




EMC TEST REPORT

Multimedia equipment

Test Report No.:	TCT250808E005	
Date of issue	Aug. 15, 2025	
Testing laboratory	Shenzhen TCT Testing Technology Co., Ltd.	
Testing location/ address	XX XXXXXXXXXXXXXXXXXXXX, China	
Applicant's name	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Address	XX XXXXXXXXXXXXXXXX, China	
Manufacturer's name	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Address	XX XXXXXXXXXXXXXXXX, China	
Standard(s)	EN 55032:2015+A11:2020+A1:2020 EN 55035:2017+A11:2020 EN IEC 61000-3-2:2019+A1:2021+A2:2024 EN 61000-3-3:2013+A1:2019+A2:2021	
Test item description	Magnetic Power Bank	
Trade Mark	N/A	
Model/Type reference	ESPB-A17Q, ESPB-A17, ESPB-A6, ESPB-A7, ESPB-A8, ESPB-A9, ESPB-A11, ESPB-A12, ESPB-A13, ESPB-A14, ESPB-A15, ESPB-A16, ESPB-A18, ESPB-A19, ESPB-A20, ESPB-A21, ESPB-A22, ESPB-A23, ESPB-A24, ESPB-A25	
Rating(s)	Battery Capacity: 5000 mAh Type C Input/Output: DC 5 V, 3 A/ DC 9 V, 2 A/ DC 12 V, 1.5 A Wireless charge output: 15 W	
Date of receipt of test item	Aug. 08, 2025	
Date (s) of performance of test:	Aug. 08, 2025 ~ Aug. 15, 2025	
Tested by (+signature)	Mark ZHANG	
Check by (+signature)	Howie LYU	
Approved by (+signature)	Tomsin	

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1. General Product Information

1.1.EUT description

Test item description	Magnetic Power Bank		
Model/Type reference	ESPB-A17Q		
Rating(s)	Battery Capacity: 5000 mAh Type C Input/Output: DC 5 V, 3 A/ DC 9 V, 2 A/ DC 12 V, 1.5 A Wireless charge output: 15 W		
Highest internal frequency F_x	<input checked="" type="checkbox"/>	$F_x \leq 108 \text{ MHz}$	
	<input type="checkbox"/>	$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	
	<input type="checkbox"/>	$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	
	<input type="checkbox"/>	$F_x > 1 \text{ GHz}$	
DC Line	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> No applicable <input checked="" type="checkbox"/> Length: 0.3 m		

1.2.Model(s) list

No.	Model No.	Tested with
1	ESPB-A17Q	<input checked="" type="checkbox"/>
Other models	ESPB-A17, ESPB-A6, ESPB-A7, ESPB-A8, ESPB-A9, ESPB-A11, ESPB-A12, ESPB-A13, ESPB-A14, ESPB-A15, ESPB-A16, ESPB-A18, ESPB-A19, ESPB-A20, ESPB-A21, ESPB-A22, ESPB-A23, ESPB-A24, ESPB-A25	<input type="checkbox"/>

Note: ESPB-A17Q is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names. So the test data of ESPB-A17Q can represent the remaining models.

2. Test Information

2.1.EUT operation mode(s)

Mode #	Operating mode description	Test voltage
1	Charging	DC 12 V(Adapter Input AC 230 V/ 50 Hz)
2	Type-C Output:5V3A	Supply power by internal battery
3	Type-C Output:12V1.5A	Supply power by internal battery
4	Wireless Output:15W	Supply power by internal battery

Test worst operating mode	
Radiated emission	Mode 3
Remark: The worst measurement data and graphical presentation show in this report.	

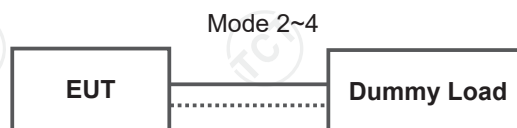
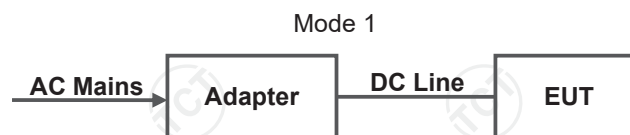
2.2.Special accessories and auxiliary equipment

Product Type	Manufacturer	Model No.	Serial No.
Adapter	SAMSUNG	EP-TA200	R37M4PR7QD4SE3

Auxiliary cable description

Port name	Specified length(m)	Shielded	Unshielded
/	/	/	/

2.3.Configuration of system under test



(EUT: Magnetic Power Bank)

2.4. General test conditions

Environmental reference conditions

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.

The climatic conditions during the tests were within the following limits:

Temperature	Humidity	Atmospheric pressure
15 °C – 35 °C	30 % - 60 %	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.

Measurement uncertainties

Test Item	Uncertainty
Uncertainty for Disturbance voltage at the mains terminals	3.32 dB
Uncertainty for Disturbance voltage at the telecommunication terminals	4.10 dB
Uncertainty for Radiated emission (30 MHz to 1 GHz)	4.86 dB
Uncertainty for Radiated emission (1 GHz to 6 GHz)	4.91 dB

The overall measurement uncertainty of a measurement is defined as the range of which can be supposed that it contains the true value with a specified probability.

This probability is 95 % for the generally specified measurement uncertainty (so-called expanded measurement uncertainty).

The limits for emission measurements and the Test levels for immunity tests in the applied standards were defined taking into consideration the accuracy limits for measurement and testing equipment required by the Basic standards.

All measurement and test results of the EMC laboratory of Shenzhen TCT Testing Technology Co., Ltd. fulfil the requirements for measurement uncertainties according to the standards applied.

Decision rule for statement(s) of conformity is based on simple acceptance specified in Clause 4.3.3 in IEC Guide 115:2023.

3. Test Result Summary

EN 55032:2015+A11:2020+A1:2020	
Requirement – Test case	Verdict
Classification Class (<input type="checkbox"/> A <input checked="" type="checkbox"/> B)	-
Disturbance voltage at mains terminals	Pass
Disturbance voltage at telecommunication terminals	N/A
Disturbance voltage at antenna terminals	N/A
N/A Conducted disturbance between 1 GHz to 18 GHz	N/A
Radiated disturbance 30 MHz –6 GHz	Pass
OUTDOOR UNITS – Limits of radiated disturbance between 1 GHz to 18 GHz	N/A
EN IEC 61000-3-2:2019+A1:2021+A2:2024	
Requirement – Test case	Verdict
Harmonic current emissions	N/A
EN 61000-3-3:2013+A1:2019+A2:2021	
Requirement – Test case	Verdict
Voltage changes, voltage fluctuations and flicker	Pass
EN 55035:2017+A11:2020	
Requirement – Test case	Verdict
Electrostatic discharge immunity (ESD)	Pass
Radiated, radio-frequency, electromagnetic field immunity (RS)	Pass
Electrical fast transient/burst immunity (EFT/B)	Pass
Surge immunity	Pass
Immunity to conducted disturbances, induced by radio-frequency fields (CS)	Pass
Broadband impulse noise disturbances for xDSL ports	N/A
Power frequency magnetic field immunity (PFMF)	Pass
Voltage dips, short interruptions and voltage variations immunity (DIPS)	Pass

Test case verdicts	
- Test case does not apply to the test object	N/A
- Test object does meet the requirement	P (Pass)
- Test object does not meet the requirement	F (Fail)

4. List of Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
Disturbance voltage at mains terminals				
EMI Test Receiver	R&S	ESCI3	100898	2026/06/25
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	2026/01/20
Attenuator	N/A	10dB	164080	2026/06/25
844 Shielded room	SKET	8m*4m*4m	CR4	2027/06/26
Test software	EZ EMC	EMEC-3A1	1.1.4.2	/
Disturbance voltage at telecommunication terminals				
EMI Test Receiver	R&S	ESCI3	100898	2026/06/25
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	2026/01/20
ISN	Schwarzbeck	CAT5 8158	151	2026/01/20
ISN	Schwarzbeck	CAT3 8158	00191	2026/06/25
ISN	Schwarzbeck	NTFM 8158	00334	2026/06/25
844 Shielded room	SKET	8m*4m*4m	CR4	2027/06/26
Test software	EZ EMC	EMEC-3A1	1.1.4.2	/
Radiated emission (30 MHz to 1 GHz)				
Broadband Antenna	Schwarzbeck	VULB 9168	01197	2026/01/23
EMI Test Receiver	R&S	ESCI7	100529	2026/01/20
Pre-amplifier	HP	8447D	2727A05017	2026/06/25
3m Anechoic Chamber	SKET	9m*6m*6m	SA01	2027/06/12
Test software	EZ EMC	FA-03A2 RE+	1.1.4.2	/
Radiated emission (1 GHz to 6 GHz)				
Horn Antenna	Schwarzbeck	BBHA 9120 D	02372	2026/01/23
Signal Analyzer	R&S	FSQ40	200061	2026/06/25
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	2026/01/20
#3 3m Anechoic Chamber	SKET	9m*6m*6m	SA03	2027/05/29
Test software	EZ EMC	FA-03A2 RE+	1.1.4.2	/
Harmonic current emissions & Voltage Fluctuations and Flicker				
AC Power Supply	KIKUSUI	PCR4000M	UC002552	2026/01/20
Harmonic/Flicker Analyzer	KIKUSUI	KHA1000	UD002324	2026/06/25
Line Impedance Network	KIKUSUI	LIN1020JF	UC001738	2026/06/25
Test software	KIKUSUI	HarmoCapture	V3.9.1.00	/

