



TEST REPORT

Reference No. : WTX22X08156832W005
Manufacturer : Descartes Systems Group Inc.
Address : 105 Trafalgar Street, Floor 2, Nelson, Tasman 7011, New Zealand
Product Name : COREInsight® Reader
Model No. : RDR001
Standards : EN 55032:2015+A11:2020; EN 55035:2017+A11:2020
EN IEC 61000-3-2:2019; EN 61000-3-3:2013+A1:2019
ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-17 V3.2.4 (2020-09)
ETSI EN 301 489-52 V1.2.1 (2021-11)
Date of Receipt sample : 2022-08-01
Date of Test : 2022-08-01 to 2022-08-28
Date of Issue : 2022-08-28
Test Report Form No. : WTX_ESI EN 301 489_1_2019W
Test Result : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Report version

Version No.	Date of issue	Description
Rev.00	2022-08-28	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	COREInsight® Reader
Trade Name:	/
Model No.:	RDR001
Adding Model(s):	/
Rated Voltage:	DC12V
Rated Current:	3A
Adapter Model:	Model:ATS036T-W120V Input:AC240V ~ 50-60Hz 1A MAX Output:DC12V,3A
Software Version:	/
Hardware Version:	/

Note: The test data is gathered from a production sample provided by the manufacturer.



Technical Characteristics of EUT	
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Bands:	WCDMA Band 1, WCDMA Band 8
Frequency Range:	WCDMA Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz WCDMA Band 8: Tx: 880-915MHz, Rx: 925-960MHz
RF Output Power:	WCDMA Band 1: 23.43dBm, WCDMA Band 8: 23.56dBm
Modulation Type:	BPSK, QPSK, 16QAM
Antenna Type:	External Antenna
Antenna Gain:	WCDMA Band 1: 1dBi, WCDMA Band 8: 1dBi
4G	
Support Bands:	FDD-LTE Band1, 3, 7, 8, 20 TDD-LTE Band 38, 40
Frequency Range:	FDD-LTE Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz FDD-LTE Band 3: Tx: 1710-1785MHz, Rx: 1805-1880MHz FDD-LTE Band 7: Tx: 2500-2570MHz, Rx: 2620-2690MHz FDD-LTE Band 8: Tx: 880-915MHz, Rx: 925-960MHz FDD-LTE Band 20: Tx: 832-862MHz, Rx: 791-821MHz TDD-LTE Band 38: Tx: 2570-2620MHz, Rx: 2570-2620MHz TDD-LTE Band 40: Tx: 2300-2400MHz, Rx: 2300-2400MHz
Max.RF Output Power:	FDD-LTE Band 1: 23.95dBm, FDD-LTE Band 3: 23.97dBm, FDD-LTE Band 7: 24.41dBm, FDD-LTE Band 8: 24.16dBm, FDD-LTE Band 20: 23.82dBm, TDD-LTE Band 38: 24.25dBm, TDD-LTE Band 40: 23.87dBm
Modulation Type:	QPSK, 16QAM
Antenna Type:	Main : External Antenna DIV: FPC Antenna
Antenna Gain:	FDD-LTE Band 1: 1dBi, FDD-LTE Band 3: 1dBi, FDD-LTE Band 5: 1dBi, FDD-LTE Band 7: 1dBi, FDD-LTE Band 8: 1dBi, TDD-LTE Band 38: 1dBi, TDD-LTE Band 40: 1dBi,



Bluetooth	
Bluetooth Version:	Bluetooth V5.0(Only BLE)
Frequency Range:	2402-2480MHz
Max.RF Output Power:	5.09dBm (EIRP)
Type of Modulation:	GFSK
Data Rate:	1Mbps
Quantity of Channels	40
Channel Separation:	2MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	1dBi

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1.2 Test Standards

The tests were performed according to following standards:

EN 55032:2015+A11:2020: Electromagnetic compatibility of multimedia equipment - Emission requirements

EN 55035:2017+A11:2020: Electromagnetic compatibility of multimedia equipment - Immunity requirements.

EN IEC 61000-3-2:2019: Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).

EN 61000-3-3:2013+A1:2019: 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 <= 16 A per phase and not subject to conditional connection.

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 V3.2.4 (2020-09): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility.

Final draft ETSI EN 301 489-19 V2.2.1 (2022-07): Electromagnetic Compatibility (EMC) standard for radio equipment and services;Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU.

ETSI EN 301 489-52 V1.2.1 (2021-11): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication User Equipment (UE) radio and ancillary equipment; Harmonised Standard for ElectroMagnetic Compatibility

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standard ETSI EN 301489-1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.



1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

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1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	
TM1	Normal working	For the EMC testing, the EMC testing sample was connected to the AC adapter. For the immunity testing, the immunity testing sample was connected to the AC adapter, also it was connected to the computer screen and the keyboard. During the immunity testing, it was monitored through the immunity firmware on the computer screen	
TM2	Bluetooth	TR, CR, TT, CT for EMS testing	
TM3	WCDMA Band 1	TR, CR, TT, CT for EMS testing	
TM4	WCDMA Band 8	TR, CR, TT, CT for EMS testing	
TM5	LTE Band 1	TR, CR, TT, CT for EMS testing	
TM6	LTE Band 3	TR, CR, TT, CT for EMS testing	
TM7	LTE Band 7	TR, CR, TT, CT for EMS testing	
TM8	LTE Band 8	TR, CR, TT, CT for EMS testing	
TM9	LTE Band 20	TR, CR, TT, CT for EMS testing	
TM10	LTE Band 38	TR, CR, TT, CT for EMS testing	
TM11	LTE Band 40	TR, CR, TT, CT for EMS testing	

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
DC Cable	1.5	Unshielded	Without Ferrite

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/



1.6 Performance Criteria for EMS

➤ EN 301 489-17, The performance criteria are:

- 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 clauses.

Table 1: Performance criteria

Criteria	During test	After test
A	Shall operate as intended. (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 3). 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 2). Shall be no unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3). 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 3).

NOTE 1: Operate as intended during the test allows a level of degradation 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: 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 3: No degradation of performance after the test is understood as no 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.



➤ **EN 301 489-52, The performance criteria are:**

According to the section 6.1 and 6.2 EN301489-52, the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

The equipment shall meet the performance criteria specified in this clause and clauses 6.1.1 to 6.1.4, as appropriate.

Portable equipment intended for use whilst powered by the main battery of a vehicle shall additionally fulfil the applicable requirements set out in ETSI EN 301 489-1 [1], clauses 7.1 and 7.2 for mobile equipment.

Portable or mobile equipment powered by the AC mains shall additionally fulfil the applicable requirements of ETSI EN 301 489-1 [1], clauses 7.1 and 7.2 for radio and ancillary equipment for fixed use.

The establishment and maintenance of a communications link, the assessment of RXQUAL, and the assessment of the audio breakthrough by monitoring the speech output signal level, are used as performance criteria to ensure that all primary functions of the transmitter and receiver are evaluated during the immunity tests. In addition, the test shall also be performed in idle mode to ensure the transmitter does not unintentionally operate.

The maintenance of a communications link shall be assessed using an indicator which may be part of the test system or the EUT.

If an equipment is of a specialized nature, such that the performance criteria described in the following clauses are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the following clauses.

The equipment shall meet the performance criteria specified in this clause and clauses 6.2.2 and 6.2.3 as appropriate.

The maintenance of a communications link shall be assessed by using an indicator, which may be part of the test system or the equipment under test.

If an equipment is of a specialized nature, that the performance criteria described in the following clauses are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after testing, as required by the present document.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the following clauses.

In addition, the test shall also be performed in idle mode to ensure the transmitter does not unintentionally operate.

The requirements apply to all types of UTRA and E-UTRA (FDD or TDD) for the UE.



