

EMC TECHNICAL FILE

Product Name : DC dual power switching relay

Model Name : RUS-32B-H-**(*=1~9 or A~Z or Empty)

Prepared for:

Nanjing ODES Intelligent Control System Co., Ltd.
No.34 Zifeng Road, Pukou District, Nanjing, Jiangsu Province, P.R.China

Prepared by:

Shanghai Global Testing Services Co., Ltd.
Floor 3rd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai,
China.

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Date of Issue : May 10,2026 to May 20,2026

Notes :

The review results only relate to these samples which have been reviewed.

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Applicant: Nanjing ODES Intelligent Control System Co., Ltd.
No.34 Zifeng Road, Pukou District, Nanjing, Jiangsu Province, P.R.China

Manufacturer: Nanjing ODES Intelligent Control System Co., Ltd.
No.34 Zifeng Road, Pukou District, Nanjing, Jiangsu Province, P.R.China

Product Name: DC dual power switching relay

Brand Name: 

Model Name: RUS-32B-H-**(=1~9 or A~Z or Empty)

Main Model: RUS-32B-H/220VDC

Serial Number: N/A

Rating: Rated Voltage Un: 220VDC/125VDC/110VDC/48VDC/24VDC
Switch Power: 500W

Date of Receipt: May 20,2026

Date of Review: May 10,2026 to May 20,2026

Review Standard: EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019

Review Result: PASS

Prepared by :

Approved by :

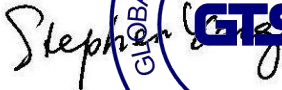




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1. GENERAL INFORMATION

1.1 Description of EUT

Product Name: DC dual power switching relay
Model Name: RUS-32B-H/220VDC
Serial Number: N/A
Power Supply: 220V
Applicant: Nanjing ODES Intelligent Control System Co., Ltd.
No.34 Zifeng Road, Pukou District, Nanjing, Jiangsu Province,
P.R.China
Manufacturer: Nanjing ODES Intelligent Control System Co., Ltd.
No.34 Zifeng Road, Pukou District, Nanjing, Jiangsu Province,
P.R.China

1.2 Description of Review Facility

Site Description : Shanghai Global Testing Services Co., Ltd.
Name of Firm : Shanghai Global Testing Services Co., Ltd.
Site Location : Floor 3rd, Building D-1, No. 128, Shenfu Road, Minhang
District, Shanghai, China.

The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

1.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB

2. TECHNIACL SUMMARY

2.1 SUMMARY OF STANDARDS AND Review RESULTS

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

EN IEC 61000-6-4:2019			
Review Item	Review Standard	Limits	Results
Conducted Disturbance at AC mains terminals ports	CISPR 16-2-1:2014 CISPR 16-1-2:2014	See 4.3	P
Conducted Disturbance at telecommunication /network ports	CISPR 22 :2009+A1:2010	N/A	N/A
Radiated Disturbance	CISPR 16-2-3:2016	See 6.3	P
Harmonic Current Emissions	EN IEC 61000-3-2:2019+A1:2021	Class A	P
Voltage Fluctuations and Flicker	EN 61000-3-3:2013+A2:2021	Section 5	P

EN IEC 61000-6-2:2019			
Review Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge Immunity	IEC 61000-4-2:2008	B	P
RF Electromagnetic Field Immunity	IEC 61000-4-3:2020	A	P
Electrical Fast Transient/Burst Immunity	IEC 61000-4-4:2012	B	P
Surge Immunity	IEC 61000-4-5:2014+A1:2017	B	P
Conducted Disturbances Immunity	IEC 61000-4-6:2013+Cor 1:2015	A	P
Power-frequency Magnetic Field Immunity	IEC 61000-4-8:2009	A	P
Voltage Dips: 100% reduction, 1 cycle	IEC 61000-4-11:2020	B	P
Voltage Dips: 60% reduction, 10 cycles		C	P
Voltage Dips: 30% reduction, 25 cycles		C	P
Voltage Interruptions: 100% reduction, 250 periods		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 Review results. If, as result of the application of the Reviews defined in this standard, the apparatus becomes dangerous or unsafe, the apparatus shall be deemed to have failed the Review. A functional description and a definition of performance criteria, during or as a consequence of the EMC Reviewing, shall be provided by the manufacturer and noted in the Review report, based on the following criteria:

2.2.1 Performance criterion A

The apparatus shall continue to operate as intended during the Review. 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 Review. 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 Review, 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. REVIEW EQUIPMENT LIST

Conducted Disturbance at AC mains terminals				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
Shielding Room	CHENGYU	5m×4m×3m	CR	Sep 13, 2026
EMI Review Receiver	R&S	ESCI7	100787	Dec. 24, 2026
Artificial Mains Network	TESEQ	NNB 51	33285	Dec. 24, 2026

Radiated Disturbance Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
3m Semi-anechoic Chamber	CHENGYU	9.2×6.25×6.15m	SAR	Sep 13, 2026
EMI Review Receiver	R&S	ESCI7	100787	Dec. 24, 2026
EMC Shielding room	Changzhou FeiTe	8 x 5 x 3 mm	Nil	Dec 24, 2026
Broadband Log Antenna	Schwarzbeck	VULB 9163	9163-561	Dec 24, 2026

Harmonic Current Emissions Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
Harmonic Currents and Flick Reviewer	APS	ECTS-3120T	550029	Dec 24, 2026

Voltage Fluctuations and Flicker Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
Harmonic Currents and Flick Reviewer	APS	ECTS-3120T	550029	Dec 24, 2026

Electrostatic Discharge Immunity Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
ESD Generator	SCHAFFNER	NSG 438	849	Dec. 24, 2026

RF Electromagnetic Field Immunity				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
Radiated Immunity Review System	TESEQ	ITS 6006	37546	Dec. 24, 2026
Power Meter	TESEQ	PMR 6006	73819	Dec. 24, 2026
Power Amplifier	MILMEGA	AS1860-50	1066592	Dec. 24, 2026
Log Periodic Antenna	Schwarzbeck	STLP 9128 D	9128 D 048	Dec. 24, 2026
Field Probe	ETS-Lindgren	HI-6105	00161798	Dec. 24, 2026

Electrical Fast Transient/SURGE Immunity Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
EFT/SURGE Generator	TESEQ	NSG 3060	1468	Dec. 24, 2026
Single Phase Coupling/decoupling Network	TESEQ	CDN 3061	1404	Dec. 24, 2026
Capacitive clamp	TESEQ	CDN 3425	1736	Dec. 24, 2026

Conducted Disturbances Immunity Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
Conducted Immunity Review System	TESEQ	NSG 4070	25795	Dec. 24, 2026
Coupling/Decoupling Network	TESEQ	CDN M116S	35371	Dec. 24, 2026
EM-clamp	TESEQ	KEMZ 801	29530	Dec. 24, 2026

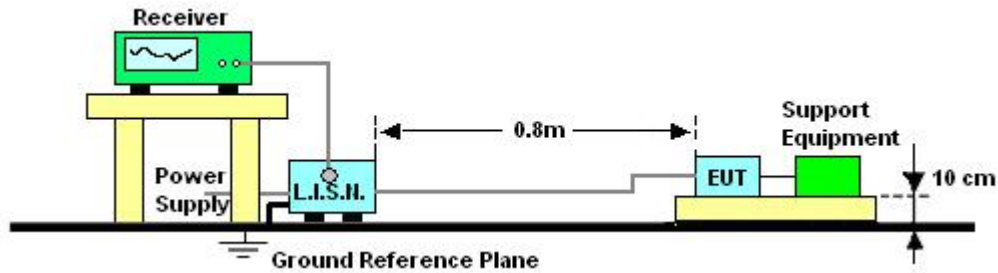
Power-frequency Magnetic Field Immunity Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
P-f Magnetic Field Loop	FCC	F-1000-4-8/9/10-1M	13	Dec. 24, 2026
Power Magnetic Field Generator	SANKI	SKS-0805	/	Dec. 24, 2026

