TEST REPORT

Report No.:	BCTC2502693836E
Applicant:	Radxa Computer (Shenzhen) Co., Ltd.
Product Name:	Radxa ROCK 3B+
Test Model:	Radxa ROCK 3B+
Tested Date:	2025-02-20 to 2025-03-05
Issued Date:	2025-03-17

Shenzhen BCTC Testing Co., Ltd.

Product Name:	Radxa ROCK 3B+
Trademark:	radxa®
Model/Type Reference:	Radxa ROCK 3B+ Radxa ROCK 3B+ D2E16J0, Radxa ROCK 3B+ D4E32J0, Radxa ROCK 3B+ D8E64J0, Radxa ROCK 3B+ D2E16J1, Radxa ROCK 3B+ D4E32J1, Radxa ROCK 3B+ D8E64J1
Prepared For:	Radxa Computer (Shenzhen) Co., Ltd.
Address:	1602, Smart Valley, tiezai Road, Gongle community, Xixiang,Baoan, Shenzhen
Manufacturer:	Radxa Computer (Shenzhen) Co., Ltd.
Address:	1602, Smart Valley, tiezai Road, Gongle community, Xixiang,Baoan, Shenzhen
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China.
Sample Received Date:	2025-02-20
Sample Tested Date:	2025-02-20 to 2025-03-05
Issue Date:	2025-03-17
Report No.:	BCTC2502693836E
Test Standards:	EN 55032:2015+A11:2020+A1:2020, EN 55035:2017+A11:2020
Test Results	PASS

Tested by:

Icey Chen

Icey Chen/ Project Handler

Approved by:

Zero Zhou/Reviewer

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2502693836E	2025-03-17	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test result**
EN 55032	Conducted emissions from the AC mains power ports	Pass
EN 55032	Asymmetric mode conducted emissions	Pass
EN 55032	Conducted differential voltage emissions	N/A[2]
EN 55032	Radiated emissions	Pass

IMMUNITY (EN 55035)		
Standard	**Test Item**	**Test result**
EN 55035	Electrostatic discharge (ESD)	Pass
EN 55035	Continuous RF electromagnetic field disturbances (RS)	Pass
EN 55035	Electrical fast transients/burst (EFT)	N/A[3]
EN 55035	Surges	N/A[3]
EN 55035	Continuous induced RF disturbances (CS)	N/A[3]
EN 55035	Broadband impulse noise disturbances, repetitive	N/A[4]
EN 55035	Broadband impulse noise disturbances, isolated	N/A[4]
EN 55035	Power frequency magnetic field (PFMF)	N/A[5]
EN 55035	Voltage dips and interruptions (DIPS)	N/A[3]

Remark:
1. Applicable to ports listed above and intended to connect to cables longer than 3 m.
2. (1) TV broadcast receiver tuner ports with an accessible connector,
   (2) RF modulator output ports;
   (3) FM broadcast receiver tuner ports with an accessible connector.
   But the EUT has no above ports, so this test item is not applicable.
3. The EUT is powered by the DC only , the test item is not applicable
4. Applicable only to CPE xDSL ports.
5. The Product doesn't contain any device susceptible to magnetic fields.

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.10
Radiated disturbance (30MHz-200MHz)	4.60
Radiated disturbance (200MHz-1000MHz)	5.20
Radiated disturbance (1GHz-6GHz)	5.20

4. Product Information And Test Setup

4.1 Product Information

Ratings:	DC 12V 3A
Model difference:	All models are identical except for the appearance color and model named.
The highest frequency of the internal sources of the EUT is (between 500 MHz and 1 GHz):	☐ less than 108 MHz, the measurement shall only be made up to 1 GHz. ☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. ☒ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. ☐ above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	Network Cable	2	BCTC	1.5	Yes	--
2.	HDMI	1	BCTC	1.5	Yes	--

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1.	Display	LG	27UP850N	---	---
2.	U disk	SanDisk	32G	---	---
3.	Router	XiaoMi	R4A	---	---
4.	Keyboard	Logitech	M-U0026	---	---
5.	Mouse	Logitech	YU0036	---	---

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted emissions from the AC mains power ports (150KHz-30MHz) Class B	Working	DC 12V from adapter input AC 230V 50Hz
Asymmetric mode conducted emissions(150KHz-30MHz) Class B	Working	DC 12V from adapter input AC 230V 50Hz
Radiated emissions(30MHz-1GHz) Class B	Working	DC 12V from adapter input AC 230V 50Hz
Radiated emissions(1 – 6 GHz) 108≤F<500MHz up to 2G 500≤F<1GHz up to 5G 1GHz ≤F up to 6G ☐Class A ☒Class B	Working	DC 12V from adapter input AC 230V 50Hz
Electrostatic discharge (ESD) B ☒Air Discharge: ±8kV ☒Contact Discharge: ±4kV ☒HCP & VCP: ±4Kv 10 times each point/	Working	DC 12V from adapter input AC 230V 50Hz
Continuous RF electromagnetic field disturbances(RS) 80MHz-1000MHz, 1800MHz, 2600MHz,3500MHz,5000MHz 3V/m,80% AM Front, Rear, Left, Right H/V	Working	DC 12V from adapter input AC 230V 50Hz

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
LISN	R&S	ENV216	101375	May 16, 2024	May 15, 2025
ISN	HPX	ISN T800	S1509001	May 16, 2024	May 15, 2025
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD 9561-F	01323	May 16, 2024	May 15, 2025

Radiated Emissions Test (966 Chamber#01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 16, 2024	May 15, 2025
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 21, 2024	May 20, 2025
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Radiated Emissions Test (966 Chamber#02)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	SKET	966 Room	966	Oct. 31. 2024	Oct. 30.2027
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
Receiver	R&S	ESRI7	100010	Oct. 31. 2024	Oct. 30. 2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9168	1323	Feb. 28, 2025	Feb. 27, 2026
Amplifier	SKET	LNPA-30M01G-30	SK2021082004	Oct. 31. 2024	Oct. 30. 2025
Software	SKET	EZ-EMC	FA-03A1	\	\
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 16, 2024	May 15, 2025

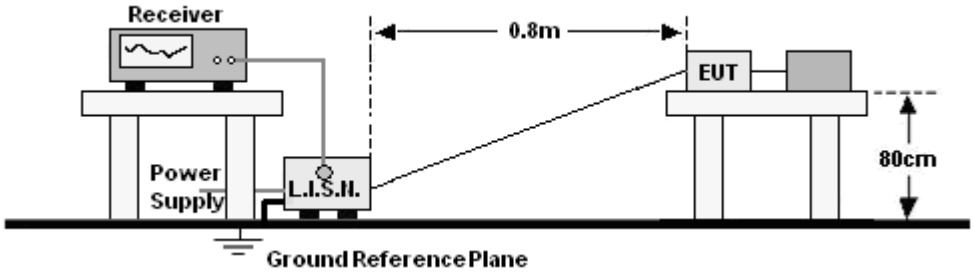
Electrostatic Discharge Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Electrostatic Discharge Simulator	3C TEST	EDS 30T	ES031000123059	Mar. 04, 2025	Mar. 03, 2026

