



EMC MEASUREMENT REPORT

Applicant: Dana Innovations: SONANCE

Address: 991 CALLE AMANECER SAN CLEMENTE CA 92673,
United States

Product: Power Amplifier

Model No.: UA 2-125

Brand Name: SONANCE

Standards: EN 55032:2015+A11:2020
EN 55032:2015+A1:2020
EN 55035:2017+A11:2020
EN 301 489 - 1 V2.2.3 (2019-11)
EN 301 489 - 17 V3.2.4 (2020-09)
AS/NZS CISPR 32:2015 AMD 1:2020

Result: Complies

Received Date: 2024-08-08

Test Date: 2024-08-14 ~ 2024-09-12

Reviewed By:

Denise Zhou

Approved By:

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

All decisions in the report are limited to the modes evaluated in the report.

Revision History

Report No.	Version	Description	Issue Date	Note
2408RSU014-E1	V01	Initial Report	2025-04-15	Valid

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1. General Information

1.1. Applicant

Dana Innovations: SONANCE

991 CALLE AMANECER SAN CLEMENTE CA 92673, United States

1.2. Manufacturer

Dana Innovations: SONANCE

991 CALLE AMANECER SAN CLEMENTE CA 92673, United States

1.3. Testing Facility

<input checked="" type="checkbox"/>	Test Site – MRT Suzhou Laboratory			
	Laboratory Location (Suzhou - Wuzhong)			
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China			
	Laboratory Location (Suzhou - SIP)			
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China			
	Laboratory Location (Suzhou - Wujiang)			
	Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People's Republic of China			
<input checked="" type="checkbox"/>	Laboratory Accreditations			
	A2LA: 3628.01		CNAS: L10551	
	FCC: CN1166		ISED: CN0001	
	VCCI:	<input type="checkbox"/> R-20025	<input type="checkbox"/> G-20034	<input type="checkbox"/> C-20020
		<input type="checkbox"/> R-20141	<input type="checkbox"/> G-20134	<input type="checkbox"/> C-20103
<input type="checkbox"/>	Test Site – MRT Shenzhen Laboratory			
	Laboratory Location (Shenzhen)			
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China			
	Laboratory Accreditations			
	A2LA: 3628.02		CNAS: L10551	
<input type="checkbox"/>	Test Site – MRT Taiwan Laboratory			
	Laboratory Location (Taiwan)			
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)			
	Laboratory Accreditations			
	TAF: 3261		ISED: TW3261	

1.4. Product Information

Product Name	Power Amplifier
Model No.	UA 2-125
EUT Identification No.	20240808Sample#07
Brand Name	SONANCE
Bluetooth Specification	BLE 1M & 2M
Power Type	100-240V ~ 50/60Hz, 80Watts
Integrated Module Information	
Bluetooth Module	Module Name: Bluetooth Module
	Model No.: HC08U
	Brand Name: Quectel
Note: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

2. Test Configuration

2.1. Test Mode

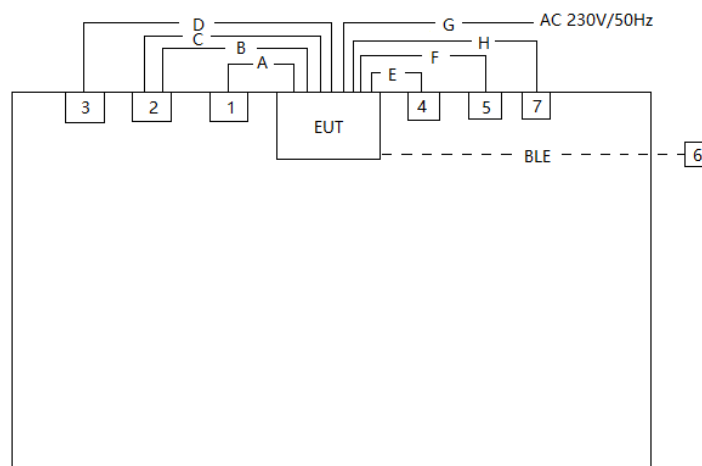
Test Mode

Mode 1: EUT powered by AC 230V/50Hz + COAX IN connected to DVD through coaxial line to play 1kHz audio + TOSLINK IN connected to DVD through optical cable + RCA IN(L&R) connected to mobile phone + RCA OUT(L&R) connected to loudspeaker output + 4Ω MINIMUM CLASS 2 WIRING Port connected to two speaker output + IR IN + BLE connected to mobile APP.

Mode 2: EUT powered by AC 230V/50Hz + COAX IN connected to DVD through coaxial line + TOSLINK IN connected to DVD through OPT cable Play 1kHz audio + RCA IN(L&R) connected to mobile phone + RCA OUT(L&R) connected to loudspeaker output + 4Ω MINIMUM CLASS 2 WIRING Port connected to two speaker output + IR IN + BLE connected to mobile APP.

2.2. Test System Connection Diagram

Mode 1 ~ 2



No.	Cable Type	Cable Spec.	Length
A	IR Cable	Non-Shielding	1.0 m
B	Coaxial Cable	Shielded	1.5 m
C	OPT Cable	Non-Shielding	1.5 m
D	Audio Cable	Non-Shielding	1.5 m
E	Audio Cable	Non-Shielding	1.5 m
F	Audio Cable	Non-Shielding	1.5 m
G	Power Cable	Non-Shielding	1.8 m
H	Audio Cable	Non-Shielding	1.5 m
No.	Product	Manufacturer	Model No.
1	IR Receiver	HANSONG	N/A

2	DVD	Pioneer	DV-420V-G
3	Loudspeaker	BOSE	Soundlink mini
4	Speaker	N/A	4Ω
5	Speaker	N/A	4Ω
6	Phone	Apple	iPhone 13
7	Phone	Apple	iPhone 6

2.3. Performance Criteria

General Requirements (EN 55035):

Performance 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.

Performance 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.

Performance 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.

General Requirements (EN 301489-1):

The performance criteria are used to take a decision on whether radio equipment passes or fails immunity tests.

For the purpose of the present document two categories of performance criteria apply:

- Performance criteria for continuous phenomena.
- Performance criteria for transient phenomena.

Normally, the performance criteria depends upon the type of radio equipment and/or its intended application. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment.

Performance criteria for continuous phenomena

During the test, the equipment shall:

- continue to operate as intended;
- not unintentionally transmit;
- not unintentionally change its operating state;
- not unintentionally change critical stored data.

Performance criteria for transient phenomena

For all ports and transient phenomena with the exception described below, the following applies:

- The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data.
- After application of the transient phenomena, the equipment shall operate as intended.

For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:

- For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.
- For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

Special Performance Requirements (EN 301489-17):

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Criteria	During test	After test (i.e. as a result of the application of the test)
A	Shall operate as intended. (see note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance Shall be no loss of function. Shall be no loss of critical stored data.
B	May be loss of function	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no loss of critical stored data.
Note: Operate as intended during the test allows a level of degradation in accordance with clause 6.2.2.		

Minimum performance level

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

Performance criteria for Continuous phenomena

The performance criteria A shall apply.

Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur during the test.

Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur during the test.

Performance criteria for Transient phenomena

The performance criteria B shall apply, except for voltage dips greater than or equal to 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur as a result of the application of the test.

Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur as a result of the application of the test.

3. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2025-05-08	WZ-SR2
Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	5 years	2026-12-20	WZ-SR2
Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2025-05-12	WZ-SR2
Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2025-09-05	WZ-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2025-09-05	WZ-SR2
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2024-12-17	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2025-07-26	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2024-11-09	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2025-05-15	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2025-04-19	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2024-10-23	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2024-10-25	WZ-AC1
Power Analyzer	California Instruments	PACS-1	MRTSUE06010	1 year	2025-04-16	SIP-SR2
AC Power Source	California Instruments	3001IX-208-CTS	MRTSUE06011	1 year	2025-04-16	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2024-11-03	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	5 years	2024-10-23	SIP-SR2
Thermohygrometer	testo	622	MRTSUE06628	1 year	2024-12-21	SIP-SR3
ESD Simulator	EM TEST	NX30.1	MRTSUE06986	1 year	2025-03-04	SIP-SR3
Shielding Room	MIX-BEP	SIP-SR3	MRTSUE06950	5 years	2024-10-23	SIP-SR3
Signal Generator	Keysight	N5181A	MRTSUE06370	1 year	2025-06-11	SIP-AC4
Power Meter	Agilent	E4418B	MRTSUE06204	1 year	2025-05-08	SIP-AC4
Power Sensor	Agilent	E9301H	MRTSUE06205	1 year	2025-05-08	SIP-AC4
Amplifier	AR	150W1000M1	MRTSUE06146	N/A	N/A	SIP-AC4
Amplifier	rflight	NTWPAS-1025100	MRTSUE06363	N/A	N/A	SIP-AC4
Amplifier	rflight	NTWPAS-2560100	MRTSUE06364	N/A	N/A	SIP-AC4
Dual Directional Coupler	AR	DC6080A	MRTSUE06148	N/A	N/A	SIP-AC4
Log-Periodic Antenna	AR	ATR80M6G	MRTSUE06145	N/A	N/A	SIP-AC4
Thermohygrometer	Testo	608-H1	MRTSUE06618	1 year	2024-11-03	SIP-AC4
Thermohygrometer	Testo	608-H1	MRTSUE11264	1 year	2024-11-19	SIP-AC4
Thermohygrometer	Testo	608-H1	MRTSUE06626	1 year	2024-10-28	SIP-AC4
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2025-04-08	SIP-AC4

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Anechoic Chamber	RIKEN	SIP-AC4	MRTSUE06806	1 year	2025-04-01	SIP-AC4
CS Test System	Teseq	NSG 4070-35	MRTSUE06159	1 year	2024-09-27	SIP-SR4
6dB Attenuator	3ctest	DTC75-6	MRTSUE06043	1 year	2025-05-08	SIP-SR4
Shielding Room	MIX-BEP	SIP-SR4	MRTSUE06951	5 years	2024-10-23	SIP-SR4
CDN	Teseq	CDN M016	MRTSUE06238	1 year	2025-05-08	SIP-SR4
Thermohygrometer	Testo	608-H1	MRTSUE11021	1 year	2024-10-28	SIP-SR4
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2025-04-08	SIP-SR4
Immunity Test System	3ctest	CCS 500	MRTSUE06832	1 year	2024-12-17	SIP-SR5
Voltage Drop Module	3ctest	VVT 2216SV	MRTSUE06833	1 year	2025-04-17	SIP-SR5
Thermohygrometer	testo	608-H1	MRTSUE06617	1 year	2024-10-29	SIP-SR5
Oscilloscope	Agilent	DSO-X 6002A	MRTSUE06107	1 year	2025-02-03	SIP-SR5
Capacitive Coupling Clamp	3ctest	CCC100	MRTSUE06814	1 year	2025-02-03	SIP-SR5
PFM Transformer	3ctest	MFT 400	MRTSUE06835	1 year	2025-04-17	SIP-SR5
PFM Coil	3ctest	TCXS111	MRTSUE06844	1 year	2025-04-17	SIP-SR5
Shielding Room	MIX-BEP	SIP-SR5	MRTSUE06952	5 years	2024-10-23	SIP-SR5

Software	Version	Function
e3	230711	RE & CE
CTS4 (H-F)	V 4.29	Harmonic & Flicker
TS+-RS	4.0.0.0	RS
NSG 4070 Control Program	V 1.3.0.1	CS
CoreLab	V 1.9.6.0	EFT & Surge & PFM & Dips
Controller_MF 7802	2.03C	RE Antenna & Turntable

4. Decision Rules and Measurement Uncertainty

4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2.
(Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~150kHz: 3.58dB 150kHz~30MHz: 3.20dB
Radiated Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 30MHz~200MHz: 3.79dB 200MHz~1GHz: 3.91dB 1GHz~6GHz: 4.99dB Vertical: 30MHz~200MHz: 4.06dB 200MHz~1GHz: 5.21dB 1GHz~6GHz: 4.90dB
Harmonic Current Emissions
The maximum measurement uncertainty is evaluated as 0.5%.
Voltage Fluctuation and Flicker
The maximum measurement uncertainty is evaluated as d_c and d_{max} : 0.095%, P_{st} and P_{lt} : 4.6%, $d_{(t)}$: 1.0%.

5. Test Result

5.1. Summary

Test Item	Basic Standard	Result
EN 301489-1 & EN 301489-17		
Conducted Emission	EN 55032:2015	Pass
Radiated Emission	EN 55032:2015	Pass
Harmonic Current Emissions	EN 61000-3-2:2014	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	Pass
Electrostatic Discharge	EN 61000-4-2:2009	Complies
Radio Frequency Electromagnetic Field	EN 61000-4-3:2006+A1:2008+A2:2010	Complies
Fast Transients, Common Mode	EN 61000-4-4:2012	Complies
Surges	EN 61000-4-5:2014+A1:2017	Complies
Radio Frequency Common Mode	EN 61000-4-6:2014	Complies
Voltage Dips and Interruptions	EN 61000-4-11:2004	Complies
EN 55032 & AS/NZS CISPR 32 & EN 55035		
Conducted Emission	EN 55032:2015+A1:2020 EN 55032:2015+A11:2020 AS/NZS CISPR 32:2015 AMD 1:2020	Pass
Radiated Emission	EN 55032:2015+A1:2020 EN 55032:2015+A11:2020 AS/NZS CISPR 32:2015 AMD 1:2020	Pass
Electrostatic Discharge	IEC 61000-4-2:2008	Complies
Radio Frequency Electromagnetic Field	IEC 61000-4-3:2006+A2:2010	Complies
Fast Transients, Common Mode	IEC 61000-4-4:2012	Complies
Surges	IEC 61000-4-5:2005	Complies
Radio Frequency Common Mode	IEC 61000-4-6:2008	Complies
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Complies
Voltage Dips and Interruptions	IEC 61000-4-11:2004	Complies
Note: The above test items with different basic standard versions use the newer basic standard version. There is no difference in the testing.		

5.2. Conducted Emission Measurement

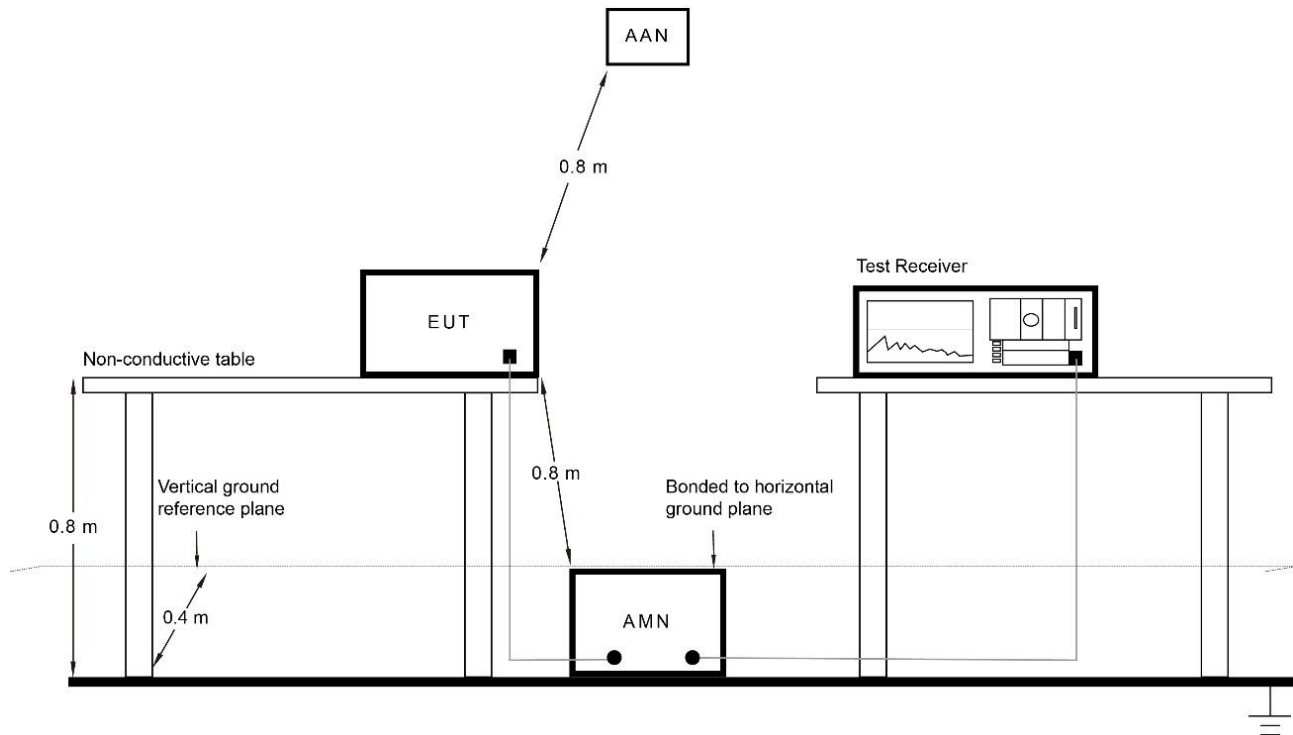
5.2.1. Test Limit

Limits for AC Mains Power input/output Ports				
Frequency Range (MHz)	Class A Limits		Class B Limits	
	QP dB(μV)	AV dB(μV)	QP dB(μV)	AV dB(μV)
0.15 ~ 0.5	79	66	66 to 56	56 to 46
0.5 ~ 5	73	60	56	46
5 ~ 30	73	60	60	50

Limits for Asymmetric Mode				
AAN				
Frequency Range (MHz)	Class A Limits		Class B Limits	
	Voltage Limits dB(μV)		Voltage Limits dB(μV)	
	QP	AV	QP	AV
0.15 ~ 0.5	97 ~ 87	84 ~ 74	84 ~ 74	74 ~ 64
0.5 ~ 30	87	74	74	64
CVP and Current Probe				
Frequency Range (MHz)	Class A Limits		Class B Limits	
	Voltage Limits dB(μV)		Voltage Limits dB(μV)	
	QP	AV	QP	AV
0.15 ~ 0.5	97 ~ 87	84 ~ 74	84 ~ 74	74 ~ 64
0.5 ~ 30	87	74	74	64
Current Probe				
Frequency Range (MHz)	Class A Limits		Class B Limits	
	Current limits dB(μA)		Current limits dB(μA)	
	QP	AV	QP	AV
0.15 ~ 0.5	53 ~ 43	40 ~ 30	40 ~ 30	30 ~ 20
0.5 ~ 30	43	30	30	20

Limits for DC Power input/output Ports for EN 301 489 -1		
Frequency Range (MHz)	Quasi-peak dB(μV)	Average dB(μV)
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

5.2.2. Test Setup



5.2.3. Test Procedure

The receiver or associated equipment under measurement and the artificial mains network are disposed as shown in 5.2.2. Measurements shall be carried out using a selective voltmeter having a quasi-peak detector for broadband measurements and an average detector for narrow-band measurements in accordance with CISPR 16-1.

The mains lead shall be arranged to follow the shortest possible path between the receiver and artificial mains network on the ground. The mains lead in excess of 0,8 m separating the equipment under test from the artificial mains network shall be folded back and forth parallel to the lead so as to form a bundle with a length of 0,3 m to 0,4 m.

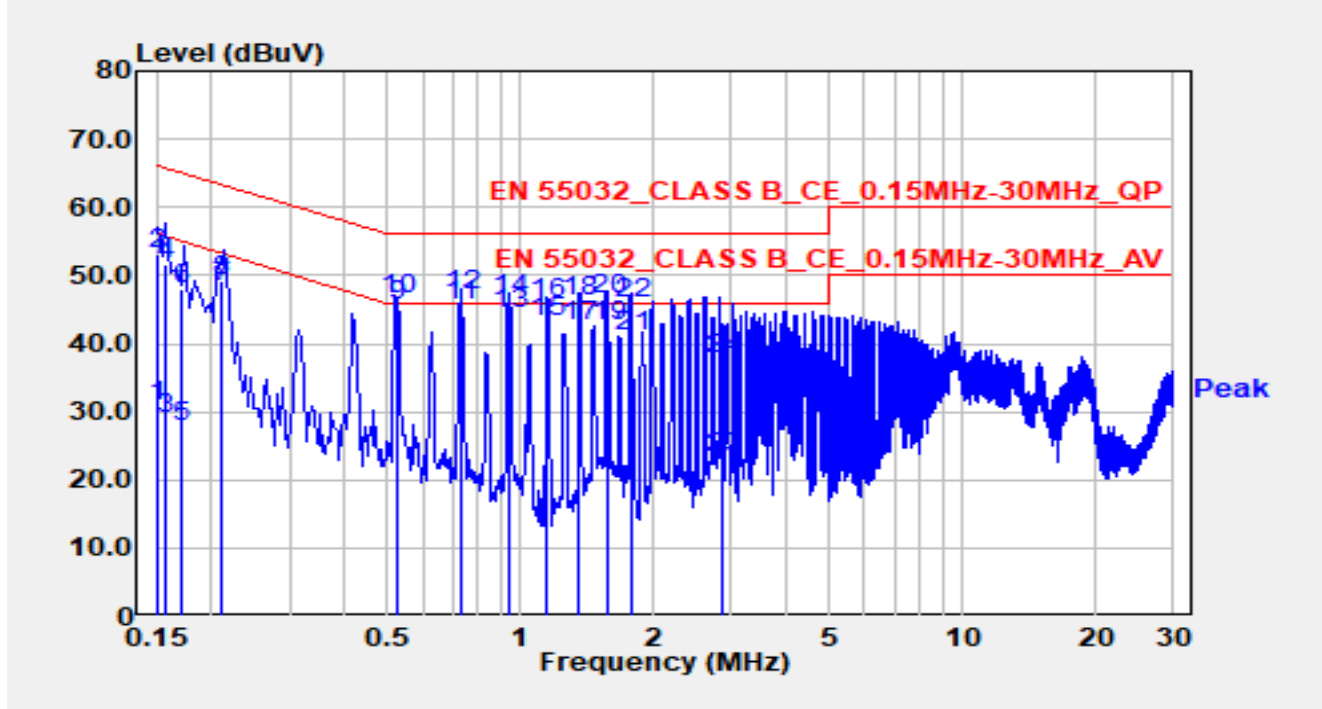
Earthing of the equipment under test if provided with a safety earth connection, shall be made to the earth terminal provided on the artificial mains network with the shortest possible lead.

If the equipment under test has a coaxial RF input connector, tests shall be performed with and without an earth connection made to the outer conductor screen of the coaxial RF input connector. When these tests are being carried out, no other earth connections shall be made to any additional earth terminal whatever.

If the equipment under test has no coaxial RF input connector and if it has an earth terminal, tests shall be performed with this terminal earthed.

5.2.4. Test Result

Site	WZ-SR2	Test Date	2024-08-18
Test Engineer	Alin Zhou	Temp./Humidity	26.9 °C/58.8 %
Factor	ENV216_101683_L1_Filter Off_C	Polarity	Line
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1, Power Port		



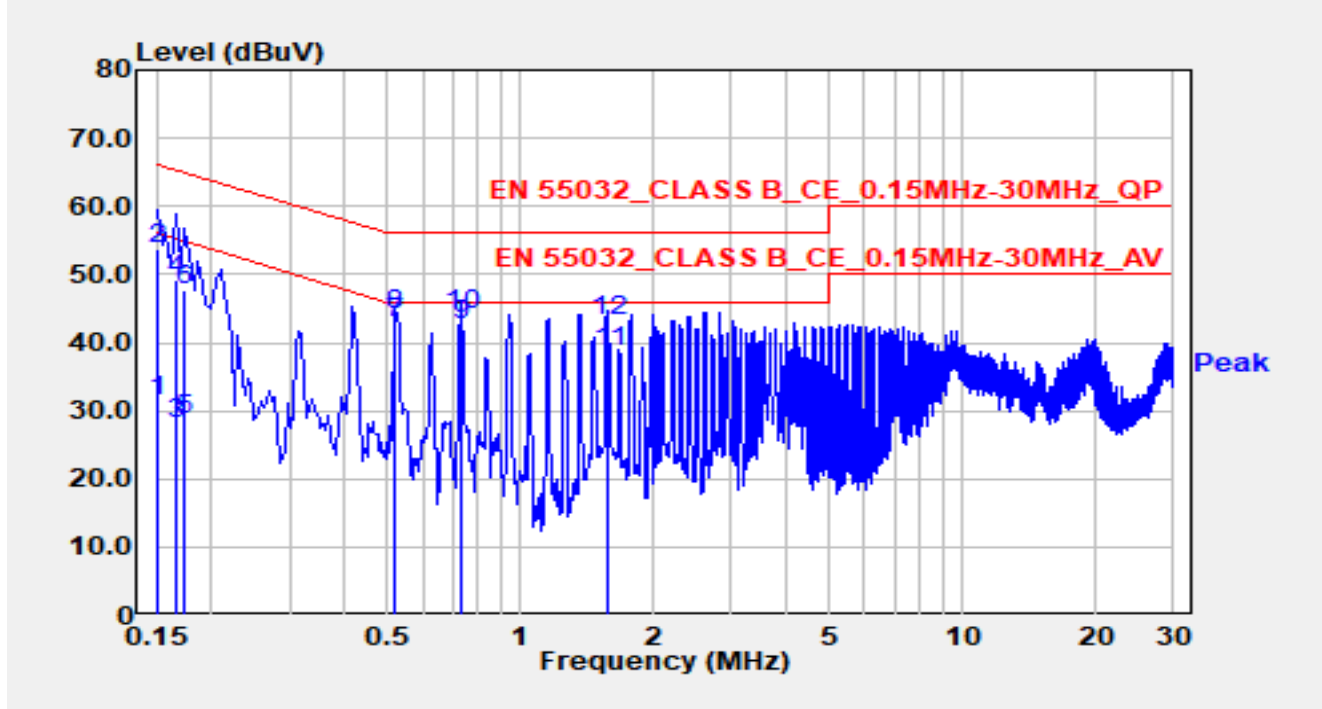
No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB)	Measurement (dBμV)	Margin (dB)	Limit (dBμV)	Detector
1		0.150	21.10	9.82	30.92	-25.08	56.00	Average
2		0.150	43.20	9.82	53.02	-12.98	66.00	QP
3		0.158	19.10	9.82	28.92	-26.67	55.59	Average
4		0.158	41.90	9.82	51.72	-13.87	65.59	QP
5		0.172	18.10	9.82	27.92	-26.97	54.88	Average
6		0.172	38.20	9.82	48.02	-16.87	64.88	QP
7		0.212	38.60	9.82	48.42	-4.72	53.14	Average
8		0.212	39.40	9.82	49.22	-13.92	63.14	QP
9		0.523	35.60	9.93	45.53	-0.47	46.00	Average
10		0.523	36.60	9.93	46.53	-9.47	56.00	QP
11	*	0.734	35.70	10.01	45.71	-0.29	46.00	Average
12		0.734	37.10	10.01	47.11	-8.89	56.00	QP
13		0.945	34.30	10.10	44.40	-1.60	46.00	Average
14		0.945	36.30	10.10	46.40	-9.60	56.00	QP

15		1.147	32.90	10.12	43.02	-2.98	46.00	Average
16		1.147	35.80	10.12	45.92	-10.08	56.00	QP
17		1.360	32.40	10.12	42.52	-3.48	46.00	Average
18		1.360	36.20	10.12	46.32	-9.68	56.00	QP
19		1.570	32.40	10.13	42.53	-3.47	46.00	Average
20		1.570	36.40	10.13	46.53	-9.47	56.00	QP
21		1.785	30.80	10.13	40.93	-5.07	46.00	Average
22		1.785	35.90	10.13	46.03	-9.97	56.00	QP
23		2.850	13.10	10.15	23.25	-22.75	46.00	Average
24		2.850	27.50	10.15	37.65	-18.35	56.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB) = LISN Factor (dB) + Cable Loss (dB).
3. Measurement (dBμV) = Reading (dBμV) + C.F (dB).

