

INDUSTRY CANADA

TEST REPORT

For
Industrial Control Switchboard

Model No.: MNS, GCK, GCS, VFD, ATS, ACC, ACP, AP, AL, AF, APE, ALE, AD, AS, AR, AW, JXF, XM, XL-21, GGD, GGJ, DB, PDU, ODC, OSG, ODB, OTC, AH, AM, AA, AJ

Applicant : Riches hardware Co., Ltd

Building 168 Guangren Road, Xintian Group, Dongya Village
Committee, Ruhu Town, Huicheng District, Huizhou City, Guangdong
Province, China

Manufacturer : Riches hardware Co., Ltd

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Issued By : Shenzhen Anteng Testing Technology Co., Ltd.

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Report Number : ATJC25101380003900IC

Issued Date : Oct. 13, 2025

Date of Report : Oct. 13 - 25, 2025

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1. GENERAL INFORMATION

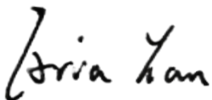
1.1 Product Description for Equipment Under Test (EUT)

Product:	Industrial Control Switchboard
Model:	MNS, GCK, GCS, VFD, ATS, ACC, ACP, AP, AL, AF, APE, ALE, AD, AS, AR, AW, JXF, XM, XL-21, GGD, GGJ, DB, PDU, ODC, OSG, ODB, OTC, AH, AM, AA, AJ
Applicant:	Riches hardware Co., Ltd Building 168 Guangren Road, Xintian Group, Dongya Village Committee, Ruhu Town, Huicheng District, Huizhou City, Guangdong Province, China
Factory:	Riches hardware Co., Ltd Building 168 Guangren Road, Xintian Group, Dongya Village Committee, Ruhu Town, Huicheng District, Huizhou City, Guangdong Province, China
Rating Voltage:	Input:1000V~, 50/60Hz, 4000kW Max

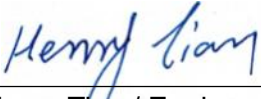
EMISSION			
Standard	Item	Result	Remarks
ICES-003 Issue 7 October 2020	Conducted (Main Port)	PASS	Meet Class B limit
	Radiated	PASS	Meet Class B limit

Deviation from Applicable Standard
None

The above equipment has been tested by Shenzhen Anteng Testing Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested : 
Aria Yan / Engineer

Date : Oct. 25, 2025

Approved : 
Henry Tian / Engineer

Date : Oct. 25, 2025

1.2 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1, radio disturbance and immunity measuring apparatus, and CISPR16-2, Method of measurement of disturbances and immunity. All measurement required was performed at laboratory of Shenzhen Anteng Testing Technology Co., Ltd. Floor 5, No. 11, Hebei Industrial Zone, Hualian Community, Longhua Street, Longhua District, Shenzhen, China

1.3 Test Instruments list

Immunity shielded room				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMC PARTNER TRANSIENT 2000	EMC PARTNER	TRA2000	881	2025-10-30
Power-frequency Magnetic field	SCHAFFNER	CCN 1000-1	72046	2025-10-30
Induction Coil Interface	SCHAFFNER	INA2141	6003	2025-10-30
Signal Generator	Marconi	2022D	119246/003	2025-10-30
Power Amplifier	M2S	A00181-1000	9801-112	2025-10-30
CDN	MEB	M3-8016	003683	2025-10-30
Power Amplifier	M2S	AC8113/800-250A	9801-179	2025-10-30
Power Antenna	SCHAFFNER	CBL6140A	1204	2025-10-30
ESD 2000	EMC PARTNER	ESD2000	182	2025-10-30
Harmonic & Flicker Tester	California instruments	PACS-3	SB2588/01	2025-10-30
AC Power Source	California instruments	5001iX-CTS-40	SB2588	2025-10-30
EMI Test Receiver	R&S	ESCI	100005	2025-10-30
Spectrum Analyzer	R&S	FSU	100114	2025-10-30
Pre Amplifier	H.P.	HP8447E	2945A02715	2025-10-30
Bilog Antenna	SUNOL Sciences	JB3	A021907	2025-10-30
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	2025-10-30
System-Controller	CCS	N/A	N/A	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R
Triple-Loop Antenna	EVERFINE	LLA-2	N/A	2025-10-30
LISN	AFJ	LS16	16010222119	2025-10-30
LISN(EUT)	Mestec	AN3016	04/10040	2025-10-30

