Shenzhen Huatongwei International Inspection Co., Ltd.
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TEST REPORT

Report Reference No. ..... :	**TRE1603019109** R/C…….: 14043
Applicant's name ..... :	**Vonino Electronics Limited**
Address.....:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer.....:	Vonino Electronics Limited
Address.....:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong
Test item description ..... :	**XAVY L8 / Epic M8**
Trade Mark .....:	vonino
Model/Type reference.....:	T8S
Listed Model(s) .....:	-
Standard ..... :	**ETSIEN301 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**
Date of receipt of test sample……..:	Mar 29, 2016
Date of testing……:	Mar 30, 2016- Apr 20, 2016
Date of issue……...:	Apr 20, 2016
Result..... ……..:	**PASS**

Compiled by (position+printedname+signature)...:	File administrators Shayne Zhu	Shayne Zhu
Supervised by (position+printedname+signature)....:	Project Engineer Lion Cai	Lion Cai
Approved by (position+printedname+signature)....:	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS AND TEST DESCRIPTION 3

1.1. Test Standards 3
1.2. Test Description 3

2. SUMMARY 4

2.1. Client Information 4
2.2. Product Description 4
2.3. EUT operation mode 6
2.4. EUT configuration 7
2.5. Modifications 7

3. TEST ENVIRONMENT 8

3.1. Address of the test laboratory 8
3.2. Test Facility 8
3.3. Environmental conditions 9
3.4. Statement of the measurement uncertainty 9
3.5. Equipments Used during the Test 10

4. TEST CONDITIONS AND RESULTS 12

4.1. EMISSION 12
4.1.1. Radiated Emission 12
4.1.2. Conducted Emission (AC Mains) 15
4.1.3. Harmonic Current Emission 18
4.1.4. Voltage Fluctuation and Flicker 19
4.2. IMMUNITY 23
4.2.1. Performance criteria 23
4.2.2. Electrostatic Discharge 28
4.2.3. RF Electromagnetic Field 30
4.2.4. Fast Transients Common Mode 48
4.2.5. Surge 49
4.2.6. Radio frequency common mode 50
4.2.7. Voltage dips and interruptions 56

5. TEST SETUP PHOTOS 57

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT 60

1. Test Standards and Test description

1.1. Test Standards

The tests were performed according to following standards:

ETSI EN 301 489-1V1.9.2 (2011-09)–Electromagnetic compatibilityand Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 489-3V1.6.1 (2013-08)–Electromagnetic compatibilityand Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC)standard for radio equipment and services;Part 3: Specific conditions for Short-Range Devices (SRD)operating on frequencies between 9 kHz and 246 GHz
ETSI EN 301 489-7V1.3.1 (2005-11)–Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio, and ancillary equipment of digital cellular radio telecommunications systems (EHSM and DCS)
ETSI EN 301 489-17V2.2.1 (2012-09)–Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for wideband transmission systems
ETSI EN 301 489-24V1.5.1 (2010-10)–Electromagnetic compatibilityand Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standardfor radio equipment and services;Part 24: Specific conditions for IMT-2000 CDMADirect Spread (UTRA and E-UTRA) forMobile and portable (UE) radio and ancillary equipment

1.2. Test Description

Test item	Standards requirement	Result
RadiatedEmission	ETSI EN301 489-1 Clause 7.1	Pass
Conducted Emission(AC Mains)	ETSI EN301 489-1 Clause 7.1	Pass
Harmonic Current Emissions	ETSI EN301 489-1 Clause 7.1	Pass
Voltage Fluctuations and Flicker	ETSI EN301 489-1 Clause 7.1	Pass
Electrostatic Discharge	ETSI EN301 489-1 Clause 7.2	Pass
RF Electromagnetic Field	ETSI EN301 489-1 Clause 7.2	Pass
Fast Transients Common Mode	ETSI EN301 489-1 Clause 7.2	Pass
Surges, Line to Line and Line to Ground	ETSI EN301 489-1 Clause 7.2	Pass
RF Common Mode 0,15 MHz to 80 MHz	ETSI EN301 489-1 Clause 7.2	Pass
Voltage Dips and Interruptions	ETSI EN301 489-1 Clause 7.2	Pass

Remark: The measurement uncertainty is not included in the test result.

2. Summary

2.1. Client Information

Applicant:	Vonino Electronics Limited
Address:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer:	Vonino Electronics Limited
Address:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong

2.2. Product Description

Product Name:	XAVY L8 / Epic M8
Trade Mark:	vonino
Model/Type reference:	T8S
Listed Model(s)::	-
Power supply:	DC 3.7V From internal battery
Adapter information:	Model:FJ-SW728L0502000UE Input:AC 100-240V,50/60Hz 0.4A Max Output: 5Vd.c., 2000mA
2G	
Operation Band:	GSM900,DCS1800
Supported type:	GSM/GPRS/ EGPRS
Power Class:	GSM900:Power Class 4 DCS1800:Power Class 1 PCS1900:Power Class 1
Modilation Type:	GMSK for GSM/GPRS GMSK, 8PSK for EGPRS
GSM Release Version	R99
GPRSMultislot Class	12
EGPRSMultislot Class	12
WCDMA	
Operation Band:	FDD Band I and FDD Band VIII
Power Class:	Power Class 3
Modilation Type:	QPSK for WCDMA/HSUPA/HSDPA/HSPA+
WCDMA Release Version:	R7
HSDPA Release Version:	Release 8
HSUPA Release Version:	Release 6
DC-HSUPA Release Version:	Not Supported
LTE	
Operation Band:	FDD Band 3 , FDD Band 7 and FDD Band 20
Power Class:	Power Class 3
Modulation type:	QPSK,16QAM
Hardware version:	V1.1
Software version:	vonino_v1.1.2

2.4GHz WIFI	
Supported type:	802.11b/802.11g/802.11n(H20)
Modulation:	802.11b: DSSS 802.11g/802.11n(H20):OFDM
Operation frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2472MHz
Channel number:	802.11b/802.11g/802.11n(H20): 13
Channel separation:	5MHz
5GHz WIFI	
Supported type:	802.11a/n(H20),802.11n(H40)
Modulation:	OFDM
Operation frequency:	5150MHz~5250MHz
Channel number:	802.11a/n(H20):4 , 802.11n(H40):2
Channel separation:	5MHz
Bluetooth	
Version:	Supported BT4.0+EDR/BLE
Modulation:	GFSK, π/4DQPSK, 8DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79/40
Channel separation:	1MHz/2MHz
GPS	
Modulation:	MSK
Operation frequency:	1575.42MHz

2.3. EUT operation mode

Test mode	GSM900		DCS1800		WCDMA Band I		WCDMA Band VIII		BT	2.4GHz WIFI	GPS	Playing Vedio	PC Down Loading	Camera	FM	AC Adapter	Earphone
	Link	Idle	Link	Idle	Link	Idle	Link	Idle									
1	■								■						■	■	■
2	■									■					■	■	■
3	■										■				■	■	■
4			■						■						■	■	■
5			■							■					■	■	■
6			■								■				■	■	■
7					■				■						■	■	■
8					■					■					■	■	■
9					■						■				■	■	■
10							■		■						■	■	■
11							■			■					■	■	■
12							■				■				■	■	■
13		■							■			■				■	■
14		■								■		■				■	■
15		■									■	■				■	■
16				■					■			■				■	■
17				■						■		■				■	■
18				■							■	■				■	■
19						■			■			■				■	■
20						■				■		■				■	■
21						■					■	■				■	■
22								■	■			■				■	■
23								■		■		■				■	■
24								■			■	■				■	■
25		■							■					■		■	■
26		■								■				■		■	■
27		■									■			■		■	■
28				■					■					■		■	■
29				■						■				■		■	■
30				■							■			■		■	■
31						■			■					■			
32						■				■				■			
33						■					■			■			
34								■	■					■			
35								■		■				■			
36								■			■			■			
37													■				

Test mode	5GHz WIFI	LTE FDD Band 3		LTE FDD Band 7		LTE FDD Band 20	
		Link	Idle	Link	Idle	Link	Idle
38		■					
39			■				
40						■	
41							■
42				■			
43					■		
44	■						

All the tests are performed at each SIM card mode, the datum recorded is the worst case for all the mode at SIM1 Card mode.

Note:
1. ■ is operation mode.
Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
Conducted emission	Mode 2
Radiated emission	Mode 16
EMS	RS,CS: 2,6, 7,10,14,16,19, 22,38,39,40,41,42,43 Others: All Modes

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer
○ - supplied by the lab

		Length (m) :	/
		Shield :	/
		Detachable :	/
		Manufacturer :	/
		Model No. :	/

2.5. Modifications

No modifications were implemented to meet testing criteria.

3. Test Environment

3.1. Address of the test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

3.2. Test Facility

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

CNAS-Lab Code: L1225
Shenzhen Huatongwei International Inspection Co., Ltd. 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, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

A2LA-Lab Cert. No. 3902.01
Shenzhen Huatongwei International Inspection Co., Ltd. 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: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

FCC-Registration No.: 317478
Shenzhen Huatongwei International Inspection 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. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

IC-Registration No.: 5377A&5377B
The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.
Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

ACA
Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

VCCI
The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.
Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.
Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.
Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV
Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

3.3. Environmental conditions

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

Normal Temperature:	25°C
Lative Humidity	55 %
Air Pressure	989 hPa

3.4. Statement of the 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 CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd 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.

Hereafter the best measurement capability for Shenzhen Huatongweilaboratory is reported:

Test Item	Range	MeasurementUncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.5. Equipments Used during the Test

Radiated Emission/ Radiated power						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	538	11/8/2014	11/7/2017
2	Emi Test Receiver	R&S	ESCI	101247	11/3/2015	11/2/2016
3	Pre-amplifer	SCHWARZBECK	BBV 9743	9743-0022	11/3/2015	11/2/2016
4	Turntable	Maturo Germany	TT2.0-1T	\	N/A	N/A
5	Antenna Mast	Maturo Germany	CAM-4.0-P-12	\	N/A	N/A
6	Test Software	R&S	ES-K1	/	N/A	N/A
7	Active Rod Antenna	BEIJING Radio Instrument Factory No.2	ZN30800	/	N/A	N/A

Radiated Emission/ Radiated power						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	546	11/8/2014	11/7/2017
2	Double-Ridged-Waveguide Horn Antenna	SCHWARZBECK	9120D	1011	11/8/2014	11/7/2017
3	Spectrum Analyzer	R&S	FSP40	100597	11/3/2015	11/2/2016
4	Pre-amplifer	SCHWARZBECK	BBV 9743	9743-0022	11/3/2015	11/2/2016
5	Broadband Preamplifer	SCHWARZBECK	BBV 9718	9718-248	11/3/2015	11/2/2016
6	Turntable	Maturo Germany	TT2.0-1T	\	N/A	N/A
7	Antenna Mast	Maturo Germany	CAM-4.0-P-12	\	N/A	N/A
8	Test Software	R&S	ES-K1	/	N/A	N/A
9	Univerasal Radio Communication	R&S	CMU200	112012	11/3/2015	11/2/2016

Conducted Disturbance						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	EMI Test Receiver	R&S	ESCI	101247	11/3/2015	11/2/2016
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	11/3/2015	11/2/2016
3	Pulse Limiter	R&S	ESH3-Z2	101488	11/3/2015	11/2/2016
4	Test Software	R&S	ES-K1	N/A	N/A	N/A

Harmonic Current						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Purified Power Source	EM TEST	ACS500N	V1106108798	11/3/2015	11/2/2016
2	Harmonic And Flicker Analyzer	EM TEST	DPA500N	V1106108797	11/3/2015	11/2/2016

3	Test Software	EM TEST	DPA	/	NA	NA

RF Field Strength Susceptibility RS						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	IFR	2032	203002/100	11/7/2015	11/6/2016
2	Amplifier	AR	150W1000	301584	11/7/2015	11/6/2016
3	Dual Directional Coupler	AR	DC6080	301508	11/7/2015	11/6/2016
4	Power Head	AR	PH2000	301193	11/7/2015	11/6/2016
5	Power Meter	AR	PM2002	302799	11/7/2015	11/6/2016
6	Transmit Antenna	AR	AT1080	28570	11/7/2015	11/6/2016
7	Power Amplifier	AR	25S1G4A	0325511	11/7/2015	11/6/2016
8	Dual Directional Coupler	AR	DC7144A	0325100	11/7/2015	11/6/2016
9	Microwave Horn Antenna	AR	AT4002A	0324848	11/7/2015	11/6/2016
10	WIDEB.RADIO COMM.TESRER	R&S	CMW500	1201.0002K50	2015/11/3	2016/11/2
11	Audio Analyzar	R&S	UPL	100174	11/7/2015	11/6/2016
12	Test Software	AR	SW1004	/	NA	NA

Surge/ Electrical Fast Transient/Burst EFT/B						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0500-19	11/3/2015	11/2/2016
2	4-Lines Coupling Network	EM TEST	CNV504	1200-04	11/3/2015	11/2/2016
3	Surge Generator	EM TEST	TSS500M4	1100-04	11/3/2015	11/2/2016
4	3-Phase Coupling Network	EM TEST	CNI503 S5/16A	0606-01	11/3/2015	11/2/2016
5	Motor Driven Voltage Transformer	EM TEST	MV2616	0301-11	11/3/2015	11/2/2016
6	Test Software	EM TEST	ISM IEC	/	NA	NA

Conducted Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Signal Generator	IFR	2023A	202308/339	5/19/2015	5/18/2016
2	Amplifier	HAEFELY	PAMP 250	154321	5/19/2015	5/18/2016
3	6db Attenuator	SUHNER	6dB/50ohm	5906.17.0005/770425	5/19/2015	5/18/2016
4	CDN	HAEFELY	CDN M2/M3	2303	5/19/2015	5/18/2016
5	Em Clamp	Lüthi	EM101	35834	5/19/2015	5/18/2016
6	Test Software	HAEFELY	PAMP250	/	NA	NA

The Calication Interval was one year.

4. Test conditions and Results

4.1. EMISSION

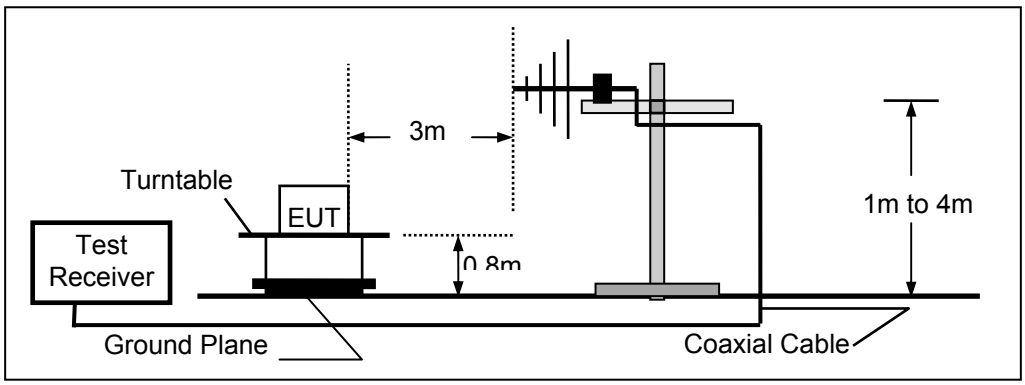
4.1.1. Radiated Emission

LIMIT

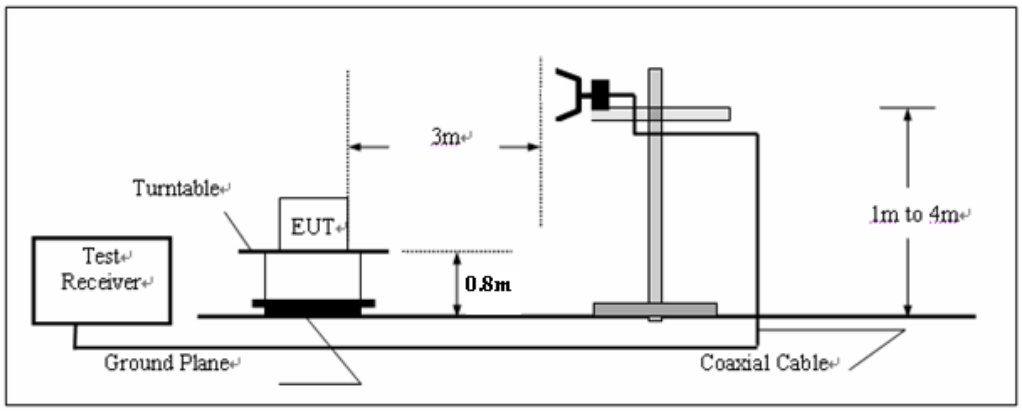
Please refer to ETSI EN301489-1 Clause 8.2.3, Table 4 and EN55022 Clause 6, Table 6, and Class B

TEST CONFIGURATION

a) Radiated emission test set-up, frequency below 1000MHz:



b) Radiated emission test set-up, frequency above 1000MHz



TEST PROCEDURE

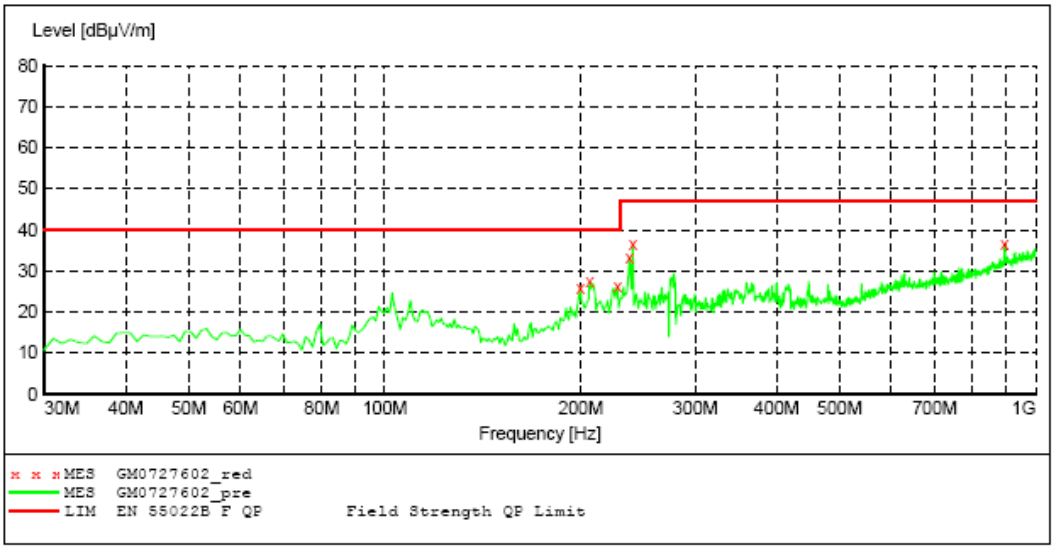
Please refer to ETSI EN 301 489-1 Clause 8.2.3 and EN 55022 Clause 6 for the measurement methods

TEST RESULTS

------Passed------

Please refer to the below test data:

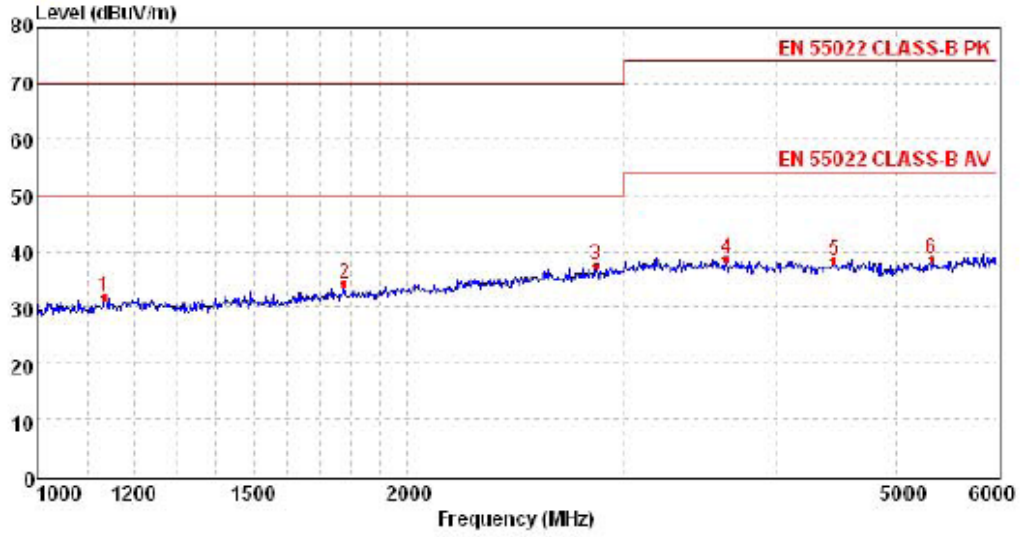
Test mode:	Mode 16	Polarization	Horizontal



MEASUREMENT RESULT: "GM0727602_red"

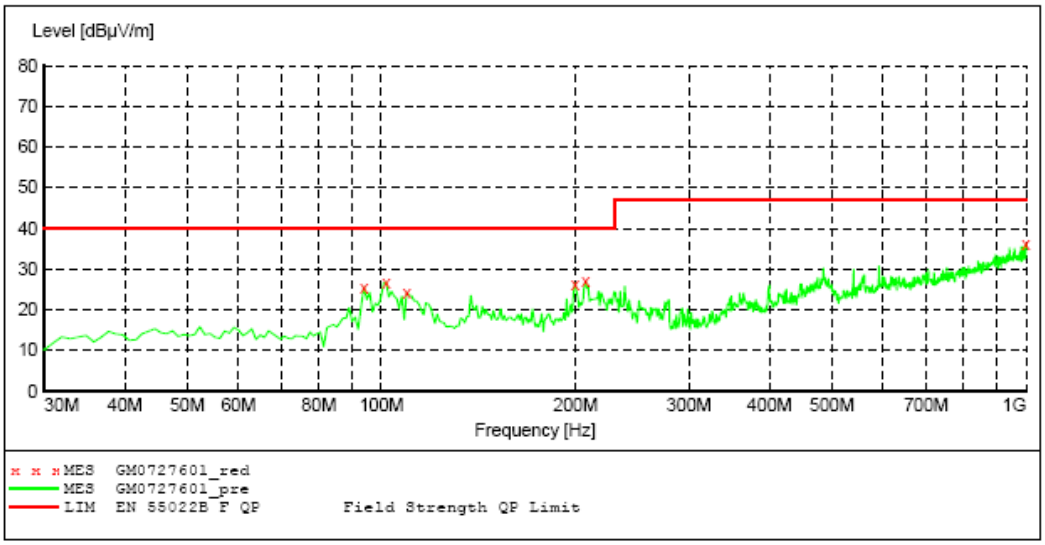
4/10/2016 9:02AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
199.750000	26.00	-13.6	40.0	14.0	QP	300.0	63.00	HORIZONTAL
206.540000	27.40	-13.9	40.0	12.6	QP	100.0	99.00	HORIZONTAL
227.880000	26.30	-14.7	40.0	13.7	QP	100.0	269.00	HORIZONTAL
237.580000	33.30	-15.1	47.0	13.7	QP	100.0	269.00	HORIZONTAL
240.490000	36.60	-15.2	47.0	10.4	QP	100.0	269.00	HORIZONTAL
896.210000	36.40	2.6	47.0	10.6	QP	100.0	236.00	HORIZONTAL



Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1135.66	39.63	24.36	4.37	36.43	31.93	70.00	-38.07	Peak
2	1777.41	39.86	25.53	5.76	37.08	34.07	70.00	-35.93	Peak
3	2847.35	39.23	28.33	7.83	37.89	37.50	70.00	-32.50	Peak
4	3633.03	38.84	28.92	8.75	37.99	38.52	74.00	-35.48	Peak
5	4440.40	36.97	30.76	8.94	38.30	38.37	74.00	-35.63	Peak
6	5311.74	35.63	31.96	9.52	38.40	38.71	74.00	-35.29	Peak

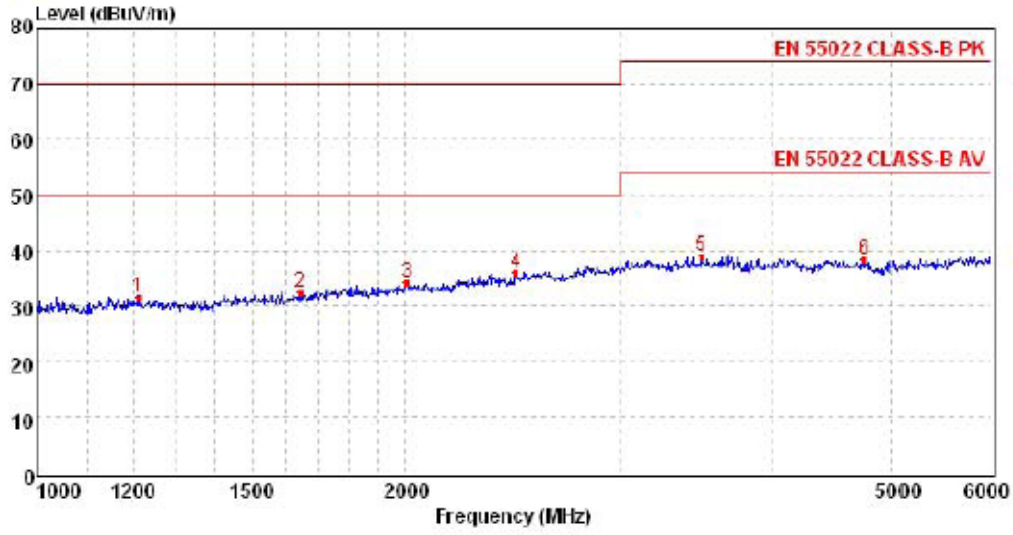
Test mode:	Mode 16	Polarization	Vertical



MEASUREMENT RESULT: "GM0727601_red"

4/20/2016 8:58AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
94.020000	25.60	-15.4	40.0	14.4	QP	100.0	57.00	VERTICAL
101.780000	26.80	-14.4	40.0	13.2	QP	100.0	70.00	VERTICAL
109.540000	24.30	-15.1	40.0	15.7	QP	100.0	140.00	VERTICAL
199.750000	26.30	-13.6	40.0	13.7	QP	100.0	296.00	VERTICAL
207.510000	27.00	-13.9	40.0	13.0	QP	100.0	140.00	VERTICAL
999.030000	36.10	4.6	47.0	10.9	QP	100.0	108.00	VERTICAL



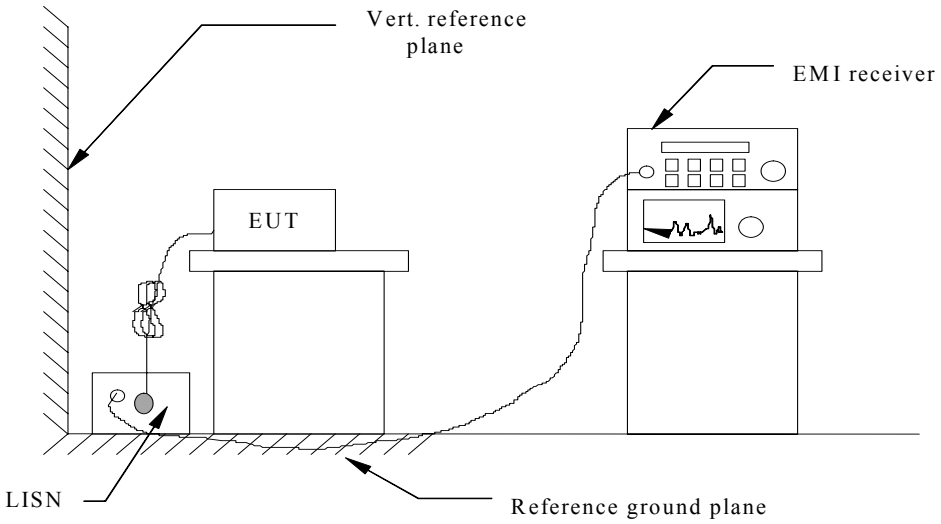
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1211.33	39.18	24.44	4.56	36.53	31.65	70.00	-38.35	Peak
2	1642.66	38.89	25.15	5.49	36.97	32.56	70.00	-37.44	Peak
3	2007.71	39.30	26.12	6.17	37.26	34.33	70.00	-35.67	Peak
4	2462.69	38.94	27.78	6.92	37.63	36.01	70.00	-33.99	Peak
5	3492.61	39.53	28.70	8.80	37.99	39.04	74.00	-34.96	Peak
6	4744.75	36.60	31.05	9.17	38.50	38.32	74.00	-35.68	Peak

4.1.2. Conducted Emission (AC Mains)

LIMIT

Please refer to ETSI EN301489-1 Clause 8.4.3, Table 8 and EN55022 Clause 5, Table 2, and Class B

TEST CONFIGURATION



TEST PROCEDURE

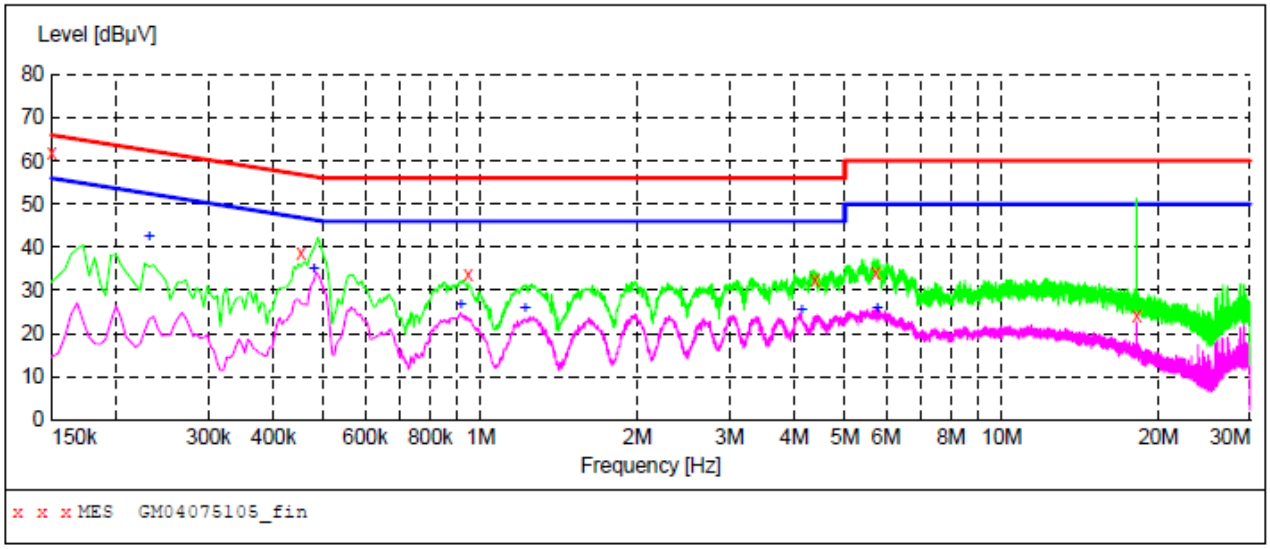
Please refer to ETSI EN 301 489-1 Clause 8.4.3 and EN 55022 Clause 5 for the measurement methods

TEST RESULTS

------Passed------

Please refer to the below test data:

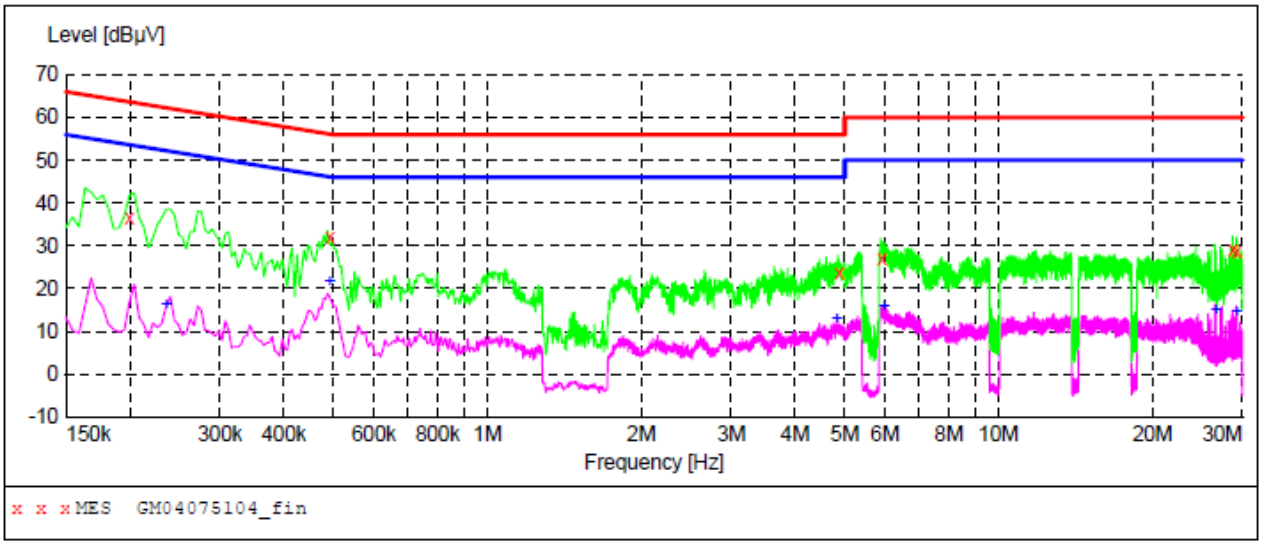
Test mode:	Mode 2	Polarization	L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	61.70	10.3	66	4.3	QP	L1	GND
0.451500	38.50	10.2	57	18.3	QP	L1	GND
0.946500	33.70	10.2	56	22.3	QP	L1	GND
4.384500	32.30	10.4	56	23.7	QP	L1	GND
5.725500	34.00	10.4	60	26.0	QP	L1	GND
18.181500	24.20	10.9	60	35.8	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	42.30	10.2	52	10.1	AV	L1	GND
0.478500	35.00	10.2	46	11.4	AV	L1	GND
0.915000	26.80	10.2	46	19.2	AV	L1	GND
1.216500	25.90	10.2	46	20.1	AV	L1	GND
4.128000	25.50	10.3	46	20.5	AV	L1	GND
5.779500	25.80	10.4	50	24.2	AV	L1	GND

Test mode:	Mode 2	Polarization	N



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199500	36.40	10.2	64	27.2	QP	N	GND
0.492000	32.10	10.2	56	24.0	QP	N	GND
4.879500	23.50	10.4	56	32.5	QP	N	GND
5.919000	27.00	10.4	60	33.0	QP	N	GND
28.684500	29.20	11.1	60	30.8	QP	N	GND
29.238000	28.70	11.1	60	31.3	QP	N	GND

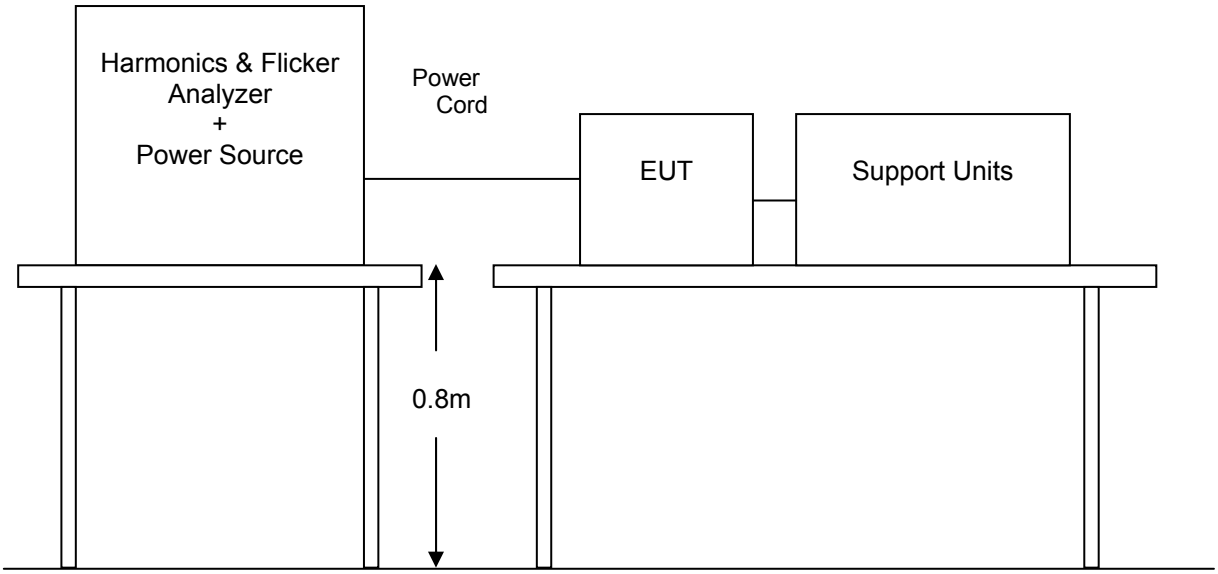
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.235500	16.10	10.2	52	36.2	AV	N	GND
0.492000	21.60	10.2	46	24.5	AV	N	GND
4.830000	13.00	10.4	46	33.0	AV	N	GND
5.973000	15.60	10.4	50	34.4	AV	N	GND
26.610000	15.00	11.0	50	35.0	AV	N	GND
29.233500	14.50	11.1	50	35.5	AV	N	GND

4.1.3. Harmonic Current Emission

LIMIT

Please refer to EN61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

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

TEST RESULTS

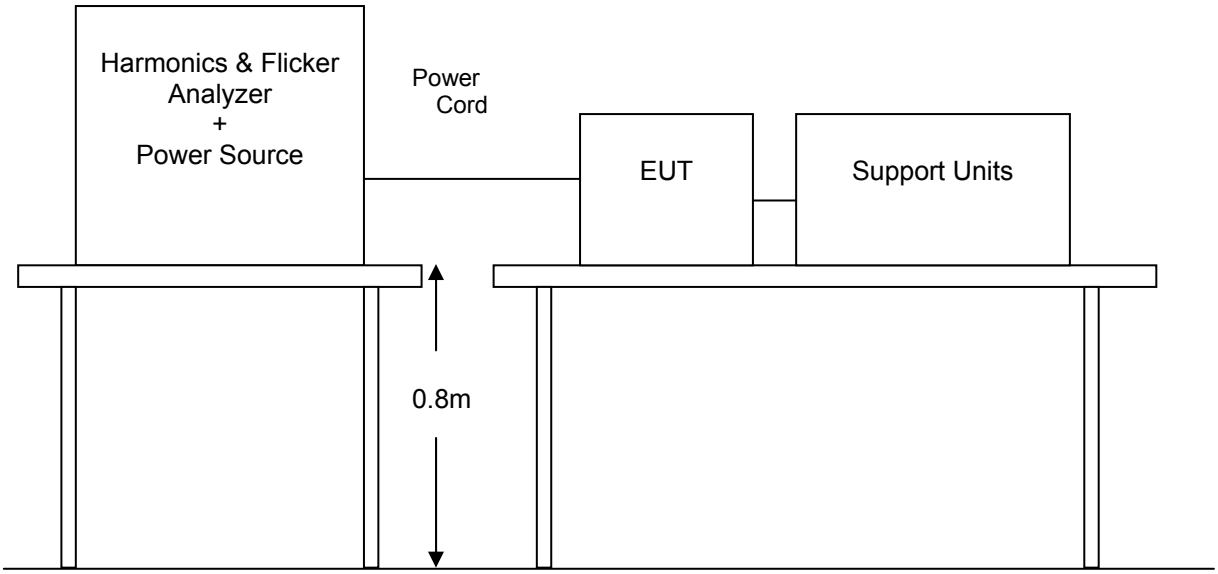
The power of the Adpter is less than 75W, So this test item is not applicable for the EUT.