Electrostatic discharge immunity (ESD)

Electrostatic Discharge Generator	3ctest	EDS 30T	ES031000122077	2026/06/28
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Radiated, radio-frequency, electromagnetic field immunity (RS)

Antenna	SKET	STLP 9129_Plus	/	/
Signal Generator	Agilent	N5181A	MY50141997	2026/01/20
Amplifier	SKET	HAP_80M01G-250 W	202105183	2026/06/25
Amplifier	SKET	HAP_01G06G-80W	202305501	2026/06/25
Field Probe	Narda	EP-601	811ZX01057	2026/06/30
USB Power Sensor	Agilent	U2000A	MY53410013	2026/01/20
USB Power Sensor	Agilent	U2001A	MZ54330012	2026/01/20
743 Anechoic Chamber	SKET	7m*4m*3m	SA04	2025/09/19
Test software	SKET	EMC-S	3.1.3.2	/

Electrical fast transient/burst immunity (EFT/B)

Fast Transient Burst Simulator	Prima	EFT61004BG	PR12074375	2026/06/25
Capacitive Coupling folder	Prima	EFT-CLAMP	N/A	2026/06/25

Surge immunity

Lightning Surge Generator	Prima	SUG61005BG	PR12125534	2026/06/25
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Immunity to conducted disturbances, induced by radio-frequency fields (CS)

Conducted Immunity Test System	Schloder	CDG-6000-75	126B1290/2014	2026/06/25
CDN	Schloder	CDN M2+M3-16	A2210281/2014	2026/06/25
CDN	Prima	CRF-CDN-TRJ45	PR230681112	2026/06/25
EM-Clamp	Schloder	EMCL-20	132A1194/2014	2026/06/25
RF Attenuator	PE	75W 6dB	N/A	2026/06/25
Test software	HUBERT	IEC/EN61000-4-6	V 1.5	/

Power frequency magnetic field immunity (PFMF)

Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	G121941CS1341114	2026/06/25
Adjustable Magnetic Field Coil	EVERFINE	MFC-4	G1242BBS1341114	2026/06/25

Voltage dips, short interruptions and voltage variations immunity (DIPS)

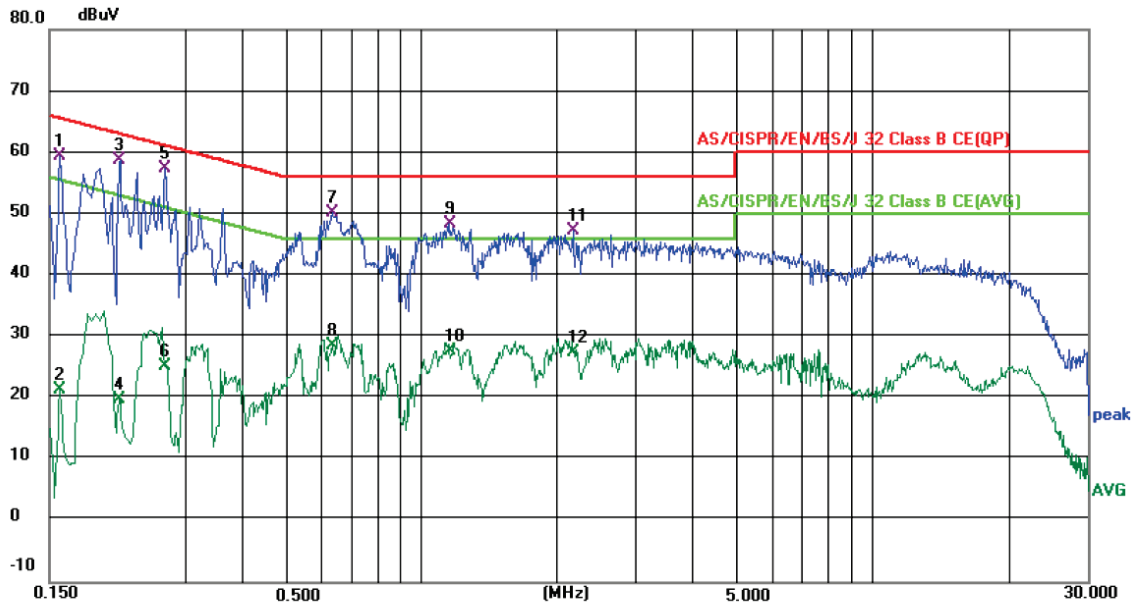
Cycle Sag Simulator	Prima	DRP61011AG	PR12106201	2026/06/25
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5. Test Conditions and Results (Emission)

5.1. Disturbance voltage at mains terminals

Test requirement	EN 55032:2015+A11:2020+A1:2020		
Test frequency range	150 kHz to 30 MHz		
Limits	Limits – Class A		
	Frequency (MHz)	dBµV Quasi-peak	dBµV Average
	0.15 to 0.5	79	66
	0.5 to 30	73	60
	Limits – Class B		
	Frequency (MHz)	dBµV Quasi-peak	dBµV Average
	0.15 to 0.5	66 to 56	56 to 46
	0.5 to 5	56	46
	5 to 30	60	50
Test method	The AMN placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.		
Ambient temperature	23.9 °C		
Relative humidity	47 %		
Test location	XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX, China		
Test model(s)	ESPB-A17Q		
EUT operation mode	Mode 1		
Test results	Pass		
Remark	/		

Measurement data and Graphical presentation of the result



Site 844 Shielding Room

Phase: **L1**

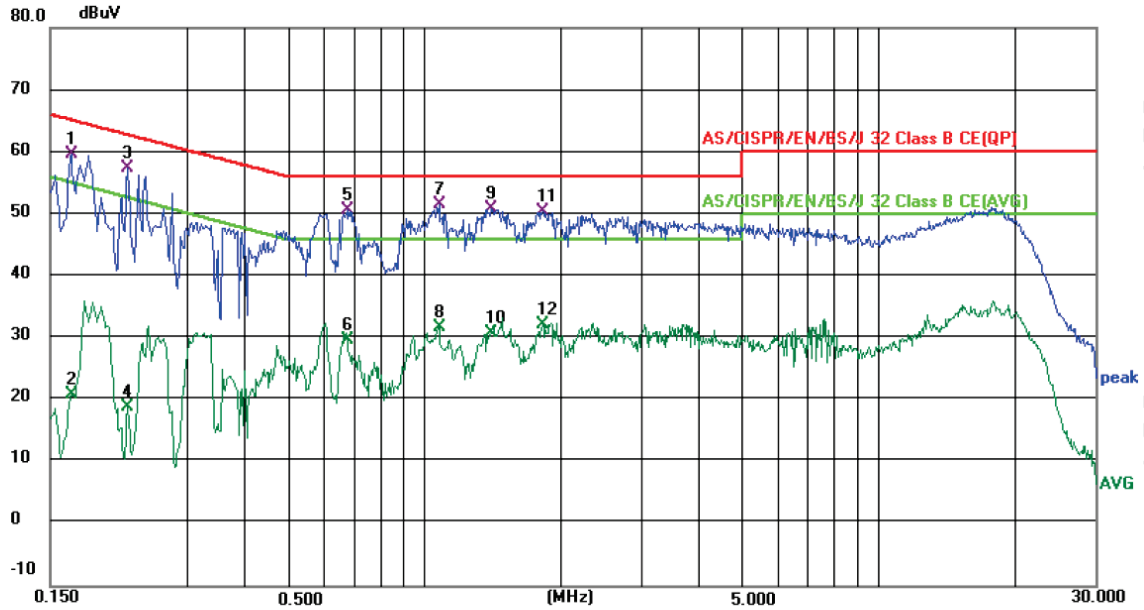
Temperature: 23.9 (°C)

Humidity: 47 %

Limit: AS/CISPR/EN/BS/J 32 Class B CE(QP)

Power: DC 12V(Adapter Input AC 230V/50Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1580	50.79	8.53	59.32	65.57	-6.25	QP	
2		0.1580	12.86	8.53	21.39	55.57	-34.18	AVG	
3		0.2139	50.24	8.52	58.76	63.05	-4.29	QP	
4		0.2139	11.39	8.52	19.91	53.05	-33.14	AVG	
5	*	0.2700	48.87	8.52	57.39	61.12	-3.73	QP	
6		0.2700	16.80	8.52	25.32	51.12	-25.80	AVG	
7		0.6340	41.70	8.54	50.24	56.00	-5.76	QP	
8		0.6340	20.16	8.54	28.70	46.00	-17.30	AVG	
9		1.1579	39.72	8.57	48.29	56.00	-7.71	QP	
10		1.1579	19.17	8.57	27.74	46.00	-18.26	AVG	
11		2.1779	38.56	8.63	47.19	56.00	-8.81	QP	
12		2.1779	18.84	8.63	27.47	46.00	-18.53	AVG	



