EMC TEST REPORT

Report No: STS1503069E01

Issued for

Shenzhen Hongjiayuan Communication Technology Co.,Ltd.

6 Floor,Block 12,Dongfangjianfuyusheng Industrial,Gushu,Baoan District,Shenzhen City,China

Product Name:	smart phone
Brand Name:	thl
Model No.:	thl T12
Series Model:	thl T12S, thl T12C, thl T12T, thl T12Pro, thl T12Plus, thl T12Max
Test Standard:	ETSI EN 301 489-1 V1.9.2 (2011-09)
	ETSI EN 301 489-3 V1.6.1 (2013-08)
	ETSI EN 301 489-7 V1.3.1 (2005-11)
	ETSI EN 301 489-17 V2.2.1 (2012-09)
	ETSI EN 301 489-24 V1.5.1 (2010-10)

Shenzhen STS Test Services Co., Ltd.
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Test Report Certification

Applicant's name ..... :	Shenzhen Hongjiayuan Communication Technology Co.,Ltd.
Address ..... :	6 Floor,Block 12,Dongfangjianfuyusheng Industrial,Gushu,Baoan District,Shenzhen City,China
Manufacture's Name ..... :	Shenzhen Hongjiayuan Communication Technology Co.,Ltd.
Address ..... :	6 Floor,Block 12,Dongfangjianfuyusheng Industrial,Gushu,Baoan District,Shenzhen City,China
Product description	
Product name ..... :	smart phone
Trademark ..... :	thl
Model and/or type reference :	thl T12
Serial Model..... :	thl T12S, thl T12C, thl T12T, thl T12Pro, thl T12Plus, thl T12Max
Standards ..... :	ETSI EN 301 489-1 V1.9.2 (2011-09) ETSI EN 301 489-3 V1.6.1 (2013-08) ETSI EN 301 489-7 V1.3.1 (2005-11) ETSI EN 301 489-17 V2.2.1 (2012-09) ETSI EN 301 489-24 V1.5.1 (2010-10)

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the 1999/5/EC R&TTE Directive Art.3.2 requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test ..... :	
Date (s) of performance of tests..... :	25 Mar. 2015 ~31 Mar. 2015
Date of Issue..... :	01 April. 2015
Test Result..... :	**Pass**

Testing Engineer : Hakim. Hou
(Hakim Hou)

Technical Manager : Vita Li
(Vita Li)

Authorized Signatory : Bovey Yang
(Bovey Yang)

TESTING · CONSULING · SOLUTION · CERTIFICATION
STS
APPROVAL

TABLE OF CONTENTS

Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	01 April. 2015	STS1503069E01	ALL	Initial Issue

1. TEST SUMMARY

Test procedures according to the technical standards:

ETSI EN 301 489-1 V1.9.2 (2011-09)
ETSI EN 301 489-3 V1.6.1 (2013-08)
ETSI EN 301 489-7 V1.3.1 (2005-11)
ETSI EN 301 489-17 V2.2.1 (2012-09)
ETSI EN 301 489-24 V1.5.1 (2010-10)

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55022:2010	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	
EN61000-3-2:2006/A2:2009	Harmonic Current Emission	Class A or D NOTE (2)	N/A	
EN 61000-3-3:2008	Voltage Fluctuations & Flicker	------	PASS	
EMC Immunity				
Section EN 55024:2010	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2:2009	Electrostatic Discharge	B	PASS	
EN 61000-4-3:2006	RF electromagnetic field	A	PASS	
EN 61000-4-4:2004/A1:2010	Fast transients	B	PASS	
EN 61000-4-5:2006	Surges	B	PASS	
EN 61000-4-6:2007	Injected Current	A	PASS	
EN 61000-4-11:2004	Volt. Interruptions Volt. Dips	B / C / C **NOTE (3)**	PASS	

NOTE:

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

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

(3) Voltage dip: 100% reduction – Performance Criteria **B**

Voltage dip: 30% reduction – Performance Criteria **C**

Voltage Interruption: 100% Interruption – Performance Criteria **C**

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

1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.
Add.: 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Bao' an District, Shenzhen, China

FCC Registration No.: 842334; IC Registration No.: 12108A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
STSC01	ANSI	150 KHz ~ 30MHz	3.18	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
STSC02	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~ 6 GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	smart phone
Trade Name	thl
Model Name	thl T12
Serial Model	thl T12S, thl T12C, thl T12T, thl T12Pro, thl T12Plus, thl T12Max
Model Difference	They are different only for model name.
Frequency Bands:	GSM 900: 880.2 MHz to 914.8 MHz GSM1800: 1710.2 MHz to 1784.8 MHz WCDMA Band I: 1920 MHz to 1980 MHz Bluetooth: 2402 MHz -2480 MHz WI-FI IEEE 802.11 b/g/20n: 2412MHz to 2472 MHz WI-FI IEEE 802.11 40n: 2422MHz to 2462 MHz GPS: 1.57542GHz
Modulation Mode:	GSM / DCS: GMSK WCDMA(HSUPA/HSDPA): QPSK IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS (CCK, DQPSK,DBPSK)+OFDM (QPSK, BPSK, 16-QAM, 64-QAM) IEEE 802.11n: OFDM(MCS 0-7) Bluetooth: GFSK, π/4-DQPSK, 8-DPSK GPS: BPSK
SIM CARD	SIM 1 and SIM 2 is a chipset unit and tested as single chipset
Power Rating	DC 3.8V from battery
Adapter	Input: AC100-240V, 0.15 A, 50/60 Hz Output: DC5V, 0.5A
Battery	Rated Voltage: 3.8V Charge Limit: 4.35V Capacity: 1800mAh
Antenna:	PIFA
Connecting I/O Port(s)	Micro B USB port
Hard Ware Version	V01
Soft Ware Version	thl.T12.171A.1373GWM.V02.A1.150209.KK1.V2_10.HD.MV88.B1B5

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 DESCRIPTION OF TEST MODES

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
   To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	WCDMA Band I
Mode 2	WIFI Mode
Mode 3	GSM900/1800 Mode
Mode 4	GPRS900/1800 Mode
Mode 5	EDGES900/1800 Mode
Mode 6	GPS
Mode 7	BT Mode
Mode 8	FM/Play music/Camera mode

For Conducted Test	
Final Test Mode	Description
Mode 1	WCDMA Band I

For Radiated Test	
Final Test Mode	Description
Mode 1	WCDMA Band I

For EMS Test	
Final Test Mode	Description
Mode 1	WCDMA Band I
Mode 2	WIFI Mode
Mode 3	GSM900/1800 Mode
Mode 4	GPRS900/1800 Mode
Mode 5	EDGES900/1800 Mode
Mode 6	GPS
Mode 7	BT Mode
Mode 8	FM/Play music/Camera mode

NOTE: The test modes were carried out for all operation modes(include link and idle).The final test mode of the EUT was the worst test mode for EMI, and its test data was showed.

