



**TEST REPORT**

ETSI EN 301 489-1 V2.2.3(2019-11)

ETSI EN 301 489-19 V2.1.1 (2019-04)

ETSI EN 301 489-52 V1.2.1 (2021-11)

EN 55032:2015/A11:2020

EN 55035:2017/A11:2020

EN IEC 61000-3-2:2019/A1:2021

EN 61000-3-3:2013/A2:2021/AC:2022-01

**MEASUREMENT AND TEST REPORT**

**For**

**OpenVox Communication Co., Ltd.**

Room 624, 6/F, Tsinghua Information Port, Qingqing Road, Longhua Street, Longhua District, Shenzhen, Guangdong, China

**Model:** UC120P

2024-04-15

**This Report Concerns:**

Original Report

**Equipment Type:**

IP-PBX

**Test Engineer:**

Blue Hu/ *Blue Hu*

**Report Number:**

TH2403326-C05-R01

**Test Date:**

2024-03-29 to 2024-04-15

**Reviewed By:**

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**Note:** This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Tian Hai Test Technology Co.,Ltd.



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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

**Applicant:** OpenVox Communication Co., Ltd.  
**Address:** Room 624, 6/F, Tsinghua Information Port, Qingqing Road, Longhua Street, Longhua District, Shenzhen, Guangdong , China  
**Manufacturer:** OpenVox Communication Co., Ltd.  
**Address:** Room 201, Building I, Jinchangda, Building 00082, Shangwei Industrial Zone, Zhangkengjing Community, Guanhu Street, Longhua District, Shenzhen, Guangdong, China

#### General Description of E.U.T

**EUT Description:** IP-PBX  
**Trade mark:** OpenVox  
**Model No.:** UC120P  
**Model Difference:** /  
**Rating:** DC12V,1A,12W  
**Power Supply:** INPUT:100-240V~50/60Hz, 0.75A  
 OUTPUT:12V= 2.0A 24W  
**Adapter:** Model:OLD120200AEU5D  
**Sample No.** TH2403326-C05-R01#  
**Note:** /

Remark: \* The test data gathered are from the production sample provided by the manufacturer.

Table for Auxiliary Equipment

Equipment Description	Manufacturer	Model	Serial No.
Portable computer	DELL	IOSE uosidsui	/
Router	/	/	/
/	/	/	/



## 1.2 Description of Test Mode

Test Mode	Description
Mode 1	WAN Transmission
Mode 2	LAN Transmission
Mode 3	Standby

## 1.3 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

EN 55032:2015/A11:2020

Electromagnetic compatibility of multimedia equipment - Emission Requirements

EN 55035:2017/A11:2020

Electromagnetic compatibility of multimedia equipment - Immunity requirements

ETSI EN 301 489-1

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

ETSI EN 301 489-17

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility

EN IEC 61000-3-2:2019/A1:2021

Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current  $\leq 16$  A per phase)

EN 61000-3-3:2013/A2:2021/AC:2022-01

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

## 1.4 Test Methodology

All measurements contained in this report were conducted with EN 55032:2015/A11:2020, EN 55035:2017/A11:2020, EN IEC 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A2:2021/AC:2022-01, ETSI EN 301 489-1 V2.2.3(2019-11) and ETSI EN 301 489-17 V2.1.1 (2019-03).



### 1.5 Measurement Uncertainty

Test	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucisp)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	$\pm 2.52$ dB $\pm 2.36$ dB	$\pm 3.80$ dB $\pm 3.40$ dB
Power disturbance	Level accuracy (30MHz to 300MHz)	$\pm 3.20$ dB	$\pm 4.50$ dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	$\pm 3.10$ dB	N/A
Radiated emission	Level accuracy (30MHz to 1000MHz)	$\pm 5.78$ dB	$\pm 6.30$ dB
	Level accuracy (above 1000MHz)	$\pm 4.62$ dB	N/A
Mains Harmonic	Voltage	$\pm 1.80\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.64\%$	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

(3) The measurement uncertainty is not included in the test result.





1.6 Measuring device and test equipment

The following test requirements were used during test:

<b>Conducted Emission</b> <input checked="" type="checkbox"/>				
<b>Kind of Equipment</b>	<b>Manufacturer</b>	<b>Type</b>	<b>S/N</b>	<b>Calibrate until</b>
EMI Test Receiver	R&S	ESRP3	102242	2024-11-13
L.I.S.N	Schwarzbeck	NNLK 8128	5089	2024-11-13
8-Wire ISN CAT6	Schwarzbeck	NTFM 8158	231	2024-11-13
Pulse Limiter	Schwarzbeck	VTSD 9561-F	847	2024-11-13
Test software	FALA	/	EMC-CON 3A1.1	/
<b>Radiated Emission (3m)</b> <input checked="" type="checkbox"/>				
EMI Test Receiver	R&S	ESR7	102333	2023-11-13
MXA Signal Analyzer	Keysight	N9020A	MY51281805	2024-11-13
Bilog Antenna	Schwarzbeck	VULB 9168	01148	2024-11-13
Pre-Amplifier	Schwarzbeck	BBV 9718 B	00109	2024-11-13
Pre-Amplifier	Schwarzbeck	BBV 9743 B	00253	2024-11-13
Pre-Amplifier	GUANGGU ELECTRONIC	GLNA18-40GK-5372	20210331001	2024-11-13
Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00148	2024-11-13
Horn Antenna	Schwarzbeck	BBHA 9120	02379	2024-11-13
Test software	FALA	/	FA-03A2 RE	/
<b>Harmonics &amp; Flicker</b> <input checked="" type="checkbox"/>				
5kVA AC Power Source	AMETEK CTS	5001iX-CTS-400	2046A03237	2024-11-13
Signal Conditioning Unit	AMETEK CTS	PACS-1	2046A03238	2024-11-13
Test software	AMETEK CTS	CTS 4	Version 4.26.0	/
<b>ESD</b> <input checked="" type="checkbox"/>				
ESD Simulator	TESEQ	NSG 437	1569	2024-11-13
<b>RS</b> <input checked="" type="checkbox"/>				
Signal generator	R&S	SMB 100A	113650	2024-04-20
Power meter	Agilent	E4417A	MY45100899	2024-04-20
Power sensor	Agilent	E9321A	US40390494	2024-04-20
Power sensor	Agilent	E9322A	MY44420219	2024-04-20
Power amplifier	Micotop	MPA-80-1000-250	MPA2112426	2024-04-20
Power amplifier	Micotop	MPA-1000-6000-100	MPA2201013	2024-04-20
Stacked Log. Periodic Antenna	Schwarzbeck	STLP 9129	201	N/A
Field strength probe	PMM	EP601	811ZX10673	2024-04-20
RF Switch	Emtrace	SW X4	/	N/A
Test Software	Emtrace	EM 3	V1.2.1	N/A



<b>EFT</b> <input checked="" type="checkbox"/>				
Burst Tester	3C test	EFT 500T	ES027000120015	2024-11-13
Coupling Clamp	3C test	CCC 100	CCC 20092269	2024-11-13
<b>Surge</b> <input checked="" type="checkbox"/>				
Surge simulator	3C test	CWS 600CT	ES058000920005	2024-11-13
Three phases CDN	3C test	SPN 3832T	ES0911910	2024-11-13
CDN for unshielded symmetrical high-speed Telecom cable	3C test	CDN405T8A	ES064001220010	2024-11-13
CDN for Telecom cable	3C test	CDN405M40-5	ES1071910	2024-11-13
<b>Radio-Frequency Continuous Conducted (CS)</b> <input checked="" type="checkbox"/>				
Conducted Immunity Test System	3C test	CST 1075	ES096000120008	2024-11-13
6dB Attenuator	3C test	DTC75-6	ES095000120006	2024-11-13
Single phase CDN	3C test	CDN M2M3	ES064002620007	2024-11-13
Three phases CDN	3C test	CDN M5-16	ES064003320004	2024-11-13
Calibration Set	3C test	CDN 100KIT	ES064002820016	2024-11-13
Calibration Set	3C test	EM CL100KIT	EM C20032816	2024-11-13
EM-Clamp	3C test	EM CL100	EM C20032811	2024-11-13
Test software	EMC-s	/	V1.4.0.54	/
<b>Voltage Dips and Interruptions</b> <input checked="" type="checkbox"/>				
Power failure simulator	3C test	PFS 2216SD	ES049001220003	2024-11-13

Note:  Used     Not Used





**2 - SUMMARY OF TEST RESULTS**

Emission		
Standard	Test Type	Result
EN55032: 2015/A11:2020 /EN 301489-1	Conducted Emission Test (0.15MHz~30MHz)	Pass
	Asymmetric mode Conducted emission (0.15MHz~30MHz)	Pass
	Radiated Emission Test (30MHz~1GHz)	Pass
	Radiated Emission Test (1GHz ~ 6GHz)	Pass Note (2)
EN IEC 61000-3- 2:2019/A1:2021	Harmonic Current Emission	N/A Note (3)
EN 61000-3- 3:2013/A2:2021/AC:2022-01	Voltage Fluctuations & Flicker	PASS
Immunity		
Standard	Test Type	Result
EN 61000-4-2: 2009	Electrostatic discharge immunity test	Pass
EN IEC 61000-4-3:2020	Radiated, radio-frequency, electromagnetic field immunity test	Pass
EN 61000-4-4: 2012	Electrical fast transient / burst immunity test	Pass
EN 61000-4-5: 2014/A1: 2017	Surge immunity test	Pass
EN 61000-4-6: 2014	Conducted disturbances, induced by radio-frequency fields immunity test	N/A
EN 61000-4-8: 2012	Power frequency magnetic field	N/A Note (4)
EN IEC 61000-4-11: 2020	Voltage dips, short interruptions and voltage variations immunity test	Pass
<p>Note:</p> <p>(1) "N/A" denotes test was not applicable in this Test Report.</p> <p>(2) The EUT's max operating frequency is exceeds 108MHz, so the test will be performed.</p> <p>(3) For equipment with a rated power of <math>\leq 75</math> W, other than lighting equipment, no limits are specified in this edition of the standard.</p> <p>(4) Applicable only to EUT containing devices susceptible to magnetic fields, such as CRT monitors, Hall elements, electrodynamic microphones, magnetic field sensors, etc.</p>		



### 3 - CONDUCTED EMISSION FROM THE AC MAINS POWER PORT

#### 3.1 Limit

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Notes: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases linearly with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

#### 3.2 Test Procedure

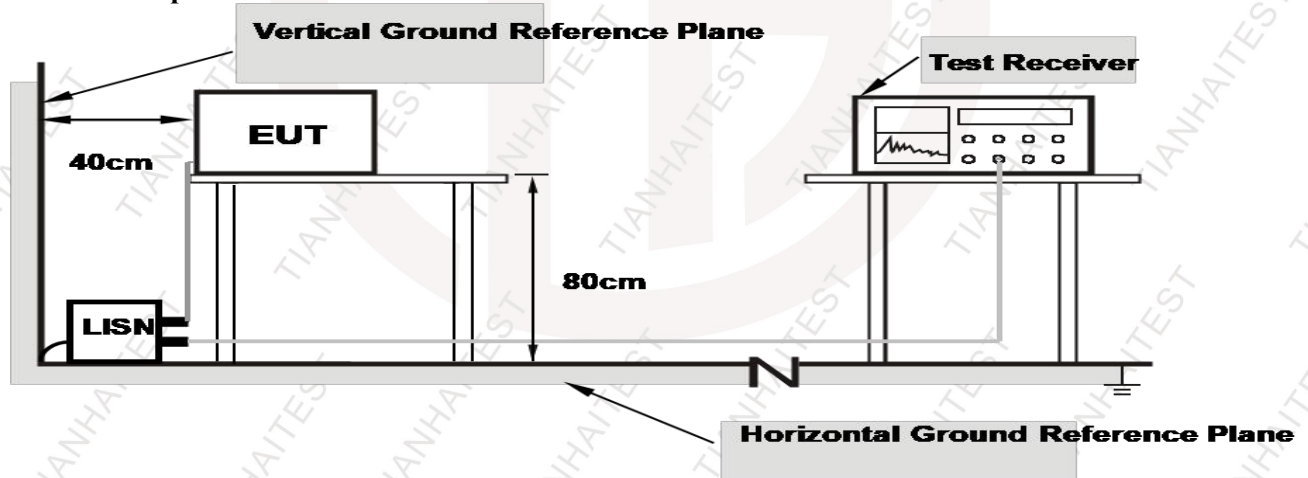
The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

