

# **CERTIFICATION TEST REPORT**

# **Report Number. :** 11760905-E3V2

- Applicant : SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN
  - FCC ID : PY7-32042D
- **EUT Description :** GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS & NFC
- Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

### Date Of Issue:

August 23, 2017

Prepared by: UL Verification Services Inc. 47173 Benicia Street Fremont, CA 94538, U.S.A. TEL: (510) 771-1000 FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

### **Revision History**

Rev.	lssue Date	Revisions	Revised By
V1	07/26/17	Initial Issue	D. Coronia
V2	08/23/17	Updated Section 6	D. Coronia

UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 2 of 66

# TABLE OF CONTENTS

1. AT	TESTATION OF TEST RESULTS
2. TE	ST METHODOLOGY6
3. FA	CILITIES AND ACCREDITATION6
4. CA	LIBRATION AND UNCERTAINTY
4.1.	MEASURING INSTRUMENT CALIBRATION
4.2.	SAMPLE CALCULATION
4.3.	MEASUREMENT UNCERTAINTY7
5. EQ	UIPMENT UNDER TEST
5.1.	DESCRIPTION OF EUT
5.2.	MAXIMUM OUTPUT POWER
5.3.	DESCRIPTION OF AVAILABLE ANTENNAS
5.4.	SOFTWARE AND FIRMWARE
5.5.	WORST-CASE CONFIGURATION AND MODE8
5.6.	DESCRIPTION OF TEST SETUP9
6. TE	ST AND MEASUREMENT EQUIPMENT12
	ST AND MEASUREMENT EQUIPMENT12 MMARY TABLE
7. SU	
7. SU	MMARY TABLE13
7. SU 8. AN	MMARY TABLE
<ul> <li>7. SU</li> <li>8. AN 8. 1.</li> </ul>	MMARY TABLE
<ul> <li>7. SU</li> <li>8. AN</li> <li>8.1.</li> <li>8.2.</li> </ul>	MMARY TABLE       13         TENNA PORT TEST RESULTS       14         MEASUREMENT METHODS       14         ON TIME, DUTY CYCLE       15
<ul> <li>7. SU</li> <li>8. AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> </ul>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH16
<ul> <li>7. SU</li> <li>8. AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> <li>8.4.</li> </ul>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH1699% BANDWIDTH20
<ol> <li>SU</li> <li>AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> <li>8.4.</li> <li>8.5.</li> </ol>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH1699% BANDWIDTH20AVERAGE POWER24
<ol> <li>SU</li> <li>AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> <li>8.4.</li> <li>8.5.</li> <li>8.6.</li> </ol>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH1699% BANDWIDTH20AVERAGE POWER24OUTPUT POWER25
<ol> <li>SU</li> <li>AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> <li>8.4.</li> <li>8.5.</li> <li>8.6.</li> <li>8.7.</li> <li>8.8.</li> </ol>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH1699% BANDWIDTH20AVERAGE POWER24OUTPUT POWER25POWER SPECTRAL DENSITY29
<ol> <li>SU</li> <li>AN</li> <li>8.1.</li> <li>8.2.</li> <li>8.3.</li> <li>8.4.</li> <li>8.5.</li> <li>8.6.</li> <li>8.7.</li> <li>8.8.</li> </ol>	MMARY TABLE13TENNA PORT TEST RESULTS14MEASUREMENT METHODS14ON TIME, DUTY CYCLE156 dB BANDWIDTH1699% BANDWIDTH20AVERAGE POWER24OUTPUT POWER25POWER SPECTRAL DENSITY29CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS33

Page 3 of 66

11	SETUP PHOTOS	60
10.	AC POWER LINE CONDUCTED EMISSIONS	.57
9.5.	WORST-CASE 18 to 26 GHz	.55
9.4.	SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)	.53
9.3.	SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)	.52
9	2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)	.44

### **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME:	SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS & NFC
SERIAL NUMBER:	RADIATED: BH9000HG8, BH90009E85 CONDUCTED: BH9000U97W, BH9000TU7W
DATE TESTED:	JULY 08 to 21, 2017

#### APPLICABLE STANDARDS

STANDARD

**TEST RESULTS** 

CFR 47 Part 15 Subpart C

Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL Verification Services Inc. By:

DAN CORONIA WISE PROJECT LEAD UL VERIFICATION SERVICES INC. Prepared By:

GLENN ESCANO WISE LAB ENGINEER UL VERIFICATION SERVICES INC.

Page 5 of 66

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 558074 D01 v04 and ANSI C63.10-2013.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
Chamber A(IC: 2324B-1)	Chamber D(IC: 22541-1)
Chamber B(IC: 2324B-2)	Chamber E(IC: 22541-2)
Chamber C(IC: 2324B-3)	Chamber F(IC: 22541-3)
	Chamber G(IC: 22541-4)
	Chamber H(IC: 22541-5)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. Chambers A through C is covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

Page 6 of 66

# 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

Uncertainty figures are valid to a confidence level of 95%.

Page 7 of 66

### 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS & NFC.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE (1Mbps)	4.64	2.91
2402 - 2480	BLE (2Mbps)	4.75	2.98

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes integrated antenna, with the maximum gains:

Frequency Band (GHz)	Antenna Gain (dBi)	
2402-2480	-3.70	

### 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was SONY, s\_atp\_1\_00139\_B\_10\_5. The test utility software used during testing was Tera Term Ver 4.79.

### 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated band edge, harmonics, and spurious emissions from 1 GHz to 18GHz were performed with the EUT was set to transmit at the Low/Middle/High channels.

Radiated emission below 30MHz, below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT was set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, & Z, and it was determined that Y-Axis orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y-Axis orientation.

Worst-case data rates as provided by the client were: 1Mbps 2Mbps

Page 8 of 66

### 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List							
Description Manufacturer Model Serial Number FCC ID							
Laptop	Lenovo	20B7S0A200	PC015REW	NA			
AC Adapter	SONY	UCH 20	3416W45305756	NA			
Headphones	SONY	N/A	N/A	N/A			

### I/O CABLES (CONDUCTED TEST)

	I/O Cable List								
Cable         Port         # of identical         Connector         Cable Type         Cable         Remarks						Remarks			
No		ports	Туре		Length (m)				
1	Antenna	1	RF	Shielded	0.2	To spectrum Analyzer			
2	USB	1	USB	Shielded	1	N/A			
3	DC	1	DC	Shielded	0.3	N/A			

### I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

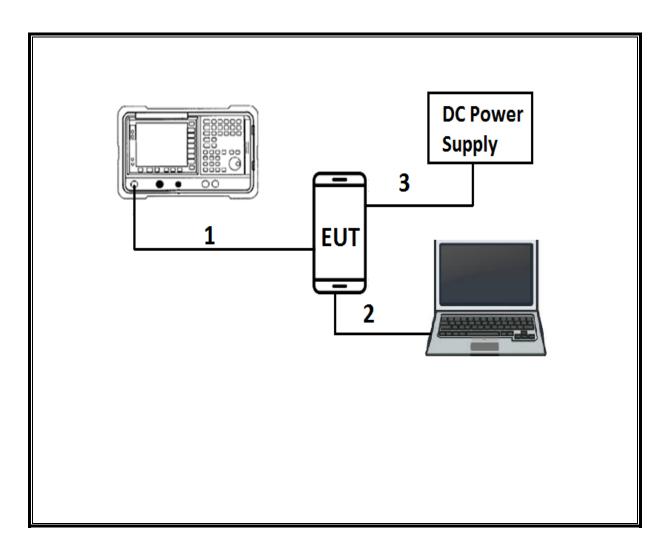
	I/O Cable List								
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks			
1	USB	1	USB	Shielded	3	N/A			
2	Audio	1	3.5mm	Shielded	1	N/A			

