

Test Report



INTENTIONAL RADIATOR TESTS ACCORDING TO FCC PART 15C AND INDUSTRY CANADA REQUIREMENTS

Equipment Under Test: Electrocardiogram (ECG) Transmitter (Bluetooth 4.0)

Model: OW-CB2

Trade Mark: Omegawave

Customer / Manufacturer: Omegawave Oy
Tekniikantie 14
FI-02150 Espoo
FINLAND

FCC Rule Part: 15.247: 2015
IC Rule Part: RSS-247, Issue 1, 2015
RSS-GEN Issue 4, 2014

KDB: Guidance for Performing Compliance Measurements on Digital
Transmission Systems (DTS) Operating Under §15.247,
KDB558074 D01, v03r05 (April 8, 2016)

Date: 19 September 2016

Issued by:


Rauno Repo
EMC/RF Specialist

19 September 2016


Janne Nyman
Compliance Specialist

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Equipment Under Test (EUT)

Electrocardiogram (ECG) Transmitter (Bluetooth 4.0)
Model: OW-CB2
Trade Mark: Omegawave
Serial Number: -
FCC ID: PTJ-0010
IC: 10681A-0010

The EUT is a Bluetooth 4.0 (BLE) transmitter for measuring states of an athlete's ECG and CNS.

Modifications incorporated in the EUT

Two samples were used with the tests. The first sample had a temporary connector for setting the BLE parameters with a PC. The other sample had also a temporary antenna cable for BLE antenna port measurements.

Classification of the device

Fixed device	☐
Mobile Device (Human body distance > 20cm)	☐
Portable Device (Human body distance < 20cm)	☒

Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing

Ratings and declarations

Operating Frequency Range : 2402 – 2480 MHz
Channels: 40
Channel separation: 2 MHz
Conducted power: -8.44 dBm
Transmission technique: DSSS
Modulation: GFSK
Internal chip antenna max gain: 3.3 dBi

Power Supply

Operating voltage range: Nominal 3.7 V

The EUT is a battery operated device which can recharged via the USB port. EUT is disabled to transmit while charging.

Disclaimer

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. This document cannot be reproduced except in full, without prior approval of the Company

SUMMARY OF TESTING

Test Specification	Description of Test	Result
§15.207(a) / RSS-GEN 8.8	Conducted Emissions on Power Supply Lines	PASS
§15.247(b)(3) / RSS-247 5.4	Maximum Peak Conducted Output Power	PASS
§15.247(a)(2) / RSS-247 5.2(1)	6 dB Bandwidth	PASS
§15.247(e) / RSS-247 5.2(2)	Power Spectral Density	PASS
RSS-GEN 6.6	99% Occupied Bandwidth	PASS
§15.247(d) / RSS-247 5.5	100 kHz Bandwidth of Frequency Band Edges and Conducted Spurious Emissions	PASS
§15.209(a), §15.247(d) / RSS-247 5.5	Radiated Emissions Within The Restricted Bands	PASS
§15.109 / RSS-GEN 6.13	Unintentional Radiated Emissions	PASS

EUT Test Conditions during Testing

The EUT was configured into the wanted channel and was in continuous transmit mode during all the tests. During the radiated measurements above 1 GHz the EUT was on 150 cm high Styrofoam table and 80 cm with the tests below 1 GHz.

Preliminary tests were made to define the worst orthogonal position for highest radiated emissions.

Following channels were used during the tests:

Channel	Frequency/ MHz
Low (CH 0)	2402
Mid (CH 20)	2442
High (CH 39)	2480

Test Facility

☐ Testing Location / address: FCC registration number: 90598	SGS Fimko Ltd Särkiniementie 3 FI-00210, HELSINKI FINLAND
☒ Testing Location / address: FCC registration number: 178986 Industry Canada registration number: 8708A-2	SGS Fimko Ltd Karakaarenkuja 4 FI-02610, ESPOO FINLAND

Conducted Emissions on Power Supply Lines

Conducted Emissions on Power Supply Lines (150 kHz - 30 MHz)

Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 15 September 2016
Temperature: 21 °C
Humidity: 45 % RH
Barometric pressure: 1010 hPa
Measurement uncertainty: ± 2.9 dB Level of confidence 95 % (k = 2)

FCC Rule: §15.207(a)
RSS-GEN 8.8

Conducted disturbance voltage was measured with an artificial main network from 150 kHz to 30 MHz with 4.5 kHz steps and a resolution bandwidth of 9 kHz. Measurements were carried out with peak and average detectors.

During the test the EUT was powered from the separate power supply through the LISN (115V/ 60 Hz).

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Conducted Emissions on Power Supply Lines

