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# EMC Test Report

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Report No.: AGC03507190403EE01B

**PRODUCT DESIGNATION** : Bluetooth speaker  
**BRAND NAME** : N/A  
**MODEL NAME** : M09062, M08906  
**APPLICANT** : Mid Ocean Brands B.V.  
**DATE OF ISSUE** : Sep. 16, 2019  
**STANDARD(S)** : EN 301 489-1 V2.2.0 (2017-03)(draft)  
: EN 301 489-17 V3.2.0 (2017-03)(draft)  
**REPORT VERSION** : V1.0

## Attestation of Global Compliance (Shenzhen) Co., Ltd

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### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 16, 2019	Valid	Extension Report

**Note:**

The original test report Ref.No. AGC03507190403EE01 dated Apr. 17, 2019 was modified on Sep. 16, 2019 to include the following changes:

Add the series model



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### 1. TEST REPORT CERTIFICATION

<b>Applicant</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Manufacturer</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Factory</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Product Designation</b>	Bluetooth speaker
<b>Brand Name</b>	N/A
<b>Test Model</b>	MO9062
<b>Series Model</b>	MO8906
<b>Difference description</b>	All the same except for the model name
<b>Date of test</b>	Apr. 04, 2019 to Apr. 16, 2019
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Report Template</b>	AGCRT-EC-BLE/EMC (2013-03-01)

We, Attestation of Global Compliance (Shenzhen) Co., Ltd., hereby certify that the submitted samples of the above item, as detailed in chapter 2.1 of this report, has been tested in our facility. The test record, data evaluation and test configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified. The test results of this report relate only to the tested sample identified in this report.

Tested By



Calvin Liu(Liu Junchen)

Apr. 16, 2019

Reviewed By



Max Zhang(Zhang Yi)

Sep. 16, 2019

Approved By



Forrest Lei(Lei Yonggang)  
Authorized Officer

Sep. 16, 2019



## 2. GENERAL INFORMATION

### 2.1. DESCRIPTION OF EUT

The EUT is a short range, lower power, Bluetooth device.  
It is designed by way of FHSS modulation achieves the system operating.  
Details of technical specification refer to the description in follows:  
Transmitter/Receiver (TX/RX)

<b>Operating Frequency</b>	2.402 GHz to 2.480GHz
<b>Bluetooth Version</b>	V5.0 (BR/EDR)
<b>Modulation</b>	GFSK, $\pi/4$ -DQPSK
<b>Hardware Version</b>	LTW-S08U-2019.03.01
<b>Software Version</b>	5.0
<b>Antenna Type</b>	PCB Antenna
<b>Number of channels</b>	79 for BR/EDR
<b>Antenna Gain</b>	1.2dBi
<b>Power Supply</b>	DC 3.7V by battery

**Note:** The EUT doesn't support 8DPSK and BLE.

### 2.2. OBJECTIVE

Perform Electro Magnetic Interference (EMI) and Electro Magnetic Susceptibility (EMS) tests for CE Marking.

### 2.3. TEST STANDARDS AND RESULTS

The EUT has been tested according to ETSI EN 301 489-1 V2.2.0 (2017-03) and ETSI EN 301 489-17 V3.2.0(2017-03).

<b>ETSI EN 301 489-1</b>	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements
<b>ETSI EN 301 489-17</b>	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems;

**Note:** The standards applied in test are draft.



## 2.4. TEST ITEMS AND THE RESULTS

No.	Basic Standard	Test Type	Result
<b>EMISSION (EN 301 489-1 §7.1)</b>			
1	EN 55032	Radiated emission	PASS
2	EN 55032	Conducted emission, AC ports	PASS
3	EN 55032	Conducted emission, Telecom ports	N/A
4	EN 61000-3-2	Harmonic current emissions	N/A
5	EN 61000-3-3	Voltage fluctuations & flicker	N/A
<b>IMMUNITY (EN 301 489-1 §7.2)</b>			
6	EN 61000-4-2	Electrostatic discharge immunity	PASS
7	EN 61000-4-3	Radiated RF electromagnetic field immunity	PASS
8	EN 61000-4-4	Electrical fast transient/burst immunity	N/A
9	ISO 7637-1, -2	Transients and surges, DC ports	N/A
10	EN 61000-4-5	Surge immunity, AC ports, Telecom ports	N/A
11	EN 61000-4-6	Immunity to conducted disturbances induced by RF fields	N/A
12	EN 61000-4-11	Voltage dips and short interruptions immunity	N/A

**Note:** 1. N/A- Not Applicable.  
2. The latest versions of basic standards are applied.

## 2.5. ENVIRONMENTAL CONDITIONS

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

- Temperature: 15°C -35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

### 3. TEST MODE DESCRIPTION

TEST MODE DESCRIPTION		
NO.	EMI TEST MODE DESCRIPTION	WORST
1	BT Link with charging	V
2	Standby with charging	
NO.	EMS TEST MODE DESCRIPTION	
1	BT Link with charging	
2	Standby with charging	

**Note:** 1. V means EMI worst mode  
2. All modes have been tested and only the worst mode test data recorded in the test report.  
3. The BT function of EUT didn't work when charging.

I/O Port Information (Applicable Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
Micro USB/AUX in port	1	0	1
USB port	1	0	1
TF-Card Ports	1	0	1

### 4. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Radiated Emission,  $U_c = \pm 3.2 \text{ dB}$
- Uncertainty of Radiated Emission below 1GHz,  $U_c = \pm 3.9 \text{ dB}$
- Uncertainty of Radiated Emission above 1GHz,  $U_c = \pm 4.8 \text{ dB}$



### 5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	S/N	Data Cable
USB Cable	N/A	N/A	N/A	1m unshielded
PC	XIAOMI	161301-01	N/A	1m unshielded
Mobile phone	HTC	816T	N/A	0

**Note:** The PC was the charging device for EUT.





## 6. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

<b>Site</b>	Attestation of Global Compliance (Shenzhen) Co., Ltd
<b>Location</b>	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

## 7. TEST EQUIPMENT LIST

### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun.12, 2018	Jun.11, 2019
LISN	R&S	ESH2-Z5	100086	Jun.12, 2018	Jun.11, 2019

### TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
TEST RECEIVER	R&S	ESCI	10096	Jun. 12, 2018	Jun. 11, 2019
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 25, 2018	Oct. 24, 2019
Double-Ridged Waveguide Horn	ETS	3117	00034609	May.18, 2017	May.17, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019

### TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	Oct.25, 2018	Oct.24, 2019

### TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
SIGNAL GENERATOR	R&S	E4421B	MY43351603	May.15, 2018	May.14, 2019
ANTENNA	SCHWARZBCK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2019
POWER SENSOR	R&S	URV5-Z4	100124	May.15, 2018	May.14, 2019
POWER METER	R&S	NRVD	8323781027	May.15, 2018	May.14, 2019
POWER AMPLIFIER	KALMUS	7100LC	04-02/17-06-001	Jun.12, 2018	Jun.11, 2019
RF AMPLIFIER	Milmega	AS0104-55_55	1004793	Jun.12, 2018	Jun.11, 2019
HORN	ETS LINDGREN	3117	00034609	May.26, 2018	May.25, 2019



ANTENNA					
Power Amplifier	rflight	NTWPA-2560100	17063183	Oct.18, 2018	Oct.17, 2019
Broadband High Gain Horn Antenna	SCHWARZBECK	BBHA 9120 J	00073	Mar.19, 2018	Mar.18, 2020



## 8. EMISSION TEST

### 8.1. RADIATED DISTURBANCE MEASUREMENT

#### 8.1.1. LIMITS OF RADIATED DISTURBANCES

Limits for radiated disturbance 30M to1 GHz at a measurement distance of 3 m

Frequency range (MHz)	Quasi peak limits(dBuV/m), for Class B ITE, at 3m measurement distance
30 - 230	40
230 - 1000	47

Limits for radiated disturbance above 1 GHz at a measurement distance of 3 m

Frequency range (MHz)	Limits (dBuV/m), Class B ITE	
	Peak	Average
1000-3000MHz	70	50
3000-6000MHz	74	54

Notes:

1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

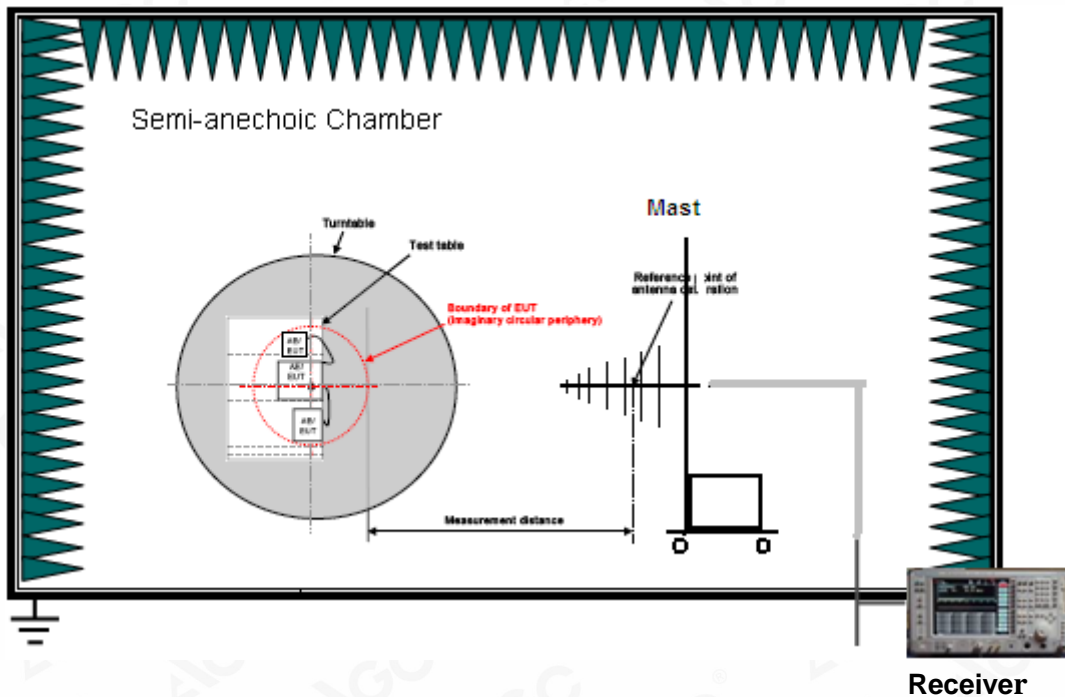
#### 8.1.2. TEST PROCEDURE

- (1). The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2). The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (3).The antenna is a broadband antenna, and its height is varied from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (4). For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.

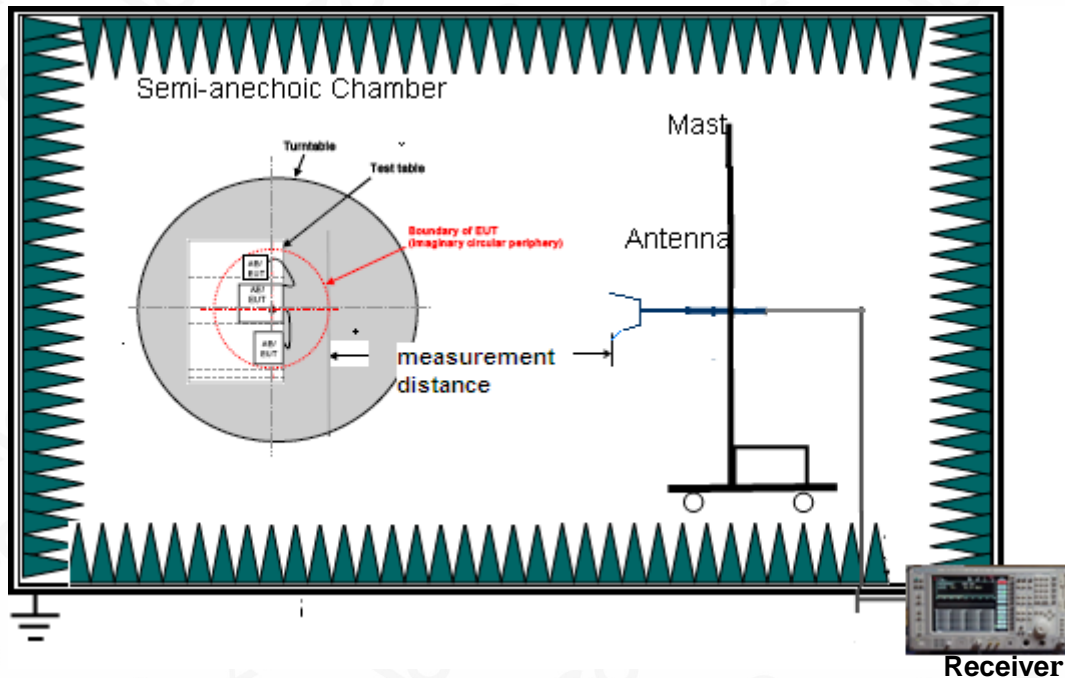


### 8.1.3. BLOCK DIAGRAM OF TEST SETUP

#### Radiated Disturbance below 1 GHz



#### Radiated Disturbance above 1 GHz

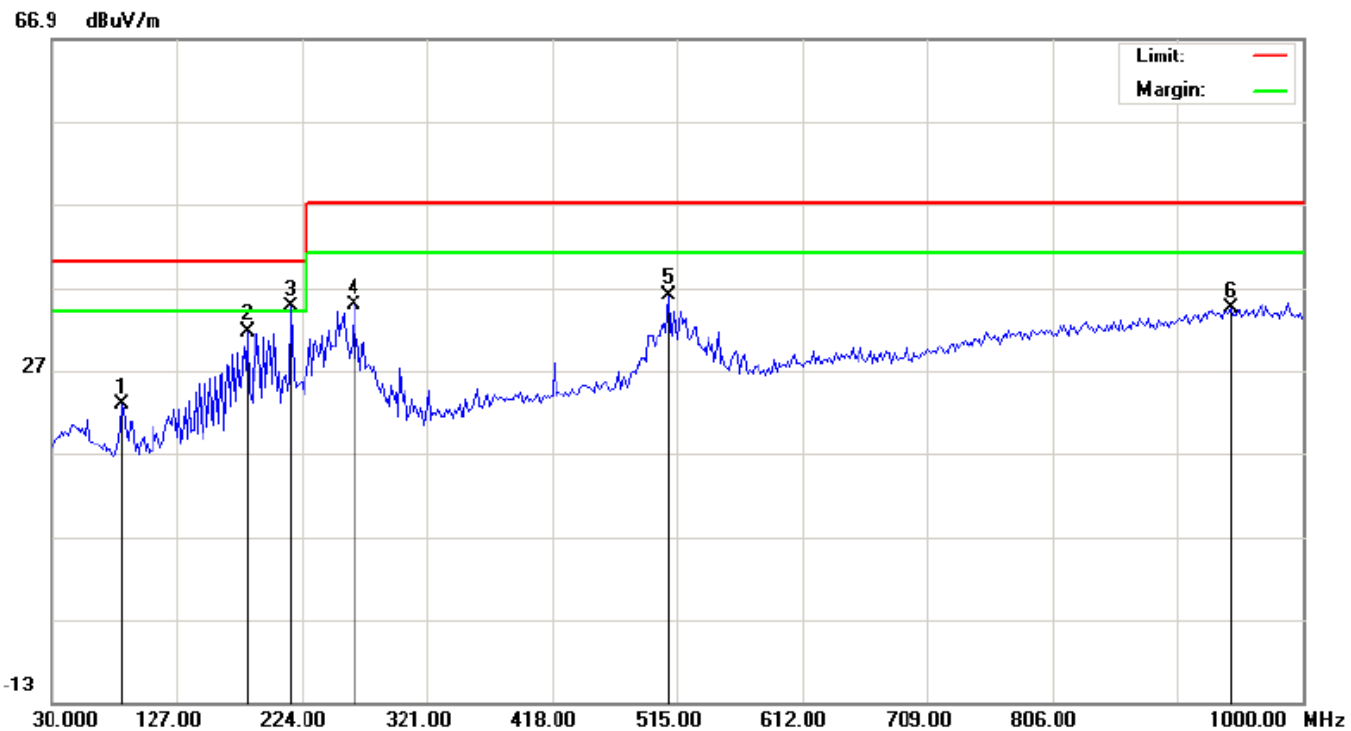


For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.



