TEST REPORT

Report Number: 104650317MIN-001
Project Number: G104650317

Testing performed on the
9389-GED24500-GIG(Kwikset 938 / Weiser GED2400)
9389-GED24500-GIG(Kwikset 939 / Weiser GED2500)
959-3000-GIG(Kwikset 959 / Weiser GED3000)

to
47 CFR, Part 15. 247:2021
RSS-247 Issue 2, February 2017
RSS-Gen, Issue 5, 2019, Amendment 1

Class II Permissive Changes for FCC ID: NUL-WIFI-GIG, IC: 3022A-WIFIGIG
(Output power and Radiated Spurious Emissions only)

For
Spectrum Brands Inc.

Test Performed by:	Test Authorized by:
Intertek Testing Services NA, Inc.	Spectrum Brands Inc.
40 51st Way NE, Suite 100	19701 Da Vinci
Fridley, MN 55421 USA	Lake Forest, CA 92610, USA

Prepared by: Richard Blonigen

Reviewed by: Uri Spector Date of issue: April 28, 2021

TABLE OF CONTENTS

1.0 GENERAL DESCRIPTION

Models:	9389-GED24500-GIG(Kwikset 938 / Weiser GED2400) 9389-GED24500-GIG(Kwikset 939 / Weiser GED2500) 959-3000-GIG(Kwikset 959 / Weiser GED3000)
Type of EUT:	Wireless Deadbolt
Serial Number:	PROTO
Related Submittal(s) Grants:	Class II Permissive Changes Class II Permissive Changes for FCC ID: NUL-WIFI-GIG, IC: 3022A-WIFIGIG
Company:	Spectrum Brands Inc.
Customer:	Johanis Hashim
Address:	19701 Da Vinci Lake Forest, CA 92610, USA
e-mail:	Johani.hashim@spectrumbrands.com
Test Standards:	☒ 47 CFR, Part 15:2021, §15.247 ☒ RSS–247, Issue 2, 2017 ☒ RSS-Gen, Issue 5, 2019, Amendment 1 (Output power and Radiated Spurious Emissions only)
Type of radio:	☒ Stand -alone ☐ Module ☐ Hybrid
Date Sample Submitted:	April 15, 2021
Test Work Started:	April 19, 2021
Test Work Completed:	April 22, 2021
Test Sample Conditions:	☐ Damaged ☐Poor (Usable) ☒ Good

1.1 Product Description; Test Facility

Product Description:	Wireless deadbolt
Transmitter Type:	☐ FHSS ☐ Digital Modulation ☐ WiFi ☒ Bluetooth Low Energy (BLE) The equipment under test is a wireless deadbolt with integrated Bluetooth Low Energy (BLE) transceiver and containing a certified Wi-Fi transmitter module (FCC ID: Z64-CC3220MOD, IC: 451I-CC3220MOD). This test report covers the radiated spurious emissions of the BLE transmitter.
Frequency Band(s):	2402 MHz – 2480 MHz
Number of Channels:	3 (2402 MHz, 2440 MHz, 2480 MHz)
Modulation:	GFSK
Antenna(s) Info:	Permanent attached SMD antenna. Antenna Gain: 2.62 dBi
Power settings:	Refer to the original filing
Antenna Installation:	☐ User ☐ Professional ☒ Factory
Transmitter power configuration:	☒ 6VDC New Internal battery ☐ External power source ☐ 120VAC ☐ 230VAC ☐ 400VAC ☐ VDC ☐ Other: Amp. ☐ 50Hz ☐ 60Hz
Special Test Arrangement:	EUT was tested as the customers would normally use (vertical orientation)..
Test Facility Accreditation:	A2LA (Certificate No. 1427.01)
Test Methodology:	Measurements performed according to the procedures in ANSI C63.10-2013 and FCC 558074 D01 DTS Measurement Guidance

1.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

☐ - Standby
☒ - Continuous transmissions (modulated signal)
☐ - Continuous transmissions (un-modulated signal)
☐ - Continuous receiving
☐ - Test program (customer specific)
☐ -

Operating modes of the EUT:

No.	Description
1	Continuously Transmitting normal modulated signal. Test was performed at low channel, middle channel, and upper channel
2	Under test mode, the EUTs were programmed to run Bluetooth DTM Mode (FW: HaloBleFCC4_App_BtLdr_v1_05) – Modulated with continuous packet transmit.

Cables:

No.	Type	Length	Designation	Note
1	None			
2				

Support equipment/Services:

No.	Item	Description
1	None	
2		

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

The model “9389-GED24500-GIG” represents four models: Kwikset 938, Weiser GED2400, Kwikset 939, and Weiser GED2500. Kwikset 938 is identical to Weiser GED2400. Kwikset 939 is identical to Weiser GED2500. Different model names are for different markets.

The model’s name of “959-3000-GIG” represents tow models: Kwikset 959 and Weiser GED3000. Kwikset 959 is identical to Weiser GED3000. Different model names are for different.

1.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

☒ **Normal**

Temperature:	+15 to +35 ° C
Humidity:	20-75 %
Atmospheric pressure:	86-106 kPa

☐ **Extreme**

☐ **Temperature:**	-20 to +50 ° C
☐ **Supply voltage:**	85% to +115%

1.4 Measurement uncertainty

Radiated Emissions:

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.0 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.8 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	5.1 dB	5.2 dB
Radiated Emissions, 3m	6-18 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.2 dB	5.5 dB

As shown above our radiated emissions Measurement Uncertainty is less than the corresponding reference value U_{cispr} in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

AC Mains Conducted Emissions:

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.6 dB	3.4 dB

As shown above our conducted emissions Measurement Uncertainty is less than the corresponding reference value U_{cispr} in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.

1.5 Field Strength Calculation

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

FS = RA + AF + CF - AG

Where: FS = Field Strength in dB(µV/m)
RA = Receiver Amplitude in dB(µV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(m^{-1})
AG = Amplifier Gain in dB

Assume a receiver reading of 48.1 dB(µV) is obtained. The antenna factor of 7.4 dB(m^{-1}) and cable factor of 1.6 dB is added and amplifier gain of 16.0 dB is subtracted giving field strength of 41.1 dB(µV/m).

RA = 48.1 dB(µV)
AF = 7.4 dB(m^{-1})
CF = 1.6 dB
AG = 16.0 dB
FS = RA + AF + CF - AG
FS = 48.1 + 7.4 + 1.6 – 16.0
FS = 41.1 dB(µV/m)

2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST SPECIFICATION	TEST PARAMETERS	RESULT
15.247(b), (c) / RSS-247 5.4	Maximum peak output power	Pass
15.247(d) / RSS-247 5.5	Radiated spurious emissions	Pass
15.247(i) / RSS- Gen 5.5	RF Exposure Compliance	Pass

