Conceived and designed by:
Pacific Bioscience Laboratories, Inc.
(L'Oreal Beauty Devices) of Redmond, WA US /
Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China

TEST REPORT FOR

Mia Ultimate

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)
15.207 & 15.247
(DTS 2400-2483.5 MHz)

Report No.: 101777-10

Date of issue: December 6, 2018

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Test Certificate # 803.05

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Conceived and designed by:
Pacific Bioscience Laboratories, Inc.
(L'Oreal Beauty Devices) of Redmond, WA US /
Manufactured by: Jabil Circuit (Guangzhou) Co., LTD.
China
17425 NE Union Hill Rd Suite 150
Redmond, WA 98052

Representative: Rajen Shah
Customer Reference Number: 4200543734

REPORT PREPARED BY:

Terri Rayle
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 101777

DATE OF EQUIPMENT RECEIPT: November 12, 2018
DATE(S) OF TESTING: November 12-19, 2018 and December 4, 2018

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
22116 23rd Drive S.E., Suite A
Canyon Park, Bothell, WA 98021

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11

Site Registration & Accreditation Information

Location	NIST CB #	TAIWAN	CANADA	FCC	JAPAN
Canyon Park Bothell, WA	US0081	SL2-IN-E-1145R	3082C-1	US1022	A-0148

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C - 15.247 (DTS)

Test Procedure	Description	Modifications	Results
15.247(a)(2)	6dB Bandwidth	NA	Pass
15.247(b)(3)	Output Power	NA	Pass
15.247(e)	Power Spectral Density	NA	Pass
15.247(d)	RF Conducted Emissions & Band Edge	NA	Pass
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted Emissions	NA	NA1

NA = Not Applicable
NA1 = Not applicable because the EUT does not transmit while charging per manufacturer.

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 2 (BLE and Motor)

Equipment Tested:

Device	Manufacturer	Model #	S/N
Mia Ultimate	Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China	Mia Ultimate	#2

Support Equipment:

Device	Manufacturer	Model #	S/N
None			

Configuration 4

Equipment Tested:

Device	Manufacturer	Model #	S/N
Mia Ultimate	Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China	Mia Ultimate	#4

Support Equipment:

Device	Manufacturer	Model #	S/N
None			

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	802.15.1
Operating Frequency Range:	2402-2480MHz
Modulation Type(s):	GFSK
Maximum Duty Cycle:	100%
Number of TX Chains:	1
Antenna Type(s) and Gain:	PCB Trace 1dBi
Beamforming Type:	NA
Antenna Connection Type:	Integral
Nominal Input Voltage:	Battery 2.4VDC
Firmware / Software used for Test:	Version 0.61

FCC Part 15 Subpart C

15.247(a)(2) 6dB Bandwidth

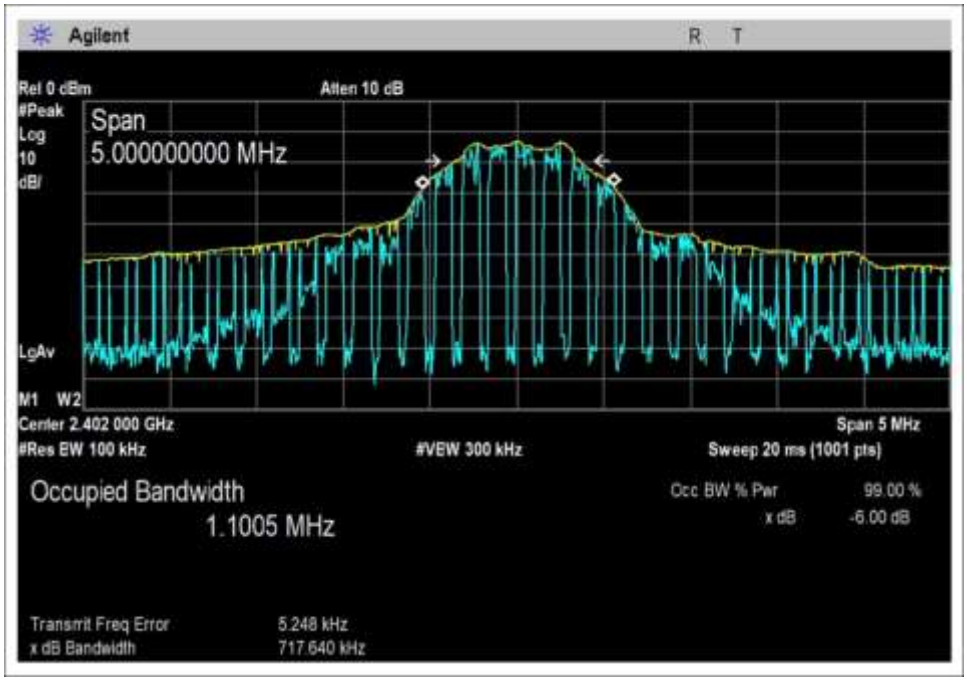
Test Setup/Conditions			
Test Location:	Bothell Lab C3	Test Engineer:	M. Atkinson
Test Method:	ANSI C63.10 (2013), KDB 558074 (v05 August 2018)	Test Date(s):	11/16/2018 to 11/19/2018
Configuration:	2		
Test Setup:	The EUT is on test table continuously transmitting with modulation.		

Environmental Conditions			
Temperature (ºC)	19-23	Relative Humidity (%):	30-40

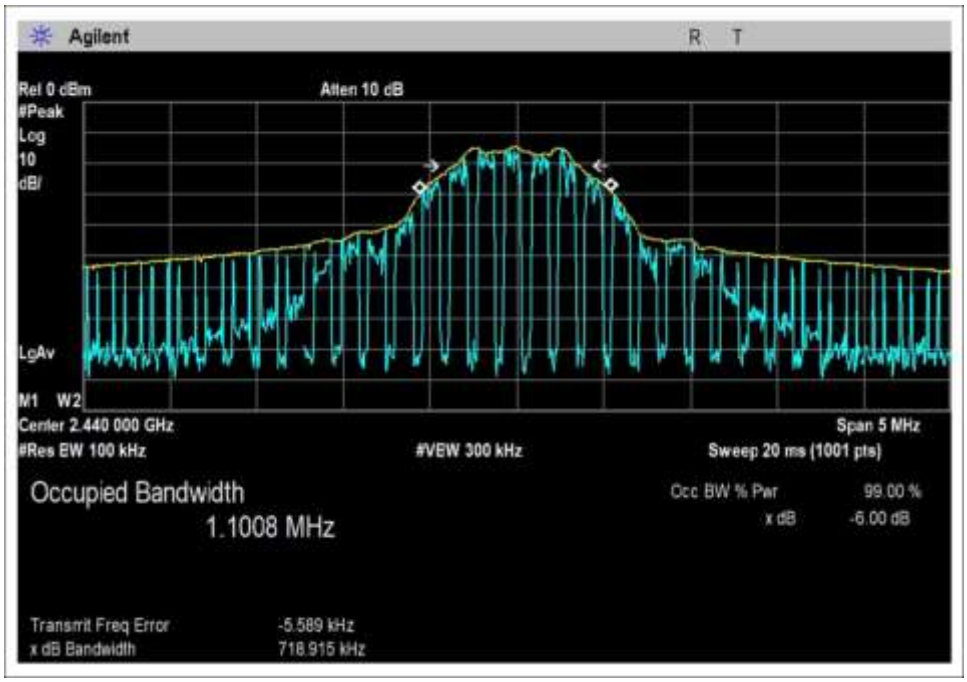
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02673	Spectrum Analyzer	Agilent	E4446A	2/3/2017	2/3/2019
P06540	Cable	Andrews	Heliax	10/30/2017	10/30/2019
P06515	Cable	Andrews	Heliax	6/29/2018	6/29/2020
01467	Horn Antenna	EMCO	3115	7/21/2017	7/21/2019
P06503	Cable	Astrolab	32026-29801-29801-36	3/13/2018	3/13/2020
03540	Preamp	HP	83017A	5/2/2017	5/2/2019

Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
2402	1	GFSK	717.6	≥500	Pass
2440	1	GFSK	718.9	≥500	Pass
2480	1	GFSK	718.4	≥500	Pass

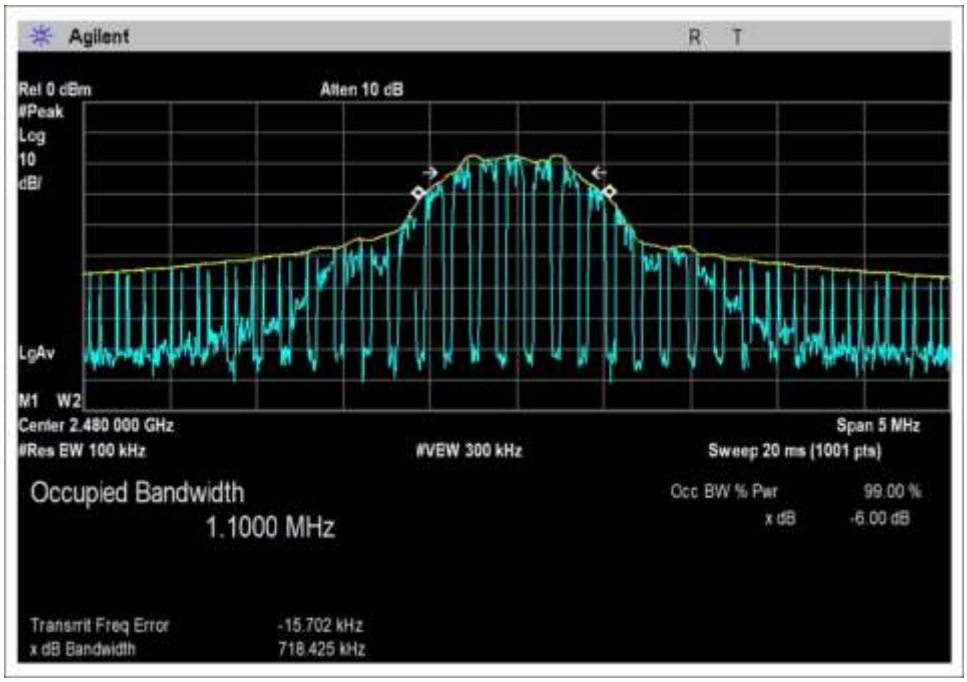
Plots



Low Channel

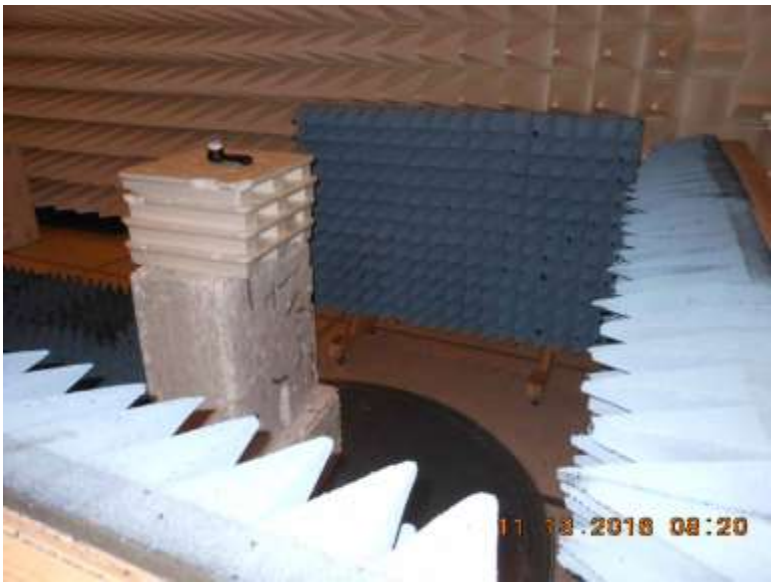


Middle Channel



High Channel

Test Setup Photo



15.247(b)(3) Output Power

Test Data Summary - Voltage Variations

This equipment is battery powered and manufacturer declares the equipment cannot operate while charging. Power output tests were performed using a fresh battery.

