

Variant RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : Vodafone Smart Tab 10
BRAND NAME : ZTE
MODEL NAME : Vodafone Smart Tab 10
FCC ID : Q78-V11A
STANDARD : FCC Part 15 Subpart E
CLASSIFICATION : Unlicensed National Information Infrastructure (UNII)

The product was received on Oct. 18, 2011 and completely tested on Nov. 06, 2011. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown compliance with the applicable technical standards.

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

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Frequency Band Edges	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	-
3.3	15.407(b)	Transmitter Radiated Emission	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	Under limit 7.41 dB at 767.6 MHz
3.4	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Vodafone Smart Tab 10
Brand Name	ZTE
Model Name	Vodafone Smart Tab 10
FCC ID	Q78-V11A
Tx/Rx Frequency Range	5150 MHz ~ 5250 MHz 5725 MHz ~ 5825 MHz
Maximum Output Power to Antenna	<5150 MHz ~ 5250 MHz> 802.11a : 9.94 dBm / 0.0099 W 802.11n (BW 20MHz) : 9.92 dBm / 0.0098 W <5725 MHz ~ 5825 MHz> 802.11a : 9.88 dBm / 0.0097 W 802.11n (BW 20MHz) : 9.84 dBm / 0.0096 W
Antenna Type	<5150 MHz ~ 5250 MHz> Fixed Internal Antenna with gain -3.2 dBi <5745 MHz ~ 5805 MHz> Fixed Internal Antenna with gain 1.7 dBi
HW Version	110403
SW Version	SmartTab10-MSM8260-V02c-Oct192011-Vodafone-DE
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Unlicensed National Information Infrastructure (UNII).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958
Test Site No.	Sporton Site No. : 03CH01-KS

1.5 Applied Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
- ♦ ANSI C63.4-2003

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (Certification), recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

802.11a Carrier Frequency Channel							
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220	48	5240
52	5260	56	5280	60	5300	64	5320
100	5500	104	5520	108	5540	112	5560
116	5580	132	5660	136	5680	140	5700
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n (BW 20MHz) Carrier Frequency Channel							
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220	48	5240
52	5260	56	5280	60	5300	64	5320
100	5500	104	5520	108	5540	112	5560
116	5580	132	5660	136	5680	140	5700
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

2.2 RF Power

Preliminary RF power output tests were performed in different data rate and recorded the in the following table:

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	9.94	9.89	9.80	9.72	9.67	9.62	9.48	9.47
CH 40	5200 MHz	9.88	-	-	-	-	-	-	-
CH 44	5220 MHz	9.91	-	-	-	-	-	-	-
CH 149	5745 MHz	9.69	-	-	-	-	-	-	-
CH 157	5785 MHz	9.86	-	-	-	-	-	-	-
CH 161	5805 MHz	9.88	9.77	9.72	9.70	9.62	9.60	9.50	9.47

Channel	Frequency	5GHz 802.11n (BW 20MHz) RF Power (dBm)							
		Data Rate							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 36	5180 MHz	9.92	9.91	9.77	9.70	9.52	9.48	9.40	9.37
CH 40	5200 MHz	9.81	-	-	-	-	-	-	-
CH 44	5220 MHz	9.91	-	-	-	-	-	-	-
CH 149	5745 MHz	9.61	-	-	-	-	-	-	-
CH 157	5785 MHz	9.80	-	-	-	-	-	-	-
CH 161	5805 MHz	9.84	9.83	9.65	9.56	9.38	9.28	9.26	9.20

Remark:

1. The data rates of WLAN 802.11a/n were set in 6Mbps for 802.11a and 6.5Mbps for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signal continuously for all testing.