### 8.1.4 TEST RESULT (mode 1)

#### RADIATED EMISSION BELOW 1GHz- HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		84.9667	7.84	14.96	22.80	40.00	-17.20	peak			
2		181.9667	14.55	17.02	31.57	40.00	-8.43	peak			
3	*	215.9167	17.57	17.00	34.57	40.00	-5.43	peak			
4		264.4167	16.10	18.67	34.77	47.00	-12.23	peak			
5		508.5333	10.93	25.16	36.09	47.00	-10.91	peak			
6		945.0333	2.22	32.09	34.31	47.00	-12.69	peak			

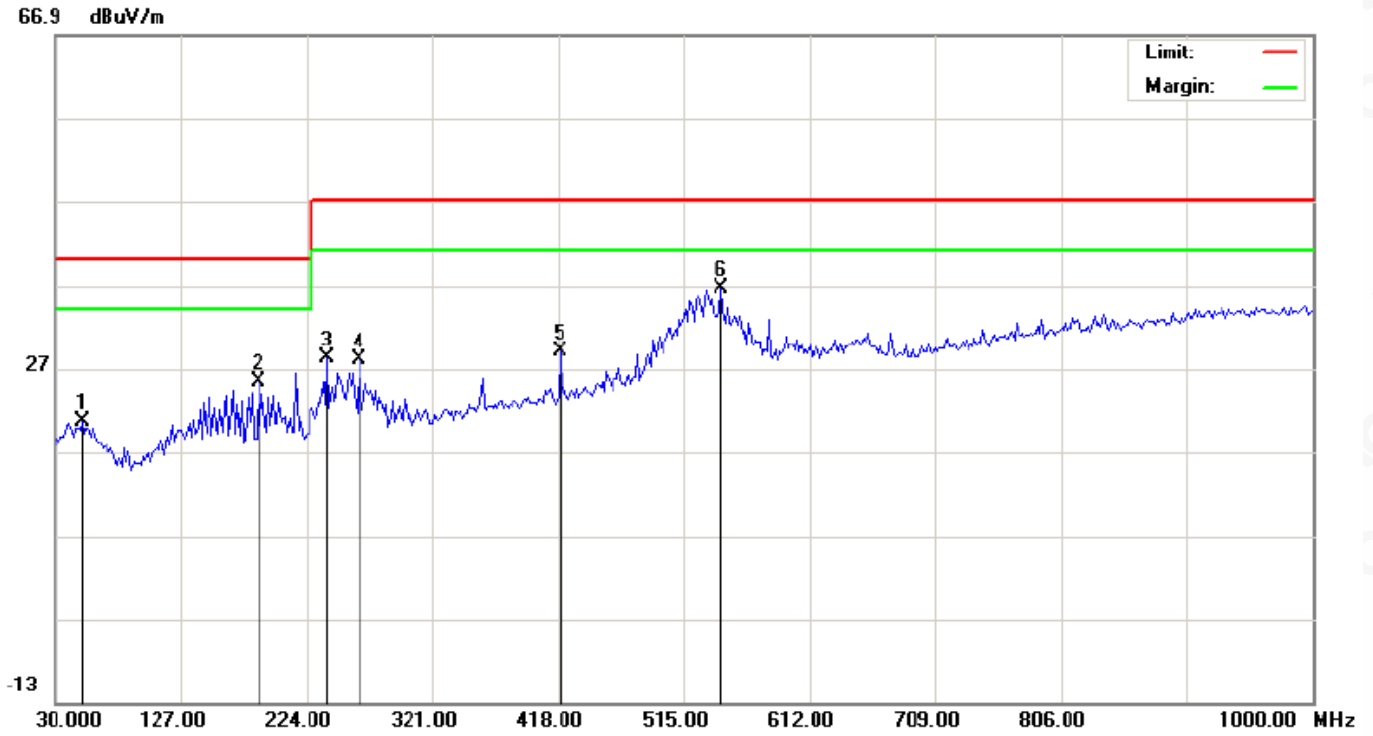
**RESULT: PASS**



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RADIATED EMISSION BELOW 1GHz- VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		51.0167	0.98	19.64	20.62	40.00	-19.38	peak			
2		186.8167	8.60	16.77	25.37	40.00	-14.63	peak			
3		240.1667	9.53	18.66	28.19	47.00	-18.81	peak			
4		264.4167	9.42	18.67	28.09	47.00	-18.91	peak			
5		419.6167	5.59	23.37	28.96	47.00	-18.04	peak			
6	*	544.1000	10.68	25.85	36.53	47.00	-10.47	peak			

RESULT: PASS



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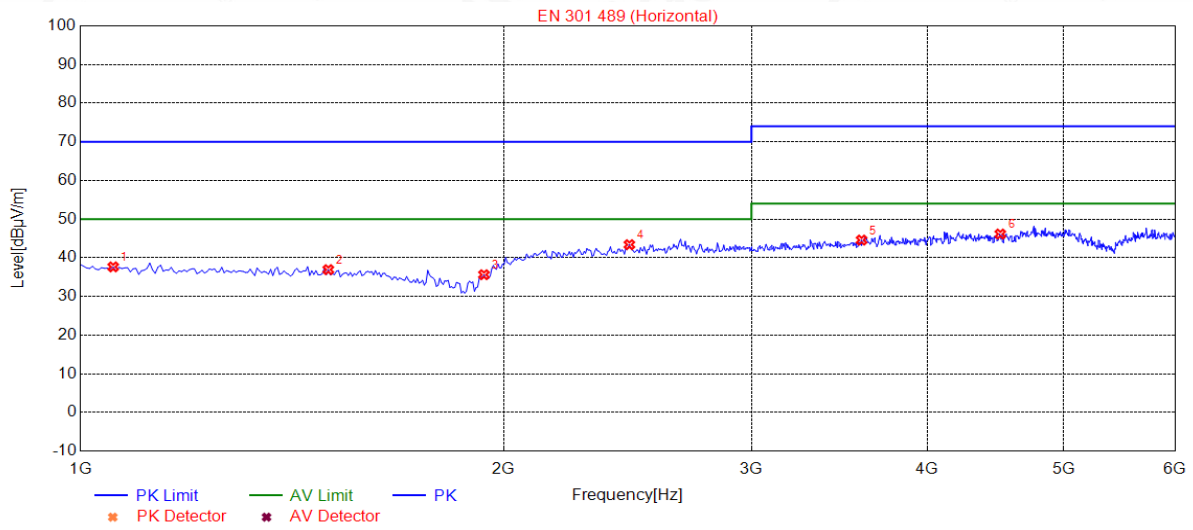
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RADIATED EMISSION ABOVE 1GHz – HORIZONTAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1055.0551	37.64	-16.69	70.00	32.36	100	60	Horizontal
2	1500.5005	36.93	-17.12	70.00	33.07	200	140	Horizontal
3	1935.9359	35.62	-12.50	70.00	34.38	150	80	Horizontal
4	2456.4565	43.39	-9.90	70.00	26.61	100	130	Horizontal
5	3592.5926	44.57	-7.40	74.00	29.43	150	290	Horizontal
6	4508.5085	46.14	-5.19	74.00	27.86	200	240	Horizontal

RESULT: PASS



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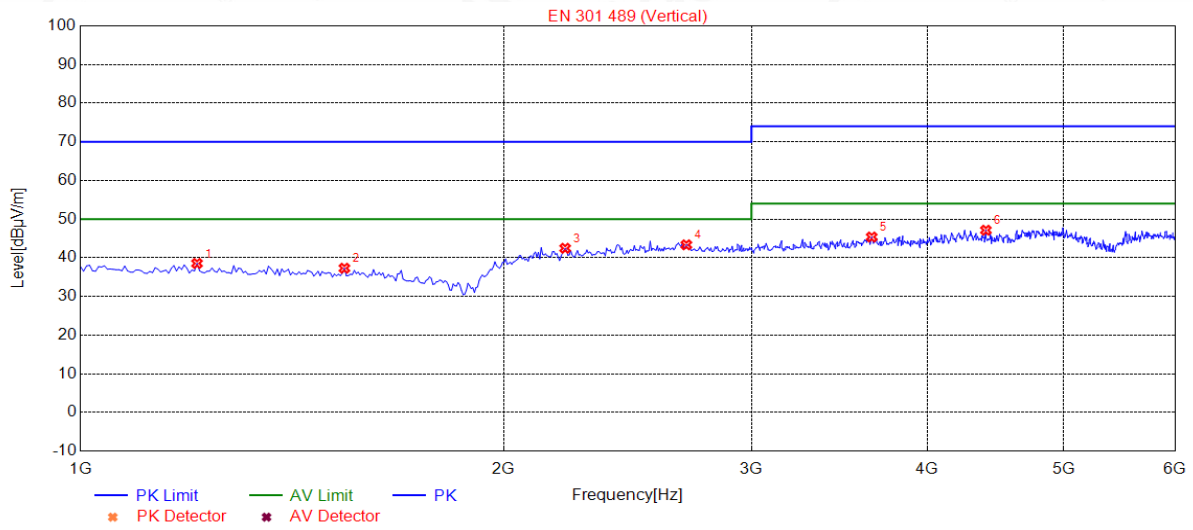
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RADIATED EMISSION ABOVE 1GHz - VERTICAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1210.2102	38.54	-16.85	70.00	31.46	200	160	Vertical
2	1540.5405	37.30	-16.70	70.00	32.70	200	50	Vertical
3	2211.2112	42.46	-10.93	70.00	27.54	150	270	Vertical
4	2696.6967	43.35	-9.57	70.00	26.65	150	30	Vertical
5	3652.6527	45.37	-7.26	74.00	28.63	150	170	Vertical
6	4403.4034	47.13	-5.45	74.00	26.87	100	290	Vertical

RESULT: PASS



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## 9. MAINS TERMINAL DISTURBANCE VOLTAGE MEASUREMENT

### 9.1. LIMITS OF MAINS TERMINAL DISTURBANCE VOLTAGE

Frequency range (MHz)	Limits (dBuV), Class B ITE	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

**NOTE:**

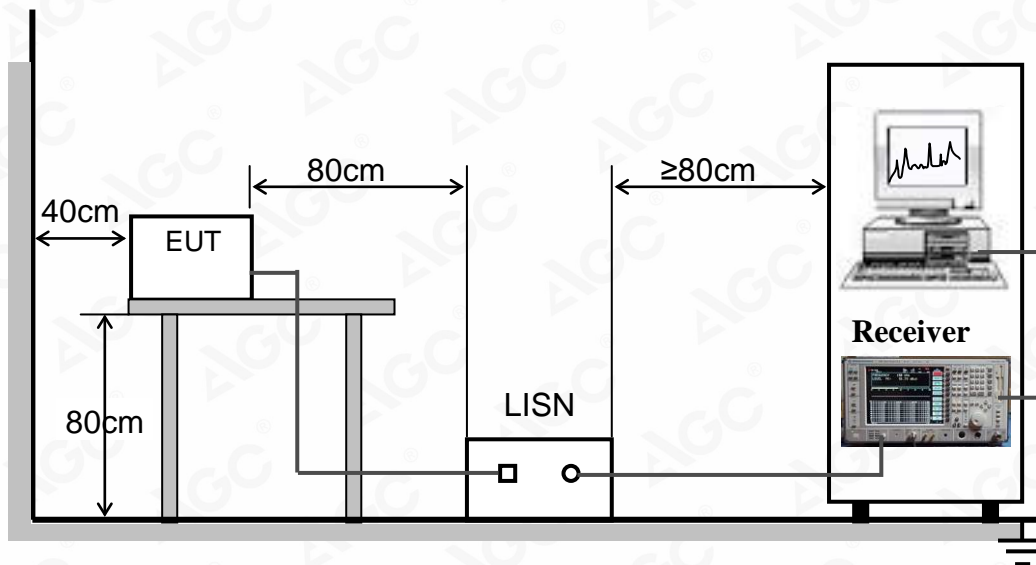
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

### 9.2. TEST PROCEDURE

- (1) The EUT was placed 0.4 meters from the conducting wall of shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50Ω/50μH of coupling impedance for the measuring instrument.
- (2) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- (3)The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 20dB under the prescribed limits are not reported.



### 9.3. TEST SETUP



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

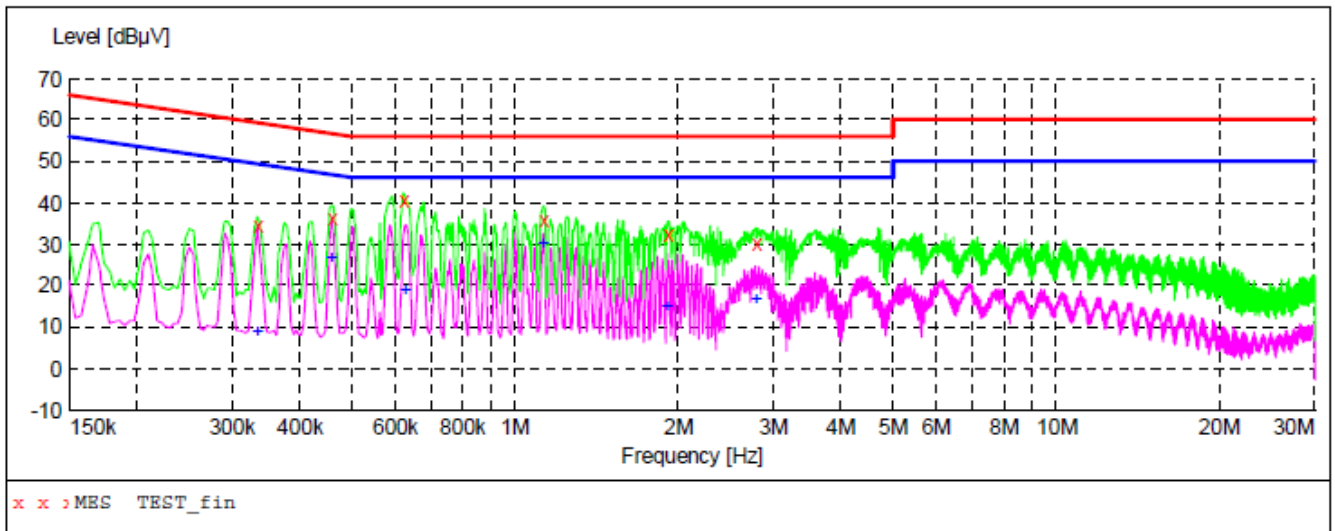
### 9.4. TEST RESULT

The test modes were carried out for all modes.

