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检测
TESTING
CNAS L5662

EN 55032:2015+A11:2020+A1:2020

EN 55035:2017+A11:2020

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

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

BS EN 55032:2015+A11:2020+A1:2020

BS EN 55035:2017+A11:2020

BS EN IEC 61000-3-2:2019+A1:2021

BS EN 61000-3-3:2013+A1:2019+A2:2021

TEST REPORT

For

SHENZHEN TENDA TECHNOLOGY CO.,LTD.

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

Tested Model: CH3-WCA
Multiple Model: RH3-WCA

Report Type: Original Report	**Product Type:** 1080P Outdoor Wi-Fi Pan/Tilt Camera
Report Number:	DG2230109-01441E-01
Report Date:	2023/3/9
Reviewed By:	Fay Hu Project Engineer
Approved By:	Rocky Xiao RF Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	DG2230109-01441E-01	Original Report	2023/3/9

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		1080P Outdoor Wi-Fi Pan/Tilt Camera
EUT Model:		CH3-WCA
Multiple Model:		RH3-WCA
Model Difference:		Please refer to the DoS
Rated Input Voltage:		DC12V from adapter
EU Adapter Information	**Model:**	BN073-A12012E
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
UK Adapter Information	**Model:**	BN073-A12012B
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
Serial Number:		1Y04
EUT Received Date:		2023/1/10
EUT Received Status:		Good

Objective

This report is prepared on behalf of ***SHENZHEN TENDA TECHNOLOGY CO.,LTD.*** in accordance with EN 55032:2015+A11:2020+A1:2020 and BS EN 55032:2015+A11:2020+A1:2020 Electromagnetic compatibility of multimedia equipment - Emission Requirements;
EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 Electromagnetic compatibility of multimedia equipment - Immunity requirements;
EN IEC 61000-3-2:2019+A1:2021 and BS EN IEC 61000-3-2:2019+A1:2021 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase);
EN 61000-3-3:2013+A1:2019+A2:2021 and BS EN 61000-3-3:2013+A1:2019+A2:2021 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection.

The objective is to determine the compliance of EUT with:
EN 55032:2015+A11:2020+A1:2020
EN 55035:2017+A11:2020
EN IEC 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A1:2019+A2:2021
BS EN 55032:2015+A11:2020+A1:2020
BS EN 55035:2017+A11:2020
BS EN IEC 61000-3-2:2019+A1:2021
BS EN 61000-3-3:2013+A1:2019+A2:2021.

Test Methodology

All measurements contained in this report were conducted with
EN 55032:2015+A11:2020+A1:2020 and BS EN 55032:2015+A11:2020+A1:2020 Electromagnetic compatibility of multimedia equipment - Emission Requirements;
EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 Electromagnetic compatibility of multimedia equipment - Immunity requirements;
EN IEC 61000-3-2:2019+A1:2021 and BS EN IEC 61000-3-2:2019+A1:2021 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase);
EN 61000-3-3:2013+A1:2019+A2:2021 and BS EN 61000-3-3:2013+A1:2019+A2:2021 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol"▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Test Mode:
M1: Operating

Note: The two adapters are same except for the power pins, which do not affect the test result, thus, only EU adapter was selected for full test.

Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

Software "TDSEE" was used during test.

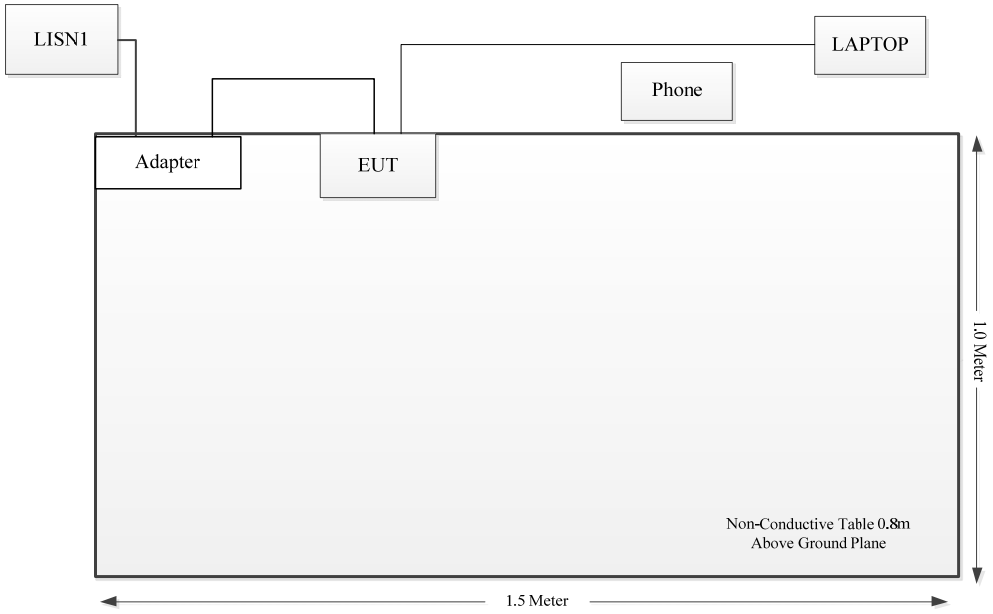
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	E6410	G4JJPM1
Huawei	Smartphone	EVR-AL00	A000009E3F501E

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
Power Cable	Yes	No	2.8	EUT	Adapter
RJ45 Cable	Yes	No	10	EUT	Laptop

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission					
R&S	LISN	ENV 216	101614	2022/10/24	2023/10/23
TESEQ	ISN	T800	34379	2022/10/24	2023/10/23
R&S	EMI Test Receiver	ESCI	100035	2022/10/24	2023/10/23
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2022/9/5	2023/9/4
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-1	2020/11/10	2023/11/9
R&S	EMI Test Receiver	ESR3	102453	2022/10/24	2023/10/23
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2022/7/19	2023/7/18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2022/7/19	2023/7/18
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2022/7/19	2023/7/18
Sonoma	Amplifier	310N	372193	2022/7/18	2023/7/17
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2021/10/12	2024/10/11
Agilent	Spectrum Analyzer	E4440A	SG43360054	2022/7/15	2023/7/14
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2022/9/4	2023/9/3
AH	Preamplifier	PAM-0118	469	2022/10/13	2023/10/12
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2022/6/16	2023/6/15
EFT & Surge & Dips					
EM TEST	Ultra Compact Generator	UCS 500N5	P1406130994	2022/11/22	2023/11/21
EM TEST	Autotransformer	MV2616	P1450144859	N/A	N/A
EM TEST	CDN	CNV508 S1	311137	2022/11/22	2023/11/21
EM TEST	EFT Clamp	N/A	300886	2022/7/15	2023/7/14
Flicker					
EVERFINE	Harmonic & Flicker TEST ING Power Source	HFS-4000	P624486CD141 1122	2022/11/22	2023/11/21
EVERFINE	Harmonic & Flicker Measurement System	HFM3000	P630850CD141 1115	2022/11/16	2023/11/15
ESD					
TESEQ	ESD Generator	NSG 438	1019	2022/11/16	2023/11/15
CS					
HP	Signal Generator	8648A	3246A00831	2022/11/22	2023/11/21
R&S	Power Amplifier	15A250	12934	N/A	N/A
Werlatone	Dual Directional Coupler	C5091-10	113192	2022/2/9	2023/2/8
HP	Power Meter	HP EPM-441A	GB37481494	2022/11/18	2023/11/17
Agilent	8482A Power sensor	8482A	US37296108	2022/11/18	2023/11/17
NARDA	Attenuator	769-6	2754	N/A	N/A
COM-POWER	CDN	M325E	521064	2022/11/22	2023/11/21
COM-POWER	CDN	T8E	581607	2022/7/15	2023/7/14
R&S	Audio Analyzer	UPV	103447	2022/11/16	2023/11/15
BK Precision	Sound Level meter	735	7350087310010 020	2022/10/31	2023/10/30
PFMF					
EM TEST	Current Transformer	MC2630	301873	N/A	N/A
EM TEST	Loop Antenna	MS100	303298	N/A	N/A
PAOFN	Transformer	AC250	250003	N/A	N/A

FLUKE	Clamp Meter	317	42270435WS	2022/11/18	2023/11/17
RS					
AR	Antenna	ATL80M1G	0351400	N/A	N/A
AR	Antenna	ATT700M12G	0349410	N/A	N/A
HP	Signal Generator	8665B	3438a00584	2022/11/18	2023/11/17
AR	Power Amplifier	500W1000C	0353561	N/A	N/A
AR	Power Amplifier	60S1G6	0348711	N/A	N/A
PASTERNACK	Dual Directional Coupler	PE2239-30	1711	2022/7/15	2023/7/14
Agilent	EPM Series Power Meter	E4419B	MY45103907	2022/11/18	2023/11/17
Agilent	E-Series Avg Power Sensor	E9301A	MY41497625	2022/11/22	2023/11/21
Agilent	E-Series Avg Power Sensor	E9301A	MY41497628	2022/11/22	2023/11/21
R&S	Audio Analyzer	UPV	103447	2022/11/16	2023/11/15
BK Precision	Sound Level meter	735	7350087310010020	2022/10/31	2023/10/30

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Test Item:	Conducted emission	Radiated emissions below 1GHz	Radiated emissions above 1GHz	EMS & Flicker
Temperature:	23.2℃	21.8℃	18.1℃	17.9~18.7℃
Relative Humidity:	72%	66%	51%	30~38%
ATM Pressure:	100.4kPa	100.5kPa	102.7kPa	101.9kPa
Tester:	Walker Chen	Colin Yang	Alan Xie	Wright Lai
Test Date:	2023/1/14	2023/1/13	2023/1/28	2023/1/29

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	EN 55032 and BS EN 55032 Clause A.3	Conducted emissions	Compliant
2	EN 55032 BS EN 55032 Clause A.2	Radiated emissions	Compliant
3	EN 55035 and BS EN 55035 Clause 4.2.1	Electrostatic discharges IEC 61000-4-2	Compliant
4	EN 55035 and BS EN 55035 Clause 4.2.2.2	Continuous radiated disturbances IEC 61000-4-3	Compliant
5	EN 55035 and BS EN 55035 Clause 4.2.2.3	Continuous conducted disturbances IEC 61000-4-6	Compliant
6	EN 55035 and BS EN 55035 Clause 4.2.3	Power frequency magnetic fields IEC 61000-4-8	Compliant
7	EN 55035 and BS EN 55035 Clause 4.2.4	Electrical fast transients/burst IEC 61000-4-4	Compliant
8	EN 55035 and BS EN 55035 Clause 4.2.5	Surges IEC 61000-4-5	Compliant
9	EN 55035 and BS EN 55035 Clause 4.2.6	Voltage dips and short interruptions IEC 61000-4-11	Compliant
10	EN IEC 61000-3-2 and BS EN IEC 61000-3-2	Harmonic current emissions	Not applicable*
11	EN 61000-3-3 and BS EN 61000-3-3	Voltage fluctuations and flicker	Compliant

Note:
Not applicable*: The maximum power of this EUT is less than 75W.

1 - CONDUCTED EMISSIONS

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
-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.
If U_{lab} is greater than U_{cispr} of Table 1, then:
-compliance is deemed to occur if no measured disturbance level, increased by (U_{lab}− U_{cispr}), exceeds the disturbance limit;
-Non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

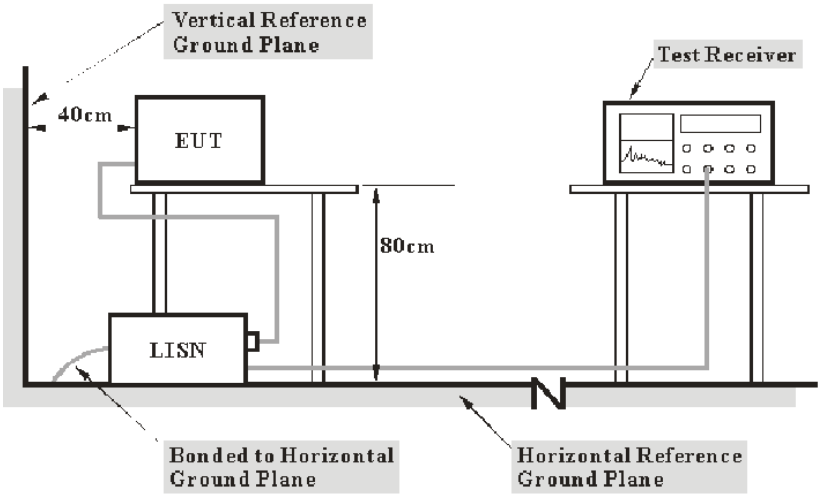
Based on CISPR 16-4-2-2011★, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz), and conducted disturbance at telecommunication port using AAN is 5.0 dB (150 kHz to 30 MHz).

Table 1 - Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (9 kHz to 150 kHz)	3.8 dB
(150 kHz to 30 MHz)	3.4 dB
Conducted disturbance at mains port using voltage probe (9 kHz to 30 MHz)	2.9 dB
Conducted disturbance at telecommunication port using AAN (150 kHz to 30 MHz)	5.0 dB
Conducted disturbance at telecommunication port using CVP (150 kHz to 30 MHz)	3.9 dB
Conducted disturbance at telecommunication port using CP (150 kHz to 30 MHz)	2.9 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with CISPR 16-1-1:2010+A1:2010+A2 2014★, CISPR 16-2-1:2008+A1:2010 +A2 2013★ measurement procedure. The specification used was the EN 55032 and BS EN 55032 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

The adapter was connected to a 230V/50Hz AC line power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz - 30 MHz	9 kHz

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:
Corr. = Cable loss + Factor of coupling device

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit -Result

Test Procedure

During the conducted emissions test, the adapter of laptop was connected to the main outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

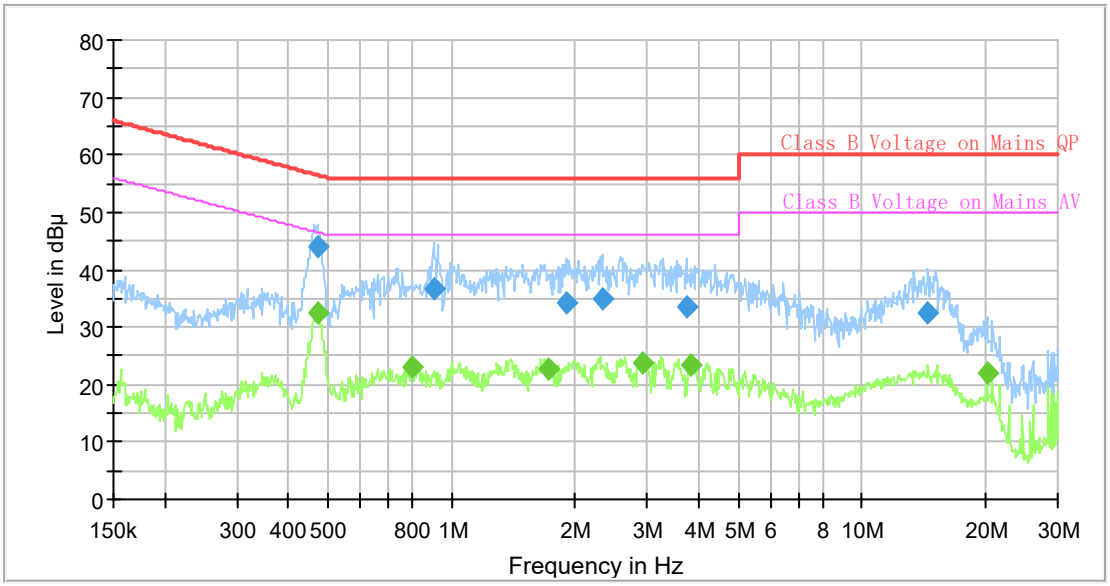
All data was recorded in the Quasi-peak and average detection mode.

Except for the recorded frequency points (no more than 6), the remaining frequency points have a margin more than 20dB.

