

FCC REPORT (Bluetooth)

Applicant: MAXCOM MOBILE

Address of Applicant: Room 2202 International Science and Technology Building,
Futian District, 3007 Shennan Road, Shenzhen, China

Equipment Under Test (EUT)

Product Name: GSM Mobile Phone

Model No.: GOODS-5130S, GOOD-5130, 5130,5130S, COOL-5130,
G5130, XTV-5130, LIKE-5130, SKIES-5130S

Trade mark: F.CELL, XTREME, MAXCOM, P.MOVIL, SKYNEW, PLAY,
NEW, LIKE, HISKY

FCC ID: FWO5130S

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247:2010

Date of sample receipt: Mar. 31, 2012

Date of Test: Apr. 05-25, 2012

Date of report issued: Apr. 25, 2012

Test Result : PASS *

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

Authorized Signature:



Stephen Guo
Laboratory Manager

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 and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of CCIS International Electrical Approvals or testing done by CCIS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by CCIS International Electrical Approvals in writing.

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2 Version

Version No.	Date	Description
00	Apr. 25, 2012	Original

Prepared By:

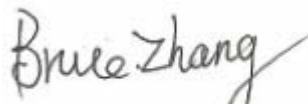


Project Engineer

Date:

Apr. 25, 2012

Check By:



Reviewer

Date:

Apr. 25, 2012

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Pseudorandom Frequency Hopping Sequence	15.247(b)(4)&TCB Exclusion List (7 July 2002)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	MAXCOM MOBILE
Address of Applicant:	Room 2202 International Science and Technology Building, Futian District, 3007 Shennan Road, Shenzhen, China
Manufacturer:	MAXCOM MOBILE
Address of Manufacturer	Room 2202 International Science and Technology Building, Futian District, 3007 Shennan Road, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	GSM Mobile Phone
Model No.:	GOODS-5130S,GOOD-5130,5130, 5130S, COOL-5130, G5130, XTV-5130, LIKE-5130, SKIES-5130S
Trade mark:	F.CELL, XTREME, MAXCOM, P.MOVIL, SKYNEW, PLAY, NEW, LIKE, HISKY
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK
Antenna Type:	Integral
Antenna gain:	-4.36dBi
AC adapter:	Trade Mark: jmc Input:100-240V AC,50/60Hz 80mA Output:4.5V-9.5V DC MAX 500mA
Power supply:	Rechargeable Li-ion Battery DC3.7V
Remark:	Just test the mode No. GOODS-5130S GOODS-5130S, GOOD-5130, 5130, 5130S, COOL-5130, G5130, XTV-5130, LIKE-5130 and SKIES-5130S are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name, Trade mark and the color of the appearance.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with worse case data rate.
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5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.:** 817957

China Certification & Inspection Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 817957, February 27, 2012

● **Industry Canada (IC)**

The 3m Semi-anechoic chamber of China Certification & Inspection Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

5.5 Test Location

All tests were performed at:

China Certification & Inspection Services Co., Ltd.

Address: 1st Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

Tel: 0755-23118282

Fax: 0755-23116366

5.6 Other Information Requested by the Customer

None.

5.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	Aug. 09 2011	Aug. 09 2012
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	June 16 2011	June 16 2012
3	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	June 09 2011	June 09 2012
4	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	June 09 2011	June 09 2012
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
6	Coaxial Cable	CCIS	N/A	CCIS0016	Mar. 01 2012	Mar. 01 2013
7	Coaxial Cable	CCIS	N/A	CCIS0017	Mar. 01 2012	Mar. 01 2013
8	Coaxial cable	CCIS	N/A	CCIS0018	Mar. 01 2012	Mar. 01 2013
9	Coaxial Cable	CCIS	N/A	CCIS0019	Mar. 01 2012	Mar. 01 2013
10	Coaxial Cable	CCIS	N/A	CCIS0087	Mar. 01 2012	Mar. 01 2013
11	Amplifier(10KHz-1.3GHz)	HP	8447D	CCIS0003	Aug. 03 2011	Aug. 03 2012
12	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	Aug. 05 2011	Aug. 05 2012
13	Spectrum analyzer	Rohde & Schwarz	FSP	CCIS0023	June 22 2011	June 22 2012
14	Printer	Hp	HP LaserJet P1007	N/A	N/A	N/A
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
16	Universal radio communication tester	Rohde & Schwarz	CMU200	CCIS0069	May 11 2011	May 10 2012

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	Oct. 10 2011	Oct. 10 2012
2	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Mar. 16 2012	Mar. 16 2013
4	LISN	CHASE	MN2050D	CCIS0074	Apr. 14 2012	Apr. 14 2013
5	Coaxial Cable	CCIS	N/A	CCIS0086	Mar. 01 2012	Mar. 01 2013
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

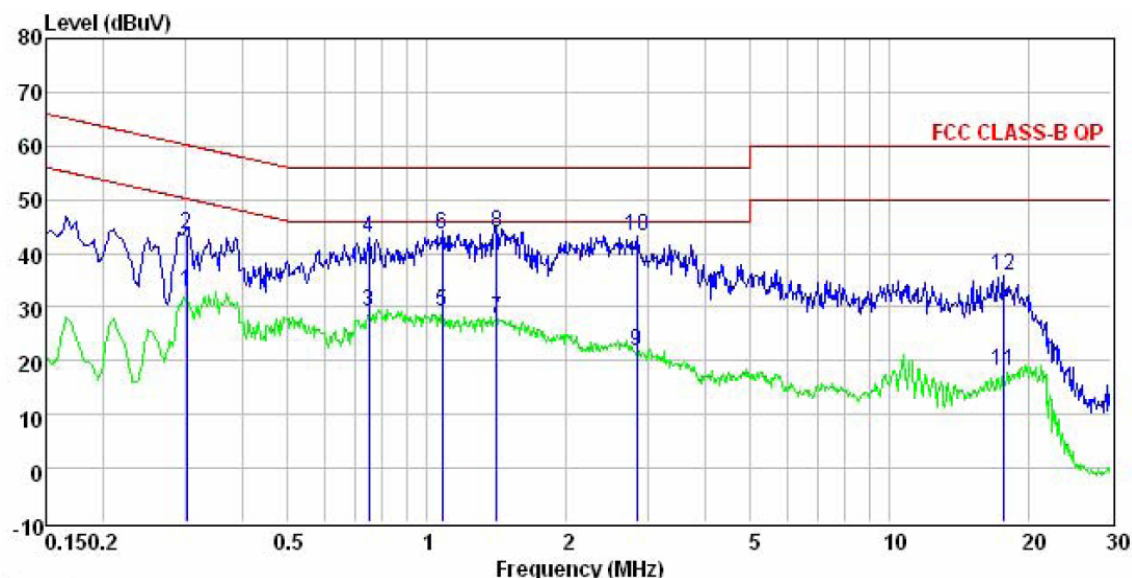
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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.</i> 15.247(c) (1)(i) requirement: <i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i>	
E.U.T Antenna:	
<i>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -4.36dBi.</i>	
 Antenna	