2.3 Test Mode

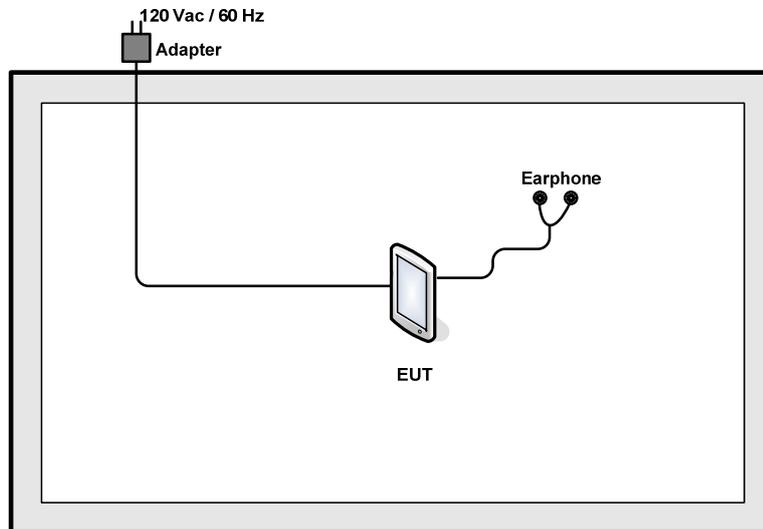
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations, laptop / tablet modes.

The following tables are showing the test modes as the worst cases and recorded in this report.

Test Cases	
Test Item	802.11a/n (Modulation : OFDM)
Radiated TCs	<ul style="list-style-type: none">■ Mode 1: 802.11a_CH40_5200 MHz■ Mode 2: 802.11a_CH157_5785 MHz■ Mode 3: 802.11a_CH40_5200 MHz (BW 20M)■ Mode 4: 802.11a_CH149_5745 MHz (BW 20M)

2.4 Connection Diagram of Test System



2.5 RF Utility

The programmed RF Utility "cmd", is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 Band Edges Measurement

3.1.1 Limit of Band Edges

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
- (2) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

3.1.2 Measuring Instruments

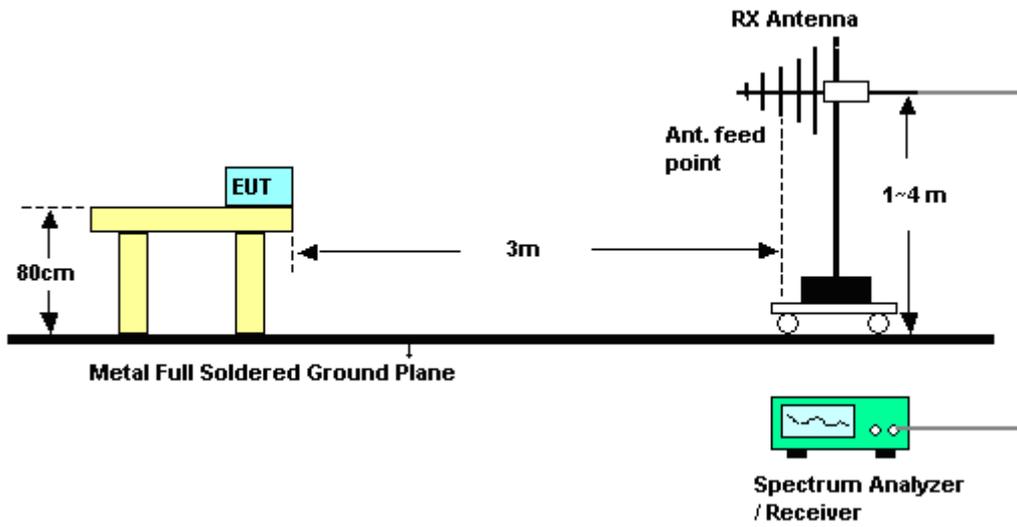
See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. Set both RBW / VBW of spectrum analyzer to 1MHz / 3MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.1.4 Test Setup