Page 9 of 66

### TEST SETUP

#### CONDUCTED TEST SETUP DIAGRAM

The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

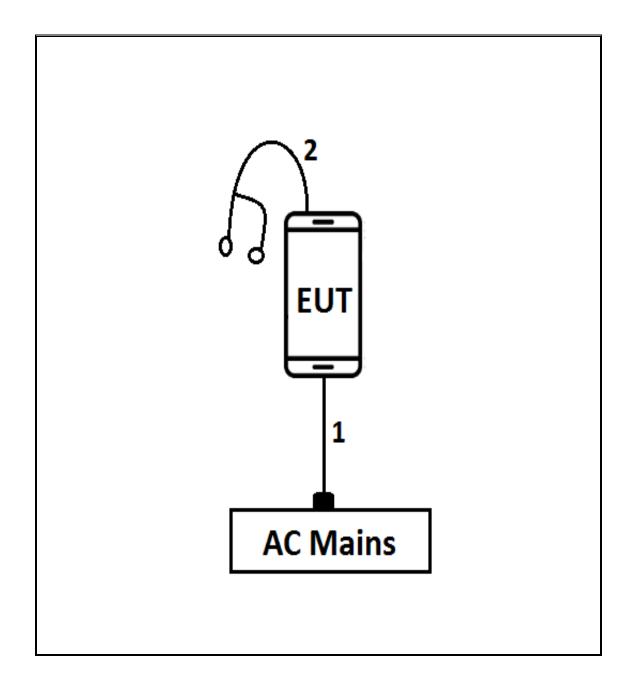


UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 10 of 66

### TEST SETUP

#### RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 11 of 66

# 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST							
Description	Manufacturer	Model	Asset	Cal Due			
Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB Pad	Sunol Sciences Corp.	JB3	T899	02/21/2018			
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T1683	02/17/2018			
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T345	03/07/2018			
Antenna, Horn 18-26.5GHz	ARA	MWH-1826/B	T449	05/26/2018			
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1264	07/17/2018			
Power Sensor, P – series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T413	06/22/2018			
Amplifier, 1-26.5GHz	Agilent (Keysight) Technologies	8449B	T404	07/23/2018			
Amplifier, 10kHz-1GHz	Agilent (Keysight) Technologies	8447D	T15	08/26/2017			
RF Amplifier	MITEQ	AFS42-00101800-25- S-42	T493	02/15/2018			
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E4440A	T199	07/22/2017			
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T907	01/23/2018			
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E9030A	T905	01/11/2018			
LISN	FISCHER	FCC-LISN-50/250- 25-2-01	T1310	01/17/2018			

Test Software List					
Description	Manufacturer	Model	Version		
Radiated Software	UL	UL EMC	Ver 9.5, Apr 26, 2016		
Antenna Port Software	UL	UL RF	Ver 5.1.1, July 15, 2016		
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2016		

The following test and measurement equipment was utilized for the tests documented in this report:

NOTE: \*testing is completed before equipment calibration expiration date.

Page 12 of 66

# 7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Band width (6dB)	>500KHz		Pass
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc	Conducted	Pass
15.247	TX conducted output power	<30dBm		Pass
15.247	PSD	<8dBm		Pass
15.207 (a)	AC Power Line conducted emissions	Section 10		Pass
15.205, 15.209, 15.247(d)	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

Page 13 of 66

# 8. ANTENNA PORT TEST RESULTS

### 8.1. MEASUREMENT METHODS

<u>6 dB BW</u>: KDB 558074 D01 v04, Section 8.1.

Output Power: KDB 558074 D01 v04, Section 9.1.1.

Power Spectral Density: KDB 558074 D01 v04, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Page 14 of 66

### 8.2. ON TIME, DUTY CYCLE

### <u>LIMITS</u>

None; for reporting purposes only.

### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)		Duty Cycle x (linear)	Cycle	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
BLE (1Mbps)	2.135	2.500	0.854	85.10	0.685	0.471

### DUTY CYCLE PLOT

Keysight Spectrum Analyze	50 Ω DC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	11:05:56 AM Jul 15, 2017 TRACE 1 2 3 4 5 TYPE WWWWWW	÷
	IFGain:Low	Atten: 10 dB	Δ	DET P NNNN Mkr3 2.500 ms 0.03 dE	Auto Tune
10 dB/div Ref 0.0	0 dBm				Center Freq
-20.0	Q <sup>1</sup>		2A	1 3Δ1	2.440000000 GHz
-40.0					Start Freq 2.440000000 GHz
-70.0	howork		Ung	ma	
-80.0					Stop Freq 2.440000000 GHz
Center 2.4400000 Res BW 8 MHz	#VBW	50 MHz	•	Span 0 Hz 000 ms (1001 pts	
MKR MODE TRC SCL 1 N 1 t 2 Δ1 1 t (Δ)	× 1.685 ms 2.135 ms (Δ)	-24.57 dBm 0.22 dB	JNCTION FUNCTION WIDTH	FUNCTION VALUE	
3 Δ1 1 t (Δ) 4 5	2.136 ms (Δ) 2.500 ms (Δ)	0.03 dB			Freq Offset 0 Hz
6 7 8					Scale Type
9 10 11					Log Lin

UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 15 of 66

### 8.3. 6 dB BANDWIDTH

### LIMITS

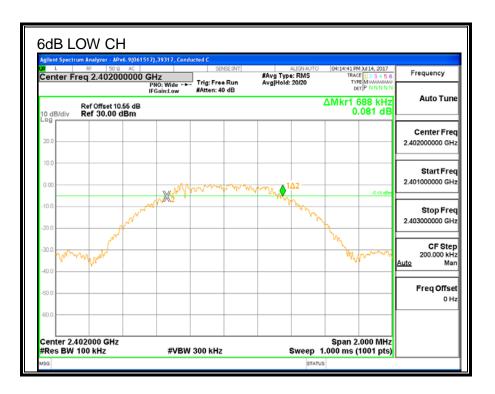
FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

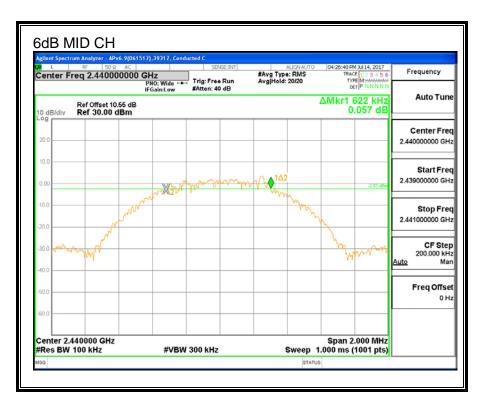
### **RESULTS**

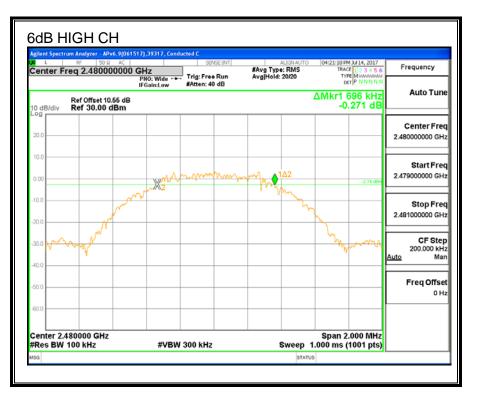
#### 6 dB BANDWIDTH (1Mbps)

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.688	0.5
Middle	2440	0.622	0.5
High	2480	0.696	0.5



Page 16 of 66

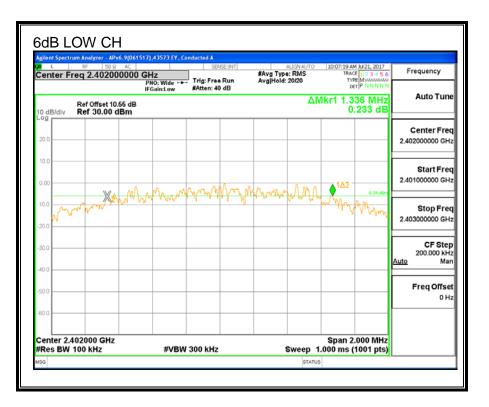




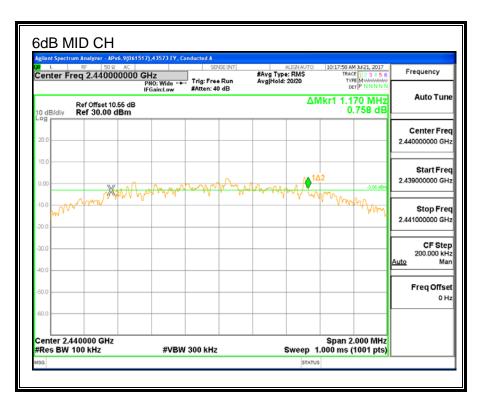
Page 17 of 66

#### 6 dB BANDWIDTH (2Mbps)

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.336	0.5
Middle	2440	1.170	0.5
High	2480	1.204	0.5



Page 18 of 66





Page 19 of 66

### 8.4. 99% **BANDWIDTH**

### <u>LIMITS</u>

None; for reporting purposes only.

