

EN 55032:2015+A11:2020

EN 55035:2017+A11:2020

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

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

BS EN 55032:2015+A11:2020

BS EN 55035:2017+A11:2020

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

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

## TEST REPORT

For

**SHENZHEN TENDA TECHNOLOGY CO.,LTD**

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**Model: IC7**

<b>Report Type:</b> Original Report	<b>Product Type:</b> 4MP Conch Security Camera
<b>Report Number:</b>	DG2210917-48680E-01
<b>Report Date:</b>	2021-10-22
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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>	4MP Conch Security Camera
<b>EUT Model:</b>	IC7
<b>Rated Input Voltage:</b>	DC 12V From Adapter
<b>The Highest Operating Frequency:</b>	1 GHz
<b>I/O Ports:</b>	Refer to manual
<b>EUT Function:</b>	refer to manual
<b>Serial Number:</b>	DG2210917-48680E-EM -S1
<b>EUT Received Date:</b>	2021.09.10
<b>EUT Received Status:</b>	Good

### Objective

This report is prepared on behalf of *SHENZHEN TENDA TECHNOLOGY CO.,LTD* in accordance with EN 55032:2015+A11:2020 and BS EN 55032:2015+A11:2020 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  $\leq 16$  A per phase); EN 61000-3-3:2013+A1:2019 and BS EN 61000-3-3:2013+A1:2019 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  $\leq 16$  A per phase and not subject to conditional connection.

The objective is to determine the compliance of EUT with:

EN 55032:2015+A11:2020

EN 55035:2017+A11:2020

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

EN 61000-3-3:2013+A1:2019.

BS EN 55032:2015+A11:2020

BS EN 55035:2017+A11:2020

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

BS EN 61000-3-3:2013+A1:2019.

### Test Methodology

All measurements contained in this report were conducted with EN 55032:2015+A11:2020 and BS EN 55032:2015+A11:2020 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  $\leq 16$  A per phase); EN 61000-3-3:2013+A1:2019 and BS EN 61000-3-3:2013+A1:2019 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  $\leq 16$  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).

Mode 1: Normal working (Powered by Adapter)

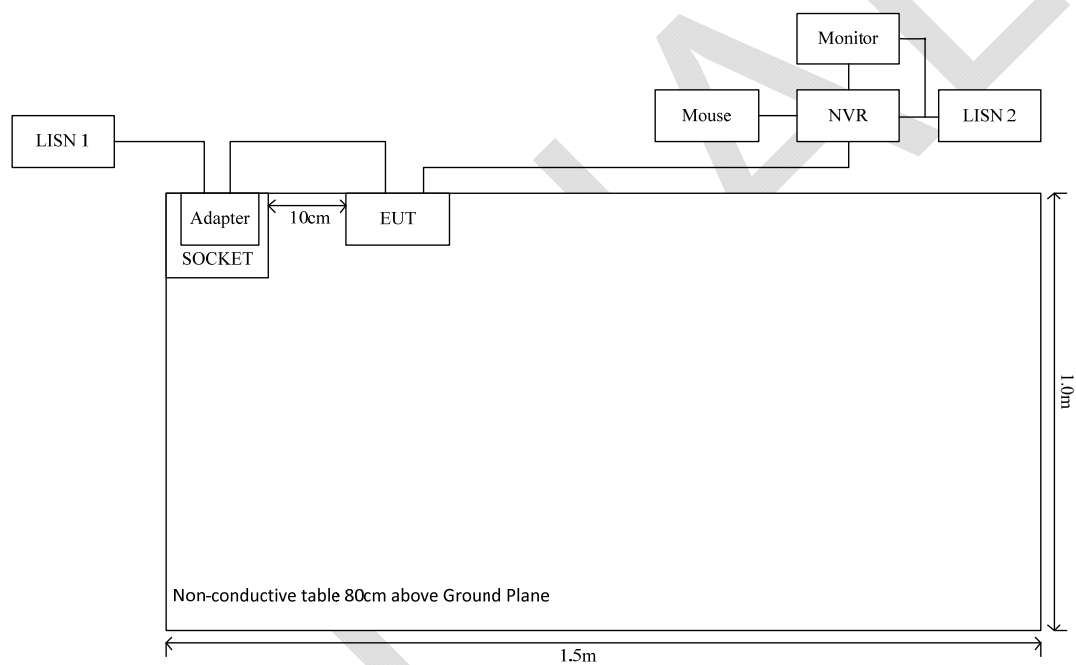
### Equipment Modifications

No modification was made to the EUT.

### EUT Exercise Software

N/A

### Block Diagram of Test Setup



**Support Equipment List and Details**

Manufacturer	Description	Model	Serial Number
TENDA	VCR	N3L-4H	N/A
DELL	Monitor	P2721Q	CN-0XJ46C-FCC00-135-AA8L-A03
HEWEISHUN	Adapter	BN026-A24012E	N/A
TENDA	Mouse	N/A	N/A

**Support Cable List and Details**

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
HDMI Cable	Yes	Yes	1.5	VCR	Monitor
RJ45 Cable	Yes	No	10	EUT	VCR
Mouse Cable	Yes	No	1.5	Mouse	VCR
Adapter Cable	No	No	1.5	Adapter	EUT

**Test Equipment List**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>Conducted emission</b>					
R&S	LISN	ENV 216	101614	2021-09-11	2022-09-10
TESEQ	ISN	T800	34379	2021-09-11	2022-09-10
R&S	EMI Test Receiver	ESCI	101121	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2021-09-05	2022-09-04
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
<b>Radiated emissions below 1GHz</b>					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2021-09-11	2022-09-10
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2021-08-19	2022-08-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2021-08-19	2022-08-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2021-08-19	2022-08-18
Sonoma	Amplifier	310N	185914	2021-08-19	2022-08-18
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
<b>Radiated emissions above 1GHz</b>					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2021-09-04	2022-09-03
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2021-09-04	2022-09-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2021-06-16	2022-06-15
<b>ESD</b>					
HAEFELY	Electrostatic Discharge Simulator	ONYX	180786	2021-09-15	2022-09-14
<b>EFT &amp; Surge &amp; Dips</b>					
EM TEST	Ultra Compact Generator	UCS 500N5	P1406130994	2021-07-22	2022-07-21
EM TEST	Autotransformer	MV2616	P1450144859	N/A	N/A
EM TEST	CDN	CNV508 S1	311137	2021-01-26	2022-01-25
EM TEST	EFT Clamp	N/A	300886	2021-07-22	2022-07-21
<b>Flicker &amp; Harmonic</b>					
ELGAR	AC Power Source	1751SX	5611	2021-09-22	2022-09-21
EM TEST	Harmonic & Flicker Analyzer	DPA 500	303278	2021-09-16	2022-09-15
<b>CS</b>					
HP	Signal Generator	8648A	3246A00831	2021-09-11	2022-09-10
R&S	Power Amplifier	15A250	12934	N/A	N/A
Werlatone	Dual Directional Coupler	C5091-10	113192	2021-02-09	2022-02-08
HP	Power Meter	HP EPM-441A	GB37481494	2021-07-22	2022-07-21
Agilent	8482A Power sensor	8482A	US37296108	2021-07-22	2022-07-21



Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
NARDA	Attenuator	769-6	2754	N/A	N/A
COM-POWER	CDN	M325E	521064	2021-07-22	2022-07-21
COM-POWER	CDN	T8E	581607	2019-05-09	2022-05-09
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	2021-06-30	2022-06-29
RS					
AR	Antenna	ATL80M1G	0351400	N/A	N/A
AR	Antenna	ATT700M12G	0349410	N/A	N/A
HP	Signal Generator	8665B	3438a00584	2021-09-11	2022-09-10
AR	Power Amplifier	500W1000C	0353561	N/A	N/A
AR	Power Amplifier	60S1G6	0348711	N/A	N/A
PASTERNAK	Dual Directional Coupler	PE2239-30	1711	2021-07-15	2022-07-14
Agilent	EPM Series Power Meter	E4419B	MY45103907	2021-07-22	2022-07-21
Agilent	E-Series Avg Power Sensor	E9301A	MY41497625	2021-07-22	2022-07-21
Agilent	E-Series Avg Power Sensor	E9301A	MY41497628	2021-07-22	2022-07-21

## Environmental Conditions

Test Item:	Conducted emission	Radiated emissions	Flicker & EMS
Temperature:	26.6℃	26.3~28.3oC	25.3~27.7℃
Relative Humidity:	68%	50%	51~69%
ATM Pressure:	100.6kPa	100.4~100.8kPa	100.9kPa
Tester:	Walker Chen	Joe Li, Bill Yang	Ethan Xu
Test Date:	2021.10.02	2021.10.08~2021.10.21	2021.10.15

Note: The relative humidity of ESD test environment is 56%.

## SUMMARY OF TEST RESULTS

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

Note:

Not applicable\*: The EUT Power 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.

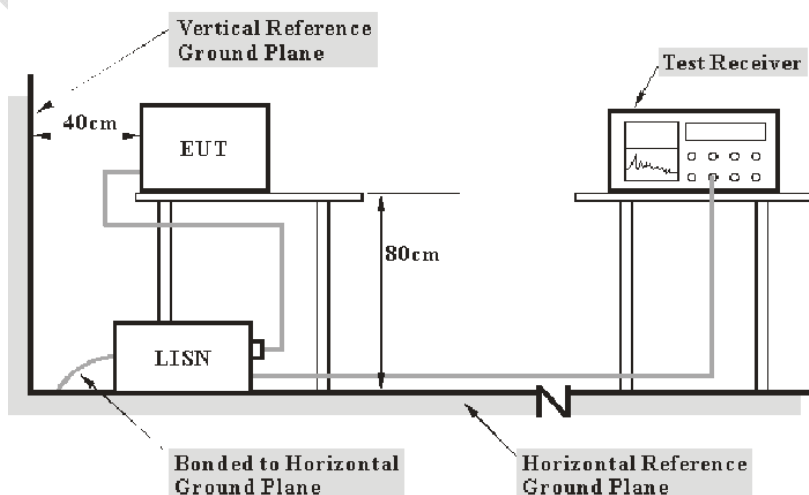
Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz), and conducted disturbance at telecommunication port using AAN is 5.0 dB (150 kHz to 30 MHz).

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, CISPR 16-2-1:2008+A1:2010 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 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.

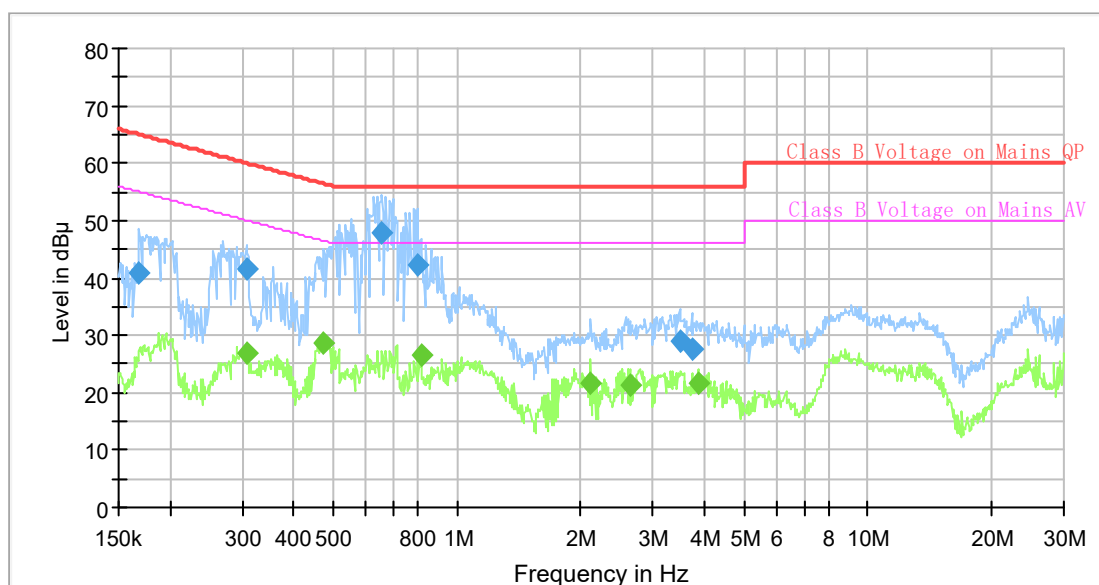
All data was recorded in the Quasi-peak and average detection mode.

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:

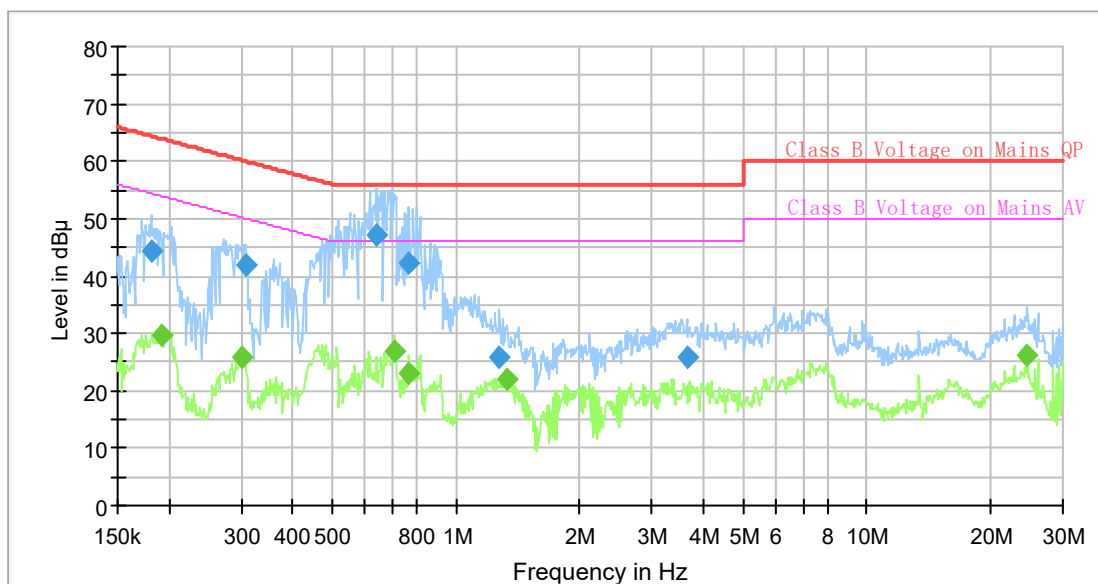
Model Number: IC7  
 Port: L  
 Test Mode: Mode 1: Normal working(Powered by Adapter)  
 Power Source: DC 12V From Adapter input AC 230V/50Hz  
 Note:



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.168233	40.97	---	65.05	24.08	9.000	L1	9.6
0.307613	---	26.89	50.03	23.14	9.000	L1	9.6
0.307613	41.44	---	60.03	18.59	9.000	L1	9.6
0.474735	---	28.78	46.43	17.65	9.000	L1	9.6
0.656516	47.87	---	56.00	8.13	9.000	L1	9.6
0.801471	42.18	---	56.00	13.82	9.000	L1	9.7
0.817621	---	26.53	46.00	19.47	9.000	L1	9.7
2.119679	---	21.67	46.00	24.33	9.000	L1	9.7
2.639835	---	21.17	46.00	24.83	9.000	L1	9.7
3.490408	28.85	---	56.00	27.15	9.000	L1	9.7
3.724217	27.61	---	56.00	28.39	9.000	L1	9.7
3.856537	---	21.63	46.00	24.37	9.000	L1	9.7

