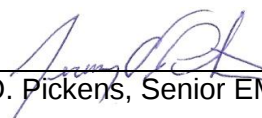


EMC Test Report

Project Number: 3322503**Report Number: 3322503EMC01****Revision Level: 1****Client: Polymap Wireless LLC****Equipment Under Test: Glucose Meter Accessory (GMA)****Model: PWR-09-02****Applicable Standards: FCC Part 15 Subpart C, § 15.247****RSS-210, Issue 8, December 2010****ANSI C63.10: 2009****Report issued on: 05 DEC 2013****Test Result: Compliant**

Tested by:



Jeremy O. Pickens, Senior EMC Engineer

Reviewed by:



David Schramm, EMC Manager**Remarks:**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in 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 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.

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1 Summary of Test Results

Test Description	Test Specification		Test Result
Occupied Bandwidth	15.247(a) (1)	RSS-210 A8.1(a)	Compliant
Peak Power Output	15.247(a) (1)	RSS-210 A8.4(4)	Compliant
Conducted Spurious Emissions	15.247(d)	RSS-210 A8.5	Compliant
Band Edge	15.247(d)	RSS-210 A8.5	Compliant
Radiated Spurious Emissions	15.247(d), 15.35(b),15.209	RSS-210 A8.5	Compliant
Pseudo-Random Hop Sequence	15.247(a) (1)	RSS-210 A8.1(a)	Compliant
Channel Separation	15.247(a) (1)	RSS-210 A8.1(b)	Compliant
Number of Hopping Channels	15.247(a) (1)(iii)	RSS-210 A8.1(d)	Compliant
Dwell Time	15.247(a) (1)(iii)	RSS-210 A8.1(d)	Compliant
Spectral Density	15.247(f), 15.247(e)	RSS-210 A8.2(b)	Compliant
Number of hopping frequencies	15.247(a) (1)(iii)	RSS-210 A8.1(d)	Compliant
AC Powerline Conducted Emission	15.107, 15.207	RSS-GEN 7.2.4	Compliant

1.1 Modifications Required for Compliance

None

2 General Information

2.1 Client Information

Name: Polymap Wireless LLC.

Address: 310 S Williams Blvd., Suite 230

City, State, Zip, Country: Tucson, AZ 85711

2.2 Test Laboratory

Name: SGS North America, Inc.

Address: 620 Old Peachtree Road NW, Suite 100

City, State, Zip, Country: Suwanee, GA 30024, USA

2.3 General Information of EUT

Type of Product: Glucose Meter Accessory (GMA)

Model: PWR-09-02

Serial Number: 015B401155F (Conducted Measurements)

015B401155D (Radiated Measurements)

FCC ID: QYP-PWR0902

Frequency Range: 2402 to 2480 MHz

Number of channels: 79

Modulation type: GFSK, $\pi/4$ -DQPSK and 8DPSK (Basic Rate, EDR2, EDR3)

Channel spacing: 1 MHz

Antenna: Integral

Rated Voltage: 2.4 VDC (2x AAA Batteries)

Product Description: The PWR-09-02 Remote is a Glucose Meter Accessory (GMA) that provides a Class 2 Bluetooth radio for various existing glucose meters.

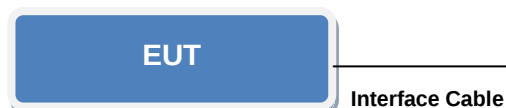
Sample Received Date: 05 November 2013

Dates of testing: 05 November – 05 December 2013

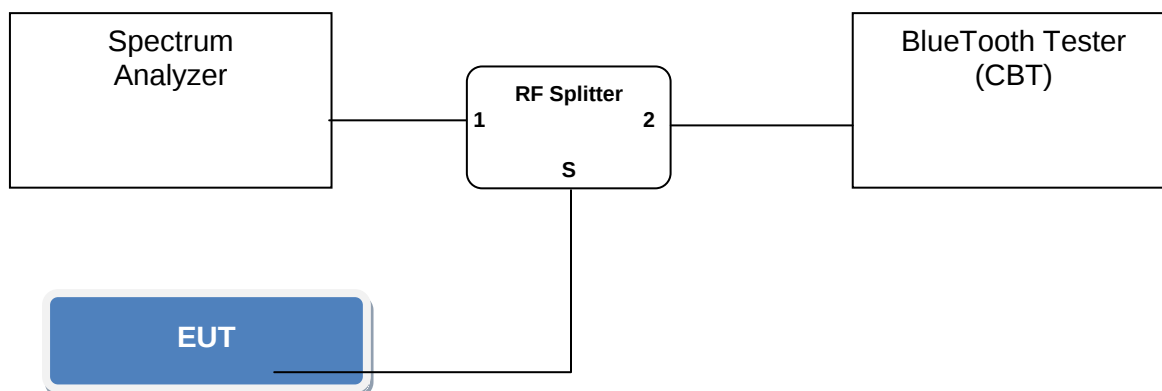
2.4 Operating Modes and Conditions

The EUT was placed into test mode using a serial interface board. Once in test mode, a Rohde & Schwarz CBT Bluetooth Tester was used to control the Bluetooth output. During testing, the device was set to max power and all packet types were investigated. Worst-case results are reported.

2.5 EUT Connection Block Diagram (Radiated Measurements)



2.6 EUT Connection Block Diagram (Conducted Measurements)



2.7 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A	Polymap Wireless	EUT	PWR-09-02	015B401155F 015B401155D

2.8 Cable List

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	GMA Interface Cable	EUT	Unterminated	0.2	No	No

3 Occupied Bandwidth

3.1 Test Result

Test Description	Basic Standards	Test Result
99% bandwidth	15.247(a) (1)	Compliant

3.2 Test Method

Measurements were taken using the 99% OBW function of the measurement receiver.

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 23.2 °C
Relative Humidity: 49.4 %

3.4 Test Equipment

Test Date: 8-Nov-2013

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	28-Aug-2014
COAXIAL CABLE	1134	GORE	B094785	16-May-2014
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	24-Sep-2014

Note: The calibration period equipment is 1 year.

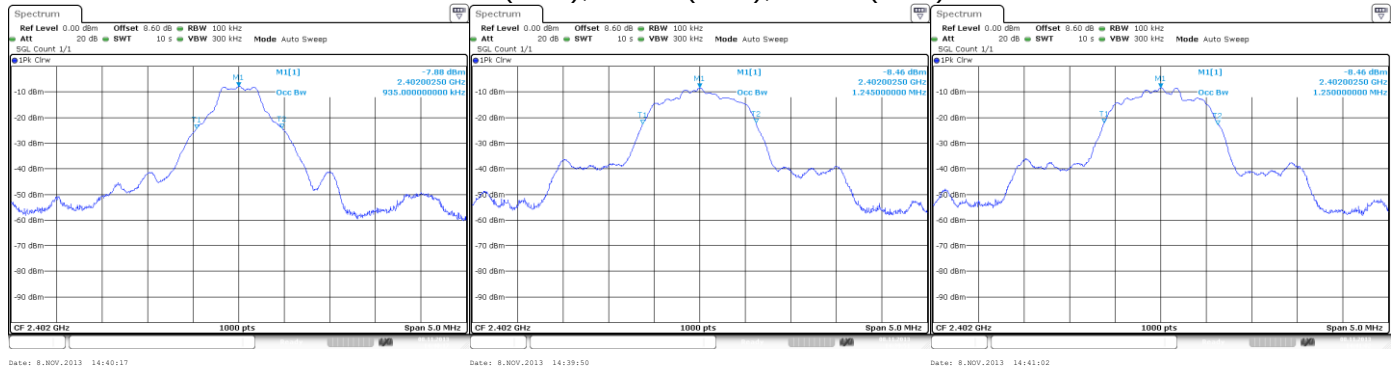
3.5 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

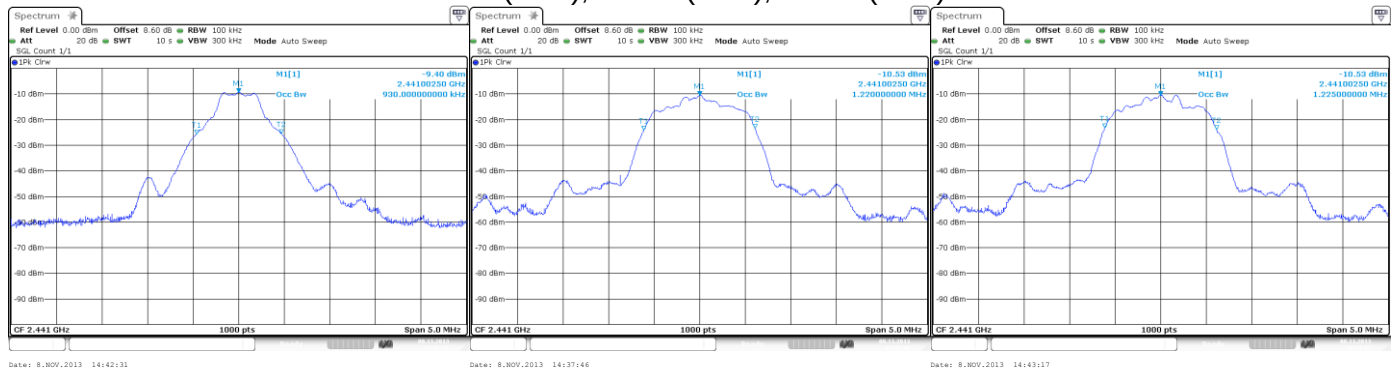
3.6 Test Data

Frequency	Channel No	Modulation	99% bandwidth kHz
2402	0	BR	935
		EDR-2	1245
		EDR-3	1250
2441	39	BR	930
		EDR-2	1220
		EDR-3	1225
2480	78	BR	930
		EDR-2	1215
		EDR-3	1225

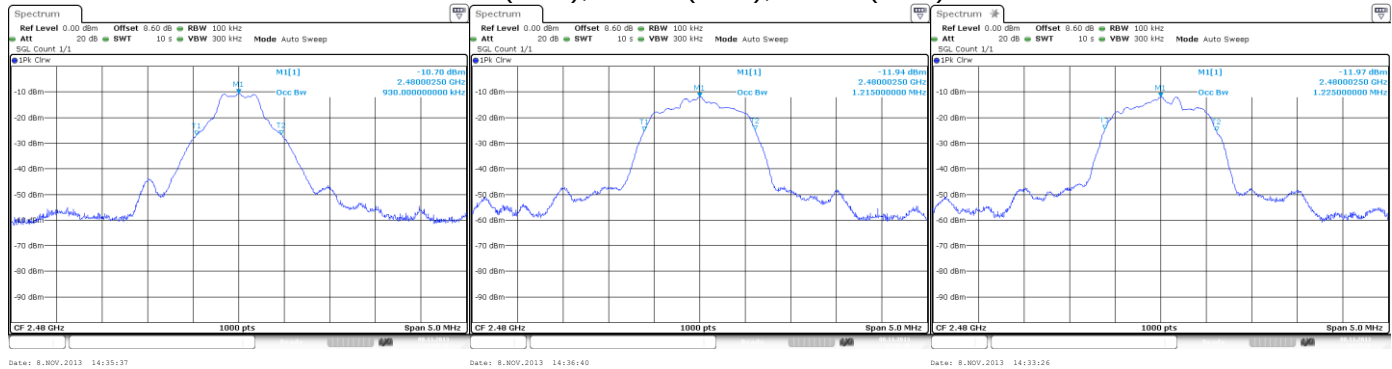
Occupied Bandwidth Plot, Low Channel
BR (DH1), EDR-2(DH3), EDR-3(DH5)



Occupied Bandwidth Plot, Mid Channel
BR (DH1), EDR-2(DH3), EDR-3(DH5)



Occupied Bandwidth Plot, High Channel BR (DH1), EDR-2(DH3), EDR-3(DH5)



4 Peak Output Power

4.1 Test Result

Test Description	Test Specification	Test Result
Peak Output Power	15.247(a) (1)	Compliant

4.2 Test Method

The test data was measured using a spectrum analyzer with Peak detector and a resolution bandwidth of 3 MHz.

Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 watt.

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 23.4 °C

Relative Humidity: 28.7 %

4.4 Test Equipment

Test Date: 8-Nov-2013

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	28-Aug-2014
COAXIAL CABLE	1134	GORE	B094785	16-May-2014
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	24-Sep-2014

Note: The calibration period equipment is 1 year.

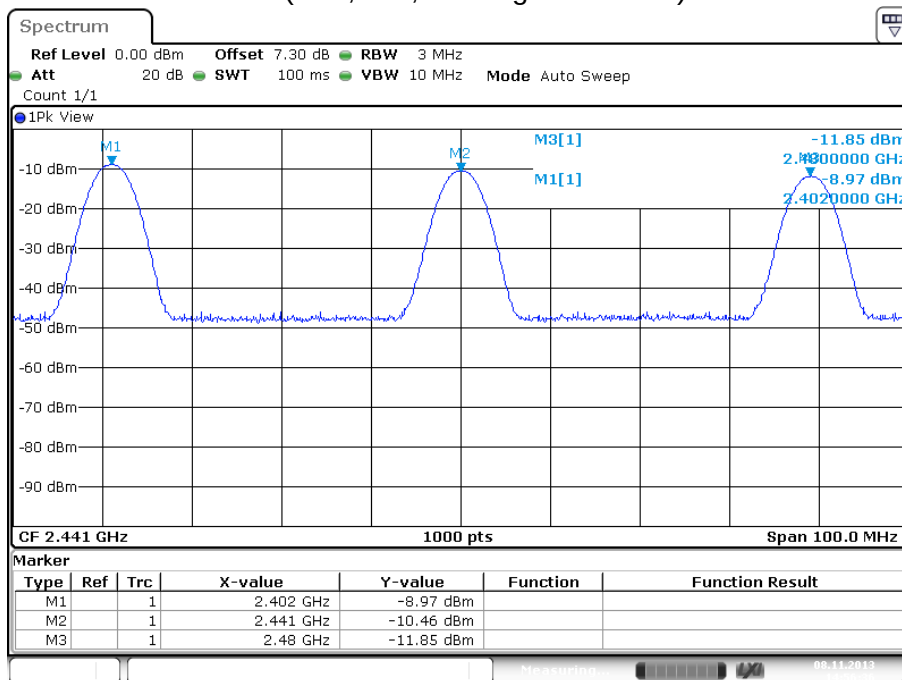
4.5 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

4.6 Test Data

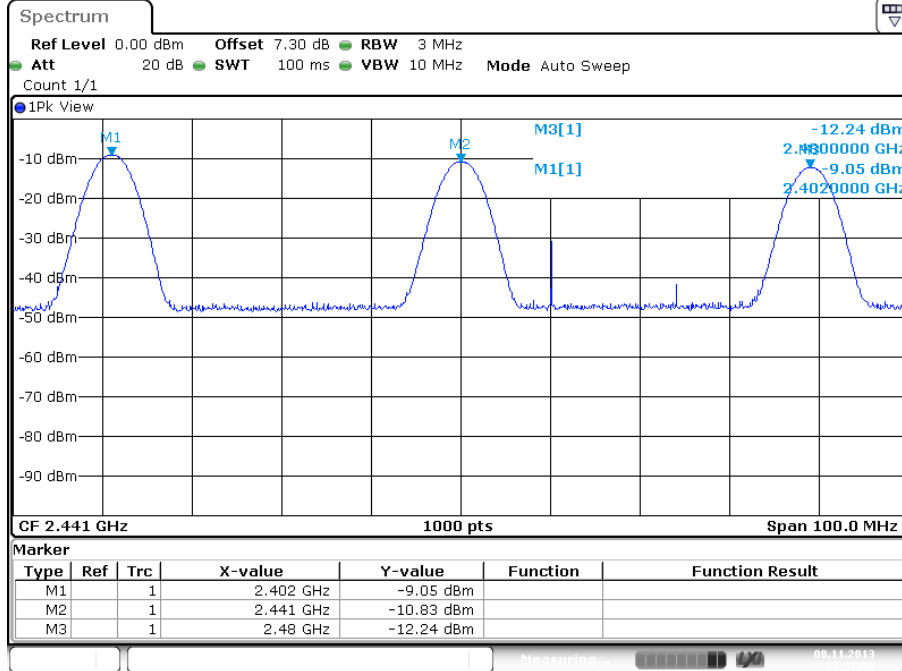
Frequency	Channel No	Modulation	Peak Output Power (dBm)
2402	0	BR	-8.97
		EDR-2	-9.05
		EDR-3	-8.88
2441	39	BR	-10.46
		EDR-2	-10.83
		EDR-3	-10.52
2480	78	BR	-11.85
		EDR-2	-12.24
		EDR-3	-12.04

BR (Low, Mid, and High Channels)



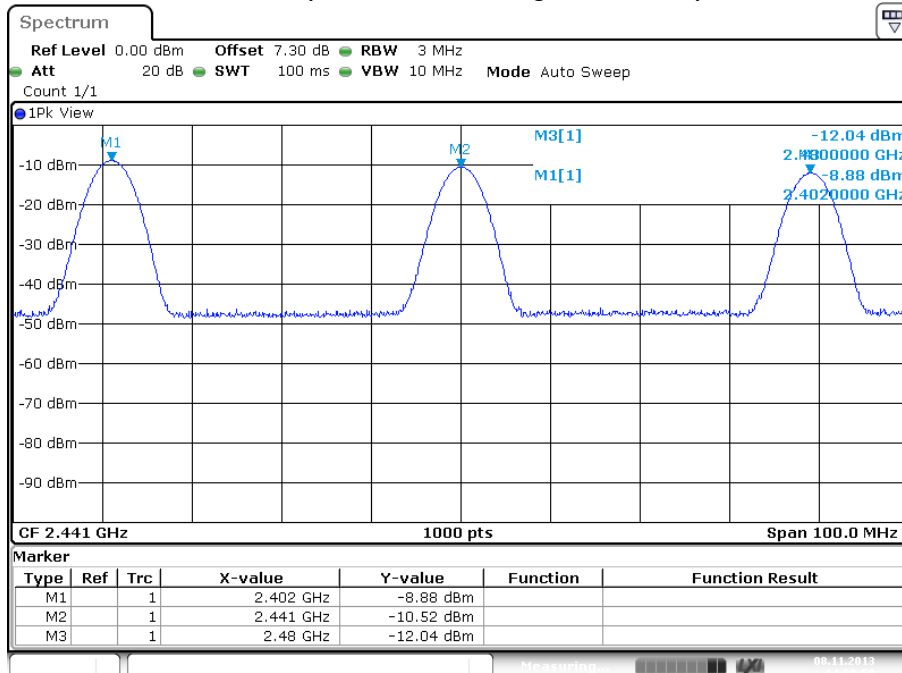
Date: 8.NOV.2013 14:56:36

EDR2 (Low, Mid, and High Channels)



Date: 8.NOV.2013 14:57:56

EDR3 (Low, Mid, and High Channels)



Date: 8.NOV.2013 14:58:59

5 Conducted Spurious Emissions

5.1 Test Result

Test Description	Test Specification	Test Result
Conducted Spurious Emissions	15.247(d)	Compliant

5.2 Test Method

The test data was measured using a spectrum analyzer with

- Peak detector, max hold
- Resolution bandwidth of at least 100 kHz
- Video bandwidth at least 3x RBW
- Frequency range: 30 MHz to 25 GHz

The limit is 20 dB below the measured peak power.

5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 21.7 °C
Relative Humidity: 46.9 %

5.4 Test Equipment

Test Date: 8-Nov-2013

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	28-Aug-2014
COAXIAL CABLE	1134	GORE	B094785	16-May-2014
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	24-Sep-2014

Note: The calibration period equipment is 1 year.

