Technical Construction File (TCF)

Applicant:	Nantong Sanjing Chemglass Co., Ltd Caobu Industrial Park Zone, Rudong County, Nantong City, Jiangsu, China
Manufacturer:	Rudong Feiju Laser Technology Co.,Ltd Caobu Industrial Park Zone, Rudong County, Nantong City, Jiangsu, China
Product Name:	CO_2 Laser Tube
Brand Name:	/
Model Name:	C70, C80, C100, C130, C150
Serial Number:	/
Rating:	220-240V 50Hz Max 150W
Date of Receipt:	July 16, 2024
Date of Test:	July 16, 2024 to July 30, 2024
Test Standard:	EN IEC 55014-1:2021 EN IEC 55014-2:2021 EN IEC 61000-3-2:2019 + A1:2021 EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022
Test Result:	PASS

Prepared by : Chen Liang

Approved by : Jack Zhou

Report Number	**:**	J55-RSJ-22139
Date of Report	**:**	July 16, 2024
Date of Test	**:**	July 16, 2024 to July 30, 2024

1. GENERAL INFORMATION

Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 1.76 dB

Radiated Emission Expanded Uncertainty : U = 3.02 dB

2. TECHNIACL SUMMARY

2.1 SUMMARY OF STANDARDS AND TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below:

EN IEC 61000-6-4:2019			
Test Item	**Test Standard**	**Limits**	**Results**
Conducted Disturbance at low voltage AC mains ports	CISPR 16-2-1, CISPR 16-1-2	See 4.3	P
Conducted Disturbance at DC power ports	CISPR 16-2-1, CISPR 16-1-2	See 5.3	N/A
Conducted Disturbance at wired network ports	CISPR 32	See 6.3	N/A
Radiated Disturbance	CISPR 16-2-3	See 7.3	P

EN IEC 61000-6-2:2019			
Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge Immunity	IEC 61000-4-2	B	P
RF Electromagnetic Field Immunity	IEC 61000-4-3	A	P
Electrical Fast Transient/Burst Immunity	IEC 61000-4-4	B	P
Surge Immunity	IEC 61000-4-5	B	P
Conducted Disturbances Immunity	IEC 61000-4-6	A	P
Power-frequency Magnetic Field Immunity	IEC 61000-4-8	A	N/A
Voltage Dips: 0% reduction, 1cycle	IEC 61000-4-11	B	P
Voltage Dips: 40% reduction, 10cycles		C	P

Voltage Dips: 70% reduction, 25cycles		C	P
Voltage interruption: 0% 250cycles		C	P

Note: P means pass, F means failure, N/A means not applicable

2.2 Description of Performance Criteria

The variety and the diversity of the apparatus within the scope of this standard make it difficult to define precise criteria for the evaluation of the immunity test results.
If, as result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe, the apparatus shall be deemed to have failed the test.
A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer and noted in the test report, based on the following criteria:

2.2.1 Performance criterion A

The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended.

2.2.2 Performance criterion B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed however. No change of actual operating state or stored data is allowed. 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 from what the user may reasonably expect from the apparatus if used as intended.

2.2.3 Performance criterion C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

3. TEST EQUIPMENT LIST

Conducted Disturbance at low voltage AC mains ports				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
Shielding Room	CHENGYU	5m×4m×3m	CR	Sep 13, 2025
EMI Test Receiver	R&S	ESCI7	100787	Feb 24, 2025
Artificial Mains Network	TESEQ	NNB 51	33285	Feb 24, 2025

Radiated Disturbance Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
3m Semi-anechoic Chamber	CHENGYU	9.2×6.25×6.15m	SAR	Sep 13, 2025
EMI Test Receiver	R&S	ESCI7	100787	Feb 24, 2025
EMC Shielding room	Changzhou FeiTe	8 x 5 x 3 mm	Nil	Dec 24, 2025
Broadband Log Antenna	Schwarzbeck	VULB 9163	9163-561	Jul 24, 2025

Electrostatic Discharge Immunity Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
ESD Generator	SCHAFFNER	NSG 438	849	Feb 24, 2025

RF Electromagnetic Field Immunity				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
Radiated Immunity Test System	TESEQ	ITS 6006	37546	Oct 20, 2025
Power Meter	TESEQ	PMR 6006	73819	Oct 20, 2025
Power Amplifier	MILMEGA	AS1860-50	1066592	Oct 20, 2025
Log Periodic Antenna	Schwarzbeck	STLP 9128 D	9128 D 048	Jul 24, 2025
Field Probe	ETS-Lindgren	HI-6105	00161798	Dec 08, 2025

Electrical Fast Transient/SURGE Immunity Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
EFT/SURGE Generator	TESEQ	NSG 3060	1468	Feb 24, 2025
Single Phase Coupling/decoupling Network	TESEQ	CDN 3061	1404	Feb 24, 2025
Capacitive clamp	TESEQ	CDN 3425	1736	Feb 24, 2025

Conducted Disturbances Immunity Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
Conducted Immunity Test System	TESEQ	NSG 4070	25795	Feb 24, 2025

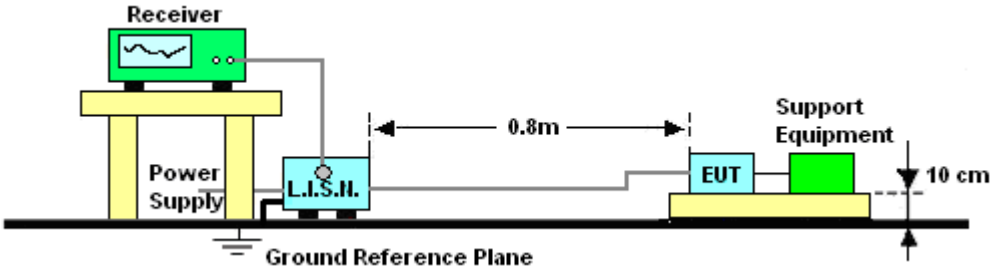
Coupling/Decoupling Network	TESEQ	CDN M116S	35371	Feb 24, 2025
EM-clamp	TESEQ	KEMZ 801	29530	Feb 24, 2025

Voltage Dips and Short Interruptions Immunity Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Next Cal.**
EFT/SURGE Generator	TESEQ	NSG 3060	1468	Feb 24, 2025
Single Phase Coupling/decoupling Network	TESEQ	CDN 3061	1404	Feb 24, 2025

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and has been calibrated by accredited calibration laboratories.