Site	WZ-SR2	Test Date	2024-08-18
Test Engineer	Alin Zhou	Temp./Humidity	26.9 °C/58.8 %
Factor	ENV216_101683_N_Filter Off_C	Polarity	Neutral
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1, Power Port		

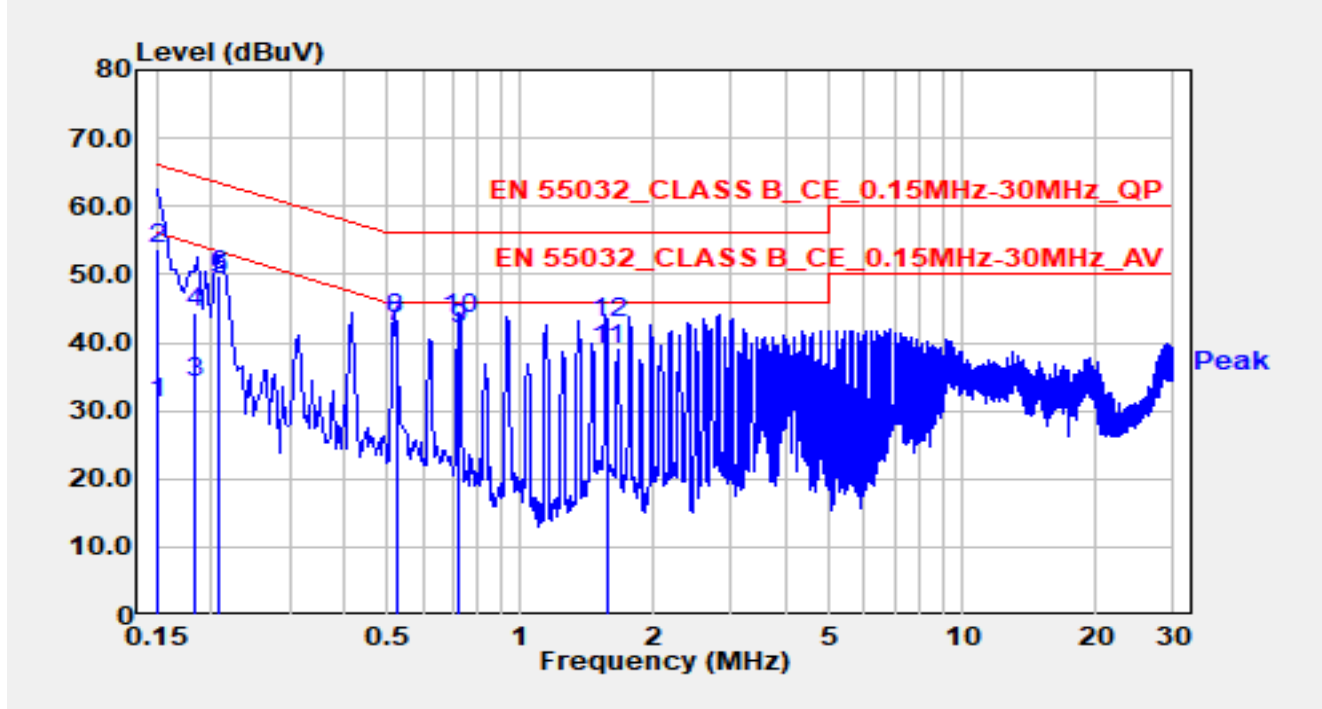


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB)	Measurement (dBμV)	Margin (dB)	Limit (dBμV)	Detector
1		0.151	21.20	10.13	31.33	-24.62	55.96	Average
2		0.151	43.50	10.13	53.63	-12.32	65.96	QP
3		0.166	18.10	10.12	28.22	-26.94	55.16	Average
4		0.166	39.00	10.12	49.12	-16.04	65.16	QP
5		0.174	18.60	10.12	28.72	-26.07	54.79	Average
6		0.174	37.60	10.12	47.72	-17.07	64.79	QP
7	*	0.522	32.80	10.18	42.98	-3.02	46.00	Average
8		0.522	33.90	10.18	44.08	-11.92	56.00	QP
9		0.734	32.20	10.27	42.47	-3.53	46.00	Average
10		0.734	33.90	10.27	44.17	-11.83	56.00	QP
11		1.584	28.30	10.38	38.68	-7.32	46.00	Average
12		1.584	32.90	10.38	43.28	-12.72	56.00	QP

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB) = LISN Factor (dB) + Cable Loss (dB).
- Measurement (dBμV) = Reading (dBμV) + C.F (dB).

Site	WZ-SR2	Test Date	2024-08-18
Test Engineer	Alin Zhou	Temp./Humidity	26.9 °C/58.8 %
Factor	ENV216_101683_L1_Filter Off_C	Polarity	Line
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2, Power Port		

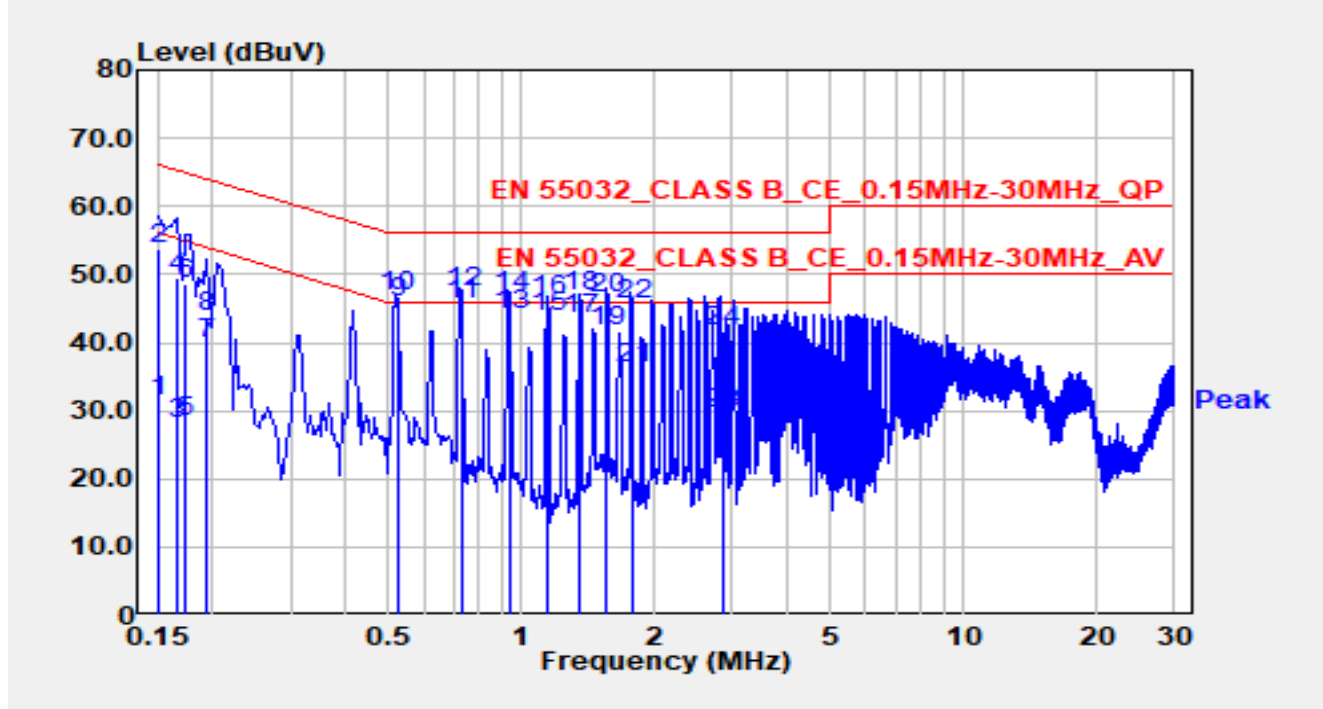


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB)	Measurement (dBμV)	Margin (dB)	Limit (dBμV)	Detector
1		0.150	21.40	9.82	31.22	-24.78	56.00	Average
2		0.150	43.90	9.82	53.72	-12.28	66.00	QP
3		0.184	24.20	9.82	34.02	-20.29	54.30	Average
4		0.184	34.70	9.82	44.52	-19.79	64.30	QP
5		0.209	39.50	9.82	49.32	-3.94	53.26	Average
6		0.209	40.10	9.82	49.92	-13.34	63.26	QP
7	*	0.522	32.20	9.93	42.13	-3.87	46.00	Average
8		0.522	33.40	9.93	43.33	-12.67	56.00	QP
9		0.728	32.00	10.01	42.01	-3.99	46.00	Average
10		0.728	33.60	10.01	43.61	-12.39	56.00	QP
11		1.566	28.70	10.13	38.83	-7.17	46.00	Average
12		1.566	32.80	10.13	42.93	-13.08	56.00	QP

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB) = LISN Factor (dB) + Cable Loss (dB).
- Measurement (dBμV) = Reading (dBμV) + C.F (dB).

Site	WZ-SR2	Test Date	2024-08-18
Test Engineer	Alin Zhou	Temp./Humidity	26.9 °C/58.8 %
Factor	ENV216_101683_N_Filter Off_C	Polarity	Neutral
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2, Power Port		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB)	Measurement (dBμV)	Margin (dB)	Limit (dBμV)	Detector
1		0.150	21.40	10.13	31.53	-24.47	56.00	Average
2		0.150	43.70	10.13	53.83	-12.17	66.00	QP
3		0.166	18.10	10.12	28.22	-26.94	55.16	Average
4		0.166	39.50	10.12	49.62	-15.54	65.16	QP
5		0.174	18.30	10.12	28.42	-26.35	54.77	Average
6		0.174	38.60	10.12	48.72	-16.05	64.77	QP
7		0.194	29.70	10.11	39.81	-14.06	53.86	Average
8		0.194	33.80	10.11	43.91	-19.96	63.86	QP
9	*	0.523	35.60	10.18	45.78	-0.22	46.00	Average
10		0.523	36.50	10.18	46.68	-9.32	56.00	QP
11		0.731	35.40	10.27	45.67	-0.33	46.00	Average
12		0.731	37.00	10.27	47.27	-8.73	56.00	QP
13		0.937	33.80	10.35	44.15	-1.85	46.00	Average
14		0.937	36.30	10.35	46.65	-9.35	56.00	QP
15		1.151	33.30	10.38	43.68	-2.32	46.00	Average

16		1.151	35.90	10.38	46.28	-9.72	56.00	QP
17		1.360	33.10	10.38	43.48	-2.52	46.00	Average
18		1.360	36.30	10.38	46.68	-9.32	56.00	QP
19		1.561	31.30	10.38	41.68	-4.32	46.00	Average
20		1.561	36.20	10.38	46.58	-9.42	56.00	QP
21		1.795	25.90	10.39	36.29	-9.71	46.00	Average
22		1.795	35.10	10.39	45.49	-10.51	56.00	QP
23		2.840	19.20	10.40	29.60	-16.40	46.00	Average
24		2.840	31.20	10.40	41.60	-14.40	56.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB) = LISN Factor (dB) + Cable Loss (dB).
3. Measurement (dBμV) = Reading (dBμV) + C.F (dB).

5.3. Radiated Emission Measurement

5.3.1. Test Limit

Frequency range (MHz)	Class A	Class B
	Quasi-peak limits dB(μ V/m)	Quasi-peak limits dB(μ V/m)
30 to 230	50	40
230 to 1000	57	47

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Additional provisions may be required for cases where interference occurs.

Above 1GHz limit for EN 55032: 2015 + A11:2020				
Frequency range (GHz)	Class A		Class B	
	Average limit dB(μ V/m)	Peak limit dB(μ V/m)	Average limit dB(μ V/m)	Peak limit dB(μ V/m)
1 to 3	56	76	50	70
3 to 6	60	80	54	74

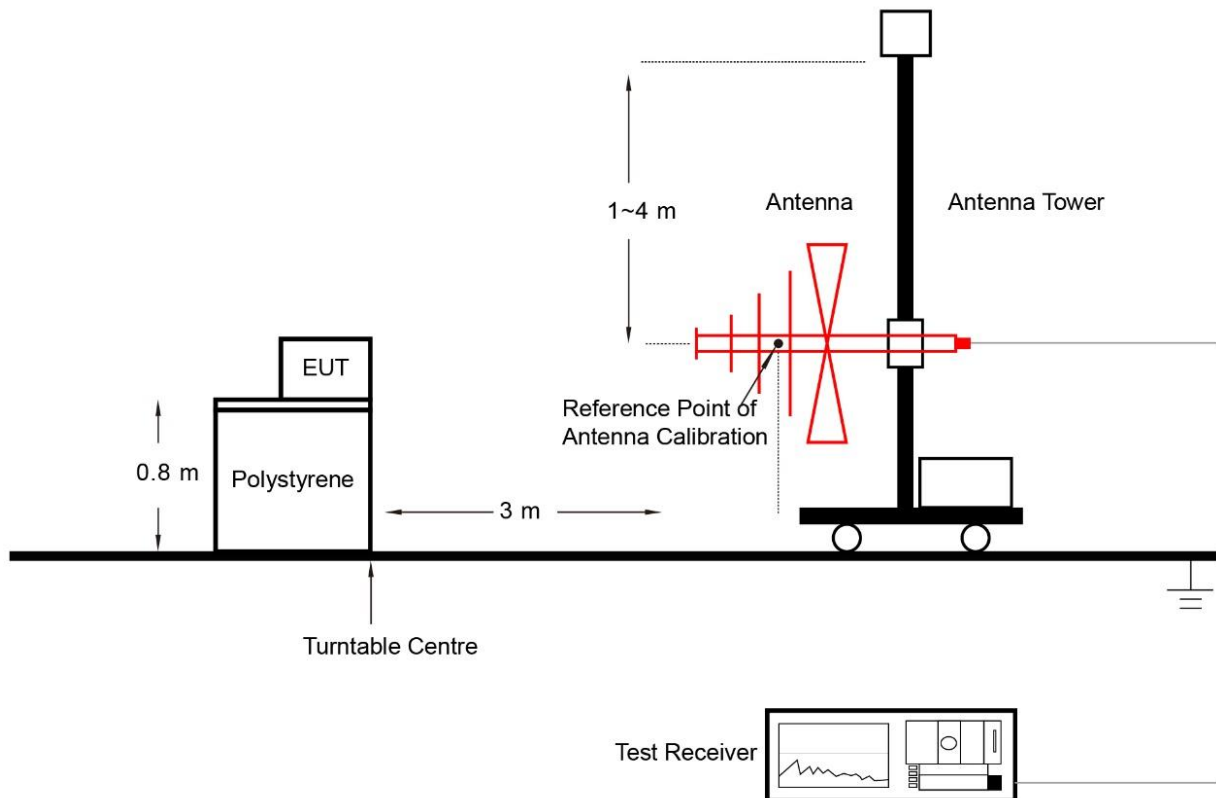
Note: The lower limit applies at the transition frequency.

Above 1GHz limit for EN 55032: 2015 + A1:2020 & AS/NZS CISPR 32:2015 AMD 1:2020				
Frequency range (GHz)	Class A		Class B	
	Average limit dB(μ V/m)	Peak limit dB(μ V/m)	Average limit dB(μ V/m)	Peak limit dB(μ V/m)
1 to 6	60	80	54	74

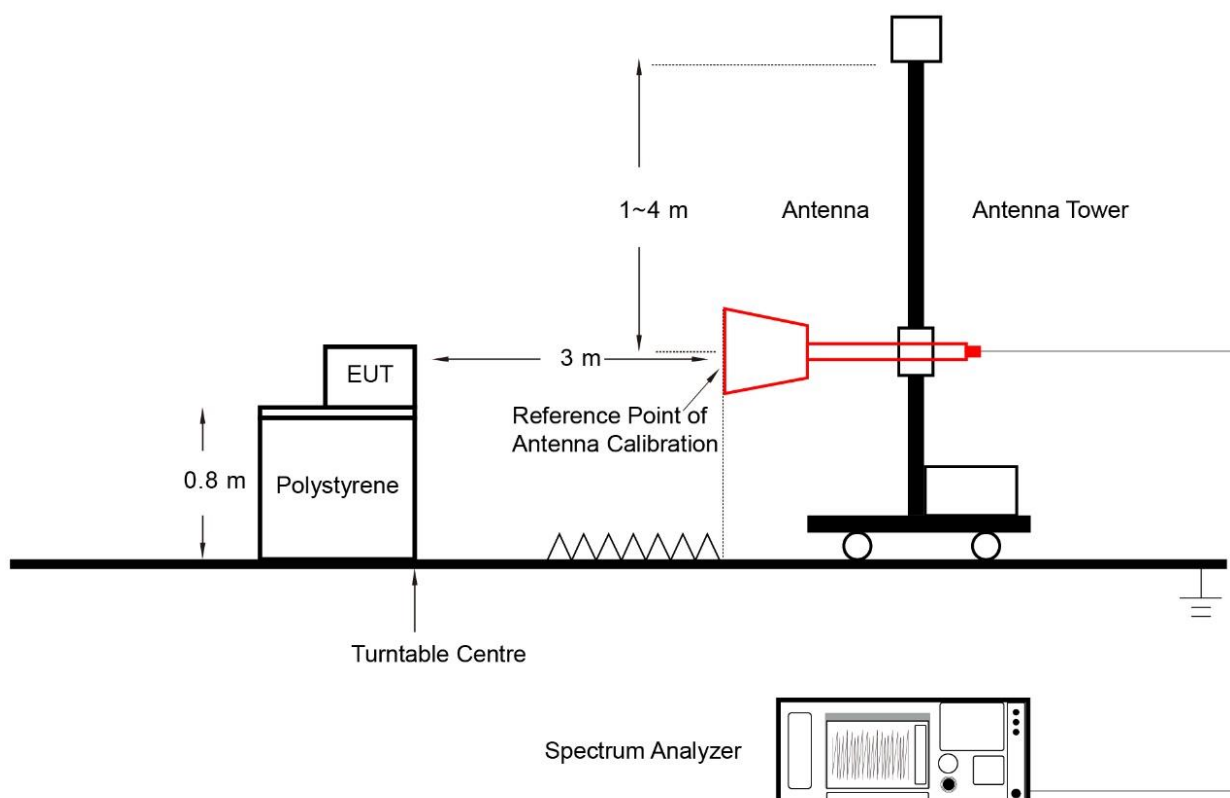
Note: In the range of 1GHz to 3GHz, the limit of EN 55032:2015+A11:2020 is more stringent than the limit of EN 55032:2015+A1:2020 and AS/NZS CISPR 32:2015 AMD 1:2020, so only the limit of EN 55032:2015 + A11:2020 is shown in the test data.

5.3.2. Test Setup

30 ~ 1000 MHz



1000 ~ 6000 MHz



Note: About the radiated test setup, the EUT and local AE shall be arranged in the most compact practical arrangement within the test volume, while respecting typical spacing and the requirements defined in EN55032 Annex D. The central point of the arrangement shall be positioned at the centre of the turntable. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and the calibration point of the antenna. See below Figure 1 and Figure 2.

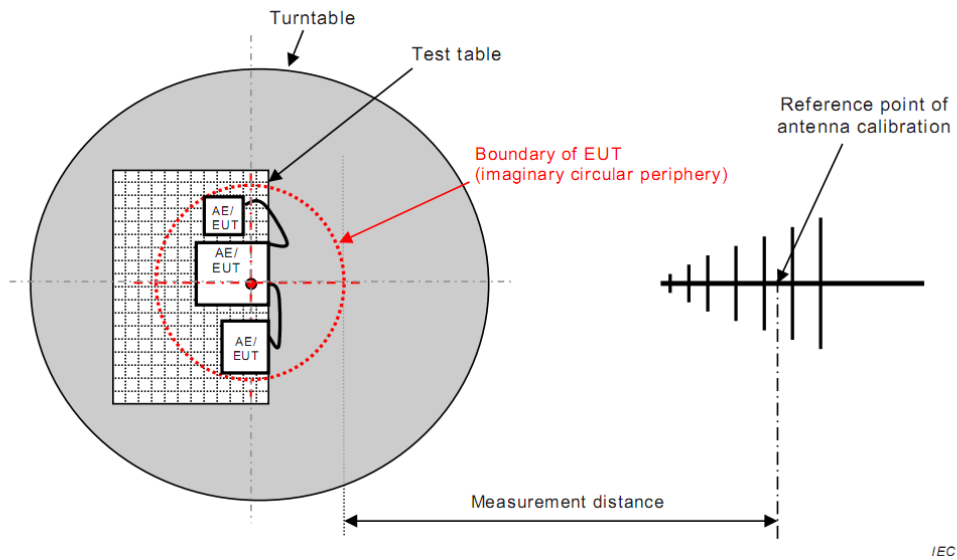


Figure 1

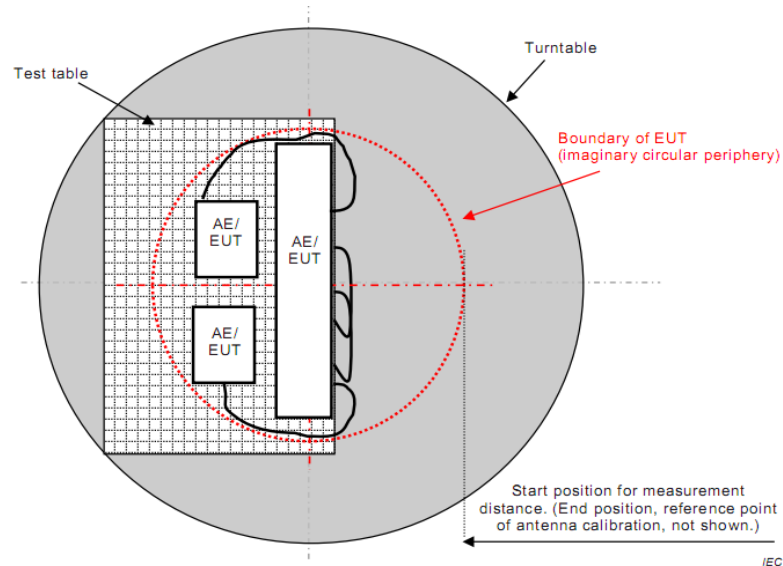


Figure 2

5.3.3. Test Procedure

Starting with the front of the receiver under test facing the measuring antenna, the measuring antenna is adjusted for horizontal polarization measurement and its height varied between 1 m and 4 m until the maximum reading is obtained.

The receiver under test is then rotated about its centre until the maximum meter reading is obtained, after which the measuring antenna height is again varied between 1 m and 4 m and the maximum reading noted.

The procedure is repeated for vertical polarization of the measuring antenna.

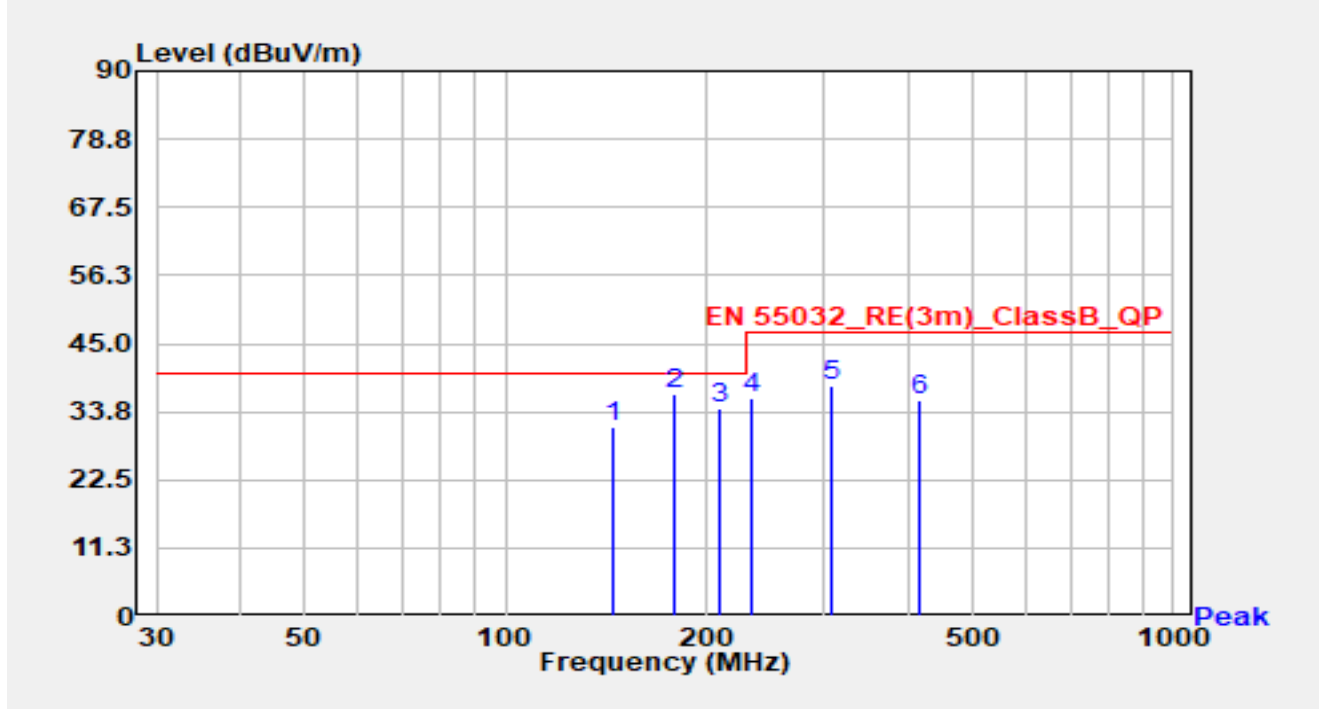
The highest value found, following this procedure, is defined as the radiation figure of the receiver.

If at certain frequencies the ambient signal field strength is high at the position of the receiving antenna, one of the following methods may be used to show compliance of the equipment under test.

For small frequency bands with high ambient signals, the disturbance value may be interpolated from the adjacent values. The interpolated value shall lie on the curve describing a continuous function of the disturbance values adjacent to the ambient noise.

