

TEST REPORT

Report No. SST231025001EF04

Applicant: SHENZHEN ELECTRON TECHNOLOGY CO.,LTD.

Product Name: Tablet PC

Trade Mark: /

Standard(s): FCC CFR Title 47 Part 15 Subpart E Section 15.407

FCC ID: 2ABC5-E0045

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

Date of sample receipt: Oct. 25, 2023

Date of Test: Oct. 25~Nov. 8, 2023

Date of report issued: Nov. 13, 2023

*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:

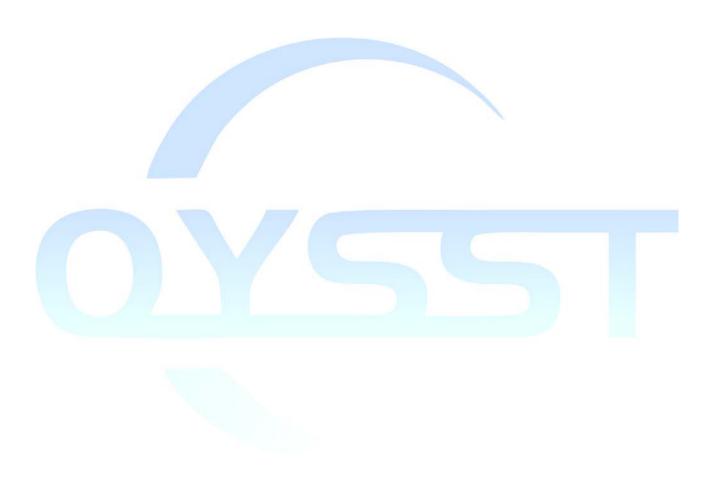
Approved by:

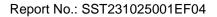
*The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



Revision History

Version	Description	Date of Issue
V1.0	Original	Nov. 13, 2023

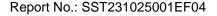






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3 Test Summary

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	
99% Bandwidth	Report only	PASS	
Emission Bandwidth	FCC part 15.407(a)	PASS	
Peak Transmit Power	FCC part 15.407(a)(1)(2)	PASS	
Power Spectral Density	FCC part 15.407(a) (1)(2)	PASS	
Undesirable Emission	FCC part 15.407(b), 15.205/15.209	PASS	
Radiated Emission	FCC part 15.205/15.209	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 informing 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 (±) (k=2, 95%)			
Output Power, Conducted	0.5	0.54		
Power Spectral Density, Conducted	1.2	1.28		
Spurious Emissions, Conducted	1.2	28		
Padiated Emissions/ (1CHz)	9kHz~30MHz	2.6		
Radiated Emissions(<1GHz)	30MHz~1GHz	5.08		
	1GHz~6GHz	4.02		
Radiated Emissions(>1GHz)	6GHz~18GHz	4.62		
	18GHz~40GHz	4.7		
Occupied Bandwidth	1.14			
Conducted Emissions AC mains	9kHz~150KHz	1.76		
Conducted Emissions—AC mains	150kHz~30MHz	2.52		
Conducted Emissions—Telecom	2.6	64		





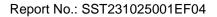
5 General Information

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:	Tablet PC
Model No.:	EM101A
Test sample(s) ID:	SST231025001-2
Sample(s) Status:	Continuously transmitter
S/N:	/
Hardware version:	/
Software version:	
Operation Frequency:	5180MHz~5240MHz
Technical specific:	802.11a, 802.11n, 802.11ac
Supported bandwidth:	20MHz, 40MHz
Modulation technology:	OFDM
Antenna gain:	Refer to section 5.7 for details
Power supply:	AC/DC adapter Model No.: JHD-AP013U-0502000BB-B INPUT: AC 100-240V, 50/60Hz, 0.35A OUTPUT: DC 5V, 2000mA
	Or DC 3.8V 5000mAh Li-ion polymer battery





Channel list	Channel list for 802.11						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	54	5270MHz	104	5520MHz	122	5610MHz
38	5190MHz	56	5280MHz	106	5530MHz	124	5620MHz
40	5200MHz	58	5290MHz	108	5540MHz	126	5630MHz
42	5210MHz	60	5300MHz	110	5550MHz	128	5640MHz
44	5220MHz	62	5310MHz	112	5560MHz	132	5660MHz
46	5230MHz	64	5320MHz	116	5580MHz	134	5670MHz
48	5240MHz	100	5500MHz	118	5590MHz	136	5680MHz
52	5260MHz	102	5510MHz	120	5600MHz	140	5700MHz

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

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

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

5.5 Description of Support Units

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

5.6 Additional Instructions

Test Software	Special test command used
Power level setup	Default

5.7 Antenna Information

Ant	Manufacturer	Model	Antenna Type	Antenna Gain (dBi)
1	Shen Zhen Xing Yuan Chuang Technology Co., Ltd	/	PIFA	1.68

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

5.8 Others

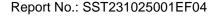
The laboratory responsible for all the information provided in the report, except those information provided by the applicant.

