



TEST REPORT

Report No. SST2504E0498

Applicant: SHENZHEN ELECTRON TECHNOLOGY CO., LTD.

Address of Applicant: Bld.2, Yingfeng Industrial Zone, Tantou Community,
Songgang Street, Bao'an, Shenzhen, China.

Product Name: Smart Screen

Trade Mark: /

Standard(s): FCC CFR Title 47 Part 15 Subpart E Section 15.407
ANSI C63.10-2020

FCC ID: 2ABC5-E0091

Test Report Form No: SST-RD-7.5-02-E01(A/0)

Date of sample receipt: 2025/3/12

Date of Test: 2025/3/12 - 2025/4/22

Date of report issued: 2025/4/23

*The equipment complies with the requirements according to the standard(s) or Specification above, it is applicable only to the tested sample identified in the report.

Prepared by:



Reviewed by:



Approved by:





*The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Version	Description	Date of Issue
V1.0	Original	2025/4/23



2 Contents

	Page
1 COVER PAGE	1
2 CONTENTS	3
3 TEST SUMMARY	4
4 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF EUT	5
5.3 TEST MODE(S)	6
5.4 TEST FACILITY	7
5.5 DESCRIPTION OF SUPPORT UNITS	7
5.6 ADDITIONAL INSTRUCTIONS	7
5.7 ANTENNA INFORMATION	7
5.8 OTHERS	7
6 TECHNICAL REQUIREMENT AND MEASUREMENT DATA	8
6.1 GENERALLY REQUIREMENT	8
6.2 DUTY CYCLE	9
6.3 CONDUCTED PEAK OUTPUT POWER.....	10
6.4 CHANNEL BANDWIDTH AND 99% OCCUPIED BANDWIDTH.....	11
6.5 POWER SPECTRAL DENSITY	12
6.6 FREQUENCY STABILITY	13
6.7 RADIATED SPURIOUS EMISSION	14
6.8 CONDUCTED EMISSIONS	18
7 TEST SETUP PHOTO	21
8 EUT CONSTRUCTIONAL DETAILS	21
ANNEX A --TEST INSTRUMENTS LIST	22

3 Test Summary

Test items	Basics standards	Result
Antenna requirement	FCC part 15.203	Pass
Automatically discontinue transmission	FCC part 15.407(c)	Pass
AC Power Line Conducted Emission	FCC part 15.207	Pass
Conducted Peak Output Power	FCC part 15.407(a)(3)	Pass
Channel Bandwidth and 99% Occupied Bandwidth	FCC part 15.407(e)	Pass
Power Spectral Density	FCC part 15.407(a)(3)	Pass
Band Edge	FCC part 15.407(b)(4)	Pass
Spurious Emission	FCC part 15.205/15.209/15.407(b)(4)	Pass
Frequency Stability	FCC part 15.407(g)	Pass

Notes:

1: NA =Not Applicable

2: Determining compliance based on the results of the compliance measurement, not taking into account measurement uncertainty. If necessary, the applicant shall inform test lab in advance

3: Additions, Deviations and Exclusions from Standards: None.

4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Item	Uncertainty ($\pm$) (k=2, 95%)	
Output Power, Conducted	0.54	
Power Spectral Density, Conducted	1.28	
Spurious Emissions, Conducted	1.28	
Radiated Emissions(<1GHz)	9kHz~30MHz	2.6
	30MHz~1GHz	5.08
Radiated Emissions(>1GHz)	1GHz~6GHz	4.02
	6GHz~18GHz	4.62
	18GHz~40GHz	4.7
Occupied Bandwidth	1.14	
Conducted Emissions—AC mains	9kHz~150KHz	1.76
	150kHz~30MHz	2.52
Conducted Emissions—Telecom	2.64	

5 General Information

5.1 Client Information

Applicant: SHENZHEN ELECTRON TECHNOLOGY CO., LTD.
Address of applicant: Bld.2, Yingfeng Industrial Zone, Tantou Community, Songgang Street, Bao'an, Shenzhen, China.
Manufacturer: Same as applicant
Address of Manufacturer: Same as applicant
Factory: Same as applicant
Address of Factory: Same as applicant

5.2 General Description of EUT

Product Name:	Smart Screen
Model No.:	SW2199T, NW2199T
Test Model:	NW2199T
Test sample(s) ID:	2503110105
Sample(s) Status:	Continuously transmitter
S/N:	/
Hardware version:	/
Software version:	/
Operation Frequency:	5745MHz ~ 5825MHz
Technical specific:	802.11a, 802.11n, 802.11ac, 802.11ax
Supported bandwidth:	20MHz, 40MHz, 80MHz
Modulation technology:	OFDM(A)
Antenna gain:	Refer to section 5.7 for details
Power supply:	SW2199T MODEL: S065-1A180300B3 INPUT: 100-240V, 50/60Hz, 1.5A OUTPUT: DC 18V, 3A OR Lithium-ion Rechargeable Battery 5200mAh, 14.6V, 75.92Wh NW2199T: MODEL: FJ-SW20261203000 INPUT: 100-240V, 50/60Hz, 1.5A OUTPUT: DC 12V, 3A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	163	5815MHz
165	5825MHz						