5.3.4. Test Result

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	VULB 9168_25-1000MHz	Polarity	Horizontal
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1		

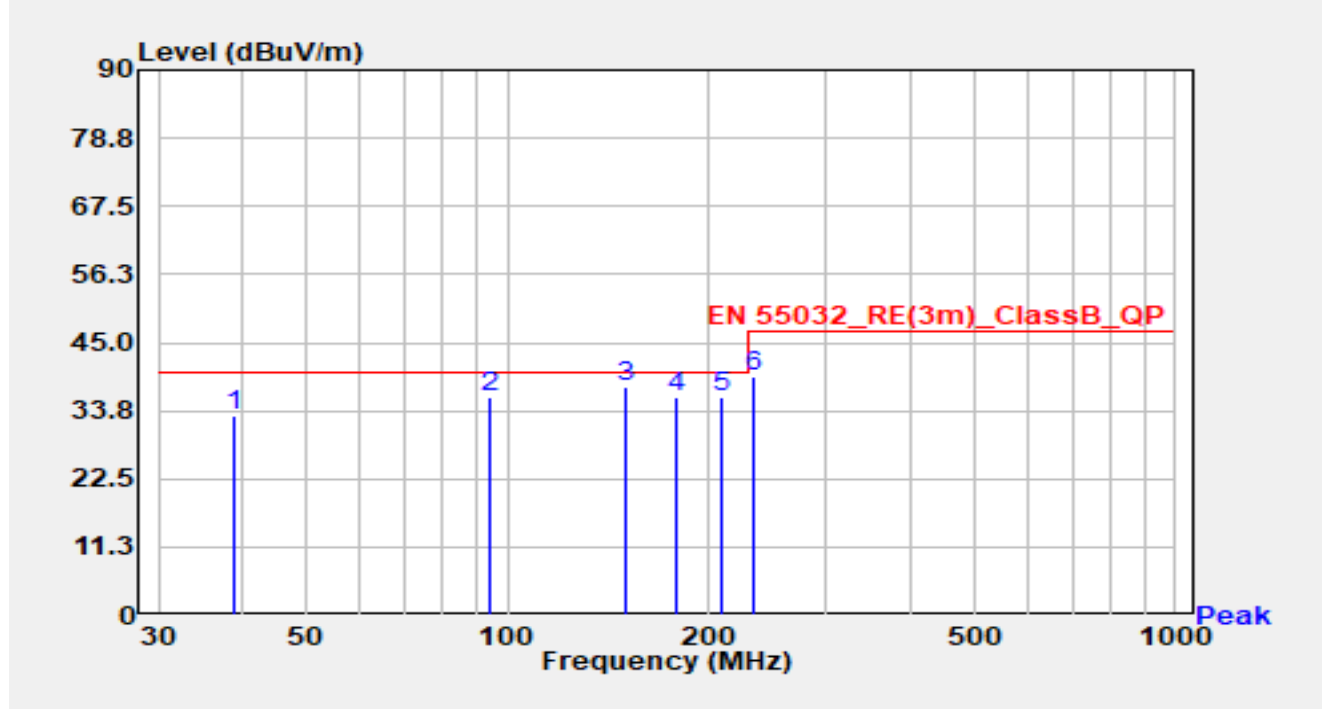


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		144.363	13.20	17.99	31.19	-8.81	40.00	QP
2	*	178.188	19.30	17.47	36.77	-3.23	40.00	QP
3		208.868	19.40	15.03	34.43	-5.57	40.00	QP
4		233.409	20.40	15.72	36.12	-10.88	47.00	QP
5		307.226	18.90	19.06	37.96	-9.04	47.00	QP
6		417.709	13.90	21.67	35.57	-11.43	47.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	VULB 9168_25-1000MHz	Polarity	Vertical
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1		

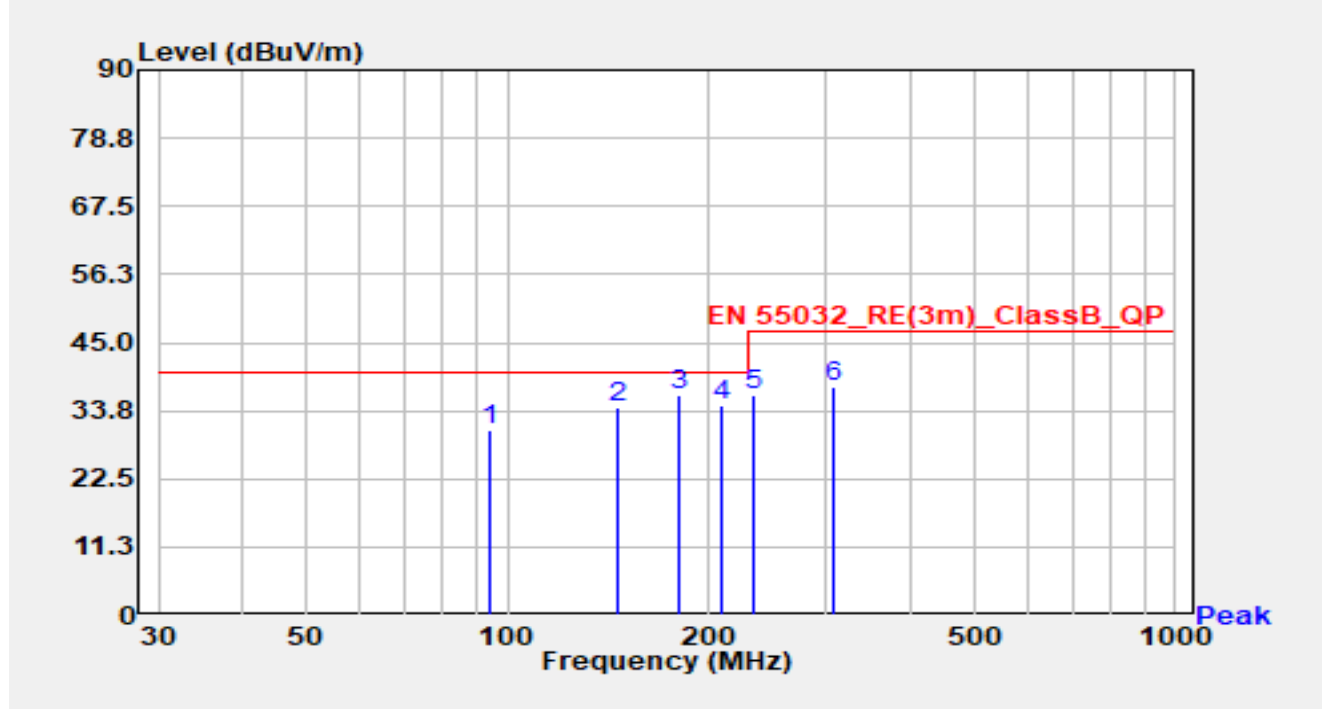


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		38.827	15.20	17.84	33.04	-6.96	40.00	QP
2		94.214	22.80	13.06	35.86	-4.14	40.00	QP
3	*	150.474	19.50	18.23	37.73	-2.27	40.00	QP
4		179.186	18.70	17.33	36.03	-3.97	40.00	QP
5		208.868	21.02	15.03	36.05	-3.95	40.00	QP
6		233.409	23.80	15.72	39.52	-7.48	47.00	QP

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
- Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	VULB 9168_25-1000MHz	Polarity	Horizontal
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2		

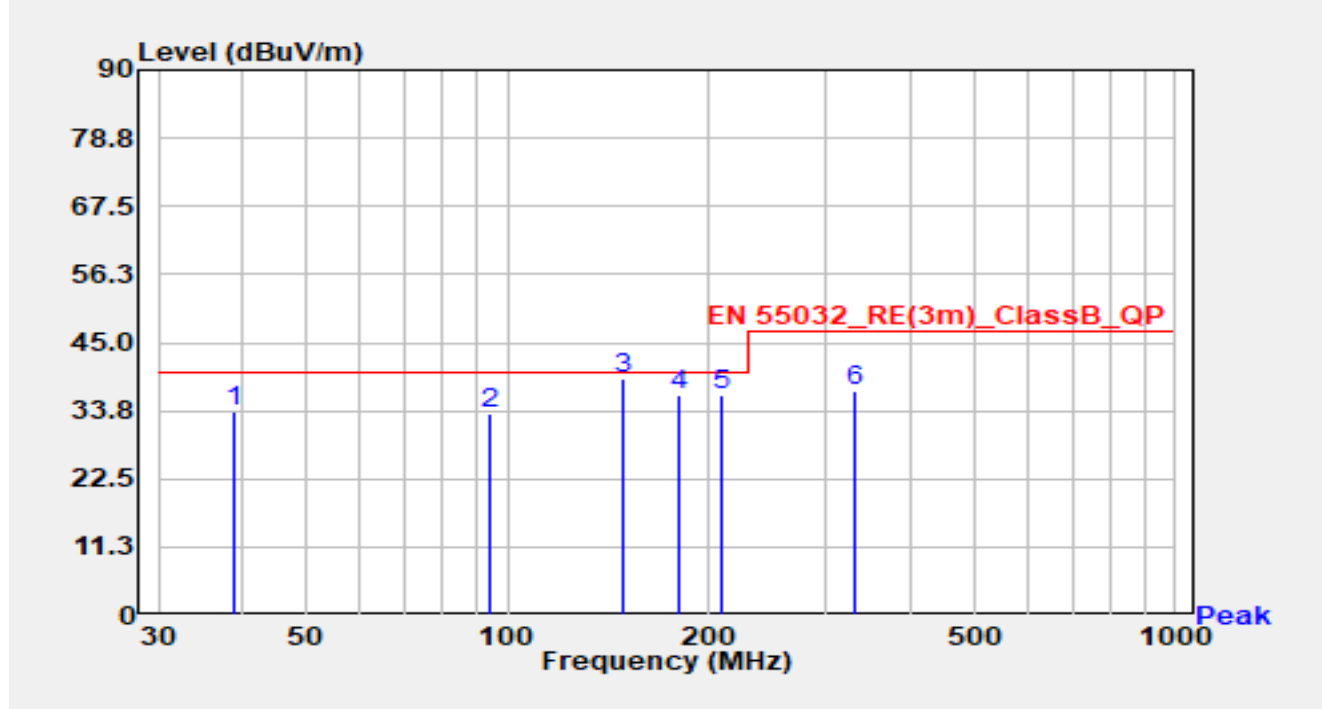


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		94.214	17.40	13.06	30.46	-9.54	40.00	QP
2		146.400	16.10	18.10	34.20	-5.80	40.00	QP
3	*	180.156	19.20	17.19	36.39	-3.61	40.00	QP
4		208.868	19.70	15.03	34.73	-5.27	40.00	QP
5		233.409	20.74	15.72	36.46	-10.54	47.00	QP
6		307.226	18.64	19.06	37.70	-9.30	47.00	QP

Notes:

1. " * ", means this data is the worst emission level.
2. C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	VULB 9168_25-1000MHz	Polarity	Vertical
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2		

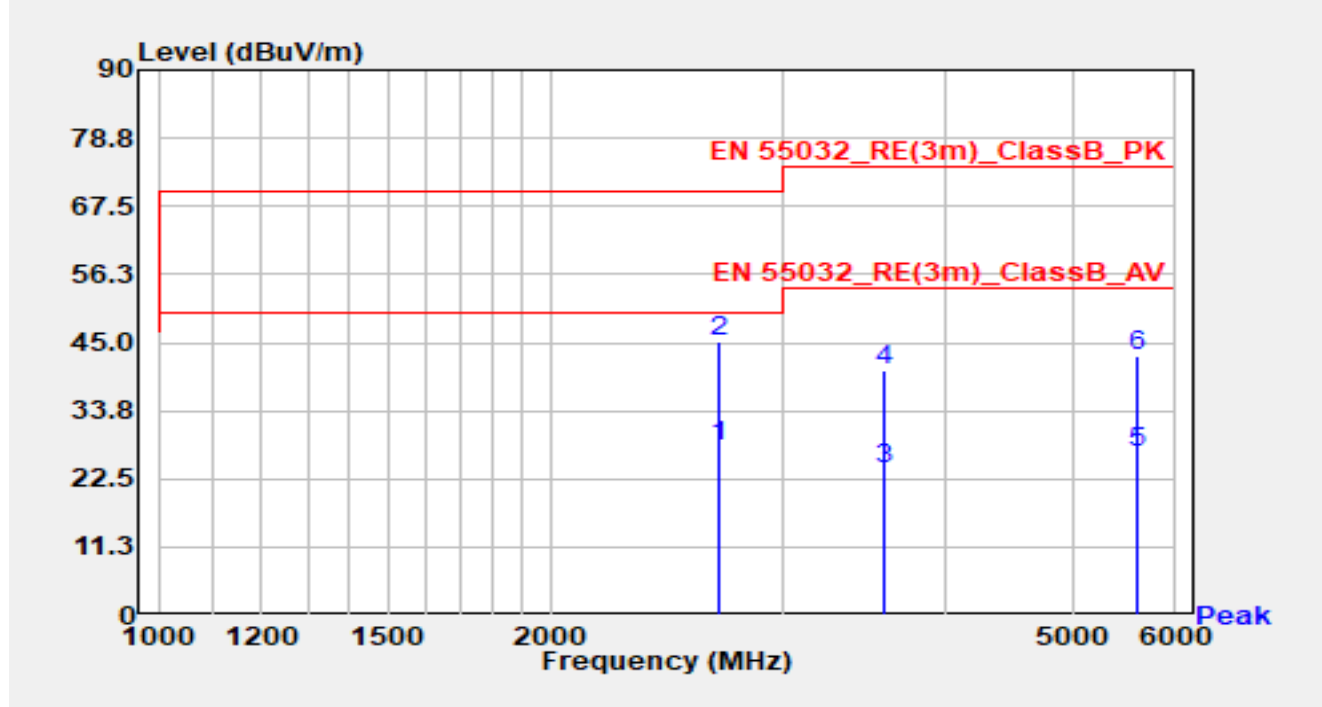


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		39.021	15.70	17.85	33.55	-6.45	40.00	QP
2		94.214	20.30	13.06	33.36	-6.64	40.00	QP
3	*	149.504	20.70	18.20	38.90	-1.10	40.00	QP
4		180.253	19.20	17.17	36.37	-3.63	40.00	QP
5		208.868	21.30	15.03	36.33	-3.67	40.00	QP
6		331.767	17.02	19.84	36.86	-10.14	47.00	QP

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).
- Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	BBHA 9120D_1167_1-18GHz	Polarity	Horizontal
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1		

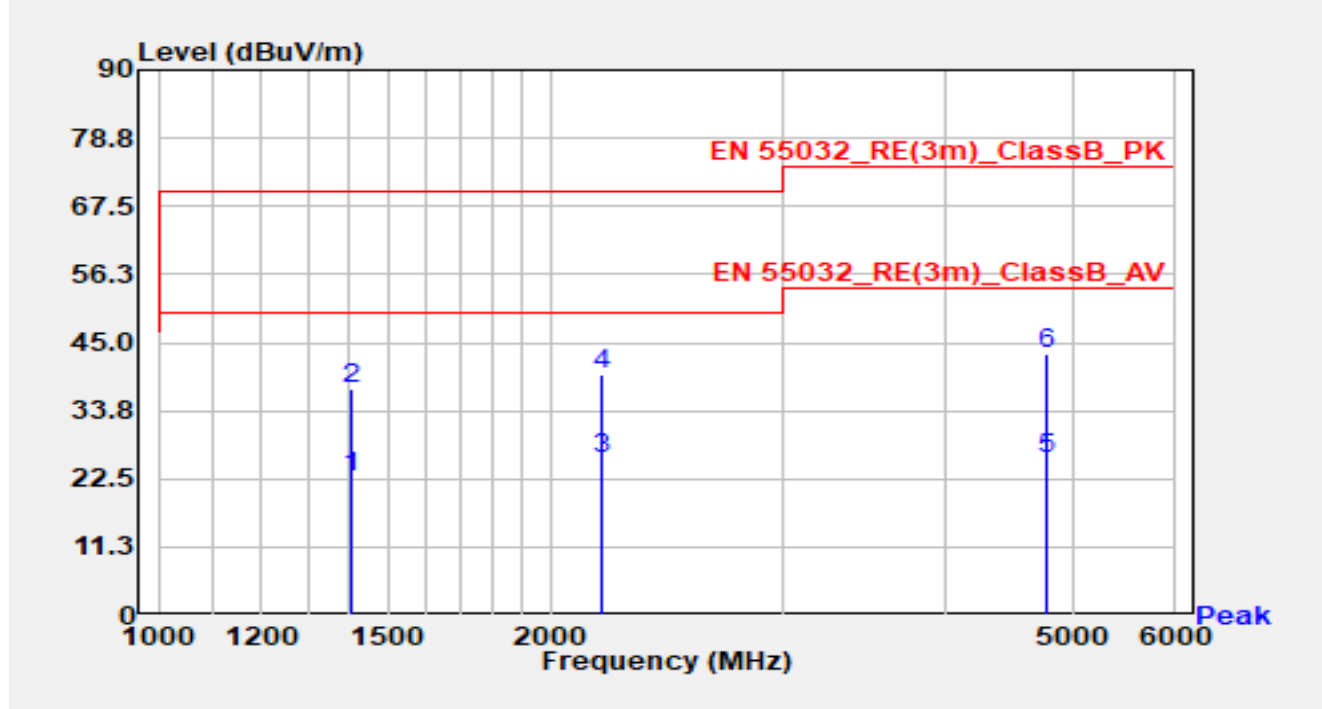


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1	*	2679.500	29.40	-1.43	27.97	-22.03	50.00	Average
2		2679.500	46.76	-1.43	45.33	-24.67	70.00	Peak
3		3584.500	23.30	0.73	24.03	-29.97	54.00	Average
4		3584.500	39.73	0.73	40.47	-33.53	74.00	Peak
5		5605.000	21.50	5.30	26.80	-27.20	54.00	Average
6		5605.000	37.57	5.30	42.86	-31.14	74.00	Peak

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
- Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	BBHA 9120D_1167_1-18GHz	Polarity	Vertical
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 1		

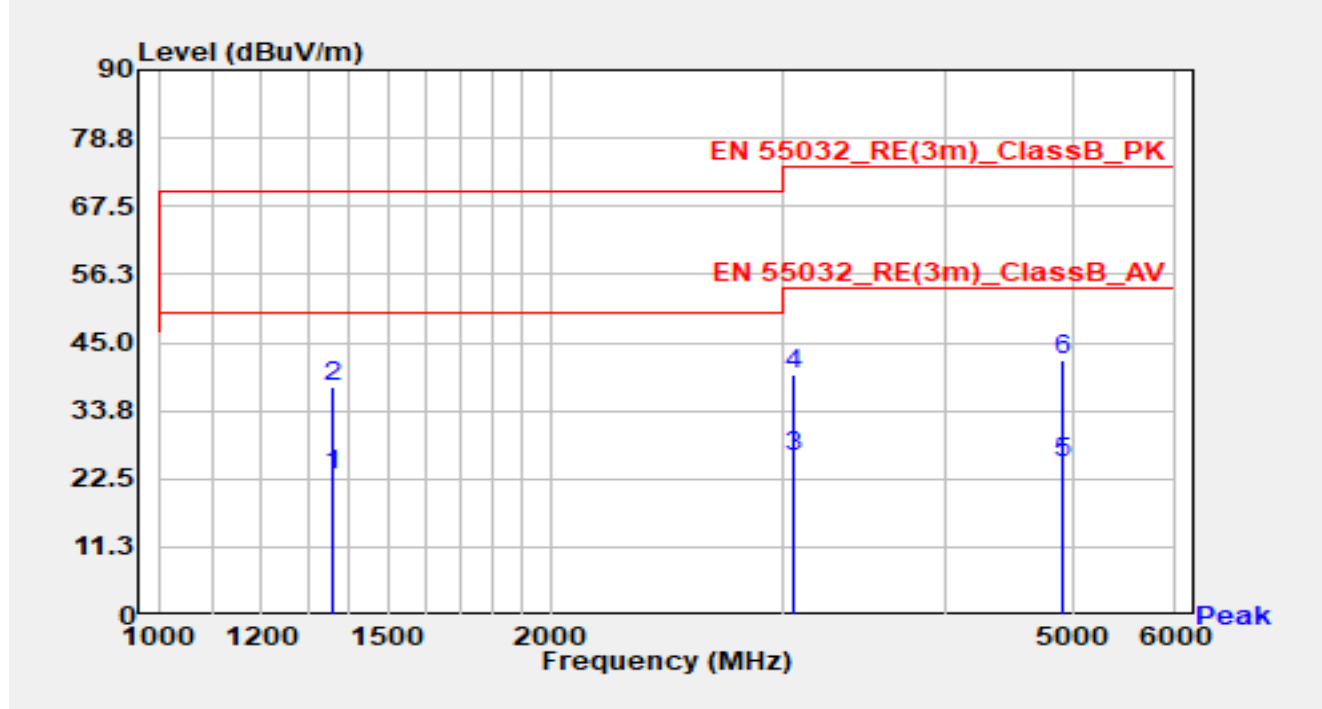


No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		1407.000	28.10	-5.37	22.73	-27.27	50.00	Average
2		1407.000	42.74	-5.37	37.37	-32.63	70.00	Peak
3	*	2185.000	27.70	-1.93	25.77	-24.23	50.00	Average
4		2185.000	41.62	-1.93	39.68	-30.32	70.00	Peak
5		4787.000	22.20	3.66	25.86	-28.14	54.00	Average
6		4787.000	39.44	3.66	43.10	-30.90	74.00	Peak

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
- Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	BBHA 9120D_1167_1-18GHz	Polarity	Horizontal
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2		

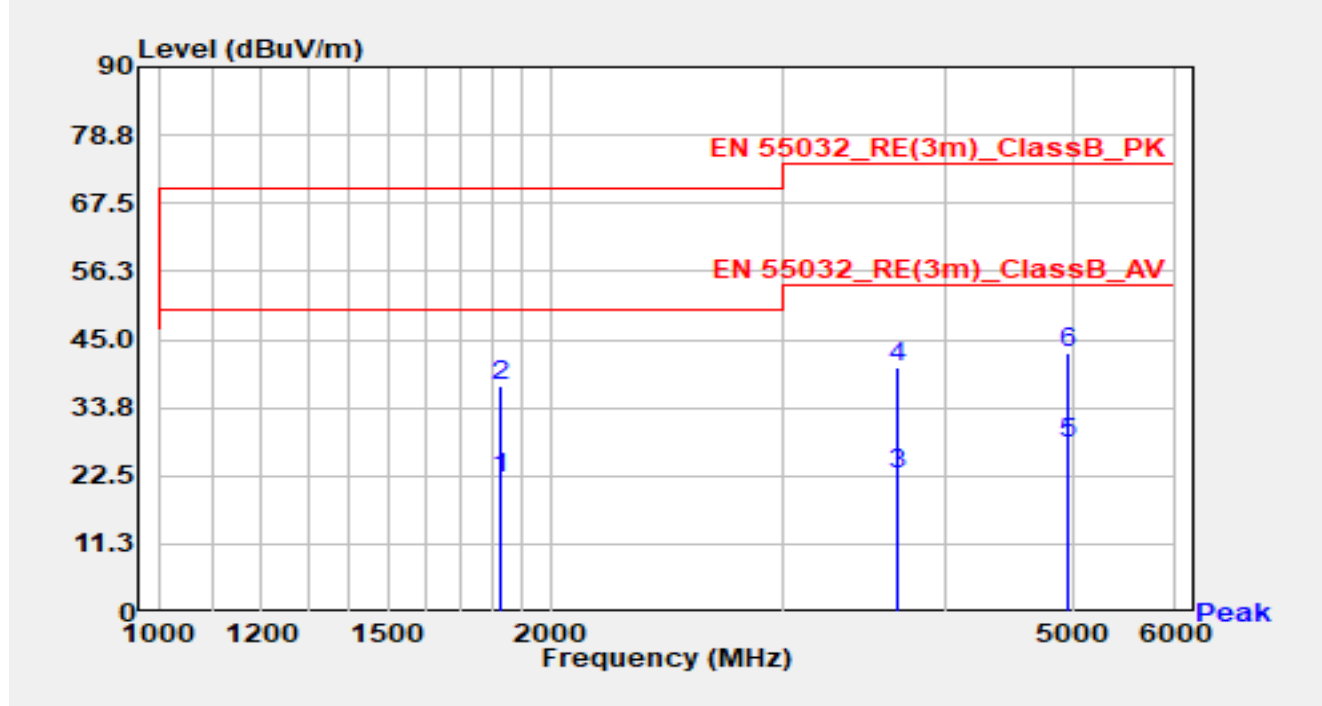


No	Mark	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Detector
1	*	1360.500	28.80	-5.57	23.23	-26.77	50.00	Average
2		1360.500	43.38	-5.57	37.81	-32.19	70.00	Peak
3		3064.000	26.40	-0.28	26.12	-27.88	54.00	Average
4		3064.000	39.84	-0.28	39.57	-34.43	74.00	Peak
5		4929.000	21.10	4.09	25.19	-28.81	54.00	Average
6		4929.000	37.93	4.09	42.03	-31.97	74.00	Peak

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
- Measurement (dBUV/m) = Reading (dBUV) + C.F (dB/m).

Site	WZ-AC1	Test Date	2024-08-14
Test Engineer	Lucas Wang	Temp./Humidity	26.9 °C/50.2 %
Factor	BBHA 9120D_1167_1-18GHz	Polarity	Vertical
EUT	Power Amplifier	Test Voltage	AC 230V/50Hz
Test Mode	Mode 2		



No	Mark	Frequency (MHz)	Reading (dBμV)	C.F (dB/m)	Measurement (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector
1		1824.500	26.70	-4.69	22.01	-27.99	50.00	Average
2		1824.500	41.93	-4.69	37.24	-32.76	70.00	Peak
3		3675.000	22.30	0.60	22.90	-31.10	54.00	Average
4		3675.000	39.89	0.60	40.49	-33.51	74.00	Peak
5	*	4965.000	23.30	4.38	27.68	-26.32	54.00	Average
6		4965.000	38.48	4.38	42.86	-31.14	74.00	Peak

Notes:

- " * ", means this data is the worst emission level.
- C.F (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - AMP (dB).
- Measurement (dBμV/m) = Reading (dBμV) + C.F (dB/m).

