



EMC TEST REPORT OF ETSI EN 301 489-1/-17

Product: bluetooth anti-lost

Model: AT01

Report No.: HTT150905061E-1

Issued Date: Sep.23,2015

Issued for:

Issued By:

Shenzhen HTT Technology Co.,Ltd.

**7F,Guangfu Building,Baoyuan Road,Xixiang,Baoan District,
Shenzhen,Guangdong,China**

Date of Test: Sep.16,2015 ~ Sep.23,2015

Date of Issue: Sep.23,2015

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Reviewed By Kevin
Kevin



Note: The results detailed in this test report relate only to the specific sample(s) tested. It is the Application's responsibility to ensure that all production units are manufactured with equivalent EMC characteristics. This report is not to be reproduced except in full, without written approval from HTT Technology.



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1.0 General Information

1.1 Client Information

Application:	
Address of Application:	
Manufacturer:	
Address of Manufacturer:	

1.2 General Description of E.U.T.

Product Name:	bluetooth anti-lost
Model:	AT01
Additional Model:	AT02、AT03、AT04、AT05、AT06、AT07、AT08、AT09、AT10、AT11、AT12、AT13、AT14、AT15、AT16、AT17、AT18、AT19、AT20、AT21、AT22、AT23、AT24、AT25、AT26、AT27、AT28、AT29、AT30
Trade Mark:	N/A
Frequency range:	2402 MHz-2480 MHz (Channel Number: 40, Channel Frequency=2402+2(K-1), K=1, 2, 340)
Channel Spacing	2MHz
Modulation Technology	GFSK
Module Channel	40
Bluetooth Version	BT V4.0
Power Supply:	DC 3V by battery (220mAh)

Model Difference:	The models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.
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Note: N.A. means Not Applicable; E.U.T. means Equipment Under Test

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1.3 Test Facility

Name :	Shenzhen HTT Technology Co.,Ltd.
Address:	7F,Guangfu Building,Baoyuan Road,Xixiang,Baoan District,Shenzhen,Guangdong,China

1.4 List of Ports

Port	Description	Classification ¹	Maximum cable Length	Cable Type
--	--	--	--	--

Note ¹ports shall be classified as ac power, dc power or signal/control port.

²Maximum cable length corresponding to the appropriate ports shall be classified as $\leq 3\text{m}$ or $> 3\text{m}$.

1.5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	MU
1.	Temperature	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0\%$
3.	Spurious emissions, conducted	$\pm 3.7\text{dB}$
4.	Spurious emissions, radiated	$\pm 4.5\text{dB}$

1.6 Ancillary and Peripheral Devices

Description	Designation	Serial No.	Manufacturer
N.A.	-		

Note: An Equipment (apparatus) used in connection with a receiver or transmitter is considered as an ancillary Equipment (apparatus) if:

- The equipment is intended for use in conjunction with a receiver or transmitter to provide additional operational and/or control features to the radio equipment. (e.g. to extend control to another position or location); and
- The equipment cannot be used on a stand alone basis to provide user functions independently of a receiver or transmitter; and
- The receiver or transmitter to which it is connected, is capable of providing some intended operation such as transmitting and/or receiving without the ancillary equipment (i.e. it is not a sub-unit of the main equipment essential to the main equipment basic functions).

1.7 Test Standards

ETSI EN 301 489-1 v1.9.2 (2011-09)
Electromagnetic compatibility and Radio spectrum Matters (ERM);
Electromagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common technical requirements
ETSI EN 301 489-17 v2.2.1 (2012-09)
Electromagnetic compatibility and Radio spectrum Matters (ERM);
Electromagnetic Compatibility (EMC) standard for radio equipment;
Part 17: Specific conditions for Broadband Data Transmission Systems

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.



2.0 Technical Test

2.1 Summary of Test Results

No deviations from the technical specification(s) were ascertained in the course of the tests Performed	
Final Verdict: (Only “Passed” if all Measurements are “Passed”)	Pass

2.2 Test Report

Emission (EMI)

EMI Phenomenon	Port	Requirement		Applicability
		Standard	Basic Standard	
Conducted Interference Voltage	AC Mains	ETSI EN301 489-1 v 1.9.2 Clause 8.4	EN 55022: 2010	Applicable
Conducted Interference Voltage	DC	ETSI EN301 489-1 v 1.9.2 Clause 8.3	EN 55022: 2010	N.A.
Radiated Interference Field Strength 30~1000MHz	Enclosure of Ancillary equipment	ETSI EN301 489-1 v 1.9.2 Clause 8.2	EN 55022: 2010	Applicable
Harmonic Current Emissions	AC Mains Input Port	ETSI EN301 489-1 v 1.9.2 Clause 8.5	EN 61000-3-2: 2006+ A2: 2009	Applicable
Flicker & Voltage Fluctuation	AC Mains Input Port	ETSI EN301 489-1 v 1.9.2 Clause 8.6	EN 61000-3-3:2008	Applicable
Conducted Interference Voltage	Telecommunication port	ETSI EN301 489-1 v 1.9.2 Clause 8.7	EN 55022: 2010	N.A.

Immunity (EMS)

EMS Phenomenon	Port	Requirement		Applicability
		Standard	Basic Standard	
Electronic Charging (ESD)	Enclosure	ETSI EN301 489-1 v 1.9.2 Clause 9.3	EN 61000-4-2:2009	Applicable
RF-Electro-Magnetic Field	Enclosure Telecommunication	ETSI EN301 489-1 v 1.9.2 Clause 9.2	EN 61000-4-3:2010	Applicable
Fast Transients, Burst	Power Line AC/DC Telecommunication	ETSI EN301 489-1 v 1.9.2 Clause 9.4	EN61000-4-4: 2004+A1:2010	Applicable
Surge	Power Line (1 phase) Telecommunication	ETSI EN301 489-1 v 1.9.2 Clause 9.8	EN 61000-4-5:2006	Applicable
Transients & Surge Vehicular Environment	Power Line (Car Charge)	ETSI EN301 489-1 v 1.9.2 Clause 9.6	ISO 7637-2:2004	N.A.
RF Common Mode (0.15-80MHz)	Power Line AC/ DC signal Lines	ETSI EN301 489-1 v 1.9.2 Clause 9.5	EN 61000-4-6:2009	Applicable
Vol. Dips, Interruptions & Fluctuations	Input & Output AC Ports only	ETSI EN301 489-1 v 1.9.2 Clause 9.7	EN 61000-4-11:2004	Applicable



Clause 8.2 Emission Test – Radiated Emission

This test assesses that ability of ancillary equipment to limit their internal noise from being radiated from the enclosure.