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2. SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

2.3 Equipment Modifications

The EUT tested was not modified by Shenzhen Anteng Testing Technology Co., Ltd.
Floor 5, No. 11, Hebei Industrial Zone, Hualian Community, Longhua Street, Longhua District, Shenzhen, China

3. EMISSION TEST

3.1 LIMITS

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2 TEST PROCEDURES

Procedure of Preliminary Test

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

All I/O cables were positioned to simulate typical actual usage as per EN55032.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

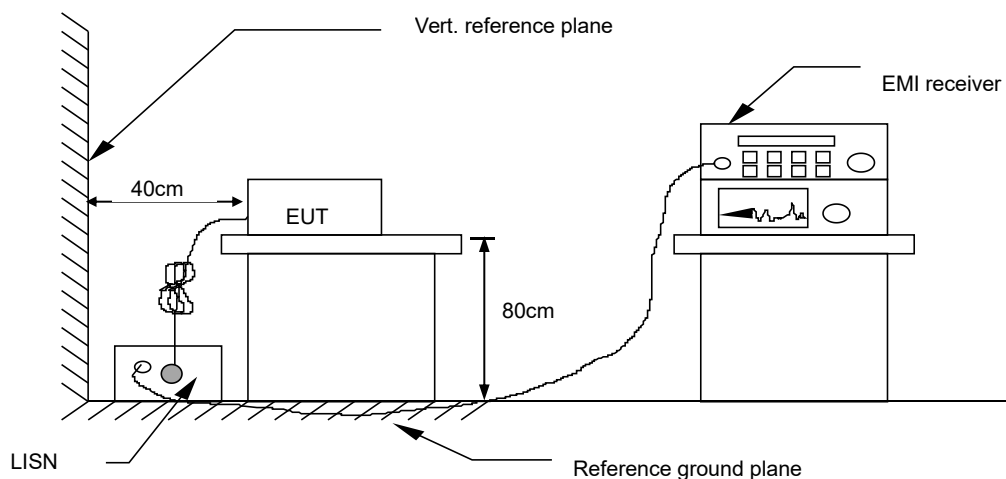
Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