➤ EN 55035, The performance criteria are:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacturer. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

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1.7 Measurement Uncertainty

Measurement uncertainty	
Parameter	Uncertainty
Uncertainty for Radiated Emission in 3m chamber	@30-200MHz $\pm 4.52\text{dB}$ @0.2-1GHz $\pm 5.56\text{dB}$ @1-6GHz $\pm 3.84\text{dB}$ @6-18GHz $\pm 3.92\text{dB}$
Uncertainty for Conducted Emission	@9-150kHz $\pm 3.74\text{dB}$ @0.15-30MHz $\pm 3.34\text{dB}$
Uncertainty for Harmonic test	3.26%
Uncertainty for Flicker test	4.76%
Uncertainty for RS test	21%, k=2
Uncertainty for CS test	29%, k=2
Uncertainty for ESD test	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
Uncertainty for EFT test	
Uncertainty for Surges test	
Uncertainty for Voltage Dips, Voltage Variations and Short Interruptions Test	
Uncertainty for PFMF test	



1.8 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
<input checked="" type="checkbox"/> Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
Amplifier	Agilent	8447F	3113A06717	2022-01-07	2023-01-06
Loop Antenna	Schwarzbeck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-333	2021-03-20	2023-03-19
<input checked="" type="checkbox"/> Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2022-03-22	2023-03-21
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
Amplifier	C&D	PAP-1G18	2002	2022-03-22	2023-03-21
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2021-04-27	2023-04-26
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2022-03-25	2023-03-24
<input type="checkbox"/> Chamber B: Below 1GHz					
Trilog Broadband Antenna	Schwarzbeck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2022-03-25	2023-03-24
<input type="checkbox"/> Chamber C: Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2022-01-07	2023-01-06
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1194	2021-05-28	2023-05-27
Amplifier	HP	8447F	2944A03869	2022-03-22	2023-03-21
<input checked="" type="checkbox"/> Conducted Room 1#					
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2022-03-22	2023-03-21
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-03-25	2023-03-24
AC LISN	Schwarzbeck	NSLK8126	8126-224	2022-03-22	2023-03-21
8-WIRE LISN	Schwarzbeck	8158	CAT3-8158-0059	2022-03-22	2023-03-21
8-WIRE LISN	Schwarzbeck	8158	CAT5-8158-0117	2022-03-22	2023-03-21
<input type="checkbox"/> Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	10129	2022-03-22	2023-03-21
LISN	Rohde & Schwarz	ENV 216	100097	2022-03-22	2023-03-21
EMF					
VDH Test Head	AFJ	VDH 30	SC022Z	2022-03-25	2023-03-24
3 Loop Antenna					
Loop Antenna	ZHINAN	ZN30401	19037	2021-04-26	2023-04-25



Clamp					
Clamp	Luthi	MDS21	3809	2022-03-28	2023-03-27
PMF					
PMF Generator	LIONCEL	PMF-801C-C	0171101	2022-03-22	2023-03-21
PMF Antenna	LIONCEL	PMF-801C-A	0180302	2022-03-22	2023-03-21
Instantaneous PMF Generator Module	LIONCEL	PMF-801C-T	0171001	2022-03-22	2023-03-21
H/F					
Digital Power Analyzer	California Instrument	CTS	72831	2022-03-22	2023-03-21
Power Source	California Instrument	5001IX-CTS-400	25965	2022-03-22	2023-03-21
ESD					
ESD Generator	LIONCEL	ESD-203B	0170901	2022-03-28	2023-03-27
EFT/SURGE/DIPS					
Transient 2000	EMC PARTNER	TRA2000	863	2022-03-22	2023-03-21
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2022-03-22	2023-03-21
CS					
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2022-01-07	2023-01-06
Attenuator	EMTEST	MA-5100/6BF2	1009	2022-03-22	2023-03-21
CDN	Luthi	L-801M2/M3	2665	2022-03-22	2023-03-21
CDN	LIONCEL	CDN-T8	0210401	2022-03-25	2023-03-24
EM Clamp	TESEQ	KEMZ801A	45028	2022-03-25	2023-03-24
RS					
Signal Generator	HP	8688B	3438A00604	2022-03-22	2023-03-21
Power Meter	KEITHLEY	3500	1162591	2022-03-22	2023-03-21
Power Meter	KEITHLEY	3500	1121428	2022-03-22	2023-03-21
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2022-03-22	2023-03-21
RF Power Amplifier	MicoTop	MPA-80-6000-100	MPA1906238	2022-03-22	2023-03-21
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A
Power Meter	Agilent	E4419B	GB42420578	2022-03-22	2023-03-21

Software List

Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing.

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2. SUMMARY OF TEST RESULTS

Standards	Reference	Description of Test Item	Result
ETSI EN 301 489-1	8.2	Radiated Emissions	Pass
	8.3	Conducted Emissions for DC Power Port	N/A
	8.4	Conducted Emissions for AC Power Port	Pass
	8.5	Harmonic Current Emissions	N/A
	8.6	Voltage Fluctuations and Flicker	Pass
	8.7	Telecommunication Ports	N/A
	9.2	Radio Frequency Electromagnetic Field	Pass
	9.3	Electrostatic Discharge	Pass
	9.4	Fast Transients, Common Mode	Pass
	9.5	Radio Frequency, Common Mode	Pass
	9.6	Transient and Surges in the Vehicular Environment	N/A
	9.7	Voltage Dips and Interruptions	Pass
	9.8	Surges	Pass
<p>Pass: The EUT complies with the essential requirements in the standard.</p> <p>Fail: The EUT does not comply with the essential requirements in the standard.</p> <p>N/A: Not applicable.</p>			

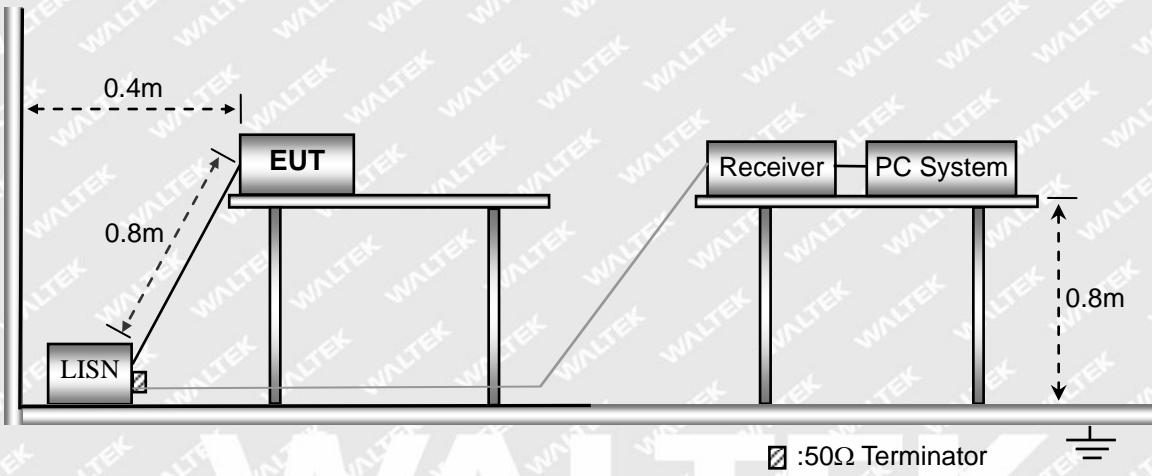


3. Conducted Emissions

3.1 Test Procedure

Test is conducted under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.