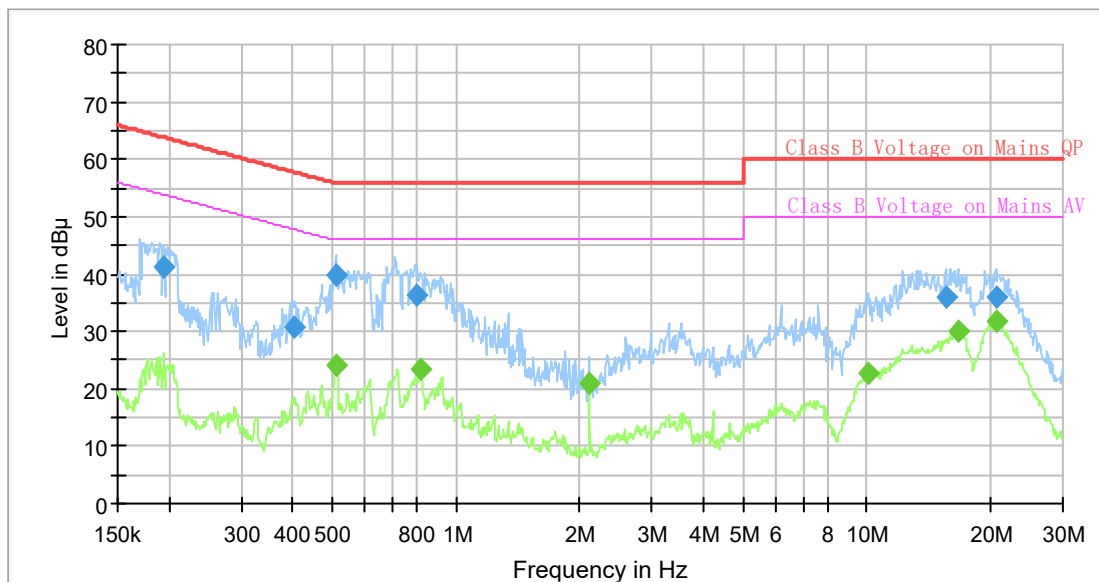
Model Number: IC7  
 Port: N  
 Test Mode: Mode 1: Normal working(Powered by Adapter)  
 Power Source: DC 12V From Adapter input AC 230V/50Hz  
 Note:



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.181302	44.37	---	64.43	20.06	9.000	N	9.6
0.191526	---	29.62	53.97	24.35	9.000	N	9.6
0.301537	---	25.84	50.20	24.36	9.000	N	9.6
0.307613	42.07	---	60.03	17.96	9.000	N	9.6
0.640347	47.20	---	56.00	8.80	9.000	N	9.6
0.711054	---	26.91	46.00	19.09	9.000	N	9.6
0.770122	42.22	---	56.00	13.78	9.000	N	9.6
0.770122	---	23.21	46.00	22.79	9.000	N	9.6
1.274476	25.93	---	56.00	30.07	9.000	N	9.6
1.332988	---	22.07	46.00	23.93	9.000	N	9.6
3.650655	25.78	---	56.00	30.22	9.000	N	9.6
24.536148	---	26.15	50.00	23.85	9.000	N	9.9

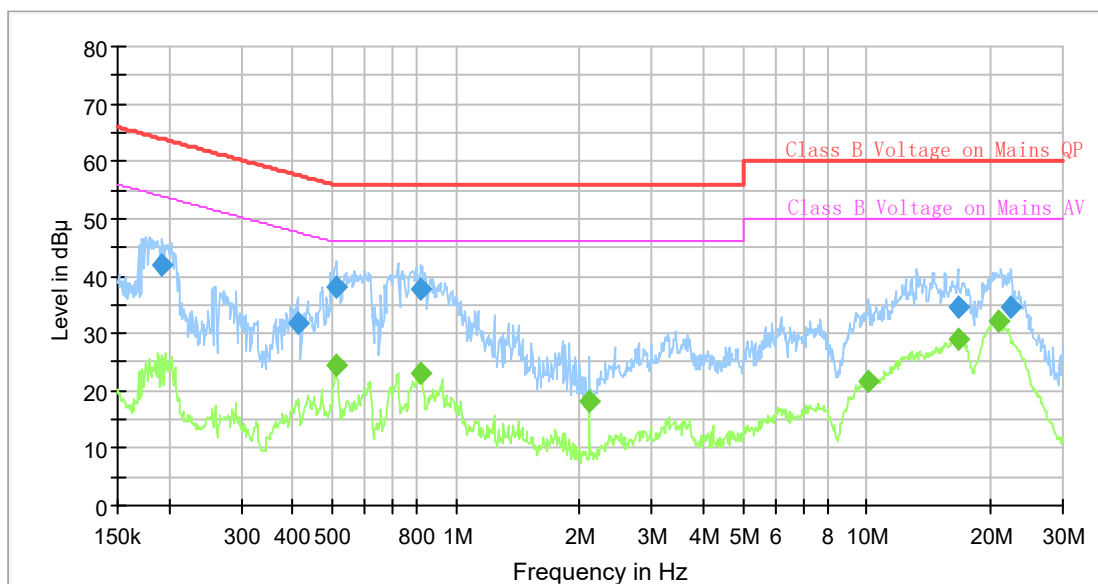
Model Number: IC7  
Port: L  
Test Mode: Mode 1: Normal working(Powered by Adapter)  
Power Source: DC 12V From Adapter input AC 110V/50Hz  
Note:



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.193446	41.16	---	63.89	22.73	9.000	L1	9.6
0.404704	30.71	---	57.76	27.05	9.000	L1	9.6
0.509069	---	24.00	46.00	22.00	9.000	L1	9.6
0.509069	39.92	---	56.00	16.08	9.000	L1	9.6
0.797484	36.39	---	56.00	19.61	9.000	L1	9.7
0.817621	---	23.33	46.00	22.67	9.000	L1	9.7
2.109133	---	21.08	46.00	24.92	9.000	L1	9.7
10.098279	---	22.76	50.00	27.24	9.000	L1	9.9
15.584568	36.11	---	60.00	23.89	9.000	L1	10.2
16.628518	---	29.99	50.00	20.01	9.000	L1	10.1
20.606025	---	31.92	50.00	18.08	9.000	L1	10.0
20.606025	36.09	---	60.00	23.91	9.000	L1	10.0

Model Number: IC7  
 Port: N  
 Test Mode: Mode 1: Normal working(Powered by Adapter)  
 Power Source: DC 12V From Adapter input AC 110V/50Hz  
 Note:

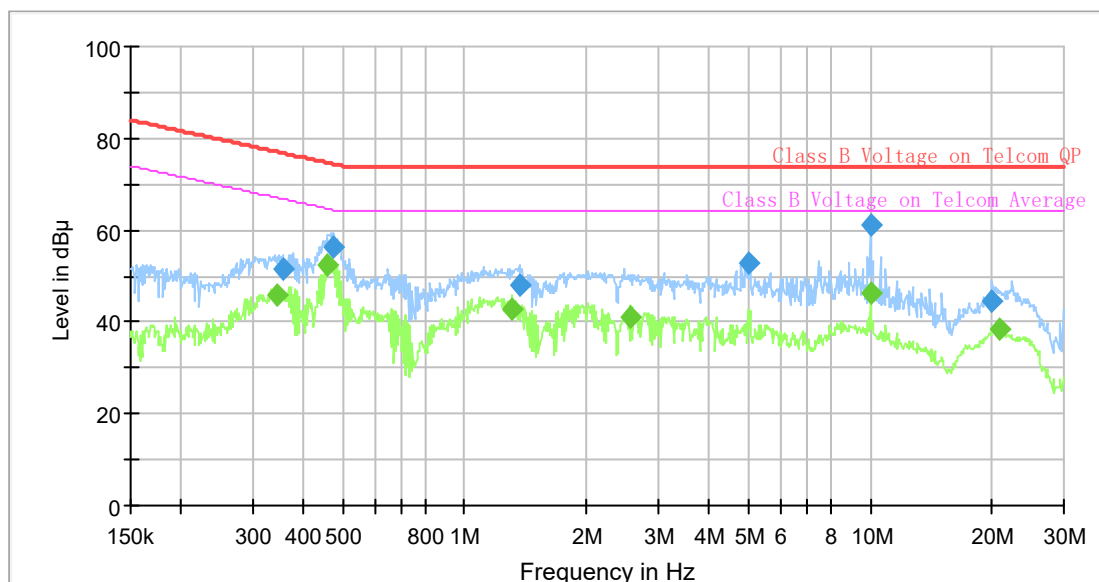


## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.192484	42.05	---	63.93	21.88	9.000	N	9.6
0.410805	31.83	---	57.63	25.80	9.000	N	9.6
0.509069	---	24.40	46.00	21.60	9.000	N	9.6
0.511614	38.15	---	56.00	17.85	9.000	N	9.6
0.821710	---	23.14	46.00	22.86	9.000	N	9.6
0.821710	37.71	---	56.00	18.29	9.000	N	9.6
2.109133	---	18.19	46.00	27.81	9.000	N	9.6
10.098279	---	21.72	50.00	28.28	9.000	N	9.7
16.628518	34.44	---	60.00	25.56	9.000	N	9.9
16.628518	---	28.97	50.00	21.03	9.000	N	9.9
20.916663	---	32.08	50.00	17.92	9.000	N	9.9
22.429380	34.42	---	60.00	25.58	9.000	N	9.9



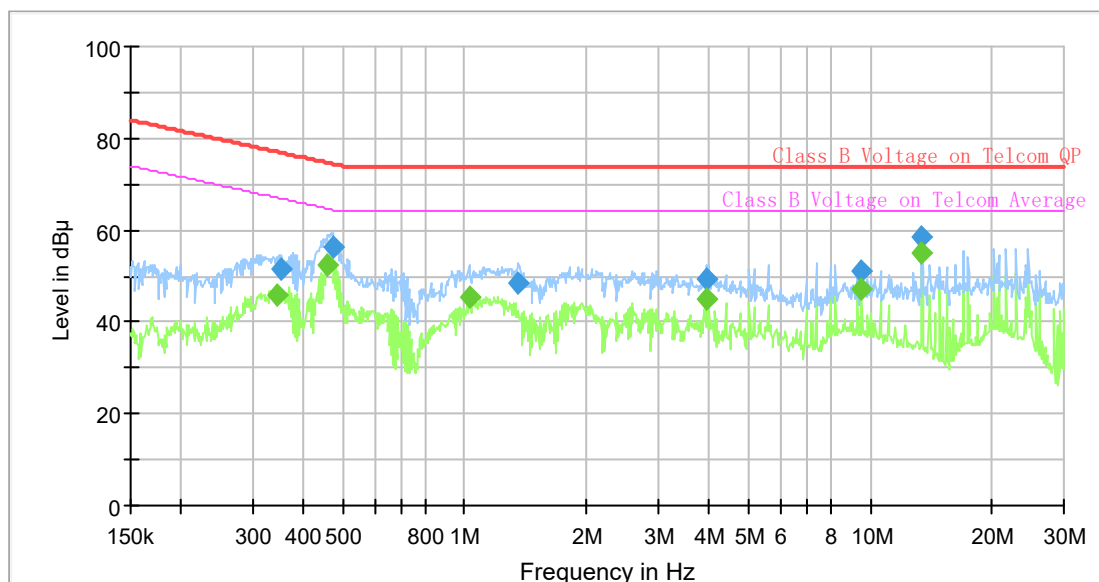
Model Number: IC7  
 Port: RJ45  
 Test Mode: 10Mbps  
 Power Source: DC 12V From Adapter input AC 230V/50Hz  
 Note: Mode 1: Normal working(Powered by Adapter)



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.345004	---	45.91	67.08	21.17	9.000	Line 1	9.9
0.355484	51.49	---	76.83	25.34	9.000	Line 1	9.9
0.460739	---	52.58	64.68	12.10	9.000	Line 1	9.8
0.474735	56.14	---	74.43	18.29	9.000	Line 1	9.8
1.313192	---	42.84	64.00	21.16	9.000	Line 1	9.7
1.366648	48.12	---	74.00	25.88	9.000	Line 1	9.7
2.562008	---	40.98	64.00	23.02	9.000	Line 1	9.6
4.998419	52.82	---	74.00	21.18	9.000	Line 1	9.6
9.998049	61.11	---	74.00	12.89	9.000	Line 1	9.6
9.998049	---	46.44	64.00	17.56	9.000	Line 1	9.6
19.998519	44.71	---	74.00	29.29	9.000	Line 1	9.7
20.916663	---	38.47	64.00	25.53	9.000	Line 1	9.7

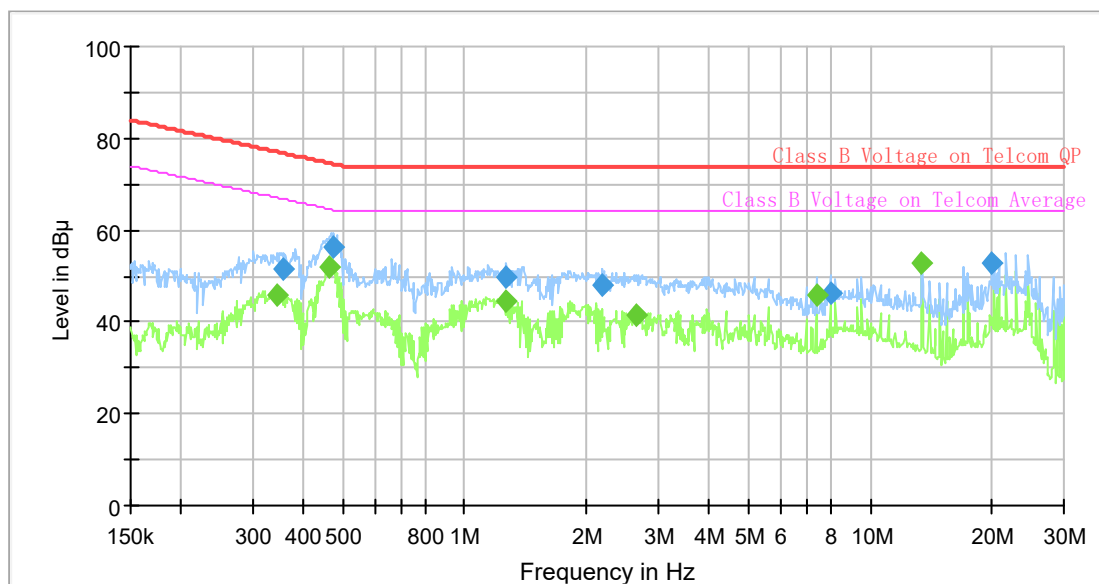
Model Number: IC7  
 Port: RJ45  
 Test Mode: 100Mbps  
 Power Source: DC 12V From Adapter input AC 230V/50Hz  
 Note: Mode 1: Normal working(Powered by Adapter)