#### 3.3 Test Setup



**Note: 1.Support units were connected to second LISN.**

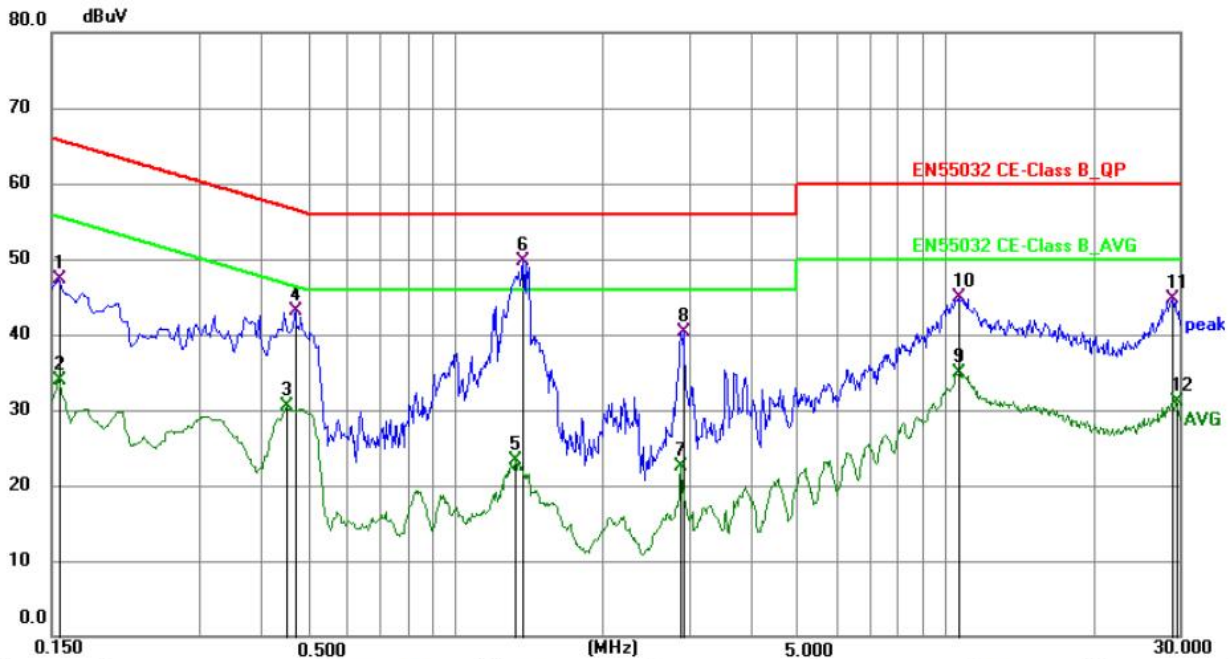
**2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.**

#### 3.4 Test Results

Please refer to following:



EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 1  
 Test Voltage : AC 230V/50Hz  
 Phase : L1  
 Temperature (°C) : 26      Relative Humidity (%) : 54      Atmospheric Pressure(mbar) : 1015



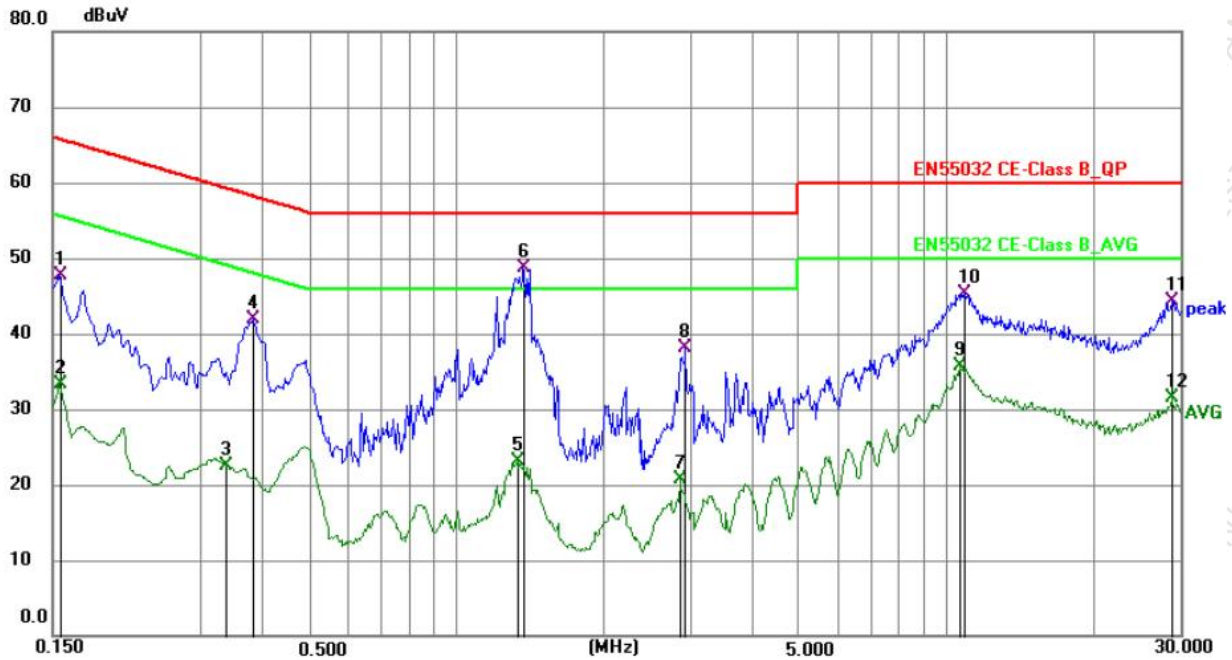
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1545	36.76	10.57	47.33	65.75	-18.42	QP
2	0.1545	23.28	10.57	33.85	55.75	-21.90	AVG
3	0.4515	19.84	10.62	30.46	46.85	-16.39	AVG
4	0.4695	32.50	10.62	43.12	56.52	-13.40	QP
5	1.3245	12.61	10.66	23.27	46.00	-22.73	AVG
6 *	1.3785	39.06	10.66	49.72	56.00	-6.28	QP
7	2.8950	11.79	10.69	22.48	46.00	-23.52	AVG
8	2.9175	29.68	10.69	40.37	56.00	-15.63	QP
9	10.6525	24.18	10.76	34.94	50.00	-15.06	AVG
10	10.7245	34.14	10.76	44.90	60.00	-15.10	QP
11	29.1610	33.74	10.95	44.69	60.00	-15.31	QP
12	29.5750	20.15	10.95	31.10	50.00	-18.90	AVG

Note: Result=Reading+Factor    Over Limit=Result-Limit





EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 1  
 Test Voltage : AC 230V/50Hz  
 Phase : N  
 Temperature (°C) : 26      Relative Humidity (%) : 54      Atmospheric Pressure(mbar) : 1015



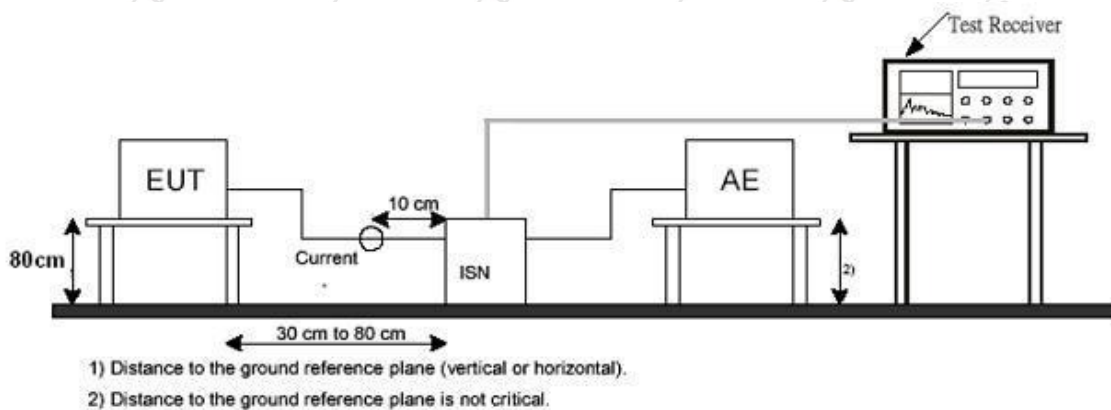
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.1545	37.08	10.57	47.65	65.75	-18.10	QP
2	0.1545	22.69	10.57	33.26	55.75	-22.49	AVG
3	0.3390	11.98	10.60	22.58	49.23	-26.65	AVG
4	0.3840	31.23	10.60	41.83	58.19	-16.36	QP
5	1.3335	12.38	10.66	23.04	46.00	-22.96	AVG
6 *	1.3695	38.00	10.66	48.66	56.00	-7.34	QP
7	2.8635	10.02	10.69	20.71	46.00	-25.29	AVG
8	2.9310	27.33	10.69	38.02	56.00	-17.98	QP
9	10.6254	24.93	10.85	35.78	50.00	-14.22	AVG
10	10.8820	34.53	10.85	45.38	60.00	-14.62	QP
11	28.7965	33.43	10.95	44.38	60.00	-15.62	QP
12	28.7965	20.47	10.95	31.42	50.00	-18.58	AVG

Note: Result=Reading+Factor Over Limit=Result-Limit



## 4. ASYMMETRIC MODE CONDUCTED EMISSION MEASUREMENT

### 4.1 Block Diagram Of Test Setup



### 4.2 Limit

Frequency range (MHz)	Class B Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	84-74	74-64
0.50 ~ 30	74	64

Remark: \* means decreasing linearly with logarithm of frequency.  
The lower limit shall apply at the transition frequencies.

### 4.3 TEST PROCEDURE

The EUT is put on the plane 0.8m high above the ground by insulating support and selecting ISN for unscreened cable or a current probe for screened cable to take measurement.  
The port of the EUT was connected to the remote side support equipment through the ISN/Current Probe and communication in normal condition.  
Making an overall range scan by using the test receiver controlled by controller and record at least six highest emissions for showing in the test report.

The bandwidth of the field strength meter is set at 9kHz.

The frequency range from 150kHz to 30MHz is investigated. The scanning waveform please refer to the next page.

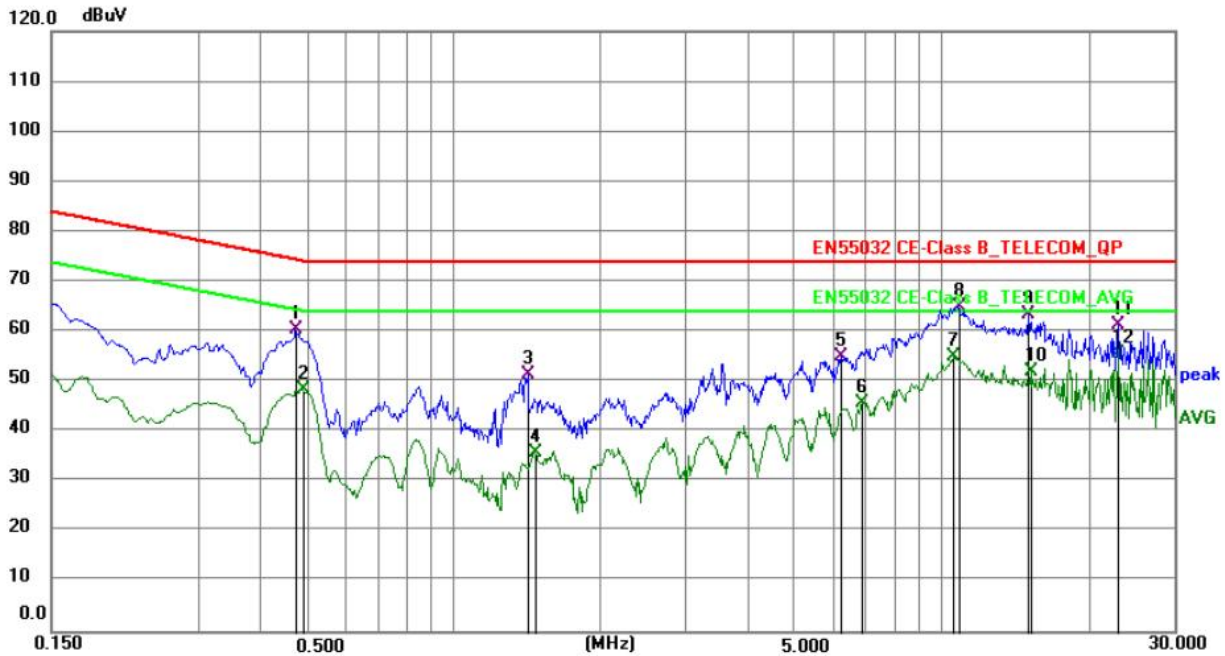
### 4.4 Test Results

Please refer to following:





EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 1  
 Test Voltage : AC 230V/50Hz  
 Phase : WAN port  
 Temperature (°C) : 26      Relative Humidity (%) : 54      Atmospheric Pressure(mbar) : 1015



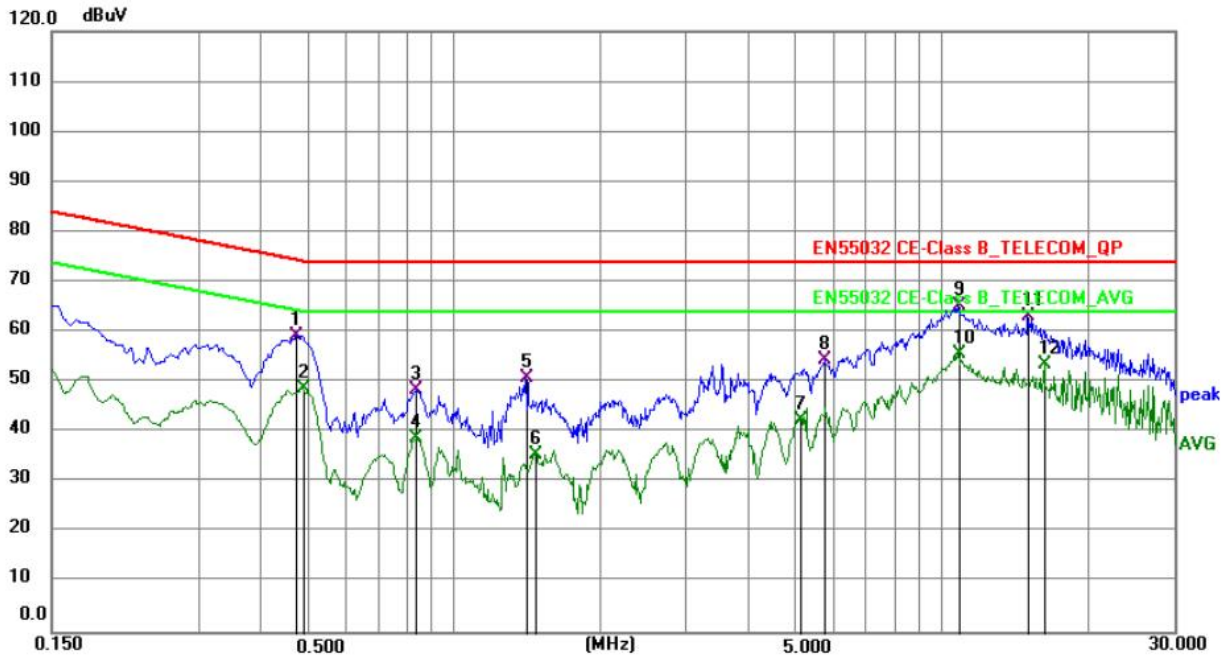
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4740	40.22	20.17	60.39	74.44	-14.05	QP
2	0.4875	28.27	20.16	48.43	64.21	-15.78	AVG
3	1.4190	31.37	20.01	51.38	74.00	-22.62	QP
4	1.4685	15.76	20.00	35.76	64.00	-28.24	AVG
5	6.2465	35.23	19.91	55.14	74.00	-18.86	QP
6	6.9035	25.88	19.91	45.79	64.00	-18.21	AVG
7	10.6120	35.05	19.92	54.97	64.00	-9.03	AVG
8	10.7920	44.92	19.92	64.84	74.00	-9.16	QP
9	15.0670	43.38	19.95	63.33	74.00	-10.67	QP
10	15.2515	32.21	19.95	52.16	64.00	-11.84	AVG
11	23.1310	41.30	20.11	61.41	74.00	-12.59	QP
12 *	23.1310	35.47	20.11	55.58	64.00	-8.42	AVG

Note: Result=Reading+Factor Over Limit=Result-Limit





EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 2  
 Test Voltage : AC 230V/50Hz  
 Phase : LAN port  
 Temperature (°C) : 26      Relative Humidity (%) : 54      Atmospheric Pressure(mbar) : 1015



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4740	39.23	20.17	59.40	74.44	-15.04	QP
2	0.4875	28.68	20.16	48.84	64.21	-15.37	AVG
3	0.8385	28.48	20.08	48.56	74.00	-25.44	QP
4	0.8385	18.77	20.08	38.85	64.00	-25.15	AVG
5	1.4055	30.91	20.01	50.92	74.00	-23.08	QP
6	1.4775	15.67	20.00	35.67	64.00	-28.33	AVG
7	5.1170	22.56	19.92	42.48	64.00	-21.52	AVG
8	5.7604	34.41	19.91	54.32	74.00	-19.68	QP
9	10.7920	45.22	19.92	65.14	74.00	-8.86	QP
10 *	10.7920	35.67	19.92	55.59	64.00	-8.41	AVG
11	15.0085	43.15	19.95	63.10	74.00	-10.90	QP
12	16.2280	33.52	19.97	53.49	64.00	-10.51	AVG

Note: Result=Reading+Factor    Over Limit=Result-Limit

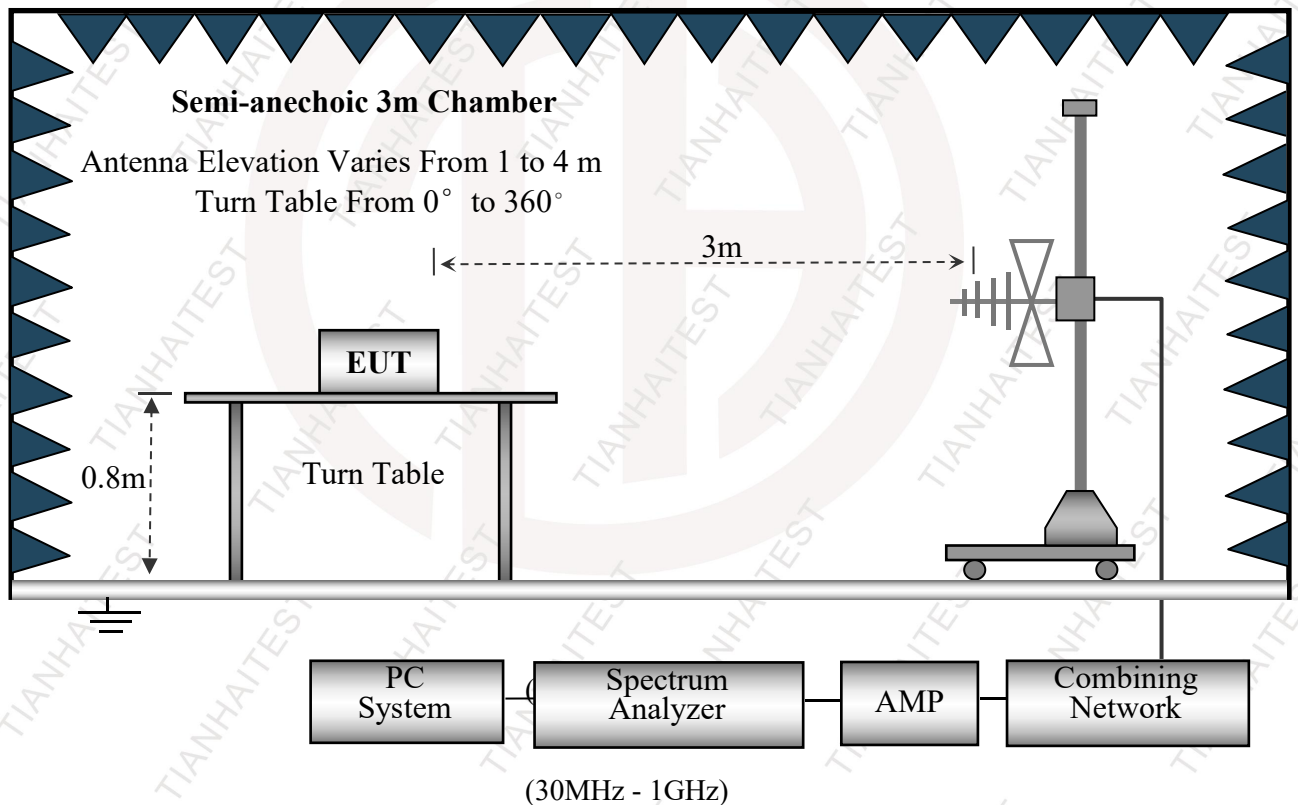


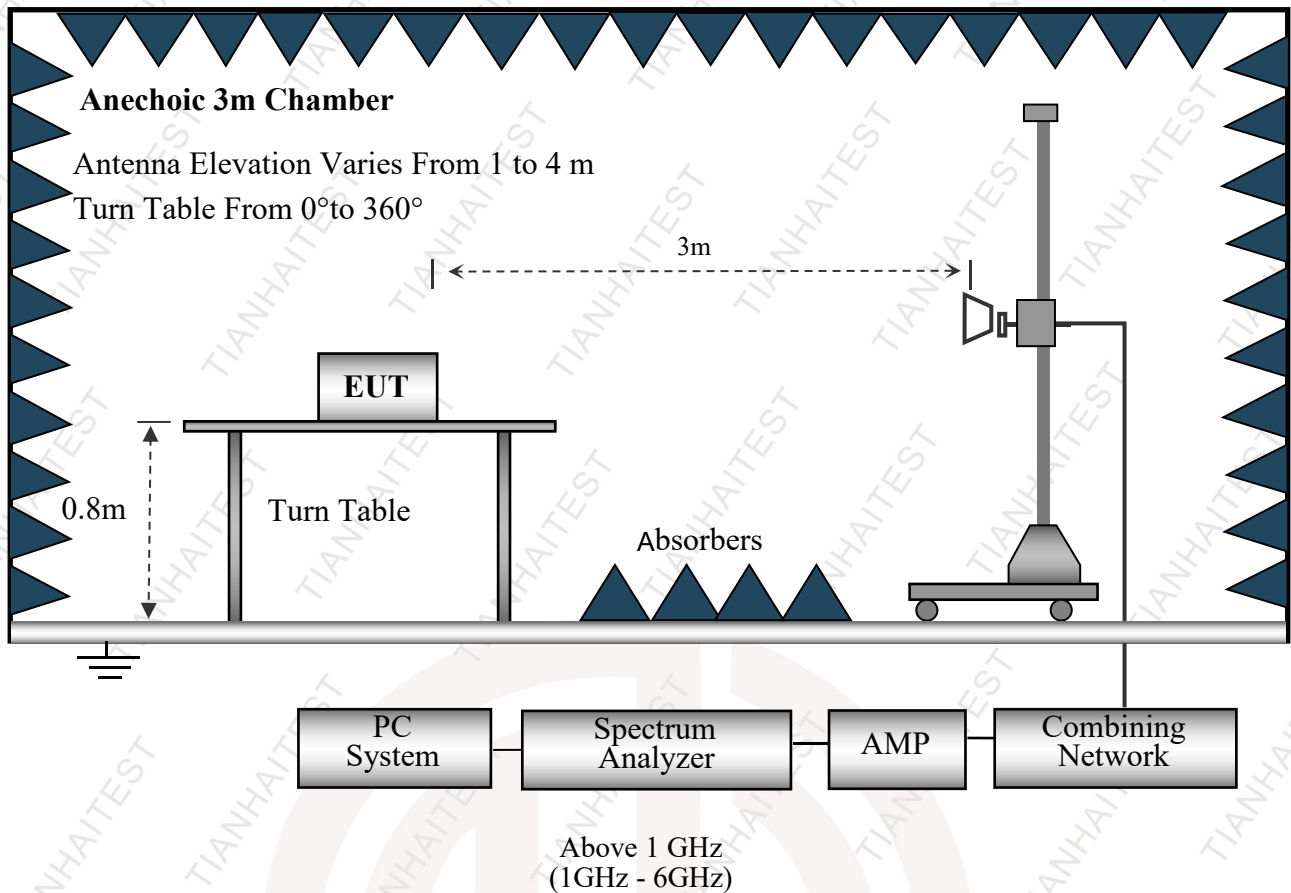
## 5 - RADIATED DISTURBANCES

### 5.1 Limit

Below 1GHz		
Frequency (MHz)	Class A (at 3m)	Class B (at 3m)
	Quasi-Peak dBuV/m	Quasi-Peak dBuV/m
30 – 230	50	40
230 – 1000	57	47
Above 1GHz		
Frequency MHz	Field Strengths Limits dB( $\mu$ V)/m	Detector
1000~3000	70	Peak
1000~3000	50	Average
3000~6000	74	Peak
3000~6000	54	Average

