



# TEST REPORT

Applicant : Shenzhen Xinnanming Electronic Co., Ltd.

Address : NO. 407, Building F, Tianyou Maker Industrial Park, No. 2 Lixin Road, Qiaotou Community, Fuhai Street, Baoan District, Shenzhen

Manufacturer : Shenzhen Xinnanming Electronic Co., Ltd.

Address : NO. 407, Building F, Tianyou Maker Industrial Park, No. 2 Lixin Road, Qiaotou Community, Fuhai Street, Baoan District, Shenzhen

Product Name : Mobile Phone Cable

Model Number : 3 In 1-01, 3 In 1-02, 3 in 1-03, 3 in 1-04, 3 in 1-05, 3 In 1-06, 3in1-XY  
( "X" represents 0-9 "Y" represents 1-9 )

Trademark : N/A

Date of Receipt : May 15, 2024

Test Date : May 15, 2024 to May 23, 2024

Date of Report : May 23, 2024

Test Result : The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

Standards : BS EN 55032:2015+A11:2020+A1:2020  
BS EN 55035:2017+A11:2020

Prepared by(Test Engineer):  
Sten Huang

*Sten Huang*

Approved(Manager):  
Casey Wang

*Casey Wang*

Approved(Manager):  
Levi Xiao



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## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Mobile Phone Cable

Trademark : N/A

Model Number : 3 In 1-01, 3 In 1-02, 3 in 1-03, 3 in 1-04, 3 in 1-05, 3 In 1-06,  
3in1-XY ( "X" represents 0-9 "Y" represents 1-9 )

Model Difference : The product is different for model name.

Power Supply : DC 5V, 2.4A

Work Frequency : Below 108MHz

Note:

1) EUT: Equipment under test

2) 3 In 1-01 was selected as the test model and the datas have been recorded in this report.

### 1.2. Independent Operation Modes

Test Voltage: DC 5V

Test Mode : ON Mode

Remark: The test data of the worst case condition(s) was reported on the following page.

### 1.3.TEST SUMMARY

Test Procedures According To The Technical Standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
BS EN 55032:2015 +A11:2020 +A1:2020	AC Port Conducted Emission	Class B	N/A	
	Radiated Emission	Class B	PASS	
	Asymmetric Mode Conducted Emissions	Class B	N/A	
	Conducted Differential Voltage Emissions	Class B	N/A	
BS EN IEC 61000-3-2:2019 +A1:2021	Harmonic Current Emission	Class A or D NOTE (2)	N/A	
BS EN 61000-3-3:2013+ A2:2021	Voltage Fluctuations & Flicker	-----	N/A	
EMC Immunity				
Standard	Test Item	Performance Criteria	Judgment	Remark
BS EN 55035:2017+ A11:2020				
IEC 61000-4-2:2008	Electrostatic Discharge	B	PASS	
IEC 61000-4-3: 2020	RF electromagnetic field	A	PASS	
IEC 61000-4-4:2012	Fast transients	B	N/A	
IEC 61000-4-5:2014+ A1:2017	Surges	B	N/A	
IEC 61000-4-6:2013	Injected Current	A	N/A	
IEC 61000-4-8:2009	Power Frequency Magnetic Field	A	N/A	Note(3)
IEC 61000-4-11:2020	Volt. Interruptions Volt. Dips	B / C / C NOTE (4)	N/A	

NOTE:

(1)"N/A" denotes test is not applicable in this Test Report

(2) The power consumption of EUT is less than 75W and no limits apply.

(3) The EUT don't containing magnetic field sensitive components.

(4) Voltage dip: 100% reduction - Performance Criteria B

Voltage dip: 30% reduction - Performance Criteria C

Voltage Interruption: 100% Interruption - Performance Criteria C

(5) For client's request and manual description, the test will not be executed.

#### 1.4.Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Serial No.
NOTEBOOK	/	LENOVO	/

#### 1.5.Test Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

##### A. Conducted Measurement :

Method	Measurement Frequency Range	U,(dB)	NOTE
CISPR 16-4-2:2018	150 KHz ~ 30MHz	3.01	

##### B. Radiated Measurement :

Method	Measurement Frequency Range	U,(dB)	NOTE
CISPR 16-4-2:2018	30MHz ~ 1000MHz	4.25	
	1GHz ~6GHz	5.1	

#### 1.6.Test Facility

##### Site Description

Name of Firm : Shenzhen BKC Testing Co., Ltd.

Site Location : Room103, 1/F, Huaya Building, Huaya Industrial Park,  
Yousong Community, Longhua Subdistrict, Longhua  
District, Shenzhen, Guangdong, China

## 2. TEST INSTRUMENT USED

### 2.1 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB 9168	01321	Mar .31 .2025
2	EMI Test Receiver	R&S	ESRP	101478	Mar .13 .2025
3	Preamplifier	HP	8447D	2727A05345	Mar .13 .2025
4	Rf cables	HUBER+SUHNER	8M-RE	N/A	Mar .13 .2025
5	Rf cables	HUBER+SUHNER	1.5M-RE	N/A	Mar .13 .2025
6	Rf cables	HUBER+SUHNER	1.5M-AP-RE	N/A	Mar .13 .2025

### 2.2 Electrostatic Discharge

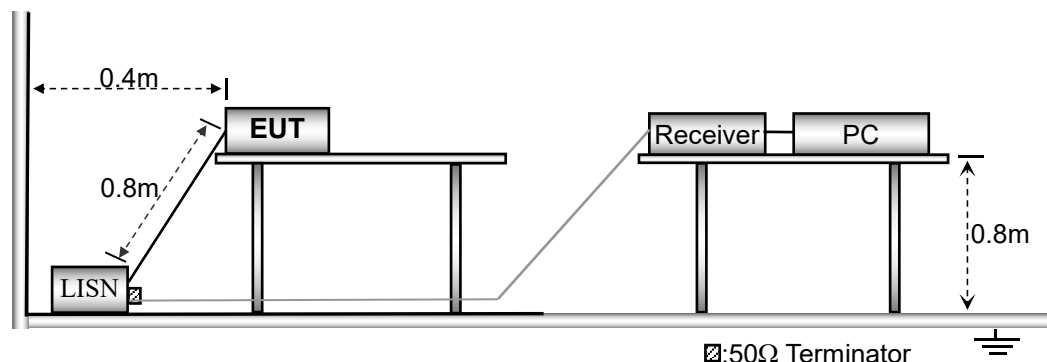
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	ESD TEST GENERATOR	HTEC	HESD16	N/A	Mar .19 .2025

### 2.3 RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Signal Generator	R&S	SMT 06	832080/007	Mar .14 .2025
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	Mar .14 .2025
3	Power Amplifier	AR	150W1000M1	320946	Mar .14 .2025
4	Microwave Horn Antenna	AR	AT4002A	321467	Mar .14 .2025
5	Power Amplifier	AR	25S1G4A	308598	Mar .14 .2025

### 3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

#### 3.1. Block Diagram Of Test Setup



#### 3.2. Test Standard

BS EN 55032:2015+A11:2020+A1:2020

#### 3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	73
0.50 ~ 30.00	66	60

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

#### 3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet BS EN 55032 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

#### 3.5. Operating Condition of EUT

- 3.5.1 Setup the EUT and simulators as shown in Section 3.1.
- 3.5.2 Turn on the power of all equipments.
- 3.5.3 Let the EUT work in test modes and test it.

