

FCC Test Report

Product Name	TABLET PC	
Model No.	T10C	
FCC ID.	ZWMT10CA10	

Applicant	Ubiqconn Technology,Inc.		
Address	No. 300 Yang Guang St., NeiHu, Taipei, Taiwan 114		

Date of Receipt	May. 20, 2013
Issued Date	June. 14, 2013
Report No.	135269R-RFUSP43V01
Report Version	V1.0





The Test Results relate only to the samples tested.

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Test Report Certification

Issued Date: June. 14, 2013

Report No.: 135269R-RFUSP43V01



Product Name	TABLET PC	
Applicant	Ubiqconn Technology,Inc.	
Address	No. 300 Yang Guang St., NeiHu, Taipei, Taiwan 114	
Manufacturer	Ubiqconn Technology,Inc.	
Model No.	T10C	
FCC ID.	ZWMT10CA10	
EUT Rated Voltage	AC 100-240V, 50-60Hz	
EUT Test Voltage	AC 120V/60Hz	
Trade Name	Ubiqconn,UTI	
Applicable Standard	able Standard FCC CFR Title 47 Part 15 Subpart C: 2012	
	ANSI C63.4: 2003, ANSI C63.10: 2009	
Test Result	Complied	

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Documented By : Leven Huang)

(Senior Adm. Specialist / Leven Huang)

Tested By :

(Engineer / Nowal Kuo)

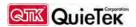
Approved By :

(Manager / Vincent Lin)



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Attachment 1: EUT Test Photographs
Attachment 2: EUT Detailed Photographs



1. GENERAL INFORMATION

1.1. EUT Description

Product Name	TABLET PC		
Trade Name	Ubiqconn,UTI		
Model No.	T10C		
FCC ID.	ZWMT10CA10		
Frequency Range	2402 – 2480MHz		
Channel Number	V3.0+HS, V2.1+EDR: 79CH V4.0: 40CH		
Type of Modulation	V3.0+HS, V2.1+EDR: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps) V4.0: GFSK(1Mbps)		
Antenna Type	Printed on PCB		
Channel Control	Auto		
Antenna Gain	Refer to the table "Antenna List"		
Power Cable	Shielded, 1.7m		
LAN to Mini USB	1 set		
Power Adapter	MFR: FSP, M/N: FSP065-RAB		
	Input: AC 100-240V, 50-60Hz, 1.5A		
	Output: DC 19V, 3.42A		
	Cable out: Shielded, 1.6m, with one ferrite core bonded.		
Contain Module	CastleNet / BSLIM2-A10		

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	CastleNet	NA	Printed on PCB	1dBi For 2.4GHz

Note:

The antenna of EUT is conform to FCC 15.203.



Center Frequency of Each Channel: (For V3.0+HS, V2.1+EDR)

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

Center Frequency of Each Channel: (For V4.0)

Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2442 MHz
Channel 01:	2404 MHz	Channel 21:	2444 MHz
Channel 02:	2406 MHz	Channel 22:	2446 MHz
Channel 03:	2408 MHz	Channel 23:	2448 MHz
Channel 04:	2410 MHz	Channel 24:	2450 MHz
Channel 05:	2412MHz	Channel 25:	2452 MHz
Channel 06:	2414 MHz	Channel 26:	2454 MHz
Channel 07:	2416 MHz	Channel 27:	2456 MHz
Channel 08:	2418 MHz	Channel 28:	2458 MHz
Channel 09:	2420 MHz	Channel 29:	2460 MHz
Channel 10:	2422 MHz	Channel 30:	2462 MHz
Channel 11:	2424 MHz	Channel 31:	2464 MHz
Channel 12:	2426 MHz	Channel 32:	2466 MHz
Channel 13:	2428 MHz	Channel 33:	2468 MHz
Channel 14:	2430 MHz	Channel 34:	2470 MHz
Channel 15:	2432 MHz	Channel 35:	2472 MHz
Channel 16:	2434 MHz	Channel 36:	2474 MHz
Channel 17:	2436 MHz	Channel 37:	2476 MHz
Channel 18:	2438 MHz	Channel 38:	2478 MHz
Channel 19:	2440 MHz	Channel 39:	2480 MHz



- 1. This device is a TABLET PC, Contains functions and so on WiFi \ Bluetooth , This report for Bluetooth.
- 2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
- 3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK)
	Mode 2: Transmit - 3Mbps (8DPSK)
	Mode 3: Transmit - BLE (GFSK)



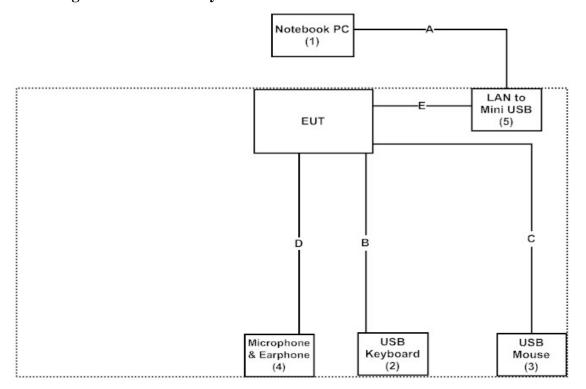
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
(1)	Notebook PC	DELL	PPT	N/A	Non-Shielded, 0.8m
(2)	USB Keyboard	Logitech	Y-UR83	8UK	N/A
(3)	USB Mouse	DELL	M056U0A	F0Y01YEC	N/A
(4)	Microphone &	Ubiqconn	N/A	N/A	N/A
	Earphone				
(5)	LAN to Mini	Ubiqconn	N/A	N/A	N/A
	USB				

	Signal Cable Type	Signal cable Description	
A	RJ45 Cable	Non-Shielded, 1.8m	
В	USB Keyboard Cable	Shielded, 1.8m	
C	USB Mouse Cable	Shielded, 1.8m	
D	Microphone & Earphone Cable	Non-Shielded, 1.2m	
Е	LAN to Mini USB Cable	Non-Shielded, 0.1m	

1.4. Configuration of Tested System





1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Execute program "Bluesuite v2.5" on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press "OK" to start the continuous Transmit.
- (5) Verify that the EUT works properly.



1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://www.quietek.com/tw/ctg/cts/accreditations.htm

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: http://www.quietek.com/

Site Description: File on

Federal Communications Commission

FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046

Registration Number: 92195

Accreditation on NVLAP NVLAP Lab Code: 200533-0

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FCC Accreditation Number: TW1014



2. Conducted Emission

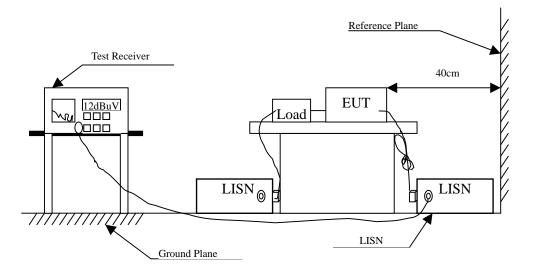
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2012	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2013	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2013	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2013	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2013	
	No.1 Shielded Room				

Note:

- 1. All equipments are calibrated every one year.
- 2. The test instruments marked by "X" are used to measure the final test results.

2.2. Test Setup





2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit				
Frequency	Lin	nits		
MHz	QP	AV		
0.15 - 0.50	66-56	56-46		
0.50-5.0	56	46		
5.0 - 30	60	50		

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.10, 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.5. Uncertainty

± 2.26 dB



2.6. Test Result of Conducted Emission

Product : TABLET PC

Test Item : Conducted Emission Test

Power Line : Line 1

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.185	9.790	35.800	45.590	-19.410	65.000
0.513	9.790	29.700	39.490	-16.510	56.000
0.650	9.790	40.310	50.100	-5.900	56.000
0.818	9.790	34.460	44.250	-11.750	56.000
1.431	9.800	31.210	41.010	-14.990	56.000
2.654	9.810	27.770	37.580	-18.420	56.000
Average					
0.185	9.790	24.690	34.480	-20.520	55.000
0.513	9.790	16.180	25.970	-20.030	46.000
0.650	9.790	24.690	34.480	-11.520	46.000
0.818	9.790	21.120	30.910	-15.090	46.000
1.431	9.800	22.280	32.080	-13.920	46.000
2.654	9.810	15.130	24.940	-21.060	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Test Item : Conducted Emission Test

Power Line : Line 2

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.197	9.770	37.130	46.900	-17.757	64.657
0.373	9.770	28.220	37.990	-21.639	59.629
0.615	9.770	37.230	47.000	-9.000	56.000
0.658	9.770	40.860	50.630	-5.370	56.000
1.064	9.780	31.550	41.330	-14.670	56.000
2.302	9.790	28.880	38.670	-17.330	56.000
Average					
0.197	9.770	25.760	35.530	-19.127	54.657
0.373	9.770	15.810	25.580	-24.049	49.629
0.615	9.770	23.600	33.370	-12.630	46.000
0.658	9.770	25.240	35.010	-10.990	46.000
1.064	9.780	15.590	25.370	-20.630	46.000
2.302	9.790	15.640	25.430	-20.570	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Test Item : Conducted Emission Test

Power Line : Line 1

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.193	9.790	38.680	48.470	-16.301	64.771
0.283	9.790	28.410	38.200	-24.000	62.200
0.408	9.790	30.820	40.610	-18.019	58.629
0.509	9.790	34.580	44.370	-11.630	56.000
0.752	9.790	35.470	45.260	-10.740	56.000
1.115	9.790	32.970	42.760	-13.240	56.000
Average					
0.193	9.790	25.650	35.440	-19.331	54.771
0.283	9.790	14.610	24.400	-27.800	52.200
0.408	9.790	19.940	29.730	-18.899	48.629
0.509	9.790	23.020	32.810	-13.190	46.000
0.752	9.790	17.510	27.300	-18.700	46.000
1.115	9.790	17.550	27.340	-18.660	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



