

Report No.: SZEM110900369601

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

Email: sgs\_internet\_operations@sgs.com Page : 1 of 45

# **FCC REPORT**

Application No: SZEM1109003696RF

Applicant: Bensussen Deutsch & Associates, Inc. (BDA)

Product Name: Wii Pro Pack Mini Ver 2 (Blue, Pink, Black)

Operation Frequency: 2402MHz to 2480MHz

**FCC ID:** YFK-091186DA

Standards: FCC CFR Title 47 Part 15 Subpart C: 2010

**Date of Receipt:** 2011-09-28

**Date of Test:** 2011-10-11 to 2011-11-02

**Date of Issue:** 2011-11-07

Test Result : PASS \*

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

#### Authorized Signature:



#### Jack Zhang

**EMC Laboratory Manager** 

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. 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 SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.



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# 3 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.247 (c)	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 (b)	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

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

Fail: The EUT does not comply with the essential requirements in the standard.



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# 4 General Information

## 4.1 Client Information

Applicant:	Bensussen Deutsch & Associates, Inc. (BDA)	
Address of Applicant:	15525 Woodinville-Redmond Road NE Woodinville, WA 98072 USA	

# 4.2 General Description of E.U.T.

Product Name:	Wii Pro Pack Mini Ver 2 (Blue, Pink, Black)	
Model No.:	000017-DA, 000215-DA, 091186-DA Only the model No. 091186-DA was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models, only the color is different.	
Operation Frequency:	2402MHz~2480MHz	
Channel numbers:	79	
Channel separation:	1MHz	
Modulation type:	GFSK	
Antenna Type:	Integral	
Antenna gain:	0dBi	
EUT power supply:	3.0V DC (1.5V x 2 'AA' Size Batteries)	



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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 for testing see below:

Channel	Frequency
Lowest channel	2402MHz
Middle channel	2441MHz
Highest channel	2480MHz



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# 4.3 E.U.T Operation mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1014mbar
Test mode:	
Non-hopping transmitting mode:	Keep the EUT in transmitting in special channel with modulation signal
Hopping transmitting mode:	Keep the EUT in hopping transmitting mode with modulation signal

# 4.4 Description of Support Units

The EUT has been tested as an independent unit.



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# 4.5 Test Facility

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

#### • CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### VCCI

The 3m Semi-anechoic chamber and Shielded Room (7.5m  $\times$  4.0m  $\times$  3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

#### • FCC – Registration No.: 556682

SGS-CSTC Standards Technical 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 556682, March 16, 2011

#### Industry Canada (IC)

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has bee registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing wit Registration No.: 4620C-1.

#### 4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594 No tests were sub-contracted.

# 4.7 Other Information Requested by the Customer

None.



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## 4.8 Test Instruments list

RE i	RE in Chamber					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)	
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2012-06-10	
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2012-05-26	
3	EMI Test software	AUDIX	E3	SEL0050	N/A	
4	Coaxial cable	SGS	N/A	SEL0028	2012-05-29	
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2011-11-09	
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2011-11-09	
7	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2011-11-09	
8	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2012-05-26	
9	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2011-10-27	
11	Band filter	Amindeon	82346	SEL0094	2012-05-26	

RF c	RF conducted						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)		
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2011-10-27		
2	Coaxial cable	SGS	N/A	SEL0028	2012-05-29		

	General used equipment						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)		
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0102 to SEL0103	2012-10-27		
2	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0101	2012-10-27		
3	Barometer	ChangChun	DYM3	SEL0088	2012-05-18		



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# 5 Test results and Measurement Data

# 5.1 Antenna requirement:

Standard requirement: FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

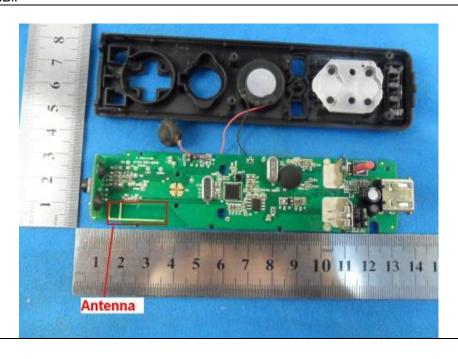
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

15.247(c) (1)(i) requirement:

(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.

#### E.U.T Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best gain of the antenna is 0dBi.





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# 5.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)			
Test Method:	ANSI C63.10:2009 section 6.10.2b			
Limit:	30dBm			
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane  Remark:			
	Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.			
Test Instruments:	Refer to section 4.8 for details			
Test state:	Non-hopping transmitting with all kinds of modulation.			
Test results:	Pass			

#### **Measurement Data**

GFSK mode						
Test channel Peak Output Power (dBm) Limit (dBm) Result						
Lowest	0.11	30.00	Pass			
Middle	-1.79	30.00	Pass			
Highest	-3.71	30.00	Pass			

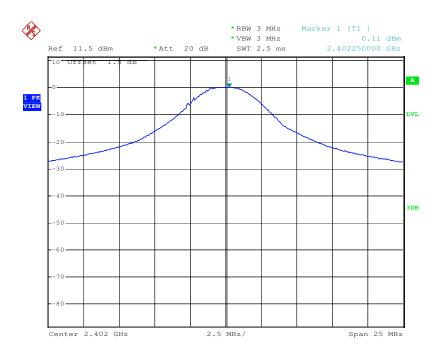


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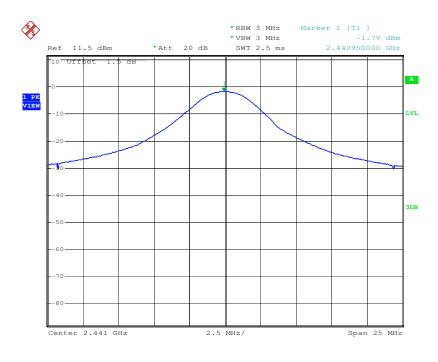
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#### Test plot as follows:

Test mode: GFSK Test channel: Lowest



Test mode: GFSK Test channel: Middle



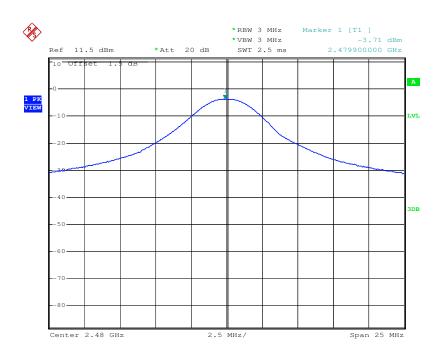




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Test mode: GFSK Test channel: Highest





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# 5.3 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2009
Limit:	NA
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane
Test Instruments:	Refer to section 4.8 for details
Test state:	Non-hopping transmitting with all kind of modulation.
Test results:	Pass

#### **Measurement Data**

Total sharmed	20dB Occupy Bandwidth (KHz)		
Test channel	GFSK		
Lowest	804		
Middle	966		
Highest	828		

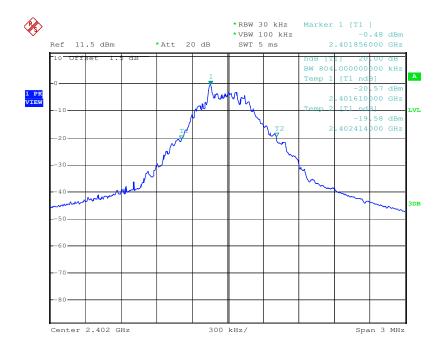


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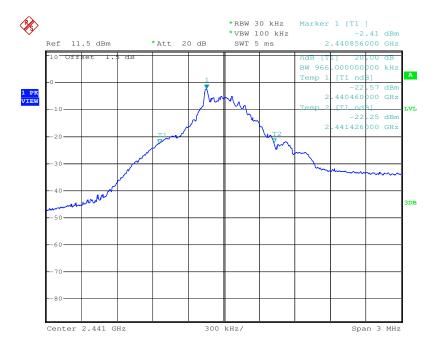
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#### Test plot as follows:

Test mode: GFSK Test channel: Lowest





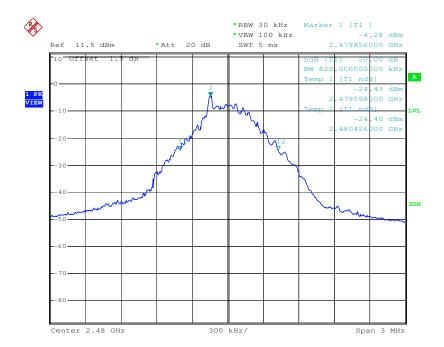




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Test mode: GFSK Test channel: Highest





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# 5.4 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2009
Test state:	Hopping transmitting with all kind of modulation.
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane
Test Instruments:	Refer to section 4.8 for details
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test results:	Pass

#### **Measurement Data**

GFSK mode				
Test channel	Carrier Frequencies Separation (KHz)	Limit (KHz)	Result	
Lowest	1000	≥644	Pass	
Middle	1000	≥644	Pass	
Highest	1000	≥644	Pass	

Note: According to section 5.4,

	140to. 7 tooording to scotlon	0.1,	
	Mode	20dB bandwidth (KHz)	Limit (KHz)
		(worse case)	(Carrier Frequencies Separation)
	GFSK	966	644

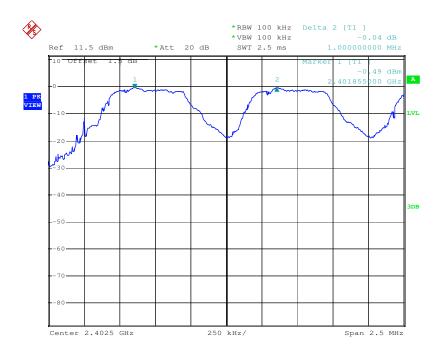


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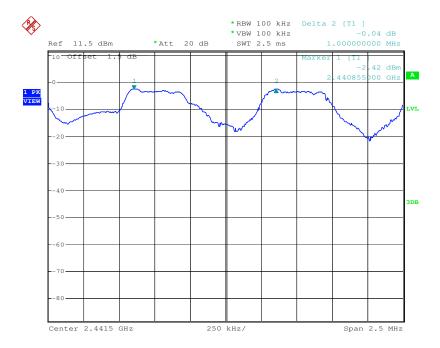
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#### Test plot as follows:

Test mode: GFSK Test channel: Lowest



Test mode: GFSK Test channel: Middle

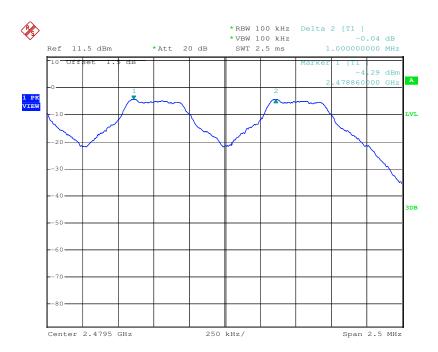




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Test mode: GFSK Test channel: Highest





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# 5.5 Hopping Channel Number

