



FCC/IC Test Report

FOR

Xirgo Technologies

Model Number: XT-4860G5 & XT-4971A

Product Description: GPS Asset Tracking Device

FCC ID: GKM-XT4800 & GKM-XT4971A

IC ID: 10281A-XT4800 & 10281A-XT4971A

Applied Rules and Standards:

47 CFR Part 15.247

RSS-247 Issue 2

TEST REPORT #: EMC_XIRGO-080-14001_DTS_rev3

DATE: 02-02-2018



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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The following equipment (and as identified in Ch.3 of this test report) was evaluated against the applicable criteria specified in FCC CFR47 Part 15.247 and Industry Canada Standards RSS 247 Issue 2.

No deviations were ascertained during the course of the tests performed.

Company	Description	Model #
Xirgo Technologies	GPS Asset Tracking Device	XT-4860G5 / XT-4971A

Responsible for Testing Laboratory:

02/02/2018	Compliance	James Donnellan (Test Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

02/02/2018	Compliance	Issa Ghanma (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road 95035 Milpitas California
Telephone:	+1 (858) 362 2400
Fax:	+1 (858) 587 4809
Test Lab Manager:	James Donnellan

2.2 Identification of the Client

Applicant's Name:	Xirgo Technologies, Inc
Street Address:	188 Camino Ruiz
City/Zip Code	Camarillo CA 93012
Country	United States
Contact Person:	Nader Barakat
Phone No.	805-233-0583
Fax:	
e-mail:	nbarakat@xirgotech.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name¹:	XT-4860G5 / XT-4971A
Model Number:	XT-4860G5 / XT-4971A
FCC-ID :	GKM-XT4800 / GKM-XT4971A
IC ID:	10281A-XT4800 / 10281A-XT4971A
Product Description:	GPS Asset Tracking device
Technology / Type(s) of Modulation	ZigBee IEEE 802.15.4, using DSSS with O-QPSK
Operating Frequency Ranges (MHz) / Channels:	Nominal band: 2400 – 2483.5; Center to center: 2405(Ch 11) - 2475 (Ch 25), 16 channels Note: the Zigbee chip integrated to the product works on the given operating frequency range which was subject to test. However, according to the Xirgo's technical description only channel 16 (2430MHz) is utilized in their end-product.
Antenna info:	Internal Ceramic chip antenna Manufacturer stated antenna gain: 2.45 GHz = 0.5dBi peak; -0.5dBi avg
Max. Output Power:	Conducted: 10.76dBm Radiated: 11.26 dBm
Other Radios included:	1. U-blox: TOBY-R202 2. Zigbee • TI CC2530F256RHAR • 2.4 GHz band of operation 3. GPS 1575.42 MHz
Rated Operating Voltage Range:	Vmin: 8V/ Vnom: 12V/ Vmax: 24V
Rated Operating Temperature Range:	Tmin: -30°C/ Tmax: 70°C

¹ Only Model Number XT-4860G5 was tested, please refer to section 4. Subject of investigation

Test Sample Status:	Prototype
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3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	Sample	HW/SW Version	Note
1	1	Radiated	XT-4860G5-001 XT-4860-01; 22.90	-
2	2	Conducted	XT-4860G5-001 XT-4860-01; 22.90	-

3.3 Identification of Accessory Equipment

STE #	Type	Manufacturer	Model	Serial Number
1	Not Applicable	-	-	-

3.4 Environmental conditions during Test:

The following environmental conditions were maintained during the course of testing:

Ambient Temperature: 20-25°C

Relative humidity: 40-60%

3.5 Dates of Testing:

07/02/2014 – 07/03/2014

3.6 Other Testing Notes:

The device was configured for Zigbee operation by a set of commands provided by the manufacturer, capable of setting the unit in different supported modulation schemes, data rates and channels of operation.

The EUT was tested on low, mid and high channels specified in the **IEEE 802.15.4 ZigBee** standard. Per the customer the device was set to transmit at its maximum power, so the measurements taken depict the worst case scenario. Device was powered using a 12VDC external power supply.

Radiated portion of the testing was performed in Milpitas facility, while conducted measurements were performed in the San Diego facility of CETECOM Inc.

4 Subject of Investigation

The objective of the measurements applied by CETECOM Inc. was to establish compliance of the EUT as described under Ch. 3 of this Test Report, with the applicable criteria specified in

- FCC CFR47 Parts 15.247
- IC RSS247 Issue 2

The XT4971A contains a technically identical implementation of BT 4.0 as the forerunner product XT6350 (FCC ID: GKM-XT6350, IC ID: 10281A-XT6350) based on TI's CC2564 chipset. Full compliance of the above standards for XT6350 has been attested in the reports:

- Intertek 101978620LEX-002 for BT-LE
- Intertek 101978620LEX-003 for BT-BDR/EDR

The XT4971A contains a technically identical implementation of Zigbee as the forerunner product XT4860G5 (FCC ID: GKM-XT4800, IC ID: 10281A-XT4800) based on a TI's CC2530 with CC2591 LNA/PA. Full compliance to the above standards for XT4860G5 has been attested in this report.

All reports referenced above are still valid under current rules for FCC and IC rules.

This test report is to support a request for new equipment authorization under the
FCC ID: **GKM-XT4800 / GKM-XT4971A** and IC ID: **10281A-XT4800 / 10281A-XT4971A**

5 Summary of Measurement Results

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§15.247(e) RSS-247 5.2(a)	Power Spectral Density	Nominal	802.15.4 ZigBee	■	□	□	□	Complies
§15.247(a)(2) RSS-247 5.2(a)	Emission Bandwidth	Nominal	802.15.4 ZigBee	■	□	□	□	Complies
§15.247(b)(3) RSS-247 5.4(d)	Maximum Peak Conducted Output Power and EIRP	Nominal	802.15.4 ZigBee	■	□	□	□	Complies
§15.247(d) §15.209(a) RSS-247 6.2.4.2 RSS Gen 7.2.2	Band edge compliance	Nominal	802.15.4 ZigBee	■	□	□	□	Complies
§15.247(d) RSS-247 6.2.4.2	TX Spurious emissions-Conducted	Nominal	802.15.4 ZigBee	■	□	□	□	Complies
§15.247(d) §15.209(a) RSS-247 6.2.4.2 RSS Gen 7.2.2	TX Spurious emissions-Radiated	Nominal	802.15.4 ZigBee	■	□	□	□	Complies

Note: NA= Not Applicable; NP= Not Performed.

6 Measurements

6.1 Radiated Measurement Procedure

ANSI C63.10 (2013)

Measurement Uncertainty: $\pm 3\text{dB}$

6.2 Sample Calculations for Radiated Measurements

Measurements from the Spectrum Analyzer/ Receiver are used to calculate the Field Strength, taking into account the following parameters:

1. Measured reading in $\text{dB}\mu\text{V}$
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

$\text{FS (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$

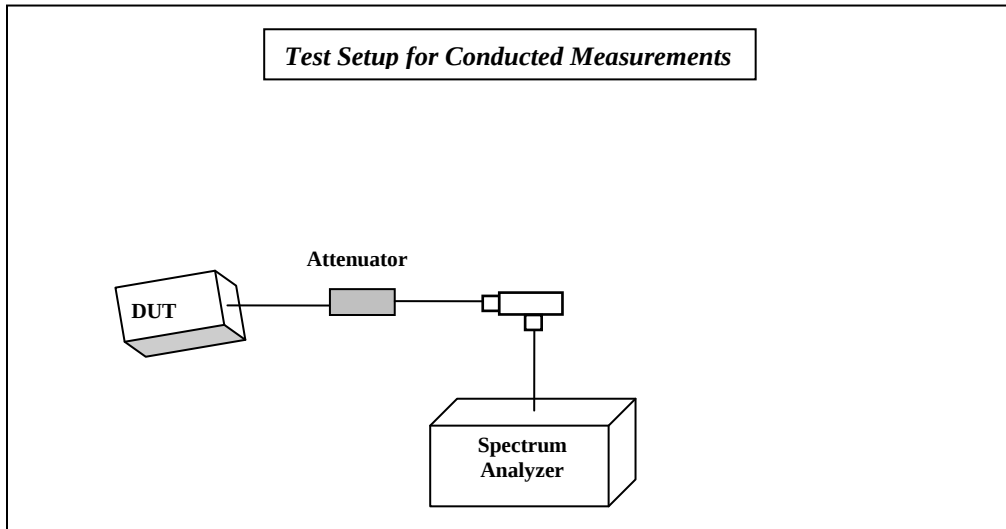
Eg:

Frequency (MHz)	Measured SA ($\text{dB}\mu\text{V}$)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result ($\text{dB}\mu\text{V/m}$)
1000	80.5	3.5	14	98.0

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the above equation.

6.3 Conducted Measurement Procedure

Following 558074 D01 DTS Meas Guidance v04



1. Connect the equipment as shown in the above diagram.
2. Test instructions provided by the manufacturer is used to control the different modulations, data rates and max output power configurations.
3. Measurements are to be performed with the EUT set to the low, middle and high channels.

Measurement Uncertainty = ± 0.5 dB;

6.4 Maximum Peak Conducted Output Power

6.4.1 Limits:

Maximum Peak Output Power:

FCC §15.247 (b)(3): 1W

IC RSS-247 Issue 2: 1W

6.4.2 Test Conditions:

Tnom: 20°C; Vnom: 12 {VDC}

6.4.3 Antenna Gain limit: 6 dBi

Antenna Gain (dBi) per declaration: 0.5 dBi

6.4.4 Test Results:

Measured Maximum Peak Conducted Output Power (dBm)				
Mode	Frequency (MHz)			
	2405 Channel 11	2430 Channel 16	2440 Channel 18	2475 Channel 25
	Peak	Peak	Peak	Peak
802.15.4 ZigBee	10.76	10.36	10.54	10.07

Calculated Maximum Peak Radiated Output Power (dBm)				
Mode	Frequency (MHz)			
	2405 Channel 11	2430 Channel 16	2440 Channel 18	2475 Channel 25
802.15.4 ZigBee	11.26	10.86	11.04	10.57

Note: Radiated EIRP is calculated as
Conducted Measurement + Antenna Gain

6.4.5 Measurement Verdict:

Pass.

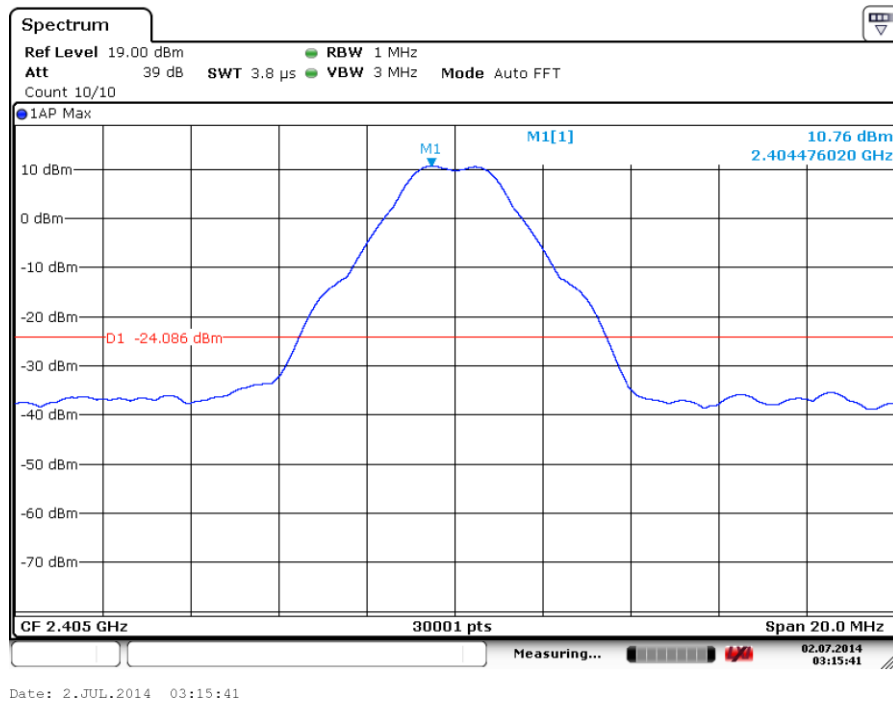
Test Report #: EMC_Xirgo-080-14001_DTS_rev3
Date of Report : 02-02-2018

FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A

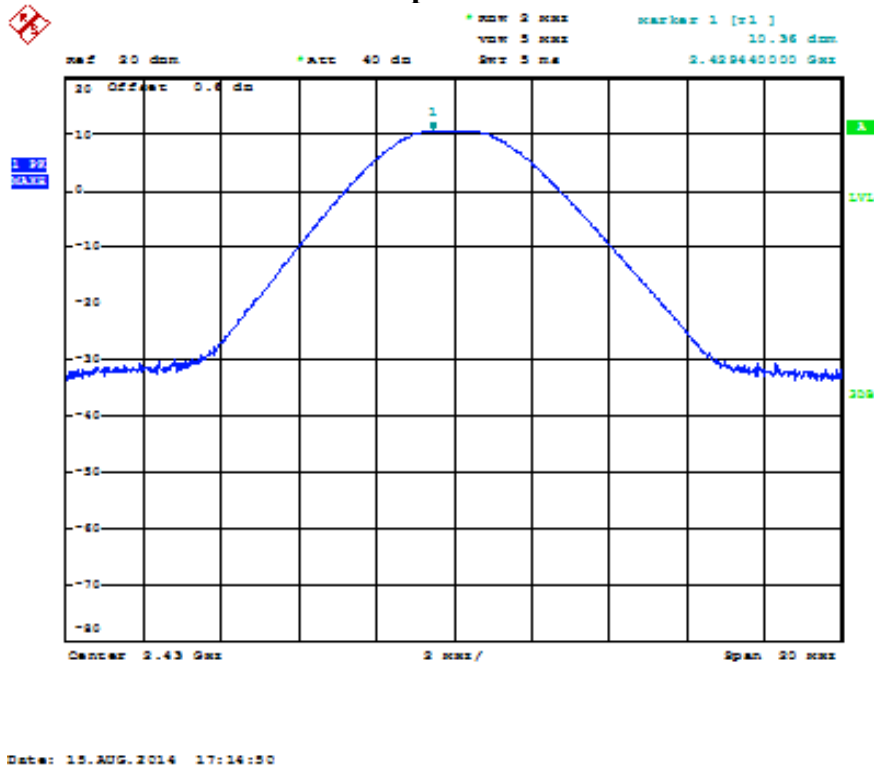


6.4.6 Test Data/Plots:

Measured Maximum Peak Conducted Output Power: 2405 MHz



Measured Maximum Peak Conducted Output Power: 2430 MHz

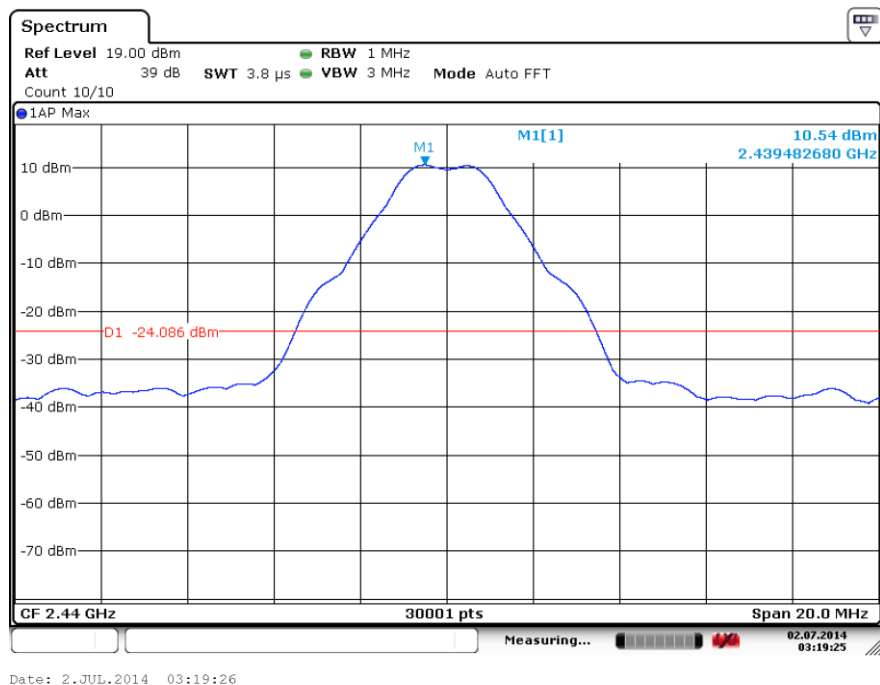


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Date of Report : 02-02-2018

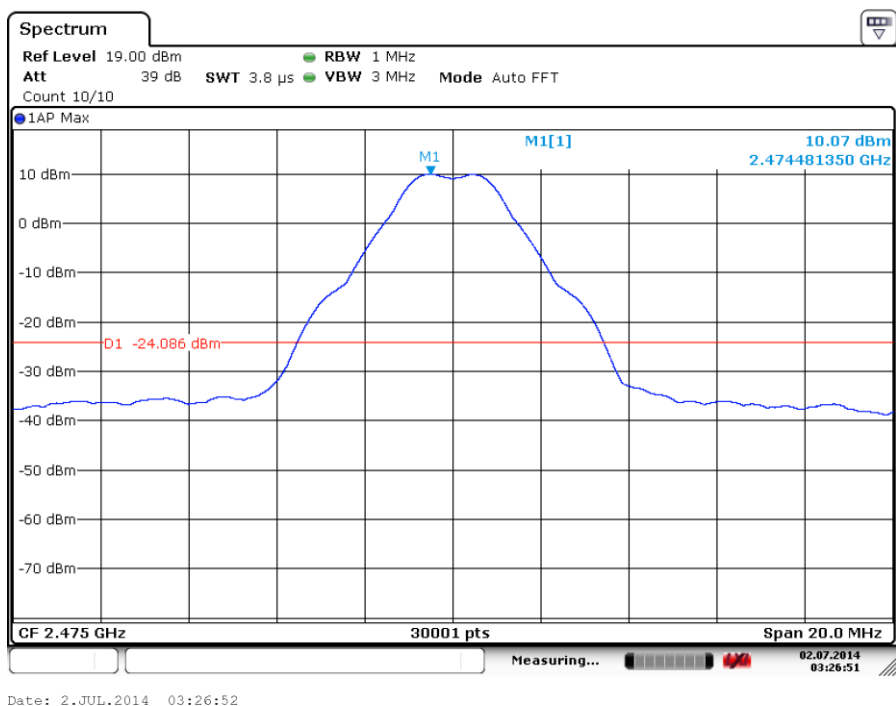
FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A



Measured Maximum Peak Conducted Output Power: 2440 MHz



Measured Maximum Peak Conducted Output Power: 2475 MHz



6.5 Emission and Occupied Bandwidth

6.5.1 Limits:

§15.247 (a)(2)
IC RSS-247 Issue 2

Minimum 6 dB bandwidth shall be 500 kHz.

6.5.2 Test Conditions:

Tnom: 20°C; Vnom: 12 VDC
Measurement Uncertainty= ±100 kHz

6.5.3 Test Results:

Occupied Bandwidth (MHz)						
Mode	Frequency (MHz)					
	2405 Channel 11		2440 Channel 18		2475 Channel 25	
	6dB	99%	6dB	99%	6dB	99%
802.15.4 ZigBee	1.61	2.6	1.62	2.6	1.61	2.6

6.5.4 Measurement Verdict

Pass.

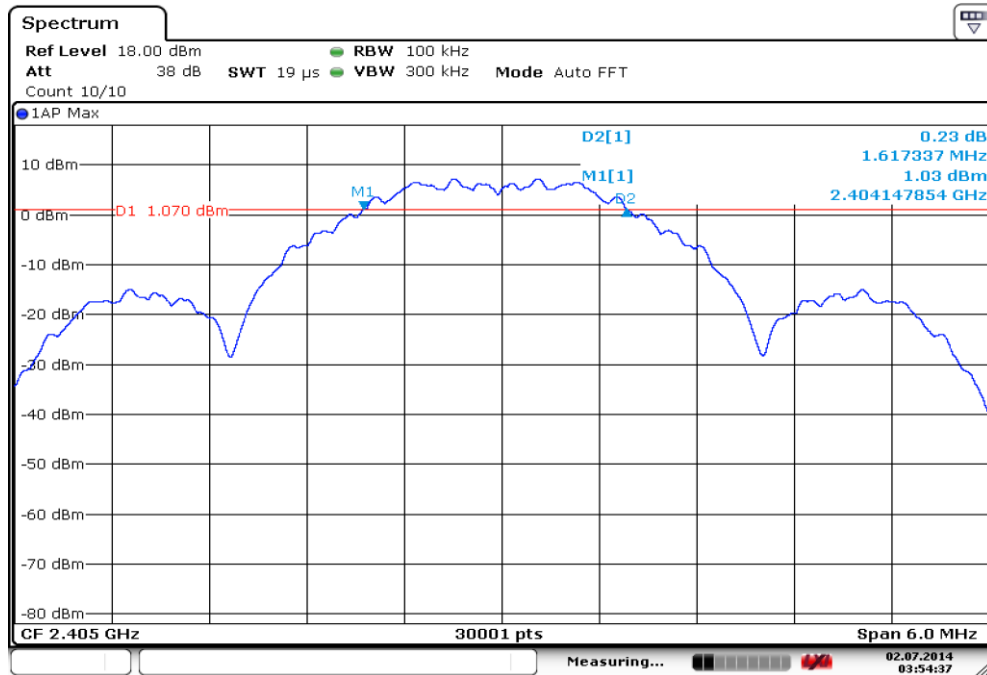
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Date of Report : 02-02-2018

FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A



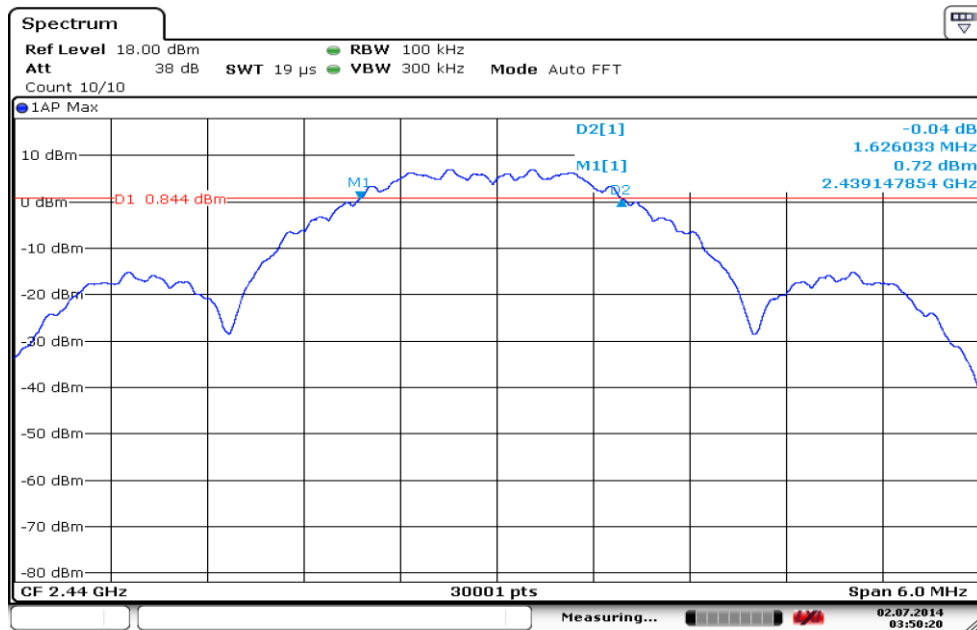
6.5.5 Test Data/plots:

6dB Bandwidth: 2405 MHz



Date: 2.JUL.2014 03:54:38

6dB Bandwidth: 2440 MHz



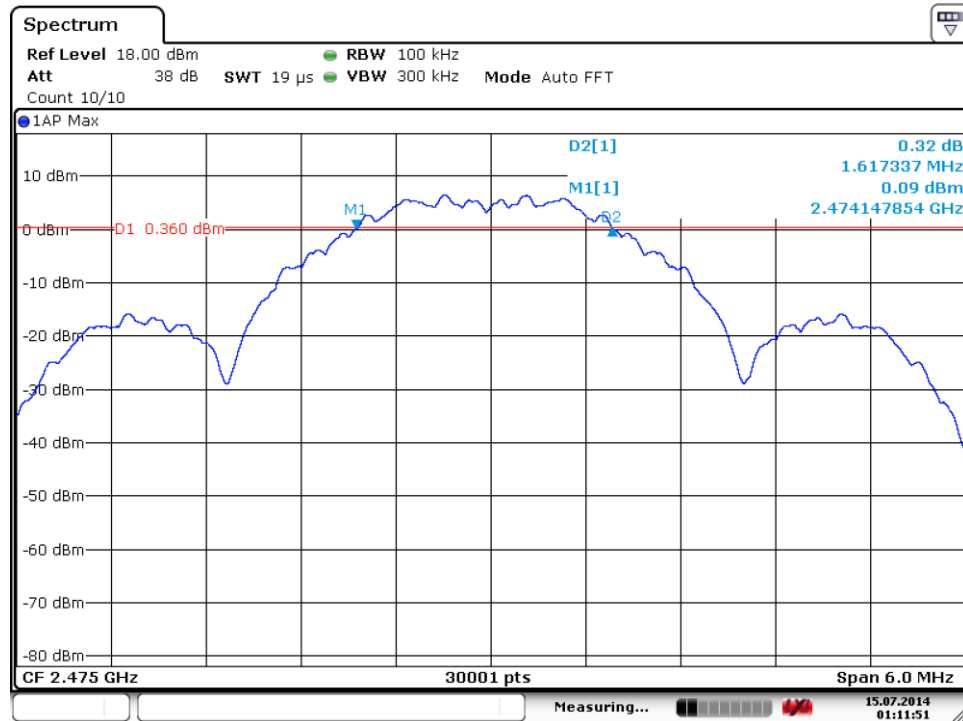
Date: 2.JUL.2014 03:50:20

Test Report #: EMC_Xirgo-080-14001_DTS_rev3
Date of Report : 02-02-2018

FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A

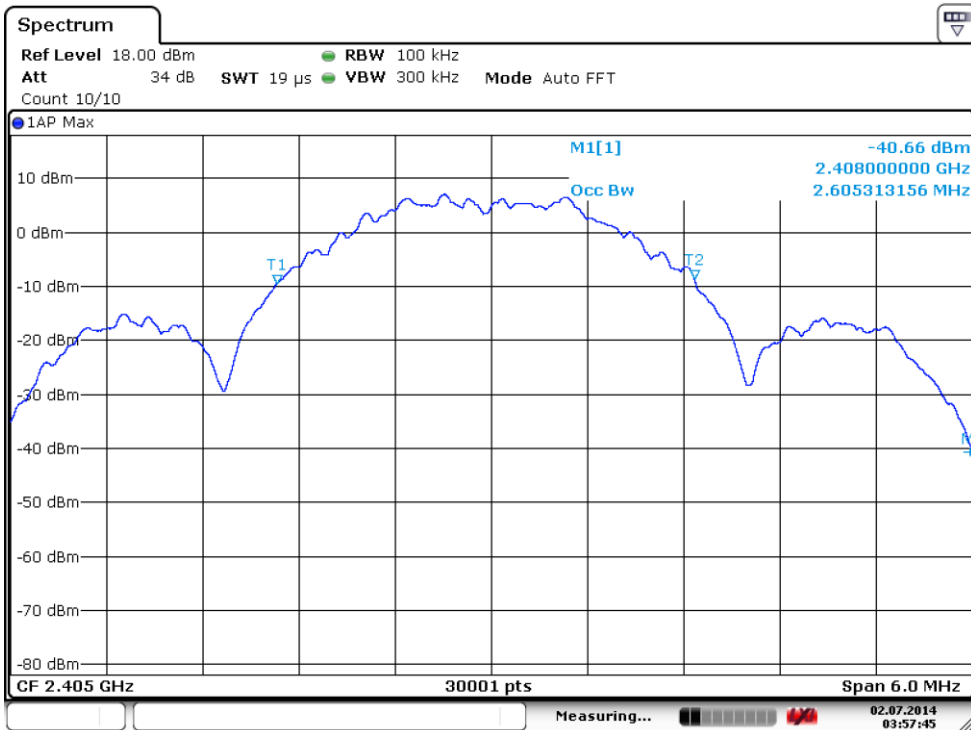


6dB Bandwidth: 2475 MHz



Date: 15.JUL.2014 01:11:51

99% Bandwidth: 2405 MHz



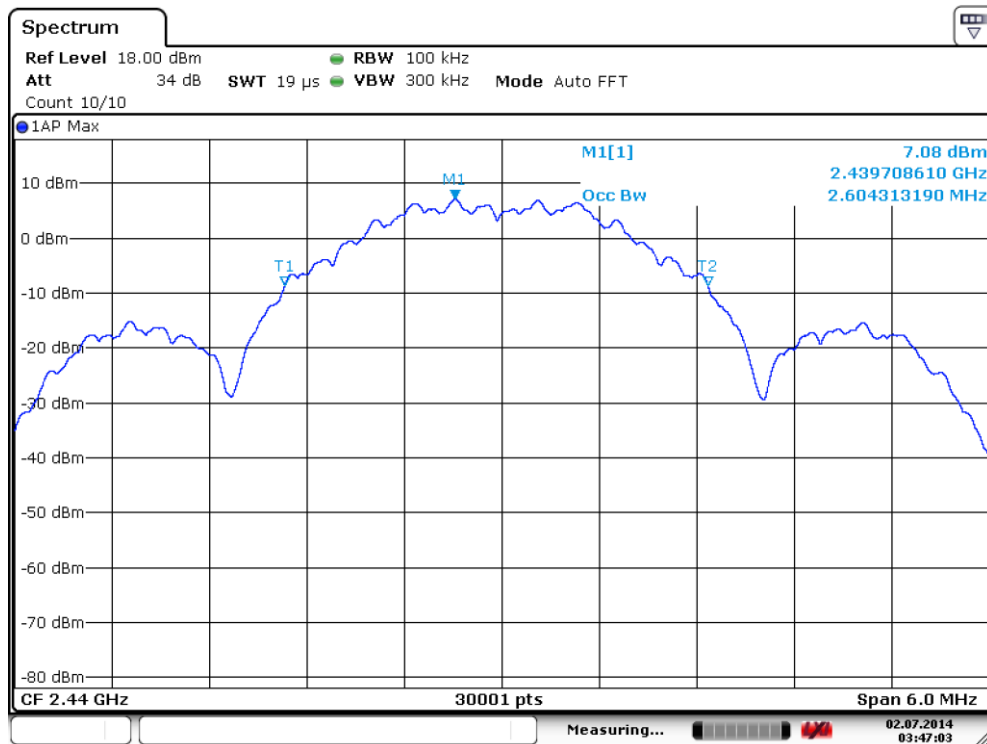
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Test Report #: EMC_Xirgo-080-14001_DTS_rev3
Date of Report : 02-02-2018

FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A

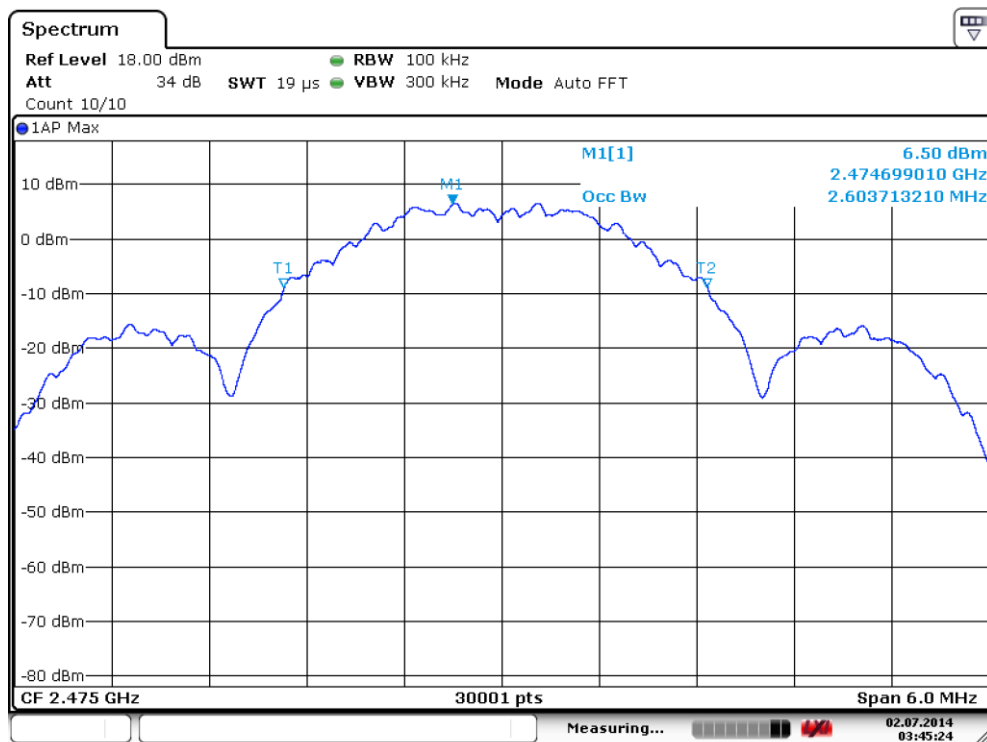


99% Bandwidth: 2440 MHz



Date: 2.JUL.2014 03:47:03

99% Bandwidth: 2475 MHz



Date: 2.JUL.2014 03:45:24

6.6 Maximum Power Spectral Density Level in the Fundamental Emission

6.6.1 Limits:

§ 15.247 (e)

IC RSS-247 Issue 2

For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

6.6.2 Test Conditions:

Tnom: 20°C; Vnom: 12.0 VDC

6.6.3 Test results:

Measured Conducted Power Spectral Density (dBm)				
Mode	Frequency (MHz)			
	2405 Channel 11	2430 Channel 16	2440 Channel 18	2475 Channel 25
802.15.4 ZigBee	7.75	6.65	7.71	7.11

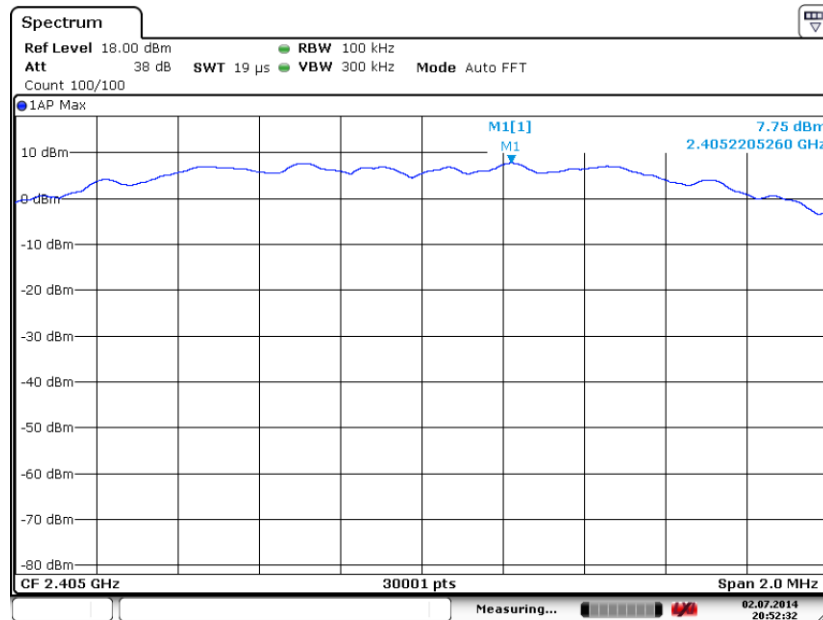
Corrected Power Spectral Density (dBm) for 3kHz BW				
Mode	Frequency (MHz)			
	2405 Channel 11	2430 Channel 16	2440 Channel 18	2475 Channel 25
802.15.4 ZigBee	-7.47	-8.55	-7.49	-8.09

6.6.4 Measurement Verdict

Pass

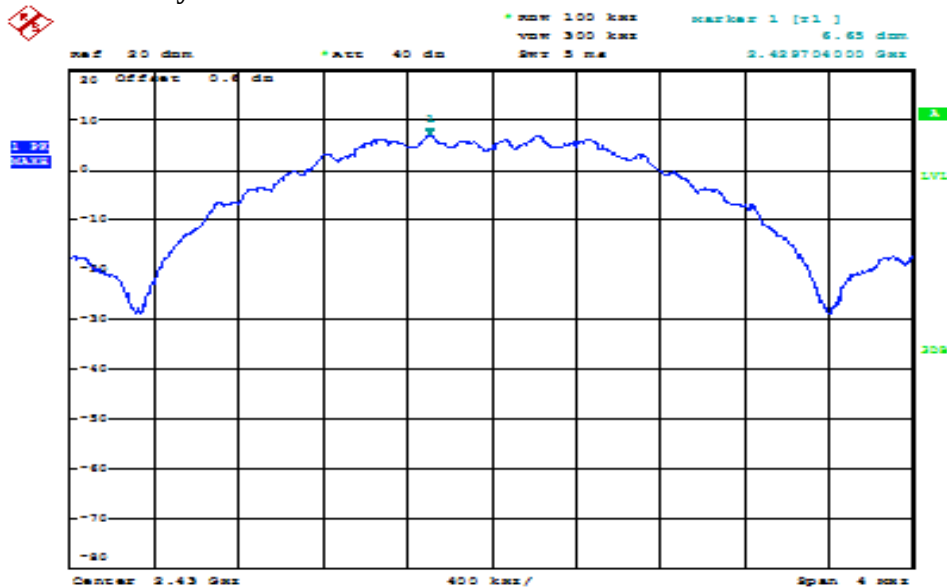
6.6.5 Test Data/plots:

Power Spectral Density: 2405 MHz



Date: 2.JUL.2014 20:52:32

Power Spectral Density: 2430 MHz



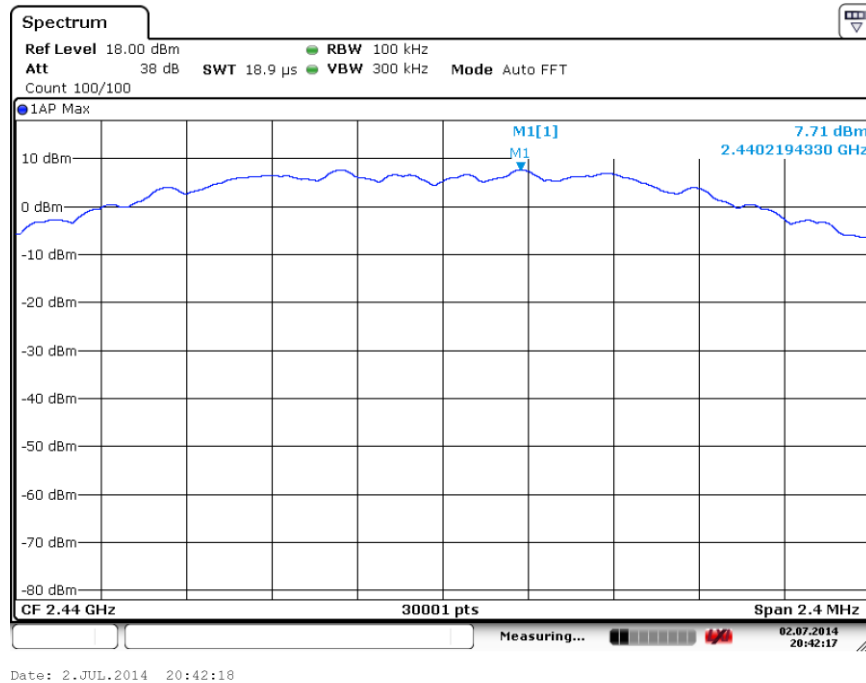
Date: 15.AUG.2014 15:15:47

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Date of Report : 02-02-2018

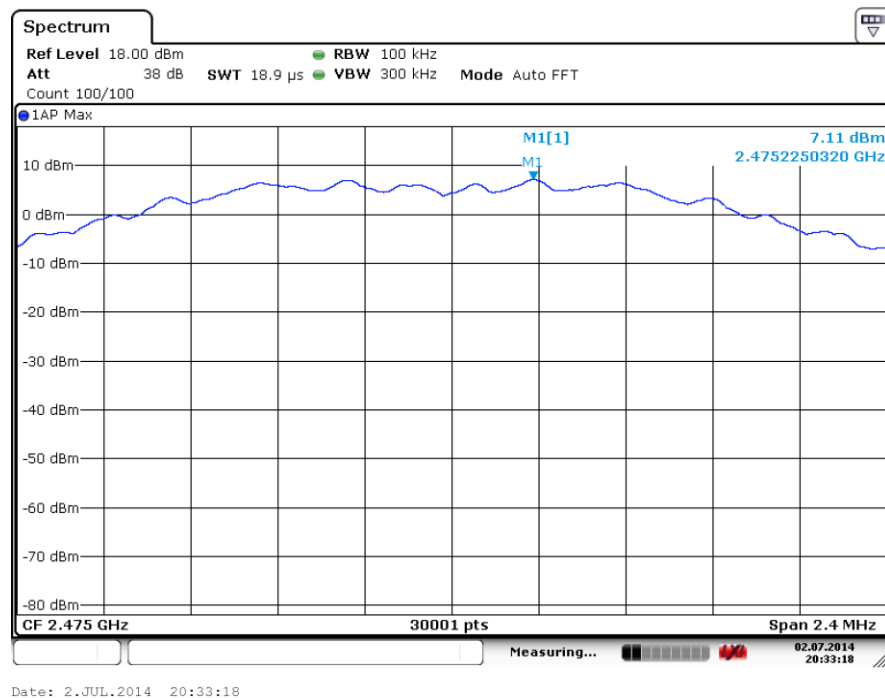
FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A



Power Spectral Density: 2440 MHz



Power Spectral Density: 2475 MHz



6.7 Unwanted Emissions into Non-Restricted Frequency Bands - Conducted

6.7.1 Reference and Limits:

FCC part 15.247 (d), IC RSS-247 Issue 2

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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.