6.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207			
Test Method:	ANSI C63.4:2003			
Test Frequency Range:	150KHz to 30MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto			
Limit:	Frequency range (MHz)	Limit (dBuV)		
		Quasi-peak	Average	
		0.15-0.5	66 to 56*	56 to 46*
		0.5-5	56	46
		5-30	60	50
* Decreases with the logarithm of the frequency.				
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. 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 of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.			
Test setup:	Reference Plane LISN AUX Equipment E.U.T 40cm 80cm LISN Filter AC power EMI Receiver Test table/Insulation plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m			
Test Instruments:	Refer to section 5.7 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Pass			

Measurement Data

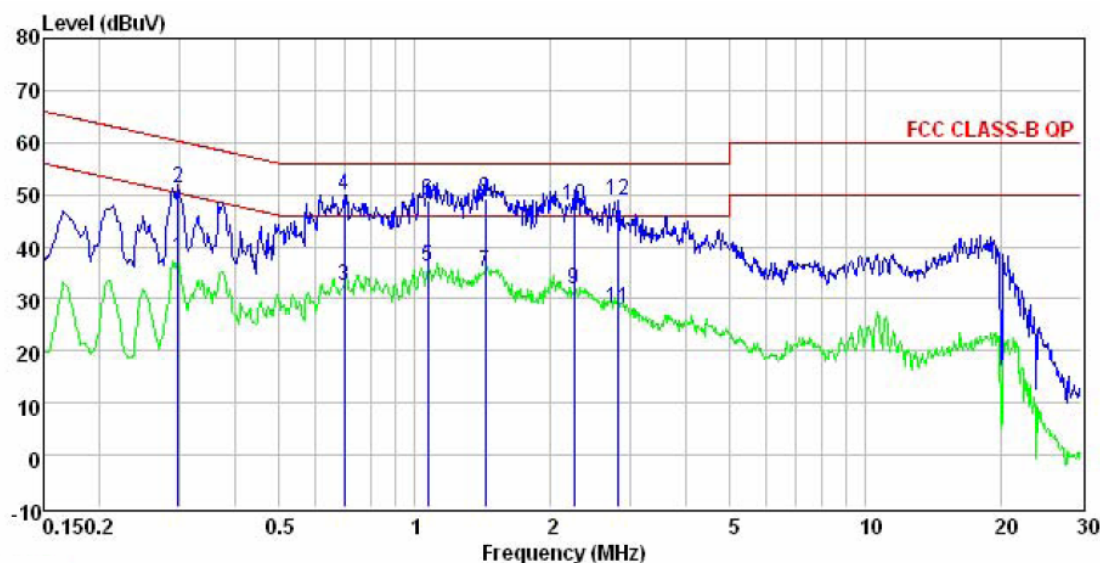
Live line:



Read LISN Cable Limit Over
Freq Level Factor Loss Level Line Limit Remark

	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.30	21.73	10.26	0.74	32.73	50.19	-17.46	Average
2	0.30	32.56	10.26	0.74	43.56	60.19	-16.63	QP
3	0.75	18.22	10.19	0.79	29.20	46.00	-16.80	Average
4	0.75	31.99	10.19	0.79	42.97	56.00	-13.03	QP
5	1.08	18.10	10.22	0.88	29.20	46.00	-16.80	Average
6	1.08	32.56	10.22	0.88	43.66	56.00	-12.34	QP
7	1.41	16.71	10.24	0.91	27.86	46.00	-18.14	Average
8	1.41	32.70	10.24	0.91	43.85	56.00	-12.15	QP
9	2.84	10.60	10.28	0.92	21.80	46.00	-24.20	Average
10	2.84	32.16	10.28	0.92	43.36	56.00	-12.64	QP
11	17.57	6.95	10.28	0.92	18.15	50.00	-31.85	Average
12	17.57	24.66	10.28	0.92	35.86	60.00	-24.14	QP

Neutral line:



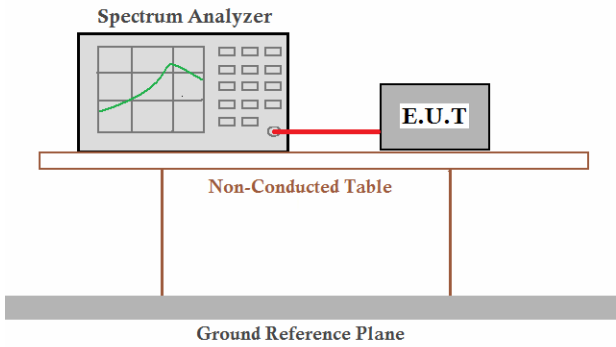
Read LISN Cable Limit Over
Freq Level Factor Loss Level Line Limit Remark

	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.30	26.77	10.24	0.74	37.75	50.28	-12.53	Average
2	0.30	40.10	10.24	0.74	51.08	60.28	-9.20	QP
3	0.70	21.56	10.16	0.77	32.49	46.00	-13.51	Average
4	0.70	38.85	10.16	0.77	49.78	56.00	-6.22	QP
5	1.07	25.00	10.21	0.88	36.09	46.00	-9.91	Average
6	1.07	37.65	10.21	0.88	48.74	56.00	-7.26	QP
7	1.43	24.12	10.24	0.92	35.28	46.00	-10.72	Average
8	1.43	37.94	10.24	0.92	49.10	56.00	-6.90	QP
9	2.25	20.53	10.27	0.95	31.75	46.00	-14.25	Average
10	2.25	36.59	10.27	0.95	47.81	56.00	-8.19	QP
11	2.82	16.90	10.27	0.92	28.09	46.00	-17.91	Average
12	2.82	37.70	10.27	0.92	48.89	56.00	-7.11	QP

