Nemko USA, Inc.
11696 Sorrento Valley Rd., Suite F
San Diego, CA 92121-1024
Phone (858) 755-5525 Fax (858) 452-1810

CERTIFICATION TEST REPORT

Report Number:	2010 10157984 FCC
Project Number:	61466-1
Nex Number:	157984
Applicant:	DISCUS DENTAL INC. 8550 HIGUERA ST. Culver City, CA 90232
Equipment Under Test (EUT):	WIRELESS FOOT PEDAL
Model:	SL3
FCC ID:	VIK-OH003
IC:	7260A-OH003
In Accordance With:	FCC Part 15 Subpart C, 15.249 IC RSS-210 Issue 8 December 2010 IC RSS-Gen Issue 3 December 2010
Tested By:	Nemko USA Inc. 11696 Sorrento Valley Road, Suite F San Diego, CA 92121
Authorized By:	 Alan Laudani, EMC/RF Test Engineer
Date:	December 14, 2010
Total Number of Pages:	25

Section1: Summary of Test Results

General

All measurements are traceable to national standards

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15; Subpart C and IC RSS-210. Radiated tests were conducted is accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC and IC.

The assessment summary is as follows:

Apparatus Assessed:	Wireless Foot Pedal
Model:	SL3
Specification:	FCC Part 15 Subpart C, 15.249 IC RSS-210 Issue 8 December 2010
Date Received in Laboratory:	October 13, 2010
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None

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1.1 Report Release History

REVISION	DATE	COMMENTS
-	December 14, 2010	Prepared By: Ferdinand Custodio
-	December 14, 2010	Initial Release: Alan Laudani

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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TESTED BY: _____ Date: December 14, 2010
Ferdinand Custodio, EMC Test Engineer

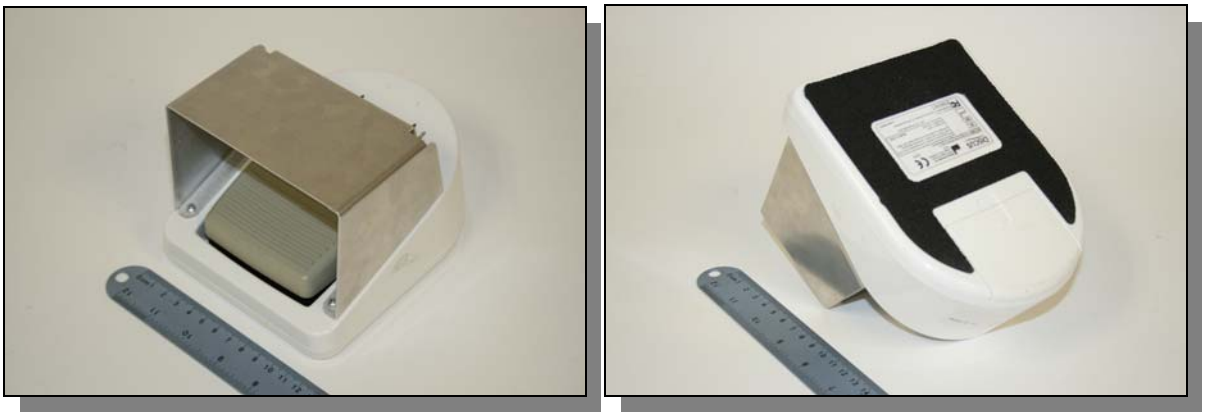
TABLE OF CONTENTS

Section 2: Equipment Under Test

2.1 Product Identification

The Equipment Under Test was identified as follows:

Discus Dental Inc. SL3 Wireless Foot Pedal



2.2 Samples Submitted for Assessment

The following sample of the apparatus has been submitted for type assessment:

Sample No.	Description	Serial No.
157984-1	SL3 WIRELESS FOOT PEDAL	N/A

2.3 Theory of Operation

The SL3 Wireless Foot Pedal is part of the SL3™ Class IV soft-tissue laser system used in a wide variety of soft-tissue procedures. The EUT is a (UL-approved) commercial foot-switch that provides hands-free ON/OFF capabilities. This switch controls initiation/termination of laser power wirelessly using 2.4GHz frequency.

2.4 Technical Specifications of the EUT

Manufacturer:	Discus Dental Inc.
Operating Frequency:	2402.0 MHz to 2470.0 MHz in the 2400-2483.5 MHz Band
Number of Operating Frequencies:	16
Rated Power:	73.0dBµV/m @ 3 meters
Modulation:	GFSK
Reference Designator:	1M79F1D
Antenna Type:	Trace on PCB, 0dBi gain (typ)
Antenna Connector:	None
Power Source:	1.5VDC from standard AA LR6 AM3 alkaline battery (2X wired in parallel)

Section 3: Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.249
Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0-24.25 GHz bands.

IC RSS-210 Issue 8 December 2010
Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

IC RSS-Gen Issue 3 December 2010
General Requirements and Information for the Certification of Radio Apparatus

3.2 Deviations From Laboratory Test Procedures

No deviations from Laboratory Test Procedure

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	18-23 ^{o}C
Humidity range	54-72%
Pressure range	102.0 – 102.3 kPa

3.4 Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
E1018	9kHz to 7GHz Spectrum Analyzer	Rohde & Schwarz	FSP7	835363/0003	1/22/2010	1/22/2011
752	Antenna, DRWG	EMCO	3115	4943	11/12/2008	11/12/2010
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	7/12/2010	7/12/2011
317	Preamplifier	HP	8449A	2749A00167	5/7/2010	5/7/2011
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	8/16/2010	8/16/2011
114	Antenna, Bicon	EMCO	3104	2997	3/5/2010	3/5/2012
110	Antenna, LPA	Electrometrics	LPA-25	1217	1/10/2009	2/10/2011

Registration of the OATS are on file with the Federal Communications Commission, under Registration Number 90579, the VCCI under registration number R-3027, and are also registered with Industry Canada under Site Numbers 2040B-1 and 2040B-2.