2.3 DESCRIPTION OF TEST SETUP

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	smart phone	thl	thl T12	N/A	EUT
E-2	Adapter	thl	XT-076E-UB76	N/A	
E-3	Earphone	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.5m	
C-2	NO	NO	1.0m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 MEASUREMENT INSTRUMENTS LIST

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

CONDUCTED EMISSION

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESPI	102086	2014.10.25	2015.10.24
LISN	R&S	ENV216	101242	2014.10.25	2015.10.24
LISN	EMCO	3810/2NM	000-23625	2014.10.25	2015.10.24
Absorbing clamp	R&S	MDS-21	100668	2014.10.27	2015.10.26
Temperature & Humitidy Chamber	Mieo	HH660	N/A	2014.10.27	2015.10.26
Conduction Cable	EM	C01	N/A	2014.10.25	2015.10.24
Clamp Cable	EM	C02	N/A	2014.10.25	2015.10.24

RADIATED TEST SITE

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Universal Radio Communication Tester	R&S	CMU200	112012	2014.10.25	2015.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2014.10.25	2015.10.24
Test Cable	N/A	R-01	N/A	2014.10.25	2015.10.24
Test Cable	N/A	R-02	N/A	2014.10.25	2015.10.24
EMI Test Receiver	R&S	ESCI	101427	2014.10.25	2015.10.24
Antenna Mast	EM	SC100_1	N/A	N/A	N/A
Turn Table	EM	SC100	060531	N/A	N/A
Spectrum Analyzer	Aglient	E4407B	MY50140340	2014.10.25	2015.10.24
Horn Antenna	Schwarbeck	BBHA 9120D	9120D-963	2014.10.25	2015.10.24
Pre-Amplifier	DASY 5	NO. WL-42W	9638	2014.10.25	2015.10.24

HARMONICS AND FILCK

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Harmonic Voltage & Flicker	LAPLACE	AC 2000A	3112217	2014.10.25	2015.10.24
AC Power Source	MTONI	PHF-5010	631169	2014.10.25	2015.10.24

ESD

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
ESD TEST GENERATOR	HTEC	HESD30	143802	2014.10.25	2015.10.24

RS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Generator	R&S	SMF100A	104260	2014.10.27	2015.10.26
Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	2014.08.15	2015.08.15
Power Amplifier	AR	150W1000M1	320946	2014.09.23	2015.09.22
Microwave Horn Antenna	AR	AT4002A	321467	2014.06.11	2015.06.10
Power Amplifier	AR	25S1G4A	308598	2014.09.23	2015.09.22
Audio Power Amplifier	B&K	2716-C-001	2610976	2015.03.08	2016.03.07
Mouth Simulator	B&K	4227	2630621	2015.03.08	2016.03.07
Sound Calibrator	B&K	4231	2637486	2015.03.08	2016.03.07
1/2Ⅱ Pressure-field Microphone	B&K	4192	2641678	2015.03.08	2016.03.07
Ear Simulator for Telephonometry	B&K	4185	2553612	2015.03.08	2016.03.07
Telephone Test Head	B&K	4185	2631728	2015.03.08	2016.03.07
Universal Radio Communication Tester	R&S	CMU200	0304789	2015.03.08	2016.03.07
Audio Analyzer	R&S	UPV	100419	2015.03.08	2016.03.07

SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Surger Generator	HTEC	HCWG71	143804	2014.10.25	2015.10.24
Surger Generator	HTEC	SCDN161P	143805	2014.10.25	2015.10.24
VOLTAGE DIPS & INTERRUPTIONS Generator	HTEC	HPFS 161P	143803	2014.10.25	2015.10.24
EFT/B Generator	HTEC	HEFT 51	143801	2014.10.25	2015.10.24

MF

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
MF Generator	HTEC	HMFG-COMB	143903	2014.10.25	2015.10.24

INJECTION CURRENT

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
CS	SCHLODER	CDG-6000-25	126A1280/2014	2014.10.25	2015.10.24
CDN	SCHLODER	CDN-M2+3	A2210275/2014	2014.10.25	2015.10.24
EM Clamp	FCC	F-203I-23MM	504	2014.06.09	2015.06.08
Attenuator	HTEC	ATT-6DB-100	A100W224	2014.10.25	2015.10.24
Audio Power Amplifier	B&K	2716-C-001	2610976	2015.03.08	2016.03.07
Mouth Simulator	B&K	4227	2630621	2015.03.08	2016.03.07
Sound Calibrator	B&K	4231	2637486	2015.03.08	2016.03.07
1/2ll Pressure-field Microphone	B&K	4192	2641678	2015.03.08	2016.03.07
Ear Simulator for Telephonometry	B&K	4185	2553612	2015.03.08	2016.03.07
Telephone Test Head	B&K	4185	2631728	2015.03.08	2016.03.07
Universal Radio Communication Tester	R&S	CMU200	0304789	2015.03.08	2016.03.07
Audio Analyzer	R&S	UPV	100419	2015.03.08	2016.03.07