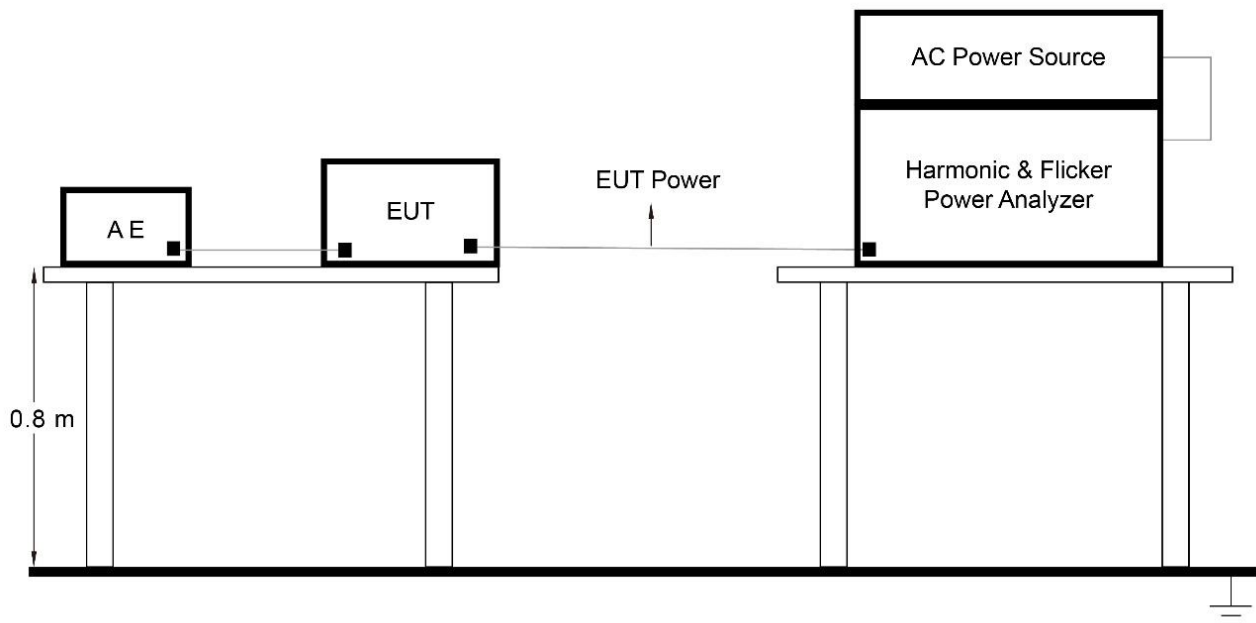
5.4. Harmonic Current Emissions Measurement

5.4.1. Test Limit

Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \leq n \leq 40$	$0.23 * 8/n$
11	0.33	--	--
13	0.21	--	--
$15 \leq n \leq 39$	$0.15 * 15/n$	--	--

5.4.2. Test Setup



5.4.3. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

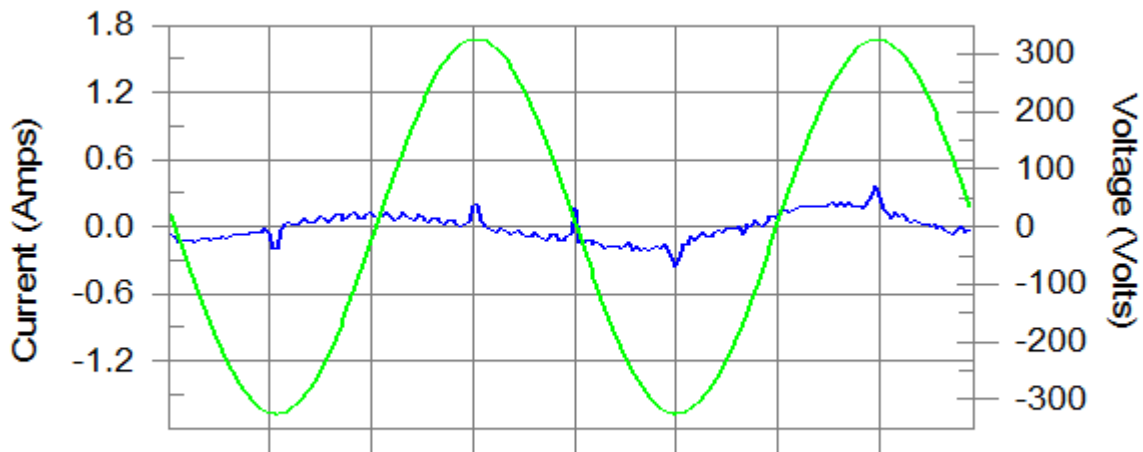
5.4.4. Test Result

Test Site	SIP-SR2	Temperature	26.9 °C
Test Engineer	Arvin Ding	Relative Humidity	58.3 %
Test Mode	Mode 1	Test Date	2024-09-12

Test Result: Pass

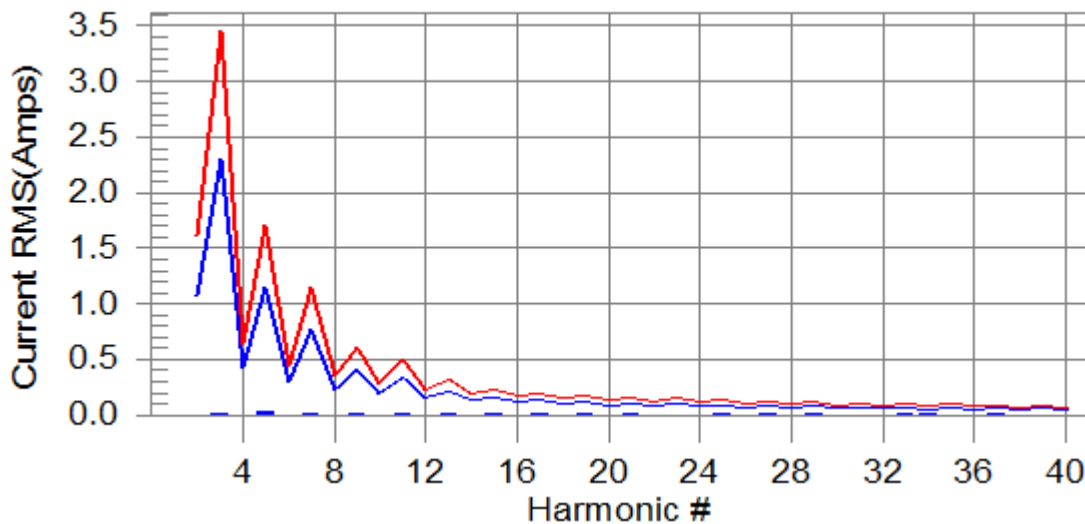
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H17-5.2% of 150% limit, H17-7.5% of 100% limit

Test Result: Pass **Source qualification: Normal**
THC(A): 0.039 **I-THD(%): 18.1** **POHC(A): 0.011** **POHC Limit(A): 0.251**
Highest parameter values during test:
 V_RMS (Volts): 230.22 **Frequency(Hz): 50.00**
 I_Peak (Amps): 0.984 **I_RMS (Amps): 0.301**
 I_Fund (Amps): 0.214 **Crest Factor: 6.140**
 Power (Watts): 47.2 **Power Factor: 0.957**

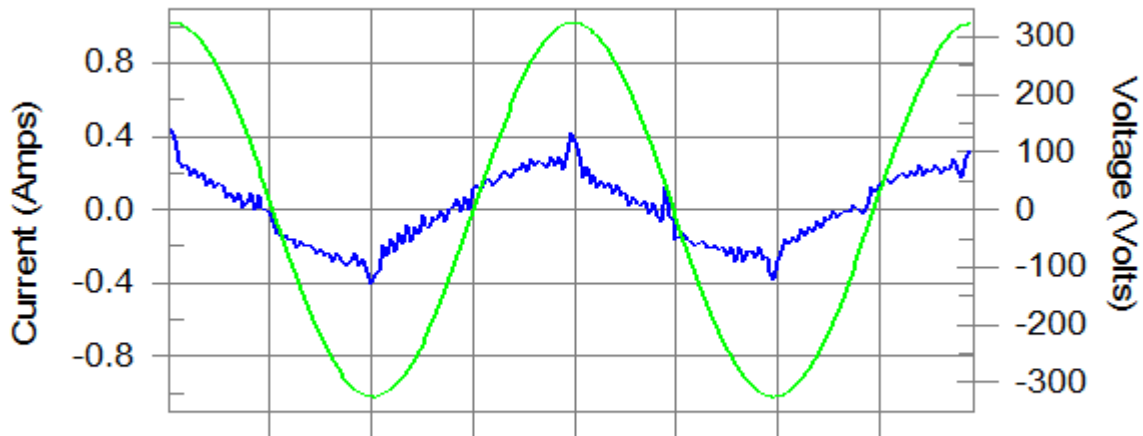
Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.004	1.620	N/A	Pass
3	0.014	2.300	0.6	0.016	3.450	0.5	Pass
4	0.002	0.430	N/A	0.003	0.645	N/A	Pass
5	0.021	1.140	1.8	0.021	1.710	1.2	Pass
6	0.002	0.300	N/A	0.003	0.450	N/A	Pass
7	0.006	0.770	0.7	0.007	1.155	0.6	Pass
8	0.002	0.230	N/A	0.002	0.345	N/A	Pass
9	0.016	0.400	4.1	0.017	0.600	2.8	Pass
10	0.002	0.184	N/A	0.002	0.276	N/A	Pass
11	0.006	0.330	1.9	0.007	0.495	1.5	Pass
12	0.002	0.153	N/A	0.002	0.230	N/A	Pass
13	0.011	0.210	5.3	0.011	0.315	3.6	Pass
14	0.002	0.131	N/A	0.002	0.197	N/A	Pass
15	0.007	0.150	5.0	0.008	0.225	3.5	Pass
16	0.002	0.115	N/A	0.002	0.173	N/A	Pass
17	0.010	0.132	7.5	0.010	0.198	5.2	Pass
18	0.002	0.102	N/A	0.002	0.153	N/A	Pass
19	0.004	0.118	N/A	0.005	0.178	N/A	Pass
20	0.002	0.092	N/A	0.003	0.138	N/A	Pass
21	0.005	0.107	4.9	0.006	0.161	3.8	Pass
22	0.002	0.084	N/A	0.003	0.125	N/A	Pass
23	0.003	0.098	N/A	0.004	0.147	N/A	Pass
24	0.002	0.077	N/A	0.003	0.115	N/A	Pass
25	0.004	0.090	N/A	0.005	0.135	N/A	Pass
26	0.003	0.071	N/A	0.003	0.107	N/A	Pass
27	0.003	0.083	N/A	0.004	0.125	N/A	Pass
28	0.003	0.066	N/A	0.003	0.099	N/A	Pass
29	0.003	0.078	N/A	0.004	0.116	N/A	Pass
30	0.002	0.061	N/A	0.003	0.092	N/A	Pass
31	0.002	0.073	N/A	0.003	0.109	N/A	Pass
32	0.002	0.058	N/A	0.003	0.086	N/A	Pass
33	0.003	0.068	N/A	0.004	0.102	N/A	Pass
34	0.003	0.054	N/A	0.004	0.081	N/A	Pass
35	0.003	0.064	N/A	0.004	0.096	N/A	Pass
36	0.003	0.051	N/A	0.003	0.077	N/A	Pass
37	0.004	0.061	N/A	0.004	0.091	N/A	Pass
38	0.003	0.048	N/A	0.004	0.073	N/A	Pass
39	0.003	0.058	N/A	0.003	0.087	N/A	Pass
40	0.002	0.046	N/A	0.003	0.069	N/A	Pass

Test Site	SIP-SR2	Temperature	26.9 °C
Test Engineer	Arvin Ding	Relative Humidity	58.3 %
Test Mode	Mode 2	Test Date	2024-09-12

Test Result: Pass

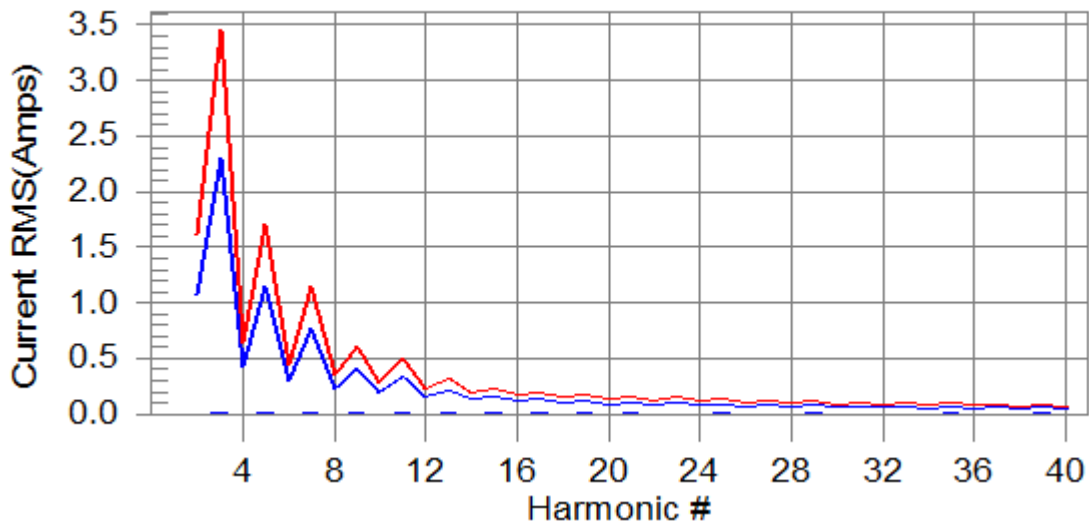
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H17-5.3% of 150% limit, H17-7.6% of 100% limit

Test Result: Pass **Source qualification: Normal**
THC(A): 0.039 **I-THD(%): 18.2** **POHC(A): 0.011** **POHC Limit(A): 0.251**
Highest parameter values during test:
 V_RMS (Volts): 230.21 **Frequency(Hz): 50.00**
 I_Peak (Amps): 0.719 **I_RMS (Amps): 0.266**
 I_Fund (Amps): 0.212 **Crest Factor: 4.605**
 Power (Watts): 46.6 **Power Factor: 0.954**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.004	1.620	N/A	Pass
3	0.014	2.300	0.6	0.015	3.450	0.4	Pass
4	0.002	0.430	N/A	0.004	0.645	N/A	Pass
5	0.021	1.140	1.8	0.021	1.710	1.2	Pass
6	0.002	0.300	N/A	0.003	0.450	N/A	Pass
7	0.006	0.770	0.7	0.007	1.155	0.6	Pass
8	0.002	0.230	N/A	0.002	0.345	N/A	Pass
9	0.016	0.400	4.1	0.017	0.600	2.8	Pass
10	0.002	0.184	N/A	0.002	0.276	N/A	Pass
11	0.007	0.330	2.0	0.007	0.495	1.5	Pass
12	0.002	0.153	N/A	0.002	0.230	N/A	Pass
13	0.011	0.210	5.3	0.012	0.315	3.7	Pass
14	0.002	0.131	N/A	0.002	0.197	N/A	Pass
15	0.008	0.150	5.1	0.008	0.225	3.6	Pass
16	0.002	0.115	N/A	0.002	0.173	N/A	Pass
17	0.010	0.132	7.6	0.010	0.198	5.3	Pass
18	0.002	0.102	N/A	0.002	0.153	N/A	Pass
19	0.005	0.118	N/A	0.006	0.178	N/A	Pass
20	0.002	0.092	N/A	0.002	0.138	N/A	Pass
21	0.005	0.107	4.9	0.006	0.161	3.9	Pass
22	0.002	0.084	N/A	0.003	0.125	N/A	Pass
23	0.003	0.098	N/A	0.004	0.147	N/A	Pass
24	0.002	0.077	N/A	0.003	0.115	N/A	Pass
25	0.004	0.090	N/A	0.005	0.135	N/A	Pass
26	0.003	0.071	N/A	0.003	0.107	N/A	Pass
27	0.003	0.083	N/A	0.004	0.125	N/A	Pass
28	0.003	0.066	N/A	0.003	0.099	N/A	Pass
29	0.003	0.078	N/A	0.004	0.116	N/A	Pass
30	0.002	0.061	N/A	0.003	0.092	N/A	Pass
31	0.002	0.073	N/A	0.003	0.109	N/A	Pass
32	0.002	0.058	N/A	0.003	0.086	N/A	Pass
33	0.002	0.068	N/A	0.003	0.102	N/A	Pass
34	0.003	0.054	N/A	0.003	0.081	N/A	Pass
35	0.003	0.064	N/A	0.004	0.096	N/A	Pass
36	0.003	0.051	N/A	0.003	0.077	N/A	Pass
37	0.003	0.061	N/A	0.003	0.091	N/A	Pass
38	0.003	0.048	N/A	0.004	0.073	N/A	Pass
39	0.003	0.058	N/A	0.004	0.087	N/A	Pass
40	0.002	0.046	N/A	0.002	0.069	N/A	Pass

5.5. Voltage Fluctuations and Flicker Measurement

5.5.1. Test Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{it} shall not be greater than 0.65;
- the value of $d_{(t)}$ during a voltage change shall not exceed 3.3% for more than 500ms;
- the relative steady-state voltage change, d_c , shall not exceed 3.3%;
- the maximum relative voltage change, d_{max} , shall not exceed;
 - a) 4% without additional conditions;
 - b) 6% for equipment which is:
 - 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.

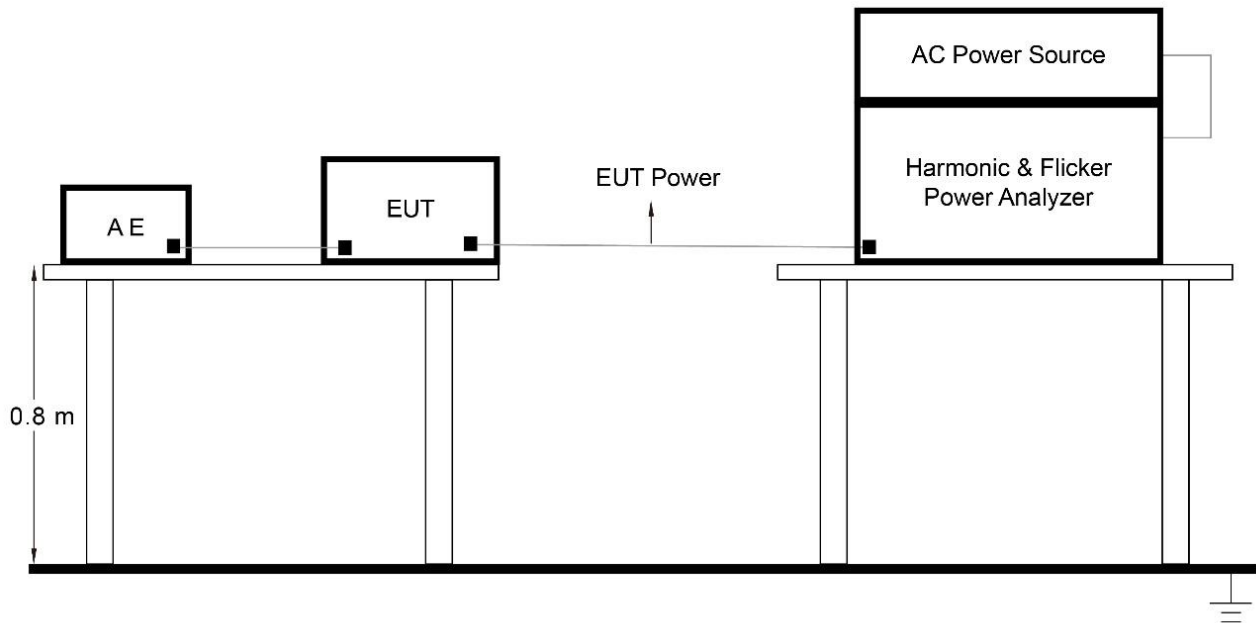
Note: The cycling frequency will be further limited by the P_{st} and P_{it} limit.

For example: a d_{max} of 6% producing a rectangular voltage change characteristic twice per hour will give a P_{it} of about 0.65.

- c) 7% for equipment which is:
 - attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn 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.

P_{st} and P_{it} requirements shall not be applied to voltage changes caused by manual switching.

5.5.2. Test Setup



5.5.3. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

5.5.4. Test Result

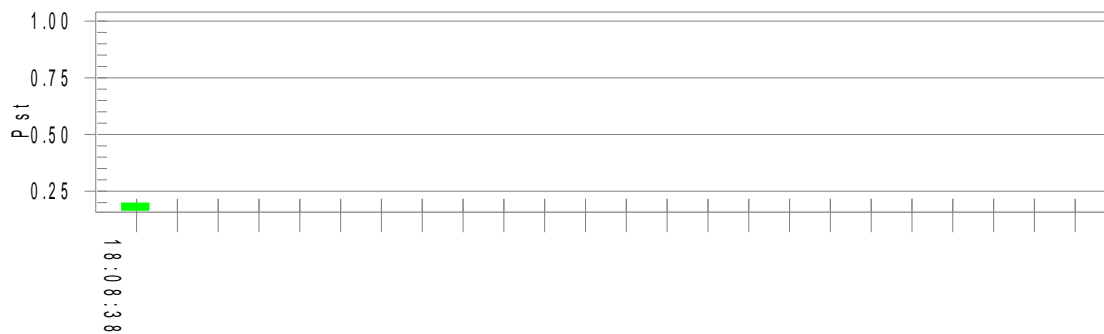
Test Site	SIP-SR2	Temperature	26.9 °C
Test Engineer	Arvin Ding	Relative Humidity	58.3 %
Test Mode	Mode 1	Test Date	2024-09-12

Test Result: Pass

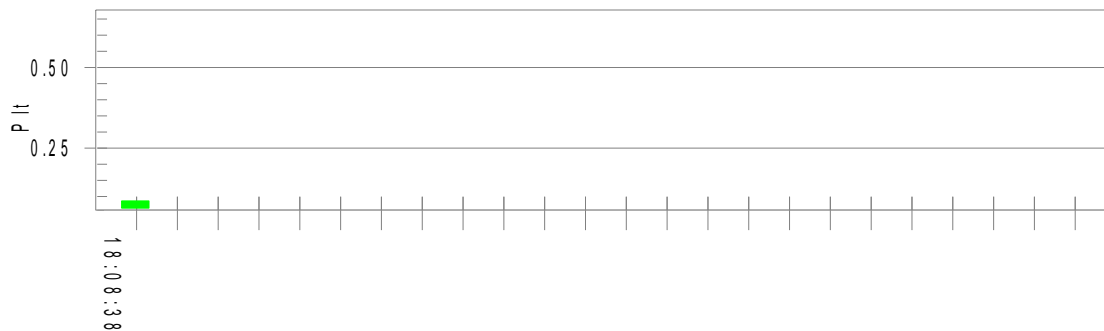
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.12

Highest dt (%): 0.00

T-max (ms): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.198

Highest Plt (2 hr. period): 0.086

Test limit (%): N/A N/A

Test limit (ms): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

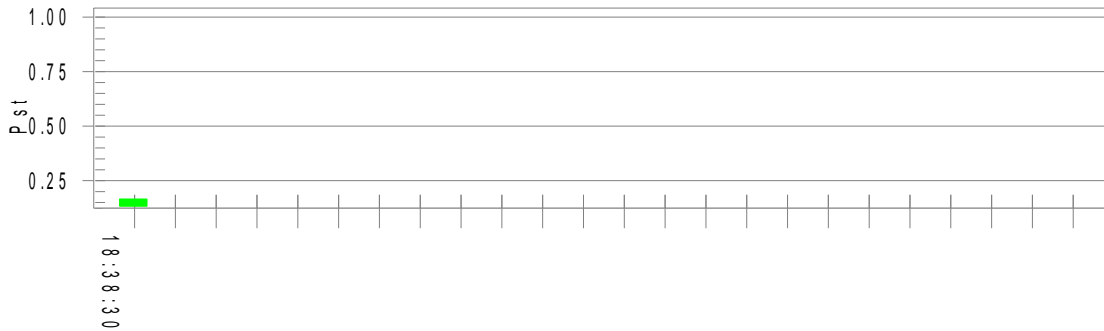
Test Site	SIP-SR2	Temperature	26.9 °C
Test Engineer	Arvin Ding	Relative Humidity	58.3 %
Test Mode	Mode 2	Test Date	2024-09-12

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.16

Highest dt (%): 0.00

T-max (ms): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.166

Highest Plt (2 hr. period): 0.072

Test limit (%): N/A N/A

Test limit (ms): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

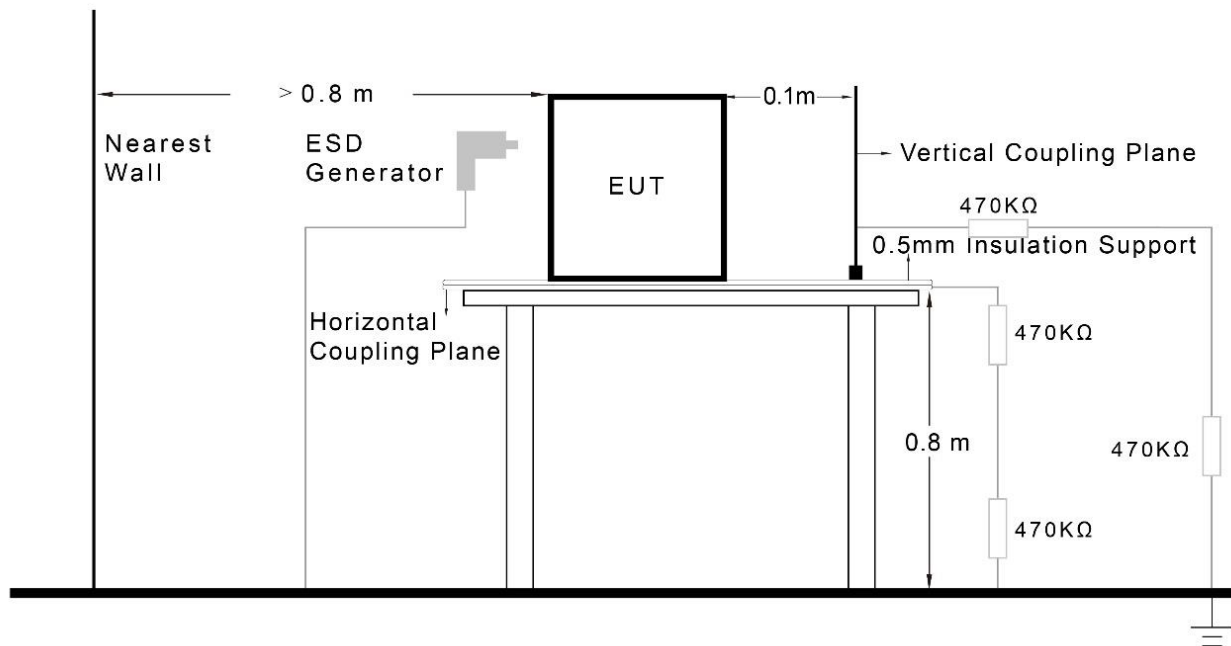
Test limit: 0.650 Pass

5.6. Electrostatic Discharge Measurement

5.6.1. Test Limit

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 55035			
Electrostatic discharge	± 4 (Contact discharge) $\pm 2, \pm 4, \pm 8$ (Air discharge)	kV (Charge voltage) kV (Charge voltage)	B
EN 301 489-1			
Electrostatic discharge	± 4 (Contact discharge) $\pm 2, \pm 4, \pm 8$ (Air discharge)	kV (Charge voltage) kV (Charge voltage)	Transient Phenomena
EN 301 489-17			
Electrostatic discharge	± 4 (Contact discharge) $\pm 2, \pm 4, \pm 8$ (Air discharge)	kV (Charge voltage) kV (Charge voltage)	B

5.6.2. Test Setup



5.6.3. Test Procedure

Direct Application of Discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect Application of Discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

5.6.4. Test Result

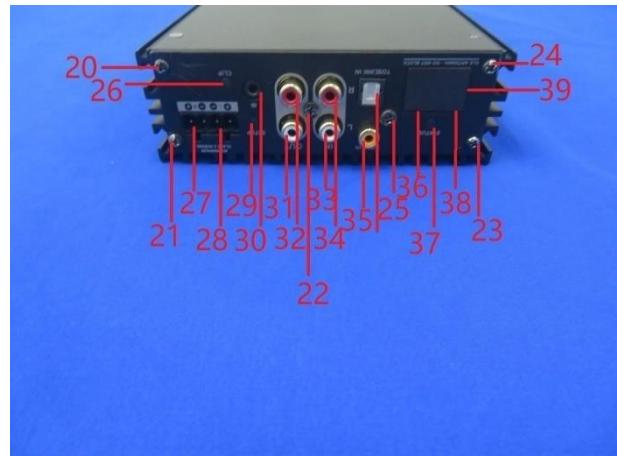
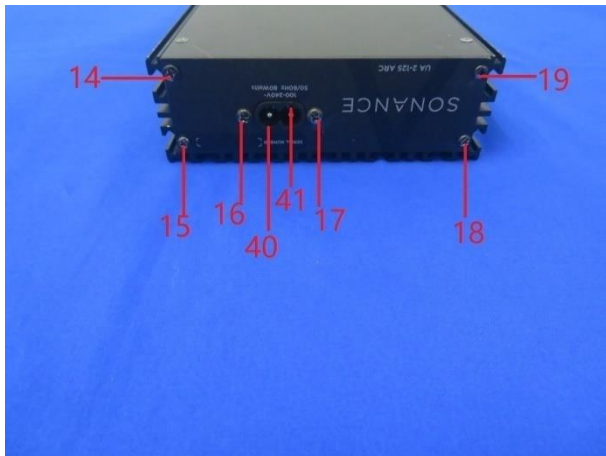
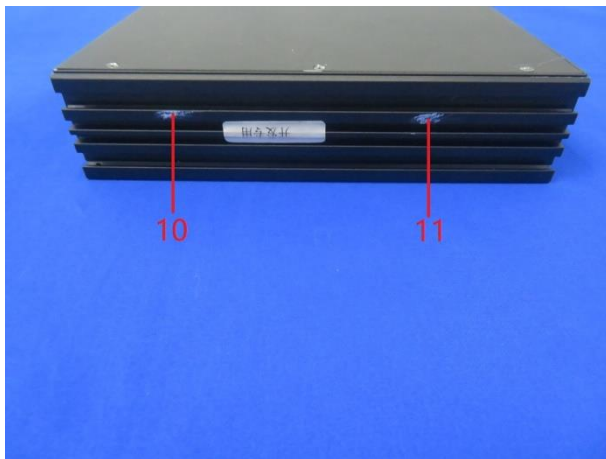
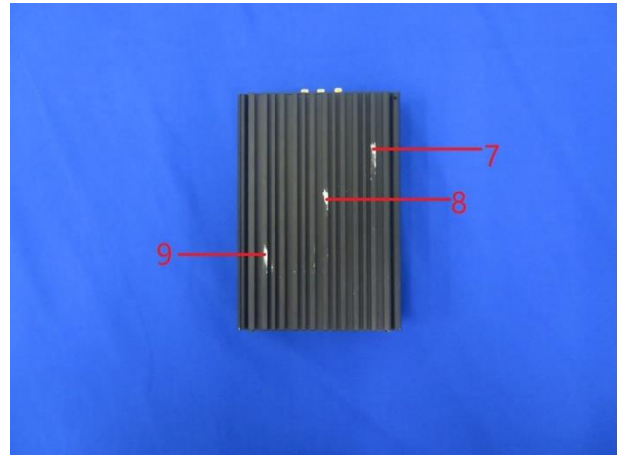
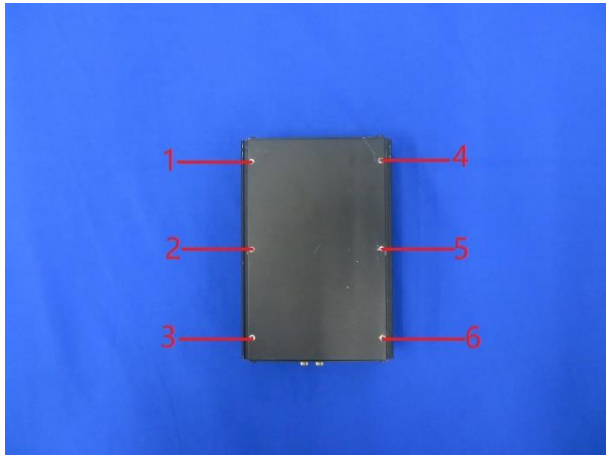
Test Site	SIP-SR3	Temperature/Humidity	25.5 °C/51.1 %
Test Engineer	Henry Wang	Barometric	100.7 kPa
Test Mode	Mode 1 & 2	Test Date	2024-09-12