Test Requirement:	FCC Part15 C Section 15.247 (b)
Test Method:	ANSI C63.10:2009
Requirement:	≥75 channels
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table
Totallorio	Ground Reference Plane
Test Instruments:	Refer to section 4.8 for details
Test state:	Hopping transmitting with all kind of modulation.
Test results:	Pass

#### **Measurement Data**

Mode	Hopping channel	Requirement
GFSK	79	≥75

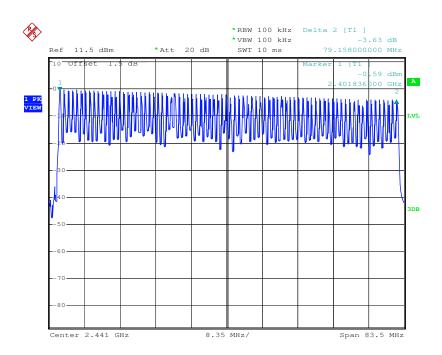


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#### Test plot as follows

Test mode: GFSK





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#### 5.6 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)		
Test Method:	ANSI C63.10:2009		
Limit:	≤ 0.4 Second		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 4.8 for details		
Test state:	Hopping transmitting with all kind of modulation.		
Test results:	Pass		

#### **Measurement Data**

Mode	Packet	Dwell time (second)	Limit (second)
GFSK	DH1	0.1712	≪0.4
	DH3	0.2856	≤0.4
	DH5	0.3232	≤0.4

#### **Test Result:**

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

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

DH1 time slot=0.535(ms)\*(1600/(2\*79))\*31.6=171.2ms

DH3 time slot=1.785(ms)\*(1600/ (4\*79))\*31.6=285.6ms

DH5 time slot=3.03(ms)\*(1600/ (6\*79))\*31.6=323.2 ms



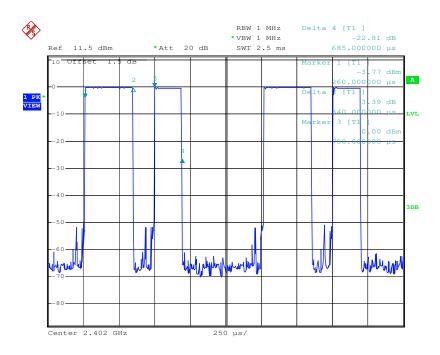


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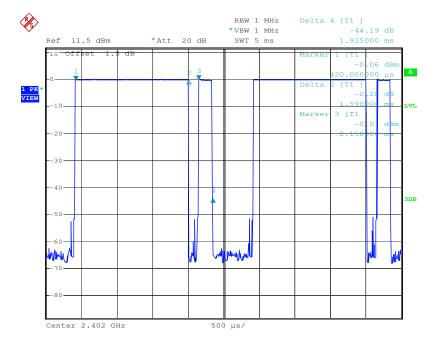
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#### Test plot as follows

Test mode: GFSK Test Packet: DH1



Test mode: GFSK Test Packet: DH3

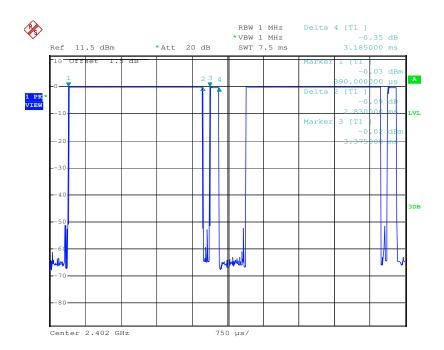




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Test mode: GFSK Test Packet: DH5





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# 5.7 Band Edge

Test Requirement:	FCC Part15 C Section 15.247 (d)		
Test Method:	ANSI C63.10:2009 section 6.9		
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:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane  Remark:  Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.		
Test Instruments:	Refer to section 4.8 for details		
Test state:	Hopping transmitting with all kinds of modulation.		
Test results:	Pass		

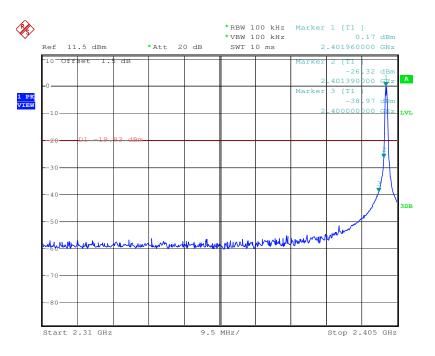


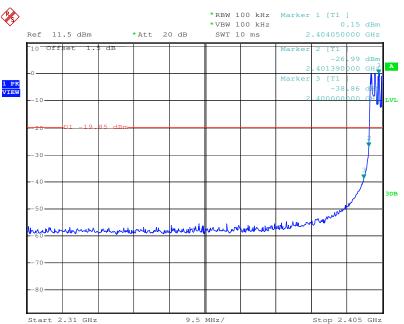
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#### Test plot as follows:

Test mode: GFSK Test channel: Lowest



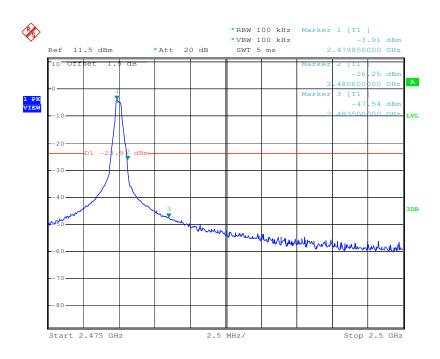


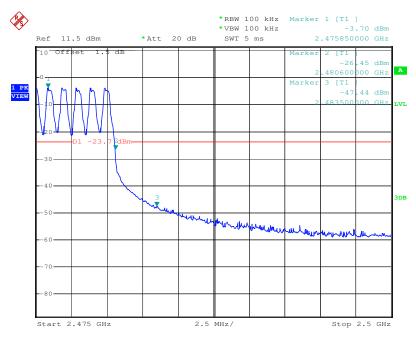


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Test mode: GFSK Test channel: Highest







