

**Application for Certification
Oceanographic Measurement Instrument**

Teledyne RD Instruments

S20, S50, S100

FCC ID: S5WV2648273001
IC ID: 10915A-V2648273001

REPORT # RV38044C

This report was prepared in accordance with the requirements of the FCC Rules and Regulations Part 2, Subpart J, 2.1033, Part 15.247 and other applicable sections of the rules as indicated herein.

Prepared By:

DNB Engineering, Inc.
5969 Robinson Avenue
Riverside, CA 92503

Table of contents

Paragraph numbers in this report follow the application section numbers found in the FCC Rules and Regulations, Part 2, Subpart J for Certification of electronic equipment.

Table of contents.....	2
1.0 ADMINISTRATIVE DATA	3
1.1 Certifications and Qualifications	3
1.2 Measurement Repeatability Information	3
1.3 Equipment Calibration List.....	4
FCC 2.1033 (b) (1), IC RSS-Gen 3.1 Application for Certification.....	5
FCC 2.1033 (b) (2), IC RSS-Gen 3.1 FCC and IC Identifiers.....	6
FCC 2.1033 (b) (3), IC RSS-Gen 3.2(a) Installation and Operating Instructions	7
FCC 2.1033 (b) (4), IC RSS-Gen 3.2(g) Brief Description of Circuit Function	8
FCC 2.1033 (b) (5), IC RSS-Gen 3.2(a) Block Diagram.....	9
FCC 2.1033 (b) (6), IC RSS-Gen 3.2(j) Report of Measurements	10
FCC 15.207 Conducted Emissions (General Provisions).....	11
FCC 15.209, IC RSS-210 2.6 Radiated Emissions (General Provisions).....	14
15.247(b) (3), RSS-210 A8.4(4) Maximum Peak Output Power (Conducted)	40
15.247(c), RSS-210 A8.5 Spurious RF Conducted Emissions.....	50
15.247 (c), RSS-210 A8.5 Band Edge Measurements.....	78
15.247 (d), RSS-210 A8.2(b) Peak Power Spectral Density	86
2.1033 (b) (7) Equipment Photographs.....	96

1.0 ADMINISTRATIVE DATA

1.1 Certifications and Qualifications

I certify that DNB Engineering, Inc conducted the tests performed in order to obtain the technical data presented in this application. Also, based on the results of the enclosed data, I have concluded that the equipment tested meets or exceeds the requirements of the Rules and Regulations governing this application.

1.2 Measurement Repeatability Information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 2.1031 through 2.1057, Part 15. The test results presented in this document are valid only for the equipment identified herein under the test conditions described.

Repeatability of these test results will only be achieved with identical measurement conditions. These conditions include: The made test distance, EUT Height, Measurement Site Characteristics, and the same EUT System Components. The system must have the same interconnecting Cables arranged in identical placement to that in the test setup, with the system and/or EUT functioning in the identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of the test may result in measurement repeatability difficulties.

All changes made to the EUT during the course of testing as identified in this test report must be incorporated into the EUT or identical models to ensure compliance with the FCC regulations.

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1.3 Equipment Calibration List

Asset #	Equipment	Manufacturer	Model #	Serial #	Location	Cal date	Interval	Due date
364	Pre-Amp	Miteq	afd304008040	121391	Riv	4 Oct 12	365	4 Oct 13
1698	Pre-Amp	Miteq	AFS4-08001800-35-LN	378064	Riv	17 Sep 12	365	17 Sep 13
2264	Spectrum Analyzer	Agilent	E4407B	MY45103462	Riv	8 Aug 12	365	8 Aug 13
1943	Power Meter	Boonton	4231A	91501	Riv	23 Mar 12	730	23 Mar 14
1944	Power Sensor	Boonton	51011-EMC	32754	RIV	23 Mar 12	730	23 Mar 14
1760	Pre-Amp	Mini-Circuits	ZFL-2000	8350	Riv	6 Nov 12	365	6 Nov 13
2295	Cable	Adams Russell	1996-0072	1W5	Riv	6 Aug 12	365	6 Aug 13
1874	Cable	DNB	Range	11874	Riv	6 Aug 12	365	6 Aug 13
11	Antenna (DRG)	EMCO	3115	2281	Riv	20 Nov 12	730	20 Nov 14
31	Antenna (Log Periodic)	Emco	3146	1284	Riv	31 May 11	730	31 May 13
1758	Antenna (Bicon)	AH Systems	SAS-200/540	524	Riv	31 May 11	730	31 May 13

FCC 2.1033 (b) (1), IC RSS-Gen 3.1 Application for Certification

Name of Applicant:	Teledyne RD Instruments
Applicant is:	Manufacturer
Name of Manufacturer:	Teledyne RD Instruments
Description:	Oceanographic Measurement Instrument
Part Number:	Sentinel S20, S50, S100
Anticipated Production Quantity:	Multiple Units
15.247 Frequency Bands:	2.412 GHz – 2.462 GHz
15.247 Rated Power:	.0143 W
Type of Signal:	Digital Modulation
Test Procedure:	Measurement of Digital Transmission Systems Operating Under Section 15.247 (March 23, 2005)

FCC 2.1033 (b) (2), IC RSS-Gen 3.1 FCC and IC Identifiers

FCC ID: S5WV2648273001

IC ID: 10915A-V2648273001

FCC 2.1033 (b) (3), IC RSS-Gen 3.2(a) Installation and Operating Instructions

To be filed as a separate attachment

FCC 2.1033 (b) (4), IC RSS-Gen 3.2(g) Brief Description of Circuit Function

To be filed as a separate attachment.

FCC 2.1033 (b) (5), IC RSS-Gen 3.2(a) Block Diagram

To be filed as a separate attachment.

FCC 2.1033 (b) (6), IC RSS-Gen 3.2(j) Report of Measurements

FCC 15.207 Conducted Emissions (General Provisions)

Procedure:

ANSI C63.10-2009 6.2

The EUT was connected to an Artificial Mains Network (AMN) and powered by 115Vac 60Hz. The emissions were measured from 150 kHz to 30 MHz.