Site 844 Shielding Room

Phase: **N**

Temperature: 23.9 (°C)

Humidity: 47 %

Limit: AS/CISPR/EN/BS/J 32 Class B CE(QP)

Power: DC 12V(Adapter Input AC 230V/50Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1660	51.03	8.53	59.56	65.16	-5.60	QP	
2		0.1660	12.32	8.53	20.85	55.16	-34.31	AVG	
3		0.2220	48.85	8.52	57.37	62.74	-5.37	QP	
4		0.2220	10.38	8.52	18.90	52.74	-33.84	AVG	
5		0.6780	42.03	8.54	50.57	56.00	-5.43	QP	
6		0.6780	21.08	8.54	29.62	46.00	-16.38	AVG	
7	*	1.0820	42.91	8.56	51.47	56.00	-4.53	QP	
8		1.0820	23.15	8.56	31.71	46.00	-14.29	AVG	
9		1.4100	42.25	8.59	50.84	56.00	-5.16	QP	
10		1.4100	22.20	8.59	30.79	46.00	-15.21	AVG	
11		1.8220	41.71	8.60	50.31	56.00	-5.69	QP	
12		1.8220	23.54	8.60	32.14	46.00	-13.86	AVG	

5.2. Disturbance voltage at telecommunication terminals

Test requirement	EN 55032:2015+A11:2020+A1:2020				
Test frequency range	150 kHz to 30 MHz				
Limits	Limits – Class A				
	Frequency	Voltage Limits		Current Limits	
	MHz	dB μ V Quasi-peak	dB μ V Average	dB μ V Quasi-peak	dB μ V Average
	0.15 to 0.5	97 to 87	84 to 74	53 to 43	40 to 30
	0.5 to 30	87	74	43	30
	Limits – Class B				
	Frequency	Voltage Limits		Current Limits	
	MHz	dB μ V Quasi-peak	dB μ V Average	dB μ V Quasi-peak	dB μ V Average
	0.15 to 0.5	84 to 74	74 to 64	40 to 30	30 to 20
	0.5 to 30	74	64	30	20
Test method	The AMN placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.				
Ambient temperature	/				
Relative humidity	/				
Test location	/				
Test model(s)	/				
EUT operation mode	/				
Test results	N/A				
Remark	This test isn't applicable because the EUT doesn't have relative function. Therefore this test is not applicable for this EUT.				

5.3. Disturbance voltage at antenna terminals

Test requirement :	EN 55032:2015+A11:2020+A1:2020					
Test frequency range... :	30 MHz to 2150 MHz					
Limits :	Table clause	Frequency range (MHz)	Detector type/ bandwidth	Class B limits dB μ V 75 Ω		
				Other	Local Oscillator Fundamental	Local Oscillator Harmonics
	a	30 to 950	For frequencies ≥ 1 GHz QP/120 kHz	46	46	46
		950 to 2150		46	54	54
	b	950 to 2150		46	54	54
	c	30 to 300		46	54	50
		300 to 1000				52
	d	30 to 300	For frequencies ≥ 1 GHz Peak/1 MHz	46	66	59
		300 to 1000				52
	e	30 to 950		46	76	46
		950 to 2150			n/a	54
	a Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers.					
b Tuner units (not the LNB) for satellite signal reception.						
c Frequency modulation audio receivers and PC tuner cards.						
d Frequency modulation car radios.						
e Applicable to EUTs with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports. Limits specified for the LO are for the RF modulator carrier signal and harmonics.						
Test method :	The measurement was performed in accordance with the requirement set in clause 5.4. The antenna terminal of the sample and the signal generator were connected to the EMI receiver by means of coaxial cables and a resistive combining network having a minimum attenuation of 6dB. The following results were those measured accordingly.					
Ambient temperature... :	/					
Relative humidity :	/					
Test location :	/					
Test model(s) :	/					
EUT operation mode.... :	/					
Test results :	N/A					
Remark :	This test isn't applicable because the EUT doesn't have relative function. Therefore this test is not applicable for this EUT.					

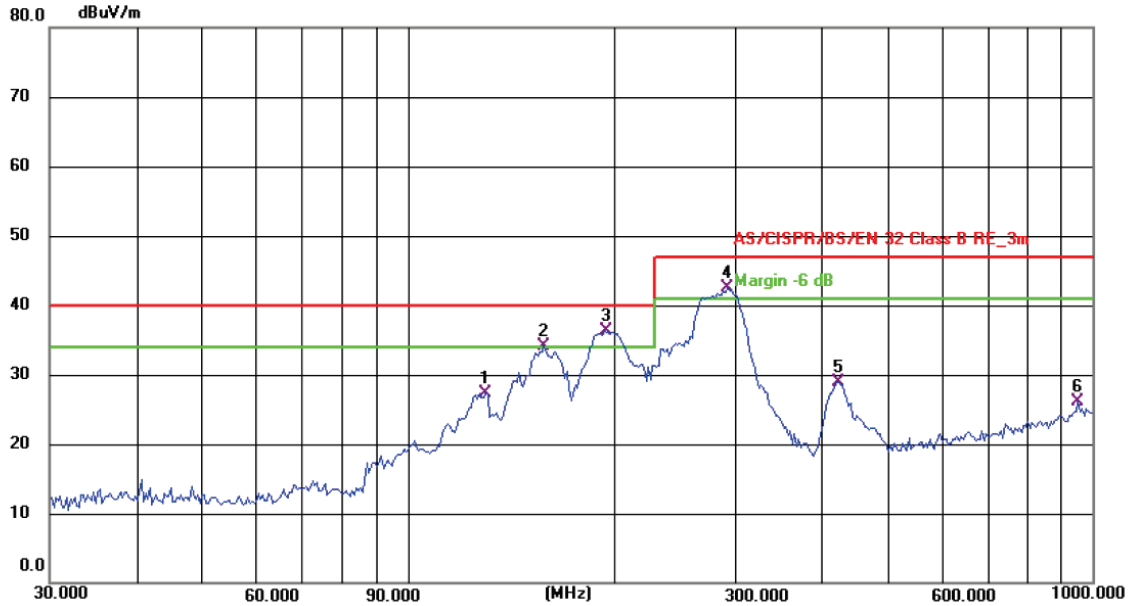
5.4. Conducted disturbance between 1 GHz to 18 GHz

Test requirement	EN 55032:2015+A11:2020+A1:2020	
Test frequency range	1 GHz to 18 GHz	
Limits	Frequency (GHz)	Power Limits (dBpW)
		Average
	1 to 18	63
Test method	In the case of a detachable feed horn, the radiated emission of the LO leakage within 7° of the main beam axis can be measured directly by a power measurement at the feed horn interface. If a suitable interface (typically types R120, C120) is available, a power meter or spectrum analyzer can be connected to the LNB via a suitable adapter. Due allowance shall be made for the feed losses between the available interface and the antenna flange.	
Ambient temperature	/	
Relative humidity	/	
Test location	/	
Test model(s)	/	
EUT operation mode	/	
Test results	N/A	
Remark	This test isn't applicable because the EUT doesn't have relative function. Therefore this test is not applicable for this EUT.	

5.5. Radiated emission

Test requirement	EN 55032:2015+A11:2020+A1:2020		
Test frequency range.:	30 MHz to 6 GHz		
Limits	Limits – Class A (OATS or SAC)		
	Frequency (MHz)	10 m measurement distance	3 m measurement distance
		dBµV/m	
	30 to 230	40 Quasi-peak	50 Quasi-peak
	230 to 1000	47 Quasi-peak	57 Quasi-peak
	Limits – Class B (OATS or SAC)		
	Frequency (MHz)	10 m measurement distance	3 m measurement distance
		dBµV/m	
	30 to 230	30 Quasi-peak	40 Quasi-peak
	230 to 1000	37 Quasi-peak	47 Quasi-peak
	Limits – Class A (FSOATS)		
	Frequency (MHz)	Peak	Average
		dBµV/m	
	1000 to 6000	80	60
	Limits – Class B (FSOATS)		
	Frequency (MHz)	Peak	Average
		dBµV/m	
1000 to 6000	74	54	
Test method	Measurements were made in a 3/10-meter semi-anechoic chamber that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3/10 meters with the receive antenna located at 1 to 4-meter height in both horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.		
Ambient temperature.:	24.2 °C		
Relative humidity	50 %		
Test location	xx xxxxxxxxxxxxxxxxxxxxx, China		
Test model(s)	ESPB-A17Q		
EUT operation mode..:	Mode 3		
Test results	Pass		
Remark.....	The EUT highest internal frequency less 108 MHz, So don't need to test above 1 GHz.		