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 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.

Tel: (86)-0769-26622875



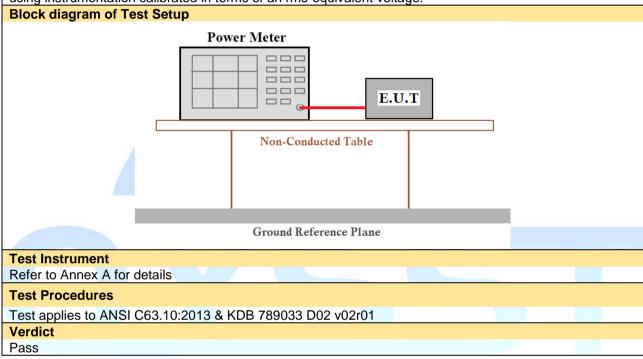


6.2 Conducted Peak Output Power

Limit	
Frequency band(MHz)	Maximum conducted power
E1E0 E2E0	≤1W(30dBm) for master device
5150-5250	≤250Mw(23.98dBm) for client device
5250-5350	≤250Mw(23.98dBm) for client device or 11dBm+10logB*
5470-5725	≤250Mw(23.98dBm) for client device or 11dBm+10logB*

Remark: *Where B is the 26dB emission bandwidth in MHz.

The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

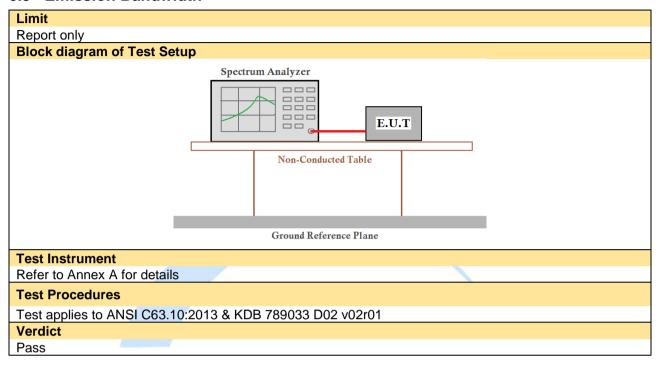


Measurement Data: The detailed test data see Appendix





6.3 Emission Bandwidth

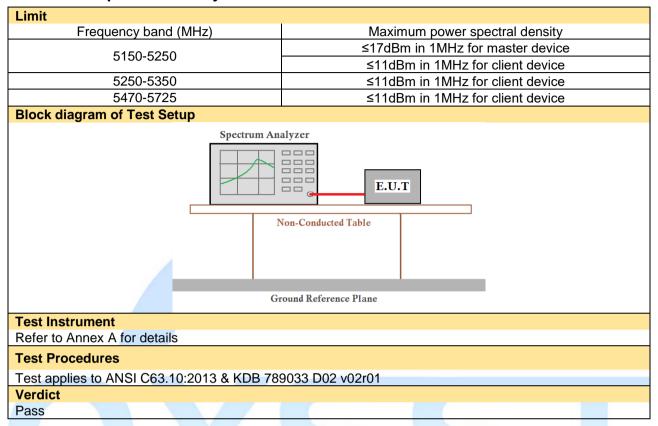


Measurement Data: The detailed test data see Appendix





6.4 Power Spectral Density



Measurement Data: The detailed test data see Appendix



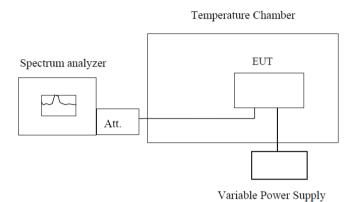


6.5 Frequency Stability

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 C63.10:2013, FCC Part 2.1055.

Verdict

Pass

Measurement Data: The detailed test data see Appendix



6.6 Radiated Spurious Emission

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
.009-0.490	2400/F(kHz)	300
.490-1.705	24000/F(kHz)	30
.705-30.0	30	30
80-88	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.