### 5.2 Test Setup





### 5.3 Test Procedure

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
- The test receiver/spectrum was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

### 5.4 Test Result

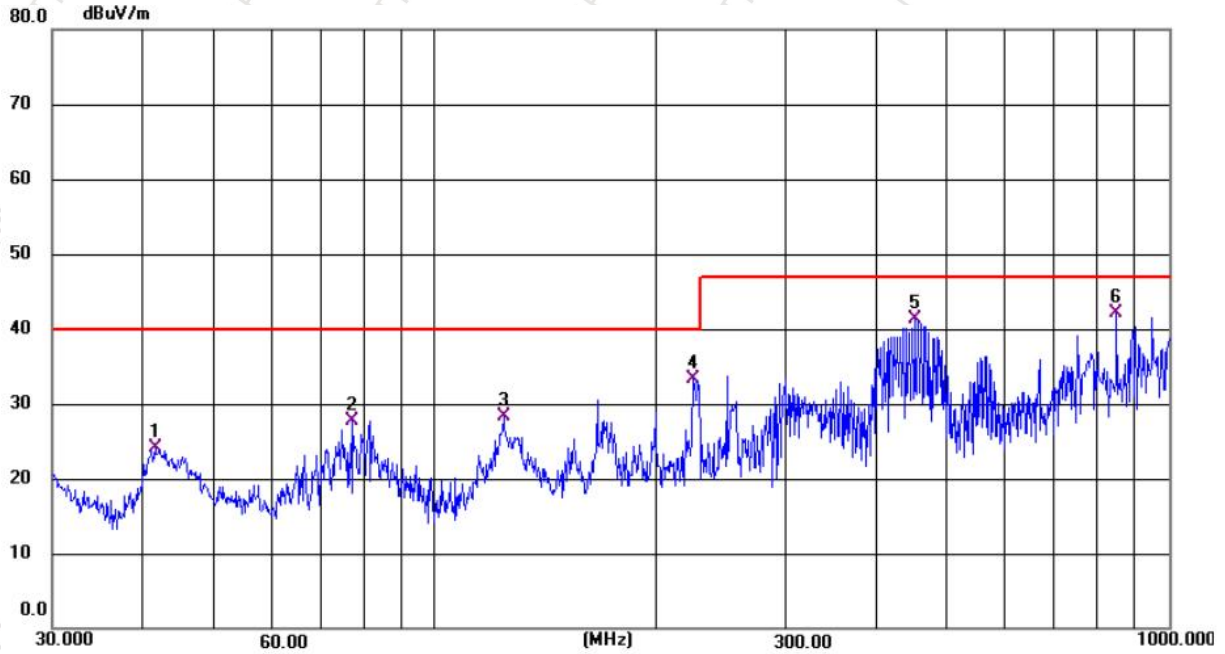
Please refer to following:





## Below 1GHz Data

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 1  
 Test Voltage : AC 230V/50Hz  
 Polarizations : Horizontal  
 Temperature (°C) : 21.7    Relative Humidity (%) : 48    Atmospheric Pressure(mbar) : 1015



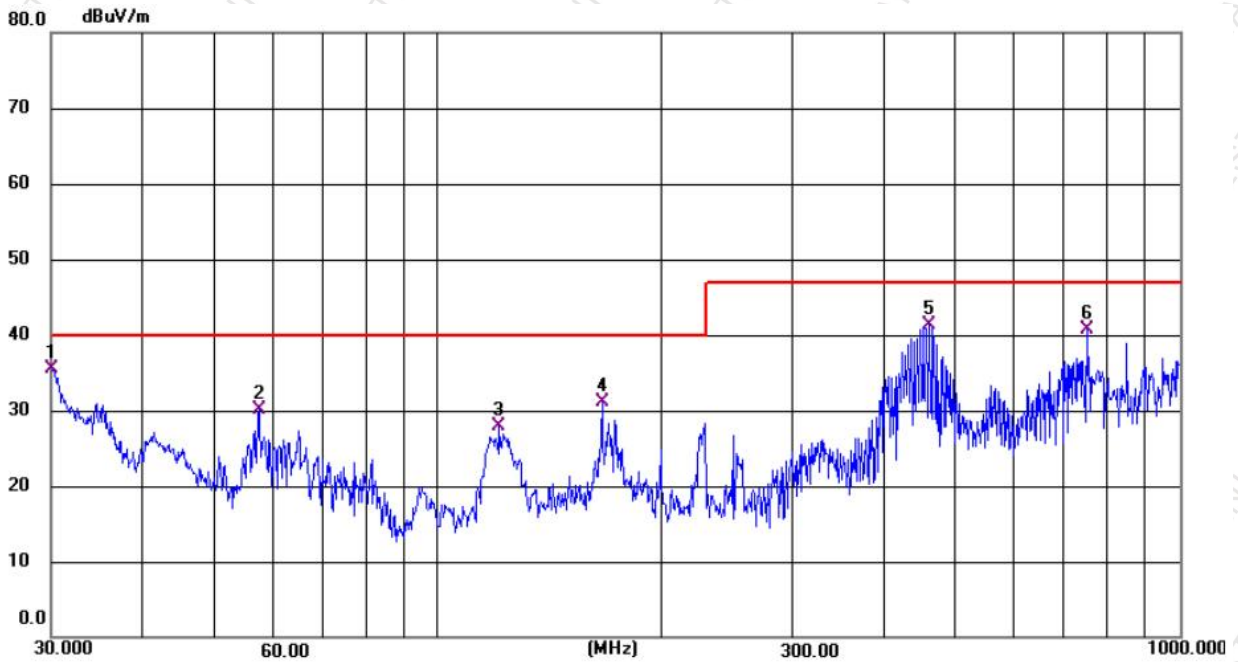
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	41.4942	38.51	-14.33	24.18	40.00	-15.82	QP
2	77.1856	46.52	-18.72	27.80	40.00	-12.20	QP
3	123.9155	44.09	-15.80	28.29	40.00	-11.71	QP
4	225.3080	51.46	-18.18	33.28	40.00	-6.72	QP
5	451.1350	51.43	-10.14	41.29	47.00	-5.71	QP
6 *	851.0353	44.65	-2.64	42.01	47.00	-4.99	QP

Note: Result=Reading+Factor    Over Limit=Result-Limit



Below 1GHz Data

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 1  
 Test Voltage : AC 230V/50Hz  
 Polarizations : Vertical  
 Temperature (°C) : 21.7    Relative Humidity (%) : 48    Atmospheric Pressure(mbar) : 1015



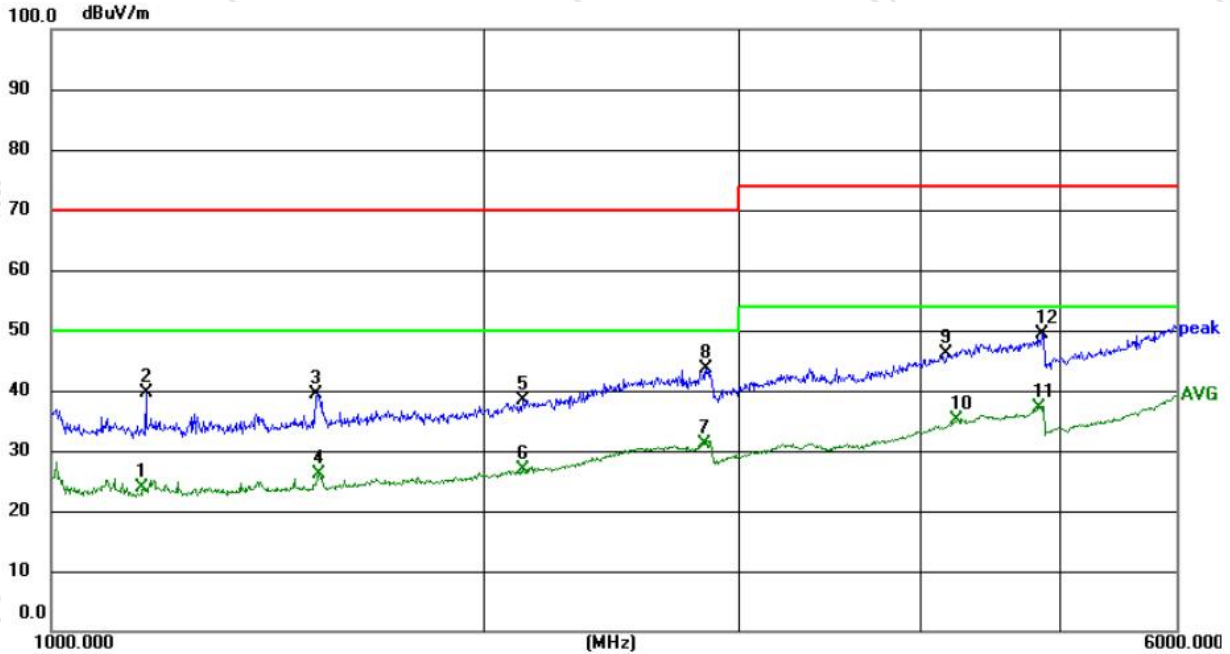
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1 *	30.0000	51.11	-15.55	35.56	40.00	-4.44	QP
2	57.3923	45.23	-15.13	30.10	40.00	-9.90	QP
3	120.6991	44.20	-16.22	27.98	40.00	-12.02	QP
4	166.6514	45.95	-14.88	31.07	40.00	-8.93	QP
5	459.1144	51.34	-9.98	41.36	47.00	-5.64	QP
6	750.1083	44.92	-4.31	40.61	47.00	-6.39	QP

Note: Result=Reading+Factor    Over Limit=Result-Limit



## Above 1GHz Data

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 3  
 Test Voltage : AC 230V/50Hz  
 Polarizations : Horizontal  
 Temperature (°C) : 22.2    Relative Humidity (%) : 50    Atmospheric Pressure(mbar) : 1015



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1160.343	29.32	-5.38	23.94	50.00	-26.06	AVG
2	1164.509	44.95	-5.35	39.60	70.00	-30.40	peak
3	1527.681	43.58	-4.25	39.33	70.00	-30.67	peak
4	1533.166	30.46	-4.23	26.23	50.00	-23.77	AVG
5	2122.382	41.00	-2.50	38.50	70.00	-31.50	peak
6	2122.382	29.50	-2.50	27.00	50.00	-23.00	AVG
7	2834.621	31.42	-0.22	31.20	50.00	-18.80	AVG
8	2844.797	43.75	-0.18	43.57	70.00	-26.43	peak
9	4166.750	42.31	3.81	46.12	74.00	-27.88	peak
10	4242.081	31.31	3.94	35.25	54.00	-18.75	AVG
11 *	4830.532	31.70	5.40	37.10	54.00	-16.90	AVG
12	4856.567	43.81	5.48	49.29	74.00	-24.71	peak