Measurement data and Graphical presentation of the result



Site: 3m Anechoic Chamber1

Polarization: **Horizontal**

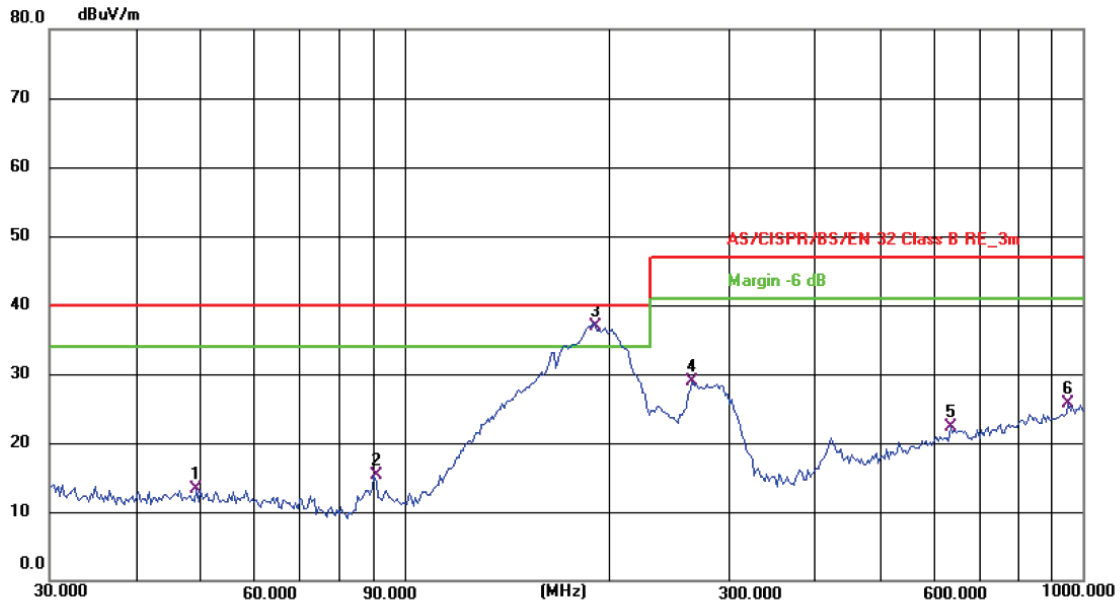
Temperature: 24.2(C)

Humidity: 50 %

Limit: AS/CISPR/BS/EN 32 Class B RE_3m

Power: Supply power by internal battery

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	129.9225	39.84	-12.55	27.29	40.00	-12.71	QP	P	
2 !	158.1123	45.38	-11.19	34.19	40.00	-5.81	QP	P	
3 *	193.7727	50.66	-14.37	36.29	40.00	-3.71	QP	P	
4 !	293.0842	53.65	-11.19	42.46	47.00	-4.54	QP	P	
5	425.0280	37.65	-8.74	28.91	47.00	-18.09	QP	P	
6	952.0937	26.05	0.05	26.10	47.00	-20.90	QP	P	



Site: 3m Anechoic Chamber1

Polarization: **Vertical**

Temperature: 24.2(C)

Humidity: 50 %

Limit: AS/CISPR/BS/EN 32 Class B RE_3m

Power: Supply power by internal battery

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	49.3594	25.66	-12.37	13.29	40.00	-26.71	QP	P	
2	90.2204	31.94	-16.64	15.30	40.00	-24.70	QP	P	
3 *	189.7385	51.17	-14.17	37.00	40.00	-3.00	QP	P	
4	265.6757	41.65	-12.73	28.92	47.00	-18.08	QP	P	
5	638.3686	26.43	-4.22	22.21	47.00	-24.79	QP	P	
6	952.0937	25.61	0.05	25.66	47.00	-21.34	QP	P	

5.6. OUTDOOR UNITS – Limits of radiated disturbance between 1 GHz to 18 GHz

Test requirement	EN 55032:2015+A11:2020+A1:2020		
Test frequency range.:	1 GHz to 18 GHz		
Limits	Limits – LO leakage and spurious radiated emissions from the EUT, in the region outside +/- 7° of the main beam axis.		
	Frequency (GHz)	Class B limits (dBµV/m)	
		Average	
	1 to 2.5	50	
	2.5 to 18	64	
	Limits – LO leakage from the EUT, in the region within +/- 7° of the main beam axis.		
	Frequency (GHz)	Class B limits (dBµV/m)	
		Average	
	1 to 18	70	
Test method	Measurements were made in a 3-meter Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter above 1GHz. The EUT was rotated 360° with the receive antenna located in horizontal and vertical polarities. Final measurements (average detector above 1GHz) were then performed by rotating the EUT 360°. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.		
Ambient temperature.:	/		
Relative humidity	/		
Test location	/		
Test model(s)	/		
EUT operation mode..:	/		
Test results	N/A		
Remark	This test isn't applicable because the EUT doesn't have relative function. Therefore this test is not applicable for this EUT.		

5.7. Harmonic current emissions

Test requirement	EN IEC 61000-3-2:2019+A1:2021+A2:2024		
Limit classification in accordance with the standard	Limits - Class A equipment		
	Odd harmonics		
	Harmonic order (n)	Maximum permissible harmonic current (A)	
	3	2.30	
	5	1.14	
	7	0.77	
	9	0.40	
	11	0.33	
	13	0.21	
	15 ≤ n ≤ 39	0.15 x 15/n	
	Even harmonics		
	2	1.08	
	4	0.43	
	6	0.30	
	8 ≤ n ≤ 40	0.23 x 8/n	
	Limits – Class D equipment		
	Harmonic order (n)	Maximum permissible harmonic current per watt Ma/W	Maximum permissible harmonic current A
	3	3.4	2.30
	5	1.9	1.14
	7	1.0	0.77
	9	0.5	0.40
	11	0.35	0.33
	13 ≤ n ≤ 39	3.85/n	See Class A limits
Test method.....	This test consists on the measurement of harmonics components of the input current which may be produced by equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems. The equipment is tested under specified conditions of operation.		
Ambient temperature.....	/		
Relative humidity	/		
Test location	/		
Test model(s)	/		
EUT operation mode.....	/		
Test results	N/A		
Remark.....	According to the electrical construction of the EUT, there is no AC terminal incorporated. Therefore this test is not applicable for this EUT.		

5.8.Voltage changes, voltage fluctuations and flicker

Test requirement	EN 61000-3-3:2013+A1:2019+A2:2021
Applied limit	<p>The value of P_{st} shall be not greater than 1.0 The value of P_{lt} shall be not greater than 0.65 The value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms The relative steady-state voltage change, dc shall not exceed 3.3 % The maximum relative voltage change d_{max} shall not exceed:</p> <ul style="list-style-type: none"> a) 4 % without additional conditions b) 6 % for equipment which is: <ul style="list-style-type: none"> - switched manually, or - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption c) 7 % for equipment which is <ul style="list-style-type: none"> - attended whilst in use (for example : hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as mowers, portable tools such as electric drills), or - switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.
Test method	This test consists on the measurement of voltage changes, voltage fluctuations and flicker which may be produced by equipment having an input current ≤ 16 A per phase, and intended to be connected to public low-voltage distribution systems. The equipment is tested under specified conditions of operation.
Observation time	<div>10 Minutes</div> <div>120 Minutes</div> <div>24 times switching according to Annex B</div>
Ambient temperature.....	23.2 °C
Relative humidity	47 %
Test location	XXX XXXXXXXXXXXXXXXXXXXX, China
Test model(s)	ESPB-A17Q
EUT operation mode.....	Mode 1
Test results	Pass
Remark.....	/

Measurement data of the result

Test Data of Voltage Fluctuation and Flicker

Final Test Result **Pass**
Nominal Voltage 230 V
Nominal Frequency 50 Hz
Plt Test Duration 600 s
Flicker Margin 100 %
d Measurement Margin 100 %

Segment	Pst	dmax(%)	dc(%)	Tmax(ms)	Judge
Limit	1.000	4.000	3.300	500	
Seg. 1	0.010	0.018	0.000	0	Pass

Plt	Value	Judge
Limit	0.650	
Measurement	0.004	Pass

6. Test Conditions and Results (Immunity)

6.1.General information

Performance criteria as defined by the standard	
Criterion	Description from standard
A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