### 3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **BS EN 55032** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 9KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

### 3.7. Test Result

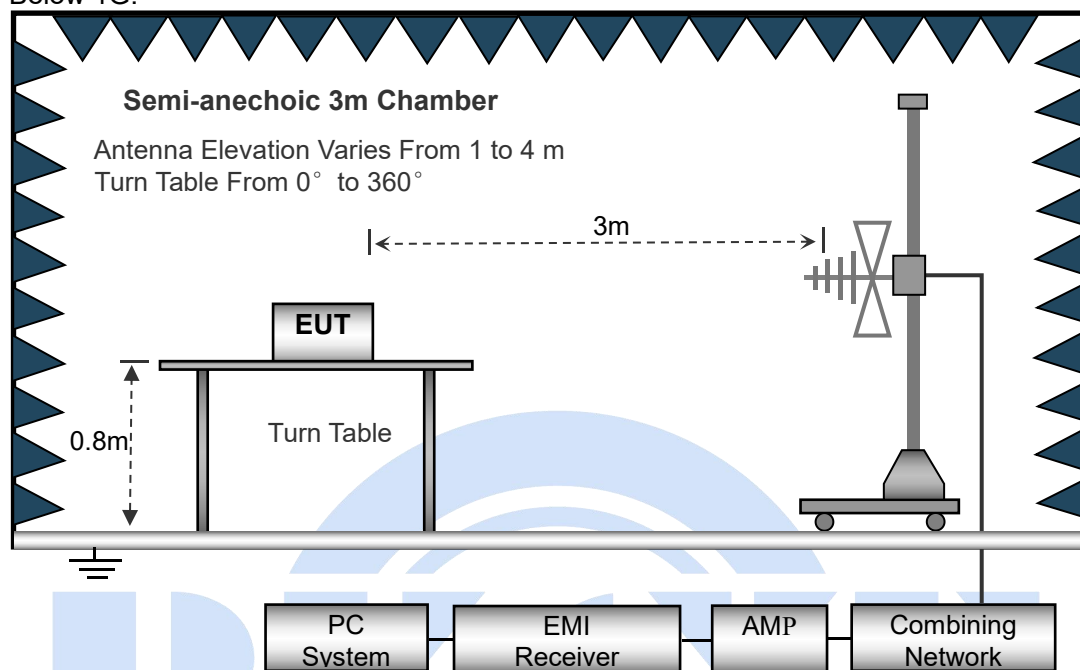
EUT power supply is provided by DC, is not applicable in this Test report.



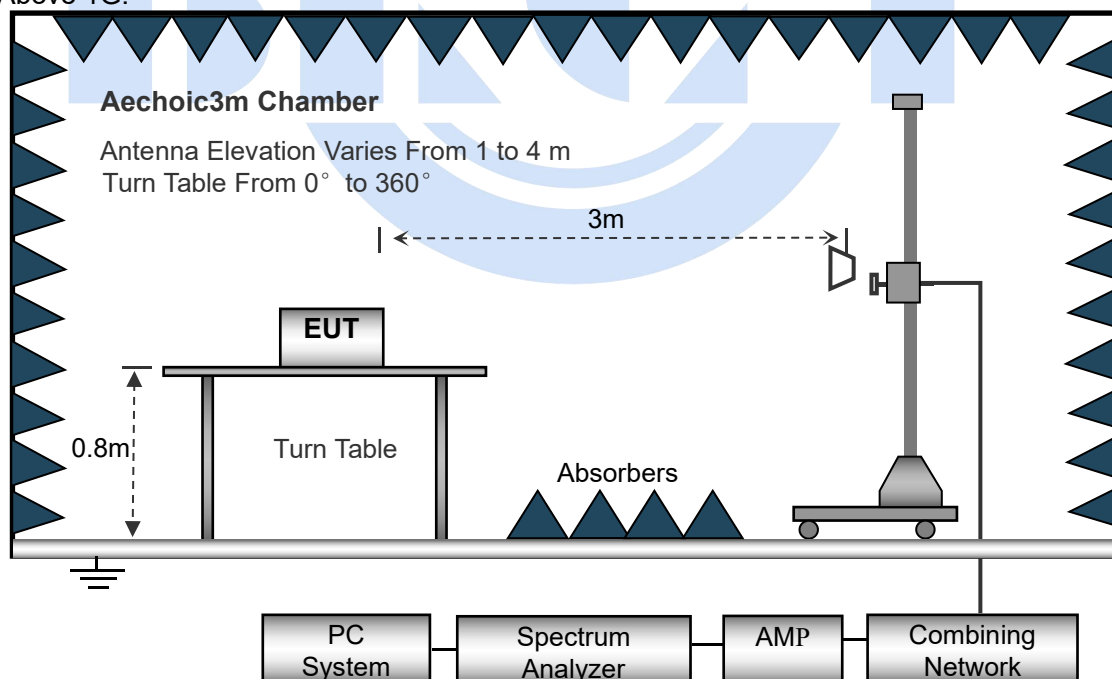
## 4. RADIATION EMISSION TEST

### 4.1. Block Diagram of Test Setup

Below 1G:



Above 1G:



## 4.2. Test Standard

BS EN 55032:2015+A11:2020+A1:2020

## 4.3. Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB( $\mu$ V)/m	Detector
30 ~ 230	3	50.0	QP
230 ~ 1000	3	57.0	QP
1000 ~ 3000	3	76.0	PEAK
1000 ~ 3000	3	56.0	AVERAGE
3000 ~ 6000	3	80.0	PEAK
3000 ~ 6000	3	60.0	AVERAGE

Remark:

(1) Emission level (dB( $\mu$ V)/m) = 20 log Emission level ( $\mu$ V/m)

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

## 4.4. EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

## 4.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 3.4 except the test set up replaced as Section 4.1.

## 4.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to BS EN 55032 on radiated emission test.

The bandwidth setting on the field strength meter is set at 120KHz below 1GHz, set at 1MHz above 1GHz



