



RF Test Report

Product Name: Smart Phone

Model Number: NAM-LX9

FCC ID: 2ATEYNAM-LX9

Report No.: SYBH(Z-EMC)20210816008001-3

Authorized	PREPARED (Test Engineer)	REVIEWED (Test Engineer)	APPROVED (Lab Manager)
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DATE	2021-09-06	2021-09-07	2021-09-07

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※ ※ Notice ※ ※

1. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
2. The laboratory has been recognized by the US Federal Communications Commission (FCC) to perform compliance testing subject to the Commission's Certification rules. The Designation Number is CN1173, and the Test Firm Registration Number is 294140.
3. The laboratory has been recognized by the Innovation, Science and Economic Development Canada (ISED) to test to Canadian radio equipment requirements. The CAB identifier is CN0003, and the ISED# is 21741.
4. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named "Global Compliance and Testing Center of Huawei Technologies Co., Ltd", the both names have coexisted since 2009.
5. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. The test report is only valid for the test samples.
8. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
9. If any question about this report, please contact the laboratory (PublicGCTC@huawei.com).

MODIFICATION RECORD

No.	Report No.	Modification Description
1	NA	First release.

DECLARATION

Type	Description
Multiple Models Applications	<input checked="" type="checkbox"/> The present report applies to single model.
	<input type="checkbox"/> The present report applies to several models. The practical measurements are performed with the model.
	The present report only presents the worst test case of all modes, see relevant test results for detailed.

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2 General Information

1.1 Test standard/s

Applied Rules :	47 CFR FCC Part 02 47 CFR FCC Part 15 Subpart C
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1.2 Test Environment

Temperature :	TN	15 to 30	°C during room temperature tests
Ambient Relative Humidity:	25 to 75 %		
Atmospheric Pressure:	Not applicable		
Power supply :	VL	3.6	V
	VN	3.87	V DC by Battery
	VH	4.45	V

NOTE 1: 1) VN= nominal voltage, VL= low extreme test voltage, VH= High extreme test voltage;

TN= normal temperature, TL= low extreme test temperature, TH= High extreme test temperature.

NOTE 2: The values used in the test report may be stringent than the declared.

1.3 Test Laboratories

Test Location :	Reliability Laboratory of Huawei Technologies Co., Ltd. Global Compliance and Testing Center of Huawei Technologies Co., Ltd.
Address of Test Location :	No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C

1.4 Applicant and Manufacturer

Company Name :	HUAWEI Device Co., Ltd.
Address :	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China

1.5 Application details

Date of Receipt Sample:	2021-08-16
Start of test:	2021-08-17
End of test:	2021-09-06

3 Summary

FCC Rule No.	Test Description	Test Limit	Test Condition	Test Result	Reference
15.225 (a)	In-Band Emissions	15,848 μ V/m @ 30m 13.553 – 13.567 MHz	RADIATED	Pass	Section 5.2
2.1049 15.215	Bandwidth	N/A		Pass	Section 5.1
15.225(b)	In-Band Emissions	334 μ V/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz		Pass	Section 5.2
15.225(c)	In-Band Emissions	106 μ V/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		Pass	Section 5.2
15.225(d) 15.209	Out-of-Band Emissions	FCC: Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in 15.209		Pass	Section 5.3
15.225(e)	Frequency Stability Tolerance	\pm 0.01% of Operating Frequency	Temperature Chamber	Pass	Section 5.4
15.207	AC Conducted Emissions 150kHz – 30MHz	FCC: < FCC 15.207 limits	LINE CONDUCTED	Pass	Section 5.5
NOTE: The transmitter has an integral PCB loop antenna that is enclosed within the housing of the EUT and meets the requirements of FCC 15.203					

4 Product Description

4.1 Product Information

4.1.1 General Description

NAM-LX9 is subscriber equipment in the GSM/WCDMA/LTE system. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, Wi-Fi, NFC etc. Externally it provides earphone port (to provide voice service), and dual SIM/single SIM card interface. NAM-LX9 is dual/single SIM smart phone. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

Note: this report is only for NFC.

