

TEST REPORT

Application No.: KSEM2206000908AT
Applicant: ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.
Address of Applicant: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Manufacturer: ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.
Address of Manufacturer: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China
Equipment Under Test (EUT):
EUT Name: NETWORK PTZ CAMERA & ANTI-CORROSION CAMERA
Model No.: DH-SD5A225GB-HNR-SL;SD5A225GB-HNR-SL;DH-SD5A432GB-HNR-SL;SD5A432GB-HNR-SL;DH-SD5A225GB-HNR;SD5A225GB-HNR;DH-SD5A432GB-HNR;SD5A432GB-HNR;
 DH-SD5A#####;
 SD5A#####;5A#####
 (#=0-9 or A-Z or - or blank or / or ()) ♣

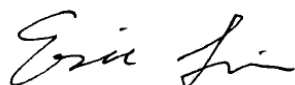
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Standard(s) : EN 55032: 2015+A1:2020
 EN 61000-3-3: 2013+A1:2019+A2:2021
 EN IEC 61000-3-2: 2019+A1:2021
 EN 50130-4: 2011 +A1:2014
 EN 55035: 2017+A11:2020

Date of Receipt: 2022-06-30
Date of Test: 2022-07-05 to 2022-07-19
Date of Issue: 2022-07-20

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin
 Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-07-20		Original

Authorized for issue by:			
		<i>Kun Gu</i>	

		Kun_gu/Project Engineer	
		<i>Eric Lin</i>	

		Eric Lin/Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Power Port (150kHz-30MHz)	EN 55032: 2015+A1:2020	EN 55032: 2015+A1:2020	Class A	Pass
Asymmetric Mode Conducted Emissions(150kHz-30MHz)		EN 55032: 2015+A1:2020	Class A	Pass
Radiated Emissions (30MHz-1GHz)		EN 55032: 2015+A1:2020	Class A	Pass
Radiated Emissions (Above 1GHz)		EN 55032: 2015+A1:2020	Class A	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013+A1:2019+A2: 2021	EN 61000-3-3: 2013+A1:2019+A2:2021	Clause 5	Pass
Harmonic Current Emission	EN IEC 61000-3-2: 2019+A1:2021	EN IEC 61000-3-2: 2019+A1:2021	Class A	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 50130-4: 2011 +A1:2014	EN 61000-4-2:2009	6kV Contact Discharge, 2,4,8kV Air Discharge	Pass
Radiated Immunity(80MHz-2.7GHz)		EN IEC 61000-4-3: 2020	10V/m, 80%, 1kHz sinusoidal Amp. Mod.	Pass
Electrical Fast Transients & Burst at AC Power Port		EN 61000-4-4:2012	2kV, 5/50ns Tr/Td, 100kHz Repetition Frequency	Pass
Surge at AC Power Port		EN 61000-4-5:2014 +A1:2017	1.2/50µs Tr/Td, 0.5,1kV Line to Line, 0.5,1,2kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-100MHz)		EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod.	Pass
Voltage Dips and Interruptions		EN IEC 61000-4-11:2020	80 % UT for 250per, 70 % UT for 25per, 40 % UT for 10per, 0 % UT for 250per	Pass
Mains Supply Voltage Variations		EN 50130-4:2011+A1:2014	Unom+10%, Unom-15%	Pass
Electrical Fast Transients & Burst at Signal Port		EN 61000-4-4:2012	1kV, 5/50ns Tr/Td, 100kHz Repetition Frequency	Pass



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Immunity Part				
Item	Standard	Method	Requirement	Result
Surge at Signal Port	EN 55035: 2017+A11:2020	EN 61000-4-5:2014 +A1:2017	1.2/50µs Tr/Td, 0.5kV	Pass
Conducted Immunity at Signal Port (150kHz-100MHz)		EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod	Pass
Electrostatic Discharge		EN 61000-4-2: 2009	±4kV Contact Discharge; ±2kV, ±4kV,±8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)		EN IEC 61000-4-3: 2020	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients & Burst at AC Power Port		EN 61000-4-4: 2012	1kV; 5/50ns Tr/Td; 5kHz Repetition Frequency	Pass
Electrical Fast Transients & Burst at Signal Port		EN 61000-4-4: 2012	0.5kV; 5/50ns Tr/Td; 5kHz Repetition Frequency	Pass
Surge at AC Power Port		EN 61000-4-5: 2014 +A1: 2017	1.2/50µs Tr/Td; 1kV Line to Line; 2kV Line to Ground	Pass
Surge at Signal Port		EN 61000-4-5: 2014 +A1: 2017	1.2/50µs Tr/Td; 1 kV Lines to Ground, 1.2/50µs Tr/Td; 0,5 kV Shield to Ground	Pass
Conducted Immunity at AC Power Port (150kHz-80MHz)		EN 61000-4-6: 2014	0,15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%,1kHz Amp. Mod.	Pass
Conducted Immunity at Signal Port (150kHz-80MHz)		EN 61000-4-6: 2014	0,15 to 10MHz 3Vrms (emf), 10 to 30MHz 3V to 1Vrms(emf), 30 to 80MHz 1Vrms(emf), 80%,1kHz Amp. Mod.	Pass
Power Frequency Magnetic Field		EN 61000-4-8: 2010	50 or 60Hz, 1 A/m	Pass
Voltage Dips and Interruptions		EN IEC 61000-4-11:2020	<5% residual voltage for 0.5cycle, 70% residual voltage for 25cycles, <5% residual voltage for 250cycles	Pass



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Model No.: DH-SD5A225GB-HNR-SL;SD5A225GB-HNR-SL;DH-SD5A432GB-HNR-SL;SD5A432GB-HNR-SL;DH-SD5A225GB-HNR;SD5A225GB-HNR;DH-SD5A432GB-HNR;SD5A432GB-HNR;DH-SD5A#####;SD5A#####;5A#####
(#=0-9 or A-Z or - or blank or / or ())

Only the model DH-SD5A225GB-HNR was tested.

There are series models mentioned in this report, and they are the similar in electrical and electronic characters. Only the model DH-SD5A225GB-HNR was tested since their differences are the model number, trade name and appearance.

Models ending with "-SL" are with anticorrosive coating



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3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	6
4 GENERAL INFORMATION	10
4.1 DETAILS OF E.U.T.	10
4.2 DESCRIPTION OF SUPPORT UNITS	10
4.3 MEASUREMENT UNCERTAINTY& DECISION RULE	11
4.4 TEST LOCATION	12
4.5 TEST FACILITY	12
4.6 DEVIATION FROM STANDARDS	12
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	12
5 EQUIPMENT LIST	13
6 EMISSION TEST RESULTS	22
6.1 CONDUCTED EMISSIONS AT MAINS POWER PORT (150KHZ-30MHZ).....	22
6.1.1 E.U.T. Operation	22
6.1.2 Test Mode Description	22
6.1.3 Test Setup Diagram	22
6.1.4 Measurement Procedure and Data	22
6.2 ASYMMETRIC MODE CONDUCTED EMISSIONS(150KHZ-30MHZ).....	25
6.2.1 E.U.T. Operation	25
6.2.2 Test Mode Description	25
6.2.3 Test Setup Diagram	25
6.2.4 Measurement Procedure and Data	25
6.3 RADIATED EMISSIONS (30MHZ-1GHZ)	27
6.3.1 E.U.T. Operation	27
6.3.2 Test Mode Description	27
6.3.3 Test Setup Diagram	28
6.3.4 Measurement Procedure and Data	28
6.4 RADIATED EMISSIONS (ABOVE 1GHZ).....	31
6.4.1 E.U.T. Operation	31
6.4.2 Test Mode Description	31
6.4.3 Test Setup Diagram	31
6.4.4 Measurement Procedure and Data	32
6.5 VOLTAGE FLUCTUATIONS AND FLICKER	35
6.5.1 E.U.T. Operation	35
6.5.2 Test Mode Description	35
6.5.3 Test Setup Diagram	35
6.5.4 Measurement Procedure and Data	35
6.6 HARMONIC CURRENT EMISSION.....	36
6.6.1 E.U.T. Operation	36
6.6.2 Test Mode Description	36
6.6.3 Test Setup Diagram	36



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6.6.4 Measurement Procedure and Data 36

7 IMMUNITY TEST RESULTS 39

7.1 ELECTROSTATIC DISCHARGE 40

7.1.1 Test Setup Diagram 40

7.1.2 E.U.T. Operation 40

7.1.3 Test Mode Description 40

7.1.4 Test Condition and Results: 41

7.2 RADIATED IMMUNITY(80MHZ-2.7GHZ) 42

7.2.1 Test Setup Diagram 42

7.2.2 E.U.T. Operation 42

7.2.3 Test Mode Description 42

7.2.4 Test Condition and Results: 42

7.3 ELECTRICAL FAST TRANSIENTS & BURST AT AC POWER PORT 43

7.3.1 Test Setup Diagram 43

7.3.2 E.U.T. Operation 43

7.3.3 Test Mode Description 43

7.3.4 Test Condition and Results: 43

7.4 SURGE AT AC POWER PORT 44

7.4.1 Test Setup Diagram 44

7.4.2 E.U.T. Operation 44

7.4.3 Test Mode Description 44

7.4.4 Test Condition and Results: 44

7.5 CONDUCTED IMMUNITY AT POWER PORT (150KHZ-100MHZ) 46

7.5.1 Test Setup Diagram 46

7.5.2 E.U.T. Operation 46

7.5.3 Test Mode Description 46

7.5.4 Test Condition and Results: 46

7.6 VOLTAGE DIPS AND INTERRUPTIONS 47

7.6.1 Test Setup Diagram 47

7.6.2 E.U.T. Operation 47

7.6.3 Test Mode Description 47

7.6.4 Test Condition and Results: 48

7.7 MAINS SUPPLY VOLTAGE VARIATIONS 49

7.7.1 Test Setup Diagram 49

7.7.2 E.U.T. Operation 49

7.7.3 Test Mode Description 49

7.7.4 Test Condition and Results: 49

7.8 ELECTRICAL FAST TRANSIENTS & BURST AT SIGNAL PORT 50

7.8.1 Test Setup Diagram 50

7.8.2 E.U.T. Operation 50

7.8.3 Test Mode Description 50

7.8.4 Test Condition and Results: 50

7.9 SURGE AT SIGNAL PORT 51

7.9.1 Test Setup Diagram 51

7.9.2 E.U.T. Operation 51

7.9.3 Test Mode Description 51

7.9.4 Test Condition and Results: 51

7.10 CONDUCTED IMMUNITY AT SIGNAL PORT (150KHZ-100MHZ) 52

7.10.1 Test Setup Diagram 52

7.10.2 E.U.T. Operation 52

7.10.3 Test Mode Description 52



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7.10.4	Test Condition and Results:	52
7.11	ELECTROSTATIC DISCHARGE	53
7.11.1	Test Setup Diagram	53
7.11.2	E.U.T. Operation	53
7.11.3	Test Mode Description	53
7.11.4	Test Condition and Results:	54
7.12	RADIATED IMMUNITY (80MHZ-1GHZ,1800MHZ,2600MHZ,3500MHZ,5000MHZ)	55
7.12.1	Test Setup Diagram	55
7.12.2	E.U.T. Operation	55
7.12.3	Test Mode Description	55
7.12.4	Test Condition and Results:	55
7.13	ELECTRICAL FAST TRANSIENTS & BURST AT AC POWER PORT	57
7.13.1	Test Setup Diagram	57
7.13.2	E.U.T. Operation	57
7.13.3	Test Mode Description	57
7.13.4	Test Condition and Results:	57
7.14	ELECTRICAL FAST TRANSIENTS & BURST AT SIGNAL PORT	58
7.14.1	Test Setup Diagram	58
7.14.2	E.U.T. Operation	58
7.14.3	Test Mode Description	58
7.14.4	Test Condition and Results:	58
7.15	SURGE AT AC POWER PORT	59
7.15.1	Test Setup Diagram	59
7.15.2	E.U.T. Operation	59
7.15.3	Test Mode Description	59
7.15.4	Test Condition and Results:	60
7.16	SURGE AT SIGNAL PORT	61
7.16.1	Test Setup Diagram	61
7.16.2	E.U.T. Operation	61
7.16.3	Test Mode Description	61
7.16.4	Test Condition and Results:	61
7.17	CONDUCTED IMMUNITY AT AC POWER PORT (150KHZ-80MHZ)	62
7.17.1	Test Setup Diagram	62
7.17.2	E.U.T. Operation	62
7.17.3	Test Mode Description	62
7.17.4	Test Condition and Results:	63
7.18	CONDUCTED IMMUNITY AT SIGNAL PORT (150KHZ-80MHZ)	64
7.18.1	Test Setup Diagram	64
7.18.2	E.U.T. Operation	64
7.18.3	Test Mode Description	64
7.18.4	Test Condition and Results:	65
7.19	POWER FREQUENCY MAGNETIC FIELD	66
7.19.1	Test Setup Diagram	66
7.19.2	E.U.T. Operation	66
7.19.3	Test Mode Description	66
7.19.4	Test Condition and Results:	66
7.20	VOLTAGE DIPS AND INTERRUPTIONS	67
7.20.1	Test Setup Diagram	67
7.20.2	E.U.T. Operation	67
7.20.3	Test Mode Description	67
7.20.4	Test Condition and Results:	68



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8	TEST SETUP PHOTO	69
9	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	82



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Compliance Certification Services (Kunshan) Inc.
EMC Laboratory

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC24V/2.5A powered by DC24V Adapter or AC24V/3A powered by AC24V Adapter or PoE (802.3at) DC24V Adapter:AD-0602400250NA Input:100-240V~ 50/60Hz 1.5A Output:DC24V/2.5A 60W AC24V Adapter :JT-3000 Input:230V~ 50Hz 1.5A Output:24V~3000mA POE Adater are Auxiliary equipment. Pre-test Voltage:AC 230V/50Hz&110V/60Hz Final-test Voltage:AC 230V/50Hz
---------------	--

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	EB24537645
Notebook	XIAOMI	Pro15	00342-35744-35614-AAOEM
PoE Adapter	SUPLET	LAS60-57CN-RJ45	/



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4.3 Measurement Uncertainty & Decision Rule

Measurement Uncertainty:

No.	Item	Measurement Uncertainty (U_{LAB}) *	U_{CISPR}
1	Conducted Emission at mains port using AMN	2.4dB (9kHz to 150kHz)	3.8dB (9kHz to 150kHz)
		2.2dB (150kHz to 30MHz)	3.4dB (150kHz to 30MHz)
2	Conducted Emission at telecommunication port using AAN	4.0 dB (150kHz to 30MHz)	5.0dB (150kHz to 30MHz)
3	Radiated Power	3.2dB	4.5dB (30MHz to 300MHz)
4	Radiated Emission (10m)	4.1 dB	6.3dB (30MHz-1GHz)
5	Radiated Emission (3m)	4.6 dB (30MHz-1GHz)	6.3dB (30MHz-1GHz)
		5.0dB (1GHz-6GHz)	5.2dB (1GHz-6GHz)
		5.2dB (6GHz-18GHz)	5.5dB (6GHz-18GHz)
		5.3dB (18GHz-40GHz)	N/A

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Decision Rule:

- CISPR 16-4-2 for emission measurements is as below described.
Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.
- U_{LAB} less than U_{CISPR} , therefore:
 - compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.
 - non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
- For immunity testing no decision rule is applicable.



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4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

- Note: 1.SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

4.5 Test Facility

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

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at Mains Power Port (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI TEST RECEIVER	R&S	ESCI	KS301101	01/22/2022	01/21/2023
TWO-LINE V-NETWORK	R&S	ENV216	KS301197	10/12/2021	10/11/2022
V (V-LISN)	SCHWARZBECK	NNLK 8129	KS301091	10/12/2021	10/11/2022
Pulse LIMITER	R&S	ESH3-Z2	KUS1902E001	01/22/2022	01/21/2023
Software	Faratronic	EZ_EMV-3A1	N/A	N/A	N/A

Asymmetric Mode Conducted Emissions(150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI TEST RECEIVER	R&S	ESCI	KS301101	01/22/2022	01/21/2023
TWO-LINE V-NETWORK	R&S	ENV216	KS301197	10/12/2021	10/11/2022
V (V-LISN)	SCHWARZBECK	NNLK 8129	KS301091	10/12/2021	10/11/2022
Pulse LIMITER	R&S	ESH3-Z2	KUS1902E001	01/22/2022	01/21/2023
CISPR22 FOUR BALANCED TELECOM PARIS ISN	FCC	FCC-TLISN-T2-02	KS301144	01/22/2022	01/21/2023
COUPLING AND DECOUPLING NETWORK	TESEQ	ISN ST08	KS301171	01/22/2022	01/21/2023
IMPEDANCE STABILIZATION NETWORK	TESEQ	ISN T800	KS301185	01/22/2022	01/21/2023
IMPEDANCE STABILIZATION NETWORK	TESEQ	ISN T8-CAT6	KS301285	01/22/2022	01/21/2023
RF CURRENT PROBE	FCC	F-65A	CZ301012	01/22/2022	01/21/2023
Software	Faratronic	EZ_EMV-3A1	N/A	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver	R&S	ESCI	KS301196	10/11/2021	10/10/2022
Antenna	TESEQ	CBL 6112D	KUS1806E006	03/05/2022	03/04/2024
Software	Faratronic	EZ_EMV 3A1	N/A	N/A	N/A



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Radiated Emissions (Above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Spectrum Analyzer	R&S	FSU26	KS301206	04/01/2022	03/31/2023
Preamplifier	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-2	01/22/2022	01/21/2023
Horn-antenna	SCHWARZBECK	BBHA9120D	KS301079	04/02/2022	04/01/2024
Software	Faratronic	EZ EMC-v 3A1	N/A	N/A	N/A

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date

Harmonic Current Emission					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Harmonic & Flicker Tester	SCHAFFNER	CCN 1000-1	KS301033	10/18/2021	10/17/2022
AC Power Source	SCHAFFNER	NSG 1007	KS301087	10/18/2021	10/17/2022
Software	TESEQ	CTS4-v 4.24.0	N/A	N/A	N/A
Harmonic/Flicker Analyzer	KIKUSUI	KHA3000	KUS2009M002-1	04/01/2022	03/31/2023
Line Impedance Network	KIKUSUI	SPEC71116	KUS2009M002-1	04/01/2022	03/31/2023
Switcher	KIKUSUI	SPEC71092	KUS2009M002-2	08/24/2021	08/23/2022
AC Power Supply(Master)	KIKUSUI	PCR24000WE 2	KUS2009M002-3	04/01/2022	03/31/2023
AC Power Supply(Slave)	KIKUSUI	PCR24000WE 2	AN002885	04/01/2022	03/31/2023
Software	KIKUSUI	HarmoCapture 3-vv 2.5.2.00	KUS2009M002-4	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
ESD Simulator	EM TEST	DITO 509030	KS301147	01/26/2022	01/25/2023

Radiated Immunity(80MHz-2.7GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Synthesized Signal Generator	AGILENT	83732B	KS301183	01/22/2022	01/21/2023
Laser probe interface	AR Worldwide	FI7000	KS301193-2	04/01/2022	03/31/2023
E-Field Sensor	AR Worldwide	FL7006 100K-6G	KS301193-1	04/01/2022	03/31/2023



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Amplifier Research (80~1000MHz 150w)	AR Worldwide	150W1000M1	KS301139	10/18/2021	10/17/2022
Amplifier Research (1~6GHz 50w)	AR Worldwide	50S1G6M1	KS301231	10/18/2021	10/17/2022
Dual Directional Coupler (1-11G)	AR Worldwide	C1-A47NFNF 35dB	KS301193-5	N.C.R	N.C.R
Dual Directional Coupler (80~1000MHz 400w)	AR Worldwide	DC6180	KS301193-6	N.C.R	N.C.R
RF POWER METER	BOONTON	4232A-01	KS301022	01/22/2022	01/21/2023
POWER SENSOR	BOONTON	51085	H3010235-1	01/22/2022	01/21/2023
POWER SENSOR	BOONTON	51085	H3010235-2	01/22/2022	01/21/2023
Antenna	AR Worldwide	TP1000A	CZ301029	N.C.R	N.C.R
Software	AR	emc ware-v 3.2.0.4	N/A	N/A	N/A

Electrical Fast Transients & Burst at AC Power Port					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	Transient2000	KS301188-1	12/19/2021	12/18/2022
Coupling Network	EMC PARTNER	CN-EFT1000	KS301188-3	12/19/2021	12/18/2022
Burst Generator	SANKI	EFT-0404S	KUS2009M002-7	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-4350	KUS2009M002-8	04/01/2022	03/31/2023

Surge at AC Power Port					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Coupling and Decoupling Network	EMC PARTNER	CDN-UTP8	KS301188-2	12/19/2021	12/18/2022
Surge Generator	SANKI	LSG-0506S	KUS2009M002-5	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-5350	KUS2009M002-6	04/01/2022	03/31/2023

Conducted Immunity at Power Port (150kHz-100MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ	NSG 4070B	KSZ201705E003	01/22/2022	01/21/2023
Amplifier	TESEQ	SCCXE75	KSZ201705E004	01/22/2022	01/21/2023



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EM-Koppelzange	SCHAFFNER	KEMZ 801	CZ301002	01/22/2022	01/21/2023
Attenuator	EURO MC	7860 ORGEVAL	CZ301084	04/01/2022	03/31/2023
Directional Coupler	HIGH POWER	C21A8	CZ750021	10/12/2021	10/11/2022
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M216	CZ301085	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M316	CZ301025	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	TESEQ	CDN S751	KS301184-2	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	TESEQ	CDN M116	KS301184-1	04/01/2022	03/31/2023
CDN	TESEQ	CDN T2-10S	KS301286	04/01/2022	03/31/2023
CDN	TESEQ	CDN T4-10S	KS301287	04/01/2022	03/31/2023
CDN	TESEQ	CDN T8-10S	KS301288	04/01/2022	03/31/2023
Current Clamp	TESEQ	IP-DR250	KS201703E00 1	04/01/2022	03/31/2023
CDN	TESEQ	CDN M432	KUS2003M001 -1	01/22/2022	01/21/2023
CDN	TESEQ	CDN M432- 3LN	KUS2003M001 -2	01/22/2022	01/21/2023
CDN	TESEQ	CDN M532	KUS2003M001 -3	01/26/2022	01/25/2023
CDN	TESEQ	CDN M232	KSZ201706E0 01	04/01/2022	03/31/2023
CDN	TESEQ	CDN M332	KSZ201706E0 02	04/01/2022	03/31/2023
Software	TESEQ	NSG 4070-v 1.3.0.1	N/A	N/A	N/A

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Switcher	KIKUSUI	SPEC71092	KUS2009M002 -2	08/24/2021	08/23/2022
AC Power Supply(Master)	KIKUSUI	PCR24000WE 2	KUS2009M002 -3	04/01/2022	03/31/2023
AC Power Supply(Slave)	KIKUSUI	PCR24000WE 2	KUS2009M002 -4	08/24/2021	08/23/2022
Software	KIKUSUI	Quick Immunity Sequencer 2-v 4.0.3.02	N/A	N/A	N/A



