FCC Radio Test Report

FCC ID: QT9-P330

Report No.	:	TB-FCC125344
Applicant	:	DJI Innovations Technology Co., Ltd.
Equipment Under Test (EUT)		
EUT Name	:	Phantom
Model No.	:	P330
Serial No.	:	P330-1, P330-2, P330-3
Brand Name	:	DJI
Receipt Date	:	2012-10-15
Test Date	:	2012-10-16 to 2012-10-28
Issue Date	:	2012-10-30
Standards	:	FCC Part 15, Subpart C (15.247:2011)
Test Method	:	ANSI C63.4:2003
Conclusions	:	**PASS**

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

The EUT technically complies with the FCC requirements

Test/Witness Engineer : Roy Lai

Approved& Authorized : Laofy Wong

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. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Contents

1. General Information About EUT

1.1 Client Information

Applicant	:	DJI Innovations Technology Co., Ltd.
Address	:	6/F, HKUST SZ IER Bldg, No.9 Yuexing 1st Rd., Hi-Tech Park(South), Nanshan District, Shenzhen, Guangdong, China
Manufacturer	:	DJI Innovations Technology Co., Ltd.
Address	:	6/F, HKUST SZ IER Bldg, No.9 Yuexing 1st Rd., Hi-Tech Park(South), Nanshan District, Shenzhen, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Phantom	
Models No.	:	P330, P330-1, P330-2, P330-3	
Model Difference	:	The different models are identical in schematic, structure and critical component, the only different is the appearance.	
Product Description	:	Operation Frequency: 2406MHz~2476MHz	
		Number of Channel:	71Channels **see note (3)**
		Out Power:	10.17 dBm max Conducted Power
		Antenna Gain:	2 dBi (Dipole Antenna)
		Modulation Type:	DSSS
		Bit Rate of Transmitter:	250 kbps
Power Supply	:	DC Voltage supplied by AAA Size battery.	
Power Rating	:	DC 6.0V from 4*AAA battery.	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note:

(1) This Test Report is according to FCC Part 15.247, the test procedure follows the FCC KDB 558074.

(2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

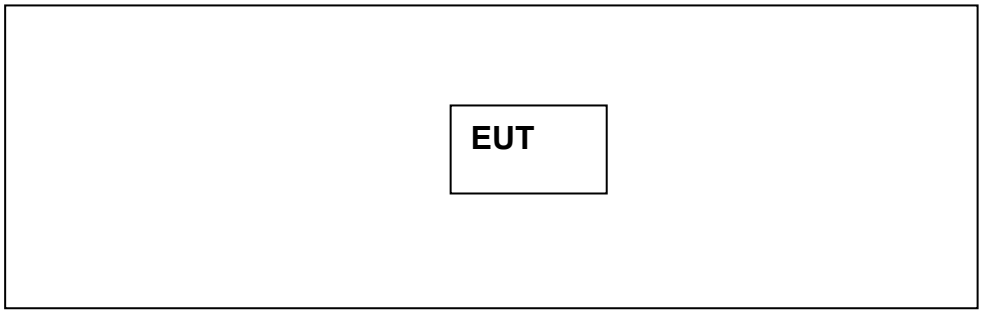
(3) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2406	25	2430	49	2454
02	2407	26	2431	50	2455

03	2408	27	2432	51	2456
04	2409	28	2433	52	2457
05	2410	29	2434	53	2458
06	2411	30	2435	54	2459
07	2412	31	2436	55	2460
08	2413	32	2437	56	2461
09	2414	33	2438	57	2462
10	2415	34	2439	58	2463
11	2416	35	2440	59	2464
12	2417	36	2441	60	2465
13	2418	37	2442	61	2466
14	2419	38	2443	62	2467
15	2420	39	2444	63	2468
16	2421	40	2445	64	2469
17	2422	41	2446	65	2470
18	2423	42	2447	66	2471
19	2424	43	2448	67	2472
20	2425	44	2449	68	2473
21	2426	45	2450	69	2474
22	2427	46	2451	70	2475
23	2428	47	2452	71	2476
24	2429	48	2453		

1.3 Block Diagram Showing the Configuration of System Tested

Mode 1: TX Mode



1.4 Description of Support Units

Name	Model	S/N	Manufacturer	Used "√"
/	/	/	/	/

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	**Description**
N/A	The equipment with DC power from battery, and no AC conducted test.

For Radiated Test	
Final Test Mode	**Description**
Mode 1	TX Mode (2406/2441/2476MHz)

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.
According to ANSI C63.4 standards, the measurements are performed at the highest, middle, lowest available channels.

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on Z-plane. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. 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 power parameters of transmitting.

1.7 Test Facility

The tests were performed at:
Bontek Compliance Testing Laboratory Ltd
1/F., Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, 518055 China
Tel: 86-755-86337020 Fax: 86-755-86337028

At the time of testing, the Laboratory is accredited. It is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 338263.

The test report was fulfilled by Shenzhen Toby Technology Co., Ltd. Shenzhen Toby Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements results.

2. Test Summary

FCC Part 15 Subpart C(15.247)			
Standard Section	**Test Item**	**Judgment**	**Remark**
15.203	Antenna Requirement	PASS	
15.207	Conducted Emission	N/A	
15.205	Restricted Bands	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(b)	Peak Output Power	PASS	
15.247(e)	Power Spectral Density	PASS	
15.247(d)	Radiated Spurious Emission	PASS	
15.247(d)	Antenna Conducted Spurious Emission	PASS	
Note: N/A is an abbreviation for Not Applicable.			

3. Conducted Emission Test

3.1 Test Standard and Limit

3.1.1Test Standard

FCC Part 15.207

3.1.2 Test Limit

Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

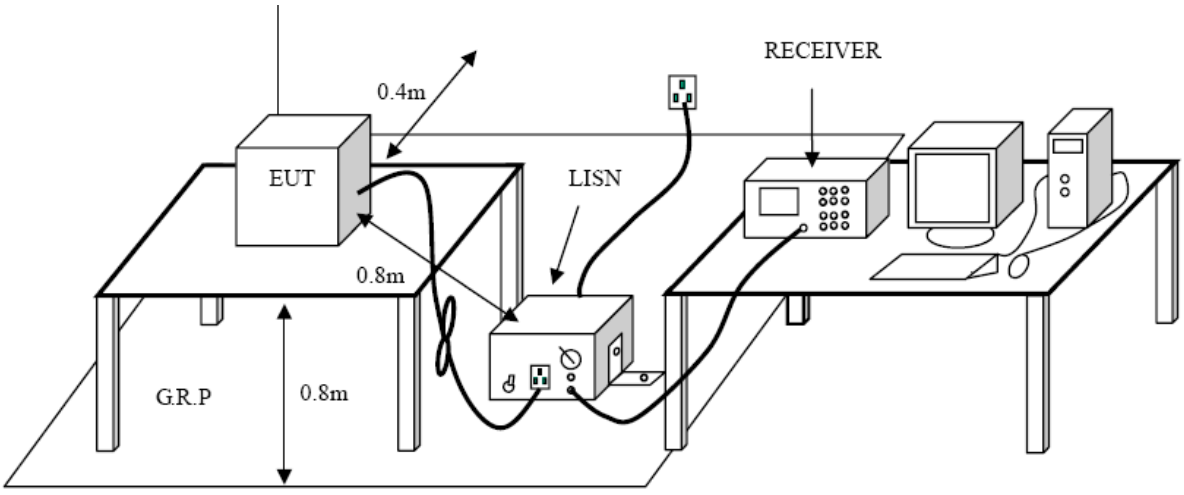
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3.2 Test Setup



3.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

3.4 Test Equipment Used

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
EMI Test Receiver	ROHDE& SCHWARZ	ESC30	DE25181	2012-08-07	2013-08-06
50ΩCoaxial Switch	Anritsu	MP59B	X10321	2012-08-07	2013-08-06
L.I.S.N	EMCO	3624/1	00063417	2012-08-07	2013-08-06
L.I.S.N	EMCO	3624/1	00063417	2012-08-07	2013-08-06

3.5 EUT Operating Mode

Please refer to the description of test mode.