Test Data

Please refer to following table and plots:

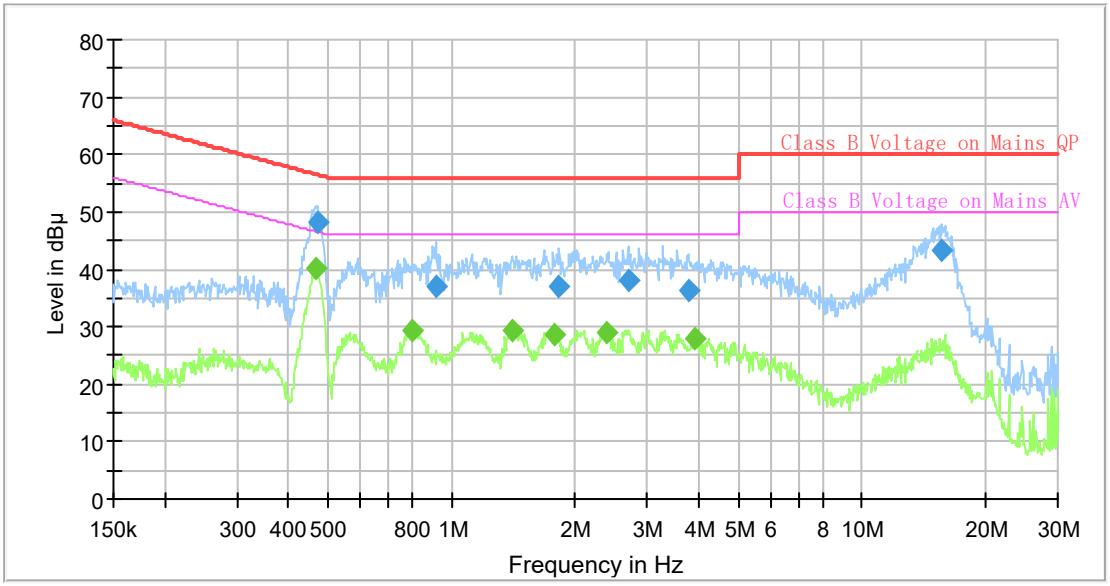
Port:	L
Test Mode:	Operating
Power Source:	AC 110V/60Hz
Note:	



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.470023	---	32.43	46.51	14.08	9.000	L1	9.6
0.470023	44.06	---	56.51	12.45	9.000	L1	9.6
0.805479	---	22.97	46.00	23.03	9.000	L1	9.7
0.903386	36.71	---	56.00	19.29	9.000	L1	9.7
1.727673	---	22.65	46.00	23.35	9.000	L1	9.7
1.899401	34.32	---	56.00	21.68	9.000	L1	9.7
2.330372	34.99	---	56.00	21.01	9.000	L1	9.7
2.931326	---	23.86	46.00	22.14	9.000	L1	9.7
3.724217	33.44	---	56.00	22.56	9.000	L1	9.7
3.837350	---	23.36	46.00	22.64	9.000	L1	9.7
14.461183	32.39	---	60.00	27.61	9.000	L1	10.2
20.199004	---	21.99	50.00	28.01	9.000	L1	10.0

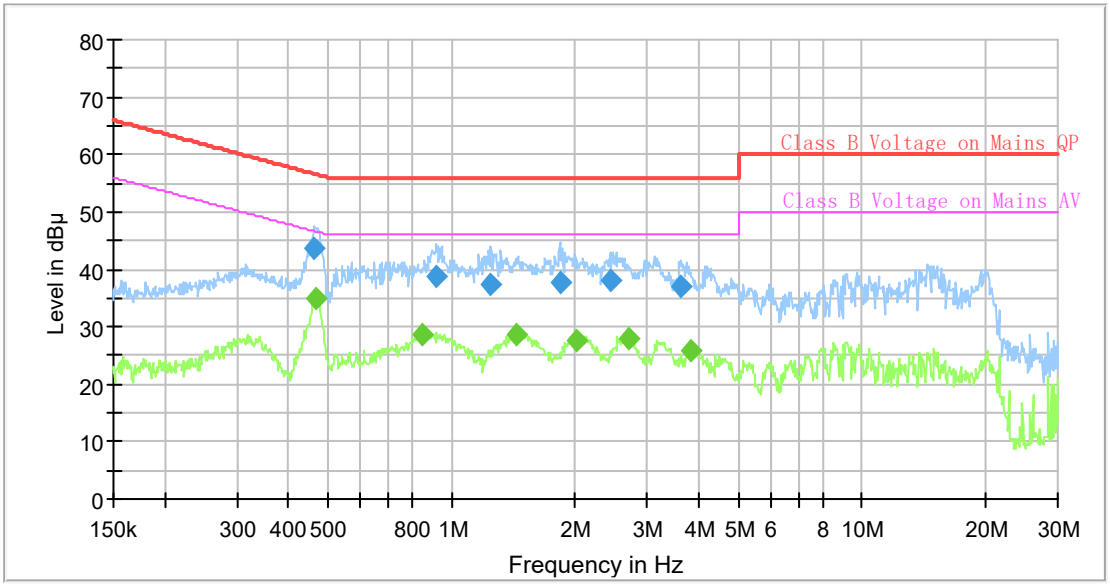
Port: N
Test Mode: Operating
Power Source: AC 110V/60Hz
Note:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.467685	---	40.33	46.55	6.22	9.000	N	9.6
0.470023	48.04	---	56.51	8.47	9.000	N	9.6
0.801471	---	29.41	46.00	16.59	9.000	N	9.6
0.917005	37.09	---	56.00	18.91	9.000	N	9.6
1.408163	---	29.38	46.00	16.62	9.000	N	9.6
1.780155	---	28.61	46.00	17.39	9.000	N	9.6
1.825106	36.97	---	56.00	19.03	9.000	N	9.6
2.377330	---	28.93	46.00	17.07	9.000	N	9.6
2.693029	37.97	---	56.00	18.03	9.000	N	9.6
3.780360	36.31	---	56.00	19.69	9.000	N	9.6
3.934248	---	27.91	46.00	18.09	9.000	N	9.6
15.662490	43.18	---	60.00	16.82	9.000	N	9.9

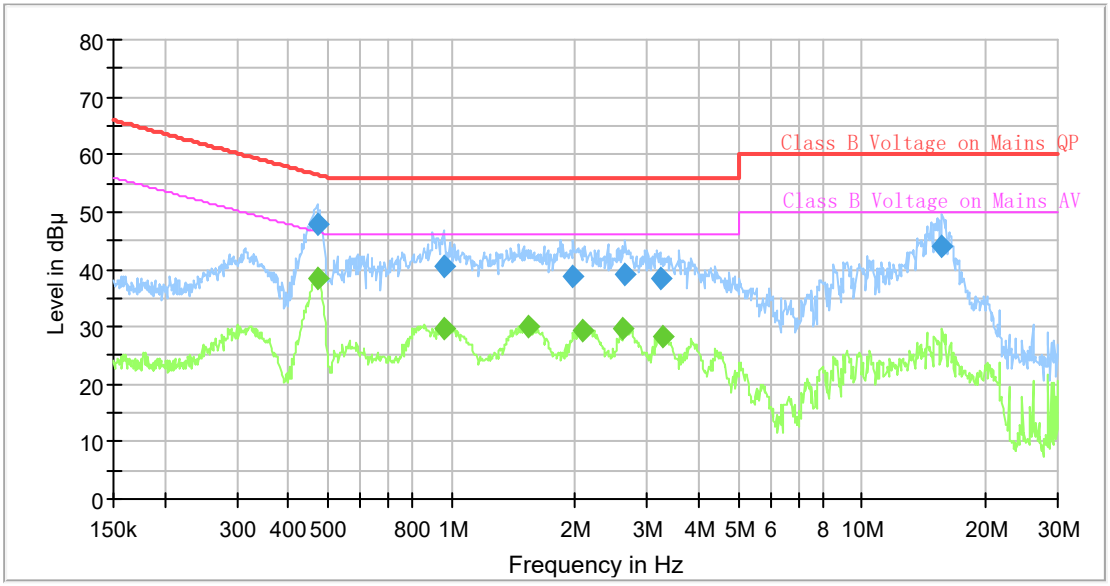
Port: L
Test Mode: Operating
Power Source: AC 230V/50Hz
Note:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.463043	43.70	---	56.64	12.94	9.000	L1	9.6
0.467685	---	34.81	46.55	11.74	9.000	L1	9.6
0.850904	---	28.69	46.00	17.31	9.000	L1	9.7
0.917005	38.69	---	56.00	17.31	9.000	L1	9.7
1.249302	37.37	---	56.00	18.63	9.000	L1	9.7
1.436538	---	28.61	46.00	17.39	9.000	L1	9.7
1.834232	37.75	---	56.00	18.25	9.000	L1	9.7
2.026635	---	27.76	46.00	18.24	9.000	L1	9.7
2.437361	38.02	---	56.00	17.98	9.000	L1	9.7
2.693029	---	27.81	46.00	18.19	9.000	L1	9.7
3.632492	37.08	---	56.00	18.92	9.000	L1	9.7
3.837350	---	25.84	46.00	20.16	9.000	L1	9.7

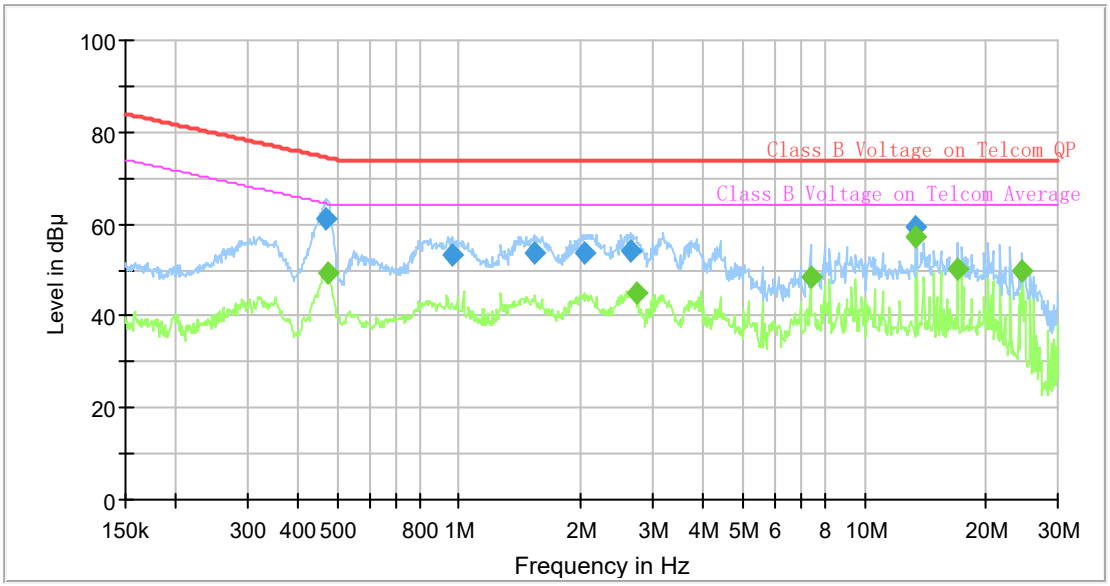
Port: N
Test Mode: Operating
Power Source: AC 230V/50Hz
Note:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.470023	47.92	---	56.51	8.59	9.000	N	9.6
0.472373	---	38.35	46.47	8.12	9.000	N	9.6
0.959105	40.43	---	56.00	15.57	9.000	N	9.6
0.963901	---	29.84	46.00	16.16	9.000	N	9.6
1.540430	---	30.06	46.00	15.94	9.000	N	9.6
1.976720	38.87	---	56.00	17.13	9.000	N	9.6
2.088199	---	29.45	46.00	16.55	9.000	N	9.6
2.613633	---	29.65	46.00	16.35	9.000	N	9.6
2.653034	39.10	---	56.00	16.90	9.000	N	9.6
3.222695	38.46	---	56.00	17.54	9.000	N	9.6
3.255003	---	28.26	46.00	17.74	9.000	N	9.6
15.662490	44.08	---	60.00	15.92	9.000	N	9.9

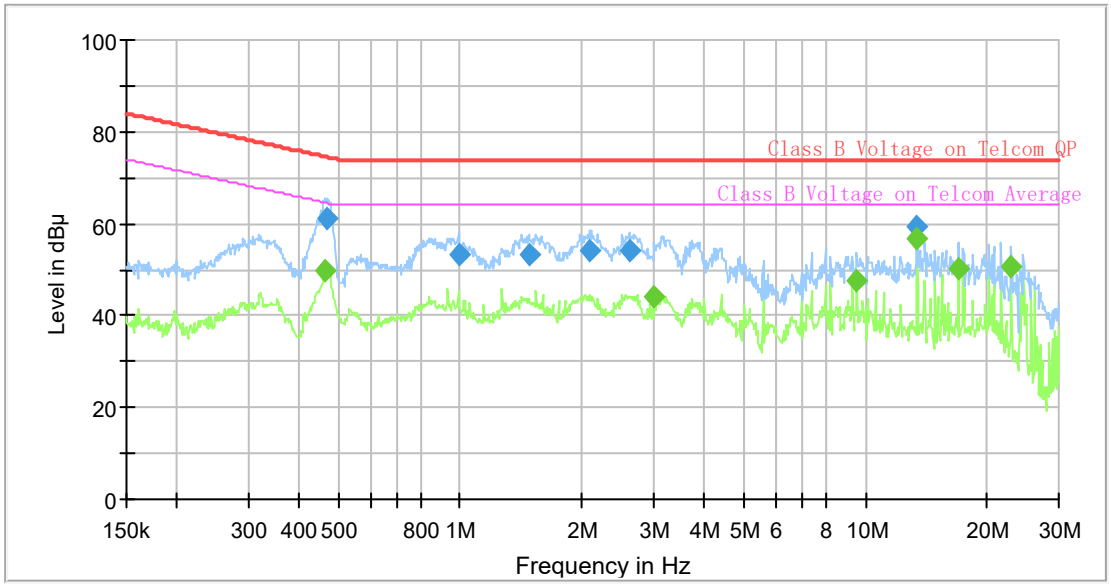
Port: RJ45
Test Mode: 10Mbps
Power Source: AC 230V/50Hz
Note:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.470023	61.22	---	74.51	13.29	9.000	Signal	9.8
0.474735	---	49.34	64.43	15.09	9.000	Signal	9.8
0.963901	53.24	---	74.00	20.76	9.000	Signal	9.7
1.525141	53.60	---	74.00	20.40	9.000	Signal	9.6
2.036768	53.85	---	74.00	20.15	9.000	Signal	9.6
2.653034	54.07	---	74.00	19.93	9.000	Signal	9.6
2.733627	---	44.86	64.00	19.14	9.000	Signal	9.6
7.375399	---	48.55	64.00	15.45	9.000	Signal	9.6
13.418776	---	57.07	64.00	6.93	9.000	Signal	9.6
13.418776	59.39	---	74.00	14.61	9.000	Signal	9.6
16.963591	---	50.08	64.00	13.92	9.000	Signal	9.6
24.536148	---	49.95	64.00	14.05	9.000	Signal	9.8

Port: RJ45
Test Mode: 100Mbps
Power Source: AC 230V/50Hz
Note:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.465358	---	49.81	64.60	14.79	9.000	Signal	9.8
0.470023	61.11	---	74.51	13.40	9.000	Signal	9.8
0.993182	53.08	---	74.00	20.92	9.000	Signal	9.7
1.480177	53.42	---	74.00	20.58	9.000	Signal	9.6
2.088199	54.30	---	74.00	19.70	9.000	Signal	9.6
2.613633	54.19	---	74.00	19.81	9.000	Signal	9.6
3.005345	---	43.97	64.00	20.03	9.000	Signal	9.6
9.511623	---	47.63	64.00	16.37	9.000	Signal	9.6
13.418776	---	56.83	64.00	7.17	9.000	Signal	9.6
13.418776	59.18	---	74.00	14.82	9.000	Signal	9.6
16.963591	---	50.36	64.00	13.64	9.000	Signal	9.6
22.881343	---	50.60	64.00	13.40	9.000	Signal	9.7

2 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
-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.
If U_{lab} is greater than U_{cispr} of Table 1, then:
-Compliance is deemed to occur if no measured disturbance level, increased by (U_{lab}− U_{cispr}), exceeds the disturbance limit;
-Non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

Based on CISPR 16-4-2:2011★, measurement uncertainty of radiated emission at a distance of 10m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 4.55 dB for Horizontal, 4.57 dB for Vertical; 200M~1GHz: 4.66 dB for Horizontal, 4.56 dB for Vertical; measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB.