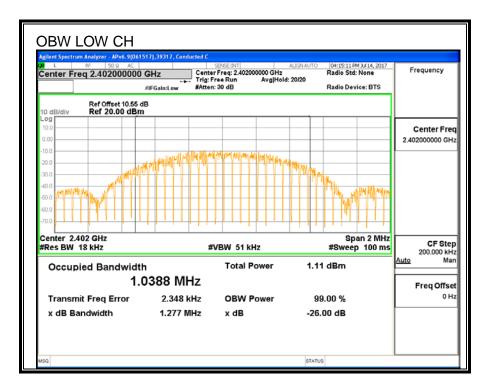
### **Test Procedure**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### **RESULTS**

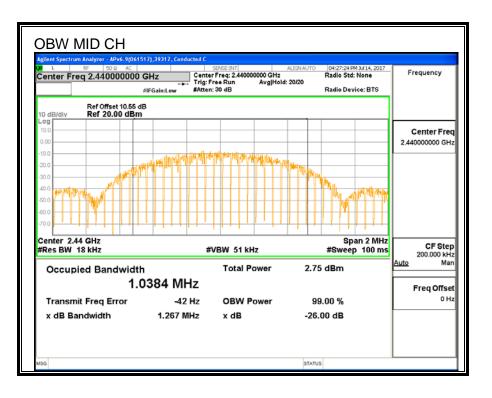
#### 99% BANDWIDTH (1Mbps)

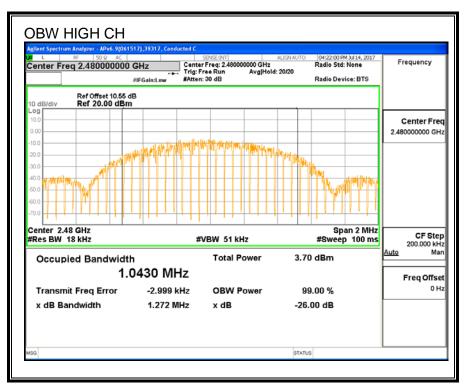
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.038
Middle	2440	1.038
High	2480	1.043



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 20 of 66

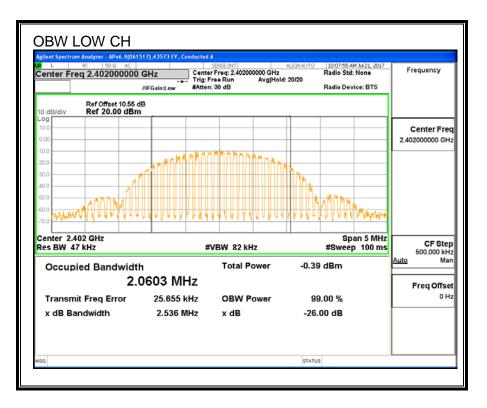




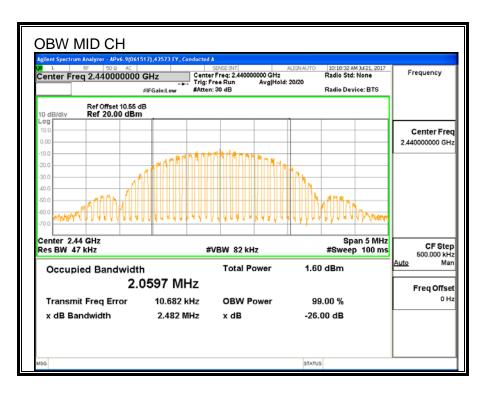
Page 21 of 66

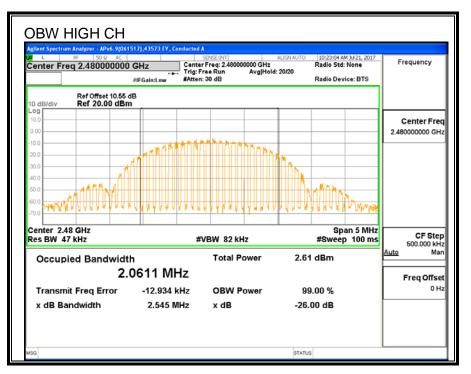
### 99% BANDWIDTH (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	2.060
Middle	2440	2.060
High	2480	2.061



Page 22 of 66





Page 23 of 66

### 8.5. AVERAGE POWER

### **LIMITS**

None; for reporting purposes only.

The cable assembly insertion loss of 10.6 dB (including 10 dB pad and 0.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### RESULTS

TEST ENGINEER:	45258	Date:	07/14/17
-------------------	-------	-------	----------

### 1Mbps

Channel	Frequency (MHz)	AV Power (dBm)
Low	2402	1.75
Middle	2440	3.54
High	2480	4.49

#### 2Mbps

Channel	Frequency (MHz)	AV Power (dBm)
Low	2402	1.73
Middle	2440	3.60
High	2480	4.58

Page 24 of 66

### 8.6. OUTPUT POWER

### **LIMITS**

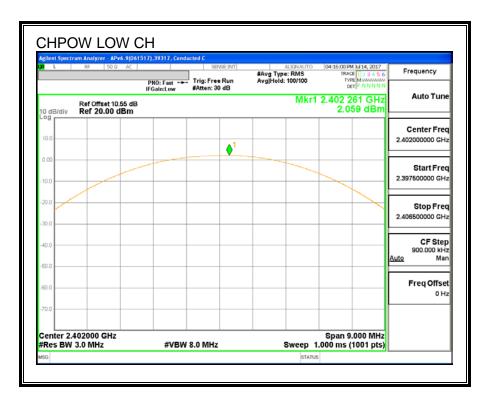
FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

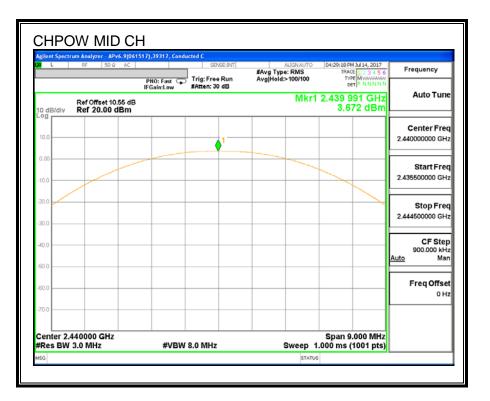
#### **RESULTS**

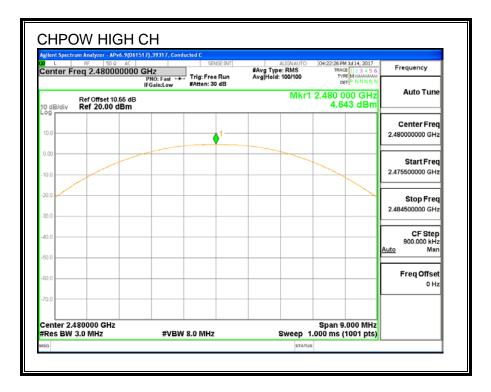
### **OUTPUT POWER (1Mbps)**

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.059	30	-27.941
Middle	2440	3.672	30	-26.328
High	2480	4.643	30	-25.357



Page 25 of 66

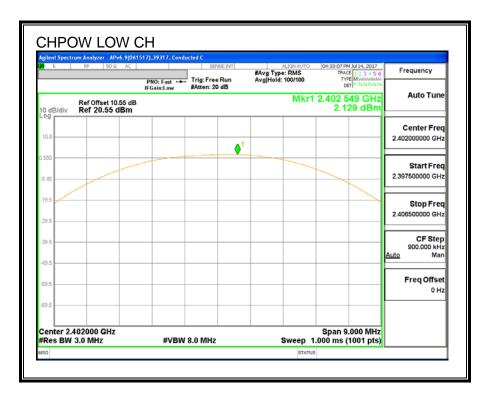




Page 26 of 66

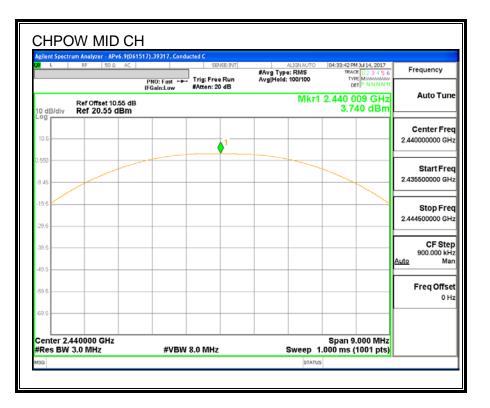
### **OUTPUT POWER (2Mbps)**

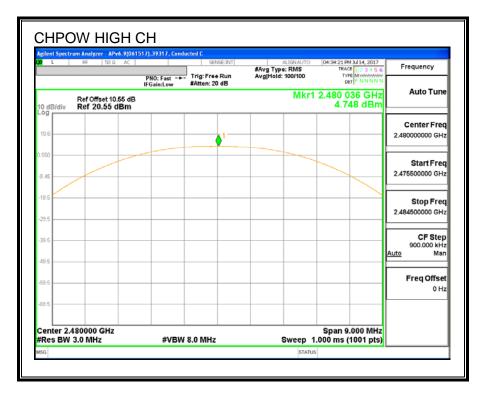
Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.129	30	-27.871
Middle	2440	3.740	30	-26.260
High	2480	4.748	30	-25.252



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. FORM NO: CCSUP4701I TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 27 of 66