Continuous RF Electromagnetic Field Disturbances Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	A00065	May 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211659	May 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211305	May 16, 2024	May 15, 2025
Amplifier	SKET	HAP_801000-250W	21201805013	May 16, 2024	May 15, 2025
Amplifier	SKET	HAP_0103-75W	21201805014	May 16, 2024	May 15, 2025
Amplifier	SKET	HAP_0306-50W	21201805015	May 16, 2024	May 15, 2025
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	00077	\	\
Field Probe	Narda	EP-601	611WX80256	May 25, 2024	May 24, 2025
Signal Generator	Agilent	N5181A	MY50143748	May 16, 2024	May 15, 2025
Software	SKET	EMC-S	1.2.0.18	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Conducted emissions at the mains ports of Class B MME

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

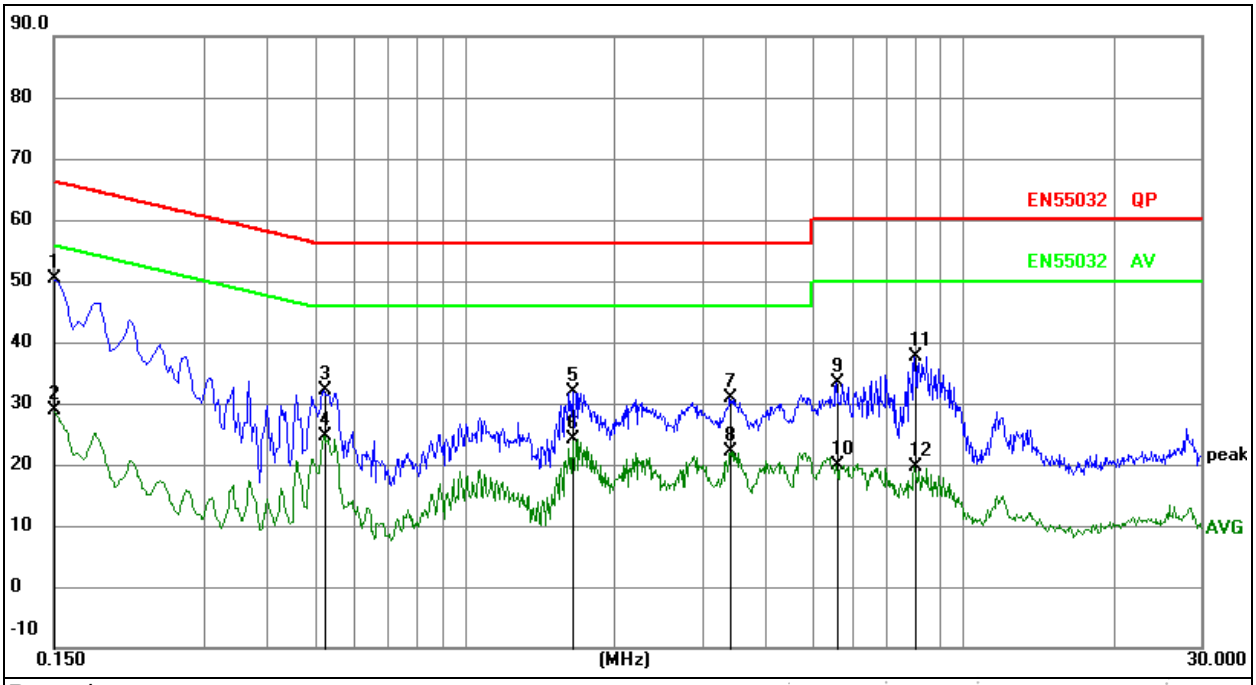
Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

For mains ports:
a. The Product was placed on a nonconductive table 0. 8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

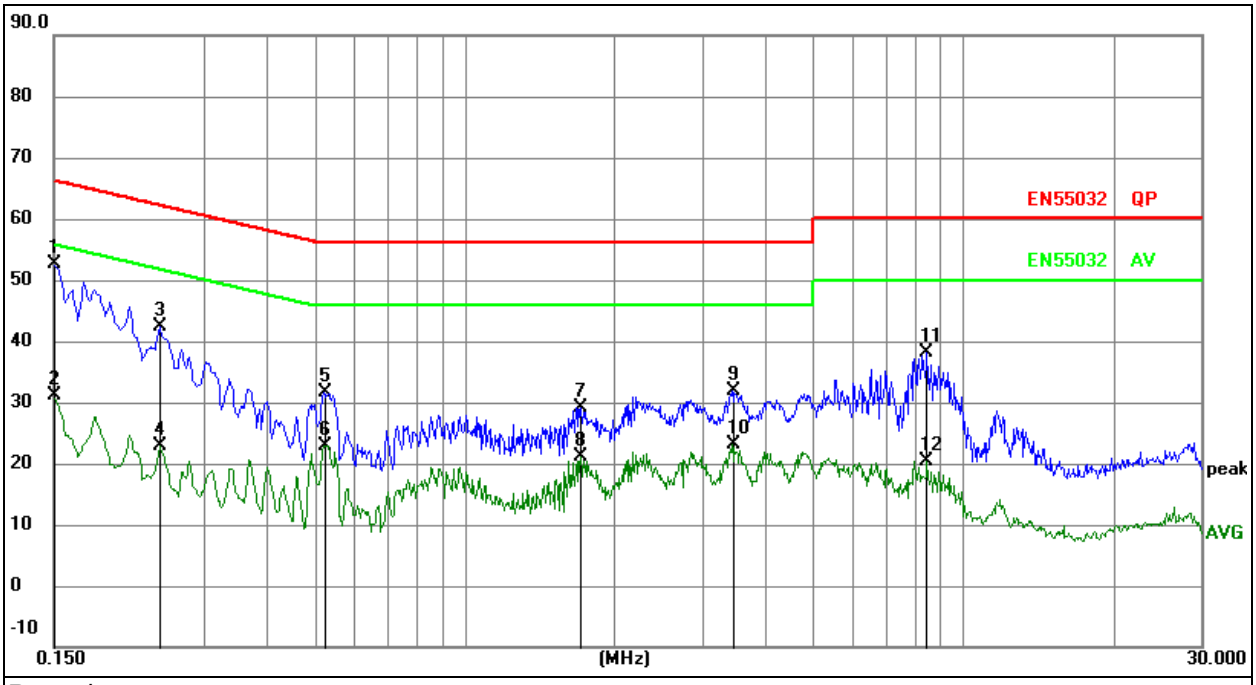
Temperature:	24.3 ℃	Relative Humidity:	52%RH
Pressure:	101kPa	Phase :	Line
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1	*	0.1500	30.30	20.07	50.37	66.00	-15.63	QP
2		0.1500	8.91	20.07	28.98	56.00	-27.02	AVG
3		0.5235	12.00	20.08	32.08	56.00	-23.92	QP
4		0.5235	4.51	20.08	24.59	46.00	-21.41	AVG
5		1.6530	11.84	20.10	31.94	56.00	-24.06	QP
6		1.6530	3.96	20.10	24.06	46.00	-21.94	AVG
7		3.4170	10.66	20.13	30.79	56.00	-25.21	QP
8		3.4170	1.90	20.13	22.03	46.00	-23.97	AVG
9		5.5770	13.14	20.15	33.29	60.00	-26.71	QP
10		5.5770	-0.25	20.15	19.90	50.00	-30.10	AVG
11		7.9845	17.36	20.16	37.52	60.00	-22.48	QP
12		7.9845	-0.56	20.16	19.60	50.00	-30.40	AVG