4.1.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN61000-3-3

TEST CONFIGURATION



TEST PROCEDURE

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

TEST RESULTS

------Passed------

Please refer to the below test data:

Report title:	HTW0831204
Company Name:	HTW
Date of test:	09:00 06 Apr 2016
Tester:	Lion Cai
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurements)
Flickermeter:	230V / 50Hz
Flicker Impedance:	Zref (IEC 60725)
	AC 230V/50Hz

Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.027	1.00	PASS
Plt	0.027	0.65	PASS
dc [%]	0.001	3.30	PASS
dmax [%]	0.101	4.00	PASS
dt [s]	0.001	0.50	PASS

Detail Flicker data

Flicker measurement 1	EUT values	Limit	Result
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.098	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 2	EUT values	Limit	Result
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.094	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 3	EUT values	Limit	Result
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.088	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 4	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.089	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 5	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.088	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 6	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.100	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 7	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.079	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 8	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.075	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 9	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.090	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 10	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.098	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 11	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.099	4.00	PASS
dt [s]	0.001	0.50	PASS

Flicker measurement 12	**EUT values**	**Limit**	**Result**
Pst	0.027	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.095	4.00	PASS
dt [s]	0.001	0.50	PASS

4.2. IMMUNITY

4.2.1. Performance criteria

■ **ETSI EN301489-3**

Classification of SRD equipment

The product family of Short Range Devices is divided into three classes of equipment, each having its own set ofminimum performance criteria. This classification is based upon the impact on persons and/or goods in case theequipment does not operate above the specified minimum performance level under EMC stress

Class of SRD equipment	Risk assessment of receiver performance
1	Highly reliable SRD communication media; e.g. serving human life inherent systems(may result in a physical risk to a person)
2	Medium reliable SRD communication media; e.g. causing inconvenience to persons,which cannot simply be overcome by other means
3	Standard reliable SRD communication media; e.g. inconvenience to persons, whichcan simply be overcome by other means (e.g. manual)

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;

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

Class 1 SRD Equipment		
Criteria	During Test	After 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
Class 2 SRD Equipment		
Criteria	During Test	After Test
A	Operate as intended No loss of function For equipment type II the minimum performance shall be 6 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
Class 3 SRD Equipment		
Criteria	During Test	After Test
A & B	May be loss of function (one or more) No unintentional responses	Operate as intended, for equipment type II the communication link may be lost, but shall be recoverable by user No degradation of performance Lost functions shall be self-recoverable

Remark: The EUT is belonged to class 3.

Performance criteria for Continuous phenomena applied toTransmitters (CT)

For equipment of type I or II including ancillary equipment tested on a stand alone basis, the performance criteria A ofthe applicable class as given in clause 6.3 shall apply.
For equipment of type II or type III that requires a communication link that is maintained during the test, it shall beverified by appropriate means supplied by the manufacturer that the communication link is maintained during eachindividual exposure in the test sequence.
Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentionaltransmission does not occur.

Performance criteria for Transient phenomena applied toTransmitters (TT)

For equipment of type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B ofthe applicable class as given in clause 6.3 shall apply, except for power interruptions exceeding a certain time theperformance criteria deviations are specified in clause 7.2.2.
For equipment of type II or type III that requires a communication link that is maintained during the test, this shall beverified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence.
Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentionaltransmission does not occur.

Performance criteria for Continuous phenomena applied toReceivers (CR)

For equipment of type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria A ofthe applicable class as given in clause 6.3 shall apply.
For equipment of type II or III that requires a communication link that is maintained during the test, it shall be verifiedby appropriate means supplied by the manufacturer that the communication link is maintained during each individualexposure in the test sequence.
Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

Performance criteria for Transient phenomena applied toReceivers (TR)

For equipment of type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B ofthe applicable class as given in clause 6.3 shall apply, except for power interruptions exceeding a certain time theperformance criteria deviations are specified in clause 7.2.2.
For equipment of type II or type III that requires a communication link that is maintained during the test, this shall beverified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence.
Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

■ **EN301489-7**

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

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

Performance criteria for Continuous phenomena applied toTransmitters (CT)

A communication link shall be established at the start of the test, and maintained during the test,
During the test, the uplink 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, centred on 1 kHz (audio breakthrough check).
NOTE: When there is a high level background noise present the filter bandwidth can be reduced down to a minimum of 40 Hz.
At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data, andthe communication link shall have been maintained. In addition to confirming the above performance during a call, thetest shall also be performed in idle mode, and the transmitter shall not unintentionally operate.

Performance criteria for Transient phenomena applied toTransmitters (TT)

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 withno loss of user control functions or stored data, as declared by the manufacturer, and the communication link shall havebeen maintained.
In addition to confirming the above performance during a call, the test shall also be performed in idle mode, and thetransmitter shall not unintentionally operate.

Performance criteria for Continuous phenomena applied toReceivers (CR)

A communications link shall be established at the start of the test,
During the test, the RXQUAL of the downlink shall not exceed the value of three, measured during each individualexposure in the test sequence.
During the test, the downlink speech output level shall be at least 35 dB less than the previously recorded referencelevels, when measured through an audio band pass filter of width 200 Hz, centred on 1 kHz (audio breakthrough check).
NOTE: When there is a high level background noise present the filter bandwidth can be reduced down to a minimum of 40 Hz.
At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data, andthe communication link shall have been maintained.

Performance criteria for Transient phenomena applied toReceivers (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 withno loss of user control functions or stored data, as declared by the manufacturer, and the communication link shall havebeen maintained.

■ **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 programmablefunctions.
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 programmablefunctions.
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 aminimum performance level specified by the manufacturer for the use of the apparatus as intended. Insome cases the specified minimum performance level may be replaced by a permissible degradationof performance.

If the minimum performance level or the permissible performance degradation is not specified by themanufacturer 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 ifused as intended.

NOTE 2:
No degradation of performance after the test is understood as no degradation below a minimumperformance level specified by the manufacturer for the use of the apparatus as intended. In somecases the specified minimum performance level may be replaced by a permissible degradation ofperformance. 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 themanufacturer 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 ifused as intended.

Performance criteria for Continuous phenomena applied toTransmitters (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 notoccur. 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 transmissionresulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied toTransmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 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 transmissionresulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied toReceivers (CR)

The performance criteria A shall apply.

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

Performance criteria for Transient phenomena applied toReceivers (TR)

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

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

- **EN301489-24**

Performance criteria for continuous phenomena

A communication link shall be established at the start of the test, and maintained during the test,

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

NOTE: When there is a high level of background audio noise present, the filter bandwidth can be reduced downto a minimum of 40 Hz.

At the conclusion of the test, the EUT shall operate as intended with no loss of user control functions or stored data, andthe communication link shall have been maintained.

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

UTRA

In the data transfer mode, the performance criteria can be one of the following:

•if the BER (as referred in TS 134 109 [8]) is used, it shall not exceed 0,001 during the test sequence;

•if the BLER (as referred in TS 134 109 [8]) is used, it shall not exceed 0,01 during the test sequence.

The BLER calculation shall be based on evaluating the CRC on each transport block.

E-UTRA

In the data transfer mode, the performance criteria shall be that the throughput shall be ≥ 95 % of the maximumthroughput of the reference measurement channel as specified in annex C in TS 136 101 [13] with parameters specifiedin tables 7.3.1-1 and 7.3.1-2 in TS 136 101 [13] during the test sequence.

Performance criteria for Transient phenomena

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 withno loss of user control functions or stored data, as declared by the manufacturer, and the communication link shall havebeen maintained.

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

4.2.2. Electrostatic Discharge

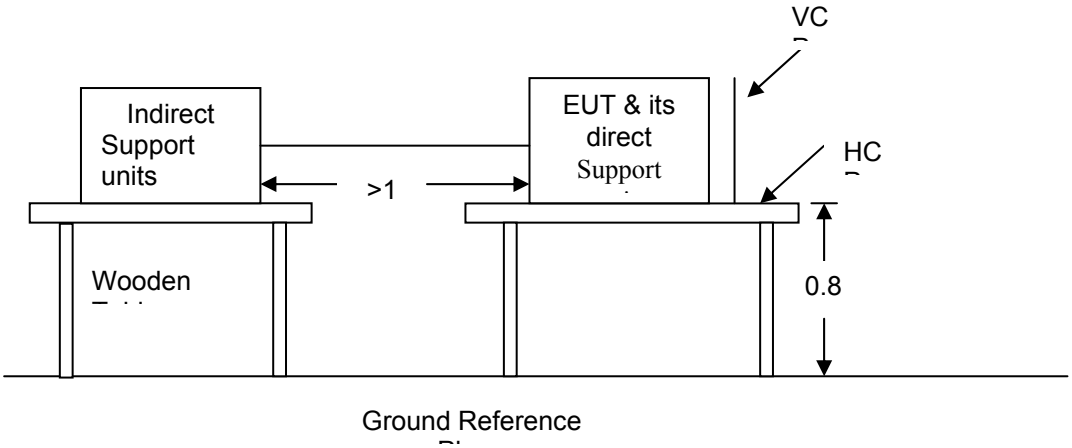
PERFORMANCE CRITERION

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 reference to the section 2.3

TEST RESULTS

------Passed------

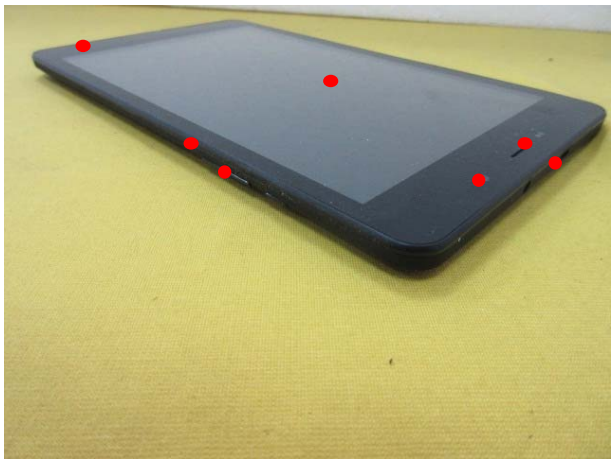
Please refer to the below test data:

Direct discharge				
Type of discharge	Discharge voltage (kV)	Observations Performance	CriteriaLevel	Result
Contact discharge	±2	No degradation in performance of the EUT was observed (A)	B	Pass
	±4	A	B	
Air discharge	±2	A	B	
	±4	A	B	
	±8	A	B	
Indirect discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	CriteriaLevel	Result
HCP (6 sides)	±2	A	B	Pass
	±4	A	B	
VCP (4 sides)	±2	A	B	
	±4	A	B	

Remark: 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



4.2.3. RF Electromagnetic Field

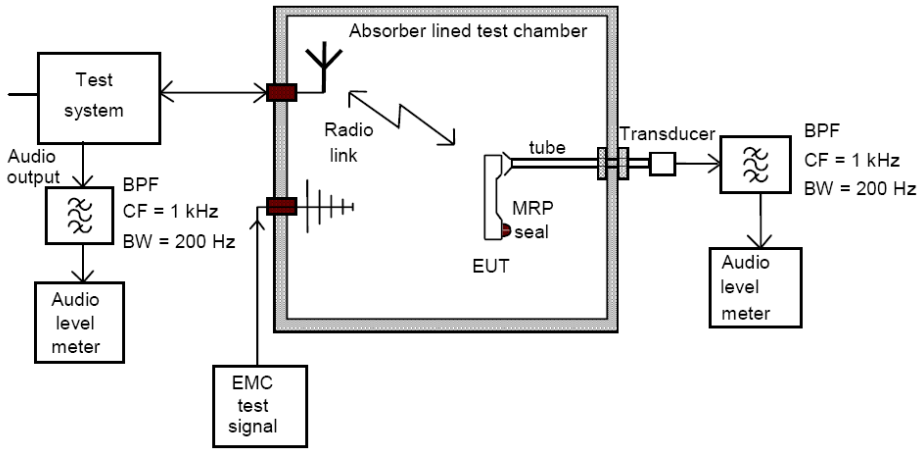
PERFORMANCE CRITERION

CriteriaA

TEST LEVEL

3V/m *(80%, 1kHz Amplitude Modulation)*

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 reference to the section 2.3

TEST RESULTS

------Passed------

Please refer to the below test data:

- **Idle mode**

Test monitor: BCCH and CCCH

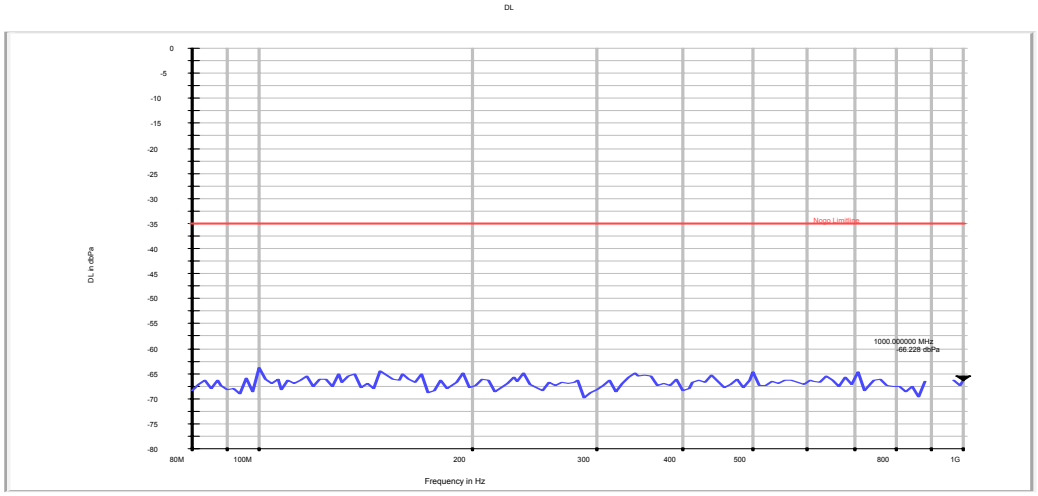
Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80 MHz-1GHz 1.4GHz-2.7GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

Remark: A: No degradation in performance of the EUT was observed.

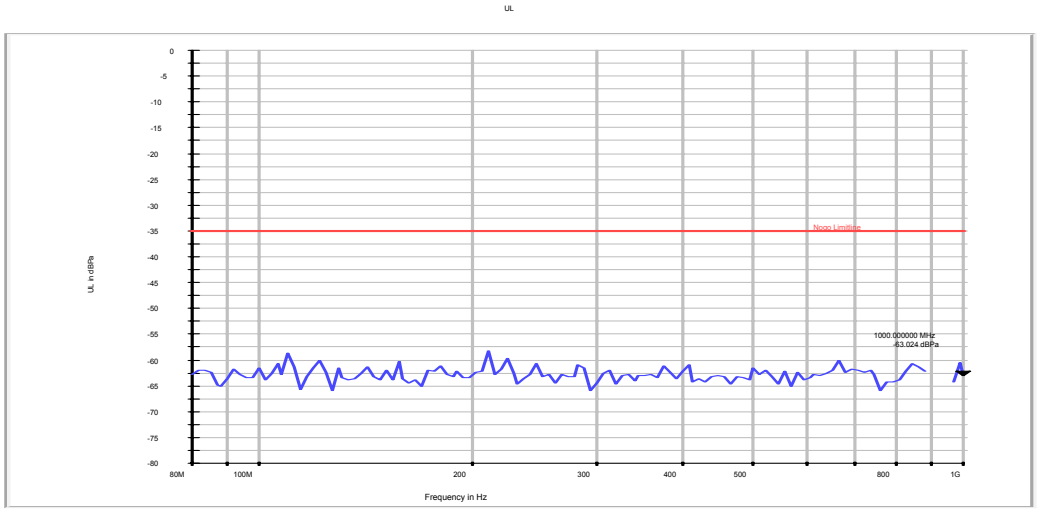
- **Traffic mode**

Test mode:	GSM900	Frequency range:	80MHz~1GHz	Polarity:	Horizontal

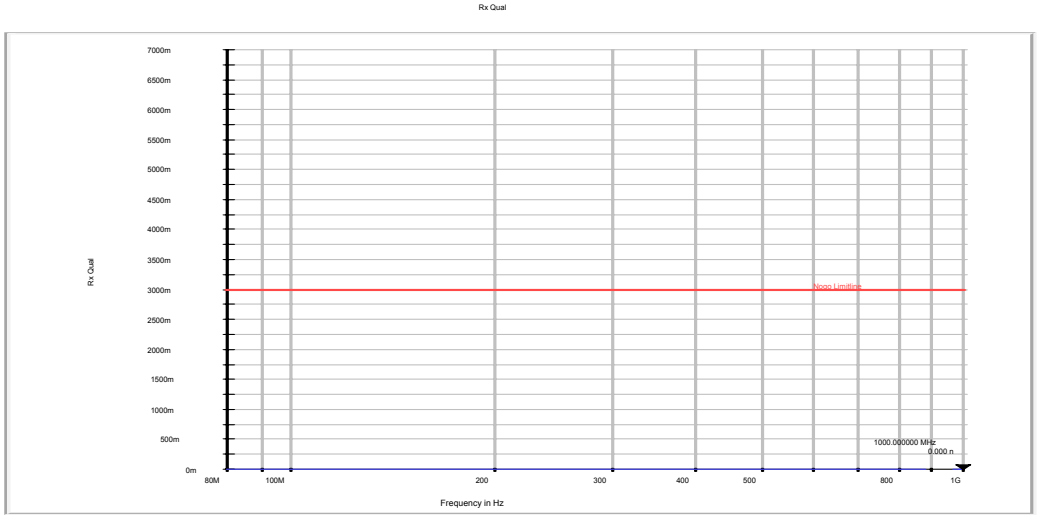
Down Link:



Up Link:

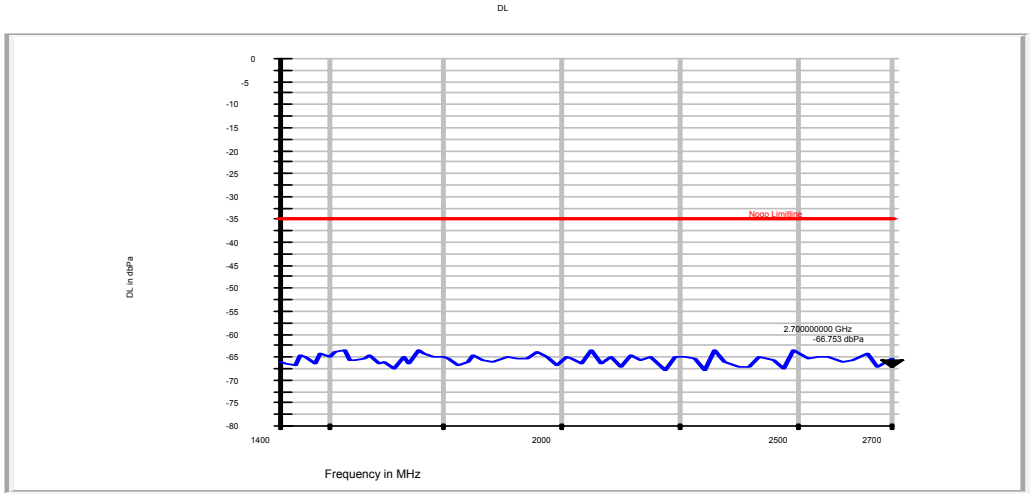


RX Quality:

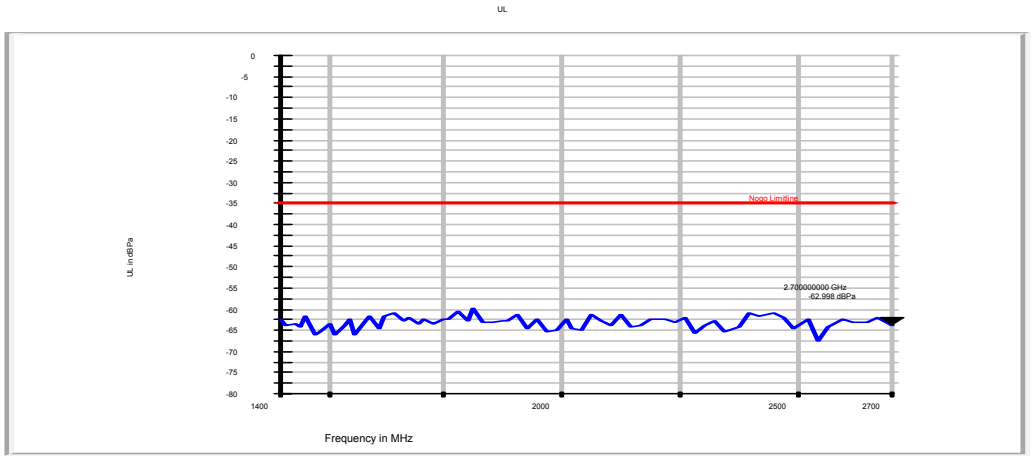


Test mode:	GSM900	Frequency range:	1.4GHz~2.7GHz	Polarity:	Horizontal

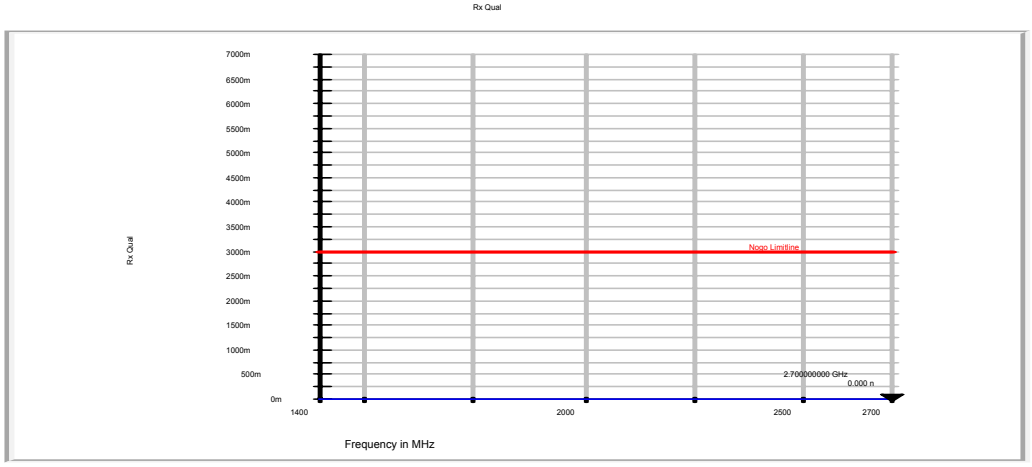
Down Link:



Up Link:

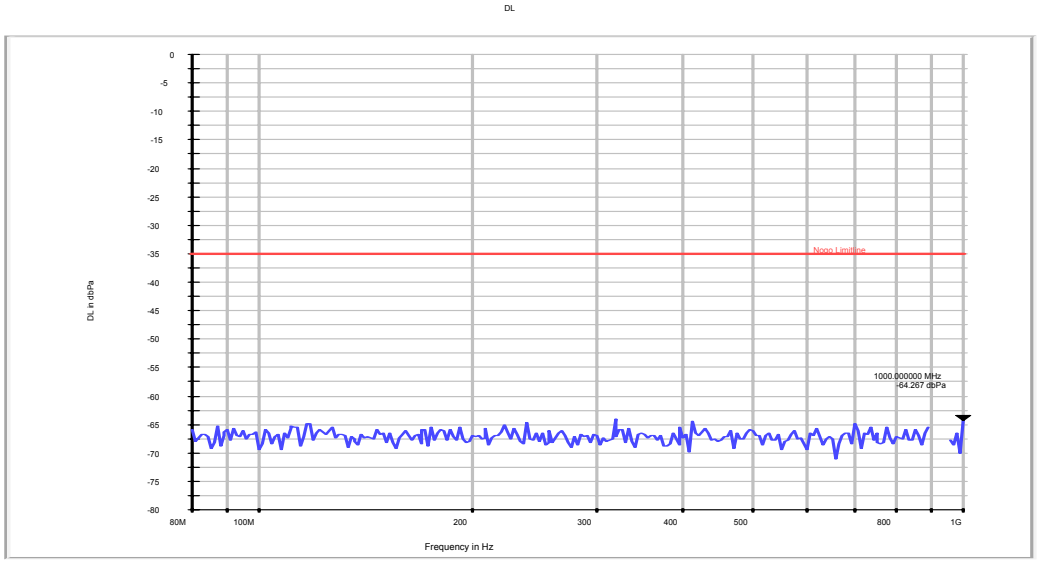


RX Quality:

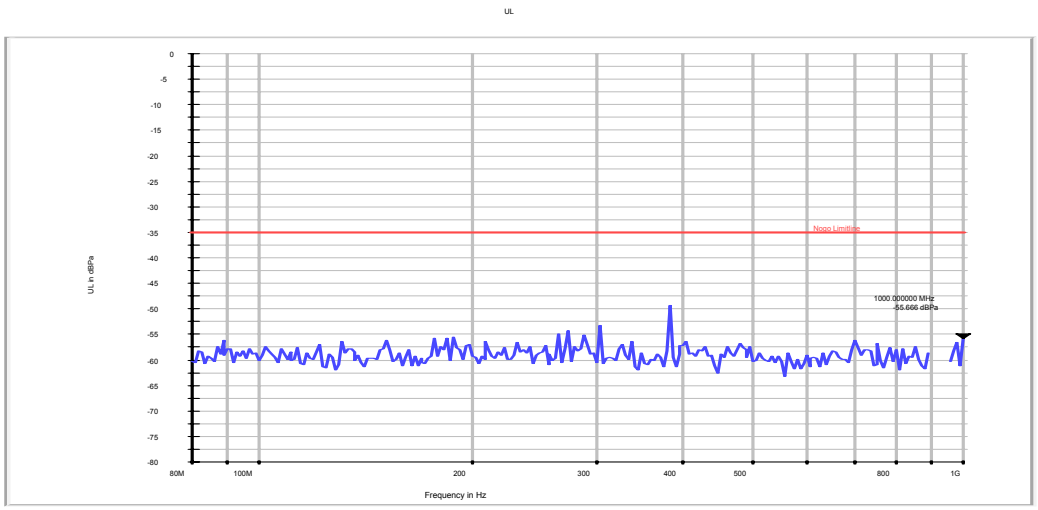


Test mode:	GSM900	Frequency range:	80MHz~1GHz	Polarity:	Vertical

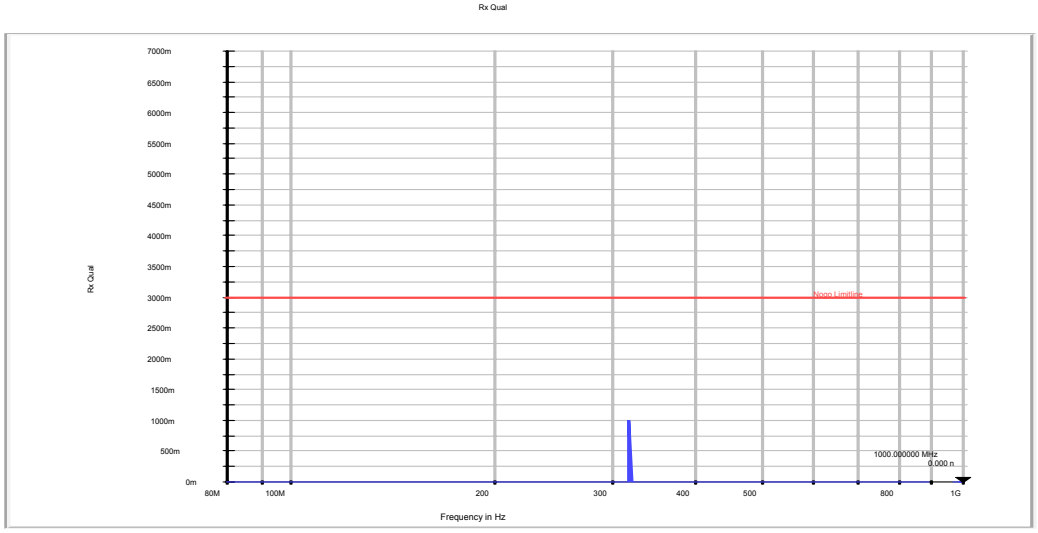
Down Link:



Up Link:

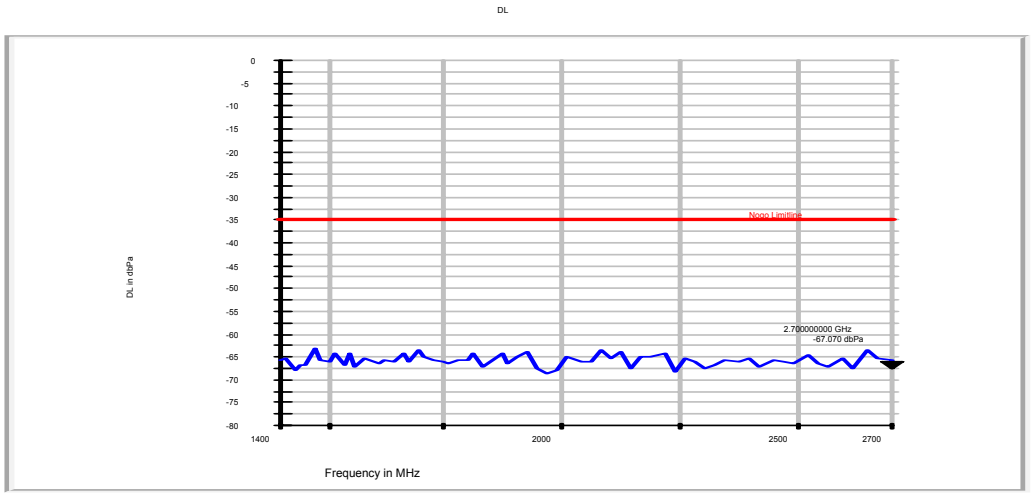


RX Quality:

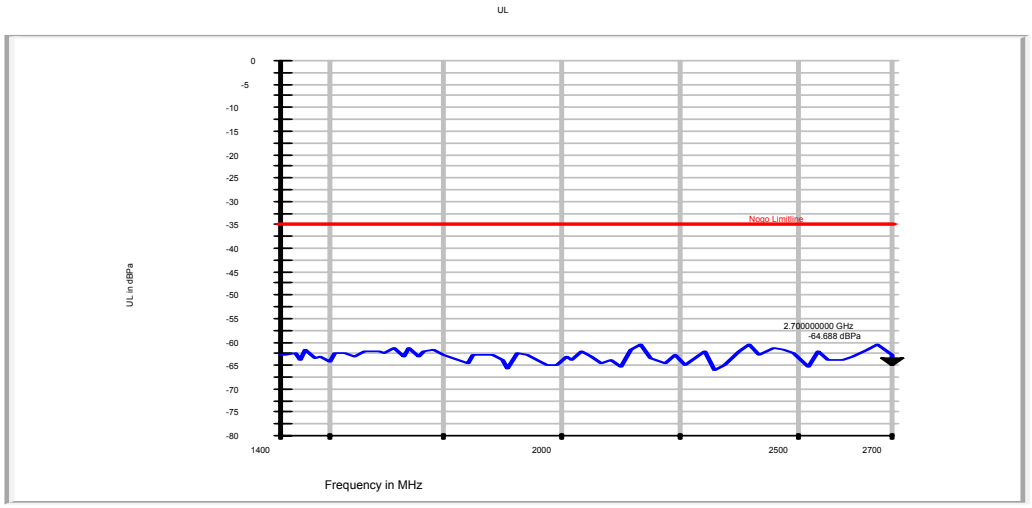


Test mode:	GSM900	Frequency range:	1.4GHz~2.7GHz	Polarity:	Vertical

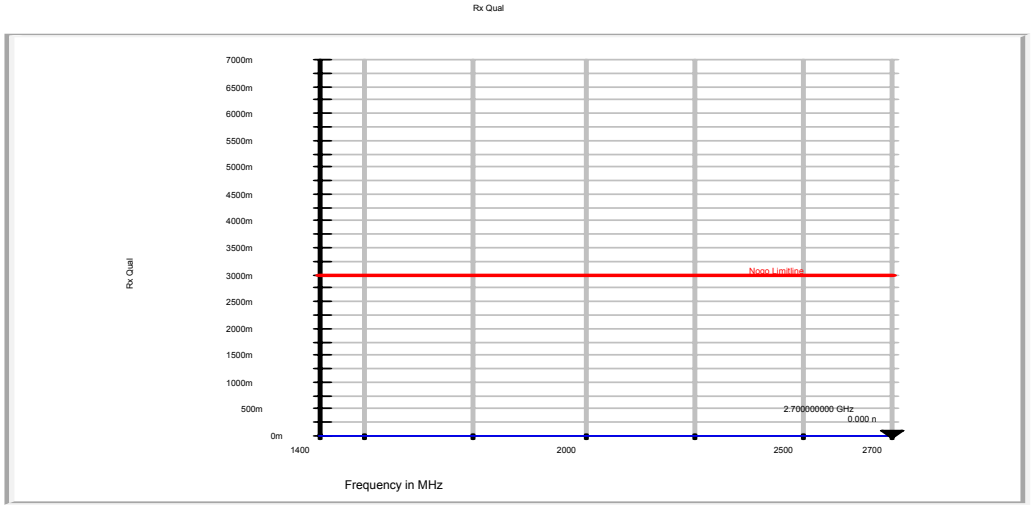
Down Link:



Up Link:

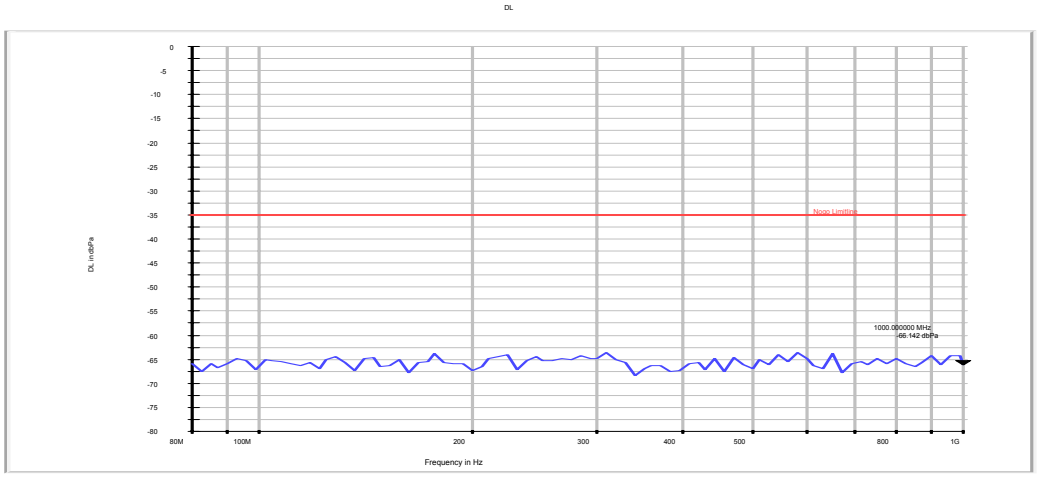


RX Quality:

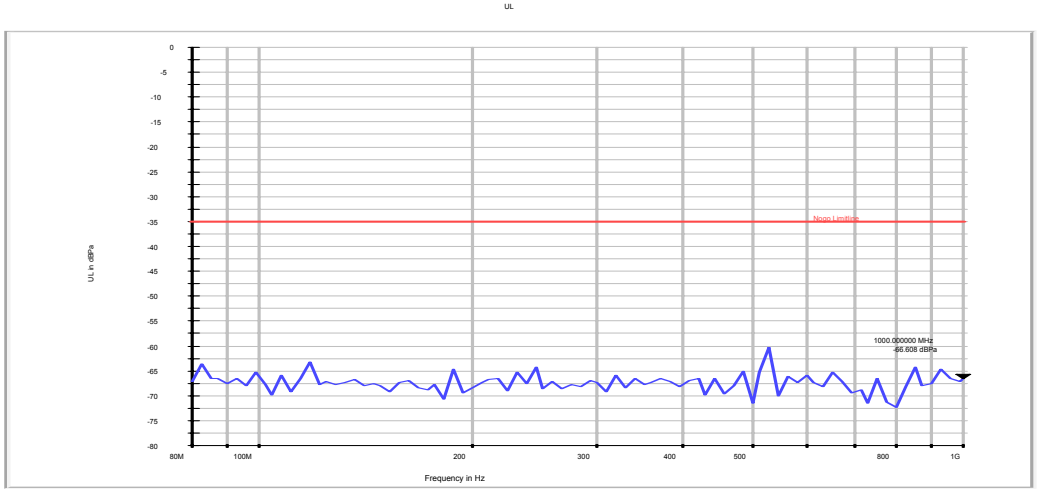


Test mode:	DCS1800	Frequency range:	80MHz~1GHz	Polarity:	Horizontal

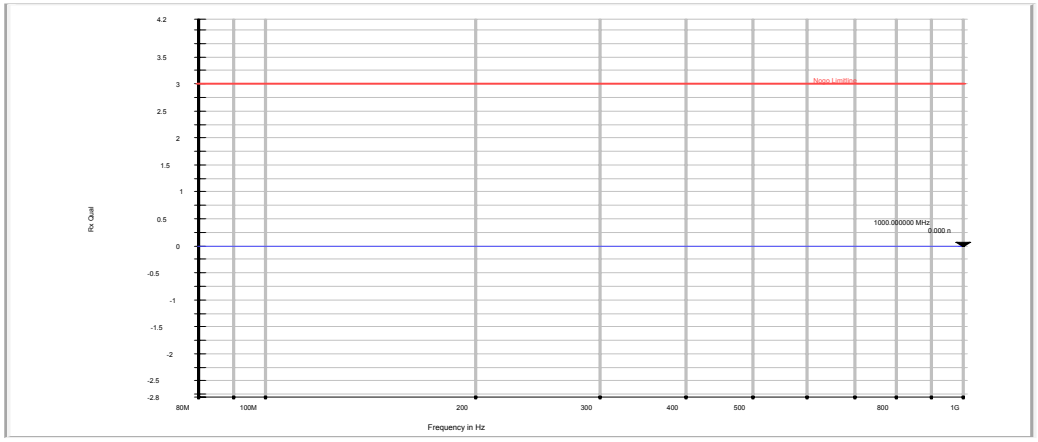
Down Link:



Up Link:

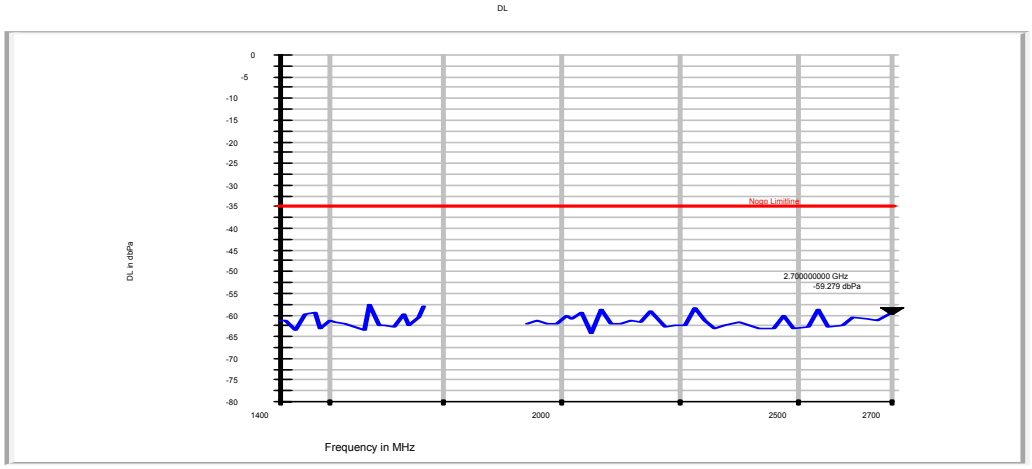


RX Quality:

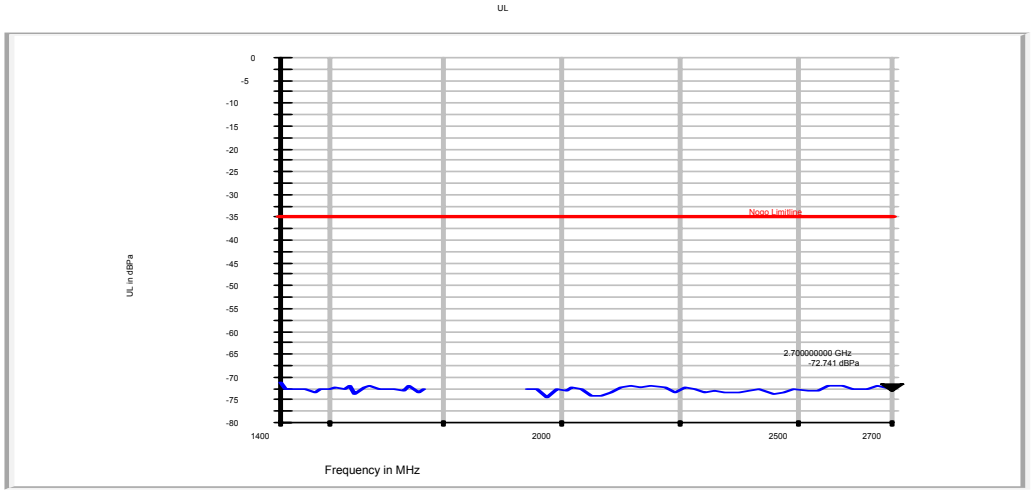


Test mode:	DCS1800	Frequency range:	1.4GHz~2.7GHz	Polarity:	Horizontal

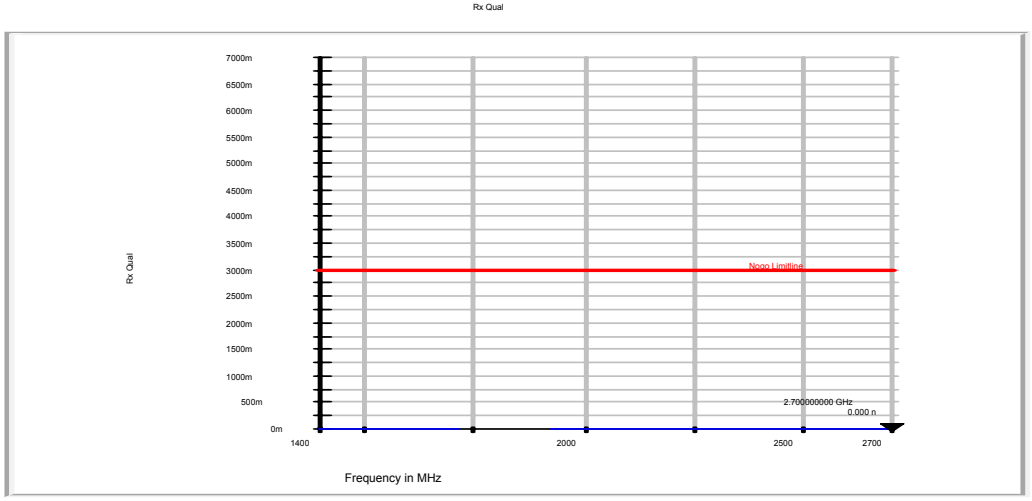
Down Link:



Up Link:

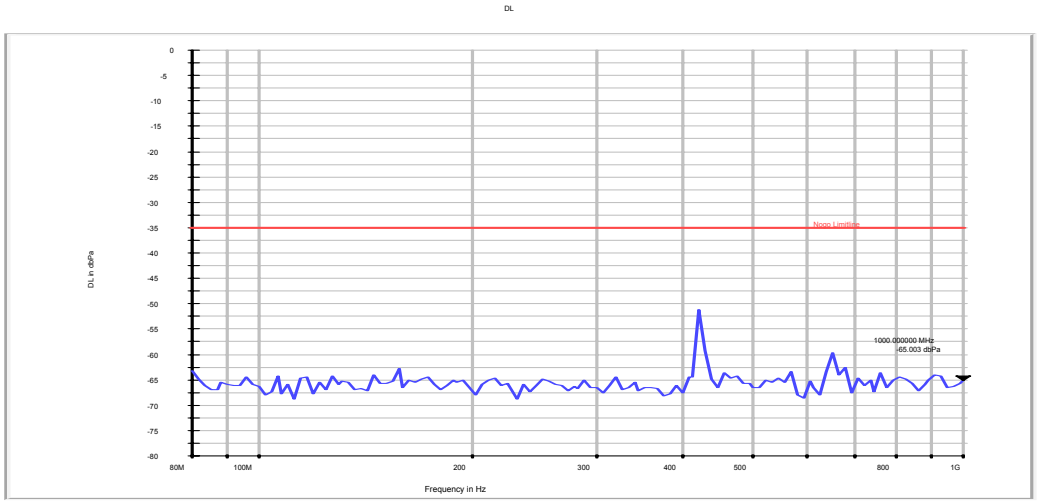


RX Quality:

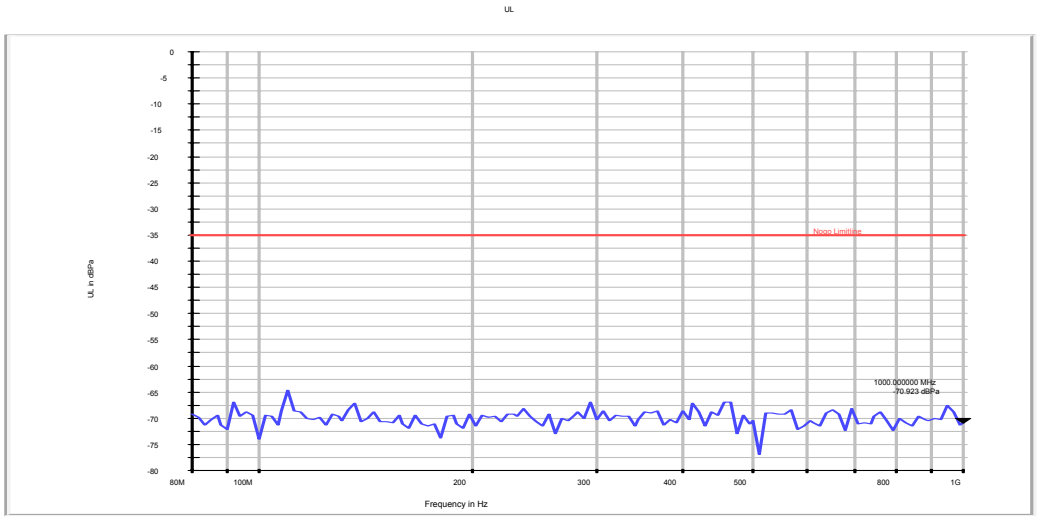


Test mode:	DCS1800	Frequency range:	80MHz~1GHz	Polarity:	Vertical

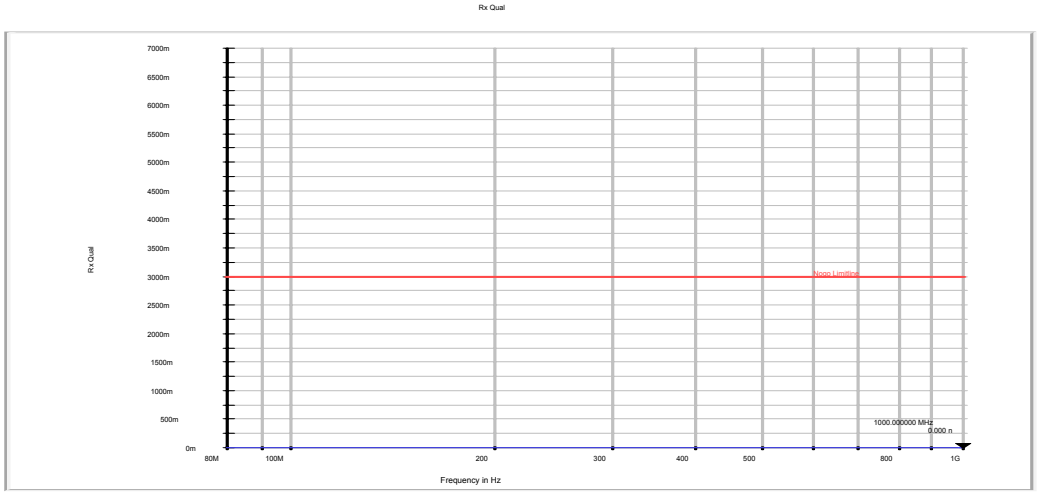
Down Link:



Up Link:

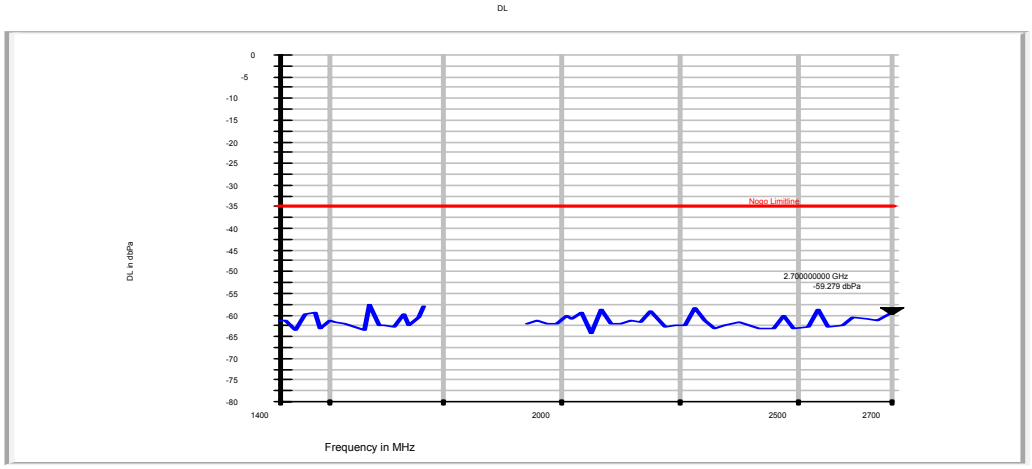


RX Quality:

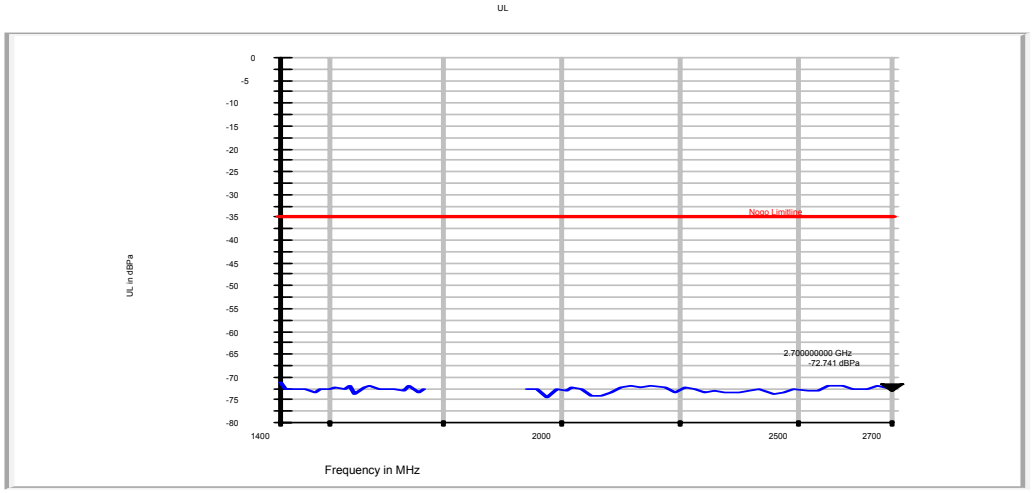


Test mode:	DCS1800	Frequency range:	1.4GHz~2.7GHz	Polarity:	Vertical

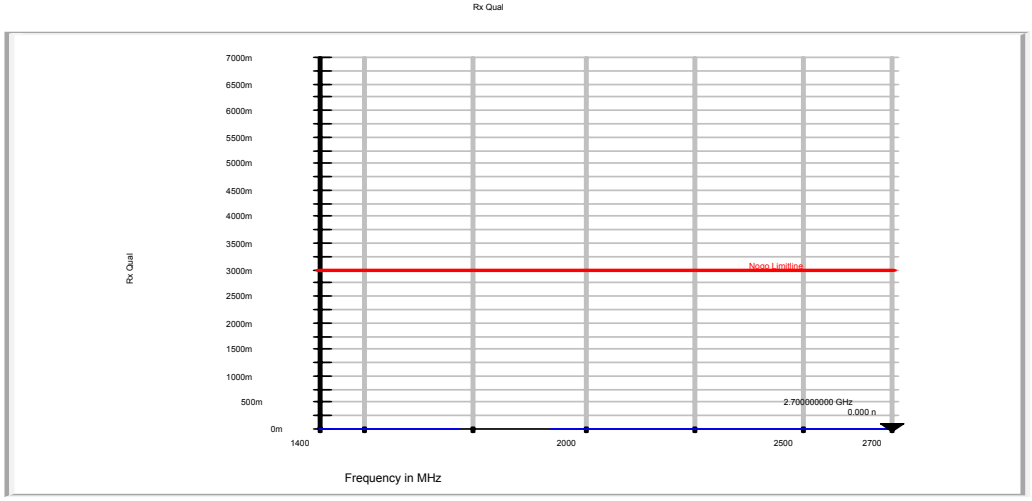
Down Link:



Up Link:

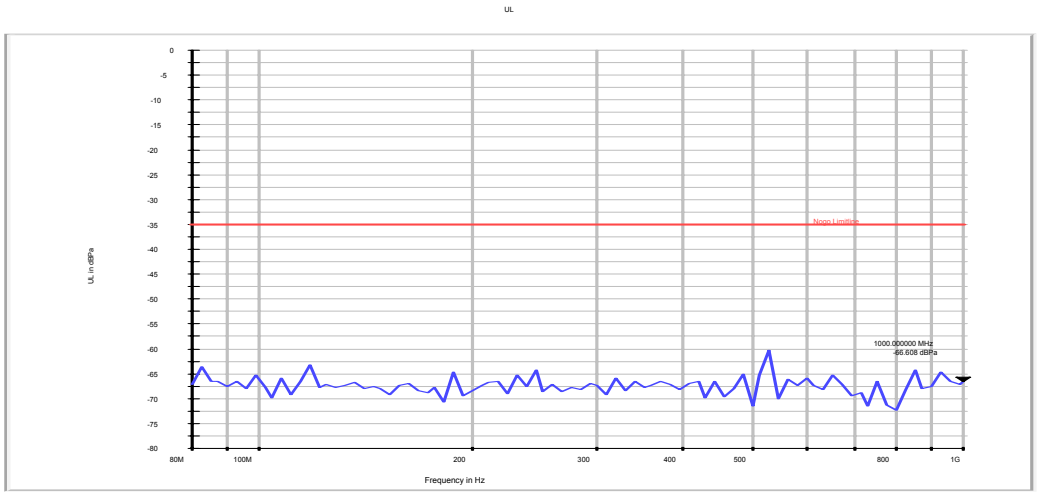


RX Quality:

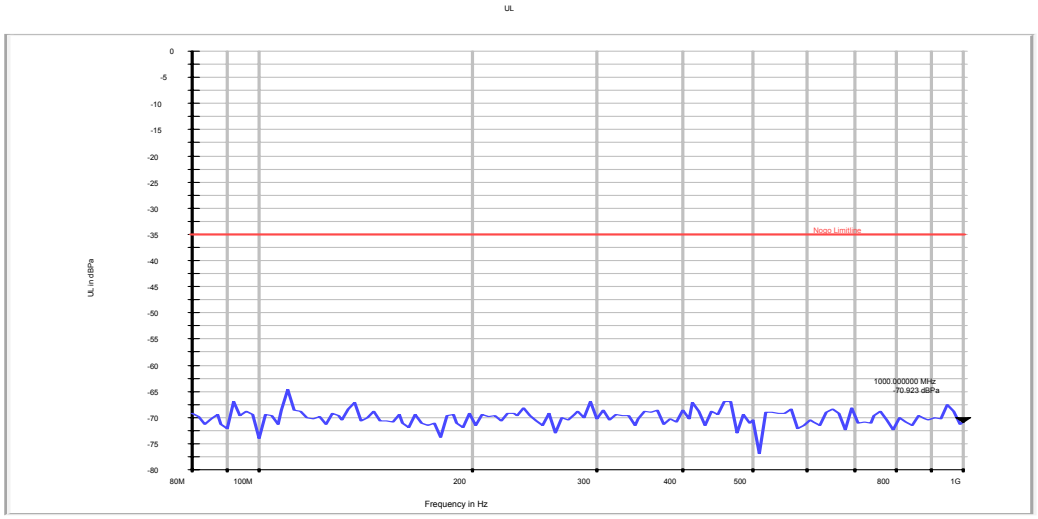


Test mode:	Band I	Frequency range:	80MHz~1GHz	Polarity:	Horizontal

Down Link:



Up Link:

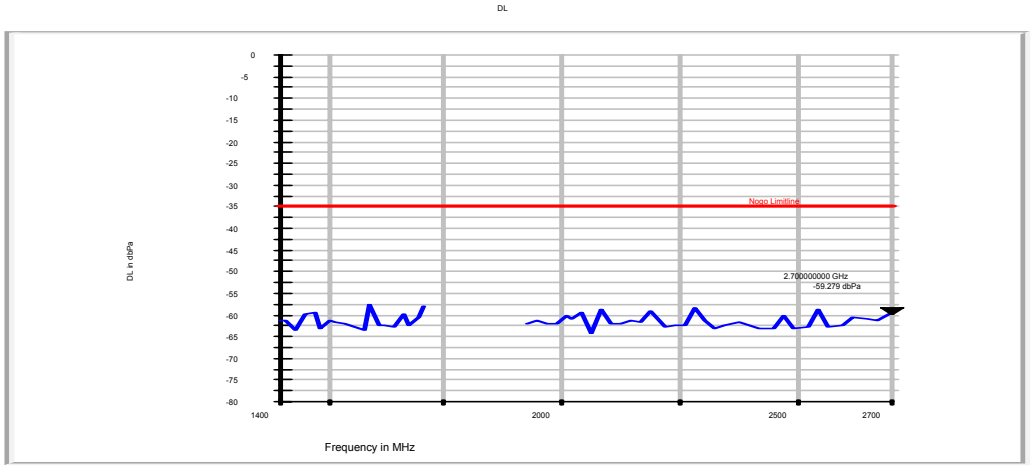


BER:

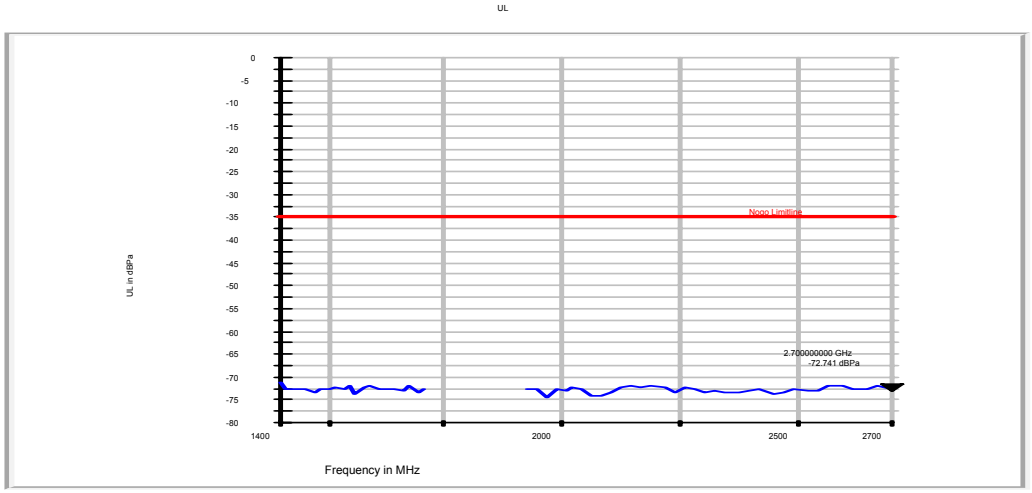
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00032	0.001	Pass
	Rear	0.00024		Pass
	Left	0.00036		Pass
	Right	0.00047		Pass

Test mode:	Band I	Frequency range:	1.4GHz~2.7GHz	Polarity:	Horizontal

Down Link:



Up Link:

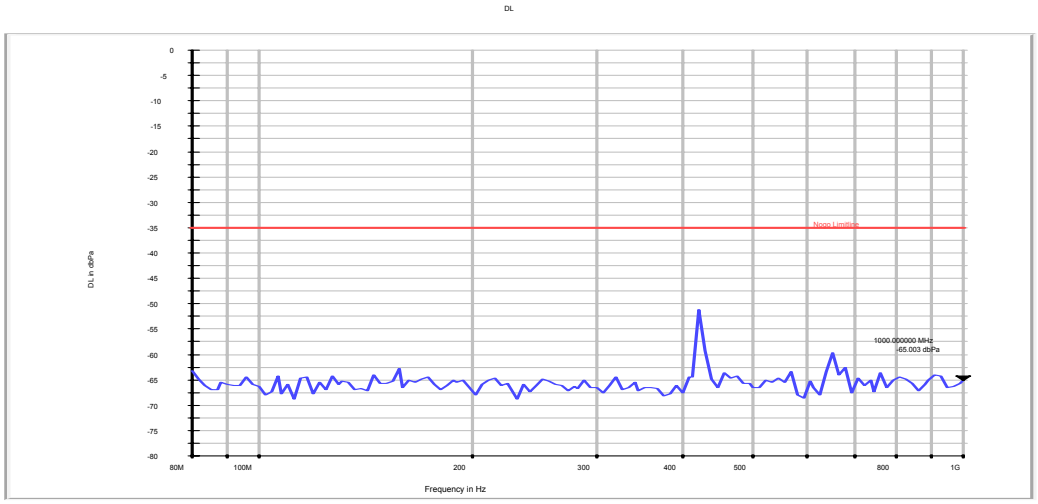


BER

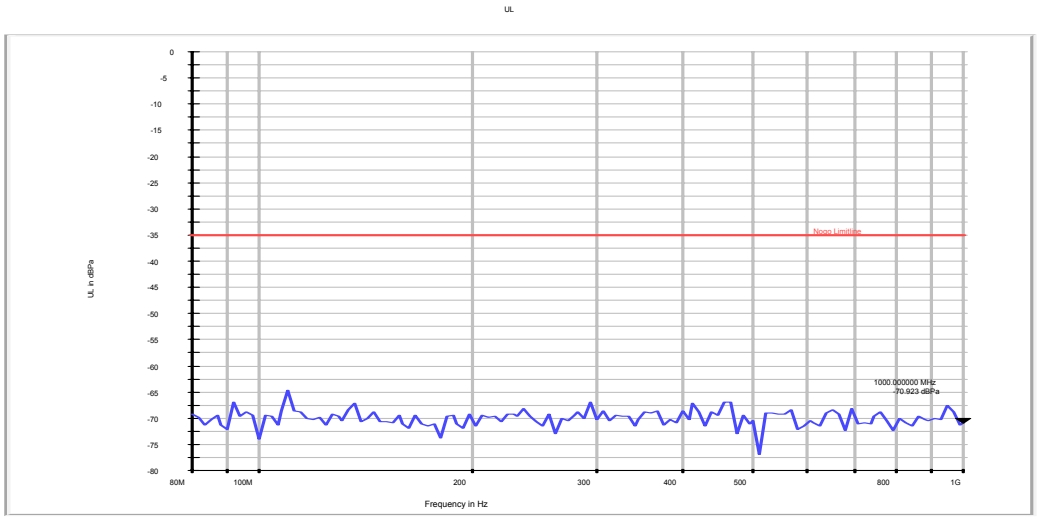
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00035	0.001	Pass
	Rear	0.00057		Pass
	Left	0.00038		Pass
	Right	0.00049		Pass

Test mode:	Band I	Frequency range:	80MHz~1GHz	Polarity:	Vertical

Down Link:



Up Link:

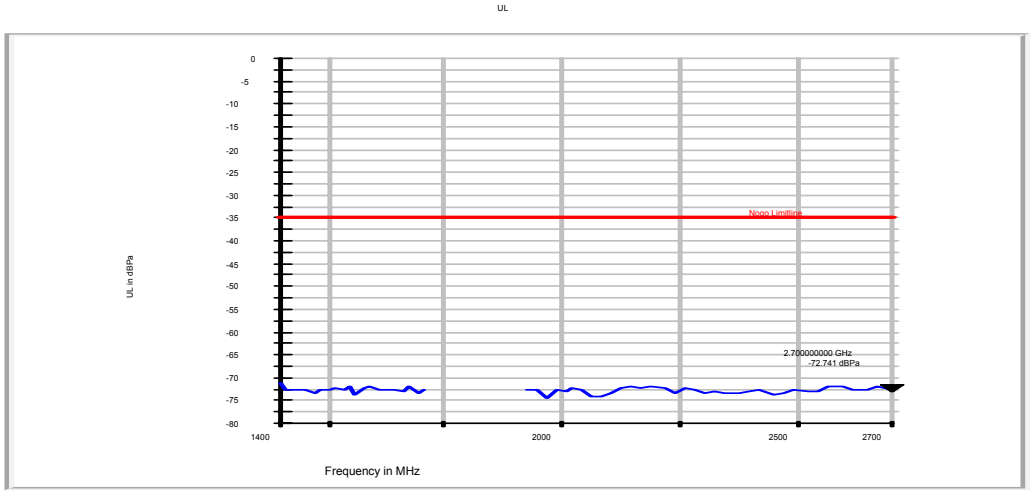


BER

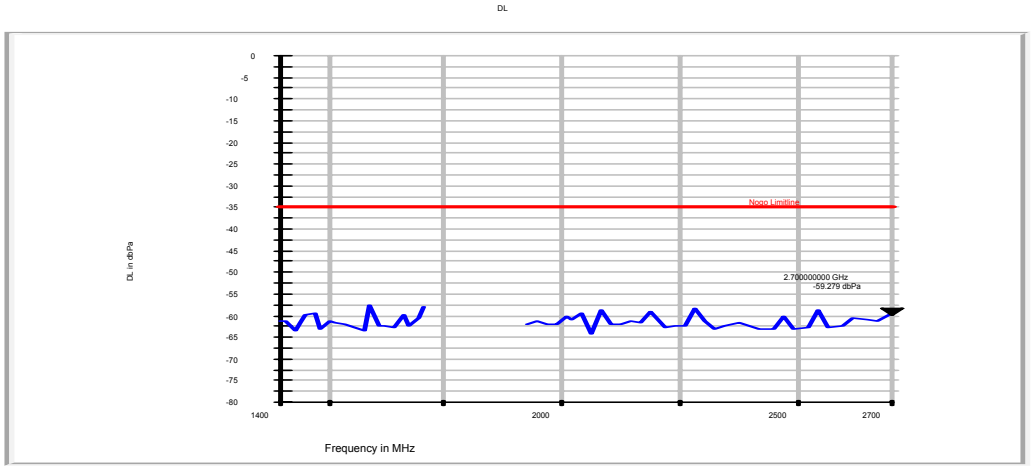
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00052	0.001	Pass
	Rear	0.00046		Pass
	Left	0.00048		Pass
	Right	0.00059		Pass

Test mode:	Band I	Frequency range:	1.4GHz~2.7GHz	Polarity:	Vertical

Down Link:



Up Link:

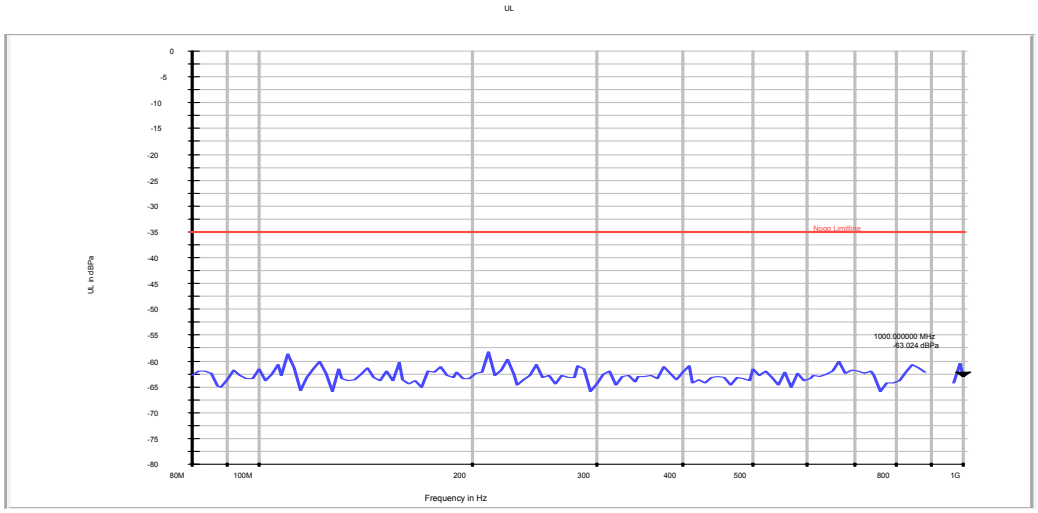


BER

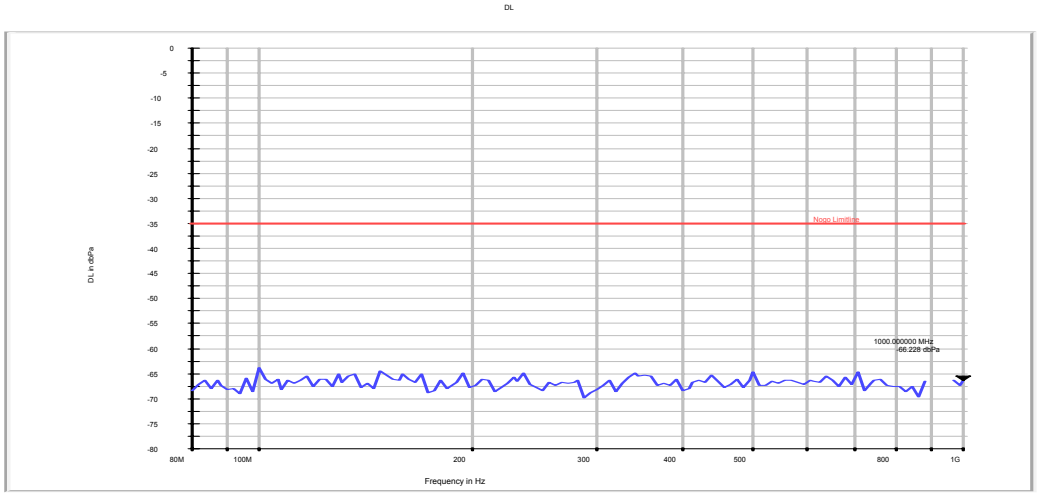
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00037	0.001	Pass
	Rear	0.00042		Pass
	Left	0.00015		Pass
	Right	0.00047		Pass

Test mode:	Band VIII	Frequency range:	80MHz~1GHz	Polarity:	Horizontal

Down Link:



Up Link:

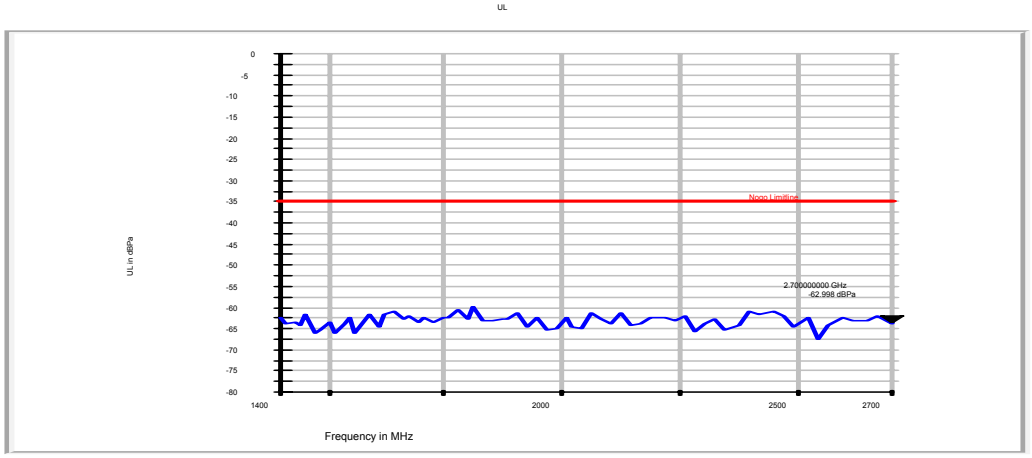


BER:

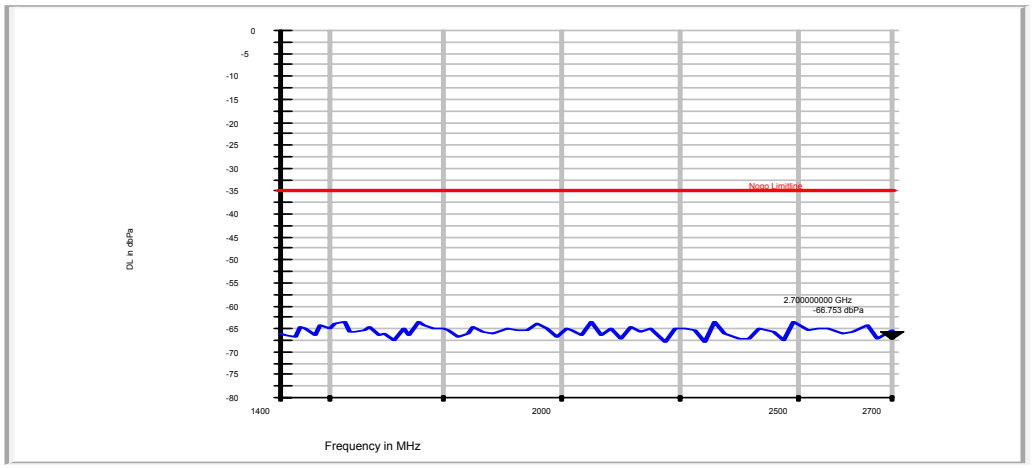
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00038	0.001	Pass
	Rear	0.00059		Pass
	Left	0.00043		Pass
	Right	0.00025		Pass

Test mode:	Band VIII	Frequency range:	1.4GHz~2.7GHz	Polarity:	Horizontal

Down Link:



Up Link:

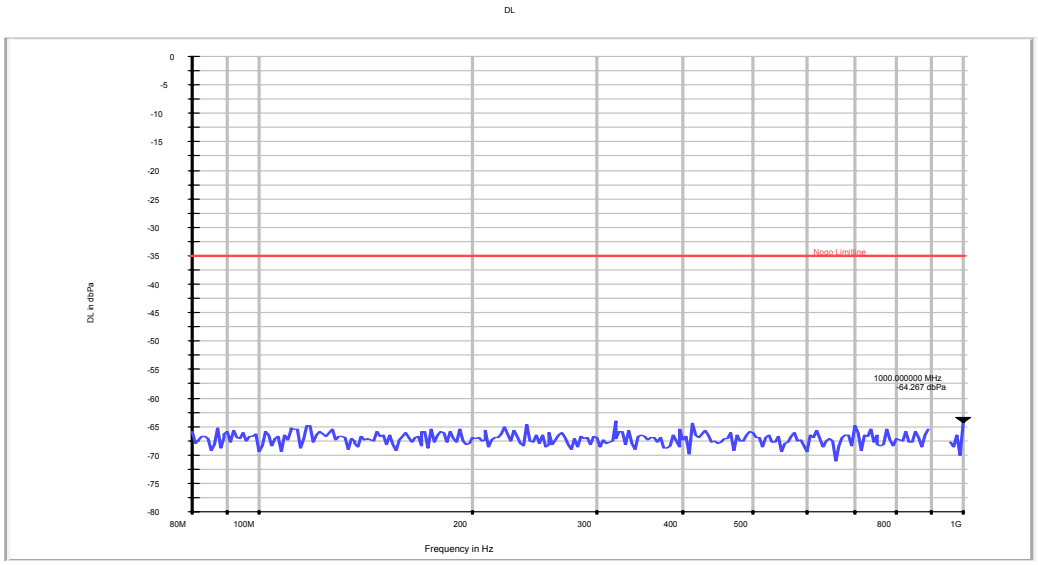


BER:

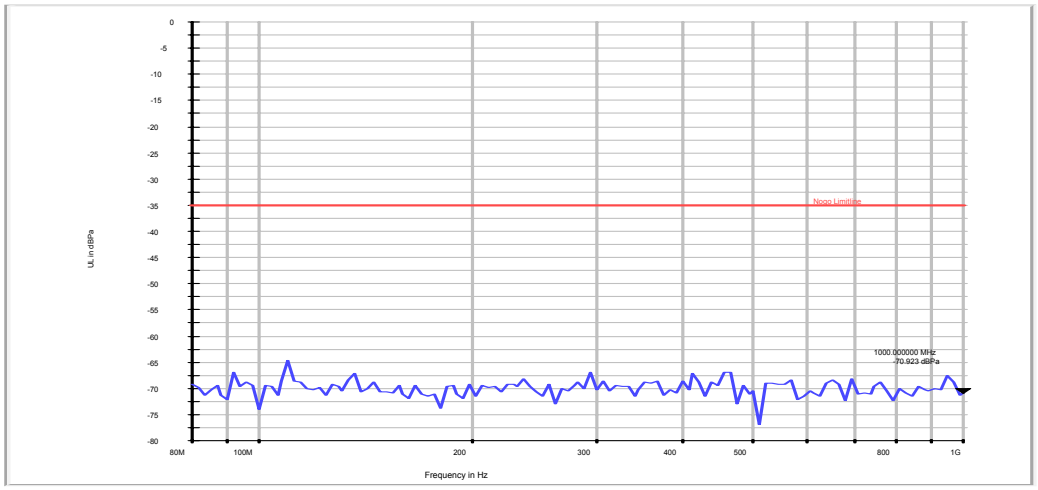
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00043	0.001	Pass
	Rear	0.00083		Pass
	Left	0.00025		Pass
	Right	0.00038		Pass

Test mode:	Band VIII	Frequency range:	80MHz~1GHz	Polarity:	Vertical

Down Link:



Up Link:

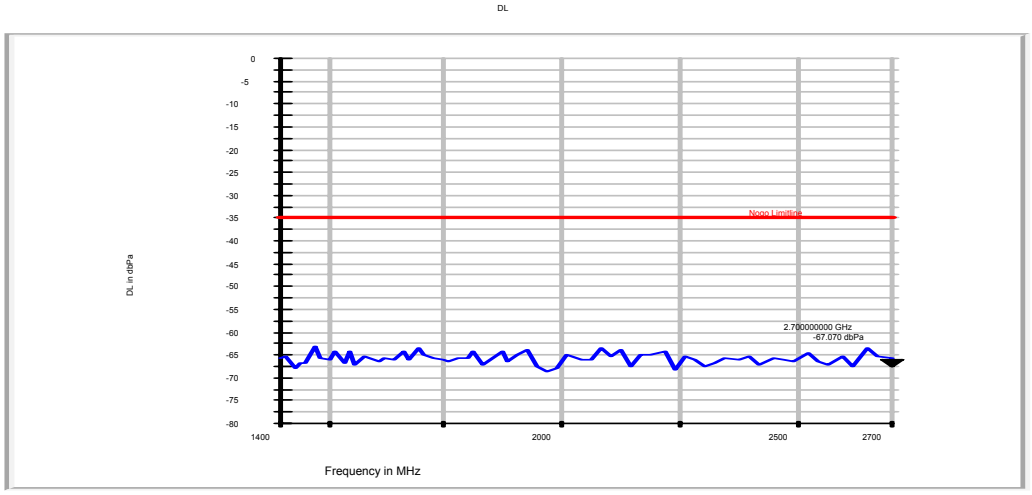


BER

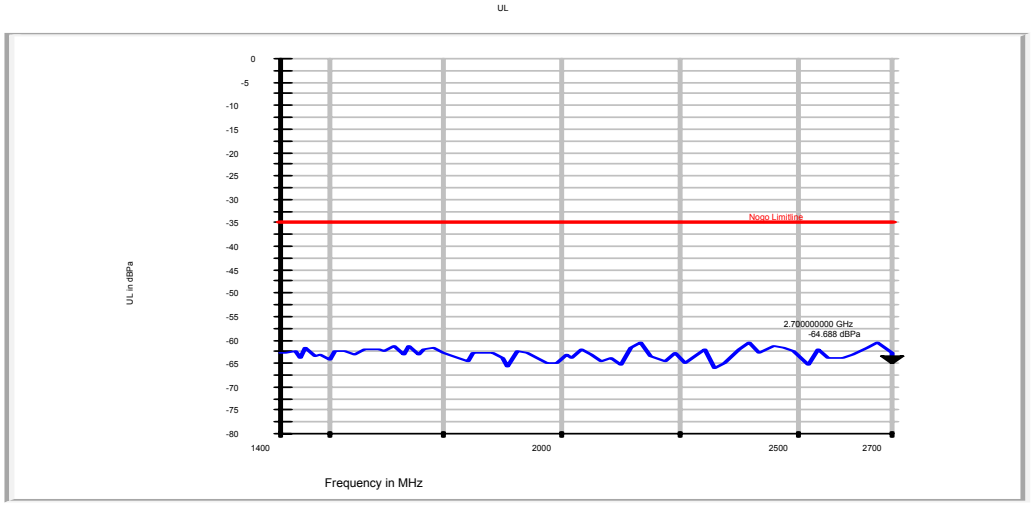
	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00046	0.001	Pass
	Rear	0.00058		Pass
	Left	0.00032		Pass
	Right	0.00047		Pass

Test mode:	Band VIII	Frequency range:	1.4GHz~2.7GHz	Polarity:	Vertical

Down Link:



Up Link:



BER:

	EUT Face	BER Test Result	BER Limit	Result
RX	Front	0.00025	0.001	Pass
	Rear	0.00074		Pass
	Left	0.00035		Pass
	Right	0.00038		Pass

Test mode:	LTE Band 3	Test Frequency:	80MHz~2.7GHz

Throughput::

Freq. Range (MHz)	Field	Modulation Depth	Polarity	Throughput :(%)	Throughput Limit(%)	Result
80-1000	3V/m	80%	H / V	98.75	95	Pass
1400-2700	3V/m	80%	H / V	98.38	95	Pass

Test mode:	LTE Band 7	Test Frequency:	80MHz~2.7GHz

Throughput::

Freq. Range (MHz)	Field	Modulation Depth	Polarity	Throughput :(%)	Throughput Limit(%)	Result
80-1000	3V/m	80%	H / V	97.45	95	Pass
1400-2700	3V/m	80%	H / V	97.53	95	Pass

Test mode:	LTE Band20	Test Frequency:	80MHz~2.7GHz

Throughput::

Freq. Range (MHz)	Field	Modulation Depth	Polarity	Throughput :(%)	Throughput Limit(%)	Result
80-1000	3V/m	80%	H / V	97.38	95	Pass
1400-2700	3V/m	80%	H / V	98.49	95	Pass

4.2.4. Fast Transients Common Mode

PERFORMANCE CRITERION

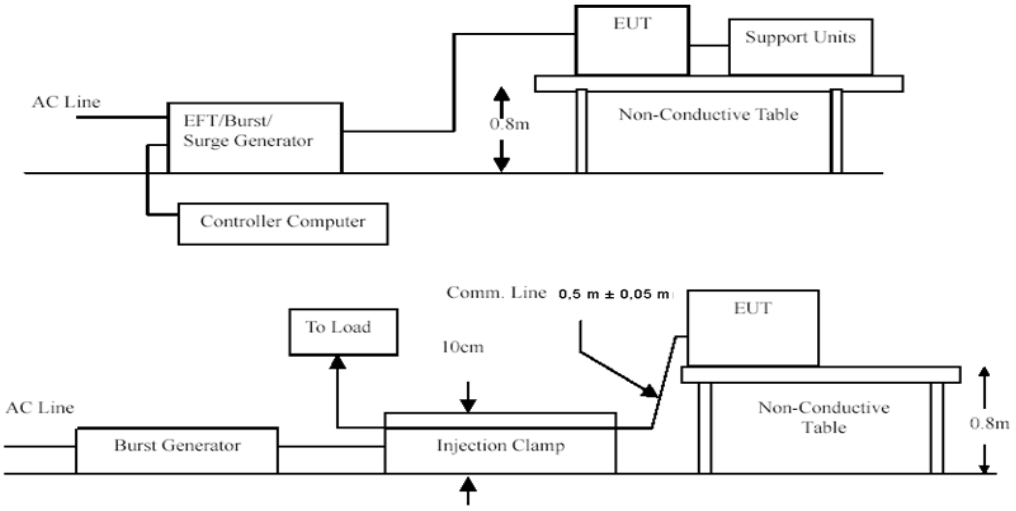
CriteriaB

TEST LEVEL

1KV for AC main port

(Impulse Frequency: 5 kHz; Tr/Th: 5/50ns; Burst Duration: 15ms; Burst Period: 3Hz)

TEST CONFIGURATION



TEST PROCEDURE

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

TEST MODE

Please reference to the section 2.3

TEST RESULTS

------Passed------

Please refer to the below test data:

Lead under Test	Level (±kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	±1	Direct	A	Pass
N	±1	Direct	A	Pass
L-N	±1	Direct	A	Pass

Remark: A: No degradation in performance of the EUT was observed.

4.2.5. Surge

PERFORMANCE CRITERION

CriteriaB

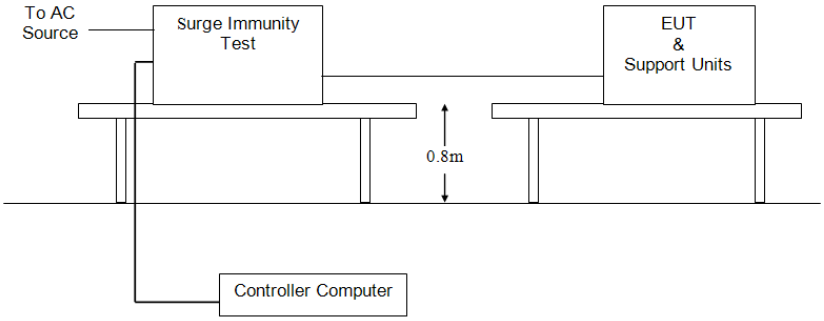
TEST LEVEL

1kV Line to Line: Differential mode

2kV Line to Ground: Common mode

(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

TEST CONFIGURATION



TEST PROCEDURE

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

TEST MODE

Please reference to the section 2.3

TEST RESULTS

------Passed------

Please refer to the below test data:

Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	± 1	5	60s	0°	A	Pass
				90°	A	Pass
				180°	A	Pass
				270°	A	Pass

Remark: A: No degradation in performance of the EUT was observed.

4.2.6. Radio frequency common mode

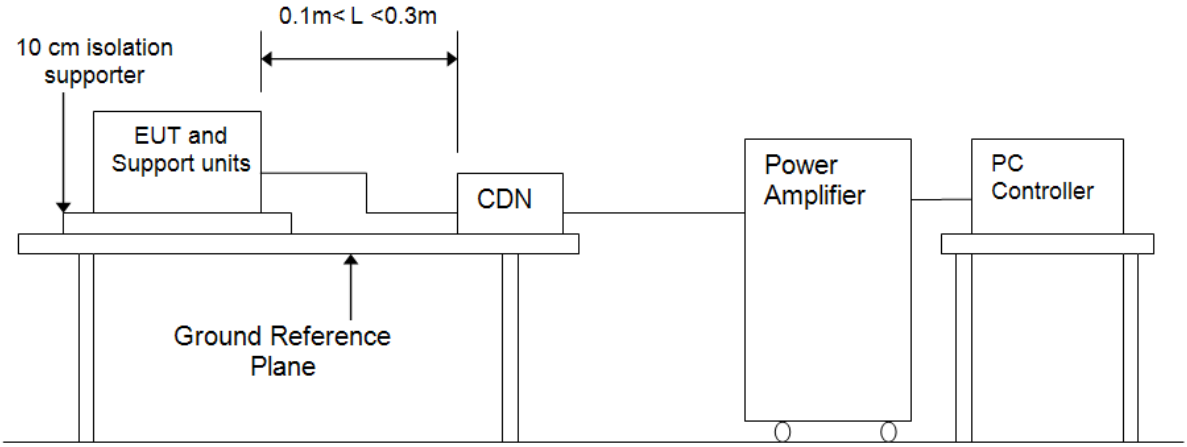
PERFORMANCE CRITERION

CriteriaA

TEST LEVEL

3Vrms on AC main port (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

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

TEST MODE

Please reference to the section 2.3

TEST RESULTS

------Passed------

Please refer to the below test data:

- **Idle mode**

Test monitor: BCCH and CCCH

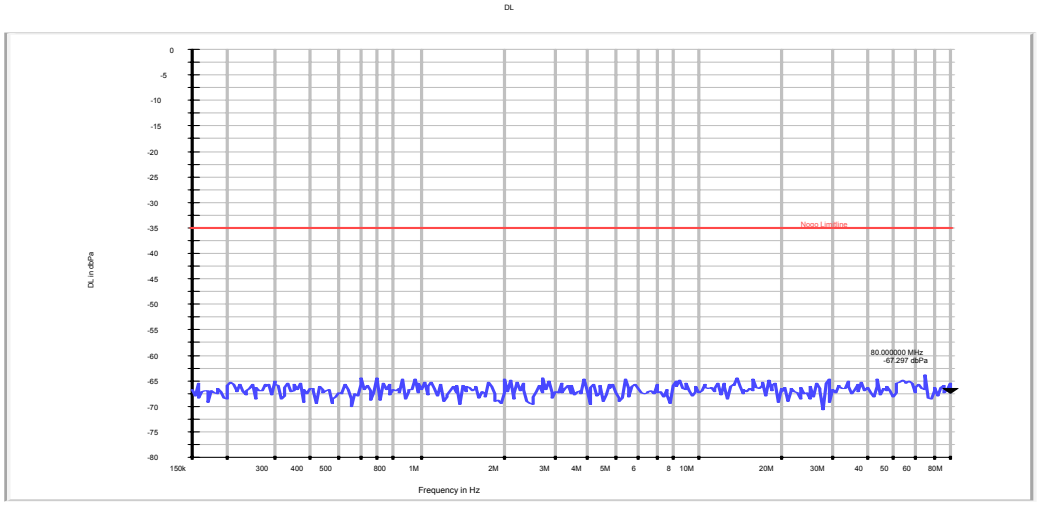
Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 80MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	A	Pass

Remark: A: No degradation in performance of the EUT was observed.

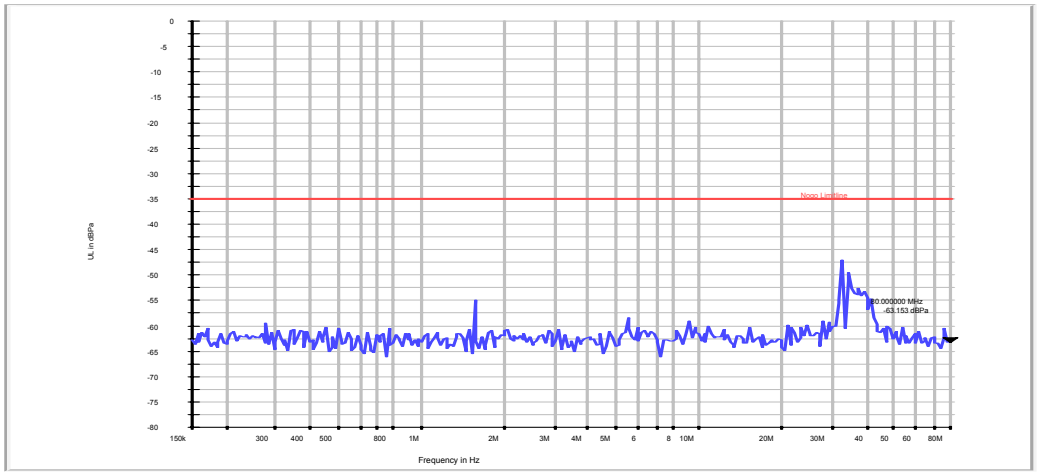
■ **Traffic mode:**

Test mode:	GSM900	Test Frequency:	150KHz-80MHz

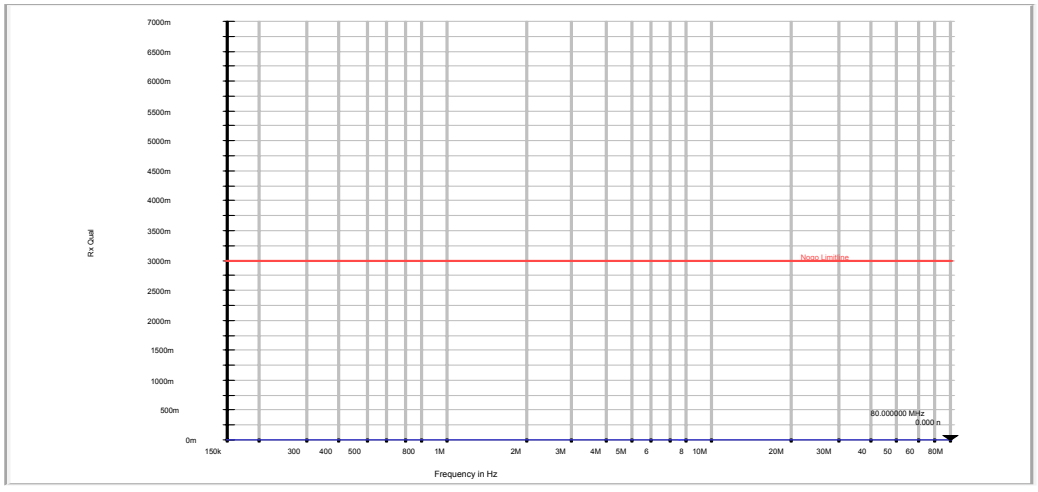
Down Link:



Up Link:

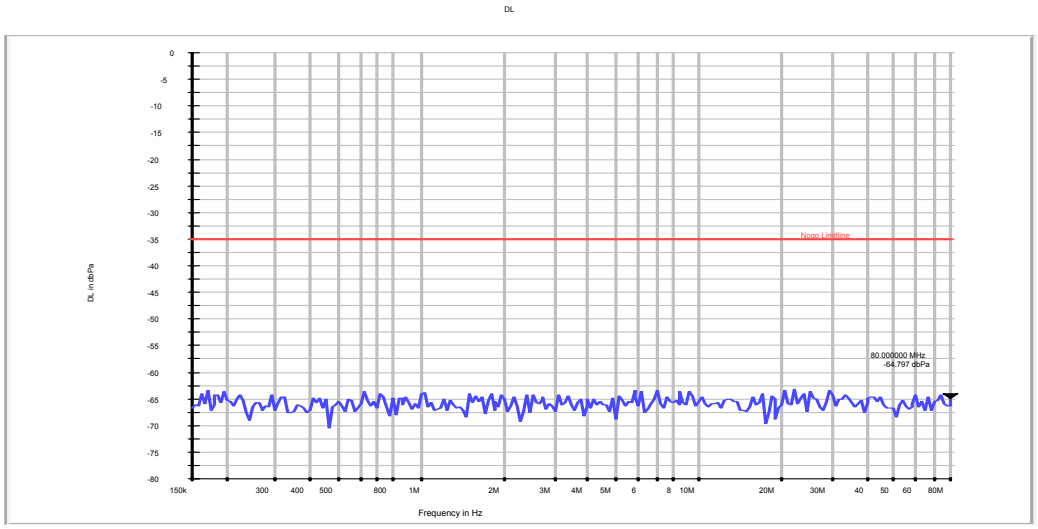


RX Quality:

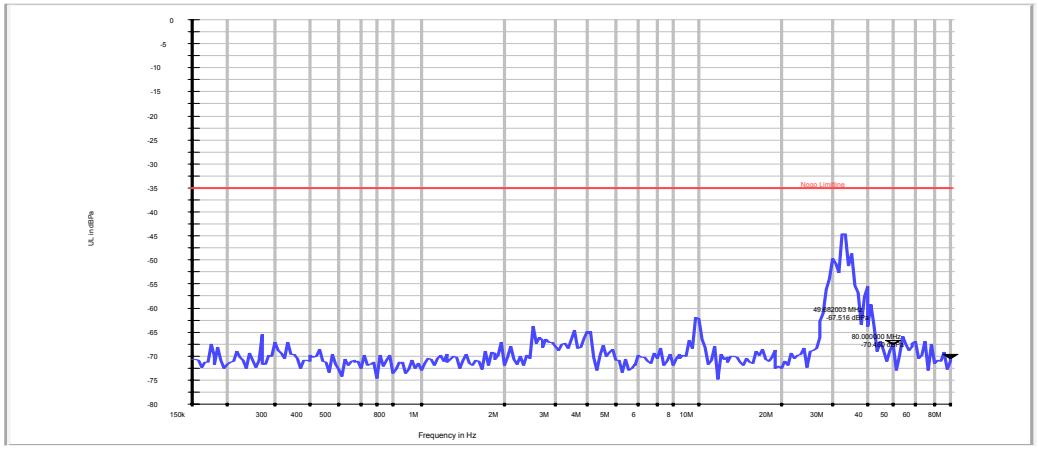


Test mode:	DCS1800	Test Frequency:	150KHz-80MHz

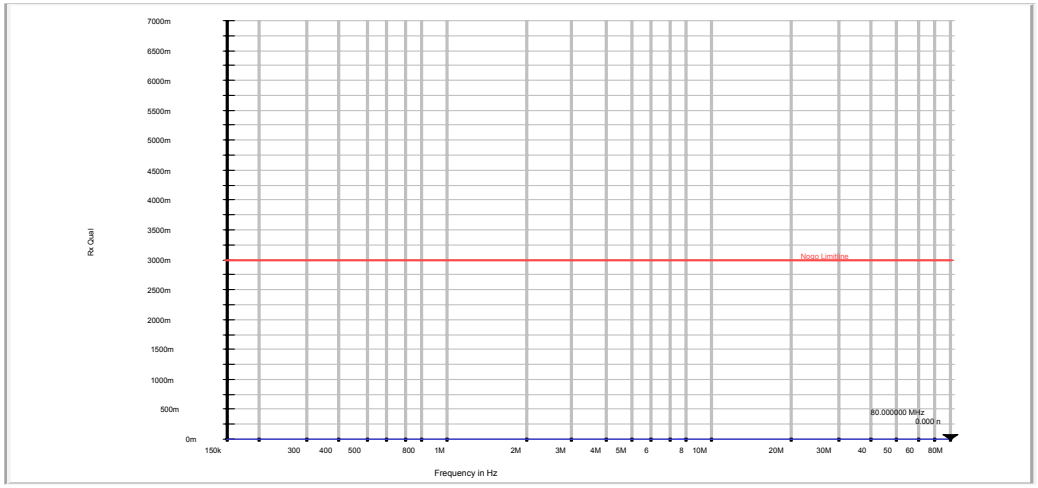
Down Link:



Up Link:

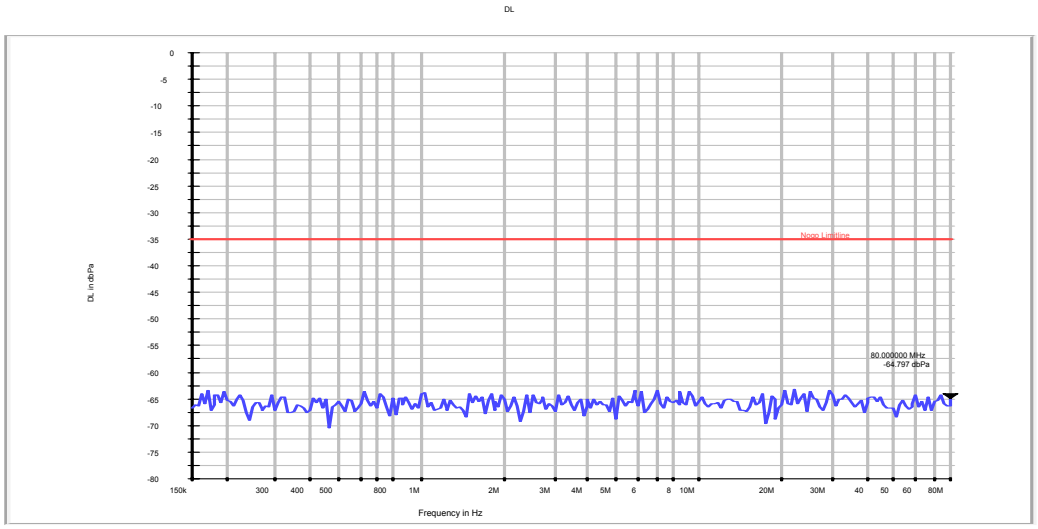


RX Quality:

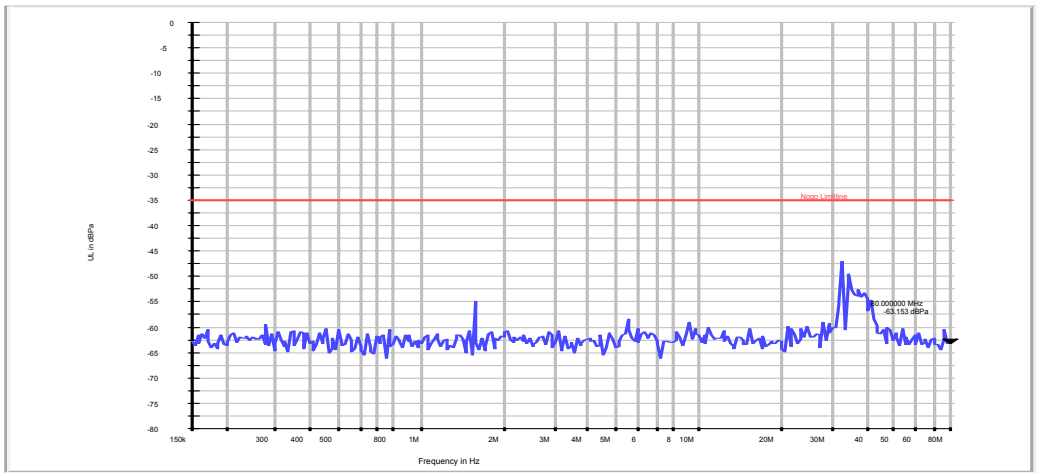


Test mode:	Band I	Test Frequency:	150KHz-80MHz

Down Link:



Up Link:

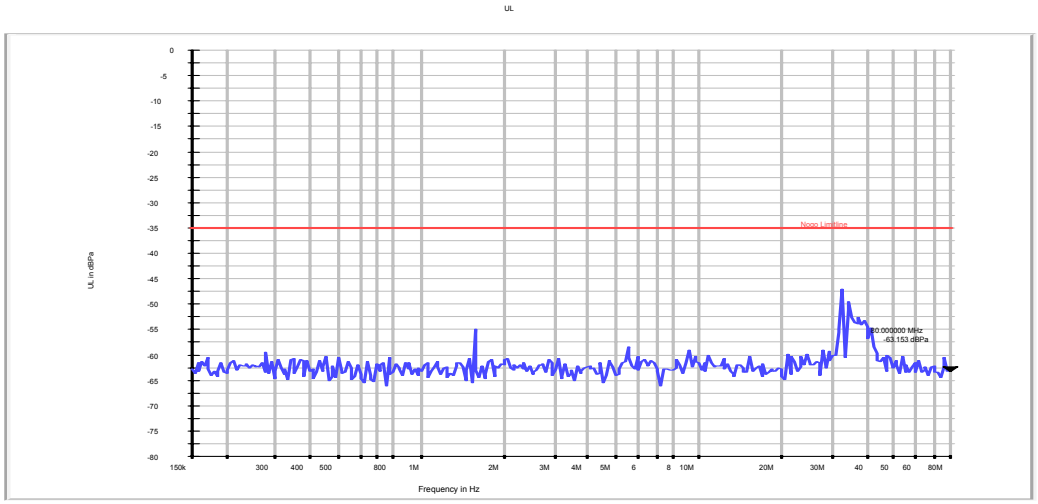


BER:

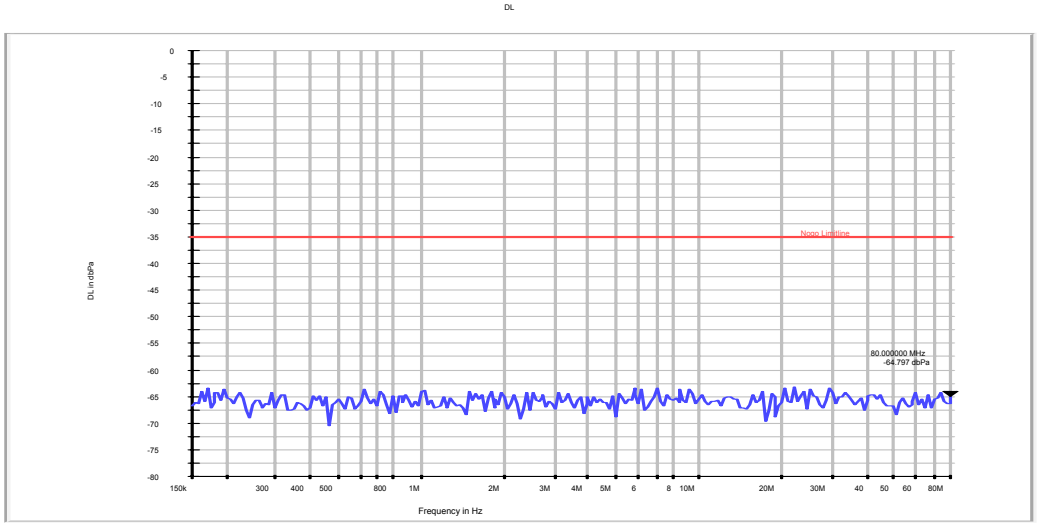
RX	Field	BER Test Result	BER Limit	Result
	3V/m	0.00043	0.001	Pass

Test mode:	Band VIII	Test Frequency:	150KHz-80MHz

Down Link:



Up Link:



BER:

RX	Field	BER Test Result	BER Limit	Result
	3V/m	0.00059	0.001	Pass

Test mode:	LTE Band 3	Test Frequency:	150KHz-80MHz

Throughput:

RX	Field	Throughput(%)	ThroughputLimit(%)	Result
	3V/m	98.96	≥95	Pass

Test mode:	LTE Band 7	Test Frequency:	150KHz-80MHz

Throughput:

RX	Field	Throughput(%)	ThroughputLimit(%)	Result
	3V/m	97.66	≥95	Pass

Test mode:	LTE Band 20	Test Frequency:	150KHz-80MHz

Throughput:

RX	Field	Throughput(%)	ThroughputLimit(%)	Result
	3V/m	98.87	≥95	Pass

4.2.7. Voltage dips and interruptions

PERFORMANCE CRITERION

>95% VD, 0.5 period----Performance criterion: B

>95% VD, 1.0 period----Performance criterion: B

30% VD, 25 period----Performance criterion: C

>95% VI, 250 period----Performance criterion: C

TEST LEVEL

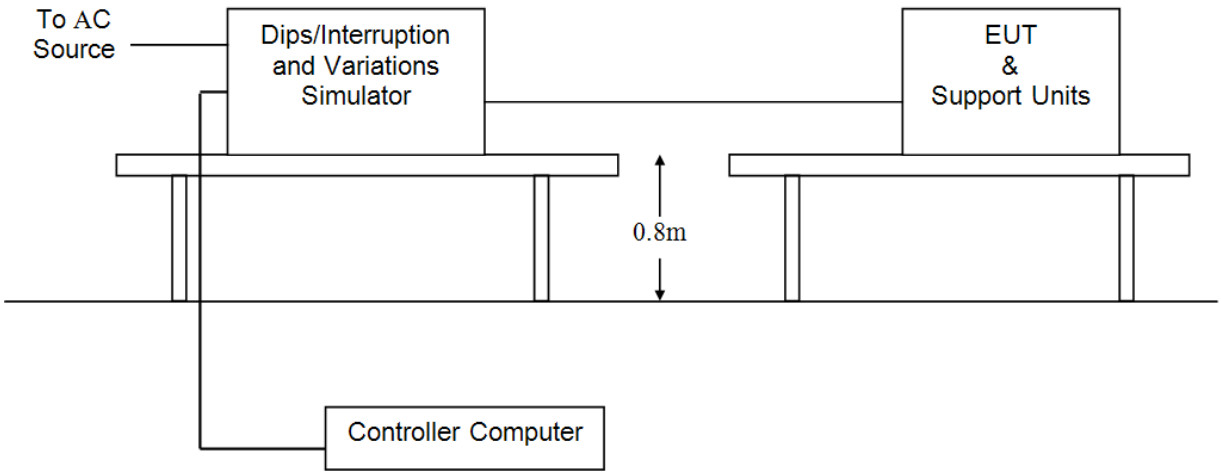
0% of VT(Supply Voltage) for 0.5 period

0% of VT(Supply Voltage) for 1.0 period

70% of VT(Supply Voltage) for 25 period

0% of VT(Supply Voltage) for 250 period

TEST CONFIGURATION



TEST PROCEDURE

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

TEST MODE

Please reference to the section 2.3

TEST RESULTS

------Passed------

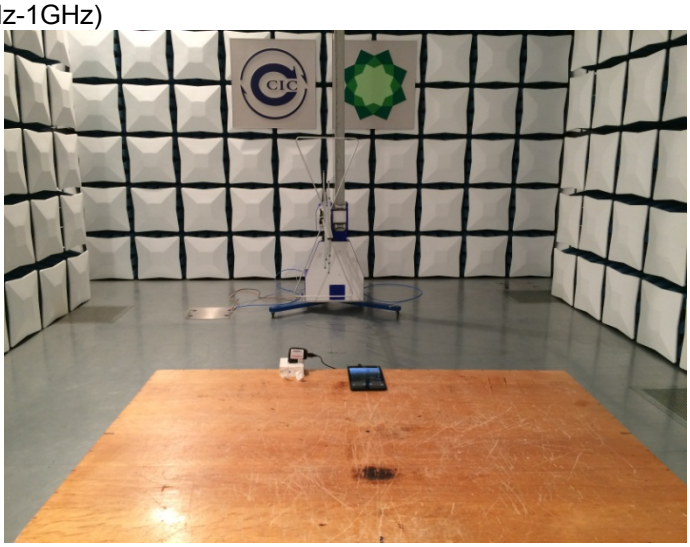
Please refer to the below test data:

Test Level % UT	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°, 90°, 180°, 270°	3	10s	A	Pass
0	1.0	0°, 90°, 180°, 270°	3	10s	A	Pass
70	25	0°, 90°, 180°, 270°	3	10s	A	Pass
0	250	0°, 90°, 180°, 270°	3	10s	B	Pass

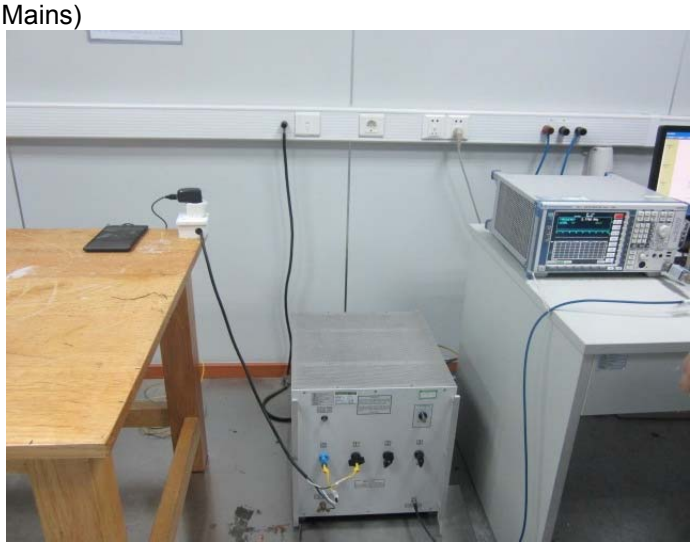
Remark :
A: No degradation in performance of the EUT was observed.
B: During the test, the power shut down, after the experiment, the function can automatically return to normal.

5. Test Setup Photos

Radiated Emission (30MHz-1GHz)



Conducted Emission (AC Mains)

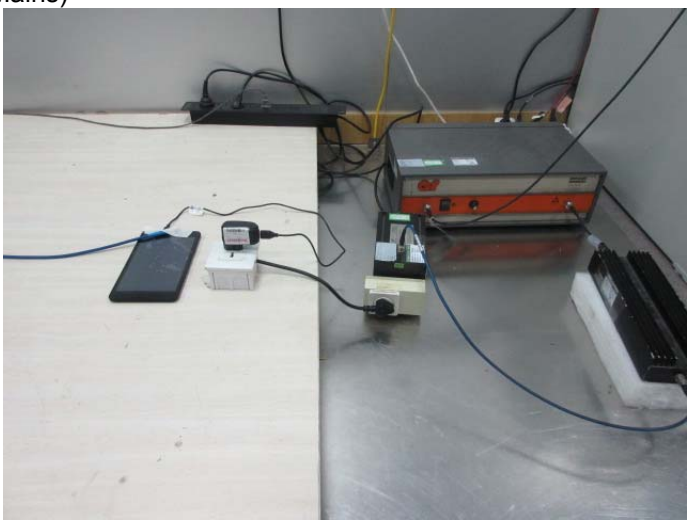


AC Mains Harmonic Current Emission/AC Mains Voltage Fluctuation and Flicker

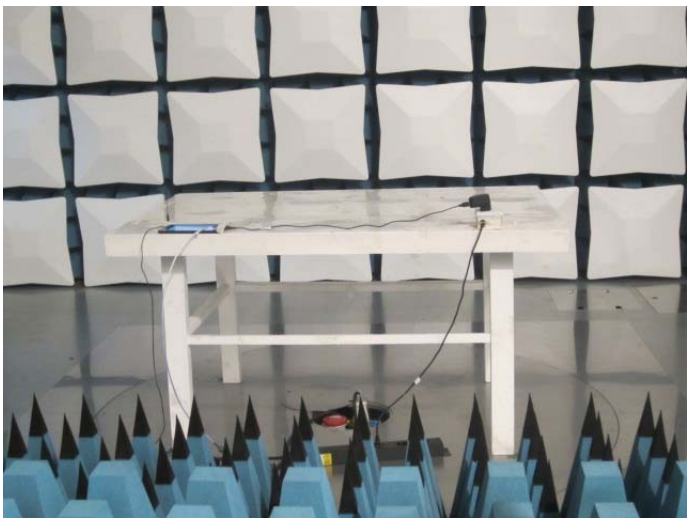
Surge (AC Mains)/Voltage Dips and Interruptions/Fast Transients- Common Mode (AC Mains)

Electrostatic Discharge

RF- Common Mode (AC Mains)



RF Electromagnetic Field



6. External and Internal Photos of the EUT

Reference to the test report No. TRE1603019101

----------End of Report----------