EMC TEST REPORT

Report No.: 18020543-FCC-E1
Supersede Report No.: N/A

Applicant	Nanjing Hanlong Technology Co., Ltd.
Product Name	IP PHONE
Model No.	UC912E
Serial No.	N/A
Test Standard	FCC Part 15 Subpart B Class B:2017, ANSI C63.4: 2014
Test Date	May 29 to June 01, 2018
Issue Date	August 8, 2018
Test Result	☒ Pass ☐ Fail
Equipment complied with the specification	☒
Equipment did not comply with the specification	☐

peter Wei	Amos. Xia	
Peter Wei Test Engineer	Amos Xia Engineer Reviewer	

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Test result presented in this test report is applicable to the tested sample only

Issued by:
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Laboratories Introduction

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Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
18020543-FCC-E1	NONE	Original	August 8, 2018

2. Customer information

Applicant Name	Nanjing Hanlong Technology Co., Ltd.
Applicant Add	5th Floor, 1st Building, Huashen Tech Park, 10 Huashen Temple, Yuhuatai Dis, Nanjing China
Manufacturer	Nanjing Hanlong Technology Co., Ltd.
Manufacturer Add	5th Floor, 1st Building, Huashen Tech Park, 10 Huashen Temple, Yuhuatai Dis, Nanjing China

3. Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMC (Ver.ICP-03A1)

4. Equipment under Test (EUT) Information

Description of EUT:	IP PHONE
Date EUT received:	May 29, 2018
Test Date(s):	May 29 to June 01, 2018
Main Model:	UC912E
Serial Model:	N/A
Input Power:	AC Adapter: MODEL: RD0501200-C55-KOG INPUT: 100-240V~50/60Hz 250mA OUTPUT: DC 5V 1.2A POE: DC48V 500 mA
Port:	Power Port, Internet Port, PC Port, Earphone Port, Phone Port
Trade Name :	Htek
FCC ID:	2ACUGUC912ESERIAL

5. Test Summary

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.107; ANSI C63.4: 2014	AC Power Line Conducted Emissions	Compliance
§15.109; ANSI C63.4: 2014	Radiated Emissions	Compliance

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Conducted Emissions and Radiated Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB

6. Measurements, Examination And Derived Results

6.1 AC Power Line Conducted Emissions

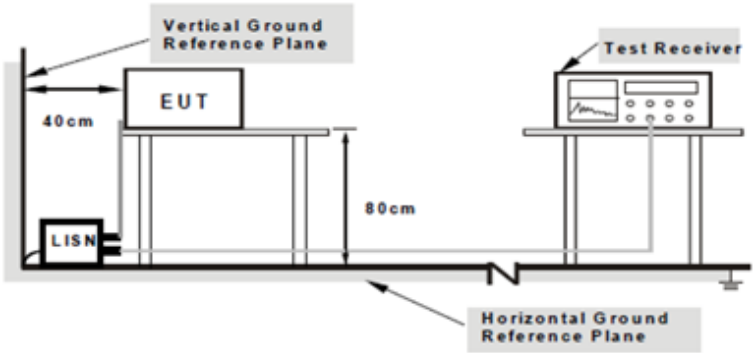
Temperature	24℃
Relative Humidity	56%
Atmospheric Pressure	1023mbar
Test date :	May 29 to June 01, 2018
Tested By :	Peter Wei

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.107	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu] H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.	☒

Frequency ranges (MHz)	Limit (dBμV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

Procedure

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.
2. The power supply for the EUT was fed through a 50Ω/50mH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipment were powered separately from another main supply.
5. The EUT was switched on and allowed to warm up to its normal operating condition.
6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz.
8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Result ☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Data sample

No.	Frequency	Reading	Detector	Lisn/lsn	Ps_Lmt	Cab_L	Result	Limit	Margin
	(MHz)	(dBμV)		(dB}	(dB)	(dB)	(dBμV)	(dBμV)	(dB)

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV) = Receiver Reading Value

Detector=Quasi Peak Detector or Average Detector

Lisn/ISN= Insertion loss of LISN

Ps_Lmt= Insertion loss of transient limiter (The transient limiter included 10dB attenuation)

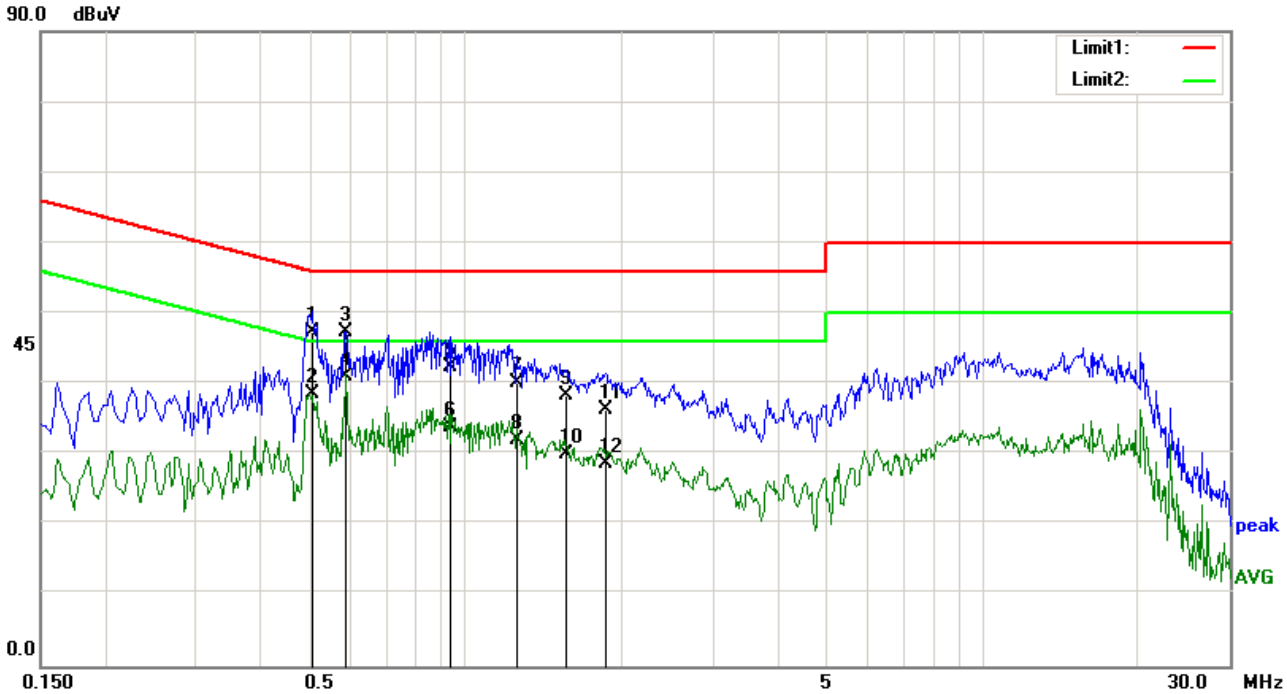
Cab_L= cable loss

Result (dBμV) = Reading Value + Corrected Value

Limit (dBμV) = Limit stated in standard

Calculation Formula:
Margin (dB) = Result (dBμV) – limit (dBμV)