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

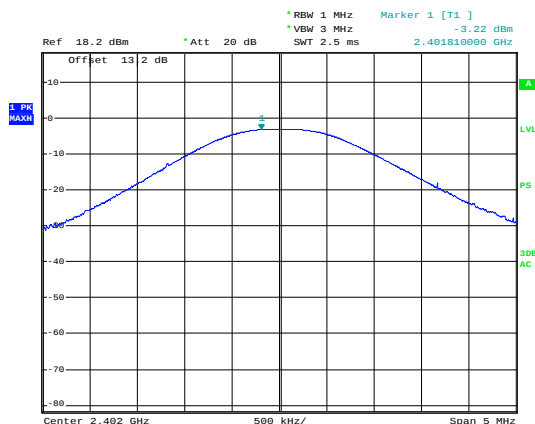
6.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

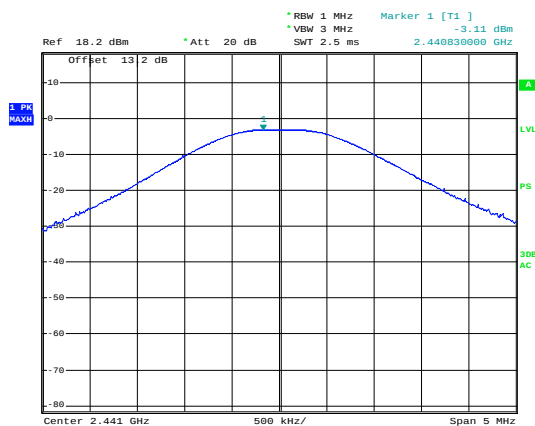
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	-3.22	30.00	Pass
Middle	-3.11	30.00	Pass
Highest	-1.76	30.00	Pass

Test plot as follows:



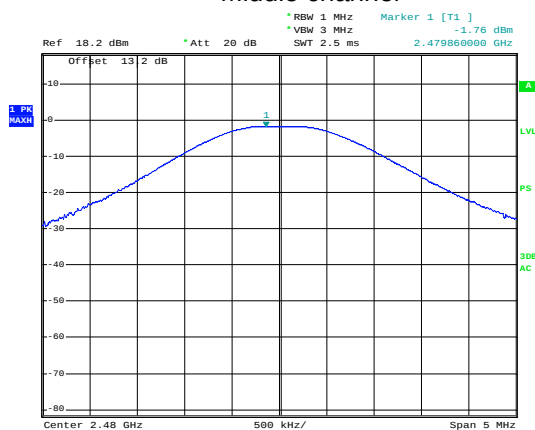
Date: 5, APR. 2012 17:59:56

Lowest channel



Date: 5, APR. 2012 17:59:41

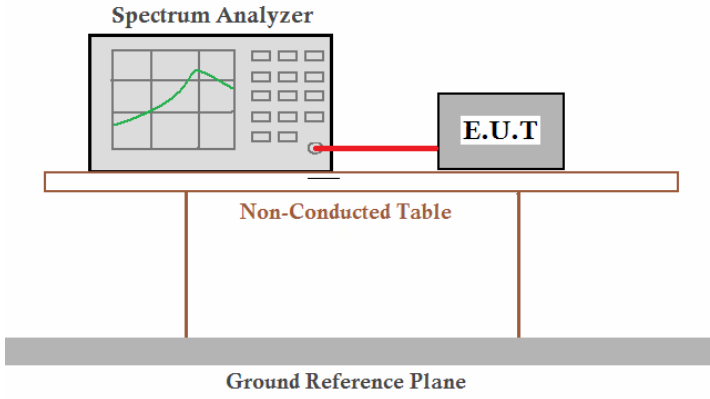
Middle channel



Date: 5, APR. 2012 17:59:21

Highest channel

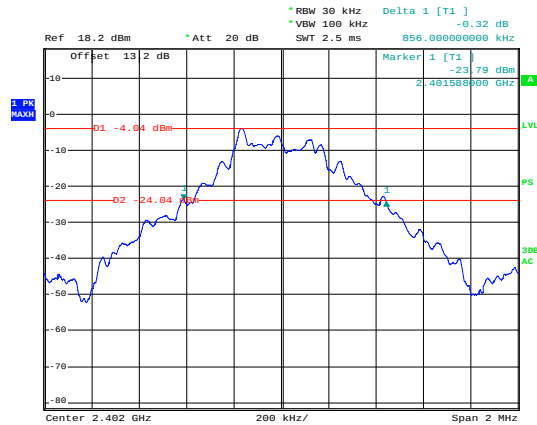
6.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=30KHz, VBW=100KHz,detector=Peak
Limit:	NA
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

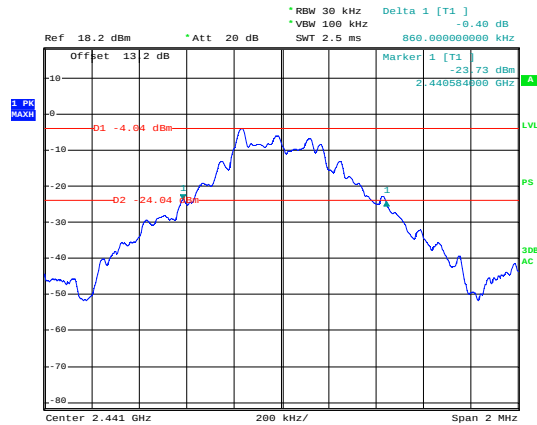
Test channel	20dB Occupy Bandwidth (KHz)
Lowest	856
Middle	860
Highest	864

Test plot as follows:



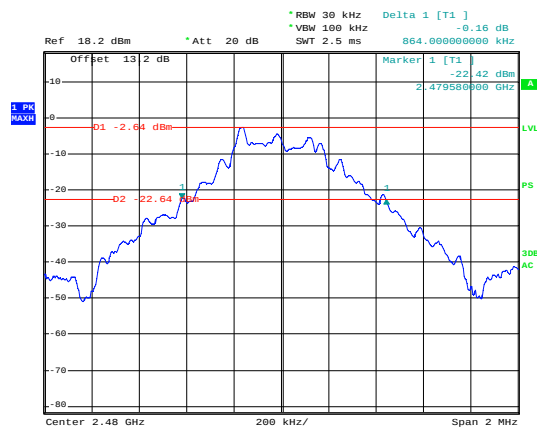
Date: 5.APR.2012 17:57:32

Lowest channel



Date: 5.APR.2012 17:58:09

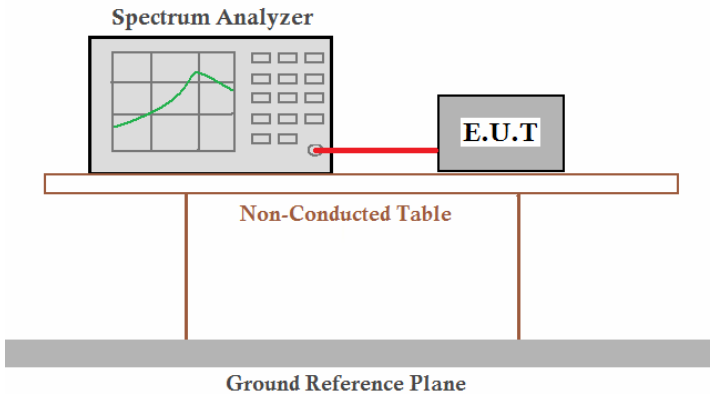
Middle channel



Date: 5.APR.2012 17:58:46

Highest channel

6.5 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=30KHz, VBW=100KHz, detector=Peak
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