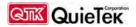
Test Item : Conducted Emission Test

Power Line : Line 2

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.189	9.770	39.120	48.890	-15.996	64.886
0.291	9.770	28.230	38.000	-23.971	61.971
0.502	9.770	33.570	43.340	-12.660	56.000
0.560	9.770	33.270	43.040	-12.960	56.000
0.740	9.780	36.740	46.520	-9.480	56.000
1.611	9.790	31.200	40.990	-15.010	56.000
Average					
0.189	9.770	25.270	35.040	-19.846	54.886
0.291	9.770	20.500	30.270	-21.701	51.971
0.502	9.770	24.020	33.790	-12.210	46.000
0.560	9.770	23.100	32.870	-13.130	46.000
0.740	9.780	19.280	29.060	-16.940	46.000
1.611	9.790	14.620	24.410	-21.590	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



3. Peak Power Output

3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2013
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2013

3Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 and ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB



3.6. Test Result of Peak Power Output

Product : TABLET PC

Test Item : Peak Power Output

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	8.56	1 Watt= 30 dBm	Pass
Channel 39	2441.00	8.93	1 Watt= 30 dBm	Pass
Channel 78	2480.00	8.24	1 Watt= 30 dBm	Pass



Test Item : Peak Power Output

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	8.36	1 Watt= 30 dBm	Pass
Channel 39	2441.00	8.41	1 Watt= 30 dBm	Pass
Channel 78	2480.00	8.36	1 Watt= 30 dBm	Pass



Test Item : Peak Power Output

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	8.56	1 Watt= 30 dBm	Pass
Channel 19	2440.00	8.65	1 Watt= 30 dBm	Pass
Channel 39	2480.00	8.82	1 Watt= 30 dBm	Pass



4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

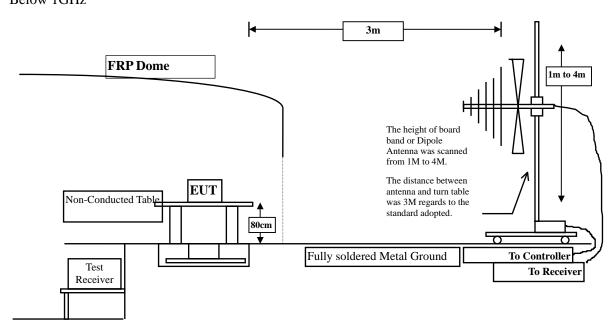
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
⊠Site # 3	X Loop Antenna		Teseq	HLA6120 / 26739	Jul., 2012
	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
			Schwarzbeck	BBHA9120D/D305	Sep., 2012
			Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

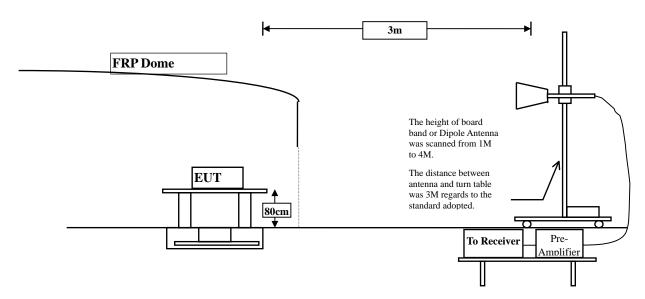
4.2. Test Setup

Below 1GHz





Above 1GHz



4.3. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits							
Frequency MHz	Field strength	Measurement distance					
WIII	(microvolts/meter)	(meter)					
0.009-0.490	2400/F(kHz)	300					
0.490-1.705	24000/F(kHz)	30					
1.705-30	30	30					
30-88	100	3					
88-216	150	3					
216-960	200	3					
Above 960	500	3					

Remarks:

- 1. RF Voltage $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.



4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 and ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2009 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas. The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured on the Final Measurement.

The measurement frequency range form 9KHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

- ± 3.9 dB above 1GHz
- ± 3.8 dB below 1GHz



4.6. Test Result of Radiated Emission

Product : TABLET PC

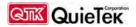
Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.327	40.310	43.637	-30.363	74.000
7206.000	10.136	37.010	47.146	-26.854	74.000
9608.000	13.706	36.780	50.486	-23.514	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4804.000	6.638	44.860	51.497	-22.503	74.000
7206.000	11.005	36.750	47.755	-26.245	74.000
9608.000	14.103	36.980	51.083	-22.917	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



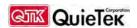
Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.001	41.560	44.561	-29.439	74.000
7323.000	11.846	36.120	47.967	-26.033	74.000
9764.000	12.563	37.520	50.083	-23.917	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4882.000	5.713	40.480	46.194	-27.806	74.000
7323.000	12.727	36.520	49.248	-24.752	74.000
9764.000	13.028	37.040	50.068	-23.932	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	2.760	43.950	46.710	-27.290	74.000
7440.000	12.567	35.650	48.216	-25.784	74.000
9920.000	13.456	37.770	51.226	-22.774	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4960.000	5.557	40.090	45.647	-28.353	74.000
7440.000	13.426	37.470	50.895	-23.105	74.000
9920.000	13.958	36.730	50.688	-23.312	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)(2402MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.327	40.240	43.567	-30.433	74.000
7206.000	10.136	37.420	47.556	-26.444	74.000
9608.000	13.706	36.050	49.756	-24.244	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4804.000	6.638	46.230	52.867	-21.133	74.000
7206.000	11.005	37.000	48.005	-25.995	74.000
9608.000	14.103	35.980	50.083	-23.917	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.001	39.960	42.961	-31.039	74.000
7323.000	11.846	36.090	47.937	-26.063	74.000
9764.000	12.563	37.210	49.773	-24.227	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4882.000	5.713	38.510	44.224	-29.776	74.000
7323.000	12.727	36.080	48.808	-25.192	74.000
9764.000	13.028	37.570	50.598	-23.402	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	2.760	42.270	45.030	-28.970	74.000
7440.000	12.567	35.450	48.016	-25.984	74.000
9920.000	13.456	36.640	50.096	-23.904	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4960.000	5.557	40.950	46.507	-27.493	74.000
7440.000	13.426	35.600	49.025	-24.975	74.000
9920.000	13.958	36.440	50.398	-23.602	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2402MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.327	42.170	45.497	-28.503	74.000
7206.000	10.136	37.920	48.056	-25.944	74.000
9608.000	13.706	37.090	50.796	-23.204	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4804.000	6.638	46.890	53.527	-20.473	74.000
7206.000	11.005	37.610	48.615	-25.385	74.000
9608.000	14.103	37.200	51.303	-22.697	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4880.000	3.010	41.410	44.420	-29.580	74.000
7320.000	11.833	36.380	48.214	-25.786	74.000
9760.000	12.580	37.620	50.201	-23.799	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4880.000	5.738	40.560	46.298	-27.702	74.000
7320.000	12.703	36.160	48.863	-25.137	74.000
9760.000	13.052	37.630	50.682	-23.318	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : Harmonic Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK)(2480MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	2.760	43.610	46.370	-27.630	74.000
7440.000	12.567	35.990	48.556	-25.444	74.000
9920.000	13.456	37.070	50.526	-23.474	74.000
Average					
Detector:					
Vertical					
Peak Detector:					
4960.000	5.557	42.880	48.437	-25.563	74.000
7440.000	13.426	35.700	49.125	-24.875	74.000
9920.000	13.958	37.720	51.678	-22.322	74.000
Average					
Detector:					

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Test Item : General Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					_
105.660	-6.673	26.987	20.314	-23.186	43.500
239.520	-6.851	32.216	25.366	-20.634	46.000
359.800	-1.680	28.562	26.882	-19.118	46.000
483.960	-0.688	36.376	35.689	-10.311	46.000
683.780	2.828	30.214	33.042	-12.958	46.000
887.480	6.204	29.157	35.361	-10.639	46.000
Vertical					
39.700	-1.056	24.322	23.266	-16.734	40.000
175.500	-8.257	32.507	24.249	-19.251	43.500
379.200	-1.505	25.186	23.680	-22.320	46.000
516.940	-0.876	28.104	27.228	-18.772	46.000
697.360	1.311	27.744	29.055	-16.945	46.000
930.160	6.477	23.744	30.221	-15.779	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Test Item : General Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
173.560	-9.954	29.960	20.007	-23.493	43.500
359.800	-1.680	28.182	26.502	-19.498	46.000
480.080	-0.329	30.652	30.323	-15.677	46.000
580.960	3.505	28.045	31.550	-14.450	46.000
697.360	3.171	30.204	33.375	-12.625	46.000
829.280	6.344	23.898	30.242	-15.758	46.000
Vertical					
103.720	-0.151	25.969	25.817	-17.683	43.500
344.280	-3.171	27.989	24.819	-21.181	46.000
515.000	-1.090	25.412	24.322	-21.678	46.000
697.360	1.311	27.357	28.668	-17.332	46.000
815.700	3.221	23.735	26.956	-19.044	46.000
961.200	7.260	24.330	31.590	-22.410	54.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Test Item : General Radiated Emission

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
173.560	-9.954	31.151	21.198	-22.302	43.500
359.800	-1.680	28.266	26.586	-19.414	46.000
480.080	-0.329	30.824	30.495	-15.505	46.000
580.960	3.505	28.651	32.156	-13.844	46.000
697.360	3.171	30.733	33.904	-12.096	46.000
912.700	6.132	27.470	33.602	-12.398	46.000
Vertical					
105.660	-0.253	25.590	25.337	-18.163	43.500
344.280	-3.171	26.908	23.738	-22.262	46.000
524.700	-0.379	23.876	23.497	-22.503	46.000
683.780	1.968	22.722	24.690	-21.310	46.000
771.080	3.115	24.426	27.541	-18.459	46.000
939.860	6.450	23.530	29.980	-16.020	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



5. RF Antenna Conducted Test

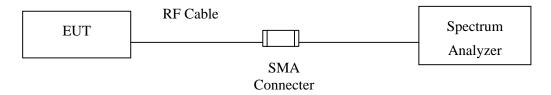
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.	Last Cal.	
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013		
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013		
X	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2013		

Note: 1. All equipments are calibrated every one year.

