TEST REPORT

Report Reference No. ..... : **HK2510115586-1ER**

Compiled by
(position+printed name+signature) . : Testing engineer Len Liao

Supervised by
(position+printed name+signature) . : Technique principal Sliver Wan

Approved by
(position+printed name+signature) . : Manager Jason Zhou

Date of issue ..... : 2025/10/16

Representative Laboratory Name .... : Shenzhen HUAK Testing Technology Co., Ltd.

Address ..... : 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Applicant's name ..... : Mid Ocean Brands B.V.

Address ..... : Unit 711- 716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

Test specification:

Standard..... : **ETSI EN 301 489-1 V2.2.3 (2019-11)/ ETSI EN 301 489-17 V3.3.1 (2024-09)/ EN 55032:2015 + A1:2020 + A11:2020/ EN 55035:2017 + A11:2020**

TRF Originator ..... : Shenzhen HUAK Testing Technology Co., Ltd.

Master TRF ..... : Dated 2019-07

Product Name..... : Find my dual tag

Trade Mark..... : N/A

Product Model..... : MO2759

Serial Model ..... : N/A

Hardware Version ..... : V2.0

Software Version..... : V2.0

Rating..... : DC 3V From Battery

Result..... : **PASS**

TEST REPORT

Test Report No. :	HK2510115586-1ER	2025/10/16 Date of issue

Product Name	:	Find my dual tag
Product Model	:	MO2759
Serial Model	:	N/A
Applicant	:	Mid Ocean Brands B.V.
Address	:	Unit 711- 716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer	:	Mid Ocean Brands B.V.
Address	:	Unit 711- 716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

Test Result according to the standards on page 5:	**PASS**

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.

** Issued History **

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	2025/10/16	Jason Zhou

Contents

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 covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

ETSI EN 301 489-17 V3.3.1 (2024-09)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for ElectroMagnetic Compatibility

EN 55032:2015 + A1:2020 + A11:2020 Electromagnetic compatibility of multimedia equipment – Emission Requirements

EN 55035:2017 + A11:2020 Electromagnetic compatibility of multimedia equipment – Immunity requirements

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	2025/10/11
Testing commenced on	:	2025/10/11
Testing concluded on	:	2025/10/16

2.2. Product Description

Name of EUT	Find my dual tag
Model(s) Number	MO2759
List Models	N/A
Difference descrption	N/A
Hardware version	V2.0
Software version	V2.0
Antenna Type	PCB Antenna

2.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 3V From Battery

2.4. Short description of the Equipment under Test (EUT)

For details, refer to the user's manual of EUT.

2.5. EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test Item	
EMI	
Mode 1	Working
EMS	
Mode 1	Working

2.6. EUT configuration

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

● - Supplied by the manufacturer

○ - Supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/

○Adapter information
N/A

2.7. Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

— essential operational modes and states;
— tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
— quality of software execution
— quality of data display and transmission
— quality of speech transmission

General performance criteria

● based on the used product standard
○ based on the declaration of the manufacturer, requestor or purchaser

● 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 clauses.

Performance table

Table 1: Performance criteria

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (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 2). 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 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). 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 2).
NOTE 1:	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 2:	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.

2.8. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.
1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2. Environmental conditions

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

Temperature:	15-35°C
Humidity:	30-60%
Atmospheric pressure:	950-1050mbar

3.3. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

Mode 1:

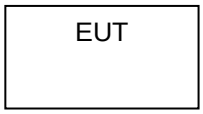


Table 2-1 Equipment Used in Tested System

No.	Product	Manufacture	Model No.	FCC ID
/	/	/	/	/

3.4. Test Description

ETSI EN 301 489-1/-17 requirements		
Radiated Emission	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015 + A1:2020 + A11:2020 Annex A.2	PASS
Conducted Emission(AC Mains)	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015 + A1:2020 + A11:2020 Annex A.3	N/A
Conducted Emission(Telecommunication Ports)	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 55032:2015 + A1:2020 + A11:2020 Annex A.3	N/A
Harmonic Current Emissions	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN IEC 61000-3-2:2019 + A1:2021 + A2:2024	N/A
Voltage Fluctuations and Flicker	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.1 EN 61000-3-3:2013 + A1:2019 + A2:2021	N/A
Electrostatic Discharge	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
RF Electromagnetic Field	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	PASS
Fast Transients Common Mode	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A
RF Common Mode 0,15 MHz to 80 MHz	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A
Transients and Surges	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A
Voltage Dips and Interruptions	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A
Surges, Line to Line and Line to Ground	ETSI EN 301 489-1 V2.2.3 (2019-11) Clause 7.2	N/A

Remark: The measurement uncertainty is not included in the test result.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen HUAK Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen HUAK Testing Technology Co., Ltd. is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.90dB	(1)
Radiated Emission	1~18GHz	4.28dB	(1)
Radiated Emission	18-40GHz	5.54dB	(1)
Conducted Disturbance	0.15~30MHz	2.71dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

CONDUCTED EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	HKE-002	Feb. 19, 2025	Feb. 18, 2026	1 year
2	LISN	R&S	ENV216	HKE-059	Feb. 19, 2025	Feb. 18, 2026	1 year
3	EMI Test Receiver	R&S	ESR	HKE-005	Feb. 19, 2025	Feb. 18, 2026	1 year
4	ISN	ETC	08-06-BAC-022-02	HKE-062	Feb. 19, 2025	Feb. 18, 2026	1 year
5	Conduction test software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/	/

RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Feb. 21, 2024	Feb. 20, 2026	2 year
2	EMI Test Receiver	R&S	ESR-7	HKE-010	Feb. 19, 2025	Feb. 18, 2026	1 year
3	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 19, 2025	Feb. 18, 2026	1 year
4	Horn antenna	Schwarzbeck	9120D	HKE-013	Feb. 21, 2024	Feb. 20, 2026	2 year
5	Preamplifier	Schwarzbeck	EMC051845SE	HKE-015	Feb. 19, 2025	Feb. 18, 2026	1 year
6	Preamplifier	Agilent	83051A	HKE-016	Feb. 19, 2025	Feb. 18, 2026	1 year
7	Position controller	Taiwan MF	MF7802	HKE-011	Feb. 19, 2025	Feb. 18, 2026	1 year
8	Radiation test software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/	/

HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Harmonic flicker tester	California Instruments	AC2000A	HKE-037	Feb. 19, 2025	Feb. 18, 2026	1 year

ESD

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD device	TESEQ	NSG437	HKE-023	Feb. 19, 2025	Feb. 18, 2026	1 year

RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Power amplifier	micotop	MPA-80-1000-250	HKE-142	Feb. 19, 2025	Feb. 18, 2026	1 year
2	Power amplifier	micotop	MPA-1000-6000-100	HKE-143	Feb. 19, 2025	Feb. 18, 2026	1 year
3	Power Meter	KEYSIGHT	E4419B	HKE-144	Feb. 19, 2025	Feb. 18, 2026	1 year
4	Vector signal generator	KEYSIGHT	N5182B	HKE-124	Feb. 19, 2025	Feb. 18, 2026	1 year
5	Field strength probe	NARDA	EP601	HKE-146	Feb. 19, 2025	Feb. 18, 2026	1 year
6	High gain antenna	Schwarzbeck	STPL9129	HKE-147	Feb. 20, 2024	Feb. 19, 2026	2 year
7	RS Test Software	Tonscend	JS35-RS 5.0.0	HKE-186	/	/	/

SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Full-featured immunity tester	TESEQ	NSG3060	HKE-036	Feb. 19, 2025	Feb. 18, 2026	1 year
2	Group pulse coupling clamp	TESEQ	CDN 8014	HKE-024	Feb. 19, 2025	Feb. 18, 2026	1 year

INJECTION CURRENT

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Sensitivity Test System	SCHLODER	CDG6000	HKE-033	Feb. 19, 2025	Feb. 18, 2026	1 year
2	Magnetic clamp	TESEQ	KEMA 801	HKE-114	Feb. 19, 2025	Feb. 18, 2026	1 year
3	Coupling decoupling network	TESEQ	CDN-M2+M3	HKE-032	Feb. 19, 2025	Feb. 18, 2026	1 year

PFMF

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Power frequency magnetic field testing system	LIONCEL	PMF-801C-C	HKE-115	Feb. 19, 2025	Feb. 18, 2026	1 year

4. TEST CONDITIONS AND RESULTS

4.1. REQUIREMENTS

4.1.1. Radiated Emission

LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.2.3

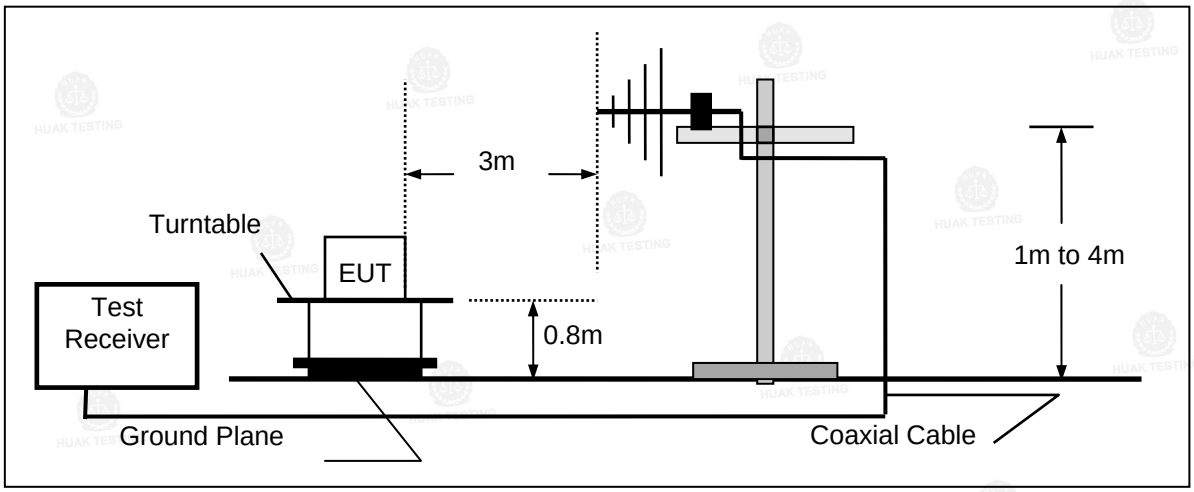
The ancillary equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A tables A.4 and A.5.

