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## FCC PART 15.247 TEST REPORT

### DIGITAL SPREAD SPECTRUM

<b>Applicant</b>	ONE WORLD TECHNOLOGIES, INC
<b>Address</b>	1428 PEARMAN DAIRY ROAD
	ANDERSON SOUTH CAROLINA 29625 USA
<b>FCC ID</b>	VMZES5
<b>Model Number</b>	ES5000
<b>Product Description</b>	INSPECTION SCOPE RADIO WITH WI FI
<b>Date Sample Received</b>	8/6/2014
<b>Date Tested</b>	August 7 to 12 <sup>th</sup> , 2014
<b>Tested By</b>	Mario de Aranzeta
<b>Approved By</b>	Sid Sanders
<b>Report Number</b>	1380AUT14TestReport.docx
<b>Issue Date:</b>	August 11 <sup>th</sup> 2014
<b>Total Pages:</b>	49
<b>Test Results</b>	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.

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## GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results relate only to the items tested.

## Summary

The device under test does:

- ☒ fulfill the general approval requirements as identified in this test report  
☐ not fulfill the general approval requirements as identified in this test report

## Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025: 2005 requirements.

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.  
849 NW State Road 45  
Newberry, FL 32669



## Authorized Signatory Name:

Mario R. de Aranzeta  
Engineering Project Manager

**Date:** August 2014

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APPLICANT: ONE WORLD TECHNOLOGIES, INC  
FCC ID: VMZES5  
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## GENERAL INFORMATION

### DUT Specification

<b>Applicable Standard</b>	Part 15.247		
<b>DUT Description</b>	INSPECTION SCOPE RADIO WITH WI FI		
<b>FCC ID</b>	VMZES5		
<b>Operating Frequency</b>	TX: 2437 MHz		
<b>Number of channels</b>	1		
<b>Modulation:</b>	OFDM /802.11 g, n		
<b>DUT Power Source</b>	<input type="checkbox"/> 110–120Vac/50– 60Hz		
	<input type="checkbox"/> DC Power		
	<input checked="" type="checkbox"/> Battery Operated Exclusively		
<b>Test Item</b>	<input type="checkbox"/> Prototype	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Production
<b>Type of Equipment</b>	<input type="checkbox"/> Fixed	<input type="checkbox"/> Mobile	<input checked="" type="checkbox"/> Portable
<b>Antenna Connector</b>	None		
<b>Antenna</b>	Integral PCB antenna <2 dBi		
<b>Test Facility</b>	Timco Engineering Inc. 849 NW State Road 45 Newberry, FL 32669 USA.		
<b>Test Conditions</b>	Temperature: 26°C Relative humidity: 50%		
<b>Test Exercise</b>	The DUT was placed in continuous transmit mode of operation.		

The device is a handheld inspection video scope utilizing a WIFI transceiver which uses only modes 802.11 g and n to communicate to a smart phone. The WIFI transmitter is locked to using only 1 transmit channel 2437 MHz.

### Test Supporting Equipment

Supporting Device	Manufacturer	Model / FCC ID	Serial Number
N/A			

### TEST RESULTS SUMMARY

Specification – Rules Part No.	RESULTS Pass/Fail/NA
Radiated Emissions - FCC Rules 15.247, 15.209	Pass
Power Line Conducted Emissions – FCC Rules 15.207	NA
Occupied Bandwidth – FCC Rules 15.247 (a)(2)	Pass
Power Output – FCC Rules 15.247 (b)	Pass
Spurious Emissions at Antenna Terminals – FCC Rules 15.247(c)	Pass
Radiated Spurious Emissions Into Adjacent Restricted Band – FCC Rules 15.205	Pass
Power Spectral Density – FCC Rules 15.247(d)	Pass

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## TEST PROCEDURES

**Radiation Interference:** ANSI C63.4-2003 using a spectrum analyzer, a preselector, a quasi-peak adapter, and an appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz with an appropriate sweep speed and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worst case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

**Formula Of Conversion Factors:** The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+ CL	= FS
33	20 dBμV	+ 10.36 dB	+ 0.5	= 30.86 dBμV/m @ 3m

**Power Line Conducted Interference:** The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

**Occupied Bandwidth:** A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was captured. The vertical scale is set to -10 dBm per division.

**Bandwidth 6.0dB:** The measurements were made with the spectrum analyzer's using the procedures outlined in kdb 558074 dated 6/2014.

**Power Output:** The RF power output was measured at the antenna feed point using a spectrum analyzer.

**Antenna Conducted Emissions:** The RBW=100 kHz, VBW=300 kHz and the span set to 10 MHz and the spectrum was scanned from 30 MHz to the 10<sup>th</sup> Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

**ANSI C63.4-2003 10.1 Measurement Procedures:** The DUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The DUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. Emissions attenuated more than 20 dB below the permissible value are not reported.

The test procedures of kdb 558074 dated June of 2014 were used throughout this report.

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## RADIATION INTERFERENCE

Rules Part No.: 15.247, 15.209

### Requirements:

Frequency	Limits
Part 15.209	
9 to 490 kHz	2400/F (kHz) $\mu\text{V/m}$ @ 300 meters
490 to 1705 kHz	24000/F (kHz) $\mu\text{V/m}$ @ 30 meters
1705 kHz to 30 MHz	29.54 dB $\mu\text{V/m}$ @ 30 meters
30 – 88	40.0 dB $\mu\text{V/m}$ @ 3 meters
80 – 216	43.5 dB $\mu\text{V/m}$ @ 3 meters
216 – 960	46.0 dB $\mu\text{V/m}$ @ 3 meters
Above 960	54.0 dB $\mu\text{V/m}$ @ 3 meters
Part 15.247	
Fundamental 902 – 928 MHz	127.37 dB $\mu\text{V/m}$ @ 3 meters
Fundamental 2.4 – 2.4835 MHz	127.37 dB $\mu\text{V/m}$ @ 3 meters
Harmonics	54.0 dB $\mu\text{V/m}$ @ 3 meters

Any emissions that fall in the restricted bands (15.205) must be less than or equal to 54 dB $\mu\text{V/m}$ . Spurious emissions not in a restricted band must be 20 dBc. A prescan was done from 9 kHz or the lowest frequency generated to 30 MHz, with no significant emissions found. Then measurements were made from 30 MHz to the 10<sup>th</sup> harmonic.

Below 1000 MHz the radiated emissions from both mode g and mode n are identical and will not be displayed twice.

No significant emissions were noted above the 3rd harmonic (7311 MHz) and are not represented in plots.

**Test Data:** All values are peak unless noted.

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## RADIATION INTERFERENCE 30 to 200MHz Horizontal

Rules Part No.: 15.247, 15.209

Mode n



07.Aug 14 15:59

Ref 77 dBμV/m

\*Att 0 dB

\*RBW 100 kHz

\*VBW 100 kHz

SWT 20 ms

Marker 1 [T1]

27.62 dBμV/m

168.125000000 MHz

Marker 2 [T1]

25.76 dBμV/m

162.131410256 MHz

Marker 3 [T1]

20.84 dBμV/m

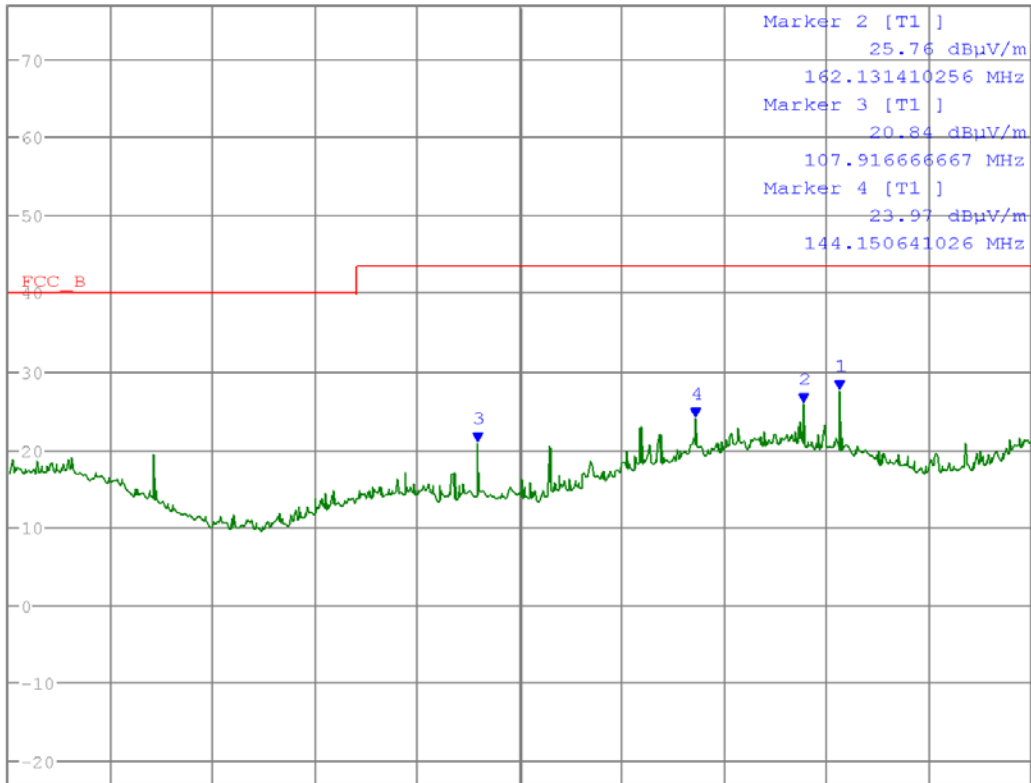
107.916666667 MHz

Marker 4 [T1]

23.97 dBμV/m

144.150641026 MHz

1 PK  
VIEW



Center 115 MHz

17 MHz/

Span 170 MHz

30 to 200 MHz radiated emissions Horizontal

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

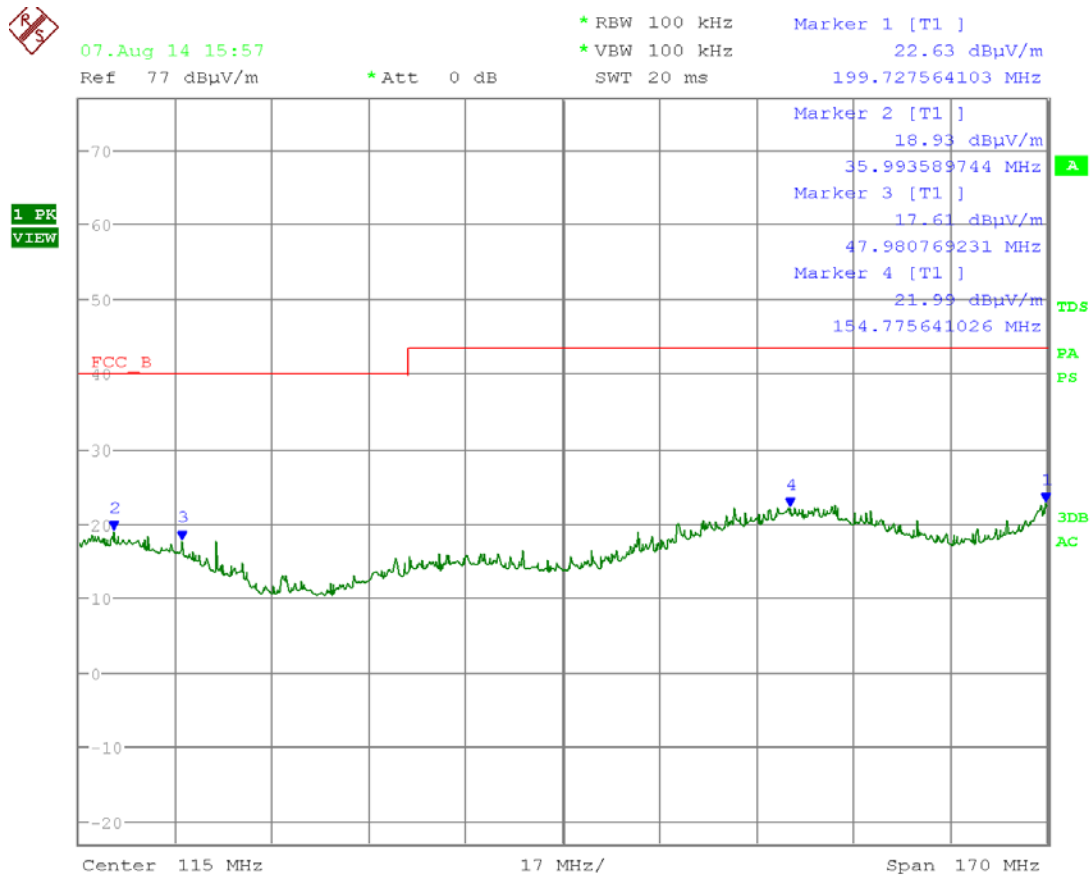
FCC ID: VMZES5

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## RADIATION INTERFERENCE 30 – 200MHz Vertical

Rules Part No.: 15.247, 15.209



30 to 200 MHz radiated emissions Vertical

**Results: Meets Requirements**

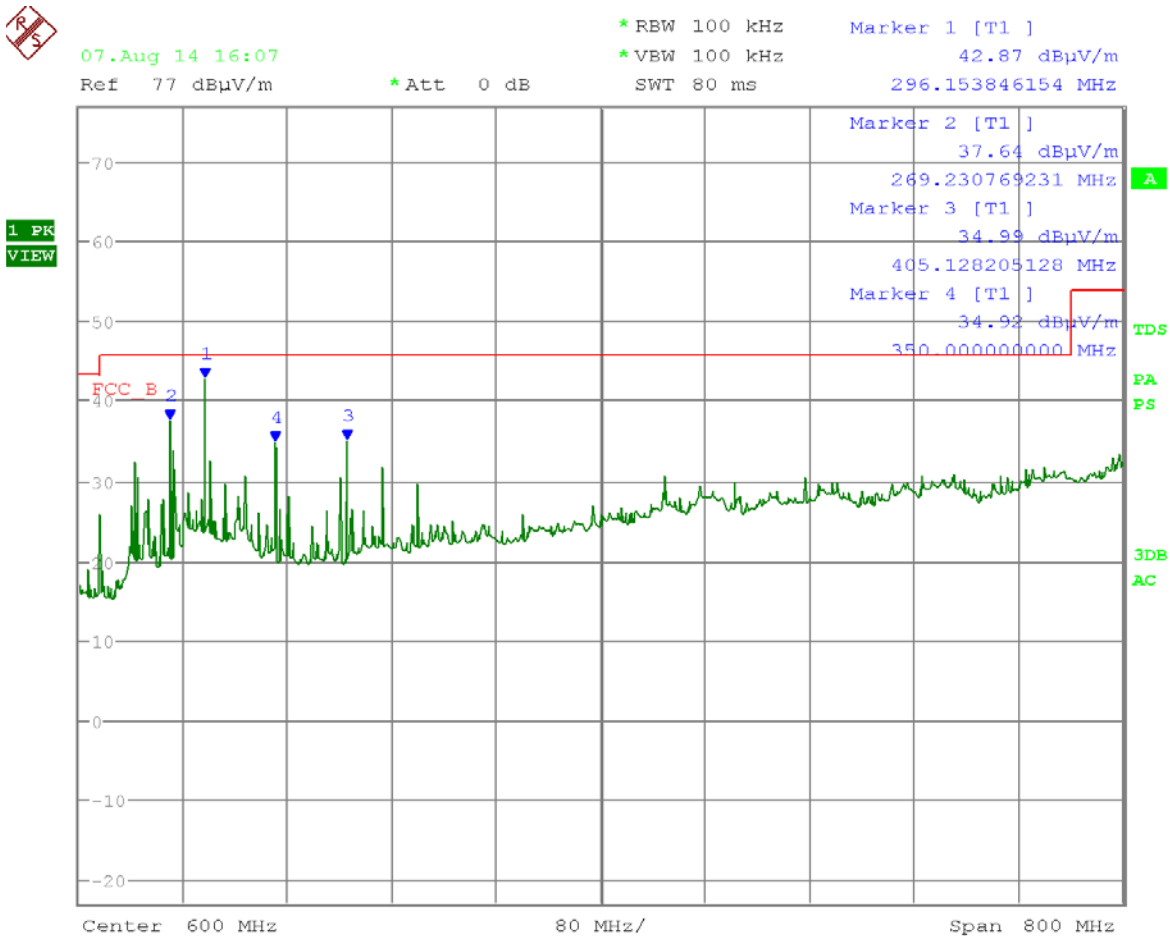
APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

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## RADIATION INTERFERENCE 200 – 1000MHz Horizontal

Rules Part No.: 15.247, 15.209



200 to 1000 MHz radiated emissions Horizontal

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

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## RADIATION INTERFERENCE 200 – 1000MHz Vertical

Rules Part No.: 15.247, 15.209



07.Aug 14 16:04

Ref 77 dBμV/m

\*Att 0 dB

\*RBW 100 kHz

\*VBW 100 kHz

SWT 80 ms

Marker 1 [T1 ]

36.02 dBμV/m

296.153846154 MHz

Marker 2 [T1 ]

35.84 dBμV/m

900.000000000 MHz

Marker 3 [T1 ]

