



CE EMC Test Report

APPLICANT : Texas Instruments Incorporated
EQUIPMENT : WiFi and Bluetooth Evaluation Board
BRAND NAME : Texas Instruments
MODEL NAME : WL1835MODCOM8B
STANDARD : ETSI EN 301 489-1 V1.9.2 (2011-09)
ETS EN 301 489-17 V2.2.1 (2012-09)
TEST DATE(S) : Dec. 27, 2013 ~ Jan. 04, 2014

The measurements shown in this test report were made in accordance with the procedures given in EUROPEAN COUNCIL DIRECTIVE 1999/5/EC and found to be in compliance with ETSI EN 301 489-1 V1.9.2 (2011-09) and ETSI EN 301 489-17 V2.2.1 (2012-09).

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Louis Wu

Reviewed by: Louis Wu / Manager

Jones Tsai

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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**SUMMARY OF TEST RESULT**

CLAUSE (EN 301 489-1)	TEST ITEMS	TEST STANDARD	RESULT (PASS/FAIL)	REMARK
EMC Emission Measurements				
8.2	Radiated Emission	EN 55022:2006/A1:2007 Class B	Not Required	Please see the Note
8.3 / 8.4	Conducted Emission	EN 55022:2006/A1:2007 Class B	Not Required	Please see the Note
8.5	Harmonic Current Emissions	EN 61000-3-2:2006/A1:2009 and EN 61000-3-2:2006/A2:2009	Not Required	Please see the Note
8.6	Voltage Fluctuations and Flicker	EN 61000-3-3:2008	Not Required	Please see the Note
EMC Immunity Tests				
9.2	RF Electromagnetic Field	EN 61000-4-3:2006+A1:2008+A 2:2010	PASS	-
9.3	Electrostatic Discharge	EN 61000-4-2:2009	PASS	Only indirect discharge, HCP/VCP, are performed, because the EUT is module.
9.4	Fast Transients, Common Mode	EN 61000-4-4:2004+A1:2010	Not Required	Please see the Note
9.5	Radio frequency, Common Mode	EN 61000-4-6:2009	Not Required	Please see the Note
9.6	Transients and Surges in the vehicular environment	ISO 7637-2:2004	Not Required	Please see the Note
9.7	Voltage Dips and Interruptions	EN 61000-4-11:2004	Not Required	Please see the Note
9.8	Surges	EN 61000-4-5:2006	Not Required	Please see the Note

Note: Testing was performed on EUT installed/operated in the test jig, only the applicable test cases for EUT were performed and reported.

1. General Description of Equipment under Test

1.1 Applicant

Texas Instruments Incorporated
12500 TI Boulevard, M/S 8751, Dallas, TX 75243, USA

1.2 Manufacturer

Jorjin Technologies Inc.
17F., No. 239, Sec. 1, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan. R.O.C.

1.3 Feature of Equipment under Test

The Equipment Under Test (hereafter called: EUT) is WiFi and Bluetooth Evaluation Board supporting, Wi-Fi 2.4 802.11b/g/n and Bluetooth, and below is details of information.

General Information of Equipment Under Test	
Equipment	WiFi and Bluetooth Evaluation Board
Brand Name	Texas Instruments
Model Name	WL1835MODCOM8B
Wi-Fi Specification	802.11b/g/n (HT20/HT40)
Bluetooth Version	v3.0 + EDR / v4.0-LE
Power Supply	From test jig

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Details of Tested Sample (EUT) Information

Product Specification subjective to this Test Standard	
Transmitter Frequency Range	WLAN 802.11b/g/n: 2400 MHz ~ 2483.5 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Receiver Frequency Range	WLAN 802.11b/g/n : 2400 MHz ~ 2483.5 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz
Antenna Type	WLAN : Chip Antenna Bluetooth : Chip Antenna
Type of Modulation	Bluetooth : GFSK, $\pi/4$ -DQPSK, 8-DPSK WLAN 802.11b : DSSS (DBPSK / DQPSK / CCK) WLAN 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Facility

