

Page 1 of 20

Report No.: 1609100326RFC-1

# **FCC TEST REPORT**

**Product** 

Smart Thermometer

Trade mark

: WEBER

Model/Type reference

WEBER IGRILL 3

**Report Number** 

: 1609100326RFC-1

Date of Issue

: September 28, 2016

FCCID

: 2AHSR-WEBER

**Test Standards** 

47 CFR Part 15 Subpart C (2015)

Test result

PASS

Prepared for:

Weber-Stephen Products LLC 1415 S. Roselle Road, Palatine, IL 60067, USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd. 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

TEL: +86-755-2823 0888 FAX: +86-755-2823 0886

Tested by:

Lesw

Senior Supervisor

Reviewed by:

Jim Lon

Leo Lai

Senior Supervisor

Approved by:

George Luo

General Manager

Date:

\*Cortified\*



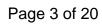
Page 2 of 20

Report No.: 1609100326RFC-1

# **Version**

Version No.	Date	Description
V1.0	September 28, 2016	Original







# **Contents**

		P	Page
1	GENE	ERAL INFORMATION	4
	1.1	CLIENT INFORMATION	4
	1.2	GENERAL DESCRIPTION OF EUT	
	1.3	PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	
	1.4	TEST ENVIRONMENT AND MODE	
	1.5	DESCRIPTION OF SUPPORT UNITS	
	1.6	TEST LOCATION	5
	1.7	DEVIATION FROM STANDARDS	
	1.8	DEVIATION FROM STANDARDS	5
	1.9	ABNORMALITIES FROM STANDARD CONDITIONS	6
	1.10	OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
	1.11	MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2)	6
2	TEST	SUMMARY	7
_			
3	TEST	RESULTS AND MEASUREMENT DATA	8
	2.1	ANTENNA REQUIREMENT	
	3.1 3.2	RADIATED SPURIOUS EMISSIONS	5 )
		RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY	
	3.3 3.4	20DB BANDWIDTH	
ΑP	<b>PENDI</b>	X 1 PHOTOGRAPHS OF TEST SETUP	20
AP	<b>PENDI</b>	X 2 PHOTOGRAPHS OF EUT	20



1 General Information

## 1.1 Client Information

Applicant: Weber-Stephen Products LLC	
Address of Applicant:	1415 S. Roselle Road, Palatine, IL 60067, USA
Manufacturer:	
Address of Manufacturer:	

# 1.2 General Description of EUT

Product Name:	Smart Thermometer			
Mode No.(EUT):	WEBER IGRILL 3	WEBER IGRILL 3		
Add Mode No.:	N/A			
Trade Mark:	WEBER	WEBER		
EUT Supports Radios	Bluetooth V4.0 BL	E		
application:	2.4GHz Wireless			
Power Supply:	AC adapter N/A			
	Vehicle adapter	N/A		
	Battery	DC 4.5V (AA x 3)		
USB Micro-B Plug cable:	N/A			
USB Changing cable:	N/A			
AUX cable:	N/A			
AC Adapter (1) line:	N/A			

# 1.3 Product Specification subjective to this standard

Frequency Range:	2402MHz ~ 2480MHz
Modulation Type:	GFSK
Number of Channels:	40
Sample Type:	Portable production
Test Power Grade:	Fixed
Test Software of EUT:	N/A
Antenna Type:	PCB
Antenna Gain:	3.3dBi
Test voltage:	DC 4.5V
Sample Received Date:	September 2, 2016
Sample tested Date:	September 2, 2016 to September 8, 2016



### **Operation Frequency each of channel**

Bluetooth 4.0 BLE

The sample supplied operated on 40 channels, nominally at 2402 -2480 MHz for transceiver. The channel is separated by 2 MHz channel spacing. The tests were carried out on 2402MHz, 2440MHz and 2480MHz of the frequency of the alignment range. 1, 19 and 39

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency	
The Lowest channel(CH0)	2402MHz	
The Middle channel(CH19)	2440MHz	
The Highest channel(CH39)	2480MHz	

### 1.4 Test Environment and Mode

Operating Environment:				
Temperature:	25.0 °C			
Humidity:	54 % RH			
Atmospheric Pressure:	9976 mbar			
Test mode:				
Transmitting mode:	Keep the EUT in transmitting mode with modulation.			