6.7.2 Test Conditions:

Tnom: 20°C; Vnom: 12 VDC

Measurement Uncertainty: ±1.0 dB

6.7.3 Test Result:

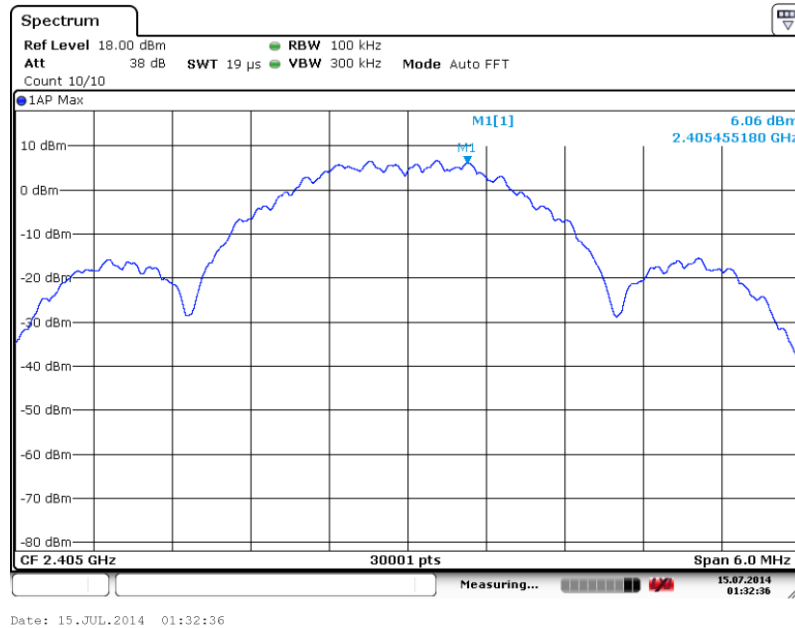
Conducted Spurious Emissions			
Channel	Frequency (MHz)	Amplitude (dBm)	Limits
		802.15.4 ZigBee	
Low	2405	6.04	30dBm
	Spurious	All other peaks >20dB below limit	-20dBc
Mid	2440	6.87	30 dBm
	Spurious	All other peaks >20dB below limit	-20dBc
High	2475	6.36	30 dBm
	Spurious	All other peaks >20dB below limit	-20dBc
Measurement Uncertainty: ±1.0 dB			

6.7.4 Measurement Verdict:

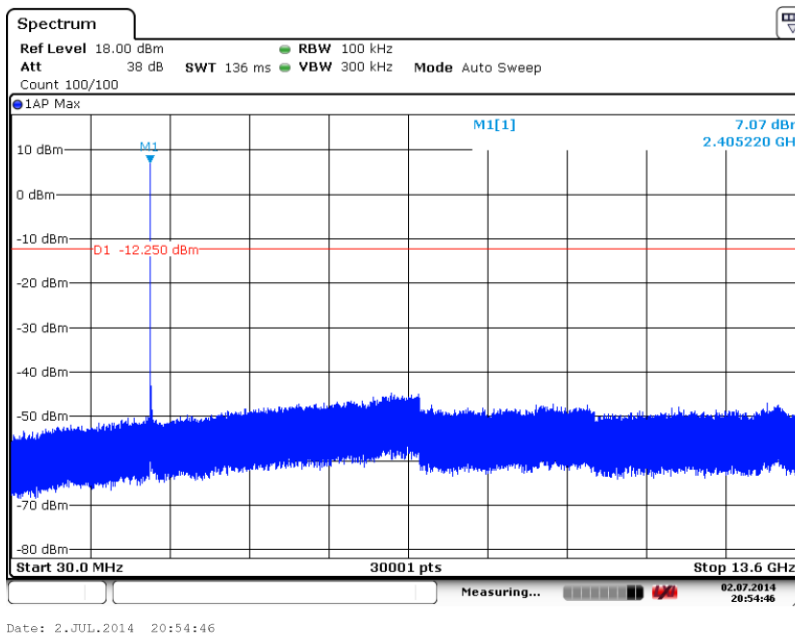
Pass.

6.7.5 Test data/ plots:

Conducted Spurious Emission: 2405 MHz



Reference level measurement



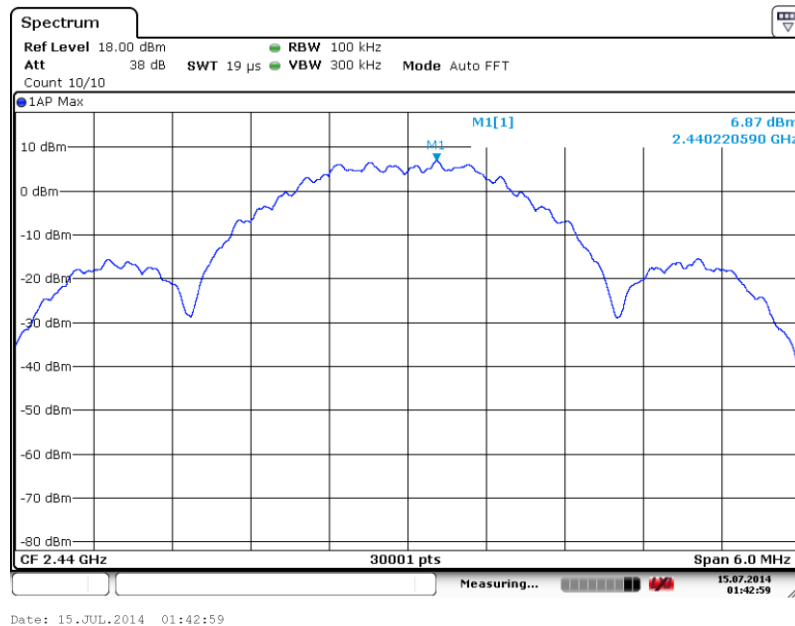
Unwanted emissions measurement

Test Report #: EMC_Xirgo-080-14001_DTS_rev3
Date of Report : 02-02-2018

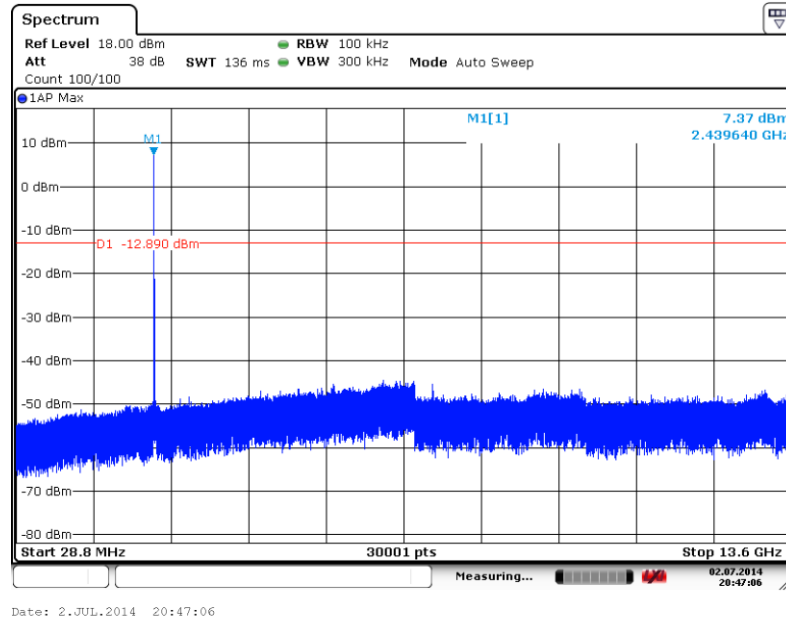
FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A



Conducted Spurious Emission: 2440 MHz



Reference level measurement



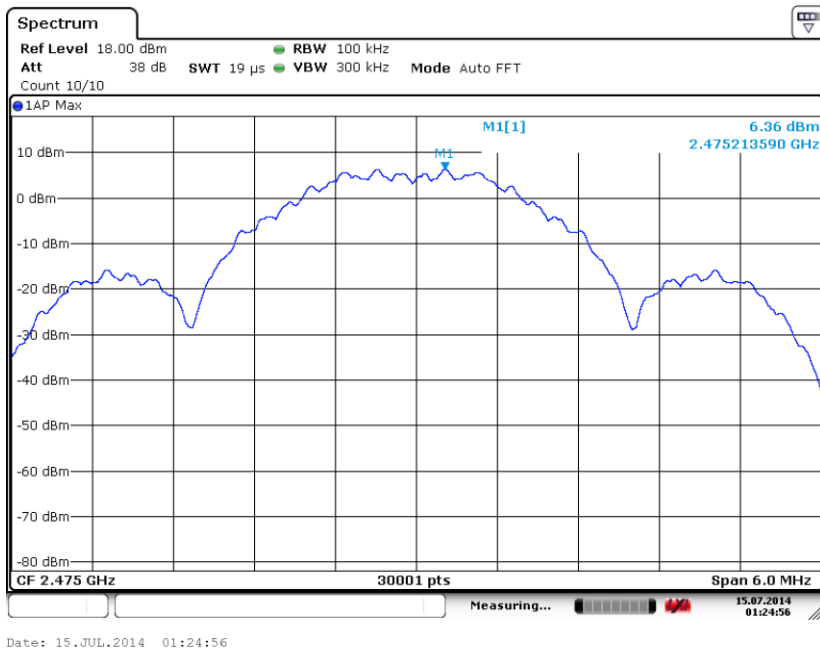
Unwanted emissions measurement

Test Report #: EMC_Xirgo-080-14001_DTS_rev3
Date of Report : 02-02-2018

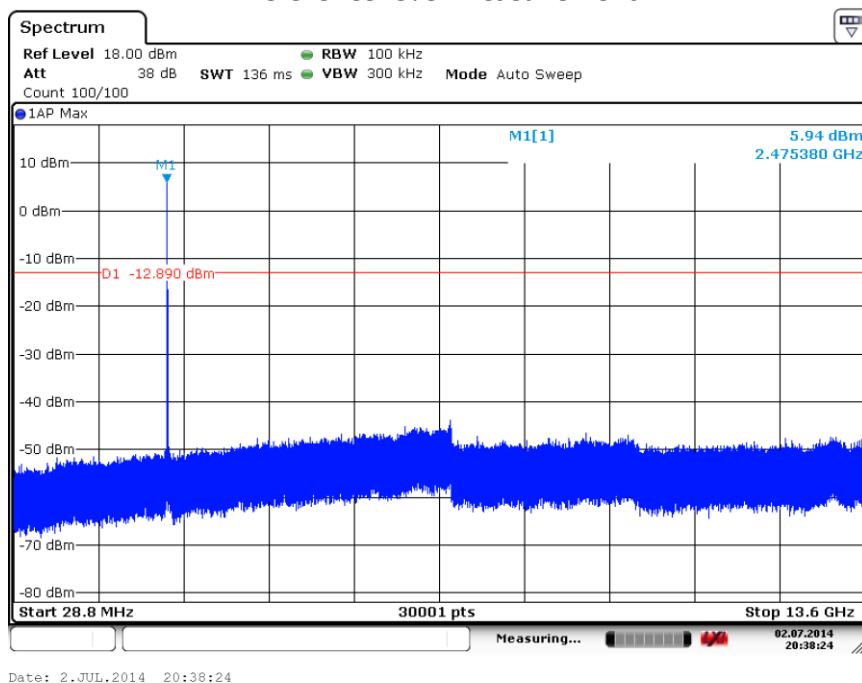
FCC ID: GKM-XT4800 / GKM-XT4971A
IC ID: 10281A-XT4800 / 10281A-XT4971A



Conducted Spurious Emission: 2475 MHz



Reference level measurement



Unwanted emissions measurement

6.8 Band Edge Compliance – at restricted and non-restricted band edges

6.8.1 Limits:

§15.209/15.205/15.247 (d) & RSS-Gen 7.2.2/ 7.2.5, IC RSS-247 Issue 2

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

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 § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

*PEAK LIMIT= 74dB μ V/m (-21.2 dBm, for 3m)

*AVG. LIMIT = 54dB μ V/m (-41.2 dBm, for 3m)

6.8.2 Test Conditions:

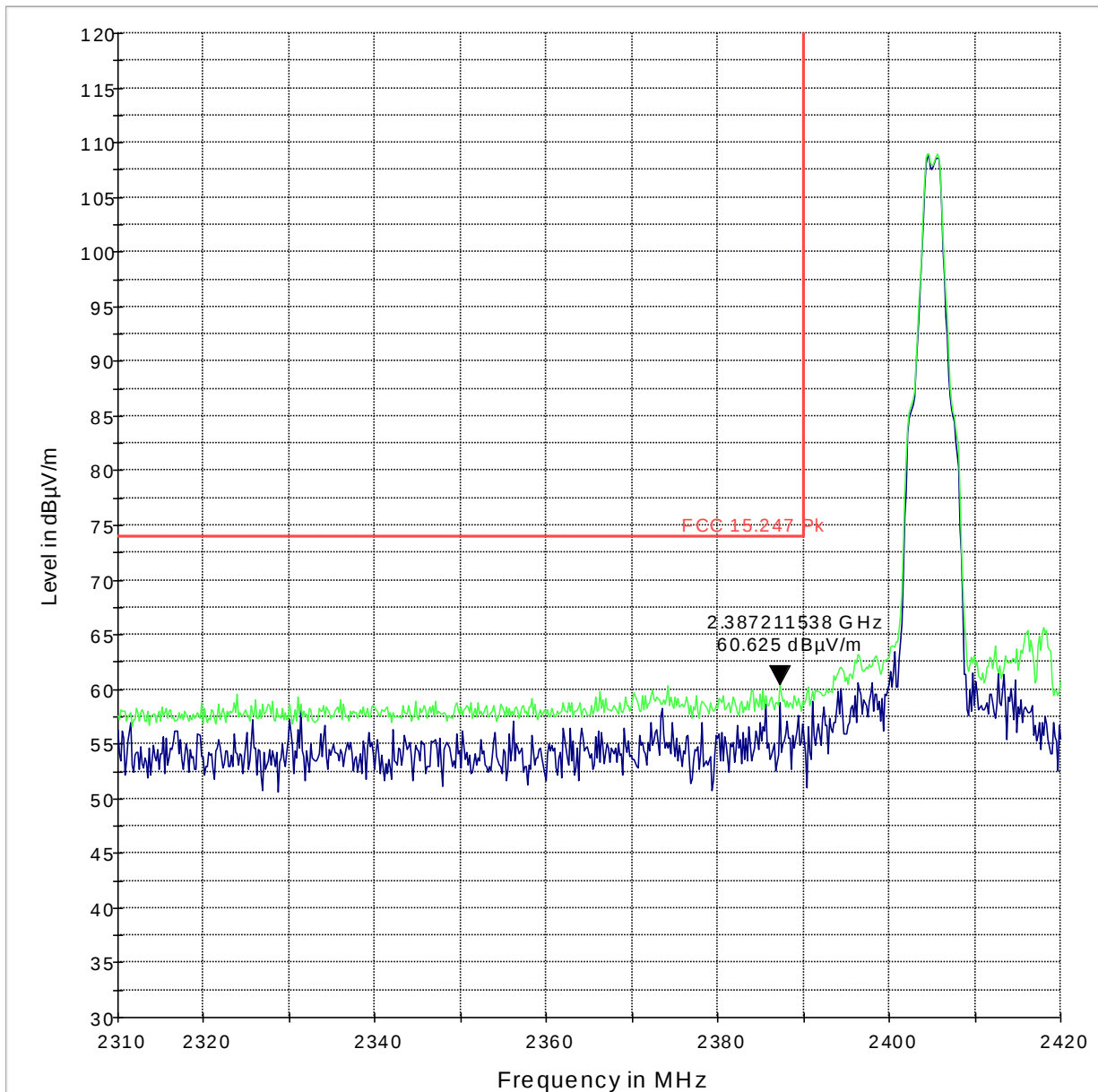
Tnom: 21°C; Vnom: 12 VDC

6.8.3 Measurement Result

Pass.