Alternatively, for ancillary equipment intended to be used exclusively in an industrial environment or telecommunication centers, the class A limits given in CENELEC EN 55032 [1], annex A tables A.2 and A.3 may be used.

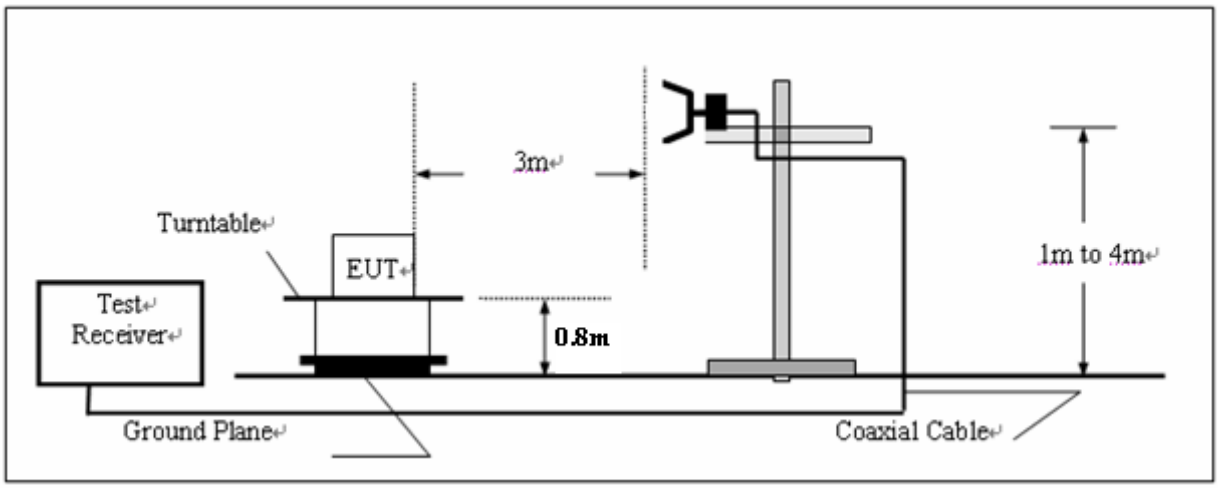
If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.6

TEST CONFIGURATION

(a) Radiated Emission Test Set-Up, Frequency below 1000MHz



(b) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

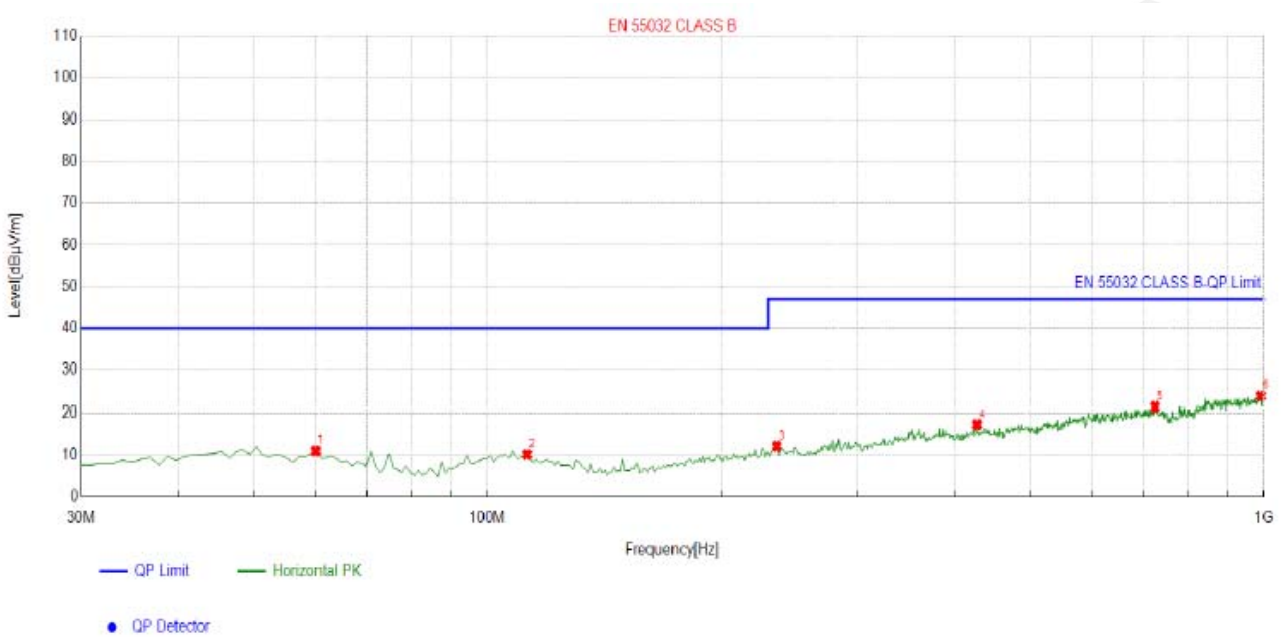
Please refer to ETSI EN 301 489-1 Clause 8.2.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.2. for the measurement methods.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

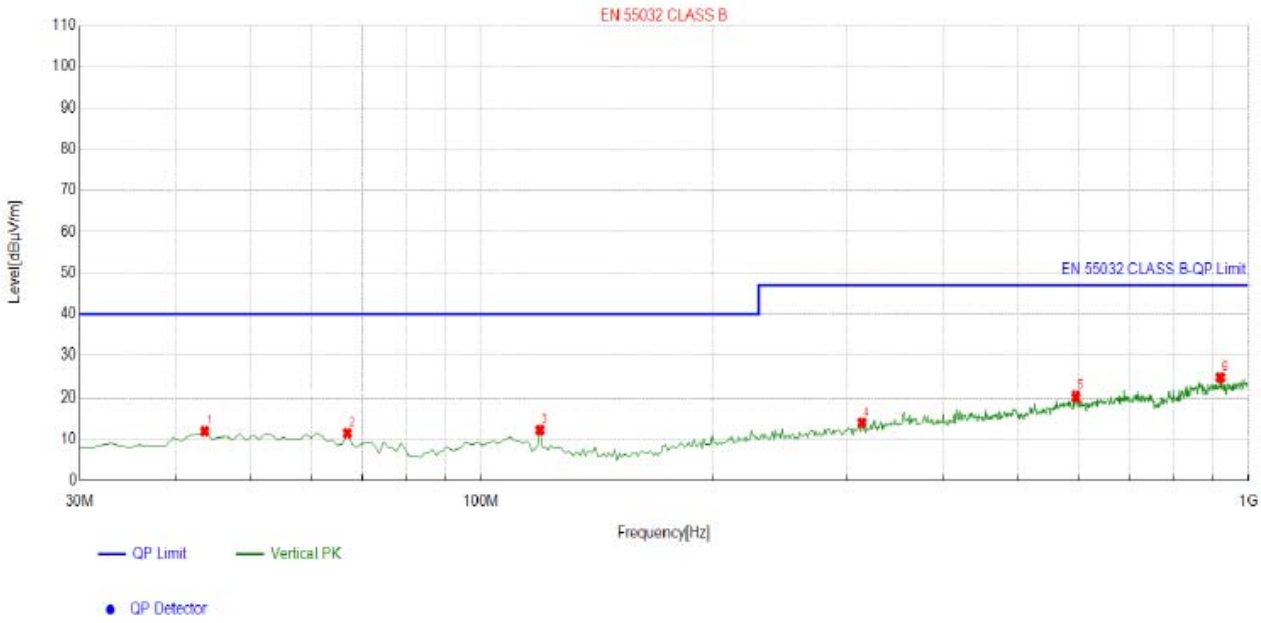
Below 1000MHz



Suspected List

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	60.1001	-13.96	24.99	11.03	40.00	28.97	100	0	Horizontal
2	112.5325	-14.72	24.91	10.19	40.00	29.81	100	78	Horizontal
3	235.8458	-13.83	25.99	12.16	47.00	34.84	100	225	Horizontal
4	427.1271	-8.79	26.06	17.27	47.00	29.73	100	341	Horizontal
5	724.2442	-4.10	25.47	21.37	47.00	25.63	100	3	Horizontal
6	991.2613	-0.45	24.30	23.85	47.00	23.15	100	290	Horizontal

