Electromagnetic Compatibility
Test Report

Test Report No: FRR 210218 Rev.2
Issued on: March 19, 2018

Product Name
BLE Robot Board/RF Module ESB9000

Tested According to
FCC Subpart C §15.249, §2.1049
RSS 210 Issue 9

Tests Performed for
Robomow Ltd.
POB 1412, Pardesia 4281500 Israel
Tel: +972-926-6262

QualiTech EMC Laboratory
30 Hasivim Street,P.O.Box 7500
Petah-Tikva, 4951169, Israel
Tel: +972-3-926-6994
Fax: +972-3-928 7490

Certificate 1633.01
Electrical Testing

Test Personnel

Tests Performed By: ----------

Dmitri Babiev

Report Prepared By: ----------

Bina Talkar

Report Approved By: ----------

Rami Nataf
EMC Lab. Manager
QualiTech EMC Laboratory

Test Report details:

Test commencement date: 14.01.2018

Test completion date: 16.01.2018

Customer's Representative: Eli Levi

Issued on: 19.03.2018

Revision details:

Version	Date	Details/Reasons
Rev. 1	21.02.2018	-
Rev. 1	19.03.2018	Updated per TCB requirements.

Assessment Information:

This report contains an assessment of the EUT against Electromagnetic Compatibility based upon tests carried out on the samples submitted. The results contained in this report relate only to the items tested. Manufactured products will not necessarily give identical results due to production and measurement tolerances. QualiTech, EMC Lab does not assume responsibility for any conclusion and generalization drawn from the test results with regards to other specimens or samples of type of the equipment represented by test item.

The EUT was setup and exercised using the configuration, modes of operation and arrangements defined in this report only.

Modifications:

Modifications made to the EUT

None

Modifications made to the Test Standard

None

System Test Configuration

Justification:

Refer to customer's declarations below for description of the differences between the models. None of the differences affects the radio performance of the EUT. Therefore RX12 Unit was selected as the worst case host for full testing.

Customer's declaration:s

Robomow®
Your robot. Our expertise.

Date: January 11, 2018

DECLARATION

I Hereby declare that
Model RX12, RX20, RX50, XR1 150, XR1 300, XR1 500 are identical physically and mechanically. The models differ only by the battery type (Lead Acid vs Lithium), by the battery capacity (7Ah vs 8.8Ah) and by the shape and the color of the plastic cover.

The difference in the above listed hosts do not affect the radio modules in the devices. Please related to them all (from a Radio point of view) as the same product.

Thank you,
Signature: _____
Vadim Pilipenko
Product Manager
F. Robotics Acquisitions Ltd.

F Robotics Acquisitions Ltd.
Hatzabar St. Industrial Zone P.O.Box 112 Pardesiya, 42815 Israel T: 972-9-8901901 F: 972-9-8987934
E: info@robomow.mail • www.robomow.eu

Summary of Compliance Status:

FCC Part 15, Subpart C Part 15.249 – Intentional Radiators

Test Spec. Clause	Test Case	Remarks
FCC Part 15, Subpart C – Intentional Radiators, ANSI C63.10: 2013, RSS 210 Issue 9		
§2.1049, RSS GEN section 6.6	Occupied Bandwidth	Pass
§15.249,§15.205 & §15.209& RSS 210 section B.10	Field Strength of Fundamental & Harmonics & Restricted Bands& Outside of Frequency Bands	Pass
47 CFR §15.107/207, ICES-003 RSS-GEN section 8.8	Power Line Emissions measurements Power supply Model PWS0022U	Pass
47 CFR §15.203,RSS- Gen Issue 4	Antenna Connector Requirements	Pass

ACCREDITED Certificate 1633.01 Electrical Testing

Table of Contents

1. General Description

Product name:

FCC ID: 2ABHE-RB-3
IC: 23524-RB3

EUT Description:

BLE Robot Board P/N: ESB9000 is a Bluetooth Low Energy transceiver - SCR chip based module intended to enable robotic lawn mower communicating with external devices.

Frequency Range: 2402-2480 MHz

Antenna Details:2400-2500 MHz,Max = 0.5 dBi ,Chip Antenna,Medel:2450AT18B100

1.1. Worst Case Results:

In order to determine the worst-case emissions for all modes/data rates/tests and EUT's position(three axis- x,y,z), all modes/data rates and position were investigated for each required test to determine which produces the worst- case data and then full testing was performed in that mode/data rate and position.

2. Test Facility & Uncertainty of Measurement

2.1. Accreditation/ Registration reference:

- *A2LA Certificate Number: 1633.01*
- *FCC Registration Number: 102724*
- *Industry Canada File Number: IC4808A-1*
- *VCCI Member no.: 1798 (C3775, R-3404, G-620, T1630)*

2.2. Test Facility description

The tests were performed at the EMC Laboratory, QualiTech Division, ECI Telecom

Address: 30, Hasivim St., Petah Tikva, Israel.
Tel: 972-3-926-6994

3m Anechoic Chamber:

Two 3m-screened chambers are used in two configurations: the semi-anechoic chamber for Radiated Emission measurements and the full-anechoic chamber for Radiated Immunity tests.

Semi Anechoic Configuration:

Measurement distance	3m
Chamber dimensions	9.5m x 6.5m x 5.2m
Antenna height	1 - 4m
Shielding Effectiveness	Magnetic field ≥80dB at 15 kHz ≥90dB at 100 kHz Electric field >120dB from 1MHz to 1GHz >110dB from 1GHz to 10GHz
Absorbing material	Ferrite tiles on the walls and ceiling Emerson and Cuming absorbing material in selected positions on the walls
Normalized Site Attenuation measured at 5 positions	±3.9dB, 30MHz to 200MHz ±3dB, 200MHz to 1000MHz
Transmission Loss measured at 5 positions, at 1.5m height	±3dB, 1GHz to 18GHz

Full-Anechoic Configuration:

Measurement distance	3m
Chamber dimensions	7m x 4m x 3m
Antenna height	1.55m at Horizontal & Vertical polarizations
Shielding Effectiveness	Magnetic field ≥80dB at 15 kHz ≥90dB at 100 kHz Electric field >120dB from 1MHz to 1GHz >110dB from 1GHz to 10GHz
Absorbing material	Ferrite tiles on the walls and ceiling Emerson and Cuming absorbing material in selected positions on the walls and floor
Field Uniformity to EN61000-4-3	±3dB 80MHz to 18GHz

2.3. Uncertainty of Measurement

Test Name	Test Method & Range	Uncertainty	
		Combined std. Uc(y)	Expanded U
Radiated Emission	30MHz to 230MHz, Horiz. polar. 30MHz to 230MHz, Ver. polar. 230MHz to 1000MHz, Horiz. polar. 230MHz to 1000MHz, Vert. polar.	[dB] 1.8 1.967 1.487 1.499	[dB] 3.6 3.934 2.973 2.998
Conducted Emission	9 kHz -150 kHz 150 kHz - 30MHz	[dB] 1.378 1.095	[dB] 2.756 2.190
Radio frequency	Up to 18 GHz	$\pm 1*10^{-6}$	$< \pm 1*10^{-5}$
Total Conducted RF Power	Up to 18 GHz	±1.378 dB	< ±1.5dB
Conducted Power density	Up to 18 GHz	±1.378 dB	< ±3dB
Temperature	23.6 °C	±0.6°C	< ±2°C
Humidity	54.9%	±3.1%	< ±5%
DC Voltage	0-60 VDC	±0.3%	< ±3%

3. Measurements & Test Results:

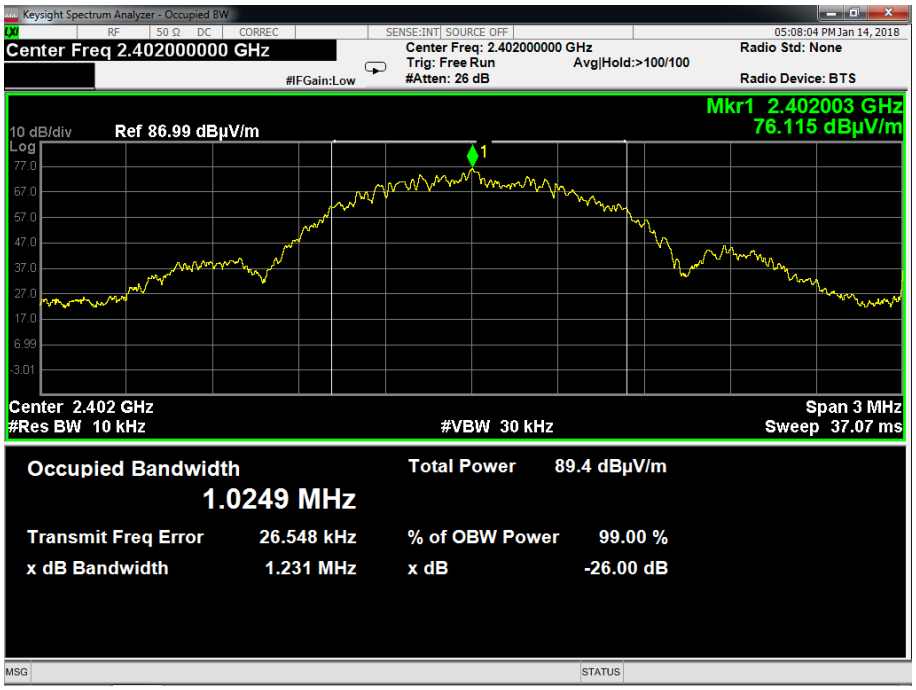
3.1. Occupied Bandwidth

Reference document:	**§2.1049, RSS GEN sec 6.6**		
Test Requirements:	The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.		
Measurement Standard	ANSI C63.10: 2013	**Pass**	
Method of testing:	Conducted		
Operating conditions:	Under normal test conditions		
S.A. Settings:	RBW: 1% to 3% of the 99% bandwidth		
Mode of operation:	Peak Detector Trace Mode : Max Hold		
Environment conditions:	Ambient Temperature: 24°c	Relative Humidity: 59%	Atmospheric Pressure: 1018hPa
Test Result:	See below		

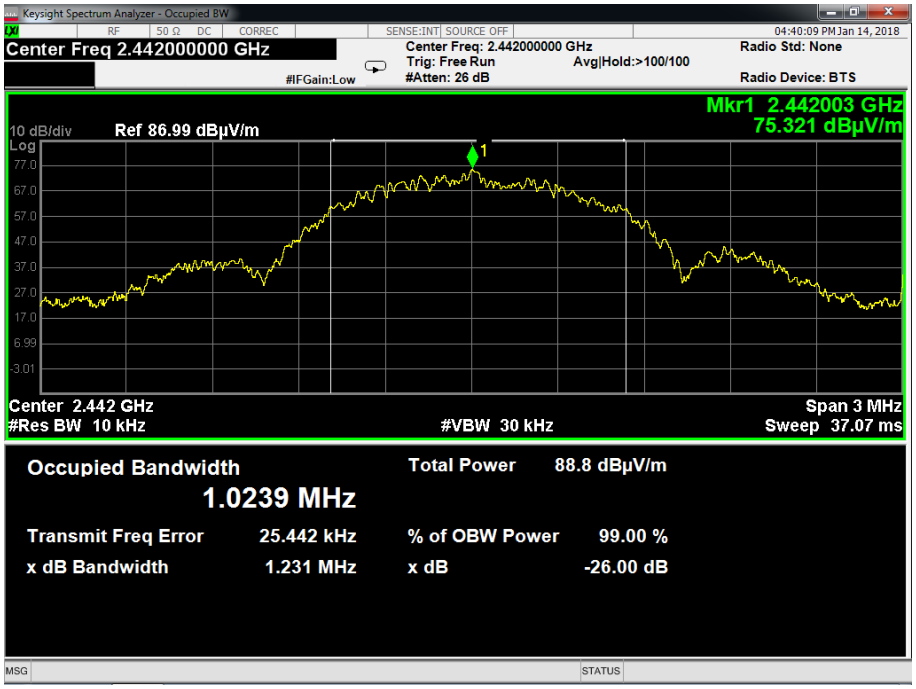
Test results:

Frequency, [MHz]	99% power BW, [MHz]	Lower Frequency, [MHz]	Middle Frequency, [MHz]	Higher Frequency, [MHz]	Limit
2402.00	1.025	2402.003	NA	NA	NA
2442.00	1.024	NA	2442.003	NA	
2480.00	1.019	NA	N.A	2480.003	

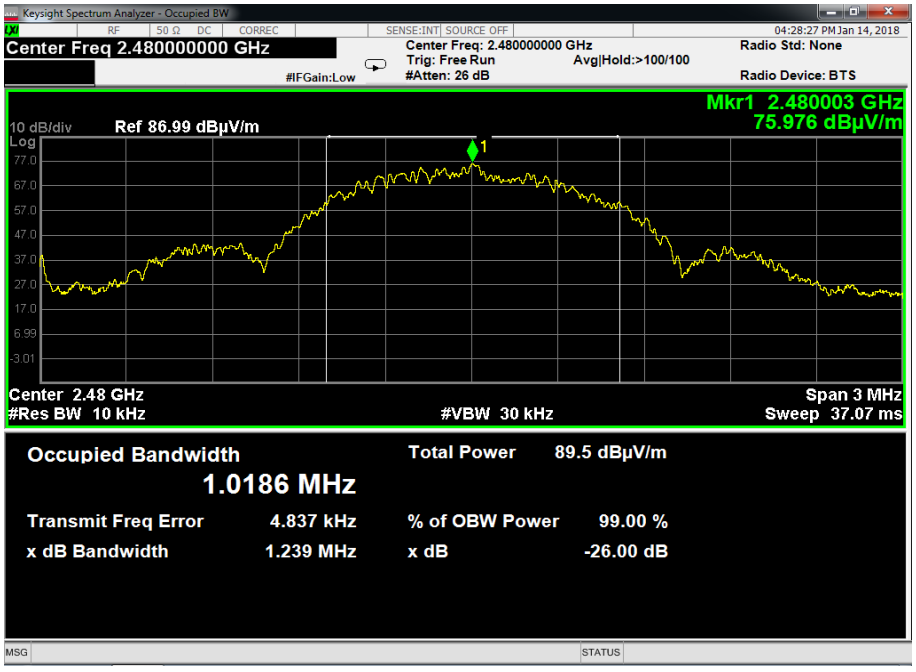
Plot 3.1.1 Occupied Channel Bandwidth test results, F = 2402 MHz



Plot 3.1.2 Occupied Channel Bandwidth test results, F = 2442 MHz



Plot 3.1.3 Occupied Channel Bandwidth test results, F = 2480 MHz



3.2. Field Strength of Fundamental & Harmonics & Restricted Bands& Outside of Frequency Bands

<table>
<tr><td>Reference document:</td><td colspan="3">47 CFR §15.249 (a)(c)(d), 47 CFR §15.205(a), RSS 210 section B.10</td></tr>
<tr><td>Test Requirements:</td><td colspan="3">the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following,in addition emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics & (microvolts/meter)</th></tr>
<tr><td>902-928 MHz</td><td>50</td><td>500</td></tr>
<tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr>
<tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
<tr><td colspan="3">-All other emission limits per § 15.209</td></tr>
</table></td></tr>
<tr><td>Measurement Standard</td><td>ANSI C63.10: 2013</td><td colspan="2" rowspan="3">Pass</td></tr>
<tr><td>Operating conditions:</td><td>Under normal test conditions</td></tr>
<tr><td>Method of testing:</td><td>Radiated</td></tr>
<tr><td>S.A. Settings:</td><td>RBW:1GHz <120kHz, VBW: 300kHz
1GHz >1MHz, VBW: 3MHz</td><td colspan="2"></td></tr>
<tr><td>Environment conditions:</td><td>Ambient Temperature: 23°c</td><td>Relative Humidity:
59%</td><td>Atmospheric Pressure:
1017.4 hPa</td></tr>
<tr><td>Test Result:</td><td>See below</td><td colspan="2">-</td></tr>
</table>

Limit:

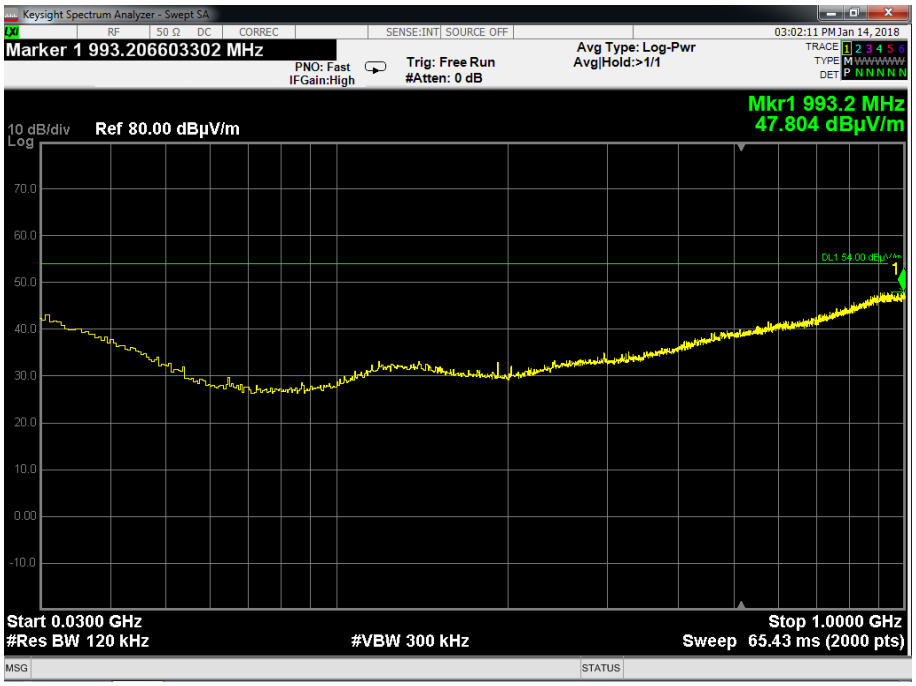
Frequency Range, MHz	Limit	
	Field strength of fundamental , ,Strength@3m, dBµV/m	**Field strength of harmonics Strength@3m, dBµV/m**
902-928 MHz	93.98	53.98
2400-2483.5 MHz	93.98	53.98
5725-5875 MHz	93.98	53.98
24.0-24.25 GHz	107.96	67.96
All other emission limits per § 15.209		

Test Result: RX12– worst case - 120Vac

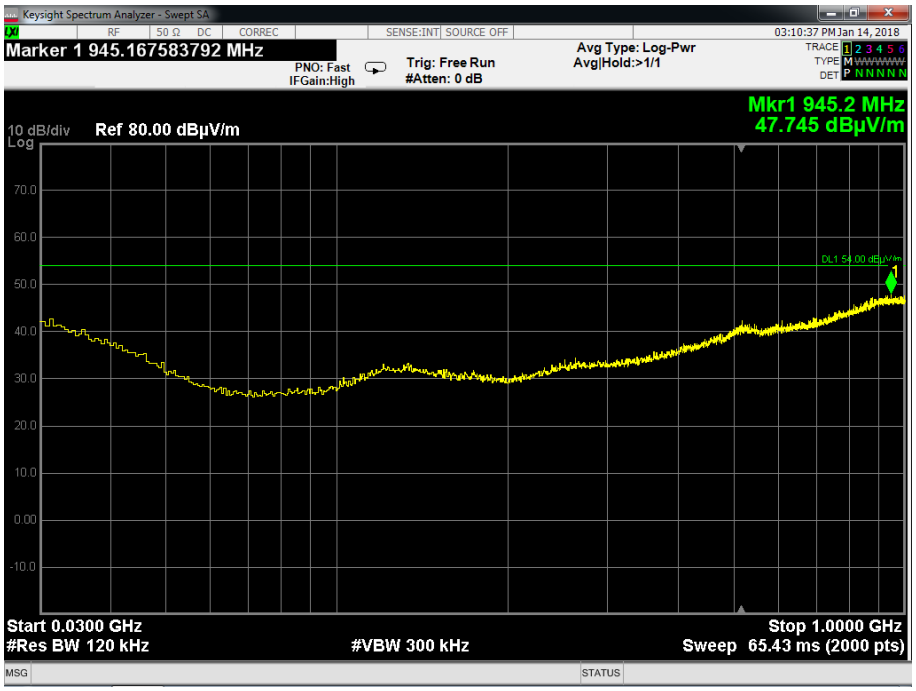
Frequency [MHz]	Antenna polarization	Emission Type	Pk Detector dBµV/m	AV Detector dBµV/m	Pk Limit Detector dBµV/m	AV Limit dBµV/m	*Pk Marge	**AV Marge	Antenna Position [cm]	Turn-table Azimuth [°]	Pass/Fail
Fc - 2402											
993.200	V	Harmonics	-	47.804	-	54.000	-	-6.196	138	166	Pass
2389.71	V	Restricted Bands	47.488	43.776	74.000	54.000	-22.512	-10.224	146	156	Pass
Fc - 2442											
963.600	H	Harmonics	-	48.868	-	54.000	-	-5.132	143	153	Pass
Fc - 2480											
997.600	V	Harmonics	-	46.410	-	54.000	-	-7.590	144	161	Pass
2483.550	V	Restricted Bands	58.409	49.843	74.000	54.000	-15.591	-4.157	147	162	Pass
2402.279	V	fundamental	92.148	-		93.98		-1.850	145	163	Pass
2442.247	V	fundamental	91.698	-		93.98		-2.300	141	78	Pass
2479.787	V	fundamental	88.675	-		93.98		-5.323	138	157	Pass

* Compared to Pk Limit which is the worst case scenario
** Compared to AV Limit which is the worst case scenario