#### 4.7. Test Result

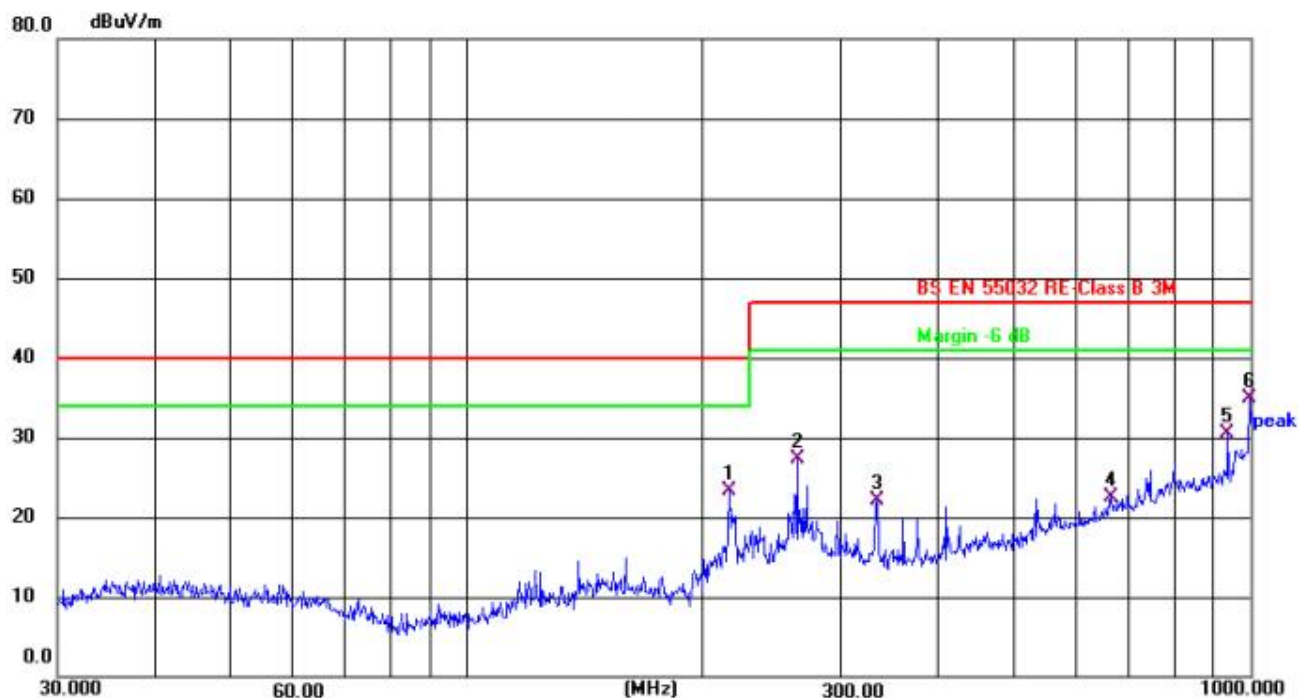
PASS

Please refer to the following page.



### Radiation Emission Test Data

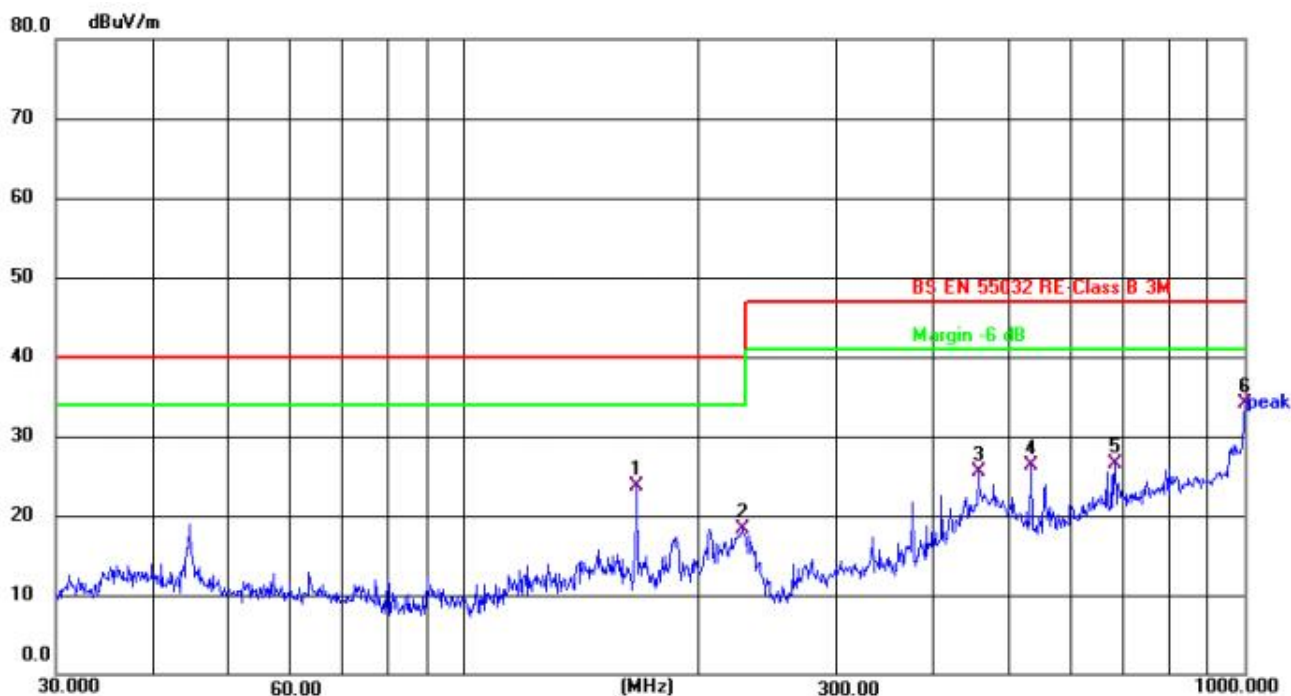
Temperature:	25.1°C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	DC 5V	Test Mode:	ON Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	216.0240	42.50	-19.21	23.29	40.00	-16.71	QP	100	0	P	
2	263.8190	44.73	-17.45	27.28	47.00	-19.72	QP	100	0	P	
3	333.6867	37.42	-15.25	22.17	47.00	-24.83	QP	100	0	P	
4	663.4729	29.93	-7.47	22.46	47.00	-24.54	QP	100	0	P	
5	935.5463	33.41	-2.90	30.51	47.00	-16.49	QP	100	0	P	
6 *	996.4996	37.07	-2.07	35.00	47.00	-12.00	QP	100	0	P	

### Radiation Emission Test Data

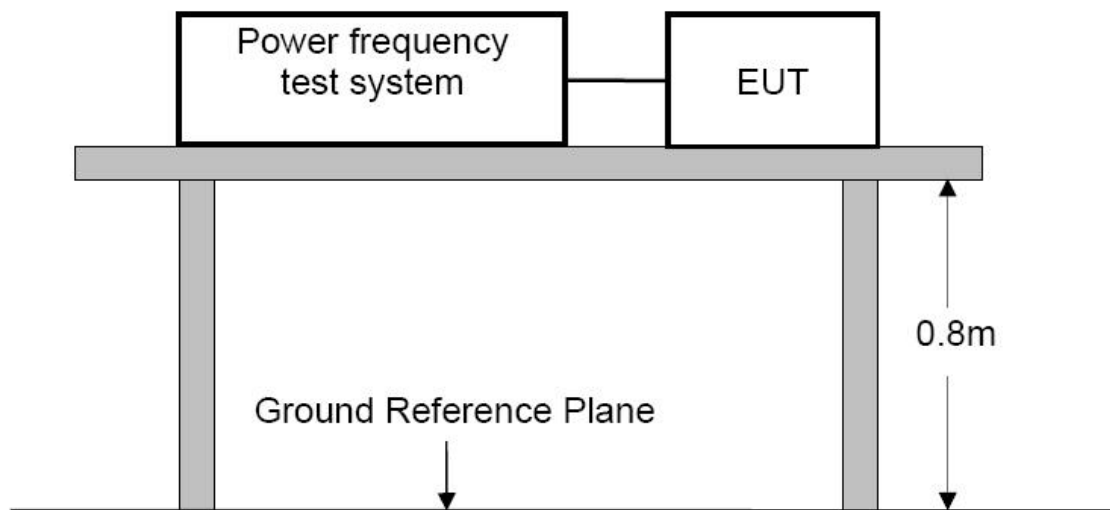
Temperature:	25.1°C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC 5V	Test Mode:	ON Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	166.6514	40.03	-16.25	23.78	40.00	-16.22	QP	100	0	P	
2	227.6906	37.22	-18.83	18.39	40.00	-21.61	QP	100	0	P	
3	455.9058	37.24	-11.73	25.51	47.00	-21.49	QP	100	0	P	
4	533.8321	36.37	-10.11	26.26	47.00	-20.74	QP	100	0	P	
5	682.3484	33.54	-7.07	26.47	47.00	-20.53	QP	100	0	P	
6 *	1000.0000	36.04	-2.02	34.02	47.00	-12.98	QP	100	0	P	