4. CONDUCTED DISTURBANCE AT LOW VOLTAGE AC MAINS PORTS

4.1 DIAGRAM OF TEST SETUP



4.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019

4.3 LIMITS FOR CONDUCTED DISTURBANCE

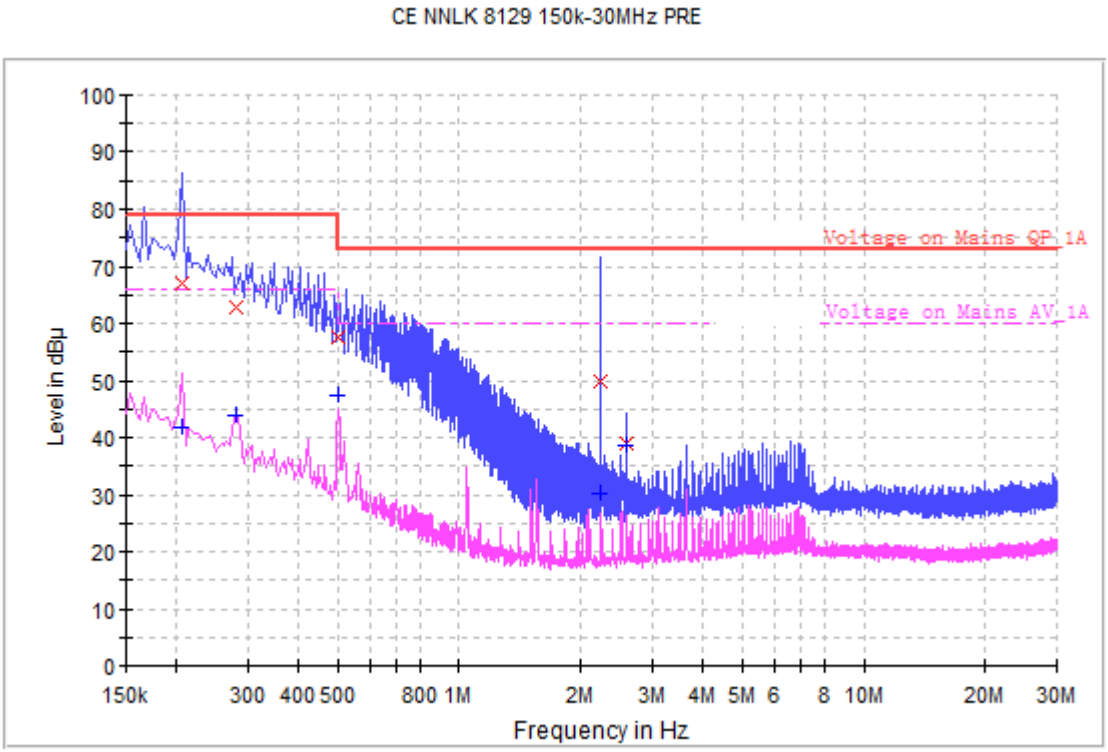
Frequency Range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ～ 0.5	79	66
0.5 ～ 30	73	60
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – Limits only apply to low voltage a.c. mains input ports.		

4.4 TEST RESULT

TEMPERATURE : 25℃ HUMIDITY : 53%

TEST MODEL : Operating POWER SUPPLY : AC380V/50Hz

L1：



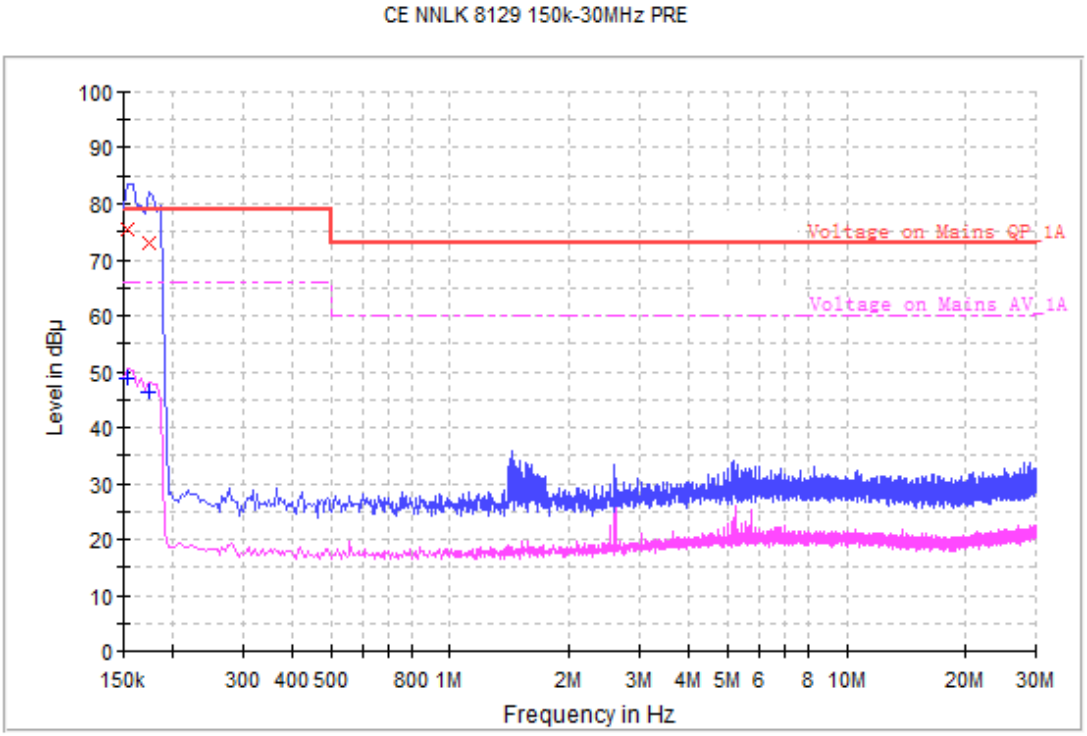
AV：

Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - CAV (dB)	Limit - CAV (dB µ
0.206000	67.2	41.9	1000.0	9.000	L1	0.1	24.1	66.0
0.282000	62.8	43.8	1000.0	9.000	L1	0.1	22.2	66.0
0.502000	57.5	47.3	1000.0	9.000	L1	0.1	12.8	60.0
2.234000	49.8	30.3	1000.0	9.000	L1	0.2	29.7	60.0
2.590000	38.8	38.7	1000.0	9.000	L1	0.2	21.3	60.0

QP：

Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB µ V)
0.206000	67.2	41.9	1000.0	9.000	L1	0.1	11.8	79.0
0.282000	62.8	43.8	1000.0	9.000	L1	0.1	16.2	79.0
0.502000	57.5	47.3	1000.0	9.000	L1	0.1	15.5	73.0
2.234000	49.8	30.3	1000.0	9.000	L1	0.2	23.2	73.0
2.590000	38.8	38.7	1000.0	9.000	L1	0.2	34.2	73.0