Temperature:	24.3 ℃	Relative Humidity:	52%RH
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working



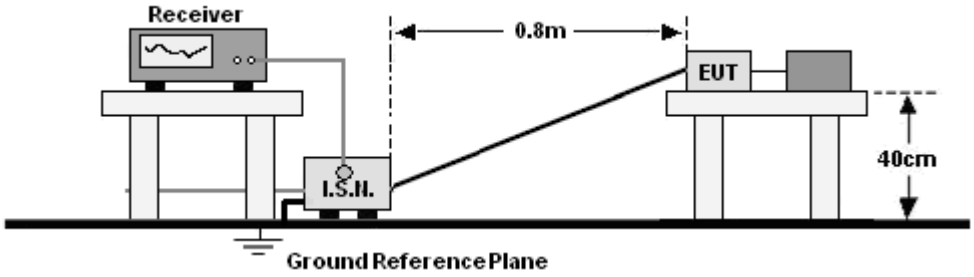
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1	*	0.1500	32.57	20.07	52.64	66.00	-13.36	QP
2		0.1500	11.10	20.07	31.17	56.00	-24.83	AVG
3		0.2442	22.29	20.07	42.36	61.95	-19.59	QP
4		0.2442	2.83	20.07	22.90	51.95	-29.05	AVG
5		0.5210	11.56	20.08	31.64	56.00	-24.36	QP
6		0.5210	2.79	20.08	22.87	46.00	-23.13	AVG
7		1.7071	8.98	20.10	29.08	56.00	-26.92	QP
8		1.7071	1.11	20.10	21.21	46.00	-24.79	AVG
9		3.4356	11.72	20.13	31.85	56.00	-24.15	QP
10		3.4356	2.97	20.13	23.10	46.00	-22.90	AVG
11		8.4561	17.89	20.16	38.05	60.00	-21.95	QP
12		8.4561	0.20	20.16	20.36	50.00	-29.64	AVG

7. Conducted Emissions

7.1 Block Diagram Of Test Setup

For asymmetric mode ports:



7.2 Limit

Limits for asymmetric mode conducted emissions of Class B MME

Frequency range (MHz)	Voltage Limits dB(μV)		Current Limits dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0,15 to 0,50	84-74	74-64	40-30	30-20
0,50 to 30	74	64	30	20

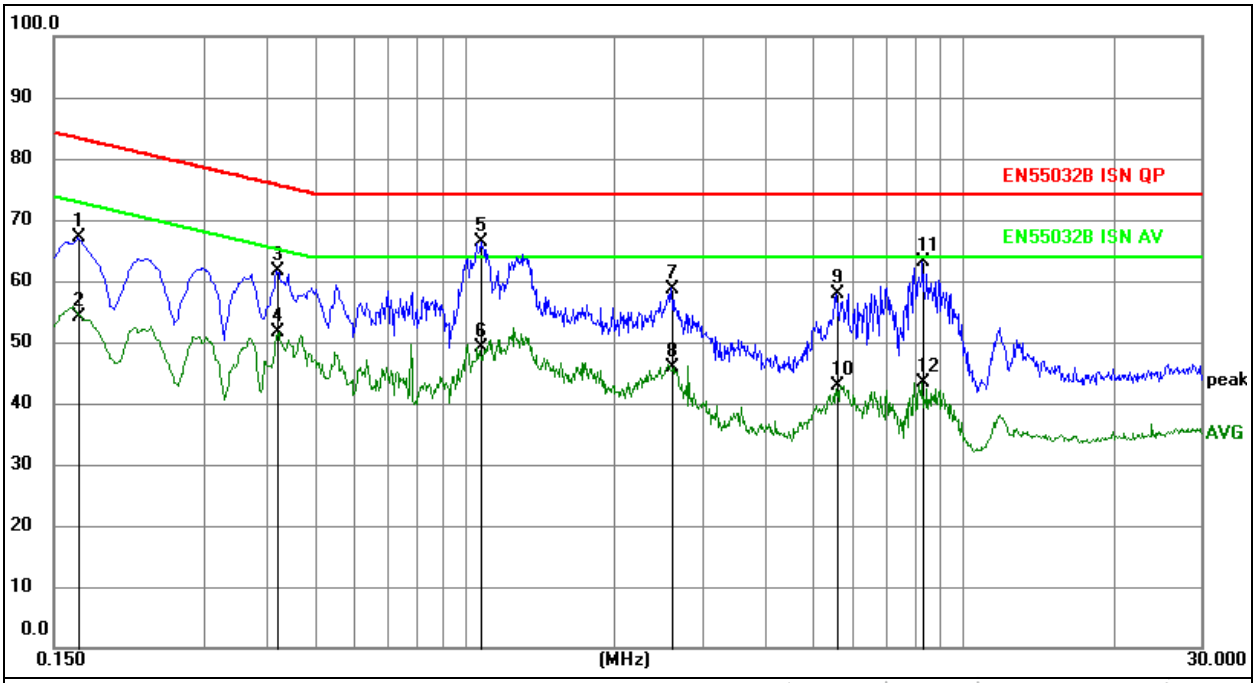
Notes: *Decreasing linearly with logarithm of frequency.

