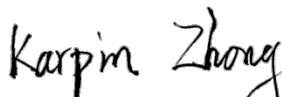
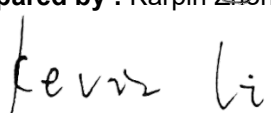


CE&UKCA EMC Test Report

Project No. : 1812C119A
Equipment : Digital Mixer
Brand Name : MIDAS
Test Model : PRO X-CC-TP
Series Model : PROX, PRO X-CC-IP, PRO3, PRO6, PRO9, PRO9-CC-TP, PRO9-CC-IP
Applicant : Music Tribe Commercial MY Sdn. Bhd.
Address : 1-17-02, Suntech @ Penang Cybercity, LinTang Mayang Pasir 3, Bayan Baru, Pulau Pinang, Malaysia
Manufacturer : Music Tribe Commercial MY Sdn. Bhd.
Address : 1-17-02, Suntech @ Penang Cybercity, LinTang Mayang Pasir 3, Bayan Baru, Pulau Pinang, Malaysia
Factory : Zhongshan Eurotec Electronics Ltd.
Address : No.10 Wanmei Road, South China Modern Chinese Medicine Park, Nanlang Town, Zhongshan City, Guangdong Province, P.R. China
Date of Receipt : Dec. 20, 2018
Jun. 25, 2021
Date of Test : Jan. 22, 2019 ~ Jan. 30, 2019
Issued Date : Jul. 16, 2021
Report Version : R00
Test Sample : Engineering Sample No.: D181211745
Standard(s) : EN 55032:2015+A11:2020
EN IEC 61000-3-2:2019
EN 61000-3-3:2013+A1:2019
EN 55035:2017+A11:2020

BS EN 55032:2015+A11:2020
BS EN IEC 61000-3-2:2019
BS EN 61000-3-3:2013+A1:2019
BS EN 55035:2017+A11:2020

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.


Prepared by : Karpin Zhong

Approved by : Kevin Li



TESTING CERT #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

Tel: +86-769-8318-3000

Web: www.newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Compared with original report (BTL-EMC-1-1812C119), 1. Updated the standards to the latest. 2. Added the standards of BS. 3. The applicant and manufacturer information are changed. Above which does not affect the test results, the rest are kept the same.	Jul. 16, 2021

Remark: For the original report (BTL- EMC-1-1812C119), the test data, data evaluation, and equipment configuration contained was accredited by the Authority of TAF according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Emission				
Standard(s)	Test Item	Limit	Judgment	Remark
EN 55032:2015+A11:2020 BS EN 55032:2015+A11:2020	Radiated emissions up to 1 GHz	Class A	PASS	
	Radiated emissions above 1 GHz	Class A	PASS	NOTE (2)
	Radiated emissions from FM receivers	-----	N/A	NOTE (1) NOTE (6)
	Conducted emissions AC mains power port	Class A	PASS	NOTE (7)
	Asymmetric mode conducted emissions	AAN	N/A	NOTE (1) NOTE (8)
		Current Probe	Class A	
		CVP	N/A	
	Conducted differential voltage emissions	-----	N/A	NOTE (1) NOTE (9)
Standard	Test Item	Limit	Judgment	Remark
EN IEC 61000-3-2:2019 /BS EN IEC 61000-3-2:2019	Harmonic current emissions	Class A	PASS	NOTE (3)
EN 61000-3-3:2013+A1:2019 /BS EN 61000-3-3:2013+A1:2019	Voltage changes, voltage fluctuations and flicker	-----	PASS	

Immunity (EN 55035:2017+A11:2020, BS EN 55035:2017+A11:2020)				
Section(s)	Test Item	Performance Criterion	Results Judgment	Remark
IEC 61000-4-2:2008	Electrostatic discharge immunity	B	PASS	
IEC 61000-4-3:2020	Continuous RF electromagnetic field disturbances	A	PASS	
IEC 61000-4-4:2012	AC mains power ports	B	PASS	
	Analogue/digital data ports with cables longer than 3m	B	PASS	
	DC network power ports with cables longer than 3m	B	N/A	NOTE (1)
IEC 61000-4-5:2014+AMD1:2017	AC mains power ports	B	PASS	NOTE (4)
	Analogue/digital data ports with cables longer than 3m	B/C	PASS	NOTE (4)
	DC network power ports with cables longer than 3m	B	N/A	
IEC 61000-4-6:2013	AC mains power ports	A	PASS	
	Analogue/digital data ports with cables longer than 3m	A	PASS	
	DC network power ports with cables longer than 3m	A	N/A	NOTE (1)
IEC 61000-4-8:2009	Power frequency magnetic field immunity	A	PASS	
IEC 61000-4-11:2020	Voltage dips, short interruptions and voltage variations immunity	B / C / C	PASS	NOTE (5)
4.2.7	Broadband impulse noise disturbances, repetitive	A	N/A	NOTE (1)
4.2.7	Broadband impulse noise disturbances, isolated	B	N/A	NOTE (1)

NOTE:

- (1) "N/A" denotes test is not applicable to this device.
- (2) The EUT's max operating frequency is above 108 MHz, so the test will be performed.
- (3) If the power consumption is less than 75W, there is no limit applied.
- (4) Port Type: unshielded symmetrical :
Performance Criterion C for signal ports and telecommunication ports.
Port Type: coaxial or shielded:
Performance Criterion B for signal ports and telecommunication ports.
Performance Criterion B for input d.c. power port and a.c. power ports.
- (5) Voltage dips:
(B) Residual voltage < 5% 0.5 period
(C) Residual voltage 70% 25period(50Hz), 30period(60Hz)
Voltage interruptions:
(C) Residual voltage < 5% 250period(50Hz), 300period(60Hz)
- (6) If the EUT has FM function the test will be performed.
- (7) If the EUT has AC power mains port the test will be performed.
- (8)

Cable Type	Number of pairs	Measurement type	Procedures
Balanced Unscreened	1 (2 wire) ; 2 (4 wire); 3 (6 wire) ; 4 (8 wire)	Voltage	AAN
Balanced Unscreened	See a)	Voltage and Current	CP+CVP
Screened or Coaxial	n/a	Voltage	AAN
Screened or Coaxial	n/a	Voltage or Current	CP or CVP
Unbalanced cables	n/a	Voltage and Current	CP+CVP

Ports connected to cables with more than 4 balanced pairs or where the port is unable to function correctly when connected through an AAN.

- (9) If the EUT has tuner port the test will be performed.
- (10) The requirement followed by the client's specification.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2, The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{CISPR} requirement.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

A. Radiated emissions up to 1 GHz measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB08 (10m)	CISPR	30MHz ~ 200MHz	V	4.54
		30MHz ~ 200MHz	H	3.98
		200MHz ~ 1,000MHz	V	3.98
		200MHz ~ 1,000MHz	H	3.76

B. Radiated emission above 1 GHz:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-CB08 (3m)	CISPR	1 ~ 6 GHz	4.02
		6 ~ 18 GHz	5.10

C. Conducted emissions AC mains power port measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 kHz ~ 30MHz	2.32

D. Asymmetric Mode Conducted Emissions Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	AAN 50...40dB	3.76
		AAN 65...50dB	3.76
		AAN 75...60dB	3.76
		Capacitive Voltage Probe	3.04
		RF Current Probe	2.58

E. Harmonic current emissions / Voltage changes, voltage fluctuations and flicker measurement:

Test Site	Method	Item	U (%)
DG-C01	EN IEC 61000-3-2 EN 61000-3-3	Voltage	0.774
		Current	0.782

F. Immunity Measurement:

Test Site	Method	Item	U
DG-SR02	IEC 61000-4-2	Rise time t_r	14.60 %
		Peak current I_p	1.72 %
		Current at 30 ns	2.0 %
		Current at 60 ns	1.84 %
DG-CB05	IEC 61000-4-3	80 MHz~1 GHz	2.175 dB
		Electrical measurements	2.267 dB
		Measuring the demodulation on analogue wired network lines	2.267 dB
		Audio breakthrough measurement, test set-up for RS 2G/3G	2.349 dB
		Audio breakthrough measurement, test set-up for RS 4G	2.413 dB
DG-SR05	IEC 61000-4-4	Voltage rise time (t_r)	10.40 %
		Voltage peak value(V_P)	8.20 %
		Voltage pulse width(t_w)	6.0 %
DG-SR05	IEC 61000-4-5	Voltage front time (T_{fv})	5.80 %
		Voltage peak value(V_P)	3.90 %
		Voltage duration(t_d)	0.60 %
DG-CB06	IEC 61000-4-6	CDN	3.25 dB
		EM clamp	4.410 dB
		Electrical measurements	3.258 dB
		measuring the demodulation on analogue wired network lines	3.258 dB
DG-SR05	IEC 61000-4-8	Magnetic Field Level	3.787 %
DG-SR05	IEC 61000-4-11	voltage fall time (T_f)	2.0 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Digital Mixer
Brand Name	MIDAS
Test Model	PRO X-CC-TP
Series Model	PROX,PRO X-CC-IP,PRO3,PRO6,PRO9,PRO9-CC-TP,PRO9-CC-IP
Model Difference(s)	Totally same design, Pro X is the highest configuration, its EM performance can cover others.
Power Source	AC Mains.
Power Rating	AC 100-240V 50/60Hz 500W
Connecting I/O Port(s)	Please refer to EUT photo.

Note:

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

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Operating
Mode 2	AES50 1 Port
Mode 3	COPPER Port
Mode 4	ETHERNET 1 Port

For Radiated Test	
Final Test Mode	Description
Mode 1	Operating

For Conducted Test	
Final Test Mode	Description
Mode 1	Operating

For ISN Test	
Final Test Mode	Description
Mode 4	ETHERNET 1 Port

For Harmonics / Flickers Test	
Final Test Mode	Description
Mode 1	Operating

For EMS Test	
Final Test Mode	Description
Mode 1	Operating

Note:

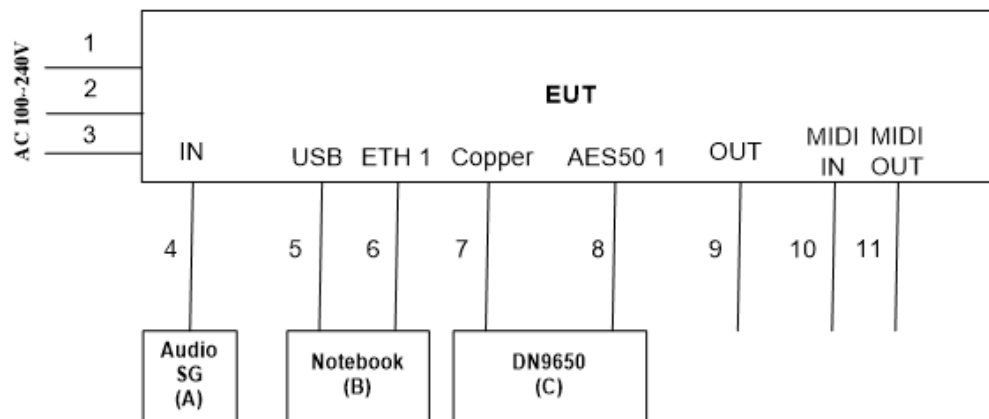
1. For ISN test, mode 2-4 is pretested and mode 4 is found to be the worst case, thus the test results of mode 4 are recorded in the report.
2. RS Acoustic: The Front, Rear, Left and Right were evaluated. The worst placement direction is Front and recorded in this report.
3. CS: The worst mode (disturb the power) is recorded in the report.

2.3 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The standard test signals and output signal as following:

1. EUT is connected with Audio SG via audio cable.
2. EUT is connected with Notebook and DN9650 via RJ45 cable.
3. Audio Single Generator to produce 1 KHZ Audio source to the EUT signal input.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



Ground plane

Remote system

2.5 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
A	Audio SG	GW	GAG-809	8651043
B	Notebook	Lenovo	E445	MP-05Y56S
C	DN9650	Behringer	DN9650	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	AC Cable	NO	NO	1.8m
2	AC Cable	NO	NO	1.8m
3	AC Cable	NO	NO	1.8m
4	Audio Cable	YES	NO	10m
5	USB Cable	YES	NO	10m
6	RJ45 Cable	YES	NO	10m
7	RJ45 Cable	YES	NO	10m
8	RJ45 Cable	YES	NO	10m
9	Audio Cable	YES	NO	3m
10	Audio Cable	YES	NO	3m
11	Audio Cable	YES	NO	3m

3. EMC EMISSION TEST

3.1 RADIATED EMISSION

3.1.1 LIMITS

Class A equipment up to 1000MHz

Table clause	Frequency range MHz	Measurement			Class A limits dB(μV/m)
		Facility (see Table A.1)	Distance m	Detector type/ bandwidth	
A2.1	30-230	OATS/SAC	10	Quasi peak / 120 kHz	40
	230-1000				47
A2.2	30-230	OATS/SAC	3		50
	230-1000				57
A2.3	30-230	FAR	10	Quasi peak / 120 kHz	42 to 35
	230-1000				42
A2.4	30-230	FAR	3		52 to 45
	230-1000				52
Apply only A2.1 or A2.2 or A2.3 or A2.4 across the entire frequency range.					

Class A equipment above 1000MHz

Table clause	Frequency range MHz	Measurement			Class A limits dB(μV/m)
		Facility (see Table A.1)	Distance m	Detector type/bandwidth	
A3.1	1000-3000	FSOATS	3	Average / 1 MHz	56
	3000-6000			60	
A3.2	1000-3000			Peak / 1 MHz	76
	3000-6000			80	
Apply A3.1 and A3.2 across the frequency range from 1000 MHz to the highest required frequency of measurement derived from Table 1.					

Class B equipment up to 1000MHz

Table clause	Frequency range MHz	Measurement			Class B limits dB(μV/m)
		Facility (see Table A.1)	Distance m	Detector type/ bandwidth	
A4.1	30-230	OATS/SAC	10	Quasi peak / 120 kHz	30
	230-1000				37
A4.2	30-230	OATS/SAC	3		40
	230-1000				47
A4.3	30-230	FAR	10	Quasi peak / 120 kHz	32 to 25
	230-1000				32
A4.4	30-230	FAR	3		42 to 35
	230-1000				42

Apply only table clause A4.1 or A4.2 or A4.3 or A4.4 across the entire frequency range. These requirements are not applicable to the local oscillator and harmonics frequencies of equipment covered by Table A.6.

Class B equipment above 1000MHz

Table clause	Frequency range MHz	Measurement			Class B limits dB(μ V/m)
		Facility (see Table A.1)	Distance m	Detector type/bandwidth	
A5.1	1000-3000	FSOATS	3	Average / 1 MHz	50
	3000-6000				54
A5.2	1000-3000			Peak / 1 MHz	70
	3000-6000				74

Apply A5.1 and A5.2 across the frequency range from 1000 MHz to the highest required frequency of measurement derived from Table 1.

Notes:

- (1) The limit for radiated test was performed according to as following: EN 55032
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dB μ V/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

Required highest frequency for radiated measurement

Highest internal frequency (F_x) MHz	Highest measured frequency MHz
$F_x \leq 108$	1000
$108 < F_x \leq 500$	2000
$500 < F_x \leq 1000$	5000
$F_x > 1000$	5 th up to a maximum 6 GHz

Note for FM and TV broadcast receiver, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.

3.1.2 MEASUREMENT INSTRUMENTS LIST

Up to 1GHz:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Receiver	Keysight	N9038A	MY54450004	Aug. 11, 2019
2	MXE EMI Receiver	Agilent	N9038A	MY53220133	Mar. 11, 2019
3	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980284	Mar. 11, 2019
4	Pre-Amplifier	EMC INSTRUMENT	EMC 9135	980283	Mar. 11, 2019
5	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	946	Nov. 24, 2019
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	947	Nov. 24, 2019
7	Cable	emci	LMR-400(5m+11m+15m)	N/A	Aug. 07, 2019
8	Cable	emci	LMR-400(5m+8m+8m)	N/A	Aug. 07, 2019
9	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A
10	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
11	Attenuator	EMCI	EMCI-N-6-06	N0670	Nov. 24, 2019
12	Attenuator	SHX	EMCI-N-6-06	N0671	Nov. 24, 2019

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

Above 1GHz:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Horn Antenna	EMCO	3115	9605-4803	Mar. 11, 2019
2	Amplifier	Agilent	8449B	3008A02584	Aug. 11, 2019
3	MXE EMI Receiver	Agilent	N9038A	MY53220133	Mar. 11, 2019
4	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A
5	Cable	MIcable Inc.	B10-01-01-15M(10MHz~26.5GHz)	18047122	May 25, 2019
6	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
7	Controller	MF	MF-7802	MF780208159	N/A
8	Cable	MIcable Inc.	B10-01-01-5M(10MHz~26.5GHz)	18047123	May 25, 2019

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

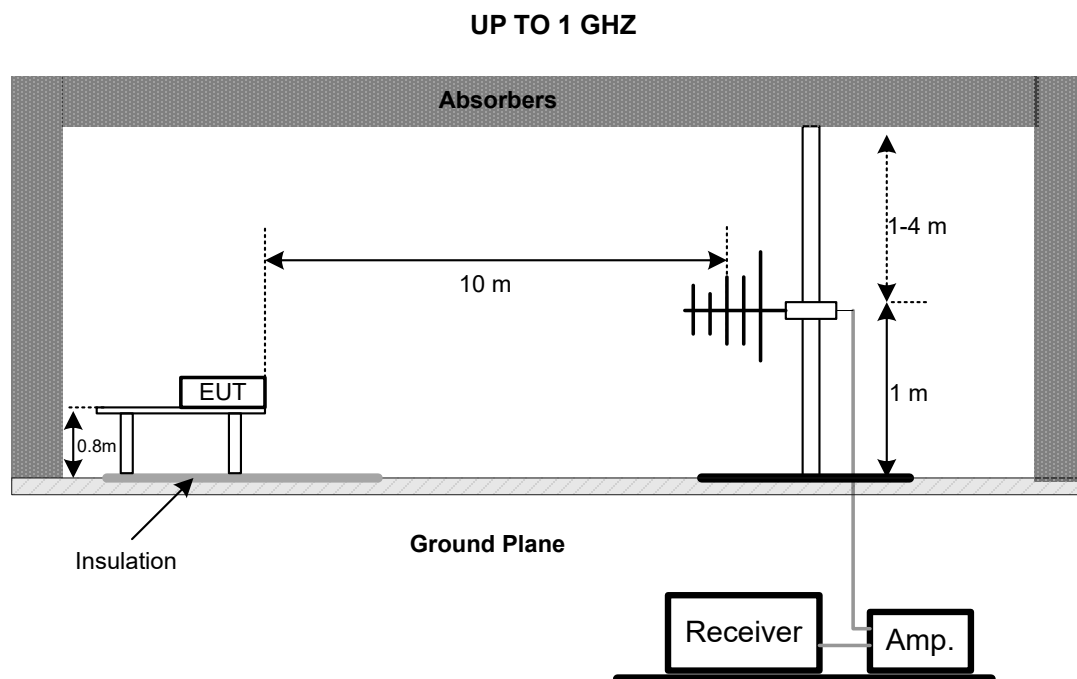
3.1.3 TEST PROCEDURE

- The measuring distance of 10 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz).
- The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
(below 1GHz)
- For the actual test configuration, please refer to the related Item - Block Diagram of system tested.