## 5. HARMONIC CURRENT EMISSION TEST

### 5.1. Block Diagram of Test Setup



### 5.2. Test Standard

BS EN IEC 61000-3-2:2019+A1:2021

### 5.3. Operating Condition of EUT

5.3.1 Setup the EUT as shown in Section 5.1.

5.3.2 Turn on the power of all equipments.

5.3.3 Let the EUT work in test mode (ON) and test it.

### 5.4. Test Procedure

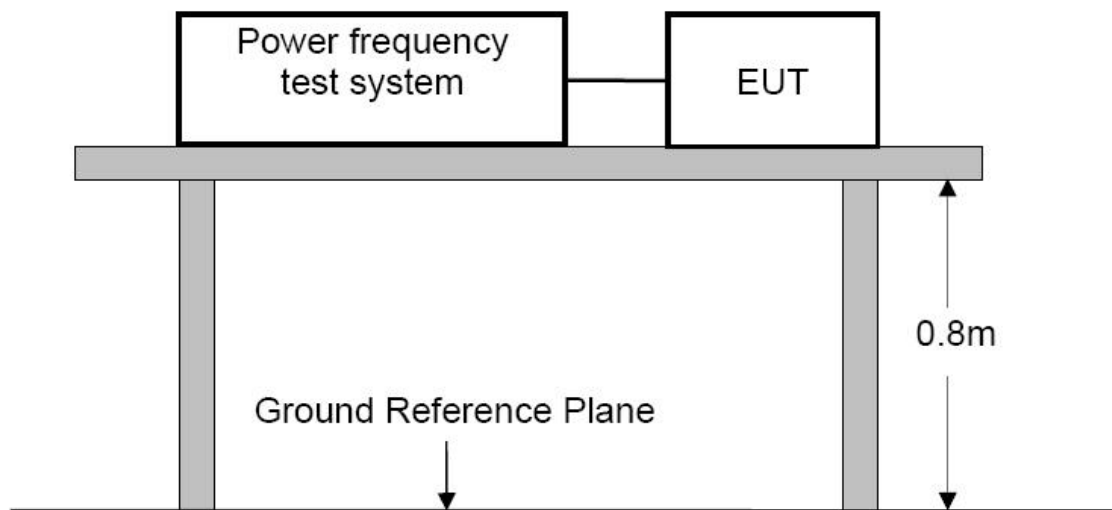
The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

### 5.5. Test Results

EUT power supply is provided by DC, is not applicable in this Test report.

## 6. VOLTAGE FLUCTUATIONS & FLICKER TEST

### 6.1. Block Diagram of Test Setup



### 6.2. Test Standard

BS EN 61000-3-3:2013+A2:2021

### 6.3. Operating Condition of EUT

Same as Section 5.3. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

#### Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

### 6.4. Test Procedure

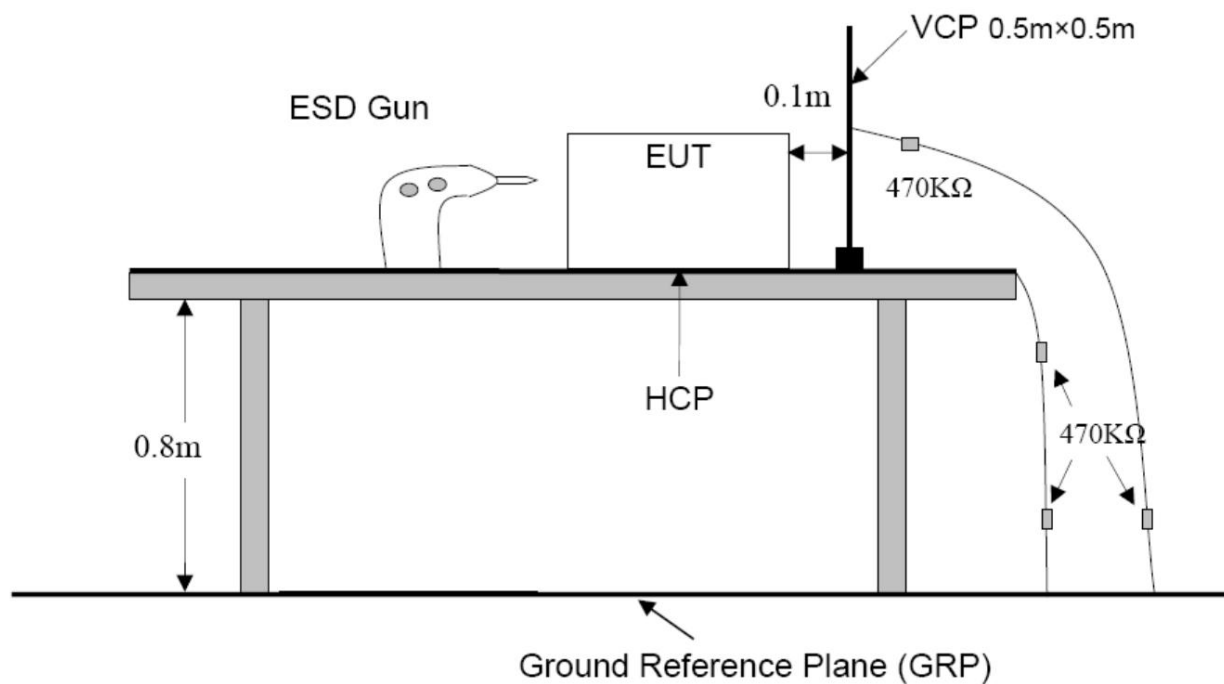
The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

### 6.5. Test Results

EUT power supply is provided by DC, is not applicable in this Test report.