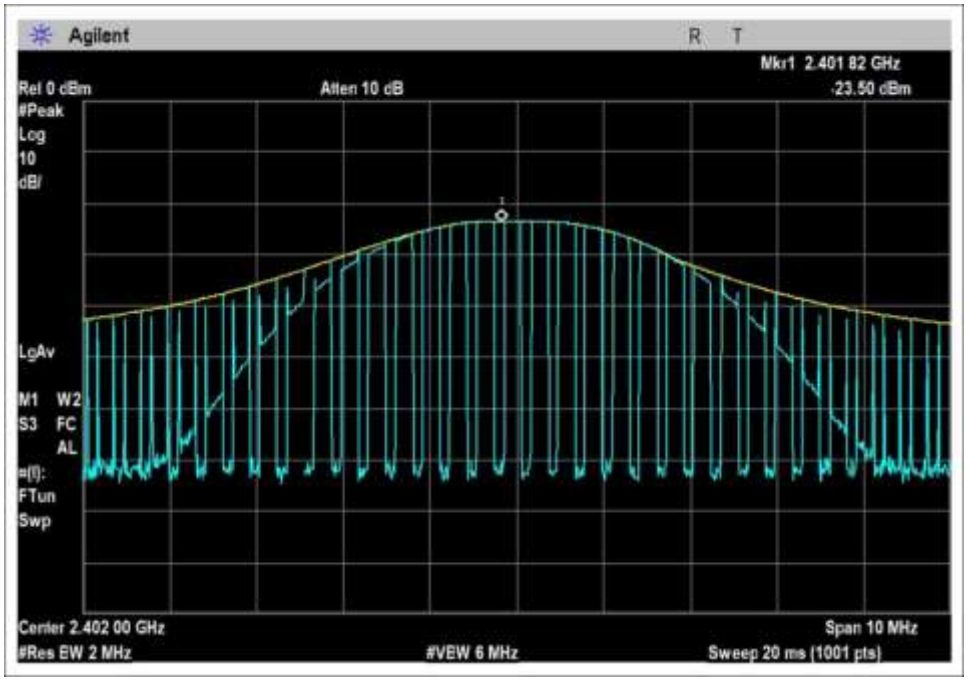
Power Output Test Data Summary - RF Conducted Measurement					
Measurement Option: RBW > DTS Bandwidth					
Frequency (MHz)	**Modulation**	**Ant. Type / Gain (dBi)**	**Measured (dBm)**	**Limit (dBm)**	**Results**
2402	GFSK	PCB Trace / 1 dBi	-3.3	≤30	Pass
2440	GFSK	PCB Trace / 1 dBi	-3.6	≤30	Pass
2480	GFSK	PCB Trace / 1 dBi	-3.8	≤30	Pass

For fixed point-to-point antennas, the limit is calculated in accordance with 15.247(c)(1):

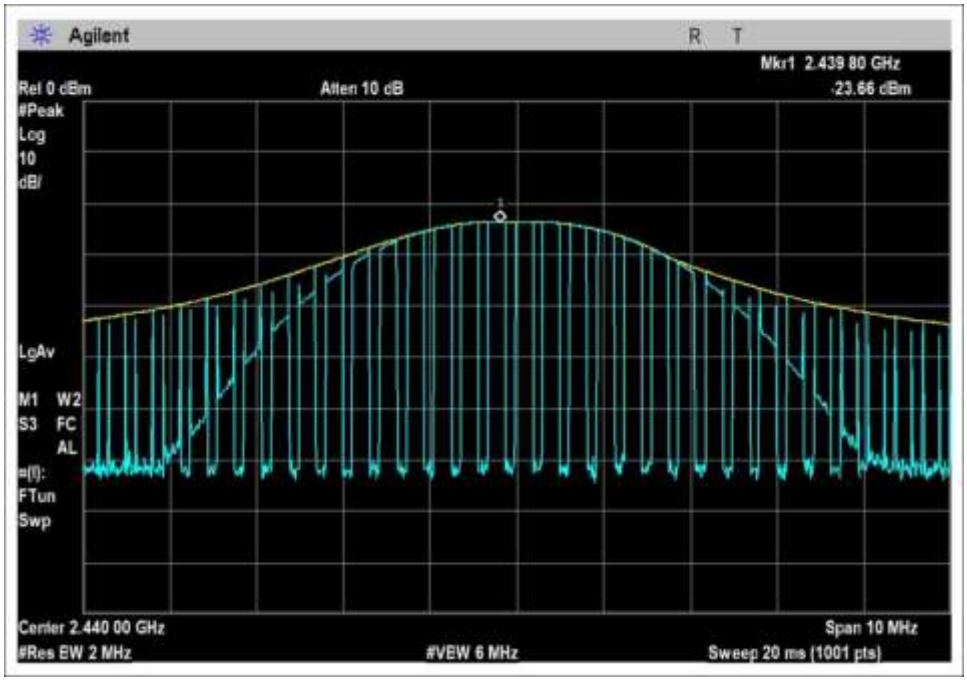
$$Limit = 30 - Roundup\left(\frac{G-6}{3}\right)$$

For directional beamforming antennas, the limit is calculated in accordance with 15.247(c)(2) and KDB 662911.

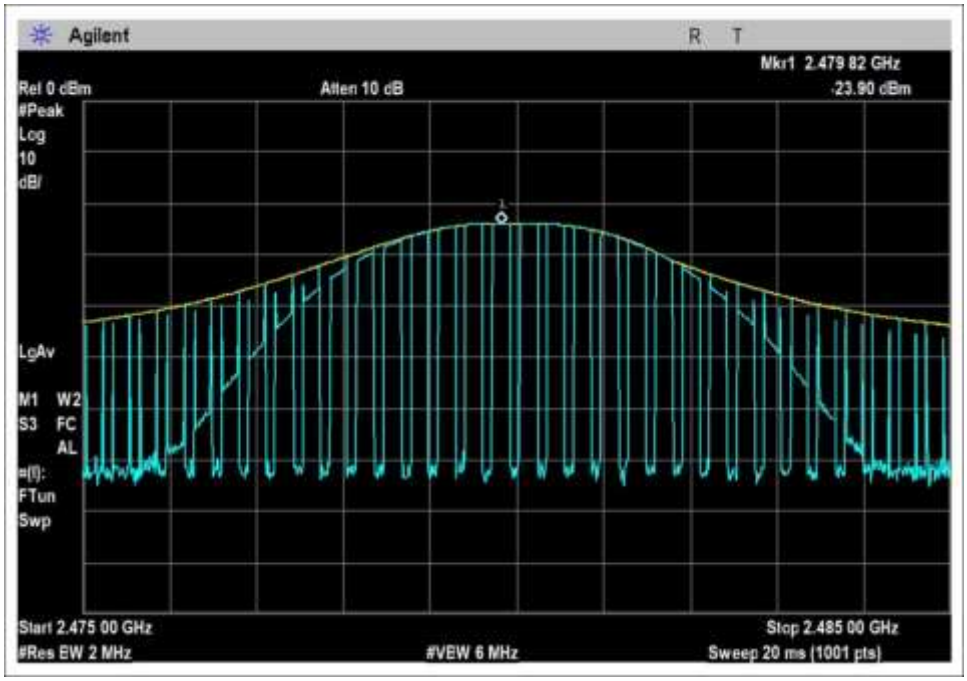
Plots



Low Channel



Middle Channel



High Channel

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(b) Power Output (2400-2483.5 MHz DTS)**		
Work Order #:	**101777**	Date:	11/19/2018
Test Type:	**Conducted Emissions**	Time:	09:24:11
Tested By:	Michael Atkinson	Sequence#:	20
Software:	EMITest 5.03.11		Battery

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

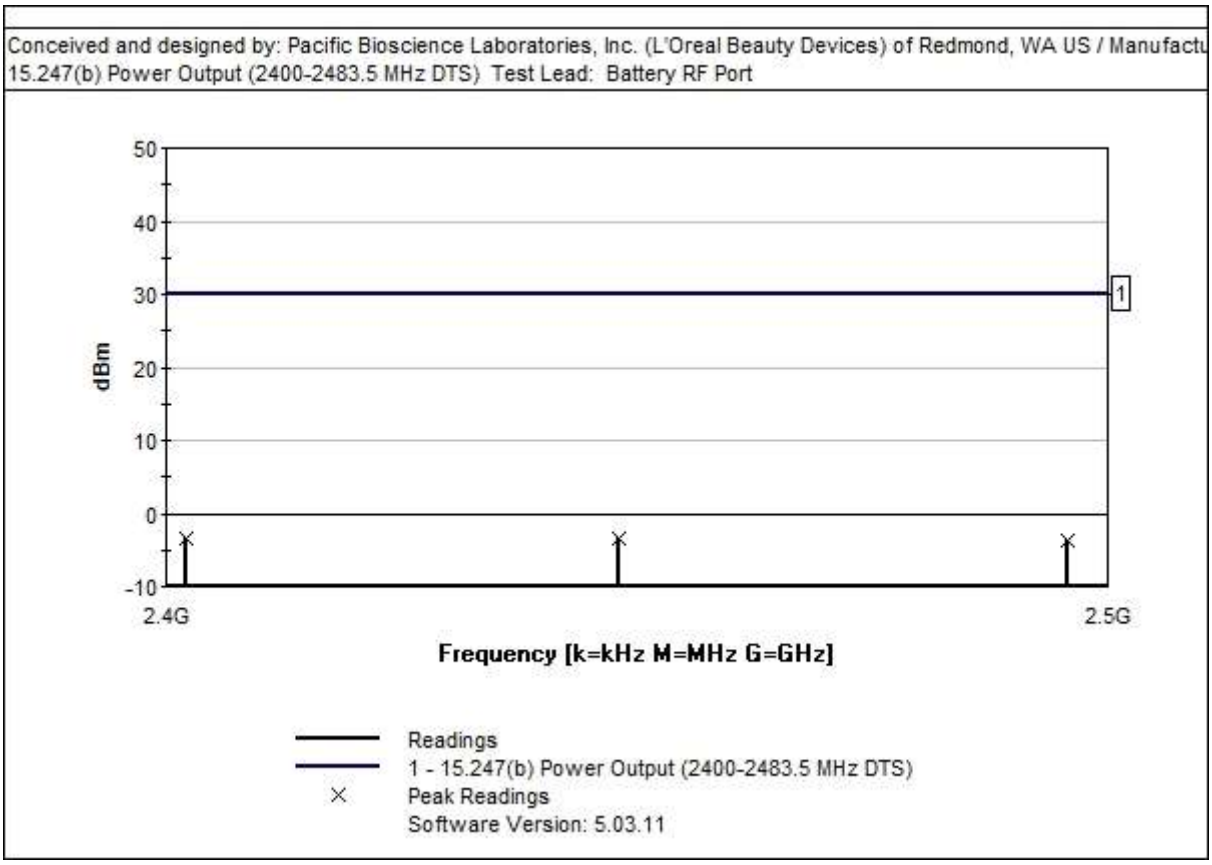
Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

Frequency: Fundamental 2402, 2440, 2480MHz

Setup: The EUT has temporary RF port connected to take direct measurement.
The EUT is continuously transmitting modulated data.
The EUT has fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP05747	Attenuator	PE7004-20	5/18/2018	5/18/2020