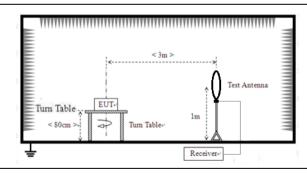
Undesirable emission limits: the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

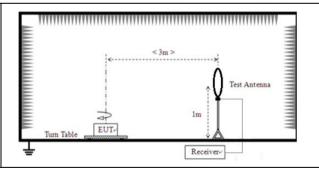
- (1)For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

Block diagram of Test Setup

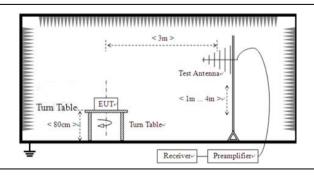
For floor standing equipment

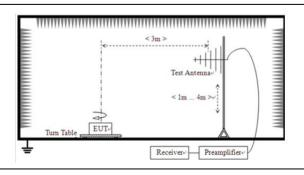
For radiated emissions from 9kHz to 30MHz

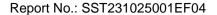




For radiated emissions from 30MHz to1GHz

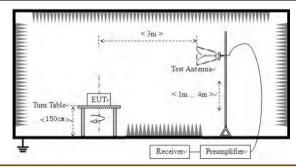


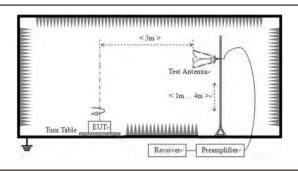






For radiated emissions above 1GHz





Test Instrument

Refer to Annex A for details

Test Procedures

Test applies to ANSI C63.10:2013 & KDB 789033 D02 v02r01

Verdict

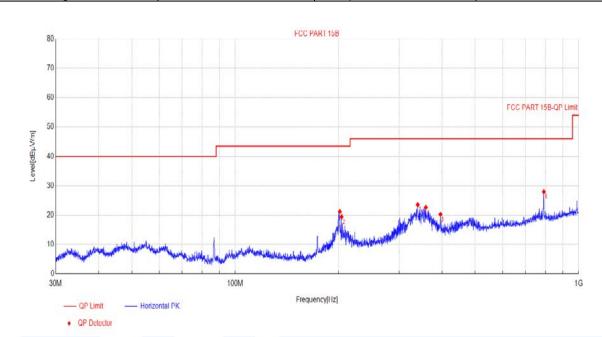
Pass

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.



Test Result(30M~1GHz)			
Test mode	Mode 1	Polarity	Horizontal
Test voltage	AC 120V/60Hz	Temp. /Hum.	25 °C/60%

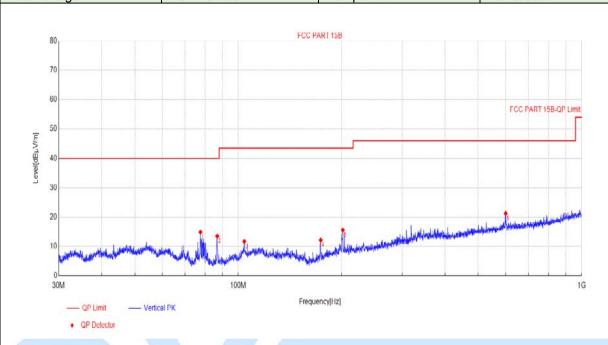


Final	Final Data List													
NO.	Freq.	Factor	QP Value	QP Limit	QP Margin	Height	Angle	Polarity	Verdict					
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity	verdict					
1	201.6504	-17.32	21.20	43.50	22.30	200	146	Horizontal	PASS					
2	203.961	-17.24	19.41	43.50	24.09	100	278	Horizontal	PASS					
3	339.9783	-13.39	23.56	46.00	22.44	100	167	Horizontal	PASS					
4	358.9632	-12.86	22.64	46.00	23.36	100	347	Horizontal	PASS					
5	395.986	-11.89	20.28	46.00	25.72	200	326	Horizontal	PASS					
6	792.0523	-6.66	27.96	46.00	18.04	100	161	Horizontal	PASS					

Note: Final Level =Receiver Read level + Factor Factor= Antenna Factor + Cable Loss - Preamplifier Factor Only the worst case report (802.11ac(HT20) 5180MHz)



Test Result(30M~1GHz)			
Test mode	Mode 1	Polarity	Vertical
Test voltage	AC 120V/60Hz	Temp. /Hum.	25 °C/60%



Final	Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	77.6424	-20.46	14.90	40.00	25.10	100	122	Vertical	PASS
2	86.8598	-20.92	13.53	40.00	26.47	100	359	Vertical	PASS
3	104.1377	-18.53	11.74	43.50	31.76	100	296	Vertical	PASS
4	173.8895	-19.30	12.21	43.50	31.29	100	192	Vertical	PASS
5	201.6504	-17.32	15.61	43.50	27.89	100	197	Vertical	PASS
6	600.976	-8.33	21.28	46.00	24.72	100	186	Vertical	PASS

Note: Final Level =Receiver Read level + Factor Factor= Antenna Factor + Cable Loss - Preamplifier Factor Only the worst case report (802.11ac(HT20) 5180MHz)





6.7 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 Setup Setup

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.