# 1.5 Description of Support Units

The EUT has been tested independently.

### 1.6 Test Location

All tests were performed at:

Compliance Certification Services (Shenzhen) Inc.

No.10-1 Mingkeda Logistics Park, No.18 Huanguan South RD. Guan Ian Town, Baoan Distr, Shenzhen, Guangdong, China.

Compliance Certification Services (Shenzhen) Inc. has been accepted by the FCC, the FCC Registration Number is 441872.

Tested by: Darry Wu

### 1.7 Deviation from Standards

None.

### 1.8 Deviation from Standards

None.

### Shenzhen UnionTrust Quality and Technology Co., Ltd.



### 1.9 Abnormalities from Standard Conditions

None.

# 1.10 Other Information Requested by the Customer

None.

# 1.11 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty	
1	Radio Frequency	±6.3 x 10 <sup>-8</sup>	
2	RF power, conducted	±0.52 dB	
3	Spurious emissions, radiated (Below 1GHz)	±5.3 dB	
3	Spurious emissions, radiated (Above 1GHz)	±5.1 dB	
4	Conduction emission (9KHz~150KHz)	±3.8 dB	
4	Conduction emission (150KHz~30MHz)	±3.4 dB	
5	Temperature	±0.64 °C	
6	Humidity	±2.8 %	
7	Supply voltages	±0.49 %	



# 2 Test Summary

Test Item	Test Requirement	Test method	Result	
Antonno Doguiroment	47 CFR Part 15 Subpart C	ANSI C63.10-2013	PASS	
Antenna Requirement	Section 15.203	ANSI C63.10-2013		
Conducted Emission	47 CFR Part 15 Subpart C	ANSI C63.10-2013	N/A	
Conducted Emission	Section 15.207	ANSI C63.10-2013		
Field Strength of the	47 CFR Part 15 Subpart C	ANCI C62 10 2012	PASS	
Fundamental Signal	Section 15.249 (a)	ANSI C63.10-2013		
Spurious Emissions	47 CFR Part 15 Subpart C	Part 15 Subpart C ANSI C63.10-2013		
Spurious Emissions	Section 15.249 (a)/15.209	ANSI C63.10-2013	PASS	
Restricted bands around	47 CFR Part 15 Subpart C			
fundamental frequency (Radiated Emission)	Section 15.249(a)/15.205	ANSI C63.10-2013	PASS	
20dB Occupied	47 CFR Part 15 Subpart C	ANCI CC2 40 2042	DA 00	
Bandwidth	Section 15.215 (c)	ANSI C63.10-2013	PASS	

Remark:

N/A: Not application, this EUT is powered by batteries.



### **Test results and Measurement Data**

# 3.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
4 = 000	

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

**EUT Antenna:** 

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3.3dBi.



Page 9 of 20 Report No.: 1609100326RFC-1

# 3.2 Radiated Spurious Emissions

**Test Requirement:** 47 CFR Part 15C Section 15.249 and 15.209

Test Method: ANSI C63.10

Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
Above 1011	Peak	1MHz	3MHz	Peak
Above 1GHz	Peak	1MHz	10Hz	Average

Receiver Setup:

**Test Setup:** 

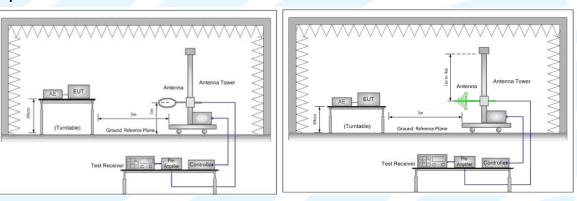


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

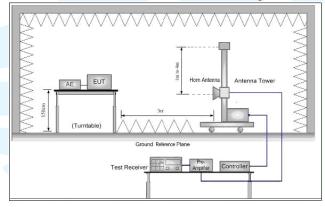


Figure 3. Above 1GHz

Page 10 of 20 Report No.: 1609100326RFC-1

# Test Procedure: Below 1GHz test procedure as below: The FLIT was placed on the top of a re-

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### Above 1GHz test procedure as below:

Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter

Test the EUT in the lowest channel ,middle channel, the Highest channel

The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

Repeat above procedures until all frequencies measured was complete.