Remark:
Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

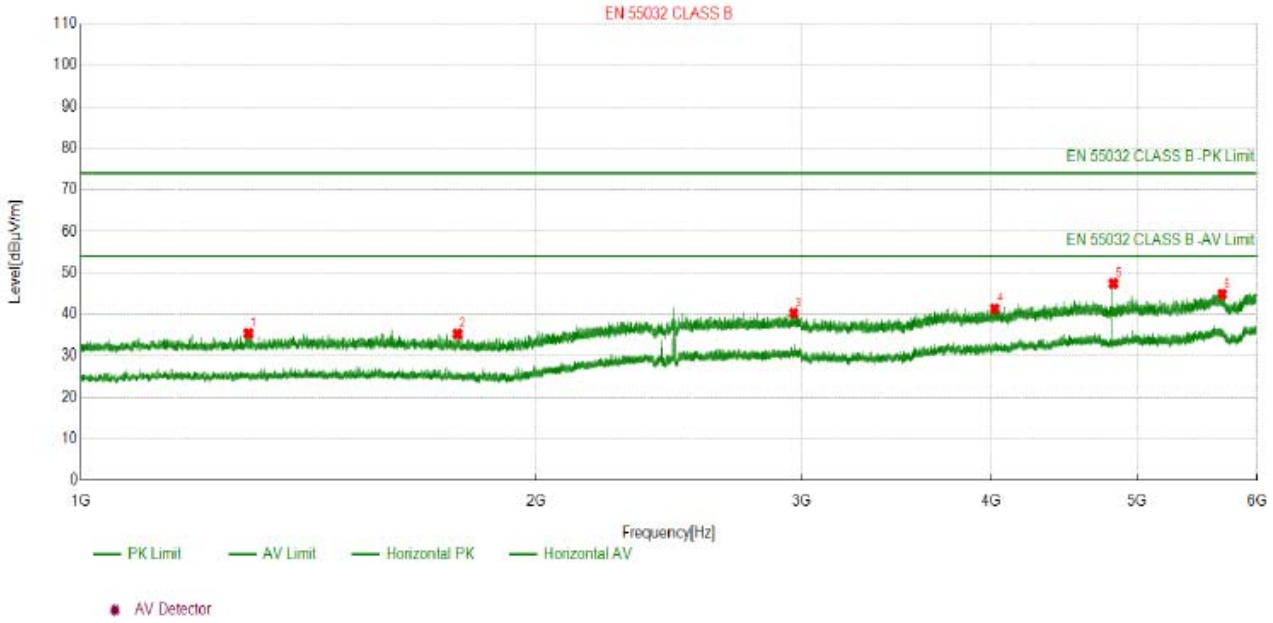


Suspected List

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	43.5936	-13.30	25.31	12.01	40.00	27.99	100	76	Vertical
2	66.8969	-16.17	27.73	11.56	40.00	28.44	100	213	Vertical
3	119.3293	-15.94	28.25	12.31	40.00	27.69	100	202	Vertical
4	313.5235	-11.54	25.67	14.13	47.00	32.87	100	353	Vertical
5	596.0761	-4.91	25.15	20.24	47.00	26.76	100	332	Vertical
6	919.4094	-1.23	25.87	24.64	47.00	22.36	100	173	Vertical

Remark:
Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

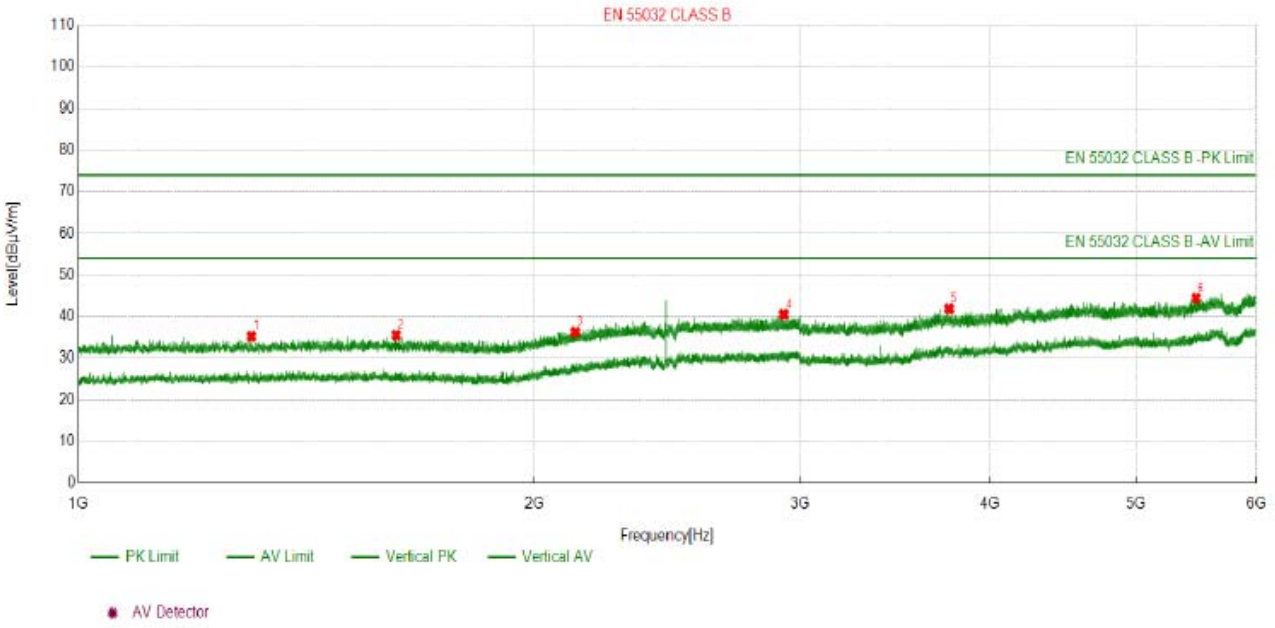
Radiated Emission From 1 GHz to 6 GHz



Suspected Data List

NO.	Freq. [MHz]	PK Level [dBµV/m]	Factor [dB]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1290.629	35.41	-19.52	74.00	38.59	100	194	Horizontal
2	1774.677	35.25	-18.17	74.00	38.75	100	41	Horizontal
3	2960.596	40.23	-13.29	74.00	33.77	100	95	Horizontal
4	4022.802	41.36	-11.89	74.00	32.64	100	3	Horizontal
5	4819.982	47.42	-10.49	74.00	26.58	100	283	Horizontal
6	5689.168	44.86	-7.82	74.00	29.14	100	154	Horizontal

Remark:
Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



Suspected Data List								
NO.	Freq. [MHz]	PK Level [dBµV/m]	Factor [dB]	PK Limit [dBµV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1300.430	35.23	-19.49	74.00	38.77	100	100	Vertical
2	1621.062	35.53	-18.66	74.00	38.47	100	9	Vertical
3	2128.912	36.29	-16.28	74.00	37.71	100	206	Vertical
4	2923.392	40.48	-13.42	74.00	33.52	100	85	Vertical
5	3759.976	41.88	-11.95	74.00	32.12	100	313	Vertical
6	5475.247	44.38	-8.91	74.00	29.62	100	57	Vertical

Remark:
Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

4.1.2. Conducted Emission (AC Mains)

LIMIT

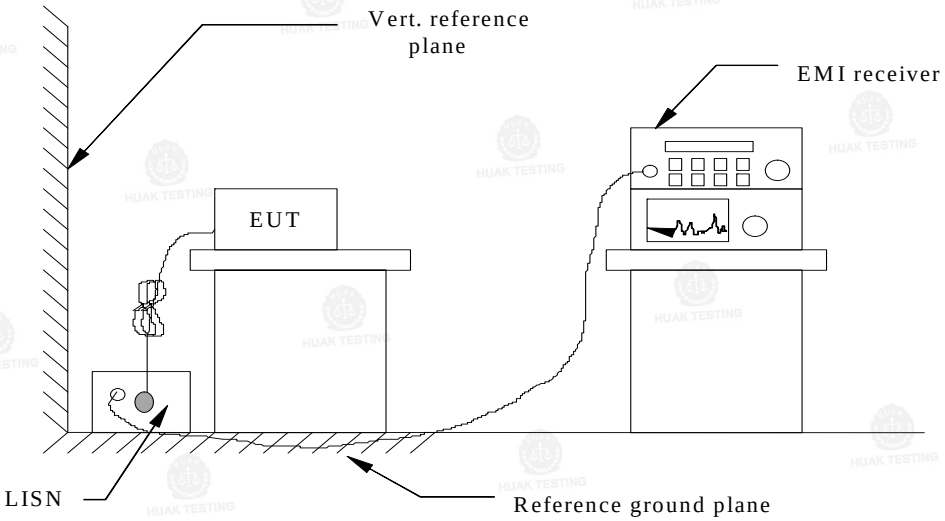
Please refer to ETSI EN 301 489-1 Clause 8.4.3

The equipment shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.10.

Alternatively, for equipment intended to be used in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1], annex A table A.9 can be used.

If EUT is also a FM Receiver, it shall meet CENELEC EN 55032 [3], annex A tables A.13

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.4.3 and EN 55032 Clause 5 for the measurement methods.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

EUT is test by DC power supply, so it is not applicable.

