



TEST REPORT

Application No.: SZCR2106021843HS
Applicant: Theragun, Inc.
Address of Applicant: 6100 Wilshire Blvd. Suite 200 Los Angeles, CA 90048-5107, USA
Manufacturer: Theragun, Inc.
Address of Manufacturer: 6100 Wilshire Blvd. Suite 200 Los Angeles, CA 90048-5107, USA
Equipment Under Test (EUT):
EUT Name: Massager
Model No.: RecoveryAir PRO
Trade Mark: RecoveryAir
Standard(s) : EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4
Date of Receipt: 2018-12-03 (for original report GZEM181200555801)
Date of Test: 2018-12-12 to 2018-12-19 (for original report GZEM181200555801)
Date of Issue: 2019-01-15 (for original report GZEM181200555801)
2021-07-12 (for new report SZCR210602184301)

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

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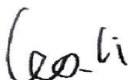
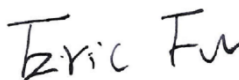


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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-07-12		Original

Authorized for issue by:				
				
		Leo Li/Project Engineer		
				
		Eric Fu/Reviewer		



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4	EN 55032:2015	Class B	Pass
Radiated Emissions (30MHz-1GHz)		EN 55032:2015	Class B	Pass
Harmonic Current Emission		EN IEC 61000-3-2:2019	Class A	N/A
Voltage Fluctuations and Flicker		EN 61000-3-3:2013 +A1:2019	Clause 5 of EN 61000-3-3	Pass

N/A: Not applicable

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients/Burst at Power Port		EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port		EN 61000-4-5:2014 +A11:2017	1.2/50µs Tr/Td 1kV Line to Line 2kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)		EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions		EN 61000-4-11:2004 +A11:2017	0 % UT for 0.5per 0 % UT for 1per 0 % UT for 250per 70 % UT for 25per UT is Supply Voltage	Pass
Radiated Immunity (80MHz-6GHz)		EN 61000-4-3:2006 +A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable



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Remark:

Original model No. in report GZEM181200555801: 737R, 737A

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the color, artwork, labelling and intended use.

Therefore only one model **737R** was tested in this report.

New model No. in report SZCR210602184301: RecoveryAir PRO

This test report SZCR210602184301 is an additional report copied from the original test report (Ref. No.: GZEM181200555801).

Compared with the original report, this report just changed the information of applicant and manufacturer, deleted the factory, added the trade mark and changed the product name and mode No.

Since according to the declaration of the applicant, the models in this report were identical in the electrical circuit design, layout, components used and internal wiring with the models in original report, only difference on model name.

And updated the below standards.

Original report standard

EN 301 489-1 V2.1.1

EN 301 489-17 V3.1.1

EN 61000-3-2:2014

EN 61000-3-3:2013

EN 61000-4-5:2014

EN 61000-4-11:2004

EN 61000-4-3:2006 +A1:2008+A2:2010

The newest report standard

EN 301 489-1 V2.2.3

EN 301 489-17 V3.2.4

EN IEC 61000-3-2:2019

EN 61000-3-3:2013+A1:2019

EN 61000-4-5:2014+A11:2017

EN 61000-4-11:2004+A11:2017

EN 61000-4-3:2006+A2:2010

Reviewed the updated standards, all the technical requirements for the EUT are identical between the original and the newest standards' version.

Therefore original data were kept in this report.



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4 General Information

4.1 Details of E.U.T.

Power Supply: MODEL: KSAPV0361200300D5
INPUT:AC 100-240V 50/60Hz 0.9A
OUTPUT:12.0V,3.0A
Test Voltage: AC 220V
Cable: 2.4m x 2wires unscreened DC power cable
Internal Source <108MHz
Frequency

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:

Supplied by SGS:

Description	Manufacturer	Model No.	SN/Certificate NO
Mobile Phone	SAMSUNG	GT-9500	RV1D82X8W9X





4.3 Measurement Uncertainty

301489

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	±3.63dB (9kHz to 150kHz)
		±3.22dB (150kHz to 30MHz)
2	Radiated Emissions	±5.0dB (30MHz-1GHz)
		±5.0dB (1GHz-6GHz)
3	Radiated Immunity	±2.18dB(80MHz-3GHz)
4	Conducted Immunity	±3.5dB(150kHz-230MHz)
5	Electrostatic Discharge	±6 %
6	EFT (Electrical Fast Transients)	±4 %
7	Surge Immunity	±6%
8	Voltage Dips and Interruptions	±4 %
9	Temperature	±0.4°C
10	Humidity	±1.3%
11	DC power	±0.5 %





4.4 Test Location

All tests were sub-contracted to:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555

Fax: +86 20 82075059

4.5 Test Facility

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

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: Monitored the display of the EUT

Audio: N/A

Other: Monitored the Spectrum Analyser for any unintentional responses.



5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Netwok	R&S	ENV216	EMC0118	2018-01-19	2019-01-18
LISN	R&S	ENV216	EMC2135	2018-09-21	2019-09-20
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2018-11-19	2019-11-18
Coaxial Cable	HangTianXing	2m	EMC0107	2017-07-23	2019-07-22
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2018-04-19	2020-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
Chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2016-06-29	2019-06-28
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2018-11-19	2019-11-18
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07



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10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Voltage Fluctuations and Flicker

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2018-04-08	2019-04-08
Power Analyzer	California	PACS	EMC0607	2018-04-08	2019-04-08
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

Electrostatic Discharge

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Simulator	TESEQ AG	NSG 435	EMC2071	2018-03-07	2019-03-06
ESD Ground Plane	SGS	3m x 3m	EMC0804	N/A	N/A
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2018-07-05	2019-07-04

Electrical Fast Transients/Burst at Power Port

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Surge at Power Port

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Modular Impulse Surge Generator	EMC PARTNER	MIG0603EN	EMC2059	2018-01-08	2019-01-07



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EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Conducted Immunity at Power Port (150kHz-80MHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Test System Of CI	TESEQ AG	NSG 4070B-80	EMC2115	2018-07-04	2019-07-04
Test Software NSG4070_Ctrl1	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
CDN S502A	TESEQ AG	CDN S502A	EMC2113	2017-06-19	2020-06-18
CDN ST08A	TESEQ AG	CDN ST08A	EMC2112	2017-07-03	2020-07-02
CDN USB3.0	TESEQ AG	CDN USB3.0	EMC2114	2017-06-19	2020-06-18
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2018-06-01	2019-06-01
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2018-08-13	2020-08-13
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2017-10-26	2020-10-25
Current Probe	Schaffner Chase	CIP9136	EMC1116	2017-10-26	2020-10-25
Current Probe	Schaffner Chase	CSP8445	EMC1117	2017-10-26	2020-10-25

Voltage Dips and Interruptions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6	EMC2072	2018-01-08	2019-01-07
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A



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Radiated Immunity (80MHz-6GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2016-12-04	2019-12-03
Laser Probe Interface	RF Microwave Instrumentation	FI7000	EMC2089	N/A	N/A
Open Switch And Control Unit	R&S	OSP130	EMC2090	N/A	N/A
Broadband Amplifier(80MHz~1GHz/250W)	R&S	BBA150	EMC2091	2018-01-08	2019-01-07
Broadband Amplifier(800MHz~3GHz/110W)	R&S	BBA150	EMC2092	2018-01-08	2019-01-07
Signal Generator	R&S	SMB100A	EMC2093	2018-01-08	2019-01-07
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2018-02-24	2019-02-23
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2095	2018-01-08	2019-01-07
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2096	2018-01-08	2019-01-07
High-Gain Log-preiodicAntenna	R&S	HL046E	EMC2097	2016-02-15	2019-02-14
RI Cable	R&S	7m	EMC2098	2018-05-23	2019-05-22
Oscilloscope	Tektronix	TDS3052C	EMC2055	2018-01-08	2019-01-07
Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A	N/A
Test Software EMC32	Rohde & Schwarz	Ver. 9.26.00	GZE100-63	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2018-07-20	2019-07-19
DMM	Fluke	73	EMC0007	2018-07-19	2019-07-18



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6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 55032:2015

Frequency Range: 150kHz to 30MHz

6.1.1 E.U.T. Operation

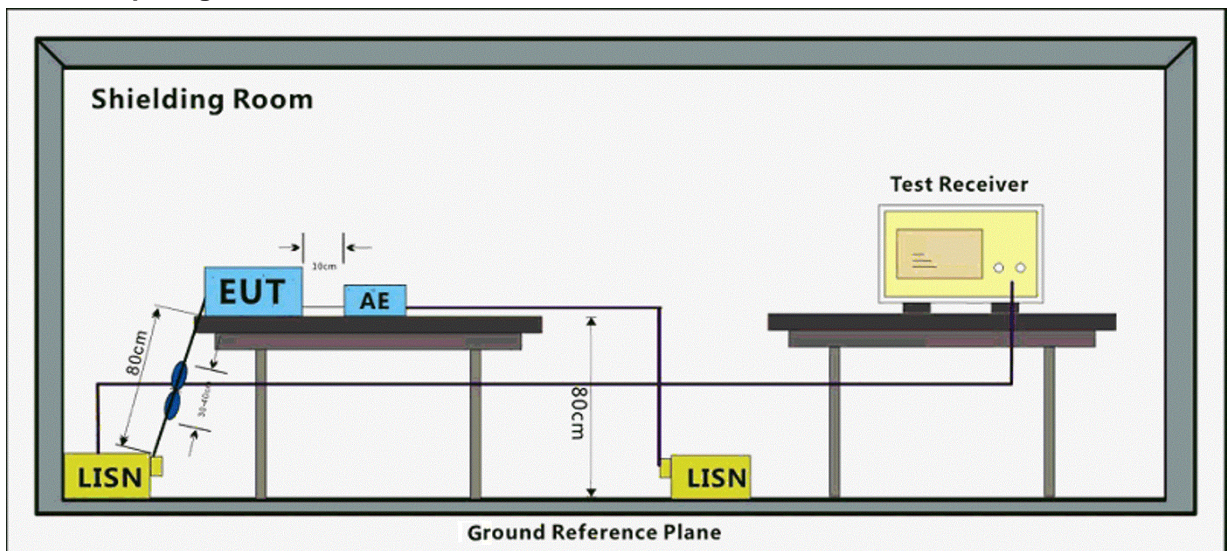
Operating Environment:

Temperature: 22.5 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:
a: Normal working_Keep the EUT communicate with other auxiliary devices.
c: Operation(BT)_Pair the device with Smartphone via Bluetooth.
d: Charging_Keep the battery of the EUT in charging mode

The worst case for final test: a: Normal working_Keep the EUT communicate with other auxiliary devices.

