

EMC REPORT

Applicant: Dragino Technology Co., Limited

Address of Applicant: Room 7009, Zi'An Commercial Building, Qian Jin 1 Road.
Xin'An 6th District, Bao'an District ; Shenzhen 518101,China

Equipment Under Test (EUT)

Product Name: Wireless IoT Module

Model No.: HE

Trade Mark: 

Applicable standards: ETSI EN 301 489-17 V2.2.1 (2012-09)
ETSI EN 301 489-1 V1.9.2 (2011-09)

Date of sample receipt: January 05, 2015

Date of Test: January 06~16, 2015

Date of report issue: January 28, 2015

Test Result : Pass *

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 1999/5/EC are considered.



Robinson Lo

Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	January 28, 2015	Original

Prepared By:

Edward Pan

Date:

January 28, 2015

Project Engineer

Check By:

Frank Yan

Date:

January 28, 2015

Reviewer

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4 Test Summary

EMI Test				
Test Item	Test Requirement	Test Method	Application	Result
Radiated Emission	ETSI EN 301 489-17	ETSI EN301 489-1	Enclosure	Pass
Conducted Emission	ETSI EN 301 489-17	ETSI EN301 489-1	AC port	N/A
Harmonic Current Emissions	ETSI EN 301 489-17	ETSI EN301 489-1	AC port	N/A
Voltage Fluctuations and Flicker	ETSI EN 301 489-17	ETSI EN301 489-1	AC port	N/A
EMS Test				
ESD (Electrostatic Discharge)	ETSI EN 301 489-17	EN 61000-4-2	Enclosure	Pass
Radiated Immunity, 80MHz to 2.7 GHz	ETSI EN 301 489-17	EN 61000-4-3	Enclosure	Pass
EFT (Electrical Fast Transients)	ETSI EN 301 489-17	EN 61000-4-4	AC port	N/A
Surge Immunity	ETSI EN 301 489-17	EN 61000-4-5	AC port	N/A
Injected Currents 150kHz to 80MHz	ETSI EN 301 489-17	EN 61000-4-6	AC port	N/A
Voltage Dips and Interruptions	ETSI EN 301 489-17	EN 61000-4-11	AC port	N/A

5 General Information

5.1 Client Information

Applicant:	Dragino Technology Co., Limited
Address of Applicant:	Room 7009, Zi'An Commercial Building, Qian Jin 1 Road. Xin'An 6th District, Bao'an District ; Shenzhen 518101,China
Manufacturer/Factory:	Dragino Technology Co., Limited
Address of Manufacturer/Factory:	Room 7009, Zi'An Commercial Building, Qian Jin 1 Road. Xin'An 6th District, Bao'an District ; Shenzhen 518101,China

5.2 General Description of EUT

Product Name:	Wireless IoT Module
Model No.:	HE
Operation Frequency:	2412MHz~2472MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2462MHz (802.11n(H40))
Channel Numbers:	13 for 802.11b/802.11g/802.11n(HT20) 9 for 802.11n(HT40)
Channel Separation:	5MHz
Modulation Technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum(DSSS)
Modulation Technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type:	Intergal Antenna
Antenna Gain:	2.0dBi (declare by Applicant)
Hardware Version:	A2
Software Version:	v1.3.4
Adaptor Information:	DC 3.3V

5.3 Operating Modes

Operating mode	Detail description
WiFi mode	Keep the EUT in wifi link mode.

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
MEILI	DC Power Supply	MCH-305A	011121168	VoC

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None

5.7 Other Information Requested by the Customer

None

5.8 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> • CNAS —Registration No.: CNAS L5775 CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. • FCC —Registration No.: 600491 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013. • Industry Canada (IC) —Registration No.: 9079A-2 The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.
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5.9 Test Location