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION

(Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

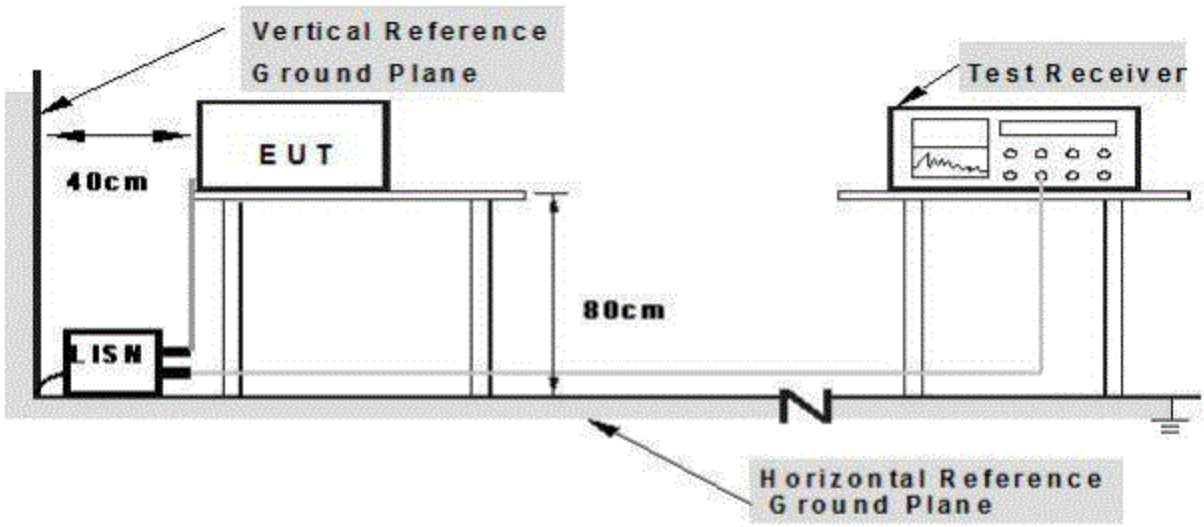
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



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

3.1.4 EUT OPERATING CONDITIONS

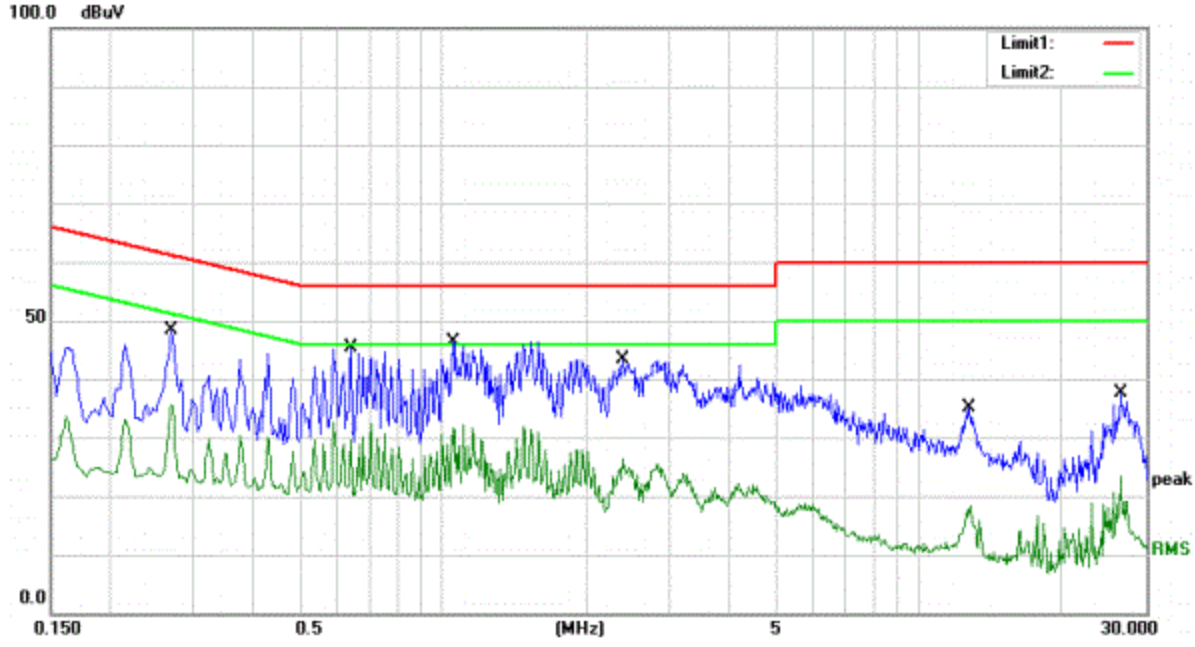
The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

EUT:	smart phone	Model Name. :	thl T12
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 5.0V from adapter AC 230V/50Hz	Test Mode:	Mode 1

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.2700	35.17	9.93	45.10	61.12	-16.02	QP
0.2700	25.20	9.93	35.13	51.12	-15.99	AVG
0.6430	31.53	9.97	41.50	56.00	-14.50	QP
0.6430	21.65	9.97	31.62	46.00	-14.38	AVG
1.0511	31.69	9.91	41.60	56.00	-14.40	QP
1.0511	20.40	9.91	30.31	46.00	-15.69	AVG
2.4216	26.14	10.00	36.14	56.00	-19.86	QP
2.4216	13.11	10.00	23.11	46.00	-22.89	AVG
12.7774	10.70	10.34	21.04	60.00	-38.96	QP
12.7774	1.59	10.34	11.93	50.00	-38.07	AVG
26.5506	21.68	10.54	32.22	60.00	-27.78	QP
26.5506	9.40	10.54	19.94	50.00	-30.06	AVG