3.3 TEST SETUP

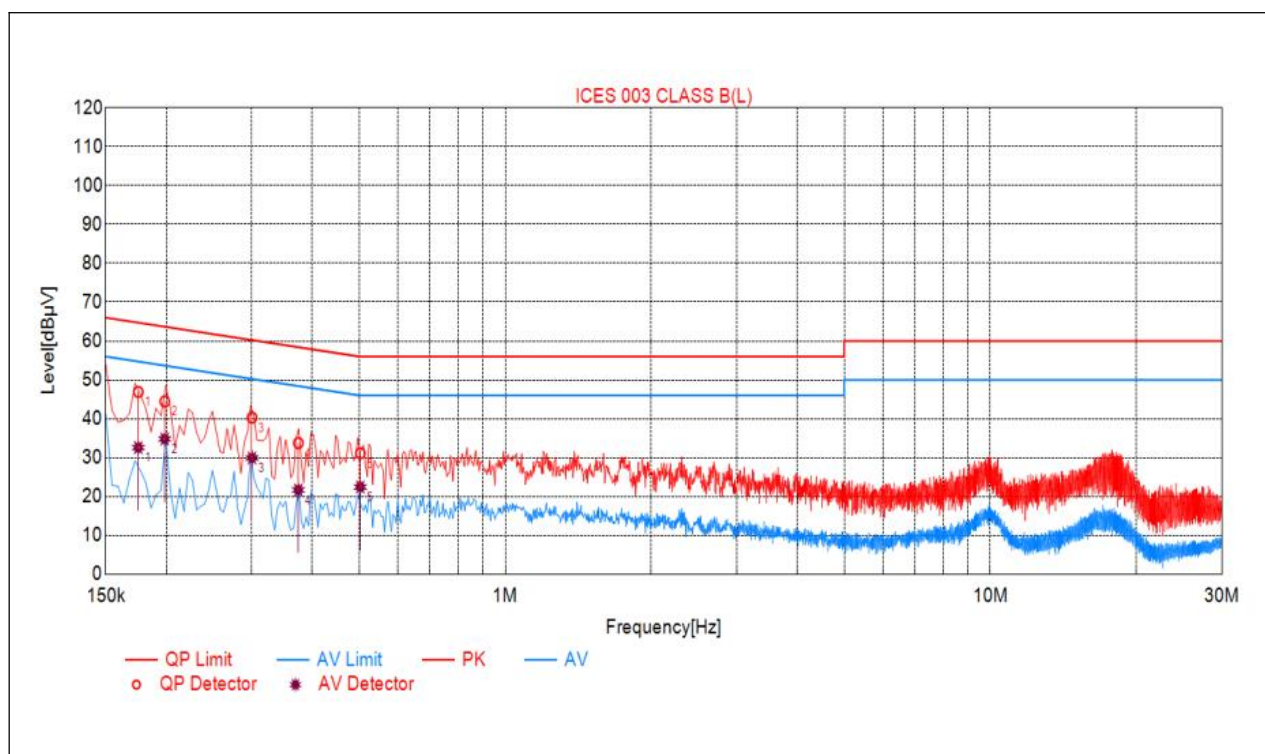


For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

3.4 TEST RESULTS

Temperature (°C)	22~28
Humidity (%RH)	50~57
Barometric Pressure (mbar)	950~1000
EUT	Industrial Control Switchboard
M/N	MNS
Operating Mode	Full Load
Test Results	PASS

EUT :	Industrial Control Switchboard	Model Name. :	MNS
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	Oct. 25, 2025
Test Mode :	Full Load	Phase :	L
Test Voltage :	AC1000V		