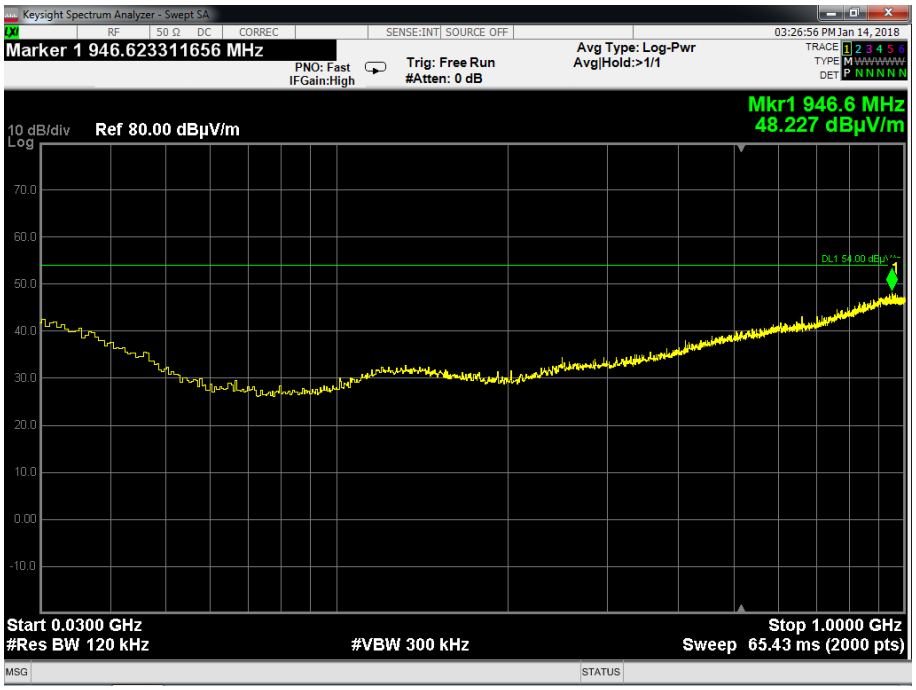
Full testing on worst case unit
Plot 3.2.1: Radiated Emissions test, Vertical Polarization, Tx Modulated, 30MHz-1GHz , Cannel 0- Fc -2402, RX12



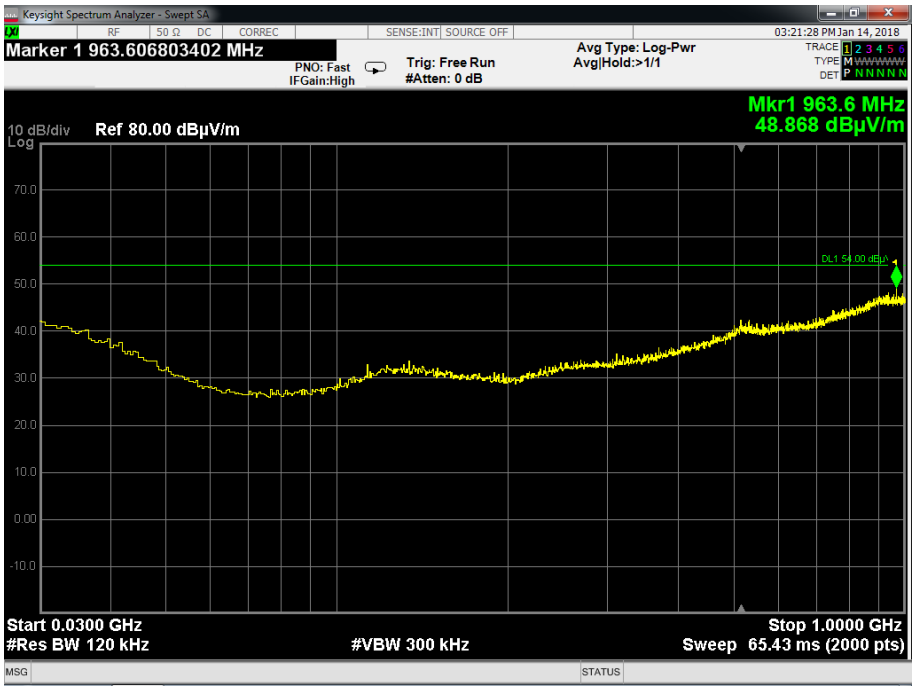
Plot 3.2.2: Radiated Emissions test, Horizontal Polarization, Tx Modulated, 30MHz-1GHz Cannel 0- Fc -2402, RX12



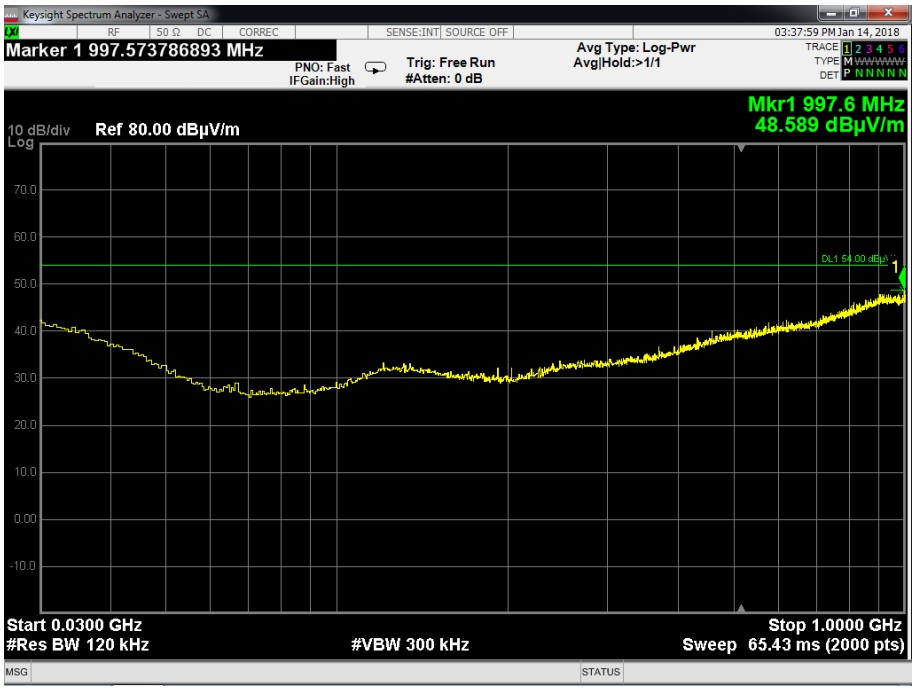
Plot 3.2.3: Radiated Emissions test, Vertical Polarization, Tx Modulated, 30MHz-1GHz Cannel 20- Fc -2442, RX12



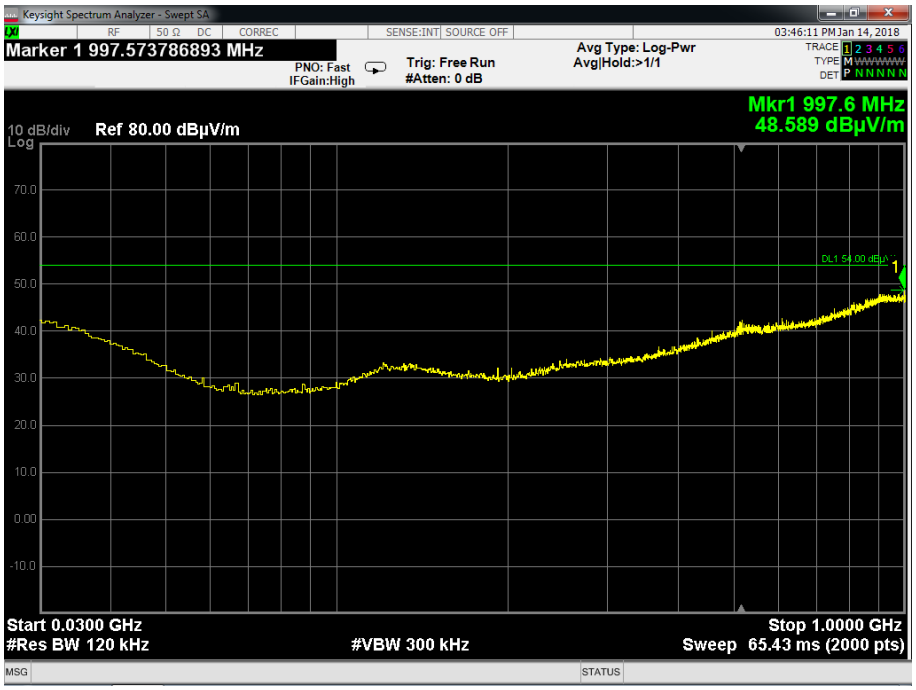
Plot 3.2.4: Radiated Emissions test, Horizontal Polarization, Tx Modulated, 30MHz-1GHz Cannel 20- Fc -2442, RX12



Plot 3.2.5: Radiated Emissions test, Vertical Polarization, Tx Modulated, 30MHz-1GHz , Cannel 39- Fc -2480, RX12



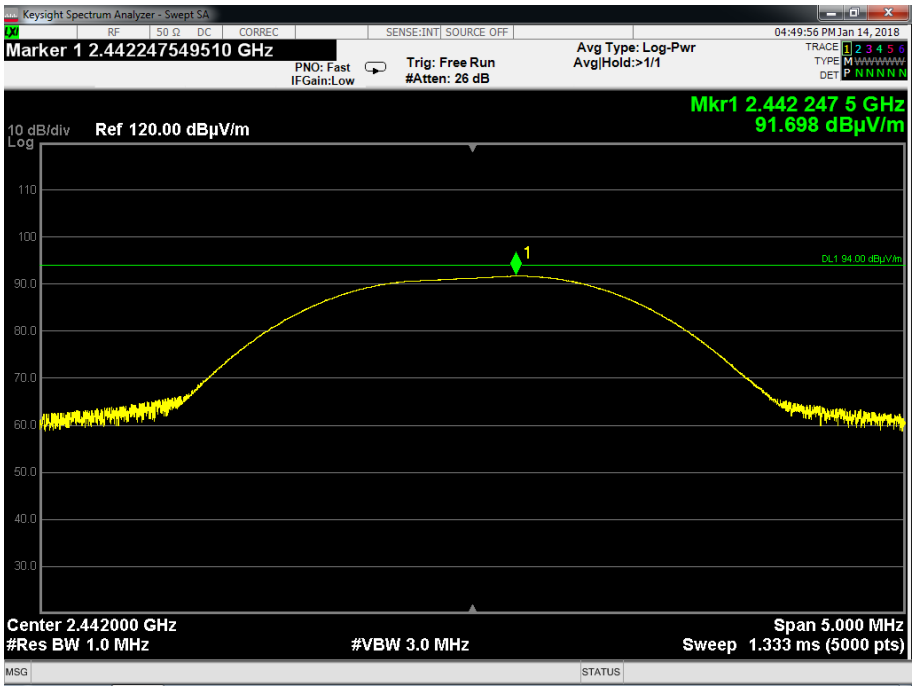
Plot 3.2.6: Radiated Emissions test, Horizontal Polarization, Tx Modulated, 30MHz-1GHz Cannel 39- Fc -2480, RX12