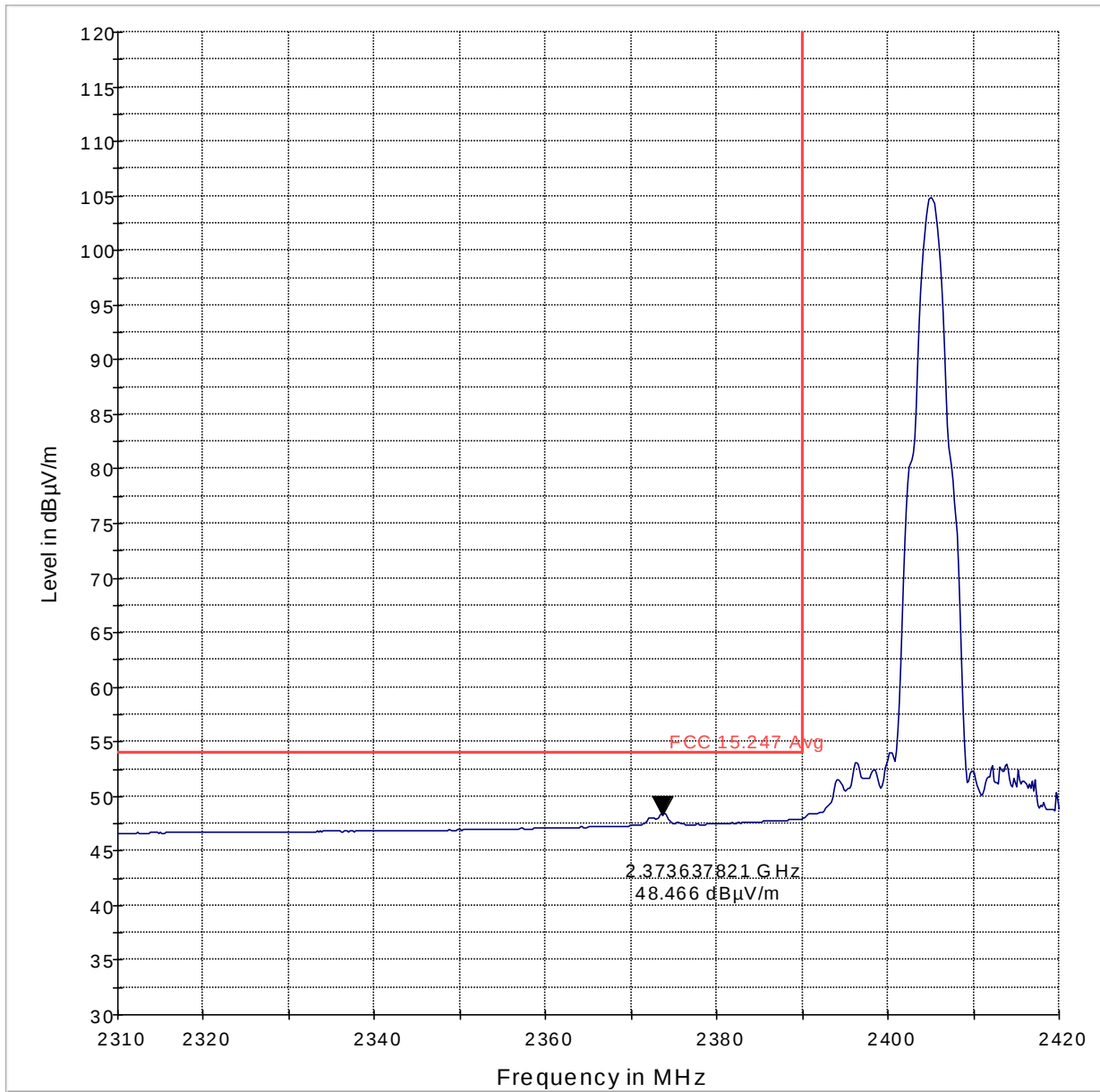
6.8.4 Test Data/plots:

Lower band edge peak – Zigbee mode: 2405 MHz



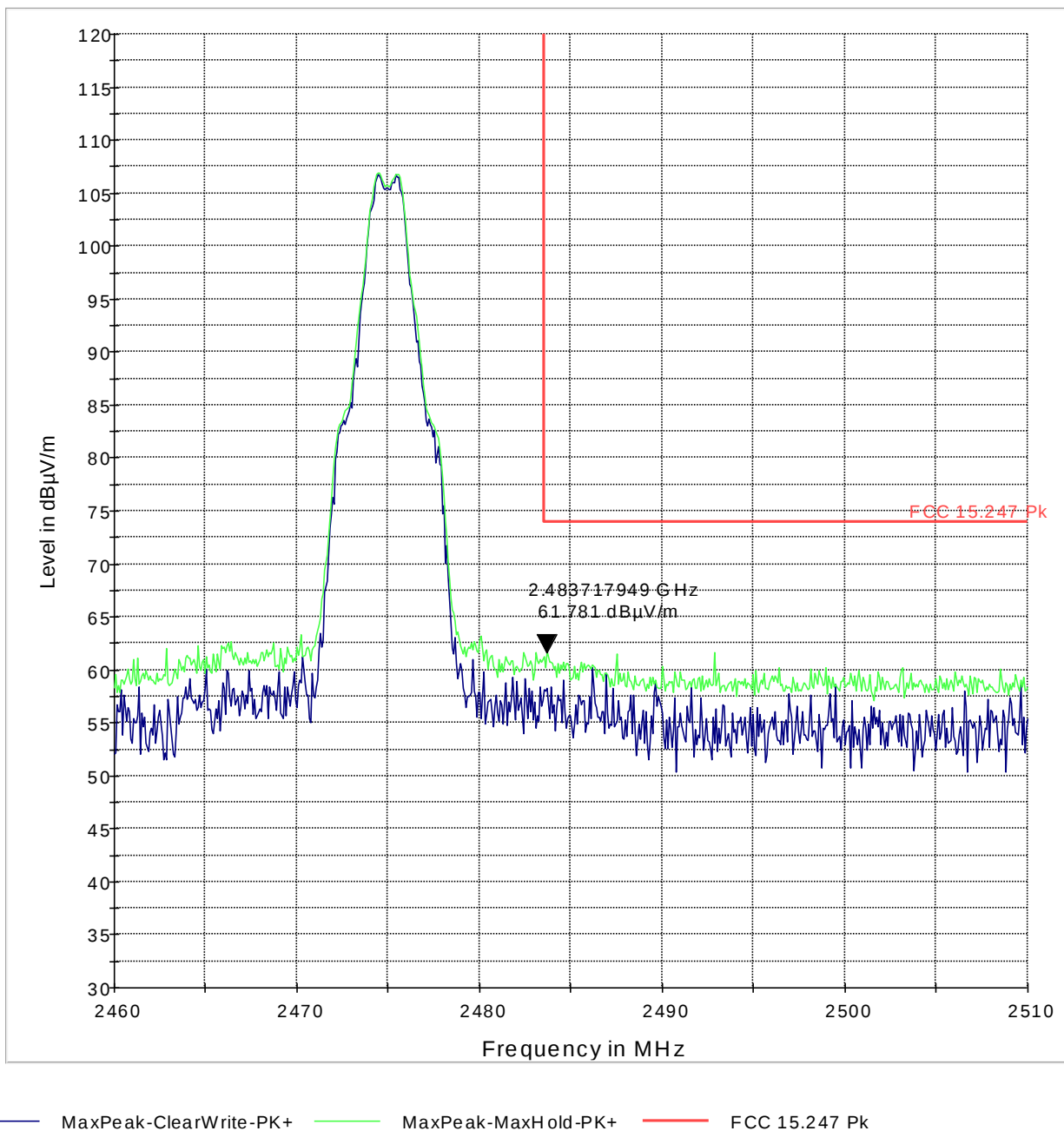
MaxPeak-ClearWrite-PK+ MaxPeak-MaxHold-PK+ FCC 15.247 Pk

Lower band edge average -Zigbee mode: 2405 MHz

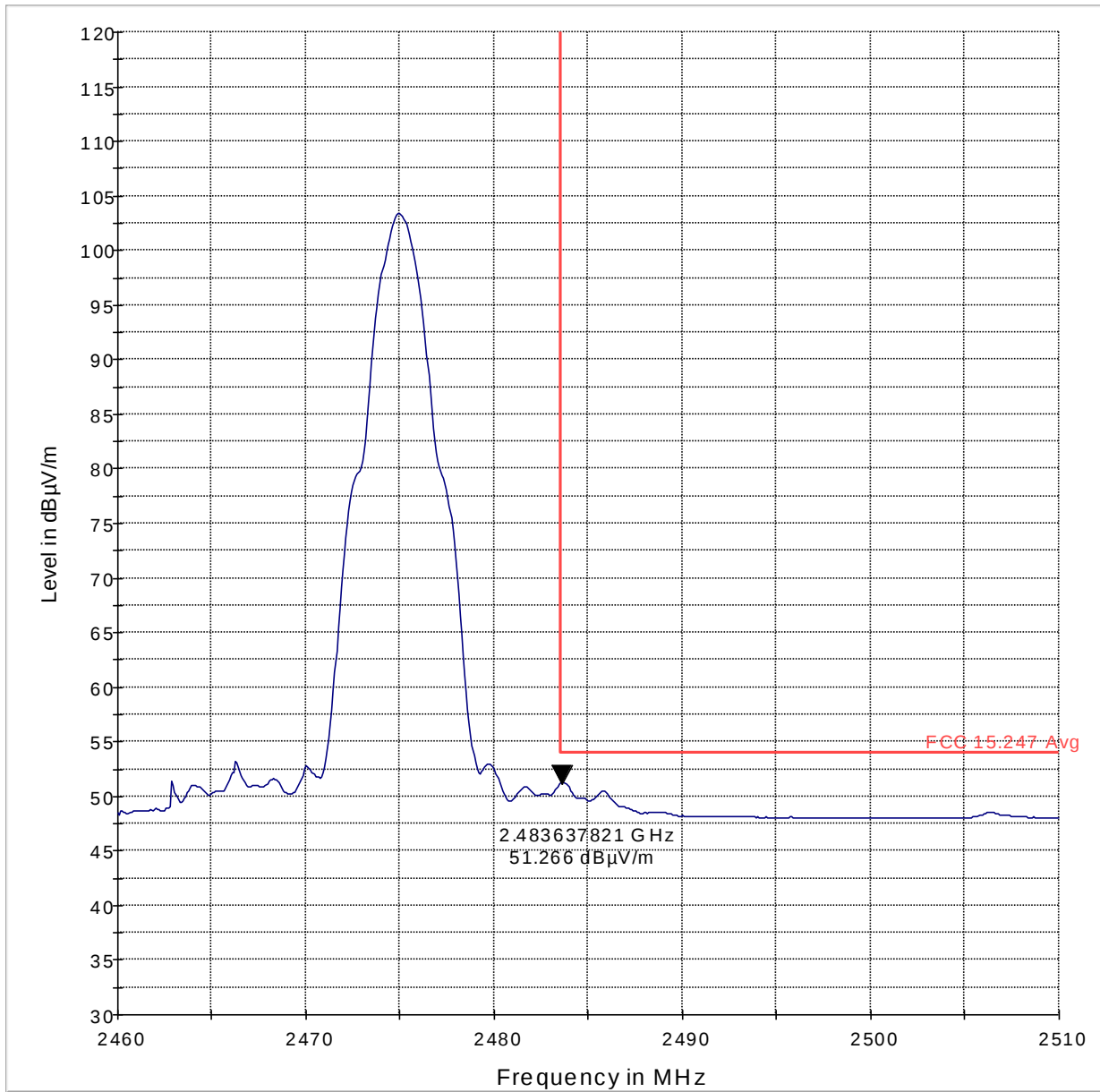


— MaxPeak-MaxHold-PK+ — Average-MaxHold-AVG — FCC 15.247 Avg

Higher band edge peak -Zigbee mode: 2475 MHz



Higher band edge average-Zigbee mode: 2475 MHz



— MaxPeak-MaxHold-PK+ — FCC 15.247 Avg

6.9 Transmitter Spurious Emissions - Radiated

6.9.1 Limits:

§15.209/15.205 & RSS-Gen 7.2.2/ 7.2.5

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Table 1:

Frequency of emission (MHz)	Field strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30

Table 2:

Frequency of emission (MHz)	Field strength ($\mu\text{V/m}$)
30–88	100 (40dB $\mu\text{V/m}$)
88–216	150 (43.5 dB $\mu\text{V/m}$)
216–960	200 (46 dB $\mu\text{V/m}$)
Above 960	500 (54 dB $\mu\text{V/m}$)

6.9.2 Test Conditions:

Tnom: 20°C; Vnom: 12 VDC

6.9.3 Measurement procedure:

Measurement according to ANSI C63.10:2009 (also refer to section 6.1 in this test report)

6.9.4 Test Result:

Plots reported here represent the worst case emissions for horizontal and vertical antenna polarizations and for three orientations of the EUT.

