

TEST REPORT ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	
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Date of issue..... :	Aug.24, 2023
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Applicant's name :	Shenzhen Mingshun Technology Co., Ltd.
Address..... :	B1015G5, Zhongshen Garden, No. 2010 Caitian Road, Fushan Community, Futian Street, Futian District, Shenzhen
Test specification	
Standard..... :	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)
Test item description :	Camera
Trade Mark..... :	N/A
Manufacturer..... :	Shenzhen Mingshun Technology Co., Ltd.
Model/Type reference..... :	E27
Serial Model..... :	E27-3、E27-AP、V8、Q7、Q7S、Q5、Q8、Q10Y、Q12、K6、X5、M6、M8、M18、M88、M68
Ratings..... :	DC5V , Class III
Result..... :	PASS

TEST REPORT

Test Report No. : RLT2307021-04R1	Aug.26,2023 Date of issue
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Equipment under Test : Camera

Model Name : E27

Serial Model : E27-3、E27-AP、V8、Q7、Q7S、Q5、Q8、Q10Y、Q12、K
6、X5、M6、M8、M18、M88、M68

Trade Mark : N/A

Applicant : Shenzhen Mingshun Technology Co., Ltd.

Address : B1015G5, Zhongshen Garden, No. 2010 Caitian Road, Fushan
Community, Futian Street, Futian District, Shenzhen

Manufacturer : Shenzhen Mingshun Technology Co., Ltd.

Address : B1015G5, Zhongshen Garden, No. 2010 Caitian Road, Fushan
Community, Futian Street, Futian District, Shenzhen

Test Result	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

ETSI EN 301 489-1 V2.2.3 (2019-11)—ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;Part 1: Common technical requirements;Harmonised Standard for ElectroMagnetic Compatibility

ETSI EN 301 489-17 V3.2.4 (2020-09)- ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 17: Specific conditions for Broadband Data Transmission Systems

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Aug.10,2023
Testing commenced on	:	Aug.10,2023 to Aug.26,2023
Testing concluded on	:	Aug.26,2023

2.2. Product Description

Product Name:	Camera
Model:	E27
Serial Model:	E27-3、E27-AP、V8、Q7、Q7S、Q5、Q8、Q10Y、Q12、K6、X5、M6、M8、M18、M88、M68
Model Difference:	Different in appearance, the rest are all the same
Trade Mark:	N/A
Frequency range:	WIFI: 2.412GHz-2.484GHz
Channel number:	36 channel
Modulation Type:	802.11b:CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps), 802.11 g/n:OFDM
Power Supply:	DC5V , Class III

2.3. DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Description
Mode 1	Normal working Mode

Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
EMI	Mode 1
EMS	Mode 1

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

○ /	M/N: /
	Manufacturer: /

2.5. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Rhenish-Lab Certification & Testing (Shenzhen) Co., Ltd.

Room 308, Building B, Huawang Road, No.163, Langkou, Dalang Street, Longhua District, Shenzhen, Guangdong, China

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Lative Humidity	55 %
Air Pressure	989 hPa

3.3. Test Description

Emission Measurement		
Radiated Emission	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	PASS
Conducted Emission(AC Mains)	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
Harmonic Current Emissions	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
Voltage Fluctuations and Flicker	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
Immunity Measurement		
Electrostatic Discharge	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	PASS
RF Electromagnetic Field	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	PASS
Fast Transients Common Mode	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
RF Common Mode 0,15 MHz to 80 MHz	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
Voltage Dips and Interruptions	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A
Surges	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09)	N/A

Remark:1. N/A means "not applicable".

2.The measurement uncertainty is not included in the test result.

3.4. Statement of the measurement uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.45 dB	(1)
Radiated Emission	1~6GHz	3.54 dB	(1)
Conducted Disturbance	0.15~30MHz	2.66 dB	(1)
Harmonic current emission	/	0.634%	(1)
Voltage fluctuations & flicker	/	0.780%	(1)

3.5. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Calibration Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESCS30	845550/030	2023/05/21	2024/05/20
2	Artificial Mains	Rohde & Schwarz	ESH3-Z5	100181	2023/05/21	2024/05/20
3	Attenuator	Robinson	6810.17A	6810.17A	2023/05/21	2024/05/20
4	Cable Line	Robinson	Z302S-NJ-BNCJ-1.5M	18126545	2023/05/21	2024/05/20
5	EMI Test Receiver	Rohde & Schwarz	ESC17	100920	2023/05/21	2024/05/20
6	Composite logarithmic antenna	SCHWARZBECK	VULB 9168	00931	2023/05/21	2024/05/20
7	Horn Antenna	SCHWARZBECK	BBHA9120D	01990	2023/05/21	2024/05/20
8	low frequency Amplifier	Sonoma Instrument	310	323089	2023/05/21	2024/05/20
9	high-frequency Amplifier	HP	8449B	P180313003	2023/05/21	2024/05/20
10	System-Controller	CCS	N/A	N/A	N/A	N/A
11	Turn Table	CCS	N/A	N/A	N/A	N/A
12	Antenna Tower	CCS	N/A	N/A	N/A	N/A
13	RF Line	Robinson	ZT26-NJ-NJ-0.6M	18126549	2023/05/21	2024/05/20
14	RF Line	Robinson	ZT26-NJ-SMAJ-2M	18126550	2023/05/21	2024/05/20
15	RF Line	Robinson	ZT26-NJ-SMAJ-0.6M	18126548	2023/05/21	2024/05/20
16	RF Line	Robinson	ZT26-NJ-SMAJ-8.5M	18126547	2023/05/21	2024/05/20
17	Electric Power Analyzer	EVERFINE	PF6000	P619086TF14 11112	2023/05/21	2024/05/20

18	Harmonics& Flicker Testing Power Source	EVERFINE	HFS-1000	P624484TM14 11115	2023/05/21	2024/05/20
19	ESD Simulators	LIONCEL	ESD-202A	0180801	2023/05/21	2024/05/20
20	ESD Gun	LIONCEL	N/A	N/A	2023/05/21	2024/05/20
21	Signal Generator	Maconi	2023D	119246/003	2023/05/21	2024/05/20
22	Power Amplifier	M2S	A00181- 1000	9801-112	2023/05/21	2024/05/20
23	Power Amplifier	M2S	AC8113/ 800-250A	9801-179	2023/05/21	2024/05/20
24	Power Antenna	SCHAFFNER	CBL6140A	1204	2023/05/21	2024/05/20
25	EFT&Surge Tester	LIONCEL	LSE-545CB	0180601	2023/05/21	2024/05/20
26	Specialized Isolated Voltage Regulator For Surge	EVERFINE	GT2502	P185365CM53 91123	2023/05/21	2024/05/20
27	Coupling Clamp	LIONCEL	EFTC	018071809	2023/05/21	2024/05/20
28	Signal Generator	Maconi	2023D	119246/003	2023/05/21	2024/05/20
29	Power Amplifier	M2S	A00181- 1000	9801-112	2023/05/21	2024/05/20
30	CDN	MEB	M3-8016	003683	2023/05/21	2024/05/20
31	Dips Tester	LIONCEL	VSD-1102	0181202	2023/05/21	2024/05/20
33	Voltage-Stabilized Source	LIONCEL	RGL-220	0180901	2023/05/21	2024/05/20
34	Voltage-Stabilized Source	LIONCEL	RGL-220	0180902	2023/05/21	2024/05/20