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	802.11 @20M	802.11 @40M	802.11 @80M
Lowest channel	5745	5755	
Middle channel	5785		5775
Highest channel	5825	5795	

5.3 Test mode(s)

Mode 1:	continuously transmitting, with its lowest data rate which emit the max power level
Mode 2:	
Mode 3:	

5.4 Test Facility

The test facility is recognized, certified, or accredited by these organizations:	FCC Accredited Lab Test Firm Registration Number: 638130 Designation Number: CN1359
	IC Registration Lab CAB Identifier No.CN0154
	A2LA Accreditation Lab Certificate No.:7057.01

Test Performed at:	Name GuangDong Set Sail Testing Co., Ltd.
	Address 101, No.19, Tianxin Hudie 1st Road, Huangjiang Town, Dongguan, Guangdong, China

5.5 Description of Support Units

Device Type	Brand	Model	Series No.	Note
Notebook PC	HP	ZHAN 66P	---	---

5.6 Additional Instructions

Test Software	Special test command provided by manufacturer(adb command)
Command version	V1.0
Power level setup	Default

5.7 Antenna Information

Ant	Manufacturer	Model	Antenna Type	Antenna Gain (dBi)	Note
1	Shenzhen Yishengbang Technology Co., Ltd	/	IPEX	2.67	WiFi, BT

All above information provided by the applicant which is fully responsible for those information.

5.8 Others

The laboratory responsible for all the information provided in the report, except those information provided by the applicant. The applicant shall fully responsible for the information they provided. The report would be invalid without a stamp of test laboratory and the signatures of compiler and approver. The laboratory has not been responsible for the sampling stage; the test report merely corresponds to the test sample received. Any objection to the test report shall submitted to the test laboratory within 15 days from the date of receipt of the report. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

6 Technical Requirement and Measurement Data

6.1 Generally requirement

15.203 requirement:

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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.407(a) requirement:

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

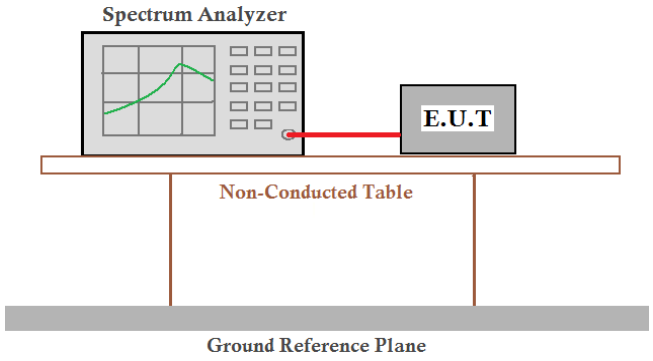
EUT Antenna:

Reference to the appendix II for details

15.407(c) requirement:

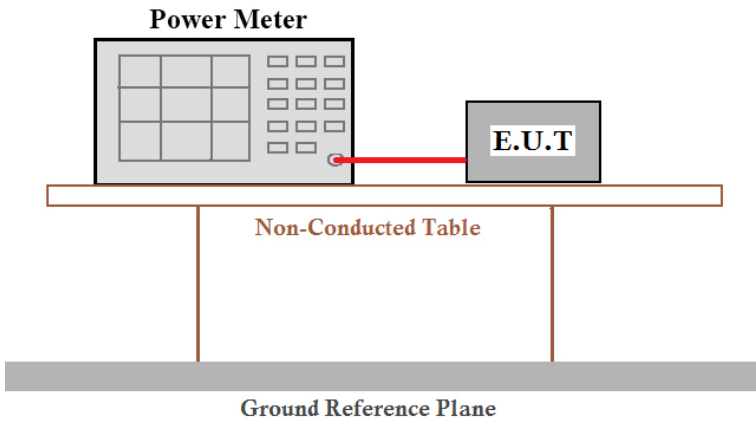
The applicant declares that the device (FCC Part 15 Subpart E Section 15.407) shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure.

6.2 Duty Cycle

Limit
Report for use
Block diagram of Test Setup
 The diagram shows a Spectrum Analyzer and an E.U.T (Equipment Under Test) connected by a red cable. They are both placed on a table labeled 'Non-Conducted Table'. This table is supported by a 'Ground Reference Plane'.
Test Instrument
Refer to Annex A for details
Test Procedures
The transmitter output connected to the Spectrum Analyzer. Test according to Procedure B.2 in KDB 789033 D02 v02r01. 1.RBW=8 MHz(the largest available value) 2.VBW=8 MHz(>RBW) 3.SPAN = 0 Hz 4.Detector = Peak 5.Number of points in sweep: 30001 6.Trace mode: Clear write 7.Measure T_{total} and T_{on} 8.Calculate Duty Cycle = T_{on}/T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$
Verdict
Pass

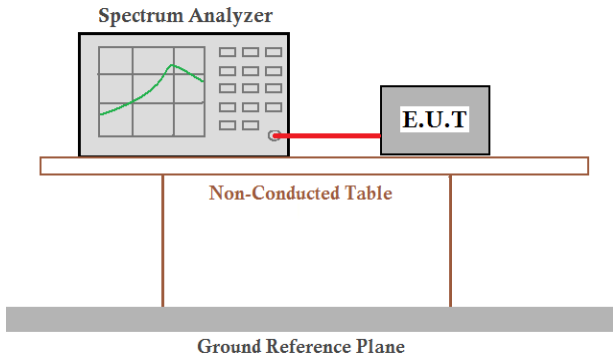
Measurement Data: The detailed test data see Appendix