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Mains Supply Voltage Variations					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Switcher	KIKUSUI	SPEC71092	KUS2009M002-2	08/24/2021	08/23/2022
AC Power Supply(Master)	KIKUSUI	PCR24000WE2	KUS2009M002-3	04/01/2022	03/31/2023
AC Power Supply(Slave)	KIKUSUI	PCR24000WE2	KUS2009M002-4	08/24/2021	08/23/2022
Software	KIKUSUI	Quick Immunity Sequencer 2-v 4.0.3.02	N/A	N/A	N/A

Electrical Fast Transients & Burst at Signal Port					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	Transient2000	KS301188-1	12/19/2021	12/18/2022
Coupling Network	EMC PARTNER	CN-EFT1000	KS301188-3	12/19/2021	12/18/2022
Burst Generator	SANKI	EFT-0404S	KUS2009M002-7	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-4350	KUS2009M002-8	04/01/2022	03/31/2023

Surge at Signal Port					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Coupling and Decoupling Network	EMC PARTNER	CDN-UTP8	KS301188-2	12/19/2021	12/18/2022
Surge Generator	SANKI	LSG-0506S	KUS2009M002-5	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-5350	KUS2009M002-6	04/01/2022	03/31/2023

Conducted Immunity at Signal Port (150kHz-100MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ	NSG 4070B	KSZ201705E003	01/22/2022	01/21/2023
Amplifier	TESEQ	SCCXE75	KSZ201705E004	01/22/2022	01/21/2023



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EM-Koppelzange	SCHAFFNER	KEMZ 801	CZ301002	01/22/2022	01/21/2023
Attenuator	EURO MC	7860 ORGEVAL	CZ301084	04/01/2022	03/31/2023
Directional Coupler	HIGH POWER	C21A8	CZ750021	10/12/2021	10/11/2022
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M216	CZ301085	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M316	CZ301025	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	TESEQ	CDN S751	KS301184-2	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	TESEQ	CDN M116	KS301184-1	04/01/2022	03/31/2023
CDN	TESEQ	CDN T2-10S	KS301286	04/01/2022	03/31/2023
CDN	TESEQ	CDN T4-10S	KS301287	04/01/2022	03/31/2023
CDN	TESEQ	CDN T8-10S	KS301288	04/01/2022	03/31/2023
Current Clamp	TESEQ	IP-DR250	KS201703E00 1	04/01/2022	03/31/2023
CDN	TESEQ	CDN M432	KUS2003M001 -1	01/22/2022	01/21/2023
CDN	TESEQ	CDN M432- 3LN	KUS2003M001 -2	01/22/2022	01/21/2023
CDN	TESEQ	CDN M532	KUS2003M001 -3	01/26/2022	01/25/2023
CDN	TESEQ	CDN M232	KSZ201706E0 01	04/01/2022	03/31/2023
CDN	TESEQ	CDN M332	KSZ201706E0 02	04/01/2022	03/31/2023
Software	TESEQ	NSG 4070-v 1.3.0.1	N/A	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
ESD Simulator	EM TEST	DITO 509030	KS301147	01/26/2022	01/25/2023

Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Synthesized Signal Generator	AGILENT	83732B	KS301183	01/22/2022	01/21/2023
Laser probe interface	AR Worldwide	FI7000	KS301193-2	04/01/2022	03/31/2023
E-Field Sensor	AR Worldwide	FL7006 100K- 6G	KS301193-1	04/01/2022	03/31/2023
Amplifier Research (80~1000MHz 150w)	AR Worldwide	150W1000M1	KS301139	10/18/2021	10/17/2022
Amplifier Research	AR Worldwide	50S1G6M1	KS301231	10/18/2021	10/17/2022



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(1~6GHz 50w)					
Dual Directional Coupler (1-11G)	AR Worldwide	C1-A47NFNF 35dB	KS301193-5	N.C.R	N.C.R
Dual Directional Coupler (80~1000MHz 400w)	AR Worldwide	DC6180	KS301193-6	N.C.R	N.C.R
RF POWER METER	BOONTON	4232A-01	KS301022	01/22/2022	01/21/2023
POWER SENSOR	BOONTON	51085	H3010235-1	01/22/2022	01/21/2023
POWER SENSOR	BOONTON	51085	H3010235-2	01/22/2022	01/21/2023
Antenna	AR Worldwide	TP1000A	CZ301029	N.C.R	N.C.R
Software	AR	emc ware-v 3.2.0.4	N/A	N/A	N/A

Electrical Fast Transients & Burst at AC Power Port

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	Transient2000	KS301188-1	12/19/2021	12/18/2022
Burst Generator	SANKI	EFT-0404S	KUS2009M002-7	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-4350	KUS2009M002-8	04/01/2022	03/31/2023

Electrical Fast Transients & Burst at Signal Port

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	Transient2000	KS301188-1	12/19/2021	12/18/2022
Coupling Network	EMC PARTNER	CN-EFT1000	KS301188-3	12/19/2021	12/18/2022
Burst Generator	SANKI	EFT-0404S	KUS2009M002-7	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-4350	KUS2009M002-8	04/01/2022	03/31/2023

Surge at AC Power Port

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Surge Generator	SANKI	LSG-0506S	KUS2009M002-5	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-5350	KUS2009M002-6	04/01/2022	03/31/2023

Surge at Signal Port

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022



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Coupling and Decoupling Network	EMC PARTNER	CDN-UTP8	KS301188-2	12/19/2021	12/18/2022
Surge Generator	SANKI	LSG-0506S	KUS2009M002-5	04/01/2022	03/31/2023
Coupling and Decoupling Network	SANKI	CDN-5350	KUS2009M002-6	04/01/2022	03/31/2023

Conducted Immunity at AC Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ	NSG 4070B	KSZ201705E003	01/22/2022	01/21/2023
Amplifier	TESEQ	SCCXE75	KSZ201705E004	01/22/2022	01/21/2023
EM-Koppelzange	SCHAFFNER	KEMZ 801	CZ301002	01/22/2022	01/21/2023
Attenuator	EURO MC	7860 ORGEVAL	CZ301084	04/01/2022	03/31/2023
Directional Coupler	HIGH POWER	C21A8	CZ750021	10/12/2021	10/11/2022
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M216	CZ301085	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	SCHAFFNER	CDN M316	CZ301025	04/01/2022	03/31/2023
CDN (Coupling and Decoupling Network)	TESEQ	CDN M116	KS301184-1	04/01/2022	03/31/2023
CDN	TESEQ	CDN M432	KUS2003M001-1	01/22/2022	01/21/2023
CDN	TESEQ	CDN M432-3LN	KUS2003M001-2	01/22/2022	01/21/2023
CDN	TESEQ	CDN M532	KUS2003M001-3	01/26/2022	01/25/2023
CDN	TESEQ	CDN M232	KSZ201706E001	04/01/2022	03/31/2023
CDN	TESEQ	CDN M332	KSZ201706E002	04/01/2022	03/31/2023
Software	TESEQ	NSG 4070-v 1.3.0.1	N/A	N/A	N/A

Conducted Immunity at Signal Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ	NSG 4070B	KSZ201705E003	01/22/2022	01/21/2023
Amplifier	TESEQ	SCCXE75	KSZ201705E0	01/22/2022	01/21/2023



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			04		
EM-Koppelzange	SCHAFFNER	KEMZ 801	CZ301002	01/22/2022	01/21/2023
Attenuator	EURO MC	7860 ORGEVAL	CZ301084	04/01/2022	03/31/2023
Directional Coupler	HIGH POWER	C21A8	CZ750021	10/12/2021	10/11/2022
CDN	TESEQ	CDN T2-10S	KS301286	04/01/2022	03/31/2023
CDN	TESEQ	CDN T4-10S	KS301287	04/01/2022	03/31/2023
CDN	TESEQ	CDN T8-10S	KS301288	04/01/2022	03/31/2023
Current Clamp	TESEQ	IP-DR250	KS201703E00 1	04/01/2022	03/31/2023
Software	TESEQ	NSG 4070-v 1.3.0.1	N/A	N/A	N/A

Power Frequency Magnetic Field					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Inductive Standard Coil	EMC PARTNER	MF1000-1	KS301188-4	12/19/2021	12/18/2022

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMC Immunity Tester	EMC PARTNER	TRA2006	KS301188-1	12/19/2021	12/18/2022
Switcher	KIKUSUI	SPEC71092	KUS2009M002 -2	08/24/2021	08/23/2022
AC Power Supply(Master)	KIKUSUI	PCR24000WE 2	KUS2009M002 -3	04/01/2022	03/31/2023
AC Power Supply(Slave)	KIKUSUI	PCR24000WE 2	KUS2009M002 -4	08/24/2021	08/23/2022
Software	KIKUSUI	Quick Immunity Sequencer 2-v 4.0.3.02	N/A	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital Pressure Meter	Mengde	DYM3	CZ750023	02/01/2022	01/31/2023
Temperature & Humidity Recorder	Anymetre	TH603	CZ720001-1 CZ720001-2 CZ720001-3 CZ720001-4 CZ720001-5 CZ720001-6 CZ720001-7	10/14/2021	10/13/2022



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6 Emission Test Results

6.1 Conducted Emissions at Mains Power Port (150kHz-30MHz)

Test Requirement: EN 55032: 2015+A1:2020

Test Method: EN 55032: 2015+A1:2020

Limit:

0.15MHz-0.5MHz 79dB(μV) quasi-peak, 66dB(μV) average

0.5MHz-30MHz 73dB(μV) quasi-peak, 60dB(μV) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 19.4 °C

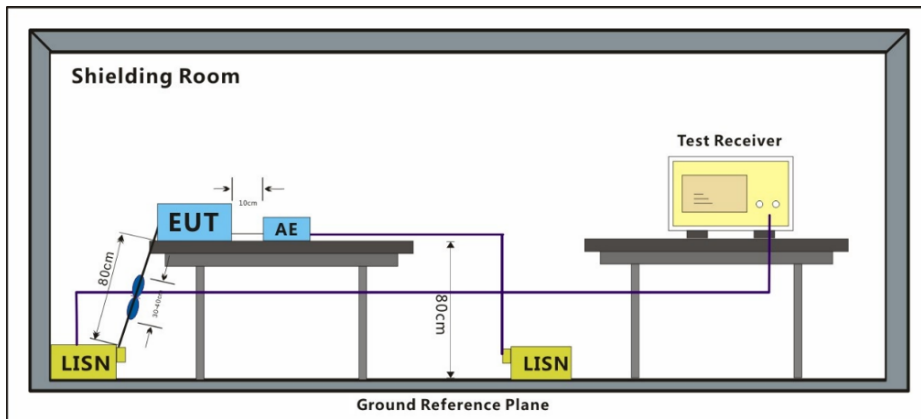
Humidity: 56.3 % RH

Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Remark: Level= Read Level+ Cable Loss+ LISN Factor

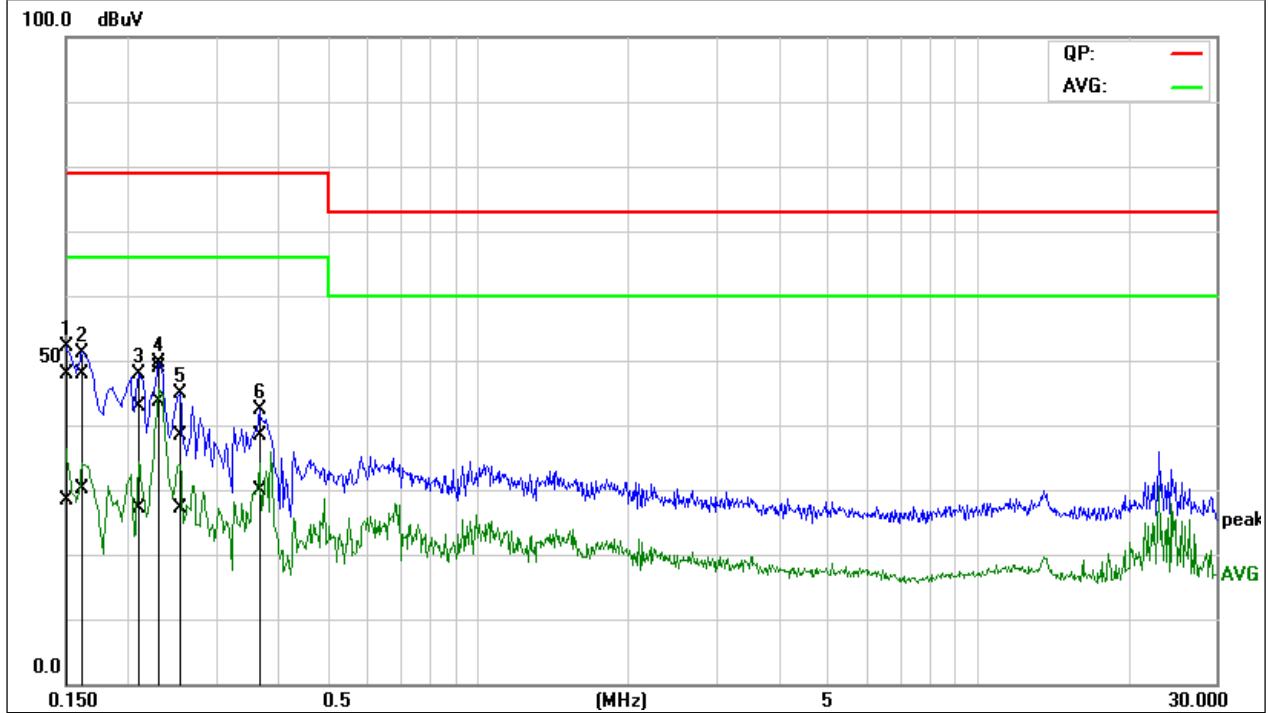


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Test Mode: 00; Line: Live line



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1507	28.44	8.83	19.50	47.94	28.33	79.00	66.00	-31.06	-37.67	Pass
2	0.1631	28.36	10.67	19.50	47.86	30.17	79.00	66.00	-31.14	-35.83	Pass
3	0.2104	23.37	7.64	19.50	42.87	27.14	79.00	66.00	-36.13	-38.86	Pass
4*	0.2317	29.36	24.15	19.50	48.86	43.65	79.00	66.00	-30.14	-22.35	Pass
5	0.2559	18.90	7.59	19.51	38.41	27.10	79.00	66.00	-40.59	-38.90	Pass
6	0.3643	18.80	10.25	19.53	38.33	29.78	79.00	66.00	-40.67	-36.22	Pass

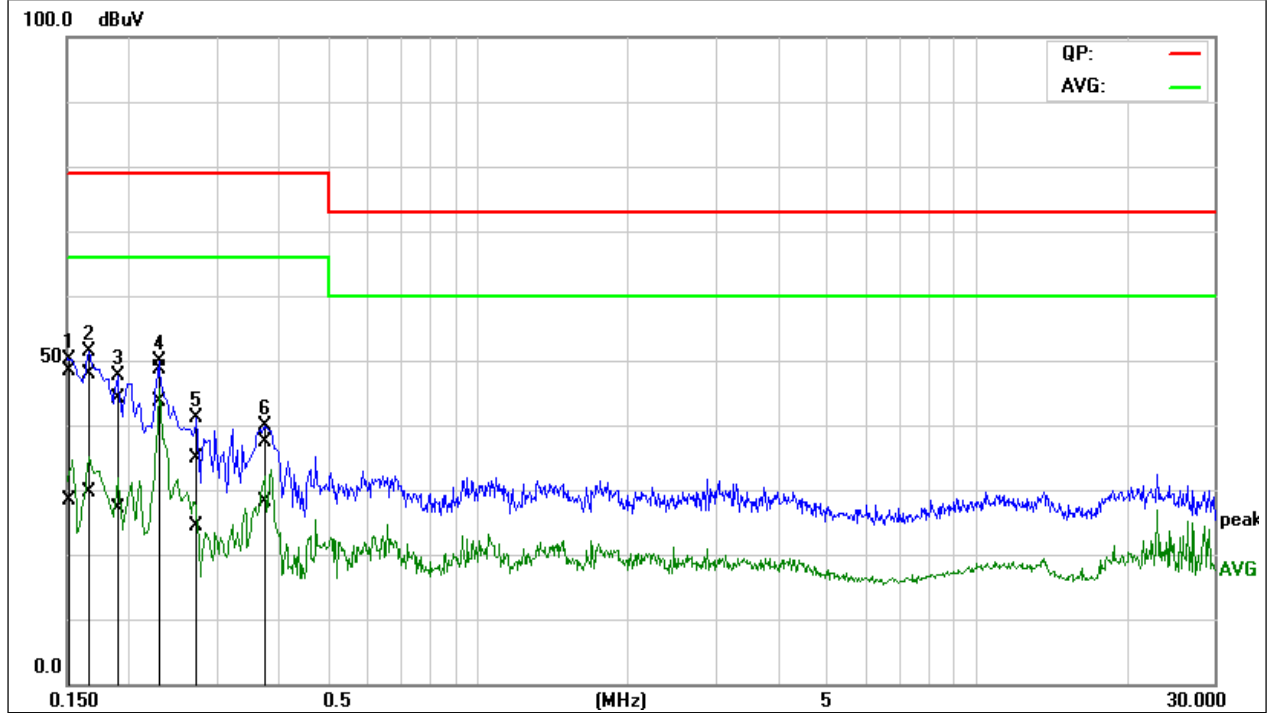


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Test Mode: 00; Line: Neutral Line



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1526	28.85	8.82	19.48	48.33	28.30	79.00	66.00	-30.67	-37.70	Pass
2	0.1632	28.45	10.21	19.48	47.93	29.69	79.00	66.00	-31.07	-36.31	Pass
3	0.1904	24.74	7.67	19.49	44.23	27.16	79.00	66.00	-34.77	-38.84	Pass
4*	0.2309	29.22	24.20	19.49	48.71	43.69	79.00	66.00	-30.29	-22.31	Pass
5	0.2716	15.37	4.88	19.50	34.87	24.38	79.00	66.00	-44.13	-41.62	Pass
6	0.3746	17.92	8.70	19.52	37.44	28.22	79.00	66.00	-41.56	-37.78	Pass



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6.2 Asymmetric Mode Conducted Emissions(150kHz-30MHz)

Test Requirement: EN 55032: 2015+A1:2020

Test Method: EN 55032: 2015+A1:2020

Limit:

0.15MHz – 0.5MHz 97dB(μV)-87dB(μV) quasi-peak, 84(μV)-74dB(μV) average

0.5MHz – 30MHz 87dB(μV) quasi-peak, 74dB(μV) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 19.4 °C

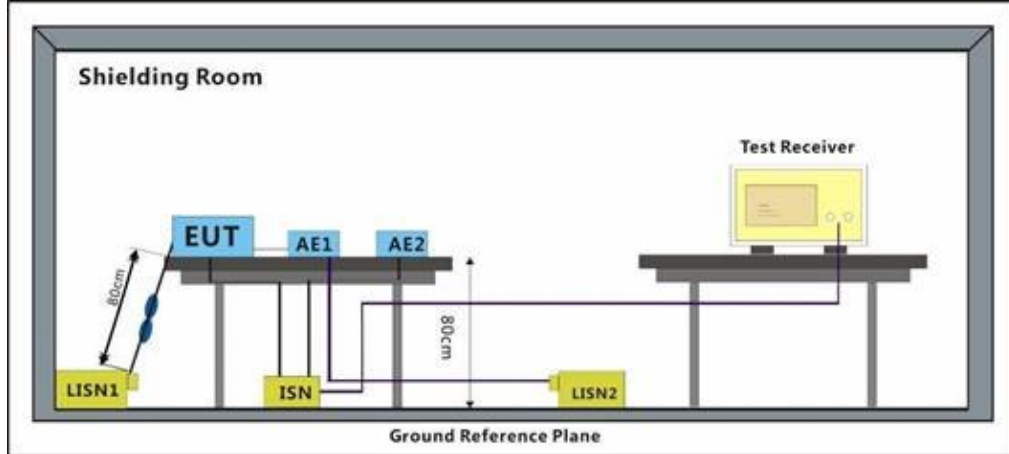
Humidity: 55.2 % RH

Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Remark: Level= Read Level+ Cable Loss+ LISN Factor

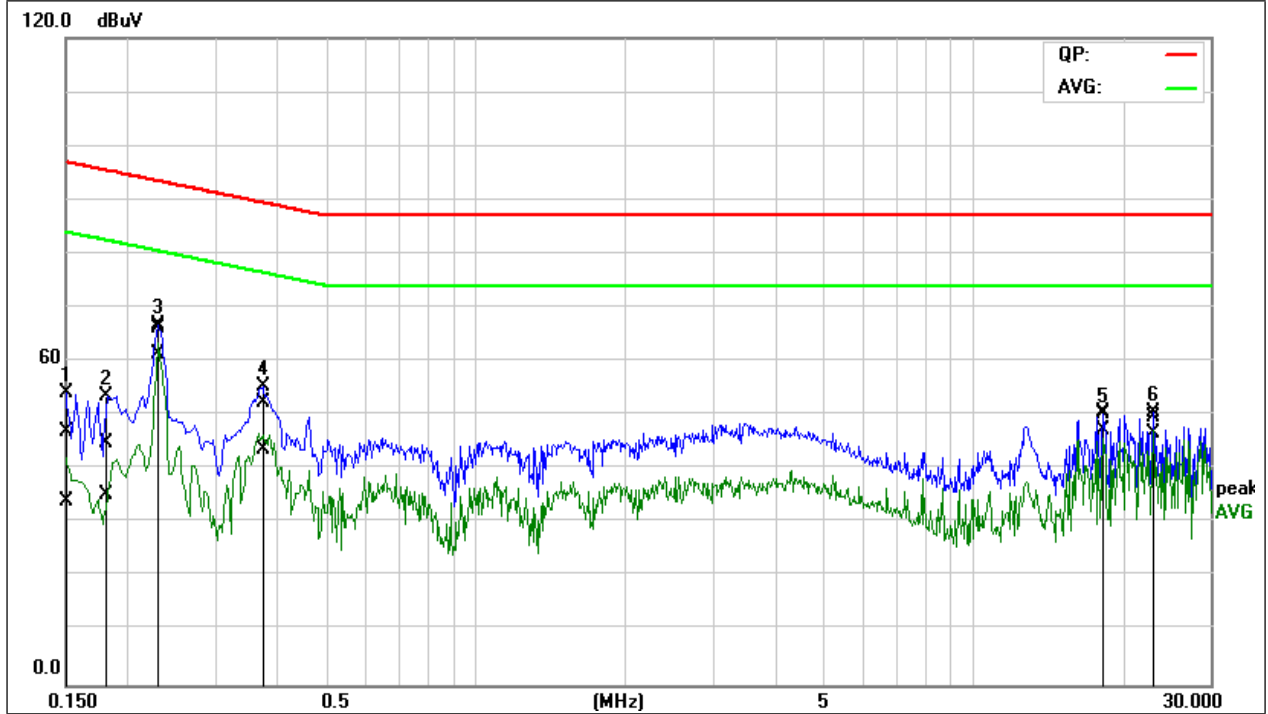


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Test Mode:00



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1500	27.07	14.05	19.87	46.94	33.92	97.00	84.00	-50.06	-50.08	Pass
2	0.1811	25.07	15.39	19.81	44.88	35.20	95.44	82.44	-50.56	-47.24	Pass
3*	0.2298	46.56	41.77	19.73	66.29	61.50	93.46	80.46	-27.17	-18.96	Pass
4	0.3757	32.90	24.12	19.59	52.49	43.71	89.37	76.37	-36.88	-32.66	Pass
5	18.2435	30.62	27.40	19.91	50.53	47.31	87.00	74.00	-36.47	-26.69	Pass
6	23.1265	29.72	26.90	19.88	49.60	46.78	87.00	74.00	-37.40	-27.22	Pass