According to EMC basic standard (EN 55022)

Measurement according to EMC basic standard, The test results correspond to the 3m Semi-Anechoic Chamber results.

The E.U.T. and its simulators are placed on a turntable which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The E.U.T. was positioned such that the distance from antenna to the E.U.T. was 3 meters.

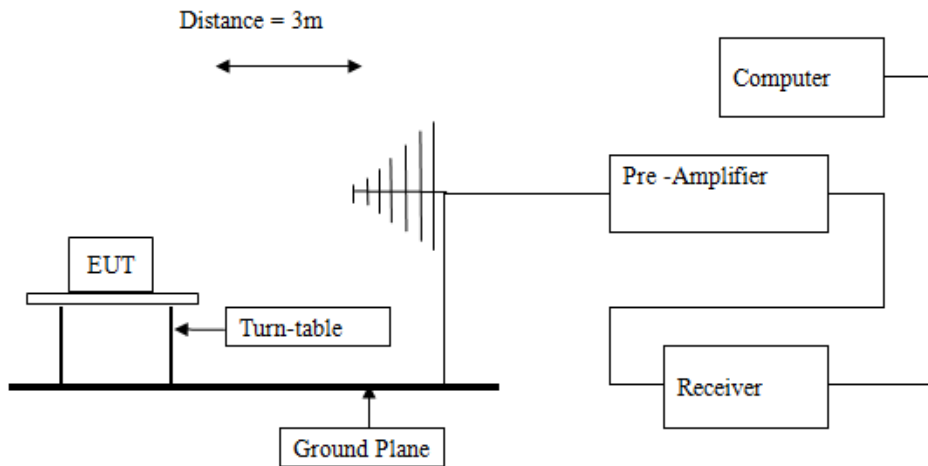
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to EN55022: 2010 on radiated measurement.

Radiated emissions were investigated over the frequency range from 30MHz to 1 GHz using a receiver bandwidth of 120kHz.

Radiated Emission was performed at an antenna to E.U.T. distance of 3 meters.

Radiated Emission Test

Block diagram of Test setup



Power line conducted Emission Limit

Frequency Range (MHz)	Distance (m)	Quasi-Peak limits (dB μ V/m)
30-230	10/3	30.0/40.0
230-1000	10/3	37.0/47.0
1000-3000	3	50 (AV) /70 (PK)
3000-6000	3	54 (AV) /74 (PK)

Note: The lower limit shall apply at the transition frequencies

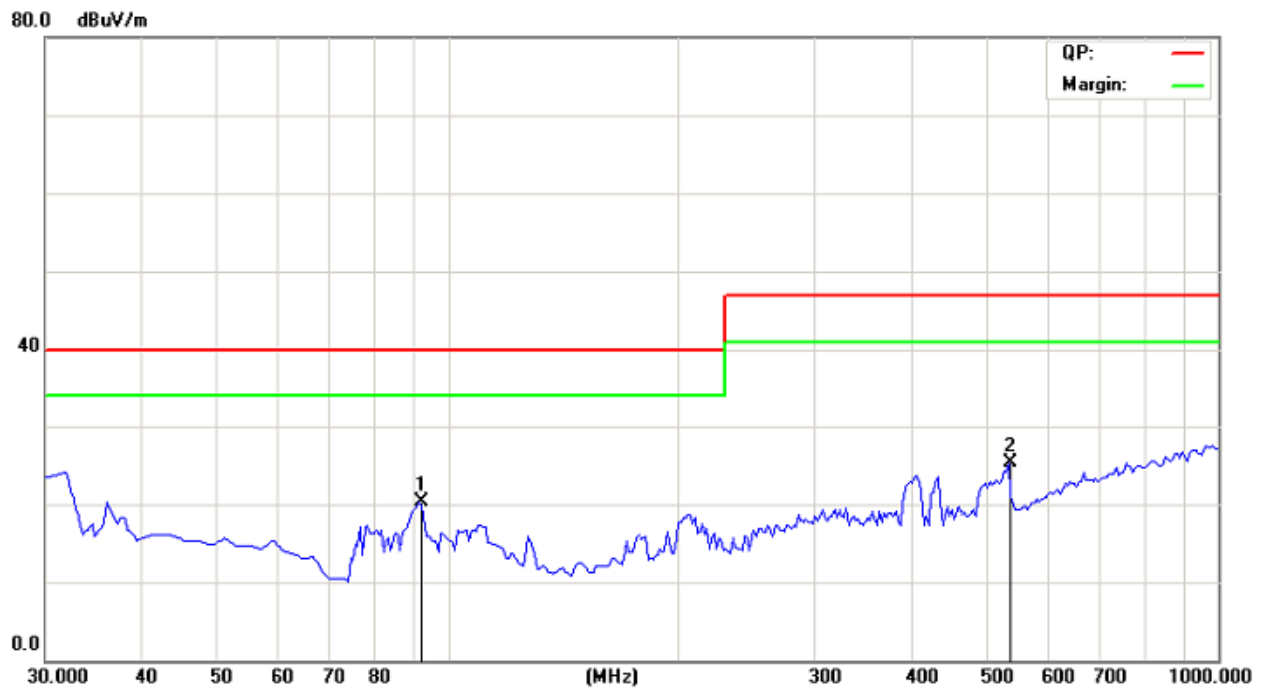
Test result

PASS

Environmental conditions: Temperature: 22° C Humidity: 53% Atmospheric pressure: 103kPa