Direct Application		Performance Criterion Result
Test Location	Test Level	Contact Discharge
1 ~ 25	±4kV	Complies ^{Note}
Test Location	Test Level	Air Discharge
26 ~ 41	±2kV, ±4kV, ±8kV	Complies ^{Note}

Indirect Application		Performance Criterion Result
Test Location	Test Level	Horizontal Coupling
Bottom, Top	±4kV	Complies ^{Note}
Test Location	Test Level	Vertical Coupling
Front, Rear Left, Right	±4kV	Complies ^{Note}

Note: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

Electrostatic Discharge Test Location

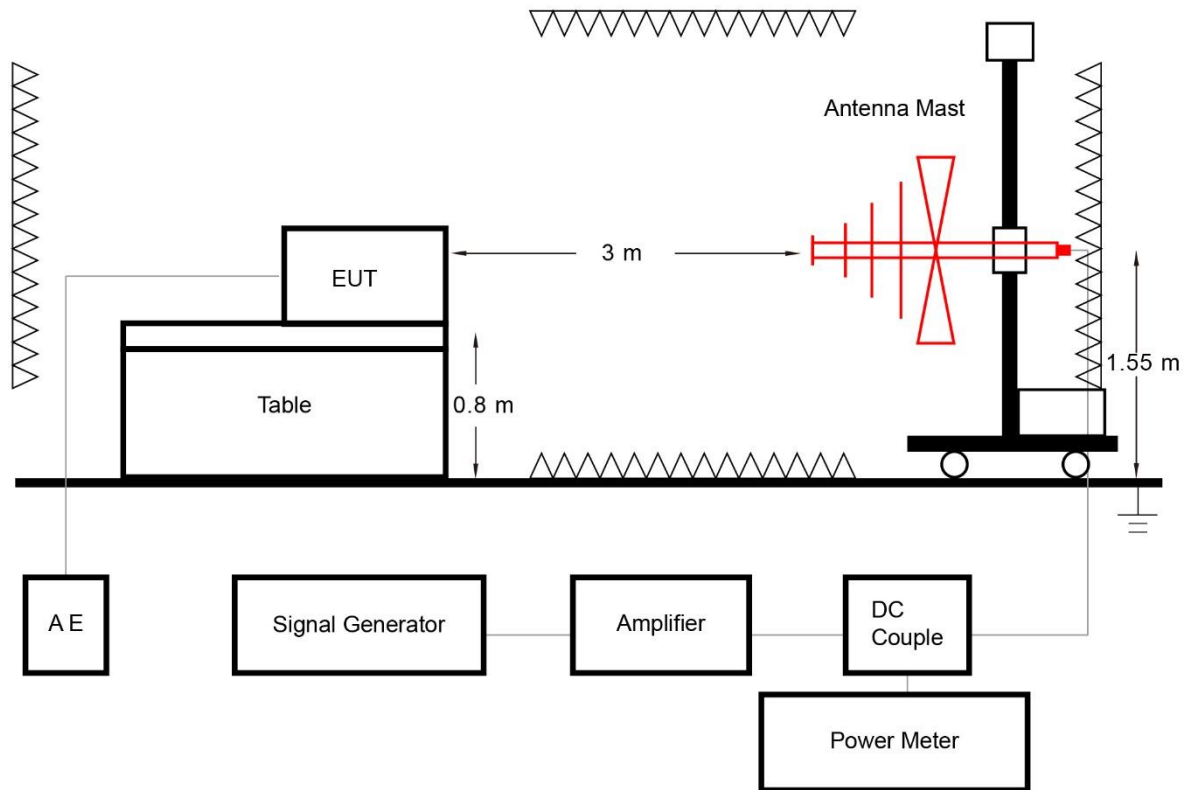


5.7. Radio Frequency Electromagnetic Field Measurement

5.7.1. Test Limit

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 55035			
Radio Frequency Electromagnetic field, sweep test	80 - 1000 3 80	MHz V/m (unmodulated, r.m.s) % AM (1kHz)	A
Radio Frequency Electromagnetic field, spot test	1800, 2600, 3500, 5000 ($\pm 1\%$) 3 80	MHz V/m (unmodulated, r.m.s) % AM (1kHz)	A
EN 301 489-1 (Note 1, 2)			
Radio Frequency Electromagnetic field, sweep test	80 - 6000 3 80	MHz V/m (unmodulated, r.m.s) % AM (1kHz)	Continuous Phenomena
EN 301 489-17 (Note 1, 2)			
Radio Frequency Electromagnetic field, sweep test	80 - 6000 3 80	MHz V/m (unmodulated, r.m.s) % AM (1kHz)	A
<p>Note 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used.</p> <p>Note 2: The test shall be performed over the frequency range 80MHz to 6000MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers of EN 301 489-1, as appropriate.</p>			

5.7.2. Test Setup



5.7.3. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters. The test shall normally be performed with the generating antenna facing each side of the EUT. When equipment can be used in different orientations (i.e. vertical or horizontal) all sides shall be exposed to the field during the test. When technically justified, some EUTs can be tested by exposing fewer faces to the generating antenna. In other cases, as determined for example by the type and size of EUT or the frequencies of test, more than four azimuths may need to be exposed.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3V/m
2.	RF Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80MHz ~ 6GHz
4.	Spot Frequency	1800MHz ($\pm 1\%$), 2600MHz ($\pm 1\%$), 3500MHz ($\pm 1\%$), 5000MHz ($\pm 1\%$)
5.	Dwell Time	1 Second
6.	Frequency Step Size Δf	1%

5.7.4. Test Result

Test Site	SIP-AC4	Temperature	23.1 °C ~ 26.2 °C
Test Engineer	Miron Ding	Relative Humidity	58.2 % ~ 60.9 %
Test Mode	Mode 1 & 2	Test Date	2024-09-10 ~ 2024-09-11

Frequency (MHz)	Polarity	Test Position	Field Strength (V/m)	Performance Criterion Result
80 - 1000	Horizontal/Vertical	Front	3	Complies ^{Note 1}
		Rear		Complies ^{Note 1}
1000 - 6000 ^{Note 2}	Horizontal/Vertical	Front	3	Complies ^{Note 1}
		Rear		Complies ^{Note 1}
1800 (±1%) 2600 (±1%) 3500 (±1%) 5000 (±1%)	Horizontal/Vertical	Front	3	Complies ^{Note 1}
		Rear		Complies ^{Note 1}

Note 1: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

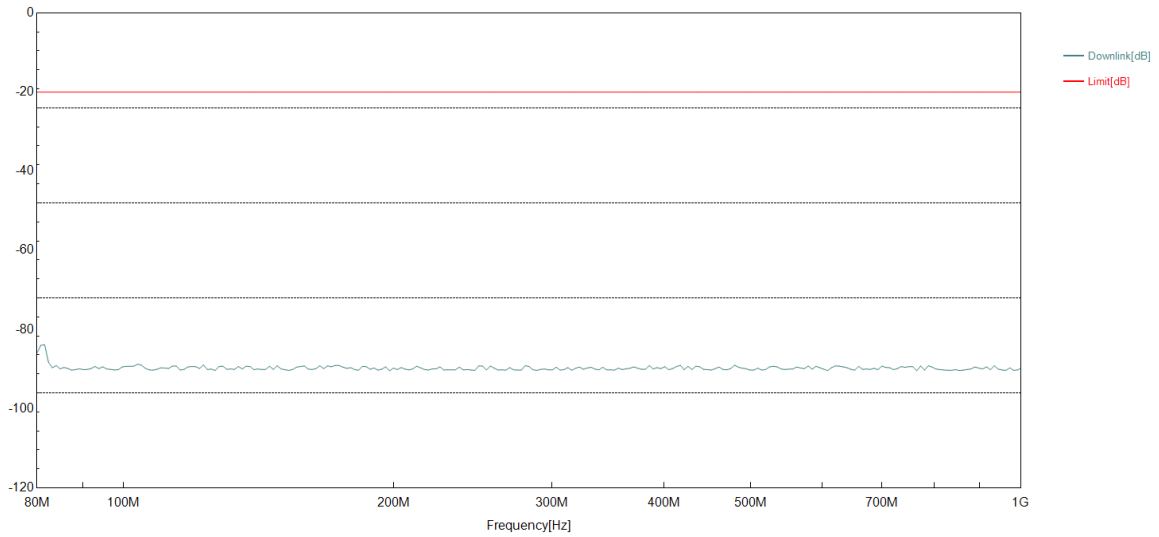
Note 2: The exclusion bands which defined in EN301489 series standards were excluded during the test.

Note 3: Two sides of the EUT are chosen for testing after evaluation.

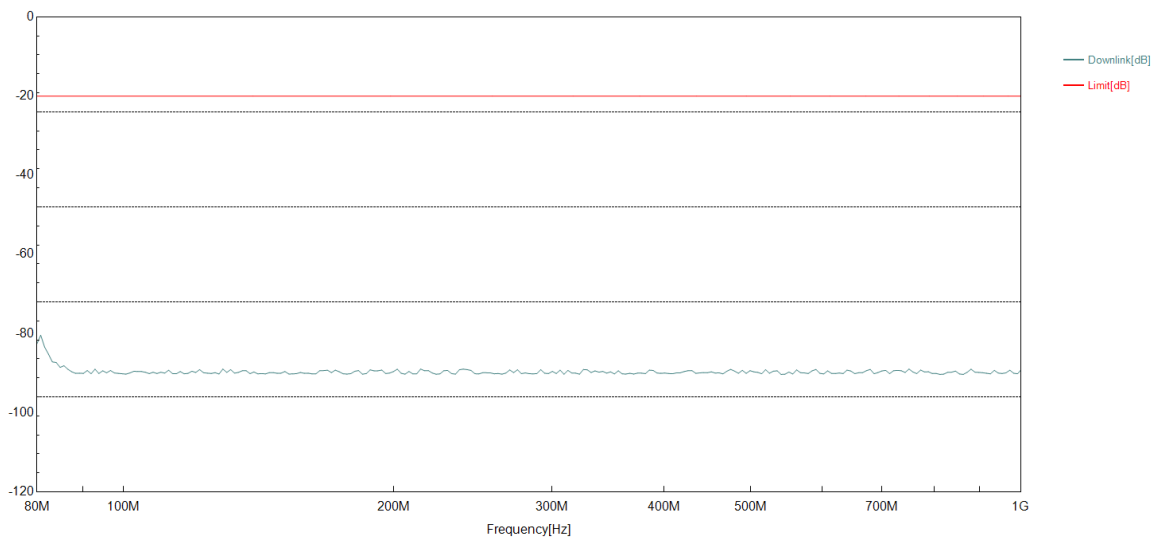
RCA OUT Port Test Data - Mode 1 - Front

Frequency Range: 80 ~ 1000 MHz

Horizontal

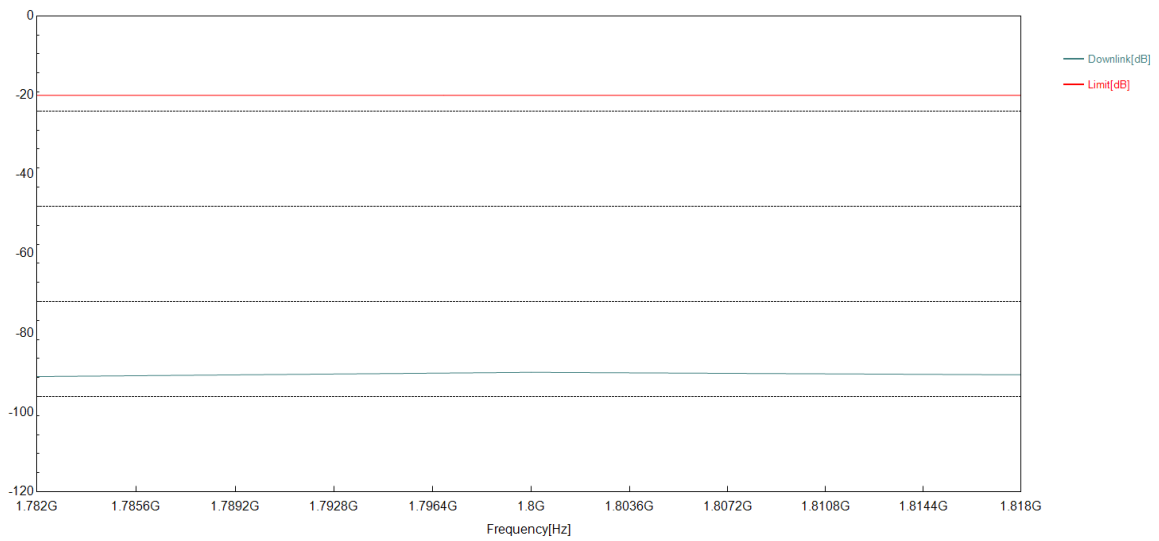


Vertical

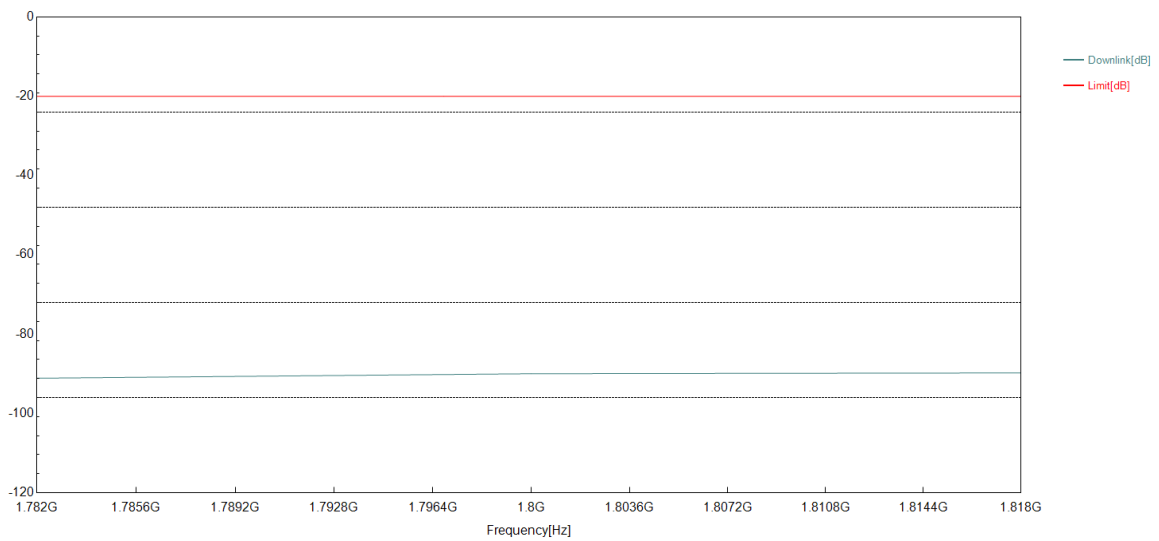


Spot Frequency: 1800($\pm 1\%$) MHz

Horizontal

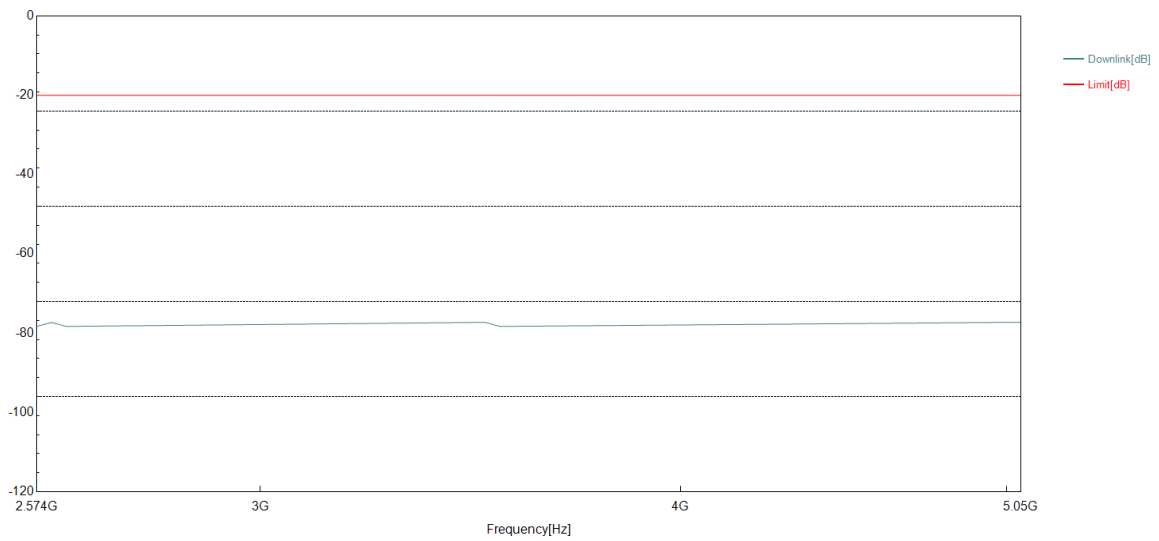


Vertical

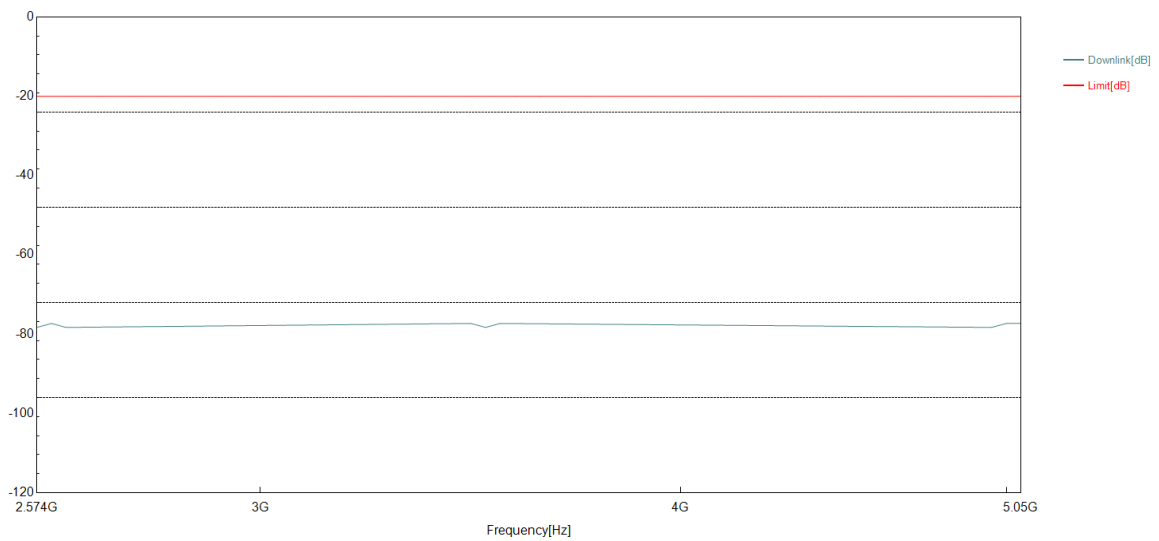


Spot Frequency: 2600($\pm 1\%$), 3500($\pm 1\%$), 5000($\pm 1\%$) MHz

Horizontal



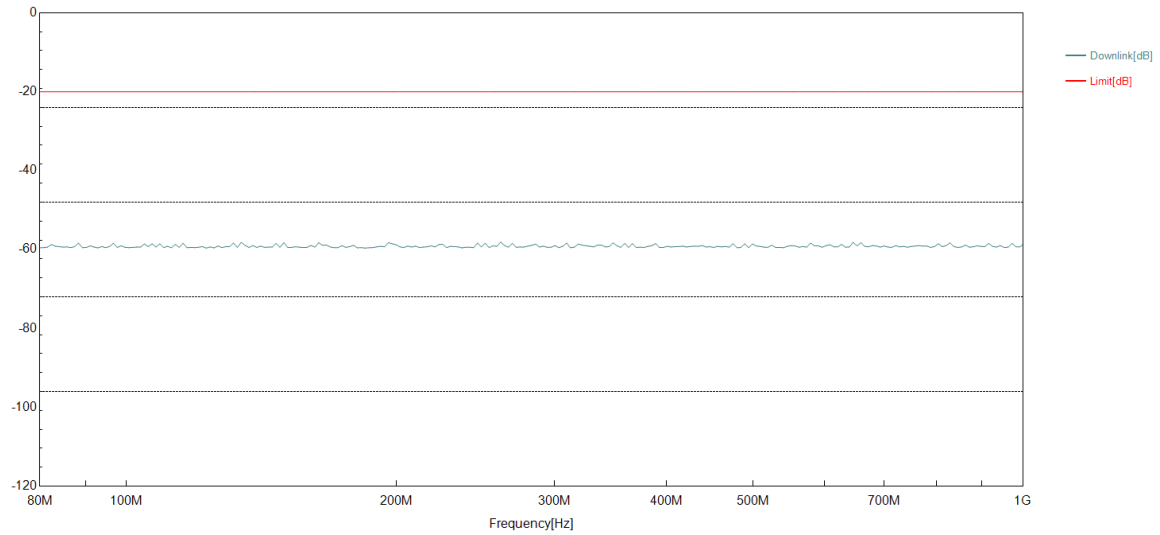
Vertical



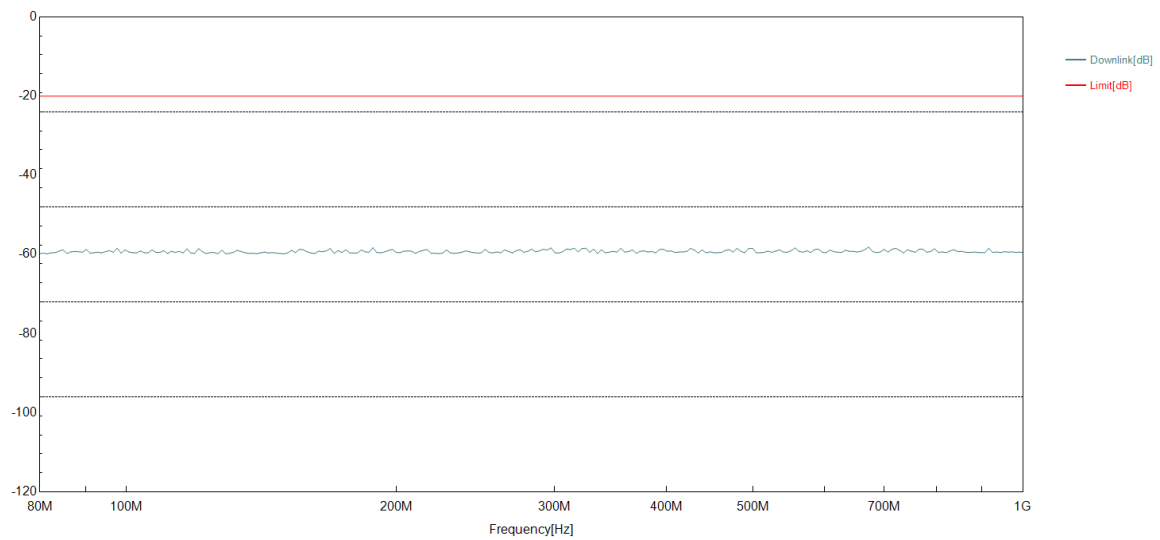
4Ω MINIMUM CLASS 2 WIRING Port Test Data - Mode 1 - Front