RI and CI tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab, No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
All other tests were performed at:
Global United Technology Services Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China Tel: 0755-27798480 Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 29 2013	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	July 01 2014	June 30 2015
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 23 2014	Feb. 22 2015
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 27 2014	June 26 2015
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 28 2014	Mar. 27 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Mar. 29 2014	Mar. 28 2015
9	Coaxial Cable	GTS	N/A	GTS211	Mar. 29 2014	Mar. 28 2015
10	Coaxial cable	GTS	N/A	GTS210	Mar. 29 2014	Mar. 28 2015
11	Coaxial Cable	GTS	N/A	GTS212	Mar. 29 2014	Mar. 28 2015
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	July 01 2014	June 30 2015
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	July 01 2014	June 30 2015
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 27 2014	June 26 2015
15	Band filter	Amindeon	82346	GTS219	Mar. 29 2014	Mar. 28 2015
16	Constant temperature and humidity box	Oregon Scientific	BA-888	GTS248	May 10 2013	May 09 2015
17	D.C. Power Supply	Instek	PS-3030	GTS232	May 10 2013	May 09 2015
18	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	May 10 2013	May 09 2015
19	Splitter	Agilent	11636B	GTS237	May 10 2013	May 09 2015

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS264	Sep. 07 2013	Sep. 06 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	July 01 2014	June 30 2015
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	July 01 2014	June 30 2015
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	July 01 2014	June 30 2015
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	July 01 2014	June 30 2015
6	Coaxial Cable	GTS	N/A	GTS227	July 01 2014	June 30 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

ESD:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	EMPEK	ESD-2030A	GTS242	July 01 2014	June 30 2015

Conducted Immunity:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	RF-Generator	SCHAFFNER	NSG 2070	SEL0039	Oct. 19 2014	Oct. 18 2015
2	Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEL0040	Oct. 19 2014	Oct. 18 2015
3	EM CLAMP	SCHAFFNER	KEMZ 801	SEL0041	Oct. 19 2014	Oct. 18 2015

Harmonic/ Flicker:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Power Analyzer	EMTEST	DPA500	GTS235	July 01 2014	June 30 2015
2	AC Power Source	EMTEST	ACS500	GTS236	July 01 2014	June 30 2015
3	Test software	EMTEST	ACS	N/A	N/A	N/A

EFT, Surge, Voltage dips and Interruption:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMTEST system	EMTEST	UCS500N	GTS239	July 01 2014	June 30 2015
2	Capacitive Clamp	Thermo ELECTRON	N/A	GTS241	N/A	N/A

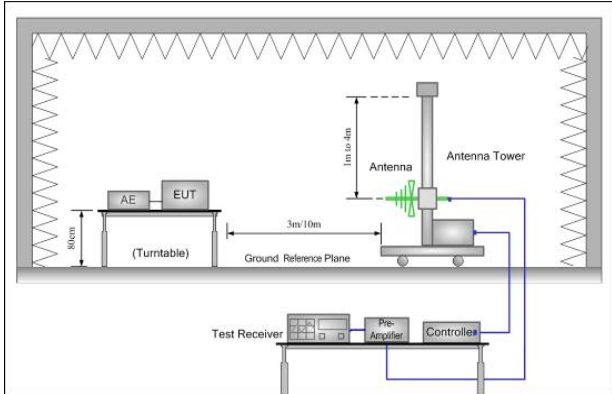
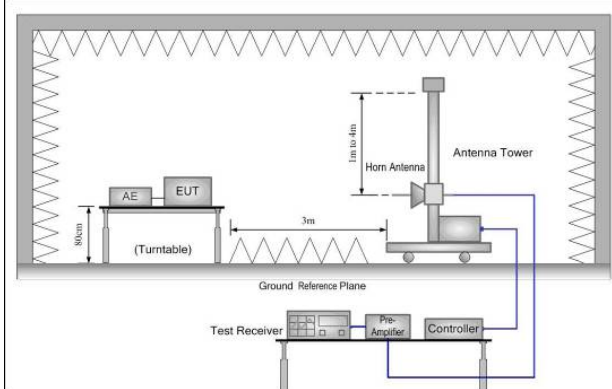
Radiated Immunity:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	June 13 2014	June 12 2015
2	Signal Generator	Rohde & Schwarz	SML03	SEL0068	June 20 2014	June 19 2015
3	RF Amplifier 30M-1GHz	Amplifier Research	250W1000A	SEL0066	Oct. 19 2014	Oct. 18 2015
4	RF Amplifier 0.8-3.0GHz	Amplifier Research	60S1G3	SEL0065	Oct. 19 2014	Oct. 18 2015
5	Power Meter	Rohde & Schwarz	NRVD	SEL0069	June 20 2014	June 19 2015
6	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0071	June 20 2014	June 19 2015
7	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0072	June 20 2014	June 19 2015
8	Software EMC32	Rohde & Schwarz	EMC32-S	SEL0082	N/A	N/A
9	Log-periodic Antenna	Amplifier Research	AT1080	SEL0073	N/A	N/A
10	Antenna Tripod	Amplifier Research	TP1000A	SEL0074	N/A	N/A
11	High Gain Horn Antenna (0.8-5GHz)	Amplifier Research	AT4002A	SEL0075	N/A	N/A
12	Audio Analyzer	Rohde & Schwarz	UPL 16	SEL0076	June 20 2014	June 19 2015
13	Nexus conditioning amplifier	B&K	2690	SEL0078	June 20 2014	June 19 2015
14	Mouth simulator	B&K	4227	SEL0079	June 20 2014	June 19 2015
15	Sound level calibrator	B&K	4231	SEL0080	June 20 2014	June 19 2015
16	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0081	June 20 2014	June 19 2015