Unless mentioned otherwise, the emissions outside the limit lines in the plots are from the transmit signal.

Measurement Uncertainty: $\pm 3.0\text{dB}$

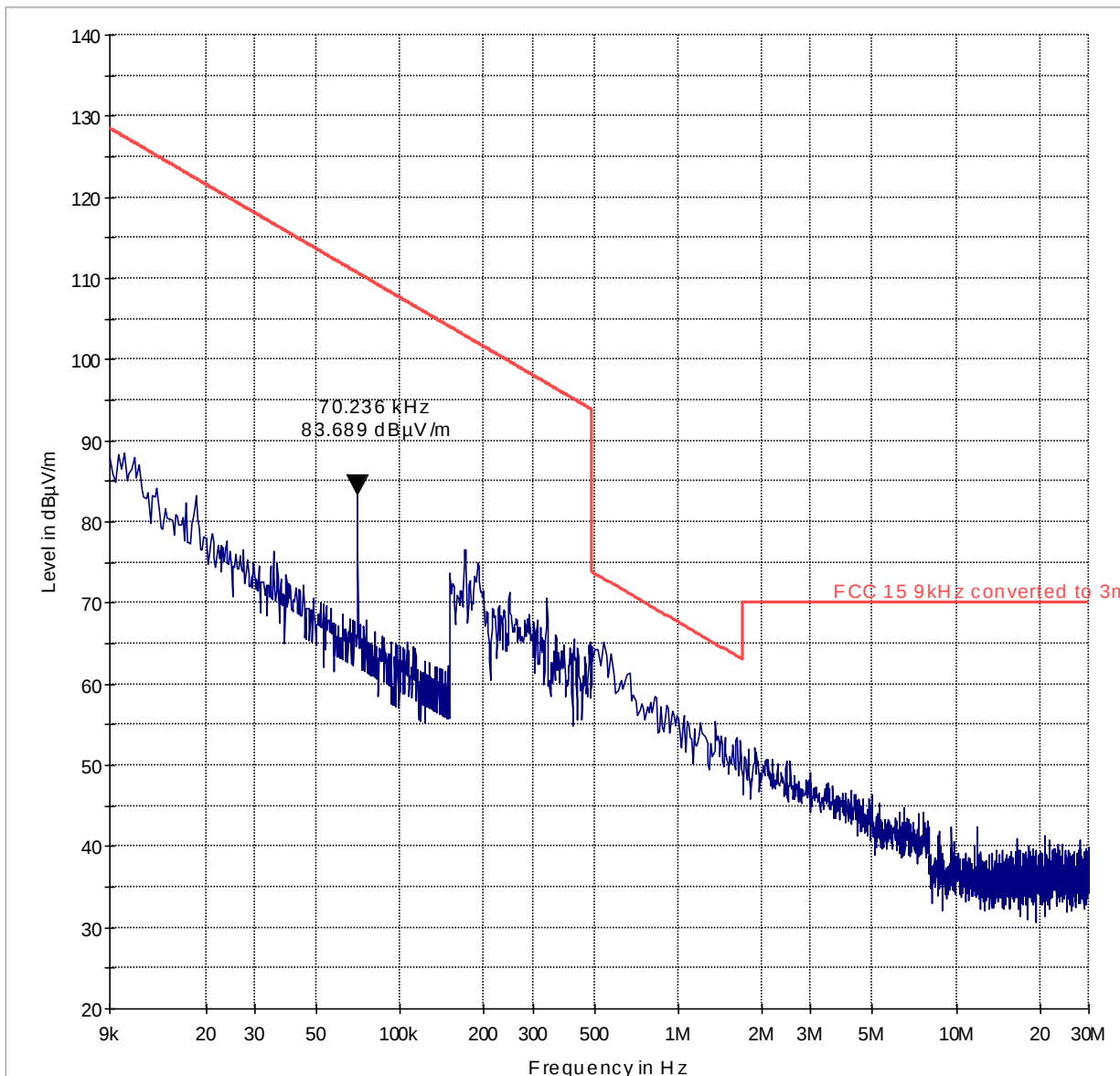
6.9.5 Measurement Verdict

Pass.

6.9.6 Test data/ plots:

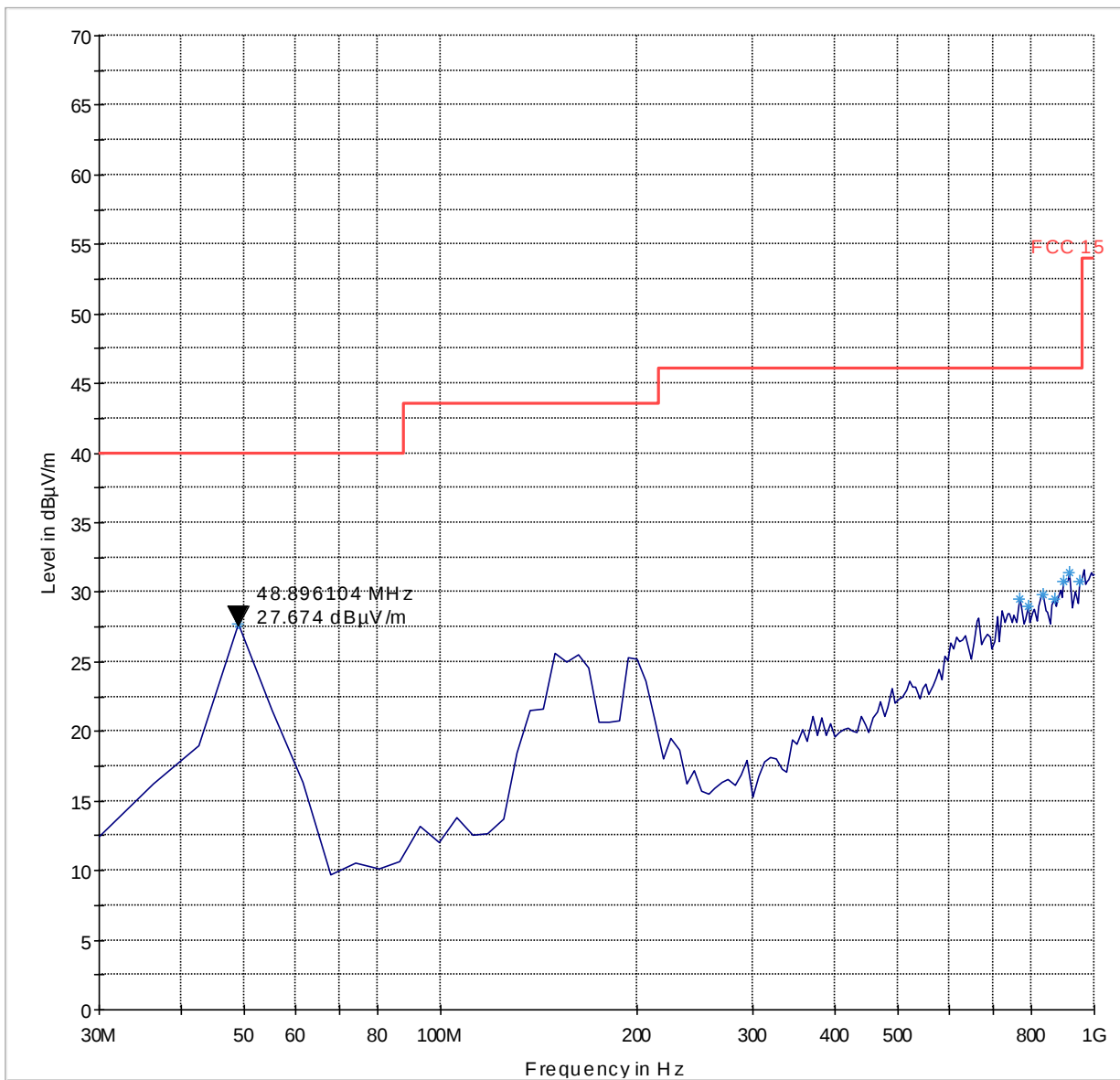
Transmitter Radiated Spurious Emission- 802.15.4; <30MHz

Note: Worst case representation for all channels of operation in this frequency range-
Limits adjusted for 3m measurement.



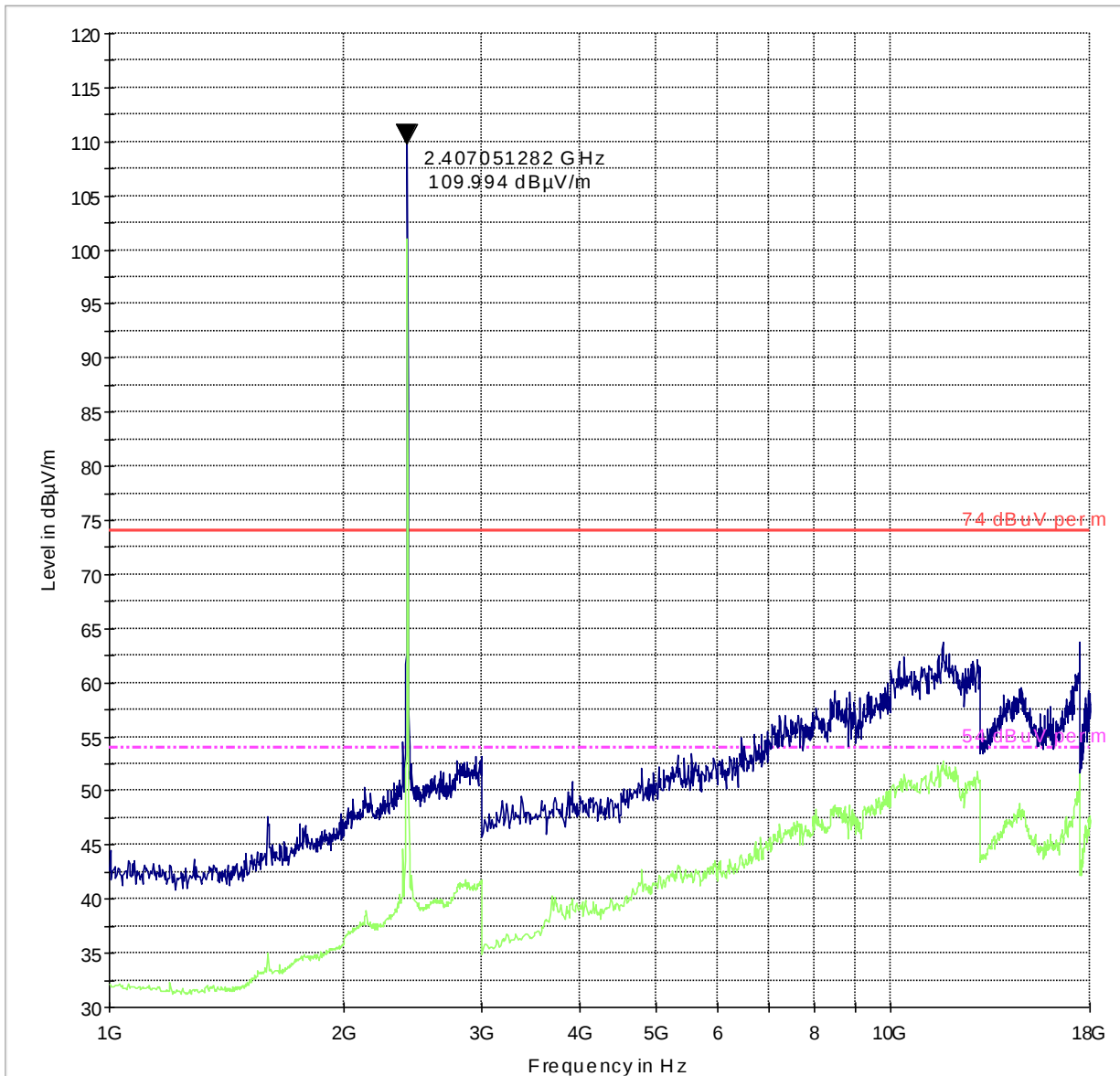
— FCC 15 9kHz converted to 3m — Preview Result 1-PK+