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. : ES04-HY ; RS02-HY
Test Condition	Test Voltage : DC 3.7V from test jig Test Distance : 3 m for radio frequency electromagnetic field immunity Test Frequency : Immunity to radiated electromagnetic fields: 80 MHz ~ 1000MHz and 1400MHz~2700MHz

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of

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

EMS Test :

- **EN 61000-4-2:2009 (ESD)**
- **EN 61000-4-3:2006+A1:2008+A2:2010 (RS)**

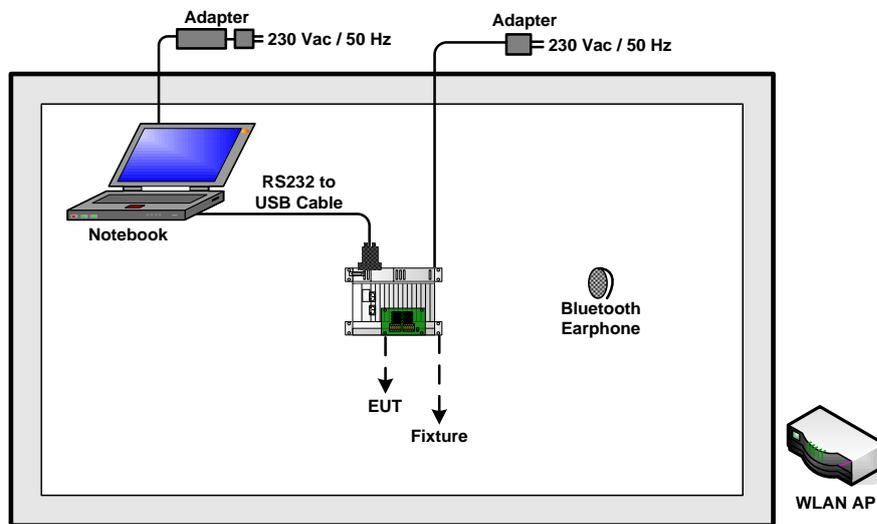
Note: All test items were verified and recorded according to the standards and without any deviation during the tests.

2. Test Configuration of Equipment under Test

2.1 Details of EUT Test Modes

Details of Test line Items	
Radio frequency electromagnetic field (Refer to EN301 489-1 Section 9.2)	
Mode 1	: EUT with Fixture + Adapter + WLAN Link + Bluetooth Link
Electrostatic discharge (Refer to EN301 489-1 Section 9.3)	
Mode 1	: EUT with Fixture + Adapter + WLAN Link + Bluetooth Link

2.2 Connection Diagram of Test System



2.3 Supported Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-825	KA2DIR825A1	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	21PCBS1	FCC DoC	Unshielded, 1.7m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Notebook	Acer	MS2347	HLZ-BRCM1053	Unshielded, 1.7m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Motorola	S705	IHDT6GH1	N/A	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
7.	Fixture	N/A	WG7XXXT01	N/A	N/A	N/A
8.	Adapter	Aviv Energy	HK-IP15-A05	N/A	N/A	Unshielded, 1.8 m



2.4 EUT Operation Test Setup

The EUT was set in below conditions during EMS testing. Power ports shall further be classified as DC power.

Before testing, the EUT is fed power from test jig and perform a functionality check as follows, and if abnormal function is found, the situation is recorded in test report,

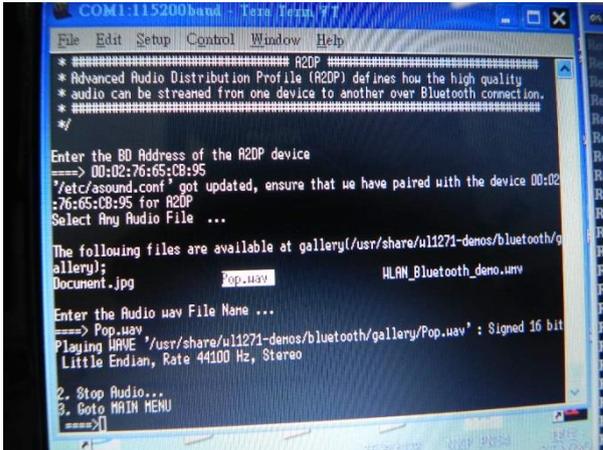
WLAN

1. EUT is fed power from test jig, and enable WLAN function of the EUT.
2. EUT links with supported units, Wireless AP, and notebook.
3. Execute "PING IP" function under the "cmd" of Window system to transfer packet bi-directionally between the EUT and supported units, Wireless AP, and notebook.
4. Monitor the packet loss and WLAN radio performance between EUT and Wireless AP by seeing the window of "cmd" the notebook display.