40.48 dBμV/m

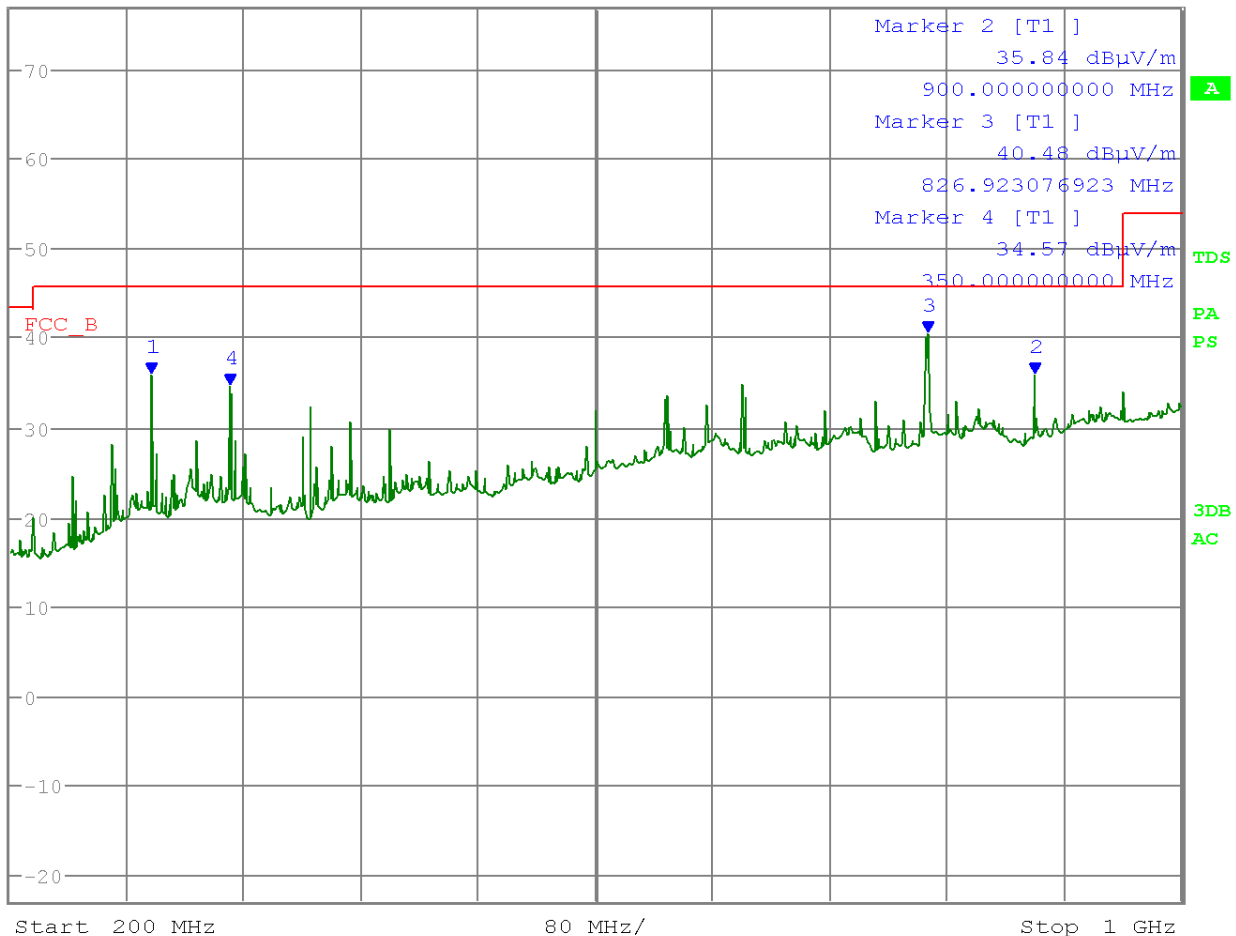
826.923076923 MHz

Marker 4 [T1 ]

34.57 dBμV/m

350.000000000 MHz

1 PK  
VIEW



200 to 1000 MHz radiated emissions Vertical

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

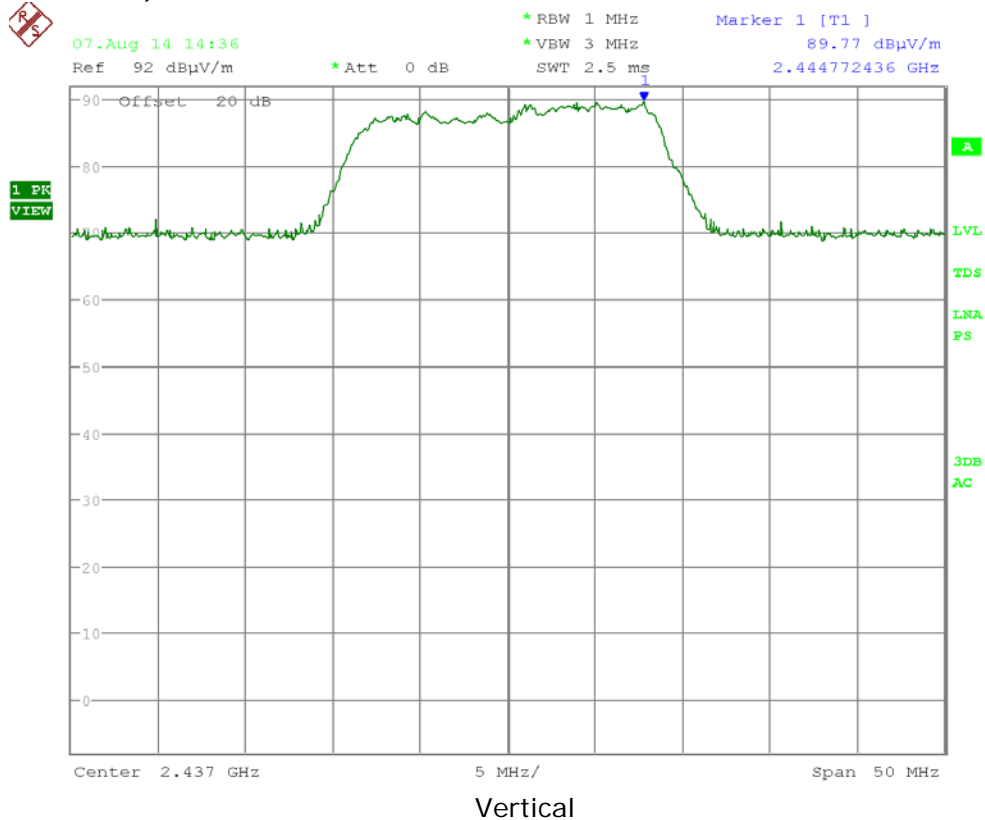
FCC ID: VMZES5

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# RADIATION INTERFERENCE Fundamental Mode n Vertical

Rules Part No.: 15.247, 15.209

Mode n (fundamentals).



Results: Meets Requirements

APPLICANT: ONE WORLD TECHNOLOGIES, INC

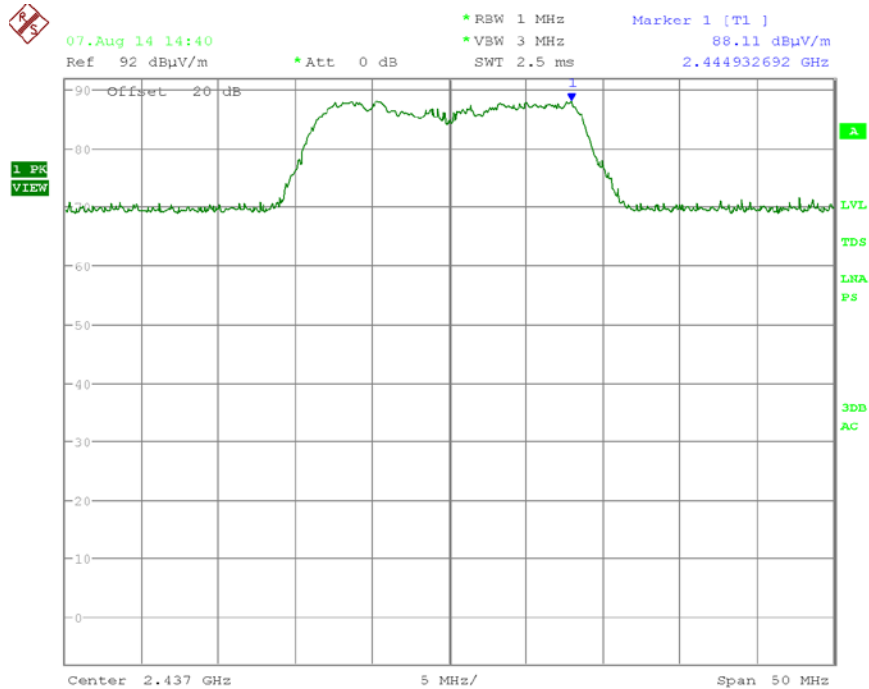
FCC ID: VMZES5

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## RADIATION INTERFERENCE Fundamental Horizontal

Rules Part No.: 15.247, 15.209

Mode n Fundamental



Horizontal

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## RADIATION INTERFERENCE Fundamental Vertical Peak

Rules Part No.: 15.247, 15.209

Mode n 2<sup>nd</sup> Harmonic



07.Aug 14 14:45

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 3 MHz

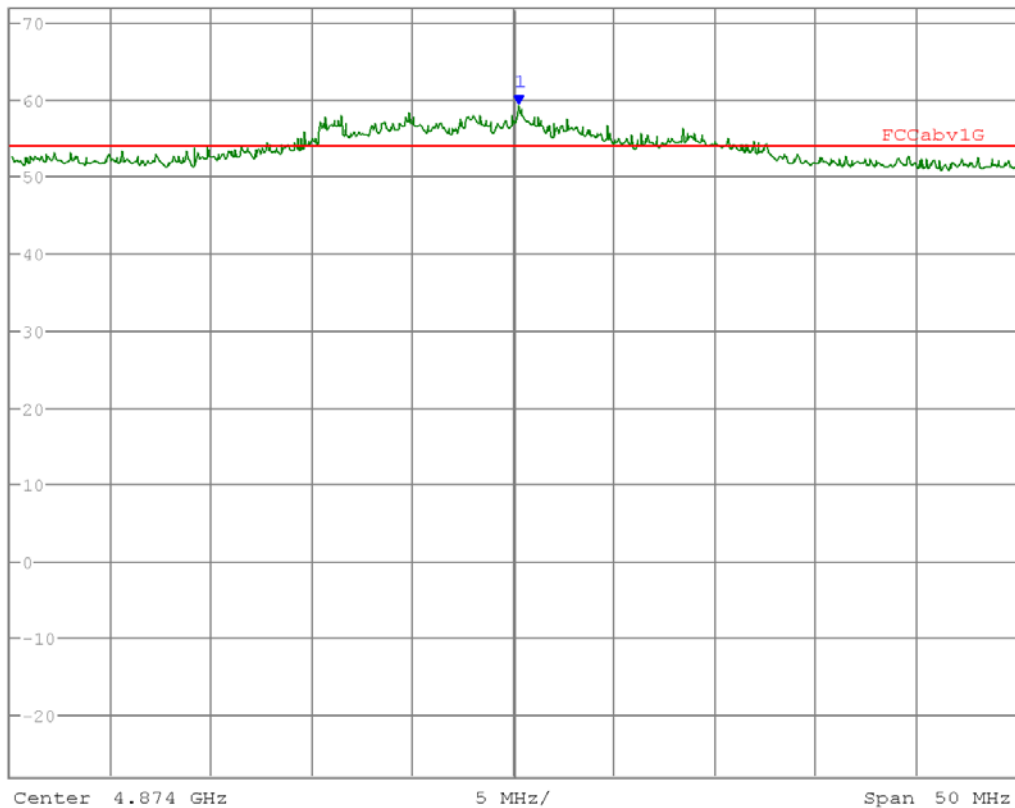
SWT 20 ms

Marker 1 [T1]

59.23 dBμV/m

4.874240385 GHz

1 PK  
VIEW



Peak Horizontal

Results: Meets Requirements

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

# RADIATION INTERFERENCE 2<sup>nd</sup> Harmonic Horizontal

Rules Part No.: 15.247, 15.209

Mode n 2<sup>nd</sup> Harmonic



07.Aug 14 14:47

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 3 MHz

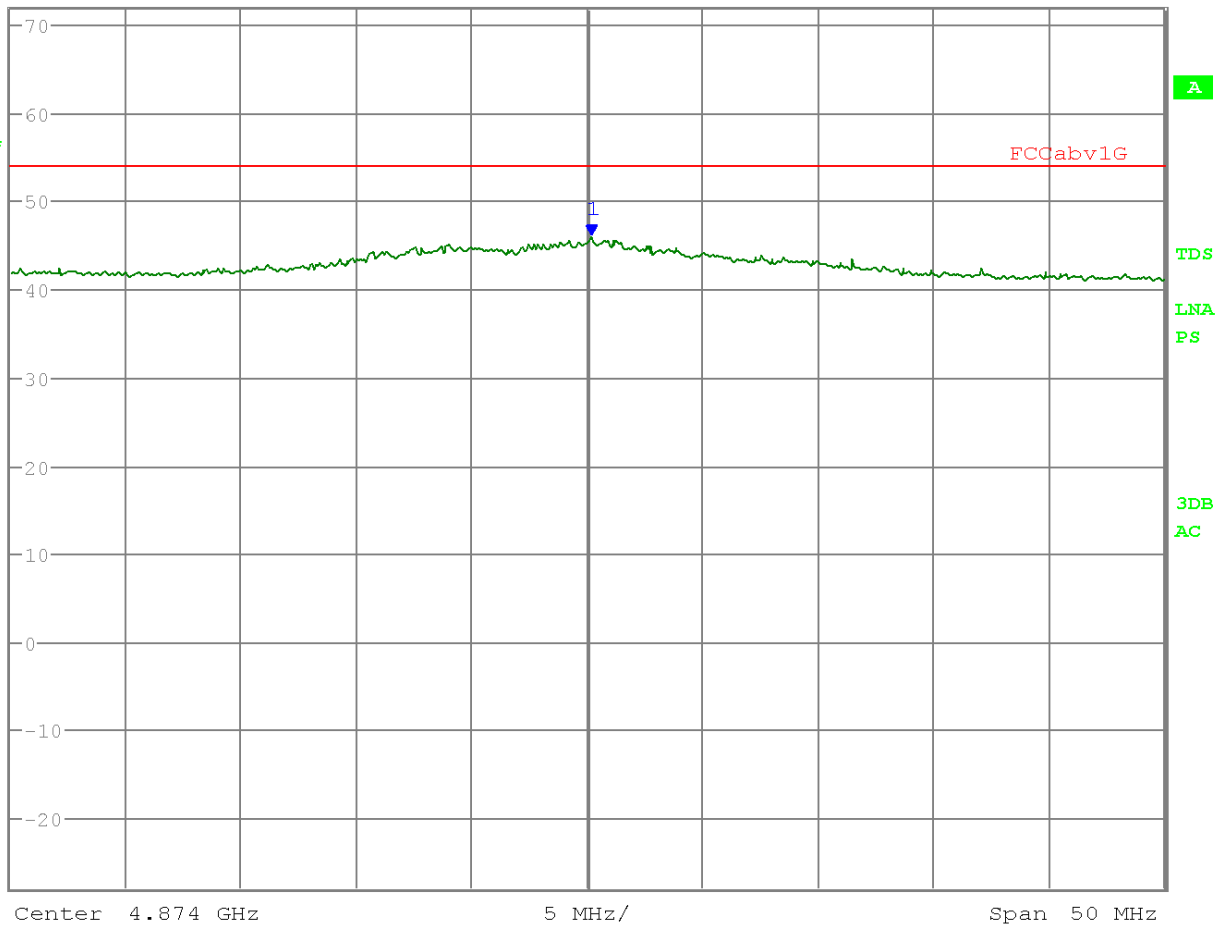
SWT 20 ms

Marker 1 [T1]

