RED-EMC Test Report

Report No.	:	**1812C40196912501E**
Applicant	:	**Zhejiang Lingzhu Technology Co., Ltd.**
Address	:	**Room 302,No 1 Building Huace Center,Xihu District, Hangzhou City, Zhejiang Province,China**
Product Name	:	**Smart Camera**
Report Date	:	**Apr. 28, 2025**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

1. General Information 6
1.1. Client Information 6
1.2. Description of Device (EUT) 6
1.3. Auxiliary Equipment Used During Test 7
1.4. Description of Test Modes 7
1.5. Measurement Uncertainty 7
1.6. Test Summary 7
1.7. Description of Test Facility 8
1.8. Disclaimer 8
1.9. EMS Performance Criteria 9
1.10. Test Equipment List 11
2. Harmonic current emissions 15
2.1. Conclusion 15
3. Conducted emissions (AC power port) 16
3.1. EUT Operation 16
3.2. Test Setup 16
3.3. Test Data 17
4. Radiated emissions (30MHz-1GHz) 21
4.1. EUT Operation 21
4.2. Test Setup 21
4.3. Test Data 22
5. Radiated emissions (above 1GHz) 26
5.1. EUT Operation 26
5.2. Test Setup 26
5.3. Test Data 27
6. Voltage fluctuations and flicker 31
6.1. EUT Operation 31
6.2. Test Setup 31
6.3. Test Data 32
7. Electrostatic discharge 33
7.1. EUT Operation 33
7.2. Test Setup 33
7.3. Test Data 34
8. Radio frequency electromagnetic field (80 MHz to 6 000 MHz) 35
8.1. EUT Operation 35
8.2. Test Setup 35
8.3. Test Data 35
9. Fast transients, common mode (AC power port) 37
9.1. EUT Operation 37
9.2. Test Setup 37
9.3. Test Data 37
10. Surges (AC power port) 38

10.1. EUT Operation 38
10.2. Test Setup 38
10.3. Test Data 38
11. Radio frequency, common mode 0,15 MHz to 80 MHz (AC power port) 39
11.1. EUT Operation 39
11.2. Test Setup 39
11.3. Test Data 39
12. Voltage dips and interruptions 40
12.1. EUT Operation 40
12.2. Test Setup 40
12.3. Test Data 40
APPENDIX I -- TEST SETUP PHOTOGRAPH 41
APPENDIX II -- EXTERNAL PHOTOGRAPH 41
APPENDIX III -- INTERNAL PHOTOGRAPH 41

TEST REPORT

Applicant	:	Zhejiang Lingzhu Technology Co., Ltd.
Manufacturer	:	Zhejiang Lingzhu Technology Co., Ltd.
Product Name	:	Smart Camera
Model No.	:	SC319-WBR8, SC319-WBR8A, SC319-WBR8B, SC319-WBR8C, SC319-WBR8D, SC319-WBR8E, SC319-WBR8F, SC319-WBR8G
Trade Mark	:	N/A
Rating(s)	:	Input: 5V⎓2A
Test Standard(s)	:	**ETSI EN 301 489-1 V2.2.3 (2019-11)** **ETSI EN 301 489-17 V3.3.1 (2024-11)**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements.
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt: Dec. 26, 2024

Date of Test: Dec. 26, 2024 to Apr. 15, 2025

Prepared By: Lene Chen

(Lene Chen)

Approved & Authorized Signer: KingKong Jin

(KingKong Jin)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Apr. 28, 2025

1. General Information

1.1. Client Information

Applicant	:	Zhejiang Lingzhu Technology Co., Ltd.
Address	:	Room 302,No 1 Building Huace Center,Xihu District, Hangzhou City, Zhejiang Province,China
Manufacturer	:	Zhejiang Lingzhu Technology Co., Ltd.
Address	:	Room 302,No 1 Building Huace Center,Xihu District, Hangzhou City, Zhejiang Province,China
Factory	:	Shenzhen Interthings Technology Co., Ltd.
Address	:	701, Building 1, Lechuanghui Building, No.1211 Guanguang Road, Longhua District, Shenzhen,China

1.2. Description of Device (EUT)

Product Name	:	Smart Camera
Model No.	:	SC319-WBR8, SC319-WBR8A, SC319-WBR8B, SC319-WBR8C, SC319-WBR8D, SC319-WBR8E, SC319-WBR8F, SC319-WBR8G (Note: All samples are the same except the model number, so we prepare "SC319-WBR8" for test only.)
Trade Mark	:	N/A
Test Power Supply	:	DC 5V from adapter input AC 230V/50Hz
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	Model: BS10A-0502000EU Input: 100-240V~50/60Hz 0.35A Max. Output: 5.0V⎓2.0A 10.0W
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
MSCard	Sony	Memory stick	/

1.4. Description of Test Modes

Pretest Modes	Descriptions
TM1	Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)
TM2	Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

1.5. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.2dB
Radiated emissions (30MHz~1000MHz)	Horizontal: 3.70dB; Vertical: 4.42dB
Radiated emissions (above 1GHz)	1G-6GHz: 4.64dB; 6G-18GHz: 4.82dB
The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.6. Test Summary

Test Items	Test Modes	Status
Conducted emissions (AC power port)	Mode1,2	P
Radiated emissions (30MHz-1GHz)	Mode1,2	P
Radiated emissions (above 1GHz)	Mode1,2	P
Harmonic current emissions	/	N
Voltage fluctuations and flicker	Mode1,2	P
Electrostatic discharge	Mode1,2	P
Radio frequency electromagnetic field (80 MHz to 6 000 MHz)	Mode1,2	P
Fast transients, common mode (AC power port)	Mode1,2	P
Surges (AC power port)	Mode1,2	P
Radio frequency, common mode 0,15 MHz to 80 MHz (AC power port)	Mode1,2	P
Voltage dips and interruptions	Mode1,2	P
Note: P: Pass N: N/A, not applicable		

1.7. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.:434132
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

ISED-Registration No.: 8058A
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location
Shenzhen Anbotek Compliance Laboratory Limited.
Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

1.8. Disclaimer

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.
7. The data in this report will be synchronized with the corresponding national market supervision and management departments and cross-border e-commerce platforms as required by regulatory agencies.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

1.9. EMS Performance Criteria

Performance Criteria for ETSI EN 301 489-1 V2.2.3 (2019-11)

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.
Continuous and non-continuous operation
Latency is the time delay between the initiation and the completion of operation of the EUT.
Correct functioning requires completing the relevant operation within the maximum latency time.
Where the maximum latency is specified in the applicable harmonised radio standard (in the wanted performance criterion, or an acknowledge requirement), that value shall be used.
Where this is not the case, then the maximum latency is that required by the intended use of the EUT.
Operating modes
Where the EUT has more than one mode of operation (see clause 4.4.1), an unplanned transition from one mode to another is considered as an unintentional response. The EUT shall be tested in all modes to confirm there are no such unintentional responses.
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.
Continuous and non-continuous operation
Latency is the time delay between the initiation and the completion of operation of the EUT.
Correct functioning requires completing the relevant operation within the maximum latency time.
Where the maximum latency is specified in the applicable harmonised radio standard (in the wanted performance criterion, or an acknowledge requirement), that value shall be used.
Where this is not the case, then the maximum latency is that required by the intended use of the EUT.
Operating modes
Where the EUT has more than one mode of operation (see clause 4.4.1), an unplanned transition from one mode to another is considered as an unintentional response. The EUT shall be tested in all modes to confirm there are no such unintentional responses.

Performance Criteria for ETSI EN 301 489-17 V3.3.1 (2024-09)

General performance criteria
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.

Performance criteria overview
Table 2: Performance criteria

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 shall be considered as: • 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, (e.g. audio equipment and equipment transmitting sporadic messages) the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.		

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.

The performance criteria B shall apply for transient phenomena, except for voltage dips greater than or equal to 100 ms, voltage interruptions of 5 000 ms duration, and surges of 10/700 µs for which performance criteria C shall apply.
Where the EUT is a transmitter in standby mode, unintentional transmission shall not occur as result of the application of the test.
Where the EUT is a transceiver in receive mode, unintentional transmission shall not occur as result of the application of the test.