6.1.2 Test Setup Diagram

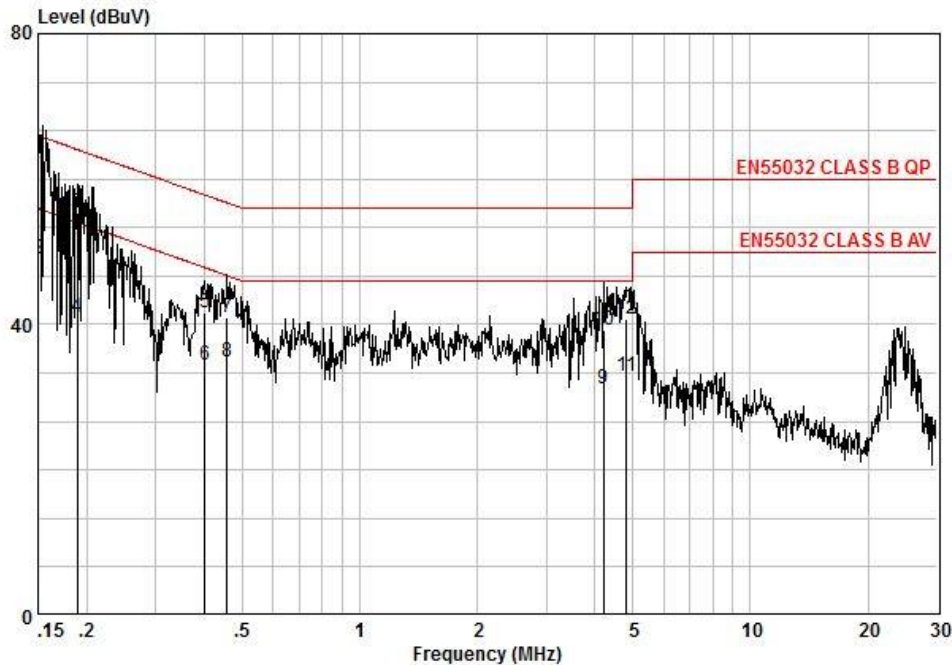


6.1.3 Measurement Data

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.

Measured Level = Read level + Cable Loss + LISN Factor

Mode:a; Line:Live Line



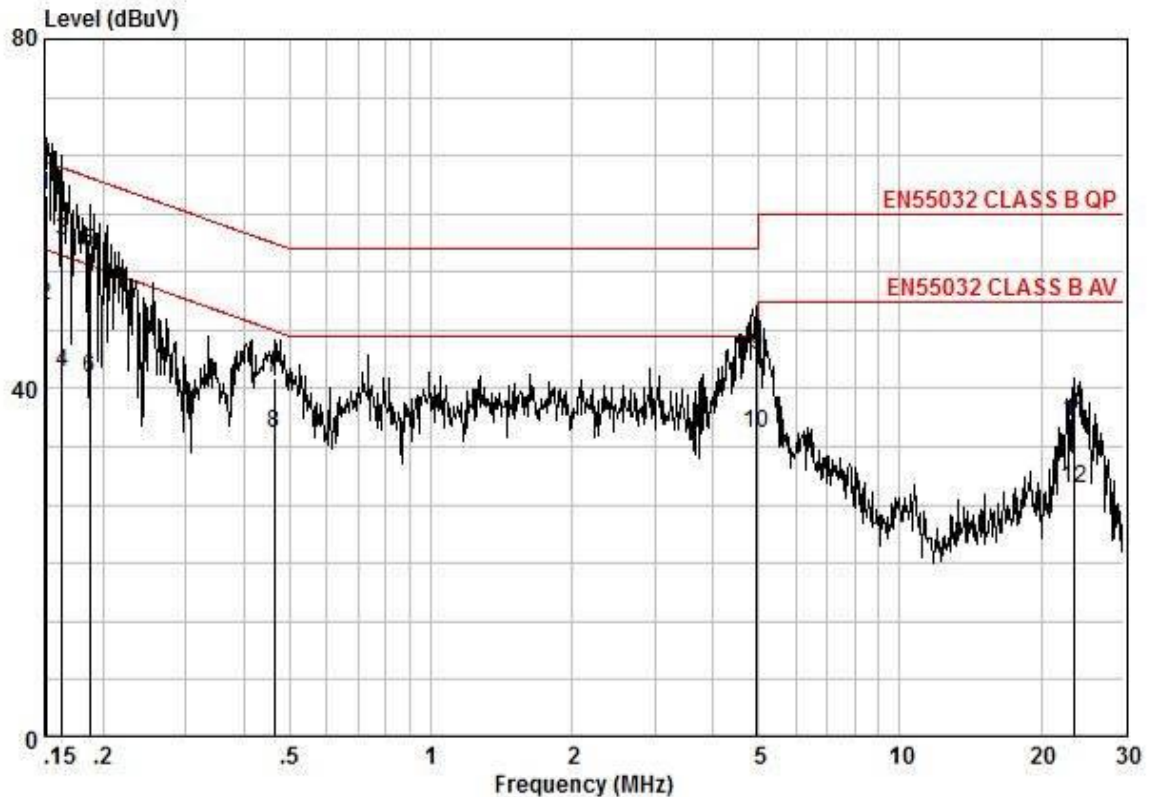
Pol	: LIVE						
No	:						
Model	:						
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,15	53,22	0,10	9,46	62,78	66,00	-3,22	QP
0,15	39,40	0,10	9,46	48,96	56,00	-7,04	AVERAGE
0,19	45,66	0,10	9,59	55,35	64,06	-8,71	QP
0,19	31,21	0,10	9,59	40,90	54,06	-13,16	AVERAGE
0,40	31,90	0,18	9,64	41,72	57,81	-16,10	QP
0,40	24,53	0,18	9,64	34,35	47,81	-13,47	AVERAGE
0,46	31,22	0,19	9,65	41,06	56,76	-15,70	QP
0,46	24,96	0,19	9,65	34,80	46,76	-11,96	AVERAGE
4,20	20,85	0,64	9,63	31,12	46,00	-14,88	AVERAGE
4,20	28,89	0,64	9,63	39,16	56,00	-16,84	QP
4,82	22,69	0,69	9,63	33,01	46,00	-12,99	AVERAGE
4,82	30,43	0,69	9,63	40,75	56,00	-15,25	QP



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Mode:a; Line:Neutral Line



Pol : NEUTRAL
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.15	52.66	0.10	9.38	62.14	65.96	-3.82	QP
0.15	39.90	0.10	9.38	49.38	55.96	-6.58	AVERAGE
0.16	47.34	0.10	9.44	56.88	65.30	-8.42	QP
0.16	32.28	0.10	9.44	41.82	55.30	-13.48	AVERAGE
0.19	45.89	0.10	9.54	55.53	64.15	-8.62	QP
0.19	31.51	0.10	9.54	41.15	54.15	-13.00	AVERAGE
0.46	31.48	0.19	9.55	41.23	56.63	-15.40	QP
0.46	25.19	0.19	9.55	34.94	46.63	-11.69	AVERAGE
4.95	33.51	0.70	9.61	43.82	56.00	-12.18	QP
4.95	24.52	0.70	9.61	34.83	46.00	-11.17	AVERAGE
23.64	25.74	0.70	9.69	36.13	60.00	-23.87	QP
23.64	18.22	0.70	9.69	28.61	50.00	-21.39	AVERAGE



6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 55032:2015

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 19.1 °C Humidity: 54.7 % RH Atmospheric Pressure: 1020 mbar

