

EMC TEST REPORT

(FULL COMPLIANCE)

Report Number: 102716227BOX-002
Project Number: G102716227

Report Issue Date: 03/28/2017

Model(s) Tested: µCor 3.0

Model(s) Partially Tested: None

Model(s) Not Tested but declared equivalent by the client: None

Standards: FCC Part 15 Subpart C: 01/2017
FCC Part 15 Subpart B: 01/2017

Tested by:

Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:

Zoll Medical Israel Ltd.
14 Atir Yeda Street
Kfar-Saba 4464313
Israel

Client:

Zoll Medical Corporation
121 Gamma Drive Pittsburgh
PA 15238
USA

Report prepared by Naga Suryadevara



Naga Suryadevara/EMC Engineer

Report reviewed by Vathana Ven



Vathana Ven/Staff Engineer, EMC

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test and Variant Models	
5	System Setup and Method	
6	Output Power and Human RF Exposure (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
7	Occupied (99%) and 20 dB Bandwidth (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
8	Channel Separation (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
9	Number of Hopping Channels (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
10	Average Channel Occupancy Time (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
11	Out of Band Conducted Emissions (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
12	Radiated Spurious Emissions (CFR47 FCC Part 15 Subpart C (15.247): 01/2017)	Pass
13	Radiated Emissions (Digital parts and Receiver) (FCC Part 15 Subpart B: 01/2017)	Pass
14	AC Mains Conducted Emissions (FCC Part 15 Subpart B: 01/2017)	Pass
15	Revision History	

3 Client Information

This EUT was tested at the request of:

Client: Zoll Medical Israel Ltd.
14 Atir Yeda Street
Kfar-Saba 4464313
Israel

Contact: Moshik Mosesko
Telephone: +972 9 9603900
Fax: None
Email: moshik@zoll.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Zoll Medical Israel Ltd.
14 Atir Yeda Street
Kfar-Saba 4464313
Israel.

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
µCor 3.0 sensor with cable for Bluetooth communication	Zoll	AS4200-01	D3-61653-0002
µCor 3.0 open sensor with cable for Bluetooth communication and antenna cable	Zoll	AS4200-01	N/A
µCor 3.0 sensor	Zoll	AS4200-01	D3-61652-0095
µCor 3.0 charger (with XT1527 (LTE) cellular phone)	Zoll	CH0202-01	C3-61520-0124
µCor 3.0 charger (with XT1505 cellular phone)	Zoll	CH0202-01	C3-61520-0127
AC/DC adapter	Fuhua Electronic	UE24WCP1-050300SPA	N/A

Receive Date:	01/26/2017
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)	
The µCor 3.0 System is intended to record, store, and transmit the following physiological data to medical professionals: i) Thoracic Impedance, ii) ECG; iii) Heart Rate; iv) Respiration Rate; v) Activity; and vi) Posture. The µCor 3.0 System is indicated for patients who are 21 years of age or older: i) with fluid-management problems; ii) taking diuretic medication; iii) living with heart failure; iv) living with end-stage renal disease; v) recovering from a coronary artery disease-related event; and/or vi) suffering from recurrent dehydration.	

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
100-240VAC (I/P to Power Supply)	0.8 Amps	50/60 Hz	Single
Internal Battery Li-Pol	370 mA	N/A	N/A

3.7V			
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Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Transmit mode – operating on internal battery
2	Receive mode – operating on internal battery
3	Transmit mode – Charging
4	Receive mode – Charging

Software used by the EUT:**Sensor:**

No.	Descriptions of EUT Exercising
1	Microcontroller version : 1.0.3
2	FPGA version: 3.0
3	BT version: 5.8
4	Fuel Gauge Version : 10082014

Gateway (cellular phone):

No.	Descriptions of EUT Exercising
1	Access point: 1.3

Server:

No.	Descriptions of EUT Exercising
1	ServerApp: 2.0.0.5

Radio/Receiver Characteristics	
Frequency Band(s)	2402 – 2480 MHz
Modulation Type(s)	$\pi/4$ DQPSK(low baud rate) and 8DPSK(high baud rate)
Data rates	Data Rate type(low baud rate) – Basic (DH3) Data Rate type(high baud rate) – EDR (3-DH5)
Maximum Output Power	3.863 mW
Test Channels	Channel low - 2402 MHz Channel middle - 2441 MHz Channel high - 2480 MHz
Occupied Bandwidth	1.2307 MHz (OBW) 1.35 MHz (20dB)
Frequency Hopper: Number of Hopping Channels	79
Frequency Hopper: Channel Dwell Time	0.290 sec
MIMO Information (# of Transmit and Receive antenna ports)	N/A
Equipment Type	Bluetooth single chip radio based on BlueCore 4.
ETSI LBT/Adaptivity	N/A
ETSI Adaptivity Type	N/A
ETSI Temperature Category (I, II, III)	N/A
ETSI Receiver Category (1, 2, 3)	N/A
Antenna Type and Gain	Integrated Antenna chip - 2450AT18B100E (Johanson) Peak Gain 0.5 dBi.

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 System Setup and Method

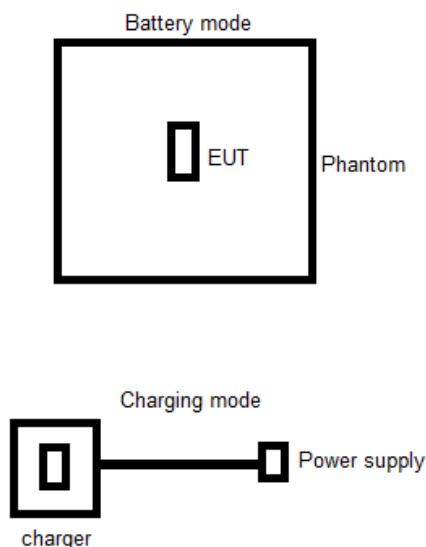
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
1	Power Cable	2	None	None	AC Mains

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	Dell	Latitude E7450	D48ZG72
Phantom + Patch	Zoll	Patch PT0203-01 Phantom JIG0021	N/A
Gateway (Cellular phone) into the charger	Motorola	XT1505 XT1527	GWID:1041 GWID:1047

5.1 Method:

Configuration as required by FCC Part 15 Subpart C: 01/2017, FCC Part 15 Subpart B: 01/2017, ANSI C 63.10 and ANSI C 63.4.

5.2 EUT Block Diagram:



6 Output Power and Human RF Exposure

6.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLHF2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROSO05'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

Software Utilized:

Name	Manufacturer	Version
None		

6.3 Results:

The sample tested was found to Comply. For systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, the maximum peak output power is 1 watt (30 dBm), for all other systems 0.125 W (21 dBm).

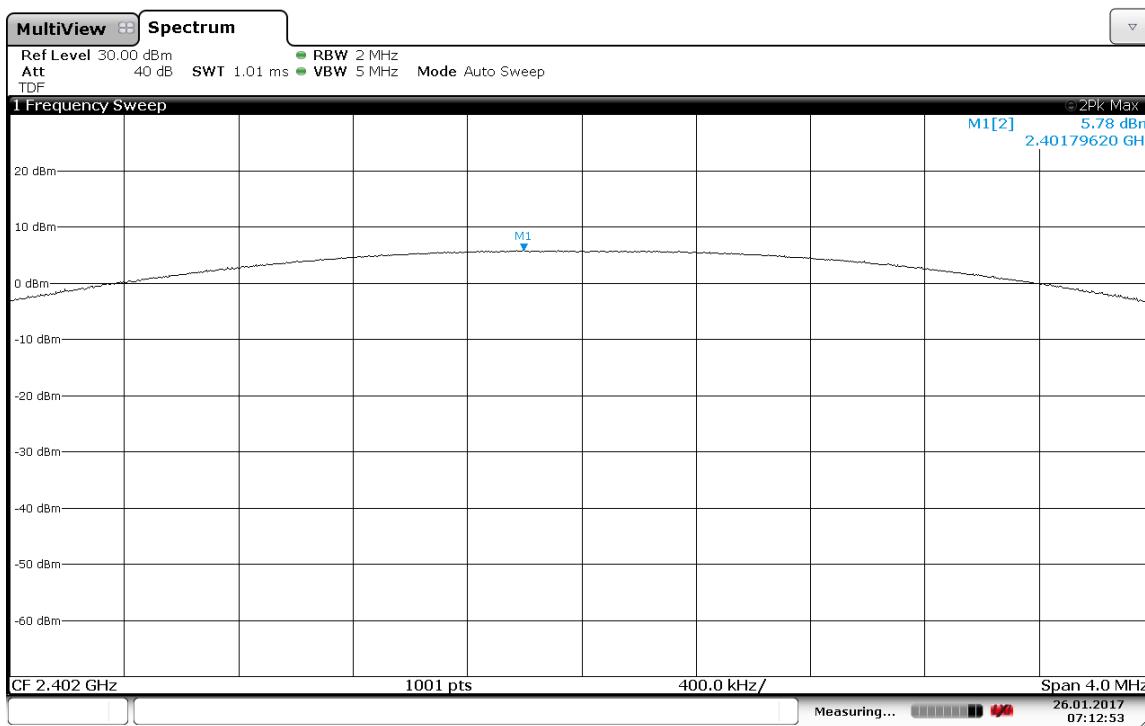
Device has 79 hopping channels

Frequency	Mode of operation	Data Rate	Output Power in dBm	Output Power in mW	Limit
2402	Charging	Low	5.87	3.863	1 W
2402		High	3.83	2.415	1 W
2402	Battery	Low	5.78	3.784	1 W
2402		High	3.86	2.432	1 W
2441	Charging	Low	5.38	3.451	1 W
2441		High	3.29	2.133	1 W
2441	Battery	Low	5.34	3.419	1 W
2441		High	3.32	2.147	1 W
2480	Charging	Low	4.26	2.666	1 W
2480		High	2.64	1.836	1 W
2480	Battery	Low	4.71	2.958	1 W
2480		High	2.64	1.8365	1 W

Note: Devices antenna gain is less than 6 dBi.

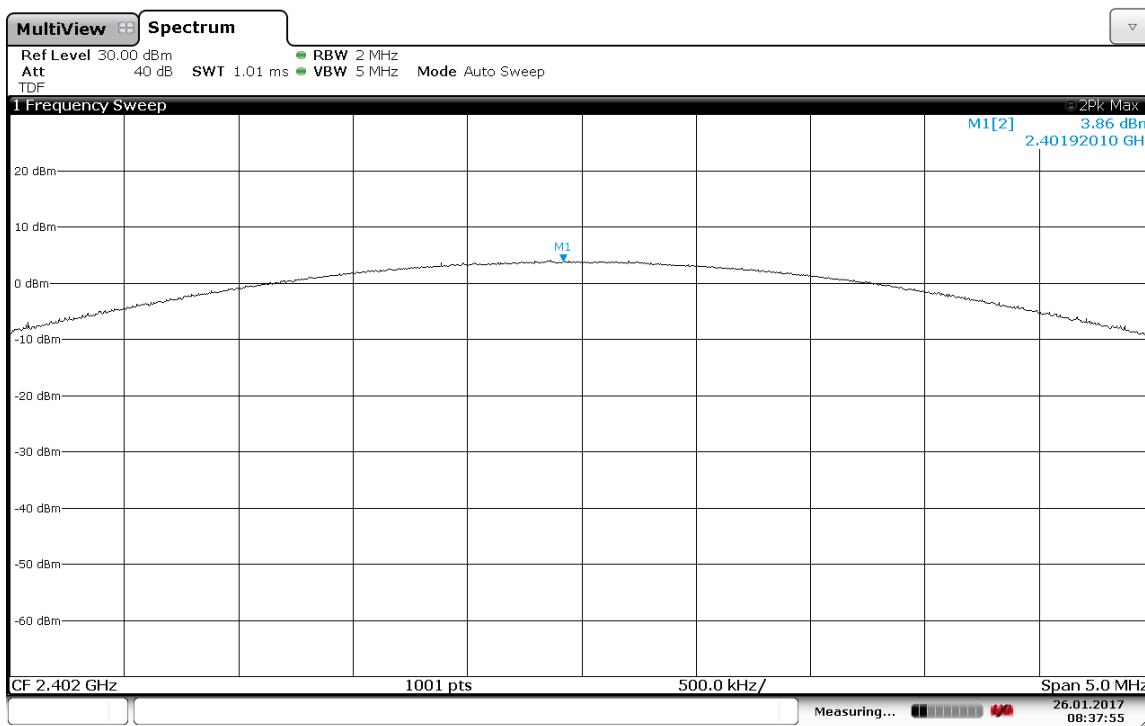
6.4 Plots/Data:

Output Power @ 2402 MHz, battery mode and low data rate = 5.78 dBm

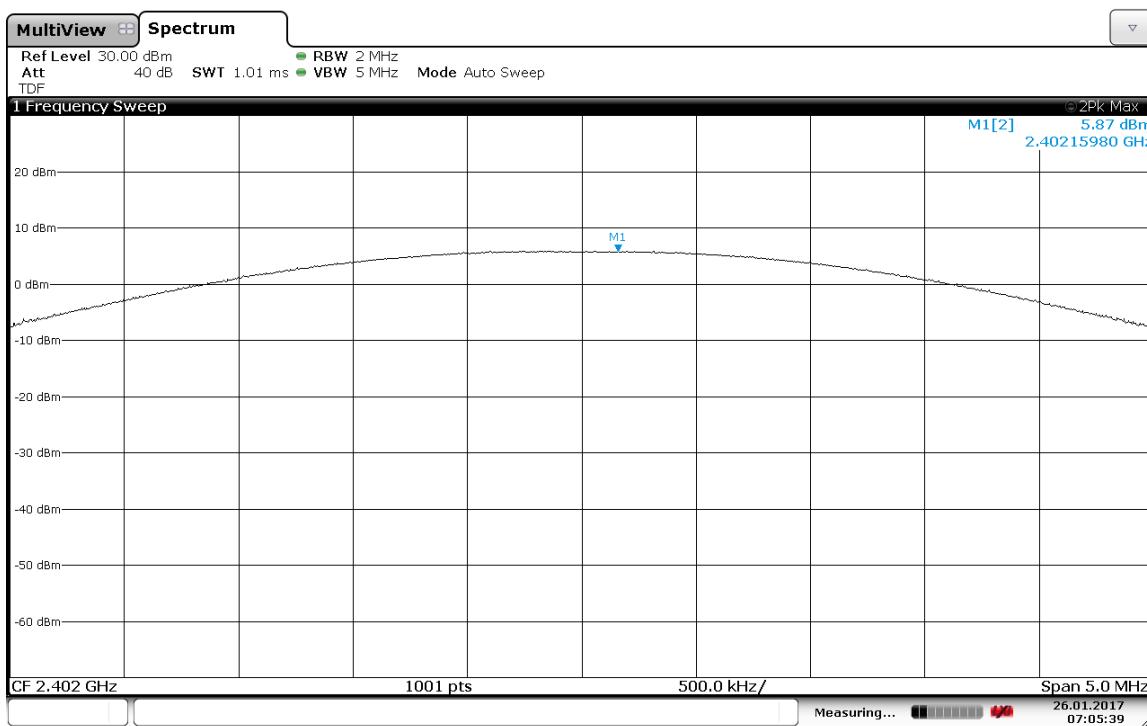


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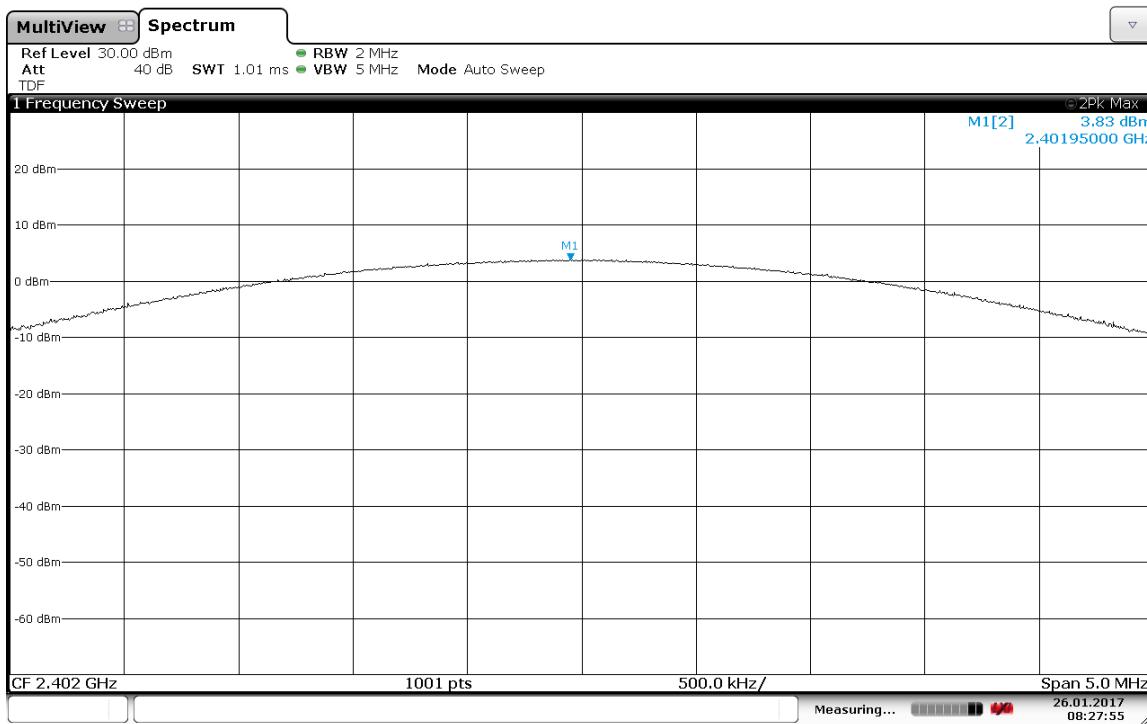
Output Power @ 2402 MHz, battery mode and high data rate = 3.86 dBm



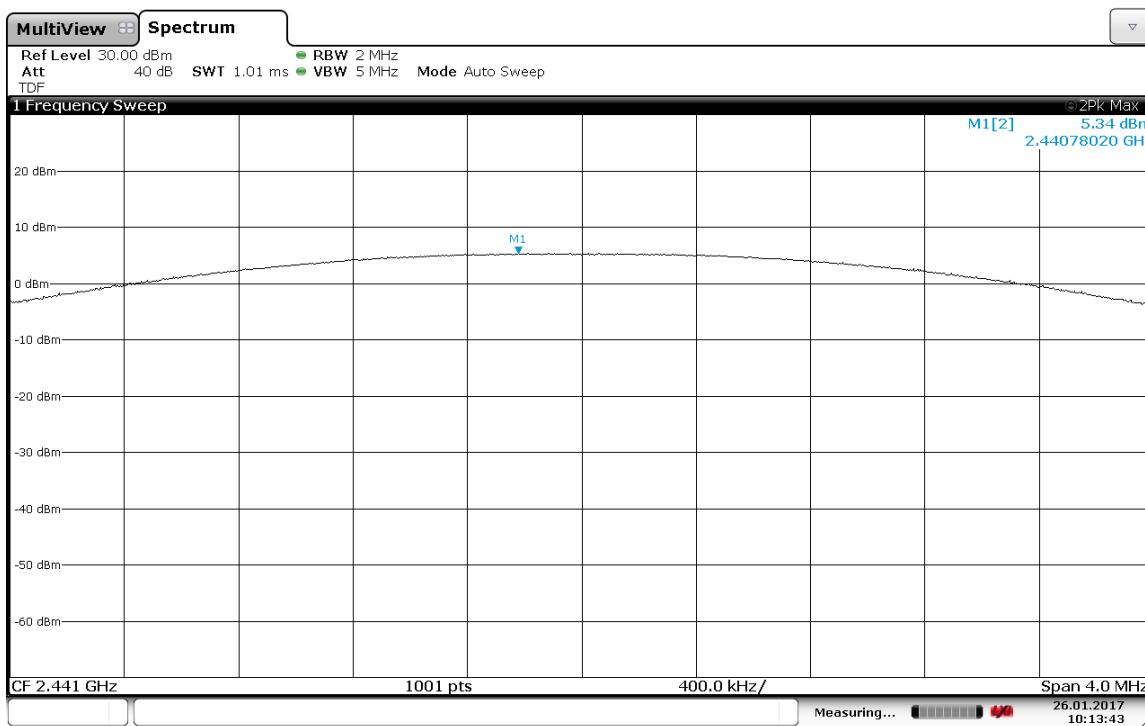
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Output Power @ 2402 MHz, Charging mode and low data rate = 5.87 dBm

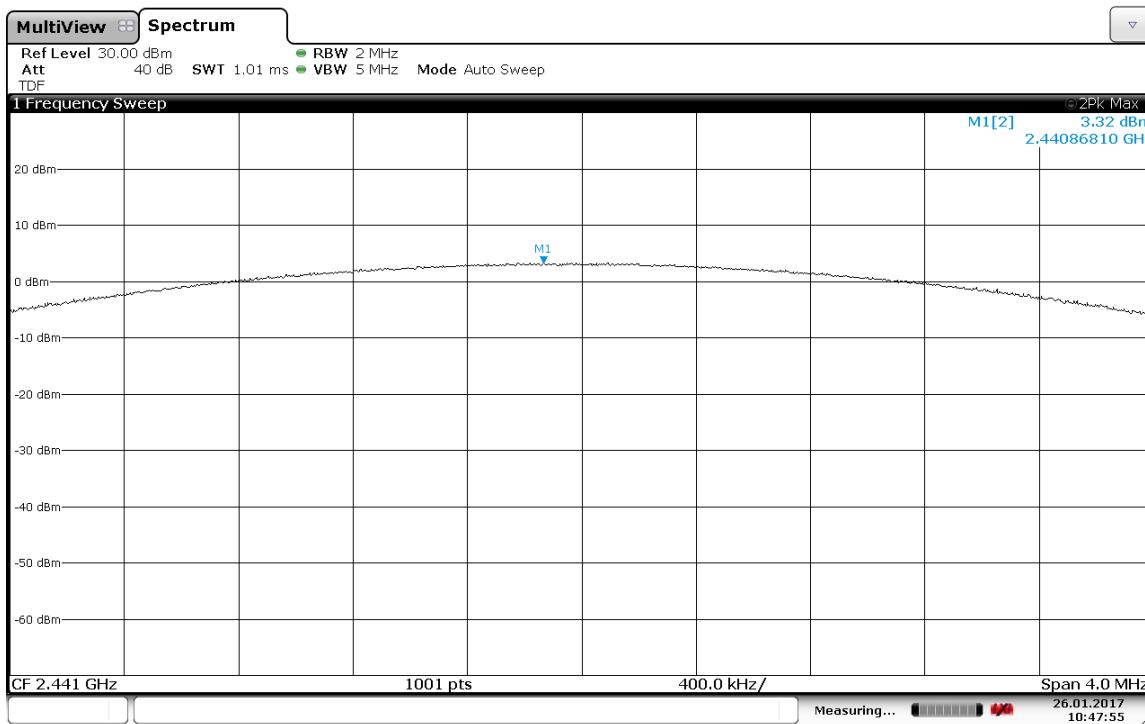
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Output Power @ 2402 MHz, Charging mode and high data rate = 3.83 dBm

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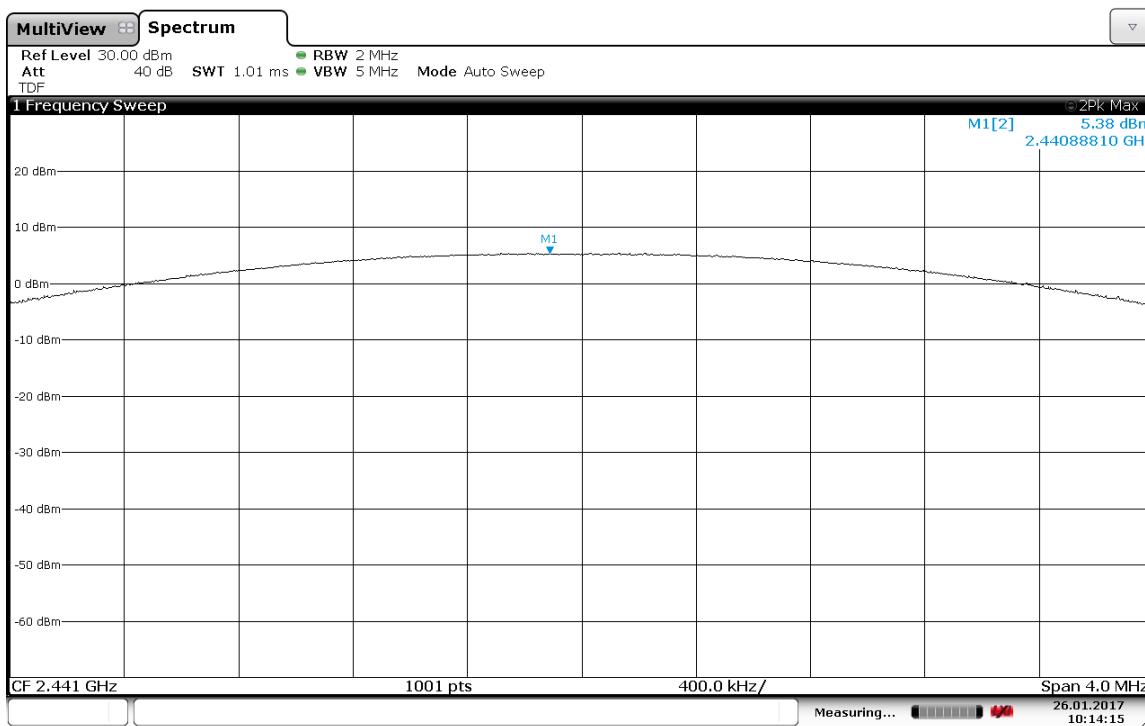
Output Power @ 2441 MHz, battery mode and low data rate = 5.34 dBm

Date: 26.JAN.2017 10:13:43

Output Power @ 2441 MHz, battery mode and high data rate = 3.32 dBm

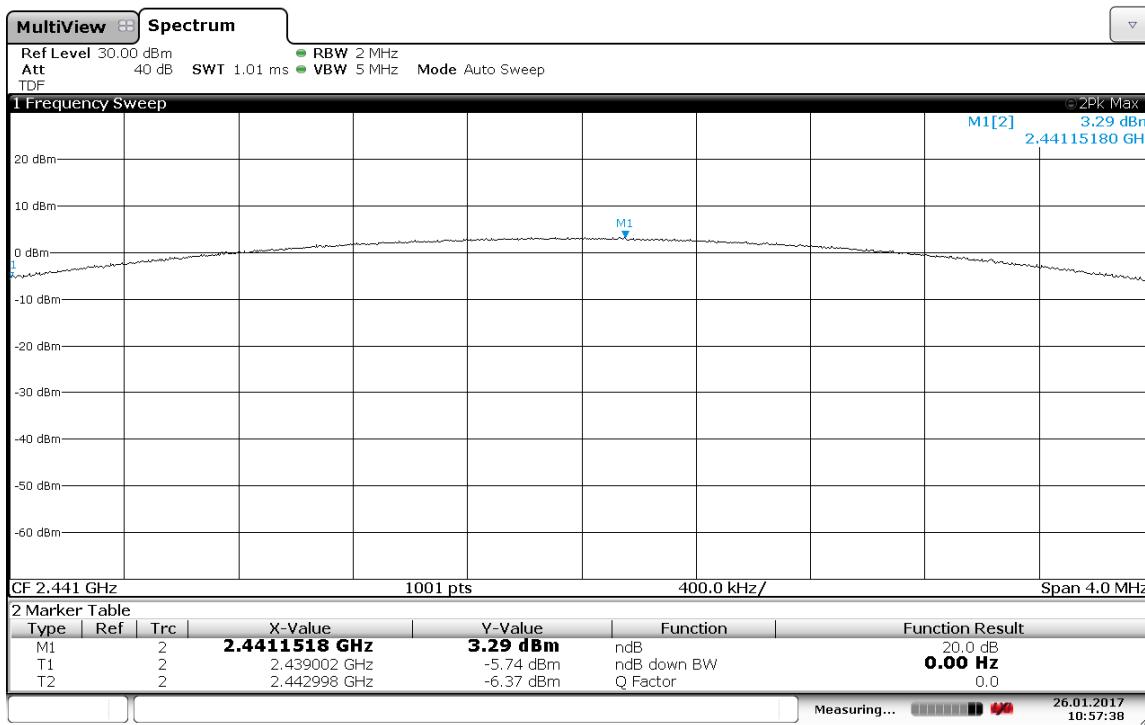
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Output Power @ 2441 MHz, charging mode and low data rate = 5.38 dBm



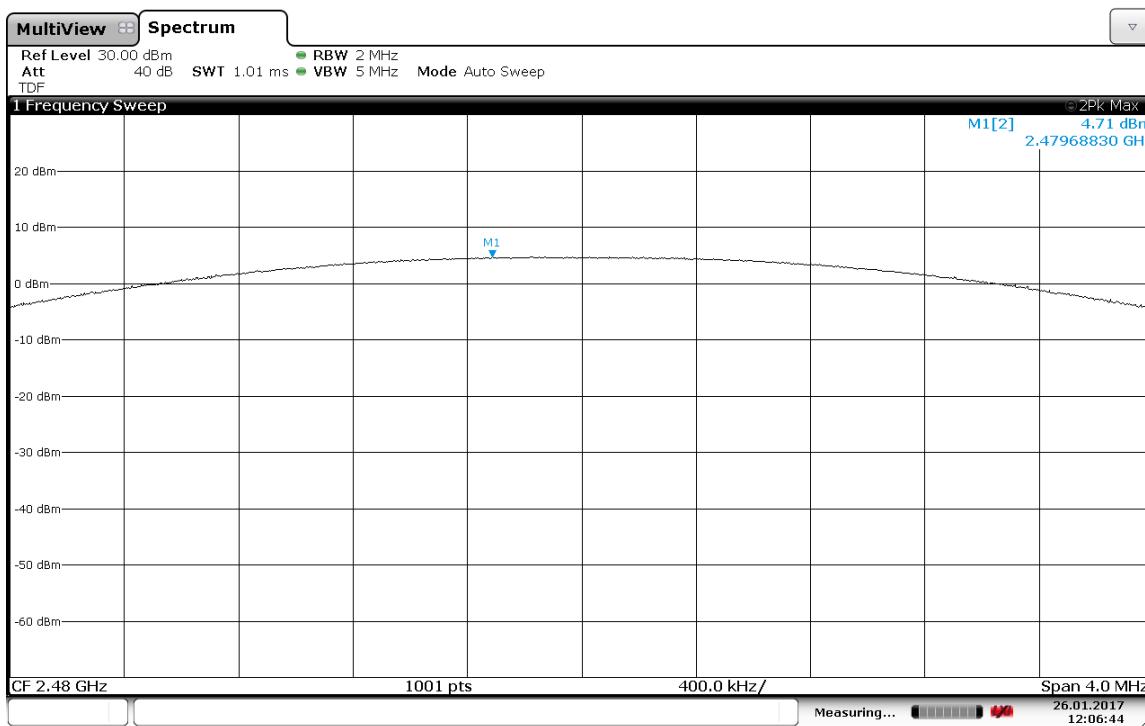
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Output Power @ 2441 MHz, charging mode and high data rate = 3.29 dBm



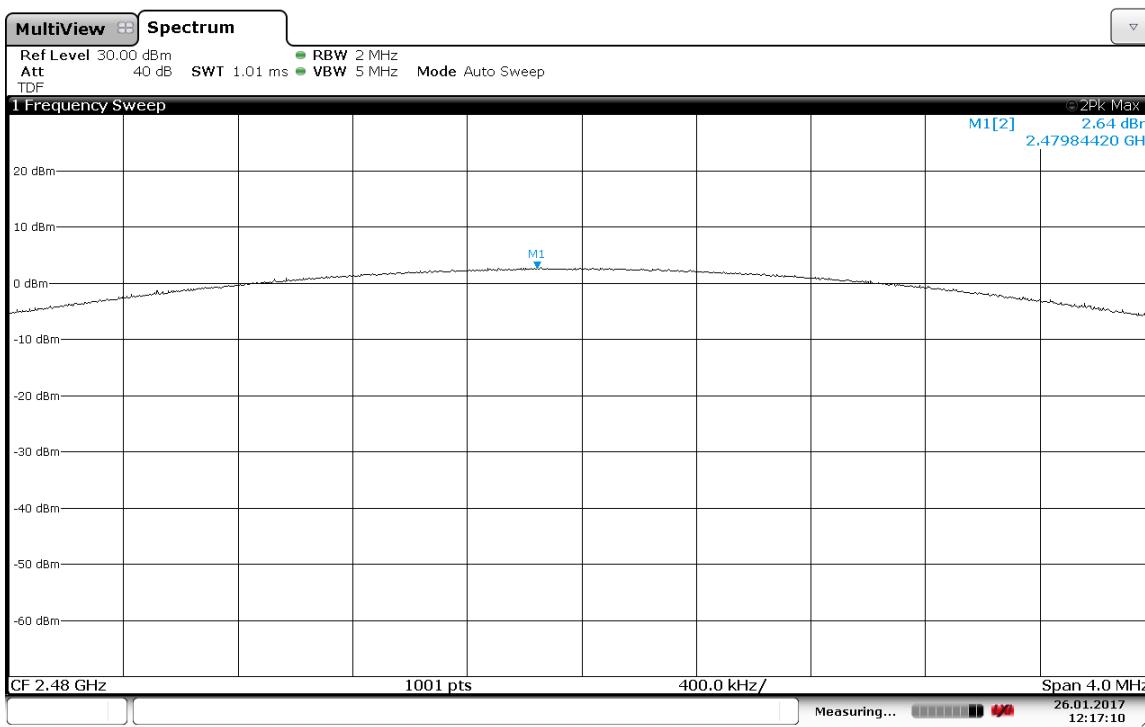
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Output Power @ 2480 MHz, battery mode and low data rate = 4.71 dBm



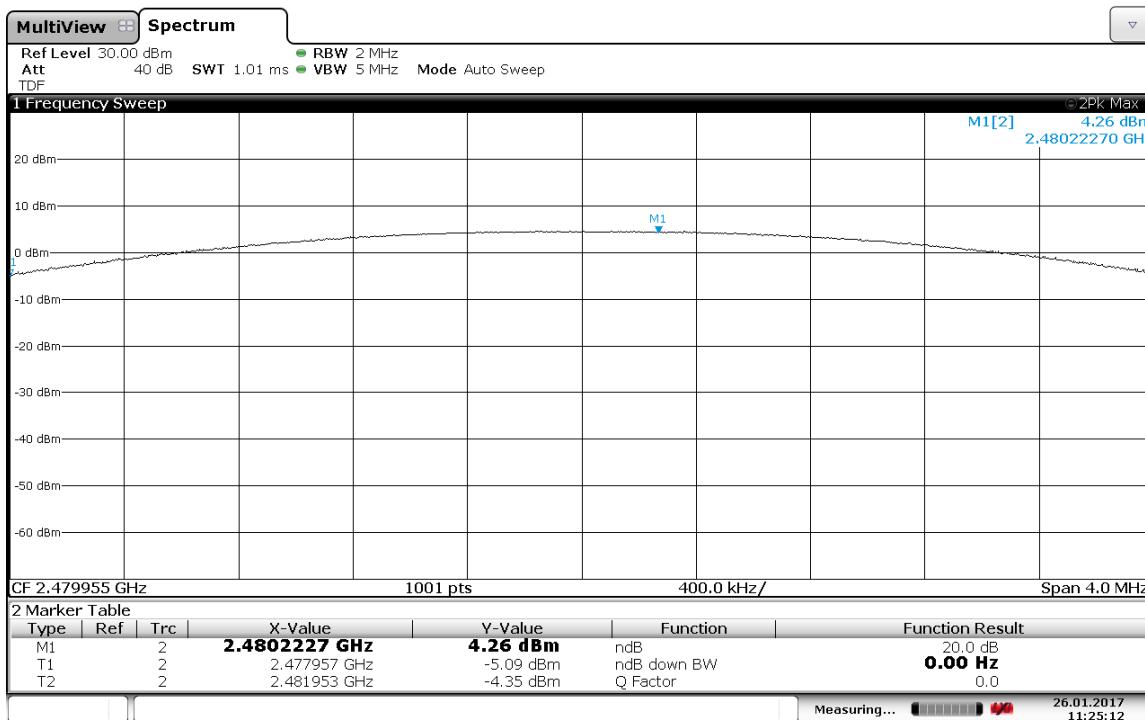
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Output Power @ 2480 MHz, battery mode and high data rate = 2.64 dBm



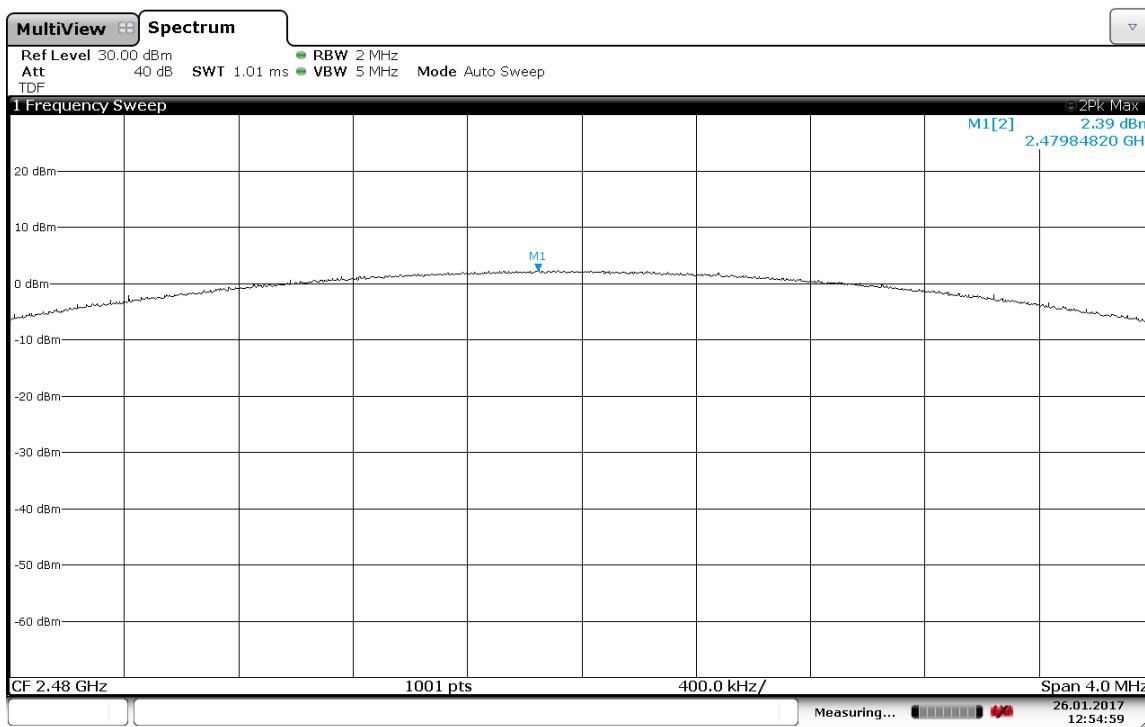
Date: 26.JAN.2017 12:17:11

Output Power @ 2480 MHz, charging mode and low data rate = 4.26 dBm



Date: 26.JAN.2017 11:25:12

Output Power @ 2480 MHz, charging mode and high data rate = 2.39 dBm



Date: 26.JAN.2017 12:54:59

Human RF Exposure/SAR Exemption

Maximum measured output power is 3.863 mW @ 2402 MHz

FCC SAR Exemption per KDB 447498

a) For 100 MHz to 6 GHz and *test separation distances* \leq 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR,}^{30} \text{ where}$$

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz

$$= (3.863/5) * (\sqrt{2.402})$$

$$= 1.19 < 3.0 \text{ (below the limit, SAR Exempt per FCC)}$$

Test Personnel: Naga Suryadevara N.5
Supervising/Reviewing

Test Date: 01/26/2017

Engineer:
(Where Applicable) N/A

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Limit Applied: See section 6.3

Pretest Verification w/
Ambient Signals or
BB Source: Yes – Signal generator

Ambient Temperature: 19 °C

Relative Humidity: 30 %

Atmospheric Pressure: 981 mbars

Deviations, Additions, or Exclusions: None

7 Occupied and 20dB Bandwidth

7.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLH2012-2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

Software Utilized:

Name	Manufacturer	Version
None		

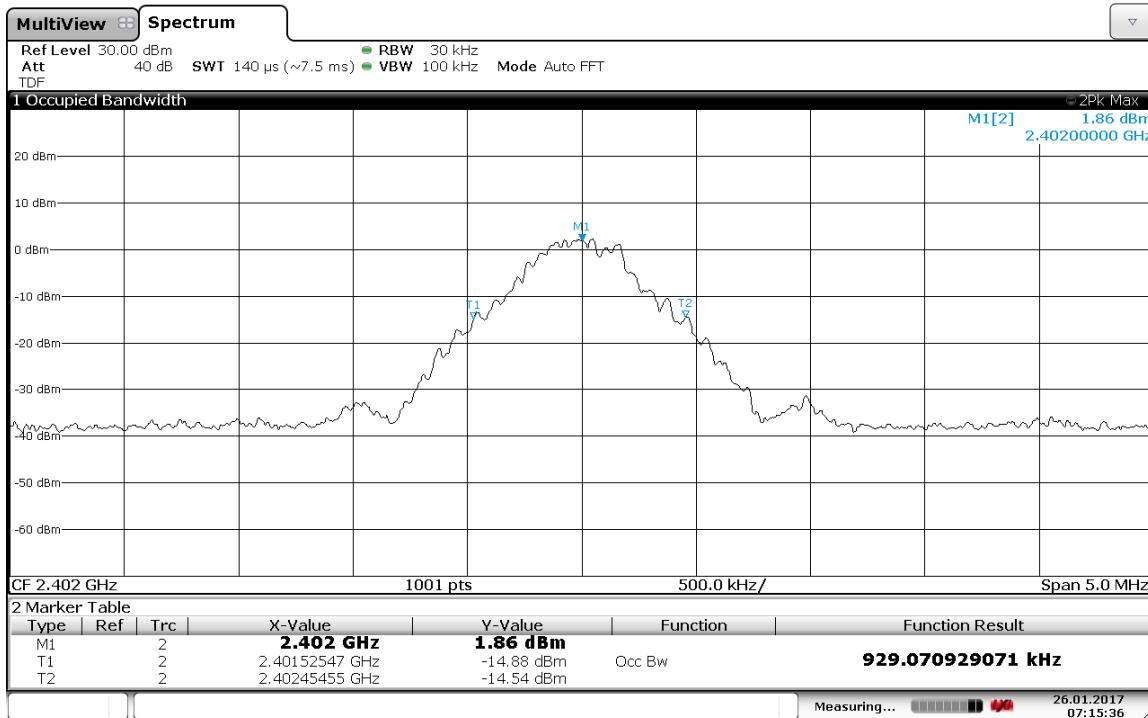
7.3 Results:

The sample tested was found to Comply.