Voltage Dips and Short Interruptions Immunity Review				
Equipment	Manufacturer	Model	Serial No.	Next Cal.
EFT/SURGE Generator	TESEQ	NSG 3060	1468	Dec. 24, 2026
Single Phase Coupling/decoupling Network	TESEQ	CDN 3061	1404	Dec. 24, 2026

The measuring equipment utilized to perform the Reviews 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 AC MAINS TERMINALS PORTS

4.1 DIAGRAM OF REVIEW SETUP



4.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019(CISPR 16-2-1:2014&CISPR 16-1-2:2014)

4.3 LIMITS FOR CONDUCTED DISTURBANCE

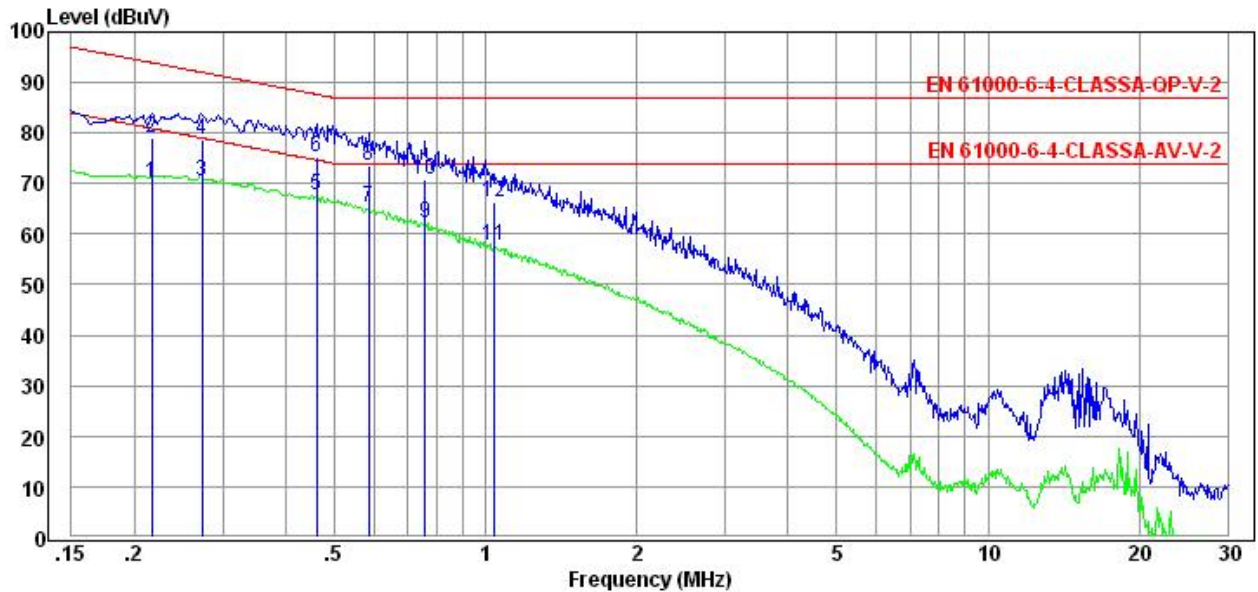
Frequency Range (MHz)	Limits dB(μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	97~87	84~74
0.5 ~ 30	87	74

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 REVIEW RESULT

TEMPERATURE : 22.3°C HUMIDITY : 40%
REVIEW MODEL : OPERATING POWER SUPPLY : 220V

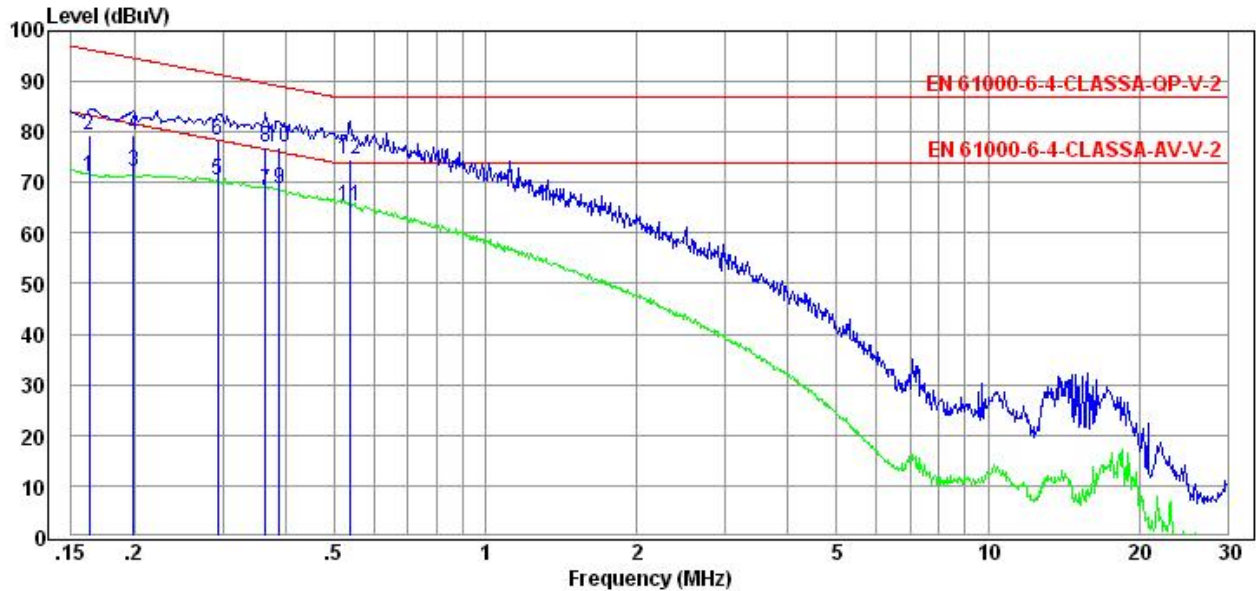
LINE:



Freq MHz	Reading dBUV	C.F dB/m	Result dBUV/m	Limit dBUV/m	Margin dB	Detector
0.22	60.46	9.59	70.05	80.92	10.87	Average
0.22	69.52	9.59	79.11	93.92	14.81	QP
0.27	60.71	9.65	70.36	79.03	8.67	Average
0.27	69.07	9.65	78.72	92.03	13.31	QP
0.46	58.05	9.64	67.69	74.67	6.98	Average
0.46	65.66	9.64	75.30	87.67	12.37	QP
0.59	55.75	9.68	65.43	74.00	8.57	Average
0.59	63.75	9.68	73.43	87.00	13.57	QP
0.76	52.37	9.69	62.06	74.00	11.94	Average
0.76	60.96	9.69	70.65	87.00	16.35	QP
1.04	47.98	9.61	57.59	74.00	16.41	Average
1.04	56.56	9.61	66.17	87.00	20.83	QP

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

NEUTRAL:



Freq MHz	Reading dBuV	C.F dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Detector
0.16	61.48	9.62	71.10	83.30	12.20	Average
0.16	69.71	9.62	79.33	96.30	16.97	QP
0.20	62.52	9.57	72.09	81.62	9.53	Average
0.20	69.78	9.57	79.35	94.62	15.27	QP
0.29	60.86	9.67	70.53	78.41	7.88	Average
0.29	68.58	9.67	78.25	91.41	13.16	QP
0.37	58.88	9.61	68.49	76.61	8.12	Average
0.37	67.50	9.61	77.11	89.61	12.50	QP
0.39	59.10	9.59	68.69	76.08	7.39	Average
0.39	67.27	9.59	76.86	89.08	12.22	QP
0.54	55.60	9.68	65.28	74.00	8.72	Average
0.54	64.77	9.68	74.45	87.00	12.55	QP