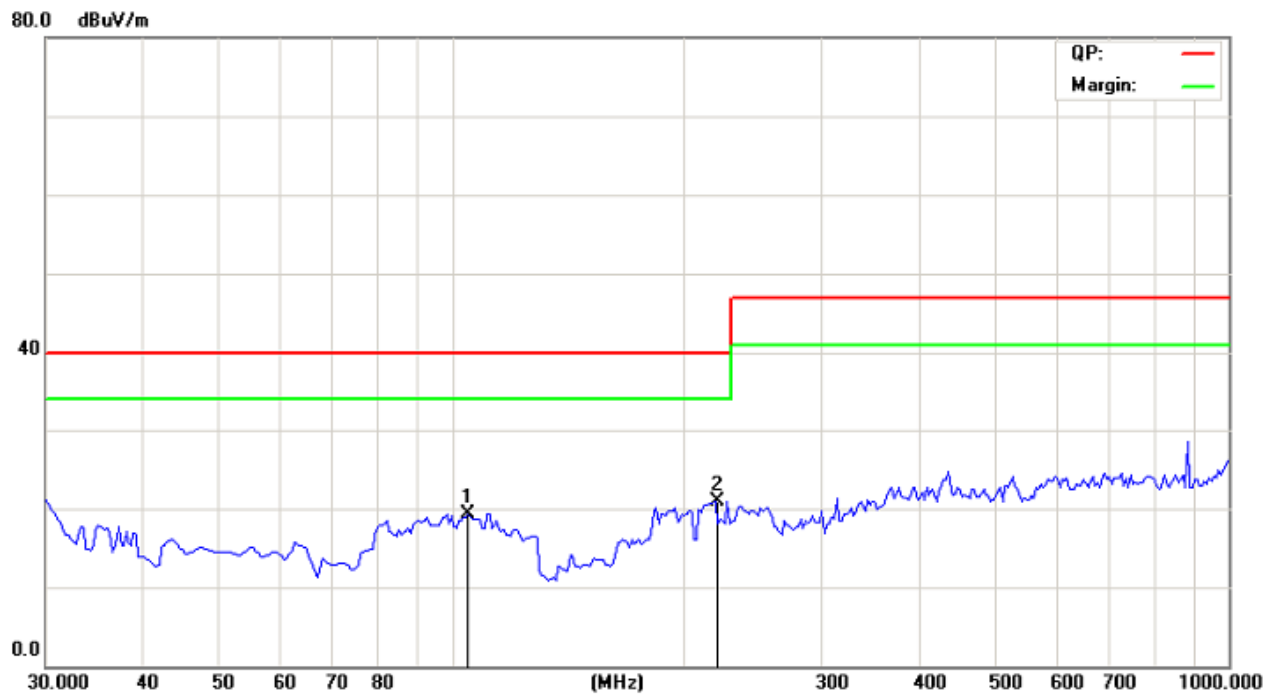


A. Radiated Emission In Horizontal (30MHz----1000MHz)

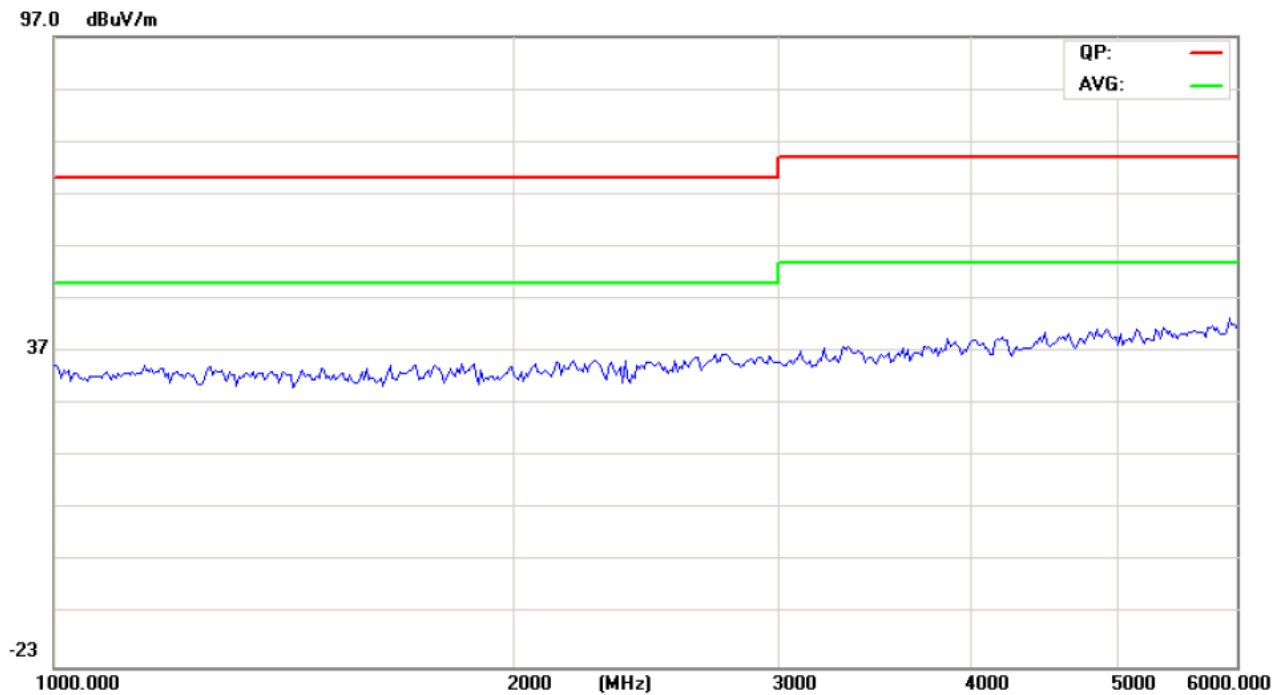


Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
91.8893	20.37	H	40.00
536.4425	26.72	H	47.00