6.2. Electrostatic discharge immunity

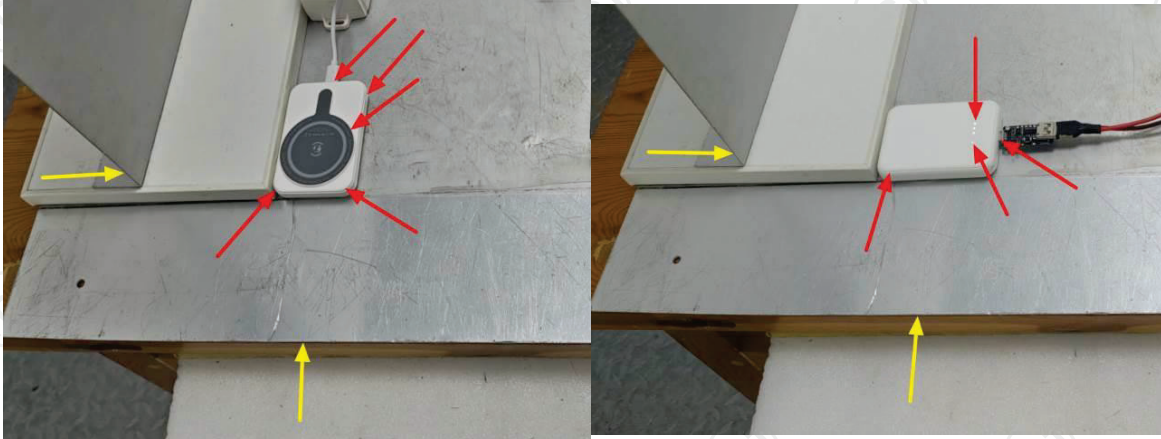
Test requirement	EN 55035:2017+A11:2020	
Basic standard	EN 61000-4-2:2009	
Test level	Discharge type	Discharge voltage
	Contact discharge voltage	±4 kV
	Air discharge voltage	±8 kV
Storage capacitor	150 pF	
Discharge resistor	330 Ω	
Horizontal coupling plate	1.6 x 0.8 m	
Vertical coupling plate	0.5 x 0.5 m	
Number of discharges	Min. 10 per discharge location	
Discharge interval	1 second	
Performance criteria	B	
Test method	The table-top equipment under test is placed on a wooden table, 0.8 m high, standing on the ground reference plane. A horizontal coupling plane (HCP), 1.6 x 0.8 m, is placed on the table. The EUT and the cables are isolated from the coupling plane by an insulating support 0.5 mm thick. The floor standing equipment is isolated from the ground reference plane by an insulating support about 0.1 m thick. The vertical coupling plane (VCP) of dimensions 0.5 m x 0.5 m is placed parallel to, and positioned at a distance of 0.1 m from, the EUT.	
Ambient temperature	23.5 °C	
Relative humidity	44 %	
Air pressure	100.7 kPa	
Test location	XX XXXXXXXXXXXXXXXXXXXX, China	
Test model(s)	ESPB-A17Q	
EUT operation mode	Mode 1, Mode 2, Mode 3, Mode 4	
Test results	Pass	
Remark	/	

6.2.1. Test results for electrostatic discharges

Photos of selected test points:

( Air Discharge)

( Contact Discharge)



Contact discharges			
Test point	Positive polarity	Negative polarity	Observations
	4 kV	4 kV	
VCP- Four Sides	Pass	Pass	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3
HCP- Four Sides	Pass	Pass	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3

Air discharges			
Test point	Positive polarity	Negative polarity	Observations
	8 kV	8 kV	
Points on non-conductive surface as indicated in the picture above	Pass	Pass	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3

6.2.2. Test results of observations description

/ - Not performed or not required.
1 –No obvious change of function was found after the test.
2 –The function stopped during the test, but can be recoverable by itself operation after the test.
3 –The function stopped during the test, but can be recoverable manually after the test.

6.3. Radiated, radio-frequency, electromagnetic field immunity

Test requirement	EN 55035:2017+A11:2020		
Basic standard	EN IEC 61000-4-3:2020		
Test level.....	Frequency (MHz)	Field strength	Modulation
	80 to1000	3 V/m (r.m.s.) (unmodulated)	80% AM (1 kHz)
	1800	3 V/m (r.m.s.) (unmodulated)	80% AM (1 kHz)
	2600	3 V/m (r.m.s.) (unmodulated)	80% AM (1 kHz)
	3500	3 V/m (r.m.s.) (unmodulated)	80% AM (1 kHz)
	5000	3 V/m (r.m.s.) (unmodulated)	80% AM (1 kHz)
Dwell time	2; 5 second		
Step size	1 %		
Distance antenna to EUT	3 m		
Performance criteria.....	A		
Test method.....	Measurements were made in a fully anechoic chamber and the indicated field strength was pre-calibrated prior to placement of the system under test. Tests were performed in both the horizontal and vertical polarities, where applicable. The antenna was placed 3 meters from the product under test. All sides of the EUT were investigated for anomalies.		
Ambient temperature.....	24.2 °C		
Relative humidity	48 %		
Air pressure	100.7 kPa		
Test location	xx xxxxxxxxxxxxxxxxxxxxxxx, China		
Test model(s)	ESPB-A17Q		
EUT operation mode.....	Mode 1, Mode 2, Mode 3, Mode 4		
Test results	Pass		
Remark.....	/		

6.3.1. Test results for radio-frequency electromagnetic field

Frequency	EUT side	Antenna polarity	Field strength	Observation	Results
<input checked="" type="checkbox"/> 80 MHz to 1 GHz <input checked="" type="checkbox"/> 1.8 GHz <input checked="" type="checkbox"/> 2.6 GHz <input checked="" type="checkbox"/> 3.5 GHz <input checked="" type="checkbox"/> 5 GHz	Front	Horizontal	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Left Side	Horizontal	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Right Side	Horizontal	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Rear	Horizontal	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Front	Vertical	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Left Side	Vertical	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Right Side	Vertical	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	Rear	Vertical	3 V/m	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.3.2. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

3 –The function stopped during the test, but can be recoverable manually after the test.

6.4. Electrical fast transient/burst immunity

Test requirement	EN 55035:2017+A11:2020	
Basic standard	EN 61000-4-4:2012	
Test level	Measurement port	Voltage
	Input a.c. power ports	±1 kV
	Input d.c. power ports	±0.5 kV
	Analogue/digital data ports	±0.5 kV
	xDSI	±0.5 kV
Burst duration	15 ms	
Burst period.....	300 ms	
Repetition frequency	5 kHz or 100 kHz	
Test time	2 minutes per level & polarity	
Performance criteria	B	
Test method	Measurements were made on a ground plane that extends 0.5-meter minimum beyond all sides of the system under test. Mains power tests were conducted with the product connected to a Coupling/Decoupling Network (CDN). One of each unique interface was tested for a period of 2 minute per polarity. The bursts are applied on the mains supply port by using a coupling decoupling network and on signal and control lines ports by using a capacitive clamp.	
Ambient temperature.....	23.2 °C	
Relative humidity	47 %	
Air pressure.....	100.7 kPa	
Test location	XX XXXXXXXXXXXXXXXXXXXX, China	
Test model(s)	ESPB-A17Q	
EUT operation mode.....	Mode 1	
Test results	Pass	
Remark.....	/	

6.4.1. Test results for electrical fast transient/burst

Measurement port	Level	Polarity	Observation	Results
AC power port	1 kV	Positive & Negative	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.4.2. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

3 –The function stopped during the test, but can be recoverable manually after the test.

6.5.Surge immunity

Test requirement	EN 55035:2017+A11:2020		
Basic standard	EN 61000-4-5:2014+A1:2017		
Test level.....	Measurement port	Coupling point	Open-circuit peak voltage
	Input a.c. power ports	Line to line	±1 kV
		Line to earth	±2 kV
	Input d.c. power ports	Line to earth	±0.5 kV
	Analogue/digital data ports (a), (b)	Line to earth	±1 kV and ±4 kV Apply when primary protection is intended
	Analogue/digital data ports (b)	Line to earth	±1 kV Apply when primary protection is not intended
	Analogue/digital data ports coaxial or shielded (c)	Line to earth	±0.5 kV
Supplementary information: (a): Surges are applied with primary protection fitted. Where possible, use the actual primary protector intended to be used in the installation. (b): Where the surge coupling network for the 10/700 (5/320) μs waveform affects the functioning of high speed data ports, the test shall be carried out using a 1.2/50 (8/20) μs waveform and appropriate coupling network. (c) Surges are applicable to ports which satisfy all the following conditions: -may connect directly to cables that leave the building structure, -defined as an antenna port (3.1.3), a wired network port (3.1.34), or a broadcast receiver tuner port (3.1.8).			
Repetition rate.....	1/min		
Phase angles	Positive pulses are applied 90° and negative pulses are applied 270°		
Number of pulses for each coupling	5		
Performance criteria	B		
Test method	Mains power tests were conducted with the product connected to a Coupling/Decoupling Network (CDN). The test voltage was increased from the lowest indicated level up to the maximum level. Five positive polarity pulses at the 90° phase angle, five negative polarity pulses at the 270° phase angle. Each surge was applied 60 seconds after the previous surge. Signal and Telecommunications ports were subject to five (5) positive and five (negative) surges applied through the appropriate Coupling/Decoupling Network (CDN).		
Ambient temperature.....	23.8 °C		
Relative humidity	50 %		
Air pressure	100.7 kPa		
Test location	xx xxxxxxxxxxxxxxxxxxxxxxxxxx, China		
Test model(s)	ESPB-A17Q		
EUT operation mode.....	Mode 1		

Test results	Pass
Remark	/

6.5.1. Test results for surge

Measurement port		Level	Polarity	Observation	Results
AC power port	L-N	1 kV	Positive	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
			Negative	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.5.2. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

3 –The function stopped during the test, but can be recoverable manually after the test.