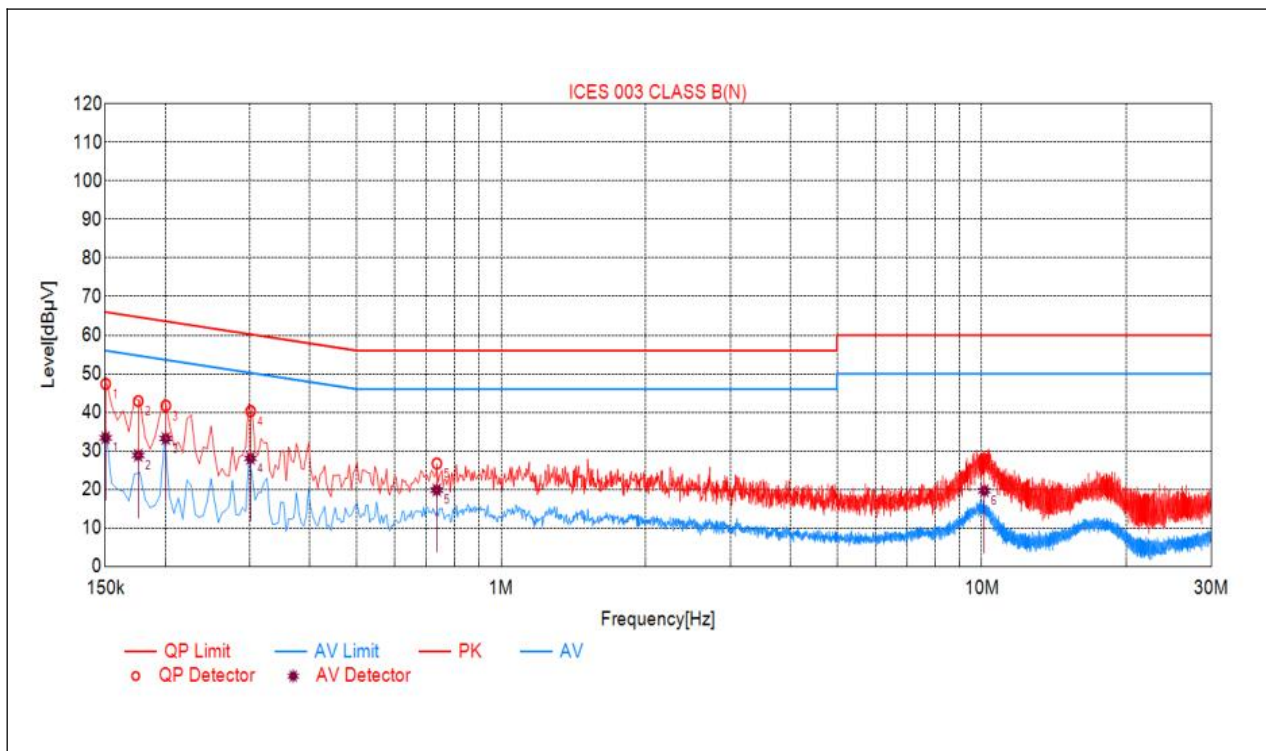


Final Data List								
NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1751	46.88	64.71	17.83	32.58	54.71	22.13	PASS
2	0.1985	44.45	63.67	19.22	34.79	53.67	18.88	PASS
3	0.3004	40.30	60.23	19.93	29.91	50.23	20.32	PASS
4	0.3743	33.74	58.40	24.66	21.66	48.40	26.74	PASS
5	0.5024	31.11	56.00	24.89	22.41	46.00	23.59	PASS

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

EUT :	Industrial Control Switchboard	Model Name. :	MNS
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	Oct. 25, 2025
Test Mode :	Full Load	Phase :	N
Test Voltage :	AC1000V		



Final Data List								
NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1503	47.35	65.98	18.63	33.36	55.98	22.62	PASS
2	0.1757	42.91	64.69	21.78	28.83	54.69	25.86	PASS
3	0.2005	41.71	63.59	21.88	33.18	53.59	20.41	PASS
4	0.3010	40.29	60.22	19.93	28.05	50.22	22.17	PASS
5	0.7345	26.71	56.00	29.29	19.84	46.00	26.16	PASS
6	10.1248	27.80	60.00	32.20	19.64	50.00	30.36	PASS

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

4. RADIATED EMISSION MEASUREMENT

4.1 LIMITS

FREQUENCY (MHz)	dBuV/m (At 3m)
	Limit
30 ~ 88	40.0
88 ~ 216	43.5
216 ~ 960	46.0
Above 960	54.0

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

4.2 TEST PROCEDURE

Procedure of Preliminary Test

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per EN55032.

All I/O cables were positioned to simulate typical usage as per EN55032.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test area shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in EN 55032. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in Item 3.1 were scanned during the preliminary test: After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna