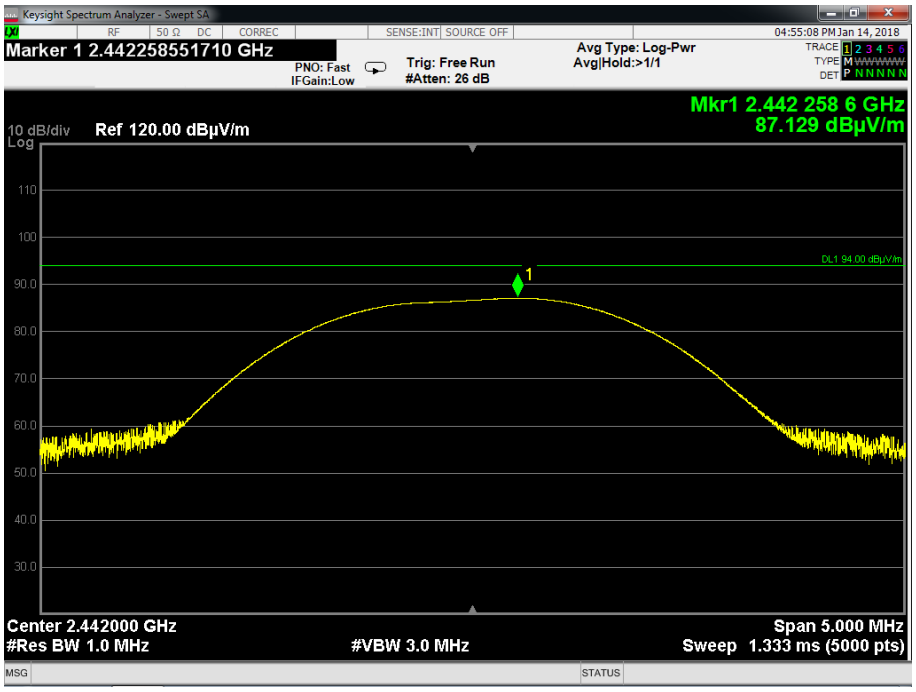
Plot 3.2.7: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of fundamental, Cannel 0- Fc -2402, RX12

Plot 3.2.8: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of fundamental, Cannel 0- Fc -2402, RX12

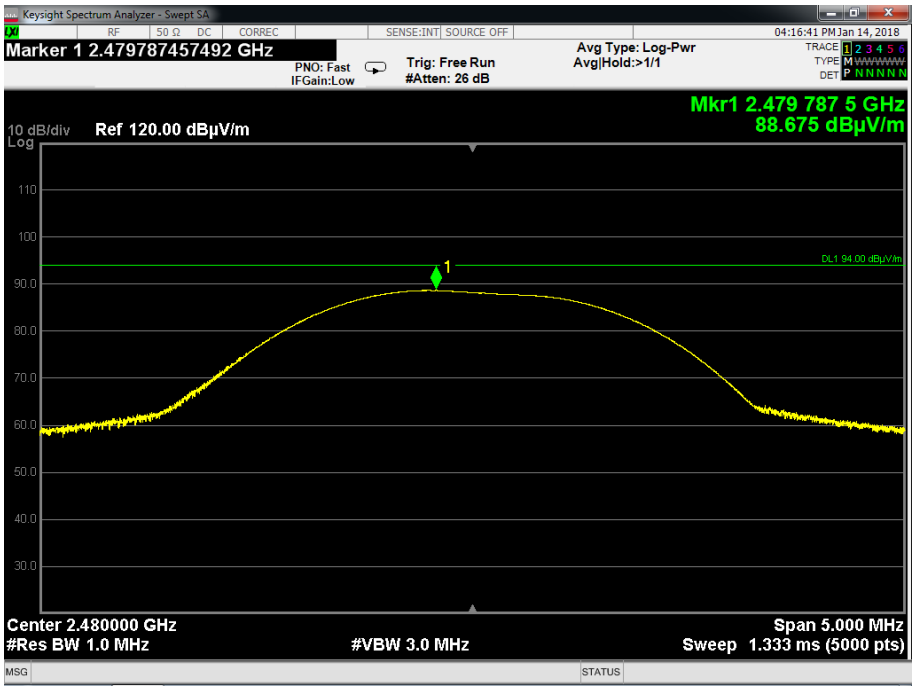
Plot 3.2.9: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of fundamental, Cannel 20- Fc -2442, RX12



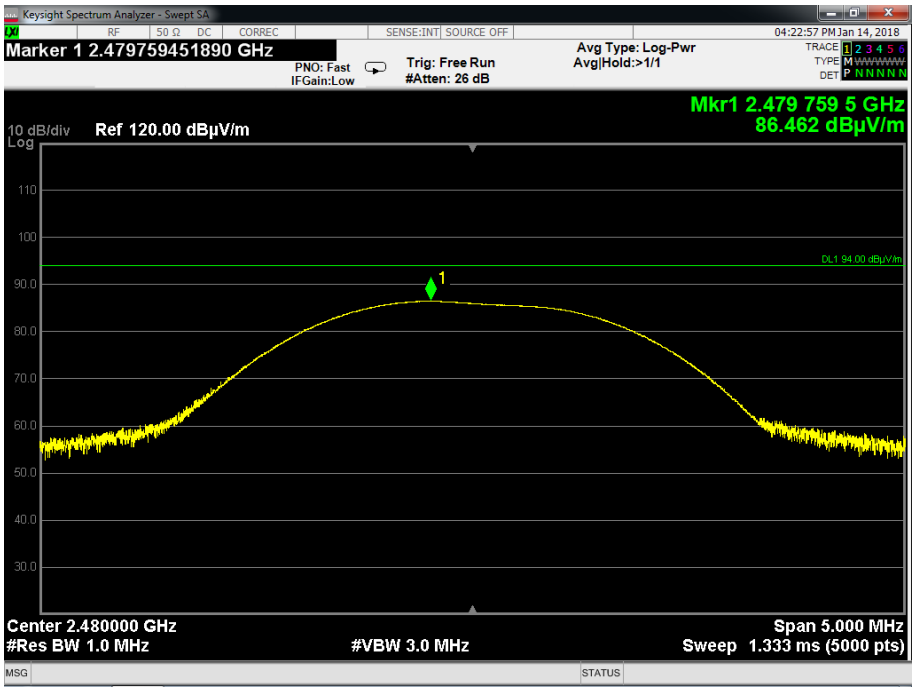
Plot 3.2.10: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of fundamental, Cannel 20 - Fc -2442, RX12



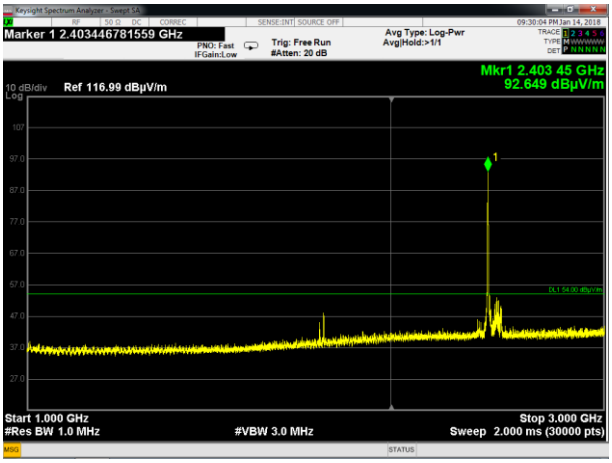
Plot 3.2.11: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of fundamental, Cannel 39- Fc -2480, RX12

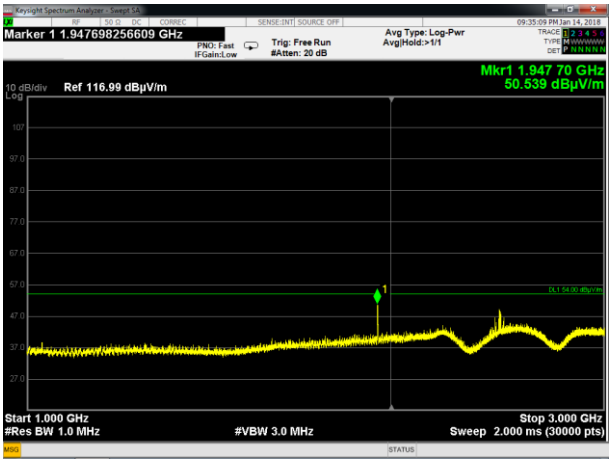


Plot 3.2.13: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of fundamental, Cannel 39- Fc -2480, RX12

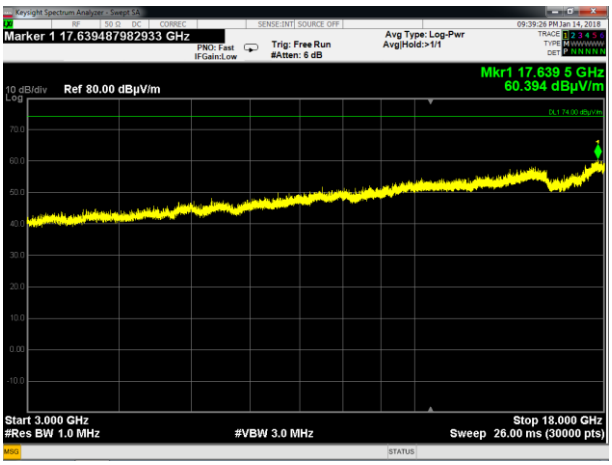


Plot 3.2.14: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 0 - Fc -2402, RX12, 1GHz -18GHz