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# 5.8 RF Antenna Conducted spurious emissions

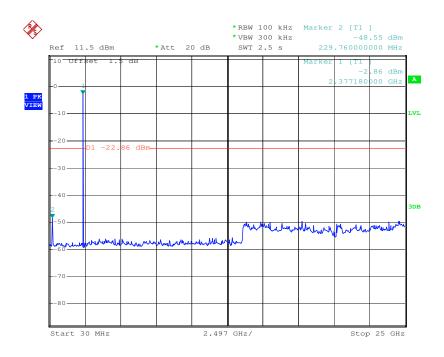
Test Requirement:	FCC Part15 C Section 15.247 (d)		
Test Method:	ANSI C63.10:2009		
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB 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:	Spectrum Analyzer		
	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
	Remark:  Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.		
Test Instruments:	Refer to section 4.8 for details		
Test results:	Pass		



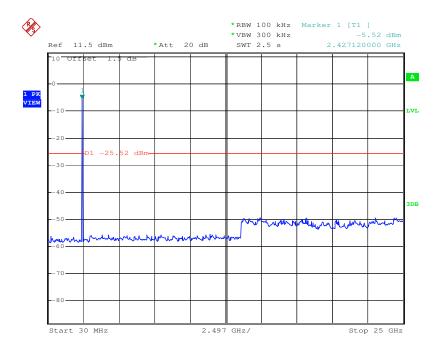
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Test mode: GFSK Test channel: Lowest





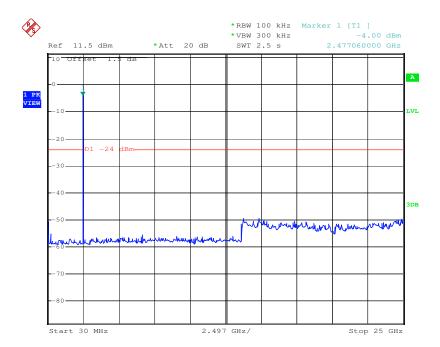




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Test mode: GFSK Test channel: Highest





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# 5.9 Pseudorandom Frequency Hopping Sequence

#### Test Requirement: FCC Part15 C Section 15.247 (a)(1) requirement:

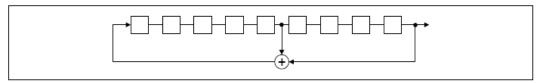
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

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**

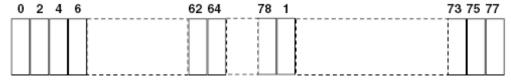
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 29 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

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.



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## 5.10 Radiated Emission

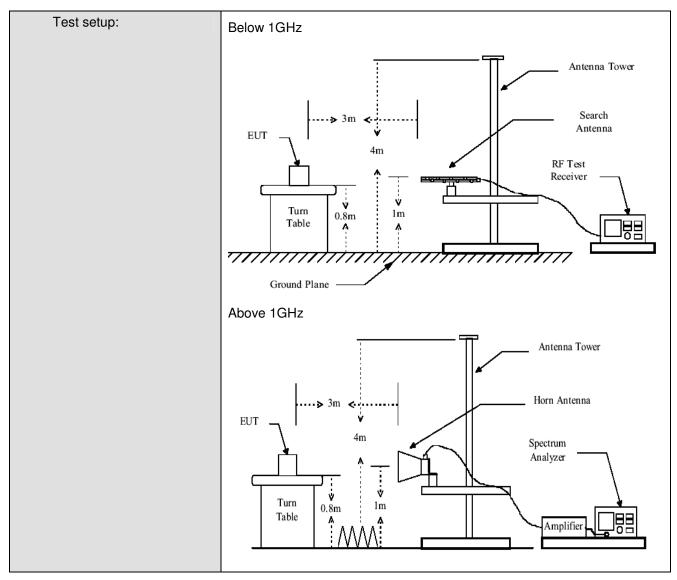
Test Requirement:	FCC Part15 C Section 15.209 and 15.205					
Test Method:	ANSI C63.10:2009					
Test Frequency Range:	30MHz to 25GHz					
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)					
Receiver setup:						
·	Frequency	Detector	RBW	VBW	Remark	
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value	
	Above 1GHz	Peak	1MHz	3MHz	Peak Value	
	Above IGHZ	Peak	1MHz	10Hz	Average Value	
Limit:						
	Freque	ency	Limit (dBuV/	m @3m)	Remark	
	30MHz-8	8MHz	40.0	)	Quasi-peak Value	
	88MHz-21	16MHz	43.5	)	Quasi-peak Value	
	216MHz-960MHz 46.0 Quasi-peak Value					
	960MHz-1GHz 54.0 Quasi-peak Va					
	Above 1	Average Value				
		Peak Value				
Test Procedure:	<ol> <li>The EUT is placed on a turntable, which is 0.8m above ground plane.</li> <li>The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.</li> <li>EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.</li> <li>Maximum procedure was performed on the six highest emissions to ensure EUT compliance.</li> <li>And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.</li> <li>Repeat above procedures until the measurements for all frequencies are complete.</li> <li>The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.</li> </ol>					
Test Instruments:	Refer to section 4.8 for details					
Test mode:	Non-hopping transmitting mode:					
Test results:	Pass					