Frequency	Mode of operation	Data Rate	Occupied Bandwidth	20dB Bandwidth
2402	Charging	Low	919.08 kHz	987.00 kHz
2402		High	1.2147 MHz	1.34 MHz
2402	Battery	Low	929.07 kHz	989.00 kHz
2402		High	1.2147 MHz	1.34 MHz
2441	Charging	Low	919.08 kHz	983.00 kHz
2441		High	1.214 MHz	1.34 MHz
2441	Battery	Low	919.08 kHz	991.00 kHz
2441		High	1.218 MHz	1.33 MHz
2480	Charging	Low	927.07 kHz	983.00 kHz
2480		High	1.2307 MHz	1.33 MHz
2480	Battery	Low	931.068 kHz	999.0 kHz
2480		High	1.2307 MHz	1.35 MHz

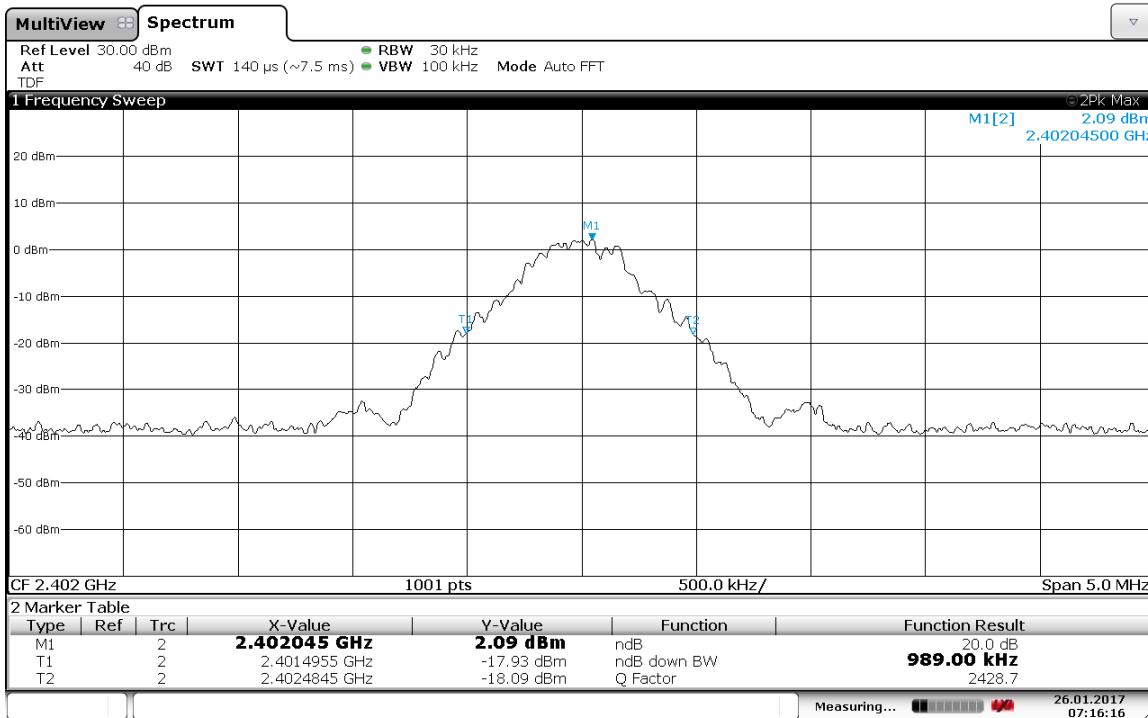
7.4 Plots/Data:

Occupied Bandwidth @ 2402 MHz, battery mode and low data rate = 929.07 kHz



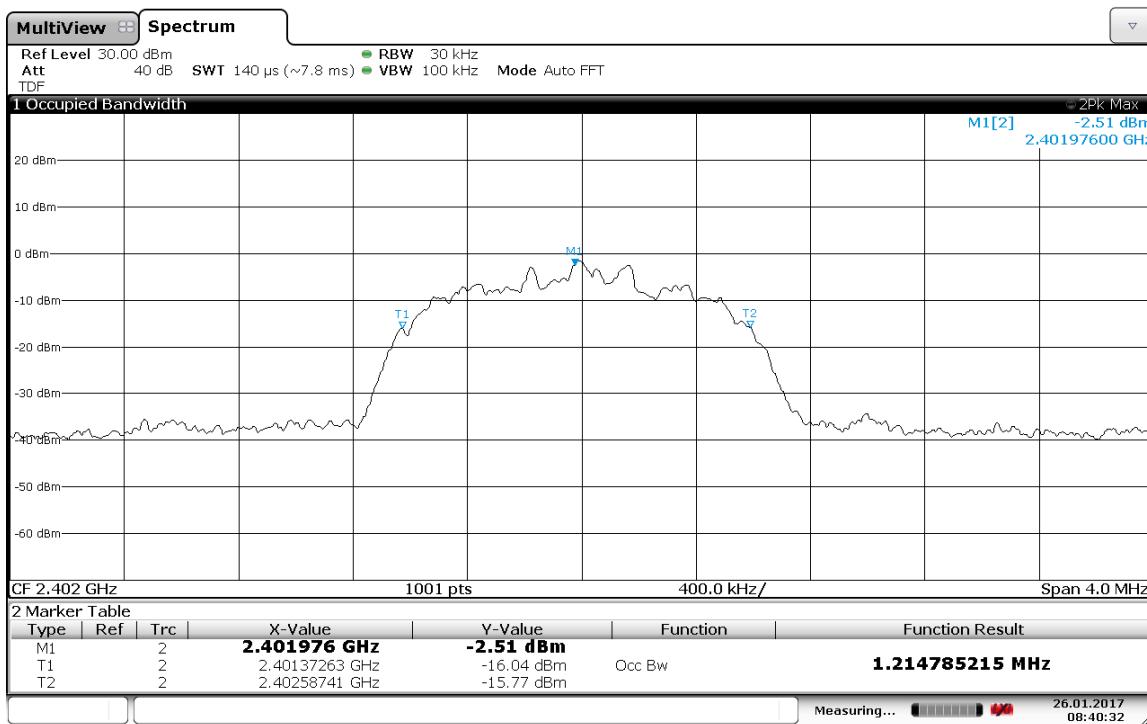
Date: 26 JAN 2017 07:15:36

20dB Bandwidth @ 2402 MHz, battery mode and low data rate = 989.00 kHz



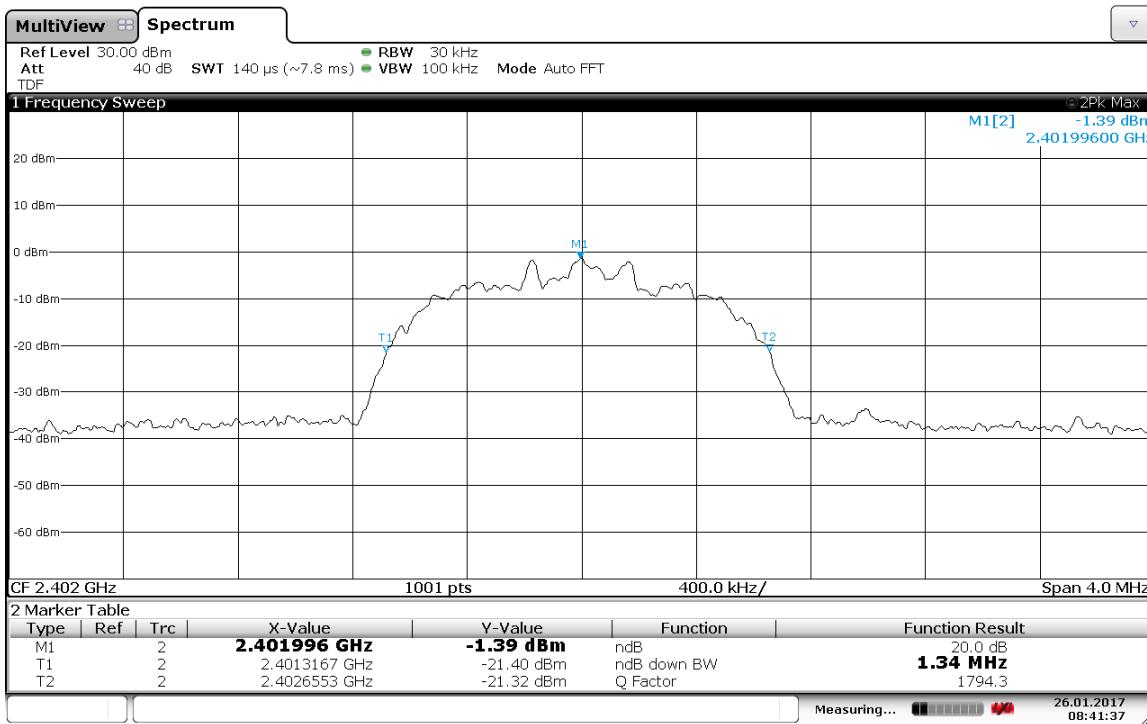
Date: 26 JAN 2017 07:16:16

Occupied Bandwidth @ 2402 MHz, battery mode and high data rate = 1.2147 MHz



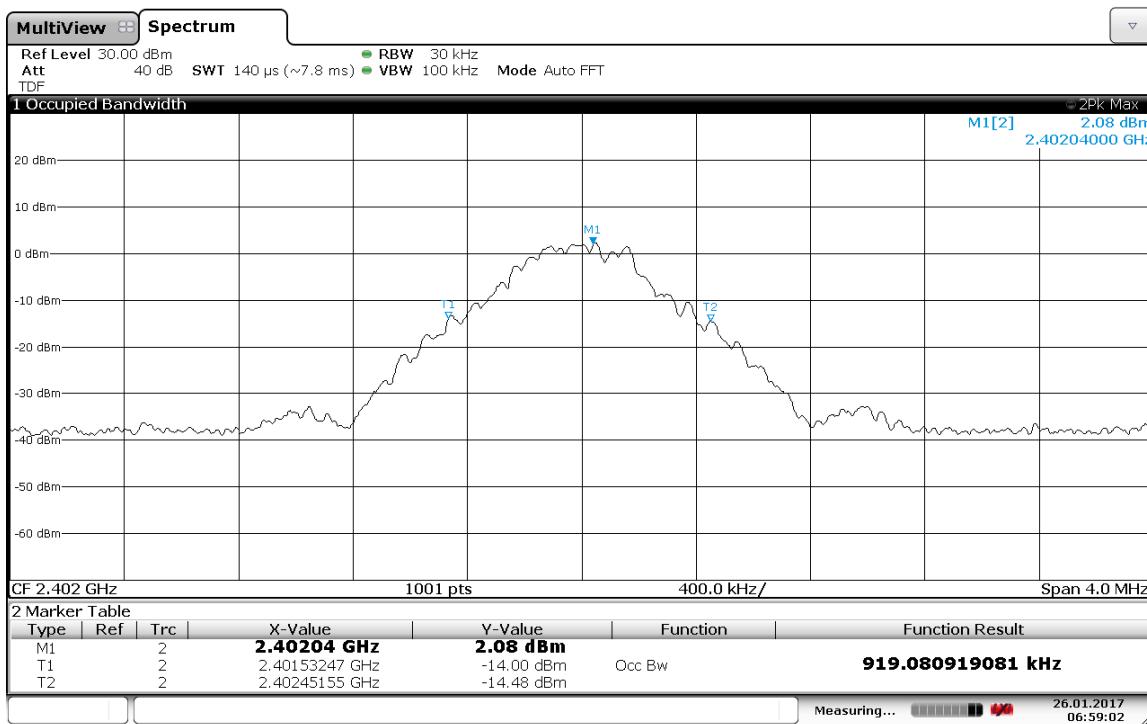
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20dB Bandwidth @ 2402 MHz, battery mode and high data rate = 1.34 MHz



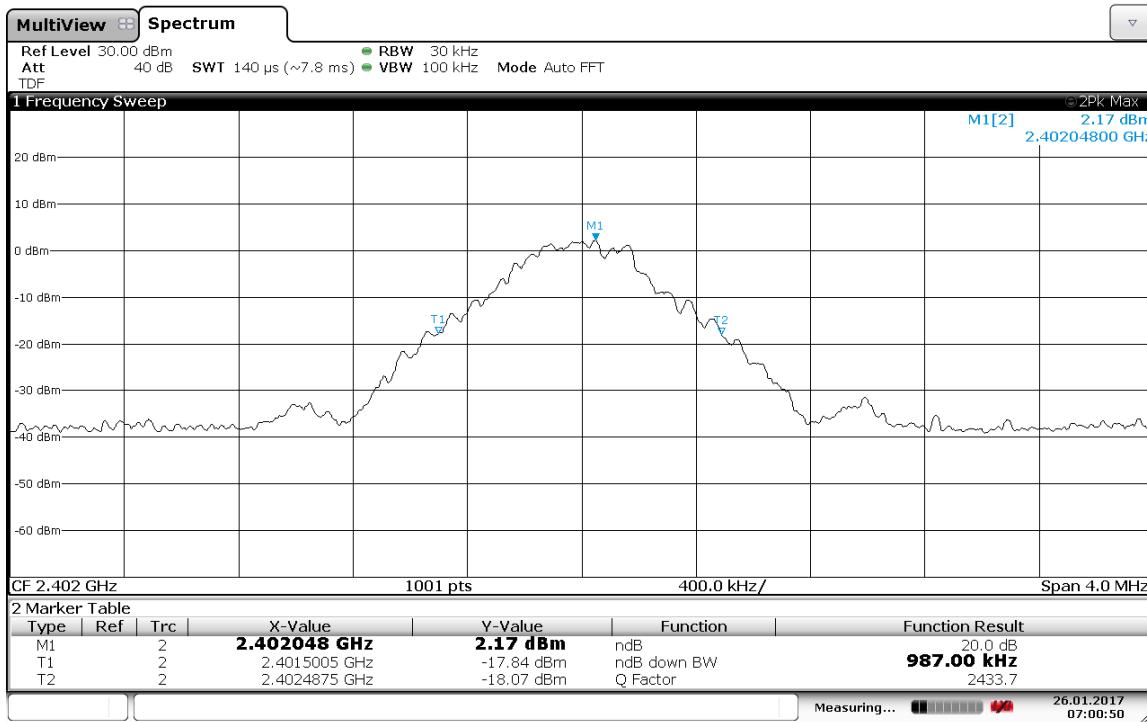
Date: 26.JAN.2017 08:41:37

Occupied Bandwidth @ 2402 MHz, charging mode and low data rate = 919.08 kHz



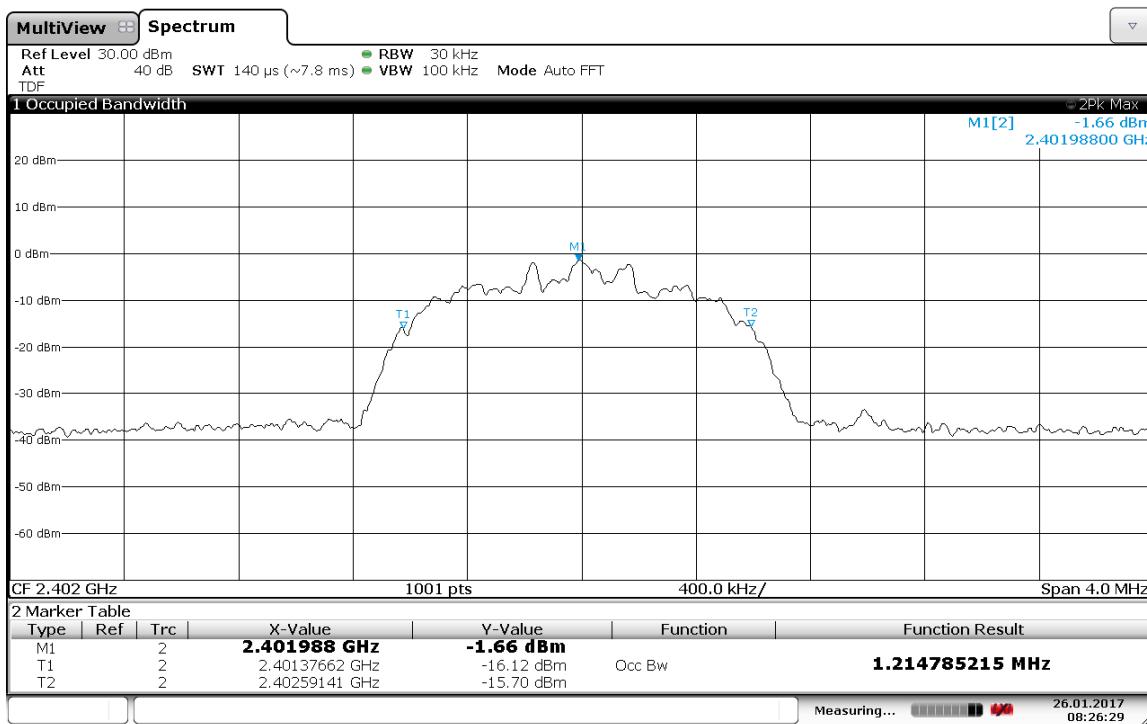
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20dB Bandwidth @ 2402 MHz, charging mode and low data rate = 987.00 kHz



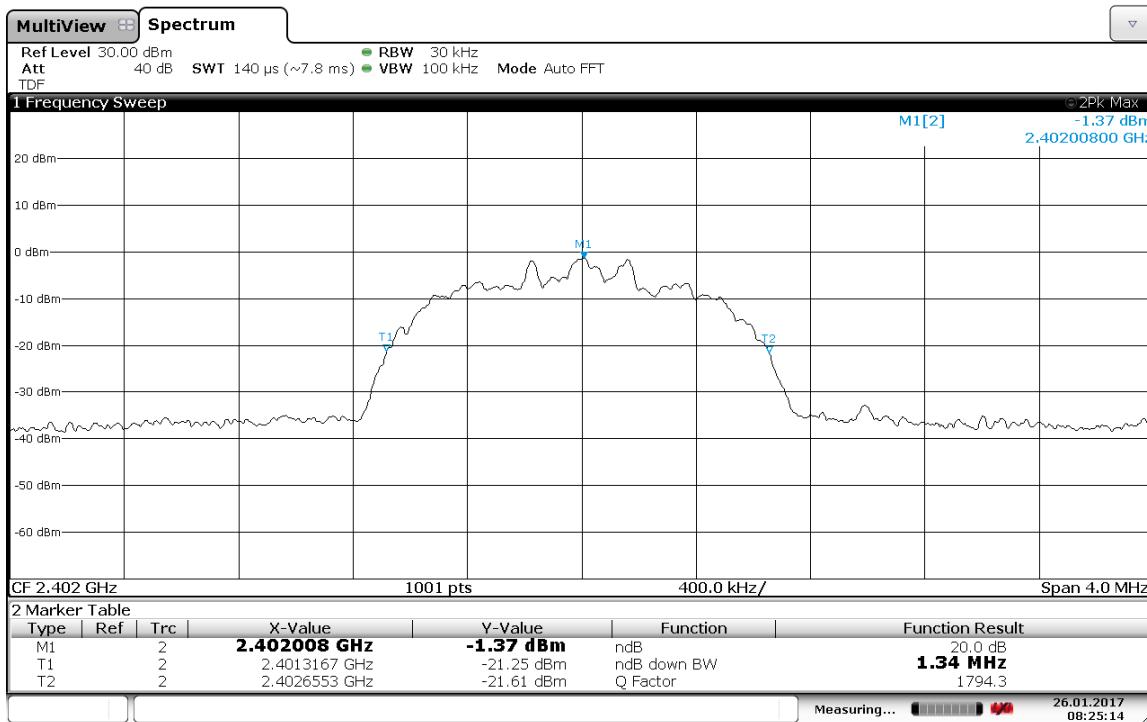
Date: 26.JAN.2017 07:00:50

Occupied Bandwidth @ 2402 MHz, charging mode and high data rate = 1.2147 MHz



Date: 26.JAN.2017 08:26:29

20dB Bandwidth @ 2402 MHz, charging mode and high data rate = 1.34 MHz



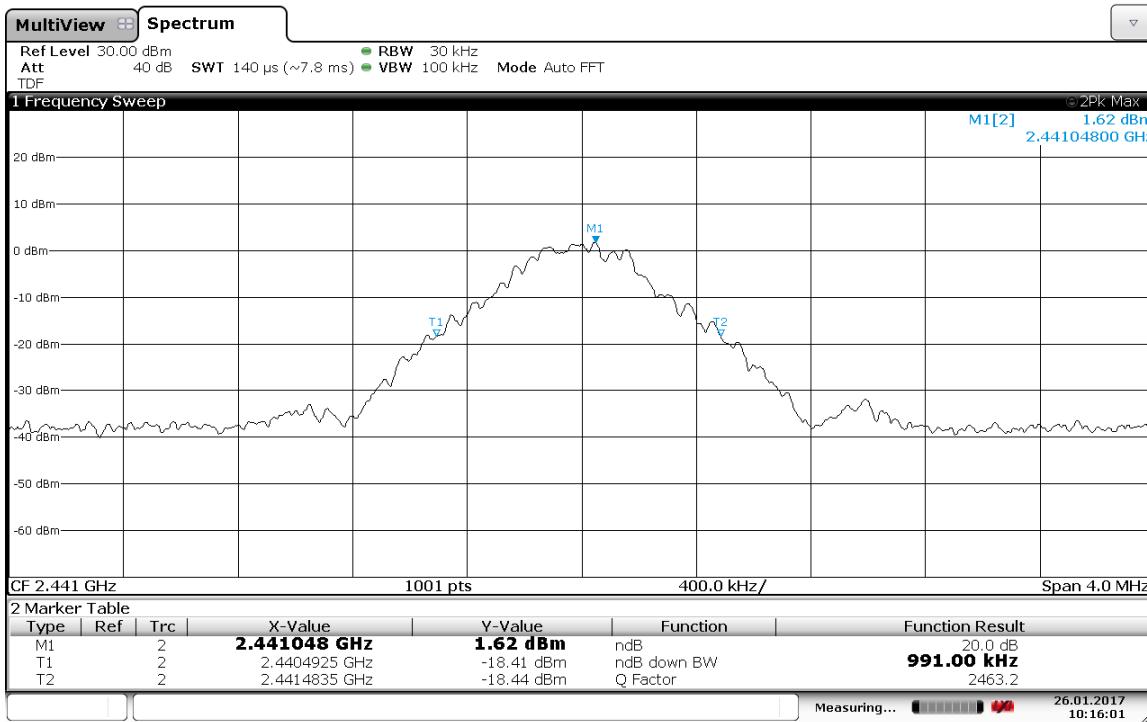
Date: 26.JAN.2017 08:25:14

Occupied Bandwidth @ 2441 MHz, battery mode and low data rate = 919.08 KHz



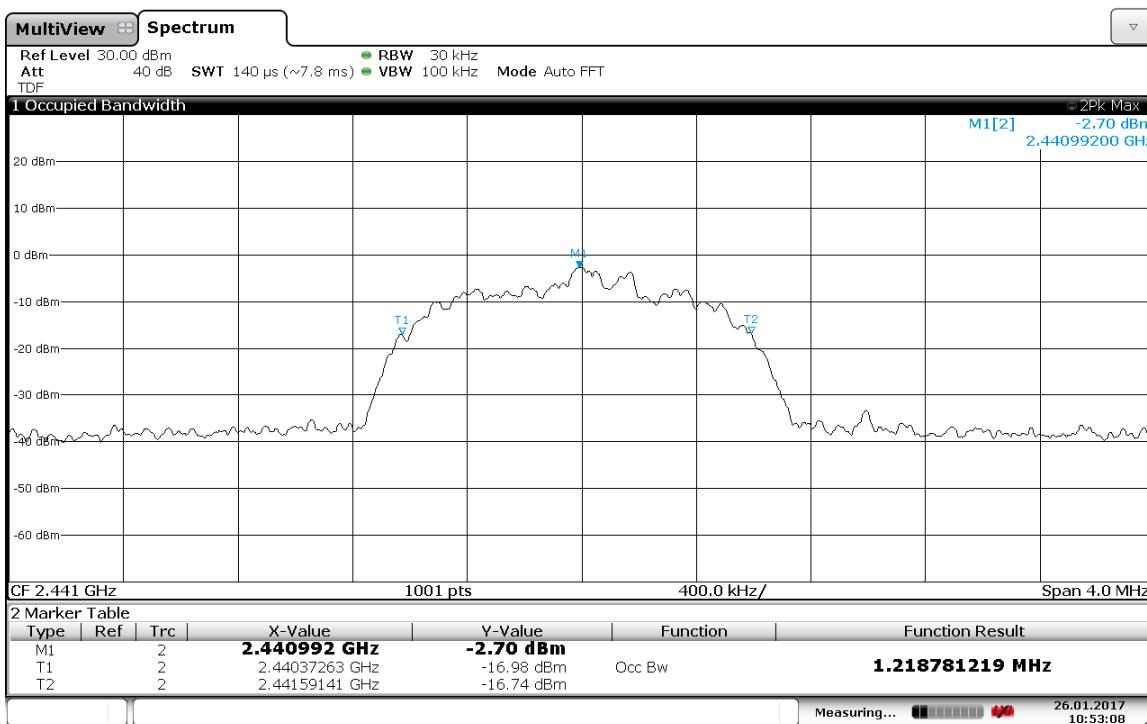
Date: 26.JAN.2017 10:15:03

20dB @ 2441 MHz, battery mode and low data rate = 991.00 KHz



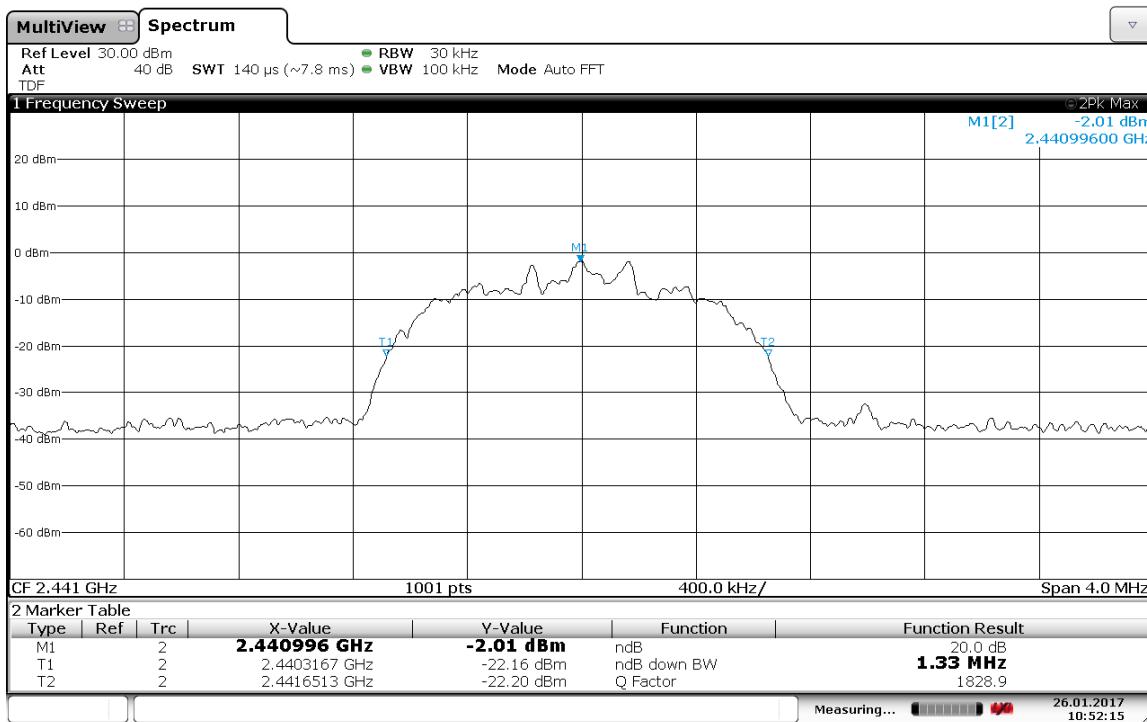
Date: 26.JAN.2017 10:16:01

Occupied Bandwidth @ 2441 MHz, battery mode and high data rate = 1.218 MHz



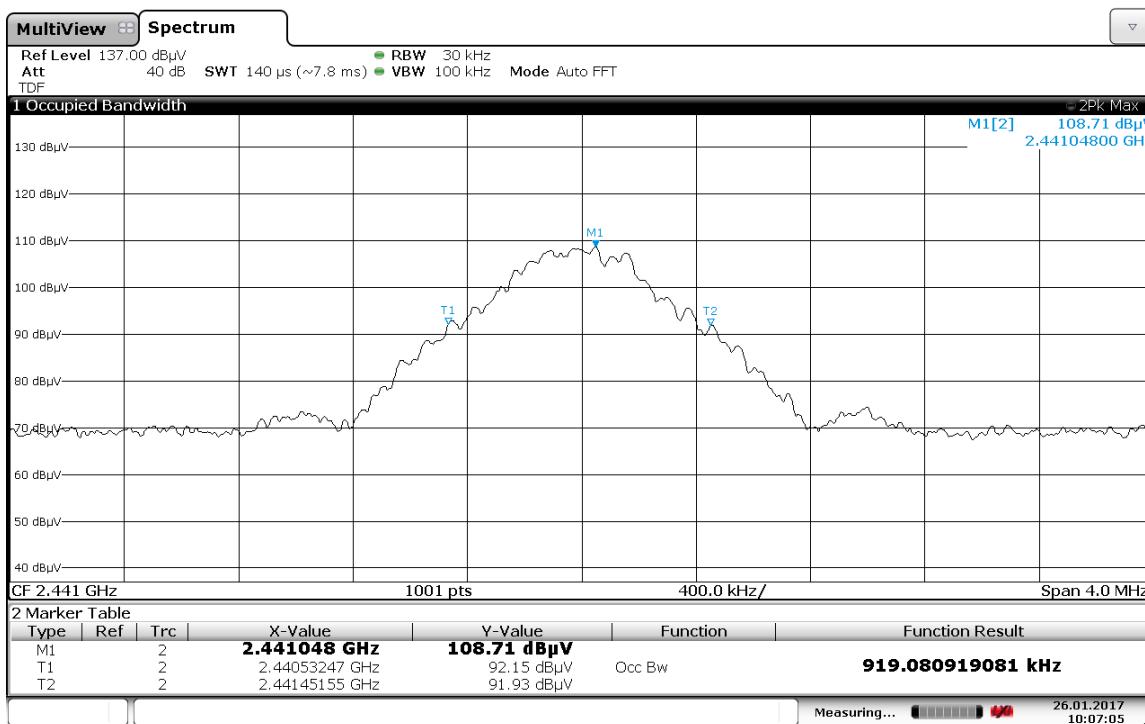
Date: 26.JAN.2017 10:53:07

20dB Bandwidth @ 2441 MHz, battery mode and high data rate = 1.33 MHz



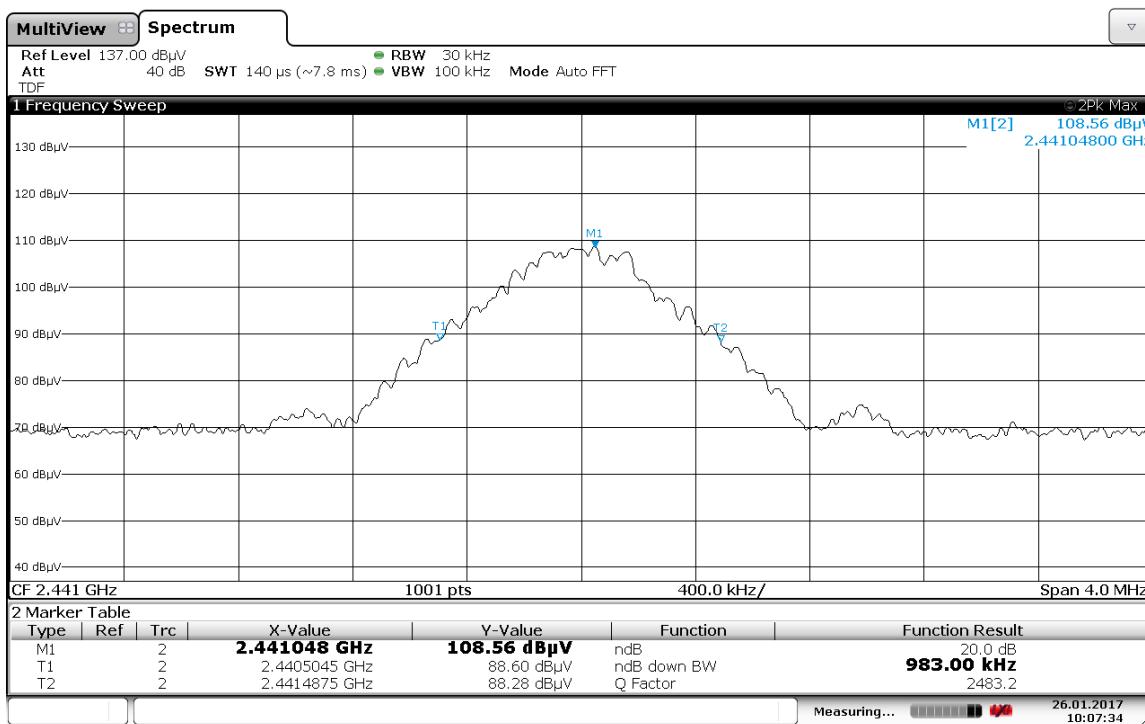
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Occupied Bandwidth @ 2441 MHz, charging mode and low data rate = 919.08 KHz



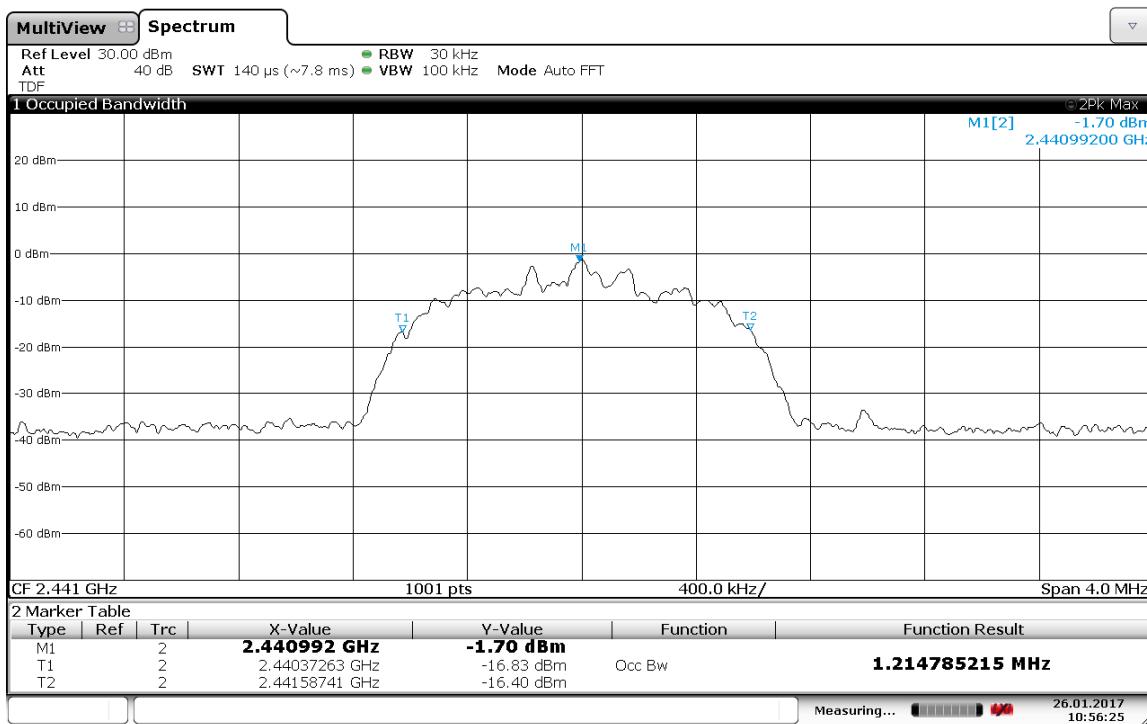
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20dB Bandwidth @ 2441 MHz, charging mode and low data rate = 983.00 KHz



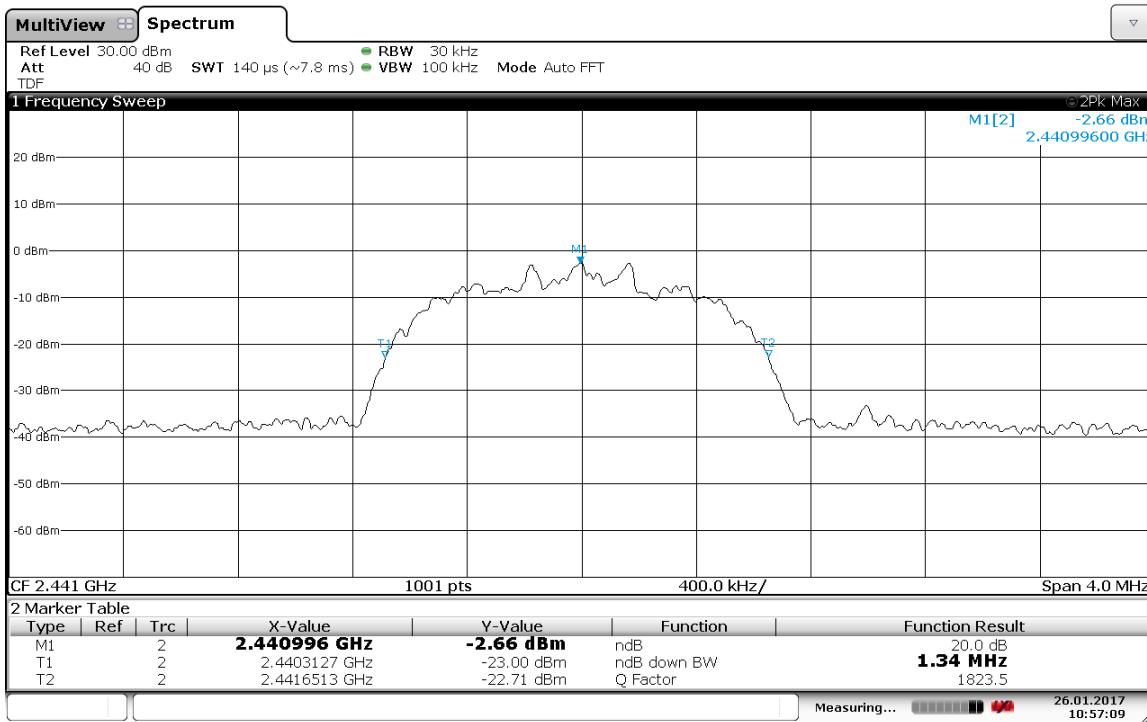
Date: 26.JAN.2017 10:07:34

Occupied Bandwidth @ 2441 MHz, charging mode and high data rate = 1.214 MHz



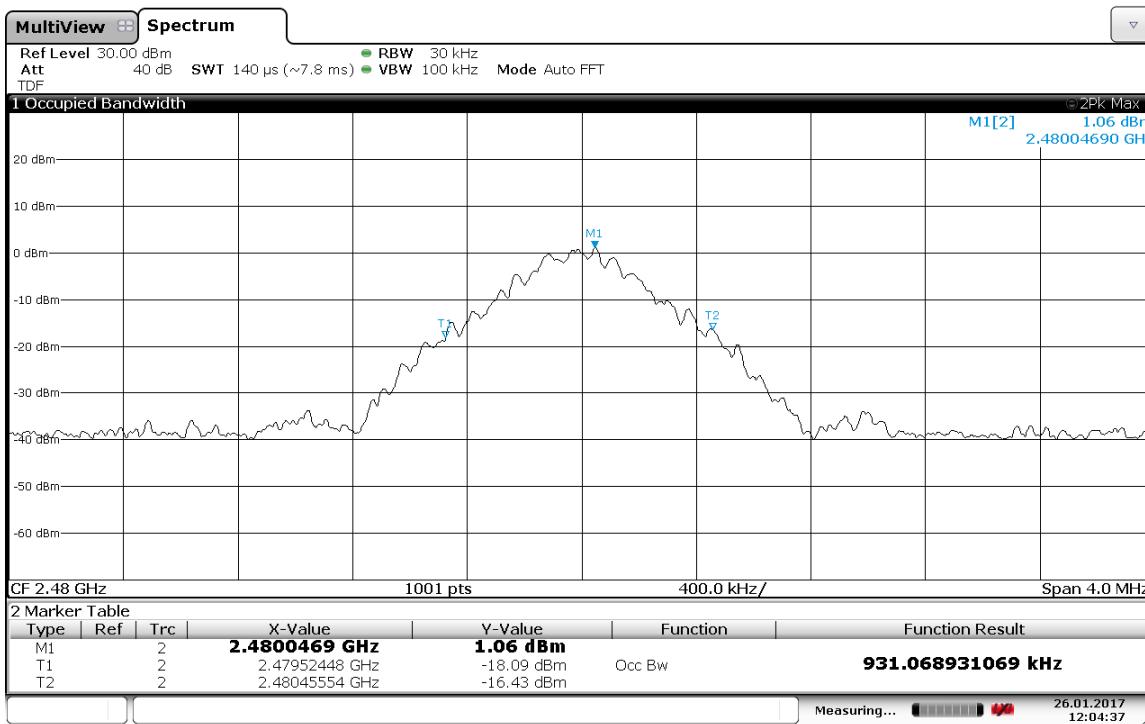
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20dB Bandwidth @ 2441 MHz, charging mode and high data rate = 1.34 MHz



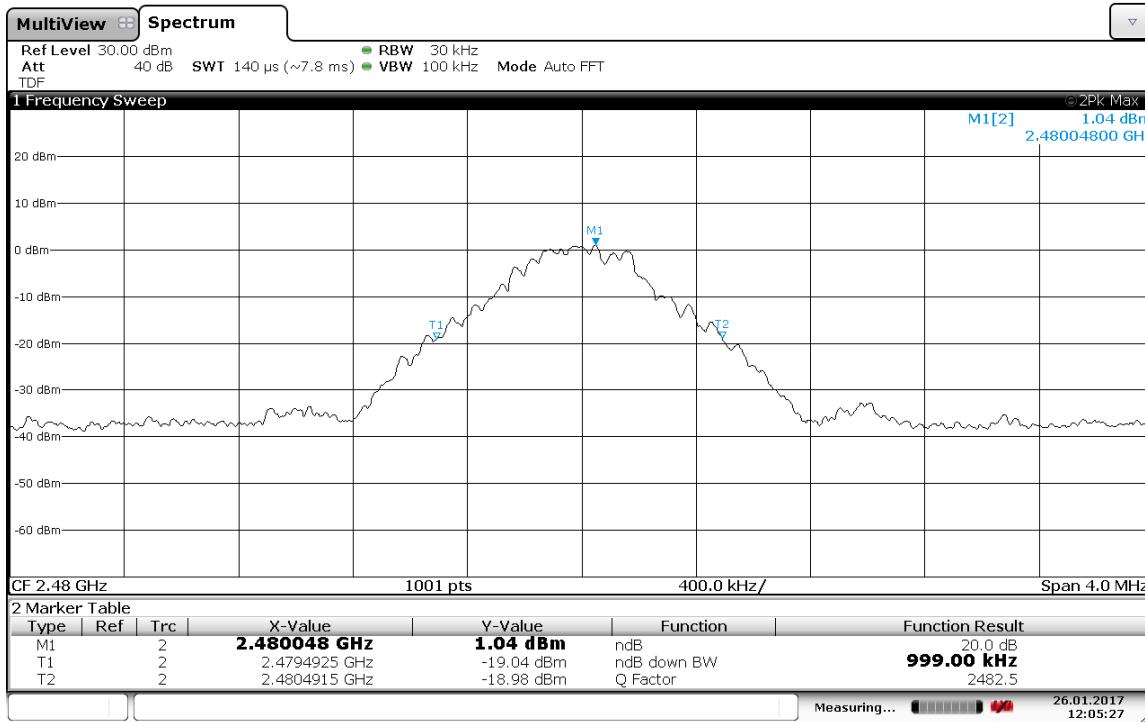
Date: 26.JAN.2017 10:57:09

Occupied Bandwidth @ 2480 MHz, battery mode and low data rate = 931.068 kHz



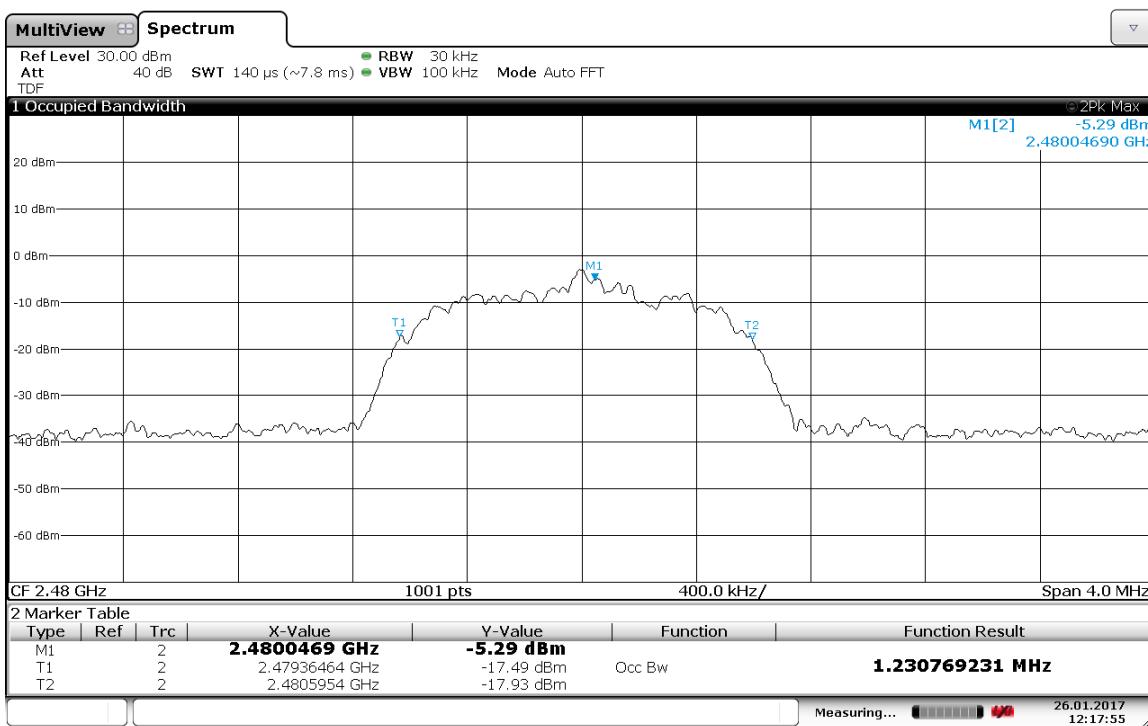
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20dB Bandwidth @ 2480 MHz, battery mode and low data rate = 999.000 kHz



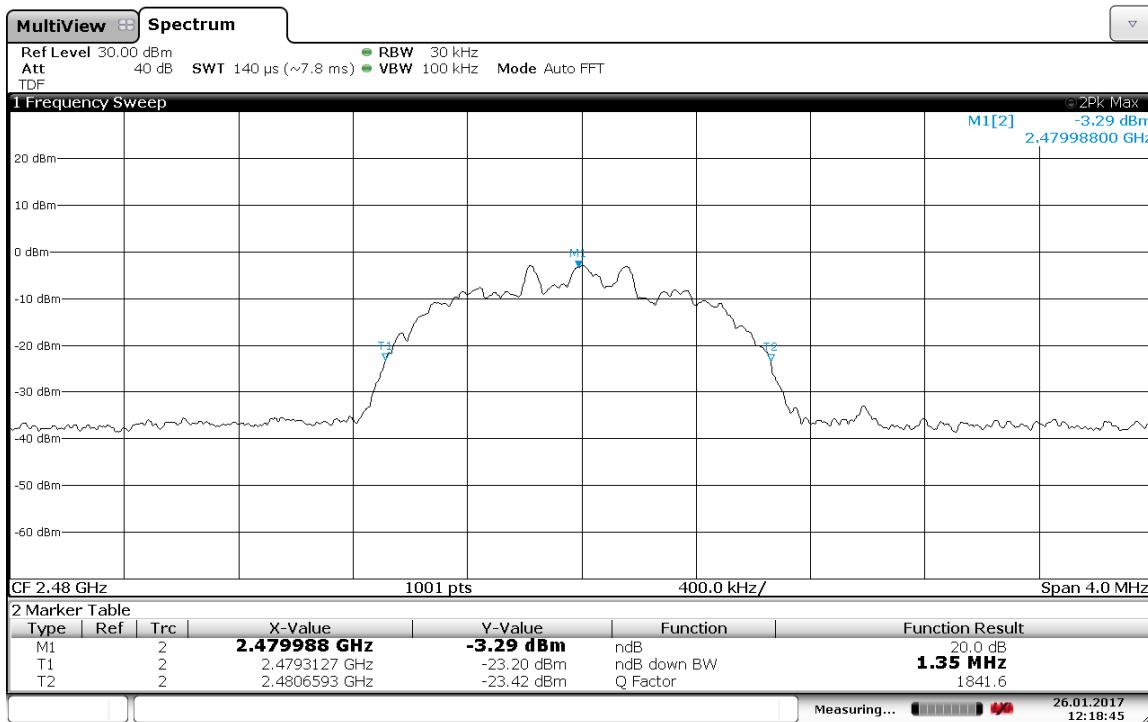
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Occupied Bandwidth @ 2480 MHz, battery mode and high data rate = 1.23076 MHz



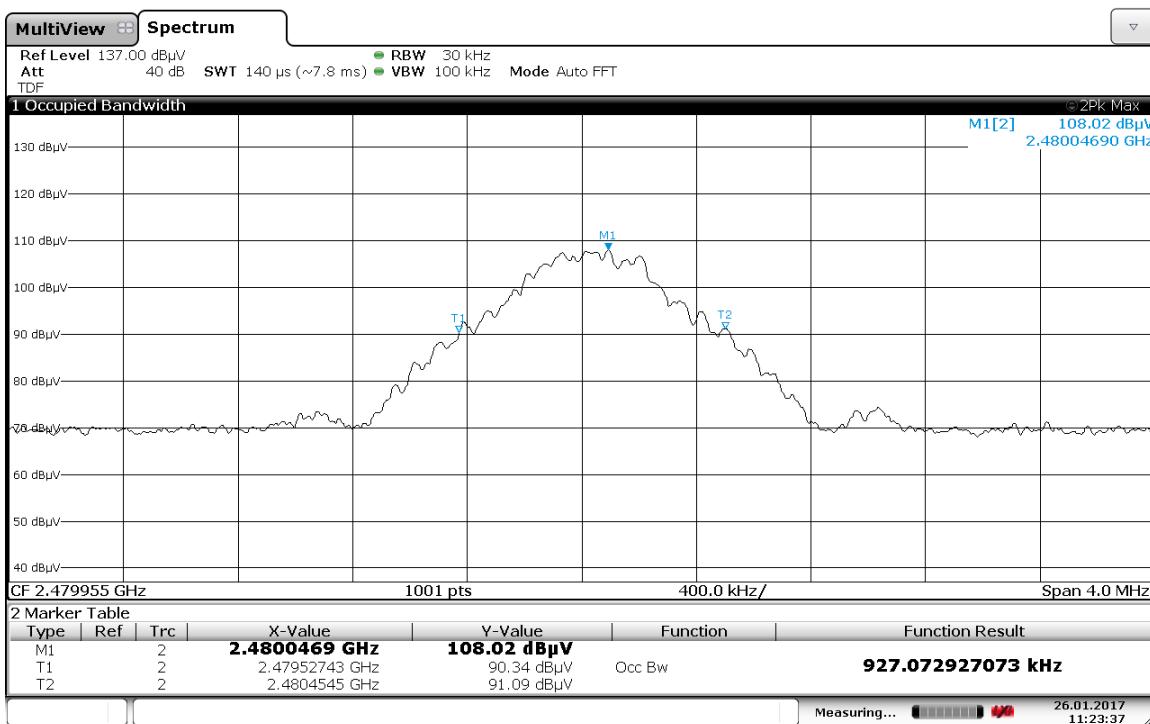
Date: 26.JAN.2017 12:17:55

20dB Bandwidth @ 2480 MHz, battery mode and high data rate = 1.35 MHz



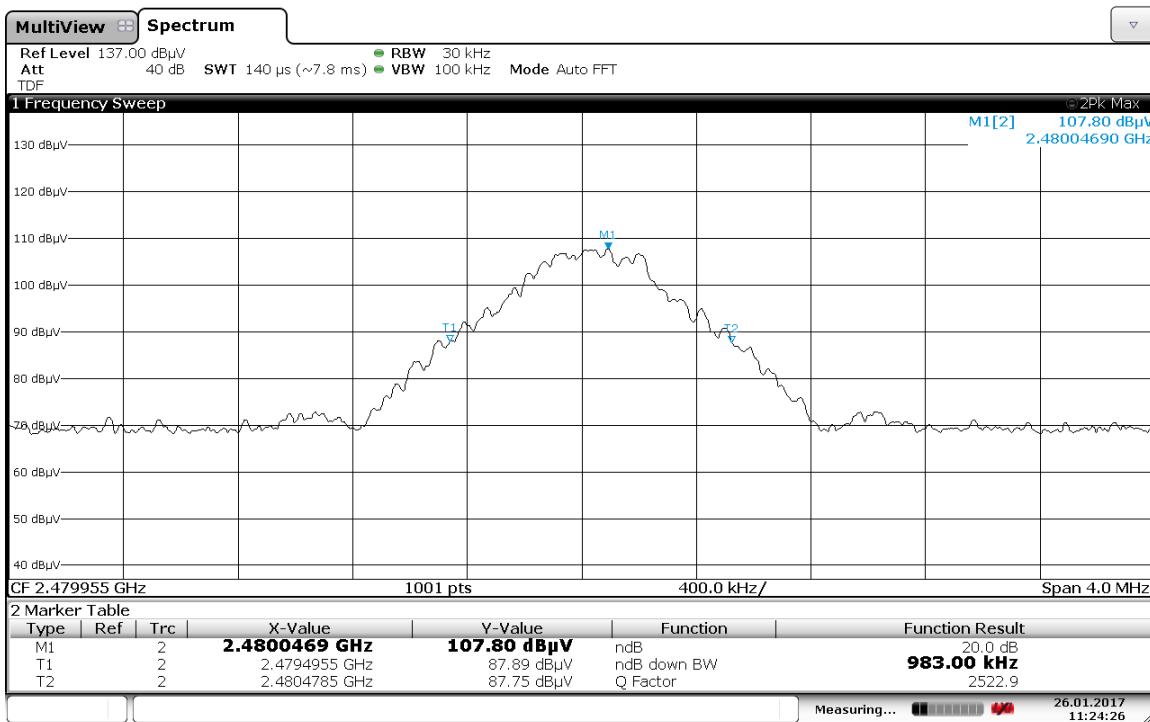
Date: 26.JAN.2017 12:18:44

Occupied Bandwidth @ 2480 MHz, charging mode and low data rate = 927.07 kHz



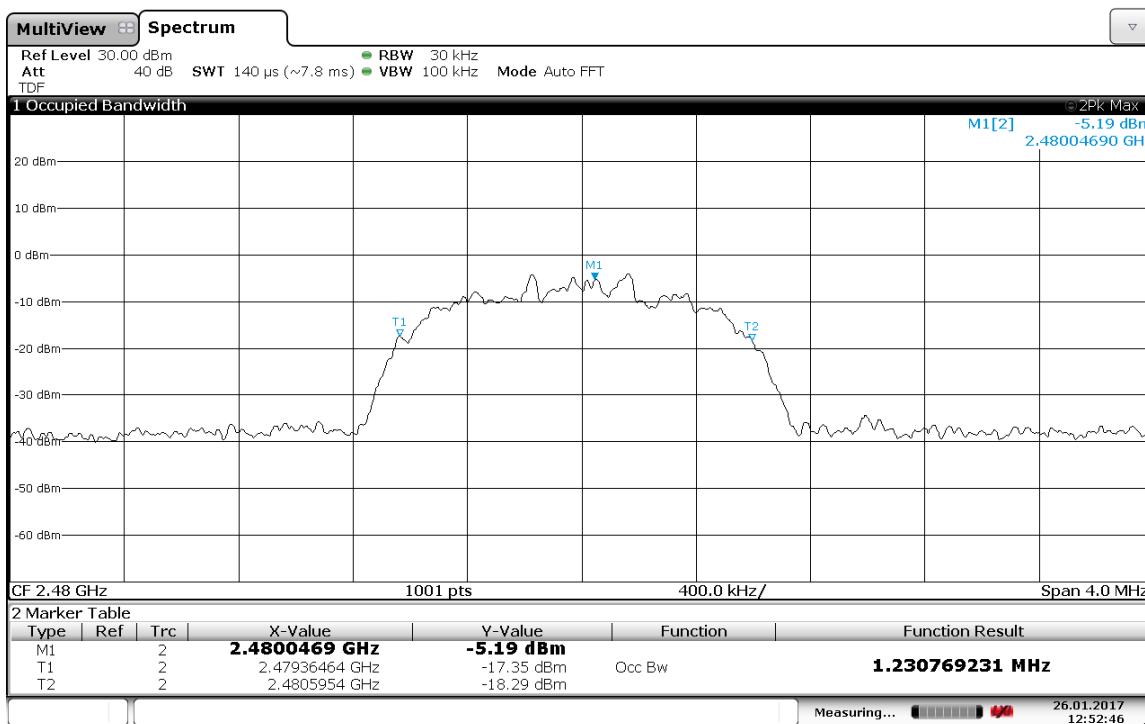
Date: 26.JAN.2017 11:23:37

20dB Bandwidth @ 2480 MHz, charging mode and low data rate = 983.00 kHz



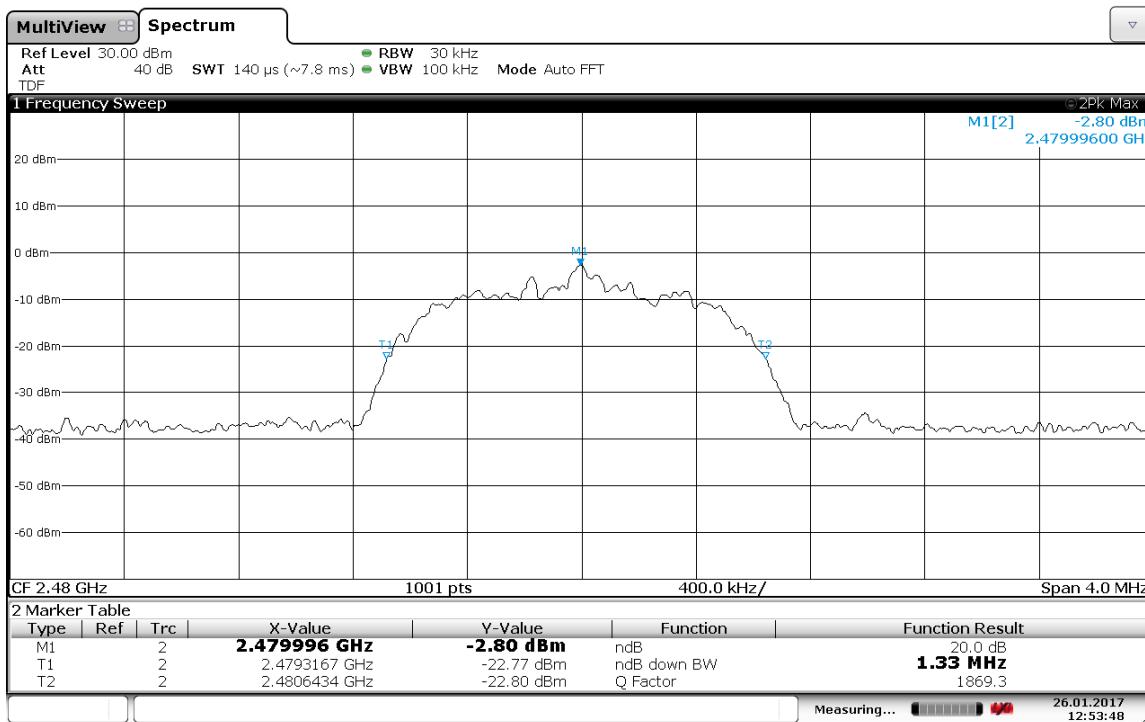
Date: 26.JAN.2017 11:24:26

Occupied Bandwidth @ 2480 MHz, charging mode and high data rate = 1.2307 MHz



Date: 26.JAN.2017 12:52:46

20dB Bandwidth @ 2480 MHz, charging mode and high data rate = 1.33 MHz



Date: 26.JAN.2017 12:53:47

Test Personnel: Naga Suryadevara N5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Test Date: 01/26/2017

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Limit Applied: See section 7.3

Pretest Verification w/
Ambient Signals or
BB Source: Yes – Signal generator

Ambient Temperature: 19 °CRelative Humidity: 30 %Atmospheric Pressure: 981 mbars

8 Channel Separation

8.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLHF2012 -2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

Software Utilized:

Name	Manufacturer	Version
None		

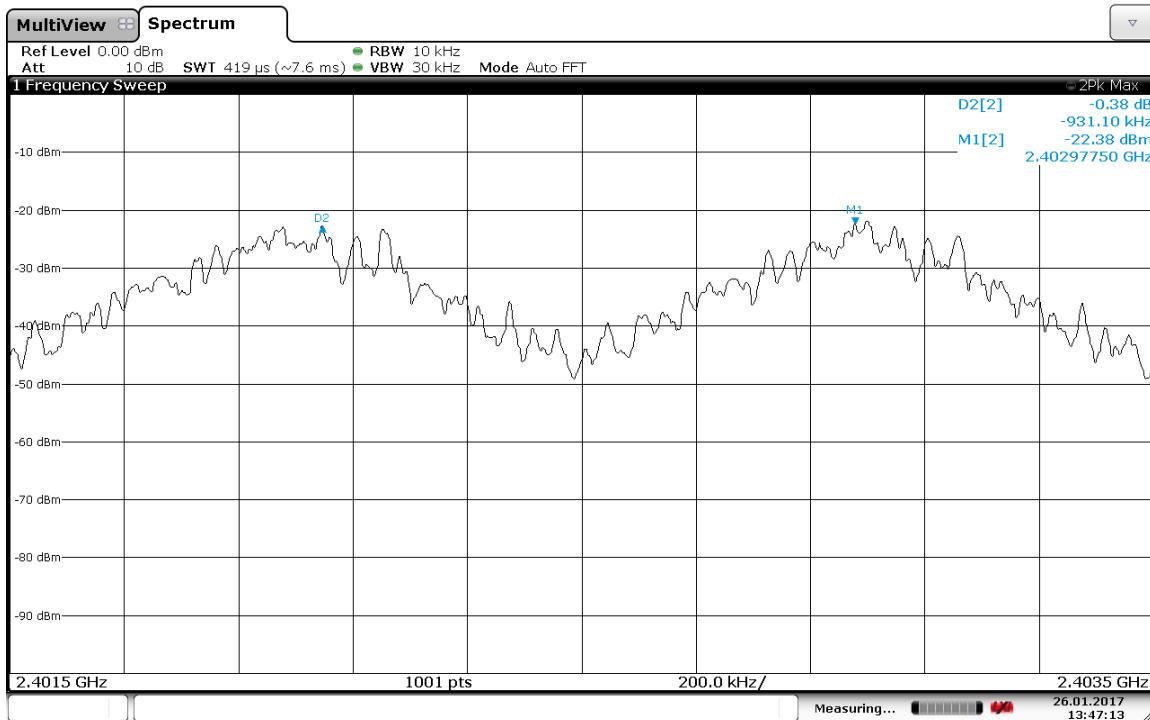
8.3 Results:

The sample tested was found to Comply. Systems shall 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.