3.6 Test Data

The Equipment is supplied by DC power, and the test item not applicable.

4. Radiated Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC Part 15.209

4.1.2 Test Limit

Radiated Emission Limit (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/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

Radiated Emission Limit (Above 1000MHz)

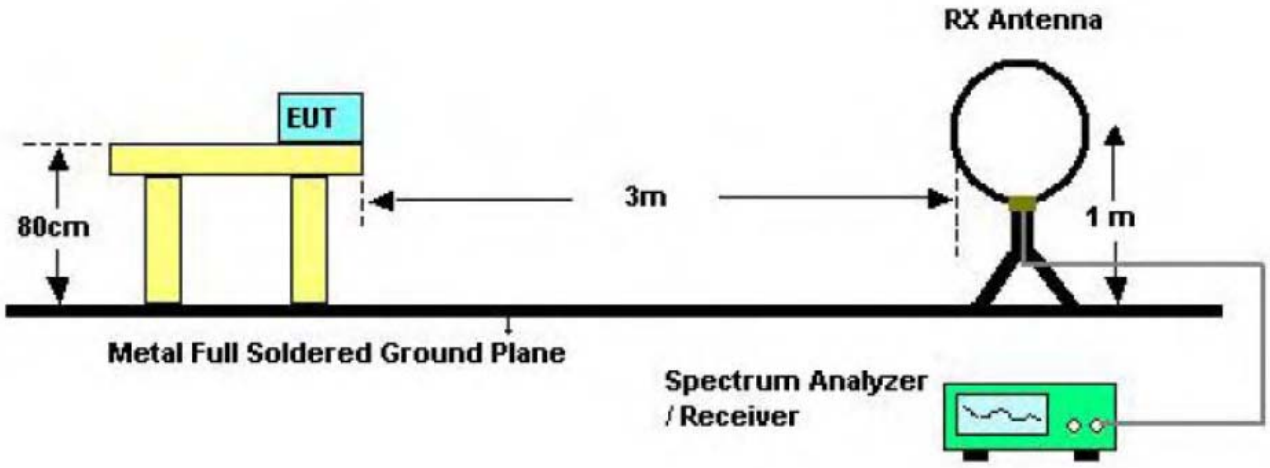
Frequency (MHz)	Class A (dBuV/m)(at 3 M)		Class B (dBuV/m)(at 3 M)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Note:

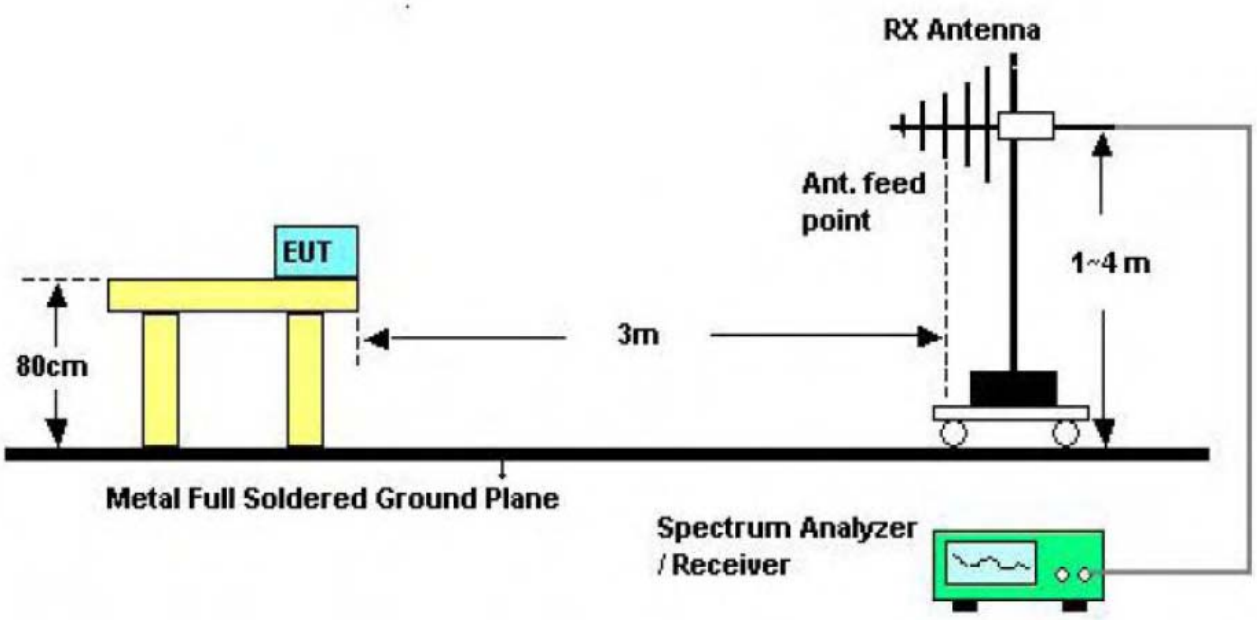
(1) The tighter limit applies at the band edges.