Test Mode(Adapter) :	Normal Working Mode

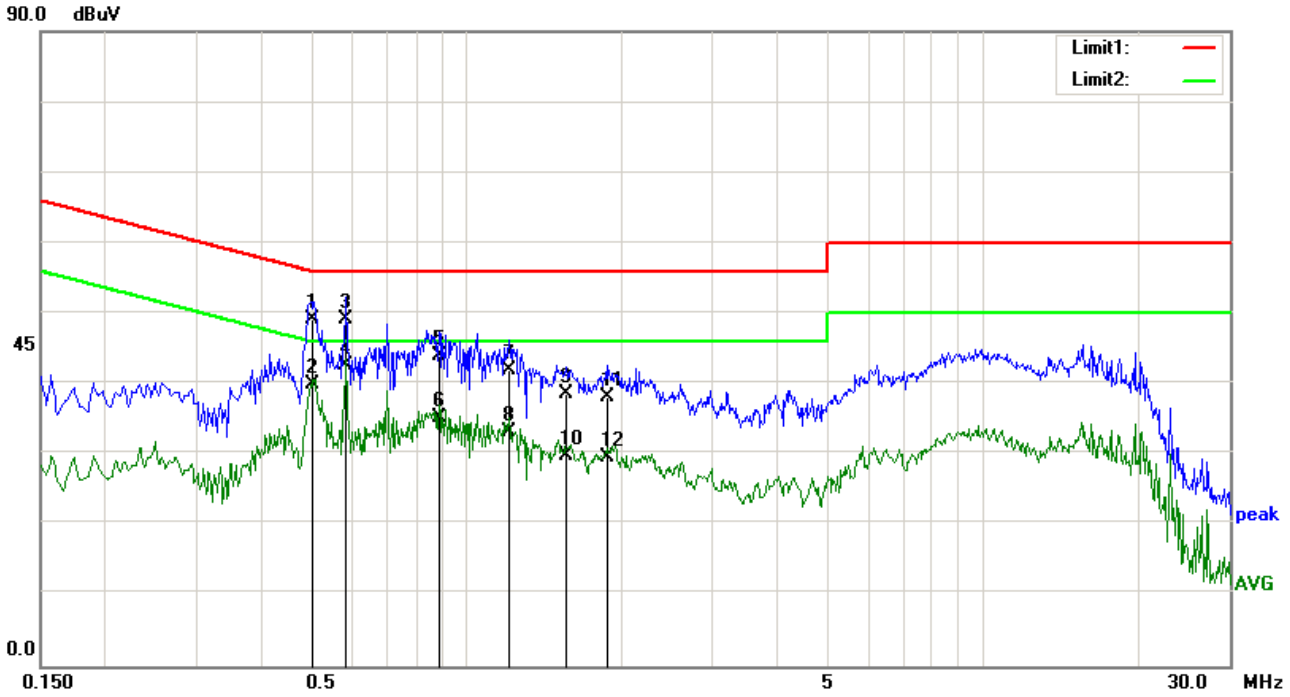


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	Frequency (MHz)	Reading (dBμV)	Detector	Lisn/Isn (dB}	Ps_Lmt (dB)	Cab_L (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	0.5060	37.07	QP	0.12	-10.00	0.21	47.40	56.00	-8.60
2	0.5060	28.19	AVG	0.12	-10.00	0.21	38.52	46.00	-7.48
3	0.5860	37.03	QP	0.12	-10.00	0.21	47.36	56.00	-8.64
4	0.5860	30.83	AVG	0.12	-10.00	0.21	41.16	46.00	-4.84
5	0.9340	32.13	QP	0.14	-10.00	0.19	42.46	56.00	-13.54
6	0.9340	23.47	AVG	0.14	-10.00	0.19	33.80	46.00	-12.20
7	1.2500	29.91	QP	0.15	-10.00	0.21	40.27	56.00	-15.73
8	1.2500	21.72	AVG	0.15	-10.00	0.21	32.08	46.00	-13.92
9	1.5620	27.95	QP	0.15	-10.00	0.20	38.30	56.00	-17.70
10	1.5620	19.63	AVG	0.15	-10.00	0.20	29.98	46.00	-16.02
11	1.8620	26.00	QP	0.16	-10.00	0.20	36.36	56.00	-19.64
12	1.8620	18.24	AVG	0.16	-10.00	0.20	28.60	46.00	-17.40

Test Mode(Adapter) :	Normal Working Mode

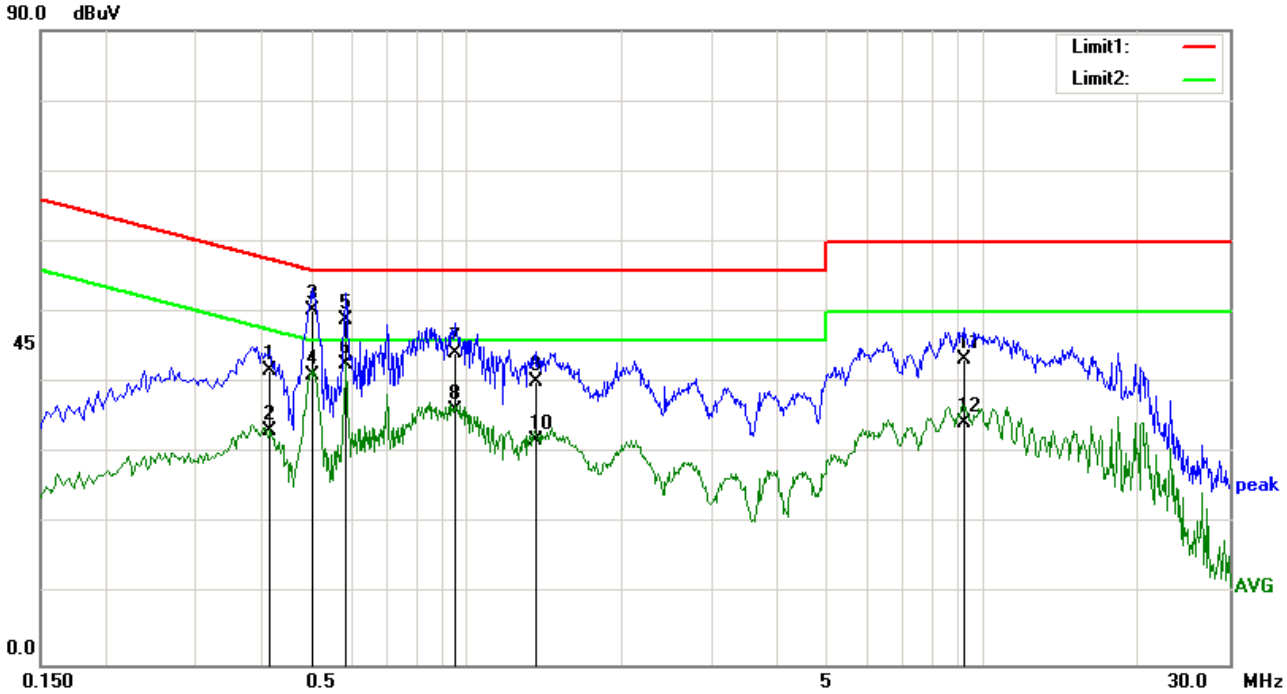


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	Frequency (MHz)	Reading (dBµV)	Detector	Lisn/Isn (dB}	Ps_Lmt (dB)	Cab_L (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	0.5020	38.80	QP	0.11	-10.00	0.21	49.12	56.00	-6.88
2	0.5020	29.60	AVG	0.11	-10.00	0.21	39.92	46.00	-6.08
3	0.5860	38.78	QP	0.11	-10.00	0.21	49.10	56.00	-6.90
4	0.5860	32.34	AVG	0.11	-10.00	0.21	42.66	46.00	-3.34
5	0.8860	33.60	QP	0.13	-10.00	0.19	43.92	56.00	-12.08
6	0.8860	24.82	AVG	0.13	-10.00	0.19	35.14	46.00	-10.86
7	1.2100	31.59	QP	0.14	-10.00	0.21	41.94	56.00	-14.06
8	1.2100	22.95	AVG	0.14	-10.00	0.21	33.30	46.00	-12.70
9	1.5660	28.21	QP	0.15	-10.00	0.20	38.56	56.00	-17.44
10	1.5660	19.45	AVG	0.15	-10.00	0.20	29.80	46.00	-16.20
11	1.8740	27.78	QP	0.16	-10.00	0.20	38.14	56.00	-17.86
12	1.8740	19.24	AVG	0.16	-10.00	0.20	29.60	46.00	-16.40