#### Limit:

(Spurious Emissions)

Frequency	Field strength	Limit	Remark	Measurement
Frequency	(microvolt/meter)	(dBµV/m)	Remark	distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Remark

Average Value

Peak Value

Limit (dBµV/m @3m)

94.0

114.0

#### Limit:

Mode:

(Field strength of the fundamental signal)

Exploratory Test

Transmitting mode

Final Test Mode:

Pretest the EUT at Transmitting mode, Only the worst case is recorded in the report.

Instruments Used:

Refer to section 5.11 for details

Frequency

2400MHz-2483.5MHz

Test Results:

Pass

Page 11 of 20 Report No.: 1609100326RFC-1

### Measurement Data Field Strength of the Fundamental Signal

#### Peak value:

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Result (Pass/Fail)	Antenna Polaxis
2402	94.3	114.00	-19.7	Pass	Н
2440	95.2	114.00	-18.8	Pass	Н
2480	96.0	114.00	-18.0	Pass	Н

Average value:

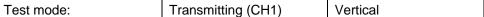
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Result (Pass/Fail)	Antenna Polaxis
2402	75.6	94	-18.4	Pass	Н
2440	76.2	94	-17.8	Pass	Н
2480	76.9	94	-17.1	Pass	Н

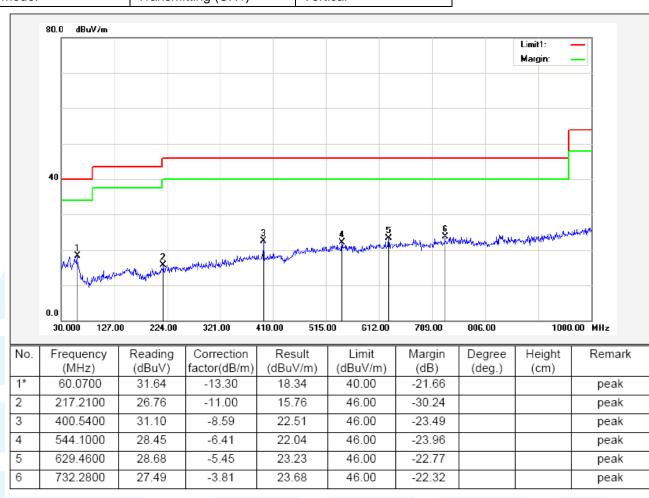
Page 12 of 20

Report No.: 1609100326RFC-1

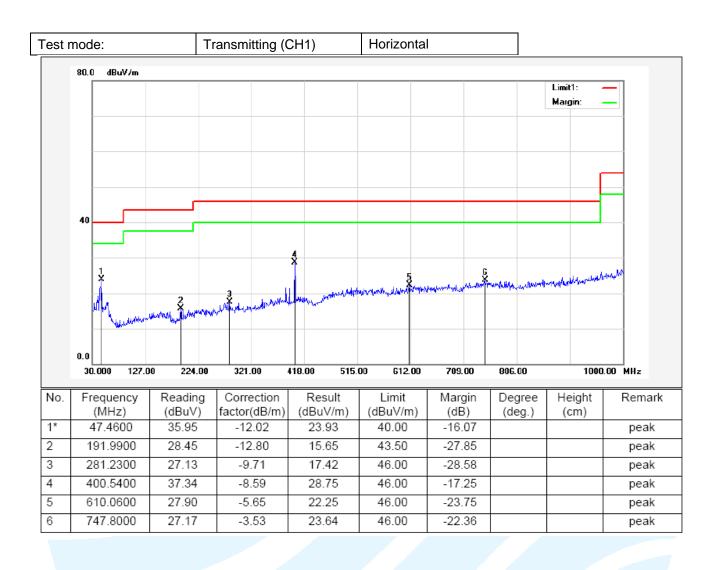
# **Spurious Emissions**

#### 30MHz~1GHz









#### Page 14 of 20 Report No.: 1609100326RFC-1

#### **Above 1GHz**

Test m	Test mode: Transmitting		Test channel:	Lowest	Lowest Remar		Peak	
ANT	Freque (MHz	•	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Н	1741.2	250	49.66	-6.39	43.27	74	-30.73	peak
Н	2398.2	250	45.93	-2.91	43.02	74	-30.98	peak
Н	3293.7	<b>7</b> 50	44.62	-1.39	43.23	74	-30.77	peak
Н	4804.0	000	41.34	3.02	44.36	74	-29.64	peak
Н	5512.0	000	40.79	4.88	45.67	74	-28.33	peak
H*	7206.0	000	40.21	9.29	49.50	74	-24.50	peak

Test m	ode:	Trar	smitting	Test channel:	Middle	Rema	rk:	Peak
ANT	Freque (MHz	-	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Н	1740.2	250	50.16	-6.40	43.76	74.00	-30.24	peak
Н	3173.7	750	43.78	-1.07	42.71	74.00	-31.29	peak
Н	4607.2	250	41.13	3.70	44.83	74.00	-29.17	peak
Н	4880.0	000	41.80	4.35	46.15	74.00	-27.85	peak