Analyzer settings

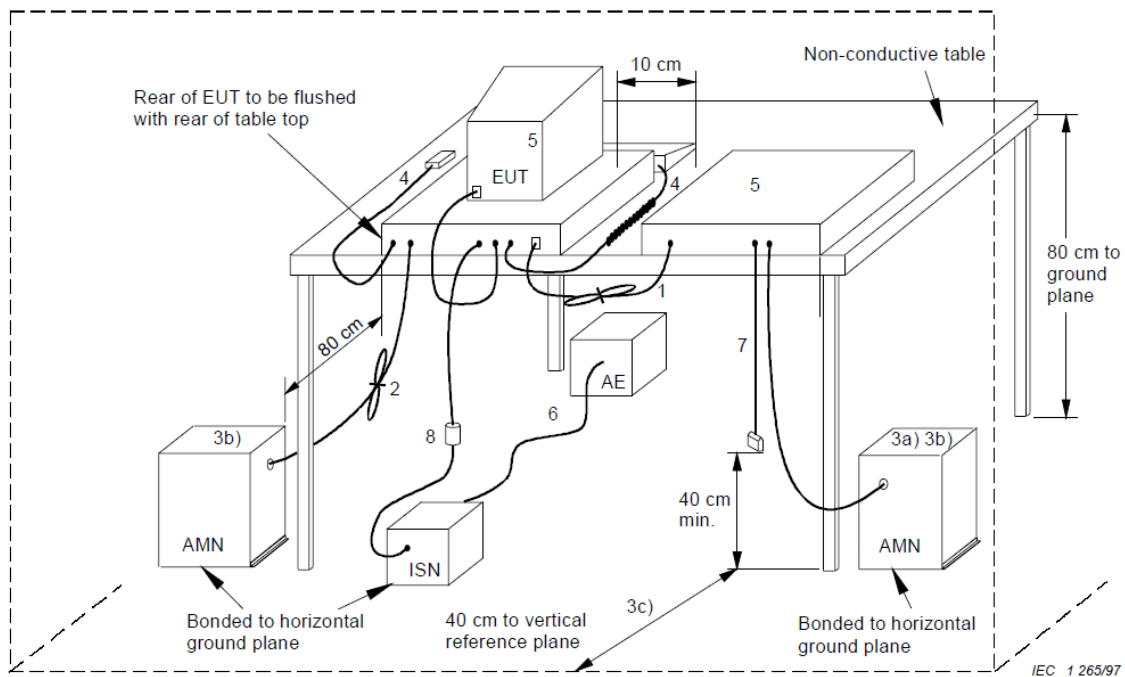
RBW: 9kHz

VBW: 30kHz

Detector: Peak

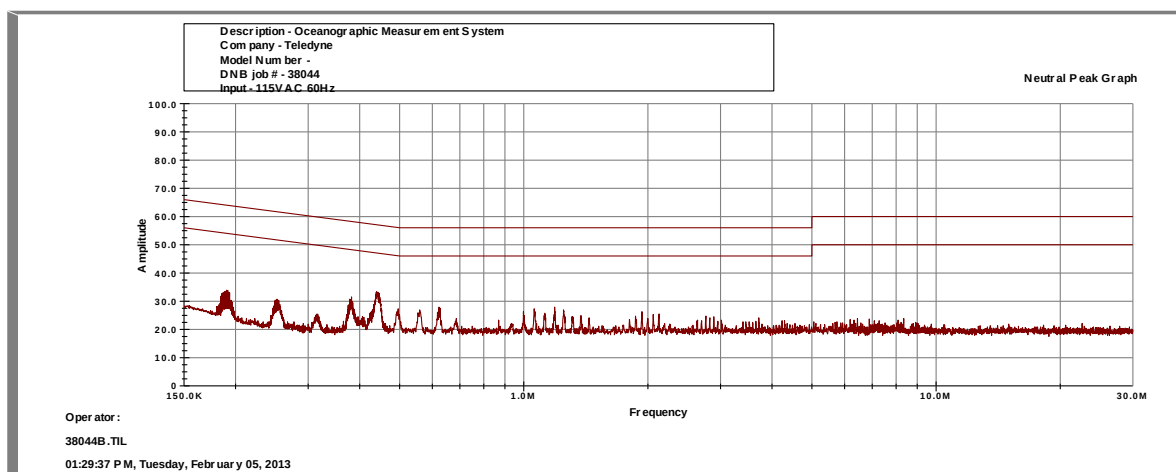
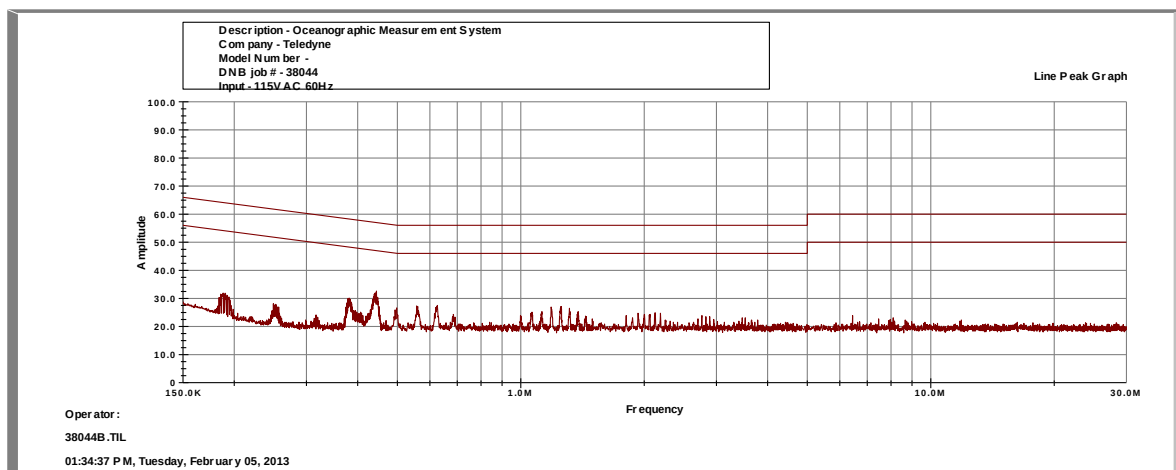
Trace: Max Hold

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Conducted Emissions	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		FCC 15.207
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Test Setup			



AMN = Artificial mains network
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Conducted Emissions	
DNB Job Number:	30044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		FCC 15.207
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Conducted Emissions 150kHz-30MHz	Mode: 802.11 b		



FCC 15.209, IC RSS-210 2.6 Radiated Emissions (General Provisions)

Test Procedure:
ANSI C63.10 6.3
ANSI C63.10 6.6

The EUT was measured on an open area test site (OATS).

A measuring distance of 3m was used for measurements. The frequency range 30MHz to 25GHz was scanned for spurious emissions. The resolution bandwidth was 1MHz and the video bandwidth was 1MHz for peak measurements. The resolution bandwidth was 1MHz and the video bandwidth was 10Hz for average measurements.

Sufficient precautions shall be taken to ensure that reflections from extraneous objects adjacent to the site do not degrade the measurement results, in particular:

- no extraneous conduction objects having any dimension in excess of a quarter wavelength of the highest frequency tested shall be in the immediate vicinity of the site;
- all cables shall be as short as possible; as much of the cables as possible shall be on the ground plane or preferably below; and the low impedance cables shall be screened.

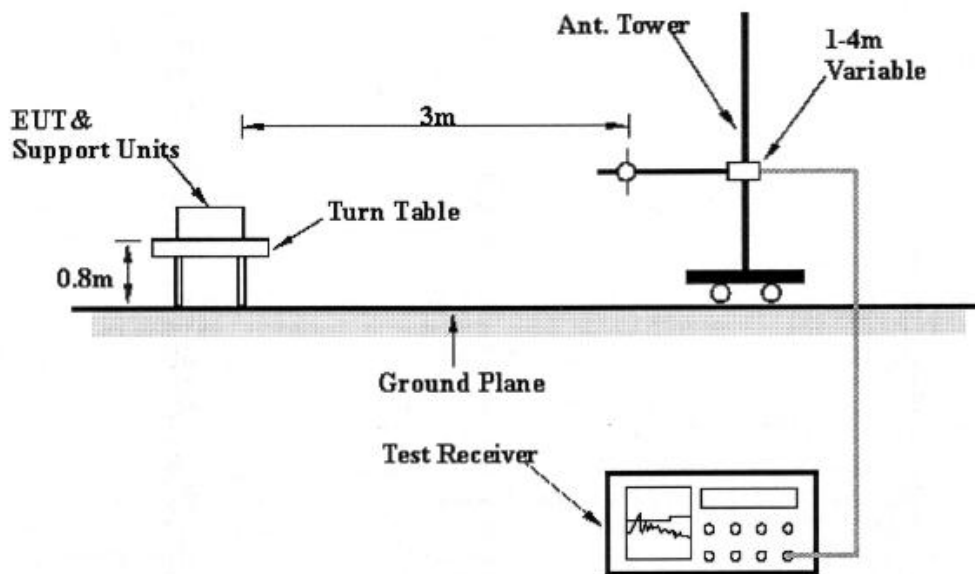
The EUT shall be placed upon a non-conductive table .8 meters above the ground plane and shall be placed in the “worst case” transmitting mode. The EUT shall be rotated 360 degrees to find the azimuth maxima. The receive antenna shall then be raised and lowered between 1 to 4 meters to find the maximum signal emanating from the EUT. This signal strength is then recorded on the data sheets.