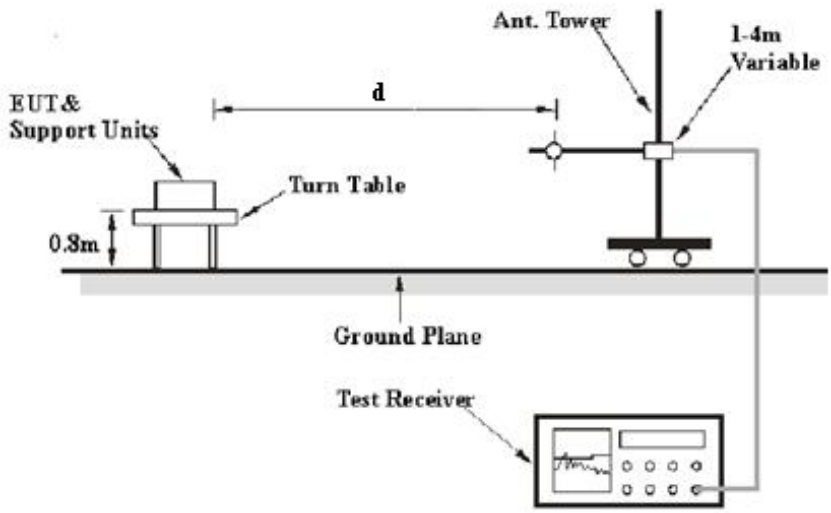
Table 1 - Values of U_{cispr}

Measurement	U_{cispr}
Radiated disturbance(electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

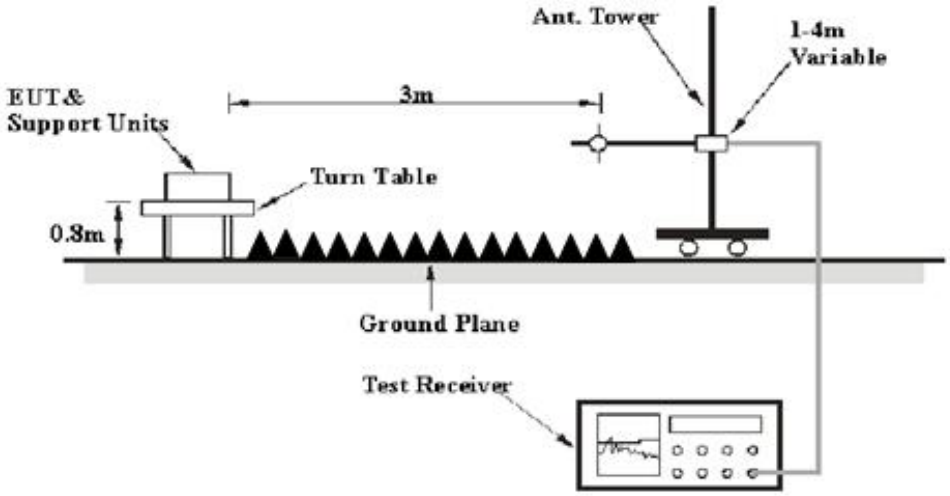
Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests below 1GHz were performed in 3 meters, above 1GHz were performed in the 3 meters, using the setup accordance with the CISPR 16-1-1:2010+A1:2010+A2:2014★, CISPR 16-1-4:2010 + A1:2012★, CISPR 16-2-3:2010+A1:2010+A2:2014★. The specification used was EN 55032 and BS EN 55032 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

EMI Test Receiver and Spectrum Analyzer Setup

The system was investigated from 30 MHz to 6 GHz.

During the radiated emission test, the EMI test receiver(Below 1GHz) and Spectrum Analyzer(Above 1GHz) were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz - 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10Hz	/	Ave.

Test Procedure

During the radiated emissions, maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

If the maximized peak measured value complies with under the QP limit more than 6dB, it is unnecessary to perform QP measurement.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading+ Corrected

Note:
Corrected = Antenna Factor + Cable Loss - Amplifier Gain
Or
Corrected = Antenna Factor + Cable Loss + Insertion loss of attenuator - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit for Class B. The equation for margin calculation is as follows:

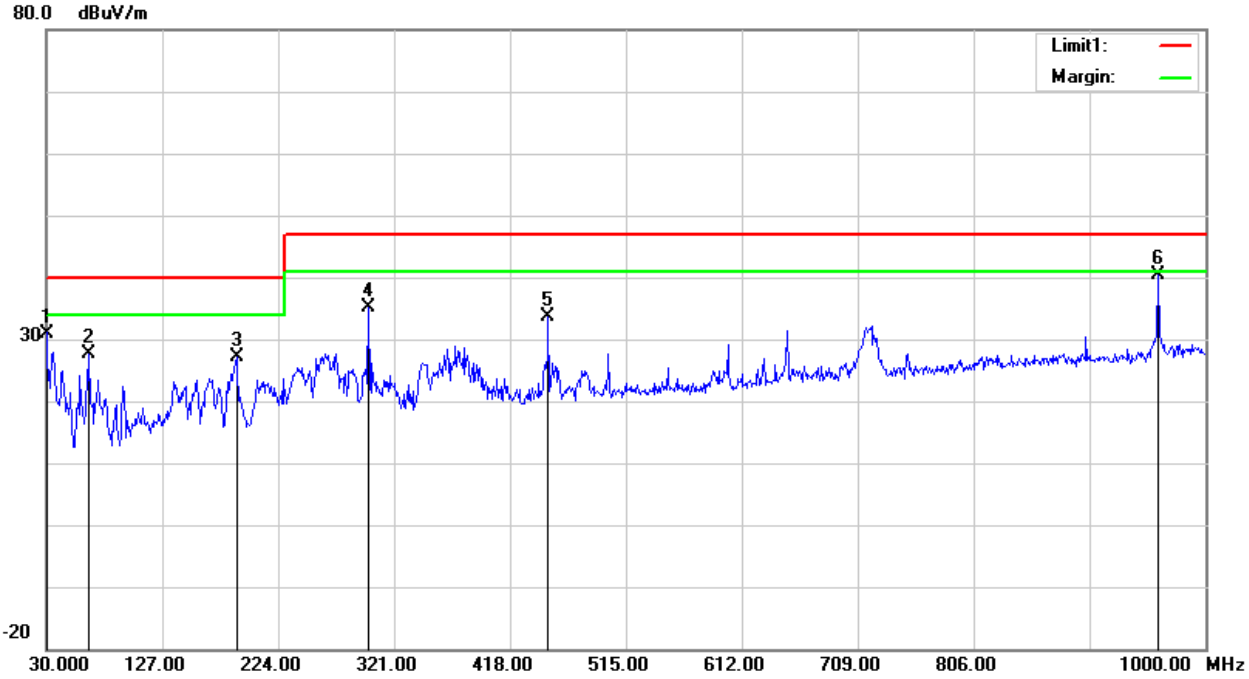
Margin = Limit -Result

Test Data

Please refer to following table and plots:

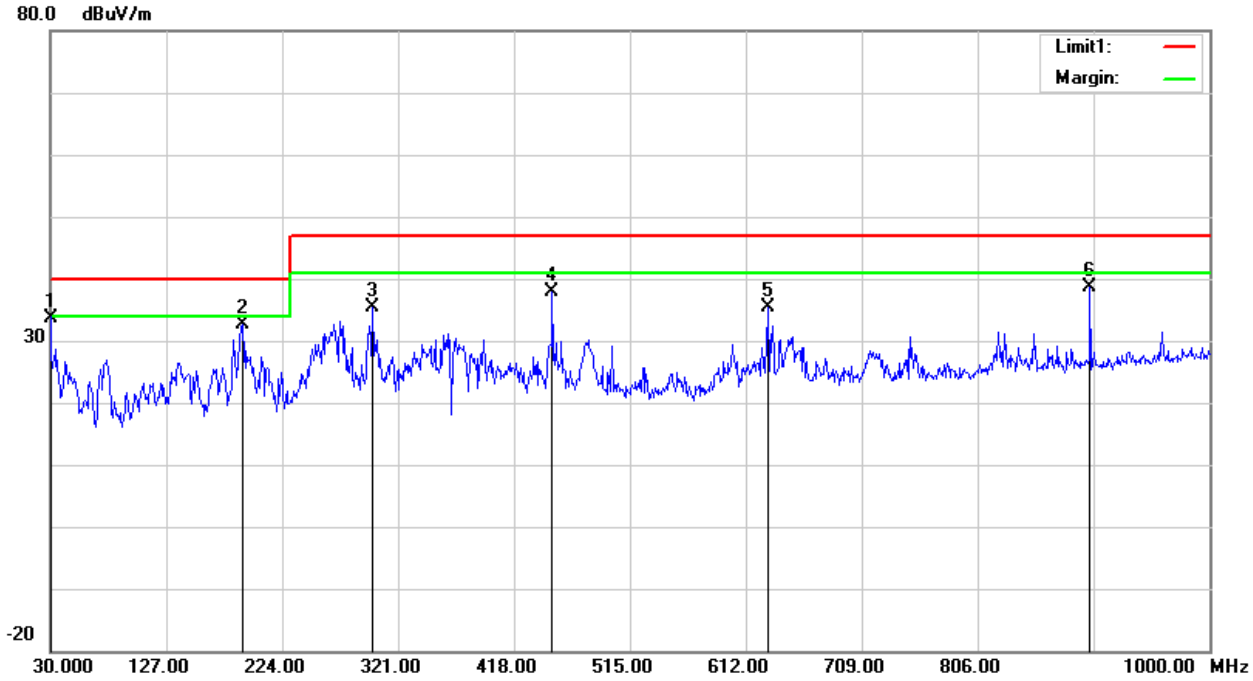
Below 1G

Condition:	EN 55032 Class B	**Polarization:**	Horizontal
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 230V/50Hz**



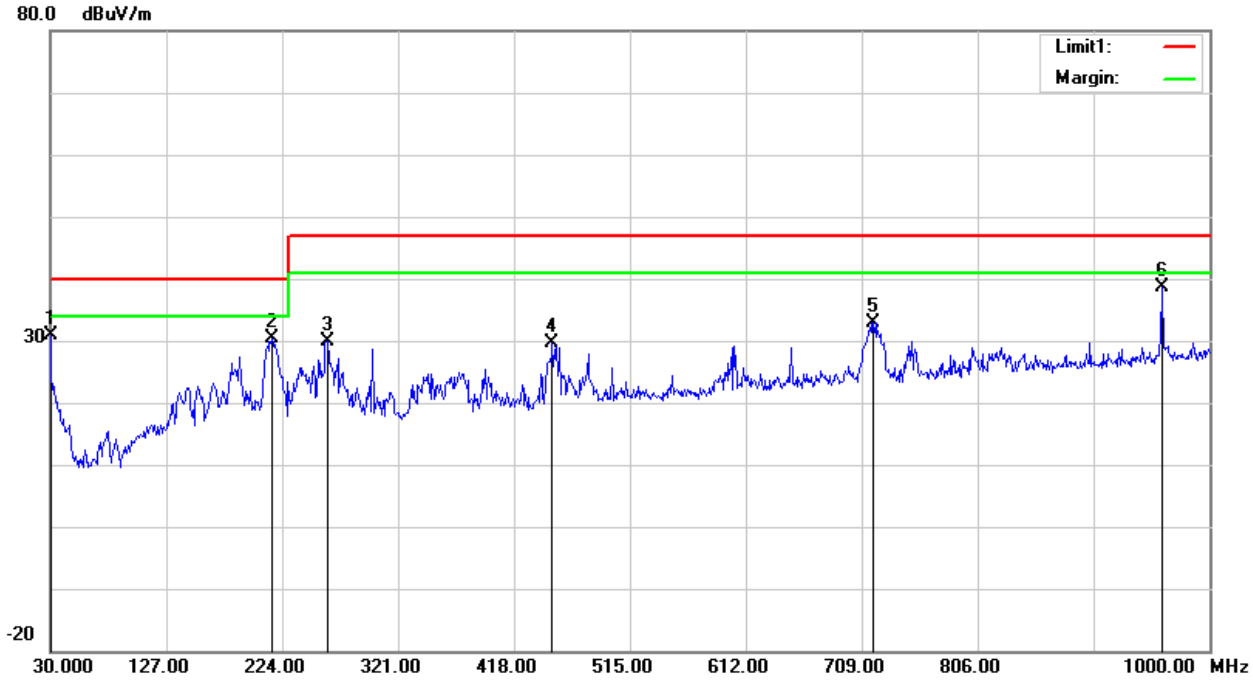
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	34.34	peak	-3.34	31.00	40.00	9.00
2	65.8900	44.24	peak	-16.65	27.59	40.00	12.41
3	189.0800	40.04	peak	-12.88	27.16	40.00	12.84
4	299.6600	45.42	peak	-10.26	35.16	47.00	11.84
5	450.0100	40.32	peak	-6.65	33.67	47.00	13.33
6	960.2300	38.81	peak	1.57	40.38	47.00	6.62

Condition:	EN 55032 Class B	**Polarization:**	Vertical
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 230V/50Hz**



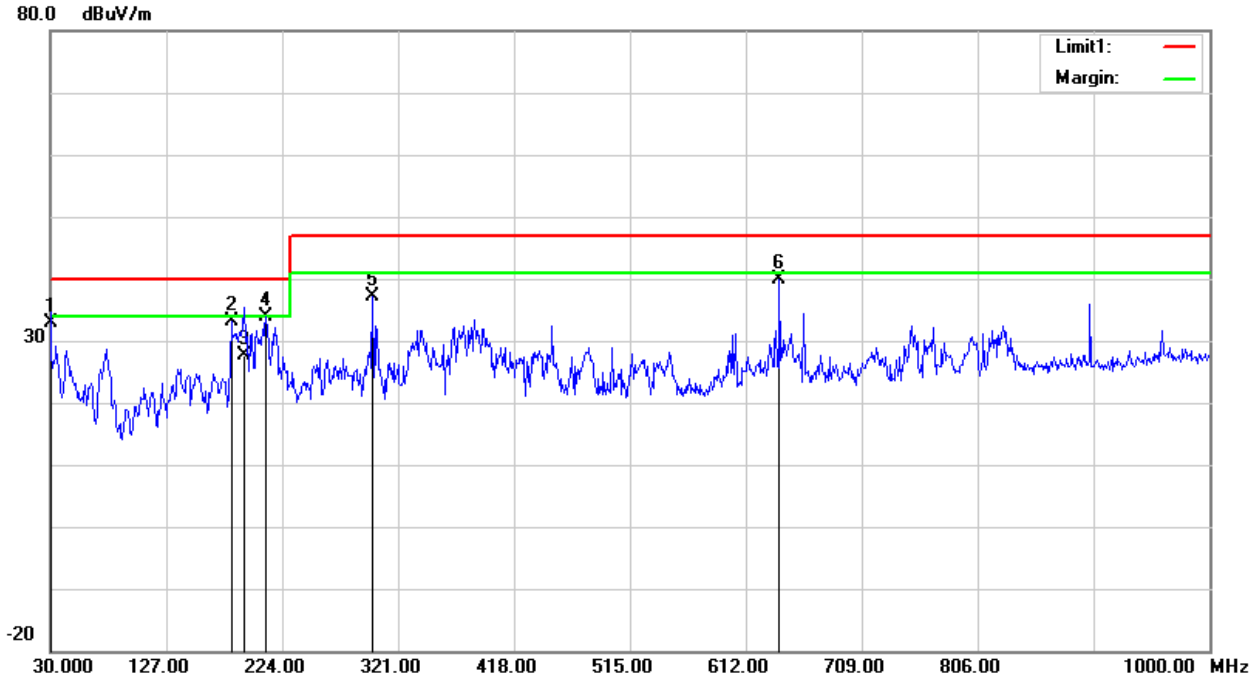
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	37.09	peak	-3.34	33.75	40.00	6.25
2	191.0200	45.35	peak	-12.76	32.59	40.00	7.41
3	299.6600	45.73	peak	-10.26	35.47	47.00	11.53
4	450.0100	44.41	peak	-6.65	37.76	47.00	9.24
5	630.4300	39.12	peak	-3.84	35.28	47.00	11.72
6	900.0900	37.92	peak	0.68	38.60	47.00	8.40