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	GTS243	July 03 2014	July 02 2015
2	Barometer	ChangChun	DYM3	GTS255	July 08 2014	July 07 2015

7 EMC Requirements Specification in ETSI EN 301489-17

7.1 EMI (Emission)

7.1.1 Radiated Emission

Test Requirement:	ETSI EN 301 489-17				
Test Method:	ETSI EN 301 489-1 and EN55016-2-3				
Test Frequency Range:	30MHz to 6GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
AV		1MHz	3MHz	Average Value	
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-230MHz		40.00		Quasi-peak Value
	230MHz-1GHz		47.00		Quasi-peak Value
	1GHz-3GHz		50.00		Average Value
			70.00		Peak Value
	3GHz-6GHz		54.00		Average Value
74.00			Peak Value		
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					

Test Procedure:	<p>■ From 30MHz to 1GHz:</p> <ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. <p>■ Above 1GHz:</p> <ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a fully-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.
Test environment:	Temp.: 25 °C Humid.: 50% Press.: 1 010mbar
Measurement Record:	Uncertainty: ± 4.5dB
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarity
50.41	45.45	15.24	0.77	30.00	31.46	40.00	-8.54	Vertical
82.65	50.85	11.57	1.05	29.78	33.69	40.00	-6.31	Vertical
250.30	44.45	14.07	2.12	29.65	30.99	47.00	-16.01	Vertical
375.94	43.37	16.56	2.75	29.61	33.07	47.00	-13.93	Vertical
625.08	39.62	20.54	3.82	29.27	34.71	47.00	-12.29	Vertical
875.25	38.81	22.87	4.76	29.12	37.32	47.00	-9.68	Vertical
94.43	51.12	14.75	1.15	29.72	37.30	40.00	-2.70	Horizontal
125.01	48.04	11.70	1.40	29.54	31.60	40.00	-8.40	Horizontal
250.30	53.02	14.07	2.12	29.65	39.56	47.00	-7.44	Horizontal
375.94	54.00	16.56	2.75	29.61	43.70	47.00	-3.30	Horizontal
501.18	41.00	18.63	3.31	29.30	33.64	47.00	-13.36	Horizontal
875.25	39.77	22.87	4.76	29.12	38.28	47.00	-8.72	Horizontal

Above 1GHz

Peak measurement

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarity
1570.00	36.08	25.03	4.73	33.74	32.10	70.00	-37.90	Vertical
2955.00	36.01	28.43	5.89	33.37	36.96	70.00	-33.04	Vertical
3750.00	35.47	29.30	7.42	32.46	39.73	74.00	-34.27	Vertical
4615.00	34.79	31.53	8.44	32.00	42.76	74.00	-31.24	Vertical
5150.00	32.39	32.07	8.99	32.26	41.19	74.00	-32.81	Vertical
5790.00	32.54	32.63	9.93	32.25	42.85	74.00	-31.15	Vertical
1465.00	37.31	25.30	4.66	33.53	33.74	70.00	-36.26	Horizontal
2575.00	36.11	27.71	5.56	33.80	35.58	70.00	-34.42	Horizontal
3570.00	37.86	29.10	7.09	32.67	41.38	74.00	-32.62	Horizontal
4485.00	33.49	31.29	8.32	31.93	41.17	74.00	-32.83	Horizontal
5180.00	33.15	32.00	9.03	32.27	41.91	74.00	-32.09	Horizontal
5910.00	32.78	32.78	10.09	32.18	43.47	74.00	-30.53	Horizontal