The worst test mode of the EUT was Mode 1, and its test data was showed as the follow:



LINE CONDUCTED EMISSION TEST-L



**MEASUREMENT RESULT: "TEST\_fin"**

4/11/2019 11:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.334000	34.70	10.2	59	24.7	QP	L1	FLO
0.458000	36.20	10.3	57	20.5	QP	L1	FLO
0.622000	40.70	10.3	56	15.3	QP	L1	FLO
1.126000	36.00	10.4	56	20.0	QP	L1	FLO
1.910000	32.30	10.4	56	23.7	QP	L1	FLO
2.790000	30.40	10.4	56	25.6	QP	L1	FLO

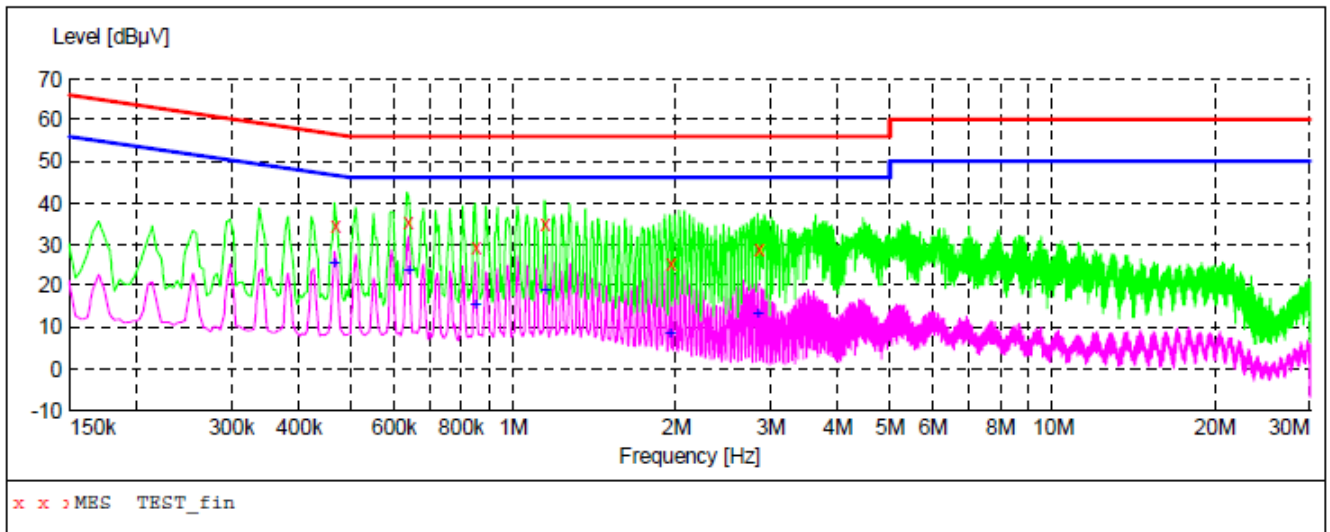
**MEASUREMENT RESULT: "TEST\_fin2"**

4/11/2019 11:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.334000	9.00	10.2	49	40.4	AV	L1	FLO
0.458000	26.80	10.3	47	19.9	AV	L1	FLO
0.626000	18.70	10.3	46	27.3	AV	L1	FLO
1.126000	30.10	10.4	46	15.9	AV	L1	FLO
1.910000	15.00	10.4	46	31.0	AV	L1	FLO
2.790000	16.60	10.4	46	29.4	AV	L1	FLO



LINE CONDUCTED EMISSION TEST-N



**MEASUREMENT RESULT: "TEST\_fin"**

4/11/2019 10:49AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.466000	34.40	10.3	57	22.2	QP	N	FLO
0.634000	35.60	10.3	56	20.4	QP	N	FLO
0.850000	29.10	10.4	56	26.9	QP	N	FLO
1.142000	35.10	10.4	56	20.9	QP	N	FLO
1.954000	25.30	10.4	56	30.7	QP	N	FLO
2.838000	29.00	10.4	56	27.0	QP	N	FLO

**MEASUREMENT RESULT: "TEST\_fin2"**

4/11/2019 10:49AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.466000	25.70	10.3	47	20.9	AV	N	FLO
0.638000	23.50	10.3	46	22.5	AV	N	FLO
0.850000	15.60	10.4	46	30.4	AV	N	FLO
1.146000	18.90	10.4	46	27.1	AV	N	FLO
1.954000	8.60	10.4	46	37.4	AV	N	FLO
2.838000	13.40	10.4	46	32.6	AV	N	FLO



## 10. IMMUNITY TEST

### 10.1. GENERAL PERFORMANCE CRITERIA

#### 1. Performance criteria for Continuous phenomena applied to Transmitter (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.

#### 2. Performance criteria for Transient phenomena applied to Transmitter (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.

#### 3. Performance criteria for Continuous phenomena applied to Receiver (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.

#### 4. Performance criteria for Transient phenomena applied to Receiver (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.



## 10.2. ELECTROSTATIC DISCHARGE IMMUNITY TEST

### 10.2.1 TEST SPECIFICATION

<b>Basic Standard</b>	EN 61000-4-2
<b>Discharge Impedance</b>	330Ω / 150 pF
<b>Discharge Voltage</b>	Air Discharge –8 kV , Contact Discharge – 4 kV
<b>Polarity</b>	Positive / Negative
<b>Number of Discharge</b>	Minimum 20 times at each test point
<b>Discharge Mode</b>	Single discharge
<b>Discharge Period</b>	1-second minimum

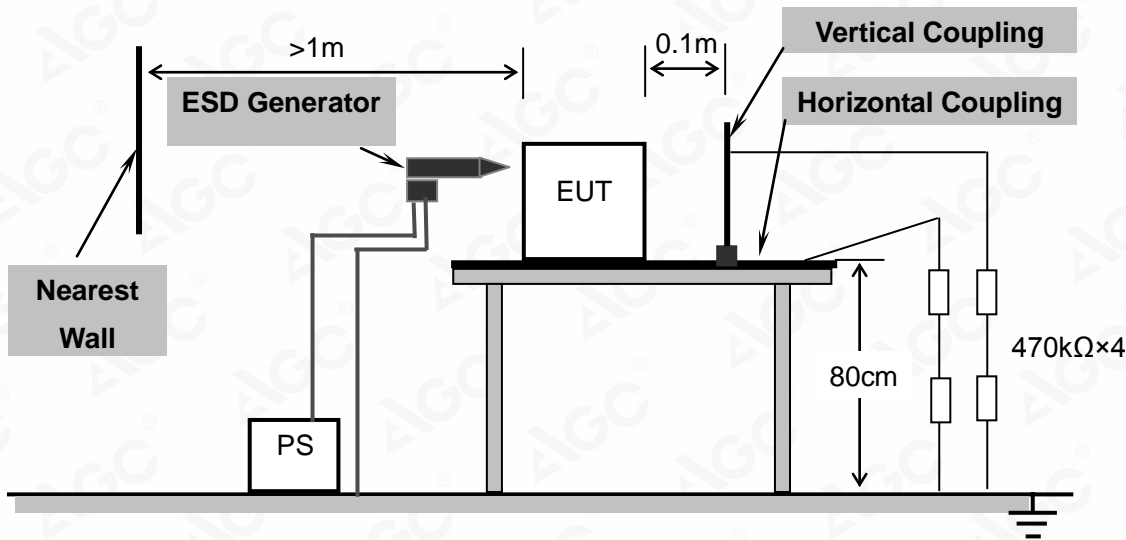
### 10.2.2 TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-2:

- a. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
- b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- c. The time interval between two successive single discharges was at least 1 second.
- d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.
- e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were completed.
- g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator was positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
- h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m×0.5m) was placed vertically to and 0.1 meters from the EUT.



### 10.2.3 TEST SETUP



For the actual test configuration, please refer to Appendix A : Photographs of the Test Configuration.

### 10.2.4 TEST RESULT TEST PROCEDURE

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

### TEST RESULTS

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.

**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.

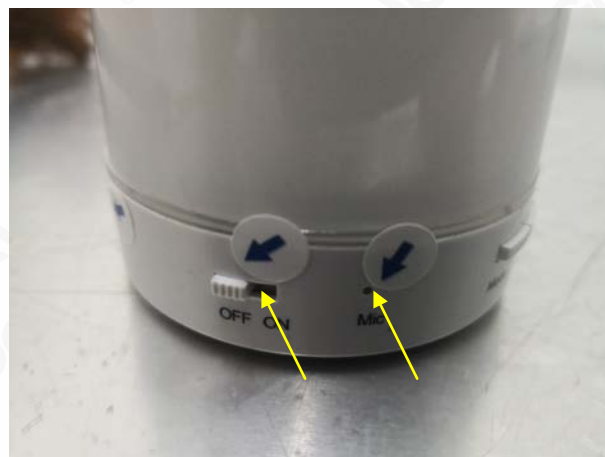
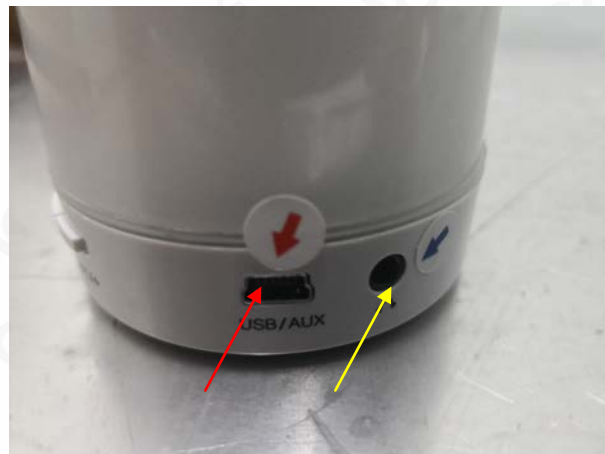
**NOTE 2:** No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. 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.

**DESCRIPTION OF THE ELECTROSTATIC DISCHARGES (ESD)**

Amount of Discharges	Voltage	Coupling	Observation	performance	Result (Pass/Fail)
Mini 20 / Point	±2KV, ±4kV	Contact Discharge	No Function Loss	A	Pass
Mini 20 / Point	±2KV, ±4kV, ±8kV	Air Discharge	No Function Loss	A	Pass
Mini 20 / Point	±2KV, ±4kV	Indirect Discharge HCP	No Function Loss	A	Pass
Mini 20 / Point	±2KV, ±4kV	Indirect Discharge VCP	No Function Loss	A	Pass

**Note:** operating mode include all modes of EMS in page 7.

ESD location: Yellow line: Air discharge    Red line: Contact discharge





**10.2.5. PERFORMANCE**

<input checked="" type="checkbox"/> <b>Criteria A:</b>	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
<input type="checkbox"/> <b>Criteria B:</b>	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
<input type="checkbox"/> <b>Criteria C:</b>	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

**PASS**                       **FAIL**

### 10.3. RADIATED RADIO FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

#### 10.3.1 TEST SPECIFICATION

Basic Standard	EN 61000-4-3
Frequency Range	80 MHz – 6000MHz
Field Strength	3V/m
Modulation	1 kHz sine wave, 80%, AM modulation
Frequency Step	1% of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance	3m
Antenna Height	1.5m
Dwell Time	3 seconds

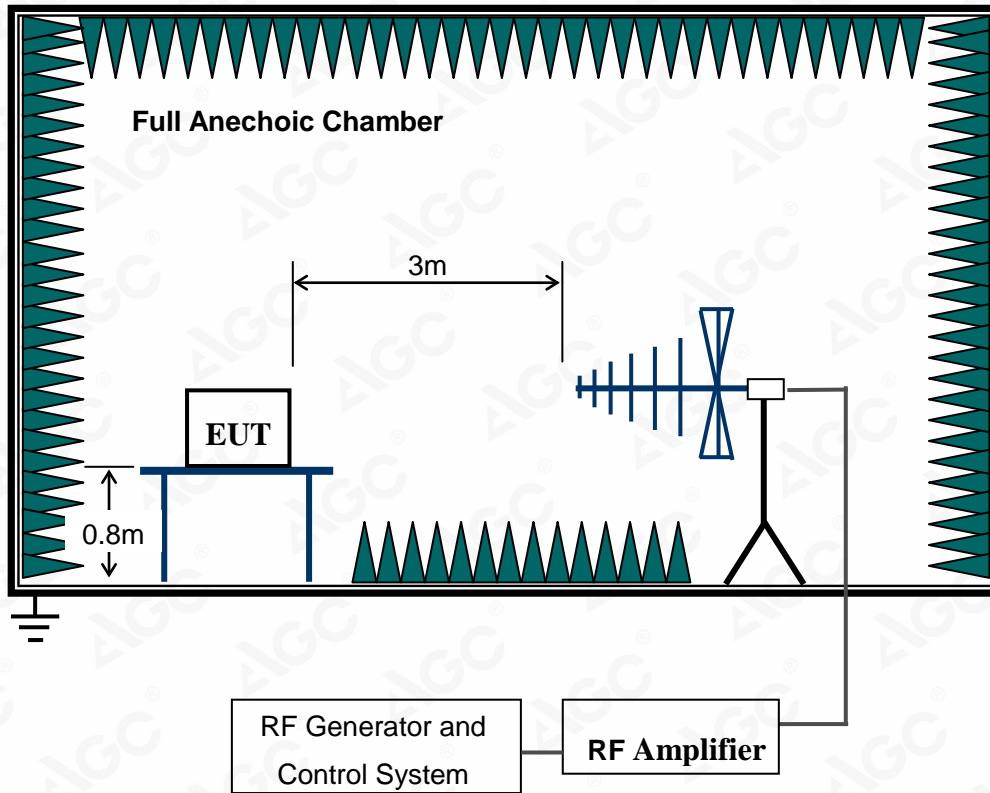
#### 10.3.2 TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-3.

- a. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b. The test signal was 80% amplitude modulated with a 1 kHz sine wave.
- c. The frequency range was swept from 80 MHz to 6000MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers. The rate of sweep did not exceed  $1.5 \times 10^{-3}$  decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- e. The field strength level was 3V/m.
- f. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.



### 10.3.3 TEST SETUP



For the actual test configuration, please refer to Appendix A : Photographs of the Test Configuration.



**10.3.4 TEST RESULT**  
**TEST PROCEDURE**

Please refer to ETSI EN 301 489-1 Clause 9.2.2, ETSI EN 301 489-17 and EN 61000-4-3 for the measurement methods.

**TEST RESULTS**

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.

**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.

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Observation	performance	Result (Pass/Fail)
80-6000	3V/m	Yes	H / V	Front	No Function Loss	A	PASS
80-6000	3V/m	Yes	H / V	Back	No Function Loss	A	PASS
80-6000	3V/m	Yes	H / V	Left	No Function Loss	A	PASS
80-6000	3V/m	Yes	H / V	Right	No Function Loss	A	PASS
80-6000	3V/m	Yes	H / V	Top	No Function Loss	A	PASS
80-6000	3V/m	Yes	H / V	Bottom	No Function Loss	A	PASS

**Note:** operating mode include all modes of EMS in page 7.

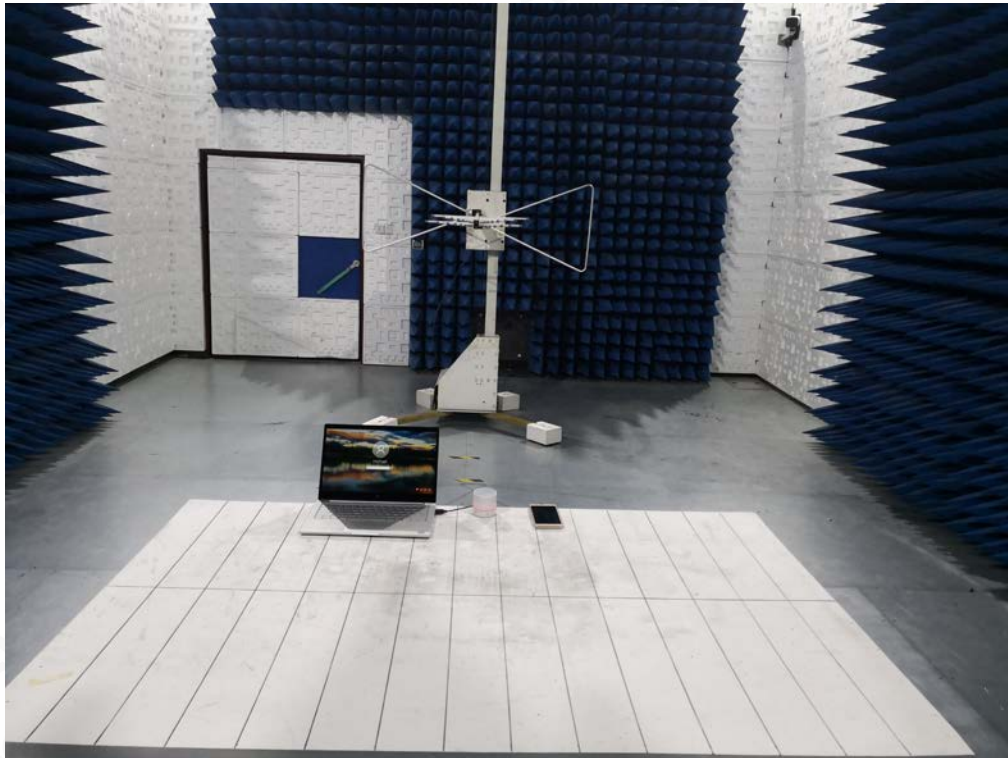


**10.3.5. PERFORMANCE**

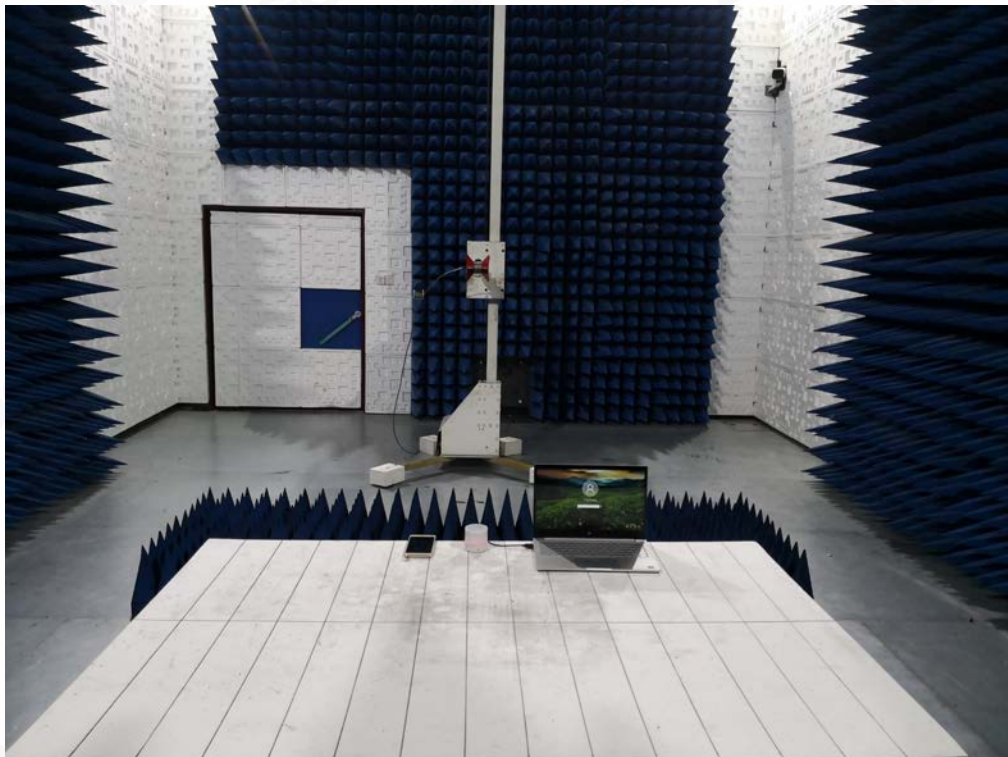
<input checked="" type="checkbox"/> <b>Criteria A:</b>	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
<input type="checkbox"/> <b>Criteria B:</b>	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
<input type="checkbox"/> <b>Criteria C:</b>	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