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. EMISSION

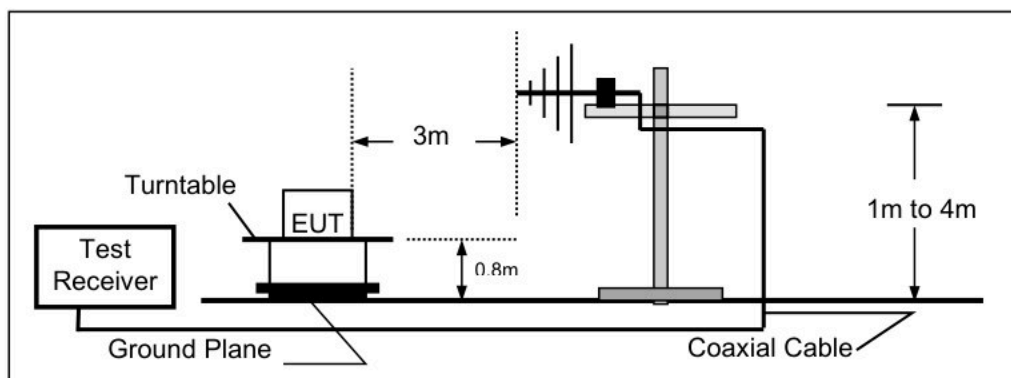
4.1.1. Radiated Emission

LIMIT

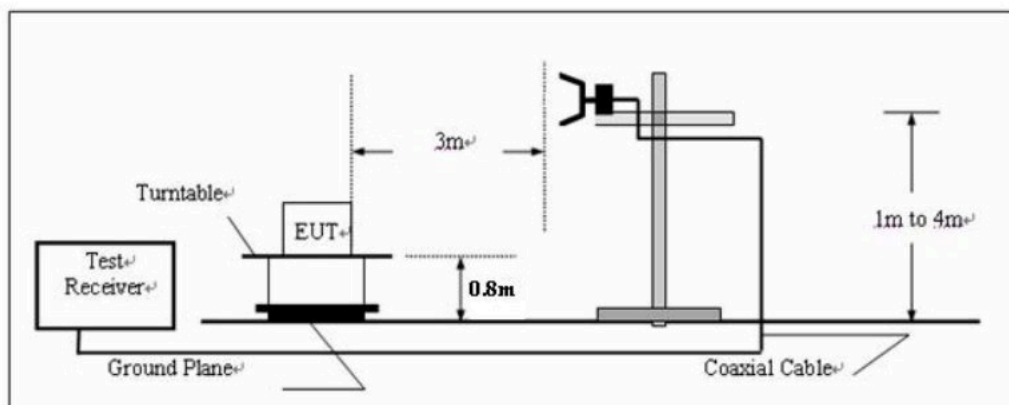
Please refer to ETSI EN301489-1 Clause 8.2.3, Table 4

TEST CONFIGURATION

- a) Radiated emission test set-up, frequency below 1000MHz:



- b) Radiated emission test set-up, frequency above 1000MHz



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.2.3 for the measurement methods

TEST RESULTS

Passed

Please refer to the below test data:

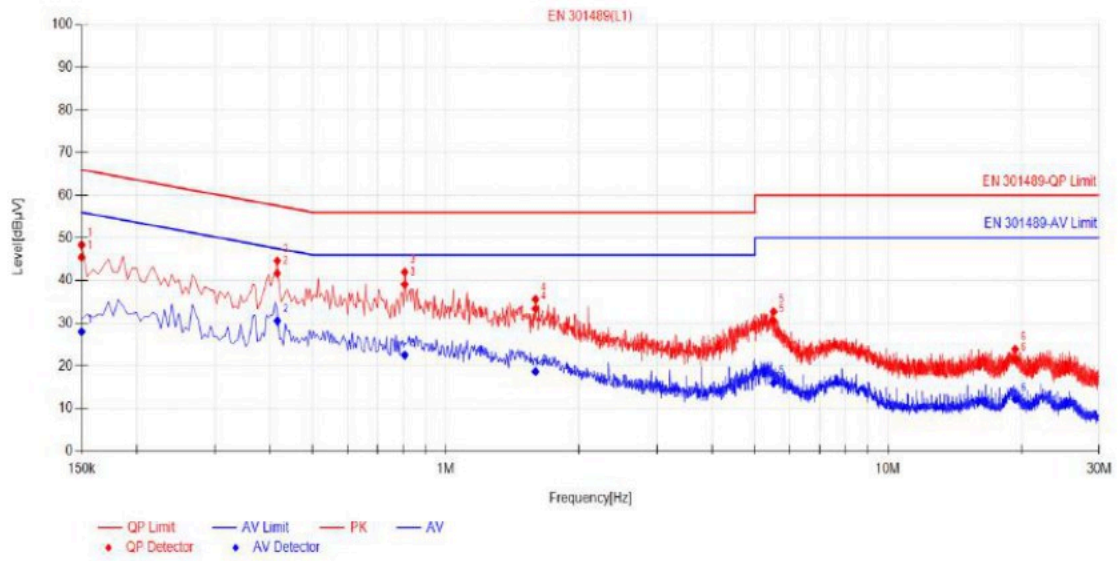
30-1000MHz

Test mode:

Mode 1

Polarization

Horizontal



Suspected List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Detector	Type	Verdict
1	0.15	37.87	48.37	10.50	66.00	17.63	PK	L1	PASS
2	0.4155	34.11	44.61	10.50	57.54	12.93	PK	L1	PASS
3	0.807	31.49	41.99	10.50	56.00	14.01	PK	L1	PASS
4	1.5945	25.08	35.58	10.50	56.00	20.42	PK	L1	PASS
5	5.5095	22.18	32.68	10.50	60.00	27.32	PK	L1	PASS
6	19.383	13.44	23.94	10.50	60.00	36.06	PK	L1	PASS