Test Mode(Adapter) :	Normal Working Mode

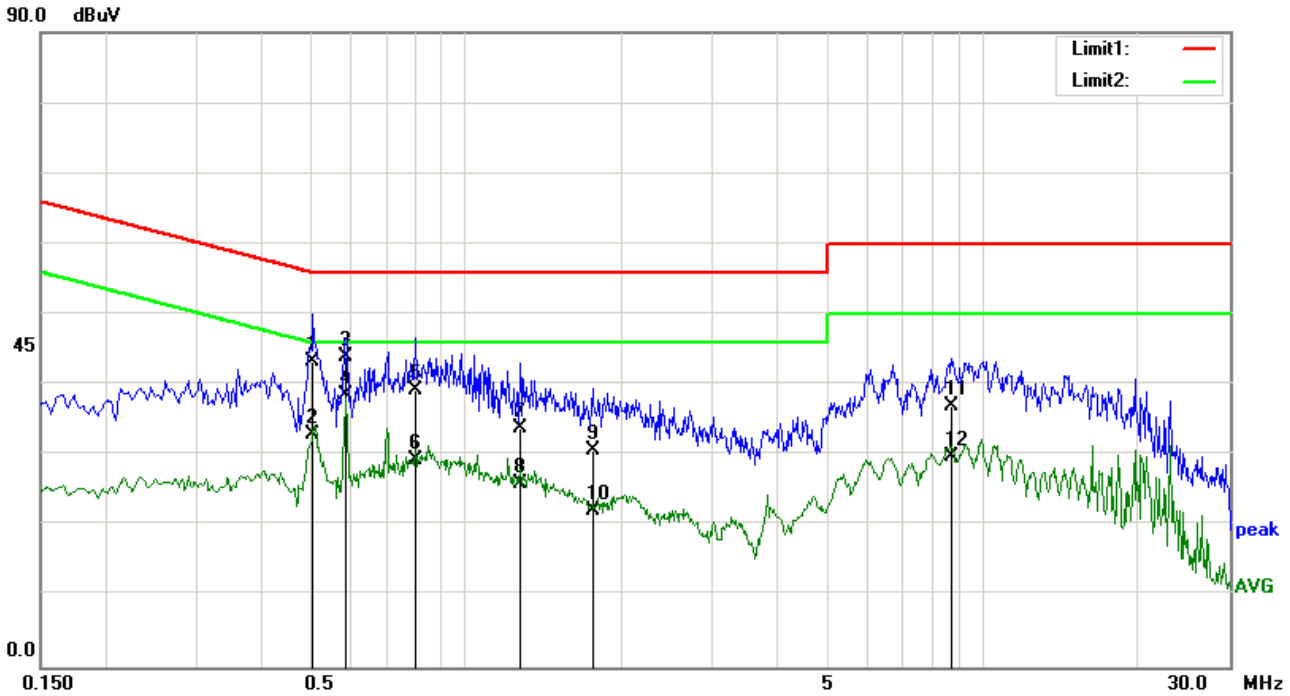


Test Data

Phase Line Plot at 230Vac, 50Hz

No.	Frequency (MHz)	Reading (dBµV)	Detector	Lisn/Isn (dB}	Ps_Lmt (dB)	Cab_L (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	0.4180	31.48	QP	0.11	-10.00	0.21	41.80	57.49	-15.69
2	0.4180	22.96	AVG	0.11	-10.00	0.21	33.28	47.49	-14.21
3	0.5020	40.05	QP	0.12	-10.00	0.21	50.38	56.00	-5.62
4	0.5020	30.69	AVG	0.12	-10.00	0.21	41.02	46.00	-4.98
5	0.5860	38.54	QP	0.12	-10.00	0.21	48.87	56.00	-7.13
6	0.5860	32.34	AVG	0.12	-10.00	0.21	42.67	46.00	-3.33
7	0.9500	33.81	QP	0.14	-10.00	0.19	44.14	56.00	-11.86
8	0.9500	25.83	AVG	0.14	-10.00	0.19	36.16	46.00	-9.84
9	1.3620	29.80	QP	0.15	-10.00	0.21	40.16	56.00	-15.84
10	1.3620	21.51	AVG	0.15	-10.00	0.21	31.87	46.00	-14.13
11	9.1900	32.37	QP	0.46	-10.00	0.38	43.21	60.00	-16.79
12	9.1900	23.37	AVG	0.46	-10.00	0.38	34.21	50.00	-15.79

Test Mode(Adapter) :	Normal Working Mode

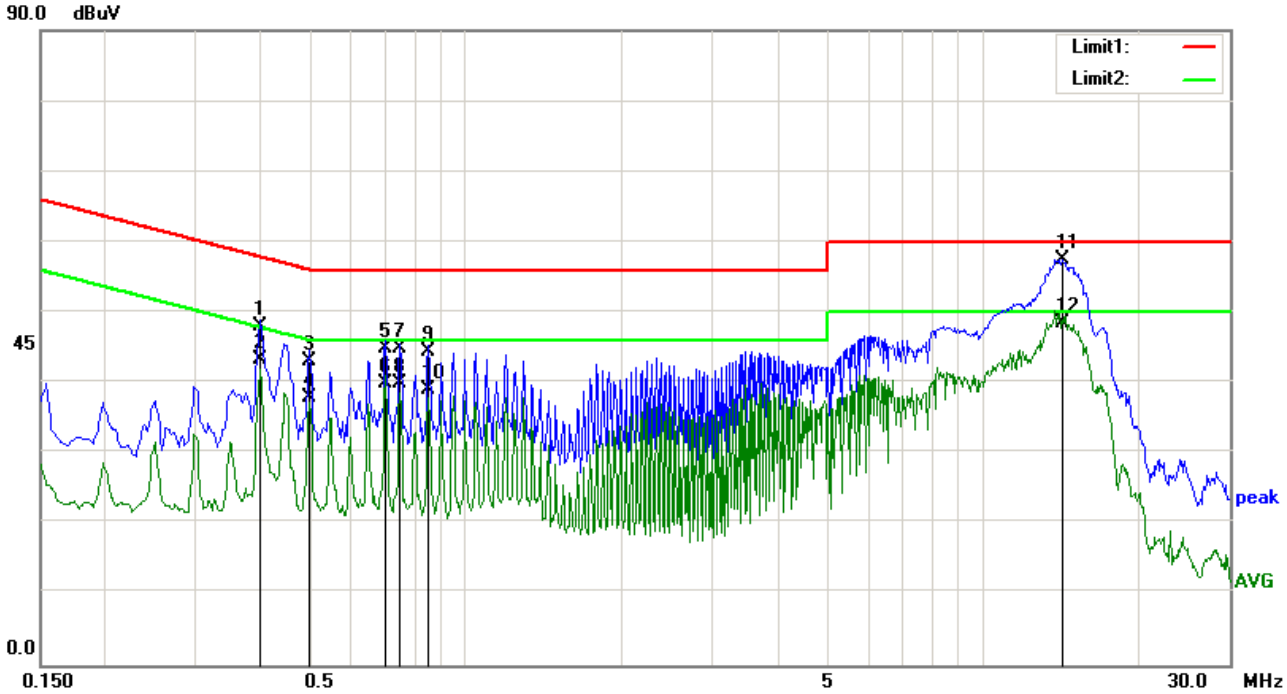


Test Data

Phase Neutral Plot at 230Vac, 50Hz

No.	Frequency (MHz)	Reading (dBμV)	Detector	Lisn/Isn (dB}	Ps_Lmt (dB)	Cab_L (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	0.5060	33.09	QP	0.11	-10.00	0.21	43.41	56.00	-12.59
2	0.5060	22.55	AVG	0.11	-10.00	0.21	32.87	46.00	-13.13
3	0.5860	33.75	QP	0.11	-10.00	0.21	44.07	56.00	-11.93
4	0.5860	28.26	AVG	0.11	-10.00	0.21	38.58	46.00	-7.42
5	0.7980	29.00	QP	0.12	-10.00	0.20	39.32	56.00	-16.68
6	0.7980	19.09	AVG	0.12	-10.00	0.20	29.41	46.00	-16.59
7	1.2740	23.49	QP	0.14	-10.00	0.21	33.84	56.00	-22.16
8	1.2740	15.57	AVG	0.14	-10.00	0.21	25.92	46.00	-20.08
9	1.7620	20.26	QP	0.16	-10.00	0.21	30.63	56.00	-25.37
10	1.7620	11.75	AVG	0.16	-10.00	0.21	22.12	46.00	-23.88
11	8.6900	26.06	QP	0.48	-10.00	0.37	36.91	60.00	-23.09
12	8.6900	18.92	AVG	0.48	-10.00	0.37	29.77	50.00	-20.23