4.1.3. Conducted Emission (Telecommunication Ports)

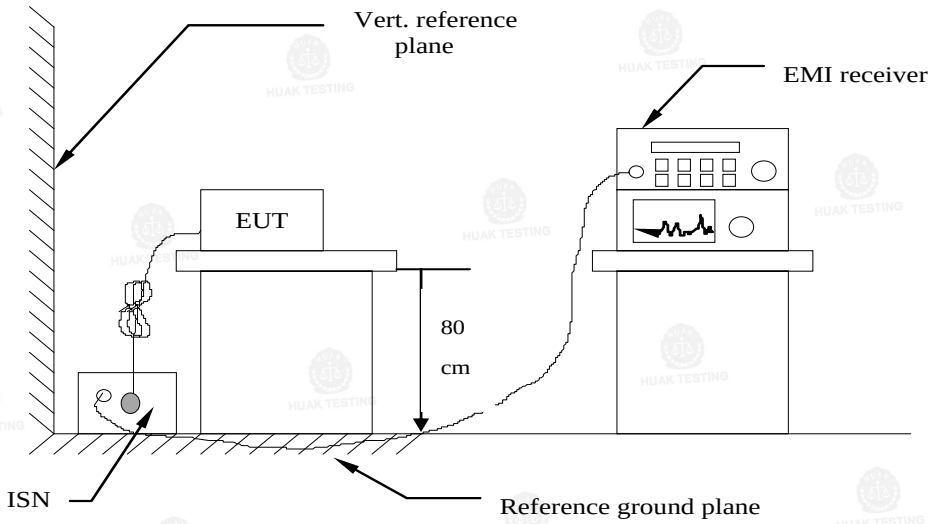
LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.7.3

The wired network ports shall meet the class B limits given in CENELEC EN 55032 [1], annex A table A.12.

Alternatively, for equipment intended to be used exclusively in an industrial environment or a telecommunication centre, the class A limits given in CENELEC EN 55032 [1] annex A table A.11 can be used.

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.7.2 and The test method shall be in accordance with CENELEC EN 55032 [1], annex A.3. for the measurement methods.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

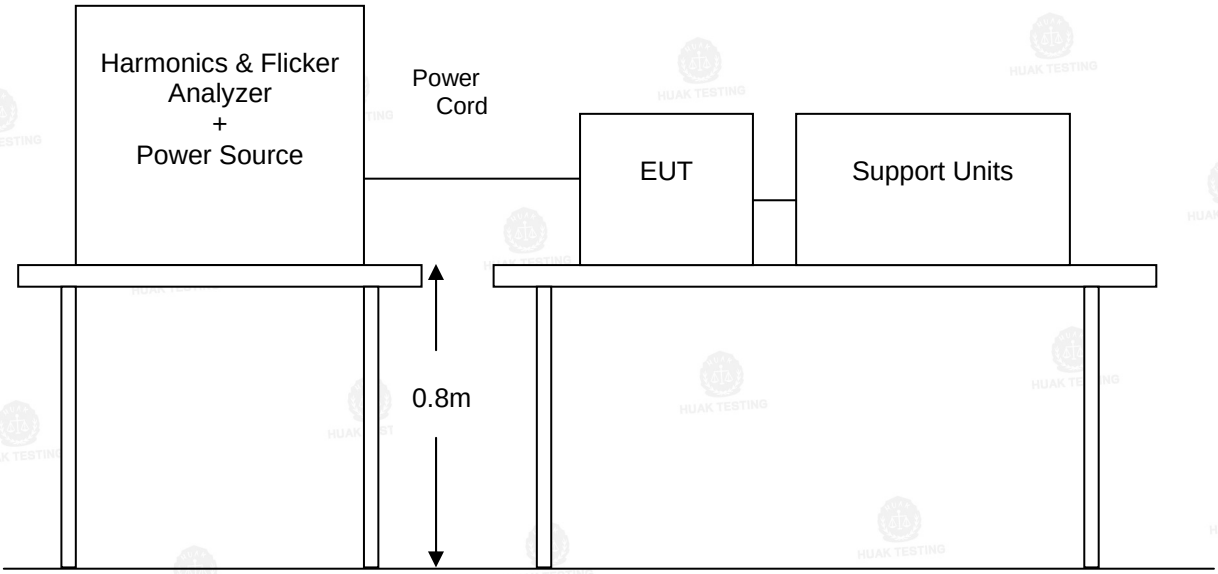
Not applicable.

4.1.4. Harmonic Current Emission

LIMIT

Please refer to EN IEC 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

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

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

EUT is test by DC power supply, so it is not applicable.

4.1.5. Voltage Fluctuation and Flicker

LIMIT
Please refer to EN 61000-3-3

TEST CONFIGURATION
Same as the configuration of the Harmonic Current Emission.

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

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

EUT is test by DC power supply, so it is not applicable.

4.1.6. Electrostatic Discharge

LIMIT

Please refer to EN 61000-4-2

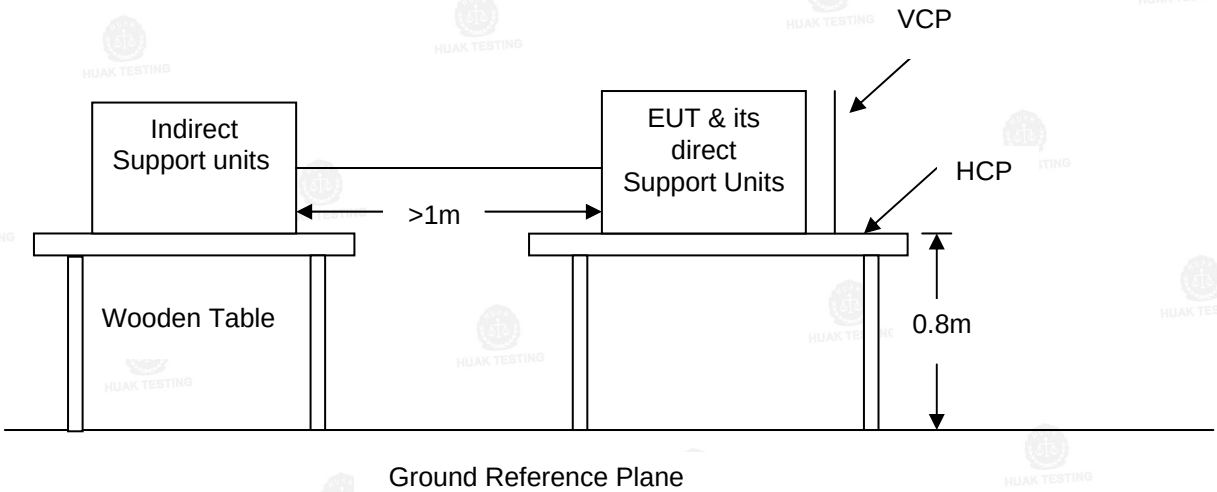
SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at ±2KV,±4KV Air Discharge at±2KV,±4KV,±8KV

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 criterion: **B**

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.

If EUT is also a FM Receiver, it shall refer to EN 55020:2007/A11:2011 Clause 5.9 for the measurement methods.

Test results

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 0.5m X 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.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

Mode	Air Discharge								Contact Discharge								Criterion	Result
Test level (kV)	4		8		10		15		2		4		6		8			
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
HCP									A	A	A	A					B	PASS
VCP									A	A	A	A						PASS
Metallic parts									/	/	/	/						N/A
enclosure	A	A	A	A														PASS
slot	A	A	A	A														PASS

Note:

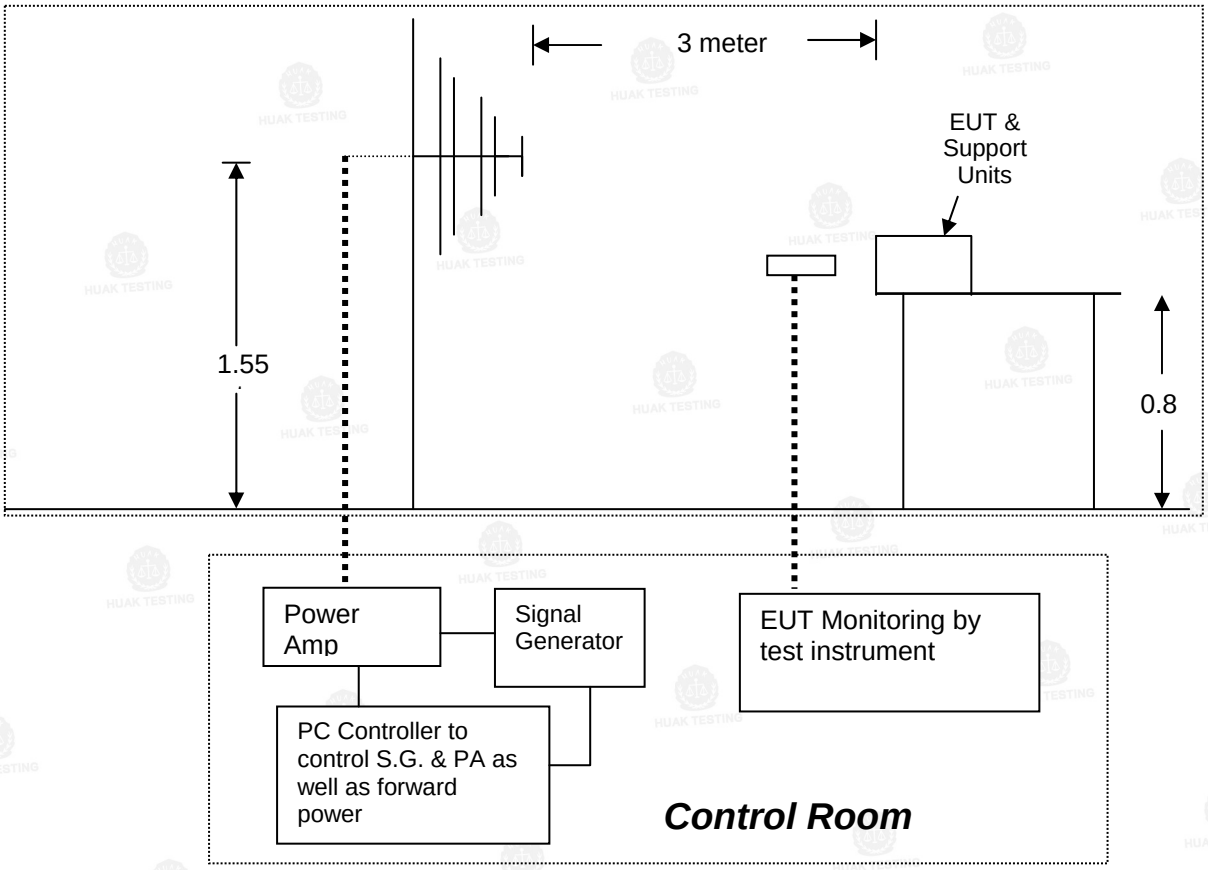
1) +/- denotes the Positive/Negative polarity of the output voltage.
2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
3) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)
4) The Indirect (HCP/VCP) discharges description of test point as following:
1.left side 2.right side 3.front side 4.rear side
5) N/A - denotes test is not applicable in this test report

4.1.7. RF Electromagnetic Field

LIMIT

Please refer to EN IEC 61000-4-3

Test Configuration



Test Levels of RF Electromagnetic Field

Test level: RF Field Strength: 3V/m

Level	RF Field Strength(V/m)
1	1
2	3
3	10
X	Special

Performance criterion: **A**

TEST PROCEDURE

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

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

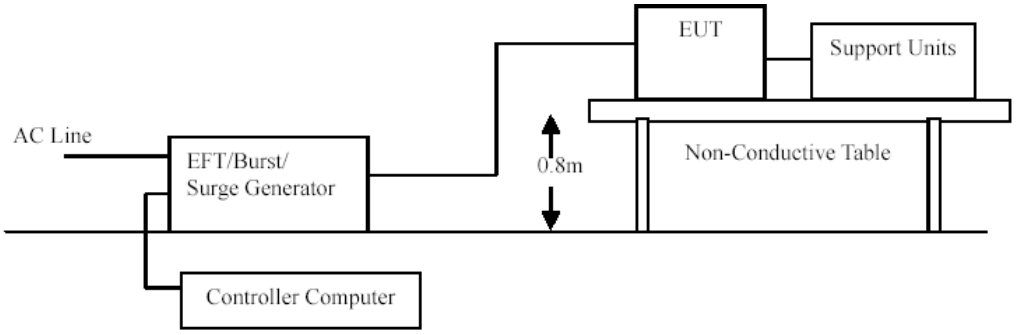
	Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode	Result (Pass/Fail)
1	80-6000	3V/m	Yes	H / V	Front	Normal Operating	Pass
	1800(±1%), 2600(±1%), 3500(±1%), 5000(±1%)	3V/m	Yes	H / V	Front		Pass
2	80-6000	3V/m	Yes	H / V	Right	Normal Operating	Pass
	1800(±1%), 2600(±1%), 3500(±1%), 5000(±1%)	3V/m	Yes	H / V	Right		Pass
3	80-6000	3V/m	Yes	H / V	Back	Normal Operating	Pass
	1800(±1%), 2600(±1%), 3500(±1%), 5000(±1%)	3V/m	Yes	H / V	Back		Pass
4	80-6000	3V/m	Yes	H / V	Left	Normal Operating	Pass
	1800(±1%), 2600(±1%), 3500(±1%), 5000(±1%)	3V/m	Yes	H / V	Left		Pass

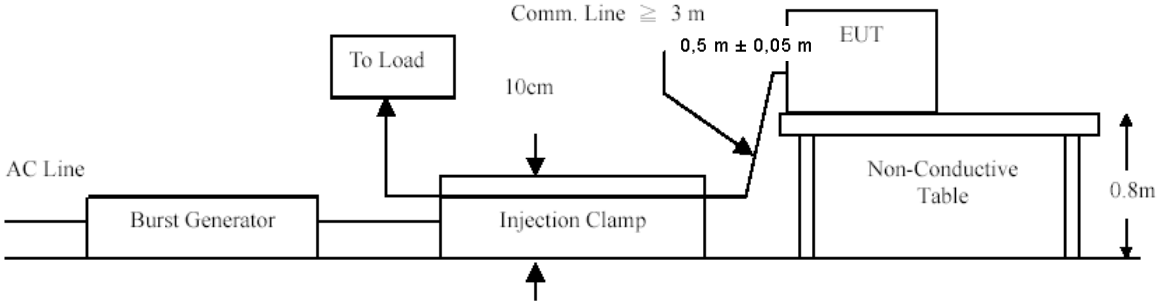
4.1.8. Fast Transients Common Mode

LIMIT

Please refer to EN 61000-4-4

TEST CONFIGURATION





TEST PROCEDURE

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

If EUT is also a FM Receiver, it shall refer to EN 55020:2007/A11:2011 Clause 5.6 for the measurement methods.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

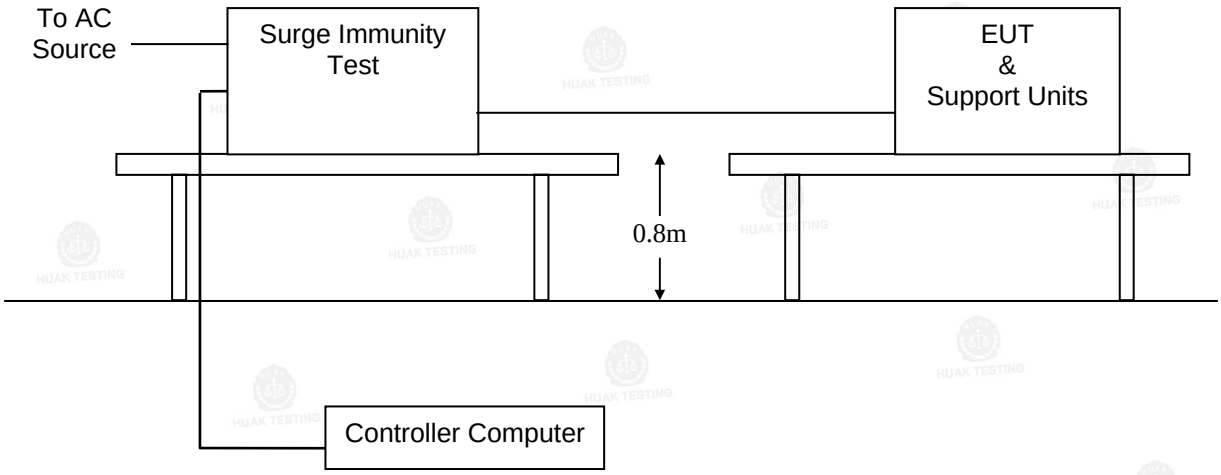
EUT is test by DC power supply, so it is not applicable.

4.1.9. Surges, Line to Line and Line to Ground

LIMIT

Please refer to EN 61000-4-5

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-5 for the measurement methods.

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

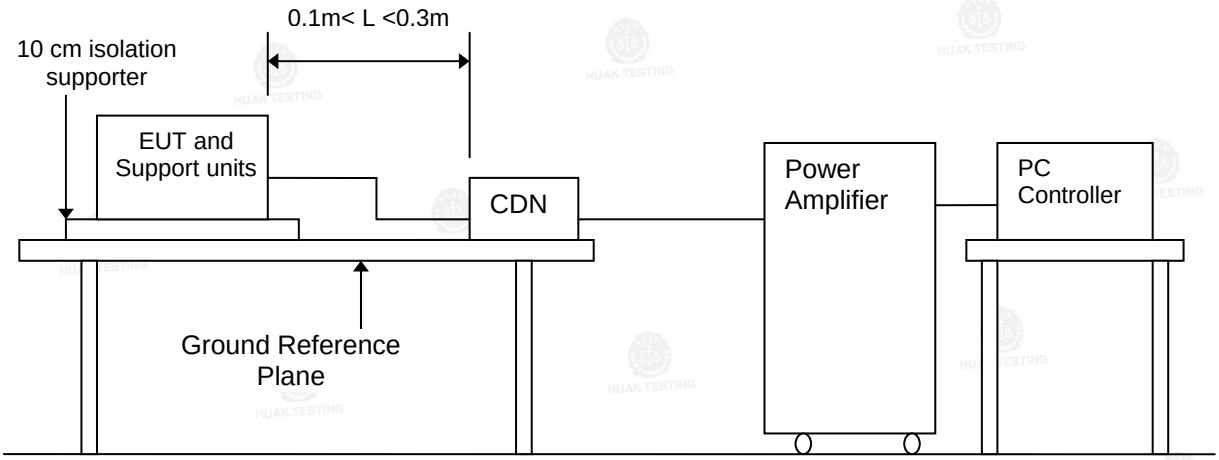
EUT is test by DC power supply, so it is not applicable.