4.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

4.2.1 Board

Board		
Description	Software Version	Hardware Version
Main Board	9.1.1.75M (C900E51R1P4) GPU Turbo	HL1NTHM

4.2.2 Sub-Assembly

EUT Accessory	
Data Cable(04072004)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: 213-01011-0 Manufacturer: GUANDONG MINGJI HI-TECH ELECTRONICS CO.,LTD.
Data Cable(04072004)	Data Cable USB A Male to USB Type C, 1m, Shielded Model: L99UC139-CS-H Manufacturer: ASAP TECHNOLOGY (JIANGXI) CO.,LTD.
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600E00 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX SN: YD62YEL8C04398
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600B00 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600A00 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600U00 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600E01 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX SN: YE80YEM5L00150
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600B01 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600A01 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600U01 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600E02 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600B02 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX SN: JF01YELC700020
Adapter	Manufacturer: Huawei Device Co.,Ltd.

	Model: HW-110600A02 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Adapter	Manufacturer: Huawei Device Co.,Ltd. Model: HW-110600U02 Input: 100-240V~50/60Hz, 1.8A Output voltage: 5V --- 2A OR 10V --- 4A OR 11V --- 6A MAX
Rechargeable Li-ion	Manufacturer: Huawei Device Co., Ltd. (Sunwoda/SCUD) Battery Model: HB476489EFW Rated capacity: 4200 mAh/ Nominal Voltage: 3.87V Charging Voltage: 4.45V
Earphone(22040351)	Model: 1311-3291-6001-TC-351 Manufacturer: Boluo County Quancheng Electronic Co., Ltd.

Remark: HW-110600E00, HW-110600B00, HW-110600U00 and HW-110600A00 have the same PCB circuit.
HW-110600E01, HW-110600B01, HW-110600U01 and HW-110600A01 have the same PCB circuit. HW-
110600E02, HW-110600B02, HW-110600U02 and HW-110600A02 have the same PCB circuit.

4.3 Technical Description

NOTE: For the detailed technical descriptions, see the applicant/manufacturer's specifications or user manual.

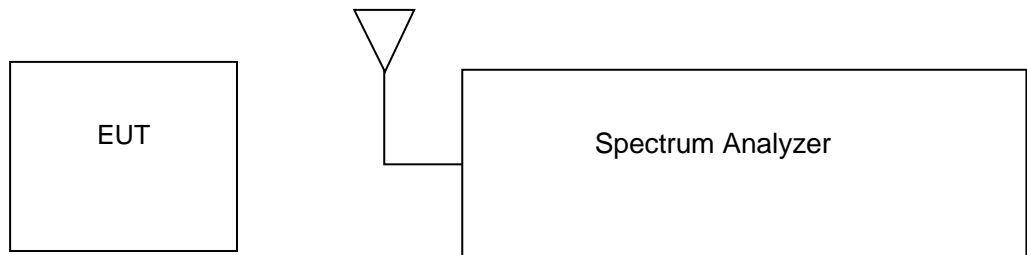
Characteristics	Description	
Operating Frequency	13.56MHz	
Modulation Type	ASK	
Antenna Type	Loop Antenna	
Description of product Class:	<input checked="" type="checkbox"/> product Class 1, <input type="checkbox"/> product Class 2, <input type="checkbox"/> product Class 3, <input type="checkbox"/> product Class 4	
Power Supply	Power Supply Type:	<input type="checkbox"/> External DC mains, <input checked="" type="checkbox"/> Battery, <input type="checkbox"/> AC/DC Adapter, <input type="checkbox"/> Powered over Ethernet (PoE). <input type="checkbox"/> USB <input type="checkbox"/> Other_____
	Input Rated Voltage	3.87V
	Operating Voltage Range	3.6V~4.45V