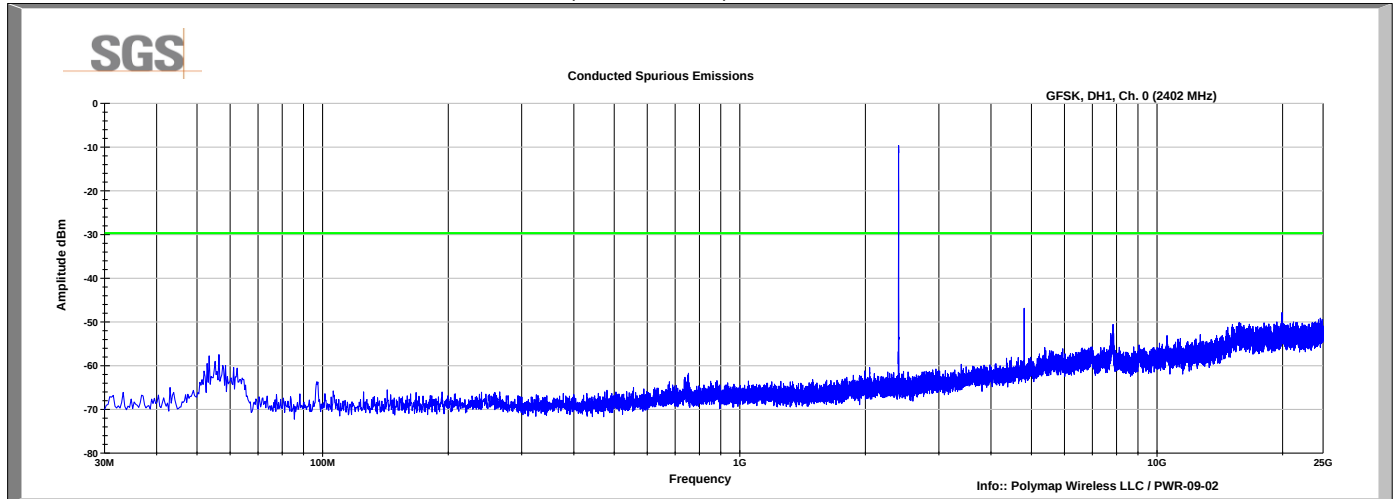
5.5 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

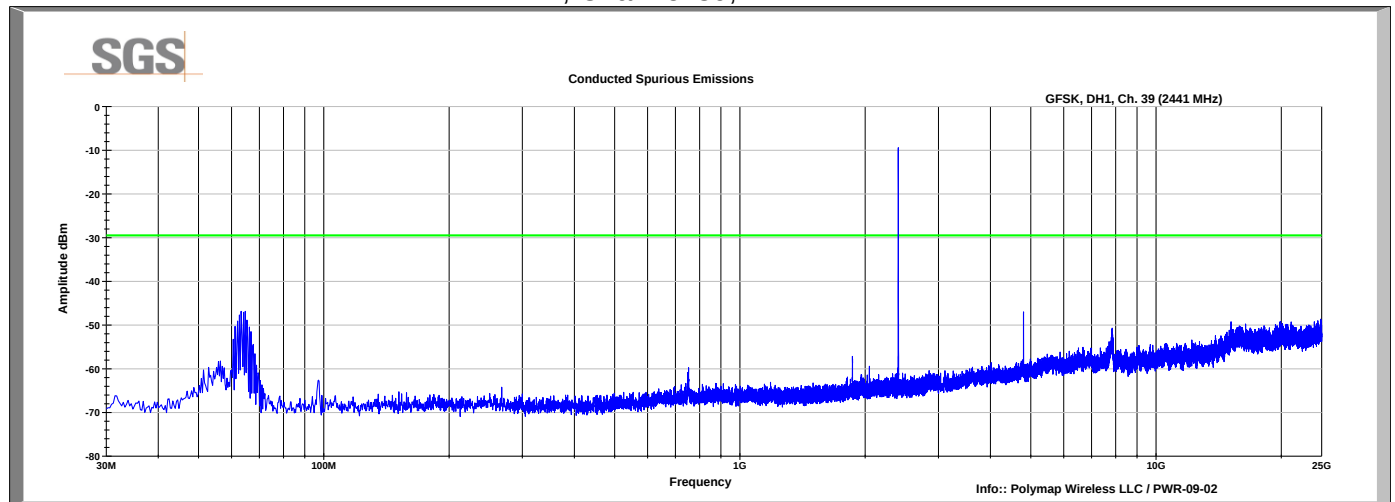
5.6 Test Data

No spurious emissions detected within 10dB of the limit.