1.10. Test Equipment List

Conducted emissions (AC power port)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2024-09-09	2025-09-08
2	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
3	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/
4	EMI Test Receiver(CE2#)	Rohde & Schwarz	ESPI3	100926	2024-09-09	2025-09-08

Radiated emissions (30MHz-1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
					2025-01-14	2026-01-13
2	Pre-amplifier	SONOMA	310N	186860	2024-01-17	2025-01-16
					2025-01-14	2026-01-13
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/

Radiated emissions (above 1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
					2025-01-14	2026-01-13
2	Pre-amplifier	SONOMA	310N	186860	2024-01-17	2025-01-16
					2025-01-14	2026-01-13
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	EMI Preamplifier	SKET Electronic	LNPA-0118G-45	SKET-PA-002	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
5	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
6	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/

Voltage fluctuations and flicker						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Programmable AC Power source	IVYTECH	APS-5005A	632734	2024-09-09	2025-09-08
2	Harmonic and Flicker Analyzer	EMC-PARTNER	HMONICS 1000-1P	164	2024-09-11	2025-09-10
3	Harmonics-1000	N/A	Ed.3.0+4.0	N.A	/	/

Electrostatic discharge						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	ESD Simulators	emtest	ESD NX30.1	11936	2024-03-11	2025-03-10
					2025-03-03	2026-03-02

Radio frequency electromagnetic field (80 MHz to 6 000 MHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Signal Generator	Agilent	N5181A	MY50143107	2024-01-23	2025-01-22
					2025-01-13	2026-01-12
2	Power Meter	Agilent	E4417A	MY45101384	2024-01-23	2025-01-22
					2025-01-13	2026-01-12
3	Amplifier	Micotop	MPA-80-1000-600	MPA2110318	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
4	Amplifier	Micotop	MPA-1000-6000-100	MPA2110327	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
5	Log.-Per.-Antenna	Schwarzbeck	VULP 9118E	01012	/	/
6	Microwave Log.-Per. Antenna	Schwarzbeck	STLP 9149	00788	/	/
7	Power Sensor	KEYSIGHT	E9323A	US40410647	2024-01-23	2025-01-22
					2025-01-13	2026-01-12
8	Power Sensor	KEYSIGHT	E9323A	MY53100007	2024-01-23	2025-01-22
					2025-01-13	2026-01-12
9	Electric field Probe	Narda S.T.S /PMM	EP 601	811ZX10351	2024-01-19	2025-01-18
					2025-01-13	2026-01-12
10	Software	EMtrace	EM 3	/	/	/
11	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	104209	2024-09-09	2025-09-08

Fast transients, common mode (AC power port)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Surge Generator	TESEQ	NSG 3060	1480	2024-01-18	2025-01-17
					2025-01-13	2026-01-12
2	CDN	TESEQ	CDN 3061	1408	2024-01-18	2025-01-17
					2025-01-13	2026-01-12
3	EFT-Clamp	PRIM	EFT61004B	PR10114282	2024-01-17	2025-01-16
					2025-01-13	2026-01-12

Surges (AC power port)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Combined Wave Lightning Surge Simulator	3Ctest	CCS600	ES3771702	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
2	Three Phase Power Coupling Network	3Ctest	SEPN69100T	ES0801757	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
3	Telecom port surge generator	PMI	TW101	190411	2024-01-18	2025-01-17
					2025-01-14	2026-01-13

Radio frequency, common mode 0,15 MHz to 80 MHz (AC power port)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CDN	FRANKONIA	CDN - M2+ M3	A2210178/2012	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
2	6dB Attenuator	FRANKONIA	DAM 26W	1172202	2024-09-09	2025-09-08
3	EM-Clamp	FRANKONIA	EMCL-20	18101728-0103	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
4	Signal Generator	R&S	SMC100A	104424	2024-02-04	2025-02-03
					2025-01-13	2026-01-12
5	Software	EMtrace	EM 6	/	/	/
6	Power Meter	Agilent	E4419B	GB43312730	2024-02-04	2025-02-03
					2025-01-13	2026-01-12
7	Amplifier	Micotop	MPA-0.15-230-110	MPA2110317	2024-02-04	2025-02-03
					2025-01-14	2026-01-13
8	Power Sensor	Agilent	E9304	/	2024-02-04	2025-02-03
					2025-01-13	2026-01-12
9	Power Sensor	Agilent	E9304	MY41498663	2024-02-04	2025-02-03
					2025-01-13	2026-01-12
10	CDN	TESEQ	CDN M432-3LN	33659	2024-01-17	2025-01-16
					2025-01-13	2026-01-12
11	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	104209	2024-09-09	2025-09-08

Voltage dips and interruptions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	CYCLE SAG Simulator	PRIMA	DRP61011 AG	PR12046234	2024-01-17	2025-01-16
					2025-01-13	2026-01-12

2. Harmonic current emissions

Test Requirement:	Class A
Test Limit:	Not specified

2.1. Conclusion

Refer to EN IEC 61000-3-2 clause 7.1:
"For the following categories of equipment, limits are not specified in this document:
– lighting equipment with a rated power less than but not equal to 5 W;
– equipment with a rated power of 75 W or less, other than lighting equipment;"
Since the rated power of the EUT is less than above described, it is deemed to comply with the requirement.

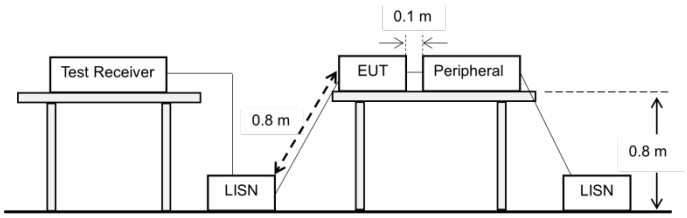
3. Conducted emissions (AC power port)

Test Requirement:	EN 301 489-1, clause 8.4 EN 301 489-17, clause 7.1
Test Limit:	Frequency Range (MHz) / Detector Type / Bandwidth / Limit (dBuV) 0.15 to 0.5 / Quasi Peak / 9 kHz / 66 to 56 0.5 to 5 / Quasi Peak / 9 kHz / 56 5 to 30 / Quasi Peak / 9 kHz / 60 0.15 to 0.5 / Average / 9 kHz / 56 to 46 0.5 to 5 / Average / 9 kHz / 46 5 to 30 / Average / 9 kHz / 50
Test Method:	EN 55032, annex A.3
Procedure:	An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. Remark: Result(dBμV) = Reading(dBμV) + Factor(dB); Over Limit(dB) = Result(dBμV) - Limit(dBμV)