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measurement Distance (meters)
.009 – 0.490	2400/F(kHz)	20*(Log10(2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20*(Log10(24000/F(kHz))	30
1.705 – 30.0	30	29.5	30
30 – 88	100	40	3
88 – 216	150	43.5	3
216 – 960	200	46.0	3
Above 960	500	54.0	3

Sample Calculation:

Corrected = Meter Reading + Cable1 Loss + Cable2 Loss + Antenna Factor – Amp Gain
Margin = Corrected – Limit

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Radiated Emissions	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 2.6 15.209
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Peak Measurements 30MHz – 1000MHz	Mode: 802.11b		



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Radiated Emissions (spurious)	
DNB Job Number:	38044C	Date:	2-19-2013	
Customer:	Teledyne RD Instruments			RSS-210 2.6 15.209
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Peak Measurements 30MHz – 1000MHz	Mode: 802.11b			

Freq (MHz)	Meter (dBμV)	Ant (dB)	Cable (dB)	Amp (dB)	Corr (dBμV)	Limit (dBμV)	Delta (dB)	Type	Pol
31.05	30.4	13.1	1.0	-21.9	22.6	40.0	-17.4	PK	V
31.39	27.2	13.0	1.1	-21.9	19.4	40.0	-20.6	PK	H
36.35	36.8	12.6	1.1	-21.9	28.6	40.0	-11.4	PK	H
41.60	38.0	11.5	1.2	-21.9	28.8	40.0	-11.2	PK	V
46.85	19.5	10.7	1.3	-21.8	9.7	40.0	-30.3	PK	H
51.96	44.0	10.1	1.3	-21.8	33.6	40.0	-6.4	PK	V
53.94	39.2	9.9	1.3	-21.8	28.6	40.0	-11.4	PK	H
61.97	38.6	9.5	1.4	-21.8	27.7	40.0	-12.3	PK	V
66.44	27.5	9.4	1.4	-21.8	16.5	40.0	-23.5	PK	H
72.47	34.9	9.4	1.5	-21.8	24.0	40.0	-16.0	PK	V
80.02	36.5	9.1	1.5	-21.9	25.2	40.0	-14.8	PK	V
81.01	28.9	9.1	1.5	-21.9	17.6	40.0	-22.4	PK	H
109.52	22.7	10.2	1.8	-21.9	12.8	43.5	-30.7	PK	V
110.89	34.7	10.3	1.8	-21.9	24.9	43.5	-18.6	PK	H
115.41	31.4	10.6	1.8	-21.9	21.9	43.5	-21.6	PK	V
119.99	29.6	10.9	1.9	-21.9	20.5	43.5	-23.0	PK	V
148.43	23.0	12.3	2.1	-21.9	15.5	43.5	-28.0	PK	H
151.96	31.1	12.5	2.2	-21.8	24.0	43.5	-19.5	PK	H
157.30	36.2	12.7	2.2	-21.8	29.3	43.5	-14.2	PK	V
159.75	32.7	12.8	2.2	-21.8	25.9	43.5	-17.6	PK	V
160.14	33.2	12.8	2.2	-21.8	26.4	43.5	-17.1	PK	H
161.69	35.0	12.9	2.3	-21.8	28.4	43.5	-15.1	PK	V
161.69	32.0	12.9	2.3	-21.8	25.4	43.5	-18.1	PK	H
162.83	31.4	12.9	2.3	-21.8	24.8	43.5	-18.7	PK	H
166.25	30.6	13.1	2.3	-21.8	24.2	43.5	-19.3	PK	H
166.26	34.8	13.1	2.3	-21.8	28.4	43.5	-15.1	PK	V
171.39	35.6	13.3	2.3	-21.8	29.4	43.5	-14.1	PK	V
197.75	19.3	14.4	2.6	-21.8	14.5	43.5	-29.0	PK	H

Freq (MHz)	Meter (dBμV)	Ant (dB)	Cable (dB)	Amp (dB)	Corr (dBμV)	Limit (dBμV)	Delta (dB)	Type	Pol
204.75	19.9	10.9	2.6	-21.8	11.6	43.5	-31.9	PK	H
218.26	30.2	10.6	2.7	-21.8	21.7	46.0	-24.3	PK	H
229.45	19.6	10.6	2.8	-21.7	11.3	46.0	-34.7	PK	H
242.45	24.0	11.2	2.9	-21.7	16.4	46.0	-29.6	PK	H
253.12	20.0	11.8	3.0	-21.7	13.1	46.0	-32.9	PK	H
274.12	20.5	12.7	3.1	-21.7	14.6	46.0	-31.4	PK	H
292.51	23.0	13.4	3.2	-21.6	18.0	46.0	-28.0	PK	H
301.55	31.0	13.9	3.3	-21.6	26.6	46.0	-19.4	PK	H
314.58	26.0	14.6	3.4	-21.6	22.4	46.0	-23.6	PK	H
337.48	24.7	13.9	3.5	-21.5	20.6	46.0	-25.4	PK	H
353.91	24.3	14.7	3.6	-21.5	21.1	46.0	-24.9	PK	H
386.06	27.6	14.5	3.8	-21.4	24.5	46.0	-21.5	PK	H
393.22	26.8	14.7	3.9	-21.4	24.0	46.0	-22.0	PK	H
403.22	21.4	15.1	4.0	-21.4	19.1	46.0	-26.9	PK	H
403.86	31.7	15.1	4.0	-21.4	29.4	46.0	-16.6	PK	H
405.89	25.7	15.2	4.0	-21.4	23.5	46.0	-22.5	PK	H
499.68	42.5	17.4	4.6	-21.2	43.3	46.0	-2.7	PK	H
502.71	31.6	17.5	4.6	-21.2	32.5	46.0	-13.5	PK	V
511.16	26.0	17.7	4.6	-21.2	27.1	46.0	-18.9	PK	H
513.25	27.1	17.8	4.6	-21.2	28.3	46.0	-17.7	PK	H
517.49	29.1	17.8	4.7	-21.2	30.4	46.0	-15.6	PK	H
609.39	33.2	18.8	4.9	-21.2	35.7	46.0	-10.3	PK	H
610.95	31.7	18.8	4.9	-21.2	34.2	46.0	-11.8	PK	V
702.39	30.2	20.9	5.2	-21.2	35.1	46.0	-10.9	PK	H
704.66	31.2	20.7	5.2	-21.2	35.9	46.0	-10.1	PK	V
804.75	31.4	20.3	5.5	-21.3	35.9	46.0	-10.1	PK	V
806.09	31.6	20.4	5.5	-21.3	36.2	46.0	-9.8	PK	H
901.24	32.0	21.5	5.8	-21.3	38.0	46.0	-8.0	PK	H
905.05	33.8	21.7	5.8	-21.3	40.0	46.0	-6.0	PK	V

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Radiated Emissions (spurious)		
DNB Job Number:	18093D	Date:	2-20-2013	
Customer:	Teledyne			RSS-210 2.6 15.209
Model Number:	S20	Specification:		
Description:	Transmitter			
Channel 1 measurements 1GHz – 25GHz	Mode: 802.11b			

Frequency (MHz)	Meter (dBμV)	Cable (dB)	Antenna (dB)	Amp (dB)	Corrected (dBμV)	Limit (dBμV)	Margin (dB)	Polarity	Detector
4824	31.5	0.1	33.2	28	36.8	74	-37.2	H	Peak
4824	18.7	0.1	33.2	28	24	54	-30	H	Average
7236	36.7	4.9	36.5	29.2	48.9	74	-25.1	H	Peak
7236	24.2	4.9	36.5	29.2	36.4	54	-17.6	H	Average
9648	37.1	7.6	37.7	28.4	54	74	-20	H	Peak
9648	25.2	7.6	37.7	28.4	42.1	54	-11.9	H	Average
12060	36.5	7.9	39.3	28.5	55.2	74	-18.8	H	Peak
12060	26.2	7.9	39.3	28.6	44.8	54	-9.2	H	Average
14472	42.5	8	42.2	28.7	64	74	-10	H	Peak
14472	26.1	8	42.2	28.7	47.6	54	-6.4	H	Average
4824	31.5	0.1	33.2	28	36.8	74	-37.2	V	Peak
4824	18.7	0.1	33.2	28	24	54	-30	V	Average
7236	35.7	4.9	36.5	29.2	47.9	74	-26.1	V	Peak
7236	23.2	4.9	36.5	29.2	35.4	54	-18.6	V	Average
9648	35.7	7.6	37.7	28.4	52.6	74	-21.4	V	Peak
9648	26.4	7.6	37.7	28.4	43.3	54	-10.7	V	Average
12060	35.2	7.9	39.3	28.5	53.9	74	-20.1	V	Peak
12060	27.3	7.9	39.3	28.6	45.9	54	-8.1	V	Average
14472	42.8	8	42.2	28.7	64.3	74	-9.7	V	Peak
14472	23.1	8	42.2	28.7	44.6	54	-9.4	V	Average

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Radiated Emissions (spurious)	
DNB Job Number:	18093D	Date:	2-20-2013
Customer:	Teledyne		Teledyne
Model Number:	S20	Specifiction:	
Description:	Transmitter		
Channel 6 1GHz – 25GHz	Mode: 802.11 b		