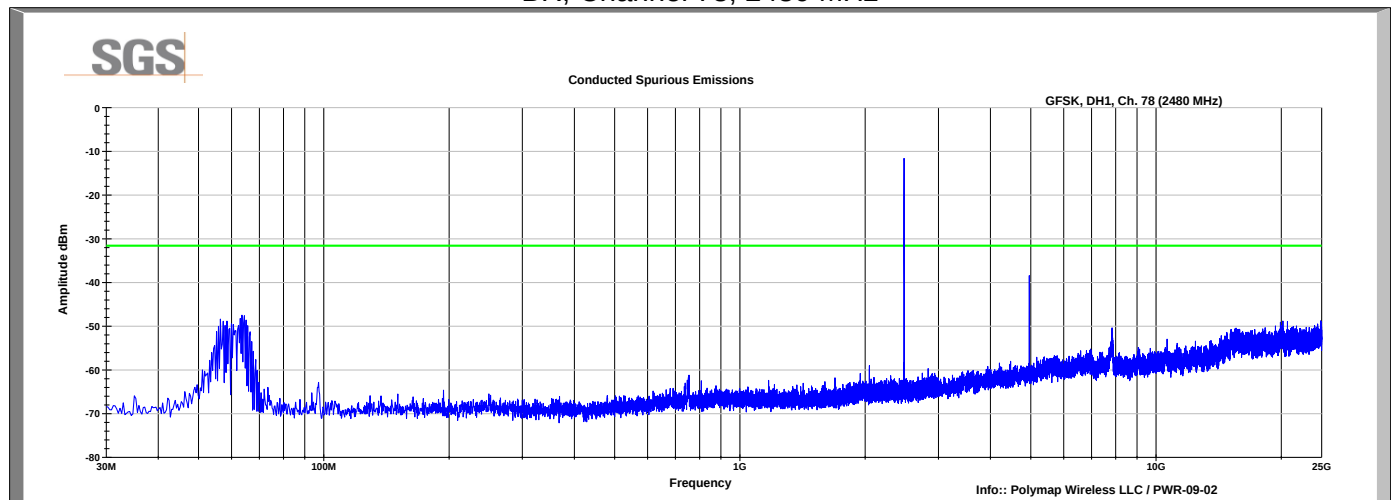
BR, Channel 0, 2402 MHz



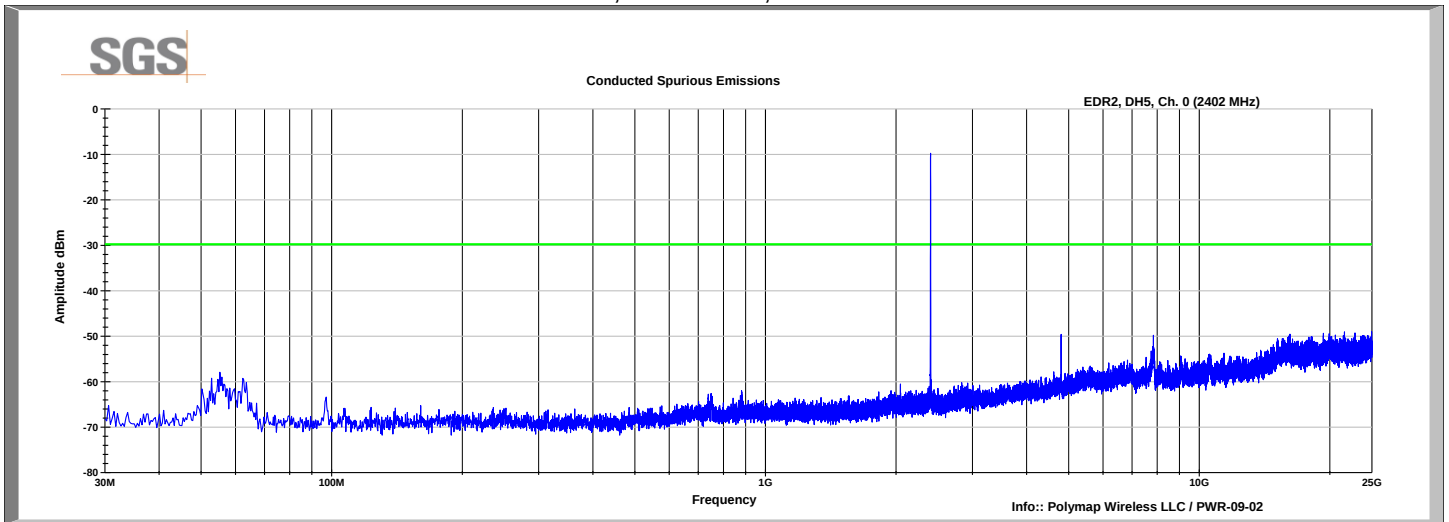
BR, Channel 39, 2441 MHz



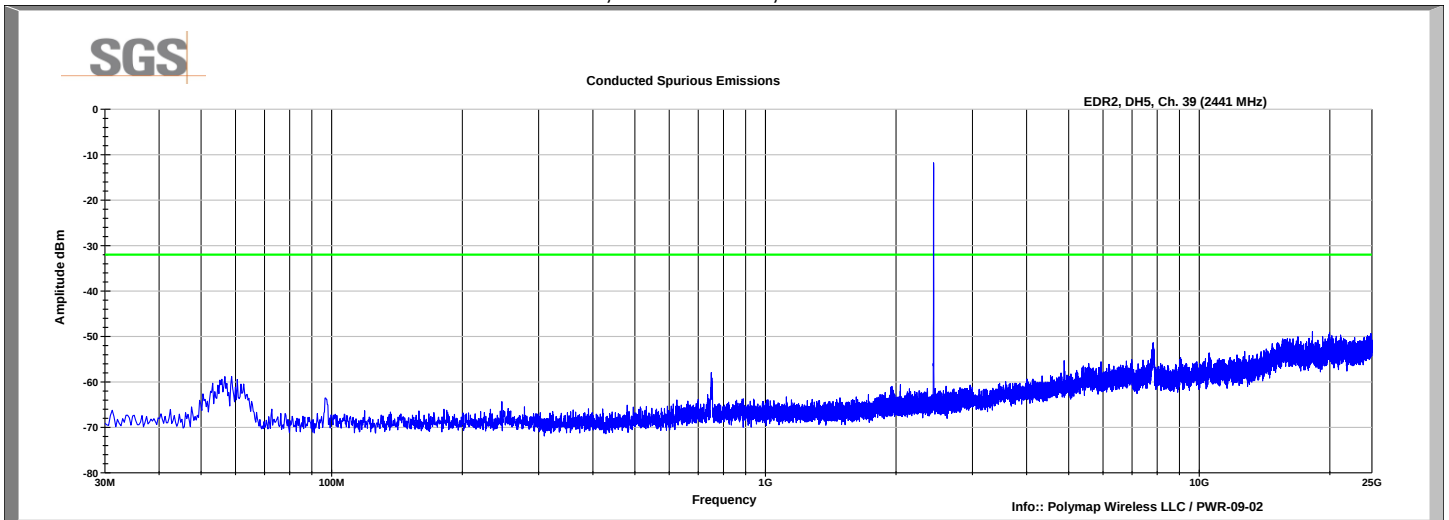
BR, Channel 78, 2480 MHz



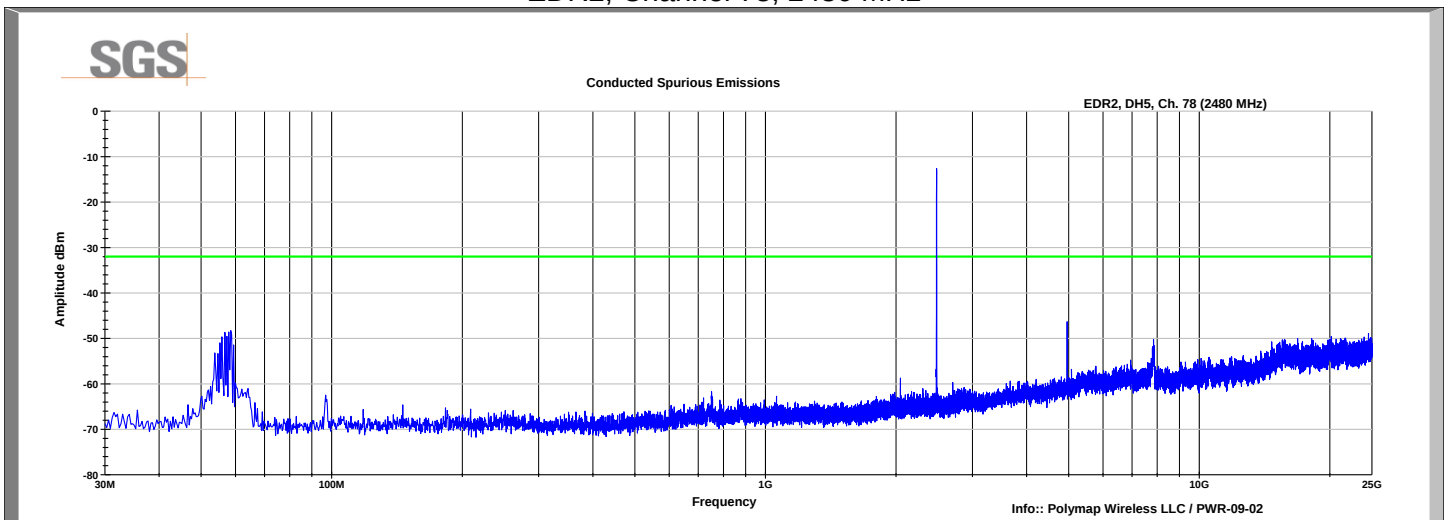
EDR2, Channel 0, 2402 MHz



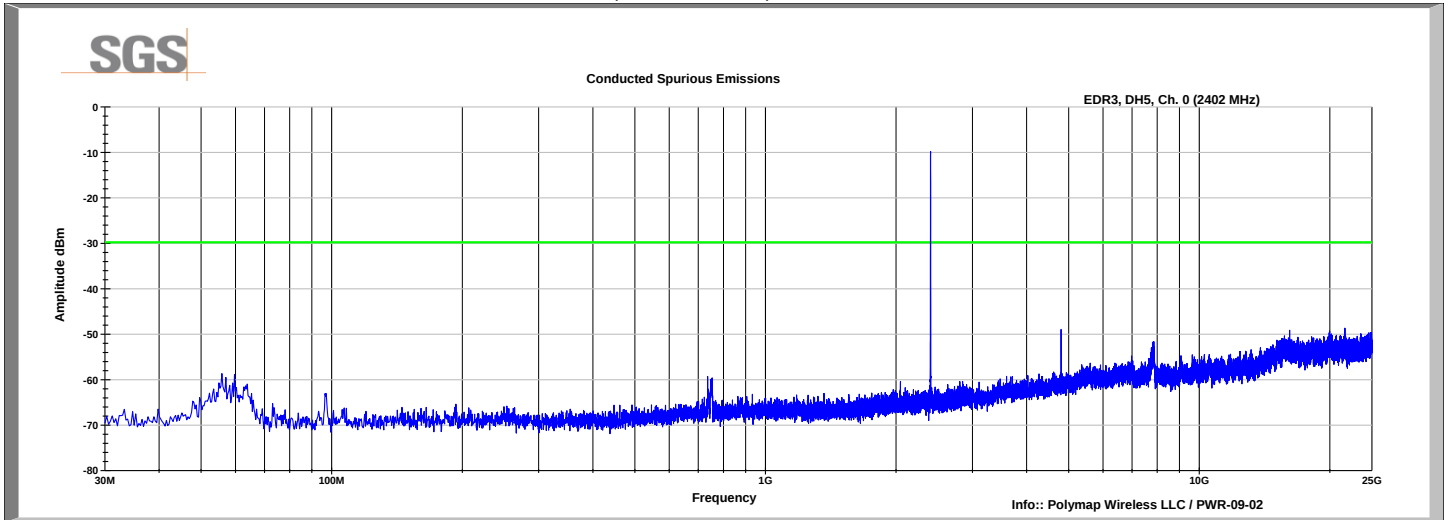
EDR2, Channel 39, 2441 MHz



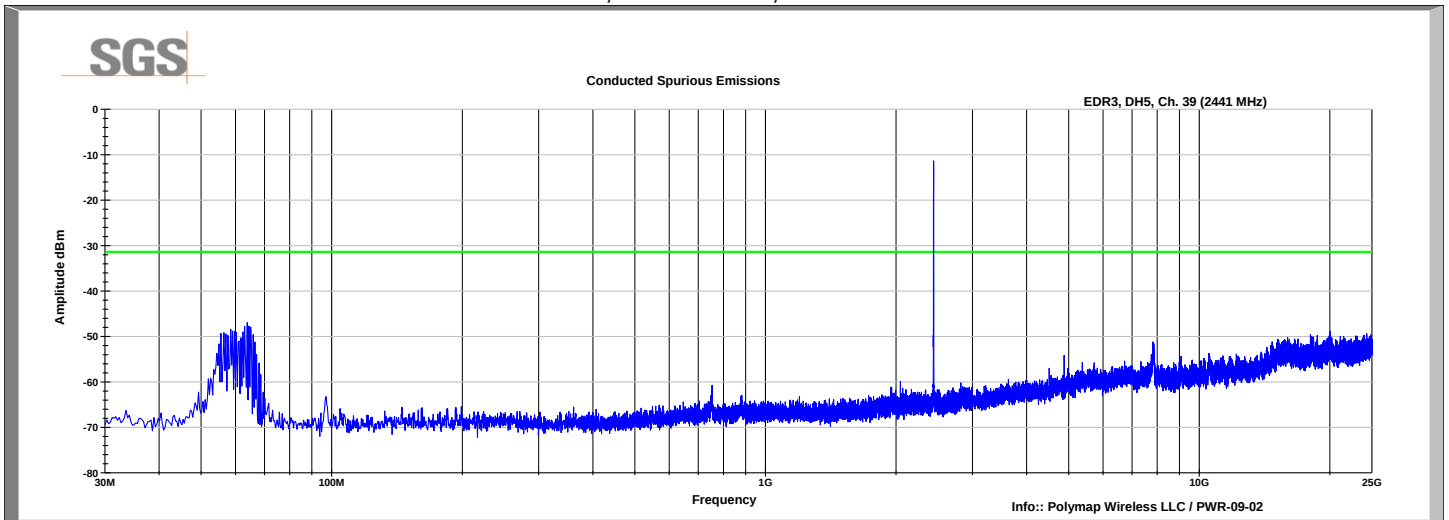
EDR2, Channel 78, 2480 MHz



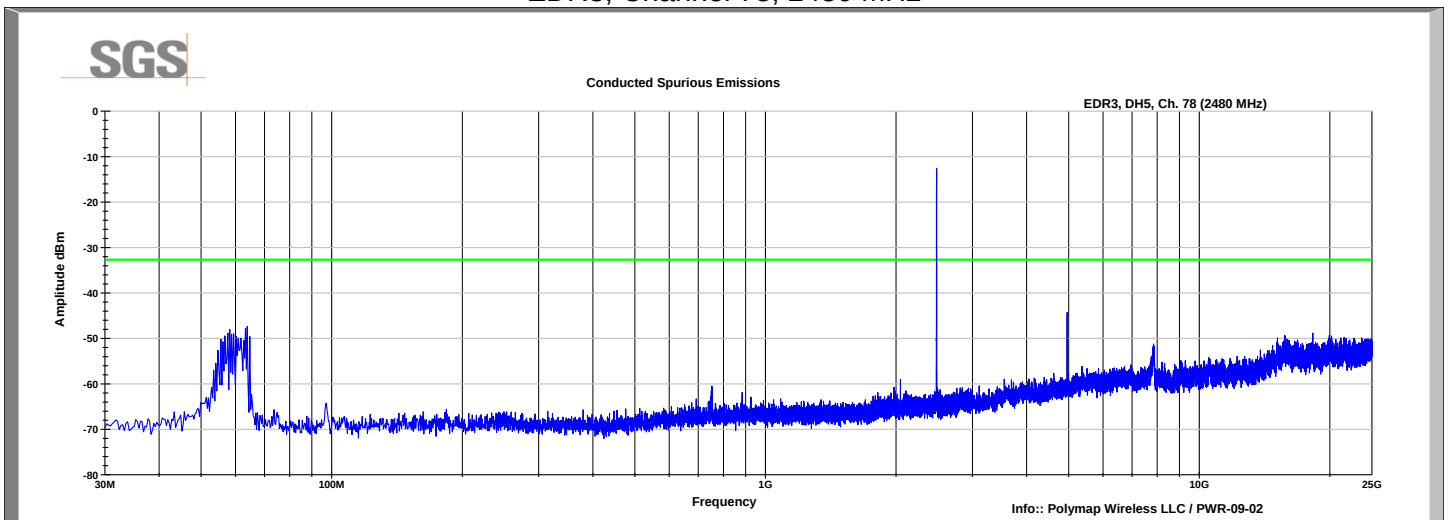
EDR3, Channel 0, 2402 MHz



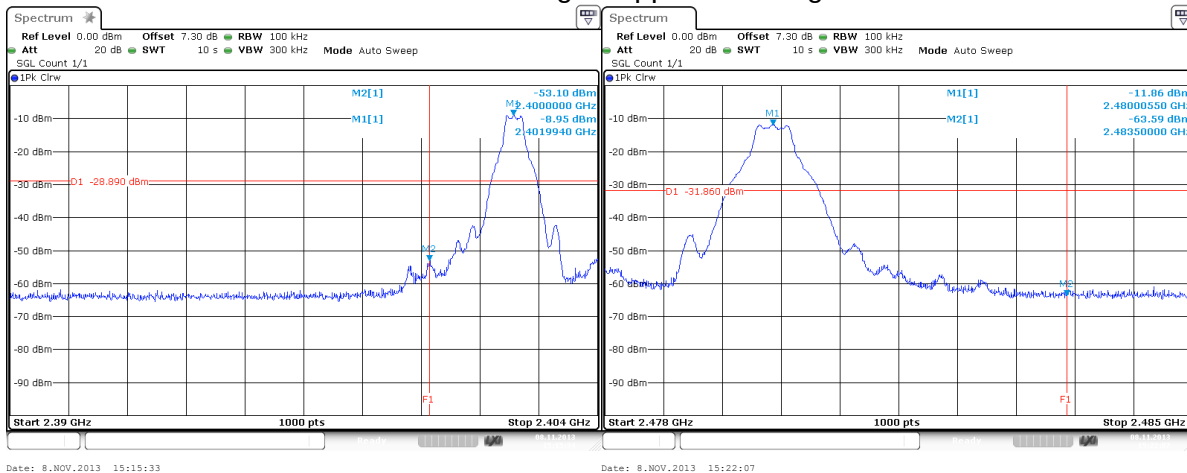
EDR3, Channel 39, 2441 MHz



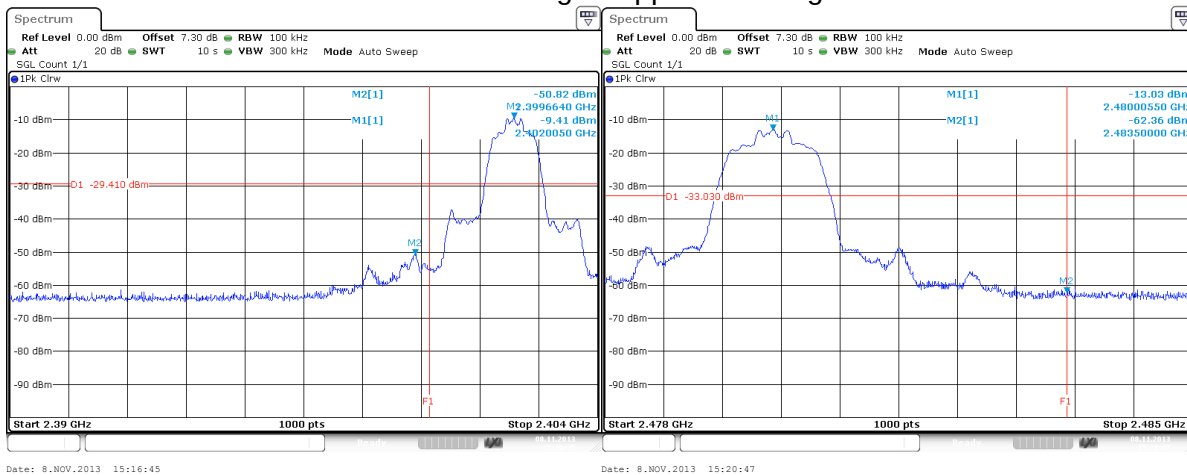
EDR3, Channel 78, 2480 MHz



BR Lower band edge / Upper band edge

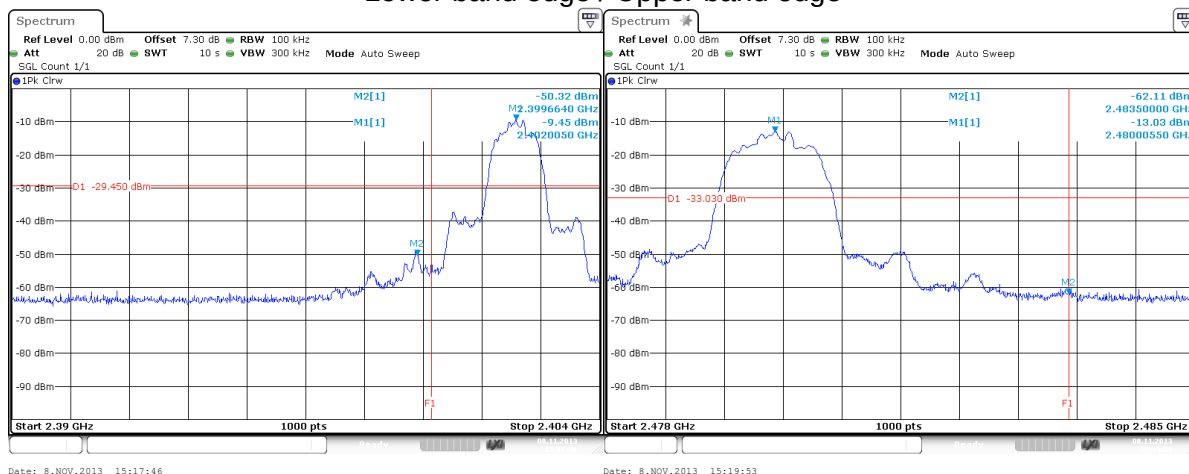


EDR 2 Lower band edge / Upper band edge



EDR 3

Lower band edge / Upper band edge



6 Field Strength of Spurious Radiation

6.1 Test Result

Test Description	Test Specification	Test Result
Field strength of spurious radiation	15.249 (a) and 15.209 RSS 210 2.6, A2.9 (1)(2)	Compliant

6.2 Test Method

The initial preliminary exploratory scans were performed over the frequency range as indicated in the tables below using the max hold function and incorporating a Peak detector and using TILE! software. The final test data was measured using a Quasi-Peak detector below 1GHz and a Peak detector above 1GHz. For harmonics of the fundamental, Average measurements were made by correcting the peak value with the duty cycle correction factor. For emissions other than harmonics of the fundamental, the Average measurements were made using the Average detector. The receivers resolution bandwidth was set to 120 kHz for measurements taken in the 30MHz to 1GHz frequency range and 1MHz for measurements for 1GHz and higher. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency. The radiated measurements were recorded and compared to the limits indicated in the table below.

Test distance:

30 MHz to 1 GHz - The EUT to measurement antenna distance is 3 meters

1 to 18 GHz - The EUT to measurement antenna distance is 3 meters

18 to 40 GHz - The EUT to measurement antenna distance is 1 meter

Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

(1) These limits are applicable to emissions outside of the intentional transmit frequency band.

(2) Quasi-peak limit

(3) Average limit

6.3 Test Site

10m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions

Temperature: 23.8 °C

Relative Humidity: 46.6 %

6.4 Test Equipment

Test End Date: 6-Nov-2013

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079689	22-Aug-2014
RF CABLE - 7500MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079711	16-Sep-2014
RF CABLE - 7500MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079713	7-Aug-2014
BLUETOOTH ANALYZER	CBT	ROHDE & SCHWARZ	S/N: 100011	CNR
10 FT N TYPE COAX	HS 84133215	HUBER&SUHNER	B079660	6-Aug-2014
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	7-Oct-2014
RF CABLE	SF106	HUBER&SUHNER	B085892	16-Oct-2014
DRG HORN (MEDIUM)	3117	ETS-LINDGREN	B079699	25-Mar-2014
PREAMPLIFIER-ANTENNA SYS	TS-PR18	ROHDE & SCHWARZ	B094463	12-Feb-2014
COAXIAL CABLE	SUCOFLEX 102	HUBER&SUHNER	B079822	29-Oct-2014
COAXIAL CABLE	SUCOFLEX 102	HUBER&SUHNER	B079824	29-Oct-2014
DRG HORN (SMALL)	3116B	ETS-LINDGREN	B079697	1-Feb-2014
FIXED GAIN AMPLIFIER	NSP1840-HG	MITEQ	B087572	31-Oct-2014

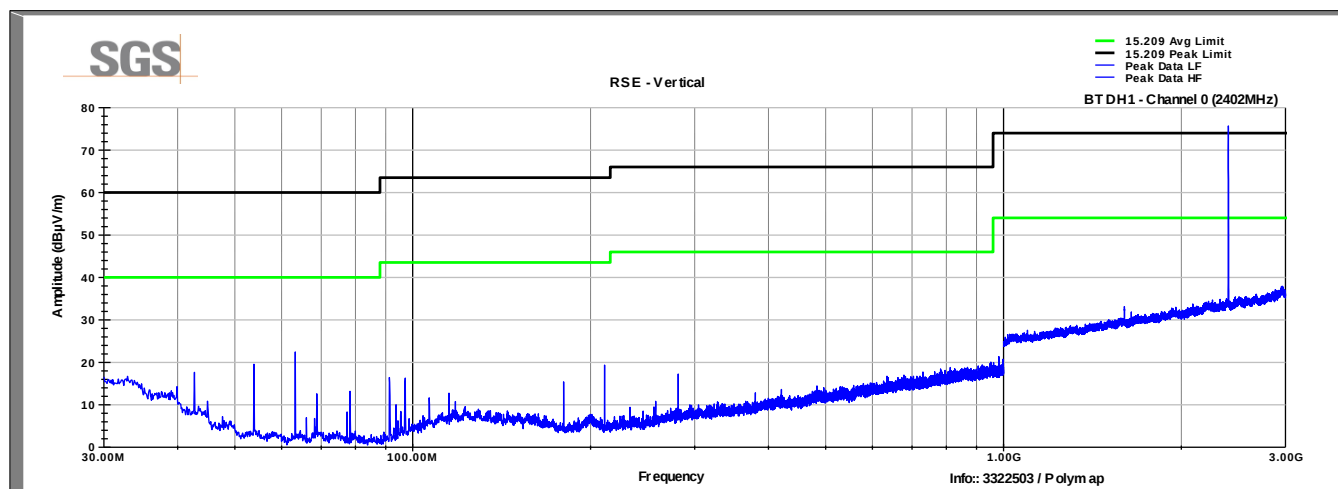
Note: The calibration period equipment is 1 year.

6.5 Test Setup Photographs

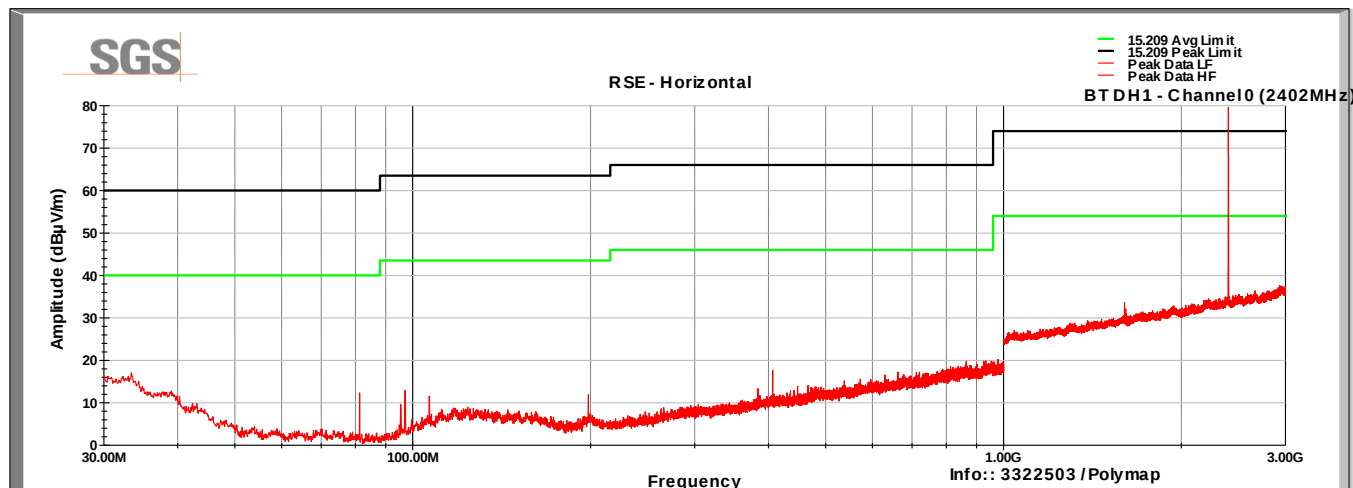
Test setup photographs are located in a separate exhibit.

6.6 Test Data

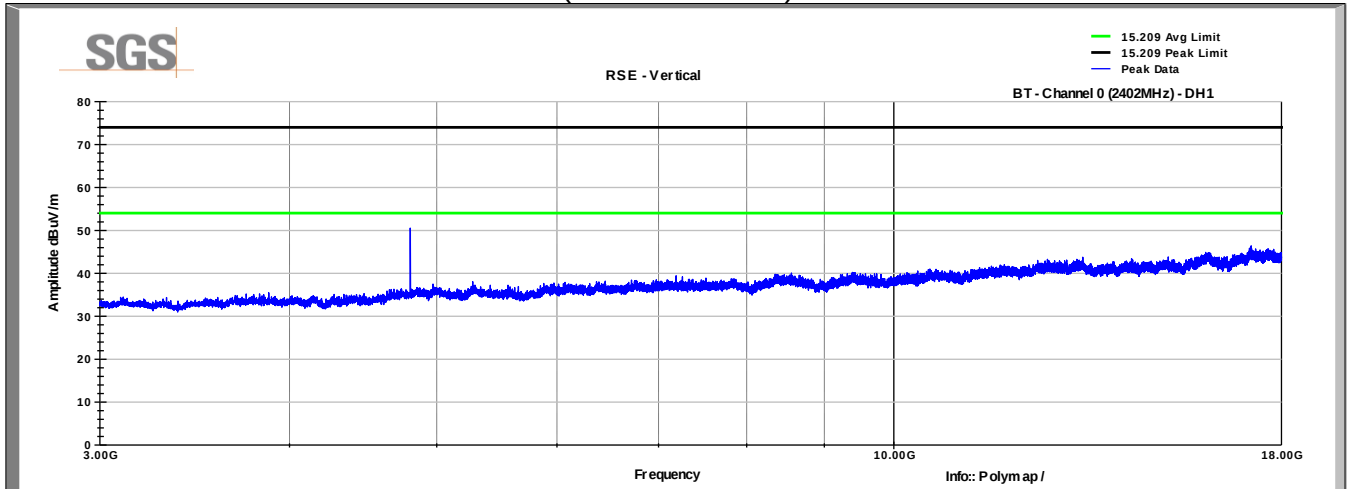
Bluetooth, Channel 0
30-3000MHz
Vertical
(3m test distance)



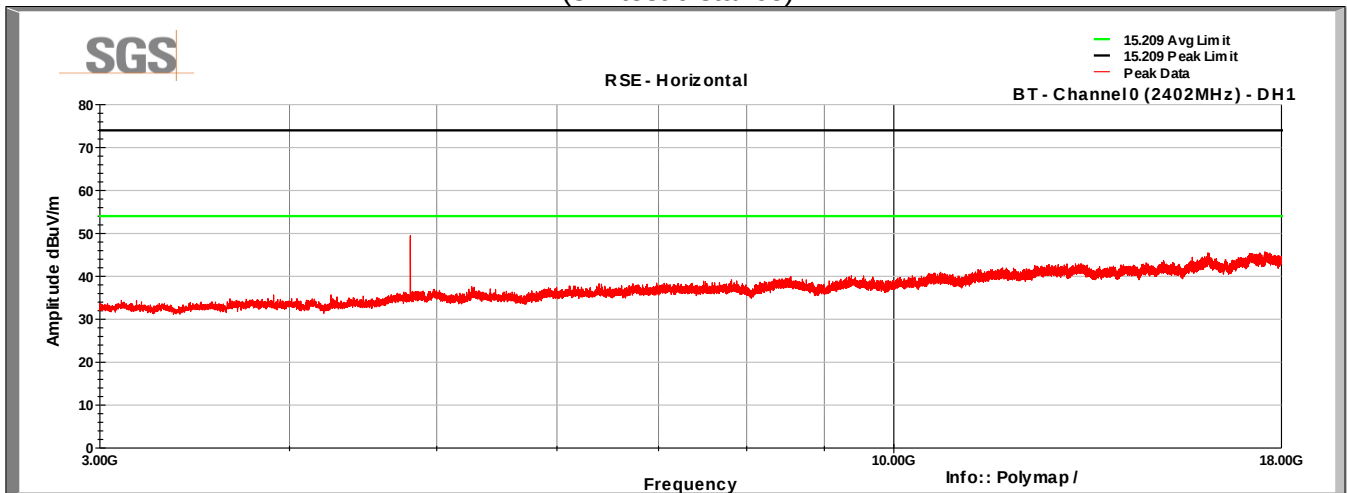
Bluetooth, Channel 0
30-3000MHz
Horizontal
(3m test distance)



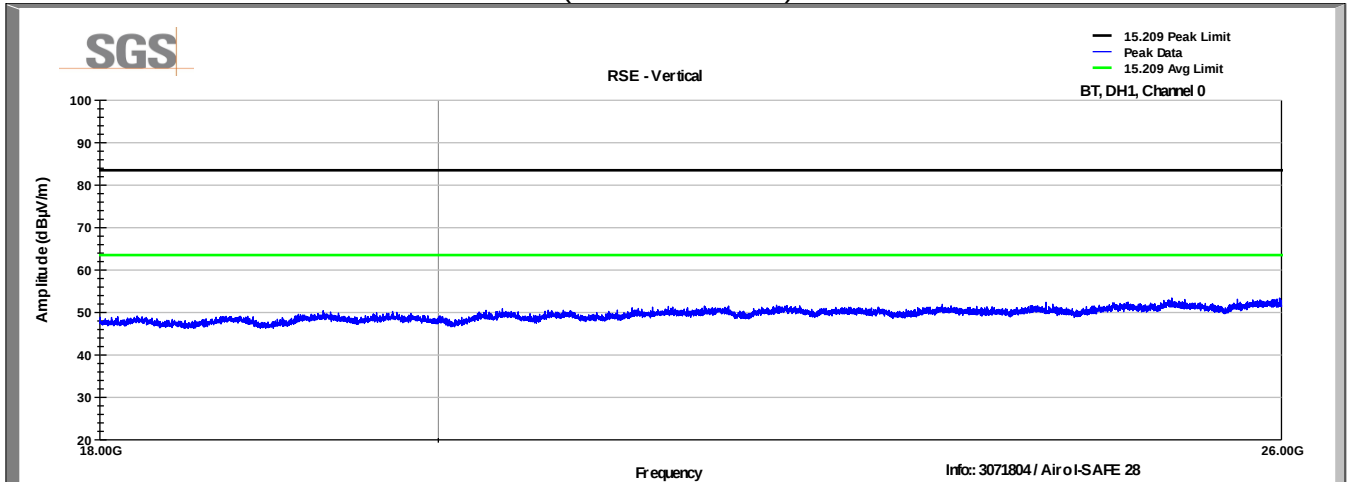
Bluetooth, Channel 0
3-18GHz
Vertical
(3m test distance)



