CTC Laboratories, Inc.

2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel: +86-755- 27521059 Fax: +86-755- 27521011 Http://www.sz-ctc.org.cn

TEST REPORT

Report No. .....:	**CTC20210068E02**
Applicant .....:	**XonTel Technology Trd. Co. W.L.L**
Address.....:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait
Manufacturer.....:	XonTel Technology Trd. Co. W.L.L
Address.....:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait
Product Name .....:	**IP Phone**
Trade Mark .....:	XonTel
Model/Type reference.....:	XT-40G
Listed Model(s).....:	N/A
Standard .....:	**ETSI EN 301 489-1 V2.2.3: 2019-11** **ETSI EN 301 489-17 V3.1.1: 2017-02**
Date of receipt of test sample…:	Mar. 10, 2020
Date of testing……..:	Mar. 11, 2020 to Mar. 23, 2020
Date of issue……....:	Jan. 20, 2021
Result……:	**PASS**

Compiled by: (Printed name+signature)	Terry Su	Terry Su
Supervised by: (Printed name+signature)	Miller Ma	Miller Ma
Approved by: (Printed name+signature)	Walter Chen	

Testing Laboratory Name .....:	**CTC Laboratories, Inc.**
Address.....:	2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Table of Contents Page

1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

ETSI EN 301 489-1 V2.2.3 (2019-11)–ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility

ETSI EN 301 489-17 V3.1.1 (2017-02)–ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

1.2. Report version

Revised No.	Date of issue	Description
01	Jan. 20, 2021	Original

Note: Update applicant, manufacturer, trademark and model name, This report is based on the report of CTC20200268E08.

1.3. Test Description

Emission			
Test Item	**Standard requirement** (ETSI EN301 489-1)	**Result**	**Test Engineer**
Radiated Emission	Clause 8.2	Pass	Terry Su
Conducted Emission(AC Mains)	Clause 8.4	Pass	Jon Huang
Harmonic Current Emissions	Clause 8.5	N/A	N/A
Voltage Fluctuations and Flicker	Clause 8.6	Pass	Lance Lan
Immunity			
Test Item	**Standard requirement** (ETSI EN301 489-1)	**Result**	**Test Engineer**
Radio Frequency Electromagnetic Field	Clause 9.2	Pass	Lance Lan
Electrostatic Discharge	Clause 9.3	Pass	Lance Lan
Fast Transients (common mode)	Clause 9.4	Pass	Lance Lan
Radio frequency (common mode)	Clause 9.5	Pass	Lance Lan
Voltage Dips and Interruptions	Clause 9.7	Pass	Lance Lan
Surges	Clause 9.8	Pass	Lance Lan

Note: “N/A” is no application

The measurement uncertainty is not included in the test result.

1.4. Test Facility

CTC Laboratories, Inc.

Add: 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation .Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in th e identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Indus try Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (F CC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
C01	ANSI	150kHz ~ 30MHz	3.2	/

B. Radiated Measurement:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.7 dB	(1)
Radiated Emission	Above 1000MHz	5.0 dB	(1)

Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

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

Normal Temperature:	23°C ~ 27°C
Lative Humidity	52% ~ 70%
Air Pressure	101kPa

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	XonTel Technology Trd. Co. W.L.L
Address:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait
Manufacturer:	XonTel Technology Trd. Co. W.L.L
Address:	Kuwait City, Qibla, Aladel Tower, F21, state of Kuwait

2.2. General Description of EUT

Product Name:	IP Phone			
Trade Mark:	XonTel			
Model/Type reference:	XT-40G			
Listed Model(s):	N/A			
Power supply:	5Vdc/2A from AC/DC Adapter Supplied from POE			
Adapter 1 Model:	F12W8-050200SPAV Input: AC100-240V 50/60Hz 0.3A Output:5V/2A			
Adapter 2 Model:	F12W8-050200SPAB Input: AC100-240V 50/60Hz 0.3A Output:5V/2A			
Hardware version:	N/A			
Software version:	N/A			
BT 4.2				
Operation Band:	2.402~2.480GHz			
Modulation:	GFSK (BLE), π/4-DQPSK, 8-DPSK			
WIFI				
Supported type:	☒802.11b	☒802.11g	☒802.11n(HT20)	☒802.11n(HT40)
Modulation:	DSSS for 802.11b OFDM for 802.11g/802.11n(HT20)/802.11n(HT40)			
Operation frequency:	2412MHz~2472MHz for 802.11b/802.11g/802.11n(HT20) 2422MHz~2462MHz for 802.11n(HT40)			
RLAN				
Support Type:	☒ 802.11a	☒ 802.11n	☒ 802.11ac	
Support Bandwidth:	802.11a ☒ 20MHz			
	802.11n ☒ 20MHz ☒ 40MHz			
	802.11ac ☒ 20MHz ☒ 40MHz ☒ 80MHz ☐ 160MHz			
Operation Frequency:	☒ Lower Band: 5150-5250MHz ☒ Higher Band: 5725-5850MHz			

2.3. Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
IP Phone	X7	JGB28B000005	Fanvil
POE Supply	H3C S1208-PWR	219801A0SYM17B0000LS	H3C
Router	FAST 5280	253703944	Sagemcom
Headset	---	X18033620	Fanvil
BT headset	TWSEJ02JY	---	XIAOMI
Cable Information			
Name	Shielded Type	Ferrite Core	Length
Lan Cable	N/A	N/A	1M

2.4. Description of Test Modes

Test mode	Communicate by hands free	Communicate by telephone receiver	WIFI	Connect to BT headset.	AC/DC Adapter	POE Supply
1	■				■	
2		■			■	
3			■		■	
4				■	■	
5	■					■
6		■				■
7			■			■
8				■		■

Note: ■ is operation mode.

Pre-scan above all test mode, found below test mode which it was worse case mode, so only show the test data for worse case mode on the test report.

Test item	Test mode
Radiated Emission	1, 6
Conducted Emission (AC Mains)	2
Harmonic Current Emissions	N/A
Voltage Fluctuations and Flicker	1
Radio Frequency Electromagnetic Field	All
Electrostatic Discharge	All
Fast Transients (common mode)	All
Radio frequency (common mode)	All
Voltage Dips and Interruptions	1, 2, 3, 4
Surges	All

Note: “N/A” is no application

2.5. Measurement Instruments List

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Dec. 27, 2020
2	LISN	R&S	ENV216	101113	Dec. 27, 2020
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 27, 2020
4	Current Probe	CYBERTEK	EM5011	E165011025	Dec. 27, 2020
5	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Dec. 27, 2020
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 27, 2020
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 27, 2020
4	Spectrum Analyzer	R&S	FSV40-N	101331	Dec. 27, 2020
5	Pre-Amplifier	SONOMA	310	186194	Dec. 27, 2020
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 27, 2020
7	Test Receiver	R&S	ESCI7	100967	Dec. 27, 2020
8	Antenna Mast	UC	UC3000	N/A	N/A
9	Turn Table	UC	UC3000	N/A	N/A
10	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Harmonic Current Emissions &Voltage Fluctuations and Flicker					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Harmonic Flicker Analyzer	Voltech	PM6000	200006700723	Dec. 27, 2020
2	Programmable AC Power Source	Mtoni	PHF1530	MTPS001	Dec. 27, 2020
5	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	ESD Simulator	EM TEST	DITO	V1113109156	Dec. 27, 2020
2	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Fast Transients Common Mode					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Electrical fast transient generator	3ctest	EFT-4003G	EC0471140	Dec. 27, 2020
2	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

RF Electromagnetic Field					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	High Gain Log-Periodic Antenna	R&S	HL046E	100037	Dec. 27, 2020
2	Stacked Log.-Per. Antenna	Schwarzbeck	STLP 9149	9149-658	Dec. 27, 2020
3	Power Amplifier	BONN ELEKTRONIK	BLWA0830-160/100/40D	76788	Dec. 27, 2020
4	Power Amplifier	Micotop	MPA-3-6G-50	MPA1706258	Dec. 27, 2020
5	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 27, 2020
6	Turn Table	UC	UC3000	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Surges					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Surge generator	3ctest	SG-5006G	EC5581149	Dec. 27, 2020
2	Surge CDN	3ctest	SGN-20G	EC5551128	Dec. 27, 2020
3	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

RF Common Mode					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	C/S Generator	SCHLODER	CDG6000	126A1266	Dec. 27, 2020
2	Coupling/Decoupling Network	SCHLODER	CDN M2+3	A2210258	Dec. 27, 2020
3	Coupling/Decoupling Network	TESEQ GmbH	CDN T8-10	45011	Dec. 27, 2020
4	6dB Attenuator	N/A	100W/6dB	N/A	Dec. 27, 2020
5	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Voltage dips and interruptions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Voltage dips and up generator	3ctest	VDG-1105G	EC0171116	Dec. 27, 2020
2	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 27, 2020

Note: The Cal. Interval was one year.

3. EMC EMISSION TEST

3.1. Radiated Emission

LIMIT

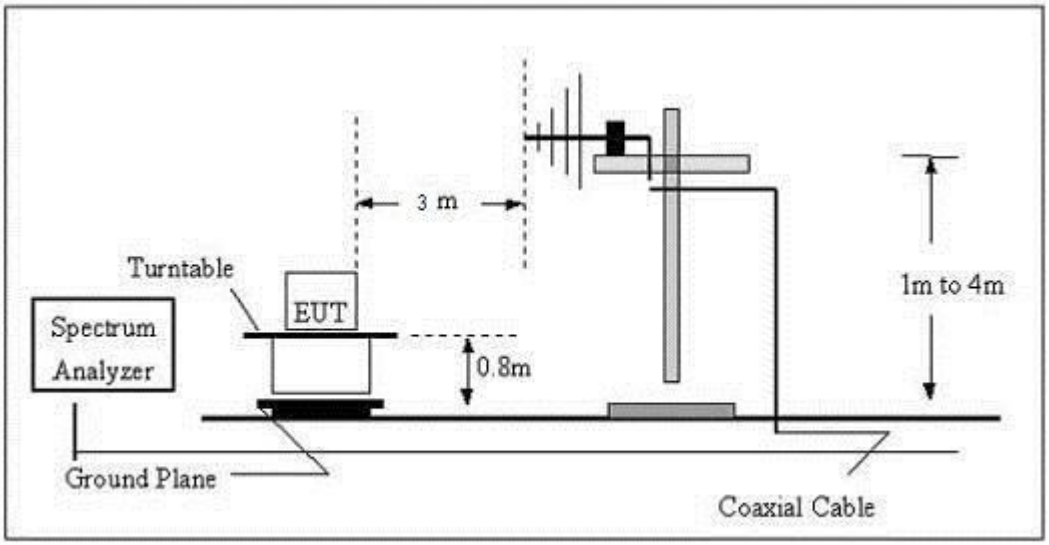
Please refer to ETSI EN301489-1 Clause 8.2.3 Table 4

Frequency range (MHz)	Quasi-peak limits dBμV/m@3m	Quasi-peak limits dBμV/m@10m
30~230	40	30
230~1000	47	37

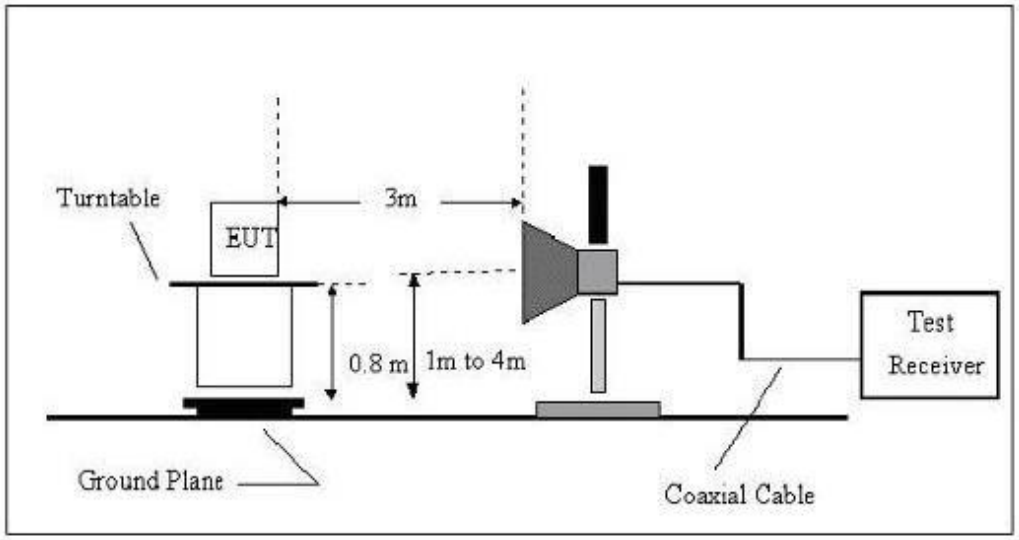
Frequency range (GHz)	Average limits dBμV/m@3m	Peak limits dBμV/m@3m
1 ~ 3	50	70
3 ~ 6	54	74

TEST CONFIGURATION

(A) Radiated Emission Test Set-Up Frequency below 1 GHz



(B) Radiated Emission Test Set-Up Frequency above 1GHz



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.2.3 and CENELEC EN 55032 Clause 6.3 for the measurement methods