Н	5993.7	750	40.50	6.08	46.58	74.00	-27.42	peak
H*	7320.0	000	40.49	8.01	48.50	74.00	-25.50	peak

Test m	ode:	Trar	smitting	Test channel:	Highest	Rema	rk: F	Peak
ANT	Freque (MHz		Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Н	1728.5	500	49.66	-6.42	43.24	74.00	-30.76	peak
Н	2398.2	250	45.93	-2.82	43.11	74.00	-30.89	peak
Н	3173.7	750	44.62	-1.07	43.55	74.00	-30.45	peak
Н	4960.0	000	41.34	3.62	44.96	74.00	-29.04	peak
Н	5512.0	000	40.79	5.88	46.67	74.00	-27.33	peak
H*	7440.0	000	40.21	7.04	47.25	74.00	-26.75	peak

#### Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Result = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



Page 15 of 20 Report No.: 1609100326RFC-1

### 3.3 Restricted bands around fundamental frequency

**Test Requirement:** 47 CFR Part 15C Section 15.209 and 15.205

Test Method: ANSI C63.10

Test Site:

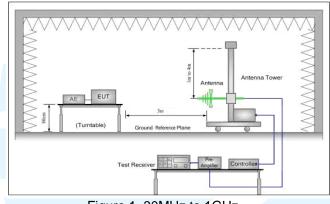
Measurement Distance: 3m (Semi-Anechoic Chamber)

**Limit(band edge):** 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 Section 15.209,

whichever is the lesser attenuation.

 Which over to the recoon attendation.							
Frequency	Limit (dBµV/m @3m)	Remark					
30MHz-88MHz	40.0	Quasi-peak Value					
88MHz-216MHz	43.5	Quasi-peak Value					
216MHz-960MHz	46.0	Quasi-peak Value					
960MHz-1GHz	54.0	Quasi-peak Value					
Above 1GHz	54.0	Average Value					
Above 1GHZ	74.0	Peak Value					

#### **Test Setup:**



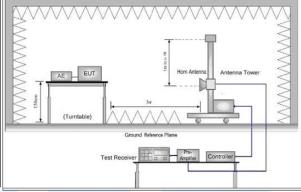


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz

#### **Test Procedure:**

### Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

### Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).

### Shenzhen UnionTrust Quality and Technology Co., Ltd.



Page 16 of 20

h. Test the EUT in the lowest channel,,the Highest channel

 The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

Report No.: 1609100326RFC-1

Repeat above procedures until all frequencies measured was complete.

**Exploratory Test Mode:** Transmitting mode Transmitting mode

Only the worst case is recorded in the report.