Frequency Range: 80 ~ 1000 MHz

Horizontal

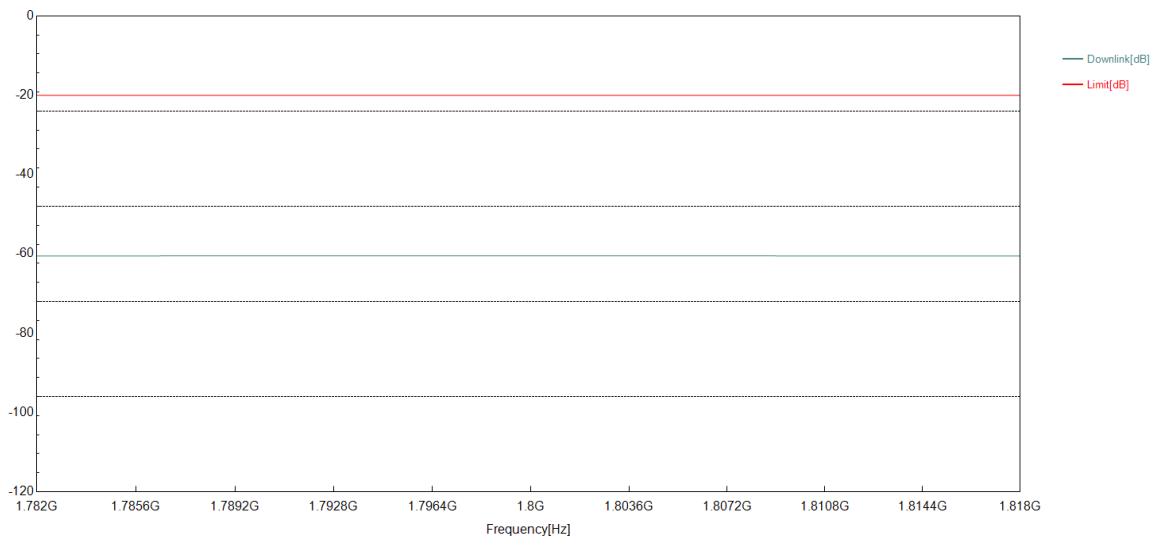


Vertical

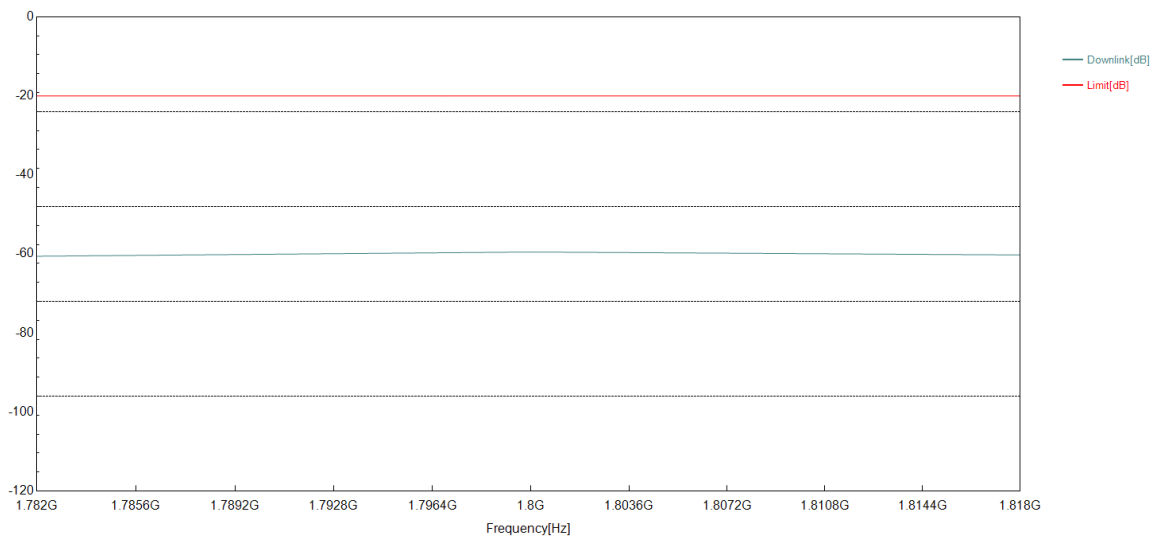


Spot Frequency: 1800($\pm 1\%$) MHz

Horizontal

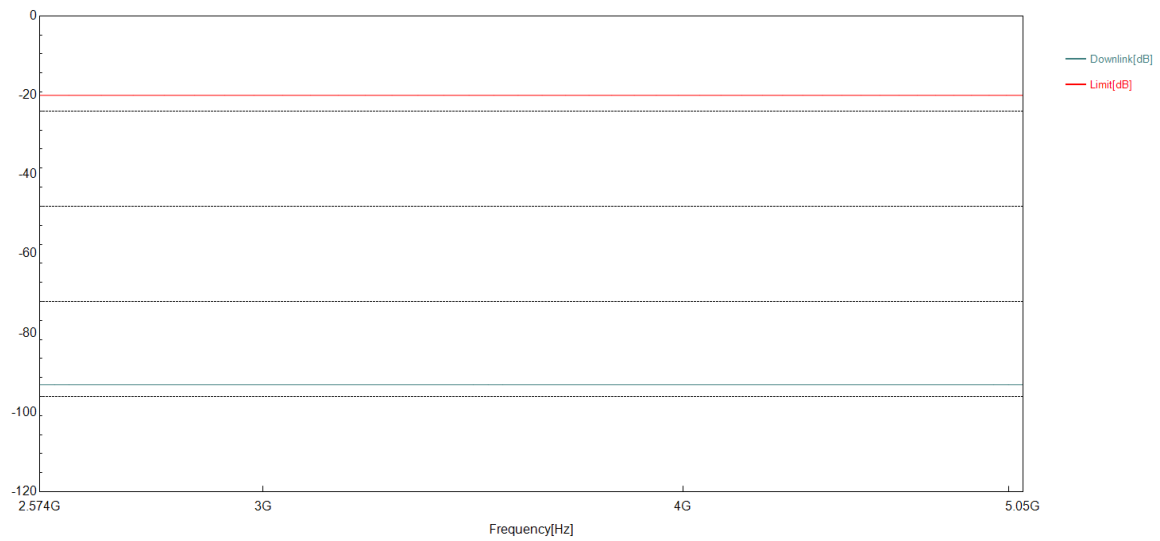


Vertical

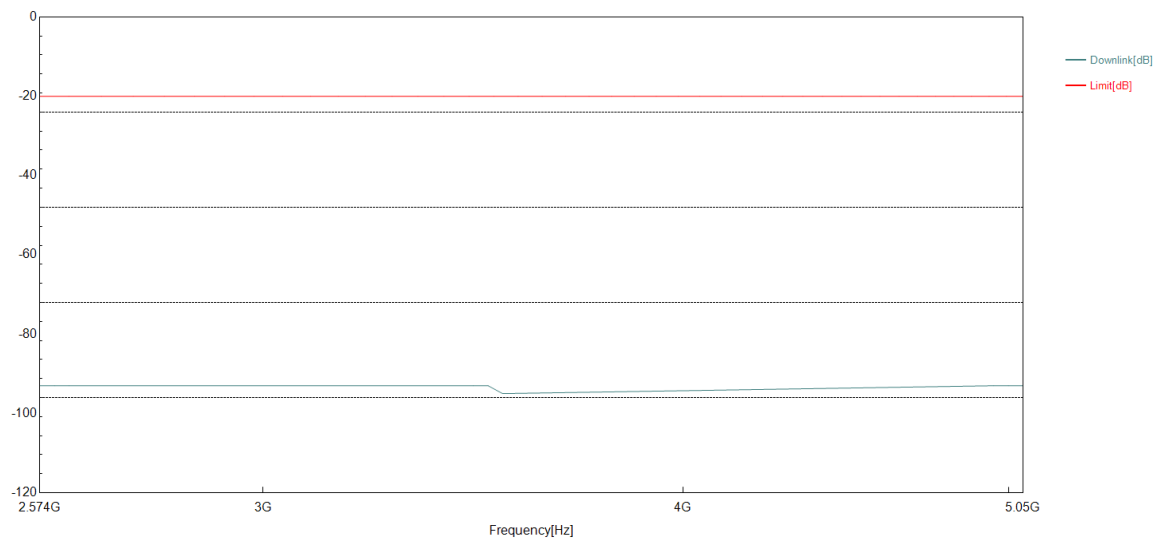


Spot Frequency: 2600($\pm 1\%$), 3500($\pm 1\%$), 5000($\pm 1\%$) MHz

Horizontal



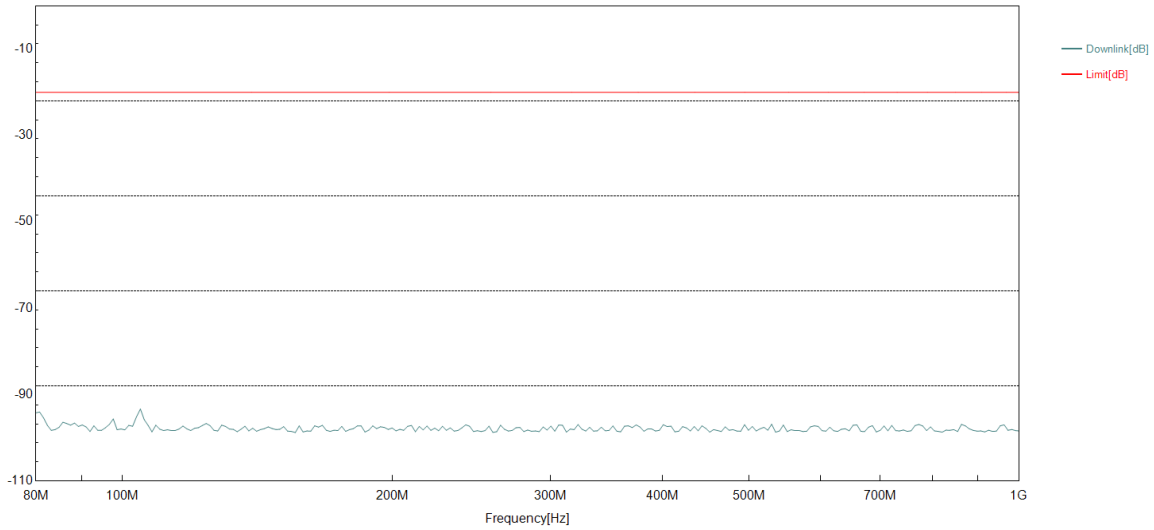
Vertical



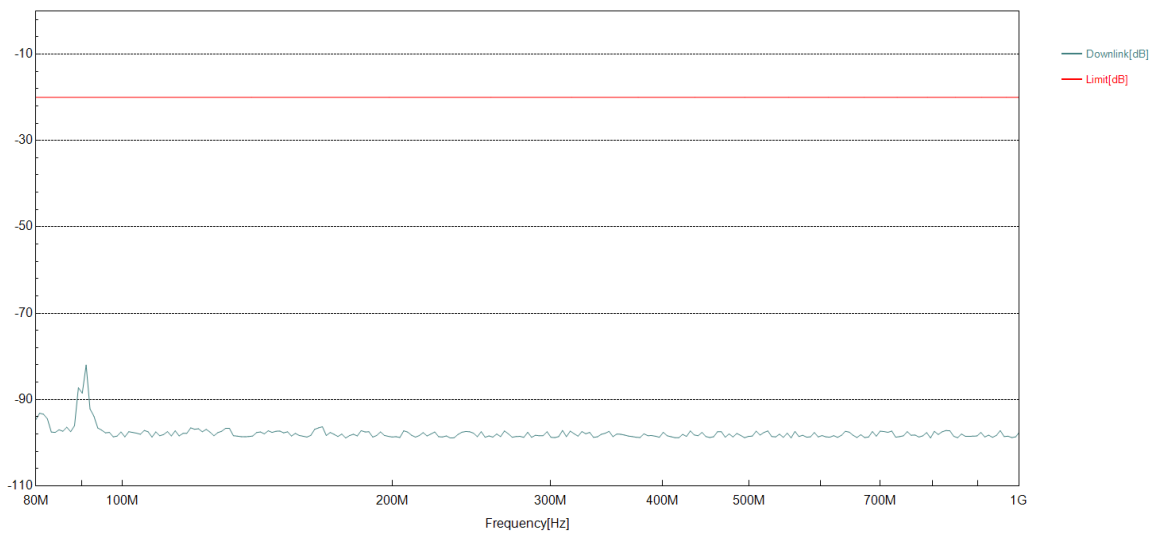
RCA OUT Port Test Data - Mode 2 - Front

Frequency Range: 80 ~ 1000 MHz

Horizontal

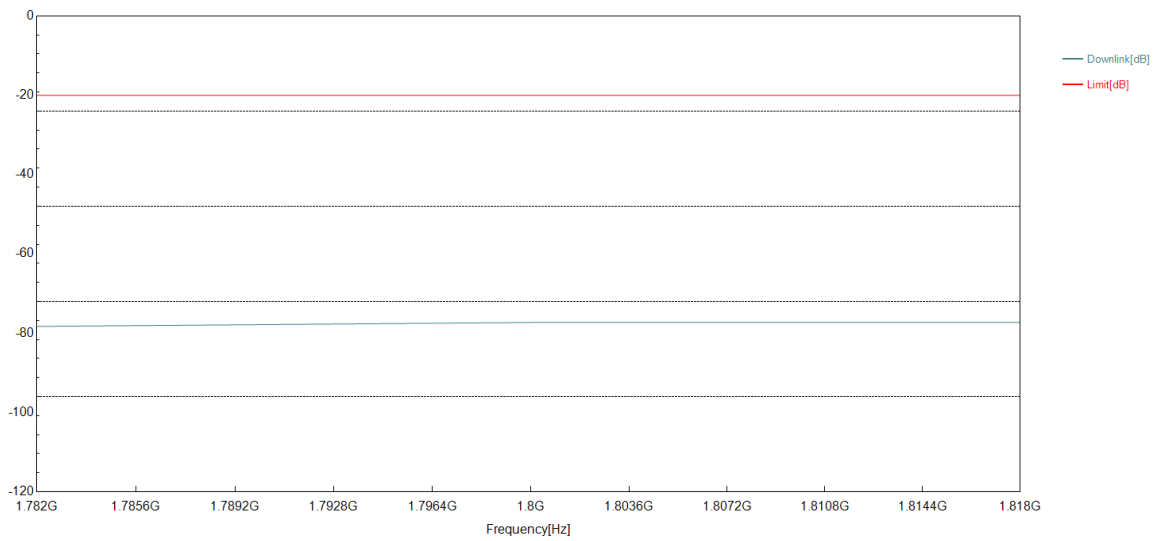


Vertical

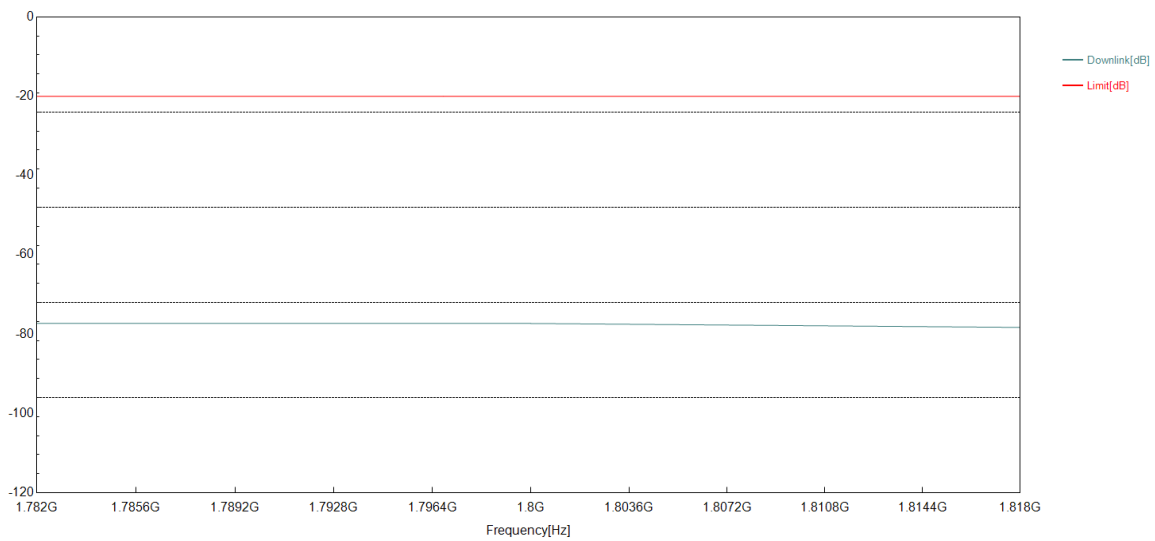


Spot Frequency: 1800($\pm 1\%$) MHz

Horizontal

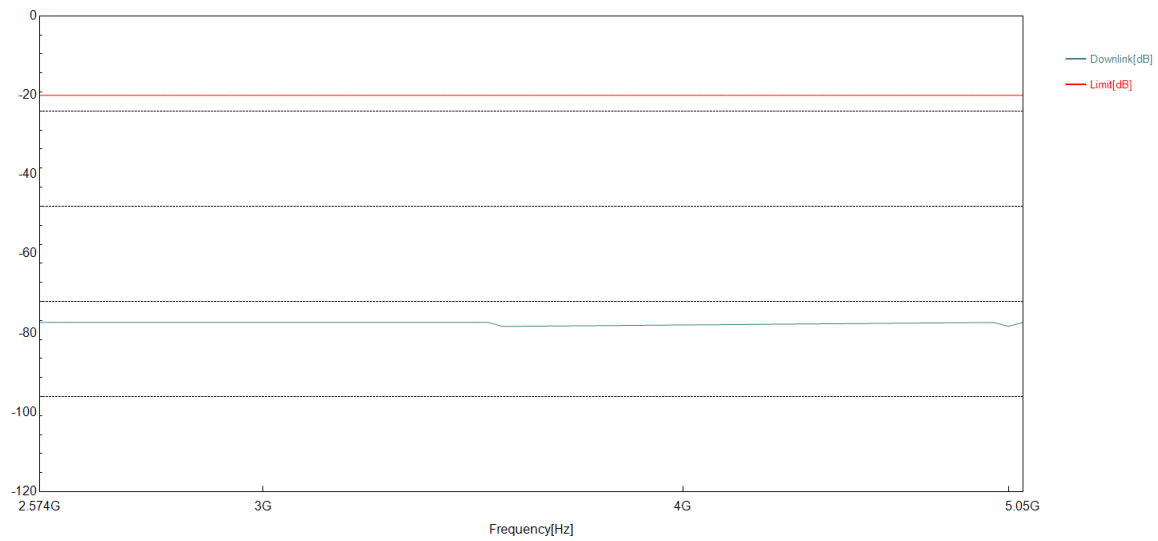


Vertical

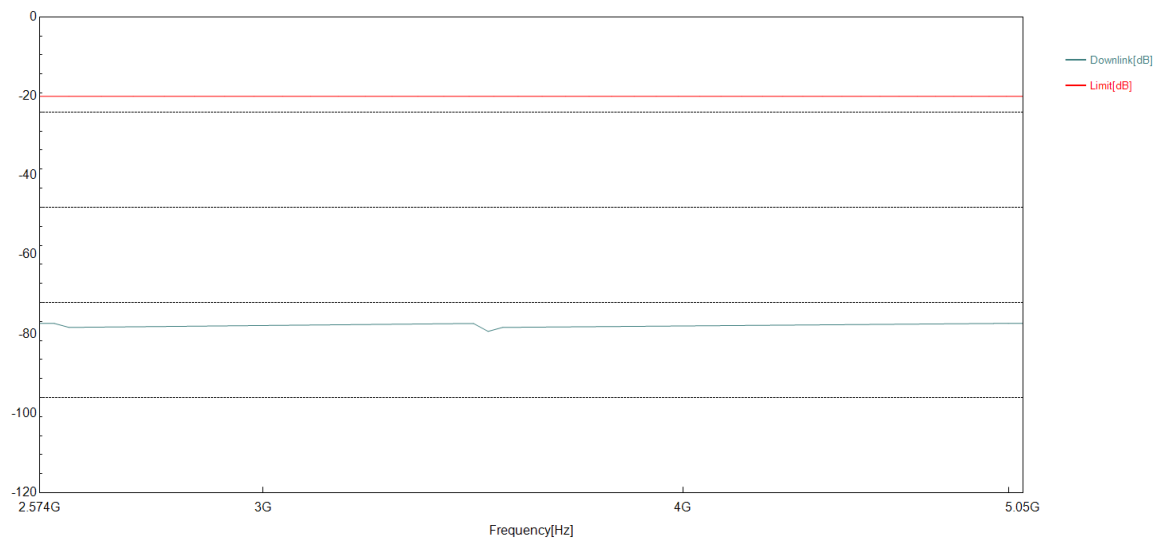


Spot Frequency: 2600($\pm 1\%$), 3500($\pm 1\%$), 5000($\pm 1\%$) MHz

Horizontal



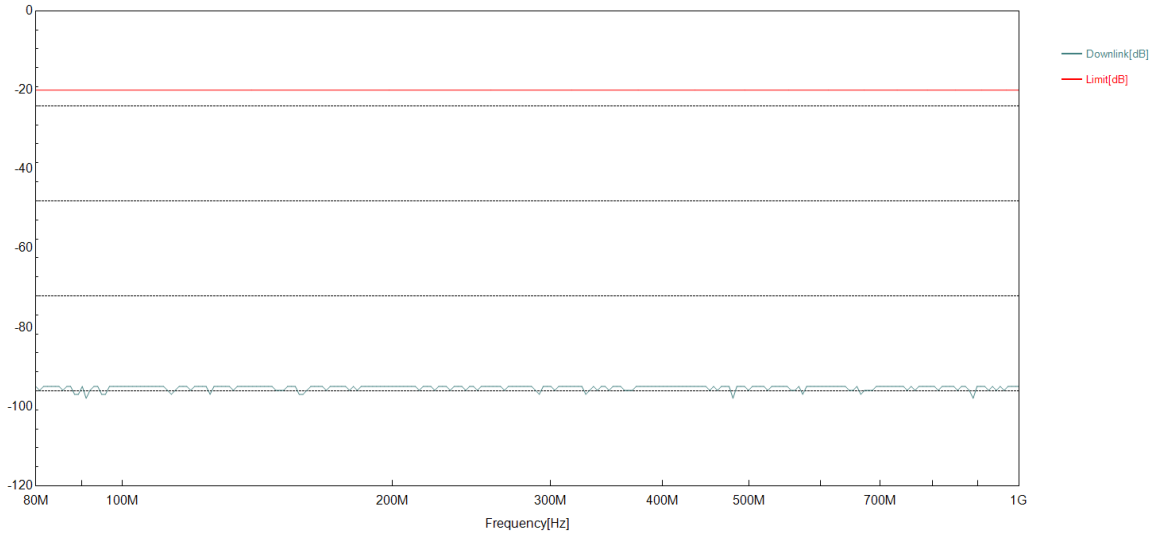
Vertical



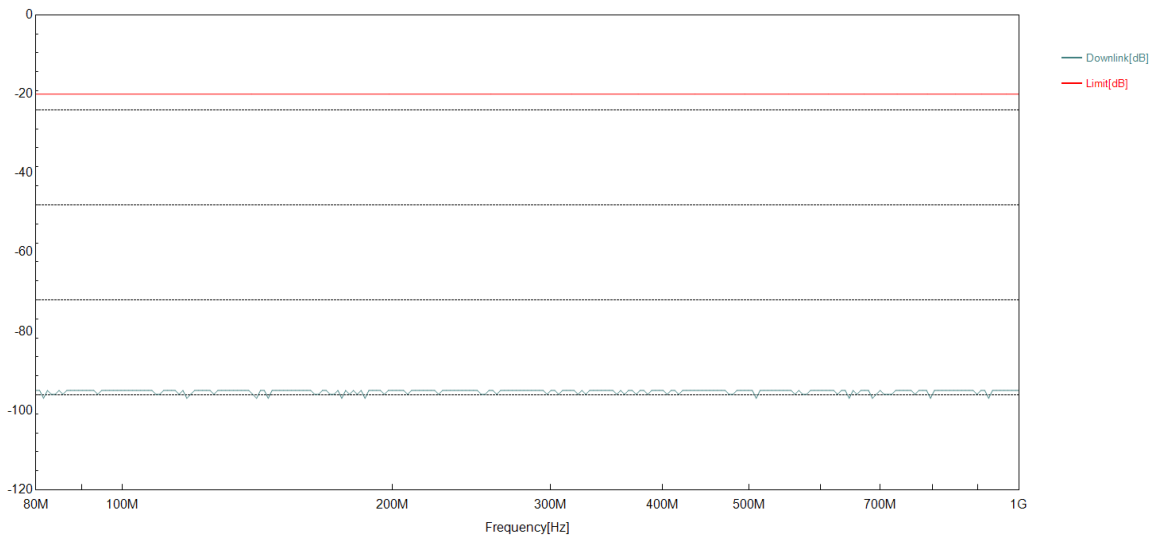
4Ω MINIMUM CLASS 2 WIRING Port Test Data - Mode 2 - Front

