



REPORT No. : SZ15120059E01

# CE EMC TEST REPORT

**APPLICANT** : Dongguan City YingJu Electronics Co.,Ltd.

**PRODUCT NAME** : Switching Adapter

**MODEL NAME** : UC11EU,UC11UK

**TRADE NAME** : ALCATEL onetouch

**BRAND NAME** : N/A

**STANDARD(S)** : ETSI EN 301 489-1 V1.9.2 (2011-09)  
ETSI EN 301 489-34 V1.4.1 (2013-05)

**TEST DATE** : 2015-12-10 to 2015-12-16

**ISSUE DATE** : 2015-12-17

**SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.**

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Change History		
Issue	Date	Reason for change
1.0	2015-12-17	First edition



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## Test Report Declaration

Applicant	Dongguan City YingJu Electronics Co.,Ltd.
Applicant Address	Yewuji Village, Sijia,Shijie Town,Dongguan,Guangdong 523300,People's Republic of China.
Manufacturer	Dongguan City YingJu Electronics Co.,Ltd.
Manufacturer Address	Yewuji Village, Sijia,Shijie Town,Dongguan,Guangdong 523300,People's Republic of China.
Product Name	Switching Adapter
Model Name	UC11EU,UC11UK
Brand Name	N/A
HW Version	N/A
SW Version	N/A
Test Standards	ETSI EN 301 489-1 V1.9.2 (2011-09) ETSI EN 301 489-34 V1.4.1 (2013-05)
Test Result	PASS

Tested by : \_\_\_\_\_  
Wang Dalong (Test Engineer)

Reviewed by : \_\_\_\_\_  
Xiao Xiong (EMC Manager)

Approved by : \_\_\_\_\_  
Zeng Dexin (Chief Engineer )



# 1. Technical Information

Note: Provide by applicant.

## 1.1. Applicant Information

Company: Dongguan City YingJu Electronics Co.,Ltd.  
Address: Yewuji Village, Sijia, Shijie Town, Dongguan, Guangdong 523300, People's Republic of China.

## 1.2. Equipment under Test (EUT) Description

<b>EUT Type:</b>	Switching Adapter
<b>Serial No:</b>	(n.a., marked #1 by test site)
<b>Hardware Version:</b>	N/A
<b>Software Version:</b>	N/A
<b>Rated Input:</b>	~ 100-240V, 50/60Hz, 200mA
<b>Rated Output:</b>	= 5V, 1000mA
<b>USB line:</b>	Unshielded, Detachable 0.45m

### NOTE:

1. There are two models(UC11EU and UC11UK) for the EUT, they are all the same except their pins. They are considered to have the same EMC performance, one model(UC11EU) was tested in this report.
2. Please refer to Annex B for the photographs of the EUT. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.





## 2. Test Results

### 2.1. Applied Reference Documents

The objective of the report is to perform testing according to following standards for CE marking:

No.	Identity	Document Title
1	ETSI EN 301 489-1 V1.9.2 (2011-09)	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
2	ETSI EN 301 489-34 V1.4.1 (2013-05)	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 34: Specific conditions for External Power Supply (EPS) for mobile phones
3	EN 61000-3-3: 2013	Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection

Test detailed items required and results are listed as below (the latest versions of basic standards are applied):

No.	Base Standard	Test Type	Result
<b>Emission (EN 301 489-34 Clause 7.1)</b>			
1	EN 55022	Radiated Emission	PASS
2	EN 55022	Conducted Emission, DC Ports	(n.a.) <sup>Note1</sup>
3	EN 55022	Conducted Emission, AC Ports	PASS
4	EN 61000-3-2	Harmonic Current Emissions	PASS <sup>Note 2</sup>
5	EN 61000-3-3	Voltage Fluctuations & Flicker	PASS
<b>Immunity (EN 301 489-34 Clause 7.2)</b>			
6	EN 61000-4-3	RF Electromagnetic Field	PASS
7	EN 61000-4-2	Electrostatic Discharge	PASS
8	EN 61000-4-4	Fast transients common mode, DC Ports	(n.a.) <sup>Note1</sup>
9	EN 61000-4-4	Fast transients common mode, AC Ports	PASS
10	EN 61000-4-6	RF common mode 0,15 MHz to 80 MHz, DC Ports	(n.a.) <sup>Note1</sup>
11	EN 61000-4-6	RF common mode 0,15 MHz to 80 MHz, AC Ports	PASS
12	EN 61000-4-11	Voltage Dips and Short Interruptions Immunity	PASS



13	EN 61000-4-5	Surge Immunity, AC Ports	PASS
<p>Note 1: This test is applicable to EPS equipment that may have DC cables longer than 3 m as declared by the manufacturer.</p> <p>Note 2: There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2:2006+A1:2009+A2:2009. For further details, please refer to Clause 7 of EN 61000-3-2:2006+A1:2009+A2:2009 which states: “For the following categories of equipment, limits are not specified in this edition of the standard: - equipment with a rated power of 75W or less, other than lighting equipment.”</p>			





## 2.2. Addendum II of M/455 EN Annex II Part A [2]

### 2.2.1. Load: EPS load representative of a Mobile Phone with the following characteristics

- USB micro-B socket connection
- Input capacitance of 1 $\mu$ F in parallel with the EPS output
- Input impedance with switchable/variable range of:
  - 1) 10k  $\Omega$  (for 0 % rated current)
  - 2) 5 $\Omega$  1% tolerance (for Maximum rated current 1000mA)
  - 3) Other resistances to obtain the currents and output voltages in step 10 of the test procedure

### 2.2.2. Test Limits

Output Voltage Ripple (Under load conditions from idle to full): 80mVp-p measured at 20 MHz bandwidth using the test method as defined in EN 62684 [16].

### 2.2.3. Test procedure

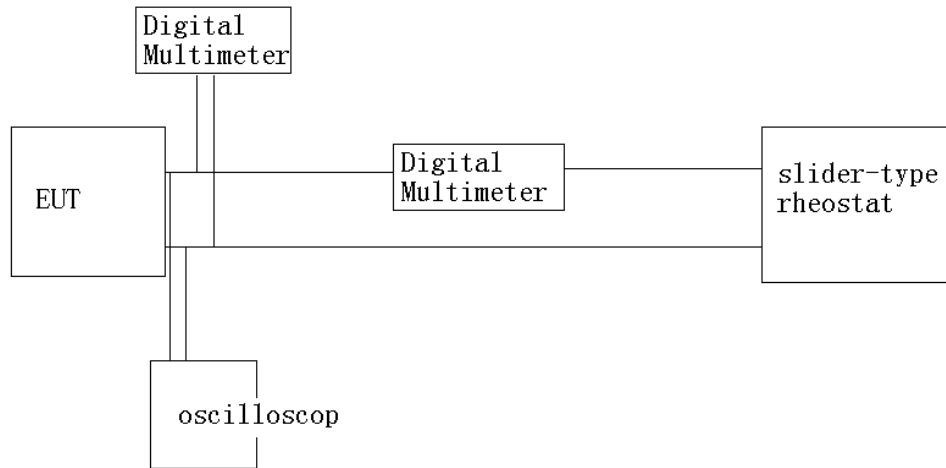
1. Place EUT into an environmental chamber.
2. Connect the EUT to Generic Load.
3. Set the Load to CC mode according to the test parameters in step 10.
4. Set the Load to desired load according to the test parameters in step 10.
5. Set the oscilloscope to 20mV/div, 1s/div and 20MHz bandwidth.
6. Connect the oscilloscope to the EUT output.
7. Set the temperature on the environmental chamber.
8. Wait for 10 minutes after the temperature stability.
9. Connect the AC input of EUT to an AC power source and let the EUT work for 10 minutes.
10. Measure the peak-to-peak voltage of the signal on the oscilloscope under each possible combination of the following parameters:



- AC Frequency: 47Hz, 50Hz and 53 Hz for an EPS with nominal AC input of 230Vac
- AC Voltage: 195Vac, 230Vac and 264Vac for an EPS with nominal AC input of 230Vac
- AC Frequency: 47Hz, 50Hz, 60Hz and 63Hz for an EPS with AC input range of 100-230Vac
- AC Voltage: 85Vac, 120Vac, 195Vac and 264Vac for an EPS with AC input range of 100-230Vac
- Load setting: CC mode (0mA) (CC = Constant Current), to (rated output current) at 25% increments and CV (CV = Constant Voltage) mode ( $V_{out}=3V$  to 4.25V) at 250mV increments.

## 2.2.4. Test Setup

Please refer to Annex B for the photographs of the Test Configuration.



## 2.2.5. The test result of ripple before the EMC test

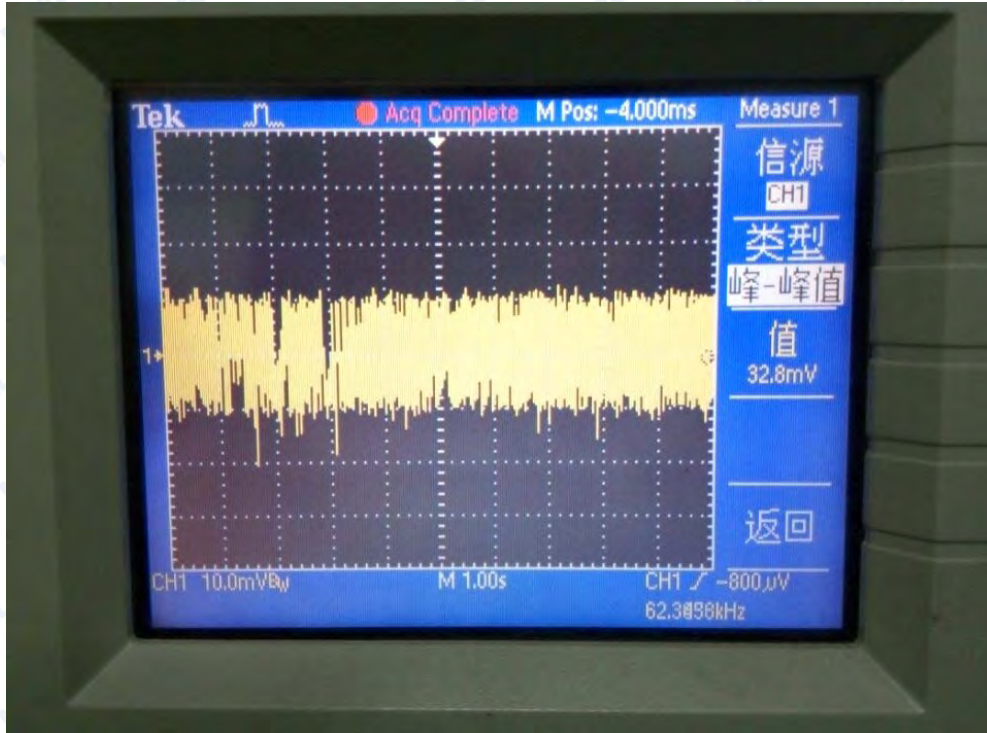
AC Voltage(V)	AC Frequency(Hz)	Load Setting	Limit(mV)	Result
85	60	CC to CV	80	Pass
	63			Pass
120	60			Pass
	63			Pass
195	47			Pass
	50			Pass
264	47			Pass
	50			Pass



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#### A. Test Plot:

NOTE: Only the worst result is recorded in this report. The Output Voltage Ripple of the worst result is 32.8mVp-p.