Measurement Data: Reading listed by margin. Test Lead: RF Port

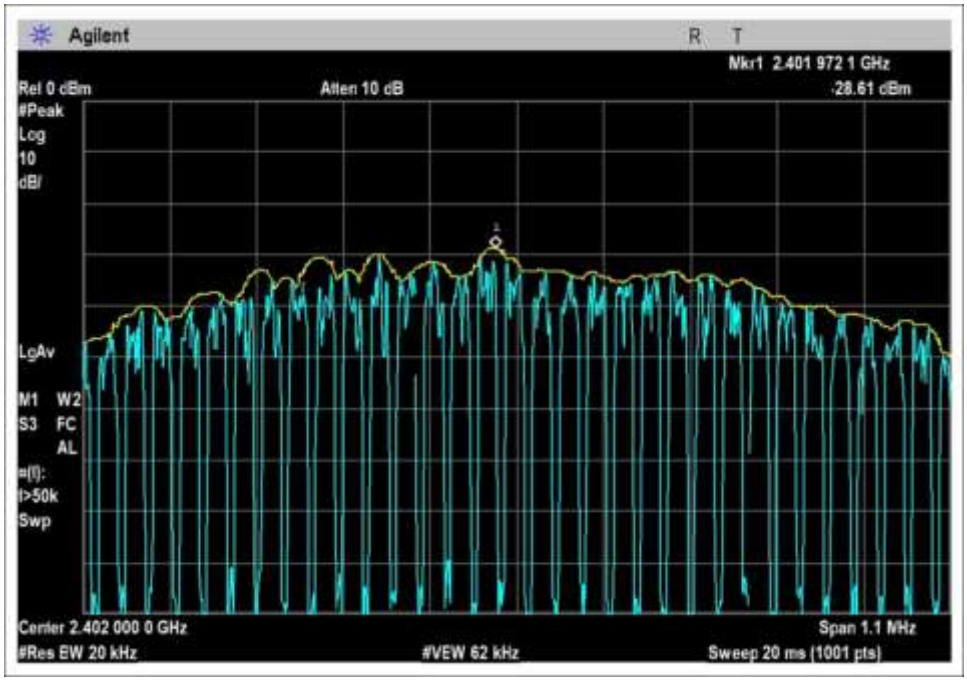
#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	2401.820M	-23.5	+20.2				+0.0	-3.3	30.0	-33.3	RF Po
2	2439.800M	-23.7	+20.1				+0.0	-3.6	30.0	-33.6	RF Po
3	2479.820M	-23.9	+20.1				+0.0	-3.8	30.0	-33.8	RF Po

Test Setup Photo

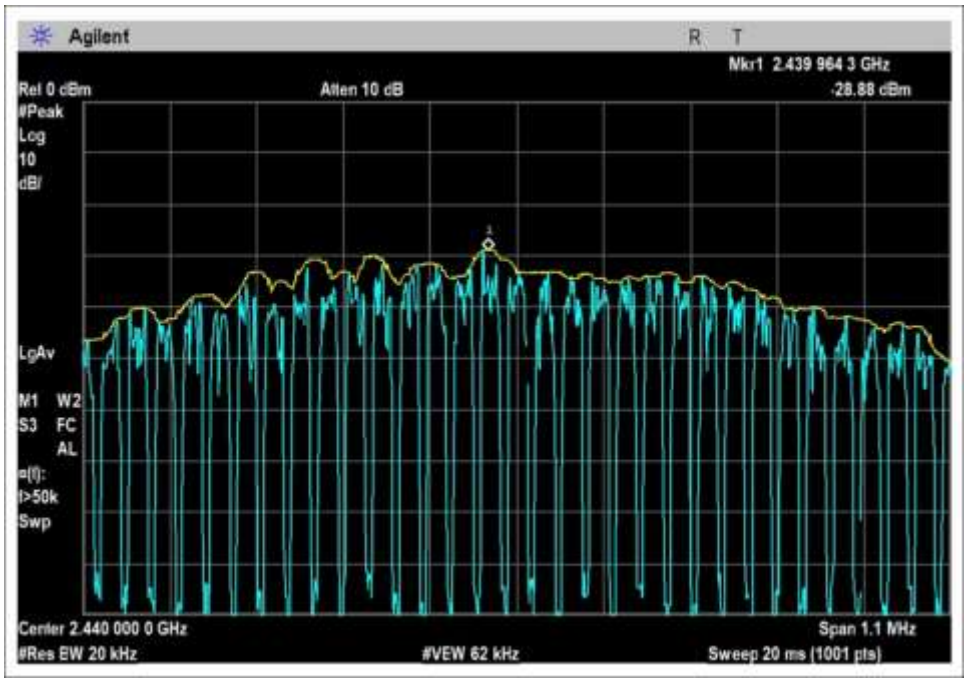
15.247(e) Power Spectral Density

PSD Test Data Summary - RF Conducted Measurement				
Measurement Method: PKPSD				
Frequency (MHz)	**Modulation**	**Measured (dBm/20kHz)**	**Limit (dBm/3kHz)**	**Results**
2402	GFSK	-8.4	≤8	Pass
2440	GFSK	-8.8	≤8	Pass
2480	GFSK	-9.0	≤8	Pass

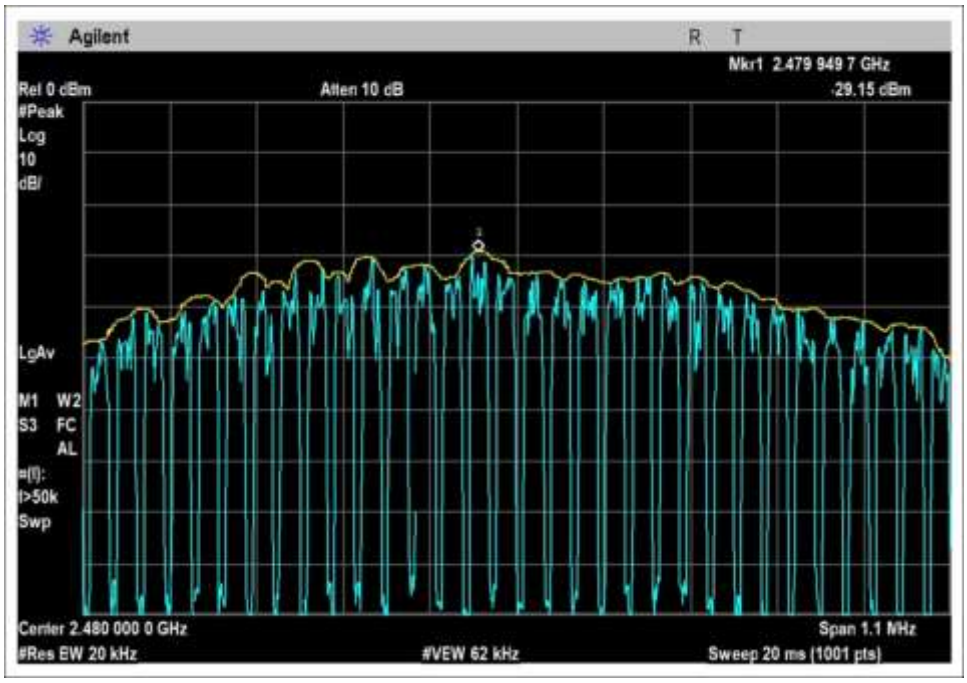
Plots



Low Channel



Middle Channel



High Channel

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(e) Peak Power Spectral Density (2400-2483.5 MHz DTS)**		
Work Order #:	**101777**	Date:	11/19/2018
Test Type:	**Conducted Emissions**	Time:	09:42:49
Tested By:	Michael Atkinson	Sequence#:	21
Software:	EMITest 5.03.11		Battery

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

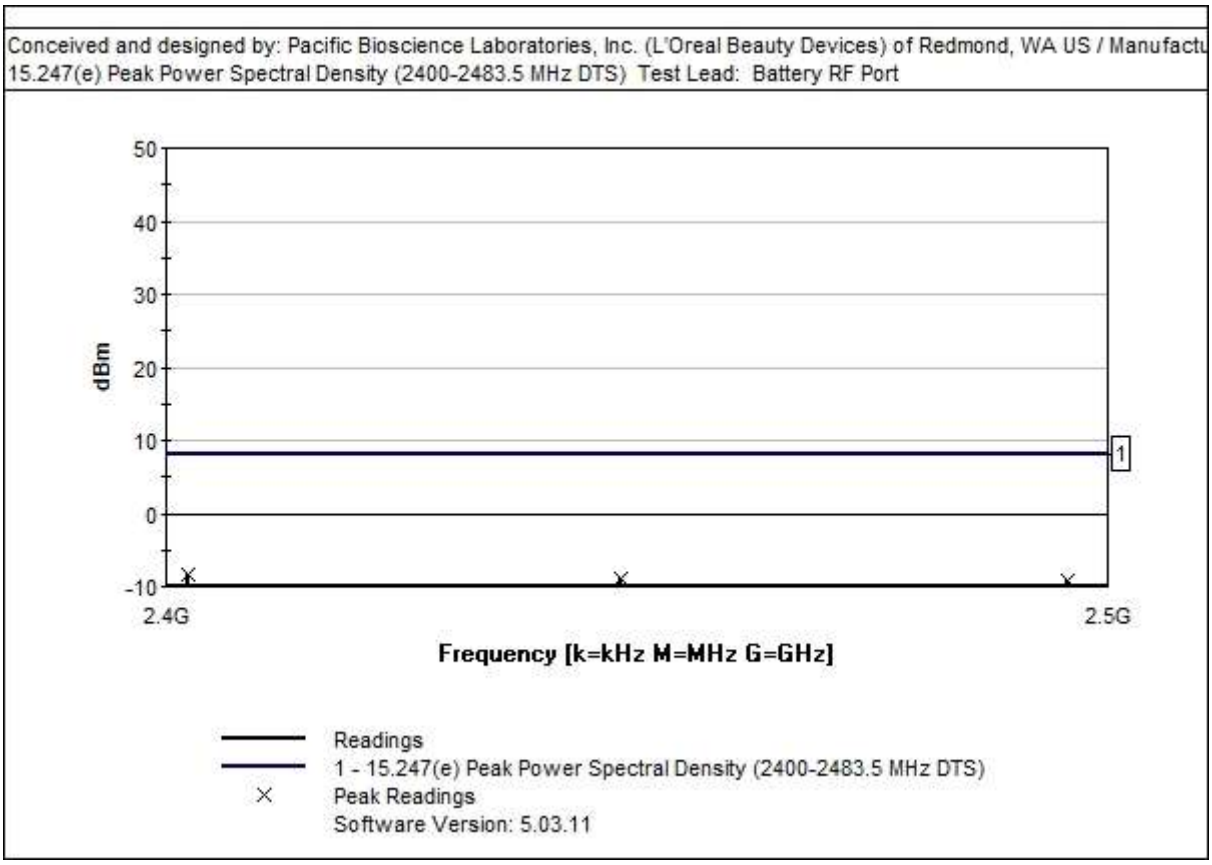
Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

Frequency: Fundamental 2402, 2440, 2480MHz

Setup: The EUT has temporary RF port connected to take direct measurement.
The EUT is continuously transmitting modulated data.
The EUT has fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP05747	Attenuator	PE7004-20	5/18/2018	5/18/2020

Measurement Data: Reading listed by margin. Test Lead: RF Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	2401.972M	-28.6	+20.2				+0.0	-8.4	8.0	-16.4	RF Po
2	2439.964M	-28.9	+20.1				+0.0	-8.8	8.0	-16.8	RF Po
3	2479.950M	-29.1	+20.1				+0.0	-9.0	8.0	-17.0	RF Po

Test Setup Photo

15.247(d) RF Conducted Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**101777**	Date:	12/4/2018
Test Type:	**Conducted Emissions**	Time:	11:31:59
Tested By:	Michael Atkinson	Sequence#:	22
Software:	EMITest 5.03.11		Battery

