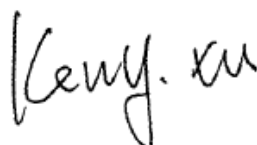


TEST REPORT

Application No.: SZEM2012013549CR
Applicant: Shenzhen DO Intelligent Technology Co., Ltd
Address of Applicant: Floor 11, Building 3, Changyi Industrial Factory, No.1 Lirong Road, Xinshi Community, Dalang Sub-district, Longhua District, Shenzhen City, China
Manufacturer: Shenzhen DO Intelligent Technology Co., Ltd
Address of Manufacturer: Floor 11, Building 3, Changyi Industrial Factory, No.1 Lirong Road, Xinshi Community, Dalang Sub-district, Longhua District, Shenzhen City, China
Factory: Shenzhen DO Intelligent Technology Co., Ltd
Address of Factory: Floor 11, Building 3, Changyi Industrial Factory, No.1 Lirong Road, Xinshi Community, Dalang Sub-district, Longhua District, Shenzhen City, China
Equipment Under Test (EUT):
EUT Name: Smart Watch
Model No.: ID206 ♣
 ♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: IDO
Standard(s) : EN 301 489-1 V2.2.3
 EN 301 489-17 V3.2.4
Date of Receipt: 2020-12-30
Date of Test: 2020-12-30 to 2021-01-04
Date of Issue: 2021-01-11

Test Result:	Pass*
---------------------	--------------

* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-01-11		Original

Authorized for issue by:			
			
		<hr/> Bill Chen/Project Engineer	
			
		<hr/> Eric Fu/Reviewer	

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Mains Power Port (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
Voltage Fluctuations and Flicker		EN 61000-3-3:2013+A1:2019	Clause 5 of EN 61000-3-3	Pass
Harmonic Current Emission		EN IEC 61000-3-2:2019	Class A	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Radiated Immunity (80MHz-6GHz)	EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Surge at AC Mains Power Port		EN 61000-4-5:2014 +A1:2017	1.2/50μs Tr/Td; 1kV Line to Line	Pass
Conducted Immunity at AC Mains 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 +A1:2017	0 % UT for 0.5per; 0 % UT for 1per; 0 % UT for 250per; 70 % UT for 25per; UT is Supply Voltage	Pass
Electrostatic Discharge		EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients Burst at AC Mains Power Port		EN 61000-4-4:2012	1kV; 5/50ns Tr/Td; 5kHz Repetition Frequency	

Remark:

Model No.: ID206

There are two kinds of samples for the above model.

Only the sample 1 was tested fully, and the sample 2 was performed the Radiated Emissions (30MHz-1GHz), Radiated Immunity (80MHz-6GHz), Electrostatic Discharge test for discrepancy, since according to the declaration of the applicant, the electrical circuit design, PCB layout, components used and internal wiring were identical for the above model, with only difference on display screen.



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4 General Information

4.1 Details of E.U.T.

Power supply:	Rechargeable battery: DC 3.8V 300mAh (Charged by USB)
Cable(s):	USB cable:60cm unshielded
The highest working frequency(except RF modulator):	Less than 108MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1443	REF. No.SEA05D09B
iPhone 8	Apple	A1863	REF. No.SEA16J00

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	$\pm 3.0\text{dB}$
Radiated Emissions (30MHz-1GHz)	$\pm 4.5\text{dB}$
Voltage Fluctuations and Flicker	$\pm 3.7\%$
Harmonic Current Emission	$\pm 0.068\text{dB}$
Radiated Immunity (80MHz-6GHz)	$\pm 1.64\text{dB}$
Surge at AC Mains Power Port	$\pm 5\%$
Conducted Immunity at AC Mains Power Port (150kHz-80MHz)	$\pm 0.96\text{dB}$
Voltage Dips and Interruptions	$\pm 4\%$
Electrostatic Discharge	$\pm 6\%$
Electrical Fast Transients Burst at AC Mains Power Port	$\pm 5\%$

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.4 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

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**

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. 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.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 EMS Monitor

Visual: Monitored the work status and display of the EUT.

Audio: None.



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5 Equipment List

Conducted Emissions at AC Mains Power Port (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2020-03-24	2021-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-04-01	2021-03-31

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2020-11-02	2021-11-01
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California Instruments	5001ix	SEM016-02	2020-04-09	2021-04-08
Power Analyzer	California Instruments	PACS-1	SEM016-01	2020-04-09	2021-04-08
Measurement Software	California Instruments	CTS 4.0 V4.17.0	N/A	N/A	N/A

Harmonic Current Emission					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California Instruments	5001ix	SEM016-02	2020-04-09	2021-04-08
Power Analyzer	California Instruments	PACS-1	SEM016-01	2020-04-09	2021-04-08
Measurement Software	California Instruments	CTS 4.0 V4.17.0	N/A	N/A	N/A

Radiated Immunity (80MHz-6GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	2020-07-10	2021-07-09
Power Sensor	Rohde&Schwarz	NRP-Z91	SEM009-09	2020-03-23	2021-03-22



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Stacked Log.-Per.-Broadband Antenna	Schwarzbeck	STLP 9129	SEM003-25	N/A	N/A
Signal Generator	Rohde&Schwarz	SMB100A	SEM006-11	2020-03-23	2021-03-22
Broadband Amplifier	Rohde&Schwarz	BBA150-BC250	SEM005-12	2020-09-23	2021-09-22
Broadband Amplifier	Rohde&Schwarz	BBA150-D110	SEM005-13	2020-04-01	2021-03-31
Broadband Amplifier	Rohde&Schwarz	BBA150-E60	SEM005-16	2020-05-21	2021-05-20
Measurement Software	Rohde&Schwarz	EMC32 V9.25.00	N/A	N/A	N/A
Amplifier	Amplifier Research	75A250A	SEM005-11	2020-04-01	2021-03-31
Wire ISN	Rohde&Schwarz	ENY 22	EMC0114	N/A	N/A
Audio Analyzer	Rohde&Schwarz	UPL	SEM008-01	2020-09-23	2021-09-22
Conditioning Amplifier	Brüel&Kjaer	2690-OS2	SEM005-10	2020-04-14	2021-04-13
Mouth Simulator	Brüel&Kjaer	4227	SEM017-01	2020-04-14	2021-04-13
Signal Source	Brüel&Kjaer	4231	SEM017-02	2020-03-25	2021-03-24
Coupling/Decoupling Network	SCHLODER	CDN-M2+3	SEM007-10	2020-09-23	2021-09-22
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	SEM010-06	2019-09-23	2021-09-22

Surge at AC Mains Power Port

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2020-03-26	2021-03-25
High Speed Coupling/Decoupling Network	EM Test	CNI 508N2	SEM018-05	2020-07-01	2021-06-30

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

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
RF-Generator	SCHAFFNER	NSG 2070	SEM006-01	2020-10-22	2021-10-21
Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEM007-03	2020-04-09	2021-04-08

Voltage Dips and Interruptions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2020-03-26	2021-03-25

Electrostatic Discharge

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Generator	TESEQ AG	NSG 437	SEM019-02	2020-04-17	2021-04-16
ESD Ground Plane	SGS(3m*3m)	N/A	SEN006-01	N/A	N/A
ESD Simulator	SCHAFFNER	NSG 438	SEM019-01	2020-04-07	2021-04-06



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Electrical Fast Transients Burst at AC Mains Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2020-03-26	2021-03-25
Capacitive Coupling Clamp	EM Test	HFK	SEM018-03	2020-03-26	2021-03-25

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06



6 Emission Test Results

6.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Test Requirement: EN 301 489-1 V2.2.3
 EN 301 489-17 V3.2.4
 Test Method: EN 55032:2015
 Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.
 Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