6.3 Conducted Peak Output Power

Limit
1W(30dBm)
Block diagram of Test Setup
 The diagram illustrates the test setup for conducted peak output power. A Power Meter and an E.U.T. (Equipment Under Test) are connected by a red cable. They are placed on a Non-Conducted Table, which is supported by two legs and sits on a Ground Reference Plane.
Test Instrument
Refer to Annex A for details
Test Procedures
Test applies to ANSI C63.10 & KDB 789033 D02 v02r01
Verdict
Pass

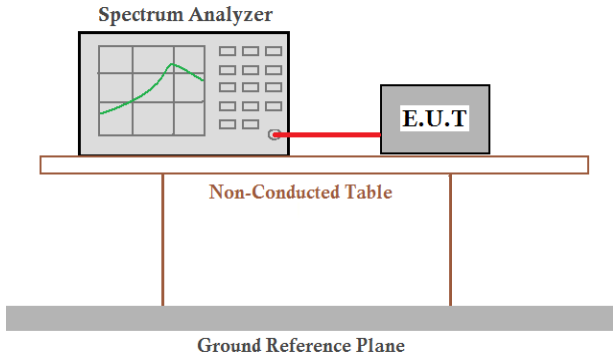
Measurement Data: The detailed test data see Appendix

6.4 Channel Bandwidth and 99% Occupied Bandwidth

Limit
>500kHz
Block diagram of Test Setup

Test Instrument
Refer to Annex A for details
Test Procedures
The following procedure shall be used for measuring this bandwidth: - Set RBW = 100 kHz. - Set the video bandwidth (VBW) $\geq 3 \times$ RBW. - Detector = Peak. - Trace mode = max-hold. - Sweep = No faster than coupled (auto) time. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Occupied bandwidth: - The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. - The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement. - Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2. - Step a) through step c) might require iteration to adjust within the specified range. - Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used. - Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
Verdict
Pass

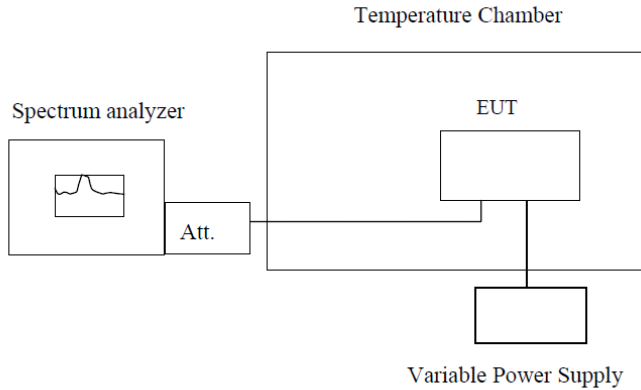
Measurement Data: The detailed test data see Appendix

6.5 Power Spectral Density

Limit
30dBm/500kHz
Block diagram of Test Setup

Test Instrument
Refer to Annex A for details
Test Procedures
a) Create an average power spectrum for the EUT operating mode being tested by following the instructions in 12.4.2 for measuring maximum conducted output power using a spectrum analyzer or EMI receiver; that is, select the appropriate test method (SA-1, SA-2, SA-3, or their respective alternatives) and apply it up to, but not including, the step labeled, "Compute power...." (This procedure is required even if the maximum conducted output power measurement was performed using the power meter method PM.) b) Use the peak search function on the instrument to find the peak of the spectrum. c) Make the following corrections to the peak value of the spectrum, if applicable: 1) If method SA-2 or SA-2A was used, then add $[10 \log (1 / D)]$, where D is the duty cycle, to the peak of the spectrum. 2) If method SA-3A was used and the linear mode was used in step h) of 12.4.2.7, add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. d) The result is the PPSD. e) The procedure in item a) through item c) requires the use of 1 MHz resolution bandwidth to satisfy the 1 MHz measurement bandwidth specified by some regulatory authorities.⁸⁵ This requirement also permits use of resolution bandwidths less than 1 MHz "provided that the measured power is integrated to show the total power over the measurement bandwidth" (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 1 MHz bandwidth, the following adjustments to the procedures apply: 1) Set $RBW \geq 1 / T$, where T is defined in 12.2 a). 2) Set $VBW \geq [3 \times RBW]$. 3) Care shall be taken such that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
Verdict
Pass

Measurement Data: The detailed test data see Appendix

6.6 Frequency Stability

Limit
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Block diagram of Test Setup
 Note : Measurement setup for testing on Antenna connector
Test Instrument
Refer to Annex A for details
Test Procedures
Test applies to ANSI C63.10, FCC Part 2.1055.
Verdict
Pass

Measurement Data: The detailed test data see Appendix

6.7 Radiated Spurious Emission

Limit

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Undesirable emission limits: the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