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6.3 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 55032: 2015+A1:2020

Test Method: EN 55032: 2015+A1:2020

Limit:

Test Distance: 3m
 30MHz-230MHz: 50 dB(μV/m) quasi-peak
 230MHz-1GHz: 57 dB(μV/m) quasi-peak
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

Test Distance: 10m
 30MHz-230MHz: 40 dB(μV/m) quasi-peak
 230MHz-1GHz: 47 dB(μV/m) quasi-peak
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz
 Highest internal frequency (Fx): $F_x \leq 108\text{MHz}$
 Highest measured frequency: 1GHz

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.7 °C Humidity: 60.0 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

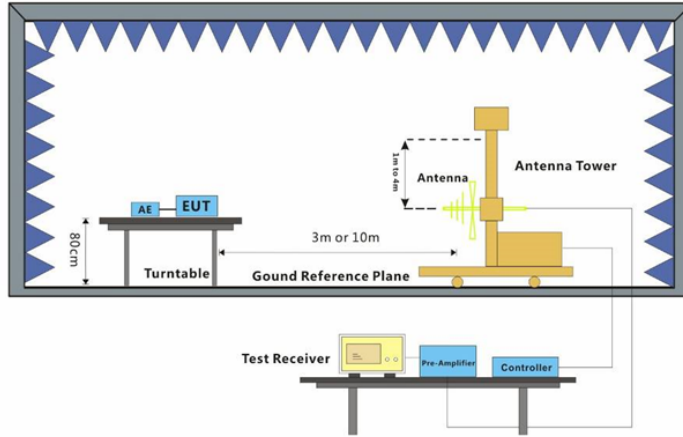


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6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

Frequency range: 30MHz-1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

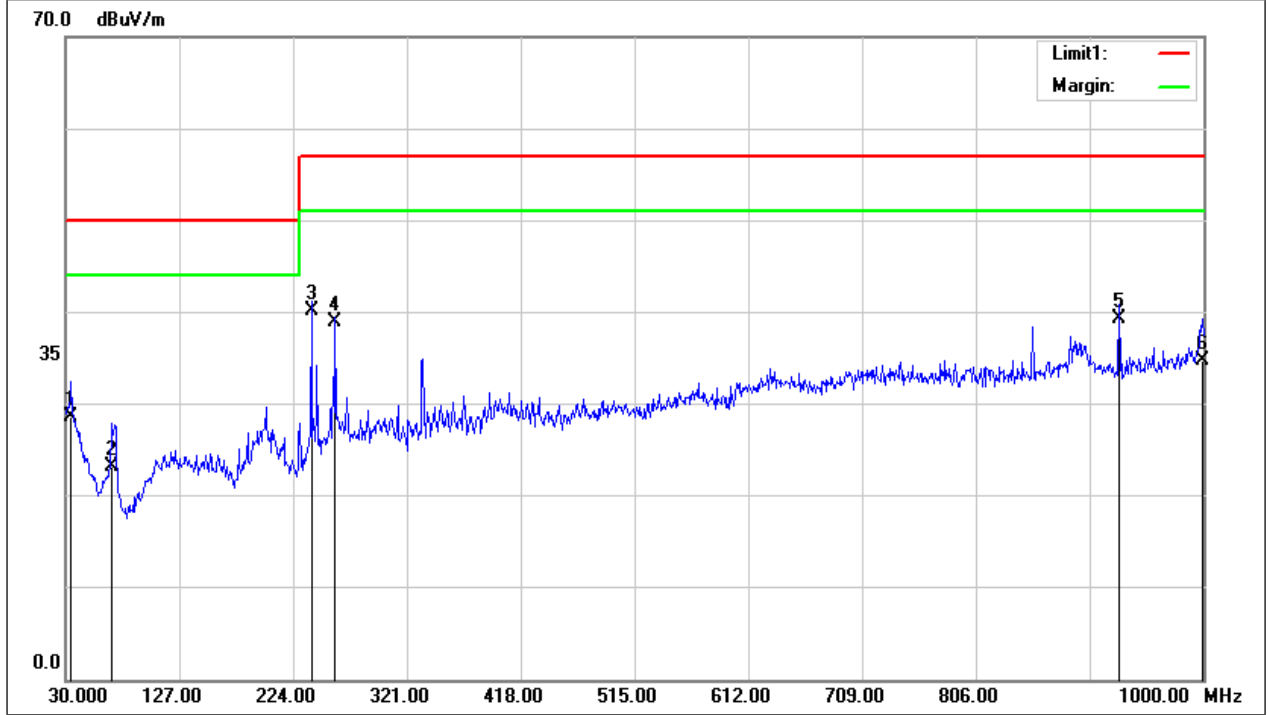


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Test Mode: 00; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	34.8500	3.89	24.67	28.56	50.00	-21.44	200	4	QP
2	69.7700	7.49	15.66	23.15	50.00	-26.85	200	0	QP
3	239.5200	21.57	18.66	40.23	57.00	-16.77	100	29	QP
4	259.8900	18.04	20.90	38.94	57.00	-18.06	100	1	QP
5	928.2200	10.30	28.96	39.26	57.00	-17.74	100	216	QP
6	999.0300	4.73	29.98	34.71	57.00	-22.29	100	230	QP

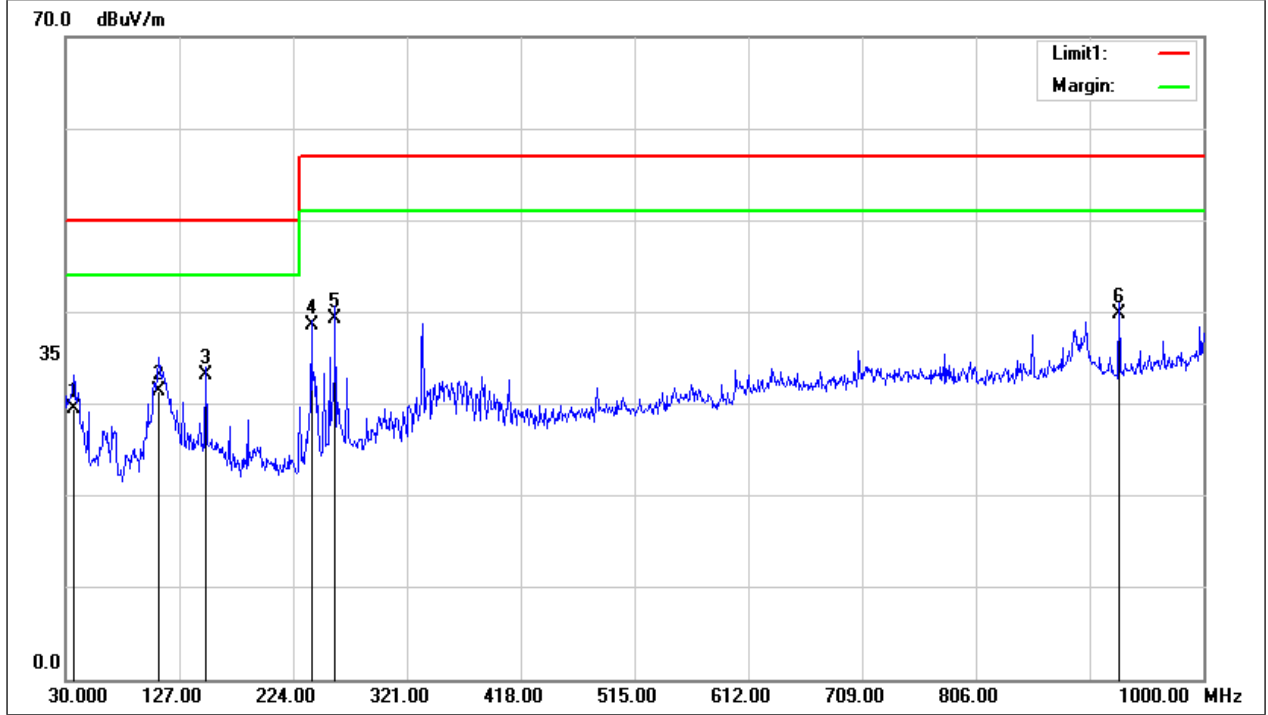


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Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	36.7900	5.83	23.69	29.52	50.00	-20.48	147	360	QP
2	109.5400	13.05	18.42	31.47	50.00	-18.53	100	49	QP
3	149.3100	15.39	17.86	33.25	50.00	-16.75	100	317	QP
4	239.5200	19.98	18.66	38.64	57.00	-18.36	100	182	QP
5	259.8900	18.43	20.90	39.33	57.00	-17.67	100	276	QP
6	928.2200	10.86	28.96	39.82	57.00	-17.18	100	5	QP



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6.4 Radiated Emissions (Above 1GHz)

Test Requirement: EN 55032: 2015+A1:2020

Test Method: EN 55032: 2015+A1:2020

Limit:

1000MHz-6000MHz: 80 dB(μV/m) peak; 60 dB(μV/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 6000MHz

Highest internal frequency (Fx): Highest measured frequency:

Fx ≤ 108MHz 1GHz

108MHz < Fx ≤ 500MHz 2GHz

500MHz < Fx ≤ 1GHz 5GHz

Fx > 1GHz 5 × Fx up to a maximum of 6GHz

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 26.2 °C

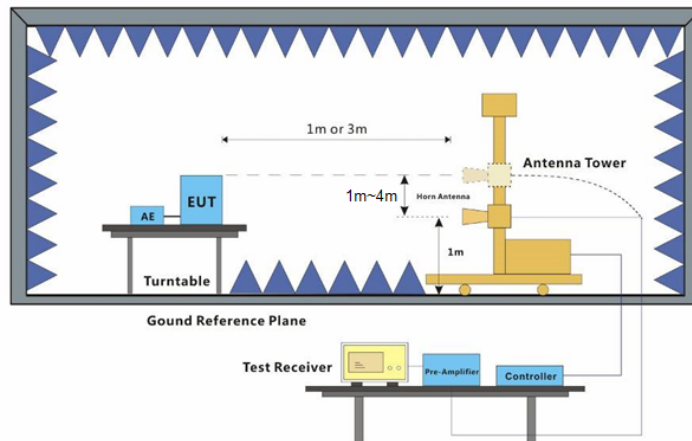
Humidity: 41.6 % RH

Atmospheric Pressure: 1010 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

6.4.3 Test Setup Diagram



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6.4.4 Measurement Procedure and Data

Frequency range: Above 1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



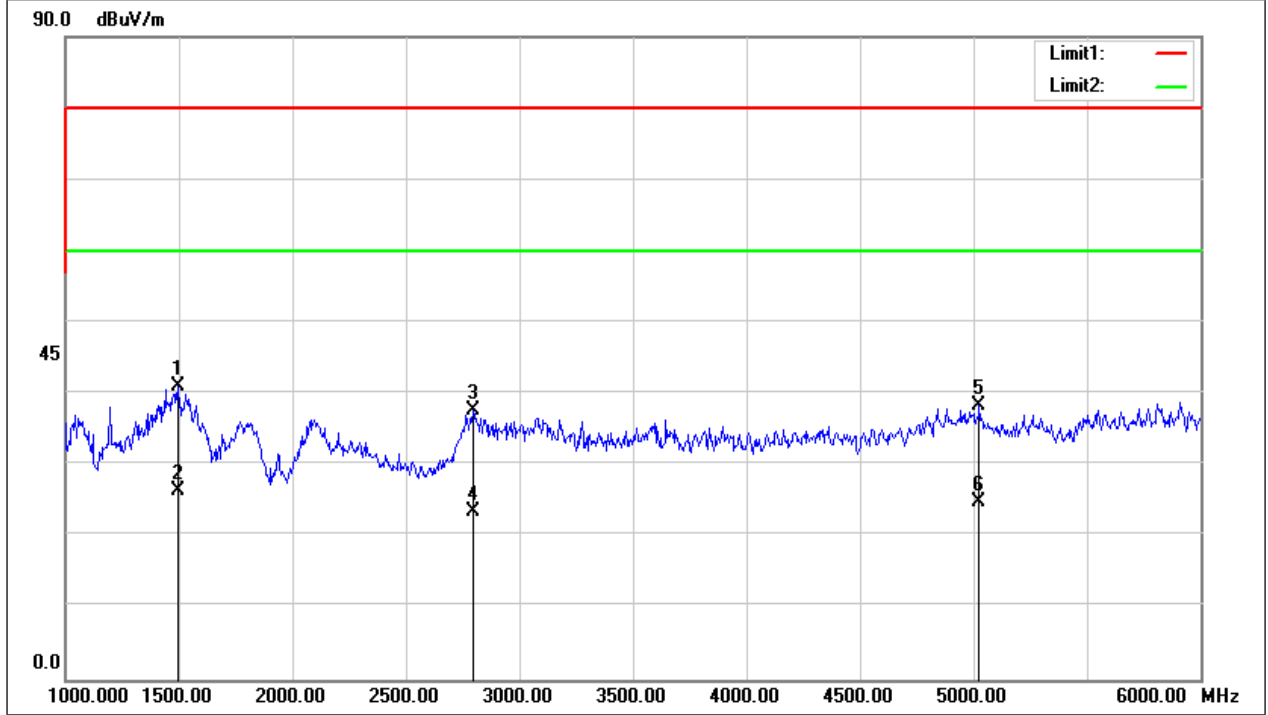
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Test Mode: 00; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1495.000	62.47	-21.45	41.02	80.00	-38.98	100	158	peak
2	1495.000	47.97	-21.45	26.52	60.00	-33.48	100	158	AVG
3	2795.000	55.69	-17.95	37.74	80.00	-42.26	100	206	peak
4	2795.000	41.47	-17.95	23.52	60.00	-36.48	100	206	AVG
5	5025.000	50.64	-12.17	38.47	80.00	-41.53	100	221	peak
6	5025.000	37.12	-12.17	24.95	60.00	-35.05	100	221	AVG

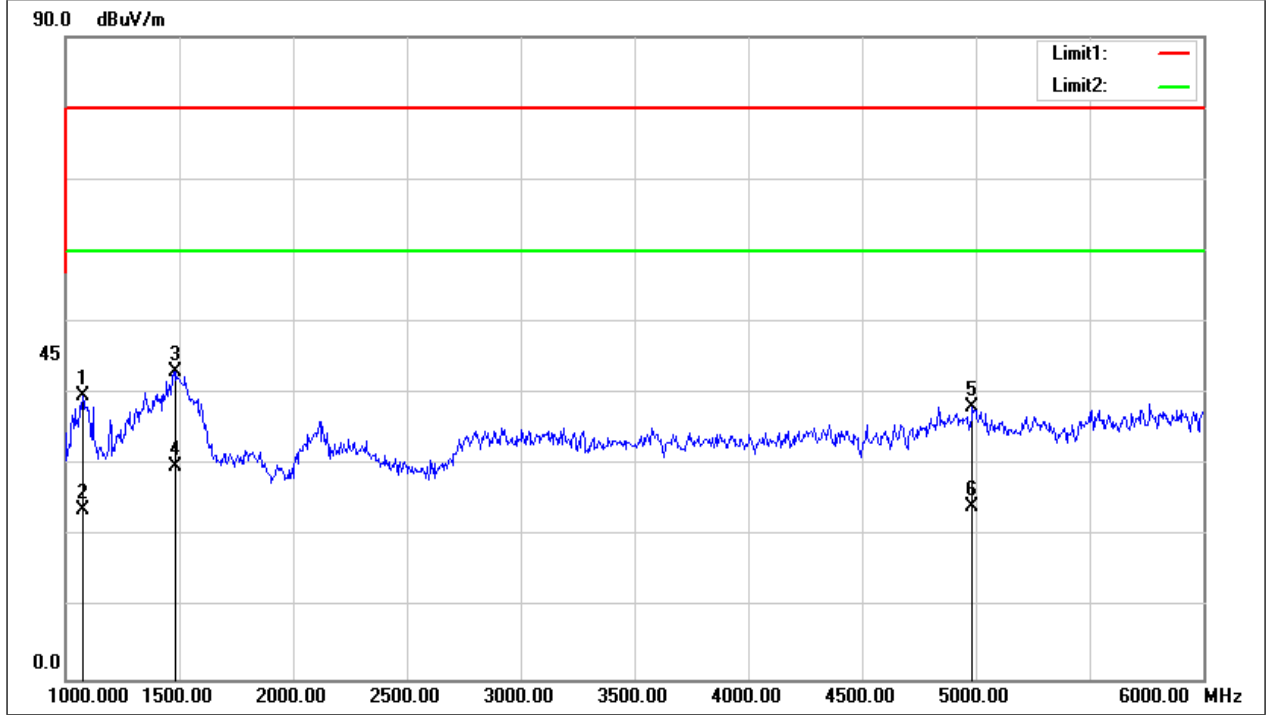


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Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1075.000	63.19	-23.54	39.65	80.00	-40.35	100	29	peak
2	1075.000	47.20	-23.54	23.66	60.00	-36.34	100	29	AVG
3	1485.000	64.45	-21.41	43.04	80.00	-36.96	100	23	peak
4	1485.000	51.26	-21.41	29.85	60.00	-30.15	100	23	AVG
5	4985.000	50.51	-12.31	38.20	80.00	-41.80	100	360	peak
6	4985.000	36.46	-12.31	24.15	60.00	-35.85	100	360	AVG



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6.5 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3: 2013+A1:2019+A2:2021

Test Method: EN 61000-3-3: 2013+A1:2019+A2:2021

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 19.4 °C

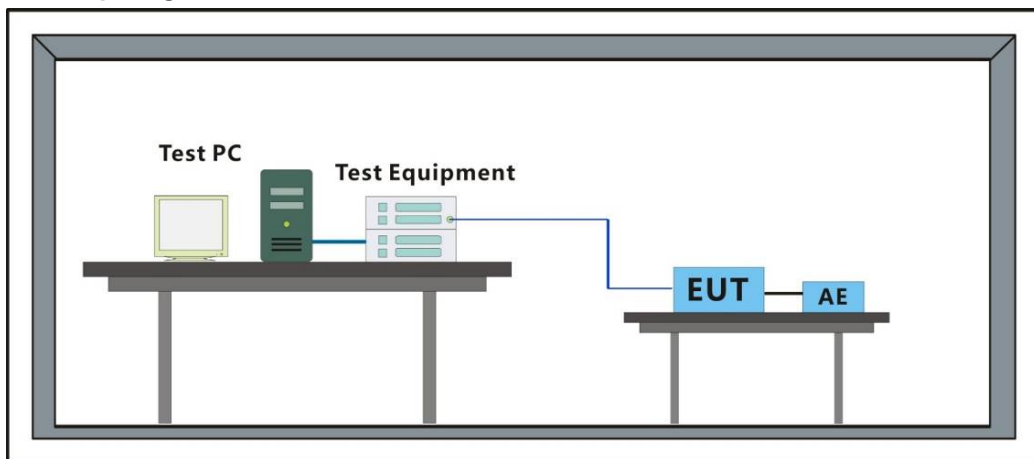
Humidity: 53.6 % RH

Atmospheric Pressure: 1010 mbar

6.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

6.5.3 Test Setup Diagram



6.5.4 Measurement Procedure and Data

Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.21		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.04	Test limit (%):	4.00
Highest Pst (10 min. period):	0.247	Test limit:	1.000
Highest Plt (2 hr. period):	0.108	Test limit:	0.650



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6.6 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2: 2019+A1:2021

Test Method: EN IEC 61000-3-2: 2019+A1:2021

6.6.1 E.U.T. Operation

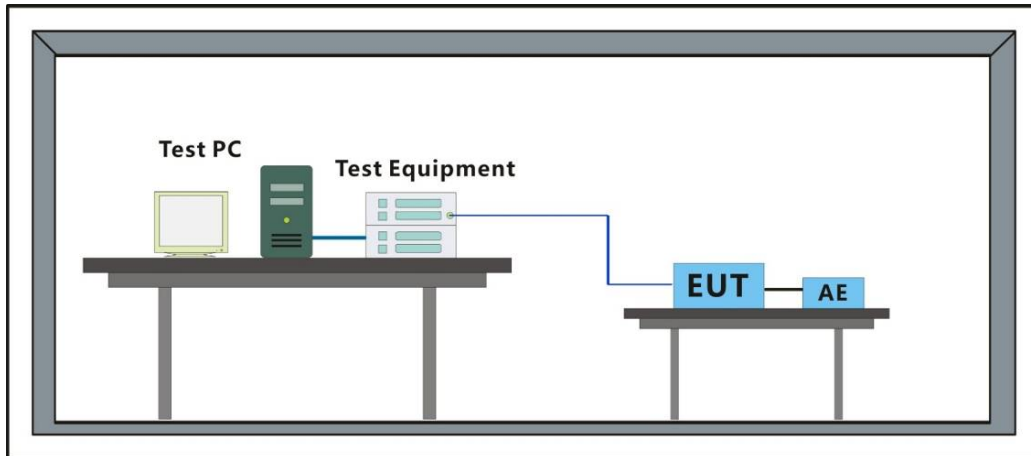
Operating Environment:

Temperature: 19.4 °C Humidity: 56.3 % RH Atmospheric Pressure: 1010 mbar

6.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

6.6.3 Test Setup Diagram



6.6.4 Measurement Procedure and Data

Frequency Range: 100Hz to 2kHz



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Highest parameter values during test:

V_RMS (Volts):	230.24	Frequency(Hz):	50.00
I_Peak (Amps):	1.093	I_RMS (Amps):	0.146
I_Fund (Amps):	0.051	Crest Factor:	7.578
Power (Watts):	10.2	Power Factor:	0.313

Harm#	Harms(avg)	100%Limit	%of Limit	LimitHarms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	N/A	0.008	1.620	N/A	Pass
3	0.043	2.300	1.9	0.044	3.450	1.3	Pass
4	0.005	0.430	1.3	0.009	0.645	1.4	Pass
5	0.042	1.140	3.7	0.042	1.710	2.5	Pass
6	0.005	0.300	1.8	0.009	0.450	1.9	Pass
7	0.041	0.770	5.3	0.042	1.155	3.6	Pass
8	0.005	0.230	2.3	0.008	0.345	2.4	Pass
9	0.040	0.400	10.00	0.040	0.600	6.7	Pass
10	0.005	0.184	2.8	0.008	0.276	3.0	Pass
11	0.039	0.330	11.70	0.039	0.495	7.8	Pass
12	0.005	0.153	3.3	0.008	0.230	3.5	Pass
13	0.037	0.210	17.70	0.037	0.315	11.8	Pass
14	0.005	0.131	N/A	0.008	0.197	N/A	Pass
15	0.035	0.150	23.60	0.036	0.225	15.8	Pass
16	0.005	0.115	N/A	0.008	0.173	N/A	Pass
17	0.033	0.132	25.40	0.034	0.198	17.0	Pass
18	0.005	0.102	N/A	0.007	0.153	N/A	Pass
19	0.031	0.118	26.60	0.032	0.178	17.8	Pass
20	0.005	0.092	N/A	0.007	0.138	N/A	Pass
21	0.029	0.107	27.40	0.029	0.161	18.3	Pass
22	0.004	0.084	N/A	0.007	0.125	N/A	Pass
23	0.027	0.098	27.70	0.027	0.147	18.6	Pass
24	0.004	0.077	N/A	0.006	0.115	N/A	Pass
25	0.025	0.090	27.60	0.025	0.135	18.5	Pass
26	0.004	0.071	N/A	0.006	0.107	N/A	Pass
27	0.023	0.083	27.00	0.023	0.125	18.2	Pass
28	0.004	0.066	N/A	0.006	0.099	N/A	Pass
29	0.020	0.078	26.10	0.020	0.116	17.6	Pass
30	0.003	0.061	N/A	0.005	0.092	N/A	Pass
31	0.018	0.073	24.80	0.018	0.109	16.7	Pass
32	0.003	0.058	N/A	0.005	0.086	N/A	Pass
33	0.016	0.068	23.10	0.016	0.102	15.7	Pass
34	0.003	0.054	N/A	0.004	0.081	N/A	Pass
35	0.014	0.064	21.30	0.014	0.096	14.4	Pass
36	0.002	0.051	N/A	0.004	0.077	N/A	Pass
37	0.012	0.061	19.20	0.012	0.091	13.0	Pass
38	0.002	0.048	N/A	0.003	0.073	N/A	Pass
39	0.010	0.058	17.00	0.010	0.087	11.5	Pass
40	0.002	0.046	N/A	0.003	0.069	N/A	Pass



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Harm#	Harmonics	V-rmsLimit	V-rms% of Limit	Status
2	0.154	0.460	33.49	OK
3	0.450	2.072	21.70	OK
4	0.077	0.460	16.69	OK
5	0.030	0.921	3.26	OK
6	0.088	0.460	19.07	OK
7	0.058	0.691	8.33	OK
8	0.042	0.460	9.22	OK
9	0.016	0.460	3.51	OK
10	0.027	0.460	5.82	OK
11	0.029	0.230	12.53	OK
12	0.018	0.230	7.98	OK
13	0.033	0.230	14.30	OK
14	0.013	0.230	5.48	OK
15	0.030	0.230	13.11	OK
16	0.016	0.230	6.77	OK
17	0.031	0.230	13.42	OK
18	0.015	0.230	6.62	OK
19	0.029	0.230	12.66	OK
20	0.012	0.230	5.37	OK
21	0.033	0.230	14.16	OK
22	0.008	0.230	3.31	OK
23	0.032	0.230	13.91	OK
24	0.010	0.230	4.31	OK
25	0.030	0.230	13.24	OK
26	0.010	0.230	4.30	OK
27	0.028	0.230	12.27	OK
28	0.010	0.230	4.43	OK
29	0.026	0.230	11.35	OK
30	0.009	0.230	4.00	OK
31	0.025	0.230	10.92	OK
32	0.008	0.230	3.36	OK
33	0.025	0.230	10.74	OK
34	0.007	0.230	3.14	OK
35	0.023	0.230	9.77	OK
36	0.007	0.230	3.01	OK
37	0.018	0.230	7.92	OK
38	0.006	0.230	2.43	OK
39	0.017	0.230	7.33	OK
40	0.007	0.230	3.06	OK



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7 Immunity Test Results

Performance Criteria Description in EN 50130-4:2011 +A1:2014

There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

For further details, please refer to Clause 7.4, 8.4, 9.4, 10.4, 11.4, 12.4 and 13.4, of EN 50130-4.