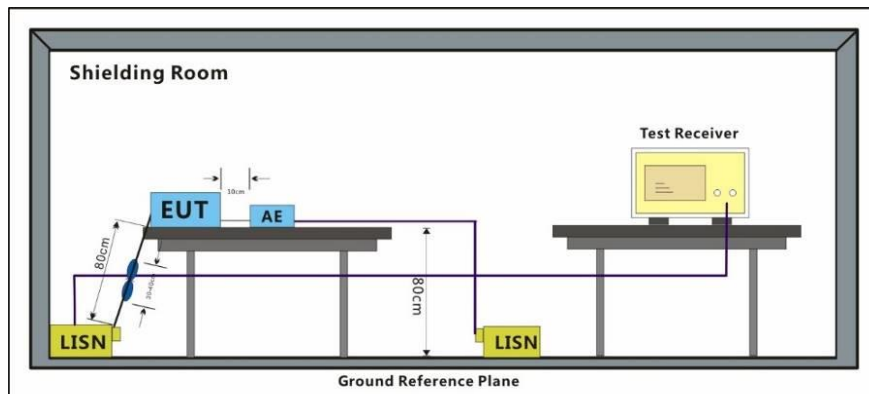
6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.5 °C Humidity: 43.6 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging:Keep the battery of the EUT in charging mode.

6.1.3 Test Setup Diagram

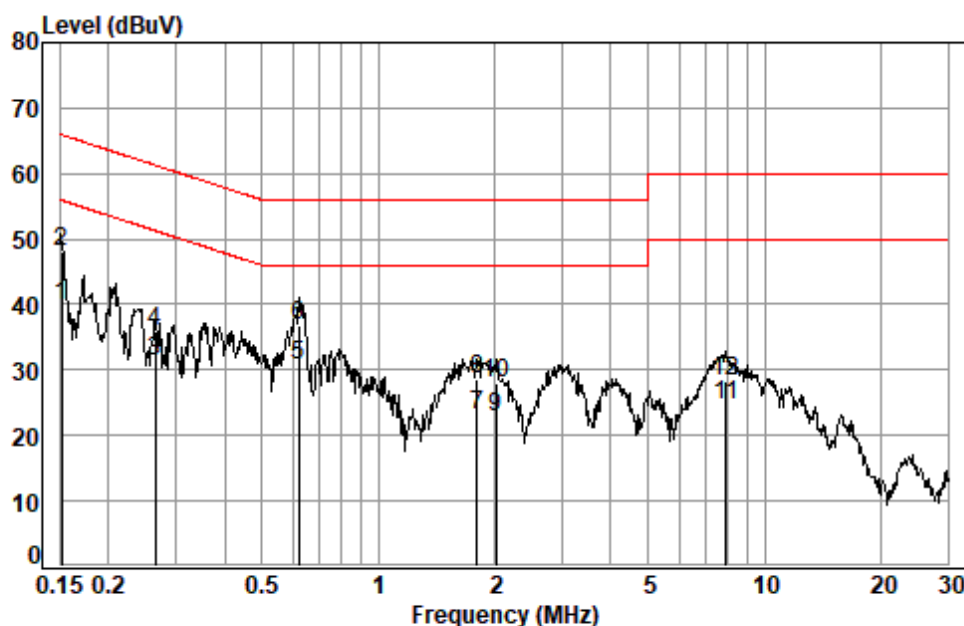


6.1.4 Measurement Procedure and Data

Frequency range: 150kHz-30MHz

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.

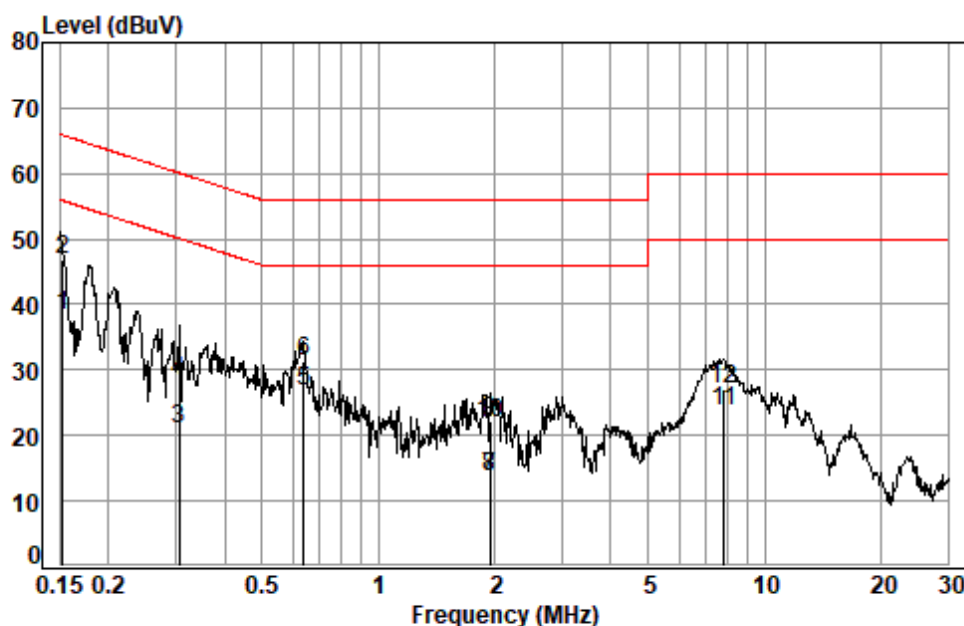
Test Mode: 04; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 13549CR
Test mode: 04

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.1516	0.03	9.70	29.99	39.72	55.91	Average
2	0.1516	0.03	9.70	38.34	48.07	65.91	QP
3	0.2644	0.05	9.74	21.43	31.22	51.29	Average
4	0.2644	0.05	9.74	26.21	36.00	61.29	QP
5	0.6238	0.08	9.77	20.88	30.73	46.00	Average
6	0.6238	0.08	9.77	27.10	36.95	56.00	QP
7	1.8000	0.12	9.81	13.12	23.05	46.00	Average
8	1.8000	0.12	9.81	18.72	28.65	56.00	QP
9	2.0119	0.13	9.81	12.87	22.81	46.00	Average
10	2.0119	0.13	9.81	18.00	27.94	56.00	QP
11	7.9353	0.16	10.09	14.26	24.51	50.00	Average
12	7.9353	0.16	10.09	17.91	28.16	60.00	QP

Test Mode: 04; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 13549CR
Test mode: 04

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.1524	0.03	9.71	28.67	38.41	55.87	Average
2	0.1524	0.03	9.71	37.15	46.89	65.87	QP
3	0.3051	0.05	9.74	11.15	20.94	50.10	Average
4	0.3051	0.05	9.74	18.35	28.14	60.10	QP
5	0.6406	0.08	9.77	16.96	26.81	46.00	Average
6	0.6406	0.08	9.77	21.59	31.44	56.00	QP
7	1.9489	0.12	9.81	3.80	13.73	46.00	Average
8	1.9489	0.12	9.81	3.78	13.71	46.00	Average
9	1.9489	0.12	9.81	12.17	22.10	56.00	QP
10	1.9489	0.12	9.81	12.02	21.95	56.00	QP
11	7.8516	0.16	10.09	13.43	23.68	50.00	Average
12	7.8516	0.16	10.09	16.85	27.10	60.00	QP

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
 Measurement Distance: 3m
 Limit:

FREQUENCY (MHz)	dBuV/m (At 10m)	dBuV/m (At 3m)
	Class B	Class B
30 ~ 230	30	40
230 ~ 1000	37	47
Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz		