5 Test Results

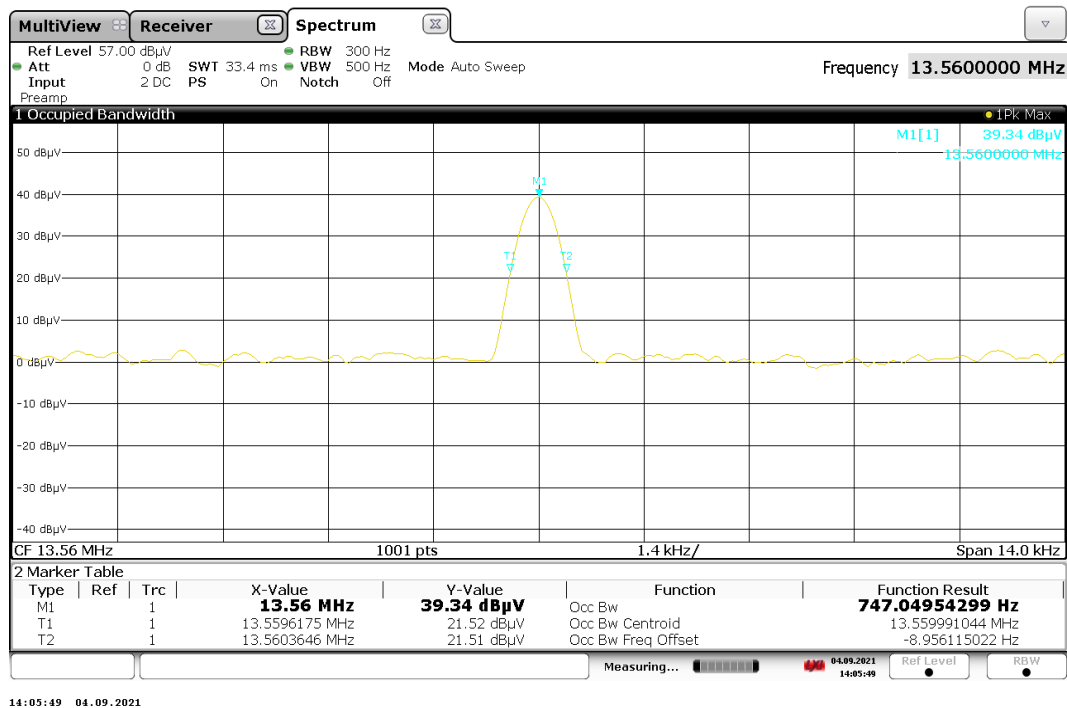
5.1 Bandwidth Measurement

The 99% emission bandwidth and 20dB bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