45.97 dBμV/m

4.874160256 GHz

1 AV \*  
VIEW



Average Horizontal

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

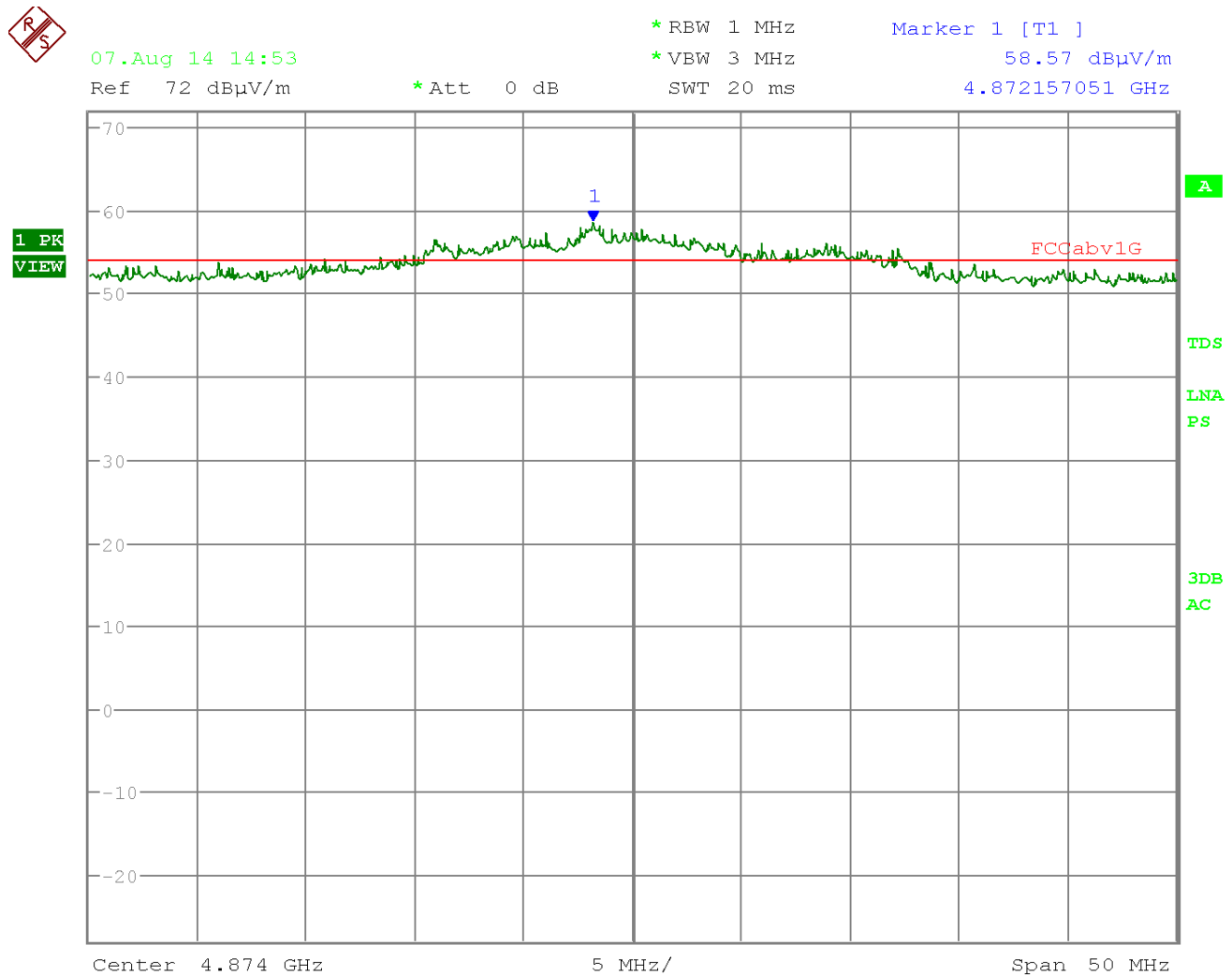
FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## RADIATION INTERFERENCE 2<sup>nd</sup> Harmonic Vertical Peak

Rules Part No.: 15.247, 15.209

Mode n 2<sup>nd</sup> Harmonic



2<sup>nd</sup> Harmonic Peak Vertical

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx



## RADIATION INTERFERENCE 2<sup>nd</sup> Harmonic Vertical Average

Rules Part No.: 15.247, 15.209

Mode n 2<sup>nd</sup> Harmonic



07.Aug 14 14:55

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

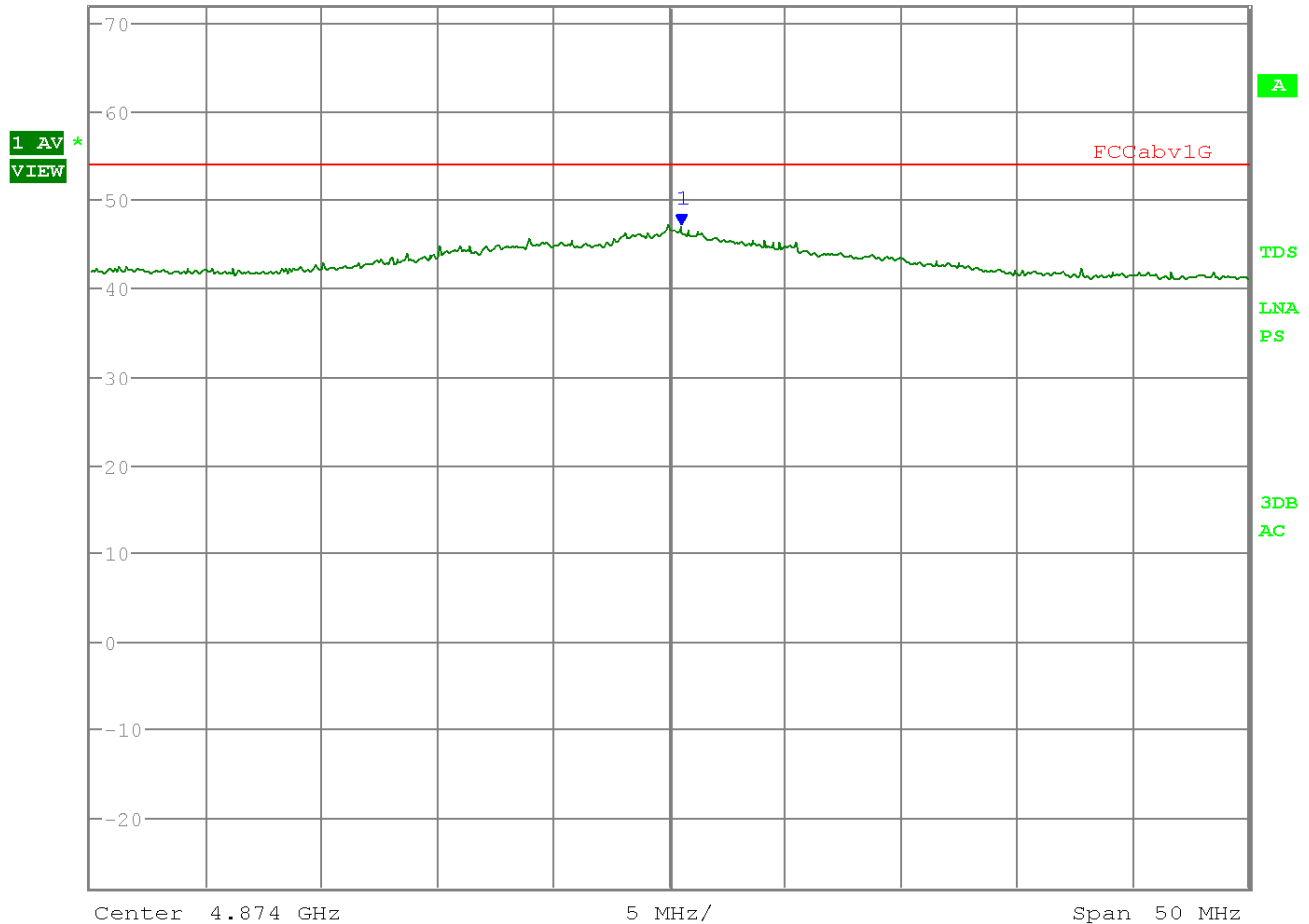
\* VBW 3 MHz

SWT 20 ms

Marker 1 [T1]

47.05 dBμV/m

4.874480769 GHz



2<sup>nd</sup> Harmonic Vertical Average

Results: Meets Requirements

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

# RADIATION INTERFERENCE 3<sup>rd</sup> Harmonic Horizontal

Rules Part No.: 15.247, 15.209

Mode n 3<sup>rd</sup> Harmonic



07.Aug 14 14:49

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 3 MHz

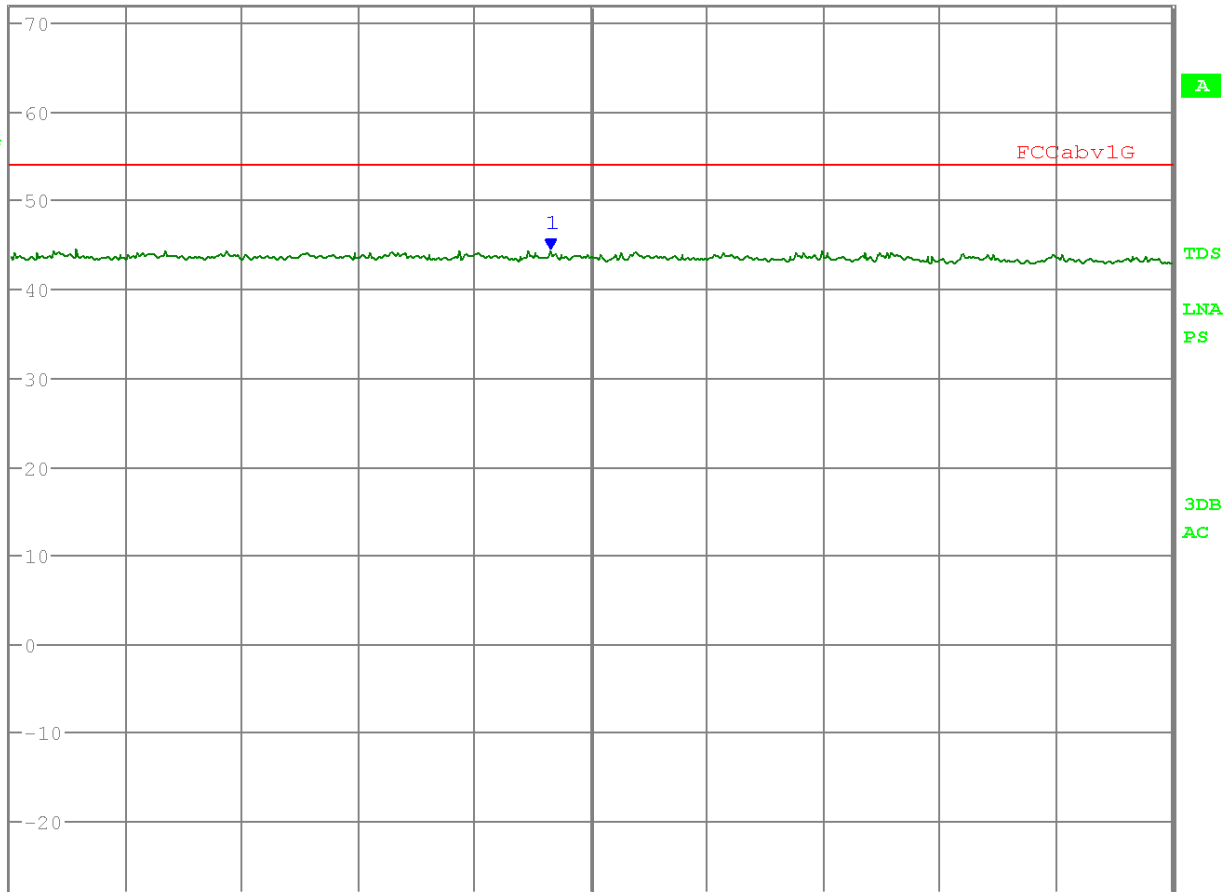
SWT 20 ms

Marker 1 [T1 ]

44.40 dBμV/m

7.309237179 GHz

1 AV \*  
VIEW



Center 7.311 GHz

5 MHz/

Span 50 MHz

3<sup>rd</sup> Peak Horizontal

Results: Meets Requirements

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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## RADIATION INTERFERENCE 3<sup>rd</sup> Harmonic Vertical

Rules Part No.: 15.247, 15.209

Mode n 3<sup>rd</sup> Harmonic



07.Aug 14 14:58

Ref 72 dBμV/m

\*Att 0 dB

\*RBW 1 MHz

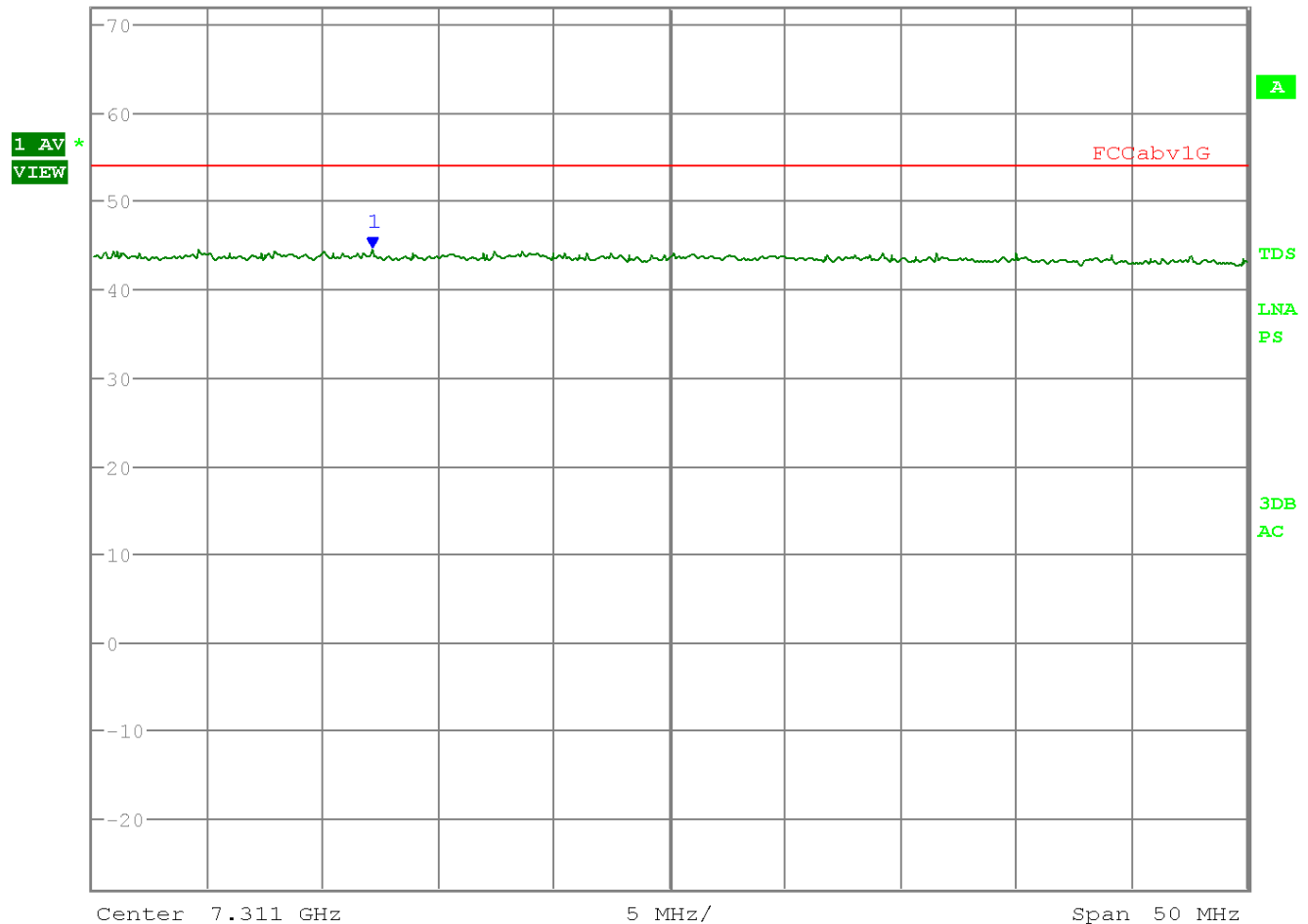
\*VBW 3 MHz

SWT 20 ms

Marker 1 [T1 ]