Page 28 of 66

### 8.7. POWER SPECTRAL DENSITY

### **LIMITS**

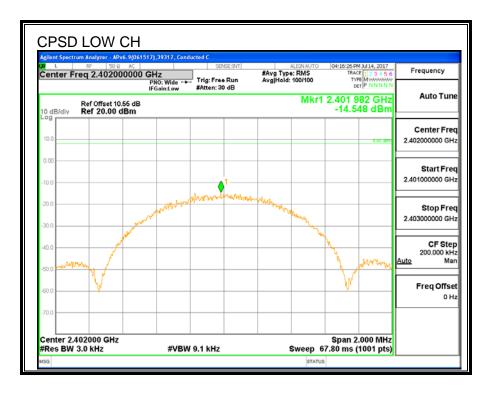
FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### **RESULTS**

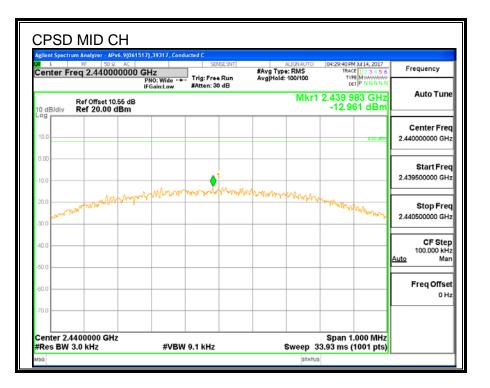
#### POWER SPECTRAL DENSITY (1Mbps)

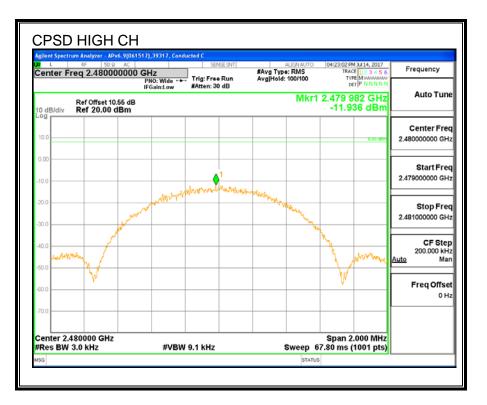
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-14.548	8	-22.548
Middle	2440	-12.961	8	-20.961
High	2480	-11.936	8	-19.936



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. FORM NO: CCSUP47011 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 29 of 66

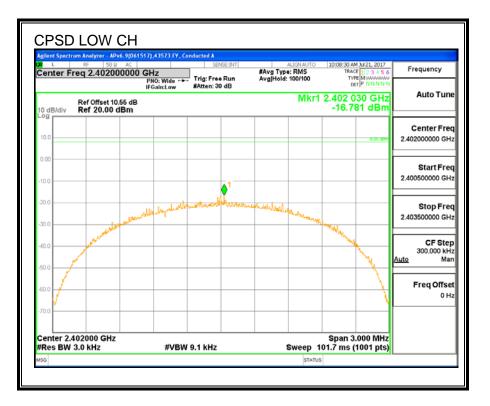




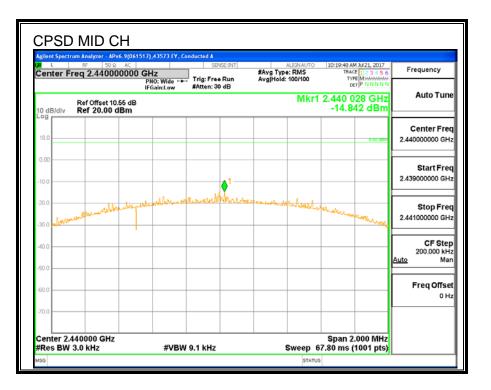
Page 30 of 66

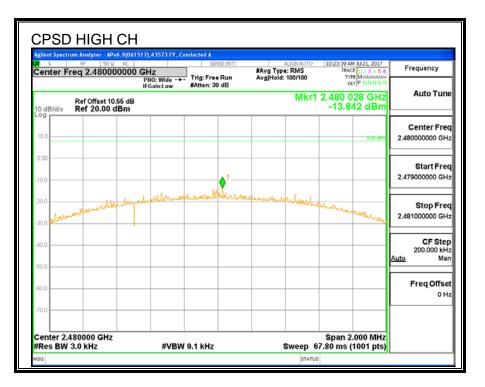
#### POWER SPECTRAL DENSITY (2Mbps)

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-16.781	8	-24.781
Middle	2440	-14.842	8	-22.842
High	2480	-13.842	8	-21.842



Page 31 of 66





Page 32 of 66

### 8.8. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

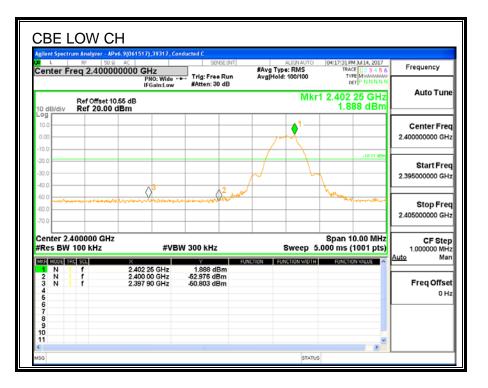
### **LIMITS**

FCC §15.247 (d)

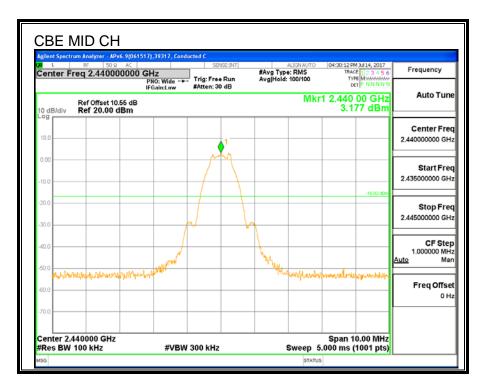
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

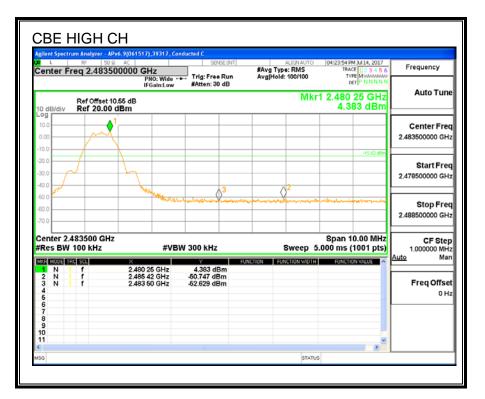
### **RESULTS**

### CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS (1Mbps)



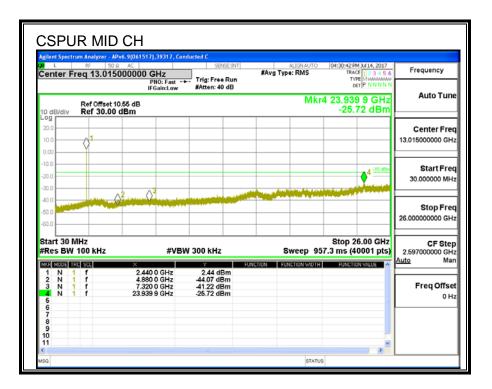
Page 33 of 66





Page 34 of 66

gilent Spect		APv6.9(061517),39317, Co			0440-05 040-044-0017	
		5000000 GHz PN0: Fast * IFGain:Low	Trig: Free Run #Atten: 40 dB	#Avg Type: RMS	04:18:05 PM 30114, 2017 TRACE 1 2 3 4 5 6 TYPE MUMANANA DET P N N N N N	Frequency
0 dB/div	Ref Offset Ref 30.0			Mkr	4 23.923 7 GHz -25.40 dBm	Auto Tun
og 20.0 10.0 0.00	Q <sup>1</sup>					Center Fre 13.015000000 GH
20.0		· 2 / 3			4 1.11 dBn	Start Fre 30.000000 MH
0.0 50.0 50.0						Stop Fre 26.00000000 G⊦
tart 30   Res BW	100 kHz	#VB	W 300 kHz	Sweep 95	Stop 26.00 GHz 7.3 ms (40001 pts) FUNCTION VALUE	CF Ste 2.597000000 GH Auto Ma
1 N 2 N 3 N 6 6 7 8		2.402 0 GHz 4.804 0 GHz 7.206 0 GHz 23.923 7 GHz	-0.27 dBm -44.02 dBm -40.14 dBm -25.40 dBm			Freq Offs 0 H
8 9 10 11					×	



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. FORM NO: CCSUP4701I TEL: (510) 771-1000 FAX: (510) 661-0888 Inc.