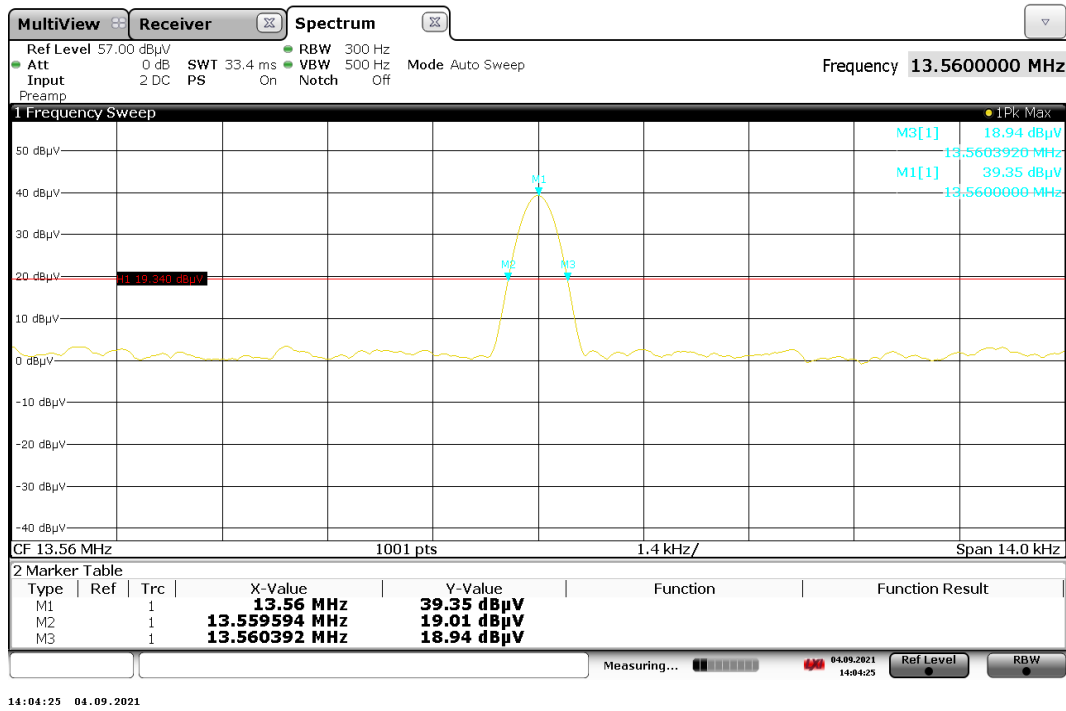
5.1.1 Test Setup



5.1.2 Test Result



Emission bandwidth	Result (Hz)	FL@OBW (MHz)	FH@OBW (MHz)	Verdict
99% emission bandwidth	747.1	13.5596175	13.5603646	PASS

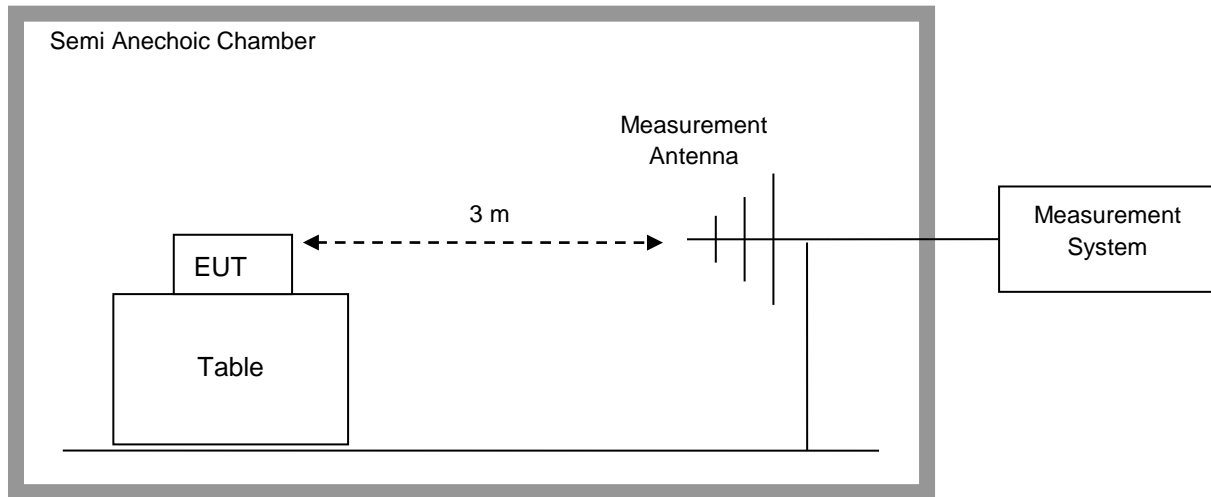


Emission bandwidth	Result (Hz)	FL@OBW (MHz)	FH@OBW (MHz)	Verdict
20dB bandwidth	798	13.559594	13.560392	PASS

The result of the measurement is passed.