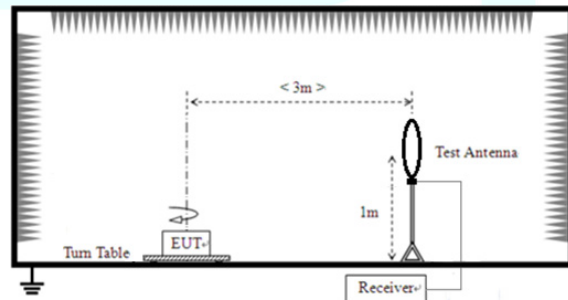
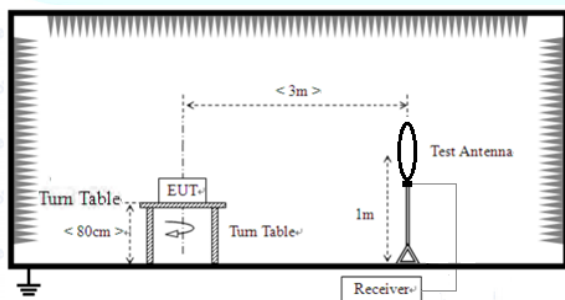
All emissions shall be limited to a level of –27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Block diagram of Test Setup

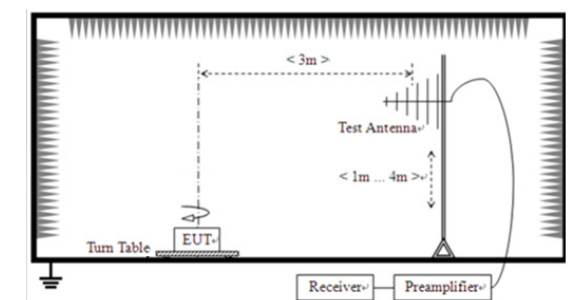
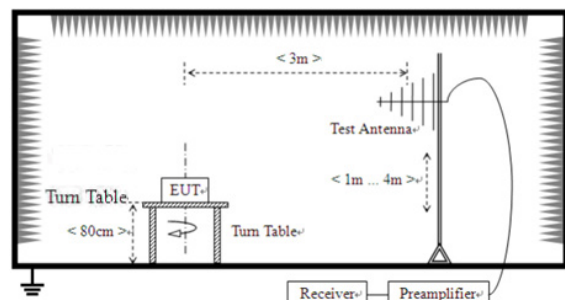
☒ For table-top equipment

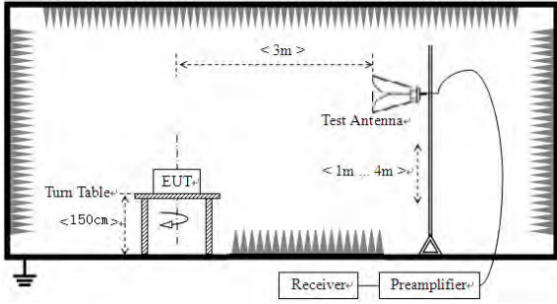
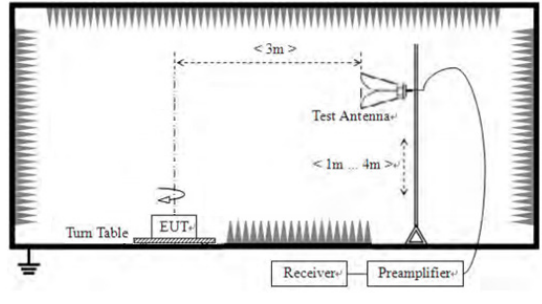
☐ For floor standing equipment

For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz	
	
Test Instrument	
Refer to Annex A for details	
Test Procedures	
Test applies to ANSI C63.10:2013 & KDB 789033 D02 v02r01	
Verdict	
Pass	

Note:

1. The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.
2. For those undesirable emission (in the Restricted Bands and out-of-band spurious) above 1GHz, According to KDB 789033 D02 v02r01 section II.G, as an alternative, antenna-port conducted measurements in conjunction with cabinet emissions tests will be permitted to demonstrate compliance.
3. The undesirable spurious emission range from 26GHz to 40GHz is as low as the cabinet noise, so there is no report, refer to appendix for details.
4. According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:

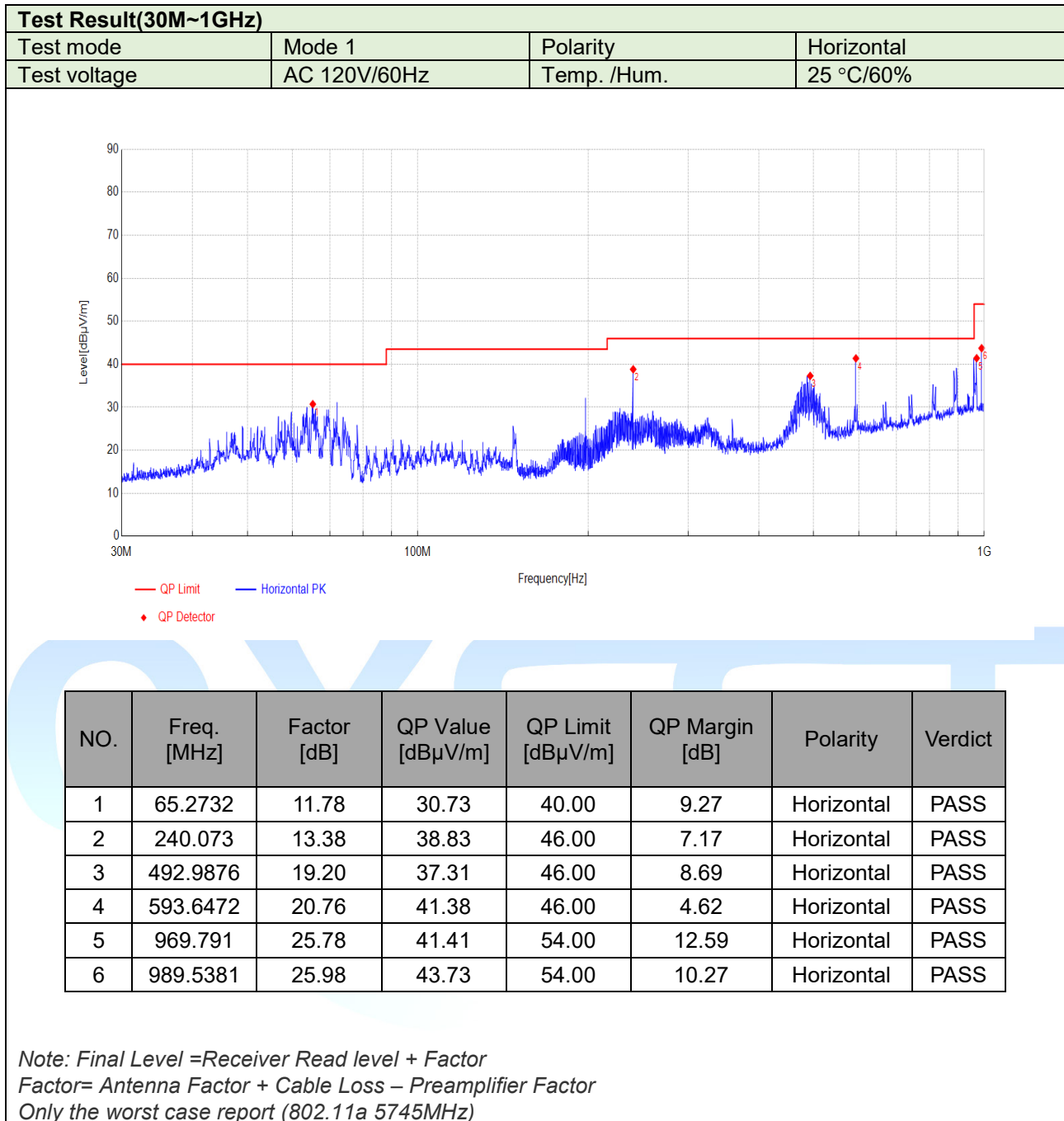
$$E[dBuV/m] = EIRP[dBm] + 95.2;$$
For example, if $EIRP = -27dBm$

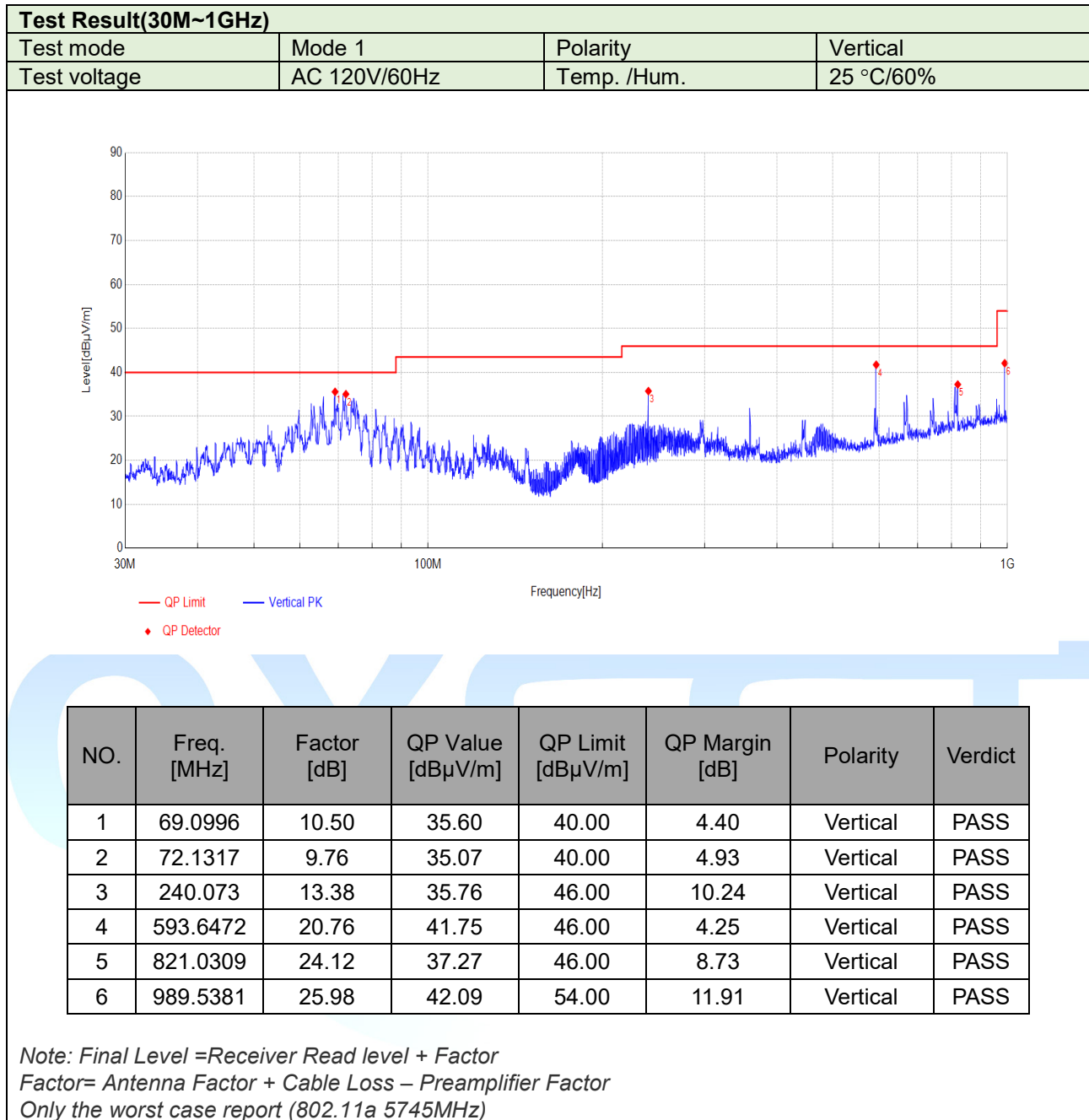
$$E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.$$