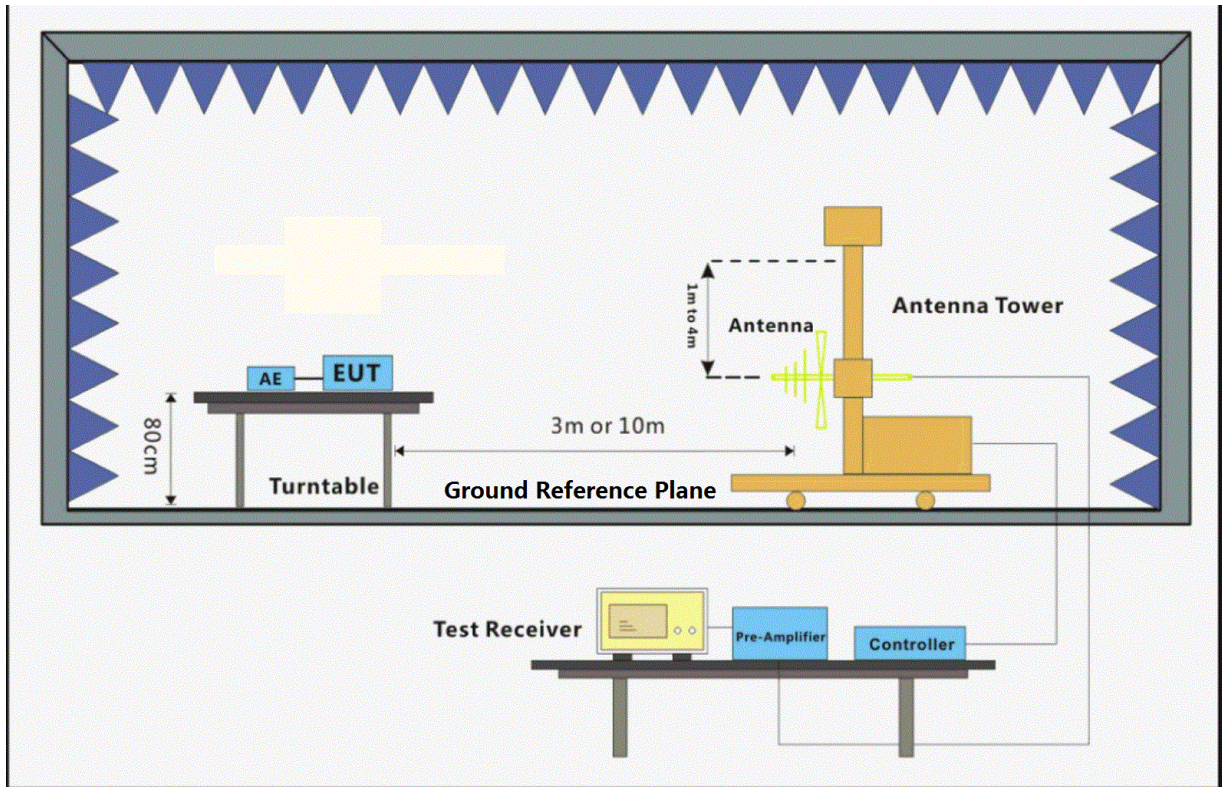
Pretest these a:Normal working_Keep the EUT communicate with other auxiliary devices.

modes to find c:Operation(BT)_Pair the device with Smartphone via Bluetooth.

the worst case: d:Charging_Keep the battery of the EUT in charging mode

The worst case d:Charging_Keep the battery of the EUT in charging mode
for final test:

6.2.2 Test Setup Diagram



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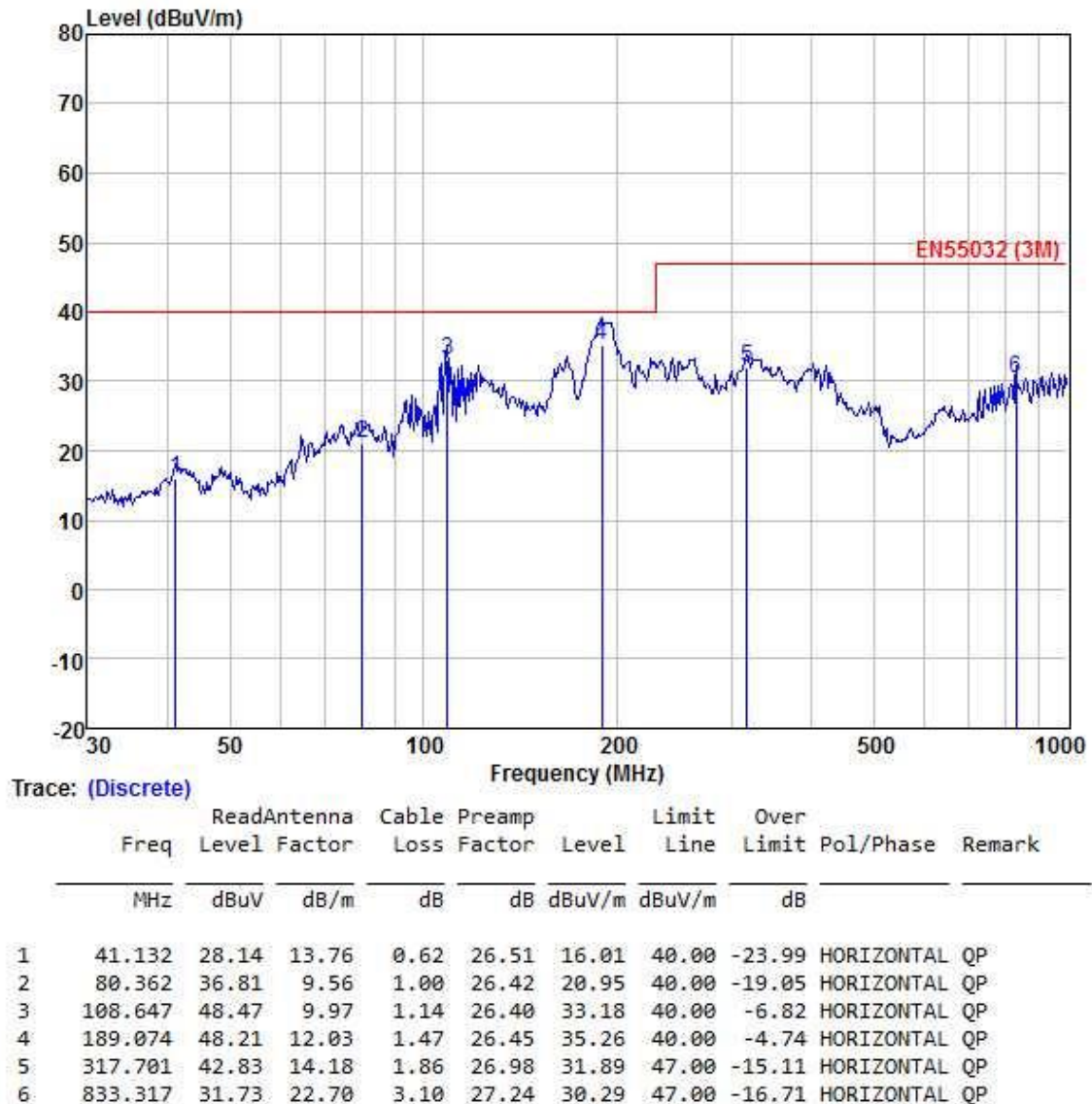
6.2.3 Measurement Data

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.

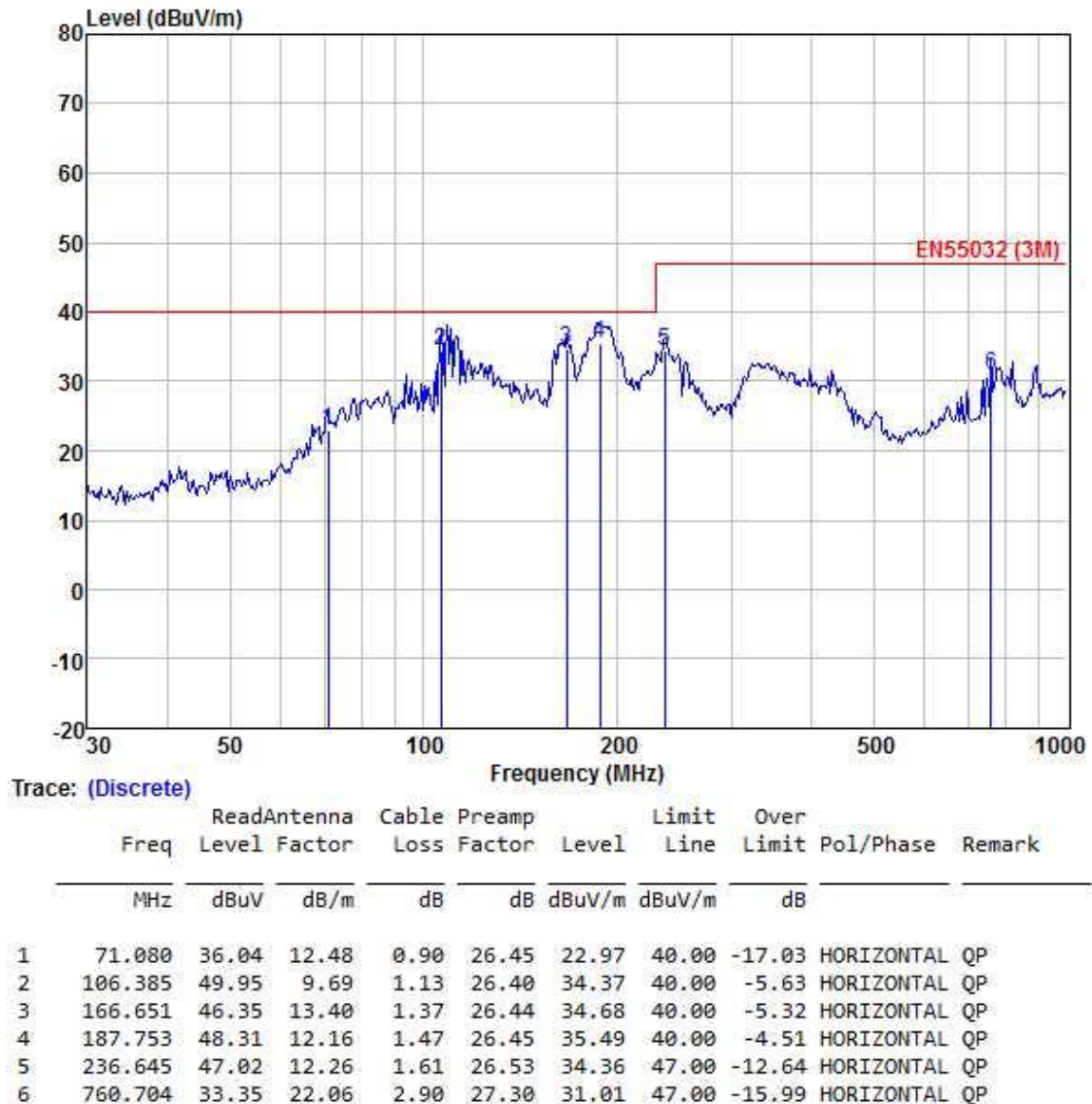
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



