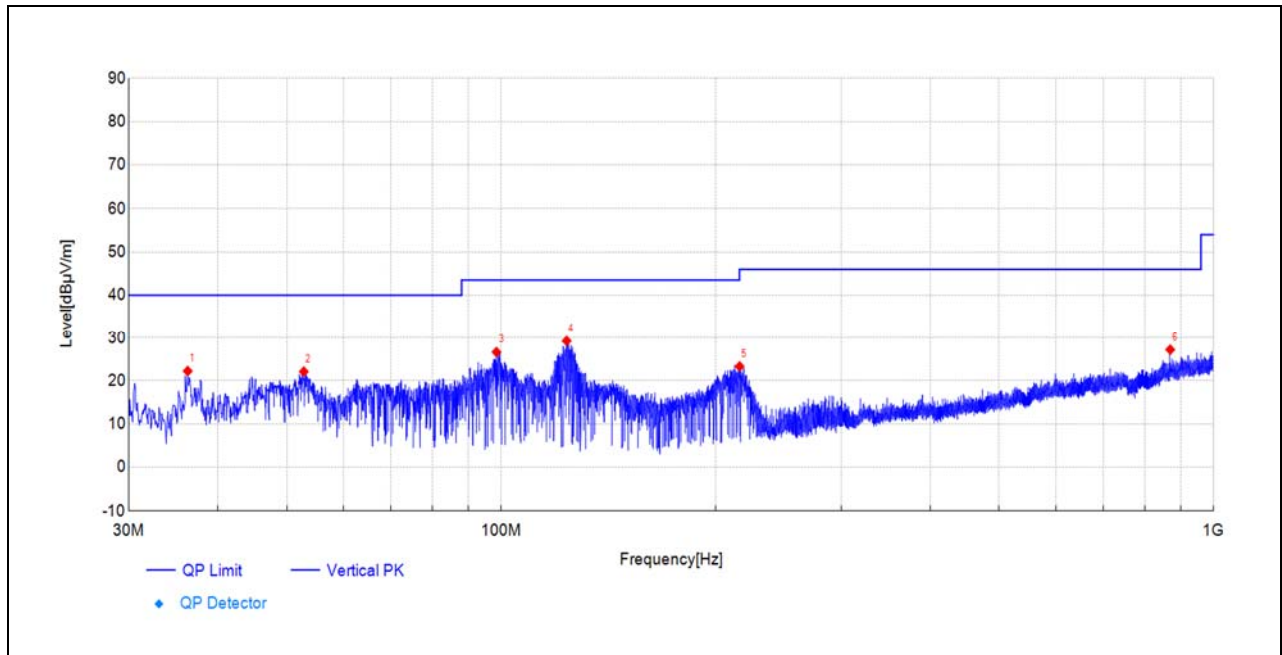
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
0.02	34.4	53.88	19.500	127.78	73.90	100	210	PK	PASS
0.03	21.5	41.09	19.610	126.95	85.86	100	100	PK	PASS
0.75	32.3	52.28	20.020	71.51	19.23	100	130	PK	PASS
2.70	21.7	41.96	20.250	69.54	27.58	100	290	PK	PASS
4.62	18.1	38.40	20.260	69.54	31.14	100	300	PK	PASS
13.56	37.4	57.79	20.350	124.00	66.21	100	140	PK	PASS

C.Radiated Emission >30MHz (30MHz-1GHz)



(30MHz – 1GHz, Test Antenna Horizontal)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
44.26	50.3	22.44	-27.890	40.00	17.56	150	360	PK	PASS
68.27	53.9	22.90	-31.020	40.00	17.10	150	319	PK	PASS
99.41	57.8	28.20	-29.600	43.50	15.30	150	311	PK	PASS
123.37	59.8	28.77	-31.040	43.50	14.73	150	205	PK	PASS
212.66	48.0	18.83	-29.170	43.50	24.67	150	249	PK	PASS
480.01	41.2	20.02	-21.190	46.00	25.98	150	122	PK	PASS



(30MHz – 1GHz, Test Antenna Vertical)