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#### Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

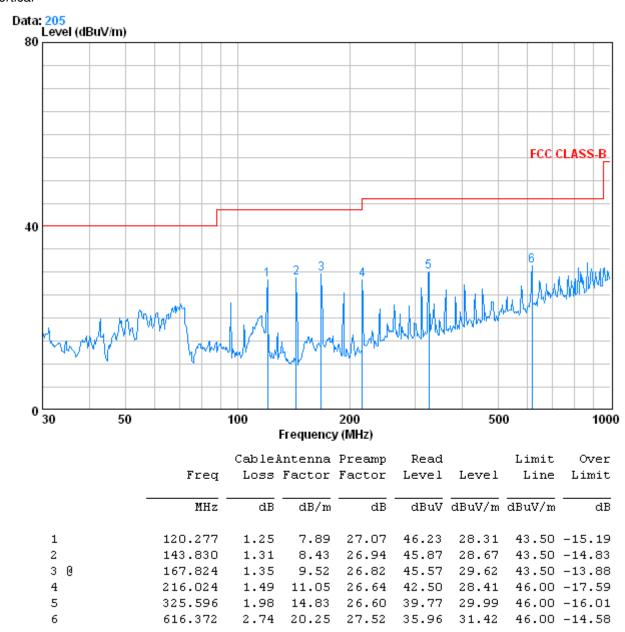


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#### 5.10.1 Radiated emission below 1GHz

Vertical



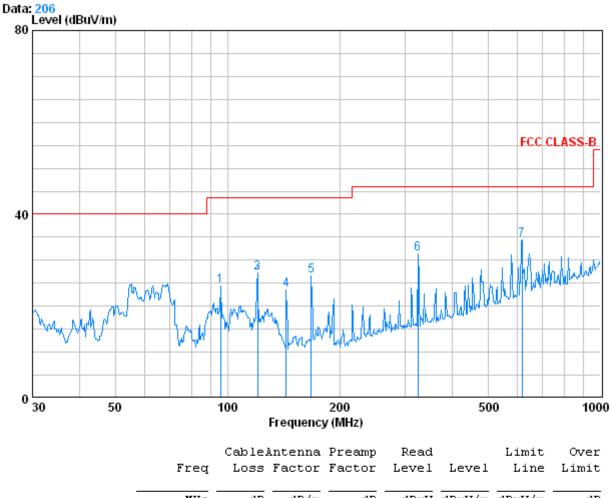
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#### Horizontal



		CableA	ıntenna	Preamp	Read		Limit	Over
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
,	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	95.762	1.16	8.93	27.21	41.42	24.31	43.50	-19.19
2	120.277	1.25	7.89	27.07	45.23	27.31	43.50	-16.19
3	120.277	1.25	7.89	27.07	45.23	27.31	43.50	-16.19
4	143.830	1.31	8.43	26.94	40.72	23.52	43.50	-19.98
5	167.824	1.35	9.52	26.82	42.56	26.61	43.50	-16.89
6	324.456	1.98	14.80	26.58	41.14	31.34	46.00	-14.66
7 0	616.372	2.74	20.25	27.52	38.94	34.41	46.00	-11.59



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#### 5.10.2 Transmitter emission above 1GHz

Test mode:	(	GFSK	Test	channel:	Lowest	Rema	ark:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4804.000	7.44	34.70	41.63	50.83	51.34	74.00	-22.66	Vertical
6875.000	8.33	35.92	40.17	48.78	52.86	74.00	-21.14	Vertical
7206.000	8.72	35.88	39.87	48.45	53.18	74.00	-20.82	Vertical
7709.250	9.24	36.00	39.44	46.97	52.77	74.00	-21.23	Vertical
8426.000	9.45	36.17	38.82	45.62	52.42	74.00	-21.58	Vertical
9718.500	9.72	37.42	37.70	45.71	55.15	74.00	-18.85	Vertical
4804.000	7.44	34.70	41.63	54.63	55.14	74.00	-18.86	Horizontal
6158.250	8.03	35.88	40.79	54.82	57.94	74.00	-16.06	Horizontal
7239.250	8.76	35.90	39.85	51.40	56.21	74.00	-17.79	Horizontal
8731.500	9.55	36.39	38.55	50.06	57.45	74.00	-16.55	Horizontal
9812.500	9.76	37.51	37.61	50.34	60.00	74.00	-14.00	Horizontal
11081.500	10.63	38.48	37.90	49.51	60.72	74.00	-13.28	Horizontal

Test mode:		GFSK	Tes	t channel:	Lowest	Rem	ark:	Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4804.000	7.44	34.70	41.63	48.20	48.71	54.00	-5.29	Vertical
6875.000	8.33	35.92	40.17	37.52	41.60	54.00	-12.40	Vertical
7206.000	8.72	35.88	39.87	41.31	46.04	54.00	-7.96	Vertical
7709.250	9.24	36.00	39.44	39.00	44.80	54.00	-9.20	Vertical
8426.000	9.45	36.17	38.82	34.09	40.89	54.00	-13.11	Vertical
9718.500	9.72	37.42	37.70	32.70	42.14	54.00	-11.86	Vertical
4804.000	7.44	34.70	41.63	48.61	49.12	54.00	-4.88	Horizontal
6158.250	8.03	35.88	40.79	43.56	46.68	54.00	-7.32	Horizontal
7239.250	8.76	35.90	39.85	42.83	47.64	54.00	-6.36	Horizontal
8731.500	9.55	36.39	38.55	40.66	48.05	54.00	-5.95	Horizontal
9812.500	9.76	37.51	37.61	39.81	49.47	54.00	-4.53	Horizontal
11081.500	10.63	38.48	37.90	37.06	48.27	54.00	-5.73	Horizontal