B. Radiated Emission In Vertical (30MHz----1000MHz)

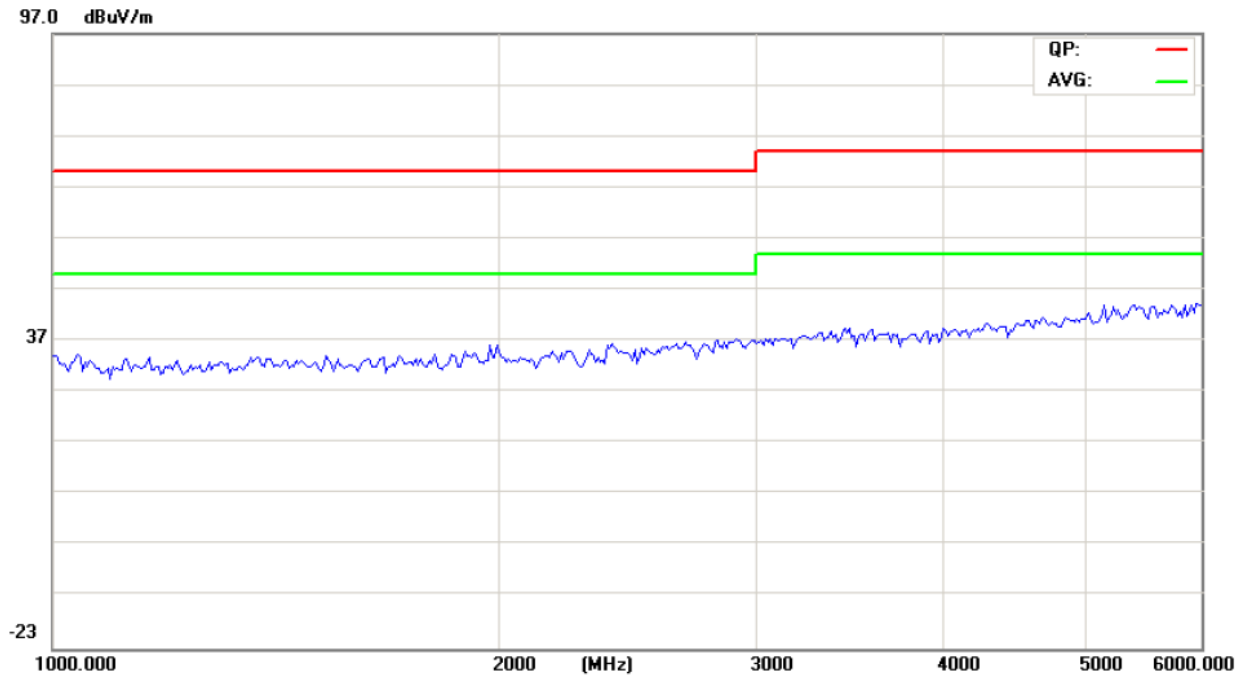


Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
105.0175	18.36	V	40.00
221.0014	20.98	V	40.00

**C. Radiated Emission In Horizontal (1000MHz---6000MHz)**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
		H	
		H	

The test data shows much less than the limit, no necessary take down the records.

**D. Radiated Emission In Vertical (1000MHz----6000MHz)**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
		V	
		V	

The test data shows much less than the limit, no necessary take down the records.

Clause 8.3 DC Power Input/Output Ports Conducted Emissions

Test Method:

According to EMC Basic Standard (EN 55022 [7] Class-B) and the Artificial Mains Networks (AMN) shall be connected to a DC power source.

The measurement frequency range extends from 150 kHz to 30 MHz. When the E.U.T. is a transmitter operating at frequencies below 30 MHz, then the exclusion band for transmitters applies (see clause 4.3) for measurements in the transmit mode of operation.

For emission measurements on DC output ports the relevant port shall be connected via an AMN to a load drawing the rated current of the source.

Test Result: N.A.

Environmental conditions: Temperature: 22° C Humidity: 53% Atmospheric pressure: 103kPa

Start Frequency	Stop Frequency	Step	IF BW	Detector	Final M-Time
0.15MHz	30MHz	4.5KHz	10KHz	QP+AV	1s

A Conducted Emission on Live Terminal of the power line (150kHz to 30MHz)

E.U.T. Description:	--	Operation Mode:	--
Tested By:	--	Test date:	--

Frequency (MHz)	Reading(dBμV)				Limit (dBμV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
--	--	--	--	--	--	--

B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

E.U.T. Description:	--	Operation Mode:	--
Tested By:	--	Test date:	--

Frequency (MHz)	Reading(dBμV)				Limit (dBμV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
--	--	--	--	--	--	--

Note: The test item is not applicable.



Clause 8.4 AC Line Conducted Emissions

According to EMC Basic Standard (EN 55022 [7] Class-B)

1. For the table top E.U.T. the distance to the reference ground plane (wall) should be 40 cm.
2. AC input line plugged into LISN.
3. The frequency spectrum from 0.15MHz to 30MHz was investigated. All readings are quasi -peak values with a resolution bandwidth of 9 KHz
4. The worse cases was selected to conducted the test

Environmental conditions: Temperature: 22° C Humidity: 53% Atmospheric pressure: 103kPa

Start Frequency	Stop Frequency	Step	IF BW	Detector	Final M-Time
0.15MHz	30MHz	4.5KHz	10KHz	QP+AV	1s

**A Conducted Emission on Live Terminal of the power line (150kHz to 30MHz)**

E.U.T. Description:		Operation Mode:	
Tested By:		Test date:	

Frequency (MHz)	Reading(dBμV)				Limit (dBμV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average

**B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

E.U.T. Description:		Operation Mode:	
Tested By:		Test date:	

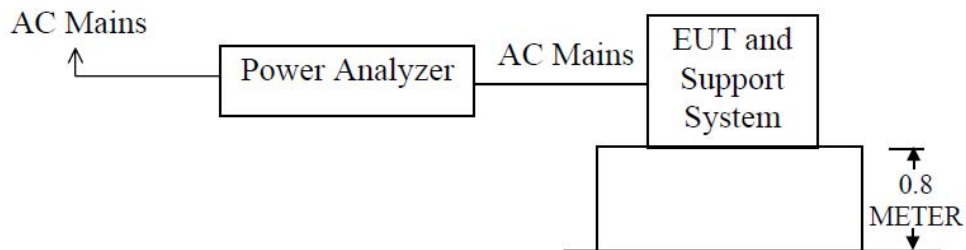
Frequency (MHz)	Reading(dBμV)				Limit (dBμV)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average

Clause 8.5 Harmonic Current Emissions

E.U.T. Operating Mode

Tx mode

Block Diagram of Test Setup.