5.2 In-Band Radiated Spurious Emission Measurements

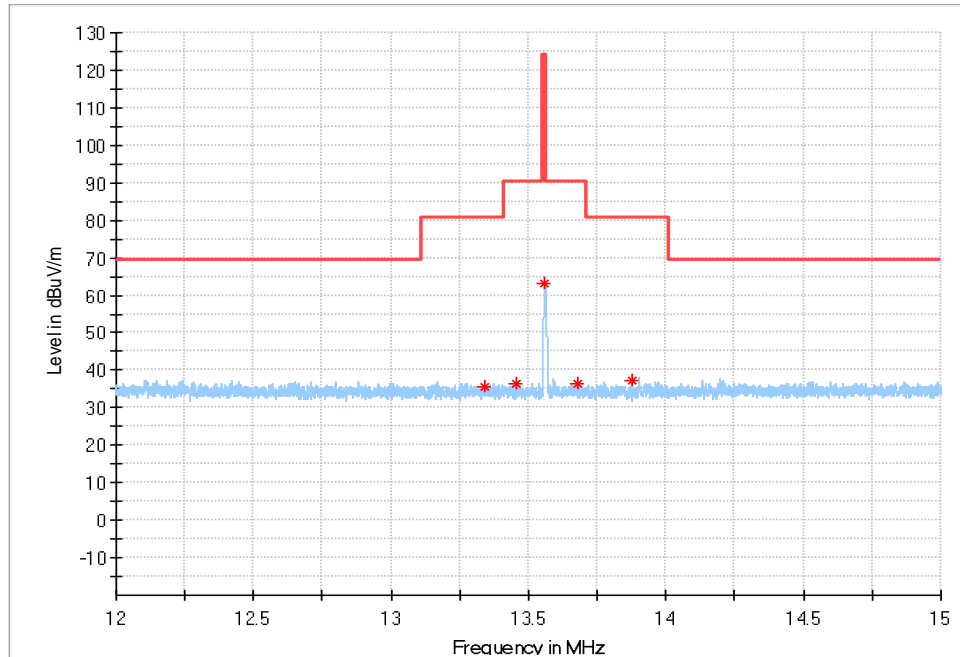
5.2.1 Test Setup



Measurement parameters	
Detector:	Quasi Peak
Sweep time:	-/-
Resolution bandwidth:	9 kHz
Video bandwidth:	30 kHz
Span:	-/-
Trace-Mode:	Max Hold

5.2.2 Test Result

Test Result



MEASUREMENT RESULT: QP Detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (deg)
13.341563	35.59	80.50	44.91	133.0
13.457438	36.43	90.50	54.07	107.0
13.559063	63.06	124.00	60.94	324.0
13.680375	36.45	90.50	54.05	48.0
13.874438	37.34	80.50	43.16	223.0

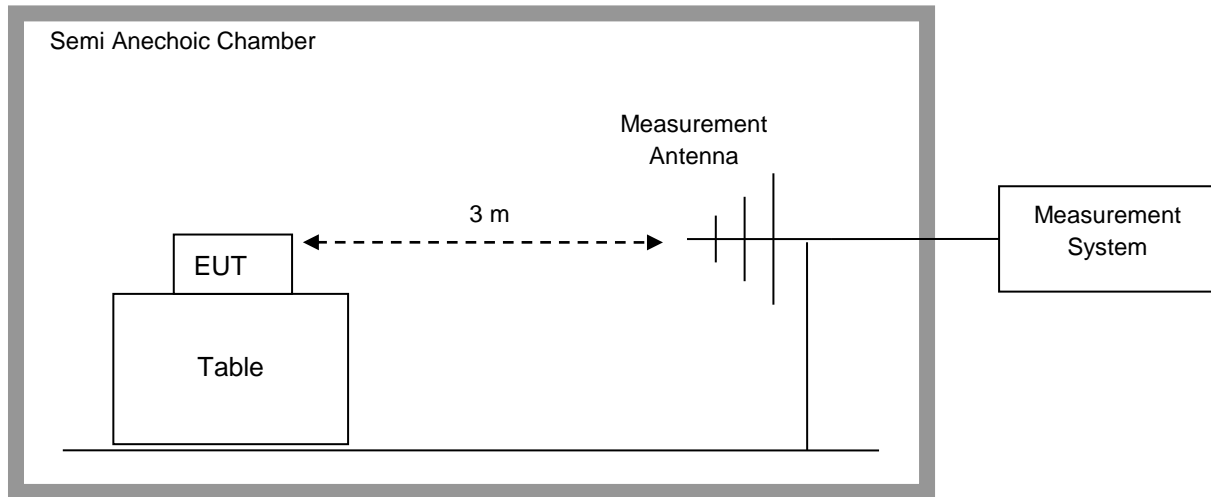
NOTES:

1. All measurements were performed using a loop antenna. The antenna was positioned in three orthogonal positions (X front, Y side, Z top) and the position with the highest emission level was recorded.
2. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor = $20 \log_{10}(30/3)^2 = 40\text{dB}$
3. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.
4. Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain). The reading level is calculated by software which is not shown in the sheet.

The result of the measurement is passed.