44.54 dBμV/m

7.298099359 GHz



3<sup>rd</sup> Harmonic Peak Vertical

**Results: Meets Requirements**

APPLICANT: ONE WORLD TECHNOLOGIES, INC

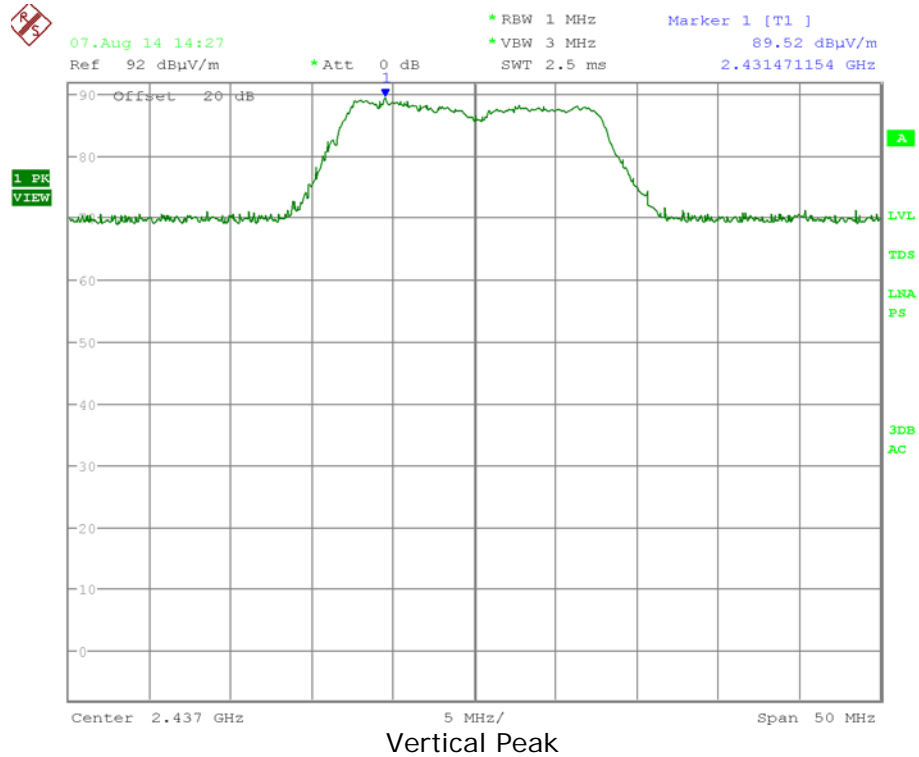
FCC ID: VMZES5

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## RADIATION INTERFERENCE

Rules Part No.: 15.247, 15.209

Mode G Fundamental



APPLICANT: ONE WORLD TECHNOLOGIES, INC

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## RADIATION INTERFERENCE

Rules Part No.: 15.247, 15.209

Mode G Fundamental



Horizontal Peak

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Vertical Peak

Rules Part No.: 15.247, 15.209

Mode G 2<sup>nd</sup> Harmonic



07.Aug 14 13:32

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 2 MHz

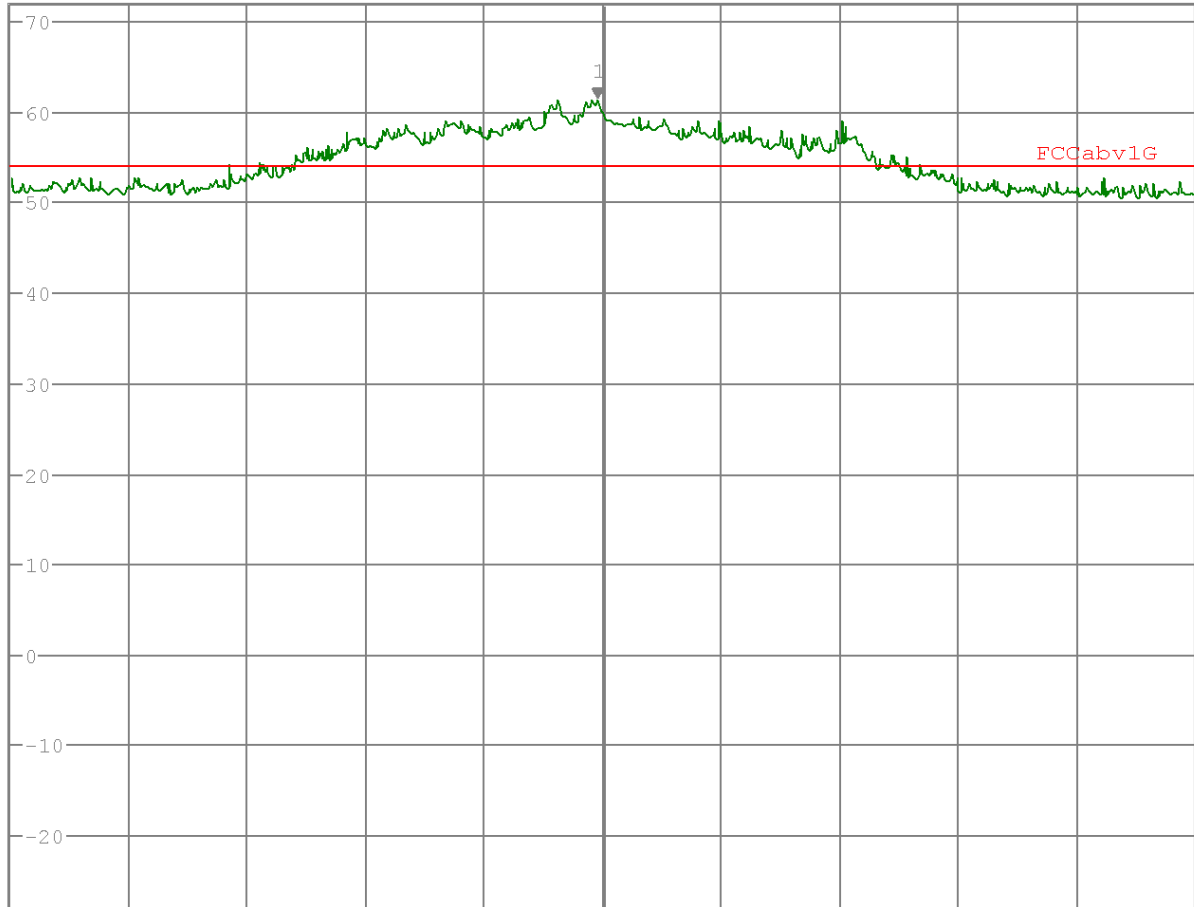
SWT 20 ms

Marker 1 [T1 ]

61.29 dBμV/m

4.873759615 GHz

1 PK  
MAXH



A

TDS

LNA

PS

3DB

AC

Center 4.874 GHz

5 MHz/

Span 50 MHz

Vertical Peak

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Vertical Average

Rules Part No.: 15.247, 15.209

Mode G 2<sup>nd</sup> Harmonic



07.Aug 14 13:35

Ref 72 dBμV/m

\*Att 0 dB

\*RBW 1 MHz

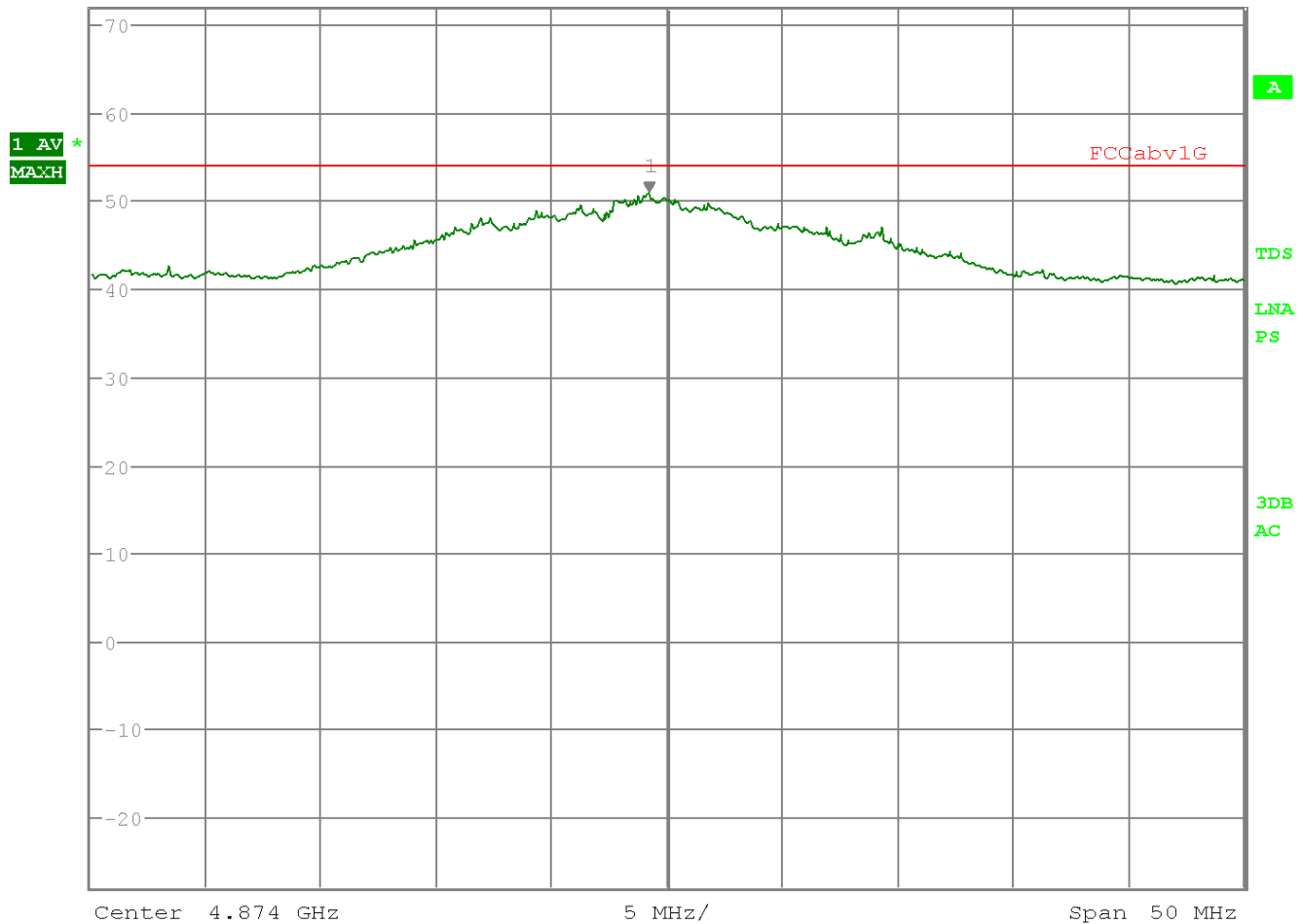
\*VBW 2 MHz

SWT 20 ms

Marker 1 [T1 ]

50.80 dBμV/m

4.873198718 GHz



Vertical Average

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Horizontal Peak

Rules Part No.: 15.247, 15.209

Mode G 2<sup>nd</sup> Harmonic



07.Aug 14 13:48

Ref 72 dBμV/m

\*Att 0 dB

\*RBW 1 MHz

\*VBW 2 MHz

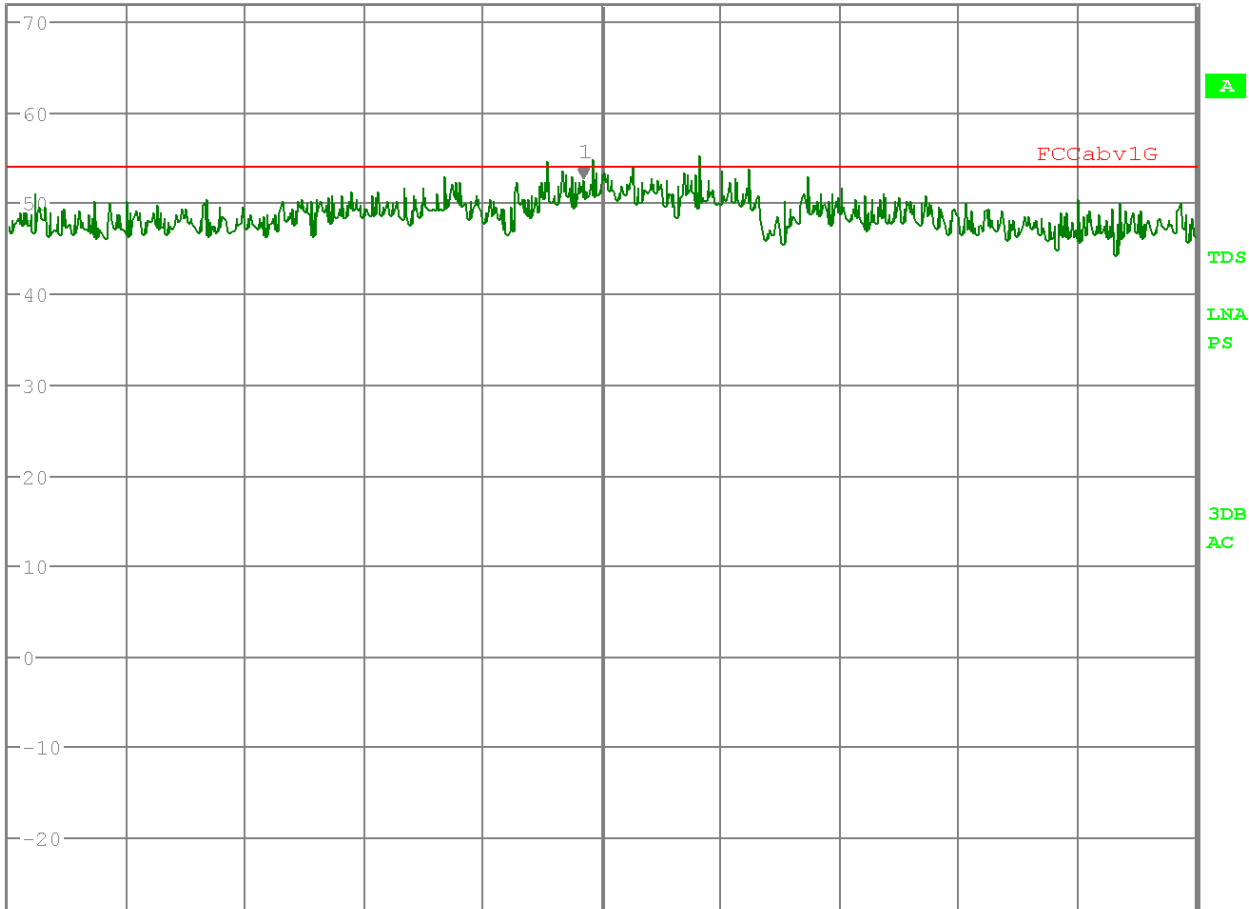
SWT 20 ms

Marker 1 [T1 ]

52.54 dBμV/m

4.873198718 GHz

1 PK  
MAXH



Center 4.874 GHz

5 MHz/

Span 50 MHz

Horizontal Peak

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# RADIATION INTERFERENCE Horizontal Average

Rules Part No.: 15.247, 15.209

Mode G 2<sup>nd</sup> Harmonic



07.Aug 14 13:50

Ref 72 dBμV/m

\*Att 0 dB

\*RBW 1 MHz

\*VBW 2 MHz

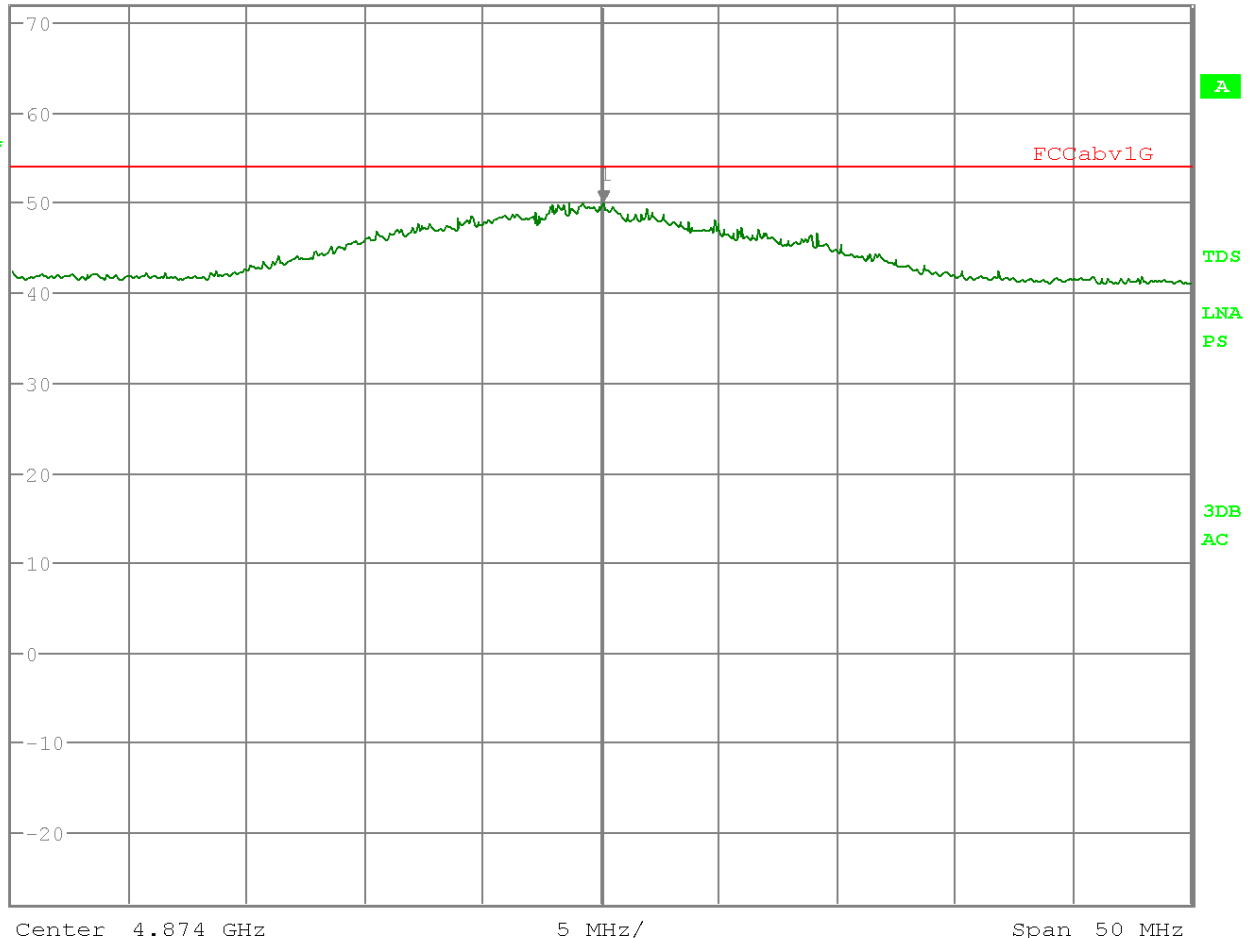
SWT 20 ms

Marker 1 [T1]

50.11 dBμV/m

4.874080128 GHz

1 AV \*  
VIEW



Horizontal Average

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# RADIATION INTERFERENCE Horizontal peak