Conducted Emission Mains FCC Part 15 Class B with ENV216

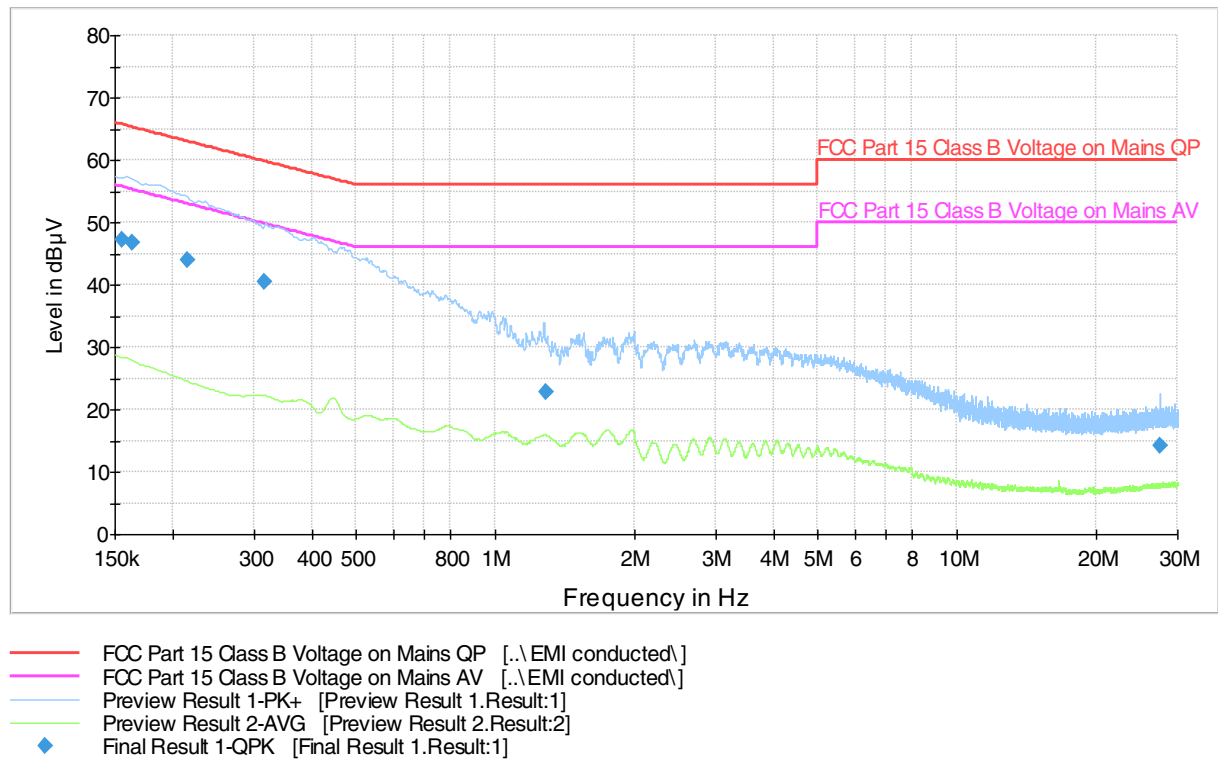


Figure 1. The measured curves with peak- and average detector

Final measurements from the worst frequencies

Table 1. Final results with a QP detector

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.156000	47.1	1000.0	9.000	L1	10.1	18.6	65.7	-
0.163500	46.8	1000.0	9.000	L1	10.2	18.4	65.3	-
0.215000	44.0	1000.0	9.000	N	10.1	19.0	63.0	-
0.315250	40.6	1000.0	9.000	N	10.2	19.3	59.8	-
1.290750	22.9	1000.0	9.000	N	10.3	33.1	56.0	-
27.596250	14.2	1000.0	9.000	N	10.8	45.8	60.0	-

No final measurements were made with average detector.

Maximum Peak Output Power

Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 15 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH
Measurement uncertainty: ± 2.87 dB Level of confidence 95 % (k = 2)

FCC Rule: §15.247(b)(3)
RSS-247 5.4

Results:

Channel	Conducted Power [dBm]	Limit [dBm]	Margin [dBm]	Result
Low	-8.44	30	38.44	PASS
Mid	-8.88	30	38.88	PASS
High	-8.59	30	38.59	PASS



Figure 2. Low channel.

Maximum Peak Output Power



Figure 3. Mid channel.

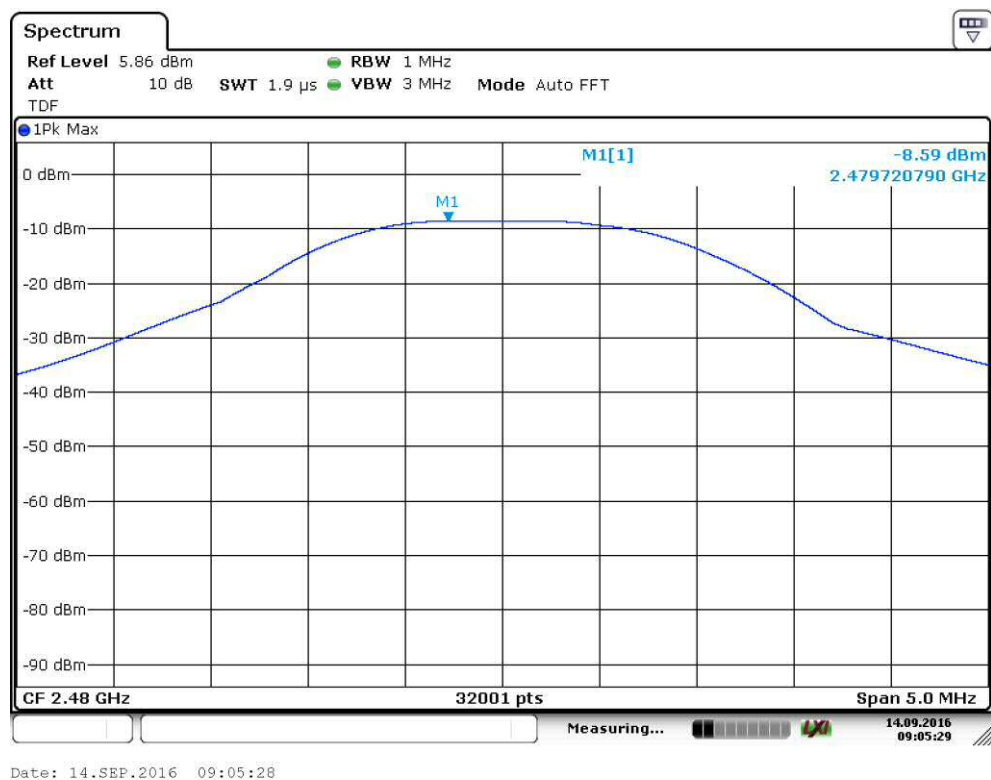


Figure 4. High channel.

Transmitter Radiated Emissions 30 MHz to 26.5 GHz

Transmitter Radiated Emissions 30 MHz to 26.5 GHz

Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 15 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH
Measurement uncertainty: ± 4.51 dB Level of confidence 95 % ($k = 2$)

FCC Rule: 15.247(d), 15.209(a)
RSS-247 5.5

The correction factor in the final result table contains the sum of the transducers (antenna + amplifier + cables).
 The result value is the measured value corrected with the correction factor.

Table 2. Limits (3 meter distance)

Frequency range [MHz]	Limit [μ V/m]	Limit [dB μ V/m]	Detector
30 - 80	100	40.0	Quasi-peak
88 - 216	150	43.5	Quasi-peak
216 - 960	200	46.0	Quasi-peak
960 - 1000	500	53.9	Quasi-peak
Above 1000	500	53.9	Average
Above 1000	5000	73.9	Peak

Test results

Low channel

Table 3. Quasi Peak results

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
907.608000	26.0	1000.0	120.000	152.0	V	358.0	27.1	20.0	46.0	noise level

Table 4. Peak results

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2311.275000	53.1	1000.0	1000.000	265.0	V	253.0	-7.7	20.8	73.9	-
2365.875000	52.1	1000.0	1000.000	255.0	V	71.0	-7.3	21.8	73.9	-
2390.000000	43.9	1000.0	1000.000	216.0	V	220.0	-7.1	30.0	73.9	-
2440.050000	51.2	1000.0	1000.000	252.0	H	9.0	-7.2	22.7	73.9	-
4801.000000	50.7	1000.0	1000.000	193.0	V	285.0	-2.9	23.2	73.9	-
7206.700000	56.3	1000.0	1000.000	179.0	H	15.0	0.7	17.6	73.9	-

Table 5. Average results

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
2386.000000	25.8	1000.0	1000.000	203.0	V	241.0	-7.1	28.1	53.9	-
4804.000000	42.3	1000.0	1000.000	150.0	V	269.0	-2.9	11.6	53.9	-
7205.600000	45.9	1000.0	1000.000	179.0	H	19.0	0.7	8.0	53.9	-

Transmitter Radiated Emissions 30 MHz to 26.5 GHz

Middle channel

Table 6. Quasi Peak results

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
942.947000	26.6	1000.0	120.000	100.0	H	1.0	27.7	19.4	46.0	noise level