Condition:	EN 55032 Class B	**Polarization:**	Horizontal
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 110V/60Hz**



No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBµV)		(dB/m)	(dBµV/m)	(dBµV/m)	(dB)
1	30.0000	34.15	peak	-3.34	30.81	40.00	9.19
2	215.2700	42.41	peak	-12.13	30.28	40.00	9.72
3	261.8300	41.67	peak	-11.81	29.86	47.00	17.14
4	450.0100	36.19	peak	-6.65	29.54	47.00	17.46
5	718.7000	35.40	peak	-2.47	32.93	47.00	14.07
6	960.2300	37.06	peak	1.57	38.63	47.00	8.37

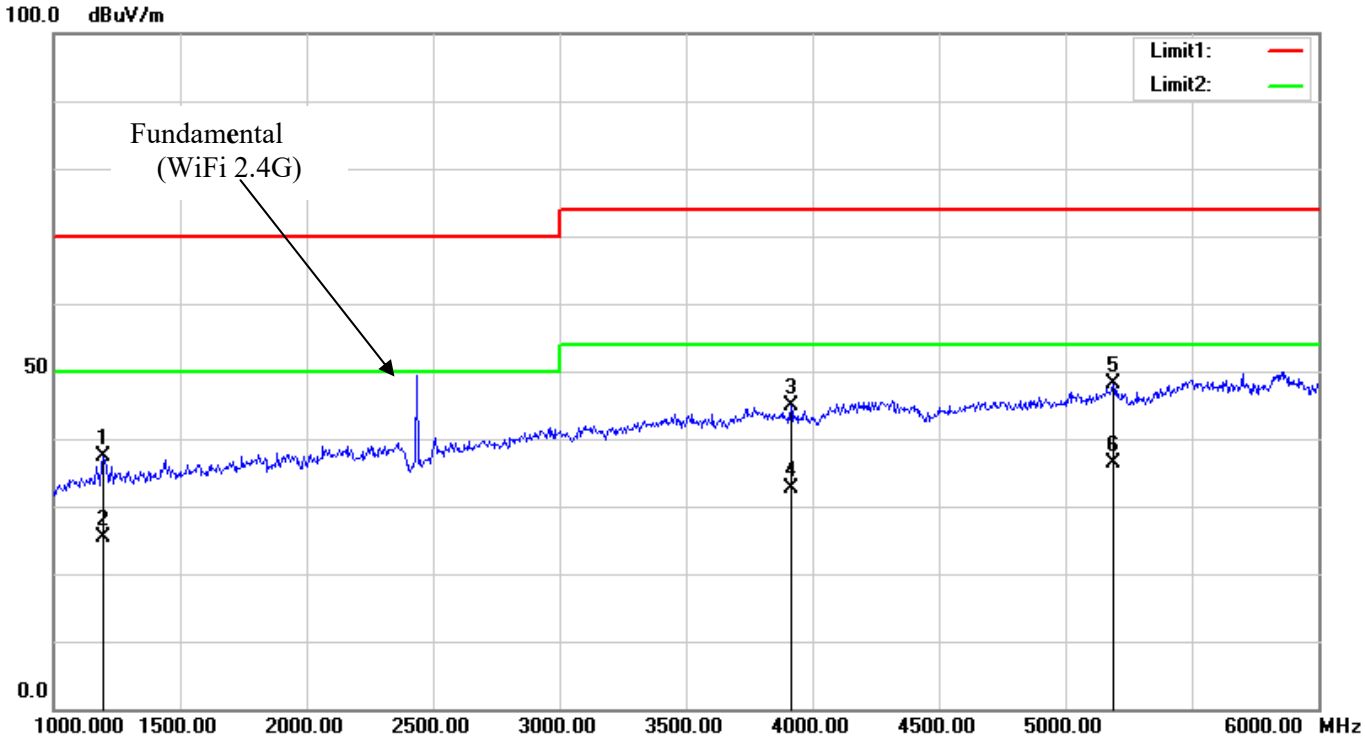
Condition:	EN 55032 Class B	**Polarization:**	Vertical
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 110V/60Hz**



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	36.22	QP	-3.34	32.88	40.00	7.12
2	181.3200	46.29	peak	-13.18	33.11	40.00	6.89
3	191.9900	40.22	QP	-12.67	27.55	40.00	12.45
4	210.4200	45.87	peak	-12.08	33.79	40.00	6.21
5	299.6600	47.28	peak	-10.26	37.02	47.00	9.98
6	640.1300	43.31	peak	-3.44	39.87	47.00	7.13

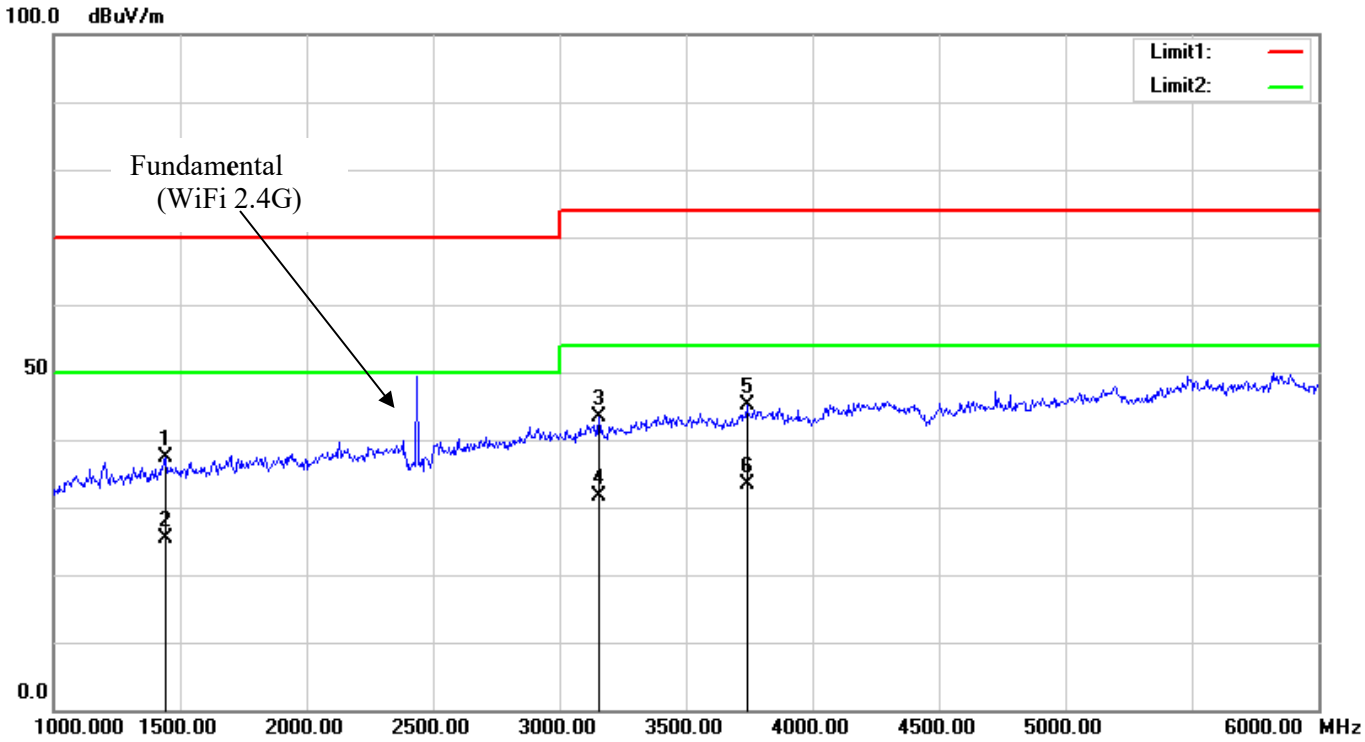
Above 1G

Condition:	EN 301 489 Class B 3m Radiation	**Polarization:**	Horizontal
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 230V/50Hz**



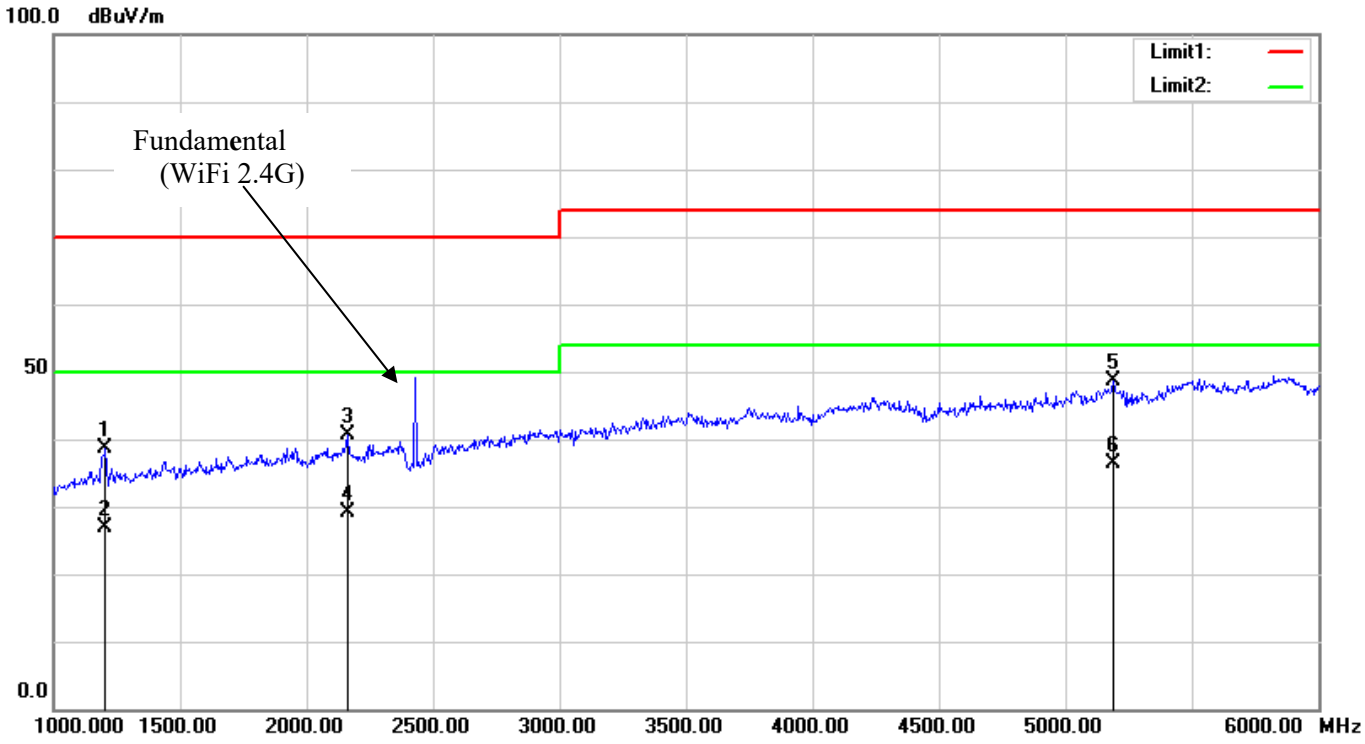
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1197.500	51.50	peak	-14.20	37.30	70.00	32.70
2	1197.500	39.54	AVG	-14.20	25.34	50.00	24.66
3	3915.000	49.65	peak	-4.87	44.78	74.00	29.22
4	3915.000	37.48	AVG	-4.87	32.61	54.00	21.39
5	5190.000	49.44	peak	-1.43	48.01	74.00	25.99
6	5190.000	37.74	AVG	-1.43	36.31	54.00	17.69

Condition:	EN 301 489 Class B 3m Radiation	**Polarization:**	Vertical
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 230V/50Hz**



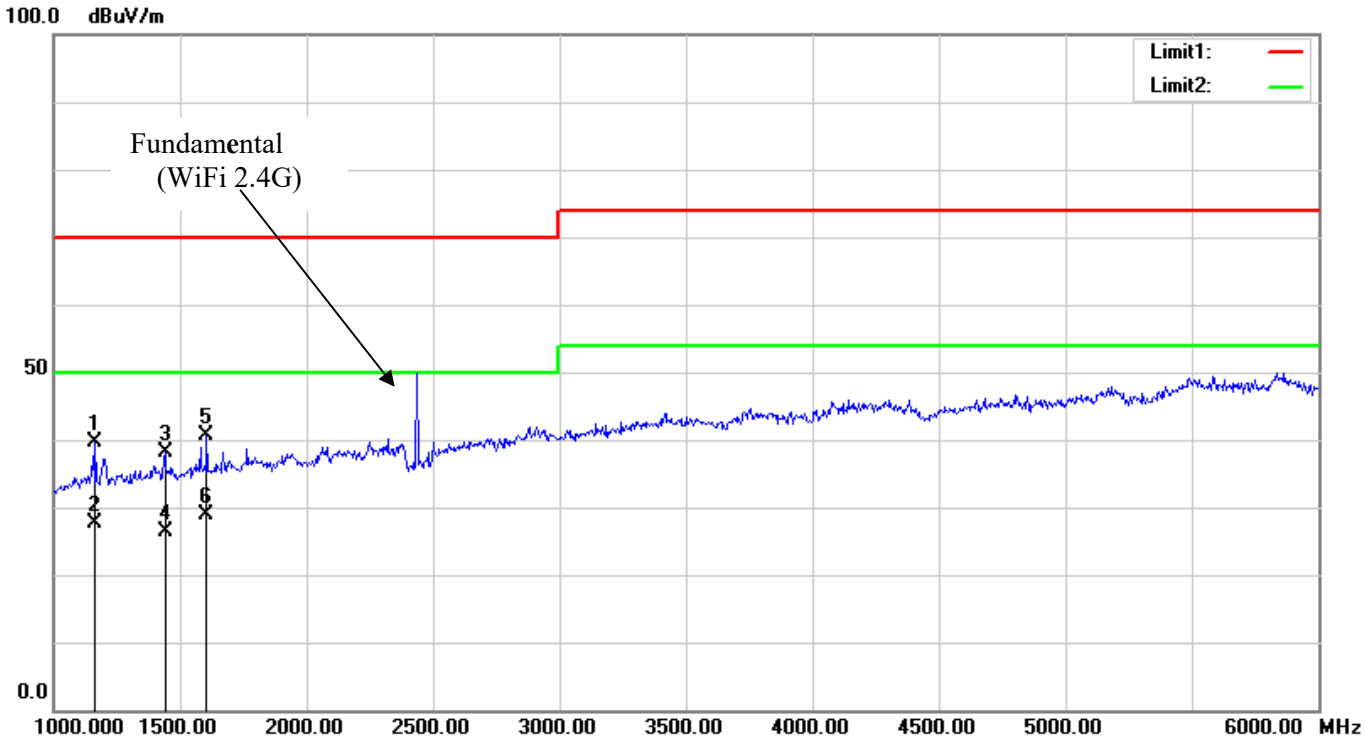
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1442.500	50.55	peak	-13.13	37.42	70.00	32.58
2	1442.500	38.48	AVG	-13.13	25.35	50.00	24.65
3	3155.000	50.00	peak	-6.68	43.32	74.00	30.68
4	3155.000	38.21	AVG	-6.68	31.53	54.00	22.47
5	3742.500	50.31	peak	-5.18	45.13	74.00	28.87
6	3742.500	38.45	AVG	-5.18	33.27	54.00	20.73

Condition:	EN 301 489 Class B 3m Radiation	**Polarization:**	Horizontal
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 110V/60Hz**



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1205.000	52.69	peak	-14.16	38.53	70.00	31.47
2	1205.000	40.94	AVG	-14.16	26.78	50.00	23.22
3	2162.500	51.12	peak	-10.52	40.60	70.00	29.40
4	2162.500	39.64	AVG	-10.52	29.12	50.00	20.88
5	5192.500	49.96	peak	-1.39	48.57	74.00	25.43
6	5192.500	37.85	AVG	-1.39	36.46	54.00	17.54