3.1.4 DEVIATION FROM TEST STANDARD

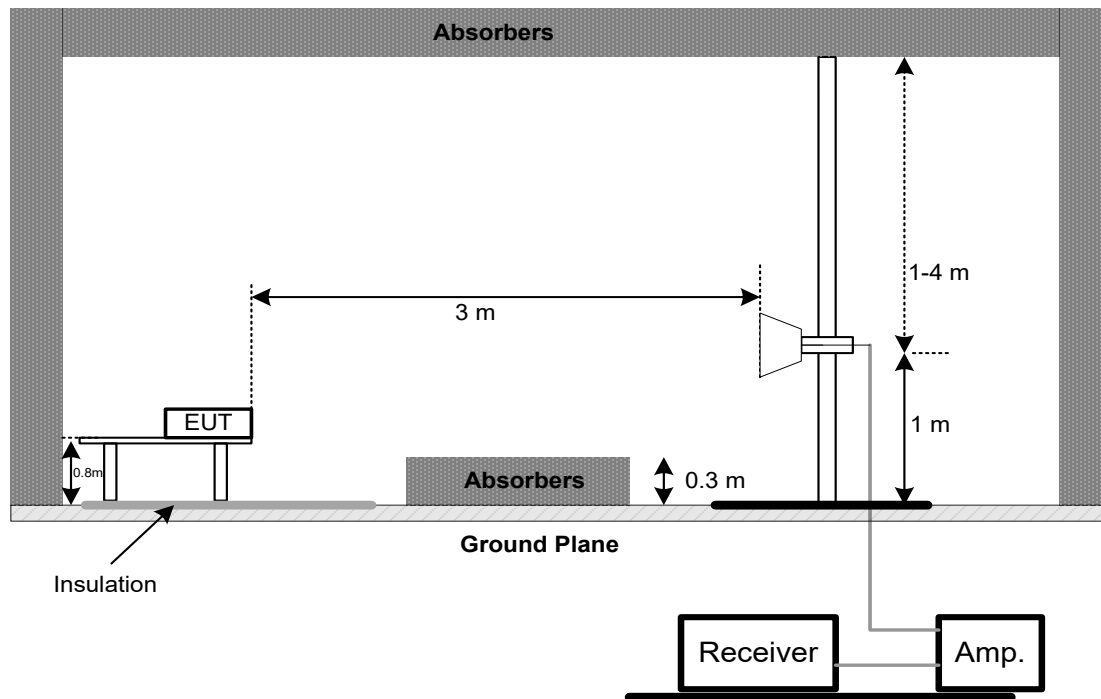
No deviation

3.1.5 TEST SETUP



Note: The antenna can be moved between 1 to 4 meters above the ground.

ABOVE 1 GHZ



3.1.6 MEASUREMENT DISTANCE

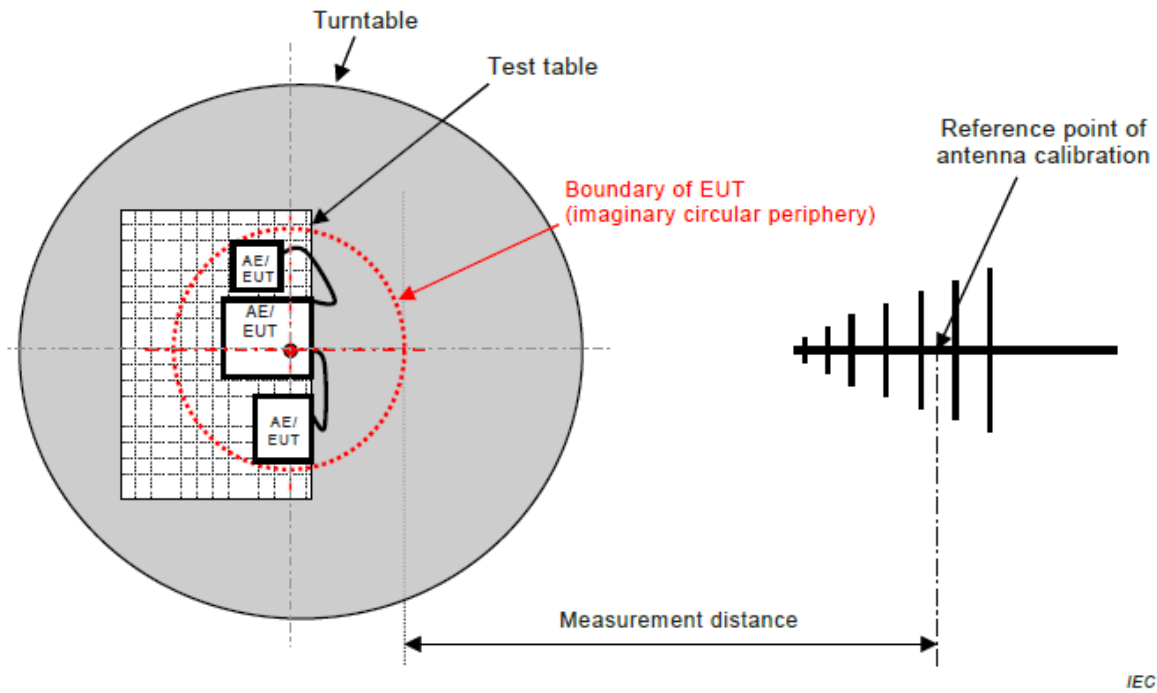


Figure C.1 – Measurement distance

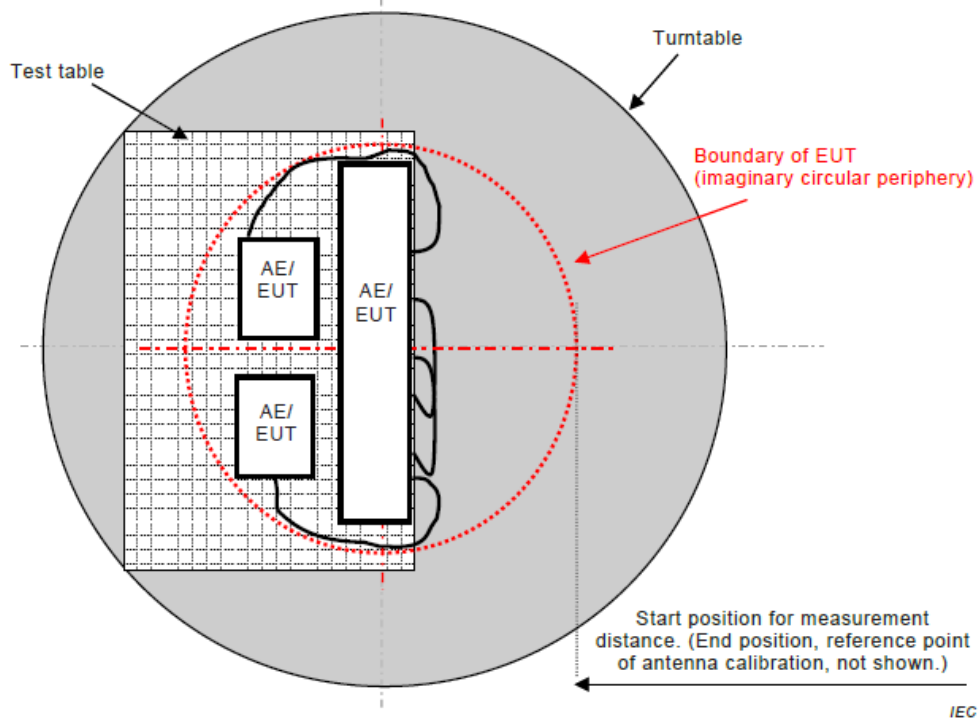
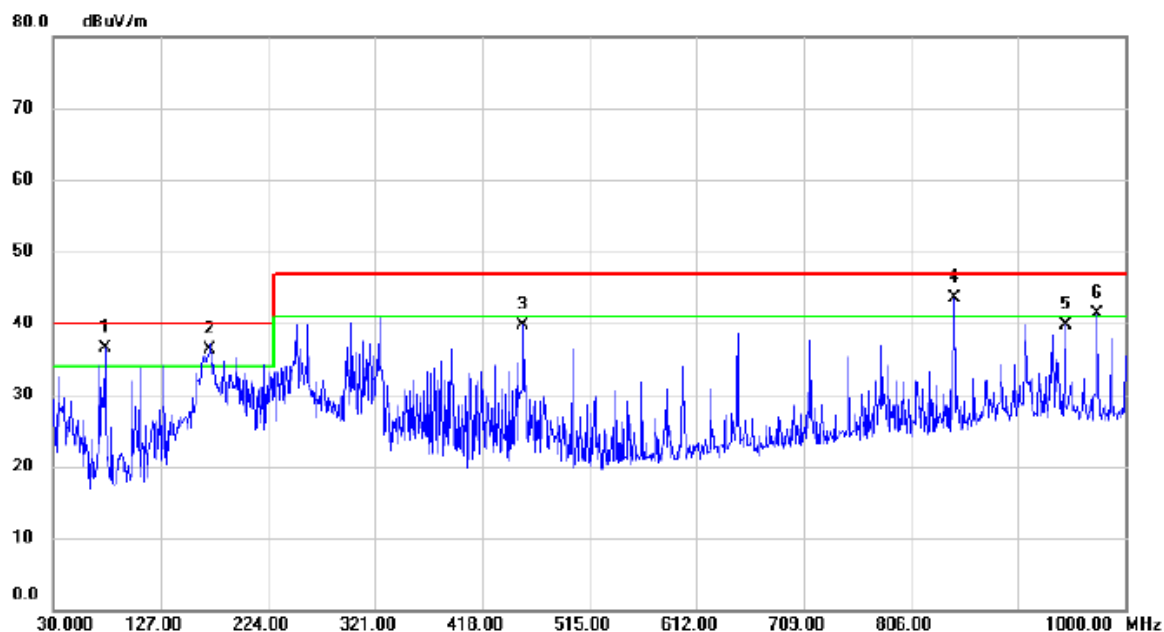


Figure C.2 – Boundary of EUT, Local AE and associated cabling

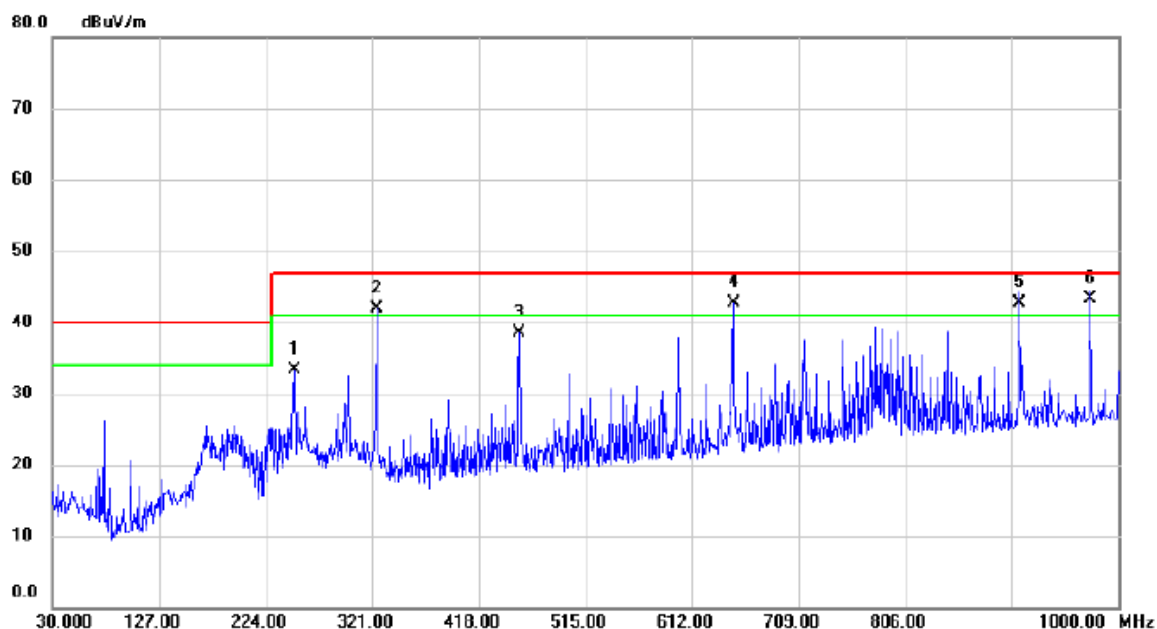
3.1.7 TEST RESULTS (UP TO 1 GHz)

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	60%
Test Voltage	AC 230V/50Hz	Polarization	Vertical
Test Mode	Operating		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	!	76.5600	56.79	-20.30	36.49	40.00	-3.51	QP	
2	!	172.1050	52.80	-16.55	36.25	40.00	-3.75	QP	
3		454.8600	51.14	-11.41	39.73	47.00	-7.27	QP	
4	*	844.8000	48.85	-5.28	43.57	47.00	-3.43	QP	
5		946.1650	43.29	-3.61	39.68	47.00	-7.32	QP	
6	!	974.7800	44.64	-3.24	41.40	47.00	-5.60	QP	

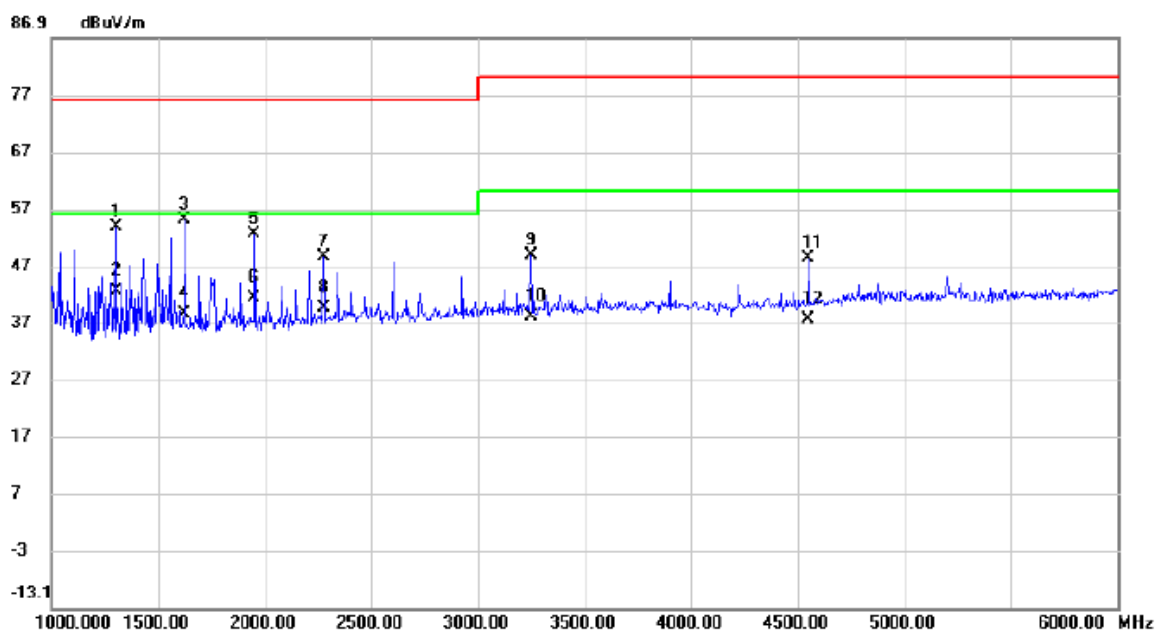
EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	60%
Test Voltage	AC 230V/50Hz	Polarization	Horizontal
Test Mode	Operating		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		250.1900	50.19	-16.98	33.21	47.00	-13.79	QP	
2	!	324.8800	56.26	-14.35	41.91	47.00	-5.09	QP	
3		454.8600	49.85	-11.31	38.54	47.00	-8.46	QP	
4	!	649.8300	50.56	-7.86	42.70	47.00	-4.30	QP	
5	!	909.7900	47.26	-4.61	42.65	47.00	-4.35	QP	
6	*	974.7800	46.72	-3.51	43.21	47.00	-3.79	QP	