TEST MODE

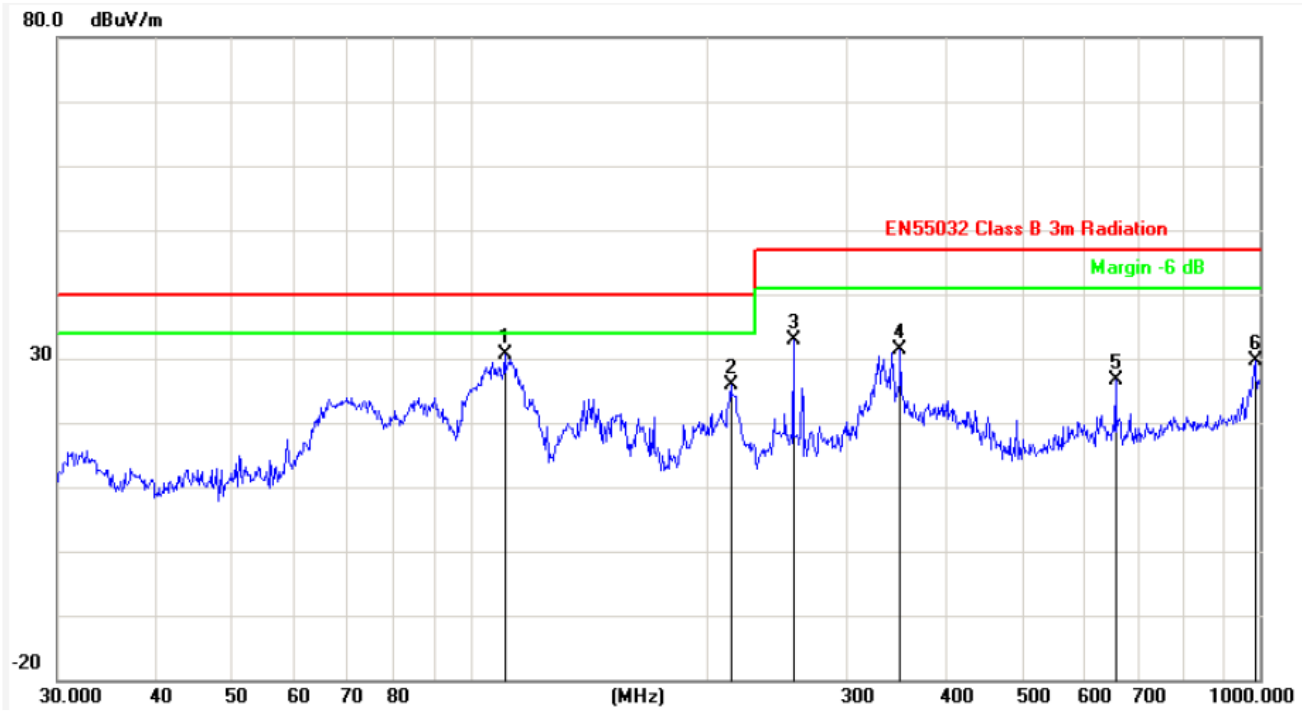
Please refer to the Clause 2.4

TEST RESULTS

Note: 6GHz ~ 40GHz(10 times the carrier frequency)
The EUT was pre-scanned the frequency band (6GHz~40GHz), found the radiated level (Background noise) lower than the limit, so don't show on the report.

(1) 30MHz-1000MHz

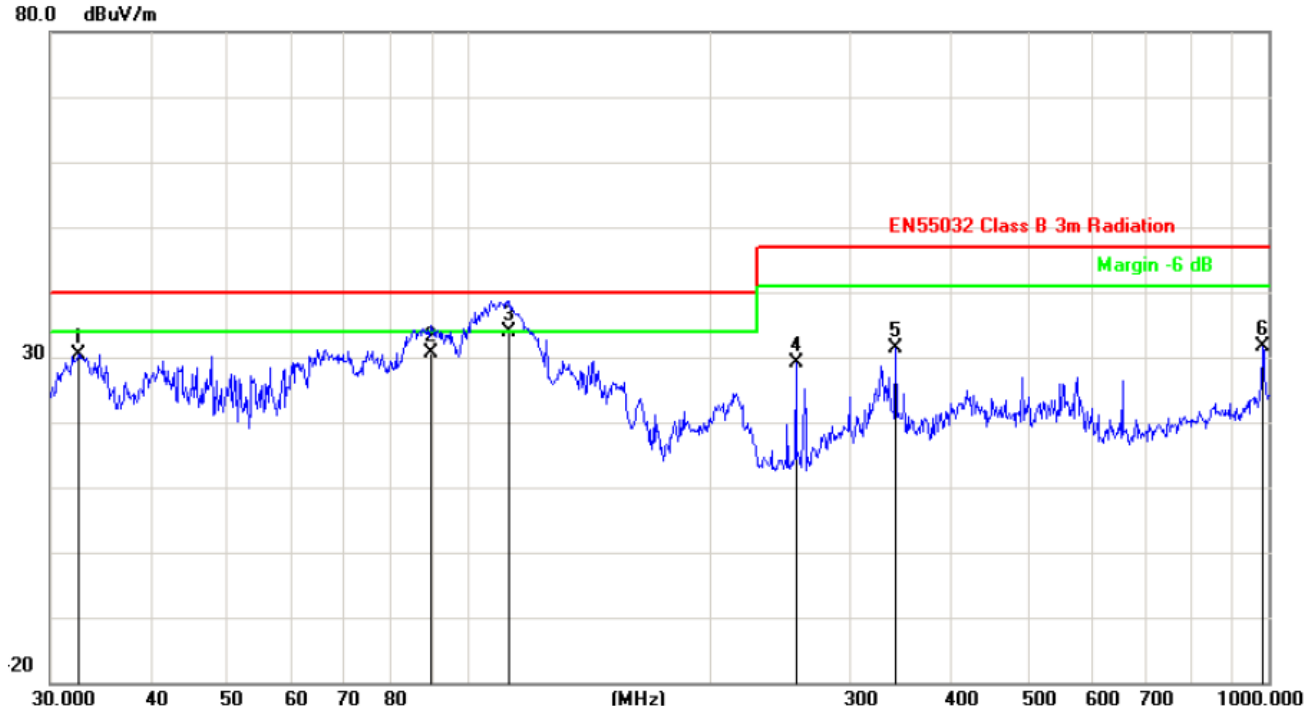
Test Mode	1
Polarization	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	110.5687	-20.10	50.71	30.61	40.00	-9.39	QP
2	213.7634	-20.41	46.32	25.91	40.00	-14.09	QP
3	256.5211	-18.96	51.87	32.91	47.00	-14.09	QP
4	350.4768	-16.71	48.11	31.40	47.00	-15.60	QP
5	656.5300	-11.39	37.96	26.57	47.00	-20.43	QP
6	986.0717	-6.97	36.49	29.52	47.00	-17.48	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

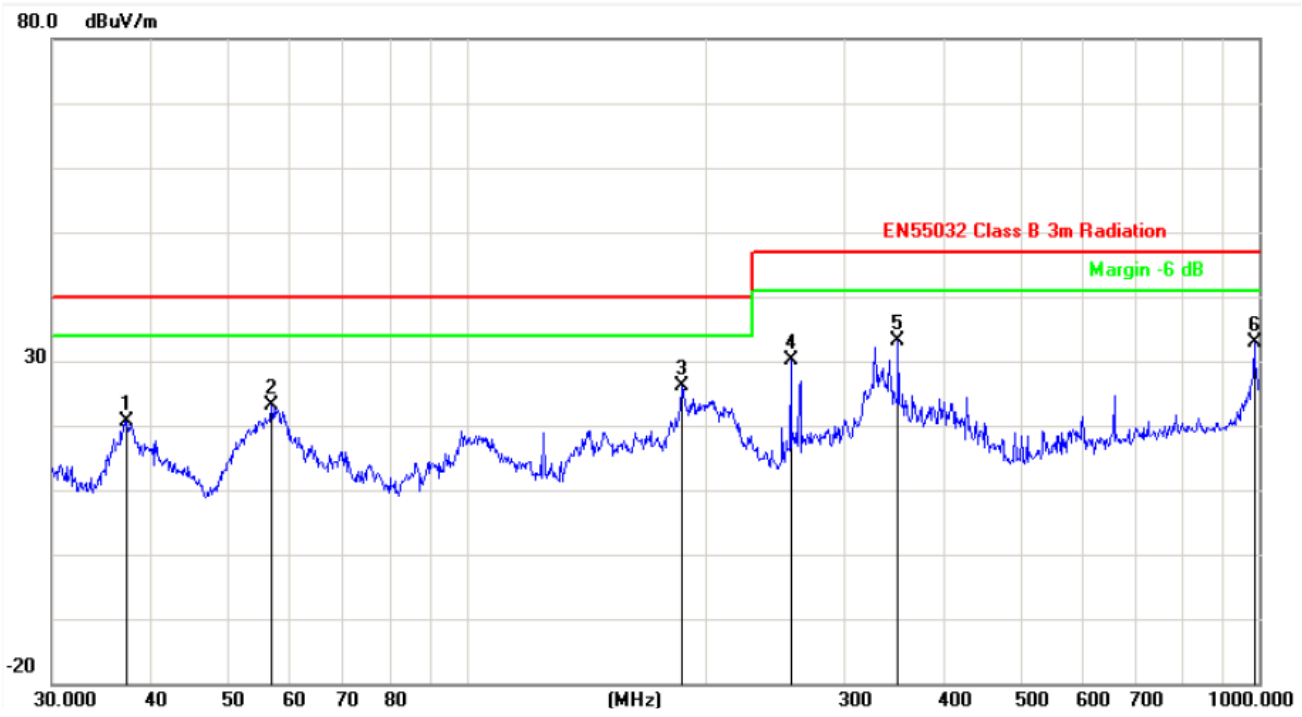
Test Mode	1
Polarization	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.5198	-18.08	48.48	30.40	40.00	-9.60	QP
2	89.5899	-21.74	52.44	30.70	40.00	-9.30	QP
3	112.5244	-19.94	53.74	33.80	40.00	-6.20	QP
4	256.5211	-18.96	48.01	29.05	47.00	-17.95	QP
5	341.9786	-16.89	48.35	31.46	47.00	-15.54	QP
6	982.6200	-7.01	38.64	31.63	47.00	-15.37	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

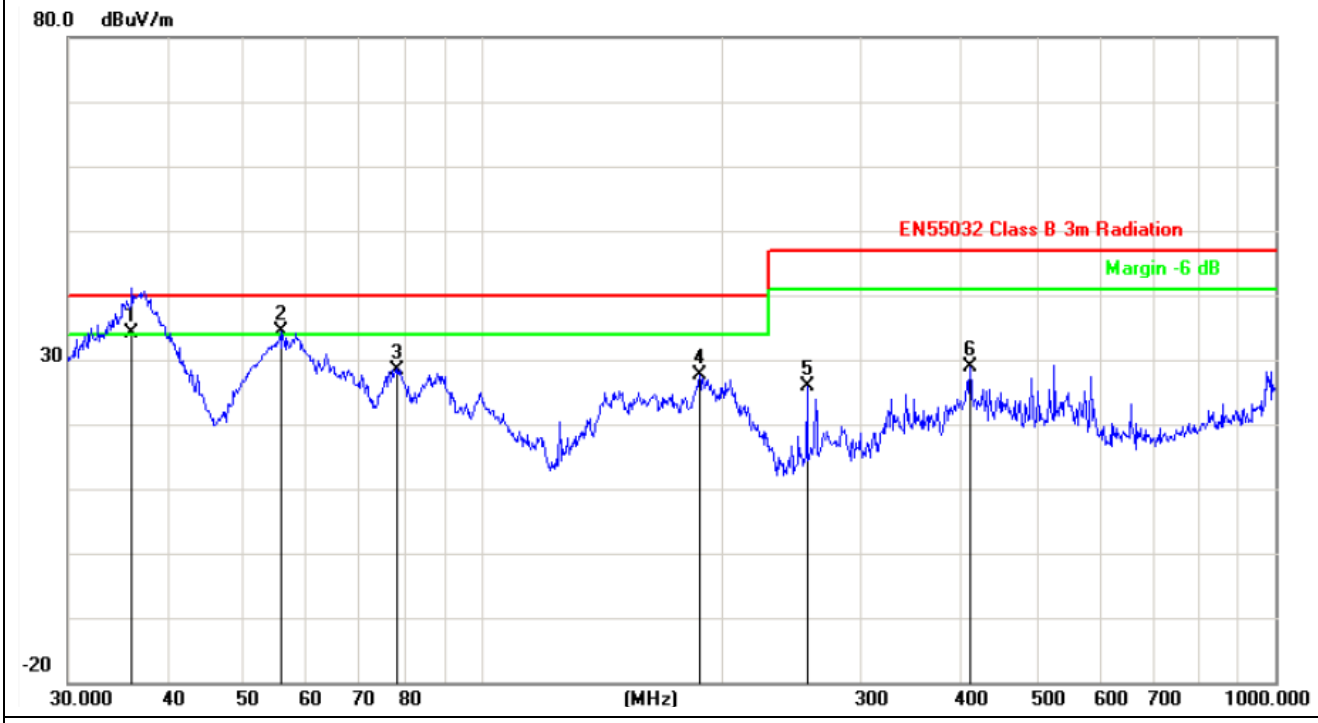
Test Mode	6
Polarization	Horizontal

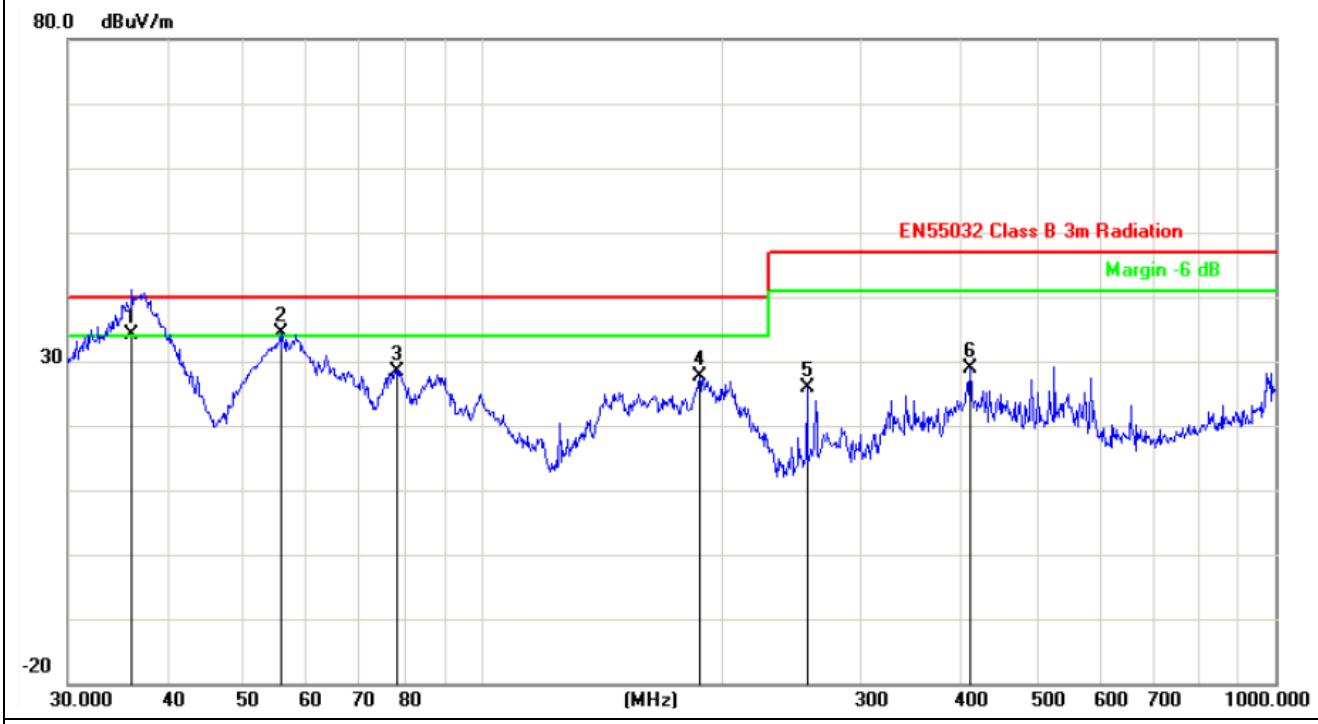


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.2855	-17.68	38.25	20.57	40.00	-19.43	QP
2	56.7917	-18.28	41.46	23.18	40.00	-16.82	QP
3	187.0958	-19.87	45.98	26.11	40.00	-13.89	QP
4	256.5211	-18.96	49.20	30.24	47.00	-16.76	QP
5	350.4768	-16.71	49.95	33.24	47.00	-13.76	QP
6	986.0717	-6.97	39.97	33.00	47.00	-14.00	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Mode	6
Polarization	Vertical