Rules Part No.: 15.247, 15.209

Mode G 3<sup>rd</sup> Harmonic



07.Aug 14 13:40

Ref 72 dBμV/m

\*Att 0 dB

\*RBW 1 MHz

\*VBW 2 MHz

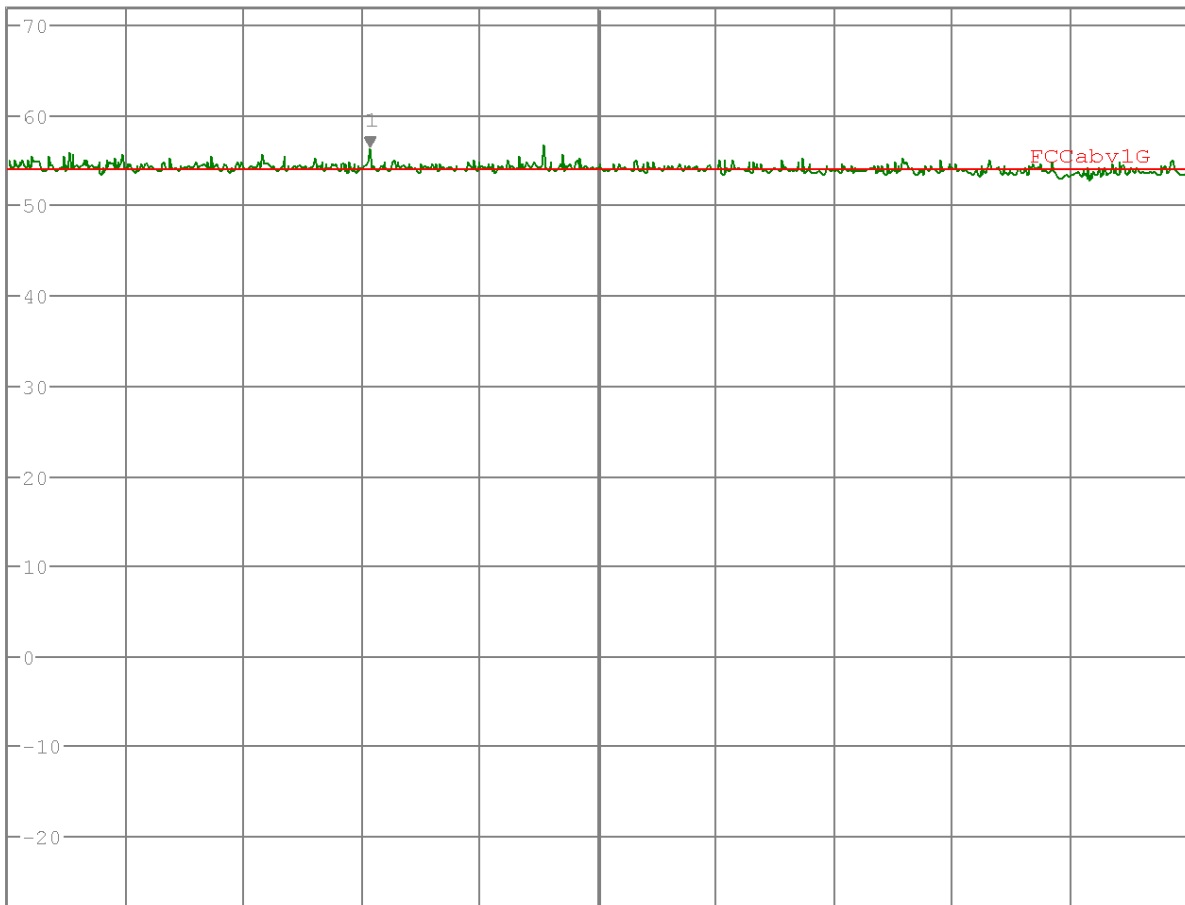
SWT 20 ms

Marker 1 [T1 ]

56.42 dBμV/m

7.301304487 GHz

1 PK  
VIEW



Center 7.311 GHz

5 MHz/

Span 50 MHz

Vertical Peak

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Vertical Average

Rules Part No.: 15.247, 15.209

Mode G 3<sup>rd</sup> Harmonic



07.Aug 14 13:42

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

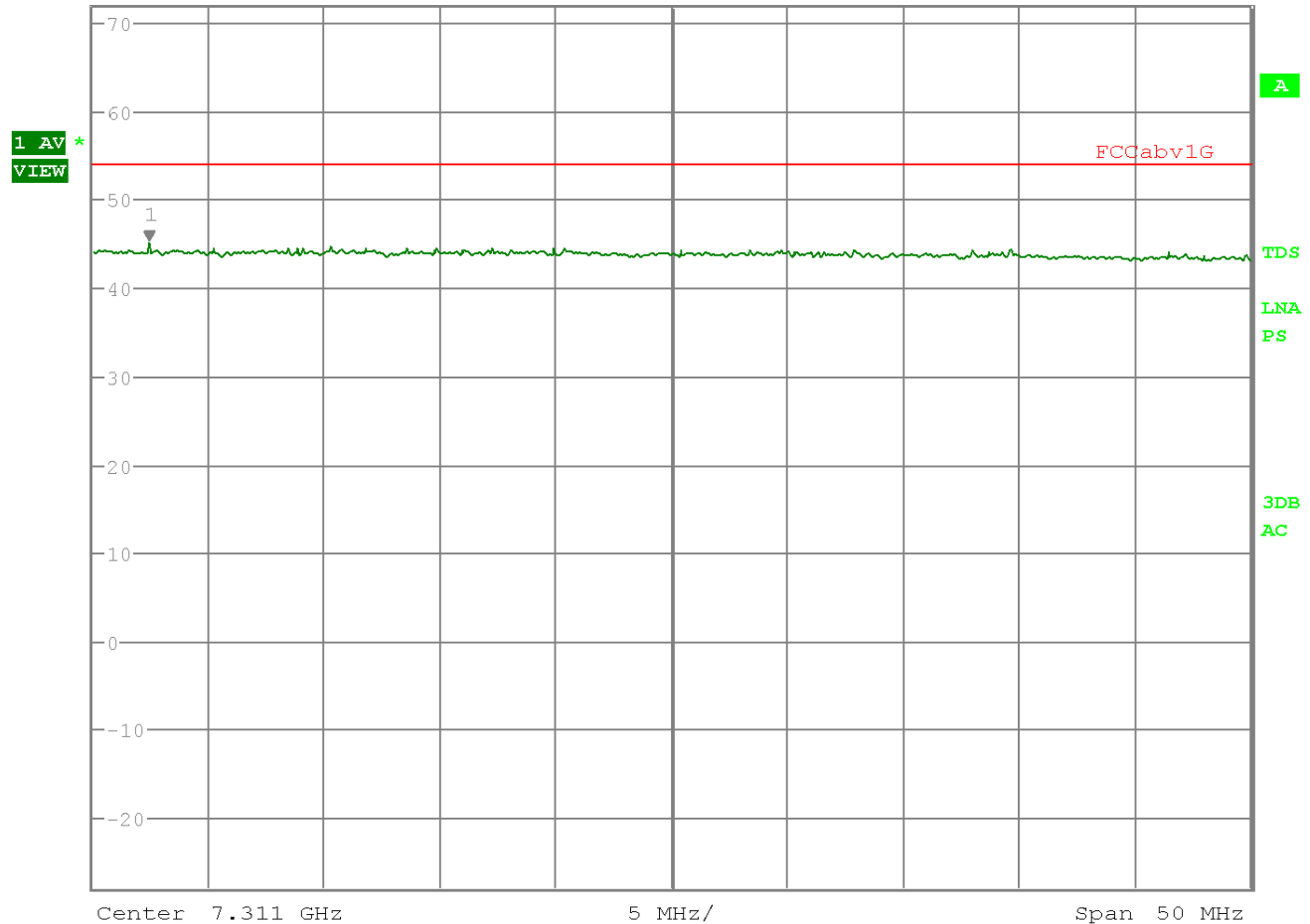
\* VBW 2 MHz

SWT 20 ms

Marker 1 [T1]

45.19 dBμV/m

7.288403846 GHz



Vertical Average

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Vertical Peak

Rules Part No.: 15.247, 15.209

Mode G 4<sup>nd</sup> Harmonic



07.Aug 14 13:44

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 2 MHz

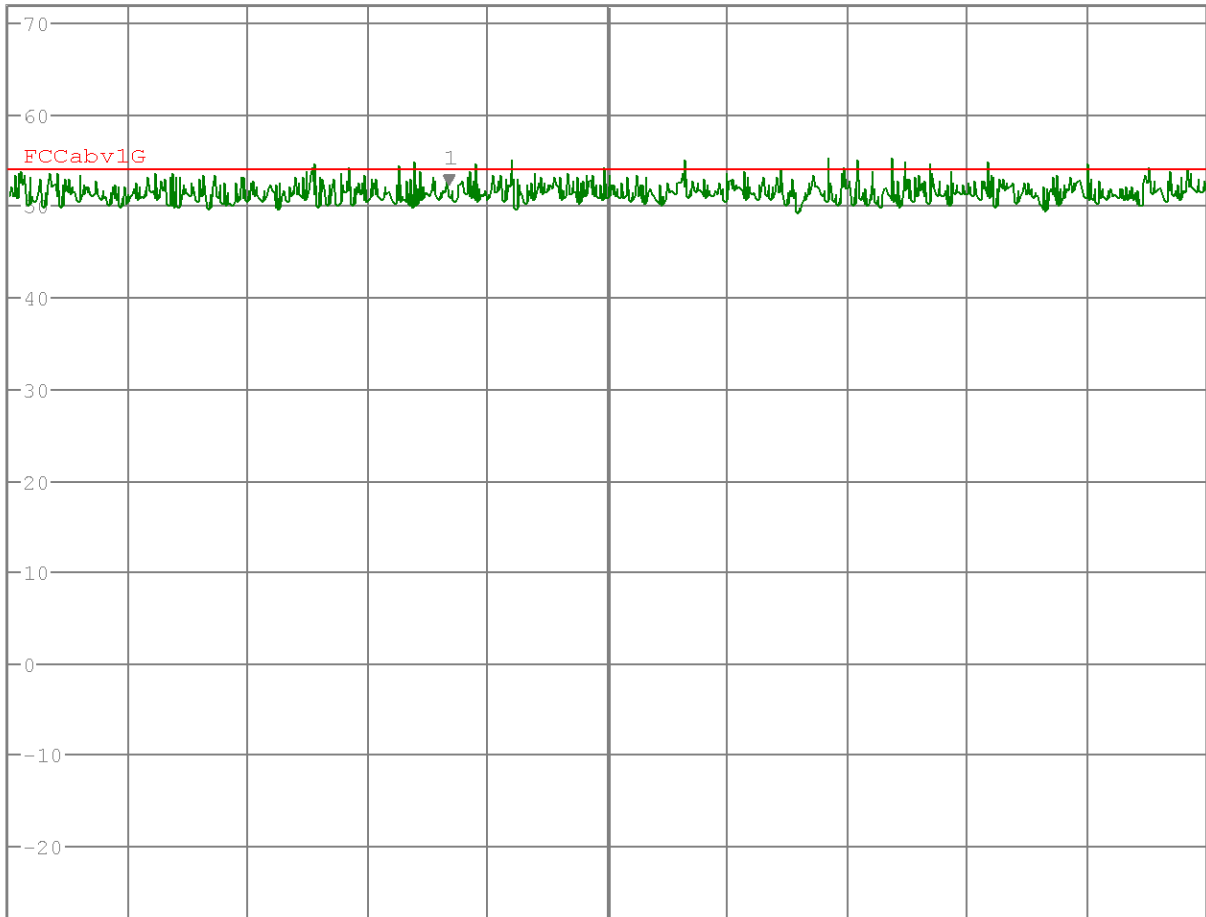
SWT 20 ms

Marker 1 [T1 ]

52.05 dBμV/m

9.741349359 GHz

1 PK  
MAXH



Center 9.748 GHz

5 MHz/

Span 50 MHz

Vertical Peak

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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# RADIATION INTERFERENCE Vertical Average

Rules Part No.: 15.247, 15.209

Mode G 4<sup>nd</sup> Harmonic



07.Aug 14 13:45

Ref 72 dBμV/m

\* Att 0 dB

\* RBW 1 MHz

\* VBW 2 MHz

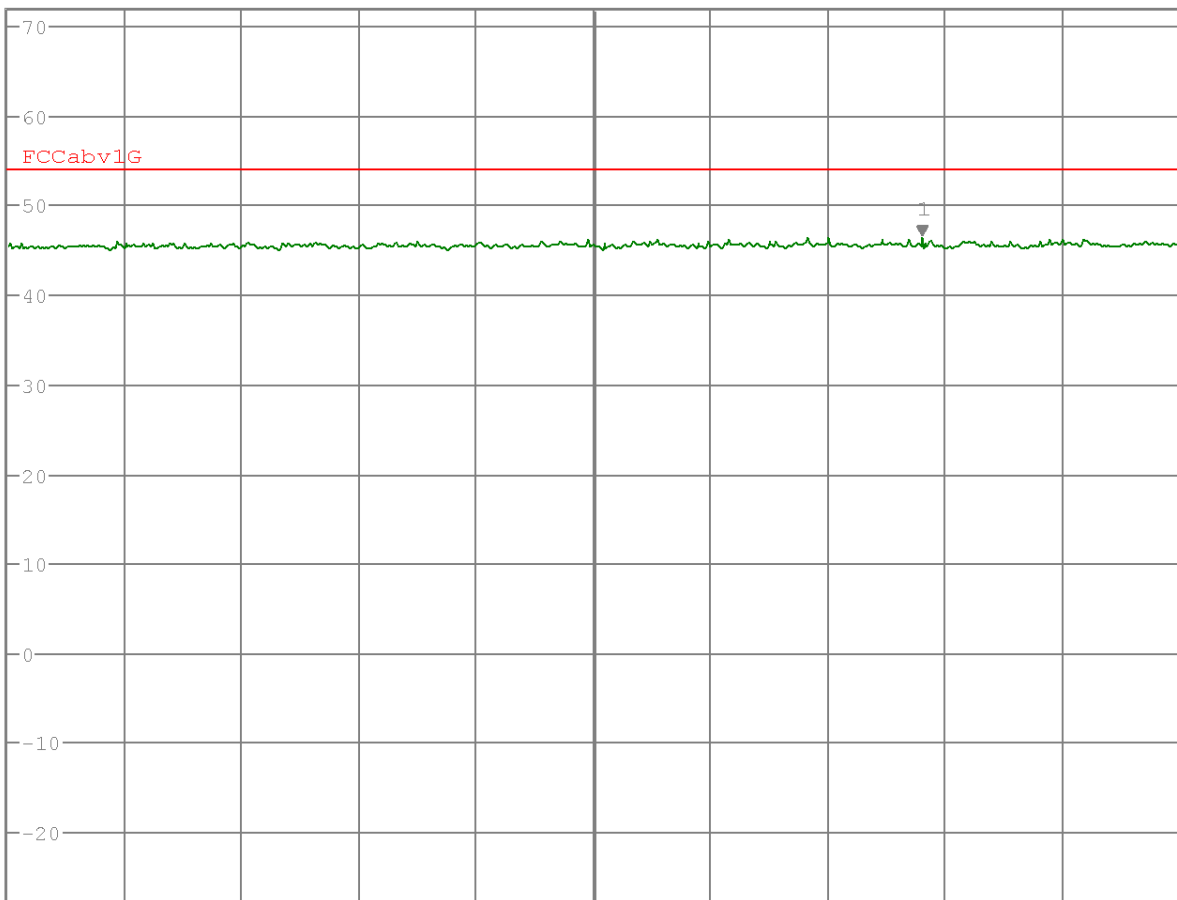
SWT 20 ms

Marker 1 [T1]

46.54 dBμV/m

9.762022436 GHz

1 AV \*  
VIEW



Center 9.748 GHz

5 MHz/

Span 50 MHz

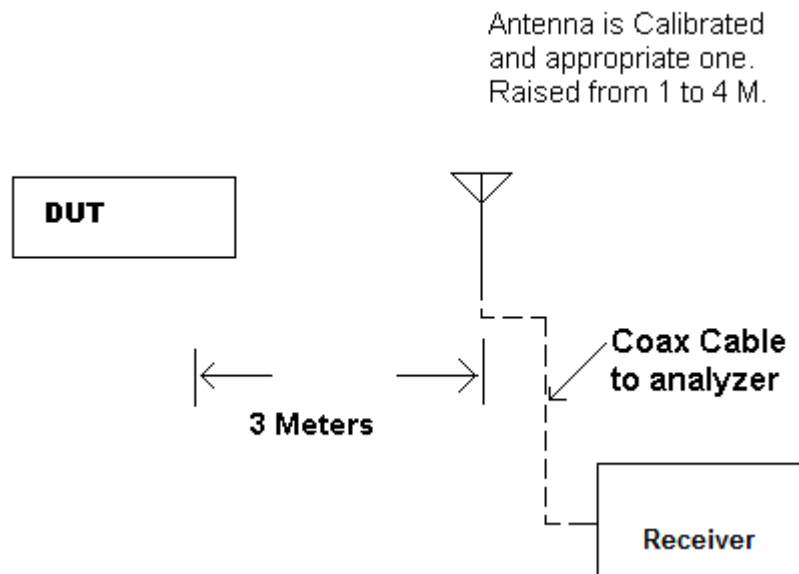
Vertical Average

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## Method of Measuring Radiated Spurious Emissions



METHOD OF MEASUREMENT: The procedure used was ANSI C63.4-2003 & the FCC/OET Guidance on Measurements for Spread Spectrum Systems – KDB 558074 or ANSI 63.10: 2010

APPLICANT: ONE WORLD TECHNOLOGIES, INC

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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.207

### Requirements:

Frequency (MHz)	Quasi Peak Limits (dB $\mu$ V)	Average Limits (dB $\mu$ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

### Test Data:

The device is capable of battery operation only (3 "AA" cells).