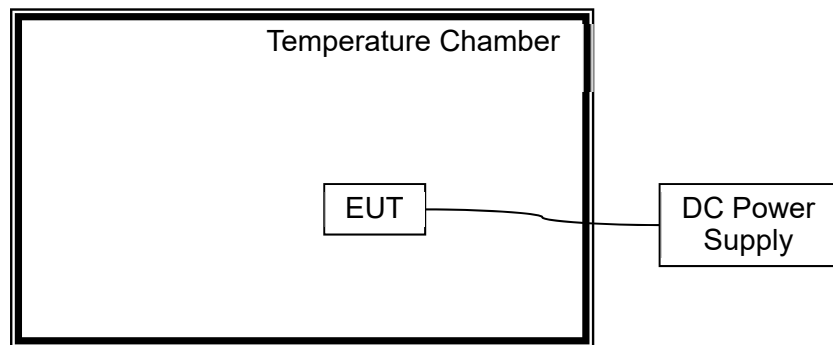
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	51.7	22.23	-29.500	40.00	17.77	150	140	PK	PASS
52.84	49.9	22.11	-27.800	40.00	17.89	150	261	PK	PASS
98.49	56.3	26.64	-29.680	43.50	16.86	150	19	PK	PASS
123.56	60.2	29.24	-30.970	43.50	14.26	150	157	PK	PASS
216.10	52.2	23.31	-28.850	46.00	22.69	150	225	PK	PASS
869.09	39.6	27.20	-12.430	46.00	18.80	150	157	PK	PASS

2.4. Frequency Tolerance

2.4.1. Test Requirement

According to FCC section 15.225, the devices operating in the 13.553~13.567 MHz shall maintain the carrier frequency within 0.01% of the operating frequency over the temperature variation of -20°C to +50°C using an environmental chamber. The primary supply voltage is varied from 85% to 115% of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

2.4.2. Test Setup



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT was measured by transmitter mode continuously.

**2.4.3. Test Result**

Operating Frequency: 13,560,000 Hz

Deference Voltage: 3.87V

Deviant Limit: $\pm 0.01\%$

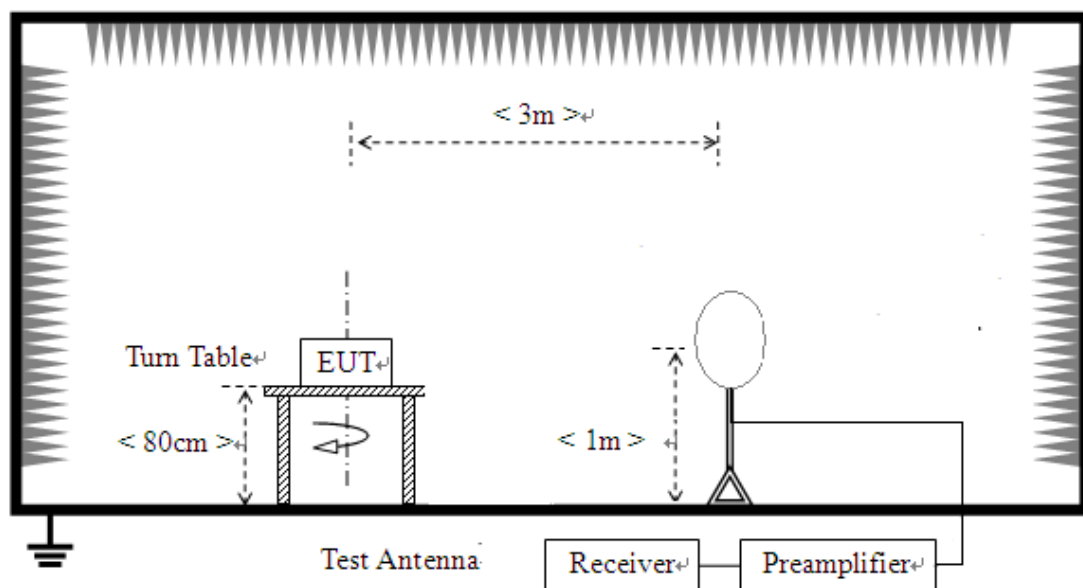
VOLTAGE (%)	Test Conditions		Fre. Dev. (Hz)	Deviation (%)	Verdict
	Power (VDC)	Temperature (°C)			
100	3.87	-20	274	0.00202	PASS
100		-10	278	0.00205	
100		0	266	0.00196	
100		10	269	0.00198	
100		20	265	0.00195	
100		30	271	0.00200	
100		40	273	0.00201	
100		50	277	0.00204	
100		60	264	0.00195	
85	3.00	20	273	0.00201	
115	4.45	20	277	0.00204	

2.5. 20 dB Bandwidth

2.5.1. Standard Applicable

According to FCC section 15.215(c), the 20dB bandwidth should be contained within the frequency band designated in the rule section under which the EUT is operated, it was measured with a spectrum analyzer connected the EUT while the EUT is operating in transmission mode.