$$E[dBuV/m] = 10 + 95.2 = 105.2dBuV/m.$$

$$E[dBuV/m] = 15.6 + 95.2 = 110.8dBuV/m.$$

$$E[dBuV/m] = 27 + 95.2 = 122.2dBuV/m$$





6.8 Conducted Emissions

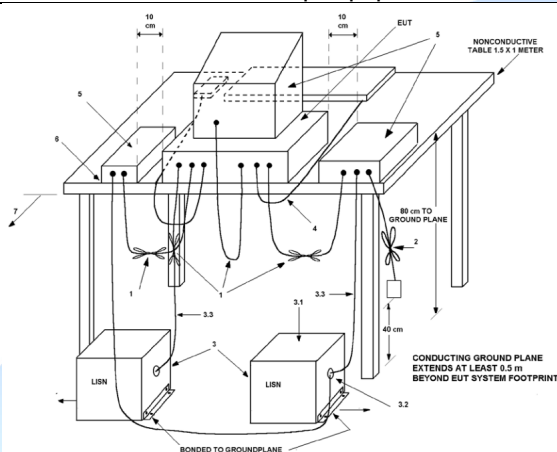
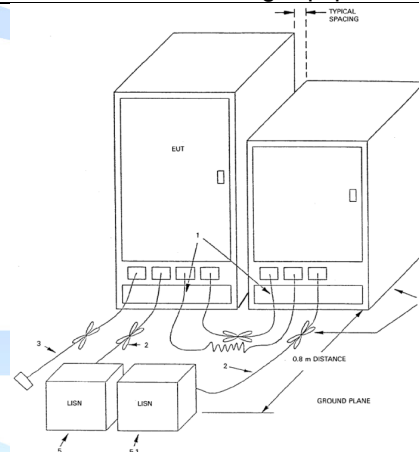
Limit

Frequency (MHz)	Quasi-peak	Average
0.15~0.50	66 to 56*	56 to 46*
0.50~5.0	56	46
5.0~30	60	50

*Decreases with the logarithm of the frequency.

If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out

Block diagram of Test Setup

☒ For table-top equipment

☐ For floor standing equipment


Test Instrument

Refer to Annex A for details

Test Procedures

The measurement was performed in a shield room.