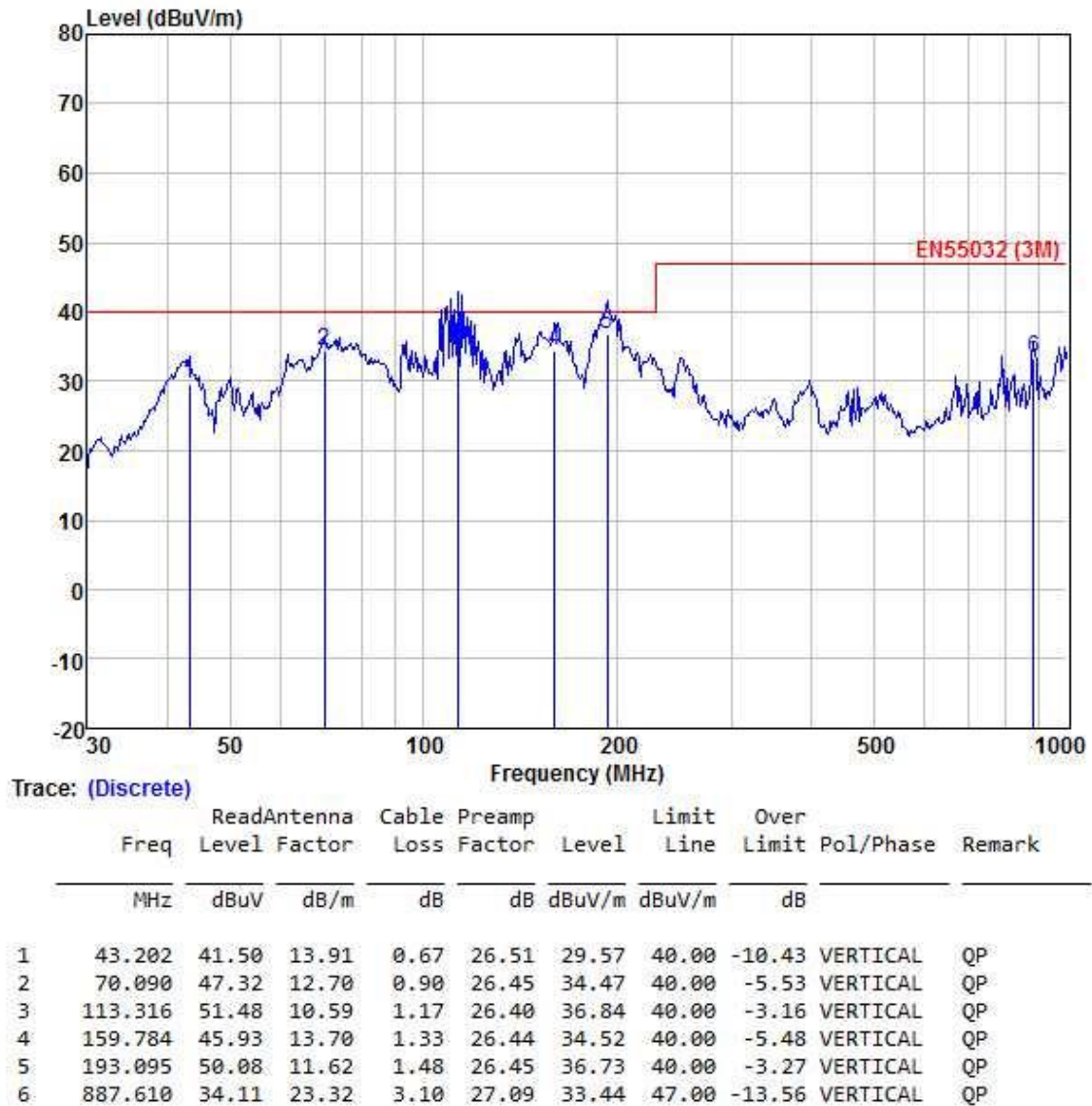
Mode:d; Polarization:Horizontal



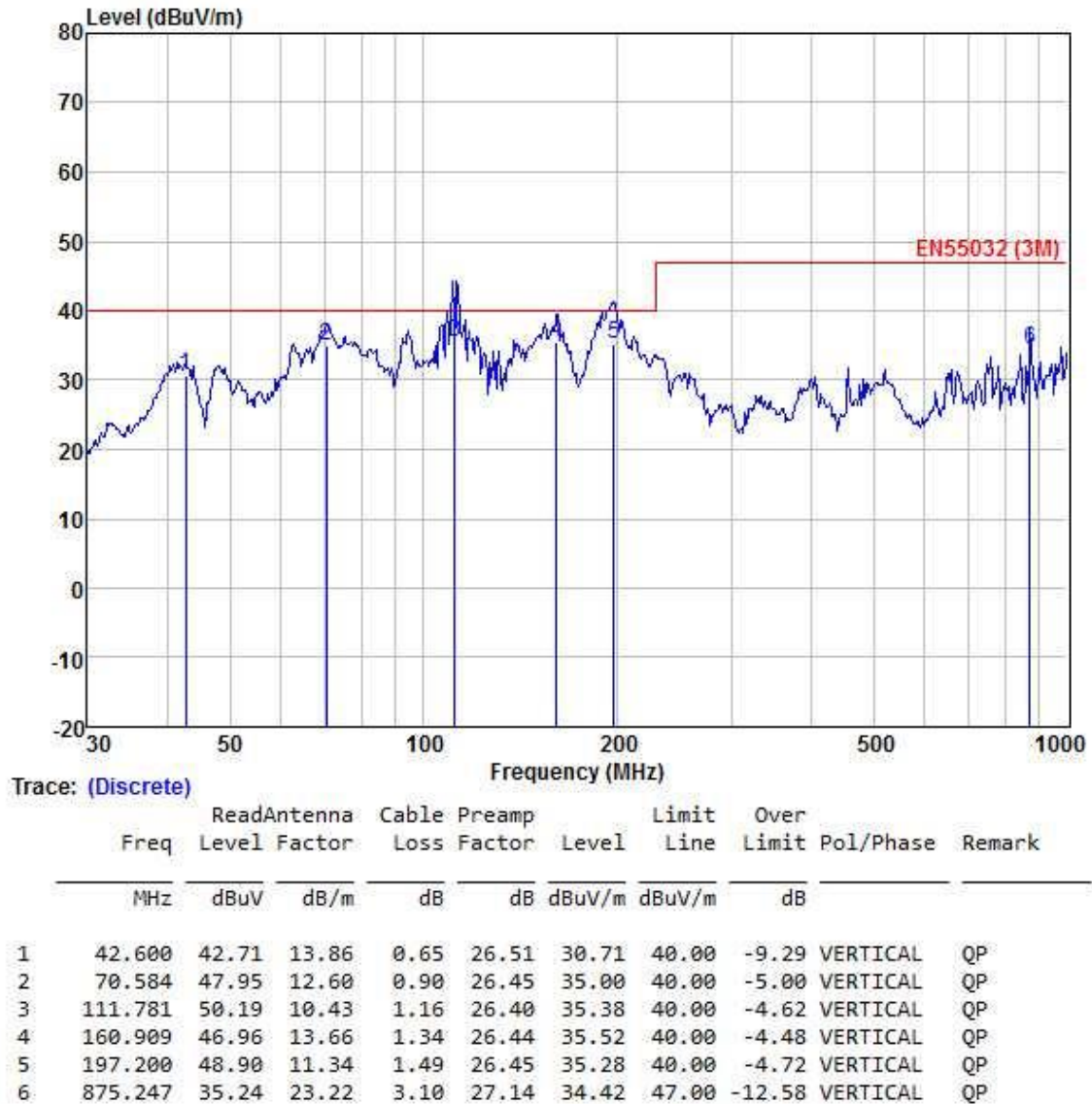
Mode:d; Polarization:Horizontal



Mode:d; Polarization:Vertical



Mode:d; Polarization:Vertical





6.3 Harmonic Current Emission

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN IEC 61000-3-2:2019

Frequency Range: 100Hz to 2kHz

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN IEC 61000-3-2:2019.

For further details, please refer to Clause 7 of EN IEC 61000-3-2:2019 which states:

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."