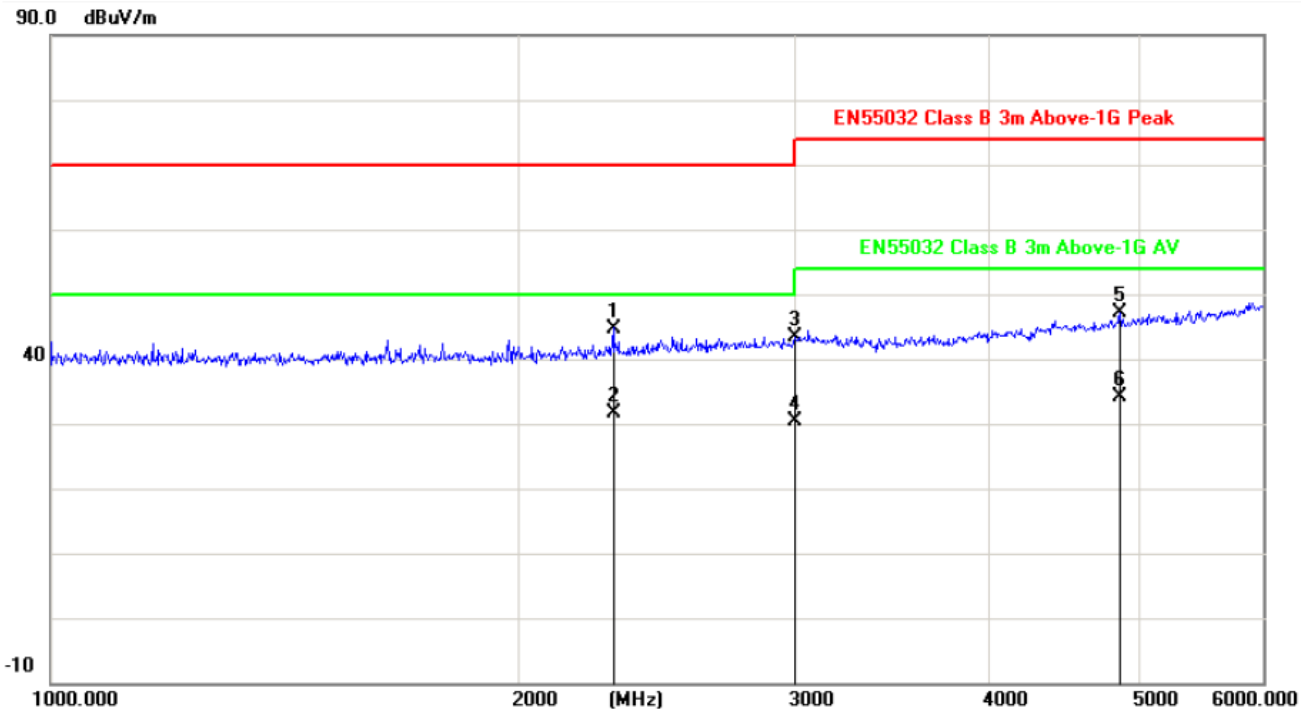




Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

(2) 1GHz-6GHz

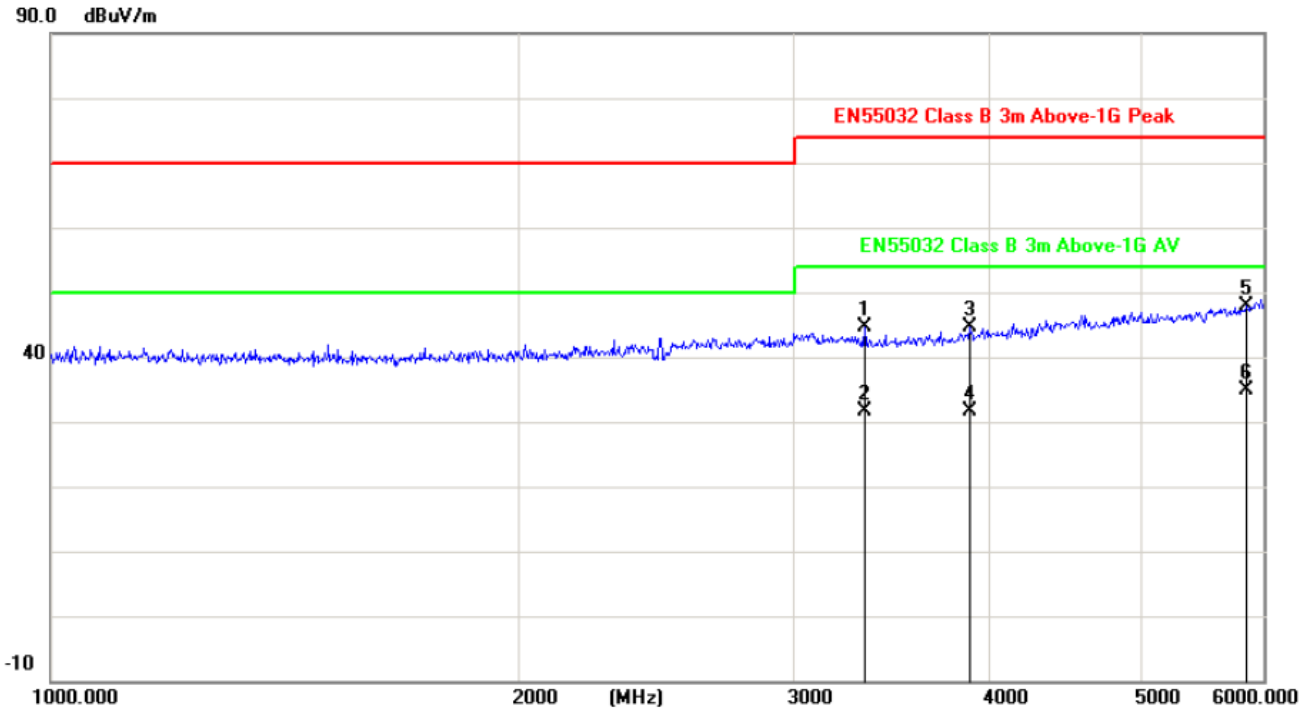
Test Mode	1
Polarization	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2296.477	-8.52	53.27	44.75	70.00	-25.25	peak
2	2296.477	-8.52	40.27	31.75	70.00	-38.25	QP
3	3004.588	-6.53	49.88	43.35	74.00	-30.65	peak
4	3004.588	-6.53	36.88	30.35	74.00	-43.65	QP
5	4856.567	-2.67	49.89	47.22	74.00	-26.78	peak
6	4856.567	-2.67	36.89	34.22	74.00	-39.78	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

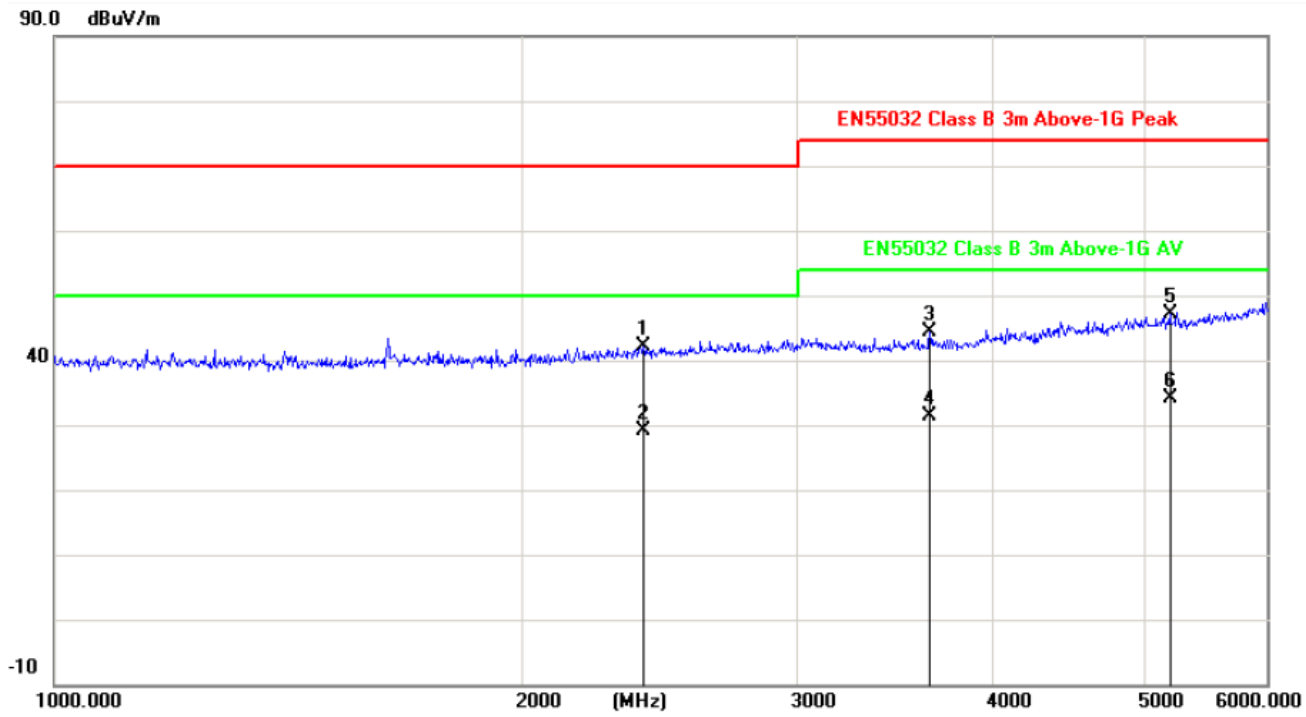
Test Mode	1
Polarization	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	3327.664	-6.52	51.04	44.52	74.00	-29.48	peak
2	3327.664	-6.52	38.04	31.52	74.00	-42.48	QP
3	3889.006	-5.48	50.11	44.63	74.00	-29.37	peak
4	3889.006	-5.48	37.11	31.63	74.00	-42.37	QP
5	5851.364	0.26	47.58	47.84	74.00	-26.16	peak
6	5851.364	0.26	34.58	34.84	74.00	-39.16	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

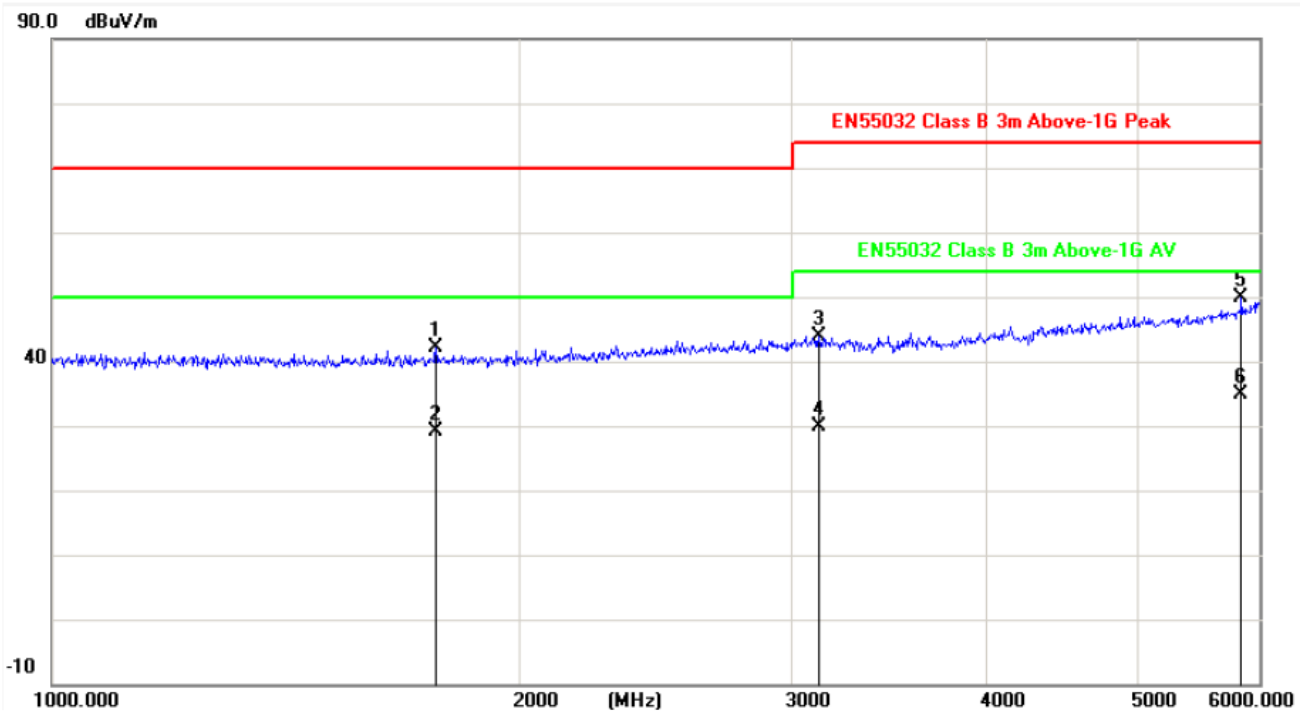
Test Mode	6
Polarization	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2388.809	-8.11	50.25	42.14	70.00	-27.86	peak
2	2388.809	-8.11	37.25	29.14	70.00	-40.86	QP
3	3646.072	-6.12	50.44	44.32	74.00	-29.68	peak
4	3646.072	-6.12	37.44	31.32	74.00	-42.68	QP
5	5198.753	-1.80	48.87	47.07	74.00	-26.93	peak
6	5198.753	-1.80	35.87	34.07	74.00	-39.93	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Mode	6
Polarization	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1767.877	-10.99	53.06	42.07	70.00	-27.93	peak
2	1767.877	-10.99	40.06	29.07	70.00	-40.93	QP
3	3119.795	-6.53	50.48	43.95	74.00	-30.05	peak
4	3119.795	-6.53	36.48	29.95	74.00	-44.05	QP
5	5840.889	0.23	49.62	49.85	74.00	-24.15	peak
6	5840.889	0.23	34.62	34.85	74.00	-39.15	QP

