

Partial FCC RF Test Report

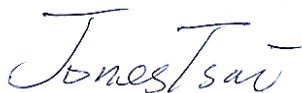
APPLICANT : Compal Electronics, Inc.
EQUIPMENT : Smart phone
BRAND NAME : SDBG
MODEL NAME : i4901
FCC ID : GKR-SD4901
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

This is a partial report which is included the conducted power and radiation measurement. The product was received on Nov. 12, 2013 and testing was completed on Mar. 29, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

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.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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FCC ID : GKR-SD4901

Page Number : 1 of 24

Report Issued Date : Jun. 04, 2014

Report Version : Rev. 01



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3N1236C	Rev. 01	Initial issue of report	Jun. 04, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.33 dB at 2389.560 MHz
3.2	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Compal Electronics, Inc.

No. 581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan (R.O.C.)

1.2 Manufacturer

Compal Electronics, Inc.

No. 581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan (R.O.C.)

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Smart phone
Brand Name	SDBG
Model Name	i4901
FCC ID	GKR-SD4901
Sample 1	EUT with 512M Memory
Sample 2	EUT with 1G Memory
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA WLAN 11b/g/n (HT20/HT40) Bluetooth v3.0 + EDR/ v4.0 - LE
HW Version	0D
SW Version	LF11.0.022.00
EUT Stage	Identical Prototype

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 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 19.68 dBm (0.0929 W) 802.11g : 22.70 dBm (0.1862 W) 802.11n HT20 : 22.37 dBm (0.1726 W) 802.11n HT40 : 22.53 dBm (0.1791 W)
Antenna Type	Loop Antenna with gain 1.07 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

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

1.6 Testing Site

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: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH02-HY	03CH06-HY	722060/4086B-1

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 Applied Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ♦ ANSI C63.4-2003

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

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.68	19.65	19.63	19.51

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	22.70	22.65	22.65	22.68	22.64	22.66	22.66	22.64

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.37	22.35	22.30	22.27	22.30	22.21	22.28	22.27

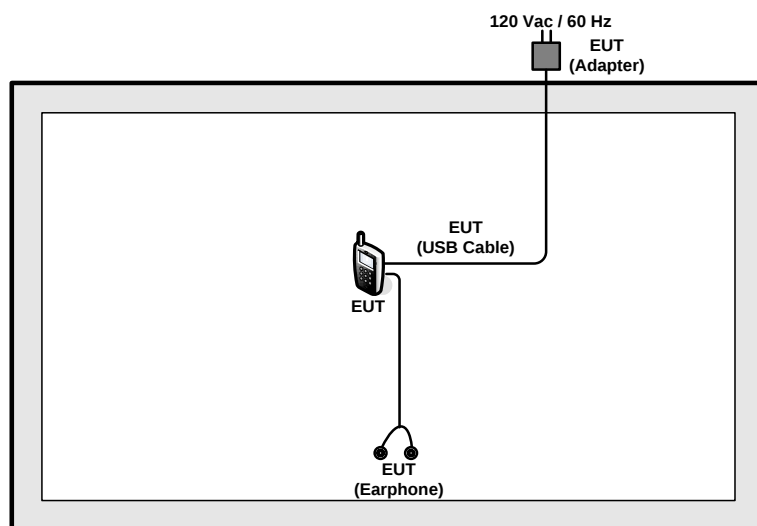
2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.53	22.17	22.01	22.12	22.14	21.90	22.10	21.99

2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1
		802.11g	6 Mbps	11
		802.11n HT20	MCS0	11
		802.11n HT40	MCS0	3
	Radiated Spurious Emission	802.11b	1 Mbps	1
		802.11g	6 Mbps	11
		802.11n HT20	MCS0	11
		802.11n HT40	MCS0	3
Remark: All tests were performed with sample 1.				

2.4 Connection Diagram of Test System





2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program (SW: LF11.0.019.00) was provided and enabled to make EUT continuous transmit/receive.