Bluetooth

1. EUT is fed power from test jig, and enable Bluetooth function of the EUT.
2. EUT Link with supported unit, Bluetooth Earphone via Bluetooth radio function.
3. Let EUT catch the Bluetooth device.
4. Monitor the status of connection by checking the Bluetooth link performance.

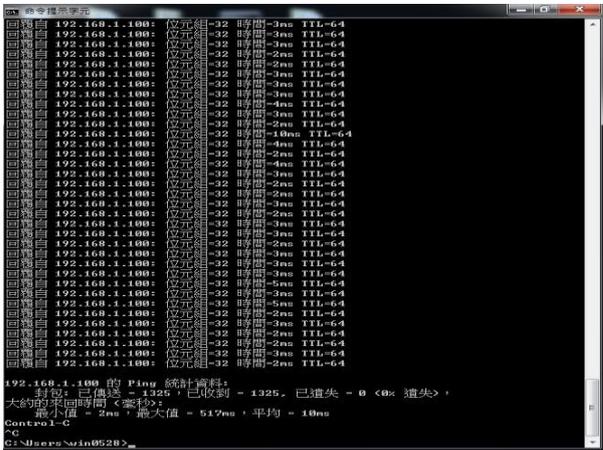
Before testing, during and after, the EUT performance criteria are under being monitored and the section 2.5 Performance Criteria of EUT is used for judgment.



Monitor the Bluetooth function



Monitor the WLAN function



Monitor the WLAN packet lost (0%)

2.5 Performance Criteria of EUT

Criteria	Performance criteria
CT/CR	<p>During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.</p> <p>During the test the EUT shall not unintentionally transmit or change its actual operating state.</p> <p>The performance criteria of functions of EUT are described as below :</p> <ul style="list-style-type: none"> ♦ The EUT shall operate as its intended operating condition during and after the test. ♦ Bluetooth : The EUT shall show no loss of user control functions and the continuous transmitting shall be maintained during and after the test. ♦ WLAN : The EUT shall show no loss of user control functions and the continuous transmitting shall be maintained during and after the test.
TT/TR	<p>After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.</p> <p>During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.</p>

**<Performance Table>
<EN301 489-17>**

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

NOTE 1:

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

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2:

No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

CLAUSE 6.3 to 6.6 of EN301489-17	
Criteria	Performance criteria
CT	<p>The performance criteria A shall apply.</p> <p>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.</p>
CR	<p>The performance criteria A shall apply.</p> <p>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.</p>
TT	<p>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.</p> <p>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.</p>
TR	<p>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.</p> <p>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.</p>



3. Test Conditions of 301489 Series Standards

3.1 Special Conditions of Applied Standards for EUT

Below each section is special condition applied for each application of EUT.

3.1.1 Immunity

EN301489-17

No special conditions are relevant for products covered in the present document.

3.2 Exclusion Band

3.2.1 301489-17

lower limit of exclusion band = lowest allocated band edge frequency -5 %;
upper limit of exclusion band = highest allocated band edge frequency +5 %.

4. Immunity Tests

4.1 Radio Frequency Electromagnetic Field Immunity (RS) (Refer to EN301 489-1 Section 9.2)

4.1.1 Limit of Radio Frequency Electromagnetic Field Test (RS)

Most electronic equipment is in some manner affected by electromagnetic radiation. RF immunity test entails the equipment under test to a uniform field of radiated electromagnetic energy of a specified electromagnetic field strength, and at the same time, monitoring the functionality of the device as the frequency is swept over specified frequency range. This test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic field disturbance.

The preferential range of test field strength levels for the RS test is given in following levels:
80 MHz ~ 1 GHz: 3V/m; 1.4 GHz ~ 2.7 GHz: 3V/m.