Section 4: Observations

4.1 Modifications Performed During Assessment

No modifications were performed during assessment.

4.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

4.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

4.4 Test Deleted

No Tests were deleted from this assessment.

4.5 Additional Observations

There were no additional observations made during this assessment.

Section 5: Results Summary

This section contains the following:

FCC Part 15 Subpart C: §15.249
IC RSS-210 Issue 8 December 2010 Annex A2.9
IC RSS-Gen Issue 3 December 2010

The column headed "Required" indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant
Y Yes: Mandatory i.e. the apparatus shall conform to these tests.
N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

5.1 Test Results

Part 15C	Industry Canada	Test Description	Required	Result
15.207 (a)	RSS-Gen 7.2.4	Conducted Emission Limit	N*	
15.215(c)	RSS-Gen 4.6.3	20 dB Bandwidth	Y	Pass
15.249 (a)	RSS-Gen 4.8 & RSS-210 A2.9	Field Strength of Emissions	Y	Pass
15.249 (d) & 15.209 (a)	RSS-Gen 4.9 & RSS-210 A2.9	Spurious Emissions Outside of the band	Y	Pass
15.249 (b)		Fixed Point-to-Point Operation	N	
15.109 (a)	RSS-Gen 4.10 & RSS-Gen 6.1	Receiver Spurious Emissions	N/T*	

N* = *EUT only employ battery power for operation and doesn't operate from the AC power lines or contain provisions for operation while connected to the AC power lines.*

N/T* = *EUT does not have a separate receive mode. Configured to transmit only.*

Appendix A: Test Results

Section 15.215(c) – Occupied Bandwidth

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

RSS-Gen Section 4.6.1 – Occupied Bandwidth

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

Test Conditions:

Sample Number:	SL3	**Temperature:**	23°C
Date:	October 21, 2010	**Humidity:**	54 %
Modification State:	Low ,Mid and High Channel	**Tester:**	FSCustodio
		Laboratory:	Nemko

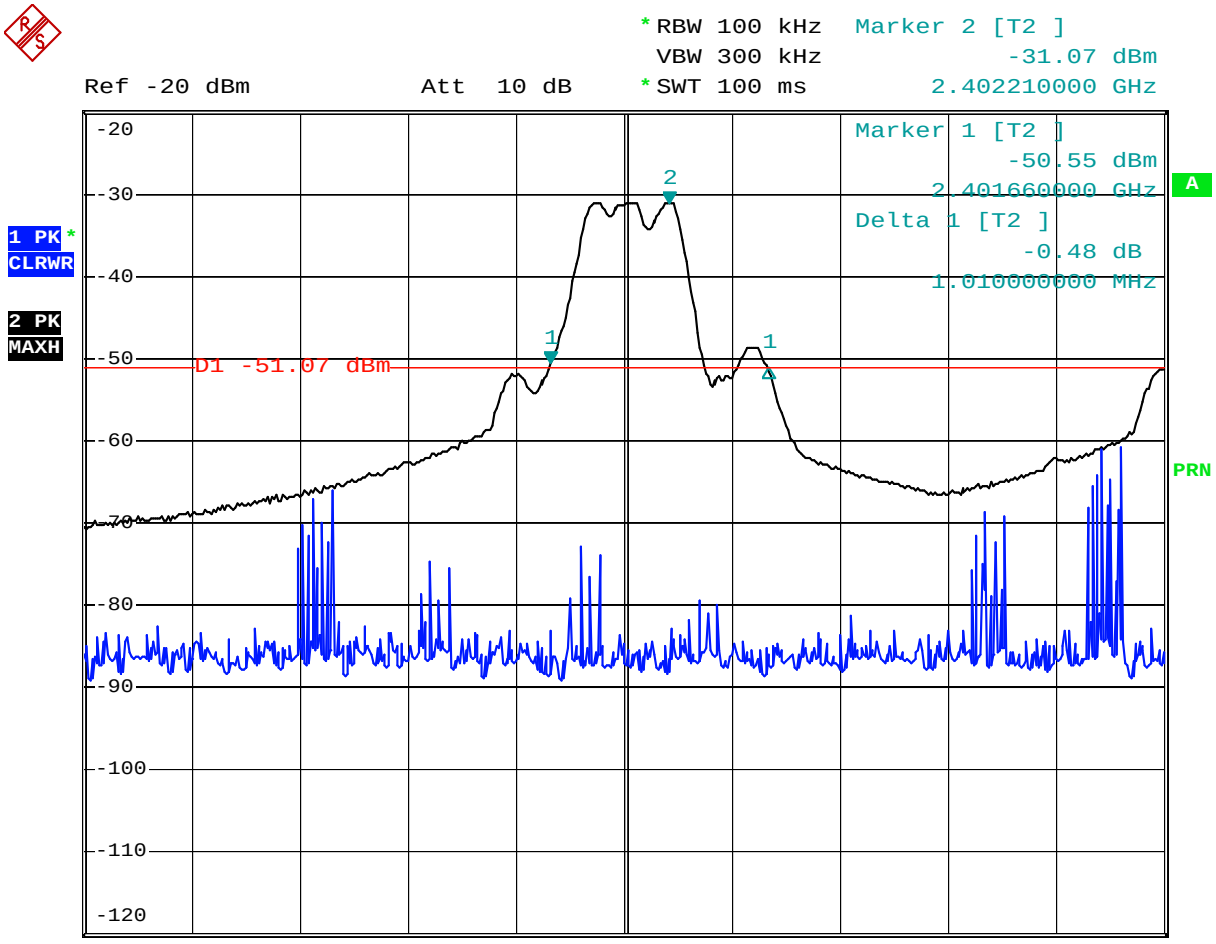
Test Results:

See attached plots

Additional Observations:

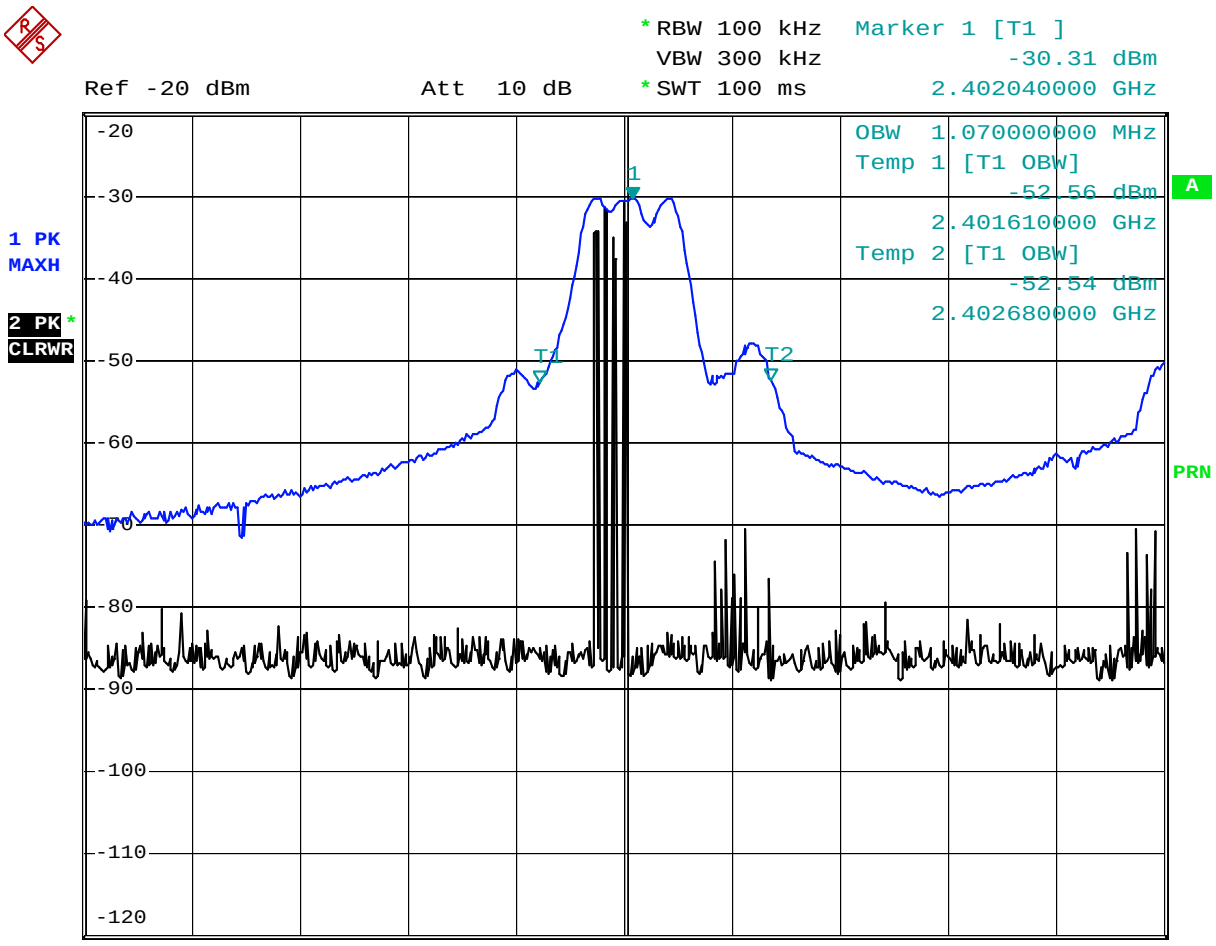
- Span is wide enough to capture the channel transmission
- RBW is 1% of the span or worst case (i.e. 5MHz span, SA RBW limited to 30kHz and 100kHz only, 100kHz RBW used)

- VBW is 3X RBW
- Sweep is auto
- Detector is Peak
- Trace is Max Hold
- A peak output max hold reading was taken; a display line was drawn 20 dB lower than peak level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.
- Per Industry Canada requirement, another measurement was made using the built-in OBW measuring feature of the spectrum analyzer with power BW of 99%.
- Observed maximum occupied BW is 1.79 MHz (20dB BW High Channel).
- 2402 MHz – 0.895 MHz = 2401.105 MHz (within the frequency band)
- 2470 MHz + 0.895 MHz = 2470.895 MHz (within the frequency band)