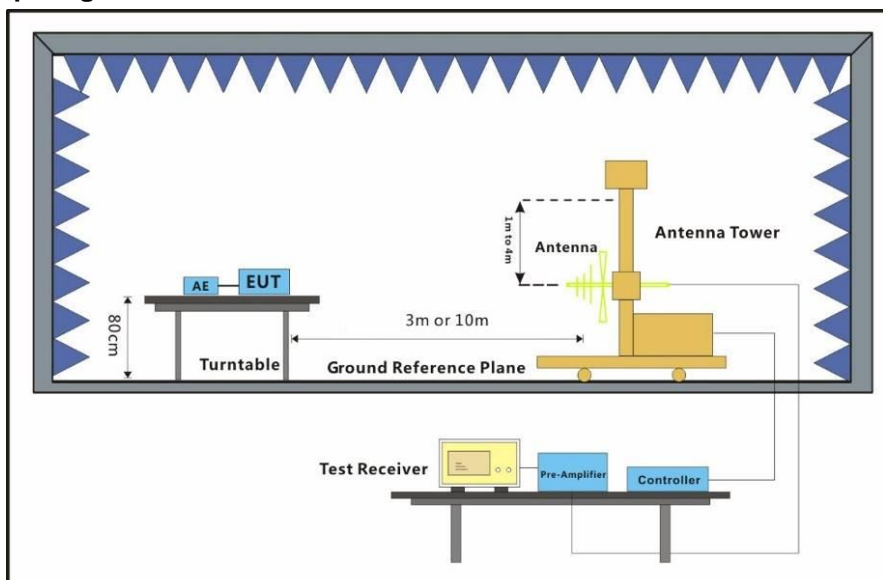
6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 25.5 °C Humidity: 51.3 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	03	Operation(BT):Keep the EUT communicating with other Bluetooth devices.
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Pre-scan	05	Idle:Keep the EUT standby.

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

Frequency range: 30MHz-1GHz

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.



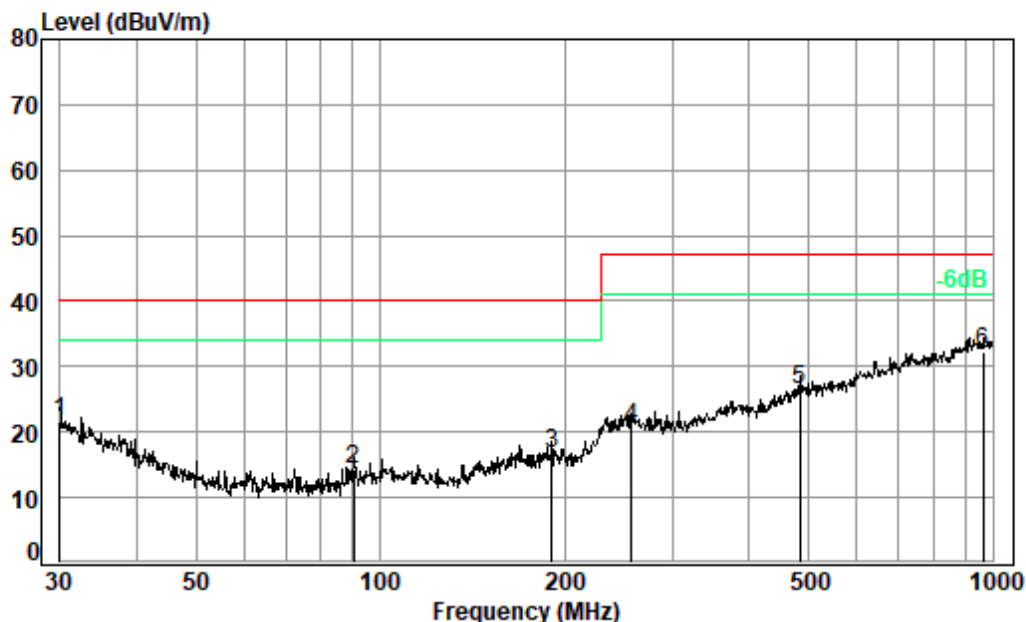
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the sample 1

Test Mode: 04; Polarity: Horizontal



Condition: 3m HORIZONTAL

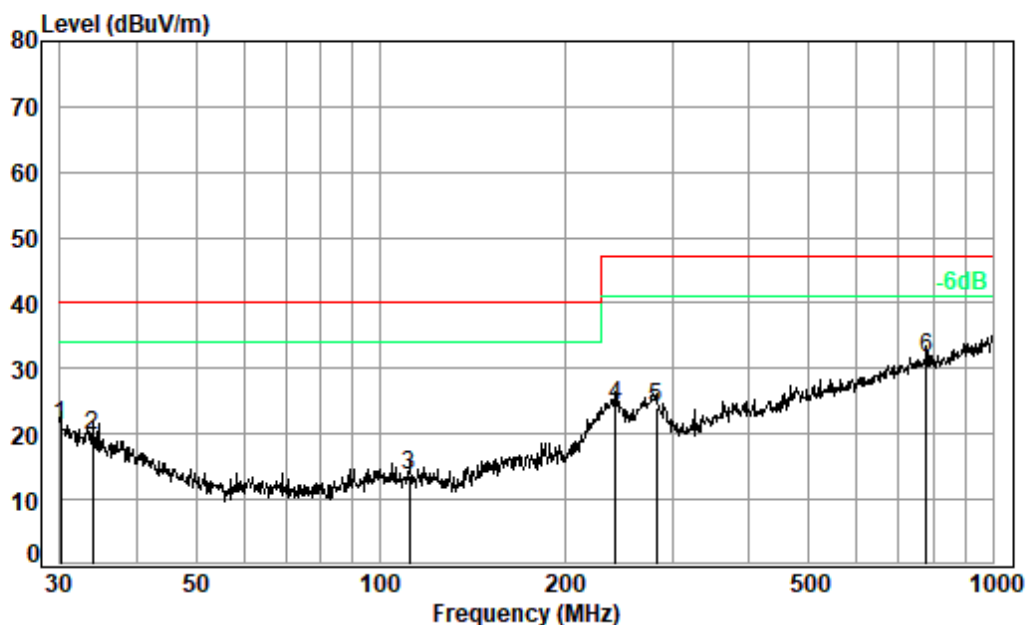
Job No. : 13549CR

Test mode: 04

: different

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	30.00	0.60	23.00	27.74	25.87	21.73	40.00	-18.27	QP
2	90.54	1.29	13.21	27.62	27.34	14.22	40.00	-25.78	QP
3	190.41	1.19	15.51	27.18	27.16	16.68	40.00	-23.32	QP
4	257.42	1.70	18.13	26.97	27.87	20.73	47.00	-26.27	QP
5	483.91	2.47	24.30	27.74	27.51	26.54	47.00	-20.46	QP
6 pp	965.54	3.57	29.50	26.83	26.11	32.35	47.00	-14.65	QP