Final Data List

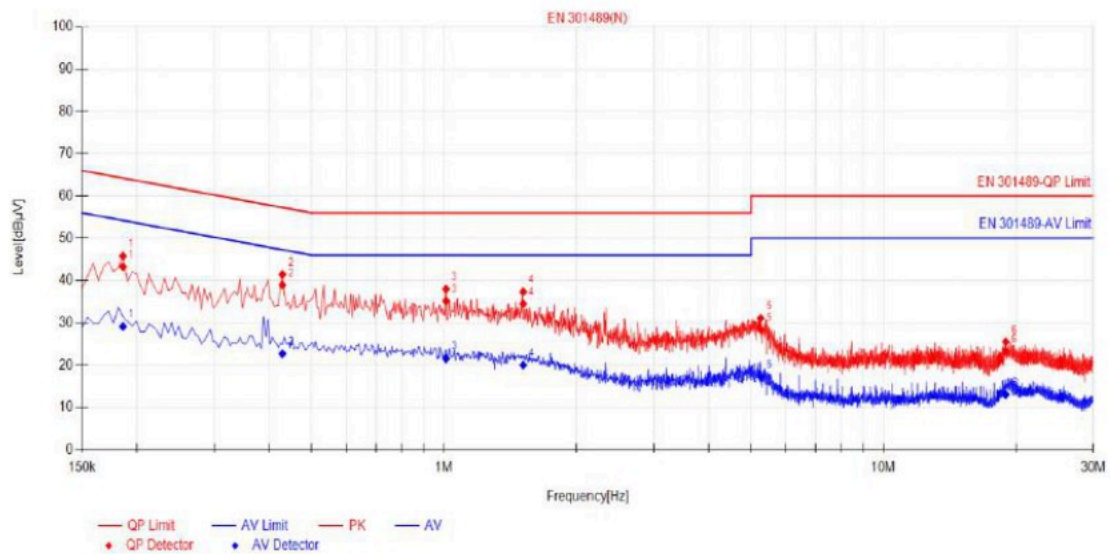
NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.15	10.50	34.96	45.46	66.00	20.54	17.52	28.02	56.00	27.98	PASS
2	0.4155	10.50	31.20	41.70	57.54	15.84	20.02	30.52	47.54	17.02	PASS
3	0.807	10.50	28.58	39.08	56.00	16.92	12.01	22.51	46.00	23.49	PASS
4	1.5945	10.50	22.86	33.36	56.00	22.64	8.14	18.64	46.00	27.36	PASS
5	5.5095	10.50	20.06	30.56	60.00	29.44	5.41	15.91	50.00	34.09	PASS
6	19.383	10.50	10.90	21.40	60.00	38.60	1.60	12.10	50.00	37.90	PASS

Test mode:

Mode 1

Polarization

Vertical



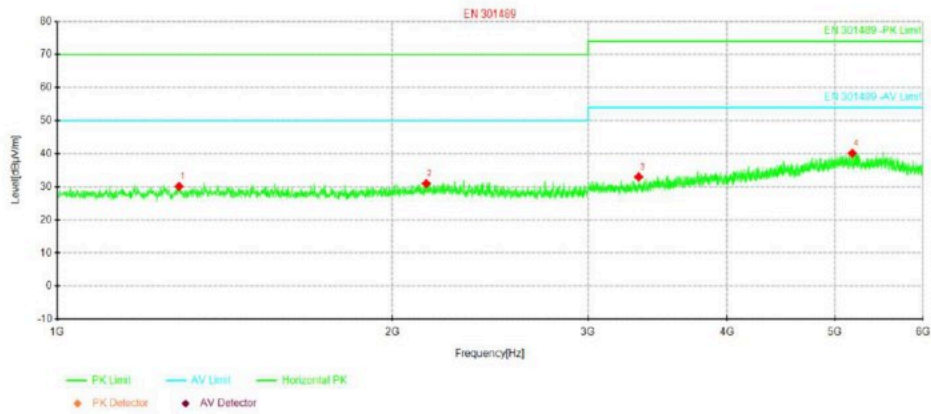
Suspected List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Detector	Type	Verdict
1	0.186	35.28	45.78	10.50	64.21	18.43	PK	N	PASS
2	0.429	30.94	41.44	10.50	57.27	15.83	PK	N	PASS
3	1.0095	27.49	37.99	10.50	56.00	18.01	PK	N	PASS
4	1.5135	26.83	37.33	10.50	56.00	18.67	PK	N	PASS
5	5.2575	20.60	31.10	10.50	60.00	28.90	PK	N	PASS
6	18.9735	15.01	25.51	10.50	60.00	34.49	PK	N	PASS

Final Data List

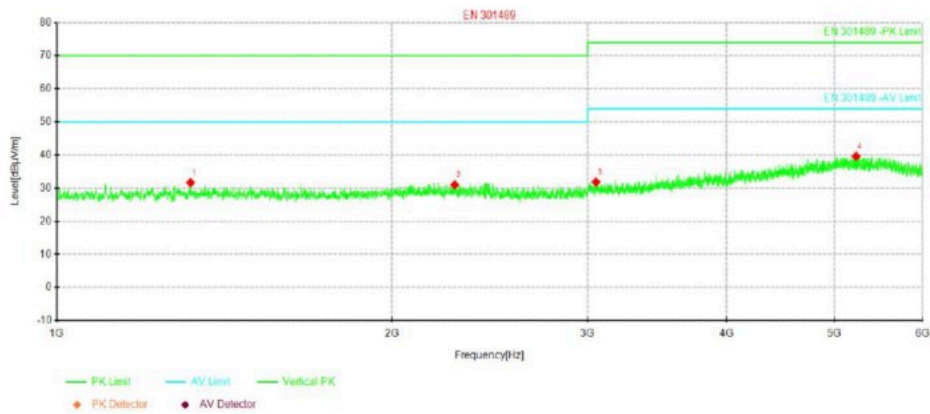
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.186	10.50	32.78	43.28	64.21	20.93	18.64	29.14	54.21	25.07	PASS
2	0.429	10.50	28.44	38.94	57.27	18.33	12.19	22.69	47.27	24.58	PASS
3	1.0095	10.50	24.68	35.18	56.00	20.82	11.05	21.55	46.00	24.45	PASS
4	1.5135	10.50	24.02	34.52	56.00	21.48	9.53	20.03	46.00	25.97	PASS
5	5.2575	10.50	17.89	28.39	60.00	31.61	6.72	17.22	50.00	32.78	PASS
6	18.9735	10.50	12.88	23.38	60.00	36.62	2.58	13.08	50.00	36.92	PASS

1000-6000 MHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1286.87	55.48	30.14	-25.34	70.00	39.86	100	160	Horizontal
2	2146.25	53.38	30.99	-22.39	70.00	39.01	100	190	Horizontal
3	3330.62	53.03	33.01	-20.02	74.00	40.99	100	100	Horizontal
4	5183.12	54.12	40.16	-13.96	74.00	33.84	100	60	Horizontal