3.0 TEST CONDITIONS AND RESULTS

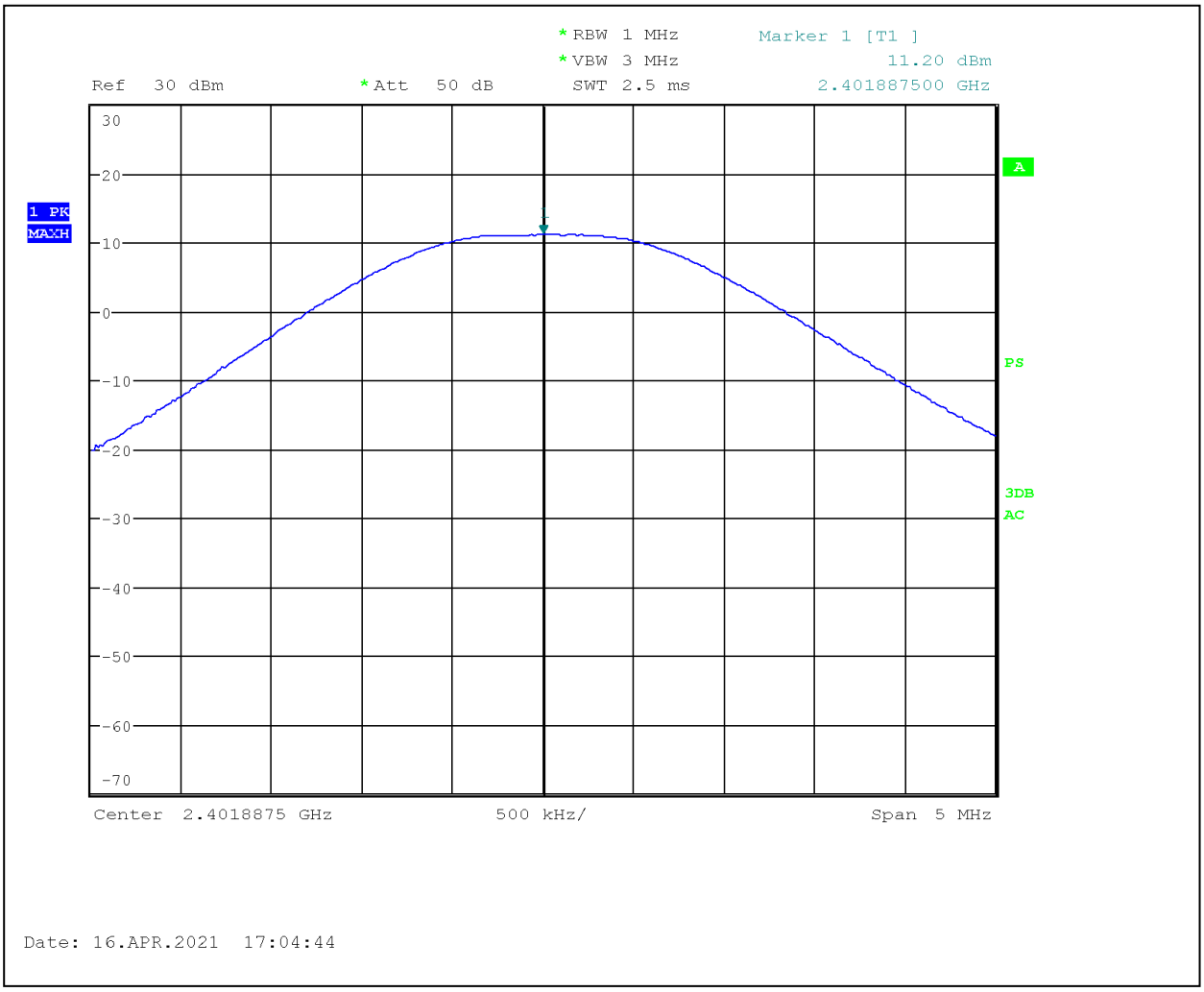
3.1 Maximum peak output power

Test location: ☐ OATS ☒ Anechoic Chamber ☐ Other

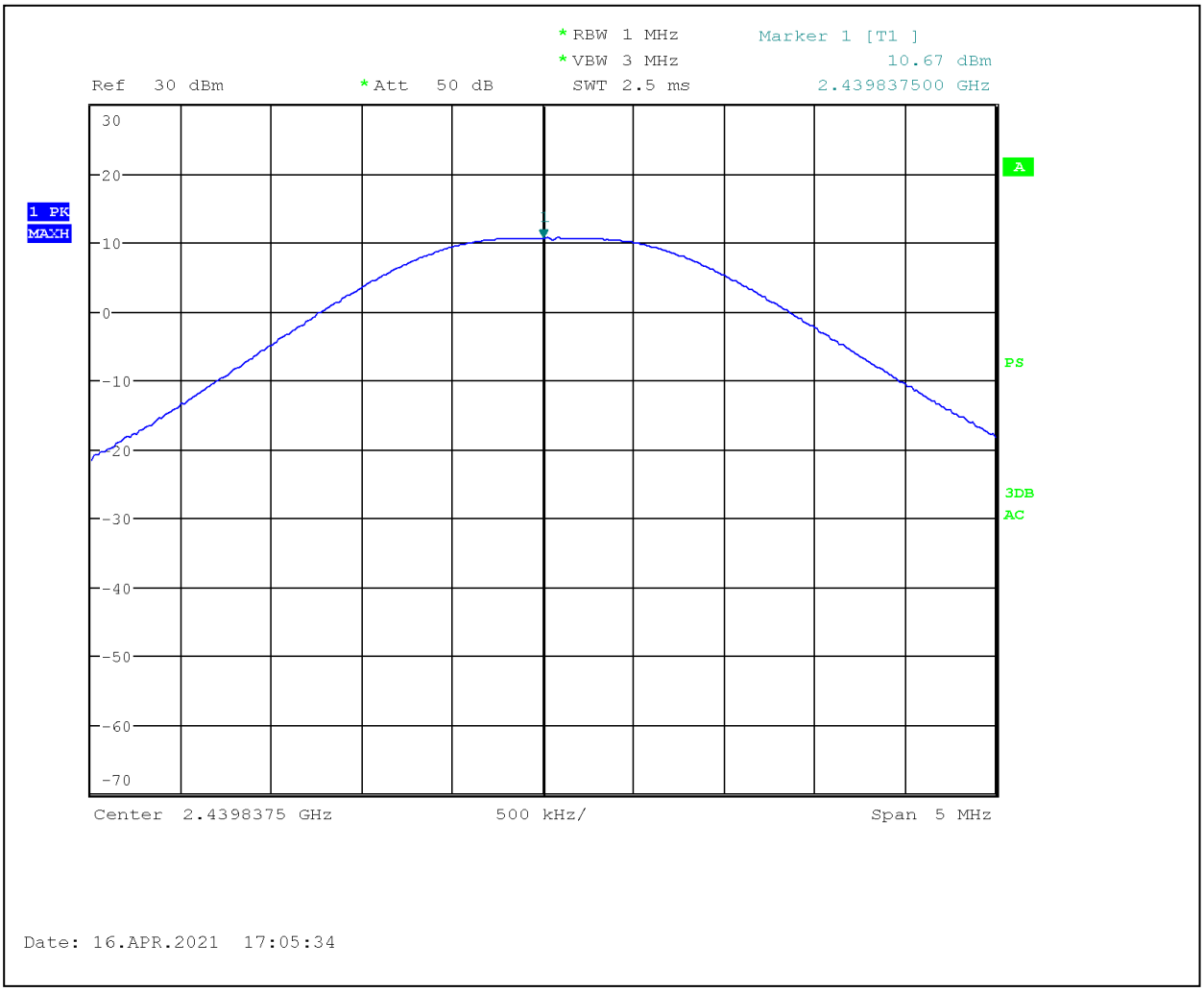
Test result: **Pass**

Power Output:	**Conducted**					
Frequency Range:	☐ 902-928MHz		☒ 2400-2483.5MHz		☐ 5725-5850MHz	
Low Frequency MHz	**Measured power dBm**	**Attenuaton dB**	**Power at Antenna dBm**	**Limit dBm**	**Limit Reduction dB**	**Margin dB**
2402.	11.20	0.4	11.60	30	0	18.40
Middle Frequency MHz						
2440	10.67	0.4	11.07	30	0	18.93
Upper Frequency MHz						
2480	10.19	0.4	10.59	30	0	19.41
RBW: **VBW:**	☒ 1MHz ☐ 1MHz	☐ 3MHz ☒ 3MHz	☐ 10MHz ☐ 10MHz			
Antenna Gain:	☒ < 6dBi	☐ >6dBi and = ___ dBi, Output power reduction = ___ dB				

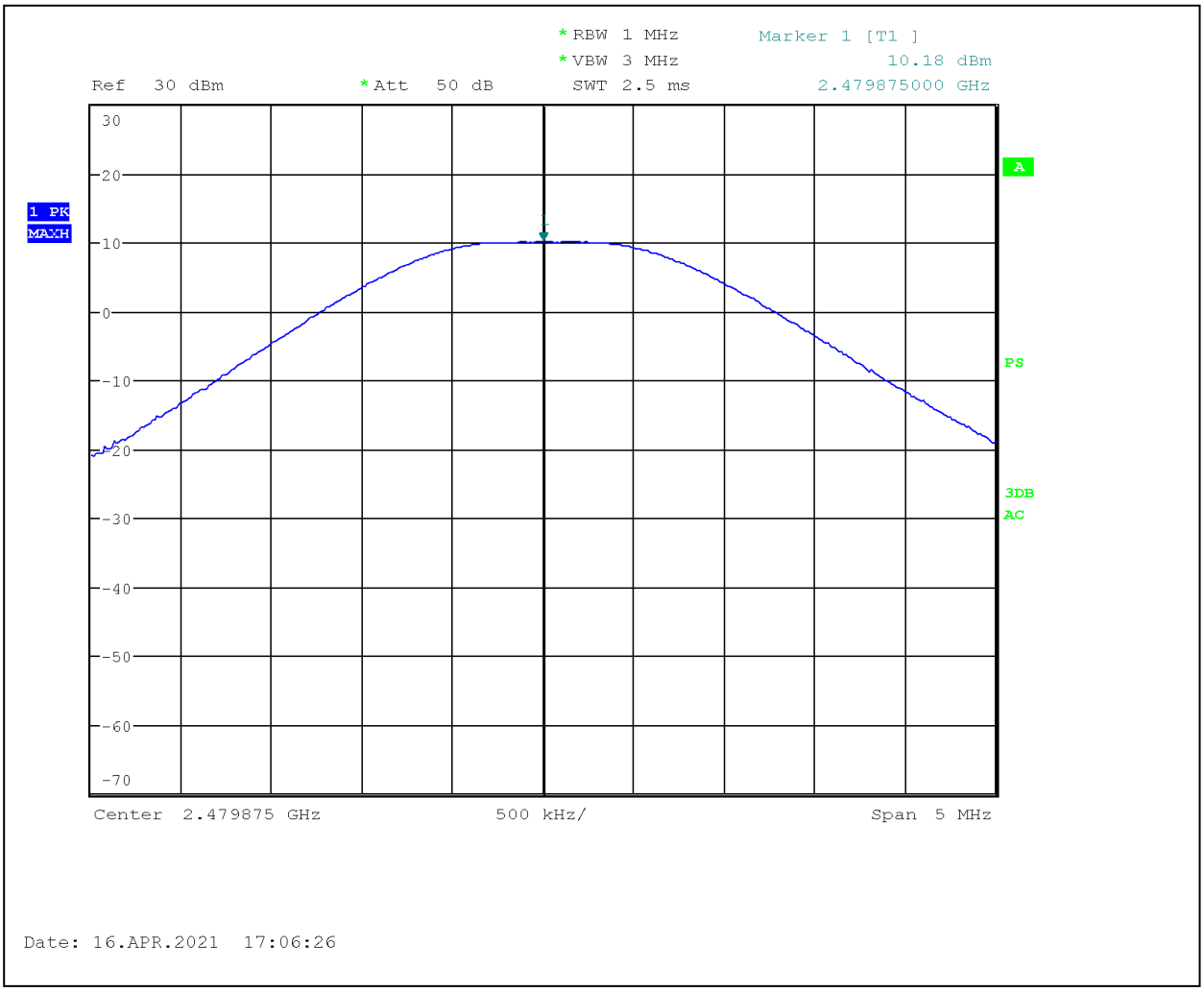
Notes: Model: 9389-GED24500-GIG (Kwikset 938 / Weiser GED2400)


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
11.20 dBm
2.401887500 GHz
Ref 30 dBm
* Att 50 dB
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.4018875 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 17:04:44

Graph 3.2.1


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
10.67 dBm
2.439837500 GHz
Ref 30 dBm
* Att 50 dB
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.4398375 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 17:05:34

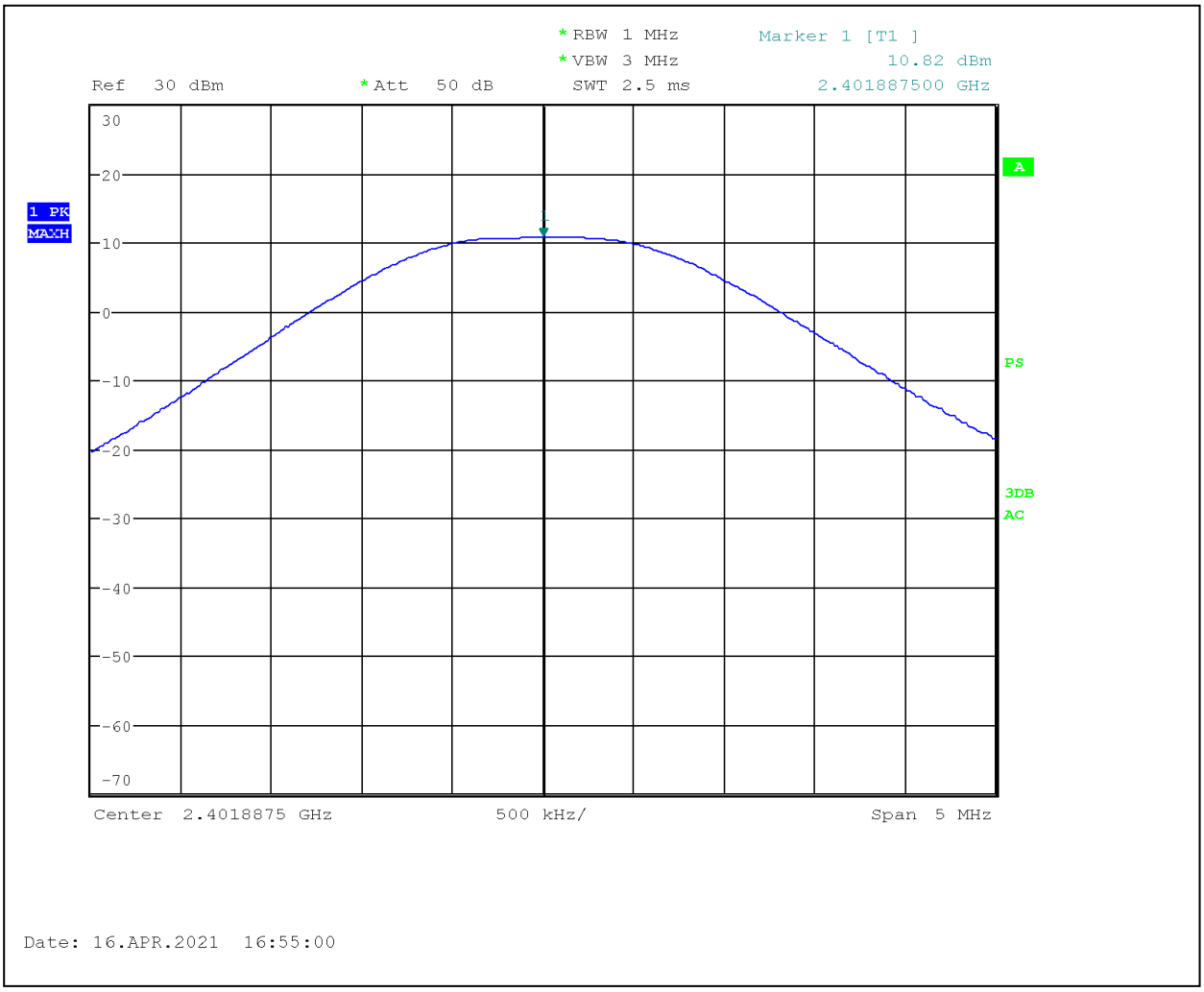
Graph 3.2.2


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
10.18 dBm
2.479875000 GHz
Ref 30 dBm
* Att 50 dB
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.479875 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 17:06:26

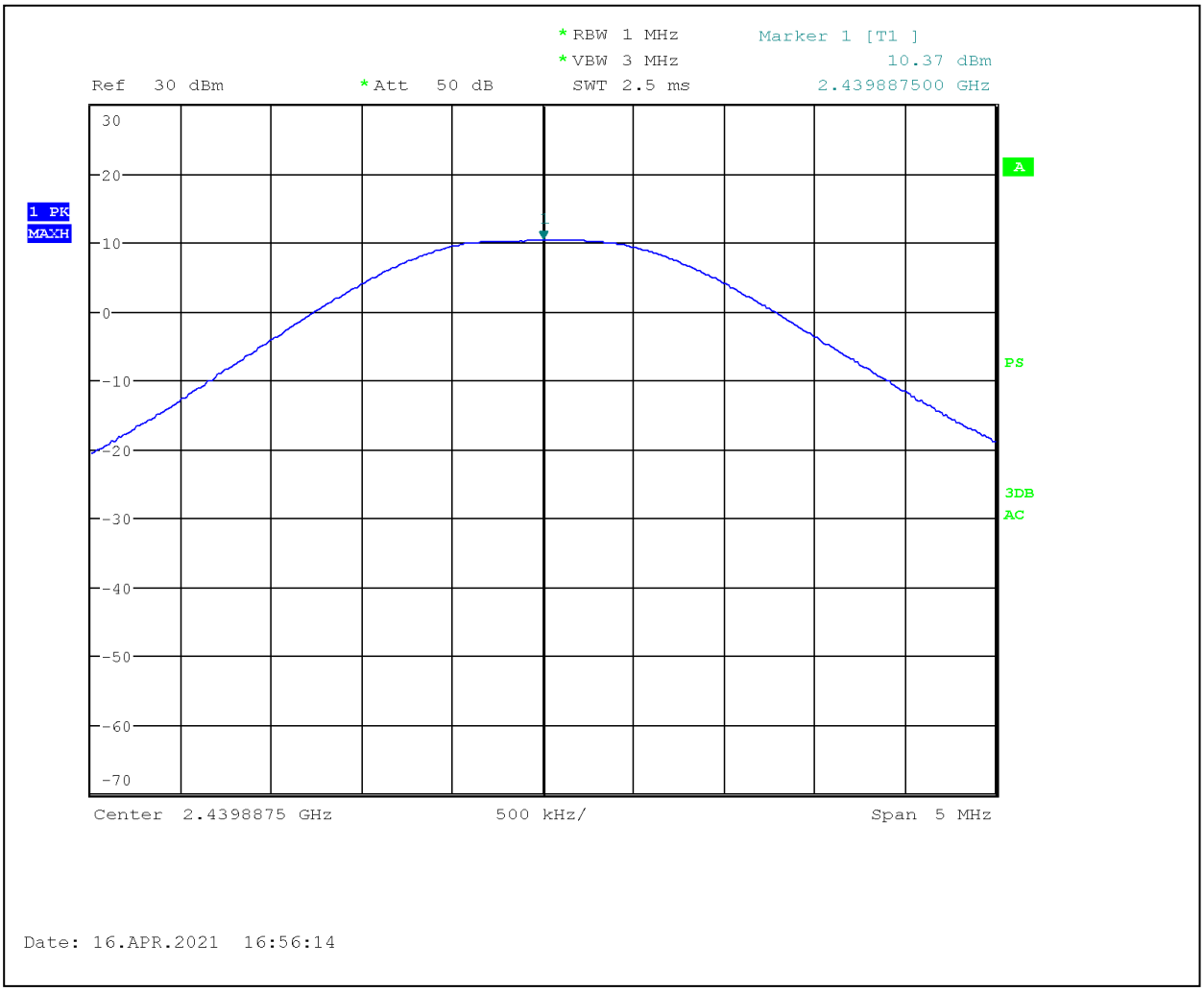
Graph 3.2.3

Power Output:	Conducted					
Frequency Range:	☐ 902-928MHz		☒ 2400-2483.5MHz		☐ 5725-5850MHz	
Low Frequency MHz	**Measured power dBm**	**Attenuaton dB**	**Power at Antenna dBm**	**Limit dBm**	**Limit Reduction dB**	**Margin dB**
2402	10.82	0.4	11.22	30	0	18.78
Middle Frequency MHz						
2440	10.37	0.4	10.77	30	0	19.23
Upper Frequency MHz						
2480	9.86	0.4	10.26	30	0	19.74
RBW: **VBW:**	☒ 1MHz ☐ 1MHz	☐ 3MHz ☒ 3MHz	☐ 10MHz ☐ 10MHz			
Antenna Gain:	☒ < 6dBi	☐ >6dBi and = dBi, Output power reduction = dB				