Page 35 of 66

Agilent Spec		Pv6.9(061517),39317, Cor				
Center F		8 AC 5000000 GHz	SENSE:INT	ALIGNAUTO #Avg Type: RMS	04:24:39 PM 3ul 14, 2017 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast H IFGain:Low	#Atten: 40 dB		DET P N N N N	
10 dB/div	Ref Offset Ref 30.00			Mkr	4 25.494 2 GHz -25.61 dBm	Auto Tun
20.0						Center Fre
10.0	01					13.015000000 GH
0.00	1					
10.0					-15.62 0	Start Fre
30.0					a distance in	30.000000 MH
40.0		agreen 2 $agreen 3$				
50.0						Stop Fre 26.00000000 GH
60.0						26.0000000 GH
Start 30 #Res BW	MHz V 100 kHz	#VB\	V 300 kHz	Sweep 95	Stop 26.00 GHz 57.3 ms (40001 pts)	CF Ste 2.597000000 GH
MKR MODE		×		UNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Ma
1 N 2 N	11	2.480 0 GHz 4.960 0 GHz	2.77 dBm -42.73 dBm			FreqOffse
3 N 4 N	11	7.440 0 GHz 25.494 2 GHz	-42.21 dBm -25.61 dBm			
6 6 7						
8						
10						
11					>	
ISG				STATU	s	

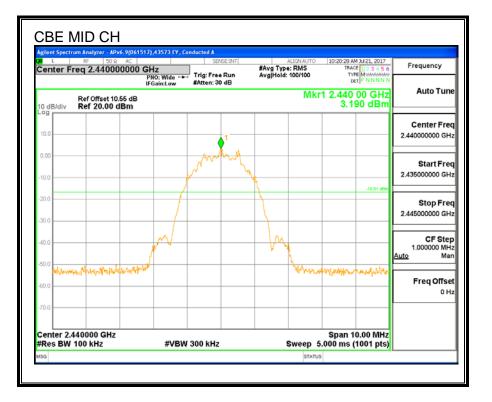
Page 36 of 66

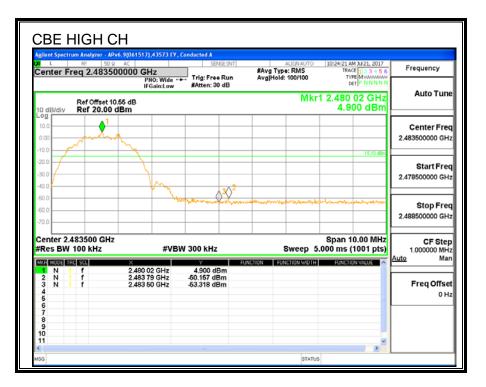
#### CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS (2Mbps)



UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 37 of 66





UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. FORM NO: CCSUP47011 FAX: (510) 661-0888 Inc.

Page 38 of 66

		PNO: Fast 😁	SENSE:INT Trig: Free Run #Atten: 40 dB	ALIGN AUTO #Avg Type: RMS	10:09:43 AM Jul 21, 2017 TRACE 1 2 3 4 5 6 TYPE MWAAAAAAA DET P NNNNN	Frequency
10 dB/div	tef Offset 10.55 dB tef 30.00 dBm	FGain:Low	watten: 40 GD	Mkr	4 23.910 1 GHz -25.77 dBm	Auto Tun
20.0 10.0 0.00	01					Center Fre 13.015000000 GH
-10.0		2			4 <u>121 dðn</u>	Start Fre 30.000000 MH
40.0 50.0 60.0	Q <sup>2</sup> Q					Stop Fre 26.00000000 GH
Start 30 MH: Res BW 10	0 kHz	#VBW	/ 300 kHz		Stop 26.00 GHz 7.3 ms (40001 pts)	CF Ste 2.597000000 GH Auto Ma
2 N 1 3 N 1	f 2.402 f 4.804 f 7.206	2 0 GHz 4 0 GHz 5 0 GHz 0 1 GHz	Y F -1.37 dBm -43.43 dBm -41.82 dBm -25.77 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offse 0 H

<b>μα</b> ι		RF	yzer - APv6.9(0 50 R AC 3.0150000	000 GH	z	SEN	SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRA	M Jul 21, 2017 CE 1 2 3 4 5 6 PE M WWWWWWW	Frequency
10 dB	idiv		Offset 10.55 d 30.00 dBm	IFGai	:Fast ⊶ n:Low	#Atten: 40			Mkr	، <mark>4 23.94</mark>	4 5 GHz 58 dBm	Auto Tun
20.0 10.0		Q <sup>1</sup>										Center Fre 13.015000000 GH
•10.0 •20.0 •30.0							فلادرا				4 :81 dBm	Start Fre 30.000000 MH
-40.0 -50.0 -60.0												Stop Fre 26.00000000 GH
	BW	100 k			#VB\	W 300 kHz			•	7.3 ms (4	26.00 GHz 10001 pts)	CF Ste 2.597000000 GH Auto Ma
1 2 3	N N N N	RC SCL f f f f		2.440 0 0 4.880 0 0 7.320 0 23.944 5 0	3Hz 3Hz	0.66 dE 42.33 dE 42.49 dE -25.58 dE	m m	L HUN FU	NCTION WIDTH	FUNCTI		Freq Offse 0 H

Page 39 of 66

L RF 50 Center Freq 13.015	R AC 0000000 GHz PN0: Fast ** IFGain:Low	SENSE:INT Trig: Free Run #Atten: 40 dB	ALIGNAUTO #Avg Type: RMS	10:24:54 AM Jul 21, 2017 TRACE 1 2 3 4 5 6 TYPE MUMANANA DET P N N N N N	Frequency
Ref Offset 1 10 dB/div Ref 30.00	0.55 dB	FREE FOR	Mkr	4 23.937 3 GHz -25.65 dBm	Auto Tune
20.0 10.0 0.00					Center Free 13.015000000 GH
20.0	.2 03		al La stree binds allof da vid	45.10 dbm	Start Free 30.000000 MH
40.0 -50.0 -60.0					Stop Free 26.000000000 GH
Start 30 MHz #Res BW 100 kHz	#VBI	W 300 kHz	Sweep 95	Stop 26.00 GHz 7.3 ms (40001 pts)	CF Ster 2.597000000 GH
MMER         MODE         TRC         SCL           1         N         1         f           2         N         1         f           3         N         1         f           4         N         1         f           6         6         7	× 4.960 0 GHz 7.440 0 GHz 23.937 3 GHz	Y E 0.84 dBm -40.96 dBm -39.41 dBm -25.65 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Mai Freq Offse 0 H
6 6 7 8 9					

Page 40 of 66

## 9. RADIATED TEST RESULTS

### 9.1. LIMITS AND PROCEDURE

### LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

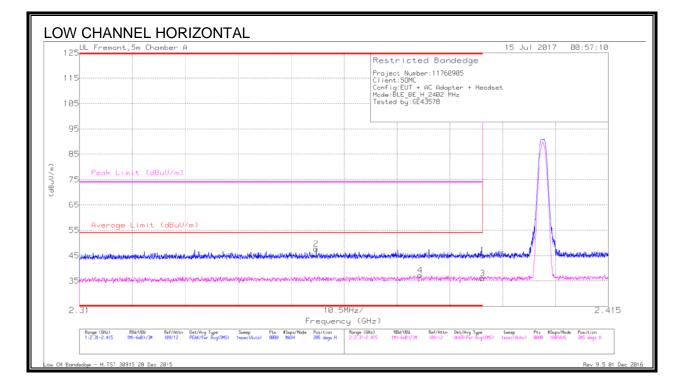
The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

### <u>Results</u>

Page 41 of 66

## 9.2. TRANSMITTER ABOVE 1 GHz



## 9.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)

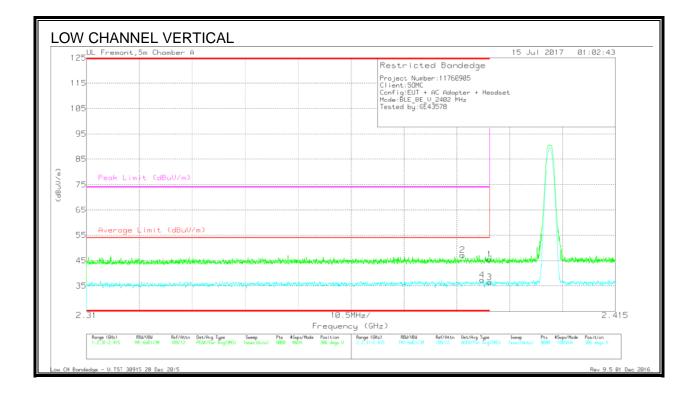
### **Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.45	Pk	31.8	-23.2	0	45.05	-	-	74	-28.95	205	247	н
2	* 2.357	39.29	Pk	31.6	-23.2	0	47.69	-	-	74	-26.31	205	247	н
3	* 2.39	26.78	RMS	31.8	-23.2	.69	36.07	54	-17.93	-	-	205	247	н
4	* 2.378	28.06	RMS	31.7	-23.2	.69	37.25	54	-16.75	-	-	205	247	н