This test was performed as per EMC Basic Standard EN61000-3-2 Class A

Results

Port	E.U.T. Operating mode	Result (Passed / Failed)
AC Input	Tx mode	Pass

Test Equipment

Please refer to Section 3 this report.

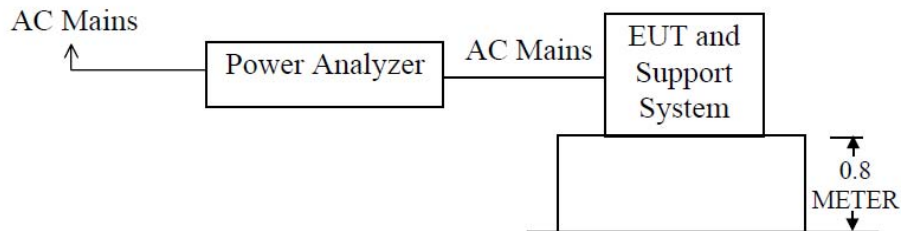
Environmental conditions: Temperature: 23° C Humidity: 54% Atmospheric pressure: 103kPa

Clause 8.6 Flicker and Voltage Fluctuation

E.U.T. Operating Mode

Tx mode

Block Diagram of Test Setup.



This test was performed as per EMC Basic Standard EN 61000-3-3

Results

Port	E.U.T. Operating mode	Result (Passed / Failed)
AC Input	Tx mode	PASS

Limits of Voltage Fluctuation and Flicks Measurement

Test Item	Limit	Note
P_{st}	1.0	Pst means short-term flicker indicator
P_{lt}	0.65	Plt means long-term flicker indicator
T_{dt} (ms)	200	Tdt means maximum time that dt exceeds 3%.
d_{max} (%)	4	Dmax means maximum relative voltage change.
dc (%)	3	Dc means relative steady-state voltage change.

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 21° C Humidity: 54% Atmospheric pressure: 103kPa

**Clause 8.7 Telecommunication ports**

According to EMC Basic Standard (EN 55022 [6] Class-B)

1. For the table top E.U.T. the distance to the reference ground plane (wall) should be 40 cm.
2. AC input line plugged into ISN.
3. The frequency spectrum from 0.15MHz to 30MHz was investigated. All readings are quasi -peak values with a resolution bandwidth of 9 KHz
4. The worse cases was selected to conducted the test

Environmental conditions: Temperature: 22° C Humidity: 53% Atmospheric pressure: 103kPa

Start Frequency	Stop Frequency	Step	IF BW	Detector	Final M-Time
0.15MHz	30MHz	4.5KHz	10KHz	QP+AV	1s

A Conducted Emission on Telecommunication ports (150kHz to 30MHz)

E.U.T. Description:	--	Operation Mode:	--
Tested By:	--	Test date:	--

Frequency(MHz)	Reading(dBμV)		Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average

The test item is not applicable.

**Clause 9.2 Immunity Test – Radiated, RF Electromagnetic Field****According to EMC Basic Standard (EN 61000-4-3)**

E.U.T. Operation Mode: Tx mode

Type of Port: Enclosure

Performance Criterion: CT/CR

The distance between the turn-table axis and transmitting antenna is 3m.

Field strength = 3V/m

Start Frequency = 80MHz Stop Frequency = 1000MHz and

Start Frequency = 1400MHz Stop Frequency = 2700MHz

Frequency Step = 1% of the present frequency

The test signal is amplitude modulated to a depth of 80 % by a sinusoidal audio signal of 1000 Hz

Environmental conditions: Temperature: 22° C Humidity: 55% Atmospheric pressure: 103kPa

Results

Frequency (MHz)	Antenna Polarity	Radiation to	Reaction of the E.U.T. During and after test	Result
80-1000, 1400-2700	Horizontal	Front	N.R.R.	Pass
80-1000, 1400-2700	Vertical	Front	N.R.R.	Pass
80-1000, 1400-2700	Horizontal	Rear	N.R.R.	Pass
80-1000, 1400-2700	Vertical	Rear	N.R.R.	Pass
80-1000, 1400-2700	Horizontal	Left	N.R.R.	Pass
80-1000, 1400-2700	Vertical	Left	N.R.R.	Pass
80-1000, 1400-2700	Horizontal	Right	N.R.R.	Pass
80-1000, 1400-2700	Vertical	Right	N.R.R.	Pass

Note: Performance criteria A observed.

Test Equipment

Please refer to Section 3 this report.

Test Procedure

The E.U.T. and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane so that the distance from antenna to the E.U.T. was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the E.U.T. are set on measurement.

In order to judge the E.U.T. performance, a CCD camera is used to monitor E.U.T.

**Clause 9.3 Electrostatic discharge****According to EMC basic standard (EN61000-4-2)**

E.U.T. Operation Mode: Tx mode

Type of Port: Enclosure

Performance Criterion: TT/TR

For the table top E.U.T. the distance to the reference ground plane should be 80 cm.

Direct contact discharge on conducting surfaces of E.U.T.

Indirect air discharge on insulating surfaces of E.U.T.

 $\pm 2\text{kV}$, $\pm 4\text{kV}$ direct discharge & $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ air discharge**Test Equipment**

Please refer to Section 3 this report.

Environmental conditions: Temperature: 24°C Humidity: 54% Atmospheric pressure: 103kPa**Test Results**

Item	Contact discharge to conducted surfaces and to coupling planes		Air discharge at insulating surfaces	Result
	Direct Contact discharge	Indirect Contact discharge		
Test Voltage	Reaction of E.U.T.	Reaction of E.U.T.	Reaction of E.U.T.	Pass/Fail
+2kV	N.R.R.	N.R.R.	N.R.R.	Pass
-2kV	N.R.R.	N.R.R.	N.R.R.	Pass
+4kV	N.R.R.	N.R.R.	N.R.R.	Pass
-4kV	N.R.R.	N.R.R.	N.R.R.	Pass
+8kV	N.A.	N.A.	N.R.R.	Pass
-8kV	N.A.	N.A.	N.R.R.	Pass

**Clause 9.4 Fast Transients, common mode****According to EMC basic standard (EN61000-4-4)**

E.U.T. Operation Mode: Tx mode

Type of Port: AC mains Port, Ethernet Port

Performance Criterion: TT/TR

For the table top E.U.T. the distance to the reference ground plane should be 80 cm.