Table 7. Peak results

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
2487.100000	54.1	1000.0	1000.000	252.0	H	0.0	-6.8	19.8	73.9	-
2556.175000	53.5	1000.0	1000.000	203.0	V	342.0	-6.8	20.4	73.9	-
4882.400000	51.5	1000.0	1000.000	150.0	V	280.0	-2.9	22.4	73.9	-
7325.200000	53.9	1000.0	1000.000	150.0	H	10.0	0.7	20.0	73.9	-
17091.60000	53.3	1000.0	1000.000	150.0	V	324.0	15.9	20.6	73.9	-

Table 8. Average results

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
4883.900000	40.7	1000.0	1000.000	180.0	V	278.0	-2.9	13.2	53.9	-
7325.400000	43.2	1000.0	1000.000	150.0	H	10.0	0.7	10.7	53.9	-
17185.60000	40.4	1000.0	1000.000	259.0	V	0.0	15.9	13.5	53.9	-

High channel

Table 9. Peak results

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
2483.500000	68.3	1000.0	1000.000	252.0	H	0.0	-6.9	5.6	73.9	-
2483.500000	64.1	1000.0	1000.000	257.0	V	58.0	-6.9	9.8	73.9	-
2555.575000	53.3	1000.0	1000.000	204.0	V	341.0	-6.8	20.6	73.9	-
4957.800000	52.1	1000.0	1000.000	150.0	V	268.0	-2.9	21.8	73.9	-
7440.700000	53.6	1000.0	1000.000	179.0	H	0.0	0.7	20.3	73.9	-
17085.00000	53.7	1000.0	1000.000	150.0	V	335.0	15.8	20.2	73.9	-

Table 10. Average results

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
2483.500000	33.5	1000.0	1000.000	283.0	H	0.0	-6.9	20.4	53.9	-
2483.500000	32.0	1000.0	1000.000	269.0	V	71.0	-6.9	21.9	53.9	-
4960.100000	38.2	1000.0	1000.000	218.0	V	267.0	-2.9	15.7	53.9	-
7439.400000	43.0	1000.0	1000.000	166.0	H	0.0	0.7	10.9	53.9	-
17094.90000	40.0	1000.0	1000.000	150.0	V	260.0	15.9	13.9	53.9	-

Transmitter Radiated Emissions 30 MHz to 26.5 GHz

Radiated Band Edge Measurement results

FCC Part 15 Class B Spurious Emission 1-4GHz 3m (optimized 2.4 GHz TX)

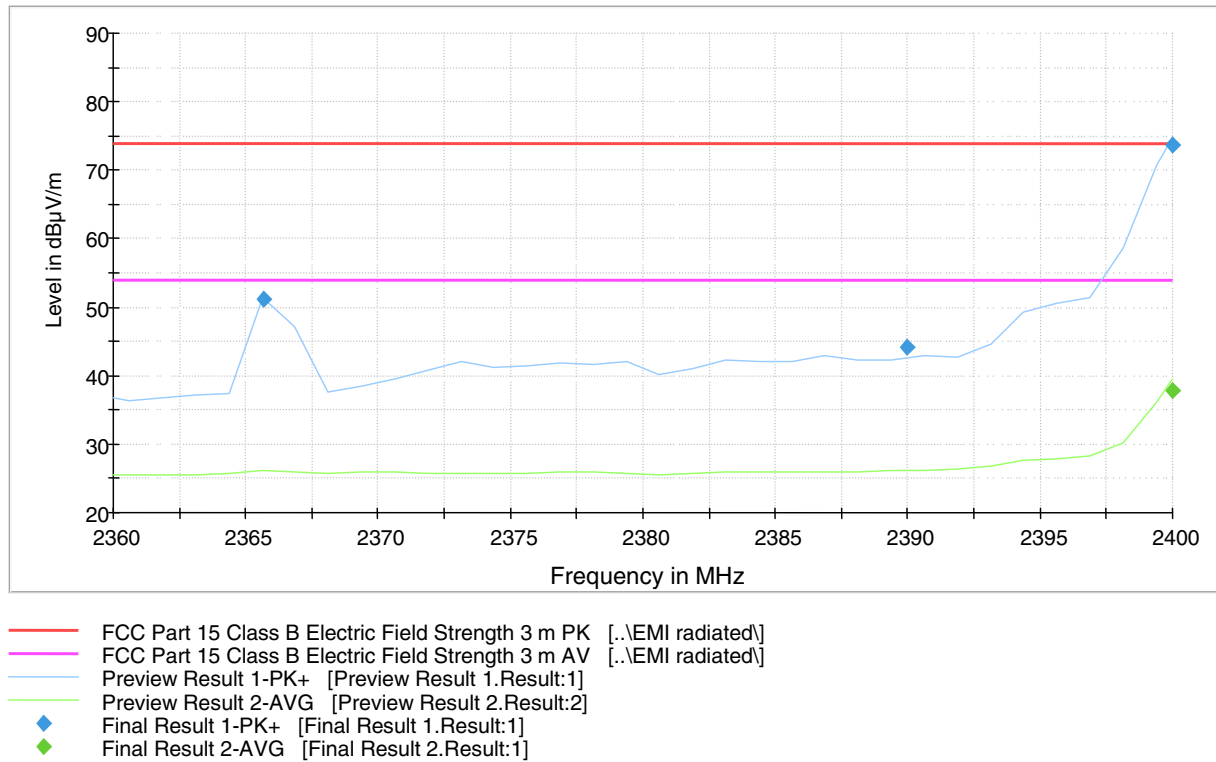


Figure 5. Low channel band edge.

Table 11. MaxPeak results

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2365.875000	52.1	1000.0	1000.000	255.0	V	71.0	-7.3	21.8	73.9	-
2390.000000	43.9	1000.0	1000.000	216.0	V	220.0	-7.1	30.0	73.9	-
2400.000000	73.6	1000.0	1000.000	241.0	V	291.0	-7.0	0.3	73.9	-

Table 12. Average results

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2400.000000	37.7	1000.0	1000.000	231.0	V	290.0	-7.0	16.2	53.9	-

Transmitter Radiated Emissions 30 MHz to 26.5 GHz

FCC Part 15 Class B Spurious Emission 1-4GHz 3m (optimized 2.4 GHz TX)