General Performance Criteria Description in EN 55035: 2017+A11:2020

- 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, no unintended 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.



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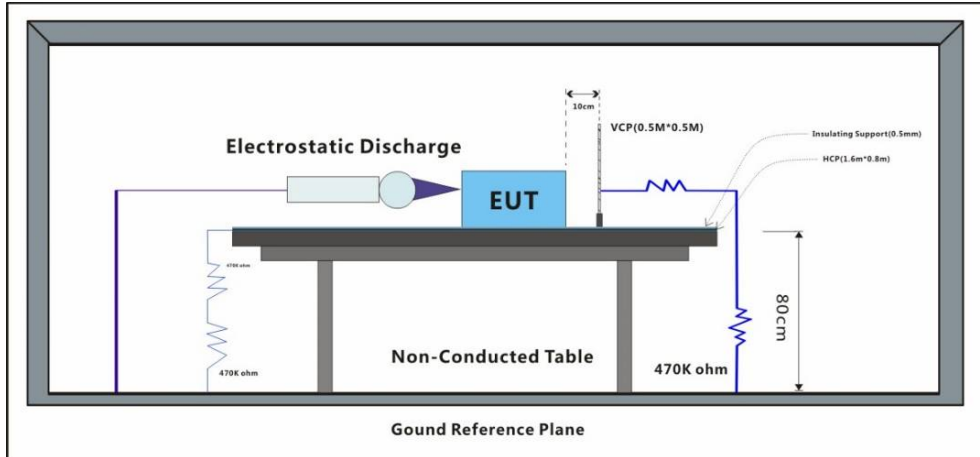
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7.1 Electrostatic Discharge

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-2:2009

7.1.1 Test Setup Diagram



7.1.2 E.U.T. Operation

Operating Environment:

Temperature: 22.1 °C

Humidity: 51.5 % RH

Atmospheric Pressure: 1010 mbar

7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.1.4 Test Condition and Results:

- Number of Discharge: Minimum 10 times at each test point for Air Discharge; Minimum 50 times at each test point for Contact or VCP & HCP Discharge
- Discharge Mode: Single Discharge
- Discharge Period: 1 second minimum
- Test Point 1: All insulated enclosure & seams.
- Test Point 2: All accessible metal parts of the enclosure.
- Test Point 3: All sides.

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	6	+	2	A
Contact Discharge	6	-	2	A
Horizontal Coupling	6	+	3	A
Horizontal Coupling	6	-	3	A
Vertical Coupling	6	+	3	A
Vertical Coupling	6	-	3	A

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



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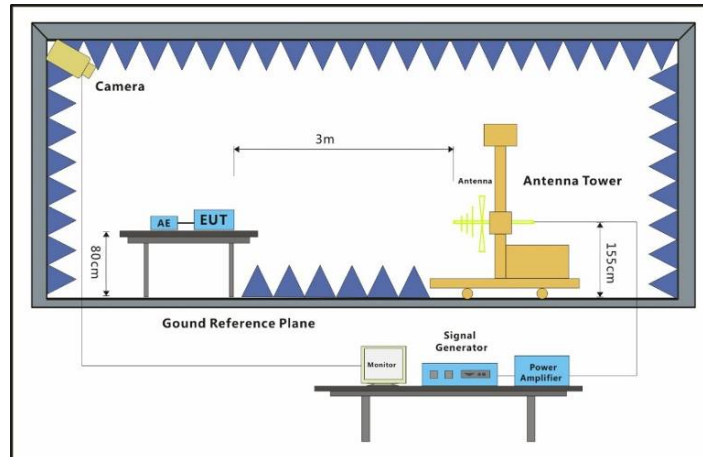
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7.2 Radiated Immunity(80MHz-2.7GHz)

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN IEC 61000-4-3: 2020

7.2.1 Test Setup Diagram



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 26.6 °C

Humidity: 36.4 % RH

Atmospheric Pressure: 1010 mbar

7.2.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.2.4 Test Condition and Results:

Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-2.7GHz	10	Front	3s	A
80MHz-2.7GHz	10	Back	3s	A
80MHz-2.7GHz	10	Left	3s	A
80MHz-2.7GHz	10	Right	3s	A
80MHz-2.7GHz	10	Top	3s	A
80MHz-2.7GHz	10	Underside	3s	A

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



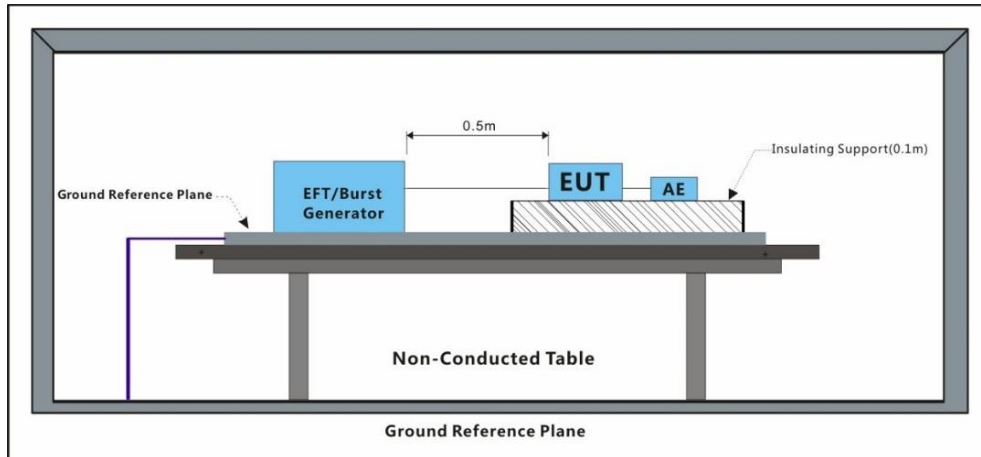
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7.3 Electrical Fast Transients & Burst at AC Power Port

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-4:2012

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.3.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.3.4 Test Condition and Results:

Repetition Frequency: 100kHz

Burst Period: 300ms

Test Duration: 1 minute per level & polarity

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	2	+	CDN	A
AC power port	2	-	CDN	A

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



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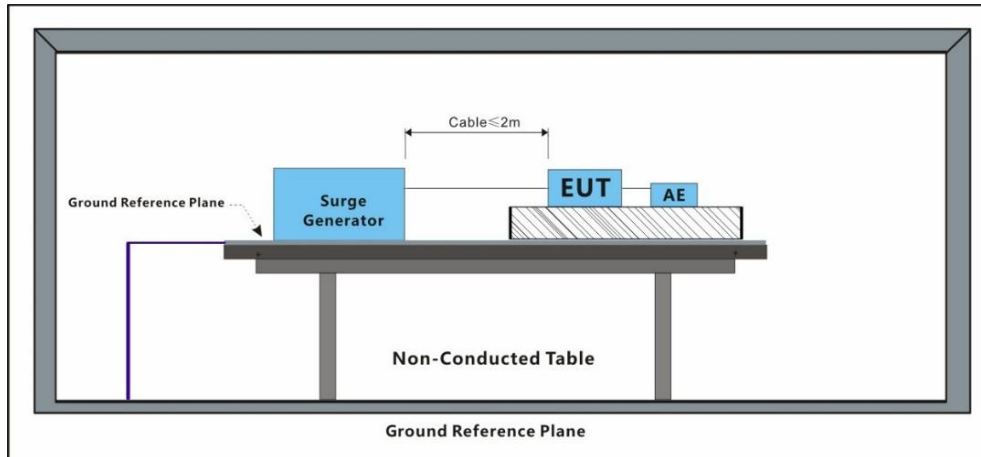
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7.4 Surge at AC Power Port

Test Requirement: EN 50130-4: 2011 +A1:2014
 Test Method: EN 61000-4-5:2014 +A1:2017

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

7.4.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.4.4 Test Condition and Results:

Interval: 60s between each surge
 No. of surges: 5 positive, 5 negative

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	0.5,1	+	0°	A
L-N	0.5,1	-	0°	A
L-N	0.5,1	+	90°	A
L-N	0.5,1	-	90°	A
L-N	0.5,1	+	180°	A
L-N	0.5,1	-	180°	A



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L-N	0.5,1	+	270°	A
L-N	0.5,1	-	270°	A
L-PE	0.5,1,2	+	0°	A
L-PE	0.5,1,2	-	0°	A
L-PE	0.5,1,2	+	90°	A
L-PE	0.5,1,2	-	90°	A
L-PE	0.5,1,2	+	180°	A
L-PE	0.5,1,2	-	180°	A
L-PE	0.5,1,2	+	270°	A
L-PE	0.5,1,2	-	270°	A
N-PE	0.5,1,2	+	0°	A
N-PE	0.5,1,2	-	0°	A
N-PE	0.5,1,2	+	90°	A
N-PE	0.5,1,2	-	90°	A
N-PE	0.5,1,2	+	180°	A
N-PE	0.5,1,2	-	180°	A
N-PE	0.5,1,2	+	270°	A
N-PE	0.5,1,2	-	270°	A

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



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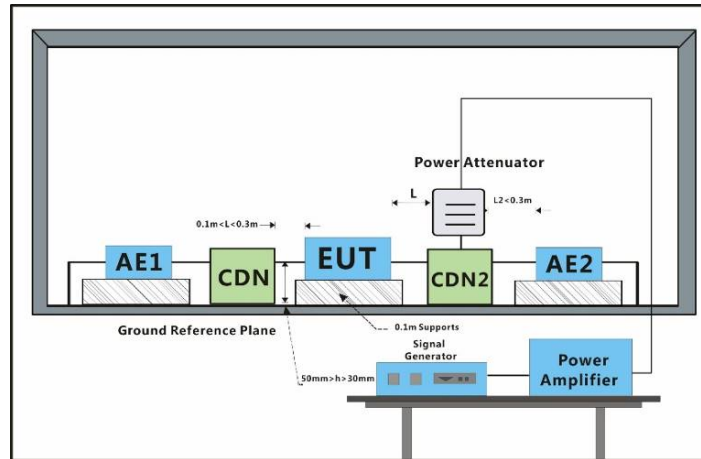
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7.5 Conducted Immunity at Power Port (150kHz-100MHz)

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-6:2014

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.5.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.5.4 Test Condition and Results:

Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	10	CDN	3s	A
A: No degradation in the performance of the EUT was observed				



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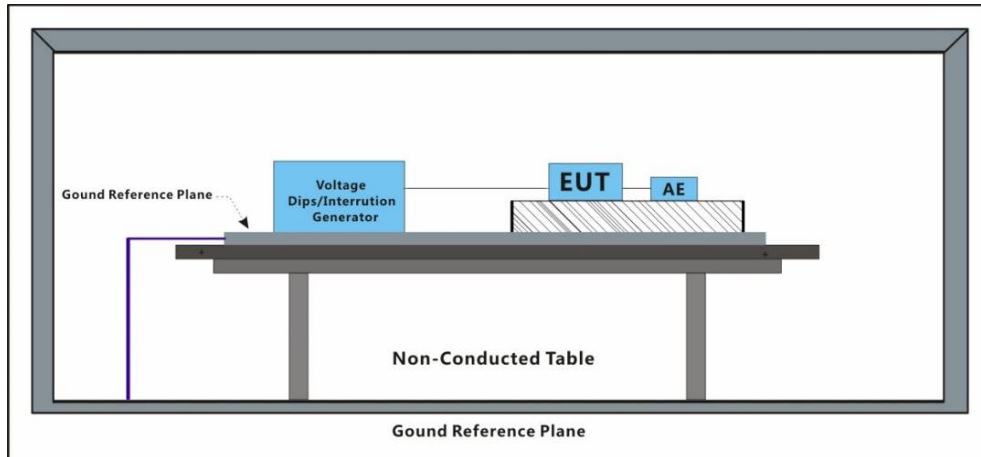
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7.6 Voltage Dips and Interruptions

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN IEC 61000-4-11:2020

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.6.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.6.4 Test Condition and Results:

Performance Criterion:

0% of UT (Supply Voltage) for 250 Periods;

40% of UT for 10 Periods;

70% of UT for 25 Periods; 80% of UT for 250 Periods;

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
80	0°	250 Cycles	3	A
80	180°	250 Cycles	3	A
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
40	0°	10 Cycles	3	A
40	180°	10 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B

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

B: During test, the EUT stopped working. After test, it could recover automatically



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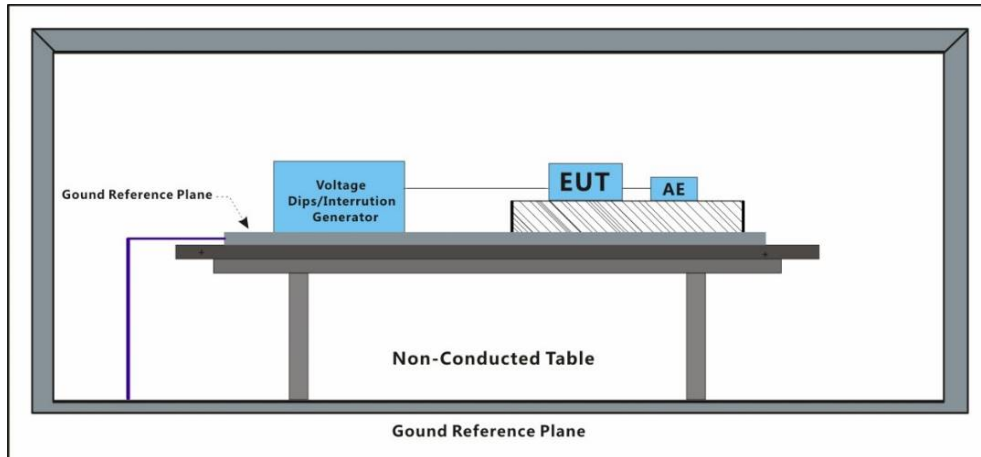
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7.7 Mains Supply Voltage Variations

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 50130-4:2011+A1:2014

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.7.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.7.4 Test Condition and Results:

Voltage max.: AC 264V (Umax: Unom + 10%)

Voltage min.: AC 85V (Umin: Unom - 15%)

Unom Voltage: AC 100-240

Test phenomenon description for the EUT:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period and detected no any changes in states, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.



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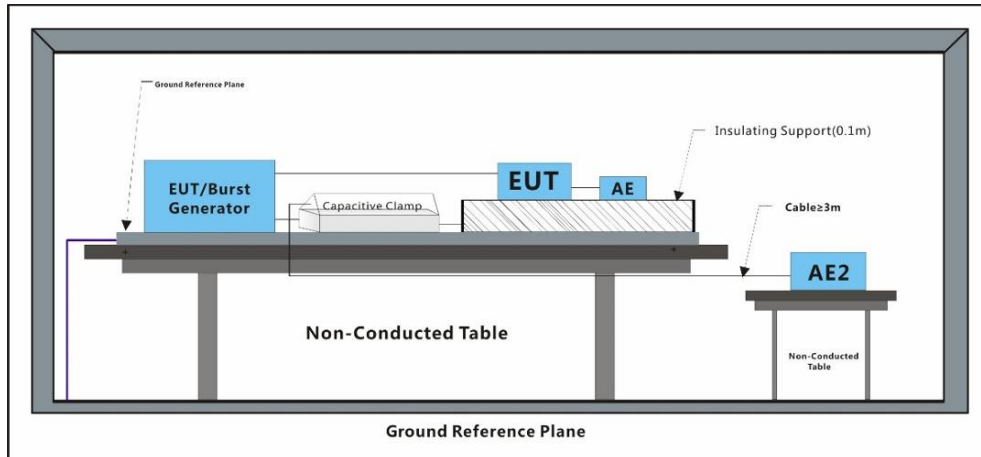
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7.8 Electrical Fast Transients & Burst at Signal Port

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-4:2012

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.8.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.8.4 Test Condition and Results:

Repetition Frequency: 100kHz

Burst Period: 300ms

Test Duration: 1 minute per level & polarity

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal Port	1	+	Clamp	A
Signal Port	1	-	Clamp	A

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



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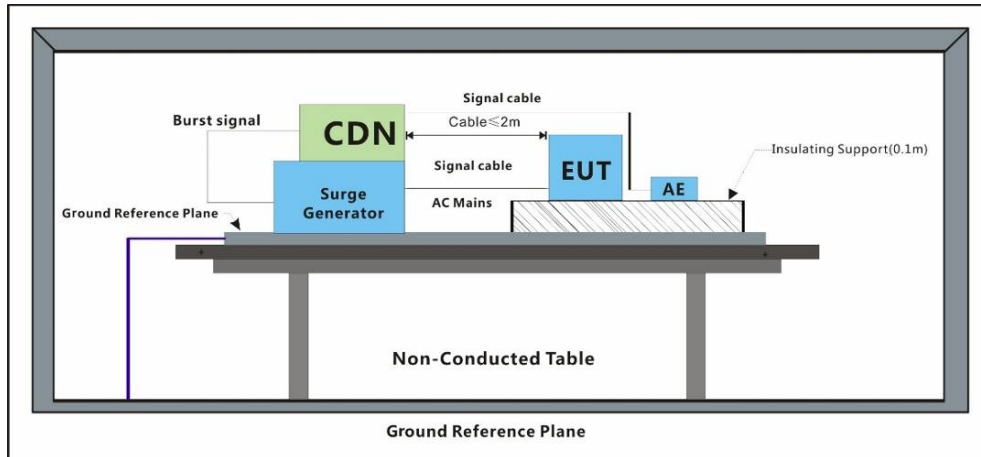
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7.9 Surge at Signal Port

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-5:2014 +A1:2017

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.9.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.9.4 Test Condition and Results:

Interval: 60s between each surge

No. of surges: 5 positive, 5 negative.

Port	Line	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	0.5	+	A
Signal port	Line-Ground	0.5	-	A

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



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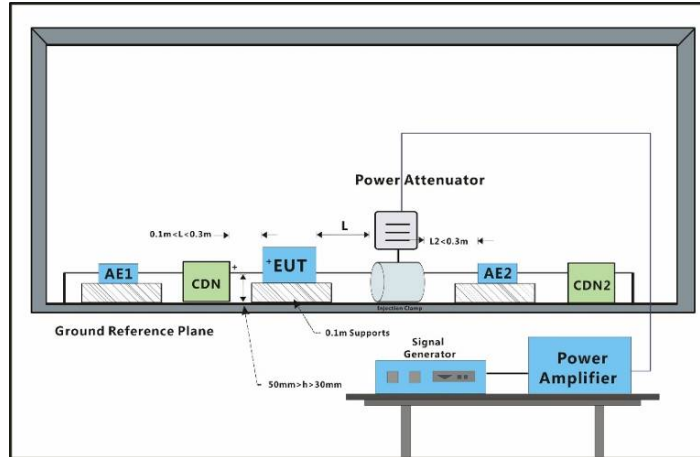
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7.10 Conducted Immunity at Signal Port (150kHz-100MHz)

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-6:2014

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.10.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.10.4 Test Condition and Results:

Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal or Control port	10	CDN	3s	A

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



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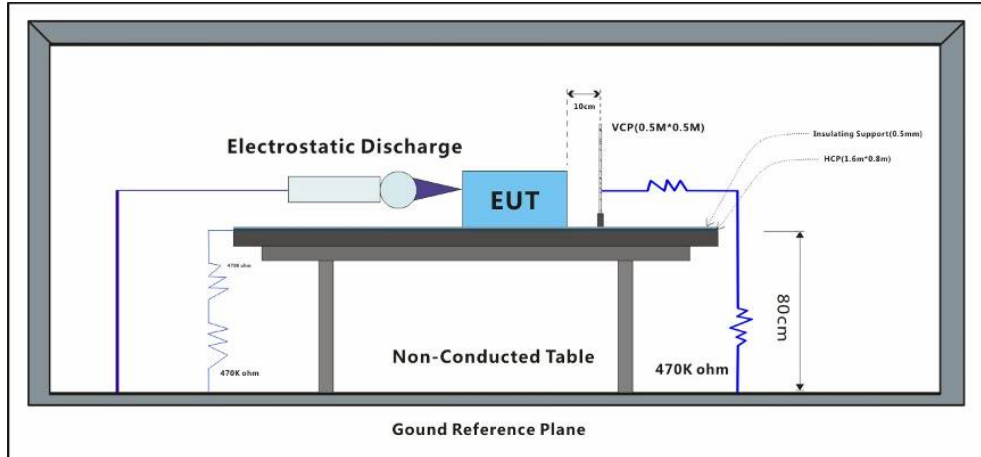
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7.11 Electrostatic Discharge

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-2: 2009

7.11.1 Test Setup Diagram



7.11.2 E.U.T. Operation

Operating Environment:

Temperature: 22.2 °C

Humidity: 51.9 % RH

Atmospheric Pressure: 1010 mbar

7.11.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.11.4 Test Condition and Results:

- Performance Criterion: B
- Discharge Impedance: 330Ω/150pF
- Number of Discharge: Minimum 10 times at each test point
- Discharge Mode: Single Discharge
- Discharge Period: 1 second minimum
- Test Point 1: All insulated enclosure & seams.
- Test Point 2: All accessible metal parts of the enclosure.
- Test Point 3: All sides.