Test Mode(POE) :	Normal Working Mode

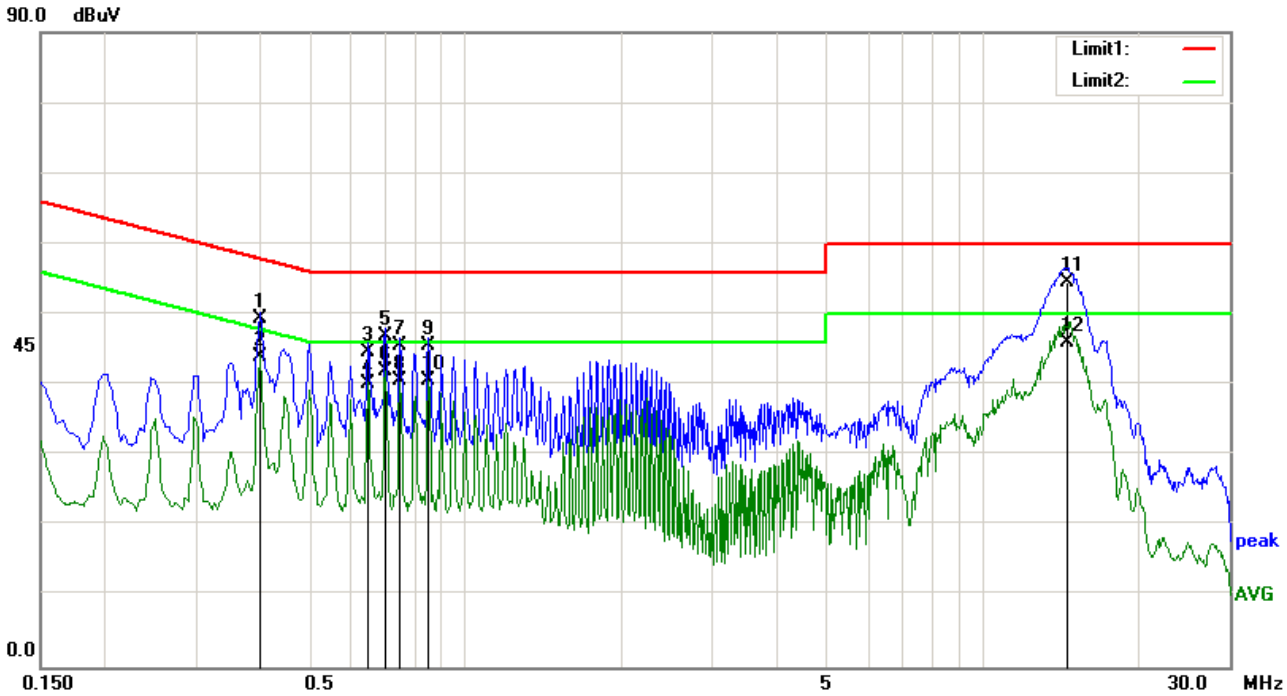


Test Data

Phase Line

No.	Frequency (MHz)	Reading (dBµV)	Detector	Lisn/Isn (dB}	Ps_Lmt (dB)	Cab_L (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	0.3980	37.77	QP	0.11	-10.00	0.21	48.09	57.90	-9.81
2	0.3980	33.00	AVG	0.11	-10.00	0.21	43.32	47.90	-4.58
3	0.4980	32.76	QP	0.12	-10.00	0.21	43.09	56.03	-12.94
4	0.4980	27.59	AVG	0.12	-10.00	0.21	37.92	46.03	-8.11
5	0.6980	34.62	QP	0.13	-10.00	0.20	44.95	56.00	-11.05
6	0.6980	29.56	AVG	0.13	-10.00	0.20	39.89	46.00	-6.11
7	0.7460	34.47	QP	0.13	-10.00	0.20	44.80	56.00	-11.20
8	0.7460	29.58	AVG	0.13	-10.00	0.20	39.91	46.00	-6.09
9	0.8460	34.08	QP	0.13	-10.00	0.20	44.41	56.00	-11.59
10	0.8460	28.71	AVG	0.13	-10.00	0.20	39.04	46.00	-6.96
11	14.2740	46.22	QP	0.81	-10.00	0.47	57.50	60.00	-2.50
12	14.2740	37.27	AVG	0.81	-10.00	0.47	48.55	50.00	-1.45

Test Mode(POE) :	Normal Working Mode



Test Data

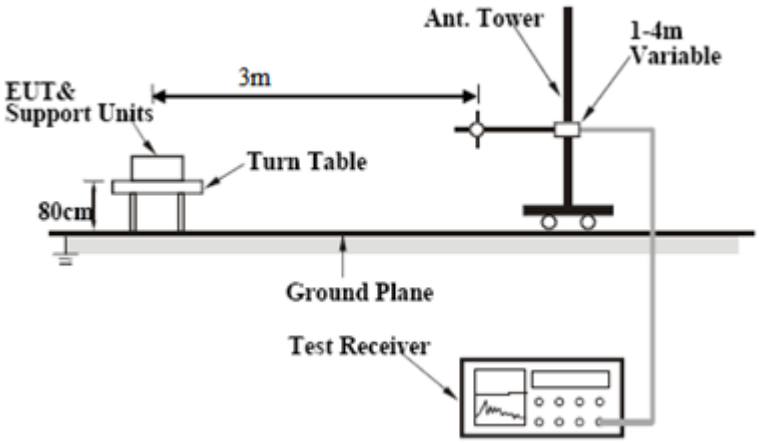
Phase Neutral

No.	Frequency	Reading	Detector	Lisn/Isn	Ps_Lmt	Cab_L	Result	Limit	Margin
	(MHz)	(dBμV)		(dB}	(dB)	(dB)	(dBμV)	(dBμV)	(dB)
1	0.3980	39.08	QP	0.11	-10.00	0.21	49.40	57.90	-8.50
2	0.3980	33.76	AVG	0.11	-10.00	0.21	44.08	47.90	-3.82
3	0.6460	34.36	QP	0.12	-10.00	0.20	44.68	56.00	-11.32
4	0.6460	29.88	AVG	0.12	-10.00	0.20	40.20	46.00	-5.80
5	0.6980	36.50	QP	0.12	-10.00	0.20	46.82	56.00	-9.18
6	0.6980	31.68	AVG	0.12	-10.00	0.20	42.00	46.00	-4.00
7	0.7460	35.22	QP	0.12	-10.00	0.20	45.54	56.00	-10.46
8	0.7460	30.35	AVG	0.12	-10.00	0.20	40.67	46.00	-5.33
9	0.8460	35.24	QP	0.12	-10.00	0.20	45.56	56.00	-10.44
10	0.8460	30.33	AVG	0.12	-10.00	0.20	40.65	46.00	-5.35
11	14.5260	43.10	QP	0.91	-10.00	0.47	54.48	60.00	-5.52
12	14.5260	34.63	AVG	0.91	-10.00	0.47	46.01	50.00	-3.99

6.2 Radiated Emissions

Temperature	24℃
Relative Humidity	56%
Atmospheric Pressure	1023mbar
Test date :	May 29, 2018
Tested By :	Peter Wei

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.109(d)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges Frequency range (MHz) / Field Strength (μV/m) 30 – 88 / 100 88 – 216 / 150 216 960 / 200 Above 960 / 500	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. 4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth with Peak detection for Average Measurement as below at frequency above 1GHz. ■1 kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%) 5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	We test the adapter and the POE Mode, only show the worst case in the report		

Result	☒ Pass	☐ Fail

Test Data ☒ Pass ☐ Fail

Test Plot ☒ Pass ☐ Fail

Data sample

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBμV/m)		(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(cm)	(°)

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV/m) = Receiver Reading Value

Detector= Peak Detector or Quasi Peak Detector

Ant_F=Antenna Factor

PA_G=Pre-Amplifier Gain

Cab_L=Cable Loss

Result (dBμV/m) = Read ing Value + Corrected Value

Limit (dBμV/m) = Limit stated in standard

Height (cm) = Height of Receiver antenna

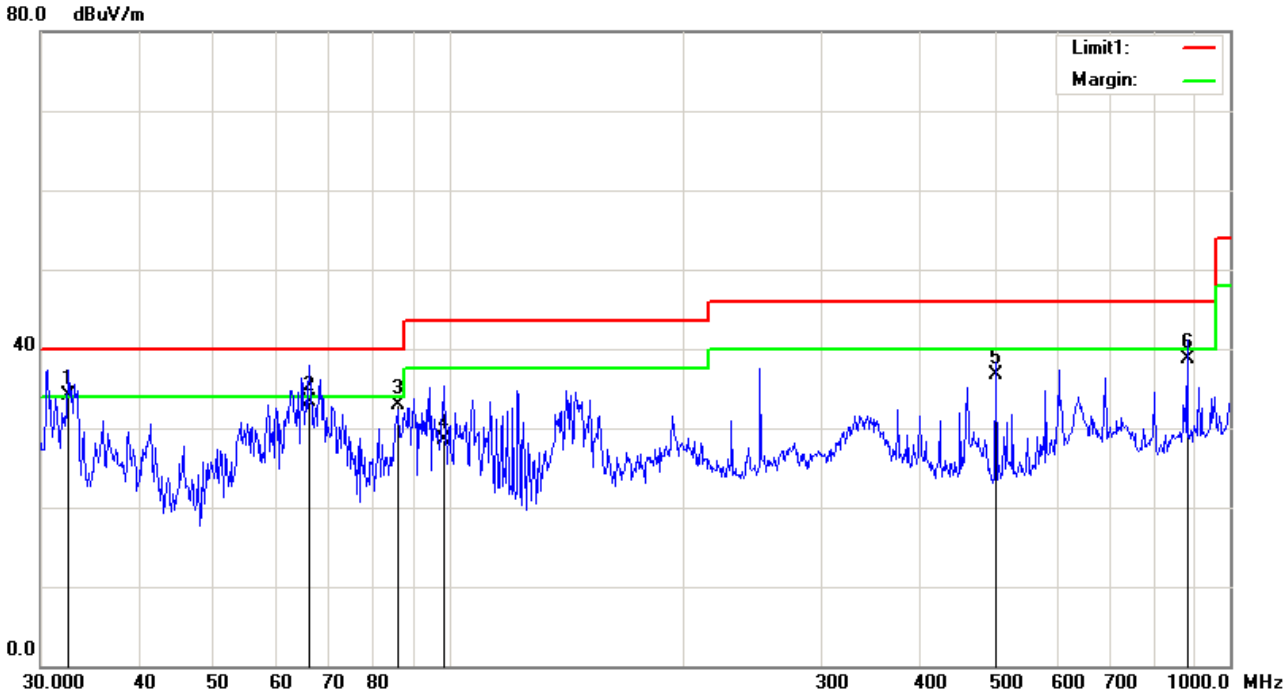
Degree = Turn table degree

Calculation Formula:

Margin (dB) = Result (dBμV/m) – limit (dBμV/m)