6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 301 489-1 V2.2.3

EN 301 489-17 V3.2.4

Test Method: EN 61000-3-3:2013+A1:2019

6.4.1 E.U.T. Operation

Operating Environment:

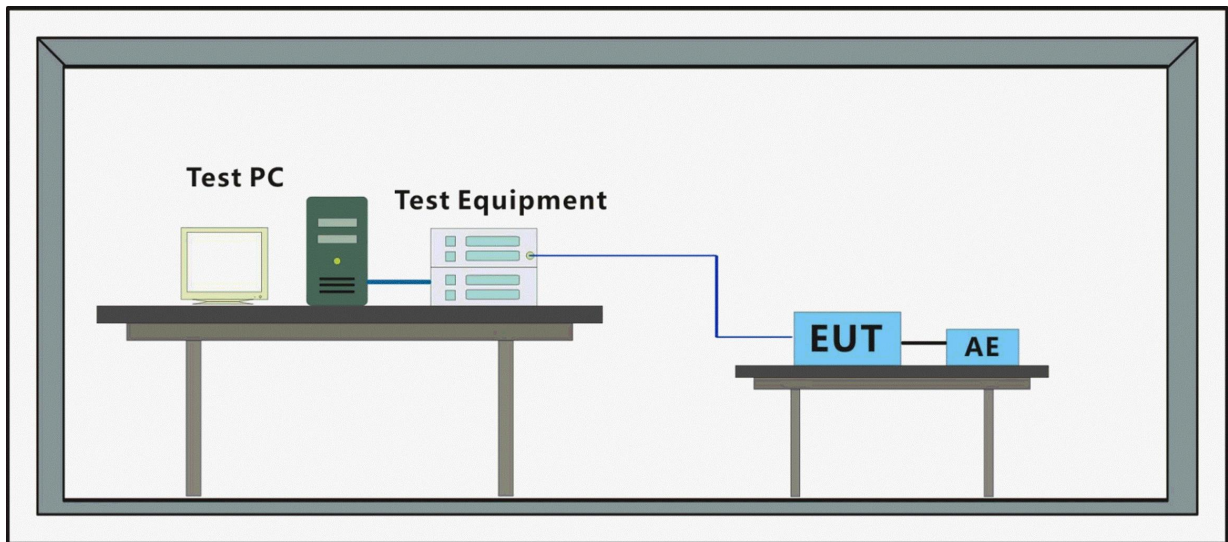
Temperature: 21.4 °C Humidity: 46.8 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:

- a: Normal working_Keep the EUT communicate with other auxiliary devices.
- c: Operation(BT)_Pair the device with Smartphone via Bluetooth.
- d: Charging_Keep the battery of the EUT in charging mode

The worst case for final test: a: Normal working_Keep the EUT communicate with other auxiliary devices.

6.4.2 Test Setup Diagram



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6.4.3 Measurement Data

Flicker Test Summary per EN61000-3-3 (Run time)

EUT: Equipment under test
Test category: dt,dmax,dc and Pst (European limits)
Test duration (min): 10

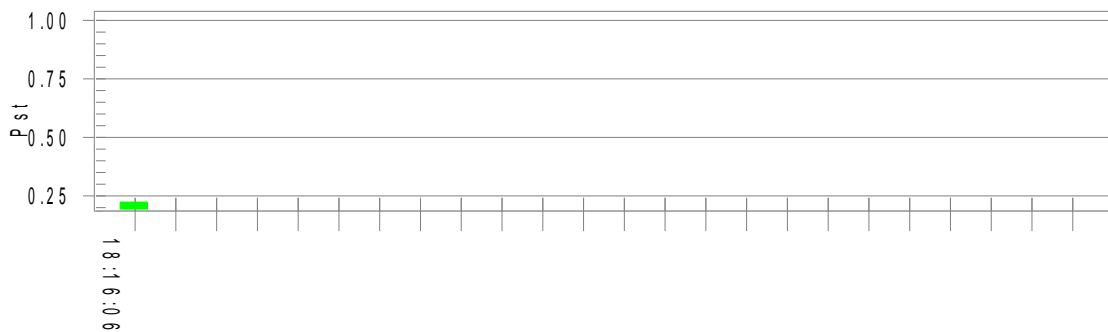
Tested by: Tested by
Test Margin: 100

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.82		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.08	Test limit (%):	4.00
Highest Pst (10 min. period):	0.224	Test limit:	1.000
			Pass



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7 Immunity Test Results

Performance Criteria Description in EN 301 489-1 V2.2.3

Performance criteria for continuous phenomena	<p>During the test, the equipment shall:</p> <ul style="list-style-type: none"> • 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	<p>For all ports and transient phenomena with the exception described below, the following applies:</p> <ul style="list-style-type: none"> • 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. <p>For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:</p> <ul style="list-style-type: none"> • 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.





Performance Criteria Description in EN 301 489-17 V3.2.4

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 Minimum performance level.

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.



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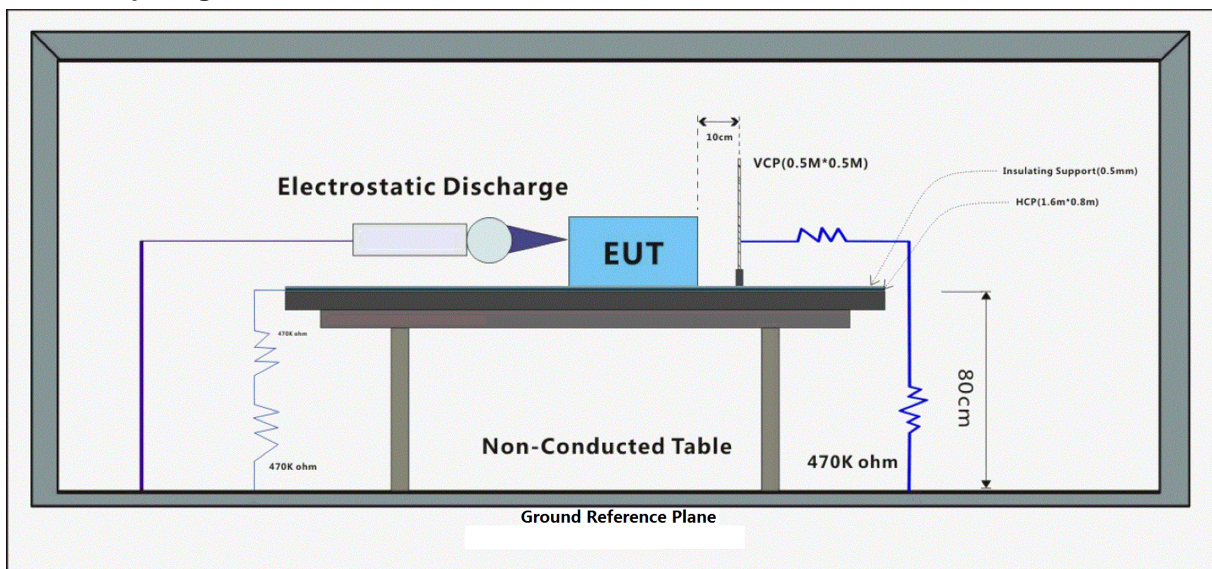
7.1 Electrostatic Discharge

Test Requirement:	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4
Test Method:	EN 61000-4-2:2009
Performance Criterion:	B
Discharge Impedance:	330Ω/150pF
Number of Discharge:	Minimum 10 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

7.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.4 °C Humidity: 46.9 % RH Atmospheric Pressure: 1020 mbar
 Test Mode: a:Normal working_Keep the EUT communicate with other auxiliary devices.
 b:Idle_Keep the EUT standby.
 c:Operation(BT)_Pair the device with Smartphone via Bluetooth.
 d:Charging_Keep the battery of the EUT in charging mode

7.1.2 Test Setup Diagram



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7.1.3 Test Results

Test Point:

Observations:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (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

Results:

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



7.2 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 61000-4-4:2012

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

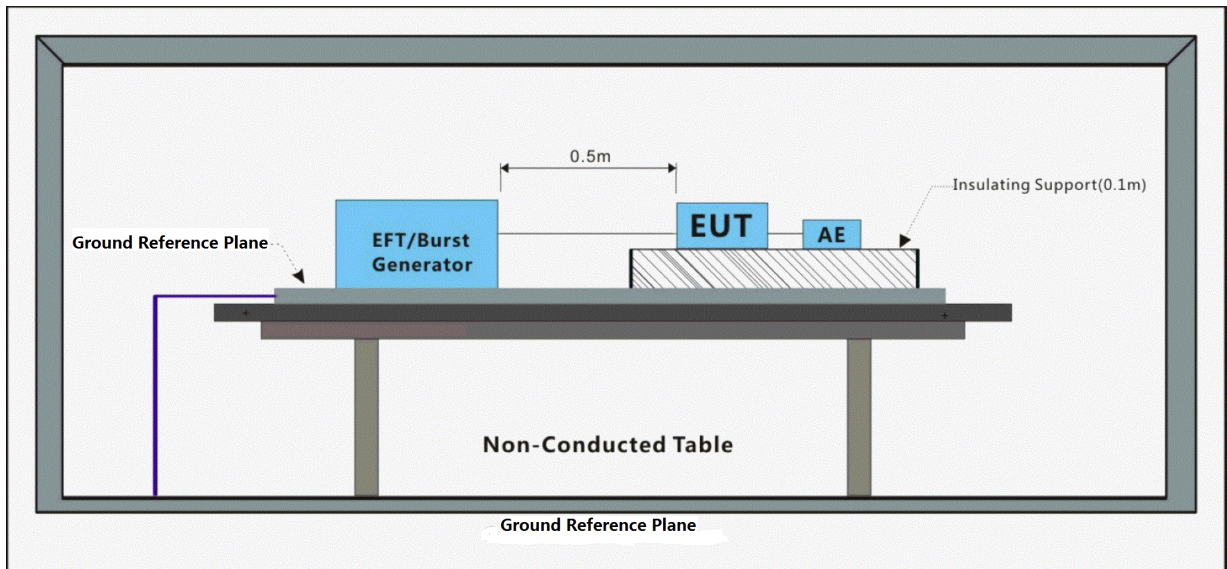
Test Mode: a:Normal working_Keep the EUT communicate with other auxiliary devices.