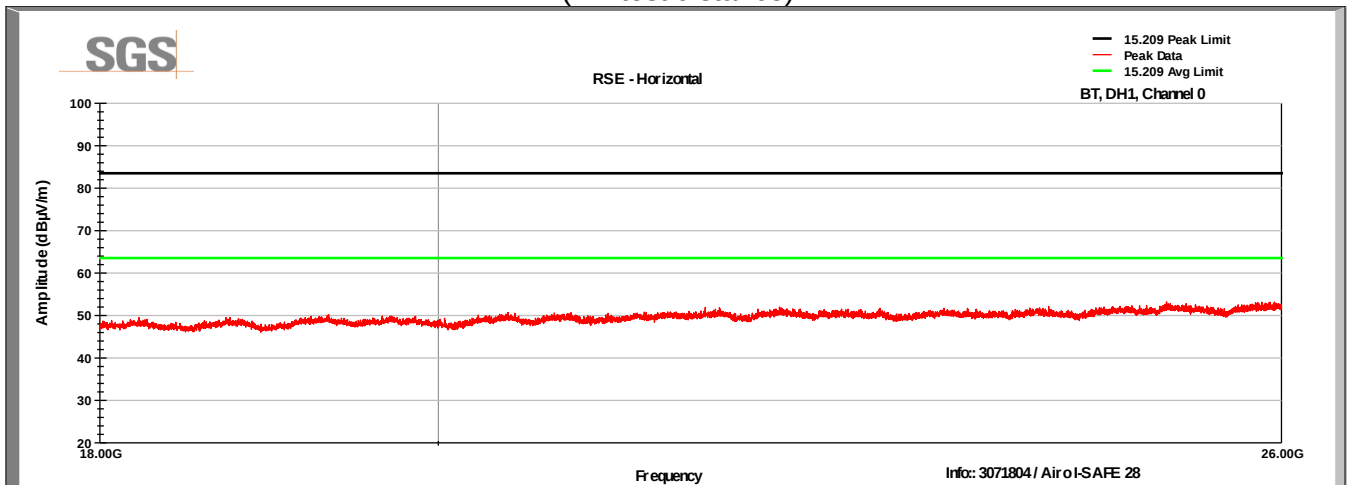
Bluetooth, Channel 0
3-18GHz
Horizontal
(3m test distance)



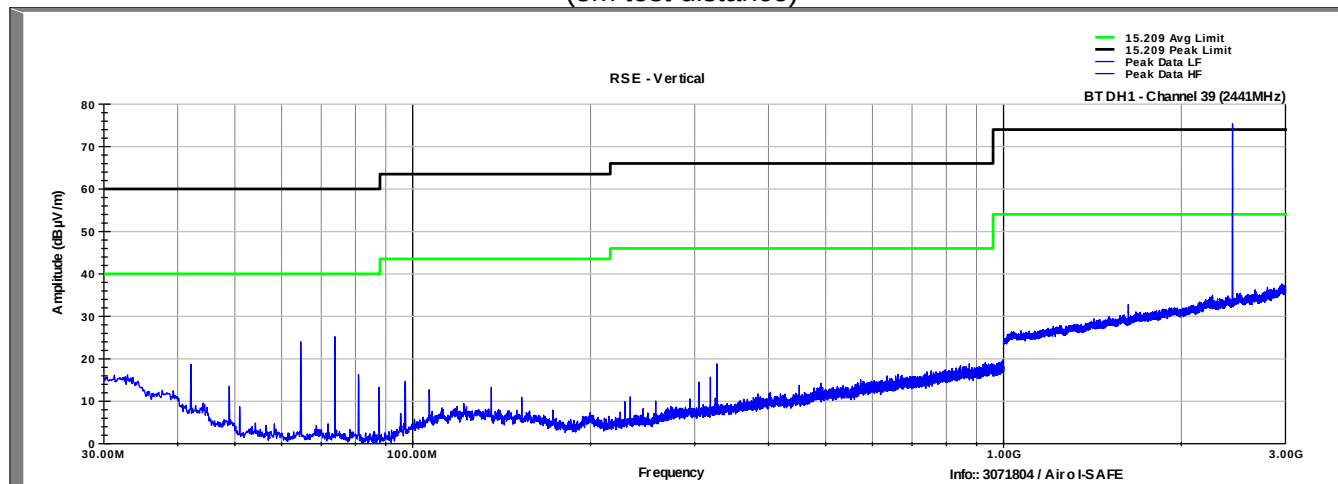
Bluetooth, Channel 0
18-26GHz
Vertical
(1m test distance)



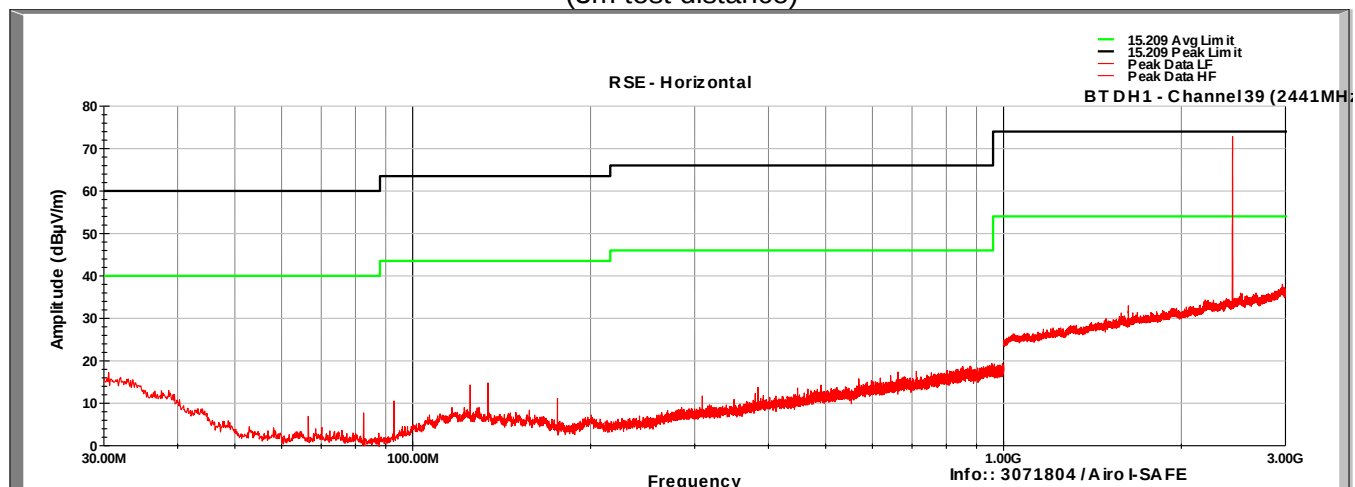
Bluetooth, Channel 0
18-26GHz
Horizontal
(1m test distance)



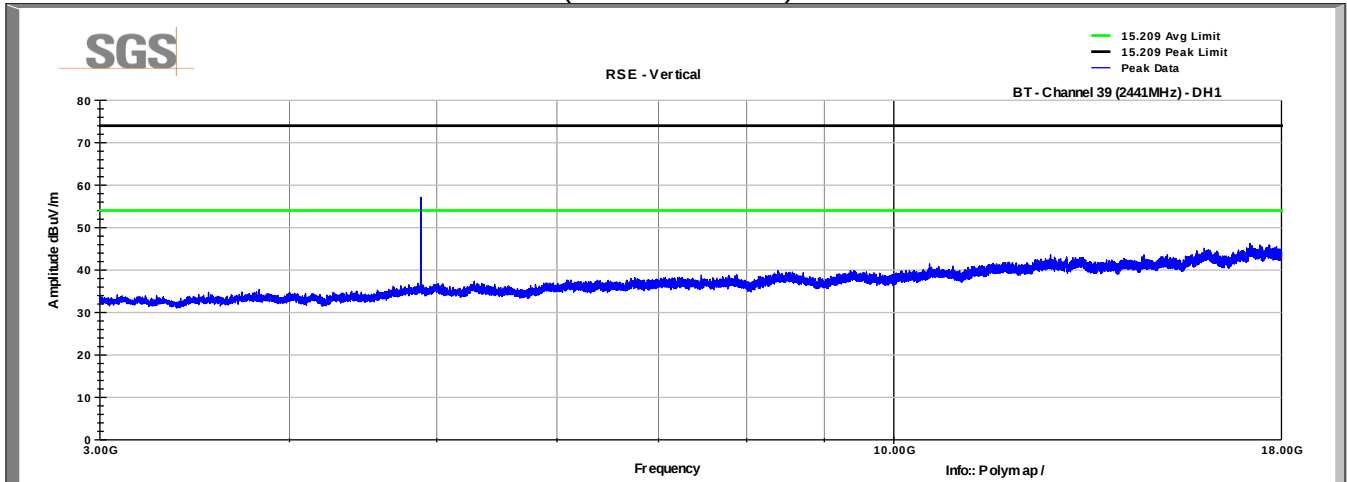
Bluetooth, Channel 39
30-3000MHz
Vertical
(3m test distance)



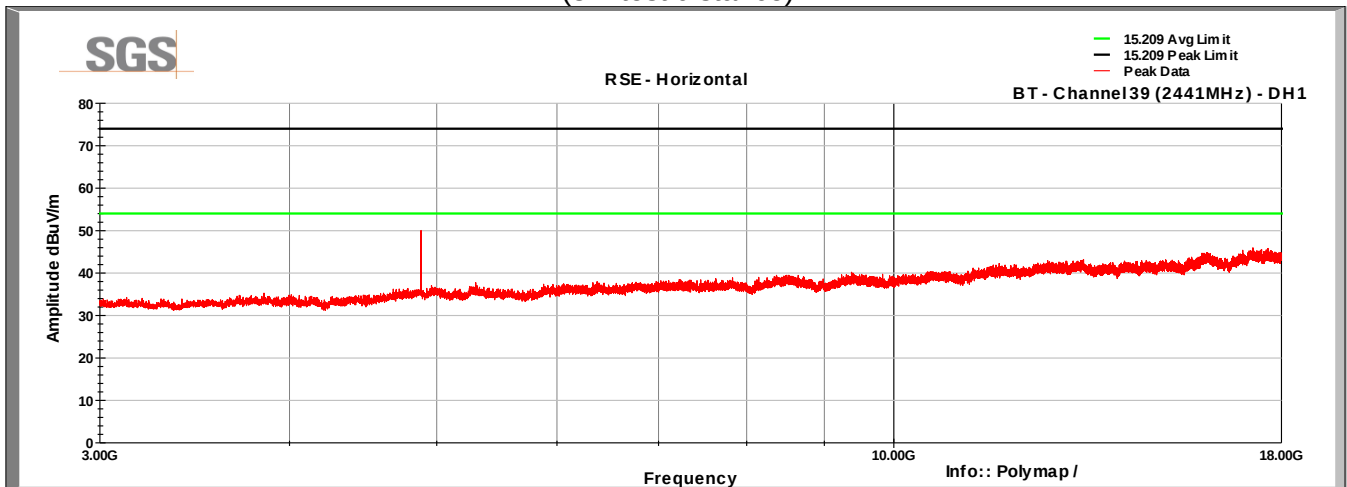
Bluetooth, Channel 39
30-3000MHz
Horizontal
(3m test distance)



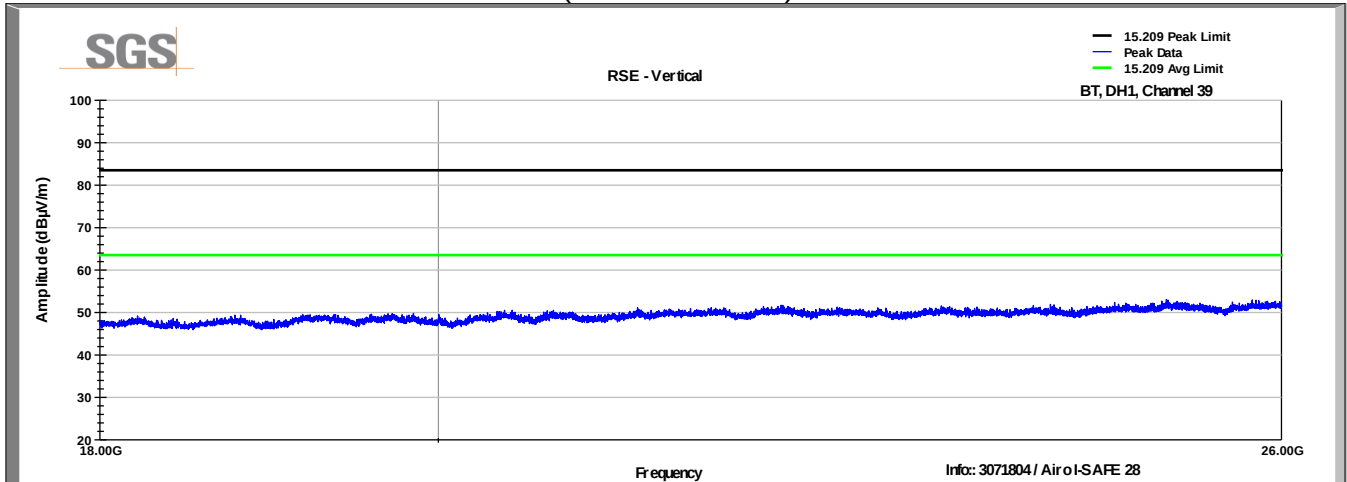
Bluetooth, Channel 39
3-18GHz
Vertical
(3m test distance)



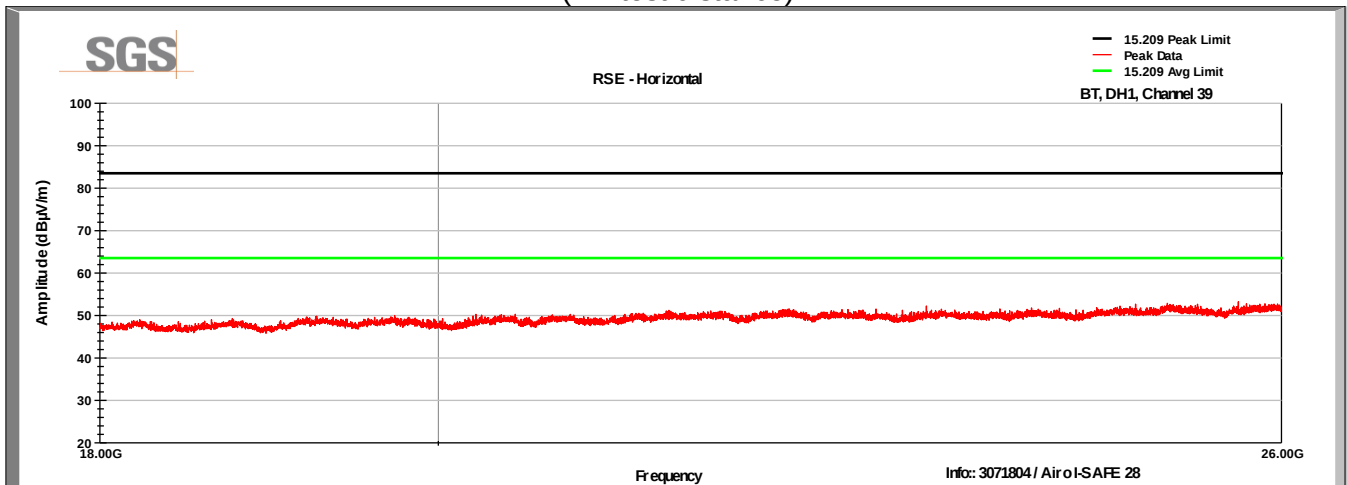
Bluetooth, Channel 39
3-18GHz
Horizontal
(3m test distance)



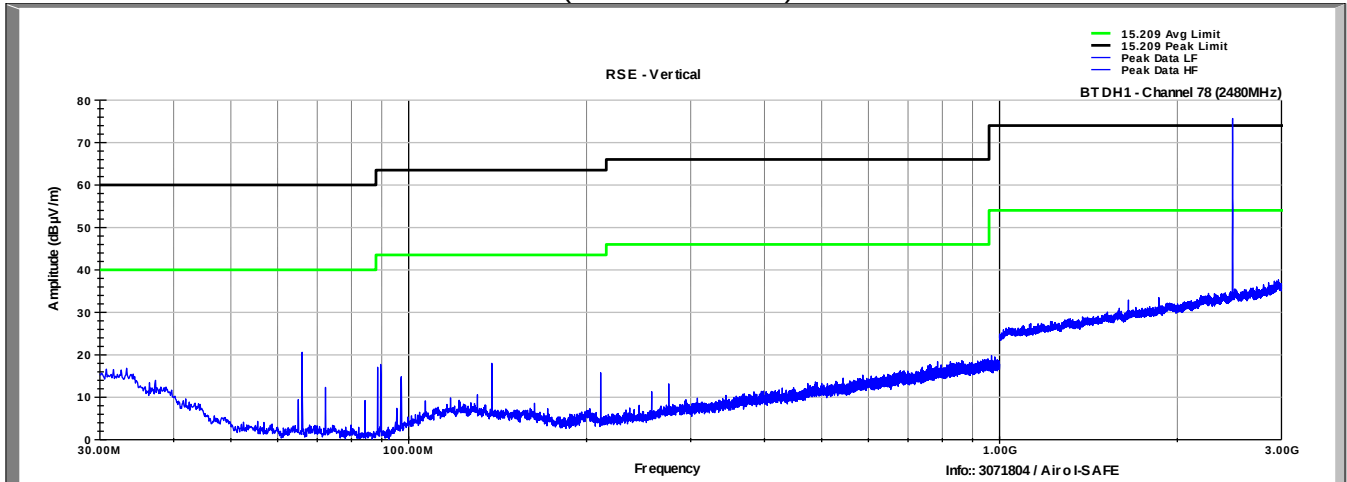
Bluetooth, Channel 39
18-26GHz
Vertical
(1m test distance)



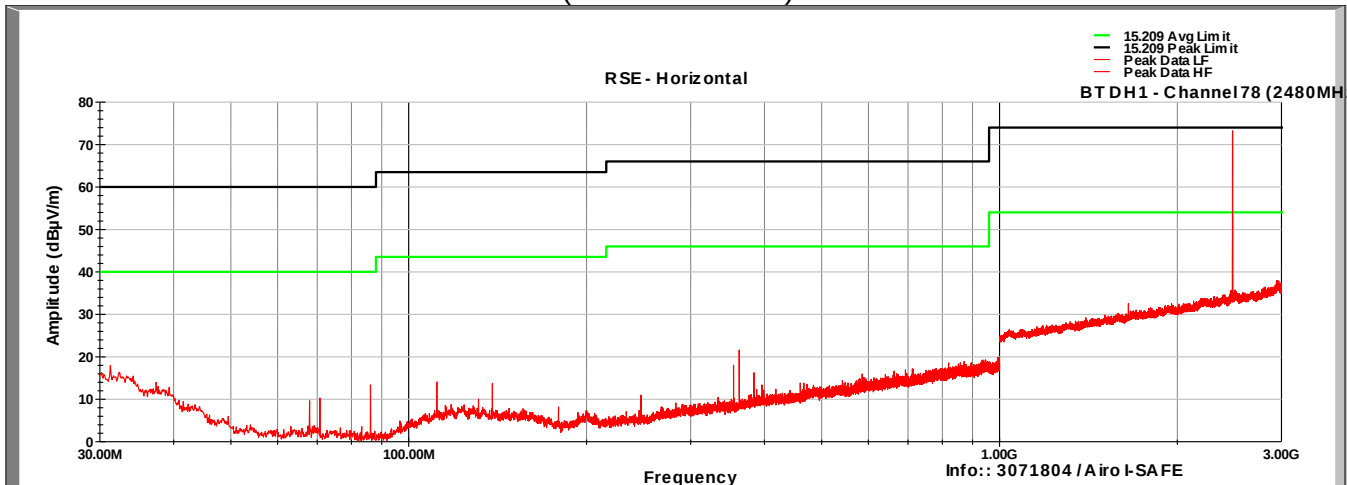
Bluetooth, Channel 39
18-26GHz
Horizontal
(1m test distance)