### 3. Emission tests

#### 3.1. EUT Setup and Operating Conditions

1	<p>The EUT configuration of the emission tests is EUT + resistance.</p> <p>During the measurement of test mode, the EUT was connected with the test load , the test load is the slider-type rheostat, and the EUT work at the worst case, 10 % and 100 % of the rated output current and when disconnected from the Representative generic test load (no load condition).</p>
<p>Note: All cases are performed, the worst case for emission tests is 100 % of the rated output current and it was recorded in this report.</p>	



## 3.2. Mains Terminal Disturbance Voltage

### 3.2.1. Limits of Mains Terminal Disturbance Voltage

Frequency range (MHz)	Conducted Limit (dB $\mu$ V)	
	Quai-peak	Average
0.15 – 0.50	66 to 56	56 to 46
0.50 – 5	56	46
5 – 30	60	50

#### NOTE:

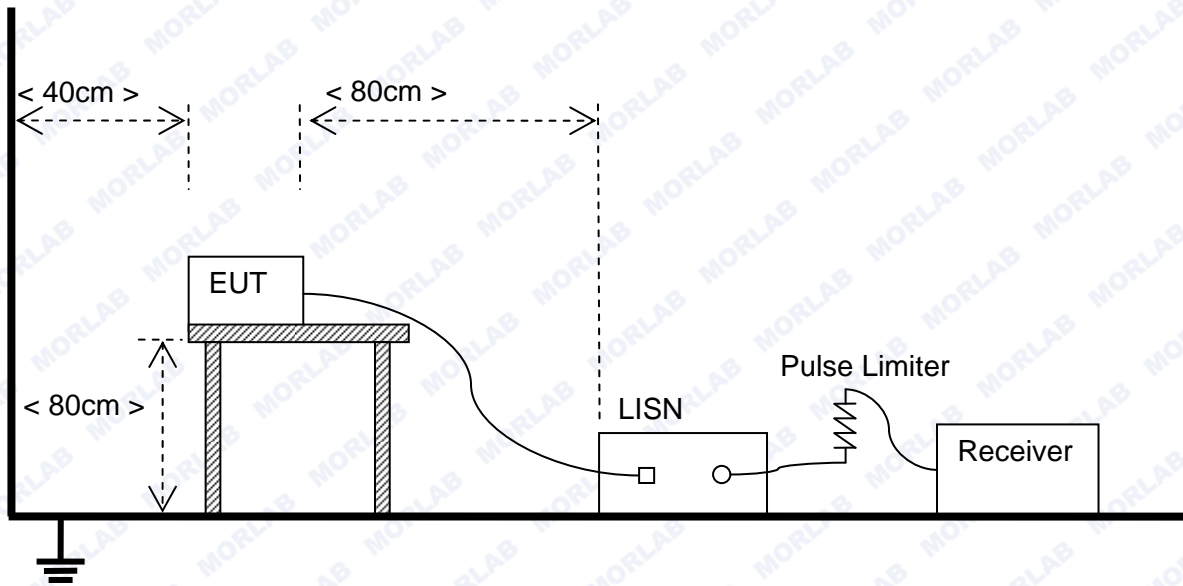
1. The lower limit shall apply at the band edges.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 – 0.50MHz.

### 3.2.2. Test Procedure

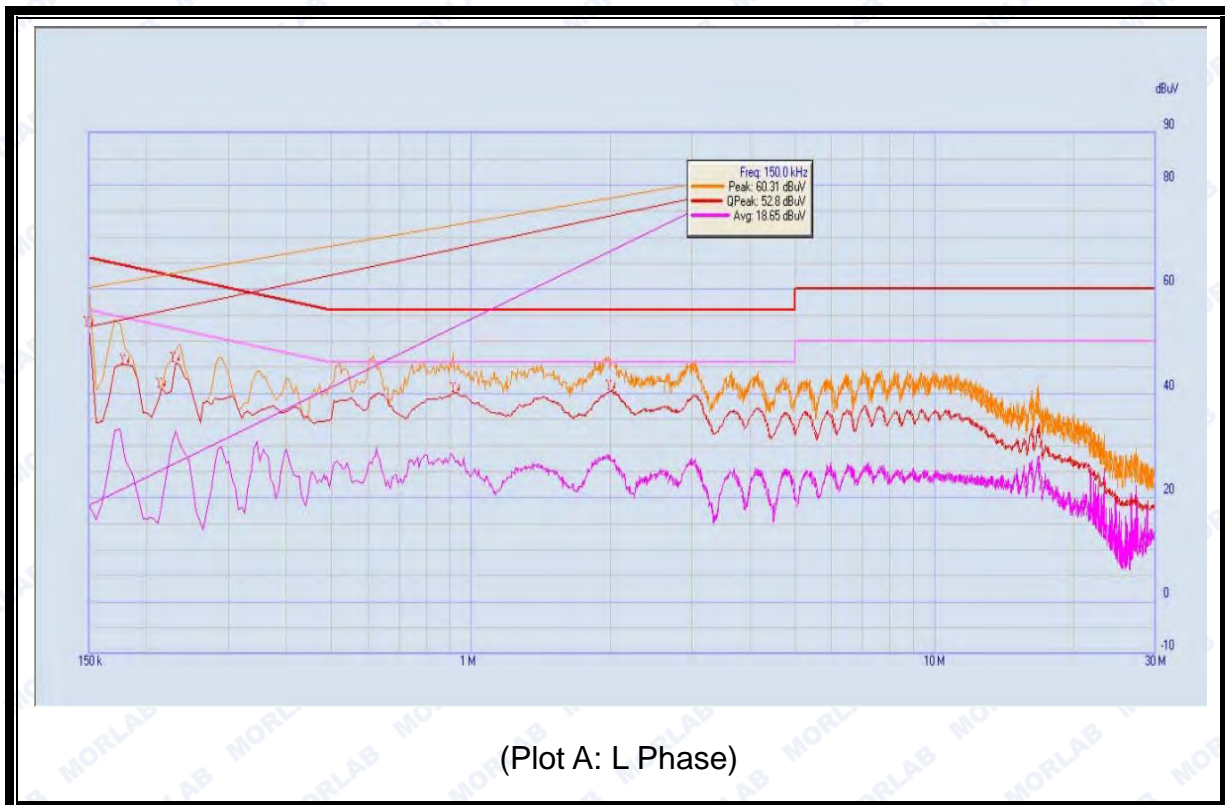
1. The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50 $\Omega$ /50 $\mu$ H of coupling impedance for the measuring instrument.
2. The test frequency range is from 150kHz to 30MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.
3. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

### 3.2.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



### 3.2.4. Test Result



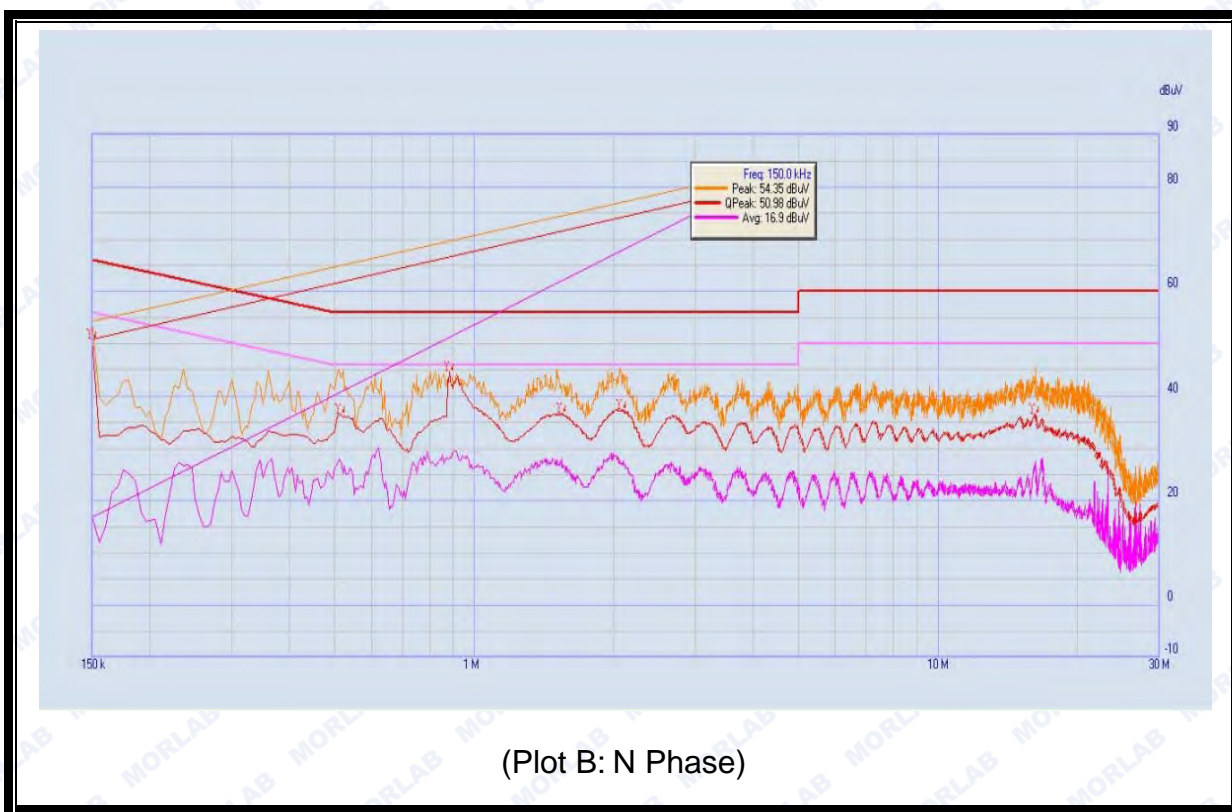
NO.	Fre.	Emission Level (dBμV)	Limit (dBμV)	Power-line	Verdict
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	(MHz)	Quai-peak	Average	Quai-peak	Average		
1	0.15	52.80	18.65	66.00	56.00	Line	PASS
2	0.18	45.44	27.18	65.14	55.14		PASS
3	0.215	41.13	18.77	64.14	54.14		PASS
4	0.23	45.89	32.83	63.71	53.71		PASS
5	0.93	40.21	26.84	56.00	46.00		PASS
6	2.015	40.54	27.08	56.00	46.00		PASS



NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.15	50.98	16.90	66.00	56.00	Neutral	PASS
2	0.515	36.45	27.49	56.00	46.00		PASS
3	0.885	44.73	28.29	56.00	46.00		PASS
4	1.545	36.53	26.52	56.00	46.00		PASS
5	2.075	37.20	27.16	56.00	46.00		PASS
6	16.125	36.51	26.72	60.00	50.00		PASS

**Result: Pass**



### 3.3. Radiated Disturbance

#### 3.3.1. Limits of Radiated Disturbance

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)
30 - 230	40
230 - 1000	47

**NOTE:**

1. The limit is applicable to 3m measurement distance.
2. The lower limit shall apply at the transition frequency.
3. Additional provisions may be required for cases where interference occurs.

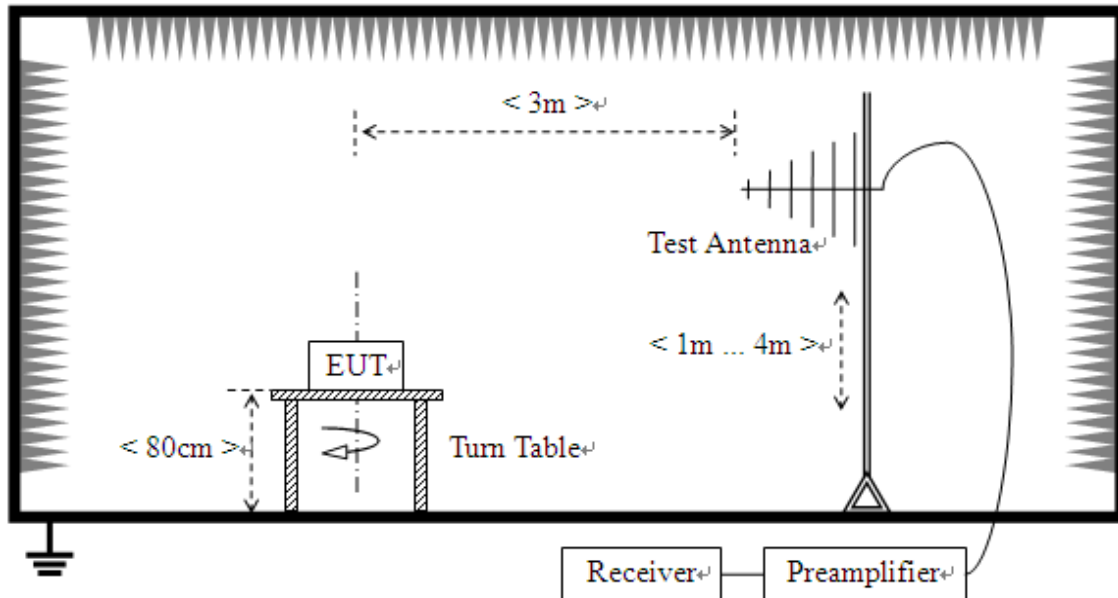
#### 3.3.2. Test Procedure

1. The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.
2. For each suspected emission, the EUT is arranged to its worst case and then the Test Antenna is tuned to the heights from 1 to 4m and the Turn Table is tuned from 0 to 360 degrees to find the maximum reading.
3. The Test Antenna is a bi-log one, and its height is varied from 1 to 4m above the ground to determine the maximum value of the field strength. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests.
4. The maximum radiated emission is searched using PK and QP detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with QP detectors.