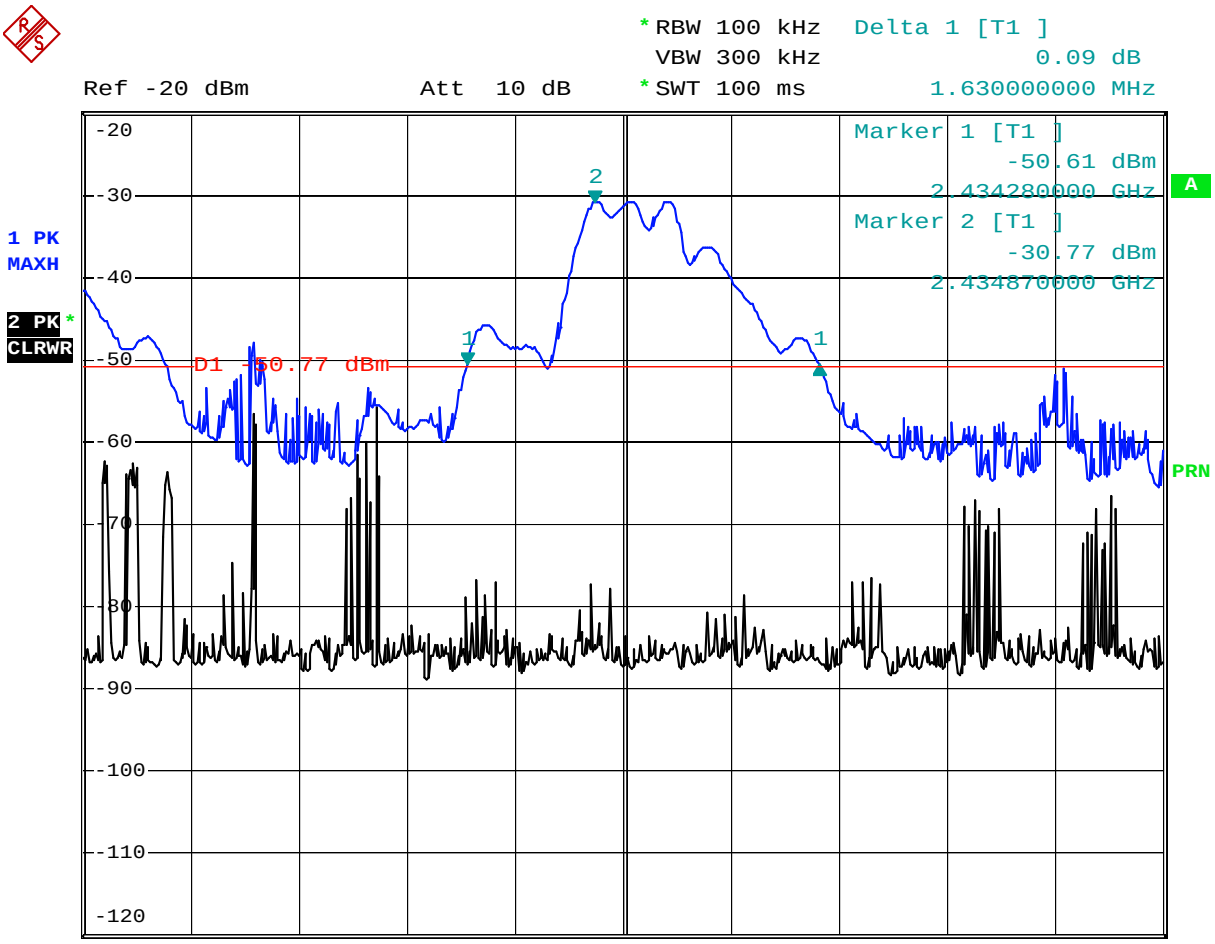
Date: 21.OCT.2010 08:49:19

Low Channel (2402MHz) 20dB Occupied Bandwidth is 1.01MHz



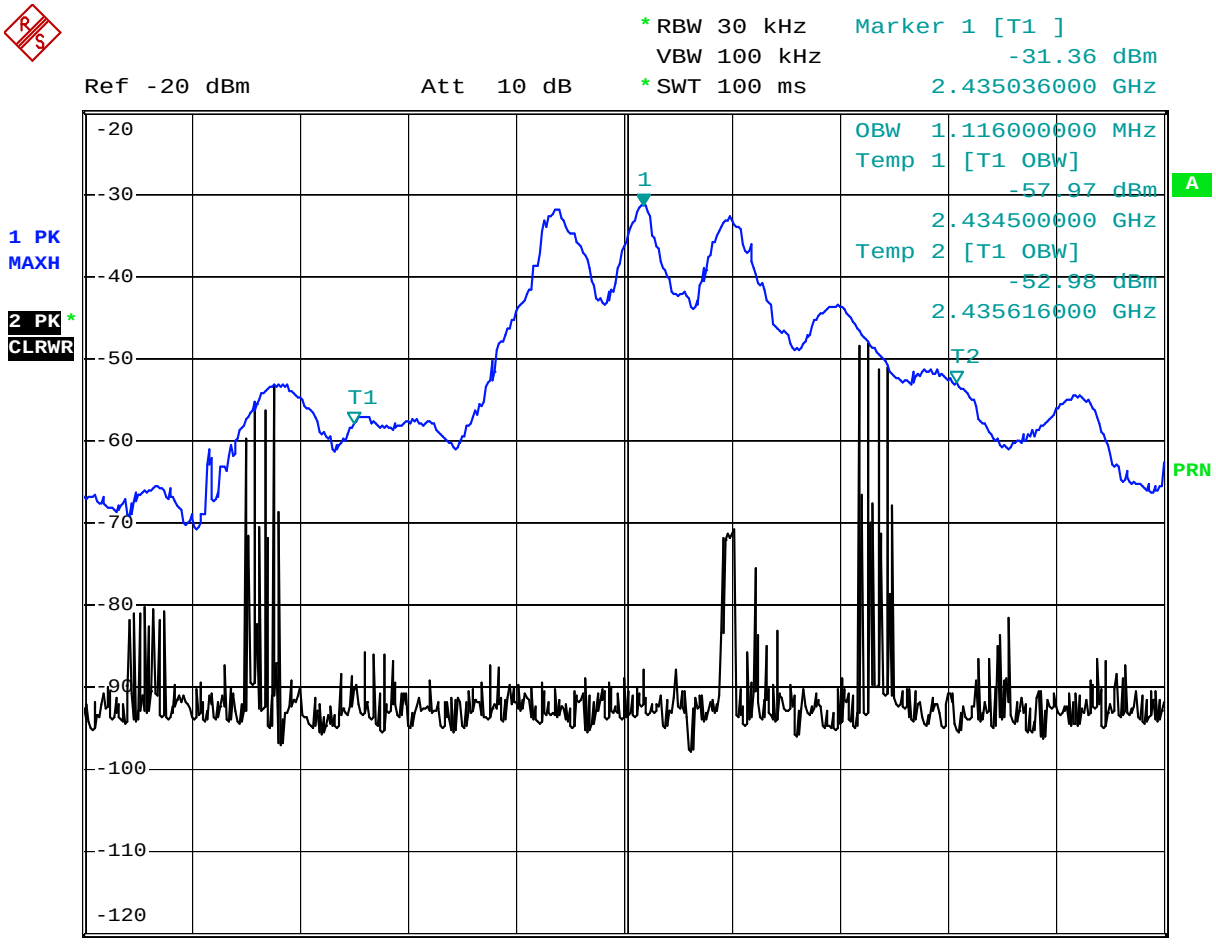
Date: 21.OCT.2010 09:09:32

Low Channel (2402MHz) 99% Occupied Bandwidth is 1.07MHz



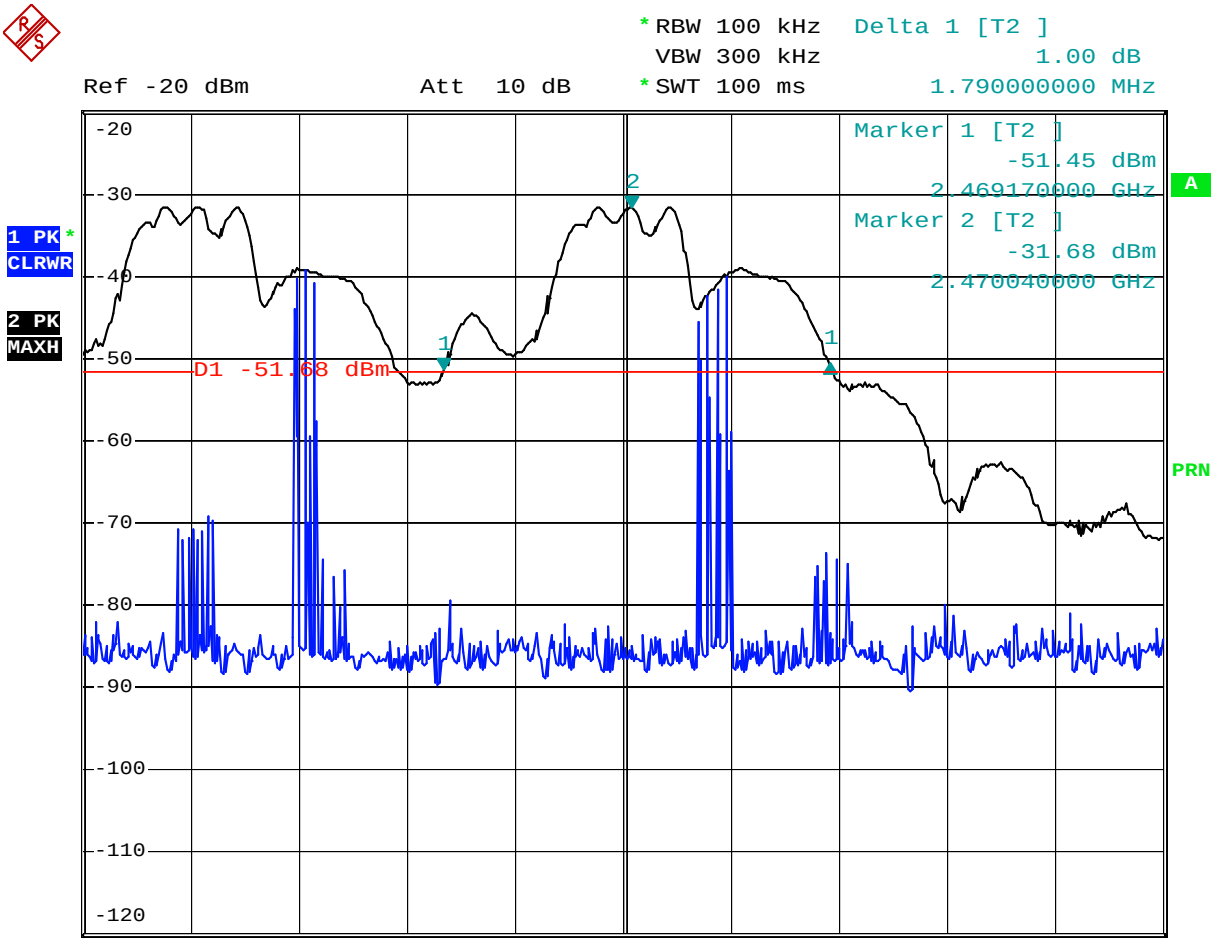
Date: 21.OCT.2010 10:27:34

Mid Channel (2435MHz) 20dB Occupied Bandwidth is 1.63MHz



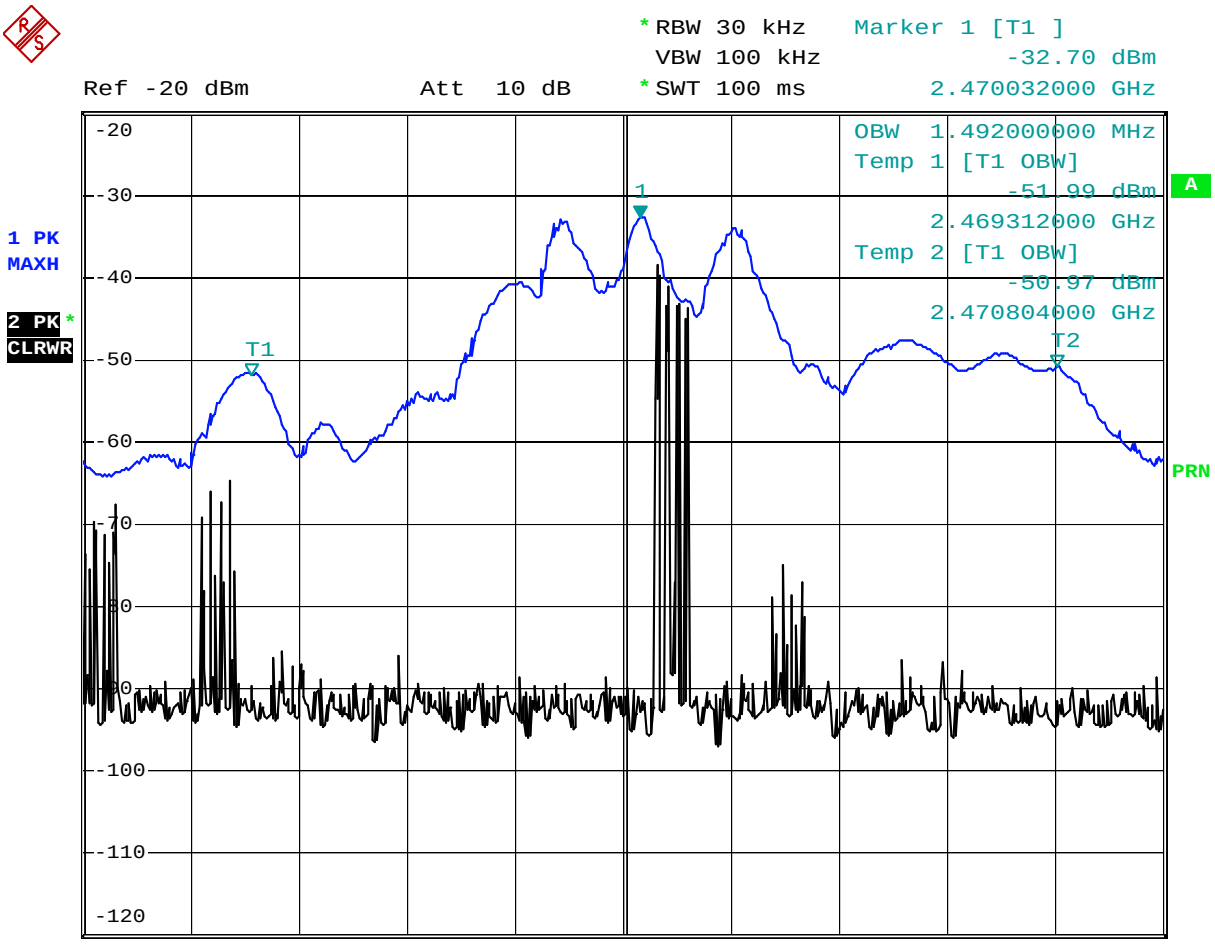
Mid Channel (2435MHz) 99% Occupied Bandwidth is 1.11MHz

Test Notes: Span and RBW were adjusted to prevent spectrum analyzer built in OBW measuring feature from incorporating signals from adjacent channels.



Date: 21.OCT.2010 08:55:25