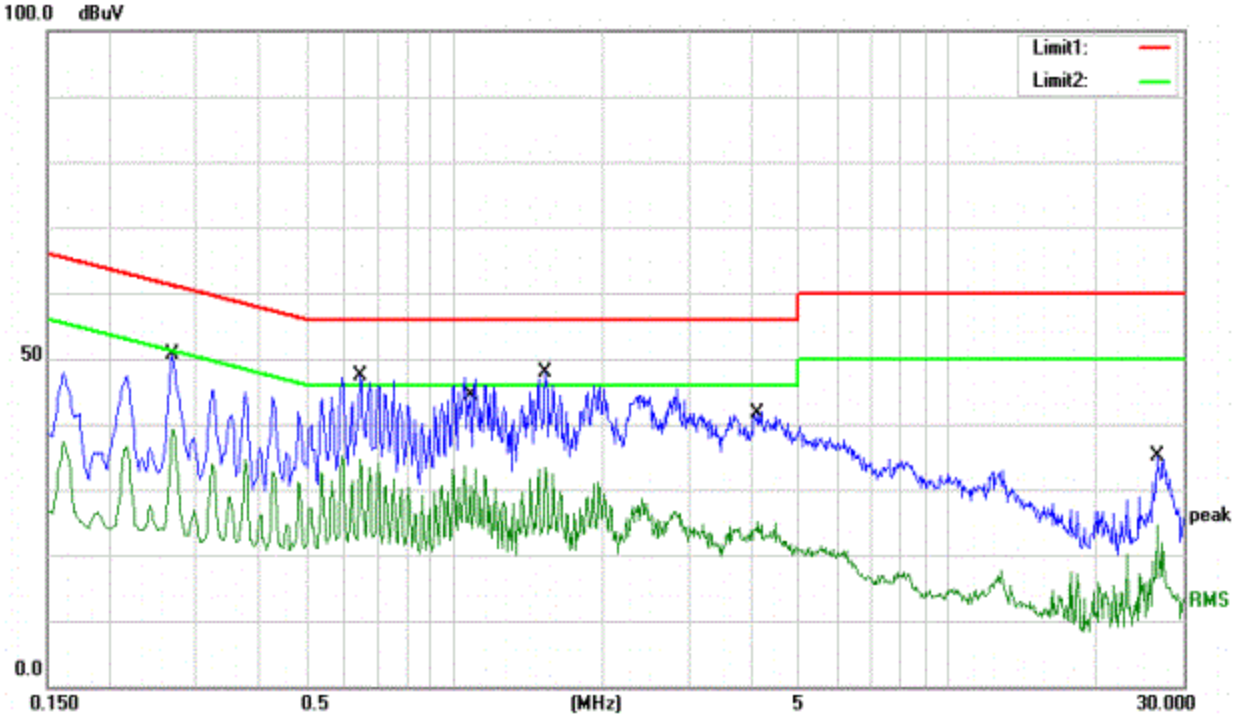
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



EUT：	smart phone	Model Name. ：	thl T12
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5.0V from adapter AC 230V/50Hz	Test Mode：	Mode 1

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.2703	38.13	9.93	48.06	61.11	-13.05	QP
0.2703	28.89	9.93	38.82	51.11	-12.29	AVG
0.6475	35.33	9.97	45.30	56.00	-10.70	QP
0.6475	24.54	9.97	34.51	46.00	-11.49	AVG
1.0852	24.55	10.00	34.55	56.00	-21.45	QP
1.0852	13.72	10.00	23.72	46.00	-22.28	AVG
1.5338	28.93	10.00	38.93	56.00	-17.07	QP
1.5338	16.48	10.00	26.48	46.00	-19.52	AVG
4.1445	24.49	10.19	34.68	56.00	-21.32	QP
4.1445	12.05	10.19	22.24	46.00	-23.76	AVG
26.4848	18.54	10.72	29.26	60.00	-30.74	QP
26.4848	10.96	10.72	21.68	50.00	-28.32	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 – 230	40	30
230 – 1000	47	37

FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
1000-3000	76	56	70	50
3000-6000	80	60	74	54

Notes:

(1) The limit for r_____ed test was performed according to as following: CISPR 22/ FCC PART 15B /ICES-003.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

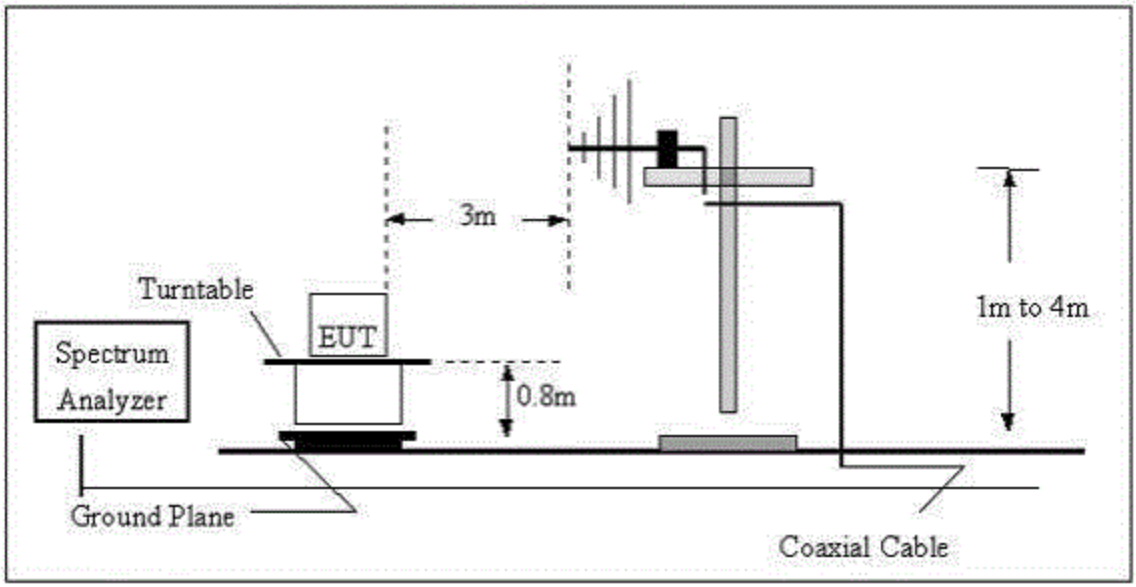
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