2. The test instruments Marked "X" are used to measure the final test results.

5.2. Test Setup



5.3. Limits

According to FCC Section 15.247(d). 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, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.4. Test Procedure

The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 and ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

5.5. Uncertainty

± 150Hz



5.6. Test Result of RF Antenna Conducted Test

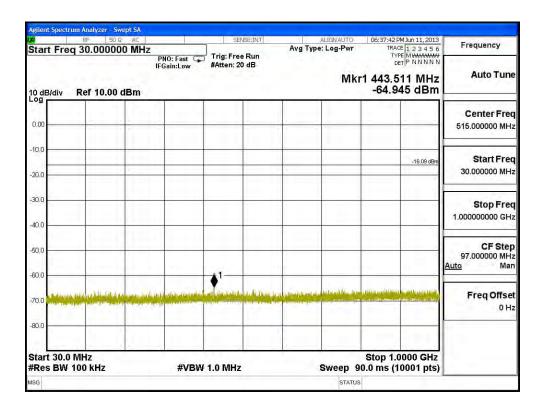
Product : TABLET PC

Test Item : RF Antenna Conducted Test

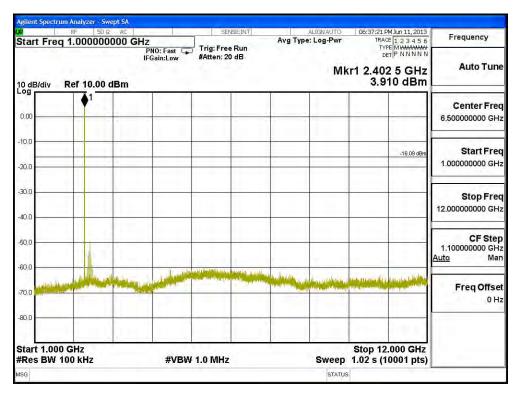
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 00:









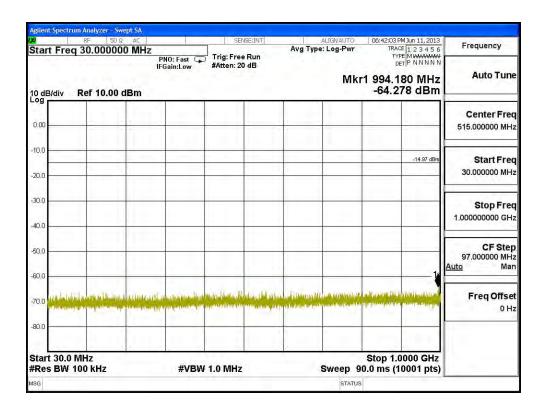


Test Item : RF Antenna Conducted Test

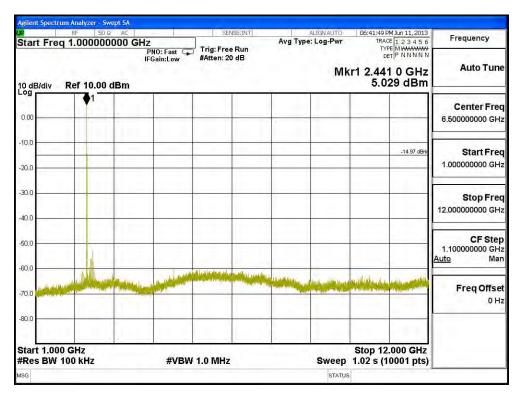
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 39:









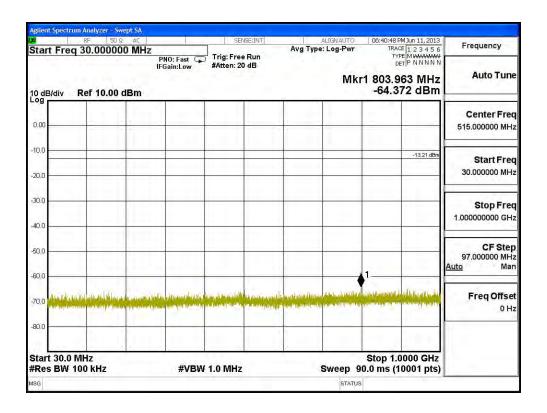


Test Item : RF Antenna Conducted Test

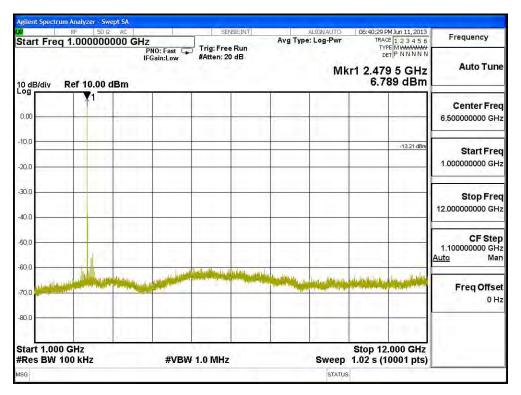
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 78:









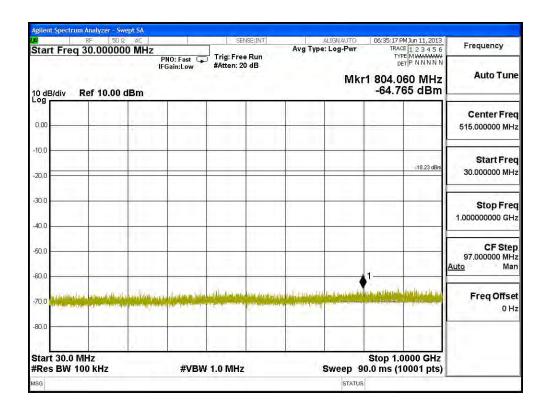


Test Item : RF Antenna Conducted Test

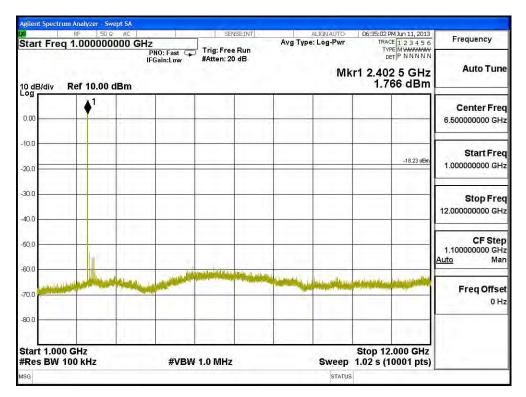
Test Site : No.3 OATS

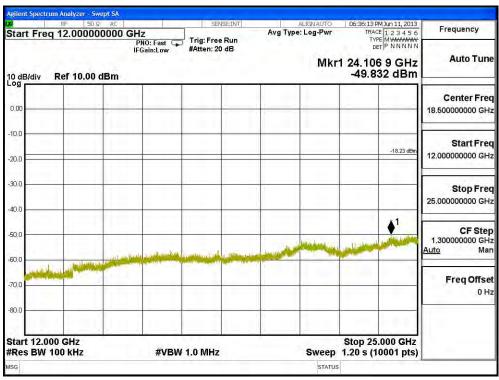
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 00:









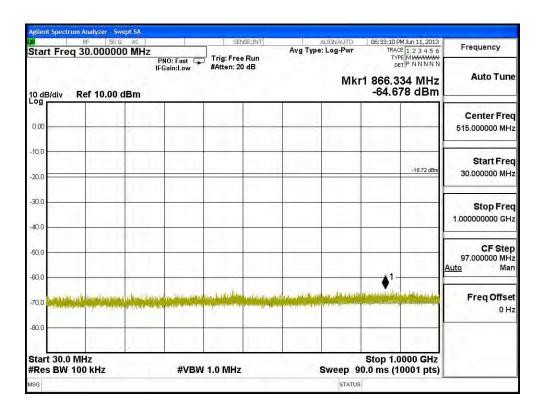


Test Item : RF Antenna Conducted Test

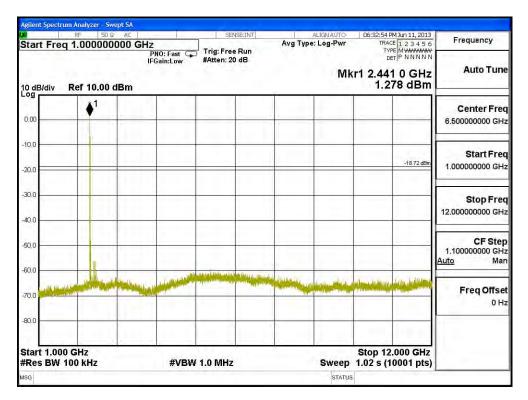
Test Site : No.3 OATS

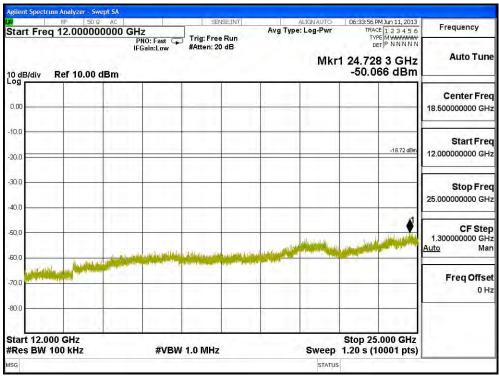
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 39:









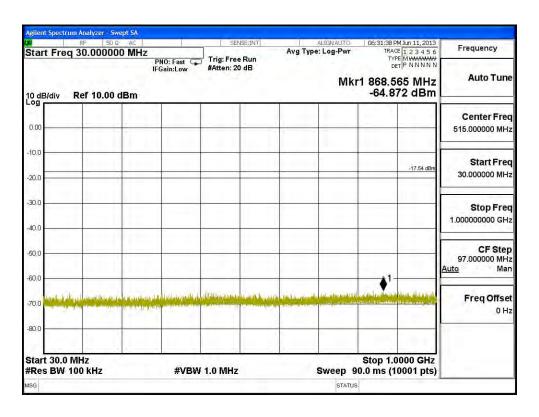


Test Item : RF Antenna Conducted Test

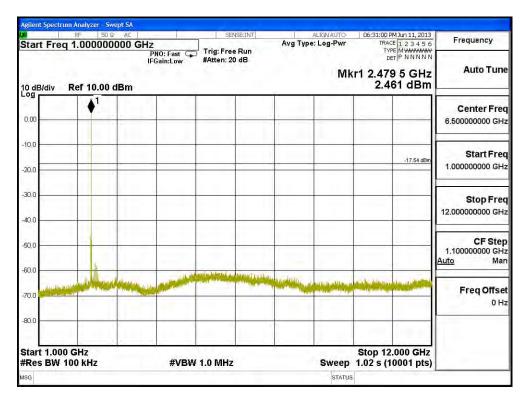
Test Site : No.3 OATS

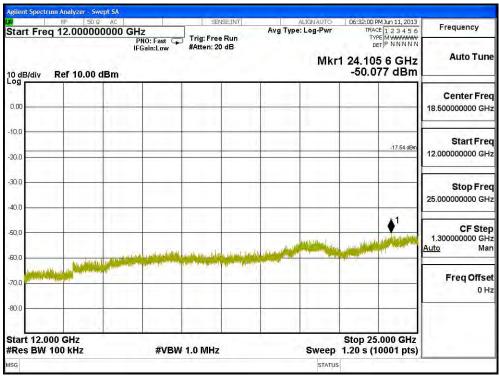
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 78:









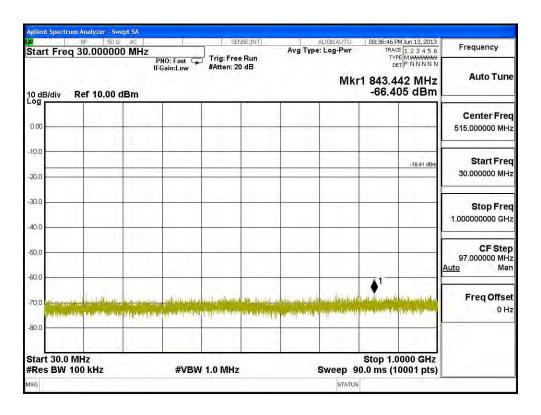


Test Item : RF Antenna Conducted Test

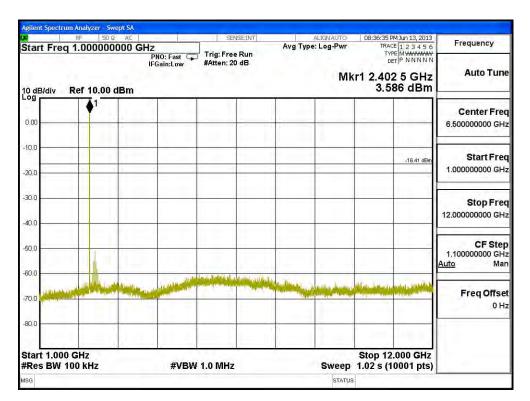
Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK)

Figure Channel 00:









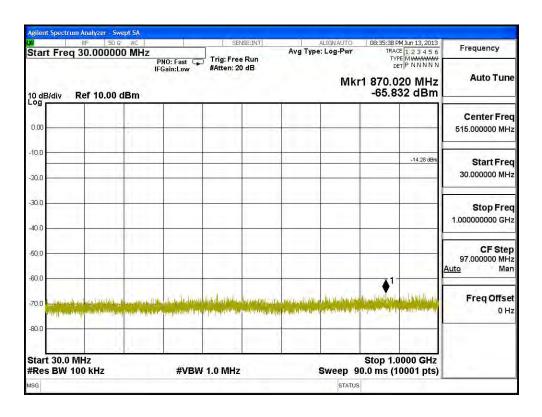


Test Item : RF Antenna Conducted Test

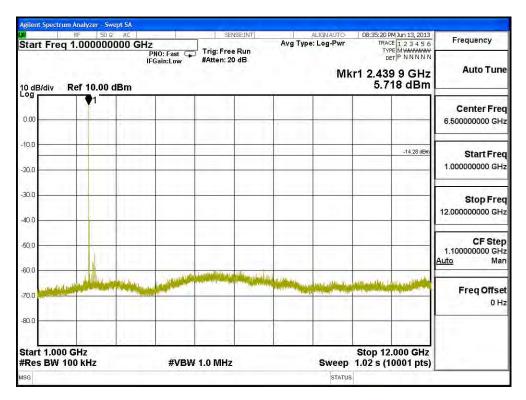
Test Site : No.3 OATS

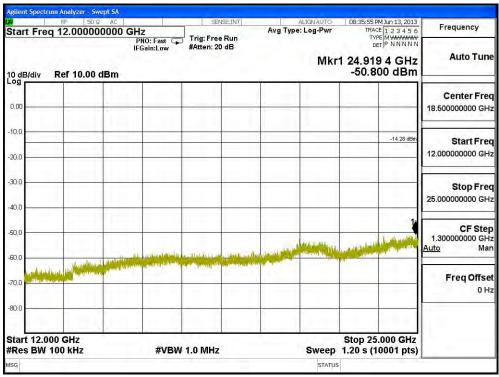
Test Mode : Mode 3: Transmit - BLE (GFSK)

Figure Channel 19:









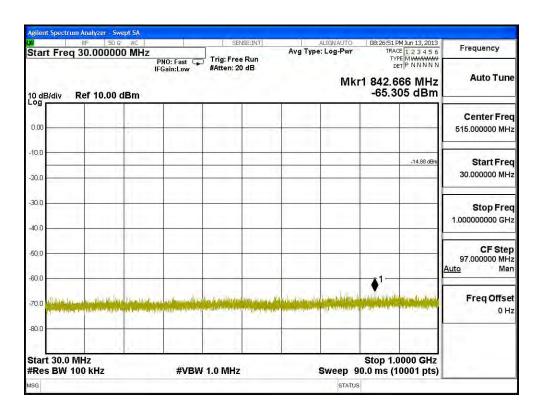


Test Item : RF Antenna Conducted Test

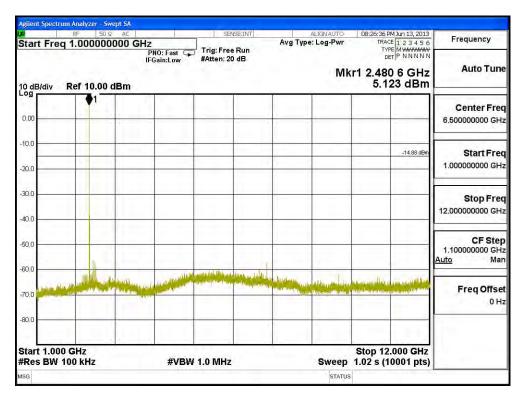
Test Site : No.3 OATS

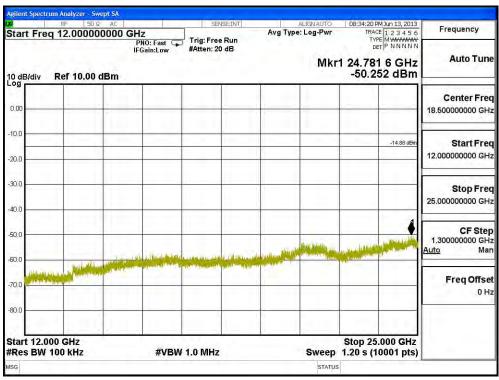
Test Mode : Mode 3: Transmit - BLE (GFSK)

Figure Channel 39:











6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2013

RF Radiated Measurement:

The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
⊠Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2012
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2012
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2013
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2012
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2013
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

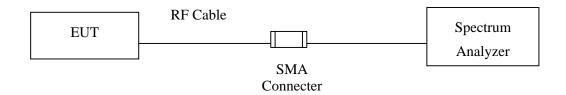
Note:

- 1. All equipments are calibrated every one year.
- 2. The test instruments marked by "X" are used to measure the final test results.