5.3 Radiated Spurious Emission Measurements, Out-of-Band

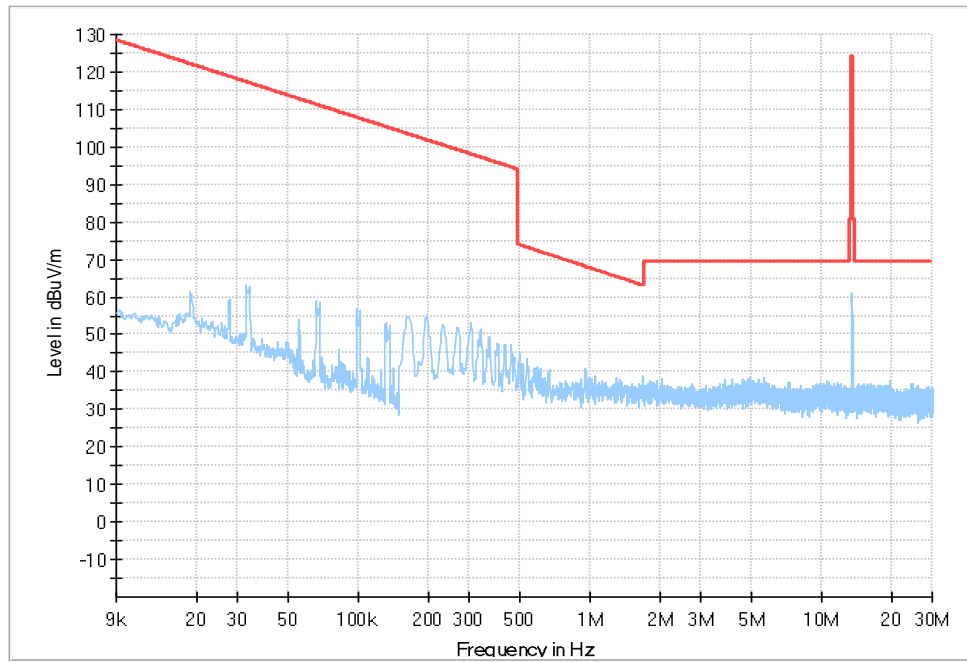
5.3.1 Test Setup



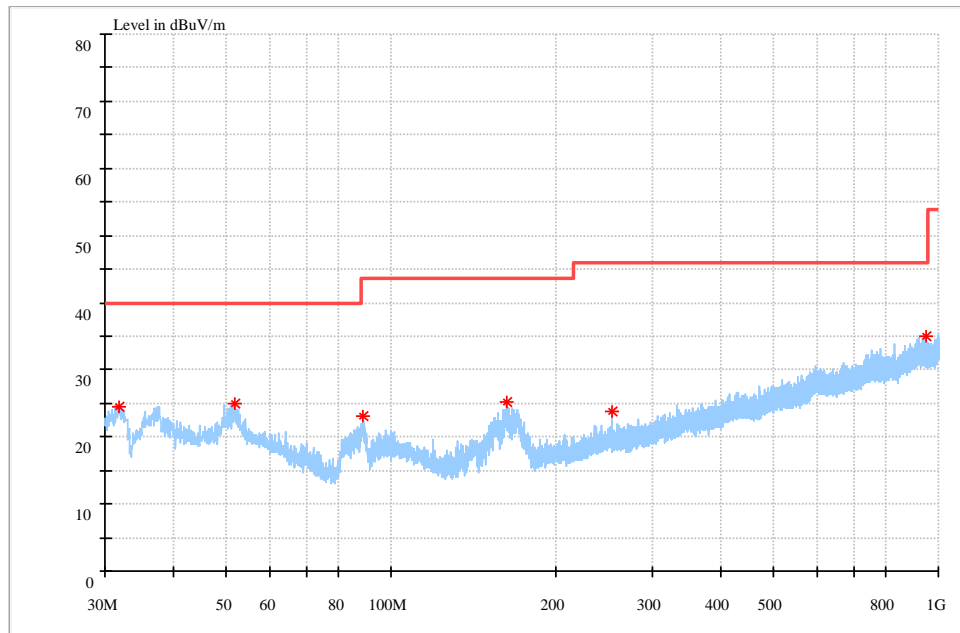
Measurement parameters	
Detector:	Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Video bandwidth:	9 kHz – 150 kHz: 500 Hz 150 kHz – 30 MHz: 30 kHz 30 MHz – 1000 MHz: 300 kHz
Span:	See Plots
Trace-Mode:	Max Hold