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Test mode:	(	GFSK	Test	t channel:	Middle	Rem	ark:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4882.000	7.48	34.59	41.68	53.93	54.32	74.00	-19.68	Vertical
7232.000	8.76	35.90	39.85	48.63	53.44	74.00	-20.56	Vertical
8708.000	9.54	36.36	38.57	47.01	54.34	74.00	-19.66	Vertical
9460.000	9.66	37.16	37.93	45.56	54.45	74.00	-19.55	Vertical
10494.000	10.20	38.28	37.65	44.98	55.81	74.00	-18.19	Vertical
10917.000	10.50	38.47	37.83	45.02	56.16	74.00	-17.84	Vertical
4882.000	7.48	34.59	41.68	56.78	57.17	74.00	-16.83	Horizontal
7323.000	8.87	35.93	39.77	48.06	53.09	74.00	-20.91	Horizontal
7744.500	9.25	36.00	39.41	46.89	52.73	74.00	-21.27	Horizontal
8390.750	9.44	36.16	38.85	46.24	52.99	74.00	-21.01	Horizontal
8849.000	9.58	36.48	38.45	46.02	53.63	74.00	-20.37	Horizontal
10682.000	10.33	38.38	37.73	45.57	56.55	74.00	-17.45	Horizontal

Test mode:		GFSK	Test	t channel:	Middle	Rem	ark:	Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4882.000	7.48	34.59	41.68	47.25	47.64	54.00	-6.36	Vertical
7232.000	8.76	35.90	39.85	42.67	47.48	54.00	-6.52	Vertical
8708.000	9.54	36.36	38.57	39.46	46.79	54.00	-7.21	Vertical
9460.000	9.66	37.16	37.93	39.19	48.08	54.00	-5.92	Vertical
10494.000	10.20	38.28	37.65	34.07	44.90	54.00	-9.10	Vertical
10917.000	10.50	38.47	37.83	32.27	43.41	54.00	-10.59	Vertical
4882.000	7.48	34.59	41.68	48.90	49.29	54.00	-4.71	Horizontal
7323.000	8.87	35.93	39.77	42.58	47.61	54.00	-6.39	Horizontal
7744.500	9.25	36.00	39.41	35.34	41.18	54.00	-12.82	Horizontal
8390.750	9.44	36.16	38.85	35.54	42.29	54.00	-11.71	Horizontal
8849.000	9.58	36.48	38.45	35.14	42.75	54.00	-11.25	Horizontal
10682.000	10.33	38.38	37.73	33.52	44.50	54.00	-9.50	Horizontal



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Test mode:		GFSK	Tes	t channel:	Highest	Rem	nark:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4960.000	7.53	34.46	41.74	49.48	49.73	74.00	-24.27	Vertical
6475.500	8.14	36.26	40.51	49.79	53.68	74.00	-20.32	Vertical
7440.000	9.01	35.98	39.67	48.85	54.17	74.00	-19.83	Vertical
9060.500	9.63	36.66	38.27	46.32	54.34	74.00	-19.66	Vertical
9730.250	9.73	37.44	37.70	44.83	54.30	74.00	-19.70	Vertical
10623.250	10.29	38.35	37.70	44.79	55.73	74.00	-18.27	Vertical
4960.000	7.53	34.46	41.74	53.23	53.48	74.00	-20.52	Horizontal
7440.000	9.01	35.98	39.67	49.37	54.69	74.00	-19.31	Horizontal
7697.500	9.24	36.00	39.46	49.85	55.63	74.00	-18.37	Horizontal
8896.000	9.59	36.51	38.40	45.42	53.12	74.00	-20.88	Horizontal
10141.500	9.94	37.88	37.51	45.29	55.60	74.00	-18.40	Horizontal
10529.250	10.23	38.31	37.67	45.96	56.83	74.00	-17.17	Horizontal

Test mode:		GFSK	Test	t channel:	Highest	Rem	ark:	Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Emission Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Antenna polarization
4960.000	7.53	34.46	41.74	44.82	45.07	54.00	-8.93	Vertical
6475.500	8.14	36.26	40.51	40.27	44.16	54.00	-9.84	Vertical
7440.000	9.01	35.98	39.67	42.19	47.51	54.00	-6.49	Vertical
9060.500	9.63	36.66	38.27	35.95	43.97	54.00	-10.03	Vertical
9730.250	9.73	37.44	37.70	33.83	43.30	54.00	-10.70	Vertical
10623.250	10.29	38.35	37.70	32.68	43.62	54.00	-10.38	Vertical
4960.000	7.53	34.46	41.74	46.52	46.77	54.00	-7.23	Horizontal
7440.000	9.01	35.98	39.67	43.80	49.12	54.00	-4.88	Horizontal
7697.500	9.24	36.00	39.46	38.64	44.42	54.00	-9.58	Horizontal
8896.000	9.59	36.51	38.40	35.19	42.89	54.00	-11.11	Horizontal
10141.500	9.94	37.88	37.51	36.88	47.19	54.00	-6.81	Horizontal
10529.250	10.23	38.31	37.67	34.61	45.48	54.00	-8.52	Horizontal

Remark: The disturbance above 11GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