**PASS**
                 
  **FAIL**

### APPENDIX A: PHOTOGRAPHS OF TEST SETUP RADIATED EMISSION TEST SETUP



RADIATED EMISSION-ABOVE 1G TEST SETUP



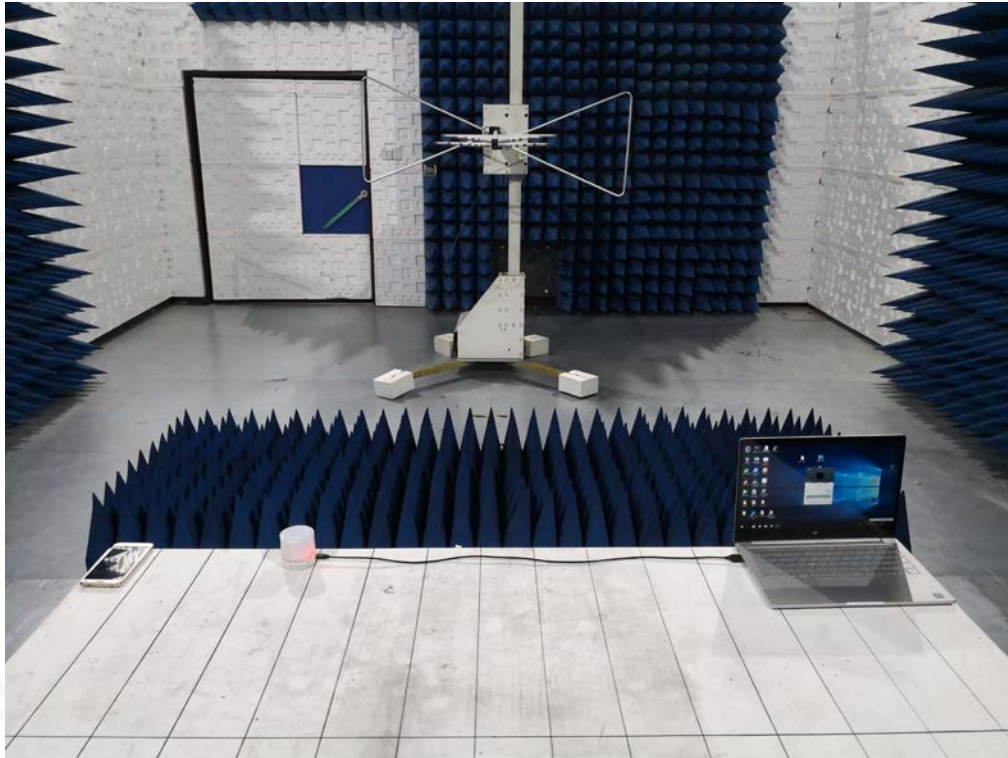
**LINE CONDUCTED EMISSION TEST SETUP**



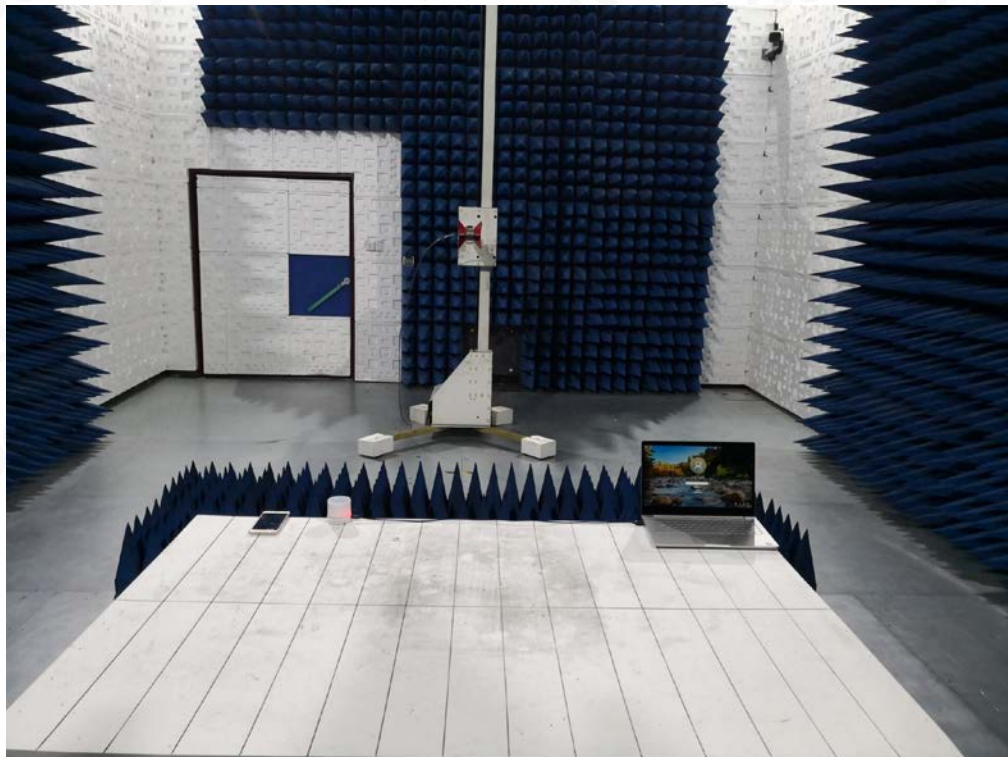
**EN 61000-4-2 ESD TEST SETUP**



EN 61000-4-3 RS TEST SETUP



EN 61000-4-3 RS-ABOVE 1G TEST SETUP



----END OF REPORT----



Attestation of Global Compliance

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# EMC Test Report

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Report No.: AGC03507190403EE02B

**PRODUCT DESIGNATION** : Bluetooth speaker  
**BRAND NAME** : N/A  
**MODEL NAME** : M09062, M08906  
**APPLICANT** : Mid Ocean Brands B.V.  
**DATE OF ISSUE** : Sep. 16, 2019  
**STANDARD(S)** : EN 55032:2015/AC:2016  
: EN 55035:2017  
**REPORT VERSION** : V1.0

## Attestation of Global Compliance (Shenzhen) Co., Ltd

**CAUTION:**

This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.



### REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 16, 2019	Valid	Extension Report

**Note:**

The original test report Ref.No. AGC03507190403EE02 dated Apr. 17, 2019 was modified on Sep. 16, 2019 to include the following changes:

Add the series model



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## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Manufacturer</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Factory</b>	Mid Ocean Brands B.V.
<b>Address</b>	7/F.,King Tower,111King Lam Street, Cheung Sha Wan, Kowloon, HongKong
<b>Product Designation</b>	Bluetooth speaker
<b>Brand Name</b>	N/A
<b>Test Model</b>	MO9062
<b>Series Model</b>	MO8906
<b>Difference description</b>	All the same except for the model name
<b>Date of test</b>	Apr. 04, 2019 to Apr. 16, 2019
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	AGCRT-EC-IT/DC(2013-03-01)

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Tested By



Calvin Liu(Liu Junchen)

Apr. 16, 2019

Reviewed By



Max Zhang(Zhang Yi)

Sep. 16, 2019

Approved By



Forrest Lei(Lei Yonggang)  
Authorized Officer

Sep. 16, 2019

## 2. SYSTEM DESCRIPTION

TEST MODE DESCRIPTION		
NO.	TEST MODE DESCRIPTION	WORST
1	TF-Card with charging	V
2	USB Discharging with charging	
3	AUX in with charging	
4	TF-Card	
5	USB Discharging	
6	AUX in	

Note: 1. V means EMI worst mode.

## 3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by ISO.

- Uncertainty of Radiated Emission,  $U_c = \pm 3.9\text{dB}$



#### 4. PRODUCT INFORMATION

<b>Housing Type</b>	Plastic and metal
<b>EUT Input Rating</b>	DC 5V by pc and DC 3.7V 450mAh by battery

I/O Port Information (Applicable Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
Micro USB/AUX in port	1	0	1
USB port	1	0	1
TF-Card Ports	1	0	1



### 5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
USB Cable	N/A	USB Cable	1m unshielded	--	--
PC	XIAOMI	PC	1m unshielded	--	--
Mobile phone	HTC	816T	--	--	--

**Note:**

1 All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.



## 6. TEST FACILITY

<b>Site</b>	Attestation of Global Compliance (Shenzhen) Co., Ltd
<b>Location</b>	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China

### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun.12, 2018	Jun.11, 2019
LISN	R&S	ESH2-Z5	100086	Jun.12, 2018	Jun.11, 2019

### TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun.12, 2018	Jun.11, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2019

### TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	Oct.25, 2018	Oct.24, 2019

### TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
SIGNAL GENERATOR	R&S	E4421B	MY433516 03	May.15, 2018	May.14, 2019
ANTENNA	SCHWARZBCK	VULB9168	D69250	Sep.28, 2017	Sep.27, 2019
POWER SENSOR	R&S	URV5-Z4	100124	May.15, 2018	May.14, 2019
POWER METER	R&S	NRVD	832378102 7	May.15, 2018	May.14, 2019
POWER AMPLIFIER	KALMUS	7100LC	04-02/17-0 6-001	Jun.12, 2018	Jun.11, 2019
RF AMPLIFIER	Milmega	AS0104-55_ 55	1004793	Jun.12, 2018	Jun.11, 2019
HORN ANTENNA	ETS LINDGREN	3117	00034609	May.26, 2018	May.25, 2019
Power Amplifier	rflight	NTWPA-256 0100	17063183	Oct.18, 2018	Oct.17, 2019
Broadband High Gain Horn Antenna	SCHWARZBEC K	BBHA 9120 J	00073	Mar.19, 2018	Mar.18, 2020





## 7. TEST ITEMS AND THE RESULTS

Test item	Test Requirement	Test Method	Class/Severity	Result
CONDUCTED EMISSION	EN 55032	EN 55032	Class B	Pass
RADIATED EMISSION	EN 55032	EN 55032	Class B	Pass
Harmonic current emission	EN 61000-3-2	EN 61000-3-2	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3	EN 61000-3-3	§5 of EN 61000-3-3	N/A
Electrostatic Discharge Immunity	EN 55035	EN 61000-4-2	± 8.0 kV (Air Discharge) ± 4.0 kV (Contact Discharge) ± 4.0 kV (Indirect Discharge)	Pass
Radiated RF Electromagnetic	EN 55035	EN 61000-4-3	3V/m with 80% AM. 1kHz Modulation.	Pass
Electrical fast transient/burst Immunity	EN 55035	EN 61000-4-4	+/- 1kV for Power Supply Lines	N/A
SURGE IMMUNITY	EN 55035	EN 61000-4-5	+/- 1kV (Line to Line) +/- 2kV (Line to Ground)	N/A
Immunity to Conducted Disturbances Induced by RF fields	EN 55035	EN 61000-4-6	3V(0.15MHz-10MHz) 3V-1V(10MHz-30MHz) 1V(30MHz-80MHz) with 80% AM. 1 kHz Modulation	N/A
Power frequency magnetic field	EN 55035	EN 61000-4-8	1A/m 50Hz or 60Hz	N/A
Voltage dips and short interruptions immunity	EN 55035	EN 61000-4-11	0degrees	N/A

**Note :** N/A means not applicable.



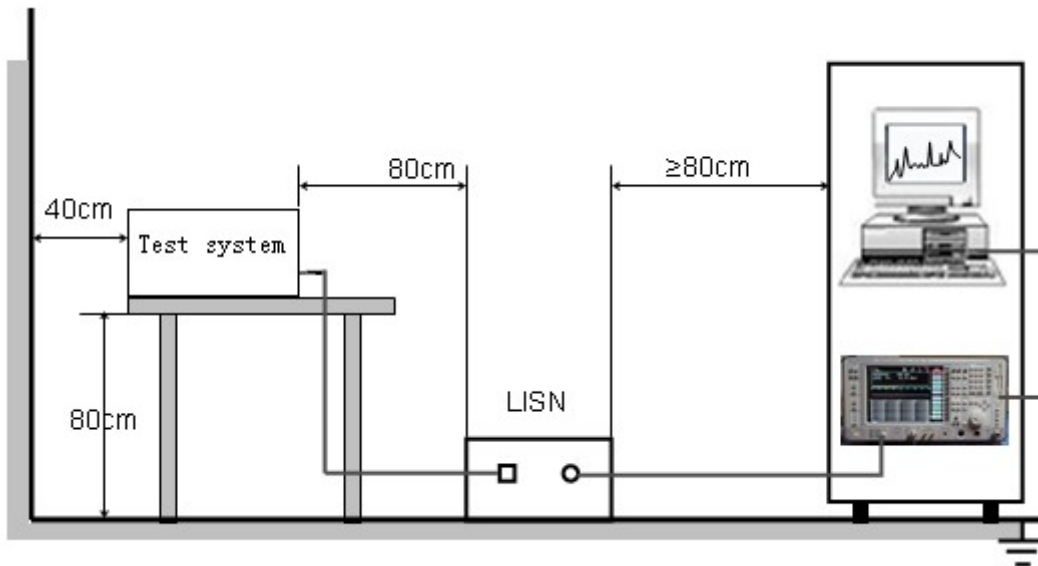
**8. EN 55032 LINE CONDUCTED EMISSION TEST**  
**8.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

**Note:**

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

**8.2. BLOCK DIAGRAM OF TEST SETUP**

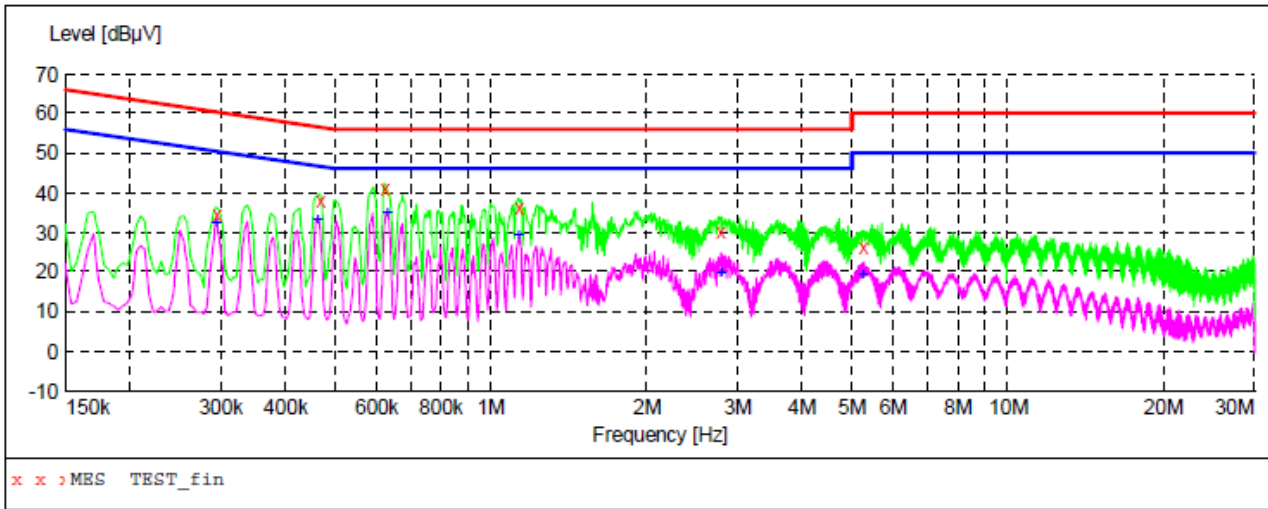


### 8.3. PROCEDURE OF LINE CONDUCTED EMISSION TEST

- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per EN55032.
- (3) All I/O cables were positioned to simulate typical actual usage as per EN55032.
- (4) The EUT received charging voltage by adapter through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- (5) All support equipments received power from a second LISN supplying power of AC 230V/50Hz, if any.
- (6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- (7) Analyzer / Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.
- (8) During the above scans, the emissions were maximized by cable manipulation.
- (9) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- (10) Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less  $-2\text{dB}$  to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.