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band Pk - Peak detector

RMS - RMS detection

Page 42 of 66



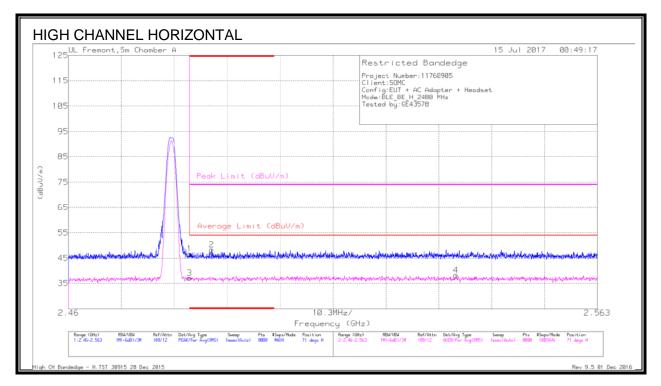
Marker	Frequency	Meter	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected	Average Limit (dBuV/m)	Margin	Peak Limit (dBuV/m)	PK Margin	Azimuth	Height	Polarity
	(GHz)	Reading					Reading		(dB)		(dB)	(Degs)	(cm)	
		(dBuV)					(dBuV/m)							
1	* 2.39	36.86	Pk	31.8	-23.2	0	45.46	-	-	74	-28.54	306	332	v
2	* 2.385	38.6	Pk	31.8	-23.2	0	47.2	-	-	74	-26.8	306	332	v
3	* 2.39	27.18	RMS	31.8	-23.2	.69	36.47	54	-17.53	-	-	306	332	V
4	* 2.389	28.12	RMS	31.8	-23.2	.69	37.41	54	-16.59	-	-	306	332	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band Pk - Peak detector

RMS - RMS detection

Page 43 of 66





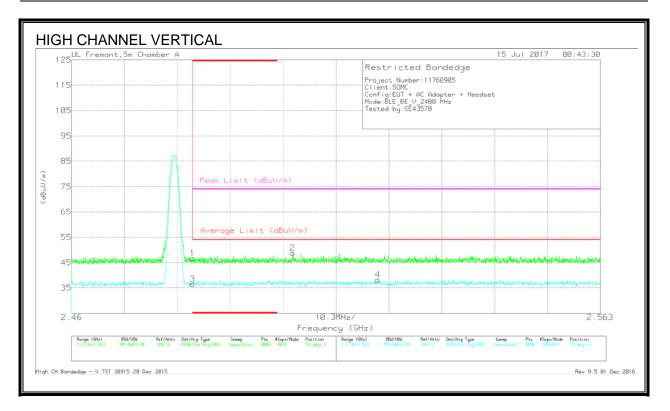
Marker	Frequency	Meter	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected	Average Limit (dBuV/m)	Margin	Peak Limit (dBuV/m)	PK Margin	Azimuth	Height	Polarity
	(GHz)	Reading					Reading		(dB)		(dB)	(Degs)	(cm)	
		(dBuV)					(dBuV/m)							
1	* 2.484	37.49	Pk	32.3	-23.1	0	46.69			74	-27.31	71	245	н
2	* 2.488	39.19	Pk	32.3	-23.2	0	48.29	-	-	74	-25.71	71	245	н
3	* 2.484	27.29	RMS	32.3	-23.1	.69	37.18	54	-16.82	-	-	71	245	н
4	2.535	28.08	RMS	32.4	-22.9	.69	38.27	54	-15.73	-	-	71	245	н

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

Page 44 of 66

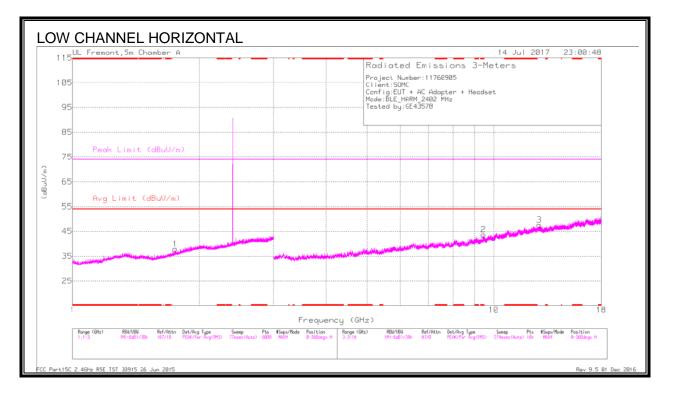


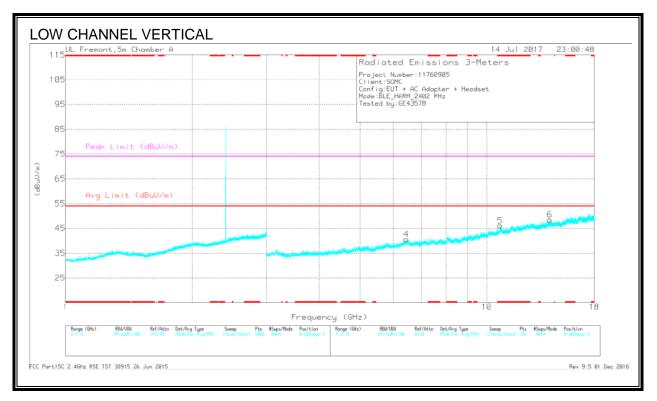
Marker	Frequency	Meter	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected	Average Limit (dBuV/m)	Margin	Peak Limit (dBuV/m)	PK Margin	Azimuth	Height	Polarity
	(GHz)	Reading					Reading		(dB)		(dB)	(Degs)	(cm)	
		(dBuV)					(dBuV/m)							
1	* 2.484	37.5	Pk	32.3	-23.1	0	46.7	-	-	74	-27.3	19	401	v
3	* 2.484	26.65	RMS	32.3	-23.1	.69	36.54	54	-17.46	-	-	19	401	V
2	2.503	39.6	Pk	32.4	-23.2	0	48.8	-	-	74	-25.2	19	401	V
4	2.52	28.21	RMS	32.4	-23.1	.69	38.2	54	-15.8	-	-	19	401	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band Pk - Peak detector

RMS - RMS detection

Page 45 of 66





Page 46 of 66

### **Radiated Emissions**

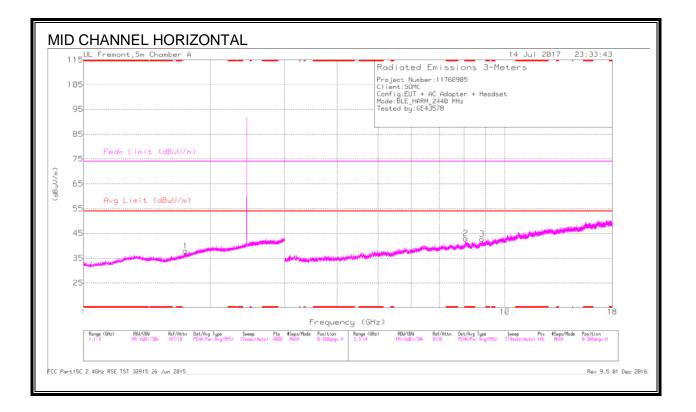
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 9.454	32.71	PK2	36.7	-20.8	0	48.61	-	-	74	-25.39	175	100	н
* 9.454	21.23	MAv1	36.7	-20.8	.69	37.82	54	-16.18	-	-	175	100	н
* 10.771	32.8	PK2	37.8	-18.7	0	51.9	-	-	74	-22.1	360	100	V
* 10.77	20.8	MAv1	37.8	-18.7	.69	40.59	54	-13.41	-	-	360	100	V
1.752	36.42	PK2	29.8	-23.2	0	43.02	-	-	-	-	6	100	н
6.445	34.84	PK2	35.8	-23.8	0	46.84	-	-	-	-	276	100	V
12.835	31.8	PK2	39.3	-18.5	0	52.6	-	-	-	-	349	100	н
14.13	33.06	PK2	39.5	-19	0	53.56	-	-	-	-	65	100	V