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

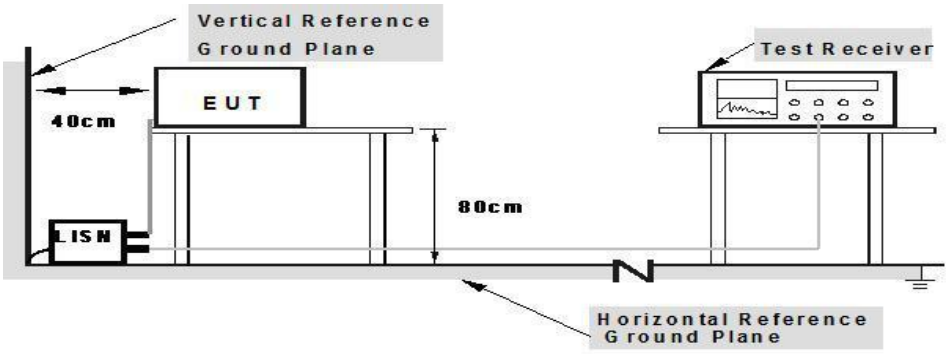
3.2. Conducted Emission(AC Mains)

LIMIT

Please refer to ETSI EN301489-1 Clause 8.4.3.2

Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit shall apply at the transition frequencies. NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

TEST CONFIGURATION



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

TEST PROCEDURE

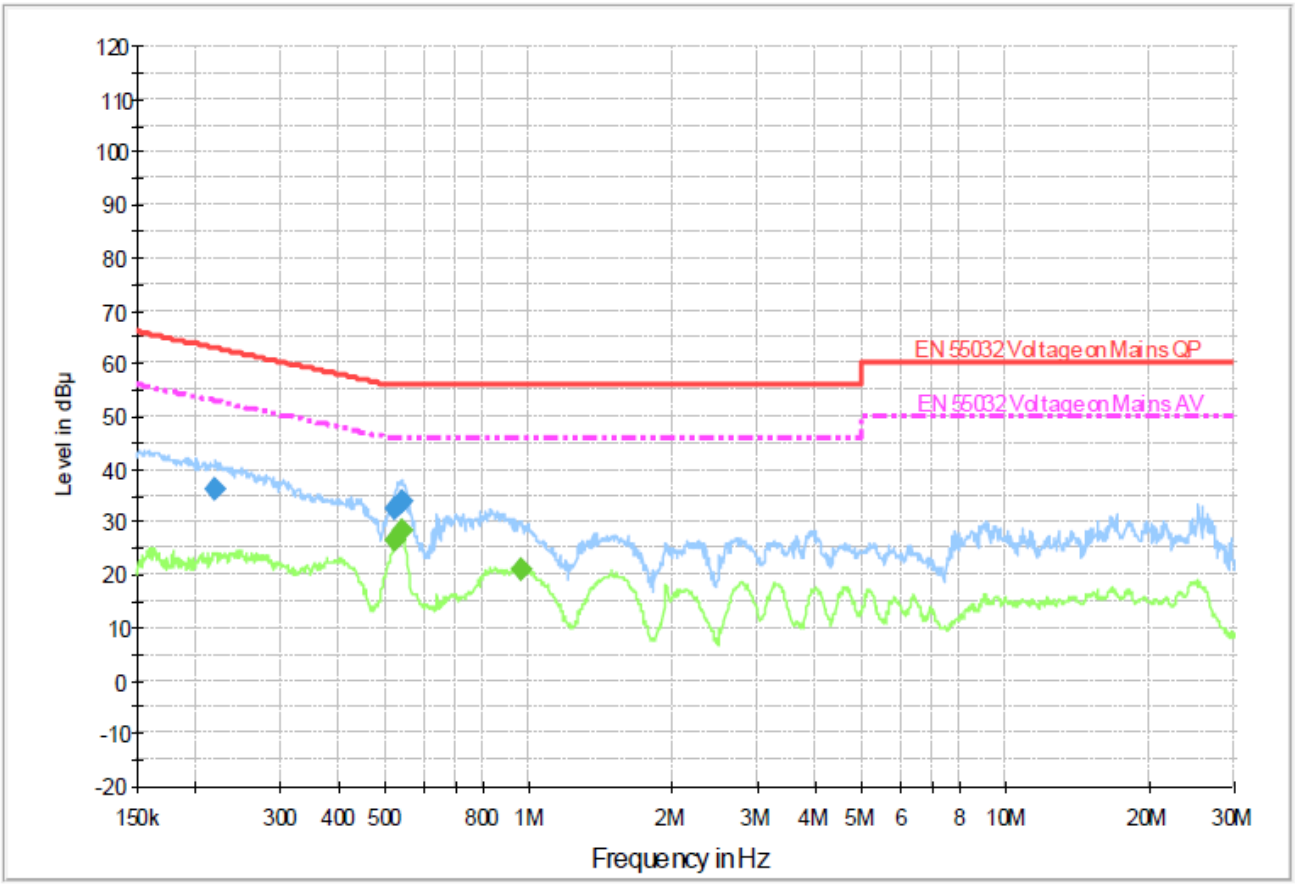
Please refer to ETSI EN 301 489-1 Clause 8.4.3 and CENELEC EN 55032 Annex A3 Table A.8

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode	2	Terminal	Line



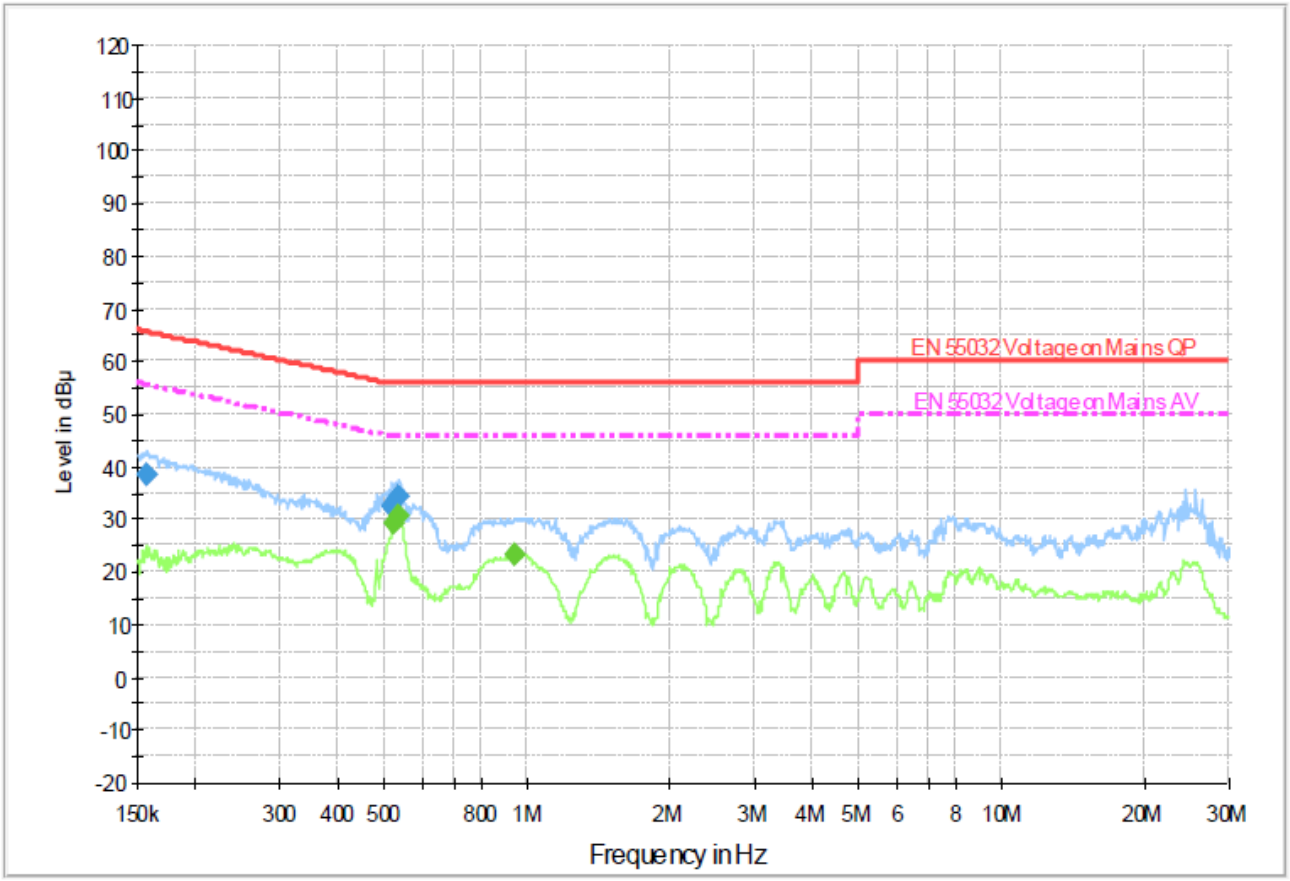
Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.218300	36.3	1000.00	9.000	On	L1	9.4	26.6	62.9	
0.519130	32.6	1000.00	9.000	On	L1	9.4	23.4	56.0	
0.538120	34.0	1000.00	9.000	On	L1	9.4	22.0	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.519130	26.6	1000.00	9.000	On	L1	9.4	19.4	46.0	
0.538120	28.2	1000.00	9.000	On	L1	9.4	17.8	46.0	
0.956170	21.2	1000.00	9.000	On	L1	9.5	24.8	46.0	

Test mode	2	Terminal	Neutral



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.157990	38.6	1000.00	9.000	On	N	9.4	27.0	65.6	
0.515000	32.5	1000.00	9.000	On	N	9.4	23.5	56.0	
0.533840	34.5	1000.00	9.000	On	N	9.4	21.5	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.519130	29.3	1000.00	9.000	On	N	9.4	16.7	46.0	
0.531710	30.8	1000.00	9.000	On	N	9.4	15.2	46.0	
0.941020	23.3	1000.00	9.000	On	N	9.5	22.7	46.0	

3.3. Harmonic Current Emission

LIMIT

EN61000-3-2 Clause 7

- **Class A equipment**

Harmonic order n	Maximum permissible harmonic current A
Odd harmonics	
3	2,30
5	1,14
7	0,77
9	0,40
11	0,33
13	0,21
$15 \le n \le 39$	$0,15 \frac{15}{n}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \le n \le 40$	$0,23 \frac{8}{n}$

- **Class B equipment**

Not exceed the values given in Class A limit multiplied by a factor of 1,5

- **Class C equipment**

Active input power >25 W

Harmonic order n	Maximum permissible harmonic currrent expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda$ *
5	10
7	7
9	5
$11 \le n \le 39$ (odd harmonics only)	3
* λ is the circuit power factor	

Active input power ≤25 W

Harmonic order n	Maximum permissible harmonic current per watt mA/W	Maximum permissible harmonic current A
3	3,4	2,30
5	1,9	1,14
7	1,0	0,77
9	0,5	0,40
11	0,35	0,33
$13 \le n \le 39$ (odd harmonics only)	$\frac{3,85}{n}$	See Table 1

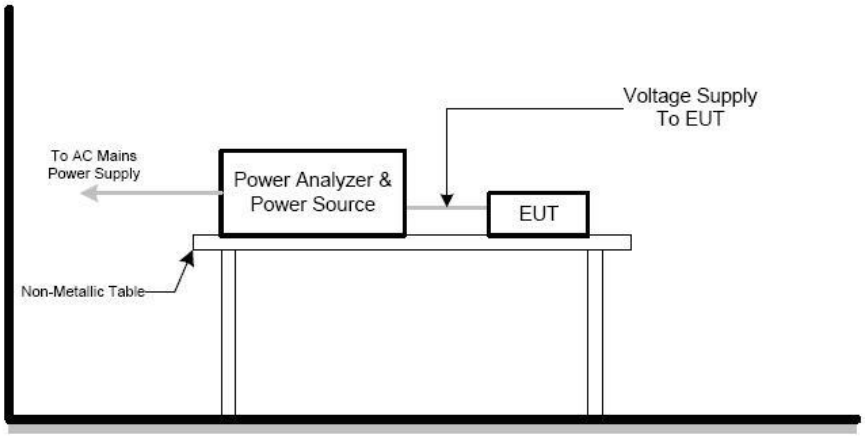
or the third harmonic current, expressed as a percentage of the fundamental current, shall not exceed 86 % and the fifth harmonic current shall not exceed 61 %. Also, the waveform of the input current shall be such that it reaches the 5 % current threshold before or at 60º, has its peak value before or at 65º and does not fall below the 5 %current threshold before 90º, referenced to any zero crossing of the fundamental supply voltage. The current threshold is 5 % of the highest absolute peak value that occurs in the measurement window, and the phase angle measurements

are made on the cycle that includes this absolute peak value

- **Class D equipment**

Harmonic order n	Maximum permissible harmonic current per watt mA/W	Maximum permissible harmonic current A
3	3,4	2,30
5	1,9	1,14
7	1,0	0,77
9	0,5	0,40
11	0,35	0,33
$13 \leq n \leq 39$ (odd harmonics only)	$\frac{3,85}{n}$	See Table 1

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN61000-3-2 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Note: The power of the EUT is less than 75W, So this test item is not applicable.