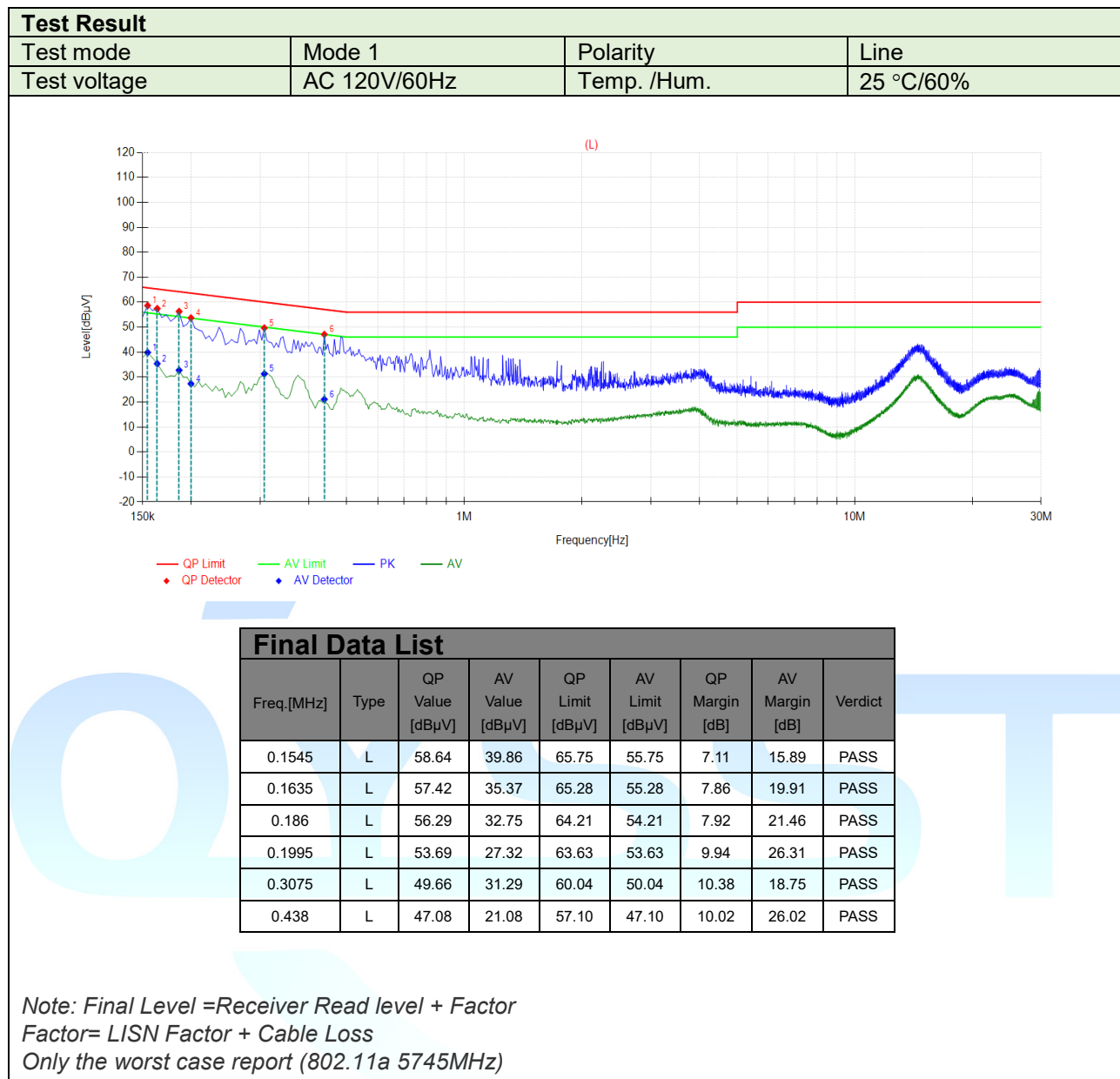
Measured levels of ac power-line conducted emission shall be the radio-noise voltage from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), as terminated into a 50 Ω EMI receiver or spectrum analyzer. All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN, if used. The manufacturer shall test equipment with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended. For measurements using a LISN, the 50 Ω measuring port is terminated into a 50 Ω EMI receiver or spectrum analyzer. All other ports are terminated into 50 Ω loads.

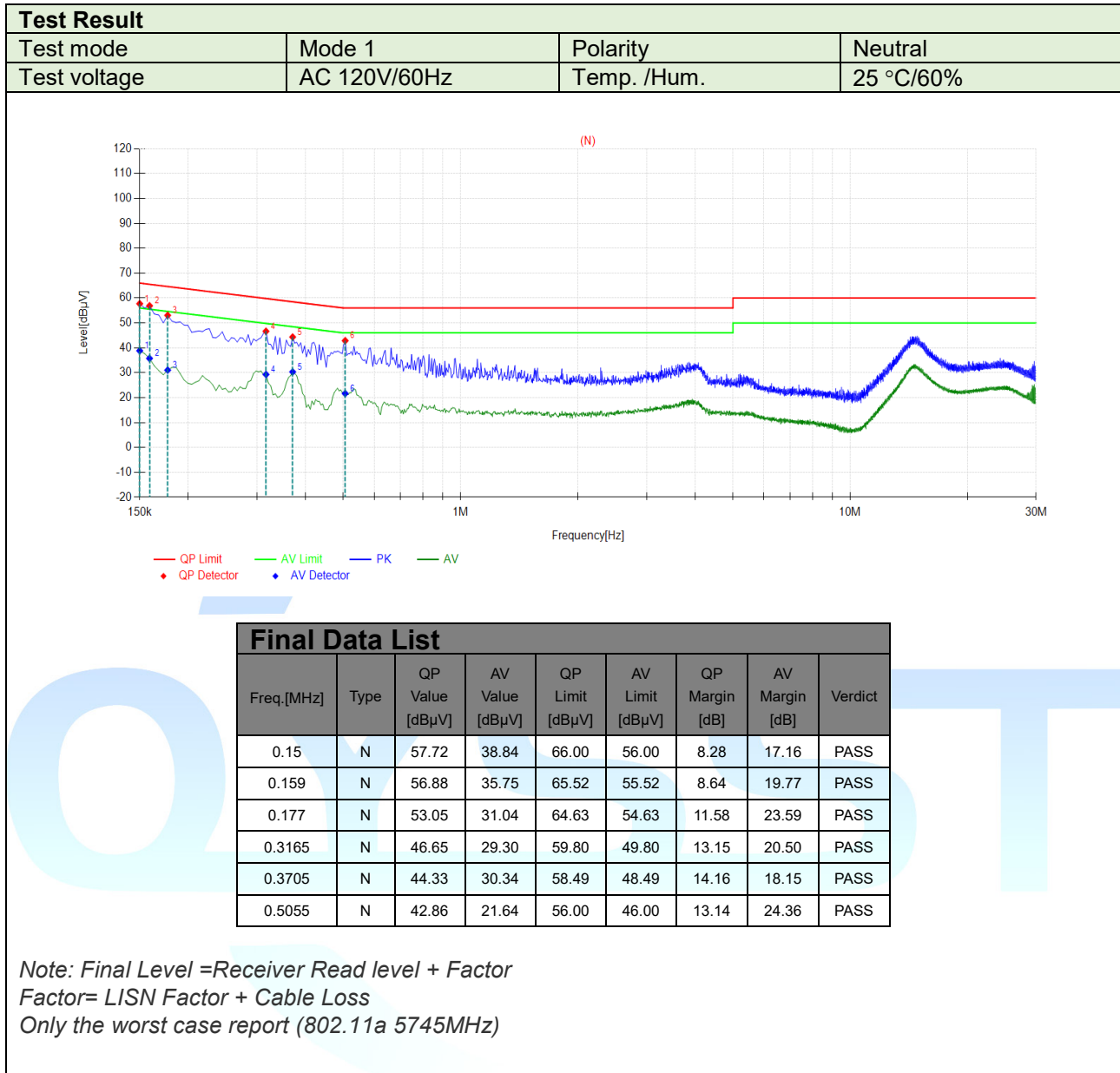
Table top devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