(2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

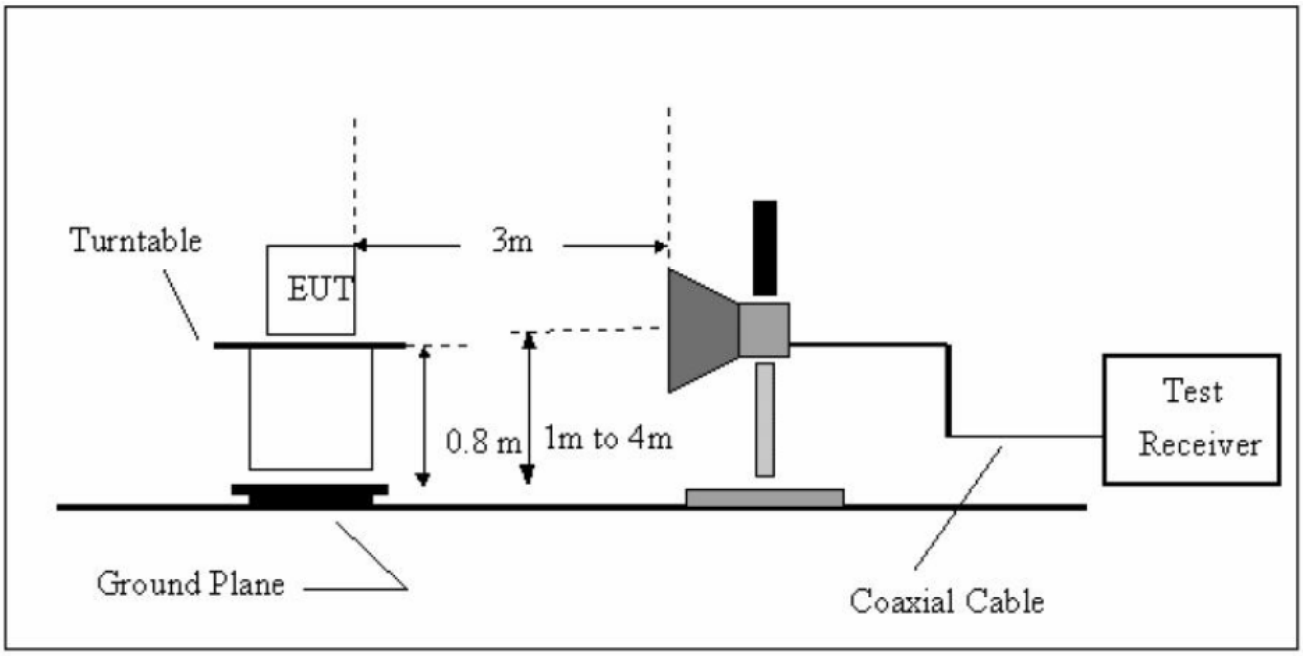
4.2 Test Setup



Bellow 30MHz Test Setup



Bellow 1000MHz Test Setup



Above 1GHz Test Setup

4.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
(2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
(3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
(5) For the actual test configuration, please see the test setup photo.

4.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

4.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2012-08-07	2013-08-06
Positioning Controller	C&C	CC-C-1F	N/A	2012-08-07	2013-08-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-07-13	2013-07-12
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2012-07-13	2013-07-12
RF Switch	EM	EMSW18	SW060023	2012-08-07	2013-08-06
Amplifier	Agilent	8447F	3113A06717	2012-08-07	2013-08-06
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2012-08-07	2013-08-06
EMI Test Receiver	ROHDE& SCHWARZ	ESPI	25498514	2012-08-07	2013-08-06
EMI Test Receiver	ROHDE& SCHWARZ	ESI26	838786/103	2012-08-07	2013-08-06
Receiver Horn Antenna	ROHDE& SCHWARZ	HF906	100013	2012-08-07	2013-08-06

4.6 Test Data

Please see the next page.

Operation Mode:	TX 2406MHz	Test Date :	October 25, 2012
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Measured Distance:	3m	Humidity :	65 %
Test Voltage:	DC 6.0V		

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit (3m) (dBuV/m)	Margin (dB)	Note
153.210	H	30.71	43.50	12.79	PK
172.520	H	33.65	43.50	9.85	PK
260.450	H	34.82	46.00	11.18	PK
300.730	H	42.27	46.00	3.73	PK
325.640	H	41.86	46.00	5.79	PK
875.230	H	38.72	46.00	7.28	PK
48.520	V	32.14	40.00	7.86	PK
151.740	V	32.36	43.50	11.14	PK
265.380	V	33.45	46.00	12.55	PK
307.350	V	34.08	46.00	11.92	PK
313.410	V	36.87	46.00	9.13	PK
765.380	V	35.96	46.00	10.04	PK

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+ Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

Operation Mode:	TX 2406MHz	Test Date :	October 25, 2012
Frequency Range:	1-25GHz	Temperature :	28 ℃
Measured Distance:	3m	Humidity :	65 %
Test Voltage:	DC 6.0V		

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m) PK	Emission Level (dBuV/m) AV	Limit3m (dBuV/m) PK	Limit3m (dBuV/m) AV	Margin(dB) PK	Margin(dB) AV
4812.760	V	53.07	47.24	74.00	54.00	20.93	6.76
7218.850	V	44.63	37.16	74.00	54.00	29.37	16.84
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
4812.680	H	50.11	44.32	74.00	54.00	23.89	9.68
7218.810	H	41.58	35.46	74.00	54.00	32.42	18.54
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Probe Factor +Cable Loss
(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode:	TX 2441MHz	Test Date :	October 25, 2012
Frequency Range:	1-25GHz	Temperature :	28 ℃
Measured Distance:	3m	Humidity :	65 %
Test Voltage:	DC 6.0V		

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m) PK	Emission Level (dBuV/m) AV	Limit3m (dBuV/m) PK	Limit3m (dBuV/m) AV	Margin(dB) PK	Margin(dB) AV
4882.570	V	52.91	46.28	74.00	54.00	21.09	7.72
7323.700	V	43.43	37.06	74.00	54.00	30.57	16.94
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
4882.630	H	49.82	43.74	74.00	54.00	24.18	10.26
7323.770	H	41.20	35.21	74.00	54.00	32.80	18.79
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Probe Factor +Cable Loss
(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode:	TX 2476MHz	Test Date :	October 25, 2012
Frequency Range:	1-25GHz	Temperature :	28 ℃
Measured Distance:	3m	Humidity :	65 %
Test Voltage:	DC 6.0V		

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m) PK	Emission Level (dBuV/m) AV	Limit3m (dBuV/m) PK	Limit3m (dBuV/m) AV	Margin(dB) PK	Margin(dB) AV
4952.760	V	51.56	45.72	74.00	54.00	22.44	8.28
7428.570	V	43.83	36.78	74.00	54.00	30.17	17.22
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
--	V	--	--	74.00	54.00	--	--
4952.810	H	48.29	43.24	74.00	54.00	25.71	10.76
7428.750	H	40.95	35.07	74.00	54.00	33.05	18.93
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--
--	H	--	--	74.00	54.00	--	--

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Probe Factor +Cable Loss
(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5. Restricted Bands Requirement

5.1 Test Standard and Limit

5.1.1 Test Standard

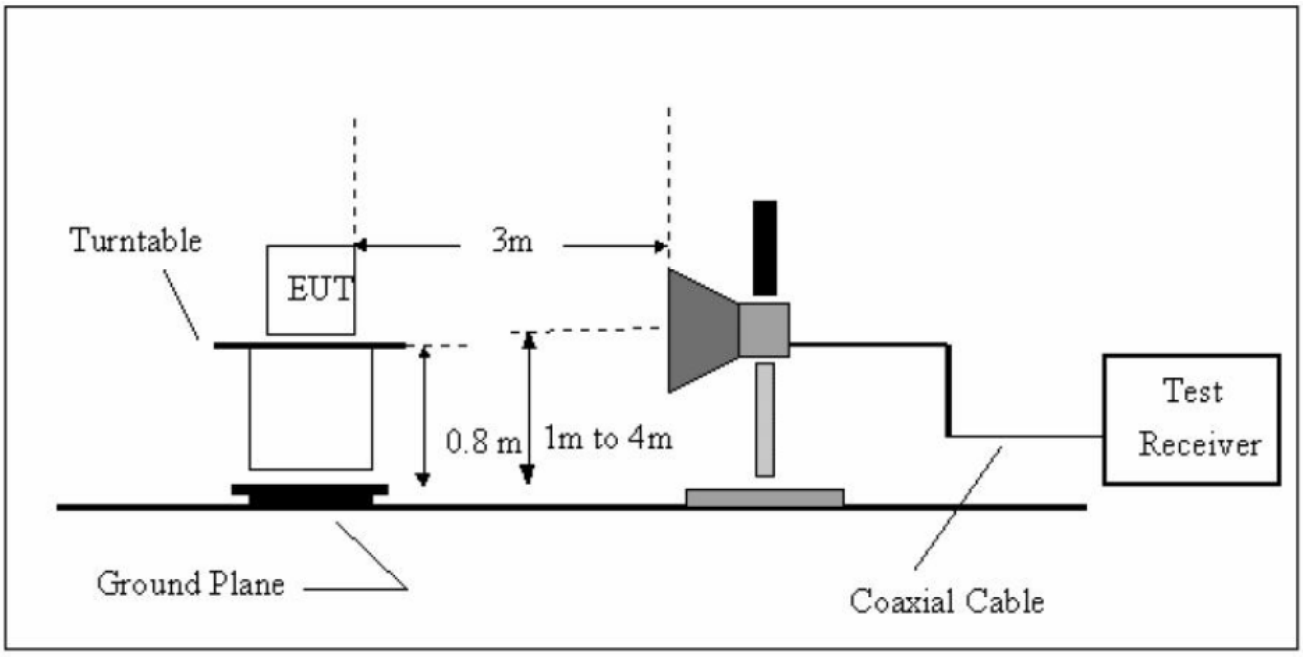
FCC Part 15.209

FCC Part 15.205

5.1.2 Test Limit

Restricted Frequency Band (MHz)	Class B (dBuV/m)(at 3 M)	
	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