Suspected Data List

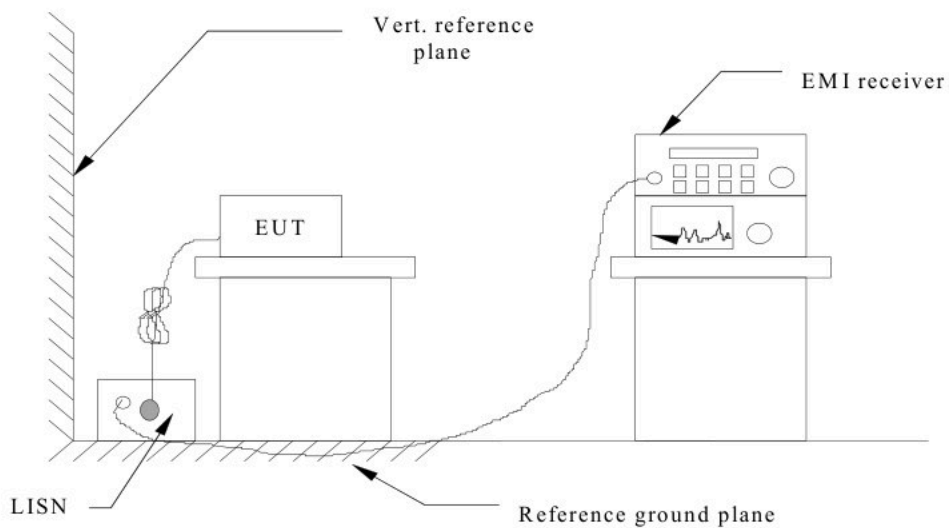
NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1318.75	56.91	31.67	-25.24	70.00	38.33	100	130	Vertical
2	2278.75	53.03	30.99	-22.04	70.00	39.01	100	100	Vertical
3	3051.87	51.89	31.85	-20.04	74.00	42.15	100	70	Vertical
4	5228.75	53.54	39.58	-13.96	74.00	34.42	100	60	Vertical

4.1.2. Conducted Emission (AC Mains)

LIMIT

Please refer to ETSI EN301489-1 Clause 8.4.3, Table 8

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.4.3 for the measurement methods.

TEST RESULTS

N/A

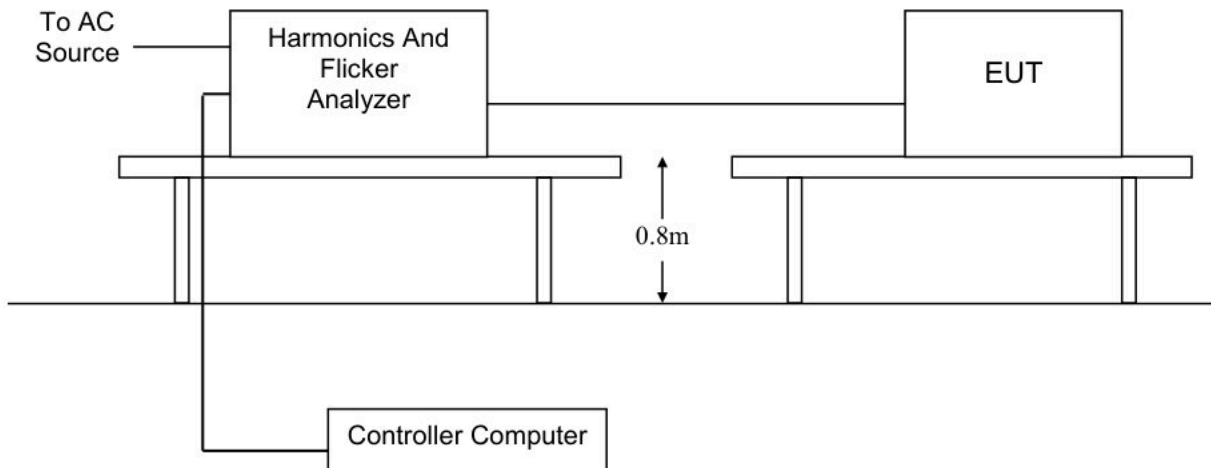
Please refer to the below test data:

4.1.3. Harmonic Current Emission

LIMIT

Please refer to EN 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

TEST RESULTS

N/A

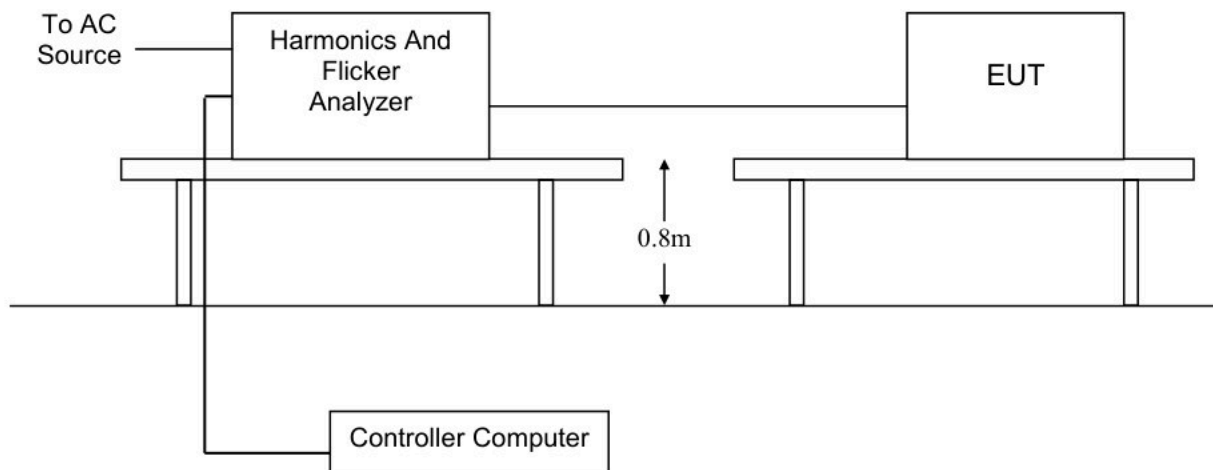
Note: The active input power of the EUT is less than 75W. No limits apply for equipment with an active input power up to and including 75W

4.1.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

TEST RESULTS

N/A

The maximum input power of the EUT is less than 20W, which unlikely to produce significant voltage fluctuation. Therefore this test item is not applicable for the EUT.

See clause 6.1*** *** EN 61000-3-3:2013+A1:2019, clause 6.1:" ... Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker. ...".

4.2. IMMUNITY

4.2.1. Performance criteria

■ ETSI EN301489-17

General performance criteria

- Performance criteria A for immunity tests with phenomena of a continuous nature;
- Performance criteria B for immunity tests with phenomena of a transient nature;
- Performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following.