The test level for AC mains power input ports shall be 1KV open circuit.

Test Setup

The minimum distance between the E.U.T. and all other conductive structures, except the ground reference plane shall be more than 0.5 m.

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 23° C Humidity: 53% Atmospheric pressure: 103kPa

Test Results

Line	Test Voltage	Inject Time(s)	Performance			Result
			Required	Observation(+)	Observation(-)	Pass/Fail
L	1kV	120	TT/TR	N.R.R.	N.R.R.	PASS
N	1kV	120	TT/TR	N.R.R.	N.R.R.	PASS
PE	1kV	120	TT/TR	N.A.	N.A.	N.A.
L N	1kV	120	TT/TR	N.R.R.	N.R.R.	PASS
L PE	1kV	120	TT/TR	N.A.	N.A.	N.A.
N PE	1kV	120	TT/TR	N.A.	N.A.	N.A.
L N PE	1kV	120	TT/TR	N.A.	N.A.	N.A.
Ethernet	0.5kV	120	TT/TR	N.A.	N.A.	N.A.
Remark: Operation as intended, no loss of function was found during and after the test.						



Clause 9.5 RF Common Mode

According to EMC basic standard (EN61000-4-6)

E.U.T. Operation Mode: Tx mode

Type of Port: AC mains Port, Ethernet Port

Performance Criterion: CT/CR

Start Frequency = 150KHz Stop Frequency = 80MHz

The step size is 1% of the preceding frequency value

The test signal is amplitude modulated to a depth of 80 % by a sinusoidal audio signal of 1000 Hz

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 24° C Humidity: 52% Atmospheric pressure: 103kPa

Test Setup

Injection via CDN or MIC clamp

Test Results

Injection On	Injection Via	Reaction of the E.U.T. During and after test	Result
AC Mains Port	CDN	N.R.R.	Pass

Clause 9.6 Transients and Surges in the Vehicular Environment

The test method shall be in accordance with ISO 7637-2 for 12 V/24V DC powered equipment

E.U.T. Operation Mode: --

Type of Port: DC power input port

Performance Criterion: CT/CR

Test Requirement:

a) Pulse 3a and 3b, level III, with the test time reduced to 20 min for each;

Pulse 4, level III, 10 pulses, with the characteristics as follows:

$V_s = -6.5V$; $V_a = -2,5 V$; $t_6 = 25 ms$; $t_7 = 20 ms$; $t_8 = 20ms$; $t_9 = 5 s$; $t_{10}=50ms$, $t_{11}=20ms$, pulse cycle time: 60 s

b) Pulse 1, level III: $t_1 = 2,5 s$; $t_2=200ms$, $t_3=50\mu s$ 10 pulses;

Pulse 2, level III: $t_1 = 2,5 s$; 10 pulses;

Both a) and b) shall be done as the manufacturer does not require the radio equipment to have a direct connection to the 12 V and 24V main vehicle battery

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 23° C Humidity: 53% Atmospheric pressure: 103kPa

Test Result:

For 12V system

Test Pulse Number	Test Voltage	Test Level	Number of test pulses or test time	Reaction of E.U.T. during and after Test	Test result
1	-75 V	III	10pulses	--	N.A.
2a	+37 V	III	10pulses	--	N.A.
2b	+10 V	III	10pulses	--	N.A.
3a	-112 V	III	20min	--	N.A.
3b	+75 V	III	20min	--	N.A.
4	-6 V	III	10pulses	--	N.A.

**For 24V system**

Test Pulse Number	Test Voltage	Test Level	Number of test pulses or test time	Reaction of E.U.T. during and after Test	Test result
1	-450 V	III	10pulses	--	N.A.
2a	+37 V	III	10pulses	--	N.A.
2b	+20 V	III	10pulses	--	N.A.
3a	-150 V	III	20min	--	N.A.
3b	+150 V	III	20min	--	N.A.
4	-12 V	III	10pulses	--	N.A.

The test item is not applicable.

**Clause 9.7 Voltage Dips and Interruption****According to EMC basic standard (EN61000-4-11)**

E.U.T. Operation mode: Tx mode

Type of Port: AC Mains port

Performance Criterion: TT/TR

For the table top E.U.T. the distance to the reference ground plane should be 80 cm.

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 23° C Humidity: 53% Atmospheric pressure: 103kPa

Test Results**Voltage Dips**

Terminal Supply Voltage	Start by Trigger Angle (AC)	Duration of Test Voltage	Test Voltage	Reaction of E.U.T. during and after Test	Result
U_1		T_{U2}	U_2		
100% U_N : 230V	0°	10ms	0% U_N : 0V	performance criteria A observed	Pass
100% U_N : 230V	0°	20ms	0% U_N : 0V	performance criteria A observed	Pass
100% U_N : 230V	0°	500ms	70% U_N : 161V	performance criteria C observed	Pass
Voltage Interruption					
100% U_N : 230V	0°	5000ms	0% U_N : 0V	performance criteria C observed	Pass

**Clause 9.8 Surges Common & Differential Mode****According to EMC basic standard (EN61000-4-5)**

E.U.T. operation mode: Tx mode

Type of Port: AC mains power input & Ethernet Port

Performance Criterion: TT/TR

For the table top E.U.T. the distance to the reference ground plane should be 80 cm.

1KV open circuit for common mode & 0.5KV open circuit for differential mode.

Test Equipment

Please refer to Section 3 this report.

Environmental conditions: Temperature: 21° C Humidity: 51% Atmospheric pressure: 103kPa

Test Results

For AC power ports (1-phase) five positive and five negative pulses each at 0°, 90°, 180°, 270°.

Repetition rate is 1 min.

Test Voltage	Reaction of the E.U.T. during and after the test				Result
	0°/pulse	90°/pulse	180°/pulse	270°/pulse	
-0.5kV +0.5kV	N.R.R.	N.R.R.	N.R.R.	N.R.R.	Pass
-1.0kV +1.0kV	N.R.R.	N.R.R.	N.R.R.	N.R.R.	Pass
-2.0kV +2.0kV	N.R.R.	N.R.R.	N.R.R.	N.R.R.	Pass
- 4.0kV +4.0kV	N.A.	N.A.	N.A.	N.A.	N.A.