Condition:	EN 301 489 Class B 3m Radiation	**Polarization:**	Vertical
Test Mode:	M1	**Distance:**	3m
Note:		**Power:**	**AC 110V/60Hz**



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1167.500	53.78	peak	-14.21	39.57	70.00	30.43
2	1167.500	41.85	AVG	-14.21	27.64	50.00	22.36
3	1440.000	51.22	peak	-13.13	38.09	70.00	31.91
4	1440.000	39.57	AVG	-13.13	26.44	50.00	23.56
5	1605.000	53.29	peak	-12.74	40.55	70.00	29.45
6	1605.000	41.56	AVG	-12.74	28.82	50.00	21.18

3 - ELECTROSTATIC DISCHARGES IEC 61000-4-2

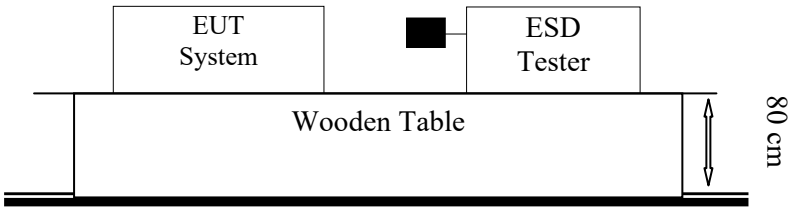
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-2) please refer to the following:

Parameter	U_{EN}	U_{lab}
Rise time t_r	≤15%	15%
Peak current I_p	≤7%	6.30%
Current at 30 ns	≤7%	6.30%
Current at 60 ns	≤7%	6.30%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Remark: ■ is the tip of the electrode

IEC61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on an insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6 by 0.8-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-2:2008)
Test level 3 for Air Discharge at ±8 kV
Test level 2 for Contact Discharge at ±4 kV

Test Level

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

Performance criteria: B

Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

All the procedure shall be same as Section 8.3.1of IEC 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane:

At least 10 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m×0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data

Please refer to following tables:

Test Mode: M1
Note:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-8 kV	+8 kV	-15 kV	+15 kV
Non-metallic Shell	A	A	A	A	A	A	/	/
DC Port	A	A	A	A	A	A	/	/
RJ45 Port	A	A	A	A	A	A	/	/
Seam	A	A	A	A	A	A	/	/
Camera	A	A	A	A	A	A	/	/
Button	A	A	A	A	A	A	/	/
Adapter	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
/	/	/	/	/	/	/	/	/

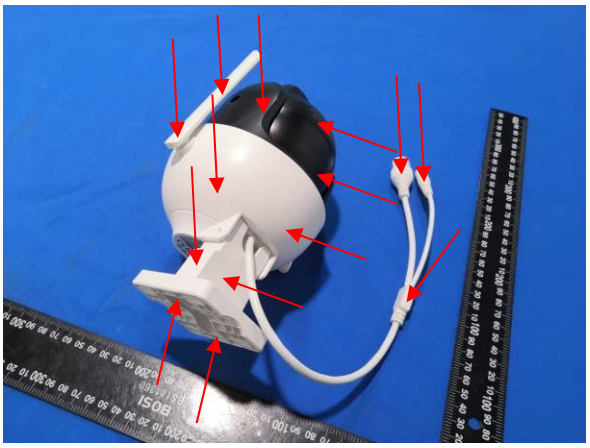
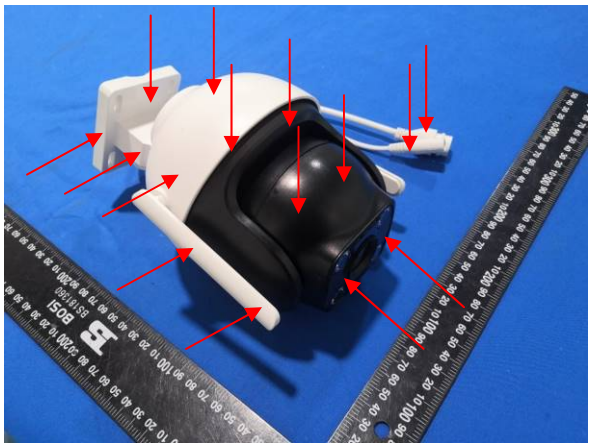
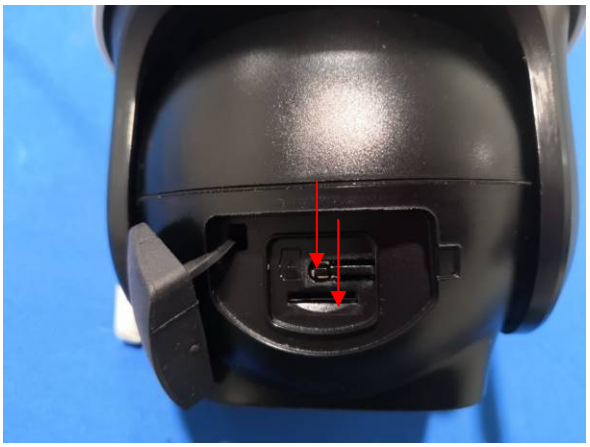
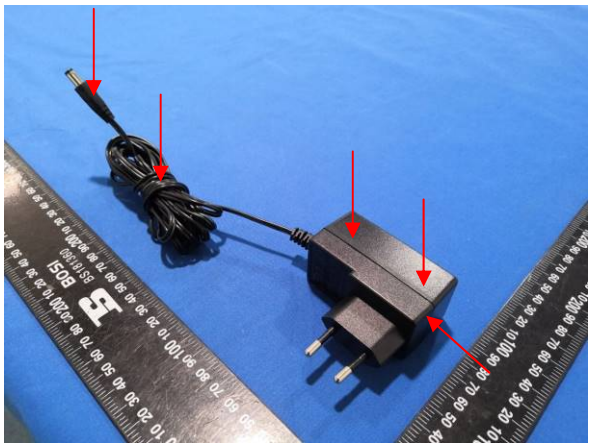
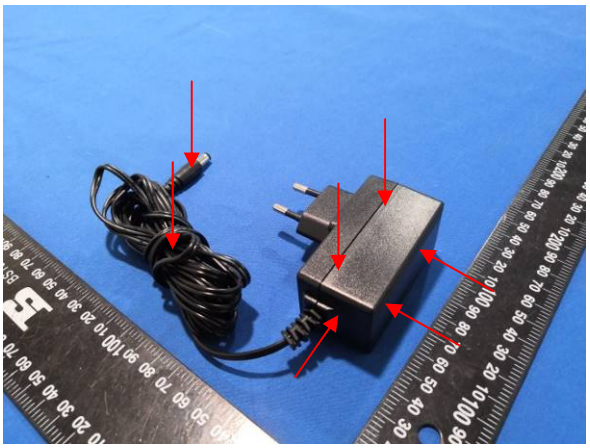
Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

Test Points Location	Test Level							
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV
Front Side	A	A	A	A	/	/	/	/
Back Side	A	A	A	A	/	/	/	/
Left Side	A	A	A	A	/	/	/	/
Right Side	A	A	A	A	/	/	/	/

ESD Location Photo

Air Discharge: → Direct Contact: →

4 - CONTINUOUS RADIATED DISTURBANCES IEC 61000-4-3

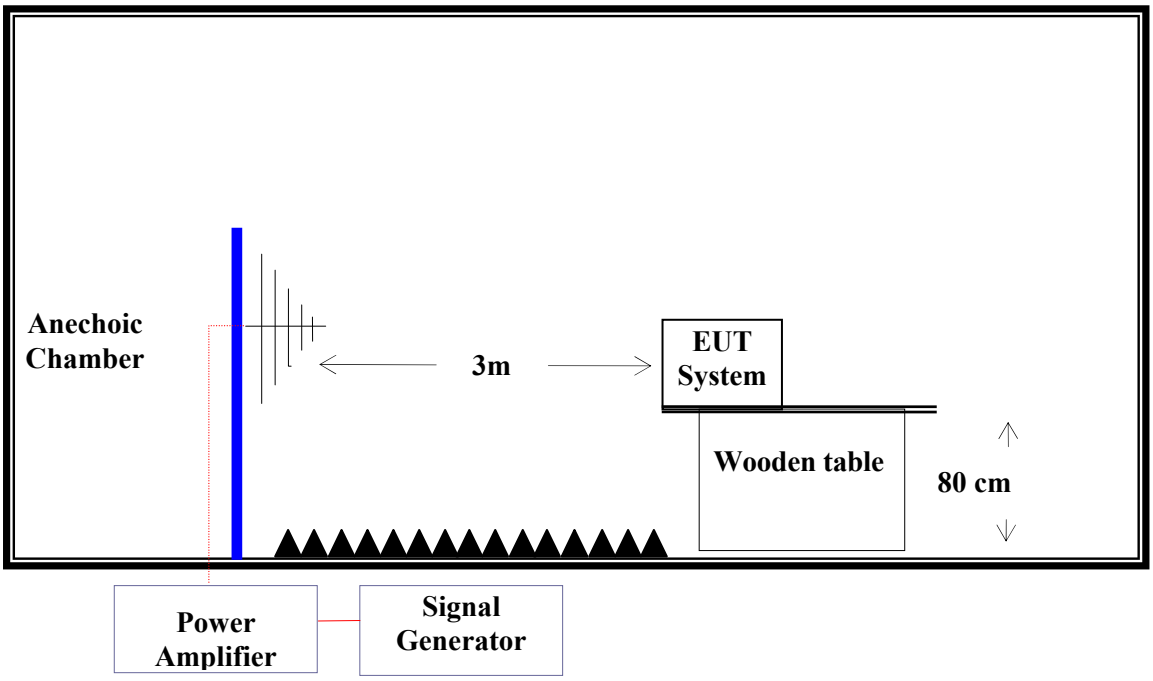
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-3) please refer to the following:

Parameter	U_{EN}	U_{lab}
Calibration process	1.88 dB	1.88 dB
Level setting	2.19 dB	2.19 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-3:2020)

Test Level

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

Performance criteria: A

A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacture as a permissible loss of performance.
B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.
D. The apparatus is broken, cannot be normal operated.

Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor the EUT.

Test Data

Please refer to following tables:

Test Mode: M1
Note:

Condition of Test	Remarks
Field Strength	3 V/m (Test Level 2)
RF Signal	1 kHz, 80% AM, sine wave
Sweep Frequency Step	1%, logarithmic
Dwell Time	1 Sec

Table 1: Radiated RF-Electromagnetic Field Immunity

Frequency Range (MHz)	Front Side		Rear Side		Left Side		Right Side	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A

Table 2: Radiated RF-Electromagnetic Field Immunity

Spot Test (MHz)	Front Side		Rear Side		Left Side		Right Side	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
1800, 2600, 3500, 5000	A	A	A	A	A	A	A	A

Table 3: Not Supporting Telephony Audio output function Acoustic measurements

Frequency (MHz)	Voltage Level	L0 (dB SPL)	L1 (dB SPL)	Margin (dB)	Limit (dB)	Perform Criterion	Remark
80-1000	3V/m	75	46.24	-28.76	≤-20	A	PASS

NOTE:
Electrical measurement procedures
1.Record the resulting dB(SPL) level (or other appropriate unit) as the value of L0.
2.Apply the RF disturbance to the EUT and record the resulting dB(SPL) level as the value of L1.
3.Calculate the interference ratio using the following formula:Acoustic Interference Ratio = L1 – L0.

Table 4: Not Supporting Telephony Audio output function Acoustic measurements

Frequency (MHz)	Voltage Level	L0 (dBA)	L1 (dBA)	Acoustic interference ratio(dB)	Limit (dB)	Perform Criterion	Remark
1800	3V/m	75	46	-29	≤-20	A	PASS
2600	3V/m	75	46	-29	≤-20	A	PASS
3500	3V/m	75	46	-29	≤-20	A	PASS
5000	3V/m	75	47	-28	≤-20	A	PASS

NOTE:
Electrical measurement procedures
1.Record the resulting dB(SPL) level (or other appropriate unit) as the value of L0.
2.Apply the RF disturbance to the EUT and record the resulting dB(SPL) level as the value of L1.
3.Calculate the interference ratio using the following formula:Acoustic Interference Ratio = L1 – L0.

5 - CONTINUOUS CONDUCTED DISTURBANCES IEC 61000-4-6

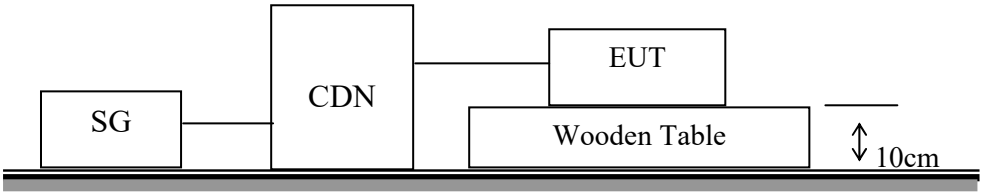
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-6) please refer to the following:

Parameter	U_{EN}	U_{lab}
CDN calibration process	1.27 dB	1.27 dB
CDN test process	1.36 dB	1.36 dB

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-6:2008★)
Test level 2 at 3 V (r.m.s.), 0.15MHz ~ 10MHz,
Test level 3-1 V (r.m.s.), 10MHz ~ 30MHz,
Test level 1 at 1 V (r.m.s.), 30MHz ~ 80MHz,

Test Level

Level	Voltage Level (r.m.s.) (V)
1	1
2	3
3	10
X	Special

Performance criteria: A

Test Procedure

1) Let the EUT work in test mode and test it.
2) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
3) The disturbance signal described below is injected to EUT through CDN.
4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
5) The frequency range is swept from 150 kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
6) Where the frequency is swept incrementally, the step size shall not exceed 1 % of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5 s.
7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data

Please refer to following tables:

Test Mode: M1: Operating
Note:

Table 1: AC mains power input port
Frequency range: 150 kHz to 80 MHz
■Modulated: Amplitude 80%, 1kHz sine wave □ Unmodulated
Dwell Time 1 Sec

Frequency(MHz)	Voltage Level	Pass	Fail
0.15-10	3V	A	/
10-30	3V-1V		
30-80	1V		

Table 2: Signal Port : RJ45
Frequency range: 150 kHz to 80 MHz
■Modulated: Amplitude 80%, 1kHz sine wave □Unmodulated □ Other:
Dwell Time 1 Sec

Frequency(MHz)	Voltage Level	Pass	Fail
0.15-10	3V	A	/
10-30	3V-1V		
30-80	1V		

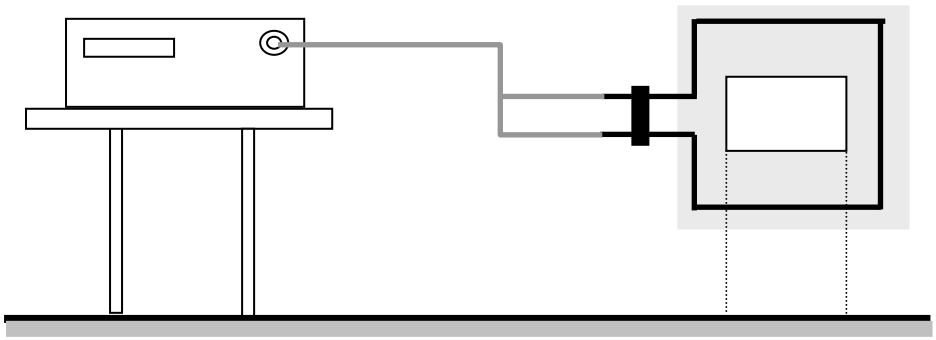
Table 3: Not Supporting Telephony Audio output function Acoustic measurements

Frequency (MHz)	Voltage Level	L0 (dBA)	L1 (dBA)	Acoustic interference ratio(dB)	Limit (dB)	Perform Criterion	Remark
0.15-10	3V	75	47	-28	≤-20	A	PASS
10-30	3V-1V						
30-80	1V						

NOTE:
Electrical measurement procedures
1.Record the resulting dB(SPL) level (or other appropriate unit) as the value of L0.
2.Apply the RF disturbance to the EUT and record the resulting dB(SPL) level as the value of L1.
3.Calculate the interference ratio using the following formula:Acoustic Interference Ratio = L1 – L0.