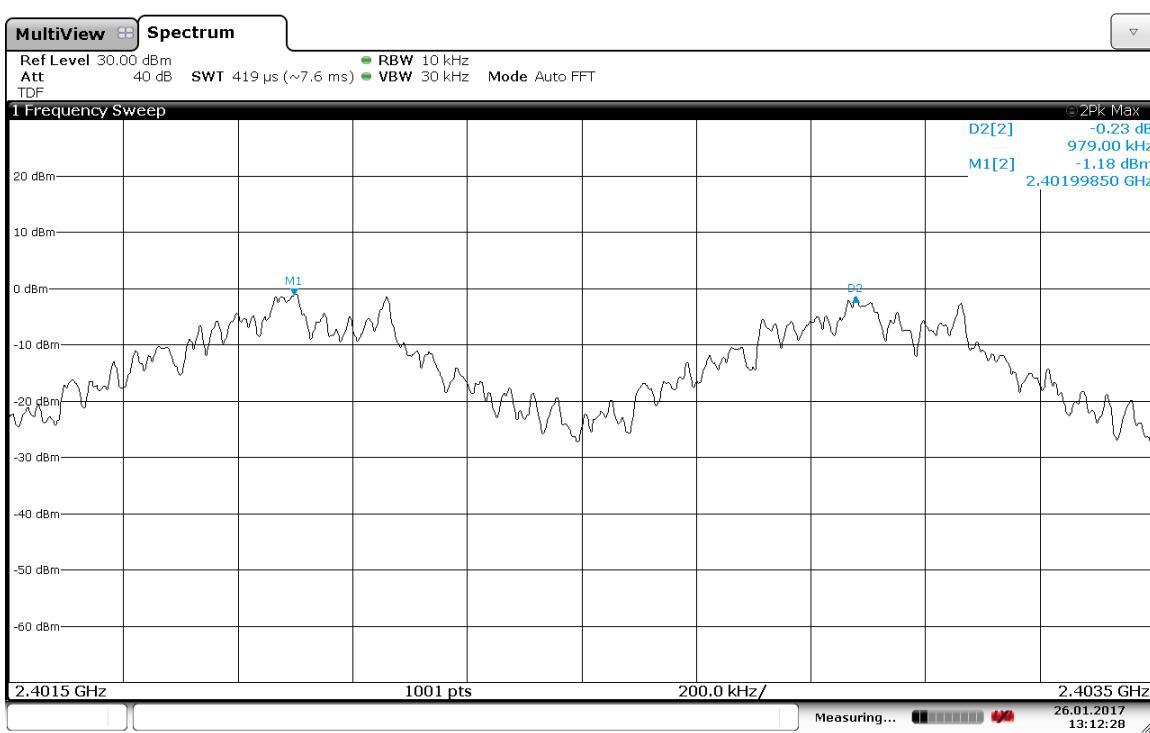
The measured channel frequency separation is 931 kHz @ low data rate and 979 kHz @ high data rate which is greater than 900 kHz (2/3rd of 20dB BW(maximum))

8.4 Plots/Data:

Channel Separation, Low data rate = 931.10 kHz



Channel Separation, High data rate = 979.00 kHz



Test Personnel: Naga Suryadevara N.5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Test Date: 01/26/2017

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Limit Applied: See section 8.3

Pretest Verification w/
Ambient Signals or
BB Source: Yes – Signal generator

Ambient Temperature: 19 °CRelative Humidity: 30 %Atmospheric Pressure: 981 mbars

9 Number of Hopping Channels

9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLHF2012 -2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

Software Utilized:

Name	Manufacturer	Version
None		

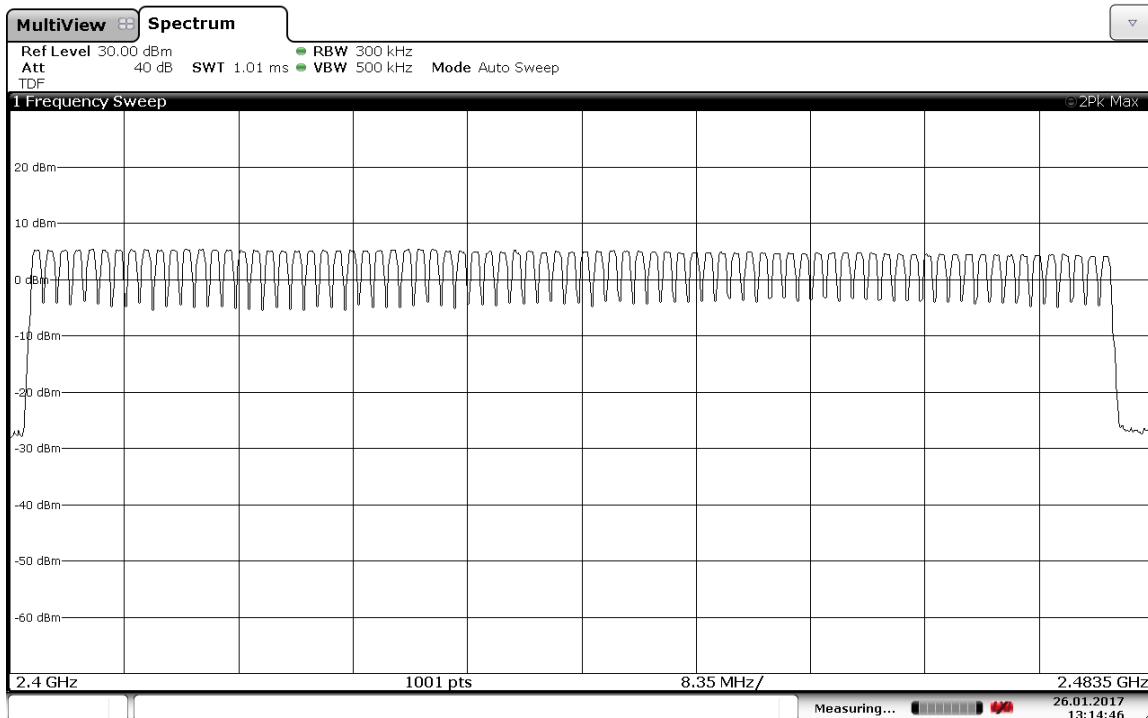
9.3 Results:

The sample tested was found to Comply. Systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping channels.

The System has 79 hopping channels.

9.4 Plots/Data:

Number of hopping channels = 79



Date: 26 JAN 2017 13:14:46

Test Personnel: Naga Suryadevara N.5
 Supervising/Reviewing
 Engineer:
 (Where Applicable) N/A

Test Date: 01/26/2017

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
 Input Voltage: Internal Battery

Limit Applied: See section 9.3

Pretest Verification w/
 Ambient Signals or
 BB Source: Yes – Signal generator

Ambient Temperature: 19 °CRelative Humidity: 30 %Atmospheric Pressure: 981 mbars

10 Average Channel Occupancy Time

10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLHF2012 -2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

Software Utilized:

Name	Manufacturer	Version
None		

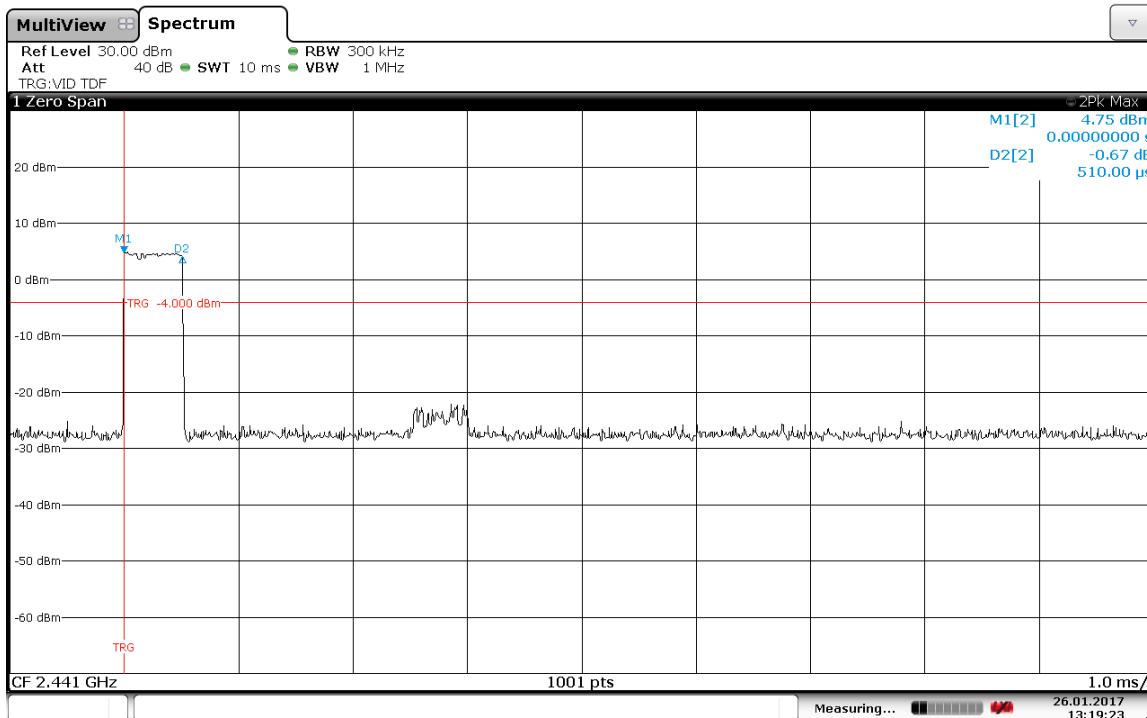
10.3 Results:

The sample tested was found to Comply. For systems operating in the 2400-2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 second within a period of 0.4 second multiplied by the number of hopping channels employed

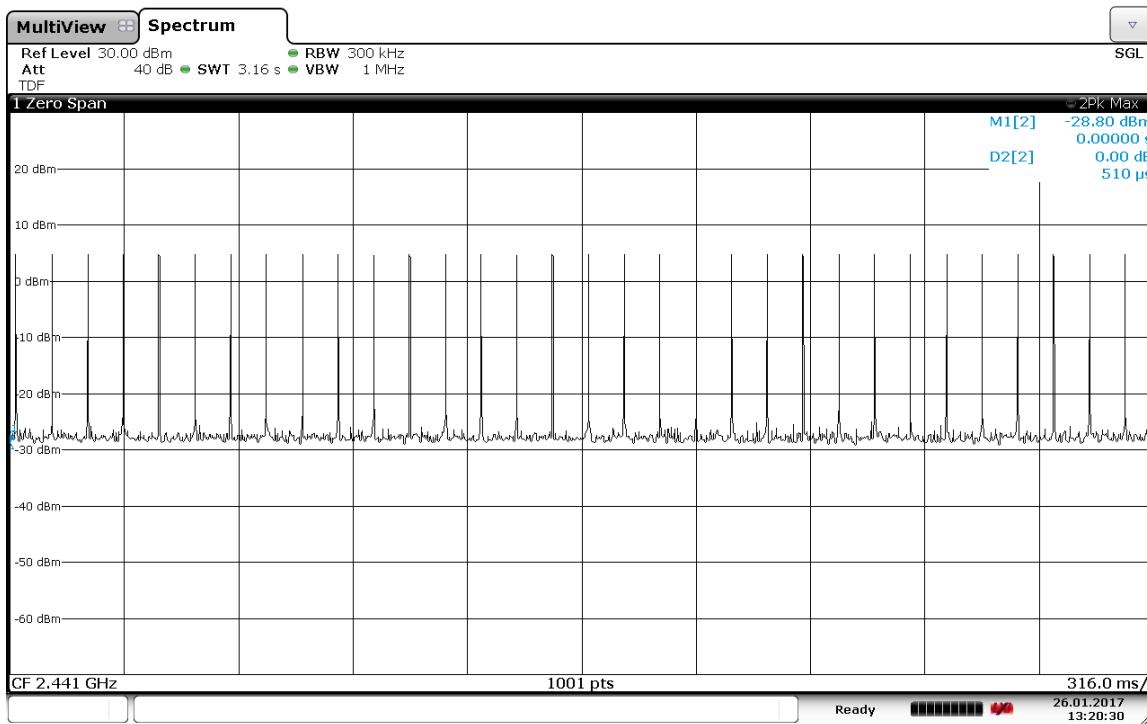
Since the radio employs 79 channels, Occupancy time was calculated during the period of $0.4 * 79 = 31.6$ sec.

Occupancy Time @ low data rate = $0.000510 * 31 * 10 = 0.1581$ sec

Occupancy Time @ high data rate = $0.00290 * 10 * 10 = 0.290$ sec

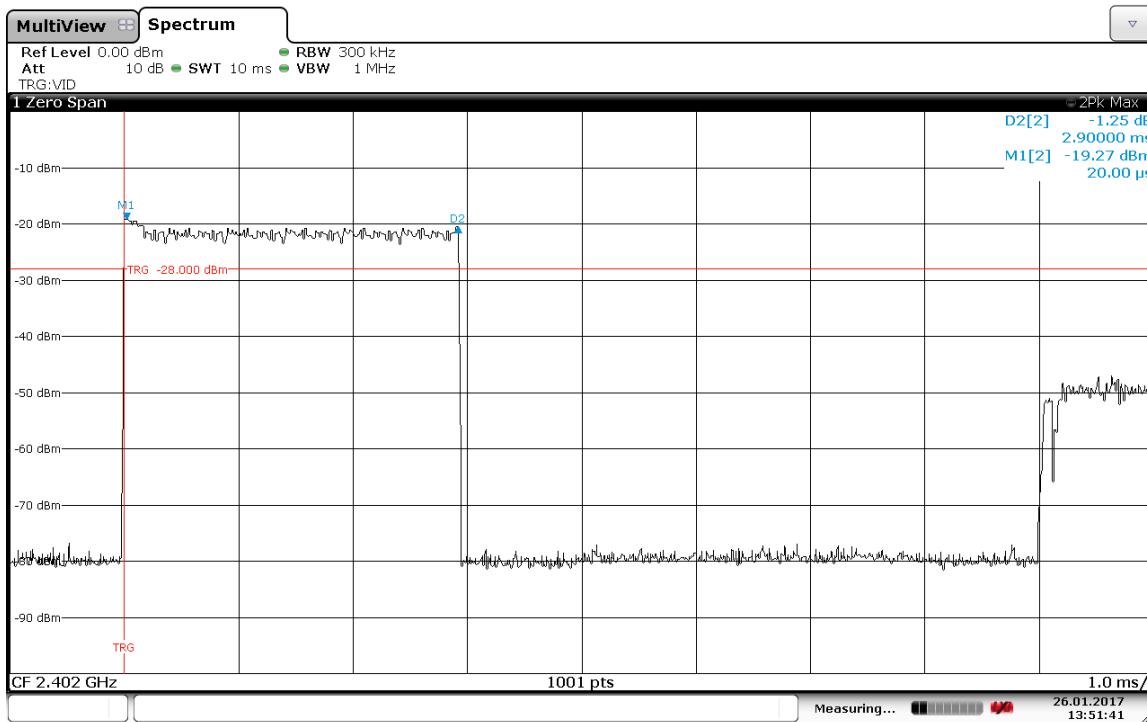
10.4 Plots/Data:**Dwell time, Low data rate = 510.00 us**

Date: 26.JAN.2017 13:19:23

Number of bursts in 3.16 second sweep, Low data rate = 31

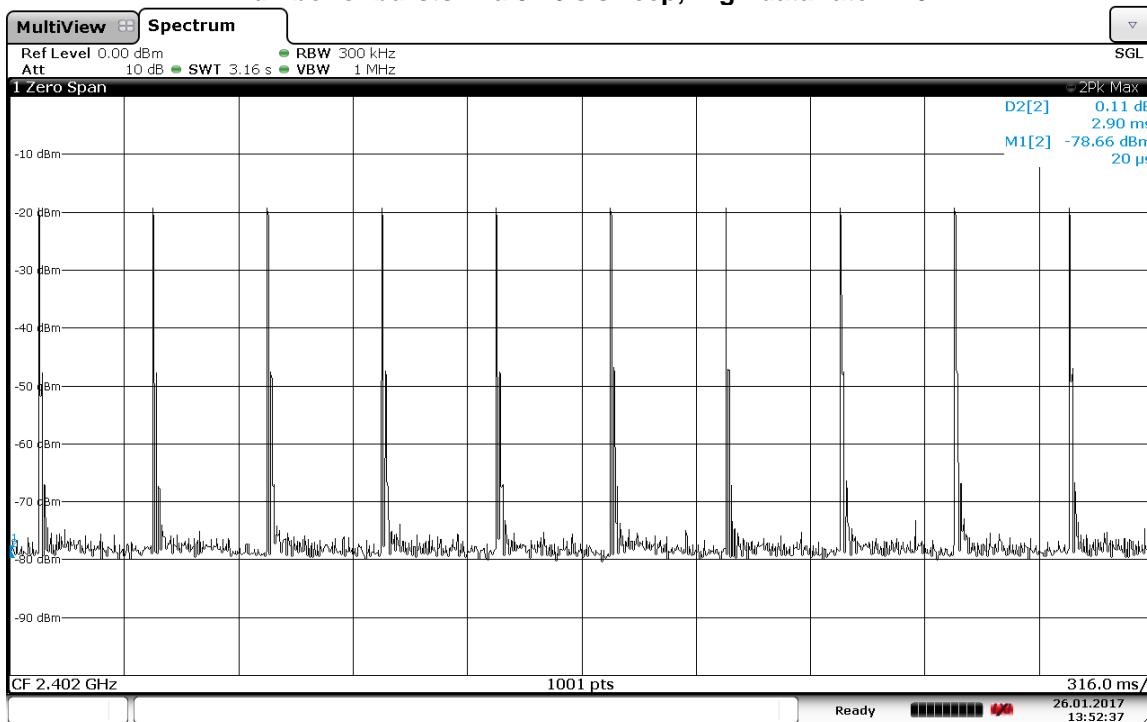
Date: 26.JAN.2017 13:20:29

Dwell time, High data rate = 2.90 ms



Date: 26.JAN.2017 13:51:41

Number of bursts in a 3.16 s sweep, High data rate = 10



Date: 26.JAN.2017 13:52:36

Test Personnel: Naga Suryadevara N5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Test Date: 01/26/2017

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Limit Applied: See section 10.3

Pretest Verification w/
Ambient Signals or
BB Source: Yes – Signal generator

Ambient Temperature: 19 °CRelative Humidity: 30 %Atmospheric Pressure: 981 mbars

11 Out of Band Conducted Emissions

11.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247) and RSS 247.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
CBLHF2012 -2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017

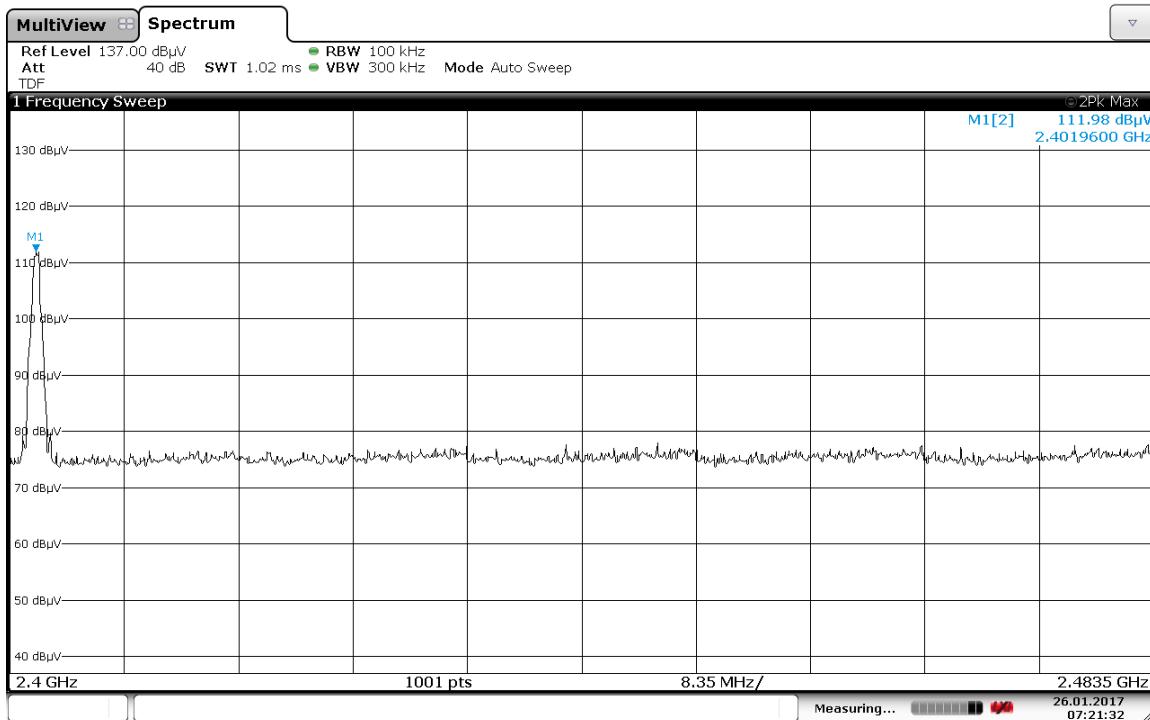
Software Utilized:

Name	Manufacturer	Version
None		

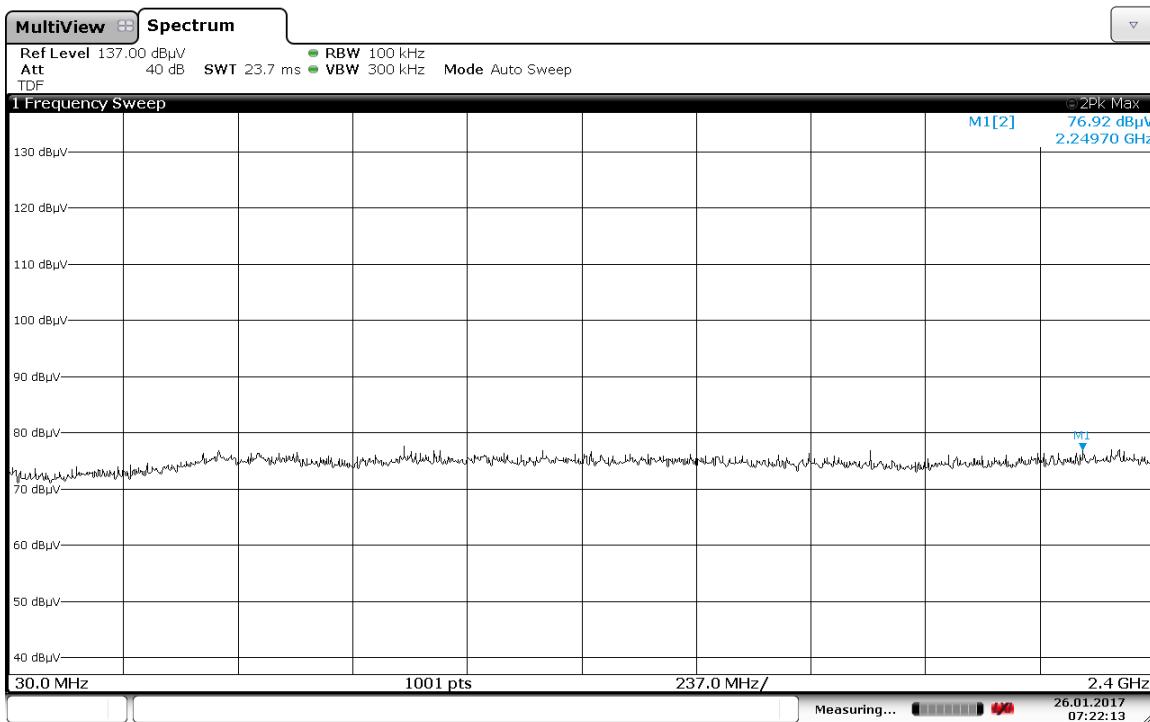
11.3 Results:

The sample tested was found to Comply. In any 100 kHz bandwidth outside the EUT pass-band, the RF power shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

All emissions measured were 20 dB below fundamental as indicated in the plots in sections 11.5.

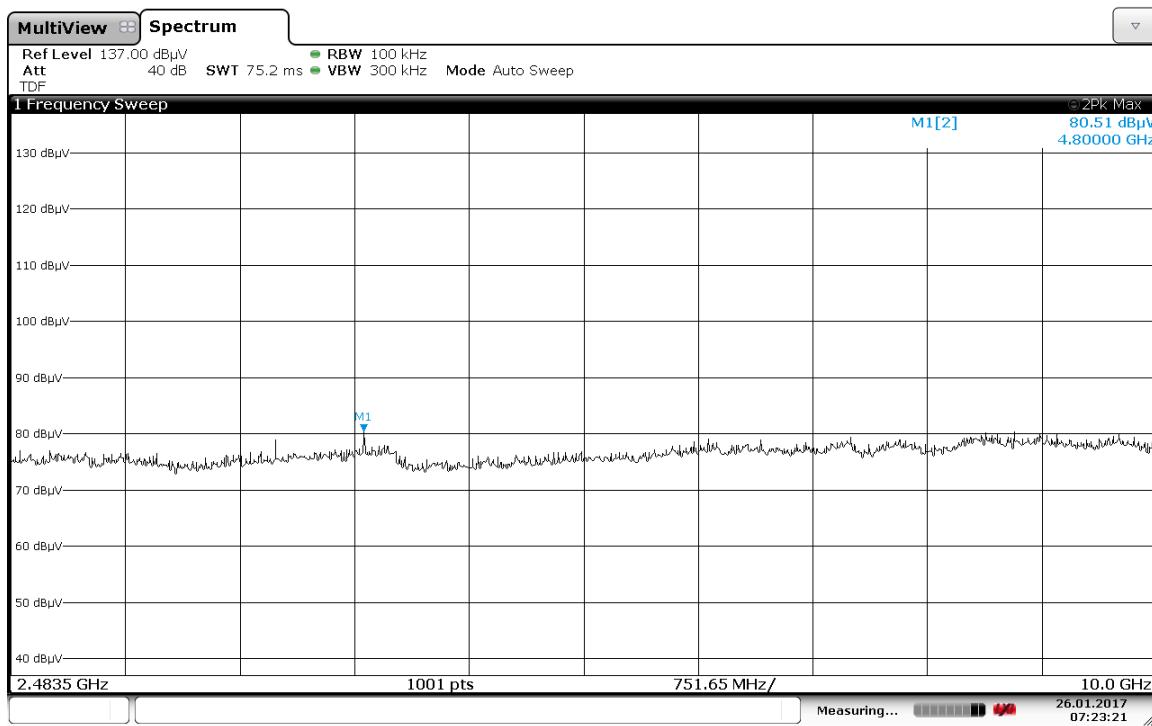
11.4 Plots/Data:**Low Channel (2402 MHz) – Battery mode, In band emissions, Low data rate**