## 7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

### 7.1. Block Diagram of Test Setup



### 7.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-2:2008

Severity Level: 3 / Air Discharge: ±8KV

Level: 2 / Contact Discharge: ±4KV

### 7.3. Severity Levels and Performance Criterion

#### 7.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

### 7.3.2 Performance criterion : B

- A.** The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- B.** The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- C.** Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

### 7.4.EUT Configuration

The following equipments are installed on Electrostatic Discharge Immunity test to meet BS EN 55035:2017+A11:2020, IEC 61000-4-2:2008, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4

### 7.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 7.1

### 7.6.Test Procedure

#### 7.6.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

#### 7.6.2 Contact Discharge:

All the procedure shall be same as Section 7.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

### 7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

### 7.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are complete illuminated.

## 7.7. Test Results

**PASS**

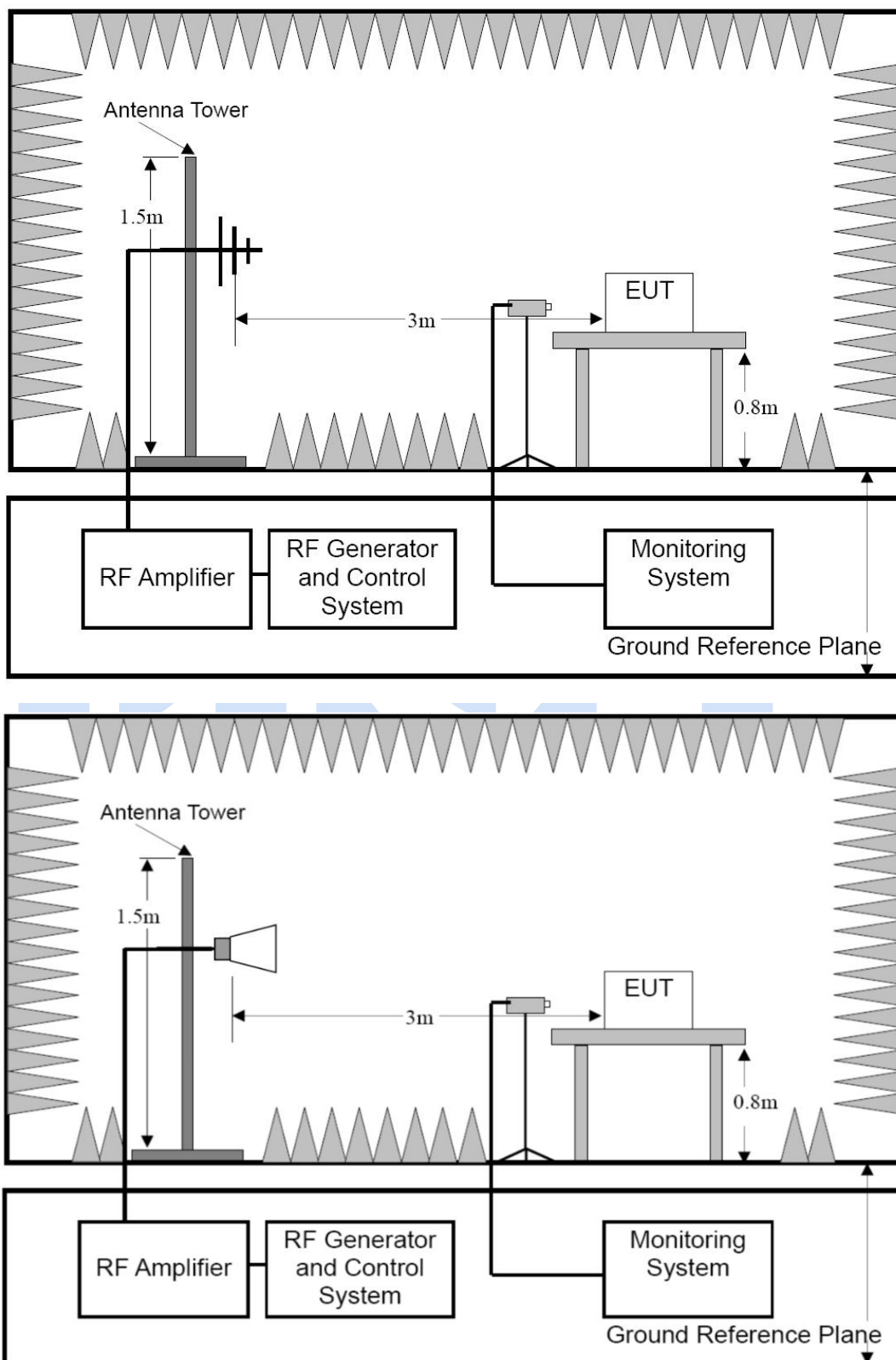
Please refer to the following page.

ESD Test Data				
Temperature:	25.1°C	Humidity:	54%	
Power Supply :	DC 5V	Test Mode:	On Mode	
Air Discharge: ± 8KV Contact Discharge: ± 4KV # For each point positive 10 times and negative 10 times discharge				
Test Points	Air Discharge	Contact Discharge	Performance Criterion	Result
Enclosure	± 8KV	N/A	B	PASS
Slit	± 8KV	N/A	B	PASS
VCP	N/A	±4 KV	B	PASS
HCP	N/A	±4 KV	B	PASS
Note: N/A				



## 8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

### 8.1. Block Diagram of Test Setup



## 8.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-3:2020  
Severity Level 2, 3V / m

## 8.3. Severity Levels and Performance Criterion

### 8.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

### 8.3.2. Performance criterion: A

- A、 The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- B、 The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- C、 Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

## 8.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet IEC 61000-4-3:2020, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

## 8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.5 except the test setup replaced by Section 8.1.

## 8.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

All the scanning conditions are as follows :

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 – 1000 MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

## 8.7. Test Results

**PASS**

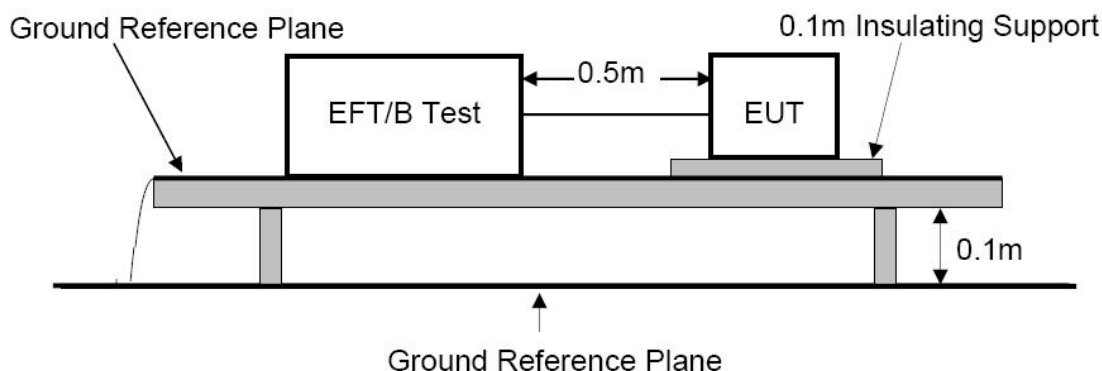
Please refer to the following page.