3 Test Result

3.1 Radiated Band Edges and Spurious Emission Measurement

3.1.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

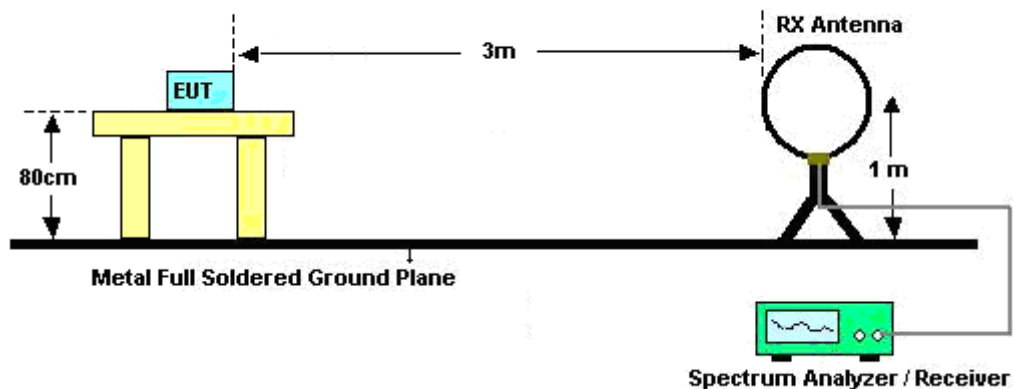
For average measurement:

 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

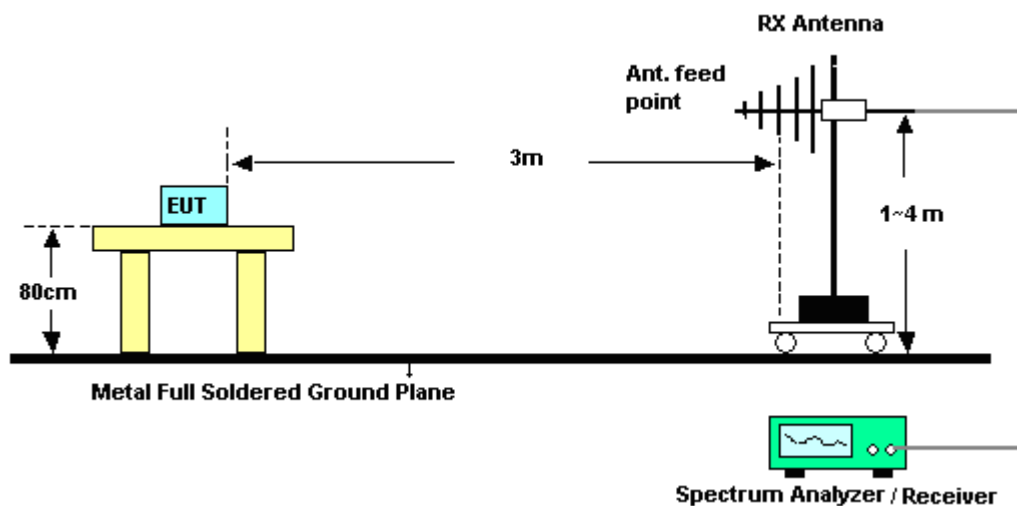
Band	Duty Cycle(%)	T(μ s)	1/T(kHz)	VBW Setting
802.11b	97.97	8393	0.12	1kHz
802.11g	88.27	1386	0.72	1kHz
2.4GHz 802.11n HT20	87.60	1290	0.78	1kHz
2.4GHz 802.11n HT40	79.13	652	1.53	3kHz

3.1.4 Test Setup

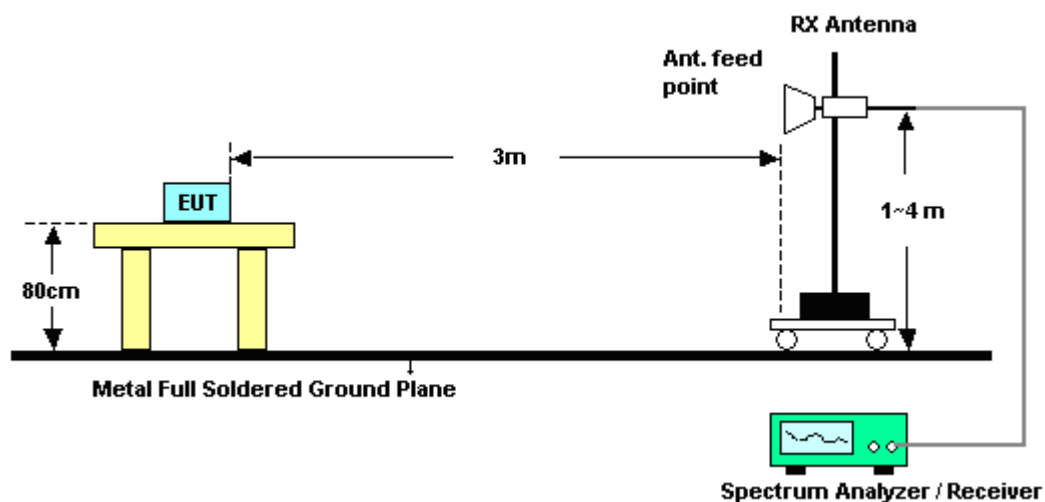
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.1.6 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b	Temperature :	22~24°C
Test Band :	Low	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Marlboro Hsu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.56	54.67	-19.33	74	50.63	31.92	6.45	34.33	200	321	Peak
2386.95	40.18	-13.82	54	36.14	31.92	6.45	34.33	200	321	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2362.38	51.55	-22.45	74	47.58	31.89	6.42	34.34	100	116	Peak
2390	38.68	-15.32	54	34.64	31.92	6.45	34.33	100	116	Average