6.6.1. Test results for Immunity to injected currents

Measurement port	Frequency	Coupling type	Level	Observation	Results
AC power port	0.15 MHz to 10 MHz	CDN	3 V	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	10 MHz to 30 MHz		3 V to 1 V	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
	30 MHz to 80 MHz		1 V	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.6.2. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

3 –The function stopped during the test, but can be recoverable manually after the test.

6.7. Broadband impulse noise disturbances for xDSL ports

Test requirement	EN 55035:2017+A11:2020			
Basic standard	EN IEC 61000-4-6:2023			
Frequency range	150 kHz to 80 MHz			
Test level	Broadband impulse noise disturbances, repetitive			
	Frequency (MHz)	(dBuV)	Burst duration	Burst period
	0.150 – 5	107	0.7 ms	8.3 (for 60 Hz) 10 (for 50 Hz)
	5 – 10	107 to 36		
	10 – 30	36 to 30		
	Broadband impulse noise disturbances, isolated			
	Frequency (MHz)	(dBuV)	Burst duration	Burst period
	0.150 – 30	107	0.24 ms 10 ms 300 ms	/
Performance criteria	A(repetitive) B(isolated)			
Test set up description	Measurements were made on a ground plane that extends 0.5-meter minimum beyond all sides of the system under test. The EUT was located 10cm above the reference ground plane and any associated I/O cables attached to the EUT were located between 30mm and 50mm above the ground plane. The indicated field was pre-calibrated prior to placement of the system under test. For the repetitive impulse test the disturbance shall be applied for a period of at least 2 min for each port under test. For the isolated impulse test a minimum of 5 isolated impulses shall be applied with an interval of at least 60 s between successive impulses.			
Ambient temperature	/			
Relative humidity	/			
Air pressure	/			
Test location	/			
Test model(s)	/			
EUT operation mode	/			
Test results	N/A			
Remark	This test isn't applicable because the EUT doesn't have relative function.			

6.8.1. Test results for Power frequency magnetic field immunity

Point of application	Frequency (Hz)	Level	Results
X-Axis	50	1 A/m	Pass
Y-Axis	50	1 A/m	Pass
Z-Axis	50	1 A/m	Pass

6.8.2. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

3 –The function stopped during the test, but can be recoverable manually after the test.

6.9.Voltage dips, short interruptions and voltage variations immunity

Test requirement	EN 55035:2017+A11:2020		
Basic standard	EN IEC 61000-4-11:2020		
Test level.....	Voltage Dips		
	Frequency	Test level in % U _T	Duration
	50 Hz	0	0.5 cycle
	50 Hz	70	25 cycles
	60 Hz	70	30 cycles
	Voltage interruptions		
	Frequency	Test level in % U _T	Duration
	50 Hz	0	250 cycles
	60 Hz	0	300 cycles
	U _T is the rated voltage of the equipment under test.		
Repetition rate.....	10 seconds		
Number of dips or interruptions	3		
Performance criteria	B & C		
Test method	The test allows estimating of the conducted immunity of electrical and electronic equipment connected to low-voltage power supply networks for voltage dips and short interruptions. The interference is applied on mains supply port by using a testing generator.		
Ambient temperature.....	23.1 °C		
Relative humidity	49 %		
Air pressure	100.7 kPa		
Test location	xx xxxxxxxxxxxxxxxxxxxxxx, China		
Test model(s)	ESPB-A17Q		
EUT operation mode.....	Mode 1		
Test results	Pass		
Remark.....	/		

6.9.1. Test results for Voltage dips

% of U_T	Frequency	Duration in cycles	Sync Angle	Observation	Results
0	50 Hz	0.5	0°	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Pass
70	50 Hz	25	0°	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.9.2. Test results for Voltage interruptions

% of U_T	Frequency	Duration in cycles	Sync Angle	Observation	Results
0	50 Hz	250	0°	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	Pass

6.9.3. Test results of observations description

/ - Not performed or not required.

1 –No obvious change of function was found after the test.

2 –The function stopped during the test, but can be recoverable by itself operation after the test.

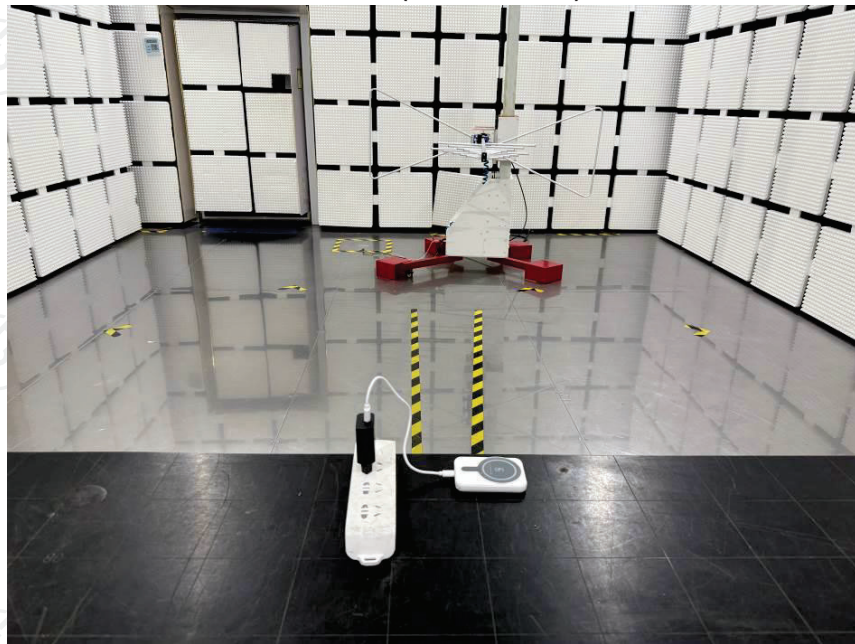
3 –The function stopped during the test, but can be recoverable manually after the test.

7. Test set-up photo

Disturbance voltage at mains terminals test view



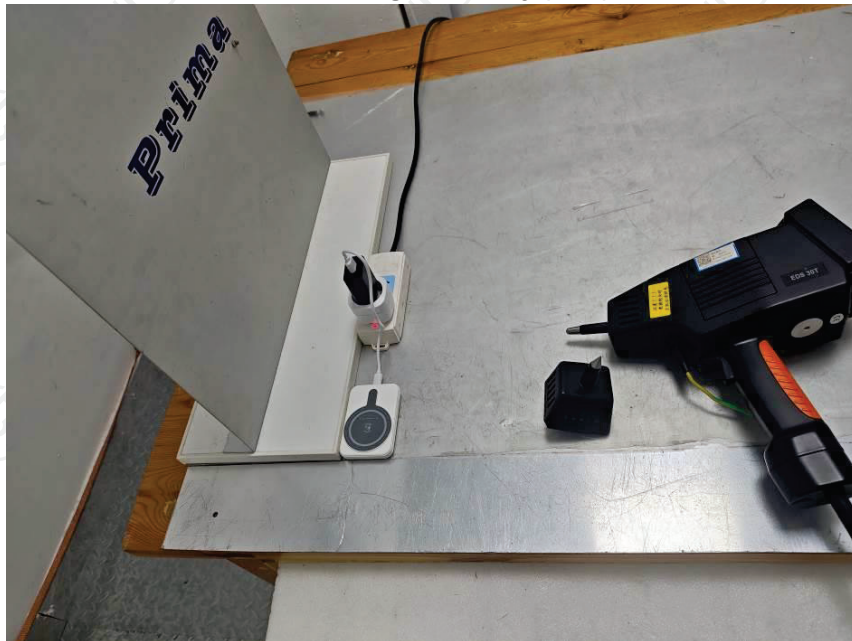
Radiated emission (30 MHz-1 GHz) test view