L2：



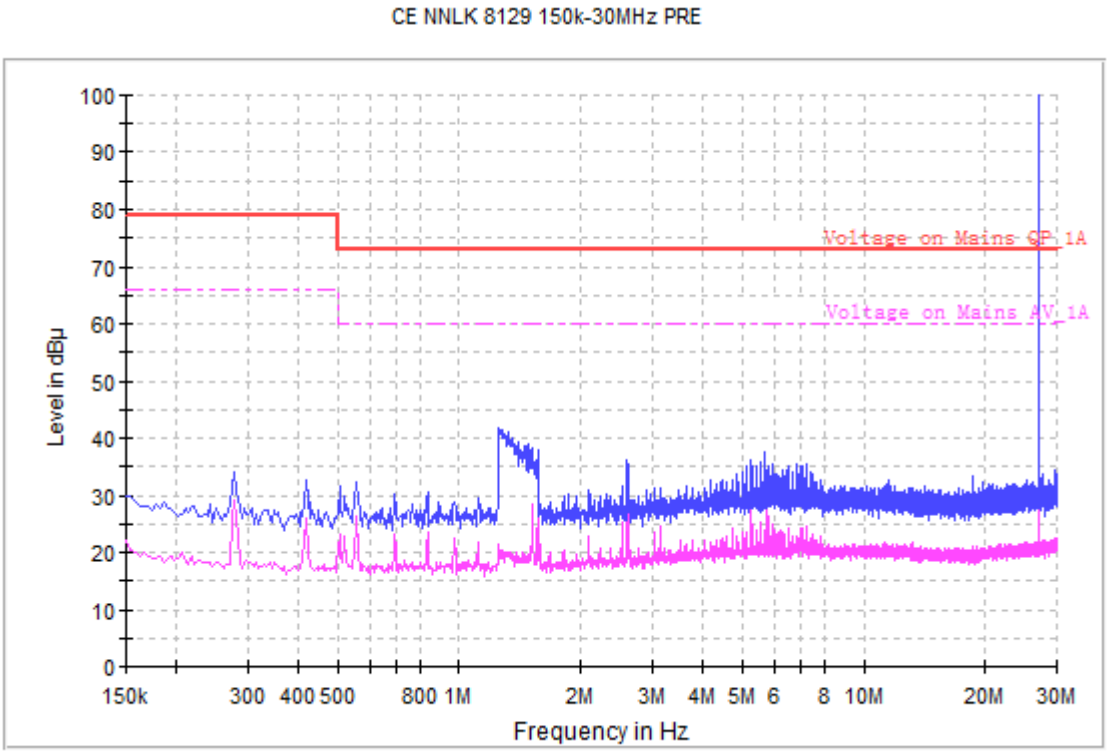
AV：

Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - CAV (dB)	Limit - CAV (dB µ
0.154000	75.3	48.7	1000.0	9.000	L2	0.1	17.3	66.0
0.174000	73.1	46.3	1000.0	9.000	L2	0.1	19.7	66.0
0.174000	73.1	46.3	1000.0	9.000	L2	0.1	19.7	66.0

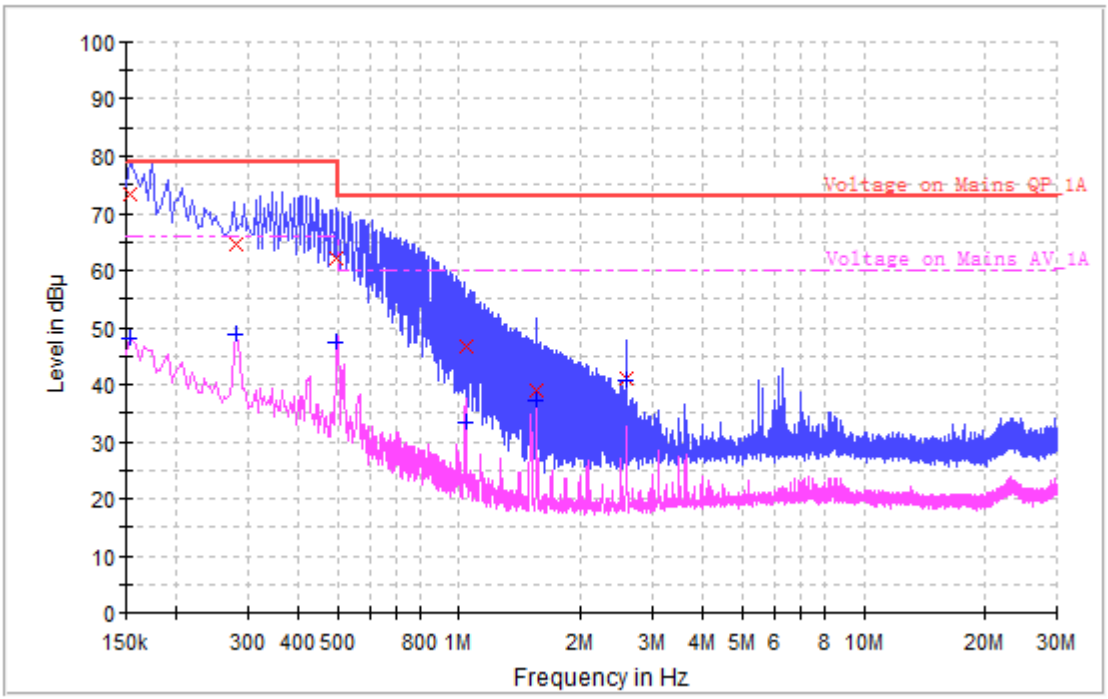
QP：

Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB µ V)
0.154000	75.3	48.7	1000.0	9.000	L2	0.1	3.7	79.0
0.174000	73.1	46.3	1000.0	9.000	L2	0.1	5.9	79.0
0.174000	74.5	46.3	1000.0	9.000	L2	0.1	4.5	79.0

L3：



PEN：



AV：

Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - CAV (dB)	Limit - CAV (dB µ

0.154000	73.4	48.2	1000.0	9.000	N	0.1	17.8	66.0
0.282000	64.5	48.8	1000.0	9.000	N	0.1	17.3	66.0
0.498000	62.0	47.4	1000.0	9.000	N	0.1	18.6	66.0
1.038000	46.6	33.3	1000.0	9.000	N	0.1	26.8	60.0
1.550000	39.1	37.1	1000.0	9.000	N	0.1	23.0	60.0
2.586000	41.0	40.8	1000.0	9.000	N	0.2	19.2	60.0
2.586000	41.0	40.8	1000.0	9.000	N	0.2	19.2	60.0

QP：

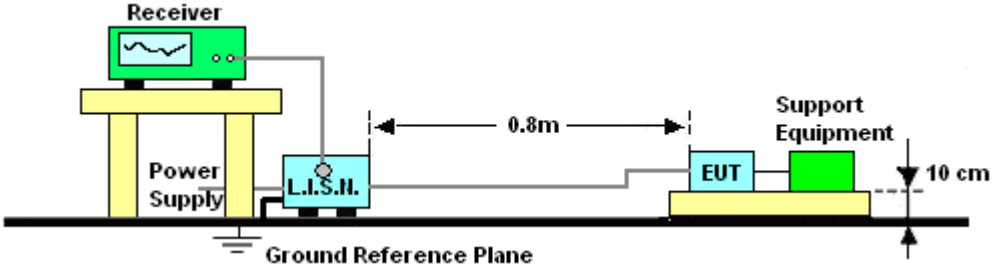
Frequency (MHz)	QuasiPeak (dB µ V)	CAverage (dB µ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB µ
0.154000	73.4	48.2	1000.0	9.000	N	0.1	5.6	79.0
0.282000	64.5	48.8	1000.0	9.000	N	0.1	14.5	79.0
0.498000	62.0	47.4	1000.0	9.000	N	0.1	17.0	79.0
1.038000	46.6	33.3	1000.0	9.000	N	0.1	26.4	73.0
1.550000	39.1	37.1	1000.0	9.000	N	0.1	33.9	73.0
2.586000	41.0	40.8	1000.0	9.000	N	0.2	32.0	73.0