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

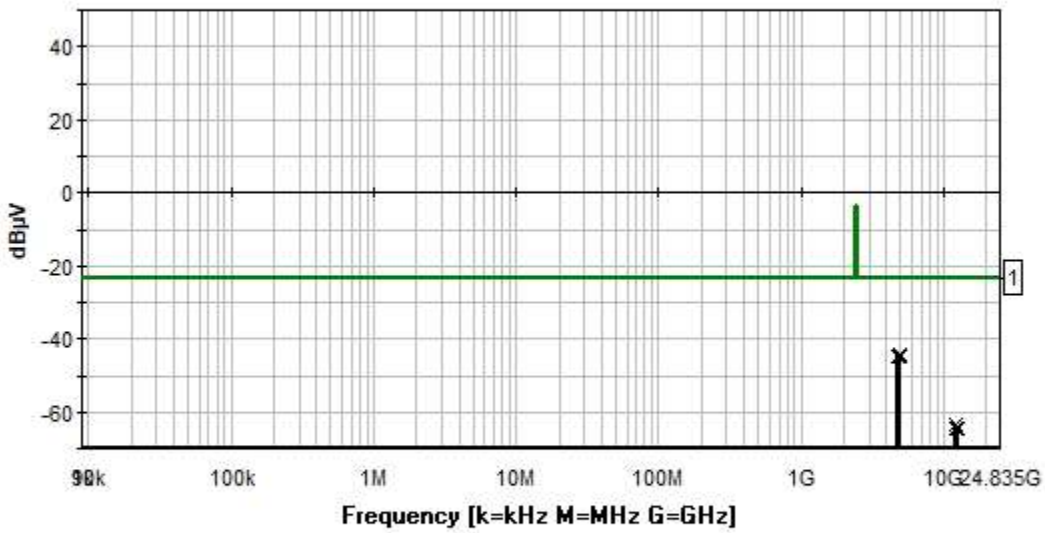
Frequency Investigated: 9kHz-24.835GHz
Frequency of Fundamental: 2402, 2440, 2480MHz

Setup: The EUT has temporary RF port connected to take direct measurement.
The EUT is continuously transmitting modulated data.
The EUT has fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactu
RSS-247 5.5 Conducted Spurious Emissions Test Lead: Battery RF Port



Readings
1 - RSS-247 5.5 Conducted Spurious Emissions
Peak Readings
Software Version: 5.03.11

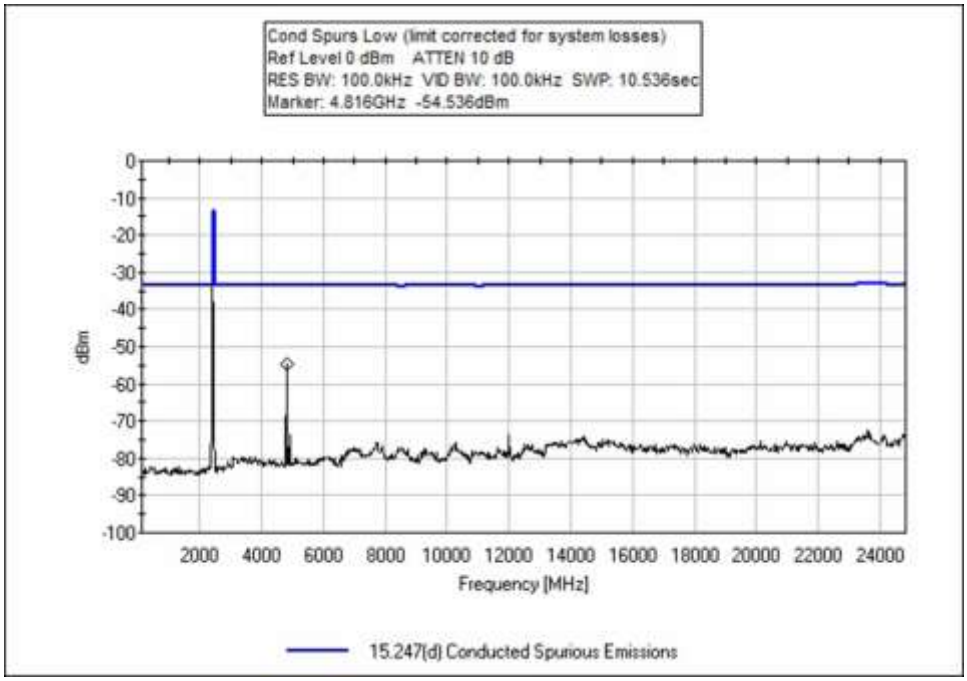
Test Equipment:

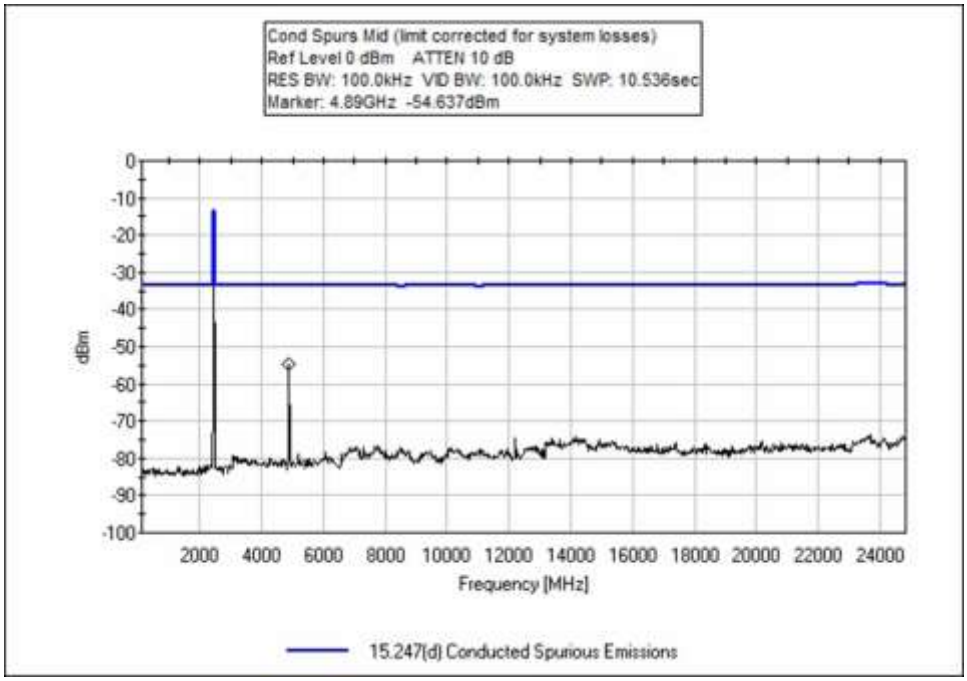
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP06241	Attenuator	54A-10	3/13/2018	3/13/2020

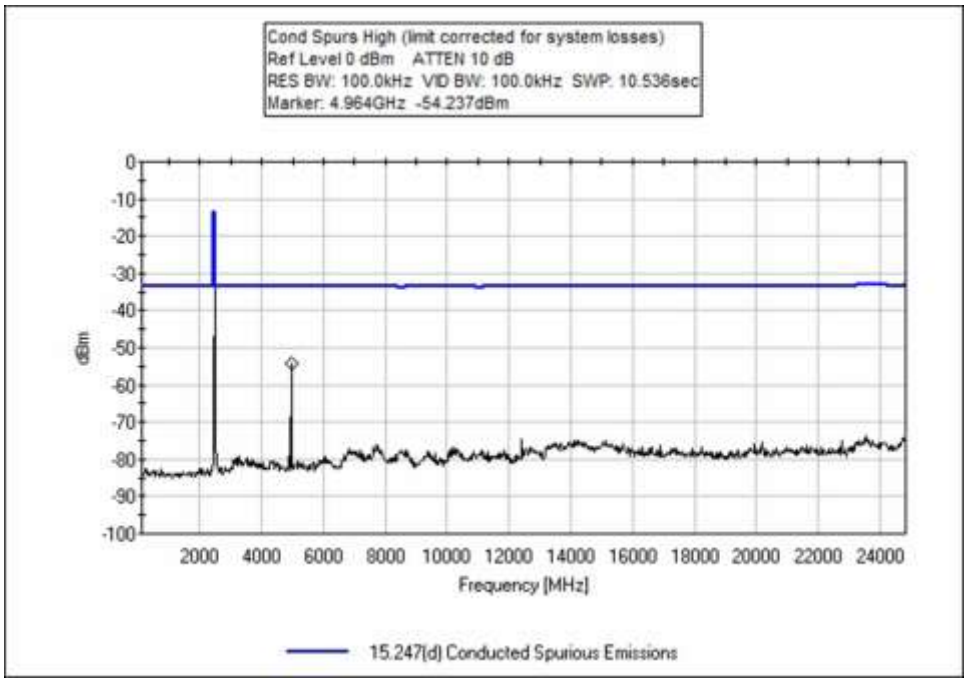
Measurement Data: Reading listed by margin. Test Lead: RF Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	4964.000M	-54.2	+10.0				+0.0	-44.2	-23.5 High	-20.7	RF Po
2	4816.000M	-54.5	+10.0				+0.0	-44.5	-23.5 Low	-21.0	RF Po
3	4890.000M	-54.6	+10.0				+0.0	-44.6	-23.5 Mid	-21.1	RF Po
4	12008.000 M	-73.6	+10.0				+0.0	-63.6	-23.5 Low	-40.1	RF Po
5	12206.000 M	-74.4	+9.9				+0.0	-64.5	-23.5 Mid	-41.0	RF Po
6	12403.000 M	-74.7	+10.0				+0.0	-64.7	-23.5 High	-41.2	RF Po

Plots


Cond Spurs Low (limit corrected for system losses)
Ref Level 0 dBm ATTEN 10 dB
RES BW: 100.0kHz VID BW: 100.0kHz SWP: 10.536sec
Marker: 4.816GHz -54.536dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
dBm
2000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 24000
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

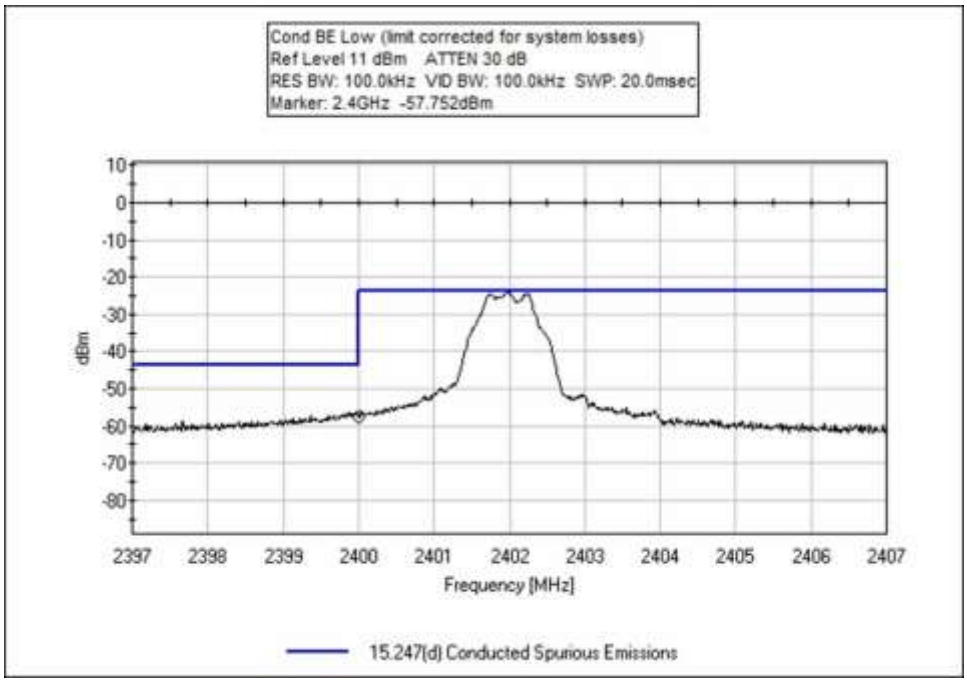

Cond Spurs Mid (limit corrected for system losses)
Ref Level 0 dBm ATTEN 10 dB
RES BW: 100.0kHz VID BW: 100.0kHz SWP: 10.536sec
Marker: 4.89GHz -54.637dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
dBm
2000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 24000
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