**Instruments Used:** Refer to section 3 for details

Test Results: Pass

#### Test plot as follows:

Test m	iode:	Trar	nsmitting	Test channel:	Lowest	Rema	rk:	Peak
ANT	Frequei (MHz	,	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Н	2379.4	100	50.68	-2.92	47.76	74.00	-26.24	peak
Н	2379.4	100	37.04	-2.92	34.12	54.00	-19.88	AVG

Test m	iode:	Tran	nsmitting	Test channel:	Highest	Rema	rk:	Peak
ANT	Freque (MHz	,	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Н	2507.2	200	51.52	-2.25	49.27	74.00	-24.73	peak
Н	2507.2	200	37.23	-2.25	34.98	54.00	-19.02	AVG

#### Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Result = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor



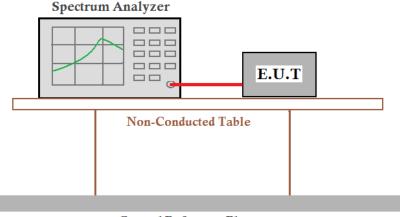
Page 17 of 20 Report No.: 1609100326RFC-1

### 3.4 20dB Bandwidth

**Test Requirement:** 47 CFR Part 15C Section 15.215

Test Method: ANSI C63.10

Test Setup:



**Ground Reference Plane** 

Limit: N/A

**Exploratory Test Mode:** Transmitter mode

Final Test Mode: GFSK

**Instruments Used:** Refer to section 3 for details

Test Results: Pass

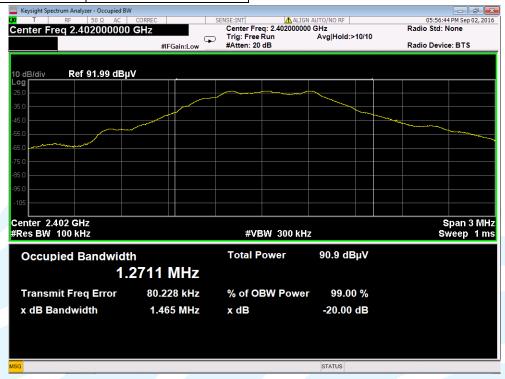
#### **Measurement Data**

Test Channel	20dB bandwidth (MHz)	Results		
Lowest	1.465	Pass		
Middle	1.365	Pass		
Highest	1.341	Pass		

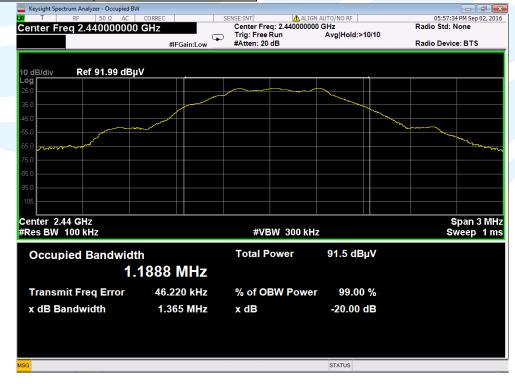


Test plot as follows:





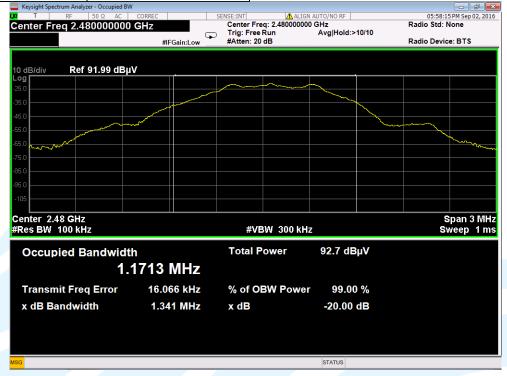




Page 19 of 20

Report No.: 1609100326RFC-1

Test channel: Highest





## **APPENDIX 1 PHOTOGRAPHS OF TEST SETUP**

See test photographs attached in Appendix 1 for the actual connections

### **APPENDIX 2 PHOTOGRAPHS OF EUT**

Refer to Appendix 2 for EUT external and internal photographs.

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.