<Radiated>





3.1.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	40	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	49.17	-24.83	74	41.42	35.25	5.11	32.61	100	113	Peak
5150	38.62	-15.38	54	30.87	35.25	5.11	32.61	100	113	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5122	51.59	-22.41	74	43.8	35.23	5.08	32.52	100	263	Peak
5122	39.62	-14.38	54	31.83	35.23	5.08	32.52	100	263	Average

Test Mode :	Mode 2	Temperature :	22~23°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	157	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.4	-18.8	68.2	41.88	35.52	5.55	33.55	100	117	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5825	48.44	-19.76	68.2	41	35.55	5.63	33.74	100	203	Peak



Test Mode :	Mode 3	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	40	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	49.4	-24.6	74	41.65	35.25	5.11	32.61	183	207	Peak
5150	37.91	-16.09	54	30.16	35.25	5.11	32.61	183	207	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	48.59	-25.41	74	40.84	35.25	5.11	32.61	100	164	Peak
5150	37.94	-16.06	54	30.19	35.25	5.11	32.61	100	164	Average

Test Mode :	Mode 4	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	42~43%
Test Channel :	149	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.34	-18.86	68.2	41.82	35.52	5.55	33.55	120	31	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.44	-17.76	68.2	42.92	35.52	5.55	33.55	100	62	Peak

3.3 Radiated Emission Measurement

3.3.1 Limit of Radiated Emission

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
- (3) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \text{ } \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBuV/m)
- 27	68.3

3.3.2 Measuring Instruments

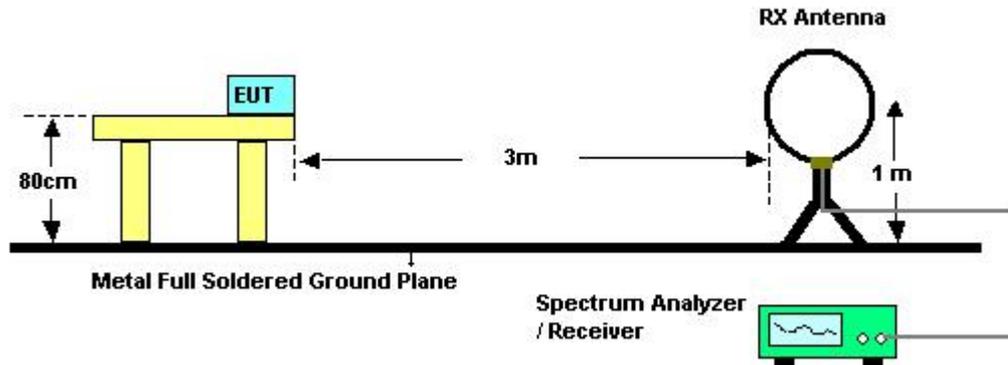
See list of measuring instruments of this test report.

3.3.3 Test Procedures

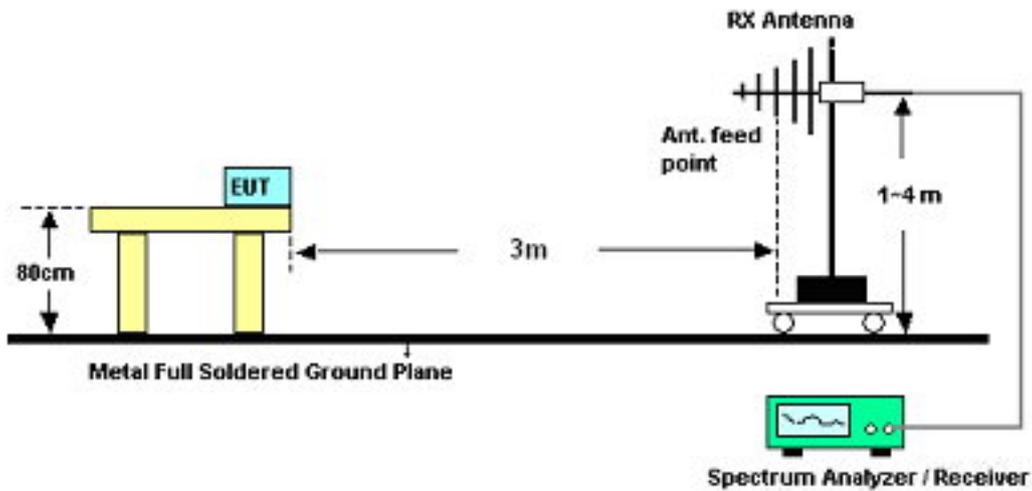
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
6. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
7. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
8. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
9. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.3.4 Test Setup