3.2 Basic Test Setup Block Diagram

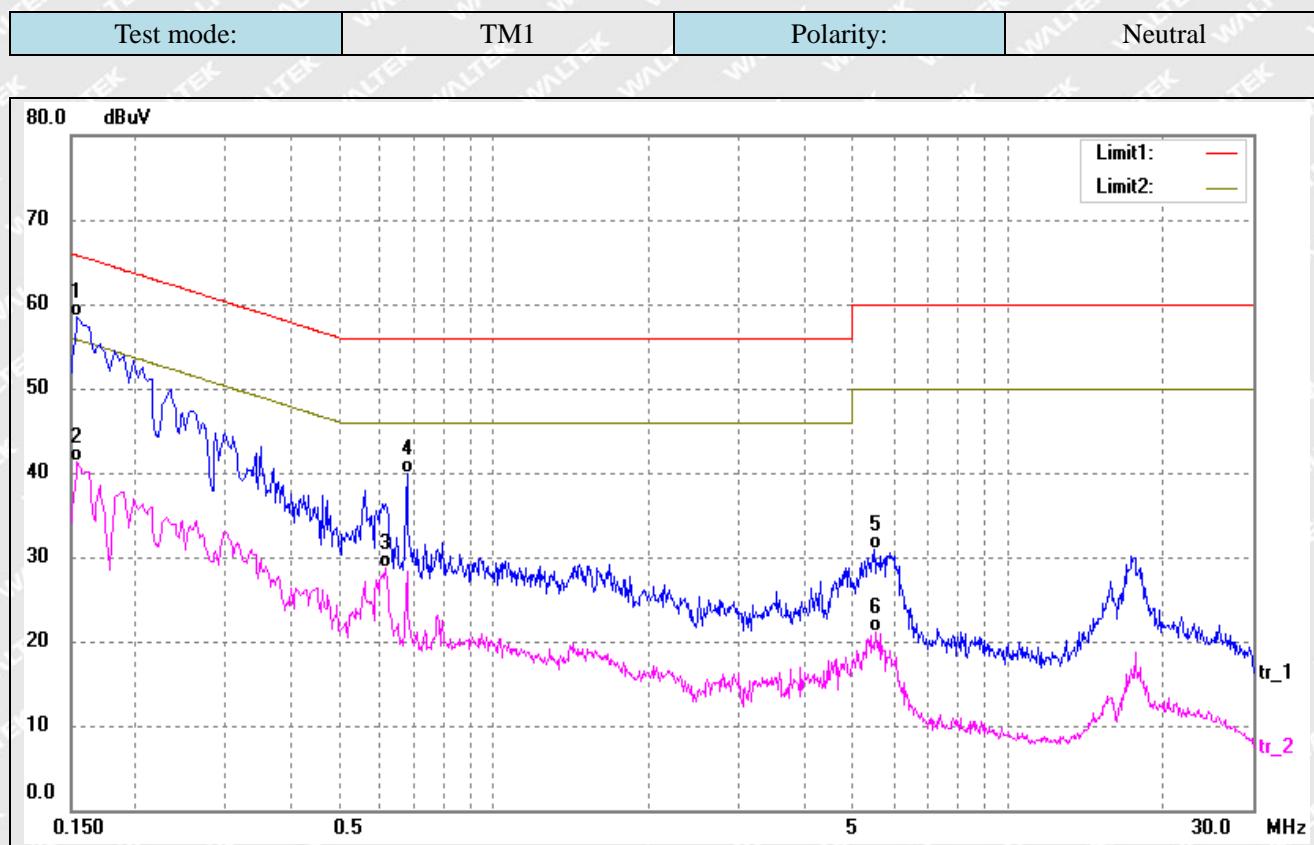


3.3 Environmental Conditions

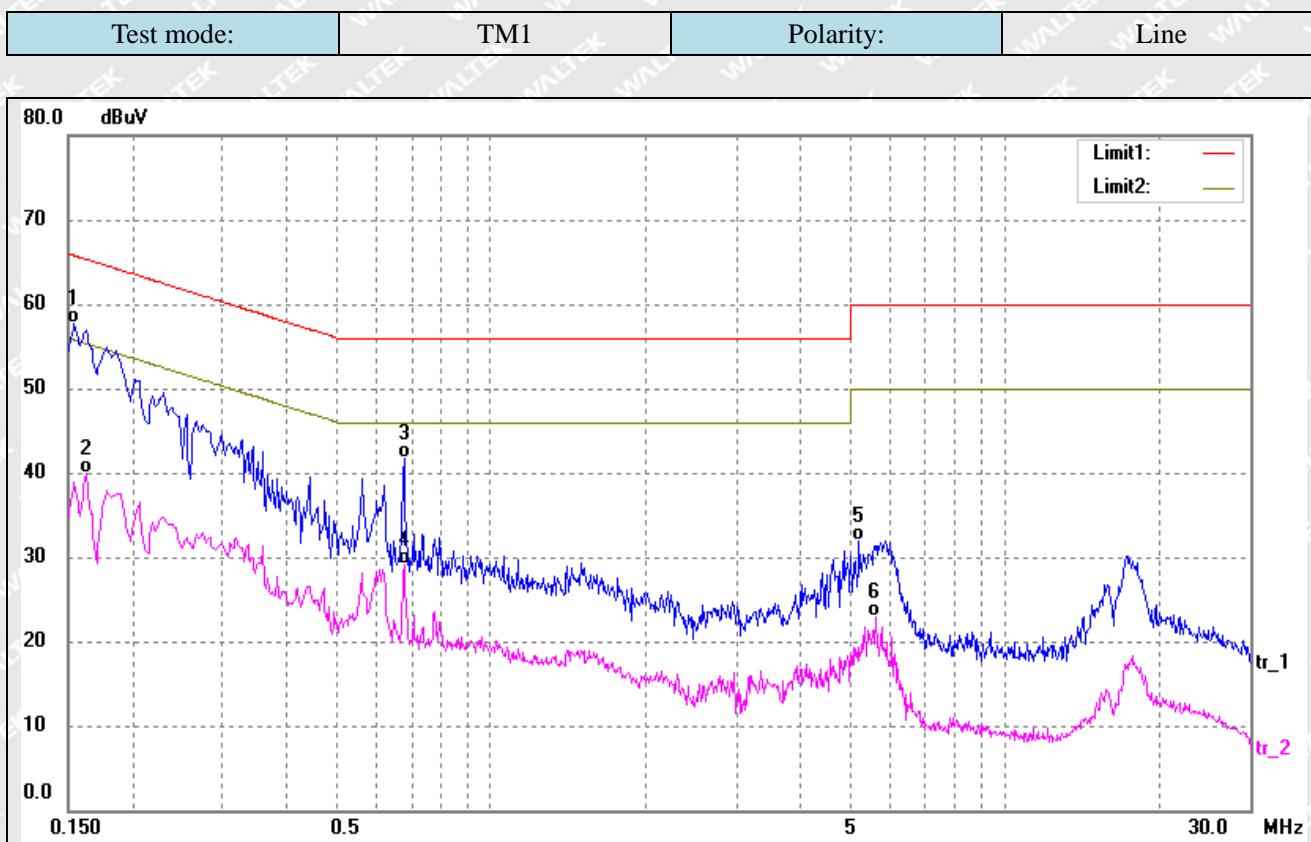
Temperature:	23.5 ° C
Relative Humidity:	54 %
ATM Pressure:	1015 mbar

3.4 Conducted Emissions Test Data

Note: Only show the worst case in the test report



No.	Frequency (MHz)	Reading (dB _{uV})	Correct (dB)	Result (dB _{uV})	Limit (dB _{uV})	Margin (dB)	Detector
1*	0.1539	48.15	10.32	58.47	65.79	-7.32	QP
2	0.1539	31.07	10.32	41.39	55.79	-14.40	AVG
3	0.6140	18.47	10.21	28.68	46.00	-17.32	AVG
4	0.6780	29.76	10.20	39.96	56.00	-16.04	QP
5	5.4860	20.48	10.33	30.81	60.00	-29.19	QP
6	5.5620	10.77	10.33	21.10	50.00	-28.90	AVG



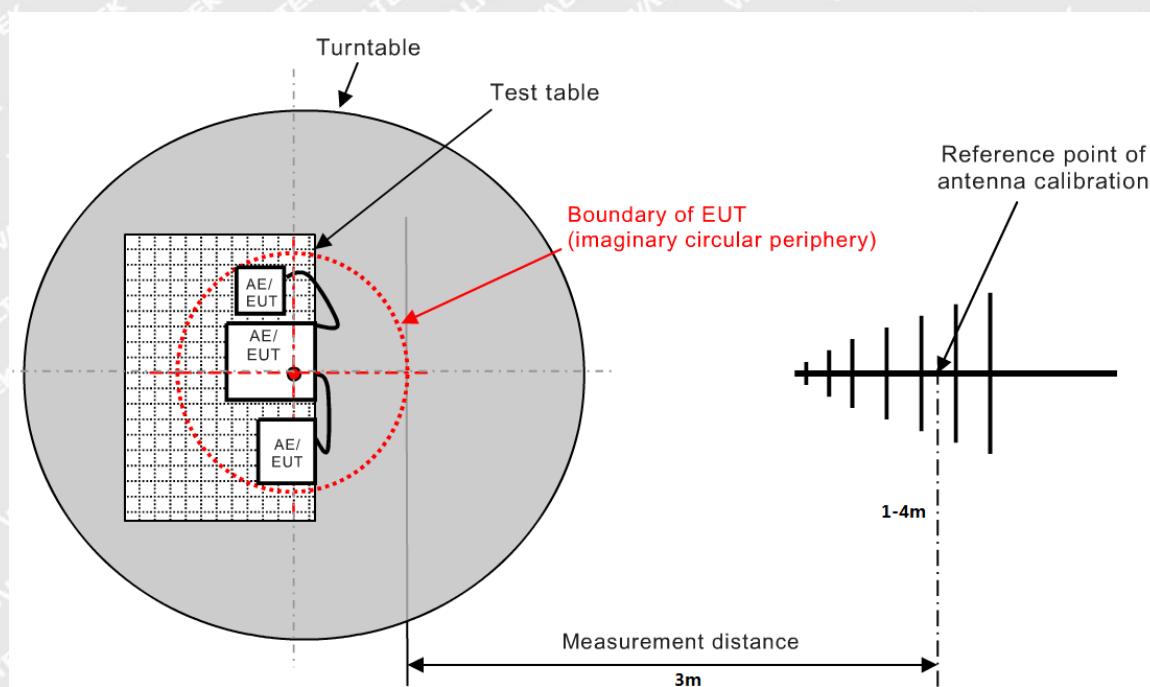
No.	Frequency (MHz)	Reading (dB _{uV})	Correct (dB)	Result (dB _{uV})	Limit (dB _{uV})	Margin (dB)	Detector
1*	0.1539	47.42	10.32	57.74	65.78	-8.04	QP
2	0.1620	29.67	10.31	39.98	55.36	-15.38	AVG
3	0.6780	31.46	10.20	41.66	56.00	-14.34	QP
4	0.6780	18.96	10.20	29.16	46.00	-16.84	AVG
5	5.2140	21.54	10.33	31.87	60.00	-28.13	QP
6	5.6060	12.57	10.33	22.90	50.00	-27.10	AVG



4. Radiated Emissions

4.1 Test Procedure

Test is conducted under the description of EN55032 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.