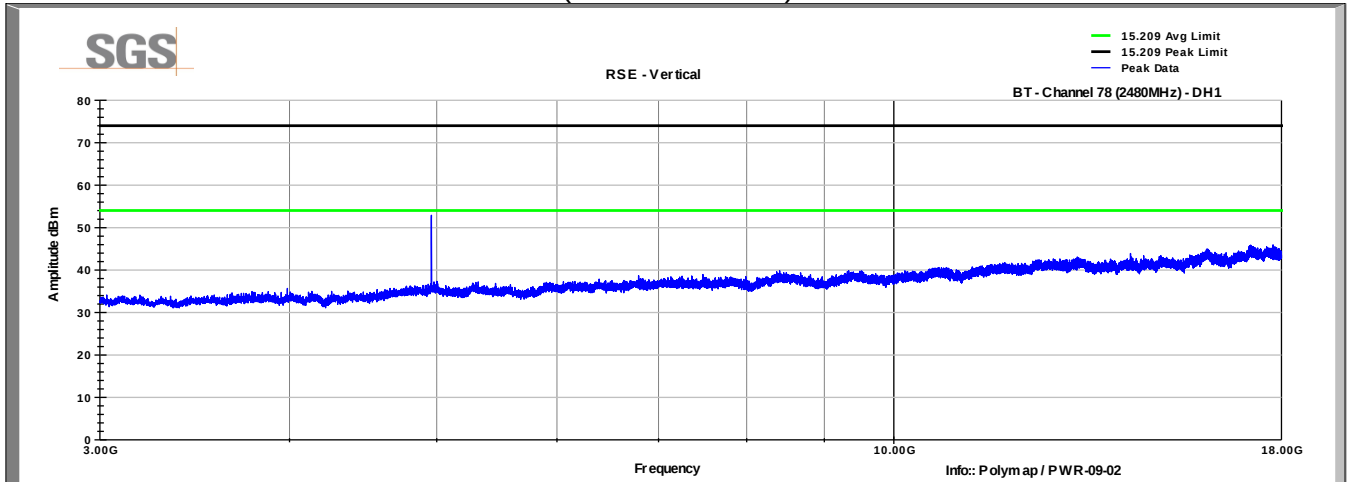
Bluetooth, Channel 78
30-3000MHz
Vertical
(3m test distance)



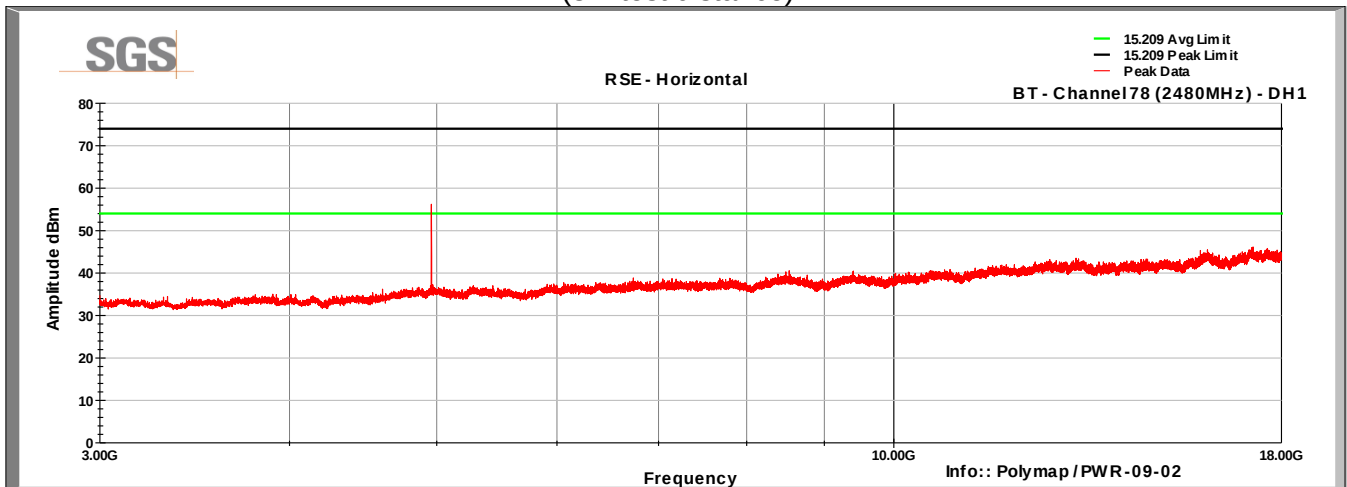
Bluetooth, Channel 78
30-3000MHz
Horizontal
(3m test distance)



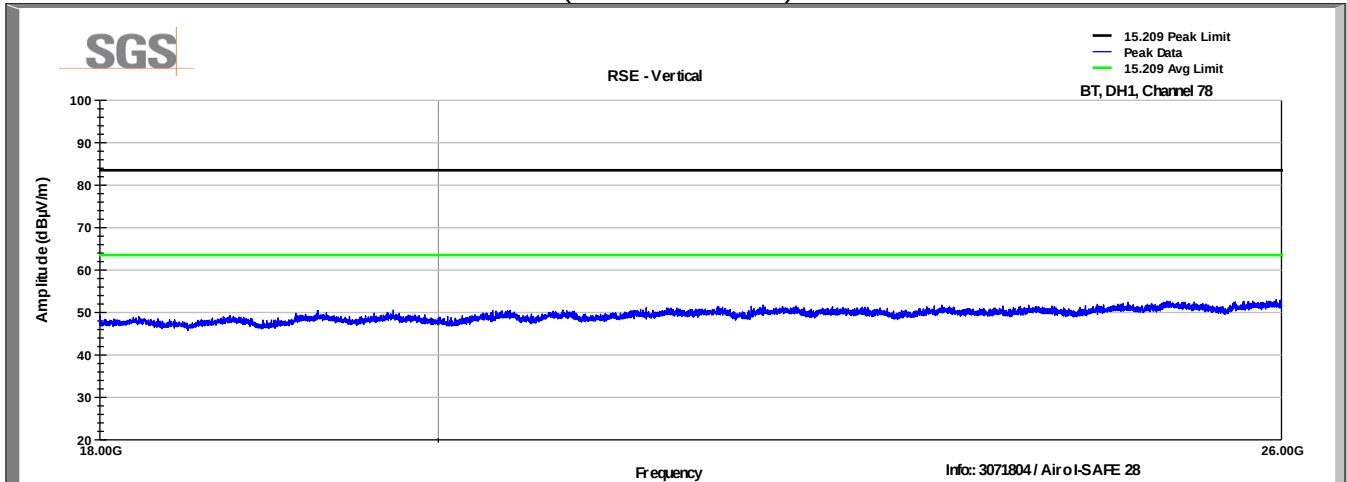
Bluetooth, Channel 78
3-18GHz
Vertical
(3m test distance)



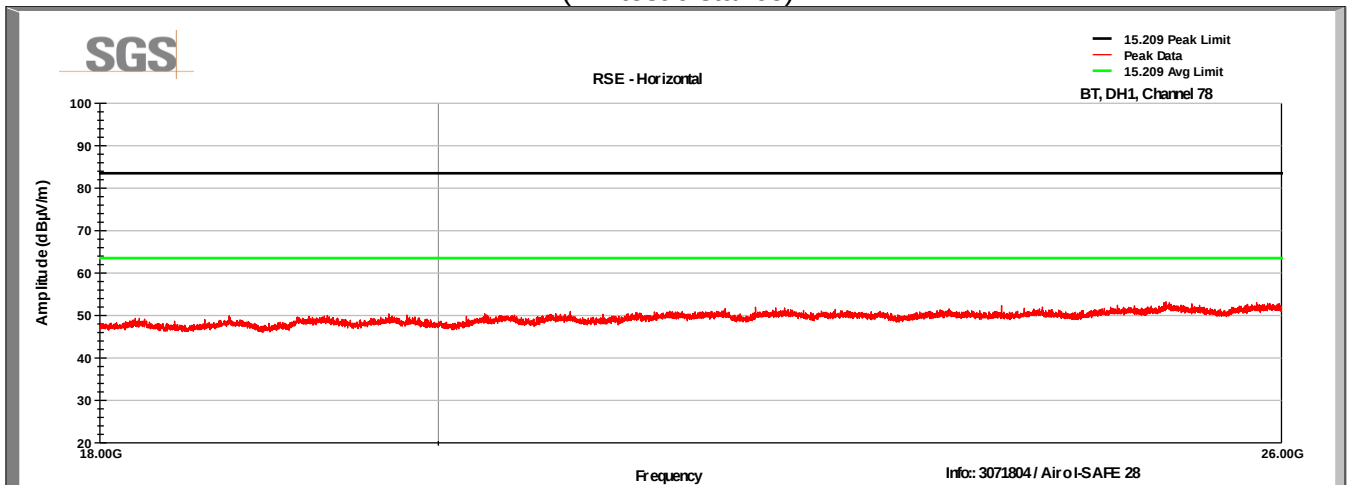
Bluetooth, Channel 78
3-18GHz
Horizontal
(3m test distance)



Bluetooth, Channel 78
18-26GHz
Vertical
(1m test distance)



Bluetooth, Channel 78
18-26GHz
Horizontal
(1m test distance)



Transmitter Spurious Emissions Tabular Data

Frequency MHz	Raw Peak dBuV	Polarity (V/H)	EUT Polarity	AF (dB/m)	CL (dB)	Amp (dB)	Duty Cycle Corr (dB)	Corr Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4804.00	42.6	V	X	34.7	5.9	33.6	0.0	49.6	74.0	-24.4
4804.00	42.6	V	X	34.7	5.9	33.6	9.7	39.9	54.0	-14.1
4804.00	46.2	H	X	34.7	5.9	33.6	0.0	53.2	74.0	-20.8
4804.00	46.2	H	X	34.7	5.9	33.6	9.7	43.5	54.0	-10.5
4804.00	49.2	V	Y	34.7	5.9	33.6	0.0	56.2	74.0	-17.8
4804.00	49.2	V	Y	34.7	5.9	33.6	9.7	46.5	54.0	-7.5
4804.00	47.6	H	Y	34.7	5.9	33.6	0.0	54.6	74.0	-19.4
4804.00	47.6	H	Y	34.7	5.9	33.6	9.7	44.9	54.0	-9.1
4804.00	48.4	V	Z	34.7	5.9	33.6	0.0	55.4	74.0	-18.6
4804.00	48.4	V	Z	34.7	5.9	33.6	9.7	45.7	54.0	-8.3
4804.00	47.4	H	Z	34.7	5.9	33.6	0.0	54.4	74.0	-19.6
4804.00	47.4	H	Z	34.7	5.9	33.6	9.7	44.7	54.0	-9.3
4882.00	49.7	V	X	34.7	5.9	33.6	0.0	56.8	74.0	-17.2
4882.00	49.7	V	X	34.7	5.9	33.6	9.7	47.1	54.0	-6.9
4882.00	52.4	H	X	34.7	5.9	33.6	0.0	59.5	74.0	-14.5
4882.00	52.4	H	X	34.7	5.9	33.6	9.7	49.8	54.0	-4.2
4882.00	51.8	V	Y	34.7	5.9	33.6	0.0	58.9	74.0	-15.1
4882.00	51.8	V	Y	34.7	5.9	33.6	9.7	49.2	54.0	-4.8
4882.00	49.2	H	Y	34.7	5.9	33.6	0.0	56.3	74.0	-17.7
4882.00	49.2	H	Y	34.7	5.9	33.6	9.7	46.6	54.0	-7.4
4882.00	51.2	V	Z	34.7	5.9	33.6	0.0	58.3	74.0	-15.7
4882.00	51.2	V	Z	34.7	5.9	33.6	9.7	48.6	54.0	-5.4
4882.00	53.9	H	Z	34.7	5.9	33.6	0.0	61.0	74.0	-13.0
4882.00	53.9	H	Z	34.7	5.9	33.6	9.7	51.3	54.0	-2.7
4960.00	52.2	V	X	34.8	6.0	33.6	0.0	59.4	74.0	-14.6
4960.00	52.2	V	X	34.8	6.0	33.6	9.7	49.7	54.0	-4.3
4960.00	52.5	H	X	34.8	6.0	33.6	0.0	59.7	74.0	-14.3
4960.00	52.5	H	X	34.8	6.0	33.6	9.7	50.0	54.0	-4.0
4960.00	53.9	V	Y	34.8	6.0	33.6	0.0	61.1	74.0	-12.9
4960.00	53.9	V	Y	34.8	6.0	33.6	9.7	51.4	54.0	-2.6
4960.00	51.0	H	Y	34.8	6.0	33.6	0.0	58.2	74.0	-15.8
4960.00	51.0	H	Y	34.8	6.0	33.6	9.7	48.5	54.0	-5.5
4960.00	50.5	V	Z	34.8	6.0	33.6	0.0	57.7	74.0	-16.3
4960.00	50.5	V	Z	34.8	6.0	33.6	9.7	48.0	54.0	-6.0
4960.00	55.0	H	Z	34.8	6.0	33.6	0.0	62.2	74.0	-11.8
4960.00	55.0	H	Z	34.8	6.0	33.6	9.7	52.5	54.0	-1.5

7 Radiated Emissions at Band Edge / Restricted Band

7.1 Test Result

Test Description	Test Specification	Test Result
Field strength of spurious radiation	15.247 (d) and 15.209	Compliant

7.2 Test Method

Peak and average field strength measurements were performed at the restricted band edges of 2390MHz and 2483.5MHz. Measurements were made using the conducted methods defined in Section 12 of FCC publication D01 DTS Meas Guidance v03r01. The measurements were recorded and using the equation $E = \text{EIRP} - 20\log D + 104.8$, the readings were converted to a radiated field strength equivalent. The resultant data were compared to the average limit of 54 dBμV/m and peak limit of 74 dBμV/m.

For the plot data to reflect field strength readings, the reference level offset was calculated from the above equation using the following method:

$$E = \text{EIRP} - 20\log D + 104.8$$

$$\text{Where } D = 3 \text{ meters, } E = \text{EIRP} - 9.5 + 104.8$$

$$E = \text{EIRP} + 95.3$$

$$\text{EIRP} = \text{Reading(dBm)} + \text{MaxAntennaGain}$$

According to Section 12.2.6 of the measurement guidance, the max antenna gain shall be the highest gain of the antenna for the entire operating band or 2 – whichever is greater. According to the antenna specifications, the max gain is 1.3, so 2 dBi was used for the calculations.

$$\text{EIRP} = \text{Reading (dBm)} + 2$$

$$\text{Reading (dBm)} = \text{Reading (dBuV)} - 107 + \text{PathLoss}$$

$$\text{PathLoss} = \text{SplitterLoss} + \text{CableLoss} = 5.9 + 1.4 = 7.3\text{dB}$$

$$\text{Reading(dBm)} = \text{Reading (dBuV)} - 107 + 7.3$$

$$\text{Reading(dBm)} = \text{Reading (dBuV)} - 99.7$$

$$E = \text{Reading (dBuV)} - 99.7 + 2 + 95.3$$

$$E = \text{Reading (dBuV)} - 2.4$$

The Spectrum Analyzer was configured with a -2.4dB offset and peak plots were compared to the average limit.

7.3 Test Site

3m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions

Temperature: 24.6 °C

Relative Humidity: 46.6 %

7.4 Test Equipment

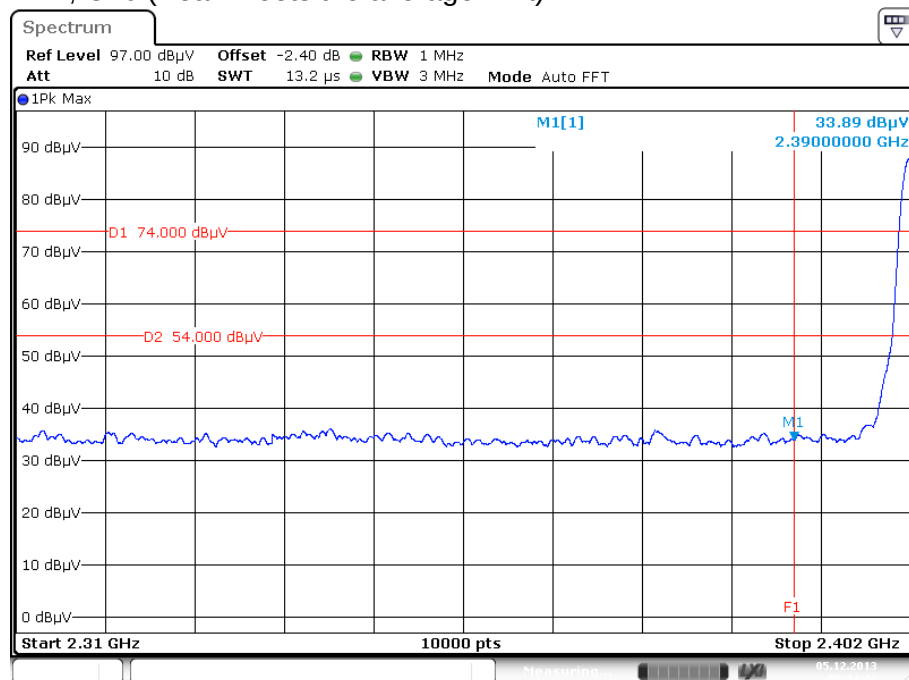
Test Date: 8-Nov-2013

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	28-Aug-2014
COAXIAL CABLE	1134	GORE	B094785	16-May-2014
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	24-Sep-2014

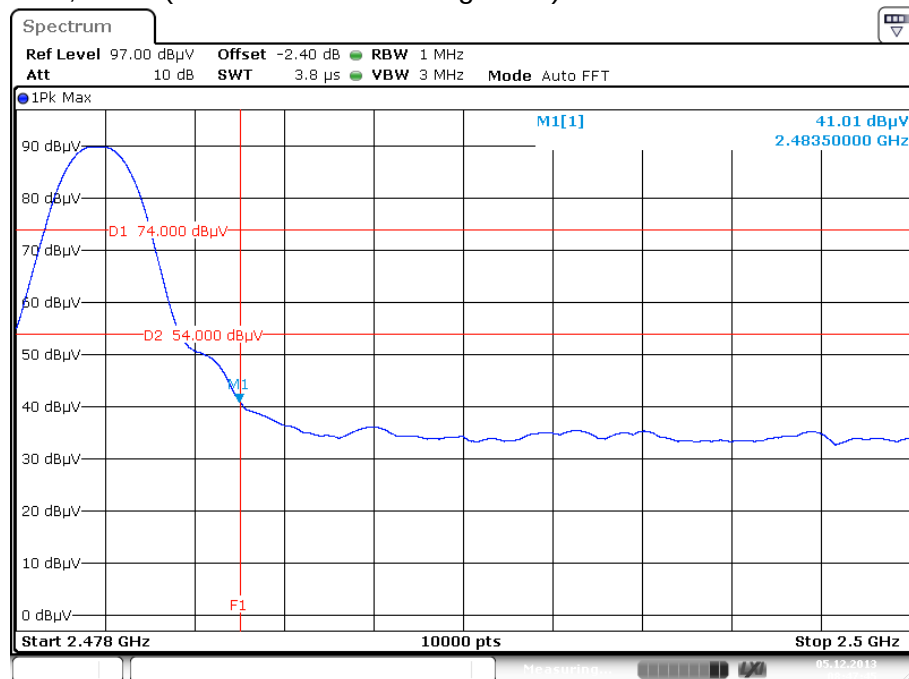
Note: The calibration period equipment is 1 year.