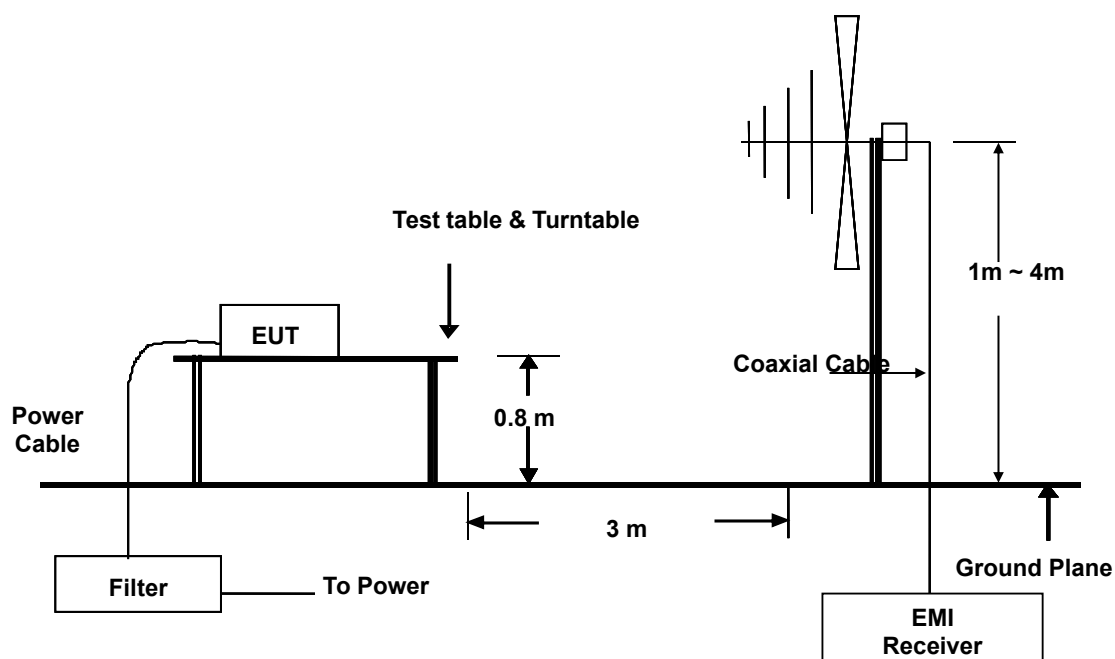
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position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