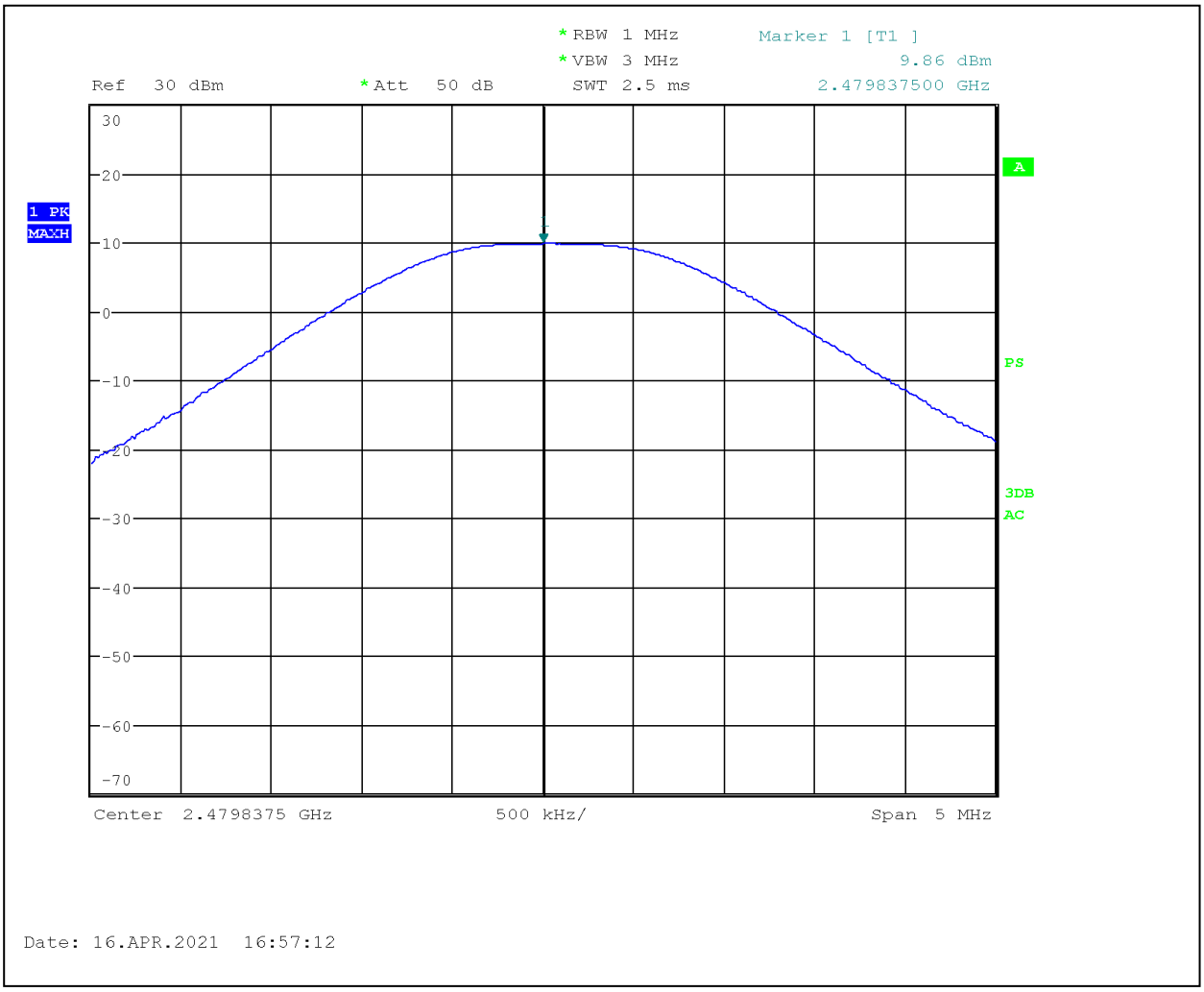
Notes: Model: 9389-GED24500-GIG (Kwikset 939 / Weiser GED2500)


* RBW 1 MHz
* VBW 3 MHz
Marker 1 [T1]
10.82 dBm
2.401887500 GHz
Ref 30 dBm
* Att 50 dB
SWT 2.5 ms
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.4018875 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:55:00

Graph 3.2.4


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
10.37 dBm
2.439887500 GHz
Ref 30 dBm
* Att 50 dB
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
PS
3DB
AC
Center 2.4398875 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:56:14

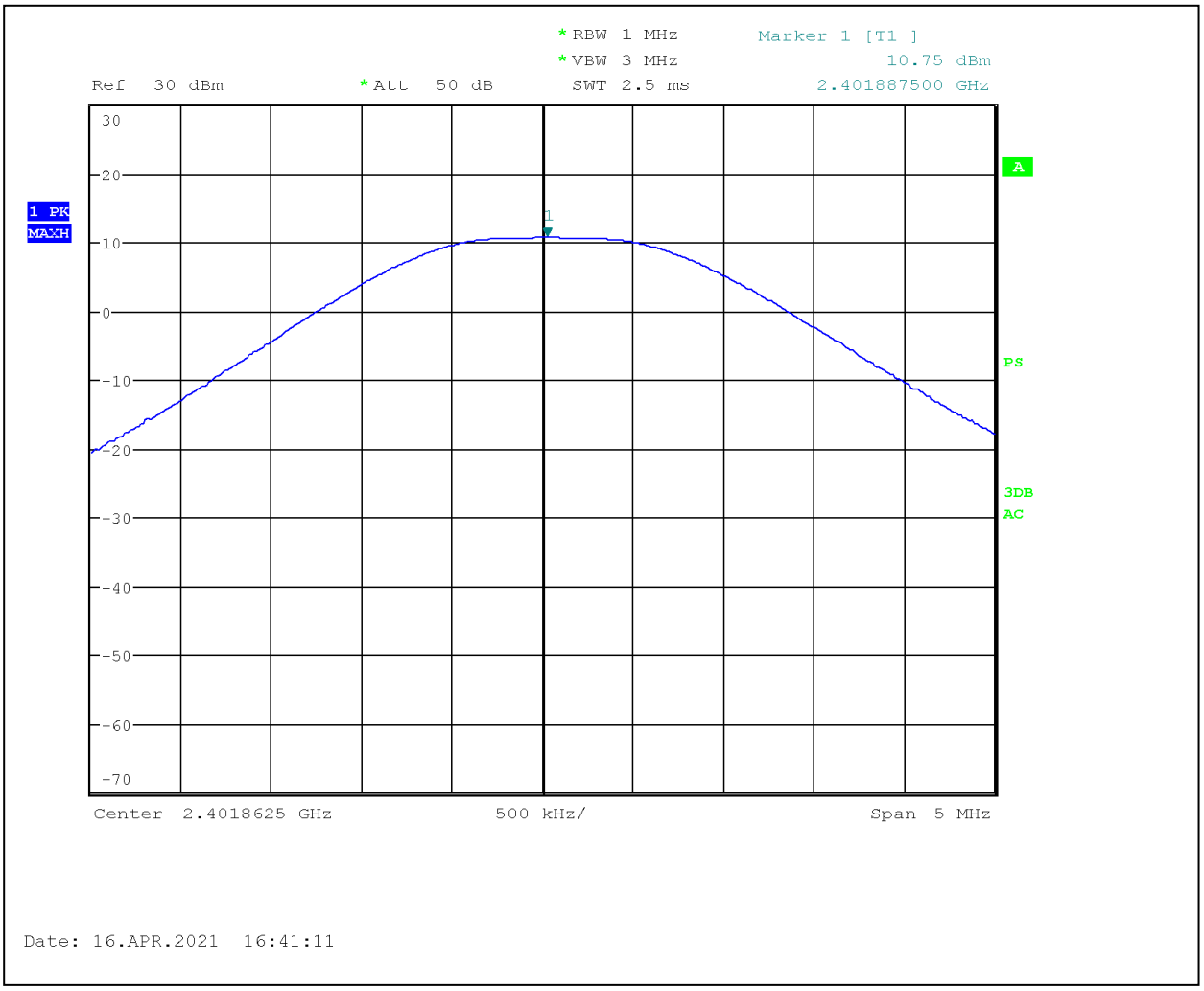
Graph 3.2.5


* RBW 1 MHz
* VBW 3 MHz
Marker 1 [T1]
9.86 dBm
2.479837500 GHz
Ref 30 dBm
* Att 50 dB
SWT 2.5 ms
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
PS
3DB
AC
Center 2.4798375 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:57:12

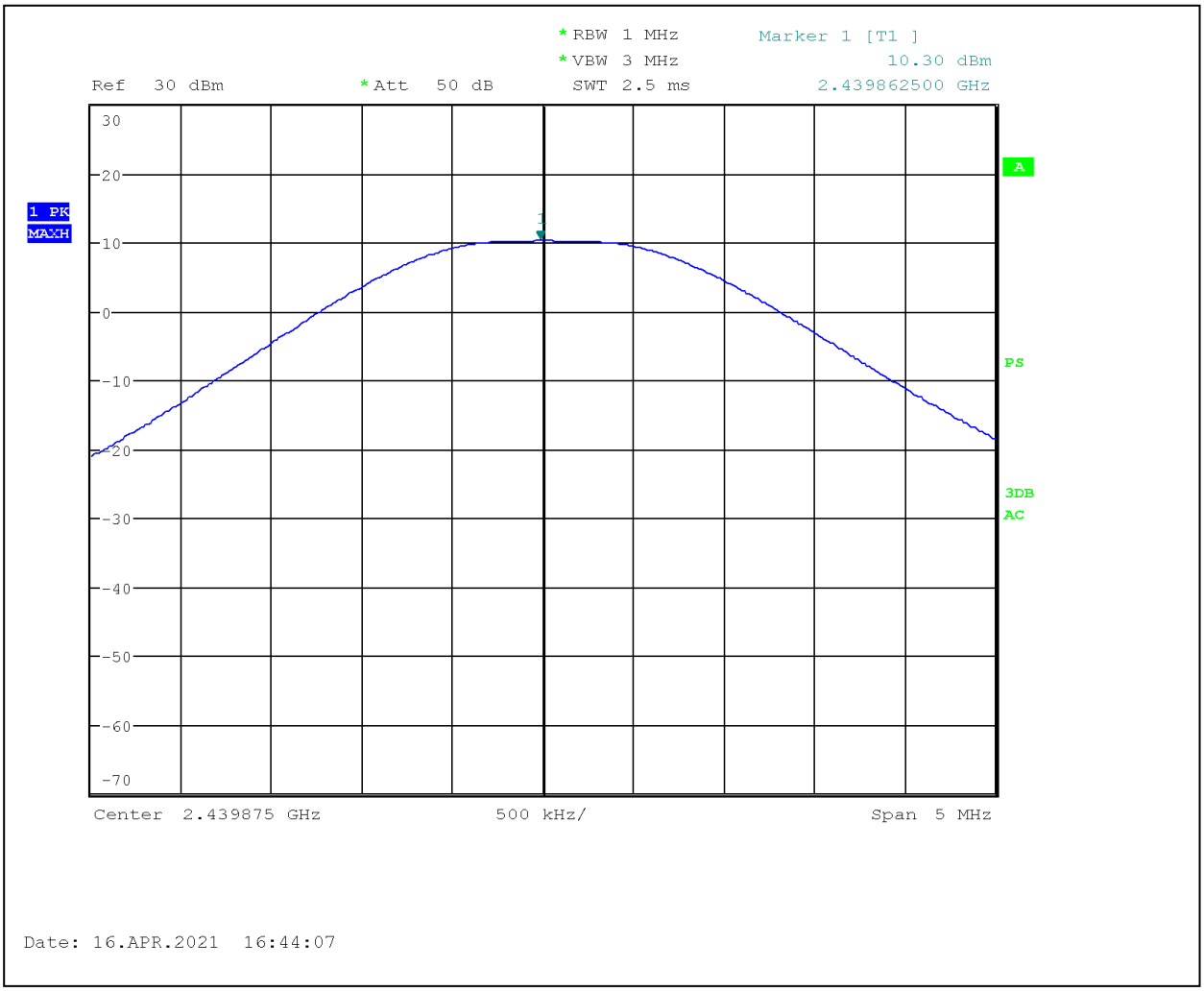
Graph 3.2.6

Power Output:	Conducted					
Frequency Range:	☐ 902-928MHz		☒ 2400-2483.5MHz		☐ 5725-5850MHz	
Low Frequency MHz	**Measured power dBm**	**Attenuaton dB**	**Power at Antenna dBm**	**Limit dBm**	**Limit Reduction dB**	**Margin dB**
2402	10.75	0.4	11.15	30	0	18.85
Middle Frequency MHz						
2440	10.30	0.4	10.70	30	0	19.30
Upper Frequency MHz						
2480	9.78	0.4	10.18	30	0	19.82
RBW: **VBW:**	☒ 1MHz ☐ 1MHz	☐ 3MHz ☒ 3MHz	☐ 10MHz ☐ 10MHz			
Antenna Gain:	☒ < 6dBi	☐ >6dBi and = dBi, Output power reduction = dB				