Test Mode :	802.11g	Temperature :	22~24°C
Test Band :	High	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Marlboro Hsu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.72	65.26	-8.74	74	60.97	32	6.59	34.3	200	328	Peak
2483.59	43.14	-10.86	54	38.86	31.99	6.59	34.3	200	328	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.91	61.97	-12.03	74	57.69	31.99	6.59	34.3	100	193	Peak
2483.86	41.06	-12.94	54	36.78	31.99	6.59	34.3	100	193	Average

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Band :	High	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Marlboro Hsu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.88	65.43	-8.57	74	61.15	31.99	6.59	34.3	200	328	Peak
2483.62	44.83	-9.17	54	40.55	31.99	6.59	34.3	200	328	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.98	63.06	-10.94	74	58.78	31.99	6.59	34.3	100	116	Peak
2483.59	41.86	-12.14	54	37.58	31.99	6.59	34.3	100	116	Average

Test Mode :	802.11n HT40	Temperature :	22~24°C
Test Band :	Low	Relative Humidity :	47~49%
Test Channel :	03	Test Engineer :	Marlboro Hsu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.3	66.71	-7.29	74	62.67	31.92	6.45	34.33	100	238	Peak
2389.56	49.67	-4.33	54	45.63	31.92	6.45	34.33	100	238	Average
2484.22	55.61	-18.39	74	51.33	31.99	6.59	34.3	100	238	Peak
2483.95	39.49	-14.51	54	35.21	31.99	6.59	34.3	100	238	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2387.76	60.65	-13.35	74	56.61	31.92	6.45	34.33	200	320	Peak
2388.48	43.18	-10.82	54	39.14	31.92	6.45	34.33	200	320	Average
2493.01	54.49	-19.51	74	50.19	32	6.59	34.29	200	320	Peak
2485.93	37.43	-16.57	54	33.15	31.99	6.59	34.3	200	320	Average

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

Test Mode :	802.11b	Temperature :	22~24°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Horizontal
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2414	102.5	-	-	98.41	31.93	6.49	34.33	200	321	Average
2414	107.42	-	-	103.33	31.93	6.49	34.33	200	321	Peak
4824	48.35	-25.65	74	59.37	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11b	Temperature :	22~24°C
Test Channel :	01	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Vertical
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2414	99.94	-	-	95.85	31.93	6.49	34.33	100	116	Average
2414	104.96	-	-	100.87	31.93	6.49	34.33	100	116	Peak
4824	49.12	-24.88	74	60.14	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11g	Temperature :	22~24°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Horizontal
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2460	93.98	-	-	89.76	31.97	6.56	34.31	200	328	Average
2460	104.61	-	-	100.39	31.97	6.56	34.31	200	328	Peak
4923	48.82	-25.18	74	60.06	34.34	10.2	55.78	100	0	Peak
7386	48.87	-25.13	74	58.5	35.56	10.92	56.11	100	0	Peak