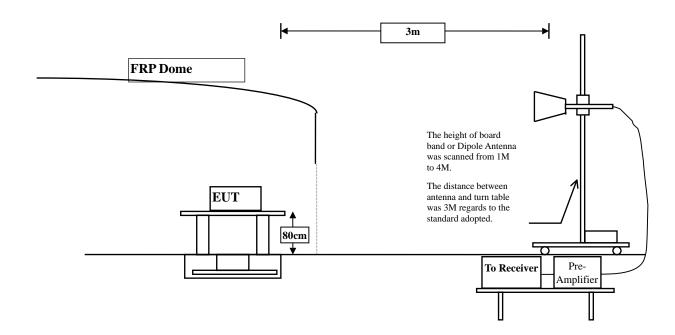
6.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz





6.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2009 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 and ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

6.5. Uncertainty

- ± 3.9 dB above 1GHz
- + 3.8 dB below 1GHz



6.6. Test Result of Band Edge

Product : TABLET PC
Test Item : Band Edge
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2402	31.573	64.35	95.924	Peak
Horizontal	2402	31.573	51.86	83.434	Average
Vertical	2402	30.917	61.38	92.297	Peak
Vertical	2402	30.917	49.44	80.357	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	$\Delta (dB)$	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2376.2	95.924	60.41	35.514	74.000	Peak
Horizontal	2376.2	83.434	56.484	26.95	54.000	Average
Vertical	2376.2	92.297	60.41	31.887	74.000	Peak
Vertical	2376.2	80.357	56.484	23.873	54.000	Average

Note:

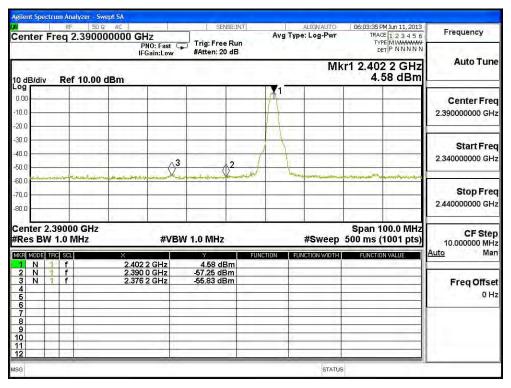
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

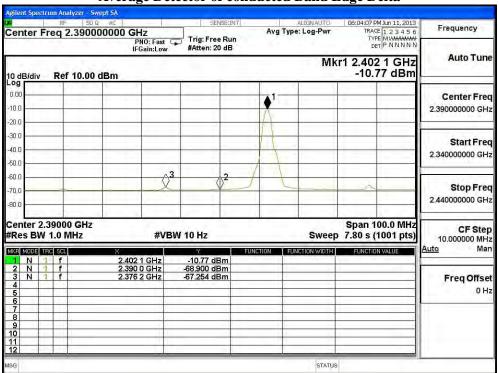
F = Fundamental field Strength (Peak or Average)



Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta





Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dB(uV/m)]	Detector
Horizontal	2480	32.155	63.74	95.896	Peak
Horizontal	2480	32.155	51.63	83.786	Average
Vertical	2480	31.412	59.98	91.392	Peak
Vertical	2480	31.412	48.79	80.202	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	$\Delta (dB)$	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	95.896	45.108	50.788	74.000	Peak
Horizontal	2483.5	83.786	45.123	38.663	54.000	Average
Vertical	2483.5	91.392	45.108	46.284	74.000	Peak
Vertical	2483.5	80.202	45.123	35.079	54.000	Average

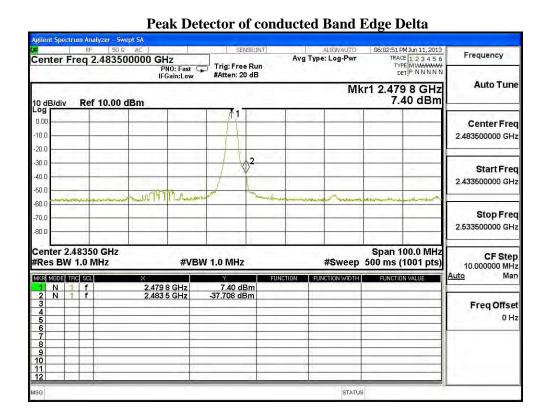
Note:

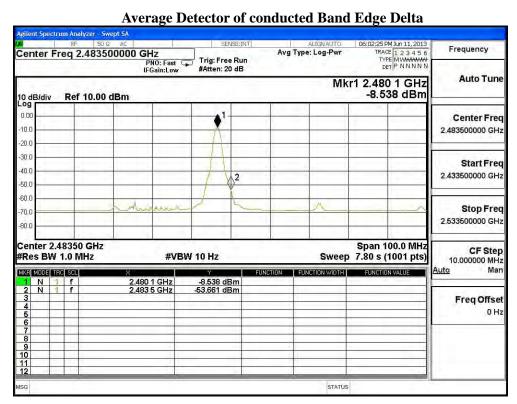
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

F = Fundamental field Strength (Peak or Average)









Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2402	31.573	63.12	94.694	Peak
Horizontal	2402	31.573	48.65	80.224	Average
Vertical	2402	30.917	60.14	91.057	Peak
Vertical	2402	30.917	46.58	77.497	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	$\Delta (dB)$	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2376.5	94.694	58.389	36.305	74.000	Peak
Horizontal	2376.5	80.224	53.4	26.824	54.000	Average
Vertical	2376.5	91.057	58.389	32.668	74.000	Peak
Vertical	2376.5	77.497	53.4	24.097	54.000	Average

Note:

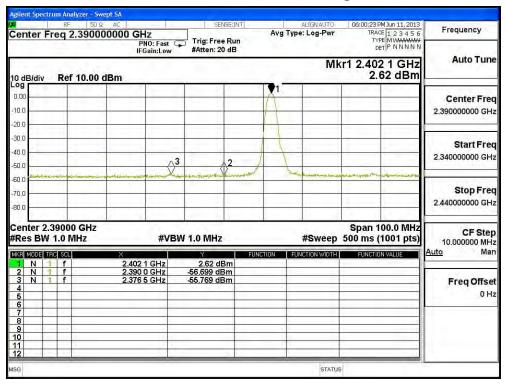
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

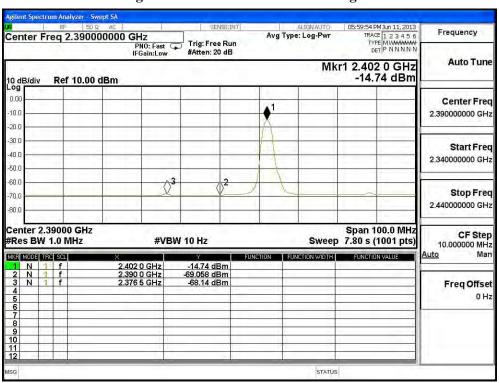
F = Fundamental field Strength (Peak or Average)



Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta





Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dB(uV/m)]	Detector
Horizontal	2480	32.155	63.13	95.286	Peak
Horizontal	2480	32.155	49.64	81.796	Average
Vertical	2480	31.412	59.78	91.192	Peak
Vertical	2480	31.412	46.94	78.352	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	95.286	54.008	41.278	74.000	Peak
Horizontal	2483.5	81.796	50.254	31.542	54.000	Average
Vertical	2483.5	91.192	54.008	37.184	74.000	Peak
Vertical	2483.5	78.352	50.254	28.098	54.000	Average

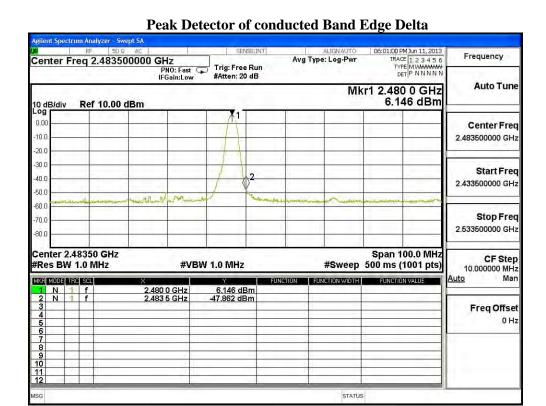
Note:

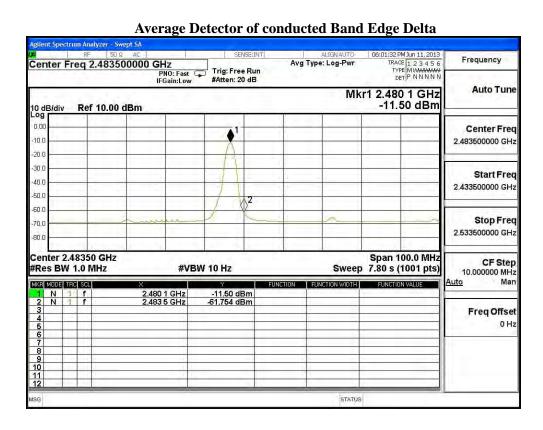
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

F = Fundamental field Strength (Peak or Average)









Test Mode : Mode 3: Transmit - BLE (GFSK) (2402MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2402	31.573	64.61	96.184	Peak
Horizontal	2402	31.573	44.31	75.884	Average
Vertical	2402	30.917	61.93	92.847	Peak
Vertical	2402	30.917	42.53	73.447	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2386.5	96.184	50.78	45.404	74.000	Peak
Horizontal	2375.9	75.884	40.98	34.904	54.000	Average
Vertical	2386.5	92.847	50.78	42.067	74.000	Peak
Vertical	2375.9	73.447	40.98	32.467	54.000	Average

Note:

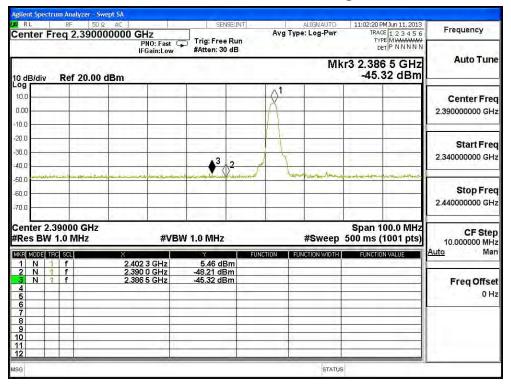
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

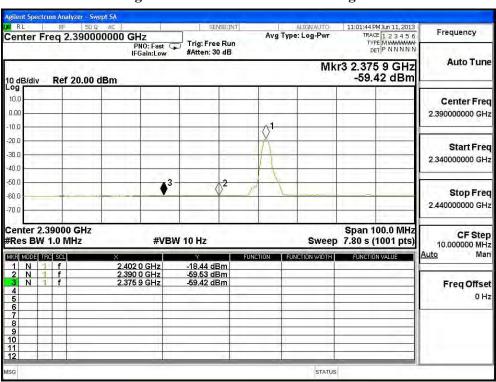
F = Fundamental field Strength (Peak or Average)



Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta





Test Mode : Mode 3: Transmit - BLE (GFSK) (2480MHz)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dB(uV/m)]	Detector
Horizontal	2480	32.155	62.06	94.216	Peak
Horizontal	2480	32.155	42.73	74.886	Average
Vertical	2480	31.412	60.47	91.882	Peak
Vertical	2480	31.412	41.78	73.192	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz
Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2483.5	94.216	42.05	52.166	74.000	Peak
Horizontal	2483.5	74.886	35.1	39.786	54.000	Average
Vertical	2483.5	91.882	42.05	49.832	74.000	Peak
Vertical	2483.5	73.192	35.1	38.092	54.000	Average

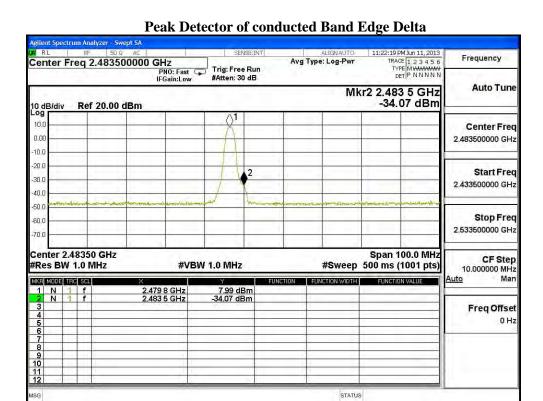
Note:

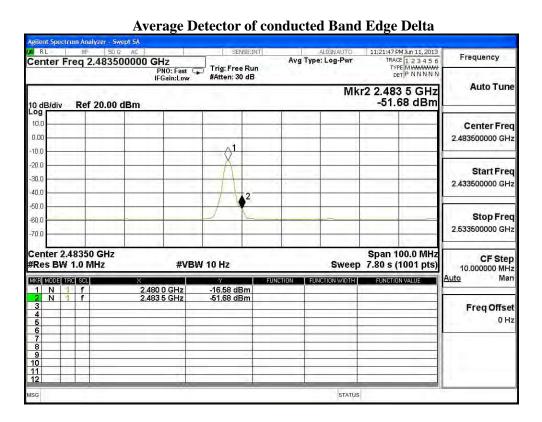
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = $F - \Delta$

F = Fundamental field Strength (Peak or Average)









7. Channel Number

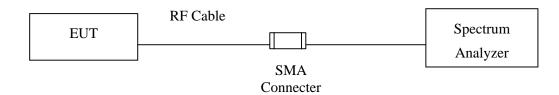
7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.4. Test Procedure

The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

N/A



7.6. Test Result of Channel Number

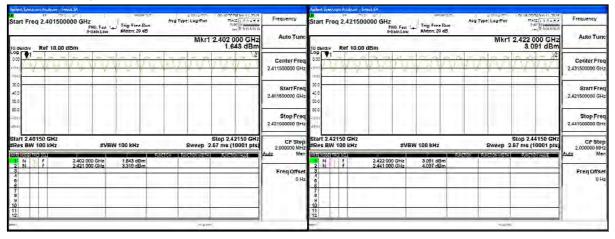
Product : TABLET PC
Test Item : Channel Number
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range	Measurement	Required Limit	Result	
(MHz)	(Hopping Channel)	(Hopping Channel)		
2402 ~ 2480	79	>75	Pass	

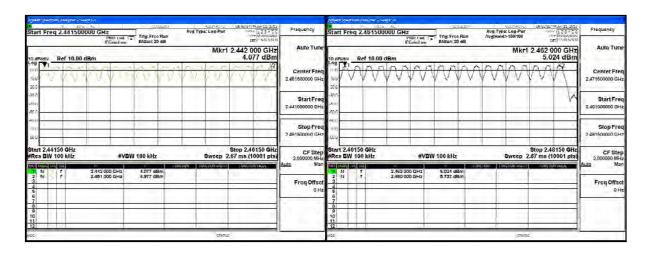
2402-2421MHz

2422-2441MHz



2442-2461MHz

2462-2480MHz





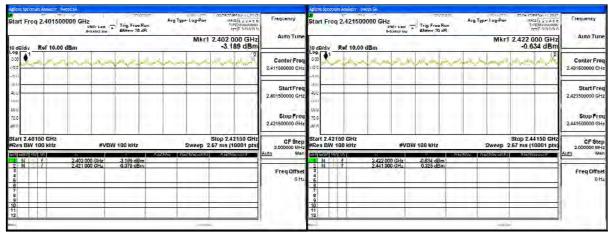
Product : TABLET PC
Test Item : Channel Number
Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Frequency Range	Measurement	Required Limit	Result	
(MHz)	(Hopping Channel)	(Hopping Channel)		
2402 ~ 2480	79	>75	Pass	

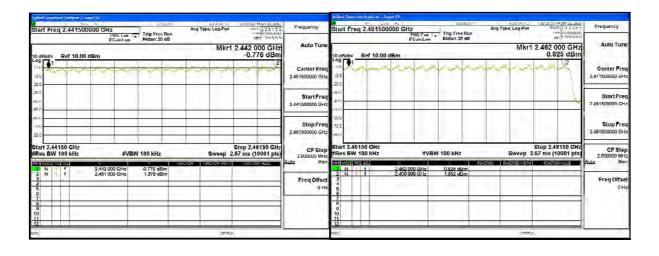
2402-2421MHz

2422-2441MHz



2442-2461MHz

2462-2480MHz





8. Channel Separation

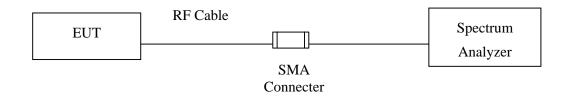
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments mark by "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedure

The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

± 150Hz



8.6. Test Result of Channel Separation

Product : TABLET PC

Test Item : Channel Separation

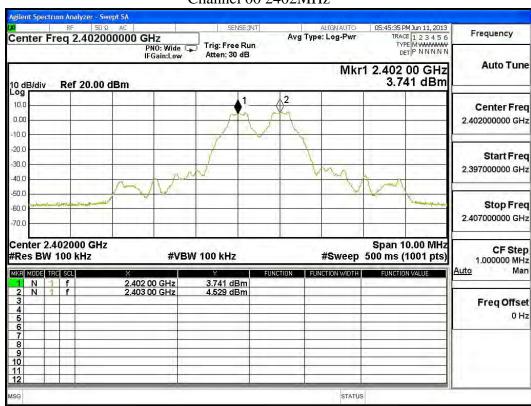
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

	Frequency	Measurement	Limit	Limit of (2/3)*20dB	
Channel No.	(MHz)	Level	(kHz)	Bandwidth (kHz)	Result
	(WITIE)	(kHz)	(KIIZ)	Dandwidth (KHZ)	
00	2402	1000	>25 kHz	746.7	Pass
39	2441	1000	>25 kHz	753.3	Pass
78	2480	1000	>25 kHz	746.7	Pass

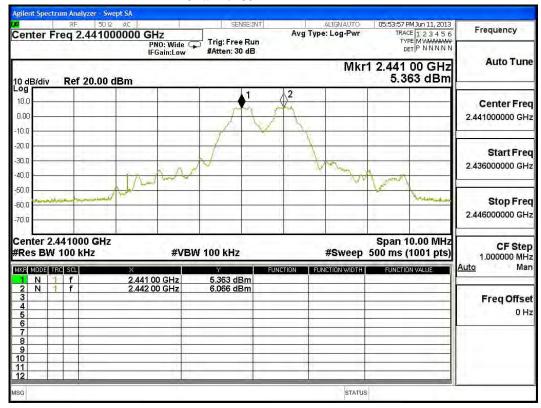
NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 2402MHz