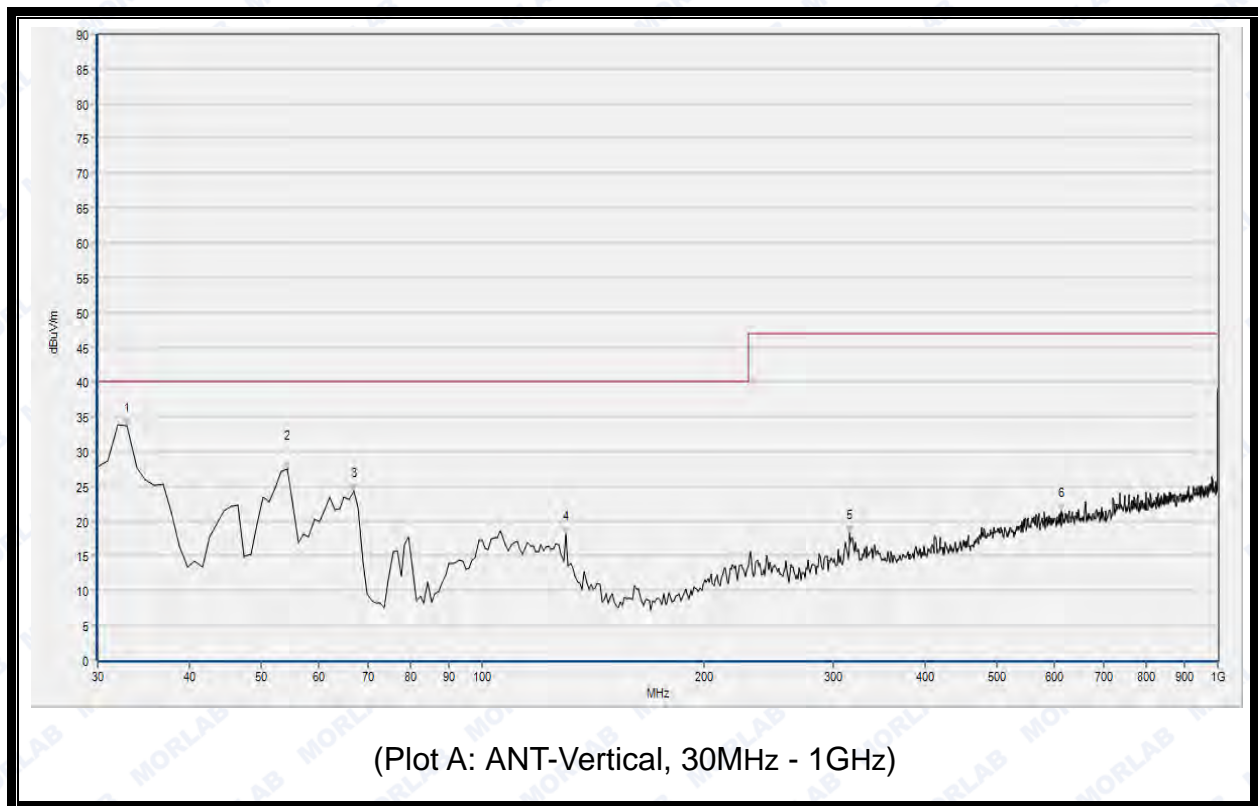
#### 3.3.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.

- 1) For radiated emissions from 30MHz to 1GHz



### 3.3.4. Test Result



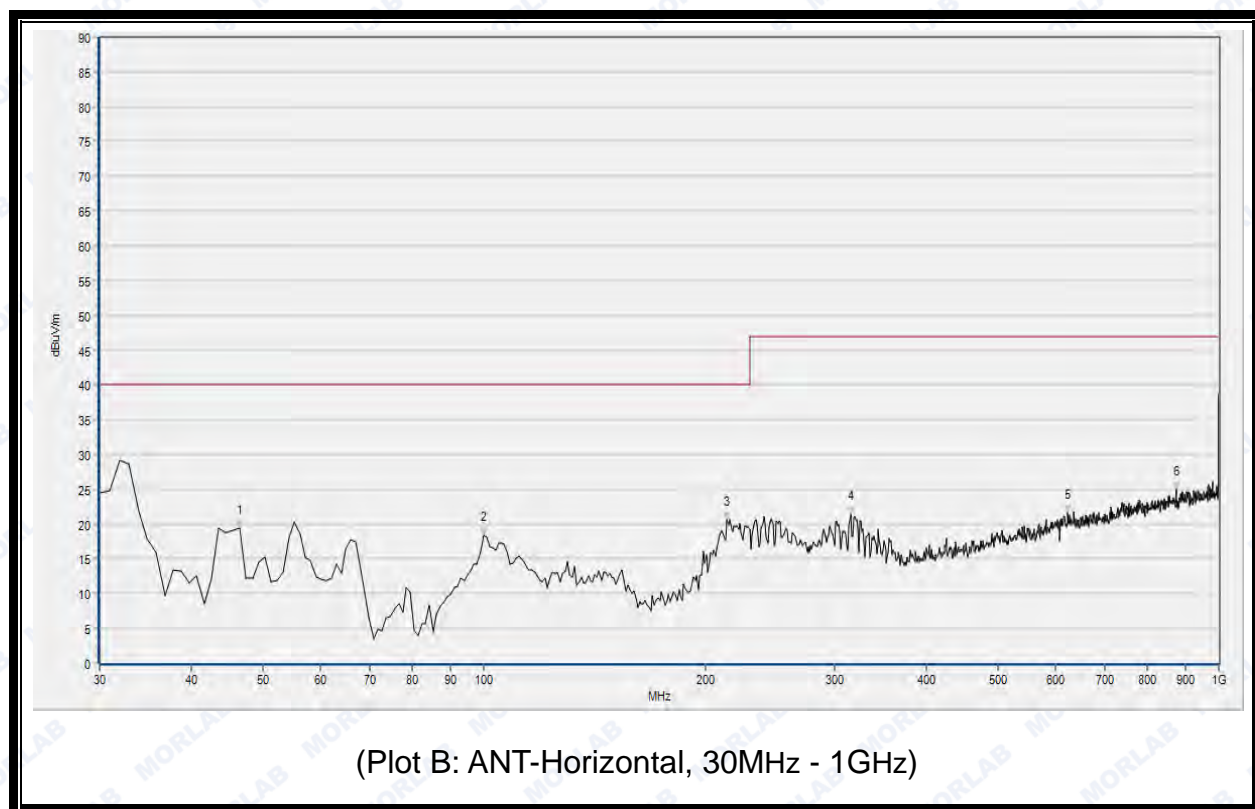
No.	Fre.	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	ANT	Verdict
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	MHz	dBμV/m	dBμV/m	dBμV/m	dBμV/m	dBμV/m	dBμV/m		
1	32.910	N.A	33.67	N.A	N.A	40.00	N.A	V	PASS
2	54.250	N.A	27.41	N.A	N.A	40.00	N.A	V	PASS
3	66.860	N.A	24.28	N.A	N.A	40.00	N.A	V	PASS
4	129.910	N.A	18.05	N.A	N.A	40.00	N.A	V	PASS
5	316.150	N.A	18.28	N.A	N.A	47.00	N.A	V	PASS
6	612.970	N.A	21.44	N.A	N.A	47.00	N.A	V	PASS



No.	Fre. MHz	Pk dBμV/m	QP dBμV/m	AV dBμV/m	Limit-PK dBμV/m	Limit-QP dBμV/m	Limit-AV dBμV/m	ANT	Verdict
1	46.490	N.A	19.39	N.A	N.A	40.00	N.A	H	PASS
2	99.840	N.A	18.45	N.A	N.A	40.00	N.A	H	PASS
3	214.300	N.A	20.57	N.A	N.A	40.00	N.A	H	PASS
4	316.150	N.A	21.52	N.A	N.A	47.00	N.A	H	PASS
5	622.670	N.A	21.56	N.A	N.A	47.00	N.A	H	PASS
6	874.870	N.A	24.89	N.A	N.A	47.00	N.A	H	PASS

**Result: Pass**

### 3.4. Voltage Fluctuations and Flicker Measurement

#### 3.4.1. Limits of Voltage Fluctuations and Flicker

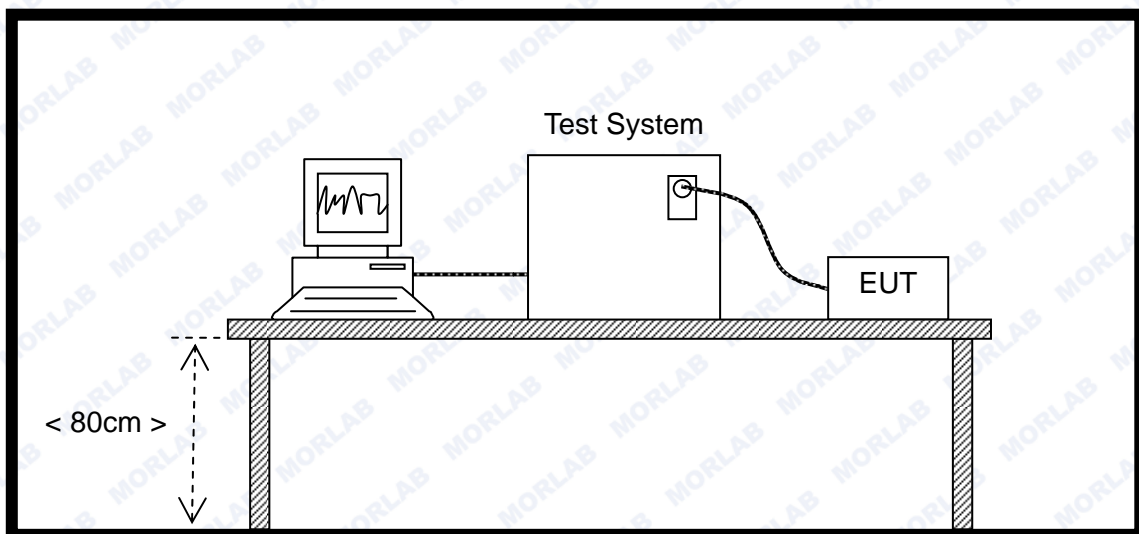
Test Item	Limit	Note
$P_{st}$	1.0	Short-term flicker indicator
$P_{lt}$	0.65	Long-term flicker indicator
$T_{dt}$	0.5	Maximum time that $dt$ exceeds 3%
$d_{max}$ (%)	4%	Maximum relative voltage change
$d_c$ (%)	3.3%	Relative steady-state voltage change

#### 3.4.2. Test Procedure

1. The EUT is placed on the top of a wooden table 0.8m above the ground and operated to produce the most unfavorable sequence of voltage changes under normal conditions.
2. During the Flicker measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

#### 3.4.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.





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### 3.4.4. Test Result

#### A. Test Specification:

No.	Specification	Value
1	Test Frequency	50Hz
2	Test Voltage	230VAC
3	Waveform	Sine
4	Test Time	10 minutes for $P_{st}$ ; 2 hours for $P_{lt}$

#### B. Test Verdict:

Test Mode	Test Parameter	Limit	Measurement Value	Verdict
See section 3.1	$P_{st}$	1.0	0.023	PASS
	$P_{lt}$	0.65	0.022	PASS
	$T_{dt}$	0.5	0.04	PASS
	$d_{max}$ (%)	4%	0.29%	PASS
	$d_c$ (%)	3.3%	0.26%	PASS





## 4. Immunity Tests

### 4.1. EUT Operation and Performance Criteria

#### 4.1.1. EUT Setup and Operating Conditions

1	<p>The EUT configuration of the immunity tests is EUT + resistance.</p> <p>During the measurement of test mode, the EUT was connected with the test load, the test load is the slider-type rheostat. The integral USB cable or the Standard detachable cable assembly, supplied for use with the EPS shall be configured for worst case susceptibility during the immunity tests.</p> <p>The EUT was tested with the defined representative generic test load.</p> <p>The EUT was tested at rated nominal voltage at its full rated load.</p>
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#### 4.1.2. Performance Criteria

##### A. General Performance Criteria:

For the EPS, the performance criteria are based on a UE intended to be used with the EPS. For some specific test cases a different compliance level and/or performance criteria has been defined in order to ensure the compliance at the UE and EPS.