4.1.10. RF- Common Mode 0.15MHz to 80MHz

LIMIT

Please refer to EN IEC 61000-4-6

TEST CONFIGURATION



TEST PROCEDURE

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

Climatic conditions

- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

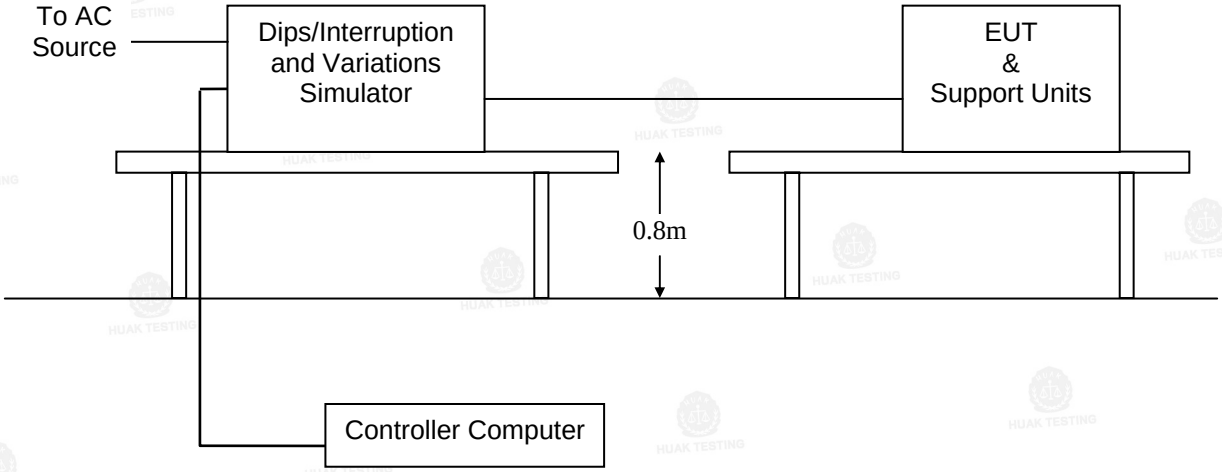
EUT is test by DC power supply, so it is not applicable.

4.1.11. Voltage Dips and Interruptions

LIMIT

Please refer to EN IEC 61000-4-11

TEST CONFIGURATION



TEST PROCEDURE

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

Climatic conditions

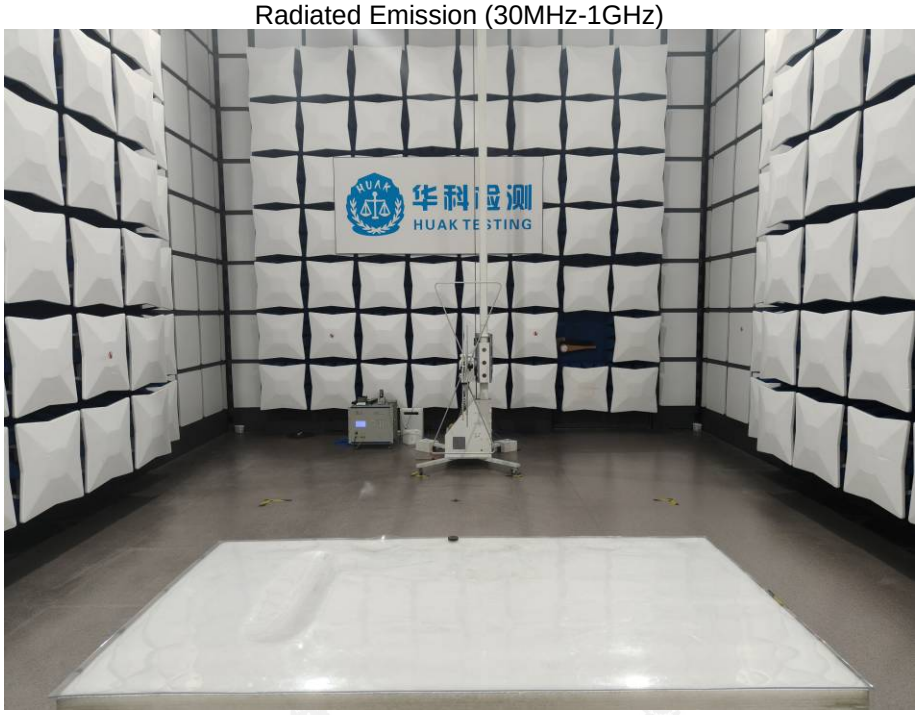
- ambient temperature : 25℃
- relative humidity: 55%
- atmospheric pressure: 960 mbar

TEST RESULTS

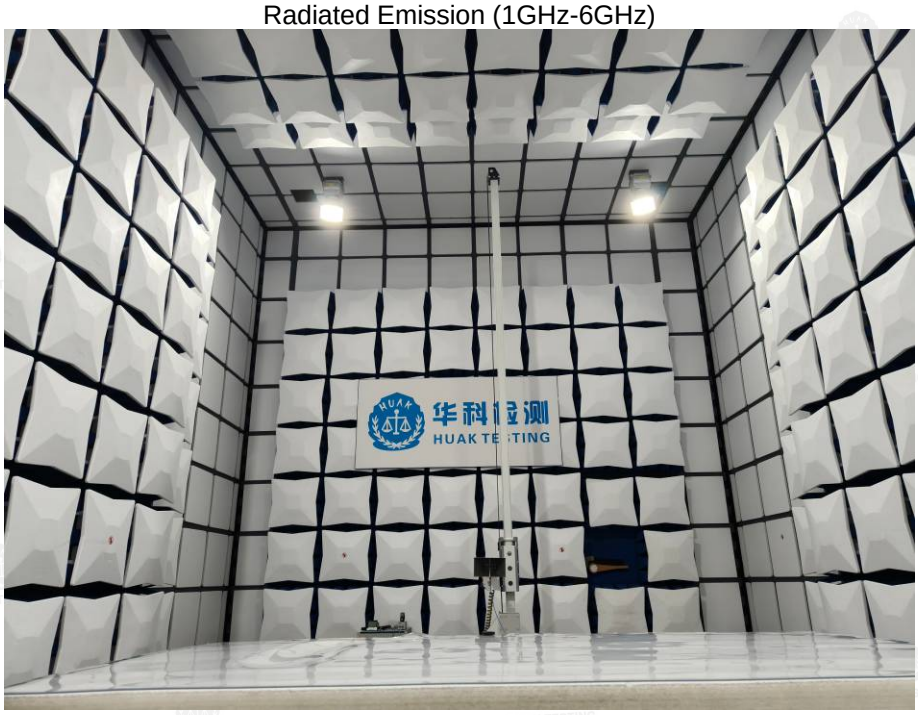
EUT is test by DC power supply, so it is not applicable.

5. Test Set-up Photos of the EUT

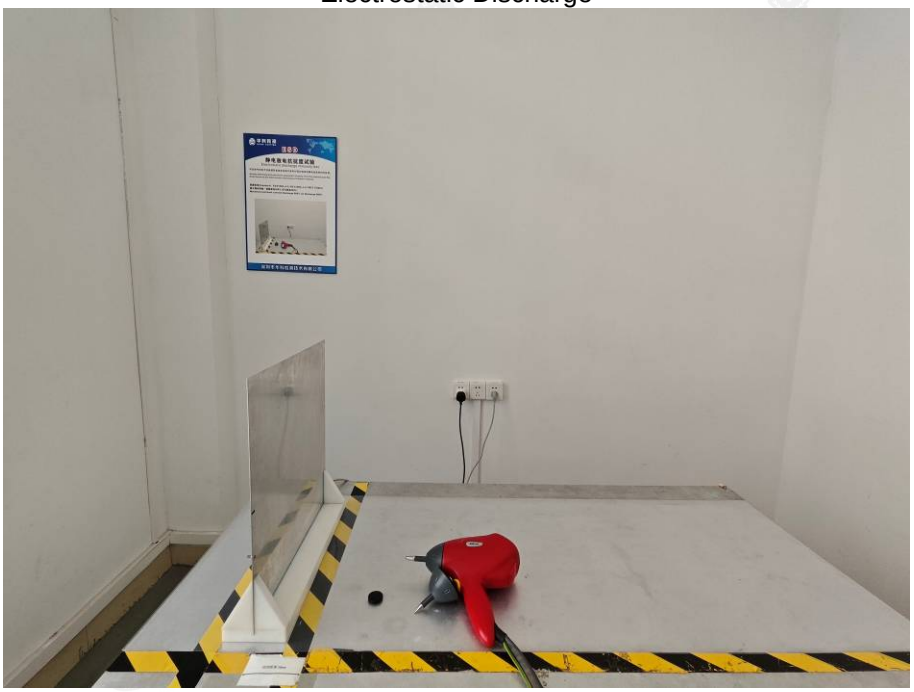
Radiated Emission (30MHz-1GHz)