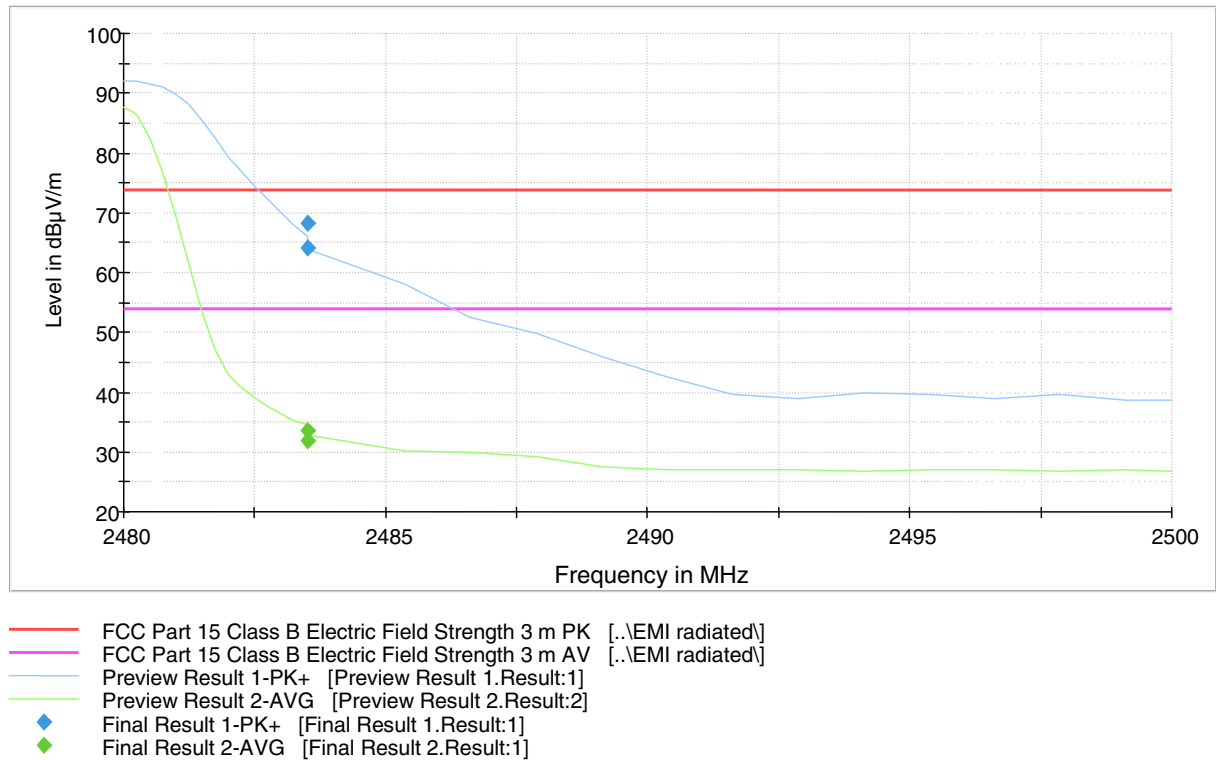


Figure 6. High channel band edge

Table 13. MaxPeak results

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
2483.500000	68.3	1000.0	1000.000	252.0	H	0.0	-6.9	5.6	73.9	-
2483.500000	64.1	1000.0	1000.000	257.0	V	58.0	-6.9	9.8	73.9	-

Table 14. Average results

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
2483.500000	33.5	1000.0	1000.000	283.0	H	0.0	-6.9	20.4	53.9	-
2483.500000	32.0	1000.0	1000.000	269.0	V	71.0	-6.9	21.9	53.9	-

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Transmitter Band Edge Measurement and Conducted Spurious Emissions

Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 14 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH

Measurement uncertainty ± 2.87 dB Level of confidence 95 % (k = 2)

FCC Rule: 15.247(d), 15.209(a)
RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Table 15. Band edge attenuation.

Band Edge Attenuation	
Lower Band Edge	Upper Band Edge
-31.63 dBc	-46.31 dBc
Limit: -20dBc	

Table 16. Conducted spurious emissions.

Conducted Spurious Emissions				
Channel	Measured Attenuation [dB]	Limit [dBc]	Margin [dB]	Result
Low	-	-20.0	-	-
Mid	-	-20.0	-	-
High	-	-20.0	-	-

No significant emissions were detected close to the limit.

Transmitter Band Edge Measurement and Conducted Spurious Emissions

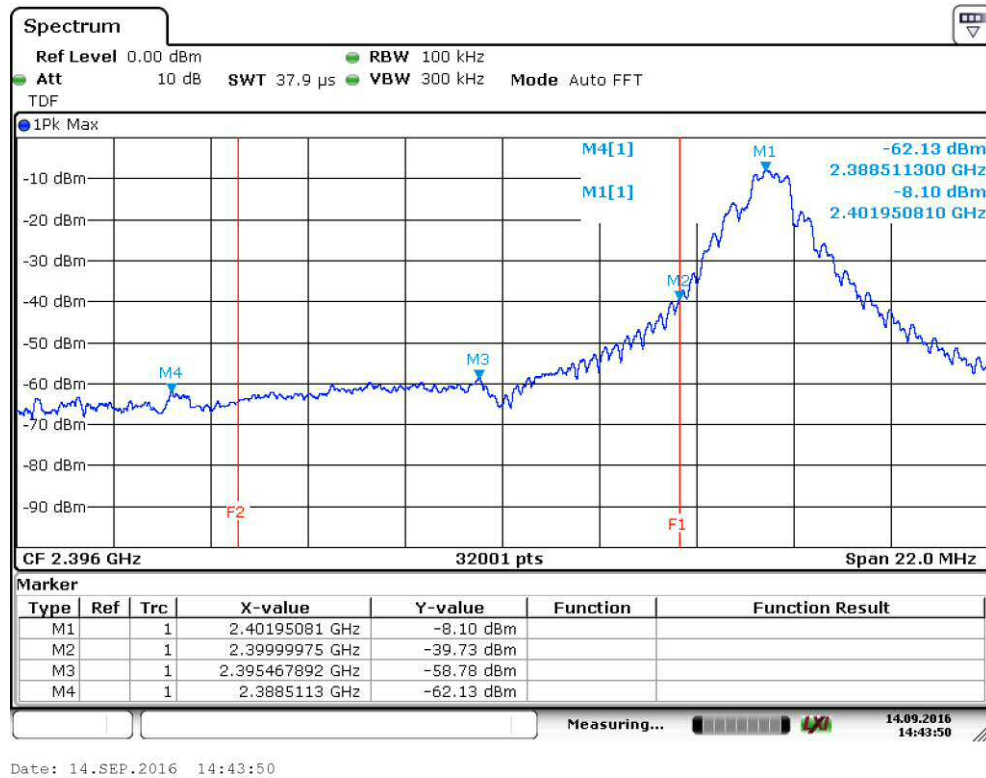


Figure 7. Lower Band Edge.