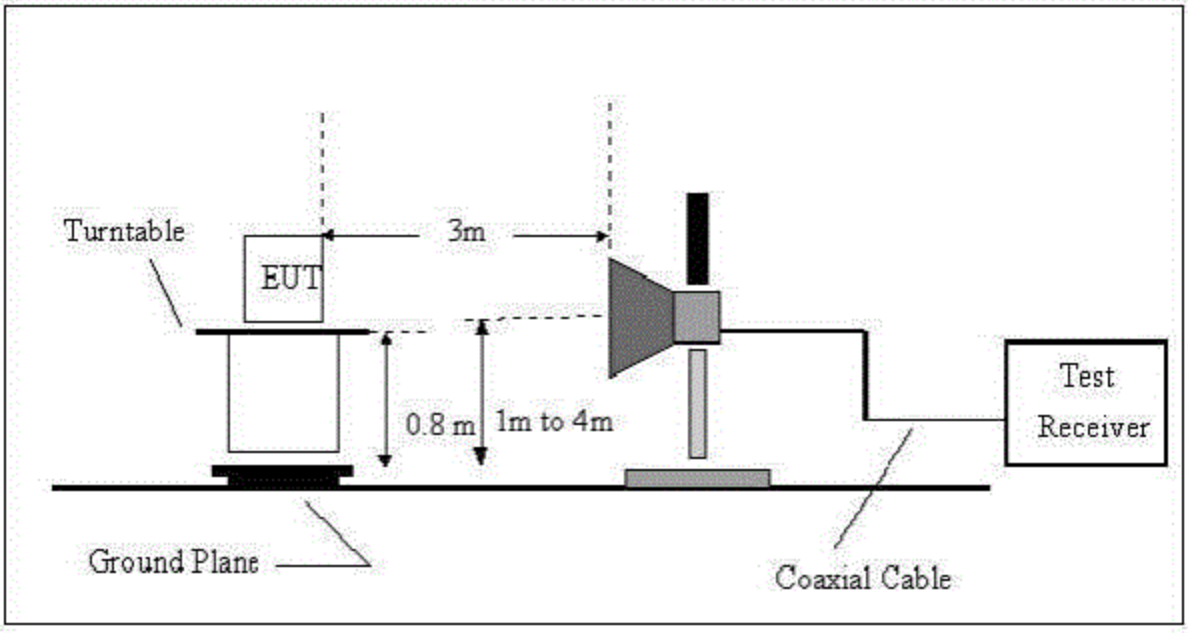
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



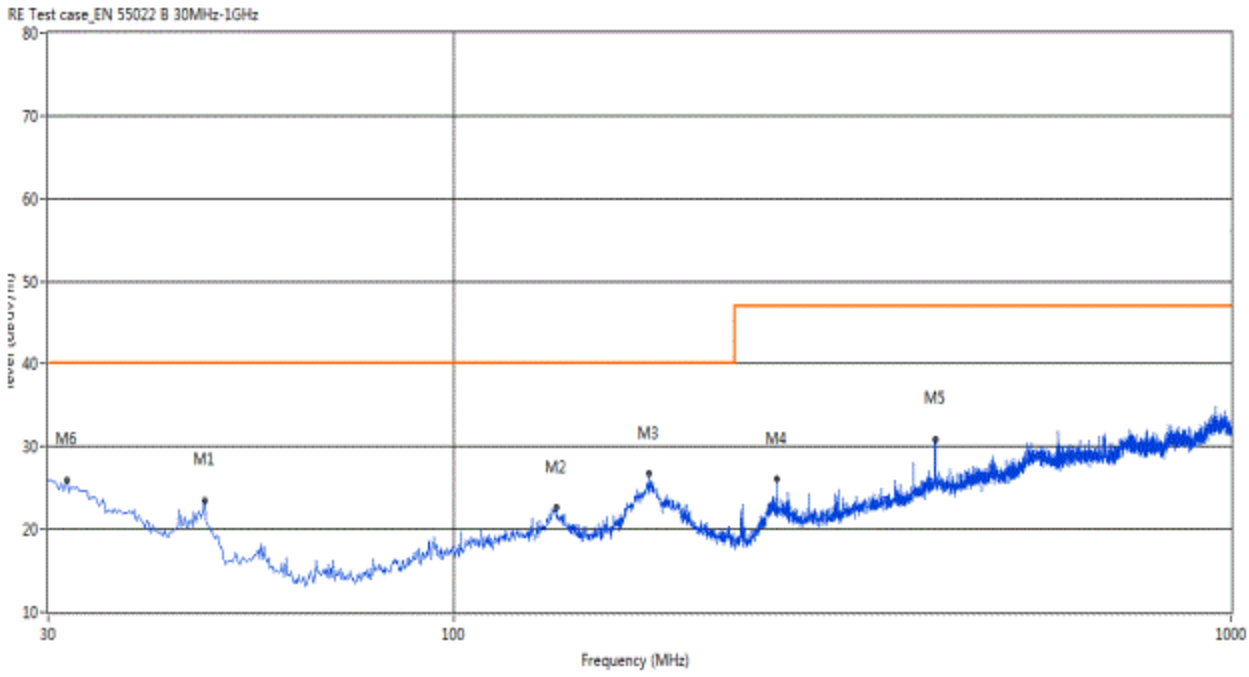
The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.4 TEST RESULT(30 -1000 MHz)

EUT:	smart phone	Model Name.:	thl T12
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	DC 5.0V from adapter AC 230V/50Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	47.70	23.54	-24.60	40.0	-16.46	QP	322.00	100	Horizontal	PASS
2	135.22	22.61	-21.35	40.0	-17.39	QP	231.00	100	Horizontal	PASS
3	178.37	26.76	-23.52	40.0	-13.24	QP	52.00	100	Horizontal	PASS
4	260.07	26.08	-18.57	47.0	-20.92	QP	161.00	100	Horizontal	PASS
5	415.96	30.92	-14.37	47.0	-16.08	QP	85.00	100	Horizontal	PASS
6	31.70	25.91	-16.15	40.0	-14.09	QP	53.00	100	Horizontal	PASS