4.2 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN 301489 Class B Limit}$$



4.3 Environmental Conditions

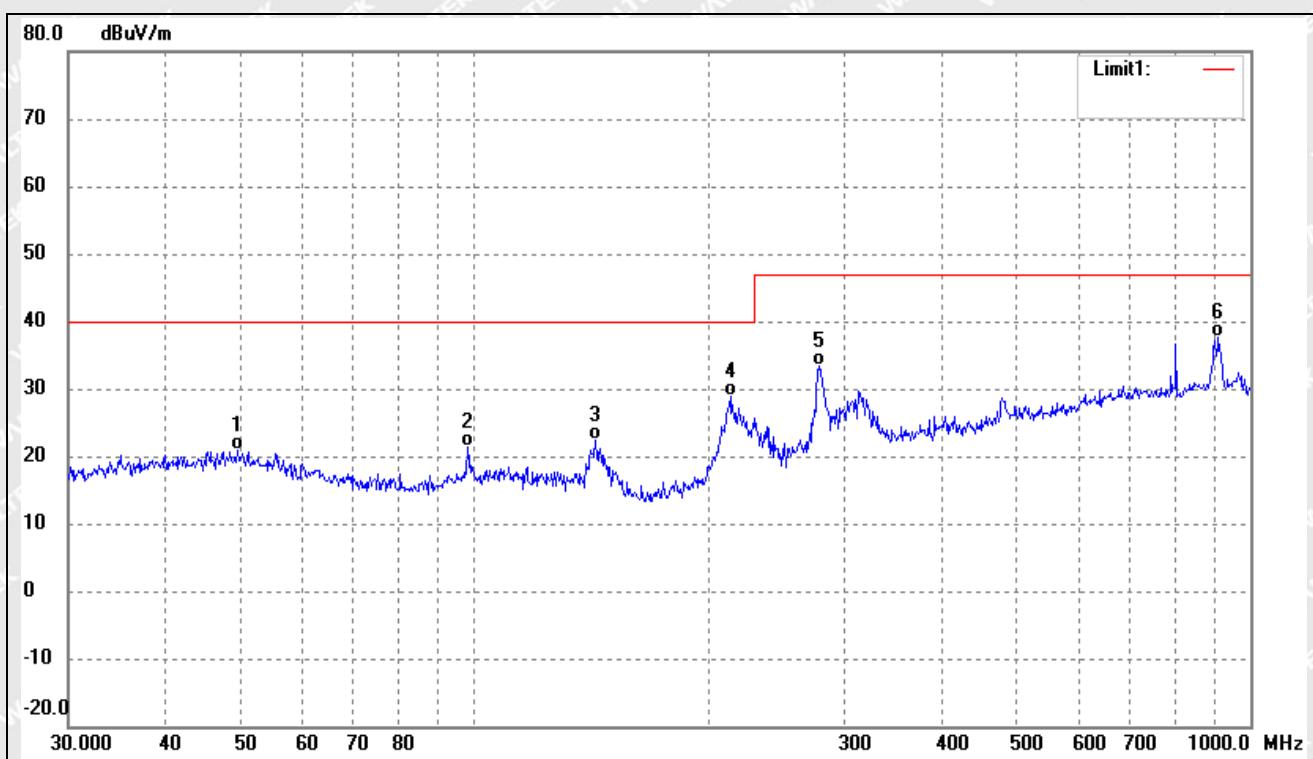
Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

4.4 Summary of Test Results/Plots

Note: Only show the worst case in the test report

➤ 30MHz to 1GHz

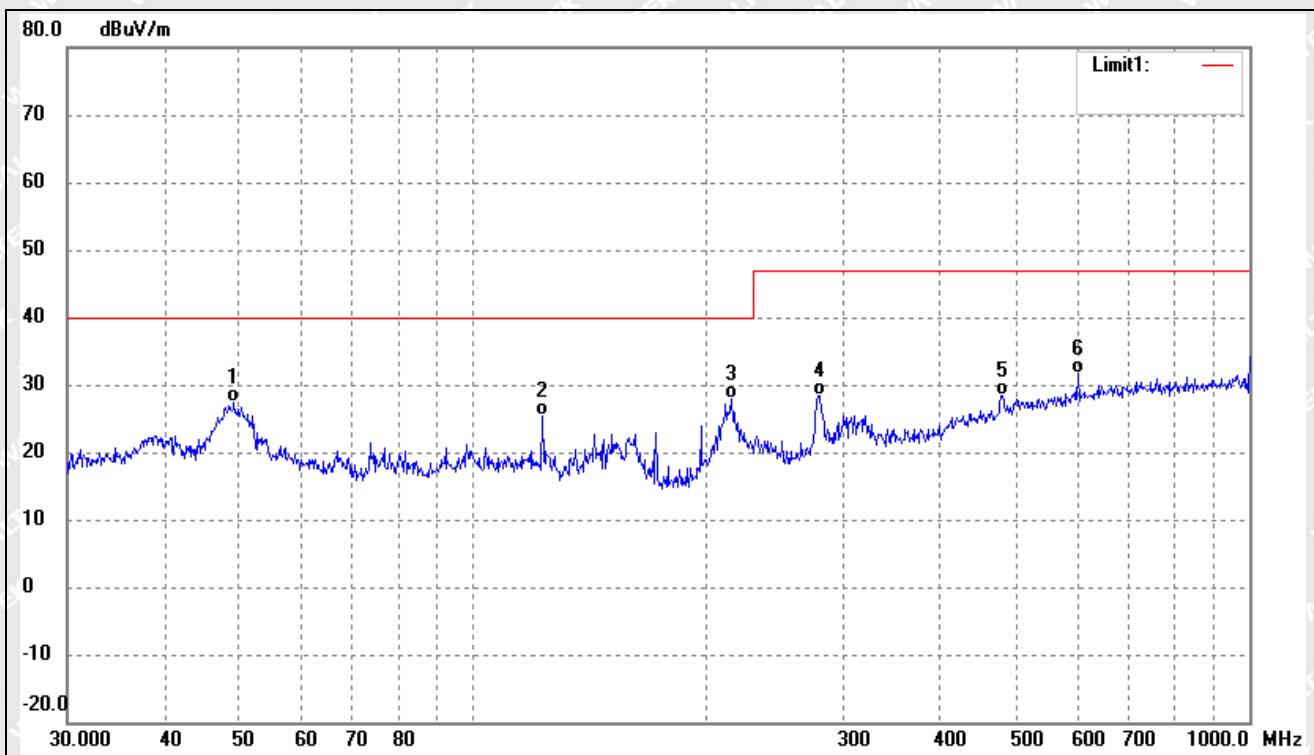
Test mode:	TM1	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree	Height (cm)	Remark
1	49.5328	27.95	-6.97	20.98	40.00	-19.02	-	-	QP
2	98.1419	30.47	-9.07	21.40	40.00	-18.60	-	-	QP
3	143.3261	34.69	-12.38	22.31	40.00	-17.69	-	-	QP
4	213.7634	38.16	-9.32	28.84	40.00	-11.16	-	-	QP
5	278.0669	40.92	-7.55	33.37	47.00	-13.63	-	-	QP
6	909.6667	34.81	2.72	37.53	47.00	-9.47	-	-	QP



Test mode:	TM1	Polarity:	Vertical
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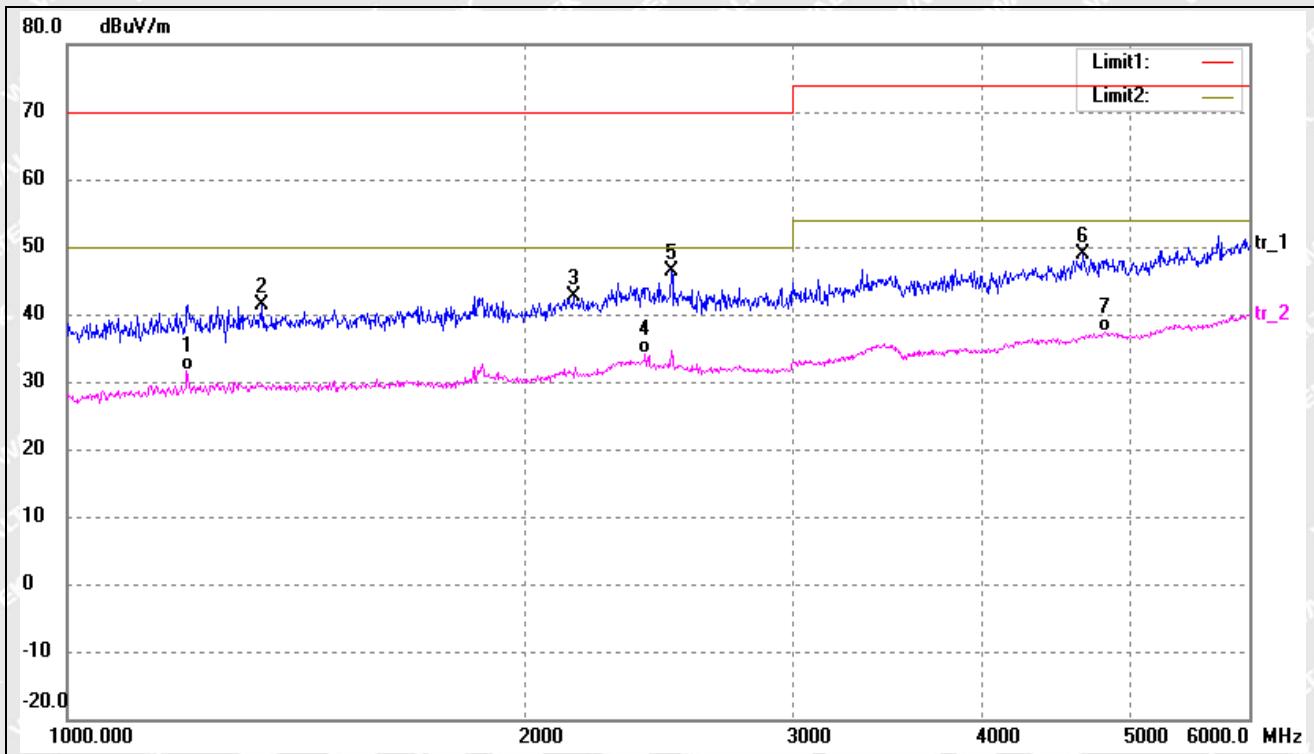