b:Idle_Keep the EUT standby.

c:Operation(BT)_Pair the device with Smartphone via Bluetooth.

d:Charging_Keep the battery of the EUT in charging mode

7.2.2 Test Setup Diagram



7.2.3 Test Results

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

Results:

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

7.3 Surge at Power Port

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 61000-4-5:2014+A11:2017

Performance Criterion: B

Interval: 60s between each surge

No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

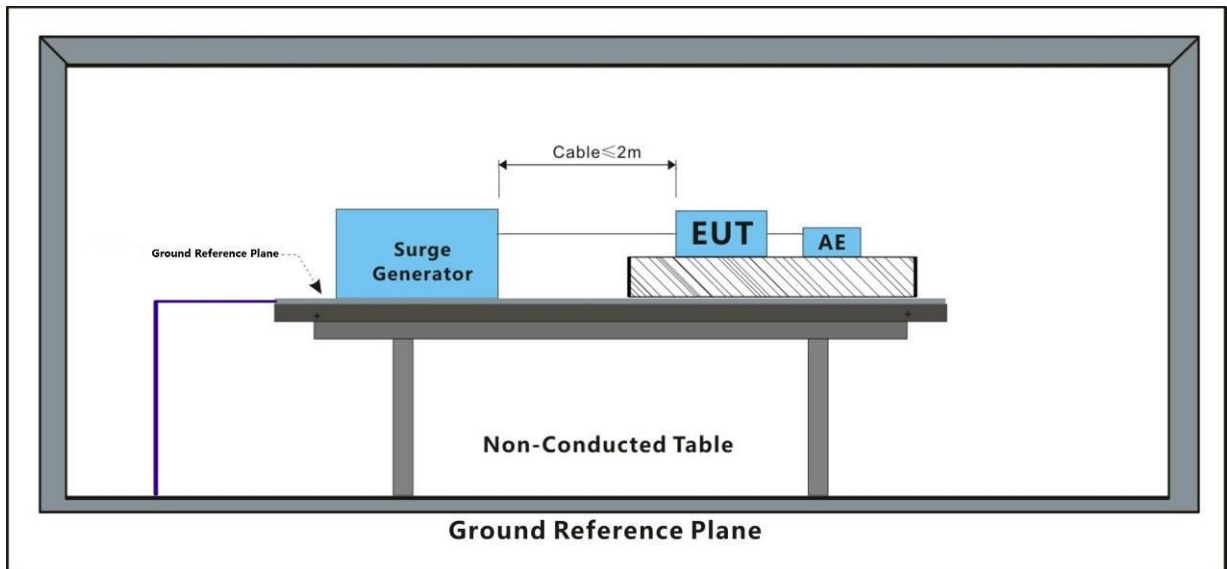
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Normal working_Keep the EUT communicate with other auxiliary devices.
b: Idle_Keep the EUT standby.
c: Operation(BT)_Pair the device with Smartphone via Bluetooth.
d: Charging_Keep the battery of the EUT in charging mode

7.3.2 Test Setup Diagram



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7.3.3 Test Results

Test Line	Level (kV)	Polarity	Phase (deg)	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

Results:

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



7.4 Conducted Immunity at Power Port (150kHz-80MHz)

Test Requirement:	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4
Test Method:	EN 61000-4-6:2014
Performance Criterion:	A
Frequency Range:	0.15MHz to 80MHz
Modulation:	80%, 1kHz Amplitude Modulation
Step Size	1%

7.4.1 E.U.T. Operation

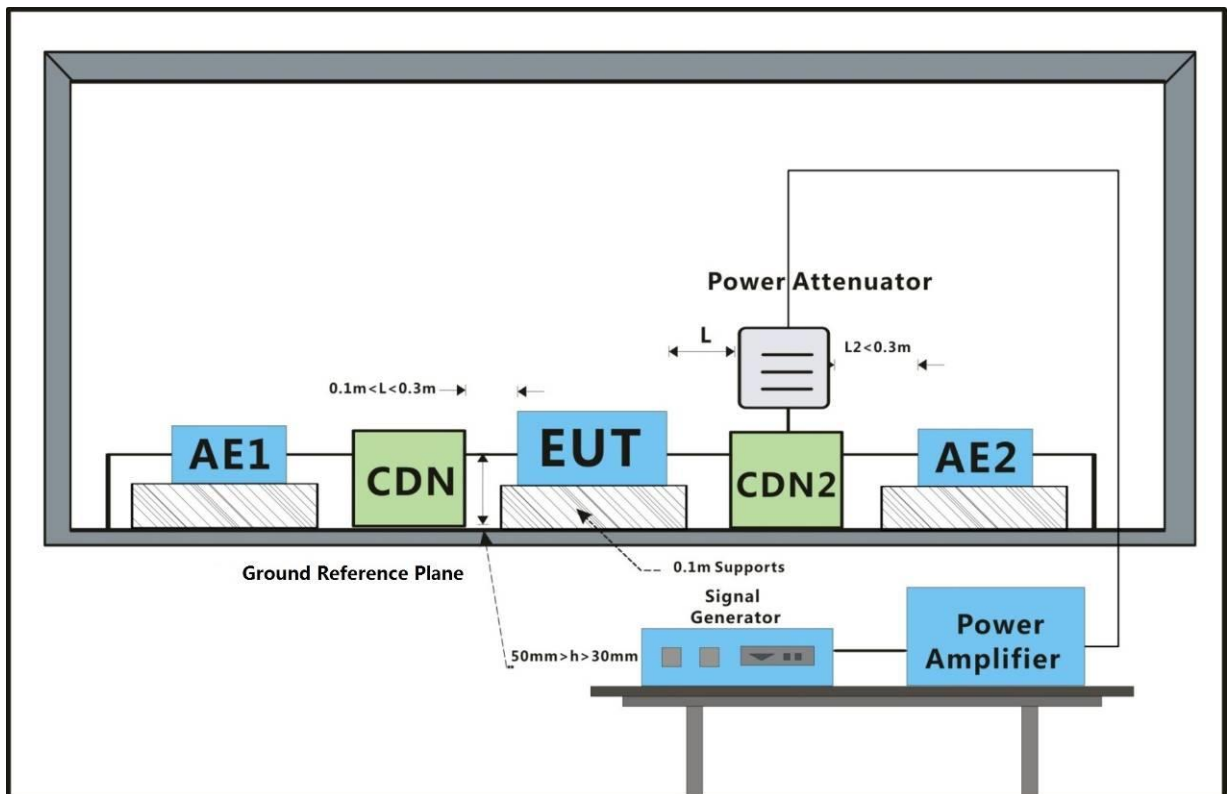
Operating Environment:

Temperature: 20 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test Mode:

- a: Normal working_Keep the EUT communicate with other auxiliary devices.
- b: Idle_Keep the EUT standby.
- c: Operation(BT)_Pair the device with Smartphone via Bluetooth.
- d: Charging_Keep the battery of the EUT in charging mode

7.4.2 Test Setup Diagram





7.4.3 Test Results

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

Results:

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



7.5 Voltage Dips and Interruptions

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 61000-4-11:2004+A11:2017

Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods:B; 0% of UT for 1 Periods:B;
0% of UT for 250 Periods:C; 70 % of UT for 25 Periods:C

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

7.5.1 E.U.T. Operation

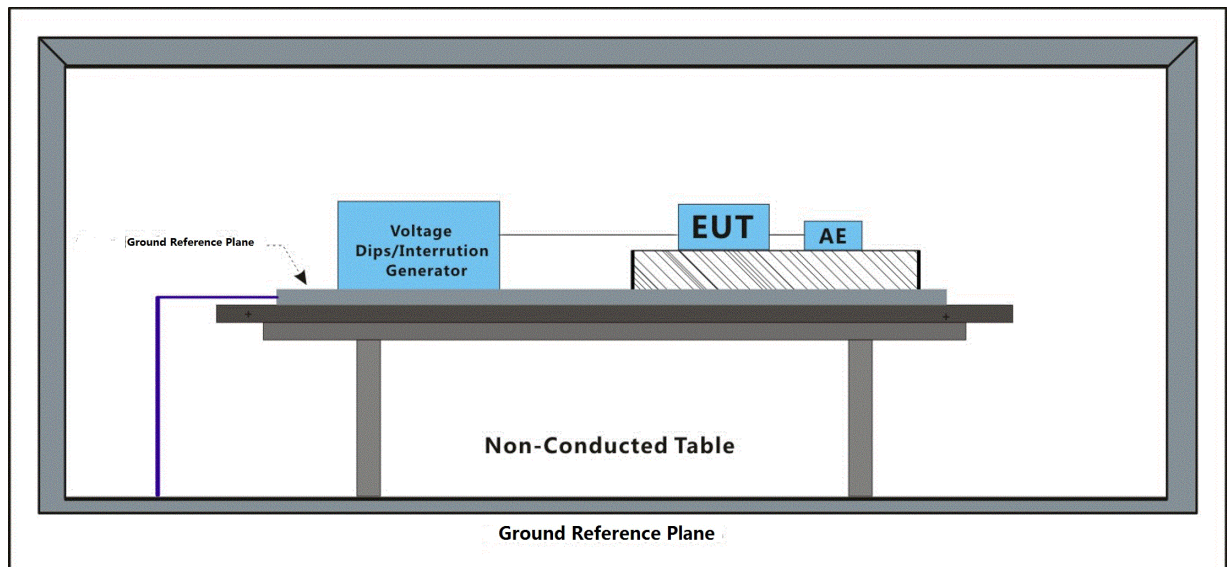
Operating Environment:

Temperature: 20 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test Mode:

- a:Normal working_Keep the EUT communicate with other auxiliary devices.
- b:Idle_Keep the EUT standby.
- c:Operation(BT)_Pair the device with Smartphone via Bluetooth.
- d:Charging_Keep the battery of the EUT in charging mode

7.5.2 Test Setup Diagram



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7.5.3 Test Results

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

Results:

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



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7.6 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4

Test Method: EN 61000-4-3:2006+A2:2010

Performance Criterion: A

Frequency Range: 80MHz to 6GHz

Antenna Polarisation: Vertical and Horizontal

Modulation: 1kHz,80% Amp. Mod,1% increment

7.6.1 E.U.T. Operation

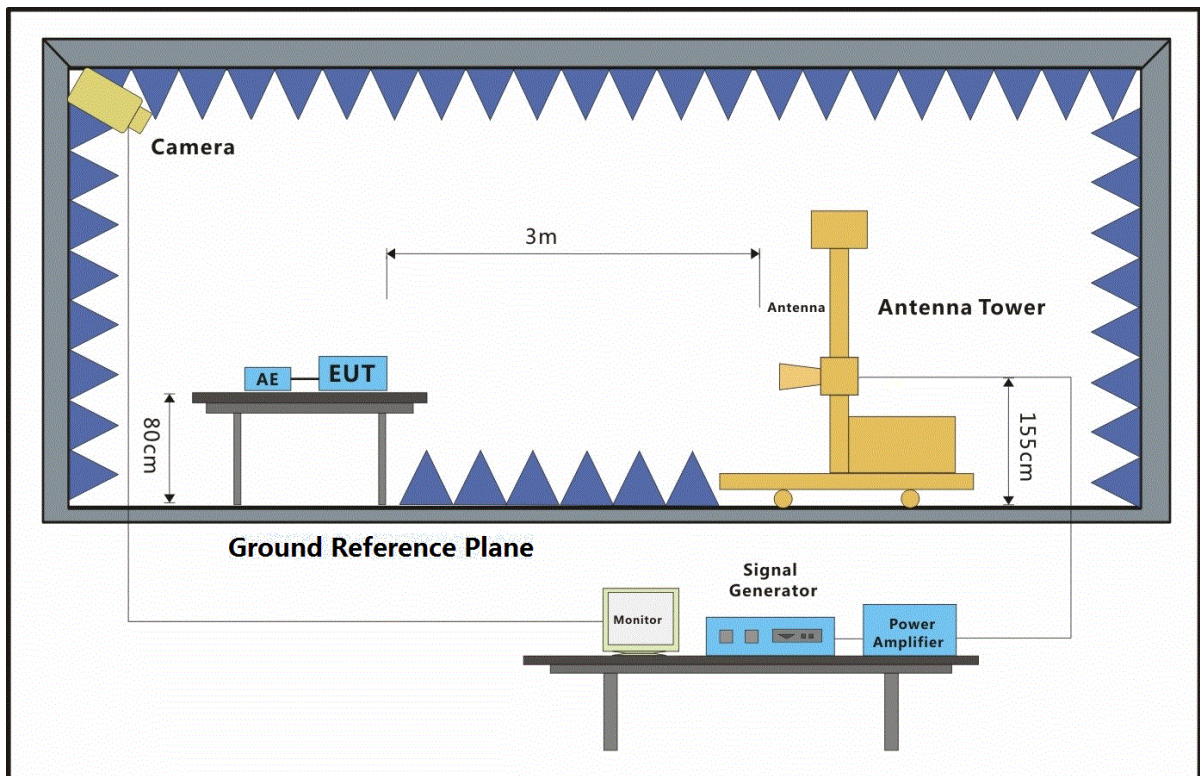
Operating Environment:

Temperature: 21 °C Humidity: 50.7 % RH Atmospheric Pressure: 1020 mbar

Test Mode:

- a:Normal working_Keep the EUT communicate with other auxiliary devices.
- b:Idle_Keep the EUT standby.
- c:Operation(BT)_Pair the device with Smartphone via Bluetooth.
- d:Charging_Keep the battery of the EUT in charging mode

7.6.2 Test Setup Diagram



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7.6.3 Test Results

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-6GHz	3	Front	2s	A
80MHz-6GHz	3	Back	2s	A
80MHz-6GHz	3	Left	2s	A
80MHz-6GHz	3	Right	2s	A
80MHz-6GHz	3	Top	2s	A
80MHz-6GHz	3	Underside	2s	A

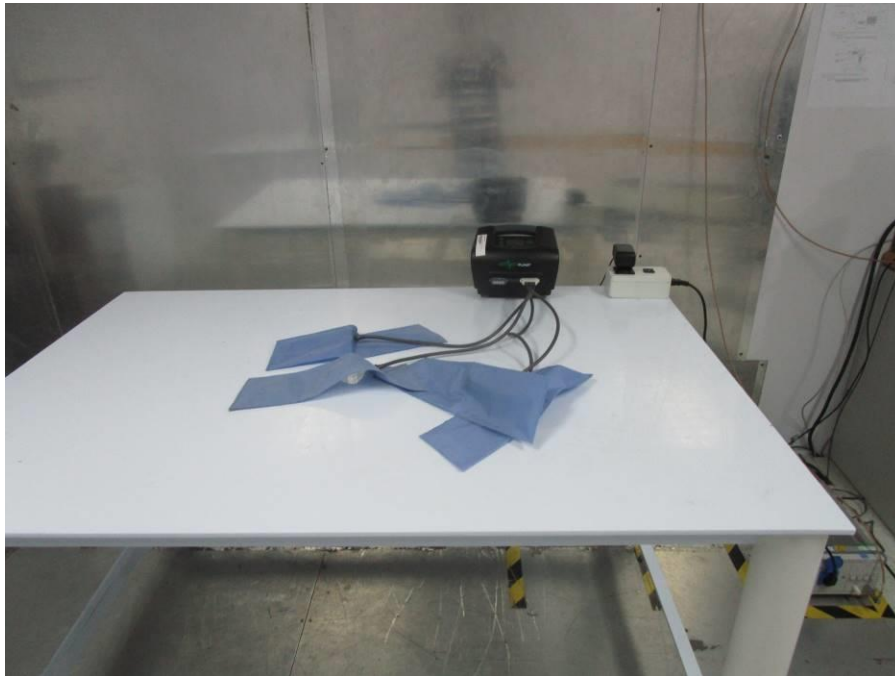
Results:

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

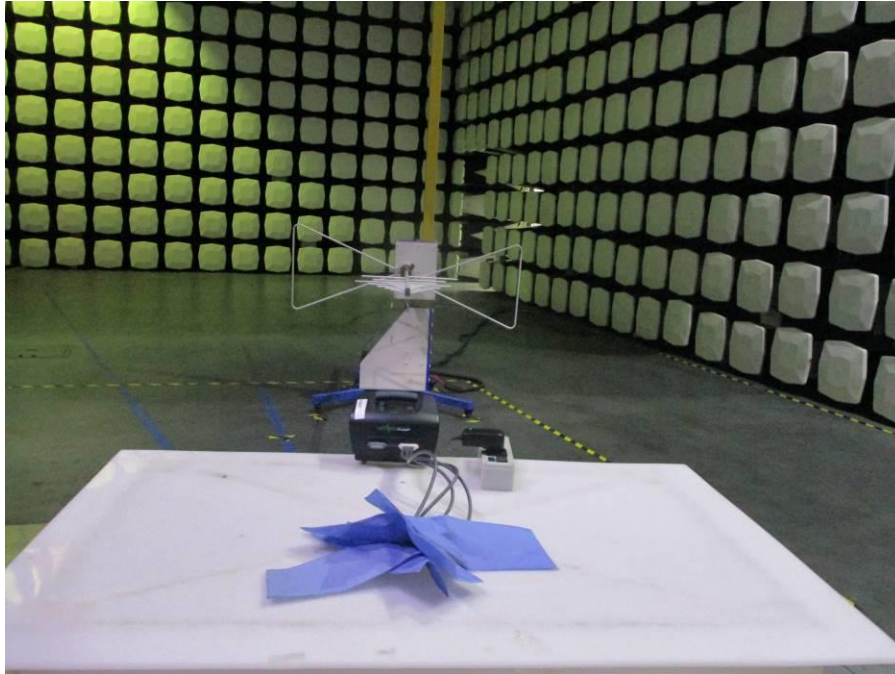


8 Photographs

8.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



8.2 Radiated Emissions (30MHz-1GHz) Test Setup



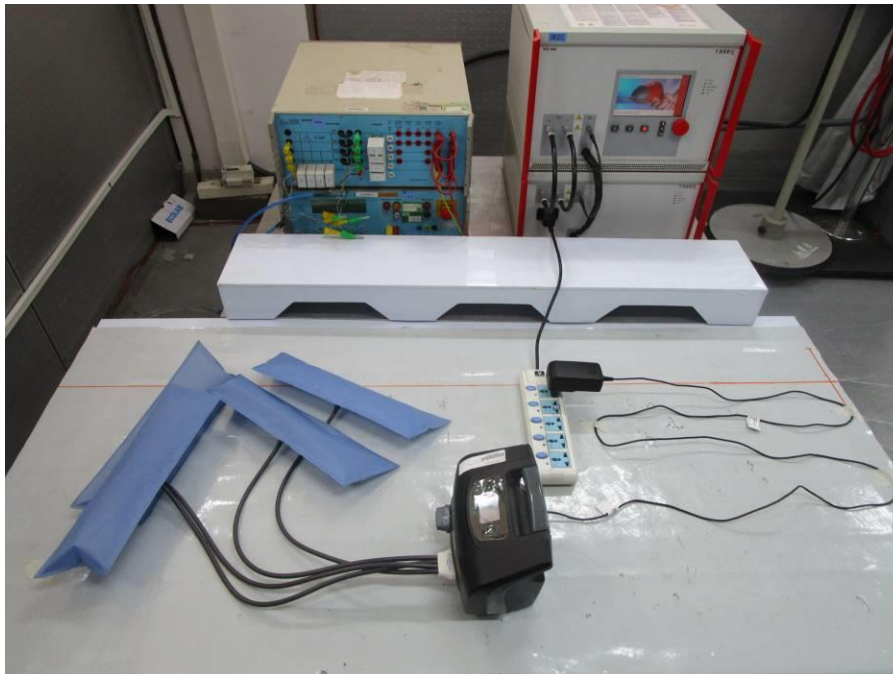
8.3 Voltage Fluctuations and Flicker Test Setup