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

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



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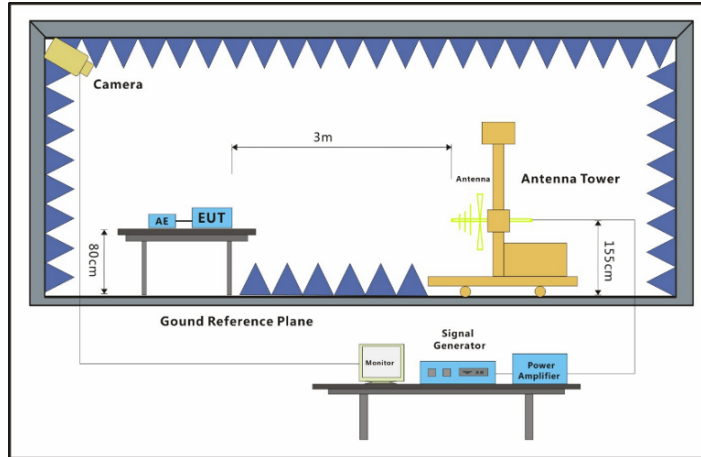
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7.12 Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN IEC 61000-4-3: 2020

7.12.1 Test Setup Diagram



7.12.2 E.U.T. Operation

Operating Environment:

Temperature: 26.6 °C

Humidity: 36.3 % RH

Atmospheric Pressure: 1010 mbar

7.12.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.12.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz

Antenna Polarisation: Vertical and Horizontal

Modulation: 1kHz,80% Amp. Mod,1% increment

Test Distance:3m

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A



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80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Underside	3s	A
1800MHz	3	Front	3s	A
1800MHz	3	Back	3s	A
1800MHz	3	Left	3s	A
1800MHz	3	Right	3s	A
1800MHz	3	Top	3s	A
1800MHz	3	Underside	3s	A
2600MHz	3	Front	3s	A
2600MHz	3	Back	3s	A
2600MHz	3	Left	3s	A
2600MHz	3	Right	3s	A
2600MHz	3	Top	3s	A
2600MHz	3	Underside	3s	A
3500MHz	3	Front	3s	A
3500MHz	3	Back	3s	A
3500MHz	3	Left	3s	A
3500MHz	3	Right	3s	A
3500MHz	3	Top	3s	A
3500MHz	3	Underside	3s	A
5000MHz	3	Front	3s	A
5000MHz	3	Back	3s	A
5000MHz	3	Left	3s	A
5000MHz	3	Right	3s	A
5000MHz	3	Top	3s	A
5000MHz	3	Underside	3s	A

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



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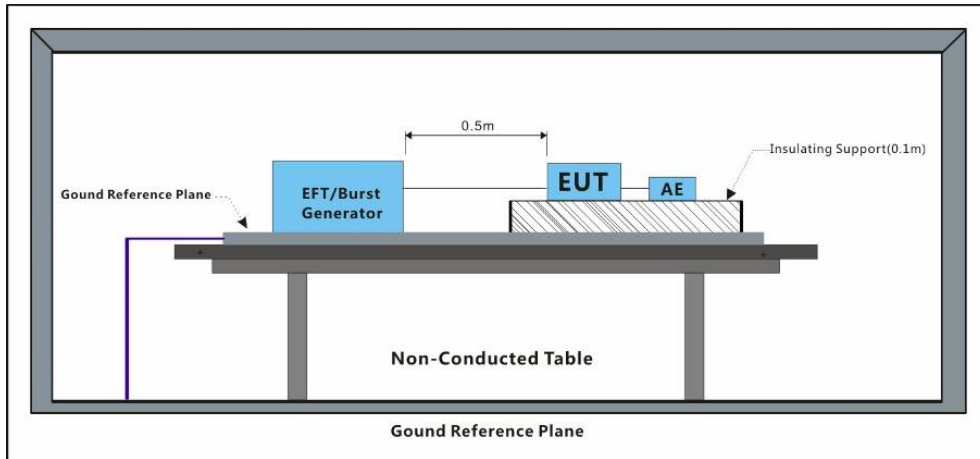
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7.13 Electrical Fast Transients & Burst at AC Power Port

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-4: 2012

7.13.1 Test Setup Diagram



7.13.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.13.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.13.4 Test Condition and Results:

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

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



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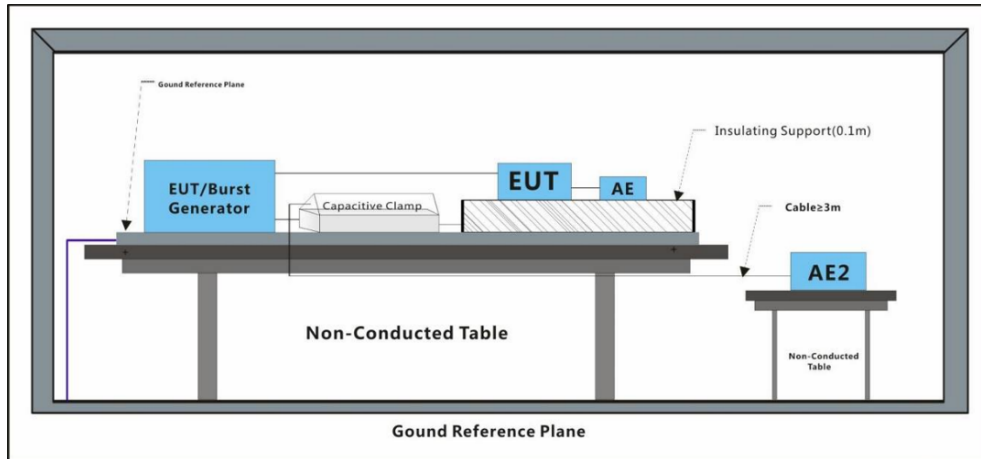
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7.14 Electrical Fast Transients & Burst at Signal Port

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-4: 2012

7.14.1 Test Setup Diagram



7.14.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.14.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.14.4 Test Condition and Results:

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

Port	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal port	0.5	+	Clamp	A
Signal port	0.5	-	Clamp	A

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



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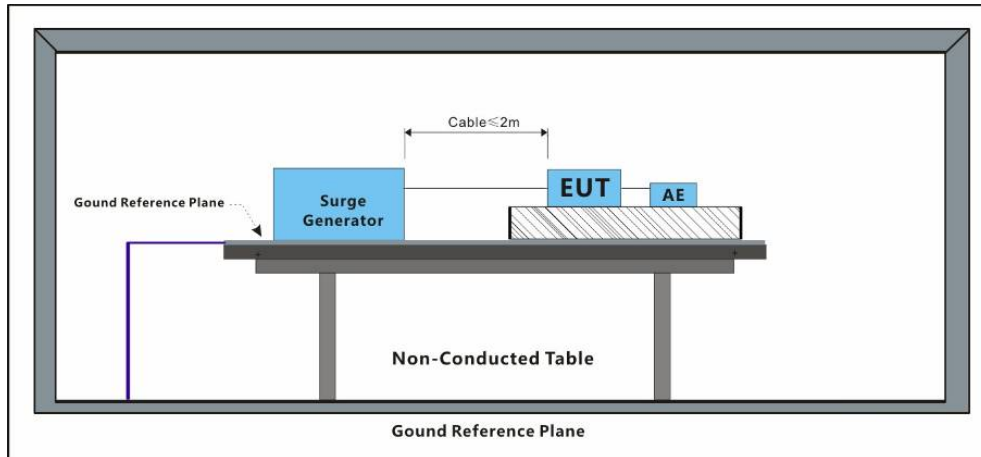
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7.15 Surge at AC Power Port

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-5: 2014 +A1: 2017

7.15.1 Test Setup Diagram



7.15.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.15.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.15.4 Test Condition and Results:

- Performance Criterion: B
- Interval: 60s between each surge
- Generator source impedance: 2Ω
- CDN coupling impedance(Line-to-ground):10Ω
- No. of surges:
 - 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

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	90°	A
L-N	1	-	270°	A
L-PE	2	+	90°	A
L-PE	2	-	270°	A
N-PE	2	-	90°	A
N-PE	2	+	270°	A

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



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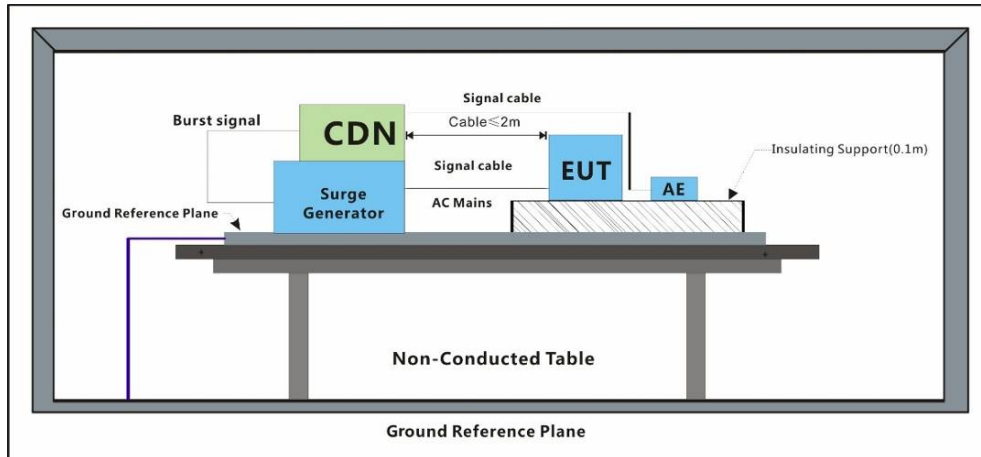
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7.16 Surge at Signal Port

Test Requirement: EN 55035: 2017+A11:2020
 Test Method: EN 61000-4-5: 2014 +A1: 2017

7.16.1 Test Setup Diagram



7.16.2 E.U.T. Operation

Operating Environment:
 Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

7.16.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.16.4 Test Condition and Results:

Performance Criterion: B
 Interval: 60s between each surge
 Generator source impedance: 2Ω

Port	Line	Waveform(μs)	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	1,2/50 (8/20)	0.5, 1	+	A
Signal port	Line-Ground	1,2/50 (8/20)	0.5, 1	-	A

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



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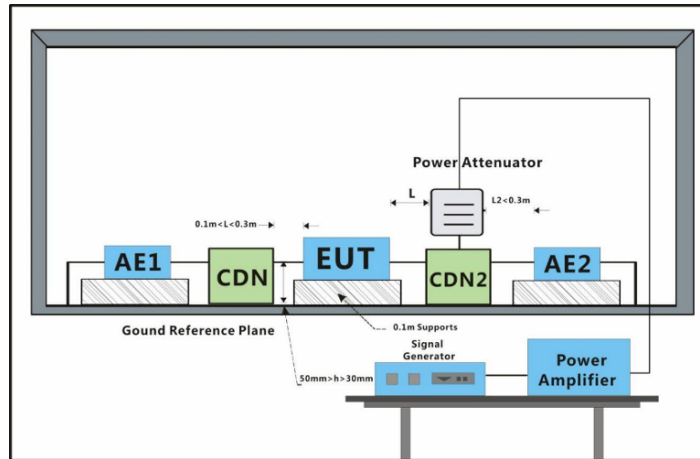
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7.17 Conducted Immunity at AC Power Port (150kHz-80MHz)

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-6: 2014

7.17.1 Test Setup Diagram



7.17.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.17.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.17.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size: 1%

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3(0.15MHz-10MHz)	CDN	3s	A
AC power port	3 to 1(10MHz-30MHz, Lines)	CDN	3s	A
AC power port	1(30MHz-80MHz)	CDN	3s	A

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



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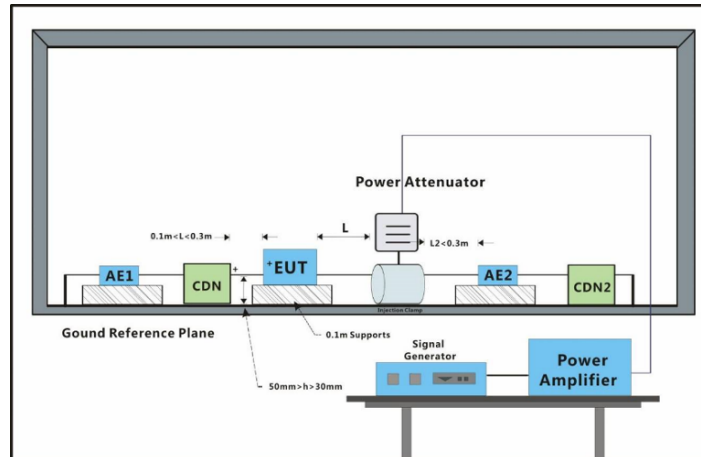
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7.18 Conducted Immunity at Signal Port (150kHz-80MHz)

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-6: 2014

7.18.1 Test Setup Diagram



7.18.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.18.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.18.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size: 1%

Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal port	3(0.15MHz-10MHz)	Clamp	3s	A
Signal port	3 to 1(10MHz-30MHz, Lines)	Clamp	3s	A
Signal port	1(30MHz-80MHz)	Clamp	3s	A

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



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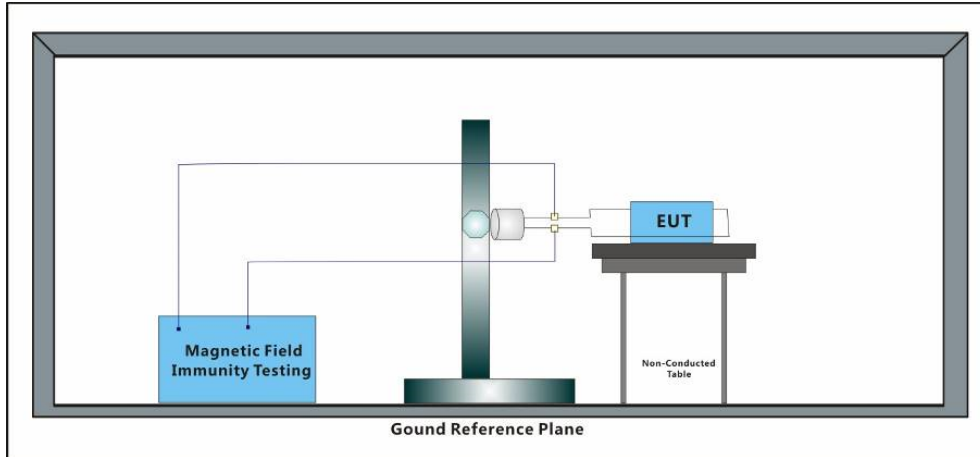
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7.19 Power Frequency Magnetic Field

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN 61000-4-8: 2010

7.19.1 Test Setup Diagram



7.19.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

7.19.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter

7.19.4 Test Condition and Results:

Performance Criterion: A

Frequency	Level (A/m)	Axial	Magnetic Field Type	Result / Observations
50Hz	1	X	Continuous filed	A
50Hz	1	Y	Continuous filed	A
50Hz	1	Z	Continuous filed	A

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



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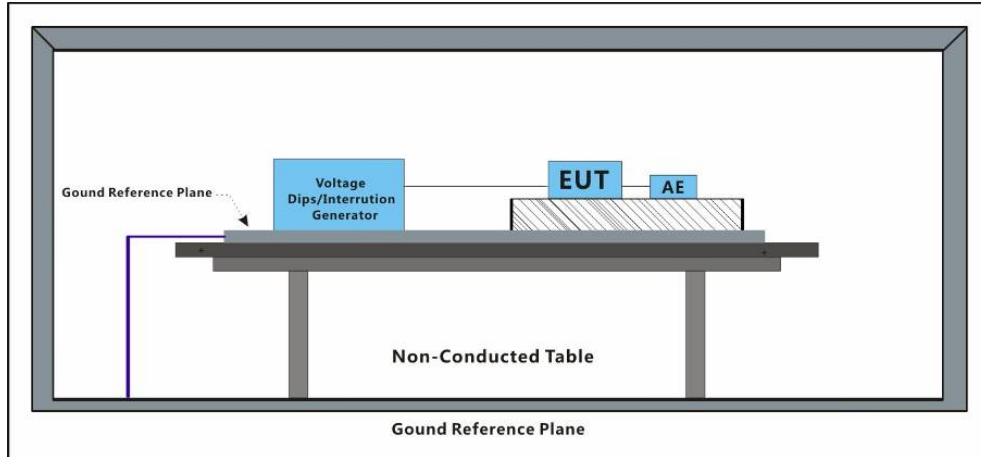
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7.20 Voltage Dips and Interruptions

Test Requirement: EN 55035: 2017+A11:2020

Test Method: EN IEC 61000-4-11:2020

7.20.1 Test Setup Diagram



7.20.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

Humidity: 48 % RH

Atmospheric Pressure: 1010 mbar

7.20.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT working normally with DC24V Adapter
Pre-scan	01	Keep EUT working normally with AC24V Adapter
Pre-scan	02	Keep EUT working normally with POE Adapter



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7.20.4 Test Condition and Results:

Performance Criterion:

<5% residual voltage for 0.5 Cycle: B

70% residual voltage for 25 Cycles: C

<5% residual voltage for 250 Cycles: C

No. of Dips / Interruptions: 3 per Level

Time between dropout: 10s

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	0°	250 Cycles	3	B
70	0°	25 Cycles	3	A

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

B: During test, the EUT stopped working. After test, it could recover automatically



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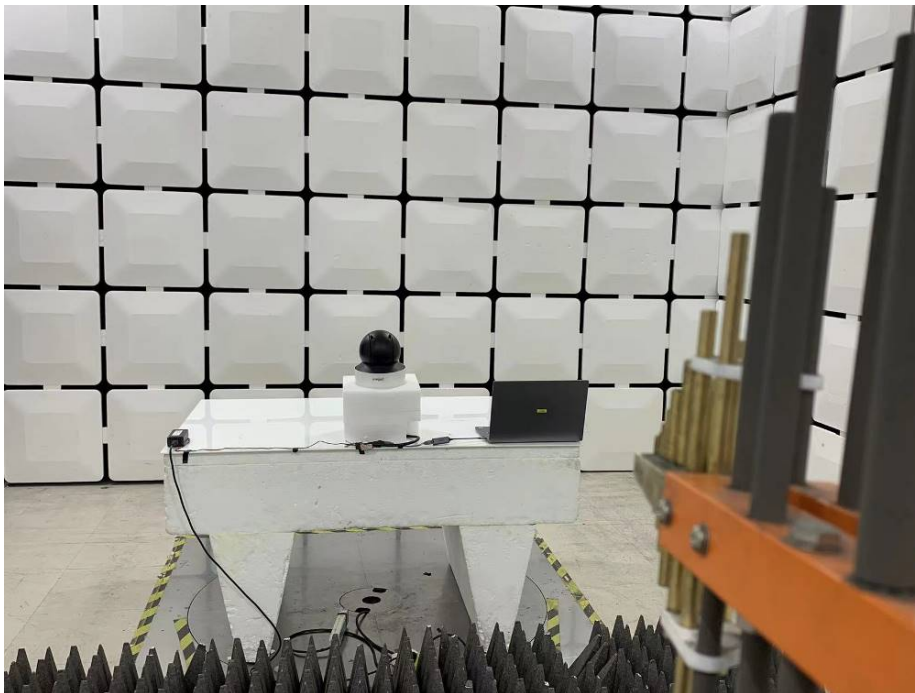
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8 Test Setup Photo

Electrostatic Discharge



Radiated Immunity(80MHz-2.7GHz)



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Electrical Fast Transients & Burst at AC Power Port



Surge at AC Power Port

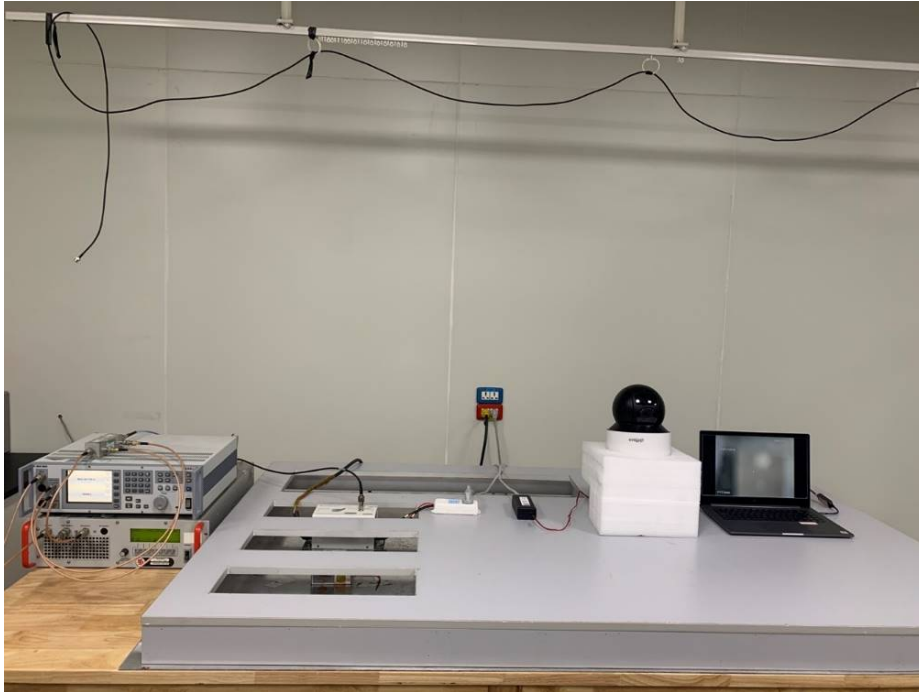


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Conducted Immunity at Power Port (150kHz-100MHz)



Voltage Dips and Interruptions



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Mains Supply Voltage Variations



Electrical Fast Transients & Burst at Signal Port



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Surge at Signal Port



Conducted Immunity at Signal Port (150kHz-100MHz)