**8.4. TEST RESULT OF LINE CONDUCTED EMISSION TEST**  
**LINE CONDUCTED EMISSION TEST-L1**



**MEASUREMENT RESULT: "TEST\_fin"**

4/11/2019 11:14AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.294000	34.30	10.2	60	26.1	QP	L1	FLO
0.466000	38.20	10.3	57	18.4	QP	L1	FLO
0.622000	41.10	10.3	56	14.9	QP	L1	FLO
1.130000	36.10	10.4	56	19.9	QP	L1	FLO
2.774000	30.50	10.4	56	25.5	QP	L1	FLO
5.246000	26.20	10.4	60	33.8	QP	L1	FLO

**MEASUREMENT RESULT: "TEST\_fin2"**

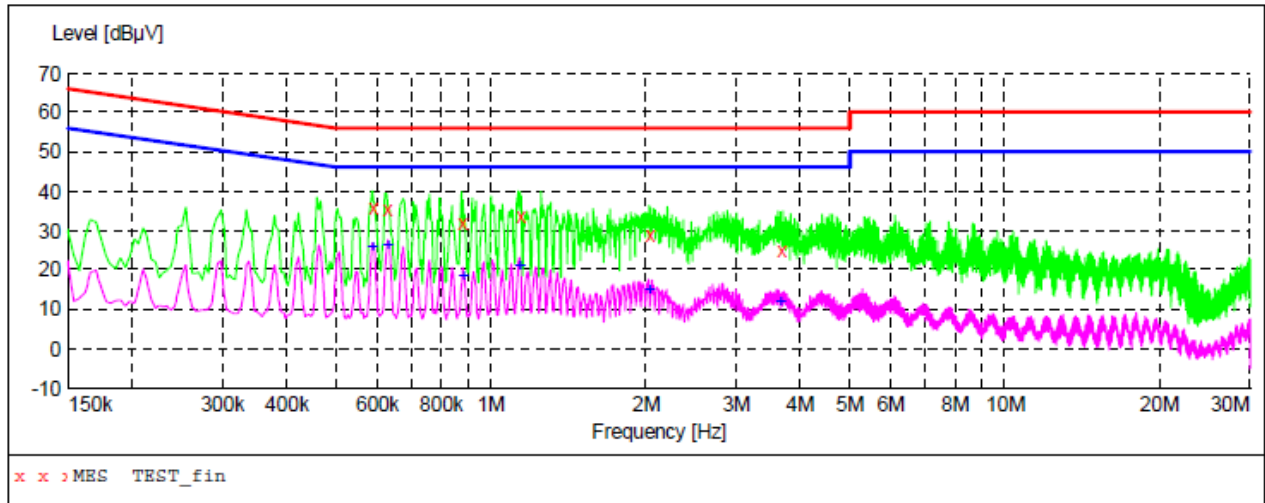
4/11/2019 11:14AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.294000	32.10	10.2	50	18.3	AV	L1	FLO
0.462000	33.50	10.3	47	13.2	AV	L1	FLO
0.630000	35.10	10.3	46	10.9	AV	L1	FLO
1.130000	29.40	10.4	46	16.6	AV	L1	FLO
2.786000	19.90	10.4	46	26.1	AV	L1	FLO
5.246000	19.40	10.4	50	30.6	AV	L1	FLO

**RESULT: PASS**



LINE CONDUCTED EMISSION TEST-N



**MEASUREMENT RESULT: "TEST\_fin"**

4/11/2019 11:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.586000	36.00	10.3	56	20.0	QP	N	FLO
0.626000	35.40	10.3	56	20.6	QP	N	FLO
0.874000	31.90	10.4	56	24.1	QP	N	FLO
1.138000	33.60	10.4	56	22.4	QP	N	FLO
2.034000	28.90	10.4	56	27.1	QP	N	FLO
3.662000	25.20	10.4	56	30.8	QP	N	FLO

**MEASUREMENT RESULT: "TEST\_fin2"**

4/11/2019 11:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.586000	25.80	10.3	46	20.2	AV	N	FLO
0.630000	26.10	10.3	46	19.9	AV	N	FLO
0.882000	18.30	10.4	46	27.7	AV	N	FLO
1.134000	21.20	10.4	46	24.8	AV	N	FLO
1.138000	21.00	10.4	46	25.0	AV	N	FLO
2.026000	15.20	10.4	46	30.8	AV	N	FLO
3.662000	11.90	10.4	46	34.1	AV	N	FLO

**RESULT: PASS**



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## 9. EN 55032 RADIATED EMISSION TEST

### 9.1. LIMITS OF RADIATED DISTURBANCES

#### AT 10M DISTANCES

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m Q.P.)
30-230	10	30.00
230-1000	10	37.00

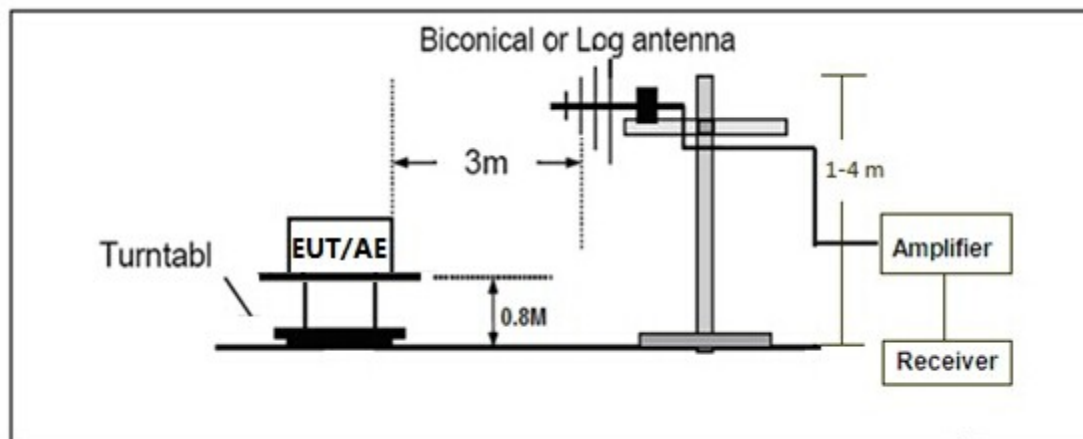
#### AT 3M DISTANCES

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m Q.P.)
30-230	3	40.00
230-1000	3	47.00

Note: The lower limit shall apply at the transition frequency.

### 9.2. BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



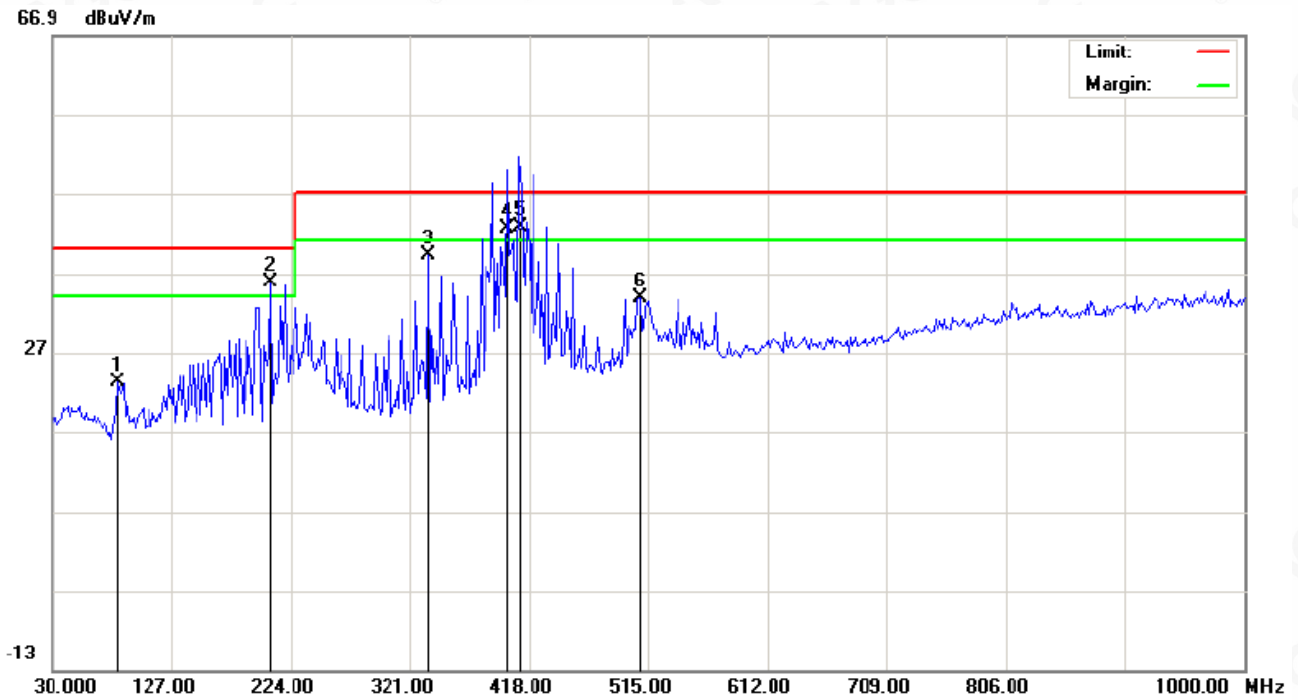
### 9.3. PROCEDURE OF RADIATED EMISSION TEST

- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per EN 55032.
- (3) All I/O cables were positioned to simulate typical actual usage as per EN 55032.
- (4) The EUT was connected to mobile phone for playing music.
- (5) The antenna was placed at 3 meter away from the EUT as stated in EN 55032. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- (6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- (7) The test mode(s) were scanned during the test:
- (8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.



### 9.4. TEST RESULT OF RADIATED EMISSION TEST

#### Radiated Emission Test at 3m Distance-Horizontal



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		83.3500	8.27	14.95	23.22	40.00	-16.78	peak			
2	*	207.8333	19.35	16.52	35.87	40.00	-4.13	peak			
3		335.5500	18.46	20.72	39.18	47.00	-7.82	peak			
4	!	399.9778	19.71	22.98	42.69	47.00	-4.31	QP			
5	!	410.6500	19.67	23.19	42.86	47.00	-4.14	QP			
6		508.5333	8.66	25.16	33.82	47.00	-13.18	peak			

**RESULT: PASS**

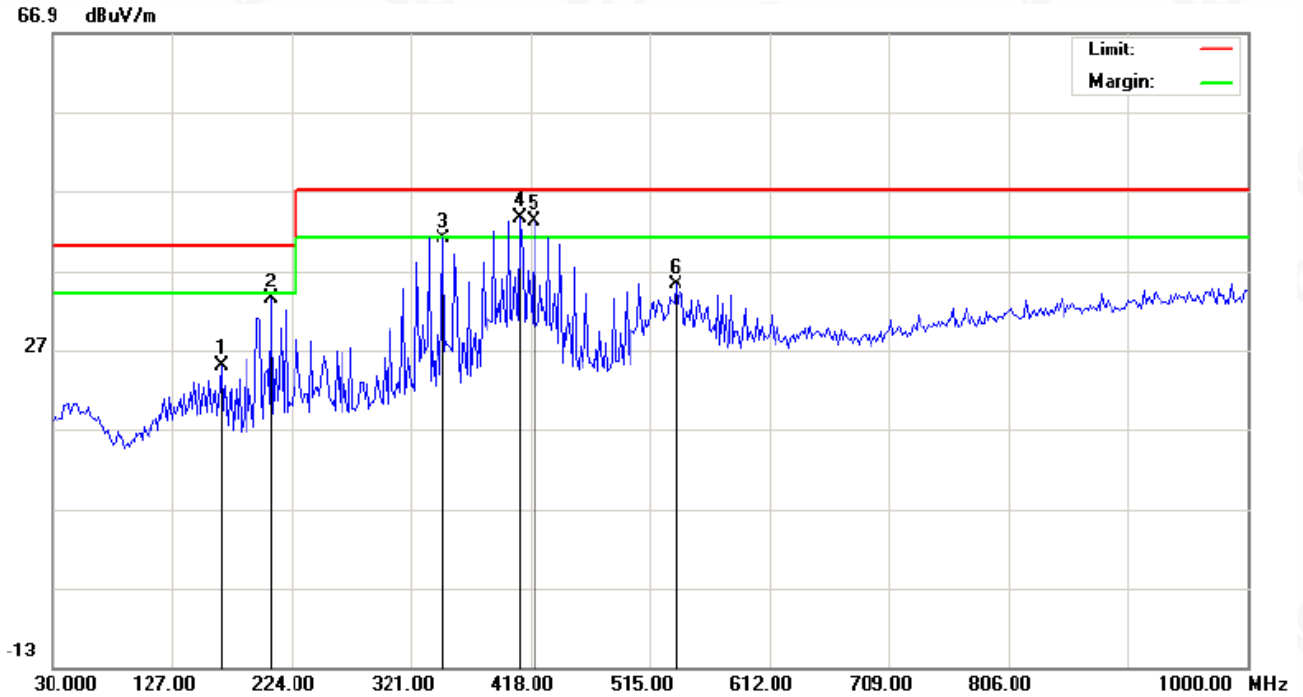


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Radiated Emission Test at 3m Distance-Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		167.4167	6.62	18.43	25.05	40.00	-14.95	peak			
2		207.8333	16.95	16.52	33.47	40.00	-6.53	peak			
3	!	346.8667	19.91	21.12	41.03	47.00	-5.97	peak			
4	*	409.9167	20.33	23.18	43.51	47.00	-3.49	peak			
5	!	421.2333	19.88	23.41	43.29	47.00	-3.71	peak			
6		536.0167	9.59	25.70	35.29	47.00	-11.71	peak			

**RESULT: PASS**

Note:

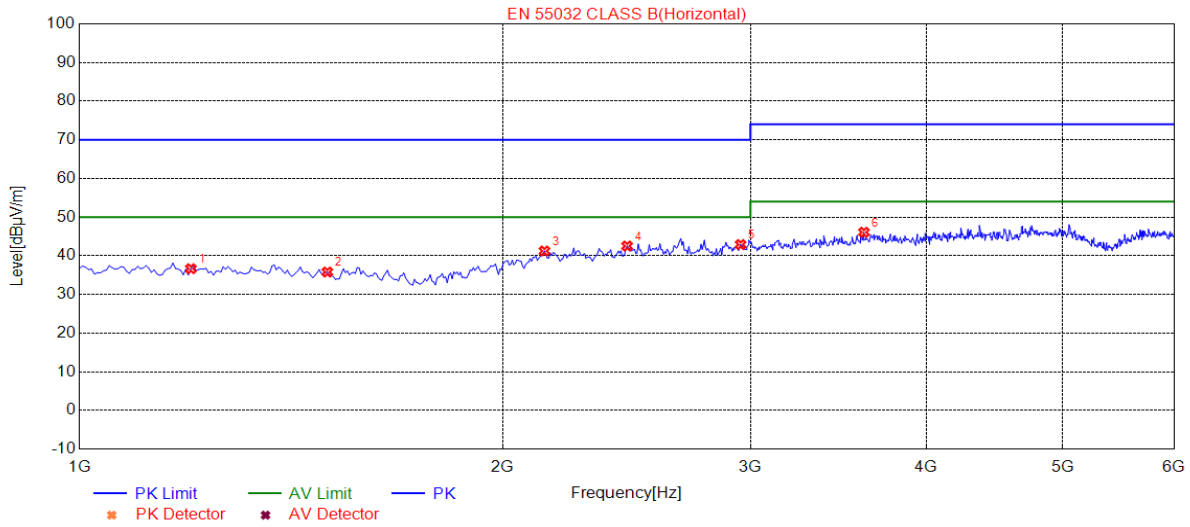
Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)