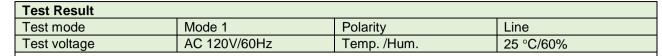
Email: sst@sstesting.cn

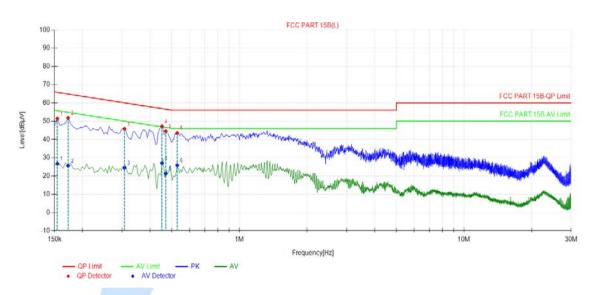
The bandwidth of the test receiver is set at 9 kHz.

Verdict

Pass







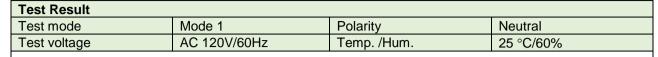
Final	Final Data List											
NO.	Freq. [MHz]	QP Value [dΒμV]	QP Limit [dBµV]	QP Margin [dB]	ΑV Value [dBμV]	AV Limit [dBµV]	AV Margin [dB]	Verdict	Туре			
1	0.1545	51.39	65.75	14.36	26.71	55.75	29.04	PASS	L			
2	0.1725	51.77	64.84	13.07	25.66	54.84	29.18	PASS	L			
3	0.3075	45.79	60.04	14.25	24.50	50.04	25.54	PASS	L			
4	0.4515	47.18	56.85	9.67	27.05	46.85	19.80	PASS	L			
5	0.4695	44.52	56.52	12.00	21.34	46.52	25.18	PASS	L			
6	0.528	43.50	56.00	12.50	25.89	46.00	20.11	PASS	L			

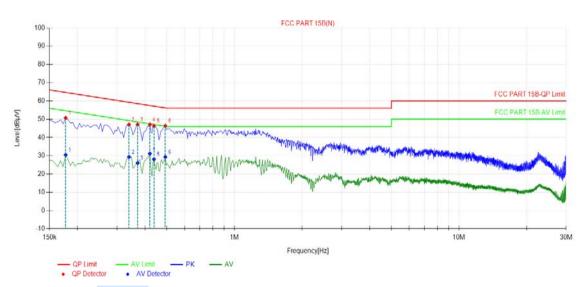
Note: Final Level =Receiver Read level + Factor

Factor= LISN Factor + Cable Loss

Only the worst case report (1 802.11a 5180MHz)







Final	Final Data List											
NO.	Freq. [MHz]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	ΑV Value [dBμV]	ΑV Limit [dBμV]	AV Margin [dB]	Verdict	Туре			
1	0.177	50.66	64.63	13.97	30.46	54.63	24.17	PASS	N			
2	0.339	47.05	59.23	12.18	29.37	49.23	19.86	PASS	N			
3	0.3705	47.12	58.49	11.37	25.99	48.49	22.50	PASS	N			
4	0.42	47.02	57.45	10.43	31.21	47.45	16.24	PASS	N			
5	0.438	46.26	57.10	10.84	28.10	47.10	19.00	PASS	N			
6	0.492	46.31	56.13	9.82	29.31	46.13	16.82	PASS	N			

Note: Final Level =Receiver Read level + Factor

Factor= LISN Factor + Cable Loss

Only the worst case report (1 802.11a 5180MHz)