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.343287	---	46.00	67.12	21.12	9.000	Line 1	9.9
0.353715	51.59	---	76.87	25.28	9.000	Line 1	9.9
0.458447	---	52.57	64.72	12.15	9.000	Line 1	9.8
0.472373	56.54	---	74.47	17.93	9.000	Line 1	9.8
1.023352	---	45.29	64.00	18.71	9.000	Line 1	9.7
1.359849	48.51	---	74.00	25.49	9.000	Line 1	9.7
3.953919	49.42	---	74.00	24.58	9.000	Line 1	9.6
3.953919	---	45.04	64.00	18.96	9.000	Line 1	9.6
9.511623	50.97	---	74.00	23.03	9.000	Line 1	9.6
9.511623	---	47.17	64.00	16.83	9.000	Line 1	9.6
13.418776	---	55.10	64.00	8.90	9.000	Line 1	9.6
13.418776	58.43	---	74.00	15.57	9.000	Line 1	9.6

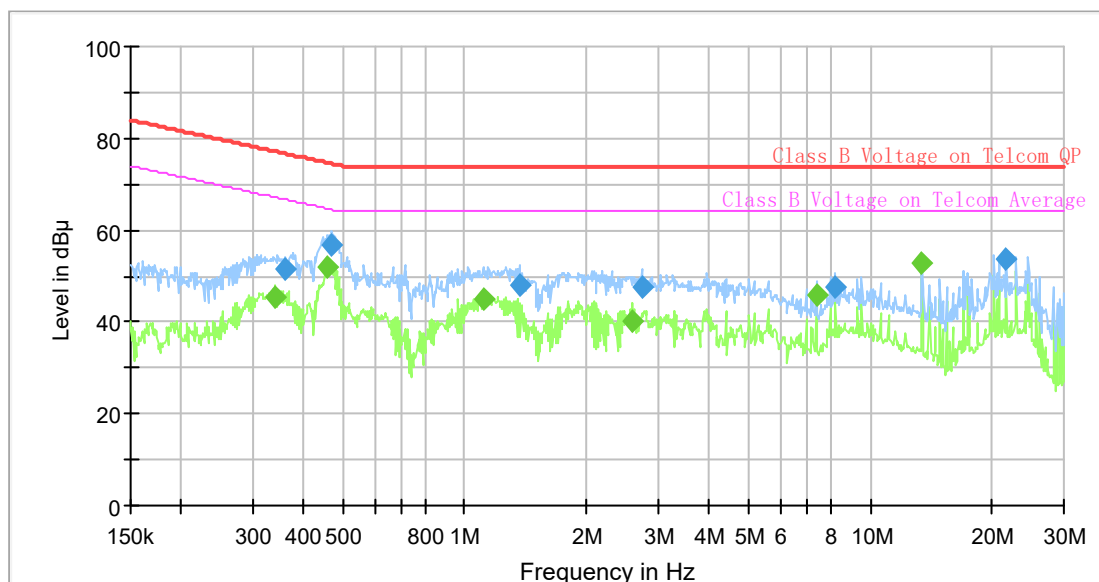
Model Number: IC7  
 Port: RJ45  
 Test Mode: 10Mbps  
 Power Source: DC 12V From Adapter input AC 110V/50Hz  
 Note: Mode 1: Normal working(Powered by Adapter)



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.345004	---	45.66	67.08	21.42	9.000	Line 1	9.9
0.357261	51.34	---	76.79	25.45	9.000	Line 1	9.9
0.465358	---	52.15	64.60	12.45	9.000	Line 1	9.8
0.474735	56.14	---	74.43	18.29	9.000	Line 1	9.8
1.268136	---	44.34	64.00	19.66	9.000	Line 1	9.7
1.268136	49.71	---	74.00	24.29	9.000	Line 1	9.7
2.184069	47.85	---	74.00	26.15	9.000	Line 1	9.6
2.639835	---	41.46	64.00	22.54	9.000	Line 1	9.6
7.375399	---	45.67	64.00	18.33	9.000	Line 1	9.6
7.988081	46.14	---	74.00	27.86	9.000	Line 1	9.6
13.418776	---	52.96	64.00	11.04	9.000	Line 1	9.6
19.998519	52.81	---	74.00	21.19	9.000	Line 1	9.7

Model Number: IC7  
Port: RJ45  
Test Mode: 100Mbps  
Power Source: DC 12V From Adapter input AC 110V/50Hz  
Note: Mode 1: Normal working(Powered by Adapter)



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.341579	---	45.45	67.16	21.71	9.000	Line 1	9.9
0.362647	51.50	---	76.67	25.17	9.000	Line 1	9.9
0.460739	---	52.13	64.68	12.55	9.000	Line 1	9.8
0.470023	56.69	---	74.51	17.82	9.000	Line 1	9.8
1.108363	---	44.94	64.00	19.06	9.000	Line 1	9.7
1.366648	47.92	---	74.00	26.08	9.000	Line 1	9.7
2.587692	---	40.18	64.00	23.82	9.000	Line 1	9.6
2.733627	47.63	---	74.00	26.37	9.000	Line 1	9.6
7.375399	---	45.71	64.00	18.29	9.000	Line 1	9.6
8.230739	47.47	---	74.00	26.53	9.000	Line 1	9.6
13.418776	---	52.96	64.00	11.04	9.000	Line 1	9.6
21.659819	53.60	---	74.00	20.40	9.000	Line 1	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  $U_{cisp}$  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  $U_{cisp}$  of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cisp})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cisp})$ , 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.

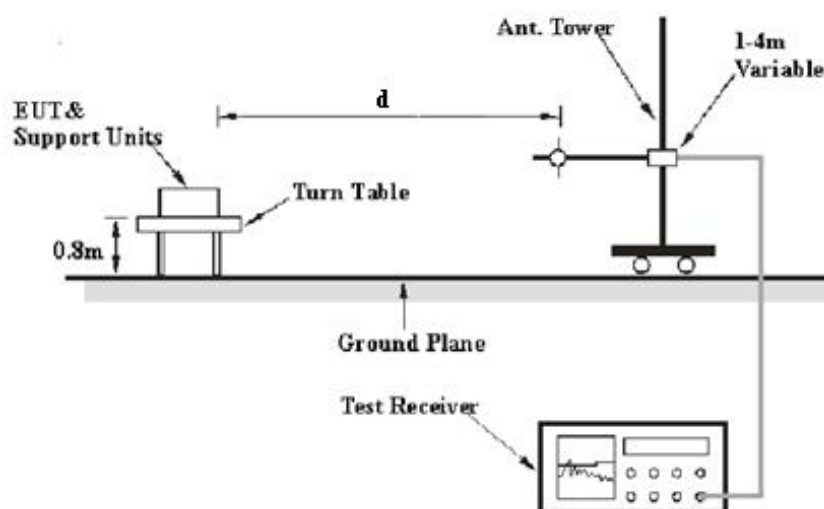
Table 1 – Values of  $U_{cisp}$

Measurement	$U_{cisp}$
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:



The radiated emission tests below 1GHz were performed in 3 meters, using the setup accordance with the CISPR 16-1-1:2010+A1:2010, CISPR 16-1-4:2010, CISPR 16-2-3:2010. 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 Setup

The system was investigated from 30 MHz to 6 GHz.

During the radiated emission test, the EMI test receiver was 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	Reduced video bandwidth	/	AVG

### 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, then 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

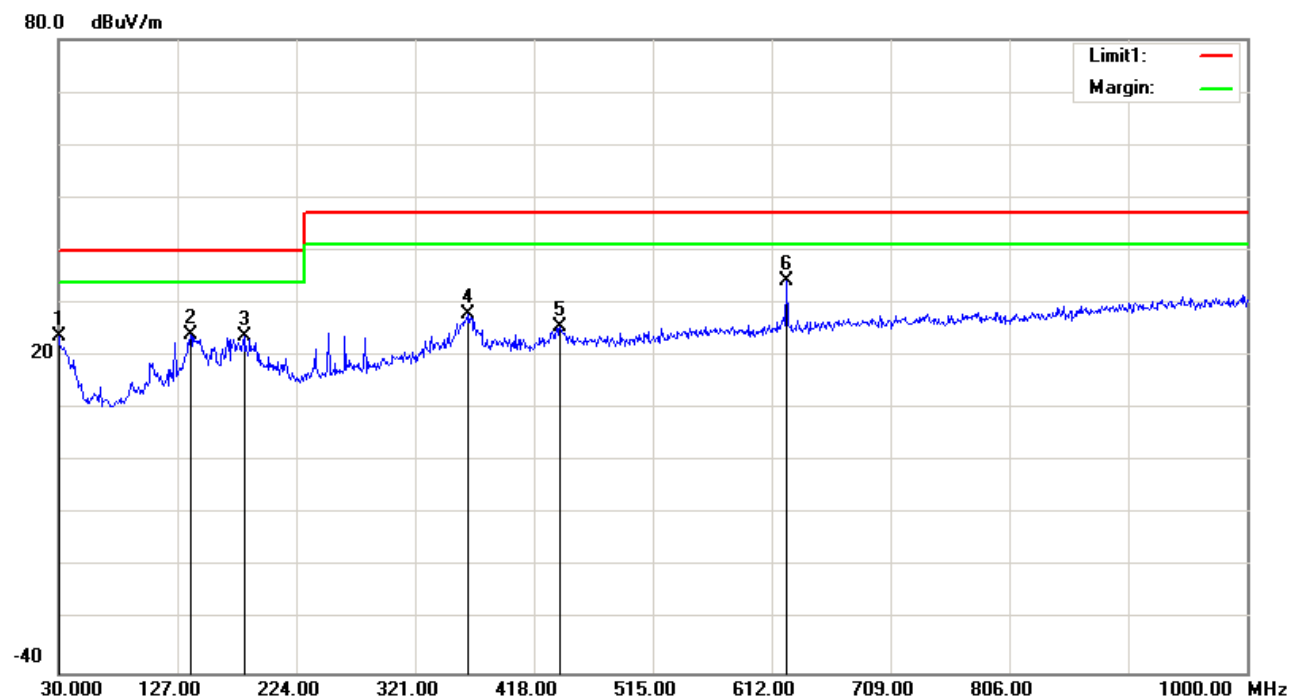
## Test Data

Please refer to following table and plots:

**Condition:** EN 55032 Class B 3m Radiation  
**EUT:** 4MP Conch Security Camera

**Polarization:** Horizontal  
**Power:** DC 12V From Adapter input AC 230V/50Hz  
**Distance:** 3m

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)  
**Note:**



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.0000	27.86	peak	-4.06	23.80	40.00	16.20
2	137.6700	33.12	peak	-9.10	24.02	40.00	15.98
3	181.3200	33.83	peak	-10.04	23.79	40.00	16.21
4	364.6500	34.23	peak	-6.17	28.06	47.00	18.94
5	439.3400	30.14	peak	-4.54	25.60	47.00	21.40
6	624.6100	34.99	peak	-0.78	34.21	47.00	12.79

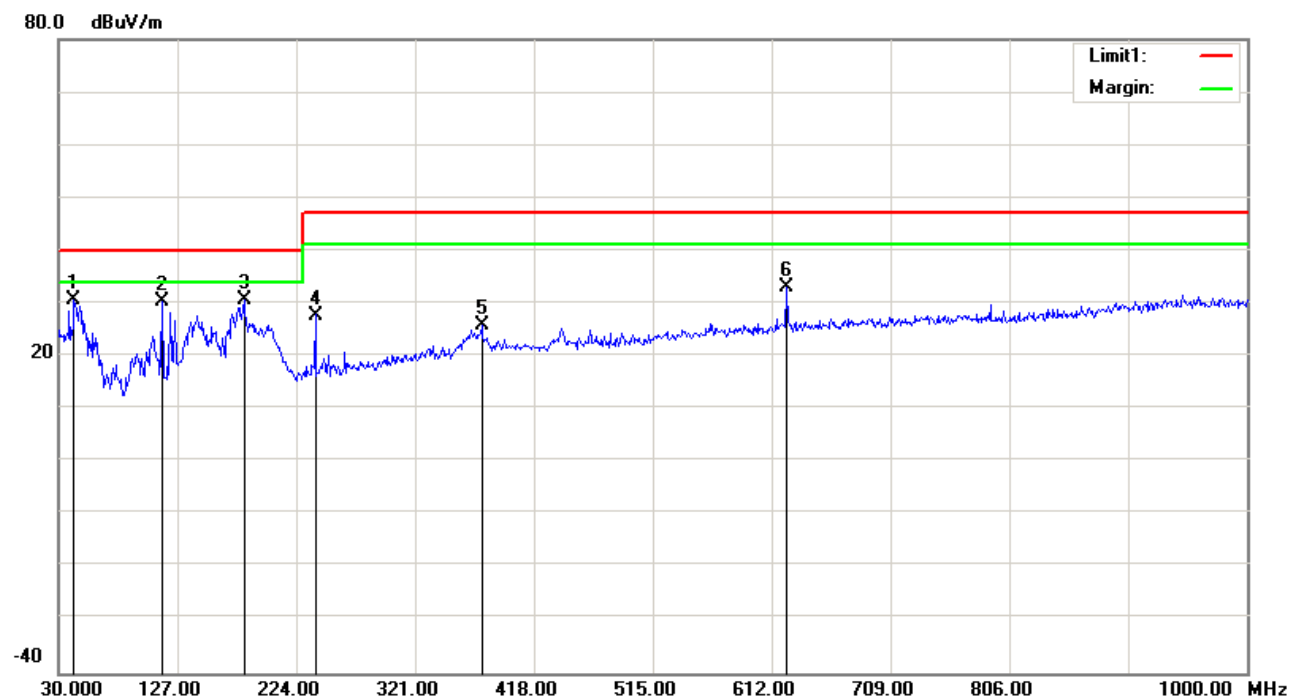
**Condition:** EN 55032 Class B 3m Radiation  
**EUT:** 4MP Conch Security Camera

**Polarization:** Vertical  
**Power:** DC 12V From  
Adapter input AC  
230V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)

**Distance:** 3m

**Note:**



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Detector	Corrected (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1	42.6100	41.71	peak	-10.99	30.72	40.00	9.28
2	114.3900	43.12	peak	-12.69	30.43	40.00	9.57
3	181.3200	40.63	peak	-10.04	30.59	40.00	9.41
4	239.5200	37.98	peak	-10.18	27.80	47.00	19.20
5	375.3200	31.69	peak	-5.93	25.76	47.00	21.24
6	624.6100	33.87	peak	-0.78	33.09	47.00	13.91