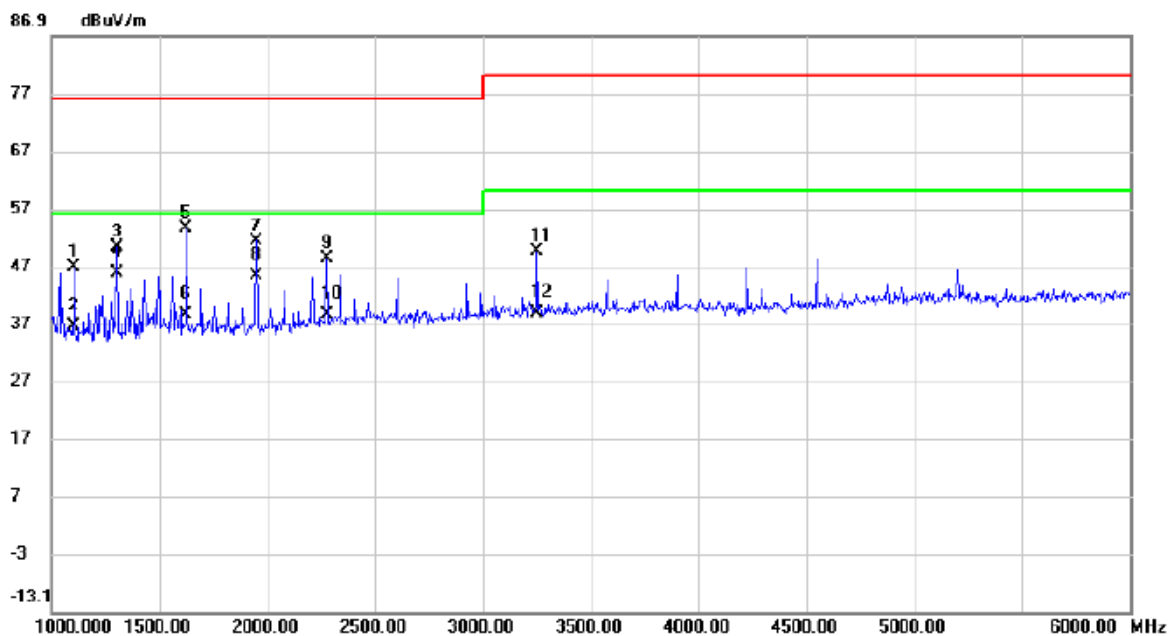
3.1.8 TEST RESULTS (ABOVE 1 GHZ)

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	22°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz	Polarization	Vertical
Test Mode	Operating		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1300.000	58.75	-4.96	53.79	76.00	-22.21	peak	
2	*	1300.000	47.59	-4.96	42.63	56.00	-13.37	AVG	
3		1625.000	58.18	-3.14	55.04	76.00	-20.96	peak	
4		1625.000	41.79	-3.14	38.65	56.00	-17.35	AVG	
5		1950.000	54.47	-2.03	52.44	76.00	-23.56	peak	
6		1950.000	43.35	-2.03	41.32	56.00	-14.68	AVG	
7		2275.000	49.21	-0.73	48.48	76.00	-27.52	peak	
8		2275.000	40.38	-0.73	39.65	56.00	-16.35	AVG	
9		3250.000	46.33	2.42	48.75	80.00	-31.25	peak	
10		3250.000	35.73	2.42	38.15	60.00	-21.85	AVG	
11		4550.000	42.47	5.87	48.34	80.00	-31.66	peak	
12		4550.000	31.69	5.87	37.56	60.00	-22.44	AVG	

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	22°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz	Polarization	Horizontal
Test Mode	Operating		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		1105.000	53.09	-6.32	46.77	76.00	-29.23	peak	
2		1105.000	42.84	-6.32	36.52	56.00	-19.48	AVG	
3		1300.000	55.14	-4.96	50.18	76.00	-25.82	peak	
4	*	1300.000	50.62	-4.96	45.66	56.00	-10.34	AVG	
5		1625.000	56.61	-3.14	53.47	76.00	-22.53	peak	
6		1625.000	41.58	-3.14	38.44	56.00	-17.56	AVG	
7		1950.000	53.43	-2.03	51.40	76.00	-24.60	peak	
8		1950.000	47.28	-2.03	45.25	56.00	-10.75	AVG	
9		2275.000	49.07	-0.73	48.34	76.00	-27.66	peak	
10		2275.000	39.18	-0.73	38.45	56.00	-17.55	AVG	
11		3250.000	47.16	2.42	49.58	80.00	-30.42	peak	
12		3250.000	36.24	2.42	38.66	60.00	-21.34	AVG	

3.2 CONDUCTED EMISSION MEASUREMENT AT AC MAINS POWER PORTS

3.2.1 LIMITS

Requirements for conducted emissions from AC mains power ports of Class A equipment

Table clause	Frequency Range MHz	Coupling Device	Detector Type / bandwidth	Class A Limits (dB(μV))
A9.1	0.15 - 0.5	AMN	Quasi Peak / 9 kHz	79
	0.5 - 30			73
A9.2	0.15 - 0.5	AMN	Average / 9 kHz	66
	0.5 - 30			60
Apply A9.1 and A9.2 across the entire frequency range.				

Requirements for conducted emissions from AC mains power ports of Class B equipment

Requirements for conducted emissions from VTS main power ports of Class B equipment				
Table clause	Frequency Range MHz	Coupling Device	Detector Type / bandwidth	Class B Limits (dB(μV))
A10.1	0.15 - 0.5	AMN	Quasi Peak / 9 kHz	66-56
	0.5 - 5			56
	5 - 30			60
A10.2	0.15 - 0.5	AMN	Average / 9 kHz	56-46
	0.5 - 5			46
	5 - 30			50
Apply A10.1 and A10.2 across the entire frequency range.				

NOTE:

(1) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)

Margin Level = Measurement Value – Limit Value

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 11, 2019
2	LISN	EMCO	3816/2	52765	Mar. 11, 2019
3	50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 11, 2019
4	TWO-LINE V-NETWORK	R&S	ENV216	101447	Mar. 11, 2019
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-0 1	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 23, 2019

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

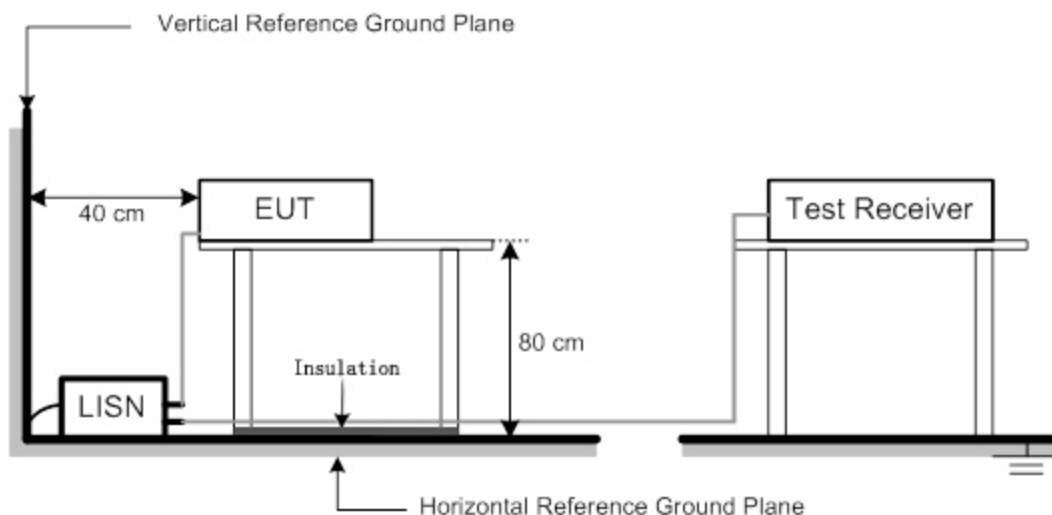
3.2.3 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

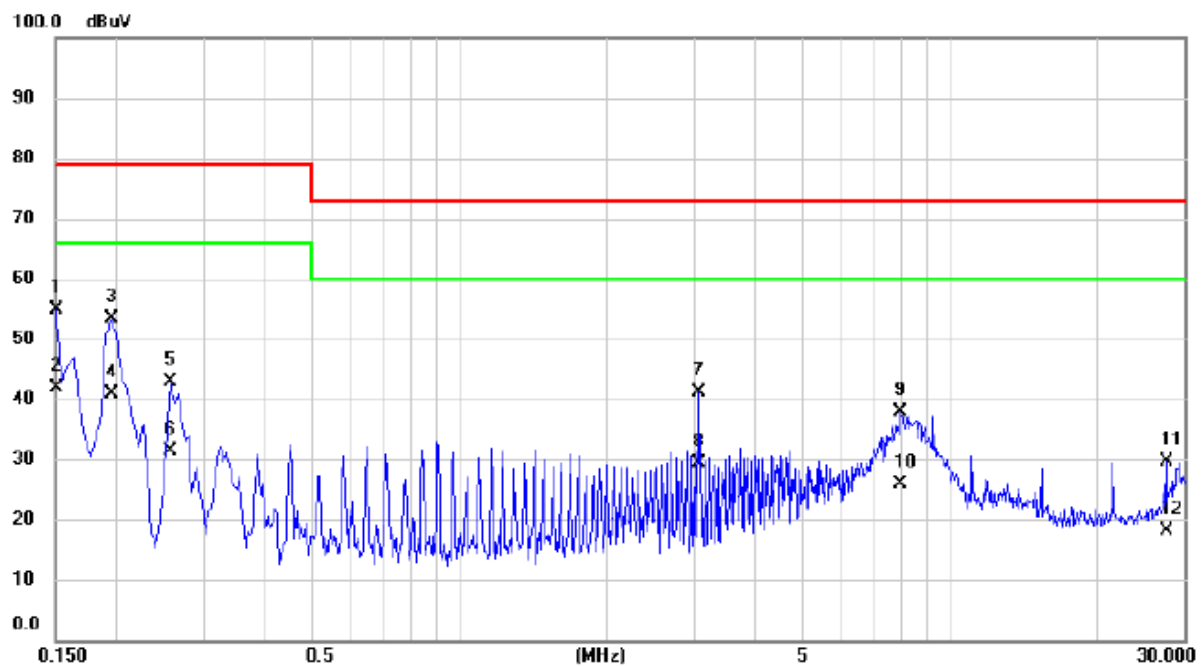
No deviation

3.2.5 TEST SETUP



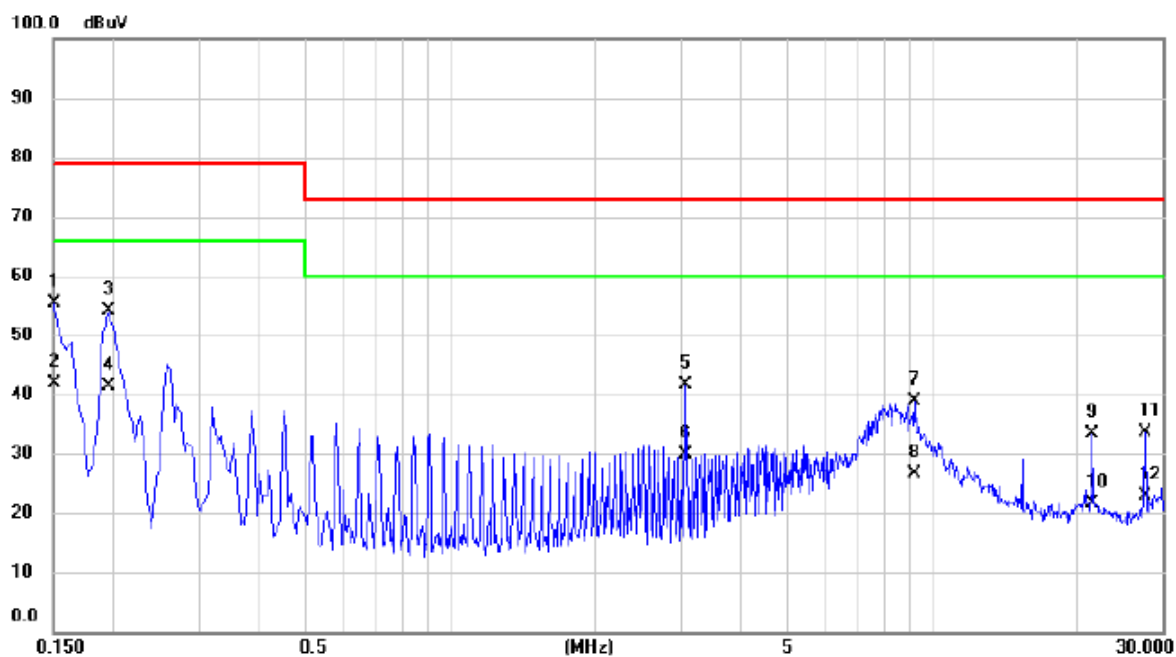
3.2.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	53%
Test Voltage	AC 230V/50Hz	Phase	Line
Test Mode	Operating		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1500	45.18	9.82	55.00	79.00	-24.00	QP	
2		0.1500	32.06	9.82	41.88	66.00	-24.12	AVG	
3		0.1950	43.44	9.82	53.26	79.00	-25.74	QP	
4		0.1950	31.05	9.82	40.87	66.00	-25.13	AVG	
5		0.2580	33.03	9.82	42.85	79.00	-36.15	QP	
6		0.2580	21.65	9.82	31.47	66.00	-34.53	AVG	
7		3.0705	31.00	10.06	41.06	73.00	-31.94	QP	
8		3.0705	19.31	10.06	29.37	60.00	-30.63	AVG	
9		7.9305	27.38	10.38	37.76	73.00	-35.24	QP	
10		7.9305	15.47	10.38	25.85	60.00	-34.15	AVG	
11		27.6405	18.61	11.10	29.71	73.00	-43.29	QP	
12		27.6405	6.99	11.10	18.09	60.00	-41.91	AVG	

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	53%
Test Voltage	AC 230V/50Hz	Phase	Neutral
Test Mode	Operating		
Test Engineer	Jason Yang		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1500	45.39	9.91	55.30	79.00	-23.70	QP	
2		0.1500	32.05	9.91	41.96	66.00	-24.04	AVG	
3		0.1950	44.21	9.91	54.12	79.00	-24.88	QP	
4		0.1950	31.54	9.91	41.45	66.00	-24.55	AVG	
5		3.0705	31.38	10.25	41.63	73.00	-31.37	QP	
6		3.0705	19.65	10.25	29.90	60.00	-30.10	AVG	
7		9.2130	28.28	10.70	38.98	73.00	-34.02	QP	
8		9.2130	16.05	10.70	26.75	60.00	-33.25	AVG	
9		21.4980	21.90	11.48	33.38	73.00	-39.62	QP	
10		21.4980	10.25	11.48	21.73	60.00	-38.27	AVG	
11		27.6405	22.10	11.49	33.59	73.00	-39.41	QP	
12		27.6405	11.42	11.49	22.91	60.00	-37.09	AVG	

3.3 ASYMMETRIC MODE CONDUCTED EMISSIONS TEST

3.3.1 LIMITS

Requirements for asymmetric mode conducted emissions from Class A equipment

Table clause	Frequency range MHz	Coupling device	Detector type / Bandwidth	Class A voltage limits dB(μV)	Class A current limits dB(μV)
A11.1	0.15 — 0.5	AAN	Quasi Peak / 9 kHz	97 — 87	n/a
	0.5 — 30			87	
	0.15 — 0.5	AAN	Average / 9 kHz	84 — 74	
	0.5 — 30			74	
A11.2	0.15 — 0.5	CVP and current probe	Quasi Peak / 9 kHz	97 — 87	53 — 43
	0.5 — 30			87	43
	0.15 — 0.5	CVP and current probe	Average / 9 kHz	84 — 74	40 — 30
	0.5 — 30			74	30
A11.3	0.15 — 0.5	Current probe	Quasi Peak / 9 kHz	n/a	53 — 43
	0.5 — 30				43
	0.15 — 0.5	Current probe	Average / 9 kHz		40 — 30
	0.5 — 30				30

The choice of coupling device and measurement procedure is defined in Annex C.

AC mains ports that also have the function of a wired network port shall meet the limits given in Table A.9. The measurement shall cover the entire frequency range.

The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.

Testing is required at only one EUT supply voltage and frequency.

Applicable to ports listed above and intended to connect to cables longer than 3 m.

Requirements for asymmetric mode conducted emissions from Class B equipment

Table clause	Frequency range MHz	Coupling device	Detector type / Bandwidth	Class B voltage limits dB(μV)	Class B current limits dB(μV)
A12.1	0.15 — 0.5	AAN	Quasi Peak / 9 kHz	84 — 74	n/a
	0.5 — 30			74	
	0.15 — 0.5	AAN	Average / 9 kHz	74 — 64	
	0.5 — 30			64	
A12.2	0.15 — 0.5	CVP and current probe	Quasi Peak / 9 kHz	84 — 74	40 — 30
	0.5 — 30			74	30
	0.15 — 0.5	CVP and current probe	Average / 9 kHz	74 — 64	30 — 20
	0.5 — 30			64	20
A12.3	0.15 — 0.5	Current probe	Quasi Peak / 9 kHz	n/a	40 — 30
	0.5 — 30				30
	0.15 — 0.5	Current probe	Average / 9 kHz		30 — 20
	0.5 — 30				20

The choice of coupling device and measurement procedure is defined in Annex C.

Screened ports including TV broadcast receiver tuner ports are measured with a common-mode impedance of 150 Ω. This is typically accomplished with the screen terminated by 150 Ω to earth.

AC mains ports that also have the function of a wired network port shall meet the limits given in Table A.10.

The measurement shall cover the entire frequency range.

The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.

Measurement is required at only one EUT supply voltage and frequency.

Applicable to ports listed above and intended to connect to cables longer than 3 m.

NOTE:

(1) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)

Margin Level = Measurement Value – Limit Value

3.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 11, 2019
2	LISN	EMCO	3816/2	52765	Mar. 11, 2019
3	50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 11, 2019
4	TWO-LINE V-NETWORK	R&S	ENV216	101447	Mar. 11, 2019
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	Cable	N/A	RG223	12m	Mar. 23, 2019
7	RF Current Probe	FCC	F-33-4	78	Mar. 11, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

3.3.3 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- AAN, CP or CVP** at least 80 cm from nearest part of EUT chassis.