Frequency (MHz)	Meter (dBμV)	Cable (dB)	Antenna (dB)	Amp (dB)	Corrected (dBμV)	Limit (dBμV)	Margin (dB)	Polarity	Detector
4874	34.9	0.1	33.2	28	40.2	74	-33.8	H	Peak
4874	25.8	0.1	33.2	28	31.1	54	-22.9	H	Average
7311	36.1	4.9	36.5	29.2	48.3	74	-25.7	H	Peak
7311	24.8	4.9	36.5	29.2	37	54	-17	H	Average
9748	38	7.6	37.7	28.4	54.9	74	-19.1	H	Peak
9748	23.1	7.6	37.7	28.4	40	54	-14	H	Average
12185	34.3	7.9	39.3	28.5	53	74	-21	H	Peak
12185	27.6	7.9	39.3	28.6	46.2	54	-7.8	H	Average
14622	41.8	8	42.2	28.7	63.3	74	-10.7	H	Peak
14622	25.2	8	42.2	28.7	46.7	54	-7.3	H	Average
4874	33.9	0.1	33.2	28	39.2	74	-34.8	V	Peak
4874	19.4	0.1	33.2	28	24.7	54	-29.3	V	Average
7311	37.3	4.9	36.5	29.2	49.5	74	-24.5	V	Peak
7311	27.2	4.9	36.5	29.2	39.4	54	-14.6	V	Average
9748	36	7.6	37.7	28.4	52.9	74	-21.1	V	Peak
9748	27.6	7.6	37.7	28.4	44.5	54	-9.5	V	Average
12185	34.9	7.9	39.3	28.5	53.6	74	-20.4	V	Peak
12185	28.7	7.9	39.3	28.6	47.3	54	-6.7	V	Average
14622	43.8	8	42.2	28.7	65.3	74	-8.7	V	Peak
14622	24.5	8	42.2	28.7	46	54	-8	V	Average

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Radiated Emissions (spurious)	
DNB Job Number:	18093D	Date:	2-20-2013	
Customer:	Teledyne		RSS-210 2.6 15.209	
Model Number:	S20	Specification:		
Description:	Transmitter			
Channel 11 1GHz – 25GHz	Mode 802.11 b			

Frequency (MHz)	Meter (dBμV)	Cable (dB)	Antenna (dB)	Amp (dB)	Corrected (dBμV)	Limit (dBμV)	Margin (dB)	Polarity	Detector
4924	32.3	0.1	33.2	28	37.6	74	-36.4	H	Peak
4924	19.4	0.1	33.2	28	24.7	54	-29.3	H	Average
7386	37.6	4.9	36.5	29.2	49.8	74	-24.2	H	Peak
7386	25.7	4.9	36.5	29.2	37.9	54	-16.1	H	Average
9848	35.4	7.6	37.7	28.4	52.3	74	-21.7	H	Peak
9848	23.2	7.6	37.7	28.4	40.1	54	-13.9	H	Average
12310	35.9	7.9	39.3	28.5	54.6	74	-19.4	H	Peak
12310	27.5	7.9	39.3	28.6	46.1	54	-7.9	H	Average
14772	39.5	8	42.2	28.7	61	74	-13	H	Peak
14772	27.4	8	42.2	28.7	48.9	54	-5.1	H	Average
4924	32.2	0.1	33.2	28	37.5	74	-36.5	V	Peak
4924	19.6	0.1	33.2	28	24.9	54	-29.1	V	Average
7386	35.7	4.9	36.5	29.2	47.9	74	-26.1	V	Peak
7386	24.9	4.9	36.5	29.2	37.1	54	-16.9	V	Average
9848	36	7.6	37.7	28.4	52.9	74	-21.1	V	Peak
9848	25.3	7.6	37.7	28.4	42.2	54	-11.8	V	Average
12310	34.1	7.9	39.3	28.5	52.8	74	-21.2	V	Peak
12310	28.3	7.9	39.3	28.6	46.9	54	-7.1	V	Average
14772	43.3	8	42.2	28.7	64.8	74	-9.2	V	Peak
14772	24.9	8	42.2	28.7	46.4	54	-7.6	V	Average

15.247(a) (2), RSS-210 A8.2(a) 6dB and 99% Emission Bandwidth
ANSI C63.10 6.9

Test Procedure:

Use the following spectrum analyzer settings:

RBW	=	100kHz
VBW	=	300kHz
Span	=	2 x OBW
Sweep	=	auto
Detector	=	peak
Trace	=	max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6dB down one side of the emission. Reset the marker-delta functions, and move the marker to the other side of the emission, until it is even with the reference marker level. The marker-delta reading at this point is the 6dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

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

EUT Operating Conditions:

The test fixture provided by the client allowed the EUT to transmit continuously at the low, mid, and upper channels respectively.

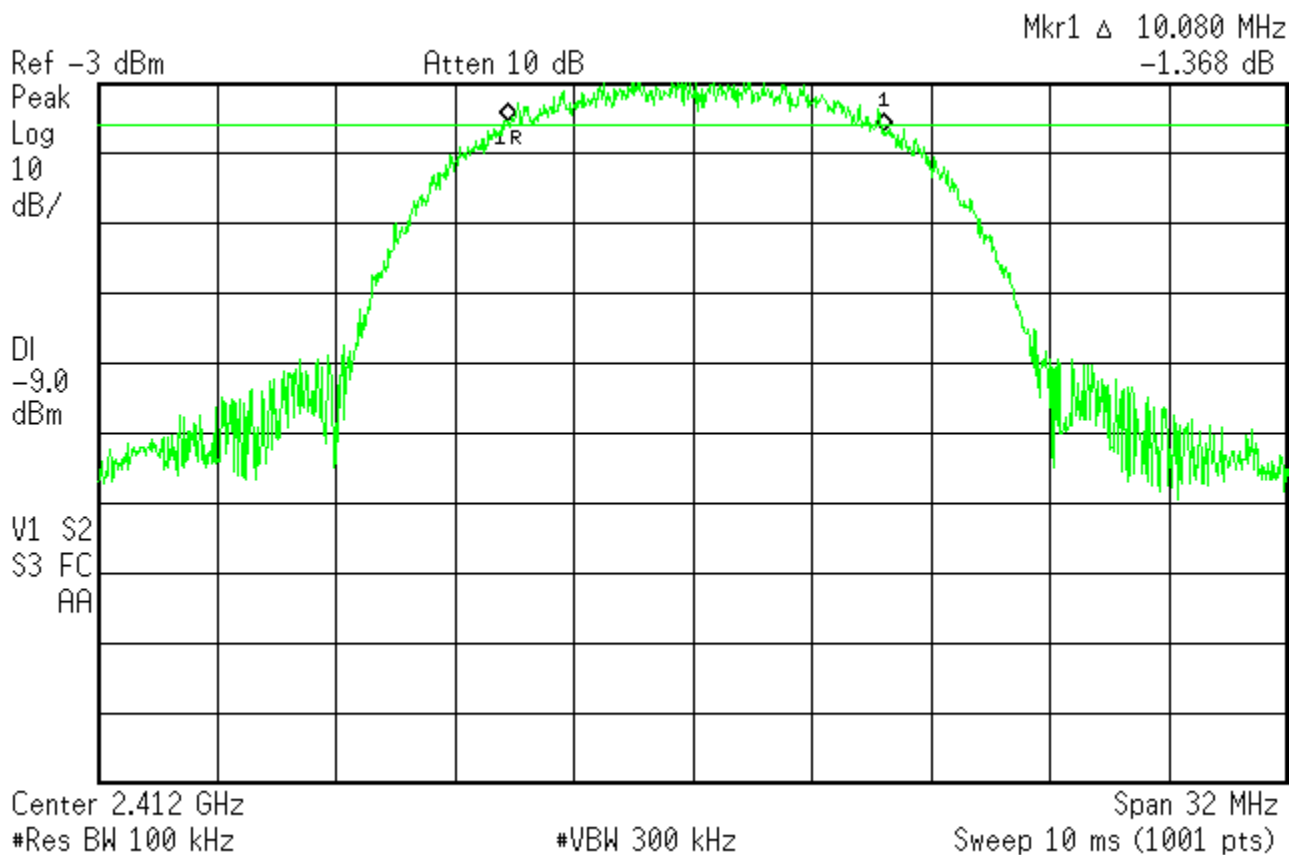
Test Setup:



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
1	802.11 b	2412	10.080	500	Pass