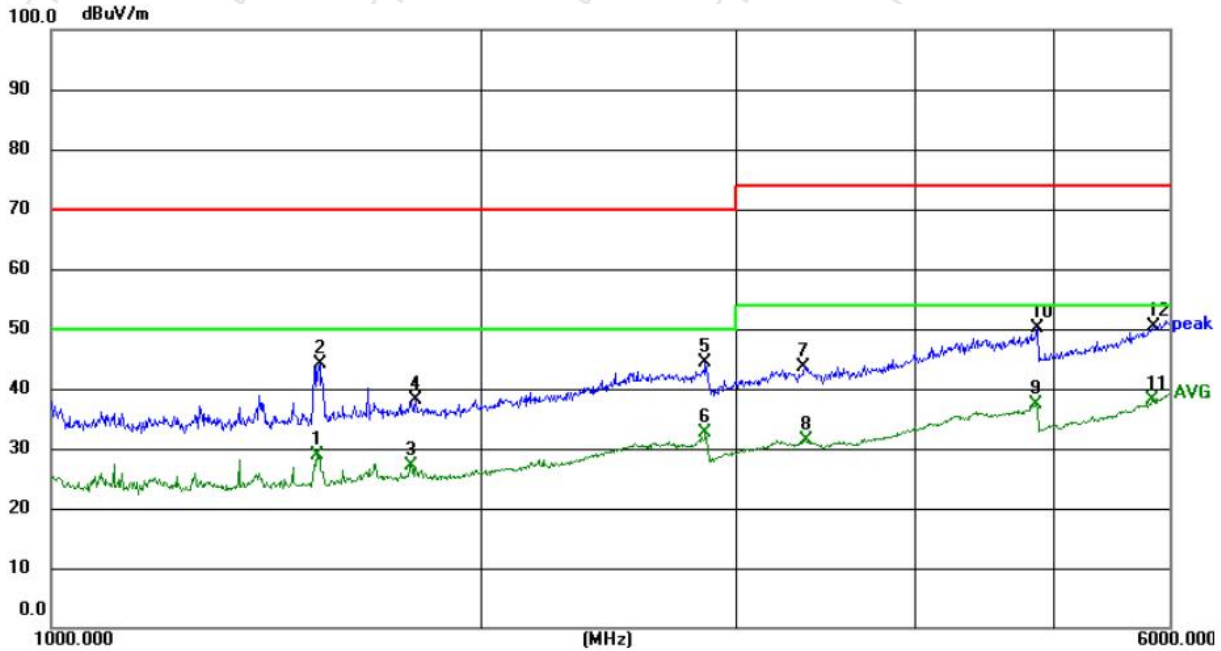
Note: Result=Reading+Factor    Over Limit=Result-Limit





## Above 1GHz Data

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : Mode 3  
 Test Voltage : AC 230V/50Hz  
 Polarizations : Vertical  
 Temperature (°C) : 22.2    Relative Humidity (%) : 50    Atmospheric Pressure(mbar) : 1015



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	1531.793	33.18	-4.24	28.94	50.00	-21.06	AVG
2	1540.049	48.38	-4.21	44.17	70.00	-25.83	peak
3	1782.189	30.70	-3.50	27.20	50.00	-22.80	AVG
4	1796.617	41.53	-3.45	38.08	70.00	-31.92	peak
5	2855.009	44.43	-0.15	44.28	70.00	-25.72	peak
6	2855.009	32.66	-0.15	32.51	50.00	-17.49	AVG
7	3354.603	43.39	0.24	43.63	74.00	-30.37	peak
8	3363.631	31.16	0.24	31.40	54.00	-22.60	AVG
9	4860.920	31.92	5.49	37.41	54.00	-16.59	AVG
10	4865.277	44.54	5.50	50.04	74.00	-23.96	peak
11 *	5856.609	29.71	8.36	38.07	54.00	-15.93	AVG
12	5861.858	42.00	8.39	50.39	74.00	-23.61	peak

Note: Result=Reading+Factor    Over Limit=Result-Limit

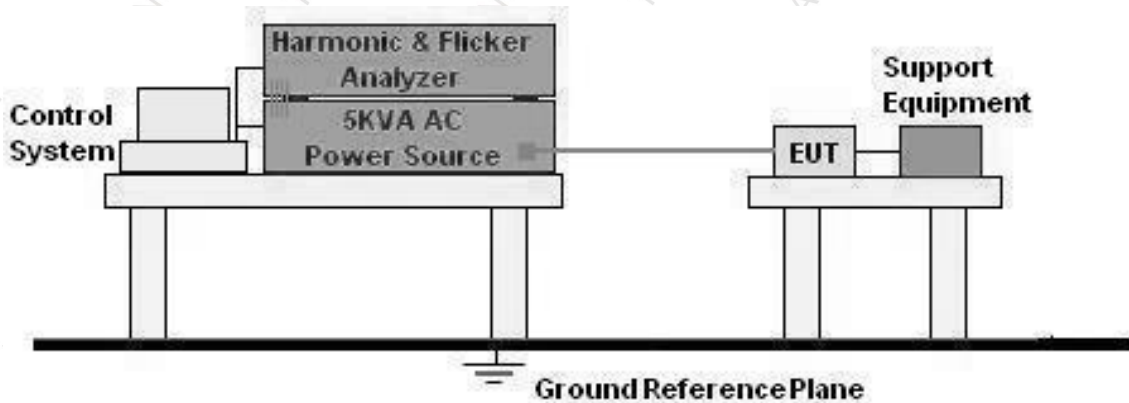


## 6 - HARMONIC CURRENT EMISSION

### 6.1 Test Standard

Please refer to EN IEC 61000-3-2:2019+A1:2021

### 6.2 Test Setup



### 6.3 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.

### 6.4 Operating Condition of EUT

Standard used:	EN/IEC 61000-3-2 A14 (2006) Quasi-stationary - Equipment class A
Observation time:	150s
E. U. T	IP-PBX
M/N	UC120P
Operation Mode	All Mode

### 6.5 Test Result

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

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

“For the following categories of equipment, limits are not specified in this standard:

- equipment with a rated power of 75 W or less, other than lighting equipment.”

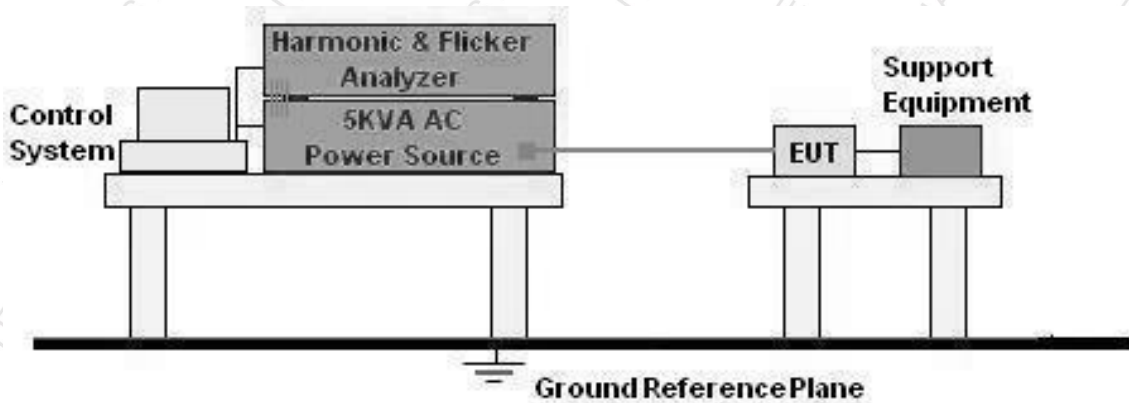


## 7 - VOLTAGE FLUCTUATIONS & FLICKER

### 7.1 Limit

EN 61000-3-3	
Test Items	Limit
Pst	1.0
dc	3.3%
Tmax	4.0%
dt	Not exceed 3.3% for 500ms

### 7.2 Test Setup



### 7.3 Test Procedure

- The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal Test Modes.
- During the flick test, the measure time shall include that part of whole operation cycle in which the Product procedure the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

### 7.4 Test Result

Pass





Flicker Test Summary per IEC61000-3-3:2013/AMD1:2017 (Run time)

EUT: IP-PBX

Tested by: Blue

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2024/4/12

Start time: 11:01:17

End time: 11:11:45

Test duration (min): 10

Data file name: F-000610.cts\_data

Comment: UC120P

Customer: OpenVox Communication Co., Ltd.

Test Result: Pass

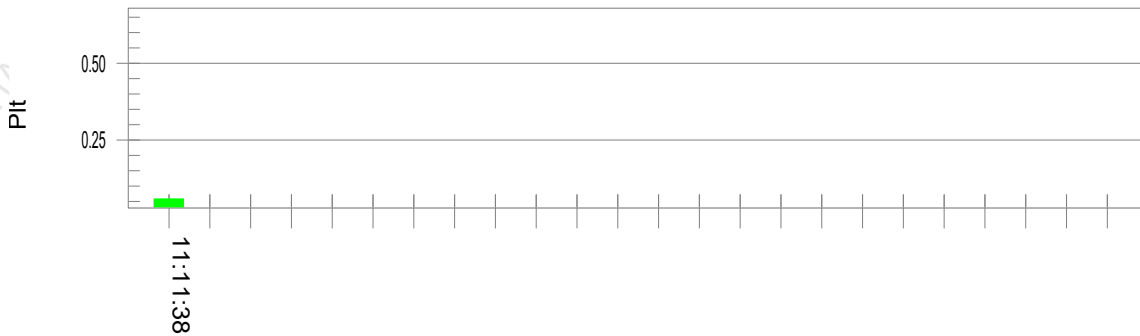
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.91

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.133

Highest Plt (2 hr. period): 0.058

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass



**8 - GENERAL PERFORMANCE CRITERIA FOR IMMUNITY TEST**

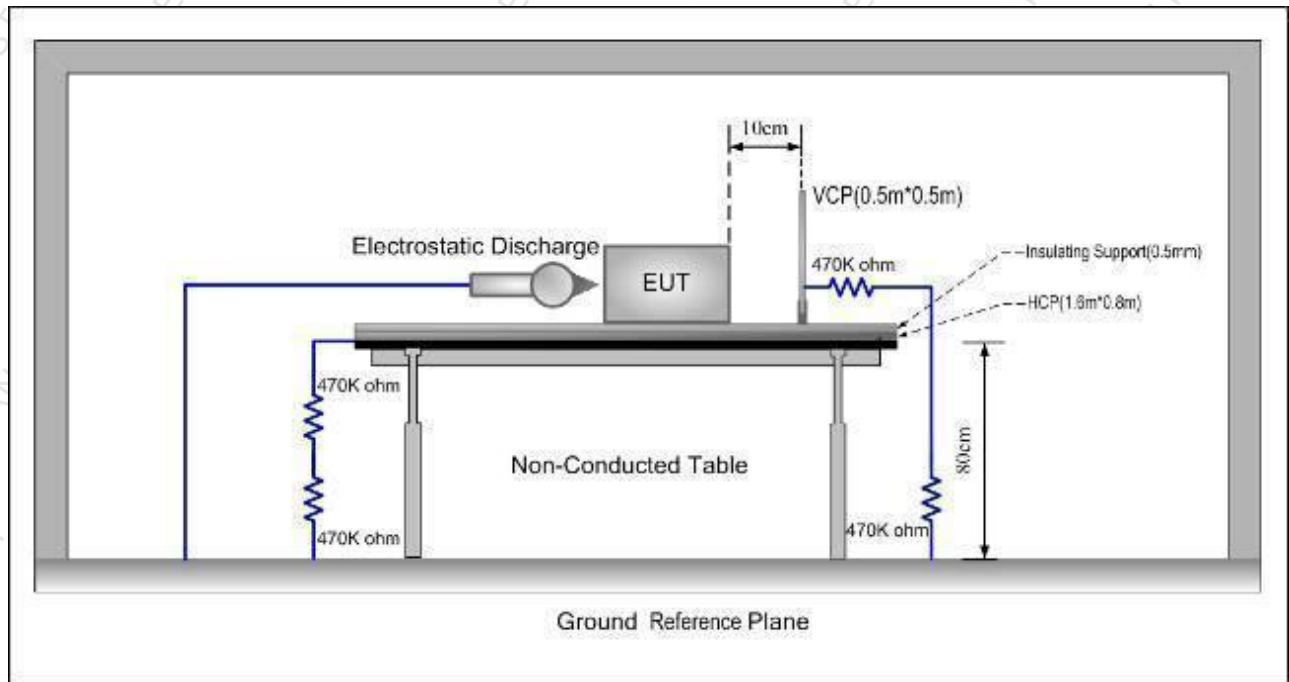
EN 55035 General Performance Criteria	
Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
	For audio output device: The measured acoustic interference ratio and/or the measured electrical interference during the test shall be -20dB or better(see note1)
Criterion B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

EN 301 489-17 Performance criteria		
Criteria	During test	After test
A	Shall operate as intended. (see note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of stored data.
B	May show loss of function	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function.	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no loss of critical stored data.
<p>Note: Operate as intended during the test allows a level of degradation in accordance with a and b.            (a) For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.            (b) For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.</p>		



## 9 - ELECTROSTATIC DISCHARGE IMMUNITY TEST

### 9.1 Test Setup



### 9.2 Test Standard

Basic Standard	: IEC 61000-4-2:2008
Test Port	: Enclosure port
Discharge Impedance	: 330 ohm / 150 pF
Discharge Mode	: Single Discharge
Discharge Period	: one second between each discharge

### 9.3 Severity Levels and Performance Criterion

Severity Level: 3 / Air Discharge:  $\pm 8\text{kV}$   
Level: 2 / Contact Discharge:  $\pm 4\text{kV}$   
Performance criterion: B

### 9.4 Test Procedure

#### 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 20 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

#### Contact Discharge:

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





**Indirect discharge for horizontal coupling plane:**

At least 25 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.