The performance criteria are used to make a decision on whether an EPS passes or fails immunity tests.

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

- performance criteria for continuous phenomena applied to EPS;

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

- performance criteria for transient phenomena applied to EPS.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.



## B. Performance criteria for EPS

For a EPS the performance criteria for continuous phenomena shall meet the requirements whilst tested with the representative generic test load as given below:

Output Voltage 5 V  $\pm$ 0.25 V from no load to maximum output current measured at the USB Micro-B plug.

While the parameters above should monitored at the USB Micro-B plug, the reference for the output voltage is the USB Micro-B plug for an EPS with captive cable and the Standard-A plug for an EPS with detachable cable.

The above criteria shall also be met after exposure to transient phenomena.

The following criteria shall be met after exposure to all immunity phenomena tests:

Output Voltage Ripple (Under load conditions from idle to full): 80mVp-p measured at 20 MHz bandwidth using the test method as defined in EN 62684 [16].



## 4.2. Electrostatic Discharge Immunity

### 4.2.1. Test Specification

Specification	Value
Basic Standard	EN 61000-4-2:2009
Discharge Impedance	330Ohm / 150pF
Discharge Voltage	Air Discharge: 8kV; Contact Discharge: 4kV
Polarity	Positive / Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single discharge
Discharge Period	1 second minimum

### 4.2.2. Test Procedure

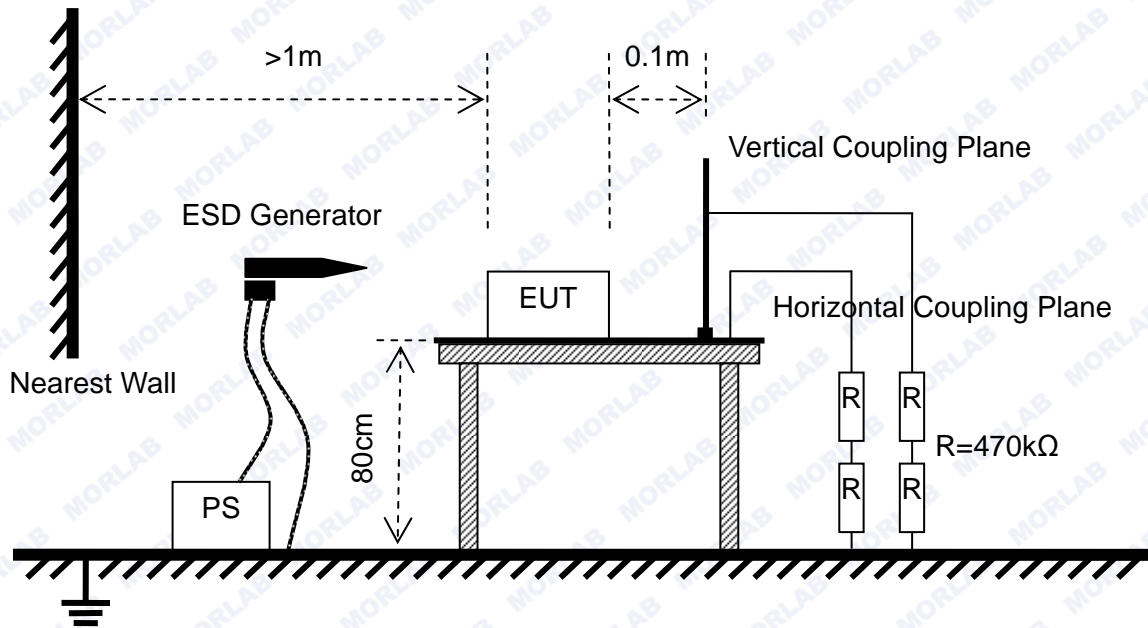
1. Electrostatic discharges are applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
2. The test is performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
3. The time interval between two successive single discharges is at least 1 second.
4. The ESD generator is held perpendicularly to the surface to which the discharge is applied and the return cable is at least 0.2 meters from the EUT.
5. Contact discharges are applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
6. Air discharges are applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator is removed from the EUT and re-triggered for a new single discharge. The test is repeated until all discharges were completed.
7. At least ten single discharges (in the most sensitive polarity) are applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator is positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
8. At least ten single discharges ( in the most sensitive polarity) are applied to the center of one



vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m\*0.5m) is placed vertically to and 0.1 meters from the EUT.

### 4.2.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



### 4.2.4. Test Result

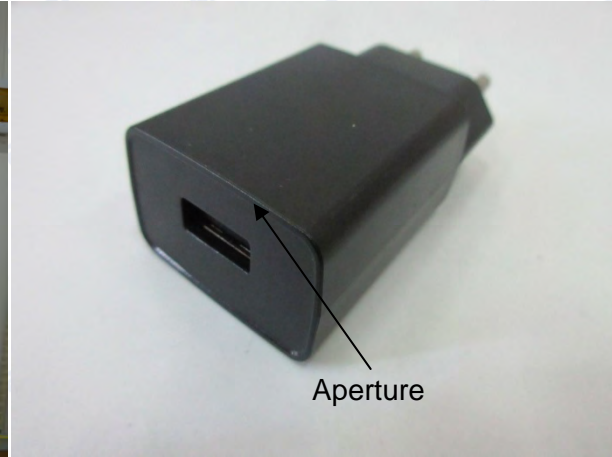
The performance of the EUT complies with the performance criteria for transient phenomena.

Test Points	Discharge Level (kV)	Discharge Mode	Number of Discharge	Test Mode	Verdict
HCP	±4	Contact	20	Full Rated Load	PASS
				No Load	
VCP	±4	Contact	20	Full Rated Load	PASS
				No Load	
Other aperture of the EUT	±2,±4,±8	Air	20	Full Rated Load	PASS
				No Load	



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#### 4.2.5. The ESD test points





## 4.3. Radiated, Radio Frequency Electromagnetic Field Immunity Test

### 4.3.1. Test Specification

Basic Standard:	EN 61000-4-3:2006+A1:2008+A2:2010
Frequency Range:	80 MHz – 1000MHz, 1400MHz-2700MHz
Field Strength:	3V/m
Modulation:	1 kHz sine wave, 80%, AM modulation
Frequency Step:	1% of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance:	3m
Antenna Height:	1.5m
Dwell Time:	3 seconds

### 4.3.2. Test Procedure

The test procedure was in accordance with EN 61000-4-3:2006+A1:2008+A2:2010.

1. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
2. The test signal was 80% amplitude modulated with a 1 kHz sine wave.
3. The frequency range was swept from 80 MHz to 1000MHz and 1400MHz to 2700MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers. The rate of sweep did not exceed  $1.5 \times 10^{-3}$  decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
4. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
5. The field strength level was 3V/m(10V/m at 751.0MHz, 897.5MHz, 847.0MHz, 1747.5MHz, 1950.0MHz, 2535.0MHz).
6. The test was performed with the EUT exposed to both vertically and horizontally polarized

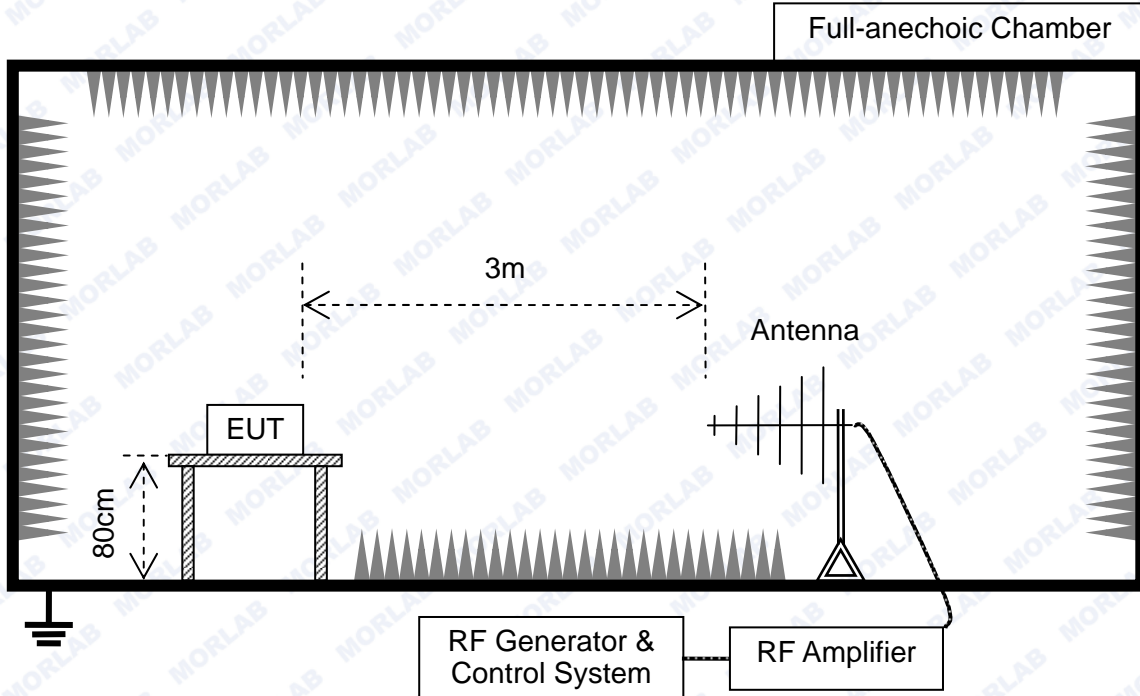




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fields on each of the four sides.

### 4.3.3. Test Setup



For the actual test configuration, please refer to Annex A for the photographs of the Test Configuration.

### 4.3.4. Test Result

The performance of the EUT complies with the performance criteria for continuous phenomena.

Operating Mode	Field Strength	Frequency (MHz)	Modulation	EUT Face	Verdict
See Section 4.1.1	3 V/m	80-1000, 1400-2700	1KHz, 80% Amp. Mod, 1% increment	Front	Pass
				Rear	Pass
				Left	Pass
				Right	Pass



## 4.4. Electrical Fast Transient / Burst Immunity

### 4.4.1. Test Specification

Specification	Value
Basic Standard	EN 61000-4-4:2012
Test Voltage	AC Power Port: 1kV
Polarity	Positive / Negative
Impulse Frequency	5kHz
Impulse Wave Shape	5/50ns
Burst Duration	15ms
Burst Period	300ms
Test Duration	> 1min

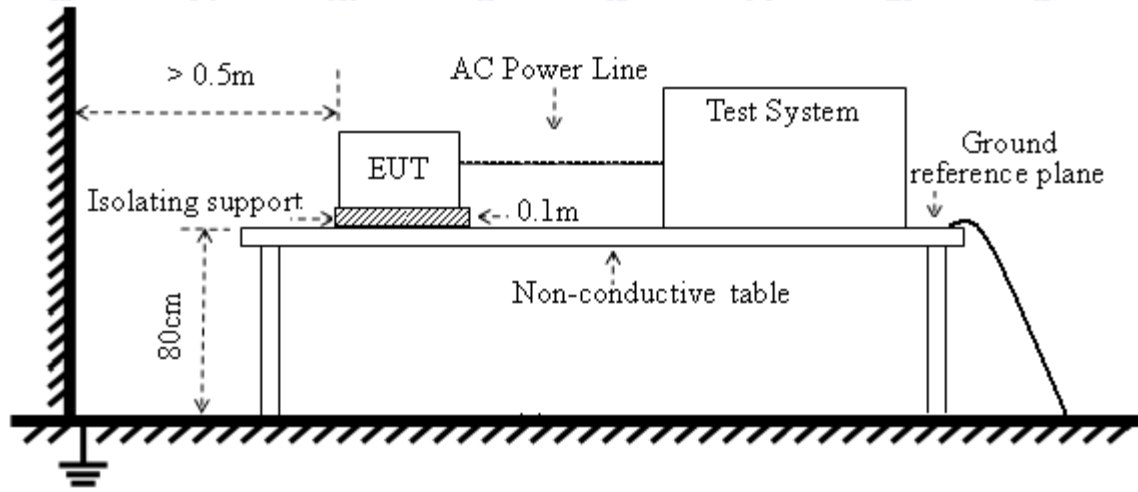
### 4.4.2. Test Procedure

1. The EUT is tested with 1000V discharges to the AC power input leads.
2. Both positive and negative polarity discharges are applied.
3. The length of the "hot wire" from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1m.
4. The duration time of each test sequential is 2min.
5. The transient / burst waveform is in accordance with EN 61000-4-4:2012, 5/50ns.