3.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

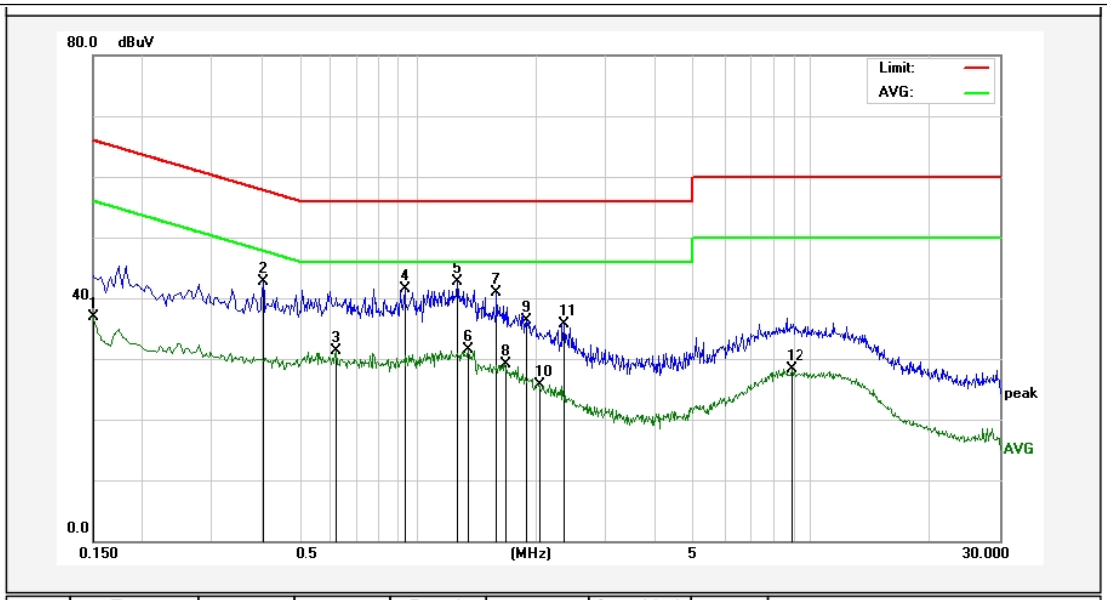
3.2. Test Setup



3.3. Test Data

Temperature:	23.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa

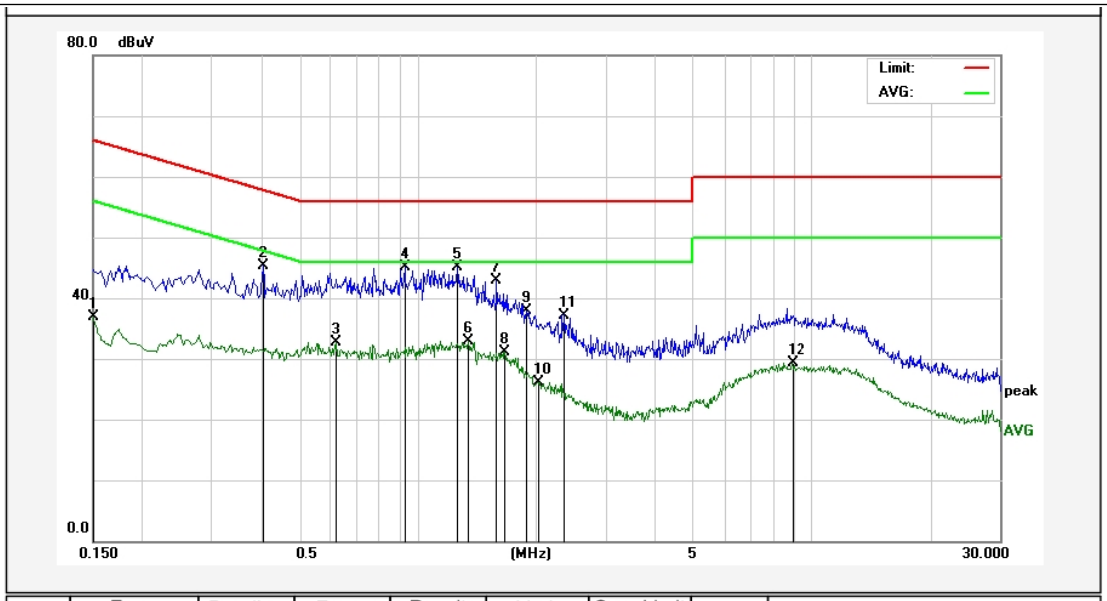
TM1 / Line: Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1499	19.11	17.82	36.93	56.00	-19.07	AVG	
2	0.4060	24.91	17.81	42.72	57.73	-15.01	QP	
3	0.6260	13.42	17.87	31.29	46.00	-14.71	AVG	
4	0.9300	23.72	17.86	41.58	56.00	-14.42	QP	
5	1.2660	24.78	17.86	42.64	56.00	-13.36	QP	
6	1.3500	13.57	17.86	31.43	46.00	-14.57	AVG	
7	1.5900	23.06	17.85	40.91	56.00	-15.09	QP	
8	1.6660	11.26	17.85	29.11	46.00	-16.89	AVG	
9	1.8940	18.48	17.85	36.33	56.00	-19.67	QP	
10	2.0260	7.82	17.85	25.67	46.00	-20.33	AVG	
11	2.3460	17.85	17.85	35.70	56.00	-20.30	QP	
12	8.8939	10.45	17.95	28.40	50.00	-21.60	AVG	

Temperature:	23.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa

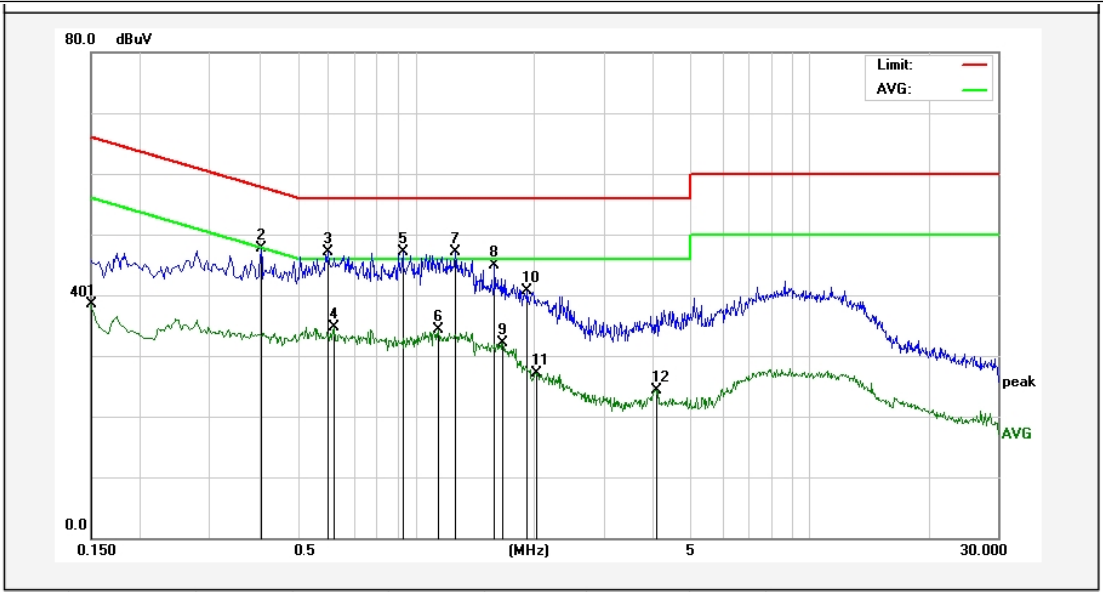
TM1 / Line: Neutral



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1499	19.11	17.82	36.93	56.00	-19.07	AVG	
2	0.4040	27.41	17.81	45.22	57.77	-12.55	QP	
3	0.6238	14.92	17.87	32.79	46.00	-13.21	AVG	
4	0.9282	27.22	17.86	45.08	56.00	-10.92	QP	
5	1.2620	27.28	17.86	45.14	56.00	-10.86	QP	
6	1.3448	15.07	17.86	32.93	46.00	-13.07	AVG	
7	1.5849	25.06	17.85	42.91	56.00	-13.09	QP	
8	1.6625	13.26	17.85	31.11	46.00	-14.89	AVG	
9	1.8877	19.98	17.85	37.83	56.00	-18.17	QP	
10	2.0224	8.32	17.85	26.17	46.00	-19.83	AVG	
11	2.3460	19.35	17.85	37.20	56.00	-18.80	QP	
12	8.8690	11.45	17.95	29.40	50.00	-20.60	AVG	

Temperature:	23.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa

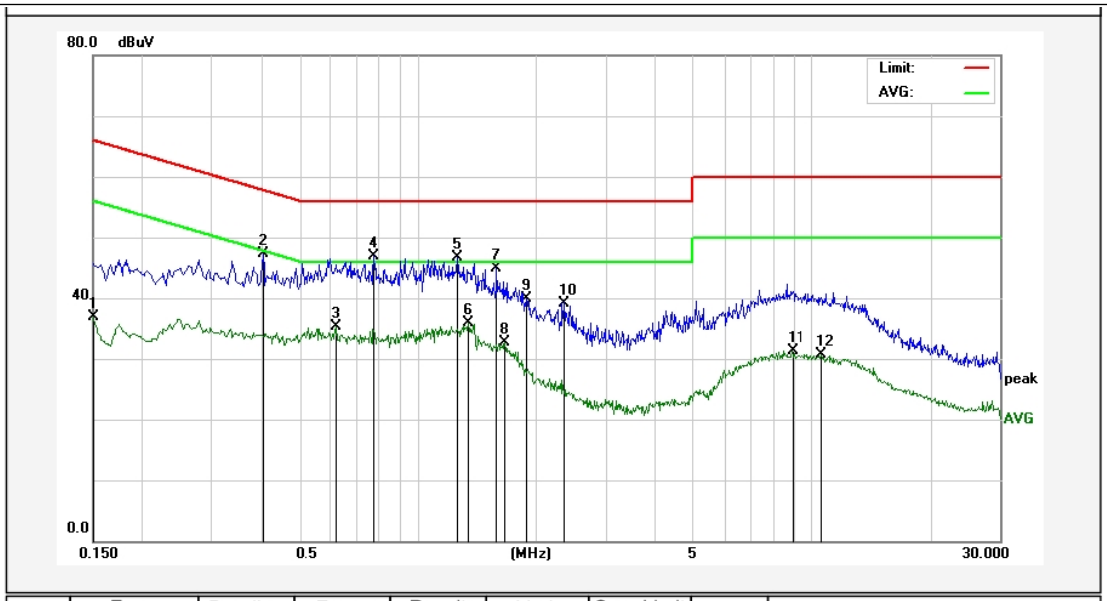
TM2 / Line: Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1499	20.61	17.82	38.43	56.00	-17.57	AVG	
2	0.4040	29.91	17.81	47.72	57.77	-10.05	QP	
3	0.6010	29.15	17.87	47.02	56.00	-8.98	QP	
4	0.6238	16.92	17.87	34.79	46.00	-11.21	AVG	
5	0.9282	29.22	17.86	47.08	56.00	-8.92	QP	
6	1.1412	16.51	17.86	34.37	46.00	-11.63	AVG	
7	1.2620	29.28	17.86	47.14	56.00	-8.86	QP	
8	1.5850	27.06	17.85	44.91	56.00	-11.09	QP	
9	1.6625	14.26	17.85	32.11	46.00	-13.89	AVG	
10	1.9181	22.93	17.85	40.78	56.00	-15.22	QP	
11	2.0224	9.32	17.85	27.17	46.00	-18.83	AVG	
12	4.0704	6.54	17.85	24.39	46.00	-21.61	AVG	