4.5 TEST CONCLUSION

PASS

5. CONDUCTED DISTURBANCE AT DC POWER PORTS

5.1 DIAGRAM OF TEST SETUP



5.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019

5.3 LIMITS FOR CONDUCTED DISTURBANCE

Table A.1 – Proposed requirements for conducted emissions – DC power port

Table Clause	Measurement network	Frequency range MHz	Limits dB(μV) Detector	Measurement specifics [a]	Limitations and restrictions [a]
A.1.1	AMN	0,15 to 0,5	89 Quasi-peak	Instrumentation, CISPR 16-1-1, Clauses 4 and 6	See Table A.2, for DC power ports that require testing.
			76 Average	Networks, CISPR 16-1-2, Clause 4	
		0,5 to 30	83 Quasi-peak	Method, CISPR 16-2-1, Clause 7	
			70 Average	Set-up, CISPR 16-2-1, Clause 7	
These informative limits have been considered by CISPR H (in conjunction with Table A.2) and are provided as a possible basis for new requirements.					
[a] Within this table, the version of the references are as follows:					
CISPR 16-1-1 is CISPR 16-1-1:2015, CISPR 16-1-2 is CISPR 16-1-2:2014, CISPR 16-2-1 is CISPR 16-2-1:2014 and CISPR 16-2-1:2014/AMD1:2017.					

5.4 TEST RESULT

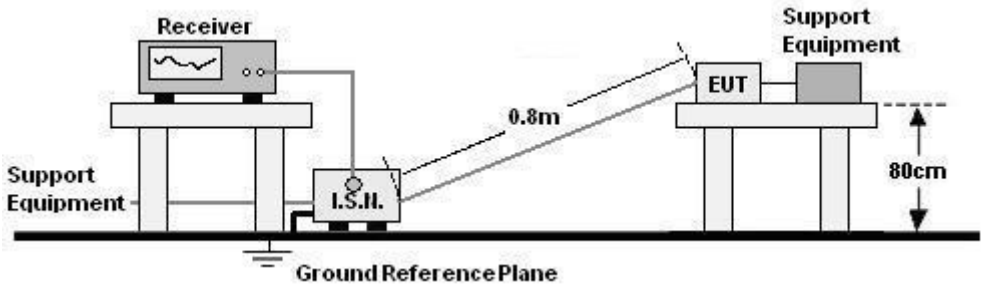
N/A

5.5 TEST CONCLUSION

N/A

6. CONDUCTED DISTURBANCE AT WIRED NETWORK PORTS

6.1 DIAGRAM OF TEST SETUP



6.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019

6.3 LIMITS FOR CONDUCTED DISTURBANCE

Table 5 – Requirements for conducted emissions – wired network port

Table clause	Measurement network	Frequency range MHz	Limits dB(μV) Detector	Limits dB(μA) Detector	Measurement specifics [a]	Limitations and restrictions [a]
5.1	As defined in CISPR 32	0,15 to 0,5	97 to 87 Quasi-peak	53 to 43 Quasi-peak	As defined in CISPR 32	The current and voltage disturbance limits are derived for use with an Asymmetric Artificial Network (AAN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the wired network port under test (conversion factor is 20 log10 150 / I = 44 dB). When performing measurements using an AAN, only the voltage limits apply. All elements within CISPR 32 shall be followed, including but not limited to selection of test method, test configuration, cable characteristics.
			84 to 74 Average	40 to 30 Average		
		0,5 to 30	87 Quasi-peak	43 Quasi-peak		
			74 Average	30 Average		
[a] Within this table, the version of the reference CISPR 32 is CISPR 32:2015.						