### 4.4.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.





#### 4.4.4. Test Result

The performance of the EUT complies with the performance criteria for transient phenomena.

EUT Operating Mode	Test Point	Polarity	Test Level (kV)	Verdict
See section 4.1.1	AC Port, L	+ / -	1	PASS
	AC Port, N	+ / -	1	PASS
	AC Port, L-N	+ / -	1	PASS



## 4.5. Surge Immunity

### 4.5.1. Test Specification

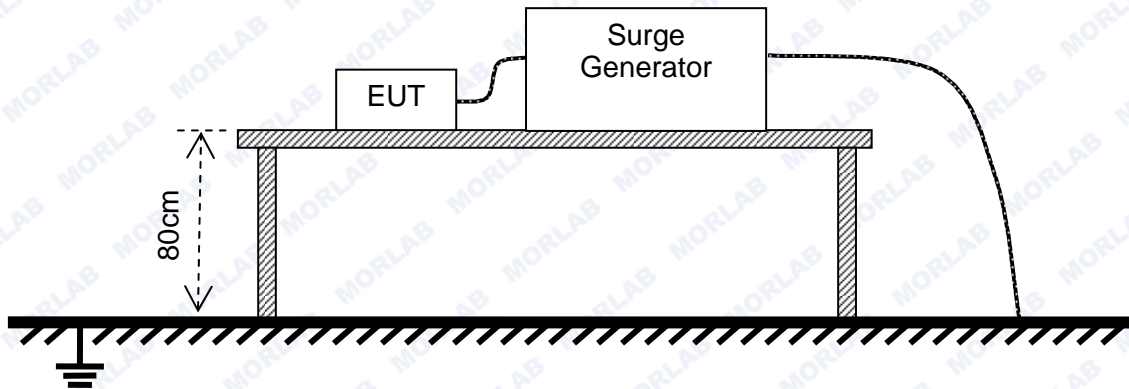
Specification	Value
Basic Standard	EN 61000-4-5:2006
Waveform	Voltage: 1.2/50 $\mu$ s; Current: 8/20 $\mu$ s
Test Voltage	AC Power Port: line to ground 2kV, line to line 1kV
Polarity	Positive / Negative
Phase Angle	0°, 90°, 180°, 270°
Repetition Rate	60 seconds
Times	5 times per condition

### 4.5.2. Test Procedure

1. The EUT and the auxiliary equipment are placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m\*1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT is less than 2 meters (provided by the manufacturer).
2. The EUT is connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise is applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).
3. The surges are applied line to line and line(s) to earth. When testing line to earth the test voltage is applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level are tested. The polarity of each surge level included positive and negative test pulses.

### 4.5.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



#### 4.5.4. Test Result

The performance of the EUT complies with the performance criteria for transient phenomena.

EUT Operating Mode	Coupling Line	Polarity	Voltage (kV)	Verdict
See section 4.1.1	AC Port, L-N	+ / -	0.5	PASS
			1	PASS





## 4.6. Immunity to Conducted Disturbance Induced by RF Fields

### 4.6.1. Test Specification

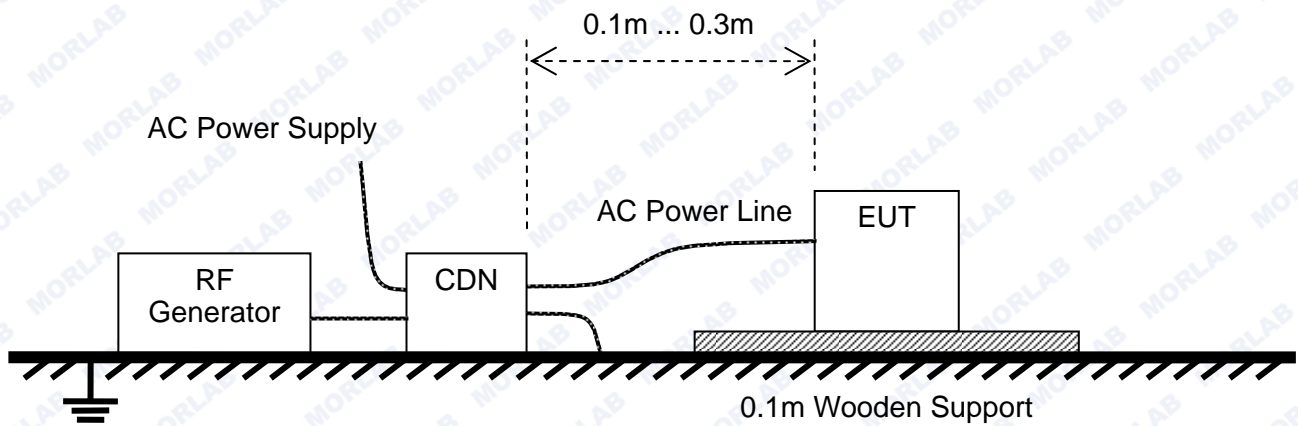
Specification	Value
Basic Standard	EN 61000-4-6:2009
Frequency Range	0.15MHz - 80MHz
Field Strength	3Vrms
Modulation	1kHz sine wave, 80% AM
Frequency Step	1% of fundamental
Coupled Cable	AC Power Line
Coupling Device	CDN-M2

### 4.6.2. Test Procedure

1. The EUT shall be tested within its intended operating and climatic conditions.
2. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50Ohm load resistor.
3. The test signal is 80% amplitude modulated with a 1kHz sine wave.
4. The frequency range is swept from 150kHz to 80MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The sweep rate shall not exceed  $1.5 \times 10^{-3}$  decades/s. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
5. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.
6. Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

### 4.6.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



### 4.6.4. Test Result

The performance of the EUT complies with the performance criteria for continuous phenomena.

EUT Operating Mode	Test Point	Frequency (MHz)	Voltage level(V)	Verdict
See section 4.1.1	AC Port	0.15 - 80	3	PASS



## 4.7. Voltage Dips and Short Interruptions Immunity

### 4.7.1. Test Specification

Specification	Value
Basic Standard	EN 61000-4-11:2004
Voltage Dips	100% reduction: 10ms; 100% reduction: 20ms; 30% reduction: 500ms
Voltage Interruptions	100% reduction: 5000ms
Voltage Phase Angle	0°&180°

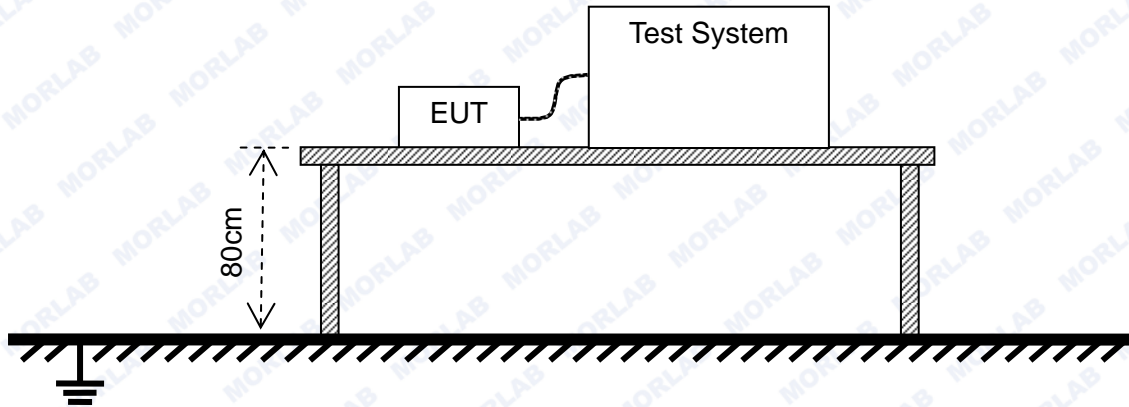
### 4.7.2. Test Procedure

1. The power cord is used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.
2. The EUT is tested for a) 100% voltage dip of supplied voltage with duration of 10ms; b) 100% voltage dip of supplied voltage with duration of 20ms; c) 30% voltage dip of supplied voltage and duration 500ms. Both of the dip tests are carried out for a sequence of three voltage dips with intervals of 10 seconds.
3. 100% voltage interruption of supplied voltage with duration of 5000ms is followed, which is a sequence of three voltage interruptions with intervals of 10 seconds.
4. Voltage reductions occur at 0 degrees crossover point of the voltage waveform. The performance of the EUT is checked after the voltage dip or interruption.

### 4.7.3. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.





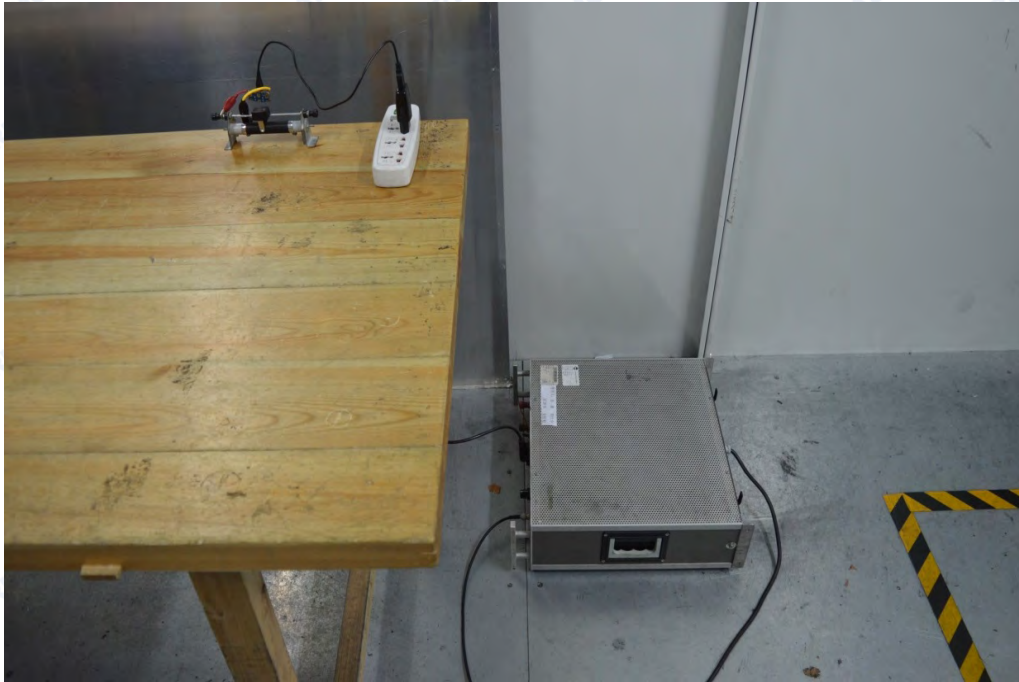
#### 4.7.4. Test Result

The performance of the EUT complies with the performance criteria for transient phenomena.