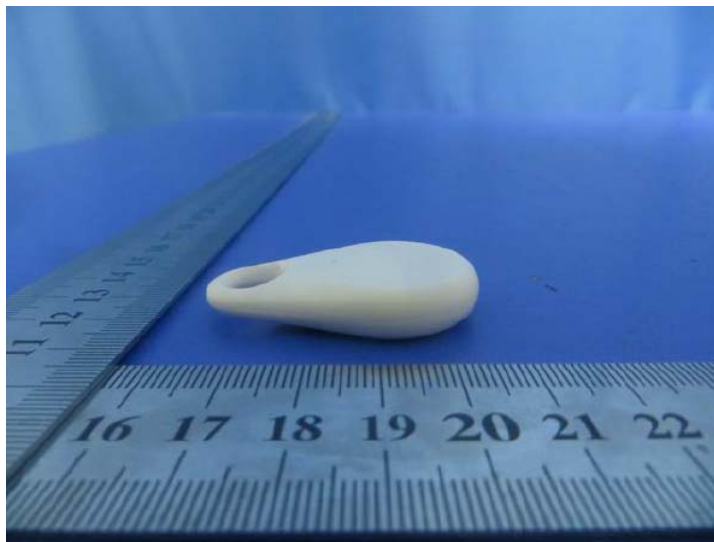
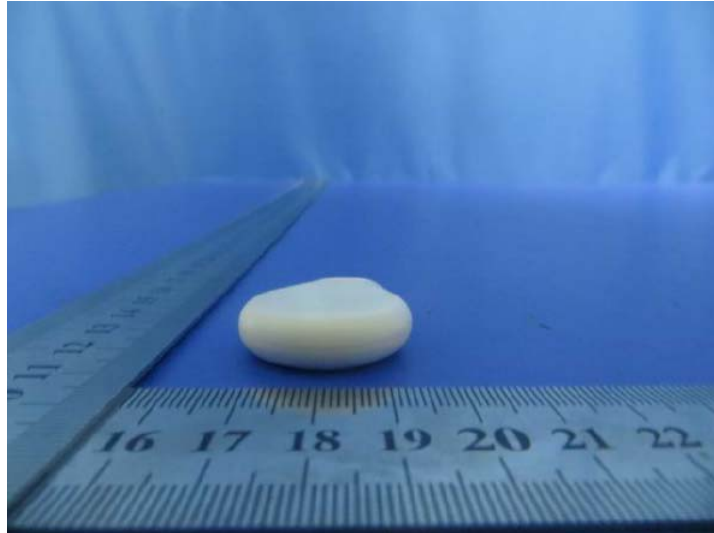
**3.0 List Test Equipments**

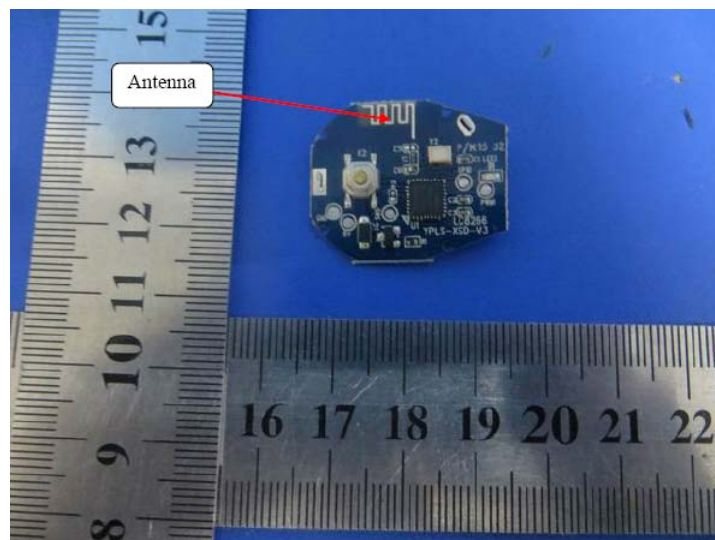
Name	Model No.	Manufacturer	Date of Cal.	Due Date
Conducted emission				
EMI Test Receiver	ESCS30	R&S	Dec. 25, 2014	Dec. 24, 2015
LISN	LS16C	AFJ	Dec. 25, 2014	Dec. 24, 2015
loop antenna	LLA-2	EVERFINE	Dec. 25, 2014	Dec. 24, 2015
Radiated emission				
EMI Test Receiver	ESCS30	R&S	Dec. 25, 2014	Dec. 24, 2015
Spectrum Analyzer	FSEM	R&S	Dec. 25, 2014	Dec. 24, 2015
Amplifier	8447D	H.P.	Dec. 25, 2014	Dec. 24, 2015
Antenna	VULB9163	SCHWARZBECK	Dec. 25, 2014	Dec. 24, 2015
Amplifier	EM30265	EM Electronics Corporation	Dec. 25, 2014	Dec. 24, 2015
Harmonic & Flicker				
Harmonics Flicker Test System	PACS-1	CI	Dec. 25, 2014	Dec. 24, 2015
5K VA AC Power source	5001iX	CI	Dec. 25, 2014	Dec. 24, 2015
Electrostatic Discharge				
Electrostatic Discharge Generator	ESD61002AG	Prima	Dec. 25, 2014	Dec. 24, 2015
Continuous radiated disturbances				
Signal Generator	2022D	Maconi	Dec. 25, 2014	Dec. 24, 2015
Power Amplifier	A00181-1000	M2S	Dec. 25, 2014	Dec. 24, 2015
Power Amplifier	AC8113/ 800-250A	M2S	Dec. 25, 2014	Dec. 24, 2015
Power Antenna	CBL6140A	SCHAFFNER	Dec. 25, 2014	Dec. 24, 2015
EFT/Surge/Dip				
Fast Transient Burst Simulator	EFT61004BG	Prima	Dec. 25, 2014	Dec. 24, 2015
Lightning Surge Generator	SUG61005BG	Prima	Dec. 25, 2014	Dec. 24, 2015
CYCLE SAG SIMULATOR	DRP61011AG	Prima	Dec. 25, 2014	Dec. 24, 2015
Continuous conducted disturbances				
Signal Generator	2022D	Maconi	Dec. 25, 2014	Dec. 24, 2015
Power Amplifier	A00181-1000	M2S	Dec. 25, 2014	Dec. 24, 2015
CDN	M3-8016	MEB	Dec. 25, 2014	Dec. 24, 2015
Power-frequency Magnetic field				
Continuous Wave Simulator	UCS 500 M4	EM TEST	Dec. 25, 2014	Dec. 24, 2015
Power Source Network	MV 2616	EM TEST	Dec. 25, 2014	Dec. 24, 2015
Current Transformer	MC2630	EM TEST	Dec. 25, 2014	Dec. 24, 2015
Magnetic Coil	MS100	EM TEST	Dec. 25, 2014	Dec. 24, 2015