Transmitter Radiated Spurious Emission- Ch11 (2405 MHz): 30M-1GHz



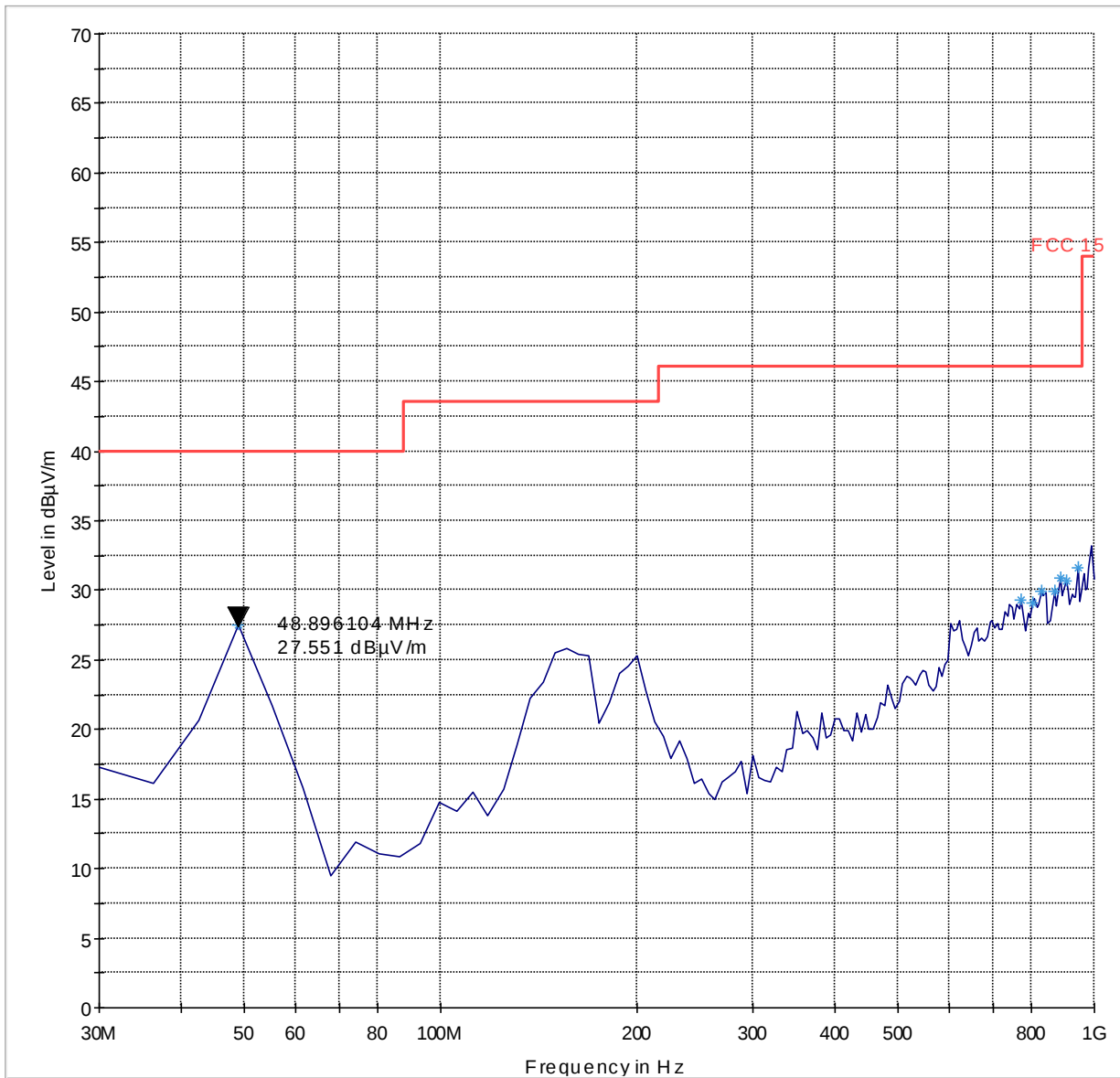
— FCC 15 — Preview Result 1-PK+ * Data Reduction Result1 [3]-PK+

Transmitter Radiated Spurious Emission- Ch11 (2405 MHz): 1G-18GHz
Emission above the limit line from the transmitter.



— 74dBuV perm - - - - 54dBuV perm — Preview Result 1-PK+ — Preview Result 2-AVG

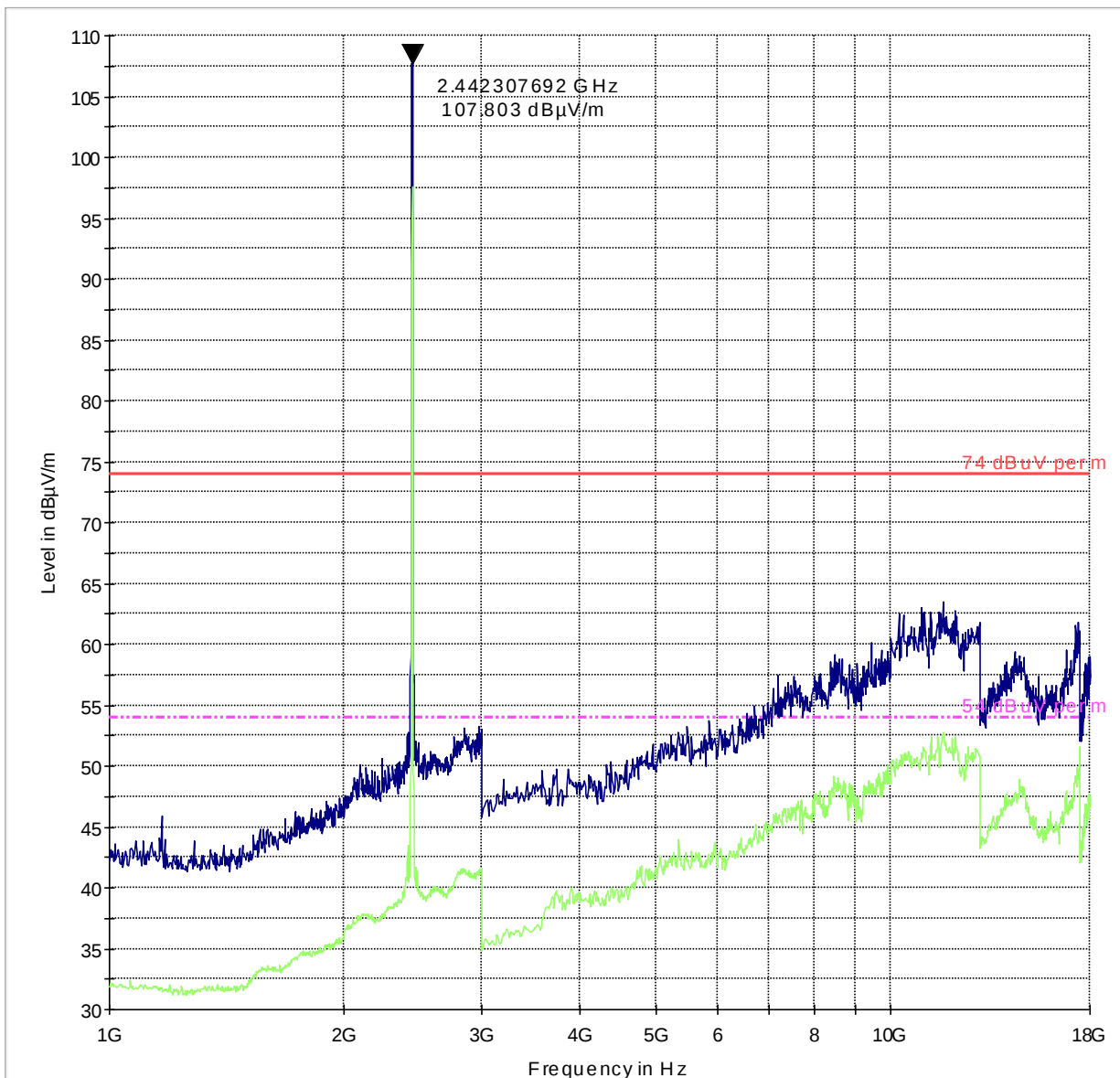
Transmitter Radiated Spurious Emission- Ch18 (2440 MHz): 30M-1GHz



— FCC 15 — Preview Result 1-PK+ * Data Reduction Result1 [3]-PK+

Transmitter Radiated Spurious Emission- Ch18(2440 MHz): 1G-18GHz

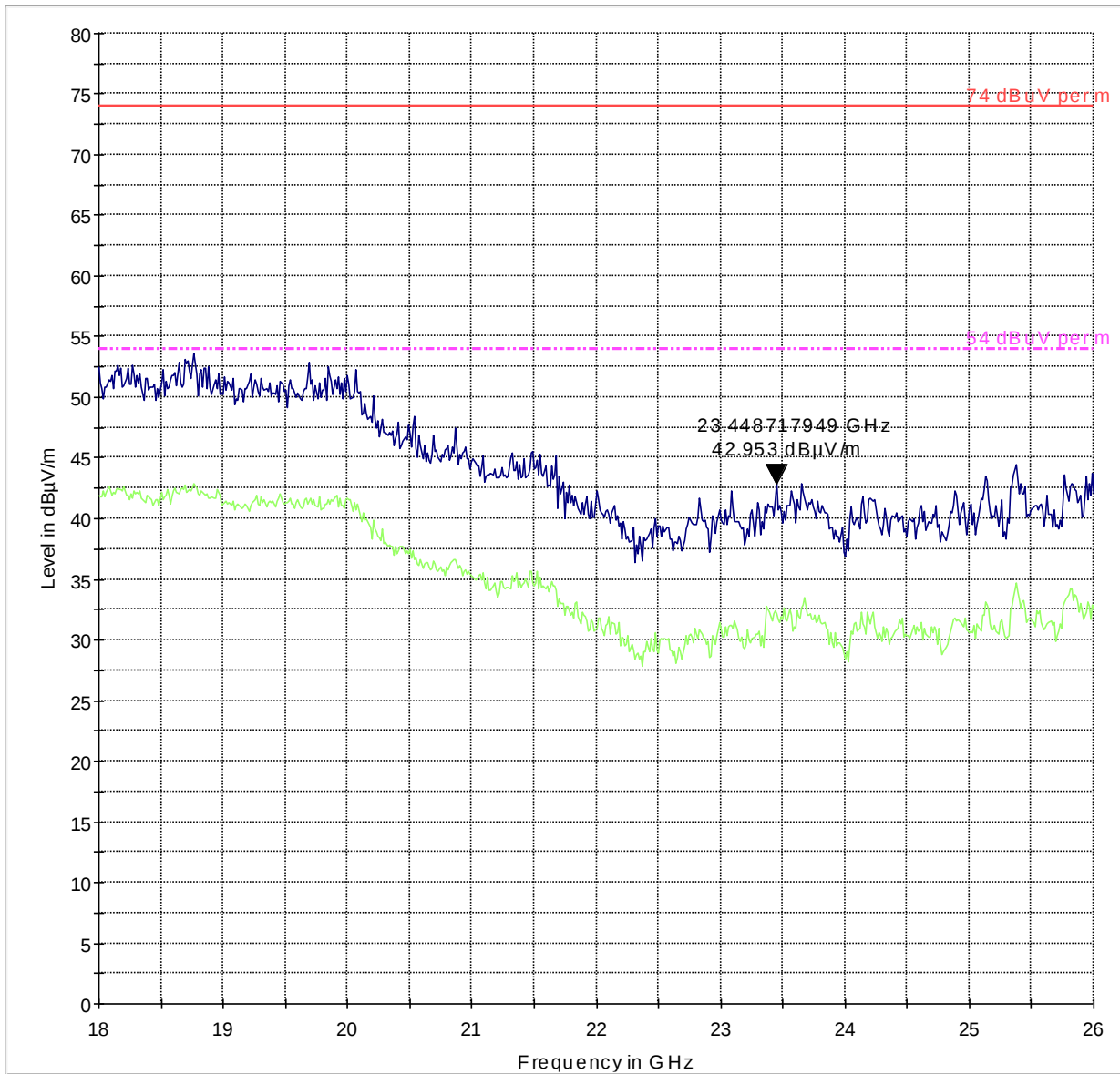
Emission above the limit line from the transmitter.



— 74 dBuV perm - - - 54 dBuV perm — Preview Result 1-PK+ — Preview Result 2-AVG

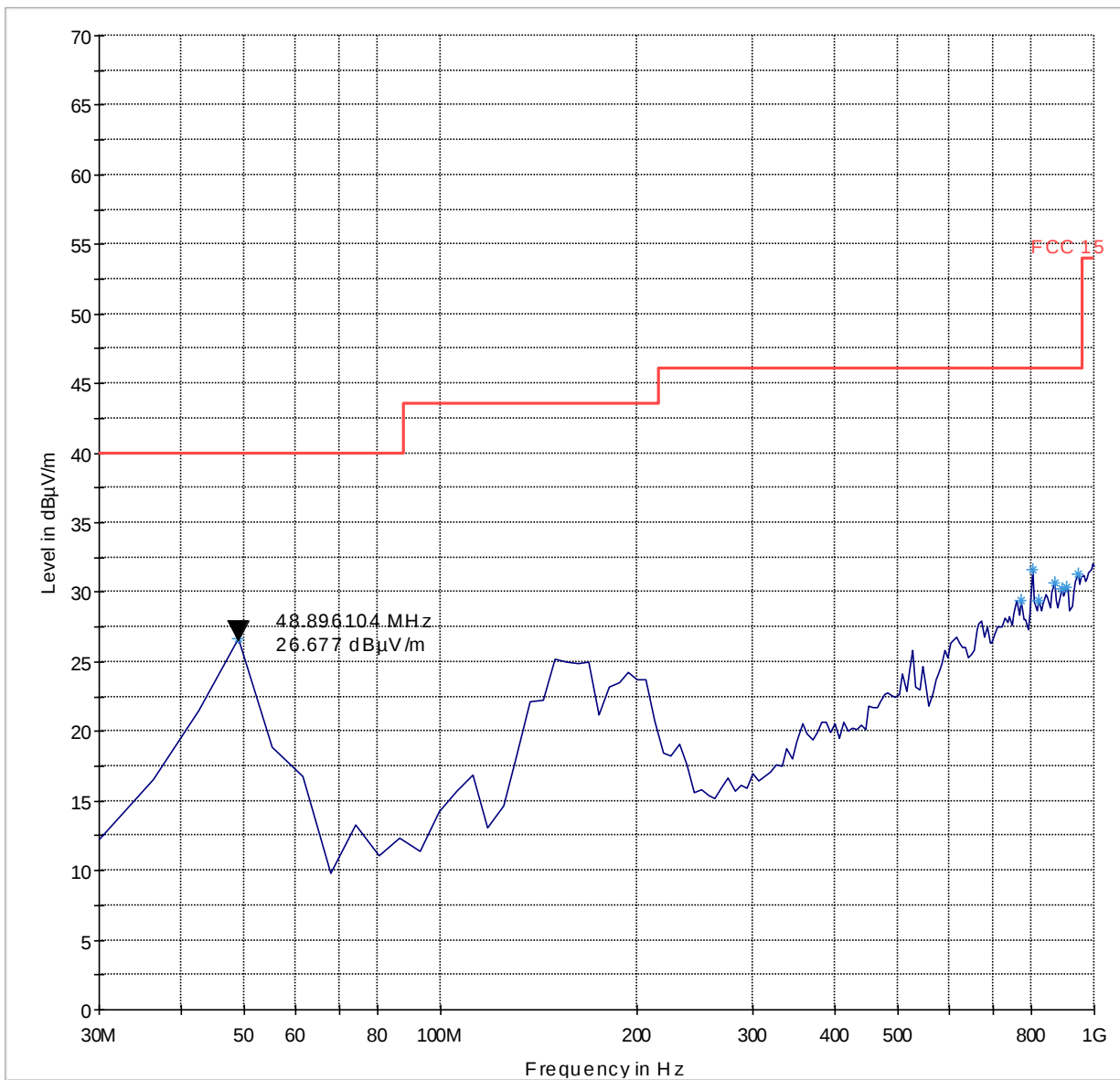
Transmitter Radiated Spurious Emission- Ch18 (2440 MHz): 18G-26GHz