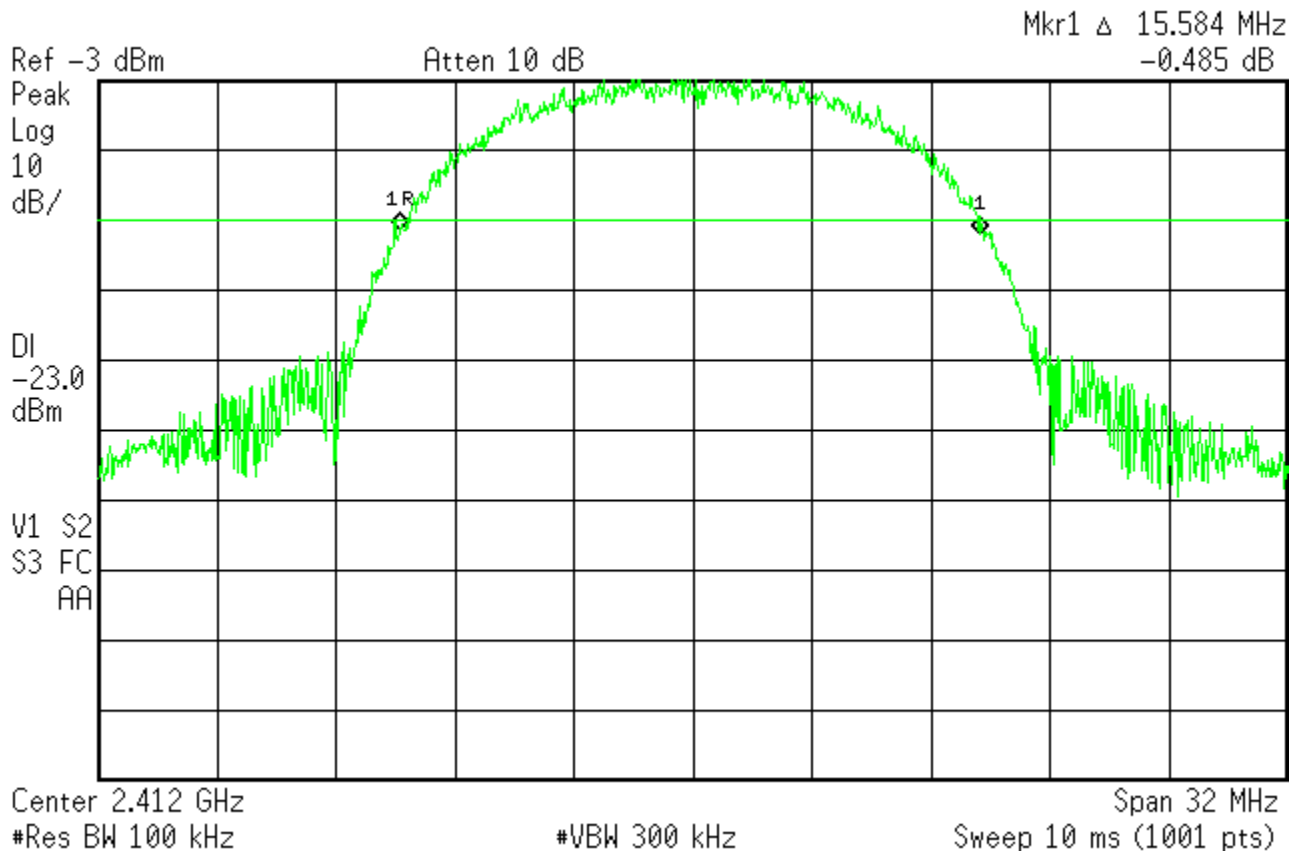
* Agilent 14:55:10 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
1	802.11 b	2412	15.584	500	Pass

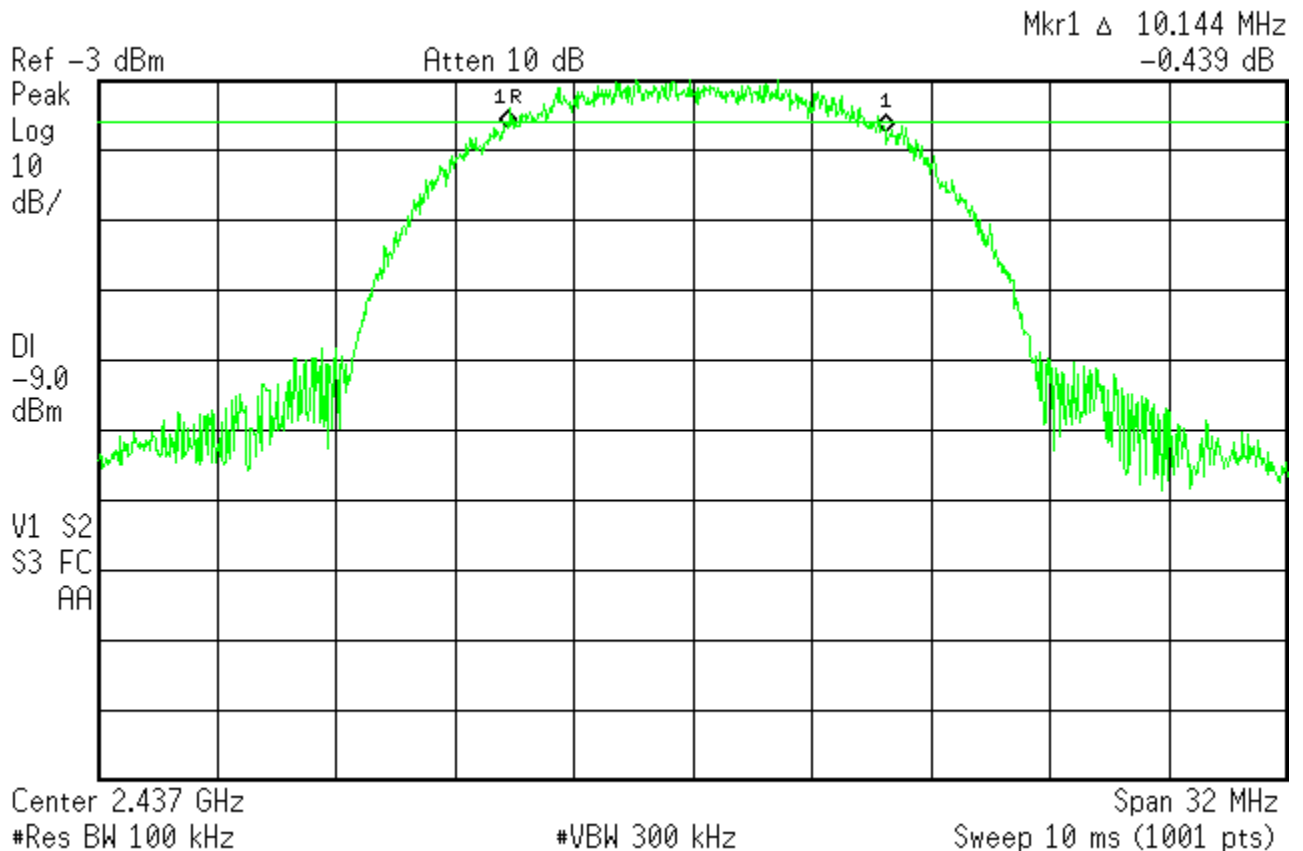
✱ Agilent 14:56:16 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
6	802.11 b	2437	10.144	500	Pass