Date: 26.JAN.2017 07:21:33

Low Channel (2402 MHz) – Battery mode, Out of band emissions, Low data rate

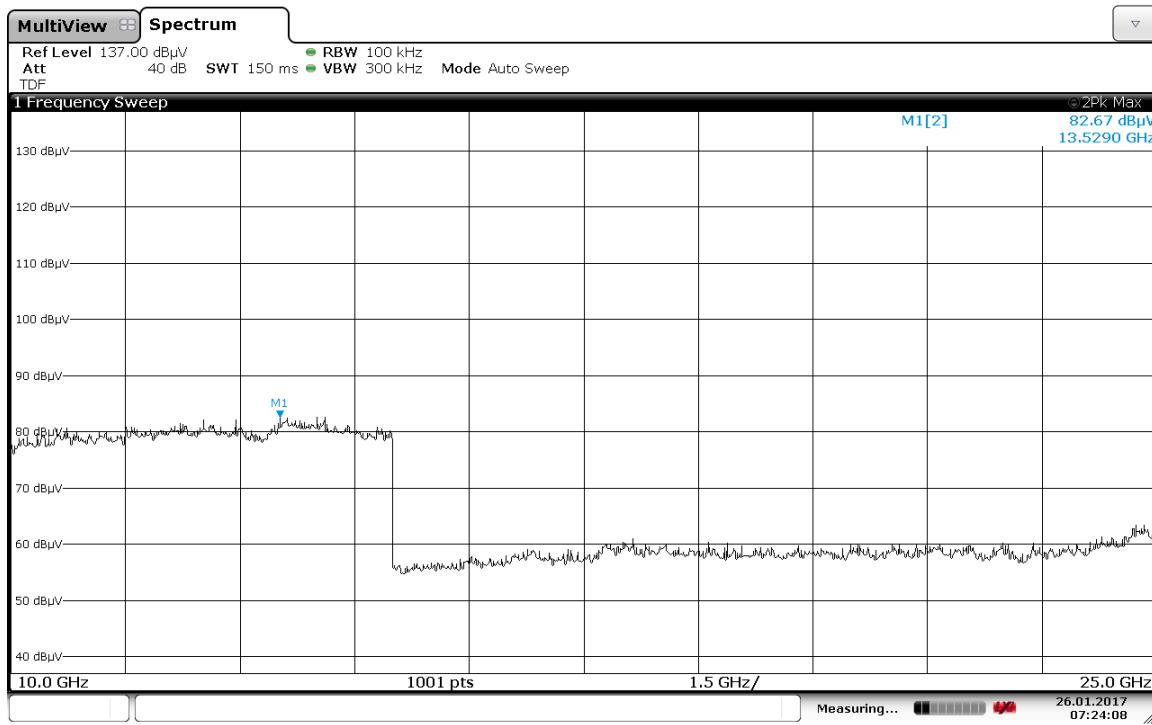
Date: 26.JAN.2017 07:22:13

Low Channel (2402 MHz) – Battery mode, Out of band emissions, Low data rate



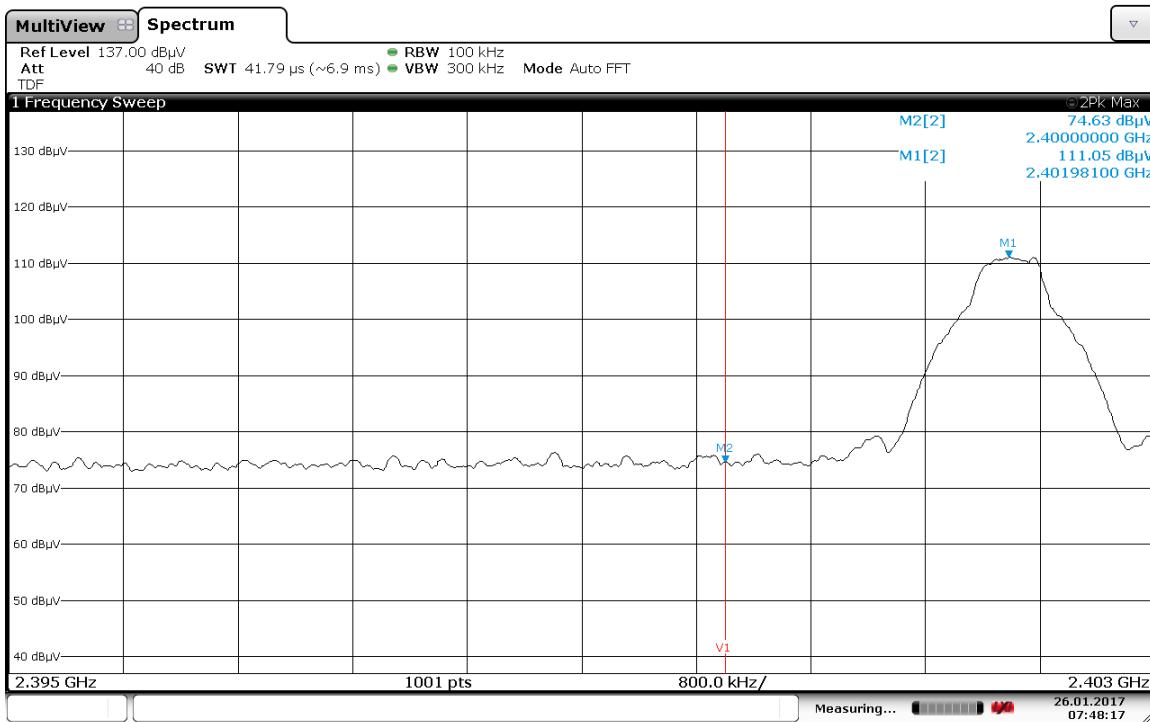
Date: 26.JAN.2017 07:23:20

Low Channel (2402 MHz) – Battery mode, Out of band emissions, Low data rate



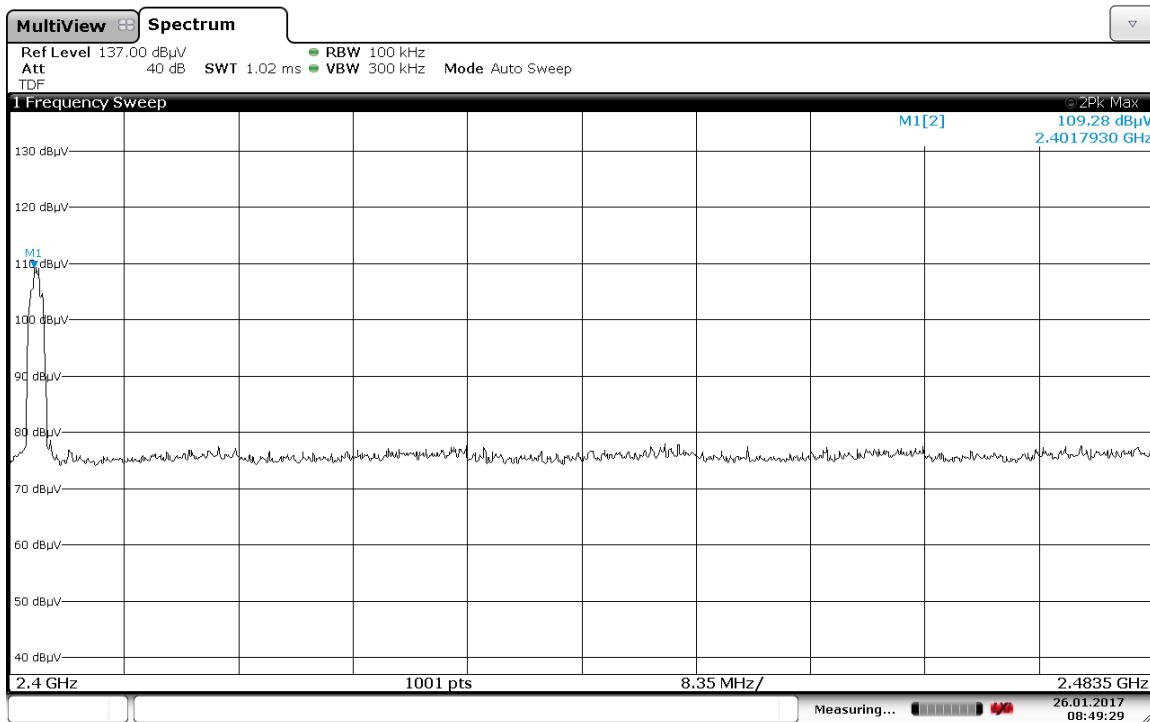
Date: 26.JAN.2017 07:24:08

Low Channel (2402 MHz) – Battery mode, Band edge emissions, Low data rate



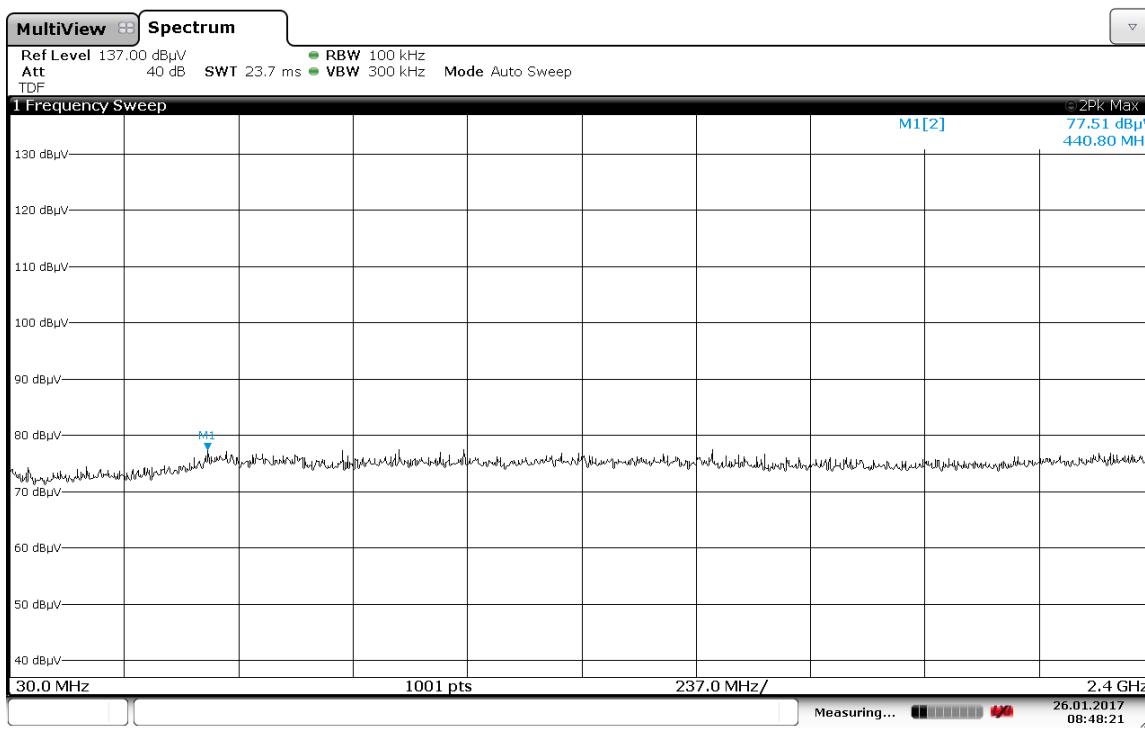
Date: 26.JAN.2017 07:48:17

Low Channel (2402 MHz) – Battery mode, In band emissions, High data rate



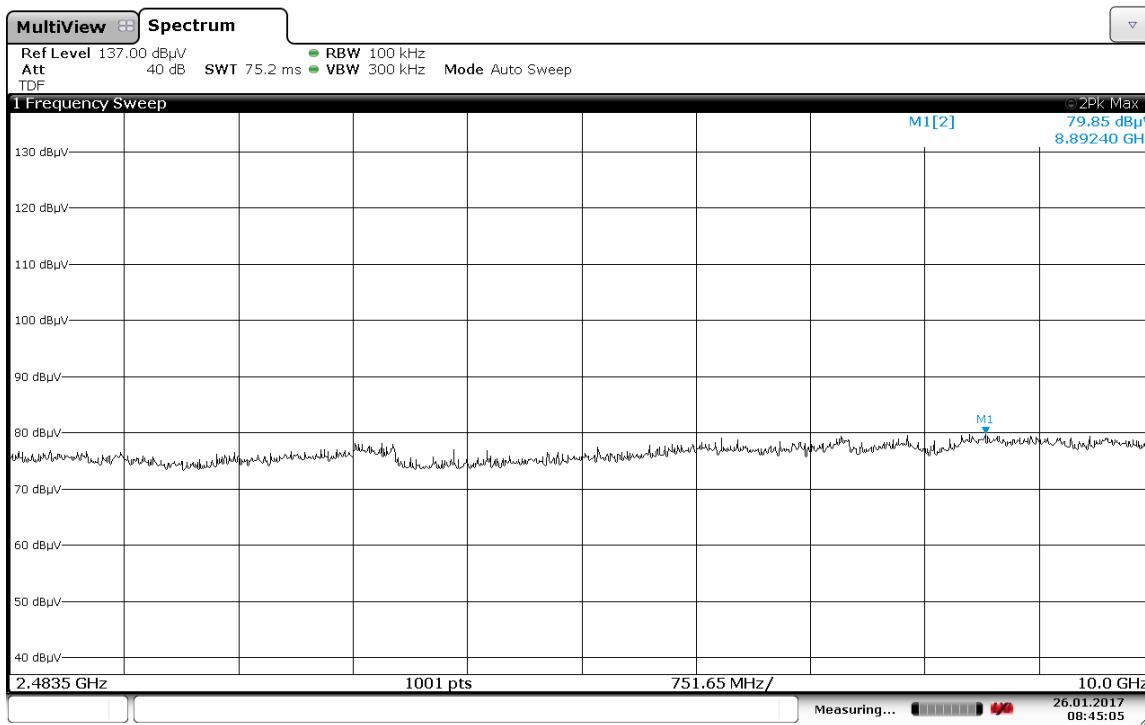
Date: 26.JAN.2017 08:49:28

Low Channel (2402 MHz) – Battery mode, Out of band emissions, High data rate



Date: 26.JAN.2017 08:48:21

Low Channel (2402 MHz) – Battery mode, Out of band emissions, High data rate



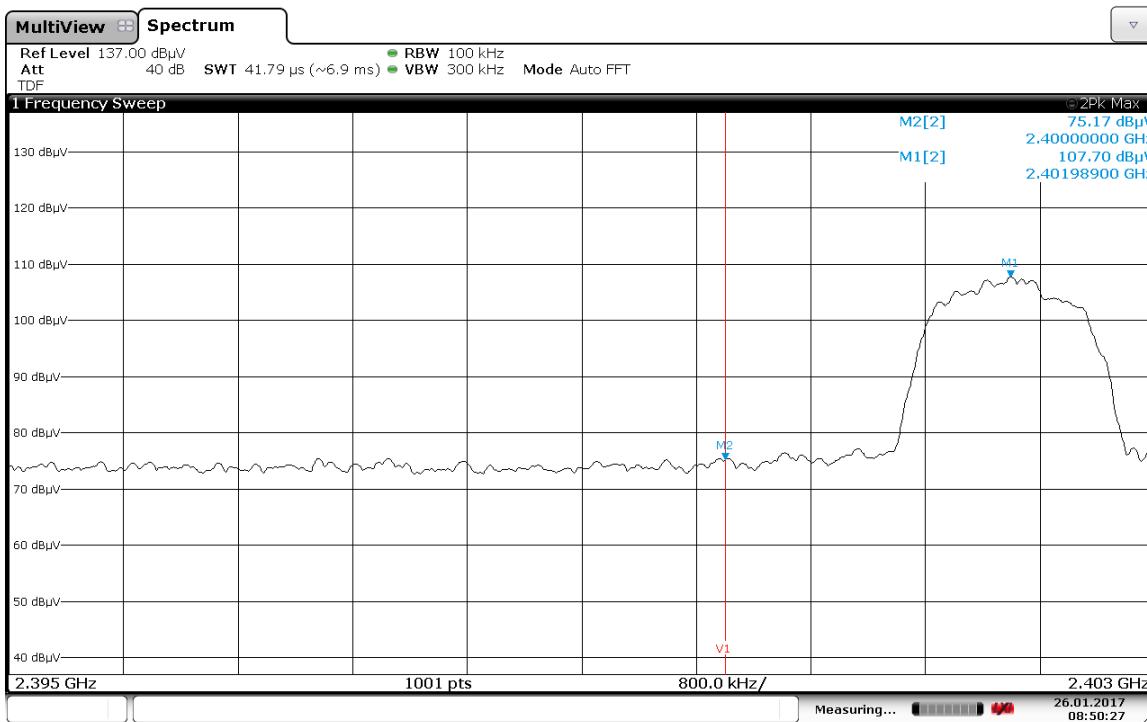
Date: 26.JAN.2017 08:45:04

Low Channel (2402 MHz) – Battery mode, Out of band emissions, High data rate



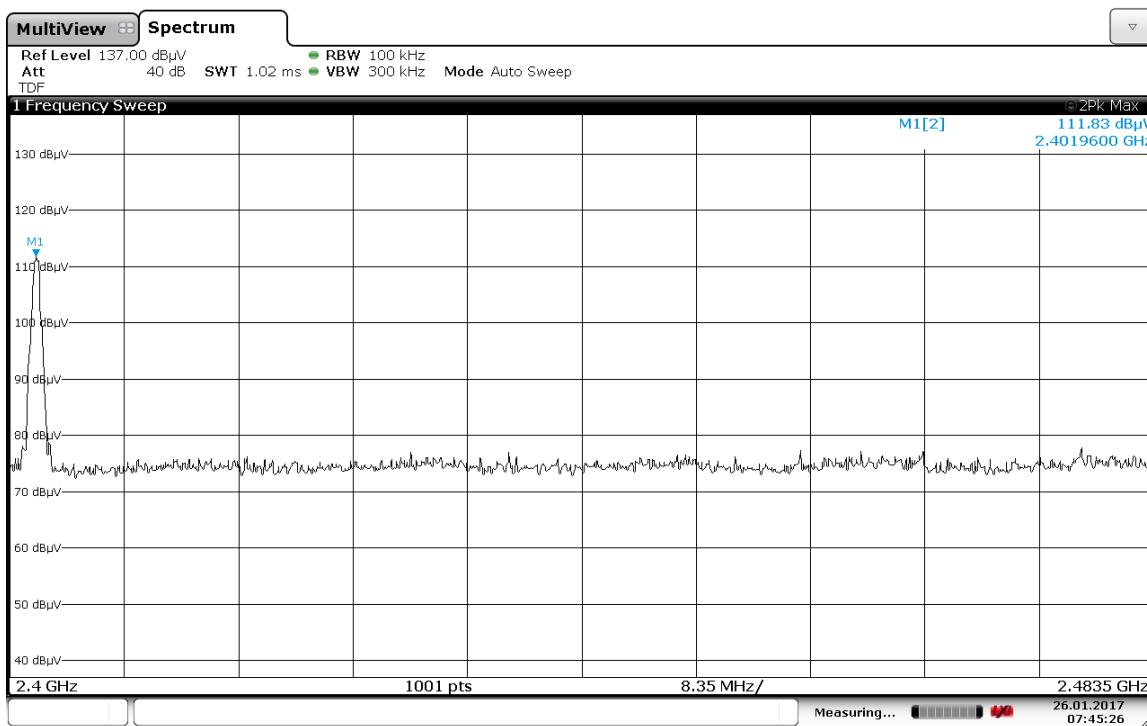
Date: 26.JAN.2017 08:46:01

Low Channel (2402 MHz) – Battery mode, Band edge emissions, High data rate



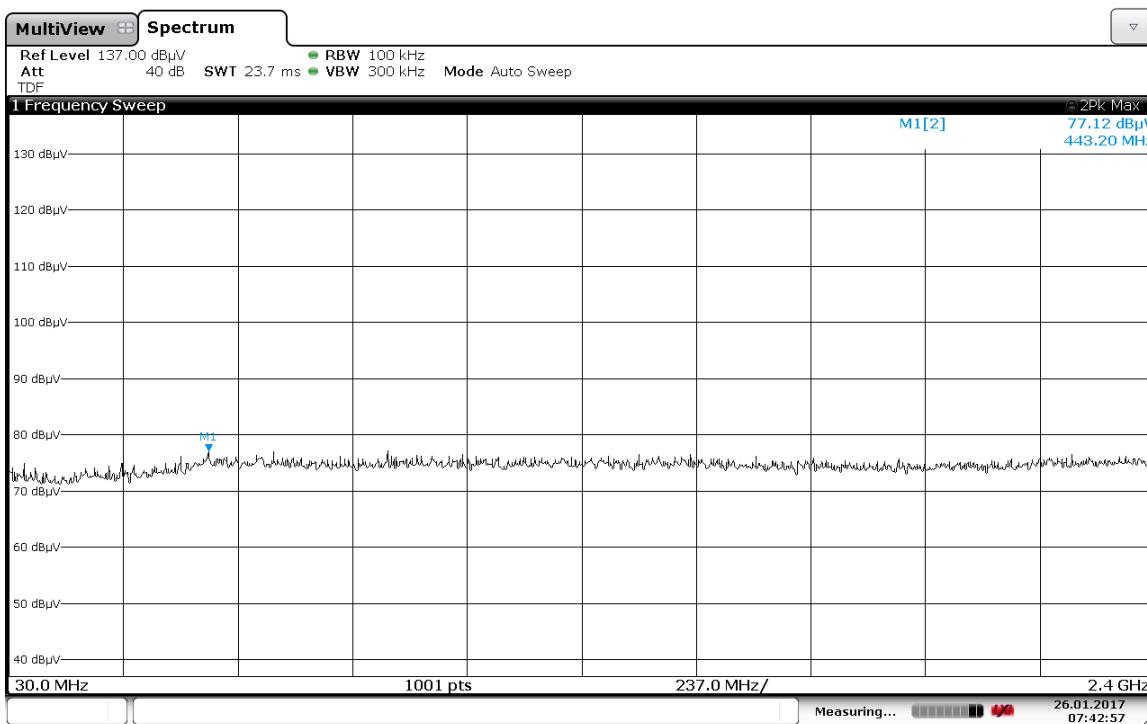
Date: 26.JAN.2017 08:50:27

Low Channel (2402 MHz) – Charging mode, In band emissions, Low data rate



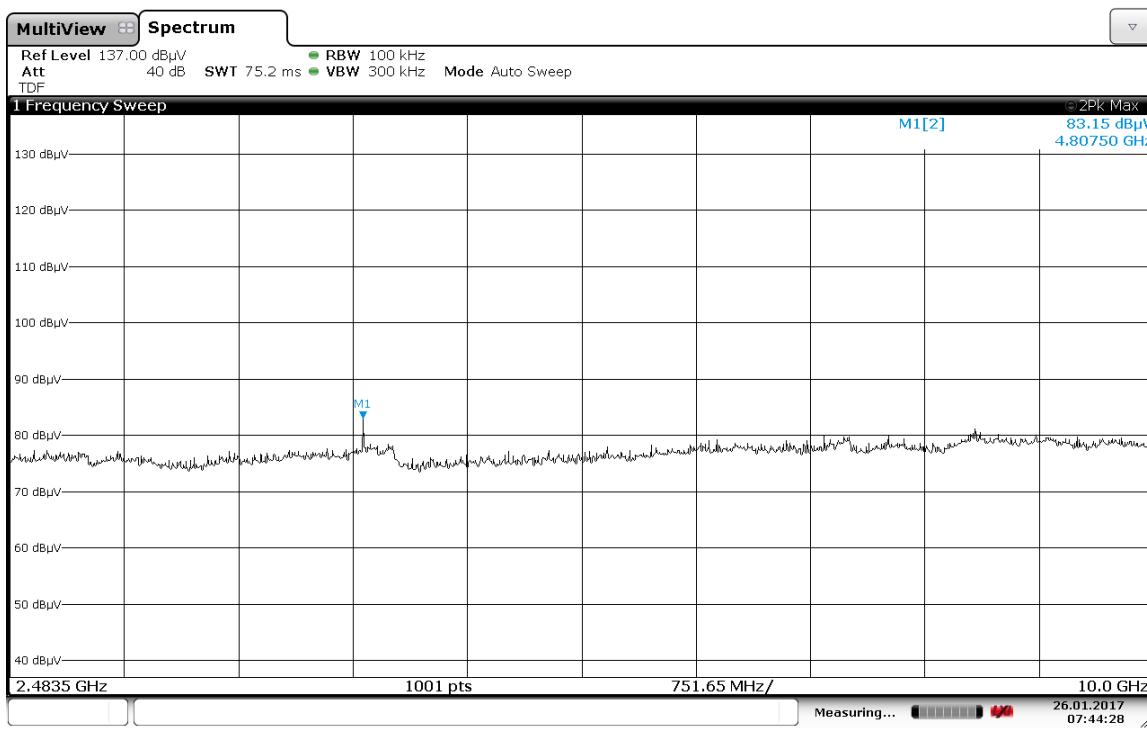
Date: 26.JAN.2017 07:45:26

Low Channel (2402 MHz) – Charging mode, Out of band emissions, Low data rate



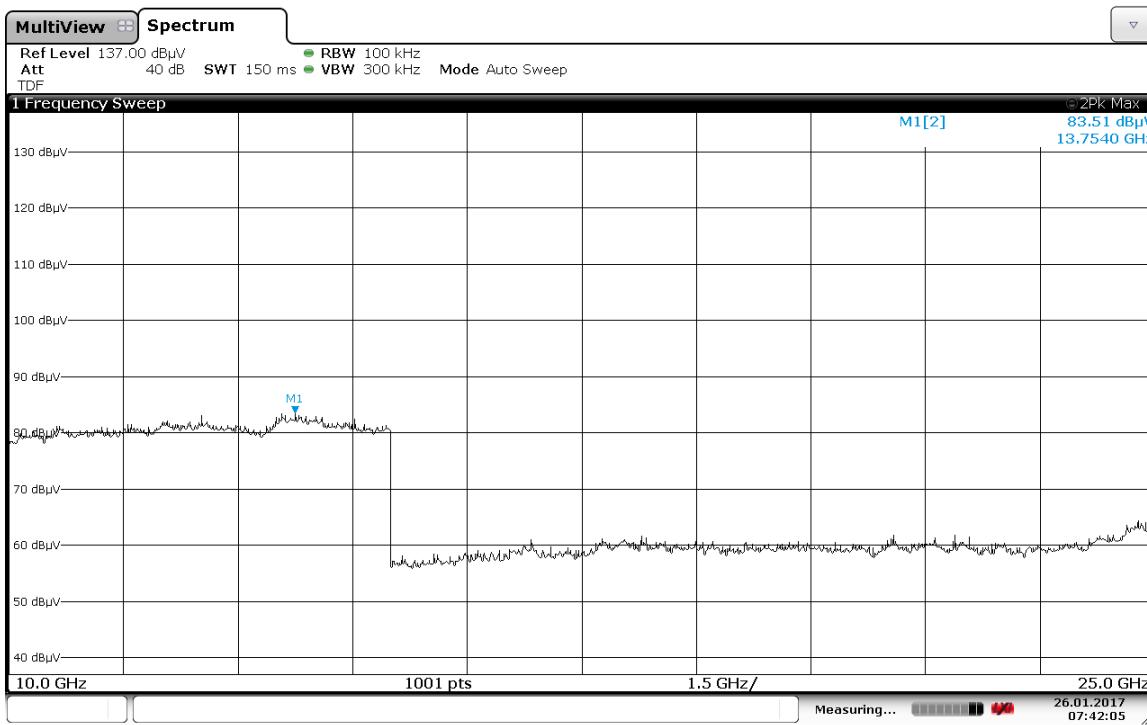
Date: 26.JAN.2017 07:42:57

Low Channel (2402 MHz) – Charging mode, Out of band emissions, Low data rate



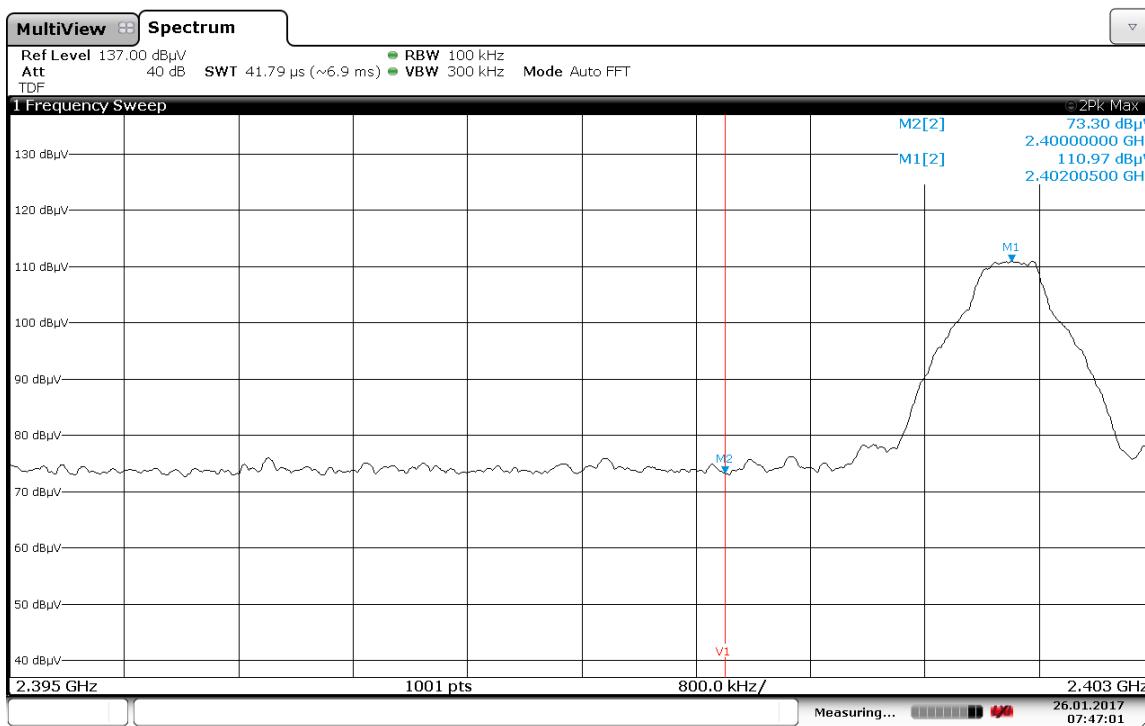
Date: 26.JAN.2017 07:44:28

Low Channel (2402 MHz) – Charging mode, Out of band emissions, Low data rate



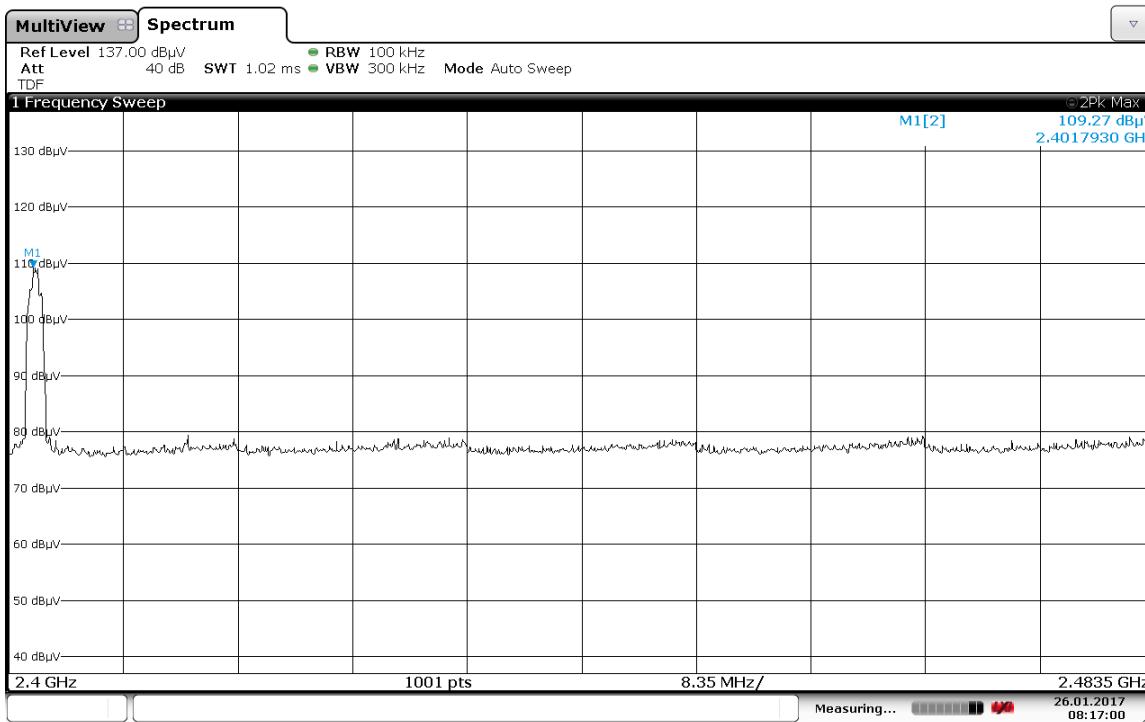
Date: 26.JAN.2017 07:42:05

Low Channel (2402 MHz) – Charging mode, Band edge emissions, Low data rate



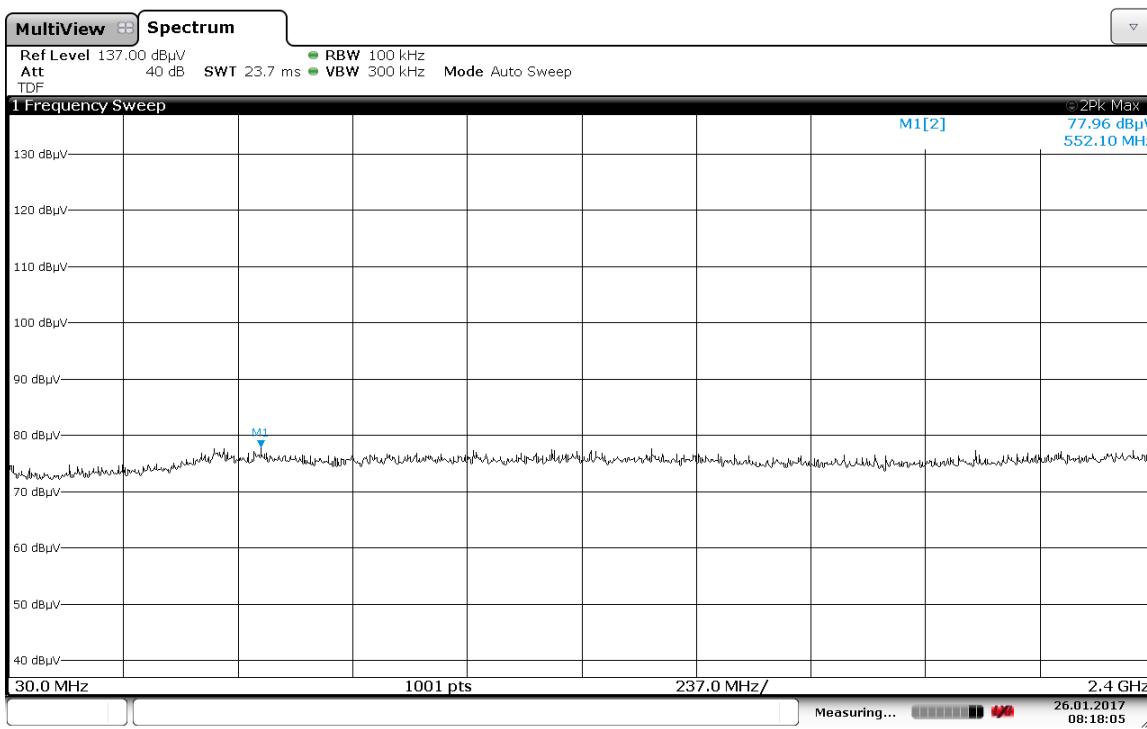
Date: 26.JAN.2017 07:47:01

Low Channel (2402 MHz) – Charging mode, In Band emissions, High data rate



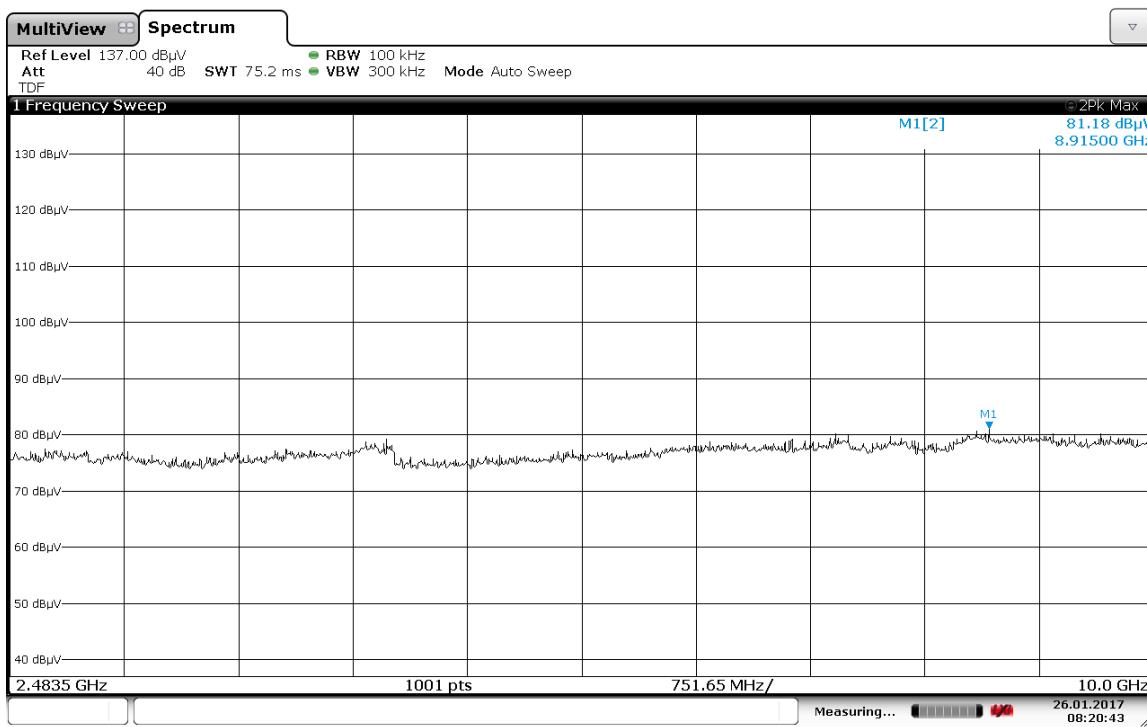
Date: 26.JAN.2017 08:17:01

Low Channel (2402 MHz) – Charging mode, Out of Band emissions, High data rate



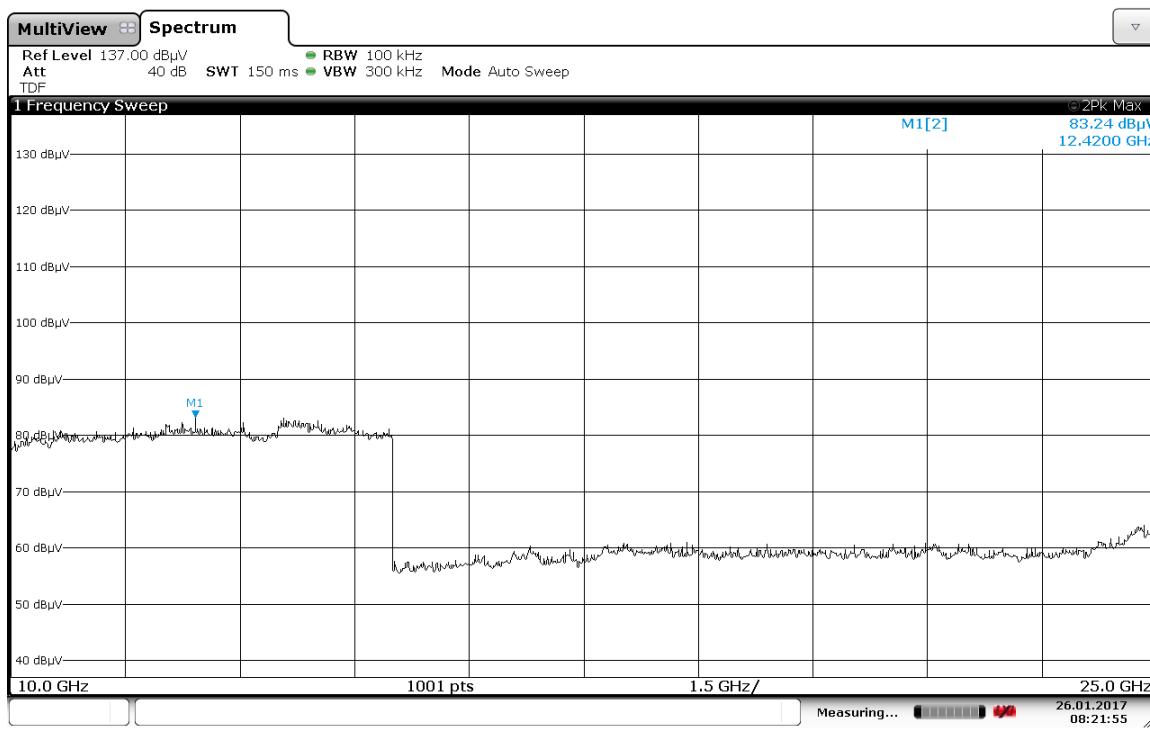
Date: 26.JAN.2017 08:18:05

Low Channel (2402 MHz) – Charging mode, Out of Band emissions, High data rate



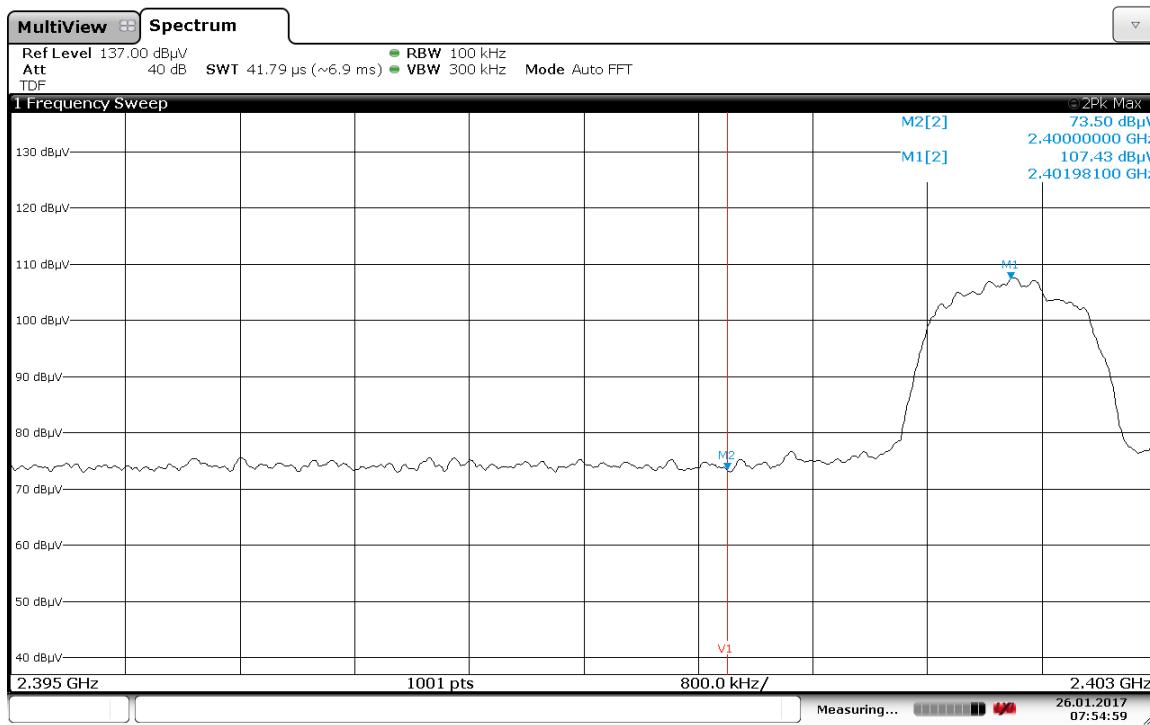
Date: 26.JAN.2017 08:20:43

Low Channel (2402 MHz) – Charging mode, Out of Band emissions, High data rate



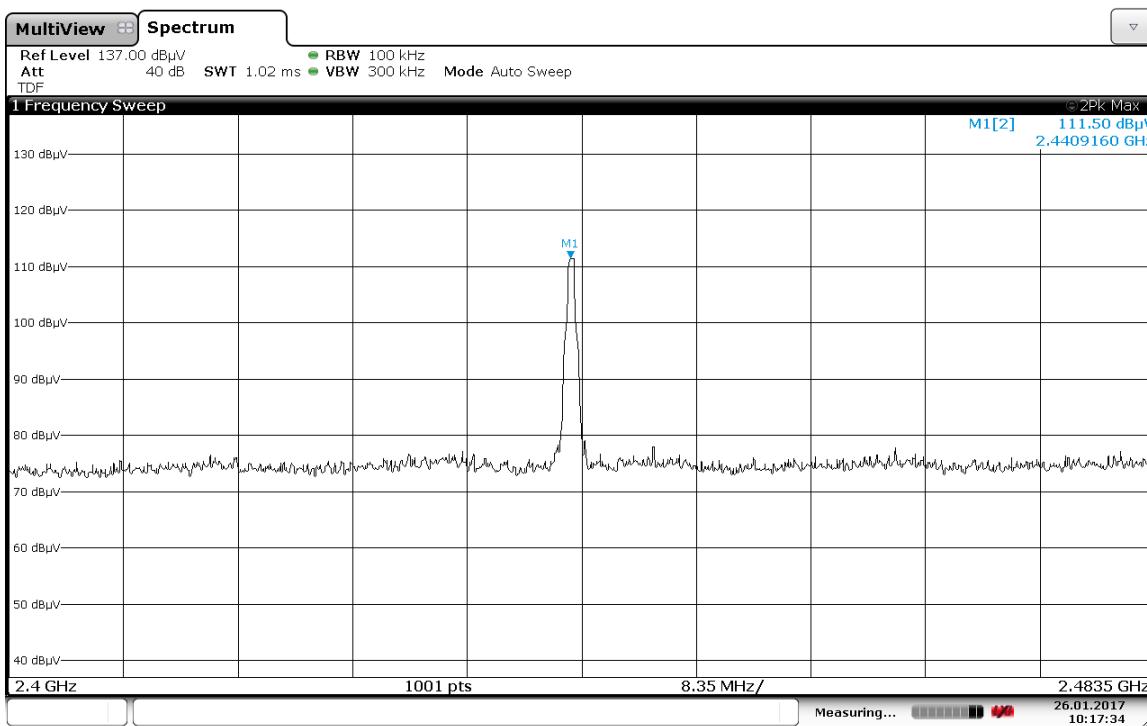
Date: 26.JAN.2017 08:21:55

Low Channel (2402 MHz) – Charging mode, Band edge emissions, High data rate



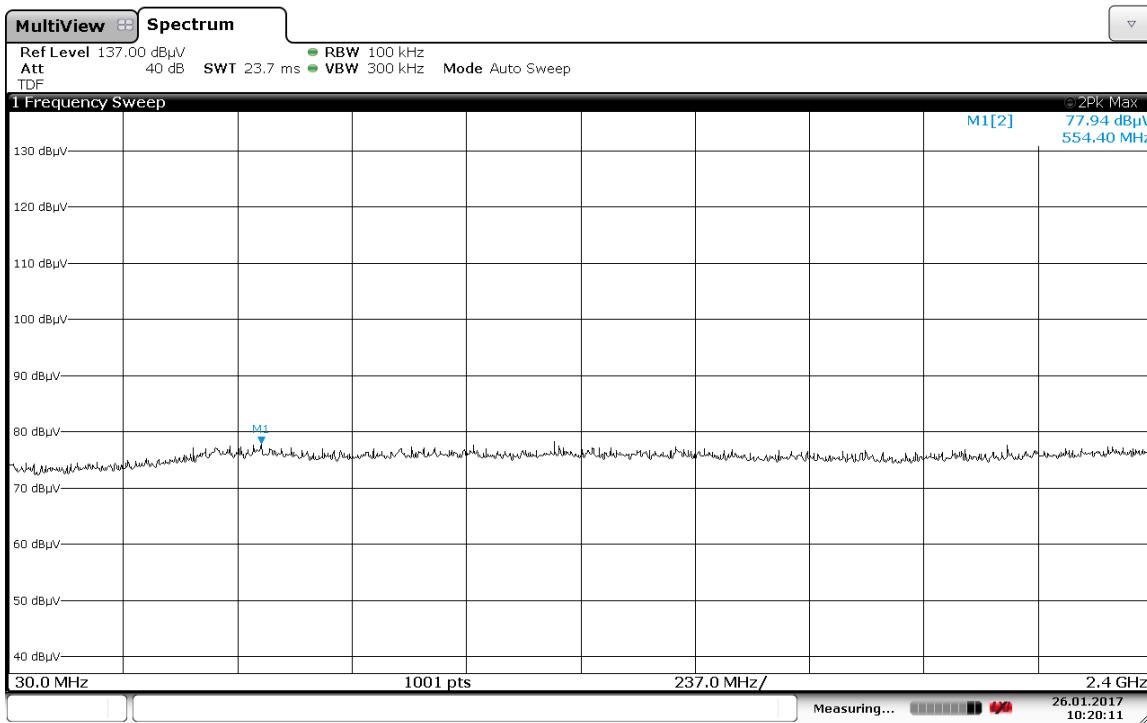
Date: 26.JAN.2017 07:54:59

Mid Channel (2441 MHz) – Battery mode, In Band emissions, Low data rate



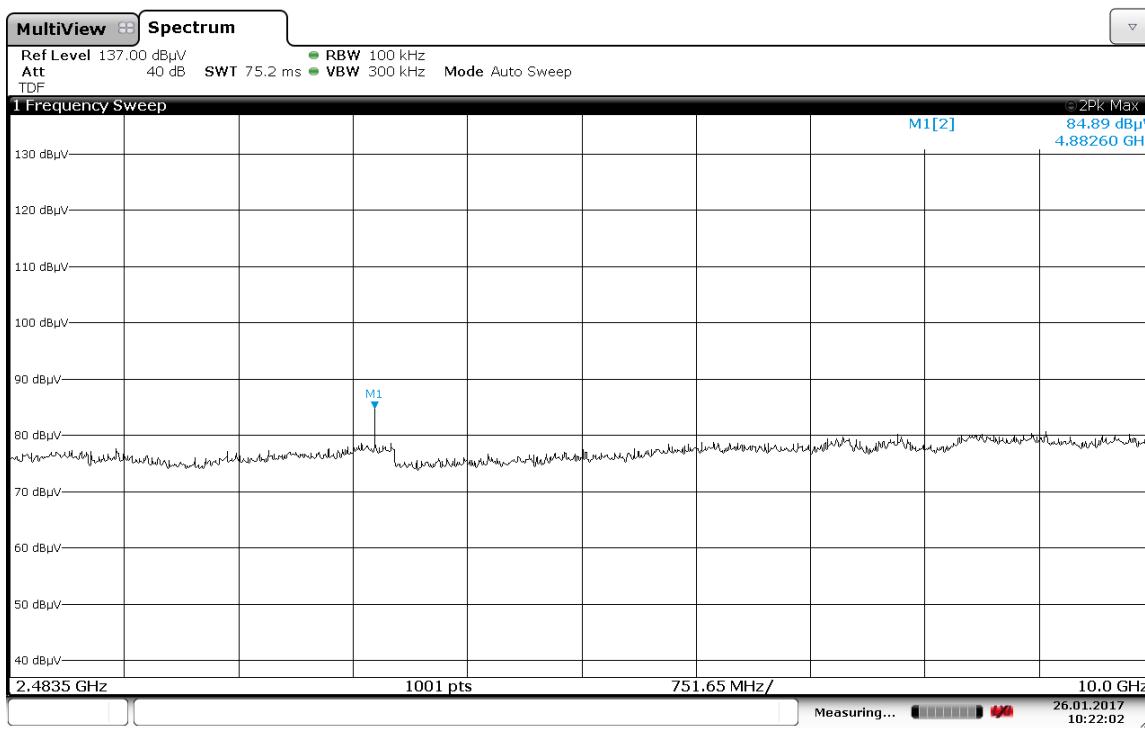
Date: 26.JAN.2017 10:17:34

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, Low data rate



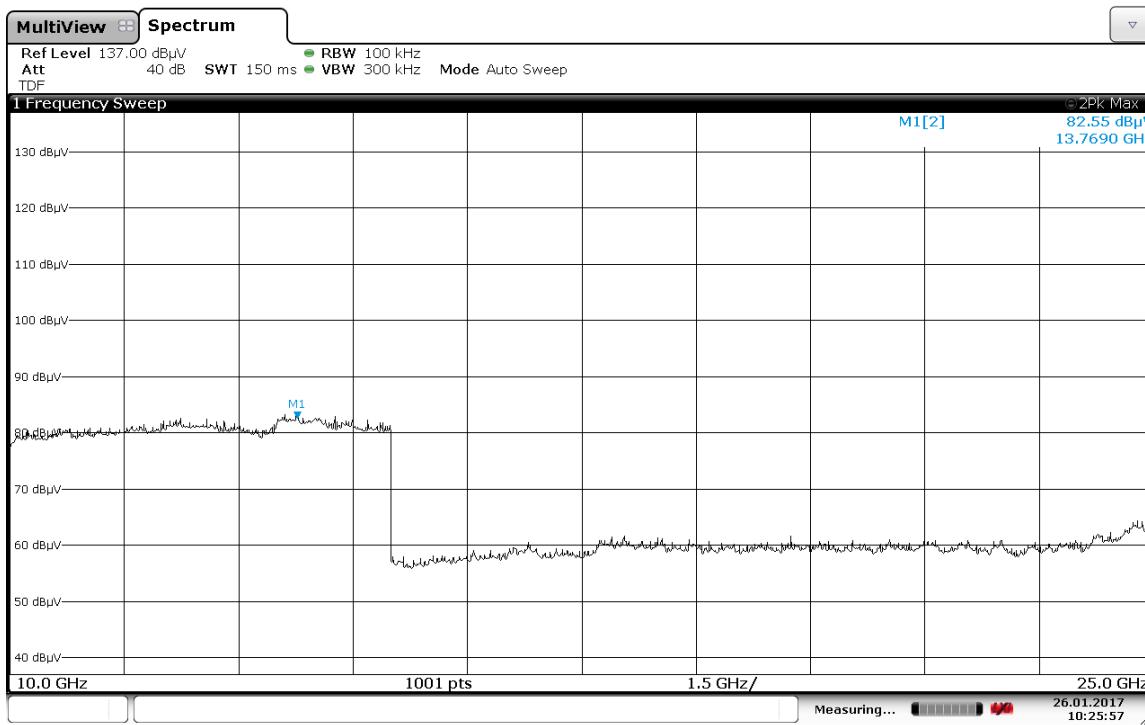
Date: 26.JAN.2017 10:20:10

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, Low data rate



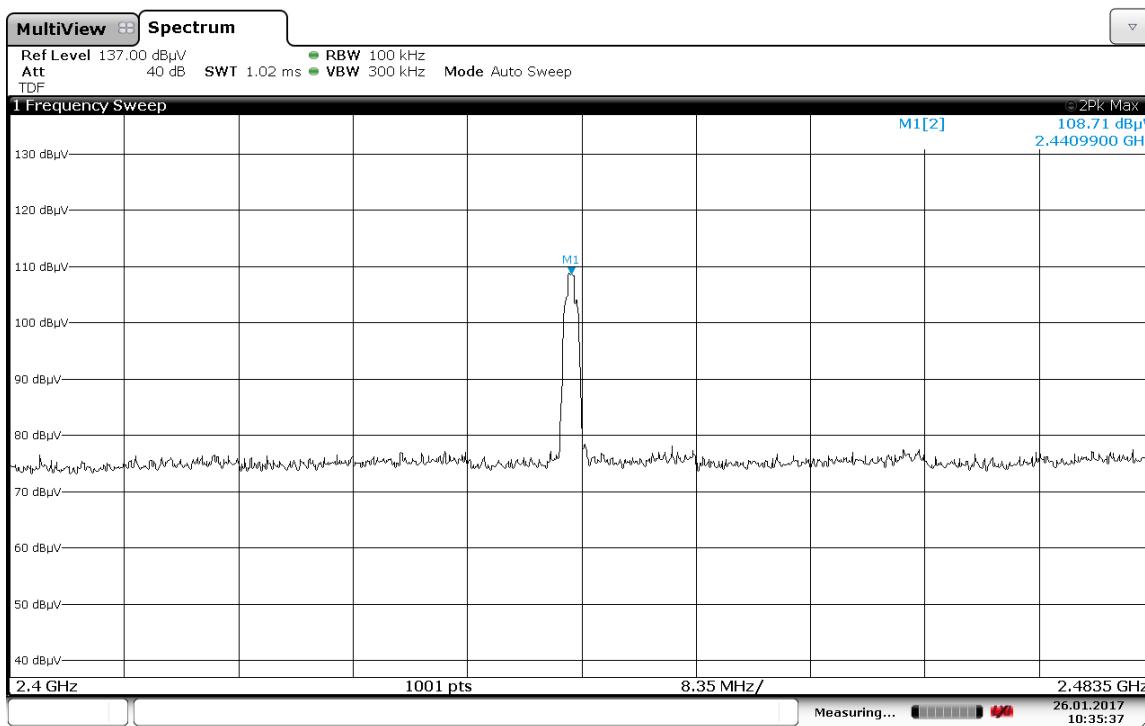
Date: 26.JAN.2017 10:22:02

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, Low data rate



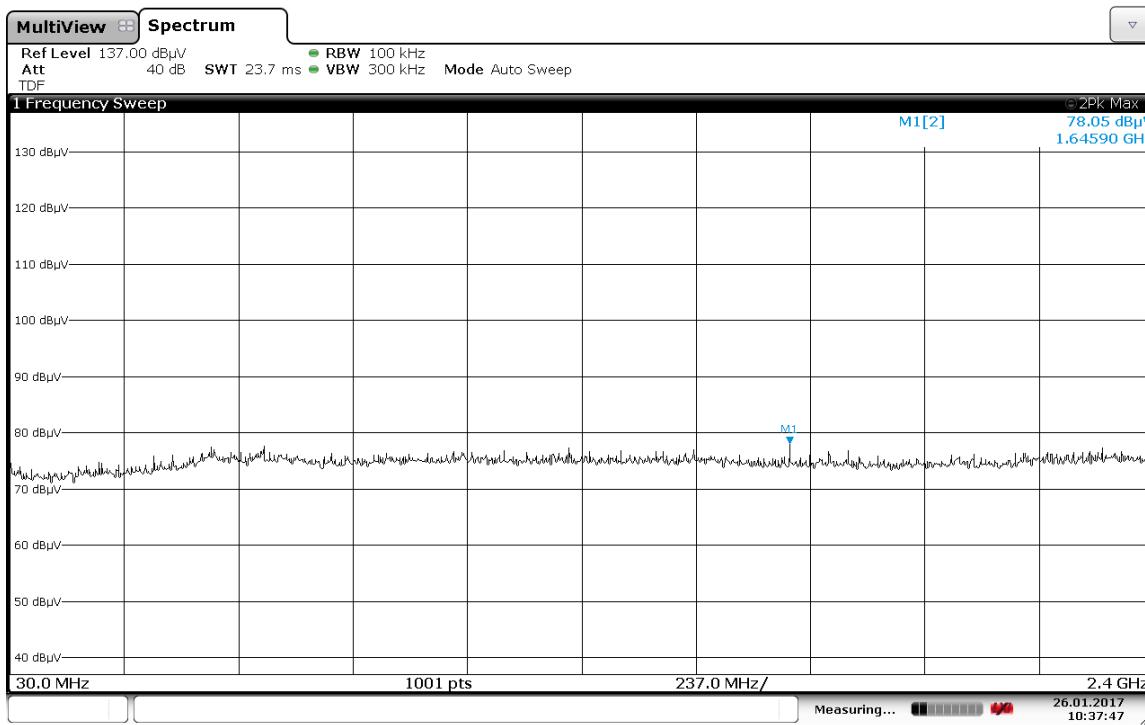
Date: 26.JAN.2017 10:25:57

Mid Channel (2441 MHz) – Battery mode, In Band emissions, High data rate



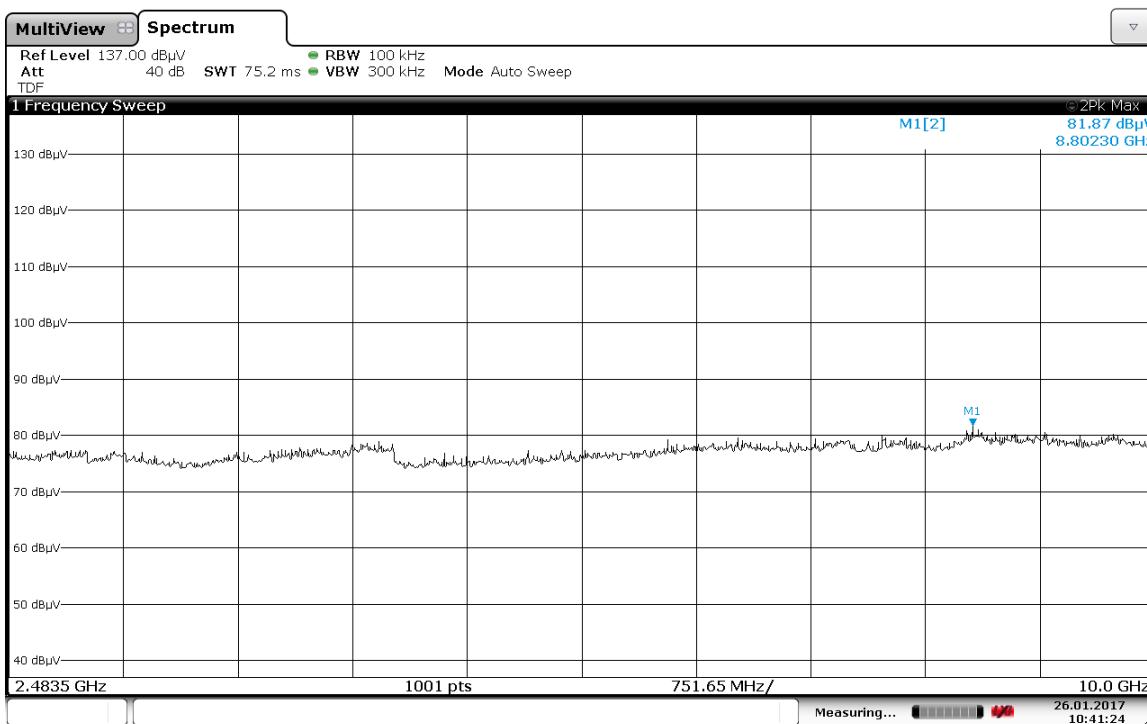
Date: 26.JAN.2017 10:35:36

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, High data rate



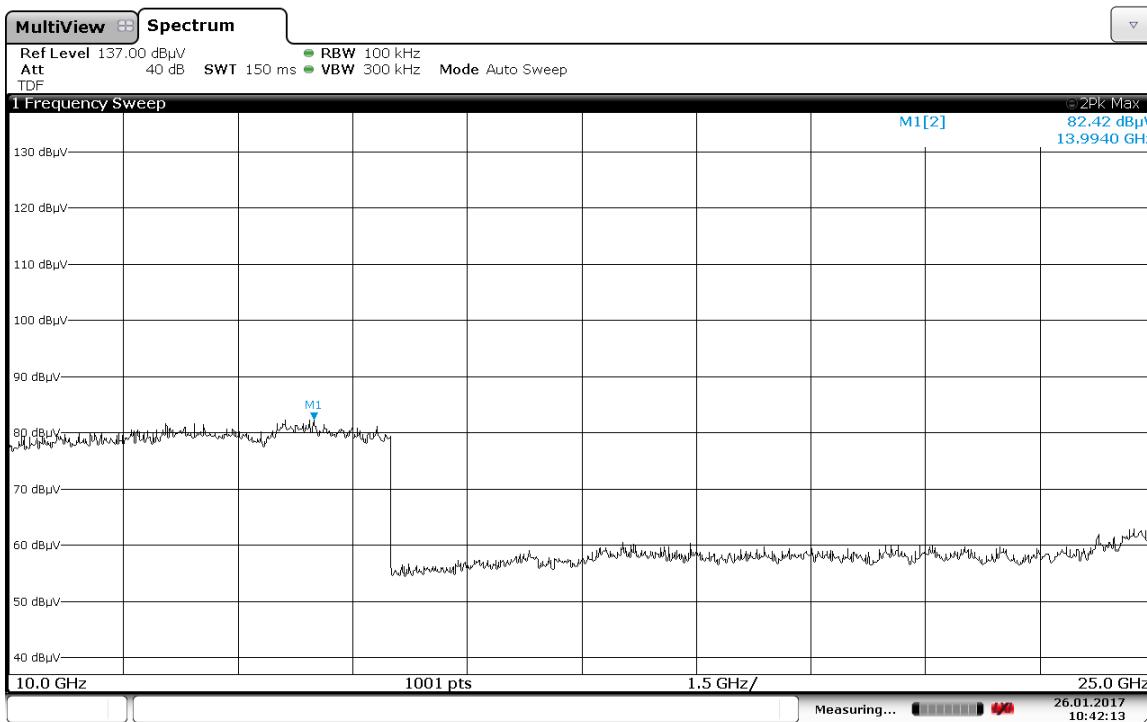
Date: 26.JAN.2017 10:37:47

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, High data rate



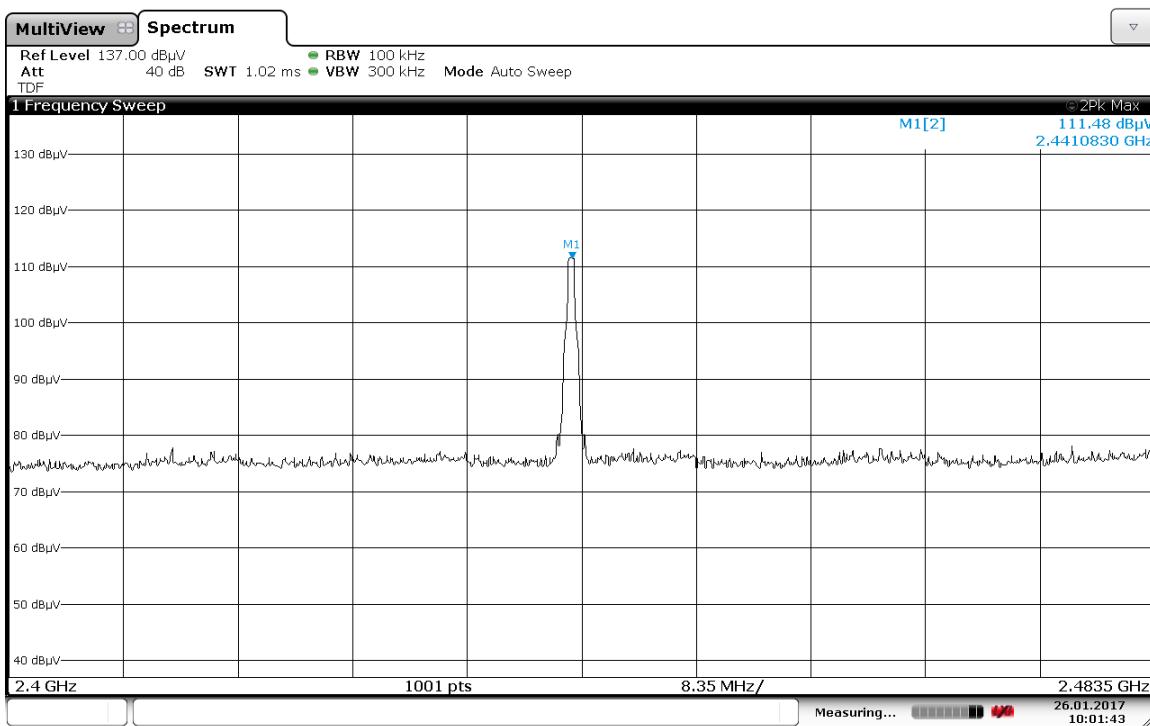
Date: 26.JAN.2017 10:41:24

Mid Channel (2441 MHz) – Battery mode, Out of Band emissions, High data rate