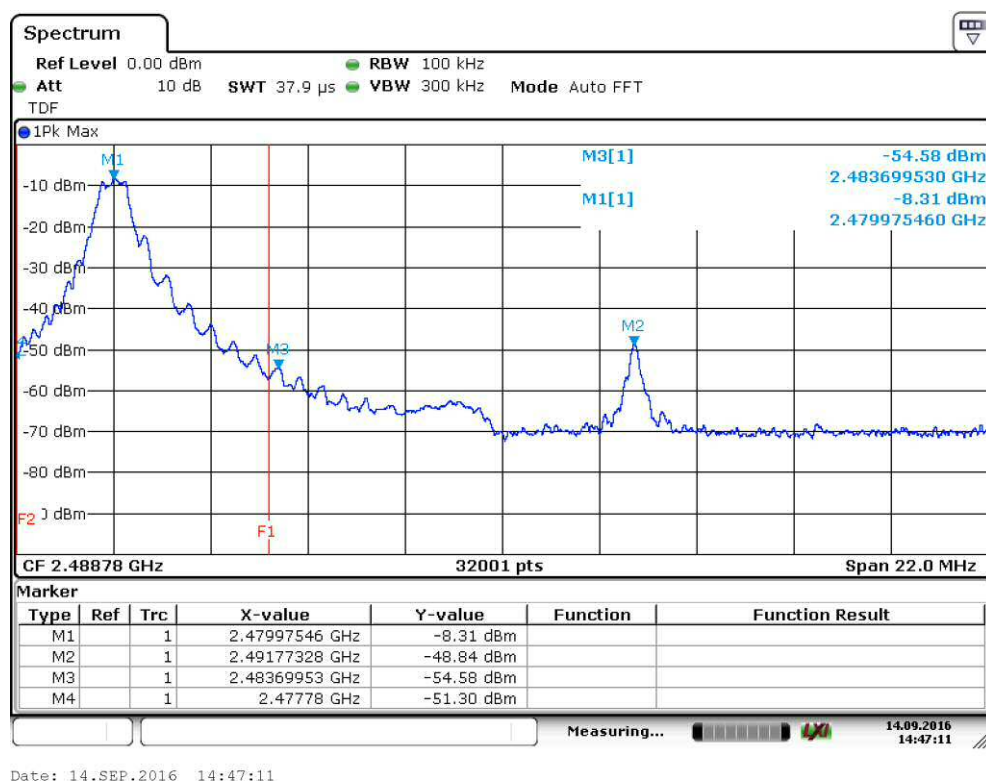


Figure 8. Upper Band Edge.

Transmitter Band Edge Measurement and Conducted Spurious Emissions

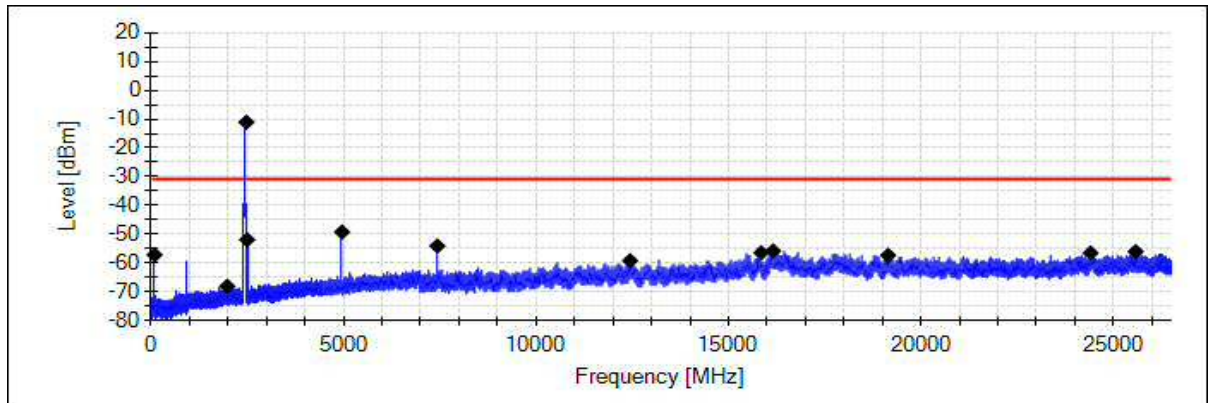


Figure 9. Low channel conducted spurious emissions.

Table 17. Low channel conducted spurious emissions

Frequency [MHz]	Level [dBm]	Limit [dBc]	Margin [dB]	Result / Note
975736000.00	-63.66	-28.23	-35.43	PASS
2399978000.00	-42.41	-28.23	-14.17	PASS
2401942600.00	-8.23	-28.23	20.00	Carrier
3773077000.00	-65.60	-28.23	-37.36	PASS
6857364000.00	-61.99	-28.23	-33.76	PASS
7205353000.00	-59.15	-28.23	-30.92	PASS
11839552000.00	-59.61	-28.23	-31.38	PASS
15831865000.00	-56.46	-28.23	-28.23	PASS
16102325000.00	-54.71	-28.23	-26.48	PASS
19153323000.00	-57.56	-28.23	-29.33	PASS
24494656000.00	-55.71	-28.23	-27.48	PASS
26278593000.00	-55.74	-28.23	-27.51	PASS
26299264000.00	-55.50	-28.23	-27.26	PASS

Transmitter Band Edge Measurement and Conducted Spurious Emissions

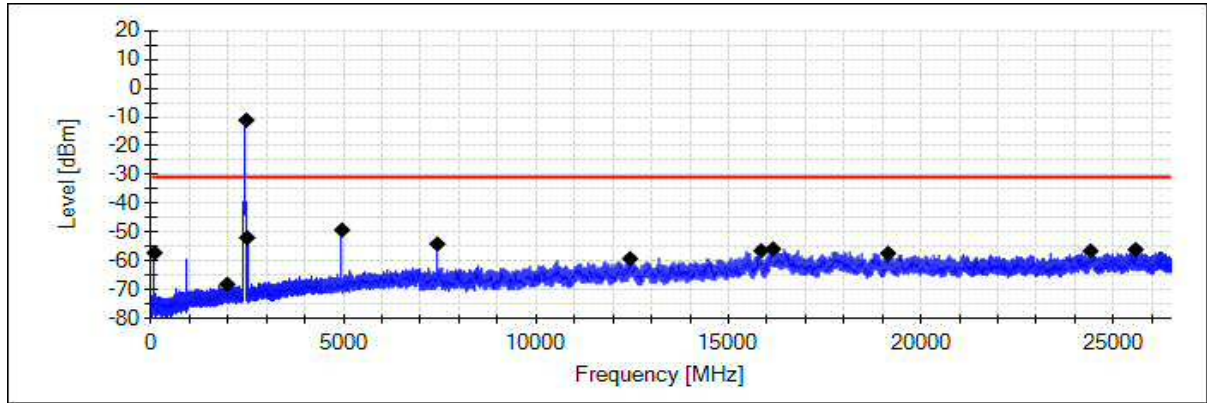


Figure 10. Middle channel conducted spurious emissions.

Table 18. Middle channel conducted spurious emissions

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Result
947819000.00	-62.36	-28.70	-33.66	PASS
1221040000.00	-52.85	-28.70	-24.15	PASS
2442005700.00	-8.70	-28.70	20.00	Carrier
2561005000.00	-50.48	-28.70	-21.79	PASS
6991422000.00	-62.29	-28.70	-33.60	PASS
7325162000.00	-59.93	-28.70	-31.24	PASS
12907331000.00	-59.03	-28.70	-30.33	PASS
15517812000.00	-56.58	-28.70	-27.89	PASS
16471313000.00	-54.98	-28.70	-26.29	PASS
19163167000.00	-57.47	-28.70	-28.77	PASS
24121449000.00	-56.19	-28.70	-27.50	PASS
25541553000.00	-55.94	-28.70	-27.24	PASS
25503726000.00	-55.83	-28.70	-27.13	PASS