Voltage changes, voltage fluctuations and flicker test view



Electrostatic discharge immunity (ESD) test view



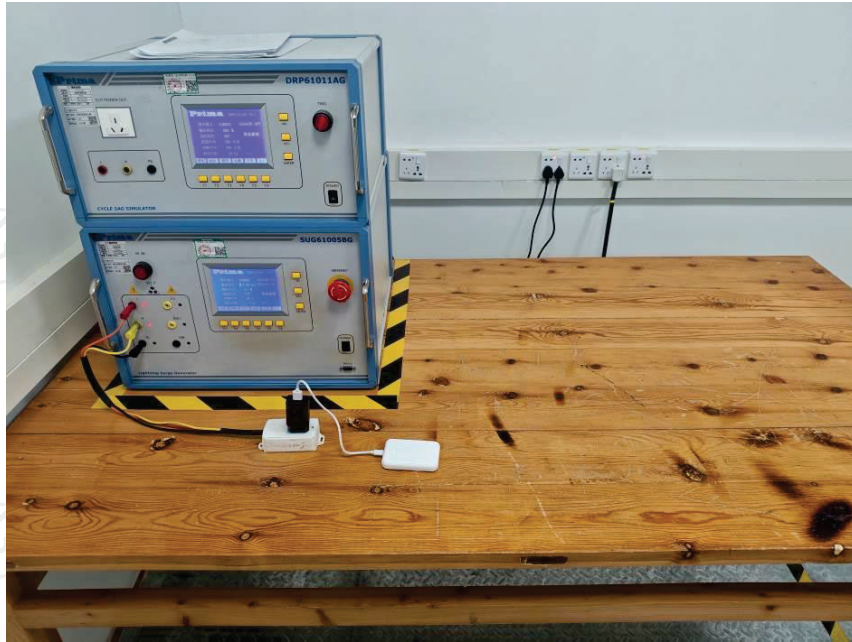
Radiated, radio-frequency, electromagnetic field immunity (RS) test view



Electrical fast transient/burst immunity (EFT/B) test view



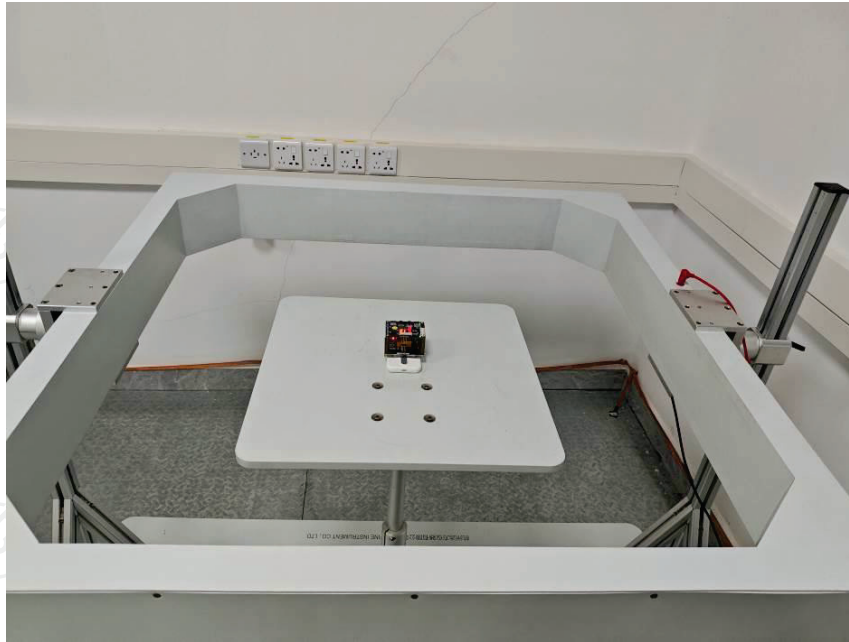
Surge immunity test view



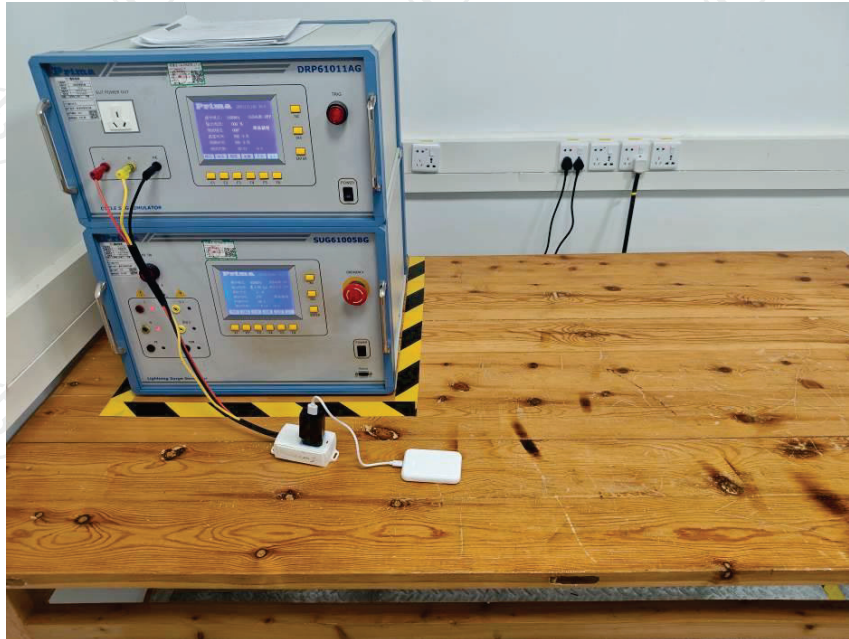
Immunity to conducted disturbances, induced by radio-frequency fields (CS) test view



Power frequency magnetic field immunity (PFMF) test view

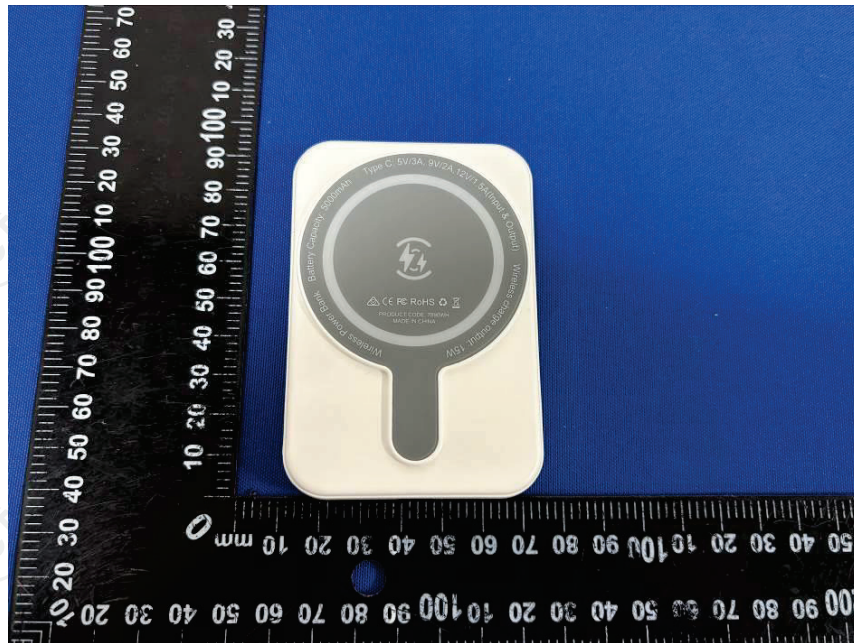


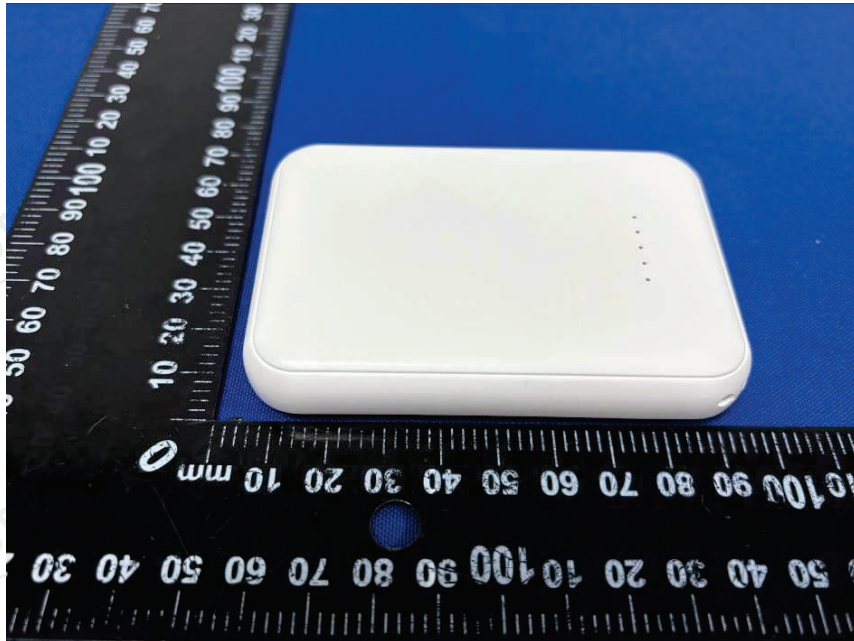
Voltage dips, short interruptions and voltage variations immunity (DIPS) test view