7.5 Test Data

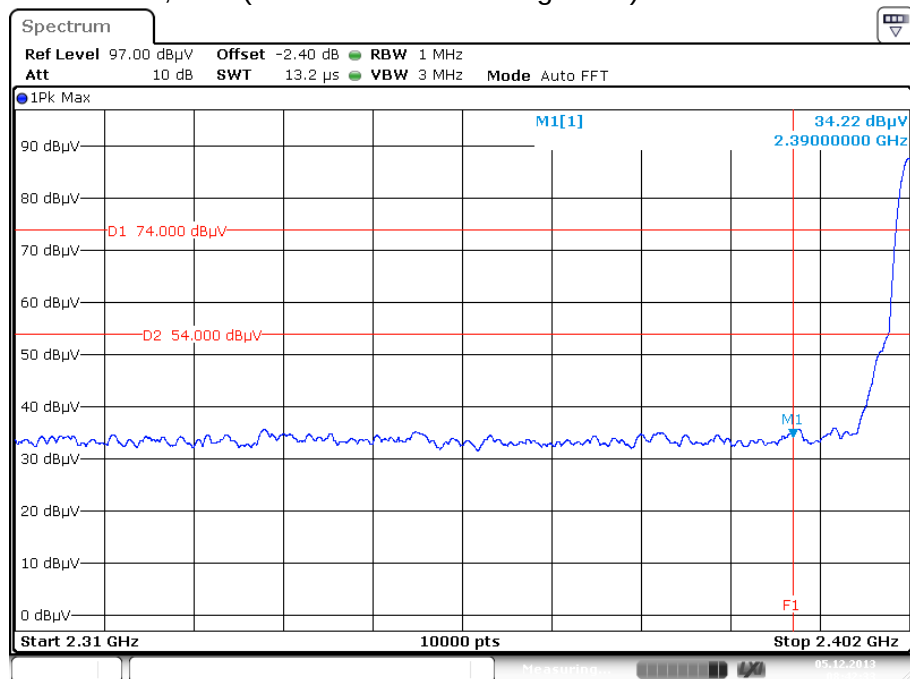
DH1, Ch0 (Peak meets the average limit)



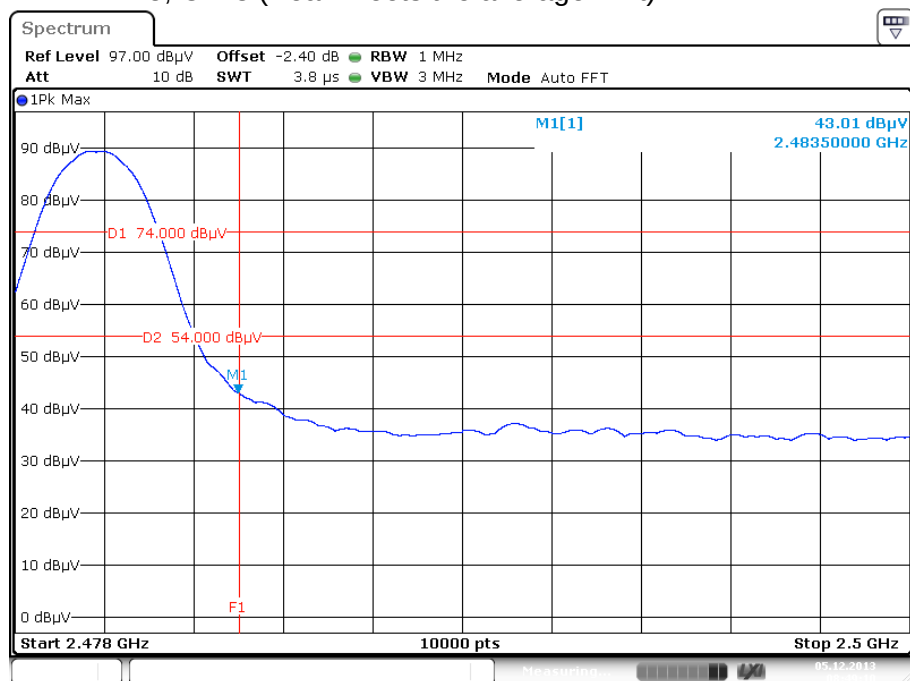
DH1, Ch78 (Peak meets the average limit)



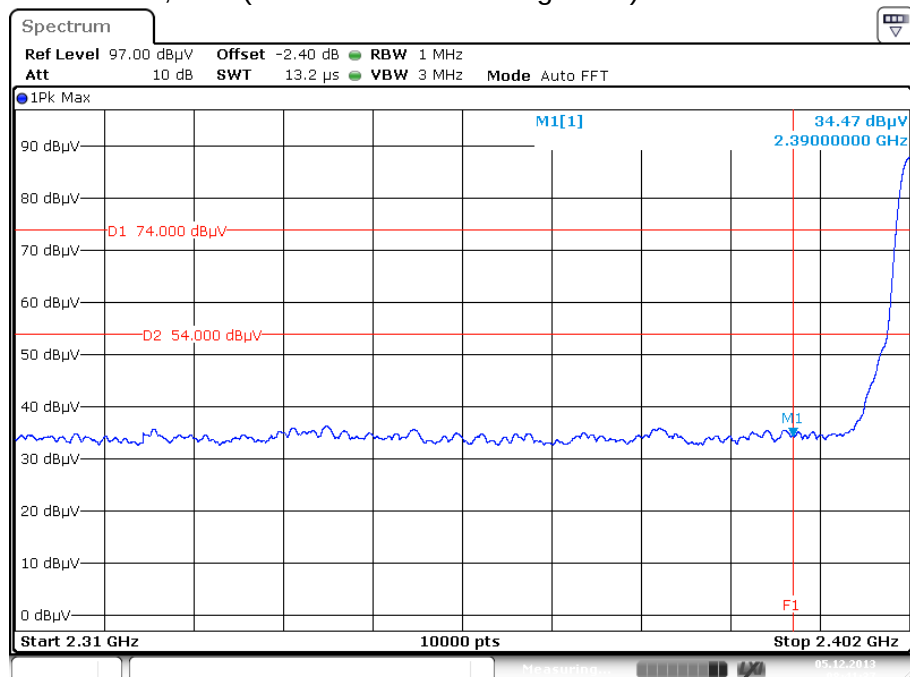
EDR 2-DH5, Ch0 (Peak meets the average limit)



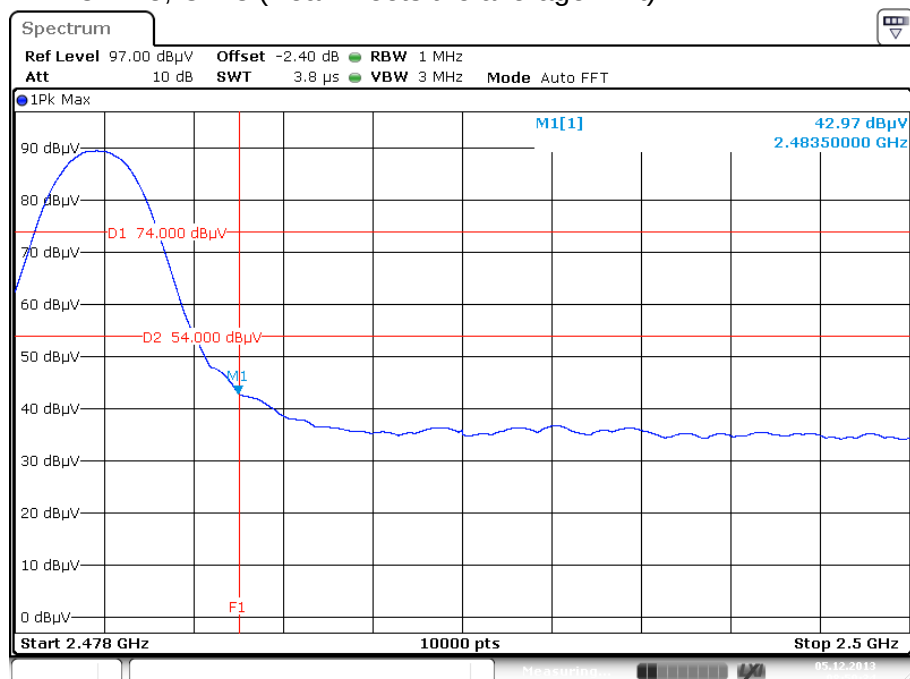
EDR 2-DH5, Ch78 (Peak meets the average limit)



EDR 3-DH5, Ch0 (Peak meets the average limit)



EDR 3-DH5, Ch78 (Peak meets the average limit)



8 Pseudo-Random Hop Sequence

8.1 Test Result

Test Description	Test Specification	Test Result
Pseudo-Random Hop Sequence	RSS-210 A8.1(a)	Compliant ⁽¹⁾

Note (1): The theory of operation states that the device is Bluetooth and operates using a pseudo-random hopping technique.

8.2 Test Method

Compliance is demonstrated by Manufacturer's declaration or is stated in the Theory of Operation.

Requirement

The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset, while the long-term distribution appears evenly distributed.

9 Channel Separation

9.1 Test Result

Test Description	Test Specification	Test Result
Number of Hopping Channels	RSS-210 A8.1(b)	Compliant

9.2 Test Method

The test data was measured using a spectrum analyzer with Peak detector (max hold) and a resolution bandwidth of 100 kHz. The trace was allowed to stabilize until all channels were displayed.

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 band 2400-2483.5 MHz 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 that the systems operate with an output power no greater than 0.125 W.

9.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.1 °C

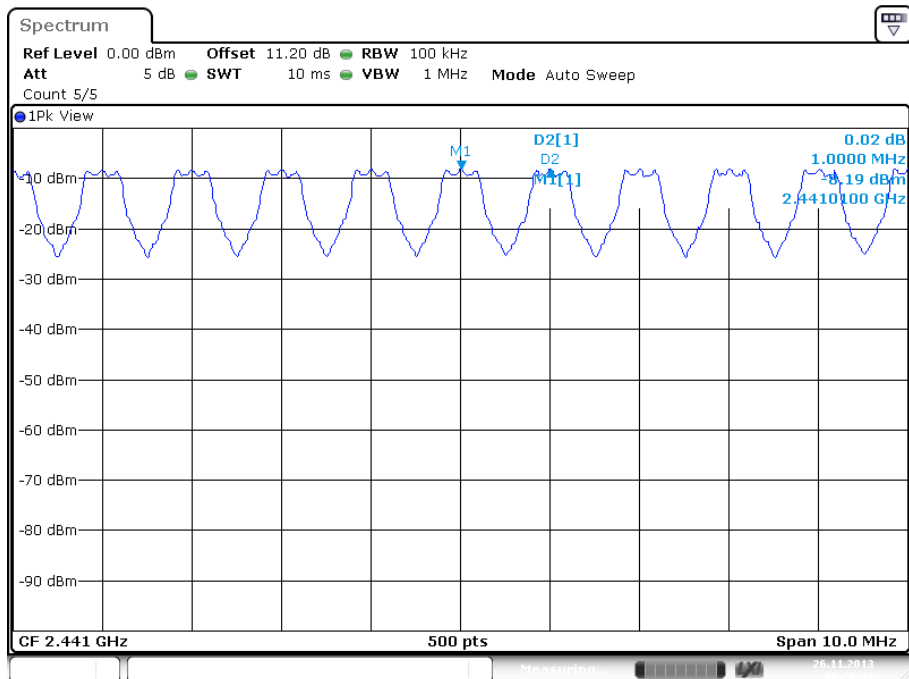
Relative Humidity: 19.0 %

9.4 Test Equipment

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
Spectrum Analyzer	FSV 30	R&S	101595	28 Aug 2014
Bluetooth Tester	CBT	R&S	100011	CNR

Note: The calibration period equipment is 1 year.

9.5 Test Data



Date: 26.NOV.2013 08:26:41

10 Number of Hopping Channels

10.1 Test Result

Test Description	Test Specification	Test Result
Number of Hopping Channels	RSS-210 A8.1(d)	Compliant

10.2 Test Method

The test data was measured using a spectrum analyzer with Peak detector (max hold) and a resolution bandwidth of 30 kHz. The trace was allowed to stabilize until all channels were displayed.

Requirement

Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

10.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.1 °C
Relative Humidity: 19.0 %

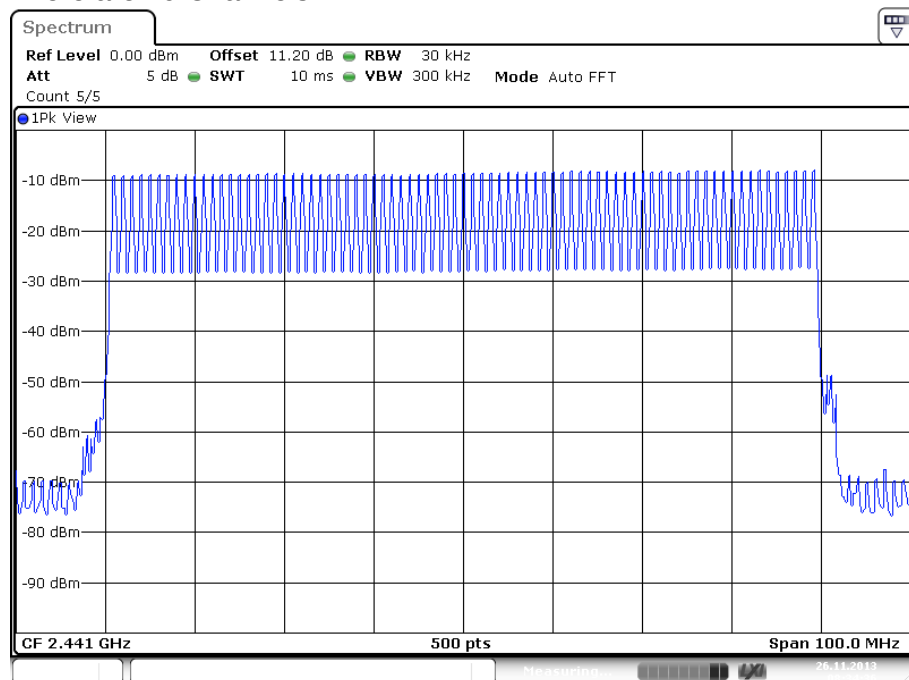
10.4 Test Equipment

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
Spectrum Analyzer	FSV 30	R&S	101595	28 Aug 2014
Bluetooth Tester	CBT	R&S	100011	CNR

Note: The calibration period equipment is 1 year.

10.5 Test Data

There are 79 Channels.



Date: 26.NOV.2013 08:34:36

11 Dwell Time

11.1 Test Result

Test Description	Test Specification	Test Result
Dwell Time	RSS-210 A8.1(d)	Compliant

11.2 Test Method

The EUT was set to test mode which allowed it to be controlled by the Bluetooth Tester. The Bluetooth Tester was then set to operate on US/EU Hopping Scheme with pseudo-random data. For each packet type and data rate, the pulse width of the packet was measured and the number of pulses were counted over the total observation period.

Requirement

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.

11.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.1 °C
Relative Humidity: 19.0 %

11.4 Test Equipment

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
Spectrum Analyzer	FSV 30	R&S	101595	28 Aug 2014
Bluetooth Tester	CBT	R&S	100011	CNR

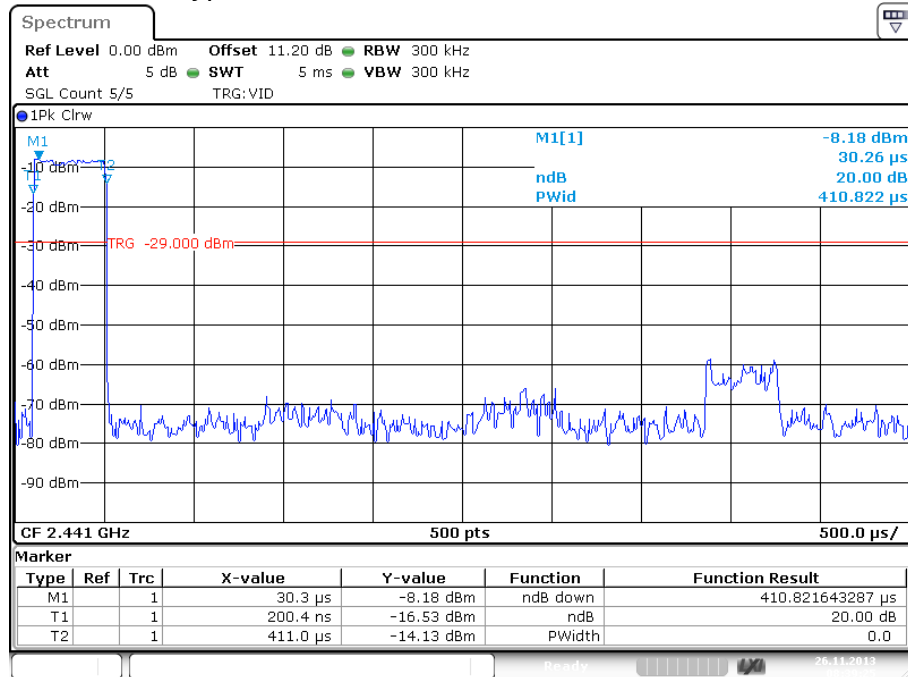
Note: The calibration period equipment is 1 year.