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

4.5 Review CONCLUSION

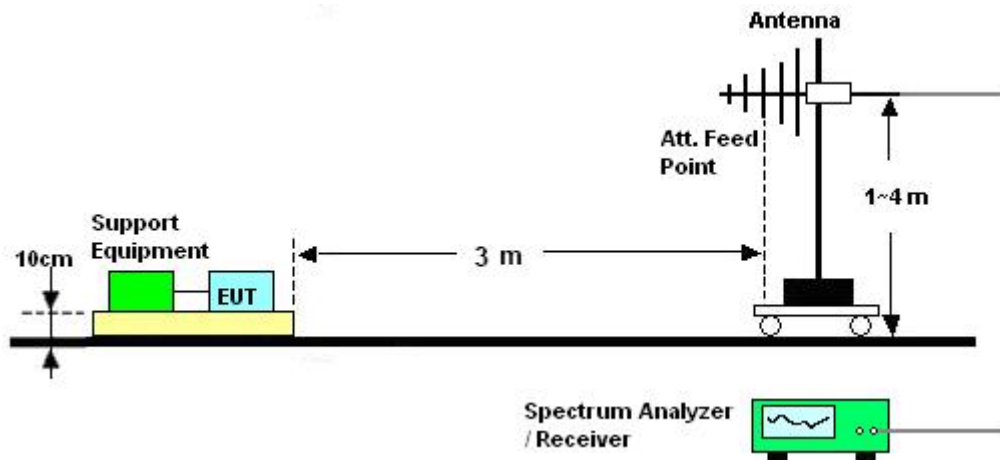
PASS

5. CONDUCTED DISTURBANCE AT TELECOMMUNICATION/NETWORK PORTS

N/A

6. RADIATED DISTURBANCE REVIEW

6.1 DIAGRAM OF REVIEW SETUP



6.2 APPLICABLE STANDARD

EN IEC 61000-6-4:2019 (CISPR 16-2-3:2016)

6.3 LIMITS FOR RADIATED DISTURBANCE

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

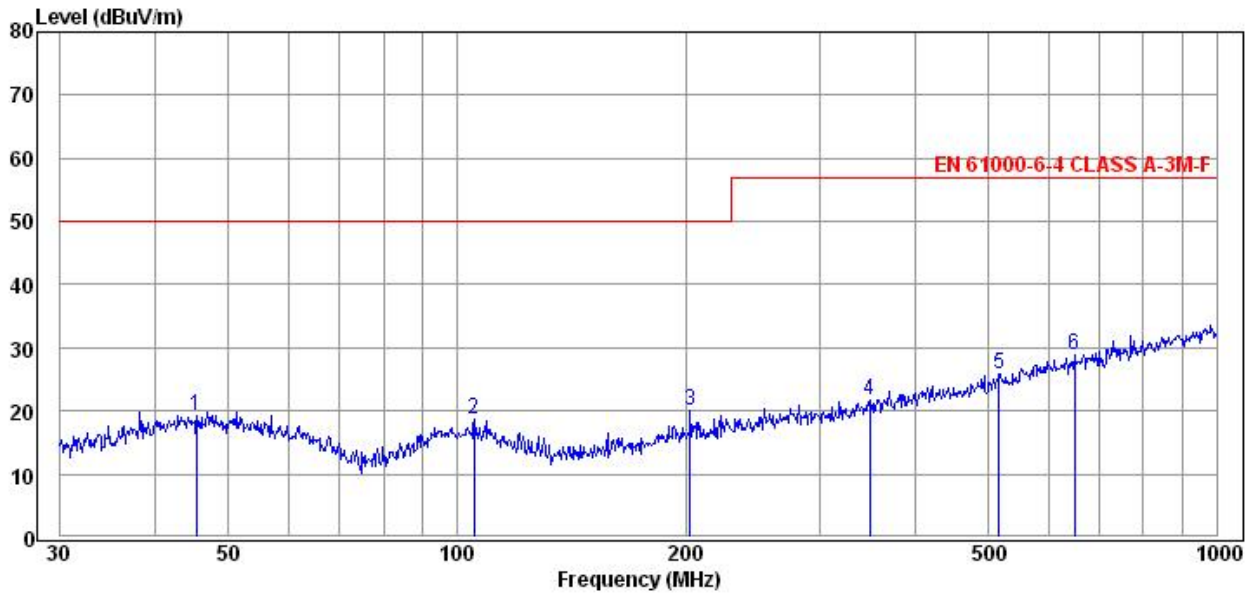
NOTE 1 - The lower limit shall apply at the transition frequency.

NOTE 2 – Additional provisions may be required for cases where interference occurs.

6.4 REVIEW RESULT

Temperature : 25°C Humidity : 40%
Review Model : Operating Power Supply : 220V

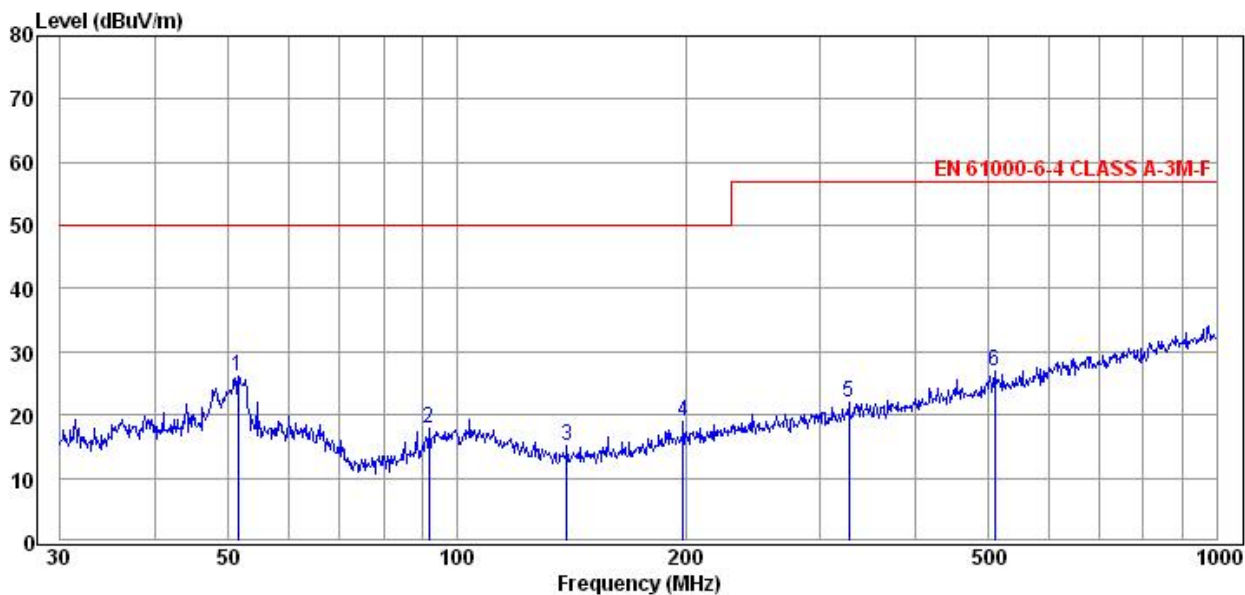
HORIZONTAL:



Freq MHz	Reading dBuV	C.F dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Detector
45.38	3.39	15.90	19.29	50.00	30.71	QP
105.27	4.02	14.67	18.69	50.00	31.31	QP
202.81	5.64	14.34	19.98	50.00	30.02	QP
349.25	3.29	18.53	21.82	57.00	35.18	QP
517.25	4.07	21.77	25.84	57.00	31.16	QP
649.66	4.59	24.18	28.77	57.00	28.23	QP

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

VERTICAL:



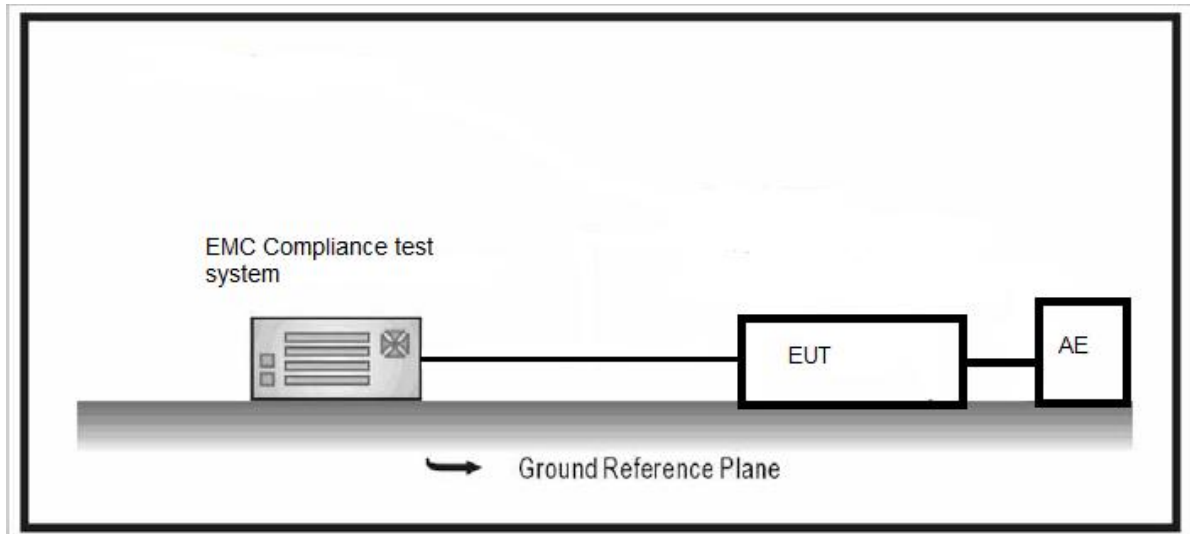
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

6.5 REVIEW CONCLUSION

PASS

7. HARMONIC CURRENT EMISSION REVIEW

7.1 DIAGRAM OF REVIEW SETUP



7.2 APPLICABLE STANDARD EN IEC 61000-3-2:2019+A1:2021 (CLASS A)

7.3 HARMONIC CURRENT LIMITS

Limits for Class A equipment	
Harmonics Order n	Max. permissible harmonics current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \times 15/n$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \times 8/n$

7.4 REVIEW RESULTS

Temperature : 25°C
Review Model : Operating

Humidity : 40%
Power Supply : 220V

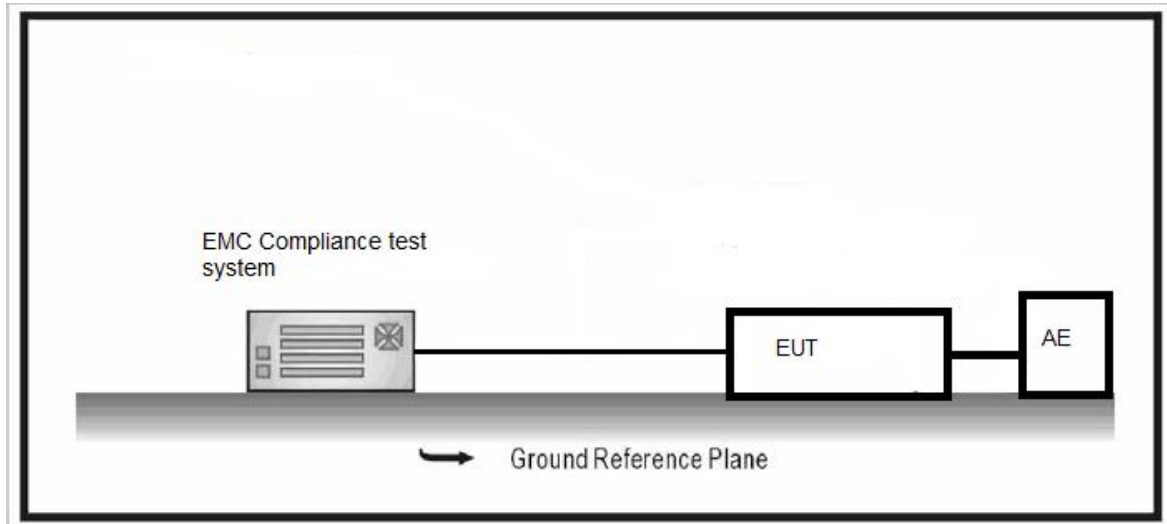
Harmonic	Status	Avg (A)	Avg L(A)	Avg %ofL	Peak (A)	Peak L(A)	Peak %ofL
1	PASS	0.36425	No Limit	N/A	0.3645	No Limit	N/A
2	PASS	0.0001	1.08	0.009559	0.00027	1.62	0.016873
3	PASS	0.34089	2.3	14.8213	0.34133	3.45	9.893623
4	PASS	0.00032	0.43	0.074881	0.00042	0.645	0.065122
5	PASS	0.30195	1.14	26.48684	0.30273	1.71	17.70351
6	PASS	0.00044	0.3	0.145803	0.00054	0.45	0.120938
7	PASS	0.25029	0.77	32.5052	0.25146	1.155	21.77143
8	PASS	0.00045	0.23	0.193478	0.00059	0.345	0.172043
9	PASS	0.19305	0.4	48.2625	0.19457	0.6	32.42833
10	PASS	0.00041	0.184	0.224772	0.00055	0.276	0.197909
11	PASS	0.1382	0.33	41.87879	0.13993	0.495	28.26869
12	PASS	0.00029	0.15333	0.191737	0.00043	0.23	0.185674
13	PASS	0.09452	0.21	45.00953	0.09627	0.315	30.56191
14	PASS	0.00012	0.13143	0.089021	0.00031	0.19715	0.155657
15	PASS	0.0698	0.15	46.53333	0.07125	0.225	31.66444
16	PASS	3.5E-05	0.115	0.03021	0.00022	0.1725	0.126864
17	PASS	0.06322	0.13235	47.76804	0.06431	0.19853	32.39391
18	PASS	5.6E-05	0.10222	0.054777	0.00025	0.15333	0.162871
19	PASS	0.0624	0.11842	52.69465	0.06344	0.17763	35.71469
20	PASS	0.00013	0.092	0.139196	0.0003	0.138	0.219123
21	PASS	0.05825	0.10714	54.36905	0.05945	0.16071	36.99459
22	PASS	0.00012	0.08364	0.138625	0.0003	0.12545	0.239753
23	PASS	0.04965	0.09783	50.75134	0.05102	0.14674	34.76785
24	PASS	3.5E-05	0.07667	0.04579	0.00027	0.115	0.231938
25	PASS	0.03949	0.09	43.88111	0.04087	0.135	30.27555
26	PASS	1.7E-05	0.07077	0.024071	0.00018	0.10615	0.167361
27	PASS	0.03199	0.08333	38.39055	0.03318	0.125	26.54171
28	PASS	9E-06	0.06571	0.01332	0.00015	0.09857	0.147153
29	PASS	0.02934	0.07759	37.81352	0.03022	0.11638	25.9686
30	PASS	9E-06	0.06133	0.014185	0.00015	0.092	0.164436
31	PASS	0.02915	0.07258	40.15652	0.02991	0.10887	27.47367
32	PASS	2.4E-05	0.0575	0.041275	0.00019	0.08625	0.215942
33	PASS	0.028	0.06818	41.07096	0.02884	0.10227	28.20099
34	PASS	2.3E-05	0.05412	0.043261	0.0002	0.08118	0.248038
35	PASS	0.02477	0.06429	38.53249	0.02573	0.09643	26.68492
36	PASS	0.00001	0.05111	0.01913	0.00011	0.07667	0.147861
37	PASS	0.02044	0.06081	33.61234	0.02141	0.09122	23.46834
38	PASS	7E-06	0.04842	0.013614	0.00011	0.07263	0.14396
39	PASS	0.01708	0.05769	29.60029	0.01785	0.08654	20.62678
40	PASS	5E-06	0.046	0.011391	8.2E-05	0.069	0.119319