Please refer to the following page:

R/S Test Data			
Temperature : 25.1°C		Humidity : 53%	
Field Strength: 3 V/m		Criterion: A	
Power Supply: DC 5V		Frequency Range: 80 MHz to 1000 MHz,1800MHz,2600MHz,3500MHz, 5000MHz	
Modulation:		<input checked="" type="checkbox"/> AM	<input type="checkbox"/> Pulse <input type="checkbox"/> none 1 KHz 80%
Test Mode : A			
	Frequency Range : 80-1000MHz,1800MHz,2600MHz,3500MHz, 5000MHz		
Steps	1 %		
	Horizontal	Vertical	Result
Front	A	A	Pass
Right	A	A	Pass
Rear	A	A	Pass
Left	A	A	Pass
Note: N/A			

## 9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

### 9.1. Block Diagram of EUT Test Setup



### 9.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-4:2012

### 9.3. Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS  
Severity Level:

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On power ports	On I/O(Input/Output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

#### Performance criterion: B

- The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

#### 9.4.EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet BS EN 55035:2017+A11:2020, IEC 61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

#### 9.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 9.1.

#### 9.6.Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a min.1m\*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m

9.6.1. For input and output AC power ports:

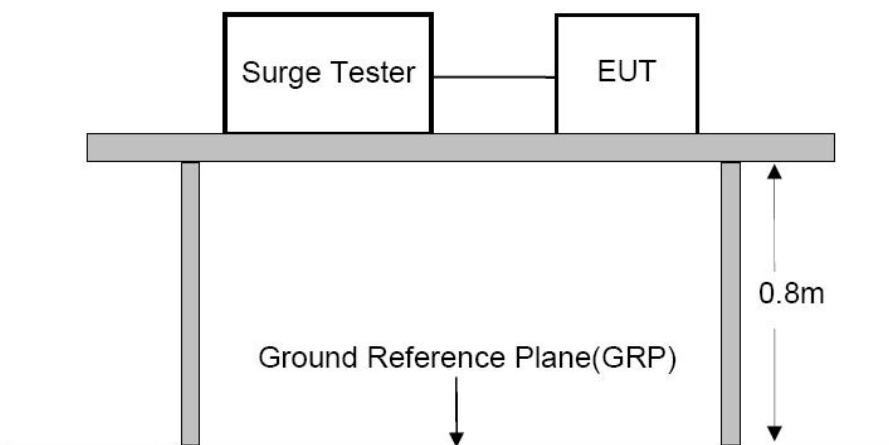
The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

#### 9.7.Test Results

EUT power supply is provided by DC, is not applicable in this Test report.

## 10. SURGE TEST

### 10.1. Block Diagram of EUT Test Setup



### 10.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-5:2014+A1:2017

### 10.3. Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;  
Severity Level: Line to Earth, Level 3 at 2KV.

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

#### Performance criterion: B

- The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

#### 10.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet BS EN 55035:2017+A11:2020, IEC 61000-4-5:2014+A1:2017 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

#### 10.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 10.1.

#### 10.6. Test Procedure

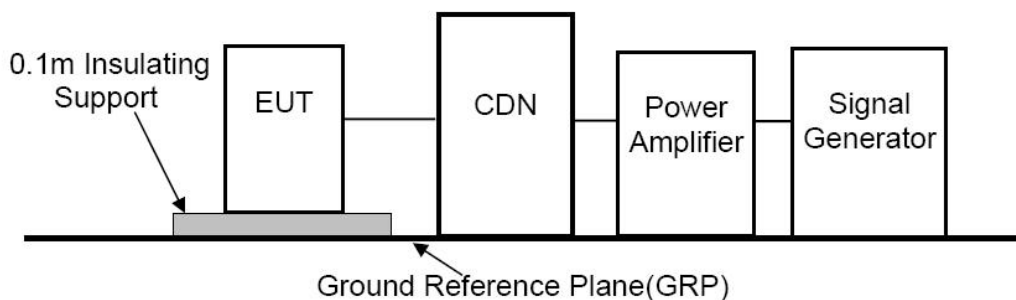
- 1) Set up the EUT and test generator as shown on section 10.1
- 2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
- 6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

#### 10.7. Test Result

EUT power supply is provided by DC, is not applicable in this Test report.

## 11. INJECTED CURRENTS SUSCEPTIBILITY TEST

### 11.1. Block Diagram of EUT Test Setup



### 11.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-6:2013

### 11.3. Severity Levels and Performance Criterion

Severity Level 2: 3V( rms ), 150KHz ~ 80MHz

Severity Level:

Level	Field Strength V
1.	1
2.	3
3.	10
X.	Special

#### Performance criterion: A

- The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



#### 11.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

#### 11.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 3.5 except the test set up replaced as Section 11.1.

#### 11.6. Test Procedure

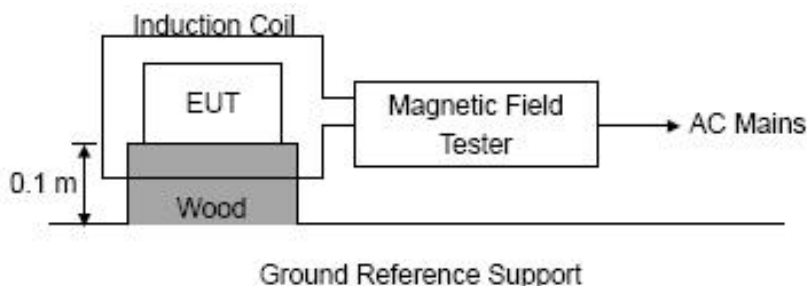
- 1) Set up the EUT, CDN and test generator as shown on section 11.1
- 2) Let EUT work in test mode and measure.
- 3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 10MHz using 3V signal level, 10-30MHz Using 3V to 1V signal level( Where the amplitude of a test level varies over a given frequency range, it changes linearly with respect to the logarithm of the frequency),30-80Mhz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave
- 7) The rate of sweep shall not exceed  $1.5 \times 10^{-3}$  decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

#### 11.7. Test Result

EUT power supply is provided by DC, is not applicable in this Test report.

## 12. MAGNETIC FIELD IMMUNITY TEST

### 12.1. Block Diagram of Test Setup



### 12.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-8:2009  
Severity Level 1 at 1A/m

### 12.3. Severity Levels and Performance Criterion

#### 11.3.1 Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

#### 11.3.2 Performance criterion: B

- The apparatus shall continue to operate as intended during and after the test.
- No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

- D. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

#### 12.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.4.

#### 12.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 3.5 except the test set up replaced as Section 12.1.

#### 12.6. Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1m\*1m) and shown in Section 12.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

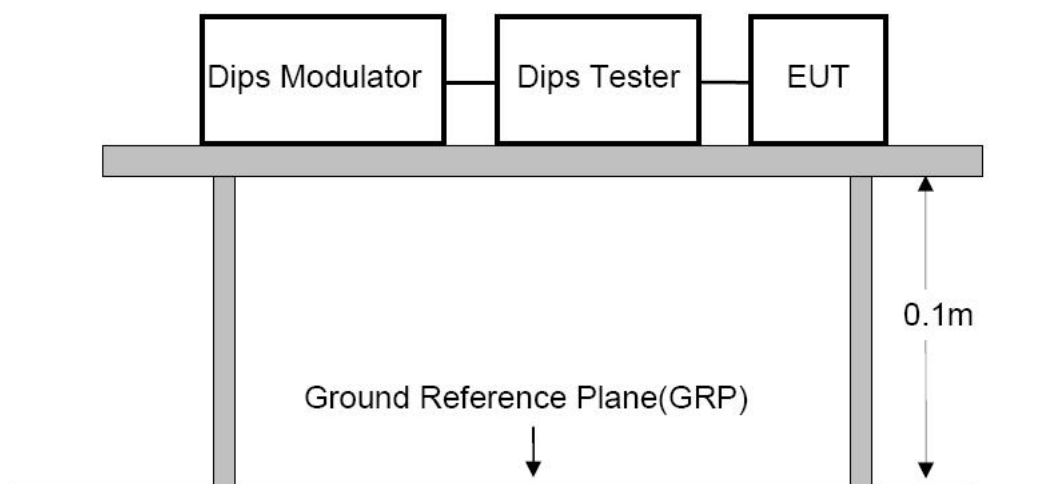
#### 12.7. Test Results

The EUT don't containing magnetic field sensitive components.