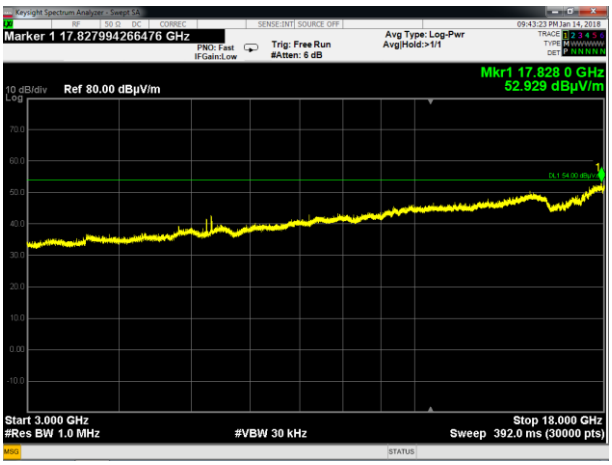




With Notch Filter 50702



PE



AV

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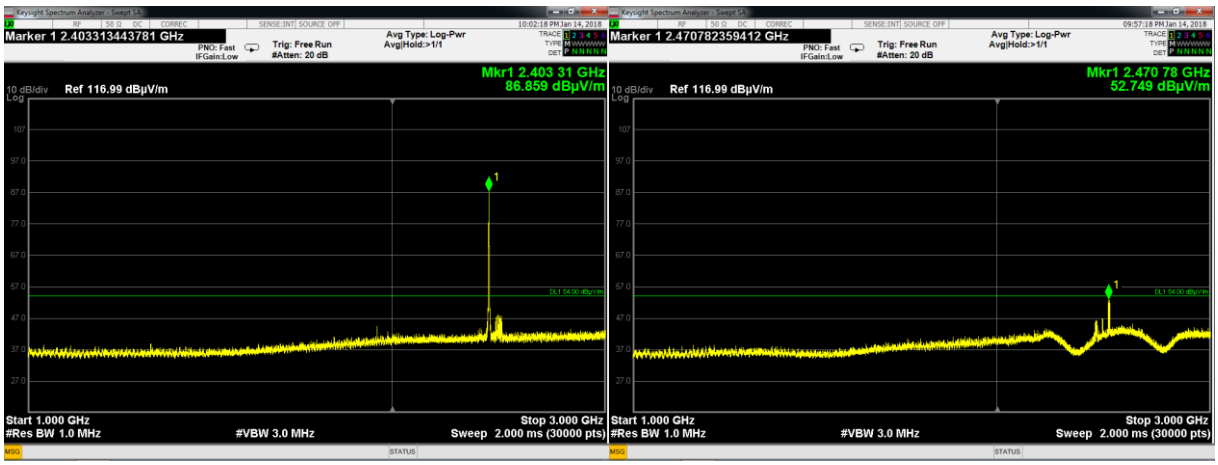
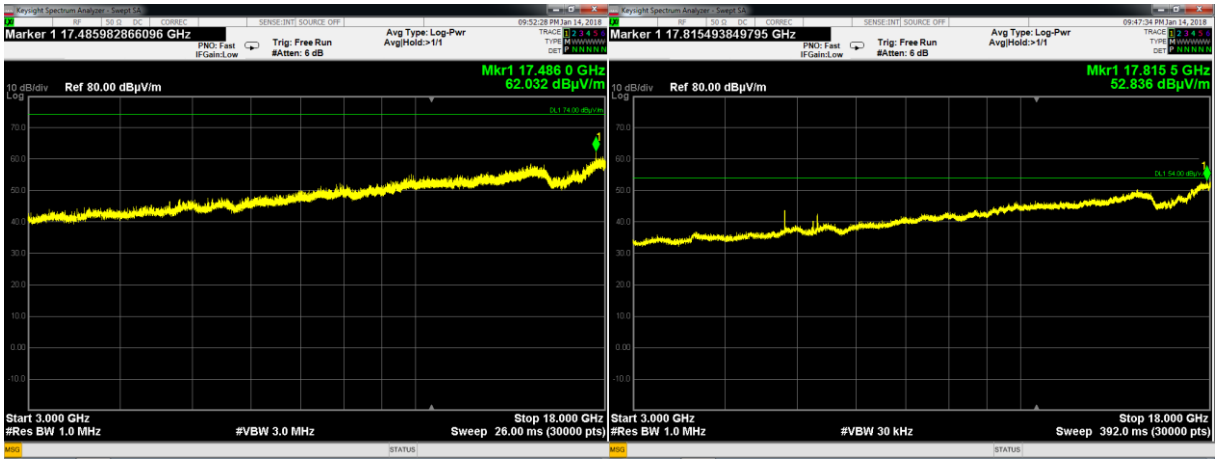
Plot 3.2.15: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 0 - Fc -2402, RX12, 1GHz -18GHz



With Notch Filter 50702



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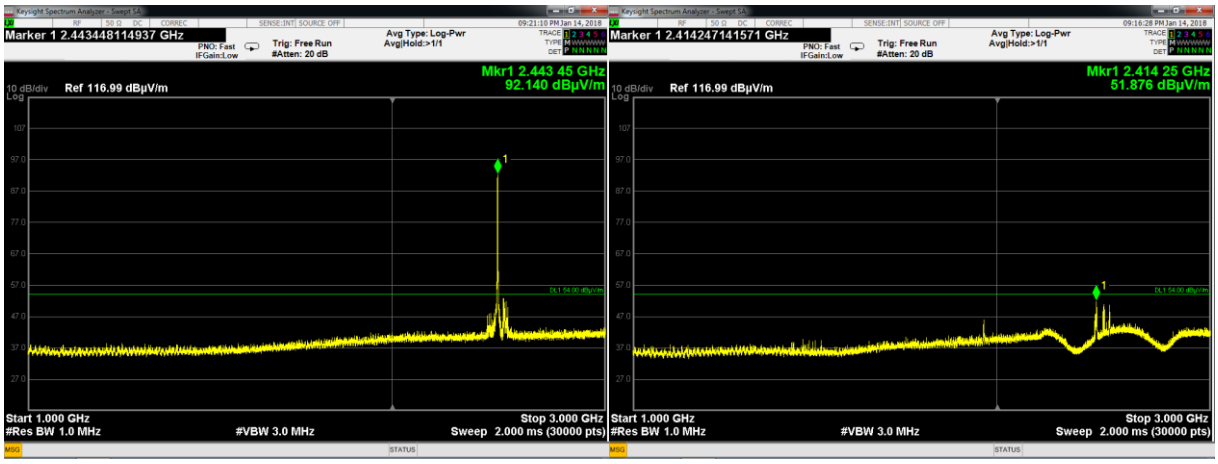
With Notch Filter 50702

Plot 3.2.16: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 20 - Fc -2442, RX12, 1GHz -18GHz



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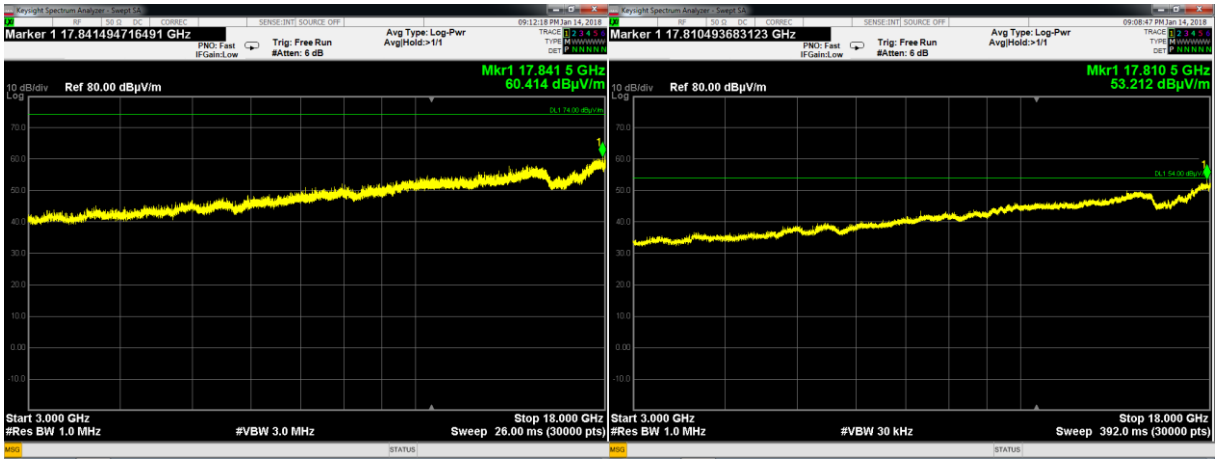

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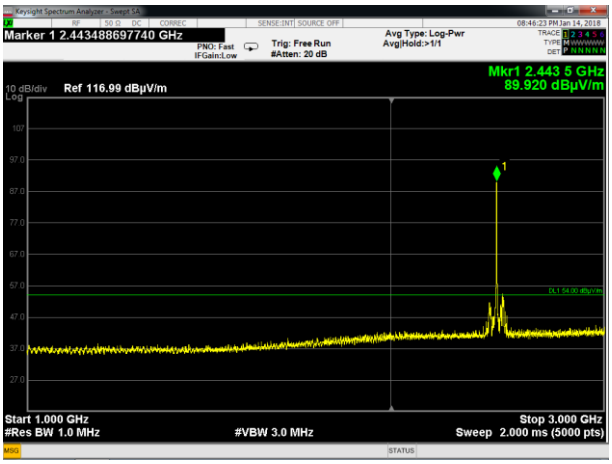
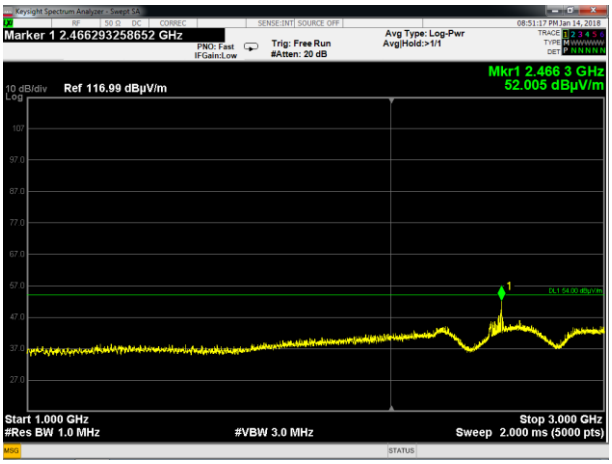
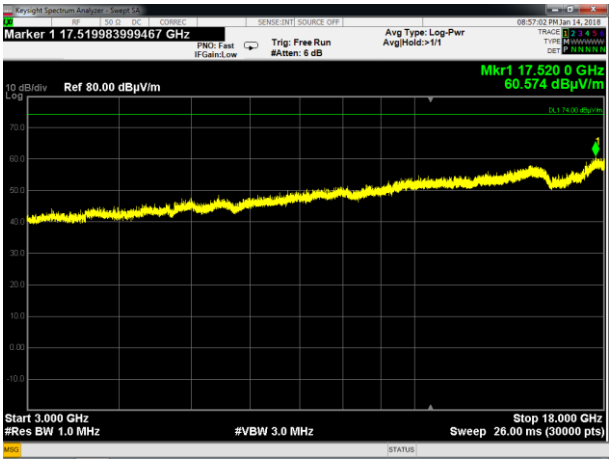
Plot 3.2.17: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 20 - Fc -2442, RX12, 1GHz -18GHz





With Notch Filter 50702



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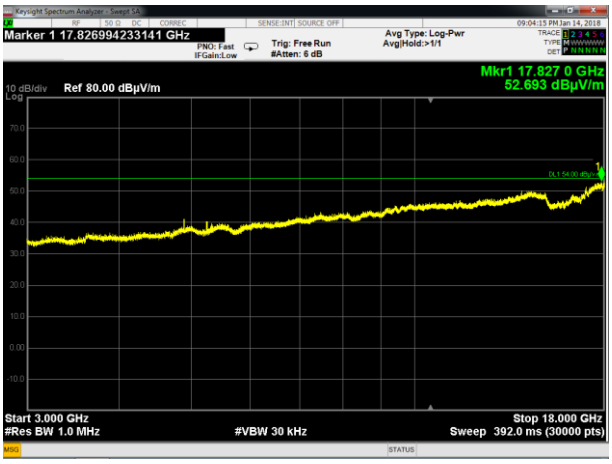
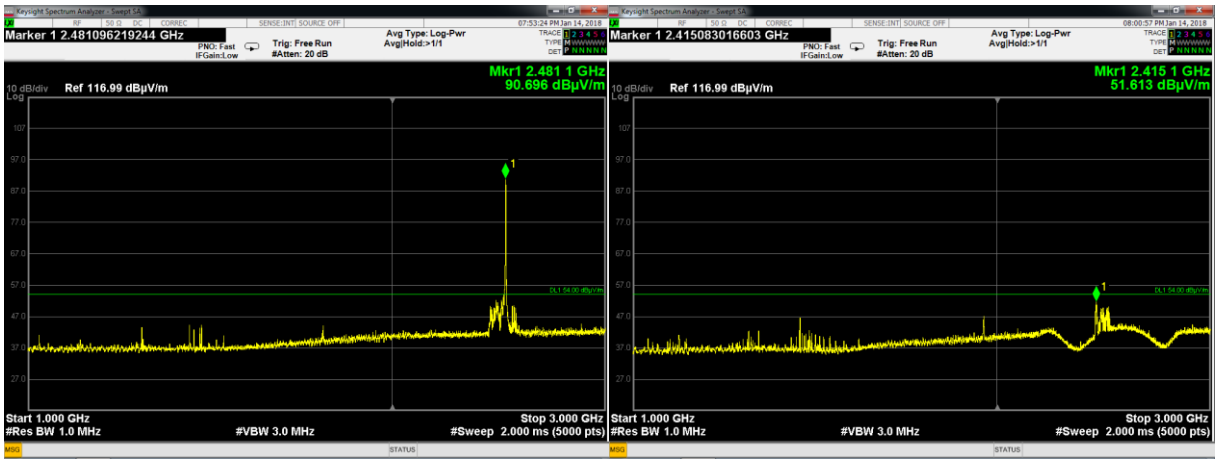