Test Mode: 04; Polarity: Horizontal



Condition: 3m HORIZONTAL

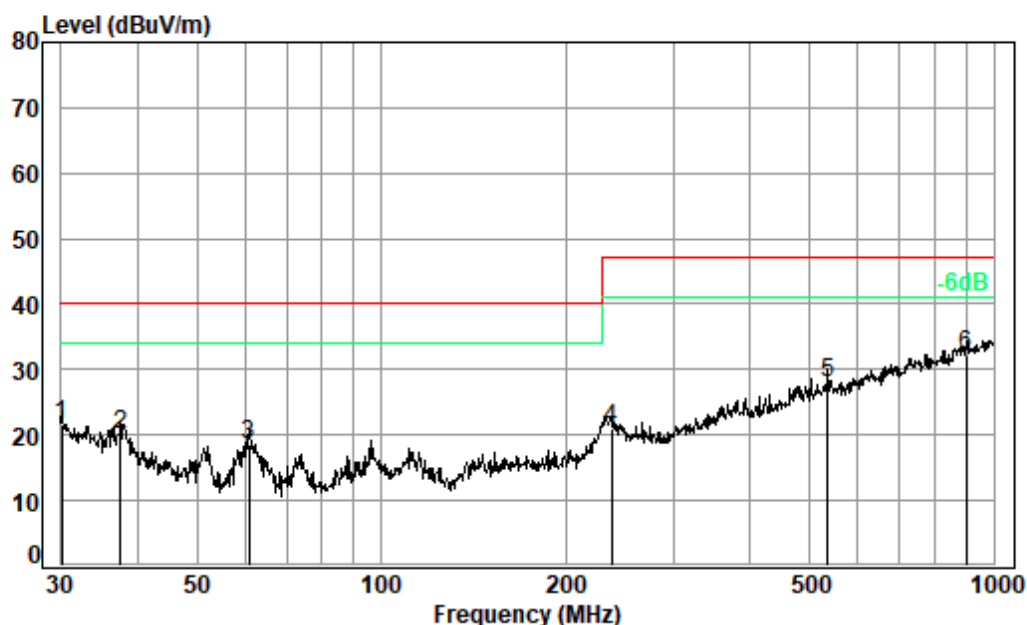
Job No. : 13549CR

Test mode: 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	30.11	0.60	22.92	27.74	25.55	21.33	40.00	-18.67	QP
2	33.92	0.64	20.92	27.72	25.94	19.78	40.00	-20.22	QP
3	111.74	1.12	13.57	27.54	26.54	13.69	40.00	-26.31	QP
4	242.53	1.58	17.90	27.01	31.95	24.42	47.00	-22.58	QP
5	281.99	1.88	18.38	26.91	30.83	24.18	47.00	-22.82	QP
6 pp	779.61	3.22	28.10	27.77	27.96	31.51	47.00	-15.49	QP

the sample 2

Test Mode: 04; Polarity: Vertical



Condition: 3m VERTICAL

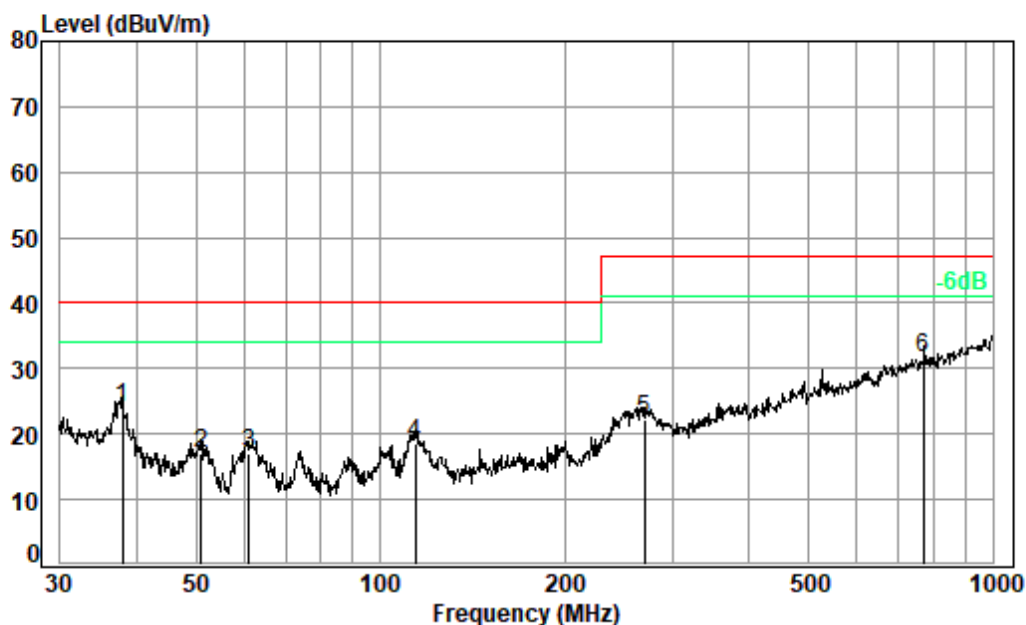
Job No. : 13549CR

Test mode: 04

: different

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	30.11	0.60	22.92	27.74	25.91	21.69	40.00	-18.31	QP
2	37.55	0.68	19.31	27.71	27.69	19.97	40.00	-20.03	QP
3	60.92	0.80	12.89	27.66	32.57	18.60	40.00	-21.40	QP
4	237.48	1.54	17.68	27.03	28.70	20.89	47.00	-26.11	QP
5	535.71	2.58	24.87	27.92	28.44	27.97	47.00	-19.03	QP
6 pp	900.15	3.50	28.90	27.16	27.02	32.26	47.00	-14.74	QP

Test Mode: 04; Polarity: Vertical



Condition: 3m VERTICAL

Job No. : 13549CR

Test mode: 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB		dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	37.94	0.68	19.21	27.71	31.75	23.93	40.00	-16.07	QP
2	50.94	0.71	13.81	27.68	30.22	17.06	40.00	-22.94	QP
3	61.13	0.80	12.91	27.66	30.91	16.96	40.00	-23.04	QP
4	114.11	1.12	13.40	27.52	31.60	18.60	40.00	-21.40	QP
5	269.43	1.79	18.57	26.94	28.74	22.16	47.00	-24.84	QP
6 pp	771.45	3.19	28.02	27.78	28.16	31.59	47.00	-15.41	QP

6.3 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

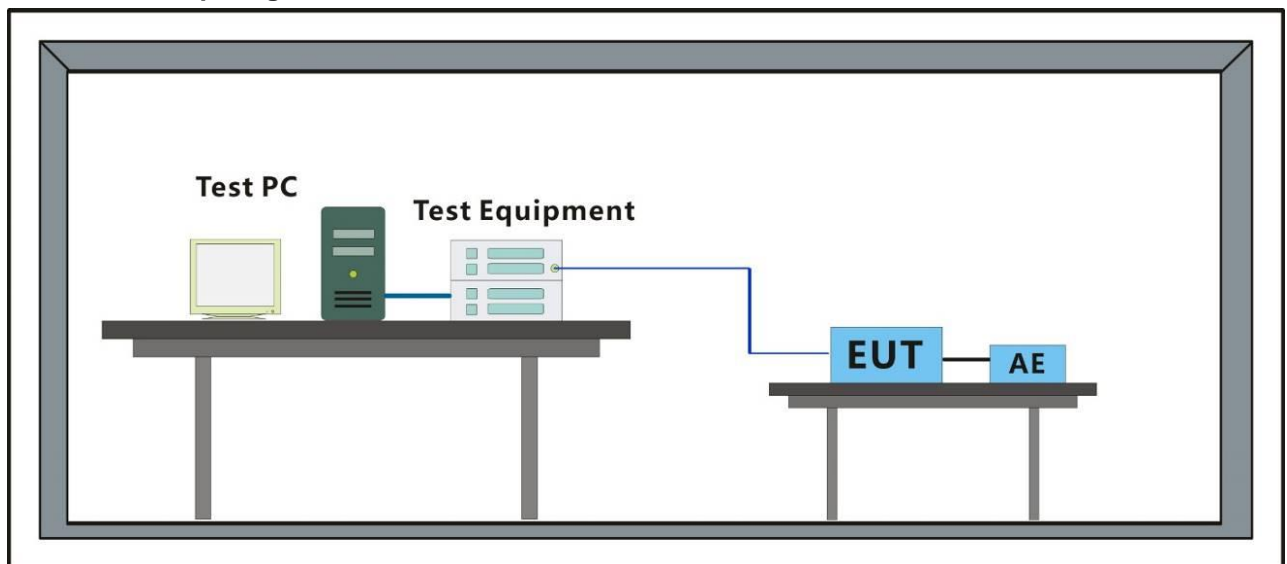
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 20.6 °C Humidity: 49.9 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging:Keep the battery of the EUT in charging mode.