5.2 Test Setup



5.3 Test Procedure

(1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

(2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

(3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

(4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
(5) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2012-08-07	2013-08-06
Positioning Controller	C&C	CC-C-1F	N/A	2012-08-07	2013-08-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-07-13	2013-07-12
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2012-07-13	2013-07-12
RF Switch	EM	EMSW18	SW060023	2012-08-07	2013-08-06
Amplifier	Agilent	8447F	3113A06717	2012-08-07	2013-08-06
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2012-08-07	2013-08-06
EMI Test Receiver	ROHDE& SCHWARZ	ESPI	25498514	2012-08-07	2013-08-06
EMI Test Receiver	ROHDE& SCHWARZ	ESI26	838786/103	2012-08-07	2013-08-06
Receiver Horn Antenna	ROHDE& SCHWARZ	HF906	100013	2012-08-07	2013-08-06

5.6 Test Data

Please see the next page.

Spectrum Detector:	PK	Test Date :	October 25, 2012
Temperature :	28 ℃	Humidity :	65 %

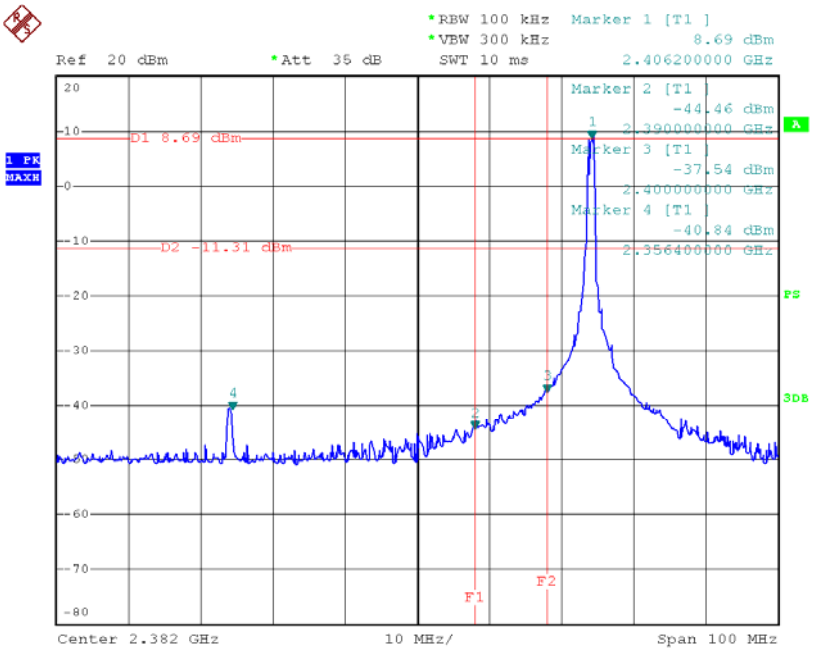
802.11b Mode

1. Conducted Test

Frequency (MHz)	Peak Power Output(dBm)	Emission Read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)
<2400	8.69	-40.84	49.53	>20dBc
>2483.5	7.29	-45.61	52.90	>20dBc

2. Radiated emission test

Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)	
		PEAK	AV	PEAK	AV
<2400	H	50.17	43.81	74.00	54.00
<2400	V	52.80	45.62	74.00	54.00
>2483.5	H	48.52	41.03	74.00	54.00
>2483.5	V	49.81	42.65	74.00	54.00



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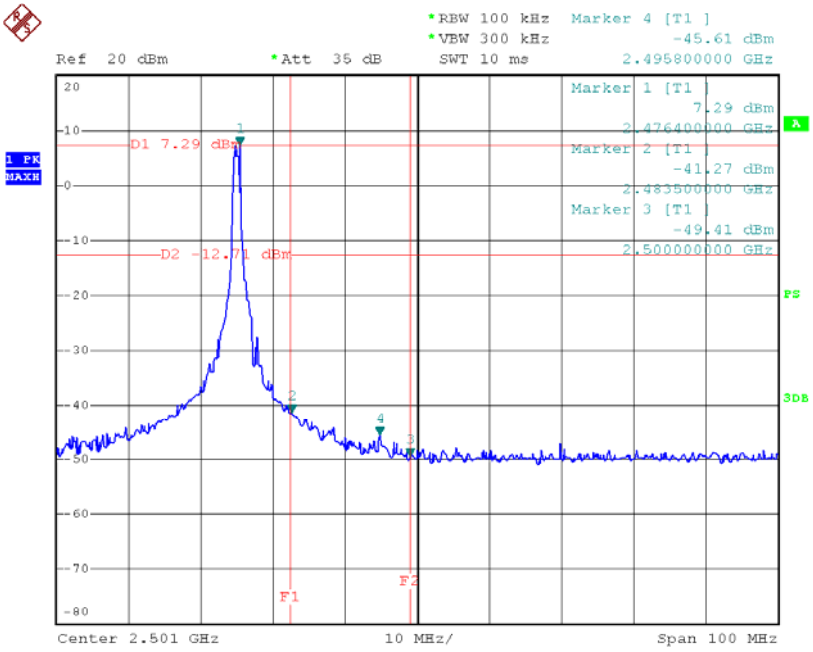

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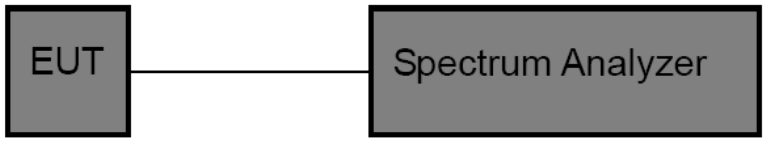
6. Bandwidth Test

6.1 Test Standard and Limit

8.1.1 Test Standard
FCC Part 15.247 (a)(2)
8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	**Limit**	**Frequency Range(MHz)**
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

6.2 Test Setup



6.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
(2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
(3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:3MHz, Detector: Peak, Sweep Time set auto.