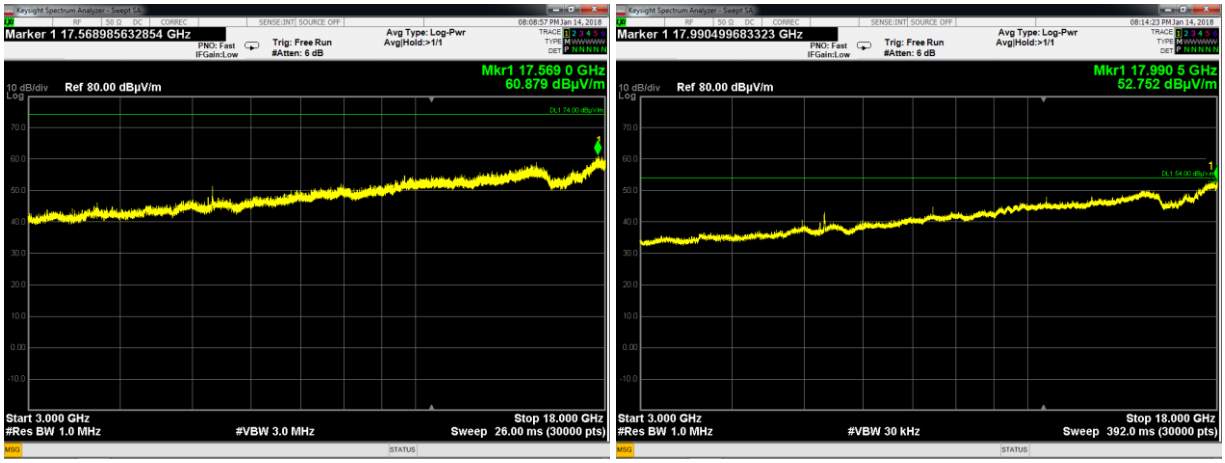
AV

With Notch Filter

Plot 3.2.18: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 39- Fc -2480, RX12,1GHz -18GHz



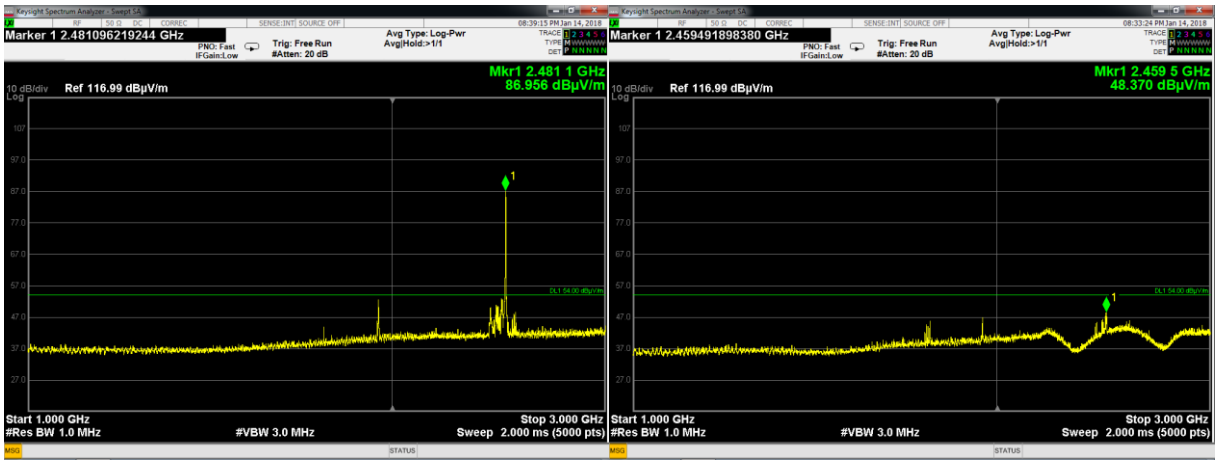
With Notch Filter 50702



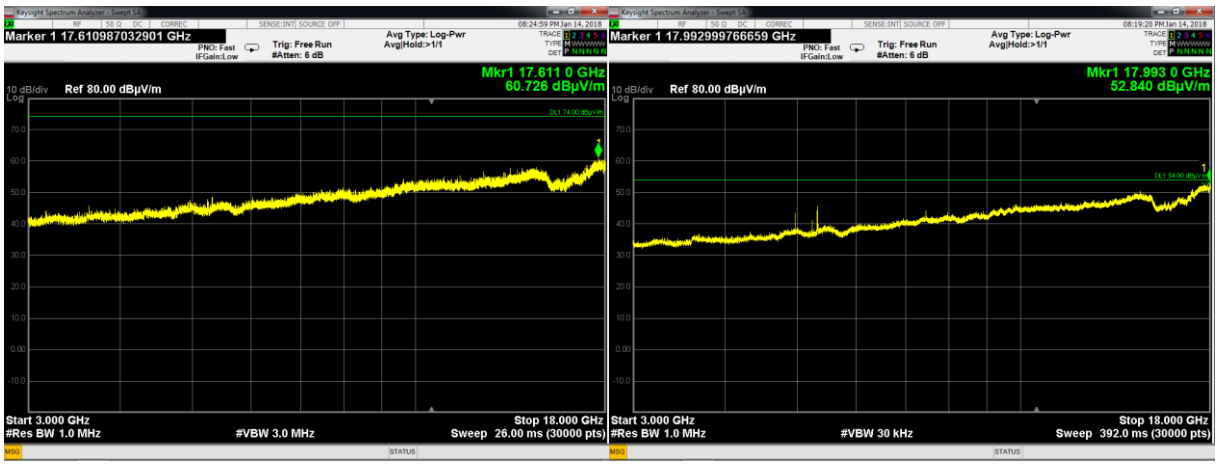
PE AV

With Notch Filter 50702

Plot 3.2.19: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 39- Fc -2480, RX12, 1GHz -18GHz



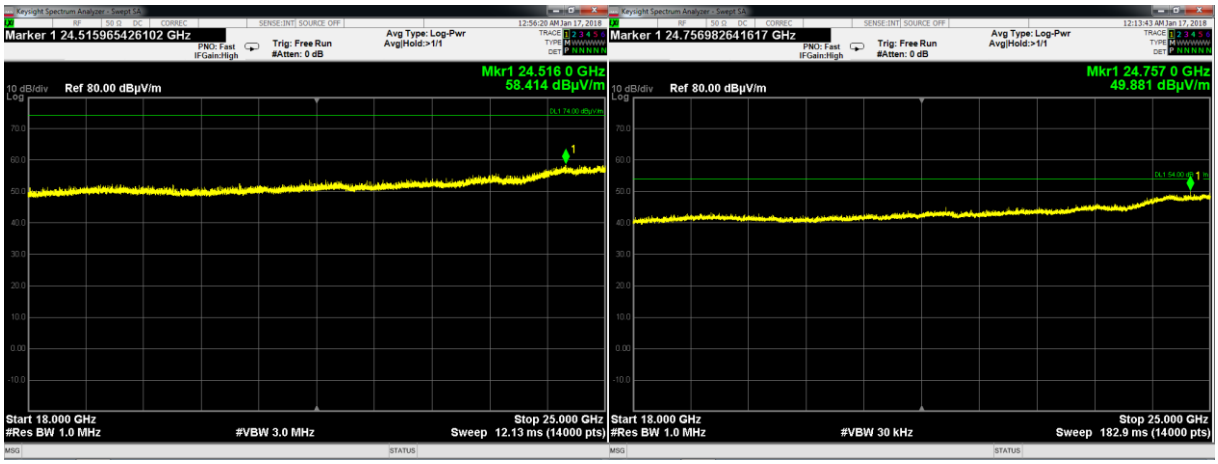
With Notch Filter 50702



PE AV

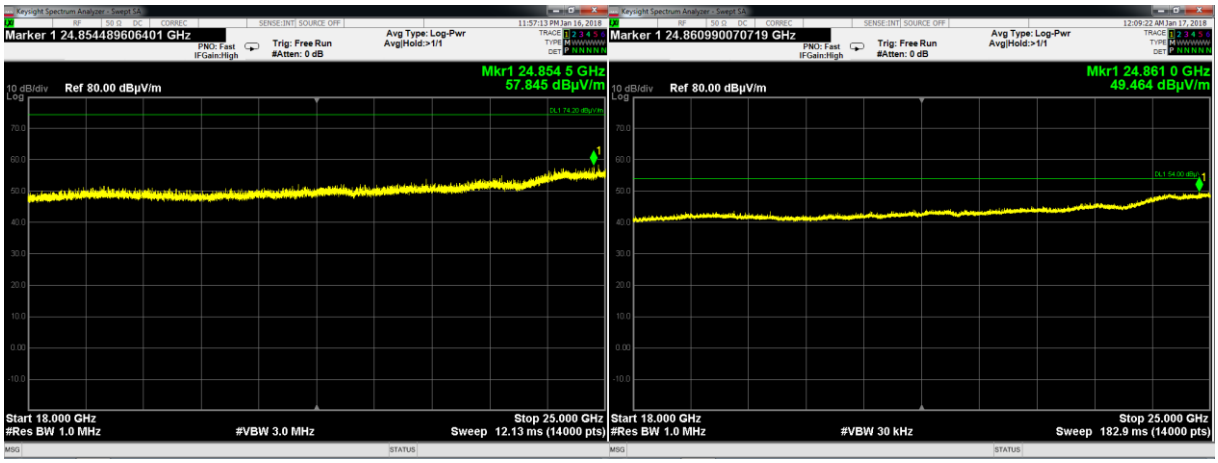
With Notch Filter

Plot 3.2.20: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 0 - Fc -2402, RX12, 18GHz -25GHz