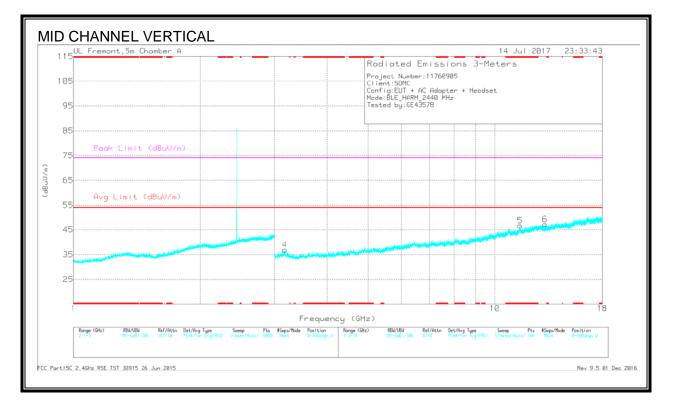
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 47 of 66





Page 48 of 66

### REPORT NO: 11760905-E3V2 FCC ID: PY7-32042D

### Radiated Emissions

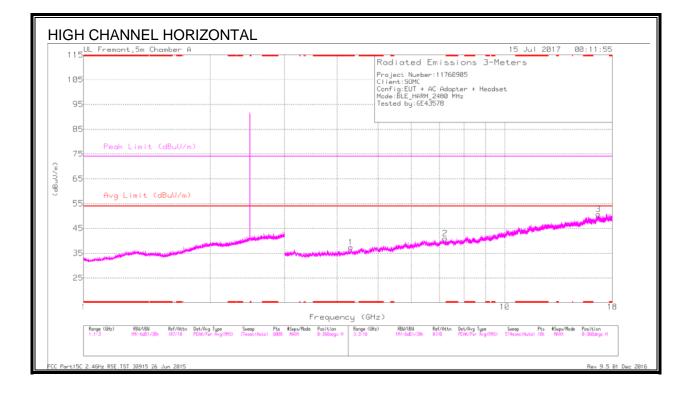
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 8.069	32.95	PK2	35.8	-21.6	0	47.15	-	-	74	-26.85	118	102	н
* 8.07	21.78	MAv1	35.8	-21.5	.69	36.77	54	-17.23	-	-	118	102	н
* 11.495	33.03	PK2	38.3	-18.5	0	52.83	-	-	74	-21.17	344	200	V
* 11.495	20.7	MAv1	38.3	-18.5	.69	41.19	54	-12.81	-	-	344	200	V
1.746	36.29	PK2	29.7	-23.2	0	42.79	-	-	-	-	207	199	Н
3.171	39.03	PK2	32.9	-28.7	0	43.23	-	-	-	-	175	102	V
8.839	33.13	PK2	36.1	-21.2	0	48.03	-	-	-	-	43	102	Н
13.165	32.3	PK2	39.2	-19.5	0	52	-	-	-	-	102	102	V

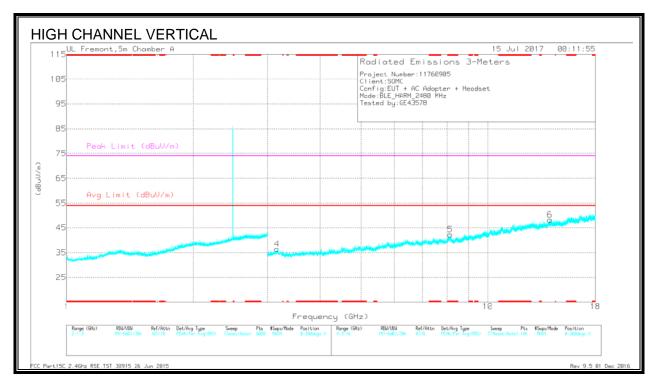
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

Page 49 of 66





UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. FORM NO: CCSUP4701I TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 50 of 66

### **Radiated Emissions**

Frequency (GHz)	Meter Reading	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	(dBuV)					(dBuV/m)							
* 4.31	37.54	PK2	33.6	-28.5	0	42.64	-	-	74	-31.36	59	100	н
* 4.311	26.04	MAv1	33.6	-28.5	.69	31.83	54	-22.17	-	-	59	100	н
* 8.147	32.96	PK2	35.8	-21.4	0	47.36	-	-	74	-26.64	-	200	V
* 8.149	22.29	MAv1	35.8	-21.5	.69	37.28	54	-16.72	-	-	-	200	V
3.158	39.14	PK2	32.9	-28.7	0	43.34	-	-	-	-	310	200	V
7.223	33.76	PK2	35.7	-23.9	0	45.56	-	-	-	-	263	199	н
14.046	32.69	PK2	39.5	-18.9	0	53.29	-	-	-	-	243	200	V
16.684	32.42	PK2	41.6	-17.7	0	56.32	-	-	-	-	249	102	н

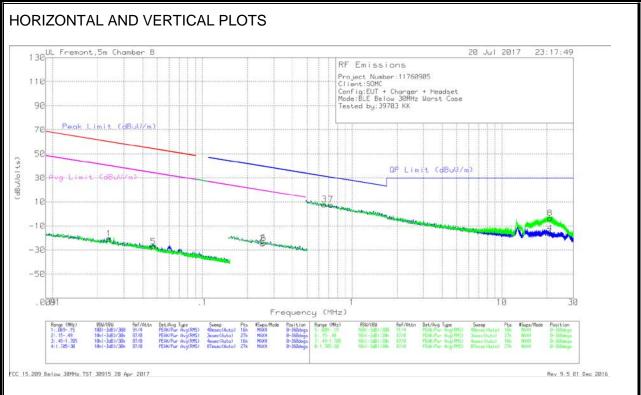
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

UL VERIFICATION SERVICES INC. 47173 BENICIA STREET, FREMONT, CA 94538, USA This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Page 51 of 66

## 9.3. SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

### Trace Markers Trace Markers

Mark er	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.02381	43.17	Pk	14.9	1.4	-80	-20.53	60.05	-80.58	40.05	-60.58	-	-	-	-	0-360
5	.04722	38.91	Pk	12.7	1.4	-80	-26.99	54.1	-81.09	34.1	-61.09	-	-	-	-	0-360
2	.25369	42.25	Pk	11.5	1.5	-80	-24.75	-	-	-	-	39.53	-64.28	19.53	-44.28	0-360
6	.25739	42.89	Pk	11.5	1.5	-80	-24.11	•	•	-	-	39.4	-63.51	19.4	-43.51	0-360

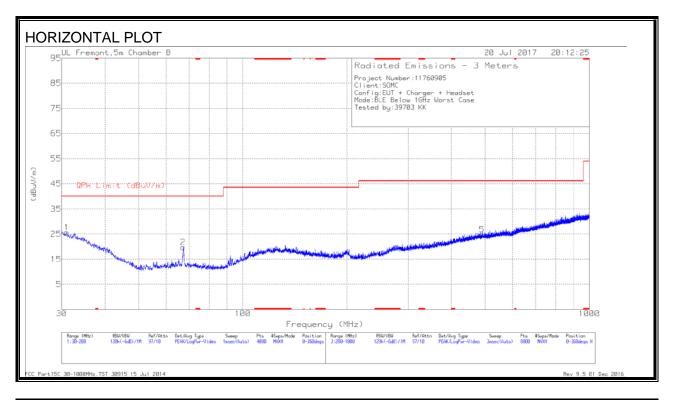
Pk - Peak detector

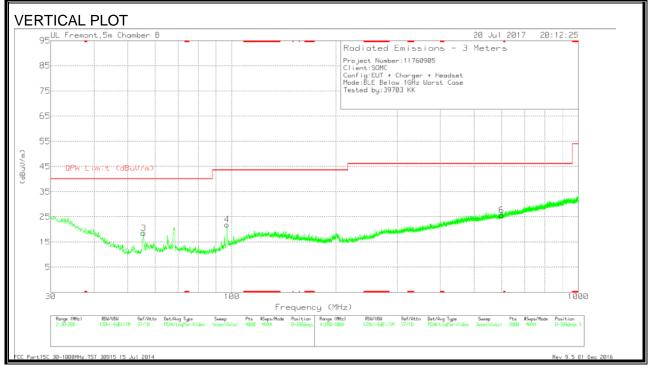
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.65089	34.91	Pk	11.5	1.5	-40	7.91	31.34	-23.43	0-360
7	.72385	34.62	Pk	11.5	1.5	-40	7.62	30.42	-22.8	0-360
4	20.96357	12.82	Pk	9.5	1.7	-40	-15.98	29.5	-45.48	0-360
8	20.9641	25.29	Pk	9.5	1.7	-40	-3.51	29.5	-33.01	0-360