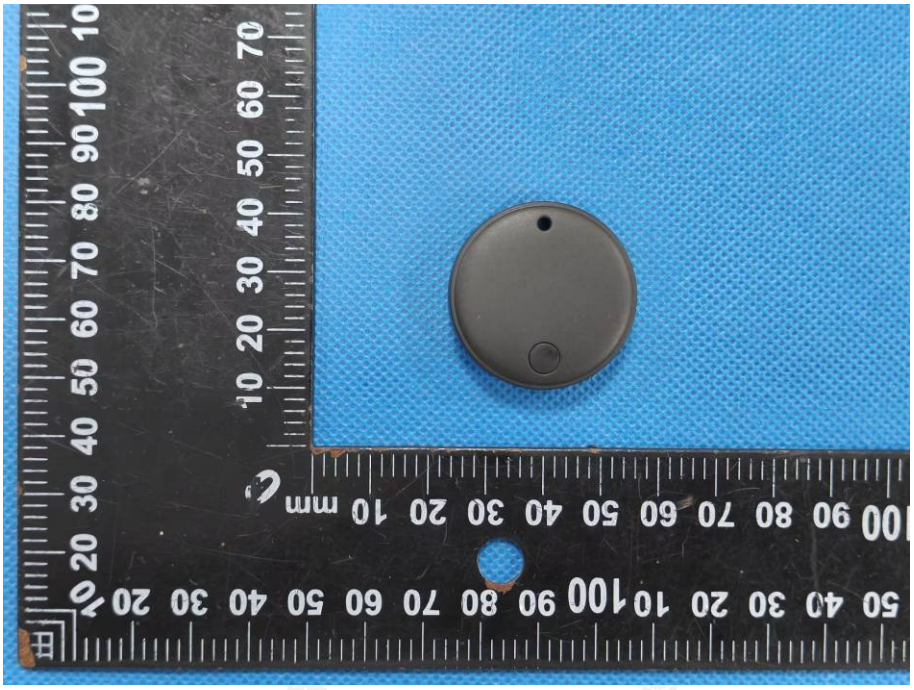
Radiated Emission (1GHz-6GHz)