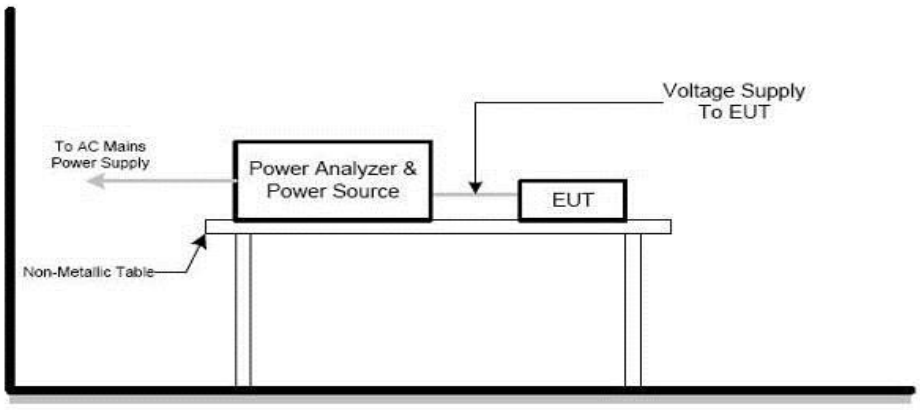
3.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN61000-3-3

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3%	≤ 3.3%	Relative Steady-State V-Chang
dmax	≤ 4%	≤ 4%	Maximum Relative V-change
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN61000-3-3 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode	1

Voltech IEC61000-3 Windows Software 1.27.13	Test Date: 18 Mar 2020 10:24
Type of Test:	Flickermeter Test - Table (EN61000-3-3:2013)
Power Analyzer:	Voltech PM6000 SN: 200006700723 Firmware Version: v1.22.07RC6 Channel(s): 1. SN: 090015502565, 28 Adjusted Date: 2 AUG 2013. 2. SN: 090015500533, 28 Adjusted Date: 19 MAR 2010. 3. SN: 090015502345, 28 Adjusted Date: 21 JUN 2012. 4. SN:None Adjusted Date:None 5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None Shunt(s): 1. SN: 091024303183, 4 Adjusted Date: 8 AUG 2013. 2. SN: 091024302146, 4 Adjusted Date: 22 JUN 2012. 3. SN: 091024302144, 4 Adjusted Date: 22 JUN 2012. 4. SN:None Adjusted Date:None 5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None
AC Source:	Mains / Manual Source
Overall Result: **PASS**	Notes: Measurement method - Voltage

	Pst	dc (%)	dmax (%)	Tmax(> 3.3%)(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.359	0.000	0.819	0

4. EMC IMMUNITY TEST

4.1. Performance criteria

- **EN301489-17:**

General performance criteria

- Performance criteria A for immunity tests with phenomena of a continuous nature;
- Performance criteria B for immunity tests with phenomena of a transient nature;
- Performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following.

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance(see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).

NOTE 1:
Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2:
no degradation of performance after the test is understood as any degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a

permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation(including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria A shall apply.

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

Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100ms and voltage interruptions of 5000 msduration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does notoccur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) ornot-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

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

Performance criteria for Transient phenomena applied to Receivers (TR)

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

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

4.2. Electrostatic Discharge

PERFORMANCE CRITERION

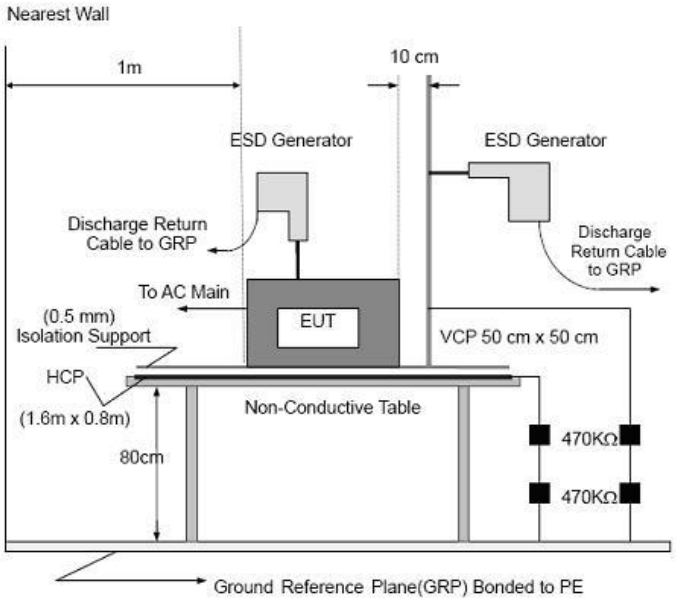
Standard	Criterion
ETSI EN301489-17	Criteria B

TEST LEVEL

Contact Discharge at ±2kV, ±4kV

Air Discharge at ±2kV, ±4kV, ±8kV

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. 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 at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

Indirect discharge for vertical coupling plane:

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

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode		All			
Type	Type of discharge	Discharge voltage (kV)	Observations Performance	Criteria Level	Result
Direct	Contact discharge	±2	A	B	Pass
		±4	A	B	
	Air discharge	±2	A	B	
		±4	A	B	
		±8	A	B	
Indirect	HCP (6 sides)	±2	A	B	Pass
		±4	A	B	
	VCP (4 sides)	±2	A	B	
		±4	A	B	

Note: 1. The ancillary equipment's specification for an acceptable level of performance or degradation of performance during and/or after the ESD tests.

Description of Discharge Point

Contact discharge-Yellow, Air discharge-Red

4.3. Radio Frequency Electromagnetic Field

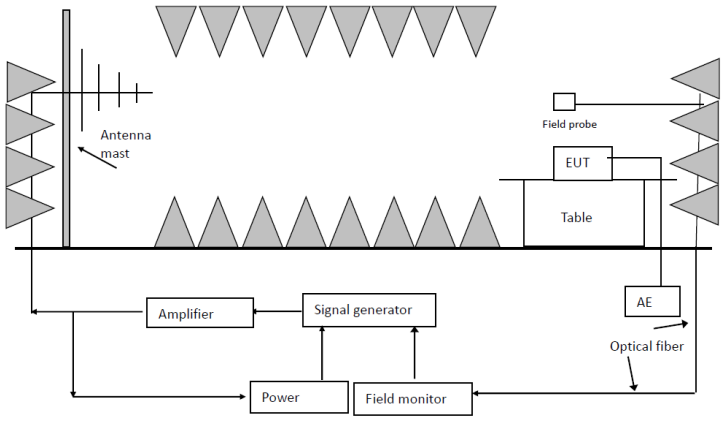
PERFORMANCE CRITERION

Standard	Criterion
ETSI EN301489-17	Criteria A

TEST LEVEL

Condition of Test	Remark
Fielded strength	3V/m
Radiated signal	Modulated
Scanning frequency	80-6000MHz
Sweep time of radiated	0.0015 Decade/s
Dwell time	1 Sec.

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2 and EN 61000-4-3 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode:	All		
Antenna Polarity	Observations (Performance Criterion)	Criteria Level	Result
H/V	A	A	Pass

4.4. Fast Transients Common Mode

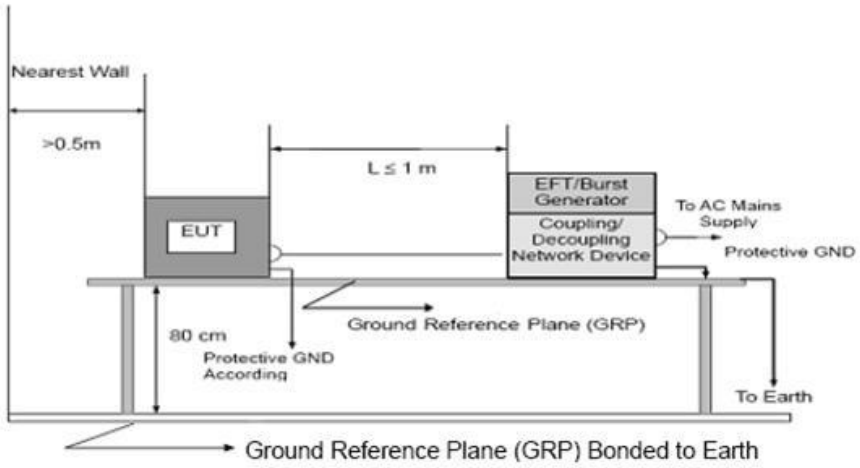
PERFORMANCE CRITERION

Standard	Criterion
ETSI EN301489-17	Criteria B

TEST LEVEL

Level: 1KV for AC port, 0.5KV for signal port
Impulse Frequency: 5 kHz;
Tr/Td: 5/50ns;
Burst Duration: 15ms; Burst Period: 300ms

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode:		All		
Lead under Test	Coupling Direct / Clamp	Observations (Performance Criterion)	Criteria Level	Result
L	Direct	A	B	Pass
N	Direct	A	B	Pass
Signal	Coupling	A	B	Pass

4.5. Surge

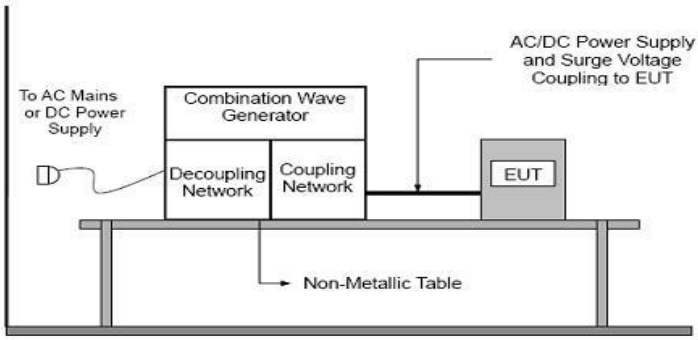
PERFORMANCE CRITERION

Standard	Criterion
ETSI EN301489-17	Criteria B

TEST LEVEL

Level: 1kV for line to line, 2kV for line to ground, 0.5KV for signal port
Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us
Pluse quantity: 5, interval time: 60 seconds
Phase: 0°, 90°, 180°, 270°

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.8.2 and EN 61000-4-5 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode:		All		
Lead under Test	Phase	Observations (Performance Criterion)	Criteria Level	Result
L - N	0°/90°/180°/270°	A	B	Pass
Signal	/	A	B	Pass

4.6. Radio frequency common mode

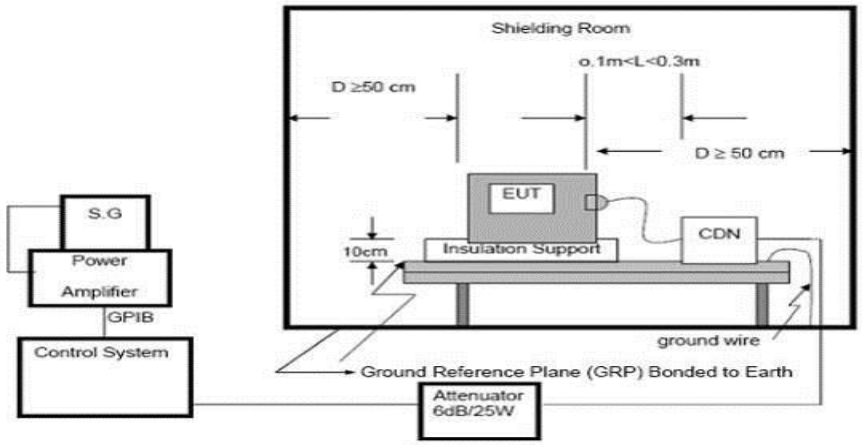
PERFORMANCE CRITERION

Standard	Criterion
ETSI EN301489-17	Criteria A

TEST LEVEL

Test frequency range: 150 kHz~80MHz
Level: 3Vrms
Modulation type: Amplitude Modulation, 80% depth
Modulated signal: 1 KHz sinusoidal audio signal, 400Hz sinusoidal audio signal for audio breakthrough
Frequency increment step: 1%
Dwell time: 3 seconds

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.5.2 and EN 61000-4-6 for the measurement methods.

TEST MODE

Please refer to the Clause 2.4

TEST RESULTS

Test mode:	All		
Injected Position	Observations (Performance Criterion)	Criteria Level	Result
AC Mains	A	A	Pass
Signal	A	A	Pass

4.7. Voltage dips and interruptions

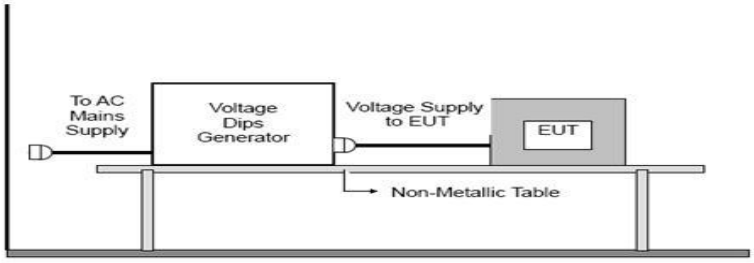
PERFORMANCE CRITERION

Standard	Criterion
ETSI EN301489-17	Criteria B for voltage dip Criteria C for voltage interruption

TEST LEVEL

0% of VT (Supply Voltage) for 0.5 period
0% of VT (Supply Voltage) for 1 period
70% of VT (Supply Voltage) for 25 period
0% of VT (Supply Voltage) for 250 period
Dip quantity: 3, interval time: 10 seconds

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.7.2 and EN 61000-4-11 for the measurement methods.