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

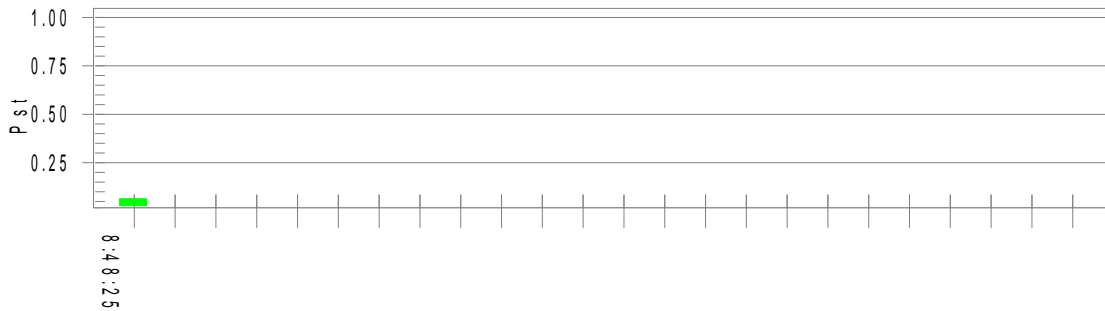


Test Result: Pass

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): 229.98

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass



6.4 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

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."



7 Immunity Test Results

Performance Criteria Description in EN 301 489-1

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

Criteria	During Test	After 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 applied to Transmitters (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Transmitters (TT)

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

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Receivers (TR)

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

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.



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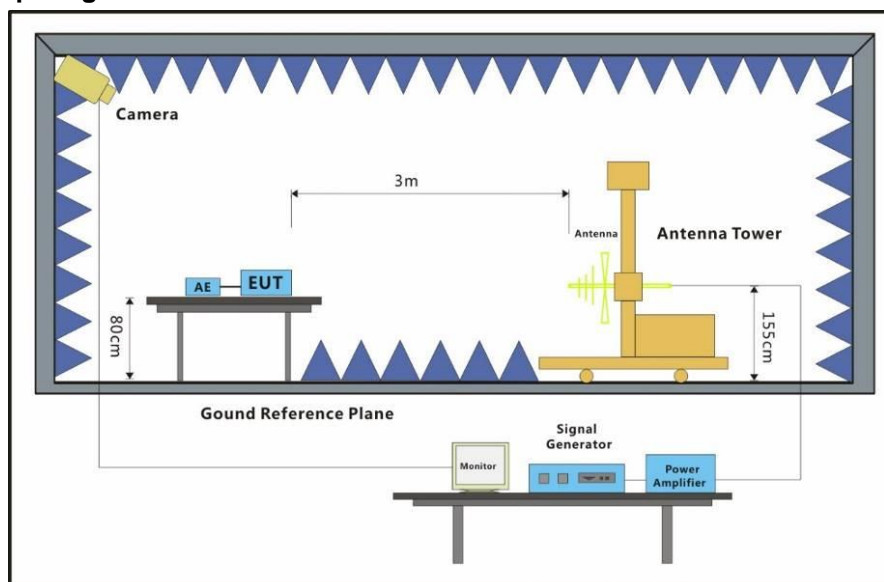
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7.1 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4
Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010

7.1.1 Test Setup Diagram



7.1.2 E.U.T. Operation

Operating Environment:
Temperature: 20.1 °C Humidity: 56.3 % RH Atmospheric Pressure: 1010 mbar

7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	Operation(BT):Keep the EUT communicating with other Bluetooth devices.
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Final test	05	Idle:Keep the EUT standby.



7.1.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 80MHz to 6GHz

Antenna Polarisation: Vertical and Horizontal

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

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

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



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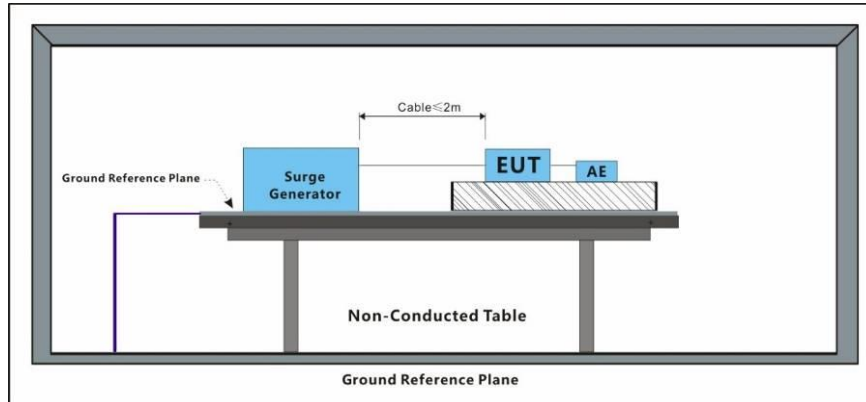
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7.2 Surge at AC Mains Power Port

Test Requirement: EN 301 489-1 V2.2.3
 EN 301 489-17 V3.2.4
 Test Method: EN 61000-4-5:2014 +A1:2017

7.2.1 Test Setup Diagram



7.2.2 E.U.T. Operation

Operating Environment:
 Temperature: 20.7 °C Humidity: 50.2 % RH Atmospheric Pressure: 1010 mbar

7.2.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Final test	05	Idle:Keep the EUT standby.



7.2.4 Test Condition and Results:

Performance Criterion: B

Interval: 60s between each surge

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

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

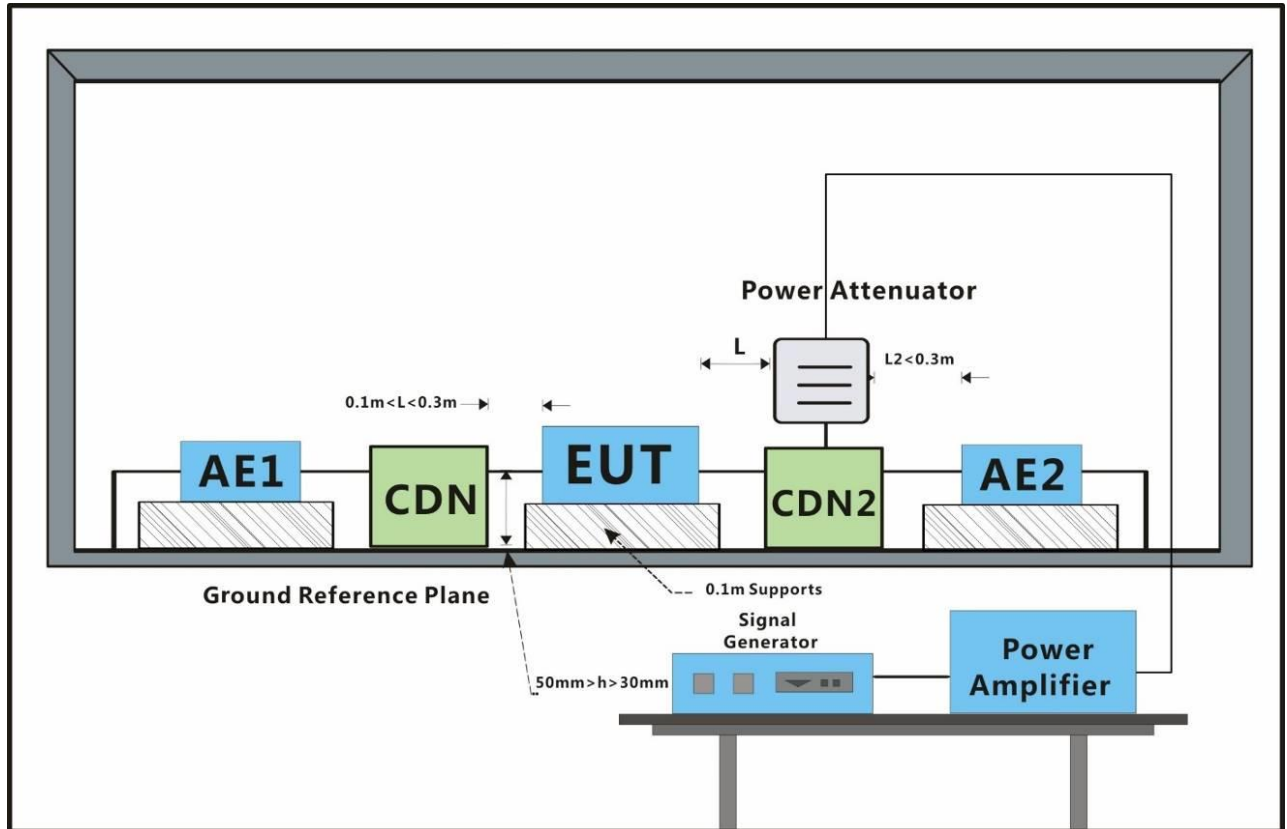
A: No degradation in the performance of the EUT was observed