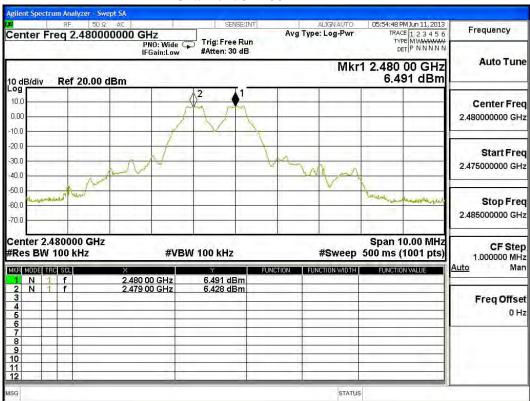




Channel 39 2441MHz



Channel 78 2480 MHz





Test Item : Channel Separation

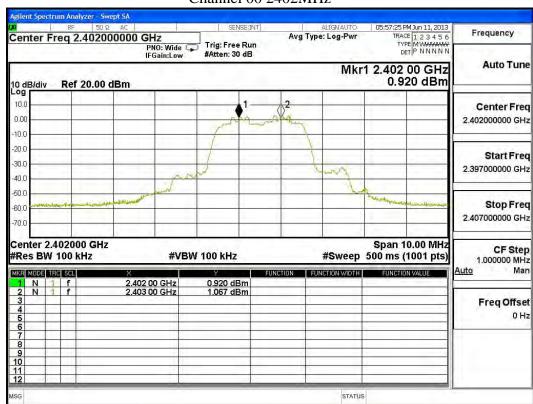
Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

	Fraguency	Measurement	Limit	Limit of (2/3)*20dB	
Channel No.	Frequency (MHz)	Level	(kHz)	Bandwidth (kHz)	Result
		(kHz)	(KIIZ)	Dandwidth (KHZ)	
00	2402	1000	>25 kHz	920.0	Pass
39	2441	1000	>25 kHz	926.7	Pass
78	2480	1000	>25 kHz	926.7	Pass

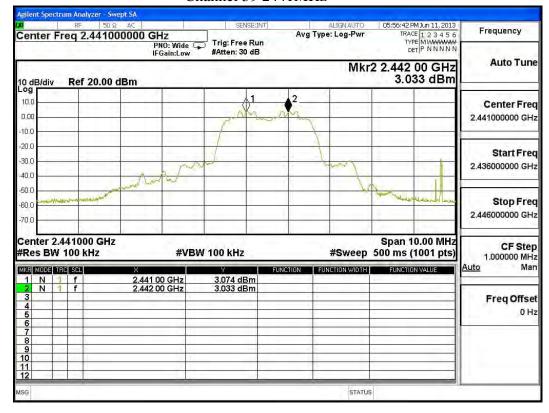
NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 2402MHz

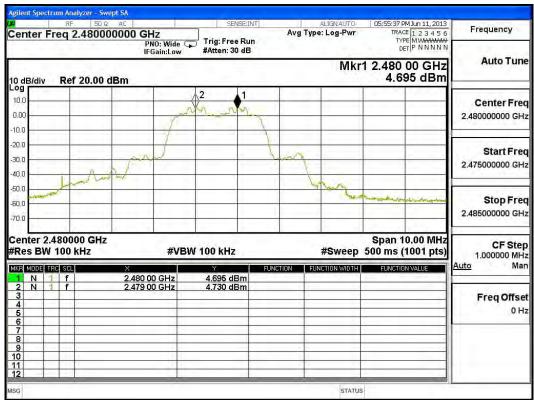




Channel 39 2441MHz



Channel 78 2480 MHz





9. Dwell Time

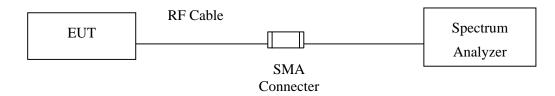
9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

9.2. Test Setup



9.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Procedure

The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

± 25msec



9.6. Test Result of Dwell Time

Product : TABLET PC
Test Item : Dwell Time
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

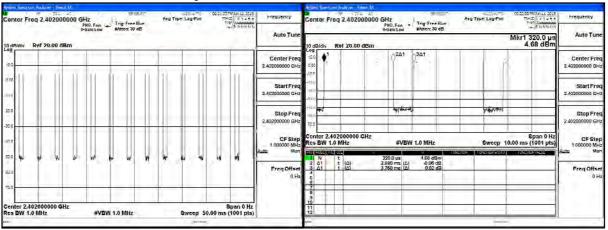
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.880	14	50	0.81	0.323	0.4	Pass
2441	2.880	14	50	0.81	0.323	0.4	Pass
2480	2.880	14	50	0.81	0.323	0.4	Pass

Duty cycle =((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) * (79*0.4)

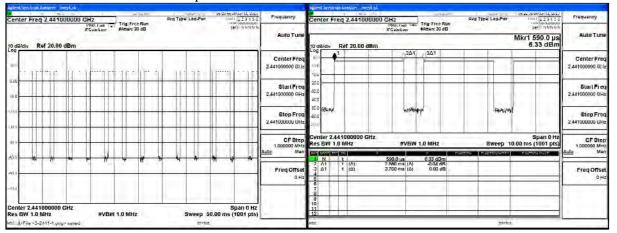
CH 00 Time Interval between hops

CH 00 Transmission Time



CH39 Time Interval between hops

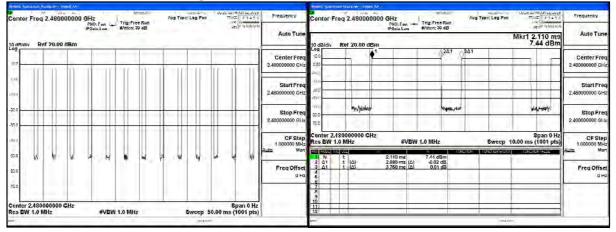
CH 39Transmission Time





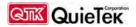
CH 78 Time Interval between hops

CH 78 Transmission Time



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



Product : TABLET PC
Test Item : Dwell Time
Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

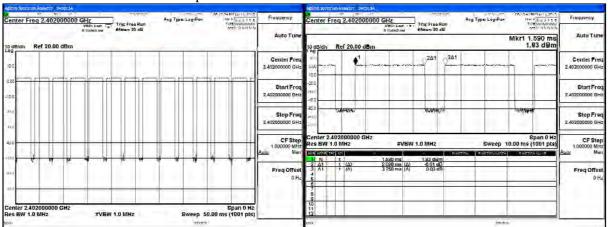
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.900	14	50	0.81	0.325	0.4	Pass
2441	2.890	14	50	0.81	0.324	0.4	Pass
2480	2.880	14	50	0.81	0.323	0.4	Pass

Duty cycle =((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) * (79*0.4)

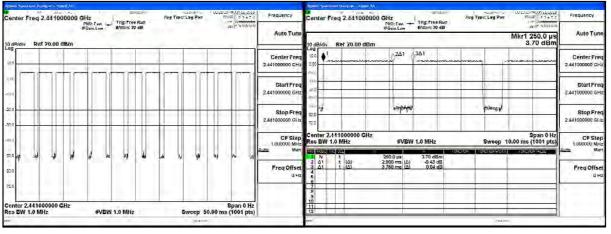
CH 00 Time Interval between hops

CH 00 Transmission Time



CH39 Time Interval between hops

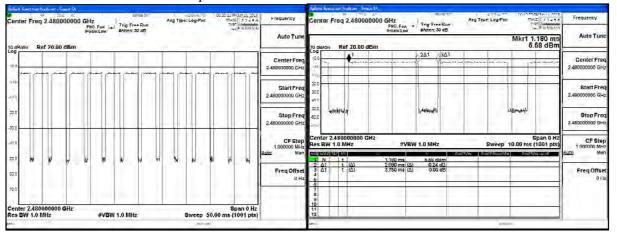
CH 39Transmission Time





CH 78 Time Interval between hops

CH 78 Transmission Time



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



10. Occupied Bandwidth (20dB BW)

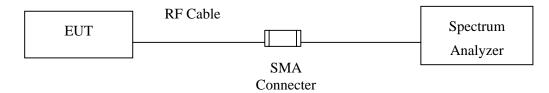
10.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

10.2. Test Setup



10.3. Limits

N/A

10.4. Test Procedure

The EUT was setup to ANSI C63.10: 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.5. Uncertainty

± 150Hz



10.6. Test Result of Occupied Bandwidth

Product : TABLET PC

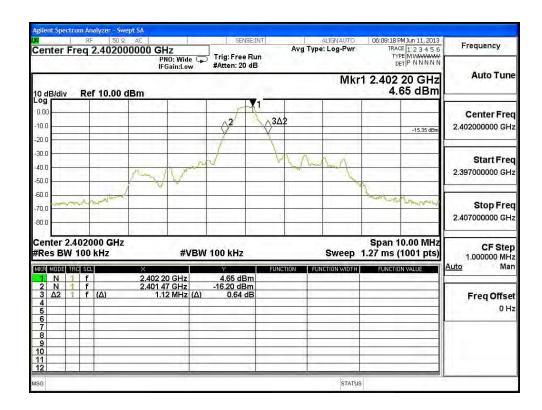
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1120		NA

Figure Channel 00:





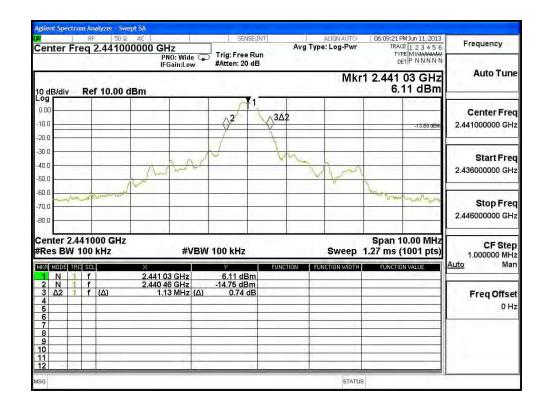
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1130		NA

Figure Channel 39:





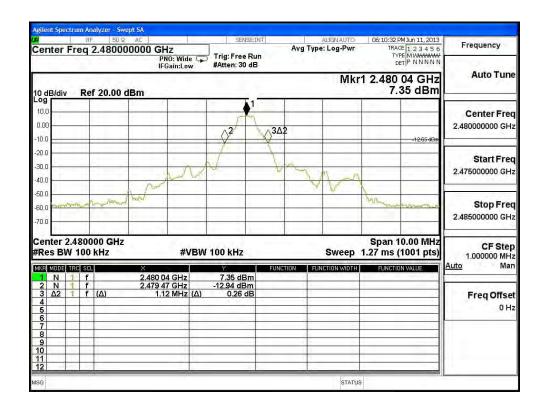
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1120		NA

Figure Channel 78:





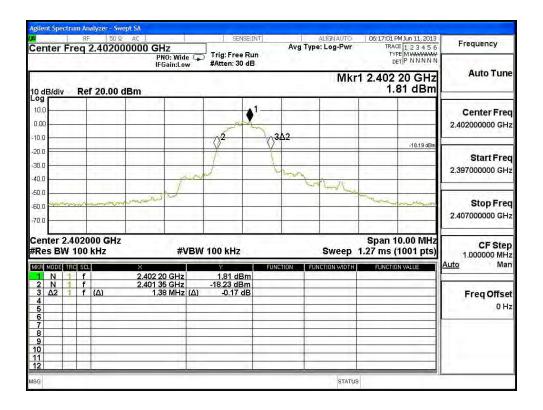
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1380		NA

Figure Channel 00:





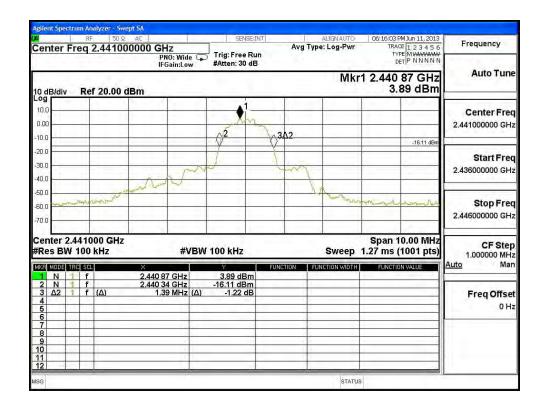
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1390		NA

Figure Channel 39:





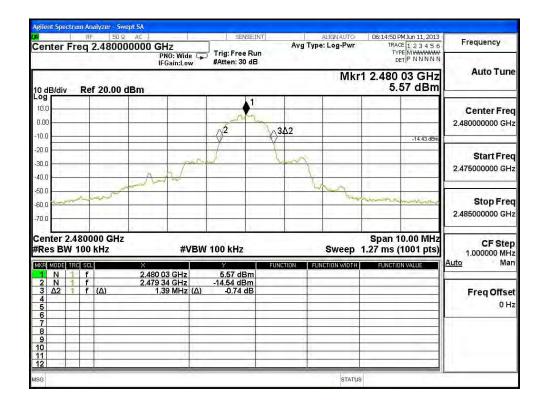
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1390		NA

Figure Channel 78:





11. Occupied Bandwidth (6dB BW)

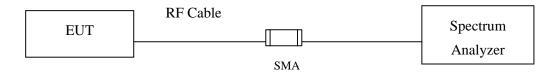
11.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

11.2. Test Setup



11.3. Limits

The minimum bandwidth shall be at least 500 kHz.

11.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009; tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

11.5. Uncertainty

± 150Hz



11.6. Test Result of Occupied Bandwidth

Product : TABLET PC

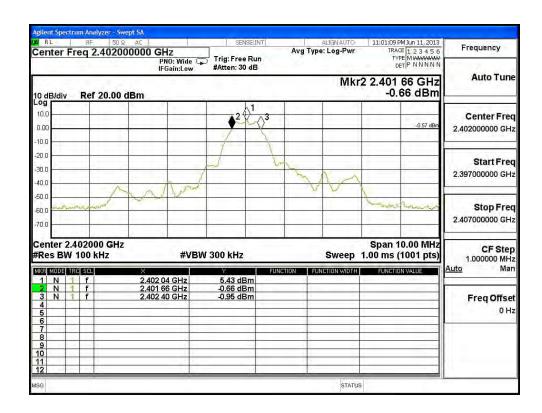
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	740.0	>500	Pass

Figure Channel 00:





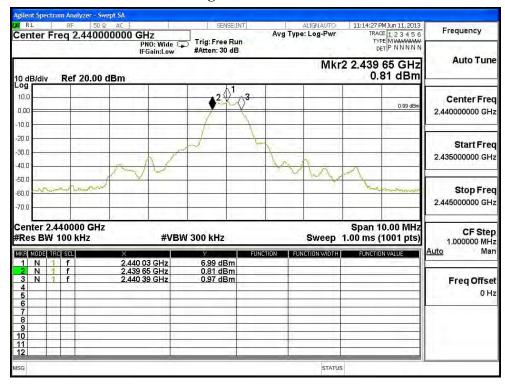
Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
19	2440	740.0	>500	Pass

Figure Channel 19:





Test Item : Occupied Bandwidth Data

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	740.0	>500	Pass

Figure Channel 39: Agient Spectrum ArmyRL RF 50 \(\text{RF} \) Center Freq 2.480000000 GHz PNO: Wide | IFGain:Low ent Spectrum Analyzer - Swept SA ALIGNAUTO 11:21:14 PM Jun 11, 2013 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NN N N N Frequency Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr2 2.479 65 GHz 1.84 dBm Ref 20.00 dBm 10.0 Center Freq 2.10 dE 0.00 2.480000000 GHz -10.0 -20.0 Start Freq -30.0 2.475000000 GHz 40.0 50.0 Stop Freq -60.0 2.485000000 GHz -70.0 Center 2.480000 GHz #Res BW 100 kHz Span 10.00 MHz Sweep 1.00 ms (1001 pts) CF Step 1.000000 MHz **#VBW 300 kHz** 8.10 dBm 1.84 dBm 1.88 dBm 2.480 04 GHz 2.479 65 GHz 2.480 39 GHz Freq Offset 0 Hz STATUS

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12. Power Density

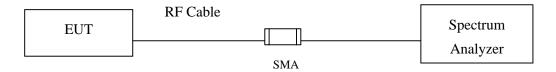
12.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
X	K Spectrum Analyzer	Agilent	N9010A/MY48030495	Apr., 2013

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

12.2. Test Setup



12.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

12.4.Test Procedure

The EUT was setup according to ANSI C63.10: 2009; tested according to DTS test procedure of ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

12.5. Uncertainty

± 1.27 dB



12.6. Test Result of Power Density

Product : TABLET PC

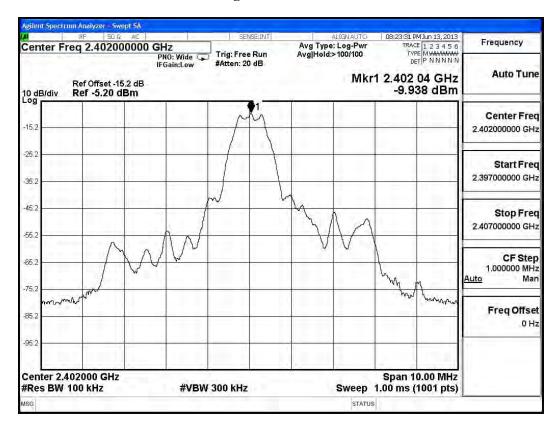
Test Item : Power Density Data

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2402MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-9.938	< 8dBm	Pass

Figure Channel 00:





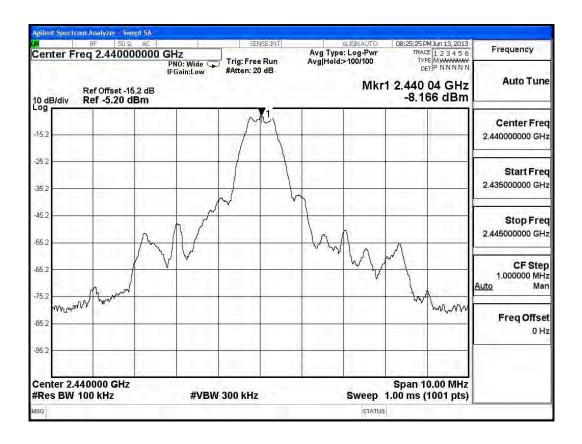
Test Item : Power Density Data

Test Site : No.3OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2440MHz)

Chann	nel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1	.9	2440	-8.166	< 8dBm	Pass

Figure Channel 19:





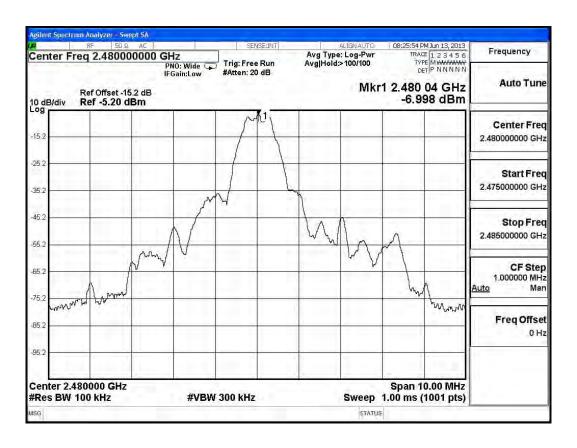
Test Item : Power Density Data

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit - BLE (GFSK) (2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
39	2480	-6.998	< 8dBm	Pass

Figure Channel 39:





13. EMI Reduction Method During Compliance Testing

No modification was made during testing.