Criteria	During test	After test
A	Shall operate as intended. (see note 1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 3). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 2). Shall be no unintentional transmissions	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 3)

NOTE 1:

Operate as intended during the test allows a level of degradation not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2:

Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation

(including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 3:

No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Receivers (TR)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

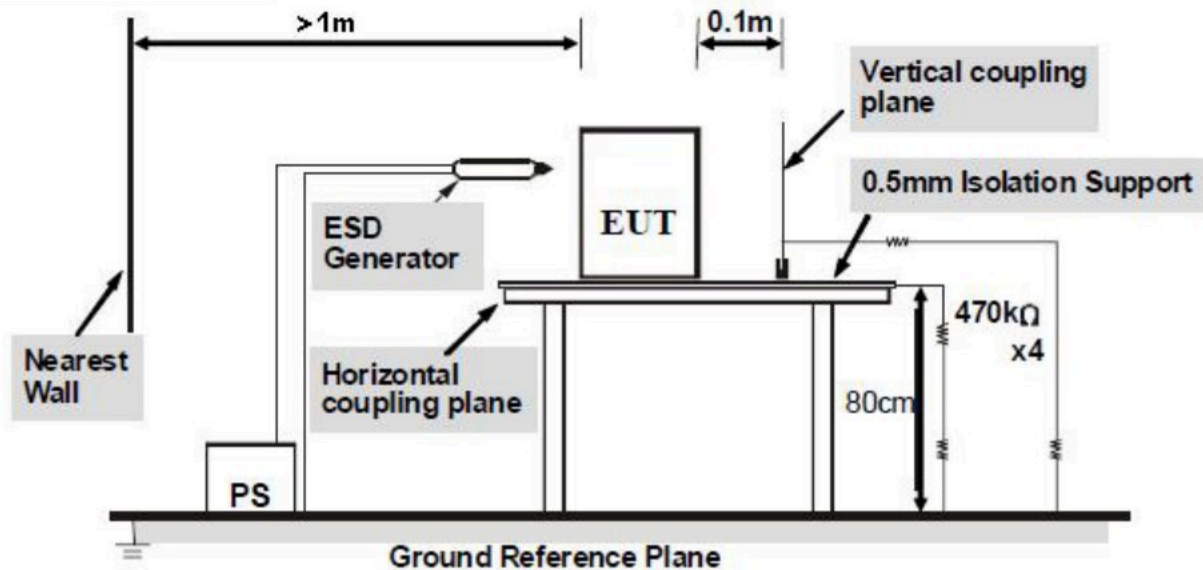
4.2.2. Electrostatic Discharge

LIMIT

SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at $\pm 2\text{KV}$, $\pm 4\text{KV}$ Air Discharge at $\pm 2\text{KV}$, $\pm 4\text{KV}$, $\pm 8\text{KV}$

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. 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 at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

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.

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 $0.5\text{m} \times 0.5\text{m}$, 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 MODE

Please reference to the section 2.3

TEST RESULTS

Direct discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
Contact discharge	±2	No degradation in performance of the EUT was observed (A)	B	Pass
	±4		B	
Air discharge	±2	A	B	
	±4	A	B	
	±8	A	B	
Indirect discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
HCP (6 sides)	±2	A	B	Pass
	±4	A	B	
VCP (4 sides)	±2	A	B	
	±4	A	B	

Remark: The ancillary equipment's specification for an acceptable level of performance or degradation of performance during and/or after the ESD tests.

4.2.3. RF Electromagnetic Field

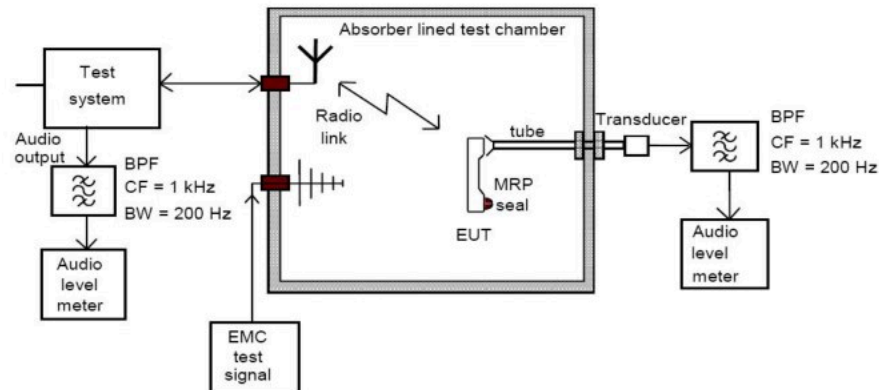
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3V/m (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2 and EN 61000-4-3 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80MHz-6GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

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

4.2.4. Surges

PERFORMANCE CRITERION

Criteria B

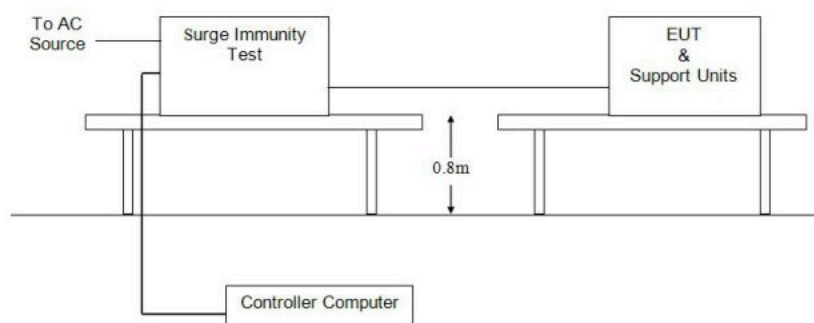
TEST LEVEL

1kV Line to Line: Differential mode

2kV Line to Ground: Common mode

(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.8.2 and EN 61000-4-5 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	± 1	5	60s	0°	A	N/A
				90°	A	N/A
				180°	A	N/A
				270°	A	N/A