Temperature:	23.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa

TM2 / Line: Neutral



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1499	19.11	17.82	36.93	56.00	-19.07	AVG	
2	0.4040	29.41	17.81	47.22	57.77	-10.55	QP	
3	0.6238	17.42	17.87	35.29	46.00	-10.71	AVG	
4	0.7752	29.12	17.87	46.99	56.00	-9.01	QP	
5	1.2620	28.78	17.86	46.64	56.00	-9.36	QP	
6	1.3449	18.07	17.86	35.93	46.00	-10.07	AVG	
7	1.5850	27.06	17.85	44.91	56.00	-11.09	QP	
8	1.6625	14.76	17.85	32.61	46.00	-13.39	AVG	
9	1.8878	21.98	17.85	39.83	56.00	-16.17	QP	
10	2.3460	21.35	17.85	39.20	56.00	-16.80	QP	
11	8.8691	13.45	17.95	31.40	50.00	-18.60	AVG	
12	10.5638	12.75	17.99	30.74	50.00	-19.26	AVG	

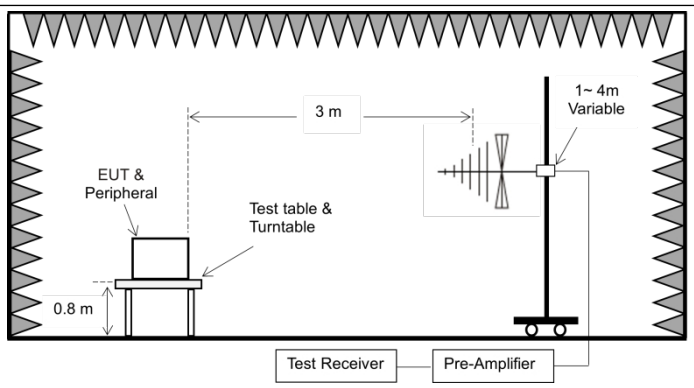
4. Radiated emissions (30MHz-1GHz)

Test Requirement:	EN 301 489-1, clause 8.2 EN 301 489-17, clause 7.1
Test Limit:	FREQUENCY (MHz) / dB(μV/m) At 10m / dB(μV/m) At 3m 30MHz-230MHz / 30 / 40 230MHz-1GHz / 37 / 47 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz
Test Method:	EN 55032, annex A.2
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Remark: Result(dBμV/m) = Reading(dBμV) + Factor(dB/m); Over Limit(dB) = Result(dBμV/m) - Limit(dBμV/m)

4.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

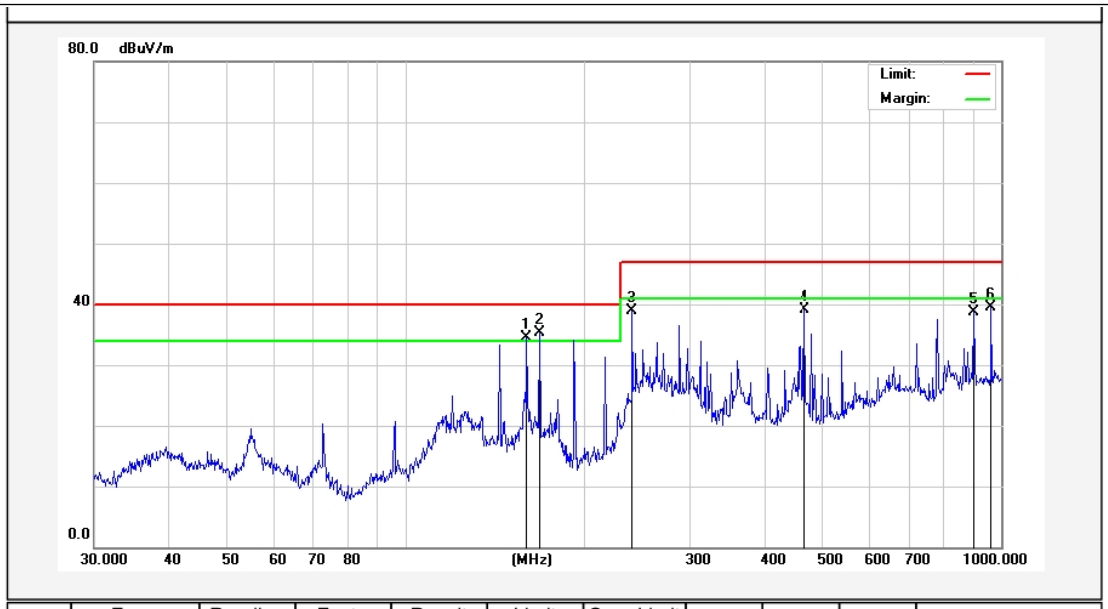
4.2. Test Setup



4.3. Test Data

Temperature:	25.3 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

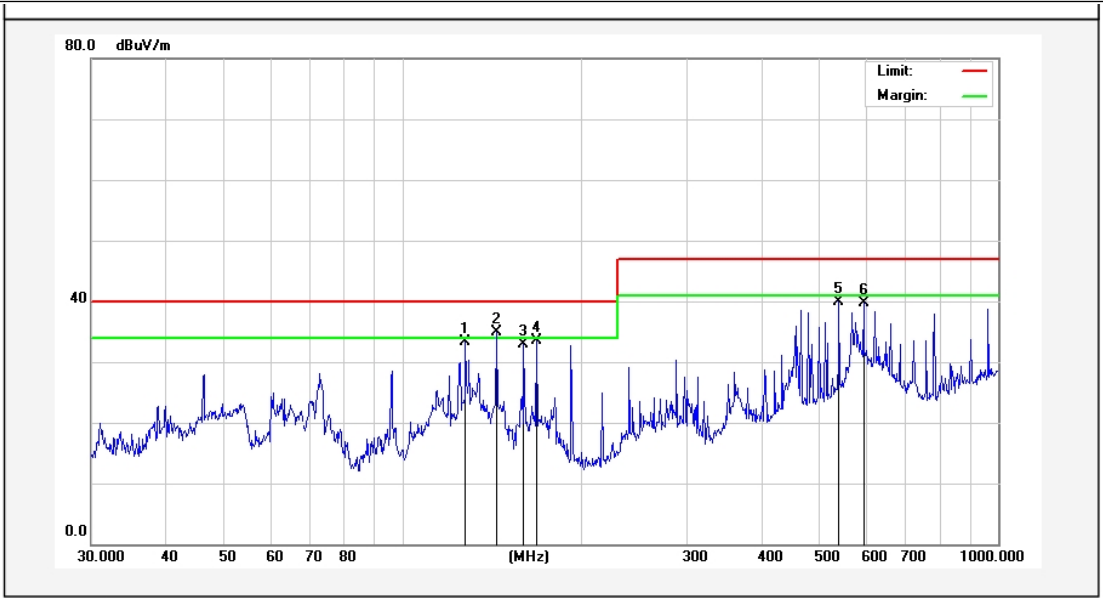
TM1 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	159.7844	56.40	-21.94	34.46	40.00	-5.54	QP			
2	167.8242	56.89	-21.51	35.38	40.00	-4.62	QP			
3	239.9874	57.20	-18.29	38.91	47.00	-8.09	QP			
4	467.2349	51.27	-12.19	39.08	47.00	-7.92	QP			
5	900.1474	44.86	-6.22	38.64	47.00	-8.36	QP			
6	962.1623	45.02	-5.44	39.58	47.00	-7.42	QP			