Test Mode :	802.11g	Temperature :	22~24°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Vertical
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	89.94	-	-	85.72	31.97	6.56	34.31	100	193	Average
2464	100.74	-	-	96.52	31.97	6.56	34.31	100	193	Peak
4923	47.26	-26.74	74	58.5	34.34	10.2	55.78	100	0	Peak
7386	47.84	-26.16	74	57.47	35.56	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	22~24°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Horizontal
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	94.87	-	-	90.65	31.97	6.56	34.31	200	328	Average
2464	105.49	-	-	101.27	31.97	6.56	34.31	200	328	Peak
4923	48.82	-25.18	74	60.06	34.34	10.2	55.78	100	0	Peak
7386	48.87	-25.13	74	58.5	35.56	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	22~24°C
Test Channel :	11	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Vertical
Remark :	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2464	89.53	-	-	85.31	31.97	6.56	34.31	100	116	Average
2464	100.15	-	-	95.93	31.97	6.56	34.31	100	116	Peak
4923	47.26	-26.74	74	58.5	34.34	10.2	55.78	100	0	Peak
7386	47.84	-26.16	74	57.47	35.56	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	22~24°C
Test Channel :	03	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Horizontal
Remark :	1. 2424 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.96	25.95	-14.05	40	46.07	10.92	0.75	31.79	100	236	Peak
109.65	21.79	-21.71	43.5	40.19	12.2	1.15	31.75	-	-	Peak
177.96	13.12	-30.38	43.5	33.99	9.4	1.48	31.75	-	-	Peak
468	19.95	-26.05	46	32.16	17.36	2.32	31.89	-	-	Peak
697.6	22.05	-23.95	46	31.79	19.4	2.88	32.02	-	-	Peak
856.5	24.26	-21.74	46	31.92	20.8	3.25	31.71	-	-	Peak
2424	90.54	-	-	86.43	31.94	6.49	34.32	100	238	Average
2424	99.95	-	-	95.84	31.94	6.49	34.32	100	238	Peak
4845	47.42	-26.58	74	58.48	34.39	10.17	55.62	100	0	Peak
7266	49.09	-24.91	74	58.86	35.63	10.95	56.35	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	22~24°C
Test Channel :	03	Relative Humidity :	47~49%
Test Engineer :	Marlboro Hsu	Polarization :	Vertical
Remark :	1. 2422MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	24.69	-15.31	40	37.35	18.5	0.64	31.8	100	71	Peak
63.75	24.42	-15.58	40	49.09	6.2	0.9	31.77	-	-	Peak
113.7	21.29	-22.21	43.5	39.79	12.07	1.18	31.75	-	-	Peak
550.6	20.43	-25.57	46	30.41	19.48	2.54	32	-	-	Peak
819.4	23.08	-22.92	46	31.42	20.4	3.13	31.87	-	-	Peak
902	24.68	-21.32	46	31.74	21.08	3.37	31.51	-	-	Peak
2422	87.12	-	-	83.01	31.94	6.49	34.32	200	320	Average
2422	96.51	-	-	92.4	31.94	6.49	34.32	200	320	Peak
4845	45.79	-28.21	74	56.85	34.39	10.17	55.62	100	0	Peak
7266	47.97	-26.03	74	57.74	35.63	10.95	56.35	100	0	Peak

3.2 Antenna Requirements

3.2.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz z	Aug. 17, 2013	Jan. 20, 2014 ~ Mar. 29, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz z	Aug. 17, 2013	Jan. 20, 2014 ~ Mar. 29, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101067	9kHz ~ 30GHz	Nov. 20, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Nov. 19, 2014	Radiation (03CH06-HY)
Spectrum Analyzer	Agilent	E4408B	MY442110 30	9kHz ~ 26.5GHz	Dec. 02, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Dec. 01, 2014	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/00 03	20MHz ~ 1000MHz	May 06, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	May 05, 2014	Radiation (03CH06-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/00 01	9kHz ~ 30MHz	Jul. 03, 2012	Jan. 30, 2014 ~ Mar. 29, 2014	Jul. 02, 2014	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL6112B	2885	30MHz ~ 2GHz	Oct. 10, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Oct. 09, 2014	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 02, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Aug. 01, 2014	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9kHz ~ 1GHz	Apr. 12, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Apr. 11, 2014	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Jul. 17, 2014	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 251	15GHz ~ 40GHz	Oct. 03, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Oct. 02, 2014	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A019 17	1GHz ~ 26.5GHz	Apr. 12, 2013	Jan. 30, 2014 ~ Mar. 29, 2014	Apr. 11, 2014	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	Jan. 30, 2014 ~ Mar. 29, 2014	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208 212	1 m ~ 4 m	N/A	Jan. 30, 2014 ~ Mar. 29, 2014	N/A	Radiation (03CH06-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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