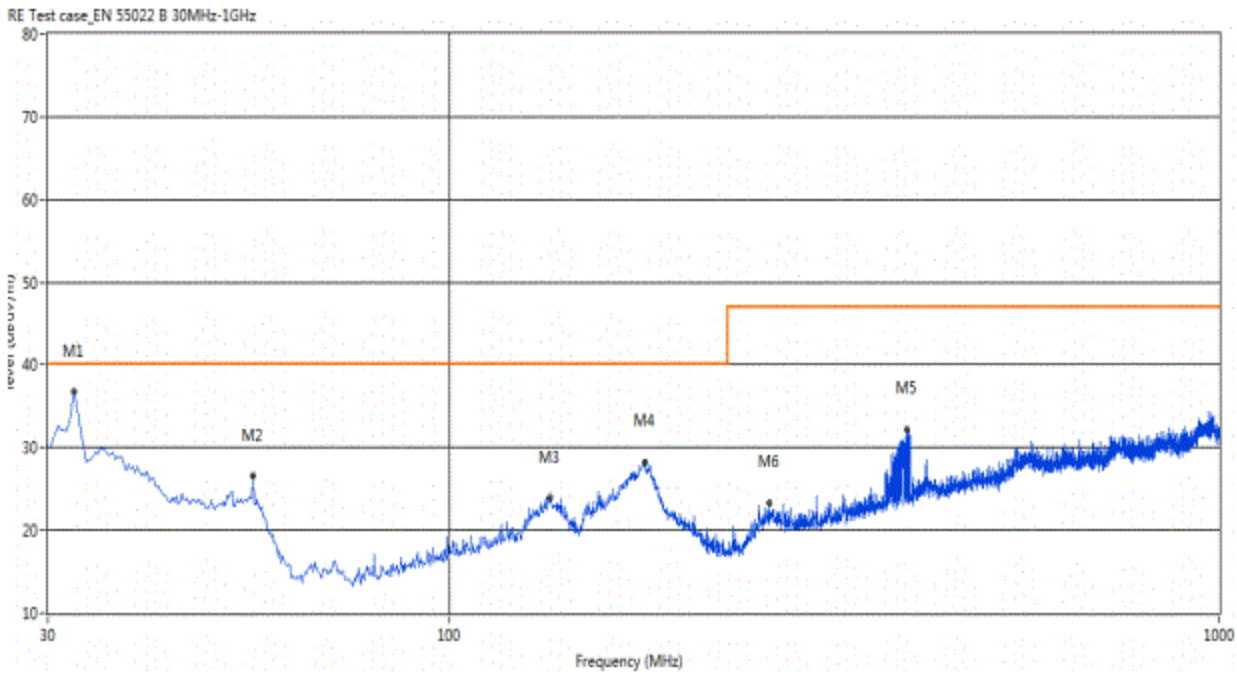
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit



EUT:	smart phone	Model Name.:	thl T12
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Vertical
Test Voltage:	DC 5.0V from adapter AC 230V/50Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	32.42	36.81	-16.51	40.0	-3.19	QP	319.00	100	Vertical	PASS
2	55.46	26.59	-27.75	40.0	-13.41	QP	211.00	100	Vertical	PASS
3	134.98	23.94	-21.35	40.0	-16.06	QP	97.00	100	Vertical	PASS
4	179.10	28.31	-23.53	40.0	-11.69	QP	179.00	100	Vertical	PASS
5	392.45	32.21	-15.38	47.0	-14.79	QP	9.00	100	Vertical	PASS
6	259.83	23.35	-18.59	47.0	-23.65	QP	274.00	100	Vertical	PASS

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit



3.2.5 TEST RESULT (1000 - 6000 MHz)

EUT：	smart phone	Model Name ：	thl T12
Temperature：	24 ℃	Relative Humidity：	54 %
Pressure：	1010 hPa	Test Mode ：	Mode 1
Test Power ：	DC 5.0V from adapter AC 230V/50Hz		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	1739.03	72.36	-11.64	60.72	70	-9.28	PK
V	1739.03	51.46	-11.54	39.92	50	-10.08	Avg
V	2147.98	66.24	-10.13	56.11	70	-13.89	PK
V	2147.98	51.85	-10.13	41.72	50	-8.28	Avg
H	1739.03	68.71	-11.52	57.19	70	-12.81	PK
H	1739.03	56.09	-11.52	44.57	50	-5.43	Avg
H	2147.98	63.67	-10.08	53.59	70	-16.41	PK
H	2147.98	50.79	-10.08	40.71	50	-9.29	Avg
Remark:							
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit							

3.3 HARMONICS CURRENT

3.3.1 LIMITS OF HARMONICS CURRENT

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
	8≤n≤40	0.23 · 8/n		DC	0.05

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A)	(mA/w)
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

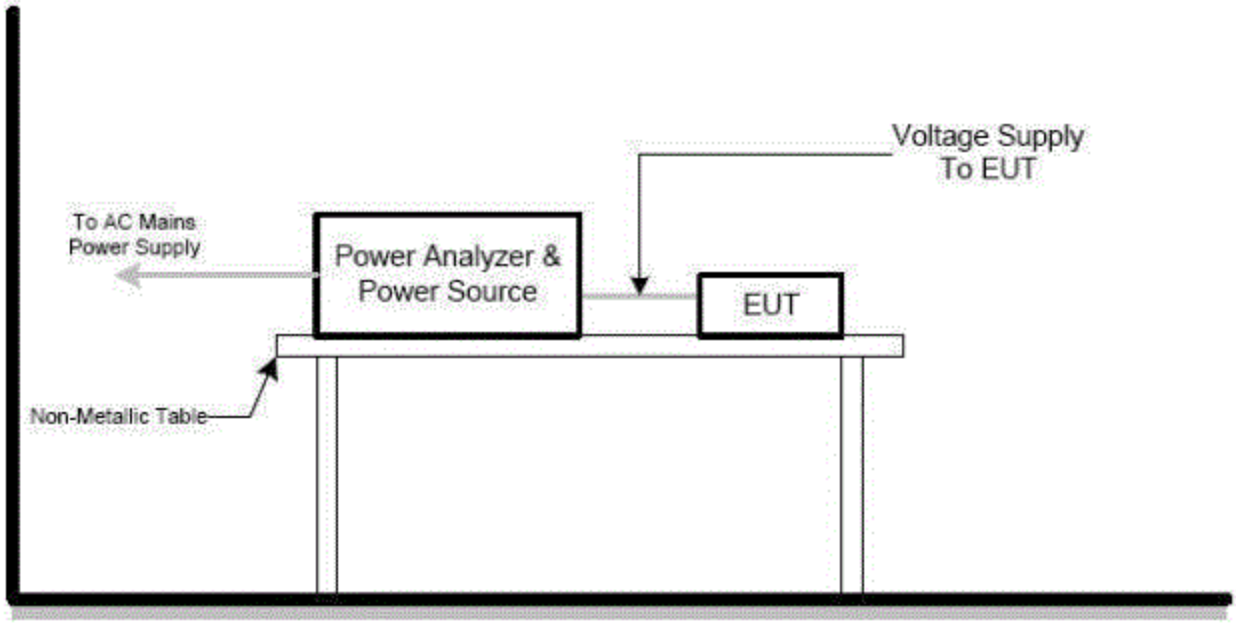
3.3.2 TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
b. The classification of EUT is according to section 5 of EN 61000-3-2: 2000.The EUT is classified as follows:
Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
Class B: Portable tools. Portable tools.; Arc welding equipment which is not professional equipment.
Class C: Lighting equipment.
Class D: Equipment having a specified power less than or equal to600 W of the following types: Personal computers and personal computer monitors and television receivers.
c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.
d. For the actual test configuration, please refer to the related item –EUT Test Photos.