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree	Height (cm)	Remark
1	49.1866	34.39	-6.97	27.42	40.00	-12.58	-	-	QP
2	122.8340	35.48	-10.12	25.36	40.00	-14.64	-	-	QP
3	215.2678	37.13	-9.28	27.85	40.00	-12.15	-	-	QP
4	280.0238	35.90	-7.49	28.41	47.00	-18.59	-	-	QP
5	480.5276	30.23	-1.79	28.44	47.00	-18.56	-	-	QP
6	601.4265	31.17	0.39	31.56	47.00	-15.44	-	-	QP



➤ Above 1GHz

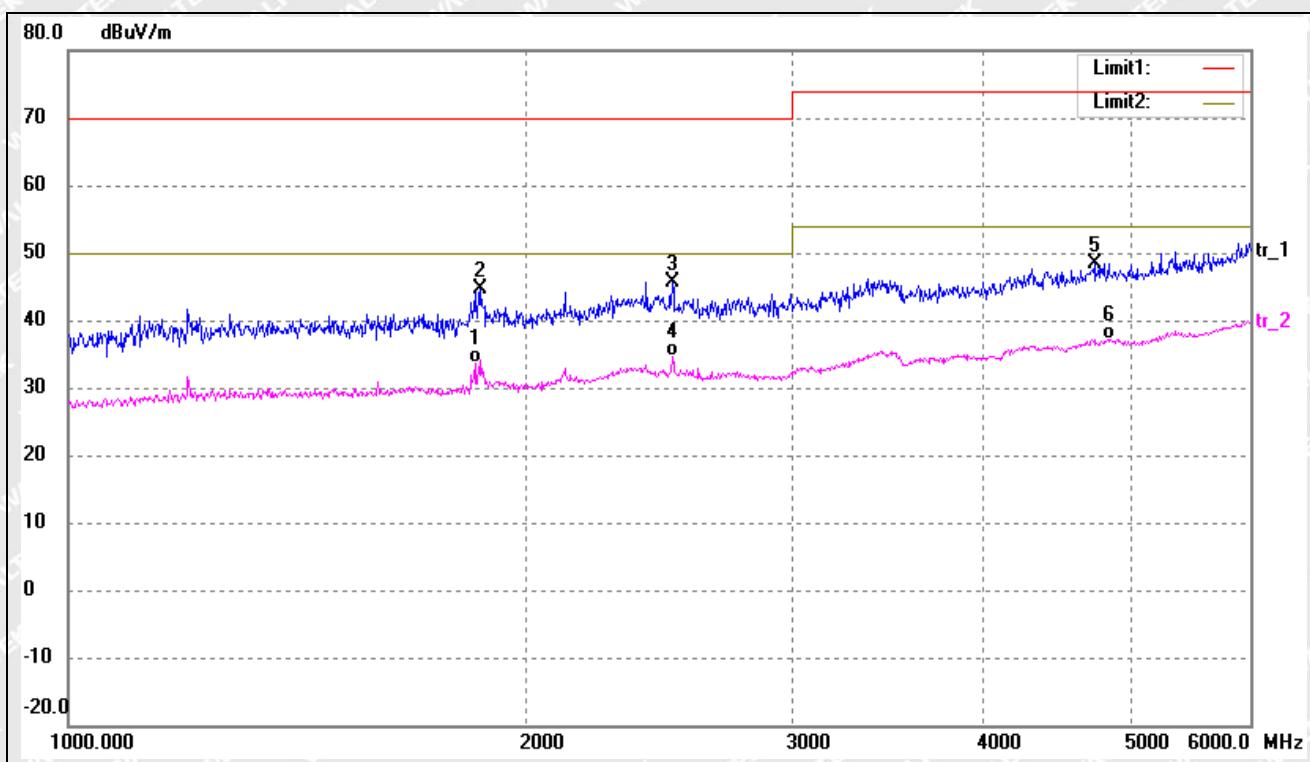
Test mode:	TM1(worst case)	Polarity:	Horizontal
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	1198.377	44.63	-12.91	31.72	50.00	-18.28	-	-	AVG
2	1343.987	53.70	-12.27	41.43	70.00	-28.57	-	-	peak
3	2153.023	52.07	-9.35	42.72	70.00	-27.28	-	-	peak
4	2401.684	42.45	-8.44	34.01	50.00	-15.99	-	-	AVG
5	2498.247	54.44	-8.08	46.36	70.00	-23.64	-	-	peak
6	4660.494	52.03	-3.14	48.89	74.00	-25.11	-	-	peak
7	4821.884	40.09	-2.83	37.26	54.00	-16.74	-	-	AVG



Test mode:	TM1(worst case)	Polarity:	Vertical
------------	-----------------	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1852.184	43.99	-10.41	33.58	50.00	-16.42	-	-	AVG
2	1868.851	54.96	-10.35	44.61	70.00	-25.39	-	-	peak
3	2498.247	53.75	-8.08	45.67	70.00	-24.33	-	-	peak
4	2498.247	42.61	-8.08	34.53	50.00	-15.47	-	-	AVG
5	4736.257	51.43	-2.98	48.45	74.00	-25.55	-	-	peak
6	4839.195	39.95	-2.79	37.16	54.00	-16.84	-	-	AVG

Remark: '-' Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

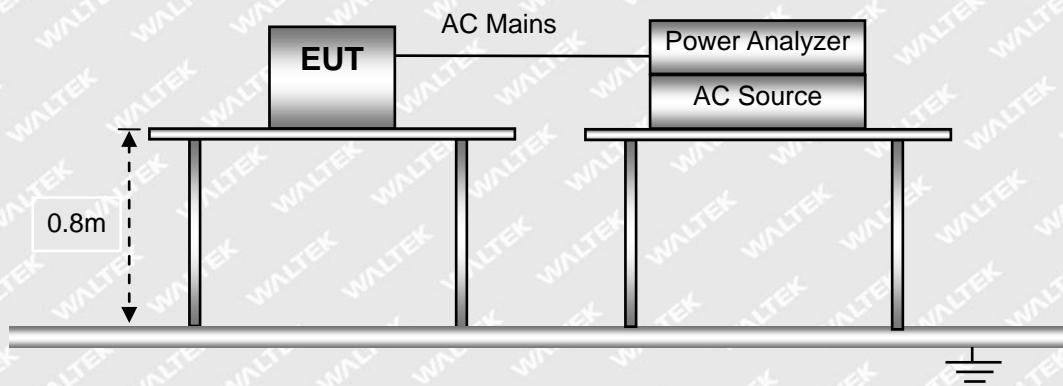


5. Harmonic Current Emissions

5.1 Test Procedure

Test is conducted under the description of EN 61000-3-2.

5.2 Test Setup Block Diagram



5.3 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

5.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1015 mbar

5.5 Harmonic Current Emissions Test Data

According to Clause 7 of EN61000-3-2, the EUT rated power is less than 75W, belong to ‘equipment with a rated power of 75W or less’, therefore ‘limits are not specified in this edition of the standards’. It is deemed to fully fit the requirements of the standards.

Result: The EUT complies with the requirements of this section.

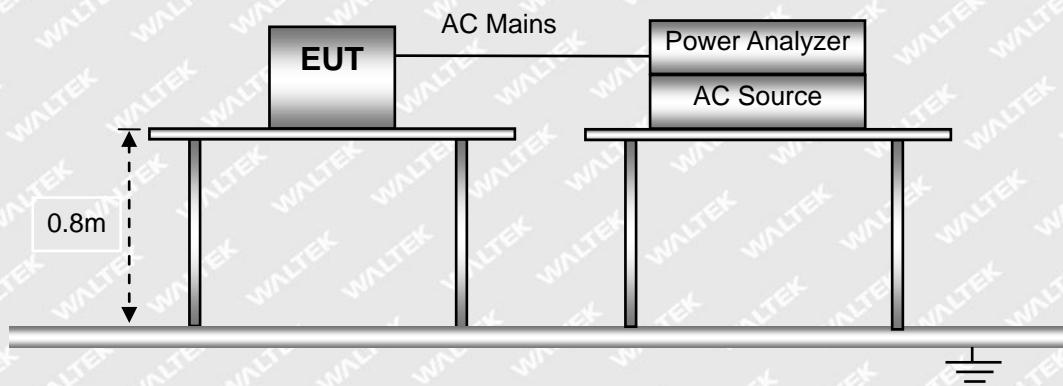


6. Voltage Fluctuation and Flicker

6.1 Test Procedure

Test is conducted under the description of EN 61000-3-3.