11.5 Test Data

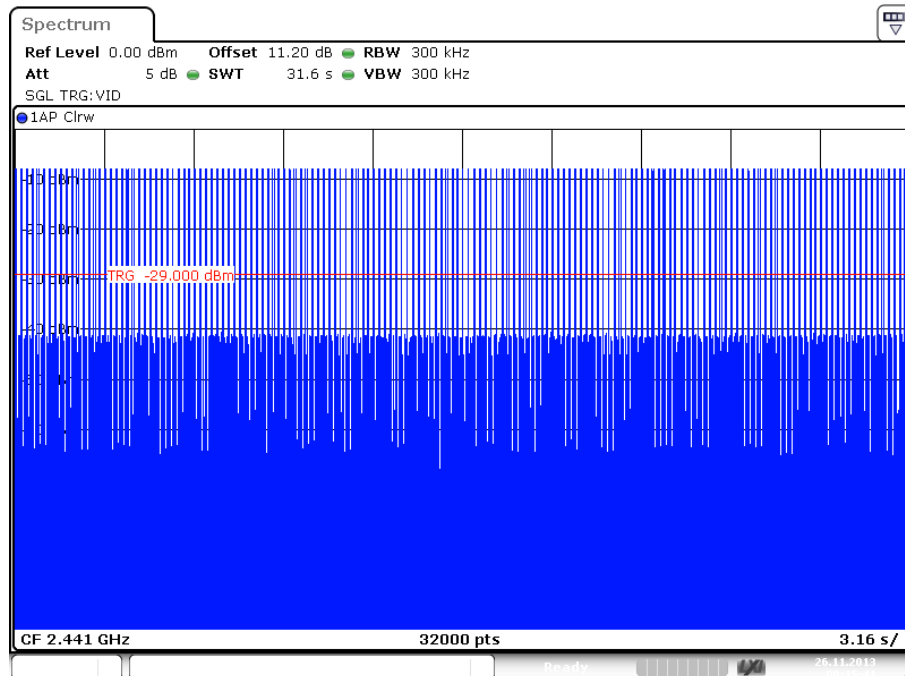
	Packet Type	Pulse Width ms	Pulses per 31.6 sec	Dwell Time Sec	Limit	Result
BR	DH1	0.411	322	0.132	0.4	PASS
	DH3	1.673	165	0.276	0.4	PASS
	DH5	2.926	119	0.348	0.4	PASS
EDR2	DH1	0.421	321	0.135	0.4	PASS
	DH3	1.683	165	0.278	0.4	PASS
	DH5	2.936	110	0.323	0.4	PASS
EDR3	DH1	0.431	321	0.138	0.4	PASS
	DH3	1.683	165	0.278	0.4	PASS
	DH5	2.936	110	0.323	0.4	PASS