Factor(dB/m)=Antenna Factor(dB/m)+Cable loss(dB)+Attenuation(dB)for Attenuator

Margin= Limit -Level



RADIATED EMISSION ABOVE 1GHZ – HORIZONTAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1200.20	36.65	-16.84	70.00	33.35	100	80	Horizontal
2	1500.50	35.79	-17.12	70.00	34.21	150	70	Horizontal
3	2141.14	41.23	-11.23	70.00	28.77	100	40	Horizontal
4	2451.45	42.52	-9.92	70.00	27.48	150	290	Horizontal
5	2951.95	42.90	-9.37	70.00	27.10	100	110	Horizontal
6	3612.61	46.08	-7.35	74.00	27.92	100	190	Horizontal

**RESULT: PASS**



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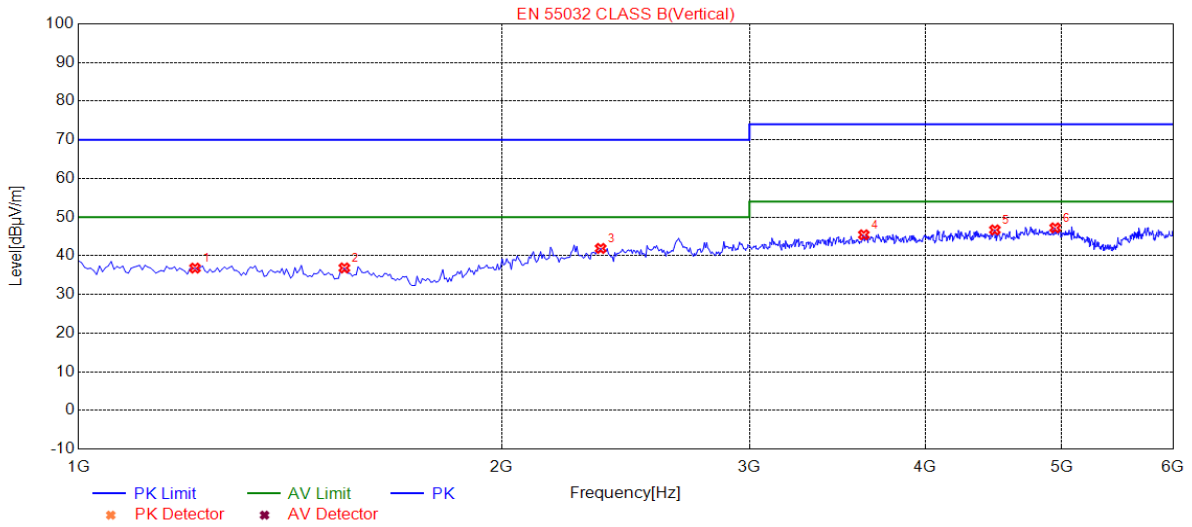
Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

RADIATED EMISSION ABOVE 1GHZ – VERTICAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1210.21	36.81	-16.85	70.00	33.19	150	150	Vertical
2	1545.54	36.85	-16.65	70.00	33.15	100	10	Vertical
3	2351.35	41.90	-10.34	70.00	28.10	100	280	Vertical
4	3617.61	45.43	-7.34	74.00	28.57	100	290	Vertical
5	4483.48	46.69	-5.24	74.00	27.31	150	10	Vertical
6	4948.94	47.22	-4.77	74.00	26.78	100	20	Vertical

RESULT: PASS



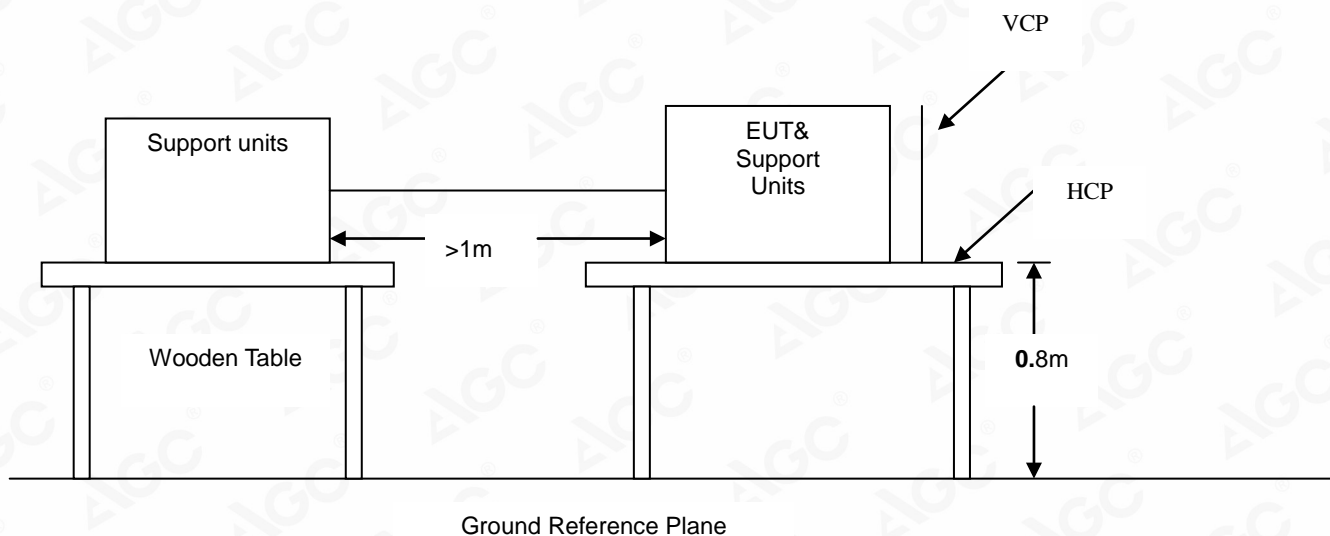
## 10. EN 61000-4-2 ESD IMMUNITY TEST

### ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	Enclosure
Basic Standard	EN 61000-4-2
Test Level	± 8.0 kV (Air Discharge) ± 4.0 kV (Contact Discharge) ± 4.0 kV (Indirect Discharge)
Standard require	B
Tester	Calvin
Temperature	23.5°C
Humidity	51.4%

### 10.1. BLOCK DIAGRAM OF TEST SETUP

(The 470 k ohm resistors are installed per standard requirement)



## 10.2. TEST PROCEDURE

The test procedure shall be in accordance with EN 61000-4-2:2009. Electrostatic discharges shall be applied only to points and surfaces of the EUT which are expected to be touched during normal operation, including user access operations specified in the user manual, for example cleaning or adding consumables when the EUT is powered. The application of discharges to the contacts of open connectors is not required.

The number of test points is EUT dependent. Sub clause 8.3.1 and Clause A.5 of EN 61000-4-2:2009 shall be taken into consideration when selecting test points, paying particular attention to keyboards, dialling pads, power switches, mice, drive slots, card slots, the areas around communication ports, etc. When applying direct discharges to a portable or handheld battery-powered EUT with a display screen, it may not be possible to observe the screen for a given EUT orientation. If observation of the screen is necessary during this test, the EUT may be mounted vertically using non-metallic supports.

**Note:** As per the A2 to EN 61000-4-2, a bleed resistor cable is connected between the EUT and HCP during the test.

The electrostatic discharges were applied as follows:

Voltage	Coupling	Test Performance	Result
±4kV	Contact Discharge	No function loss	A
±4kV	Indirect Discharge HCP (Front)	No function loss	A
±4kV	Indirect Discharge HCP (Left)	No function loss	A
±4kV	Indirect Discharge HCP (Back)	No function loss	A
±4kV	Indirect Discharge HCP (Right)	No function loss	A
±4kV	Indirect Discharge VCP (Front)	No function loss	A
±4kV	Indirect Discharge VCP (Left)	No function loss	A
±4kV	Indirect Discharge VCP (Back)	No function loss	A
±4kV	Indirect Discharge VCP (Right)	No function loss	A
±8kV	Air Discharge	No function loss	A



**10.3. PERFORMANCE & RESULT**

<b>Criteria A:</b>	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
<b>Criteria B:</b>	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
<b>Criteria C:</b>	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

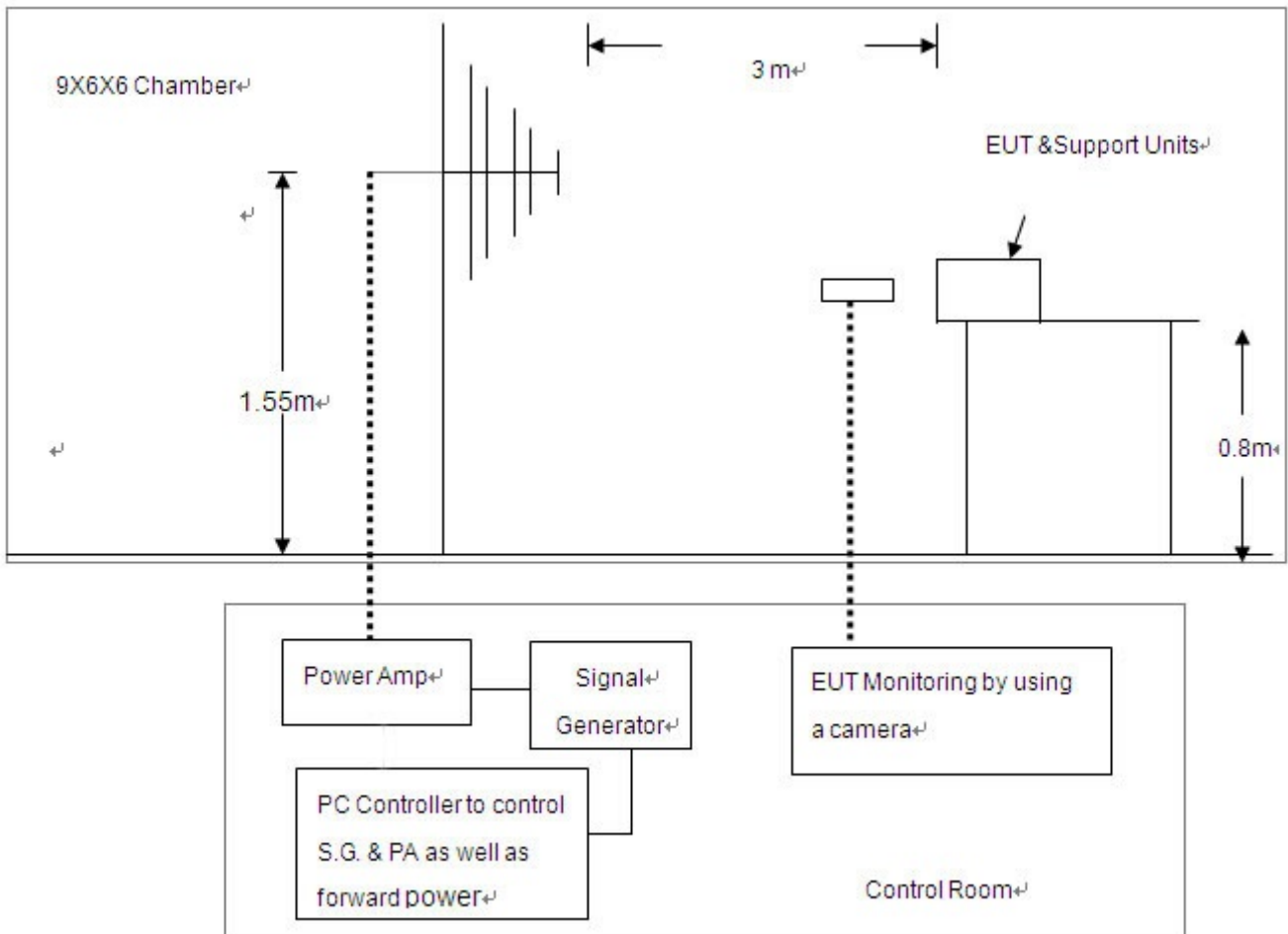
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## 11. EN 61000-4-3 RS IMMUNITY TEST

### RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	Enclosure
Basic Standard	EN 61000-4-3
Test Level:	3V/m with 80% AM. 1kHz Modulation.
Standard require	A
Tester	Calvin
Temperature	24.8°C
Humidity	54.3%

#### 11.1. BLOCK DIAGRAM OF TEST SETUP



### 11.2. TEST PROCEDURE

The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per EN 61000-4-3.

EUT worked with resistance load, and make sure EUT worked normally.

Setting the testing parameters of RS test software per EN 61000-4-3.

Performing the test at each side of with specified level (3V/m) at 1% steps and test frequency from 80MHz to 1000MHz

Recording the test result in following table.

#### EN 61000-4-3 Final test conditions:

Test level: 3V/m

Steps: 1 % of fundamental

Dwell Time: 1 sec

Range (MHz)	Field	Modulation	Polarity	Position	Test Performance	Result
80-1000	3V/m	AM	H/V	Front	No function loss	A
80-1000	3V/m	AM	H/V	Left	No function loss	A
80-1000	3V/m	AM	H/V	Back	No function loss	A
80-1000	3V/m	AM	H/V	Right	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Front	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Left	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Back	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Right	No function loss	A

Frequency ( $\pm 1\%$ ) for Spot test.

### 11.3. PERFORMANCE & RESULT

<b>Criteria A:</b>	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
<b>Criteria B:</b>	The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
<b>Criteria C:</b>	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