3.3.3 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.4 TEST SETUP



3.3.5 TEST RESULT

EUT:	smart phone	Model Name.:	thl T12
Temperature:	25 ℃	Relative Humidity:	45%
Pressure:	1010 hPa	Test Model：	N/A
Test Power:	N/A		

*Note: The active input power of the EUT is less than **75 W.** No limits apply for equipment with an active input power up to and including 75W*

3.4 VOLTAGE FLUCTUATION AND FLICKER

3.4.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKER

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

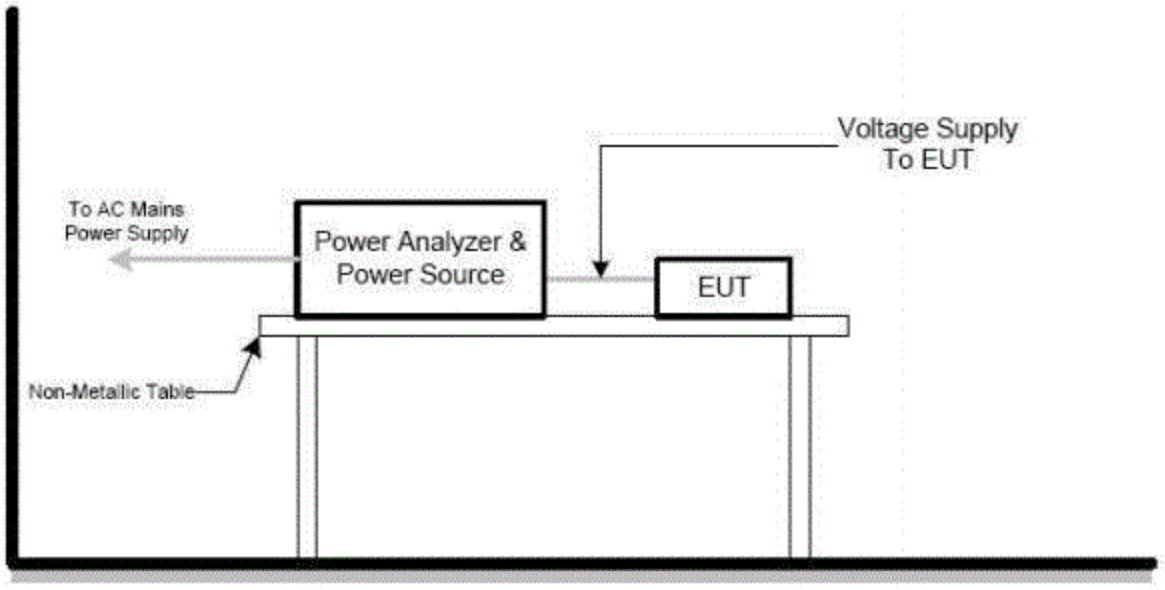
3.4.2 TEST PROCEDURE

a. Harmonic Current Test:
Test was performed according to the procedures specified in Clause 5.0 of IEC2, C5, C7, ZP980, ZP99055-2 and/or
Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.
b. Fluctuation and Flickers Test:
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC2, C5, C7, ZP980, ZP99055-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on
which standard adopted for compliance measurement.
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.
d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.4.3 EUT OPERATING CONDITION

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.4 TEST SETUP



3.4.5 TEST RESULT

EUT:	smart phone	Model Name.:	thl T12
Temperature:	25 ℃	Relative Humidity:	45%
Pressure:	1010 hPa	Test Power :	DC 5.0V from adapter AC 230V/50Hz
Test Mode	Mode 2		

Test Parameter	Measurement Value	Limit	Remarks
P_{st}	0.130	1.0	Pass
P_{lt}	0.510	3.3	Pass
$T_{dt(s)}$	0.000	0.5	Pass
d_{max}(%)	0.75%	4%	Pass
d_c(%)	0.12%	3.3%	Pass

4. EMC IMMUNITY TEST

4.1 GENERAL PERFORMANCE CRITERIA

4.1.1 PERFORMANCE CRITERIA (GPS)

According to **EN 301 489-3** standard, the general performance criteria as following:

Criteria	During the test	After the test
A	Operate as intended No loss of function For equipment type II the minimum performance shall be 12 dB SINAD No unintentional responses	Operate as intended For equipment type II the communication link shall be maintained No loss of function No degradation of performance No loss of stored data or user programmable functions
B	May be loss of function (one or more) No unintentional responses	Operate as intended Lost function(s) shall be self-recoverable No degradation of performance No loss of stored data or user programmable functions
Note: please refer to EN301 489-3 clause 6.3.		

4.1.2 PERFORMANCE CRITERIA (GSM/ WCDMA)

According to **EN 301489 -7** standard, the general performance criteria as following:

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

PERFORMANCE CRITERIA FOR CT AND CR

A communication link shall be established at the start of the test, and maintained during the test. During the test, the RXQUAL of the downlink shall not exceed 3, measured during each individual exposure in the test sequence. Both the uplink speech output level and the downlink speech output level shall be at least 35 dB less than the previously recorded reference levels, when measured through an audio band Pass filter of width 200 Hz, centered on 1 kHz (audio breakthrough check). At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data, and the communication link shall have been maintained.