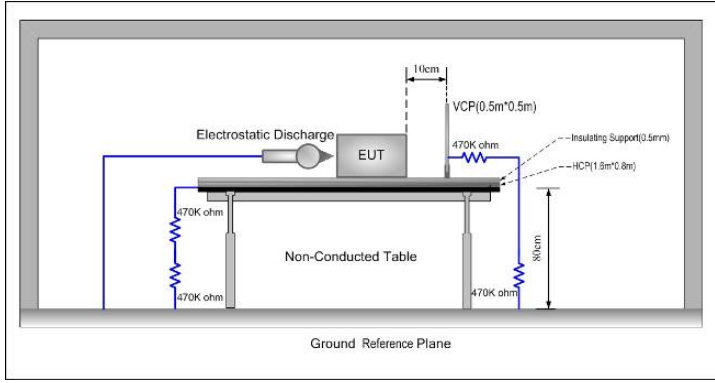
Remark:

1. The EUT was test at 3m in field chamber.
2. If the average limit is met when using a Peak detector, the EUT shall be deemed to meet both peak and average limits. And measurement with the average detector is unnecessary.

7.2 Immunity

Performance Criteria of ETSI EN 301 489-17, sub clause 6.2 table 1.		
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).
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>		

7.2.1 Electrostatic Discharge

Test Requirement:	ETSI EN 301 489-17
Test Method:	EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ HCP/VCP: $\pm 2\text{kV}$, $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Contact Discharge: Minimum 25 times at each test point, Air Discharge: Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Limit:	Criteria B
Test setup:	
Test Procedure:	<p>Air discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on non-conductive surfaces of EUT. 2. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. 3. After each discharge, the discharge electrode was removed from the EUT. 4. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 5. This procedure was repeated until all the air discharge completed <p>Contact Discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on conductive surfaces of EUT. 2. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 3. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. <p>Indirect discharge for horizontal coupling plane</p> <ol style="list-style-type: none"> 1. At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT.

	<p>2. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.</p> <p>3. Consideration should be given to exposing all sides of the EUT.</p> <p>Indirect discharge for vertical coupling plane</p> <p>1. At least 10 single discharges were applied to the center of one vertical edge of the coupling plane.</p> <p>2. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT.</p> <p>3. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.</p>
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 010mbar
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

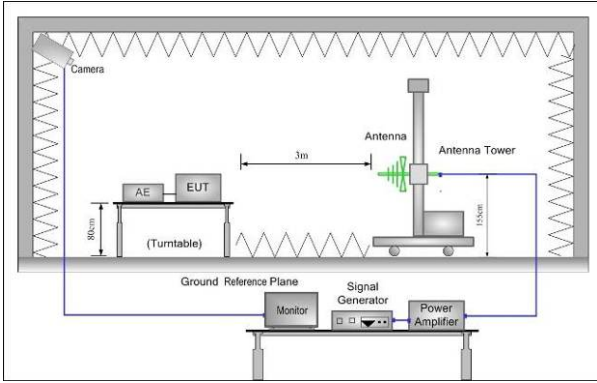
Measurement Record:

Test points:	I: N/A			
	II: N/A			
Direct discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations Performance	Result
± 2, ± 4	Contact	I	N/A	Pass
± 2, ± 4, ± 8	Air	II	N/A	Pass
Indirect discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 2, ± 4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
± 2, ± 4	VCP-Front/Back /Left/Right	Center of the VCP	A	Pass

Remark:

A: Normal performance within the specification limits.

7.2.2 Radiated Immunity

Test Requirement:	ETSI EN 301 489-17
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 1GHz, 1.4GHz to 2.7GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	Criteria A
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> 1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to

	monitor the performance of the EUT.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 010mbar
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Record:

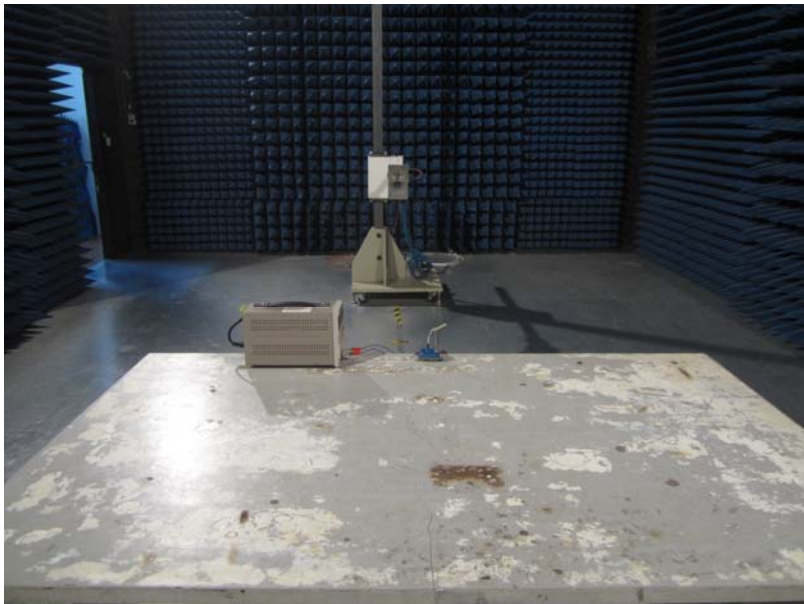
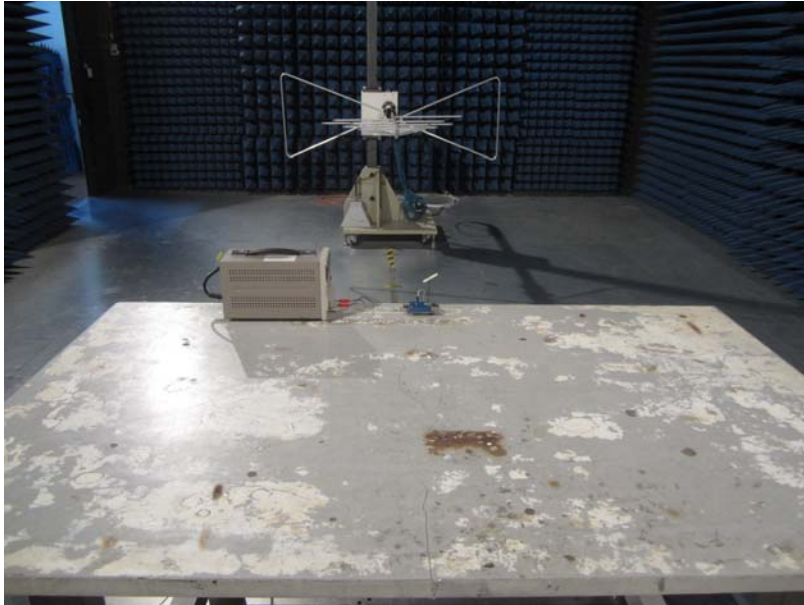
Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)
80 MHz-1 GHz 1.4GHz-2.7GHz	3 V/m	1 kHz, 80 % Amp. Mod, 10 % increment, dwell time=3seconds	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			V	Bottom	A
			H		A

Remarks:

A: Normal performance within the specification limits.