PASS

FAIL



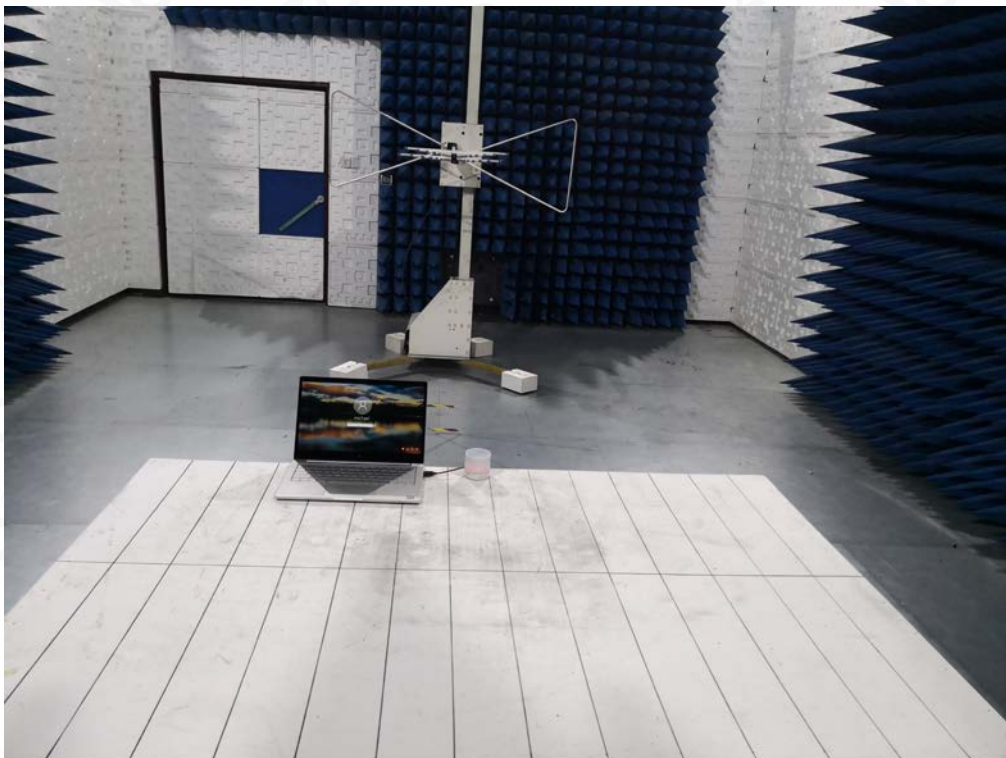


## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

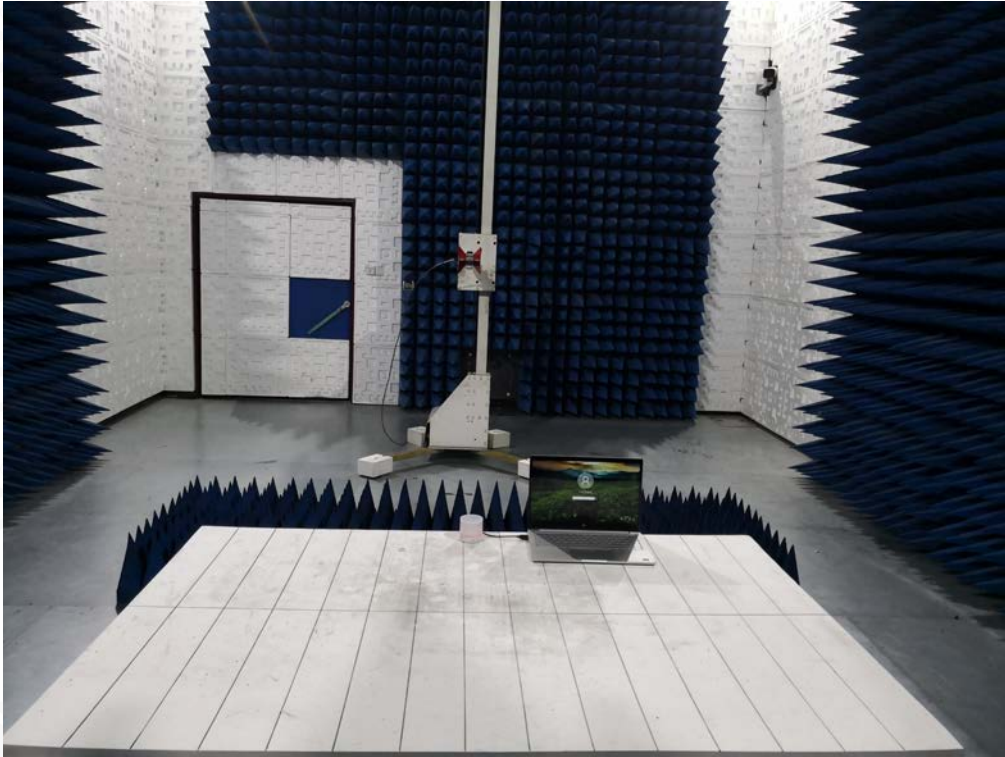
### LINE CONDUCTED EMISSION TEST SETUP



EN 55032 RADIATED EMISSION TEST SETUP



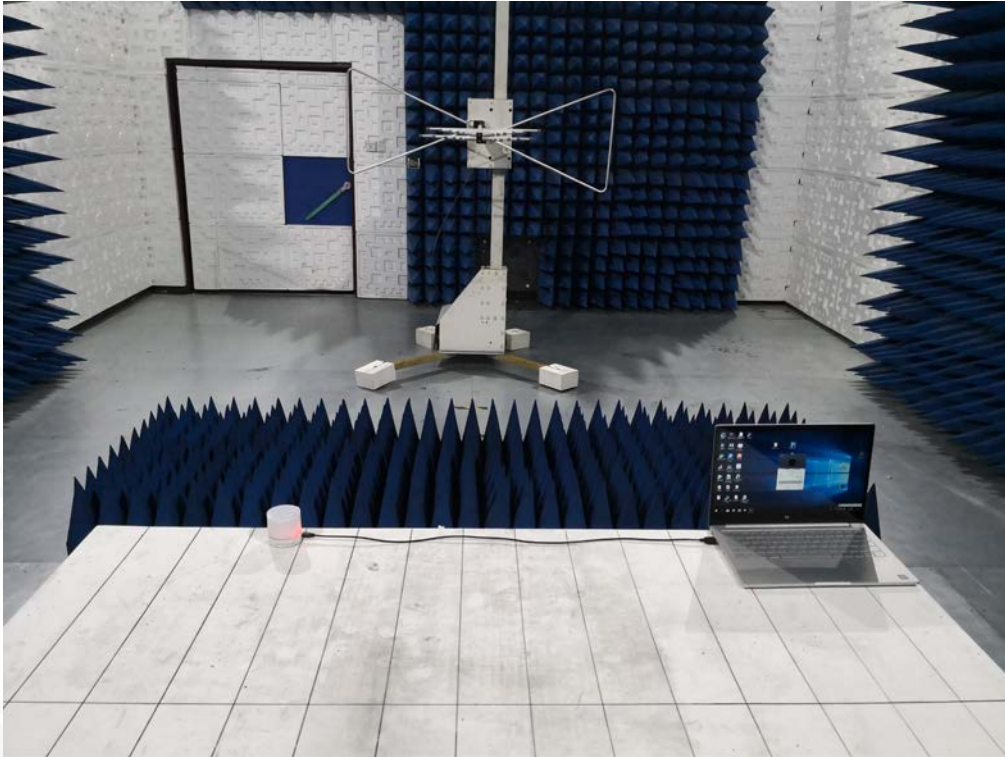
EN 55032 RADIATED EMISSION-ABOVE 1G TEST SETUP



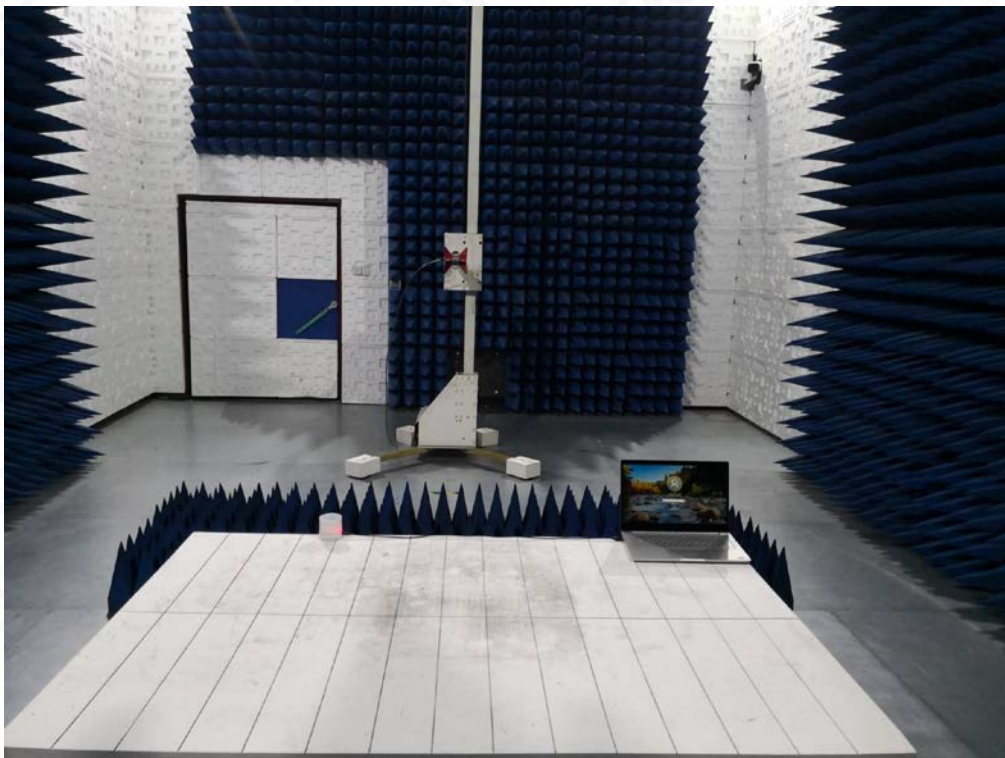
EN 61000-4-2 ESD IMMUNITY TEST SETUP



EN 61000-4-3 RS IMMUNITY TEST SETUP



EN 61000-4-3 RS IMMUNITY-ABOVE 1G TEST SETUP



----END OF REPORT----

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# EUT PHOTO

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Report No.: AGC03507190403AP01B

**PRODUCT DESIGNATION** : Bluetooth speaker  
**BRAND NAME** : N/A  
**MODEL NAME** : M09062, M08906  
**APPLICANT** : Mid Ocean Brands B.V.  
**DATE OF ISSUE** : Sep. 16, 2019  
**REPORT VERSION** : V1.0

## Attestation of Global Compliance (Shenzhen) Co., Ltd

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### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 16, 2019	Valid	Extension Report

**Note:**

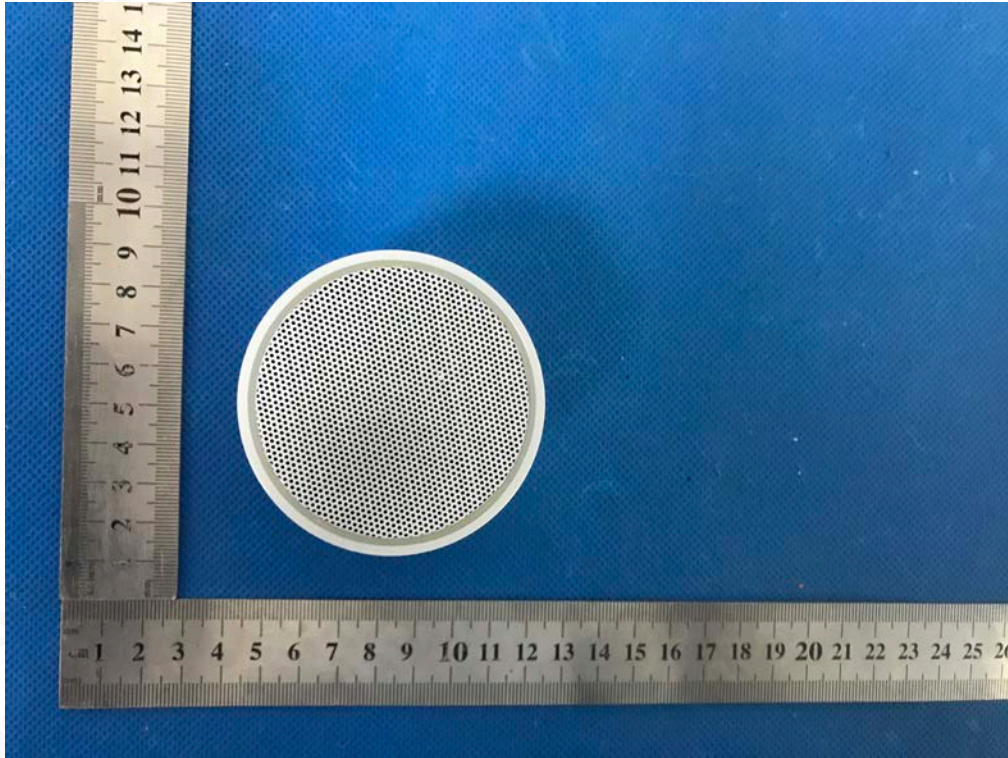
The original test report Ref.No. AGC03507190403AP01 dated Apr. 17, 2019 was modified on Sep. 16, 2019 to include the following changes:

Add the series model

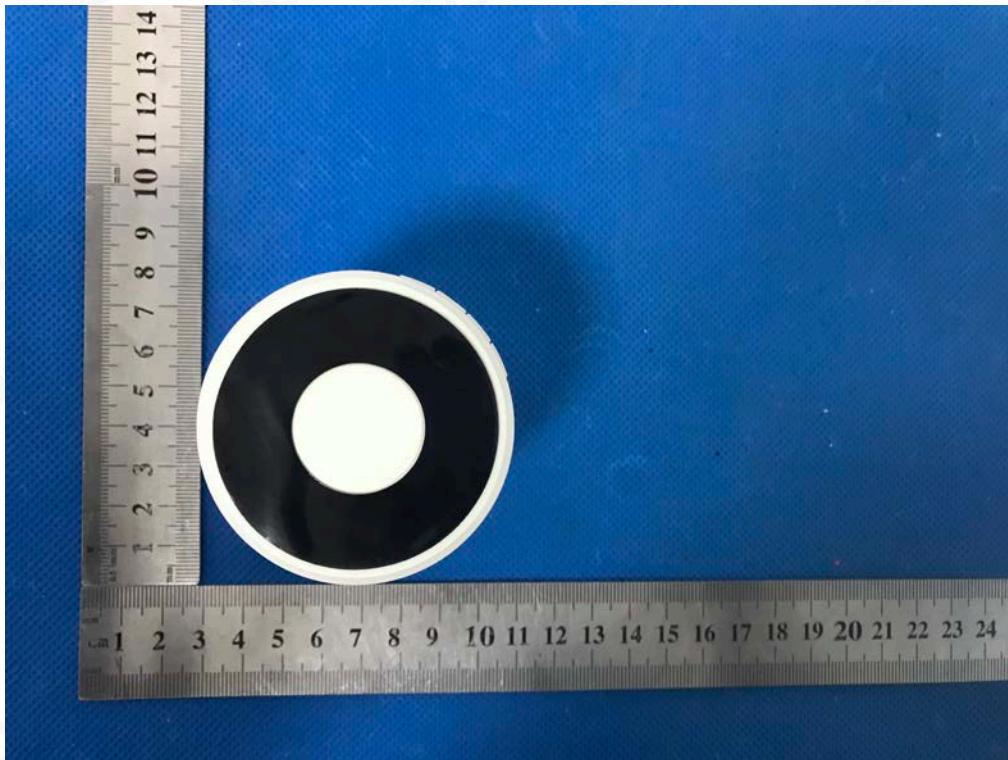


**PHOTO GRAPHS OF EUT**

TOP VIEW OF EUT



BOTTOM VIEW OF EUT



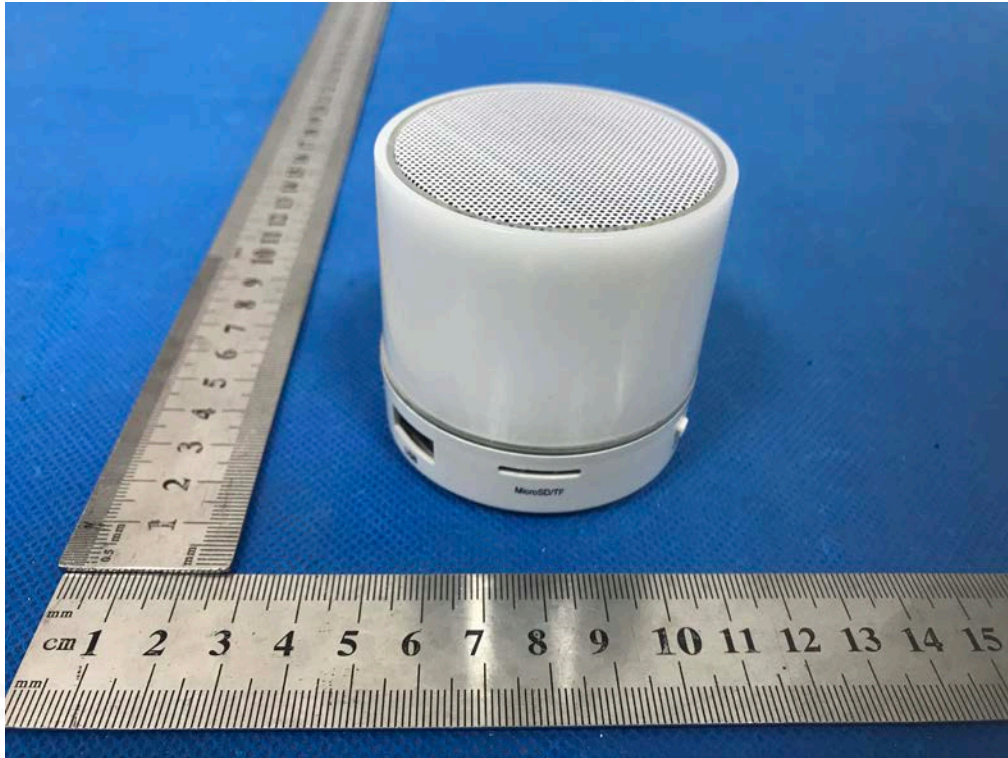
FRONT VIEW OF EUT



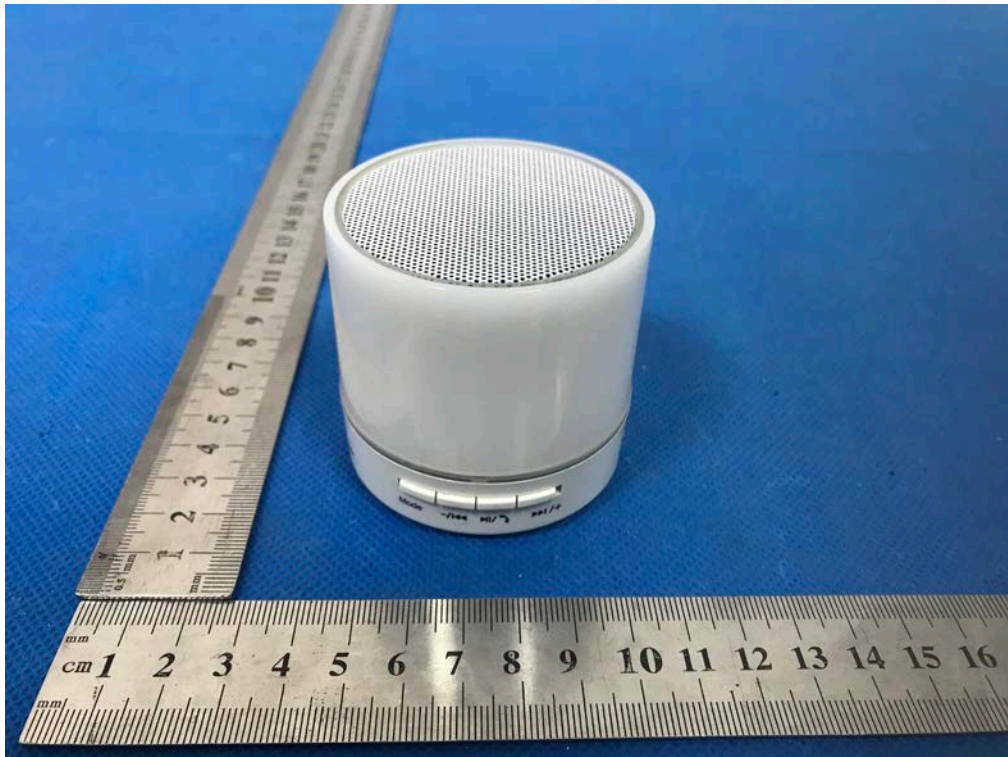
BACK VIEW OF EUT



LEFT VIEW OF EUT

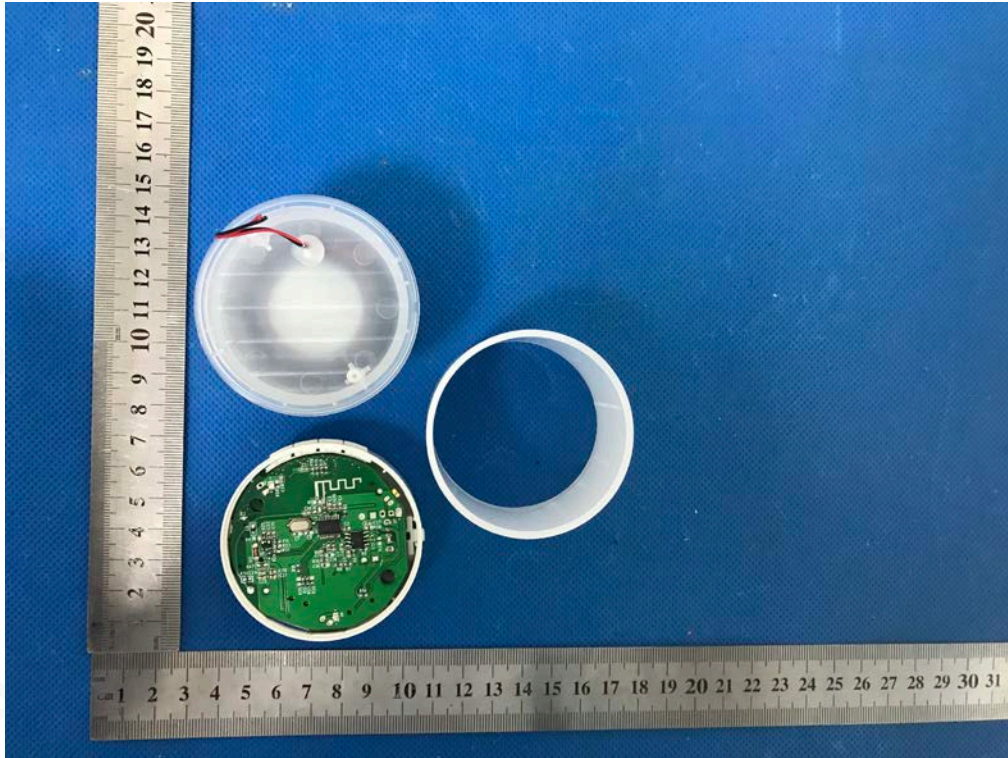


RIGHT VIEW OF EUT

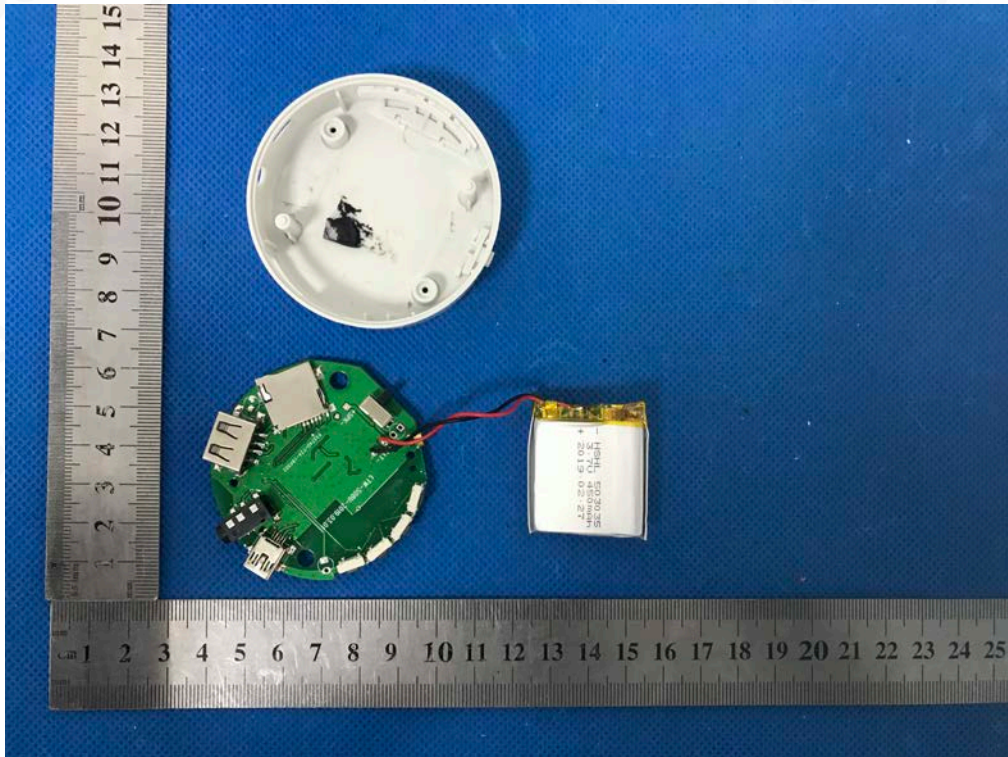




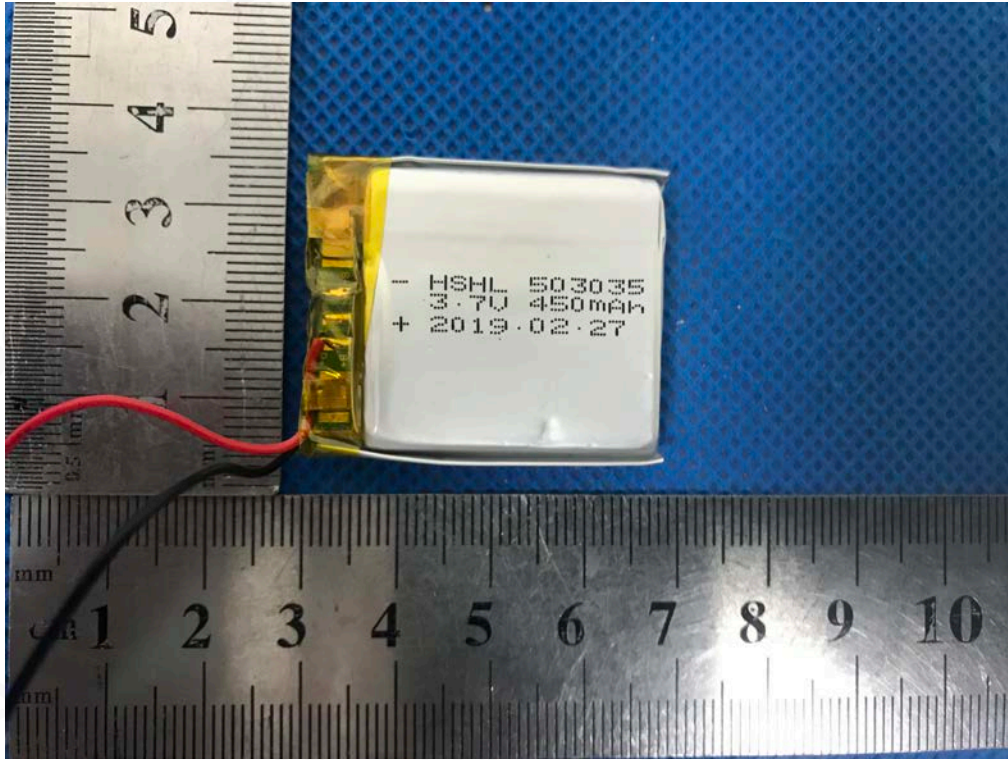
OPEN VIEW OF EUT(FIGURE 1)



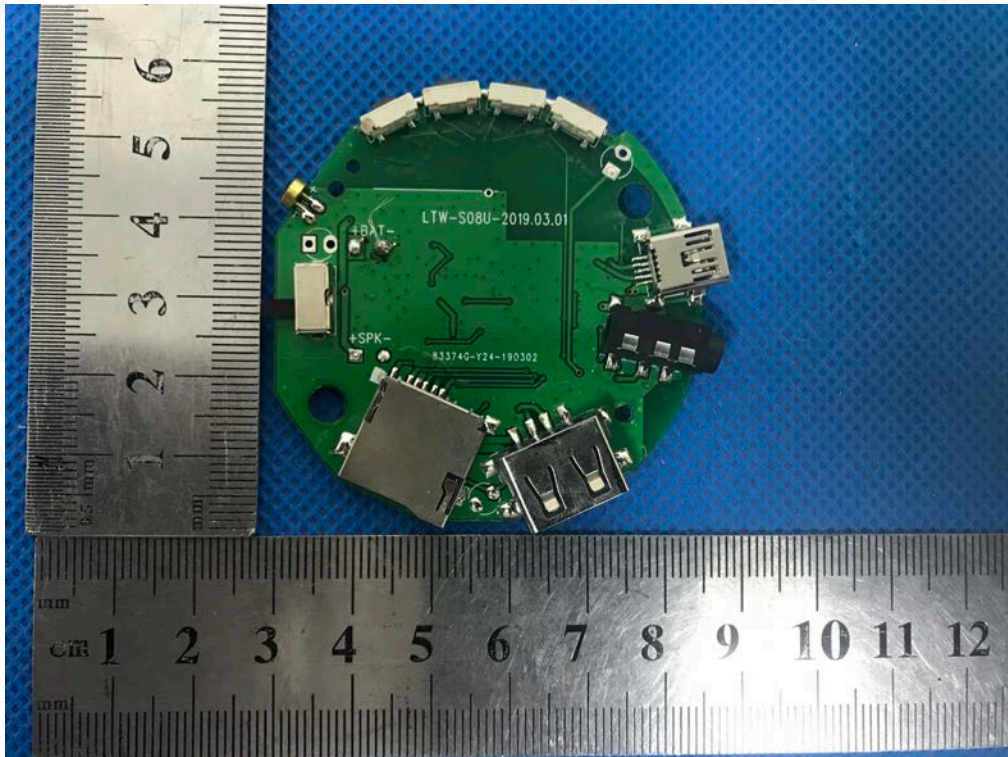
OPEN VIEW OF EUT(FIGURE 2)



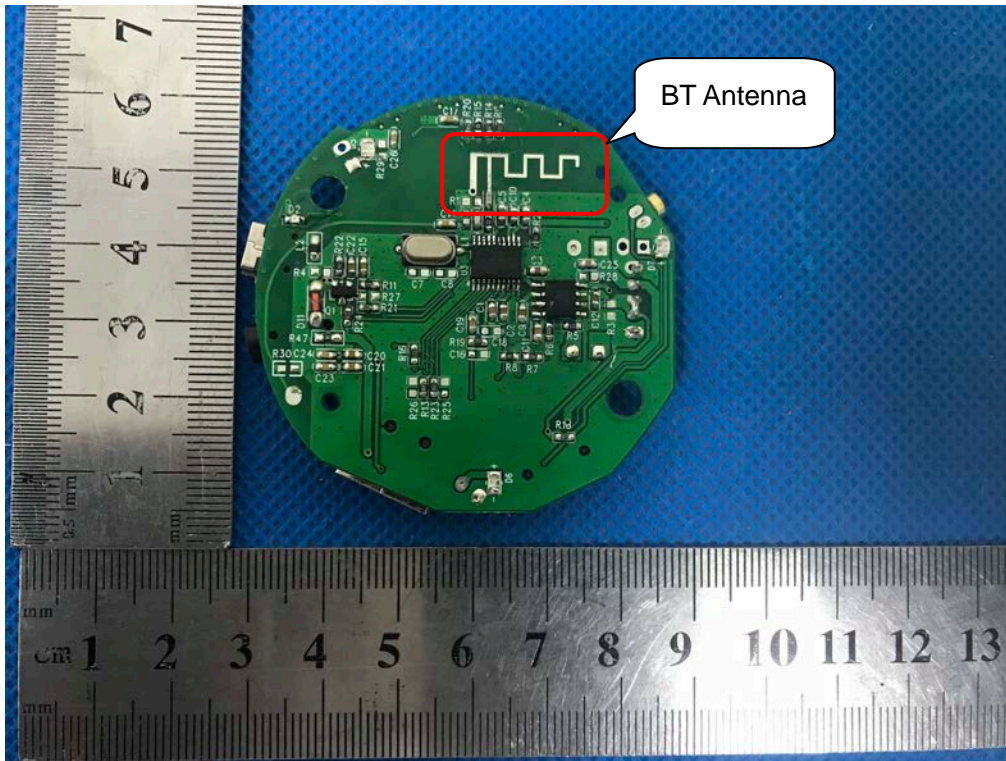
VIEW OF BATTERY



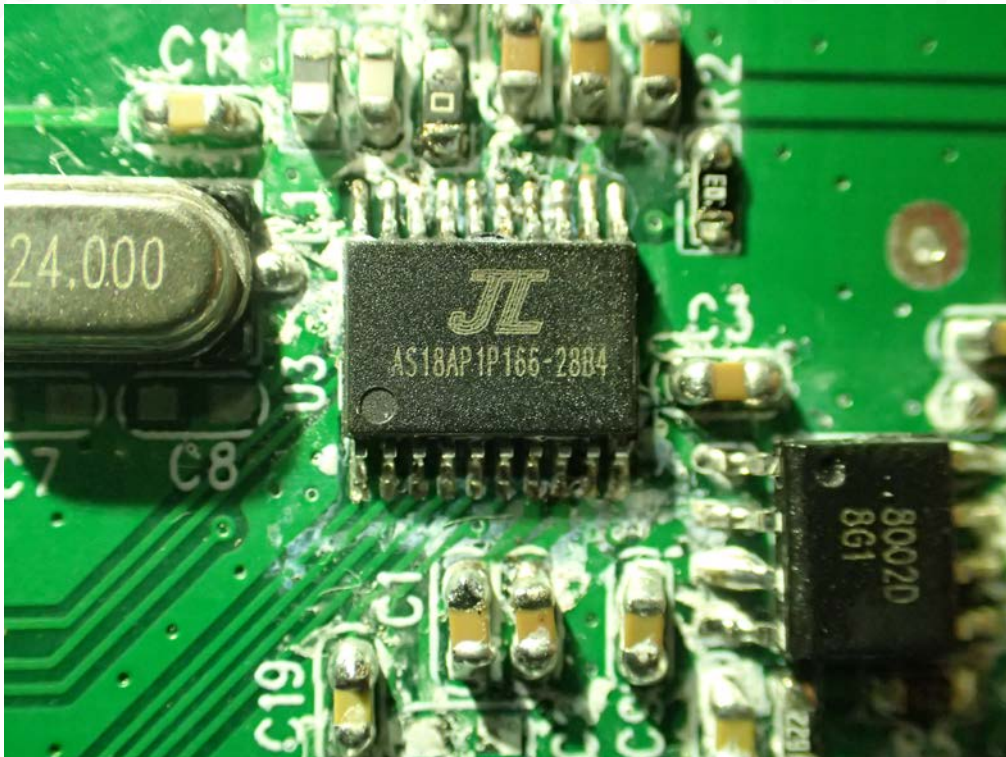
INTERNAL VIEW OF EUT(FIGURE 1)



INTERNAL VIEW OF EUT(FIGURE 2)



INTERNAL VIEW OF EUT(FIGURE 3)



----END OF REPORT----