EUT Operating Mode	Test Mode	Voltage Reduction	Duration (ms)	Times	Interval (sec)	Verdict
See section 4.1.1	Voltage Dips	30%	500	3	10	PASS
		100%	20	3	10	PASS
		100%	10	3	10	PASS
	Voltage Interruptions	100%	5000	3	10	PASS

## Annex A Photographs of Test Setup

### 1. Mains Terminal Disturbance Voltage Measurement



### 2. Radiated Field Strength Measurement(30MHz-1GHz)







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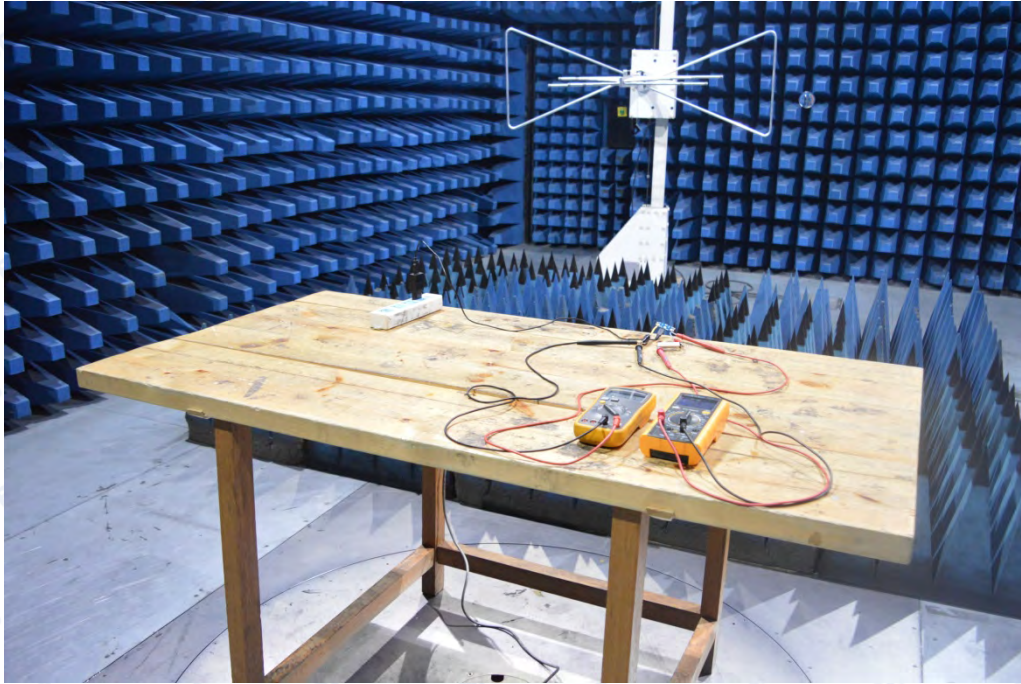
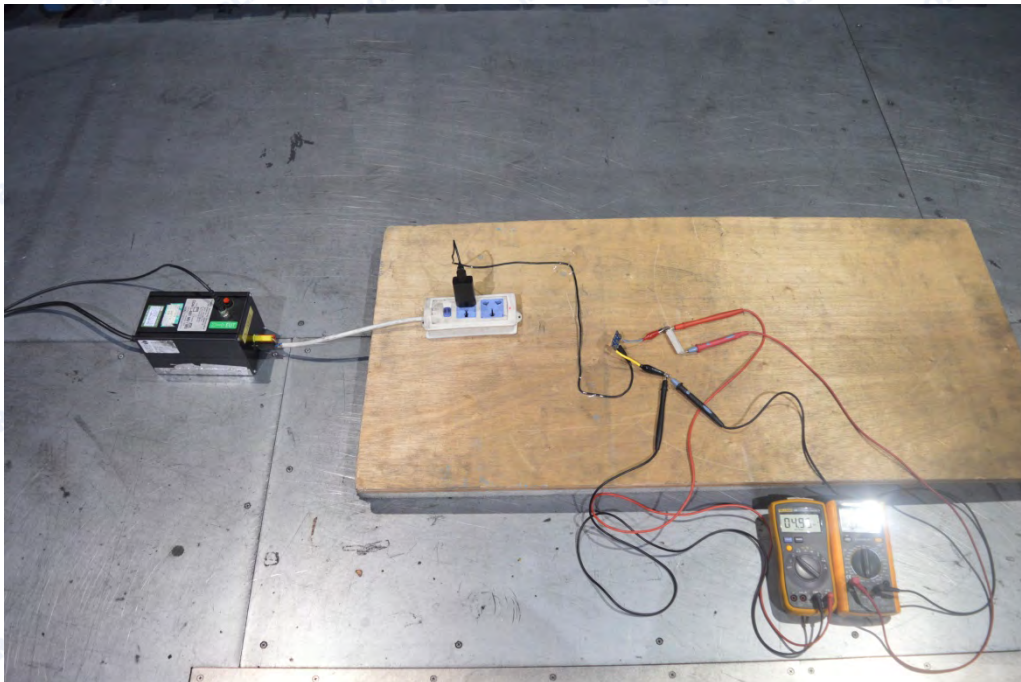
### 3. Voltage Fluctuations & Flicker



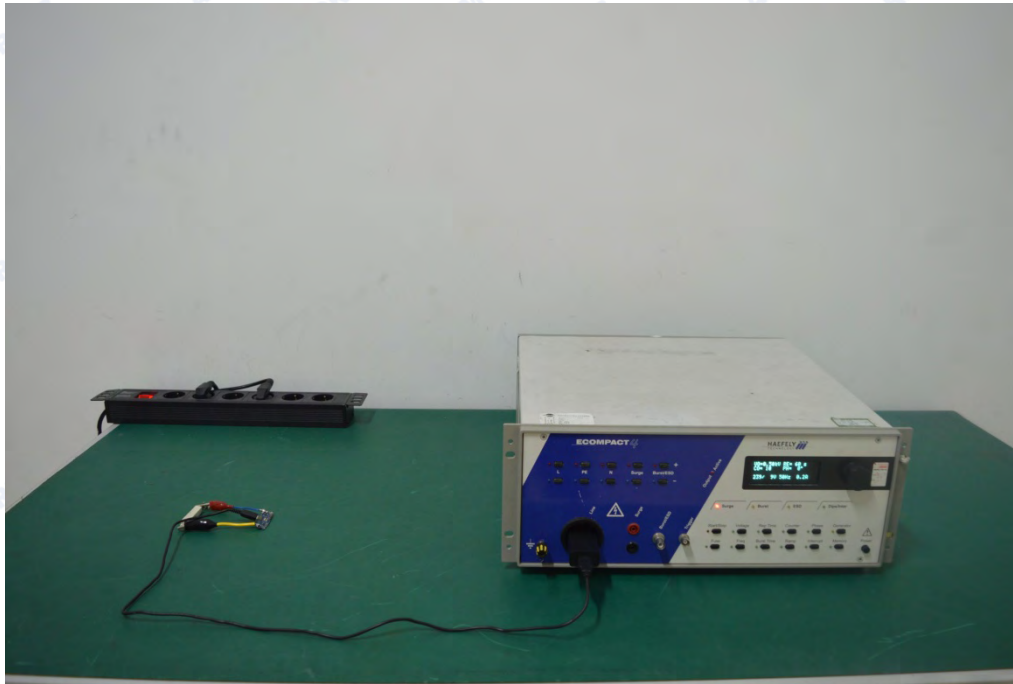
### 4. Electrostatic Discharge Immunity Test



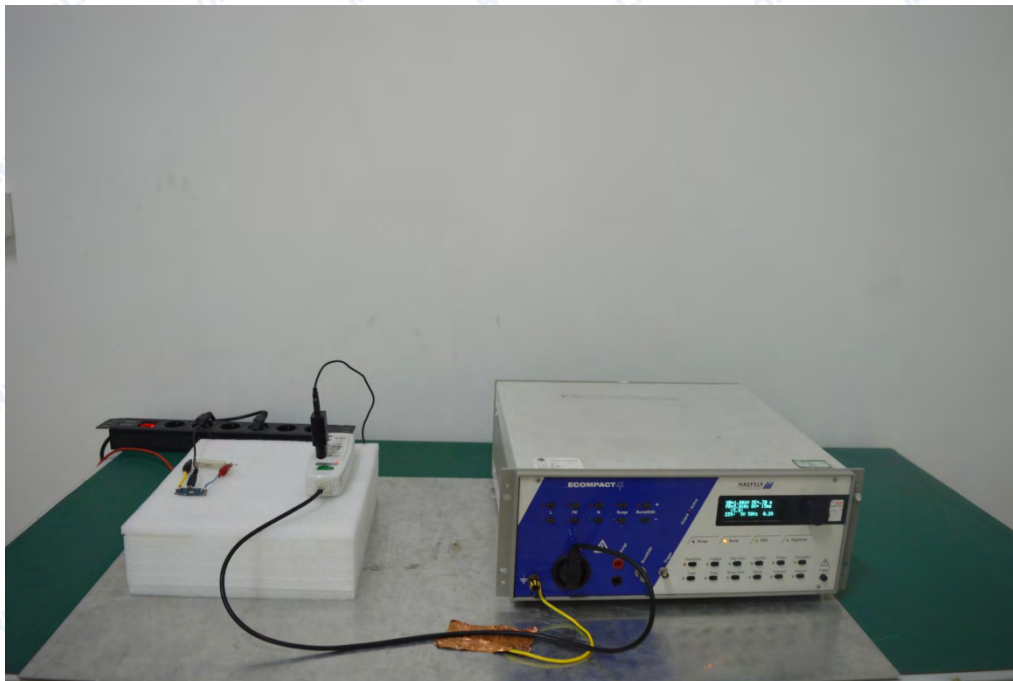


5. Radiated, Radio Frequency Electromagnetic Field Immunity Test6. Immunity to Conducted Disturbance Induced by RF Fields

## 7. Voltage Dips and Short Interruptions Immunity, Surge Immunity Test



## 8. Electrical Fast Transient/Burst Immunity Test

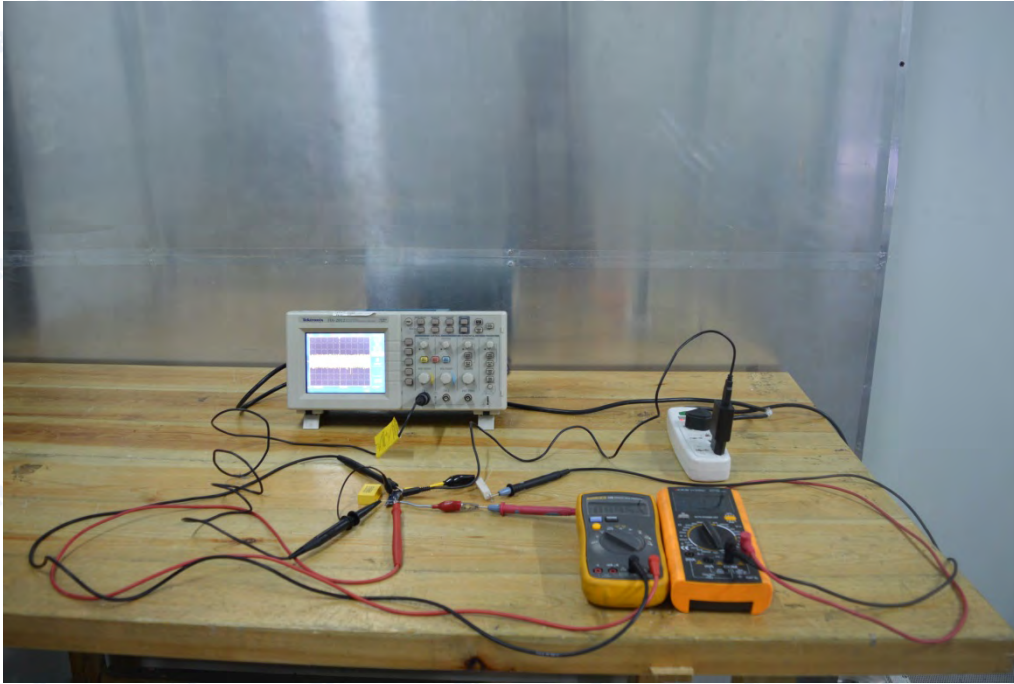






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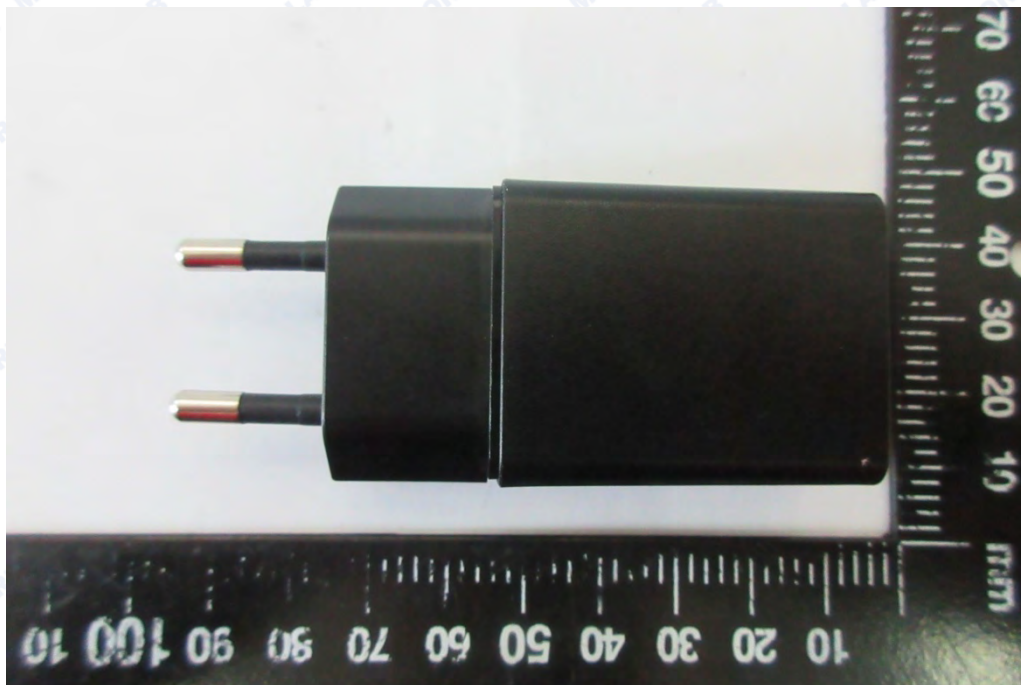
## 9. Output Voltage Ripple Test