7.3 Conducted Immunity at AC Mains 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

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 20.7 °C Humidity: 50.2 % RH Atmospheric Pressure: 1010 mbar

7.3.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Final test	05	Idle:Keep the EUT standby.



7.3.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size: 1%

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A
A: No degradation in the performance of the EUT was observed				



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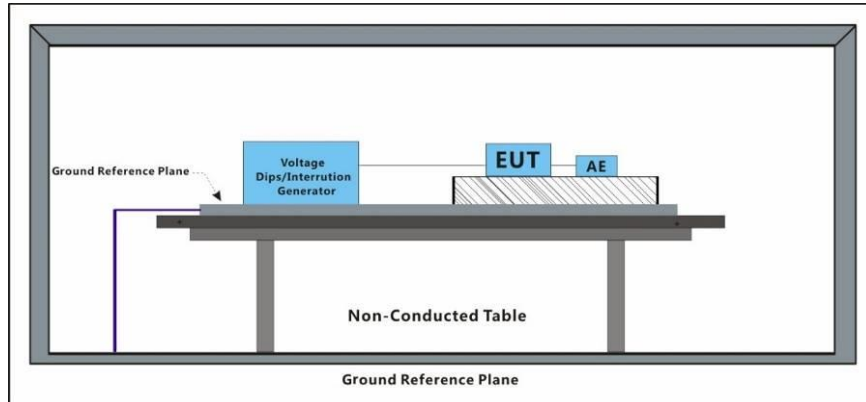
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7.4 Voltage Dips and Interruptions

Test Requirement: EN 301 489-1 V2.2.3
 EN 301 489-17 V3.2.4
 Test Method: EN 61000-4-11:2004 +A1:2017

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:
 Temperature: 20.8 °C Humidity: 49.9 % RH Atmospheric Pressure: 1010 mbar

7.4.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Final test	05	Idle:Keep the EUT standby.

7.4.4 Test Condition and Results:

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

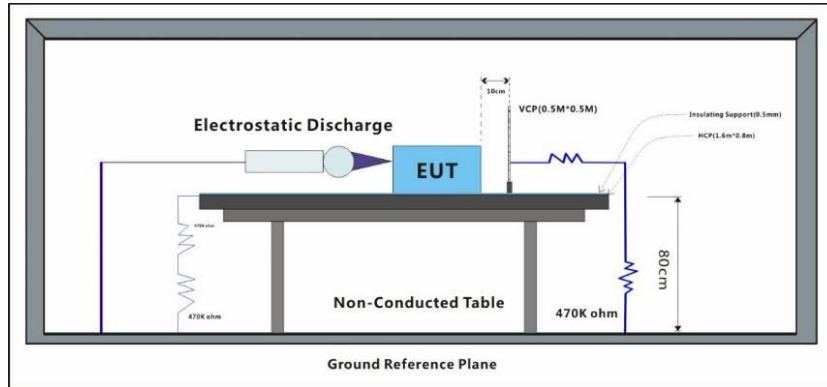
Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	180°	0.5 Cycles	3	A
0	0°	1 Cycles	3	A
0	180°	1 Cycles	3	A
0	0°	250 Cycles	3	C
0	180°	250 Cycles	3	C
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A

A: No degradation in the performance of the EUT was observed
C: The EUT stop being charged during the test. It can recover automatically after the test.

7.5 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

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:
Temperature: 23.1 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar

7.5.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	Operation(BT):Keep the EUT communicating with other Bluetooth devices.
Final test	04	Charging:Keep the battery of the EUT in charging mode.
Final test	05	Idle:Keep the EUT standby.



7.5.4 Test Condition and Results:

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

Test Point: 1. All insulated enclosure and seams.

2. All accessible metal parts of the enclosure.

3. All side

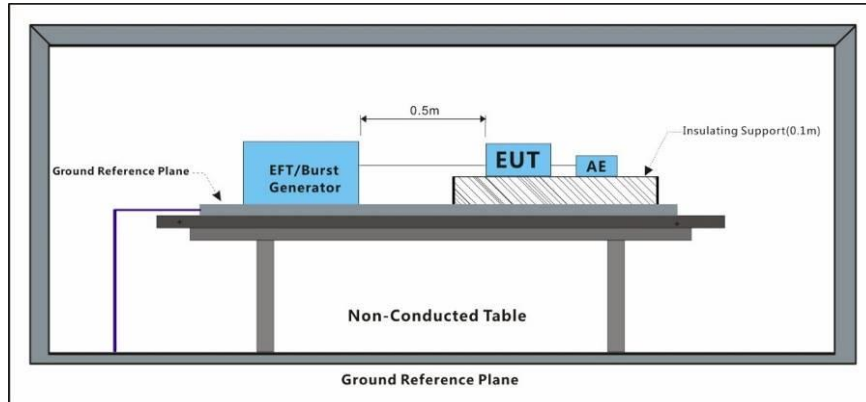
Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A
A: No degradation in the performance of the EUT was observed				



7.6 Electrical Fast Transients Burst at AC Mains 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

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:
 Temperature: 23.1 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar

7.6.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Charging: Keep the battery of the EUT in charging mode.