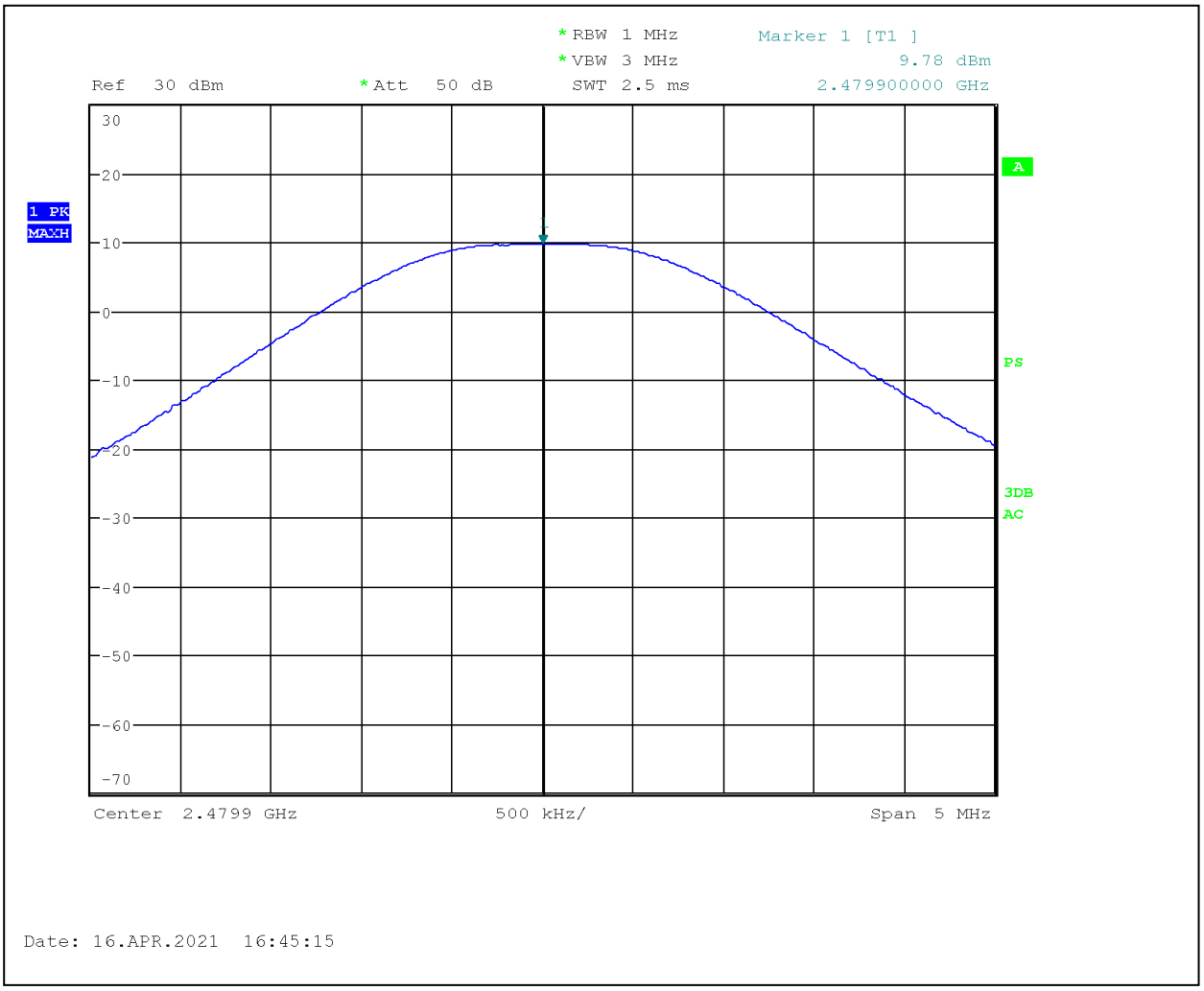
Notes: Model: 959-3000-GIG (Kwikset 959 / Weiser GED3000)


* RBW 1 MHz
* VBW 3 MHz
Marker 1 [T1]
10.75 dBm
2.401887500 GHz
Ref 30 dBm
* Att 50 dB
SWT 2.5 ms
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.4018625 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:41:11

Graph 3.2.7


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
10.30 dBm
2.439862500 GHz
Ref 30 dBm
* Att 50 dB
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.439875 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:44:07

Graph 3.2.8


* RBW 1 MHz
* VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
9.78 dBm
2.479900000 GHz
Ref 30 dBm
* Att 50 dB
1 PK
MAXH
A
PS
3DB
AC
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.4799 GHz
500 kHz/
Span 5 MHz
Date: 16.APR.2021 16:45:15

Graph 3.2.9

3.2 Radiated spurious emissions

Test location: ☐ OATS ☒ Anechoic Chamber ☐ Other

Test result: **Pass**

EUT was configured to transmit continuously. Radiated emission measurements were performed from 9 kHz to 25 GHz according to the procedure described in ANSI C64.10.

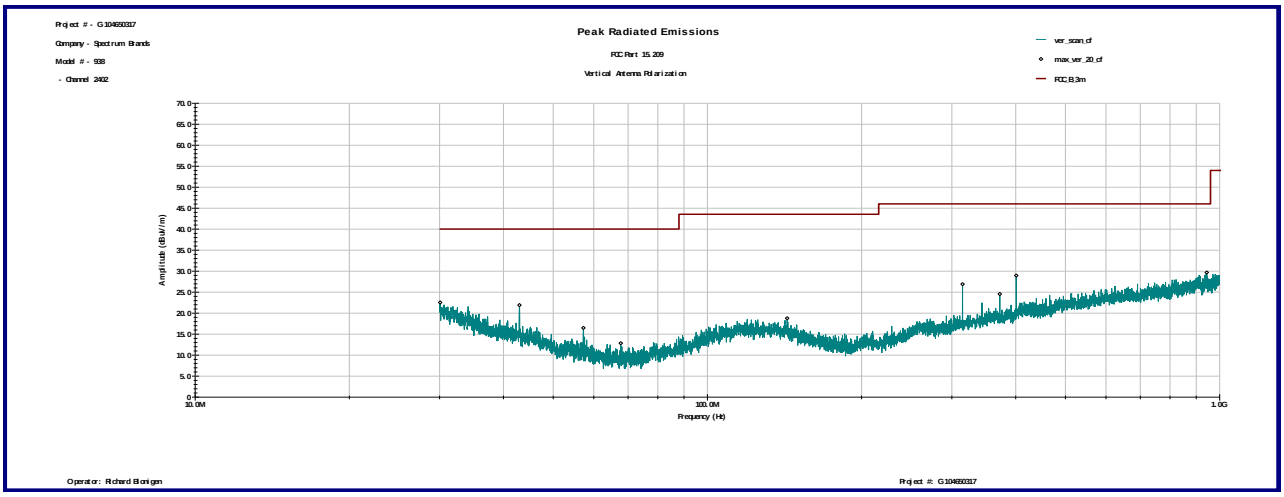
Spectrum analyzer resolution bandwidth is 200 Hz for frequencies 9 kHz to 150 kHz, 9 kHz for frequencies 150 kHz to 30MHz and 120 kHz for frequencies 30 MHz to 1 GHz. Above 1 GHz, both Peak and Average measurements were performed. The peak level of radiated emissions was measured with a resolution bandwidth (RBW) of 1 MHz, a video bandwidth (VBW) of 3 MHz, and a peak detector. Duty cycle correction factor (DCCF) applied to the peak level for the average level of radiated emissions. Duty cycle of 0.196 was provided by Spectrum Brands. Refer to the operational description for the derivation of duty cycle.

Data included is representative of the worst-case configuration (the configuration which resulted in the highest emission levels). Data provided is corrected for distance, cables, preamp, filters and antenna factors then compared to the limits

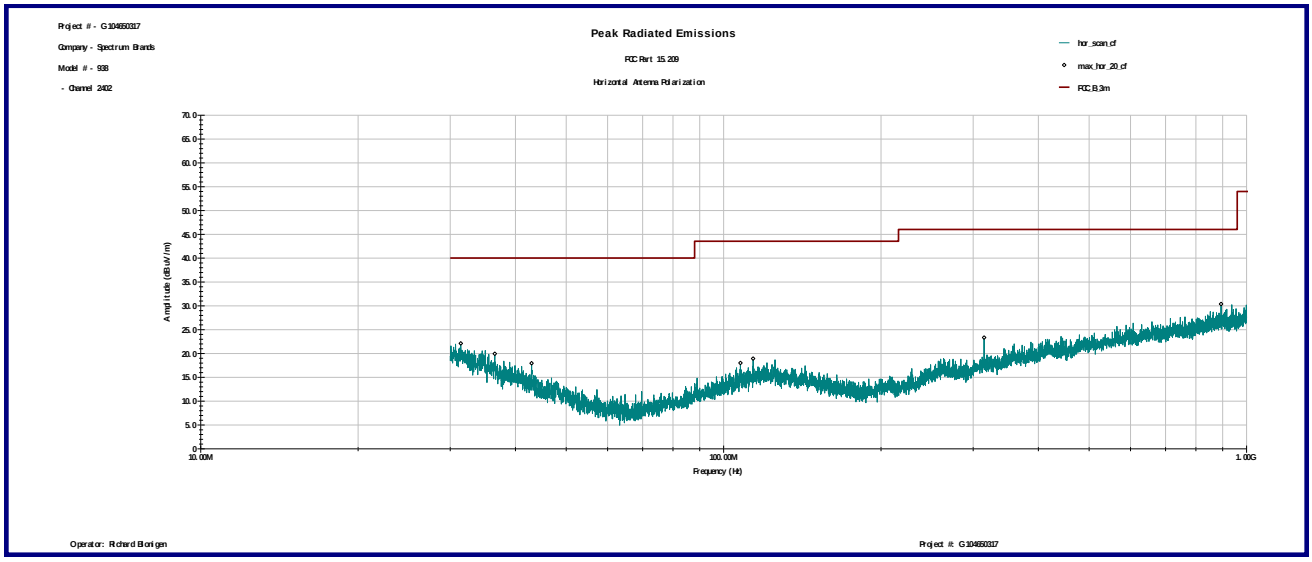
Note 1: No Radiated and Spurious emissions were detected in the frequency range 9 kHz to 30MHz and 18GHz to 25 GHz.

Note 2: No Radiated and Spurious emissions related with transmitting operation were detected in the frequency range 30 MHz to 1 GHz.