NOTE:

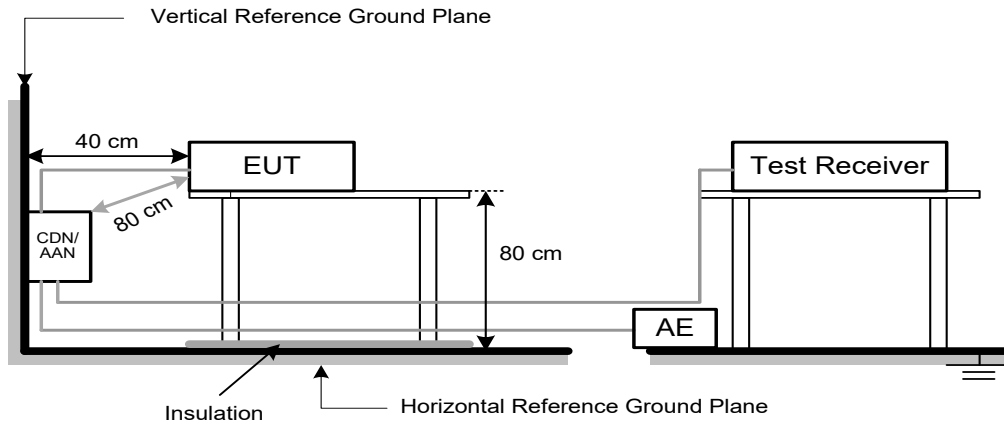
- The communication function of EUT was executed and AAN was connected between EUT and associated equipment and the AAN was connected directly to reference ground plane.
Measure the voltage at the measurement port of the AAN
Correct the measured voltage by adding the AAN voltage division factor
Compare the corrected voltage with the limit(**For AAN**)
- Measure the current with a current probe and compare to the current limit(**For CP**)
- The current shall be measured with the current probe and the results compared with the current limits.
The voltage measured shall be corrected at each frequency of interest as follows:
- if the current margin with respect to the current limit is ≤ 6 dB, the actual current margin shall be subtracted from the measured voltage;
-if the current margin with respect to the current limit is > 6 dB, 6 dB shall be subtracted from the measured voltage.
The adjusted voltage shall be compared with the applicable voltage limit.
Both the measured current and the corrected voltage shall be below the applicable current and voltage limits at all frequencies for the EUT to be deemed compliant with this publication.(**For CVP**)

3.3.4 DEVIATION FROM TEST STANDARD

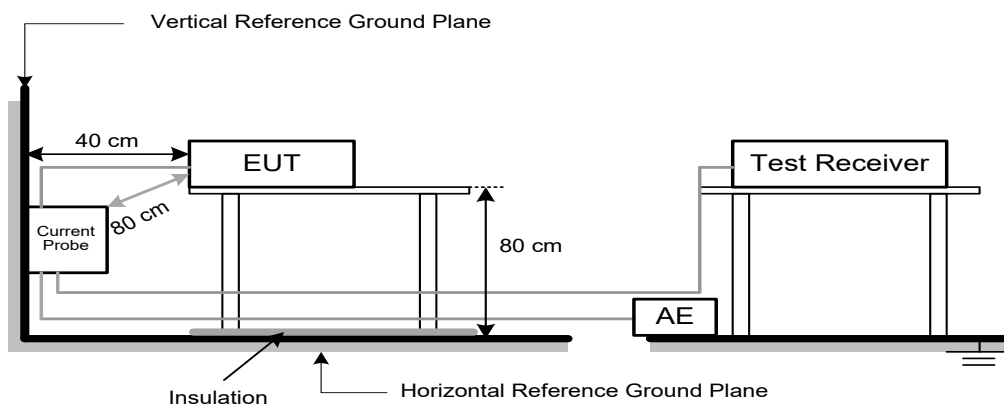
No deviation

3.3.5 TEST SETUP

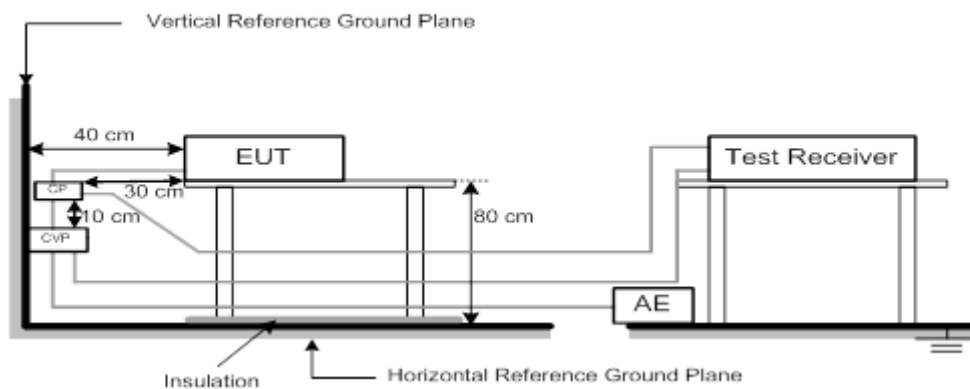
a) Cable Type: Balanced Unscreened, Screened or Coaxial



b) Cable Type: Screened or Coaxial

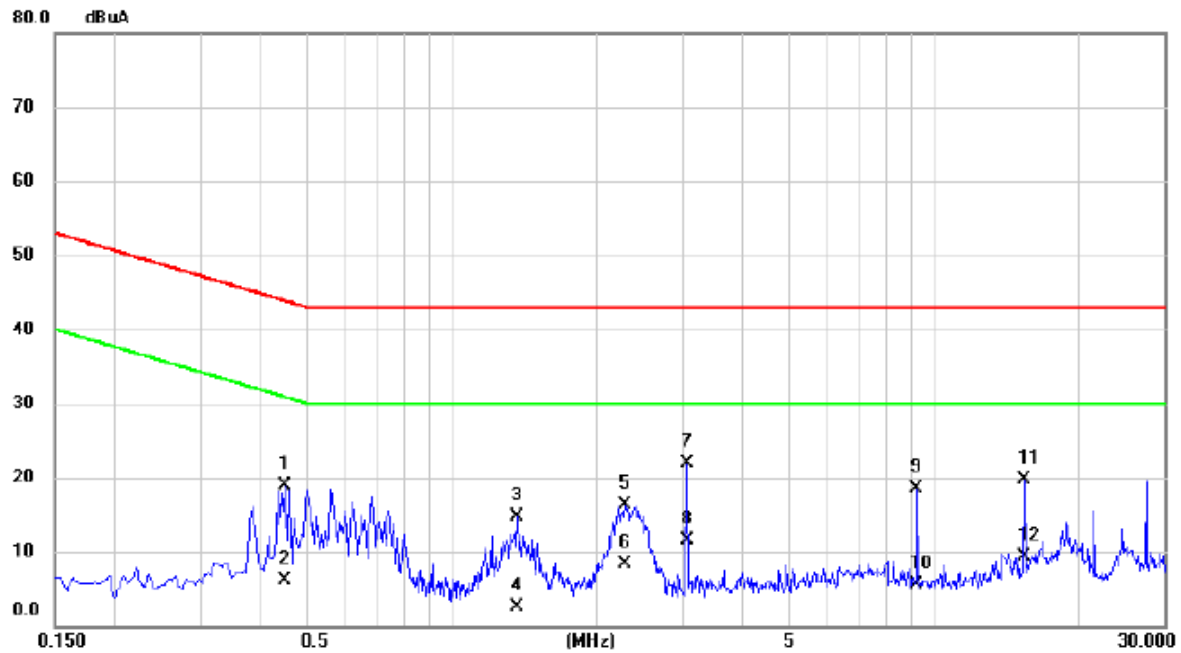


c) Cable Type: Balanced Unscreened, Unbalanced



3.3.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	53%
Test Voltage	AC 230V/50Hz	Test Mode	ETHERNET 1 Port



No.	Mk.	Freq. MHz	Reading Level dBuA	Correct Factor dB	Measure- ment dBuA	Limit dBuA	Margin dB	Detector	Comment
1		0.4515	18.83	0.02	18.85	43.85	-25.00	QP	
2		0.4515	6.15	0.02	6.17	30.85	-24.68	AVG	
3		1.3604	14.57	0.17	14.74	43.00	-28.26	QP	
4		1.3604	2.32	0.17	2.49	30.00	-27.51	AVG	
5		2.2783	16.11	0.22	16.33	43.00	-26.67	QP	
6		2.2783	8.04	0.22	8.26	30.00	-21.74	AVG	
7		3.0705	21.69	0.26	21.95	43.00	-21.05	QP	
8	*	3.0705	11.32	0.26	11.58	30.00	-18.42	AVG	
9		9.2130	17.94	0.47	18.41	43.00	-24.59	QP	
10		9.2130	5.05	0.47	5.52	30.00	-24.48	AVG	
11		15.3555	19.14	0.62	19.76	43.00	-23.24	QP	
12		15.3555	8.61	0.62	9.23	30.00	-20.77	AVG	

3.4 HARMONIC CURRENT EMISSIONS TEST

3.4.1 LIMITS

EN IEC 61000-3-2						
Equipment Category	Harmonic Order	Max. Permissible Harmonic Current	Equipment Category	Harmonic Order	Max. Permissible Harmonic Current	
	n	A		n	A	mA/w
Class A	Odd Harmonics		Class D	Odd Harmonics only		
	3	2.30		3	2.30	3.4
	5	1.14		5	1.14	1.9
	7	0.77		7	0.77	1.0
	9	0.40		9	0.40	0.5
	11	0.33		11	0.33	0.35
	13	0.21		13	0.21	0.30
	15≤n≤39	0.15 x 15/n		15≤n≤39	0.15 x 15/n	3.85/n
	Even Harmonics					
	2	1.08				
	4	0.43				
	6	0.30				
	8≤n≤40	0.23 x 8/n				

3.4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonics and Flicker Analyzer	California Instruments	PACS-1	72344	Aug. 13, 2019
2	3KVA AC Power source	California Instruments	3001ix	56309	Aug. 11, 2019
3	Measurement Software	California	CTS4.0 Version 4.18	N/A	N/A

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

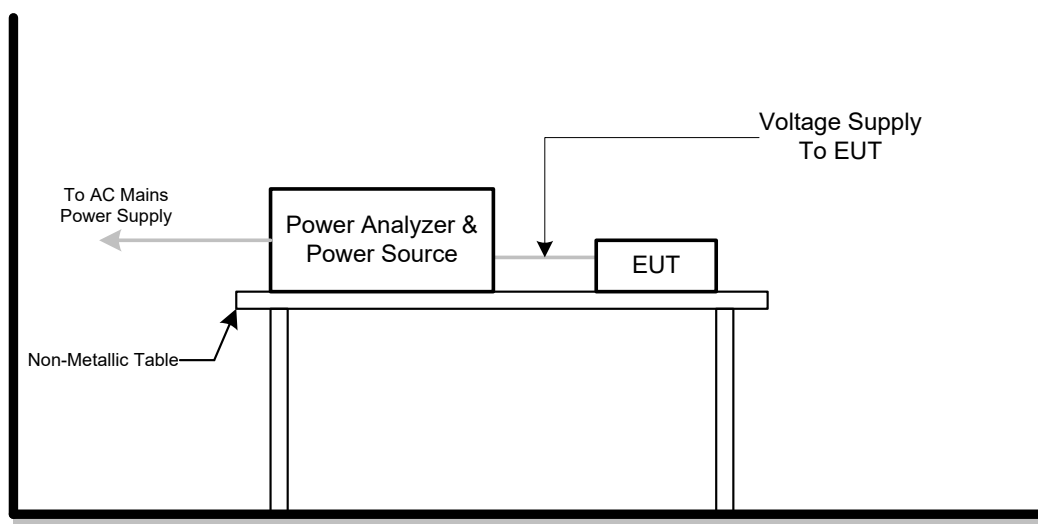
3.4.3 TEST PROCEDURE

- a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
- b. The classification of EUT is according to of EN IEC 61000-3-2. The EUT is classified as follows:
 - Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
 - Class B: Portable tools; Arc welding equipment which is not professional equipment.
 - Class C: Lighting equipment.
 - Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.
- c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

3.4.4 DEVIATION FROM TEST STANDARD

No deviation

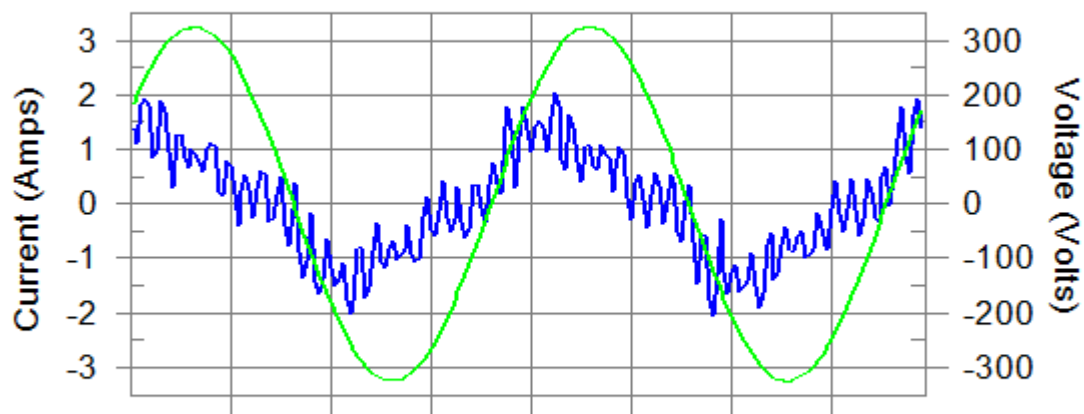
3.4.5 TEST SETUP



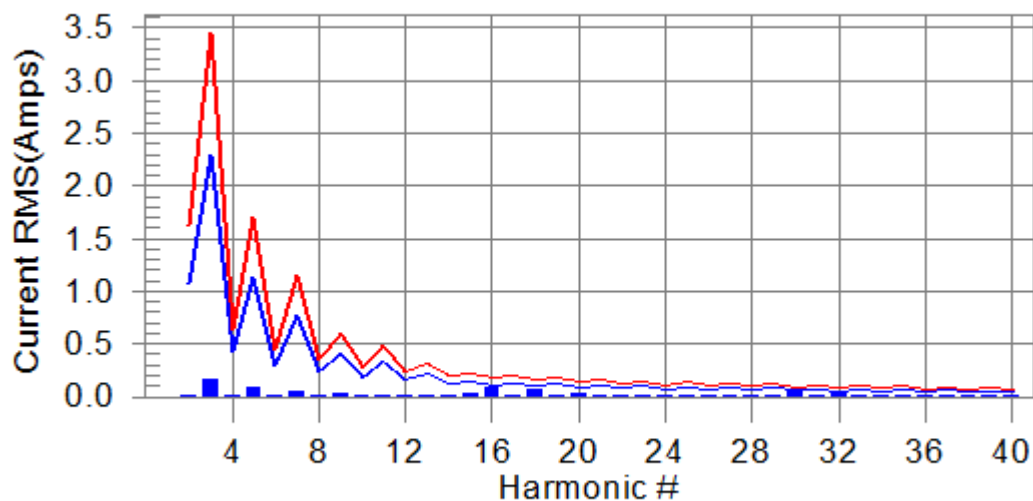
3.4.6 TEST RESULTS

Harmonic - Class A			
EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass **Worst harmonic was #18 with 73.3% of the limit.**

Current Test Result Summary (Run time)			
EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

THC(A): 0.235 I-THD(%): 27.5' POHC(A): 0.026 POHC Limit(A): 0.251

Highest parameter values during test:

V RMS (Volts): 229.97 Frequency(Hz): 50.00
I Peak (Amps): 2.320 I RMS (Amps): 0.966
I Fund (Amps): 0.857 Crest Factor: 2.408
Power (Watts): 169.8 Power Factor: 0.767

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.003	1.080	N/A	0.003	1.620	N/A	Pass
3	0.169	2.300	7.3	0.171	3.450	4.9	Pass
4	0.003	0.430	N/A	0.004	0.645	N/A	Pass
5	0.077	1.140	6.8	0.078	1.710	4.6	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.049	0.770	6.3	0.049	1.155	4.2	Pass
8	0.006	0.230	N/A	0.007	0.345	N/A	Pass
9	0.023	0.400	5.8	0.024	0.600	4.0	Pass
10	0.007	0.184	3.7	0.008	0.276	2.7	Pass
11	0.013	0.330	4.1	0.014	0.495	2.8	Pass
12	0.018	0.153	11.8	0.019	0.230	8.1	Pass
13	0.020	0.210	9.3	0.021	0.315	6.6	Pass
14	0.019	0.131	14.8	0.020	0.197	10.4	Pass
15	0.022	0.150	14.5	0.024	0.225	10.8	Pass
16	0.078	0.115	67.4	0.079	0.173	45.5	Pass
17	0.018	0.132	13.8	0.026	0.198	13.1	Pass
18	0.075	0.102	73.3	0.076	0.153	49.8	Pass
19	0.012	0.118	9.8	0.020	0.178	11.3	Pass
20	0.025	0.092	27.5	0.026	0.138	19.1	Pass
21	0.008	0.107	7.7	0.011	0.161	6.6	Pass
22	0.005	0.084	N/A	0.005	0.125	N/A	Pass
23	0.009	0.098	9.1	0.009	0.147	6.5	Pass
24	0.007	0.077	8.6	0.007	0.115	6.2	Pass
25	0.006	0.090	6.5	0.006	0.135	4.7	Pass
26	0.005	0.071	N/A	0.007	0.107	N/A	Pass
27	0.012	0.083	14.3	0.012	0.125	9.9	Pass
28	0.008	0.066	11.7	0.010	0.099	10.0	Pass
29	0.012	0.078	15.7	0.013	0.116	11.5	Pass
30	0.039	0.061	63.7	0.046	0.092	50.5	Pass
31	0.008	0.073	10.7	0.011	0.109	10.2	Pass
32	0.028	0.058	48.5	0.030	0.086	35.1	Pass
33	0.006	0.068	9.0	0.007	0.102	7.1	Pass
34	0.017	0.054	30.5	0.018	0.081	21.8	Pass
35	0.005	0.064	N/A	0.006	0.096	N/A	Pass
36	0.009	0.051	17.6	0.010	0.077	12.7	Pass
37	0.004	0.061	N/A	0.005	0.091	N/A	Pass
38	0.005	0.048	N/A	0.006	0.073	N/A	Pass
39	0.010	0.058	16.9	0.010	0.087	11.8	Pass
40	0.003	0.046	N/A	0.004	0.069	N/A	Pass