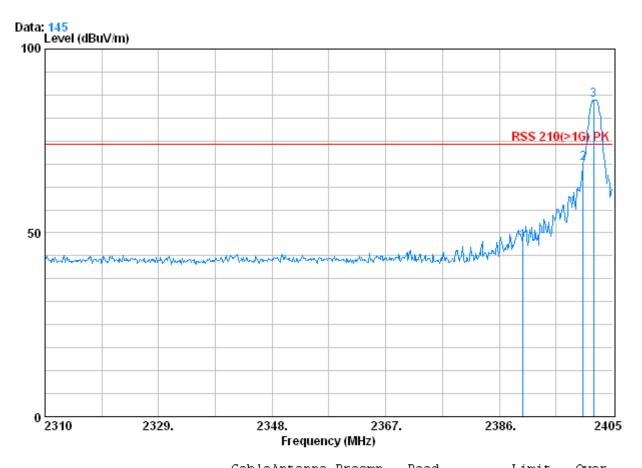


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# 5.10.3 Band edge (Radiated Emission)

Test mode: Transmitting Test channel: Lowest Remark: Peak Vertical

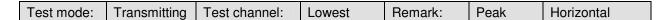


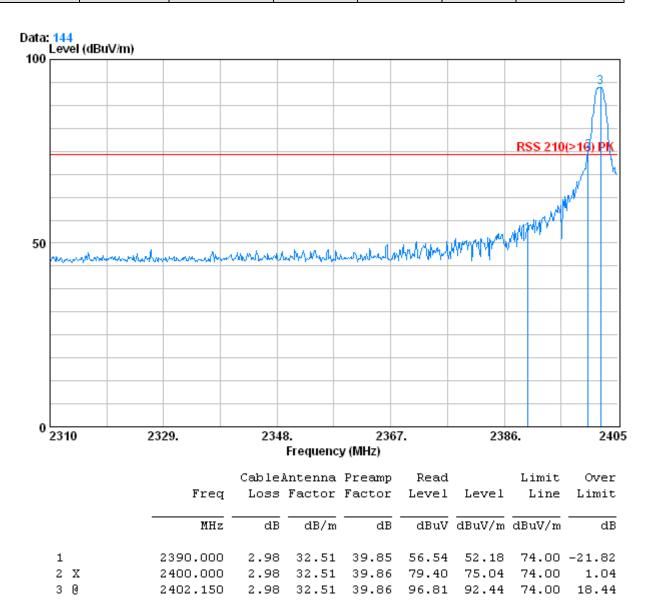
			capie	untenna	rreamp	Read		Limit	over
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1		2390.000	2.98	32.51	39.85	52.02	47.67	74.00	-26.33
2		2400.000	2.98	32.51	39.86	73.25	68.88	74.00	-5.12
3	X	2401.770	2.98	32.51	39.86	90.51	86.14	74.00	12.14



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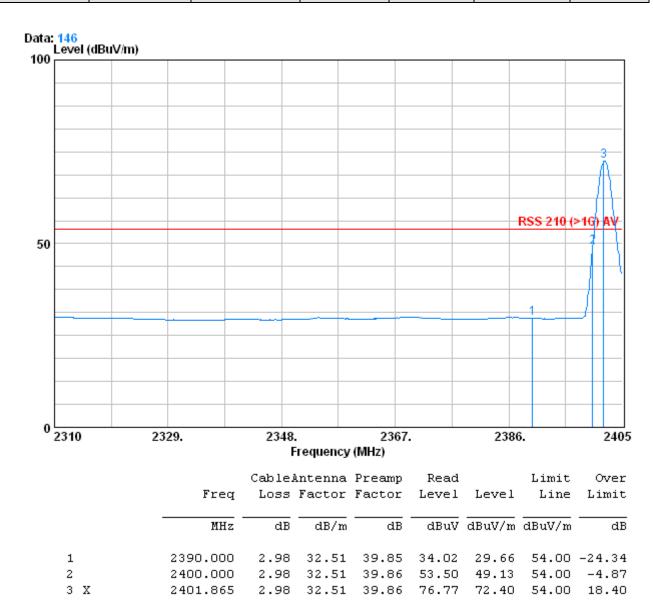




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Test mode: Transmitting Test channel: Lowest Remark: Average Vertical



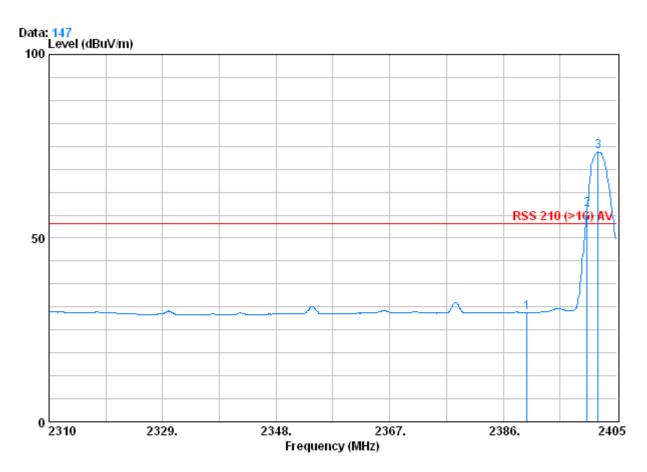
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Test mode:	Transmitting	Test channel:	Lowest	Remark:	Average	Horizontal
			_000.		, o. a.g.	