5.3.2 Test Result

9k~30MHz



30M~1GHz



Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarisation	Azimuth (deg)	Transd (dB)
31.891500	24.58	40.00	15.42	100.0	V	119.0	16.4
51.825000	25.04	40.00	14.96	100.0	V	359.0	20.5
89.121500	23.08	43.50	20.42	100.0	V	128.0	16.3
163.181000	25.12	43.50	18.38	100.0	V	167.0	15.5
253.924500	23.77	46.00	22.23	100.0	H	184.0	19.8
951.742500	35.09	46.00	10.91	100.0	V	158.0	30.9

NOTES:

1. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector for emissions below 960MHz.
2. Both Vertical and Horizontal polarities of the receive antenna were evaluated with the worst case emissions being reported. Below 30MHz the Loop antenna was positioned in 3 separate radials.
3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
4. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
5. Level =Reading level by receiver + Trends (Antenna factor + cable loss – preamplifier gain). The reading level is calculated by software which is not shown in the sheet.

The result of the measurement is passed.

5.4 Frequency Stability

5.4.1 Test Setup

The EUT was placed in a Climatic Chamber. A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer. Measurement performed without modulation on TX.

5.4.2 Test Result

VOLTAGE (%)	POWER Battery	TEMP (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100%	VN	-20	13559530	-470	-0.0034661
100%		-10	13559738	-262	-0.0019322
100%		0	13560316	316	0.0023304
100%		10	13560266	266	0.0019617
100%		20	13560060	60	0.0004425
100%		30	13559393	-607	-0.0044764
100%		40	13559545	-455	-0.0033555
100%		50	13560603	603	0.0044469
85%	VL	20	13560213	213	0.0015708
115%	VH	20	13559180	-820	-0.0060472

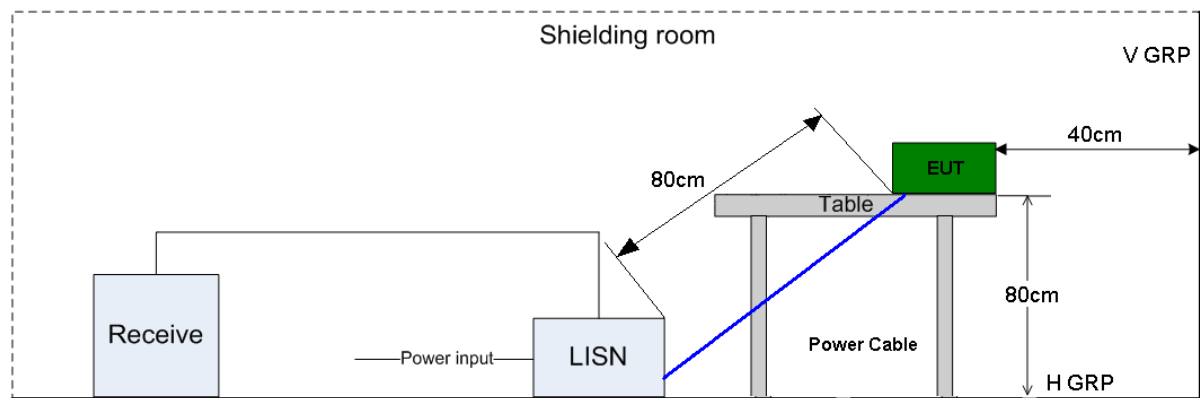
The result of the measurement is passed.