Transmitter Band Edge Measurement and Conducted Spurious Emissions

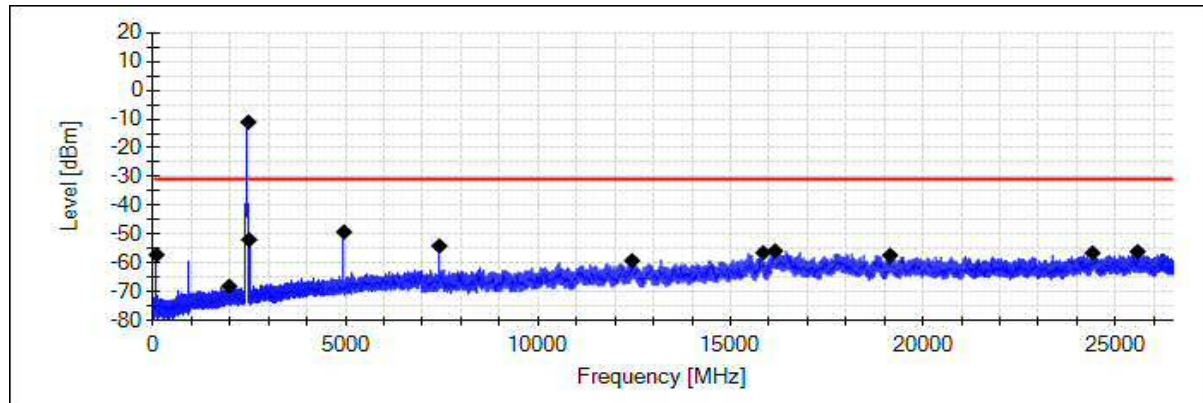


Figure 11. High channel conducted spurious emissions.

Table 19. High channel conducted spurious emissions.

Frequency [MHz]	Level [dBm]	Limit [dBc]	Margin [dB]	Result
947728000.00	-61.85	-28.37	-33.48	PASS
1780454000.00	-50.77	-28.37	-22.40	PASS
2479976100.00	-8.37	-28.37	20.00	Carrier
2561100000.00	-48.81	-28.37	-20.44	PASS
6961329000.00	-62.24	-28.37	-33.87	PASS
7440658000.00	-60.58	-28.37	-32.21	PASS
12919612000.00	-59.08	-28.37	-30.71	PASS
15490250000.00	-57.10	-28.37	-28.73	PASS
16157729000.00	-55.33	-28.37	-26.96	PASS
19161292000.00	-57.33	-28.37	-28.96	PASS
24440377000.00	-56.36	-28.37	-27.99	PASS
26246672000.00	-56.65	-28.37	-28.28	PASS
25444338000.00	-56.25	-28.37	-27.88	PASS

6 dB Bandwidth of the Channel

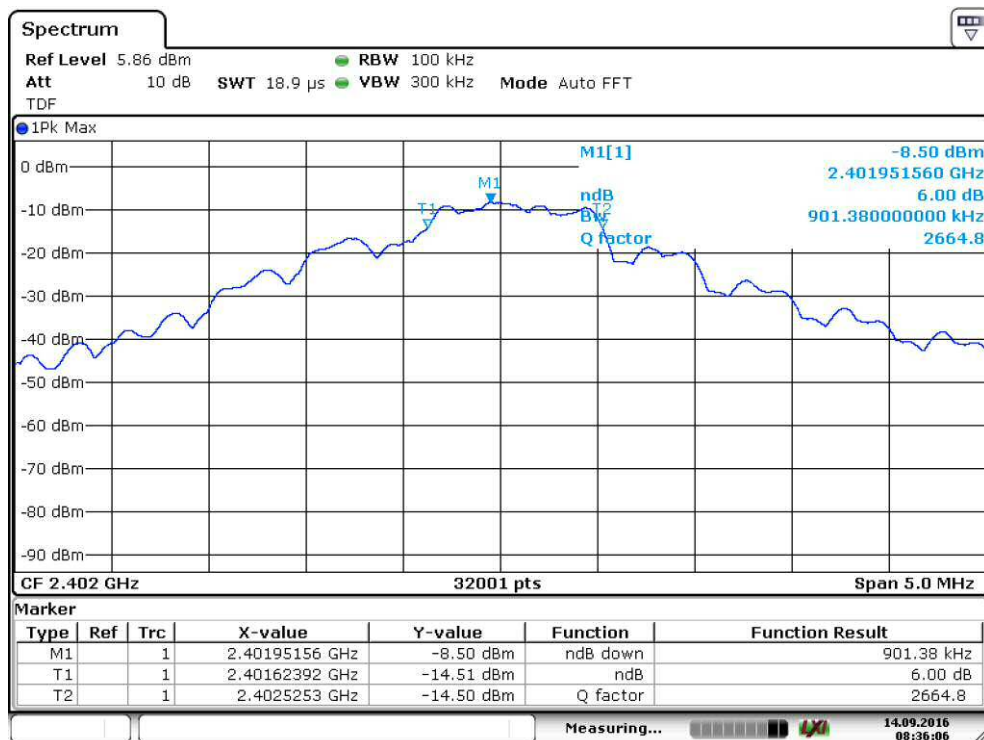
Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 14 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH

FCC Rule: 15.247(a)(2)
RSS-247 5.2

Results:

Table 20. 6 dB bandwidth test results.

Channel	6 dB BW [kHz]	Minimum limit [kHz]	Result
Low	901.38	500	PASS
Mid	678.57		PASS
High	694.82		PASS



Date: 14.SEP.2016 08:36:06

Figure 12. 6 dB bandwidth of the Low channel.

6 dB Bandwidth of the Channel

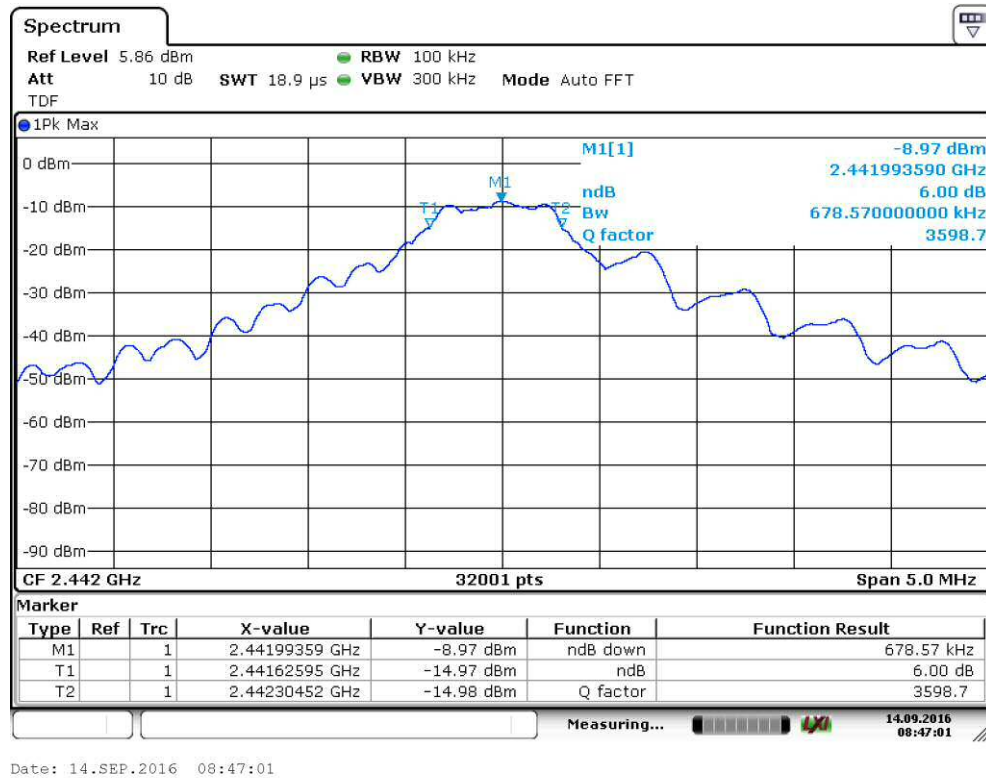


Figure 13. 6 dB bandwidth of the Mid channel.