## OCCUPIED BANDWIDTH

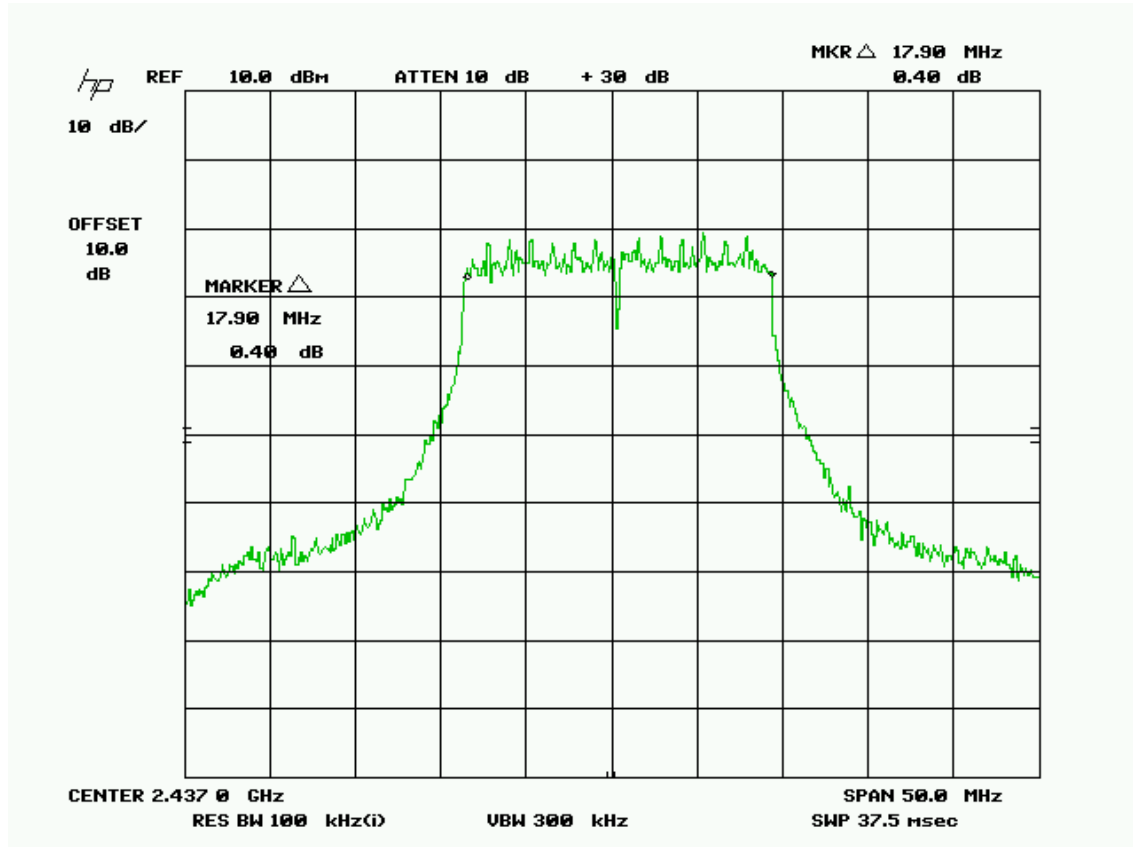
**Rules Part No.:** 15.247(a)(2)

**Requirements:** The 6 dB bandwidth must be greater than 500 kHz.

### Test Data:

The device is capable of limited number of channels (1) and data rates, the worst case 6 and 20 dB bandwidths are shown in the plots.

### Mode g



APPLICANT: ONE WORLD TECHNOLOGIES, INC

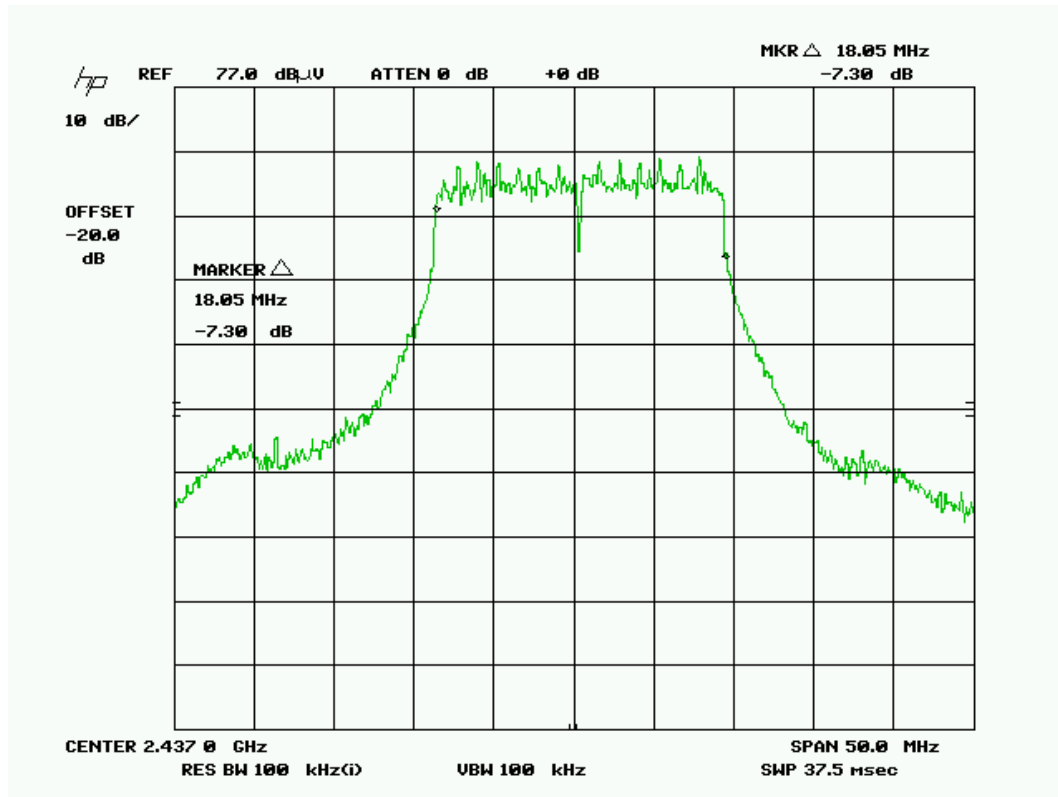
FCC ID: VMZES5

REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx



## OCCUPIED BANDWIDTH

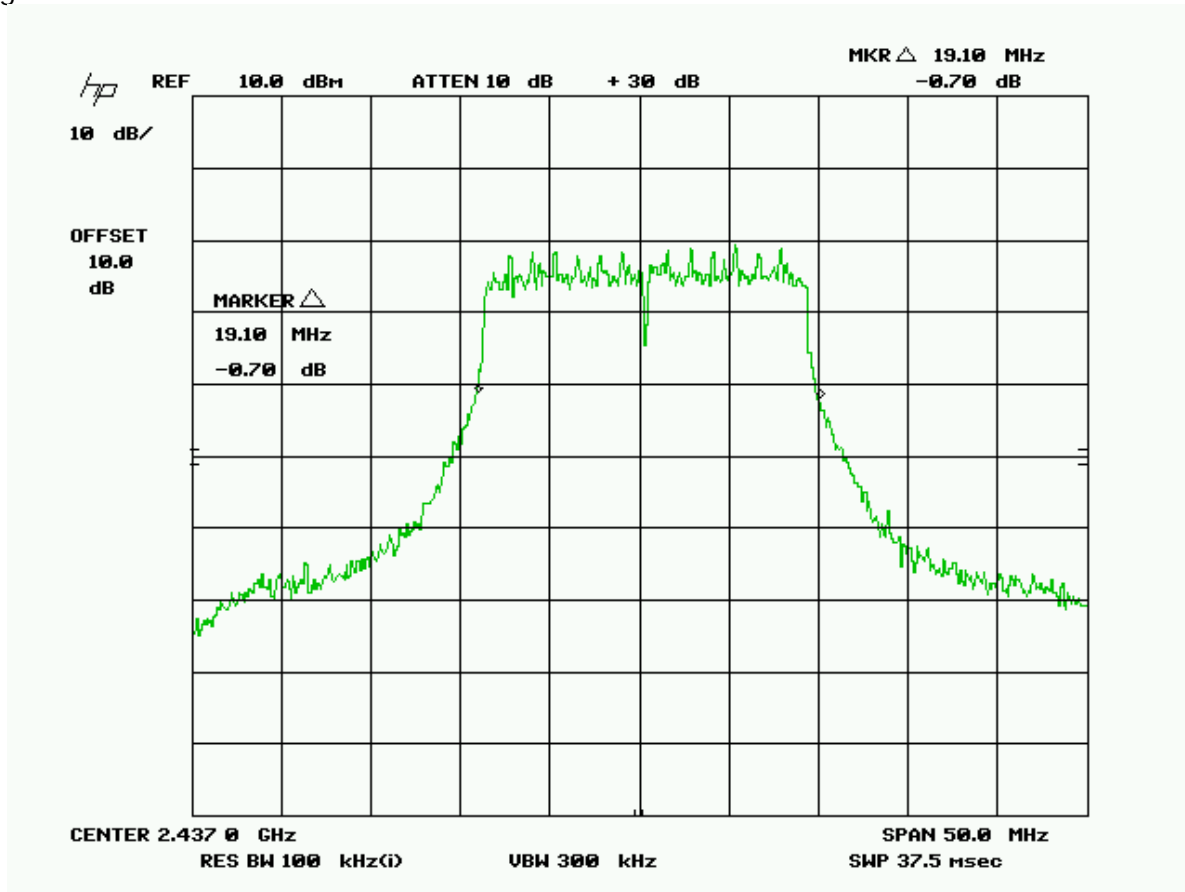
Mode n



## OCCUPIED BANDWIDTH

20 dB bandwidth plots

Mode g



APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## OCCUPIED BANDWIDTH

Mode n



APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

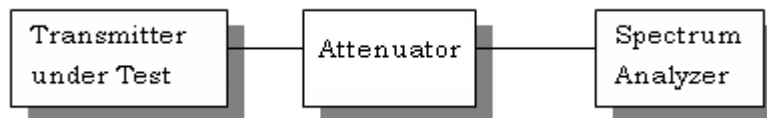
REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## POWER OUTPUT

**Rules Part #:** 15.247(b) 1 Watt conducted, 4W EIRP

The device is capable of using only a single transmit channel and 2 modulation modes (g and n). Various data rates were pretested and the worst case data for each mode represented.

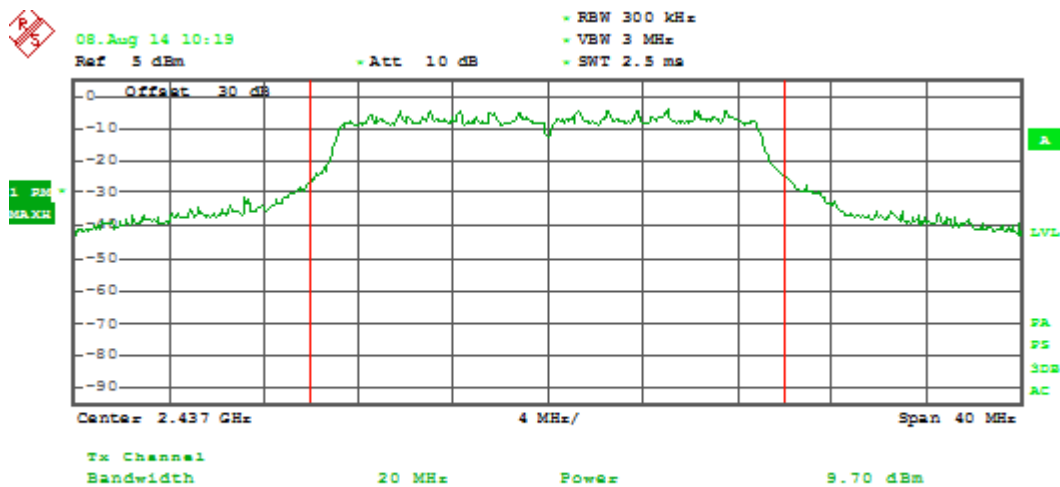
TEST SET UP:



## Test Results:

Frequency MHz	Mode	Po Watts	Po dBm
2437 MHz	g	0.01	9.7
2437 MHz	n	0.016	11.9

Mode g



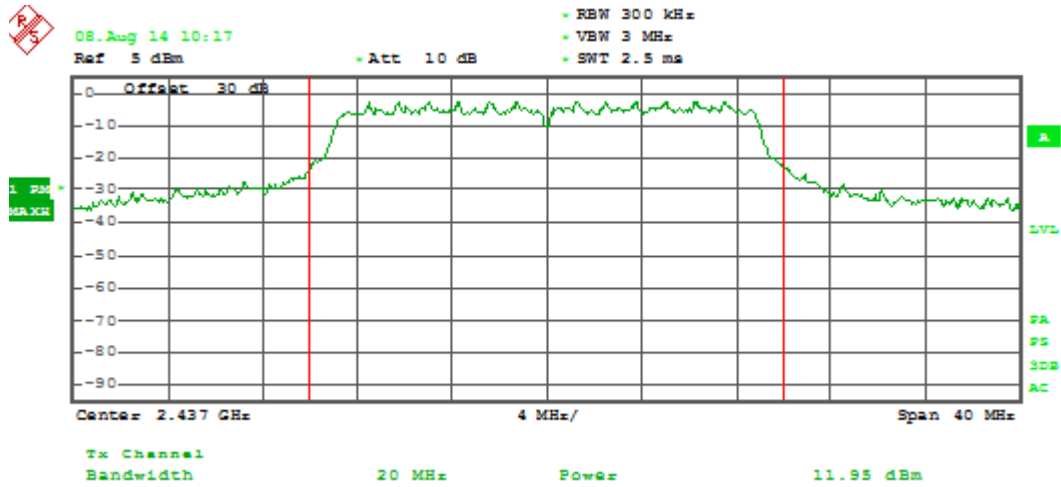
APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## POWER OUTPUT

Mode n



APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

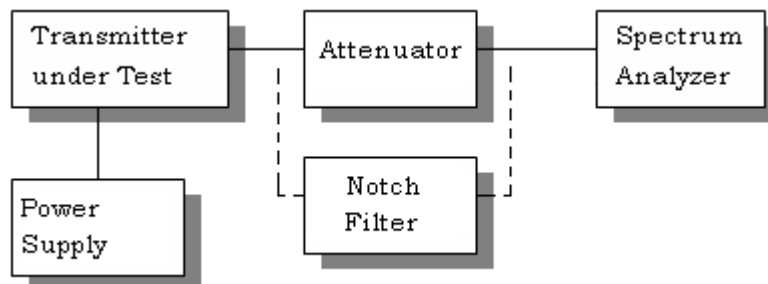
## SPURIOUS EMISSIONS AT ANTENNA TERMINALS

**Requirements:** Emissions must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

### Test Data:

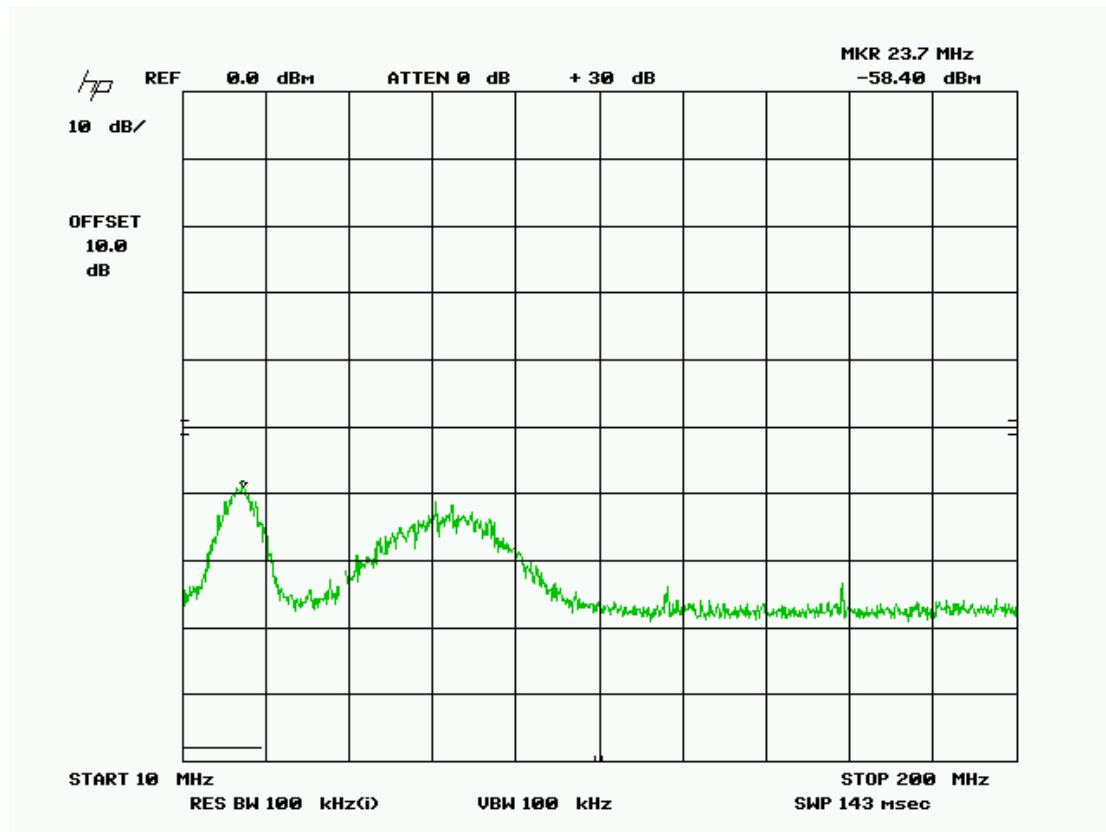
The device has a permanently attached antenna and a temporary antenna connector was used to make the following plots. Emissions were checked from 9 kHz or the lowest frequency generated to the 10<sup>th</sup> harmonic. There were no significant emissions past 7.4 GHz.