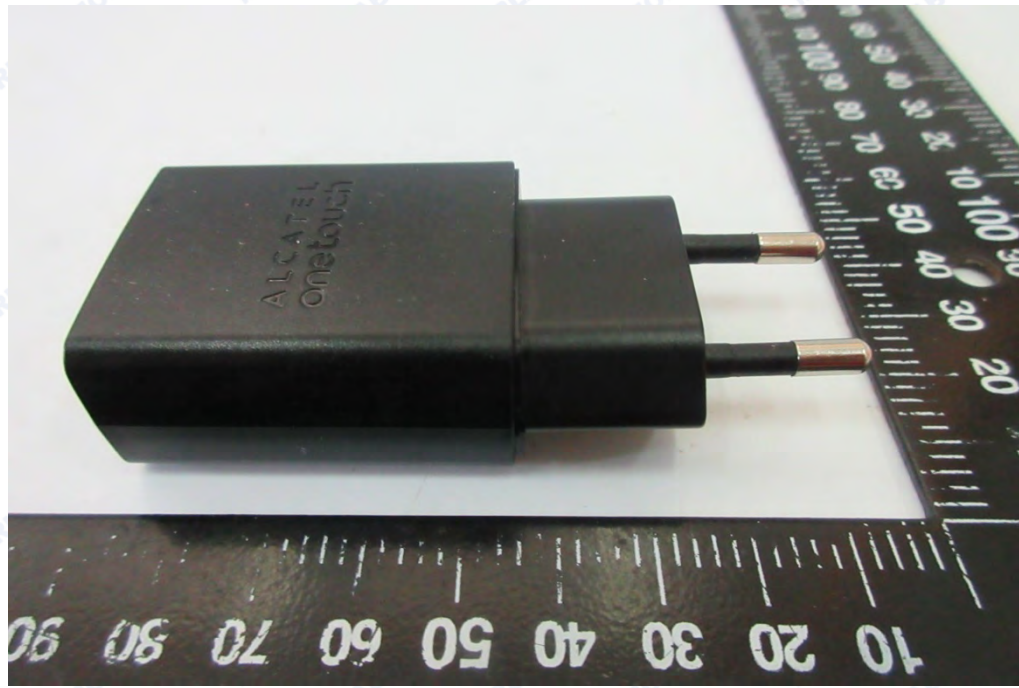
## Annex B Photos of the EUT

### 1. Appearance of the EUT:





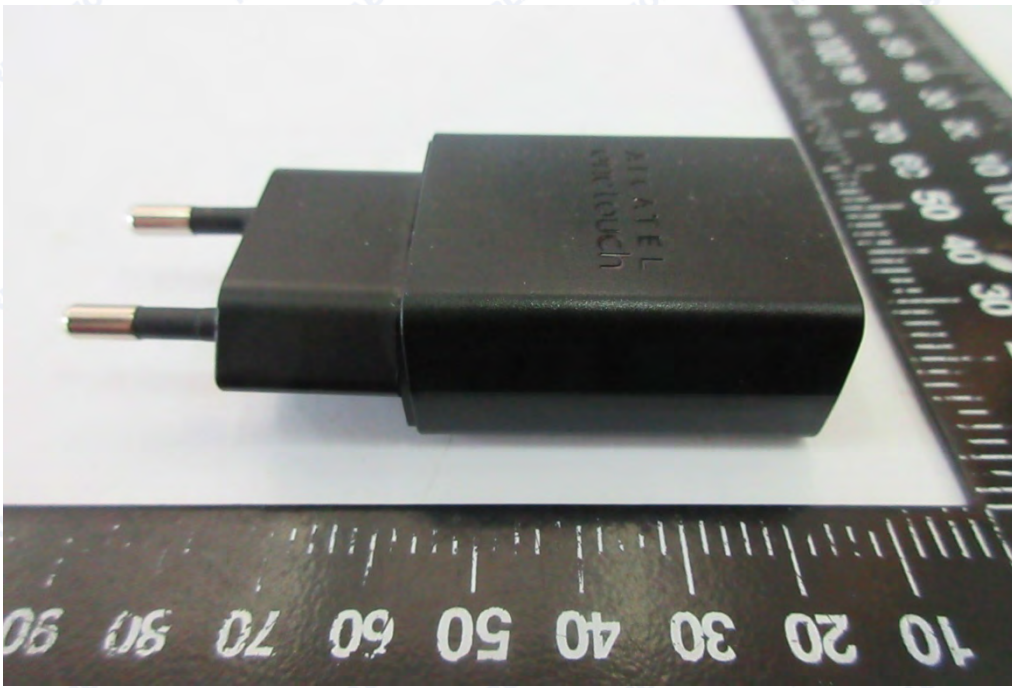
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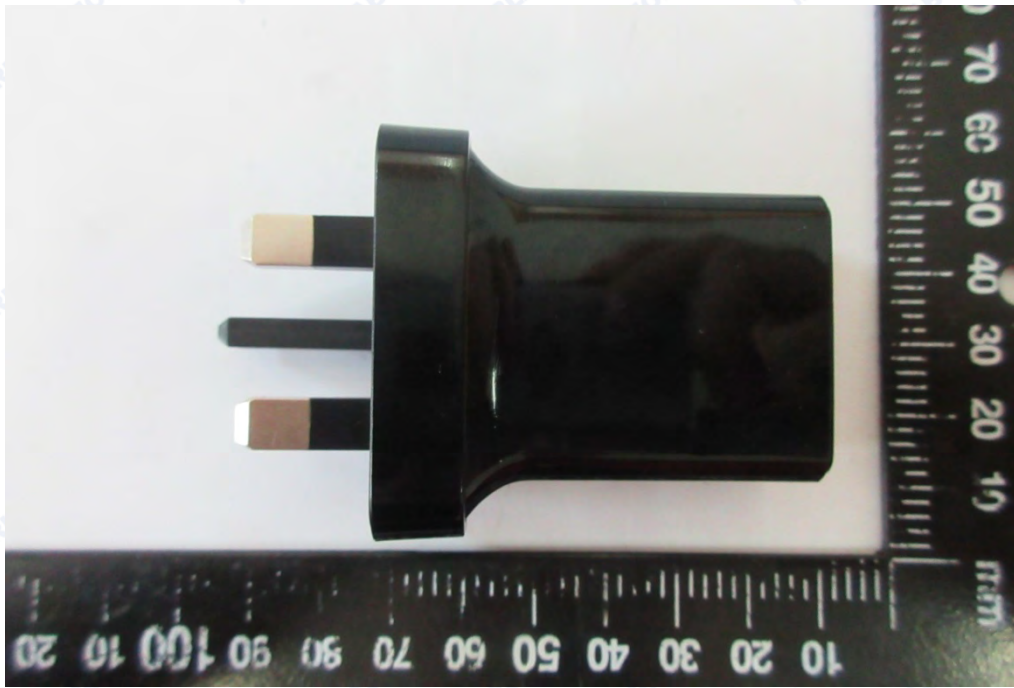


(UC11EU)



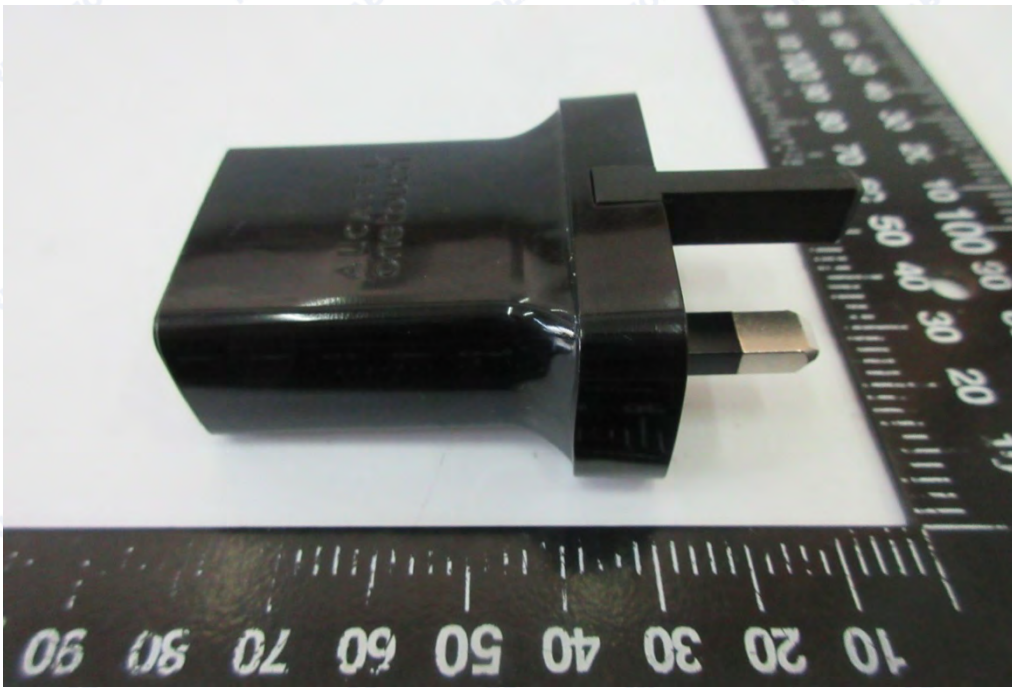
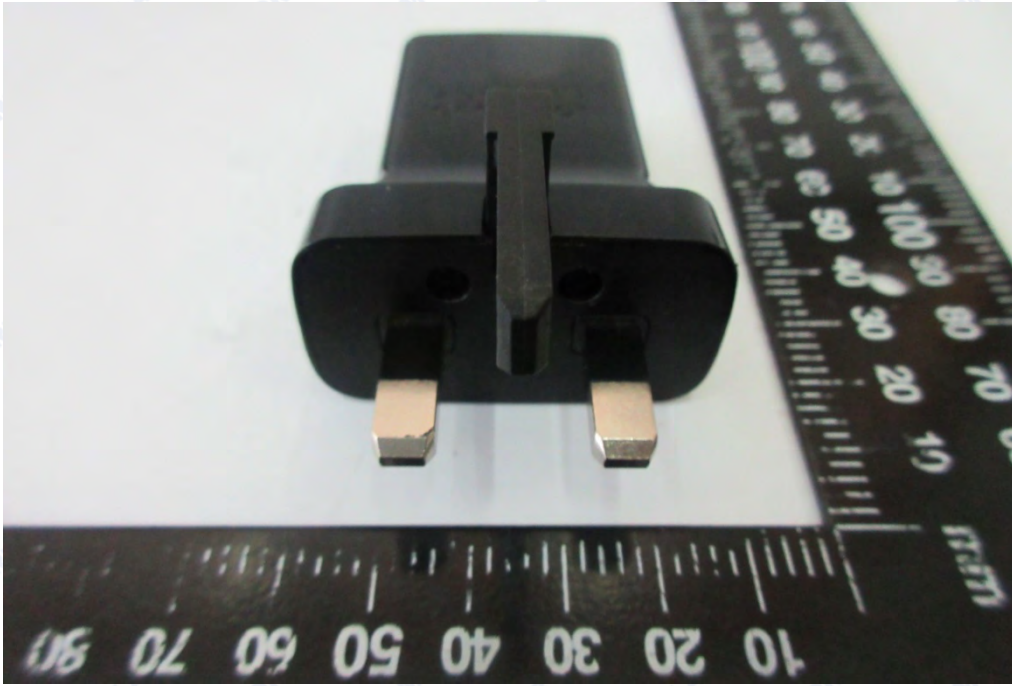