Note: Worst case representation of all channels



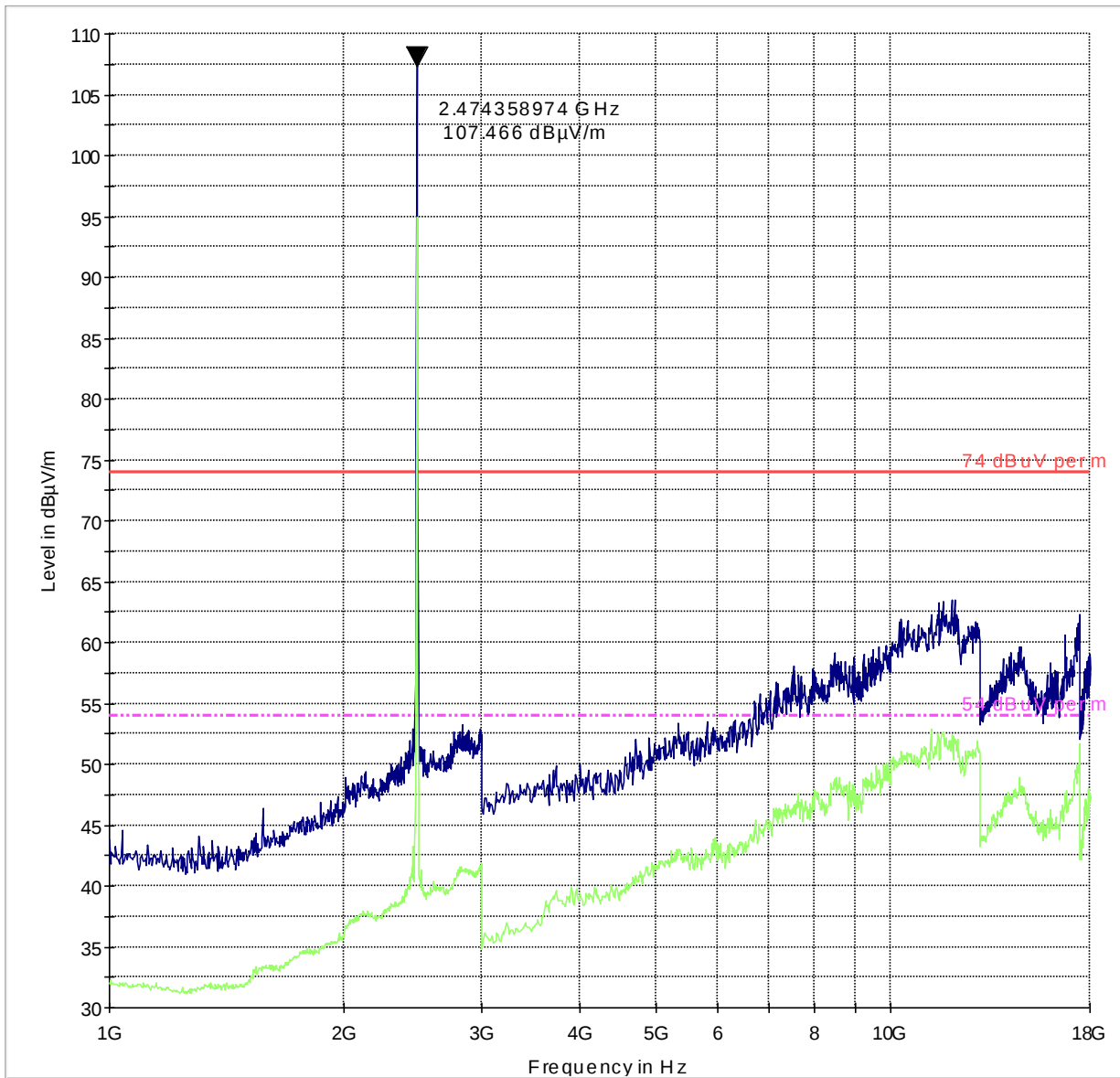
— 74dBuV perm - - - 54dBuV perm — Preview Result 1-PK+ — Preview Result 2-AVG

Transmitter Radiated Spurious Emission- Ch25 (2475 MHz): 30M-1GHz



— FCC 15 — Preview Result 1-PK+ * Data Reduction Result1 [3]-PK+

Transmitter Radiated Spurious Emission- Ch25 (2475 MHz): 1G-18GHz
Emission above the limit line from the transmitter.



— 74dBuV perm - - - - 54dBuV perm — Preview Result 1-PK+ — Preview Result 2-AVG

7 Test Equipment and Ancillaries used for tests

7.1 CETECOM Inc. San Diego EMC Lab

Equipment Name	Manufacturer	Type/Model	Serial No.	Cal Date	Cal Interval	Next cal date
3m Semi- Anechoic Chamber:						
Spectrum Analyzer	Rohde und Schwarz	FSU 26	200302	6/2013	2 years	6/2015
Receiver	Rohde und Schwarz	ESR3	101663	2/2013	2 years	2/2015
LISN	Rohde und Schwarz	ESV 216	101129	1/2013	2 years	1/2015
Radiocommunication Tester	Rohde and Schwarz	CMU 200	121672	7/2013	2 years	7/2015
Log Periodic Antenna	Rohde and Schwarz	HL 050	100515	4/2013	3 year	4/2016
Ultralog Antenna	Rohde and Schwarz	HL 562	100495	2/2012	3 year	2/2015
Open Switch Control Unit	Rohde and Schwarz	OPS 130	10085	n/a		
Extention Unit Open Switch Control Unit	Rohde and Schwarz	OSP 150	10086	n/a		
Turn Table TT	Maturo	1.5 SI	TT 1.5SI/204/6070910	n/a		
Compact antenna Mast	Maturo	CAM 4.0-P	CAM4.0-P/067/6000910	n/a		
Multiple Control Unit	Maturo	MCU	2140910	n/a		
Pre-Amplifier	Rohde and Schwarz	TS-PR 18	100072	Part of the system calibration		
High Pass Filter	Mini-Circuits	SHP-1200+	RUU11201224	Part of the system calibration		
High Pass Filter	Wainwright Instr.	WHKX 3.0/18	109	Part of the system calibration		

7.2 CETECOM Inc. Milpitas EMC Lab

Instrument/Ancillary	Model	Manufacturer	Serial No.	Cal Date	Cal Interval
EMI Receiver/Analyzer	ESU 40	Rohde & Schwarz	100251	Sept 2013	1 Years
Spectrum Analyzer	FSU	Rohde & Schwarz	200302	Jun 2013	2 Years
Pre-Amplifier	Miteq	JS40010260	340125	N/A	N/A
Binconilog Antenna	EMCO	3141	0005-1186	Apr 2012	3 Years
Binconilog Antenna	ETS	3149	J000123908	Feb 2012	3 years
Horn Antenna	EMCO	3115	35114	Mar 2012	3 Years
Communication Antenna	IBP5-900/1940	Kathrein	n/a	n/a	n/a
High Pass Filter	5HC2700	Trilithic Inc.	9926013	Part of system calibration	
High Pass Filter	4HC1600	Trilithic Inc.	9922307	Part of system calibration	
6GHz High Pass Filter	HPM50106	Microtronics	001	Part of system calibration	
Pre-Amplifier	JS4-00102600	Miteq	00616	Part of system calibration	
LISN	R&S	ESH3-Z5	836679/003	Jun 2013	3 Years

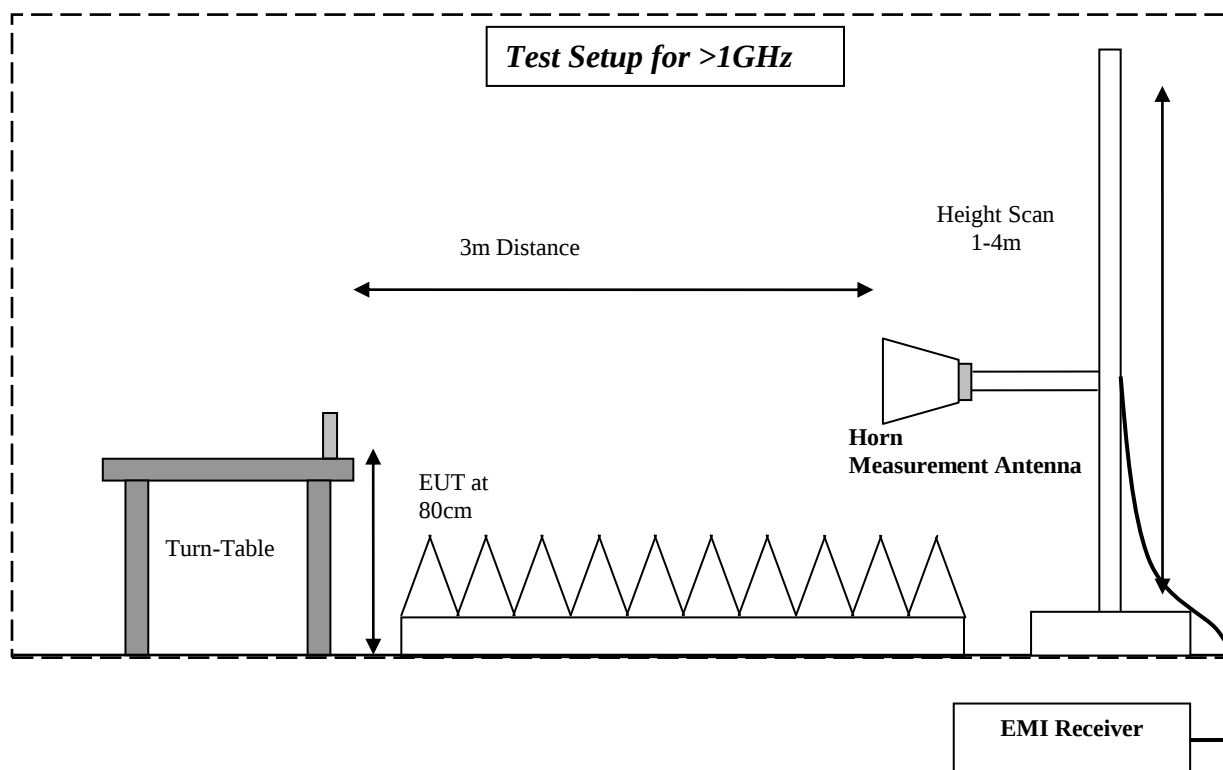
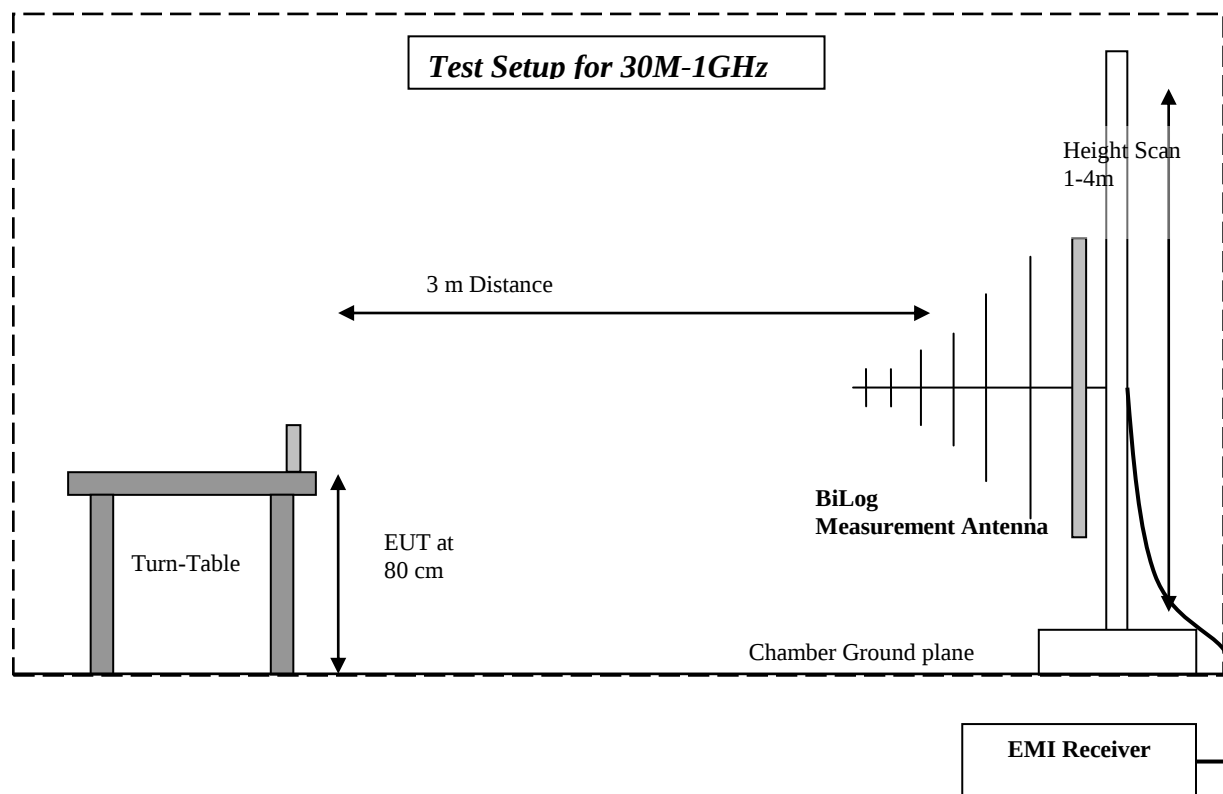
Calibration status valid at the time of testing.

Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.

Calibration due dates, unless defined specifically, falls on the last day of the month.

Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

8 Test Setup Diagrams:



Test Report #: EMC_Xirgo-080-14001_DTS_rev3 FCC ID: GKM-XT4800 / GKM-XT4971A
Date of Report : 02-02-2018 IC ID: 10281A-XT4800 / 10281A-XT4971A



Revision History

Date	Report Name	Changes to report	Report prepared by
07-11-2014	EMC_Xirgo-080-14001_DTS	First Version	M.Anees
08-27-2014	EMC_Xirgo-080-14001DTS_rev2	Added Ch 2430 readings and formatted the report.	M.Anees
02-02-2018	EMC_Xirgo-080-14001DTS_rev3	Adding Model Name XT-4971A	I.Ghanma