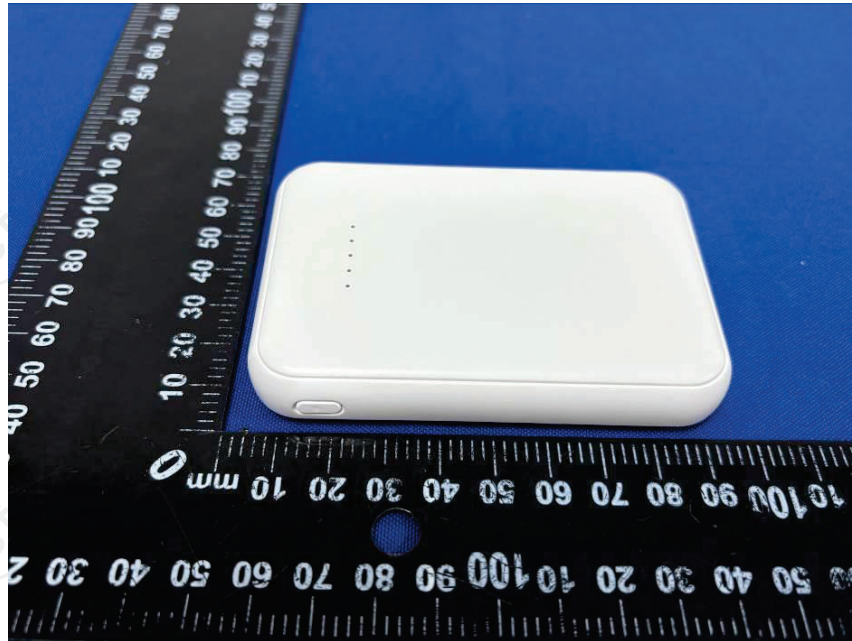


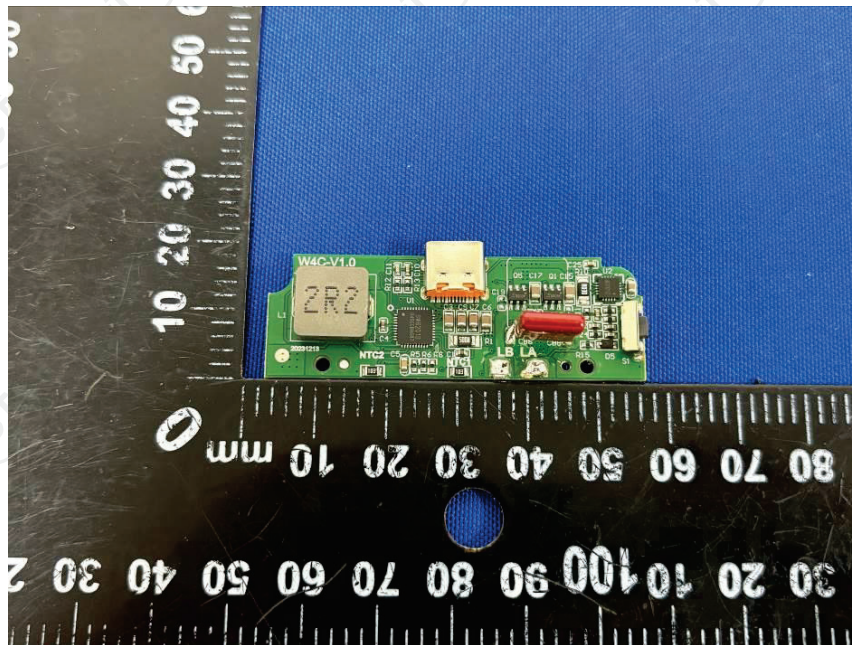
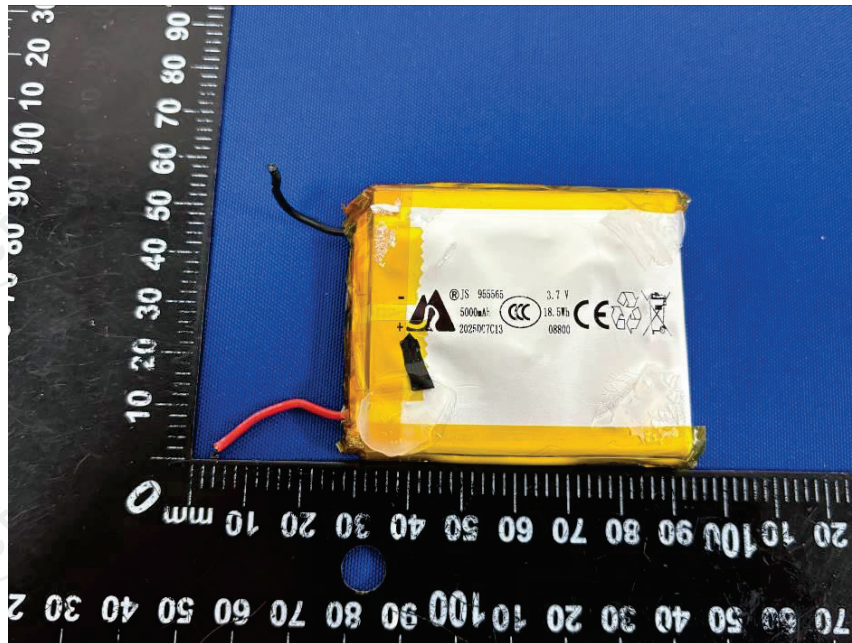
8. Photo of the EUT

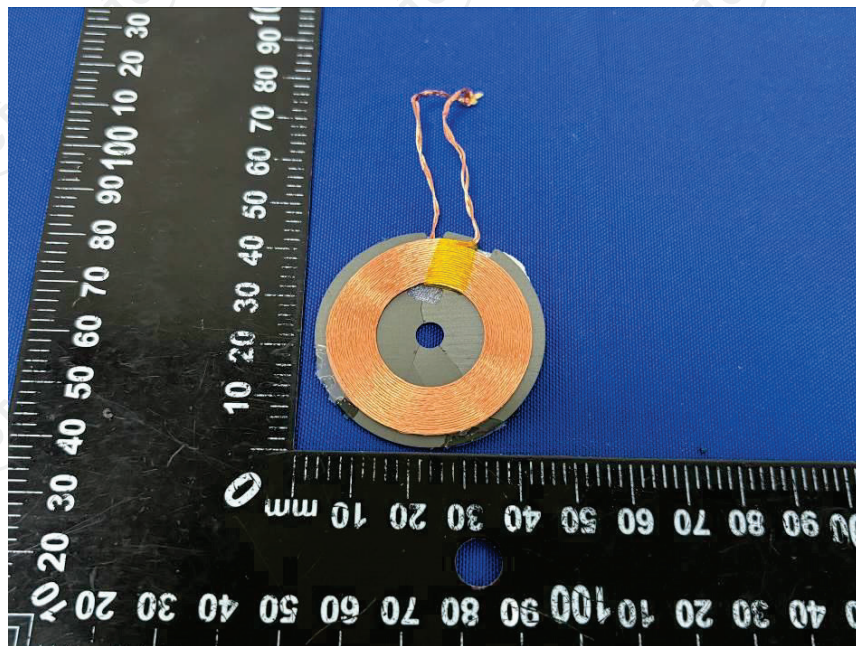
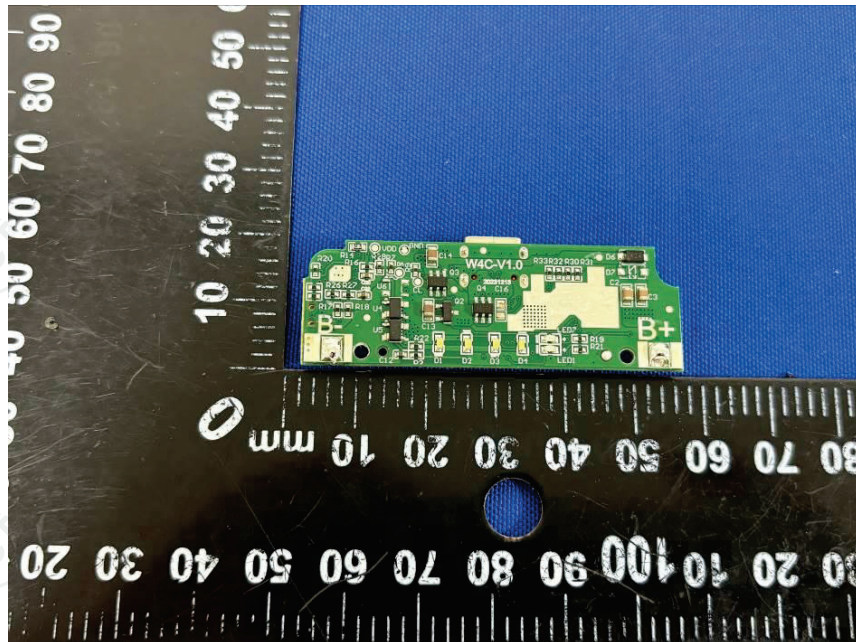












*****End of report*****