8 Test Setup Photo

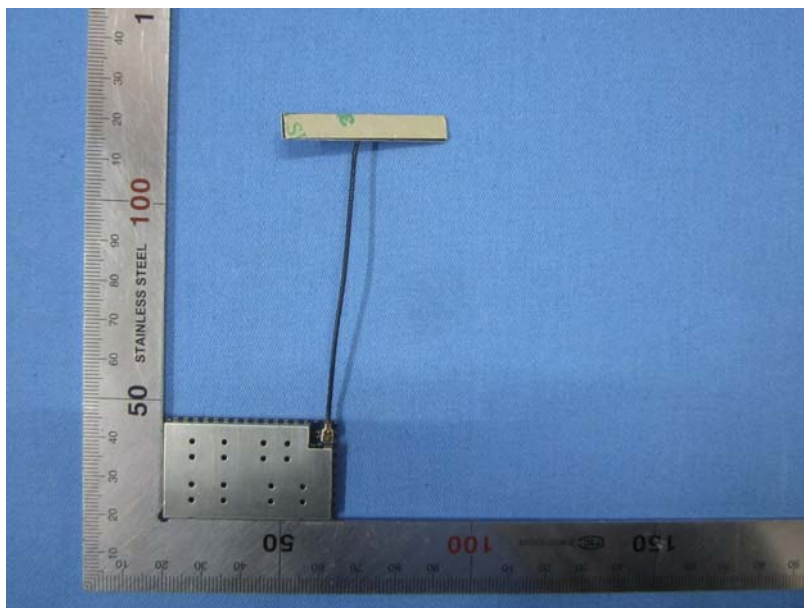
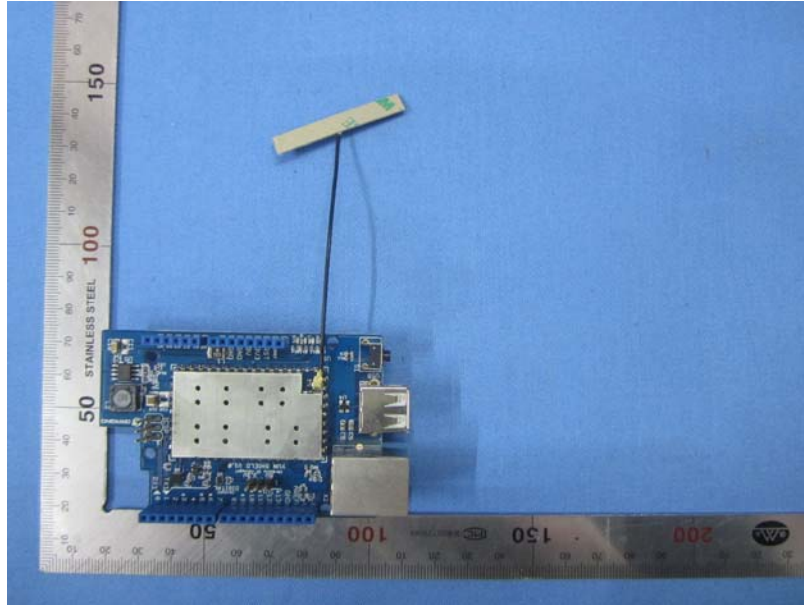
Radiated Emission

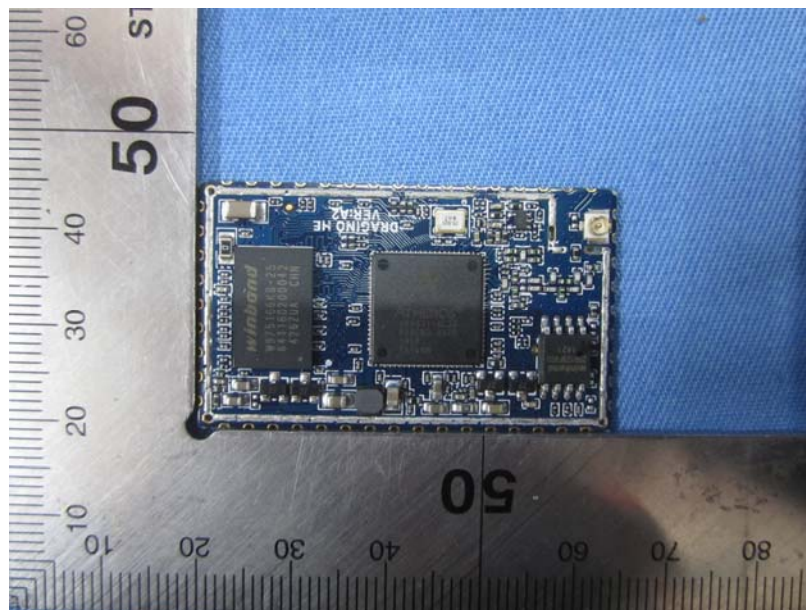
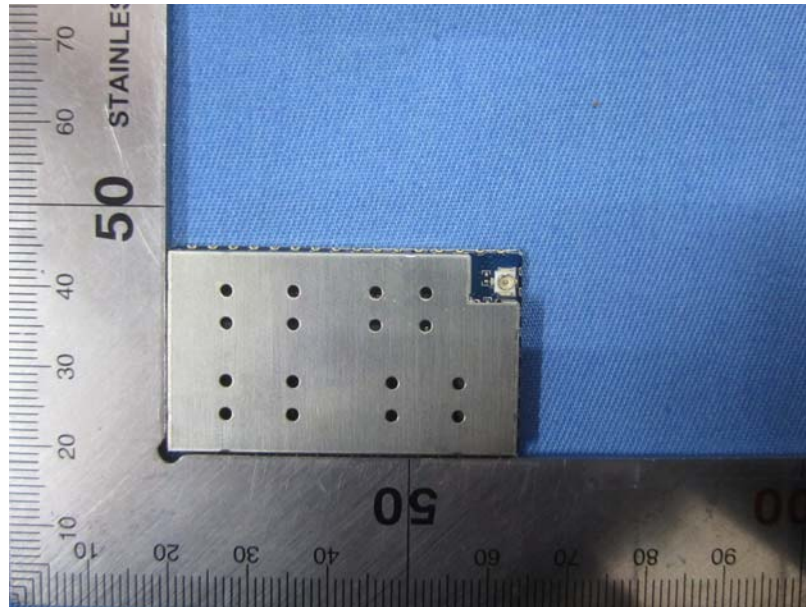