TEST MODE

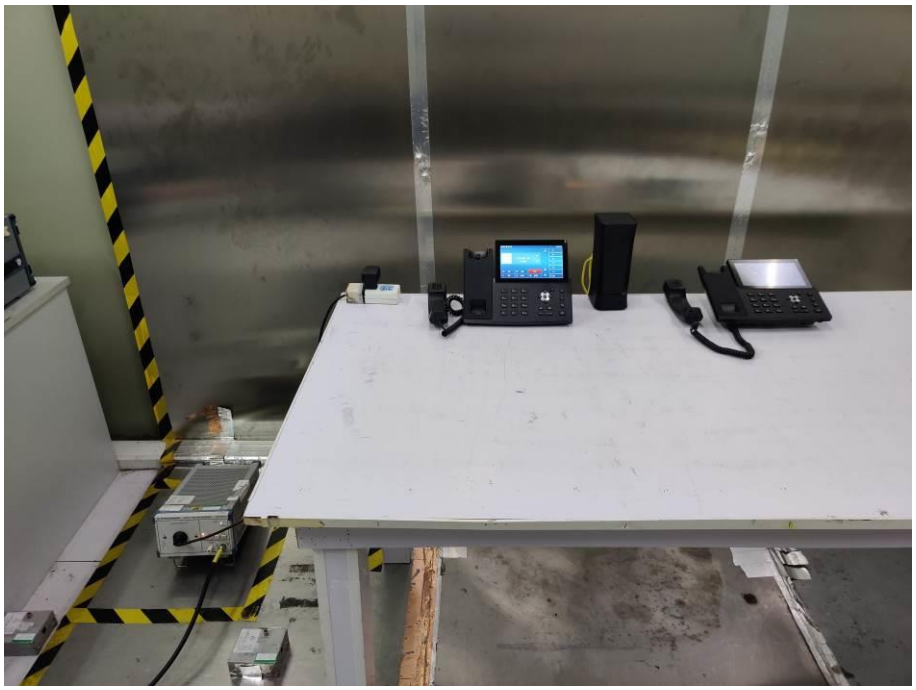
Please refer to the Clause 2.4

TEST RESULTS

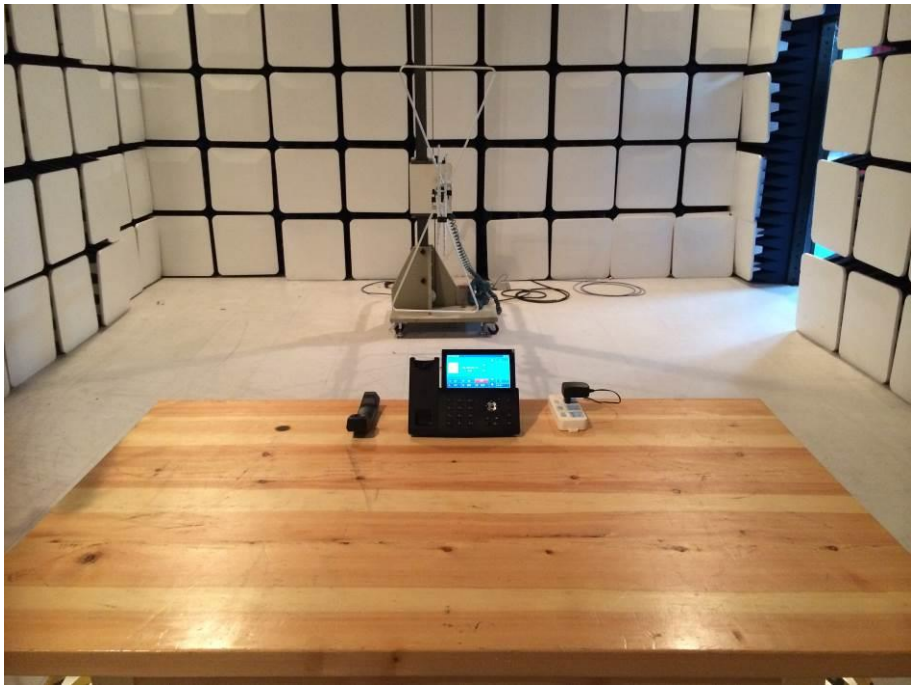
Test mode:		1, 2, 3, 4			
Test Voltage %	Duration periods	Phase angle	Observations (Performance Criterion)	Criteria Level	Result
0	0.5	0°, 45, 90°, 135°, 180°, 225°, 270°, 315°	A	B	Pass
0	1	0°, 45, 90°, 135°, 180°, 225°, 270°, 315°	A	B	Pass
70	25	0°, 45, 90°, 135°, 180°, 225°, 270°, 315°	A	B	Pass
0	250	0°, 45, 90°, 135°, 180°, 225°, 270°, 315°	C	C	Pass

5. EUT TEST PHOTOS

Conducted Emission (AC Mains)



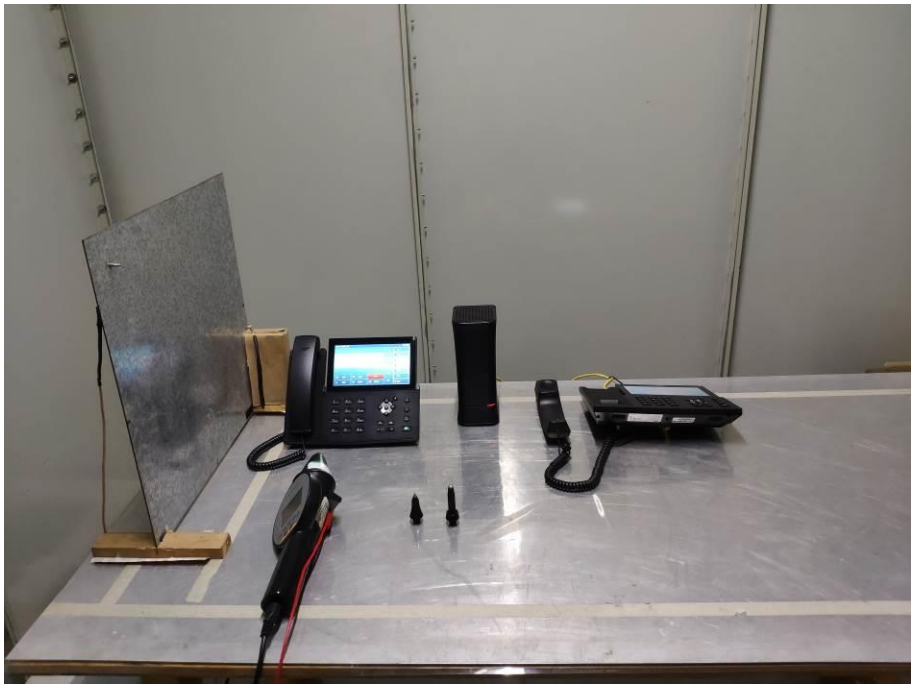
Radiated Measurement (30MHz~1000MHz)



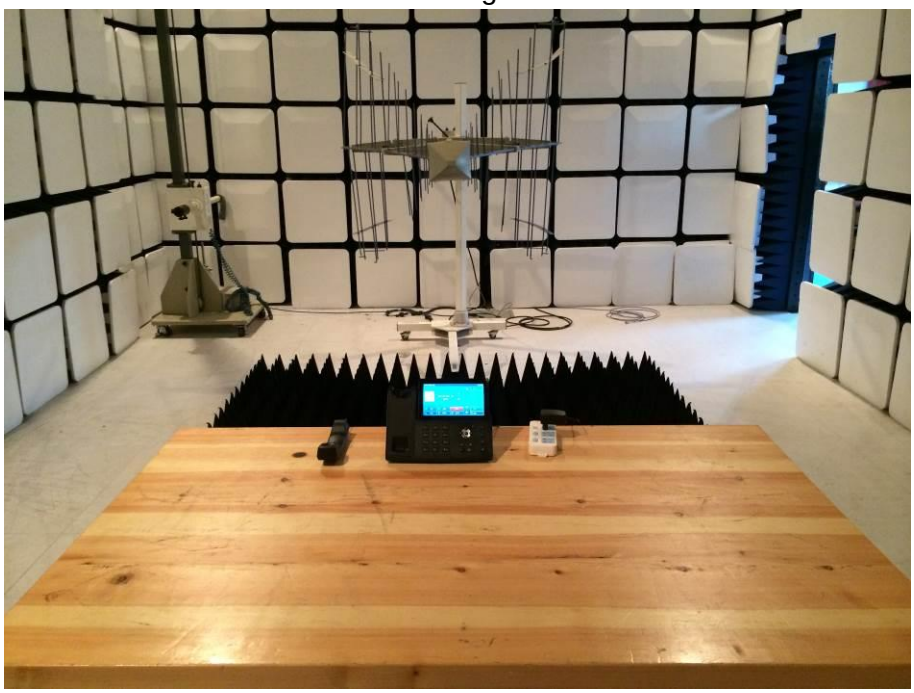
Radiated Measurement (1000~6000MHz)