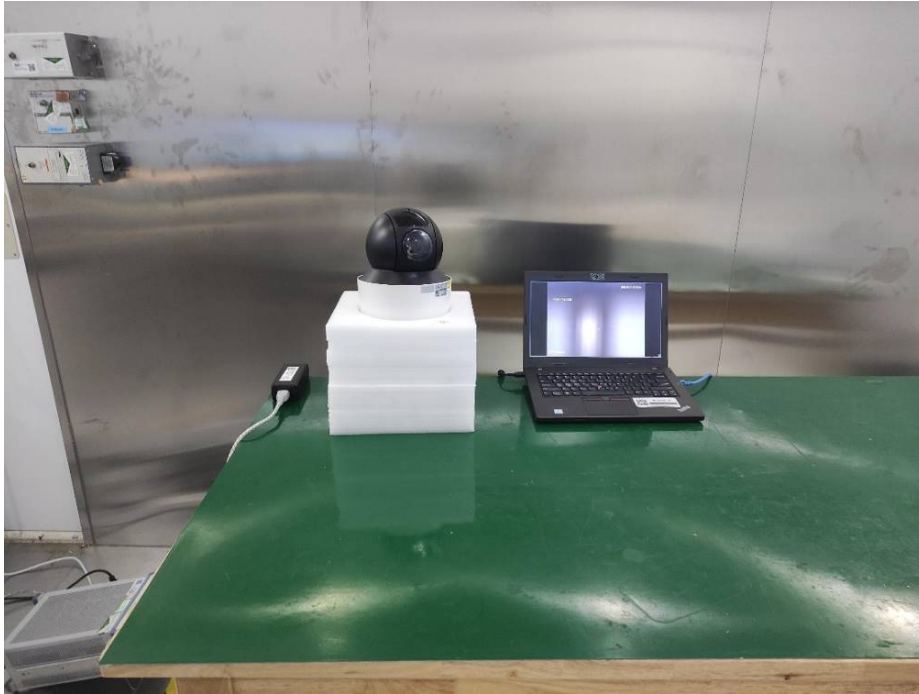


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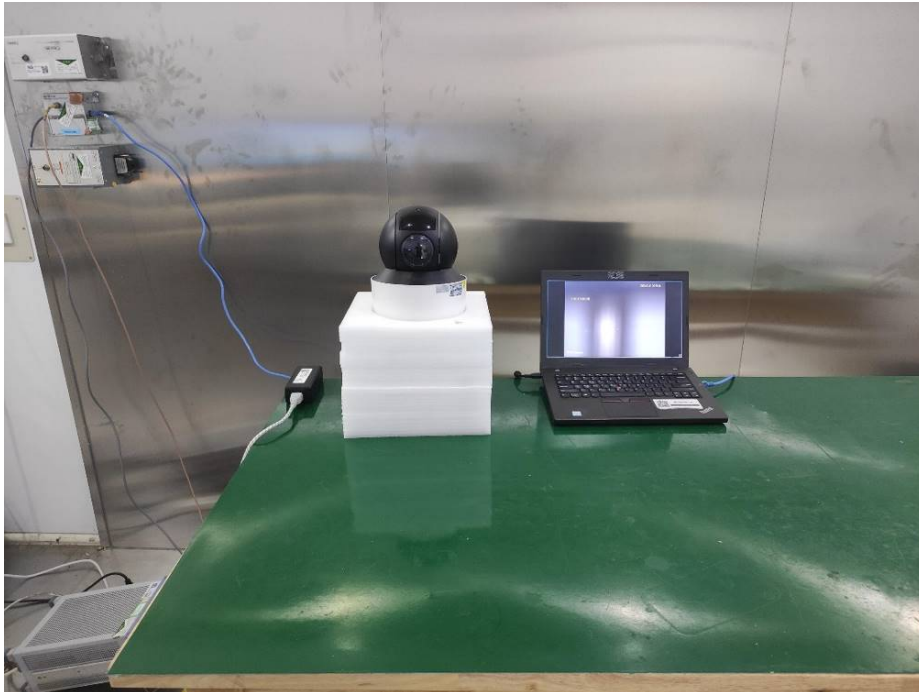
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Conducted Emissions at Mains Power Port (150kHz-30MHz)



Asymmetric Mode Conducted Emissions(150kHz-30MHz)



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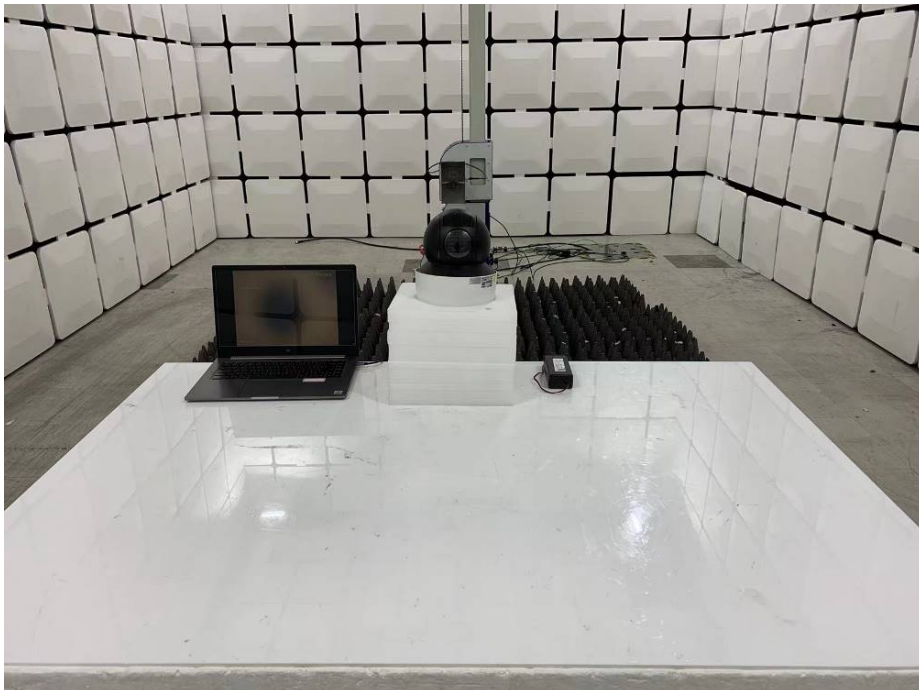
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Radiated Emissions (30MHz-1GHz)



Radiated Emissions (Above 1GHz)



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Voltage Fluctuations and Flicker



Harmonic Current Emission



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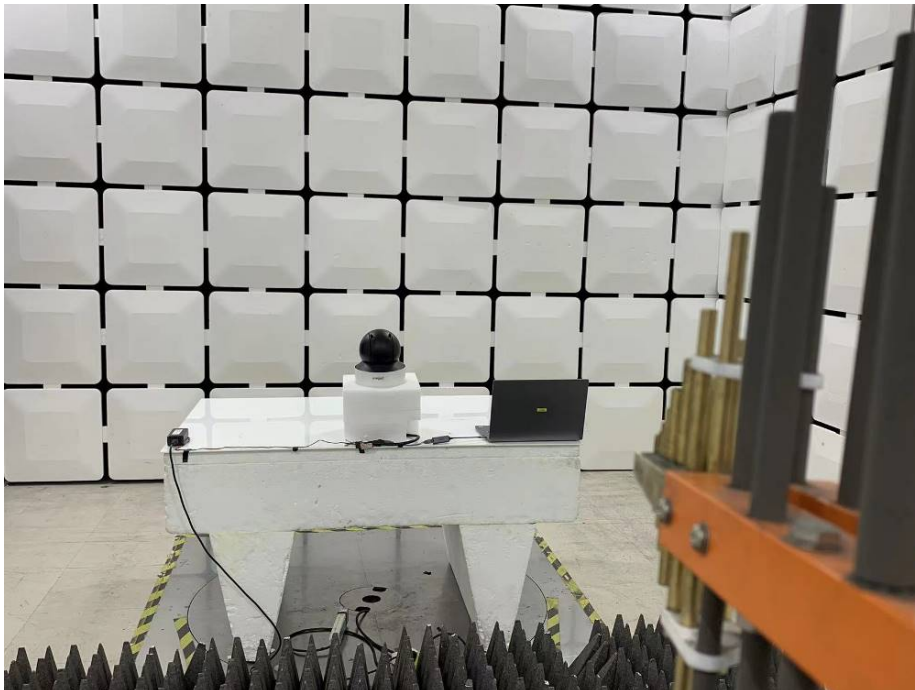
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Electrostatic Discharge



Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)



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Electrical Fast Transients & Burst at AC Power Port



Electrical Fast Transients & Burst at Signal Port



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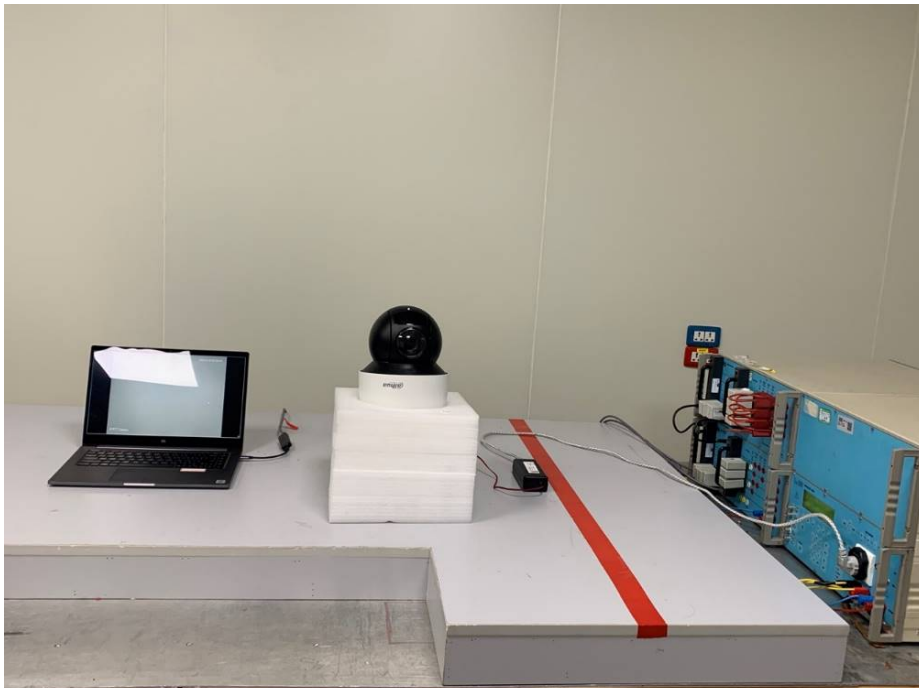
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Surge at AC Power Port



Surge at Signal Port

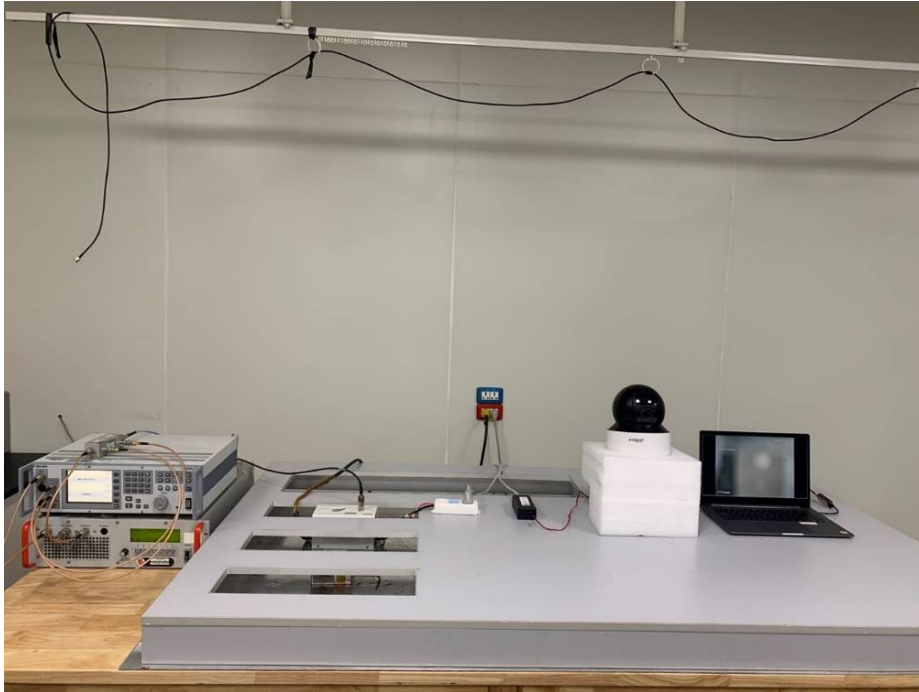


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Conducted Immunity at AC Power Port (150kHz-80MHz)



Conducted Immunity at Signal Port (150kHz-80MHz)

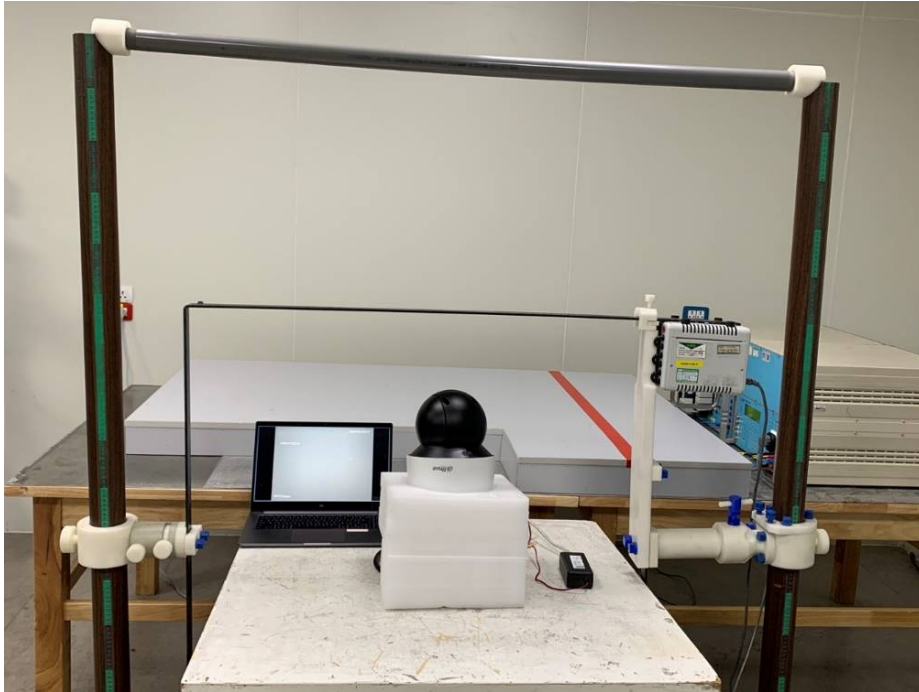


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Power Frequency Magnetic Field



Voltage Dips and Interruptions



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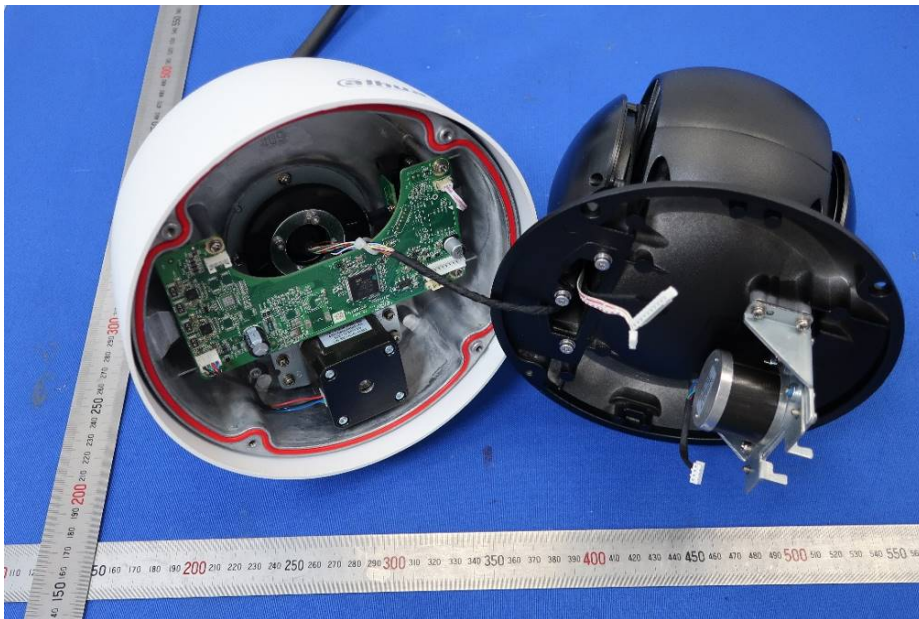
9 EUT Constructional Details (EUT Photos)



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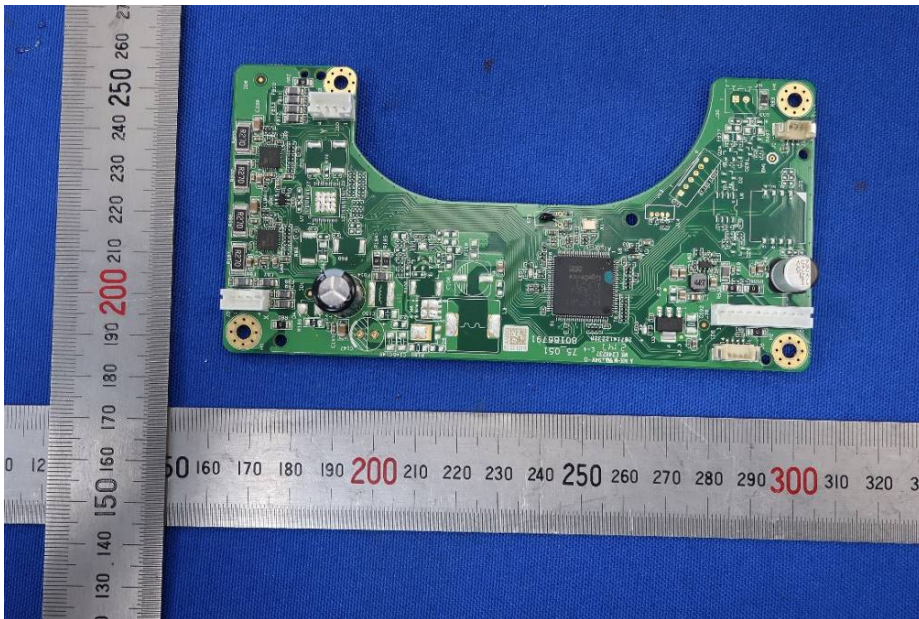
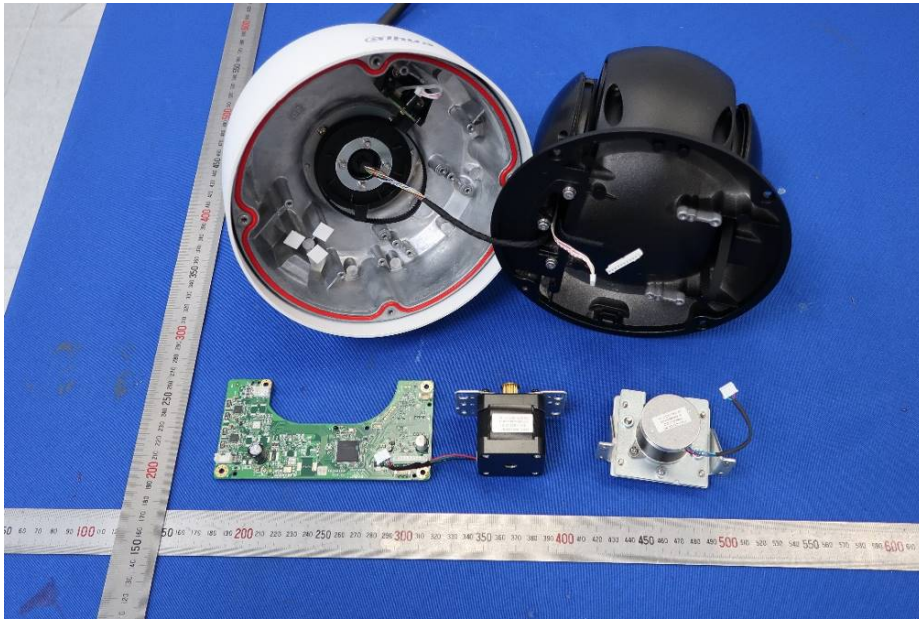