5.5 AC Power Line Conducted Emissions

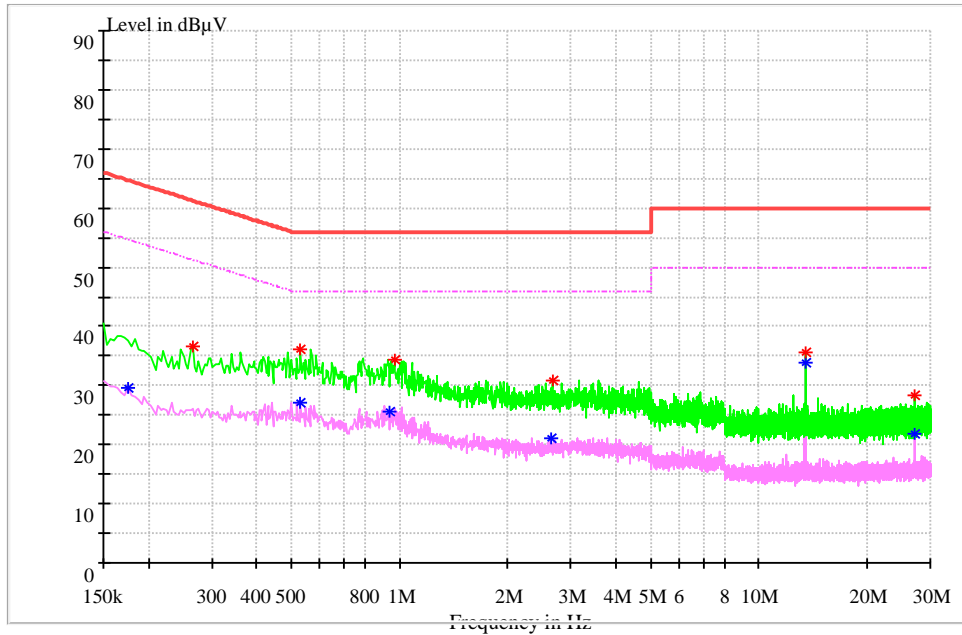
5.5.1 Test Setup

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



5.5.2 Test Result



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Limit dBμV	Transd dB	Margin dB	Line	PE
0.265669	36.61	61.25	9.6	24.64	L1	FLO
0.530588	36.22	56.00	9.6	19.78	L1	FLO
0.970875	34.28	56.00	9.7	21.72	N	FLO
2.657400	30.90	56.00	9.6	25.10	L1	FLO
13.560112	35.60	60.00	10.2	24.40	N	FLO
27.123206	28.35	60.00	10.6	31.65	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Limit dBμV	Transd dB	Margin dB	Line dBμV	PE
0.176119	29.47	54.67	9.6	25.19	L1	FLO
0.530588	27.09	46.00	9.6	18.91	L1	FLO
0.941025	25.68	46.00	9.7	20.32	N	FLO
2.646206	21.09	46.00	9.8	24.91	N	FLO
13.560112	33.73	50.00	10.2	16.27	N	FLO
27.123206	21.79	50.00	10.6	28.21	N	FLO

Note1:

1, Level = Reading level by receiver + Transd (cable loss – correction factor)

The reading level is calculated by software which is not shown in the sheet.

2, Margin = Limit - Level

The result of the measurement is passed.

6 MAIN TEST INSTRUMENTS

6.1 Current Test Project/Report

Main Test Equipments(RE test system)					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal-Due
Test receiver	R&S	ESW44	101878	Jan. 13, 2021	Jan. 12, 2022
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	Jan. 30,2020	Jan. 30, 2022
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-01303	Aug. 11, 2020	Aug. 10, 2022
Software Information					
Test Item	Software Name		Manufacturer		Version
RE	EMC32		R&S		V10.60.20

Main Test Equipment(CE test system)					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal-Due
Test receiver	R&S	ESU26	100150	Nov. 06, 2020	Nov. 05, 2021
Artificial Mains Network	R&S	ENV216	100382	Jul. 13, 2021	Jul. 12, 2022
Software Information					
Test Item	Software Name		Manufacturer		Version
CE	EMC32		R&S		V9.25.0

7 System Measurement Uncertainty

For a 95% confidence level ($k = 2$), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
All Emissions, Radiated	Field Strength [dBμV/m]	For 3 m Chamber: U = 3.868 dB (9 kHz to 150 kHz) U = 3.872 dB (150 kHz to 30 MHz) U = 5.24 dB (30 MHz-1 GHz)
AC Power Line Conducted Emissions	Disturbance Voltage[dBμV]	U=2.3 dB

-----The END-----