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

4.2.5. RF- Common Mode 0.15MHz to 80MHz

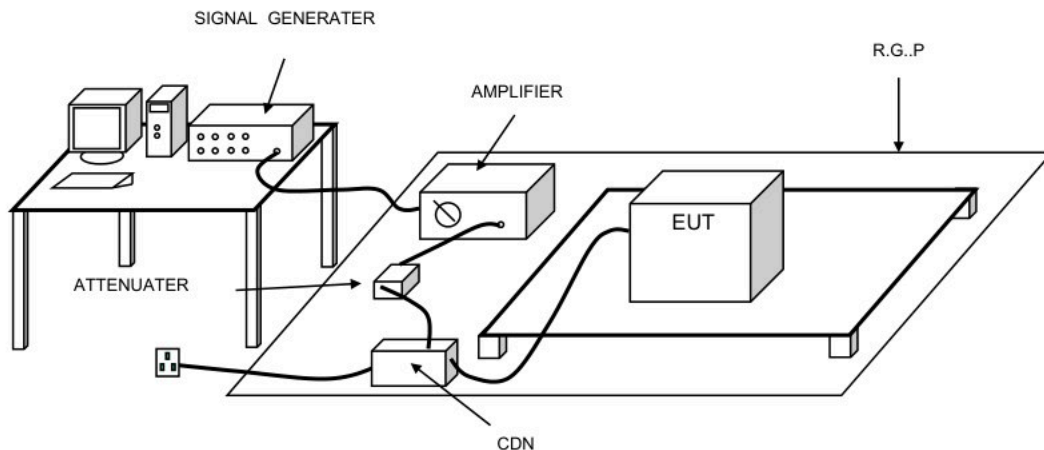
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3Vrms on AC main port (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.5.2 and EN 61000-4-6 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 80MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	A	N/A

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

4.2.6. Fast Transients Common Mode

PERFORMANCE CRITERION

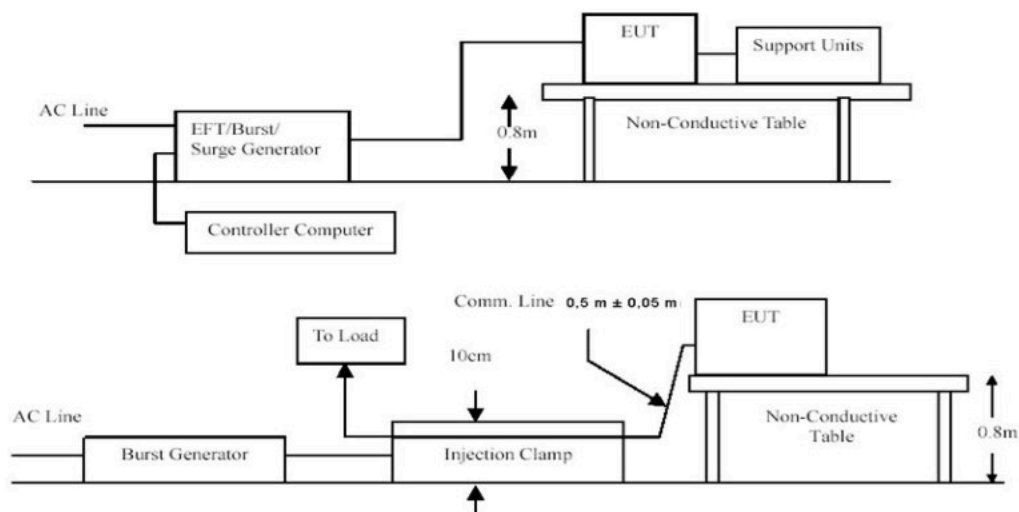
Criteria B

TEST LEVEL

1KV for AC main port

(Impulse Frequency: 5 kHz; Tr/Th: 5/50ns; Burst Duration: 15ms; Burst Period: 3Hz)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 EN 61000-4-4 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Lead under Test	Level ($\pm$ kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	± 1	Direct	A	N/A
N	± 1	Direct	A	N/A
L-N	± 1	Direct	A	N/A

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

4.2.7. Voltage Dips and Interruptions

PERFORMANCE CRITERION

>95% VD, 0.5 period----Performance criterion: B

>95% VD, 1.0 period----Performance criterion: B

30% VD, 25 period----Performance criterion: C

>95% VI, 250 period----Performance criterion: C

TEST LEVEL

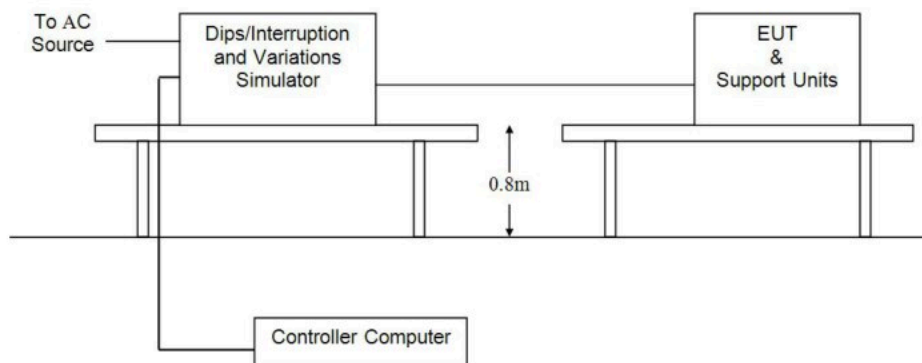
0% of VT(Supply Voltage) for 0.5 period

0% of VT(Supply Voltage) for 1.0 period

70% of VT(Supply Voltage) for 25 period

0% of VT(Supply Voltage) for 250 period

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.7.2 and EN 61000-4-11 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

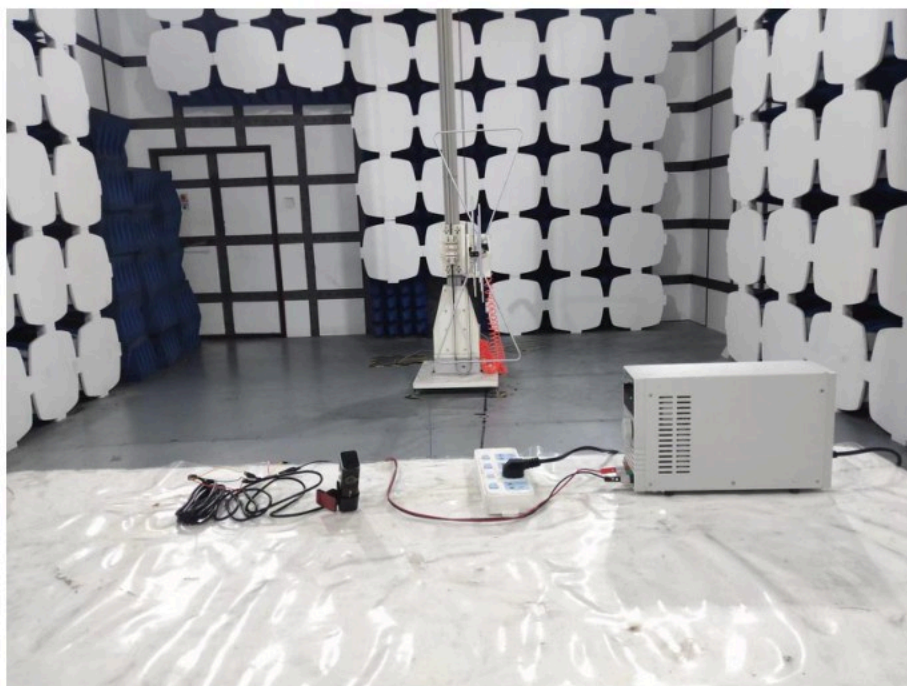
Test Level % UT	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°, 90°, 180°, 270°	3	10s	A	N/A
0	1.0	0°, 90°, 180°, 270°	3	10s	A	N/A
70	25	0°, 90°, 180°, 270°	3	10s	A	N/A
0	250	0°, 90°, 180°, 270°	3	10s	B	N/A

Remark :

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

B: During the test, the power shut down, after the experiment, the function can automatically return to normal.