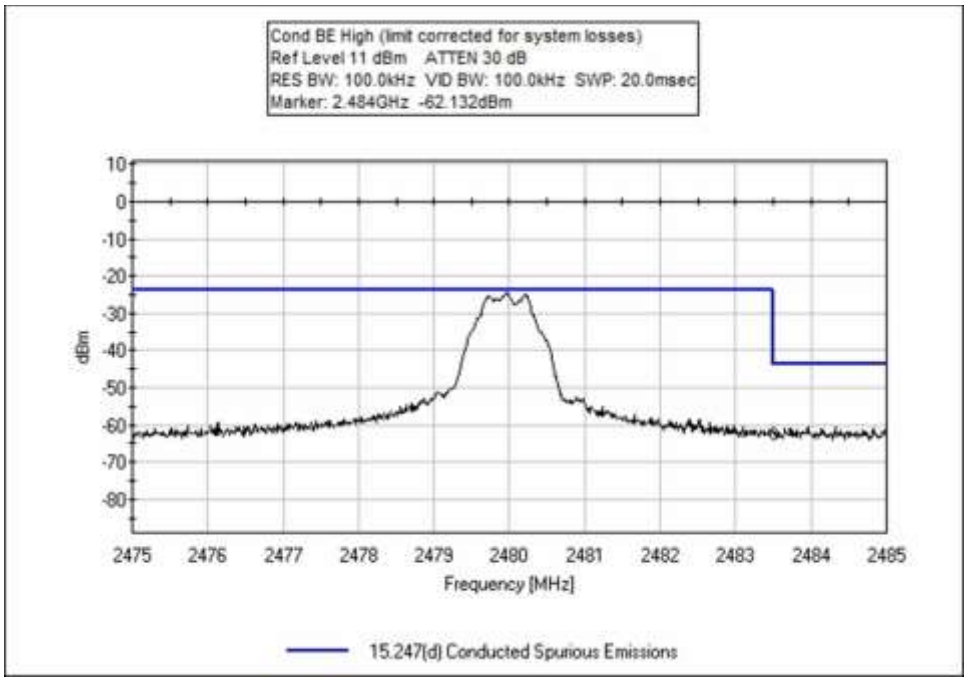

Cond Spurs High (limit corrected for system losses)
Ref Level 0 dBm ATTEN 10 dB
RES BW: 100.0kHz VID BW: 100.0kHz SWP: 10.536sec
Marker: 4.964GHz -54.237dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
dBm
2000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 24000
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

Band Edge

Band Edge Summary				
Limit applied: Max Power/100kHz - 20dB.				
Frequency (MHz)	**Modulation**	**Measured (dBm)**	**Limit (dBm)**	**Results**
2400.0	GFSK	-37.6	<-23.5	Pass
2483.5	GFSK	-42.0	<-23.5	Pass

Plots


Cond BE Low (limit corrected for system losses)
Ref Level 11 dBm ATTEN 30 dB
RES BW: 100.0kHz VID BW: 100.0kHz SWP: 20.0msec
Marker: 2.4GHz -57.752dBm
dBm
10
0
-10
-20
-30
-40
-50
-60
-70
-80
2397
2398
2399
2400
2401
2402
2403
2404
2405
2406
2407
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


Cond BE High (limit corrected for system losses)
Ref Level 11 dBm ATTEN 30 dB
RES BW: 100.0kHz VID BW: 100.0kHz SWP: 20.0msec
Marker: 2.484GHz -62.132dBm
dBm
10
0
-10
-20
-30
-40
-50
-60
-70
-80
2475
2476
2477
2478
2479
2480
2481
2482
2483
2484
2485
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**101777**	Date:	12/4/2018
Test Type:	**Conducted Emissions**	Time:	11:09:32
Tested By:	Michael Atkinson	Sequence#:	21
Software:	EMITest 5.03.11		Battery

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

Frequency Investigated: Band Edge
Frequency of Fundamental: 2402, 2480MHz

Setup: The EUT has temporary RF port connected to take direct measurement.
The EUT is continuously transmitting modulated data.
The EUT has fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP05747	Attenuator	PE7004-20	5/18/2018	5/18/2020

Measurement Data: Reading listed by margin. Test Lead: RF Port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2400.000M	-57.8	+20.2				+0.0	-37.6	-23.5	-14.1	RF Po
2	2483.500M	-62.1	+20.1				+0.0	-42.0	-23.5	-18.5	RF Po

Test Setup Photos

15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101777**	Date:	11/16/2018
Test Type:	**Maximized Emissions**	Time:	14:57:56
Tested By:	Michael Atkinson	Sequence#:	18
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

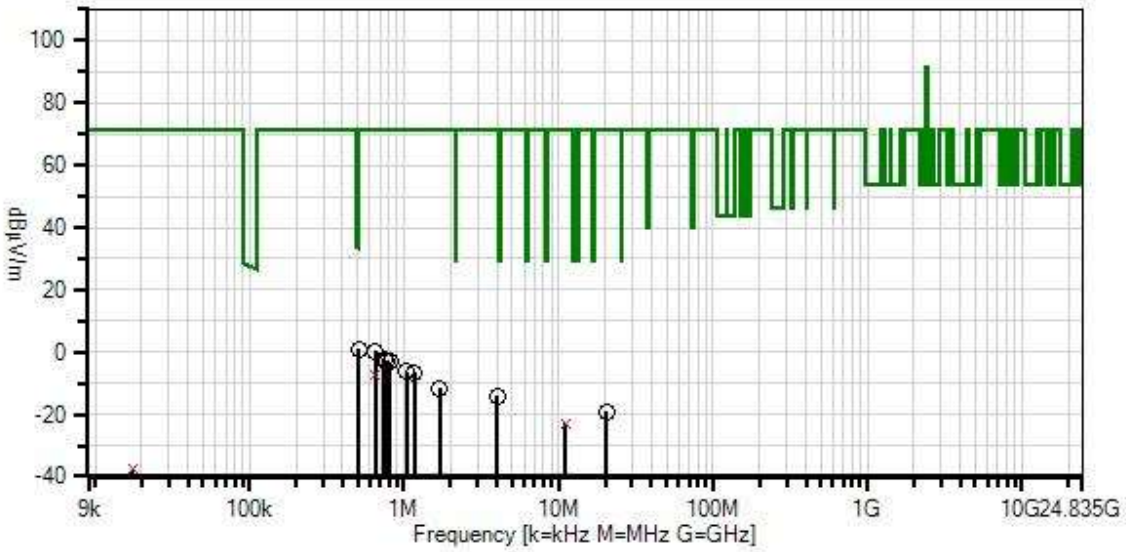
Frequency: 9kHz-30MHz

Setup: The EUT is continuously transmitting with modulation.
Low, Mid, and High investigated, X, Y, and Z EUT axes investigated, worst case reported.
Fresh charged battery installed.
3 orthogonal antenna axes investigated, worst case reported.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China WO#: 101777 Sequence#: 18 Date: 11/16/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Perp



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	505.419k	31.2	+0.0	+0.0	+0.0	+9.7	-40.0	0.9	71.5	-70.6	Para
2	651.768k	30.4	+0.0	+0.0	+0.0	+9.8	-40.0	0.2	71.5	-71.3	Groun
3	745.850k	27.8	+0.0	+0.0	+0.0	+9.9	-40.0	-2.3	71.5	-73.8	Para
4	773.029k	27.3	+0.0	+0.0	+0.0	+10.0	-40.0	-2.7	71.5	-74.2	Para
5	814.843k	27.0	+0.0	+0.0	+0.0	+10.0	-40.0	-3.0	71.5	-74.5	Para
6	1.030M	23.9	+0.0	+0.0	+0.0	+9.9	-40.0	-6.2	71.5	-77.7	Para
7	1.166M	23.5	+0.0	+0.0	+0.0	+9.9	-40.0	-6.6	71.5	-78.1	Para
8 QP	651.768k	23.1	+0.0	+0.0	+0.0	+9.8	-40.0	-7.1	71.5	-78.6	Para
9	1.703M	18.6	+0.0	+0.0	+0.1	+9.8	-40.0	-11.5	71.5	-83.0	Para
10	3.998M	16.1	+0.0	+0.0	+0.1	+9.7	-40.0	-14.1	71.5	-85.6	Para
11	20.433M	12.8	+0.0	+0.0	+0.2	+7.9	-40.0	-19.1	71.5	-90.6	Para
12 QP	11.136M	7.6	+0.0	+0.0	+0.2	+9.2	-40.0	-23.0	71.5	-94.5	Perp
^	11.136M	13.4	+0.0	+0.0	+0.2	+9.2	-40.0	-17.2	71.5	-88.7	Perp
14 QP	17.546k	30.0	+0.0	+0.0	+0.0	+12.3	-80.0	-37.7	71.5	-109.2	Perp
^	17.546k	36.6	+0.0	+0.0	+0.0	+12.3	-80.0	-31.1	71.5	-102.6	Perp

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101777**	Date:	11/12/2018
Test Type:	**Maximized Emissions**	Time:	14:45:26
Tested By:	Michael Atkinson	Sequence#:	12
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

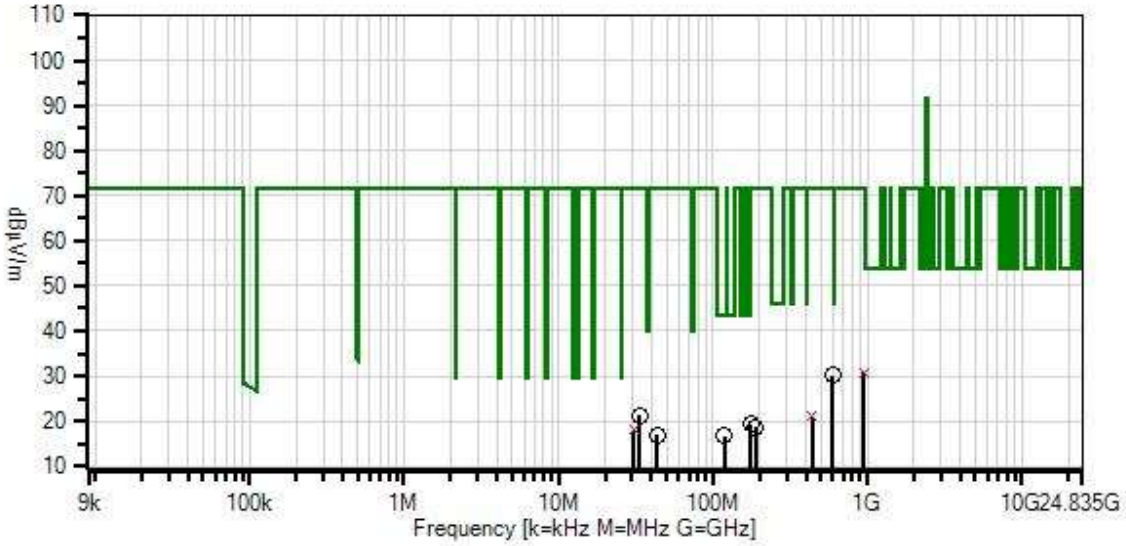
Frequency: 30-1000MHz

Setup: The EUT is continuously transmitting with modulation.
Low, Mid, and High investigated, X, Y, and Z EUT axes investigated, worst case reported.
Fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China WO#: 101777 Sequence#: 12 Date: 11/12/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Horiz