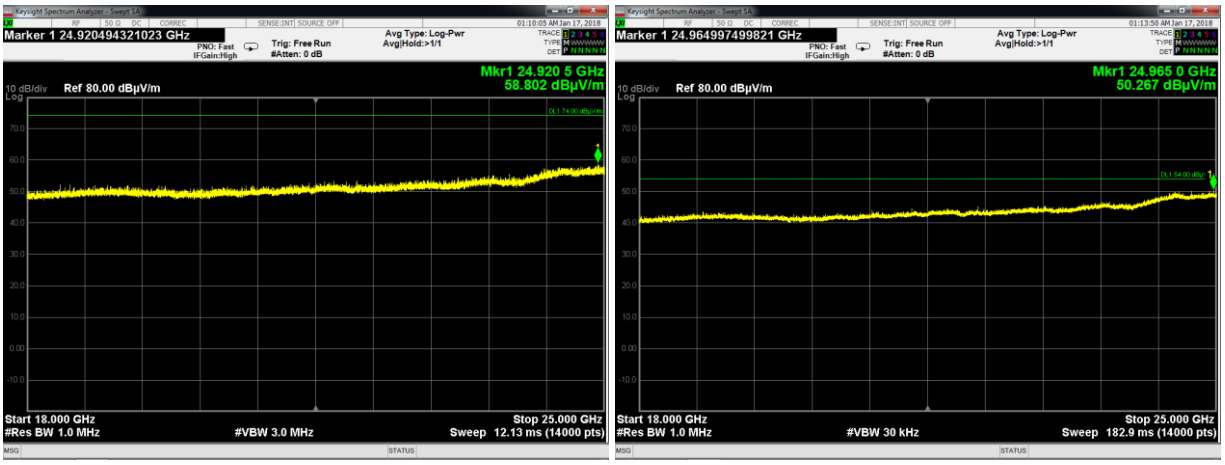
PE **AV**

Plot 3.2.21: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 0 - Fc -2402, RX12, 18GHz -25GHz



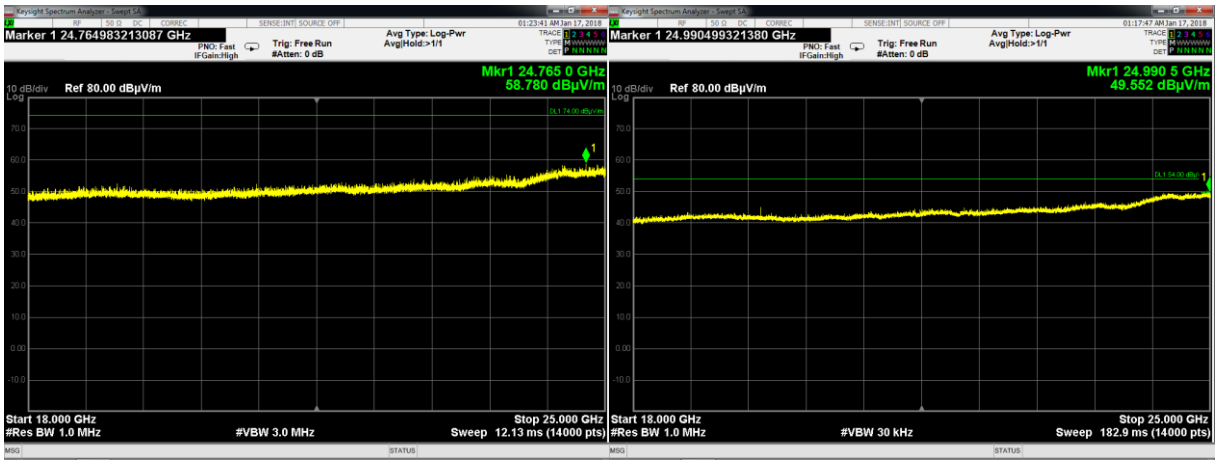
PE **AV**

Plot 3.2.22: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 20 - Fc -2442, RX12, 18GHz -25GHz



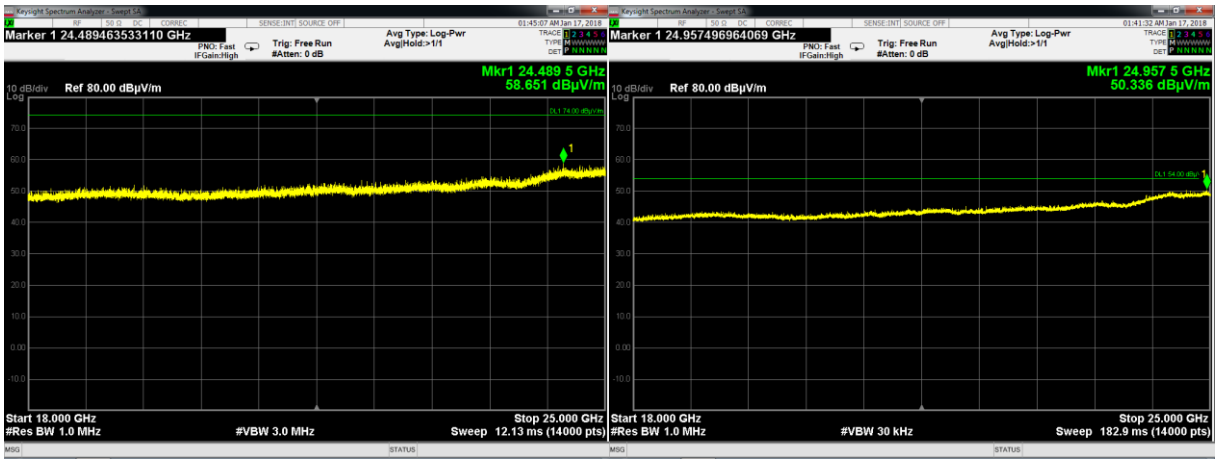
PE **AV**

Plot 3.2.23: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 20 - Fc -2442, RX12, 18GHz -25GHz



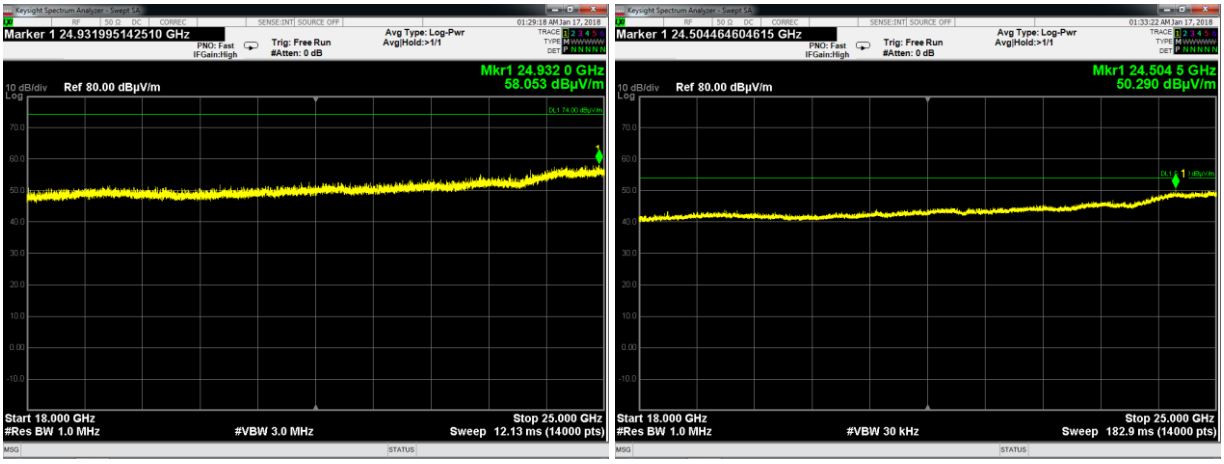
PE **AV**

Plot 3.2.24: Radiated Emissions test, Vertical Polarization, Tx Modulated, Field strength of harmonics, Cannel 39- Fc -2480, RX12, 18GHz -25GHz



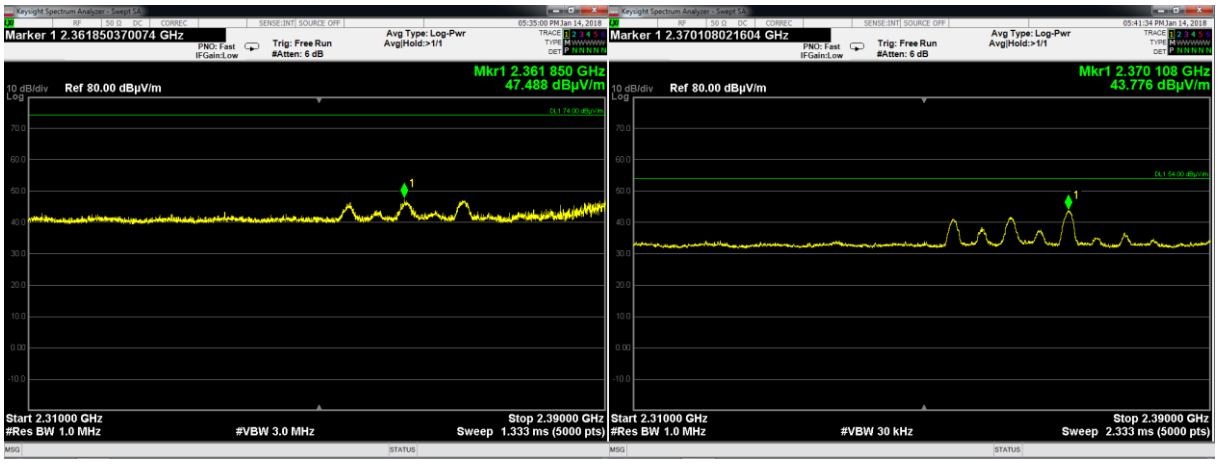
PE **AV**

Plot 3.2.25: Radiated Emissions test, Horizontal Polarization, Tx Modulated, Field strength of harmonics, Cannel 39- Fc -2480, RX12, 18GHz -25GHz



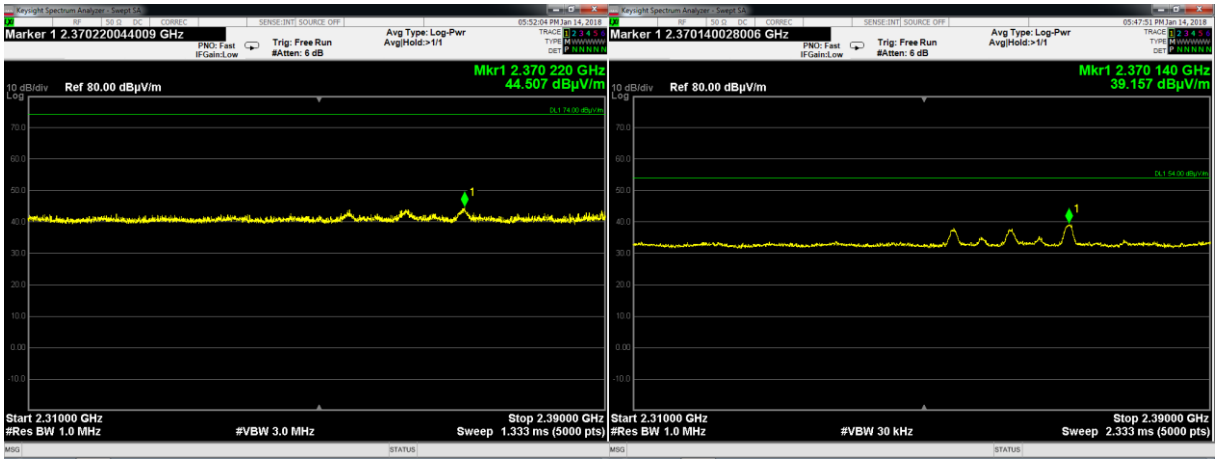
PE **AV**

Restricted Bands according to §15.205(a) and § 15.209.
Plot 3.2.26: Radiated Emissions test, Vertical Polarization, Tx Modulated, 2310MHz-2390MHz, Cannel 0- Fc -2402, RX12