Pk - Peak detector

Page 52 of 66

# 9.4. SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)





Page 53 of 66

Marker	Frequency (MHz)	Meter Reading	Det	AF T899 (dB/m)	Amp/Cbl (dB)	Corrected Reading	QPk Limit (dBuV/m)	Margin	Azimuth	Height	Polarity
	(IVIHZ)	(dBuV)				(dBuV/m)		(dB)	(Degs)	(cm)	
1	31.0203	29.7	Pk	24.7	-28.8	25.6	40	-14.4	0-360	100	Н
3	55.6341	35.82	Pk	11.1	-28.4	18.52	40	-21.48	0-360	100	V
2	67.2609	35.91	Pk	12.1	-28.3	19.71	40	-20.29	0-360	200	Н
4	96.806	36.62	Pk	13.3	-28	21.92	43.52	-21.6	0-360	100	V
5	489.1376	28.95	Pk	21.6	-25.8	24.75	46.02	-21.27	0-360	200	Н
6	600.352	28.88	Pk	22.4	-25.6	25.68	46.02	-20.34	0-360	200	V

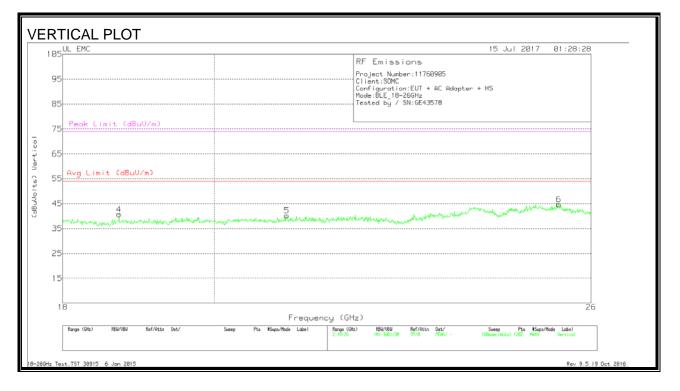
Pk - Peak detector

Page 54 of 66

## 9.5. WORST-CASE 18 to 26 GHz

## SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

UL EMC	15 Jul 2017 01:28:28
	RF Emissions
	Project Number:11760905 Client:SOMC Configuration:EUT + AC Adopter + HS Mode:BLE_18-266Hz
	Tested by / SN:6E43578
Peak Limit (dBuU/m)	
Avg Limit (dBuV/m)	
manutelationstationstation	and the way a shore a provide the second and the se
8	26
Range (GHz) RSW/VBV Ref/Ritn Det/	Frequency (GHz) Seeve Pis tSeev/tode Label   Rance (Btz) RSU/181/ Ref/Rith Det/ Seeva Pis tSeev/tode Label
1:18-26 1H(-3d8)/3H 97/8 FEAV -	sweep na sweep naa sweet



Page 55 of 66

### <u>DATA</u>

Marker	Frequency	Meter	Det	T449 AF	Amp/Cbl (dB)	Dist Corr	Corrected	Avg Limit	Margin	Peak Limit	PK Margin
	(GHz)	Reading		(dB/m)		(dB)	Reading	(dBuV/m)	(dB)	(dBuV/m)	(dB)
		(dBuV)					(dBuVolts)				
1	20.052	41.37	Pk	32.8	-25	-9.5	39.67	54	-14.33	74	-34.33
2	23.975	43.13	Pk	33.9	-24.2	-9.5	43.33	54	-10.67	74	-30.67
3	25.081	44.3	Pk	34.3	-24.6	-9.5	44.5	54	-9.5	74	-29.5
4	18.719	42.57	Pk	32.3	-24.7	-9.5	40.67	54	-13.33	74	-33.33
5	21.037	41.67	Pk	33.2	-25.2	-9.5	40.17	54	-13.83	74	-33.83
6	25.42	44.07	Pk	34.4	-24.3	-9.5	44.67	54	-9.33	74	-29.33

Pk - Peak detector

Page 56 of 66

## **10. AC POWER LINE CONDUCTED EMISSIONS**

### <u>LIMITS</u>

FCC §15.207 (a) RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBµV)					
	Quasi-peak	Average				
0.15-0.5	66 to 56 *	56 to 46 *				
0.5-5	56	46				
5-30	60	50				

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

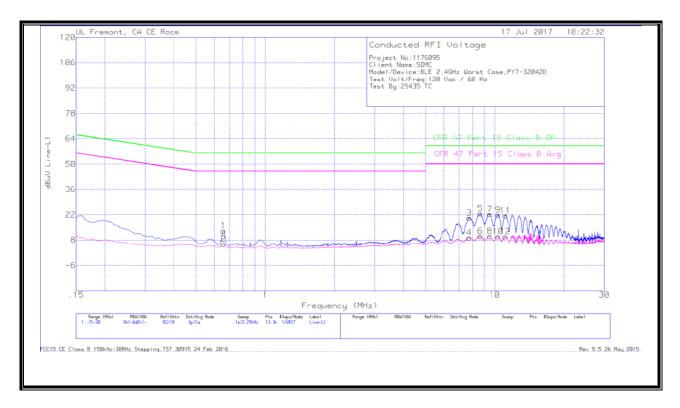
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

### <u>RESULTS</u>

Page 57 of 66

### LINE 1 RESULTS



#### WORST EMISSIONS

### **Trace Markers**

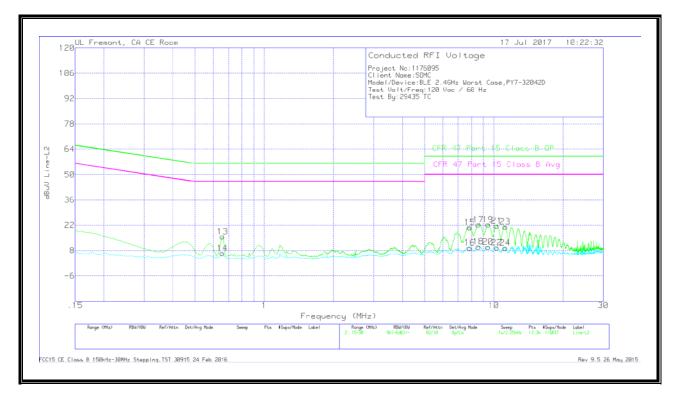
Range	1: Line-L1 .	15 - 30MH	lz								
Marker	Frequency (MHz)	Meter Reading	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading	CFR 47 Part 15	QP Margin (dB)	CFR 47 Part 15	Av(CISPR) Margin
		(dBuV)					dBuV	Class B QP		Class B Avg	(dB)
1	.6585	3.03	Qp	0	.1	10.1	13.23	56	-42.77	-	-
2	.6585	-4.35	Ca	0	.1	10.1	5.85	-	-	46	-40.15
3	7.74375	9.85	Qp	0	.2	10.2	20.25	60	-39.75	-	-
4	7.73925	-1.09	Ca	0	.2	10.2	9.31	-	-	50	-40.69
5	8.65388	12.29	Qp	0	.2	10.2	22.69	60	-37.31	-	-
6	8.655	19	Ca	0	.2	10.2	10.21	-	-	50	-39.79
7	9.51	11.95	Qp	0	.2	10.2	22.35	60	-37.65	-	-
8	9.51675	23	Ca	0	.2	10.2	10.17	-	-	50	-39.83
9	10.34025	11.66	Qp	0	.2	10.2	22.06	60	-37.94	-	-
10	10.338	37	Ca	0	.2	10.2	10.03	-	-	50	-39.97
11	11.112	11.09	Qp	0	.2	10.2	21.49	60	-38.51	-	-
12	11.11425	43	Ca	0	.2	10.2	9.97	-	-	50	-40.03

Qp - Quasi-Peak detector

Ca - CISPR average detection

Page 58 of 66

### LINE 2 RESULTS



### WORST EMISSIONS

### **Trace Markers**

Range	2: Line-L2 .	15 - 30MH	lz								
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.6585	5.53	Qp	0	.1	10.1	15.73	56	-40.27	-	-
14	.65737	-3.73	Ca	0	.1	10.1	6.47	-	-	46	-39.53
15	7.845	10.34	Qp	0	.2	10.2	20.74	60	-39.26	-	-
16	7.84613	82	Ca	0	.2	10.2	9.58	-	-	50	-40.42
17	8.57063	11.94	Qp	0	.2	10.2	22.34	60	-37.66	-	-
18	8.5695	29	Ca	0	.2	10.2	10.11	-	-	50	-39.89
19	9.43013	11.93	Qp	0	.2	10.2	22.33	60	-37.67	-	-
20	9.438	38	Ca	0	.2	10.2	10.02	-	-	50	-39.98
21	10.31325	11.31	Qp	0	.2	10.2	21.71	60	-38.29	-	-
22	10.31325	66	Ca	0	.2	10.2	9.74	-	-	50	-40.26
23	11.22675	10.76	Qp	0	.2	10.2	21.16	60	-38.84	-	-
24	11.21325	89	Ca	0	.2	10.2	9.51	-	-	50	-40.49

**Qp** - Quasi-Peak detector

Ca - CISPR average detection