Verdict

Pass





7 Test Setup Photo

Reference to the **appendix I** for details.

8 EUT Constructional Details

Reference to the **appendix II** for details.



Annex A --Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date
3m Semi- Anechoic Chamber	BOST	966	/	3 years	2023.01.07
Control Room	BOST	333	/	3 years	2023.01.07
Breiband TRILOG Messantenne	Schwarzbeck	VULB 9162	00556	1 year	2025.04.19
Broad-band Horn Antenna	Schwarzbeck	BBHA 9120 D	02783	1 year	2025.04.19
EMI Test Receiver	R&S	ESU8	100372	1 year	2025.04.17
Amplifier (1-18GHz)	TSTPASS	LNA10180G45	TSAM2303003	1 year	2025.04.17
Spectrum Analyzer	keysight	N9020A	MY51280659	1 year	2025.04.17
Amplifier (40G)	RFsystem	TRLA-180400G45B	23060801	1 year	2025.04.18
Broadband Horn Antenna (40G)	Schwarzbeck	BBHA9170	01306	1 year	2025.04.19
Spectrum analyzer	R&S	FSV40-N	101791	1 year	2025.04.17
Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60B 044	1 year	2025.04.18
5W 6dB attenuator	/	DC-6GHz	/	Internal calibration	/
Thermohygrometer	KTJ	TA218A	879030	1 year	2025.04.21
EMI Test Software	Tonscend	TS+	V5.0	/	/

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date
Shielding Room	BOST	854	/	3 year	2023.01.07
EMI Test Receiver	R&S	ESR3	103057	1 year	2025.04.17
LISN	R&S	ENV 216	102832	1 year	2025.04.17
ISN	Schwarzbeck	NTFM 8158	00347	1 year	2025.04.17
ISN	Schwarzbeck	CAT3 8158	00279	1 year	2025.04.17
ISN	Schwarzbeck	CAT5 8158	00524	1 year	2025.04.17
Sensor probe	TCTEST	CSP 9160A	81837	1 year	2025.04.17
High impedance capacitive voltage probe	Schwarzbeck	CVP 9222C	00221	1 year	2025.04.22
Voltage probe	Schwarzbeck	TK 9420	01304	1 year	2025.04.17
Antenna port test assembly	/	DC-3GHz	/	Internal calibration	/
Thermohygrometer	KTJ	TA218A	879036	1 year	2025.04.21
EMI Test Software	Tonscend	TS+	V4.0	/	/

RF conducted					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date
Shielding Room	BOST	543	/	3 year	2023.01.07
Spectrum analyzer	keysight	N9020A	MY51280659	1 year	2025.04.17
Analog signal source	Agilent	N5181A	MY48180054	1 year	2025.04.17
Vector signal source	keysight	N5172B	MY57281610	1 year	2025.04.17
Thermohygrometer	KTJ	TA218A	879032	1 year	2025.04.21
Spectrum analyzer	R&S	FSV40-N	/	1 year	2025.04.17
Power meter 1	TST	TST V2	/	1 year	2025.04.17
Test Software	TST PASS	TST PASS	V2.0	/	/
Temperature and humidity chamber	Guangdong fenghe	FH-TH-1000	FH24032017	1 year	2024.04.26

▶▶▶ END OF REPORT ◀◀◀