Frequency Range: 80 ~ 1000 MHz

Horizontal

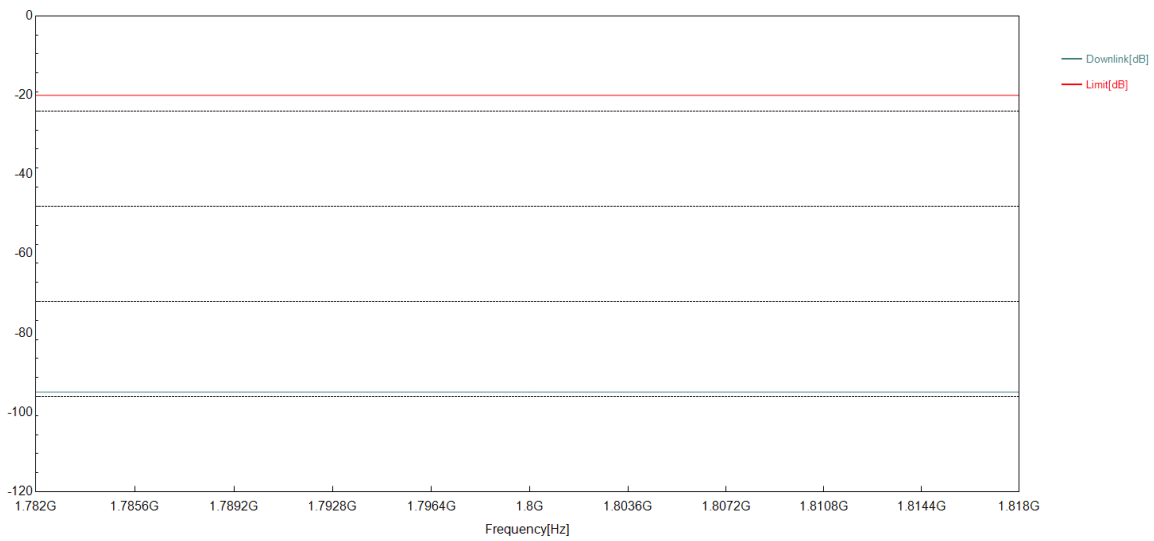


Vertical

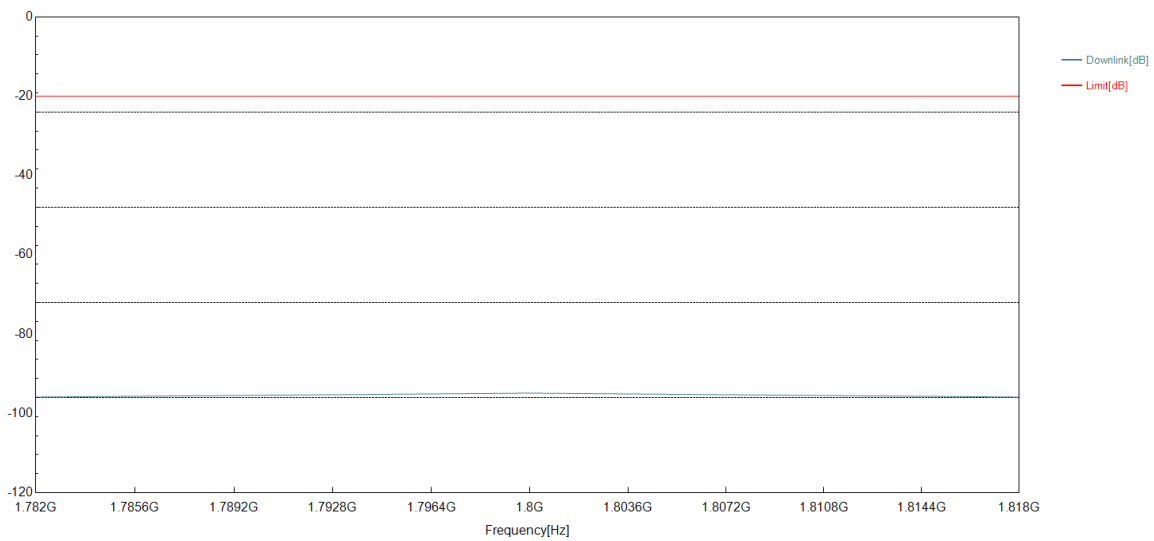


Spot Frequency: 1800($\pm 1\%$) MHz

Horizontal

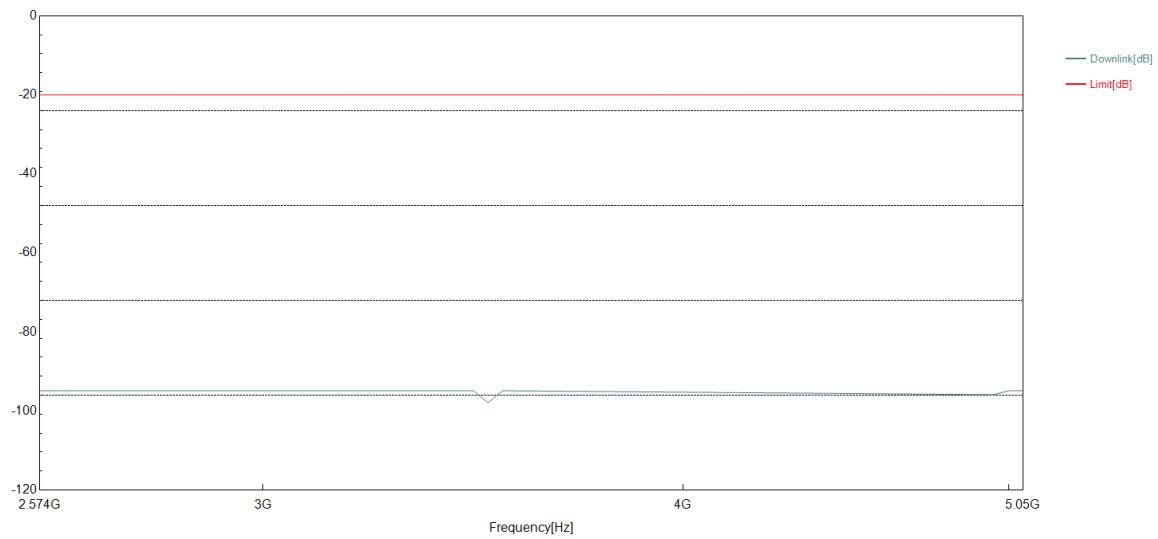


Vertical

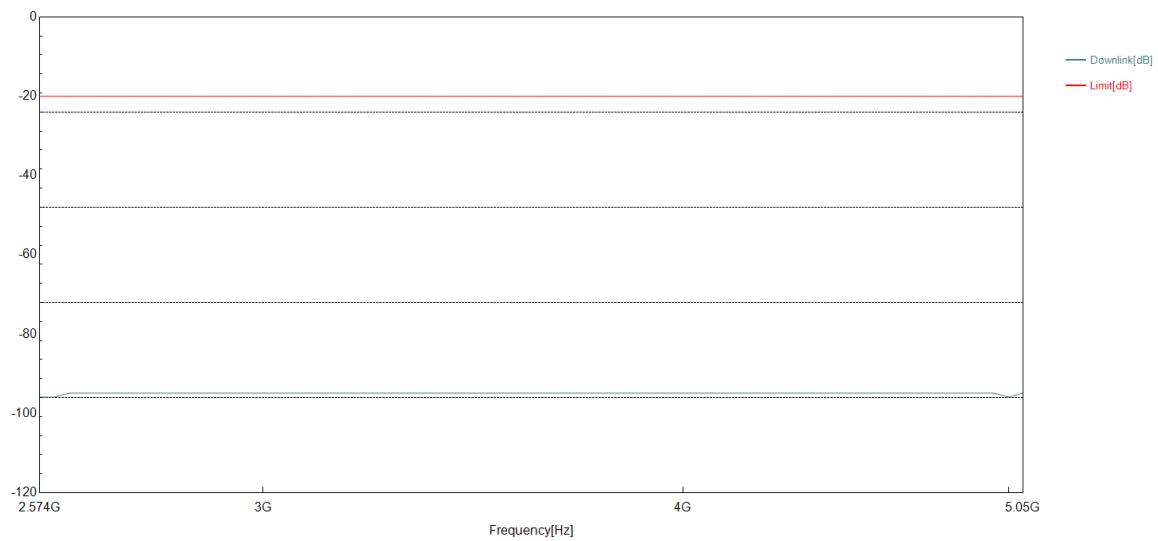


Spot Frequency: 2600($\pm 1\%$), 3500($\pm 1\%$), 5000($\pm 1\%$) MHz

Horizontal



Vertical



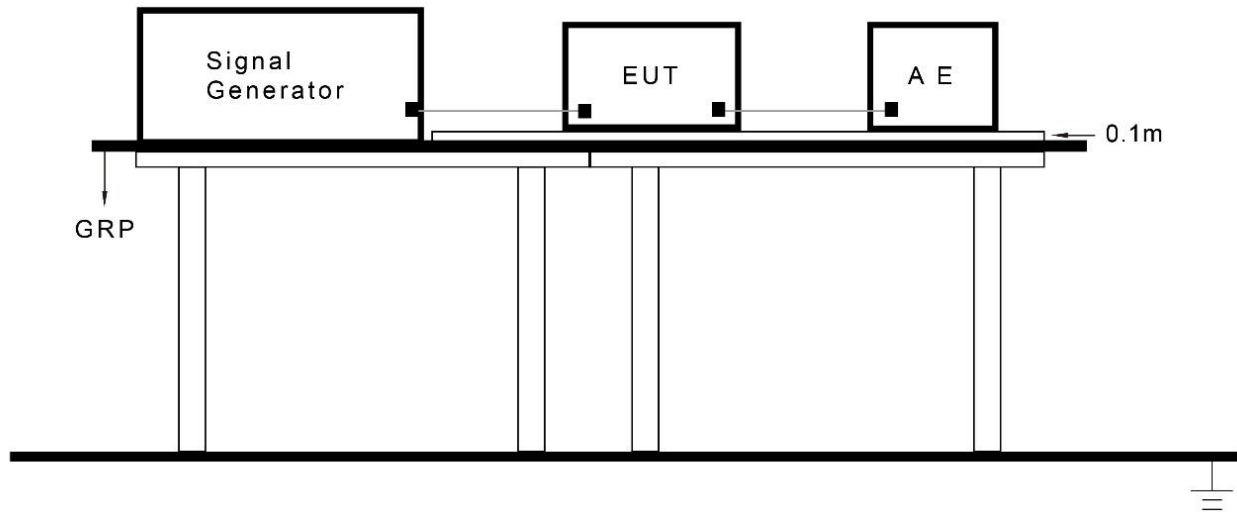
5.8. Electrical Fast Transients Measurement

5.8.1. Test Limit

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 55035			
Input AC power ports			
Electrical Fast Transients	±1 5/50 5	kV (open circuit test voltage) Tr/Th (ns) Repetition frequency (kHz)	B
Analogue/digital data ports (Note 1, 2)			
Electrical Fast Transients	±0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	B
Note 1: Applicable only to cables which according to the manufacturer's specification supports communication on cable lengths greater than 3 m.			
Note 2: For XDSL equipment, the repetition frequency for EFT testing shall be 100 kHz.			
EN 301 489-1			
Input AC power ports			
Electrical Fast Transients	±1 5/50 5	kV (open circuit test voltage) Tr/Th (ns) Repetition frequency (kHz)	Transient Phenomena
Input DC power ports			
Electrical Fast Transients	±0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	Transient Phenomena
Signal ports, wired network ports (excluding xDSL), and control ports			
Electrical Fast Transients	±0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	Transient Phenomena
Note 1: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.			
Note 2: The test level for signal ports, wired network ports (excluding xDSL), and control ports shall be 0.5 kV open circuit voltage at a repetition rate of 5 kHz.			
Note 3: The test level for xDSL wired network ports shall be 0,5 kV open circuit voltage at a repetition rate of 100 kHz.			

EN 301 489-17			
Input AC power ports			
Electrical Fast Transients	±1 5/50 5	kV (open circuit test voltage) Tr/Th (ns) Repetition frequency (kHz)	B
Input DC power ports			
Electrical Fast Transients	±0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	B
Signal ports, wired network ports (excluding xDSL), and control ports			
Electrical Fast Transients	±0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	B
<p>Note 1: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.</p> <p>Note 2: The test level for signal ports, wired network ports (excluding xDSL), and control ports shall be 0.5 kV open circuit voltage at a repetition rate of 5 kHz.</p> <p>Note 3: The test level for xDSL wired network ports shall be 0,5 kV open circuit voltage at a repetition rate of 100 kHz.</p>			

5.8.2. Test Setup



5.8.3. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.

The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

For Input AC Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.

Each of the line conductors is impressed with burst noise for 1 minute.

The length of the power lines between the coupling device and the EUT is 0.5m.

For Signal Ports, Telecommunication Ports, and Control Ports:

The EFT interference signal is through a coupling clamp device couples to the signal of the EUT with burst noise for 1 minute.

The length of the signal lines between the coupling device and the EUT is 0.5m.

5.8.4. Test Result

Test Site	SIP-SR5	Temperature	24.8 °C
Test Engineer	Lily Zhang	Relative Humidity	57.0 %
Test Mode	Mode 1 & 2	Test Date	2024-08-23

Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Performance Criteria Result
Input a.c. power port (Tr/Th: 5/50ns, Repetition Frequency: 5kHz)					
L + N	+	1	60	CDN	Complies ^{Note}
L + N	-	1	60	CDN	Complies ^{Note}

Note: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

5.9. Surges Measurement

5.9.1. Test Limit

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 55035			
AC mains power ports			
Surges	1.2/50 (8/20) 1 lines to line	Tr/Th (us) kV (open circuit test voltage)	B
	1.2/50 (8/20) 2 lines to ground	Tr/Th (us) kV (open circuit test voltage)	
DC network power ports (Note 1, 5)			
Surges	1.2/50 (8/20) ±0.5 line to reference GND	Tr/Th (us) kV (open circuit test voltage)	B
Analogue / digital data ports			
Surges	Port type: unshielded symmetrical Apply where primary protection is intended (Note 1 - 4)		C
	10/700 (5/320) 1 and 4 lines to ground	Tr/Th (us) kV (open circuit test voltage)	
	Apply where primary protection is not intended (Note 1, 3, 4)		
	10/700 (5/320) 1 lines to ground	Tr/Th (us) kV (open circuit test voltage)	
Surges	Port type: coaxial or shielded (Note 1, 4)		B
	1.2/50 (8/20) 0.5 shield to ground	Tr/Th (us) kV (open circuit test voltage)	

Note 1: Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.

Note 2: Surges are applied with primary protection fitted. Where possible, use the actual primary protector intended to be used in the installation.

Note 3: 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.

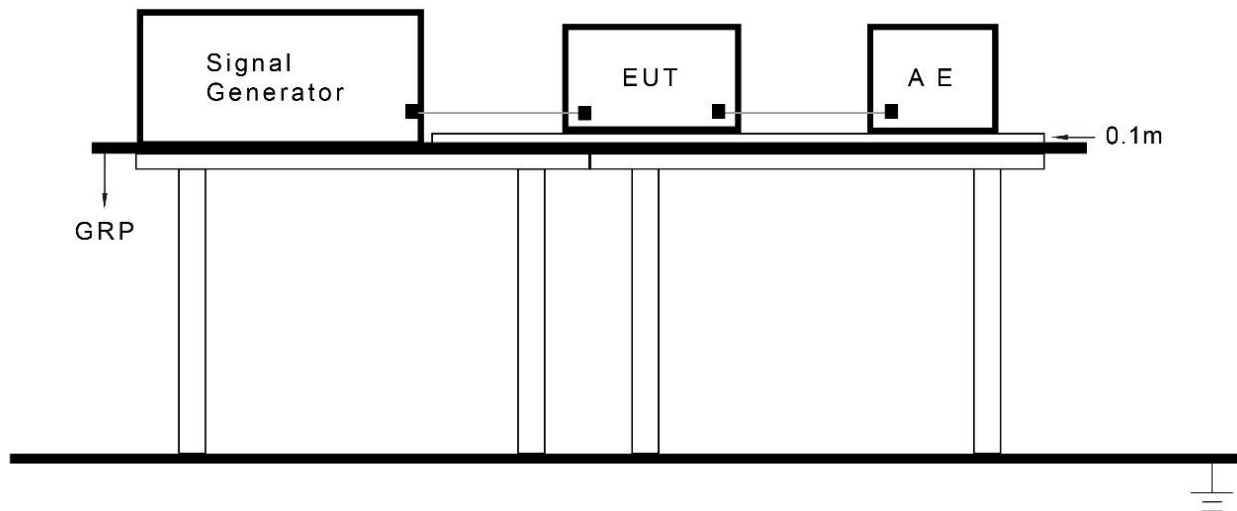
Note 4: Surges are applicable to ports which satisfy all the following conditions:

- 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).

Note 5: Applicable only to ports which, according to the manufacturer's specification, may connect directly to outdoor cables.

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 301 489-1			
Input AC power ports			
Surges	1.2/50 (8/20) ±1 line to line ±2 line to earth	Tr/Th (us) kV kV	Transient Phenomena
Wired network ports directly connected to outdoor cables			
Surges (Symmetrically operated)	10/700 ±1 line to earth	Tr/Th (us) kV	Transient Phenomena
Surges (Non-symmetrically operated)	1.2/50 (8/20) ±0.5 line to line ±1 line to earth, shield to earth	Tr/Th (us) kV kV	Transient Phenomena
Wired network ports directly connected to indoor cables (Note)			
Surges	1.2/50 (8/20) ±0.5 line to ground, shield to earth	Tr/Th us kV	Transient Phenomena
Note: Applicable only to wired network ports, intended to be connected to indoor cables, support cable lengths greater than 30 m.			
EN 301 489-17			
Input AC power ports			
Surges	1.2/50 (8/20) ±1 line to line ±2 line to earth	Tr/Th (us) kV kV	B
Wired network ports directly connected to outdoor cables			
Surges (Symmetrically operated)	10/700 ±1 line to earth	Tr/Th (us) kV	B
Surges (Non-symmetrically operated)	1.2/50 (8/20) ±0.5 line to line ±1 line to earth, shield to earth	Tr/Th (us) kV kV	B
Wired network ports directly connected to indoor cables (Note)			
Surges	1.2/50 (8/20) ±0.5 line to ground, shield to earth	Tr/Th us kV	B
Note: Applicable only to wired network ports, intended to be connected to indoor cables, support cable lengths greater than 30 m.			

5.9.2. Test Setup



5.9.3. Test Procedure

The EUT is placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m minimum and 0.65mm thick minimum and projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input AC Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0° , 90° , 180° , 270° and the peak value of the AC voltage wave. (Positive and negative)

Each of Line to Earth and Line to Line is impressed with a sequence of five surge voltages with interval of 1 minute.

For Telecommunication Ports:

The signal line of EUT is connected to coupling and decoupling network that directly couples the surge interference signal.

Only Line to ground is impressed with a sequence of five surge voltages with interval of 1 minute.

5.9.4. Test Result

Test Site	SIP-SR5	Temperature	26.6 °C
Test Engineer	Lily Zhang	Relative Humidity	47.0 %
Test Mode	Mode 1 & 2	Test Date	2024-09-11

Inject Line	Polarity	Angle (degree)	Test Level (kV)	Waveform Tr/Th (us)	Test Interval (second)	Performance Criteria Result
Power Ports [Tr/Th: 1.2/50us (8/20us)]						
L to N	+	0	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	-	0	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	+	90	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	-	90	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	+	180	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	-	180	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	-	270	0.5 & 1	1.2/50	60	Complies ^{Note}
L to N	+	270	0.5 & 1	1.2/50	60	Complies ^{Note}

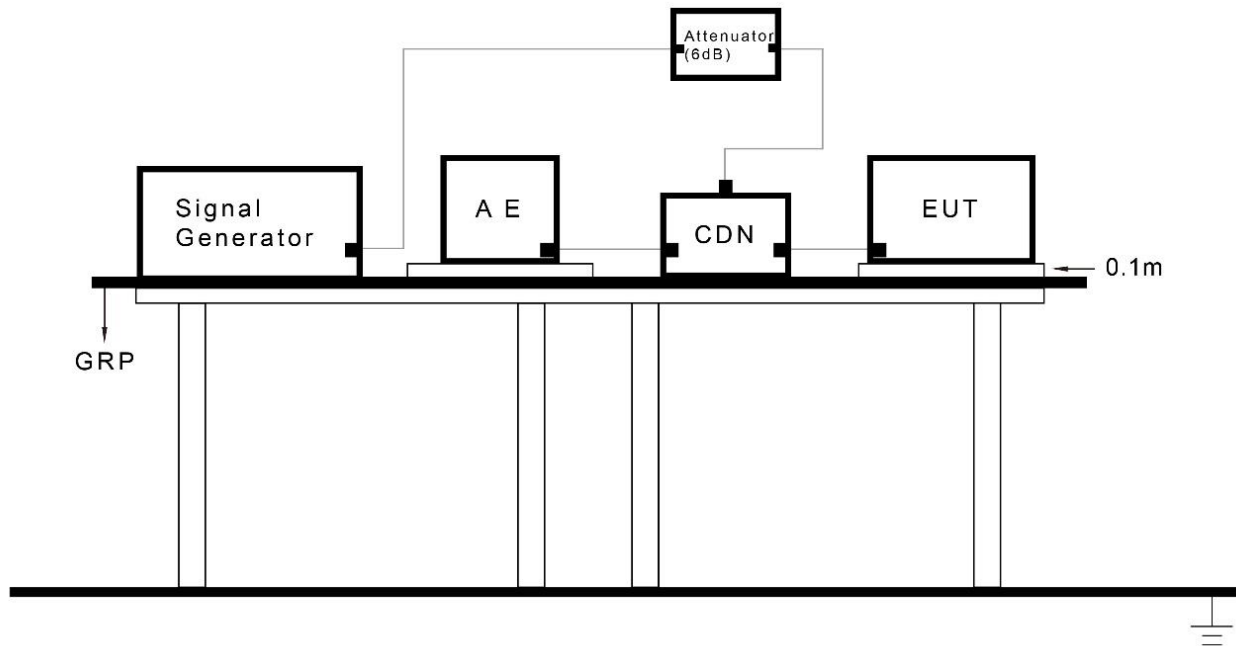
Note: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

5.10. Radio Frequency Common Mode Measurement

5.10.1. Test Limit

Environmental	Test Specification	Units	Performance Criterion
EN 55035			
Input AC power ports			
Radio Frequency Common Mode	0.15 - 10, 10 - 30, 30 - 80 3, 3 to 1, 1 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	A
Analogue / Digital data ports (Note 2)			
Radio Frequency Common Mode	0.15 - 10, 10 - 30, 30 - 80 3, 3 to 1, 1 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	A
EN 301 489-1			
Input AC power ports (Note 1)			
Radio Frequency Common Mode	0.15 - 80 3 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	Continuous Phenomena
Signal ports, wired network ports, control ports, and DC power ports (Note 1, 2)			
Radio Frequency Common Mode	0.15 - 80 3 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	Continuous Phenomena
EN 301 489-17			
Input AC power ports (Note 1)			
Radio Frequency Common Mode	0.15 - 80 3 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	A
Signal ports, wired network ports, control ports, and DC power ports (Note 1, 2)			
Radio Frequency Common Mode	0.15 - 80 3 80	MHz V (unmodulated, r.m.s) % AM (1kHz)	A
Note 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used. Note 2: Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3m.			

5.10.2. Test Setup



5.10.3. Test Procedure

The EUT is placed on a table that is 0.8 meter height, and a ground reference plane on the table, EUT is placed upon table and use 0.1m insulation between the EUT and ground reference plane.

For Input AC Power Ports:

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

For Signal Ports, Telecommunication Ports, and Control Ports:

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and telecommunication lines of the EUT.

	Condition of Test	Remarks
1.	Voltage Strength	Refer to clause 5.10.1
2.	RF Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	Refer to clause 5.10.1
4.	Dwell Time	1 Second
5.	Frequency Step Size Δf	1%

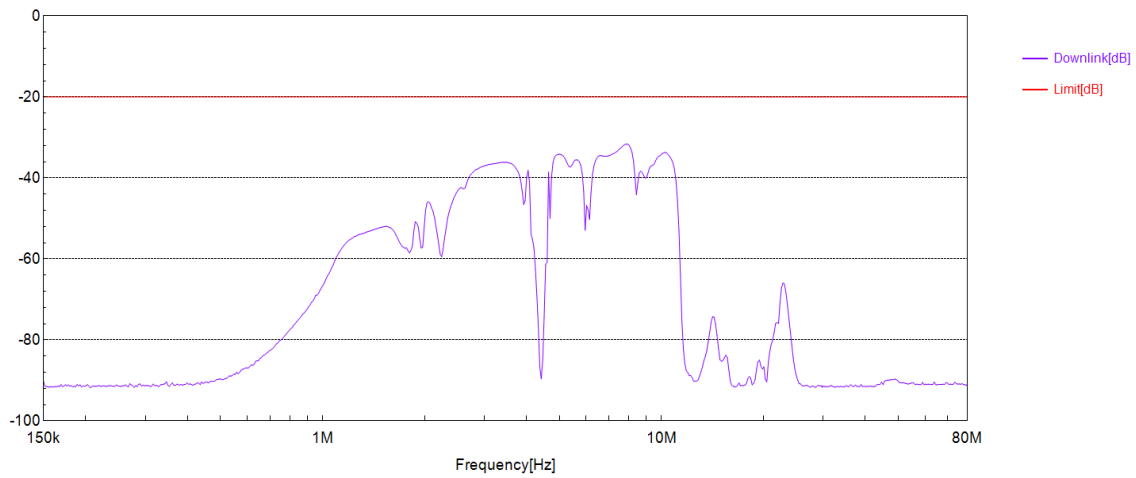
5.10.4. Test Result

Test Site	SIP-SR4	Temperature	25.9 °C
Test Engineer	Wayne Wang	Relative Humidity	52.0 %
Test Mode	Mode 1 & 2	Test Date	2024-09-03

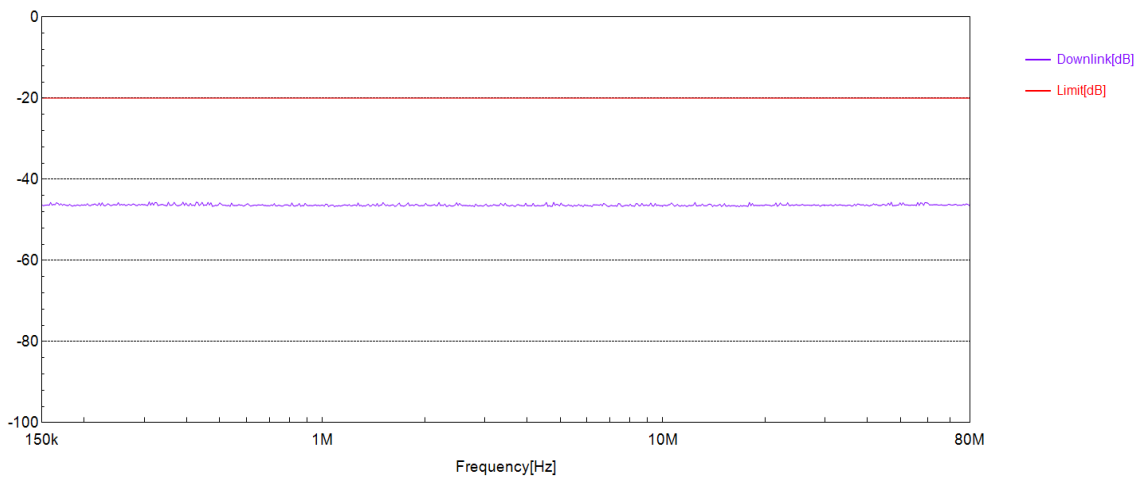
Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Performance Criteria Result
0.15 ~ 80	3	AC Mains	CDN	Complies ^{Note}
0.15 ~ 10	3	AC Mains	CDN	Complies ^{Note}
10 ~ 30	3 ~ 1	AC Mains	CDN	Complies ^{Note}
30 ~ 80	1	AC Mains	CDN	Complies ^{Note}

Note: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

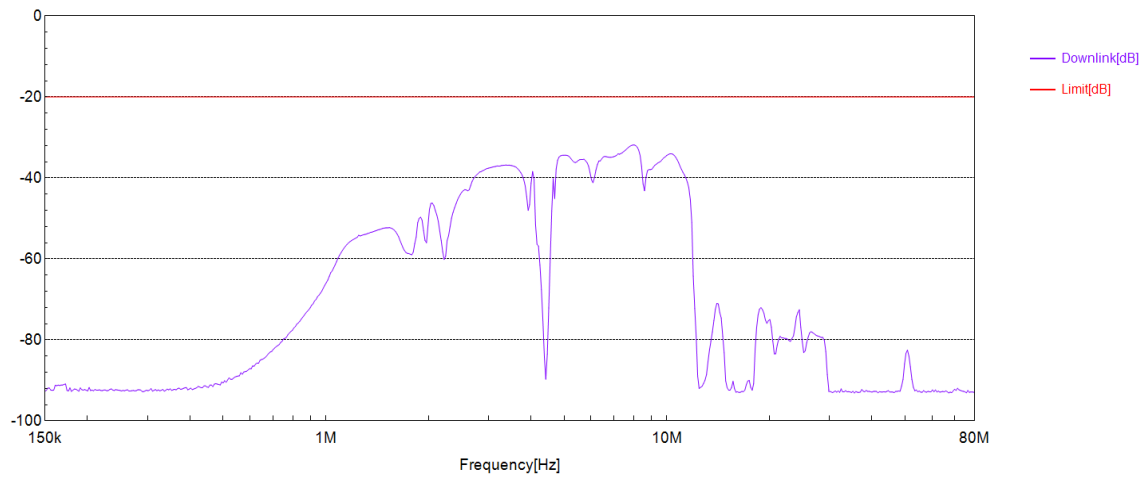
RCA OUT Port Test Data for AC Mains - Mode 1



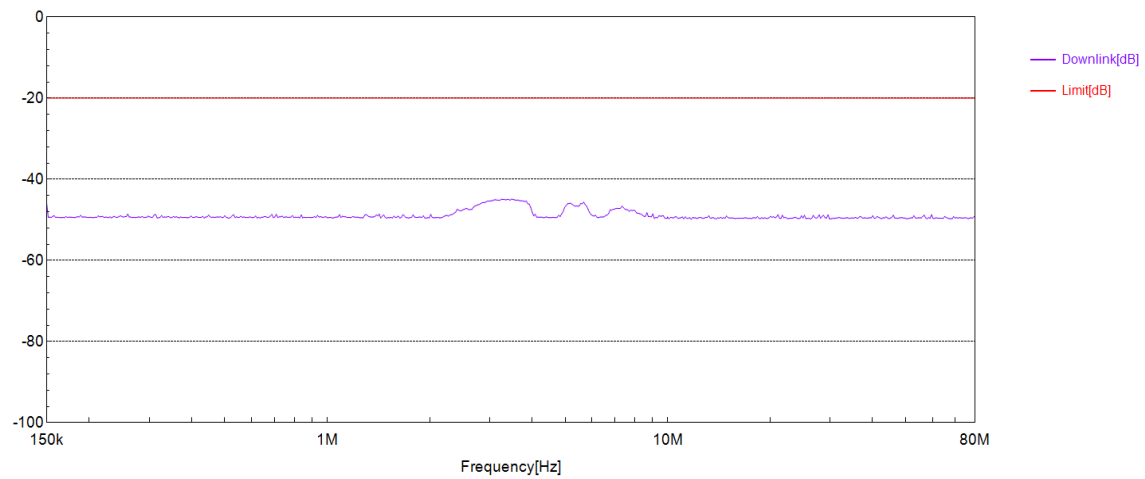
4Ω MINIMUM CLASS 2 WIRING Port Test Data for AC Mains - Mode 1