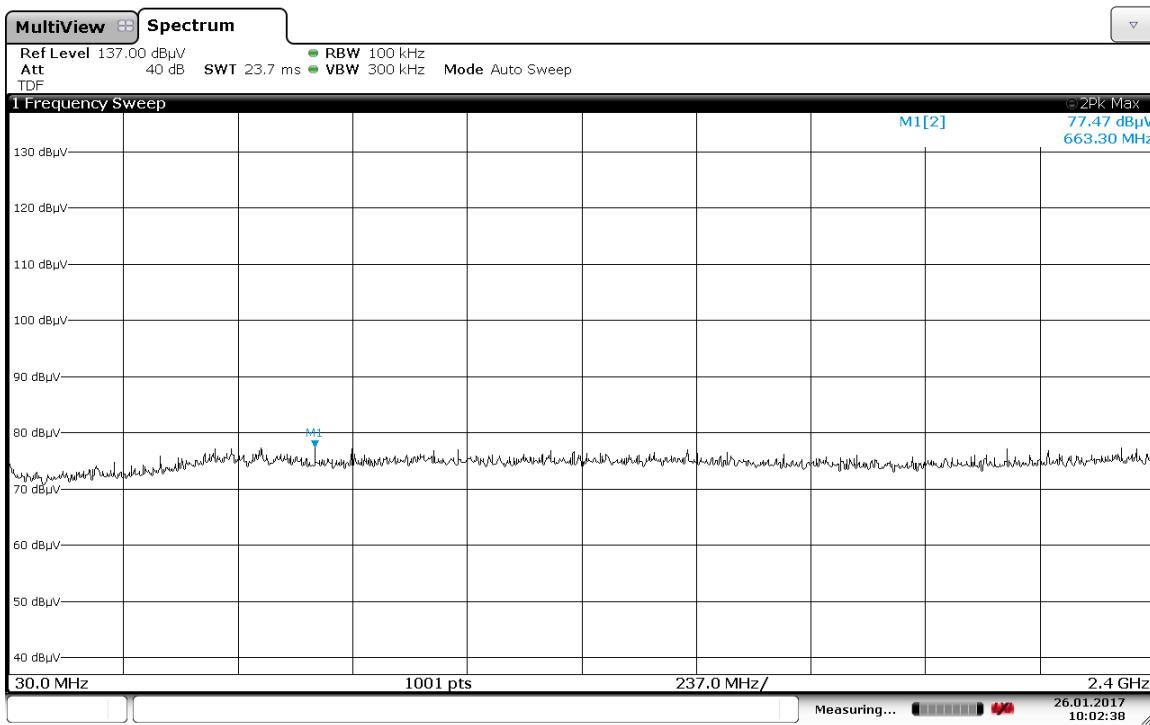
Date: 26.JAN.2017 10:42:13

Mid Channel (2441 MHz) – Charging mode, In Band emissions, Low data rate



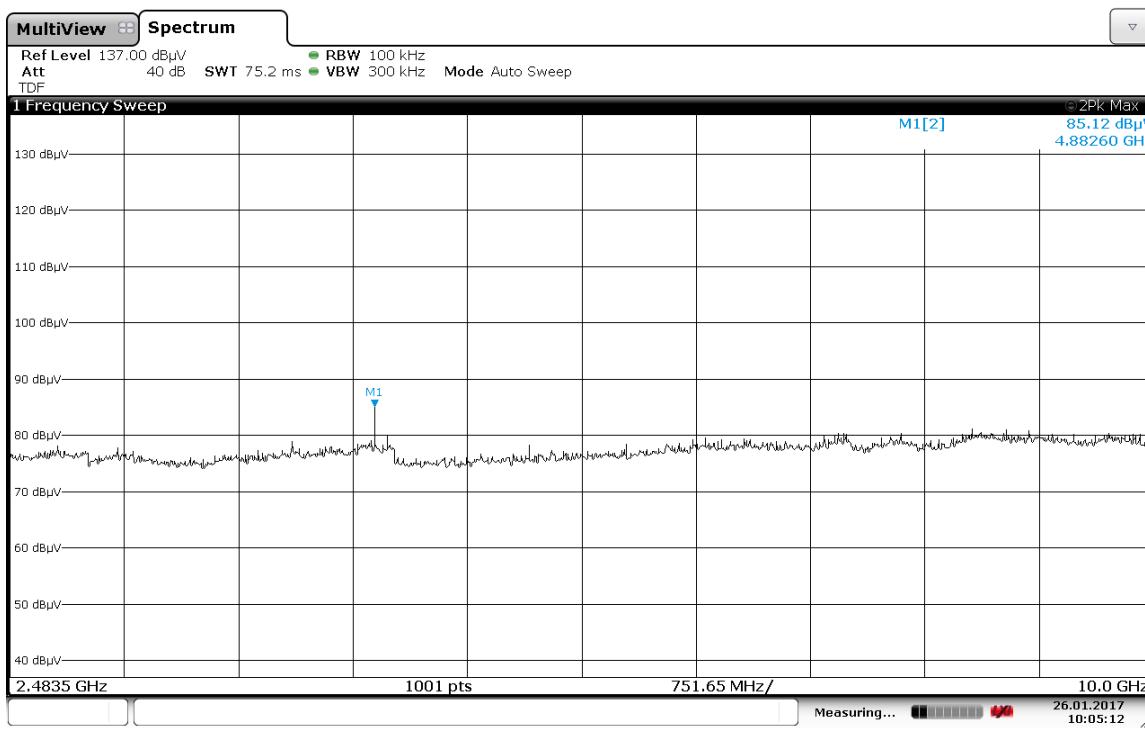
Date: 26.JAN.2017 10:01:43

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, Low data rate



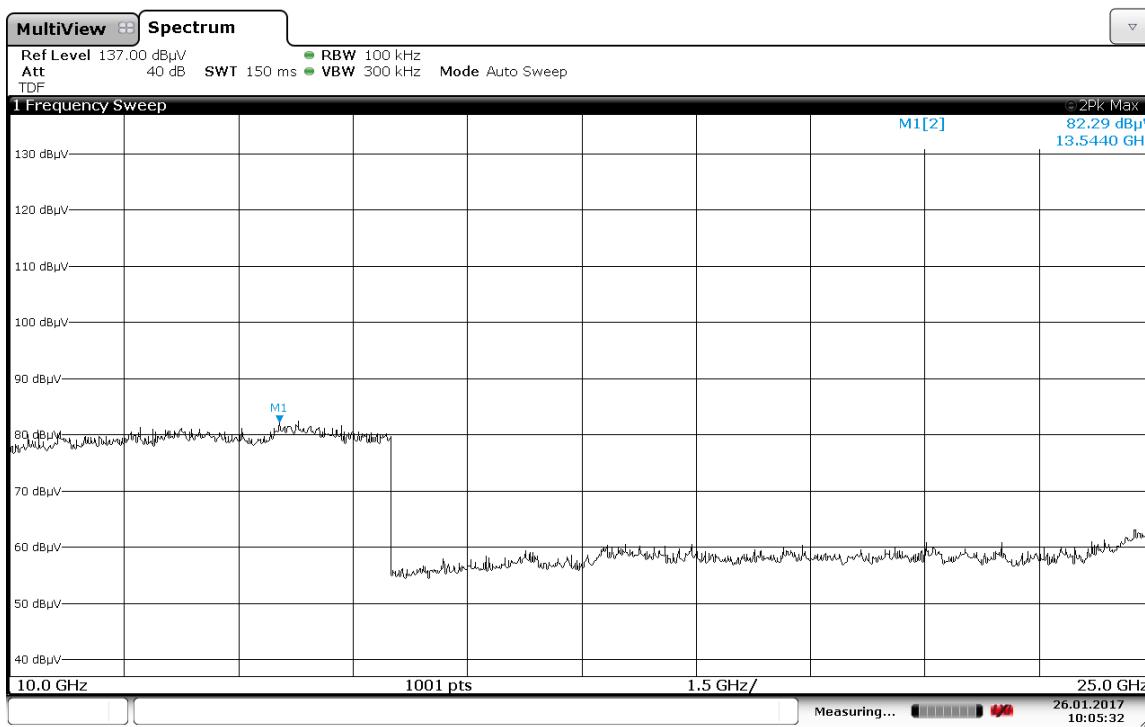
Date: 26.JAN.2017 10:02:38

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, Low data rate



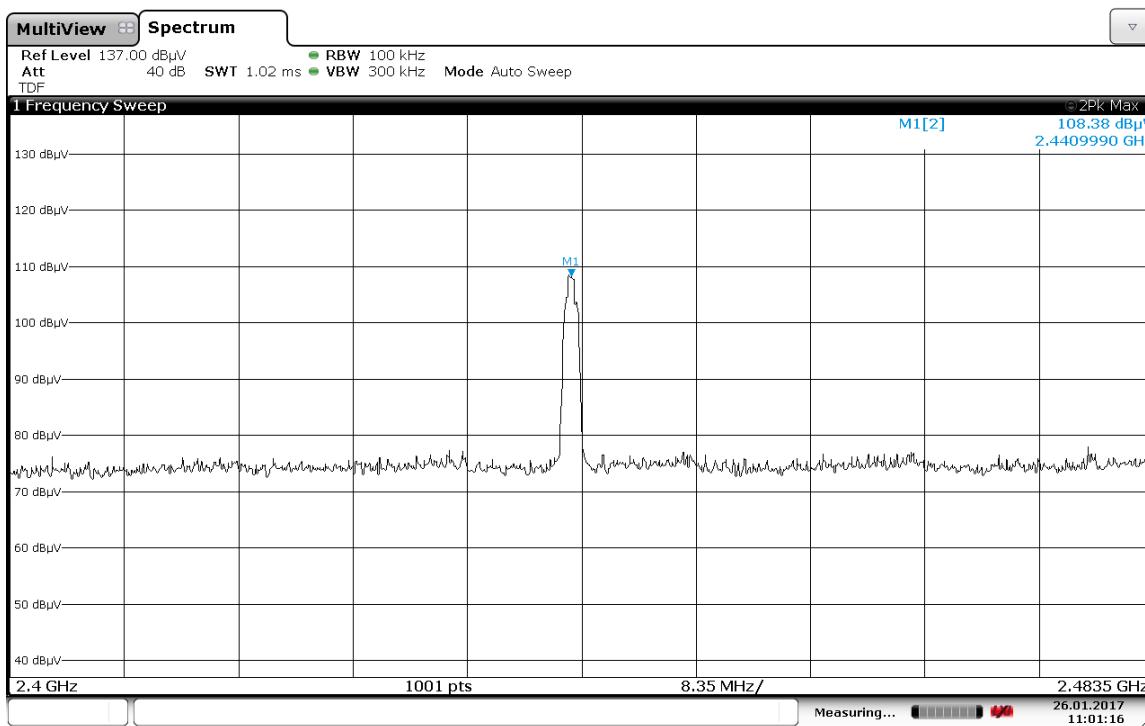
Date: 26.JAN.2017 10:05:12

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, Low data rate



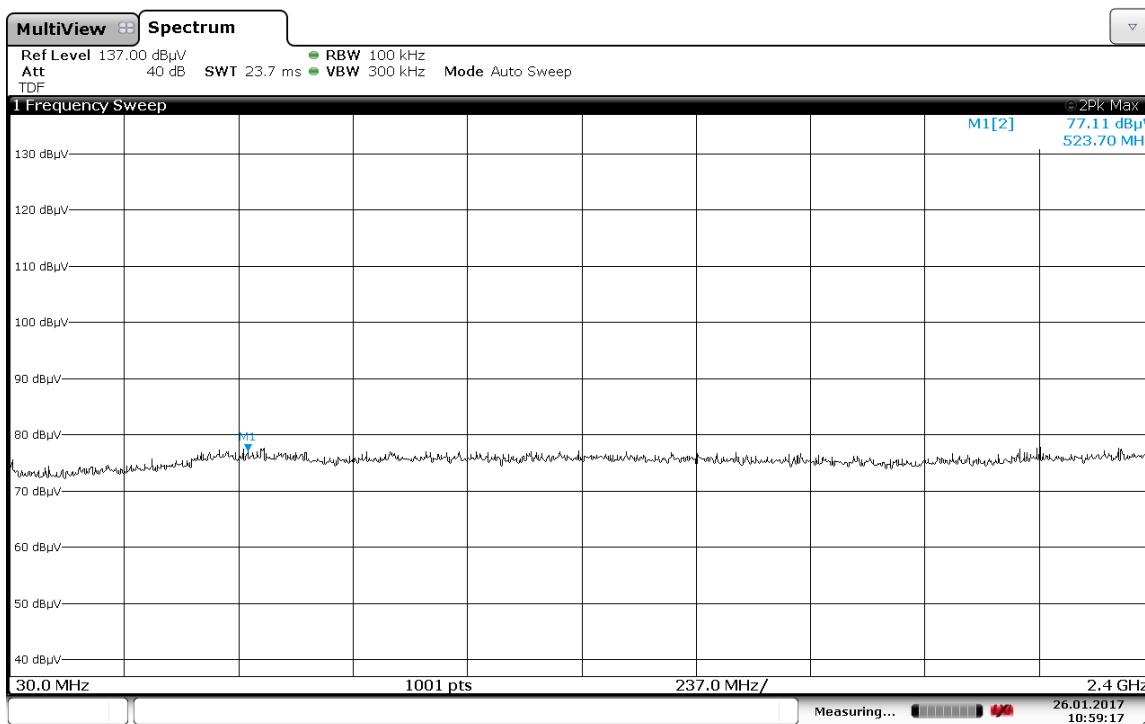
Date: 26.JAN.2017 10:05:32

Mid Channel (2441 MHz) – Charging mode, In Band emissions, High data rate



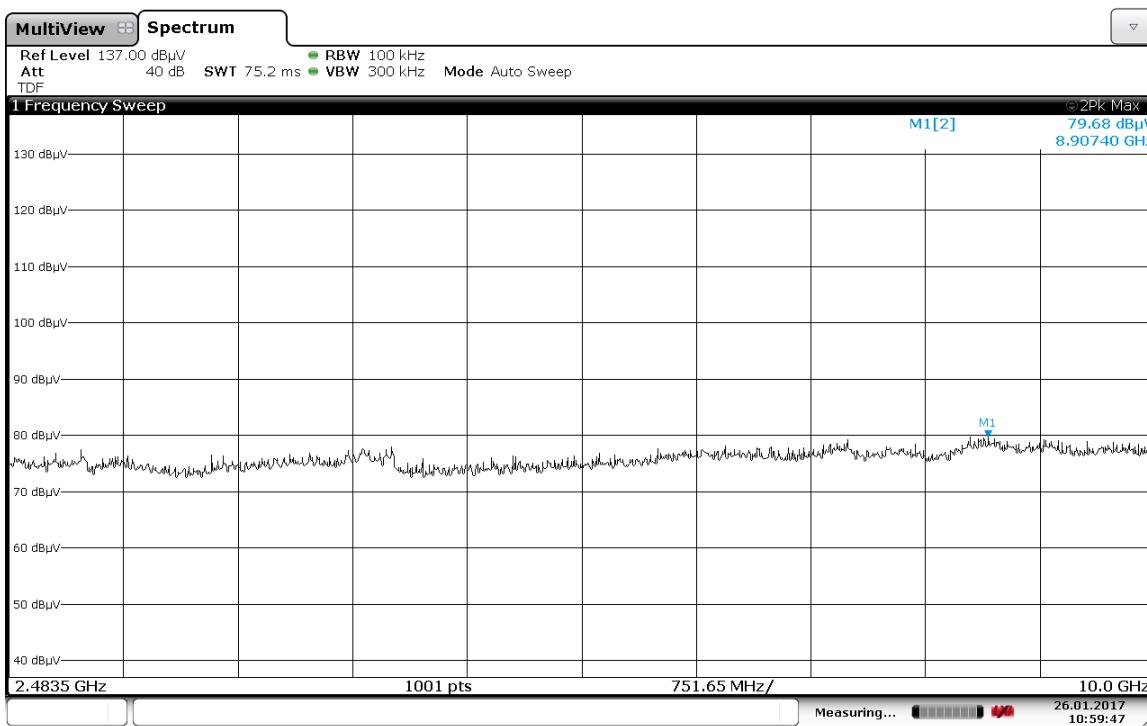
Date: 26.JAN.2017 11:01:15

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, High data rate



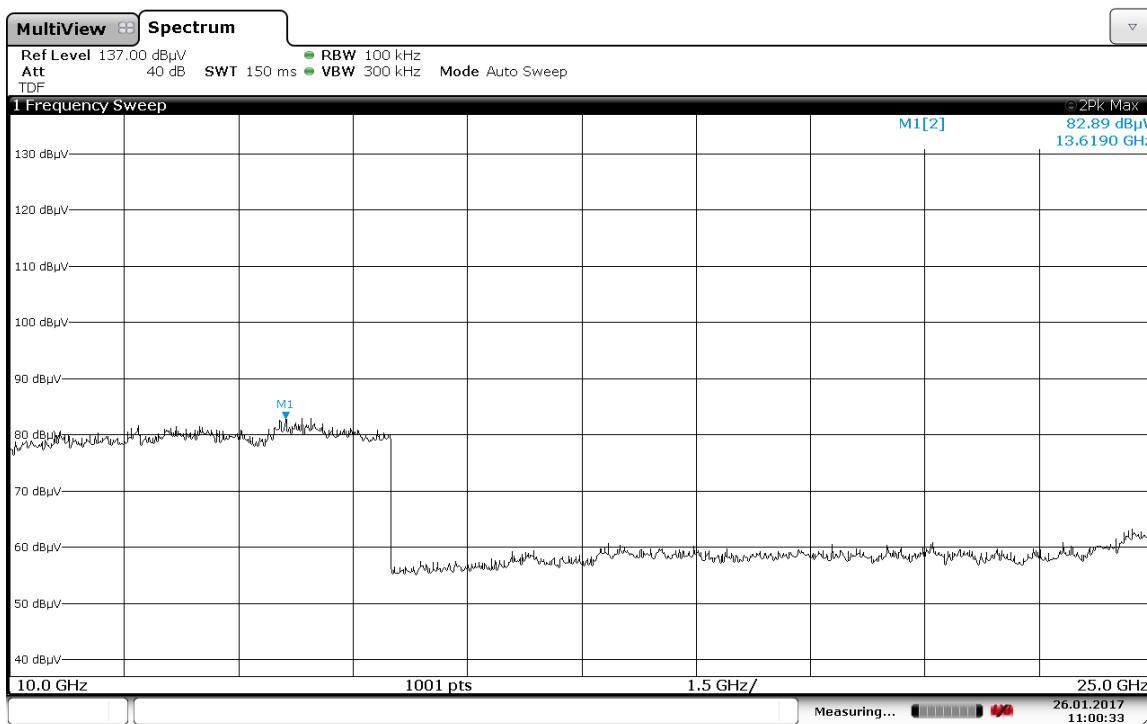
Date: 26.JAN.2017 10:59:17

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, High data rate



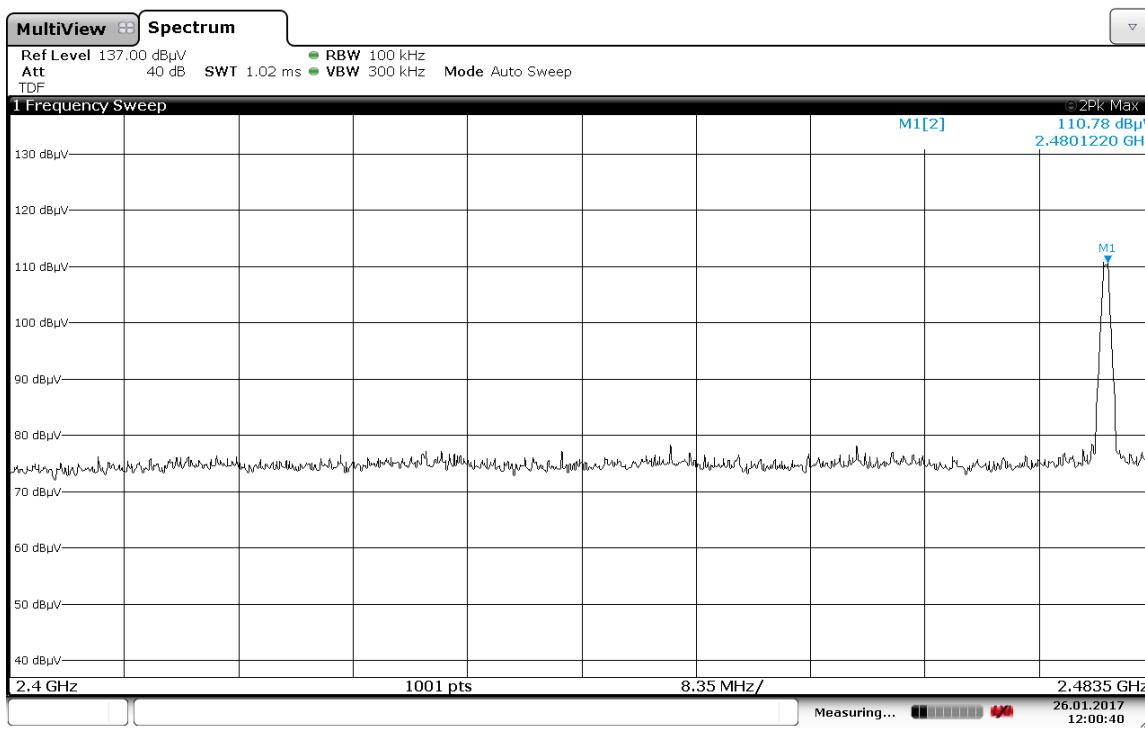
Date: 26.JAN.2017 10:59:47

Mid Channel (2441 MHz) – Charging mode, Out of Band emissions, High data rate



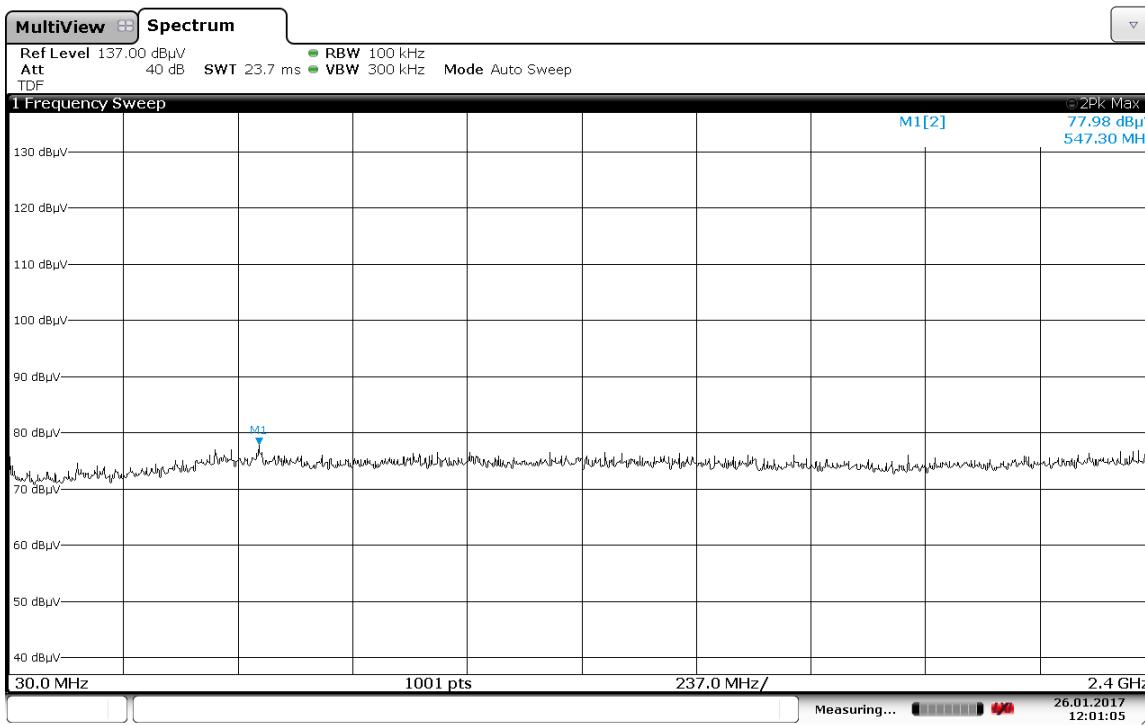
Date: 26.JAN.2017 11:00:33

High Channel (2480 MHz) – Battery mode, In Band emissions, Low data rate



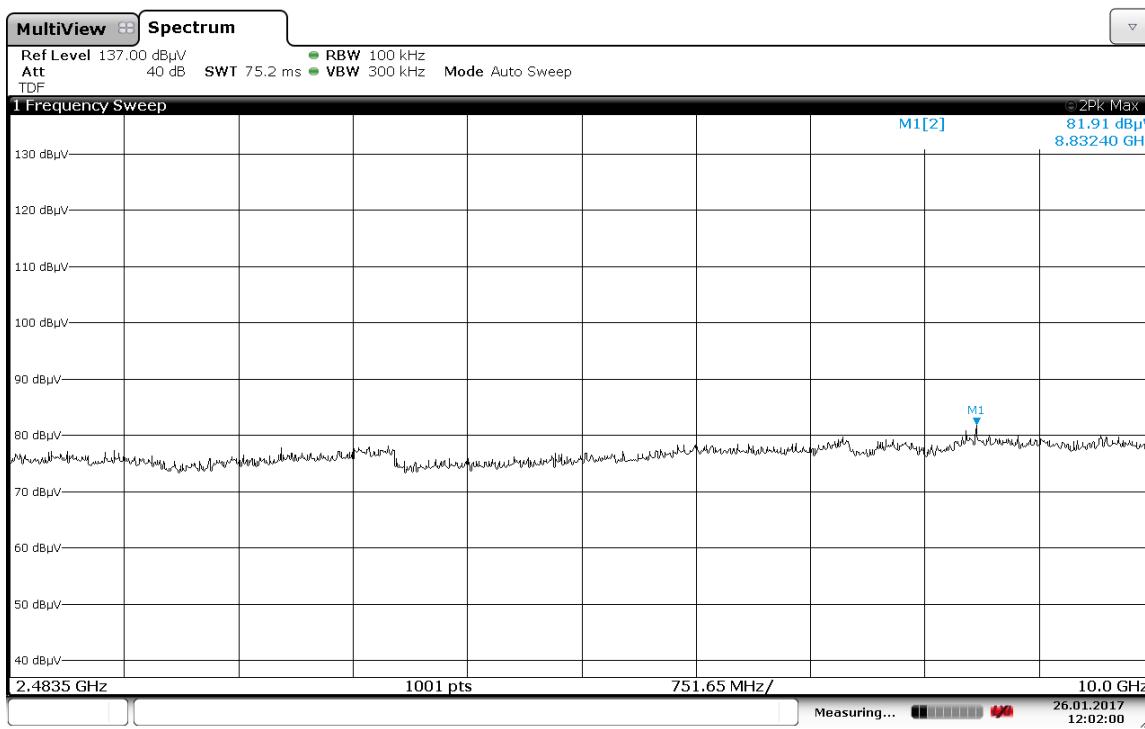
Date: 26.JAN.2017 12:00:39

High Channel (2480 MHz) – Battery mode, Out of Band emissions, Low data rate



Date: 26.JAN.2017 12:01:04

High Channel (2480 MHz) – Battery mode, Out of Band emissions, Low data rate



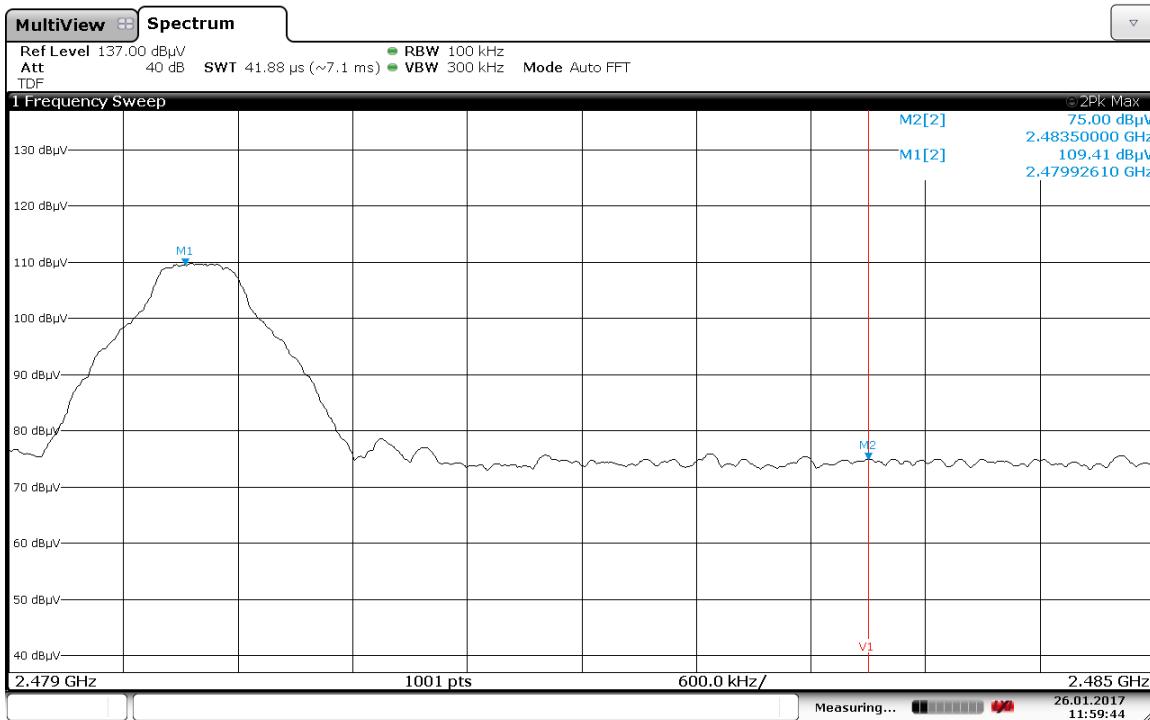
Date: 26.JAN.2017 12:02:00

High Channel (2480 MHz) – Battery mode, Out of Band emissions, Low data rate



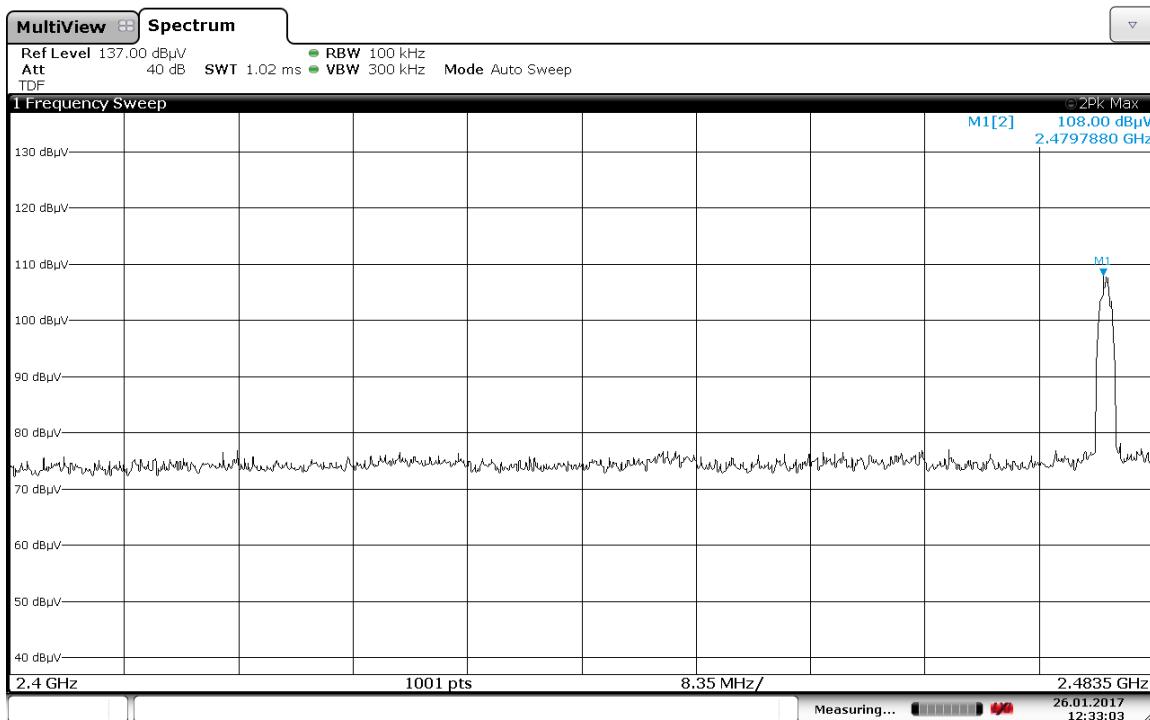
Date: 26.JAN.2017 12:02:42

High Channel (2480 MHz) – Battery mode, Band edge emissions, Low data rate



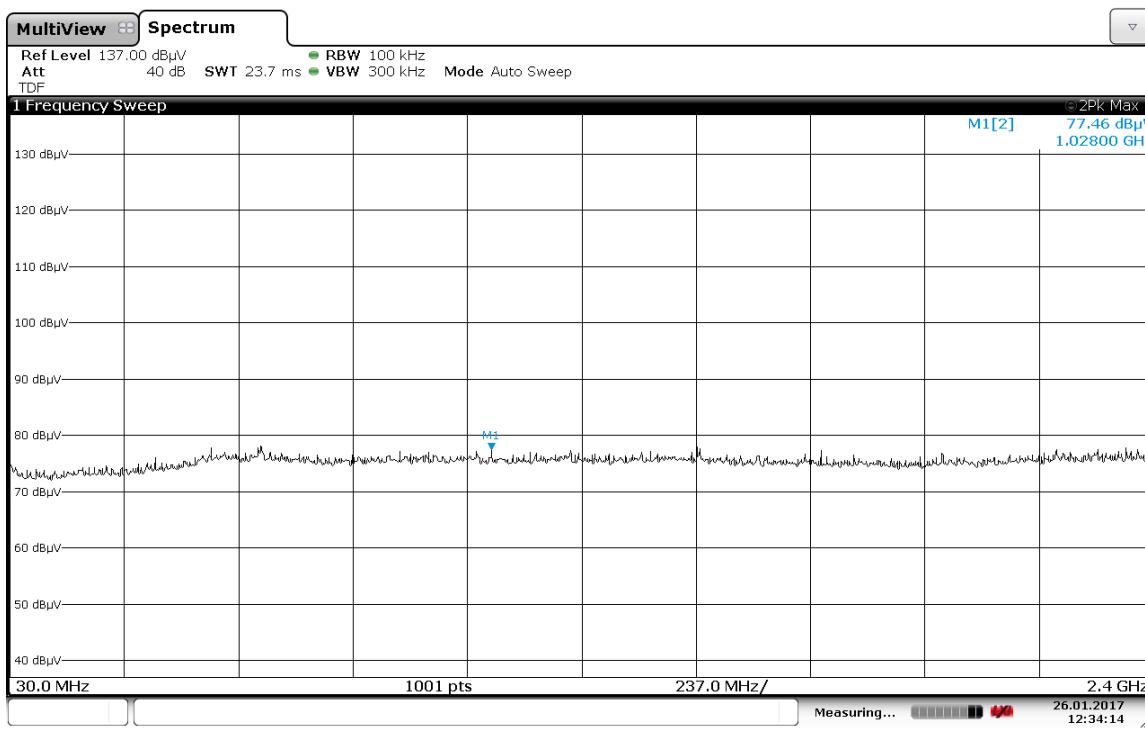
Date: 26.JAN.2017 11:59:44

High Channel (2480 MHz) – Battery mode, In Band emissions, High data rate



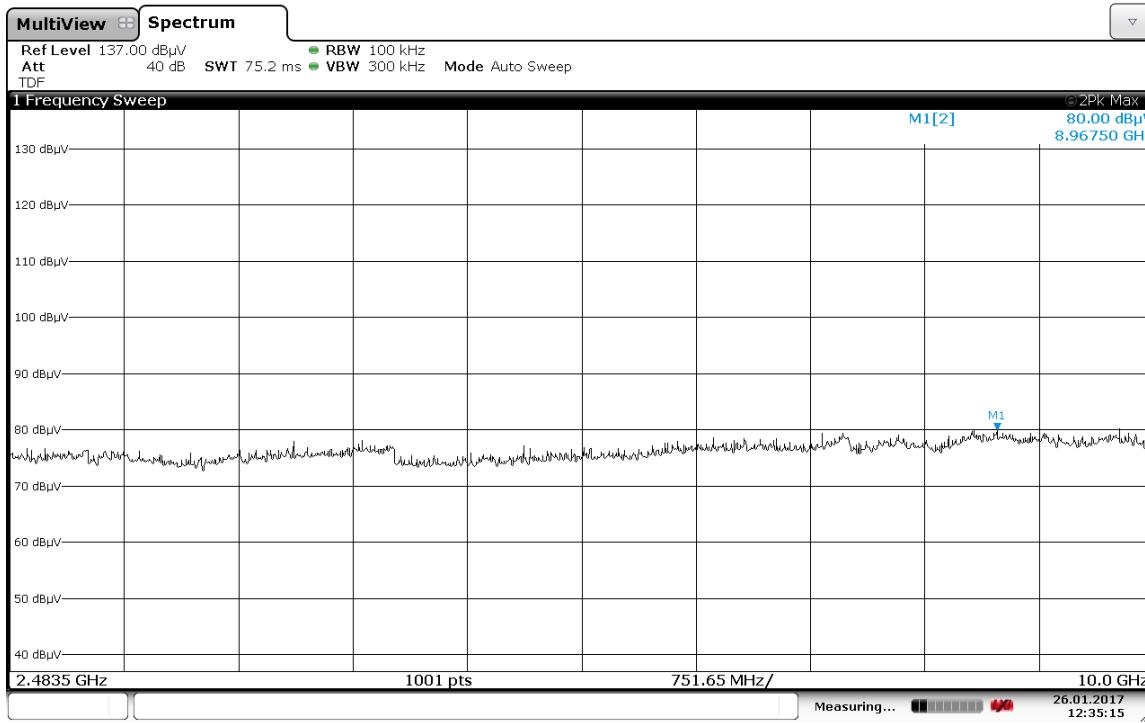
Date: 26.JAN.2017 12:33:02

High Channel (2480 MHz) – Battery mode, Out of emissions, High data rate



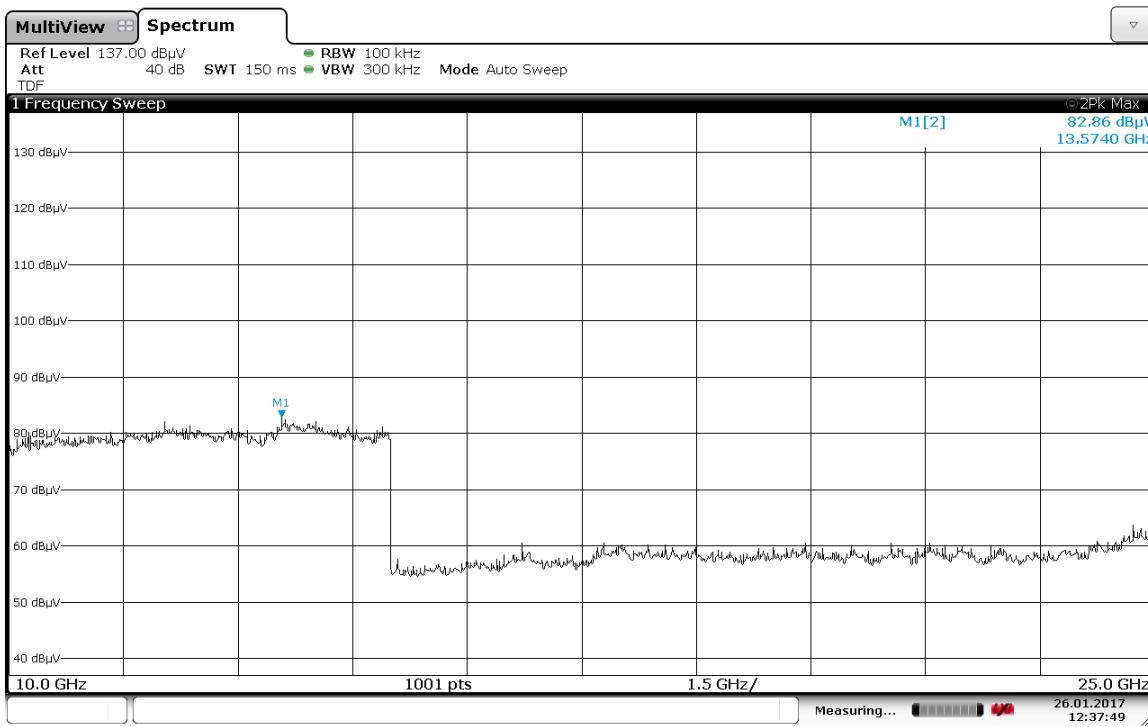
Date: 26.JAN.2017 12:34:14

High Channel (2480 MHz) – Battery mode, Out of emissions, High data rate



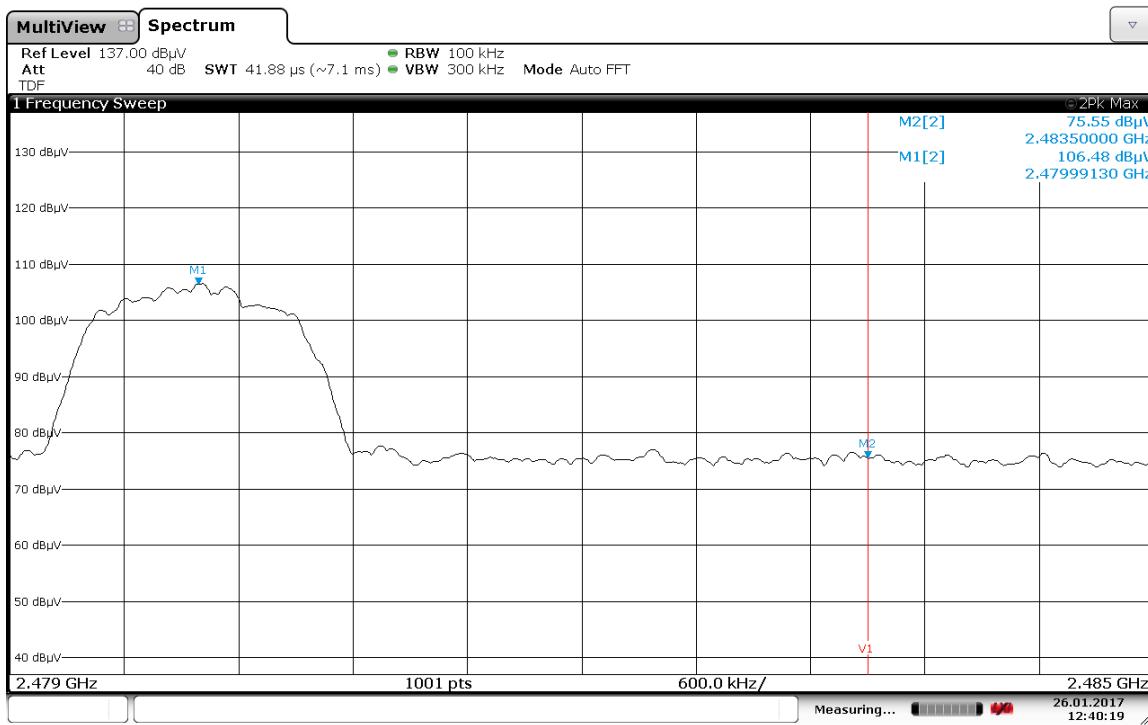
Date: 26.JAN.2017 12:35:15

High Channel (2480 MHz) – Battery mode, Out of emissions, High data rate



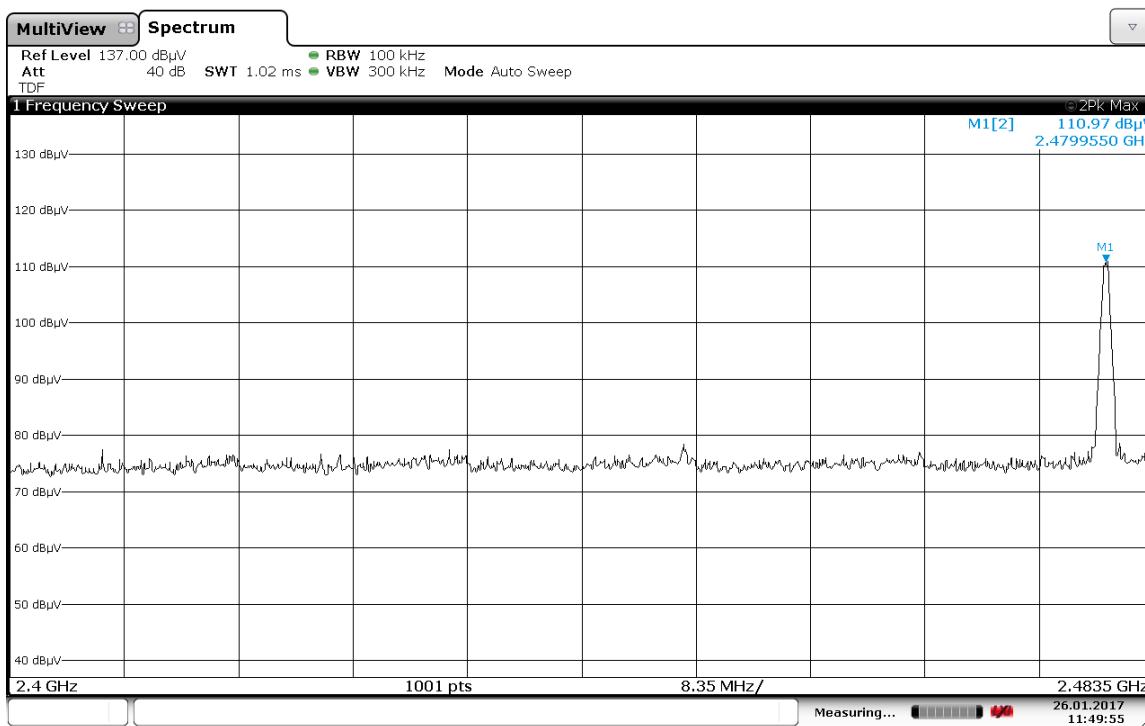
Date: 26.JAN.2017 12:37:49

High Channel (2480 MHz) – Battery mode, Band edge emissions, High data rate



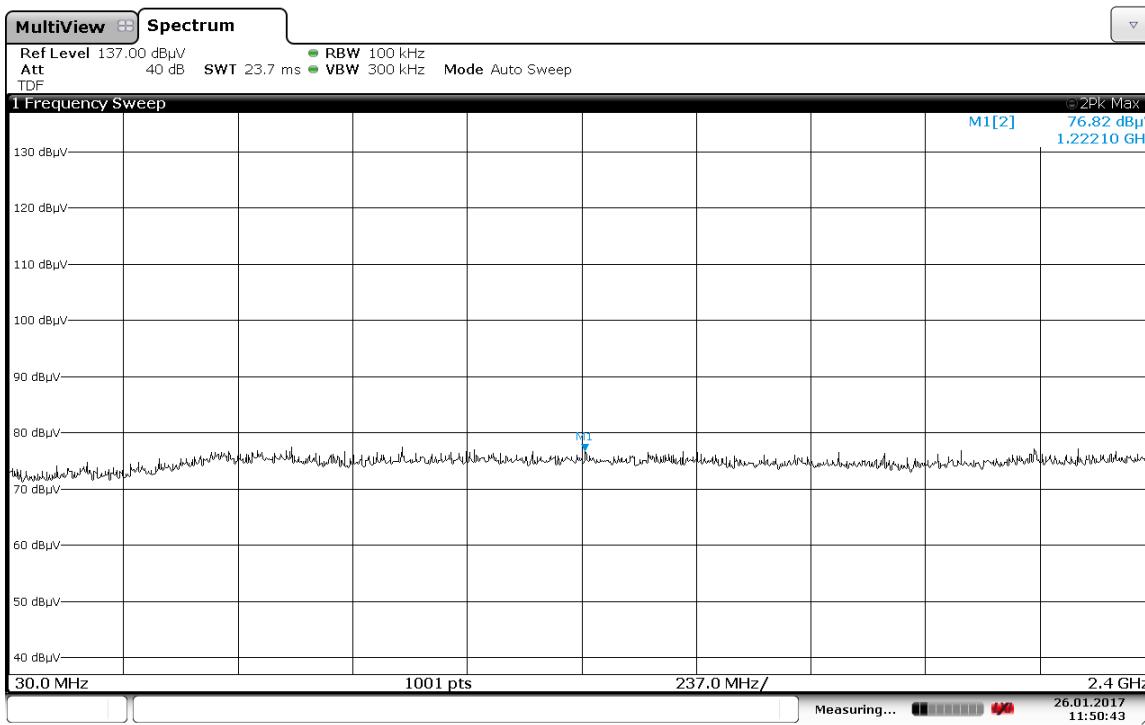
Date: 26.JAN.2017 12:40:19

High Channel (2480 MHz) – Charging mode, In Band emissions, Low data rate



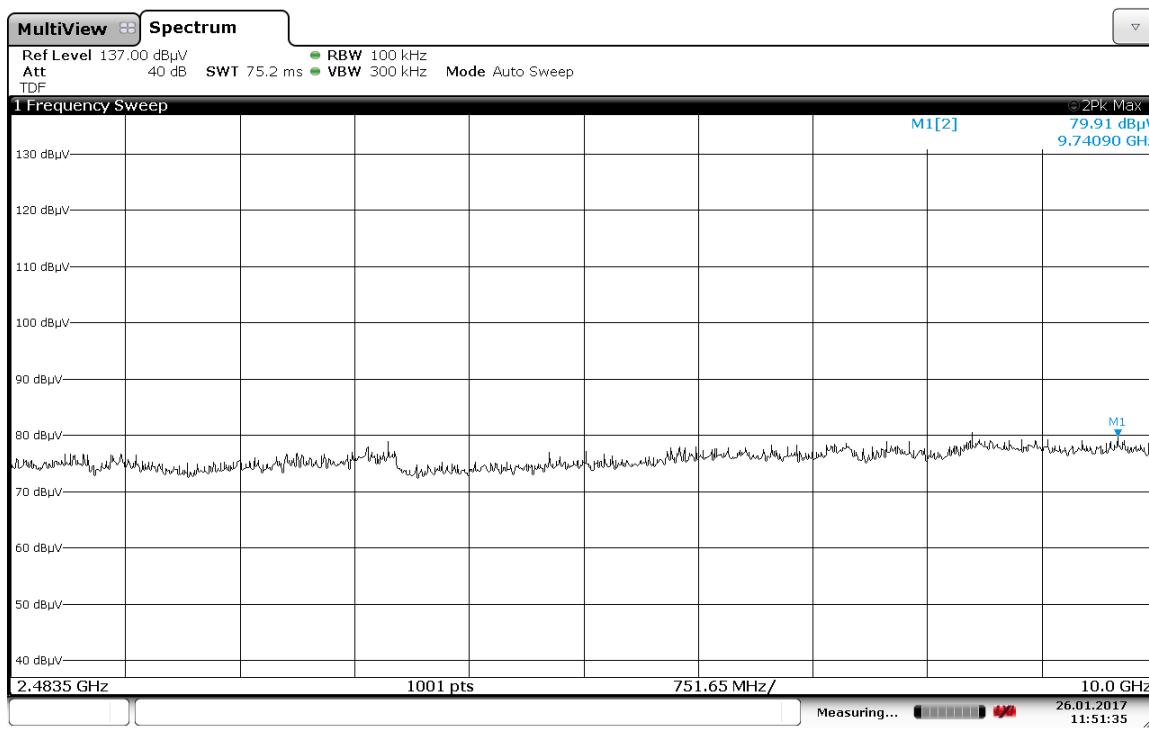
Date: 26.JAN.2017 11:49:54

High Channel (2480 MHz) – Charging mode, Out of Band emissions, Low data rate



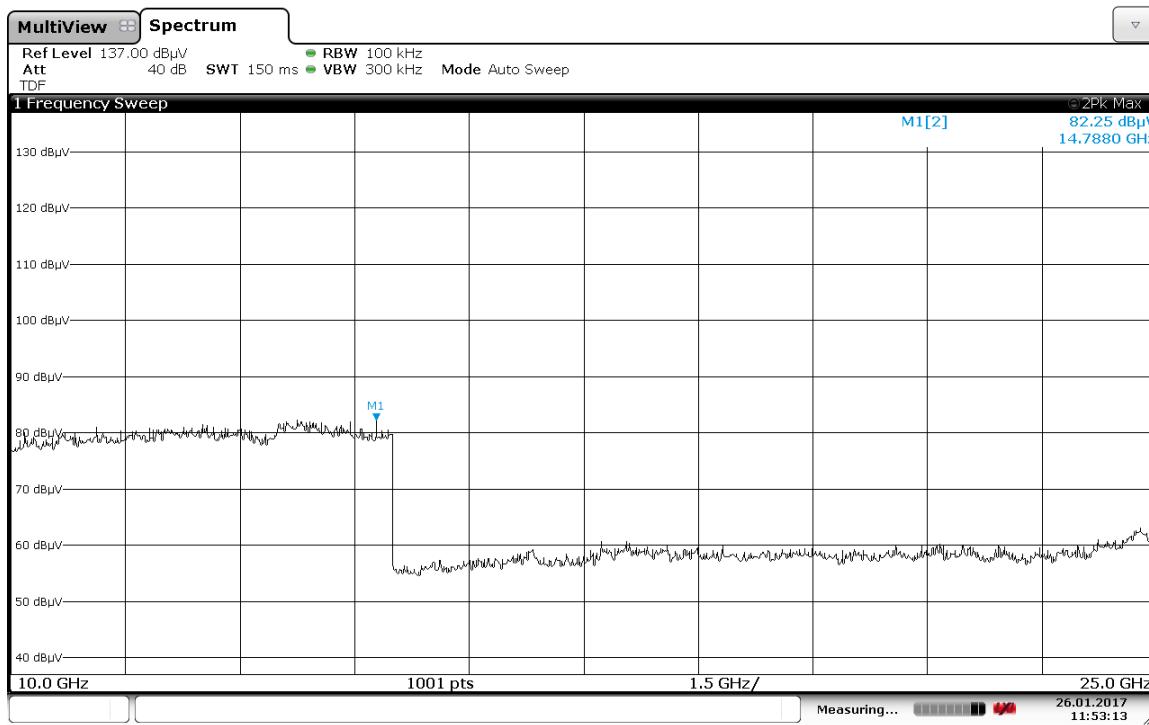
Date: 26.JAN.2017 11:50:43

High Channel (2480 MHz) – Charging mode, Out of Band emissions, Low data rate



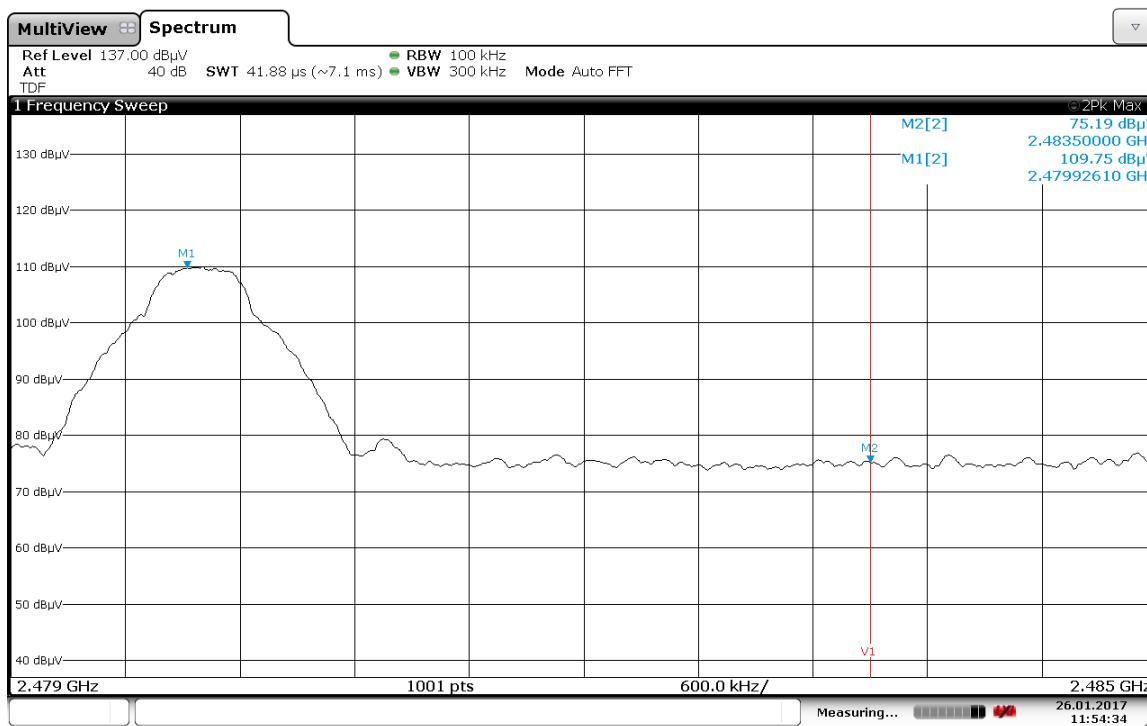
Date: 26.JAN.2017 11:51:35

High Channel (2480 MHz) – Charging mode, Out of Band emissions, Low data rate



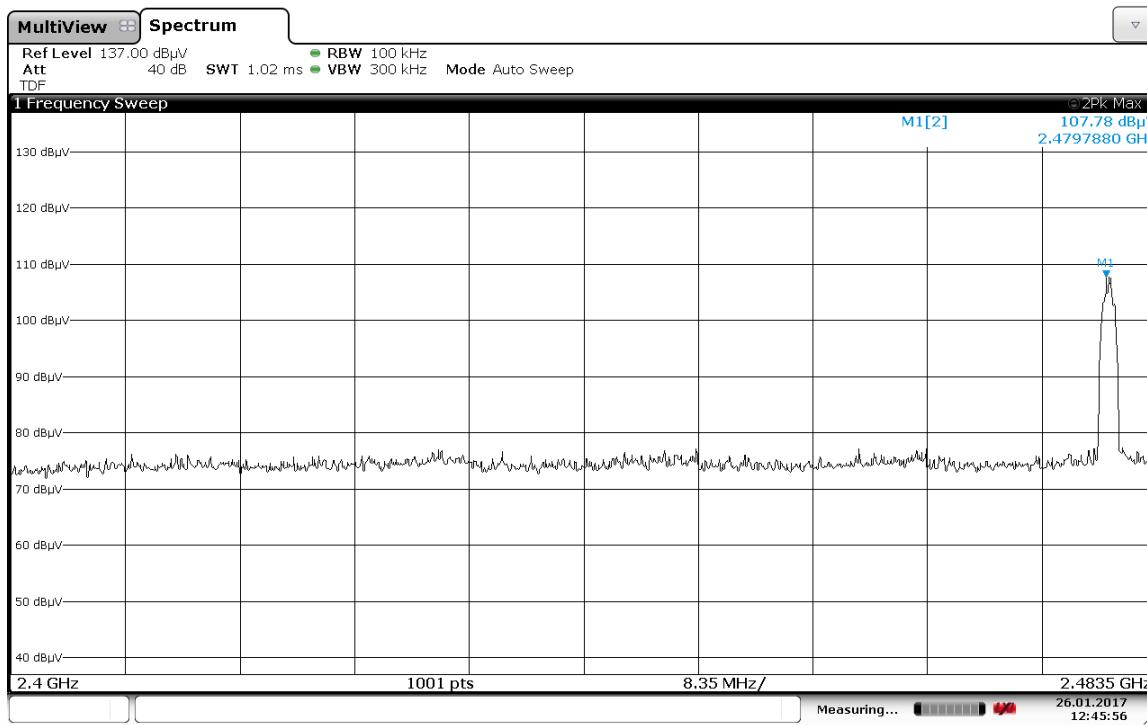
Date: 26.JAN.2017 11:53:12

High Channel (2480 MHz) – Charging mode, Band edge emissions, Low data rate



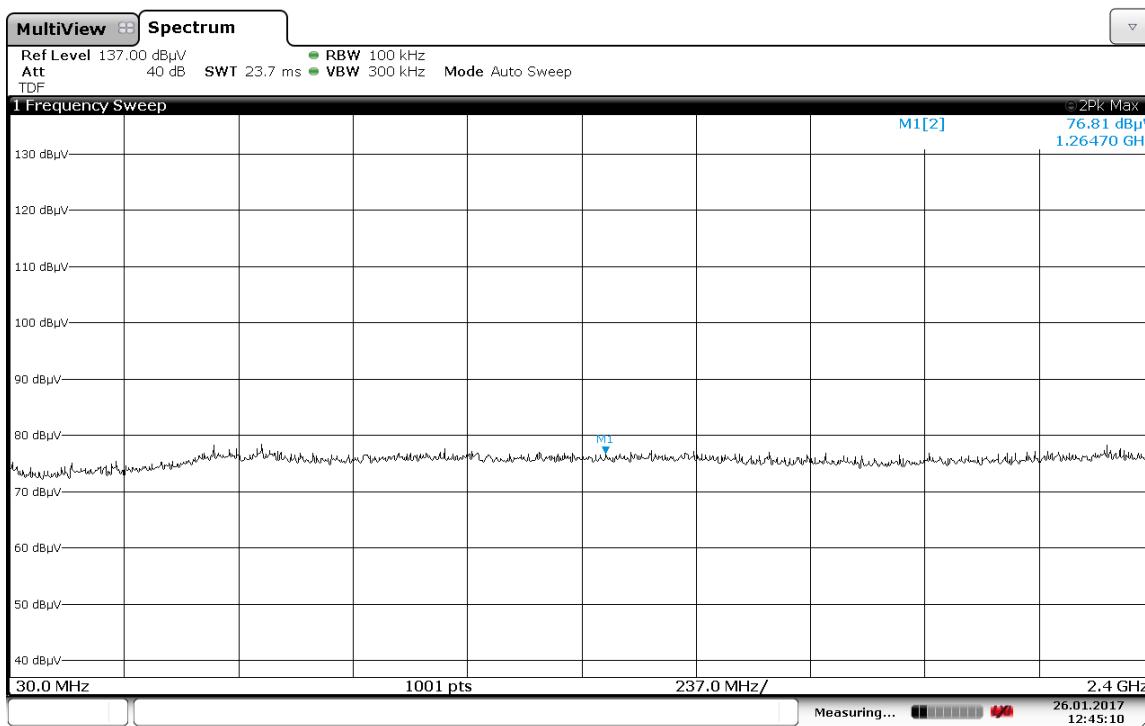
Date: 26.JAN.2017 11:54:34

High Channel (2480 MHz) – Charging mode, In Band emissions, High data rate



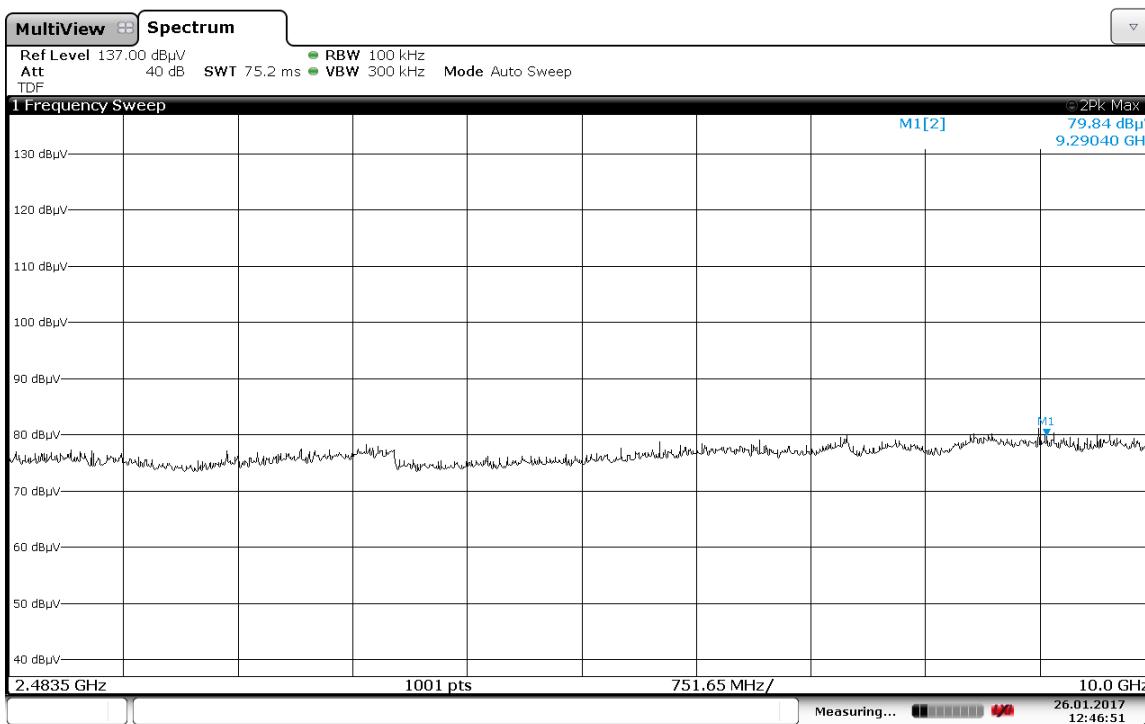
Date: 26.JAN.2017 12:45:56

High Channel (2480 MHz) – Charging mode, Out of Band emissions, High data rate



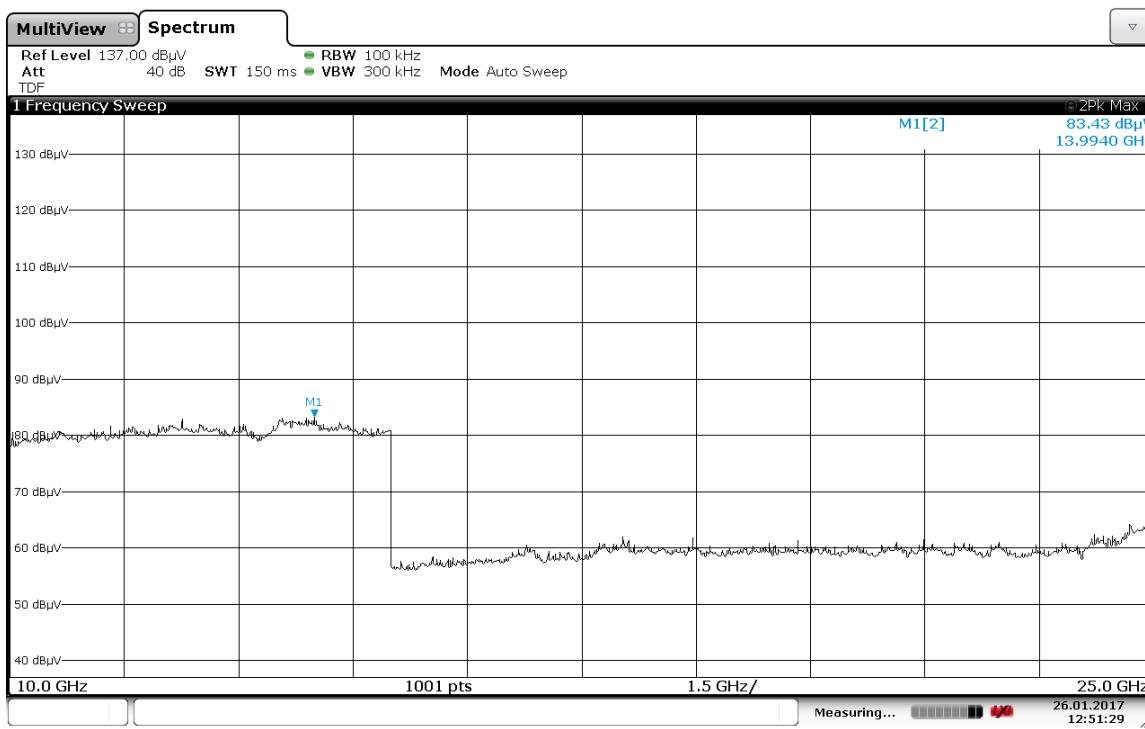
Date: 26.JAN.2017 12:45:09

High Channel (2480 MHz) – Charging mode, Out of Band emissions, High data rate



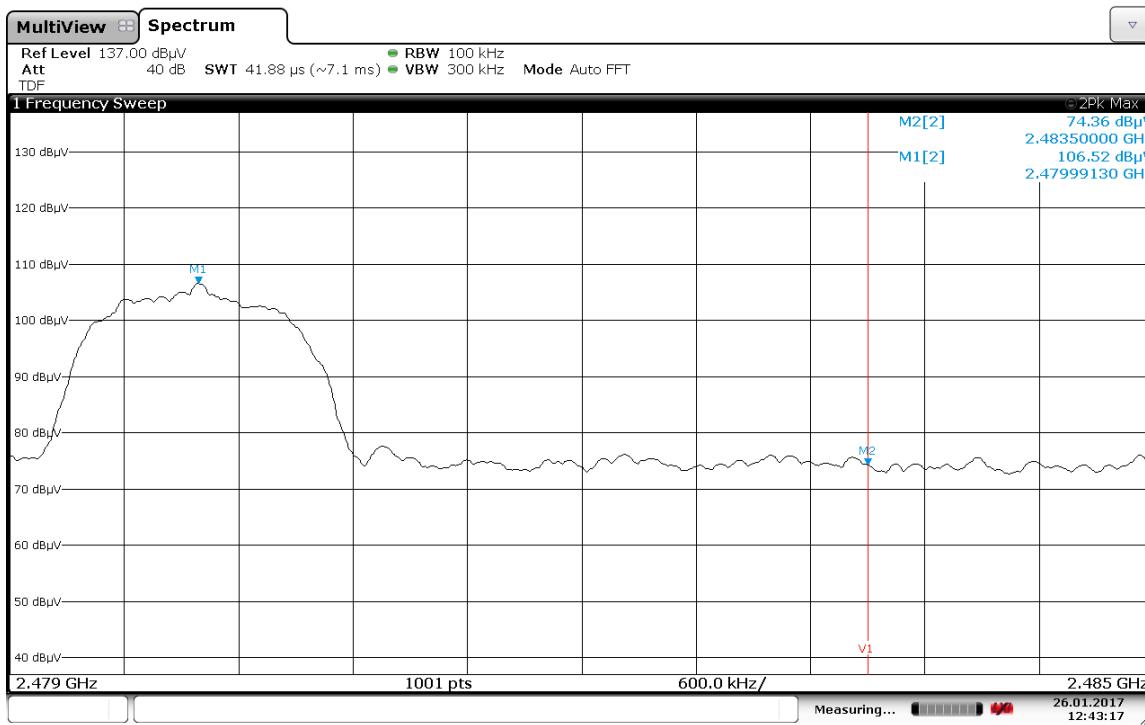