**Indirect discharge for vertical coupling plane:**

At least 25 singles discharge (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×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 completely illuminated.

**9.5 Test Result**

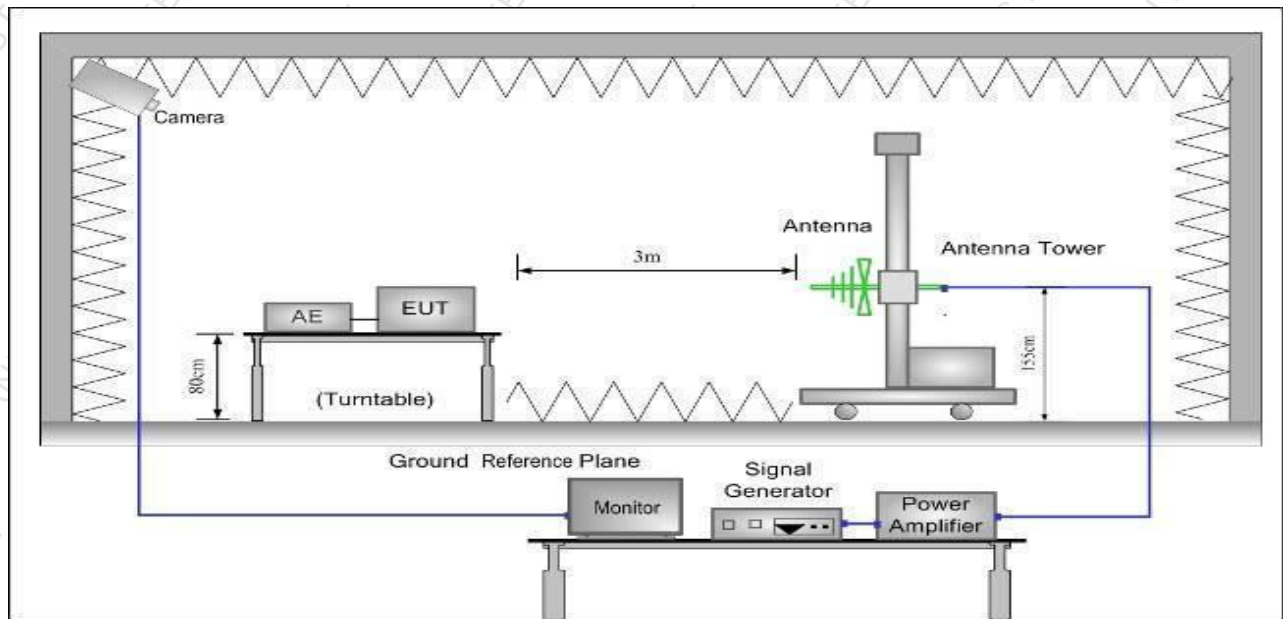
Please refer to following:

Electrostatic Discharge Test Data				
EUT	:	IP-PBX		
M/N	:	UC120P		
Operation Mode	:	All Mode		
Test Voltage	:	AC 230V/50Hz		
Temperature (°C)	:	23.2	Relative Humidity (%)	: 56
			Atmospheric Pressure(mbar)	: 1015
Discharge Method	Discharge Position	Test Level /±kV	Remark	Result (Pass/Fail)
Contact Discharge	Indirect Discharge HCP	2, 4	A	Pass
	Indirect Discharge VCP	2, 4	A	Pass
	The entire metal shell	2, 4	B	Pass
	SAM antenna connection point	2, 4	B	Pass
Air Discharge	WAN port	2, 4, 8	A	Pass
	LAN port	2, 4, 8	A	Pass
	Cloud platform	2, 4, 8	A	Pass
	Indicator light, SIM/SD port	2, 4, 8	A	Pass
	Keys, gaps	2, 4, 8	A	Pass
Note: No obvious change of function was found after the test.				



## 10 - RF FIELD STRENGTH SUSCEPTIBILITY TEST

### 10.1 Test Setup



### 10.2 Test Standard

Basic Standard	IEC 61000-4-3:2020
Condition of Test	Remarks
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Modulated
Scanning Frequency	80 – 6000 MHz
Step	1%
Dwell Time	3 Sec.
Polarization	Horizontal & Vertical

### 10.3 Severity Levels and Performance Criterion

Severity Level 2, 3V/m  
Performance criterion: B

### 10.4 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:

### 10.5 Test Result

Please refer to following:



**EN 55035 R/S Test Data**

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : All Mode  
 Test Voltage : AC 230V/50Hz  
 Temperature (°C) : 24.8    Relative Humidity (%) : 55    Atmospheric Pressure(mbar) : 1015

Frequency Range	Field Strength (V/m)	Position	Polarization of Antenna	Result (Pass/Fail)
80 - 1000MHz	3	Front, Right, Back, Left	Horizontal	Pass
80 - 1000MHz	3	Front, Right, Back, Left	Vertical	Pass
1800MHz	3	Front, Right, Back, Left	Horizontal	Pass
1800MHz	3	Front, Right, Back, Left	Vertical	Pass
2600MHz	3	Front, Right, Back, Left	Horizontal	Pass
2600MHz	3	Front, Right, Back, Left	Vertical	Pass
3500MHz	3	Front, Right, Back, Left	Horizontal	Pass
3500MHz	3	Front, Right, Back, Left	Vertical	Pass
5000MHz	3	Front, Right, Back, Left	Horizontal	Pass
5000MHz	3	Front, Right, Back, Left	Vertical	Pass

Note:  
 No loss of function was observed.

**ETSI EN 301 489-17 R/S Test Data**

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : All Mode  
 Test Voltage : AC 230V/50Hz  
 Temperature (°C) : 24.8    Relative Humidity (%) : 55    Atmospheric Pressure(mbar) : 1015

Frequency Range	Field Strength (V/m)	Position	Polarization of Antenna	Result (Pass/Fail)
80 - 6000MHz	3	Front, Right, Back, Left	Horizontal	Pass
80 - 6000MHz	3	Front, Right, Back, Left	Vertical	Pass

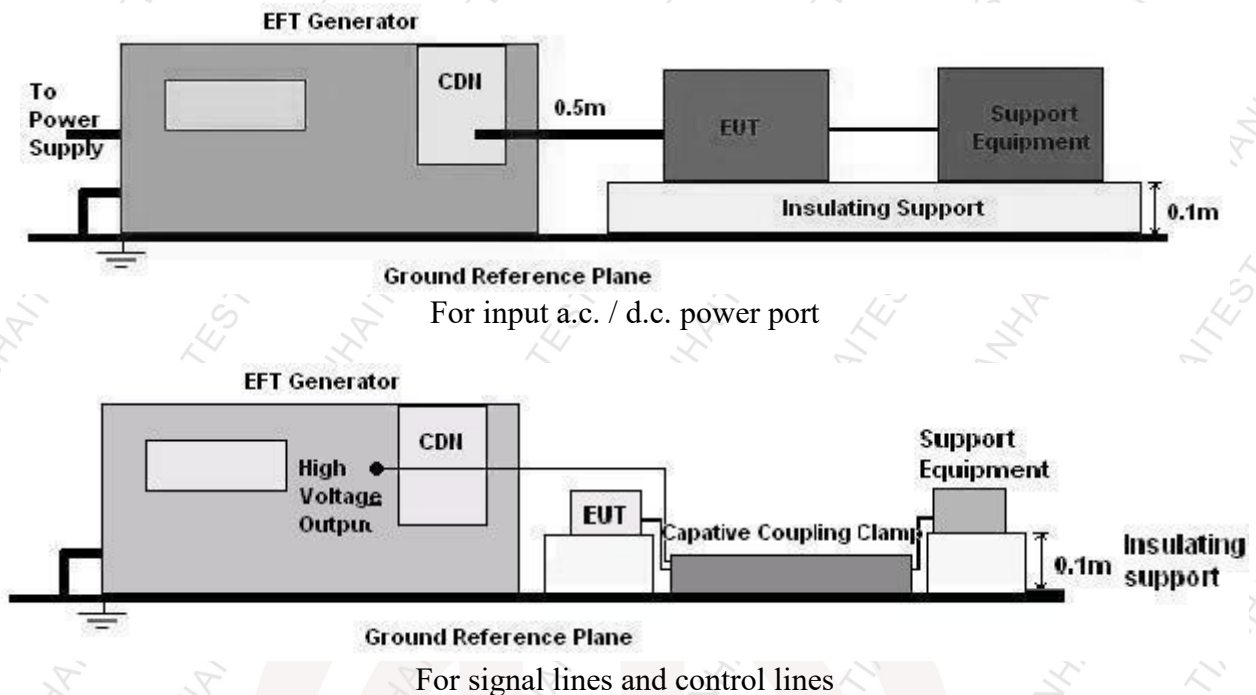
Note:  
 No loss of function was observed.





## 11 - ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

### 11.1 Test Setup



### 11.2 Test Standard

Basic Standard	: IEC 61000-4-4:2012
Test Port	: input a.c.power port / signal port
Impulse Frequency	: 5 kHz
Impulse Wave-shape	: 5/50 ns
Burst Duration	: 15 ms
Burst Period	: 300 ms
Test Duration	: 2 minutes per polarity

### 11.3 Severity Levels and Performance Criterion

Severity Level 2 at 1kV, Pulse Rise time & Duration: 5 ns / 50 ns

Performance criterion: B

### 11.4 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

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.



11.5 Test Result

**EFT Test Data**

EUT : IP-PBX  
M/N : UC120P  
Operation Mode : All Mode  
Test Voltage : AC 230V/50Hz  
Temperature (°C) : 21.2    Relative Humidity (%) : 50    Atmospheric Pressure(mbar) : 1015

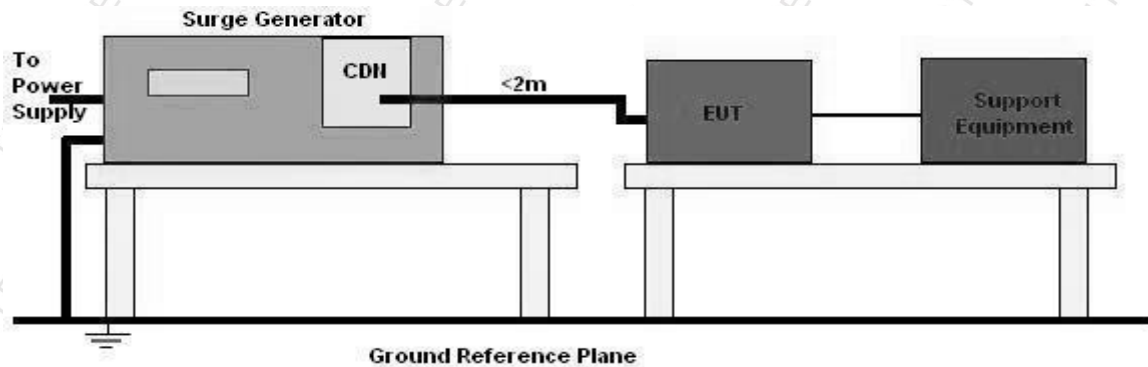
Conductor	Test Level /kV	Remark	Result (Pass/Fail)
L	±1kV	B	Pass
N	±1kV	B	Pass
L - N	±1kV	B	Pass
RJ45	±0.5kV	B	Pass

Note:  
No loss of function was observed.



## 12 - SURGE IMMUNITY TEST

### 12.1 Test Setup



### 12.2 Test Standard

Basic Standard	IEC 61000-4-5:2014+AMD1:2017
Test Port	input a.c. power port /signal port
Wave-Shape	Open Circuit Voltage - 1.2 / 50 us, 10/700us Short Circuit Current - 8 / 20 us, 5/320us
Pulse Repetition Rate	1 pulse / min.
Test Events	Five positive polarity pulses at the 90° phase angel Five negative polarity pulses at the 270° phase angel

### 12.3 Severity Levels and Performance Criterion

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

### 12.4 Test Procedure

- 1) Set up the EUT and test generator as shown on section 11.1
- 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.