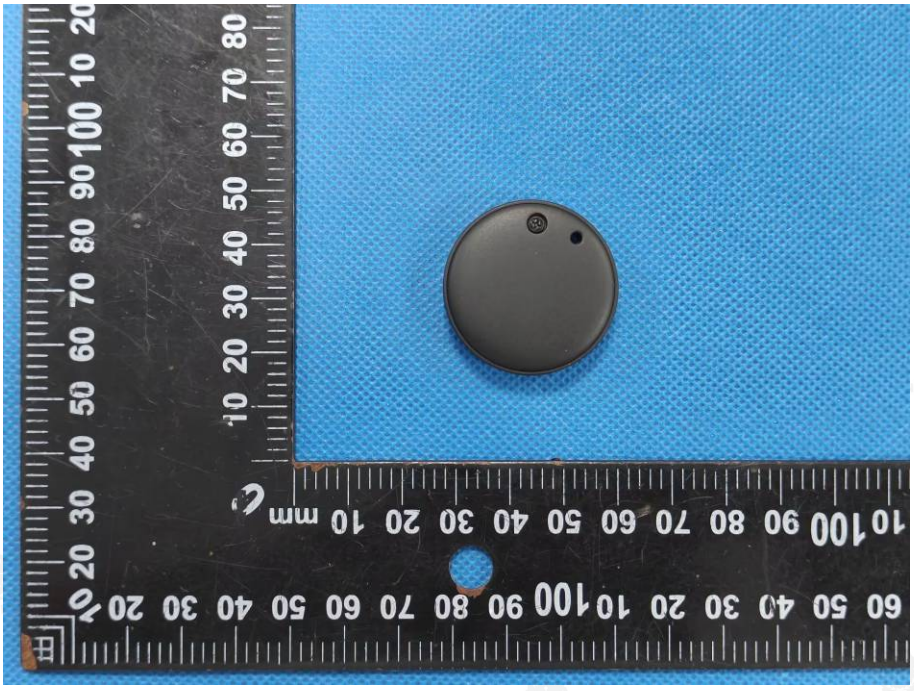


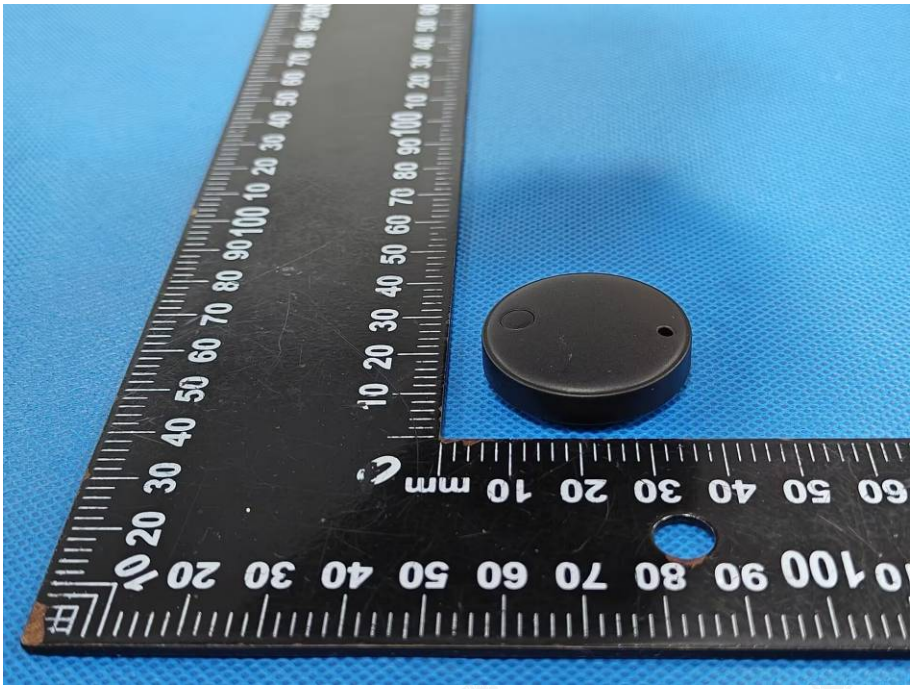
Electrostatic Discharge

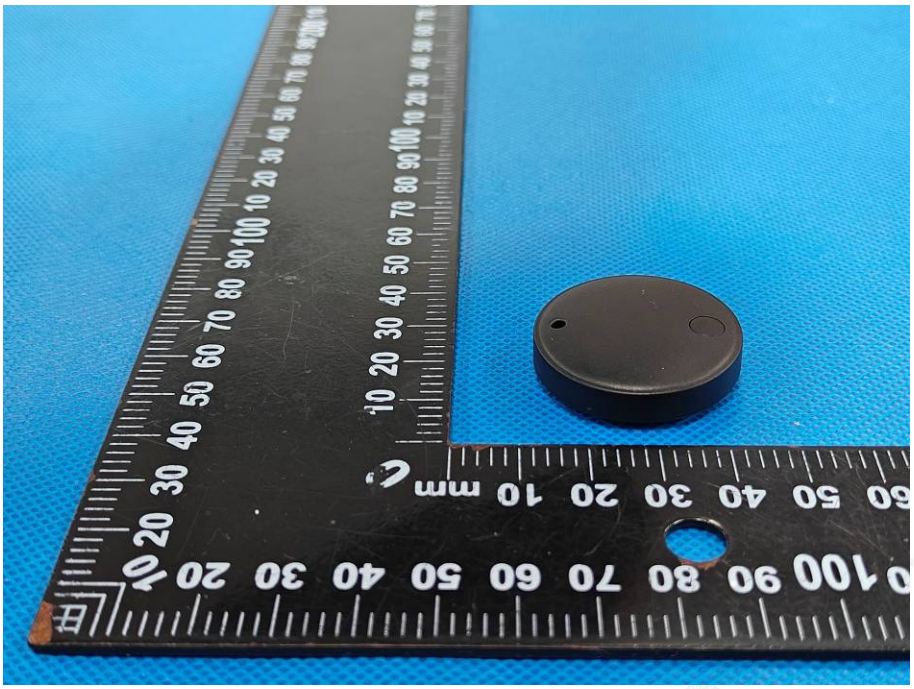


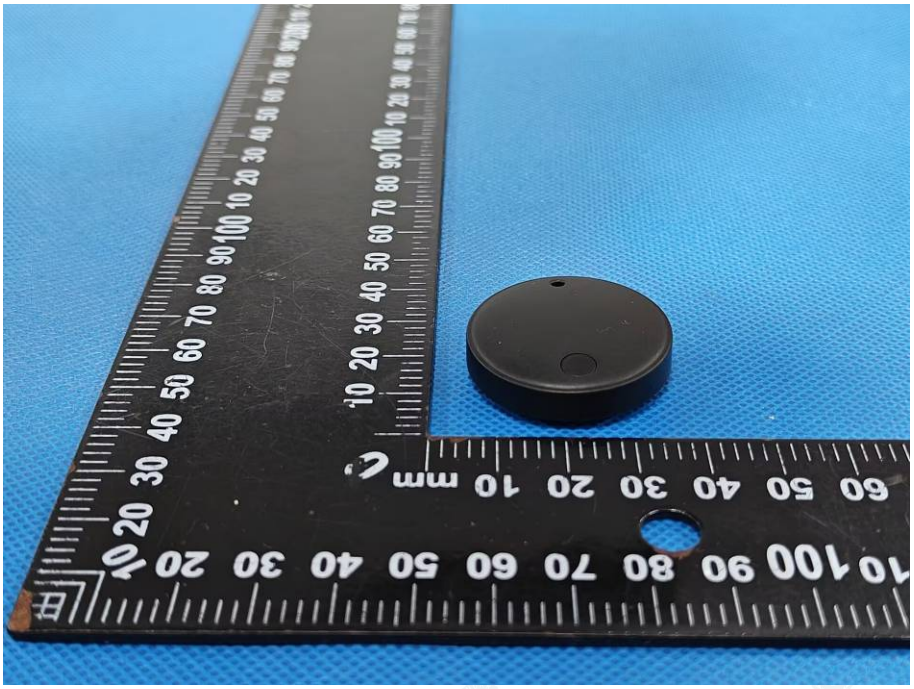
6. PHOTOS OF THE EUT

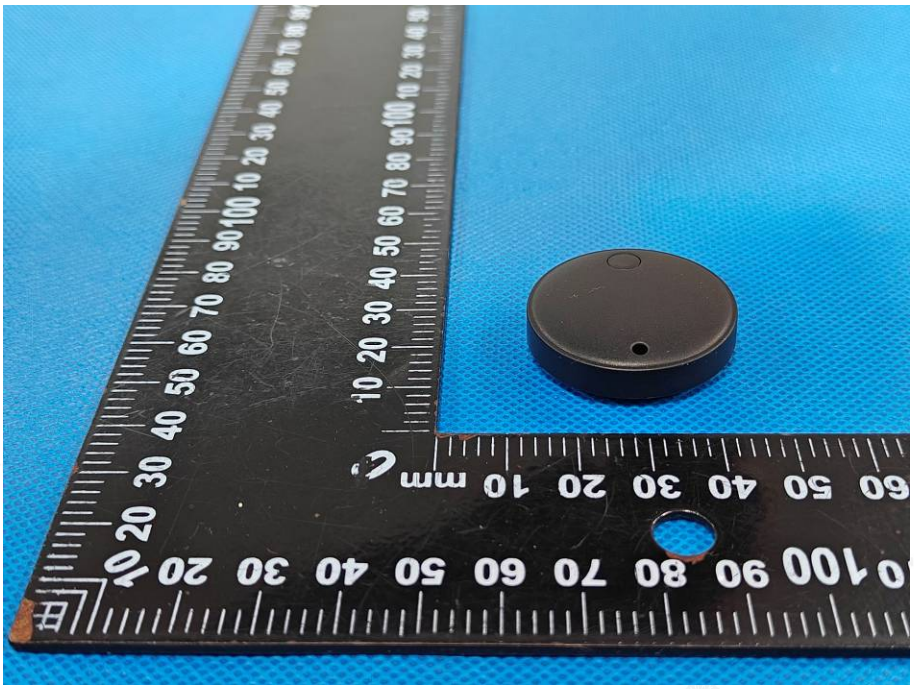


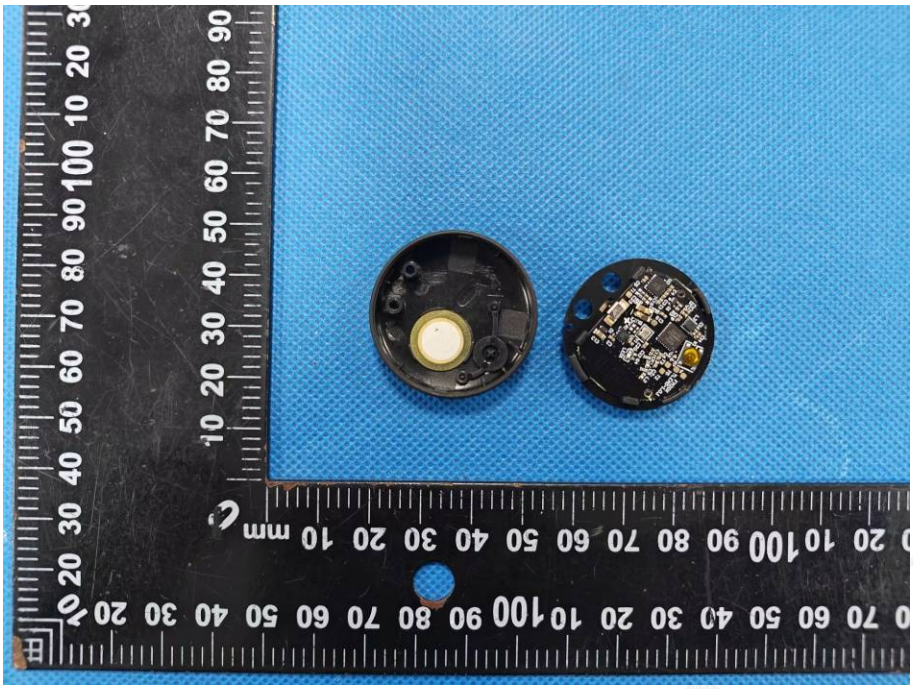


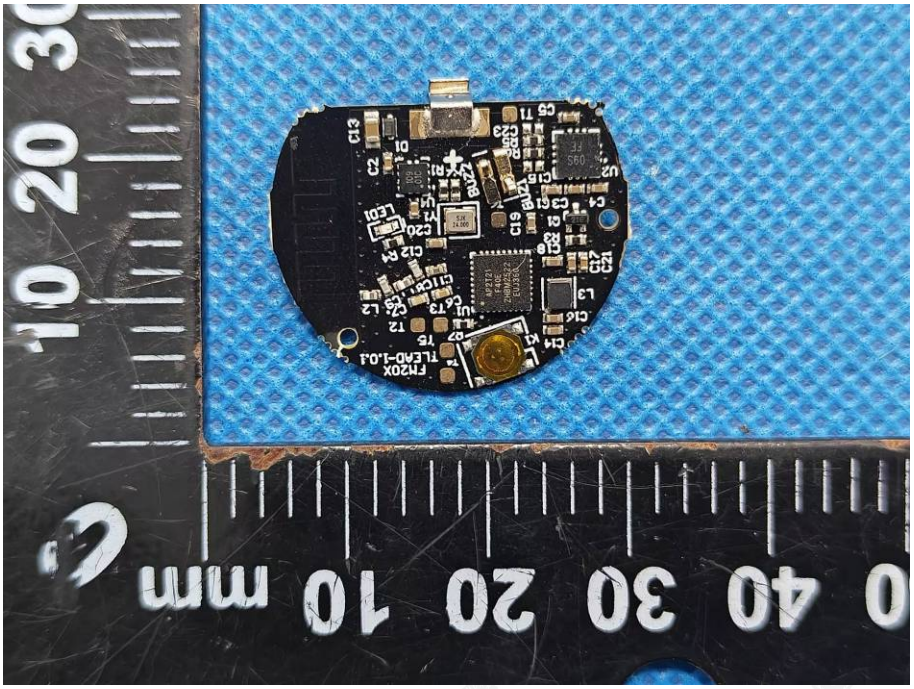


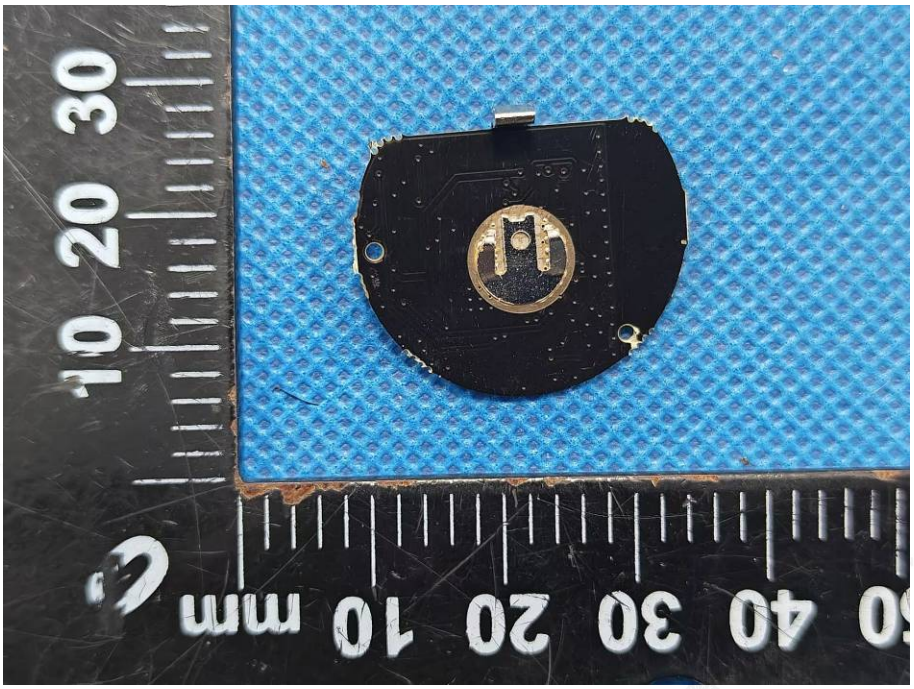












.....End of Report.....