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T3	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T4	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T5	ANP06123	Attenuator	18N-6	5/5/2017	5/5/2019
T6	AN03628	Biconilog Antenna	3142E	6/7/2017	6/7/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	956.213M	22.9	+0.4 +5.9	+1.6 +25.0	-27.2	+2.1	+0.0	30.7	46.0	-15.3	Horiz
	QP										
^	956.213M	28.1	+0.4 +5.9	+1.6 +25.0	-27.2	+2.1	+0.0	35.9	46.0	-10.1	Horiz
3	593.077M	28.8	+0.3 +5.9	+1.3 +20.5	-28.2	+1.5	+0.0	30.1	46.0	-15.9	Horiz
4	33.630M	28.6	+0.1 +5.9	+0.3 +14.0	-28.0	+0.3	+0.0	21.2	40.0	-18.8	Horiz
5	30.700M	24.0	+0.1 +5.9	+0.3 +15.5	-28.0	+0.3	+0.0	18.1	40.0	-21.9	Horiz
	QP										
^	30.700M	28.4	+0.1 +5.9	+0.3 +15.5	-28.0	+0.3	+0.0	22.5	40.0	-17.5	Horiz
7	43.260M	29.3	+0.1 +5.9	+0.3 +8.9	-27.9	+0.3	+0.0	16.9	40.0	-23.1	Horiz
8	174.500M	29.3	+0.2 +5.9	+0.6 +9.9	-27.4	+0.7	+0.0	19.2	43.5	-24.3	Horiz
9	189.970M	28.8	+0.2 +5.9	+0.7 +9.6	-27.3	+0.8	+0.0	18.7	43.5	-24.8	Horiz
10	440.100M	23.5	+0.2 +5.9	+1.1 +17.0	-27.8	+1.2	+0.0	21.1	46.0	-24.9	Horiz
	QP										
^	440.100M	28.9	+0.2 +5.9	+1.1 +17.0	-27.8	+1.2	+0.0	26.5	46.0	-19.5	Horiz
12	118.400M	29.7	+0.2 +5.9	+0.6 +7.4	-27.6	+0.6	+0.0	16.8	43.5	-26.7	Horiz

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101777**	Date:	11/12/2018
Test Type:	**Maximized Emissions**	Time:	14:36:50
Tested By:	Michael Atkinson	Sequence#:	11
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

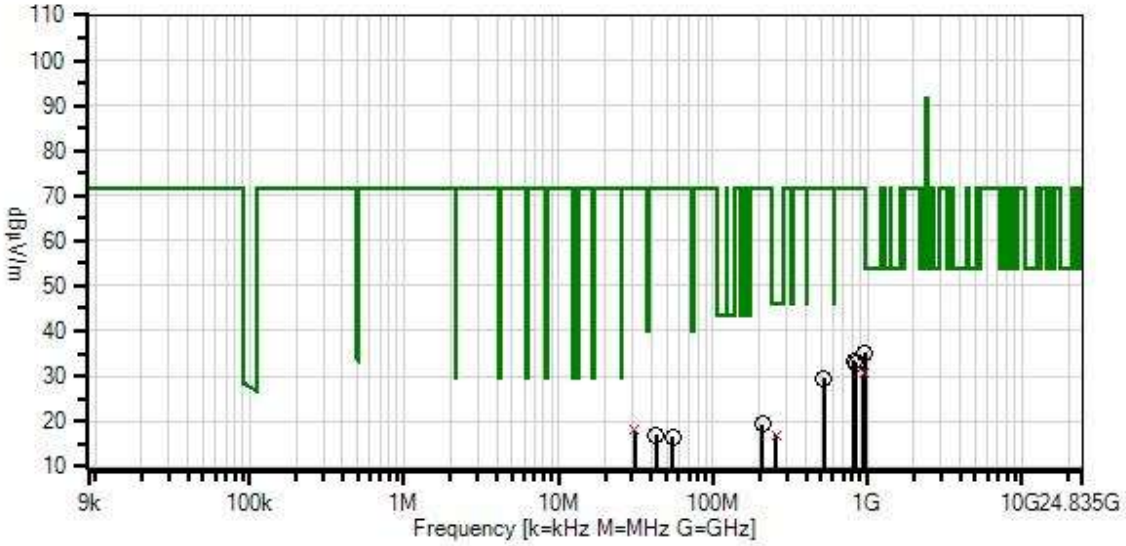
Frequency: 30-100MHz

Setup: The EUT is continuously transmitting with modulation.
Low, Mid, and High investigated, X, Y, and Z EUT axes investigated, worst case reported.
Fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China WO#: 101777 Sequence#: 11 Date: 11/12/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T4	AN02307	Preamp	8447D	1/15/2018	1/15/2020
T5	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T6	ANP06123	Attenuator	18N-6	5/5/2017	5/5/2019
T7	AN03628	Biconilog Antenna	3142E	6/7/2017	6/7/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	257.100M	23.0	+0.0	+0.2	+0.8	-27.0	+0.0	16.8	46.0	-29.2	Vert
	QP		+0.9	+5.9	+13.0						
^	257.100M	28.9	+0.0	+0.2	+0.8	-27.0	+0.0	22.7	46.0	-23.3	Vert
			+0.9	+5.9	+13.0						
3	957.381M	27.4	+0.0	+0.4	+1.6	-27.2	+0.0	35.2	71.5	-36.3	Vert
			+2.1	+5.9	+25.0						
4	822.500M	28.1	+0.0	+0.3	+1.5	-27.7	+0.0	33.4	71.5	-38.1	Vert
			+1.8	+5.9	+23.5						
5	840.033M	27.8	+0.0	+0.3	+1.5	-27.6	+0.0	33.0	71.5	-38.5	Vert
			+1.8	+5.9	+23.3						
6	946.288M	22.9	+0.0	+0.4	+1.6	-27.2	+0.0	30.5	71.5	-41.0	Vert
	QP		+2.0	+5.9	+24.9						
^	946.288M	28.0	+0.0	+0.4	+1.6	-27.2	+0.0	35.6	71.5	-35.9	Vert
			+2.0	+5.9	+24.9						
8	524.700M	28.8	+0.0	+0.3	+1.2	-28.2	+0.0	29.5	71.5	-42.0	Vert
			+1.4	+5.9	+20.1						
9	208.800M	28.3	+0.0	+0.2	+0.7	-27.2	+0.0	19.3	71.5	-52.2	Vert
			+0.8	+5.9	+10.6						
10	31.190M	24.0	+0.0	+0.1	+0.3	-28.0	+0.0	17.9	71.5	-53.6	Vert
	QP		+0.3	+5.9	+15.3						
^	31.190M	28.4	+0.0	+0.1	+0.3	-28.0	+0.0	22.3	71.5	-49.2	Vert
			+0.3	+5.9	+15.3						
12	42.740M	29.2	+0.0	+0.1	+0.3	-27.9	+0.0	17.0	71.5	-54.5	Vert
			+0.3	+5.9	+9.1						
13	55.200M	31.0	+0.0	+0.1	+0.4	-27.9	+0.0	16.4	71.5	-55.1	Vert
			+0.4	+5.9	+6.5						

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101777**	Date:	11/13/2018
Test Type:	**Maximized Emissions**	Time:	12:21:01
Tested By:	Michael Atkinson	Sequence#:	16
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

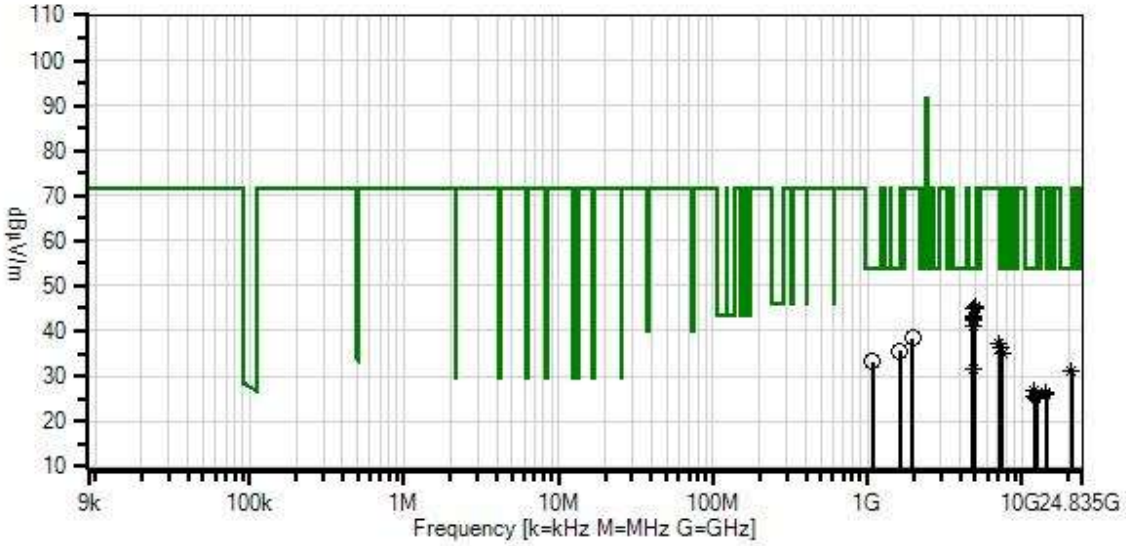
Frequency: 1-25GHz

Setup: The EUT is continuously transmitting with modulation.
Low, Mid, and High investigated, X, Y, and Z EUT axes investigated, worst case reported.
Fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China WO#: 101777 Sequence#: 16 Date: 11/13/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/2/2017	5/2/2019
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/21/2017	7/21/2019
T7	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	3/30/2017	3/30/2019
T8	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T9	ANP06678	Cable	32026-29801-29801-144	3/13/2018	3/13/2020
T10	AN03122	Cable	32026-2-29801-36	3/13/2018	3/13/2020
T11	AN02742	Horn Antenna	MWH-1826/B	10/16/2018	10/16/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4960.030M	40.0	+0.0	+0.5	+4.2	-33.2	+0.0	45.6	54.0	-8.4	Horiz
	Ave		+1.6	+32.5	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						
^	4960.030M	48.7	+0.0	+0.5	+4.2	-33.2	+0.0	54.3	54.0	+0.3	Horiz
			+1.6	+32.5	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						
3	4880.020M	39.4	+0.0	+0.5	+4.2	-33.2	+0.0	44.9	54.0	-9.1	Horiz
	Ave		+1.6	+32.4	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
^	4880.020M	47.6	+0.0	+0.5	+4.2	-33.2	+0.0	53.1	54.0	-0.9	Horiz
			+1.6	+32.4	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
5	4959.530M	39.2	+0.0	+0.5	+4.2	-33.2	+0.0	44.8	54.0	-9.2	Horiz
	Ave		+1.6	+32.5	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						
^	4959.530M	48.9	+0.0	+0.5	+4.2	-33.2	+0.0	54.5	54.0	+0.5	Horiz
			+1.6	+32.5	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						