High Channel (2470MHz) 20dB Occupied Bandwidth is 1.79MHz



High Channel (2470MHz) 99% Occupied Bandwidth is 1.492MHz

Test Notes: Span and RBW were adjusted to prevent spectrum analyzer built in OBW measuring feature from incorporating signals from adjacent channel.

Section 15.249(a) – Field Strength of Emissions

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

RSS-210 A2.9 – Field Strength of Emissions

This section provides standards for low-power devices that can be used for any application provided the following conditions are met:
(a) The field strengths measured at 3 metres shall not exceed the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (millivolts/meter)
902–928 MHz	50(Note 1)	0.5
2400–2483.5 MHz	50(Note 1)	0.5
5725–5875 MHz	50(Note 1)	0.5

Note 1: Equivalent to 0.75 mW e.i.r.p.

(b) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to Table 2 limits, whichever is the less stringent.

Section 4.4 of RSS-Gen (Pulsed Operation) does not apply to CISPR measurement for the band 902-928 MHz.

Test Conditions:

Sample Number:	SL3	**Temperature:**	18°C
Date:	October 22, 2010	**Humidity:**	72 %
Modification State:	Hopping	**Tester:**	FSCustodio
		Laboratory:	SOATS

Test Results:

See attached plots.

Additional Observations:

- Fresh batteries were used during assessment.
- All measurements were performed using peak detector.