Voltage Source Verification Data (Run time)			
EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

Highest parameter values during test:

Voltage (Vrms): 229.97	Frequency(Hz): 50.00
I Peak (Amps): 2.320	I RMS (Amps): 0.966
I Fund (Amps): 0.857	Crest Factor: 2.408
Power (Watts): 169.8	Power Factor: 0.767

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.135	0.460	29.43	OK
3	0.160	2.069	7.75	OK
4	0.071	0.460	15.50	OK
5	0.248	0.920	26.96	OK
6	0.024	0.460	5.26	OK
7	0.049	0.690	7.16	OK
8	0.018	0.460	3.94	OK
9	0.045	0.460	9.71	OK
10	0.024	0.460	5.31	OK
11	0.018	0.230	8.00	OK
12	0.014	0.230	6.26	OK
13	0.030	0.230	13.01	OK
14	0.007	0.230	3.12	OK
15	0.021	0.230	8.98	OK
16	0.017	0.230	7.37	OK
17	0.021	0.230	9.23	OK
18	0.020	0.230	8.55	OK
19	0.018	0.230	7.76	OK
20	0.015	0.230	6.69	OK
21	0.023	0.230	9.79	OK
22	0.011	0.230	4.78	OK
23	0.018	0.230	7.96	OK
24	0.007	0.230	3.19	OK
25	0.012	0.230	5.23	OK
26	0.009	0.230	4.06	OK
27	0.024	0.230	10.23	OK
28	0.009	0.230	3.72	OK
29	0.018	0.230	8.04	OK
30	0.017	0.230	7.25	OK
31	0.012	0.230	5.16	OK
32	0.013	0.230	5.65	OK
33	0.010	0.230	4.14	OK
34	0.010	0.230	4.26	OK
35	0.011	0.230	4.79	OK
36	0.007	0.230	2.93	OK
37	0.011	0.230	4.79	OK
38	0.004	0.230	1.63	OK
39	0.016	0.230	6.94	OK
40	0.006	0.230	2.79	OK

3.5 VOLTAGE CHANGES, VOLTAGE FLUCTUATIONS AND FLICKER TEST

3.5.1 LIMITS

Tests	Limits	Descriptions
	EN 61000-3-3	
Pst	≤ 1.0 , $T_p = 10$ min.	Short Term Flicker Indicator
Plt	≤ 0.65 , $T_p = 2$ hr.	Long Term Flicker Indicator
dc	$\leq 3.3\%$	Relative Steady-State V-Chang
dmax	$\leq 4\%$	Maximum Relative V-change
d (t)	≤ 500 ms	Relative V-change characteristic

3.5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonics and Flicker Analyzer	California Instruments	PACS-1	72344	Aug. 13, 2019
2	3KVA AC Power source	California Instruments	3001ix	56309	Aug. 11, 2019
3	Measurement Software	California	CTS4.0 Version 4.18	N/A	N/A

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

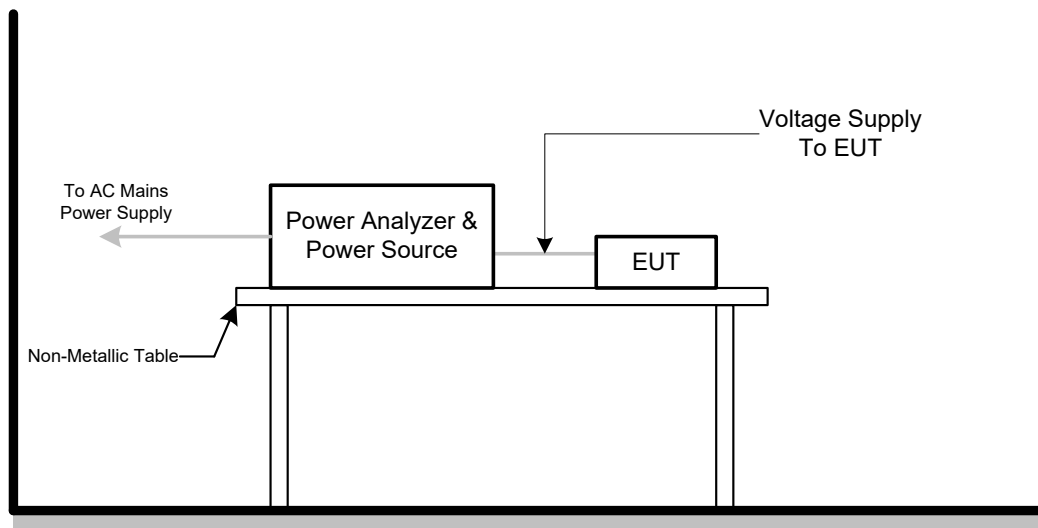
3.5.3 TEST PROCEDURE

- Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in EN 61000-3-3 depend on which standard adopted for compliance measurement.
- All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

3.5.4 DEVIATION FROM TEST STANDARD

No deviation

3.5.5 TEST SETUP

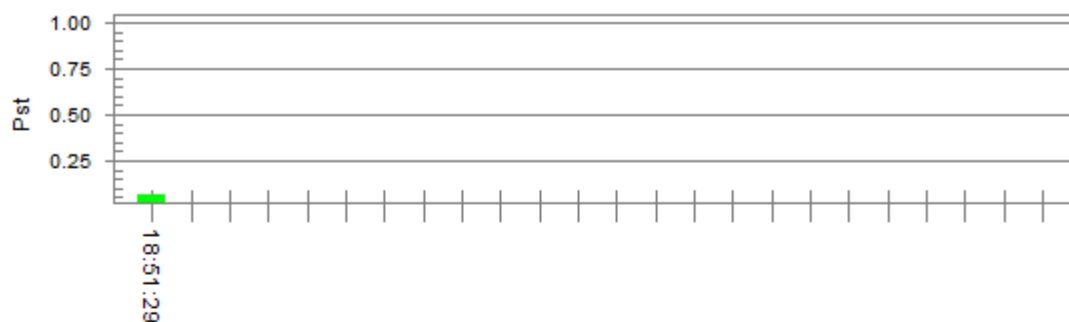


3.5.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	55%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.01

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Highest Plt (2 hr. period): 0.028

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

4. EMC IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SEVERITY LEVEL/CRITERIA

Tests Standard No.	Test Specification Level / Test Mode	Test Ports	Criteria
Electrostatic discharge IEC 61000-4-2 (ESD)	±8kV air discharge ±4kV contact discharge (Direct Mode)	Enclosure	B
	±4kV HCP discharge ±4kV VCP discharge (Indirect Mode)	Enclosure	B
Continuous RF electromagnetic field disturbances,swept test IEC 61000-4-3 (RS)	80 MHz to 1000 MHz 3V/m(unmodulated, r.m.s), 1 kHz, 80%, AM modulated	Enclosure	A
Continuous RF electromagnetic field disturbances,spot test IEC 61000-4-3 (RS)	1800 MHz, 2600MHz, 3500 MHz, 5000MHz(± 1 %) 3V/m(unmodulated, r.m.s), 1 kHz, 80%, AM modulated	Enclosure	A
Electrical fast transient/burst immunity IEC 61000-4-4 (EFT/Burst)	±0.5kV(peak) 5/50ns Tr/Th 5kHz Repetition Frequency (100kHz Repetition Frequency for xDSL equipment)	Analogue/digital data ports (NOTE 1)	B
	±0.5kV(peak) 5/50ns Tr/Th 5kHz Repetition Frequency	DC network power ports (NOTE 1)	B
	±1 kV(peak) 5/50ns Tr/Th 5kHz Repetition Frequency	AC mains power ports	B

Surge immunity IEC 61000-4-5 (Surges)	Port Type: unshielded symmetrical		
	Apply: lines to ground		
	Primary protection is Intended ±1 kV and ±4 kV 10/700(5/320)Tr/Th μs(NOTE 3)	Analogue/digital data ports (NOTE 1)	C
	Primary protection is not Intended ±1 kV 10/700(5/320) Tr/Th μs(NOTE 3)		C
	Port type: coaxial or shielded		
	Apply: shield to ground		
±0.5 kV 1.2/50(8/20) Tr/Th μs(NOTE 3)	Analogue/digital data ports (NOTE 1)	B	
line to reference ground for each individual line: ±0.5 kV(peak) 1.2/50(8/20) Tr/Th μs	DC network power ports (NOTE 1)& (NOTE 2)	B	
±1 kV(peak) 1.2/50(8/20) Tr/Th μs (line to line) ±2 kV(peak) 1.2/50(8/20) Tr/Th μs (line to earth or ground)	AC mains power ports	B	
Continuous induced RF disturbances IEC 61000-4-6 (Injected Current)	0.15 MHz to 10 MHz 3V(unmodulated, r.m.s), 10 MHz to 30 MHz 3V to 1V(unmodulated, r.m.s), 30 MHz to 80 MHz 1V(unmodulated, r.m.s), 1kHz 80%, AM 150Ω source impedance	Analogue/digital data ports (NOTE 1)	A
	0.15 MHz to 10 MHz 3V(unmodulated, r.m.s), 10 MHz to 30 MHz 3V to 1V(unmodulated, r.m.s), 30 MHz to 80 MHz 1V(unmodulated, r.m.s), 1kHz 80%, AM 150Ω source impedance	DC network power ports (NOTE 1)	A
	0.15 MHz to 10 MHz 3V(unmodulated, r.m.s), 10 MHz to 30 MHz 3V to 1V(unmodulated, r.m.s), 30 MHz to 80 MHz 1V(unmodulated, r.m.s), 1kHz 80%, AM 150Ω source impedance	AC mains power ports	A

Power frequency magnetic field immunity IEC 61000-4-8 (PFMF)	50 Hz or 60Hz, 1A/m(r.m.s) μ s	Enclosure	A
Voltage dips, short interruptions and voltage variations immunity IEC 61000-4-11 (Voltage Interruption/Dips)	Voltage dips: Residual voltage < 5% 0.5 Cycles Residual voltage 70% 25 Cycles (50Hz), 30period(60Hz) Voltage interruptions: Residual voltage < 5% 250 Cycles (50Hz), 300 Cycles (60Hz)	AC Power Ports	B C C
Broadband impulse noise disturbances, repetitive	0.15MHz to 0.5 MHz 107dBuV 0.5 MHz to 10 MHz 107dBuV to 36dBuV 10 MHz to 30 MHz 36dBuV to 30 dBuV	Analogue/digital data ports (Applicable only to CPE xDSL ports) (NOTE 1)	A
	0.70 ms 8.3 ms(for 60Hz) 10 ms(for 50Hz)	Analogue/digital data ports (Apply period based on the AC mains frequency) (NOTE 1)	A
Broadband impulse noise disturbances, isolated	0.15MHz to 30 MHz 110dBuV	Analogue/digital data ports (Applicable only to CPE xDSL ports) (NOTE 1)	B
	0.24 ms 10 ms(for 60Hz) 300 ms(for 50Hz)	Analogue/digital data ports (Apply allburst durations) (NOTE 1)	B

Note.

- 1) Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.
- 2) Applicable only to ports which, according to the manufacturer's specification, may connect directly to outdoor cables.
- 3) Where the coupling network for the 10/700 μ s waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μ s waveform and appropriate coupling network.

4.2 GENERAL PERFORMANCE CRITERIA

According to **EN 55035** standards, the general performance criteria as following:

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

4.3 PERFORMANCE CRITERIA FOR AUDIO OUTPUT FUNCTION

Criterion A	Refer to chapter G.7.1 of EN 55035:2017
Criterion B	Refer to chapter G.7.2 of EN 55035:2017
Criterion C	Refer to chapter G.7.3 of EN 55035:2017

Note:

EUT is a Digital Mixer. The EUT can input and output 1Khz sine wave, applicable to appendix G.

4.4 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

4.4.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-2
Discharge Impedance	330 ohm / 150 pF
Required Performance	B
Discharge Voltage	Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ (Direct) Contact Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$ (Direct/Indirect)
Polarity	Positive & Negative
Number of Discharge	Air Discharge: min. 20 times at each test point Contact Discharge: min. 20 times at each test point
Discharge Mode	Single Discharge
Discharge Period	1 second minimum

4.4.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	ESD Generator	TESEQ AG	NSG 437	450	Sep. 28, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

4.4.3 TEST PROCEDURE

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

- a. The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied.

NOTE 1 The minimum number of discharges applied is depending on the EUT; for products with synchronized circuits the number of discharges should be larger.

For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.

NOTE 2 The points to which the discharges should be applied may be selected by means of an exploration carried out at a repetition rate of 20 discharges per second, or more.

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

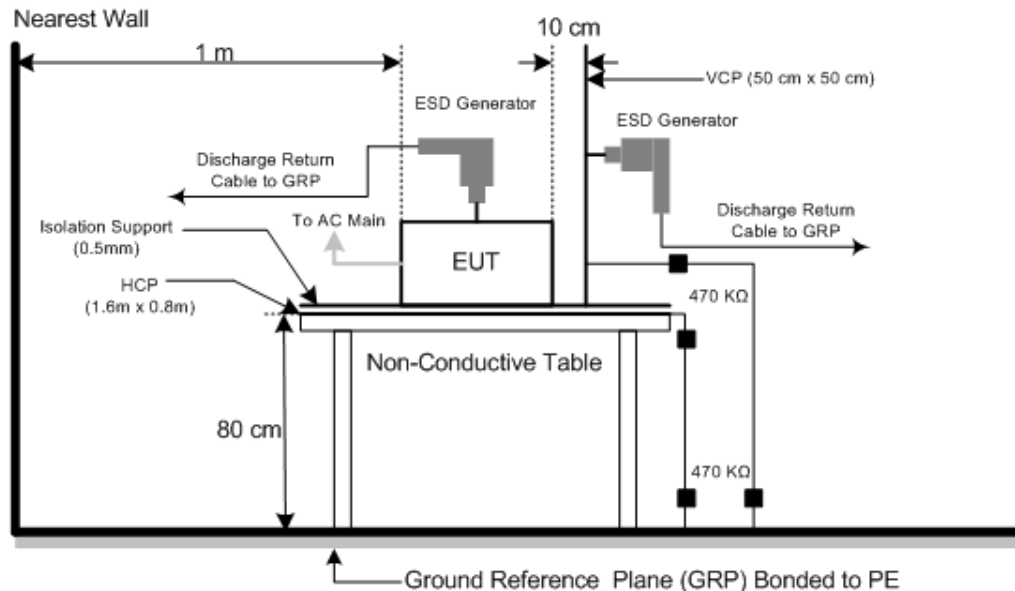
- b. Air discharges at insulation surfaces of the EUT.