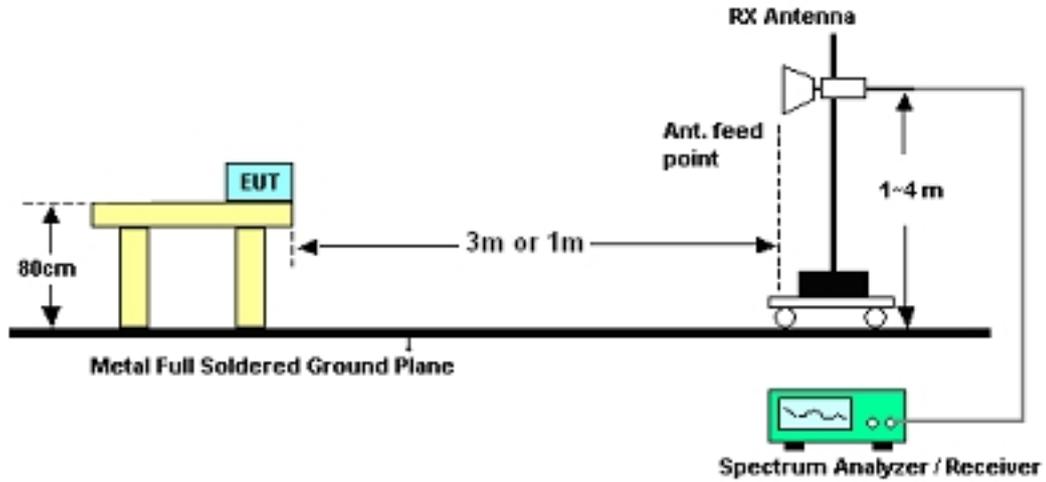
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.3.5 Test Results of Radiated Emissions (9kHz ~ 30MHz)

Temperature	22~23°C	Humidity	42~43%
Test Engineer	Jack Li		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.3.6 Test Result of Radiated Emission (30MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	40	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	5200 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.41	29.08	-10.92	40	51.91	7.01	0.29	30.13	-	-	Peak
113.7	25.11	-18.39	43.5	42.84	11.8	0.44	29.97	-	-	Peak
288.93	24.51	-21.49	46	40.91	12.84	0.71	29.95	-	-	Peak
548.5	34.89	-11.11	46	45.09	18.48	1	29.68	-	-	Peak
767.6	36.22	-9.78	46	44.68	19.89	1.2	29.55	101	347	Peak
944	30.73	-23.27	54	38.22	20.71	1.33	29.53	-	-	Peak
5150	49.17	-24.83	74	41.42	35.25	5.11	32.61	100	113	Peak
5150	38.62	-15.38	54	30.87	35.25	5.11	32.61	100	113	Average
5200	92.22	-	-	84.55	35.26	5.16	32.75	100	40	Peak
5200	80.66	-	-	72.99	35.26	5.16	32.75	100	40	Average
5250	48.41	-19.79	68.2	40.84	35.28	5.21	32.92	100	62	Peak
5350	48.52	-25.48	74	41.11	35.32	5.31	33.22	100	330	Peak
5350	37.24	-16.76	54	29.83	35.32	5.31	33.22	100	330	Average



Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	40	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	5200 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
35.94	26.93	-13.07	40	42.13	14.65	0.23	30.08	-	-	Peak
132.87	21.5	-22	43.5	39.54	11.47	0.48	29.99	-	-	Peak
288.93	29.02	-16.98	46	45.42	12.84	0.71	29.95	-	-	Peak
548.5	37.76	-8.24	46	47.96	18.48	1	29.68	112	351	Peak
767.6	37.03	-8.97	46	45.49	19.89	1.2	29.55	-	-	Peak
960.1	34.15	-19.85	54	41.56	20.79	1.34	29.54	-	-	Peak
5122	51.59	-22.41	74	43.8	35.23	5.08	32.52	100	263	Peak
5122	39.62	-14.38	54	31.83	35.23	5.08	32.52	100	263	Average
5200	97.44	-	-	89.77	35.26	5.16	32.75	100	355	Peak
5200	85.29	-	-	77.62	35.26	5.16	32.75	100	355	Average
5250	49.12	-19.08	68.2	41.55	35.28	5.21	32.92	100	218	Peak
5350	50.39	-23.61	74	42.98	35.32	5.31	33.22	100	173	Peak
5350	37.58	-16.42	54	30.17	35.32	5.31	33.22	100	173	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.68	28.13	-11.87	40	50.96	7.01	0.29	30.13	-	-	Peak
113.97	24.46	-19.04	43.5	42.19	11.8	0.44	29.97	-	-	Peak
288.93	25.25	-20.75	46	41.65	12.84	0.71	29.95	-	-	Peak
548.5	34.65	-11.35	46	44.85	18.48	1	29.68	-	-	Peak
767.6	36.02	-9.98	46	44.48	19.89	1.2	29.55	200	360	Peak
944	30.36	-23.64	54	37.85	20.71	1.33	29.53	-	-	Peak
5725	49.4	-18.8	68.2	41.88	35.52	5.55	33.55	100	117	Peak
5785	94.98	-	-	87.5	35.53	5.59	33.64	162	18	Peak
5785	83.14	-	-	75.66	35.53	5.59	33.64	162	18	Average
5825	48.38	-19.82	68.2	40.94	35.55	5.63	33.74	100	110	Peak



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
72.93	23.94	-16.06	40	48.12	5.55	0.34	30.07	-	-	Peak
135.03	24.03	-19.47	43.5	42.24	11.3	0.48	29.99	-	-	Peak
288.93	28.4	-17.6	46	44.8	12.84	0.71	29.95	-	-	Peak
512.1	37.21	-8.79	46	48.51	17.45	0.97	29.72	-	-	Peak
548.5	38.24	-7.76	46	48.44	18.48	1	29.68	-	-	Peak
767.6	38.34	-7.66	46	46.8	19.89	1.2	29.55	191	355	Peak
5725	48.1	-20.1	68.2	40.58	35.52	5.55	33.55	100	326	Peak
5785	84.09	-	-	76.61	35.53	5.59	33.64	100	3	Average
5785	95.52	-	-	88.04	35.53	5.59	33.64	100	3	Peak
5825	48.44	-19.76	68.2	41	35.55	5.63	33.74	100	203	Peak