6.2 Test Setup Block Diagram



6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

6.4 Environmental Conditions

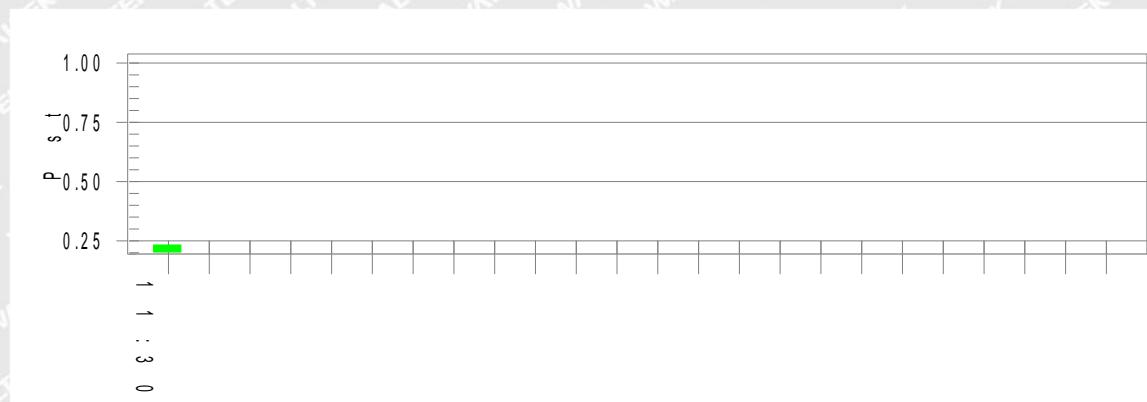
Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1015 mbar

6.5 Voltage Fluctuation and Flicker Test Data



Test mode:

TM1(worst case)

Test Result: Pass**Status: Test Completed****Pst_i and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:**

Vrms at the end of test (Volt): 230.12

Highest dt (%):

T-max (mS): 0

Test limit (%):

Test limit (mS): 500.0 Pass

Highest dc (%):

Test limit (%): 3.30 Pass

Highest dmax (%):

Test limit (%): 4.00 Pass

Highest Pst (10 min. period): 0.233

Test limit: 1.000 Pass

Highest Plt (2 hr. period): 0.102

Test limit: 0.650 Pass

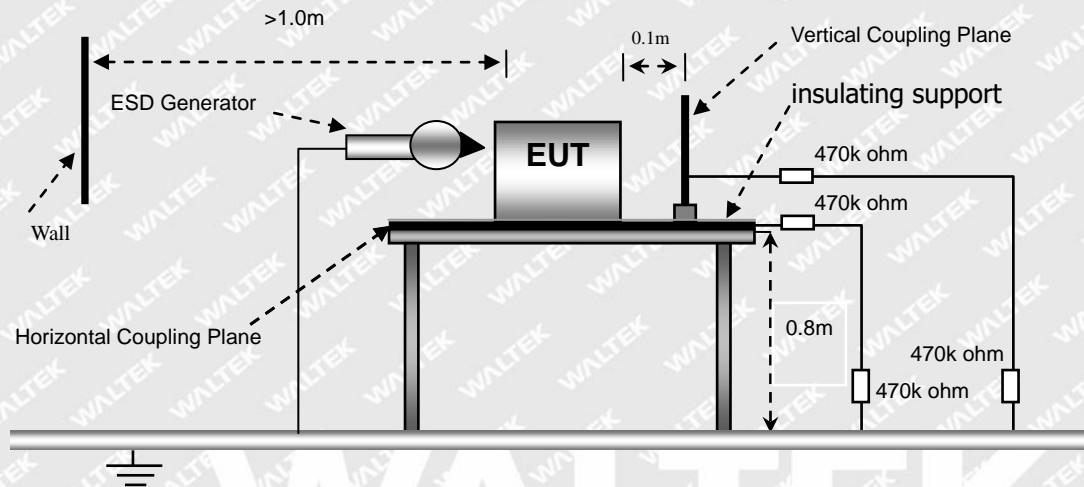


7. Electrostatic Discharge (ESD)

7.1 Test Procedure

Test is conducted under the description of EN 61000-4-2.

7.2 Test Setup Block Diagram



7.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	B
	TM3-TM11	Pass

Note: TM2-TM11 for TT,TR

7.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

7.5 Electrostatic Discharge Immunity Test Data



Test mode	TM1-TM2							
EN 61000-4-2	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Air Discharge								
Enclosure Port	A	A	A	A	A	A	A	A
Direct Contact Discharge								
Antenna Port	A	A	A	A	/	/	/	/
Indirect Contact Discharge								
HCP (6 Sides)	A	A	A	A	/	/	/	/
VCP (4 Sides)	A	A	A	A	/	/	/	/

Test mode	TM3-TM11							
EN 61000-4-2	Test Levels (kV)							
	-2	+2	-4	+4	-6	+6	-8	+8
Air Discharge								
Enclosure Port	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Direct Contact Discharge								
Antenna Port	Pass	Pass	Pass	Pass	/	/	/	/
Indirect Contact Discharge								
HCP (6 Sides)	Pass	Pass	Pass	Pass	/	/	/	/
VCP (4 Sides)	Pass	Pass	Pass	Pass	/	/	/	/

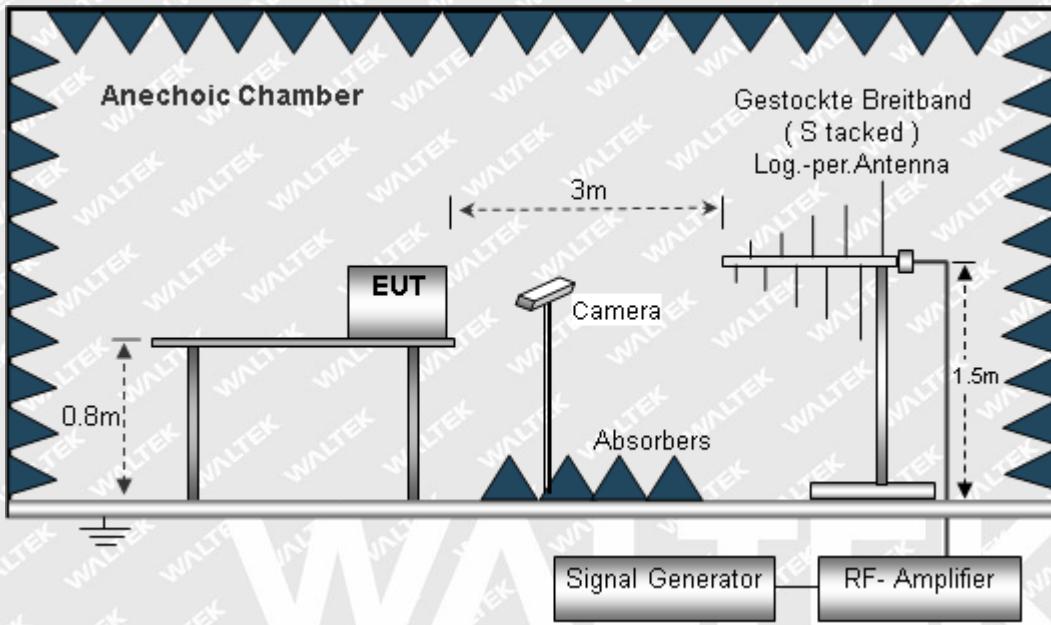


8. Radio Frequency Electromagnetic Field (R/S)

8.1 Test Procedure

Test is conducted under the description of EN 61000-4-3.

8.2 Test Setup Block Diagram



8.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	A
	TM3-TM11	Pass

Note: TM2-TM11 for CT, CR; TM5 for CR

8.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

8.5 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth



Test mode		TM1-TM2							
Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A
1000-3000	3	A	A	A	A	A	A	A	A
3000-6000	3	A	A	A	A	A	A	A	A

Test mode:		TM3-TM11			
Type	Antenna Polar.	Observation item	Test Result	Limit	Result
WCDMA Band 1	VERT/HORI	Speech output level	-46.35	<-35	Pass
		BER	0	<0.001	
WCDMA Band 8	VERT/HORI	Speech output level	-44.15	<-35	Pass
		BER	0	<0.001	
LTE Band 1	VERT/HORI	Throughput	100	>95	Pass
LTE Band 3	VERT/HORI	Throughput	100	>95	Pass
LTE Band 7	VERT/HORI	Throughput	100	>95	Pass
LTE Band 8	VERT/HORI	Throughput	100	>95	Pass
LTE Band 20	VERT/HORI	Throughput	100	>95	Pass
LTE Band 38	VERT/HORI	Throughput	100	>95	Pass
LTE Band 40	VERT/HORI	Throughput	100	>95	Pass

Idle mode cannot get any unintentionally operation.