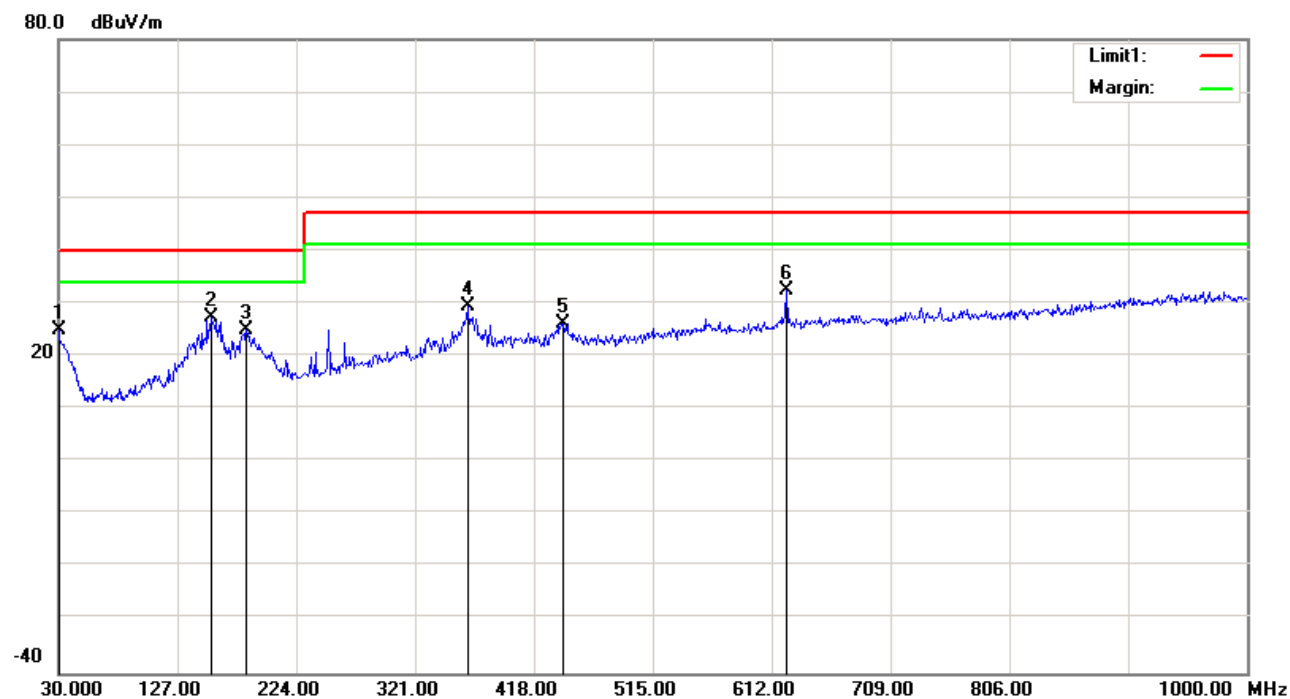


**Condition:** EN 55032 Class B 3m Radiation  
**EUT:** 4MP Conch Security Camera

**Polarization:** Horizontal  
**Power:** DC 12V From  
Adapter input AC  
110V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powerd by Adapter)  
**Note:**

**Distance:** 3m



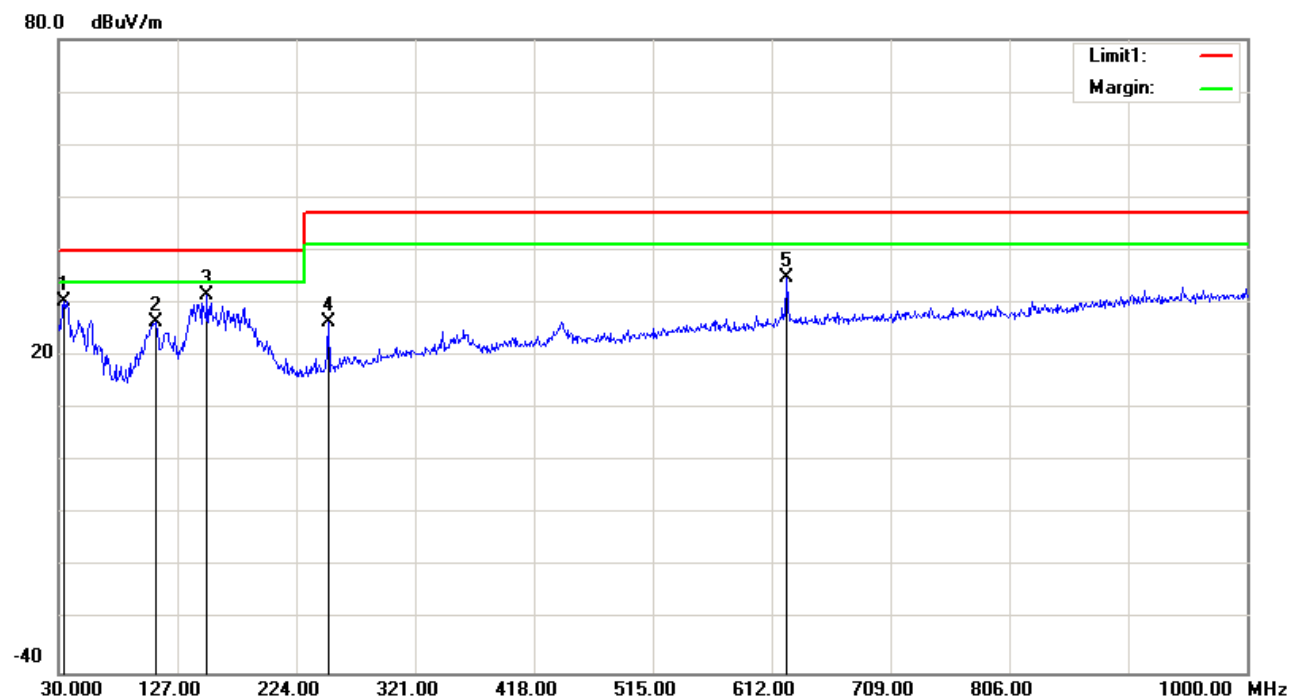
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.0000	29.04	peak	-4.06	24.98	40.00	15.02
2	155.1300	36.52	peak	-9.30	27.22	40.00	12.78
3	183.2600	35.03	peak	-10.19	24.84	40.00	15.16
4	363.6800	35.62	peak	-6.13	29.49	47.00	17.51
5	442.2500	30.67	peak	-4.48	26.19	47.00	20.81
6	624.6100	33.14	peak	-0.78	32.36	47.00	14.64

**Condition:** EN 55032 Class B 3m Radiation  
**EUT:** 4MP Conch Security Camera

**Polarization:** Vertical  
**Power:** DC 12V From  
Adapter input AC  
110V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powerd by Adapter)  
**Note:**

**Distance:** 3m



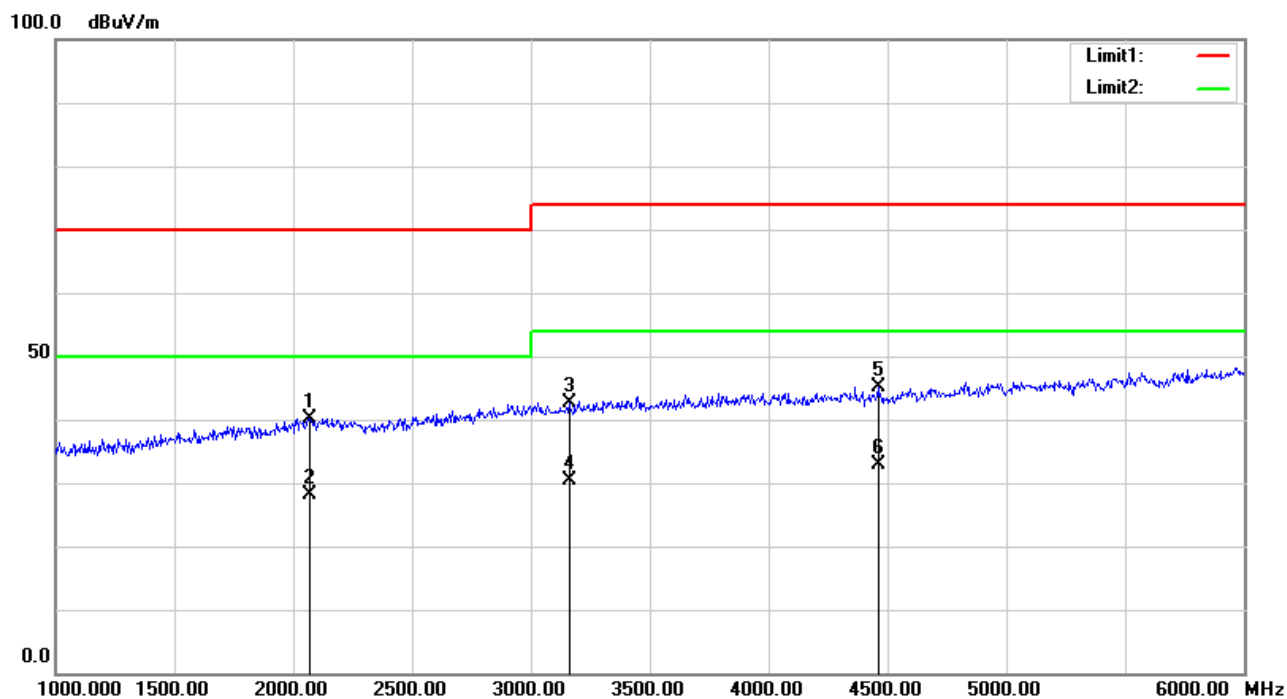
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	33.8800	36.45	peak	-6.10	30.35	40.00	9.65
2	109.5400	39.13	peak	-12.81	26.32	40.00	13.68
3	151.2500	40.64	peak	-9.20	31.44	40.00	8.56
4	250.1900	36.26	peak	-9.90	26.36	47.00	20.64
5	624.6100	35.61	peak	-0.78	34.83	47.00	12.17

**Condition:** EN 55032 Class B  
**EUT:** 4MP Conch Security Camera

**Polarization:** Horizontal  
**Power:** DC 12V From  
Adapter input AC  
230V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)  
**Note:**

**Distance:** 3M



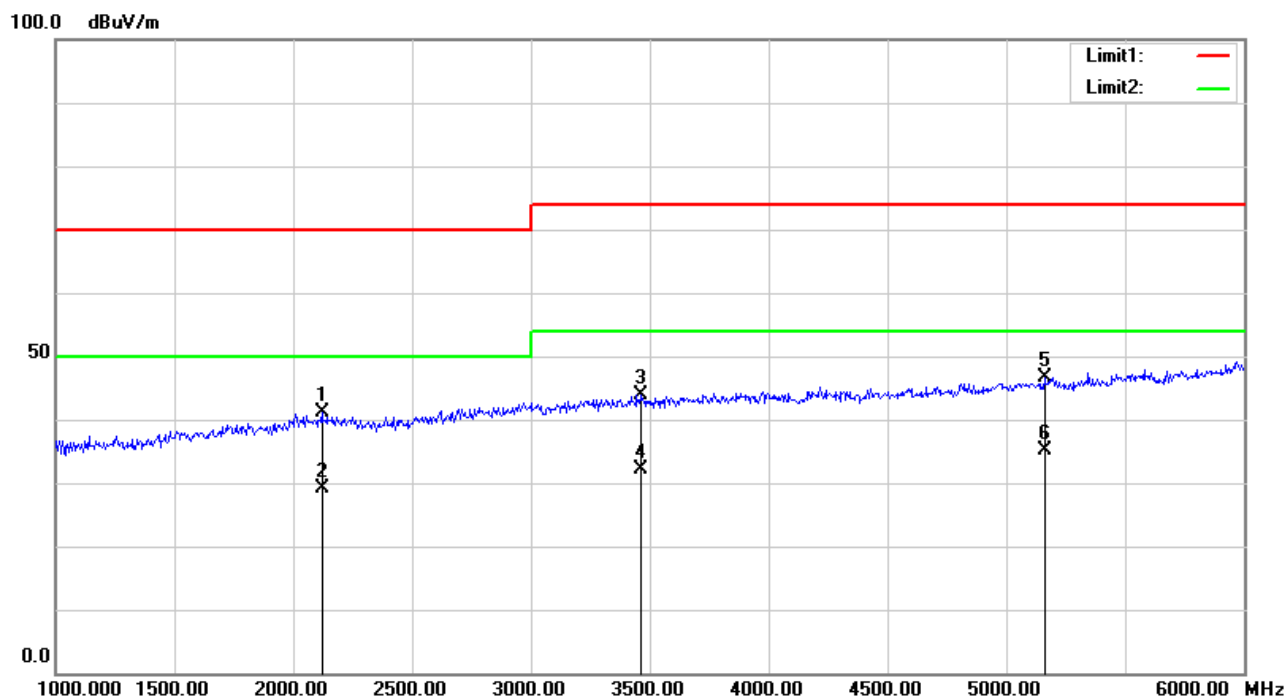
No.	Frequency (MHz)	Reading (dB $\mu$ V)	Detector	Corrected (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1	2072.500	36.40	peak	3.79	40.19	70.00	29.81
2	2072.500	24.23	AVG	3.79	28.02	50.00	21.98
3	3162.500	35.92	peak	6.80	42.72	74.00	31.28
4	3162.500	23.63	AVG	6.80	30.43	54.00	23.57
5	4462.500	35.70	peak	9.51	45.21	74.00	28.79
6	4462.500	23.44	AVG	9.51	32.95	54.00	21.05

**Condition:** EN 55032 Class B  
**EUT:** 4MP Conch Security Camera

**Polarization:** Vertical  
**Power:** DC 12V From  
 Adapter input AC  
 230V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)  
**Note:**

**Distance:** 3M



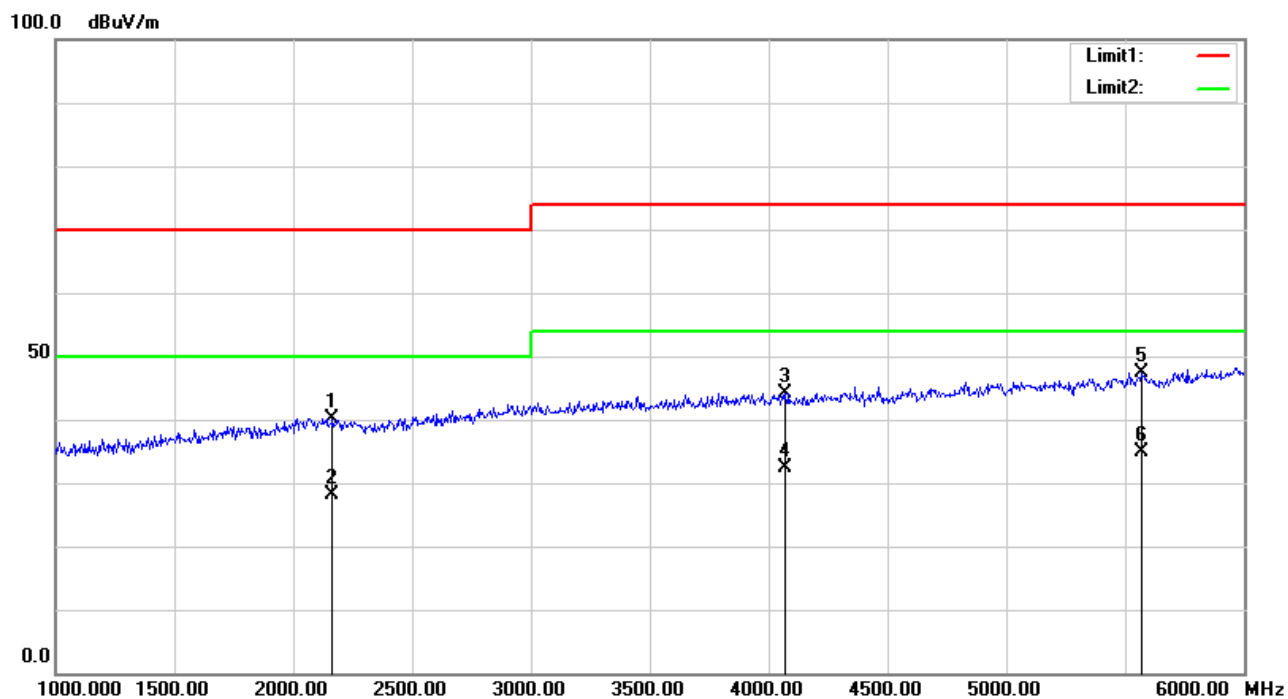
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	2122.500	37.29	peak	3.83	41.12	70.00	28.88
2	2122.500	25.31	AVG	3.83	29.14	50.00	20.86
3	3460.000	36.28	peak	7.71	43.99	74.00	30.01
4	3460.000	24.35	AVG	7.71	32.06	54.00	21.94
5	5162.500	35.14	peak	11.47	46.61	74.00	27.39
6	5162.500	23.56	AVG	11.47	35.03	54.00	18.97