6.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

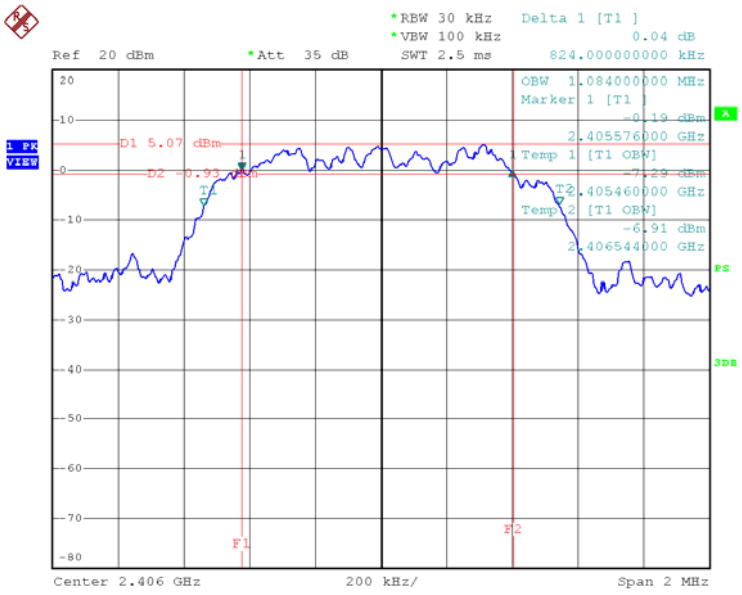
6.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2012-08-07	2013-08-06

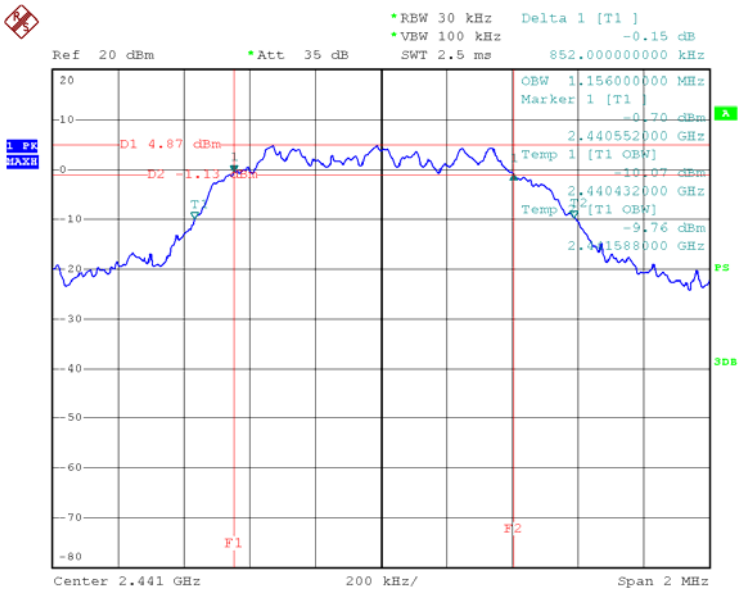
6.6 Test Data

TX Mode			
Channel frequency (MHz)	**6dB Bandwidth (kHz)**	**99% Bandwidth (kHz)**	**Limit**
2406	824	1084	>=500 kHz
2441	852	1156	>=500 kHz
2476	912	1212	>=500 kHz

2406 MHz

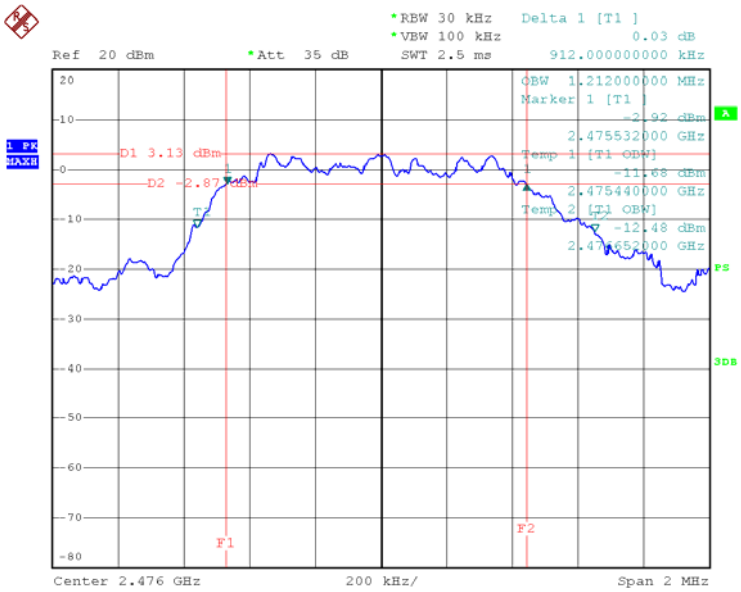


2441 MHz



Date: 23.OCT.2012 16:31:39

2476 MHz



Date: 23.OCT.2012 16:33:24

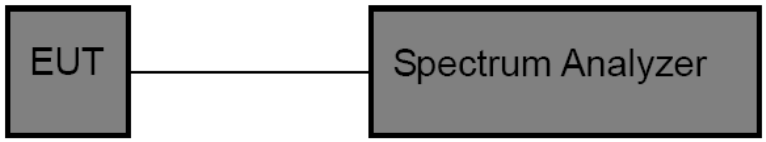
7. Peak Output Power Test

7.1 Test Standard and Limit

9.1.1 Test Standard
FCC Part 15.247 (b)
9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	**Limit**	**Frequency Range(MHz)**
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

7.2 Test Setup



7.3 Test Procedure

The EUT was directly connected to the power meter and antenna output port as show in the block diagram above.

7.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

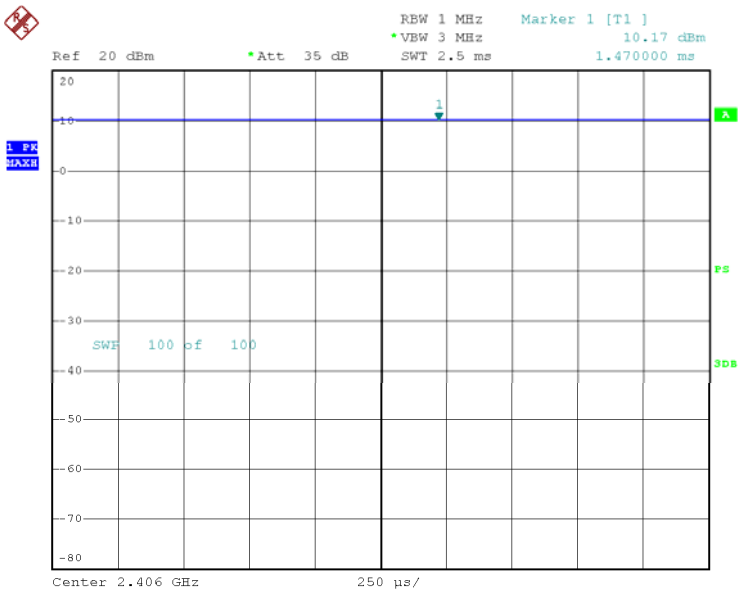
7.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
EMI Test Receiver	Rohde& Schwarz	ESCI	101122	2012-04-11	2013-04-10