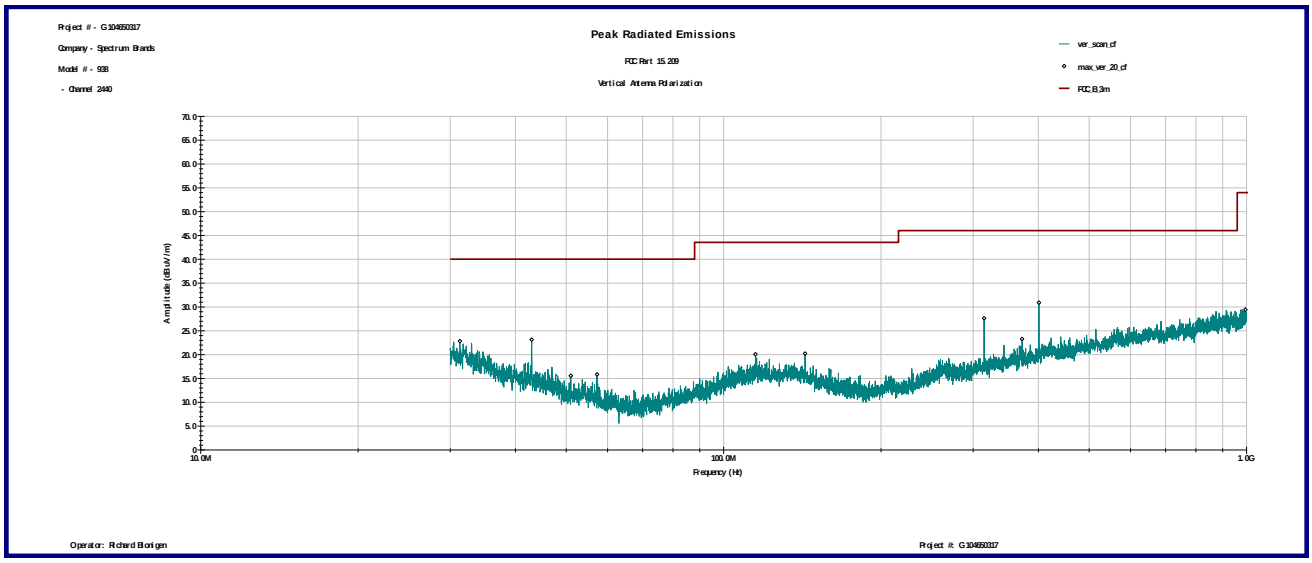
Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	9389-GED24500-GIG(Kwikset 938 / Weiser GED2400) Frequency Range: 30MHz – 1GHz	



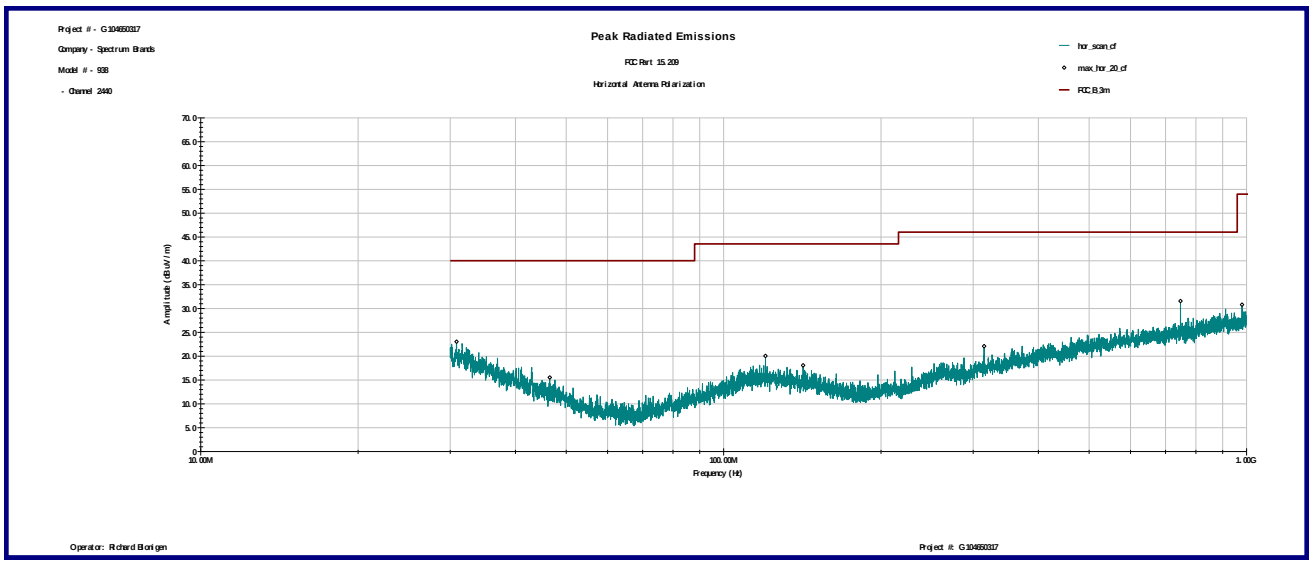
Graph 1



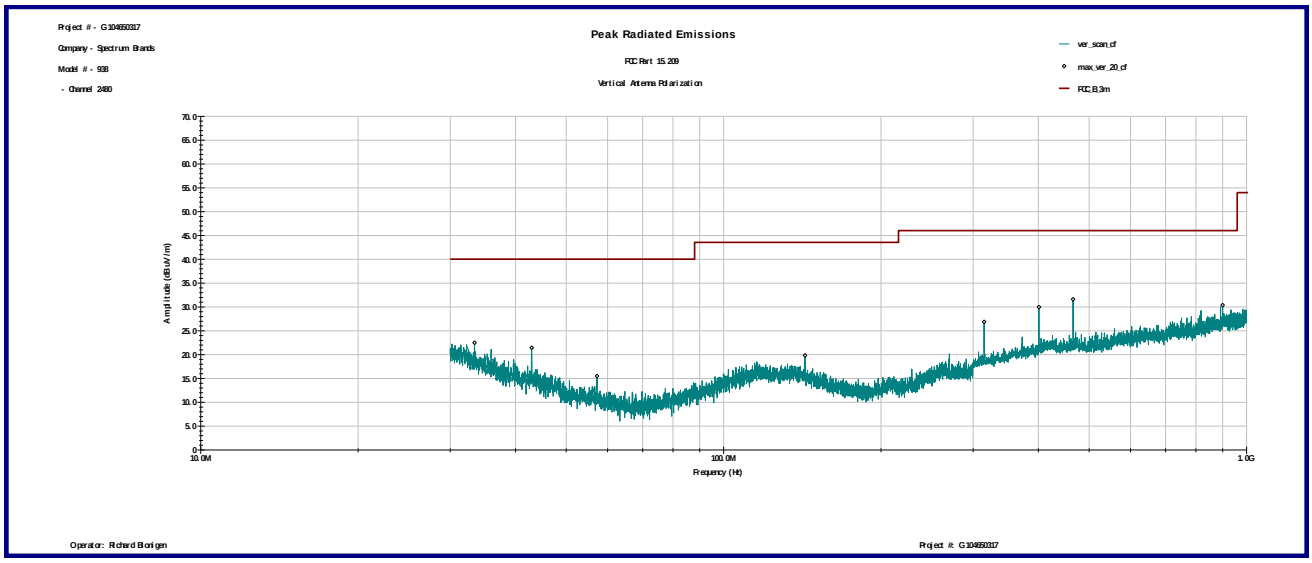
Graph 2



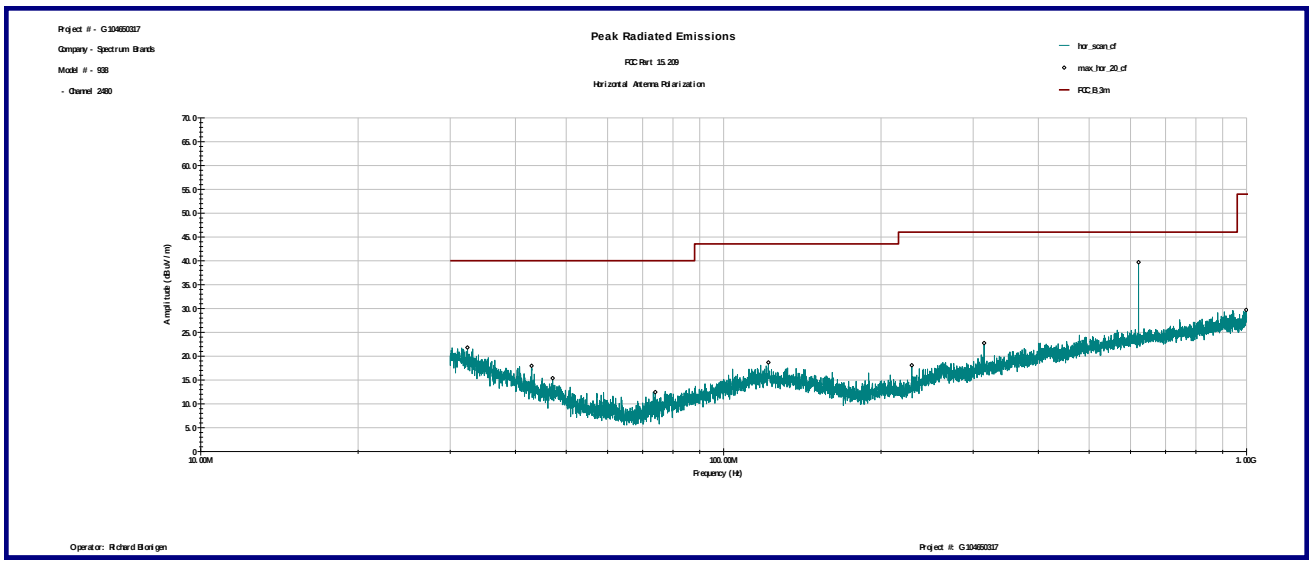
Graph 3



Graph 4



Graph 5



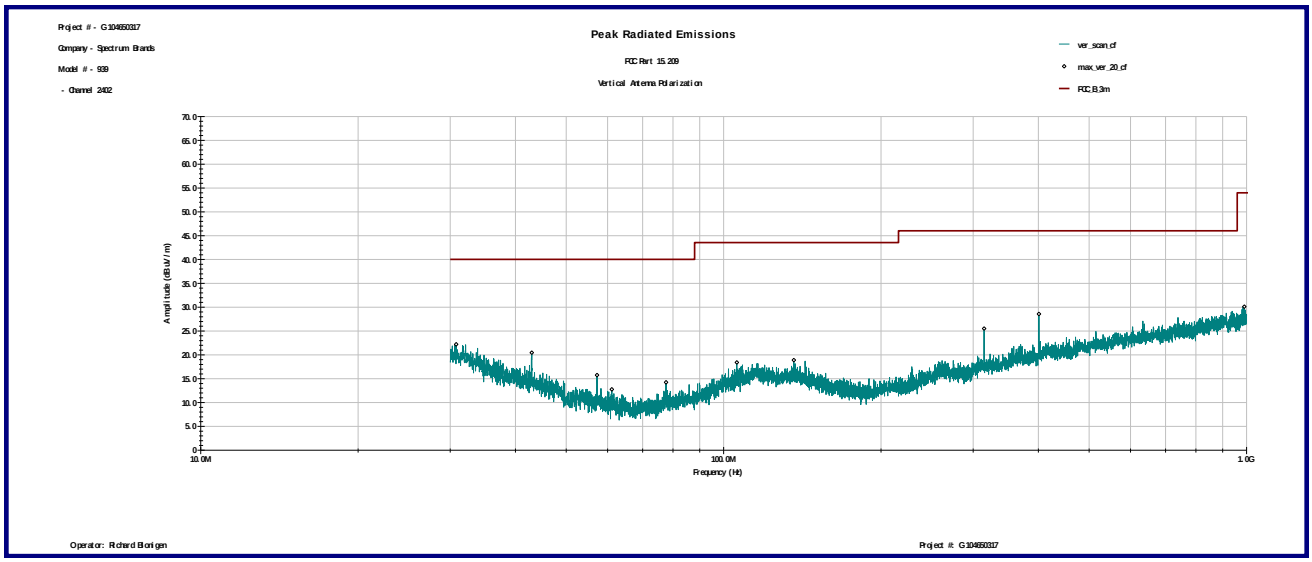
Graph 6

Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	9389-GED24500-GIG (Kwikset 938 / Weiser GED2400) Frequency Range: 1GHz – 25GHz	