It was at least ten single discharges with positive and negative at the same selected point.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test was installed in a representative system as described in IEC 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

4.4.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	24°C	Relative Humidity	45%
Test Voltage	AC 230V/50Hz	Pressure	1010hPa
Test Mode	Operating		

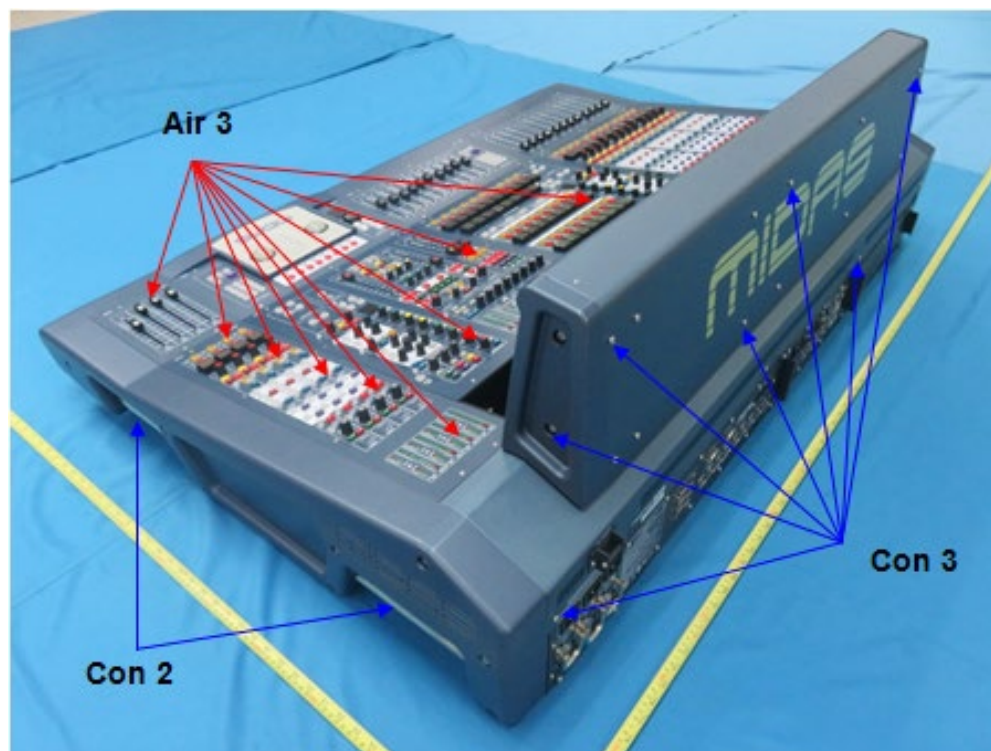
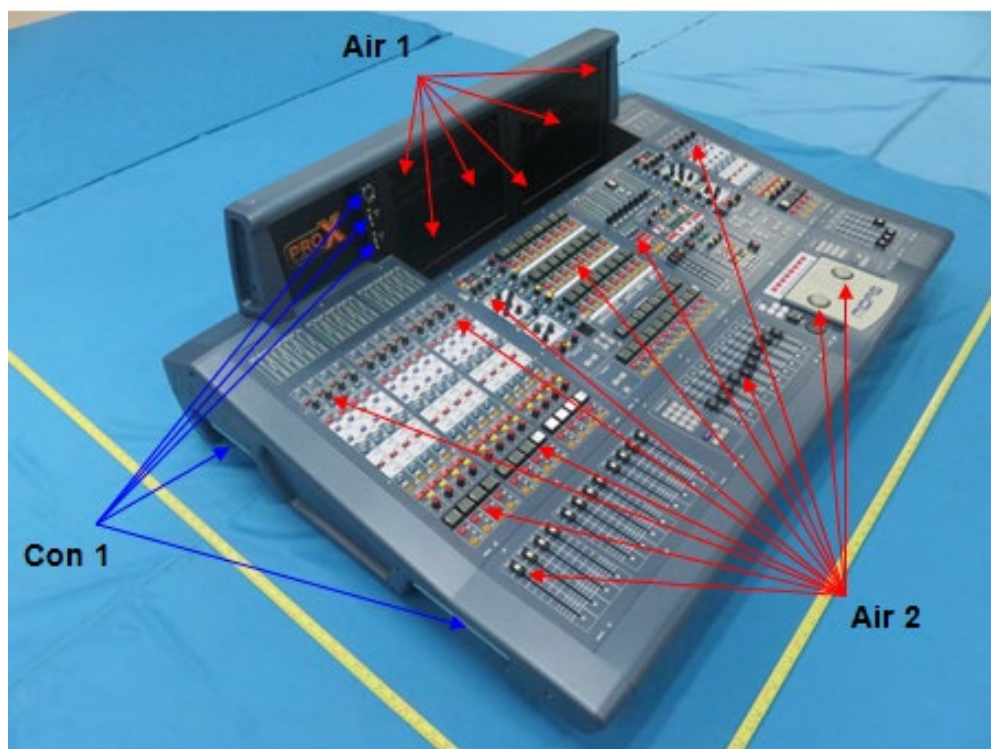
Mode	Air Discharge								Contact Discharge					
	2kV		4kV		8kV		- kV		2kV		4kV		- kV	
Location	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	A	A	A	A	-	-	A	A	A	A	-	-
2	A	A	A	A	A	A	-	-	A	A	A	A	-	-
3	A	A	A	A	A	A	-	-	A	A	A	A	-	-
4	A	A	A	A	A	A	-	-	A	A	A	A	-	-
5	A	A	A	A	A	A	-	-	A	A	A	A	-	-
6	-	-	-	-	-	-	-	-	A	A	A	A	-	-
7	-	-	-	-	-	-	-	-	A	A	A	A	-	-
Criteria	B						-		B					
Result	A						-		A					
Judgment	PASS						-		PASS					

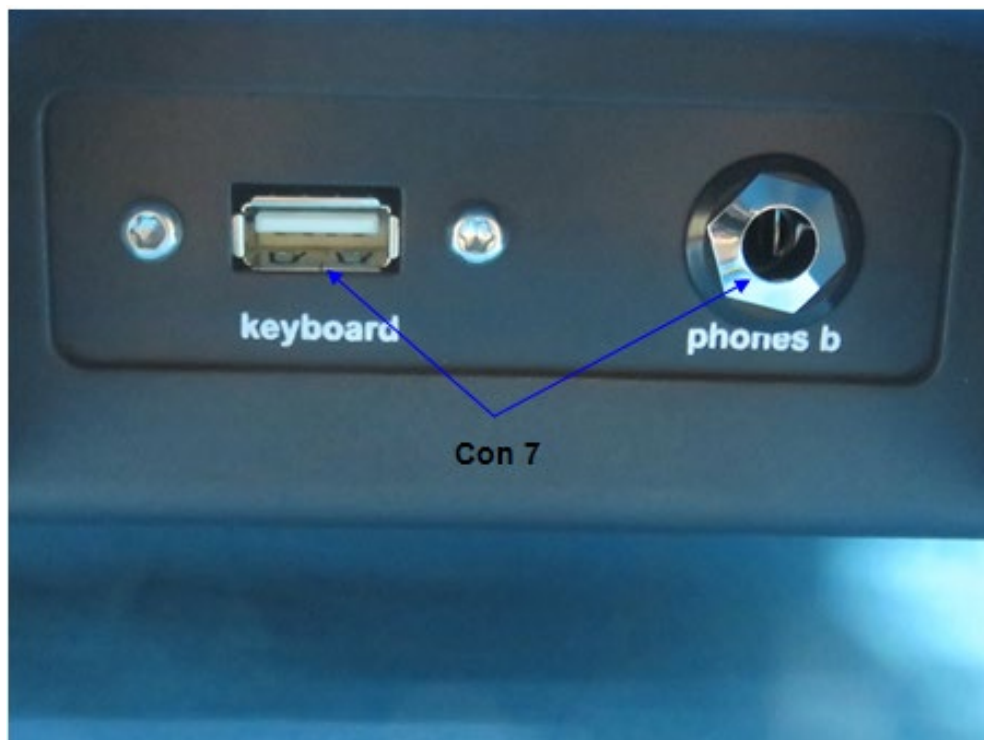
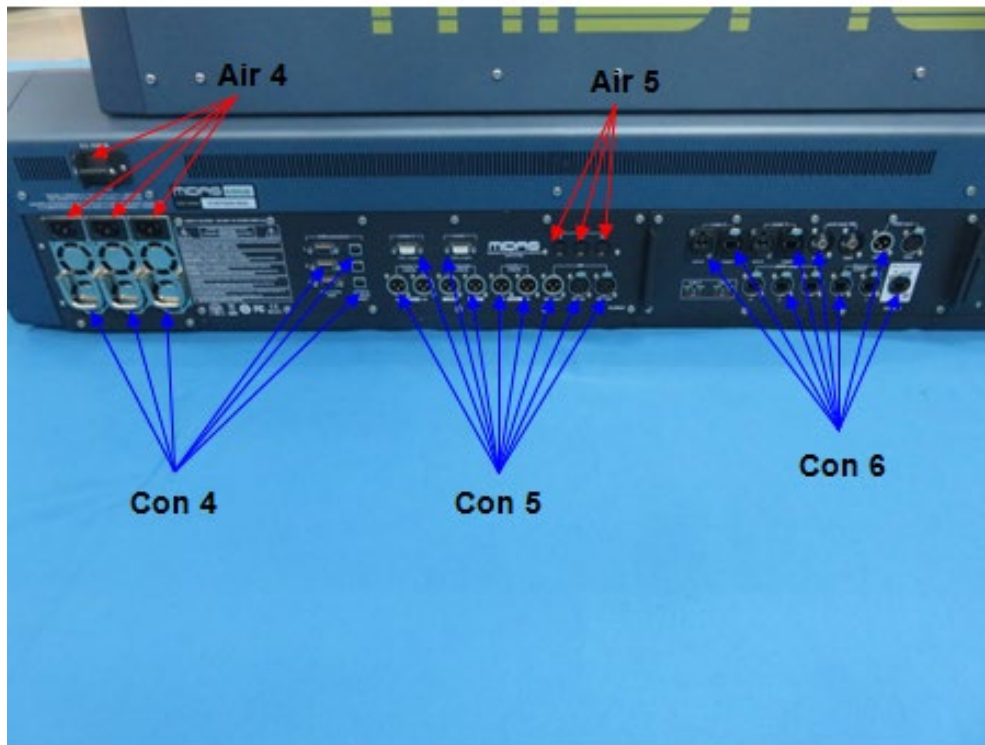
Mode	HCP Contact Discharge						VCP Contact Discharge					
	2kV		4kV		- kV		2kV		4kV		- kV	
Location	P	N	P	N	P	N	P	N	P	N	P	N
1	A	A	A	A	-	-	A	A	A	A	-	-
2	A	A	A	A	-	-	A	A	A	A	-	-
3	A	A	A	A	-	-	A	A	A	A	-	-
4	A	A	A	A	-	-	A	A	A	A	-	-
Criteria	B						B					
Result	A						A					
Judgment	PASS						PASS					

Note:

- 1) Test condition:
Direct/Indirect (HCP/VCP) discharges: Minimum 20 times (Positive/Negative) at each point.
Air discharges: Minimum 20 times (Positive/Negative) at each point.
- 2) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
- 3) The Indirect (HCP/VCP) discharges description of test point as following:
1.left side; 2.right side; 3.front side; 4.rear side.
- 4) N/A - denotes test is not applicable in device.

PHOTO(S) SHOWN THE LOCATION(S) OF ESD EVALUATED





4.5 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS)

4.5.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-3
Required Performance	A
Frequency Range	80 MHz - 1000 MHz 1800 MHz, 2600 MHz, 3500 MHz, 5000MHz
Field Strength	3 V/m(unmodulated, r.m.s)
Modulation	1 kHz Sine Wave, 80%, AM Modulation
Frequency Step	1% of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance	3 m
Antenna Height	1.55 m
Dwell Time	at least 3 seconds

4.5.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	ETS	3142C	47662	Mar. 11, 2019
2*	Amplifier	AR	50S1G4A	326720	Apr. 08, 2021
3	Audio Test System	Audio precision	ATS-1ACCES S	ATS1-45376	Mar. 11, 2019
4	MXG Analog Signal Generator	Agilent	N5181A	MY49060710	Aug. 11, 2019
5	Conditioning Amplifier	B&K	_2690__0F2_	2723746	Jul. 02, 2019
6*	Power amplifier	MILMEGA	AS1860-50	1064834	Aug. 20, 2020
7*	Microwave Log.-Per. Antenna	TESEQ	STLP 9149	9149-277	Mar. 11, 2021
8*	Power amplifier	MILMEGA	80RF1000-250	1064833	Aug. 20, 2020
9	Measurement Software	TOYO	IM5/RS Ver 3.8.050	N/A	N/A
10	Free-field 1/2` Microphone	B&K	4190-L-001	2913343	Jul. 02, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

* All calibration period of equipment list is three year.

4.5.3 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

The testing distance from antenna to the EUT was 3 meters.

The other condition as following manner:

- a. The field strength level was 3V/m(unmodulated, r.m.s).
- b. The frequency range is swept from 80 MHz to 1000 MHz, 1800 MHz, 2600 MHz, 3500 MHz, 5000MHz with the signal 80%amplitude modulated with a 1 kHz sinewave. The rate of sweep did not exceed 1.5x 10⁻³ decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

For Acoustic measurements:

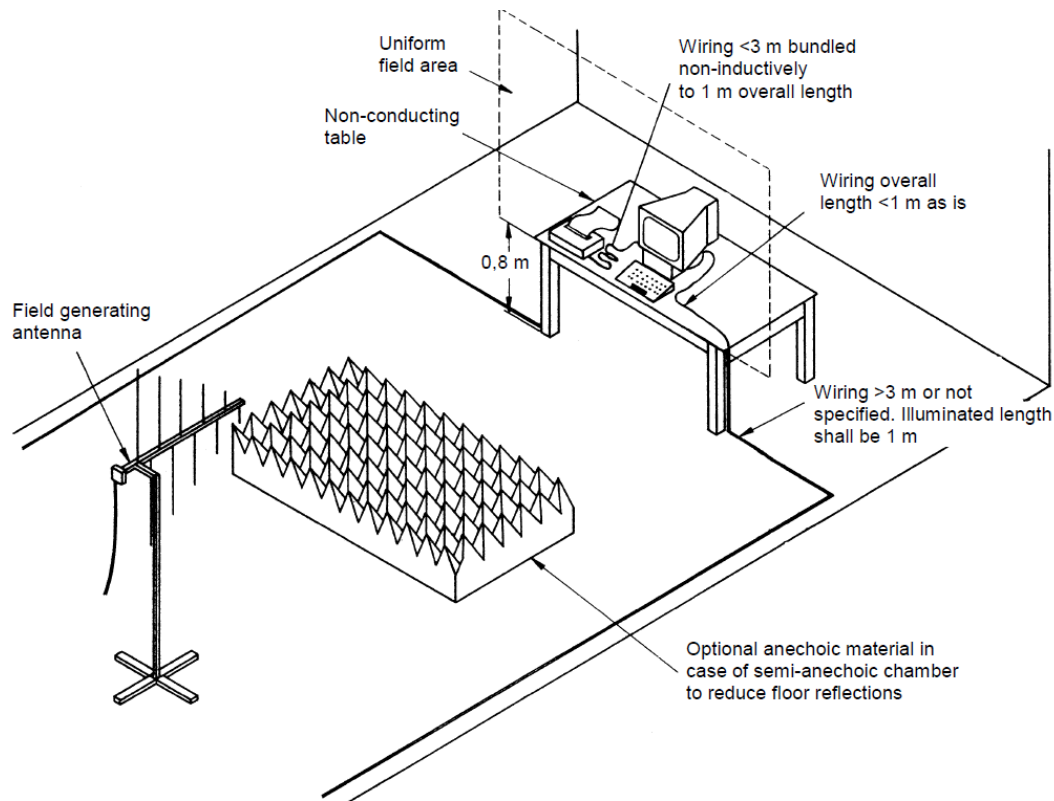
- a. The frequency range is swept from 80 MHz to 1000 MHz with the signal 80%amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5x 10⁻³ decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- b. Apply an appropriate input signal to the EUT so that a sine wave (tone) at the frequency that will be used to modulate the applied disturbance (typically 1 kHz) is generated from the port under test at a level equal to the acoustic reference level. The setup of the EUT may need additional adjustment in accordance with Clause 5.4.5 b (1)
- c. Record the resulting dB (SPL) level (or other appropriate dB unit) as the value of L_0 .
(BTL lab uses the software to take L_0 as the referecne value and make it return to zero.)
- d. Change the input to the EUT so that the port under test is silent, or represents silence. This change shall not alter the terminating impedance at the EUT's input.
- e. Apply the RF disturbance to the applicable port of the EUT and record the resulting demodulated audio level in dB (SPL) (or other dB unit used in step d)) as the value of L_1 .
- f. Ensure that non-linear processing does not impact the measurements.
- g. Calculate the acoustic interference ratio using the following formula:
Acoustic interference ratio = $L_1 - L_0$.
(For step e-g, BTL lab proceeds the test with software and calculate Acoustic interference ratio = $L_1 - L_0$).
- h. The measured acoustic interference ratio and/or the measured electrical interference ratio during the test shall be -20 dB or better.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

a) For Continuous induced RF disturbances



NOTE:

TABLE-TOP EQUIPMENT

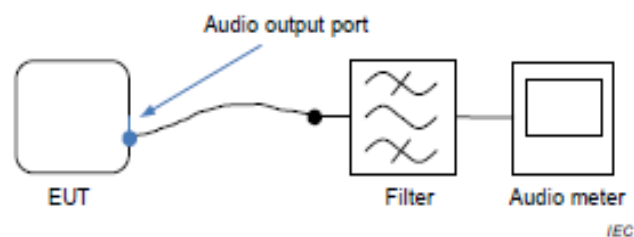
The EUT installed in a representative system as described in IEC 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in IEC 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

b) For Audio output function

(1) For Audio output port



The filter is the audio filter specified in G.8.1 and is typically incorporated into the audio meter. Additional filtering might be necessary to ensure that the RF disturbance signal does not interfere with the measurement.