7.6 Test Data

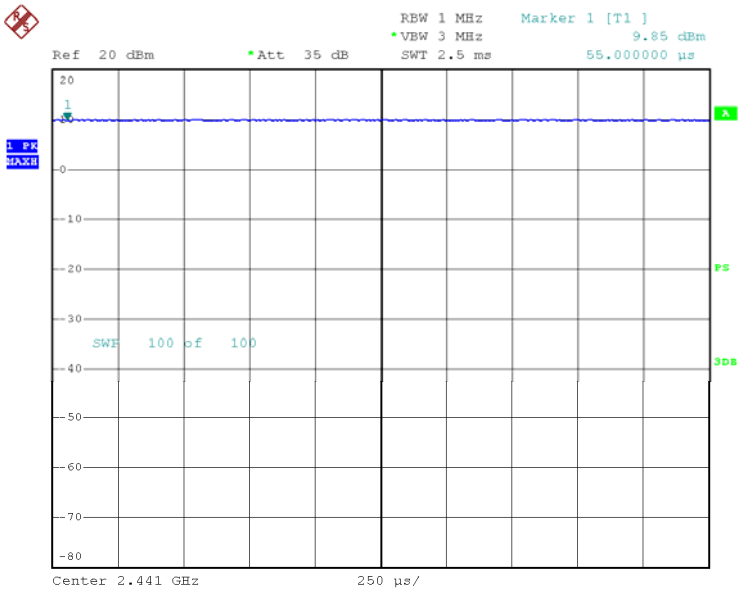
Peak Power Test			
Test Channel	**Frequency (MHz)**	**Peak Output Power (dBm)**	**Limit (dBm)**
CH 01	2406	10.17	30
CH 36	2441	9.85	30
CH 71	2476	8.28	30

2406 MHz



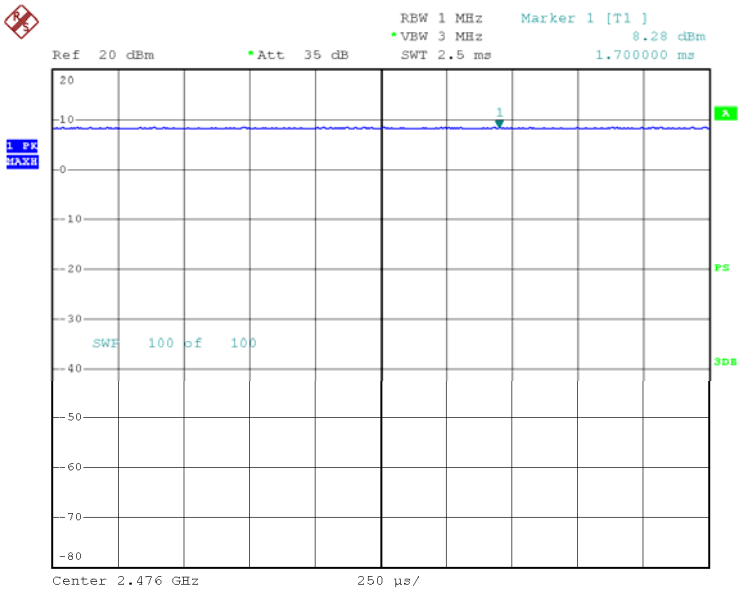
Date: 23.OCT.2012 16:47:28

2441 MHz



Date: 23.OCT.2012 16:46:50

2476 MHz



Date: 23.OCT.2012 16:46:15

8. Power Spectral Density Test

8.1 Test Standard and Limit

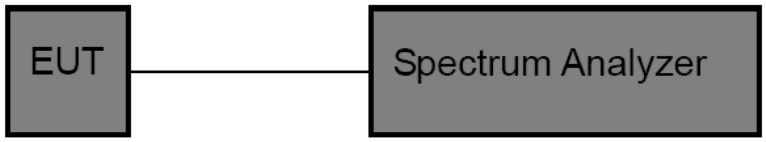
8.1.1 Test Standard

FCC Part 15.247 (e)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	**Limit**	**Frequency Range(MHz)**
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

8.2 Test Setup



8.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Measure the spectral power density the spectrum analyzer was set to Resolution Bandwidth=100 kHz, and Video Bandwidth≥300 kHz, Detector: Peak, Span to 5%~30% greater than EBW, Sweep time auto.

(3) Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a BWCF=-15.2 dB.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

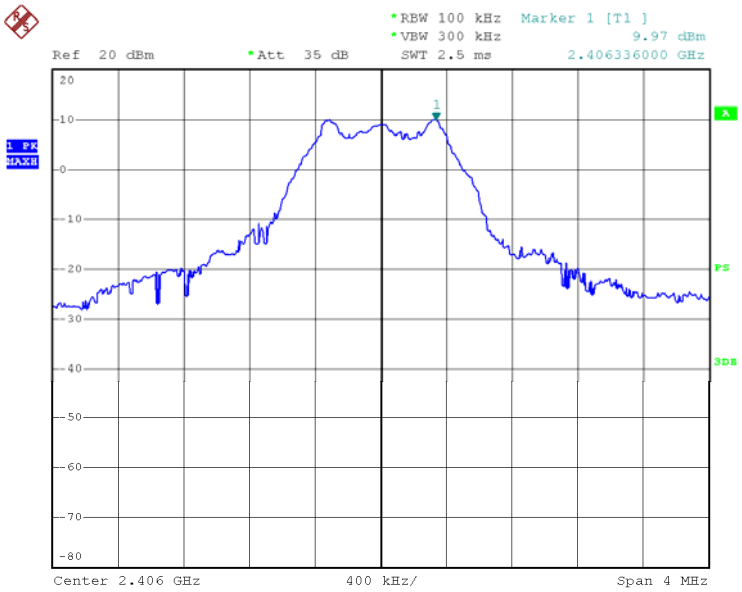
8.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2012-08-07	2013-08-06

8.6 Test Data

Power Density Test				
Test Channel	**Frequency (MHz)**	**Power Level (100 kHz)**	**Power Density (3 kHz/dBm)**	**Limit (dBm)**
CH 01	2406	9.97	-5.23	8
CH 36	2441	9.52	-5.68	8
CH 71	2476	7.94	-7.26	8
Note: Power Density=Power Level-15.2				

2406 MHz



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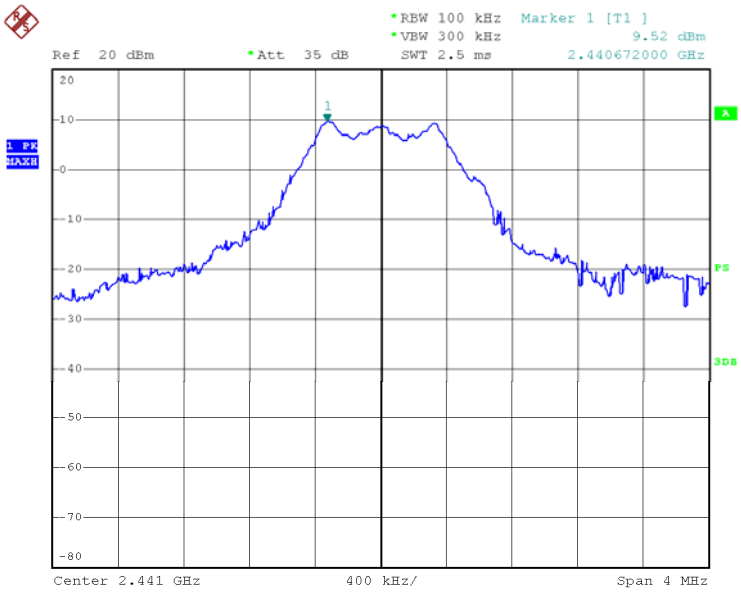
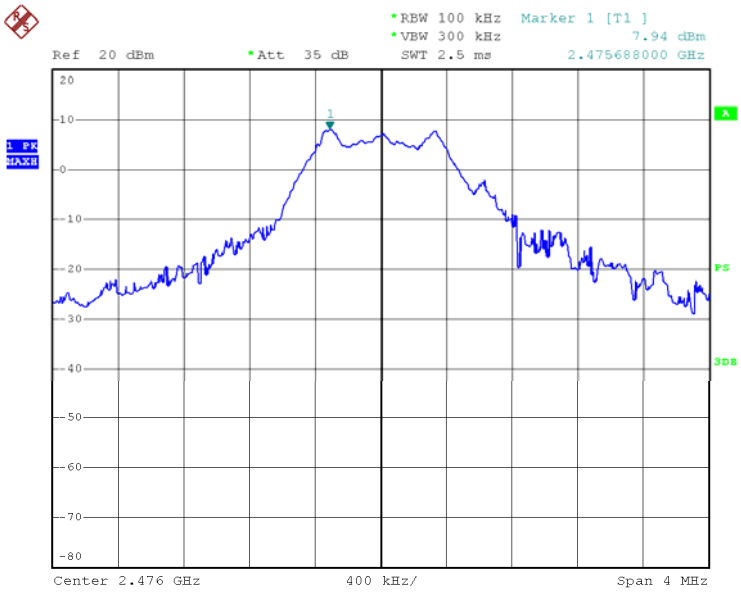
2441 MHz