### 15.247c Method of Measuring RF Conducted Spurious Emissions



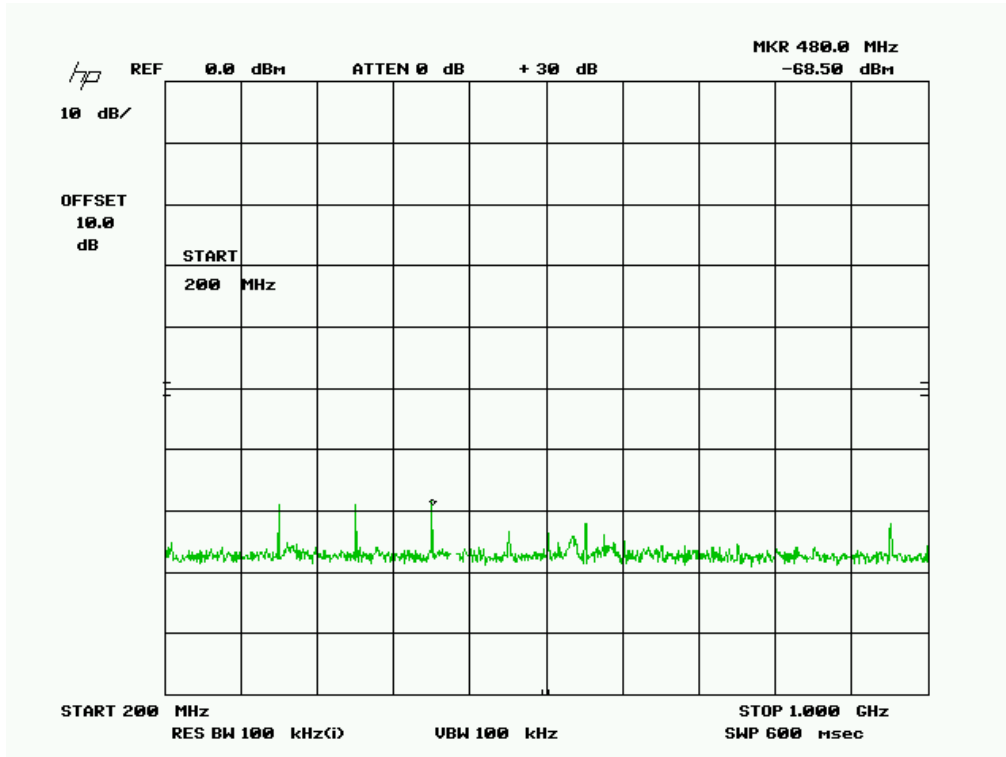
Test Data:

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS

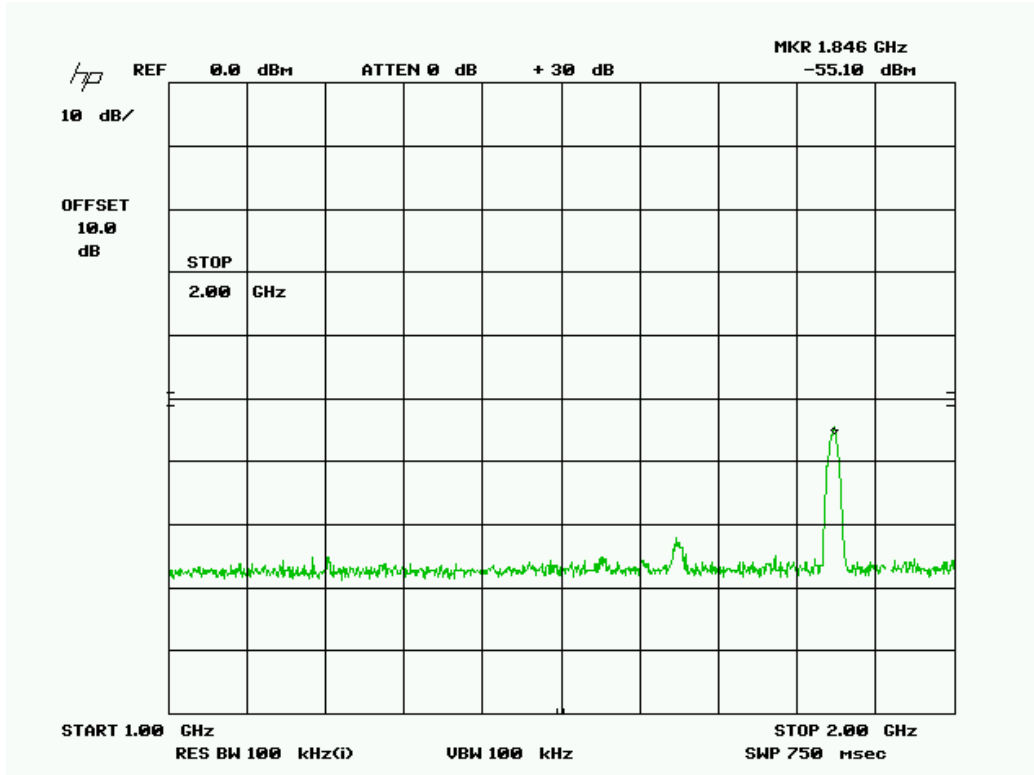


10 to 200 MHz

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS



200 to 1000 MHz



1 to 2 GHz

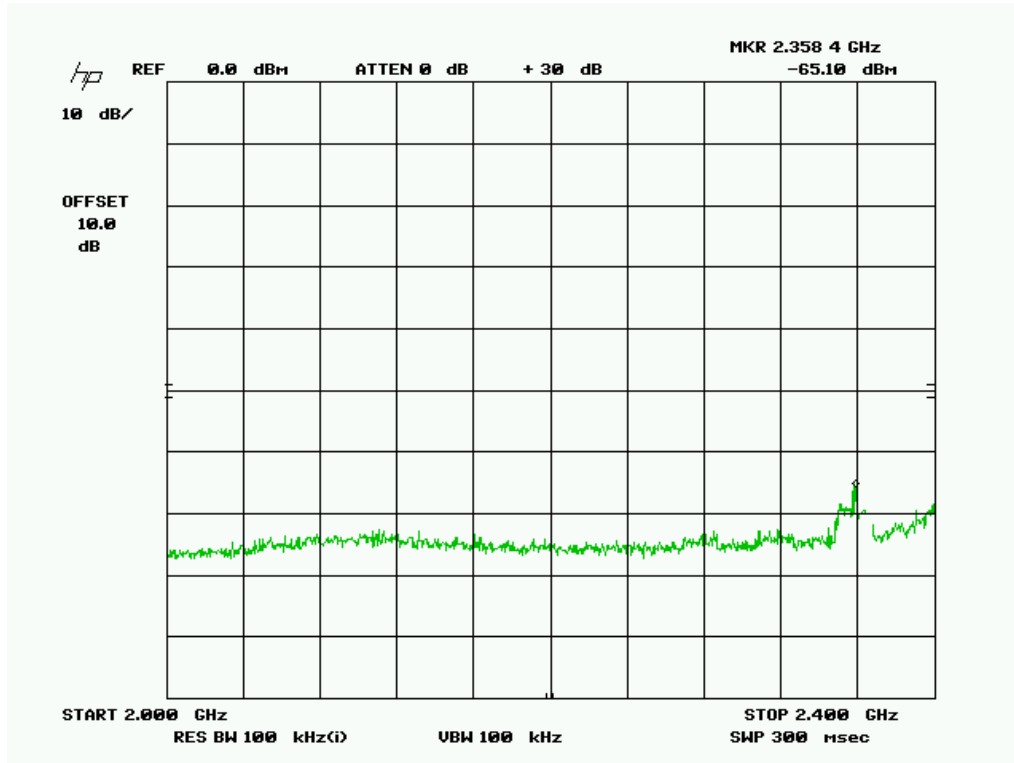
APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

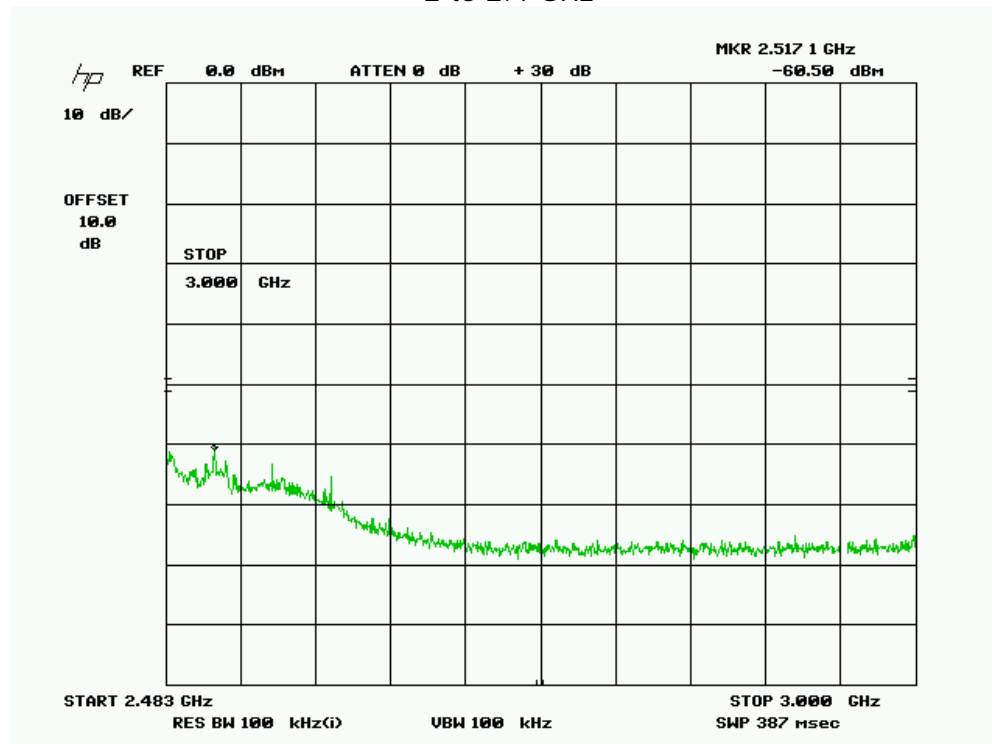
REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx



## SPURIOUS EMISSIONS AT ANTENNA TERMINALS



2 to 2.4 GHz



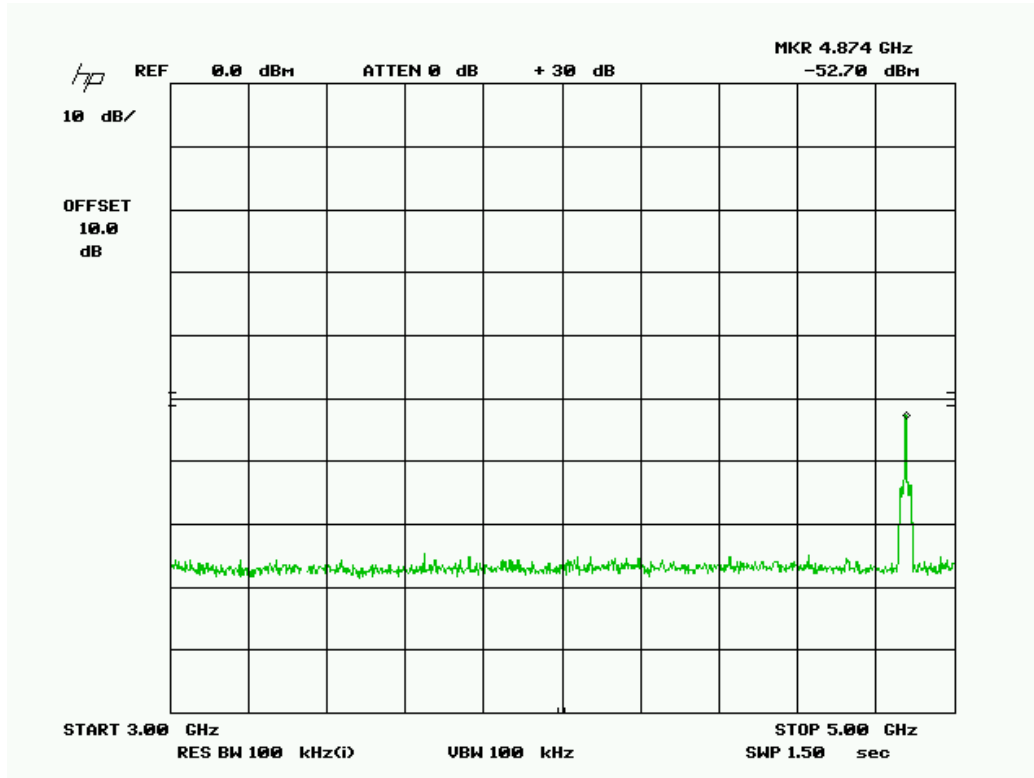
2483.5 MHz to 3 GHz

APPLICANT: ONE WORLD TECHNOLOGIES, INC

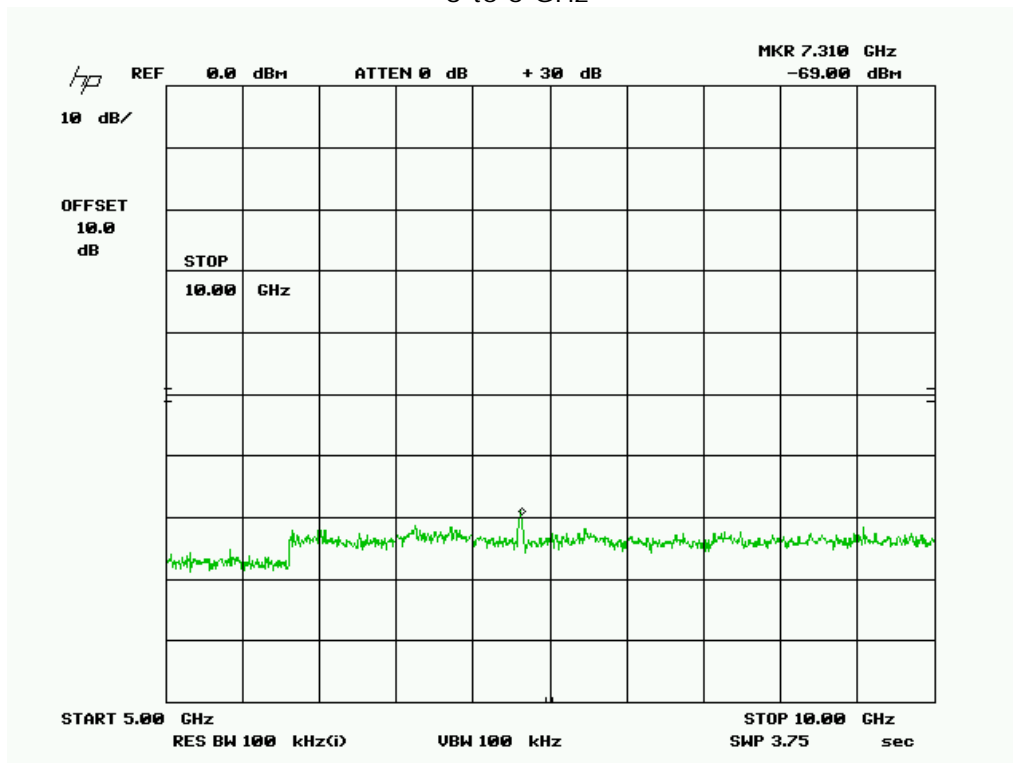
FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## SPURIOUS EMISSIONS AT ANTENNA TERMINALS



3 to 5 GHz



5 to 10 GHz

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

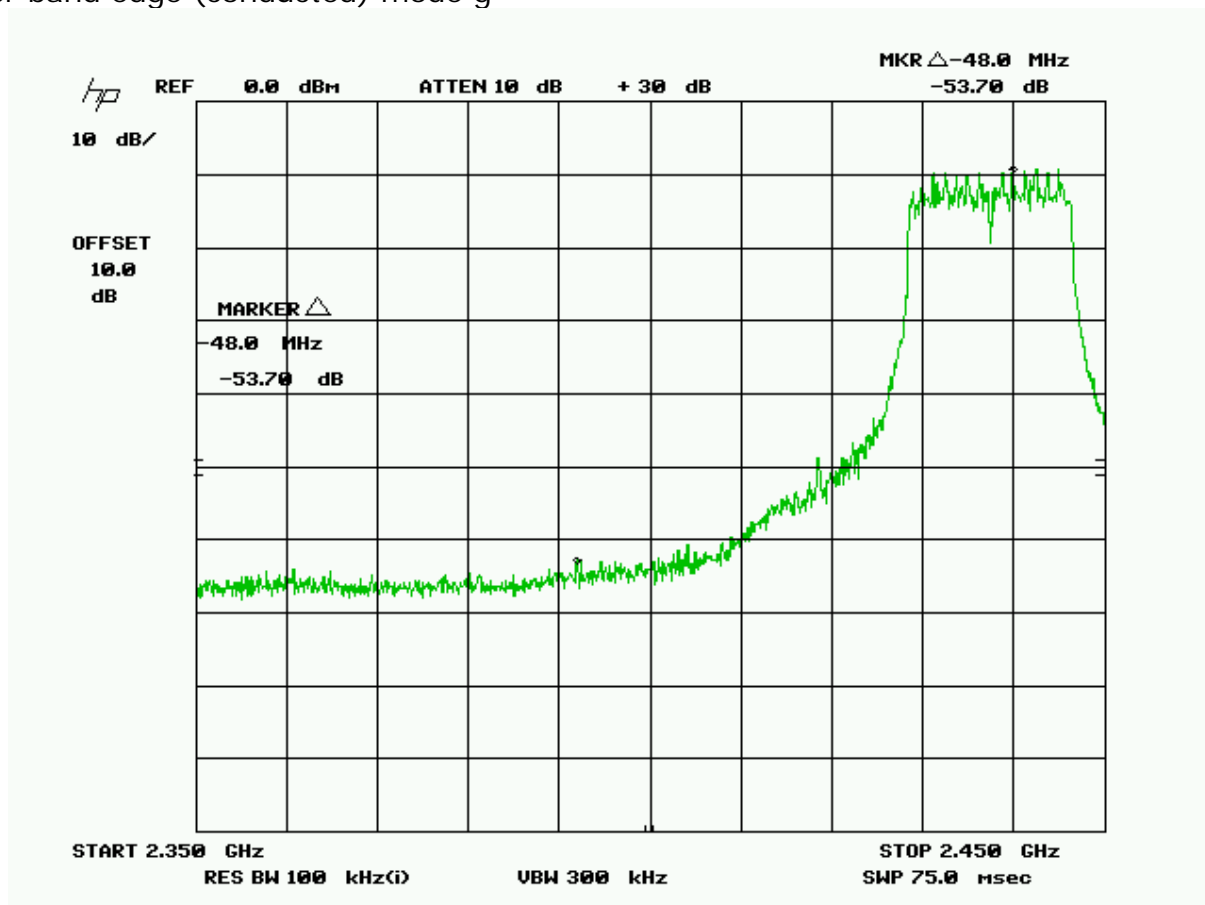
REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