6 - POWER FREQUENCY MAGNETIC FIELDS IEC 61000-4-8

Test Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-8:2009)

Test Level

Level	Magnetic Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X.	Special

Performance criteria: A

Test Procedure

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

Test Data

Please refer to following tables:

Test Mode: M1
Note:

Severity Level: 1 A/m(r. m. s)

Level	Magnetic Field Strength (A/m)	X (Horizontal)	Y (Vertical)	Z (Special)
1	1	A	A	A
2	3	/	/	/
3	10	/	/	/
4	30	/	/	/
5	100	/	/	/
X	Special	/	/	/

7 - ELECTRICAL FAST TRANSIENTS/BURST IEC 61000-4-4

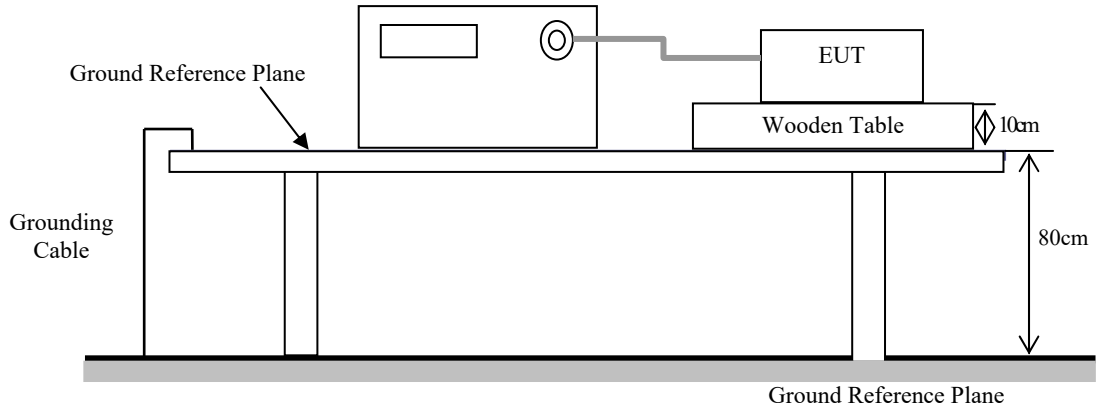
Measurement Uncertainty

U_{lab} (measurement uncertainty of lab) and U_{EN} (measurement uncertainty of EN 61000-4-4) please refer to the following:

Parameter	U_{EN}	U_{lab}
Rise time t_r	6.20%	6.20%
Peak voltage value V_p	8.60%	8.60%
Voltage pulse width t_w	5.90%	5.90%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test System Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-4:2012)
AC mains: Test level 2 at 1 kV
Signal port: Test level 2 at 0.5 kV

Test Level

Open Circuit Output Test Voltage ±10%		
Level	**On Power Supply Lines**	**On I/O (Input/Output) Signal data and control lines**
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

Performance criteria: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data

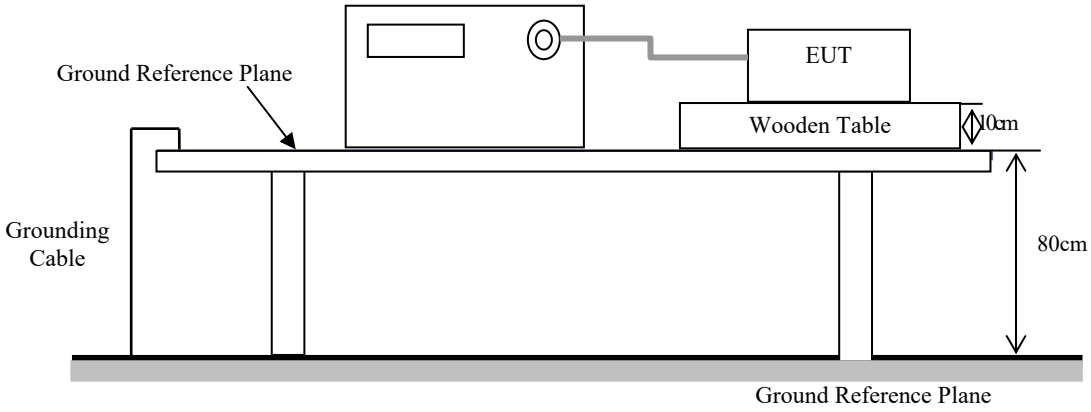
Please refer to following tables:

Test Mode: M1
Note:

Test Points		Test Level (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
AC mains power input ports	L	A	A	A	A	/	/	/	/
	N	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
	L+N	A	A	A	A	/	/	/	/
	L + Earth	/	/	/	/	/	/	/	/
	N + Earth	/	/	/	/	/	/	/	/
	L+N+Earth	/	/	/	/	/	/	/	/
Signal ports	RJ45	A	A	/	/	/	/	/	/

8 - SURGES IEC 61000-4-5

Test System Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-5:2005★)
AC Mains: L-N: Test level 2 at 1kV
Signal port: Test level 2 at 1kV

Test Level

Level	Open Circuit Output Test Voltage ±10%
1	0.5 kV
2	1 kV
3	2 kV
4	4 kV
X	Special

Performance criteria: B

Test Procedure

1) Provide disturbance signal described below is injected to EUT.
2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
3) Different phase angles are done individually.
4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data

Please refer to following tables:

Test Mode: M1
Note:

Table 1: AC mains power input port

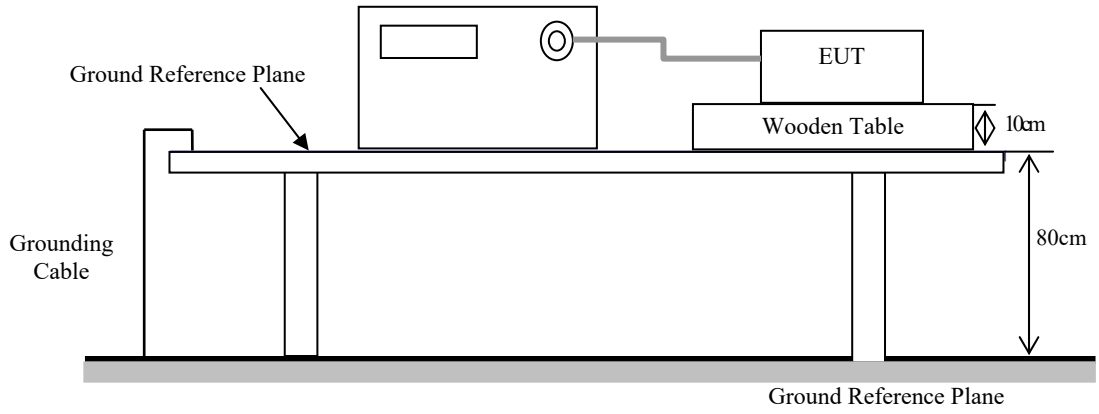
Level	Voltage	Poll	Path	Phase Angle	Pass	Fail
1	0.5kV	+	L- N,	90	A	/
1	0.5kV	-	L- N	270	A	/
2	1kV	+	L- N	90	A	/
2	1kV	-	L- N	270	A	/

Table 2: RJ45 I/O Circuit and Lines

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	Line-Ground	A	/
2	1kV	±	Line-Ground	A	/

9 -VOLTAGE DIPS AND SHORT INTERRUPTIONS IEC 61000-4-11

Test Setup



Test Standard

EN 55035:2017+A11:2020 and BS EN 55035:2017+A11:2020 (IEC 61000-4-11:2004★)
Test levels and Performance Criterion

Test Level

Test Level	U2 (% Reduction)	Duration (Periods)	Performance Criteria
1	>95	0.5	B
2	30	25	C
3	>95	250	C

Test Procedure

1) The interruption is introduced at selected phase angles with specified duration.
2) Record any degradation of performance.

Test Data

Please refer to following tables:

Test Mode: **M1**

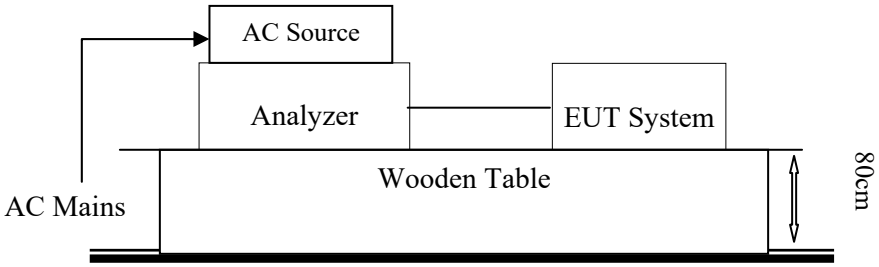
Note: B indicates that the power supply of the EUT was interrupted during the test, and the EUT was restarted. After the test, it can automatically return to normal use.

Table 1: Voltage Dips/Interruptions Test

U2 (% Reduction)	Td (Periods)	Phase Angle	N	Result
>95	0.5	0/90/180/270	3	A
30	25	0/90/180/270	3	A
>95	250	0/90/180/270	3	B

11 -VOLTAGE FLUCTUATIONS AND FLICKER

Test System Setup



Test Standard

EN 61000-3-3:2013+A1:2019+A2:2021 and BS EN 61000-3-3:2013+A1:2019+A2:2021

Flicker Test Limits:

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6 and annex A. Tests made to prove compliance with the limits are considered to be type tests.
The following limits apply:
- the value of Pst shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- the value of d(t) during a voltage change shall not exceed 3,3 % for more than 500 ms;
- the relative steady-state voltage change, dc, shall not exceed 3,3 %;
- the maximum relative voltage change dmax, shall not exceed
a) 4 % without additional conditions;
b) 6 % for equipment which is:

- Switched manually, or
- Switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

Note: The cycling frequency will be further limited by the Pst and Plt limit. For example: a dmax of 6 % producing a rectangular voltage change characteristic twice per hour will give a Plt of about 0,65.

c) 7 % for equipment which is
- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

In the case of equipment having several separately controlled circuits in accordance with 6.6,limits b) and c) shall apply only if there is delayed or manual restart after a power supply interruption; for all equipment with automatic switching which is energized immediately on restoration of supply after a power supply interruption, limits a) shall apply; for all equipment with manual switching, limits b) or c) shall apply depending on the rate of switching. Pst and Plt requirements shall not be applied to voltage changes caused by manual switching. The limits shall not be applied to voltage changes associated with emergency switching or emergency interruptions.

Test Data

Please refer to following tables:

Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurement)
Test Mode:	M1: Operating
Power Source:	AC 230V/50Hz
Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.005	3.30	PASS
dmax [%]	0.214	4.00	PASS
dt [s]	0.000	0.50	PASS

EXHIBITA - EUT PHOTOGRAPHS

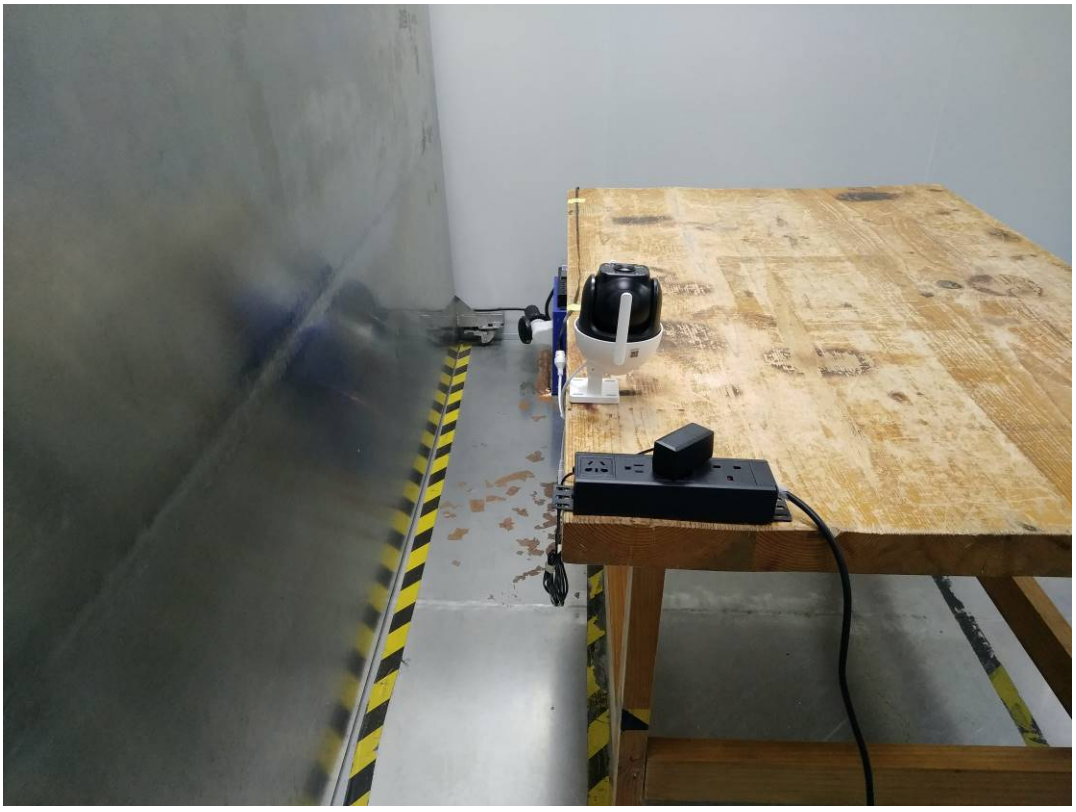
For photos in this section, please refer to report No.: DG2230109-01441E-02 EXHIBIT A.