Test Mode(Adapter) :	Normal Working Mode

Below 1GHz



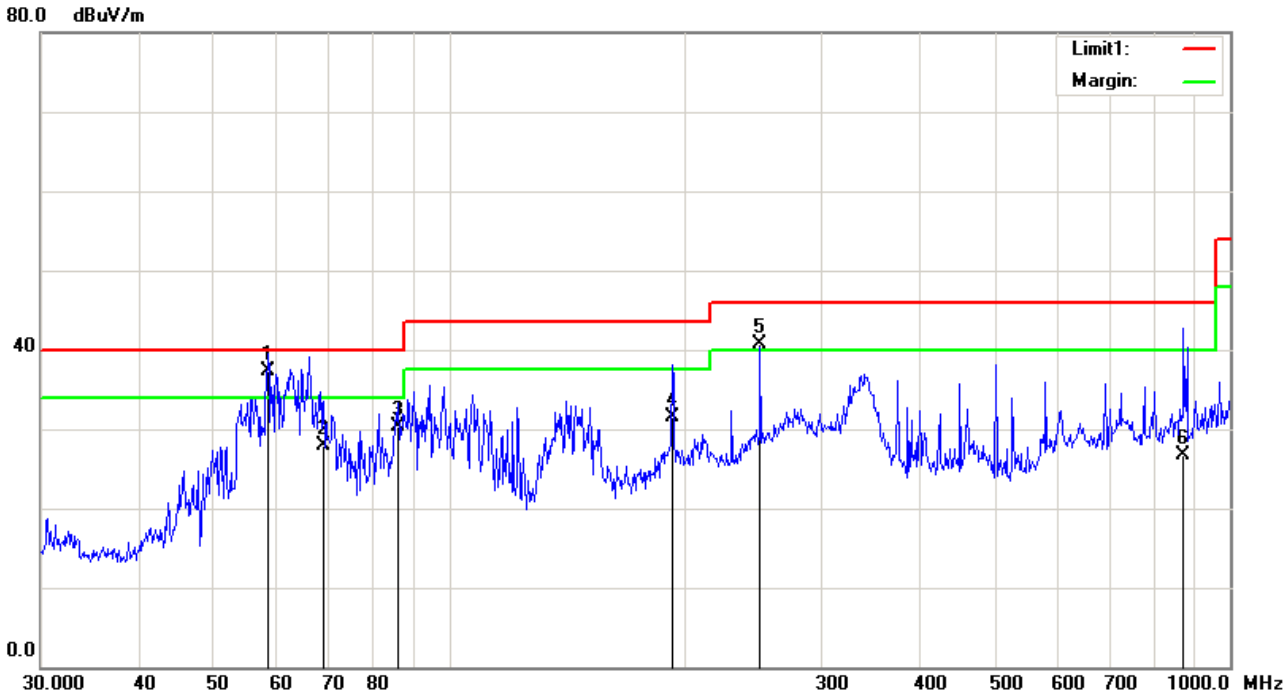
Test Data

Vertical Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBμV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)
1	32.5198	58.71	QP	20.13	45.66	0.92	34.10	40.00	-5.90	100	259
2	66.2662	70.13	QP	9.48	47.70	1.39	33.30	40.00	-6.70	100	35
3	85.8984	70.53	QP	8.32	47.43	1.48	32.90	40.00	-7.10	100	76
4	98.4866	62.67	QP	10.79	46.56	1.60	28.50	43.50	-15.00	121	360
5	501.1790	67.13	QP	15.38	49.27	3.56	36.80	46.00	-9.20	100	162
6	881.4067	56.67	QP	23.28	45.95	4.80	38.80	46.00	-7.20	200	322

Test Mode(Adapter) :	Normal Working Mode

Below 1GHz



Test Data

Horizontal Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBμV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (°)
1	58.6126	73.59	QP	9.54	47.12	1.29	37.30	40.00	-2.70	300	148
2	69.1141	63.80	QP	10.61	47.84	1.43	28.00	40.00	-12.00	200	154
3	85.8984	66.72	QP	9.63	47.43	1.48	30.40	40.00	-9.60	200	154
4	193.0945	63.29	QP	12.98	46.90	2.23	31.60	43.50	-11.90	200	201
5	250.3012	70.87	QP	15.16	47.74	2.51	40.80	46.00	-5.20	100	181
6	872.1832	45.31	QP	22.78	46.06	4.77	26.80	46.00	-19.20	100	213

Note: The data above 1 GHz which below 20 dB to the limit was not recorded.

Annex A. TEST INSTRUMENT

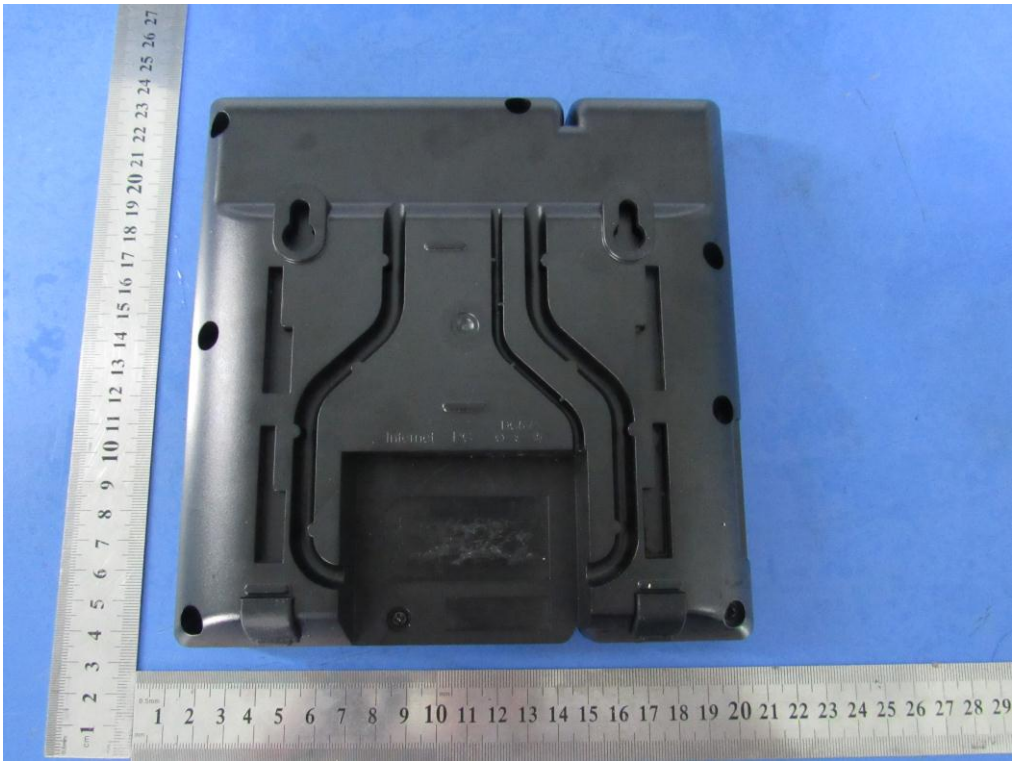
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
R&S EMI Test Receiver	ESPI3	101216	04/26/2018	04/25/2019	☒
V-LISN	ESH3-Z5	838979/005	04/26/2018	04/25/2019	☒
SIEMIC EZ_EMC Conducted Emissions	Ver.ICP-03A1	N/A	N/A	N/A	☒
Radiated Emissions					
Spectrum Analyzer	N9010A	MY47191130	04/26/2018	04/25/2019	☒
R&S EMI Receiver	ESPI3	101216	04/26/2018	04/25/2019	☒
Antenna (30MHz~6GHz)	JB6	A121411	05/19/2018	05/18/2019	☒
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	05/19/2018	05/18/2019	☒
Hp Pre-Amplifier	8447F	1937A01160	04/26/2018	04/25/2019	☒
Agilent Pre-Amplifier	8449B	N/A	04/26/2018	04/25/2019	☒
SIEMIC EZ_EMC Radiated Emissions software	Ver.ICP-03A1	N/A	N/A	N/A	☒