Date: 26.JAN.2017 12:46:51

High Channel (2480 MHz) – Charging mode, Out of Band emissions, High data rate



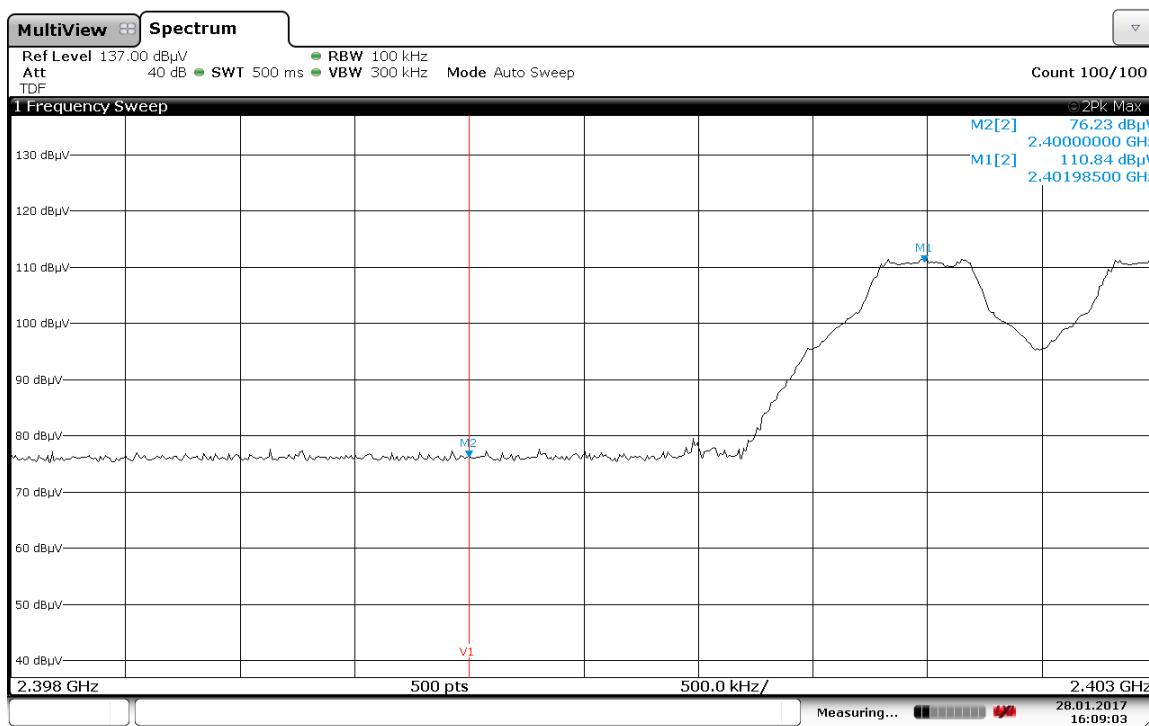
Date: 26.JAN.2017 12:51:28

High Channel (2480 MHz) – Charging mode, Band edge emissions, High data rate



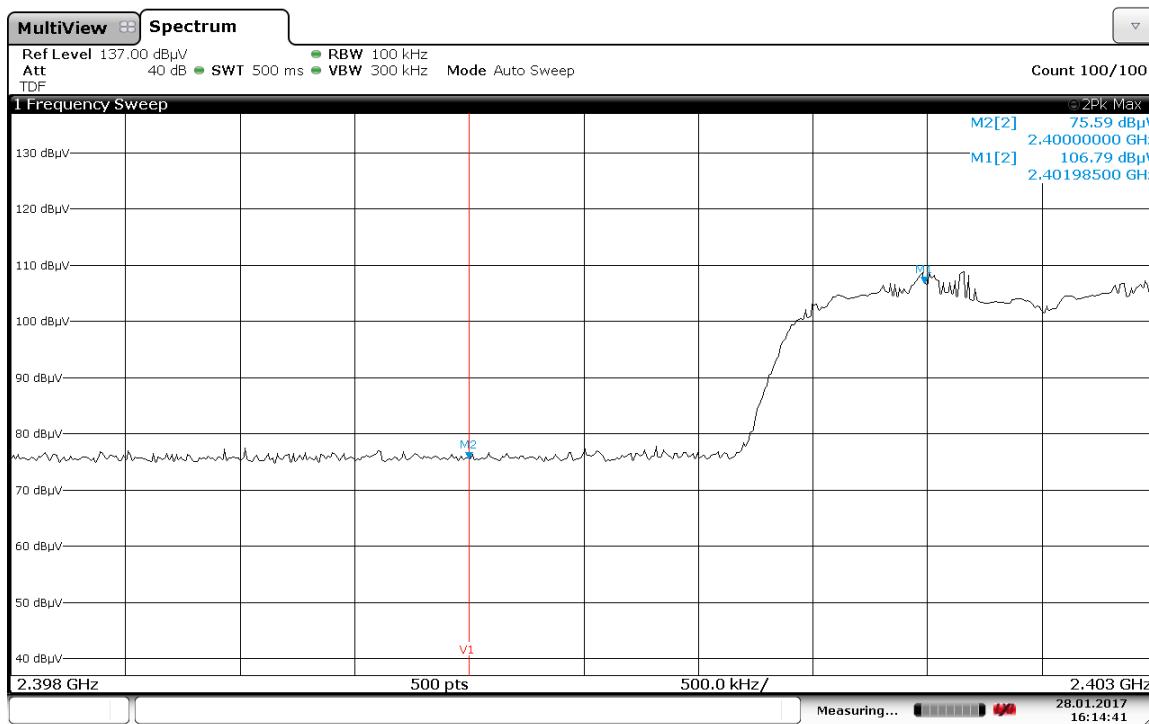
Date: 26.JAN.2017 12:43:16

Frequency hopping – Battery mode, Lower Band edge emissions, Low data rate



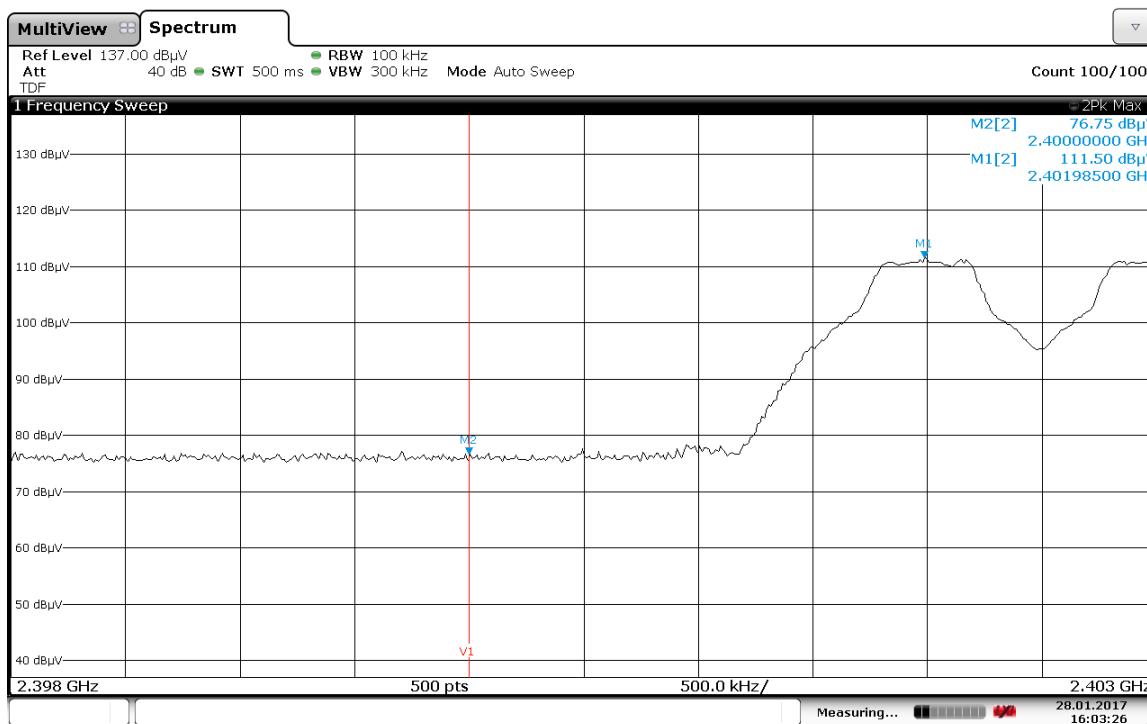
Date: 28.JAN.2017 16:09:02

Frequency hopping – Battery mode, Lower Band edge emissions, High data rate



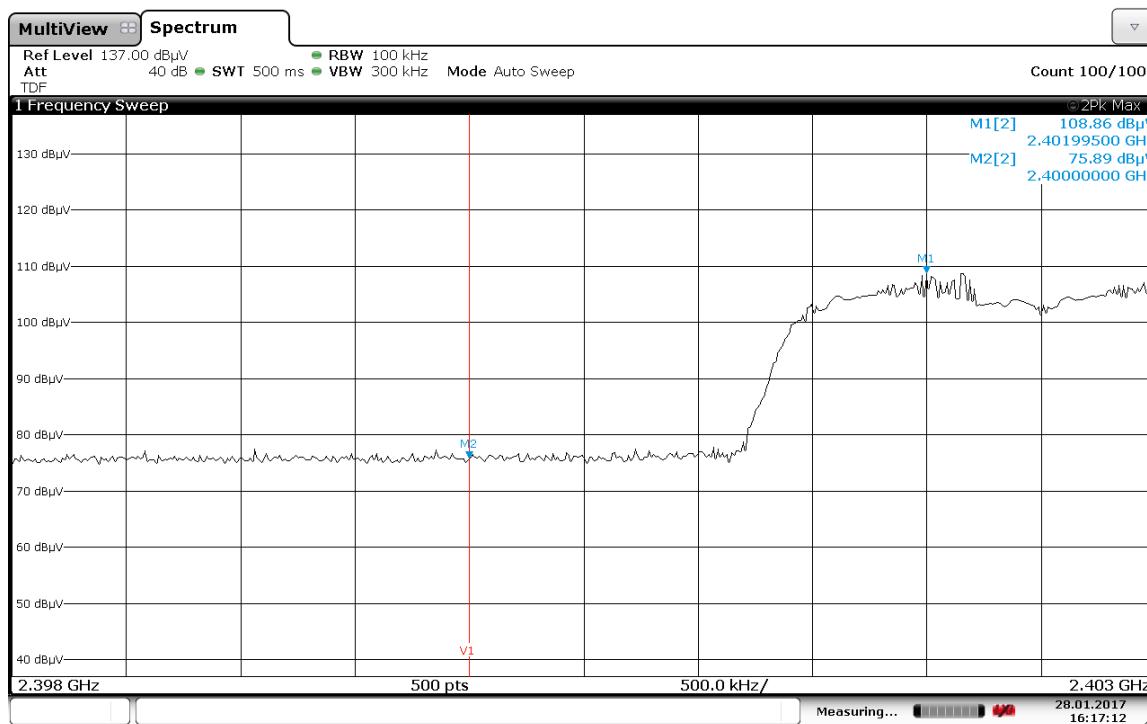
Date: 28.JAN.2017 16:14:40

Frequency hopping – Charging mode, Lower Band edge emissions, Low data rate



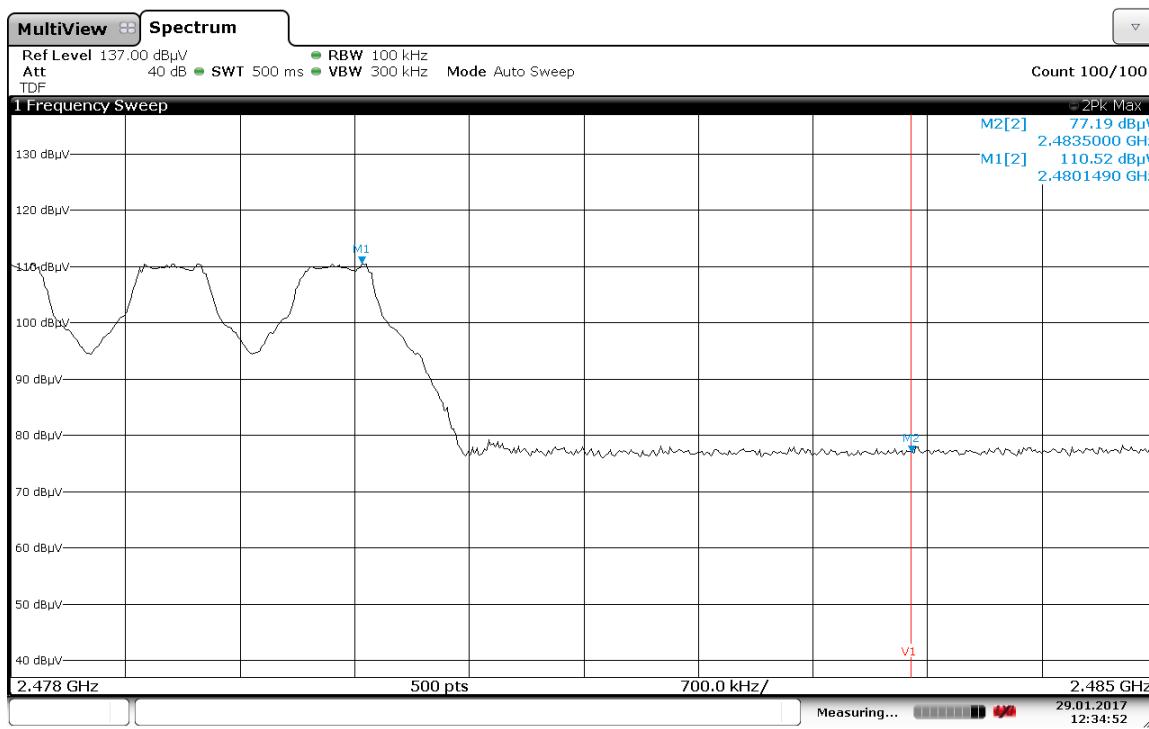
Date: 28.JAN.2017 16:03:26

Frequency hopping – Charging mode, Lower Band edge emissions, High data rate



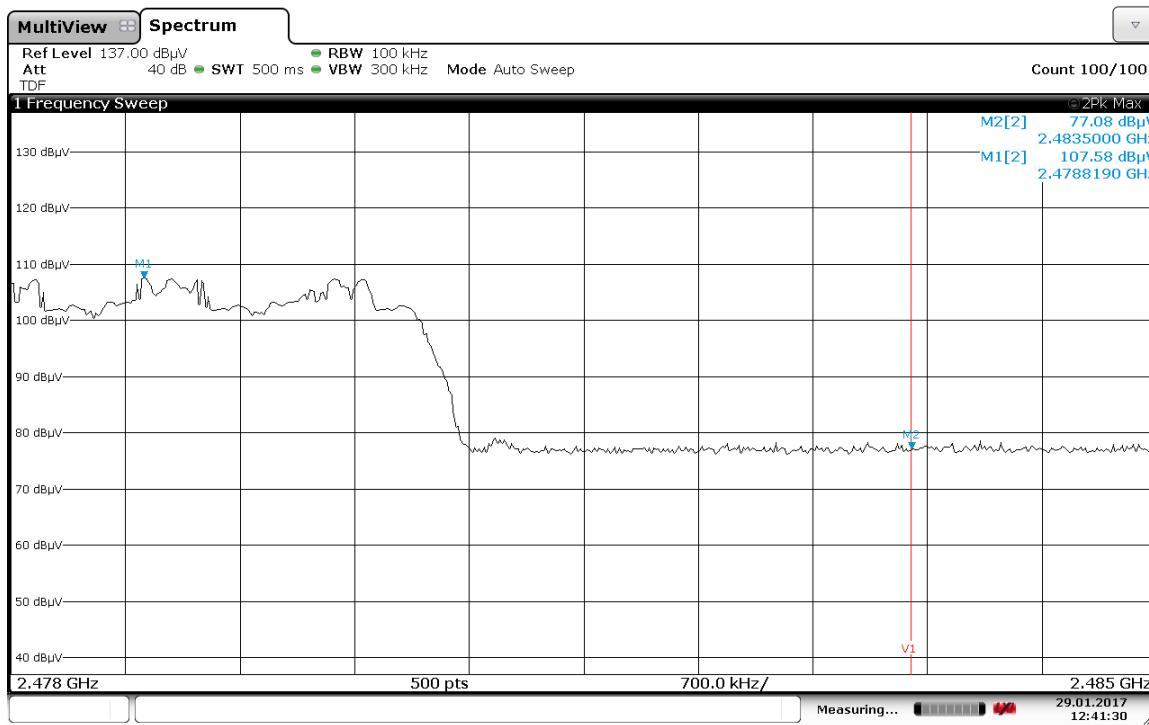
Date: 28.JAN.2017 16:17:12

Frequency hopping – Battery mode, Higher Band edge emissions, Low data rate



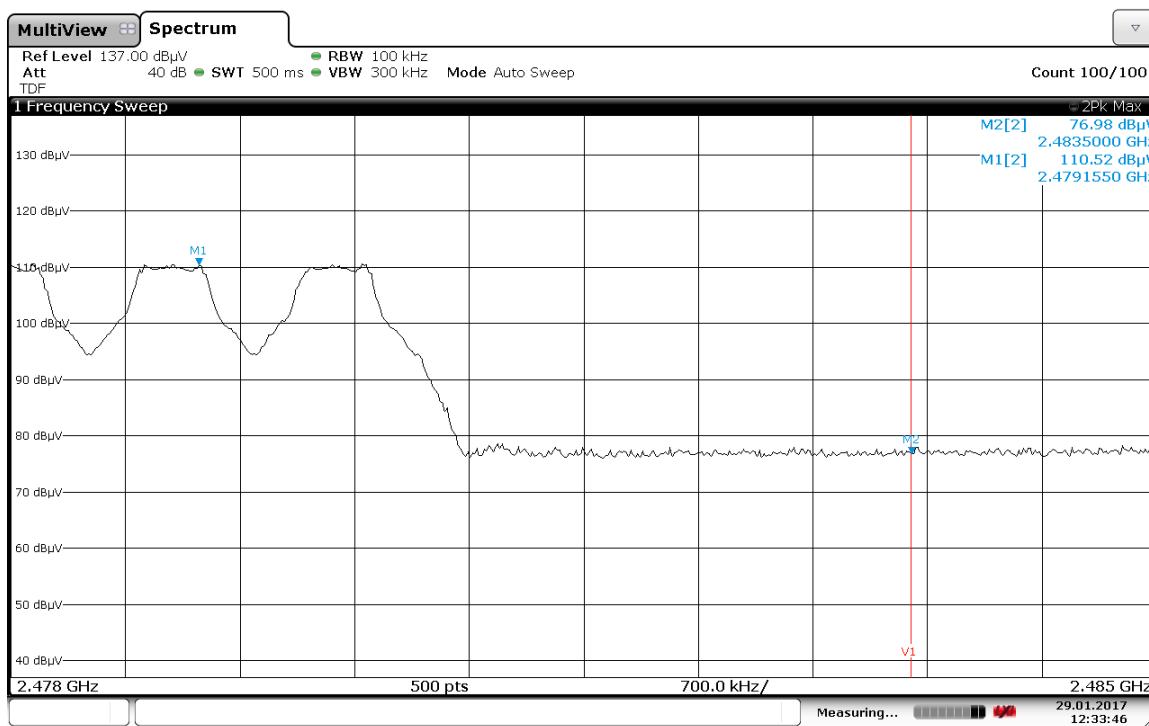
Date: 29.JAN.2017 12:34:52

Frequency hopping – Battery mode, Higher Band edge emissions, High data rate



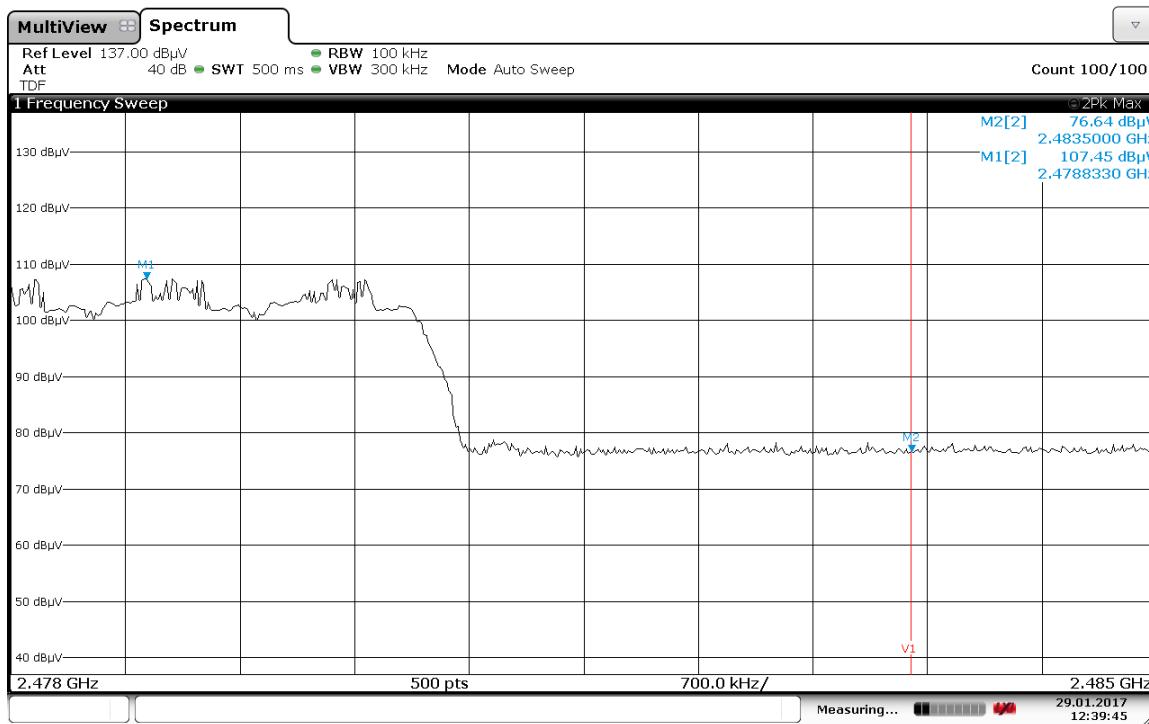
Date: 29.JAN.2017 12:41:30

Frequency hopping – Charging mode, Higher Band edge emissions, Low data rate



Date: 29.JAN.2017 12:33:46

Frequency hopping – Charging mode, Higher Band edge emissions, High data rate



Date: 29.JAN.2017 12:39:45

Test Personnel: Naga Suryadevara N5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Test Date: 01/26/2017

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Limit Applied: See section 11.3

Pretest Verification w/
Ambient Signals or
BB Source: Yes – Signal generator

Ambient Temperature: 19 °CRelative Humidity: 30 %Atmospheric Pressure: 981 mbars

12 Radiated Spurious Emissions

12.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.247).

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

FS = Field Strength in $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 $\text{dB}\mu\text{V}$ is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 $\text{dB}\mu\text{V}/\text{m}$. This value in $\text{dB}\mu\text{V}/\text{m}$ was converted to its corresponding level in $\mu\text{V}/\text{m}$.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}/\text{m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V}/\text{m}$$

To convert from $\text{dB}\mu\text{V}$ to μV or mV the following was used:

$$UF = 10^{(NF/20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in } \text{dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V}/\text{m}$$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "AF" is the Antenna Factor; "PA+CL" are Preamp and Cable Loss. These are already accounted for in the "Level" column.

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	03/09/2016	03/09/2017
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/30/2016	07/30/2017
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	12/16/2016	12/16/2017
ETS001'	1-18GHz DRG Horn Antenna	ETS-Lindgren	3117	00143259	02/10/2016	02/10/2017
145-416'	Cables 145-420 145-423 145-424 145-408	Huber + Suhner	3m Track B cables	multiple	07/30/2016	07/30/2017
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	05/27/2016	05/27/2017
EMC04'	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	09/14/2016	09/14/2017
REA004"	3GHz High Pass Filter	Reactel, Inc	7HSX-3G/18G-S11	06-1	01/25/2016	01/25/2017
PRE10"	30-1000MHz pre-amp	ITS	PRE10	PRE10	12/16/2016	12/16/2017
CBLHF2012 -2M-2'	2m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252675002	02/09/2016	02/09/2017
CBLHF2012 -5M-2'	5m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252676002	02/19/2016	02/19/2017

Software Utilized:

Name	Manufacturer	Version
Compliance5	Teseq	5.26.46.46

12.3 Results:

The sample tested was found to Comply.