7.3 Test procedure

For asymmetric mode ports:
a. The Product was placed on a non-conductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the associated port through votalge probe.
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

7.4 Test Result

Temperature:	24.3 ℃	Relative Humidity:	52%RH
Pressure:	101kPa	Phase :	TELE
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working



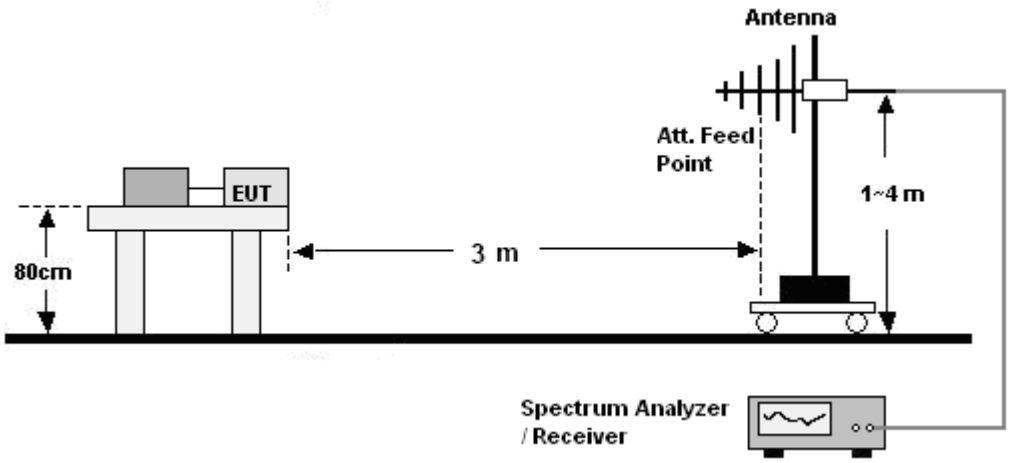
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1680	47.29	19.80	67.09	83.06	-15.97	QP
2		0.1680	34.28	19.80	54.08	73.06	-18.98	AVG
3		0.4200	41.68	19.90	61.58	75.45	-13.87	QP
4		0.4200	31.61	19.90	51.51	65.45	-13.94	AVG
5	*	1.0814	46.34	20.08	66.42	74.00	-7.58	QP
6		1.0814	28.98	20.08	49.06	64.00	-14.94	AVG
7		2.6070	38.74	20.01	58.75	74.00	-15.25	QP
8		2.6070	25.98	20.01	45.99	64.00	-18.01	AVG
9		5.5860	37.60	20.16	57.76	74.00	-16.24	QP
10		5.5860	22.77	20.16	42.93	64.00	-21.07	AVG
11		8.2995	42.91	20.26	63.17	74.00	-10.83	QP
12		8.2995	23.08	20.26	43.34	64.00	-20.66	AVG

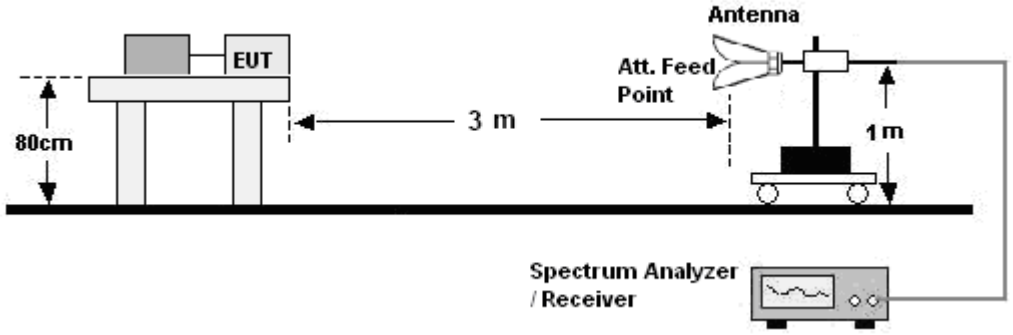
8. Radiated Emissions Test

8.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



Above 1GHz:



8.2 Limits

Limits for radiated disturbance of Class B MME

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

Frequency (GHz)	limit above 1G at 3m dB(μV/m)	
	Average	peak
1-6	54	74

Note: The lower limit shall apply at the transition frequencies.

8.3 Test Procedure

30MHz ~ 1GHz:
a. The Product was placed on the nonconductive turntable 0.8m above the ground in a semi anechoic chamber.
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:
a. The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

8.4 Test Results

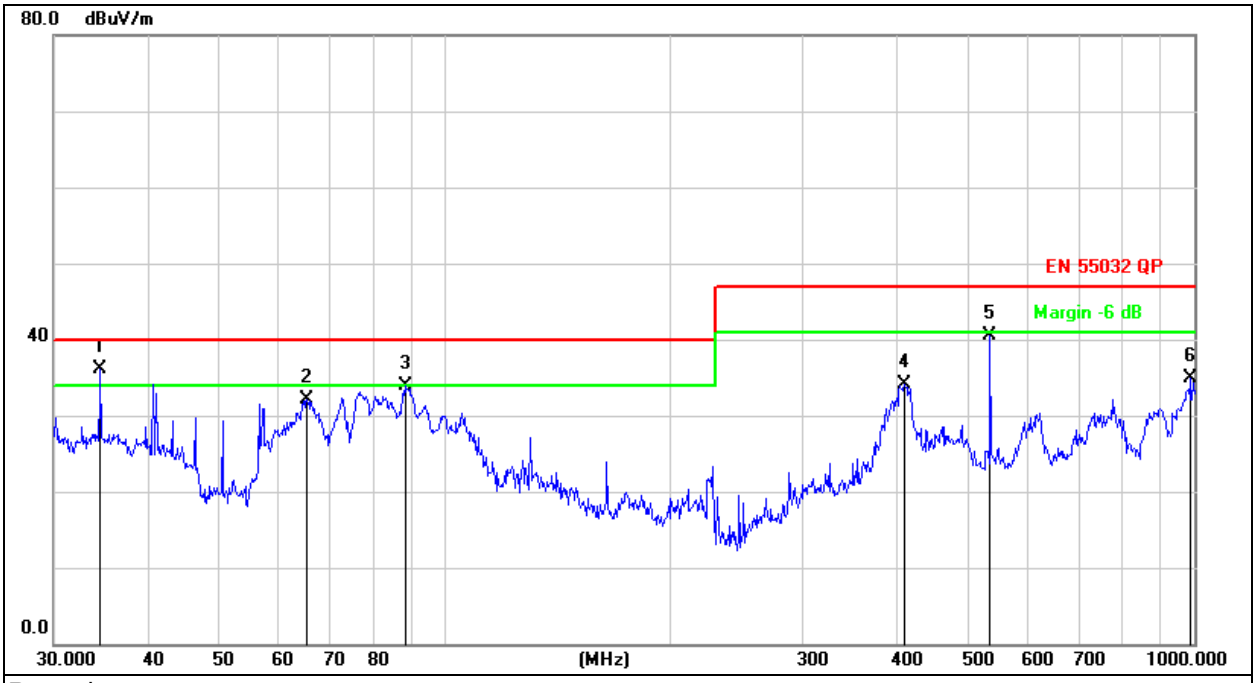
30MHz ~ 1GHz

Temperature:	24.1 ℃	Relative Humidity:	50%RH
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		41.1320	39.01	-14.63	24.38	40.00	-15.62	QP
2		74.3955	46.61	-18.77	27.84	40.00	-12.16	QP
3		180.6488	46.44	-17.16	29.28	40.00	-10.72	QP
4		416.1791	38.64	-10.52	28.12	47.00	-18.88	QP
5	*	533.8321	47.46	-9.81	37.65	47.00	-9.35	QP
6		962.1623	40.30	-2.80	37.50	47.00	-9.50	QP