**Condition:** EN 55032 Class B  
**EUT:** 4MP Conch Security Camera

**Polarization:** Horizontal  
**Power:** DC 12V From  
Adapter input AC  
110V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)  
**Note:**

**Distance:** 3M



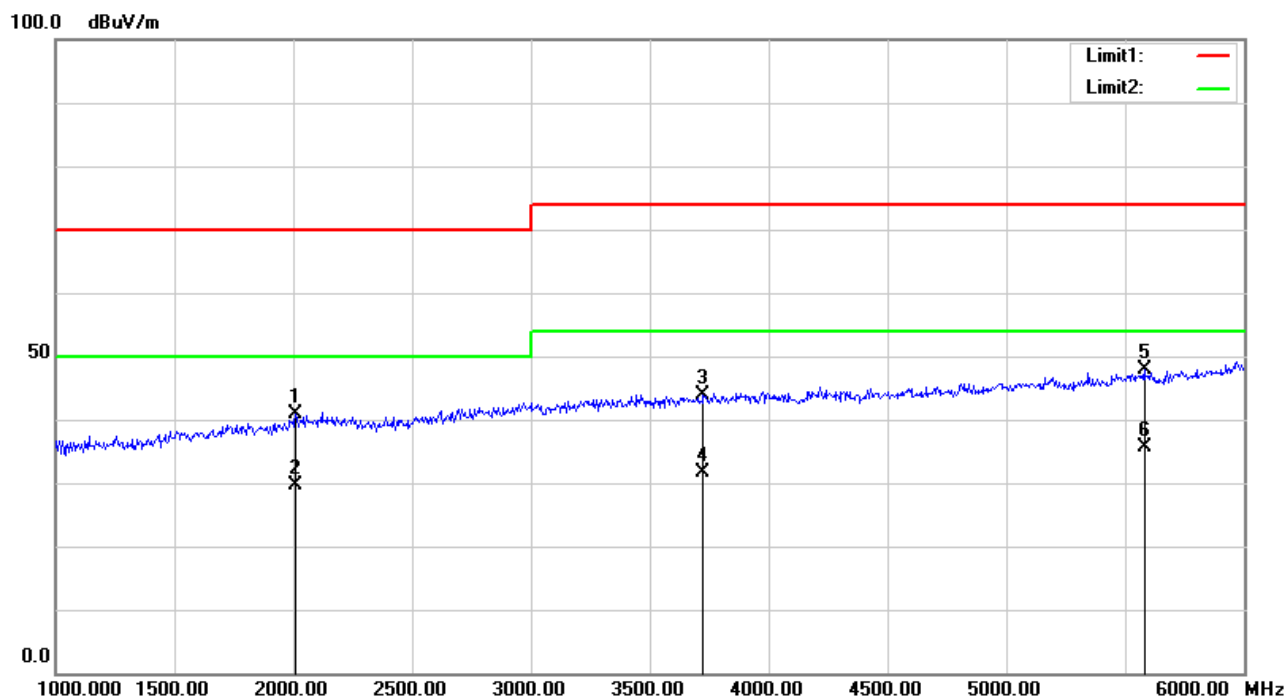
No.	Frequency (MHz)	Reading (dB $\mu$ V)	Detector	Corrected (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1	2165.000	36.40	peak	3.84	40.24	70.00	29.76
2	2165.000	24.28	AVG	3.84	28.12	50.00	21.88
3	4072.500	35.11	peak	9.08	44.19	74.00	29.81
4	4072.500	23.18	AVG	9.08	32.26	54.00	21.74
5	5572.500	34.92	peak	12.49	47.41	74.00	26.59
6	5572.500	22.39	AVG	12.49	34.88	54.00	19.12

**Condition:** EN 55032 Class B  
**EUT:** 4MP Conch Security Camera

**Polarization:** Vertical  
**Power:** DC 12V From  
 Adapter input AC  
 110V/50Hz

**Model:** IC7  
**Test Mode:** Normal working(Powered by Adapter)  
**Note:**

**Distance:** 3M



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	2010.000	37.20	peak	3.71	40.91	70.00	29.09
2	2010.000	25.83	AVG	3.71	29.54	50.00	20.46
3	3727.500	35.44	peak	8.47	43.91	74.00	30.09
4	3727.500	23.24	AVG	8.47	31.71	54.00	22.29
5	5582.500	35.44	peak	12.51	47.95	74.00	26.05
6	5582.500	23.17	AVG	12.51	35.68	54.00	18.32

### 3 - ELECTROSTATIC DISCHARGES IEC 61000-4-2

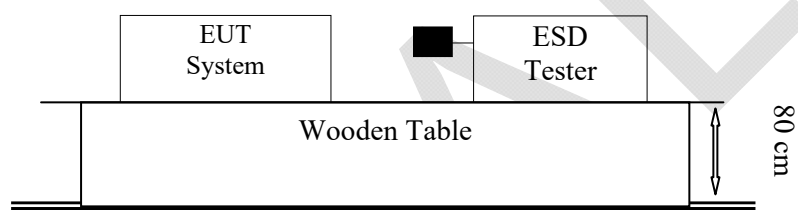
#### Measurement Uncertainty

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

Parameter	$U_{EN}$	$U_{lab}$
Rise time $t_r$	$\leq 15\%$	15%
Peak current $I_p$	$\leq 7\%$	6.30%
Current at 30 ns	$\leq 7\%$	6.30%
Current at 60 ns	$\leq 7\%$	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 a 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(IEC 61000-4-2:2008)  
 BS EN 55035:2017+A11:2020(IEC 61000-4-2:2008)  
 Test level 3 for Air Discharge at  $\pm 8$  kV  
 Test level 2 for Contact Discharge at  $\pm 4$  kV

**Test Level**

Level	Test Voltage Contact Discharge ( $\pm$ kV)	Test Voltage Air Discharge ( $\pm$ 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 8.3.1 of 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 50 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 50 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions  $0.5\text{m} \times 0.5\text{m}$ , 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:** Normal working(Powered by Adapter)

**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	/	/
Camera	A	A	A	A	A	A	/	/
Seam	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
/	/	/	/	/	/	/	/	/

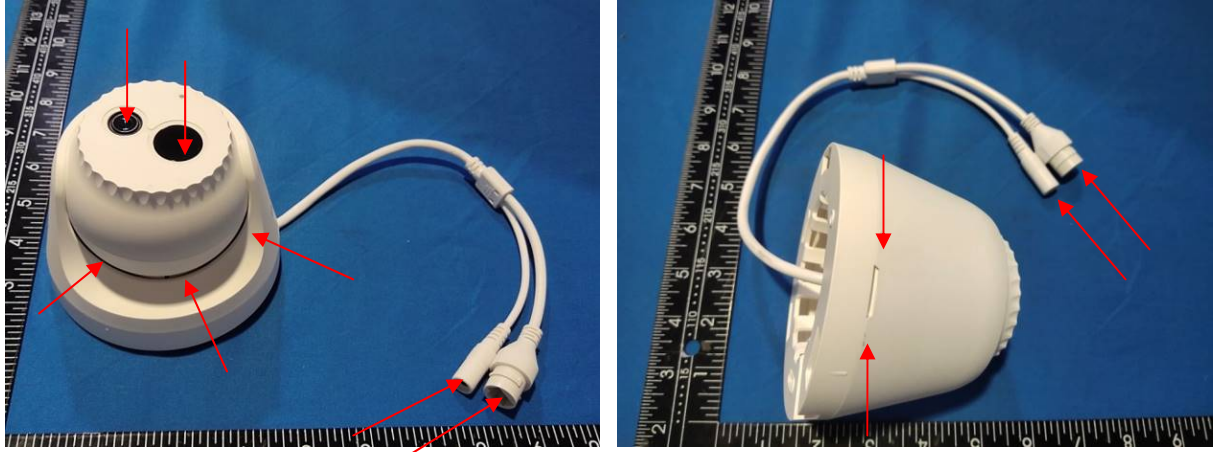
**Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)**

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:



FINAL

## 4 - CONTINUOUS RADIATED DISTURBANCES IEC 61000-4-3

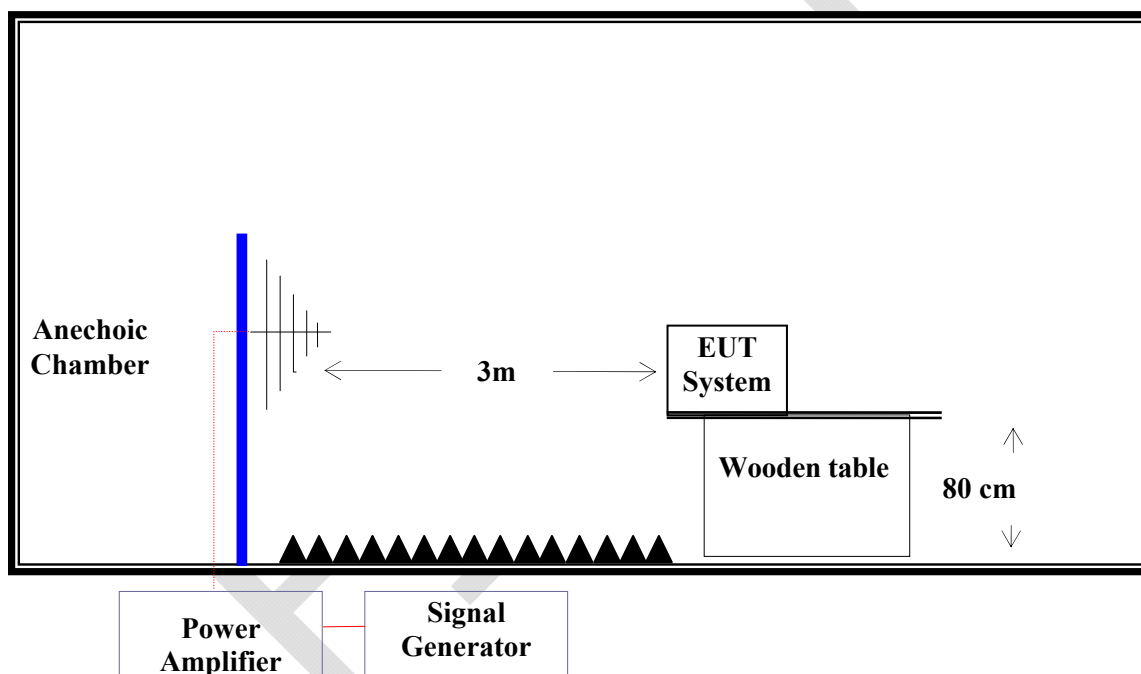
### Measurement Uncertainty

$U_{lab}$ (measurement uncertainty of lab) and  $U_{EN}$ (measurement uncertainty of EN 61000-4-3 and BS 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 (IEC 61000-4-3:2020)

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****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:** Normal working(Powered by Adapter)

**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

## 5 - CONTINUOUS CONDUCTED DISTURBANCES IEC 61000-4-6

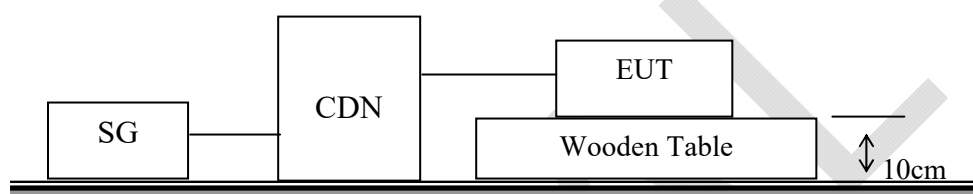
### Measurement Uncertainty

$U_{lab}$ (measurement uncertainty of lab) and  $U_{EN}$ (measurement uncertainty of EN 61000-4-6 and BS 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 (IEC 61000-4-6:2013)  
 BS EN 55035:2017+A11:2020 (IEC 61000-4-6:2013)  
 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:** Normal working(Powered by Adapter)

**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

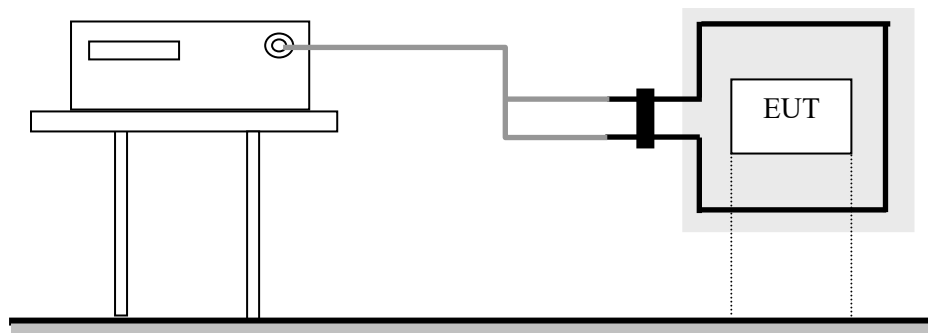
Frequency(MHz)	Voltage Level	Pass	Fail
0.15-10	3V	A	/
10-30	3V-1V		
30-80	1V		

**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		



**6 - POWER FREQUENCY MAGNETIC FIELDS IEC 61000-4-8****Test Setup****Test Standard**

EN 55035:2017+A11:2020& 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:** Normal working(Powered by Adapter)

**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

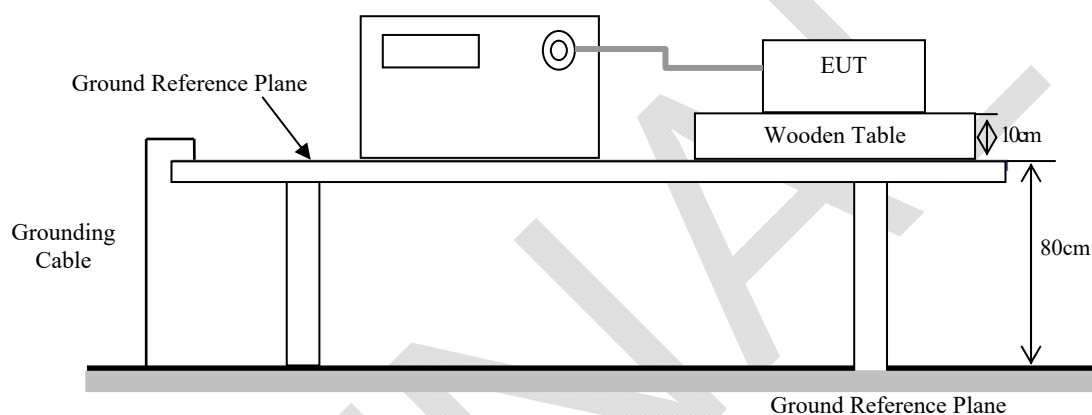
### Measurement Uncertainty

$U_{lab}$ (measurement uncertainty of lab) and  $U_{EN}$ (measurement uncertainty of EN 61000-4-4 and BS 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 (IEC 61000-4-4:2012)