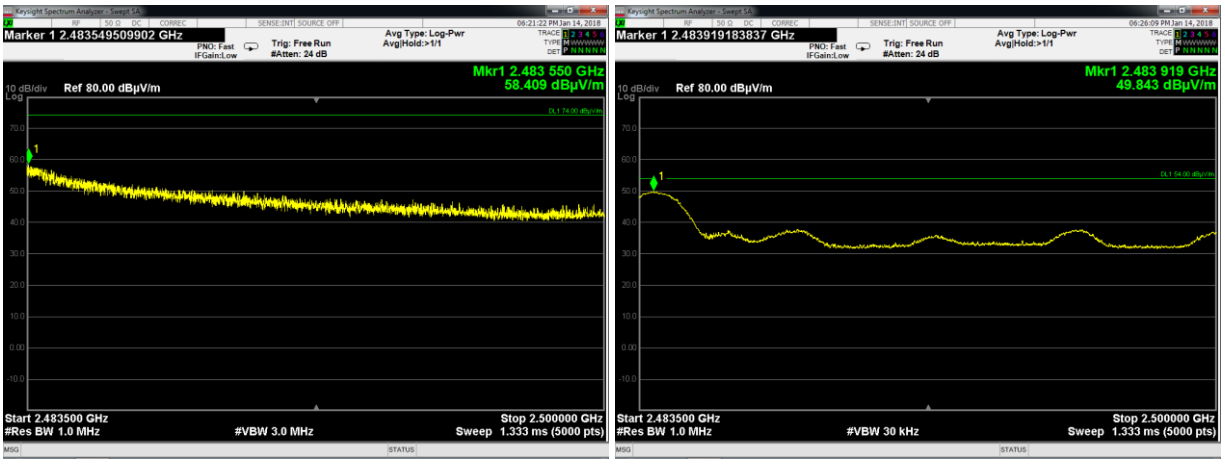
PE **AV**

Plot 3.2.27: Radiated Emissions test, Horizontal Polarization, Tx Modulated, 2310MHz-2390MHz, Fc -2402, RX12



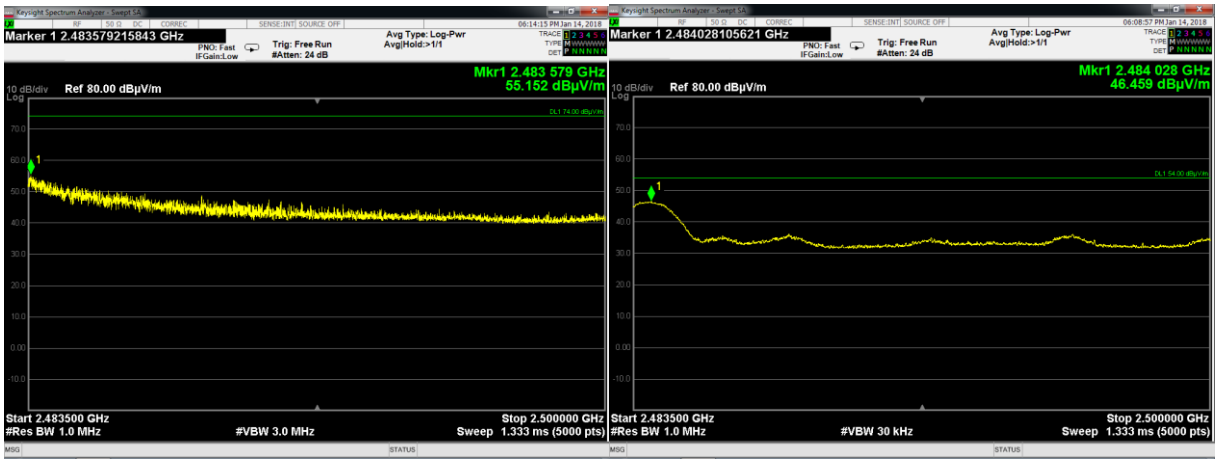
PE **AV**

Plot 3.2.28: Radiated Emissions test, Vertical Polarization, Tx Modulated, 2483.50MHz-2500MHz, Cannel 39- Fc -2480, RX12



PE AV

Plot 3.2.29: Radiated Emissions test, Horizontal Polarization, Tx Modulated, 2483.5MHz-2500MHz, Fc -2480, RX12



PE AV

3.3. Power Line Emissions measurements

Reference document:	**47 CFR §15.207, RSS-GEN section 8.8**		
Test Requirements:	The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in §15.107. The emissions from an intentional radiator shall not exceed the field strength levels specified in §15.207. Any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Sec.15.207.		
Measurement Standard	ANSI C63.10: 2013	**Pass**	
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted Emissions		
S.A. Settings:	f <30MHz: RBW: 9kHz, VBW:30kHz		
Radio device:	Idle		
Environment conditions:	Ambient Temperature: 23.2°c	Relative Humidity: 48.1%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below		

Test Results: 110 VAC Power supply Model PWS0022U

"Phase" Lead

Frequency (MHz)	Peak (dBuV)	QP (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AVG (dBuV)	AVG Limit (dBuV)	AVG Margin (dBuV)
0.180	51.8	47.8	65.2	-17.3	26.5	55.2	-28.7
0.322	45.3	41.8	61.1	-19.3	24.7	51.1	-26.3
0.449	39.1	34.6	57.5	-22.9	21.9	47.5	-25.6
1.183	31.8	25.1	56.0	-30.9	16.0	46.0	-30.0
2.204	33.6	26.5	56.0	-29.5	16.6	46.0	-29.4
10.537	40.2	31.2	60.0	-28.8	19.4	50.0	-30.6

"Neutral" Lead

Frequency (MHz)	Peak (dBuV)	QP (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AVG (dBuV)	AVG Limit (dBuV)	AVG Margin (dBuV)
0.245	26.6	20.8	63.3	-42.5	15.2	53.3	-38.1
0.587	27.0	21.1	56.0	-34.9	15.3	46.0	-30.7
17.422	27.7	22.0	60.0	-38.0	16.4	50.0	-33.6
19.656	28.4	22.1	60.0	-37.9	16.4	50.0	-33.6
22.326	27.9	22.1	60.0	-37.9	16.3	50.0	-33.7
26.916	28.4	22.5	60.0	-37.5	16.9	50.0	-33.1

Measured at the Power supply 110VAC port

Plot 3.3.1: Phase Lead

Plot 3.3.2: Neutral Lead

3.4. Antenna Connector Requirements

Reference document:	**47 CFR §15.203 RSS- Gen Issue 4**	
Test Requirements:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with provisions of this section.	
Measurement Standard	ANSI C63.10: 2013	**Pass**
Test Result:	The EUT had integral antenna.	

4. Appendix

Appendix A: List of Measuring Equipment used:

Description	Manufacturer	Model	Serial No.	Last Cal	Cal Due
Oscilloscope	Keysight Technologies	DSOX1102G	CN57096496	3/6/2017	3/6/2018
Oscilloscope	Keysight Technologies	DSOX1102G	CN57126605	3/14/2017	3/14/2018
Oscilloscope	Keysight Technologies	DSOX1102G	126530	3/15/2017	3/15/2018
RF Filter Section (6.5GHz)	HP	85460A	3704A00366	4/9/2017	4/9/2018
EMI Receiver (6.5GHz)	HP	8546A	3710A00392	4/9/2017	4/9/2018
Environmental Test Chamber	TENNEY ENGINEERING	TTRS	10.158-5	8/6/2017	8/6/2018
RF Filter Section (2.9GHz)	HP	85460A	3448A00282	6/15/2017	6/15/2018
EMI Receiver (2.9GHz)	HP	8546A	3617A00318	6/15/2017	6/15/2018
Low-Noise Amplifier 18GHz - 26.5 GHz	Spacek Labs	SL1018-56-5	17J29	9/29/2017	9/29/2018
Spectrum Analyzer 9KHz-22GHz	Agilent/HP	8593EM	3536A00131	9/27/2017	9/27/2019
Signal Generator	Agilent	83732B	US37101834	10/17/2017	10/17/2018
Spectrum Analyzer (9KHz-3.6GHz)	Agilent	N9010A	MY50060093	9/27/2017	9/27/2018
EMC Analyzer	Agilent	E7405A	US41160436	9/27/2017	9/27/2018
Horn Antenna 15-40 GHz	Schwarzbeck	BBHA 9170	BBHA9170214	3/6/2015	3/6/2018
E-Field Monitor	Amplifier Research	FM5004	22107	4/18/2017	4/18/2018
E-Field Probe (10KHz-1000MHz)	Amplifier Research	FP5000	22121	4/18/2017	4/18/2018
Horn Antenna (EMM) 1-18GHz	A.R.A	DRG-118/A	17188	8/15/2017	8/15/2018
Isotropic Probe (10MHz-40GHz)	ETS-Lindgren	HI-6153	168752	11/19/2017	11/19/2018
Biconical Antenna 20 –200 MHz	Seibersdorf	PBA320	301	1/30/2017	1/30/2020
Biconical Antenna	Seibersdorf	PBA320	302	1/30/2017	1/30/2020
Log periodic Antenna 180MHz to 4GHz	Schwarzbeck	VUL9118-A	348	5/19/2016	5/19/2019
Log periodic Antenna 180MHz to 4GHz	Schwarzbeck	VUL9118-A	349	5/19/2016	5/19/2019
Log periodic Antenna 200MHz – 2GHz	Schwarzbeck	VUSLP 9111	9111184	5/19/2016	5/19/2019
Horn Antenna (for IMM) 1-18GHz	EMCO	3115	9602-4677	7/6/2016	7/6/2019
PSG analog signal generator 250KHz-40GHz	Agilent	E8257D	MY49280547	3/20/2016	3/20/2018
Spectrum Analyzer 3Hz-44GHz	Agilent	E4446A	MY46180602	12/16/2016	12/16/2018
Dipole Antenna	AH. Systems Inc.	FCC-1	519	2/2/2015	2/2/2018
Dipole Antenna	AH. Systems Inc.	FCC-2	519	2/2/2015	2/2/2018
Dipole Antenna	AH. Systems Inc.	FCC-3	519	2/2/2015	2/2/2018
Dipole Antenna	AH. Systems Inc.	FCC-4	519	2/2/2015	2/2/2018
Anechoic new (large) chamber	-----	-----	-----	3/10/2016	3/10/2018
LNA 1-18GHz (New)	Spacek Labs	SL1018-56-5	17J29	1/4/2018	1/4/2019
Low-Noise Amplifier 18GHz - 26.5GHz	MITEQ	AMF-7D-00182650-30-10P	45372	1/4/2018	1/4/2019
Universal Telecom ISN	FCC	F-071115-1057-1	20616	5/25/2017	5/25/2020

Appendix B: Accreditation Certificate

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

QUALITECH

Petah-Tikva, Israel

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 28th day of June 2016.

Senior Director of Quality and Communications
For the Accreditation Council
Certificate Number 1633.01
Valid to June 30, 2018

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

End of the Test Report