12.4 Plots/Data:

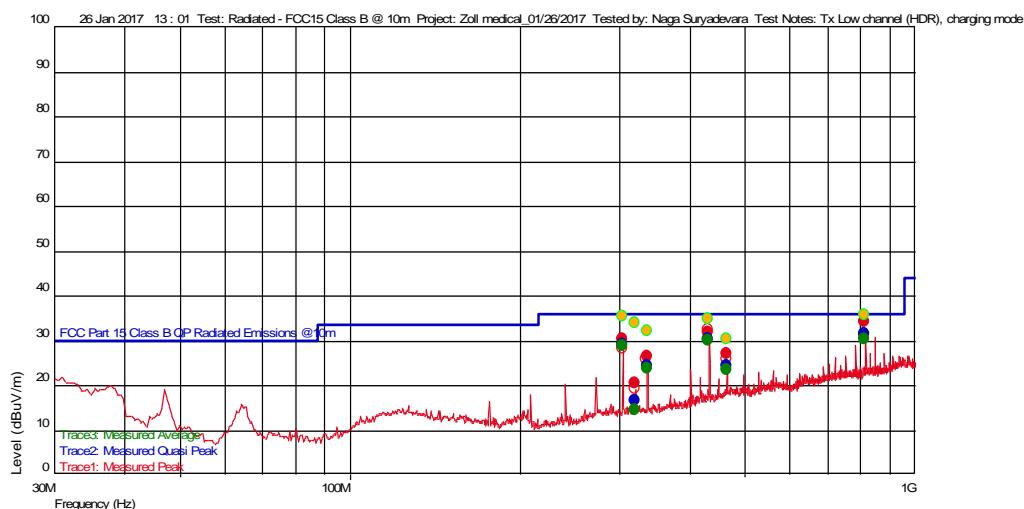
Low Channel, Charging mode, Tx (Low data rate, 30 MHz – 1 GHz)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical_01/26/2017
 Test Notes: Tx Low channel, charging mode
 Temperature: 19 C
 Humidity: 30% 981 mbars
 Tested by: Naga Suryadevara
 Test Started: 26 Jan 2017 13 : 01

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
319.978357156 M	16.70	20.100	-38.178	36.020	-19.32	--	310	1.15	120 k
463.994589287 M	24.22	23.660	-37.590	36.020	-11.80	--	96	2.37	120 k
335.972946186 M	24.35	20.219	-38.136	36.020	-11.67	--	97	1.24	120 k
303.958917427 M	29.04	19.758	-38.210	36.020	-6.98	--	96	2.36	120 k
431.946092589 M	30.31	22.739	-37.777	36.020	-5.71	--	94	2.39	120 k
815.994588912 M	31.49	28.000	-35.661	36.020	-4.53	--	286	1.15	120 k

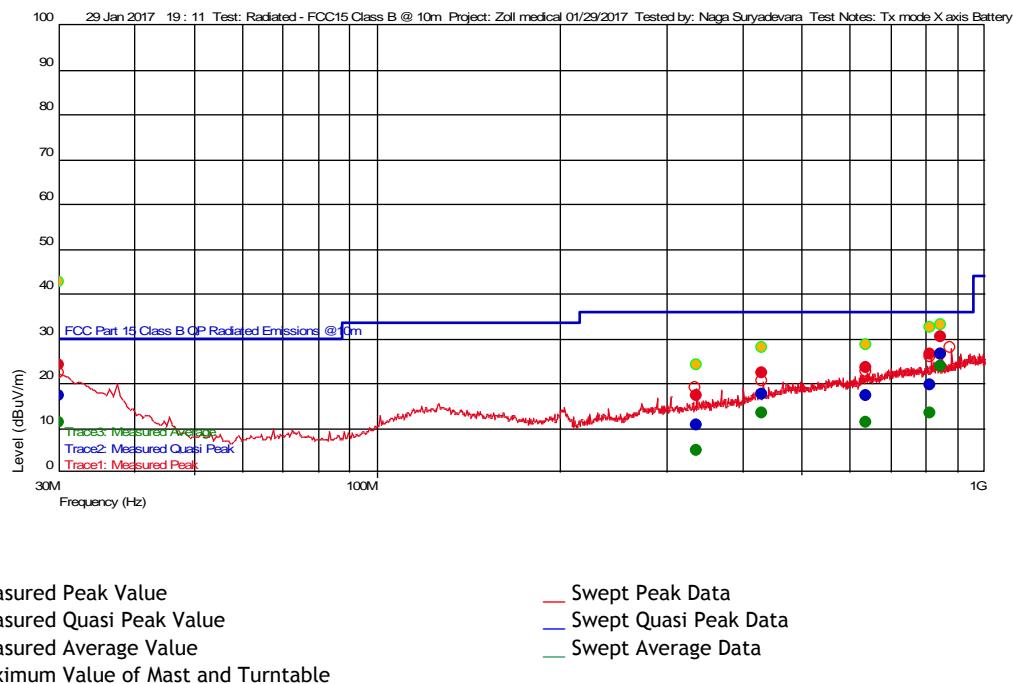
Low Channel, Battery mode, Tx (Low data rate, 30 MHz – 1 GHz, X-axis)

Test Information

Test Details
 Test: User Entry
 Project: Radiated - FCC15 Class B @ 10m
 Test Notes: Zoll medical 01/29/2017
 Temperature: Tx mode X axis Battery
 Humidity: 19 C
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 19 : 11

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
335.870340976 M	10.71	20.217	-38.137	36.020	-25.31		185	1.08	120 k
638.554108525 M	17.08	26.100	-36.623	36.020	-18.94		94	1.27	120 k
431.934870144 M	17.32	22.739	-37.778	36.020	-18.70		265	1.05	120 k
815.867134002 M	19.63	28.000	-35.662	36.020	-16.39		73	1.50	120 k
30.0 M	17.24	27.500	-40.080	30.000	-12.76	--	342	2.40	120 k
848.001403242 M	26.34	28.000	-35.554	36.020	-9.68		62	1.77	120 k

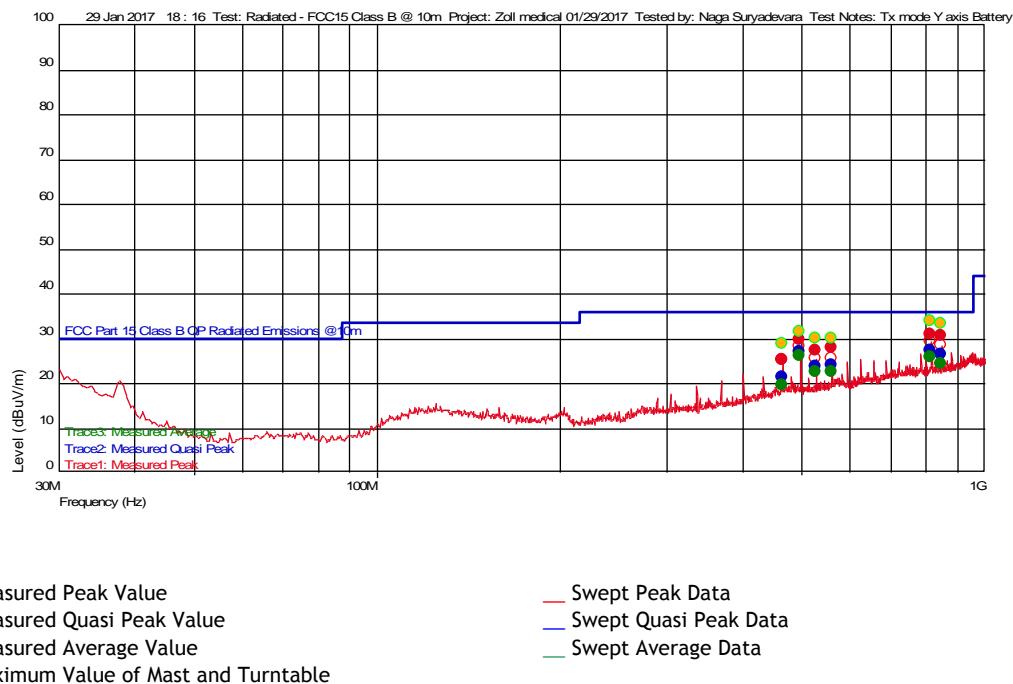
Low Channel, Battery mode, Tx (Low data rate, 30 MHz – 1 GHz, Y-axis)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical 01/29/2017
 Test Notes: Tx mode Y axis Battery
 Temperature: 19 C
 Humidity: 19% 999 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 18 : 16

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
463.968136381 M	21.33	23.659	-37.591	36.020	-14.69	--	40	1.57	120 k
527.954309076 M	23.63	24.218	-37.241	36.020	-12.39	--	63	1.32	120 k
559.953907978 M	24.17	25.097	-37.096	36.020	-11.85	--	53	1.35	120 k
847.950100637 M	26.42	28.000	-35.554	36.020	-9.60		75	1.65	120 k
495.96452887 M	27.15	23.919	-37.396	36.020	-8.87	--	63	1.41	120 k
815.984969673 M	27.33	28.000	-35.661	36.020	-8.69		72	3.51	120 k

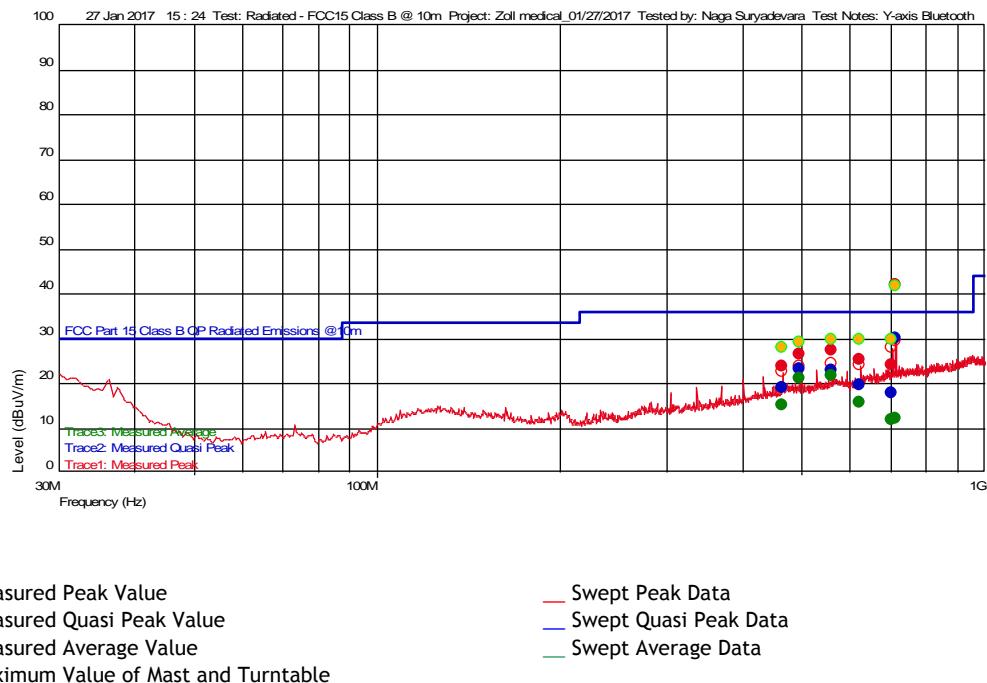
Low Channel, Battery mode, Tx (Low data rate, 30 MHz – 1 GHz, Z-axis)

Test Information

Test Details User Entry
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical_01/27/2017
 Test Notes: Z-axis Bluetooth
 Temperature: 19C
 Humidity: 27% 987mbars
 Tested by: Naga Suryadevara
 Test Started: 27 Jan 2017 15 : 24

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
703.911422617 M	17.85	26.700	-36.148	36.020	-18.17		40	3.97	120 k
463.940080269 M	18.83	23.658	-37.591	36.020	-17.19	--	75	2.39	120 k
624.030059689 M	19.65	25.542	-36.729	36.020	-16.37	--	62	1.97	120 k
559.974749661 M	22.89	25.098	-37.096	36.020	-13.13	--	73	1.24	120 k
495.980560934 M	23.13	23.920	-37.396	36.020	-12.89	--	73	1.77	120 k
713.079358611 M	29.88	26.823	-36.101	36.020	-6.14		0	1.16	120 k

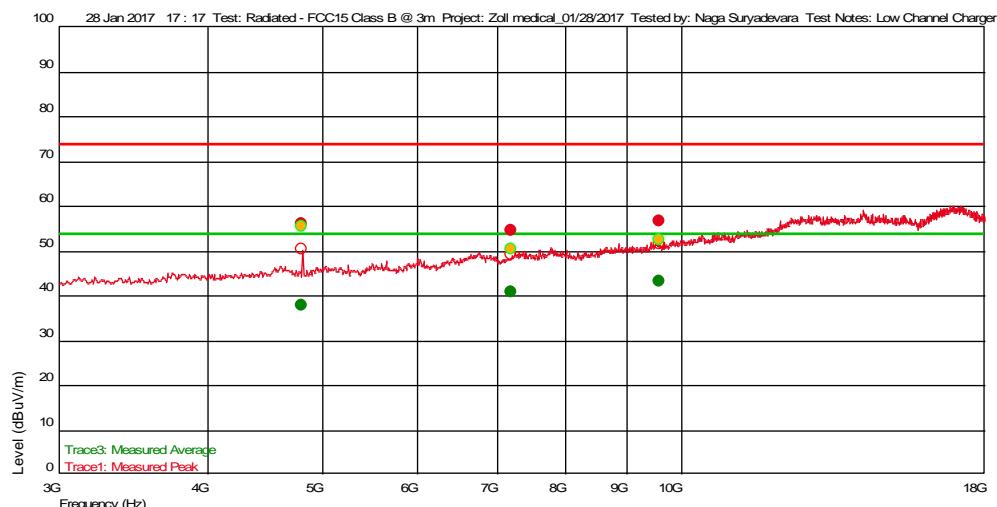
Low Channel, Charging mode, Tx (Low data rate, above 1 GHz)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low Channel Charger
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 17:17

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.203687375 G	54.48	35.644	-23.895	74.000	-19.52		310	4.00	1 M
4.803961255 G	55.85	34.192	-25.631	74.000	-18.15	--	81	3.00	1 M
9.599385438 G	56.67	36.681	-22.087	74.000	-17.33		188	1.23	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.803961255 G	37.64	34.192	-25.631	54.000	-16.36	--	81	3.00	1 M
7.203687375 G	40.67	35.644	-23.895	54.000	-13.33		310	4.00	1 M
9.599385438 G	43.18	36.681	-22.087	54.000	-10.82		188	1.23	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

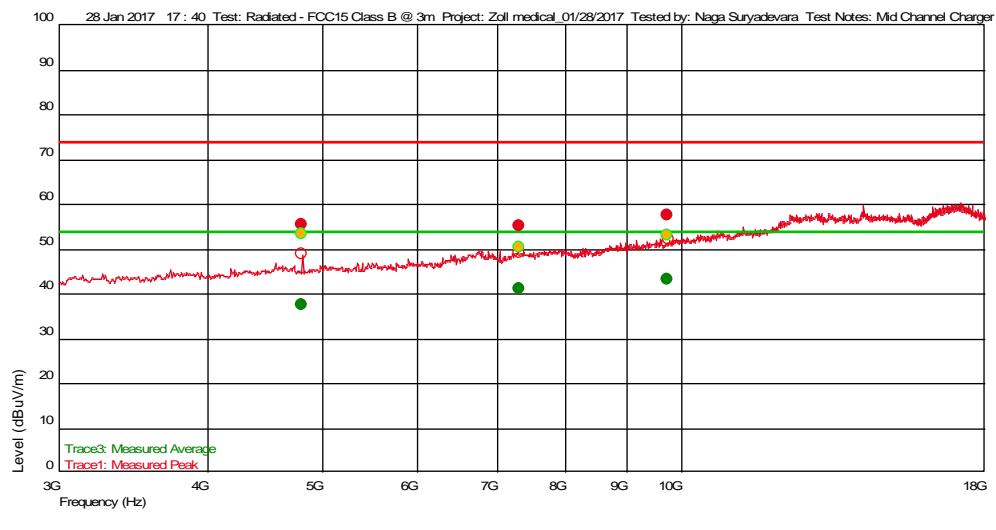
Mid Channel, Charging mode, Tx (Low data rate, above 1 GHz)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Mid Channel Charger
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 17 : 40

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.323473614 G	54.96	35.622	-23.659	74.000	-19.04	--	331	3.87	1 M
4.843987975 G	55.34	34.192	-25.630	74.000	-18.66	--	107	3.88	1 M
9.759338677 G	57.44	36.829	-21.849	74.000	-16.56		48	2.96	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.843987975 G	37.32	34.192	-25.630	54.000	-16.68	--	107	3.88	1 M
7.323473614 G	41.05	35.622	-23.659	54.000	-12.95	--	331	3.87	1 M
9.759338677 G	43.04	36.829	-21.849	54.000	-10.96		48	2.96	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

High Channel, Charging mode, Tx (Low data rate, above 1 GHz)

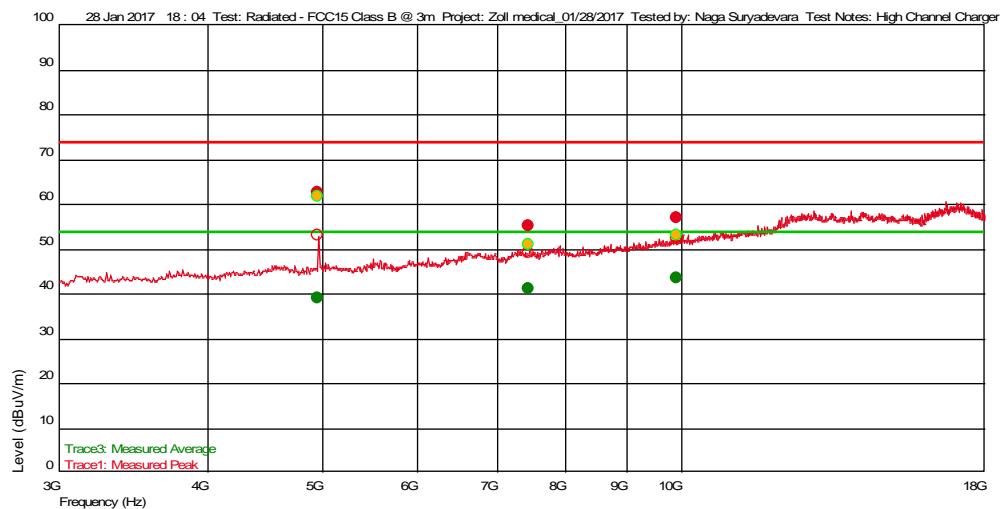
Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: High Channel Charger
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 18 : 04

User Entry
 Radiated - FCC15 Class B @ 3m
 Zoll medical_01/28/2017
 High Channel Charger
 20C
 21% 989 mbars
 Naga Suryadevara
 28 Jan 2017 18 : 04

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.449833 G	55.17	35.632	-23.588	74.000	-18.83	--	134	4.00	1 M
9.921329325 G	56.83	37.064	-21.749	74.000	-17.17	--	228	1.11	1 M
4.9598998 G	62.40	34.213	-25.336	74.000	-11.60		187	3.55	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.9598998 G	38.87	34.213	-25.336	54.000	-15.13		187	3.55	1 M
7.449833 G	41.13	35.632	-23.588	54.000	-12.87	--	134	4.00	1 M
9.921329325 G	43.37	37.064	-21.749	54.000	-10.63	--	228	1.11	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

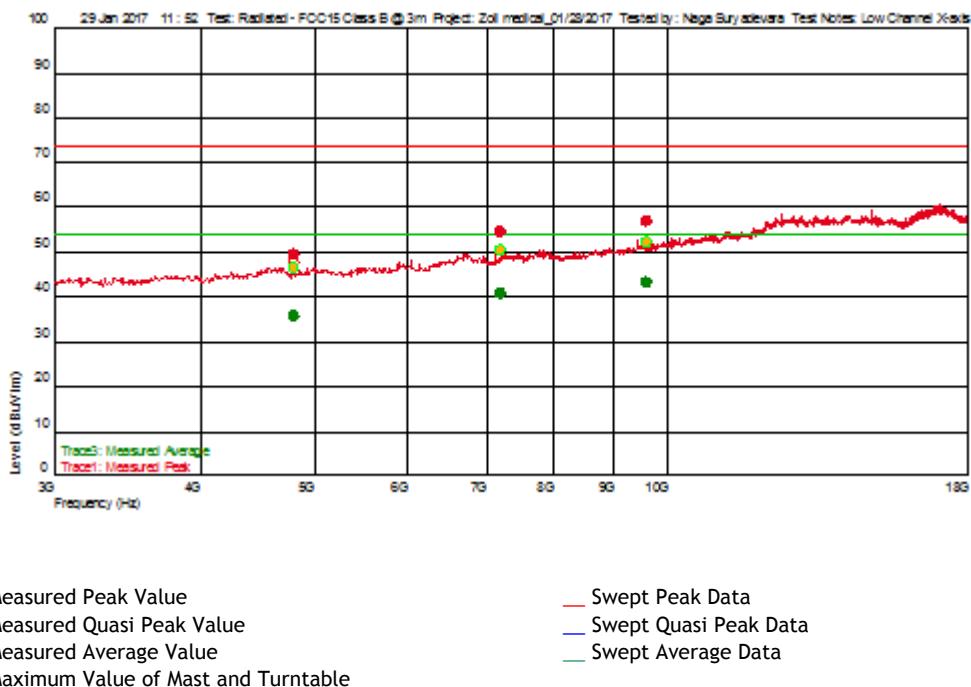
Low Channel, Battery mode, Tx (Low data rate, above 1 GHz, X axis)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low Channel X-axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 11:52

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.801616566 G	49.44	34.191	-25.635	74.000	-24.56	--	302	1.56	1 M
7.20492986 G	54.49	35.644	-23.889	74.000	-19.51		102	2.34	1 M
9.605290581 G	56.79	36.686	-22.078	74.000	-17.21		154	3.05	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.801616566 G	35.66	34.191	-25.635	54.000	-18.34	--	302	1.56	1 M
7.20492986 G	40.67	35.644	-23.889	54.000	-13.33		102	2.34	1 M
9.605290581 G	43.19	36.686	-22.078	54.000	-10.81		154	3.05	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

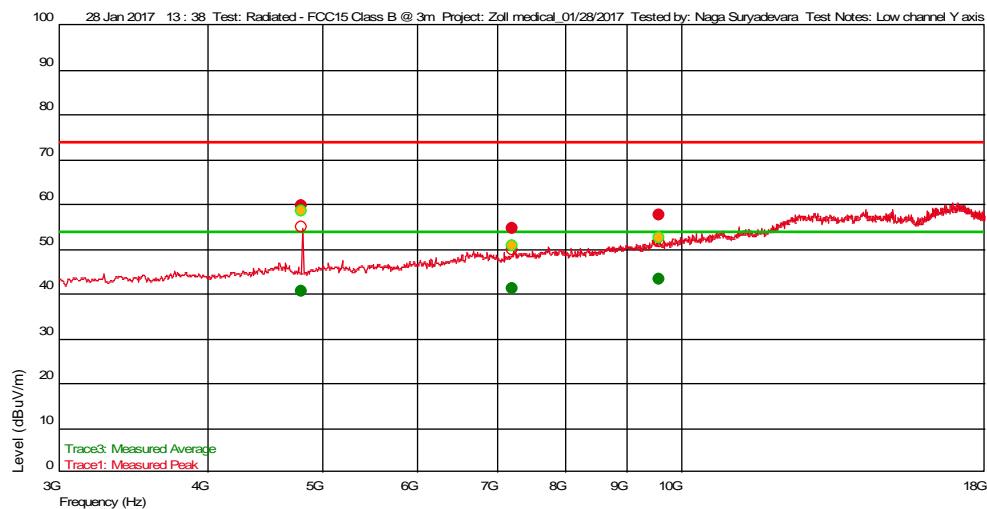
Low Channel, Battery mode, Tx (Low data rate, above 1 GHz, Y axis)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low channel Y axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 13 : 38

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.2198998 G	54.41	35.641	-23.826	74.000	-19.59		118	3.70	1 M
9.606666667 G	57.61	36.687	-22.076	74.000	-16.39	--	0	1.94	1 M
4.803914495 G	59.47	34.192	-25.631	74.000	-14.53	--	263	1.95	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.803914495 G	40.38	34.192	-25.631	54.000	-13.62	--	263	1.95	1 M
7.2198998 G	40.90	35.641	-23.826	54.000	-13.10		118	3.70	1 M
9.606666667 G	43.20	36.687	-22.076	54.000	-10.80	--	0	1.94	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

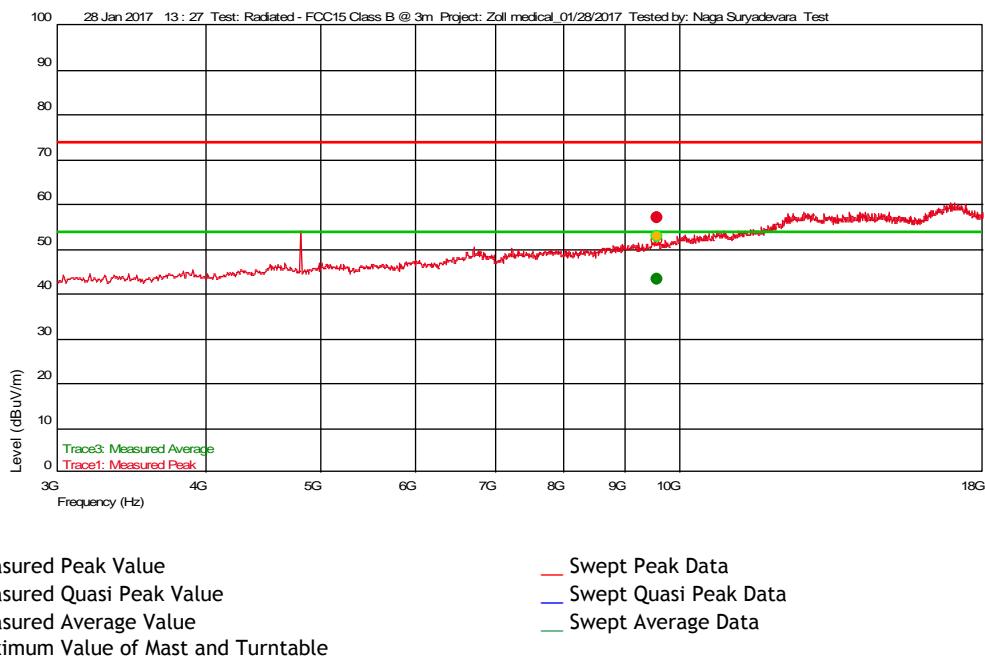
Low Channel, Battery mode, Tx (Low data rate, above 1 GHz, Z axis) – Scan1

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low channel Z axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 13 : 03

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.21490982 G	54.39	35.642	-23.847	74.000	-19.61	--	232	1.59	1 M
4.803941215 G	56.80	34.192	-25.631	74.000	-17.20		181	2.05	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.803941215 G	38.98	34.192	-25.631	54.000	-15.02		181	2.05	1 M
7.21490982 G	40.88	35.642	-23.847	54.000	-13.12	--	232	1.59	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

Low Channel, Battery mode, Tx (Low data rate, above 1 GHz, Z axis) – Scan2

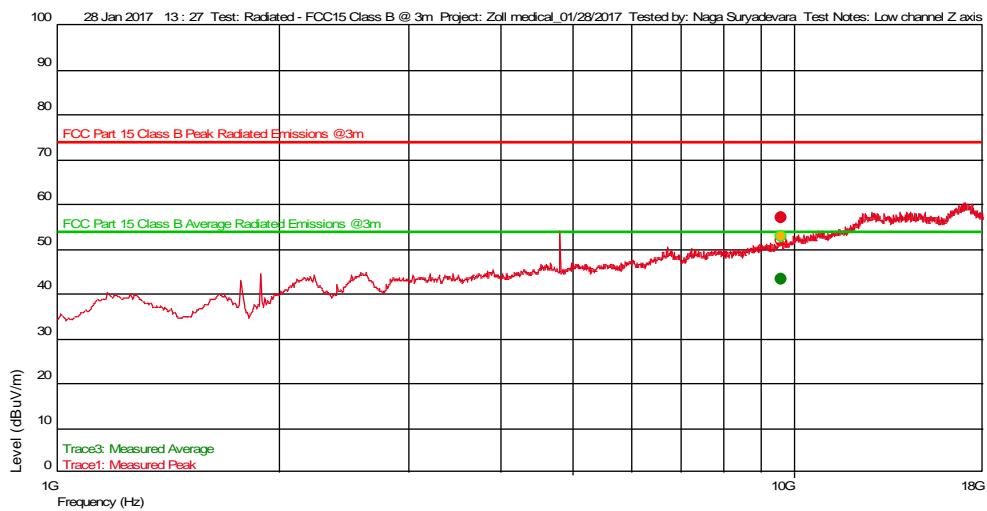
Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low channel Z axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 13:27

User Entry
 Radiated - FCC15 Class B @ 3m
 Zoll medical_01/28/2017
 Low channel Z axis
 20C
 21% 989 mbars
 Naga Suryadevara
 28 Jan 2017 13:27

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
9.602932532 G	56.78	36.684	-22.081	74.000	-17.22	--	360	1.92	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
9.602932532 G	43.19	36.684	-22.081	54.000	-10.81	--	360	1.92	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

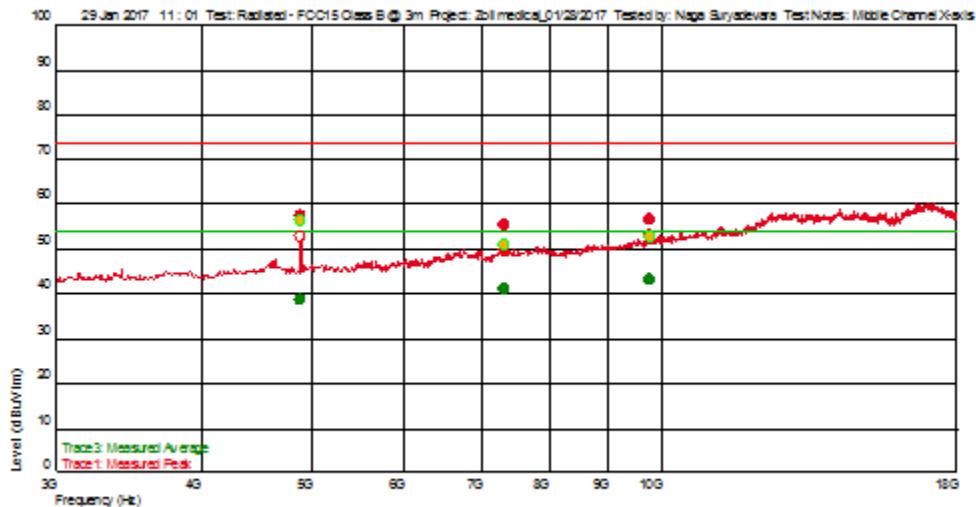
Mid Channel, Battery mode, Tx (Low data rate, above 1 GHz, X axis)

Test Information

Test Details
 Test: User Entry
 Project: Radiated - FCC15 Class B @ 3m
 Test Notes: Zoll medical_01/28/2017
 Temperature: Middle Channel X-axis
 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 11 : 01

Additional Information

Prescan Emission Graph



●	Measured Peak Value	—	Swept Peak Data
●	Measured Quasi Peak Value	—	Swept Quasi Peak Data
●	Measured Average Value	—	Swept Average Data
●	Maximum Value of Mast and Turntable	—	

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.323146293 G	55.46	35.622	-23.659	74.000	-18.54		294	2.75	1 M
9.774395457 G	56.52	36.843	-21.840	74.000	-17.48		319	4.00	1 M
4.882030728 G	57.54	34.238	-25.483	74.000	-16.46		129	1.80	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.882030728 G	38.61	34.238	-25.483	54.000	-15.39		129	1.80	1 M
7.323146293 G	41.05	35.622	-23.659	54.000	-12.95		294	2.75	1 M
9.774395457 G	43.06	36.843	-21.840	54.000	-10.94		319	4.00	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

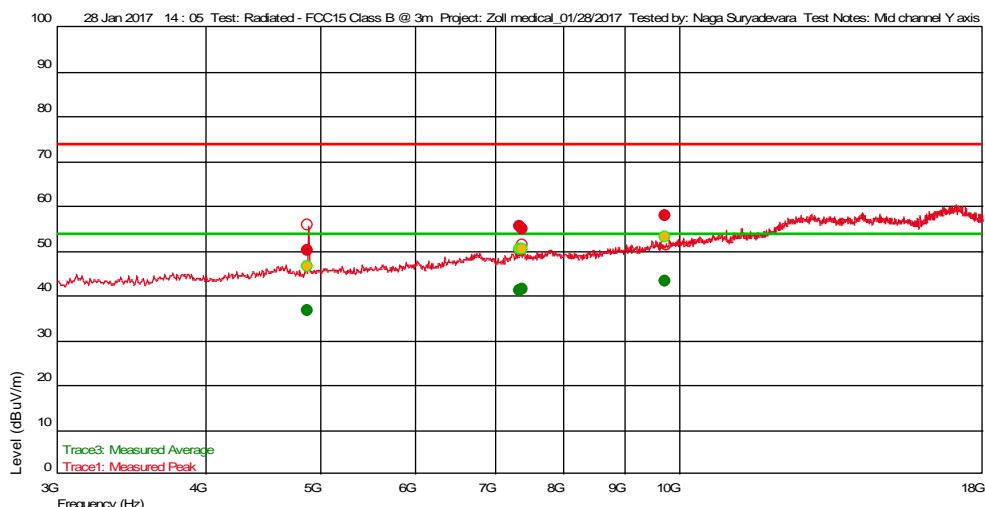
Mid Channel, Battery mode, Tx (Low data rate, above 1 GHz, Y axis)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Mid channel Y axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 14 : 05

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.886813627 G	50.05	34.241	-25.474	74.000	-23.95		330	3.87	1 M
7.400487642 G	54.86	35.611	-23.616	74.000	-19.14		319	4.01	1 M
7.35746159 G	55.23	35.617	-23.640	74.000	-18.77		96	3.16	1 M
9.757675351 G	57.84	36.827	-21.850	74.000	-16.16		40	3.75	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.886813627 G	36.46	34.241	-25.474	54.000	-17.54		330	3.87	1 M
7.35746159 G	41.06	35.617	-23.640	54.000	-12.94		96	3.16	1 M
7.400487642 G	41.24	35.611	-23.616	54.000	-12.76		319	4.01	1 M
9.757675351 G	43.04	36.827	-21.850	54.000	-10.96		40	3.75	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

Mid Channel, Battery mode, Tx (Low data rate, above 1 GHz, Z axis)

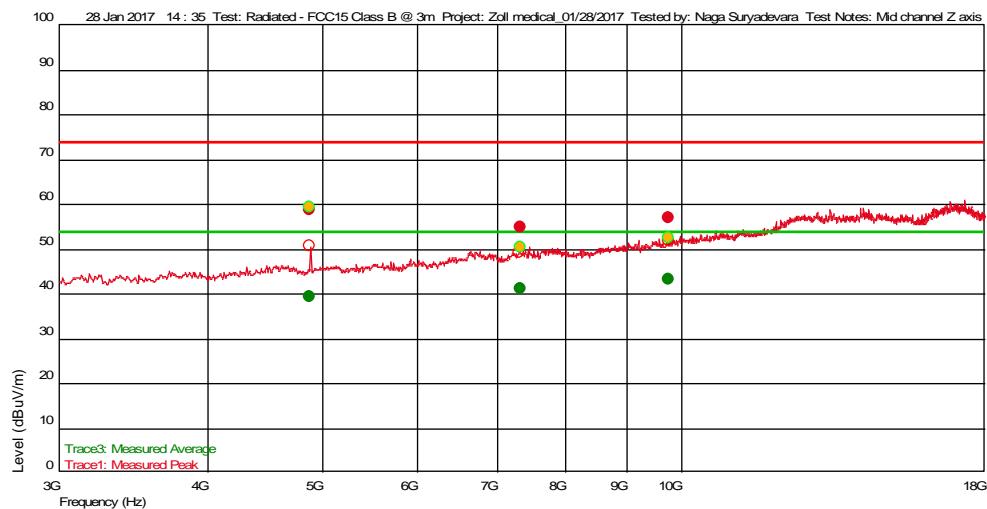
Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Mid channel Z axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 14 : 35

User Entry
 Radiated - FCC15 Class B @ 3m
 Zoll medical_01/28/2017
 Mid channel Z axis
 20C
 21% 989 mbars
 Naga Suryadevara
 28 Jan 2017 14 : 35

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.32998664 G	54.70	35.621	-23.655	74.000	-19.30		230	2.18	1 M
9.771663326 G	56.93	36.840	-21.842	74.000	-17.07	--	166	2.69	1 M
4.881877087 G	58.77	34.238	-25.483	74.000	-15.23		152	3.17	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.881877087 G	39.18	34.238	-25.483	54.000	-14.82		152	3.17	1 M
7.32998664 G	41.05	35.621	-23.655	54.000	-12.95		230	2.18	1 M
9.771663326 G	43.06	36.840	-21.842	54.000	-10.94	--	166	2.69	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

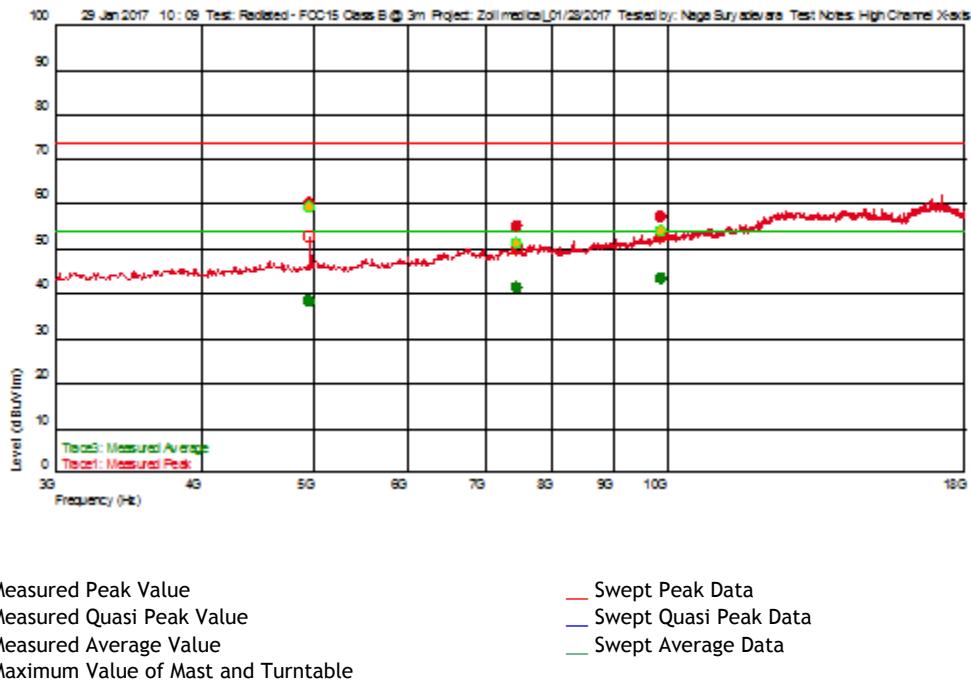
High Channel, Battery mode, Tx (Low data rate, above 1 GHz, X axis)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: High Channel X-axis Battery
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 10 : 09

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.452124249 G	55.04	35.633	-23.587	74.000	-18.96		360	1.67	1 M
9.91260521 G	57.22	37.047	-21.754	74.000	-16.78		331	1.38	1 M
4.95997328 G	60.06	34.213	-25.336	74.000	-13.94		338	2.91	1 M

Trace3: Measured Average

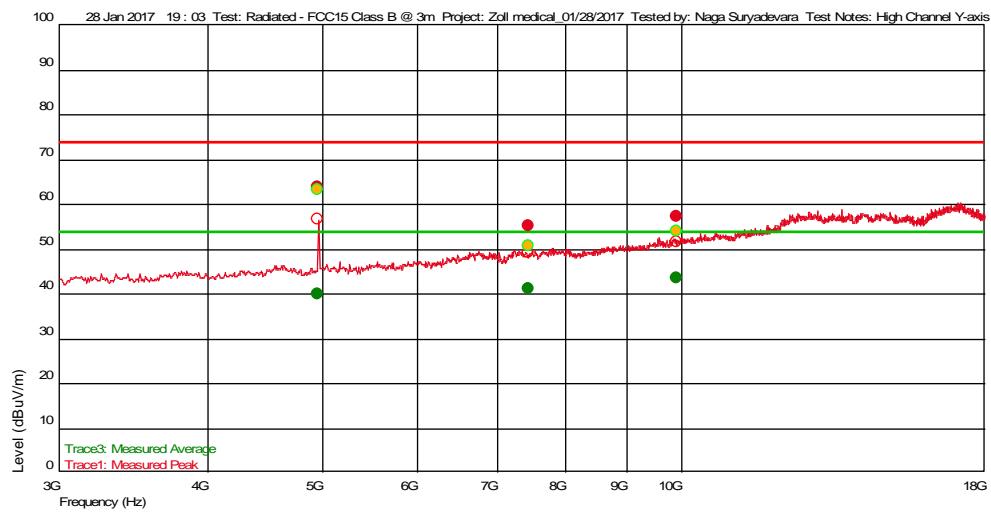
Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.95997328 G	38.43	34.213	-25.336	54.000	-15.57		338	2.91	1 M
7.452124249 G	41.29	35.633	-23.587	54.000	-12.71		360	1.67	1 M
9.91260521 G	43.53	37.047	-21.754	54.000	-10.47		331	1.38	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

High Channel, Battery mode, Tx (Low data rate, above 1 GHz, Y axis)**Test Information**

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: High Channel Y-axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 19 : 03

Additional Information

Prescan Emission Graph

- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data**Trace1: Measured Peak**

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.447775551 G	55.17	35.632	-23.589	74.000	-18.83	--	0	1.32	1 M
9.919271877 G	57.09	37.060	-21.750	74.000	-16.91		319	2.27	1 M
4.95997328 G	63.87	34.213	-25.336	74.000	-10.13		69	2.88	1 M

Trace3: Measured Average

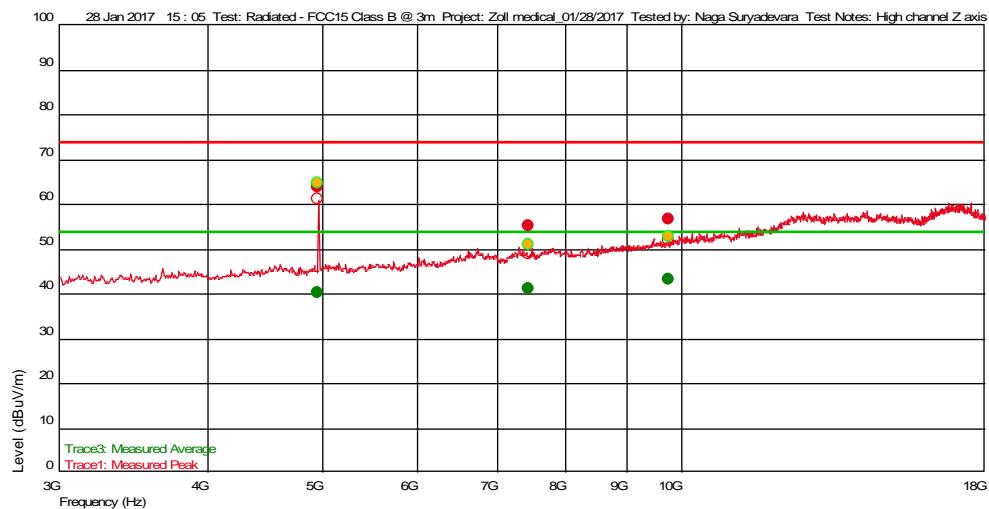
Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.95997328 G	39.70	34.213	-25.336	54.000	-14.30		69	2.88	1 M
7.447775551 G	41.12	35.632	-23.589	54.000	-12.88	--	0	1.32	1 M
9.919271877 G	43.37	37.060	-21.750	54.000	-10.63		319	2.27	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

High Channel, Battery mode, Tx (Low data rate, above 1 GHz, Z axis)**Test Information**

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: High channel Z axis
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 28 Jan 2017 15 : 05

Additional Information

Prescan Emission Graph

- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data**Trace1: Measured Peak**

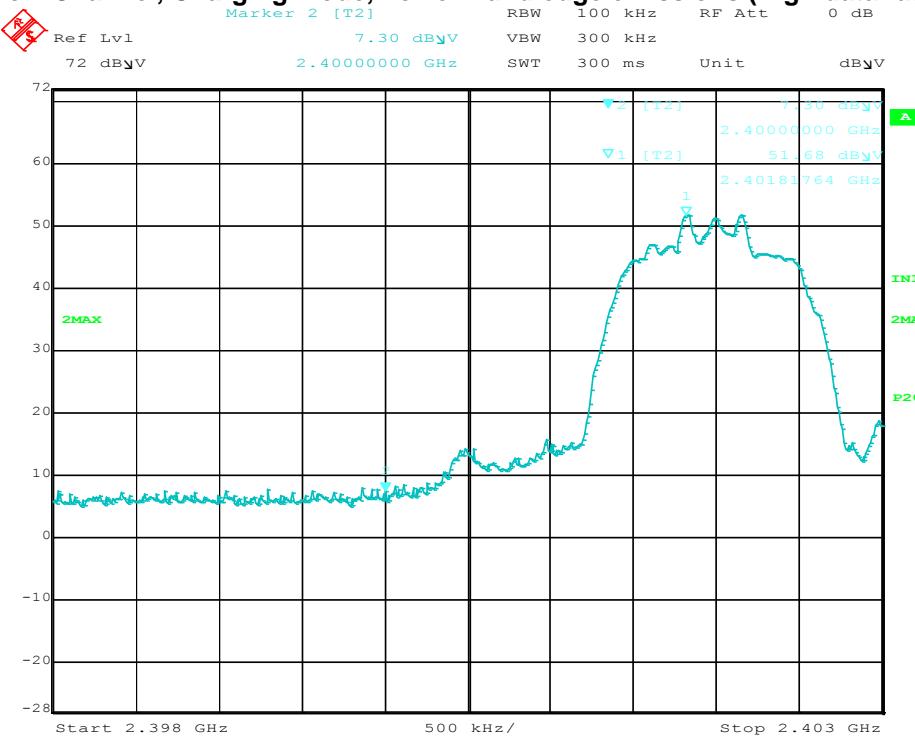
Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
7.446472946 G	55.17	35.631	-23.590	74.000	-18.83	--	229	1.69	1 M
9.765190381 G	56.51	36.834	-21.846	74.000	-17.49		19	2.05	1 M
4.95995324 G	63.74	34.213	-25.336	74.000	-10.26		173	1.93	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
4.95995324 G	40.09	34.213	-25.336	54.000	-13.91		173	1.93	1 M
7.446472946 G	41.12	35.631	-23.590	54.000	-12.88	--	229	1.69	1 M
9.765190381 G	43.05	36.834	-21.846	54.000	-10.95		19	2.05	1 M

Note: Manual Scans were performed from 1-3 GHz and 18 - 40 GHz, no emissions were detected above the noise floor

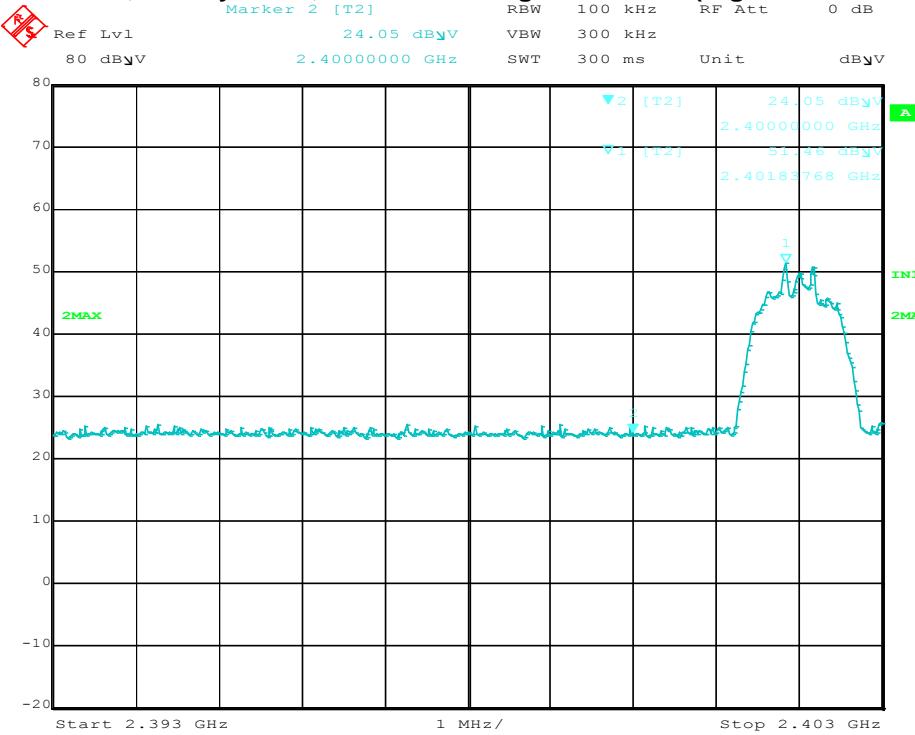
Low Channel, Charging mode, Lower Band edge emissions (High data rate)



Date: 29.JAN.2017 13:30:38

Emissions at lower band edge were 20 dB below the peak

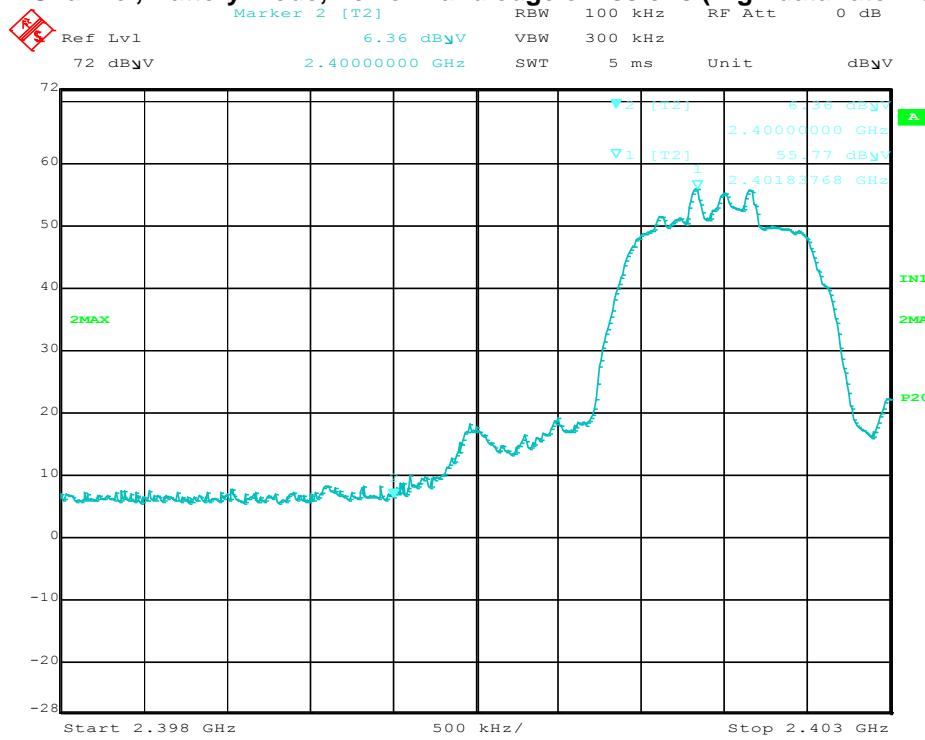
Low Channel, Battery mode, Lower Band edge emissions (High data rate X axis)