Temperature:	25.3 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

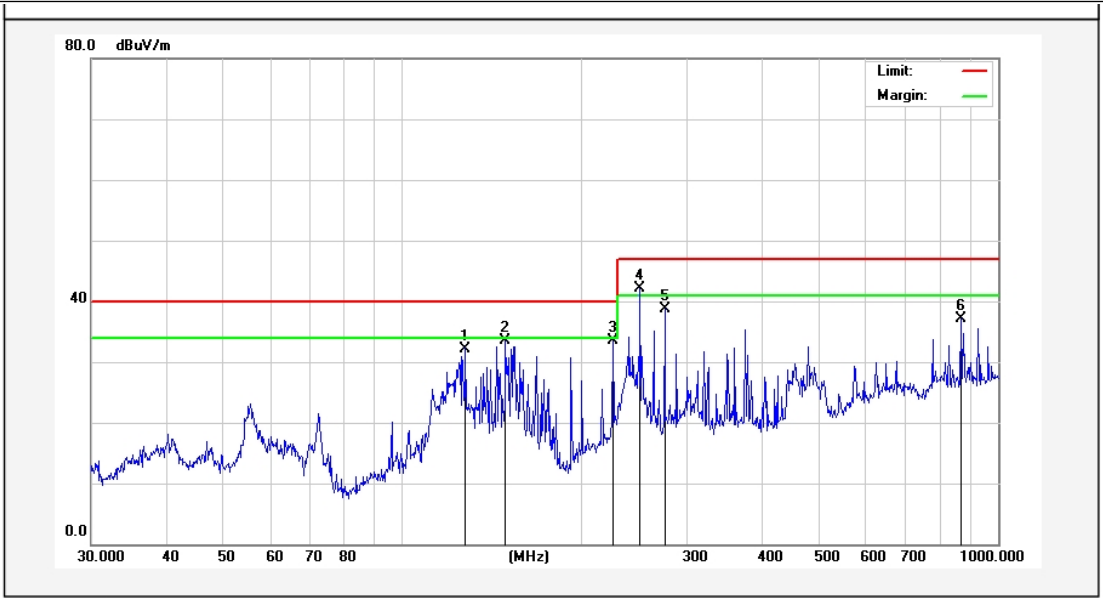
TM1 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	127.6645	54.89	-21.65	33.24	40.00	-6.76	QP			
2	143.8293	57.32	-22.33	34.99	40.00	-5.01	QP			
3	159.7844	54.56	-21.67	32.89	40.00	-7.11	QP			
4	167.8241	54.70	-21.24	33.46	40.00	-6.54	QP			
5	541.3724	51.62	-11.71	39.91	47.00	-7.09	QP			
6	595.1327	49.20	-9.46	39.74	47.00	-7.26	QP			

Temperature:	25.3 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

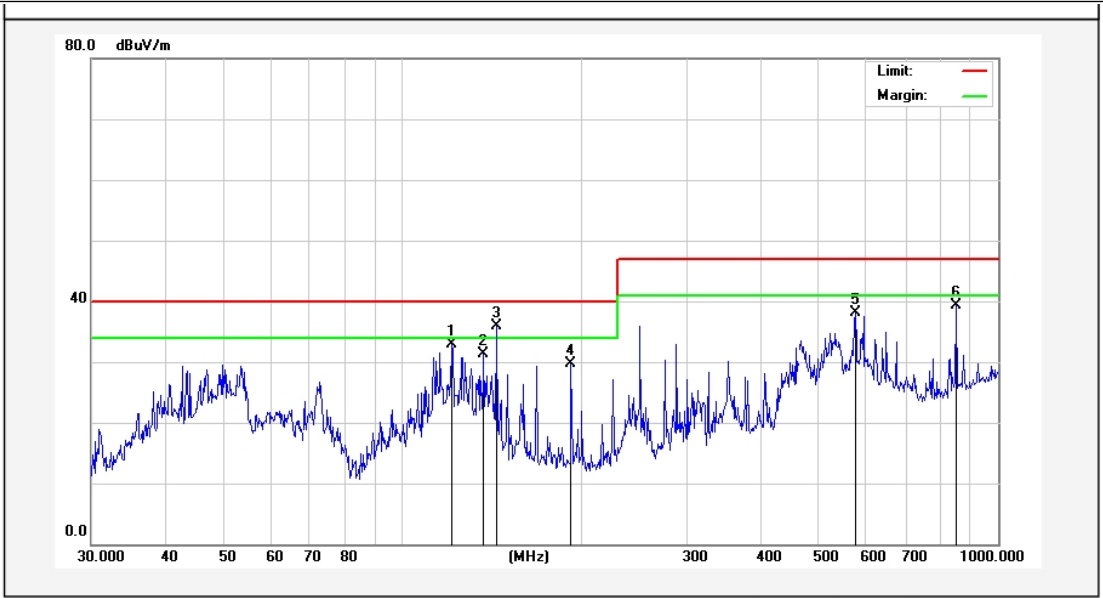
TM2 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	127.6645	53.85	-21.65	32.20	40.00	-7.80	QP			
2	148.9625	55.79	-22.27	33.52	40.00	-6.48	QP			
3	225.3080	52.35	-18.82	33.53	40.00	-6.47	QP			
4	250.3012	60.04	-17.92	42.12	47.00	-4.88	QP			
5	275.1570	55.83	-17.10	38.73	47.00	-8.27	QP			
6	866.0879	44.23	-7.08	37.15	47.00	-9.85	QP			

Temperature:	25.3 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

TM2 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	121.1230	53.58	-20.69	32.89	40.00	-7.11	QP			
2	136.9391	53.72	-22.33	31.39	40.00	-8.61	QP			
3	143.8294	58.22	-22.33	35.89	40.00	-4.11	QP			
4	191.7450	49.73	-20.05	29.68	40.00	-10.32	QP			
5	576.6443	48.54	-10.41	38.13	47.00	-8.87	QP			
6	851.0353	46.80	-7.46	39.34	47.00	-7.66	QP			

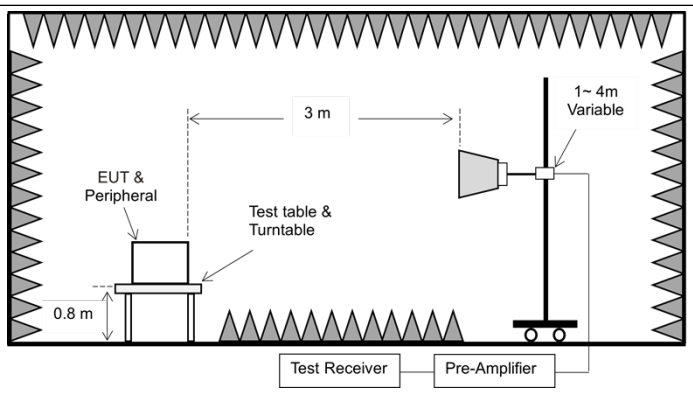
5. Radiated emissions (above 1GHz)

Test Requirement:	EN 301 489-1, clause 8.2 EN 301 489-17, clause 7.1
Test Limit:	**Frequency range (MHz)** / **Radiated emissions limit (dBuV/m)** (Peak / Average) 1000 to 3000: 70 / 50 3000 to 6000: 74 / 54 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 6000MHz
Test Method:	EN 55032, annex A.2
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities. Remark: Result(dBμV/m) = Reading(dBμV) + Factor(dB/m); Over Limit(dB) = Result(dBμV/m) - Limit(dBμV/m)