RF signal was modulated by a 1 kHz sine wave with a modulation depth of 80%.

Dwell time : 3 seconds ; Step size : 1 %

Required performance criterion is CT/CR (Continuous Phenomena for Transmitter / Receiver).

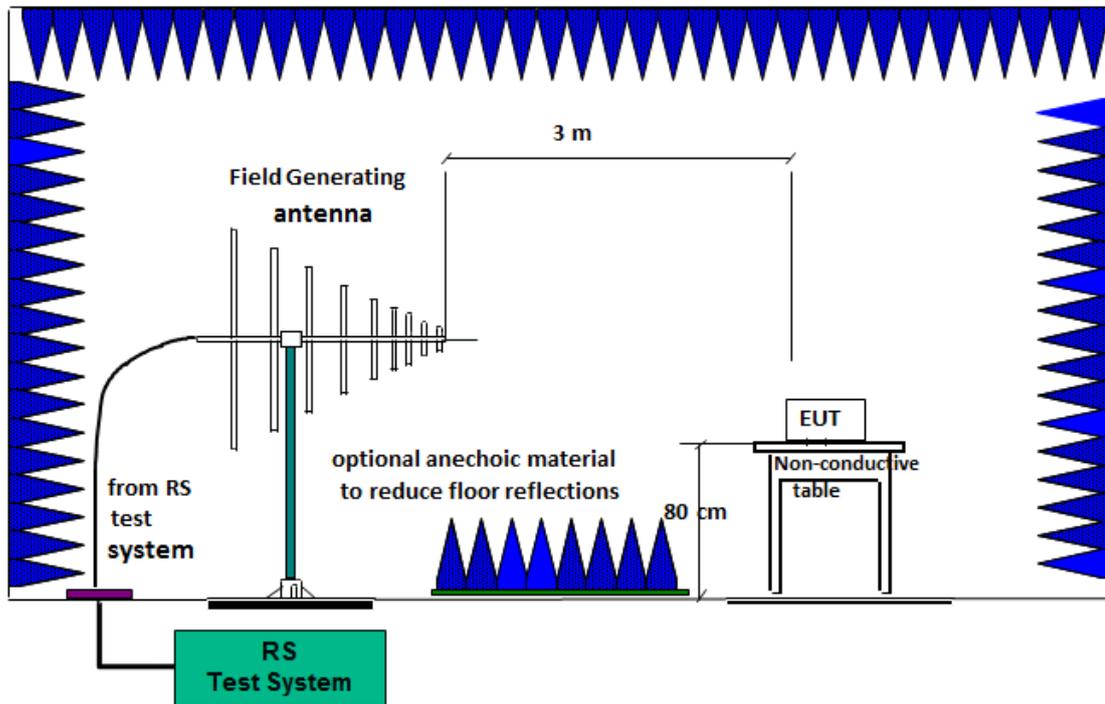
4.1.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

4.1.3 Test Procedures

- a. The antenna which is enabling the complete frequency range of 80-1000 MHz and 1400-2700 MHz is placed 3m away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
- b. The test is performed with the antenna facing the front and back sides of the EUT with or without the headset. Both vertical and horizontal polarizations from antenna are tested.
- c. At each of the above conditions, the frequency range is swept at 80-1000 MHz and 1400-2700MHz. The exclusion band for receivers and receiver sections of transceivers is the band of frequencies over which no immunity tests with radiated RF are made.

4.1.4 Test Setup



NOTE: The SPORTON 7m x 4m x 4m semi-anechoic chamber is in compliance with the sixteen point uniform field requirement as stated in IEC 61000-4-3 Section 6.2.

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

4.1.5 Test Severity Levels

Frequency Band: 80-1000 MHz and 1400-2700 MHz.

Level	Test field strength (V/m)
1	1
2	3
3	10
X	Specified

Remark: "X" is an open class.