6.4 TEST RESULT

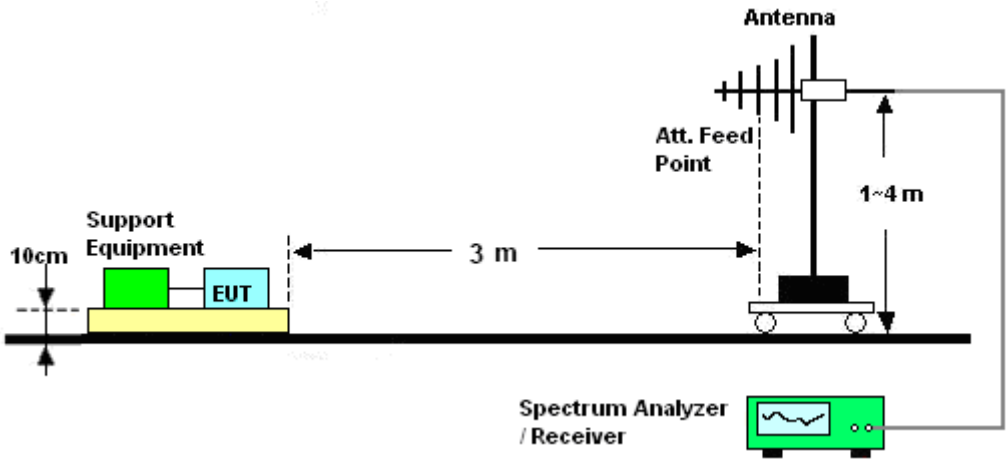
N/A

6.5 TEST CONCLUSION

N/A

7. RADIATED DISTURBANCE TEST

7.1 DIAGRAM OF TEST SETUP



7.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019

7.3 LIMITS FOR RADIATED DISTURBANC

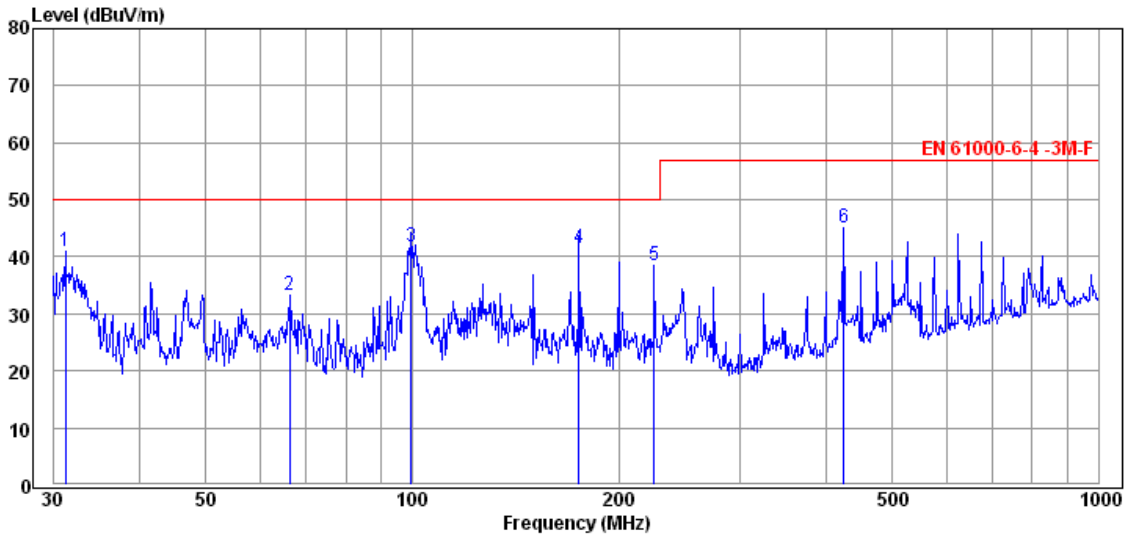
Below 1GHz

Frequency (MHz)	Distance (m)	Field Strength Limits dB(V/m)	Converted Field Strength Limits By 3 Meters Measuring Distance dB(V/m)
30 ~ 230	10	40	50
230 ~ 1000	10	47	57
NOTE 1 - The lower limit shall apply at the transition frequency. NOTE 2 – Additional provisions may be required for cases where interference occurs.			

7.4 TEST RESULT

Temperature	:	25℃	Humidity	:	53%
Test Model	:	Operating	Power Supply	:	AC380V/50Hz

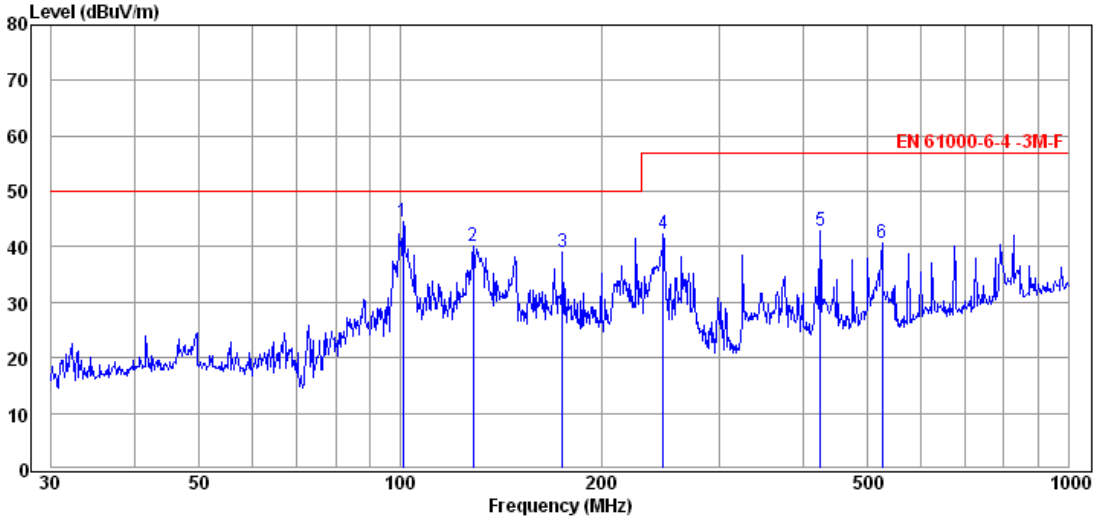
HORIZONTAL:



Freq MHz	Reading dBuV	C.F dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Detector
31.18	28.44	12.40	40.84	50.00	9.16	QP
66.27	20.52	12.75	33.27	50.00	16.73	QP
99.53	27.50	14.39	41.89	50.00	8.11	QP
175.04	29.50	12.09	41.59	50.00	8.41	QP
225.31	23.51	14.87	38.38	50.00	11.62	QP
425.03	25.00	19.96	44.96	57.00	12.04	QP

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

VERTICAL：



Freq MHz	Reading dBuV	C.F dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Detector
100.93	29.95	14.46	44.41	50.00	5.59	QP
128.56	28.80	11.29	40.09	50.00	9.91	QP
175.04	27.07	12.09	39.16	50.00	10.84	QP
247.68	26.83	15.56	42.39	57.00	14.61	QP
425.03	23.04	19.96	43.00	57.00	14.00	QP
526.40	18.59	21.99	40.58	57.00	16.42	QP

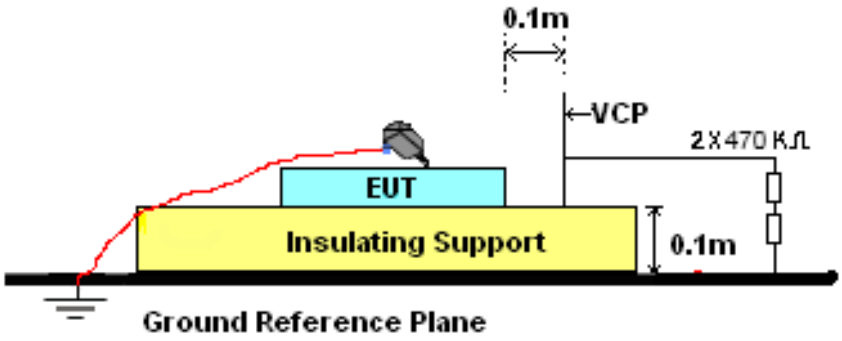
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

7.5 TEST CONCLUSION

PASS

8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1 DIAGRAM OF TEST SETUP



8.2 APPLICABLE STANDARD

IEC 61000-4-2, Contact Discharge:±4kV;
Air Discharge: ±8kV

8.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

8.3.1 Severity levels

Level	Test Voltage	
	Contact Discharge (kV)	Air Discharge (kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X	Special	Special

8.3.2 Performance criterion: B

8.4 TEST RESULT

Temperature	:	25℃	Humidity	: 45%
Test Model	:	Operating	Power Supply	: AC380V/50Hz

Air Discharge Voltage: ±2kV, ±4kV, ±8kV Contact Discharge Voltage: ±2kV, ±4kV

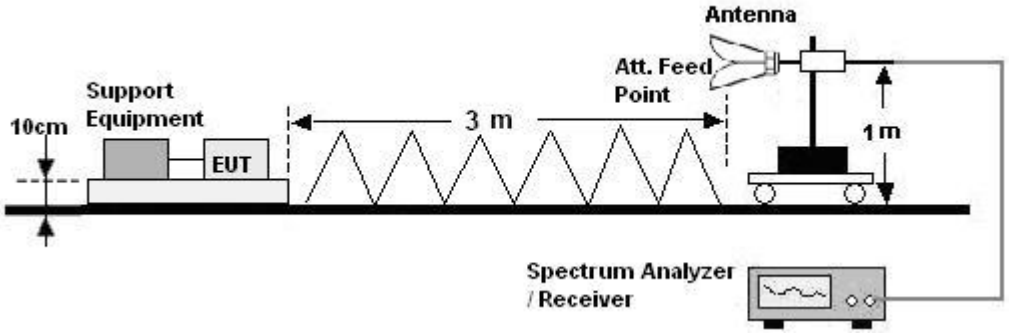
Contact Discharge: For each point positive 10 times and negative 10 times discharge Air Discharge: For each point positive 10 times and negative 10 times discharge			
Location	**Point**	**Kind**	**Result**
Around the EUT	4	C (VCP)	A
Around the EUT	4	C (HCP)	A
Metal part of EUT and screws	48	C	B
Gap and Button	/	A	B
NOTE 1 – C (Contact Discharge), A(Air Discharge); NOTE 2 – HCP (Horizontal Coupling Plane), VCP (Vertical Coupling Plane).			