12.5 Test Result

Surge Test Data

EUT : IP-PBX  
 M/N : UC120P  
 Operation Mode : All Mode  
 Test Voltage : AC 230V/50Hz  
 Temperature (°C) : 21.2      Relative Humidity (%) : 50      Atmospheric Pressure(mbar) : 1015

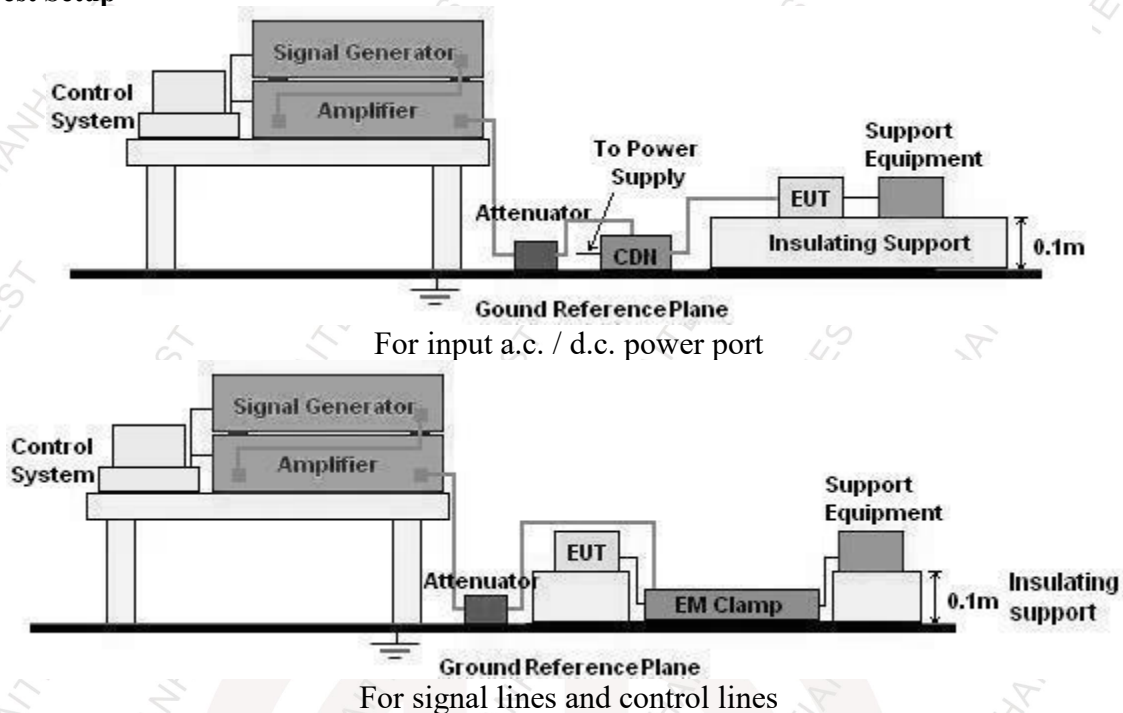
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result (Pass/Fail)
L-N	±	0°	10	1.0	Pass
	±	90°	10	1.0	Pass
	±	180°	10	1.0	Pass
	±	270°	10	1.0	Pass
L - PE	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
N - PE	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
Signal Line(RJ45)	±	/	10	0.5	Pass

Note:  
 No loss of function was observed.



## 13 - INJECTED CURRENTS SUSCEPTIBILITY TEST

### 13.1 Test Setup



### 13.2 Test Standard

Basic Standard	: IEC 61000-4-6:2013
Test Port	: input a.c. power port / signal port
Step Size	: 1%
Modulation	: 1kHz,80% AM
Dwell Time	: 1 second

### 13.3 Severity Levels and Performance Criterion

Severity Level 2: 3V ( rms ), 150KHz - 80MHz  
Performance criterion: A

### 13.4 Test Procedure

- 1) Set up the EUT, CDN and test generator as shown on section 12.1
- 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 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.



**13.5 Test Result**

Please refer to following:

EN 55035 CS Test Data			
EUT	:	IP-PBX	
M/N	:	UC120P	
Operation Mode	:	All Mode	
Test Voltage	:	AC 230V/50Hz	
Temperature (°C)	:	25	Relative Humidity (%) : 54 Atmospheric Pressure(mbar) : 1015
Frequency Range	Injected Position	Test Level (r.m.s.)	Result (Pass/Fail)
0.15 - 10MHz	AC Mains	3	Pass
10 - 30MHz		3 - 1	Pass
30 - 80MHz		1	Pass
0.15 - 10MHz	Signal Line	3	Pass
10 - 30MHz		3 - 1	Pass
30 - 80MHz		1	Pass
Note: No loss of function was observed.			

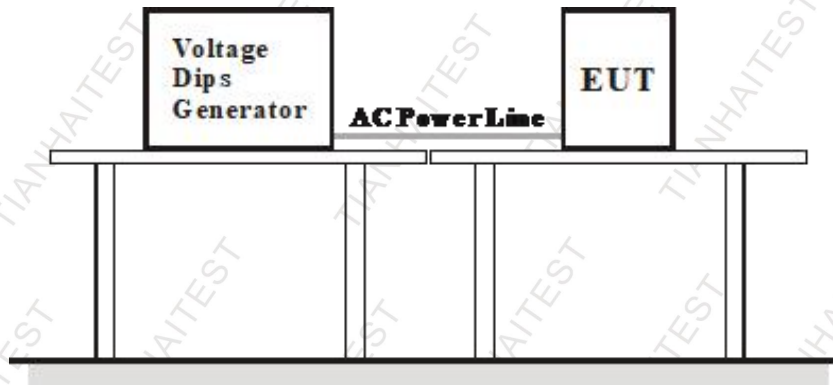
ETSI EN 301 489-17 CS Test Data			
EUT	:	IP-PBX	
M/N	:	UC120P	
Operation Mode	:	All Mode	
Test Voltage	:	AC 230V/50Hz	
Temperature (°C)	:	21.2	Relative Humidity (%) : 50 Atmospheric Pressure(mbar) : 1015
Frequency Range	Injected Position	Test Level (r.m.s.)	Result (Pass/Fail)
0.15 - 10MHz	AC Line	3	Pass
10 - 30MHz			Pass
30 - 80MHz			Pass
0.15 - 10MHz	Signal Line	3	Pass
10 - 30MHz			Pass
30 - 80MHz			Pass
Note: No loss of function was observed.			





## 14 - VOLTAGE DIPS AND INTERRUPTIONS TEST

### 14.1 Test Setup



### 14.2 Test Standard

Basic Standard : IEC 61000-4-11:2020  
 Test Port : input a.c. power port  
 Phase Angle : 0°, 180°

### 14.3 Severity Levels and Performance Criterion

Input and Output AC Power Ports.  
 Voltage Dips.  
 Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	100 0.5	% Reduction period	B
	100 1	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	100 250	% Reduction period	C

### 14.4 Test Procedure

- 1) Set up the EUT and test generator as shown on section 14.1
- 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.



**14.5 Test Result**

Please refer to following:

<b>Voltage Dips &amp; Short Interruptions Test Data</b>						
EUT		: IP-PBX				
M/N		: UC120P				
Operation Mode		: All Mode				
Test Voltage		: AC 230V/50Hz				
Temperature (°C)		: 21.2	Relative Humidity (%)	: 50	Atmospheric Pressure(mbar)	: 1015
Test Level %UT	Voltage Dips %UT	Duration (in period) 50Hz/60Hz	Phase Angle	Performance Criterion	Result (Pass/Fail)	
0	100	0.5P	0°- 360°	A	Pass	
0	100	1P	0°-360°	A	Pass	
70	30	25P	0°-360°	B	Pass	
0	100	250P	0°	C	Pass	
<p>Note: Means EUT Shut down, lost function. It should be recoverable by operator.</p>						



## APPENDIX A - TEST SETUP PHOTOGRAPHS

**Photograph 1: Set-up for Conducted Emission**



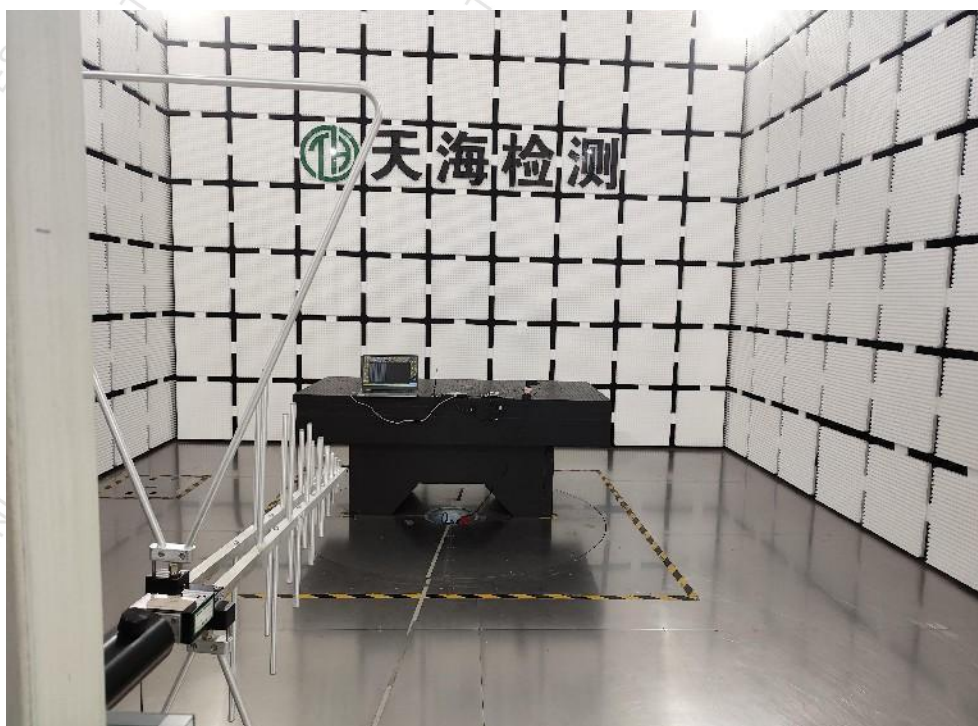
**Photographs 2: Set-up for Asymmetric mode conducted emission**