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

The Whole Package – Front View

Top View of EUT



Bottom View of EUT

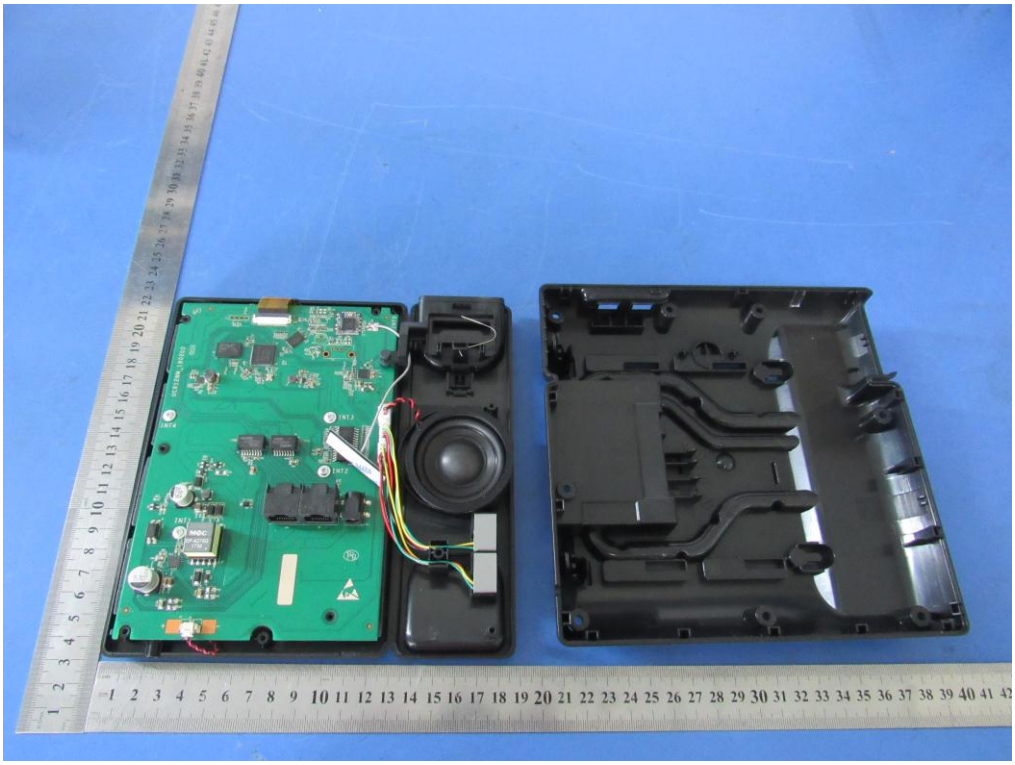
Front View of EUT

Rear View of EUT

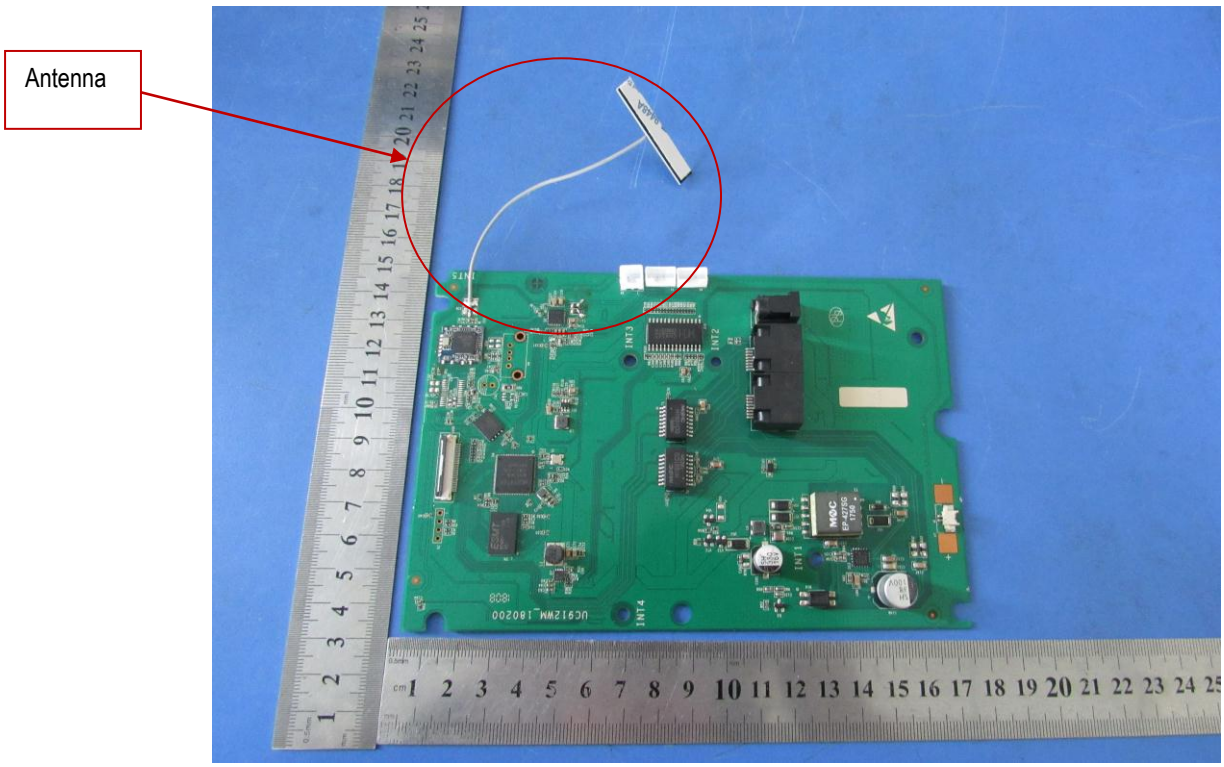
Left View of EUT

Right View of EUT

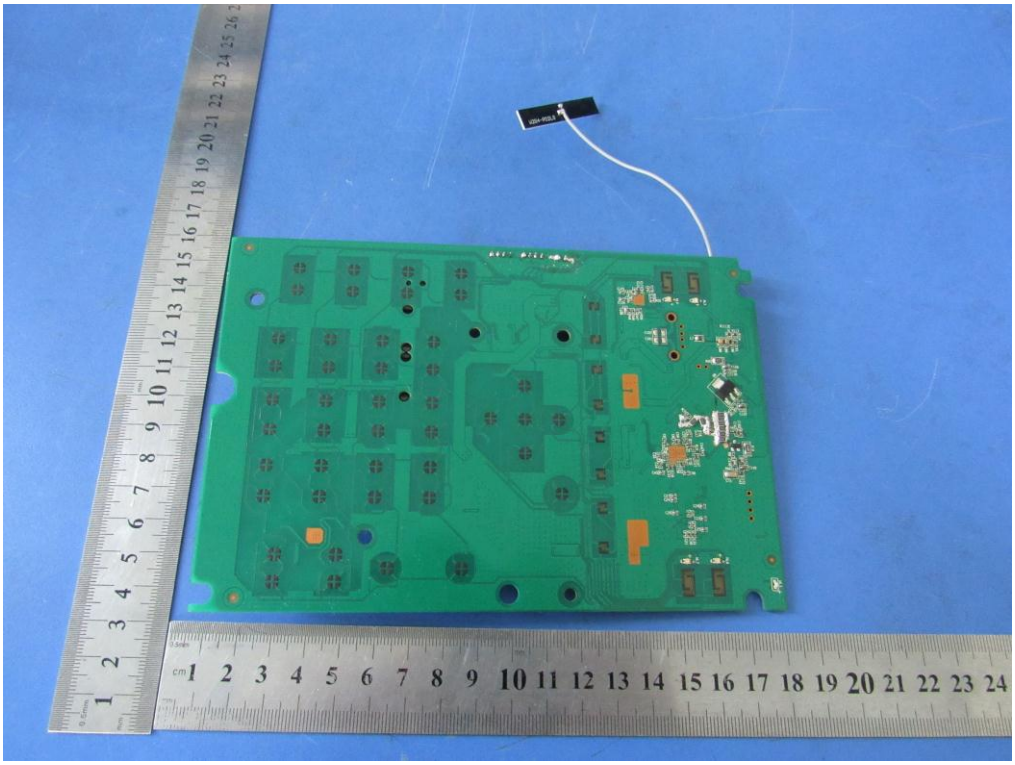
Annex B.ii. Photograph EUT Internal Photo



EUT Uncover – Front View



EUT PCBA – Front View



EUT PCBA– Rear View

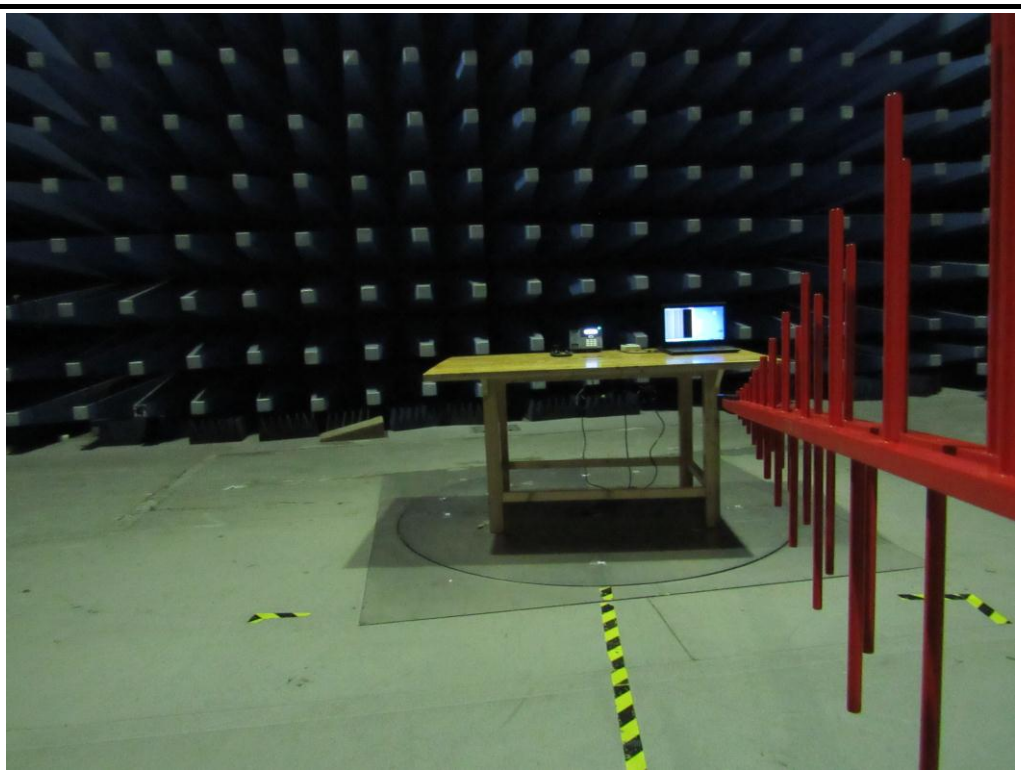
Annex B.iii. Photograph: Test Setup Photo