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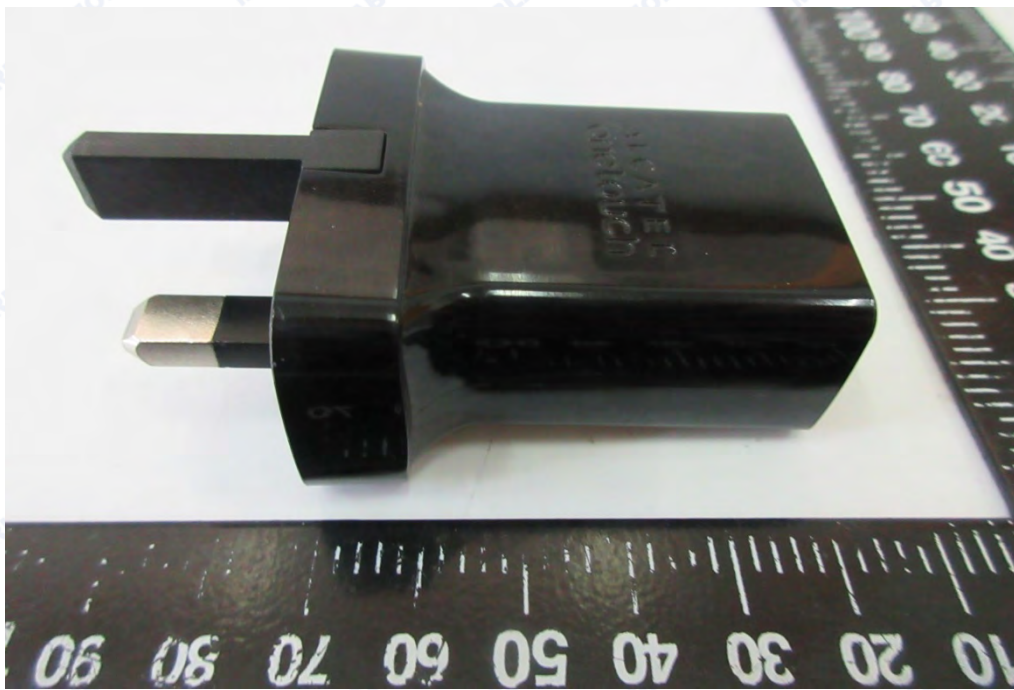
REPORT No. : SZ15120059E01







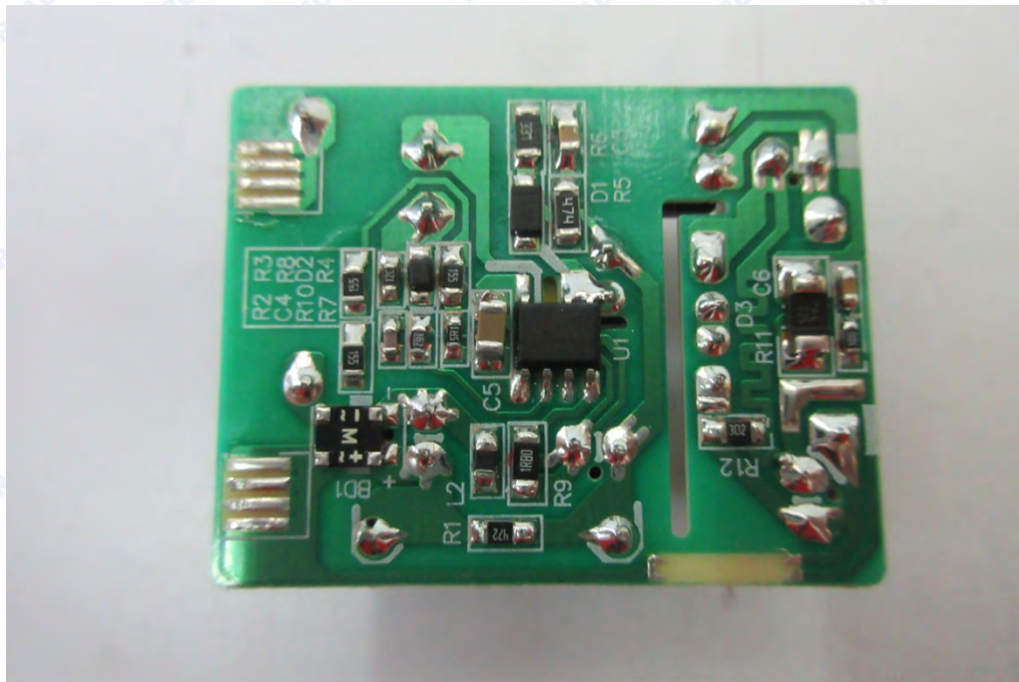
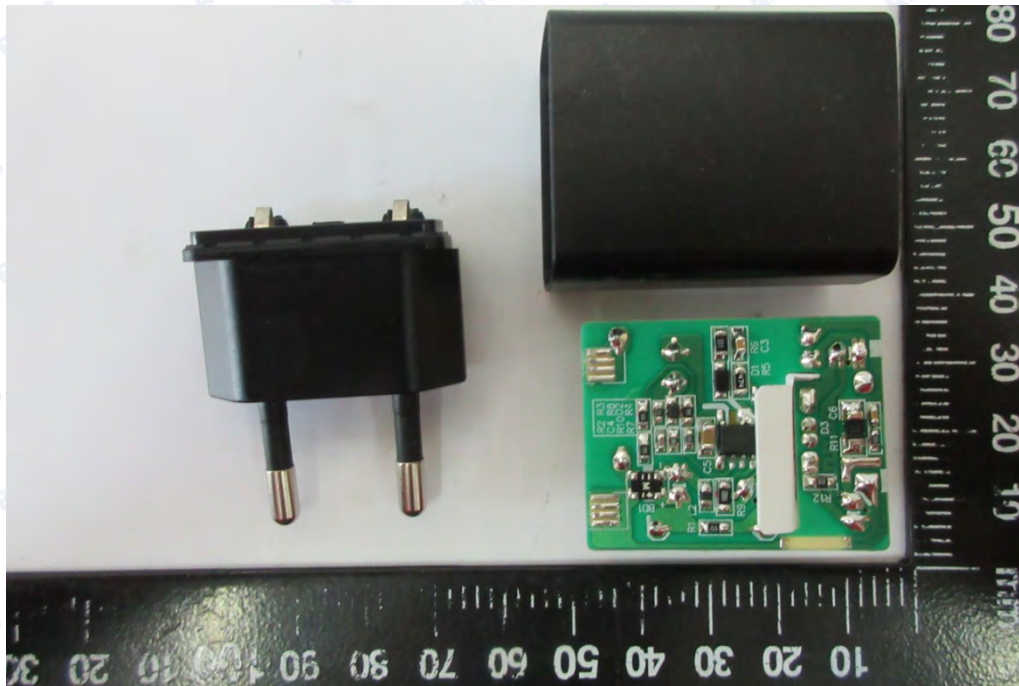
REPORT No. : SZ15120059E01



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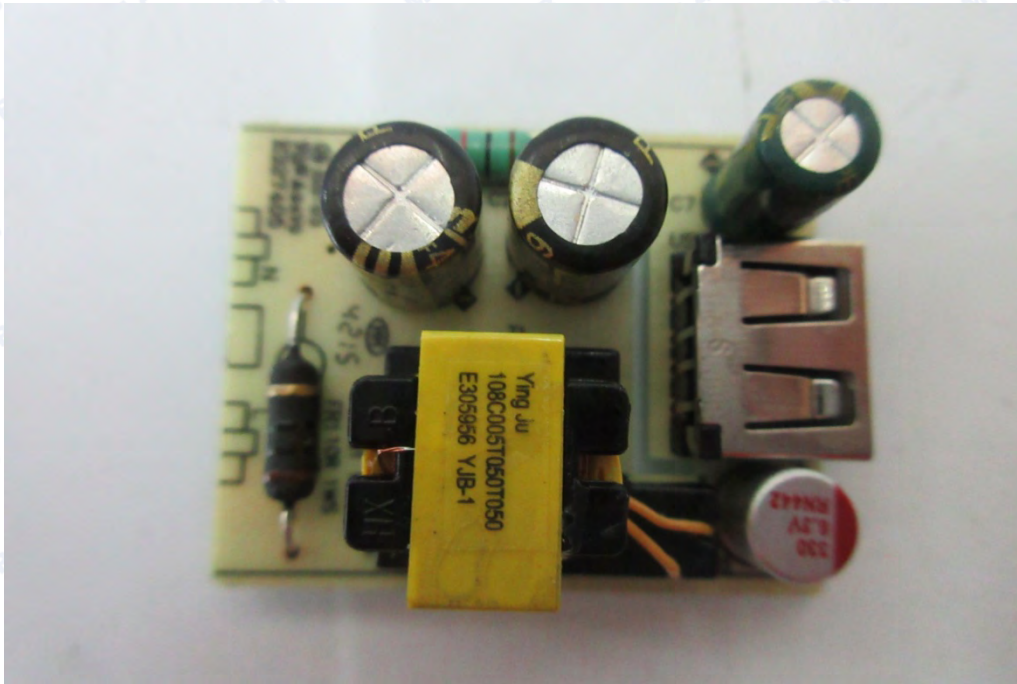


2. Inside of the EUT:





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## Annex C Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	$\pm 1.8\text{dB}$
Uncertainty of Radiated Emission:	$\pm 3.1\text{dB}$





## Annex D Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

### 2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

### 3. Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106



#### 4. Test Equipments Utilized

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2015.2.21	2016.2.20
Receiver	Narda	PMM 9060	001WX11001	2015.2.21	2016.2.20
Receiver	Narda	PMM 9010	595WX11007	2015.2.21	2016.2.20
LISN	Schwarzbeck	NSLK 8127	812744	2015.2.24	2016.2.23
Pulse Limiter (20dB)	Schwarzbeck	VTSD 9561-D	9537	2015.2.21	2016.2.20
Test Antenna – Bi-Log	Schwarzbeck	VULB 9163	9163-274	2015.2.25	2016.2.24
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	9120D-963	2015.2.25	2016.2.24
Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2015.2.21	2016.2.20
ESD Test System	KIKUSUI	KES-4021	LJ003478	2015.2.25	2016.2.24
EFT /Surge/Dips Test System	HTEC	HCOMPACT 5	142201	2015.2.21	2016.2.20
Signal Generator	R&S	SMP 02	8330521005	2015.2.21	2016.2.20
Signal Generator	R&S	SME 03	8472021001	2015.2.21	2016.2.20
Power Amplifier	Prana	AP32 SV125A	0607-0751	2015.2.21	2016.2.20
Power Amplifier	Prana	AP32 LT165	0604-0746	2015.2.21	2016.2.20
Power Meter	Giga-Tronics	8542C	1832005	2015.2.21	2016.2.20
Power Meter	Agilent	E4419B	QB43312255	2015.2.21	2016.2.20
Signal Generator	R&S	UPL	A0304214	2015.2.21	2016.2.20
Mouth Simulation	Brüel & Kjær	4227	A0304216	2015.2.21	2016.2.20
Ear Simulation and supply	Brüel & Kjær	2669, 4182, 5935	A0305284	2015.2.21	2016.2.20
CDN	Luthi Elektronik-Feinmechanik AG	CDNL-801 M2/M3	2573	2015.2.21	2016.2.20
Acoustical Calibrators	Brüel & Kjær	4231	A0304215	2015.2.21	2016.2.20
Flicker and Harmonic test system	LAPLACE	AC2000A	377949	2015.6.27	2016.6.26

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