BS EN 55035:2017+A11:2020 (IEC 61000-4-4:2012)

AC mains: Test level 2 at 1 kV;

Signal line: Test level 2 at 0.5 kV

**Test Level**

Open Circuit Output Test Voltage $\pm 10\%$		
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:

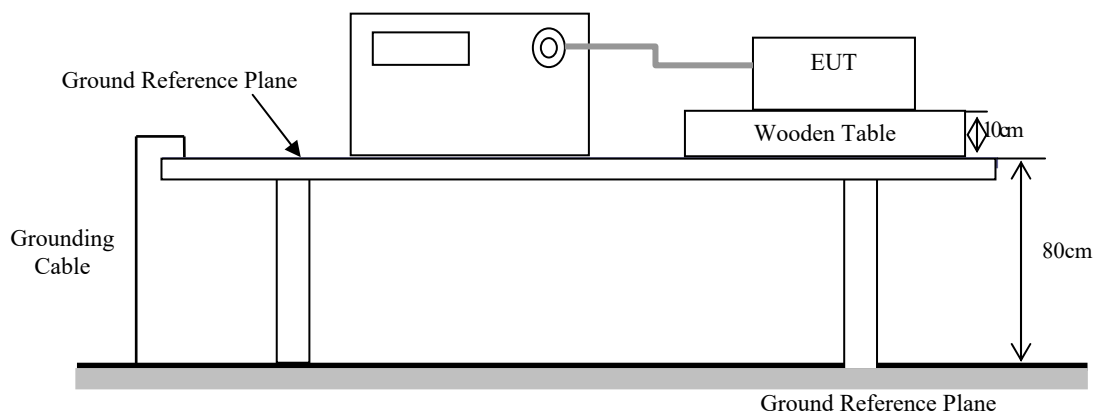
**Test Mode:** Normal working(Powered by Adapter)

**Note:**

Test Points		Test Level (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
<u>AC</u> 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	<b>RJ45</b>	A	A	/	/	/	/	/	/

## 8 - SURGES IEC 61000-4-5

### Test System Setup



### Test Standard

EN 55035:2017+A11:2020 (IEC 61000-4-5:2017)  
 BS EN 55035:2017+A11:2020 (IEC 61000-4-5:2017)  
 AC Mains: L-N: Test level 2 at 1kV,  
 Signal line: Test level at 1kV;

### Test Level

Level	Open Circuit Output Test Voltage $\pm 10\%$
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:** Normal working(Powered by Adapter)

**Note:**

**Table 1:** AC mains power input port

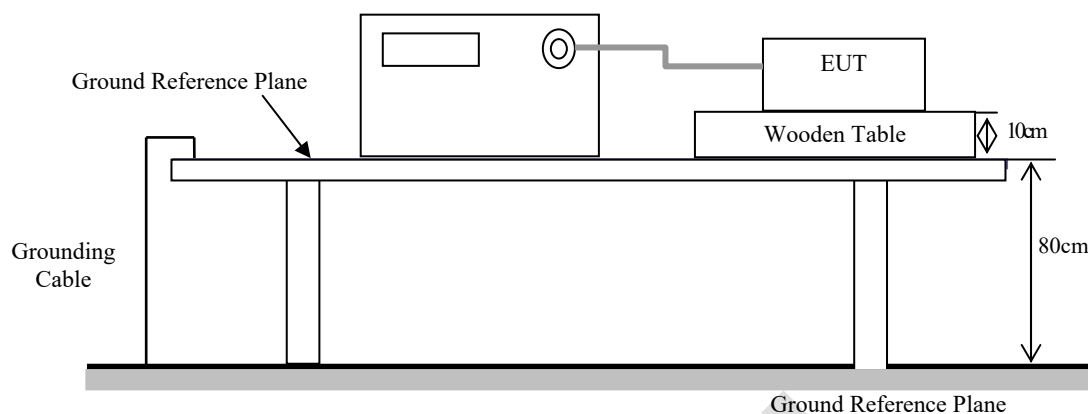
Level	Voltage	Poll	Path	Phase Angle	Pass	Fail
1	0.5kV	+	L-N	90	A	/
1	0.5kV	-	L-N	270	A	/
2	1kV	+	L-N	90	A	/
2	1kV	-	L-N	270	A	/

**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 (IEC 61000-4-11:2020)  
BS EN 55035:2017+A11:2020 (IEC 61000-4-11:2020)  
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:** Normal working(Powered by Adapter)

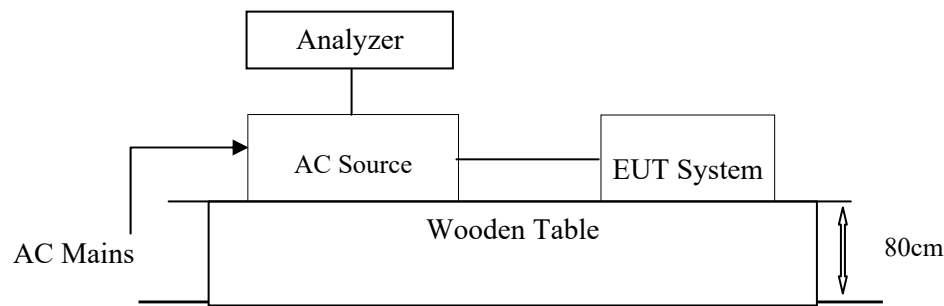
**Note:** C indicates that the EUT runs abnormally during the test, and  
can be restored to normal use after the test is finished

**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	C

## 11 – VOLTAGE FLUCTUATIONS AND FLICKER

### Test System Setup



### Test Standard

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

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

### 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 triangular 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:	10 min (1Flicker measurement)
Test Mode:	Normal working(Powered by Adapter)
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 [%]	007	3.30	PASS
dmax [%]	0.144	4.00	PASS
dt [s]	0.000	0.50	PASS

## EXHIBITA – EUT PHOTOGRAPHS

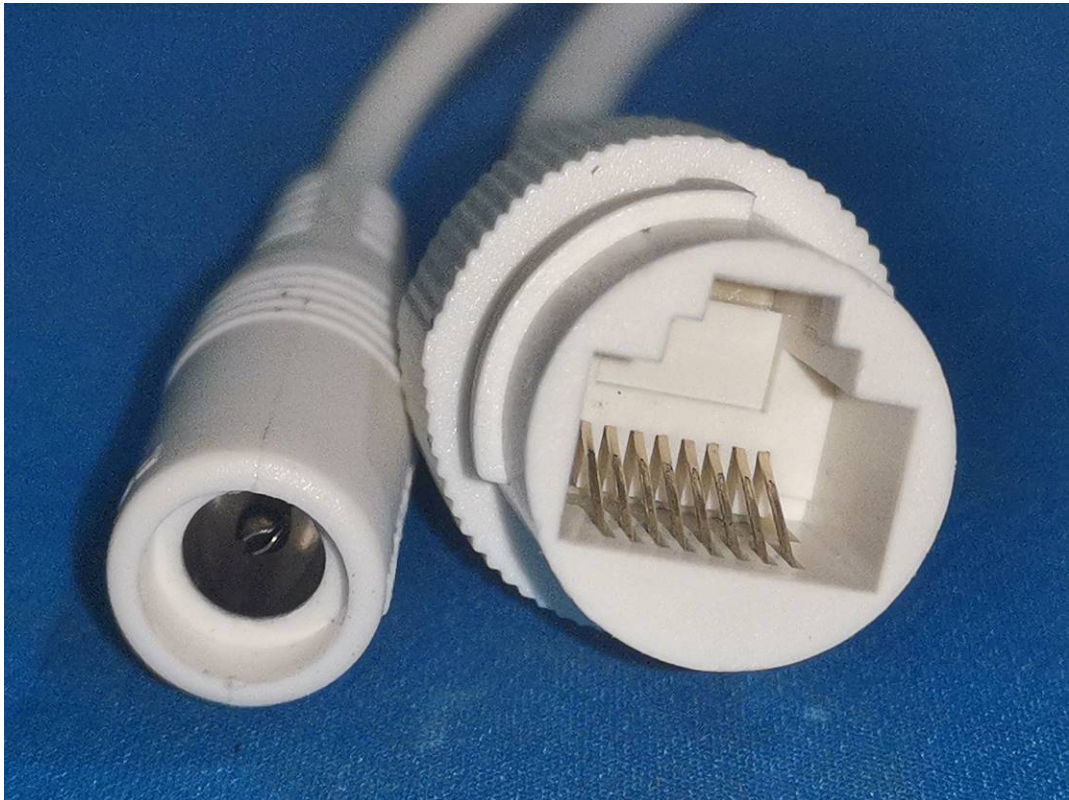


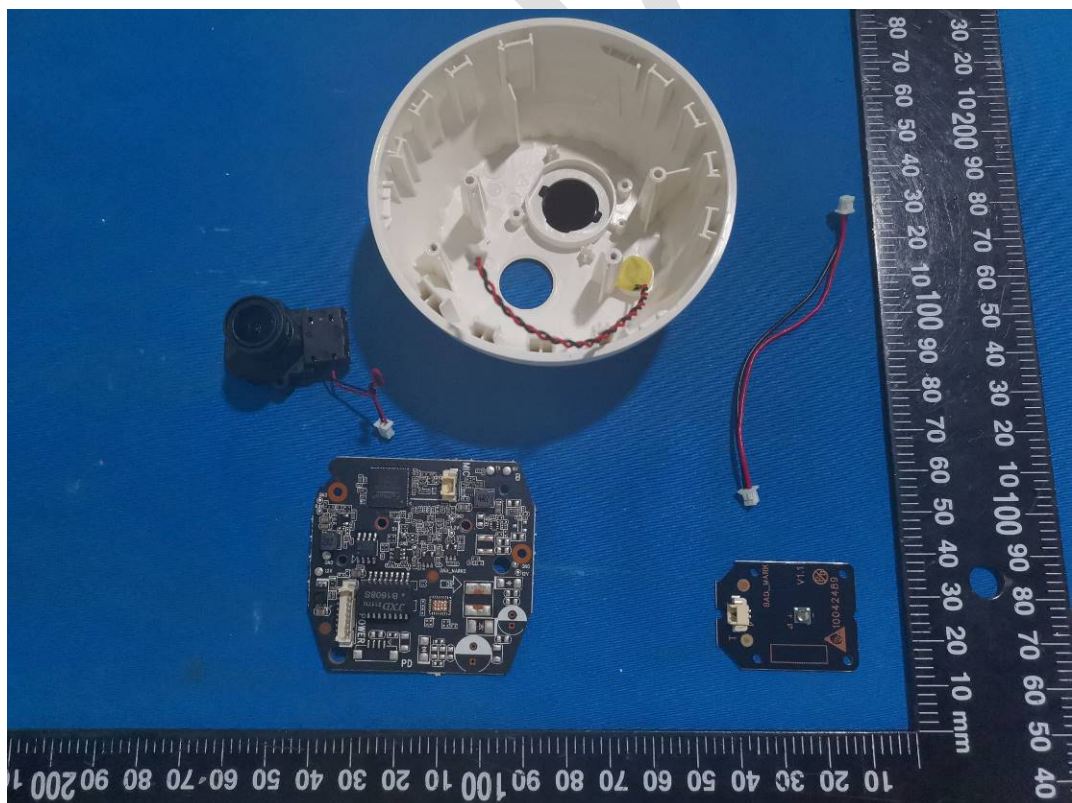




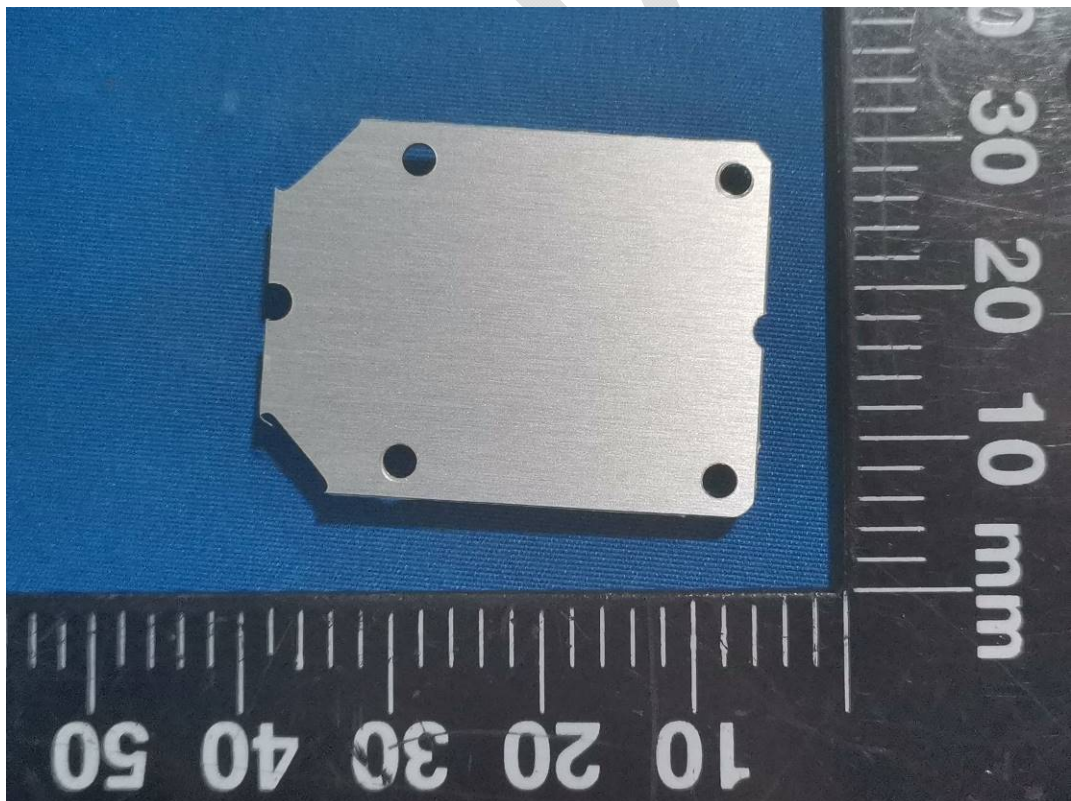
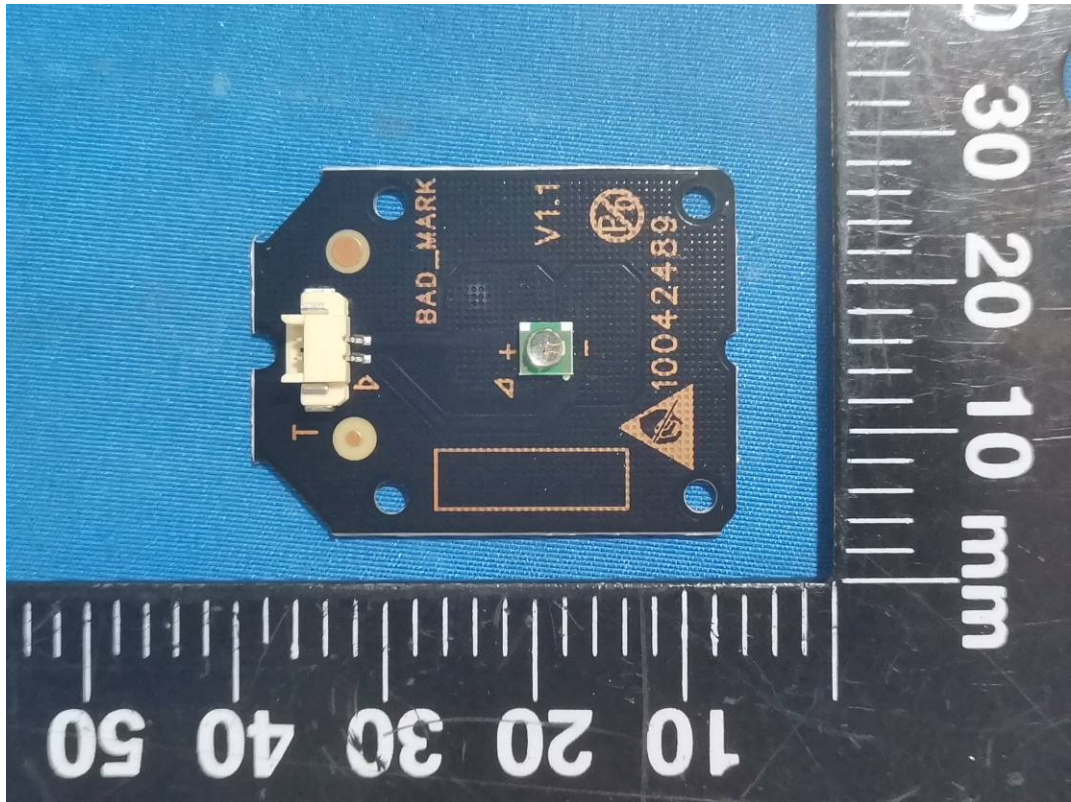