4.5.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	52%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

a) For Continuous RF electromagnetic field disturbances

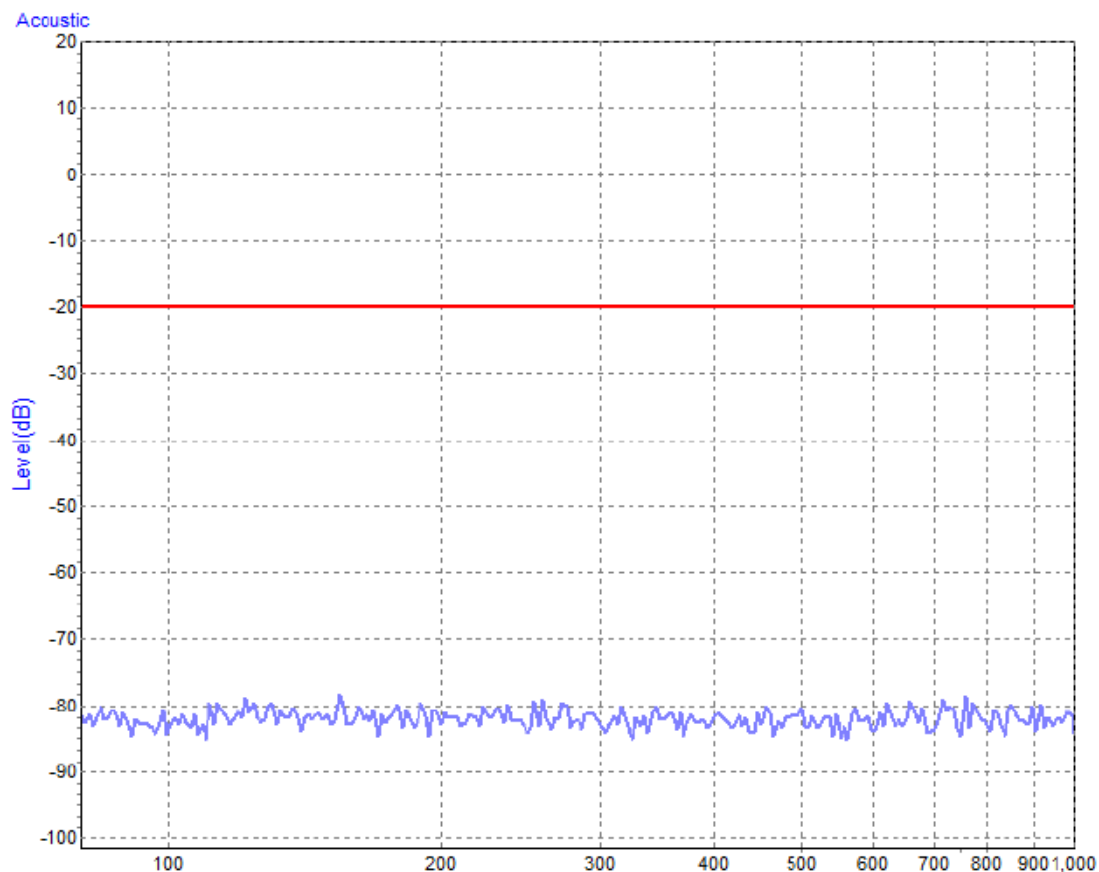
Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Criterion	Result	Judgment
80 - 1000	H / V	3V/m (unmodulated, r.m.s) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			
1800(±1%)	H / V	3V/m (unmodulated, r.m.s) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			
2600(±1%)	H / V	3V/m (unmodulated, r.m.s) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			
3500(±1%)	H / V	3V/m (unmodulated, r.m.s) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			
5000(±1%)	H / V	3V/m (unmodulated, r.m.s) AM Modulated 1000Hz, 80%	0	A	A	PASS
			90			
			180			
			270			

Note:

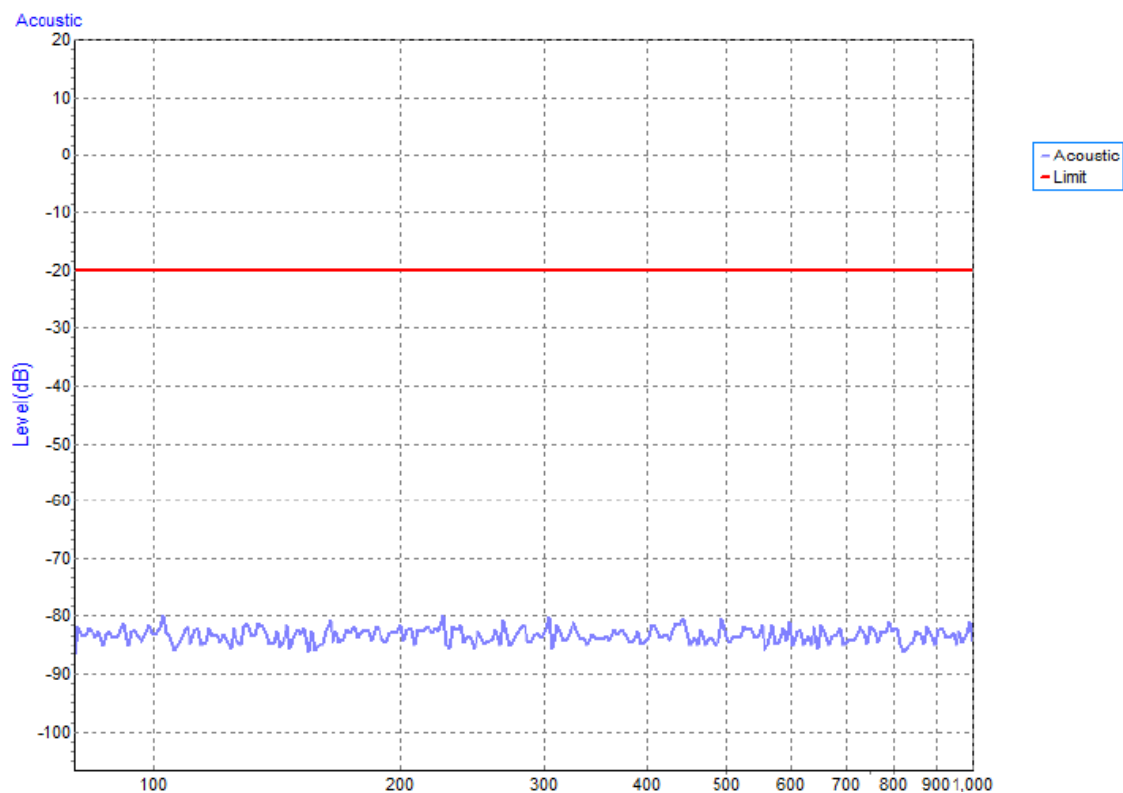
1) N/A - denotes test is not applicable in device.

Test Voltage	AC 230V/50Hz
Test Mode	Operating_Vertical_Front

b) For Audio output function



Test Voltage	AC 230V/50Hz
Test Mode	Operating_Horizontal_Front



4.6 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST (EFT/BURST)

4.6.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-4
Required Performance	B
Test Voltage	AC mains power ports: ± 1 kV Analogue/digital data ports: ± 0.5 kV
Polarity	Positive & Negative
Impulse Frequency	5 kHz: except for xDSL ports 100 kHz: only for single lines of xDSL ports.
Impulse Wave shape	5/50 ns
Burst Duration	15 ms
Burst Period	300 ms
Test Duration	Not less than 1 min.

4.6.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Electrical Fast Transient Pulse Group Generator	HAEFELY	AXOS8	181265	Dec. 21, 2019
2	Capacitor Clamp	Thermo KeyTek	CCL	502215	Mar. 11, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

4.6.3 TEST PROCEDURE

The EUT and support equipment(s) are placed on a table that is 0.8 meter high above a metal ground plane and should be located 0.1 m $\pm$ 0.01m high above the Ground Reference Plane (1m*1m min. and 0.65mm thick min).

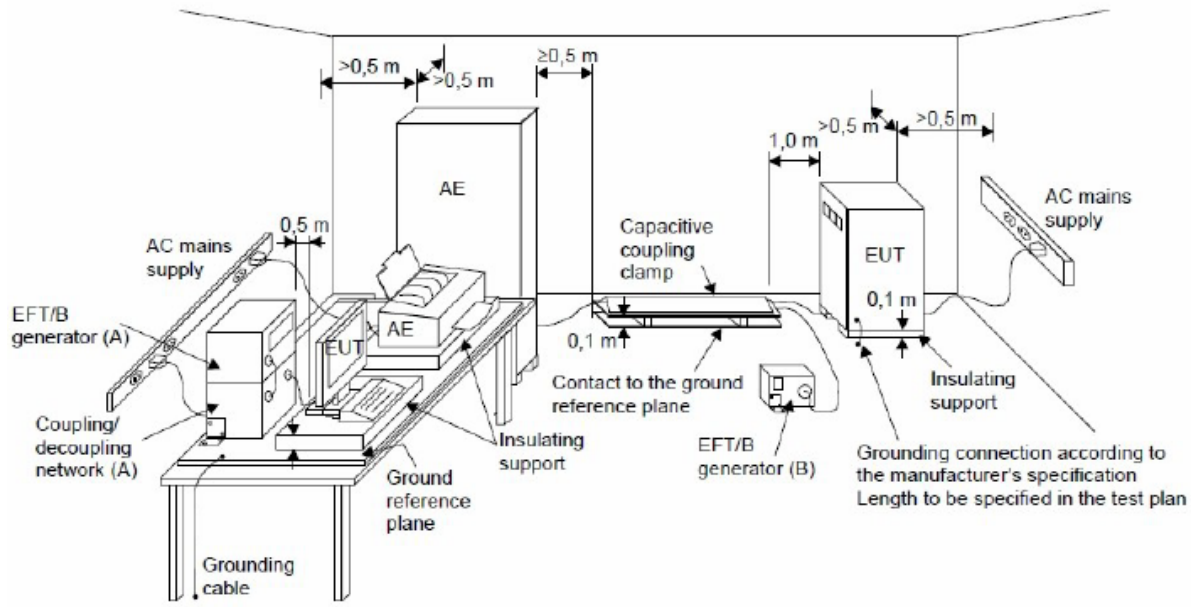
The other condition as following manner:

- The length of power cord between the coupling device and the EUT should not exceed 1 meter.
- Both positive and negative polarity discharges were applied.
- The duration time of each test sequential was 1 minute

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane and should be located 0.1 m $\pm$ 0.01m above the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in IEC 61000-4-4 and its cables were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

4.6.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	50%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

EUT Ports Tested		Polarity	Repetition Frequency	Test Level 1kV	Criterion	Result	Judgment
AC mains power ports	Line (L)	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	Neutral (N)	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	Ground (PE)	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	L+N	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	L+PE	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	N+PE	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	L+N+PE	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			

EUT Ports Tested		Polarity	Repetition Frequency	Test Level 0.5 kV	Criterion	Result	Judgment
Analogue/digital data ports	INPUT Port	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	USB Port	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	Copper port	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	AES50 1 Port	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			
	ETHERNET 1 Port	+	5 kHz	A	B	A	PASS
		-	5 kHz	A			

4.7 SURGE IMMUNITY TEST

4.7.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-5
Required Performance	B(AC mains power ports) B(Analogue/digital data ports)
Wave-Shape	Combination Wave for power lines 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage	AC mains power ports: ± 0.5 kV, ± 1 kV, ± 2 kV Analogue/digital data ports: ± 0.5 kV
Surge Input/Output	L-N, L - PE, N- PE, Analogue/digital data ports
Generator Source Impedance	2 ohm between line-to-line of a.c./d.c. lines 12 ohm between line-to-ground of a.c./d.c. lines 42 ohm between shield-to-ground of coaxial or shielded interconnection lines
Phase Angle and Polarity:	Five positive pulses line-to-neutral at 90° phase Five negative pulses line-to-neutral at 270° phase Five positive pulses line-to-earth at 90° phase Five negative pulses line-to-earth at 270° phase Five negative pulses neutral-to-earth at 90° phase Five positive pulses neutral-to-earth at 270° phase
Pulse Repetition Rate	1 time / min. (maximum)
Number of Tests	5 positive and 5 negative at selected points

4.7.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	System mainframe	Schaffner	NSG 2050	200729-619LU	Aug. 31, 2019
2	Measurement Software	Schaffner	Win 2000 Version V7.10	N/A	N/A
3	Pulse coupling newwork	Schaffner	CDN 131	34426	Aug. 31, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

4.7.3 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT :

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

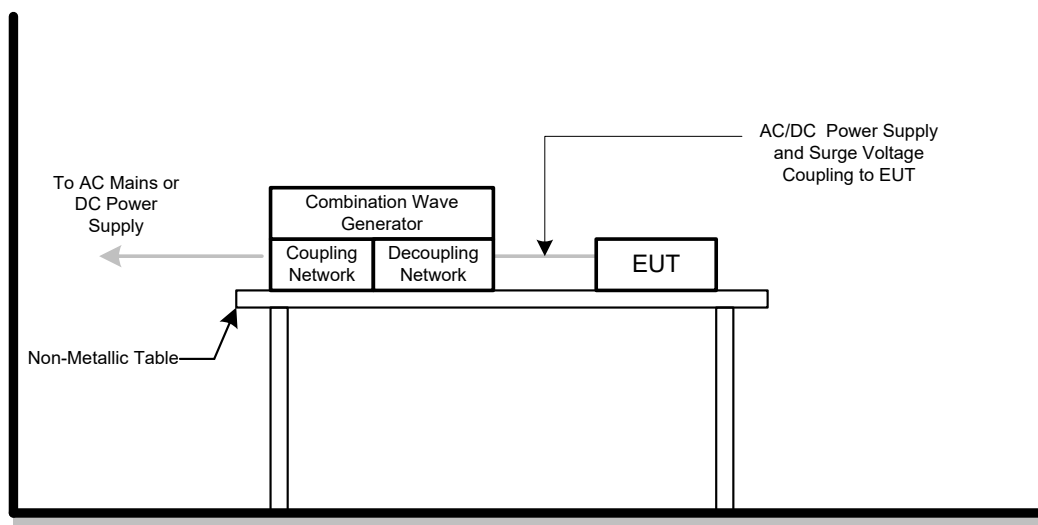
c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT :

The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	50%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

Wave Form EUT Ports Tested		1.2/50(8/20)Tr/Thµs						Criterion	Result	Judgment
		Polarity	Phase	Voltage						
				0.5kV	1kV	2 kV	-- kV			
AC	L – N (2 ohm)	+	90°	A	A	-	-	B	A	PASS
		-	270°	A	A	-	-			
	L - PE	+	90°	A	A	A	-	B	A	PASS
		-	270°	A	A	A	-			
	N - PE	-	90°	A	A	A	-	B	A	PASS
		+	270°	A	A	A	-			
Analogue/digital data ports (INPUT Port)		+/-	N/A	A	-	-	-	B	A	PASS
Analogue/digital data ports (USB Port)		+/-	N/A	A	-	-	-	B	A	PASS
Analogue/digital data ports (Copper Port)		+/-	N/A	A	-	-	-	B	A	PASS
Analogue/digital data ports (AES50 1 Port)		+/-	N/A	A	-	-	-	B	A	PASS
Analogue/digital data ports (ETHERNET 1 Port)		+/-	N/A	A	-	-	-	B	A	PASS

Note:

1) N/A - denotes test is not applicable in device.

4.8 IMMUNITY TO CONDUCTED DISTURBANCES, INDUCED BY RADIO-FREQUENCY FIELDS TEST (CS)

4.8.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-6
Required Performance	A
Frequency Range& Field Strength	0.15 MHz - 10 MHz - 3V (unmodulated, r.m.s.) 10 MHz - 30 MHz - 3V to 1V (unmodulated, r.m.s.) 30 MHz - 80 MHz - 1V (unmodulated, r.m.s.)
Modulation	1 kHz Sine Wave, 80%, AM Modulation
Frequency Step	1% of fundamental
Dwell Time	at least 3 seconds

4.8.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Audio Test System	Audio precision	ATS-1ACCE SS	ATS1-45376	Mar. 11, 2019
2	Power CDN	FCC	FCC-801-M2 /M3-16A	100270	Mar. 11, 2019
3	TEST SYSTEM FOR CONDUCTED AND RADIATED IMMUNITY	TESEQ	NSG 4070B	37513	Aug. 11, 2019
4	Measurement Software	Farad	EZ-CS(V2.0. 1.2)	N/A	N/A
5	Free-field 1/2" Microphone	B&K	4190-L-001	2913343	Jul. 02, 2019
6	EM Clamp	MEB	KEMZ801	14291	Mar. 11, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

4.8.3 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

The other condition as following manner:

- The field strength level was 3 V (unmodulated, r.m.s.)
- The frequency range is swept from 150 kHz to 80 MHz, with the signal 80%amplitude modulated with a 1 kHz sinewave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

For Acoustic measurements:

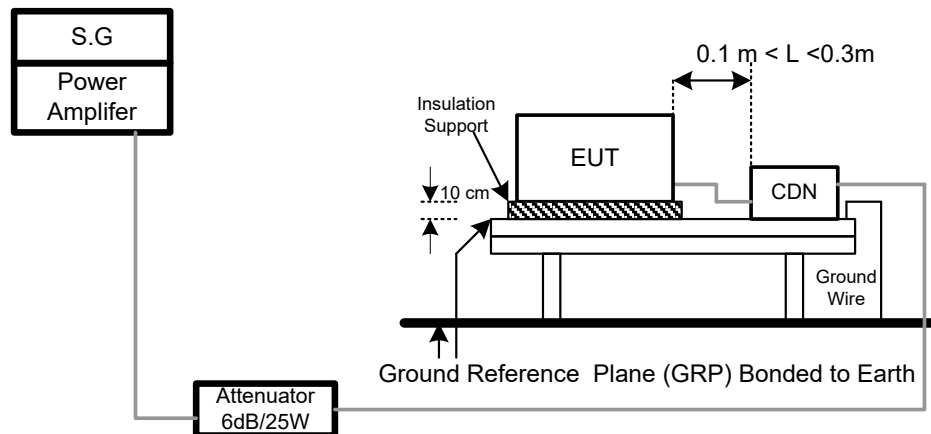
- a. The frequency range is swept from 80 MHz to 1000 MHz with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- b. Apply an appropriate input signal to the EUT so that a sine wave (tone) at the frequency that will be used to modulate the applied disturbance (typically 1 kHz) is generated from the port under test at a level equal to the acoustic reference level. The setup of the EUT may need additional adjustment in accordance with Clause 5.4.5 b (1)
- c. Record the resulting dB (SPL) level (or other appropriate dB unit) as the value of L_0 .
(BTL lab uses the software to take L_0 as the reference value and make it return to zero.)
- d. Change the input to the EUT so that the port under test is silent, or represents silence. This change shall not alter the terminating impedance at the EUT's input.
- e. Apply the RF disturbance to the applicable port of the EUT and record the resulting demodulated audio level in dB (SPL) (or other dB unit used in step d)) as the value of L_1 .
- f. Ensure that non-linear processing does not impact the measurements.
- g. Calculate the acoustic interference ratio using the following formula:
Acoustic interference ratio = $L_1 - L_0$.
(For step e-g, BTL lab proceeds the test with software and calculate Acoustic interference ratio = $L_1 - L_0$).
- h. The measured acoustic interference ratio and/or the measured electrical interference ratio during the test shall be -20 dB or better.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP

a) For Continuous induced RF disturbances



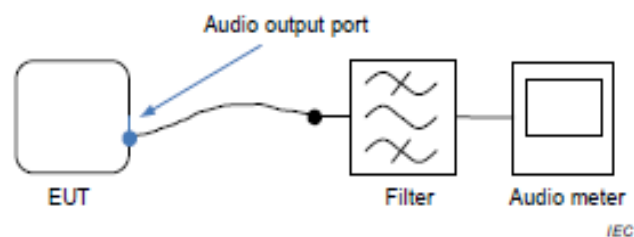
NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

b) For Audio output function

(1) For Audio output port



The filter is the audio filter specified in G.6.1 and is typically incorporated into the audio meter. Additional filtering might be necessary to ensure that the RF disturbance signal does not interfere with the measurement.