Harmonic Current Emission/ Voltage Fluctuations & Flicker

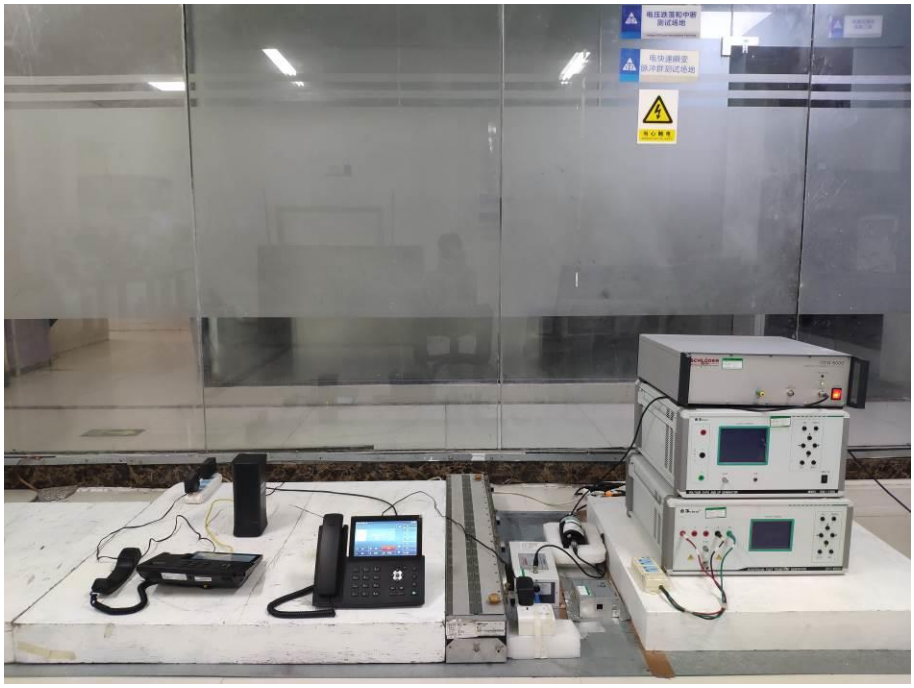
Electrostatic Discharge



RF electromagnetic field



Injected Current



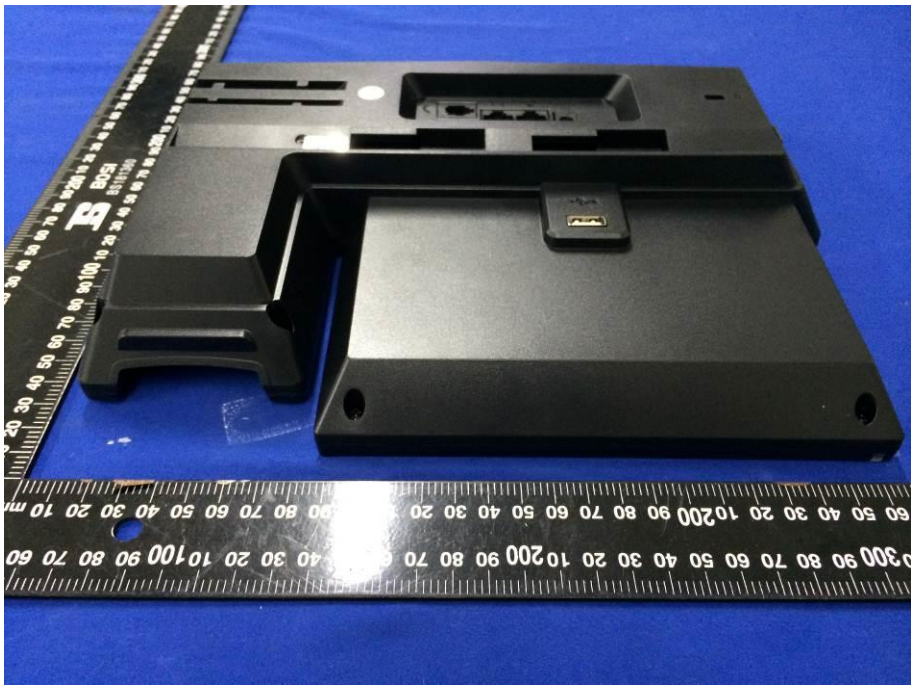
Electric Fast Transients

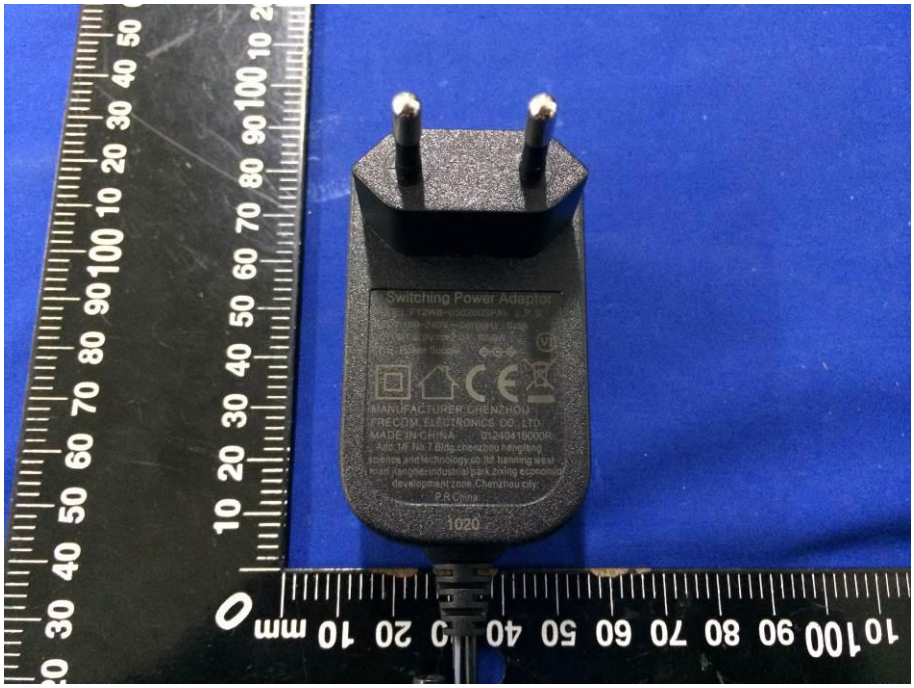
Surges

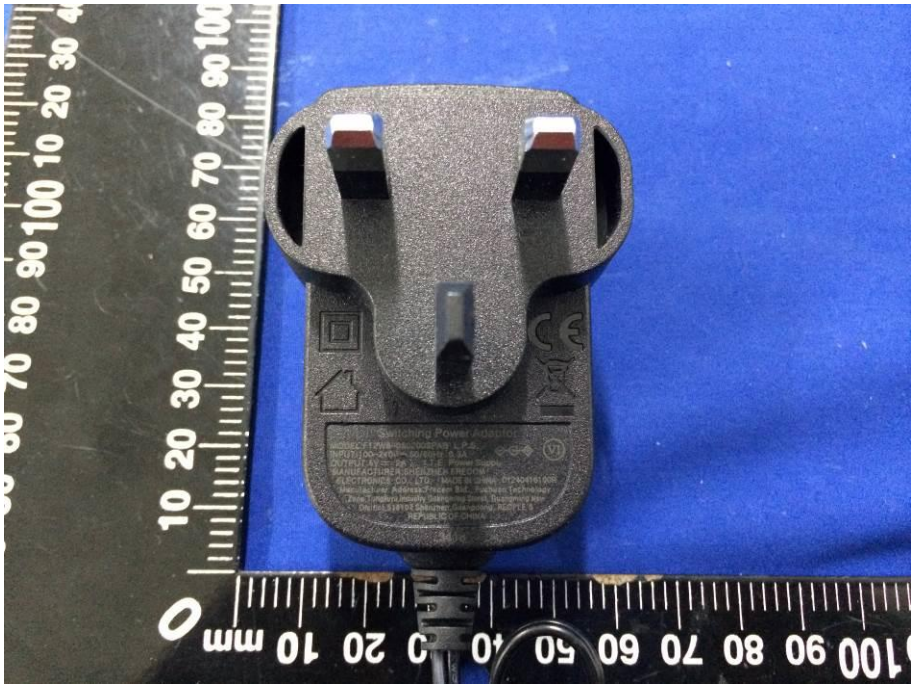
Volt. Interruptions/Volt. Dips

6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

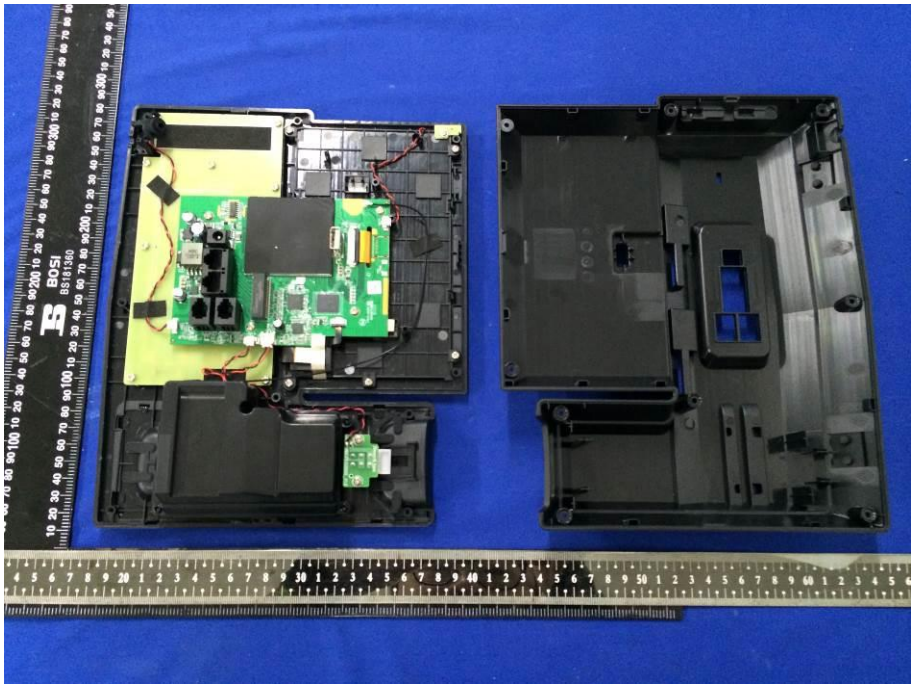
External Photographs

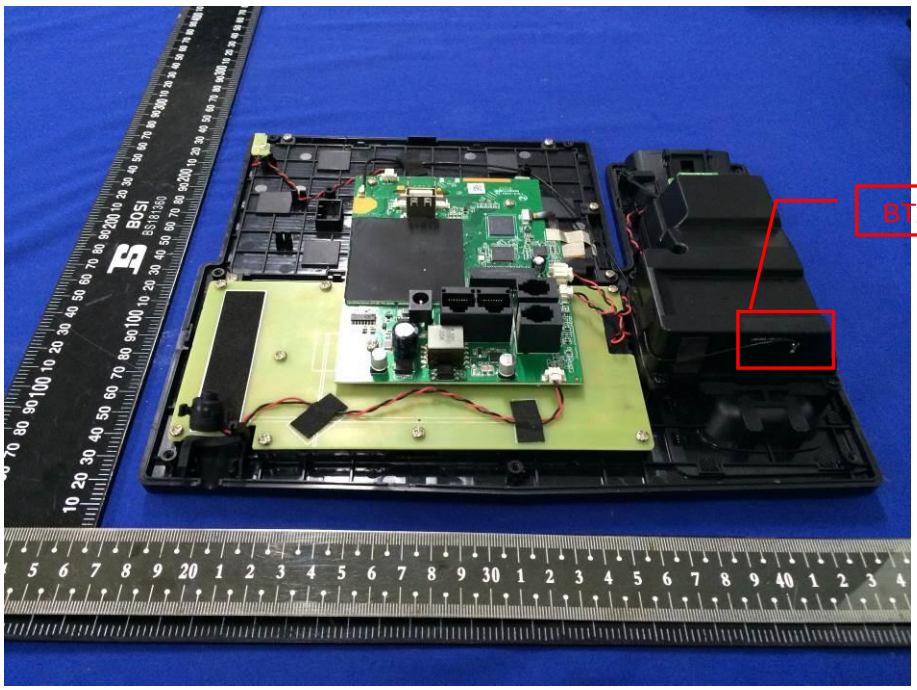


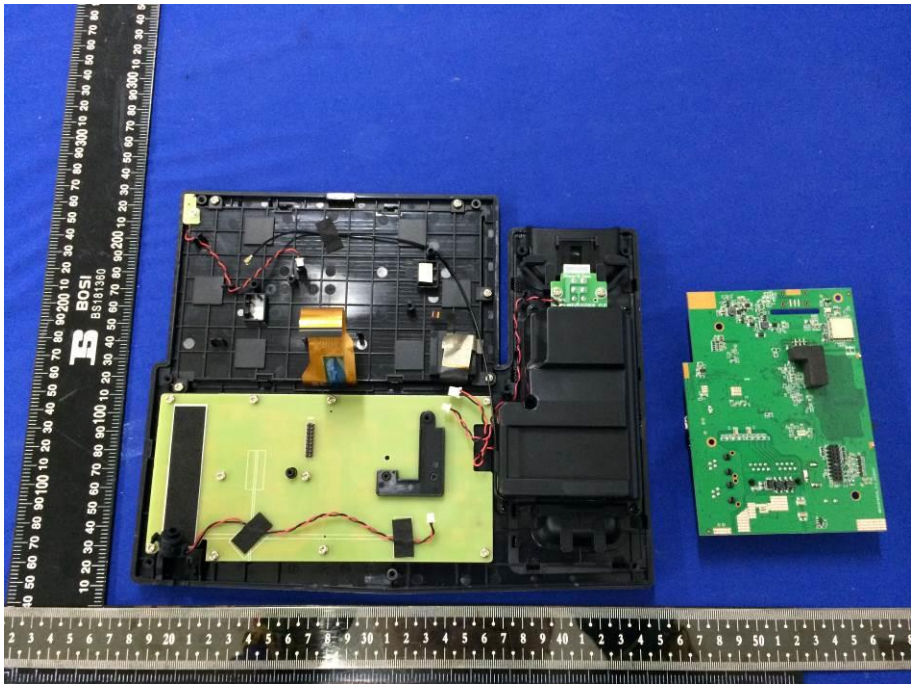

Switching Power Adapter
MANUFACTURER:CHENZHOU
FRECOM ELECTRONICS CO.,LTD.
MADE IN CHINA
P.R.China
1020