5.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

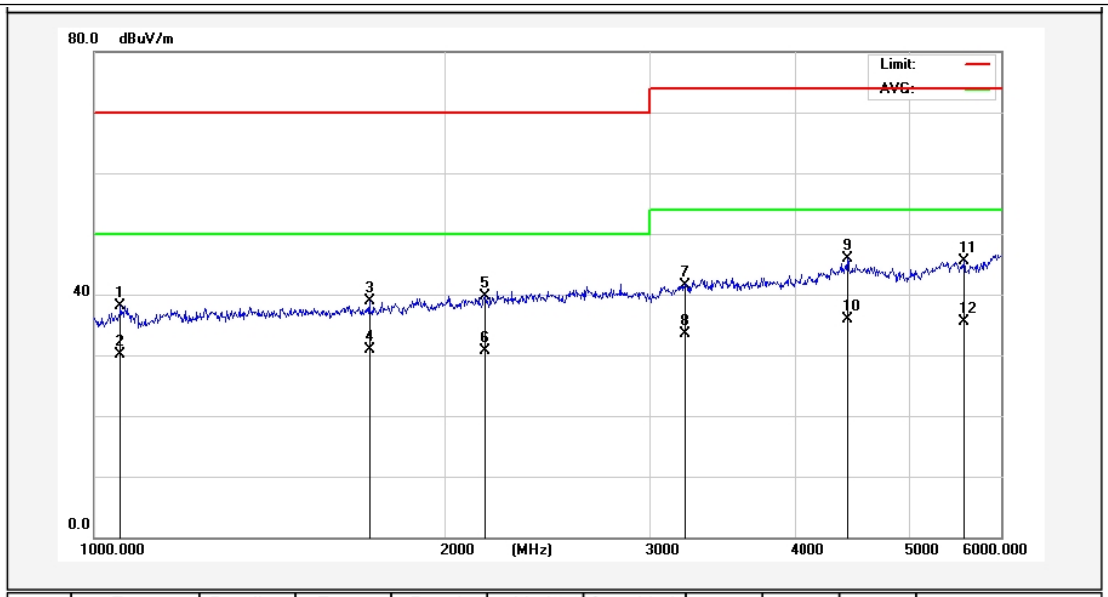
5.2. Test Setup



5.3. Test Data

Temperature:	23.7 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

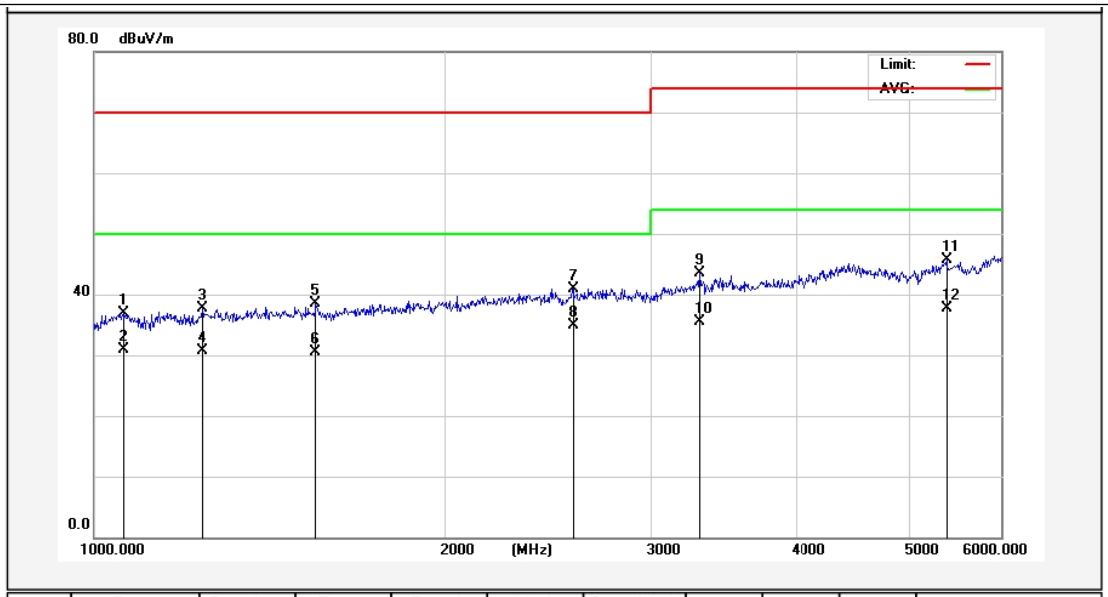
TM1 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1053.335	65.89	-27.70	38.19	70.00	-31.81	peak			
2	1053.335	57.89	-27.70	30.19	50.00	-19.81	AVG			
3	1724.082	65.40	-26.56	38.84	70.00	-31.16	peak			
4	1724.082	57.40	-26.56	30.84	50.00	-19.16	AVG			
5	2164.628	64.51	-24.81	39.70	70.00	-30.30	peak			
6	2164.628	55.51	-24.81	30.70	50.00	-19.30	AVG			
7	3210.528	63.18	-21.75	41.43	74.00	-32.57	peak			
8	3210.528	55.18	-21.75	33.43	54.00	-20.57	AVG			
9	4432.448	64.19	-18.35	45.84	74.00	-28.16	peak			
10	4432.448	54.19	-18.35	35.84	54.00	-18.16	AVG			
11	5575.028	61.70	-16.25	45.45	74.00	-28.55	peak			
12	5575.028	51.70	-16.25	35.45	54.00	-18.55	AVG			

Temperature:	23.7 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

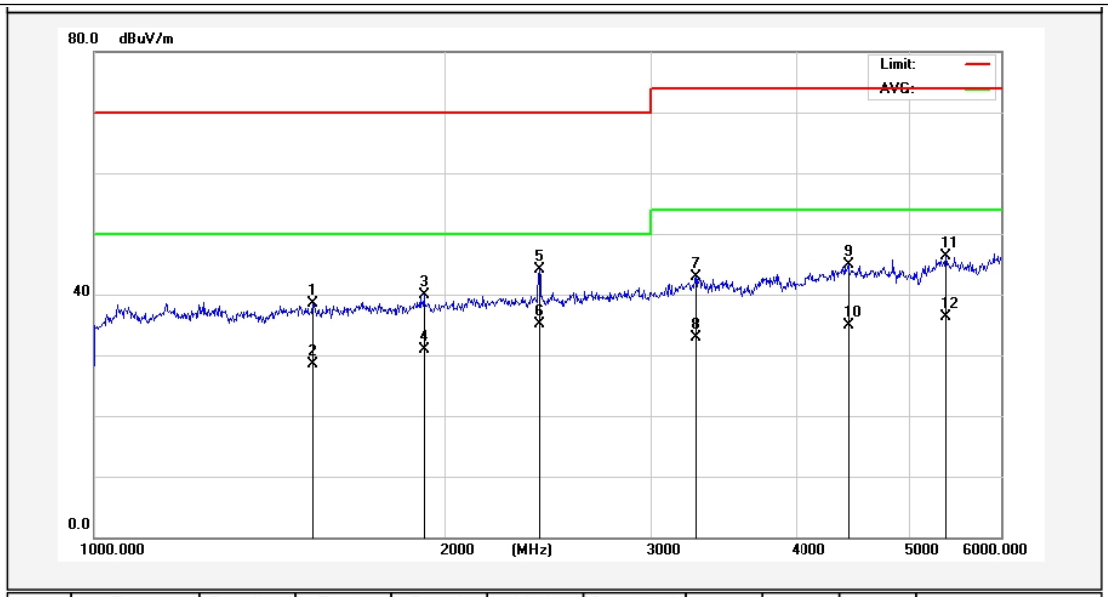
TM1 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1060.911	64.54	-27.69	36.85	70.00	-33.15	peak			
2	1060.911	58.54	-27.69	30.85	50.00	-19.15	AVG			
3	1237.656	64.93	-27.23	37.70	70.00	-32.30	peak			
4	1237.656	57.93	-27.23	30.70	50.00	-19.30	AVG			
5	1551.126	65.29	-26.88	38.41	70.00	-31.59	peak			
6	1551.126	57.29	-26.88	30.41	50.00	-19.59	AVG			
7	2575.514	64.88	-23.92	40.96	70.00	-29.04	peak			
8	2575.514	58.88	-23.92	34.96	50.00	-15.04	AVG			
9	3303.900	65.02	-21.59	43.43	74.00	-30.57	peak			
10	3303.900	57.02	-21.59	35.43	54.00	-18.57	AVG			
11	5388.429	62.02	-16.25	45.77	74.00	-28.23	peak			
12	5388.429	54.02	-16.25	37.77	54.00	-16.23	AVG			