Test Result: Pass



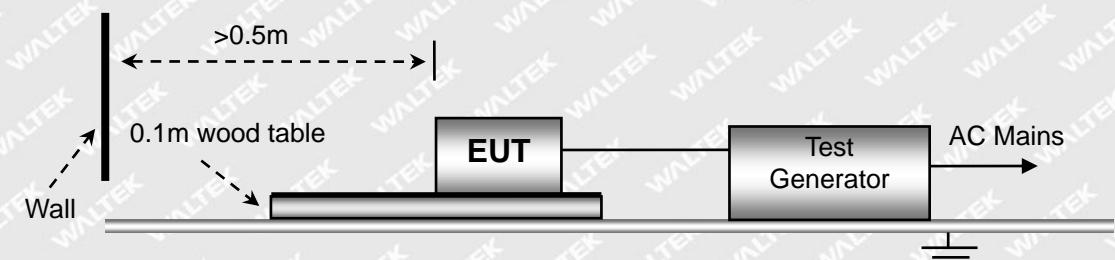
9. Fast Transients, Common Mode (EFT)

9.1 Test Procedure

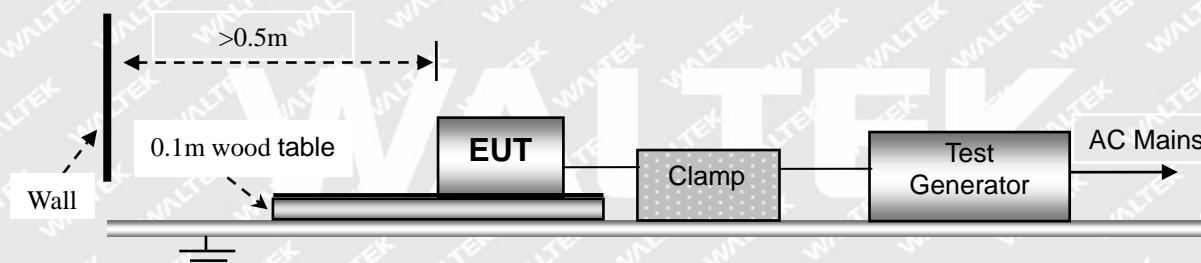
Test is conducted under the description of EN 61000-4-4.

9.2 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



9.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	B
	TM3-TM11	Pass

Note: TM2-TM11 for TT,TR

9.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.5 Electrical Fast Transients Test Data



Test Mode		TM1-TM2							
EN 61000-4-4 Test Line		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC Main Power port	L	A	A	A	A	/	/	/	/
	N	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L-N	A	A	A	A	/	/	/	/
	L-PE	/	/	/	/	/	/	/	/
	N-PE	/	/	/	/	/	/	/	/
	L-N-PE	/	/	/	/	/	/	/	/
Signal ports	/	/	/	/	/	/	/	/	/

Test Mode		TM2-TM11							
EN 61000-4-4 Test Line		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC Main Power port	L	Pass	Pass	Pass	Pass	/	/	/	/
	N	Pass	Pass	Pass	Pass	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L-N	Pass	Pass	Pass	Pass	/	/	/	/
	L-PE	/	/	/	/	/	/	/	/
	N-PE	/	/	/	/	/	/	/	/
	L-N-PE	/	/	/	/	/	/	/	/
Signal ports	/	/	/	/	/	/	/	/	/

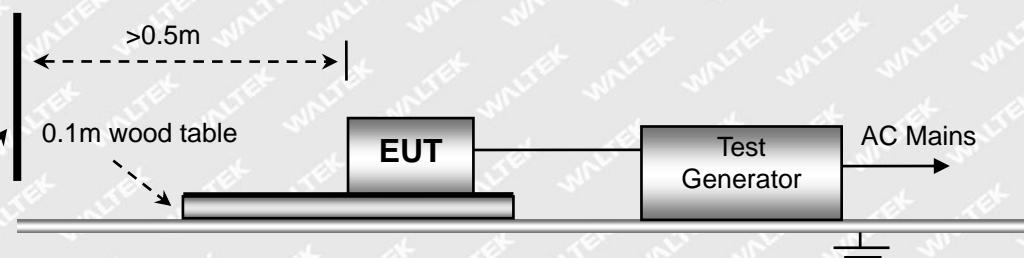
10. Surges

10.1 Test Procedure

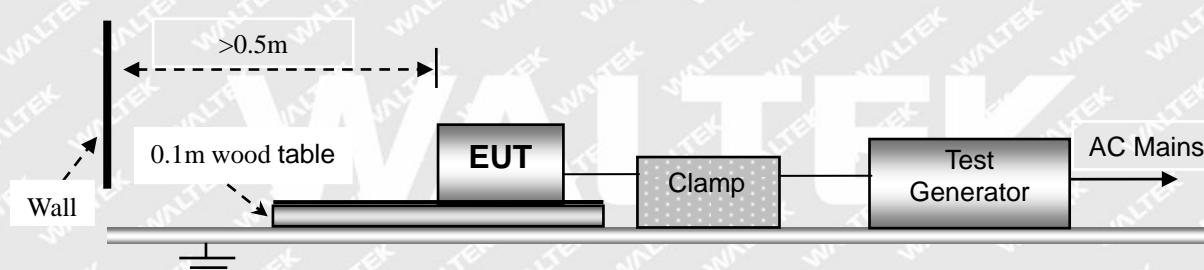
Test is conducted under the description of EN 61000-4-5.

10.2 Test Setup Block Diagram

For AC Mains or DC Ports:



For Signal or Telecommunication Ports:



10.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	B
	TM3-TM11	Pass

Note: TM2-TM11 for TT,TR

10.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.5 Surge Test Data



Test Mode	TM1-TM2			
Voltage	Poll	Path	Pass	Fail
0.5kV	±	L-N	A	/
1kV	±	L-N	A	/
2kV	±	L-N, L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/

Test Mode	TM3-TM11			
Voltage	Poll	Path	Pass	Fail
0.5kV	±	L-N	Pass	/
1kV	±	L-N	Pass	/
2kV	±	L-N, L-PE, N-PE	/	/
4kV	±	L-N, L-PE, N-PE	/	/



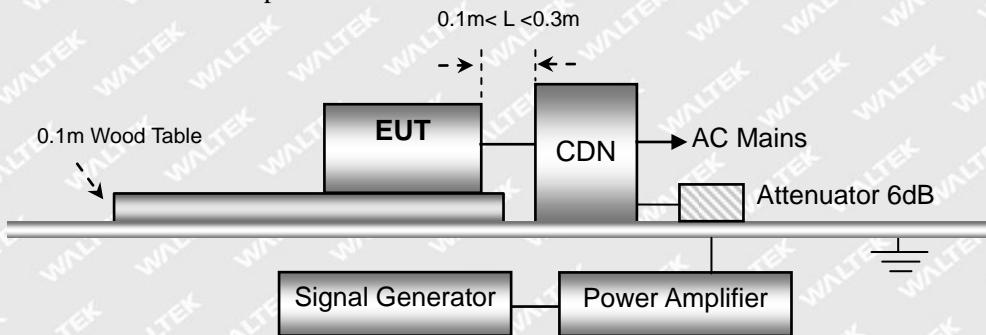
11. Radio Frequency, Common Mode (C/S)

11.1 Test Procedure

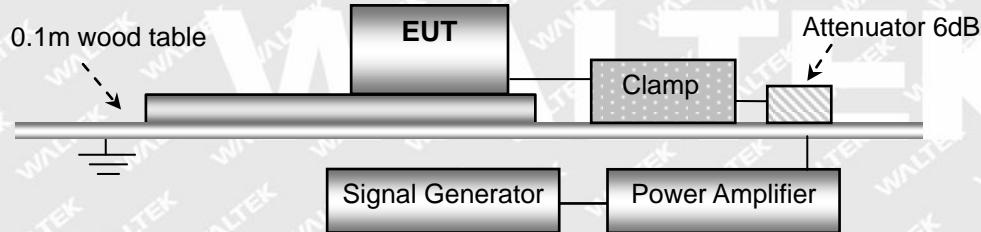
Test is conducted under the description of EN 61000-4-6.