Temperature:	24.1 ℃	Relative Humidity:	50%RH
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working

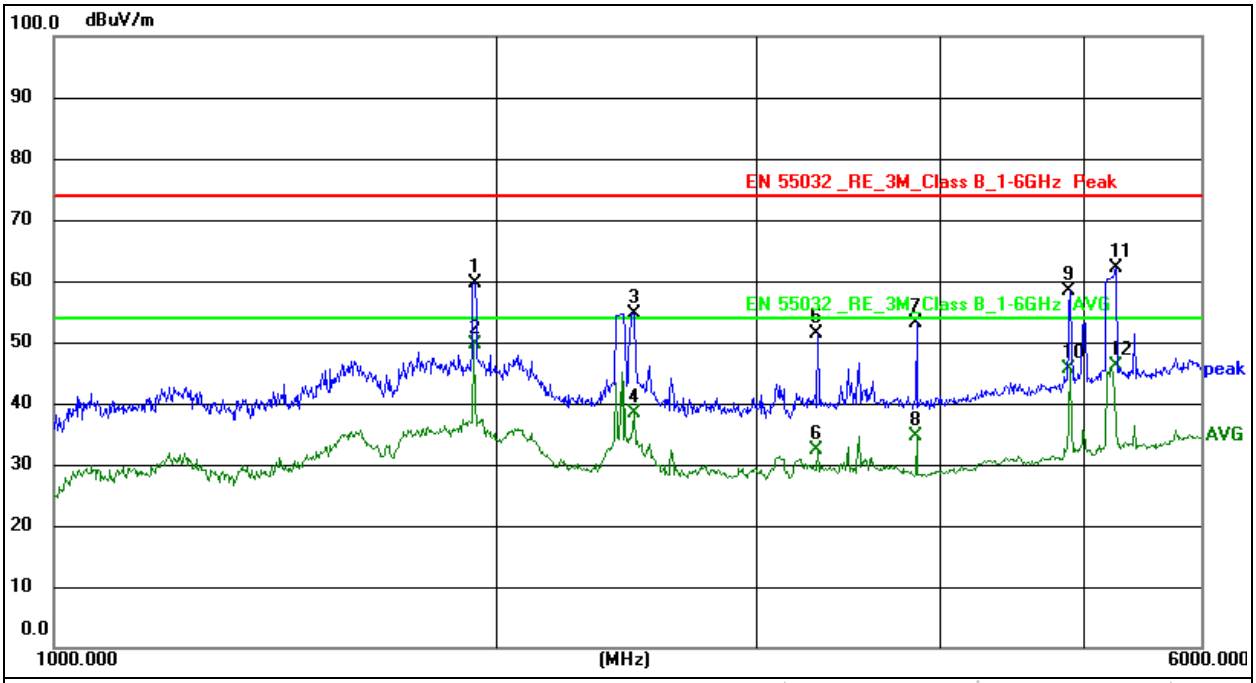


Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	34.6385	51.94	-15.75	36.19	40.00	-3.81	QP
2		65.3432	48.75	-16.72	32.03	40.00	-7.97	QP
3		88.3421	51.70	-17.79	33.91	40.00	-6.09	QP
4		410.3825	44.73	-10.64	34.09	47.00	-12.91	QP
5		533.8321	50.34	-9.81	40.53	47.00	-6.47	QP
6		989.5355	37.39	-2.48	34.91	47.00	-12.09	QP

Above 1GHz

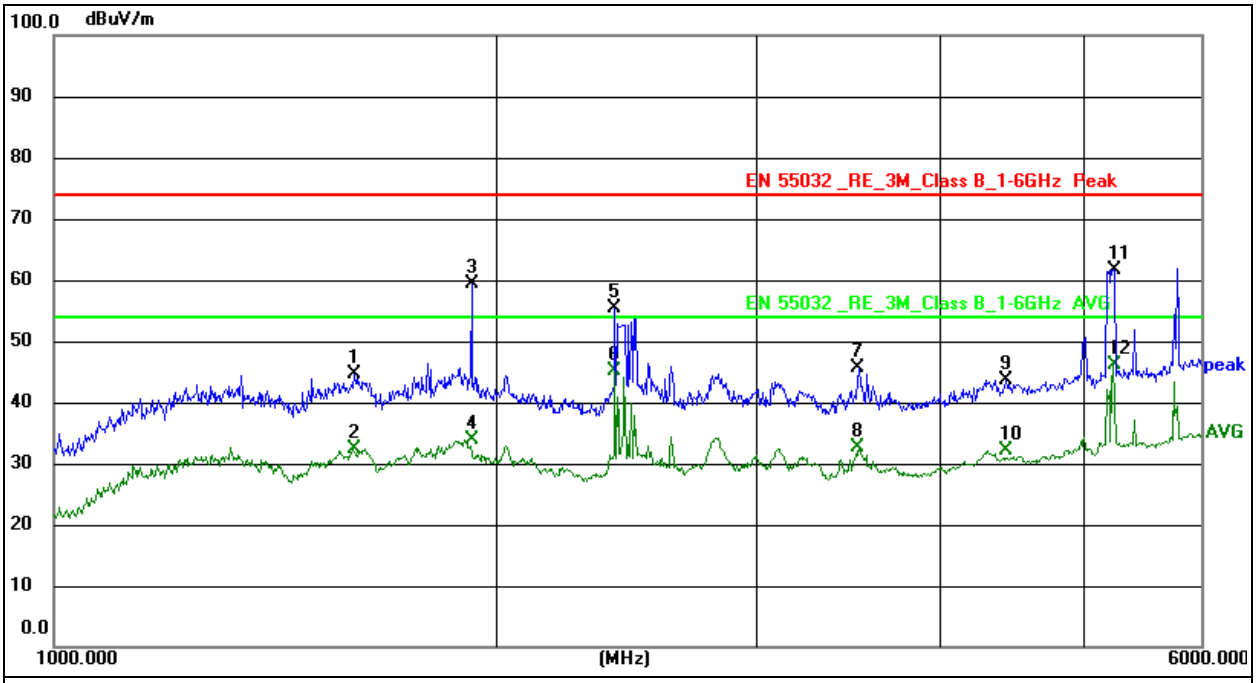
Temperature:	24.2 ℃	Relative Humidity:	51%RH
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1930.108	84.02	-24.31	59.71	74.00	-14.29	peak
2 *	1930.108	73.89	-24.31	49.58	54.00	-4.42	AVG
3	2475.965	77.51	-22.86	54.65	74.00	-19.35	peak
4	2475.965	61.22	-22.86	38.36	54.00	-15.64	AVG
5	3297.985	71.89	-20.41	51.48	74.00	-22.52	peak
6	3297.985	52.90	-20.41	32.49	54.00	-21.51	AVG
7	3847.421	71.76	-18.57	53.19	74.00	-20.81	peak
8	3847.421	53.30	-18.57	34.73	54.00	-19.27	AVG
9	4891.499	72.98	-14.49	58.49	74.00	-15.51	peak
10	4891.499	60.24	-14.49	45.75	54.00	-8.25	AVG
11	5254.944	75.49	-13.33	62.16	74.00	-11.84	peak
12	5254.944	59.57	-13.33	46.24	54.00	-7.76	AVG