**4.1.6 Test Result**

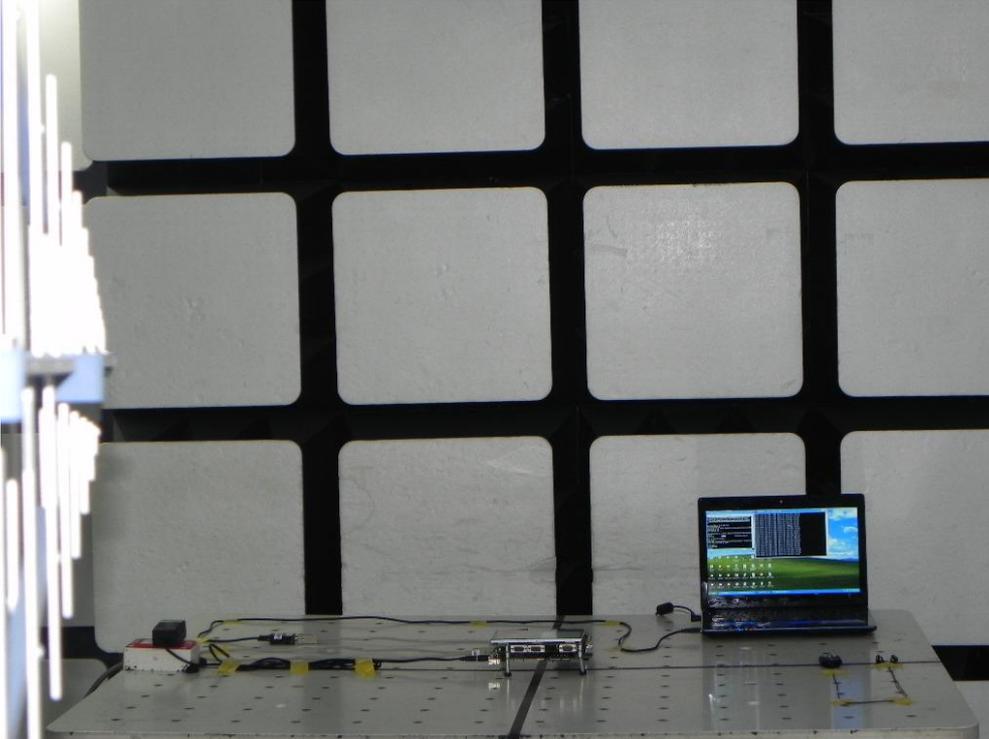
Test Standard	EN 61000-4-3:2006+A1:2008+A2:2010
Product Standard	EN 301 489-1, EN 301 489-17
Required Performance Criteria	CT/CR
EUT Performance	CT/CR
Frequency Range	80-1000 MHz, 1400-2700 MHz
Field Strength	3 V/m (Modulated 1KHz, 80% AM) - Level 2
Ambient Temperature	23~25°C
Relative Humidity	52~55%
Test Date	Dec. 27, 2013
Test Engineer	Sin Lai
Test Result	PASS

Remark:

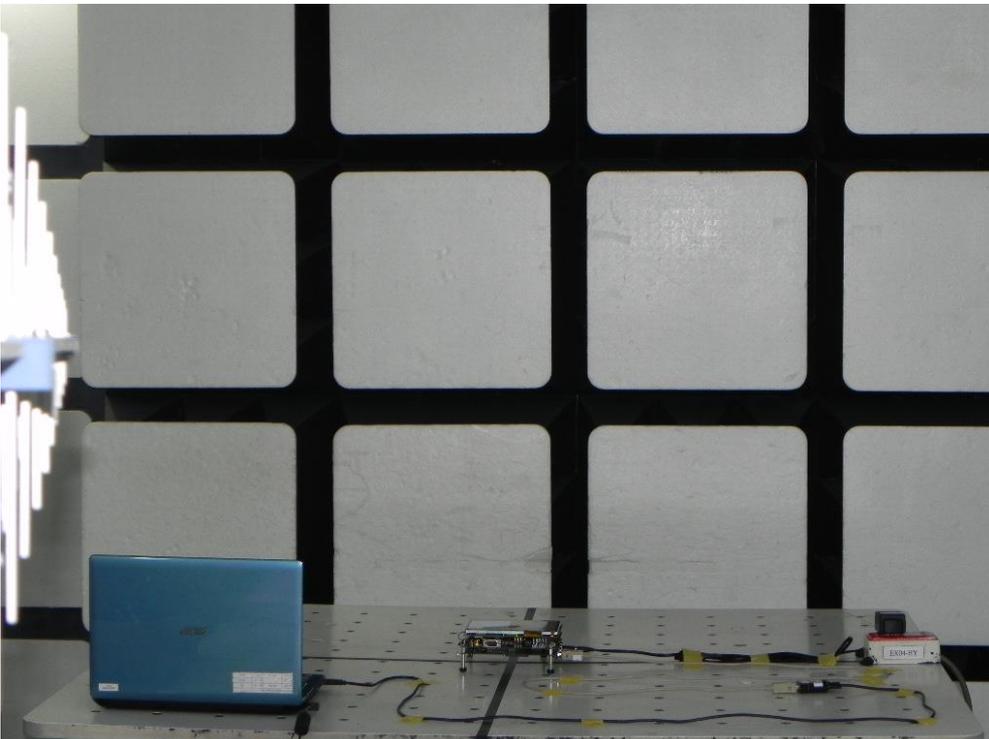
1. There is no unintentional operation during this test.
2. When the EUT was placed on the table, the all sides of EUT have almost the same separation distance away from field generation antenna. The right (90°) and left (270°) sides are under the same field strength while the EUT was tested at front (0°) and back (180°) side. Therefore, we only tested at front and back sides of EUT for RS testing.

4.1.7 Setup Photographs

Position 0°



Position 180°



4.2 Electrostatic Discharge (ESD) (Refer to EN301 489-1 Section 9.3)

This test is applicable for radio equipment and associated ancillary equipment. This test shall be performed on a representative configuration of the radio equipment, the associated ancillary equipment, or a representative configuration of the combination of radio and ancillary equipment.

4.2.1 Limit of Electrostatic Discharge Test

This test assesses the ability of the EUT to operate as intended in the event of an electrostatic discharge. Air discharges and contact charges are estimated to enclosure of EUT on all connectors and conducting surfaces. The minimum number of discharges applied is depending on the EUT; for products with synchronized circuits the number of discharges should be larger.

Contact Discharges to the conductive surfaces and to coupling planes:

The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied. At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the centre point of each unit (if applicable) of the EUT and 0,1 m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. At least 10 single discharges (in the most sensitive polarity) shall be applied to the centre of one vertical edge of the coupling plane. The coupling plane, of dimensions 0,5 m × 0,5 m, is placed parallel to, and positioned at a distance of 0,1 m from, the EUT.

Air Discharge at seam between apertures and insulation surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. This investigation should be restricted to those areas normally handled by the user. A minimum of 10 single air discharges of each polarity and test level shall be applied to the selected test point for each area.

The preferential range of test levels for the ESD test is given in following levels:

Contact discharge test voltage ± 4 kV; Air discharge test voltage ± 8 kV.

Required performance criterion is the criteria TT/TR (Transient Phenomena for Transmitter / Receiver).

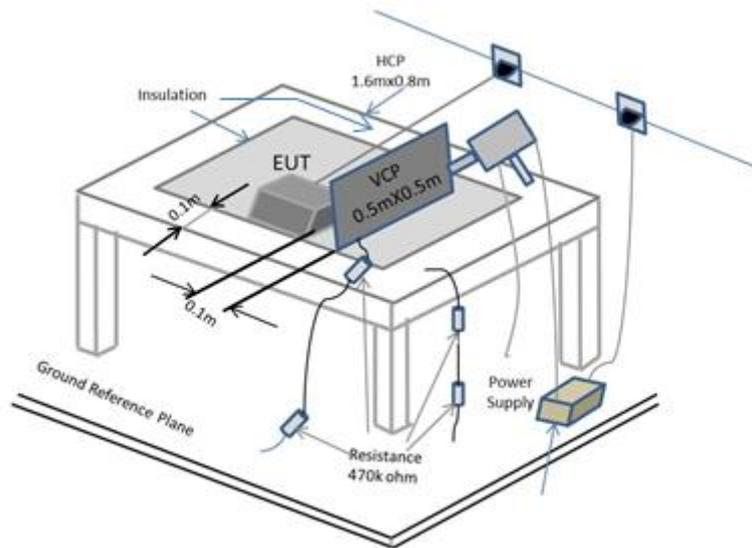
4.2.2 Measuring Instruments

The measuring equipment is listed in the section 6 of this test report.