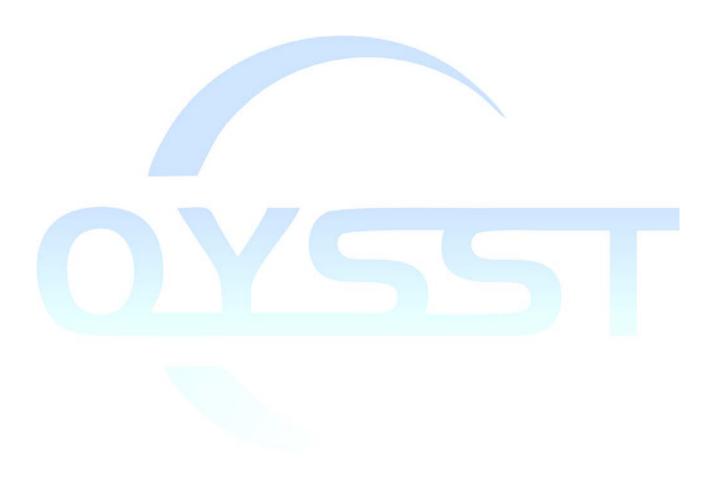


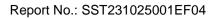


Test Setup PhotoReference to the **appendix I** for details.

EUT Constructional Details

Reference to the appendix II for details.







Annex A --Test Instruments list

Radiated Emiss	sion:					
Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date
SST-E-SAC001	3m Semi- Anechoic Chamber	BOST	966	1	3 years	2023.01.07
SST-E-SCC001	Control Room	BOST	333	/	3 years	2023.01.07
SST-E-SAC002	Breiband TRILOG Messantenne	Schwarzbeck	VULB 9162	00556	1 year	2023.04.02
SST-E-SAC004	Broad-band Horn Antenna	Schwarzbeck	BBHA 9120 D	02783	1 year	2023.04.02
SST-E-SCC003	EMI Test Receiver	R&S	ESPI7	101401	1 year	2023/3/23
SST-E-SCC004	Amplifier	Schwarzbeck	BBV 9744	00327	1 year	2023/3/23
SST-E-SCC015	Amplifie (1-18GHz)	TSTPASS	LNA10180G45	TSAM2303003	1 year	2023/5/6
SST-E-RSC007	Spectrum Analyzer	keysight	N9010A	MY51282069	1 year	2023/3/31
SST-E-SCC016	Amplifier (40G)	RFsystem	TRLA- 180400G45B	23060801	1 year	2023/6/15
SST-E-SAC006	Broadband Horn Antenna (40G)	Schwarzbeck	BBHA9170	01306	1 year	2023/6/11
SST-E-RSC010	Spectrum analyzer	R&S	FSV40-N	/	1 year	2023/06/16
SST-E-SAC007	Loop Antenna	Schwarzbeck	FMZB 1513- 60B	1513-60B 044	1 year	2023/6/11
SST-E-SAC005	5W 6dB attenuator	1	DC-6GHz	1	Internal calibration	1
SST-E-EMC006	Thermohygrometer	KTJ	TA218A	879030	1 year	2023/03/28
/	EMI Test Software	Tonscend	TS+	V5.0	/	/

Conducted Emission										
Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date				
SST-E-CSC001	Shielding Room	BOST	854	/	3年	2023/1/7				
SST-E-CSC002	EMI Test Receiver	R&S	ESR3	103057	1 year	2023/3/23				
SST-E-CSC003	LISN	R&S	ENV 216	102832	1 year	2023/3/23				
SST-E-CSC004	ISN	R&S	NTFM 8158	00347	1 year	2023/3/23				
SST-E-CSC007	Antenna port test assembly	/	DC-3GHz	/	Internal calibration	/				
SST-E-EMC011	Thermohygrometer	KTJ	TA218A	879036	1 year	2023/03/28				
/	EMI Test Software	Tonscend	TS+	V4.0	/	/				





RF conducted						
Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. cycle	Cal.Date
SST-E-RSC001	Shielding Room	BOST	543	/	3 year	2023/1/7
SST-E-RSC007	Spectrum analyzer	keysight	N9020A	MY51280659	1 year	2023/3/31
SST-E-RSC008	Analog signal source	Agilent	N5181A	MY48180054	1 year	2023/3/25
SST-E-RSC009	Vector signal source	keysight	N5172B	MY57281610	1 year	2023/3/23
SST-E-EMC007	Thermohygrometer	KTJ	TA218A	879032	1 year	2023/03/28
SST-E-RSC010	Spectrum analyzer	R&S	FSV40-N	/	1 year	2023/06/16
SST-E-RSC015- 1	Power meter 1	TST	TST V2	/	1 year	2023/09/22
/	Test Software	TST PASS	TST PASS	V2.0	/	/