**Requirements:** Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500  $\mu\text{V/m}$  (54 dB $\mu\text{V/m}$ ).

**Test Procedure:** An in band field strength measurement of the fundamental Emission using the RBW and detector function required by C63.4-2003 or kdb 558074 and FCC Rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

Lower band edge (conducted) mode g



Meets the 20 dBc requirement at the bandedge

Field strength of the fundamental 89.52 dBuV/m

$89.52\text{dBuV/m} - 53.7\text{ dB} = 35.82\text{ dBuV/m}$

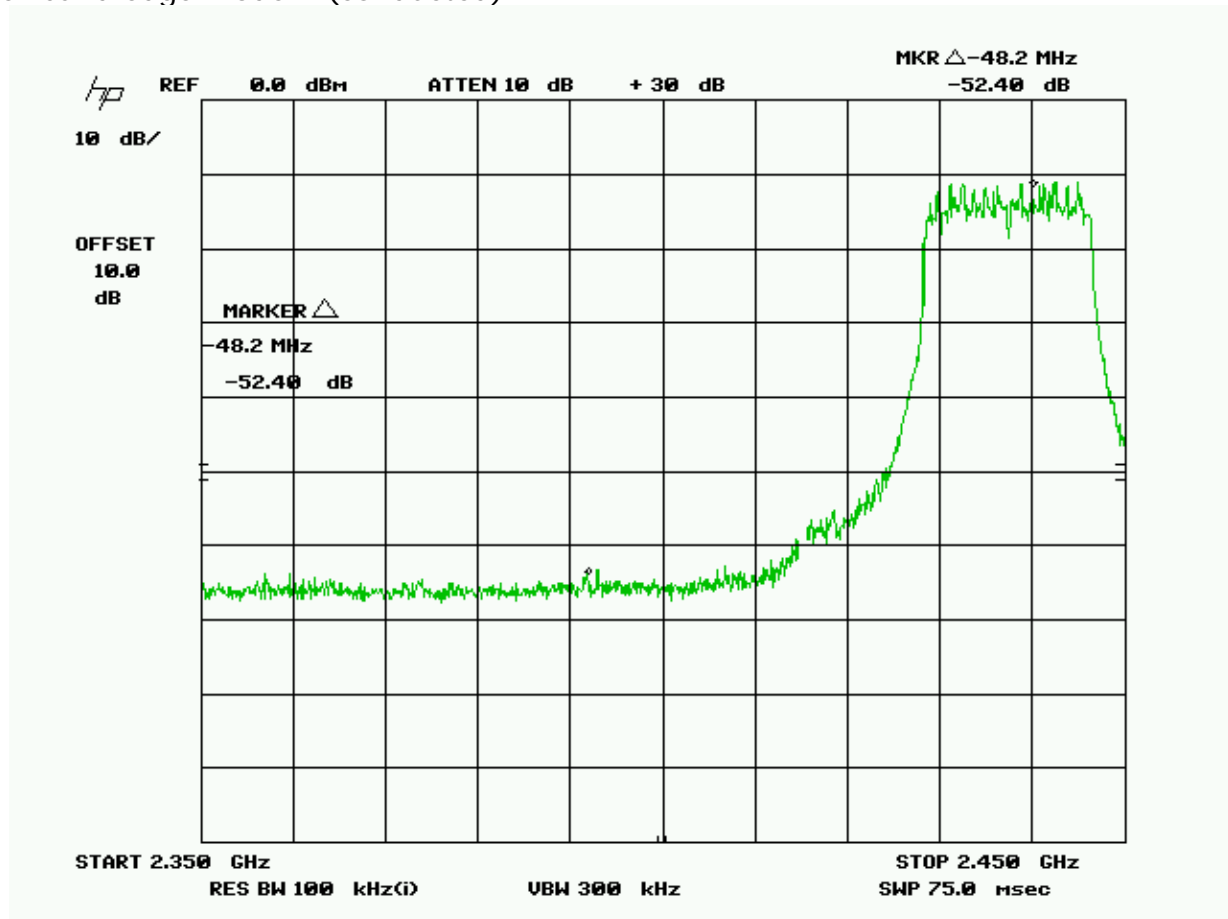
APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

Lower band edge mode n (conducted).



Meets the 20 dBc requirements at the bandedge

Field strength of the fundamental 89.77 dB $\mu$ V/m

$89.77 \text{ dB}\mu\text{V/m} - 52.40 \text{ dB} = 37.37 \text{ dB}\mu\text{V/m}$

## RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

Upper band edge mode g (conducted)



08.Aug 14 11:34

\*RBW 100 kHz

Delta 2 [T1 ]

\*VBW 3 MHz

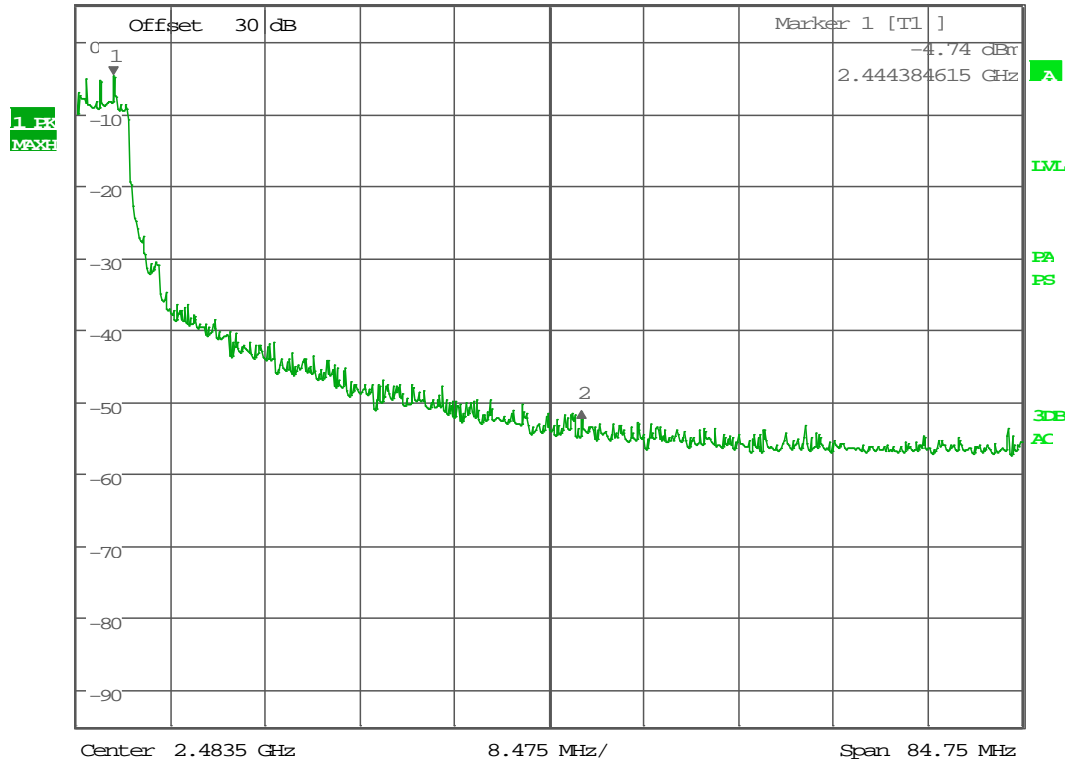
-46.71 dB

Ref 5 dBm

\*Att 10 dB

SWT 10 ms

41.967548077 MHz



Date: 8.AUG.2014 11:34:50

Field strength of the fundamental 89.52 dBμV/m

$89.52 \text{ dB}\mu\text{V/m} - 46.71 \text{ dB} = 42.81 \text{ dB}\mu\text{V/m}$

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND



08.Aug 14 11:28

\*RBW 100 kHz

Marker 1 [T1 ]

\*VBW 3 MHz

-9.82 dBm

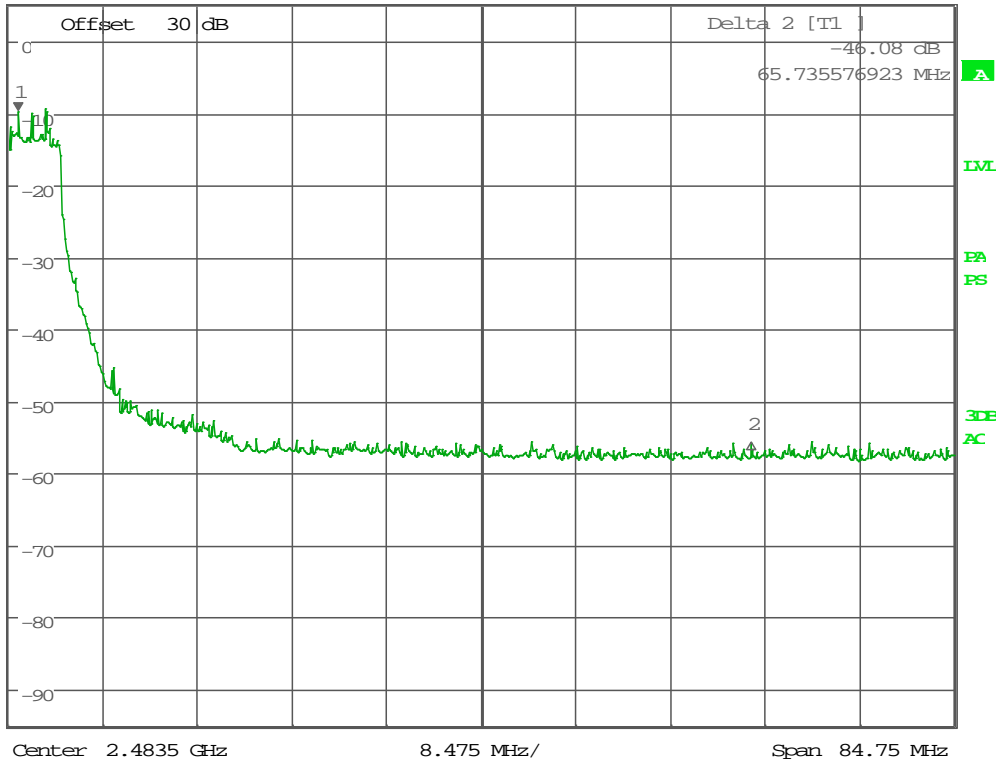
Ref 5 dBm

\*Att 10 dB

SWT 10 ms

2.441939904 GHz

1.33  
Next



Date: 8.AUG.2014 11:28:42

Field strength of the fundamental 89.77 dBμV/m

$89.77 \text{ dB}\mu\text{V/m} - 46.08 \text{ dB} = 43.69 \text{ dB}\mu\text{V/m}$

APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## POWER SPECTRAL DENSITY

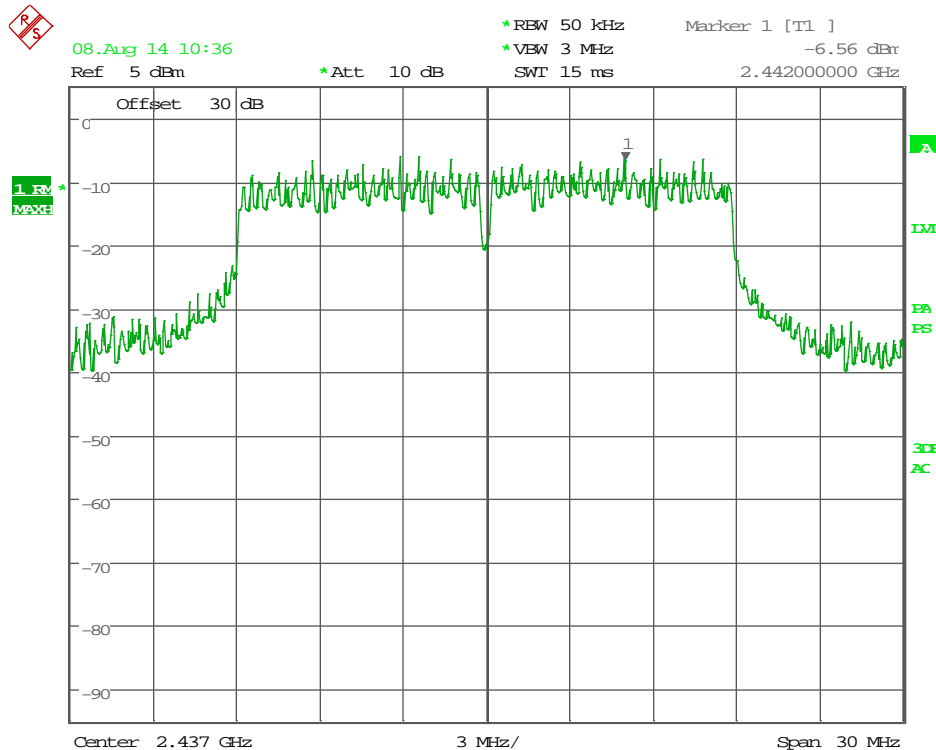
Rules Part No.: 15.247(d)

**Requirements:** The peak level measured must be less than +8.0 dBm/3 kHz.

All the data rates were checked and the worst case (highest) presented below.

**Test Data:** SEE THE FOLLOWING PLOTS

Mode n (conducted)



Date: 8.AUG.2014 10:36:26

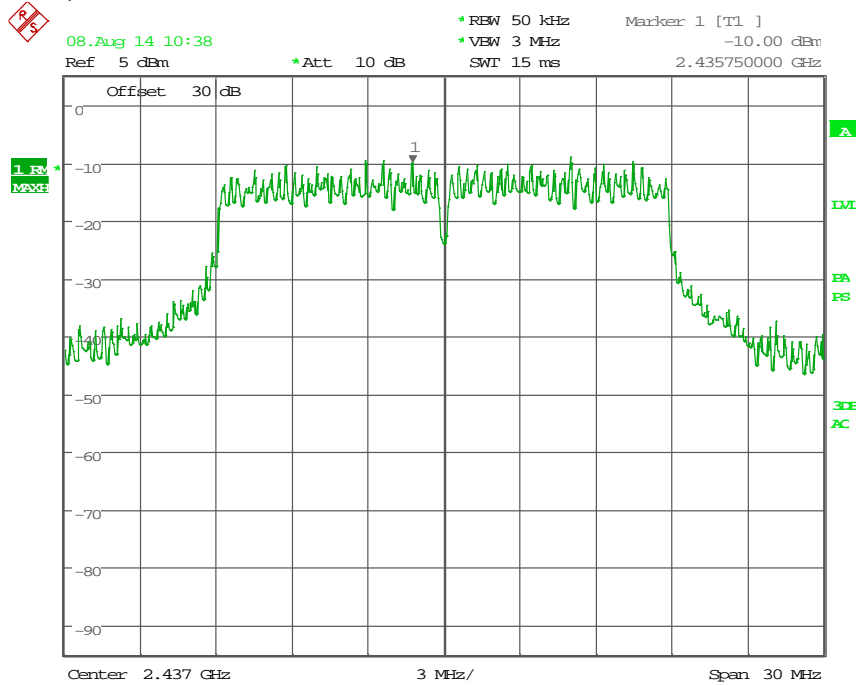
APPLICANT: ONE WORLD TECHNOLOGIES, INC

FCC ID: VMZES5

REPORT: O\ONE WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx

## POWER SPECTRAL DENSITY

Mode g (conducted)



Date: 8.AUG.2014 10:38:16

APPLICANT: ONE WORLD TECHNOLOGIES, INC  
 FCC ID: VMZES5  
 REPORT: O\ONE\_WORLD\_VMZ\1380AUT14\1380AUT14TestReport.docx



## EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Shielded Enclosure Screen Room	Timco	Shielded Enclosure	N/A	N/A	N/A
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	12/31/13	12/31/15
Coaxial Cable - Chamber 3 cable set	Semiflex	N/A	Chamber 3 cable set	1/26/12	1/26/15
EMI Test Receiver	Rhode & Schwarz	*ESU40	1302.6005.40	3/21/13	3/21/15
Antenna: Biconnical	Eaton	94455-1	1096	5/10/13	5/10/15
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	5/09/13	5/09/15
Antenna: Double-Ridged Horn/ETS Horn 2	ETS-Lindgren	3117	00041534	10/05/12	10/05/14
Coaxial Cable #65	General Cable Co.	E9917 RG233/U	Timco #65	6/26/13	6/26/15
LISN	Electro-Metrics	EM-7820	2682	6/5/13	6/5/15

### \*EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3