7.6.4 Test Condition and Results:

Performance Criterion: B
 Repetition Frequency: 5kHz
 Burst Period: 300ms

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

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

8 Test Setup Photo

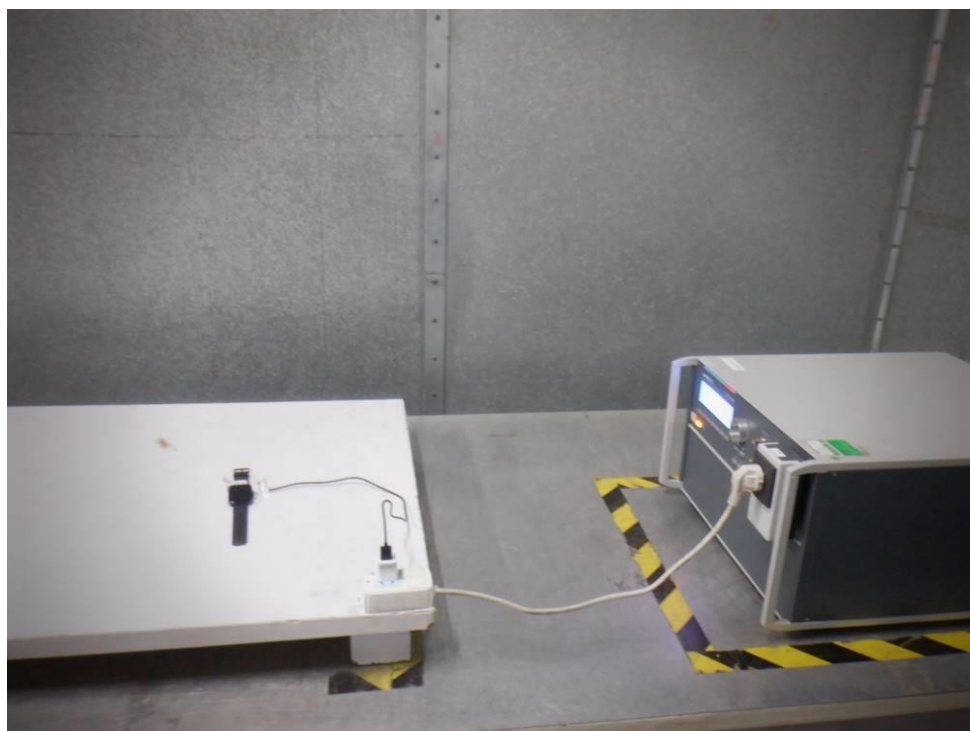
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)



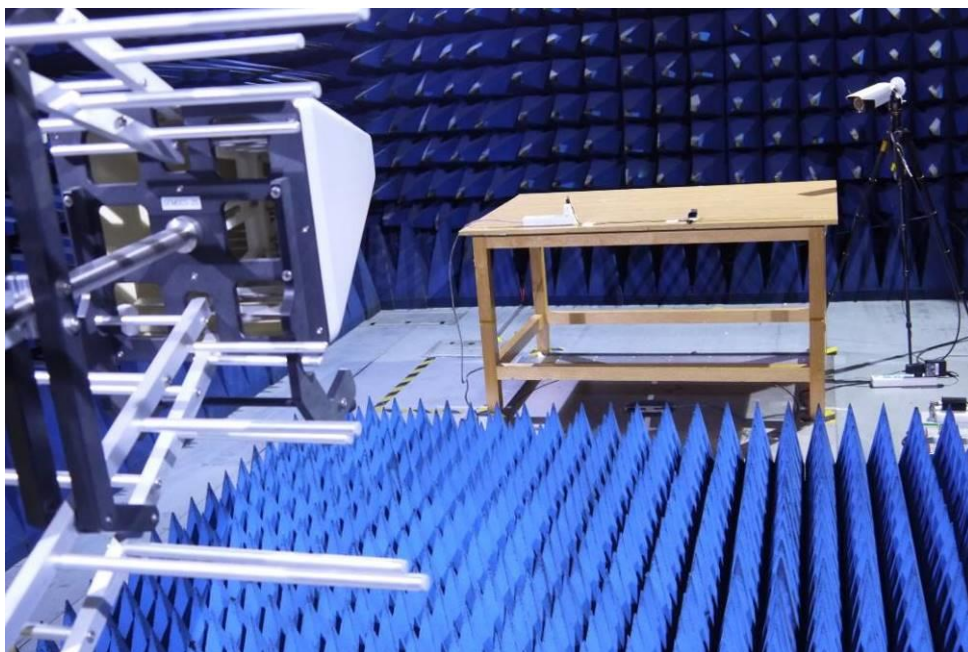
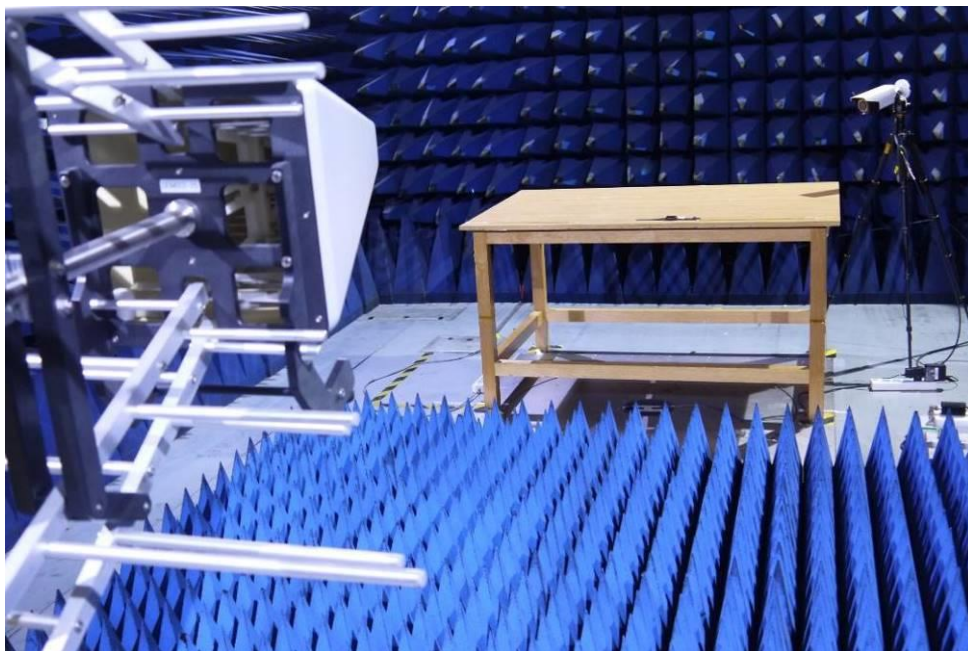
Radiated Emissions (30MHz-1GHz)



Voltage Fluctuations and Flicker



Radiated Immunity (80MHz-6GHz)