Temperature:	23.7 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

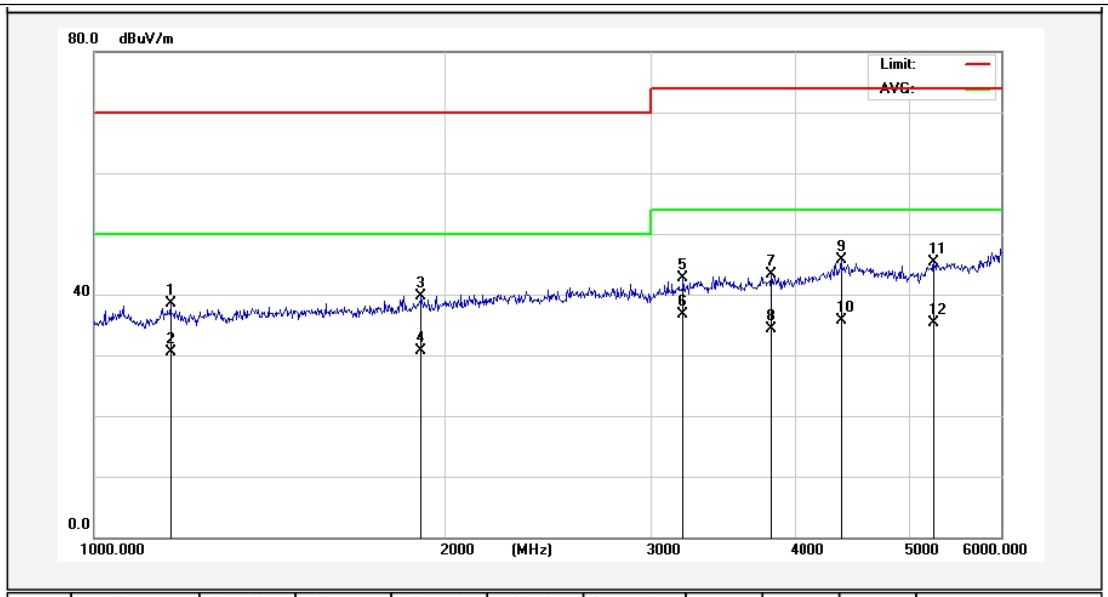
TM2 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1542.811	65.31	-26.88	38.43	70.00	-31.57	peak			
2	1542.811	55.31	-26.88	28.43	50.00	-21.57	AVG			
3	1919.761	65.52	-25.55	39.97	70.00	-30.03	peak			
4	1919.761	56.52	-25.55	30.97	50.00	-19.03	AVG			
5	2410.307	68.61	-24.42	44.19	70.00	-25.81	peak			
6	2410.307	59.61	-24.42	35.19	50.00	-14.81	AVG			
7	3280.305	64.46	-21.62	42.84	74.00	-31.16	peak			
8	3280.305	54.46	-21.62	32.84	54.00	-21.16	AVG			
9	4440.397	63.22	-18.34	44.88	74.00	-29.12	peak			
10	4440.397	53.22	-18.34	34.88	54.00	-19.12	AVG			
11	5378.783	62.52	-16.25	46.27	74.00	-27.73	peak			
12	5378.783	52.52	-16.25	36.27	54.00	-17.73	AVG			

Temperature:	23.7 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

TM2 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1162.424	65.85	-27.44	38.41	70.00	-31.59	peak			
2	1162.424	57.85	-27.44	30.41	50.00	-19.59	AVG			
3	1909.469	65.30	-25.57	39.73	70.00	-30.27	peak			
4	1909.469	56.30	-25.57	30.73	50.00	-19.27	AVG			
5	3199.044	64.46	-21.77	42.69	74.00	-31.31	peak			
6	3199.044	58.46	-21.77	36.69	54.00	-17.31	AVG			
7	3806.281	63.66	-20.42	43.24	74.00	-30.76	peak			
8	3806.281	54.66	-20.42	34.24	54.00	-19.76	AVG			
9	4377.202	64.17	-18.47	45.70	74.00	-28.30	peak			
10	4377.202	54.17	-18.47	35.70	54.00	-18.30	AVG			
11	5254.944	61.74	-16.50	45.24	74.00	-28.76	peak			
12	5254.944	51.74	-16.50	35.24	54.00	-18.76	AVG			

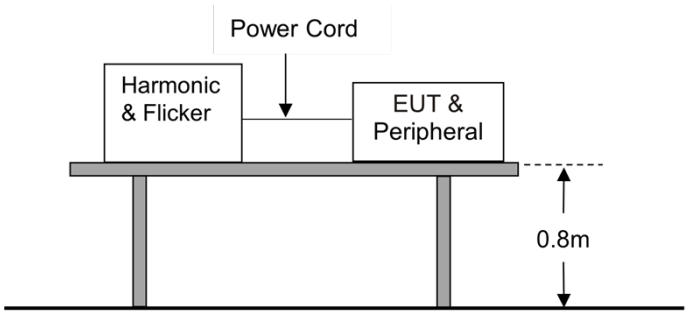
6. Voltage fluctuations and flicker

Test Requirement:	Clause 4
Test Limit:	EN 61000-3-3, Clause 5
Test Method:	EN 61000-3-3:2013+A2: 2021

6.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

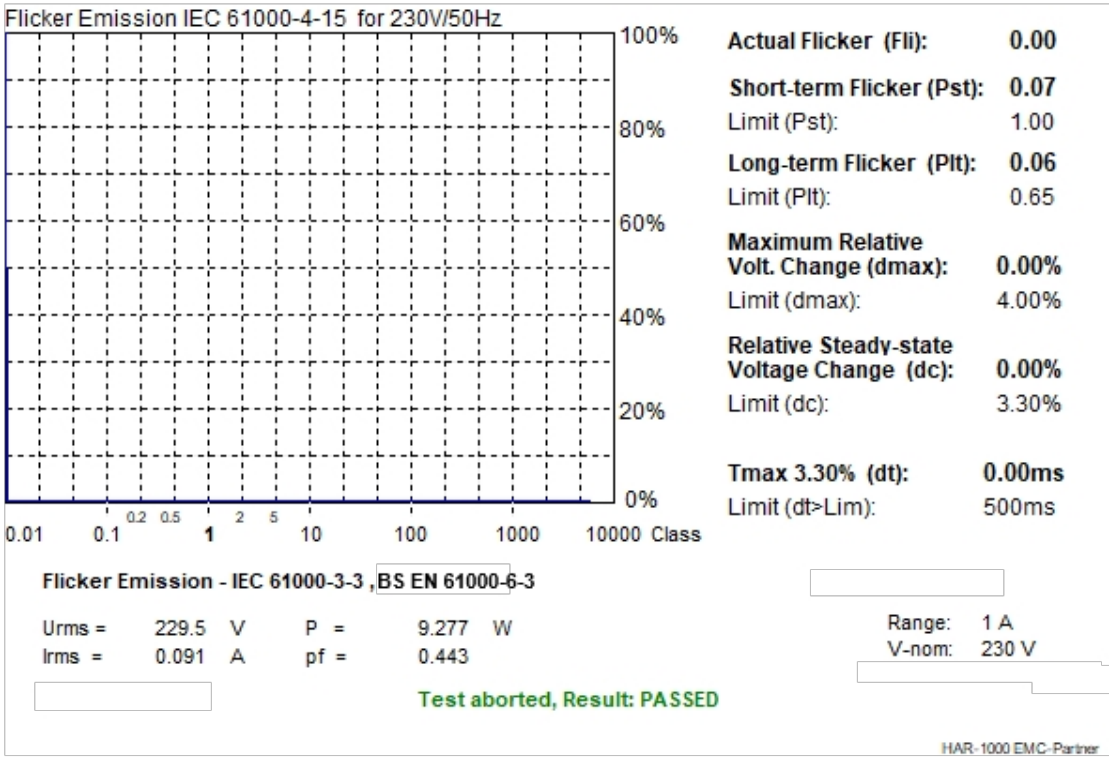
6.2. Test Setup



6.3. Test Data

Note:Only record the worst data in the report.