		Cable	lntenna	Preamp	Read		Limit	Over
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.000	2.98	32.51	39.85	34.10	29.74	54.00	-24.26
2 X	2400.000	2.98	32.51	39.86	62.11	57.74	54.00	3.74
3 @	2401.865	2.98	32.51	39.86	77.85	73.48	54.00	19.48

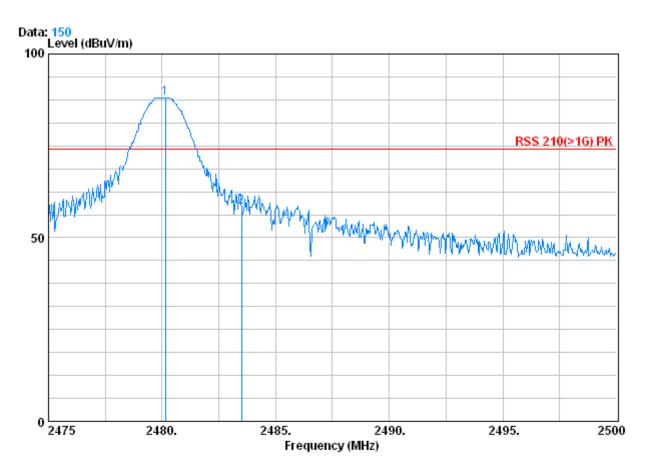




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Test mode: Transmitting Test channel: Highest Remark: Peak Vertical



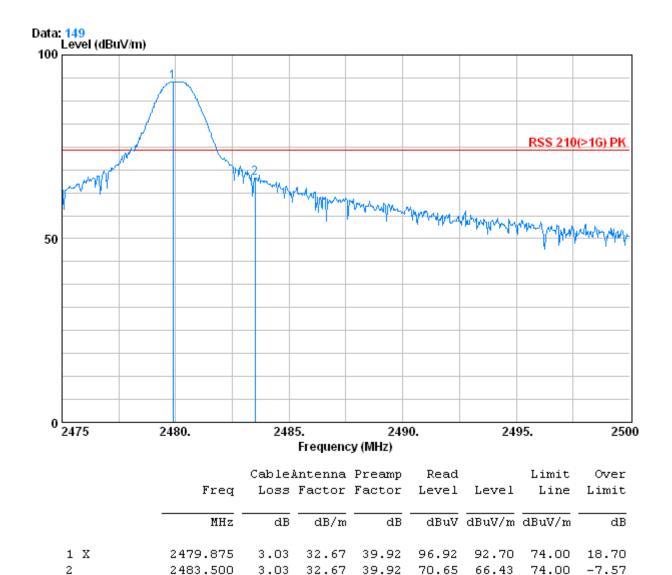
			CableAntenna		Preamp	Read		Limit		
		Freq	Loss	Factor	Factor	Level	Level	Line	Limit	
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	X	2480.150	3.03	32.67	39.92	92.34	88.12	74.00	14.12	
2		2483.500	3.03	32.67	39.92	62.60	58.38	74.00	-15.62	



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Test mode: Transmitting Test channel: Highest Remark: Peak Horizontal





2

2483.500

3.03

32.67

39.92

42.79

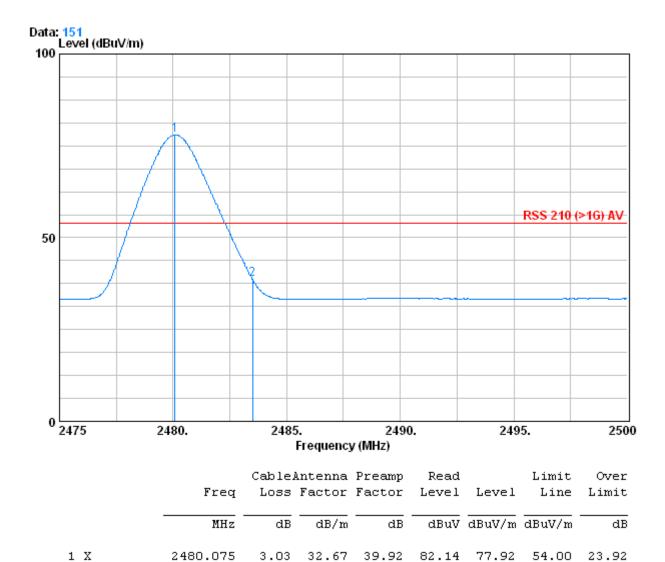
38.57 54.00 -15.43

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Test mode: Transmitting Test channel: Highest Remark: Average Vertical

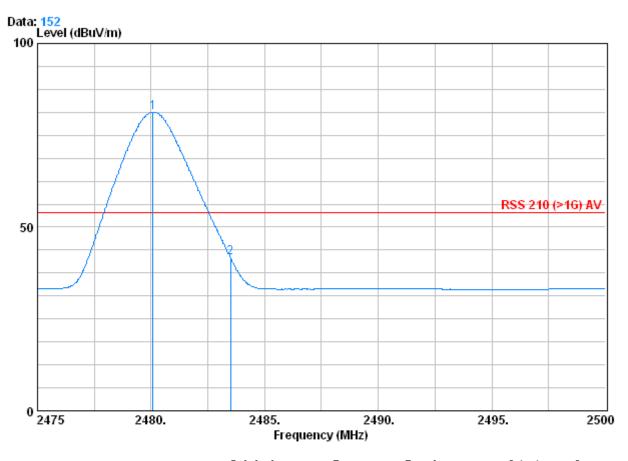




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Test mode: Transmitting Test channel: Highest Remark: Average Horizontal



		Cable	Antenna	Preamp	Read		Limit	Over
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
			,			,	,	
1 0	2480.075	3.03	32.67	39.92	85.54	81.32	54.00	27.32
- 0	2.00.0.0	0.00	00.01	00.00		01.00	00	
2	2483.500	3.03	32.67	39.92	45.83	41.61	54.00	-12.39