7	4879.440M	37.9	+0.0	+0.5	+4.2	-33.2	+0.0	43.4	54.0	-10.6	Horiz
	Ave		+1.6	+32.4	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
^	4879.440M	48.7	+0.0	+0.5	+4.2	-33.2	+0.0	54.2	54.0	+0.2	Horiz
			+1.6	+32.4	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
9	4804.050M	38.0	+0.0	+0.5	+4.1	-33.2	+0.0	43.2	54.0	-10.8	Horiz
	Ave		+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
^	4804.000M	46.4	+0.0	+0.5	+4.1	-33.2	+0.0	51.6	54.0	-2.4	Horiz
			+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
11	4803.600M	37.6	+0.0	+0.5	+4.1	-33.2	+0.0	42.8	54.0	-11.2	Horiz
	Ave		+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
12	4804.078M	37.0	+0.0	+0.5	+4.1	-33.2	+0.0	42.2	54.0	-11.8	Vert
	Ave		+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
13	4803.480M	36.0	+0.0	+0.5	+4.1	-33.2	+0.0	41.2	54.0	-12.8	Vert
	Ave		+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
^	4803.480M	45.9	+0.0	+0.5	+4.1	-33.2	+0.0	51.1	54.0	-2.9	Vert
			+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
15	7319.340M	25.7	+0.0	+0.9	+5.4	-34.1	+0.0	36.5	54.0	-17.5	Horiz
	Ave		+2.1	+36.5	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
^	7319.340M	36.8	+0.0	+0.9	+5.4	-34.1	+0.0	47.6	54.0	-6.4	Horiz
			+2.1	+36.5	+0.0	+0.0			Mid		
			+0.0	+0.0	+0.0						
17	1620.000M	41.4	+0.0	+0.4	+2.2	-34.8	+0.0	35.5	54.0	-18.5	Horiz
			+0.6	+25.7	+0.0	+0.0					
			+0.0	+0.0	+0.0						
18	7439.760M	23.9	+0.0	+1.1	+5.5	-34.4	+0.0	35.1	54.0	-18.9	Horiz
	Ave		+2.2	+36.8	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						
^	7439.760M	34.0	+0.0	+1.1	+5.5	-34.4	+0.0	45.2	54.0	-8.8	Horiz
			+2.2	+36.8	+0.0	+0.0			High		
			+0.0	+0.0	+0.0						
20	1088.000M	42.6	+0.0	+0.4	+1.8	-36.4	+0.0	33.1	54.0	-20.9	Horiz
			+0.5	+24.2	+0.0	+0.0					
			+0.0	+0.0	+0.0						

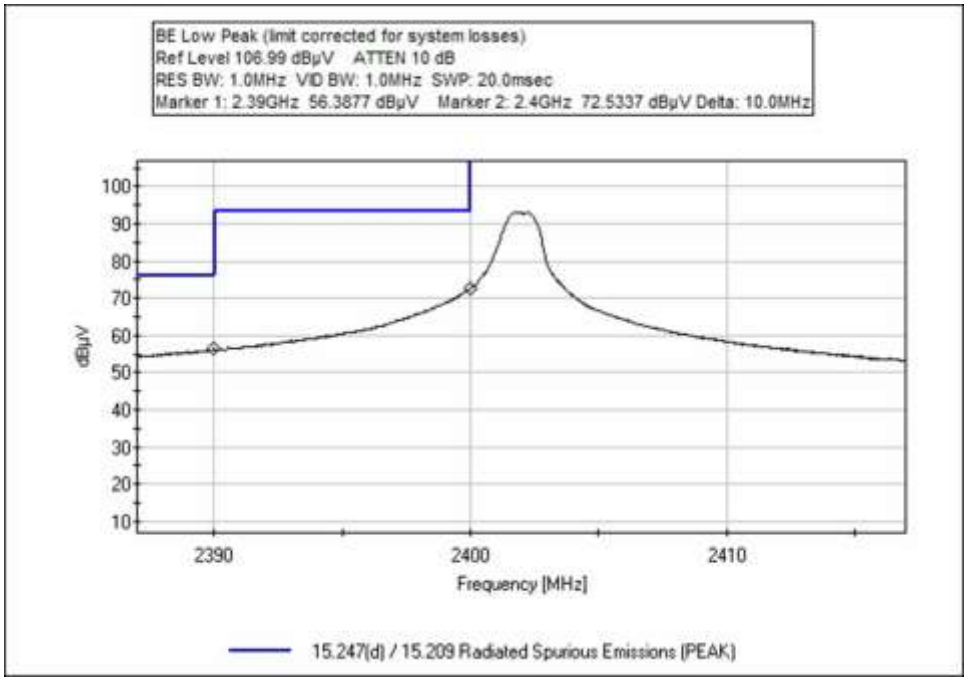
21	4803.600M	26.2	+0.0	+0.5	+4.1	-33.2	+0.0	31.4	54.0	-22.6	Horiz
	Ave		+1.5	+32.3	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	4803.600M	47.5	+0.0	+0.5	+4.1	-33.2	+0.0	52.7	54.0	-1.3	Horiz
			+1.5	+32.3	+0.0	+0.0			Low		
			+0.0	+0.0	+0.0						
23	21000.600 M	32.3	+0.0	+0.0	+0.0	+0.0	+0.0	31.0	54.0	-23.0	Vert
			+0.0	+0.0	+0.0	+2.0					
	Ave		+8.8	+2.3	-14.4						
^	21000.600 M	41.1	+0.0	+0.0	+0.0	+0.0	+0.0	39.8	54.0	-14.2	Vert
			+0.0	+0.0	+0.0	+2.0					
			+8.8	+2.3	-14.4						
25	12008.890 M	32.1	+0.0	+1.0	+6.8	+0.0	+0.0	26.6	54.0	-27.4	Vert
			+0.0	+0.0	-13.3	+0.0					
	Ave		+0.0	+0.0	+0.0				Low		
^	12008.890 M	41.3	+0.0	+1.0	+6.8	+0.0	+0.0	35.8	54.0	-18.2	Vert
			+0.0	+0.0	-13.3	+0.0					
			+0.0	+0.0	+0.0				Low		
27	12198.760 M	30.8	+0.0	+1.0	+6.9	+0.0	+0.0	25.6	54.0	-28.4	Vert
			+0.0	+0.0	-13.1	+0.0					
	Ave		+0.0	+0.0	+0.0				Mid		
^	12198.760 M	41.1	+0.0	+1.0	+6.9	+0.0	+0.0	35.9	54.0	-18.1	Vert
			+0.0	+0.0	-13.1	+0.0					
			+0.0	+0.0	+0.0				Mid		
29	12008.860 M	30.9	+0.0	+1.0	+6.8	+0.0	+0.0	25.4	54.0	-28.6	Horiz
			+0.0	+0.0	-13.3	+0.0					
	Ave		+0.0	+0.0	+0.0				Low		
^	12008.860 M	39.3	+0.0	+1.0	+6.8	+0.0	+0.0	33.8	54.0	-20.2	Horiz
			+0.0	+0.0	-13.3	+0.0					
			+0.0	+0.0	+0.0				Low		
31	12401.120 M	30.3	+0.0	+1.1	+7.0	+0.0	+0.0	25.0	54.0	-29.0	Vert
			+0.0	+0.0	-13.4	+0.0					
	Ave		+0.0	+0.0	+0.0				High		
^	12401.120 M	40.3	+0.0	+1.1	+7.0	+0.0	+0.0	35.0	54.0	-19.0	Vert
			+0.0	+0.0	-13.4	+0.0					
			+0.0	+0.0	+0.0				High		
33	1952.000M	41.5	+0.0	+0.3	+2.4	-34.4	+0.0	38.4	71.5	-33.1	Vert
			+0.8	+27.8	+0.0	+0.0					
			+0.0	+0.0	+0.0						

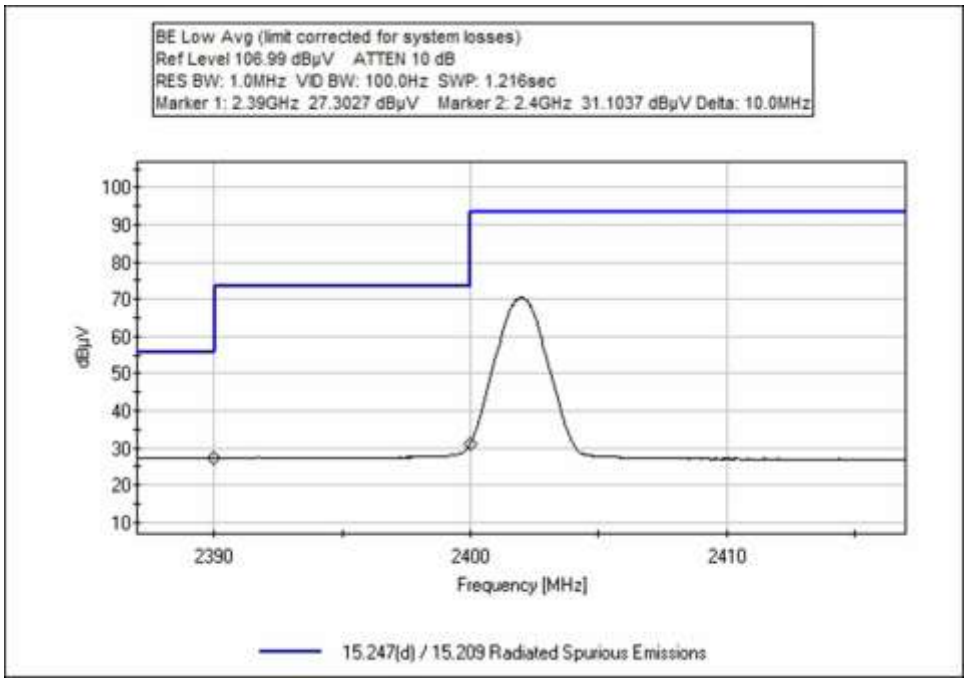
34	7205.290M Ave	26.9	+0.0 +2.1 +0.0	+0.7 +36.2 +0.0	+5.3 +0.0 +0.0	-33.9 +0.0	+0.0	37.3	71.5 Low	-34.2	Horiz
^	7205.290M	39.4	+0.0 +2.1 +0.0	+0.7 +36.2 +0.0	+5.3 +0.0 +0.0	-33.9 +0.0	+0.0	49.8	71.5 Low	-21.7	Horiz
36	14410.900 M Ave	32.3	+0.0 +0.0 +0.0	+0.7 +0.0 +0.0	+8.0 -14.6 +0.0	+0.0 +0.0	+0.0	26.4	71.5 Low	-45.1	Vert
^	14410.900 M	43.8	+0.0 +0.0 +0.0	+0.7 +0.0 +0.0	+8.0 -14.6 +0.0	+0.0 +0.0	+0.0	37.9	71.5 Low	-33.6	Vert
38	14410.710 M Ave	31.7	+0.0 +0.0 +0.0	+0.7 +0.0 +0.0	+8.0 -14.6 +0.0	+0.0 +0.0	+0.0	25.8	71.5 Low	-45.7	Horiz
^	14410.710 M	42.5	+0.0 +0.0 +0.0	+0.7 +0.0 +0.0	+8.0 -14.6 +0.0	+0.0 +0.0	+0.0	36.6	71.5 Low	-34.9	Horiz