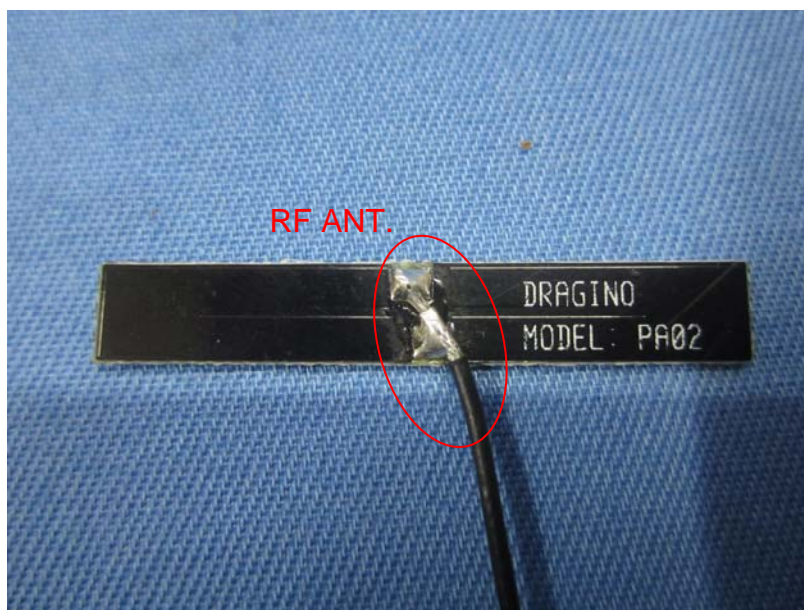
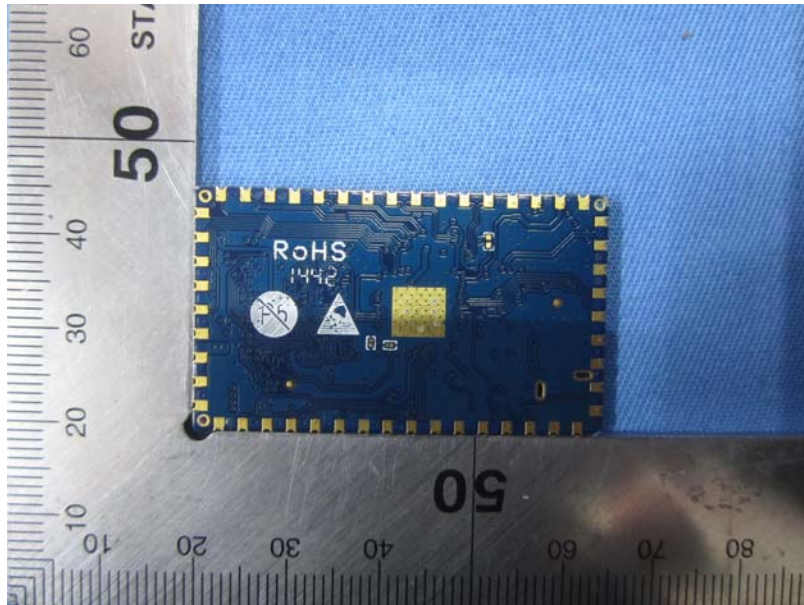
ESD



9 EUT Constructional Details







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