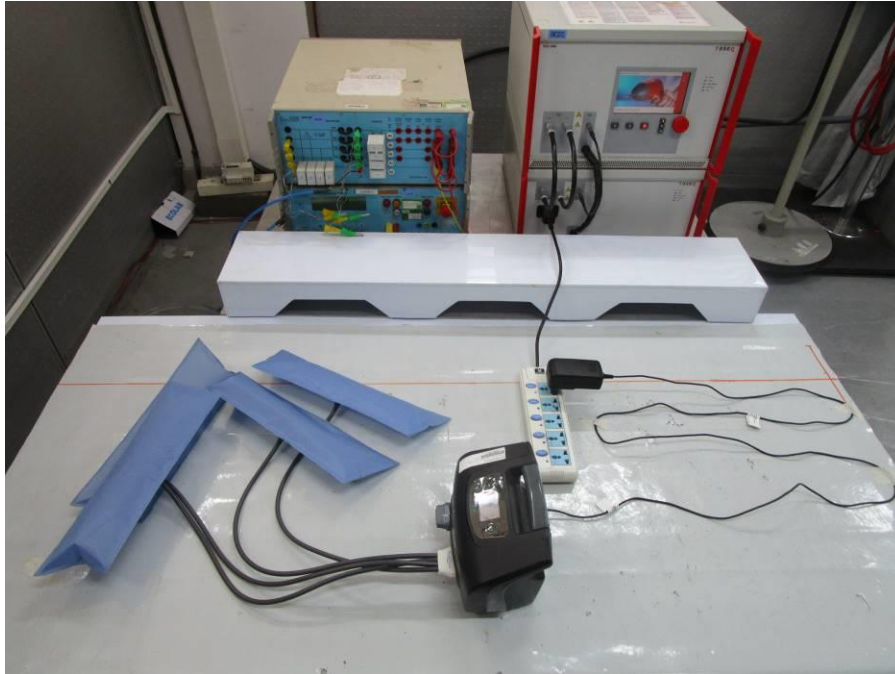
8.4 Electrostatic Discharge Test Setup



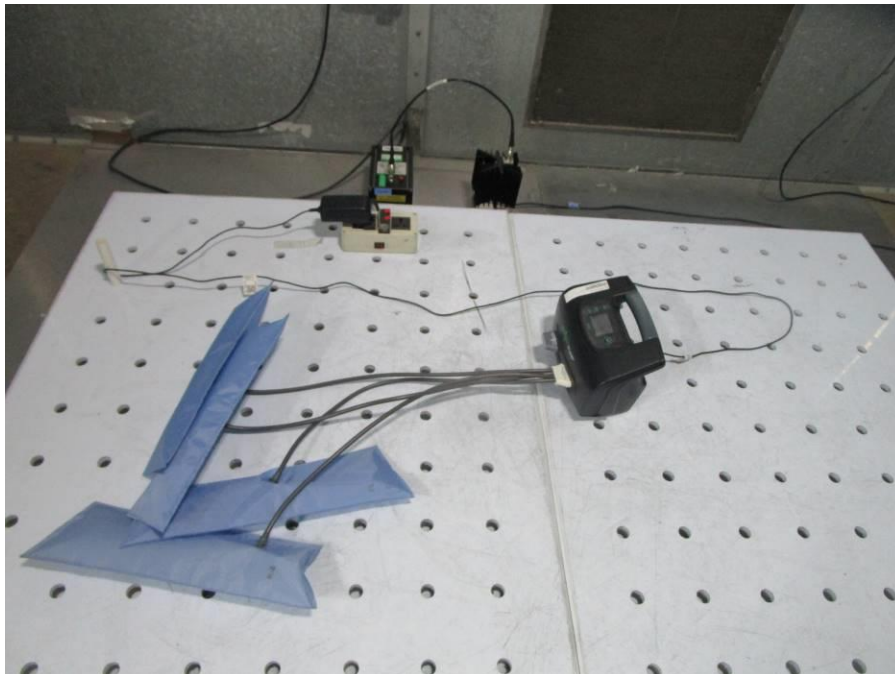
8.5 Electrical Fast Transients/Burst at Power Port Test Setup



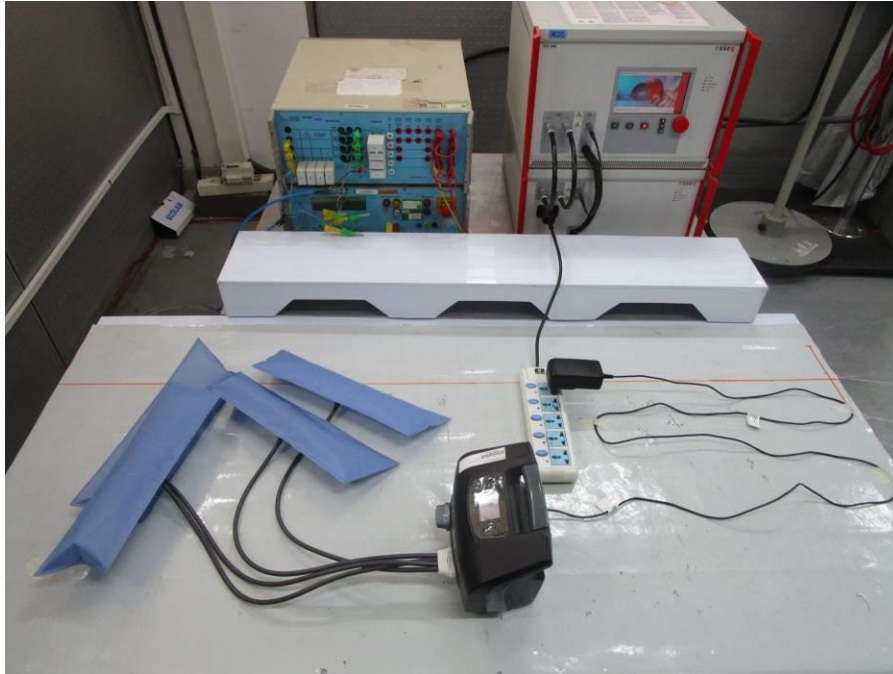
8.6 Surge at Power Port Test Setup



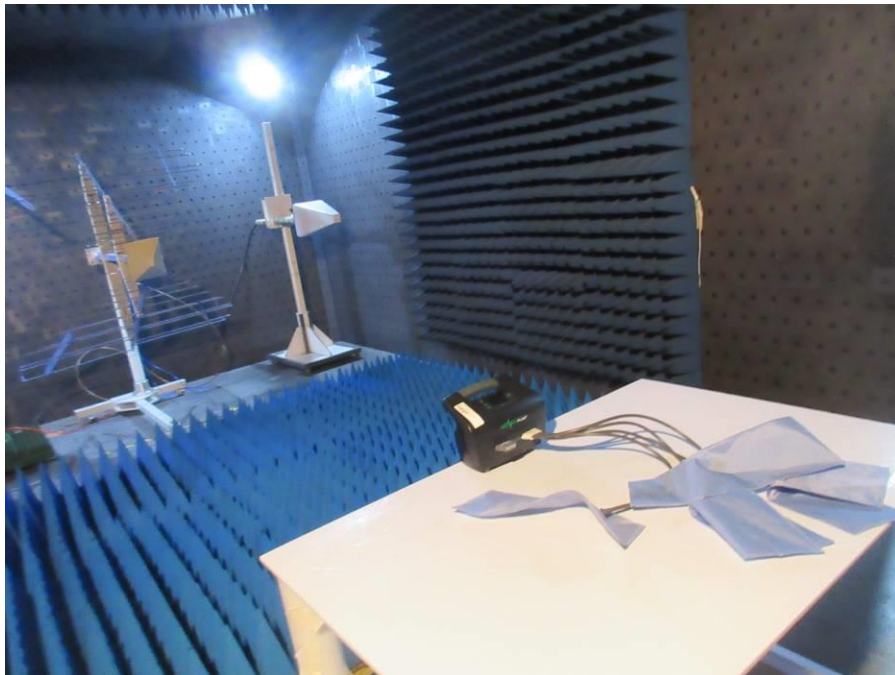
8.7 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



8.8 Voltage Dips and Interruptions Test Setup



8.9 Radiated Immunity (80MHz-6GHz) Test Setup





8.10 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZCR2106021843HS.

--End of Report--