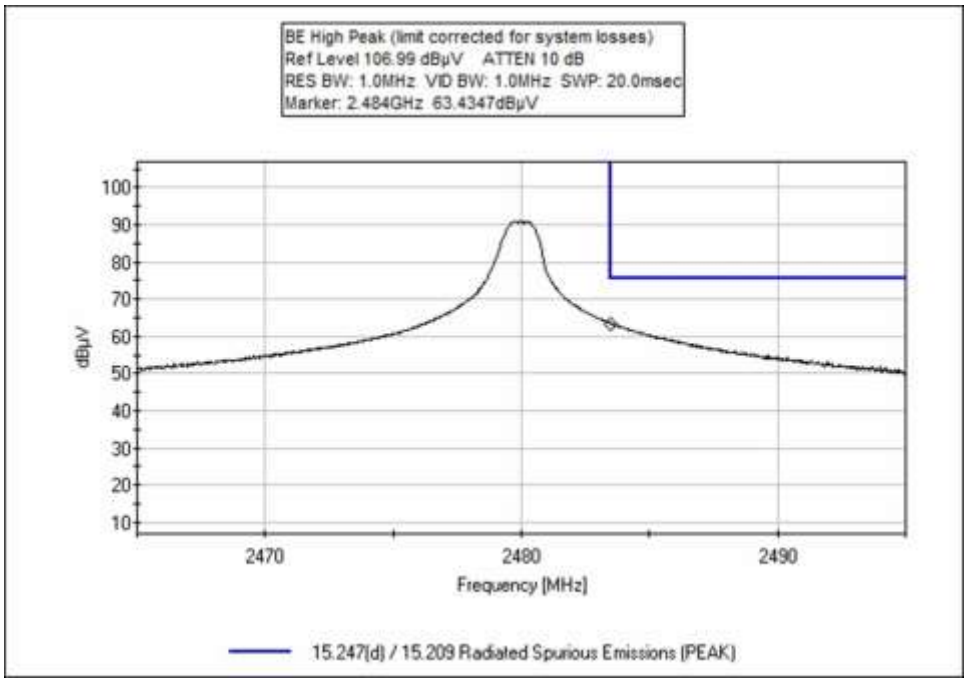
Band Edge

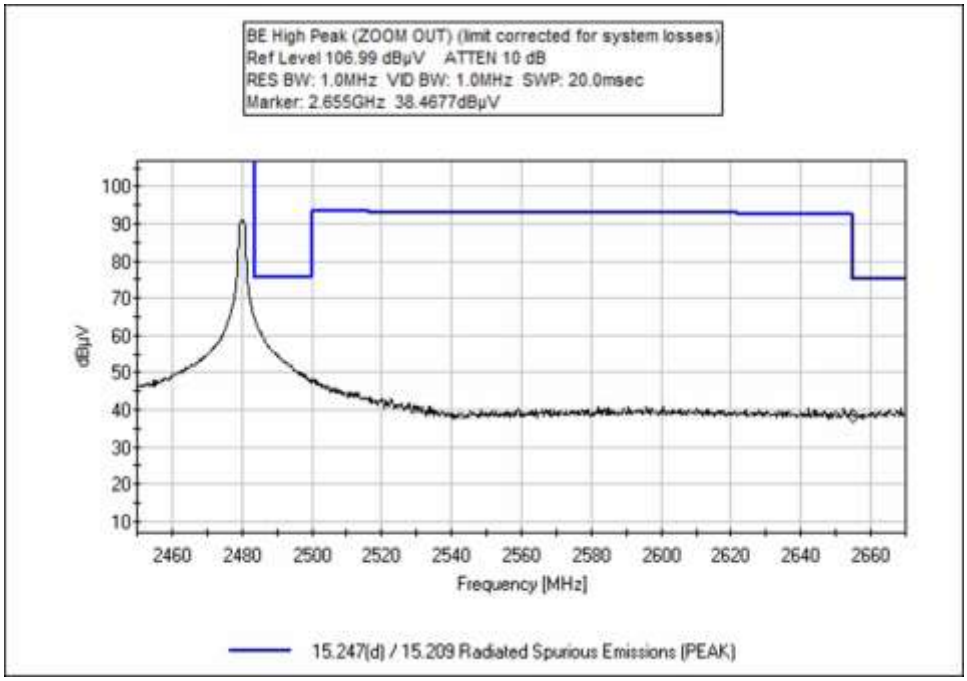
Band Edge Summary					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
2390.0 (PEAK)	GFSK	Internal Trace, 1dBi	54.5	<74	Pass
2390.0 (AVE)	GFSK	Internal Trace, 1dBi	25.4	<54	Pass
2400.0 (PEAK)	GFSK	Internal Trace, 1dBi	70.6	<91.5	Pass
2400.0 (AVE)	GFSK	Internal Trace, 1dBi	29.2	<71.5	Pass
2483.5 (PEAK)	GFSK	Internal Trace, 1dBi	61.6	<74	Pass
2483.5 (AVE)	GFSK	Internal Trace, 1dBi	25.7	<54	Pass

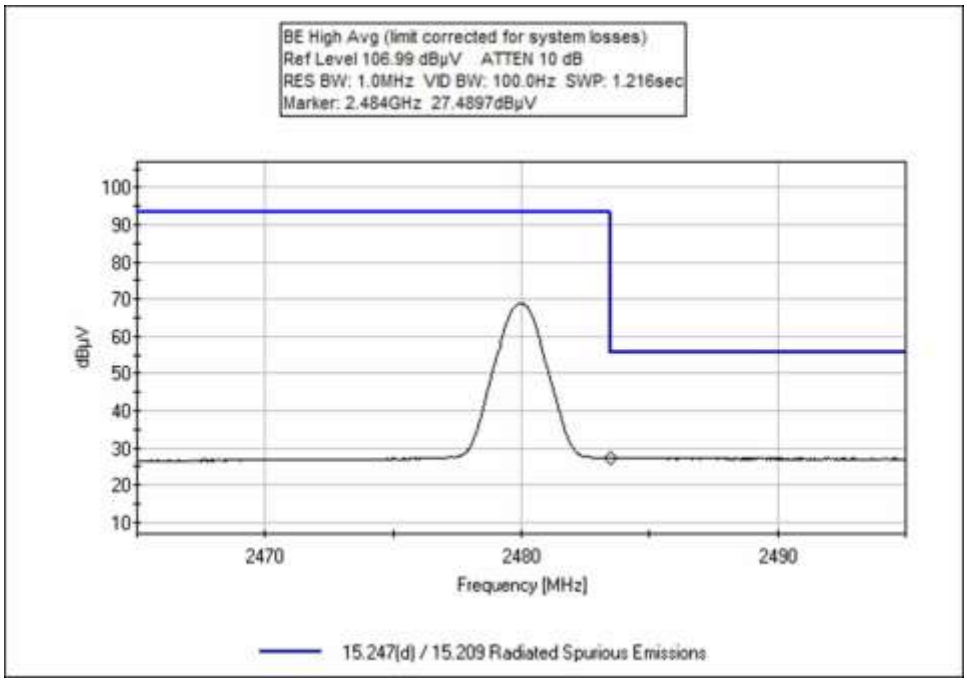
Band Edge Plots

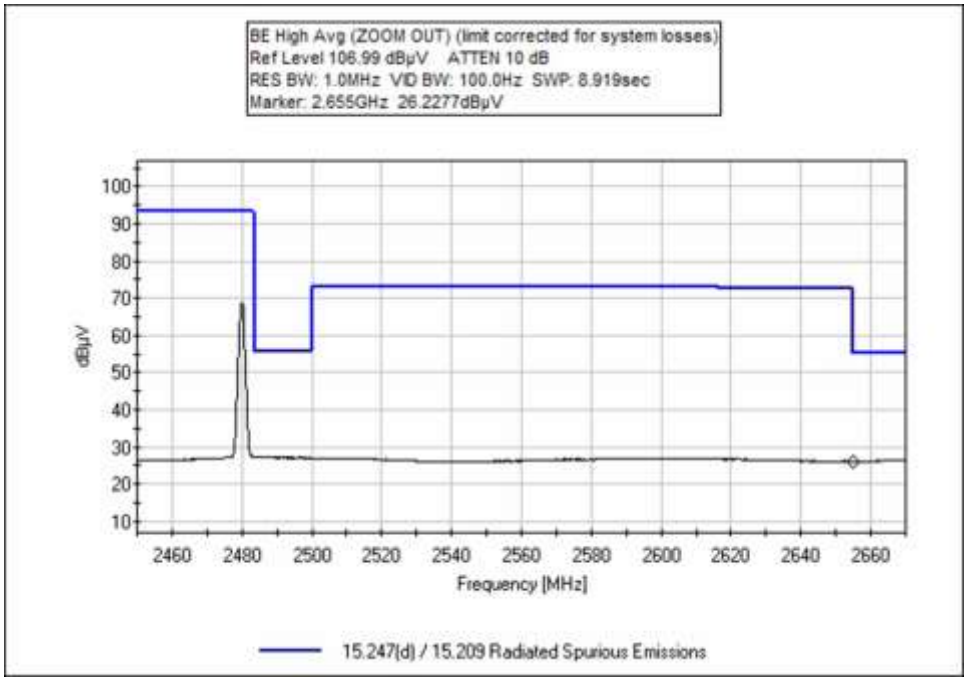





BE High Peak (limit corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 2.484GHz 63.4347dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2470
2480
2490
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions (PEAK)


BE High Peak (ZOOM OUT) (limit corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 2.655GHz 38.4677dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2460
2480
2500
2520
2540
2560
2580
2600
2620
2640
2660
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions (PEAK)


BE High Avg (limit corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 1.216sec
Marker: 2.484GHz 27.4897dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


BE High Avg (ZOOM OUT) (limit corrected for system losses)
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 8.919sec
Marker: 2.655GHz 26.2277dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Conceived and designed by: Pacific Bioscience Laboratories, Inc. (L'Oreal Beauty Devices) of Redmond, WA US / Manufactured by: Jabil Circuit (Guangzhou) Co., LTD. China**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101777**	Date:	11/13/2018
Test Type:	**Maximized Emissions**	Time:	15:30:45
Tested By:	Michael Atkinson	Sequence#:	17
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Temperature: 19-23°C
Humidity: 30-40%
Pressure: 102.5-104kPa

Frequency: Band Edge

Setup: The EUT is continuously transmitting with modulation.
Low, Mid, and High investigated, X, Y, and Z EUT axes investigated, worst case reported.
Fresh charged battery installed.

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013), KDB 558074 (v05 August 2018)

Test Equipment:

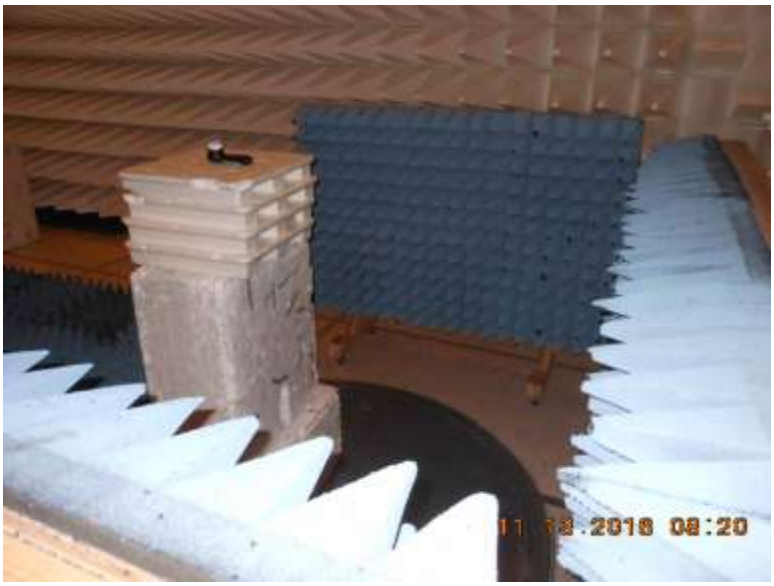
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	AN03540	Preamp	83017A	5/2/2017	5/2/2019
T5	ANP06503	Cable	32026-29801-29801-36	3/13/2018	3/13/2020
T6	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/21/2017	7/21/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	27.5	+0.0	+0.4	+2.7	-34.0	+0.0	25.7	54.0	-28.3	Horiz
	Ave		+1.0	+28.1							
^	2483.500M	63.4	+0.0	+0.4	+2.7	-34.0	+0.0	61.6	74.0	-12.4	Horiz
			+1.0	+28.1							
3	2390.000M	27.3	+0.0	+0.4	+2.6	-34.0	+0.0	25.4	54.0	-28.6	Horiz
	Ave		+1.0	+28.1							
^	2390.000M	56.4	+0.0	+0.4	+2.6	-34.0	+0.0	54.5	74.0	-19.5	Horiz
			+1.0	+28.1							
5	2400.000M	31.1	+0.0	+0.4	+2.6	-34.0	+0.0	29.2	71.5	-42.3	Horiz
	Ave		+1.0	+28.1							
^	2400.000M	72.5	+0.0	+0.4	+2.6	-34.0	+0.0	70.6	91.5	-20.9	Horiz
			+1.0	+28.1							

Test Setup Photos

Below 1GHz



Above 1GHz, Cone placement

X Axis

Y Axis

Z Axis

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret (“^”) was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.