Temperature:	24.2 ℃	Relative Humidity:	51%RH
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V from adapter input AC 230V 50Hz	Test Mode:	Working



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1599.100	70.38	-25.76	44.62	74.00	-29.38	peak
2	1599.100	58.23	-25.76	32.47	54.00	-21.53	AVG
3	1919.761	83.62	-24.35	59.27	74.00	-14.73	peak
4	1919.761	58.25	-24.35	33.90	54.00	-20.10	AVG
5	2401.685	78.52	-23.04	55.48	74.00	-18.52	peak
6	2401.685	68.07	-23.04	45.03	54.00	-8.97	AVG
7	3517.727	64.95	-19.36	45.59	74.00	-28.41	peak
8	3517.727	51.95	-19.36	32.59	54.00	-21.41	AVG
9	4424.514	60.00	-16.25	43.75	74.00	-30.25	peak
10	4424.514	48.35	-16.25	32.10	54.00	-21.90	AVG
11	5245.536	74.96	-13.36	61.60	74.00	-12.40	peak
12 *	5245.536	59.42	-13.36	46.06	54.00	-7.94	AVG

9. Immunity Test Of General The Performance Criteria

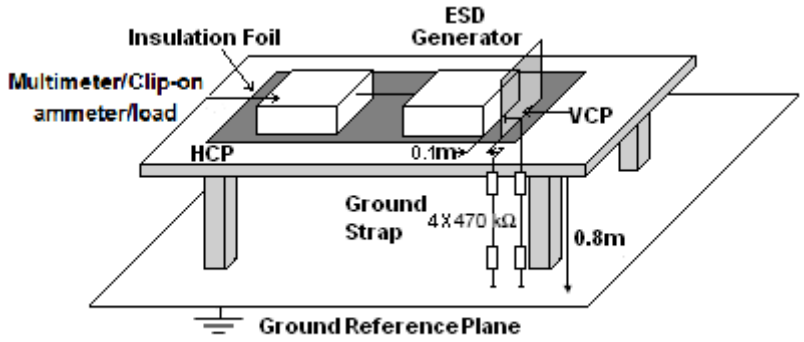
Product Standard	EN 55035:2017+A11:2020 clause 8
CRITERION A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment 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.
CRITERION 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. If the minimum performance level (or the permissible performance loss), or recovery time, 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.
CRITERION 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.

10. Electrostatic Discharge (ESD)

10.1 Test Specification

Basic standard	:	IEC 61000-4-2
Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

10.2 Block Diagram of Test Setup



10.3 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
c. The time interval between two successive single discharges was at least 1 second.
d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

10.4 Test Results

Temperature:	24.0 ℃	Relative Humidity:	45%RH
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 12V from adapter input AC 230V 50Hz		

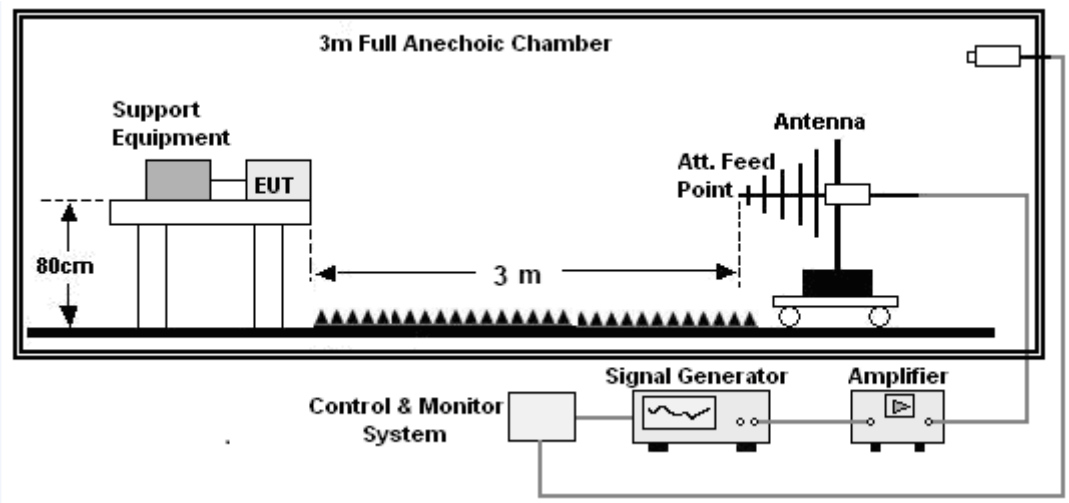
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	HCP	4	10	B	A
	VCP	4	10	B	A
	USB port, network port, HPMI port	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A

11. Continuous Rf Electromagnetic Field Disturbances (RS)

11.1 Test Specification

Basic standard	:	IEC 61000-4-3
Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

11.2 Block Diagram of Test Setup



11.3 Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
b. The frequency range is swept from 80MHz to 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz,with the signal 80% amplitude modulated with a 1 kHz sine wave,and the step size was 1%.
c. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond, but should not exceed 5 s at each of the frequencies during the scan.
d. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.
e. For Broadcast reception function:Group 2 not apply in this test.

11.4 Test Results

Temperature:	21.3 ℃	Relative Humidity:	52%RH
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 12V from adapter input AC 230V 50Hz		

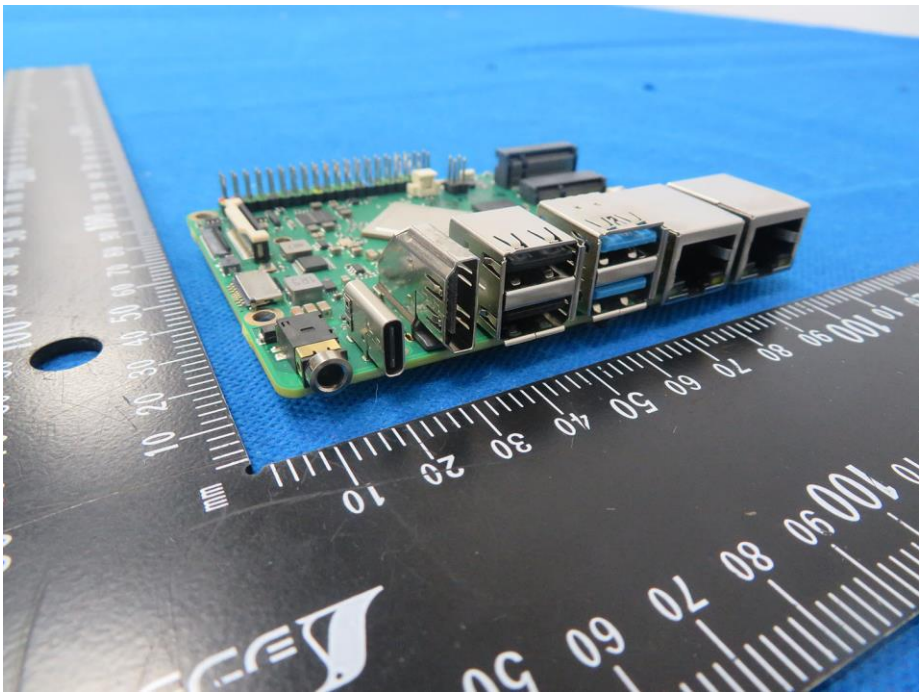
Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz	Front, Right, Back, Left	3	A	A