Temperature:	21.5 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa



Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current , Green : Voltage , Red : Failed

Urms = 229.5V Freq = 50.000 Range: 1 A
Irms = 0.091A Ipk = 0.416A cf = 4.551
P = 9.277W S = 20.96VA pf = 0.443

Test - Time : 10 x 1min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
dmax : 4.00 % dc : 3.30 %
dtLim: 3.30 % dt>Lim: 500ms

Test aborted, Result: PASSED

	P3s	dmax [%]	dc [%]	dt>Lim [ms]
1	0.010	0.000	0.000	0.000

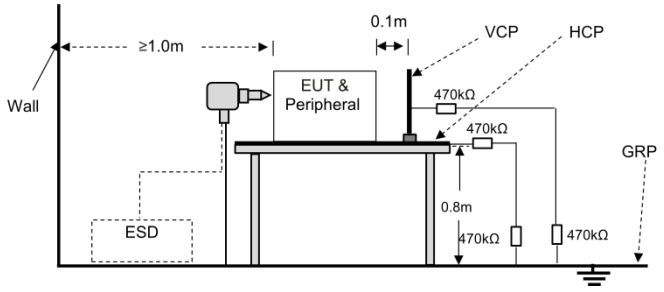
7. Electrostatic discharge

Test Requirement:	EN 301 489-1, clause 9.3 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-2, clauses 6, 7 and 8
Procedure:	Discharge Impedance: 330Ω/150pF Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	TT(B), TR(B)

7.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

7.2. Test Setup



7.3. Test Data

Temperature:	21.2 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa

Discharge type	Volt (kV)	Polarity	Test Point	Result/ Observations
Air discharge	2,4,8	+	1	A
Air discharge	2,4,8	-	1	A
Contact discharge	4	+	2	A
Contact discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Test Point: 1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side.
A: No degradation in the performance of the EUT was observed.

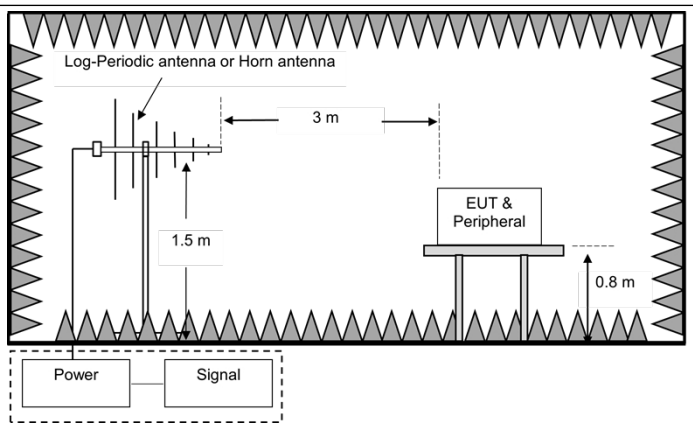
8. Radio frequency electromagnetic field (80 MHz to 6 000 MHz)

Test Requirement:	EN 301 489-1, clause 9.2 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-3, clauses 6, 7 and 8
Procedure:	Frequency Range: 80MHz to 6GHz Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment
Performance Criteria:	CT(A), CR(A)

8.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

8.2. Test Setup



8.3. Test Data

Temperature:	22.2 °C	Humidity:	51 %	Atmospheric Pressure:	101 kPa

Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-6GHz	3	Front	3s	A
80MHz-6GHz	3	Back	3s	A
80MHz-6GHz	3	Left	3s	A
80MHz-6GHz	3	Right	3s	A
80MHz-6GHz	3	Top	3s	A
80MHz-6GHz	3	Bottom	3s	A

A: No degradation in the performance of the EUT was observed.

Special conditions for EMC immunity tests(Bluetooth/WiFi):

EUT operating Mode	Max PER During test	PER Limit
TM1	1.8%	10%
TM2	2.3%	10%

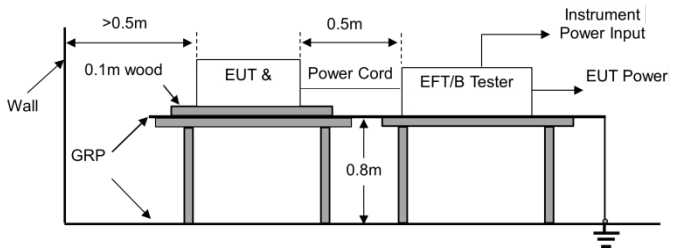
9. Fast transients, common mode (AC power port)

Test Requirement:	EN 301 489-1, clause 9.4 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-4, clauses 5
Procedure:	Repetition Frequency: 5kHz Burst Period: 300ms
Performance Criteria:	TT(B), TR(B)

9.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

9.2. Test Setup



9.3. Test Data

Temperature:	21.5 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

Port	Volt (kV)	Polarity	CDN/ Clamp	Result/ Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

A: No degradation in the performance of the EUT was observed.

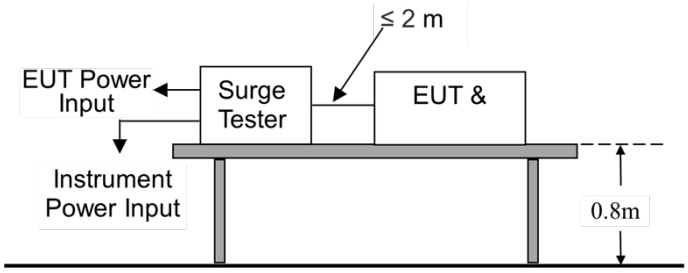
10. Surges (AC power port)

Test Requirement:	EN 301 489-1, clause 9.8 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-5, clauses 7 and 8
Performance Criteria:	TT(B), TR(B)

10.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

10.2. Test Setup



10.3. Test Data

Temperature:	21.5 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

Port	Volt (kV)	Polarity	Phase(degree)	Result/ Observations
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	-	90°	A
L-N	1	+	90°	A
L-N	1	-	180°	A
L-N	1	+	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

A: No degradation in the performance of the EUT was observed.

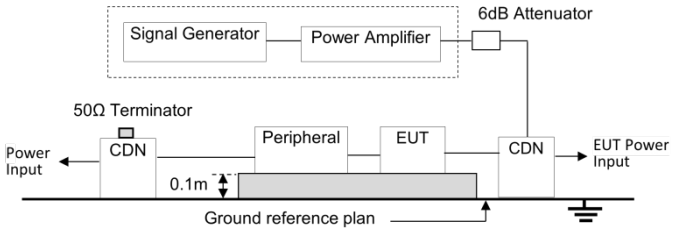
11. Radio frequency, common mode 0,15 MHz to 80 MHz (AC power port)

Test Requirement:	EN 301 489-1, clause 9.5 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-6, clauses 6 and 8
Performance Criteria:	CT(A), CR(A)

11.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

11.2. Test Setup



11.3. Test Data

Temperature:	22.2 °C	Humidity:	51 %	Atmospheric Pressure:	101 kPa

Port	Strength (Vrms)	CDN/Clamp	Dwell time	Result/ Observations
AC power port	3	CDN	3s	A

A: No degradation in the performance of the EUT was observed.

Special conditions for EMC immunity tests(Bluetooth/WiFi):

EUT operating Mode	Max PER During test	PER Limit
TM1	1.7%	10%
TM2	2.2%	10%

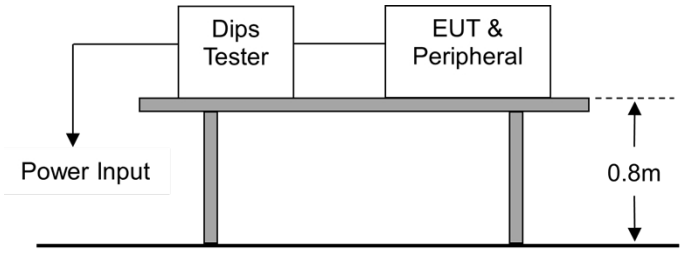
12. Voltage dips and interruptions

Test Requirement:	EN 301 489-1, clause 9.7 EN 301 489-17, clause 7.2
Test Method:	EN 61000-4-11, clause 8 The test levels shall be: • voltage dip: 0 % residual voltage for 0,5 cycle; • voltage dip: 0 % residual voltage for 1 cycle; • voltage dip: 70 % residual voltage for 25 cycles (at 50 Hz); • voltage interruption: 0 % residual voltage for 250 cycles (at 50 Hz).
Performance Criteria:	Voltage dips: TT(B), TR(B) Voltage interruptions: TT(C), TR(C)

12.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: Adapter+WiFi + TF Card Mode(DC 5V from adapter input AC 230V/50Hz) 2: TM2: Adapter+BT + TF Card Mode(DC 5V from adapter input AC 230V/50Hz)

12.2. Test Setup



12.3. Test Data

Temperature:	21.5 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa

Level %UT	Phase (degree)	Duration	No. of Dips/ Interruptions	Result/ Observations
0	0°	0.5 Cycles	3	B
0	180°	0.5 Cycles	3	B
0	0°	1 Cycles	3	B
0	180°	1 Cycles	3	B
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B
70	0°	25 Cycles	3	B
70	180°	25 Cycles	3	B

B: During the test, the power shut down, after the experiment, the function can automatically return to normal.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph_EMC

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

---------- End of Report ----------