## 13. VOLTAGE DIPS AND INTERRUPTIONS TEST

### 13.1. Block Diagram of EUT Test Setup



### 13.2. Test Standard

BS EN 55035:2017+A11:2020, IEC 61000-4-11:2020

### 13.3. Severity Levels and Performance Criterion

Severity Level:

Input and Output AC Power Ports.

☒ Voltage Dips.

☒ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	>95 0.5	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	>95 250	% Reduction period	C

**Performance criterion:** B, C, C

- A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

- B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

#### 13.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

#### 13.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 3.5 except the test set up replaced as Section 13.1.

#### 13.6. Test Procedure

- 1) Set up the EUT and test generator as shown on section 13.1
- 2) The interruption is introduced at selected phase angles with specified duration. There is a 3mins minimum interval between each test event.
- 3) After each test a full functional check is performed before the next test.
- 4) Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.
- 5) Record any degradation of performance.

#### 13.7. Test Result

EUT power supply is provided by DC, is not applicable in this Test report.



## 14. PHOTOGRAPHS

Photo 1

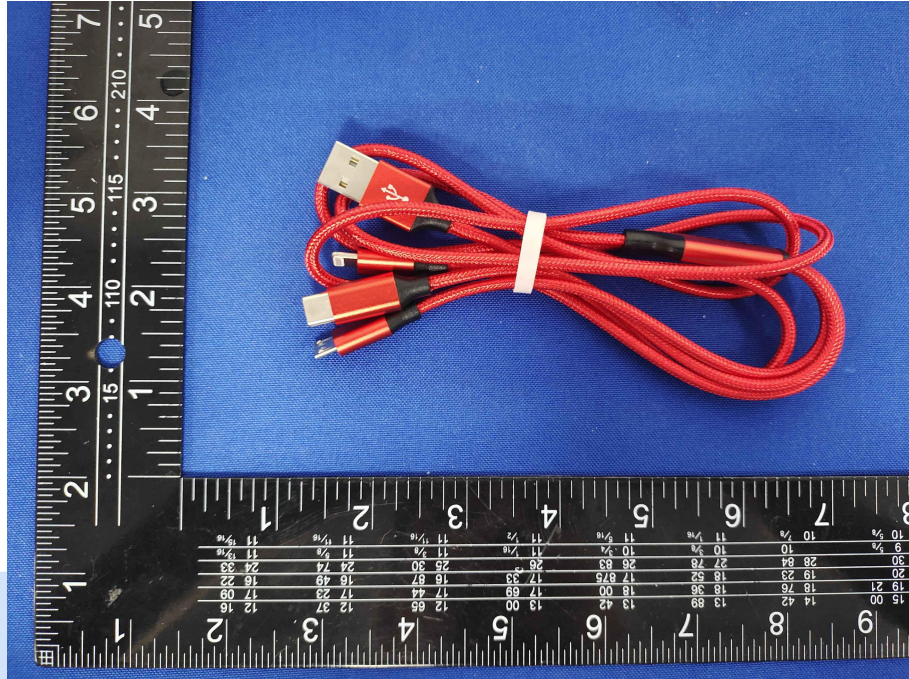


Photo 2

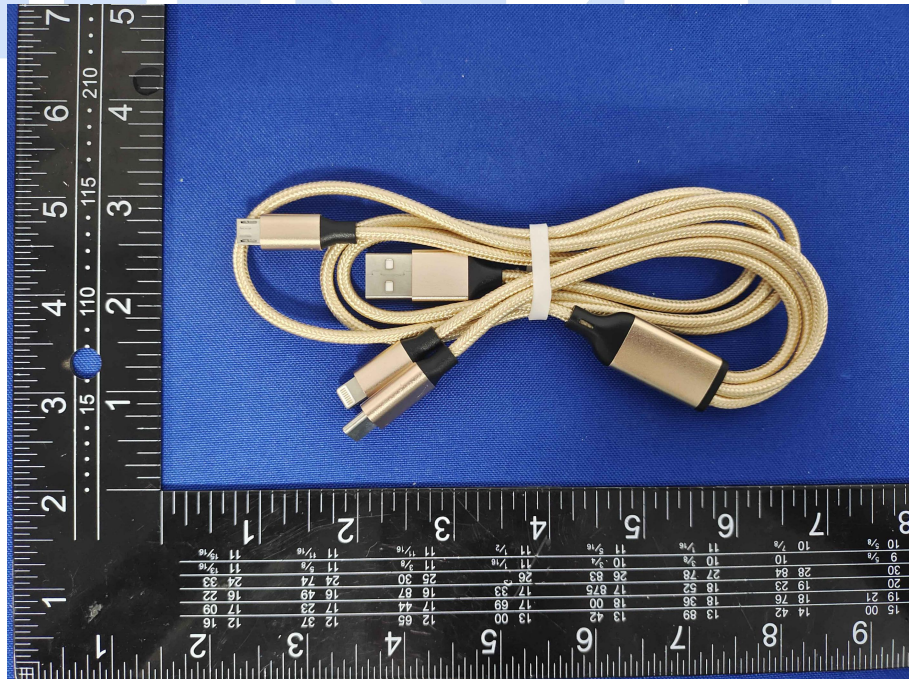




Photo 3

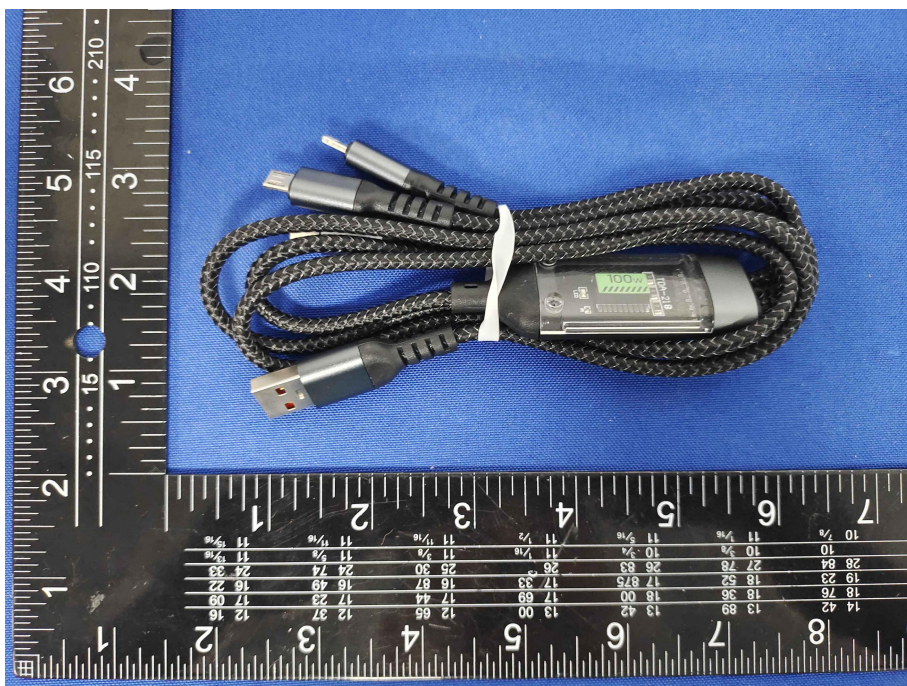


Photo 4

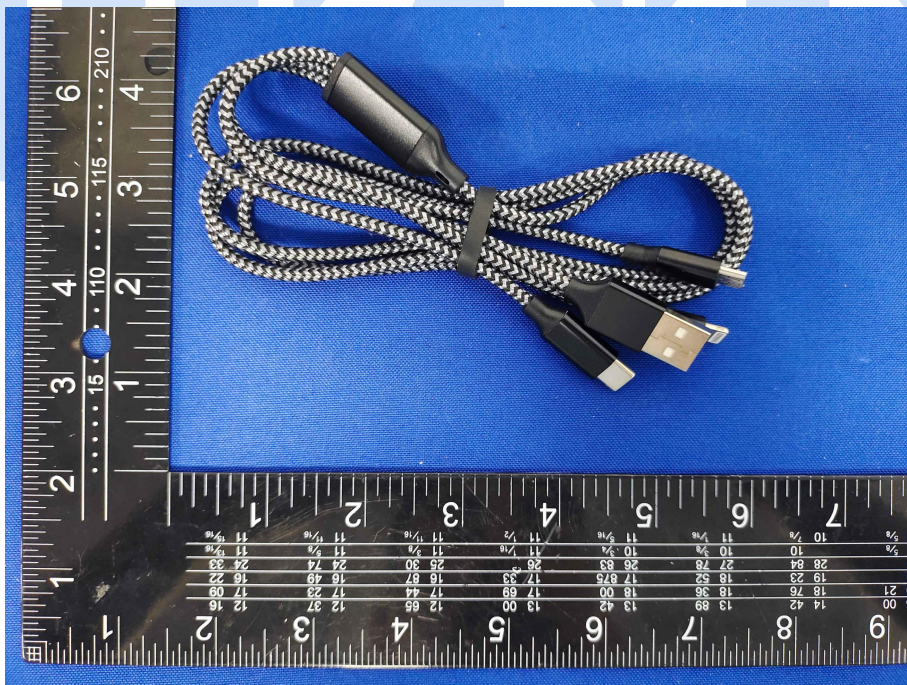




Photo 5

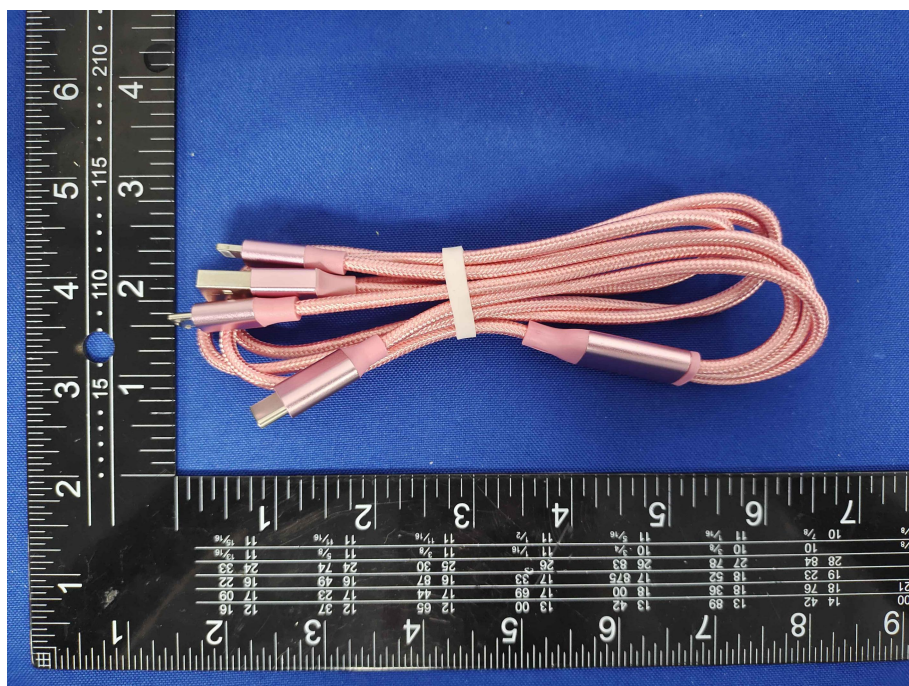


Photo 6

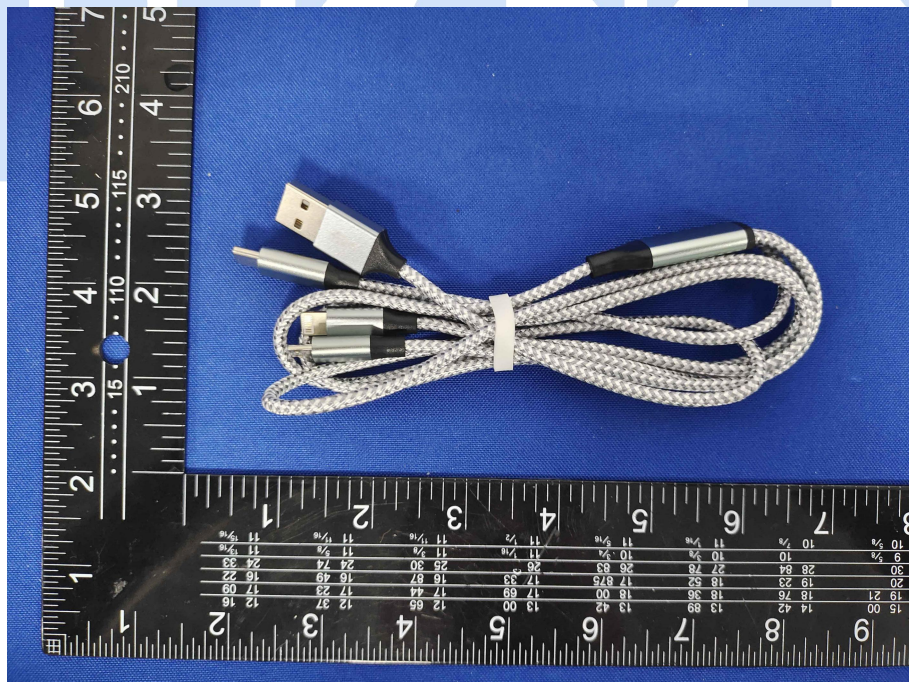




Photo 7



\*\*\*\*\* END OF REPORT \*\*\*\*\*