8.5 TEST CONCLUSION

PASS

9. RF ELECTROMAGNETIC FIELD IMMUNITY TEST

9.1 DIAGRAM OF TEST SETUP



9.2 APPLICABLE STANDARD

IEC 61000-4-3

Frequency Range: 80 - 1000 MHz, Field Strength: 10 V/m, modulation, 80% AM 1kHz ; 1400 - 6000 MHz, Field Strength: 3 V/m, modulation, 80% AM 1kHz

9.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

9.3.1 Severity levels

Level	Field Strength V/m
1	1
2	3
3	10
X	Special

9.3.2 Performance criterion: A

9.4 TEST RESULT

Temperature : 25℃ Humidity : 55%
Test Model : Operating Power Supply : AC380V/50Hz

Frequency Range		80 MHz to 1000 MHz		1400 MHz to 6000 MHz	
Modulation		80% AM 1 kHz		80% AM 1 kHz	
Steps		1 %		1 %	
Dwell Time		3 s		3 s	
Antenna Polarization		80 MHz to 1000 MHz		1400 MHz to 6000 MHz	
Field Strength		10V/m		3V/m	
Antenna Polarization		Horizontal	Vertical	Horizontal	Vertical
EUT Position	Front	A	A	A	A
	Rear	A	A	A	A
	Right	A	A	A	A
	Left	A	A	A	A
	Floor	--	--	--	--
	Top	--	--	--	--
NOTE – "--" means the item is no applicable.					

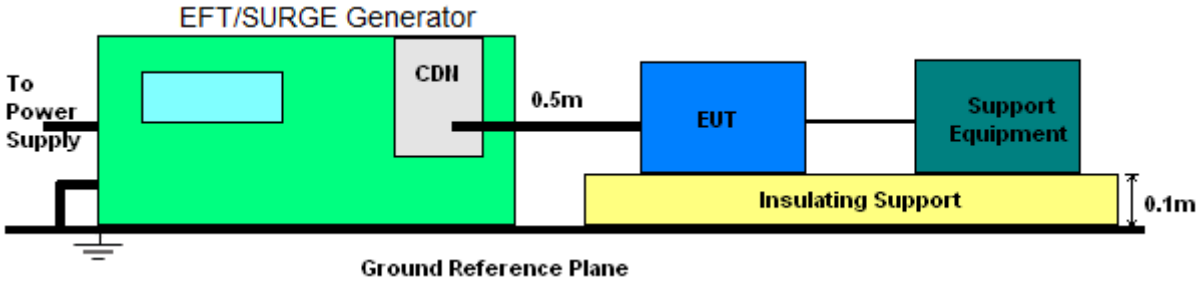
9.5 TEST CONCLUSION

PASS

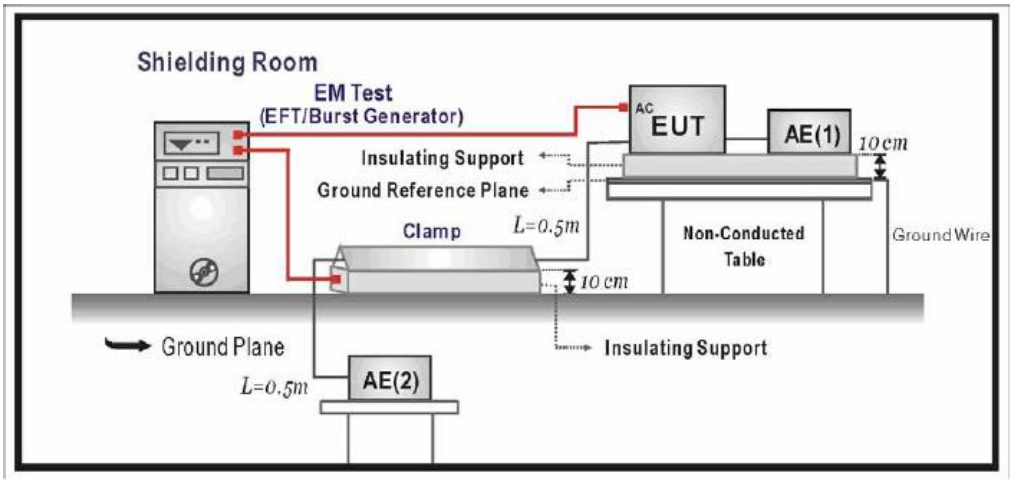
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1 DIAGRAM OF TEST SETUP

FOR POWER PORT:



FOR SIGNAL PORT:



10.2 APPLICABLE STANDARD

IEC 61000-4-4

Signal/control ports: ±1 kV, 5/50ns, 5/100kHz

DC power ports: ±1 kV, 5/50ns, 5/100kHz

AC power ports: ±2 kV, 5/50ns, 5/100kHz

10.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

10.3.1 SEVERITY LEVELS

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (input/output) signal, data and control ports	
	Voltage peak kV	Repetition rate kHz	Voltage peak kV	Repetition rate kHz
1.	0.5	5 or 100	0.25	5 or 100
2.	1	5 or 100	0.5	5 or 100
3.	2	5 or 100	1	5 or 100
4.	4	5 or 100	2	5 or 100
Xa	Special	Special	Special	Special
Note 1: Use of 5kHz repetition rates is traditional; however, 100kHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types. Note 2: With some products, there may be no clear distinction between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
"Xa" is an open level. The level has to be specified in the dedicated equipment specification.				

10.3.2 PERFORMANCE CRITERION: B

10.4 TEST RESULTS

Temperature : 25℃ Humidity : 55%
Test Model : Operating Power Supply : AC380V/50Hz

Inject Line	Voltage kV	Repetition rate kHz	Duration of Test (seconds)	Inject Method	Result
L1、L2、L3、PEN	±2	5	120	Direct	B
DC power port	--	--	--	--	--
Signal Port	--	--	--	--	--
NOTE – "--" means the item is no applicable.					