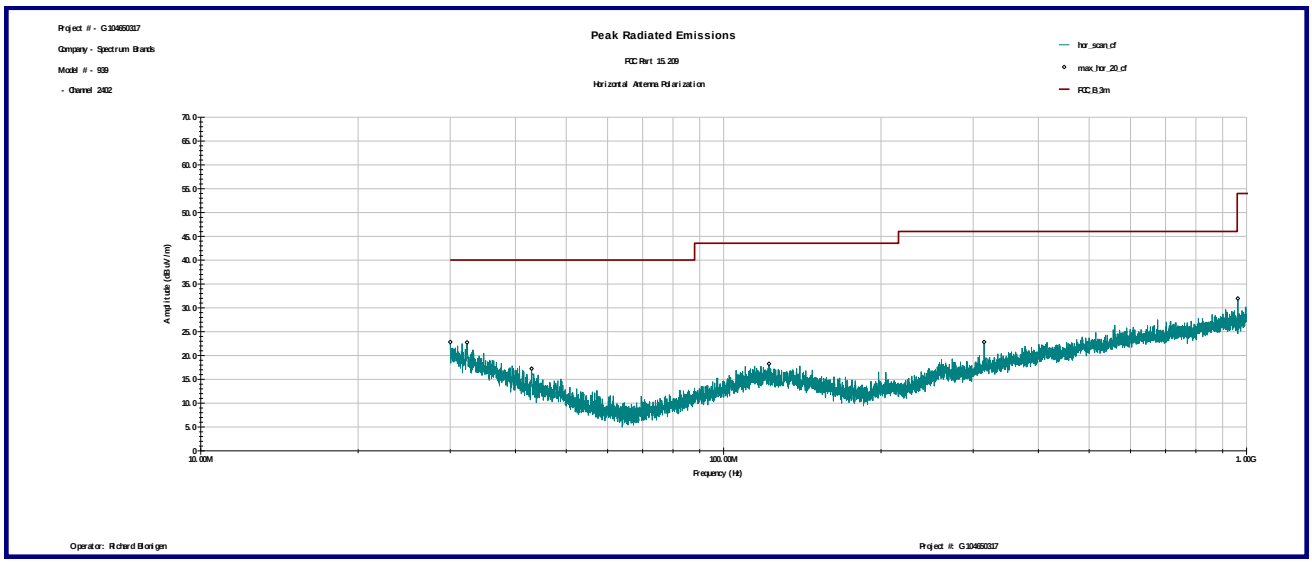
Table 3.5.1

Frequency	Antenna		Ant. CF	Cable loss and Filter CF	Pre-amp	Reading	Total @ 3m	Limit	Margin	Comments
MHz	Polarity	Hts(cm)	dB1/m	dB	Gain (dB)	dBµV	dBµV/m	dBµV/m	dB	
Channel 2402										
4804.00	V	125	32.9	3.1	43.2	51.5	44.2	54.0	-9.8	AVG
4804.00	H	143	32.9	3.1	43.2	50.0	42.7	54.0	-11.3	AVG
4804.00	V	100	32.9	3.1	43.2	65.6	58.4	74.0	-15.6	Peak
4804.00	H	100	32.9	3.1	43.2	64.1	56.9	74.0	-17.1	Peak
Channel 2440										
4880.00	V	100	33.0	3.1	43.2	49.3	42.1	54.0	-11.9	AVG
4880.00	H	100	33.0	3.1	43.2	50.4	43.2	54.0	-10.8	AVG
4880.00	V	100	33.0	3.1	43.2	63.4	56.3	74.0	-17.7	Peak
4880.00	H	100	33.0	3.1	43.2	64.5	57.3	74.0	-16.7	Peak
7320.00	H	135	36.0	3.6	43.7	38.7	34.5	54.0	-19.5	AVG
7320.00	H	135	36.0	3.6	43.7	52.8	48.7	74.0	-25.3	Peak
Channel 2480										
4960.00	V	100	33.1	3.1	43.3	51.8	44.7	54.0	-9.3	AVG
4960.00	H	100	33.1	3.1	43.3	49.3	42.2	54.0	-11.8	AVG
4960.00	V	100	33.1	3.1	43.3	65.9	58.8	74.0	-15.2	Peak
4960.00	H	100	33.1	3.1	43.3	63.4	56.3	74.0	-17.7	Peak
Bandedge										
2390.00	V	100	28.1	1.9	0.0	26.5	56.5	74.0	-17.5	Peak
2390.00	H	100	28.1	1.9	0.0	26.3	56.3	74.0	-17.7	Peak
2390.00	V	100	28.1	1.9	0.0	12.3	42.3	54.0	-11.7	AVG
2390.00	H	100	28.1	1.9	0.0	12.1	42.1	54.0	-11.9	AVG
2483.50	V	100	28.4	1.9	0.0	27.1	57.4	74.0	-16.6	Peak
2483.50	H	100	28.4	1.9	0.0	26.9	57.2	74.0	-16.8	Peak
2483.50	V	100	28.4	1.9	0.0	12.9	43.2	54.0	-10.8	AVG
2483.50	H	100	28.4	1.9	0.0	12.7	43.0	54.0	-11.0	AVG

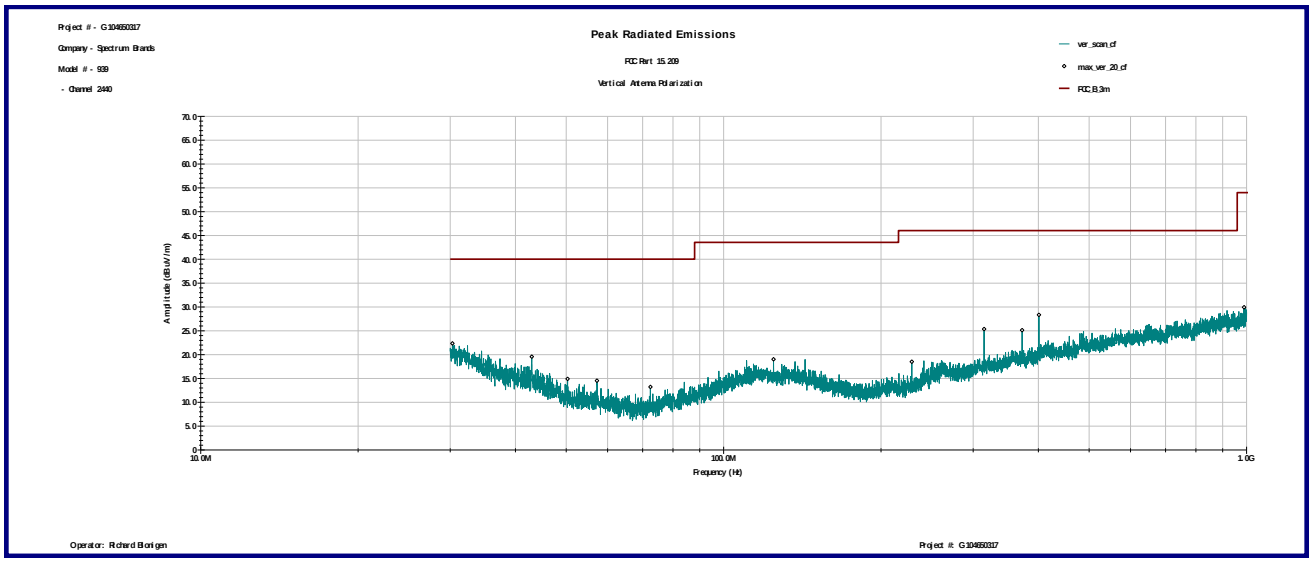
Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	9389-GED24500-GIG (Kwikset 939 / Weiser GED2500) Frequency Range: 30MHz – 1GHz	