EXHIBITB - TEST SETUP PHOTOGRAPHS

Conducted emissions

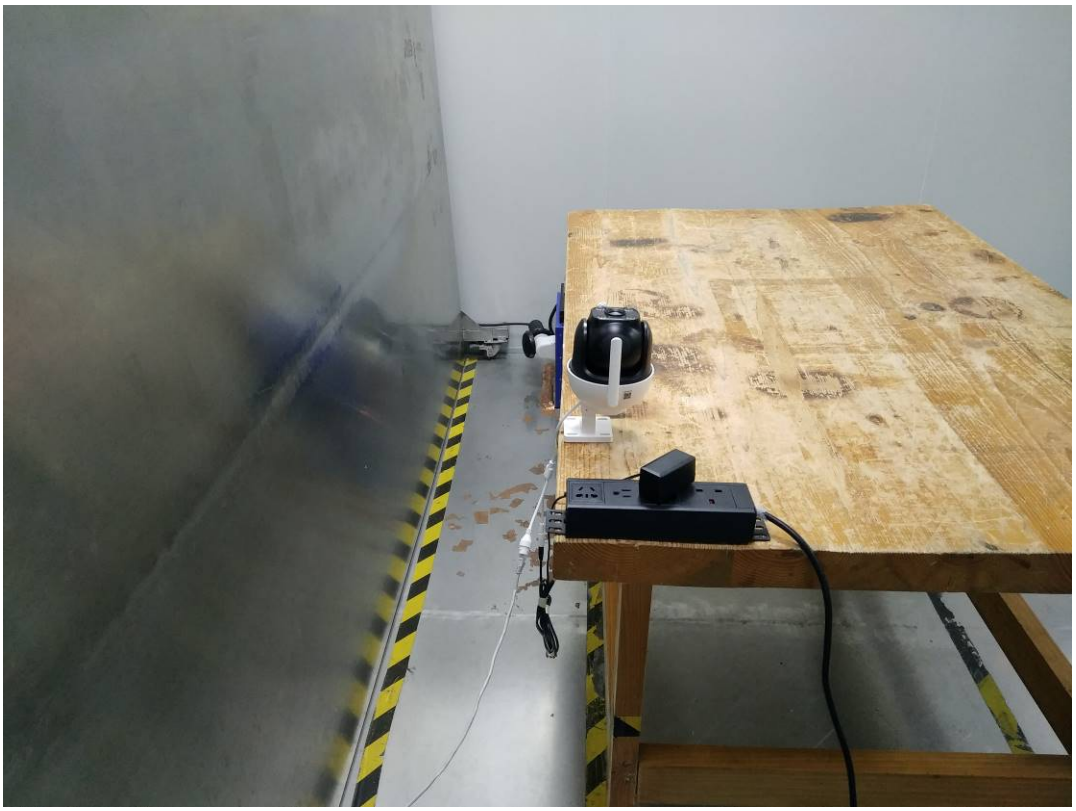
Conducted emissions front View

Conducted emissions side View



Conducted emissions ISN front View

Conducted emissions ISN side View

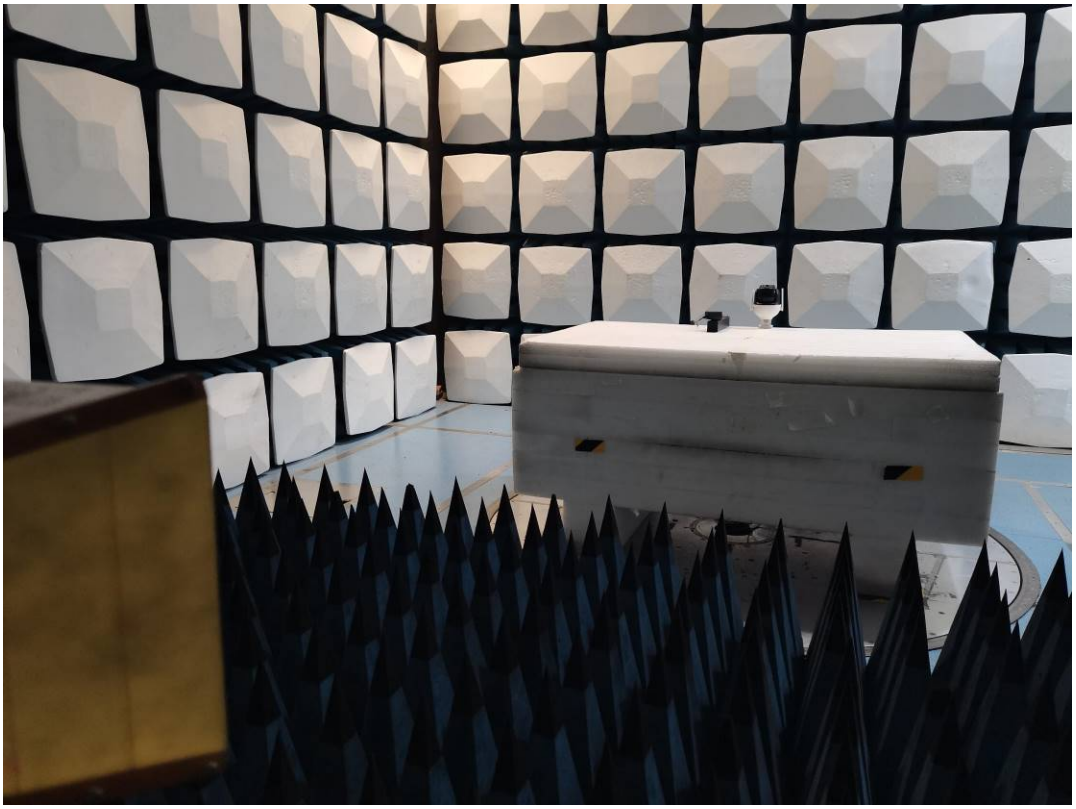


Radiated Emissions

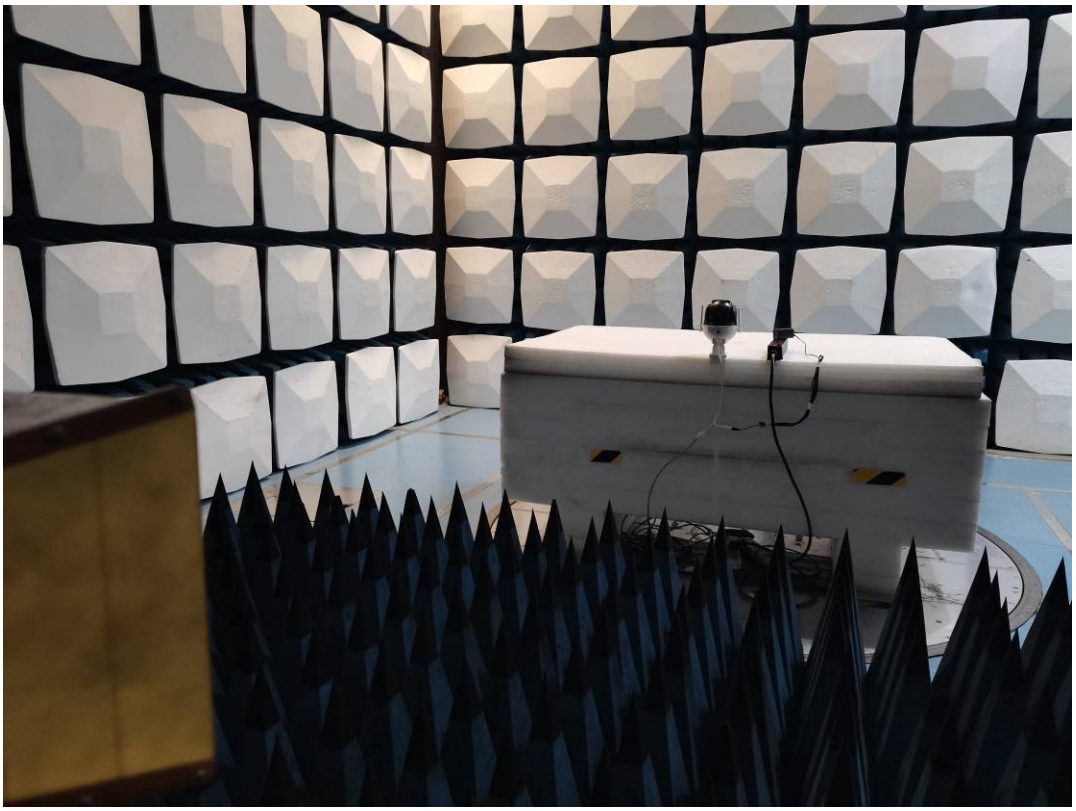
Radiated Emissions Below 1GHz front View