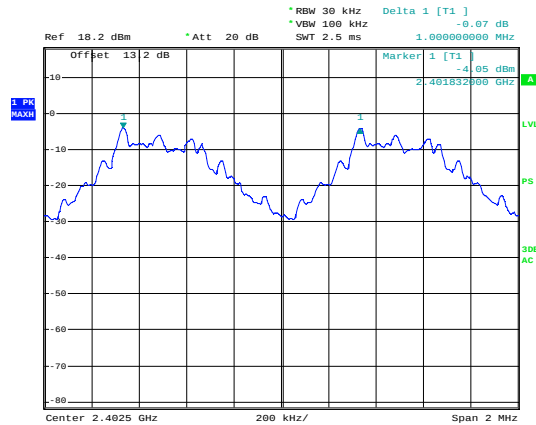
Measurement Data

Test channel	Carrier Frequencies Separation (KHz)	Limit (KHz)	Result
Lowest	1000	570.667	Pass
Middle	1004	573.333	Pass
Highest	1000	576.000	Pass

Note: According to section 5.4,

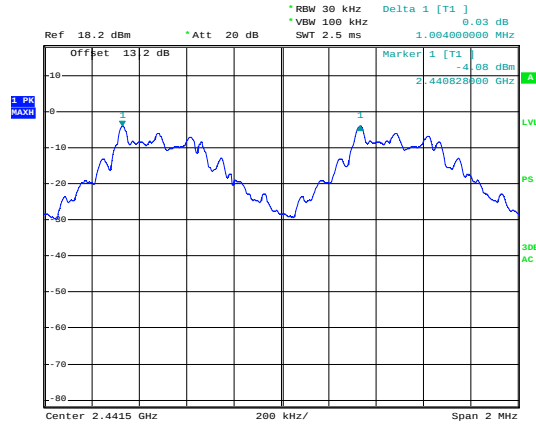
20dB bandwidth (KHz) (worse case)	Limit (KHz) (Carrier Frequencies Separation)
856	570.667
860	573.333
864	576.000

Test plot as follows:



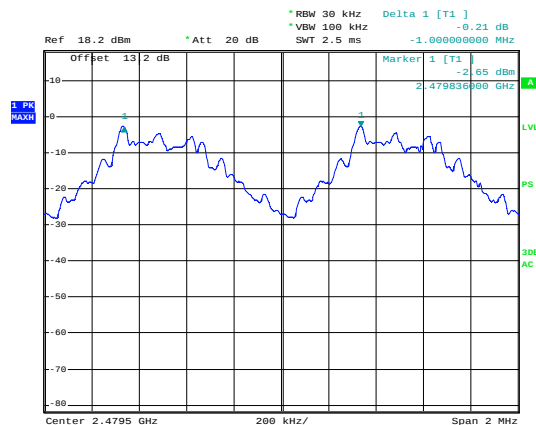
Date: 5.APR.2012 18:00:37

Lowest channel



Date: 5.APR.2012 18:01:14

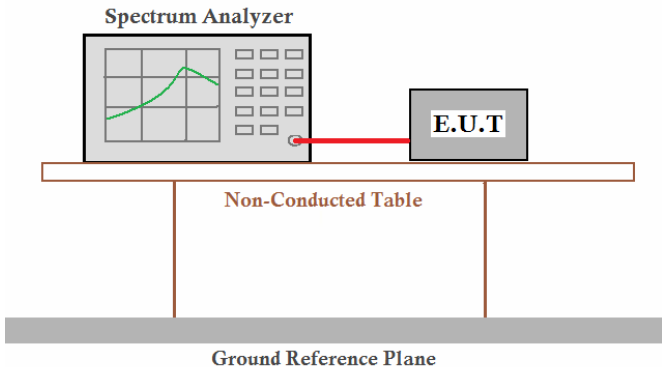
Middle channel



Date: 5.APR.2012 18:01:44

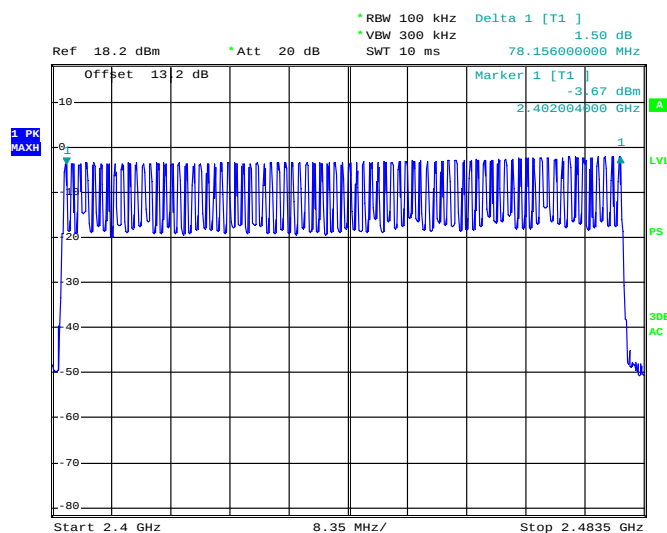
Highest channel

6.6 Hopping Channel Number

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=100KHz, VBW=300KHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15channels
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

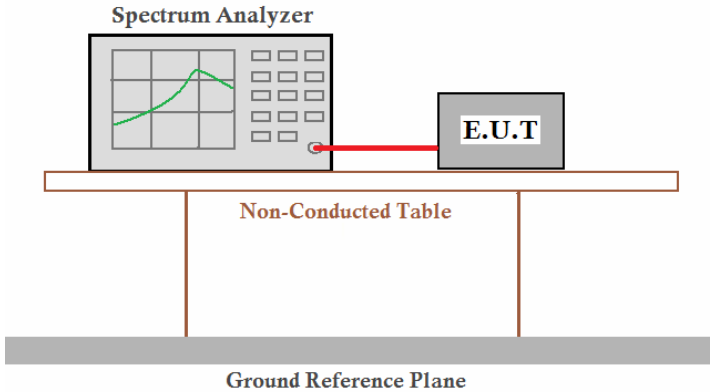
Measurement Data:

Hopping channel numbers	Limit	Result
79	≥ 15	Pass



Date: 5.APR.2012 17:51:42

6.7 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=1MHz, VBW=1MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test mode:	Hopping transmitting with all kind of modulation.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an Equipment Under Test (E.U.T.). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data (Worse case)

Packet	Dwell time (second)	Limit (second)	Result
DH1	0.1392	0.4	Pass
DH3	0.2712		
DH5	0.3154		

Test Result:

The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

The lowest channel (2402MHz), middle channel (2441MHz), highest channel (2480MHz) as blow

DH1 time slot = $0.435(\text{ms}) \times (1600 / (2 \times 79)) \times 31.6 = 139.2 \text{ ms}$

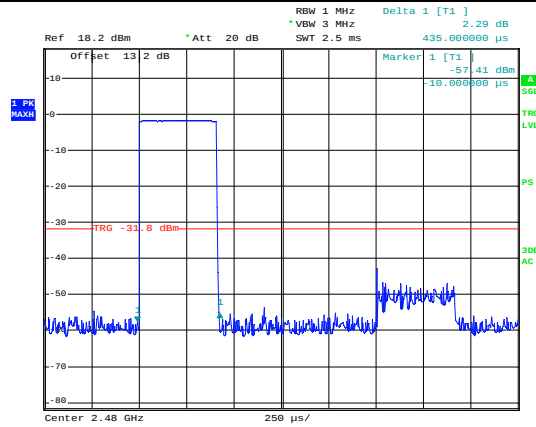
DH3 time slot = $1.695(\text{ms}) \times (1600 / (4 \times 79)) \times 31.6 = 271.2 \text{ ms}$

DH5 time slot = $2.959(\text{ms}) \times (1600 / (6 \times 79)) \times 31.6 = 315.4 \text{ ms}$

Test plot as follows:

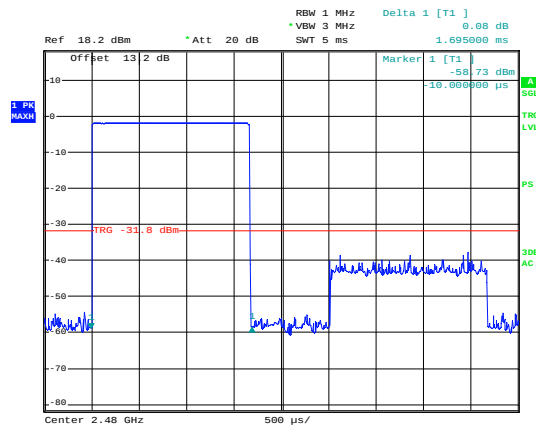
Modulation mode:

GFSK



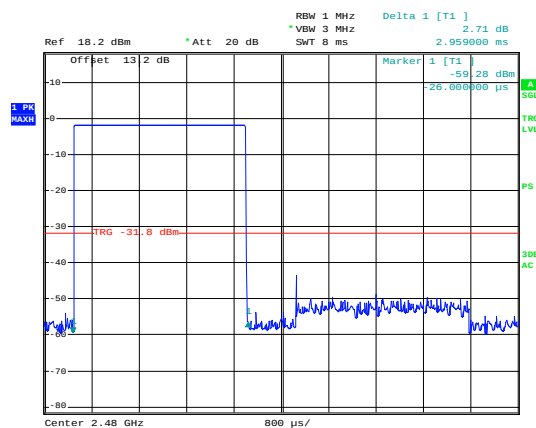
Date: 5.APR.2012 17:53:51

DH1



Date: 5.APR.2012 17:54:23

DH3



Date: 5.APR.2012 17:55:53

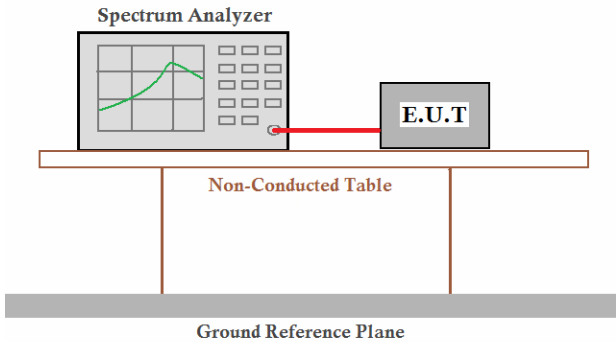
DH5

6.8 Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part15 C Section 15.247 (a)(1) requirement:
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. Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.	
EUT Pseudorandom Frequency Hopping Sequence	
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones. • Number of shift register stages: 9 • Length of pseudo-random sequence: $2^9 - 1 = 511$ bits • Longest sequence of zeros: 8 (non-inverted signal) <i>Linear Feedback Shift Register for Generation of the PRBS sequence</i> An example of Pseudorandom Frequency Hopping Sequence as follow: Each frequency used equally on the average by each transmitter. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.	

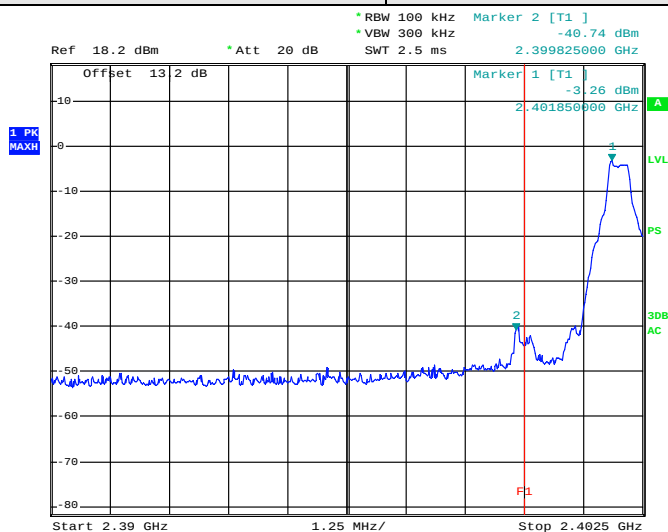
6.9 Band Edge

6.9.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Receiver setup:	RBW=100KHz, VBW=300KHz, Detector=Peak
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.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	No-hopping mode
Test results:	Pass