Conducted Emissions Test Setup Front View – Adapter Power Supply

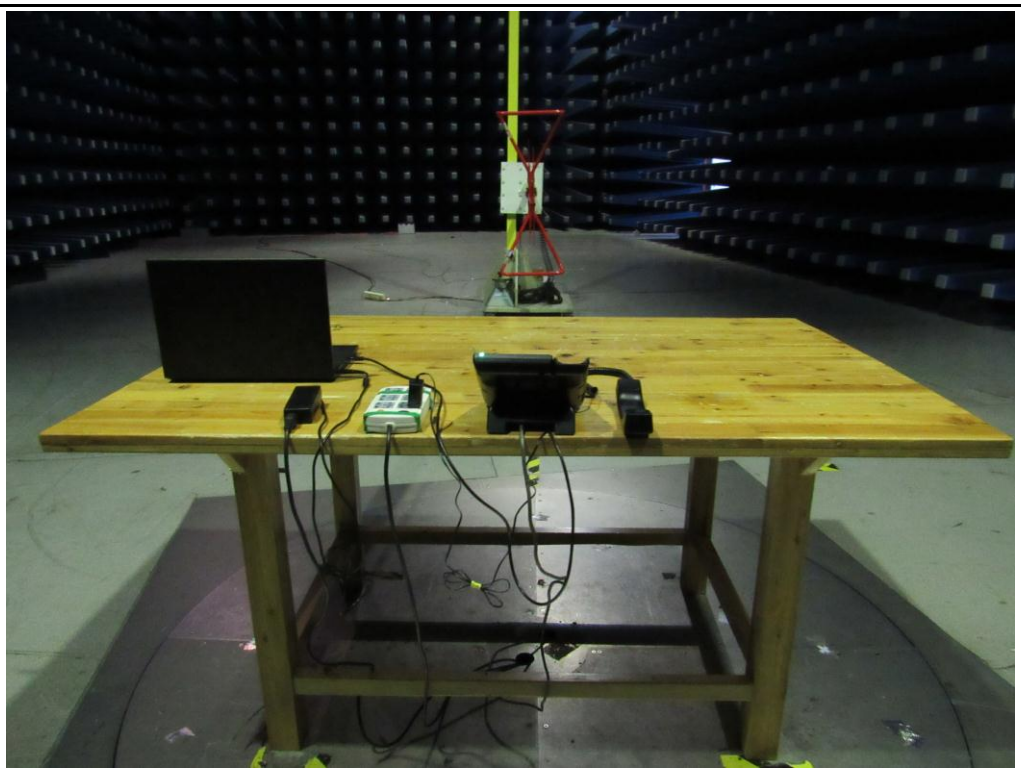
Conducted Emissions Test Setup Side View – Adapter Power Supply

Conducted Emissions Test Setup Front View – POE

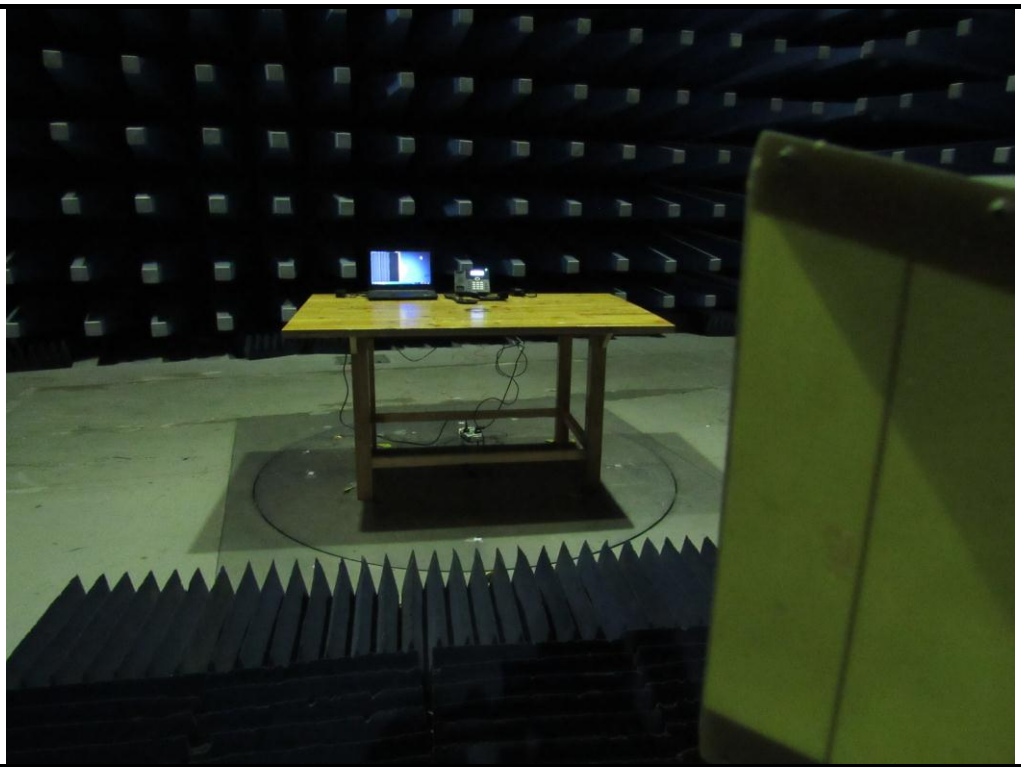
Conducted Emissions Test Setup Side View – POE



Radiated Spurious Emissions Test Setup Front View Below 1GHz



Radiated Spurious Emissions Test Setup Rear View Below 1GHz



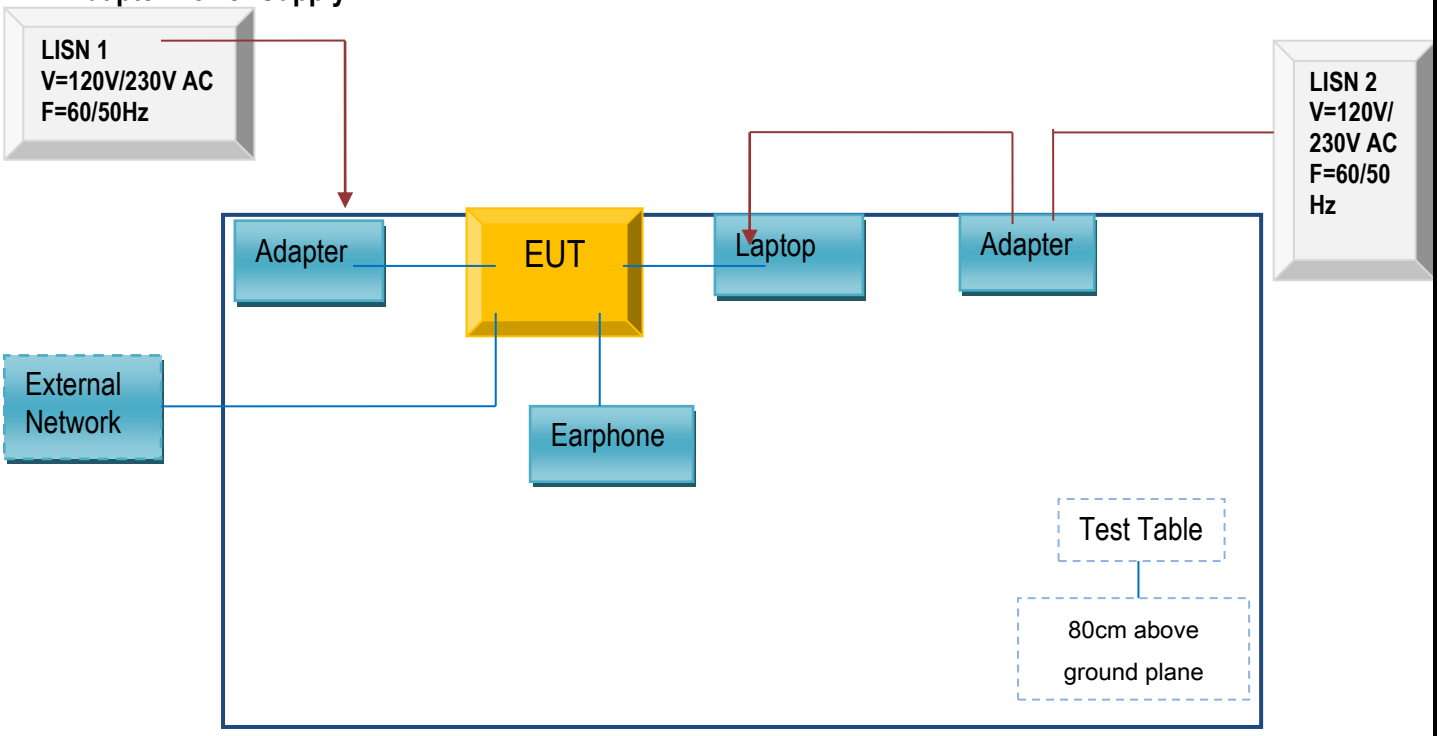
Radiated Spurious Emissions Test Setup Above 1GHz