Date: 23.OCT.2012 16:37:38

2476 MHz



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9. Antenna Conducted Spurious Emission

9.1 Test Standard and Limit

10.1.1 Test Standard

FCC Part 15.247 (c)

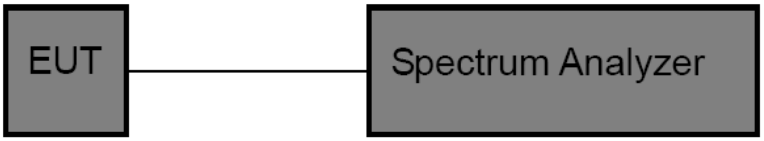
10.1.2 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/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

(2)If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

9.2 Test Setup



9.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

(2) Spectrum Setting:
RBW=100 KHz, VBW=300 KHz.
Frequency range: from 30MHz to 26.5 GHz.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

9.5 Test Equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2012-08-07	2013-08-06

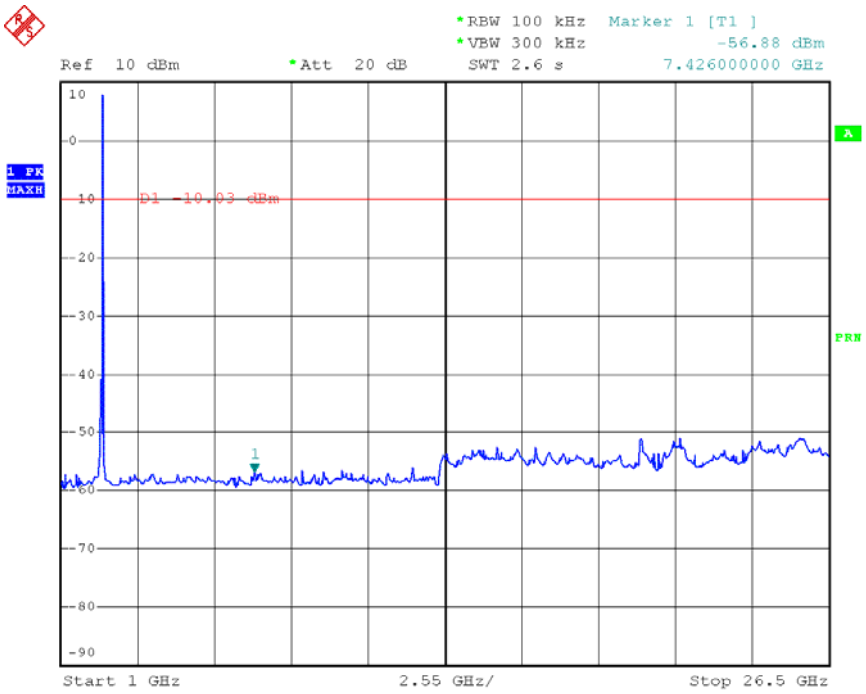
9.6 Test Data

Unwanted Emission Level of Non-Restricted Frequency Bands

801.11b Mode				
Test Channel	**Max. Emission Level (dBm)**	**Power Density (dBm)**	**Limit (dBm)**	**Result**
CH 01	-44.84	-5.23	-25.23	Compliance
CH 36	-48.30	-5.68	-25.68	Compliance
CH 71	-48.83	-7.26	-27.26	Compliance

802.11b Mode TX CH 01 2406MHz

Above 1 GHz



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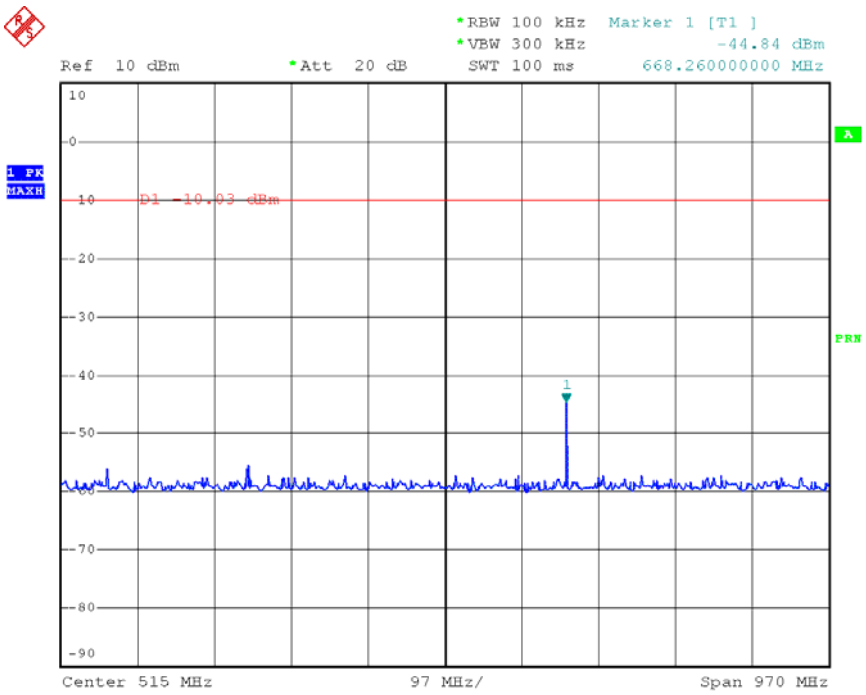
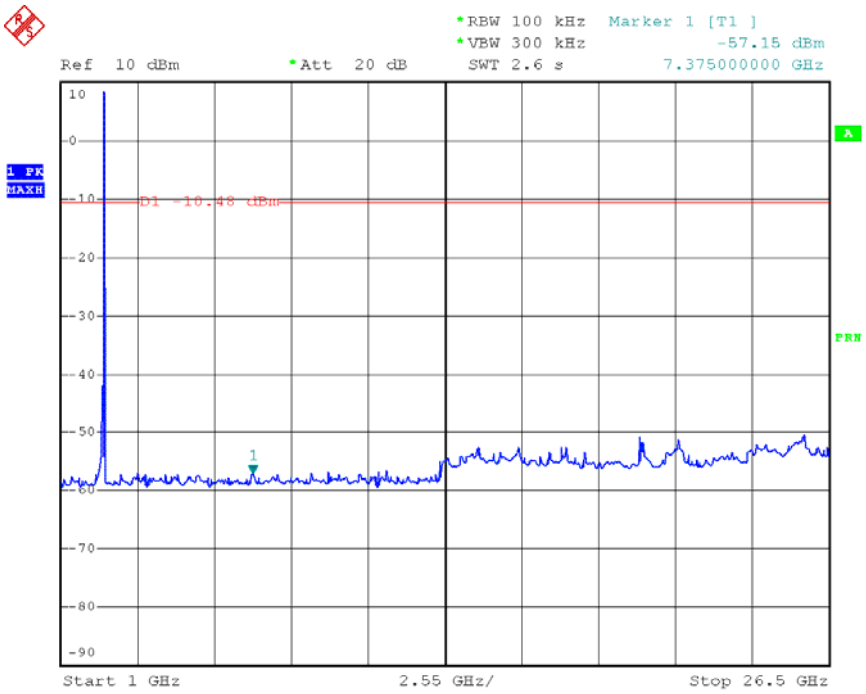
Bellow 1 GHz