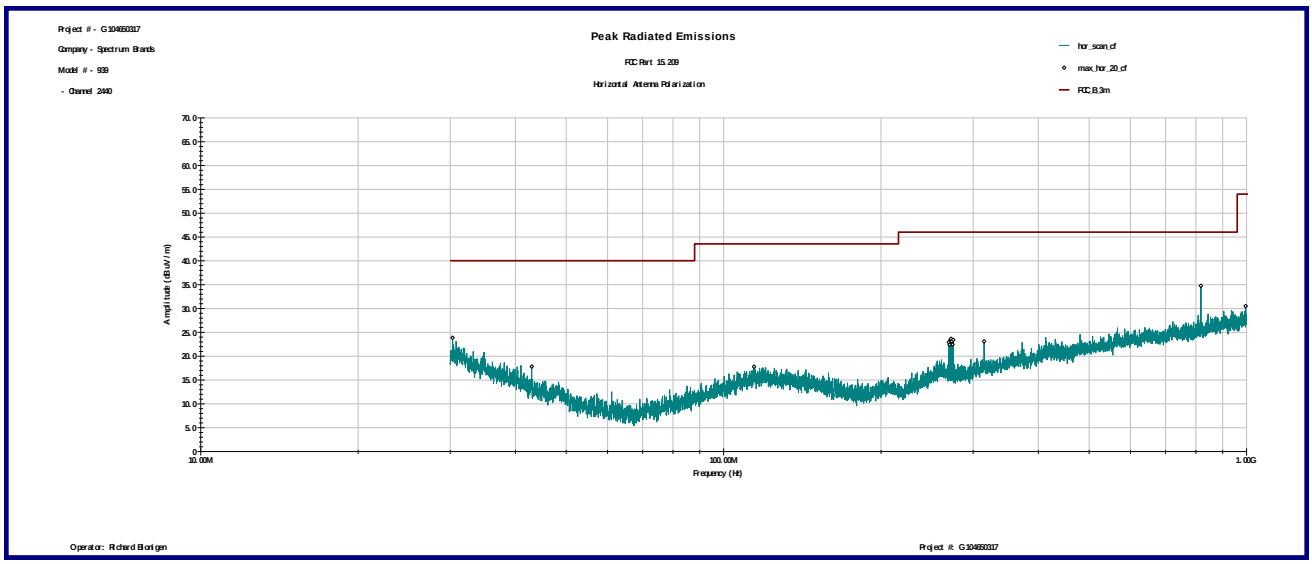
Graph 7



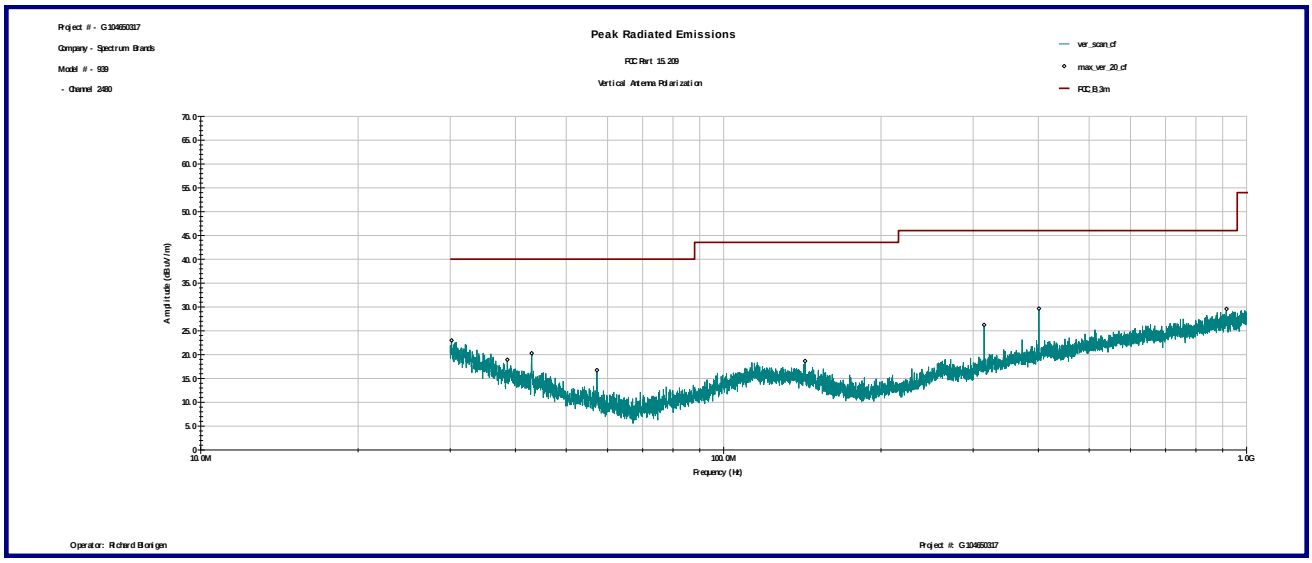
Graph 8



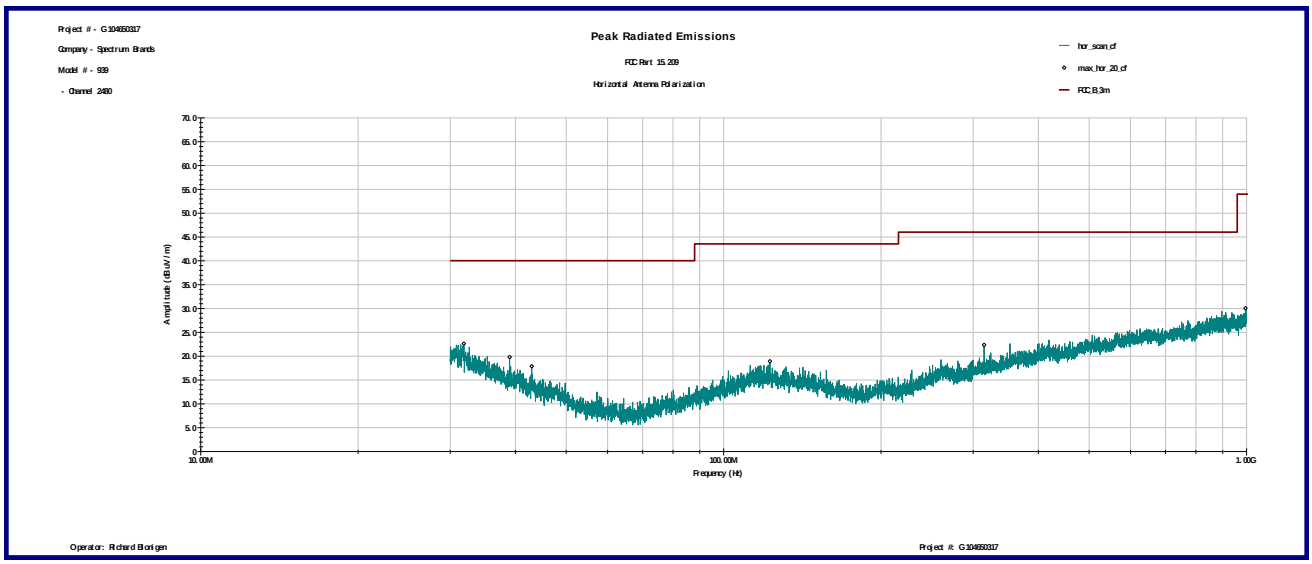
Graph 9



Graph 10



Graph 11



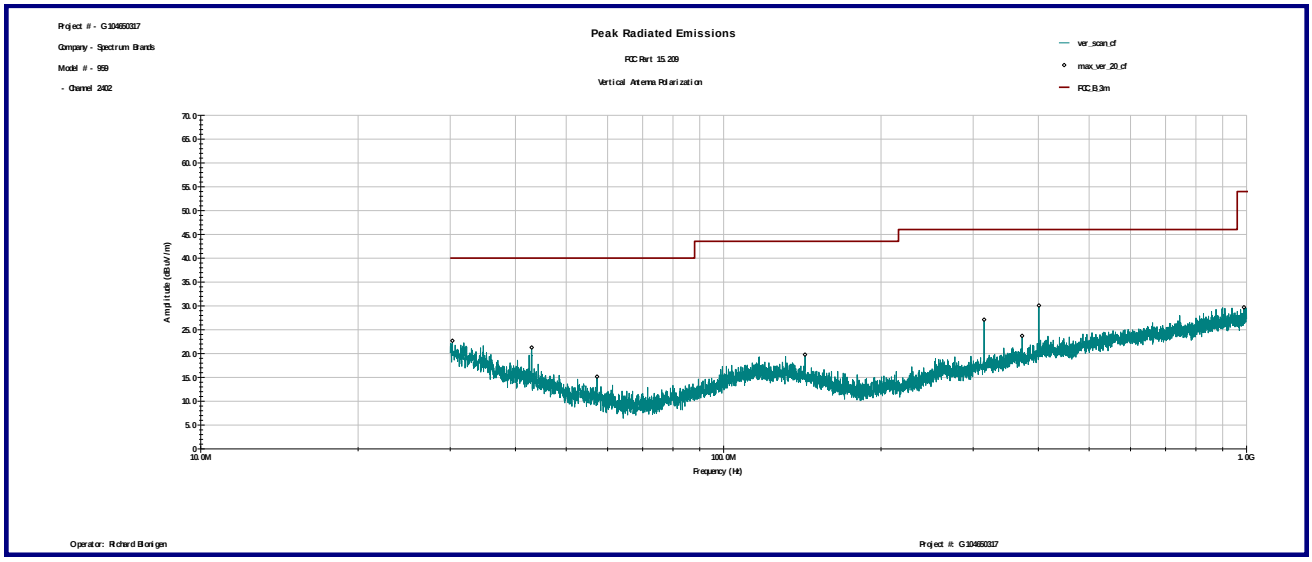
Graph 12

Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	9389-GED24500-GIG(Kwikset 939 / Weiser GED2500) Frequency Range: 1GHz – 25GHz	

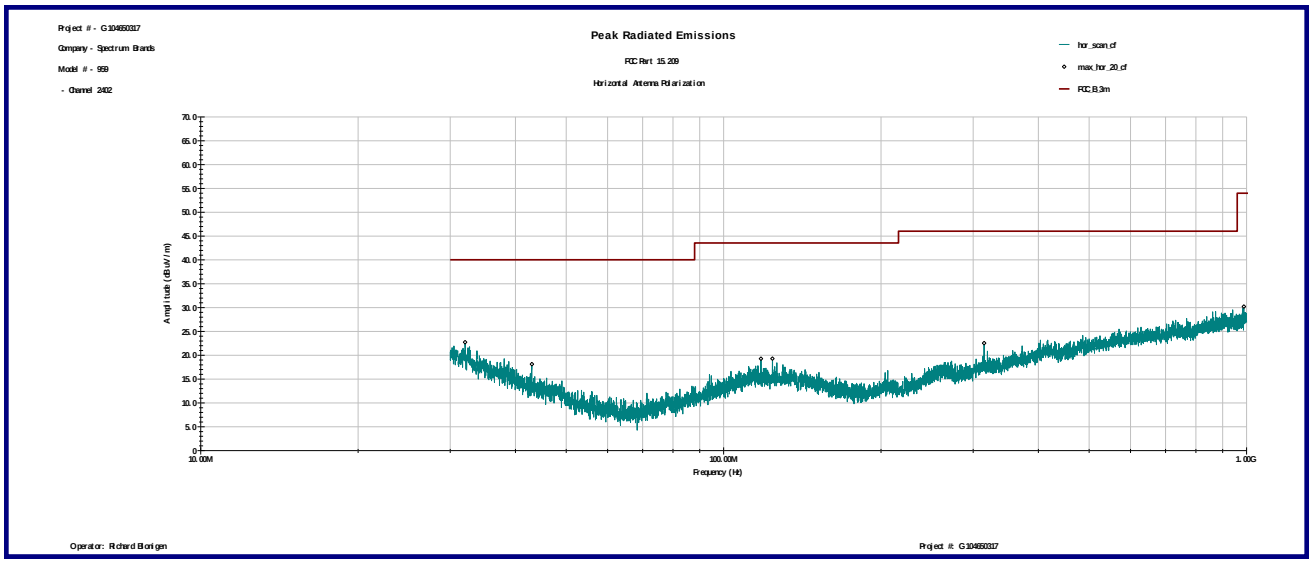
Table 3.5.2

Frequency	Antenna		Ant. CF	Cable loss and Filter CF	Pre-amp	Reading	Total @ 3m	Limit	Margin	Comments
MHz	Polarity	Hts(cm)	dB1/m	dB	Gain (dB)	dBµV	dBµV/m	dBµV/m	dB	
Channel 2402										
4804.00	V	100	32.9	2.9	43.2	48.8	41.4	54.0	-12.6	AVG
4804.00	H	159	32.9	2.9	43.2	44.8	37.4	54.0	-16.6	AVG
4804.00	V	100	32.9	2.9	43.2	62.9	55.5	74.0	-18.5	Peak
4804.00	H	153	32.9	2.9	43.2	58.9	51.5	74.0	-22.5	Peak
Channel 2440										
4880.00	V	107	33.0	3.0	43.2	49.1	41.8	54.0	-12.2	AVG
4880.00	H	112	33.0	3.0	43.2	48.8	41.5	54.0	-12.5	AVG
4880.00	V	107	33.0	3.0	43.2	63.2	55.9	74.0	-18.1	Peak
4880.00	H	112	33.0	3.0	43.2	62.9	55.6	74.0	-18.4	Peak
Channel 2480										
4960.00	V	134	33.1	3.1	43.3	51.9	44.7	54.0	-9.2	AVG
4960.00	H	126	33.1	3.1	43.3	49.6	42.4	54.0	-11.5	AVG
4960.00	V	134	33.1	3.1	43.3	66.0	58.9	74.0	-15.1	Peak
4960.00	H	126	33.1	3.1	43.3	63.7	56.6	74.0	-17.4	Peak
Bandedge										
2390.00	V	100	28.1	1.9	0.0	23.3	53.3	74.0	-20.7	Peak
2390.00	H	100	28.1	1.9	0.0	23.2	53.2	74.0	-20.8	Peak
2390.00	V	100	28.1	1.9	0.0	9.1	39.1	54.0	-14.9	AVG
2390.00	H	100	28.1	1.9	0.0	9.0	39.0	54.0	-15.0	AVG
2483.50	V	100	28.4	1.9	0.0	24.6	54.9	74.0	-19.1	Peak
2483.50	H	100	28.4	1.9	0.0	24.4	54.7	74.0	-19.3	Peak
2483.50	V	100	28.4	1.9	0.0	10.4	40.7	54.0	-13.3	AVG
2483.50	H	100	28.4	1.9	0.0	10.0	40.3	54.0	-13.7	AVG

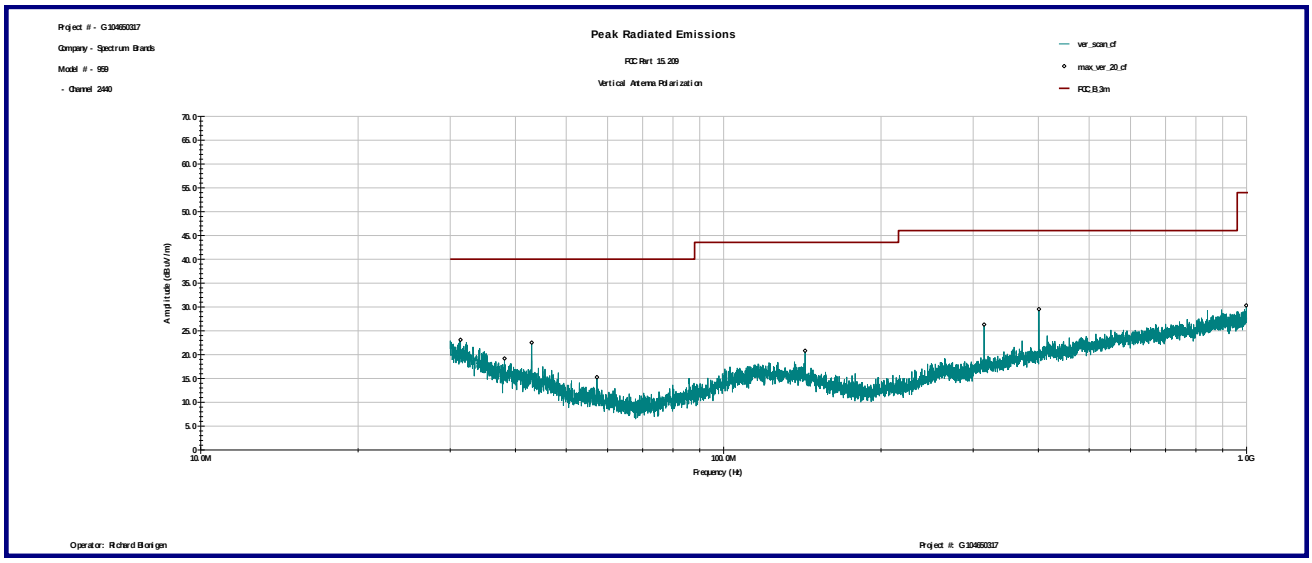
Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	959-3000-GIG(Kwikset 959 / Weiser GED3000) Frequency Range: 30MHz – 1GHz	