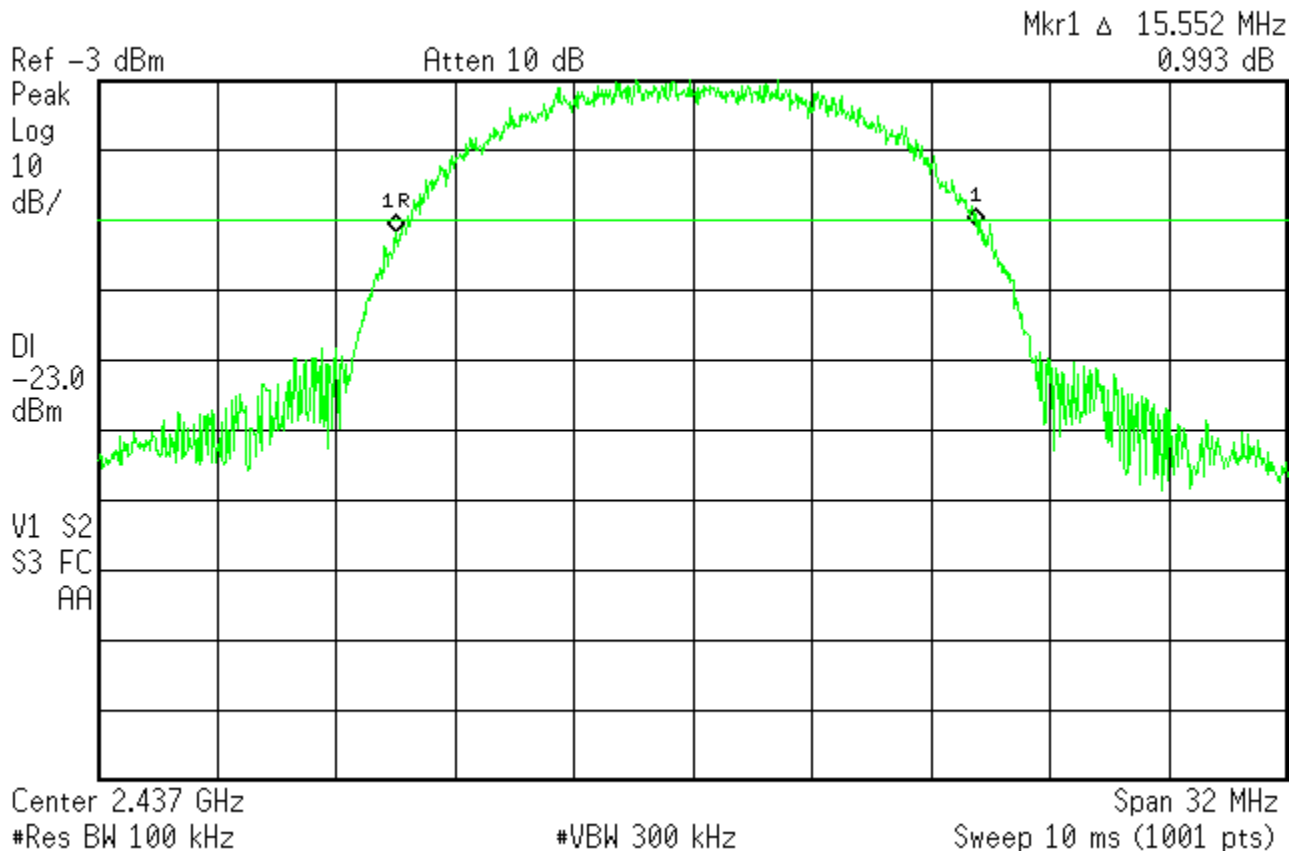
✱ Agilent 14:49:04 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
6	802.11 b	2437	15.552	500	Pass

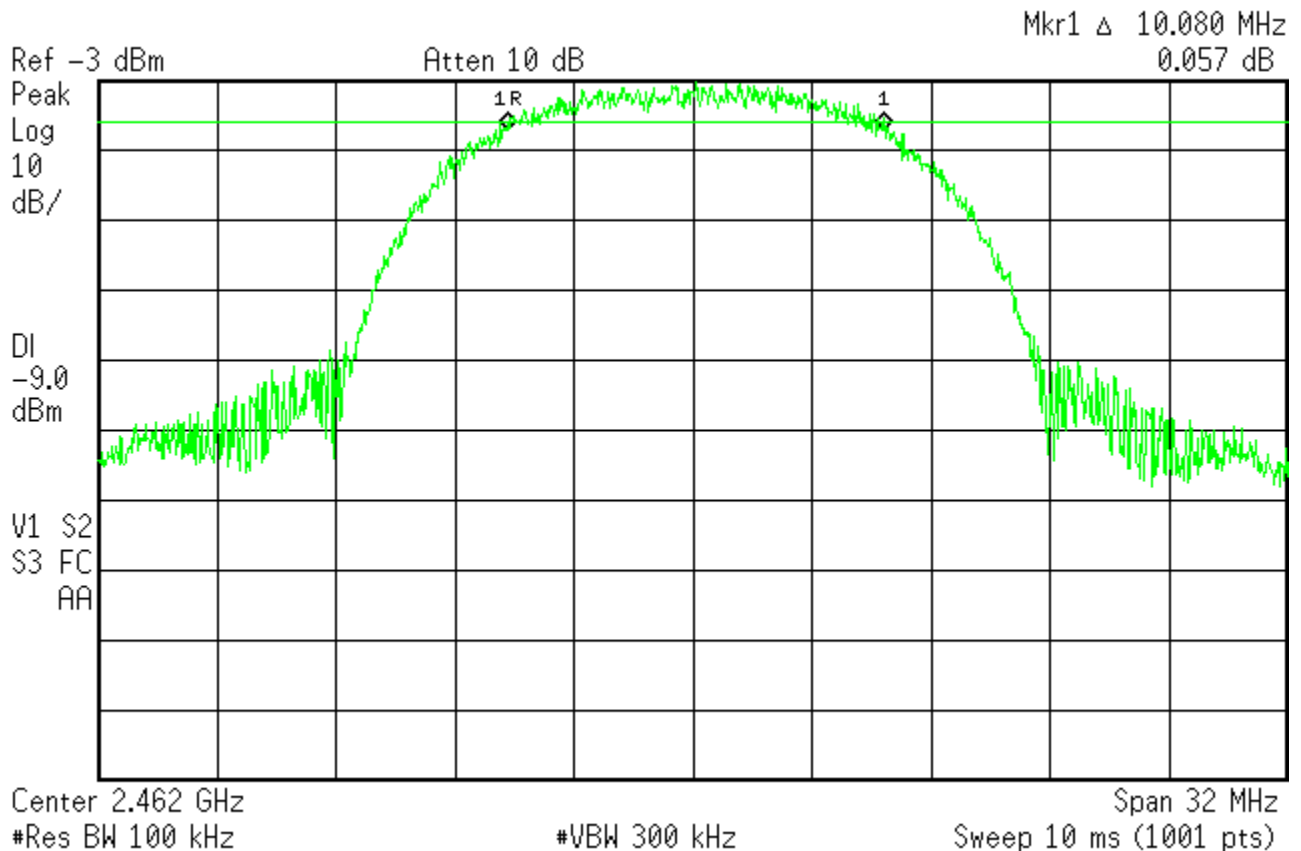
✱ Agilent 14:46:47 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
11	802.11 b	2462	10.080	500	Pass

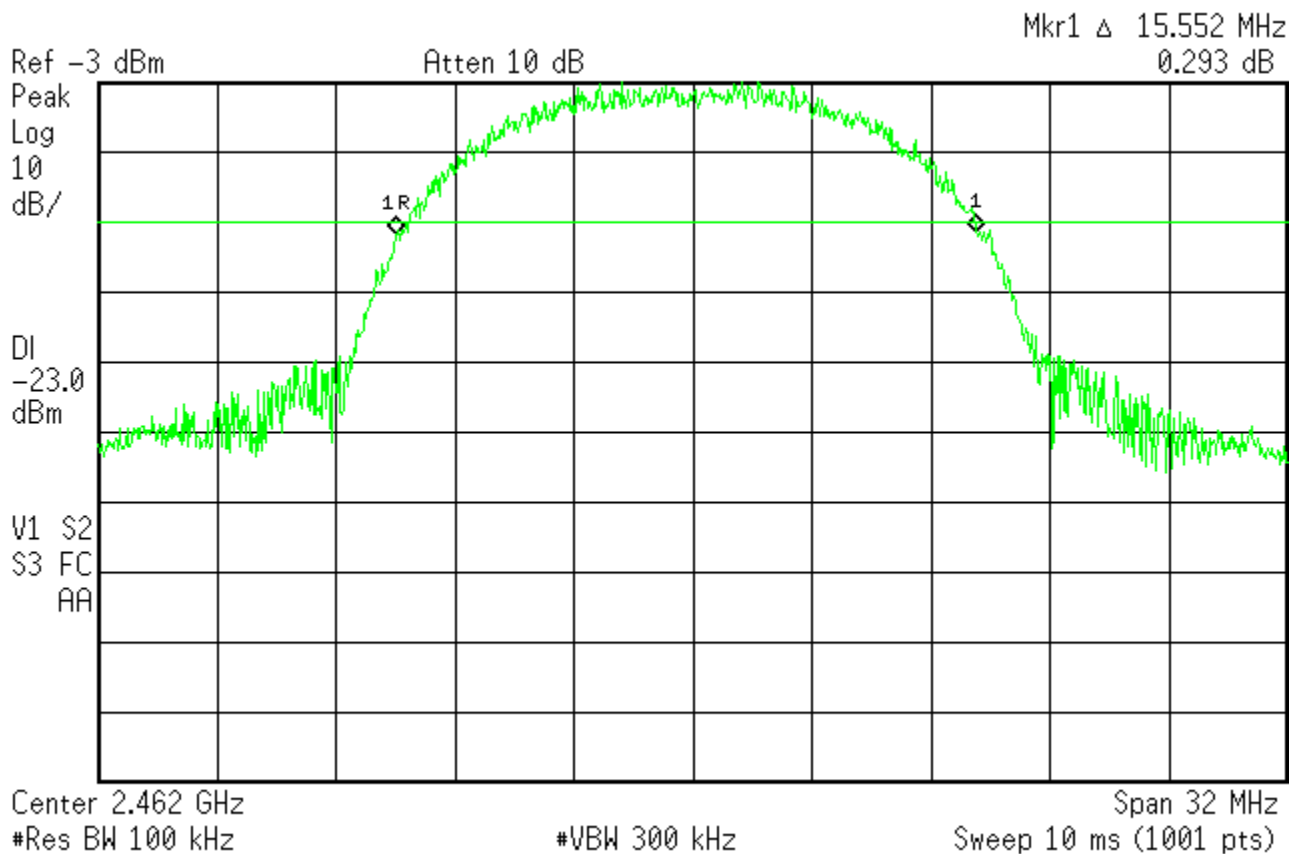
✱ Agilent 14:52:24 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-21-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
11	802.11 b	2432	15.552	500	Pass