Date: 29.JAN.2017 12:55:04

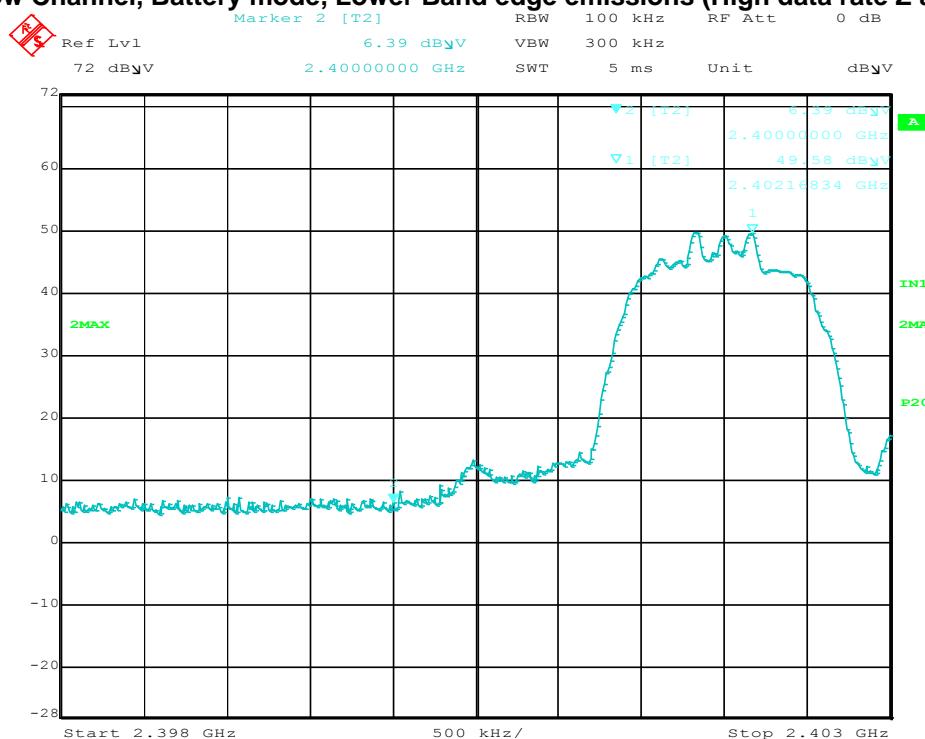
Emissions at lower band edge were 20 dB below the peak

Low Channel, Battery mode, Lower Band edge emissions (High data rate Y axis)



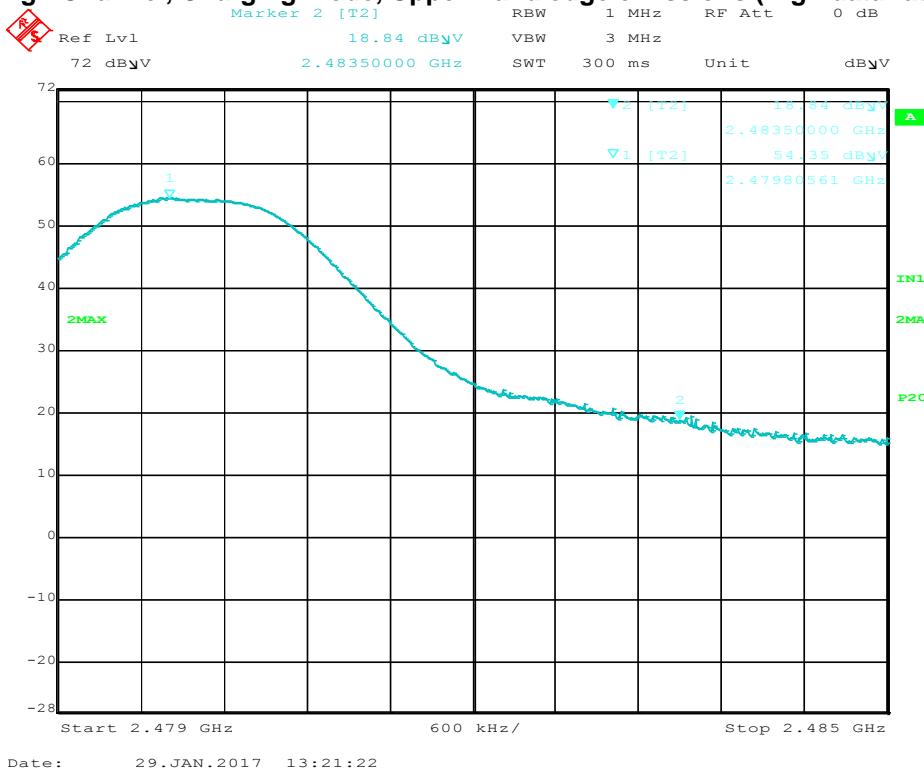
Emissions at lower band edge were 20 dB below the peak

Low Channel, Battery mode, Lower Band edge emissions (High data rate Z axis)



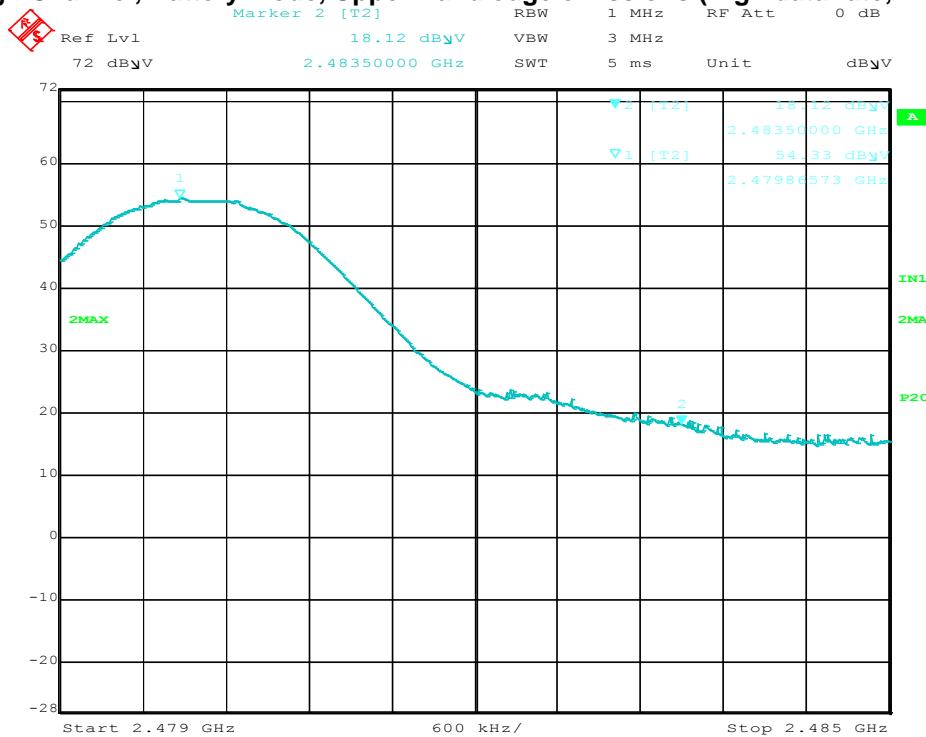
Emissions at lower band edge were 20 dB below the peak

High Channel, Charging mode, Upper Band edge emissions (High data rate)



Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
PK	V	2483.500	18.84	32.22	5.18	0.00	0.00	56.25	74.00	-17.75	1/3 MHz
AVG	V	2483.500	4.56	32.22	5.18	0.00	0.00	41.97	54.00	-12.03	1/3 MHz

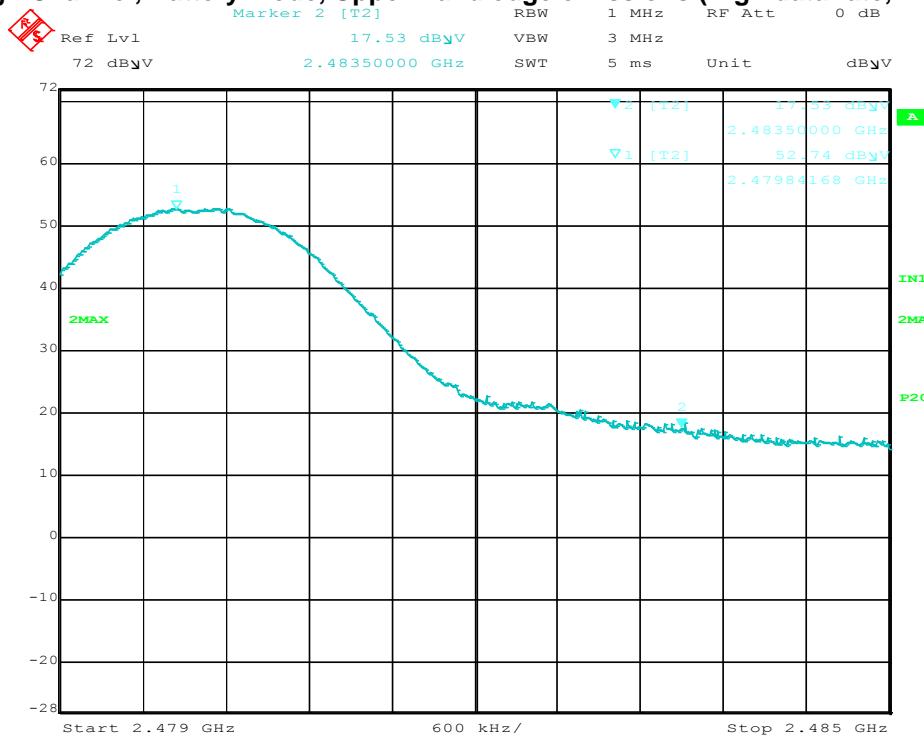
High Channel, Battery mode, Upper Band edge emissions (High data rate, X axis)



Date: 29.JAN.2017 13:44:12

Detector Type	Ant. Pol. (V/H)	Ant.	Frequency	Reading	Antenna Factor	Cable Loss	Pre-amp Factor	Distance Factor	Net	Limit	Margin	Bandwidth
			MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB	
PK	H	2483.500	18.12	32.22	5.18	0.00	0.00	0.00	55.53	74.00	-18.47	1/3 MHz
AVG	H	2483.500	4.34	32.22	5.18	0.00	0.00	0.00	41.75	54.00	-12.25	1/3 MHz

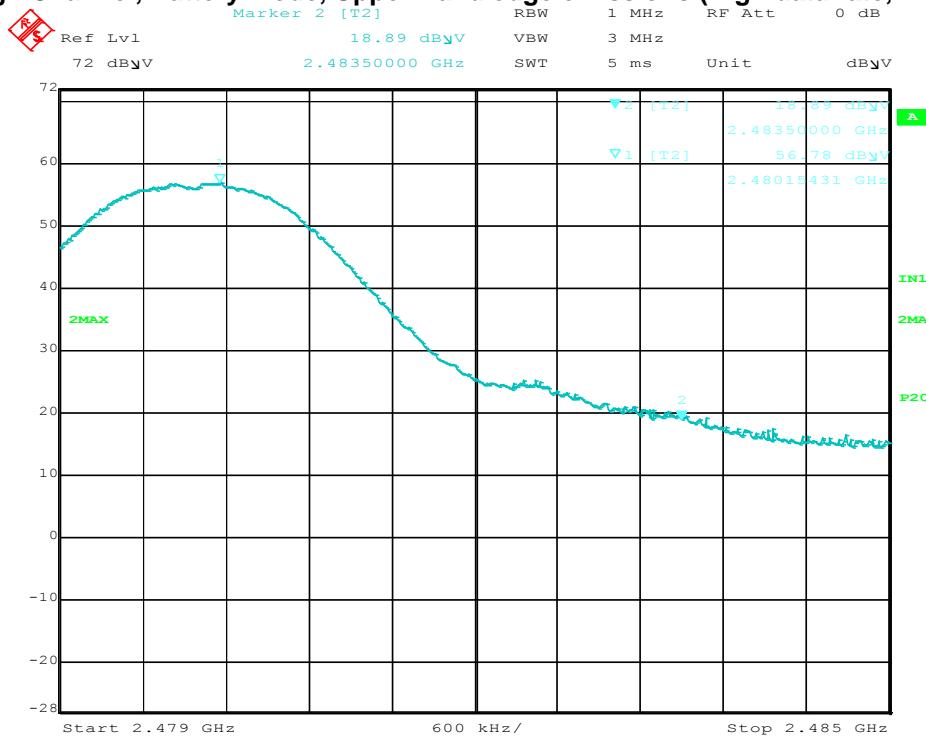
High Channel, Battery mode, Upper Band edge emissions (High data rate, Y axis)



Date: 29.JAN.2017 13:50:55

Detector Type	Ant. Pol. (V/H)	Ant.	Frequency	Reading	Antenna Factor	Cable Loss	Pre-amp Factor	Distance Factor	Net	Limit	Margin	Bandwidth
			MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB	dB(uV/m)	dB	
PK	H	2483.500	17.53	32.22	5.18	0.00	0.00	0.00	54.94	74.00	-19.06	1/3 MHz
AVG	H	2483.500	4.22	32.22	5.18	0.00	0.00	0.00	41.63	54.00	-12.37	1/3 MHz

High Channel, Battery mode, Upper Band edge emissions (High data rate, Z axis)



Date: 29.JAN.2017 13:58:48

Detector Type	Ant. Pol. (V/H)	Ant.	Frequency	Reading	Antenna Factor	Cable Loss	Pre-amp Factor	Distance Factor	Net	Limit	Margin	Bandwidth
			MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB	
PK	V	2483.500	18.89	32.22	5.18	0.00	0.00	0.00	56.30	74.00	-17.70	1/3 MHz
AVG	V	2483.500	5.68	32.22	5.18	0.00	0.00	0.00	43.09	54.00	-10.91	1/3 MHz

Test Personnel: Naga Suryadevara N.5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Product Standard: FCC Part 15 Subpart C
(15.247)
120VAC 60Hz
Input Voltage: Internal Battery

Pretest Verification w/
Ambient Signals or
BB Source: BB Source

Test Date: 01/27/2017
01/28/2017
01/29/2017

Limit Applied: As specified in the plots (Section
12.4)

Ambient Temperature: 19, 20 19 °C

Relative Humidity: 30, 21 19 %

Atmospheric Pressure: 981, 989, 999 mbars

Deviations, Additions, or Exclusions: None

13 Radiated Emissions (Digital Device and Receiver)

13.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

FS = Field Strength in $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 $\text{dB}\mu\text{V}$ is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 $\text{dB}\mu\text{V}/\text{m}$. This value in $\text{dB}\mu\text{V}/\text{m}$ was converted to its corresponding level in $\mu\text{V}/\text{m}$.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}/\text{m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V}/\text{m}$$

To convert from $\text{dB}\mu\text{V}$ to μV or mV the following was used:

$$UF = 10^{(NF/20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in } \text{dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V}/\text{m}$$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "AF" is the Antenna Factor; "PA+CL" are Preamp and Cable Loss. These are already accounted for in the "Level" column.

13.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	03/09/2016	03/09/2017
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/30/2016	07/30/2017
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	12/16/2016	12/16/2017
ETS001'	1-18GHz DRG Horn Antenna	ETS-Lindgren	3117	00143259	02/10/2016	02/10/2017
145-416'	Cables 145-420 145-423 145-424 145-408	Huber + Suhner	3m Track B cables	multiple	07/30/2016	07/30/2017
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	05/27/2016	05/27/2017
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	12/16/2016	12/16/2017

Software Utilized:

Name	Manufacturer	Version
Compliance5	Teseq	5.26.46.46

13.3 Results:

The sample tested was found to Comply.

13.4 Plots/Data:

Battery mode, Rx, 30 – 1000 MHz

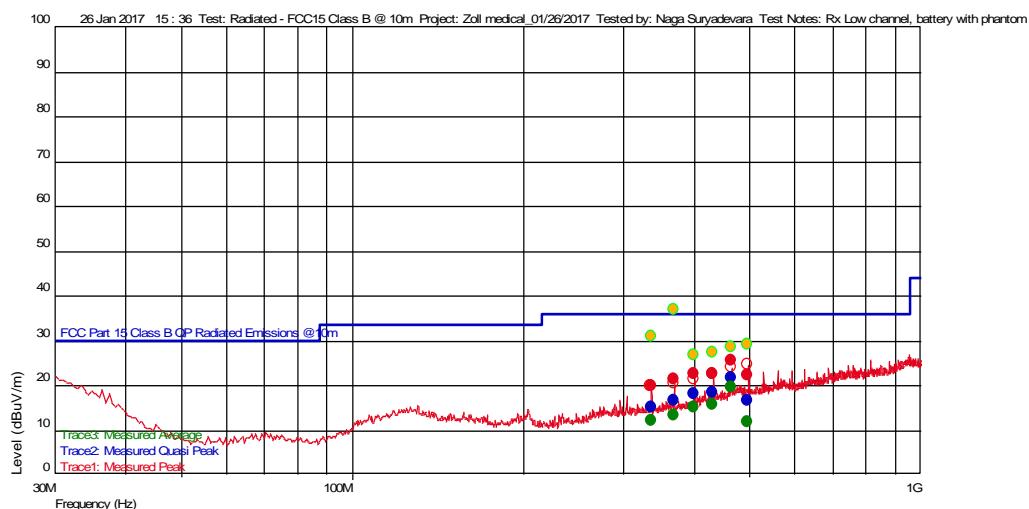
Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical_01/26/2017
 Test Notes: Rx Low channel, battery with phantom
 Temperature: 19 C
 Humidity: 30% 981 mbars
 Tested by: Naga Suryadevara
 Test Started: 26 Jan 2017 15 : 36

User Entry
 Radiated - FCC15 Class B @ 10m
 Zoll medical_01/26/2017
 Rx Low channel, battery with phantom
 19 C
 30% 981 mbars
 Naga Suryadevara
 26 Jan 2017 15 : 36

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
336.049098491 M	15.21	20.221	-38.136	36.020	-20.81	--	20	2.09	120 k
368.030260519 M	16.62	21.100	-38.045	36.020	-19.40	--	184	3.04	120 k
495.908416645 M	16.62	23.918	-37.396	36.020	-19.40	--	293	1.45	120 k
399.953707116 M	17.99	21.698	-37.940	36.020	-18.03	--	164	2.50	120 k
431.929258922 M	18.28	22.739	-37.778	36.020	-17.74	--	141	2.28	120 k
463.996994096 M	21.77	23.660	-37.590	36.020	-14.25	--	3	1.56	120 k

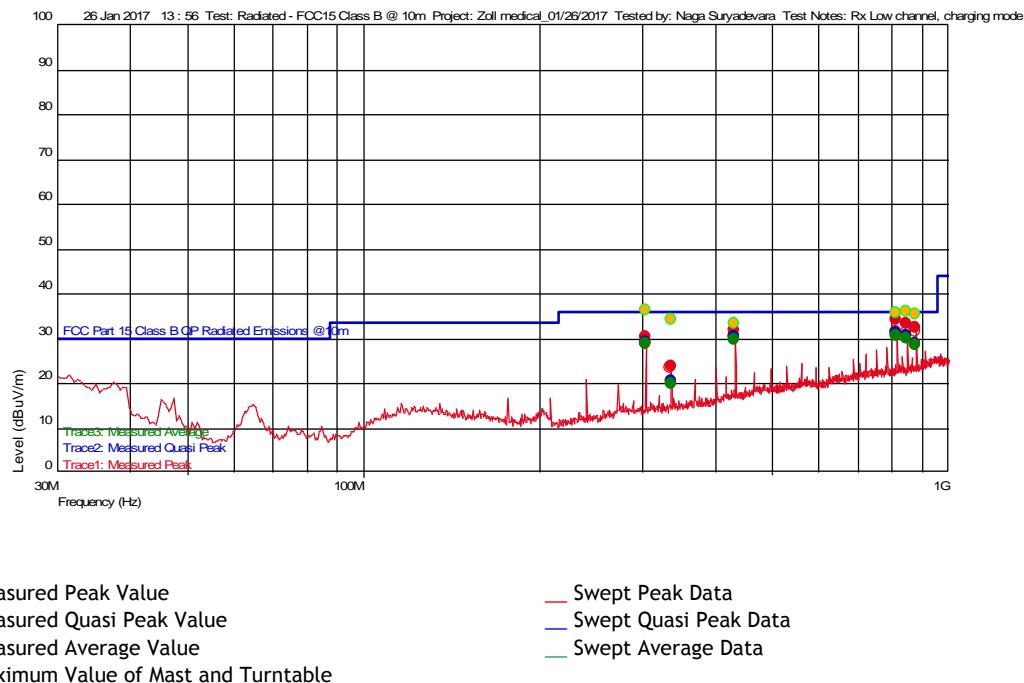
Charging mode, Rx, 30 – 1000 MHz (XT 1505)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical_01/26/2017
 Test Notes: Rx Low channel, charging mode
 Temperature: 19 C
 Humidity: 30% 981 mbars
 Tested by: Naga Suryadevara
 Test Started: 26 Jan 2017 13 : 56

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
335.933667629 M	20.46	20.219	-38.137	36.020	-15.56	--	97	2.51	120 k
880.022645431 M	28.95	28.300	-35.446	36.020	-7.07	--	130	1.26	120 k
303.958115824 M	29.04	19.758	-38.210	36.020	-6.98	--	261	3.83	120 k
431.966934273 M	30.24	22.739	-37.777	36.020	-5.78	--	85	1.87	120 k
847.946894224 M	30.58	28.000	-35.554	36.020	-5.44	--	121	1.15	120 k
815.972144022 M	31.24	28.000	-35.661	36.020	-4.78	--	297	1.05	120 k

Charging mode, Rx, 30 – 1000 MHz (XT 1527)

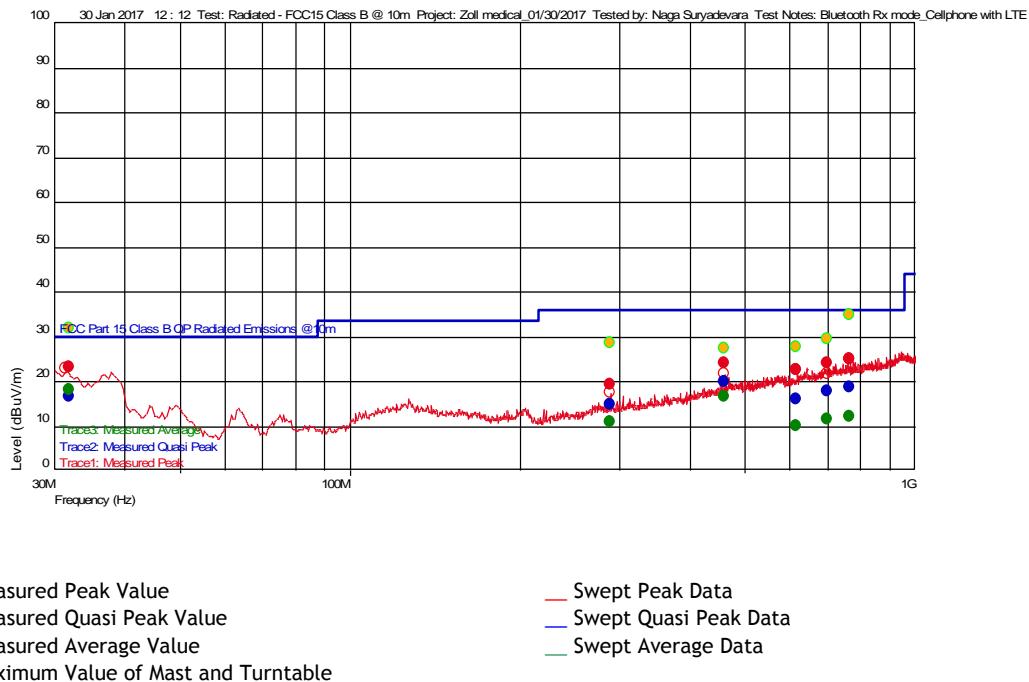
Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 10m
 Project: Zoll medical_01/30/2017
 Test Notes: Bluetooth Rx mode_Cellphone with LTE
 Temperature: 20 C
 Humidity: 16% 996 mbars
 Tested by: Naga Suryadevara
 Test Started: 30 Jan 2017 12 : 12

User Entry
 Radiated - FCC15 Class B @ 10m
 Zoll medical_01/30/2017
 Bluetooth Rx mode_Cellphone with LTE

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
288.553907667 M	14.77	19.400	-38.255	36.020	-21.25	--	36	1.04	120 k
617.134268321 M	15.95	25.128	-36.778	36.020	-20.07		277	1.24	120 k
699.310220764 M	17.76	26.700	-36.175	36.020	-18.26	--	176	3.04	120 k
766.514829782 M	18.58	27.400	-35.861	36.020	-17.44		0	2.56	120 k
460.825450673 M	19.78	23.533	-37.611	36.020	-16.24	--	96	2.16	120 k
32.015030228 M	16.47	25.888	-40.044	30.000	-13.53		286	3.01	120 k

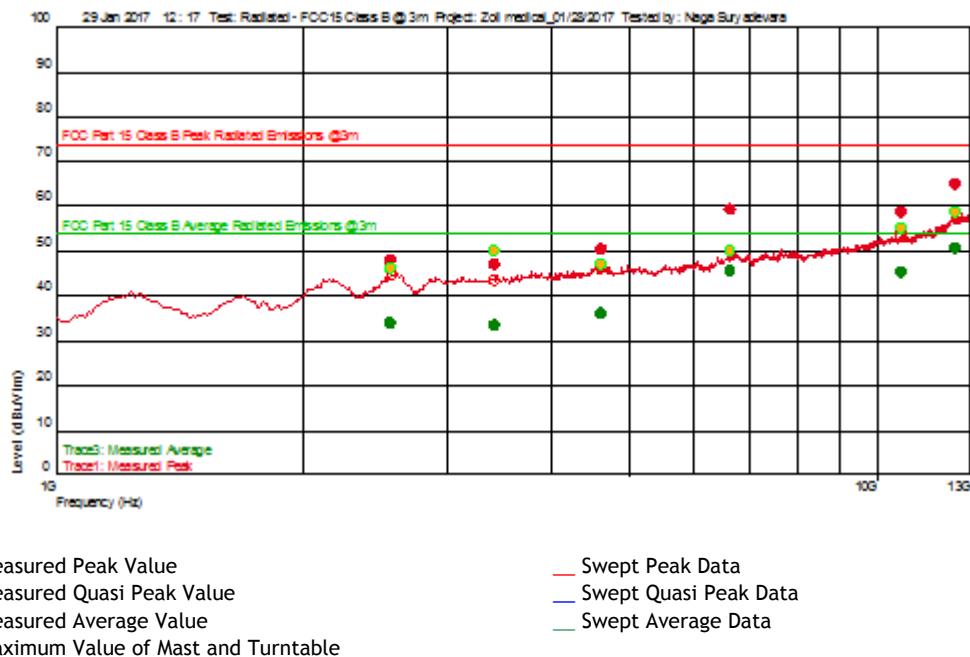
Battery mode, Rx, 1 – 13 GHz

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low Channel Rx Battery
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 12 : 17

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
3.43263193 G	46.90	32.802	-27.303	74.000	-27.10		142	3.28	1 M
2.562845692 G	47.90	32.360	-28.116	74.000	-26.10		0	4.00	1 M
4.627862391 G	50.31	34.427	-25.895	74.000	-23.69		320	2.65	1 M
10.761322645 G	58.64	37.706	-20.189	74.000	-15.36	--	315	3.06	1 M
6.647040748 G	59.14	35.533	-24.361	74.000	-14.86	--	306	3.02	1 M
12.527869071 G	64.82	39.115	-17.549	74.000	-9.18		321	2.17	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
3.43263193 G	33.19	32.802	-27.303	54.000	-20.81		142	3.28	1 M
2.562845692 G	33.95	32.360	-28.116	54.000	-20.05		0	4.00	1 M
4.627862391 G	36.03	34.427	-25.895	54.000	-17.97		320	2.65	1 M
10.761322645 G	45.21	37.706	-20.189	54.000	-8.79	--	315	3.06	1 M
6.647040748 G	45.61	35.533	-24.361	54.000	-8.39	--	306	3.02	1 M
12.527869071 G	50.65	39.115	-17.549	54.000	-3.35		321	2.17	1 M

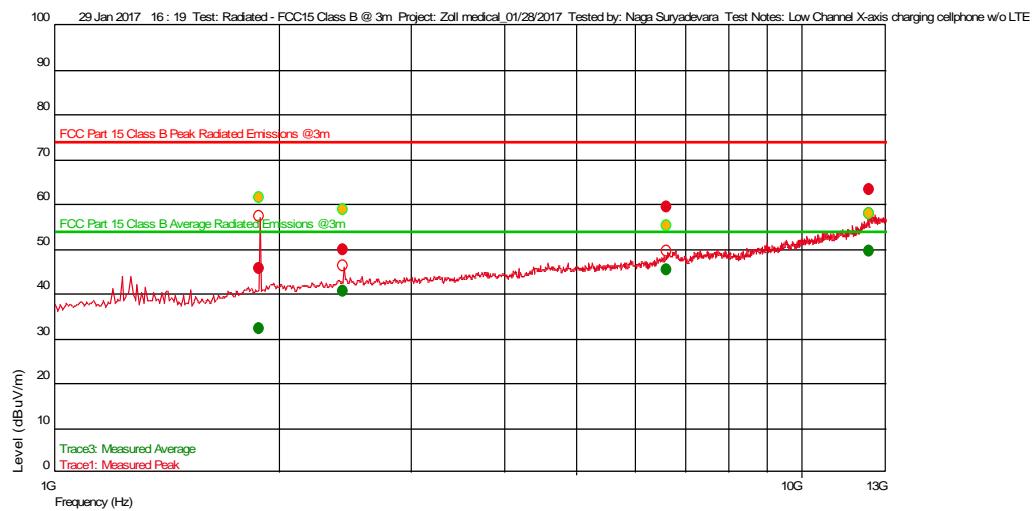
Charging mode, Rx, 1 – 13 GHz (XT 1505)

Test Information

Test Details
 Test: User Entry
 Project: Radiated - FCC15 Class B @ 3m
 Test Notes: Zoll medical_01/28/2017
 Temperature: Low Channel X-axis charging cellphone w/o LTE
 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 16:19

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
1.887882431 G	45.60	30.801	-28.451	74.000	-28.40	--	96	1.31	1 M
2.439425518 G	49.78	32.257	-28.153	74.000	-24.22	--	128	1.07	1 M
6.625210421 G	59.21	35.548	-24.447	74.000	-14.79		253	1.07	1 M
12.348550435 G	63.27	39.103	-18.019	74.000	-10.73	--	163	1.67	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
1.887882431 G	32.20	30.801	-28.451	54.000	-21.80	--	96	1.31	1 M
2.439425518 G	40.41	32.257	-28.153	54.000	-13.59	--	128	1.07	1 M
6.625210421 G	45.27	35.548	-24.447	54.000	-8.73		253	1.07	1 M
12.348550435 G	49.50	39.103	-18.019	54.000	-4.50	--	163	1.67	1 M

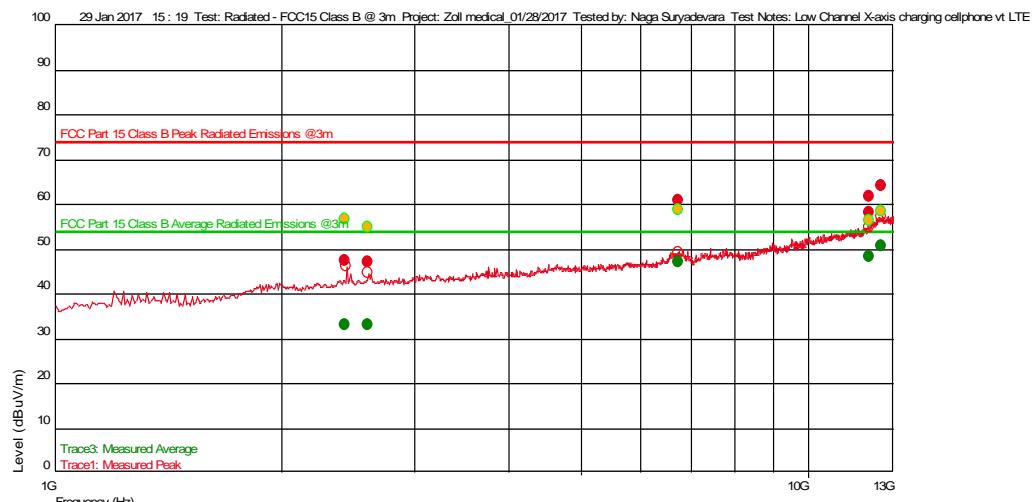
Charging mode, Rx, 1 – 13 GHz (XT 1527)

Test Information

Test Details
 Test: Radiated - FCC15 Class B @ 3m
 Project: Zoll medical_01/28/2017
 Test Notes: Low Channel X-axis charging cellphone vt LTE
 Temperature: 20C
 Humidity: 21% 989 mbars
 Tested by: Naga Suryadevara
 Test Started: 29 Jan 2017 15 : 19

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
12.102204409 G	58.03	38.865	-18.672	74.000	-15.97	--	0	0.00	1 M
2.612738811 G	47.07	32.437	-28.097	74.000	-26.93	--	139	1.31	1 M
2.433547095 G	47.23	32.262	-28.155	74.000	-26.77	--	52	1.31	1 M
6.75744823 G	60.88	35.524	-23.979	74.000	-13.12	--	49	1.42	1 M
12.101162325 G	61.71	38.864	-18.675	74.000	-12.29		29	1.57	1 M
12.539812959 G	64.07	39.126	-17.523	74.000	-9.93	--	225	3.71	1 M

Trace3: Measured Average

Frequency(Hz)	Level(dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (--), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)
2.433547095 G	32.86	32.262	-28.155	54.000	-21.14	--	52	1.31	1 M
2.612738811 G	33.09	32.437	-28.097	54.000	-20.91	--	139	1.31	1 M
6.75744823 G	47.04	35.524	-23.979	54.000	-6.96	--	49	1.42	1 M
12.101162325 G	48.25	38.864	-18.675	54.000	-5.75		29	1.57	1 M
12.539812959 G	50.52	39.126	-17.523	54.000	-3.48	--	225	3.71	1 M

Test Personnel: Naga Suryadevara N.5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Product Standard: FCC Part 15 Subpart B
120VAC 60Hz
Input Voltage: Internal Battery

Pretest Verification w/
Ambient Signals or
BB Source: BB Source

Test Date: 01/26/2017
01/29/2017
01/30/2017

Limit Applied: Class A

Ambient Temperature: 19, 20, 20 °C

Relative Humidity: 30, 21, 16 %

Atmospheric Pressure: 981, 989, 996 mbars

14 AC Mains Conducted Emissions

14.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C and FCC Part 15 Subpart B.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.8dB	3.4dB
Telco Port Emissions	150 kHz - 30 MHz	3.2dB	5.0dB

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in $\text{dB}\mu\text{V}$

RF = Reading from receiver in $\text{dB}\mu\text{V}$

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from $\text{dB}\mu\text{V}$ to μV or mV the following was used:

$$UF = 10^{(NF/20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in $\text{dB}\mu\text{V}$

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V}/20)} = 285.1 \mu\text{V}/\text{m}$$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "TF" is the Transducer Factor; in this case LISN or ISN loss.

14.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002'	Weather Station	Davis Instruments	7400	PE80519A93	06/01/2016	06/01/2017
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K0 3	100067	07/29/2016	07/29/2017
DS22'	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS22	09/08/2016	09/08/2017
CBLBNC2 012-4'	50 Ohm Coaxial Cable	Pomona	RG58C/U -4	CBLBCN2012 -4	03/21/2016	03/21/2017
LISN31'	LISN - CISPR16 Compliant 9kHz-30MHz	Com-Power	LI-215A	191957	03/14/2016	03/14/2017

Software Utilized:

Name	Manufacturer	Version
Compliance 5	Teseq	5.26.46.46

14.3 Results:

The sample tested was found to Comply.

14.4 Plots/Data:

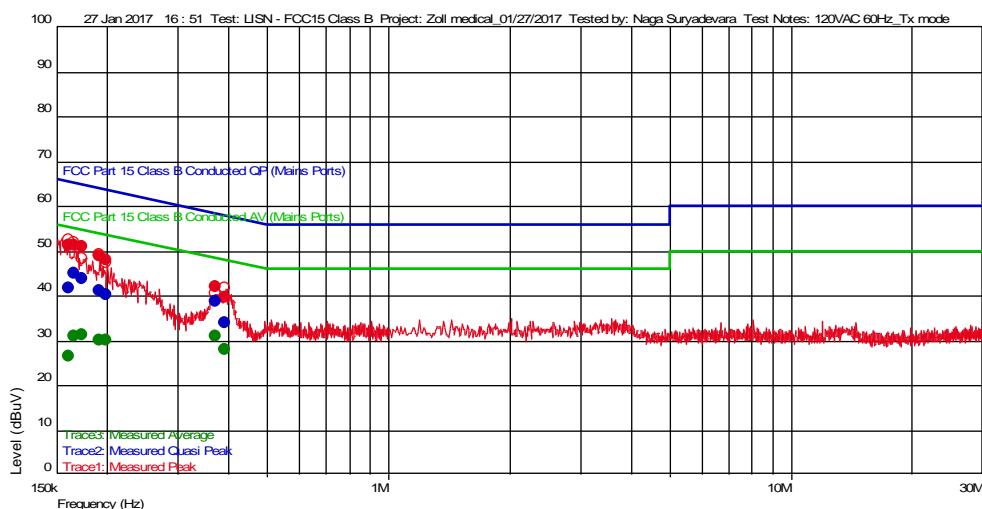
120VAC 60Hz, Tx mode

Test Information

Test Details
 Test: LISN - FCC15 Class B
 Project: Zoll medical_01/27/2017
 Test Notes: 120VAC 60Hz_Tx mode
 Temperature: 22 C
 Humidity: 14% 987 mbars
 Tested by: Naga Suryadevara
 Test Started: 27 Jan 2017 16 : 51

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
393.95 k	33.90	0.027	20.580	57.980	-24.08	9 k		N
161.05 k	41.73	0.071	20.594	65.410	-23.68	9 k		N
200.15 k	40.12	0.040	20.591	63.604	-23.48	9 k		N
191.65 k	41.11	0.047	20.592	63.965	-22.85	9 k		N
174.65 k	43.73	0.060	20.593	64.736	-21.01	9 k		L1
166.15 k	44.82	0.067	20.593	65.151	-20.33	9 k		N
374.4 k	38.64	0.028	20.581	58.403	-19.77	9 k		N

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
161.05 k	26.50	0.071	20.594	55.410	-28.91	9 k		N
166.15 k	31.00	0.067	20.593	55.151	-24.15	9 k		N
191.65 k	30.02	0.047	20.592	53.965	-23.94	9 k		N
174.65 k	31.17	0.060	20.593	54.736	-23.56	9 k		L1
200.15 k	30.12	0.040	20.591	53.604	-23.49	9 k		N
393.95 k	27.86	0.027	20.580	47.980	-20.12	9 k		N
374.4 k	30.83	0.028	20.581	48.403	-17.57	9 k		N

120VAC 60Hz, Rx mode

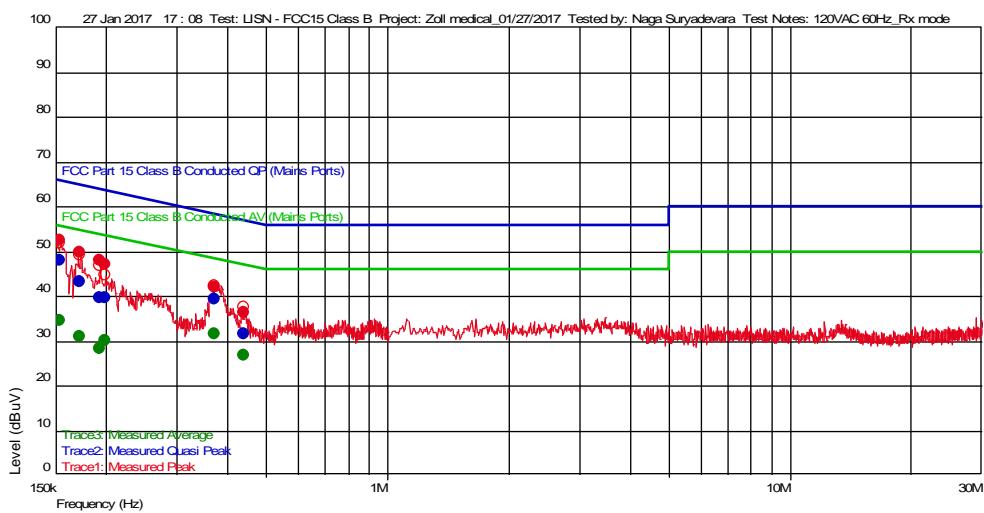
Test Information

Test Details
 Test: LISN - FCC15 Class B
 Project: Zoll medical_01/27/2017
 Test Notes: 120VAC 60Hz_Rx mode
 Temperature: 22 C
 Humidity: 14% 987 mbars
 Tested by: Naga Suryadevara
 Test Started: 27 Jan 2017 17 : 08

User Entry
 LISN - FCC15 Class B
 Zoll medical_01/27/2017
 120VAC 60Hz_Rx mode
 22 C
 14% 987 mbars
 Naga Suryadevara
 27 Jan 2017 17 : 08

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable

- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
441.55 k	31.46	0.025	20.577	57.033	-25.57	9 k		N
193.35 k	39.43	0.045	20.592	63.891	-24.46	9 k		N
199.3 k	39.69	0.041	20.591	63.640	-23.95	9 k		N
172.95 k	43.14	0.062	20.593	64.818	-21.68	9 k		L1
372.7 k	39.12	0.028	20.581	58.441	-19.32	9 k		N
154.25 k	47.86	0.077	20.594	65.768	-17.91	9 k		N

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
193.35 k	28.13	0.045	20.592	53.891	-25.76	9 k		N
172.95 k	31.00	0.062	20.593	54.818	-23.82	9 k		L1
199.3 k	30.07	0.041	20.591	53.640	-23.57	9 k		N
154.25 k	34.48	0.077	20.594	55.768	-21.29	9 k		N
441.55 k	26.76	0.025	20.577	47.033	-20.28	9 k		N
372.7 k	31.58	0.028	20.581	48.441	-16.86	9 k		N

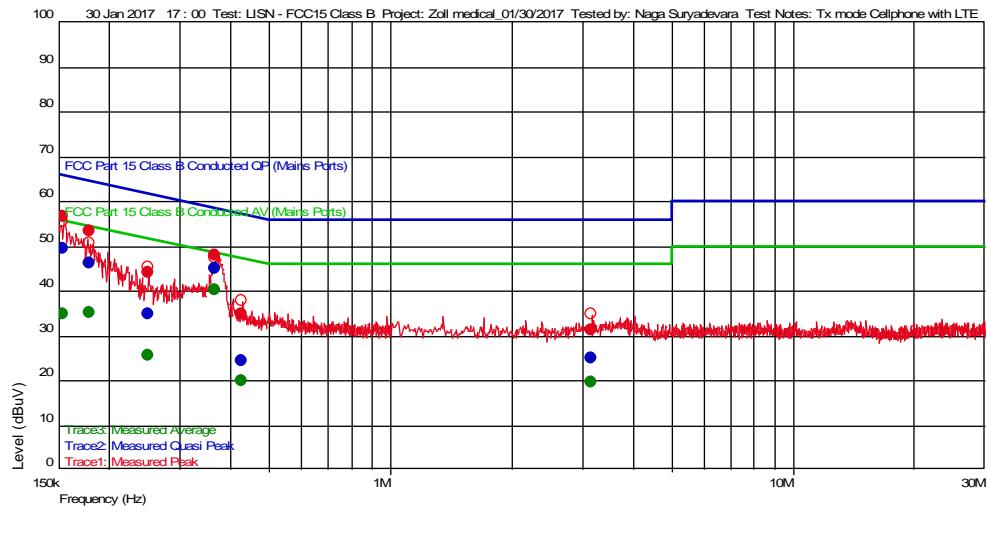
120VAC 60Hz, Tx mode

Test Information

Test Details User Entry
 Test: LISN - FCC15 Class B
 Project: Zoll medical_01/30/2017
 Test Notes: Tx mode Cellphone with LTE
 Tested by: Naga Suryadevara
 Test Started: 30 Jan 2017 17:00

Additional Information

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
429.65 k	24.29	0.026	20.577	57.259	-32.97	9 k	N	
3.169 M	25.00	0.020	20.580	56.000	-31.00	9 k	L1	
250.3 k	34.83	0.035	20.588	61.747	-26.92	9 k	N	
178.9 k	46.12	0.057	20.593	64.537	-18.42	9 k	L1	
154.25 k	49.49	0.077	20.594	65.768	-16.28	9 k	L1	
367.6 k	44.95	0.028	20.581	58.555	-13.61	9 k	L1	

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
429.65 k	19.97	0.026	20.577	47.259	-27.29	9 k	N	
3.169 M	19.43	0.020	20.580	46.000	-26.57	9 k	L1	
250.3 k	25.44	0.035	20.588	51.747	-26.30	9 k	N	
154.25 k	34.71	0.077	20.594	55.768	-21.06	9 k	L1	
178.9 k	34.97	0.057	20.593	54.537	-19.57	9 k	L1	
367.6 k	40.17	0.028	20.581	48.555	-8.38	9 k	L1	

120VAC 60Hz, Rx mode

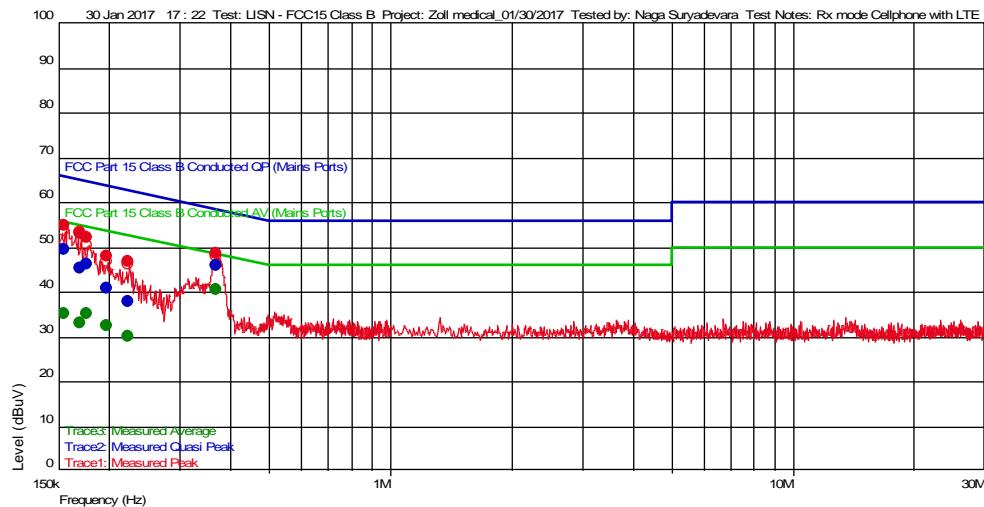
Test Information

Test Details
 Test: LISN - FCC15 Class B
 Project: Zoll medical_01/30/2017
 Test Notes: Rx mode Cellphone with LTE
 Tested by: Naga Suryadevara
 Test Started: 30 Jan 2017 17:22

User Entry
 LISN - FCC15 Class B
 Zoll medical_01/30/2017
 Rx mode Cellphone with LTE
 Naga Suryadevara
 30 Jan 2017 17:22

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
224.8 k	37.86	0.038	20.590	62.640	-24.78	9 k	N	
198.45 k	40.87	0.041	20.591	63.675	-22.80	9 k	N	
170.4 k	45.14	0.064	20.593	64.941	-19.80	9 k	N	
176.35 k	46.01	0.059	20.593	64.656	-18.65	9 k	L1	
155.1 k	49.35	0.076	20.594	65.722	-16.37	9 k	L1	
371.85 k	45.74	0.028	20.581	58.460	-12.72	9 k	N	

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
224.8 k	29.91	0.038	20.590	52.640	-22.73	9 k	N	
170.4 k	33.07	0.064	20.593	54.941	-21.87	9 k	N	
198.45 k	32.24	0.041	20.591	53.675	-21.43	9 k	N	
155.1 k	35.10	0.076	20.594	55.722	-20.63	9 k	L1	
176.35 k	35.12	0.059	20.593	54.656	-19.54	9 k	L1	
371.85 k	40.35	0.028	20.581	48.460	-8.11	9 k	N	

Test Personnel: Naga Suryadevara N5
Supervising/Reviewing
Engineer:
(Where Applicable) N/A
Product Standard: FCC Part 15 Subpart C
FCC Part 15 Subpart B
Input Voltage: 120VAC 60Hz

Pretest Verification w/
Ambient Signals or
BB Source: Signal generator

Test Date: 01/27/2017
01/30/2017

Limit Applied: Class B

Ambient Temperature: 22, 20 °C

Relative Humidity: 14, 17 %

Atmospheric Pressure: 987, 990 mbars

Deviations, Additions, or Exclusions: None

15 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	02/12/2017	102716227BOX-002	N·5	VFV <i>VFV</i>	Original Issue
1	02/15/2017	102716227BOX-002	N·5	VFV <i>VFV</i>	Fixed typographical errors
2	03/09/2017	102716227BOX-002	N·5	VFV <i>VFV</i>	Fixed typographical errors
3	03/28/2017	102716227BOX-002	N·5	VFV <i>VFV</i>	Updated page 5