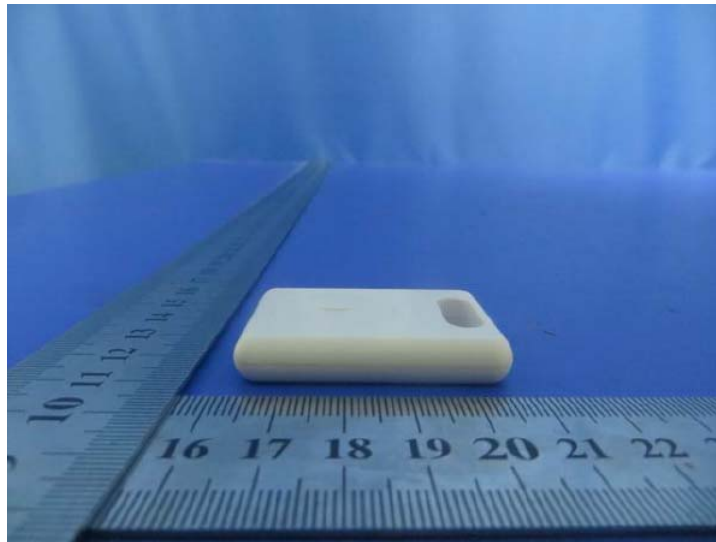
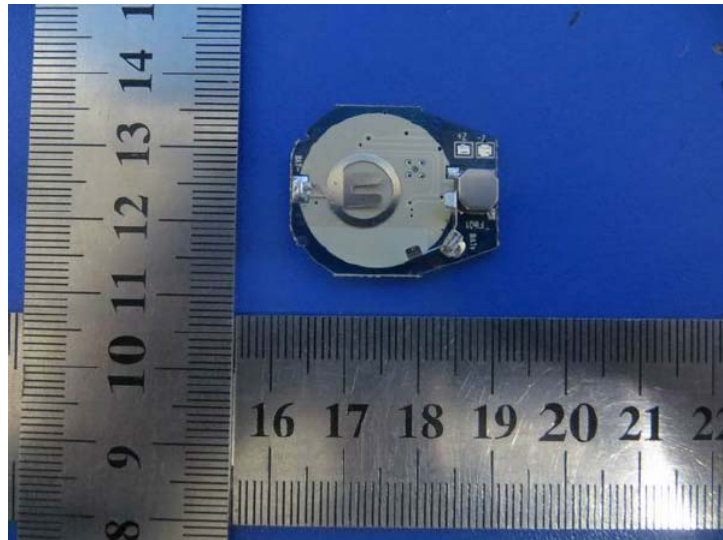
4.0 Photos of E.U.T

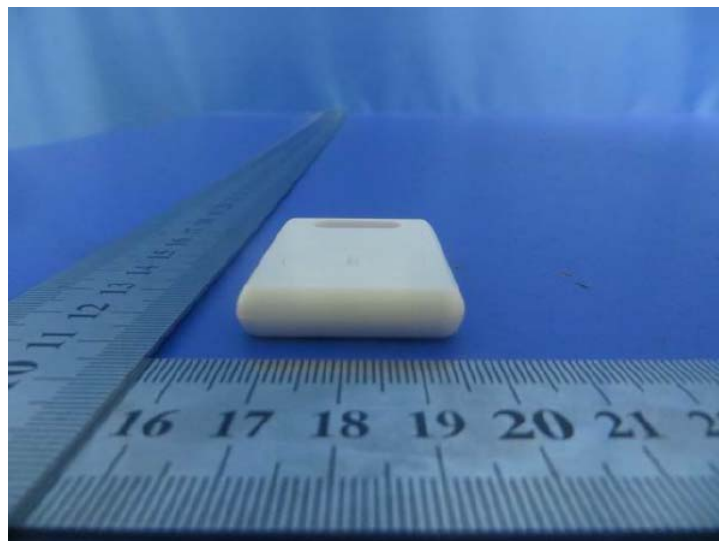
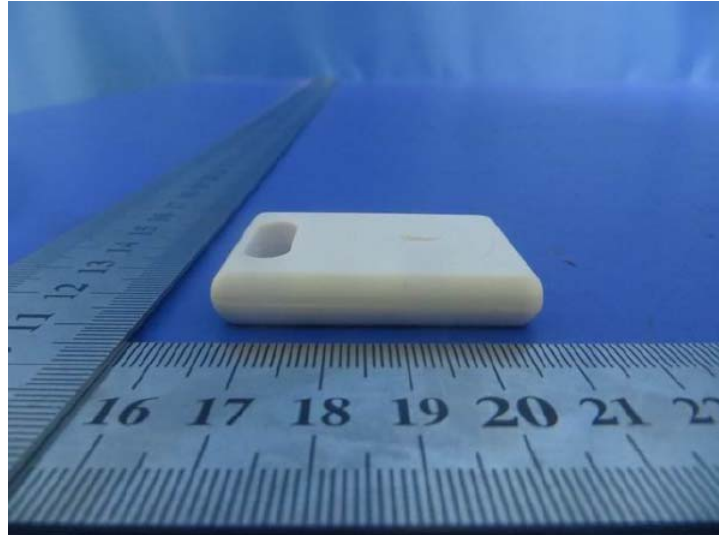












*******END OF THE REPORT*******