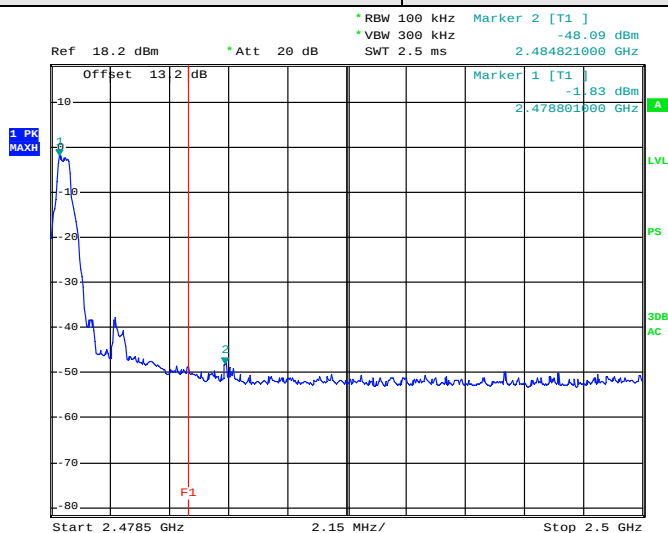
Test plot as follows:

Test channel:	Lowest channel
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Date: 5.APR.2012 18:04:38

Test channel:	Highest channel
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Date: 5.APR.2012 18:03:04

6.9.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205																		
Test Method:	ANSI C63.4: 2003																		
Test Frequency Range:	2.3GHz to 2.5GHz																		
Test site:	Measurement Distance: 3m																		
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value
Frequency	Detector	RBW	VBW	Remark															
Above 1GHz	Peak	1MHz	3MHz	Peak Value															
	Peak	1MHz	10Hz	Average Value															
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr><tr><td>74.00</td><td>Peak Value</td></tr></table>					Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	54.00	Average Value	74.00	Peak Value						
Frequency	Limit (dBuV/m @3m)	Remark																	
Above 1GHz	54.00	Average Value																	
	74.00	Peak Value																	
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																		
Test setup:	EUT Turn Table 0.8m 3m 4m 1m Antenna Tower Horn Antenna Spectrum Analyzer Amplifier																		
Test Instruments:	Refer to section 5.7 for details																		
Test mode:	Refer to section 5.3 for details.																		
Test results:	Passed																		

Test channel:		Lowest			Level:		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	63.38	27.58	3.81	34.83	59.94	74.00	59.94	Horizontal
2390.00	64.48	27.58	3.81	34.83	61.04	74.00	61.04	Vertical

Test channel:		Lowest			Level:		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	52.15	27.58	3.81	34.83	48.71	54.00	-5.29	Horizontal
2390.00	52.95	27.58	3.81	34.83	49.51	54.00	-4.49	Vertical

Test channel:		Highest			Level:		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.63	64.18	27.52	3.89	34.86	60.73	74.00	-13.27	Horizontal
2483.63	64.34	27.52	3.89	34.86	60.89	74.00	-13.11	Vertical

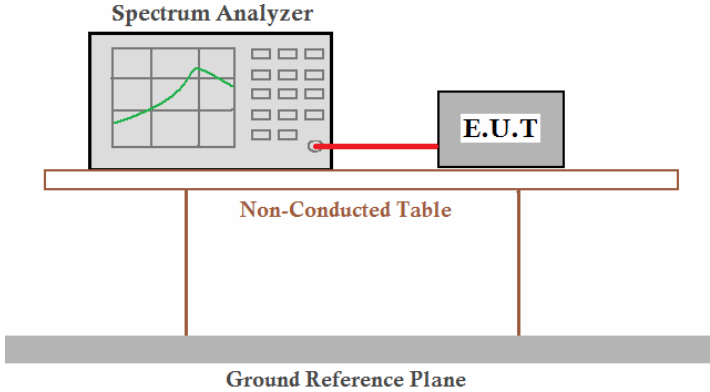
Test channel:		Highest			Level:		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	52.36	27.52	3.89	34.86	48.91	54.00	-5.09	Horizontal
2483.50	52.67	27.52	3.89	34.86	49.22	54.00	-4.78	Vertical

Remark:

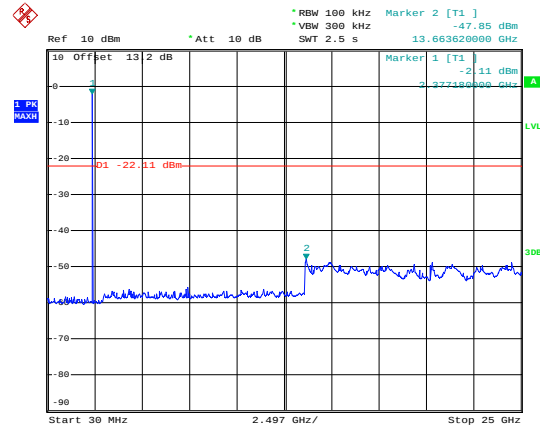
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.10 Spurious Emission

6.10.1 Conducted Emission Method

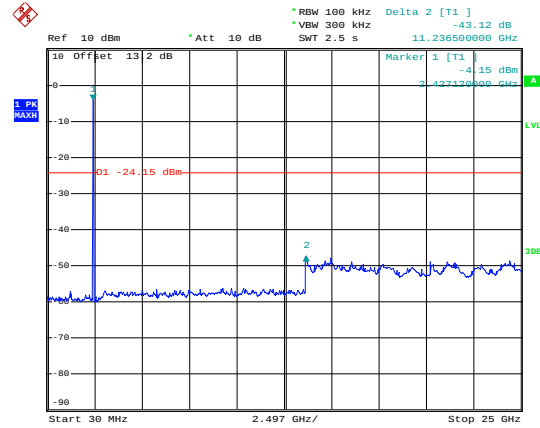
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB DA00-705
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at 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.
Test setup:	 The diagram illustrates the test setup for conducted emission measurement. A Spectrum Analyzer is connected via a red cable to an E.U.T (Equipment Under Test). Both are placed on a Non-Conducted Table, which sits on a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Test plot as follows:



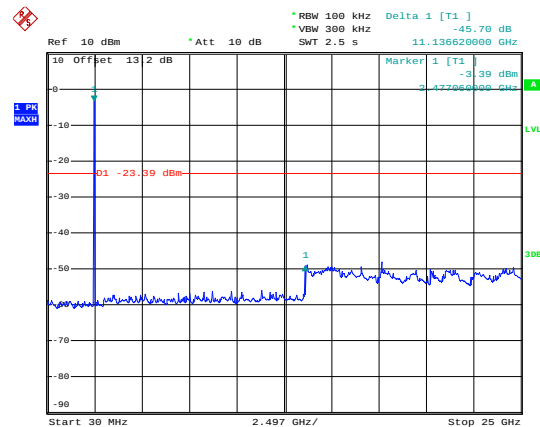
Date: 16.APR.2012 08:58:43

Lowest channel



Date: 16.APR.2012 09:02:19

Middle channel

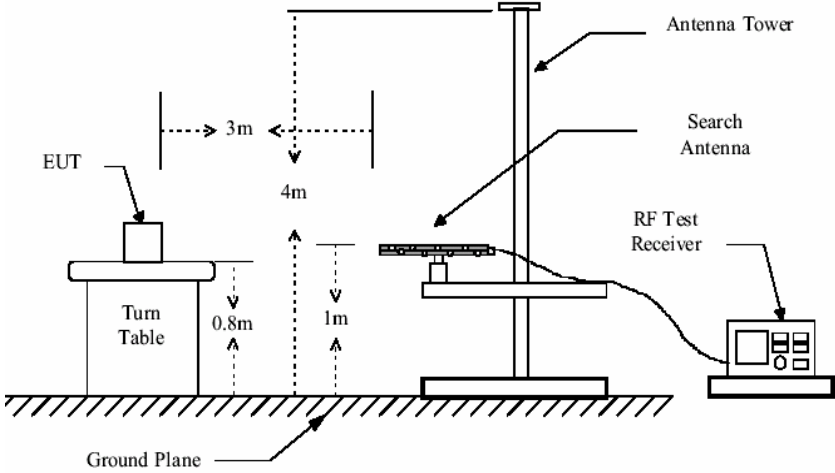
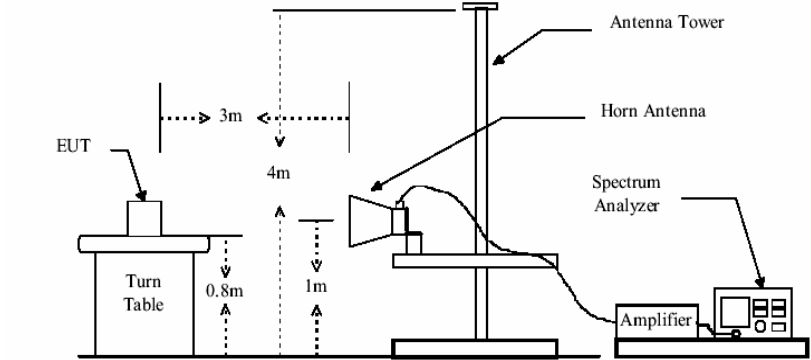


Date: 16.APR.2012 09:03:16

Highest channel

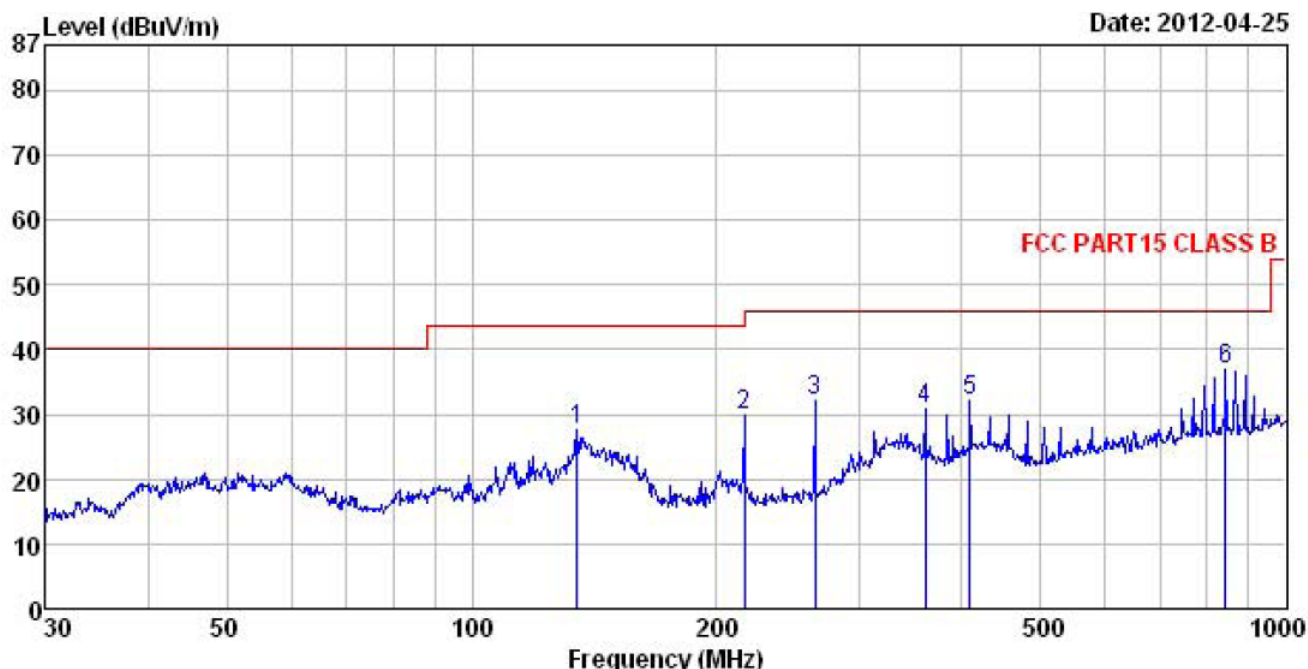
6.11 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:					
	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:					
	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz	54.0		Average Value	
74.0		Peak Value			
Test Procedure:	7. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 8. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 9. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 10. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 11. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 12. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