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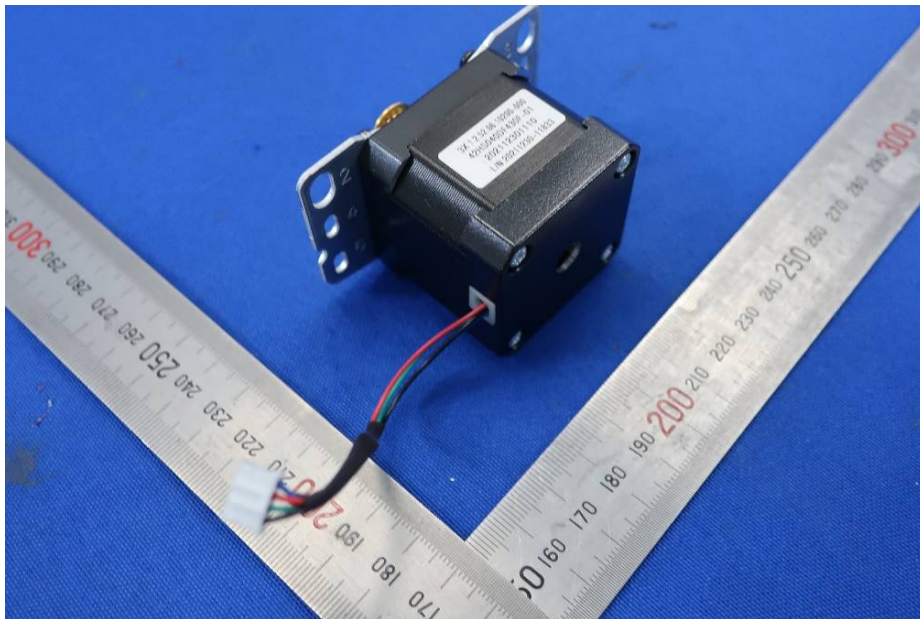
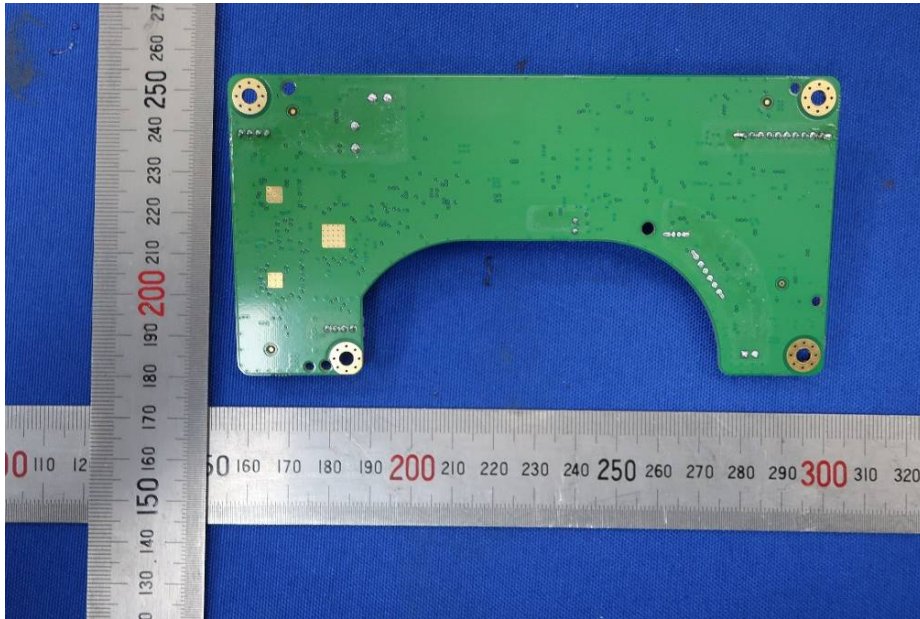
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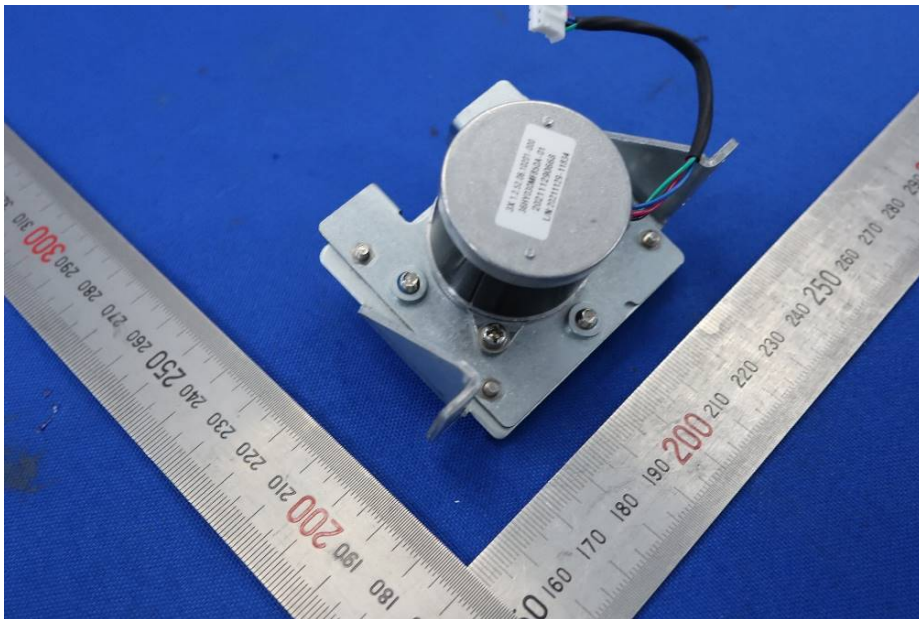
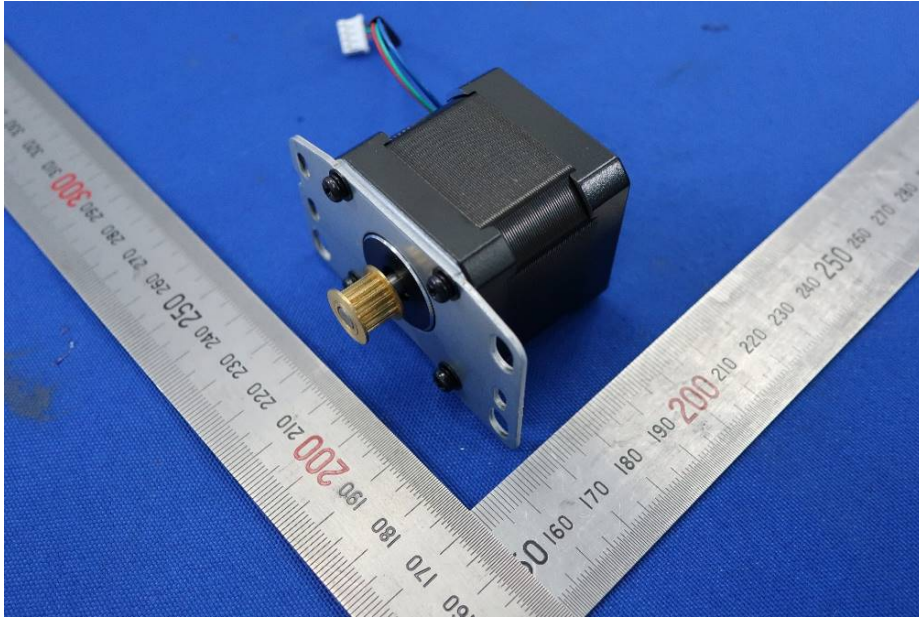
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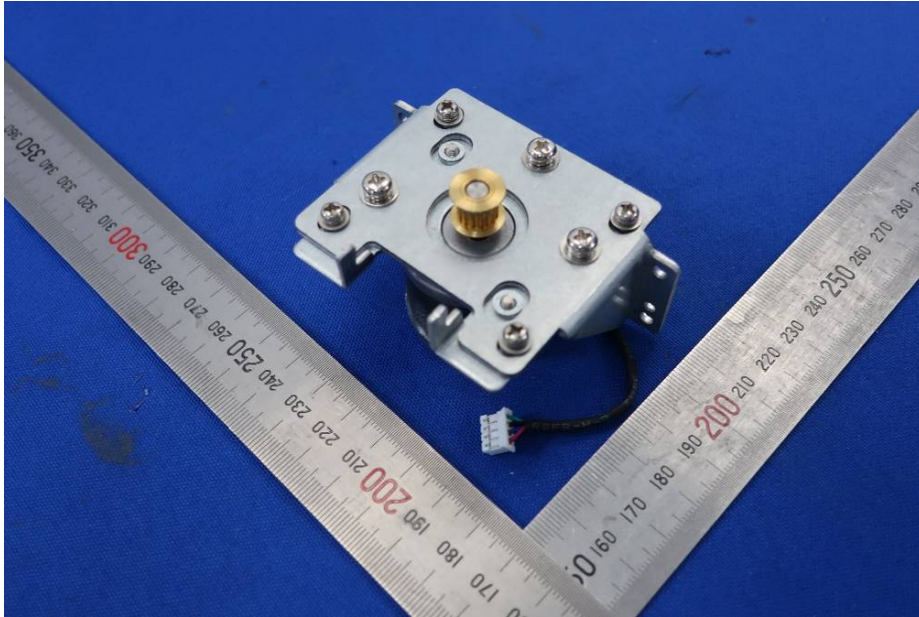
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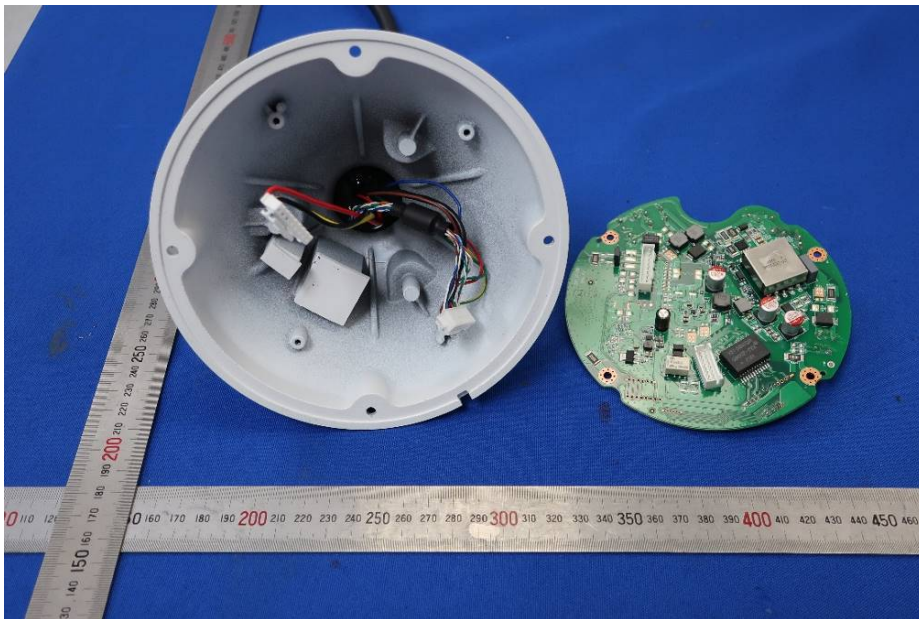
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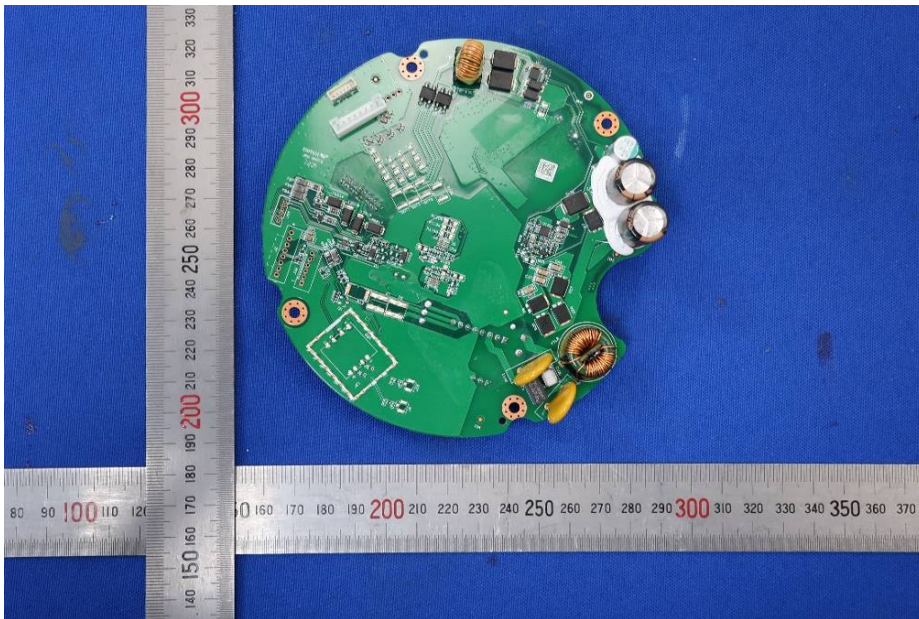
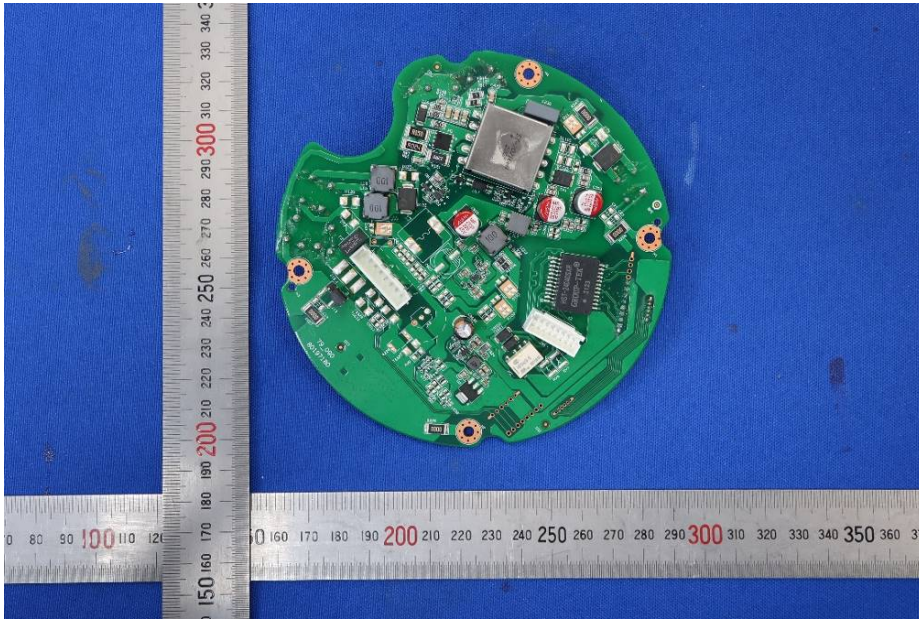
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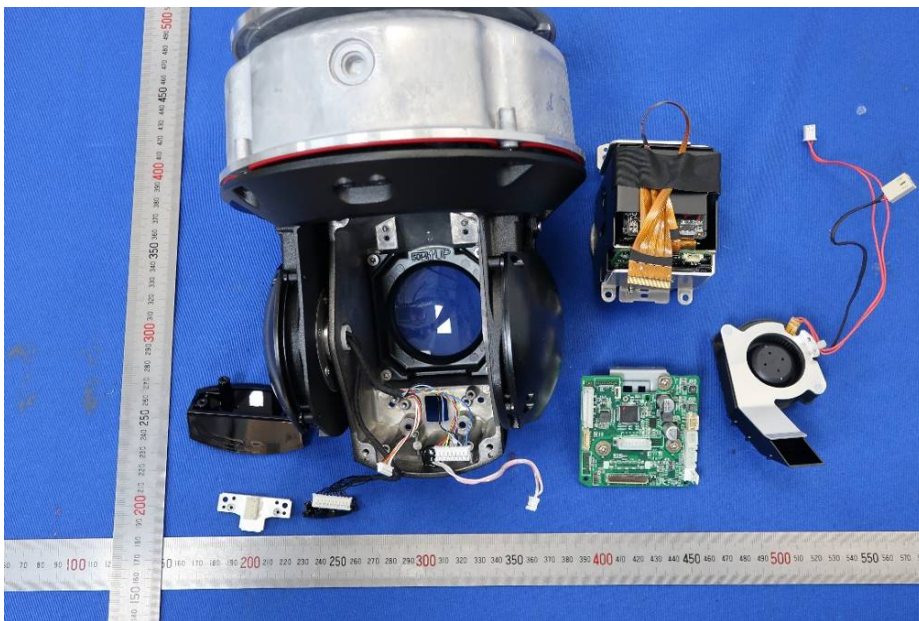
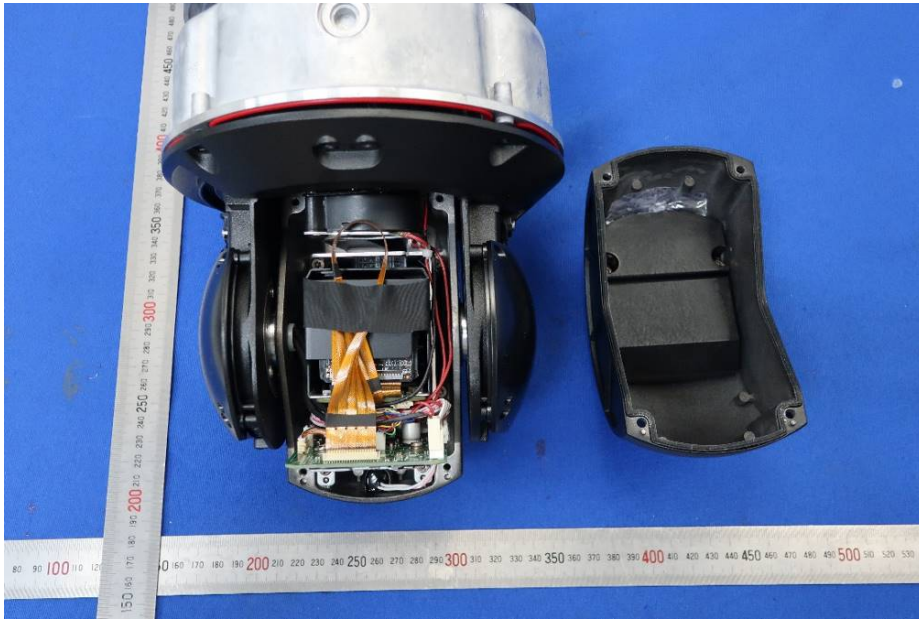
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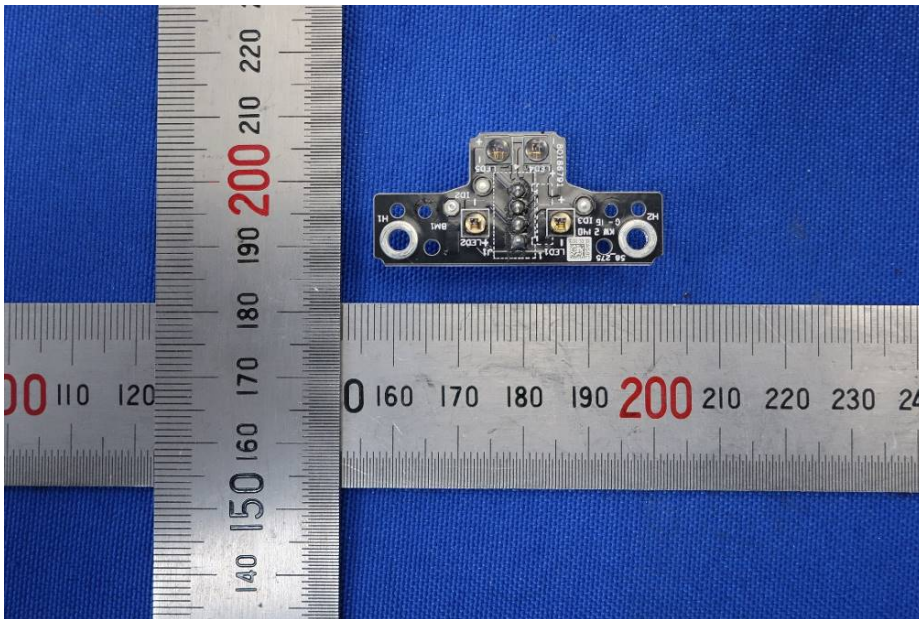
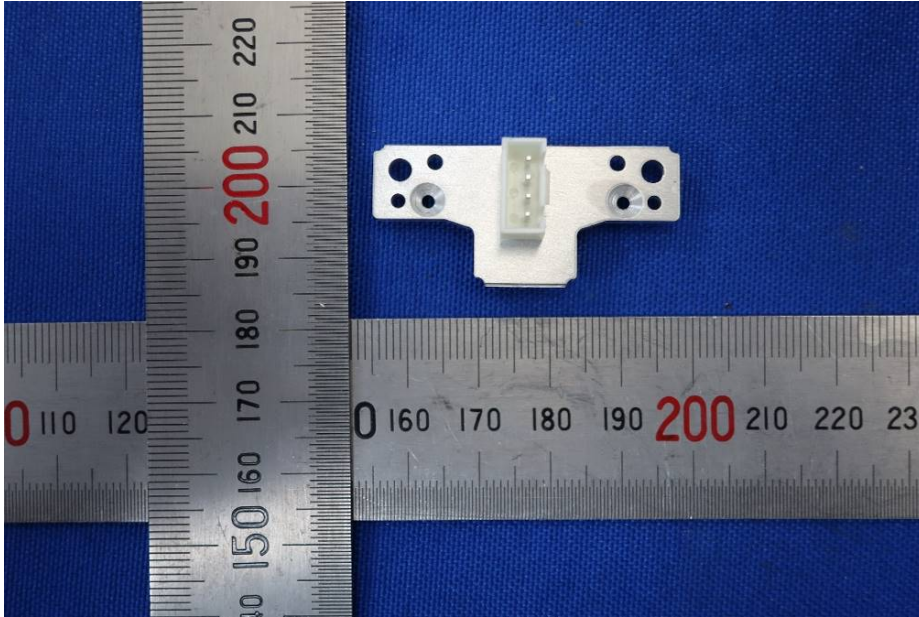
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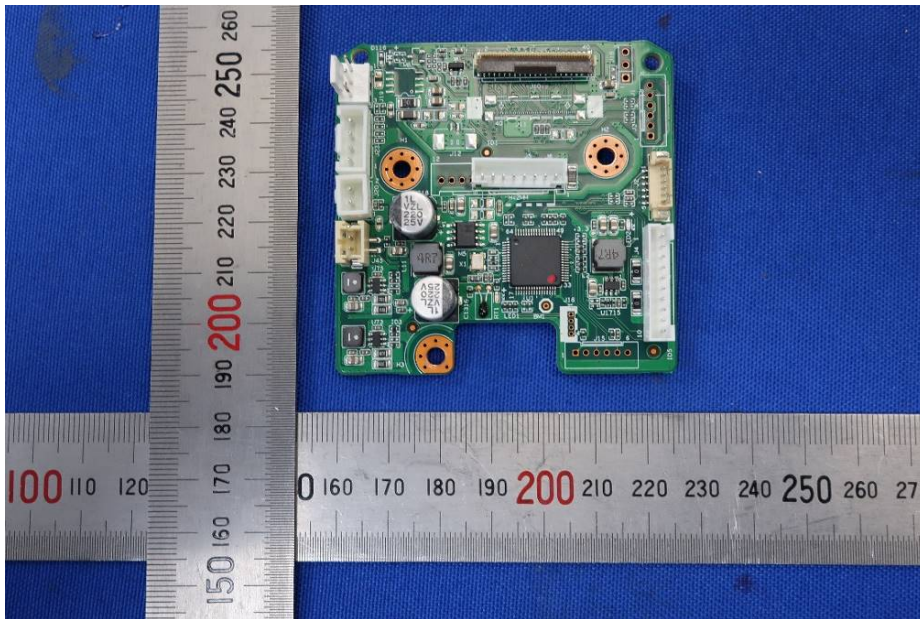
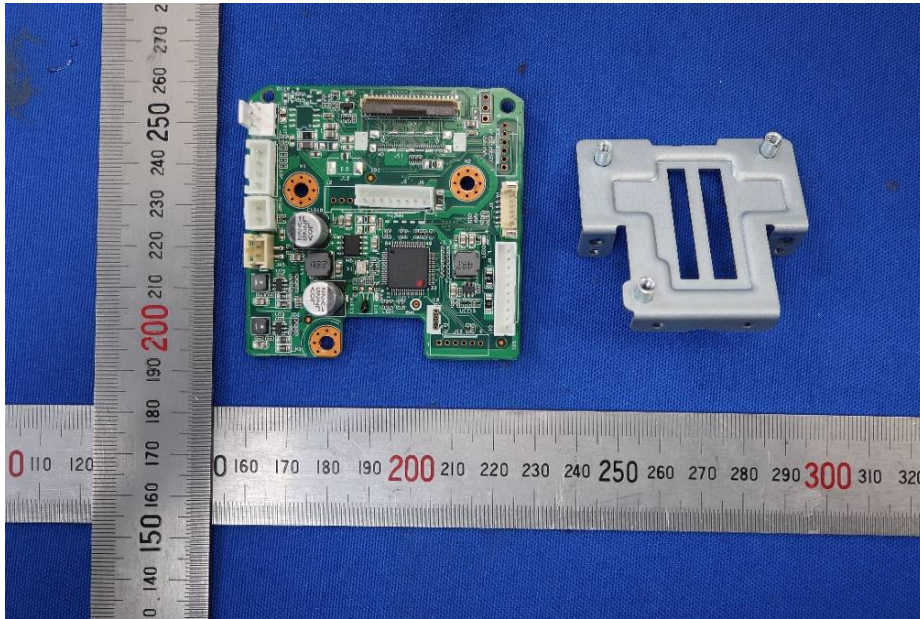
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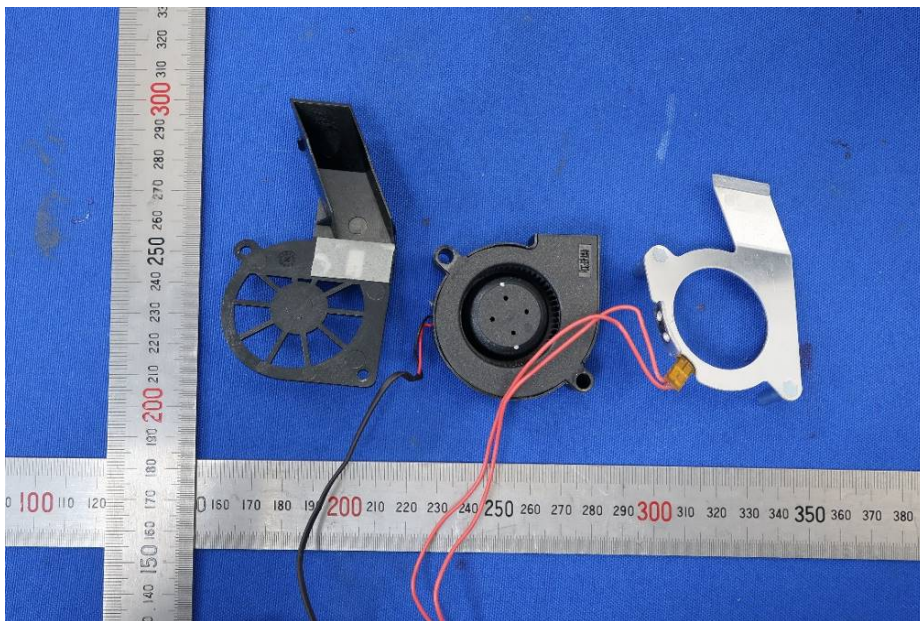
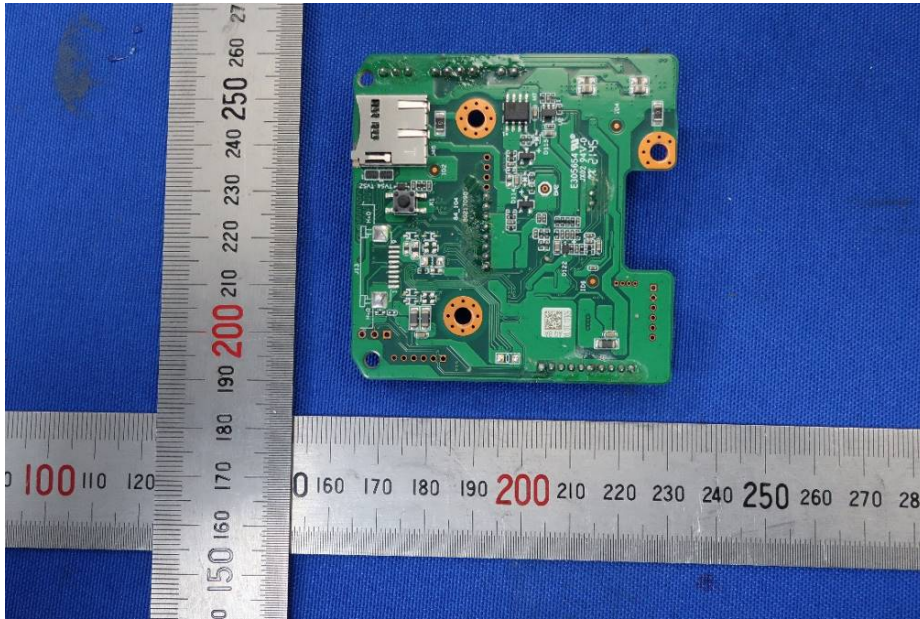