4.8.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	56%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

a) For Continuous RF electromagnetic field disturbances

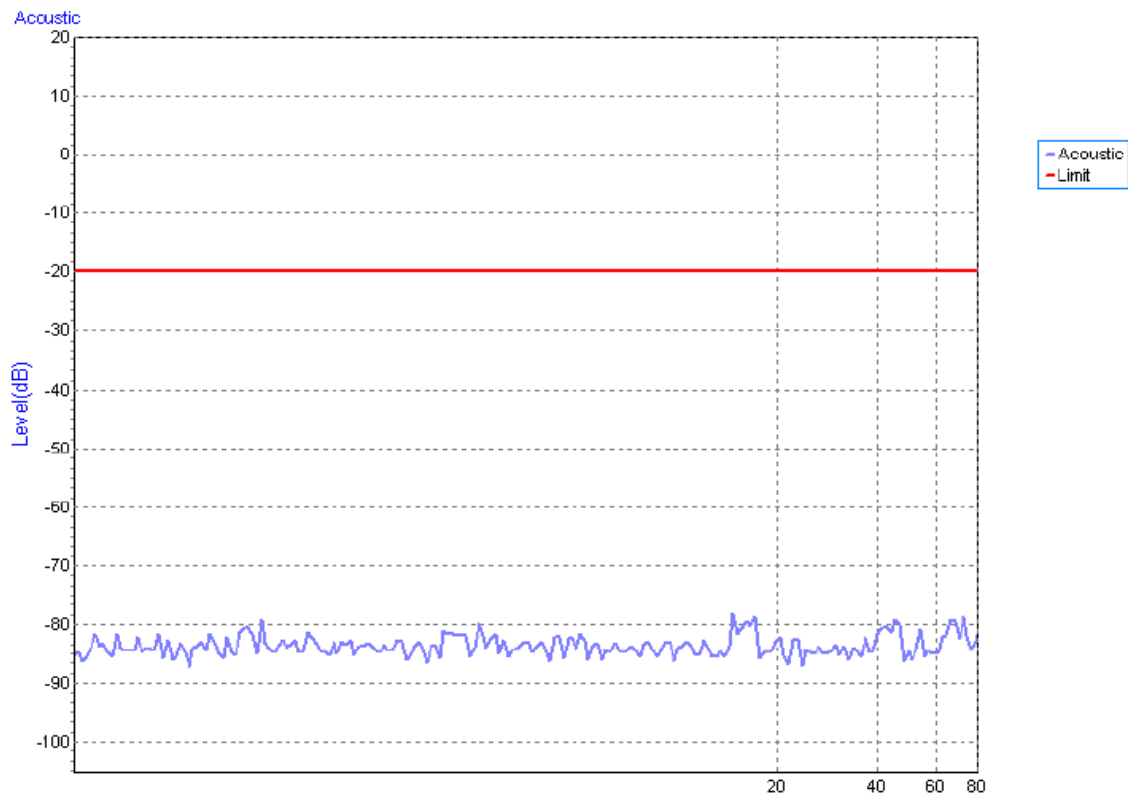
Test Ports (Mode)	Freq. Range (MHz)	Field Strength	Criteria	Results	Judgment
AC mains power ports	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			
Analogue/digital data ports (INPUT Port)	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			
Analogue/digital data ports (USB Port)	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			
Analogue/digital data ports (Copper Port)	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			
Analogue/digital data ports (AES50 1 Port)	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			
Analogue/digital data ports (ETHERNET 1 Port)	0.15 - 10	3V (unmodulated, r.m.s.)	A	A	PASS
	10 - 30	3V to 1V (unmodulated, r.m.s.)			
	30 - 80	1V (unmodulated, r.m.s.)			

Note:

- 1). N/A - denotes test is not applicable in device.

Test Voltage	AC 230V/50Hz
Test Mode	Operating_CDN M3

b) For Audio output function



4.9 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST (PFMF)

4.9.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-8
Required Performance	A
Frequency Range	50/60Hz
Field Strength	1 A/m
Observation Time	1 minute
Inductance Coil	Rectangular type, 1mx1m

4.9.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Magnetic Field test Generator	FCC	F-1000-4-8-G-125A	4032	Mar. 24, 2019
2	Magnetic Field immunity loop	Thermo KeyTek	F-1000-4-8/9/10-L-1M	4024	Mar. 24, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

4.9.3 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

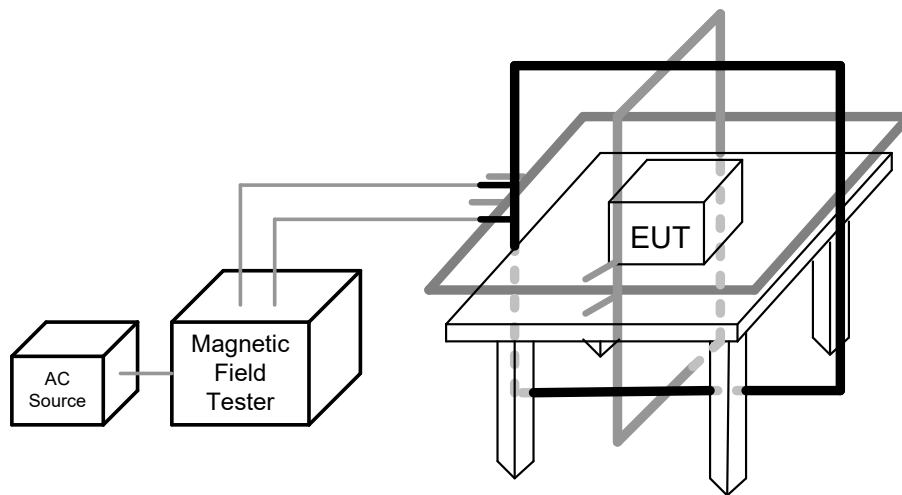
The other condition as following manner:

- The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

4.9.4 DEVIATION FROM TEST STANDARD

No deviation

4.9.5 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 percent of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

4.9.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	50%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

50Hz

Test Mode	Test Level	Antenna aspect	Duration (s)	Criteria	Results	Judgment
Enclosure	1 A/m	X	60	A	A	PASS
Enclosure	1 A/m	Y	60	A	A	PASS
Enclosure	1 A/m	Z	60	A	A	PASS

60Hz

Test Mode	Test Level	Antenna aspect	Duration (s)	Criteria	Results	Judgment
Enclosure	1 A/m	X	60	A	A	PASS
Enclosure	1 A/m	Y	60	A	A	PASS
Enclosure	1 A/m	Z	60	A	A	PASS

Note:

- 1). N/A - denotes test is not applicable in device.

4.10 VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS IMMUNITY TEST

4.10.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-11
Required Performance	Voltage dips: (B) Residual voltage < 5% 0.5 period (C) Residual voltage 70% 25period(50Hz), 30period(60Hz) Voltage interruptions: (C) Residual voltage < 5% 250period(50Hz), 300period(60Hz)
Test Duration Time	Minimum three test events in sequence
Interval between Event	Minimum ten seconds
Phase Angle	0°/180°
Test Cycle	3 times

4.10.2 MEASUREMENT INSTRUMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Electrical Fast Transient Pulse Group Generator	HAEFELY	AXOS8	181265	Dec. 21, 2019

Remark: "N/A" denotes no model name, no serial No. or no calibration specified.

All calibration period of equipment list is one year.

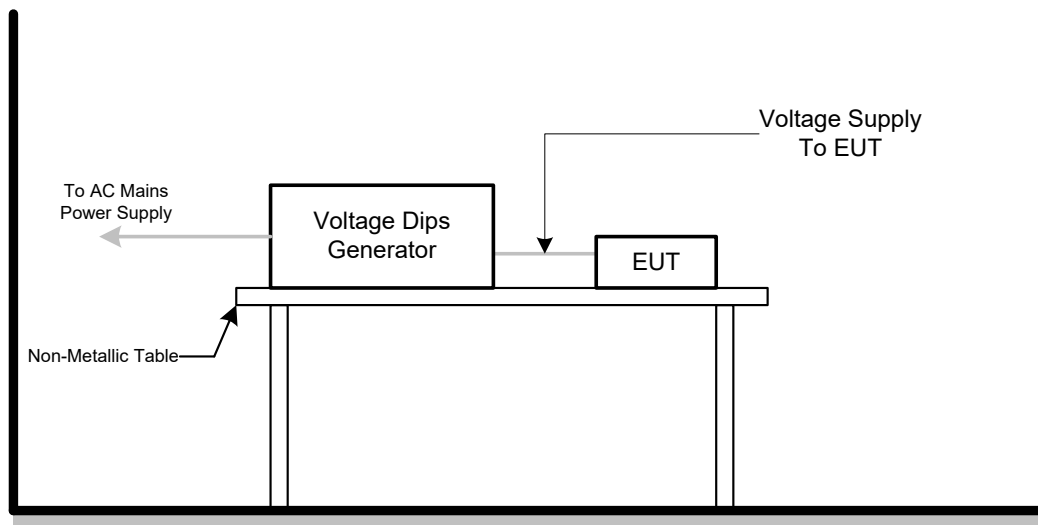
4.10.3 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

4.10.4 DEVIATION FROM TEST STANDARD

No deviation

4.10.5 TEST SETUP



4.10.6 TEST RESULTS

EUT	Digital Mixer	Model Name	PRO X-CC-TP
Temperature	25°C	Relative Humidity	50%
Test Voltage	AC 230V/50Hz		
Test Mode	Operating		

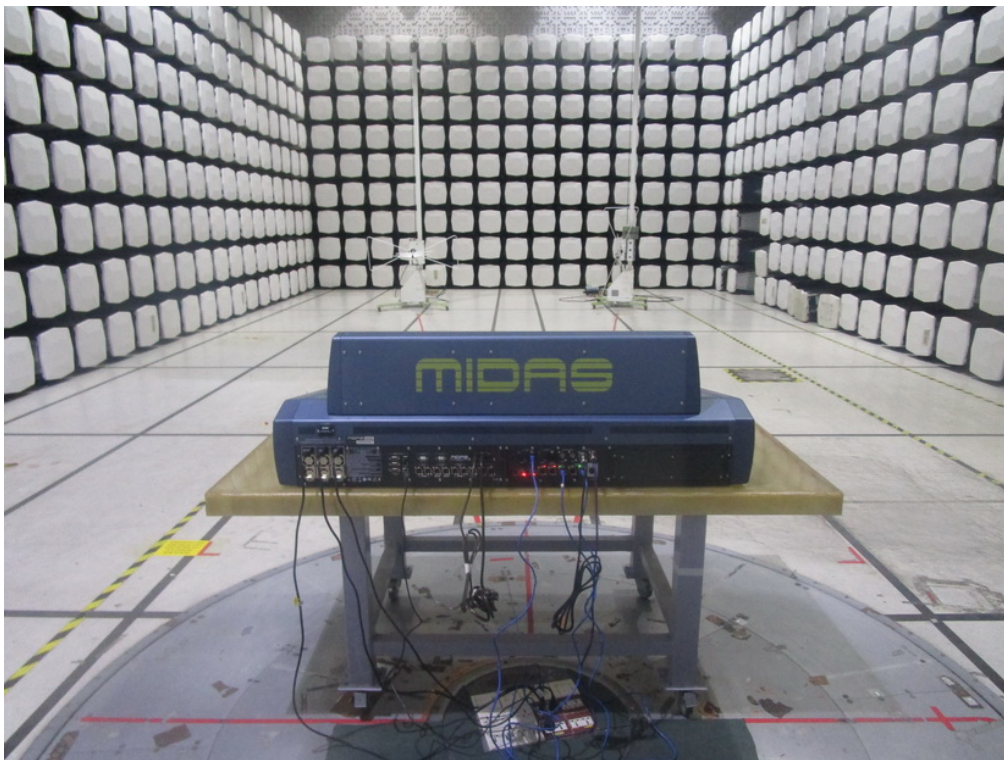
AC 230V/50Hz					
Item	Residual Voltage	Cycles	Criteria	Results	Judgment
Voltage dips	<5%	0.5	B	A	PASS
Voltage dips	70%	25	C	A	PASS
Voltage Interruption	<5%	250	C	C	PASS

Note:

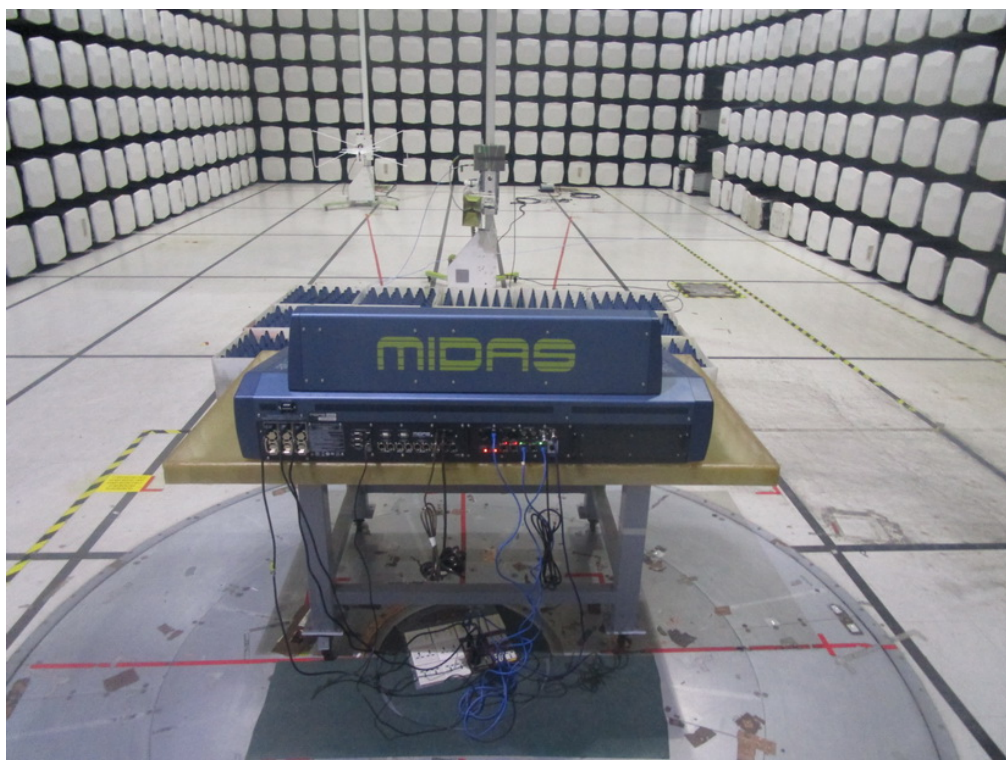
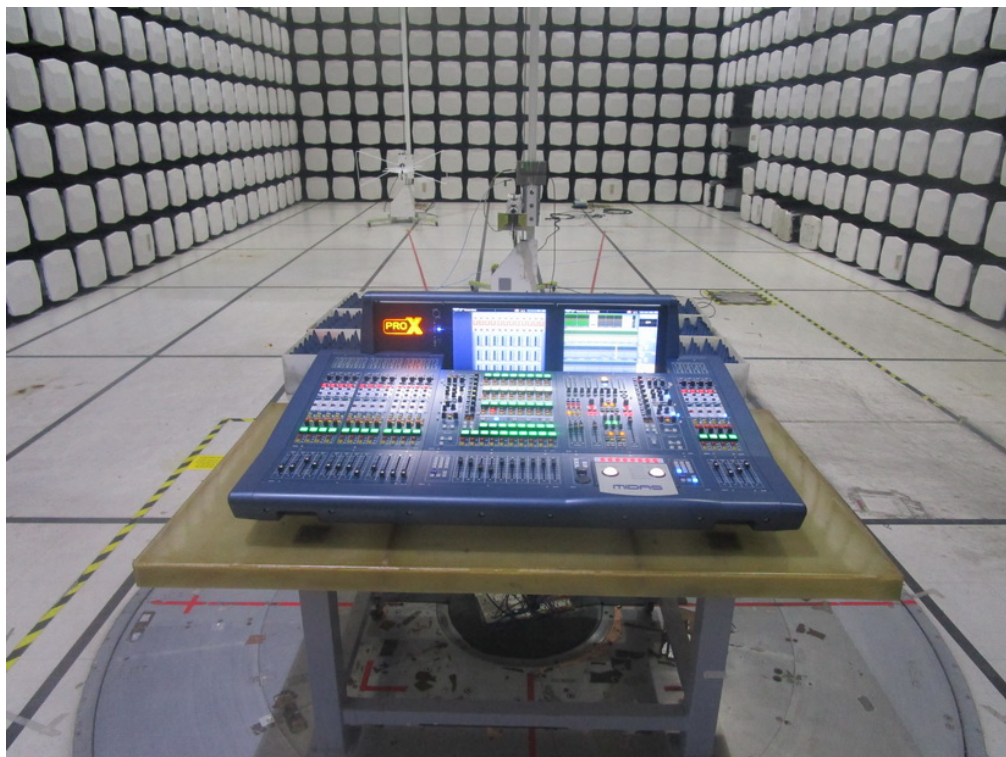
- 1). N/A - denotes test is not applicable in device.

5. EUT TEST PHOTO

Radiated emissions up to 1 GHz



Radiated emissions above 1 GHz



Conducted emissions AC mains power port



Asymmetric mode conducted emissions



End of Test Report

ATTACHMENT

PHOTOGRAPHS OF EUT