4.3 TEST SETUP

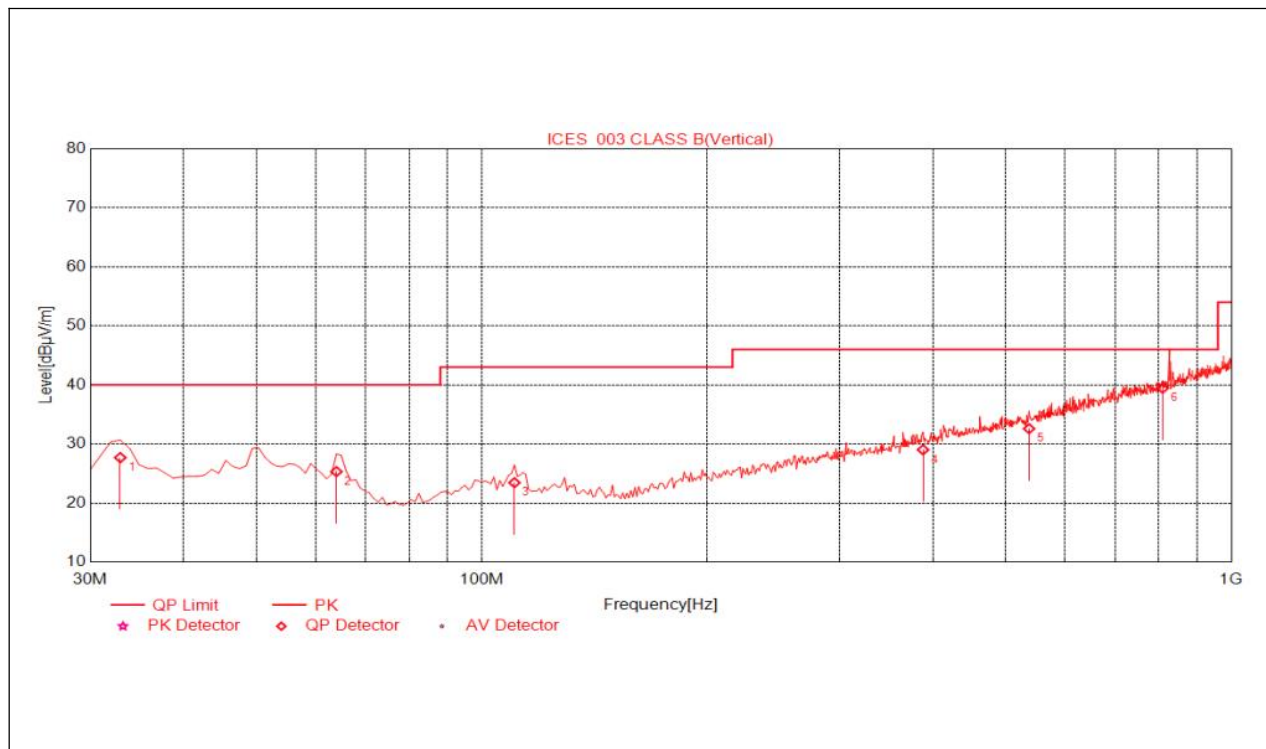


For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

4.4 TEST RESULTS

Temperature (°C)	22~28
Humidity (%RH)	50~57
Barometric Pressure (mbar)	950~1000
EUT	Industrial Control Switchboard
M/N	MNS
Operating Mode	Full Load
Test Results	PASS

EUT :	Industrial Control Switchboard	Model Name. :	MNS
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	Oct. 25, 2025
Test Mode :	Full Load	Phase :	Vertical
Test Voltage :	AC1000V		