5. Test Set-up Photos of the EUT



6. External and Internal Photos of the EUT

Photo 1

Description: Overview



Photo 2

Description: Overall view

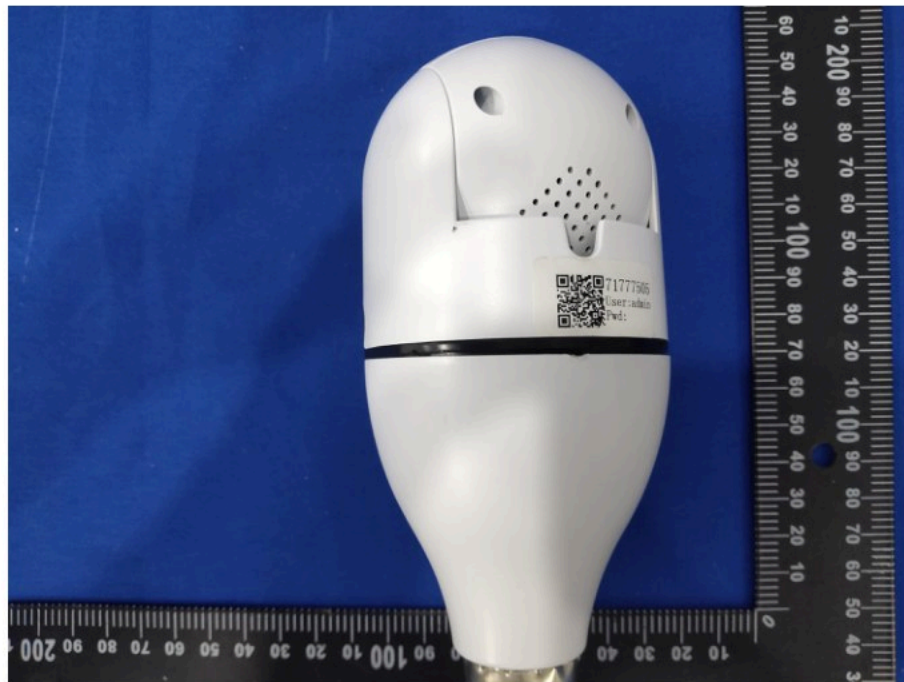


Photo 3

Description: Overall view



Photo 4

Description: Interior view

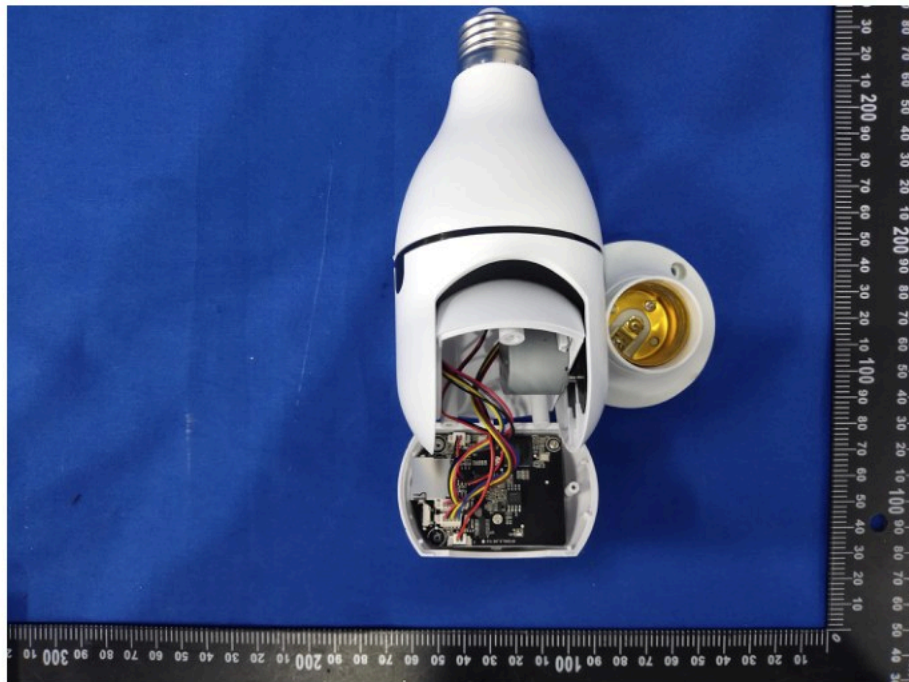


Photo 5