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

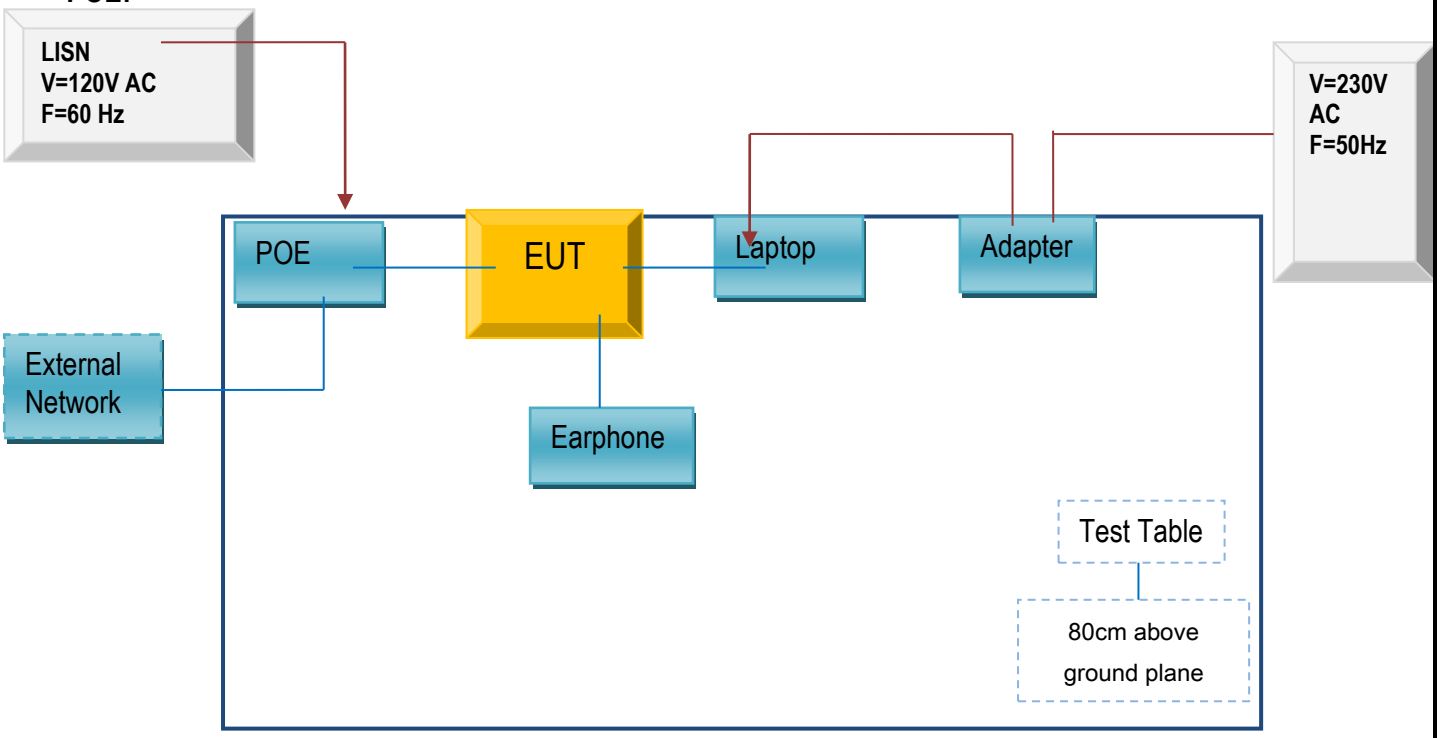
Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Conducted Emissions

Adapter Power Supply:

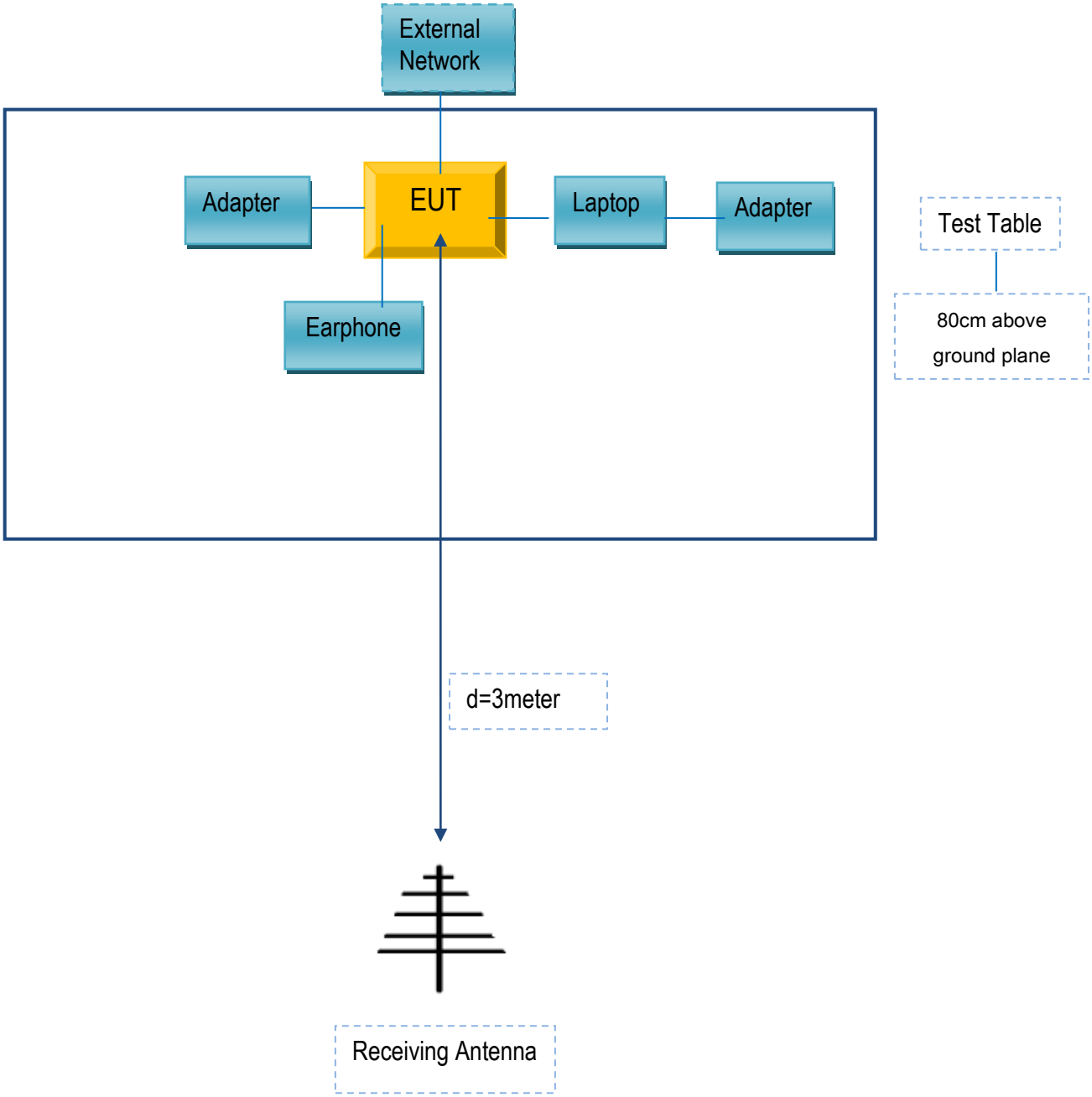


POE:



Block Configuration Diagram for Radiated Emissions

Adapter Power Supply:



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
HP	Laptop	4321S	N/A
N/A	Earphone	N/A	N/A
PROCET	POE	PT-PSE101	PT1050000242

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
Power Cable	Un-shielding	No	0.8m	N/A

Annex D. User Manual / Block Diagram / Schematics / Partlist

See attachment

Annex E. DECLARATION OF SIMILARITY

N/A