PERFORMANCE CRITERIA FOR TT AND TR

A communications link shall be established at the start of the test. At the conclusion of each exposure the EUT shall operate with no user noticeable loss of the communication link. At the conclusion of the total test comprising the series of individual exposures, the EUT shall operate as intended with no loss of user control functions or stored data, as declared by the manufacturer, and the communication link shall have been maintained.

According to **EN 301489 -24** standard.

PERFORMANCE CRITERIA FOR CONTINUOUS PHENOMENA TO WCDMA

In the speech mode, the performance criteria shall be that the Up Link and Down Link speech output levels shall be at least 35 dB less than the recorded reference levels, when measured through an audio band pass filter of width 200 Hz, centred on 1 kHz.

PERFORMANCE CRITERIA FOR TRANSIENT PHENOMENA TO WCDMA

At the conclusion of each exposure the EUT shall operate with no user noticeable loss of the communication link.At the conclusion of the total test comprising the series of individual exposures, the EUT shall operate as intended with no loss of user control functions or stored data, as declared by the manufacturer, and the communication link shall have been maintained.

In addition to confirming the above performance in traffic mode, the test shall also be performed in idle mode, and the transmitter shall not unintentionally operate.

4.1.3 PERFORMANCE CRITERIA (Bluetooth/WIFI)

According to **EN 301489 -17** standard, the general performance criteria as following:

Criteria	During the test	After the 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 FOR TT

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. 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 not-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 FOR 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.

PERFORMANCE FOR 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 Not 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 FOR 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.

4.1.4 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

4.2 ESD TESTING

4.2.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge：2kV/4kV/8kV (Direct) Contact Discharge：2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 200 times in total
Discharge Mode:	AC Discharge
Discharge Period:	1 second minimum

4.2.2 TEST PROCEDURE

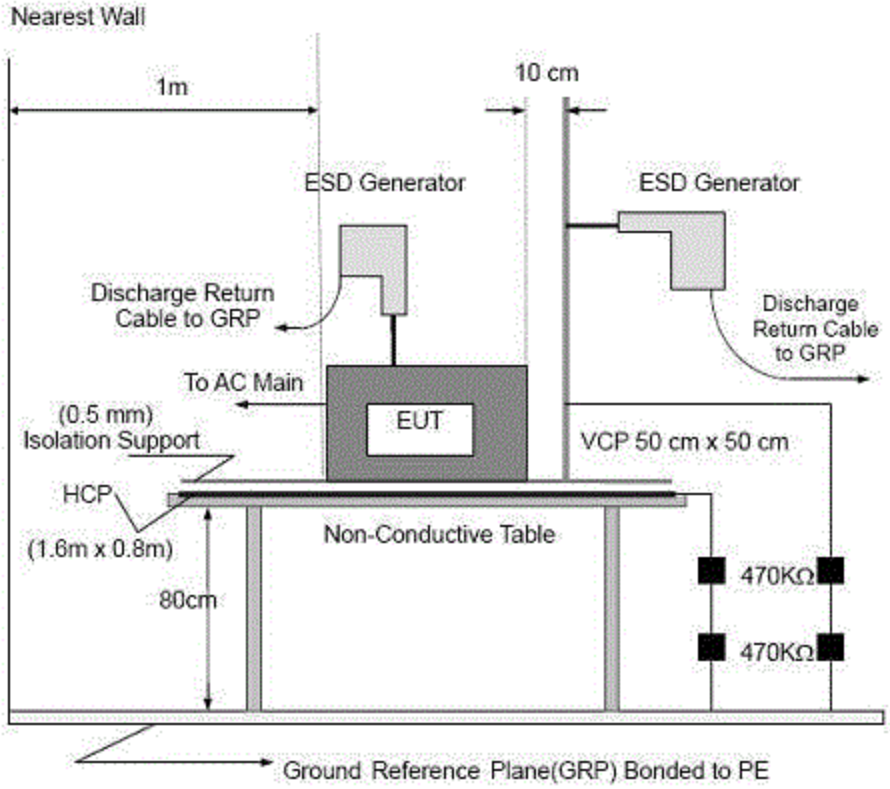
The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.

c. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.2.4 TEST RESULT

EUT:	smart phone	Model Name :	thl T12
Temperature:	25 ℃	Relative Humidity:	45%
Pressure:	1010 hPa	Test Power :	AC 230V/50Hz
Test Mode	Mode1/2/3/4/5/6/7/8		

WIFI/BT/GPS TEST RESULT

Mode	Air Discharge								Contact Discharge								Observation	Criterion	Result
Test level (kV)	2		4		8		15		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
HCP									A	A	A	A					TT,TR	B	**PASS**
VCP									A	A	A	A							**PASS**
Metallic parts									A	A	A	A							**PASS**
enclosure	A	A	A	A	A	A													**PASS**
slit	A	A	A	A	A	A													**PASS**

WCDMA TEST RESULT

Mode	Air Discharge								Contact Discharge								Observation	Criterion	Result
Test level (kV)	2		4		8		15		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
HCP									A	A	A	A					TT,TR	B	**PASS**
VCP									A	A	A	A							**PASS**
Metallic parts									A	A	A	A							**PASS**
enclosure	A	A	A	A	A	A													**PASS**
slit	A	A	A	A	A	A													**PASS**

GSM/GPRS/EDGE TEST RESULT

Mode	Air Discharge								Contact Discharge								Observation	Criterion	Result
Test level (kV)	2		4		8		15		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
HCP									A	A	A	A					TT,TR	B	PASS
VCP									A	A	A	A							PASS
Metallic parts									A	A	A	A							PASS
enclosure	A	A	A	A	A	A													PASS
slit	A	A	A	A	A	A													PASS

Note: 1) P/N denotes the Positive/Negative polarity of the output voltage.
2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
3) N/A - denotes test is not applicable in this test report
4) There was not any unintentional transmission in standby mode