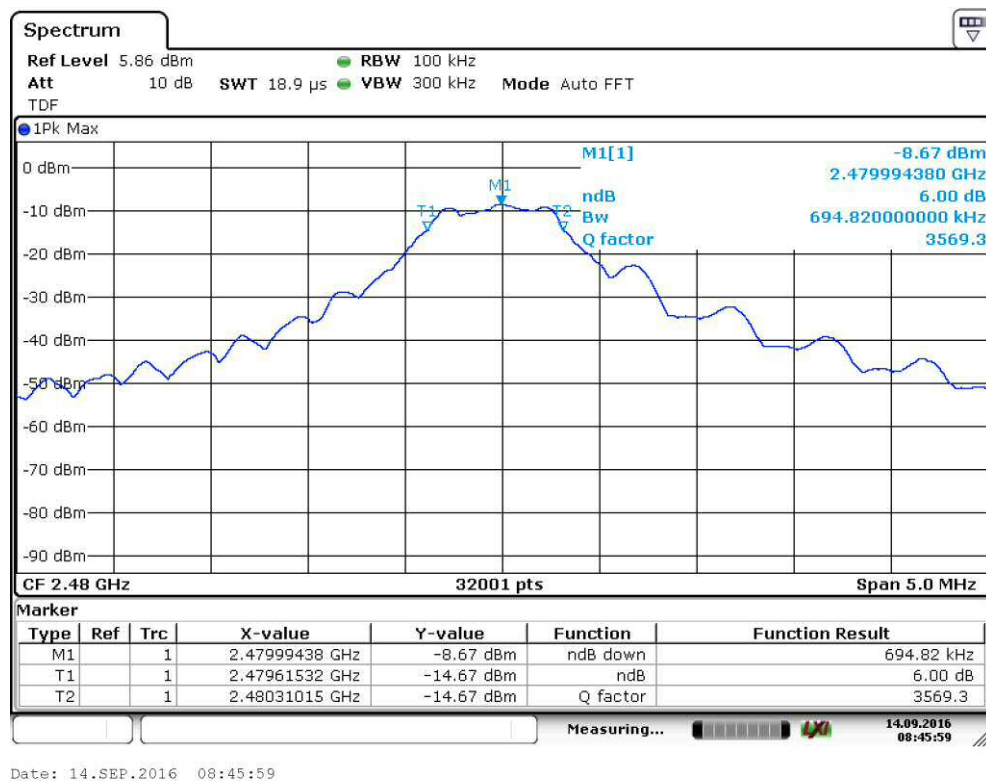


Figure 14. 6 dB bandwidth of the High channel.

Power Spectral Density

Standard: ANSI C63.10 (2013)
Tested by: RRE
Date: 14 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH

FCC Rule: 15.247(e)
RSS-247 5.2

Results:

Table 21. Power Spectral Density test results.

Channel	PSD dBm/3 kHz	Maximum limit [dBm/3kHz]	Result
Low	-21.67	+8.00	PASS
Mid	-22.98		PASS
High	-22.43		PASS



Figure 15. Power Spectral Density of the Low channel.

Power Spectral Density

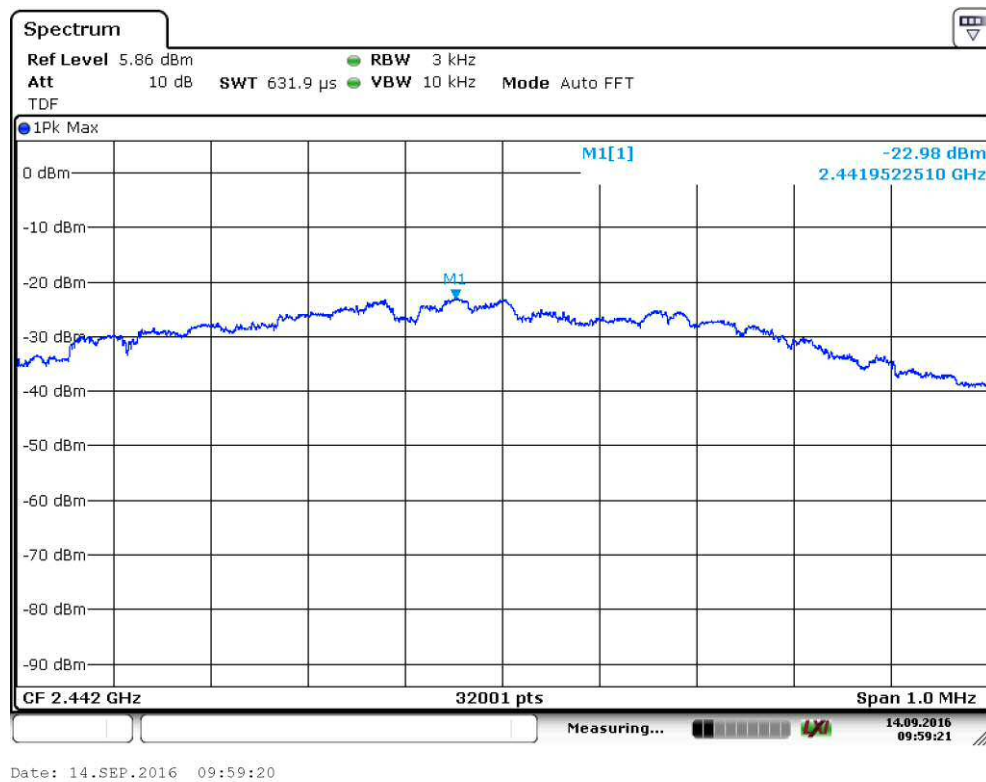


Figure 16. Power Spectral Density of the Mid channel.