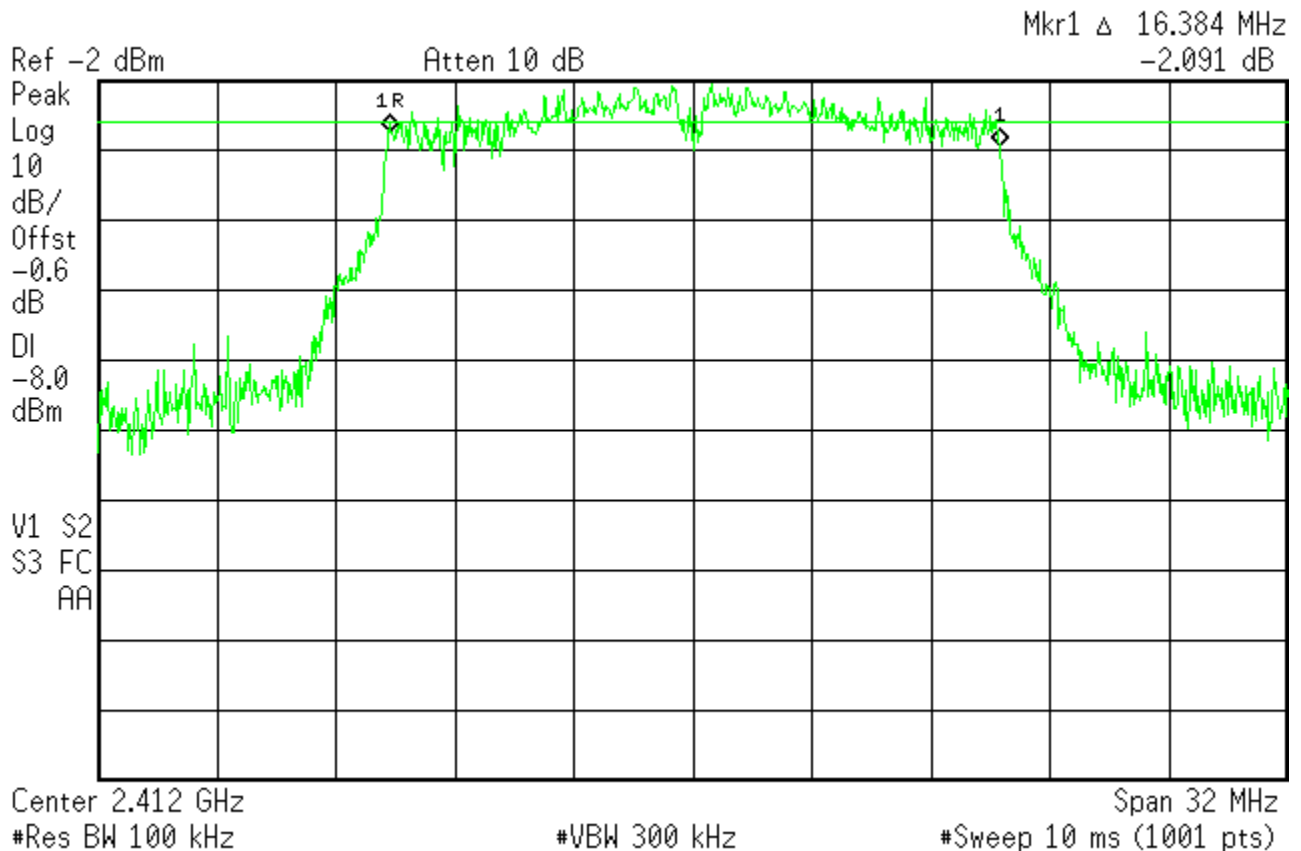
✱ Agilent 14:40:41 May 21, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
1	802.11 g	2412	16.384	500	Pass

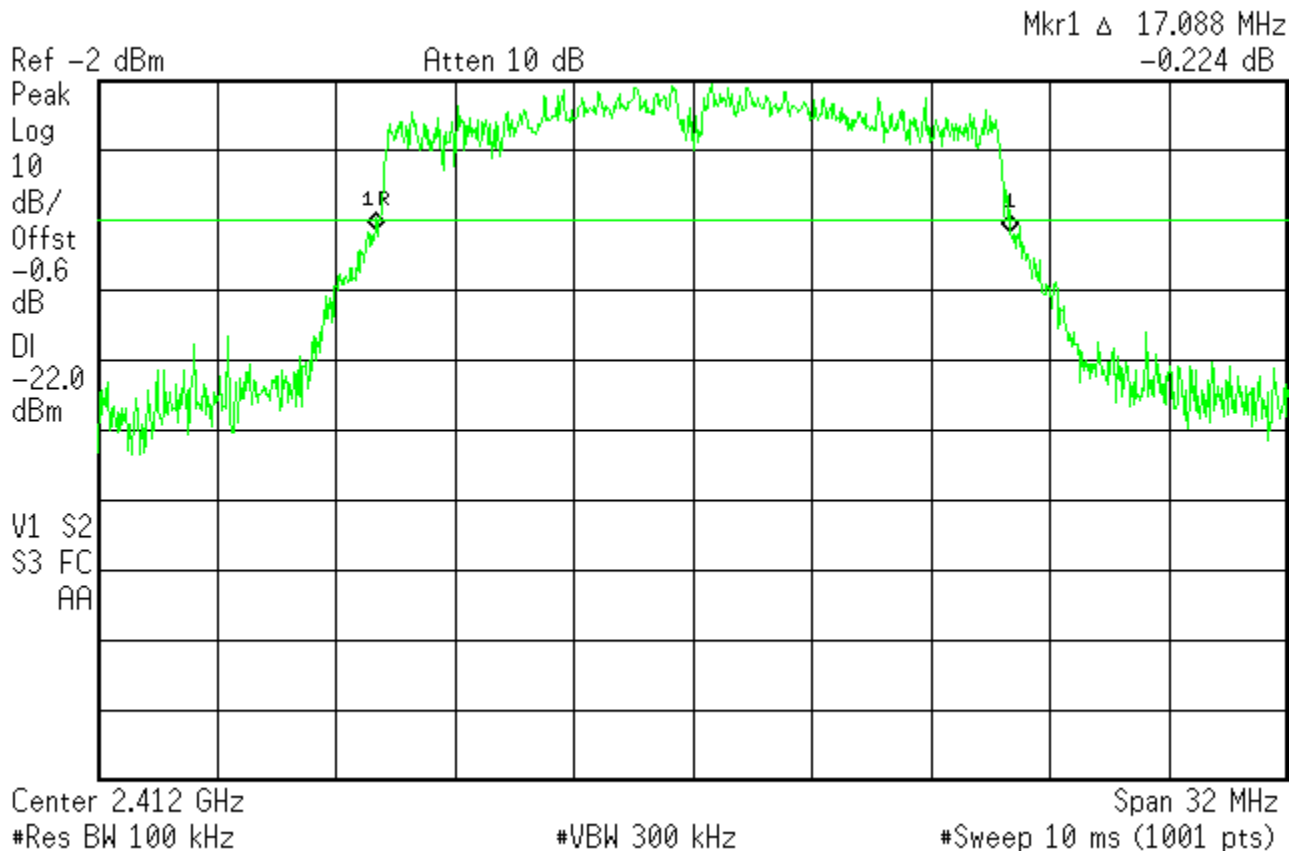
✧ Agilent 14:44:05 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
1	802.11 g	2412	17.088	500	Pass