11.2 Test Setup Block Diagram

For AC Mains or DC Input:



For Signal or Telecommunication Ports:



11.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	A
	TM3-TM11	Pass

Note: TM2-TM11 for CT,CR

11.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.5 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second



Test Mode		TM1-TM2		
Level	Voltage (V) (rms, unmodulated)	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Mode		TM3-TM11			
Type	Injected Position	Observation item	Test Result	Limit	Result
WCDMA Band 1	AC Mains	Speech output level	-46.69	<-35	Pass
		BER	0	<0.001	
WCDMA Band 8	AC Mains	Speech output level	-47.12	<-35	Pass
		BER	0	<0.001	
LTE Band 1	AC Mains	Throughput	100	>95	Pass
LTE Band 3	AC Mains	Throughput	100	>95	Pass
LTE Band 7	AC Mains	Throughput	100	>95	Pass
LTE Band 8	AC Mains	Throughput	100	>95	Pass
LTE Band 20	AC Mains	Throughput	100	>95	Pass
LTE Band 38	AC Mains	Throughput	100	>95	Pass
LTE Band 40	AC Mains	Throughput	100	>95	Pass

Idle mode cannot get any unintentionally operation.

Test Result: Pass

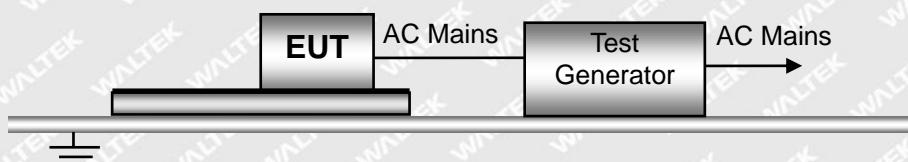


12. Voltage Dips and Interruptions

12.1 Test Procedure

Test is conducted under the description of EN 61000-4-11.

12.2 Test Setup Block Diagram



12.3 Test Performance

Performance Criterion:	Mode	Verdict
	TM1-TM2	B for voltage dip/ C for voltage interruption
	TM3-TM11	Pass

Note: TM3-TM11 for TT,TR

12.4 Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

12.5 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	A	/
2	100%	20ms	0/90/180/270	3	B	/
3	30%	500ms	0/90/180/270	3	B	/
4	100%	5000ms	0/90/180/270	3	C	/



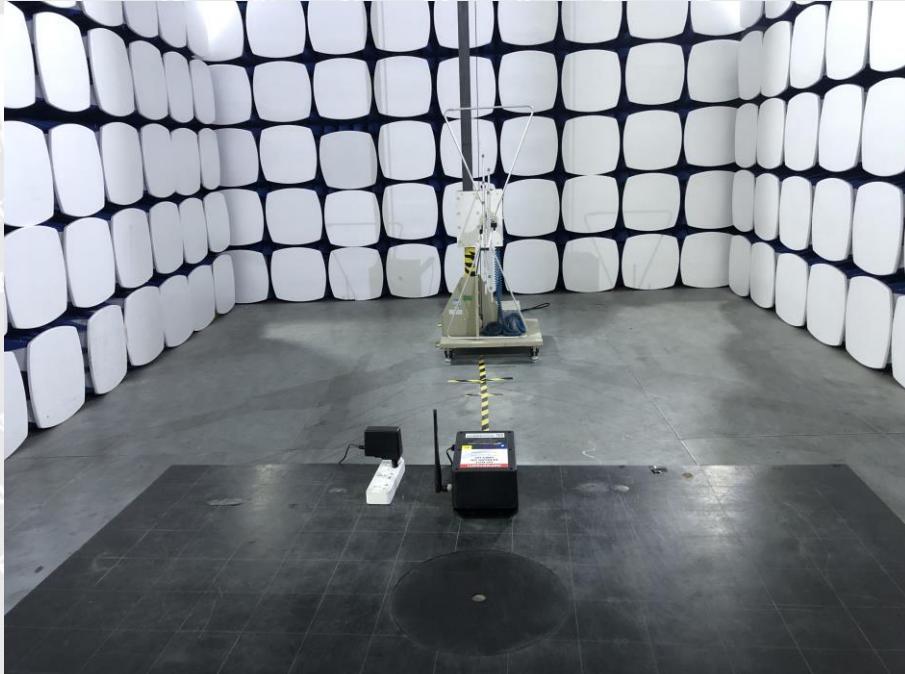
EXHIBIT 1 - EUT PHOTOGRAPHS

Please refer to "ANNEX".

WALTEK



EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

<p>Conducted Emission Test Setup</p>	 A photograph showing a test setup on a wooden bench. On the left, there is a grey electronic device connected to a power source. In the center, a metal chassis with various components and cables is visible. To the right, a black 4G router sits on a wooden stand. A red cable runs from the center setup towards the left.
<p>Radiation Emission Test View(30MHz to 1GHz)</p>	 A photograph of a radiation emission test chamber. The walls are covered in white absorber panels arranged in a grid pattern. In the center, a tall vertical antenna is mounted on a tripod. On the floor in front of the antenna, there is a small cart holding some equipment. Two black rectangular devices with antennas are placed on the floor to the left and right of the central antenna.



**Radiation Emission Test
Setup ((Above 1GHz))**



Flicker Test View

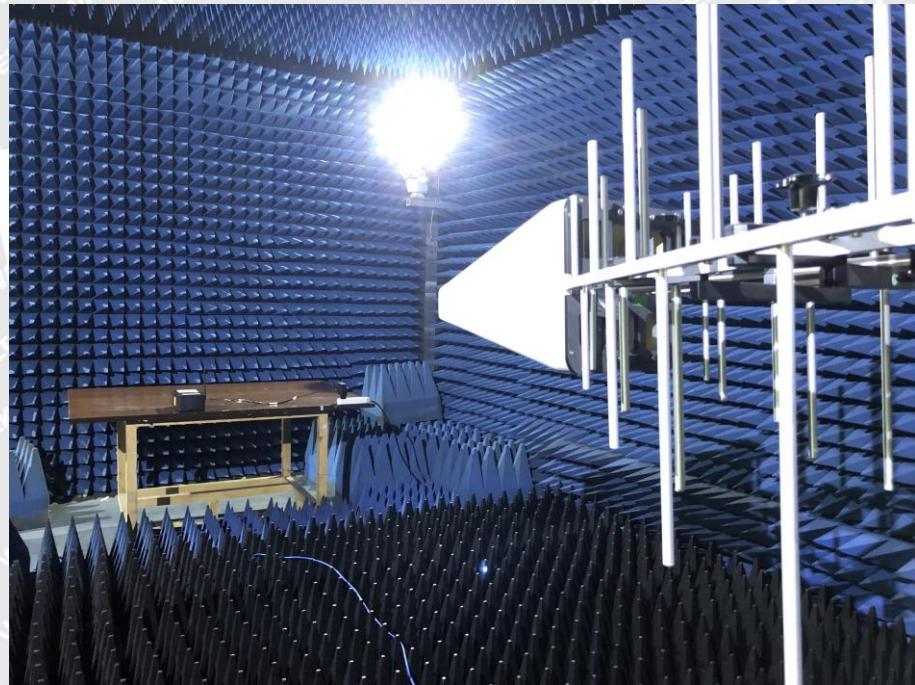




EN 61000-4-2 Test View



EN 61000-4-3 Test View

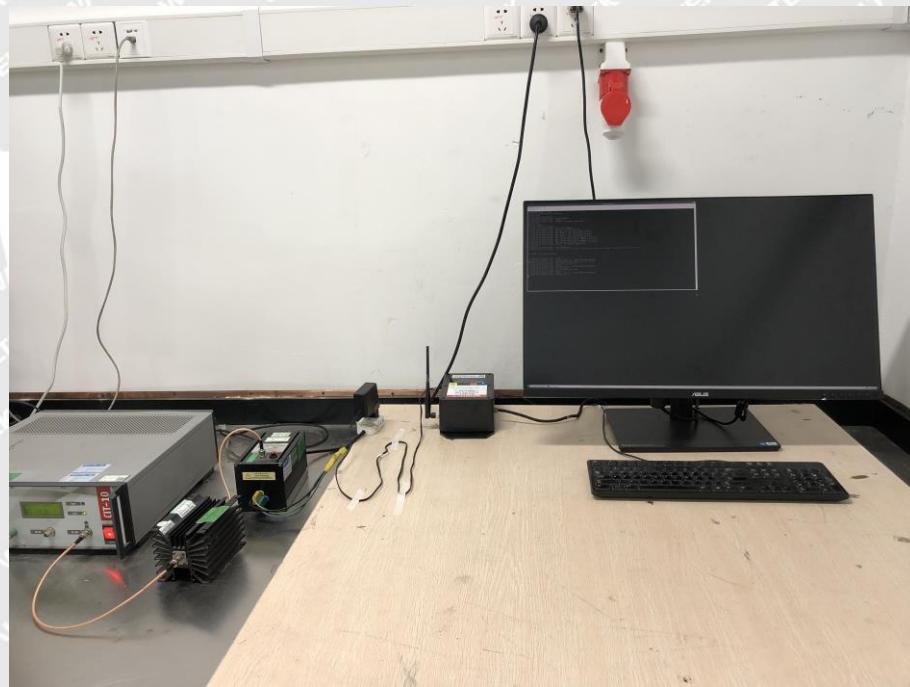




**EN 61000-4-4/5/11 Test
View**



EN 61000-4-6 Test View



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