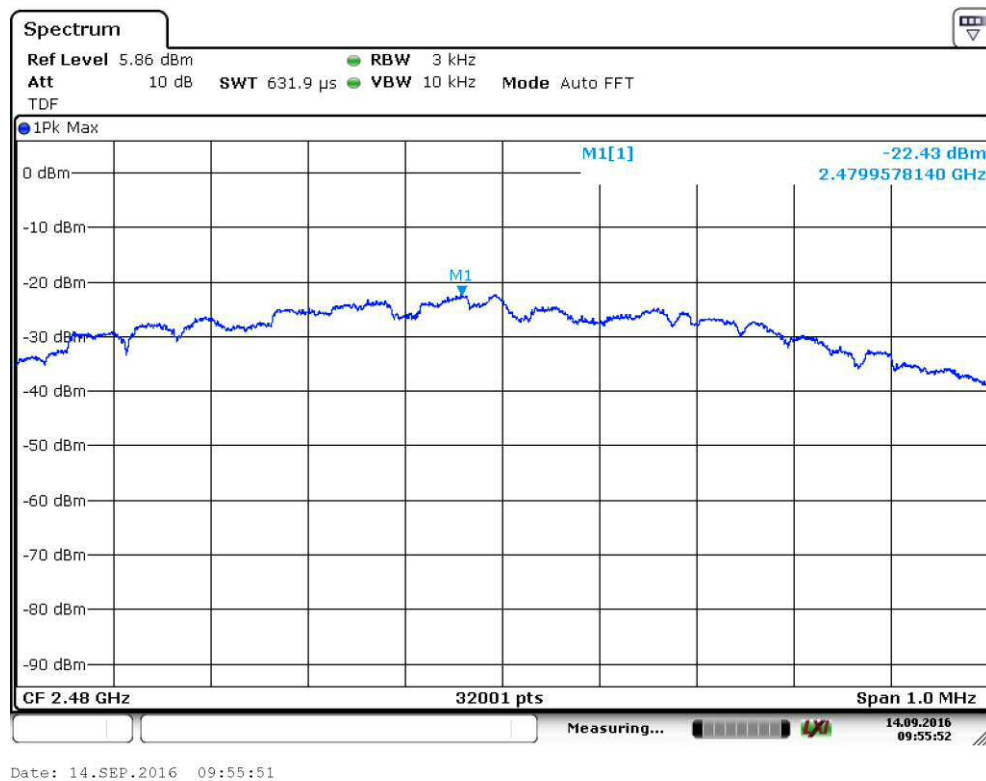


Figure 17. Power Spectral Density of the High channel.

99 % Occupied Bandwidth

Standard: RSS-GEN (2014)
Tested by: RRE
Date: 14 September 2016
Temperature: 22 ± 3 °C
Humidity: 30 - 60 % RH

RSS-GEN 6.6

Table 22. 99 % OBW test results.

Channel	Limit	99 % BW [MHz]	Result
Low	-	2.512733977	PASS
Mid	-	2.030092810	PASS
High	-	1.419174401	PASS

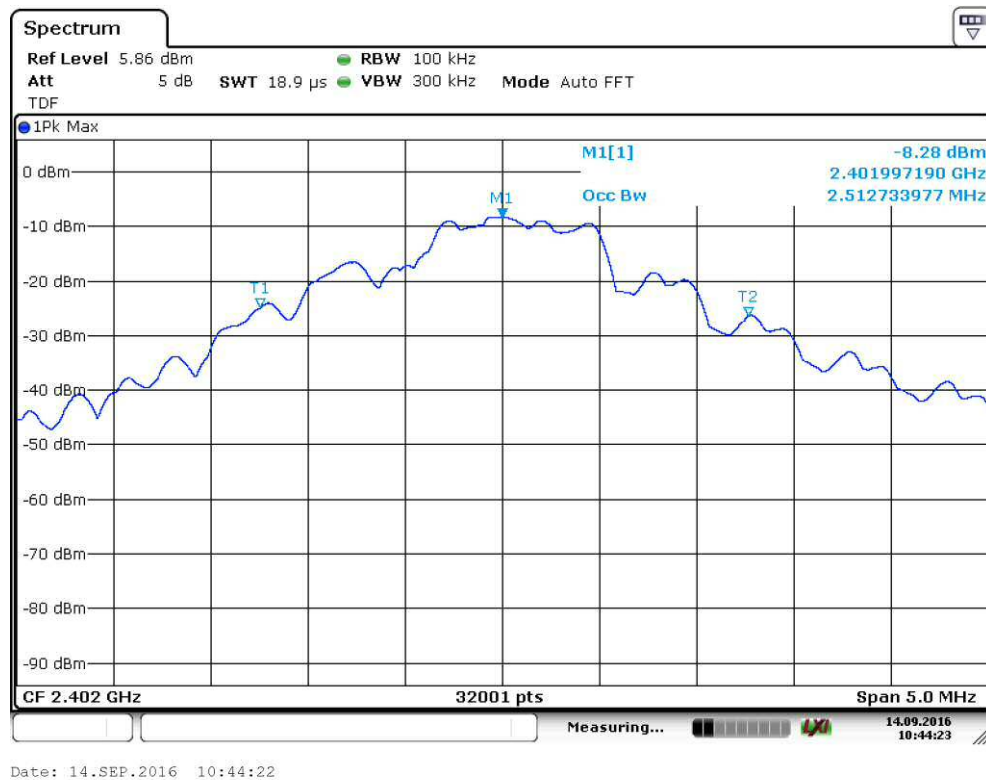


Figure 18. 99 % OBW. Low channel.



Figure 19. 99 % OBW. Mid channel.



Figure 20. 99 % OBW. High channel.

LIST OF TEST EQUIPMENT

RF-Test Equipment

Equipment	Manufacturer	Type	Inv or serial	Prev Calib	Next Calib
MONITORING ANTENNA	A.H. SYSTEMS	SAS-200/518	inv:7873	-	-
MONITORING SPECTRUM ANALYZER	AGILENT	E7405A	inv:9746	2016-01-07	2018-01-07
TURNTABLE	DEISEL	DS 430	sn:430/447/97	-	-
MAST & TURNTABLE CONTROLLER	DEISEL	HD-100	sn:100/544	-	-
MAST & TURNTABLE CONTROLLER	MATURO	NCD	inv:10183	-	-
ANTENNA MAST	DEISEL	MA 240	inv:7896	-	-
ANTENNA	EMCO	3117	inv:7293	2016-03-16	2018-03-06
ANTENNA	EMCO	3160-09	inv:7294	2016-03-16	2017-03-16
PREAMPLIFIER	ALC MICROWAVE	AWB-2018-40-08	14	2016-08-30	2017-08-30
PREAMPLIFIER	MERCURY SYSTEMS	ALS1826-41-12	-	2016-09-02	2017-09-02
TEST SOFTWARE	ROHDE & SCHWARZ	EMC-32	-	-	-
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU 26	inv:8453	2016-06-10	2017-06-10
SIGNAL ANALYZER	ROHDE & SCHWARZ	FSV40	inv:9093	2016-06-10	2017-06-10
ANTENNA	SCHWARZBECK	VULB 9168	inv:8911	2014-11-04	2016-11-04
HIGH PASS FILTER	WAINWRIGHT	WHKX4.0/18G-10SS	sn:10	2016-01-22	2017-01-22
POWER SOURCE	CALIFORNIA INSTR.	500i-400	inv:9489	-	-
LISN	ROHDE & SCHWARZ	ENV216	inv:9611	2016-02-24	2017-02-24