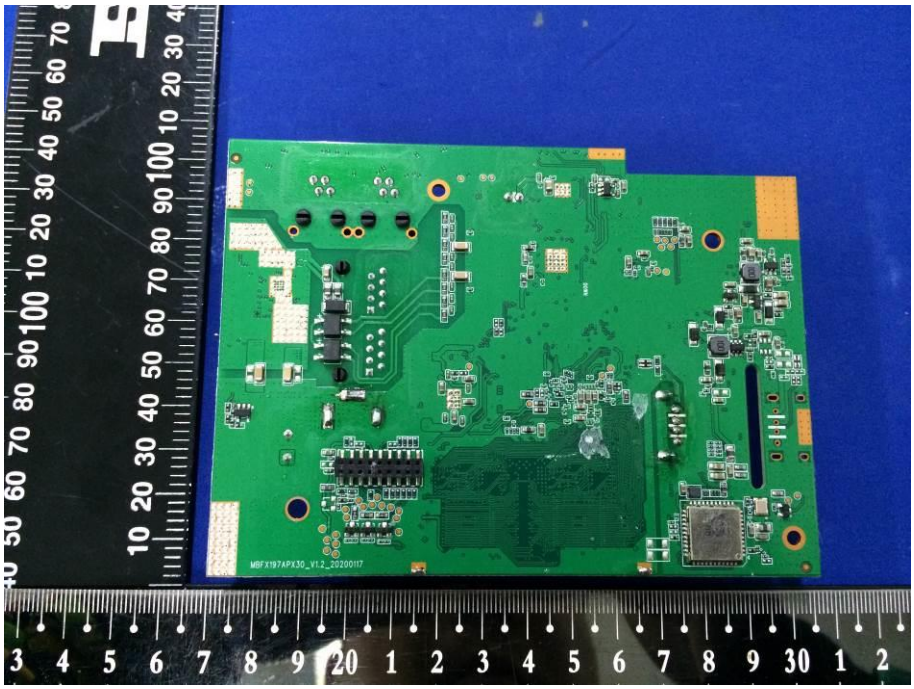


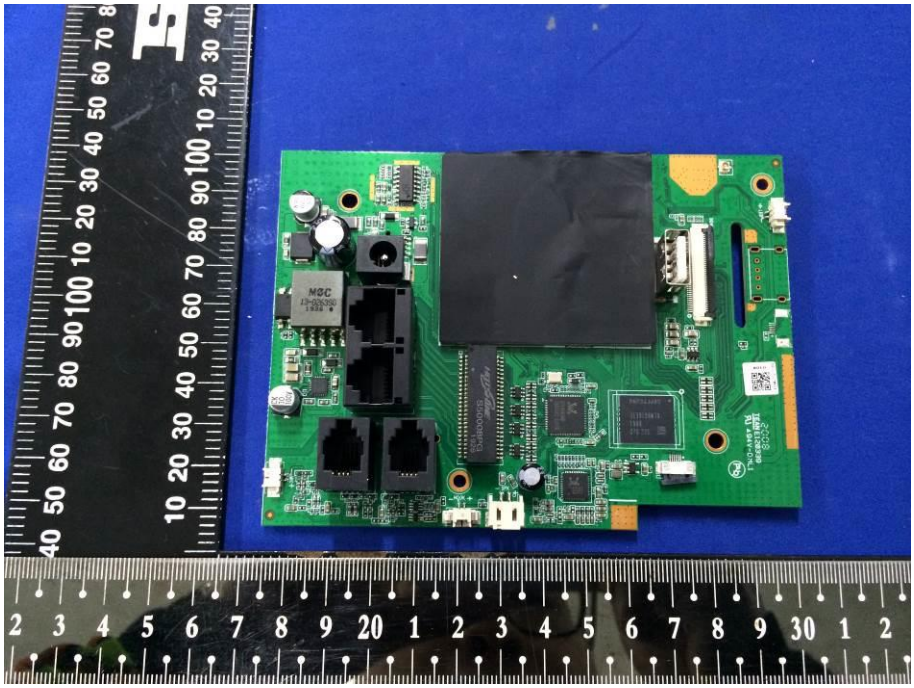
Internal Photographs

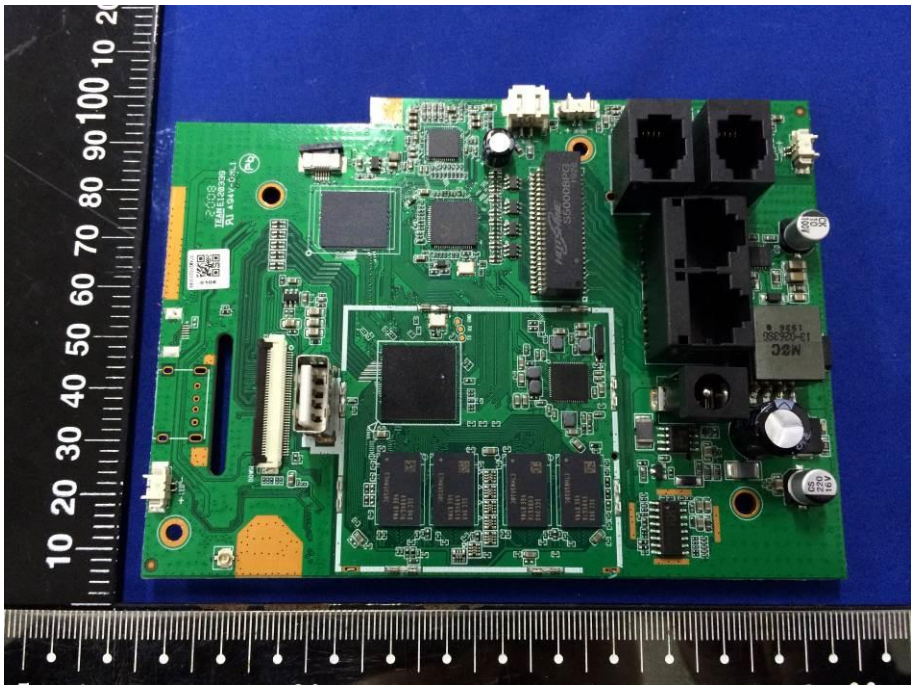


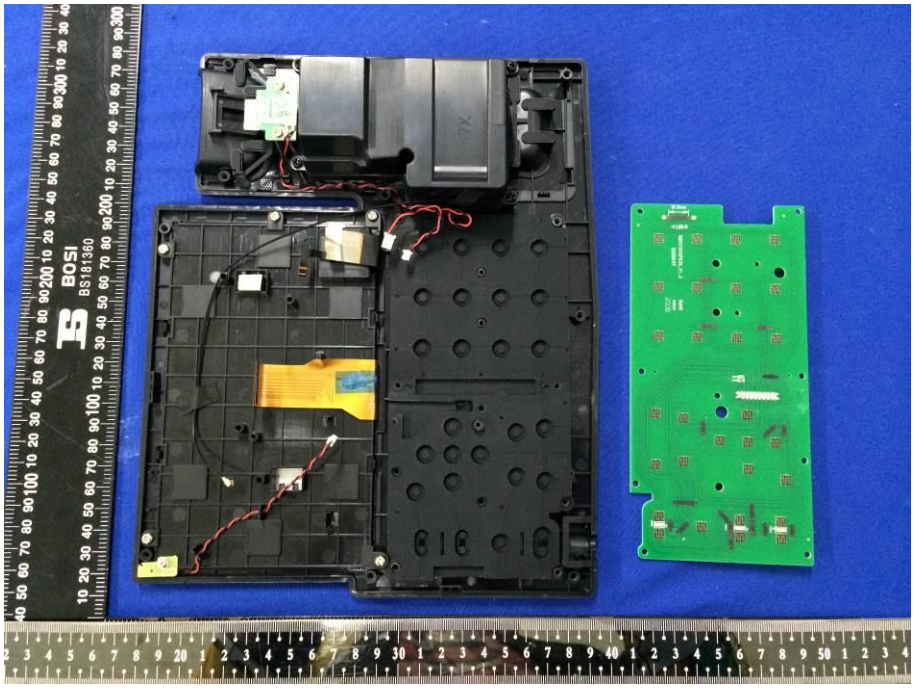


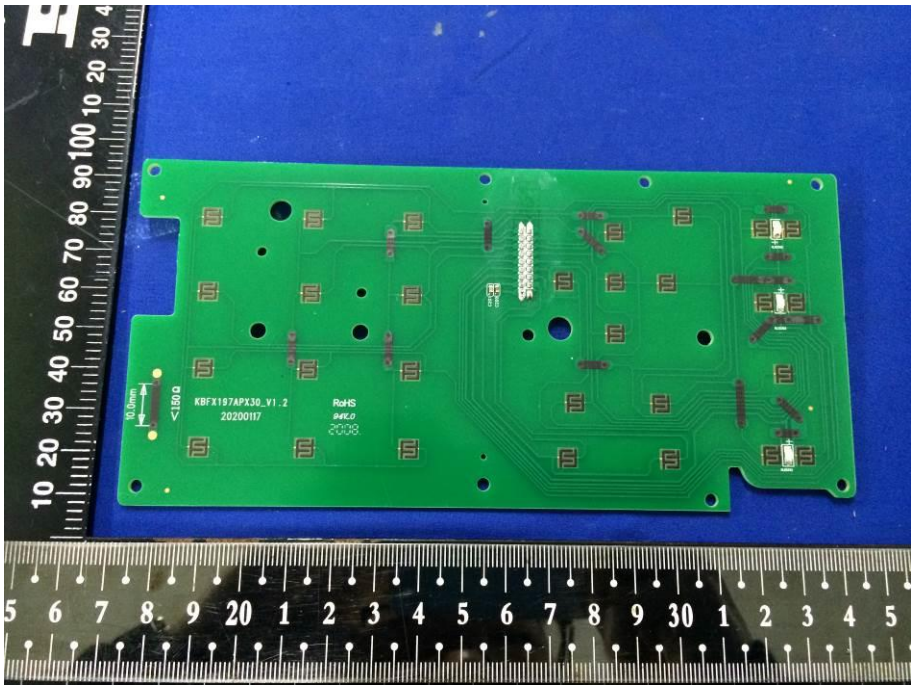


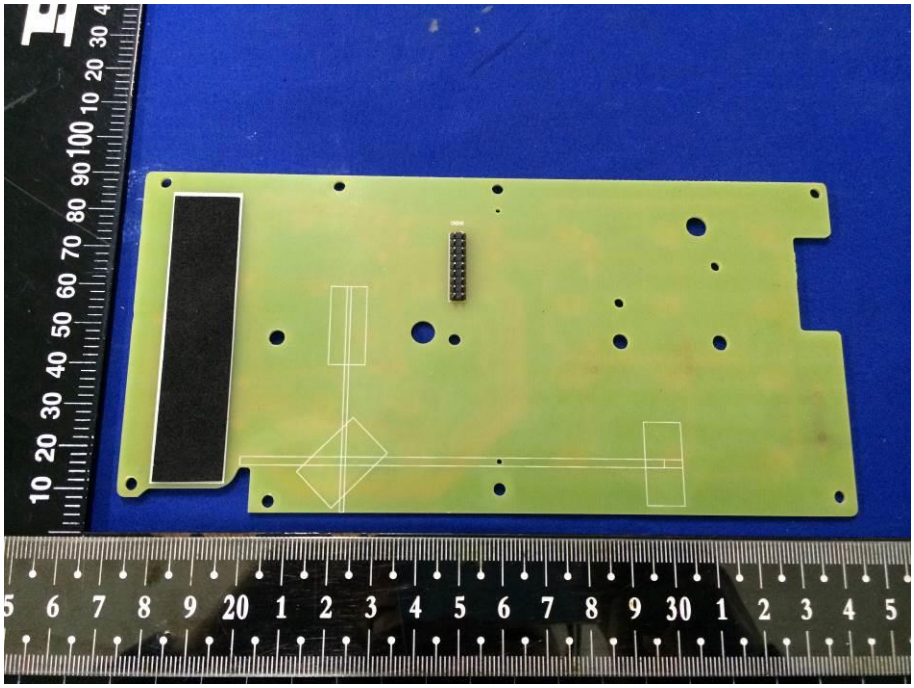


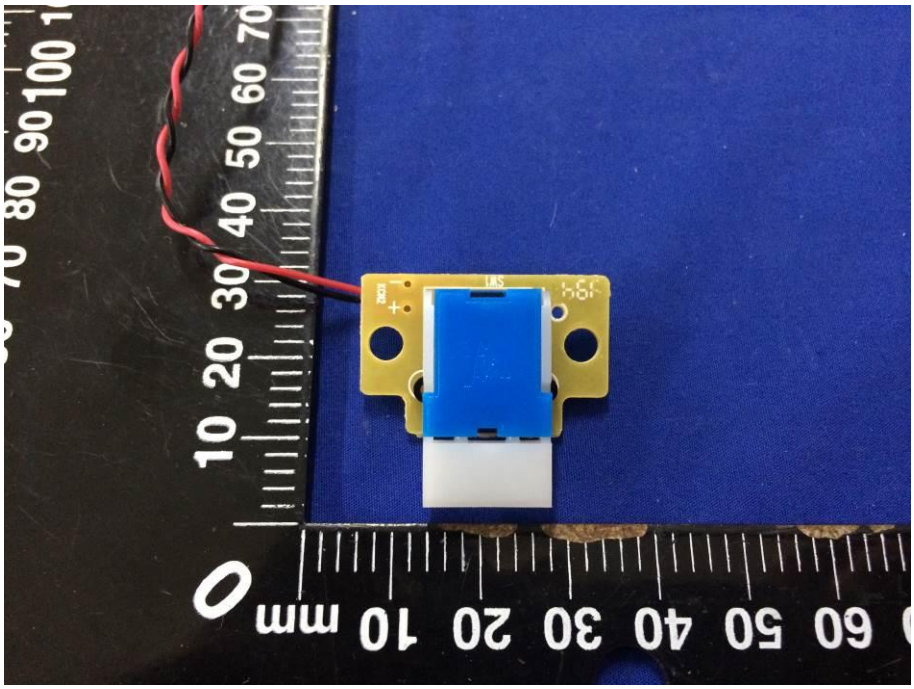


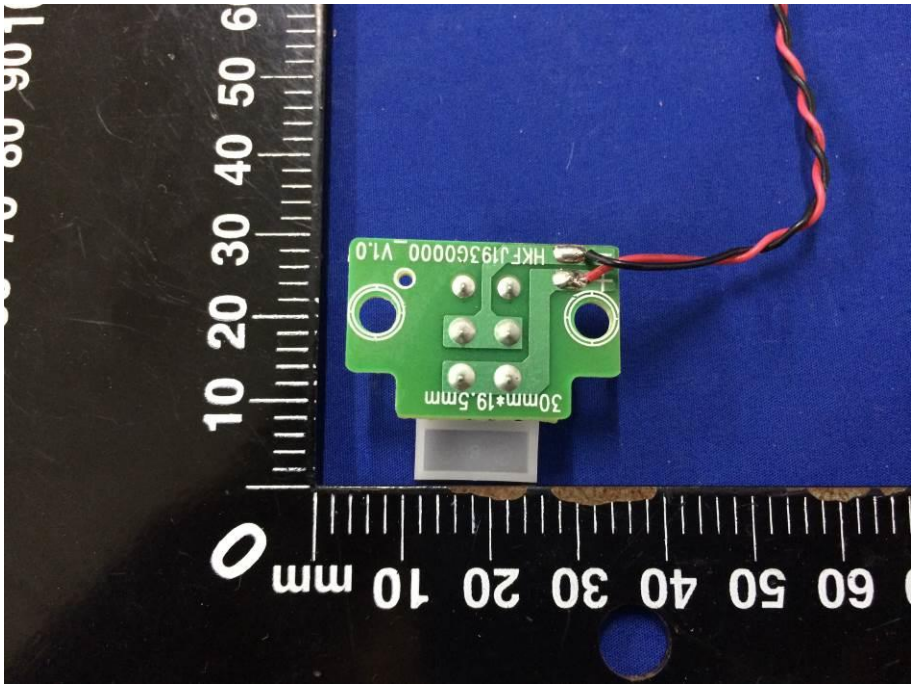


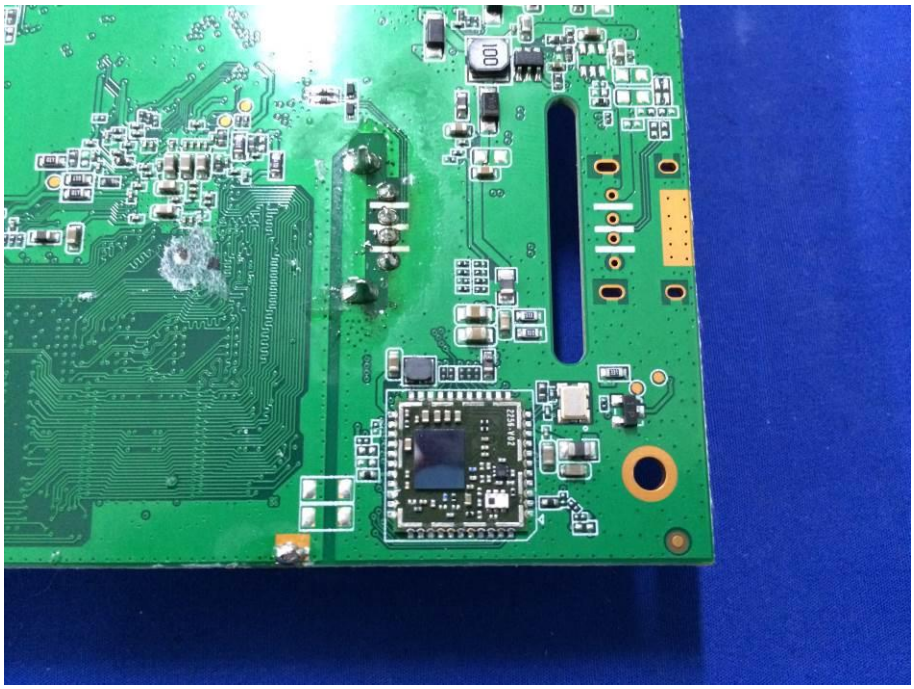









HKF-J193G0000 V1.0
30mm*19.5mm
0 10 20 30 40 50 60
mm 0 10 20 30 40 50 60



**********THE END**********