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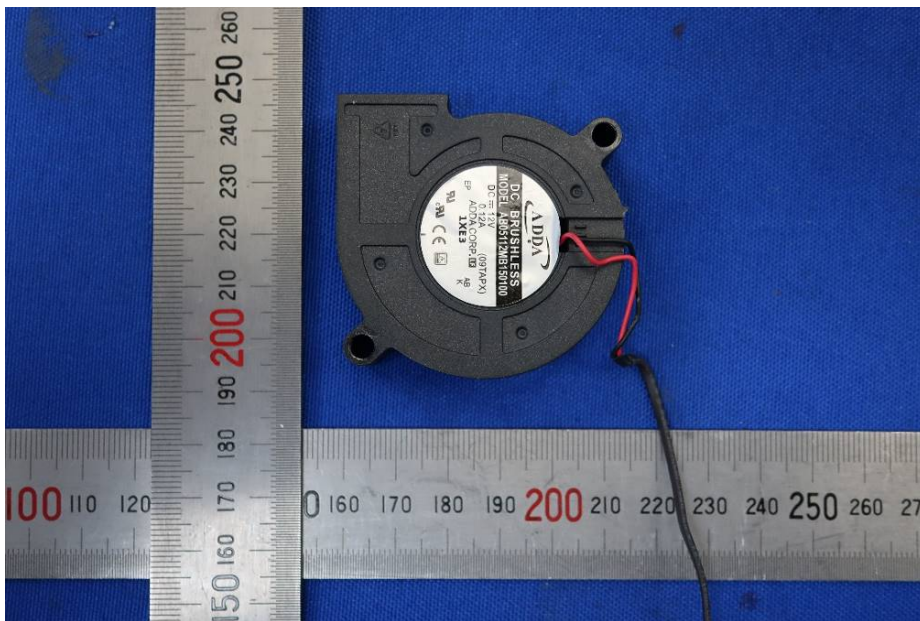
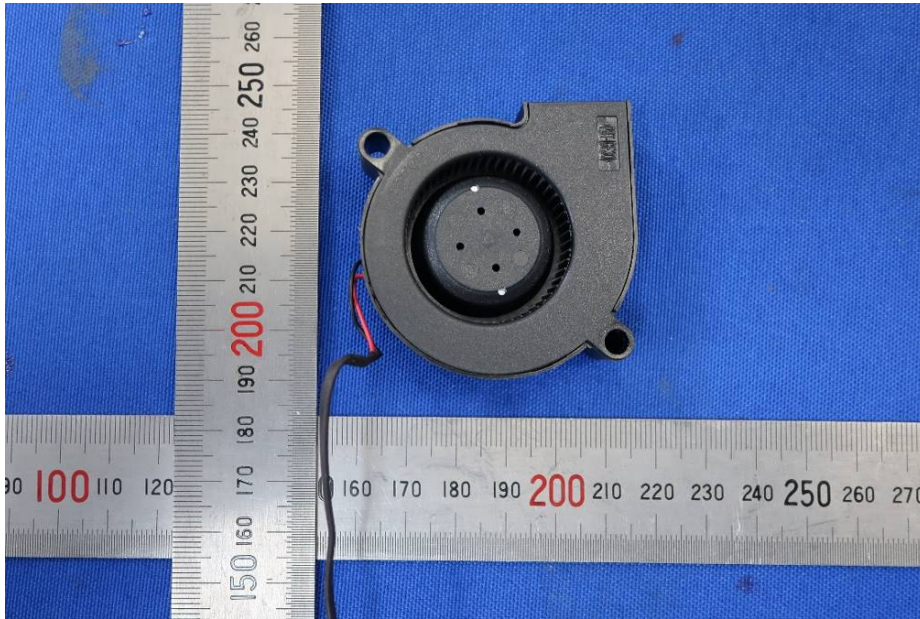
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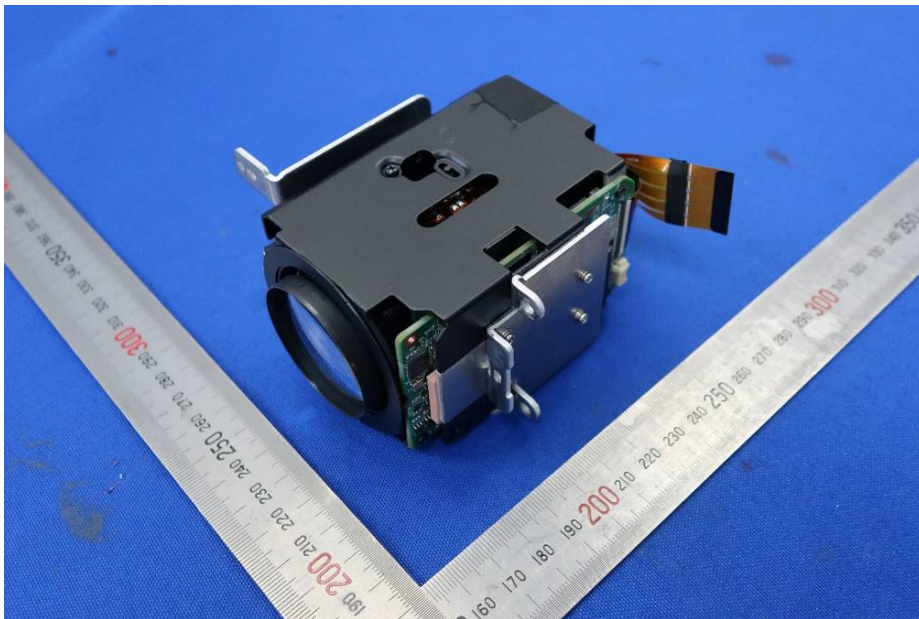
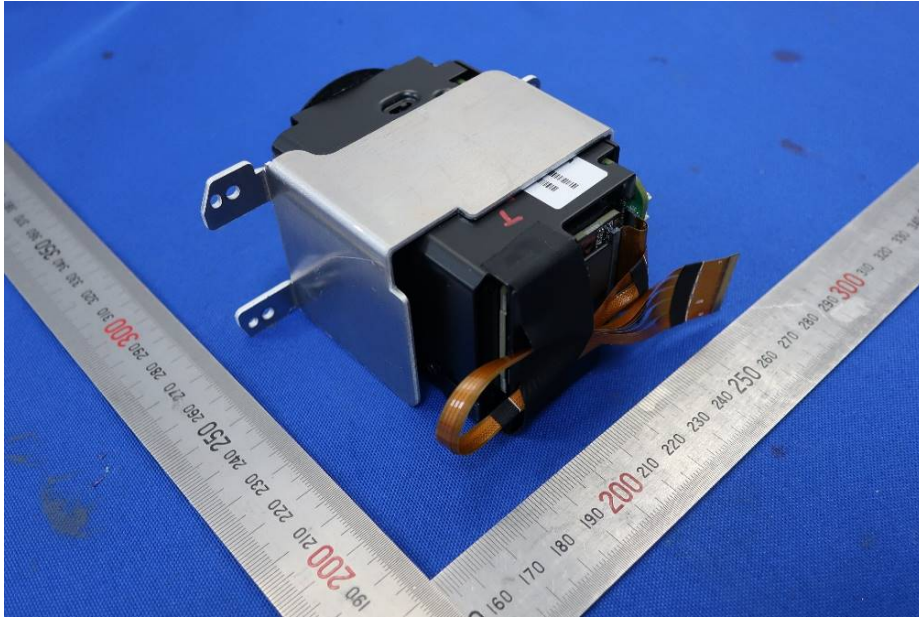
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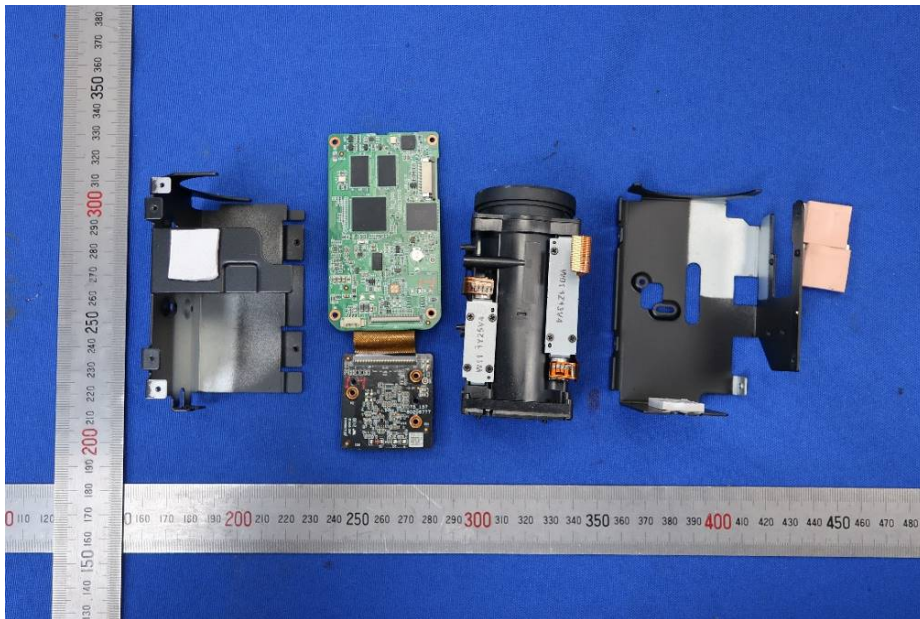
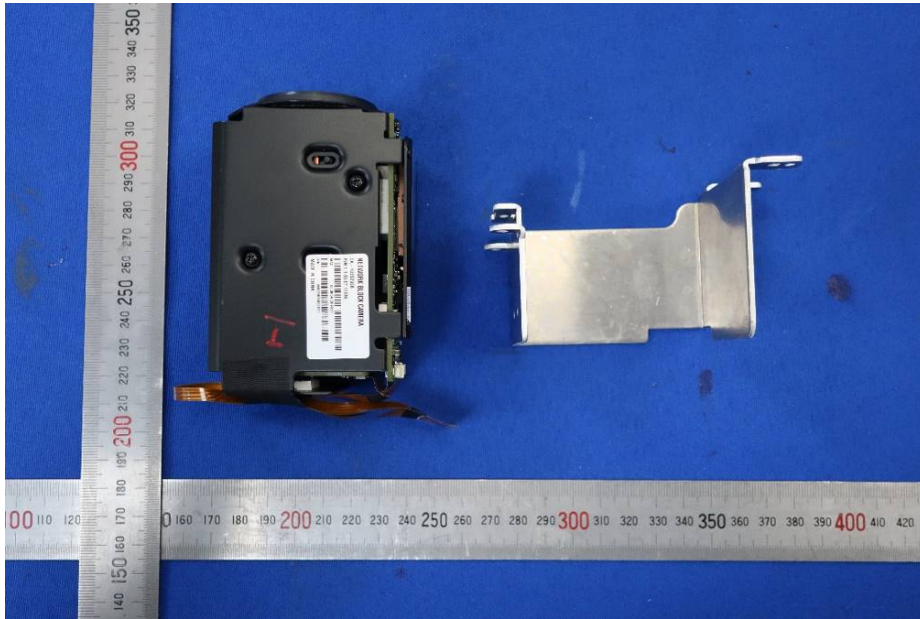
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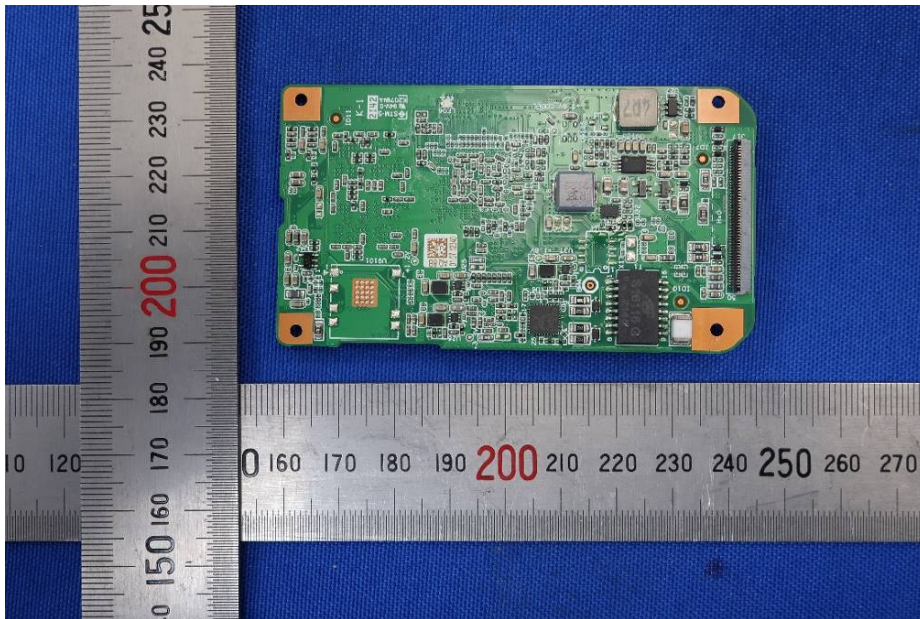
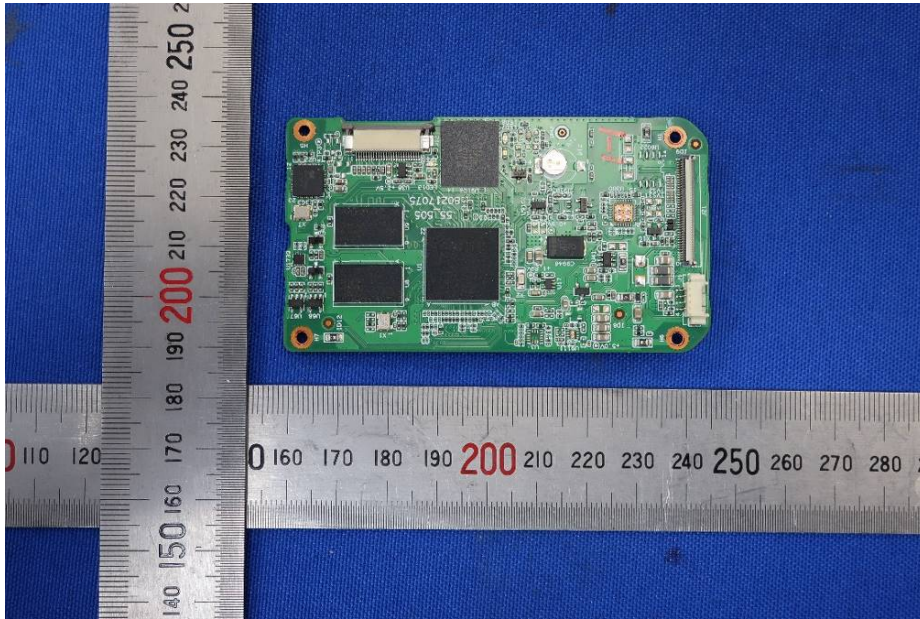
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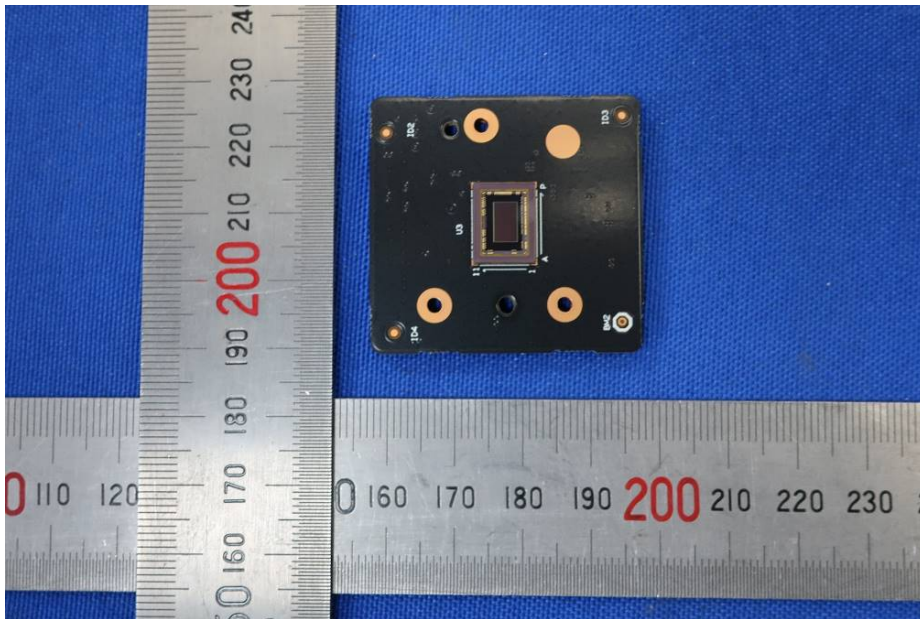
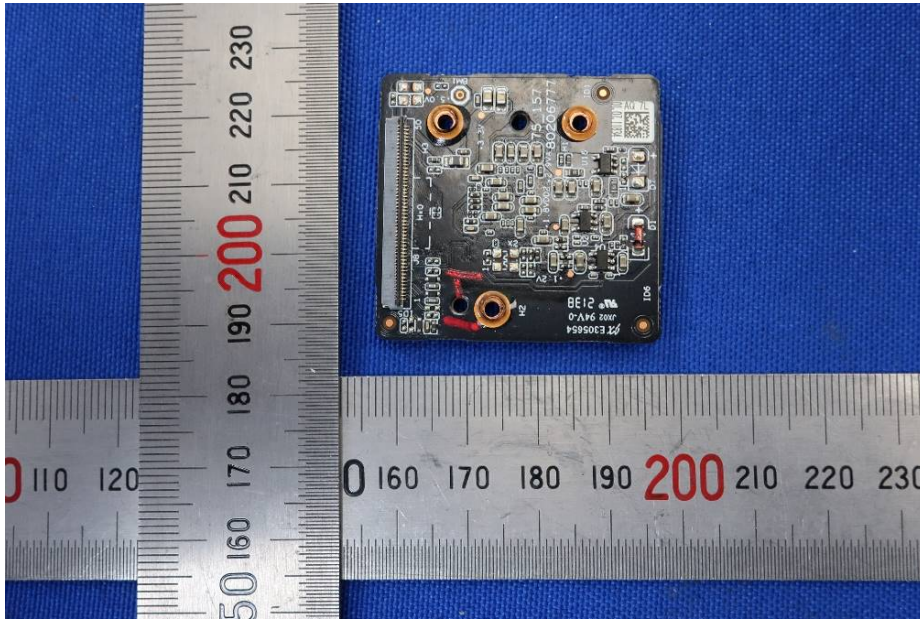
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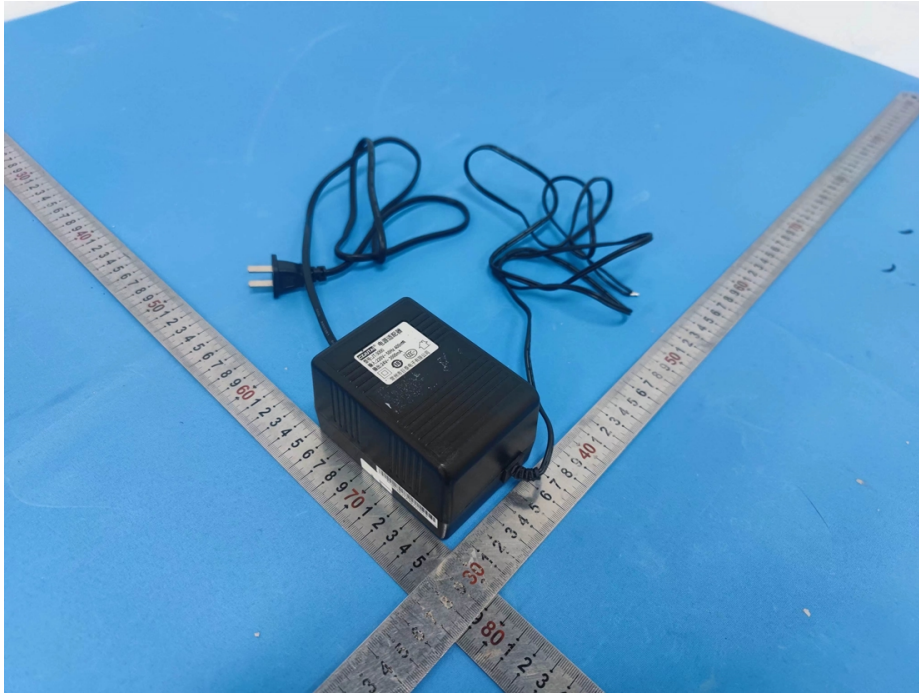


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- End of the Report -