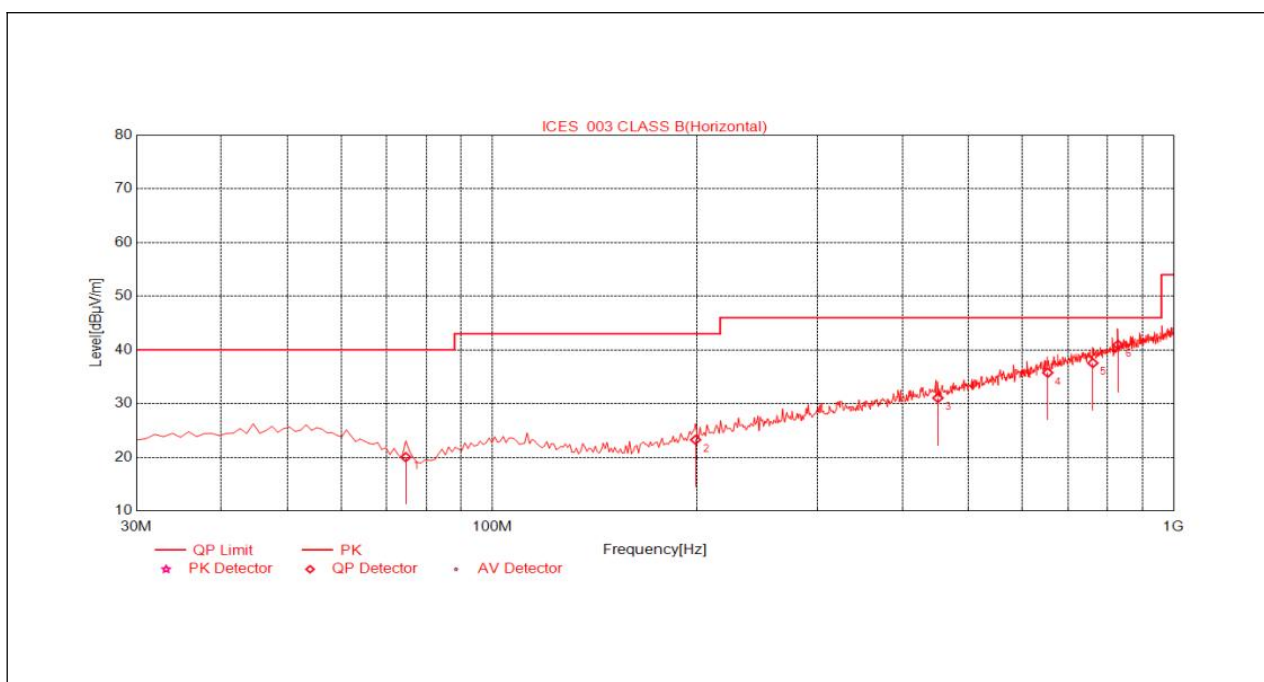


Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.9100	-7.02	27.68	40.00	12.32	100	298	Vertical
2	63.9500	-6.71	25.31	40.00	14.69	100	287	Vertical
3	110.5100	-7.36	23.43	43.00	19.57	100	301	Vertical
4	387.9300	0.57	29.01	46.00	16.99	100	82	Vertical
5	537.3100	3.99	32.58	46.00	13.42	100	194	Vertical
6	809.8800	9.65	39.44	46.00	6.56	100	219	Vertical

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

EUT :	Industrial Control Switchboard	Model Name. :	MNS
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	Oct. 25, 2025
Test Mode :	Full Load	Phase :	Horizontal
Test Voltage :	AC1000V		



Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	74.6200	-9.79	20.00	40.00	20.00	100	136	Horizonta
2	198.7800	-5.55	23.24	43.00	19.76	100	69	Horizonta
3	450.9800	2.00	31.03	46.00	14.97	100	108	Horizonta
4	653.7100	6.59	35.74	46.00	10.26	100	108	Horizonta
5	761.3800	8.82	37.53	46.00	8.47	100	273	Horizonta
6	829.2800	10.03	40.94	46.00	5.06	100	330	Horizonta

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

5. EUT PHOTOGRAPHS

Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



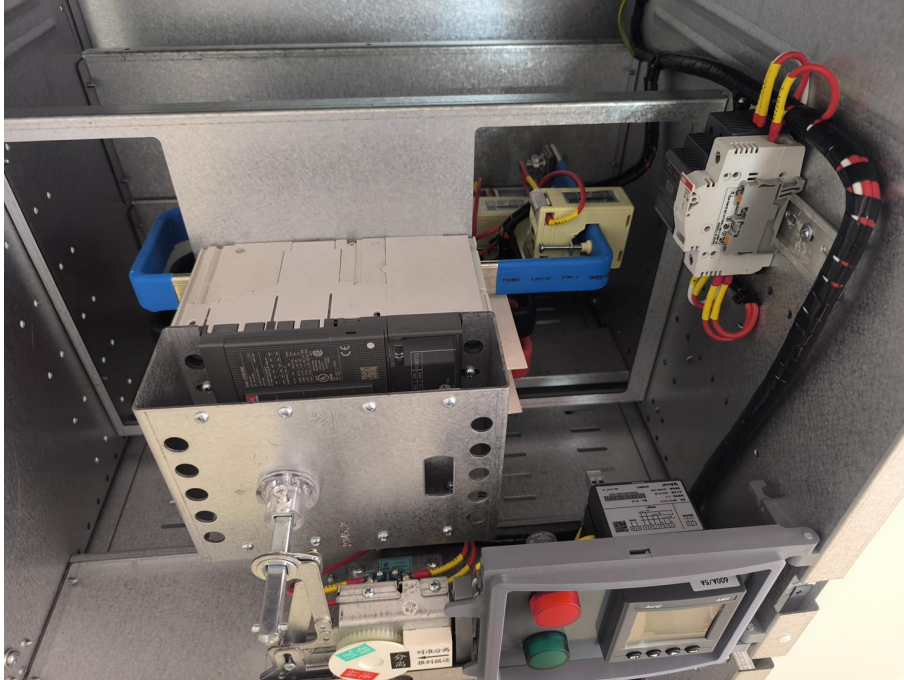
Photo 8



Photo 9



Photo 10



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