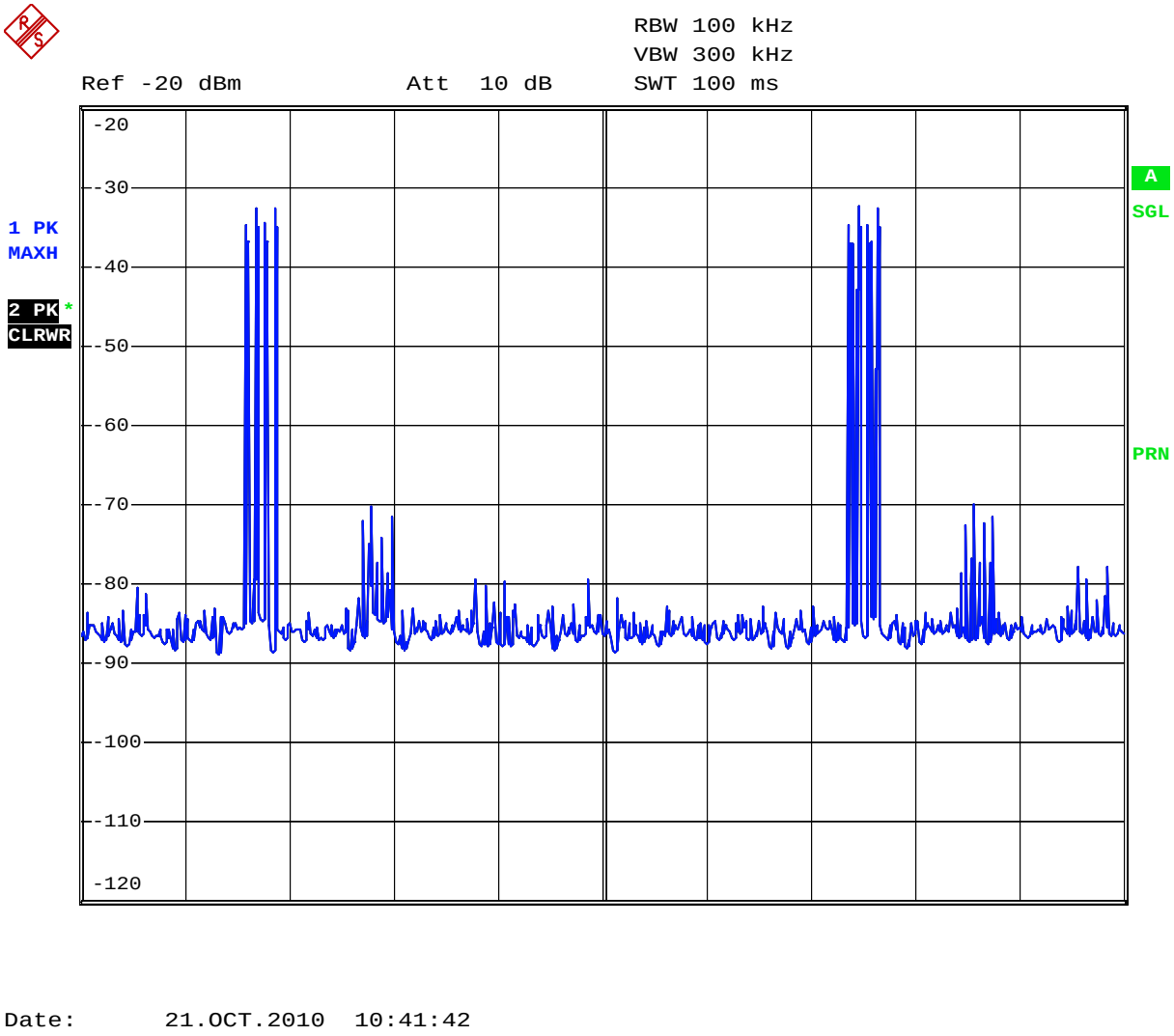
- RBW is 1MHz while VBW is 3MHz.
- Spectrum was investigated up to 24.70GHz
- There are no emissions found after the second harmonic
- Average data are calculated from Peak measurements and Duty Cycle Correction Factor (DCCF).
- OBW max is 1.79 MHz, the Radiated Output Power for the fundamentals were measured with a 3 MHz RBW, VBW = 10 MHz.

Sample Computation (Radiated Emissions Data Sheet):

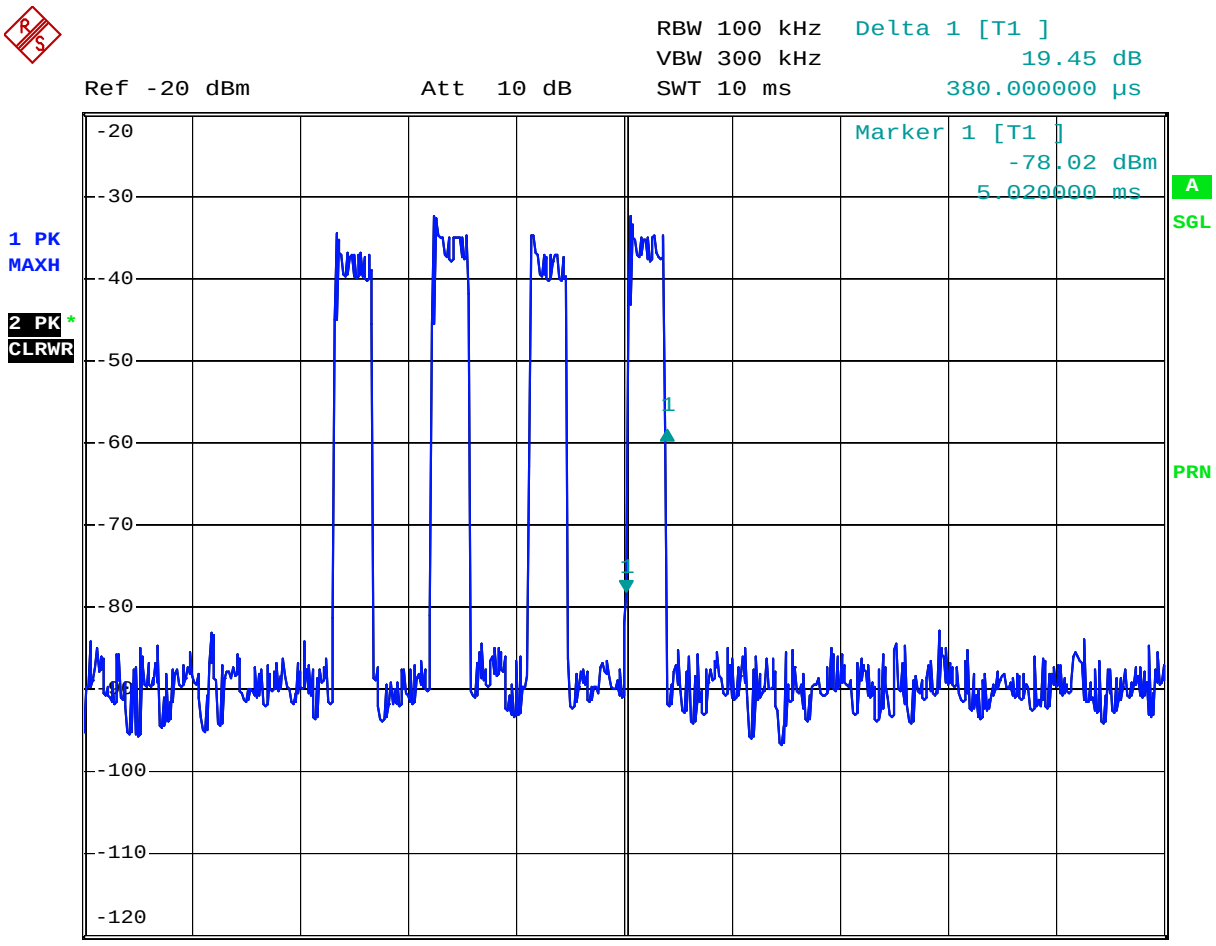
Correction factor @ 2402MHz = 36.88 dBµV/m
= Antenna factor + Cable loss – Preamp gain
= 29.18 + 7.7 – 0