4.2.3 Test Procedure

- a. In the case of air discharge testing, the climatic conditions shall be within the following ranges:
 - ambient temperature: 15°C to 35°C;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)
- b. Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- c. In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- d. In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - The contact discharge test shall not be applied to such surfaces.
- e. In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.
- f. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.
- g. The test shall be performed with both air discharge and contact discharge. According to the CE severity level on pre-selected points, at least 10 single discharges (in the most sensitive polarity) shall be applied on air discharge and at least 10 single discharges (in the most sensitive polarity) shall be applied on contact discharge. For the time interval between successive single discharges, an initial value of one second is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
- h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.

4.2.4 Test Setup



The test setup consists of the discharge generator, EUT and auxiliary instrument necessary to perform DIRECT and INDIRECT application of discharges to the EUT, in the following manner:

- a. CONTACT DISCHARGE to the conductive surfaces and to the coupling plane;
- b. AIR DISCHARGE at insulating surfaces.

A ground reference plane was provided on the floor of the test site. It was a metallic sheet (copper or aluminum) of 0.25 mm, minimum thickness; other metallic may be used but they shall have at least 0.65 mm thickness. In SPORTON, we provided 1 mm thickness aluminum ground reference plane or 1 mm thickness stainless steel ground reference plane. The minimum size of the ground reference plane is 1 m x 1 m, the exact size depending on the dimensions of the EUT. It was connected to the protective grounding system.

The EUT was arranged and connected according to its functional requirements. A distance of 1m minimum was provided between the EUT and the wall of the lab and any other metallic structure. In cases where this length exceeds the length necessary to apply the discharges to the selected points, the excess length shall, where possible, be placed non-inductively off the ground reference plane and shall not be less than 0.2m to other conductive parts in the test setup.

Where the EUT is installed on a metal table, the table was connected to the reference plane via a cable with a 470k ohm resistor located at each end, to prevent a build-up of charge. The test setup consisted a wooden table, 0.8m high, standing on the ground reference plane. A HCP, 1.6 m x 0.8 m, was placed on the table. The EUT and cables was isolated from the HCP by an insulating support 0.5 mm thick. The VCP size is 0.5 m x 0.5 m.

4.2.5 Test Severity Levels

Level	Test Voltage (kV) of Air Discharge	Test Voltage (kV) of Contact discharge
1	±2	±2
2	±4	±4
3	±8	±6
4	±15	±8
X	Specified	Specified

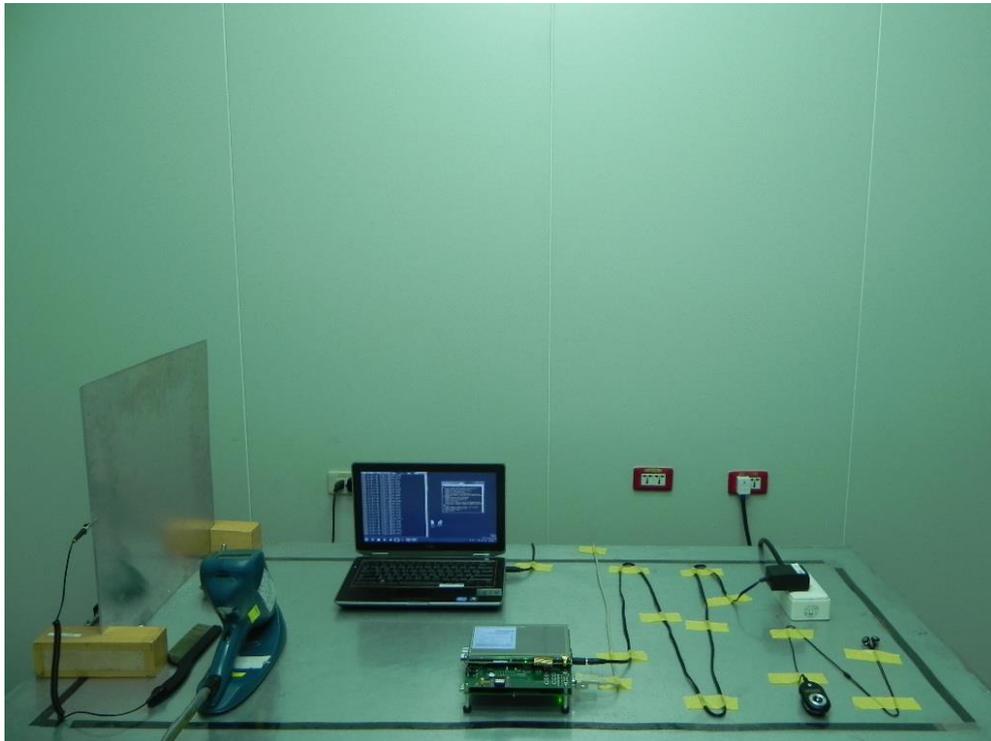
Remark: "X" is an open level.