12. EUT Photographs

EUT Photo 1

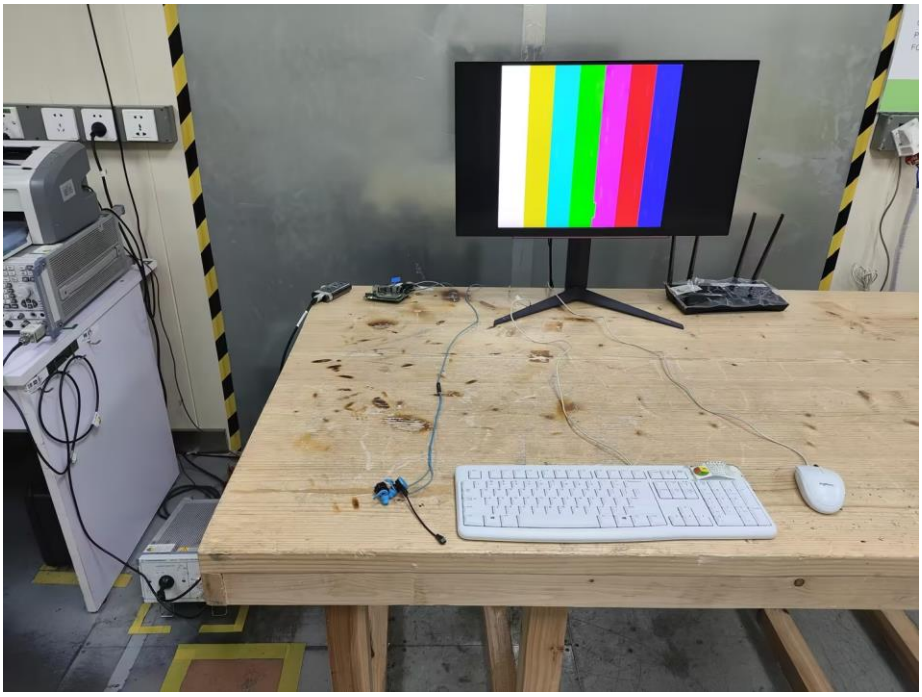
EUT Photo 2

EUT Photo 3

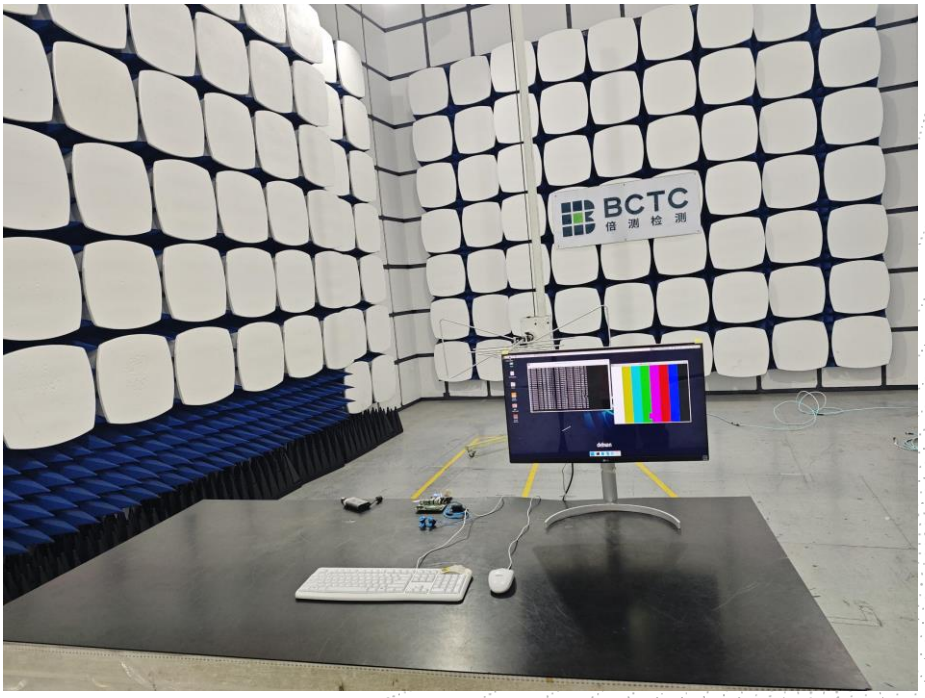


13. EUT Test Setup Photographs

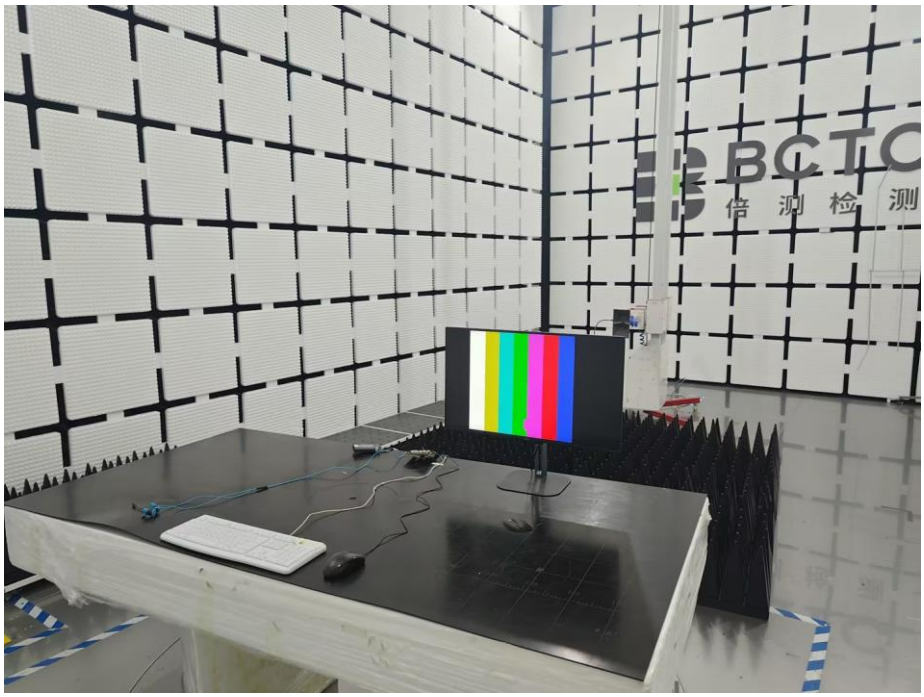
Conducted emissions



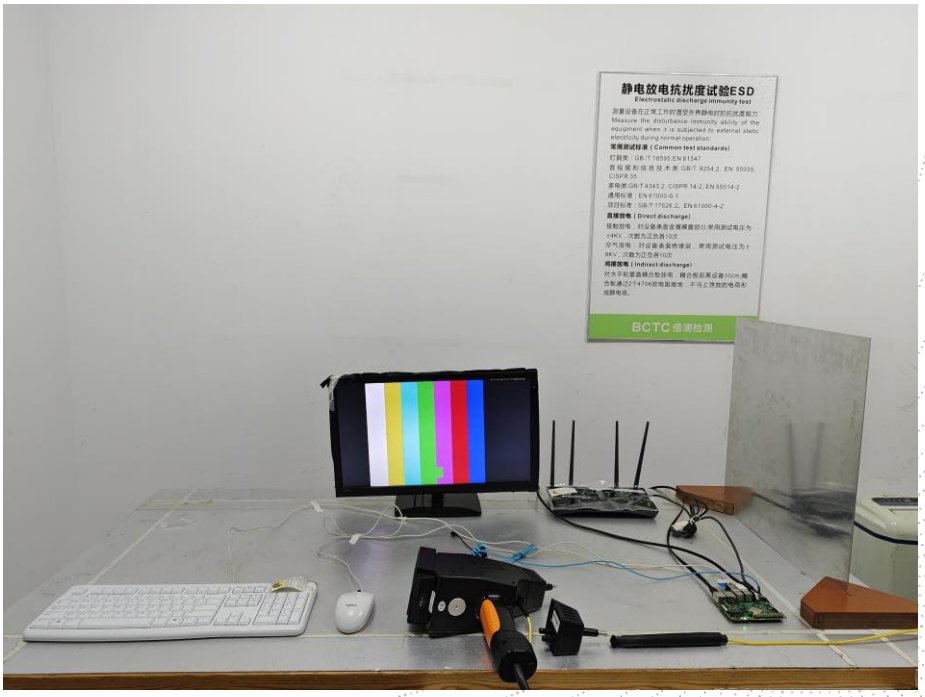