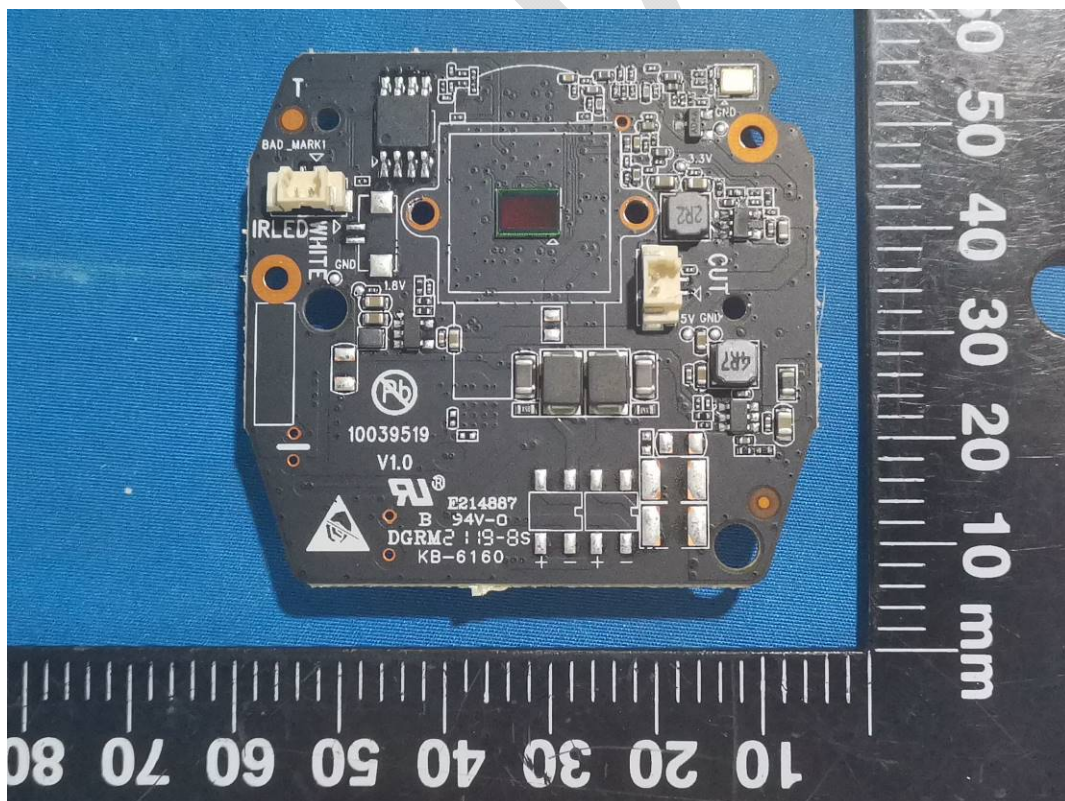
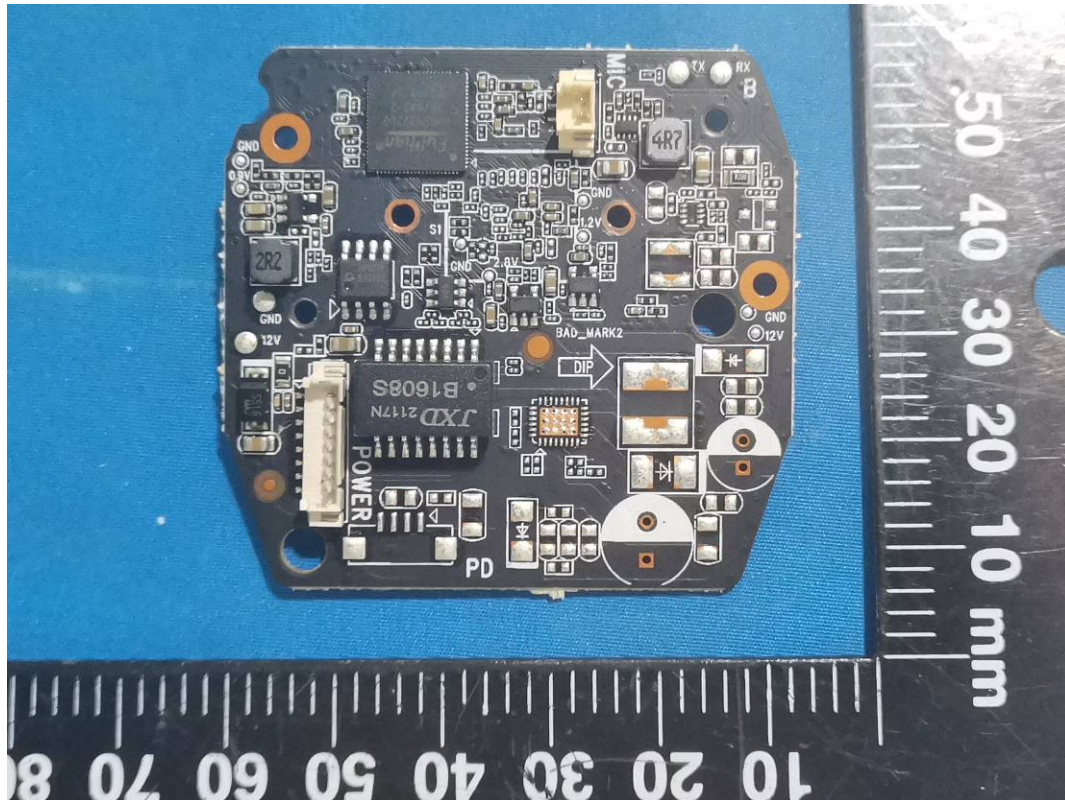