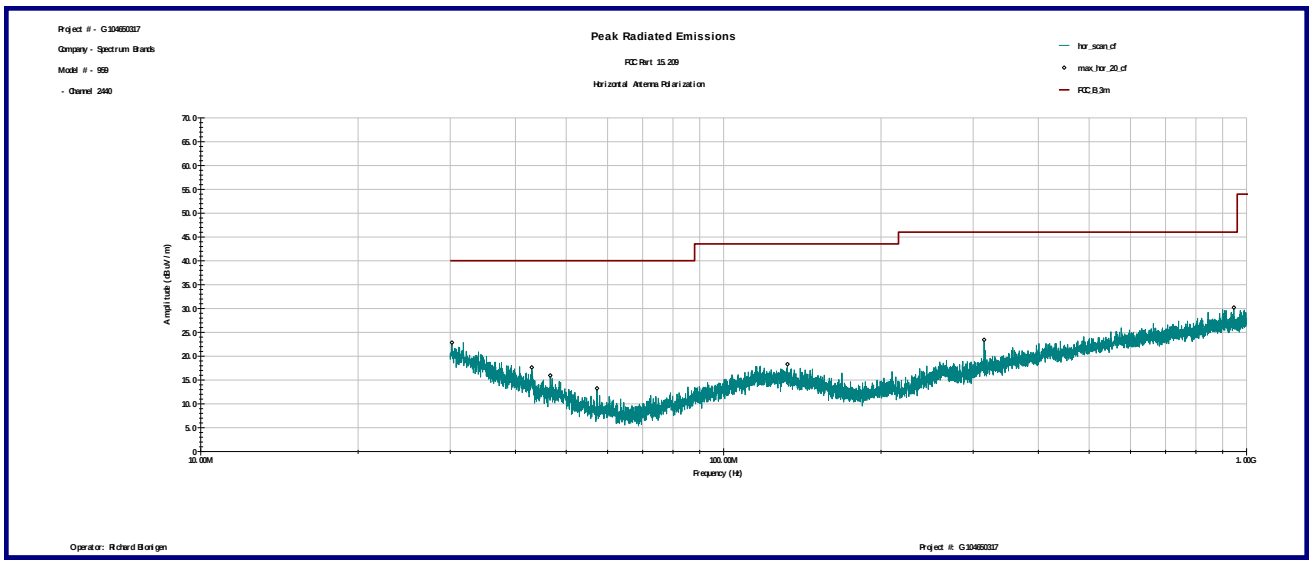
Graph 13



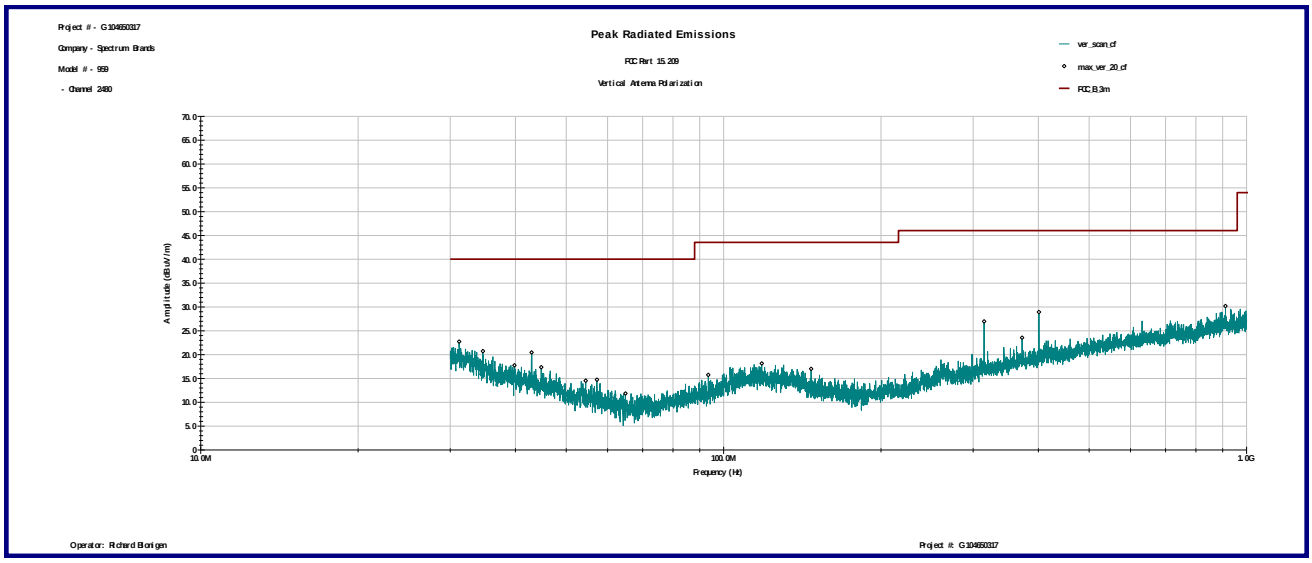
Graph 14



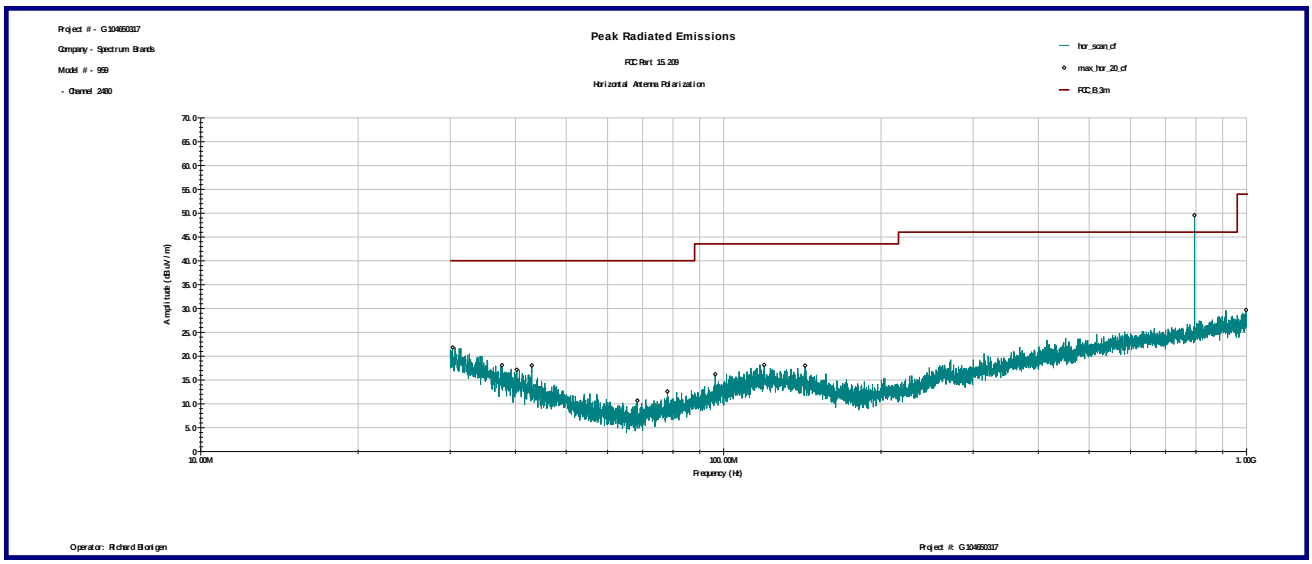
Graph 15



Graph 16



Graph 17



Graph 18

Date:	April 19 – 22, 2021	**Result: Pass**
Tested by:	Richard Blonigen	
Standard:	FCC part 15.247(d)	
Operation mode:	See page 5	
Environmental Conditions:	21°C; 35%(RH); 98kPa	
Equipment Verification:	☒	
Note:	959-3000-GIG(Kwikset 959 / Weiser GED3000) Frequency Range: 1GHz – 25GHz	

Table 3.5.3

Frequency	Antenna		Ant. CF	Cable loss and Filter CF	Pre-amp	Reading	Total @ 3m	Limit	Margin	Comments
MHz	Polarity	Hts(cm)	dB1/m	dB	Gain (dB)	dBµV	dBµV/m	dBµV/m	dB	
Channel 2402										
4804.00	V	100	32.9	2.9	43.2	48.6	41.2	54.0	-12.8	AVG
4804.00	H	159	32.9	2.9	43.2	47.0	39.6	54.0	-14.4	AVG
4804.00	V	100	32.9	2.9	43.2	62.7	55.3	74.0	-18.7	Peak
4804.00	H	153	32.9	2.9	43.2	61.1	53.7	74.0	-20.3	Peak
Channel 2440										
4880.00	V	107	33.0	3.0	43.2	49.0	41.7	54.0	-12.3	AVG
4880.00	H	112	33.0	3.0	43.2	48.0	40.7	54.0	-13.3	AVG
4880.00	V	107	33.0	3.0	43.2	63.1	55.8	74.0	-18.2	Peak
4880.00	H	112	33.0	3.0	43.2	62.1	54.8	74.0	-19.2	Peak
Channel 2480										
4960.00	V	134	33.1	3.1	43.3	51.7	44.5	54.0	-9.4	AVG
4960.00	H	126	33.1	3.1	43.3	49.1	41.9	54.0	-12.0	AVG
4960.00	V	134	33.1	3.1	43.3	65.8	58.7	74.0	-15.3	Peak
4960.00	H	126	33.1	3.1	43.3	63.2	56.1	74.0	-17.9	Peak
Bandedge										
2390.00	V	100	28.1	1.9	0.0	24.1	54.1	74.0	-19.9	Peak
2390.00	H	100	28.1	1.9	0.0	24.3	54.3	74.0	-19.7	Peak
2390.00	V	100	28.1	1.9	0.0	9.9	39.9	54.0	-14.1	AVG
2390.00	H	100	28.1	1.9	0.0	10.1	40.1	54.0	-13.9	AVG
2483.50	V	100	28.4	1.9	0.0	23.6	53.9	74.0	-20.1	Peak
2483.50	H	100	28.4	1.9	0.0	23.5	53.8	74.0	-20.2	Peak
2483.50	V	100	28.4	1.9	0.0	9.4	39.7	54.0	-14.3	AVG
2483.50	H	100	28.4	1.9	0.0	9.3	39.6	54.0	-14.4	AVG

3.6 RF Exposure Compliance

FCC §1.1310 Radiofrequency radiation exposure limits

Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic field.

Table 1 – Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	842/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

F = frequency in MHz * = Plane-wave equivalent power density

ISED RSS-102 Issue 5

Table 2 below sets forth limits for the RF field strength.

Table 2 – RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency range (MHz)	Electric field strength (V/m rms)	Magnetic field strength (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz. *Based on nerve stimulation (NS) **Based on specific absorption rate (SAR)

RF Exposure Compliance for Model: 9389-GED24500-GIG(Kwikset 938 / Weiser GED2400)

The maximum measured antenna conducted power, P is 11.60dBm

The antenna gain, G is 2.62dBi

The maximum EIRP power = P + G
EIRP = 11.60+2.62= 14.22 dBm, or 26.42mW

The limits for Maximum Permissible Exposure (MPE) reference to Table 1 and Table 2 in section 3.6.

The Power Density, S in mW/cm^2 is related to EIRP in mW and Antenna Separation Distance, D in cm with the equation:

$S = EIRP / 4\pi D^2$

If antenna Safe Separation Distance is 20cm,
$S = 26.42 / 4\pi 20^2$,
$S = 0.00526 mW/cm^2$, or below the Maximum Permissible Exposure (MPE)

For the Wi-Fi 2.4 GHz IEEE 802.11b/g/n transmitter:

$S = 0.018$ mW/c $m^2 = 0.18$ W/ m^2

Note: Data was taken from the FCC filing, FCC ID: Z64-CC3220MOD (provided by Spectrum Brands). Intertek takes no responsibility for the accuracy of the data.

FCC: $\Sigma(Si/MPEi) = (0.00526/1) + (0.018/1) = 0.02326 < 1$
ISED Canada: $\Sigma(Si/MPEi) = (0.0526/5.351) + (0.18/5.366) = 0.0435 < 1$

RF Exposure Compliance for Model: 9389-GED24500-GIG(Kwikset 939 / Weiser GED2500)

The maximum measured antenna conducted power, P is 11.22dBm

The antenna gain, G is 2.62dBi

The maximum EIRP power = P + G
EIRP = 11.22+2.62= 13.84 dBm, or 24.21mW

The limits for Maximum Permissible Exposure (MPE) reference to Table 1 and Table 2 in section 3.6

The Power Density, S in mW/cm^2 is related to EIRP in mW and Antenna Separation Distance, D in cm with the equation:

$S = EIRP / 4\pi D^2$

If antenna Safe Separation Distance is 20cm,
$S = 24.21 / 4\pi 20^2$,
$S = 0.00482 mW/cm^2$, or below the Maximum Permissible Exposure (MPE)

For the Wi-Fi 2.4 GHz IEEE 802.11b/g/n transmitter:

$S = 0.018$ mW/c $m^2 = 0.18$ W/ m^2

Note: Data was taken from the FCC filing, FCC ID: Z64-CC3220MOD (provided by Spectrum Brands). Intertek takes no responsibility for the accuracy of the data.

FCC: $\Sigma(Si/MPEi) = (0.00482/1) + (0.018/1) = 0.02282 < 1$
ISED Canada: $\Sigma(Si/MPEi) = (0.0482/5.351) + (0.18/5.366) = 0.0426 < 1$

RF Exposure Compliance for Model: 959-3000-GIG(Kwikset 959 / Weiser GED3000)

The maximum measured antenna conducted power, P is 11.15dBm

The antenna gain, G is 2.62dBi

The maximum EIRP power = P + G
EIRP = 11.15+2.62= 13.77 dBm, or 23.82 mW

The limits for Maximum Permissible Exposure (MPE) reference to Table 1 and Table 2 in section 3.6

The Power Density, S in mW/cm^2 is related to EIRP in mW and Antenna Separation Distance, D in cm with the equation:

$S = EIRP / 4\pi D^2$

If antenna Safe Separation Distance is 20cm,
$S = 23.82 / 4\pi 20^2$,
$S = 0.00474 mW/cm^2$, or below the Maximum Permissible Exposure (MPE)

For the Wi-Fi 2.4 GHz IEEE 802.11b/g/n transmitter:

$S = 0.018$ mW/c $m^2 = 0.18$ W/ m^2

Note: Data was taken from the FCC filing, FCC ID: Z64-CC3220MOD (provided by Spectrum Brands). Intertek takes no responsibility for the accuracy of the data.

FCC: $\Sigma(Si/MPEi) = (0.00474/1) + (0.018/1) = 0.02274 < 1$
ISED Canada: $\Sigma(Si/MPEi) = (0.0474/5.351) + (0.18/5.366) = 0.0444 < 1$

4.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	LAST CAL DATE	CAL DUE
Spectrum Analyzer	R & S	FSP 40	100024	12559	02/12/2021	02/12/2022
Spectrum Analyzer	R & S	ESU	100398	25283	07/22/2020	07/22/2021
Bicono-Log Antenna	Teseq	CBL6112D	32859	25289	05/13/2020	05/13/2021
Chamber HF Cable	Insulated Wire Inc.	SPS-2303-3600-SPRX		12670	09/07/2020	09/07/2021
Chamber RE Cable	Coleman	RG214/U M17/164-00001		172505	09/08/2020	09/08/2021
Horn Antenna	EMCO	3115	9507-4513	9936	08/17/2020	08/17/2021
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	01/22/2021	01/22/2022
Loop Antenna	ETS	6512	00060486	19942	02/22/2021	02/22/2022
Pre-Amplifier	MITEQ	LNA-40-00101800-35-15P	2108525	172474	05/14/2020	05/14/2021
Pre-Amplifier	MITEQ	LNA-40-00101800-35-15P	2108526	172476	04/06/2021	04/06/2022
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	VBU
High Pass Filter	Reactel Inc.	9HS-4G/24G-S12	(20) 1		04/08/2021	04/08/2022

5.0 Revision History

REVISION LEVEL	DATE	REPORT NUMBER	PREPARED	REVIEWED	NOTES
0	4-28-2021	104650317MIN-001	RB	US	Original Issue