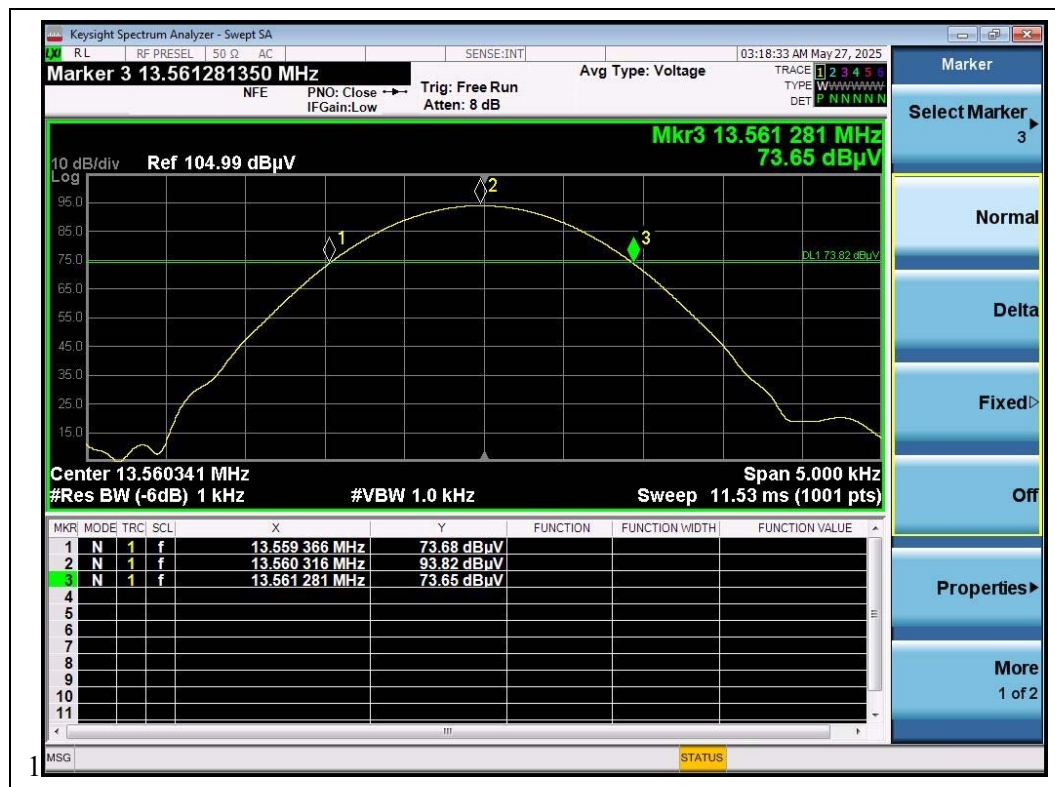
2.5.2. Test Setup





2.5.3. Test Result

Centre Frequency	Measurement		Limit		Verdict
	20 dB Bandwidth (kHz)	Frequency Range (MHz)	20dB Bandwidth (kHz)	Frequency Range(MHz)	
13.56MHz	1.91	13.559366 to 13.561281	14	13.553 to 13.567	PASS





Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Test Items	Uncertainty
Radiated Emission	$\pm 3.1\text{dB}$
Conducted Emission	$\pm 1.8\text{dB}$
Bandwidth	$\pm 5\%$
Frequency Tolerance	$\pm 5\%$



Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipment Utilized

4.1 Radiated Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2024.05.30	2025.05.29
				2025.05.13	2026.05.12
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2024.06.03	2025.06.02
DC Power Supply	1709D361010	IV3610	IVYTECH	2024.09.11	2025.09.19
Temperature Chamber	12108015	DTL-003S101	YOMA	2024.09.11	2025.09.19
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.04.19	2028.04.18
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29

4.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2025.01.06	2026.01.05
LISN	8127449	NSLK 8127	Schwarzbeck	2025.01.09	2026.01.18
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2024.05.30	2025.05.29
				2025.05.13	2026.05.12
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	2024.07.02	2025.07.01

4.3 Test Software Utilized

Description	Manufacturer	Software Version
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0
PMM Emission Suite	narda	Version 2.02

_____ END OF REPORT _____