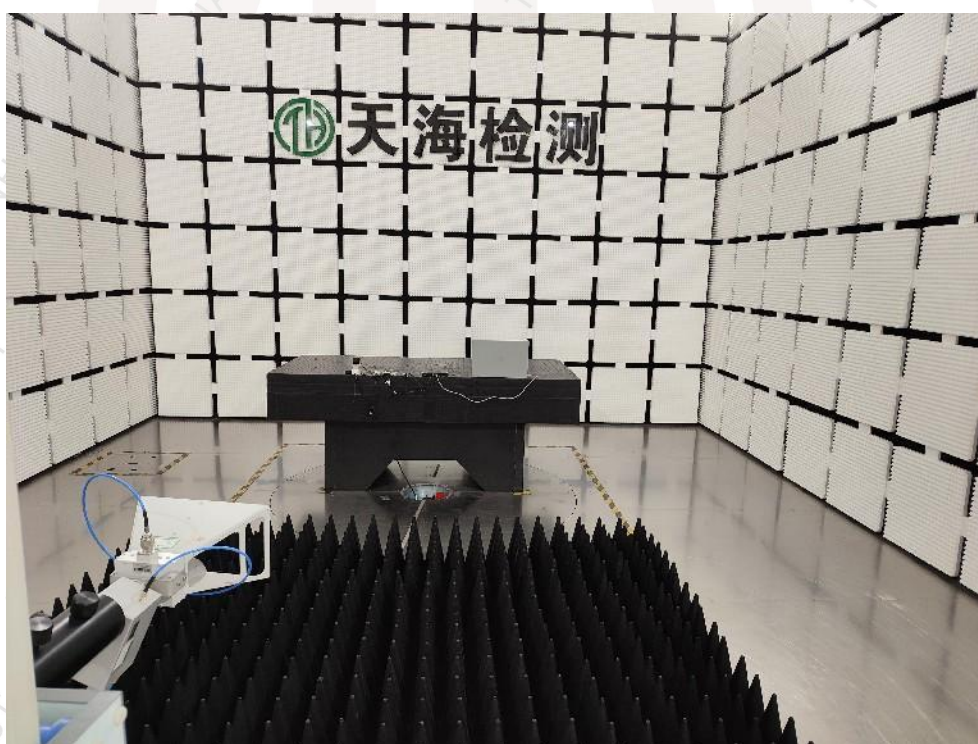




**Photograph 3: Set-up for Radiation Emission (Below 1GHz)**



**Photograph 4: Set-up for Radiation Emission (Above 1GHz)**





Photograph 5: Set-up for Harmonic / Flicker



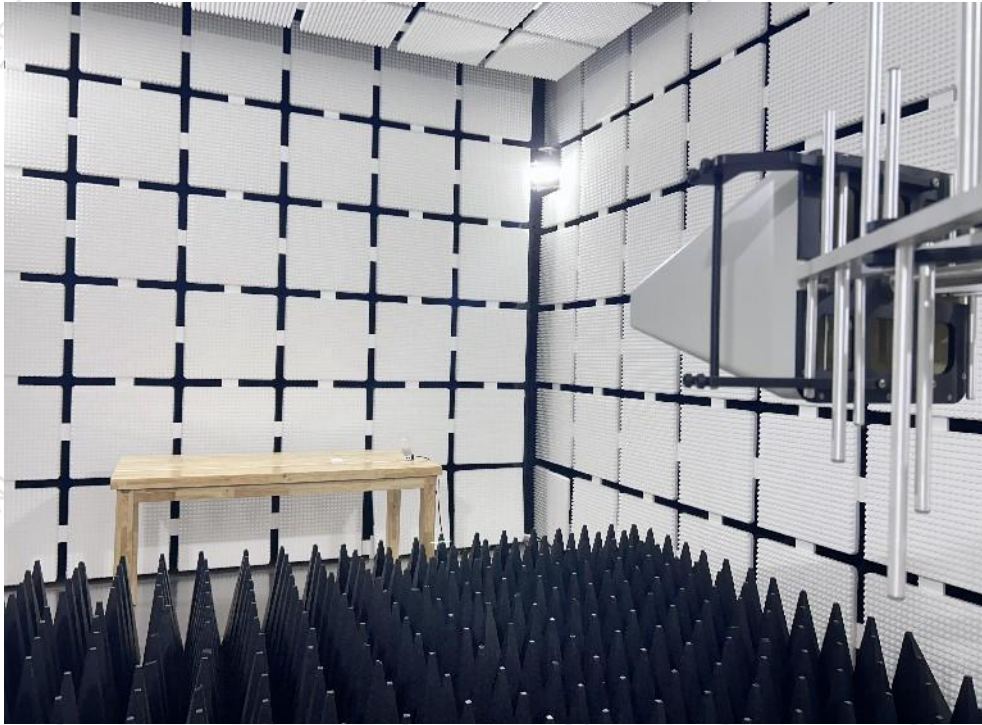
Photograph 6: Set-up for Electrostatic Discharges







Photograph 7: Set-up for Radio-Frequency Electromagnetic Field (RS)



Photograph 8: Set-up for Electrical Fast Transient / Burst(EFT) AC power port







Signal port



Photograph 9: Set-up for Surge

AC power port



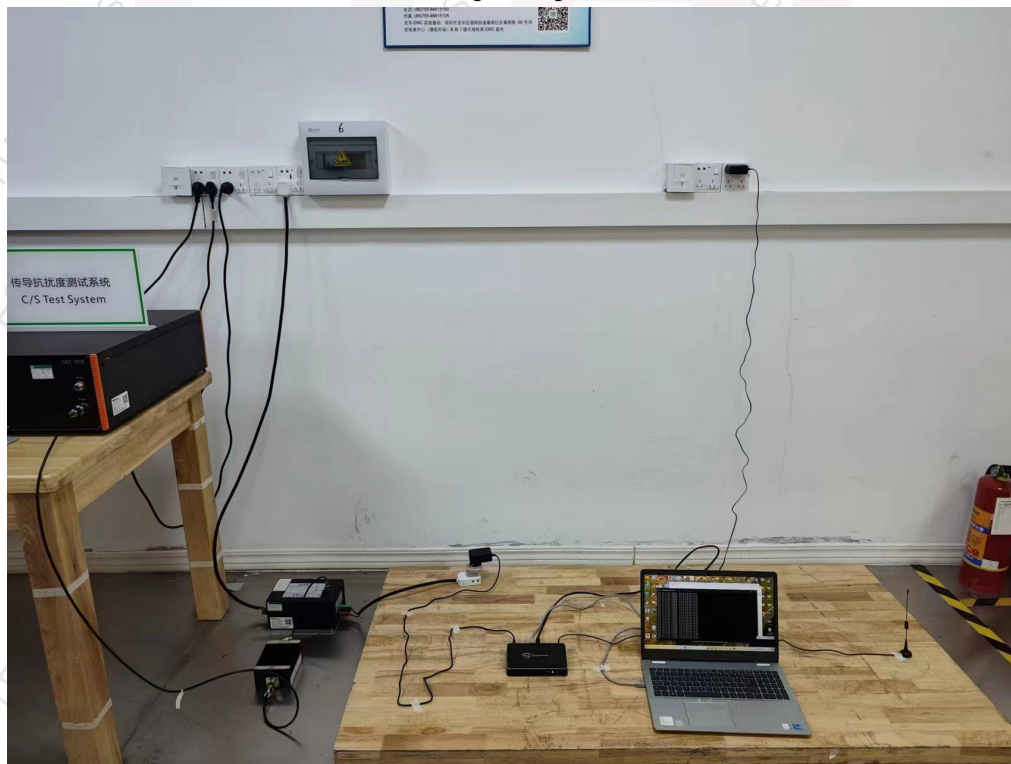


**Signal port**



**Photograph 10: Set-up for Conducted disturbances, induced by radio-frequency fields (CS)**

**AC power port**



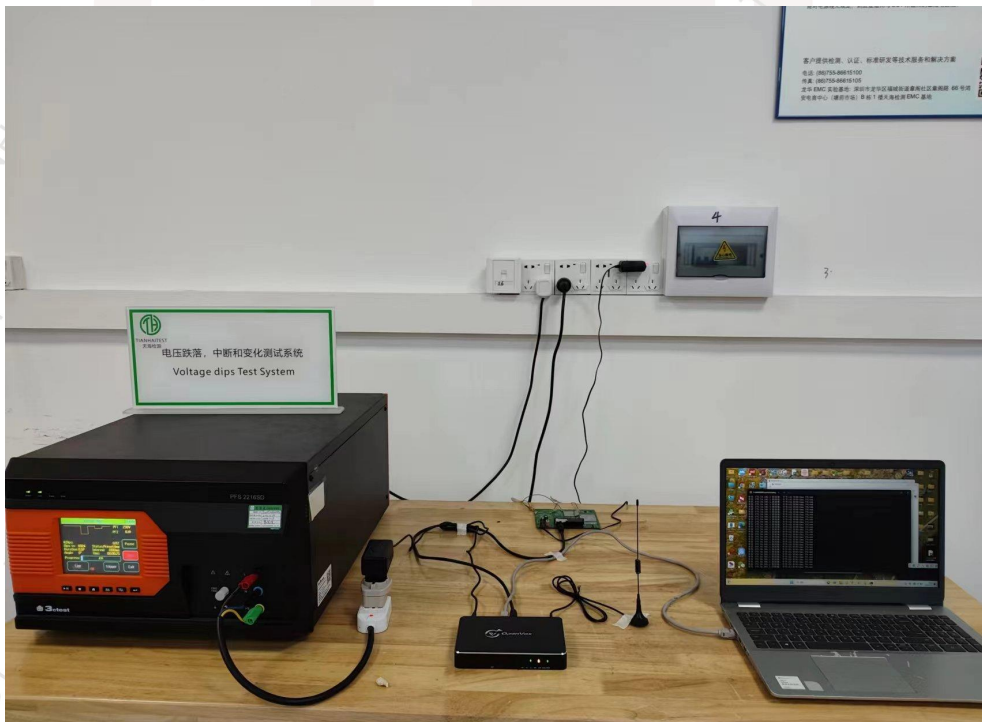




Signal port



Photograph 11: Set-up for Voltage Dips and Interruption (Dips)







**APPENDIX B - EUT PHOTOGRAPHS**









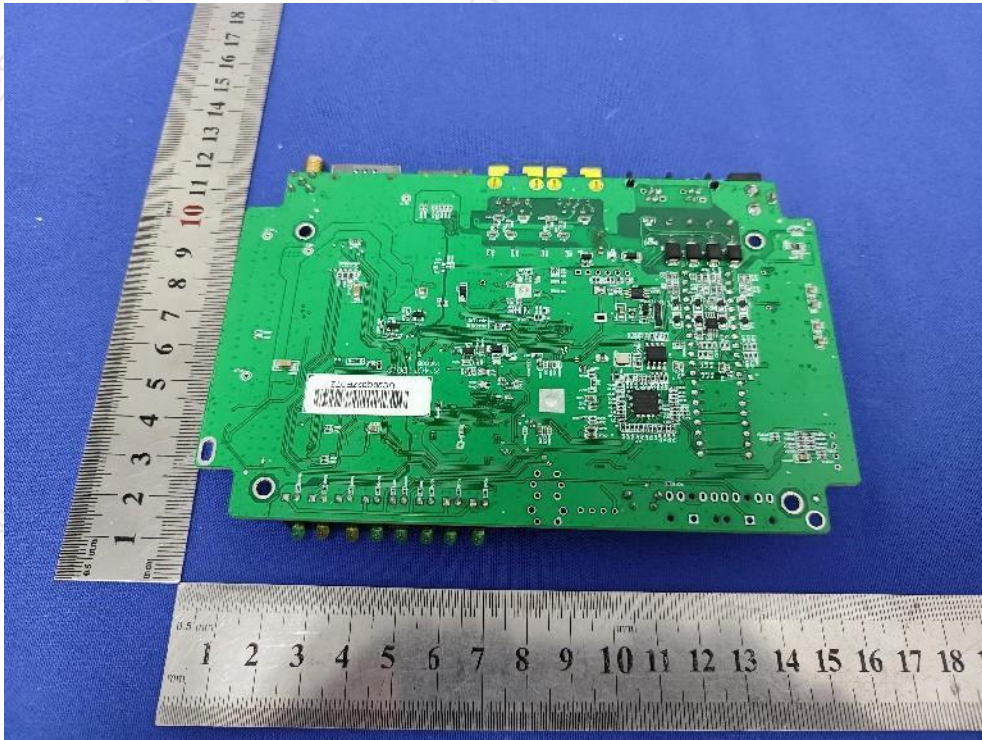




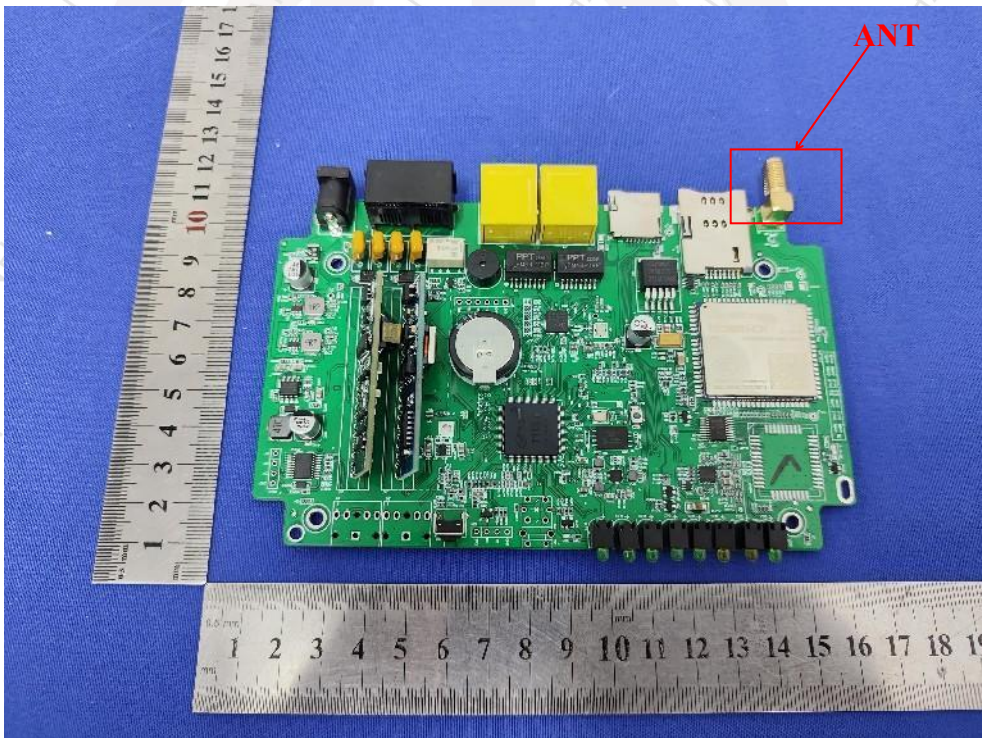












\*\*\*\*\*END OF THE REPORT\*\*\*\*\*