Radiated emissions(30MHz ~ 1GHz)



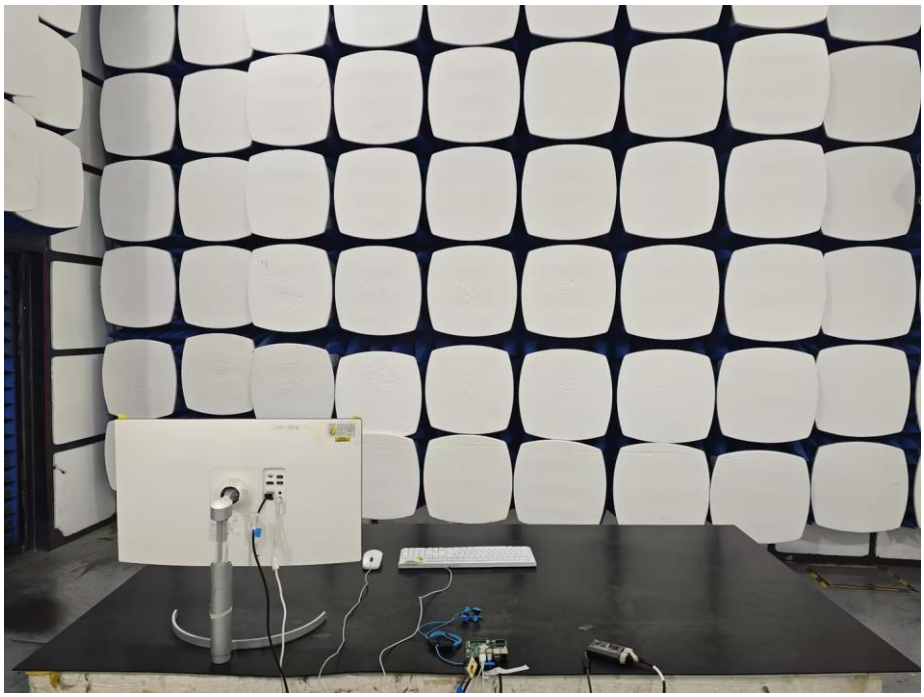
Radiated emissions(Above 1GHz)



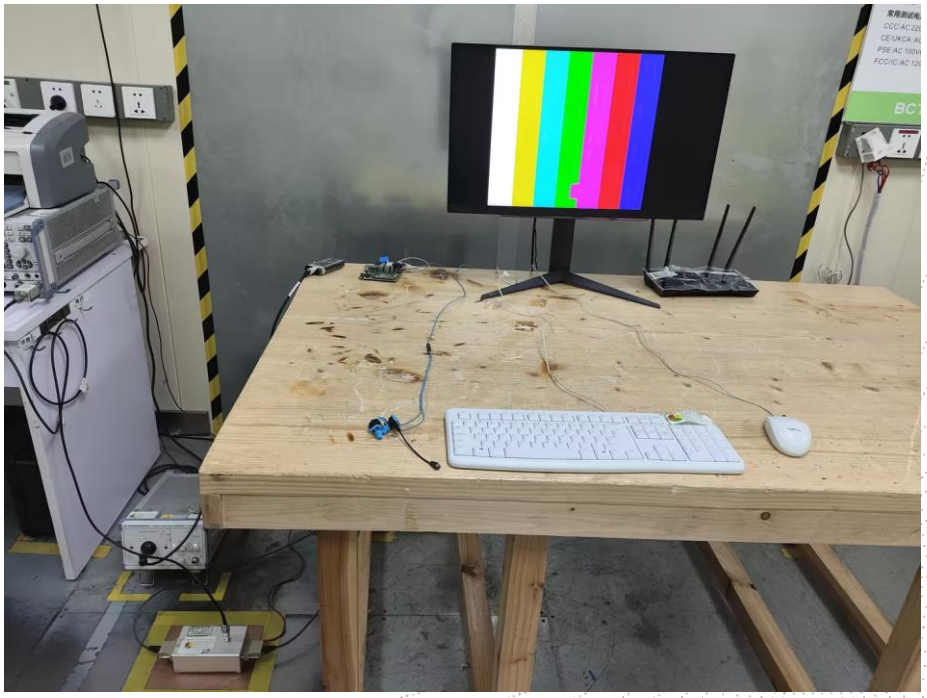
ESD



RS



TELE



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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