7.5 REVIEW CONCLUSION

PASS

8. VOLTAGE FLUCTUATIONS AND FLICKER REVIEW

8.1 DIAGRAM OF REVIEW SETUP



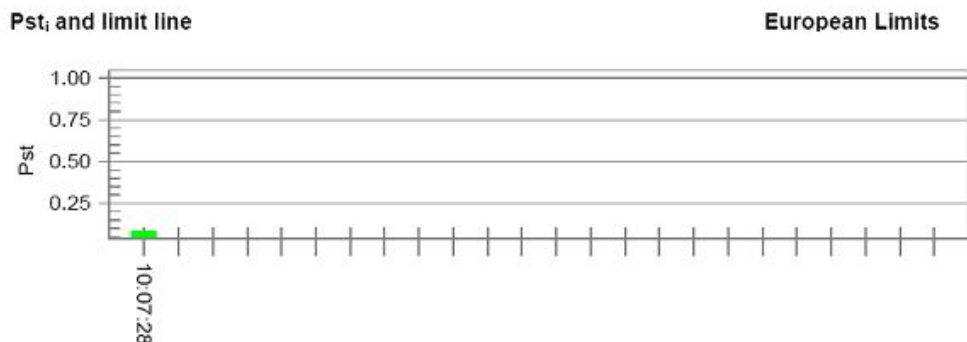
8.2 APPLICABLE STANDARD EN 61000-3-3:2013+A2:2021

8.3 VOLTAGE FLUCTUATIONS AND FLICKER EMISSION LIMITS

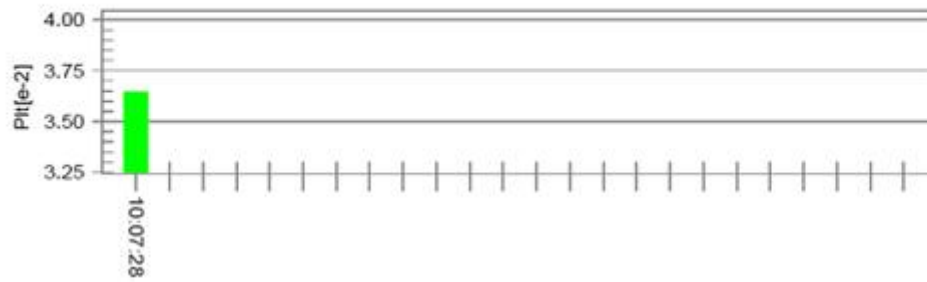
Review Item	Limit	Note
P_{st}	1.0	Short-term flicker indicator
P_{lt}	0.65	Long-term flicker indicator
$T_{dt}(ms)$	500	Maximum time that dt exceeds 3%
$d_{max}(\%)$	4%	Maximum relative voltage change
$d_c(\%)$	3.3%	Relative steady-state voltage change

8.4 REVIEW RESULTS

Temperature : 25°C Humidity : 40%
 Review Model : Operating Power Supply : 220V
 Flicker Review Summary (Run time)



Pit and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.94

Highest dt (%): 0.62

Time(mS) > dt: 0.0

Highest dc (%): 0.00

Highest dmax (%): -0.59

Highest Pst (10 min. period): 0.083

Test limit (%): 3.30

Test limit (mS): 500.0

Test limit (%): 3.30

Test limit (%): 4.00

Test limit: 1.000

Pass

Pass

Pass

Pass

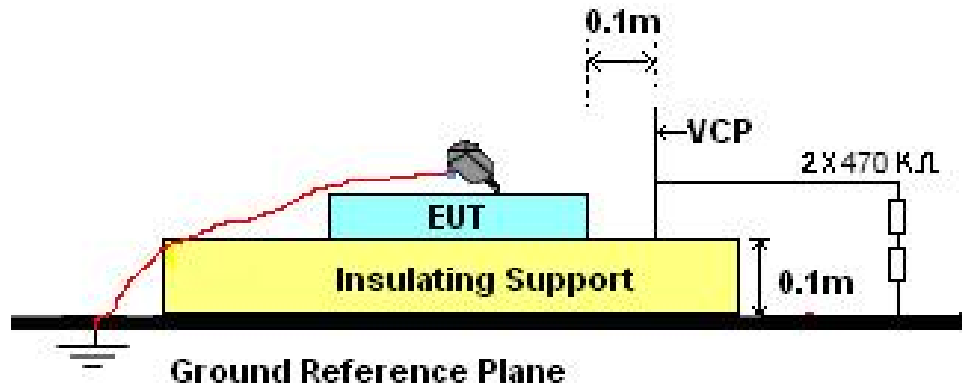
Pass

8.5 REVIEW CONCLUSION

PASS

9. ELECTROSTATIC DISCHARGE IMMUNITY REVIEW

9.1 DIAGRAM OF REVIEW SETUP



9.2 APPLICABLE STANDARD

IEC 61000-4-2:2008, Contact Discharge: 2kV, 4kV;
Air Discharge: 2kV, 4kV, 8kV

9.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

9.3.1 Severity levels

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

9.3.2 Performance criterion: B

9.4 REVIEW RESULT

Temperature : 25°C Humidity : 45%
Review Model : Operating Power Supply : 220V

Air Discharge Voltage: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$

Contact Discharge Voltage: $\pm 2\text{kV}$, $\pm 4\text{kV}$

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	28	C	B
Gap and screen	/	A	B

NOTE 1 – C (Contact Discharge), A(Air Discharge);

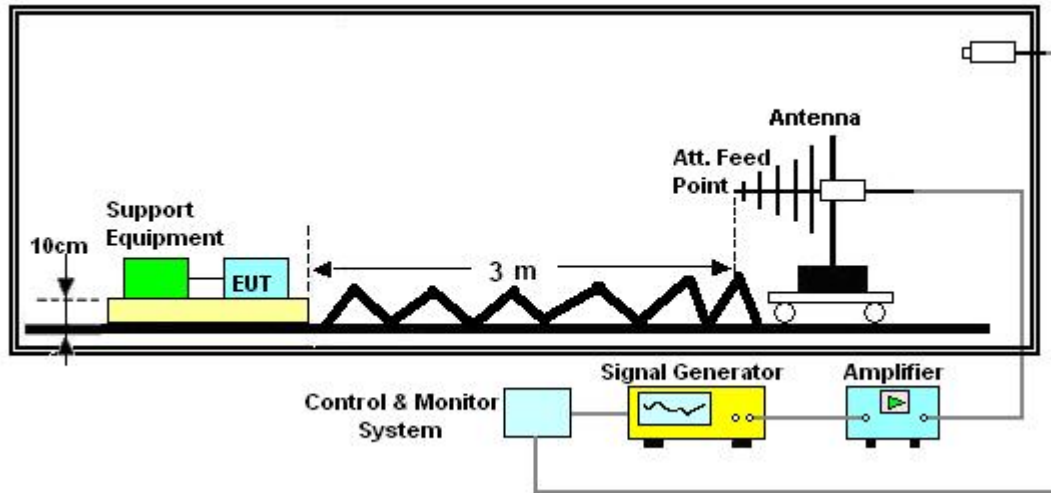
NOTE 2 – HCP (Horizontal Coupling Plane), VCP (Vertical Coupling Plane).