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	40	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	5200 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.14	30.01	-9.99	40	52.84	7.01	0.29	30.13	-	-	Peak
113.97	25.26	-18.24	43.5	42.99	11.8	0.44	29.97	-	-	Peak
228.18	22.82	-23.18	46	41.35	10.75	0.64	29.92	-	-	Peak
548.5	35.77	-10.23	46	45.97	18.48	1	29.68	-	-	Peak
767.6	36.06	-9.94	46	44.52	19.89	1.2	29.55	178	245	Peak
944	29.12	-24.88	54	36.61	20.71	1.33	29.53	-	-	Peak
5150	49.4	-24.6	74	41.65	35.25	5.11	32.61	183	207	Peak
5150	37.91	-16.09	54	30.16	35.25	5.11	32.61	183	207	Average
5200	91.61	-	-	83.94	35.26	5.16	32.75	100	322	Peak
5200	78.68	-	-	71.01	35.26	5.16	32.75	100	322	Average
5250	49.37	-18.83	68.2	41.8	35.28	5.21	32.92	100	142	Peak
5350	48.71	-25.29	74	41.3	35.32	5.31	33.22	118	21	Peak
5350	36.72	-17.28	54	29.31	35.32	5.31	33.22	118	21	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	40	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	5200 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
72.93	20.57	-19.43	40	44.75	5.55	0.34	30.07	-	-	Peak
133.68	21.03	-22.47	43.5	39.15	11.39	0.48	29.99	-	-	Peak
288.93	27.96	-18.04	46	44.36	12.84	0.71	29.95	-	-	Peak
512.1	34.07	-11.93	46	45.37	17.45	0.97	29.72	-	-	Peak
548.5	37.82	-8.18	46	48.02	18.48	1	29.68	-	-	Peak
767.6	38.59	-7.41	46	47.05	19.89	1.2	29.55	200	0	Peak
5150	48.59	-25.41	74	40.84	35.25	5.11	32.61	100	164	Peak
5150	37.94	-16.06	54	30.19	35.25	5.11	32.61	100	164	Average
5200	96.95	-	-	89.28	35.26	5.16	32.75	200	331	Peak
5200	85.29	-	-	77.62	35.26	5.16	32.75	200	331	Average
5250	47.93	-20.27	68.2	40.36	35.28	5.21	32.92	100	88	Peak
5350	48.77	-25.23	74	41.36	35.32	5.31	33.22	131	228	Peak
5350	36.68	-17.32	54	29.27	35.32	5.31	33.22	131	228	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.68	28.53	-11.47	40	51.36	7.01	0.29	30.13	-	-	Peak
113.16	25.4	-18.1	43.5	43.13	11.8	0.44	29.97	-	-	Peak
295.41	25.57	-20.43	46	41.85	12.95	0.72	29.95	-	-	Peak
512.1	29.39	-16.61	46	40.69	17.45	0.97	29.72	-	-	Peak
548.5	34.88	-11.12	46	45.08	18.48	1	29.68	-	-	Peak
767.6	37.03	-8.97	46	45.49	19.89	1.2	29.55	105	223	Peak
5725	49.34	-18.86	68.2	41.82	35.52	5.55	33.55	120	31	Peak
5745	81.87	-	-	74.37	35.52	5.56	33.58	108	31	Average
5745	93.72	-	-	86.22	35.52	5.56	33.58	108	31	Peak
5825	48.7	-19.5	68.2	41.26	35.55	5.63	33.74	100	12	Peak



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	42~43%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
72.93	24.38	-15.62	40	48.56	5.55	0.34	30.07	-	-	Peak
134.76	25.53	-17.97	43.5	43.74	11.3	0.48	29.99	-	-	Peak
288.93	29.35	-16.65	46	45.75	12.84	0.71	29.95	-	-	Peak
512.1	37.72	-8.28	46	49.02	17.45	0.97	29.72	-	-	Peak
548.5	37.56	-8.44	46	47.76	18.48	1	29.68	-	-	Peak
767.6	38.23	-7.77	46	46.69	19.89	1.2	29.55	100	346	Peak
5725	50.44	-17.76	68.2	42.92	35.52	5.55	33.55	100	62	Peak
5745	83.12	-	-	75.62	35.52	5.56	33.58	100	182	Average
5745	93.57	-	-	86.07	35.52	5.56	33.58	100	182	Peak
5825	48.83	-19.37	68.2	41.39	35.55	5.63	33.74	100	33	Peak



3.4 Antenna Requirements

3.4.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.4.2 Antenna Connected Construction

The antennas type used in this product is Fixed Internal Antenna without connector and it is considered to meet antenna requirement of FCC.

3.4.3 Antenna Gain

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 16, 2010	Nov. 15, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz ~ 2GHz	Jan. 10, 2011	Jan. 09, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 13, 2011	Oct. 12, 2012	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP182402-01 as below