Description: Interior view

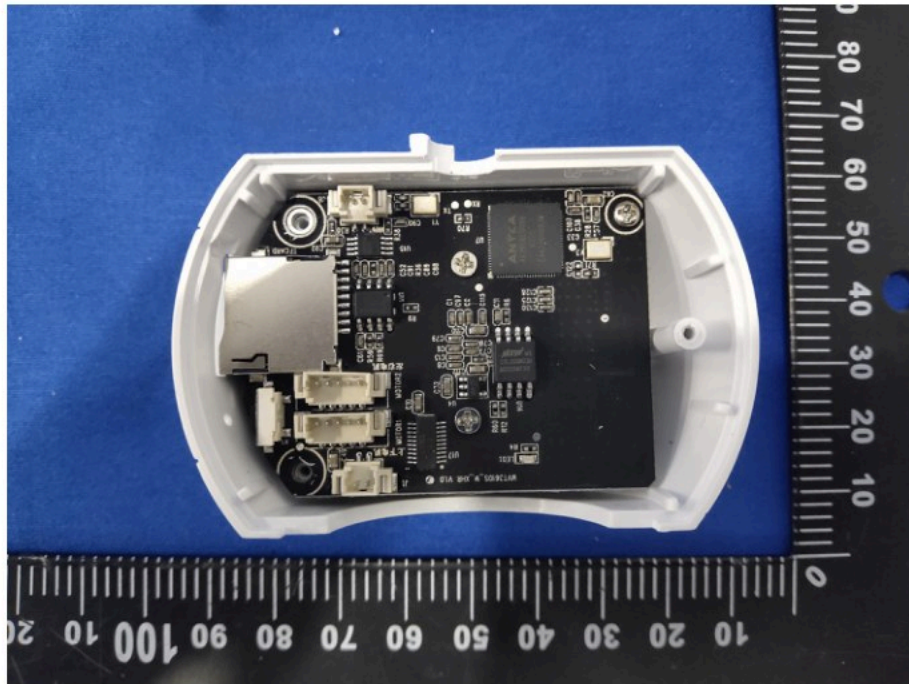


Photo 6

Description: Interior view

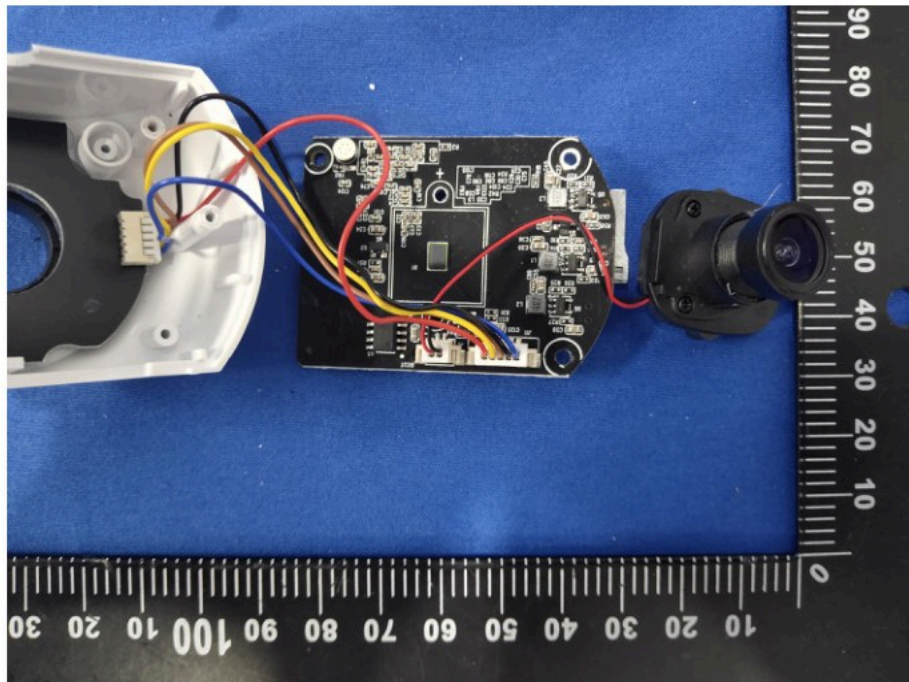


Photo 7

Description: Interior view of PCB

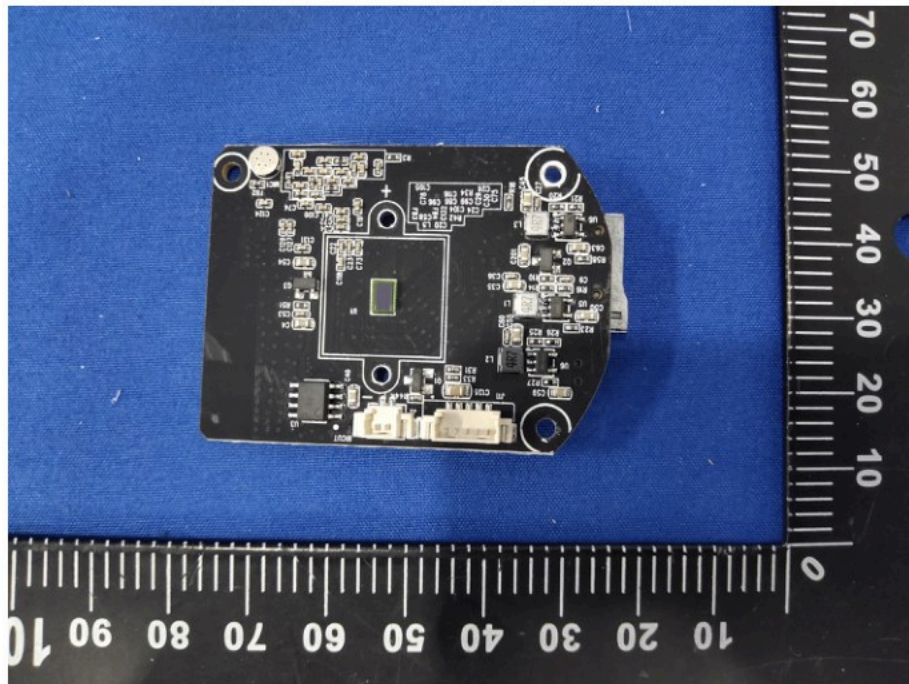
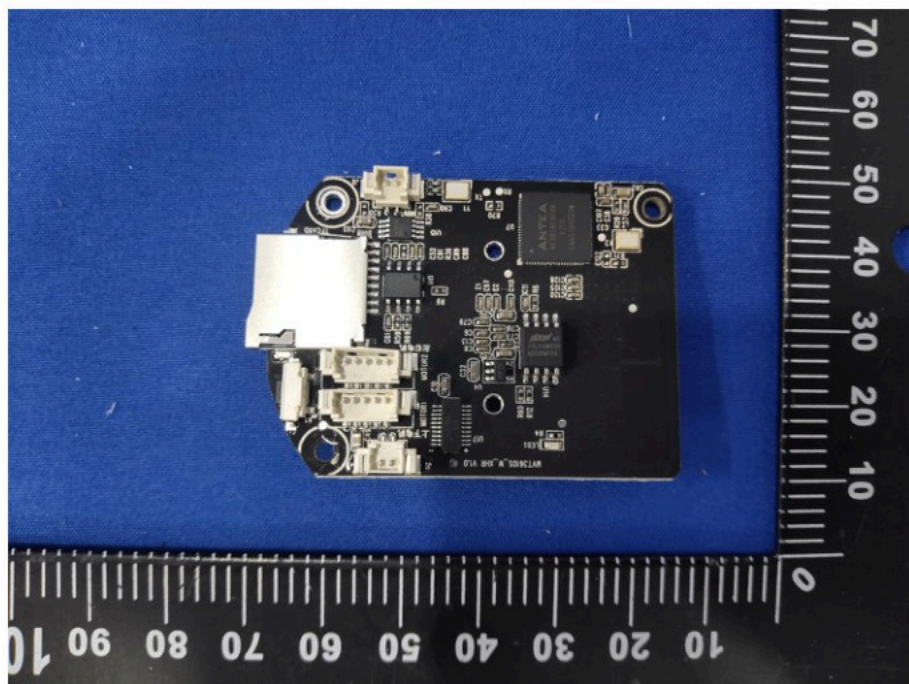


Photo 8

Description: Interior view of PCB



.....End of Report.....