9.5 REVIEW CONCLUSION

PASS

10. RF ELECTROMAGNETIC FIELD IMMUNITY REVIEW

10.1 Diagram of Review Setup



10.2 Applicable Standard

IEC 61000-4-3:2020,

Frequency Range:

80 - 1000 MHz, Field Strength: 10 V/m, Modulation: 80% AM 1kHz;

1400 - 2000 MHz, Field Strength: 3V/m, Modulation: 80% AM 1kHz;

2000 - 2700 MHz, Field Strength: 1 V/m, Modulation: 80% AM 1kHz

10.3 Severity Levels and Performance Criterion

10.3.1 Severity levels

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

10.3.2 Performance criterion: A

10.4 Review Result

Temperature : 26°C Humidity : 55%
Review Model : Operating Power Supply : 220V

Frequency Range		80 MHz to 1000 MHz		1400 MHz to 2000 MHz		2000 MHz to 2700 MHz	
Modulation		80% AM 1 kHz		80% AM 1 kHz		80% AM 1 kHz	
Steps		1 %		1 %		1 %	
Dwell Time		3 s		3 s		3 s	
Antenna Polarization		80 MHz to 1000 MHz		1400 MHz to 2000 MHz		2000 MHz to 2700 MHz	
Field Strength		10V/m		3V/m		1V/m	
Antenna Polarization		Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
EUT Position	Front	A	A	A	A	A	A
	Rear	A	A	A	A	A	A
	Right	A	A	A	A	A	A
	Left	A	A	A	A	A	A
	Floor	--	--	--	--	--	--
	Top	--	--	--	--	--	--

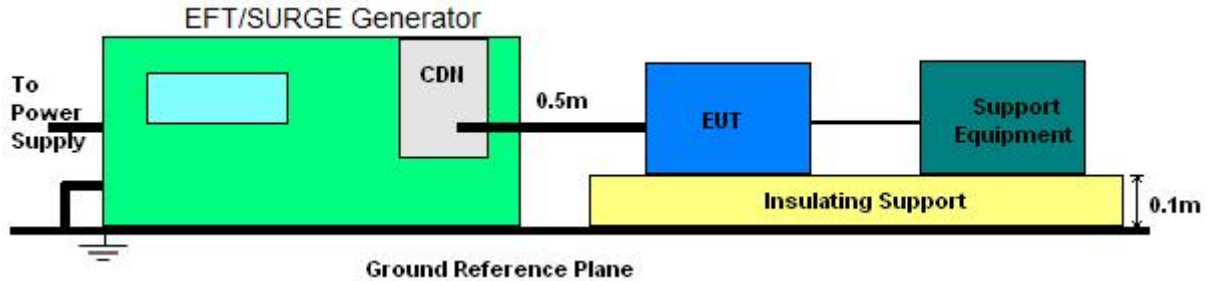
10.5 Review CONCLUSION

PASS

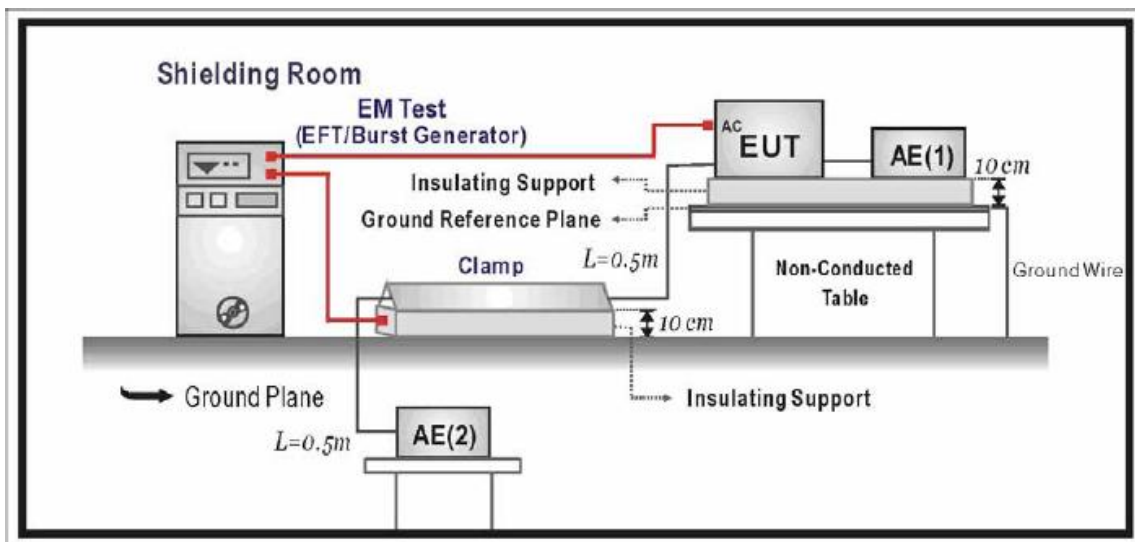
11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY REVIEW

11.1 DIAGRAM OF REVIEW SETUP

FOR POWER PORT:



FOR SIGNAL PORT:



11.2 APPLICABLE STANDARD

IEC 61000-4-4:2012, Signal port: ± 1.0 kV, 5/50ns, 5kHz

Power port: ± 2.0 kV, 5/50ns, 5kHz

11.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

11.3.1 SEVERITY LEVELS

Open circuit output Review 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 Review purposes.

“Xa” is an open level. The level has to be specified in the dedicated equipment specification.

11.3.2 PERFORMANCE CRITERION: B

11.4 REVIEW RESULTS

Temperature : 26℃

Humidity : 55%

Review Model : Operating

Power Supply : 220V

Inject Line	Voltage kV	Repetition rate kHz	Duration of Review (seconds)	Inject Method	Result
L	± 1	5	120	Direct	A
N	± 1	5	120	Direct	A
L、N	± 1	5	120	Direct	A

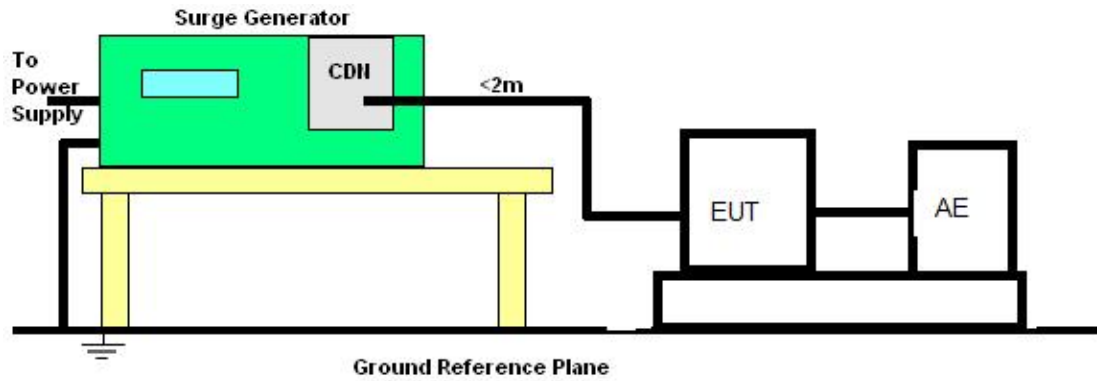
11.5 REVIEW CONCLUSION

PASS

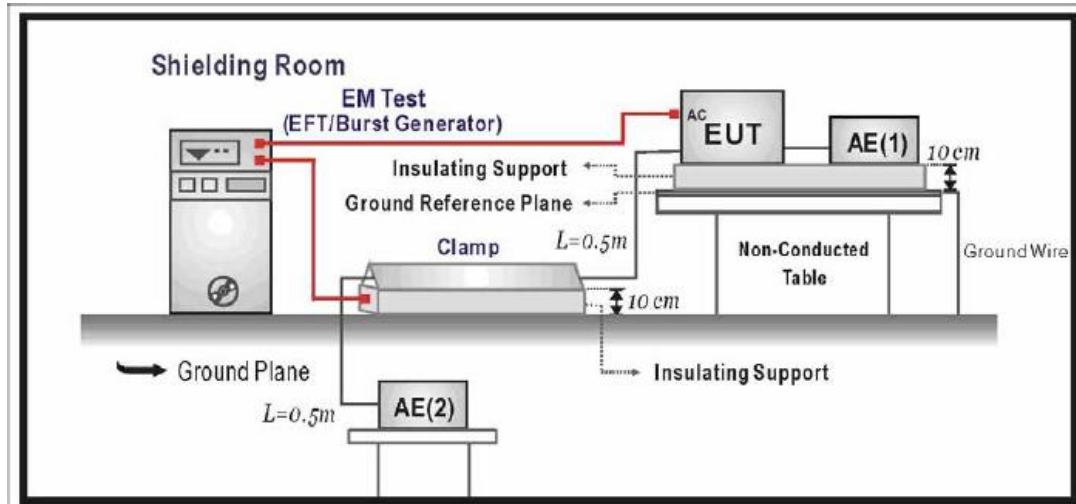
12. SURGE IMMUNITY REVIEW

12.1 Diagram of Review Setup

FOR POWER PORT:



FOR SIGNAL PORT:



12.2 Applicable Standard

IEC 61000-4-5:2014+A1:2017, Signal port : ± 1.0 kV, 1.2/50 (8/20)

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

12.3 Severity Levels and Performance Criterion

12.3.1 Severity levels

Review 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

12.3.2 Performance criterion: B

12.4 Review Result

Temperature : 25°C Humidity : 55%
 Review Model : Operating Power Supply : 220V

AC Input Power Port						
Location	Polarity		Phase Angle	No. of Pulse	Pulse Voltage (kV)	Result
L-N	+	-	0	5	1.0	P
	+	-	90	5	1.0	P
	+	-	180	5	1.0	P
	+	-	270	5	1.0	P
L-PE	+	-	0	5	2.0	P
	+	-	90	5	2.0	P
	+	-	180	5	2.0	P
	+	-	270	5	2.0	P
N-PE	+	-	0	5	2.0	P
	+	-	90	5	2.0	P
	+	-	180	5	2.0	P
	+	-	270	5	2.0	P
Signal Line	--	--	--	--	--	--
NOTE "--" means the item is no applicable.						

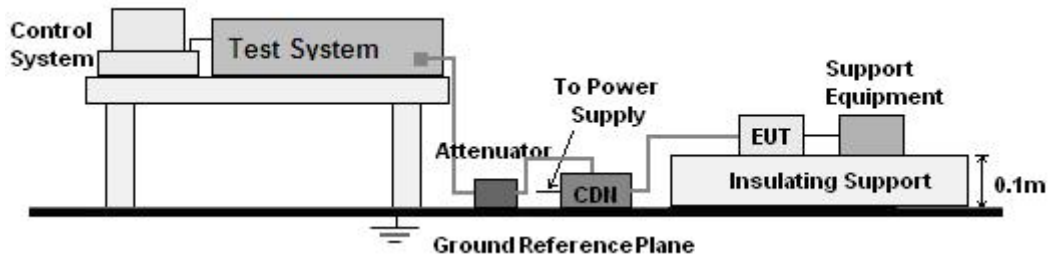
12.5 Review CONCLUSION

PASS

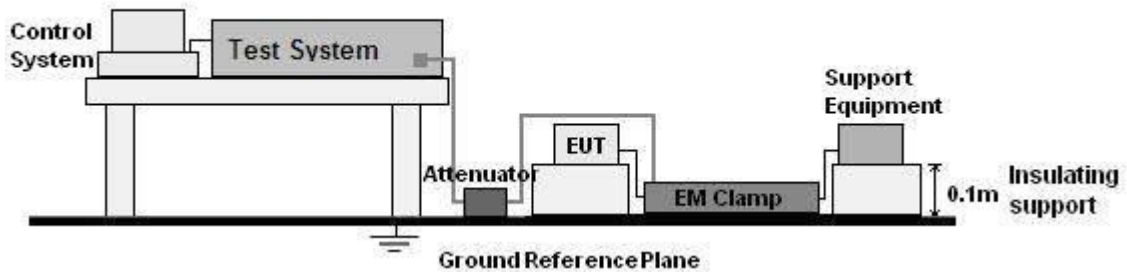
13. CONDUCTED DISTURBANCES IMMUNITY REVIEW

13.1 Diagram of Review Setup

FOR POWER PORT:



FOR SIGNAL PORT:



13.2 APPLICABLE STANDARD

IEC 61000-4-6:2013+Cor 1:2015, Power port: 0.15-80MHz, 10V Modulation, 80%AM (1kHz), Signal port: 0.15-80MHz, 10V Modulation, 80%AM (1kHz)

13.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

13.3.1 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.		

13.3.2 Performance criterion: A

13.4 REVIEW RESULTS

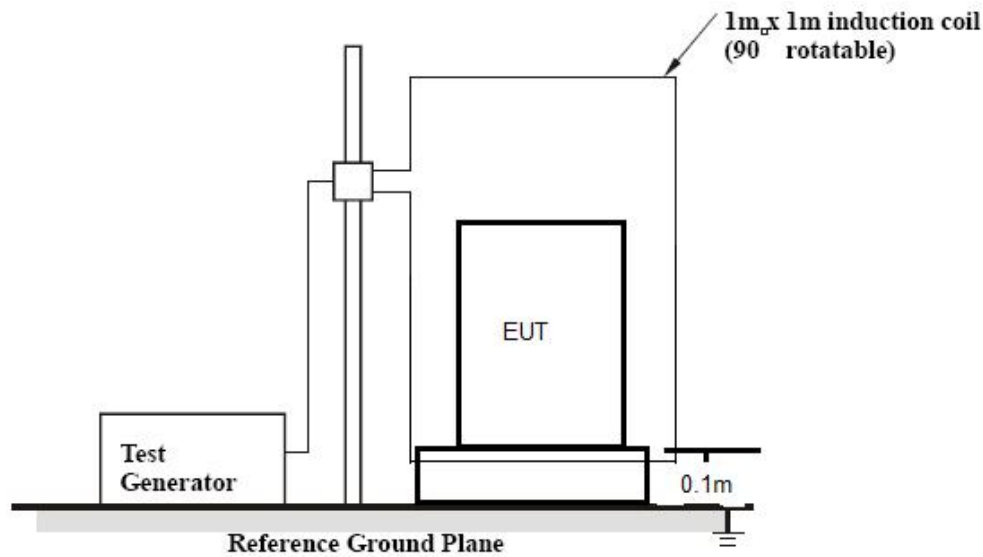
Temperature : 25°C Humidity : 55%
Review Model : Operating Power Supply : 220V

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

13.5 REVIEW CONCLUSION**PASS**

14. POWER-FREQUENCY MAGNETIC FIELD IMMUNITY REVIEW

14.1 DIAGRAM OF Review SETUP



14.2 APPLICABLE STANDARD

IEC 61000-4-8:2009, Magnetic field strength: 30A/m

14.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

14.3.1 Severity level:

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

14.3.2 Performance criterion: A

14.4 REVIEW RESULTS

Temperature : 25.2°C Humidity : 40%
 Review Model: Operating Power Supply : 220V

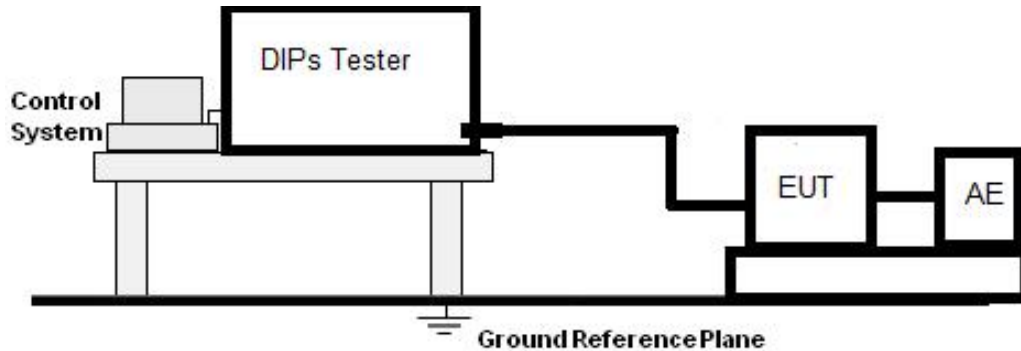
Review Level (A/m)	Reviewing Duration (in second)	Coil Orientation	Criterion	Result
30	120	Axis-X	A	P
30	120	Axis-Y	A	P
30	120	Axis-Z	A	P