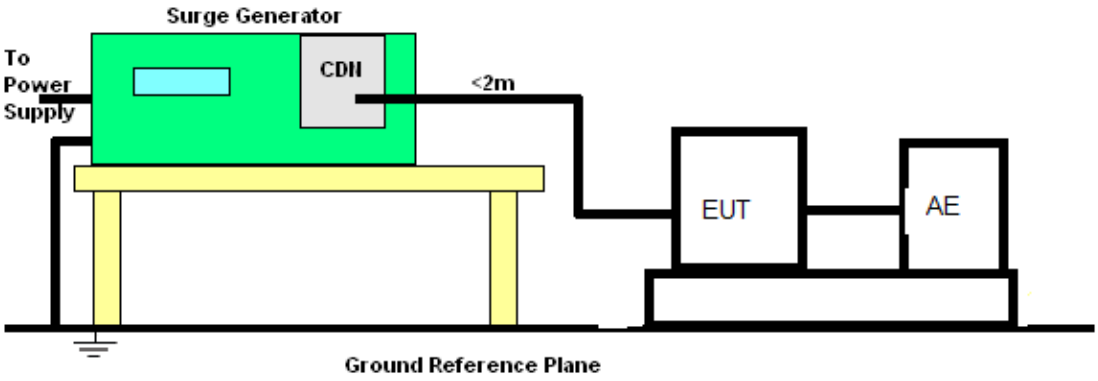
10.5 TEST CONCLUSION

PASS

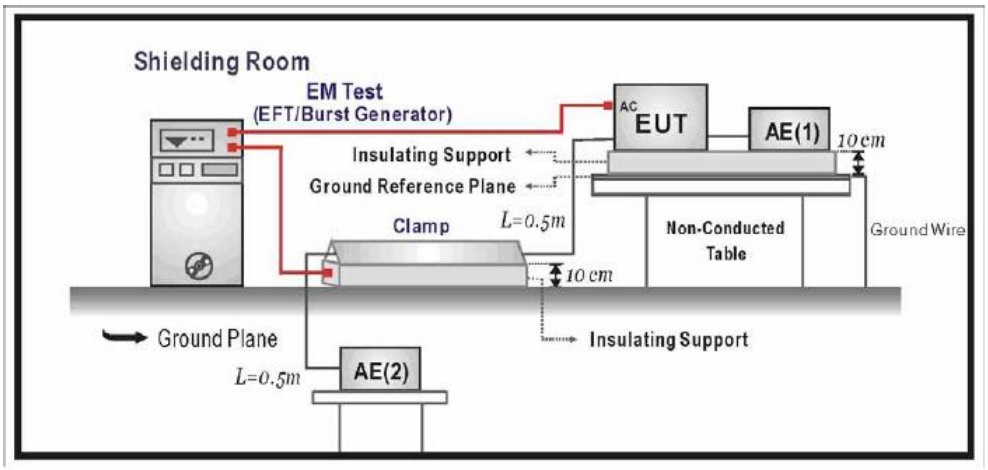
11. SURGE IMMUNITY TEST

11.1 DIAGRAM OF TEST SETUP

FOR POWER PORT:



FOR SIGNAL PORT:



11.2 Applicable Standard

IEC 61000-4-5

Signal/control ports：line to earth ±1 kV, 1.2/50(8/20)

DC power ports: line to earth ±1 kV, 1.2/50(8/20), line to line ±0.5 kV, 1.2/50(8/20)

AC power ports：line to earth ±2 kV, 1.2/50(8/20), line to line ±1 kV, 1.2/50(8/20)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity levels

Test Level	Power Supply Coupling Mode	
	Line to Line kV	Line to Earth kV
1	NA	0.5
2	0.5	1.0
3	1.0	2.0
4	2.0	4.0
X	Special	Special

11.3.2 Performance criterion: B

11.4 Test Result

Temperature : 25℃ Humidity : 55%

Test Model : Operating Power Supply : AC380V/50Hz

AC Input Power Port						
Location	Polarity		Phase Angle	No. of Pulse	Pulse Voltage (kV)	Result
L1-L2	+	-	0	5	1.0	B
	+	-	90	5	1.0	B
	+	-	180	5	1.0	B
	+	-	270	5	1.0	B
L1-L3	+	-	0	5	1.0	B
	+	-	90	5	1.0	B
	+	-	180	5	1.0	B
	+	-	270	5	1.0	B
L2-L3	+	-	0	5	1.0	B
	+	-	90	5	1.0	B
	+	-	180	5	1.0	B
	+	-	270	5	1.0	B
L1-PEN	+	-	0	5	2.0	B
	+	-	90	5	2.0	B
	+	-	180	5	2.0	B
	+	-	270	5	2.0	B
L2-PEN	+	-	0	5	2.0	B
	+	-	90	5	2.0	B
	+	-	180	5	2.0	B
	+	-	270	5	2.0	B
L3-PEN	+	-	0	5	2.0	B
	+	-	90	5	2.0	B
	+	-	180	5	2.0	B
	+	-	270	5	2.0	B
Signal interfaces						
NOTE “--” means the item is no applicable.						

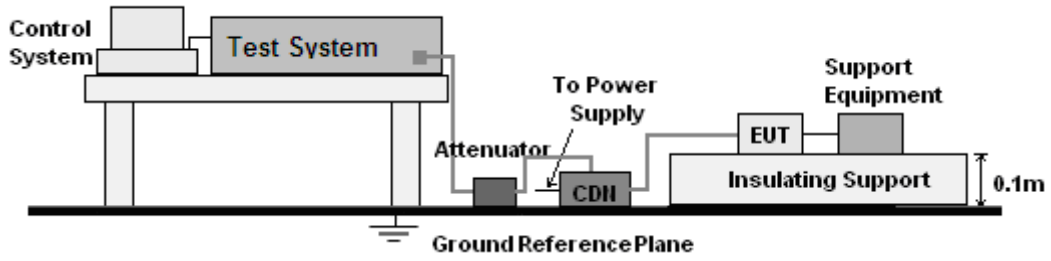
11.5 TEST CONCLUSION

PASS

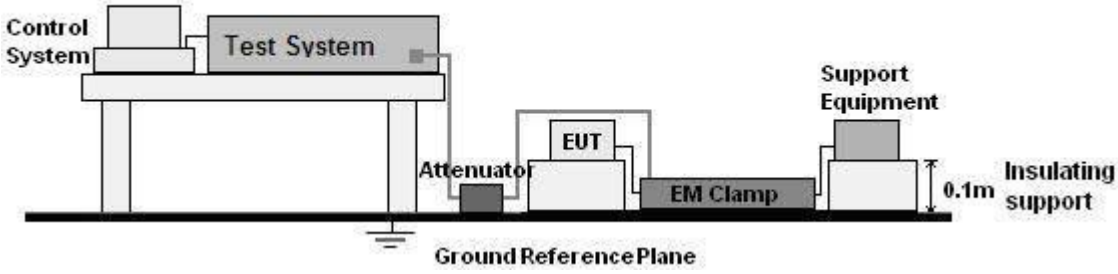
12. CONDUCTED DISTURBANCES IMMUNITY TEST

12.1 Diagram of Test Setup

FOR POWER PORT：



FOR SIGNAL PORT：



12.2 Applicable Standard

IEC 61000-4-6
Signal/control ports：0.15-80MHz, 10V, 80%AM (1kHz)
DC power ports: 0.15-80MHz, 10V, 80%AM (1kHz)
AC power ports：0.15-80MHz, 10V, 80%AM (1kHz)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity levels

Frequency Range 0.15 MHz – 80 MHz		
Level	Voltage Level (e.m.f.)	
	U0 dB(μV)	U0 (V)
1.	120	1
2.	130	3
3.	140	10
Xa	Special	
Xa is an open level.		