11.6 Plots

DH1 Packet Type, Basic Rate

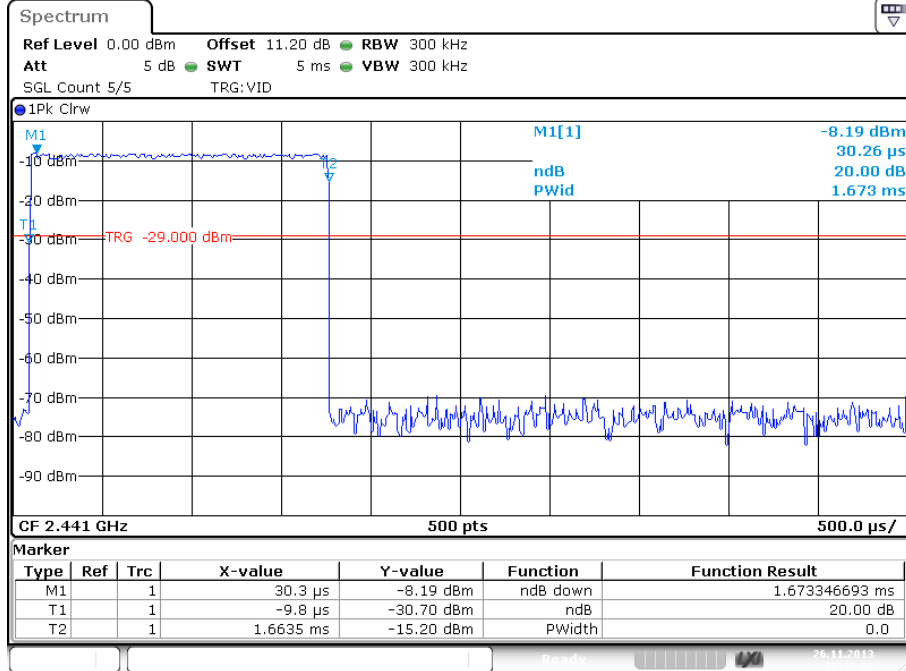


Date: 26.NOV.2013 08:39:25

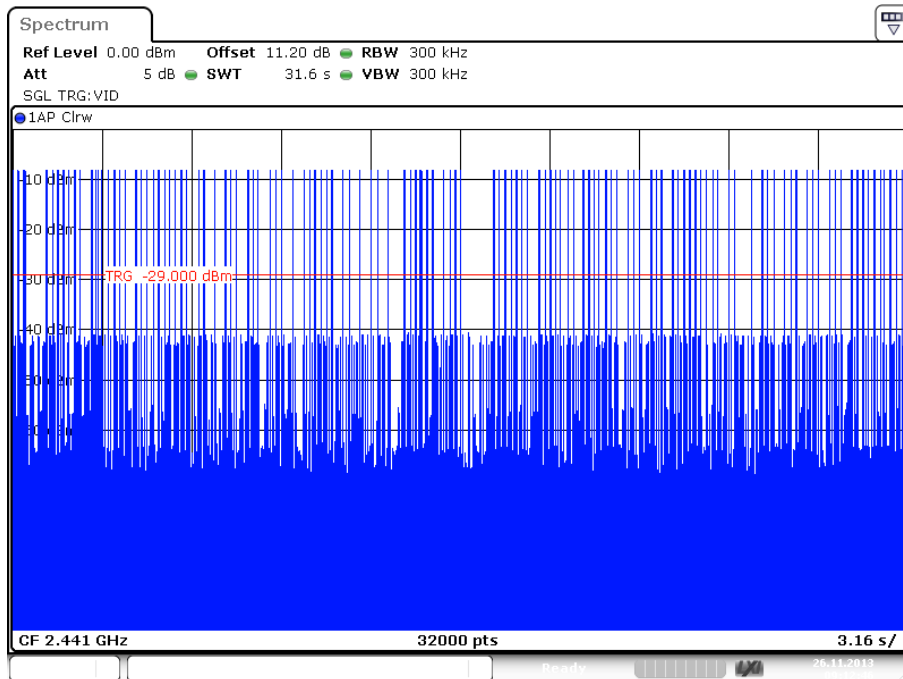


Date: 26.NOV.2013 09:15:41

DH3 Packet Type, Basic Rate

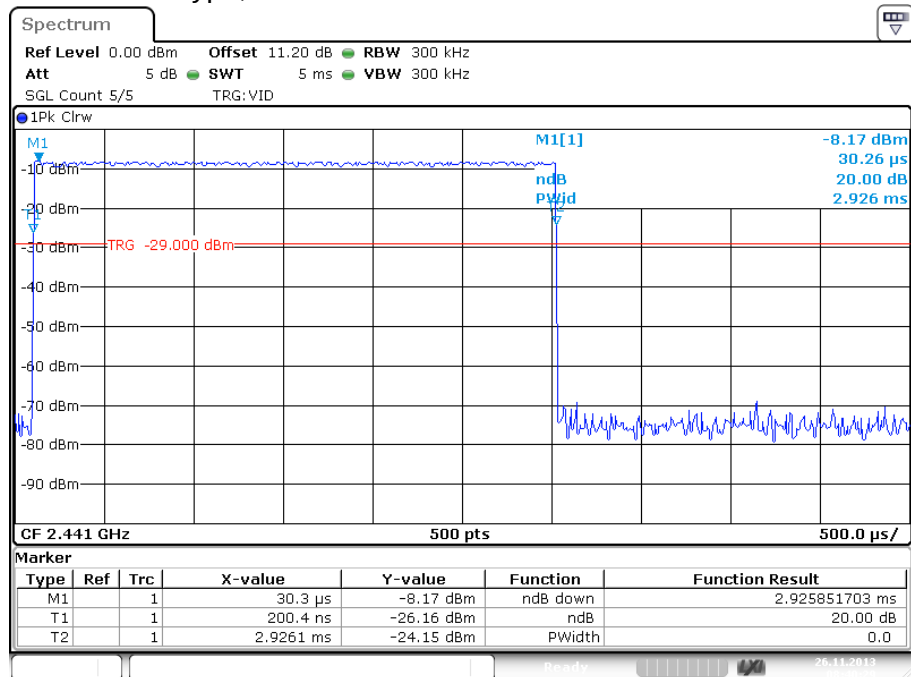


Date: 26.NOV.2013 08:40:06

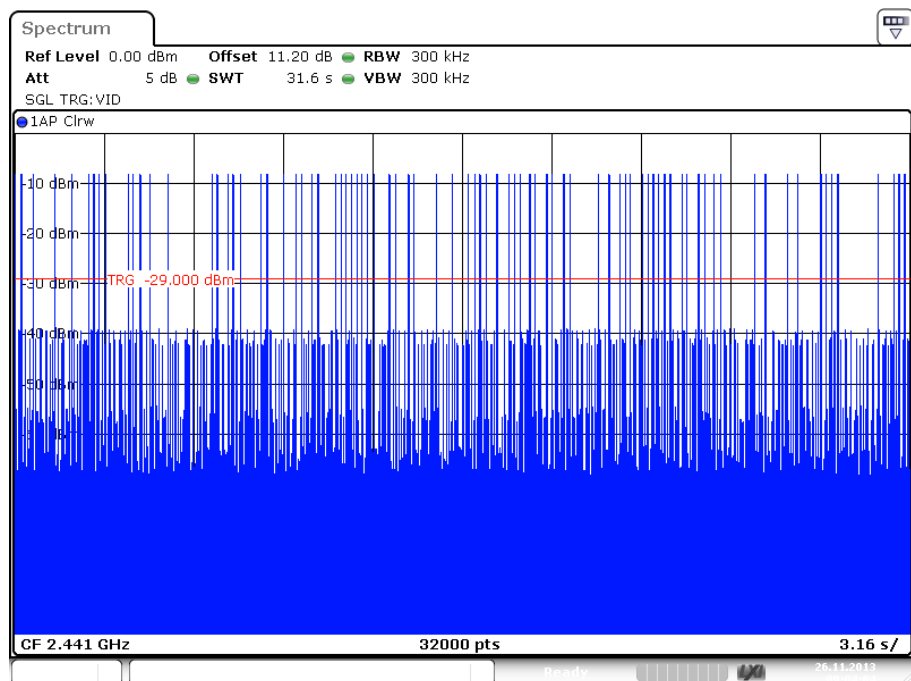


Date: 26.NOV.2013 09:12:46

DH5 Packet Type, Basic Rate

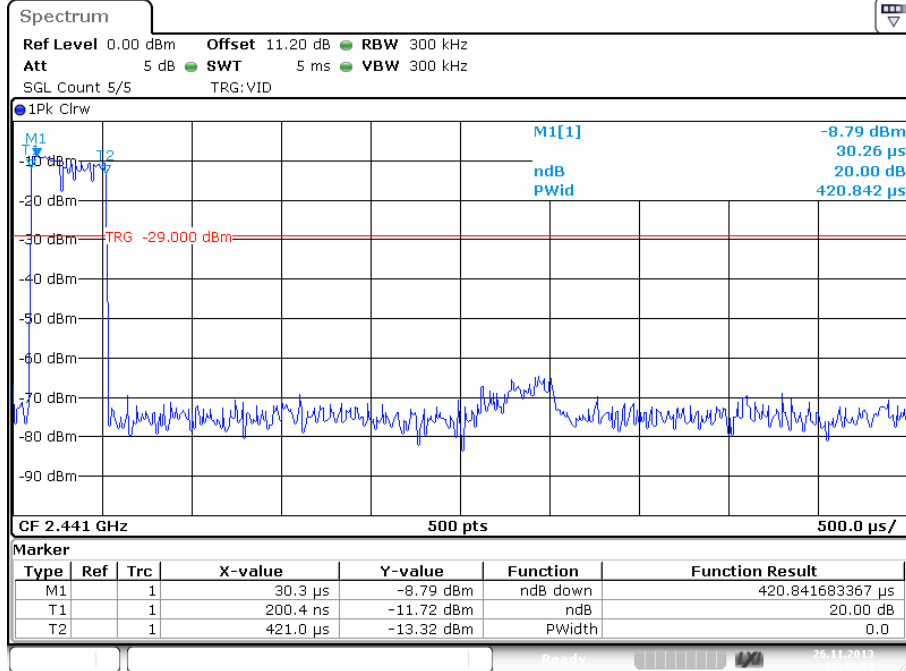


Date: 26.NOV.2013 08:40:29

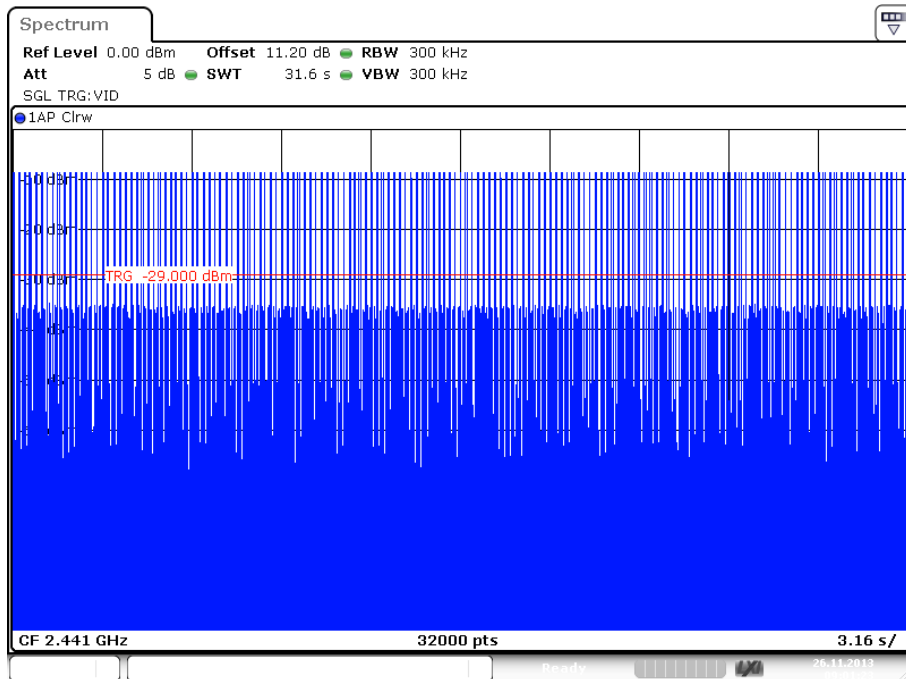


Date: 26.NOV.2013 09:04:04

DH1 Packet Type, EDR 2

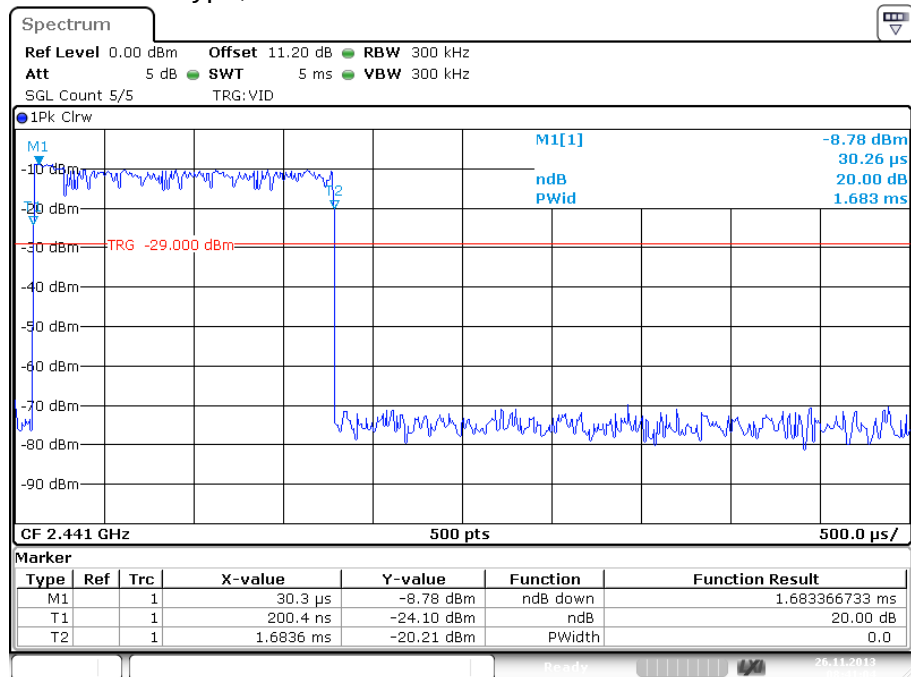


Date: 26.NOV.2013 08:40:49

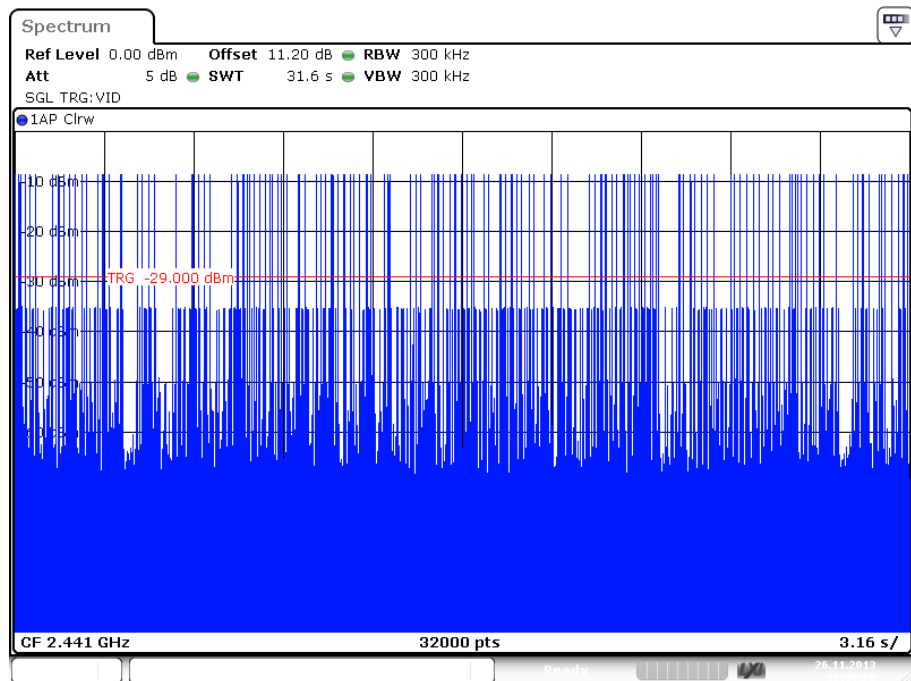


Date: 26.NOV.2013 09:01:23

DH3 Packet Type, EDR 2

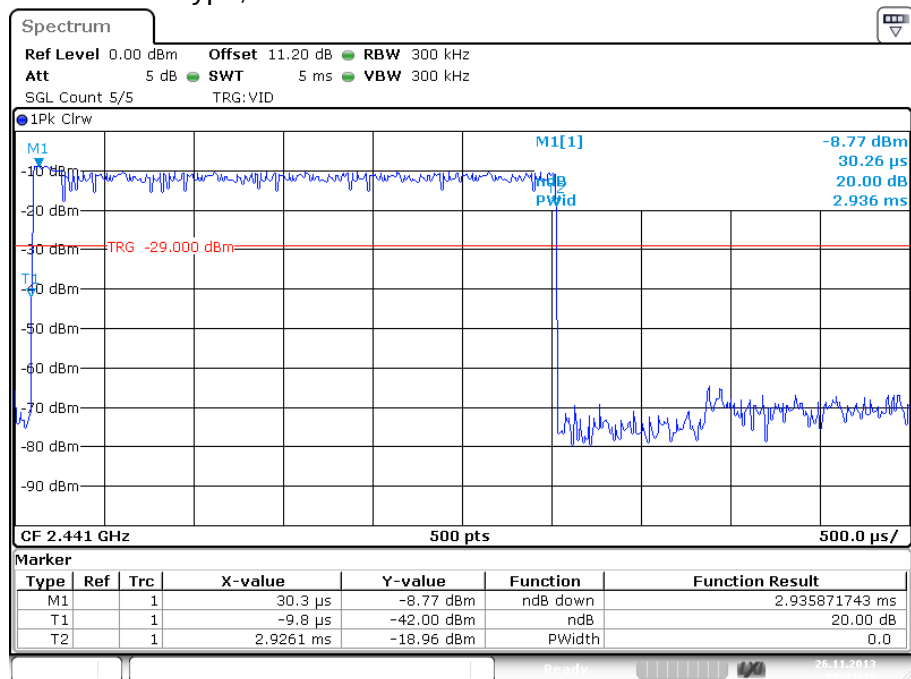


Date: 26.NOV.2013 08:41:04

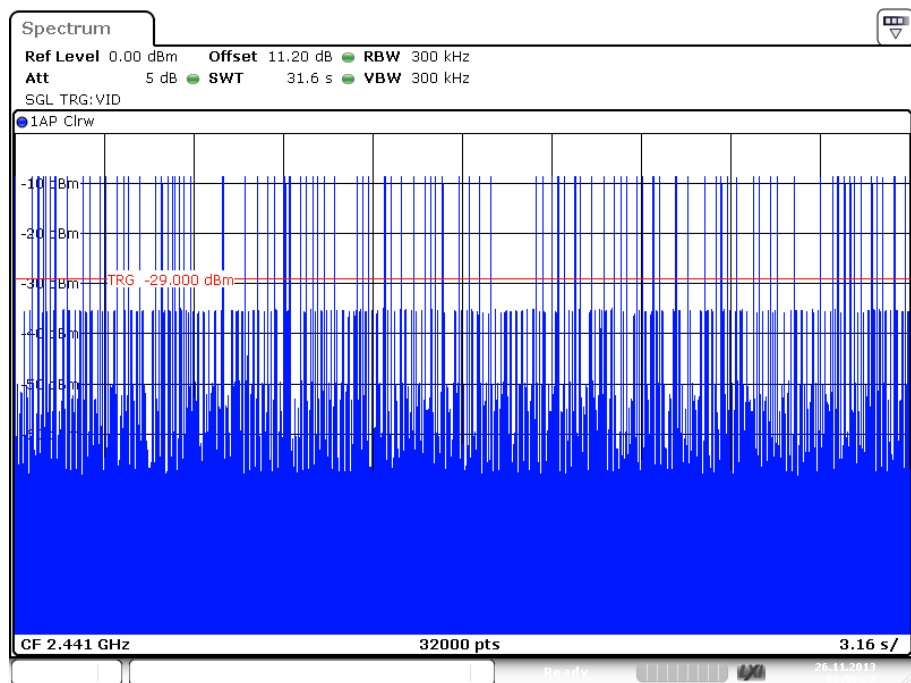


Date: 26.NOV.2013 08:58:20

DH5 Packet Type, EDR 2

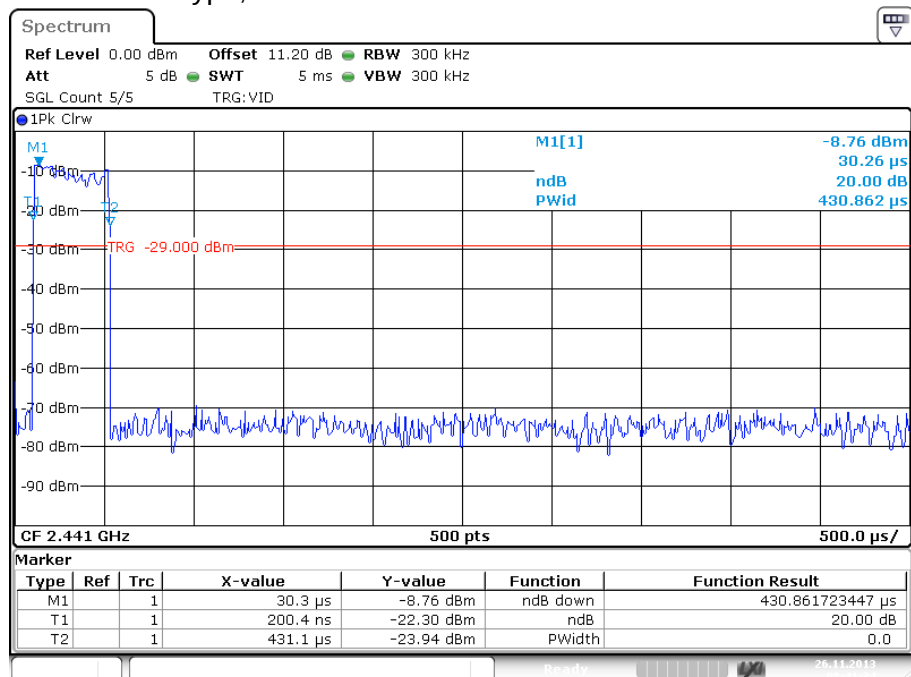


Date: 26.NOV.2013 08:41:19

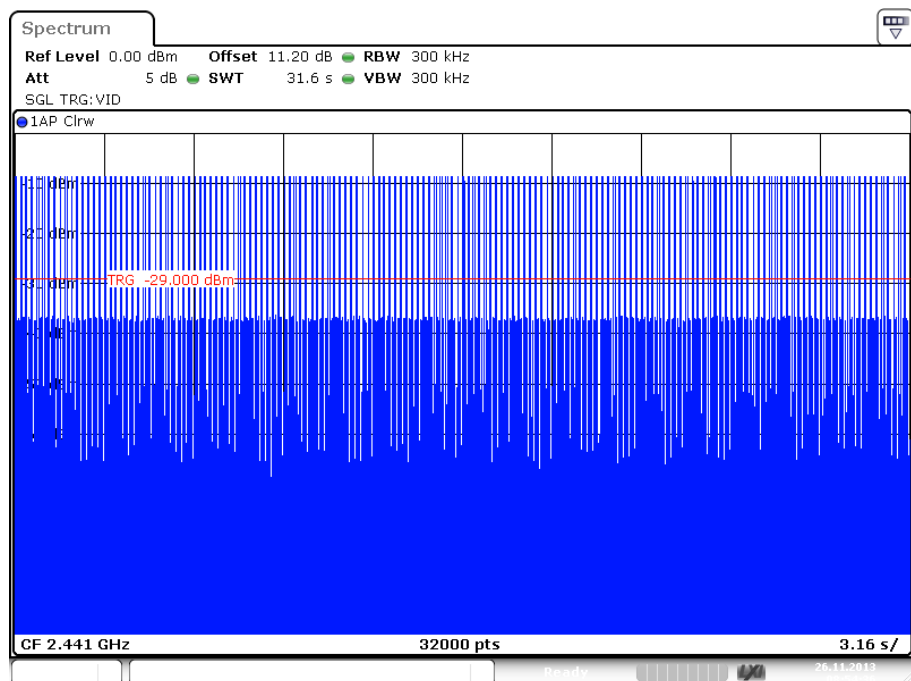


Date: 26.NOV.2013 08:56:27

DH1 Packet Type, EDR 3

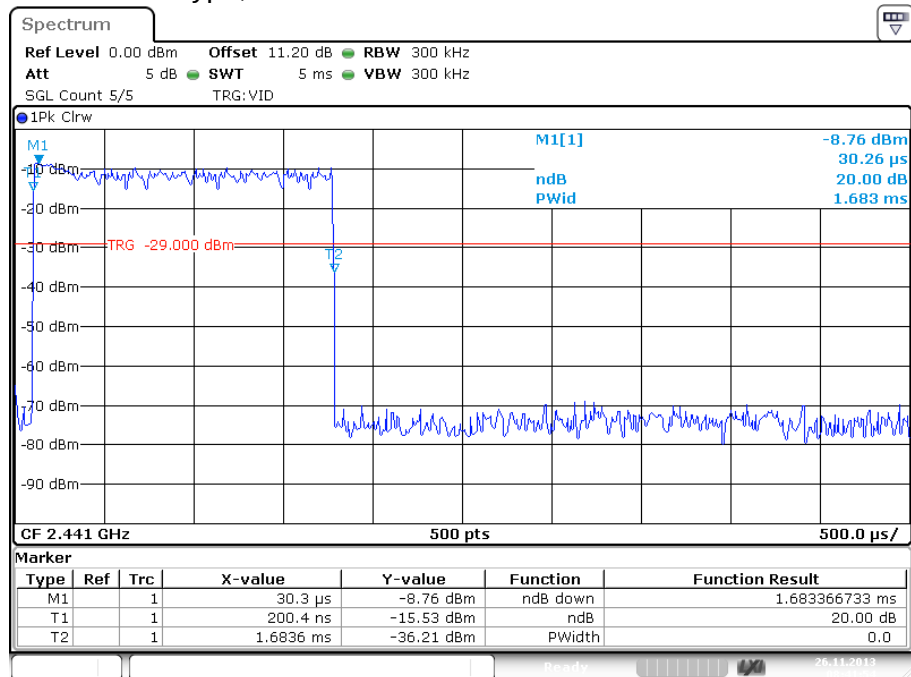


Date: 26.NOV.2013 08:41:34

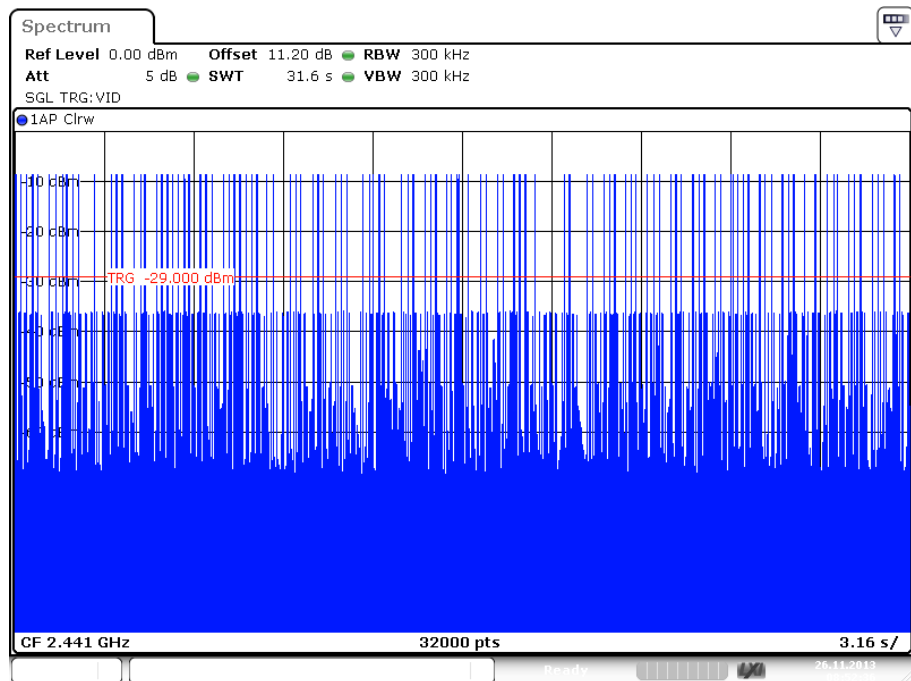


Date: 26.NOV.2013 08:54:36

DH3 Packet Type, EDR 3

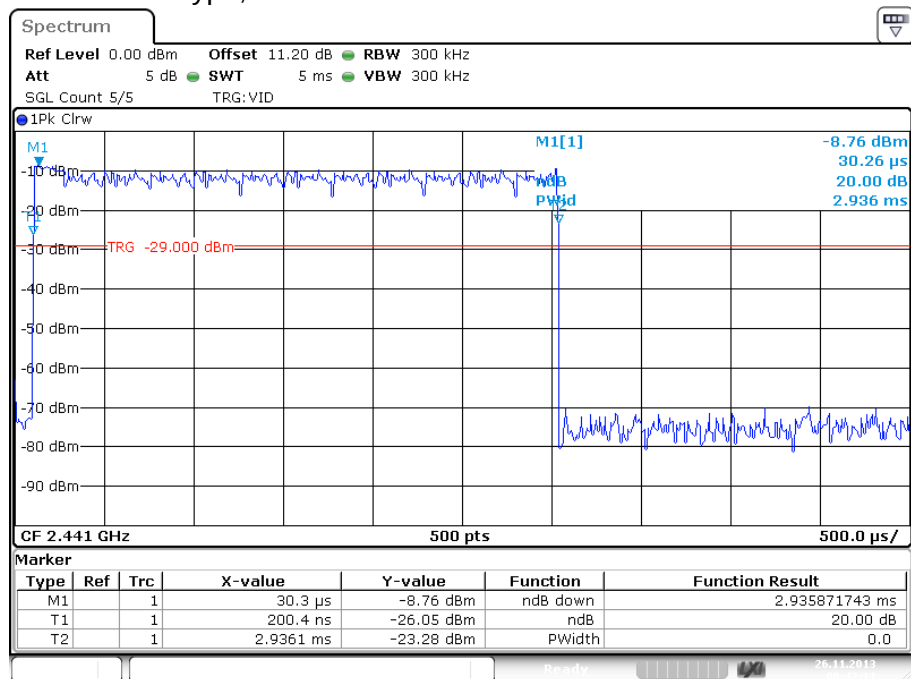


Date: 26.NOV.2013 08:41:54

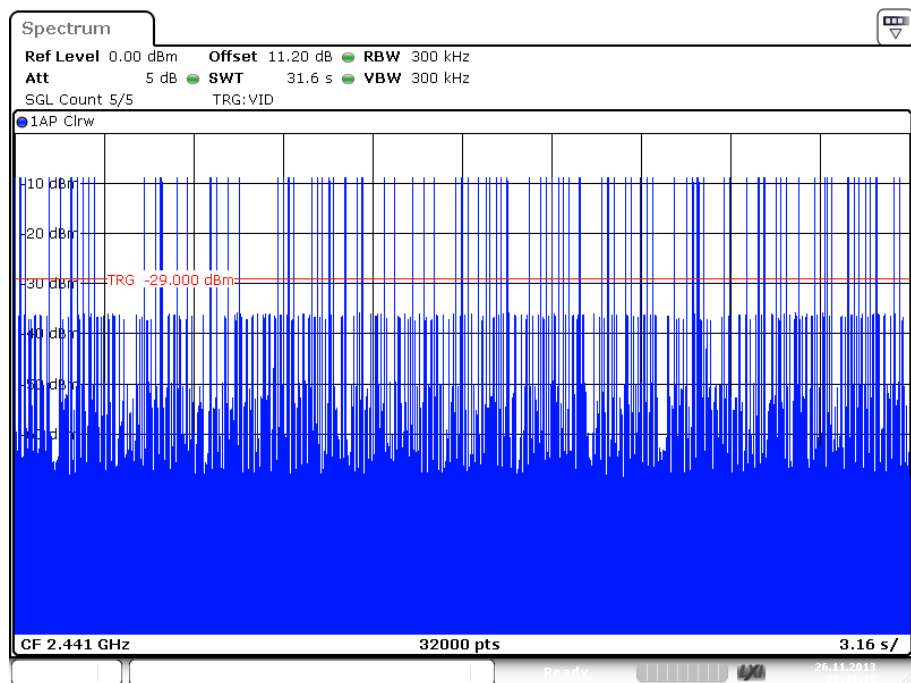


Date: 26.NOV.2013 08:52:36

DH5 Packet Type, EDR 3



Date: 26.NOV.2013 08:42:11



Date: 26.NOV.2013 08:48:13

12 Power Spectral Density

12.1 Test Result

Test Description	Basic Standards	Test Result
Power Spectral Density	15.247(f), 15.247(e) ANSI C63.4:2009	Compliant

12.2 Test Method

The measurement methods used are defined in Section 10 of in Section 12 of FCC publication D01 DTS Meas Guidance v03r01. Because the duty cycle was <98%, 10.7 Method AVGPSSD-2 was applied. The EUT was set at each channel and data rate to transmit continuously, the peak emission was located and set as the center frequency. The span was set to 1.5MHz (~1.5x the OBW), autocoupled sweep time, 100 kHz RBW, peak detector and trace on max hold. One minute was allowed for the signal to reach steady-state and then the peak was reported as the PSD. The limit is 8 dBm in any 3 kHz band during any time interval of continuous transmission.

12.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 23.6 °C
Relative Humidity: 28.1 %

12.4 Test Equipment

Test Date: 8-Nov-2013

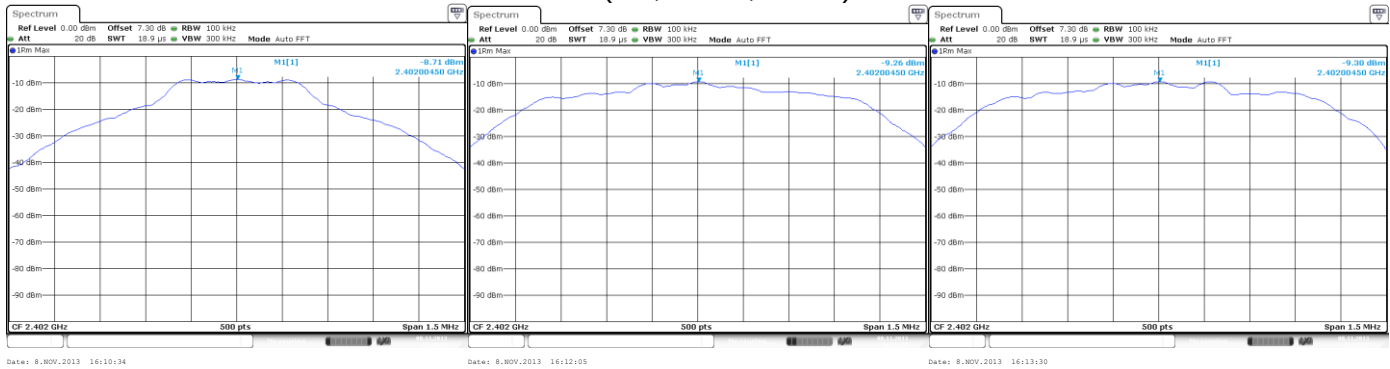
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	28-Aug-2014
COAXIAL CABLE	1134	GORE	B094785	16-May-2014
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	24-Sep-2014

Note: The calibration period equipment is 1 year.

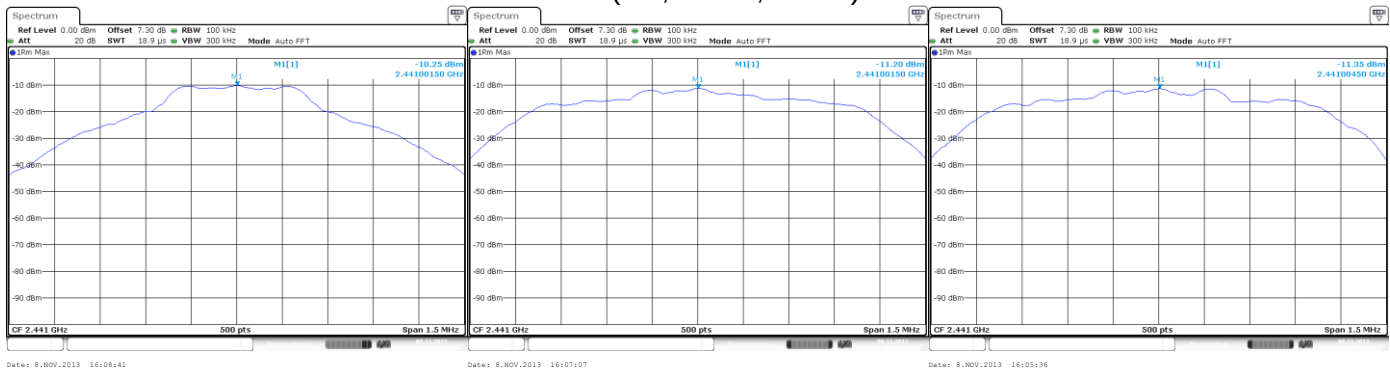
12.5 Test Data

Frequency	Channel No	Modulation	Spectral Density Value, dBm
2402	0	BR	-8.71
		EDR-2	-9.26
		EDR-3	-9.30
2441	39	BR	-10.25
		EDR-2	-11.20
		EDR-3	-11.35
2480	78	BR	-11.76
		EDR-2	-12.93
		EDR-3	-12.96

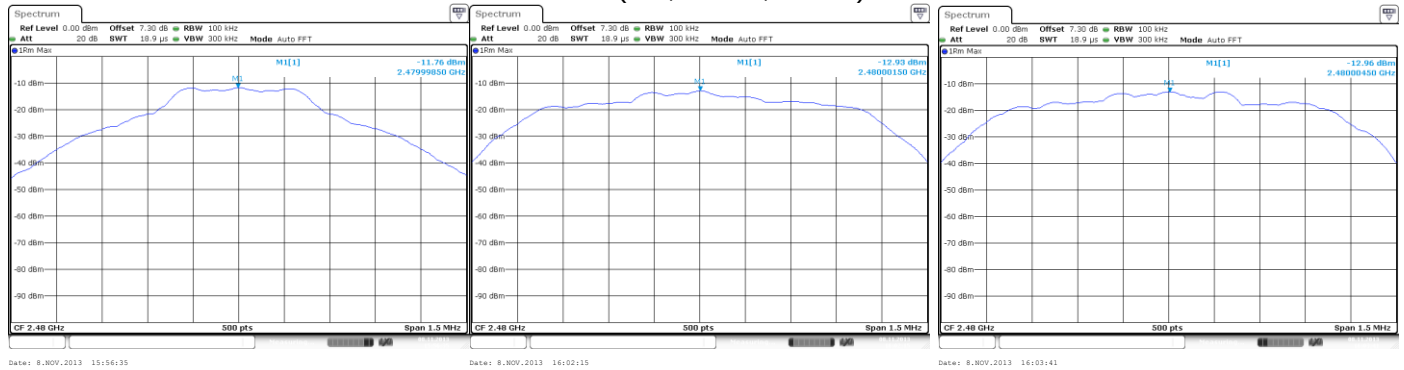
CH0(BR, EDR2, EDR3)



CH39(BR, EDR2, EDR3)



CH78(BR, EDR2, EDR3)



13 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	25 NOV 2013
1	Corrected tabular data for EDR-3 2480MHz BW in Sec. 3.6 Added block diagram for conducted measurements on Page 6 Corrected test distance on plots in Section 6.6 Added formulas to Section 7.2 and corrected plots	05 DEC 2013