14.5 REVIEW CONCLUSION

PASS

15. VOLTAGE DIPS AND SHORT INTERRUPTIONS IMMUNITY REVIEW

15.1 DIAGRAM OF Review SETUP



15.2 APPLICABLE STANDARD

IEC 61000-4-11:2020, Review Value: Voltage dips: Dips 100% reduction: 1 cycle; Dips 60% reduction: 10 cycles; Dips 30% reduction: 25 cycles; Voltage interruptions 100% reduction: 250 cycles.

15.3 SEVERITY LEVELS AND PERFORMANCE CRITERION

15.3.1 Preferred severity levels and durations for voltage dips

Class ^a	Review 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 25/30 ^c 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 Review” and “30 cycles for 60Hz Review”.

15.3.2 Preferred severity levels and durations for short interruptions:

Class ^a	Review 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 Review” and “300 cycles for 60Hz Review”.

15.3.3 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

15.4 REVIEW RESULTS

Temperature : 24.8℃ Humidity : 55%

Review Model: Operating Power Supply : 220V

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

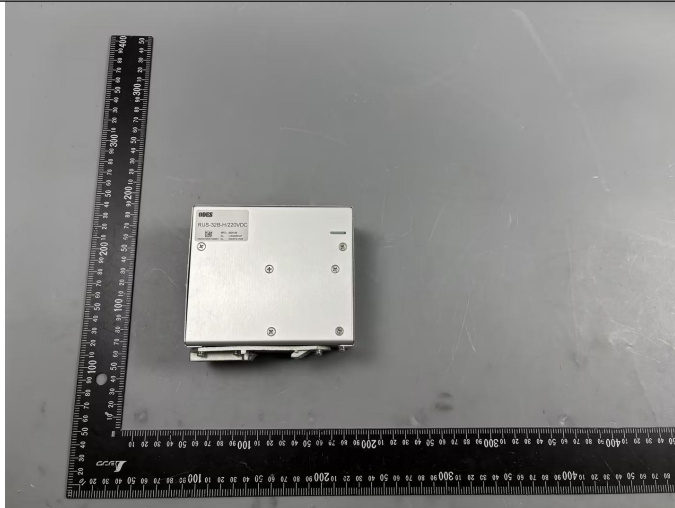
15.5 REVIEW CONCLUSION

PASS

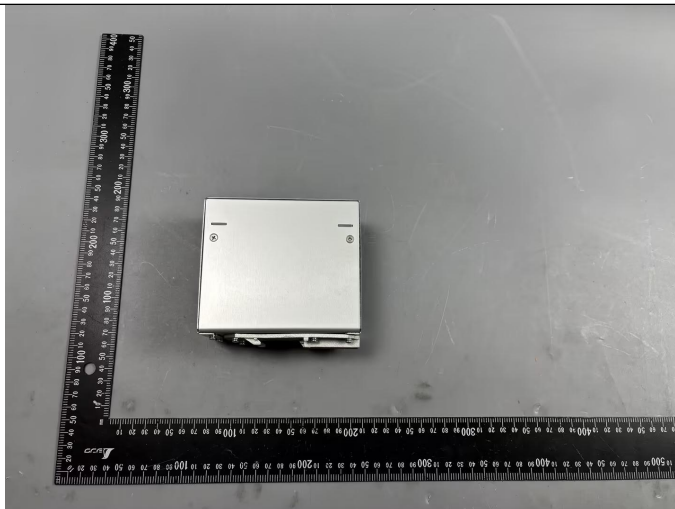
Photo documentation:

Type of equipment:	DC dual power switching relay
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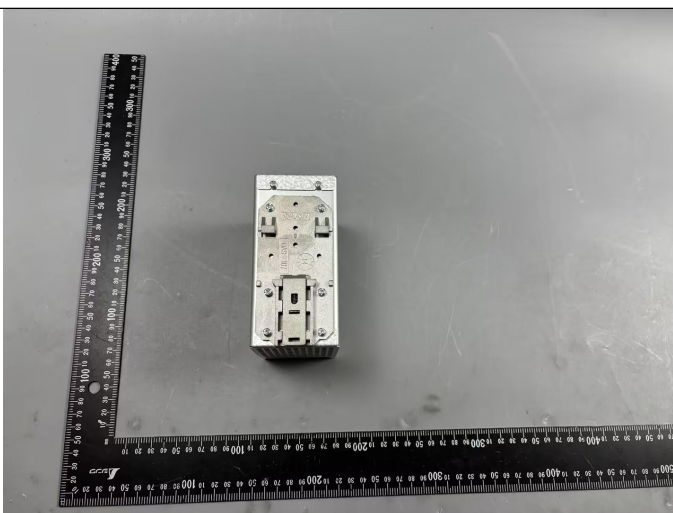
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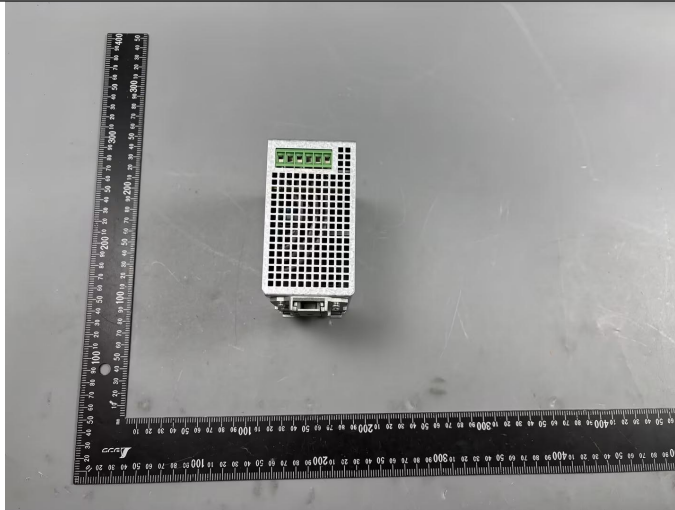
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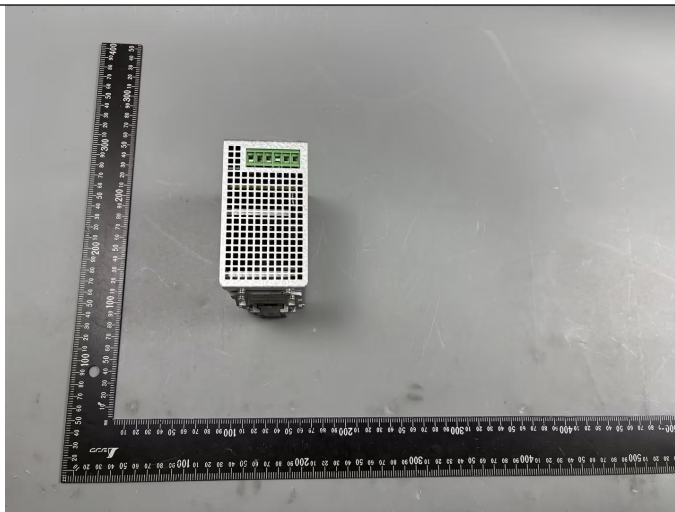
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