## EXHIBITB – TEST SETUP PHOTOGRAPHS

### Conducted Emissions

Conducted emissions front View



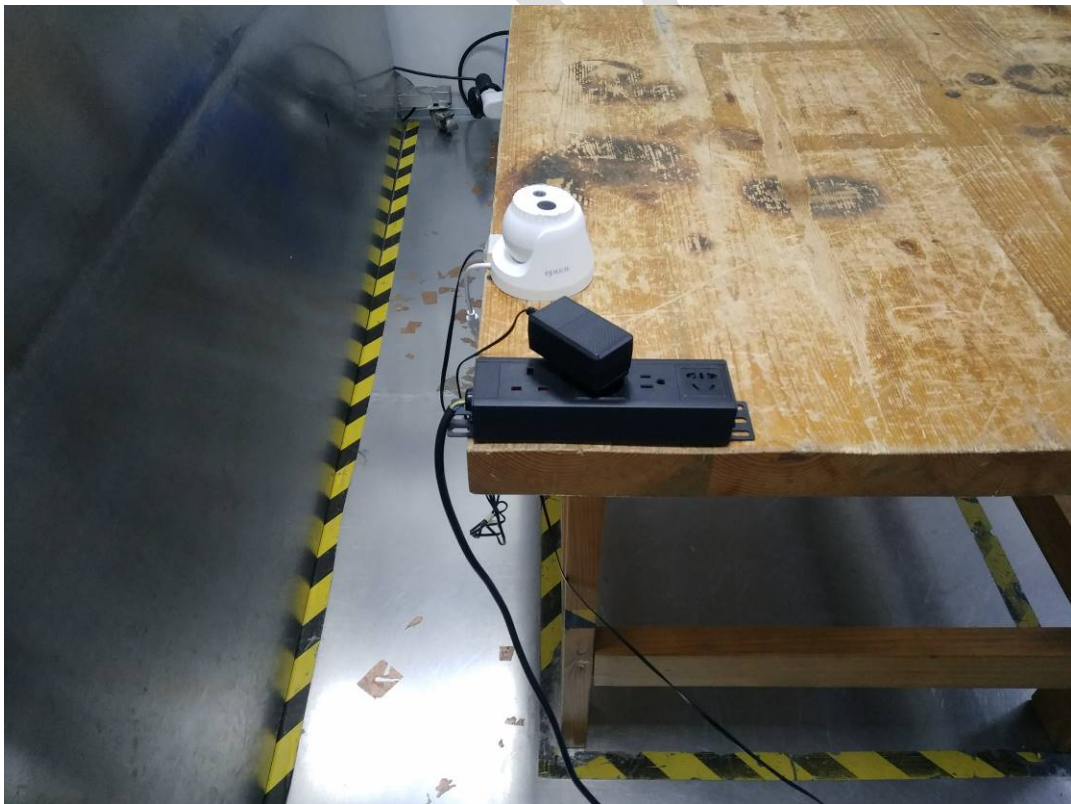
Conducted emissions side View



Conducted emissions front View ISN



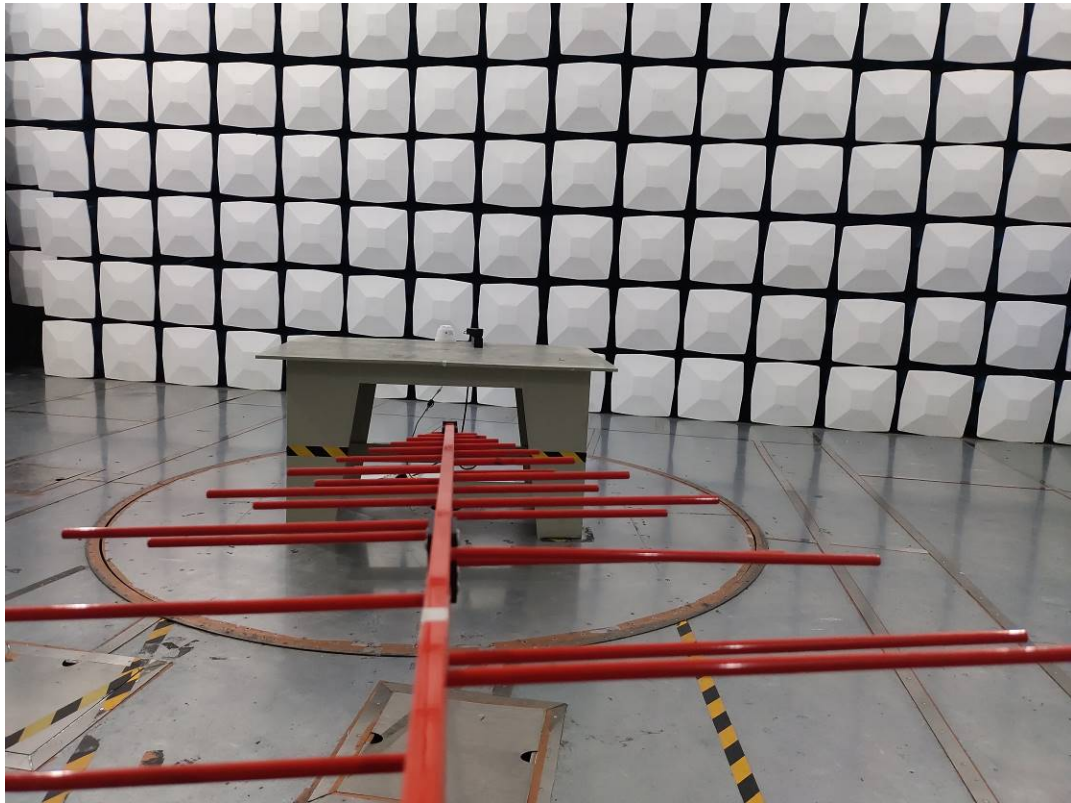
Conducted emissions side View ISN



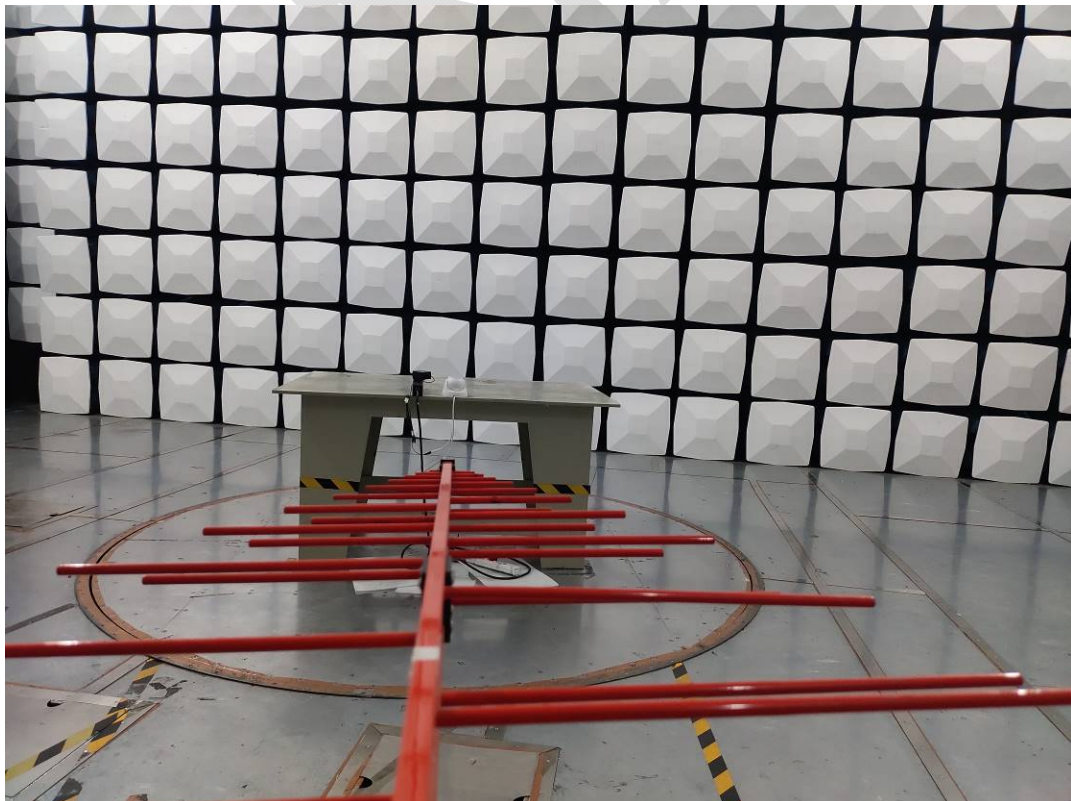


## Radiated Emission

Radiated Emissions Below 1G front View



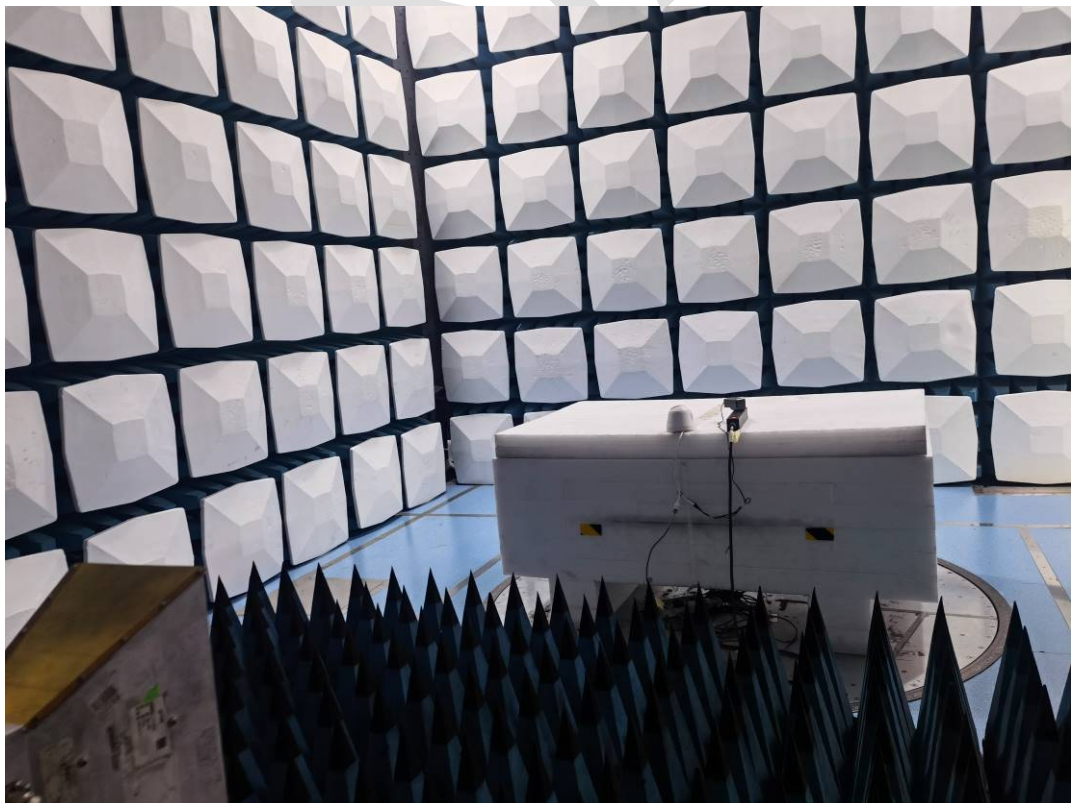
Radiated Emissions Below 1G rear View



Radiated Emissions Above 1G front View



Radiated Emissions Above 1G rear View



## ESD

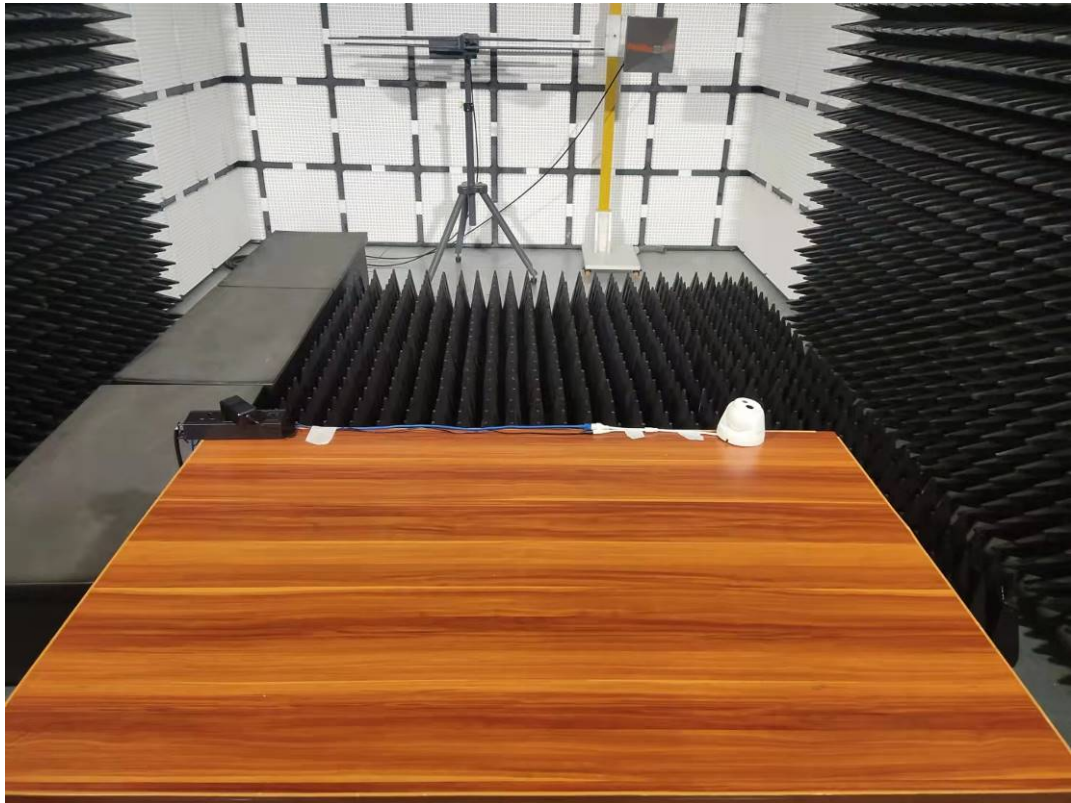
Test Setup Photo View





RS

Test Setup Photo View



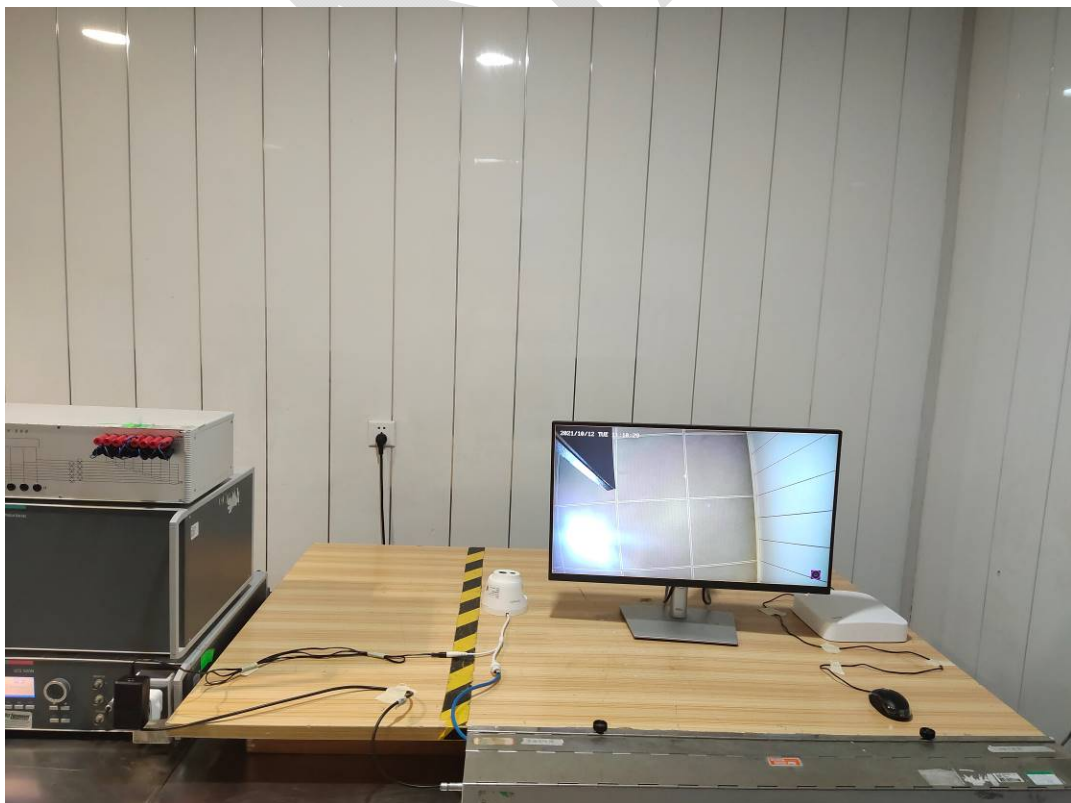


## EFT

Test Setup Photo View

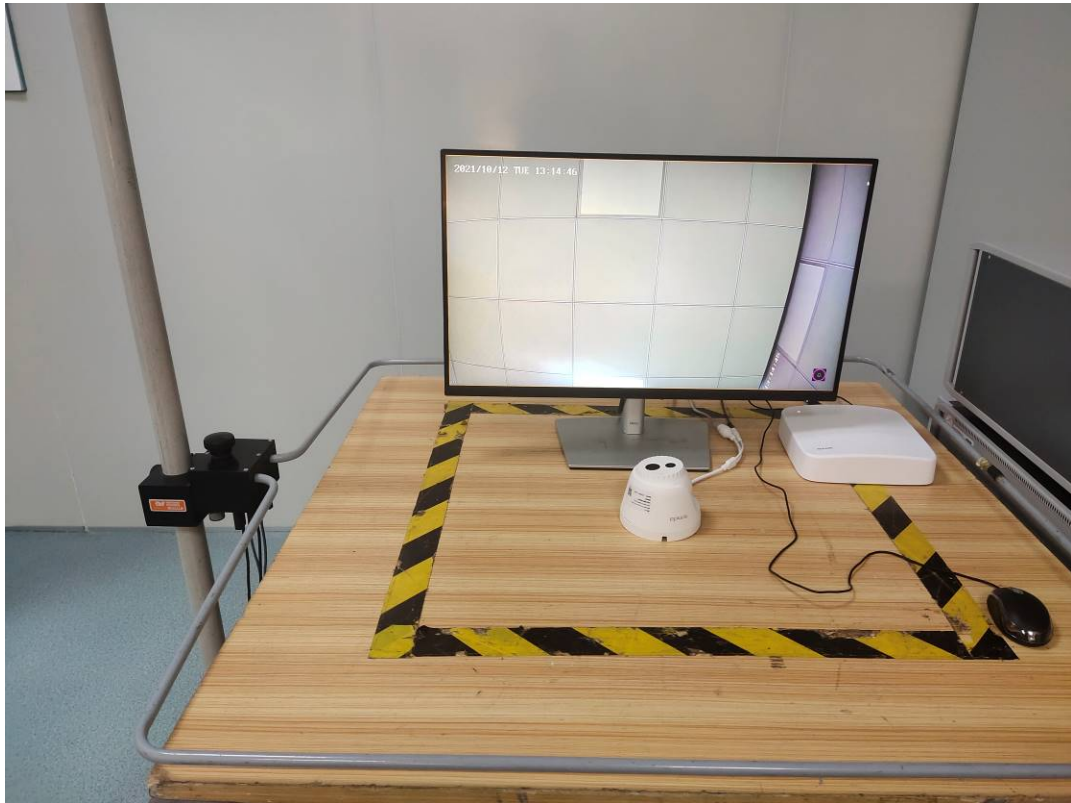


RJ45 Test Setup Photo View



**PFMF**

Test Setup Photo View

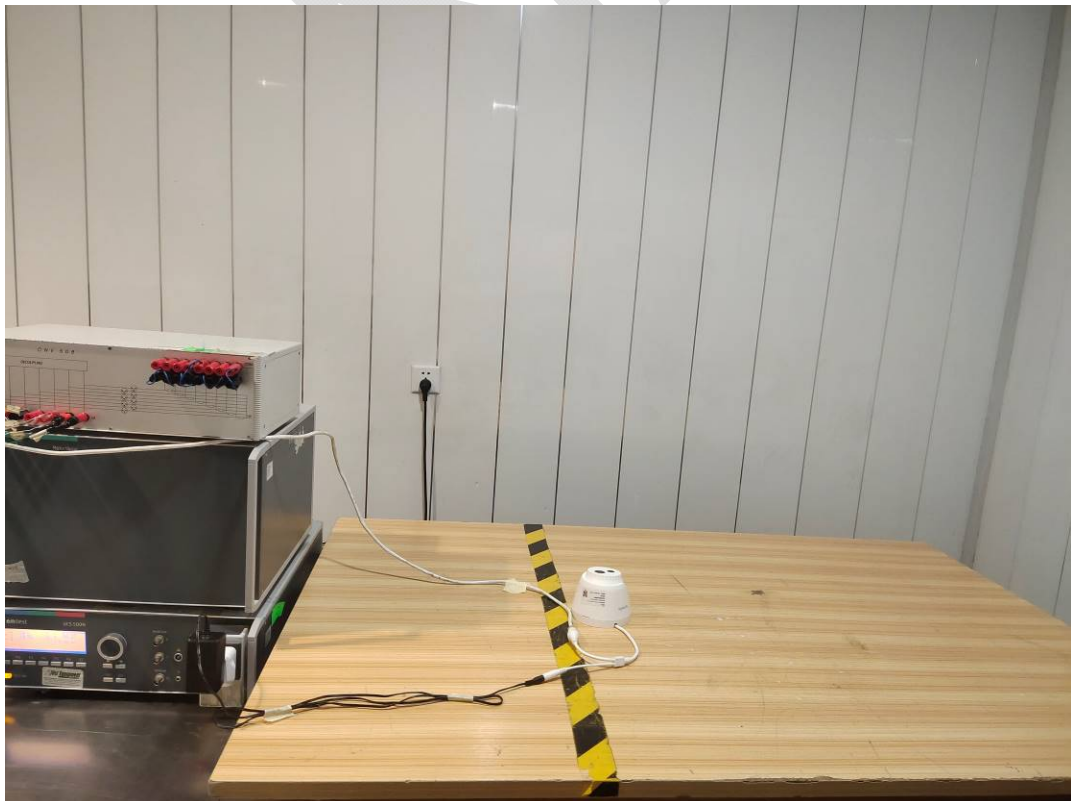


## Surge

Test Setup Photo View



RJ45 Test Setup Photo View



## Dips

Test Setup Photo View





CS

Test Setup Photo View



RJ45 Test Setup Photo View



## Flicker

Test Setup Photo View



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