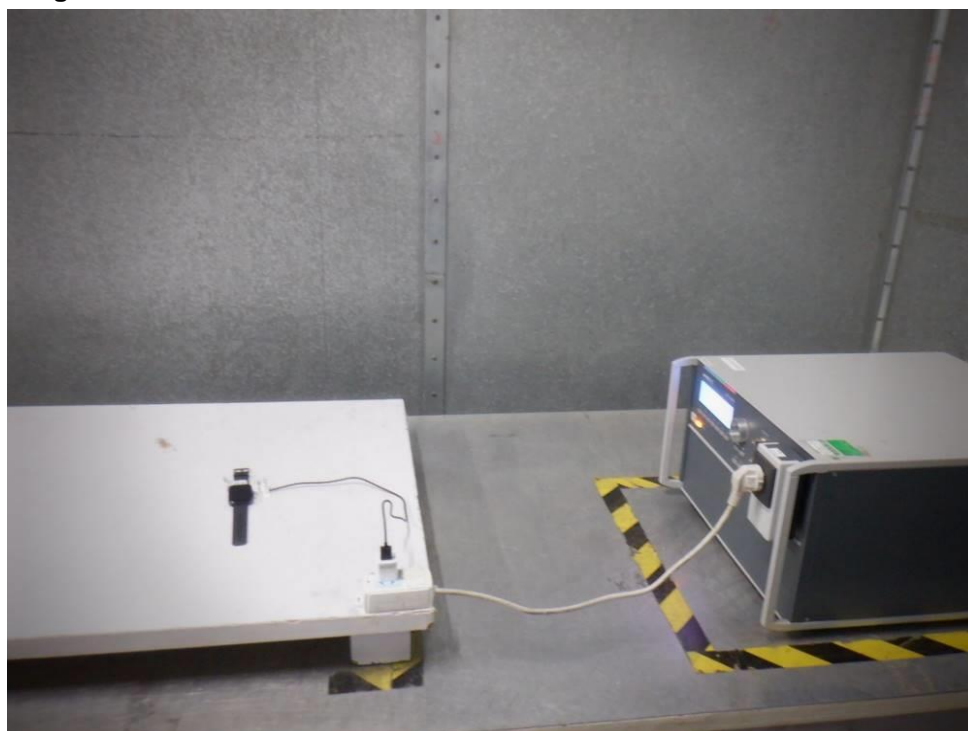


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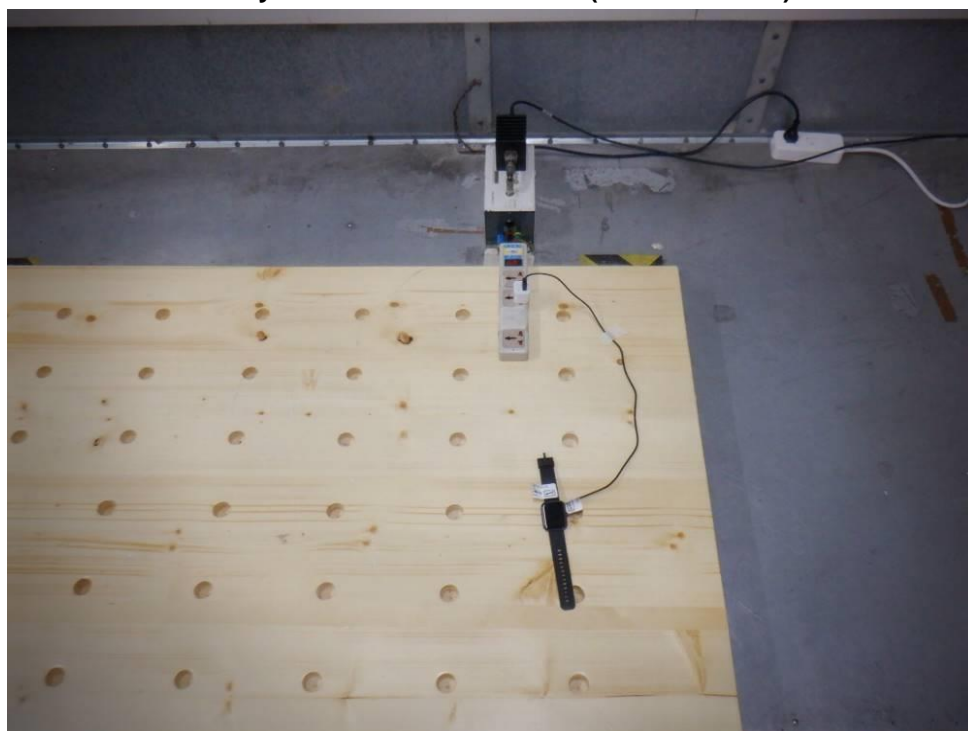
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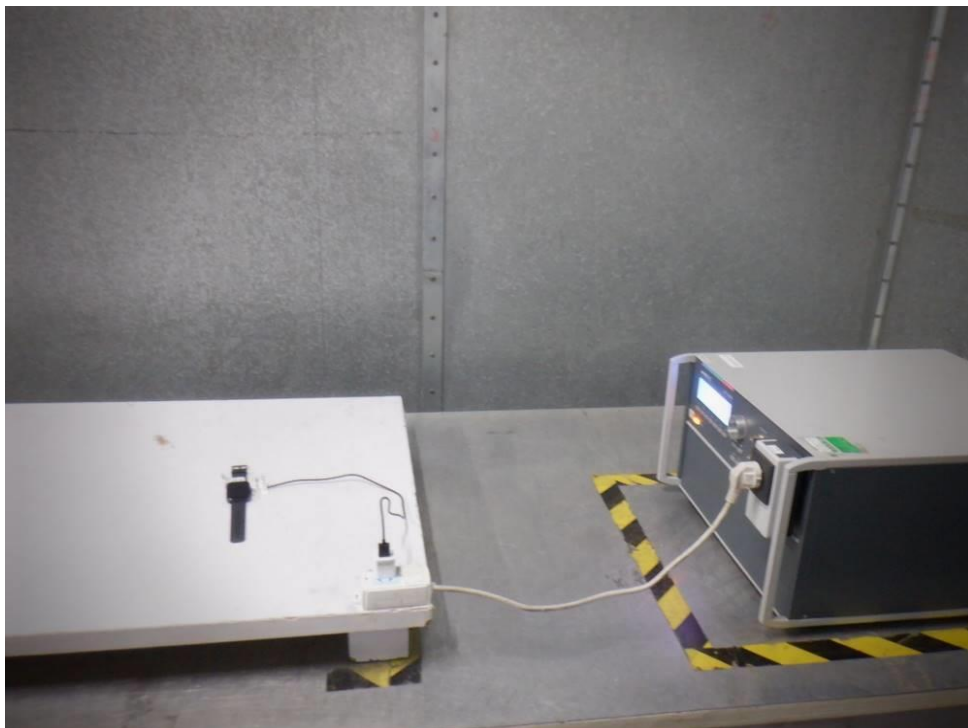
Surge at AC Mains Power Port



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



Voltage Dips and Interruptions



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Electrostatic Discharge

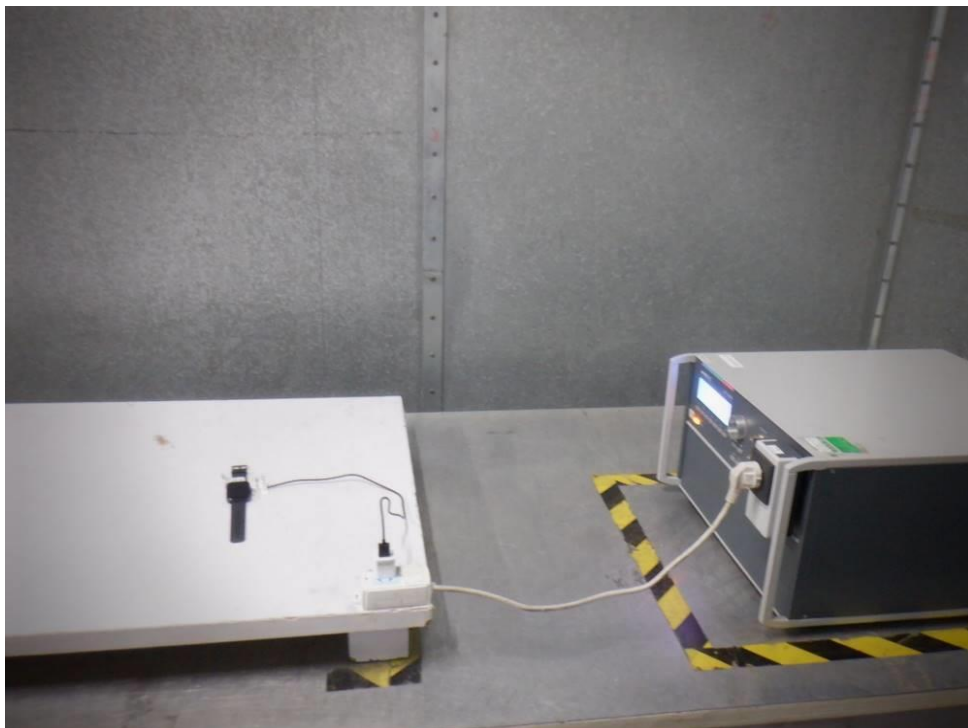


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Electrical Fast Transients Burst at AC Mains Power Port



9 EUT Constructional Details (EUT Photos)

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM2012013549CR.

- End of the Report -



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