Date: 24.OCT.2012 10:31:13

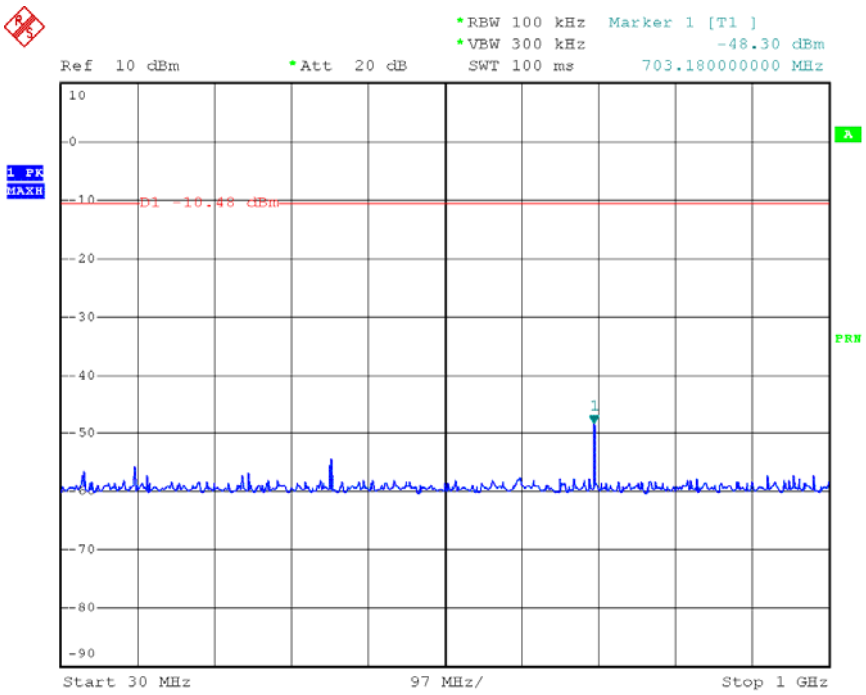
802.11b Mode TX CH 36 2441MHz

Above 1 GHz



Date: 24.OCT.2012 10:39:29

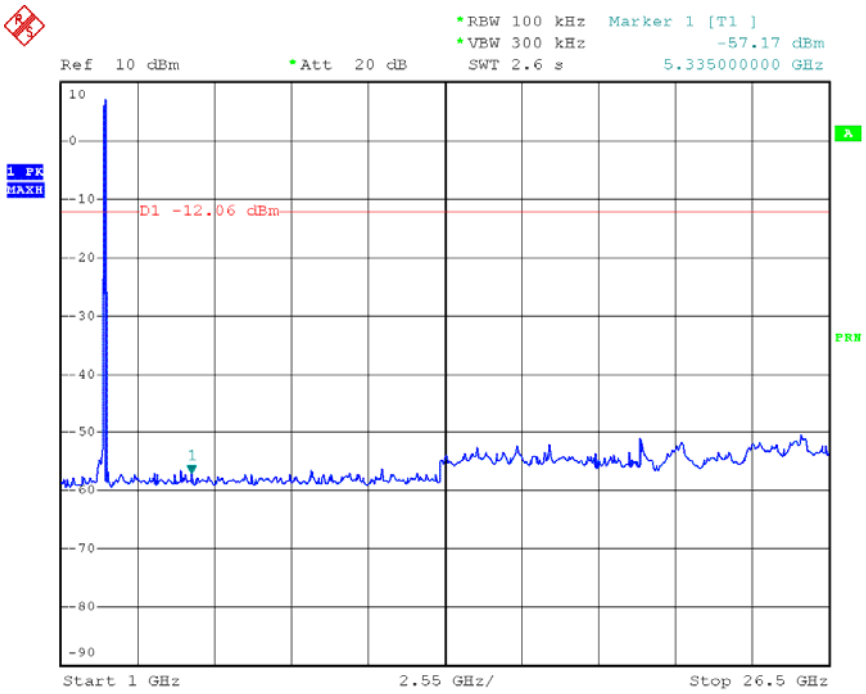
Bellow 1 GHz



Date: 24.OCT.2012 10:40:30

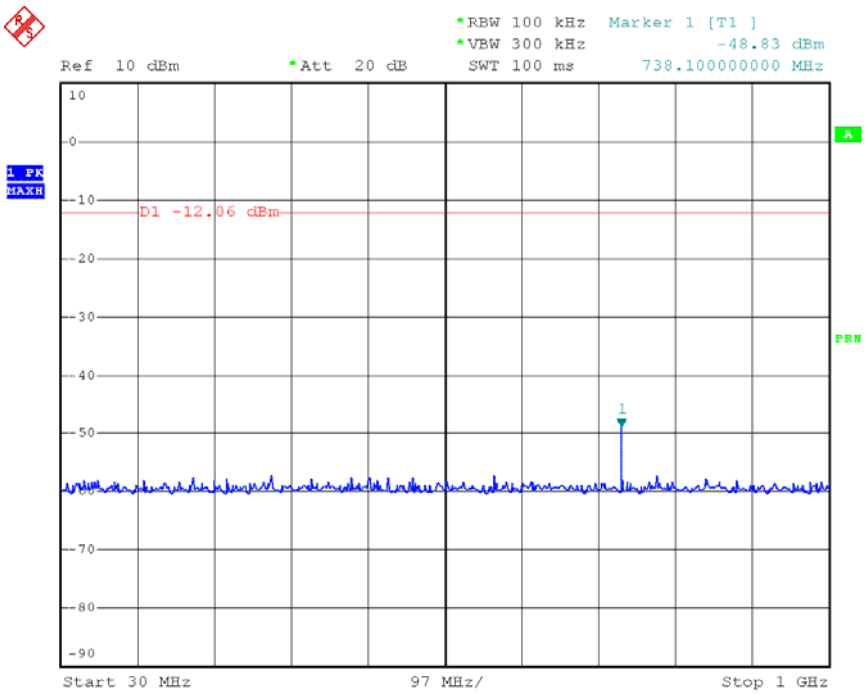
802.11b Mode TX CH 71 2476MHz

Above 1 GHz



Date: 24.OCT.2012 10:52:56

Bellow 1 GHz



Date: 24.OCT.2012 10:41:29

10. Antenna Requirement

10.1 Standard Requirement

11.1.1 Standard

FCC Part 15.203

11.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2 Bi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

10.2 Result

The EUT antenna is an Dipole Antenna. It complies with the standard requirement.