4.2.6 Test Equipment Settings

Indirect Application of The Discharge		
Test Type	Test Severity Level	Tested No.
Vertical Coupling Plane (VCP)	±2 / ±4 kV	BY 10
Horizontal Coupling Plane (HCP)	±2 / ±4 kV	BY 10

4.2.7 Test Result

Test Standard	EN 61000-4-2:2009
Product Standard	EN 301 489-1, EN 301 489-17
Required Performance Criteria	TT/TR
EUT Performance	CT/CR
Tested Voltage	±2 / ±4 kV for contact discharge - Level 2
Ambient Temperature	21~24°C
Relative Humidity	49~52%
Atmospheric Pressure	98kPa
Test Date	Jan. 04, 2014
Test Engineer	Mars Chen
Test Result	PASS

4.2.8 Setup Photographs



5. Uncertainty Measurement

Uncertainty of Radiated Susceptibility Measurement (80 MHz ~ 1 GHz and 1.4GHz ~ 2.7GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y))	2.56
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Uncertainty of Electrostatic Discharge Measurement

	Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y)) %
Electrostatic Discharge ~ Rise Time	8.50%
Electrostatic Discharge ~ Peak Current	6.00%
Electrostatic Discharge ~ 30ns Current	6.00%
Electrostatic Discharge ~ 60ns Current	6.00%

**6. List of Measuring Equipment**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Field Sensor	ETS-Lindgren	HI-6105	00086972	100kHz~6GHz	Mar. 18, 2013	Dec. 27, 2013	Mar. 17, 2014	RS (RS02-HY)
Signal Generator	R&S	SML-03	100383	9kHz ~ 3.3 GHz	Aug. 26, 2013	Dec. 27, 2013	Aug. 25, 2014	RS (RS02-HY)
Power Meter	R&S	NRVD	102003	N/A	Mar. 28, 2013	Dec. 27, 2013	Mar. 27, 2014	RS (RS02-HY)
Power Sensor	R&S	URV5-Z2	100356	N/A	Mar. 28, 2013	Dec. 27, 2013	Mar. 27, 2014	RS (RS02-HY)
Power Sensor	R&S	URV5-Z2	100358	N/A	Mar. 28, 2013	Dec. 27, 2013	Mar. 27, 2014	RS (RS02-HY)
Antenna	R&S	HL562Z1	100168	30MHz ~ 3GHz	Calibrated as part of system	Dec. 27, 2013	Calibrated as part of system	RS (RS02-HY)
Power Amplifier	AR	60S1G3	0327591	0.8 ~ 3GHz, 60w	Calibrated as part of system	Dec. 27, 2013	Calibrated as part of system	RS (RS02-HY)
Power Amplifier	AR	150W1200	312366	80MHz ~ 1GHz	Calibrated as part of system	Dec. 27, 2013	Calibrated as part of system	RS (RS02-HY)
ESD Simulator	TESTQ	NSG 438	877	±0.2 KV ~ 30 KV	Jul. 18, 2013	Jan. 04, 2014	Jul. 17, 2014	ESD (ES04-HY)