Radiated Emissions Below 1GHz rear View

Radiated Emissions Above 1GHz front View

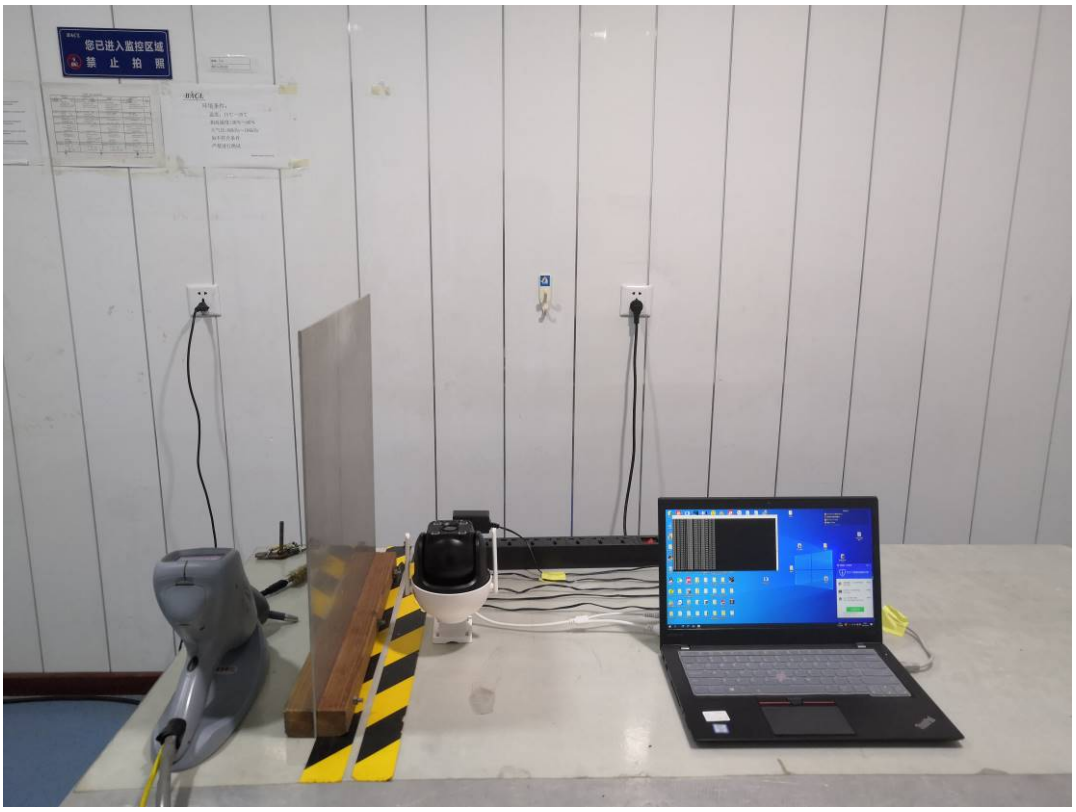


Radiated Emissions Above 1GHz rear View



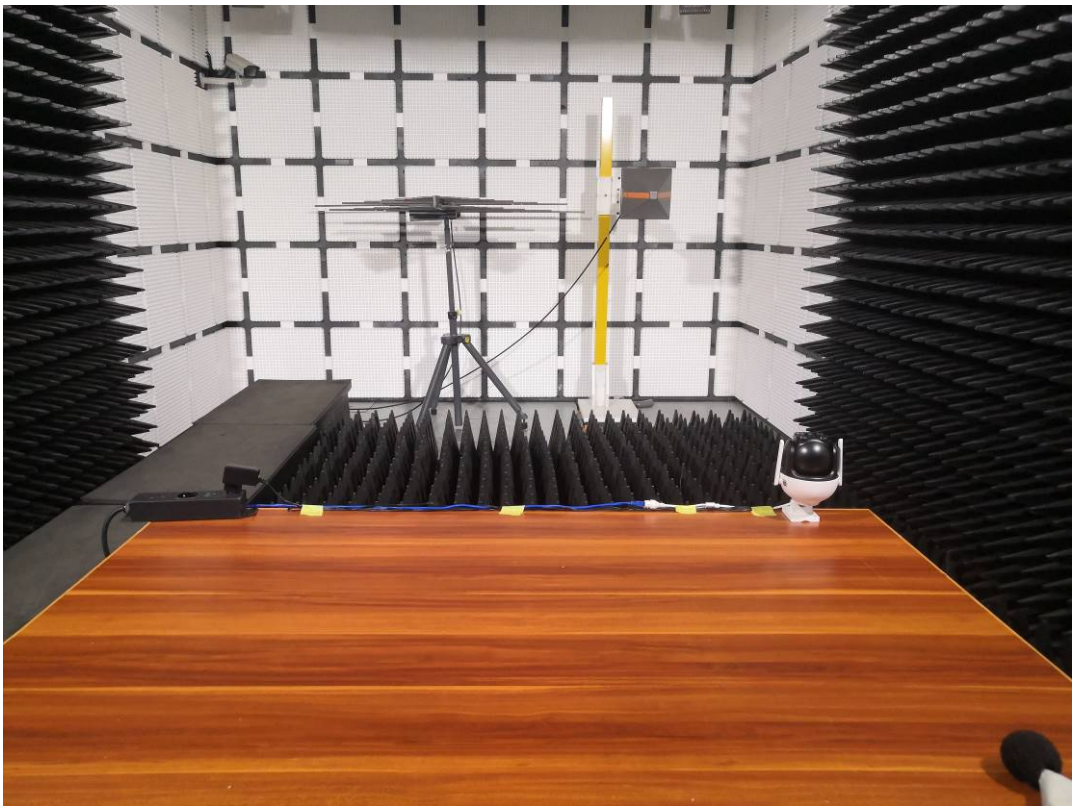
ESD

Test Setup Photo View



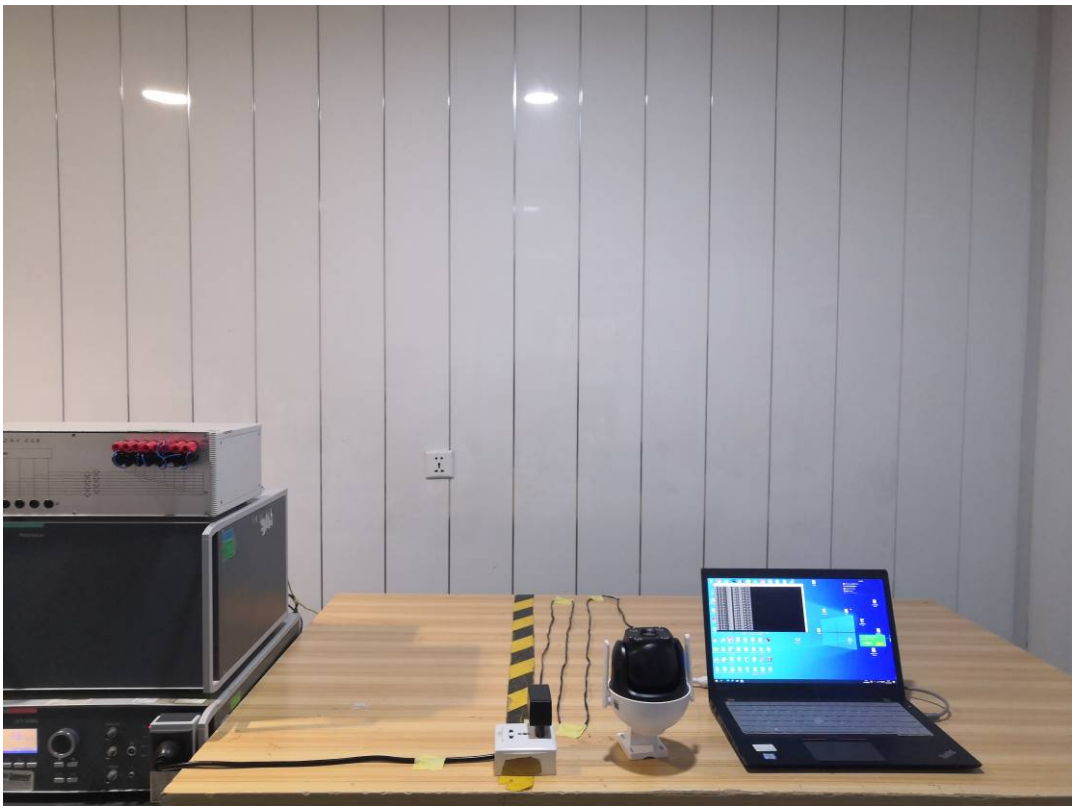
RS

Test Setup Photo View

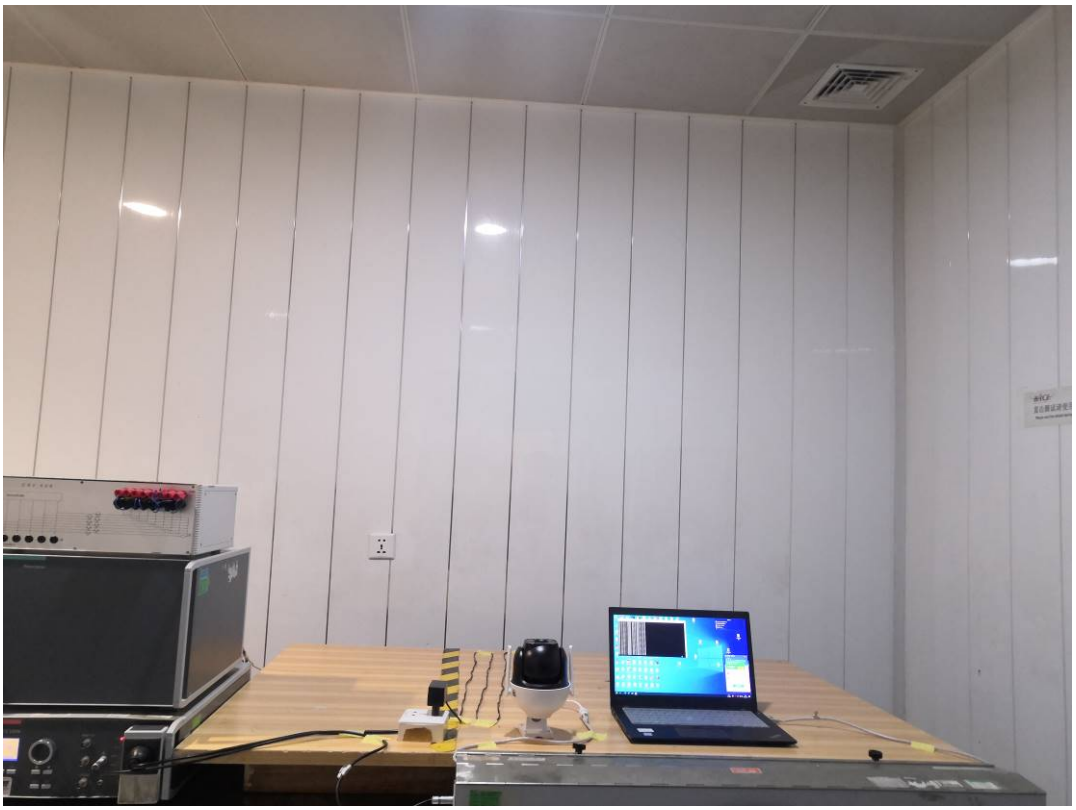


EFT

Test Setup Photo View

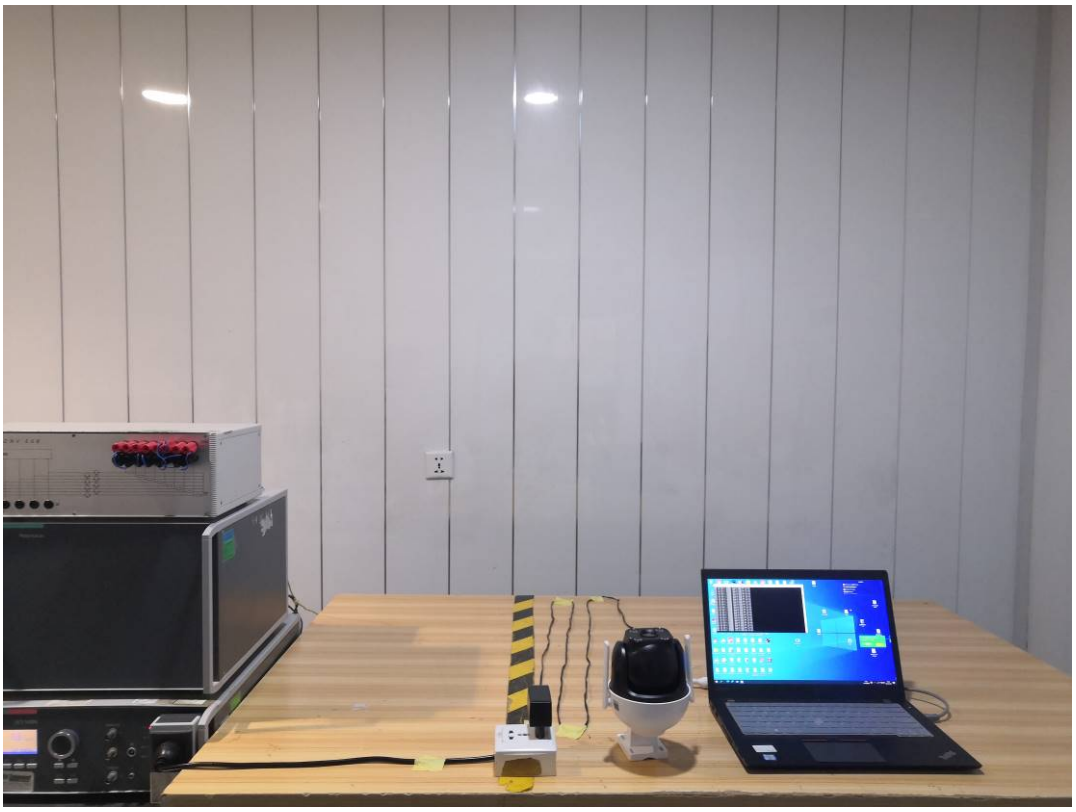


RJ45 Port Test Setup Photo View



Dips

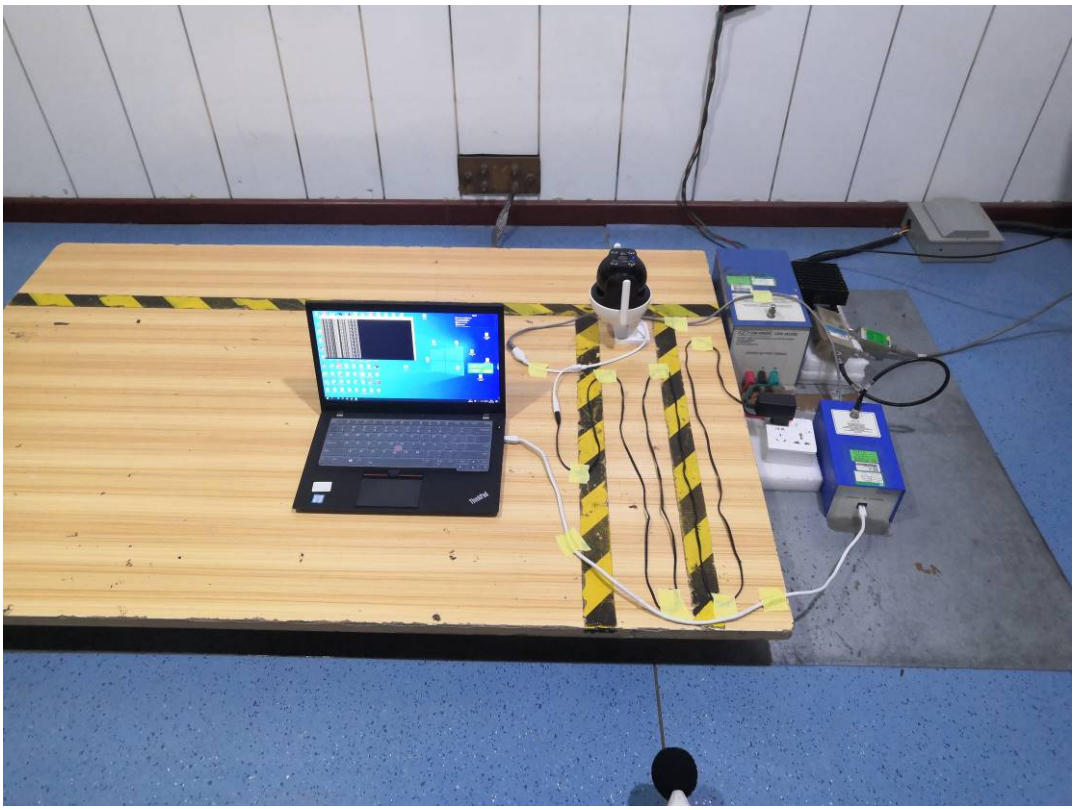
Test Setup Photo View



CS

Test Setup Photo View

RJ45 Port Test Setup Photo View

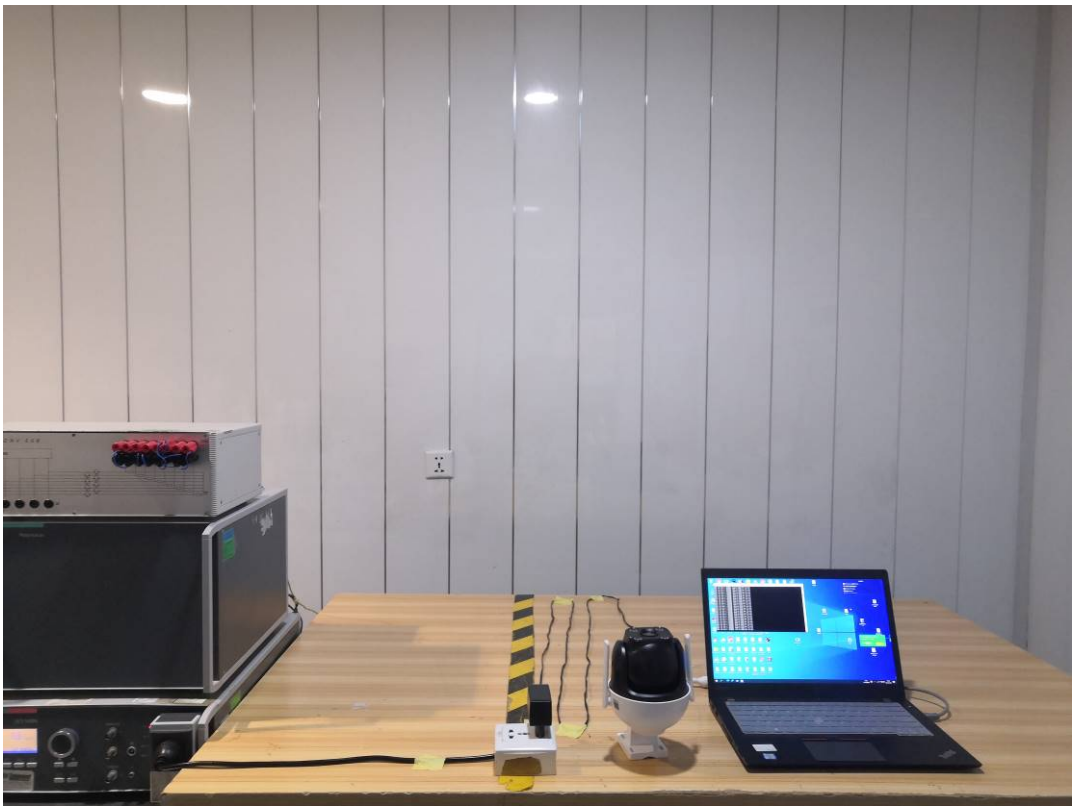


Flicker

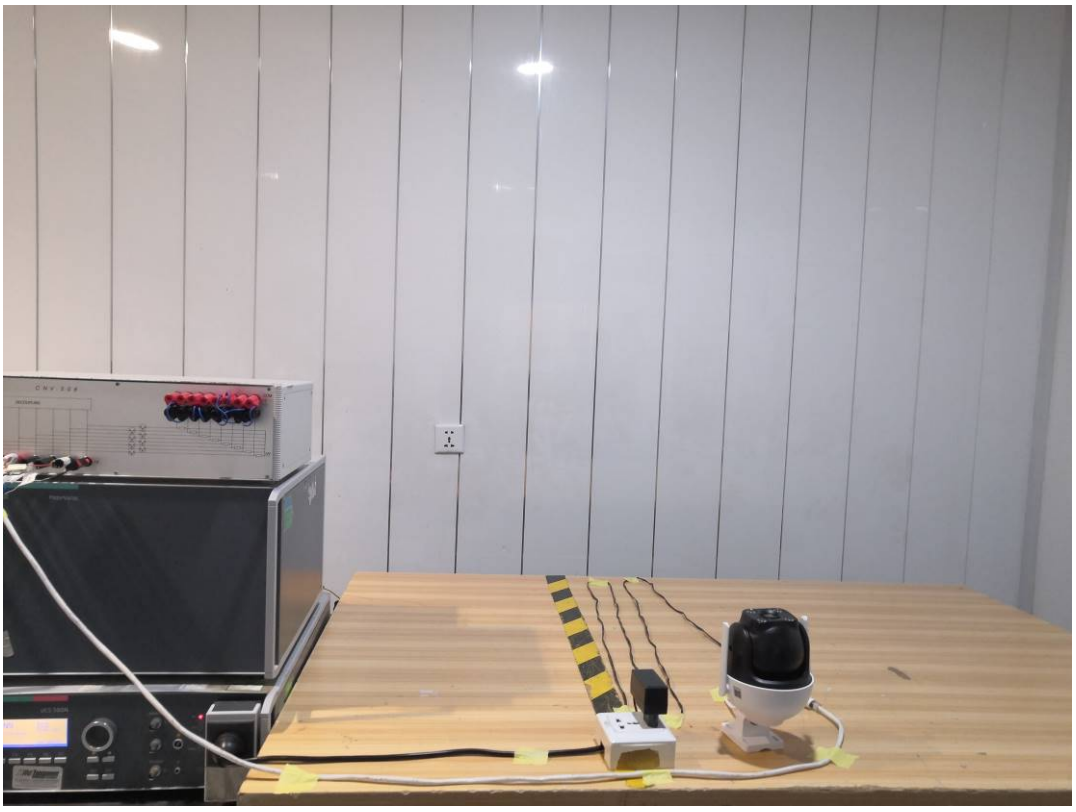
Test Setup Photo View

Surge

Test Setup Photo View

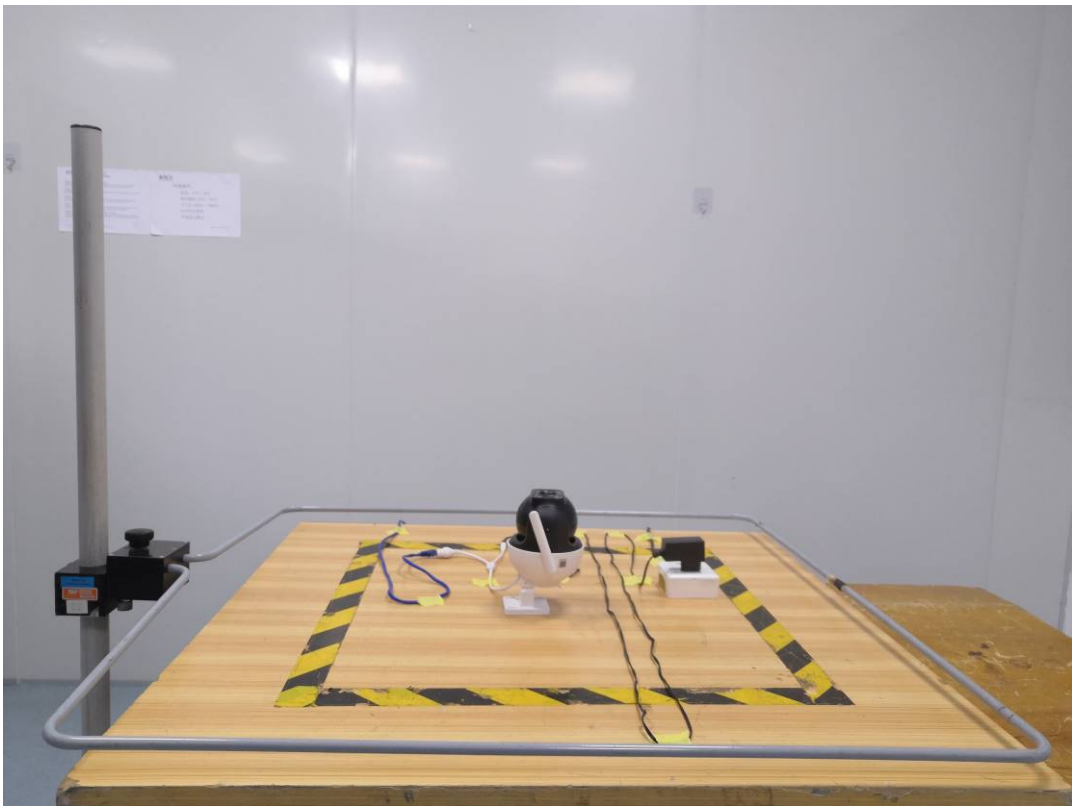


RJ45 Port Test Setup Photo View



PFMF

Test Setup Photo View



DECLARATION LETTER

SHENZHEN TENDA TECHNOLOGY CO.,LTD.
Add: 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Tel: 86-755-27657098 Fax: 86-755-27657178
E-mail: cert@tenda.cn

DECLARATION OF SIMILARITY

Date: 2023-01-09

To whom it may concern

Dear Sir or Madam:

We, SHENZHEN TENDA TECHNOLOGY CO.,LTD., hereby declare that the product: 1080P Outdoor Wi-Fi Pan/Tilt Camera, model: RH3-WCA is electrically identical with the model: CH3-WCA which was tested by BACL(Dongguan) with the same electromagnetic emissions and electromagnetic compatibility characteristics.

A description of the differences between those models and that are declared similar are as follows:
They are the same product, and just the different model name, the rest are the same.

Please contact me should there be need for any additional clarification or information.

Best Regards

Signature: 

Printed Name: Shen Yue
Title: Engineer

*******END OF REPORT*******