RCA OUT Port Test Data for AC Mains - Mode 2



4Ω MINIMUM CLASS 2 WIRING Port Test Data for AC Mains - Mode 2

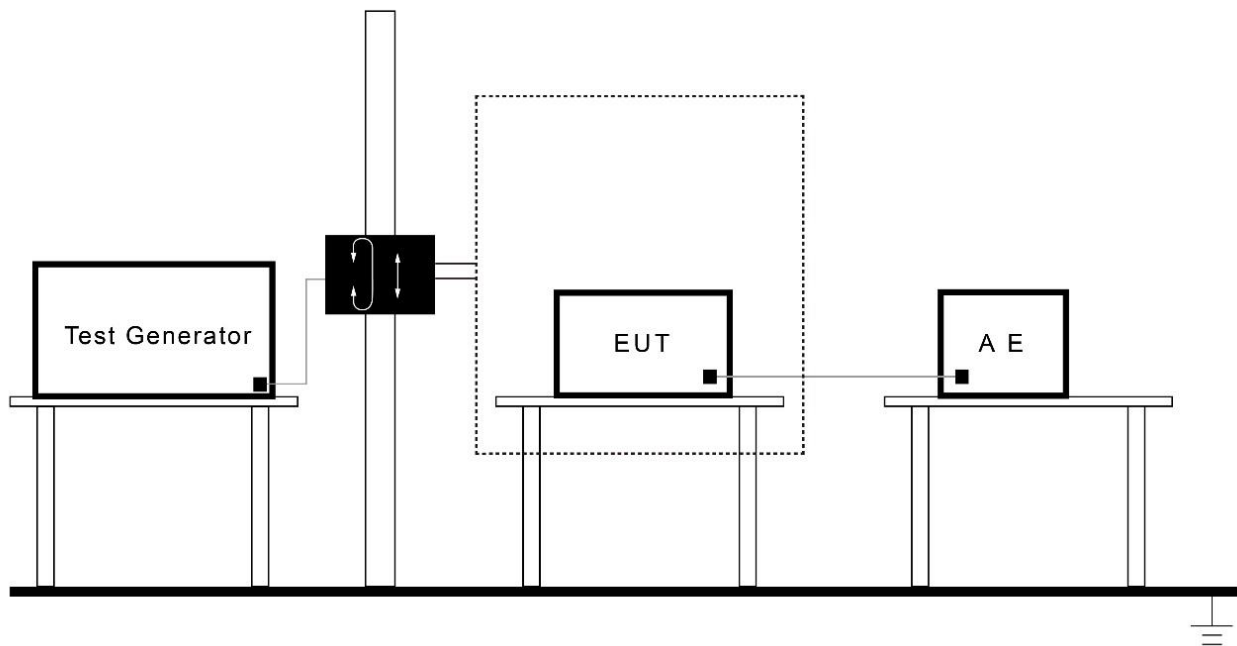


5.11. Power Frequency Magnetic Field Measurement

5.11.1. Test Limit

Environmental Phenomenon	Test Specification	Units	Performance Criterion
EN 55035			
Power Frequency	50 or 60	Hz	A
Magnetic Field	1	A/m	

5.11.2. Test Setup



5.11.3. Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m minimum. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 10 minutes by the immersion method to the EUT, and the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

5.11.4. Test Result

Test Site	SIP-SR5	Temperature	24.8 °C
Test Engineer	Lily Zhang	Relative Humidity	57.0 %
Test Mode	Mode 1 & 2	Test Date	2024-08-23

Test Coil Position	Frequency (Hz)	Magnetic Strength (A/m)	Performance Criteria Result
X Axis	50	1	Complies ^{Note}
Y Axis	50	1	Complies ^{Note}
Z Axis	50	1	Complies ^{Note}

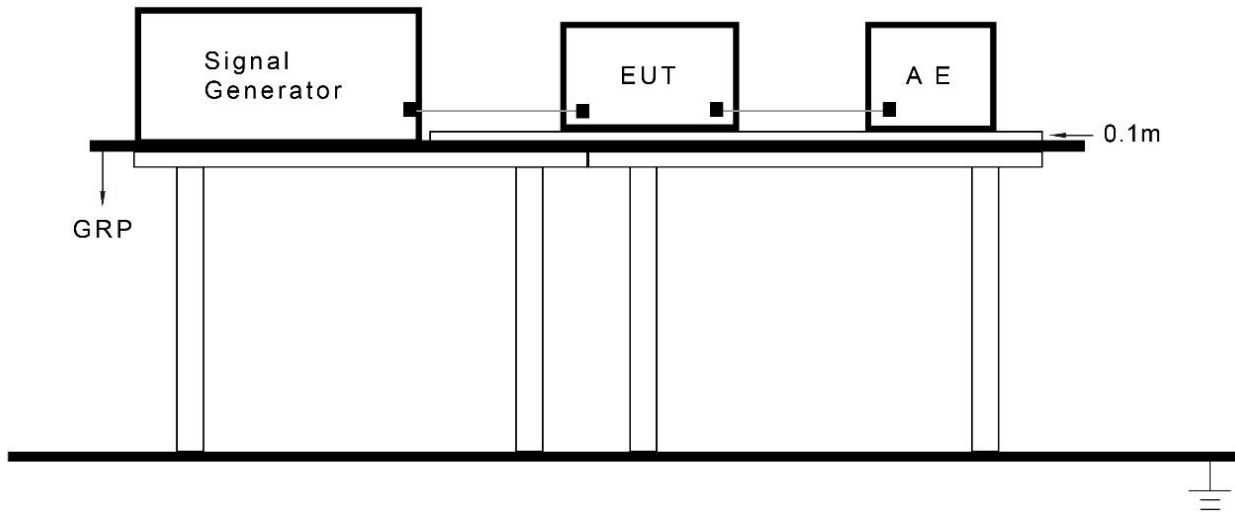
Note: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

5.12. Voltage Dips and Interruptions Measurement

5.12.1. Test Limit

Environmental	Test Specification	Units	Performance Criterion
EN 55035			
Voltage dips	< 5	% residual voltage	B
	0.5	Numbers of cycles	
	70	% residual voltage	C
Voltage interruptions	25 for 50 Hz	Numbers of cycles	
	30 for 60 Hz	Numbers of cycles	
	< 5	% residual voltage	C
Voltage interruptions	250 for 50 Hz	Numbers of cycles	
	300 for 60 Hz	Numbers of cycles	
	< 5	% residual voltage	C
EN 301 489-1			
Voltage dips	0	% residual	Transient Phenomena
	0.5	cycle	
	0	% residual	Transient Phenomena
Voltage interruptions	1	cycle	
	70	% residual	Note
	25	cycle	
Voltage interruptions	0	% residual	Note
	250	cycle	
<p>Note:</p> <ul style="list-style-type: none"> in the case where the equipment is fitted with or connected to a battery back-up, the performance criteria for transient phenomena shall apply; in the case where the equipment is powered solely from the AC mains supply (without the use of a parallel battery back-up) volatile user data may have been lost and if applicable the communication link need not to be maintained and lost functions should be recoverable by user or operator; no unintentional responses shall occur at the end of the test, when the voltage is restored to nominal; in the event of loss of function(s) or in the event of loss of user stored data, this fact shall be recorded. 			
EN 301 489-17			
Voltage dips	0	% residual	B
	0.5	cycle	
	0	% residual	B
Voltage interruptions	1	cycle	
	70	% residual	C
	25	cycle	
Voltage interruptions	0	% residual	C
	250	cycle	

5.12.2. Test Setup



5.12.3. Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m minimum, and 0.65mm thick minimum, and projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage dips and interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the voltage dips and interruption generator.

5.12.4. Test Result

Test Site	SIP-SR5	Temperature	24.8 °C
Test Engineer	Lily Zhang	Relative Humidity	57.0 %
Test Mode	Mode 1 & 2	Test Date	2024-08-23

Test Item	Voltage % Residual	Test Duration (periods)	Result
Input a.c. Power Ports (AC 100V/50Hz)			
Voltage Dips	0	0.5	Complies ^{Note 1}
	0	1	Complies ^{Note 1}
	70	25	Complies ^{Note 1}
Voltage Interruption	0	250	Complies ^{Note 2}
Input a.c. Power Ports (AC 240V/50Hz)			
Voltage Dips	0	0.5	Complies ^{Note 1}
	0	1	Complies ^{Note 1}
	70	25	Complies ^{Note 1}
Voltage Interruption	0	250	Complies ^{Note 2}

Note 1: During and after the test, the EUT performance complied with performance criteria and there is not any degradation of performance or function.

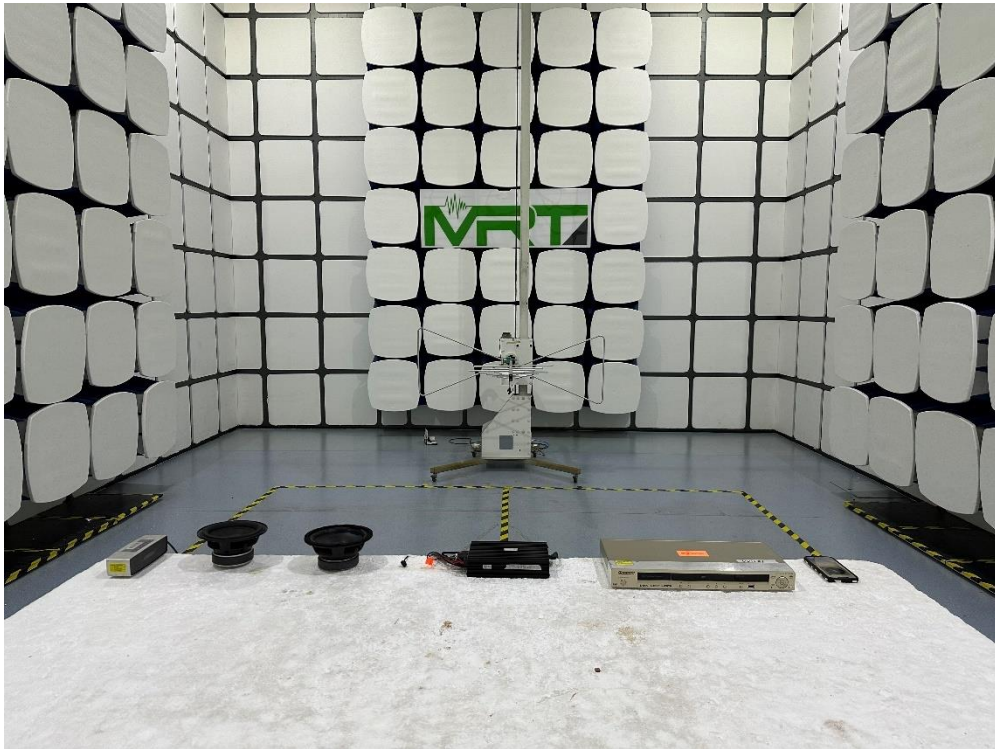
Note 2: During the test, the EUT had temporary lost the function of supplying power, but it could recover without operator intervention after the test.

Test Mode 1 & 2

Test Mode 1 & 2

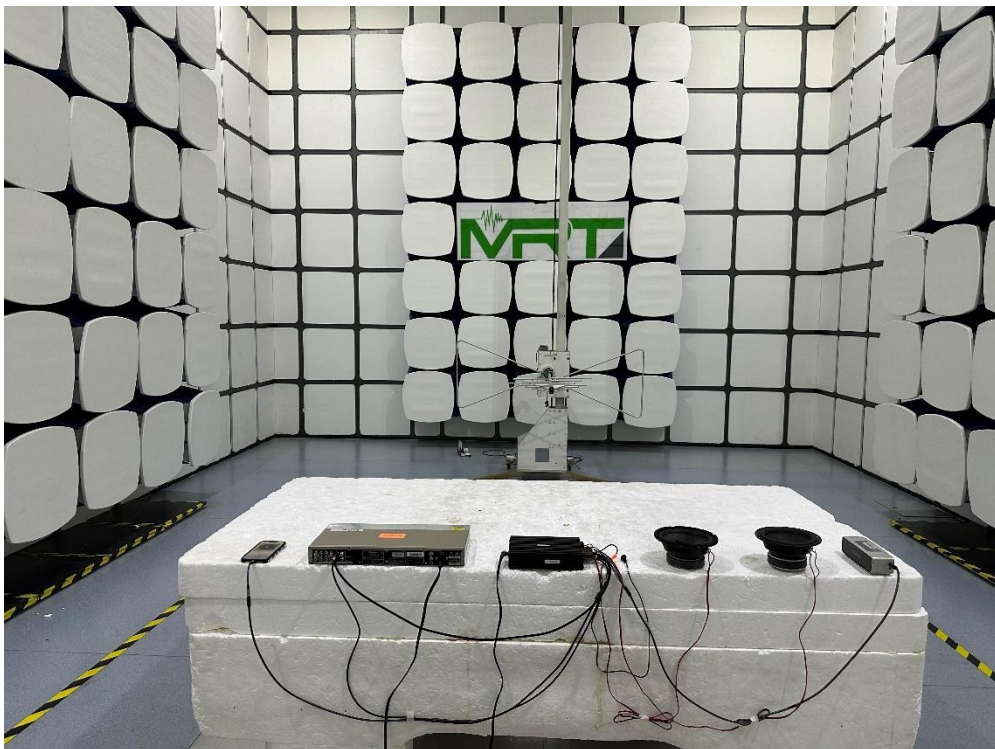
Test Mode 1 & 2

Description: Front View of Radiated Emission Test Setup (Below 1GHz)



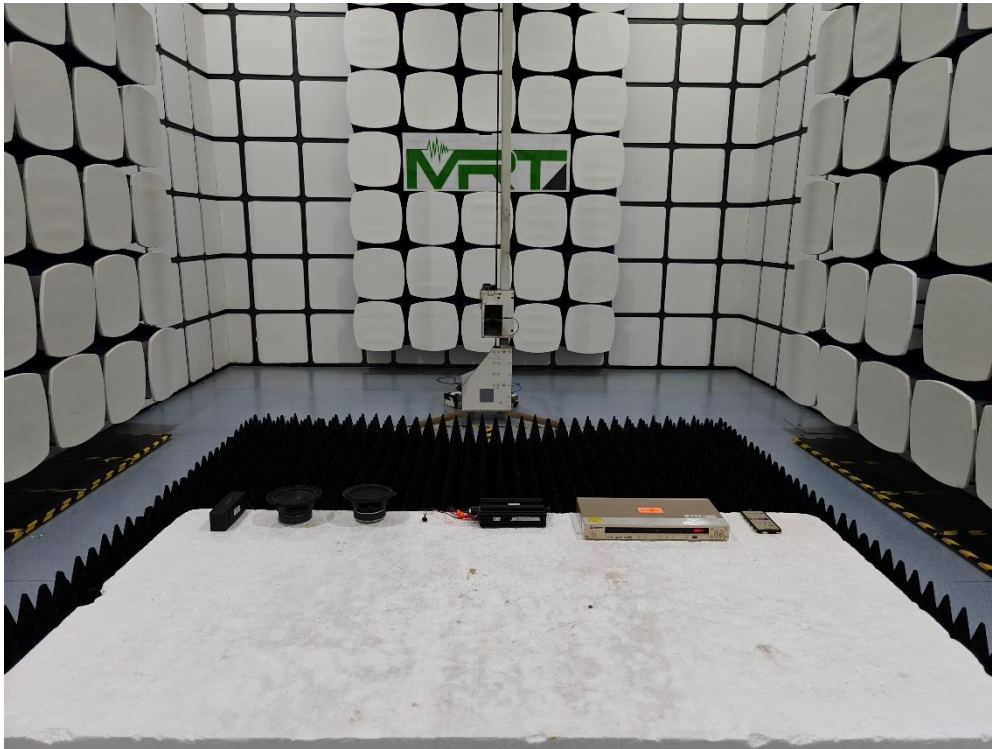
Test Mode 1 & 2

Description: Rear View of Radiated Emission Test Setup (Below 1GHz)



Test Mode 1 & 2

Description: Front View of Radiated Emission Test Setup (Above 1GHz)



Test Mode 1 & 2

Description: Harmonics Current Emissions and Voltage Fluctuation and Flicker Test Setup



Test Mode 1

Description: Electrostatic Discharge Test Setup



Test Mode 2

Description: Electrostatic Discharge Test Setup



Test Mode 1 & 2

Description: Radio-Frequency Electromagnetic Field Test Setup



Test Mode 1 & 2

Description: Electrical Fast Transients Test Setup for Power Port



Test Mode 1 & 2

Description: Surge Test Setup for Power Port



Test Mode 1 & 2

Description: Radio-Frequency Common Mode Test Setup for Power Port



Test Mode 1 & 2

Description: Power Frequency Magnetic Field Test Setup



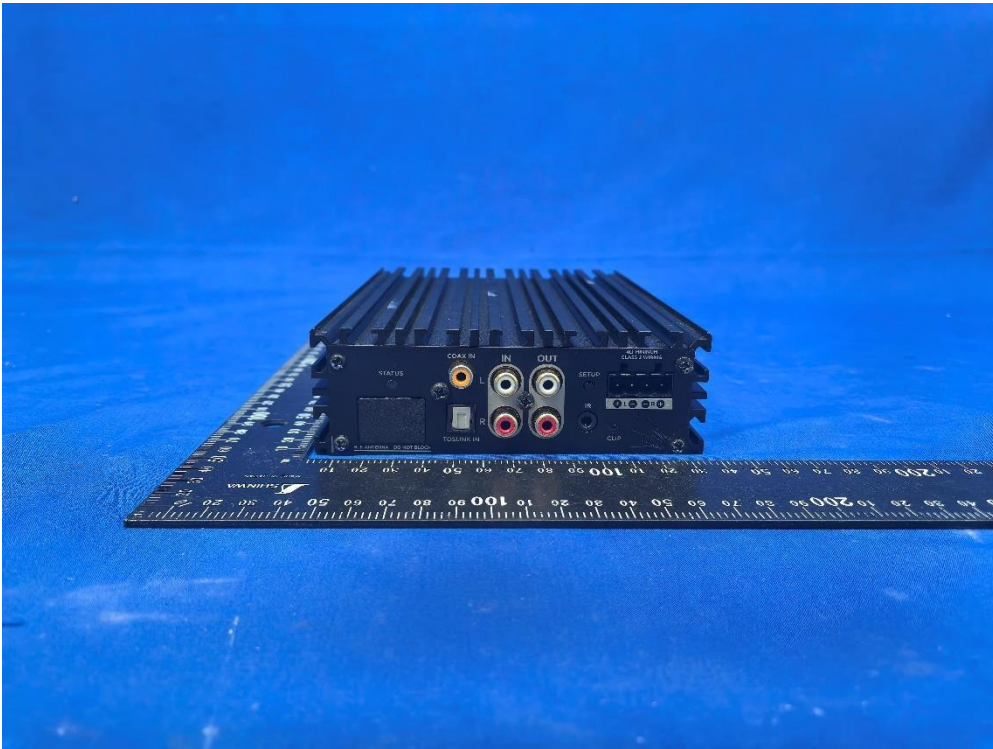
Test Mode 1 & 2

Description: Voltage Dips and Interruptions Test Setup

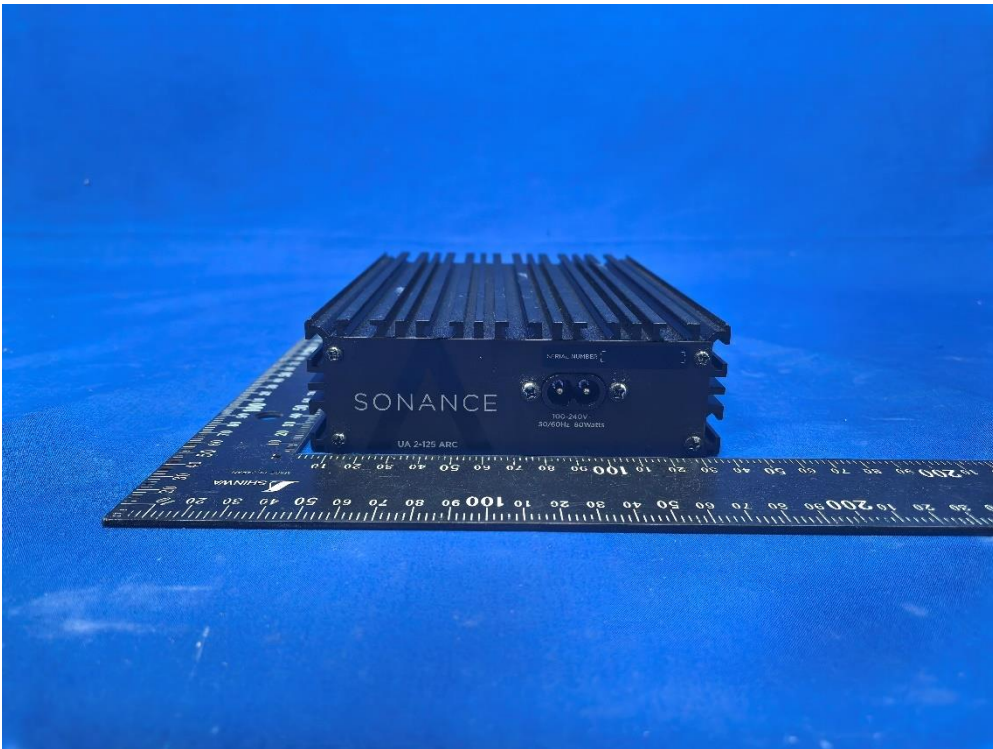


Appendix B – EUT Photograph

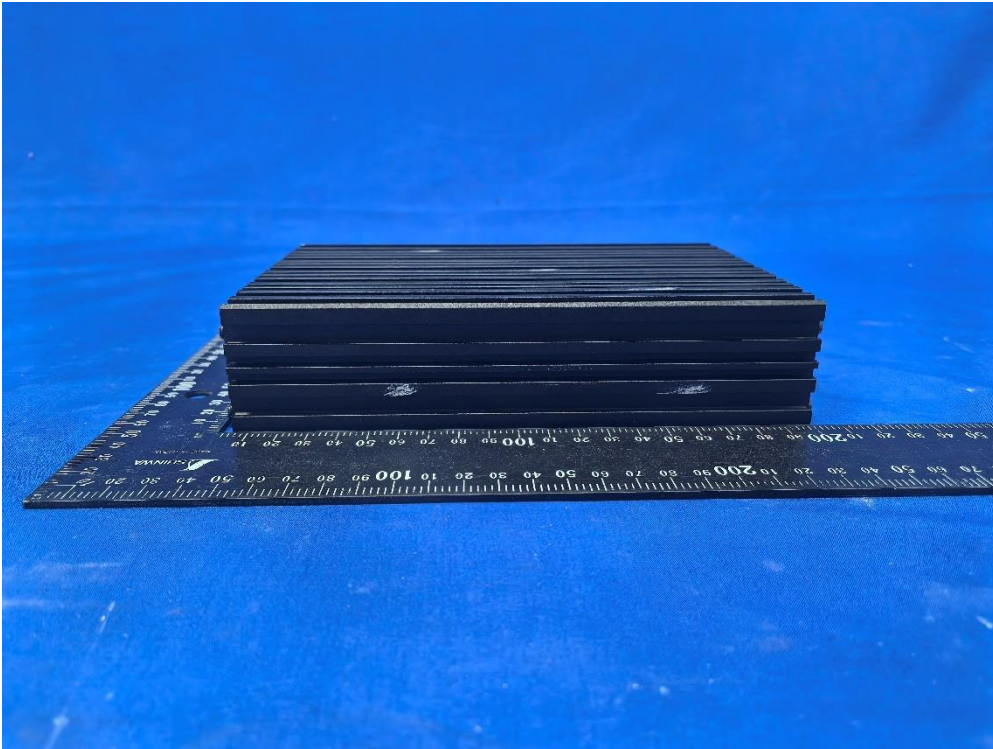
(1) EUT Photo (Front View)



(2) EUT Photo (Rear View)



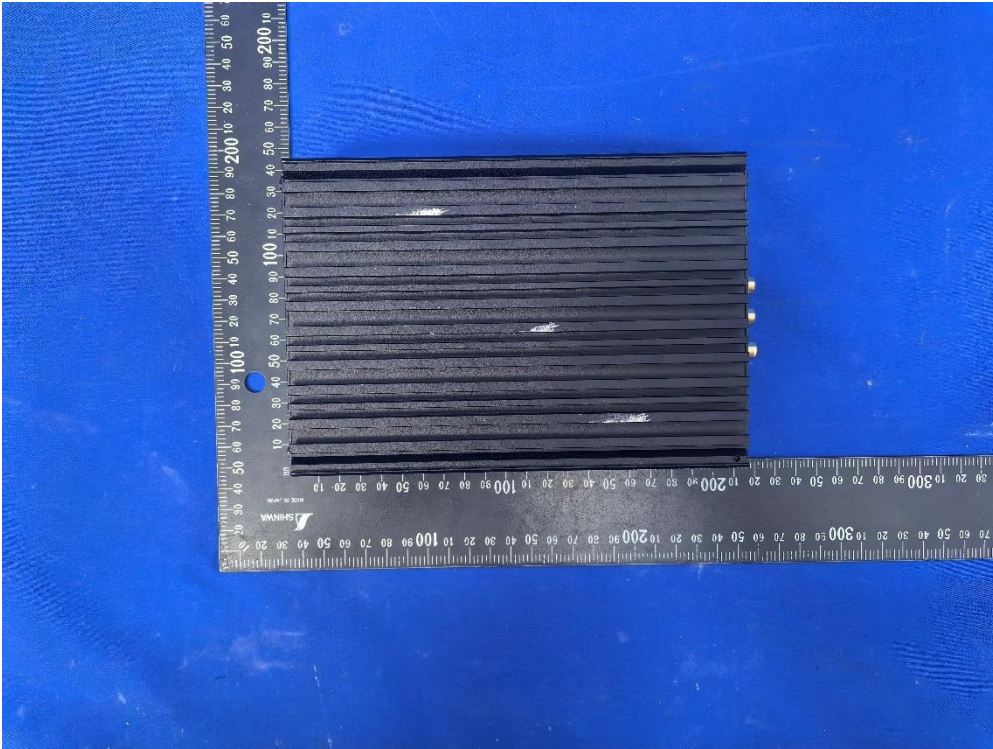
(3) EUT Photo (Left View)



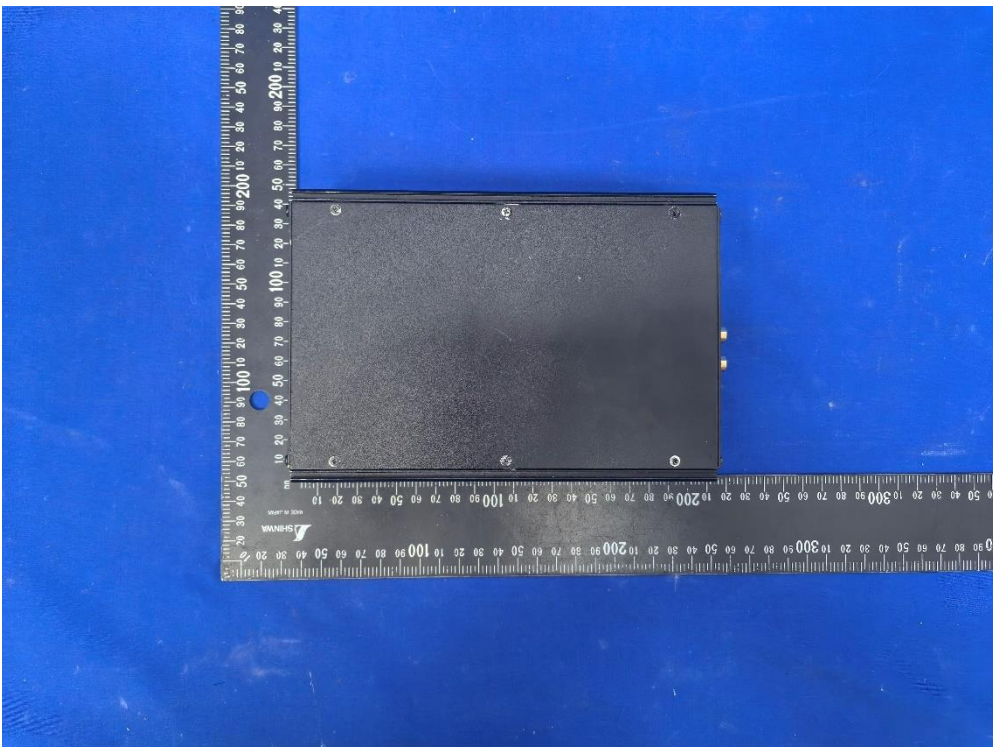
(4) EUT Photo (Right View)



(5) EUT Photo (Top View)



(6) EUT Photo (Bottom View)



(7) EUT Photo



(8) EUT Photo



(9) EUT Photo



The End