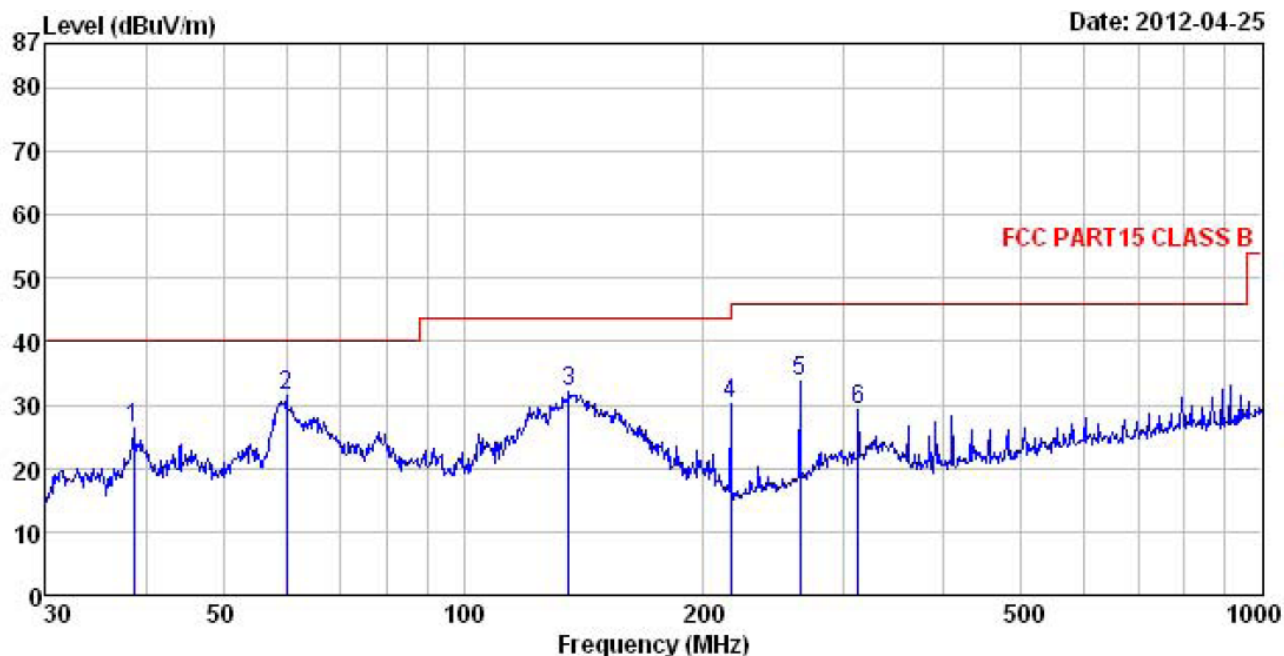
30MHz~1GHz

Horizontal:



	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	Level	Factor	Loss	Factor	Line	Limit	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	134.559	43.70	8.56	2.34	26.89	27.71	43.50	-15.79
2	216.024	42.61	11.08	2.85	26.54	30.00	46.00	-16.00
3	263.819	43.34	12.17	2.85	26.40	31.96	46.00	-14.04
4	360.448	40.31	14.41	3.10	26.87	30.95	46.00	-15.05
5	408.946	41.10	15.25	3.10	27.24	32.21	46.00	-13.79
6	842.130	39.78	20.51	4.22	27.46	37.05	46.00	-8.95

Vertical:



	ReadAntenna	Cable Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level
-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m
-----	-----	-----	-----	-----	-----
1	38.616	37.14	15.24	1.18	27.11
2	60.069	41.55	15.59	1.38	27.10
3	135.506	48.03	8.51	2.35	26.88
4	216.024	42.72	11.08	2.85	26.54
5	263.819	45.12	12.17	2.85	26.40
6	312.179	39.44	13.21	2.98	26.42

Above 1GHz

Test channel:	Lowest	Level:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	39.26	31.78	5.32	24.09	52.27	74.00	-21.73	Vertical
7206.00	35.22	36.15	6.87	26.38	51.86	74.00	-22.14	Vertical
9608.00	30.85	37.95	8.94	25.40	52.34	74.00	-21.66	Vertical
4804.00	38.14	31.78	5.32	24.09	51.15	74.00	-22.85	Horizontal
7206.00	30.46	36.15	6.87	26.38	47.10	74.00	-26.90	Horizontal
9608.00	30.14	37.95	8.94	25.40	51.63	74.00	-22.37	Horizontal

Test channel:	Lowest	Level:	Average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	*	31.78	5.32	24.09	*	54.00	*	Vertical
7206.00	*	36.15	6.87	26.38	*	54.00	*	Vertical
9608.00	*	37.95	8.94	25.40	*	54.00	*	Vertical
4804.00	*	31.78	5.32	24.09	*	54.00	*	Horizontal
7206.00	*	36.15	6.87	26.38	*	54.00	*	Horizontal
9608.00	*	37.95	8.94	25.40	*	54.00	*	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means average level is not recorded when its peak level is less than average limit .
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test channel:	Middle	Level:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	39.63	31.85	5.40	24.01	52.87	74.00	-21.13	Vertical
7323.00	35.16	36.37	6.91	26.62	51.82	74.00	-22.18	Vertical
9764.00	30.53	38.35	9.01	25.29	52.60	74.00	-21.40	Vertical
4882.00	38.36	31.85	5.40	24.01	51.60	74.00	-22.40	Horizontal
7323.00	30.47	36.37	6.91	26.62	47.13	74.00	-26.87	Horizontal
9764.00	30.29	38.35	9.01	25.29	52.36	74.00	-21.64	Horizontal

Test channel:	Middle	Level:	Average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	*	31.85	5.40	24.01	*	54.00	*	Vertical
7323.00	*	36.37	6.91	26.62	*	54.00	*	Vertical
9764.00	*	38.35	9.01	25.29	*	54.00	*	Vertical
4882.00	*	31.85	5.40	24.01	*	54.00	*	Horizontal
7323.00	*	36.37	6.91	26.62	*	54.00	*	Horizontal
9764.00	*	38.35	9.01	25.29	*	54.00	*	Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means average level is not recorded when its peak level is less than average limit .*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test channel:	Highest	Level:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	39.93	31.93	5.47	23.93	53.40	74.00	-20.60	Vertical
7440.00	35.82	36.59	6.95	26.95	52.41	74.00	-21.59	Vertical
9920.00	30.45	38.81	9.07	25.22	53.11	74.00	-20.89	Vertical
4960.00	38.75	31.93	5.47	23.93	52.22	74.00	-21.78	Horizontal
7440.00	30.66	36.59	6.95	26.95	47.25	74.00	-26.75	Horizontal
9920.00	30.18	38.81	9.07	25.22	52.84	74.00	-21.16	Horizontal

Test channel:	Highest	Level:	Average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	*	31.93	5.47	23.93	*	54.00	*	Vertical
7440.00	*	36.59	6.95	26.95	*	54.00	*	Vertical
9920.00	*	38.81	9.07	25.22	*	54.00	*	Vertical
4960.00	*	31.93	5.47	23.93	*	54.00	*	Horizontal
7440.00	*	36.59	6.95	26.95	*	54.00	*	Horizontal
9920.00	*	38.81	9.07	25.22	*	54.00	*	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means average level is not recorded when its peak level is less than average limit .
3. The emission levels of other frequencies are very lower than the limit and not show in test report.