12.3.2 Performance criterion: A

12.4 TEST RESULTS

Temperature : 25℃ Humidity : 55%
Test Model : Operating Power Supply : AC380V/50Hz

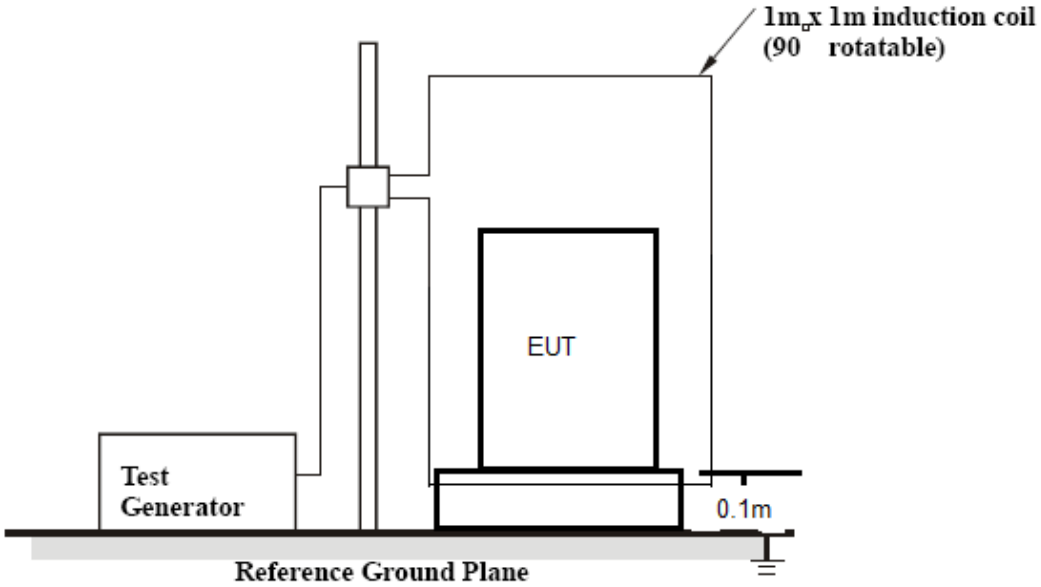
Frequency Range(MHz)	Injected Position	Strength (Unmodulated)	Results
0.15 ~ 80	AC Mains	10V(r.m.s.)	A

12.5 TEST CONCLUSION

PASS

13. POWER-FREQUENCY MAGNETIC FIELD IMMUNITY TEST

13.1 DIAGRAM OF TEST SETUP



13.2 APPLICABLE STANDARD

IEC 61000-4-8, Magnetic field strength: 30A/m,50Hz

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level:

Test Level	Magnetic field strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

13.3.2 Performance criterion: A

13.4 Test Results

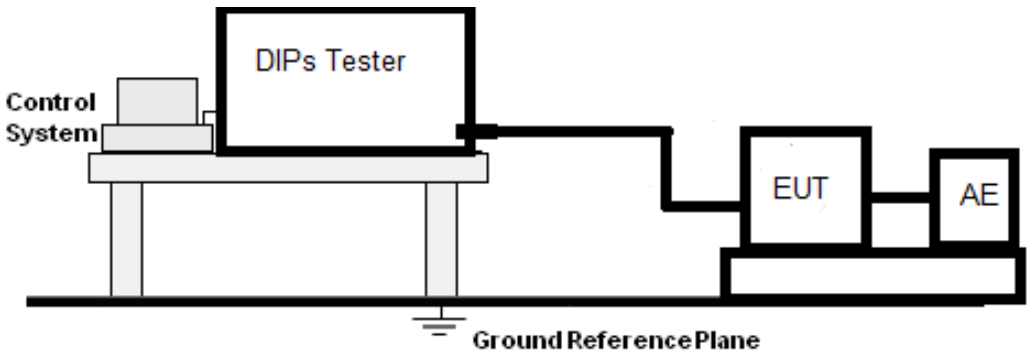
N/A

13.5 TEST CONCLUSION

N/A

14. VOLTAGE DIPS AND SHORT INTERRUPTIONS IMMUNITY TEST

14.1 DIAGRAM OF TEST SETUP



14.2 Applicable Standard

IEC 61000-4-11

Test Value：Voltage Dips 0% reduction: 1cycle， Voltage Dips 40% reduction: 10cycles; Voltage Dips 70% reduction: 25cycles; Voltage interruption: 0% 250cycles

14.3 Severity Levels and Performance Criterion

14.3.1 Preferred severity levels and durations for voltage dips

Class[a]	Test level and durations for voltage dips (ts) (50Hz/60Hz)		
Class 1	Case-by-case according to the equipment requirements		
Class 2	0% during ½ cycle	0% during 1 cycle	70% during 25/30c cycles

Class 3	0% during ½ cycle	0% during 1 cycle	40% during 10/12[c] cycles	70% during 25/30[c] cycles	80% during 250/300[c] cycles
Class X[b]	X	X	X	X	X

a Classes as per IEC 61000-2-4.
b To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
c "25/30 cycles" means "25 cycles for 50Hz test" and "30 cycles for 60Hz test".

14.3.2 Preferred severity levels and durations for short interruptions:

Class[a]	Test level and durations for short interruptions (ts) (50Hz/60Hz)
Class 1	Case-by-case according to the equipment requirements
Class 2	0% during 250/300[c] cycles
Class 3	80% during 250/300[c] cycles
Class X[b]	X

a Classes as per IEC 61000-2-4.
b To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.
c "250/300 cycles" means "250 cycles for 50Hz test" and "300 cycles for 60Hz test".

14.3.3 Performance criterion:
Voltage Dips 100%Reduction 1 cycle: B
Voltage Dips 60% Reduction 10 cycles: C
Voltage Dips 30% Reduction 25 period: C
Voltage interruptions 100% Reduction 250 period: C

14.4 Test Results

Temperature : 25℃ Humidity : 55%
Test Model : Operating Power Supply : AC380V/50Hz

Test level (%Ut)	Voltage Dips& Short Interruptions (%Ut)	Duration (cycle)	Phase (in angle)	Criterion	Voltage phenomenon
0	100	1	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°	B	Dips
40	60	10	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°	C	Dips
70	30	25	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°	C	Dips
0	100	250	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°	C	Interruptions

14.5 TEST CONCLUSION

PASS

----End of the report----