Corrected reading = Max. reading + Correction factor
= 36.1 + 36.88
= 73.0 dBµV/m

Duty Cycle Correction Factor Calculations



Two (2) set of data packets in 100ms sweep



Four (4) transmissions in one data packet (380 µs long each)

Duty Cycle = 0.000380ms x 8
= 0.304 ms/100 ms
= 0.3%

DCCF = 20 log (0.0304)
= -30.34; limited to -20

OBW max is 1.79 MHz, the Radiated Output Power for the fundamentals were measured with a 3 MHz RBW; VBW = 10 MHz. Peak Harmonics of the fundamental were measured with 1 MHz RBW; 3MHz VBW.

Radiated Emissions Data

Job # :	61466-1	Date :	10/22/2010	Page 1 of 1	
NEX#:	157984	Time :	9:30AM		
		Staff :	FSC		
Client Name :	Discus Dental Inc.			EUT Voltage :	Battery
EUT Name :	Wireless Foot Pedal			EUT Frequency :	
EUT Model # :	SL3			Phase:	
EUT Serial # :	N/A			NOATS	
EUT Config. :	Continuous transmit			SOATS	X
				Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	CFR47 Part 15, Subpart B, Class B				
Loop Ant. #:	NA				
Bicon Ant.#:	NA	Temp. (°C) :	18		
Log Ant.#:	NA	Humidity (%) :	72		
DRG Ant. #	877	Spec Analyzer #:	835		
Cable LF#:	NA	Analyzer Display #:			
Cable HF#:	40ft_blue	Quasi-Peak Detector #:	835		
Preamp LF#:	NA	Preselector #:	NA		
Preamp HF#	317	DCCF :	20		

Quasi-Peak	RBW:	120 kHz
	Video Bandwidth	300 kHz
Peak	RBW:	1 MHz
	Video Bandwidth	3 MHz
Average	= Peak -DCCF	

Meas. Freq. (MHz)	Meter Reading **Vertical**	Meter Reading **Horizontal**	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment
2402.0	51.7	56.1	P	BR	1.2	56.1	93.0	114.0	-21.0	Pass	
2402.0	31.7	36.1	A	BR	1.2	36.1	73.0	94.0	-21.0	Pass	
2435.0	51.0	54.7	P	BL	1.8	54.7	91.5	114.0	-22.5	Pass	
2435.0	31.0	34.7	A	BL	1.8	34.7	71.5	94.0	-22.5	Pass	
2470.0	52.6	54.0	P	BL	1.8	54.0	90.9	114.0	-23.1	Pass	
2470.0	32.6	34.0	A	BL	1.6	34.0	70.9	94.0	-23.1	Pass	
2400.0	28.8	51.0	P	BR	1.2	51.0	54.7	74.0	-19.3	Pass	Delta Marker Method
2400.0	8.8	31.0	A	BR	1.2	31.0	34.7	54.0	-19.3	Pass	
2483.5	49.9	50.2	P	BR	1.2	50.2	53.9	74.0	-20.1	Pass	
2483.5	29.9	30.2	A	BR	1.2	30.2	33.9	54.0	-20.1	Pass	
4804.0	48.4	50.3	P	BL	1.2	50.3	62.4	74.0	-11.5	Pass	
4804.0	28.4	30.3	A	BL	1.2	30.3	42.4	54.0	-11.5	Pass	
7206.0	45.4	45.3	P	BL	1.2	45.4	64.8	74.0	-9.1	Pass	Noise floor
4870.0	47.9	48.6	P	BL	1.2	48.6	60.7	74.0	-13.2	Pass	Noise floor
7305.0	44.4	45.3	P	BL	1.2	45.3	65.1	74.0	-8.9	Pass	Noise floor
4940.0	47.3	46.8	P	BL	1.2	47.3	59.7	74.0	-14.3	Pass	Noise floor
7410.0	44.7	44.5	P	BL	1.2	44.7	64.1	74.0	-9.9	Pass	Noise floor

Section 15.249 (d) – Spurious Emissions Outside of the band

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

RSS-210 A2.9 – Spurious Emissions Outside of the band

(b) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

Test Conditions:

Sample Number:	SL3	**Temperature:**	18°C
Date:	October 22, 2010	**Humidity:**	72 %
Modification State:	Hopping	**Tester:**	FSCustodio
		Laboratory:	SOATS

Test Results:

No emissions found.

Additional Observations:

- Fresh batteries were used during assessment.
- All measurements below 1 GHz were performed at 3m employing a CISPR quasi-peak detector.
- Peak measurements above 1 GHz utilize a RBW of 1 MHz and a VBW of 3 MHz
- The Spectrum was searched from 30MHz to 24.7 GHz.
- There were no emissions found other than the fundamental and the second harmonic (Section 15.249(a)).

Appendix C: Block Diagram of Test Setups

Test Site For Radiated Emissions