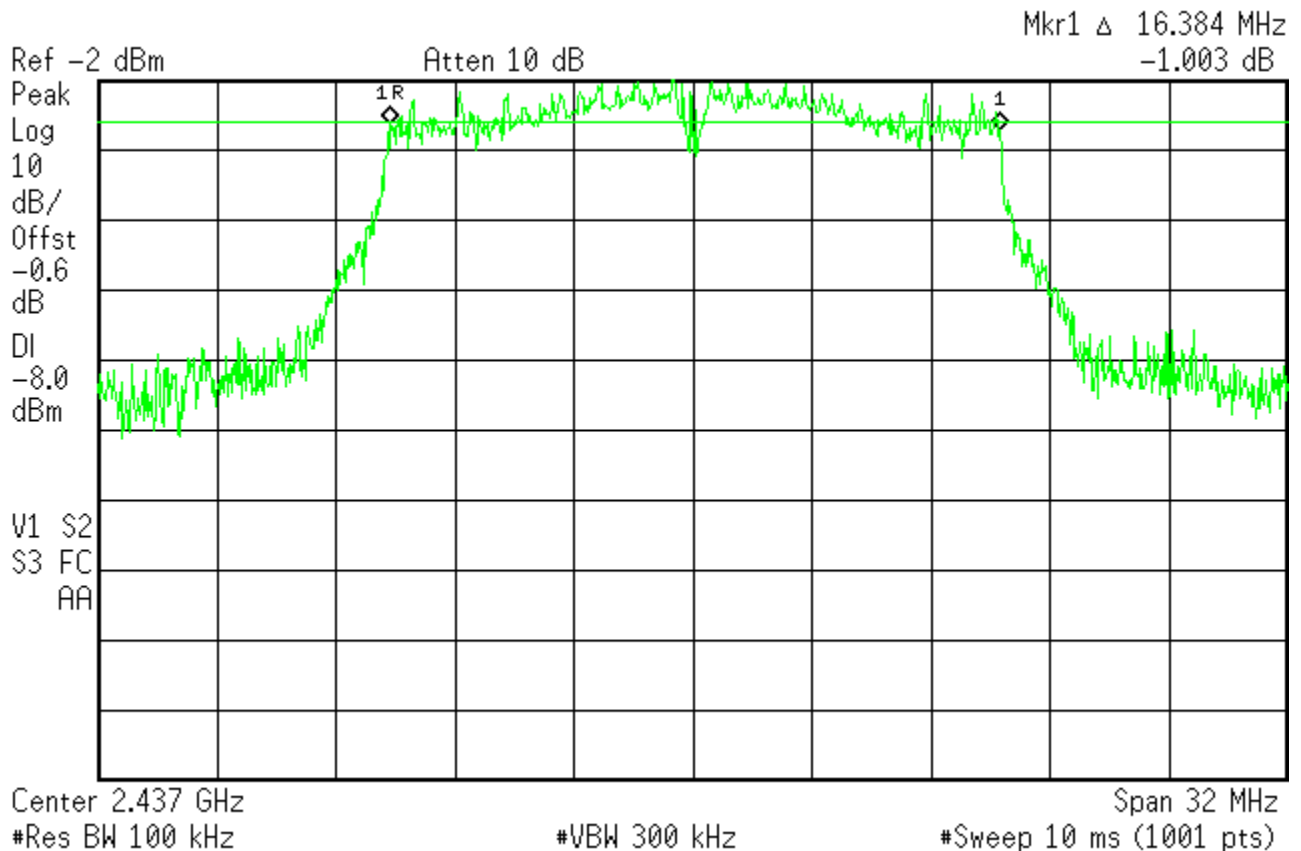
✱ Agilent 14:45:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
6	802.11 g	2437	16.384	500	Pass

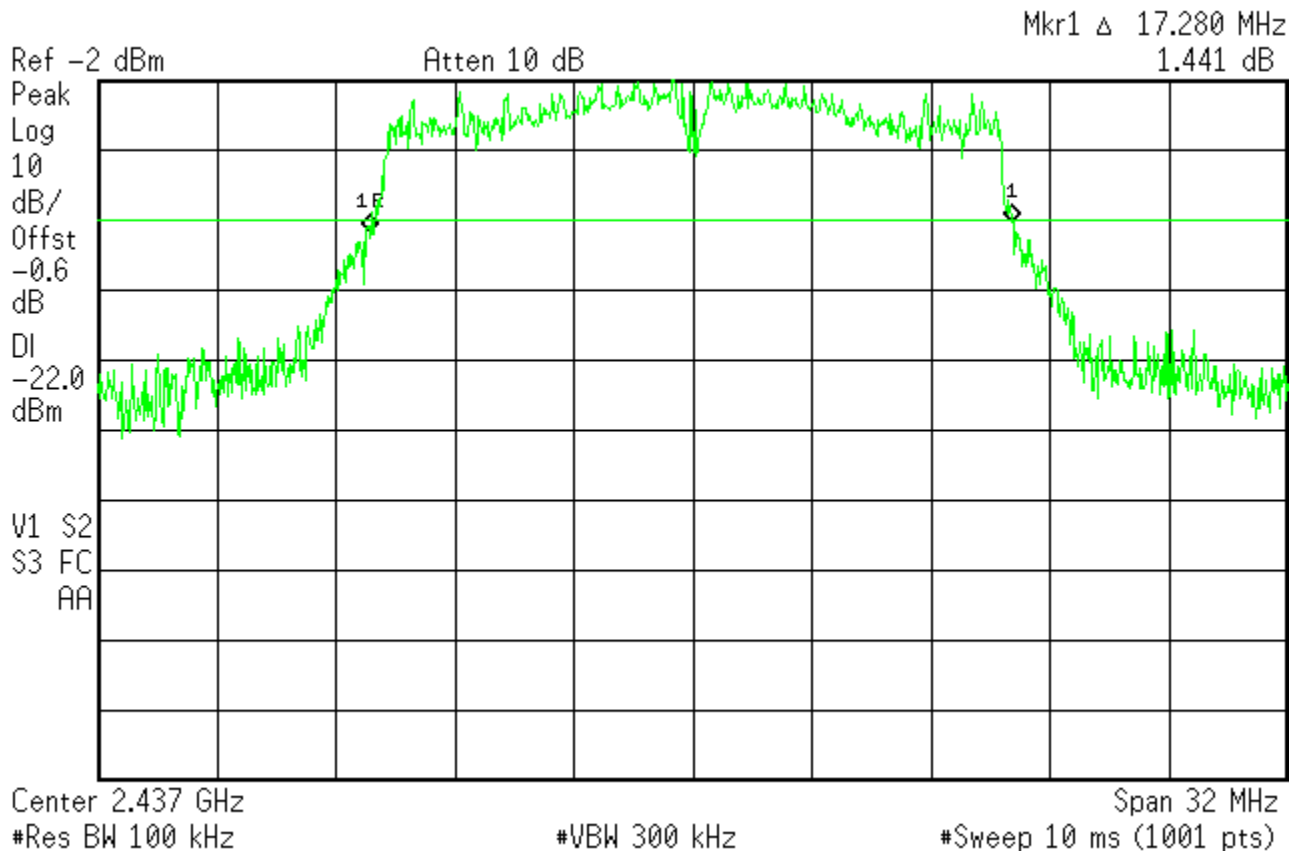
✧ Agilent 14:38:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
6	802.11 g	2437	17.28	500	Pass

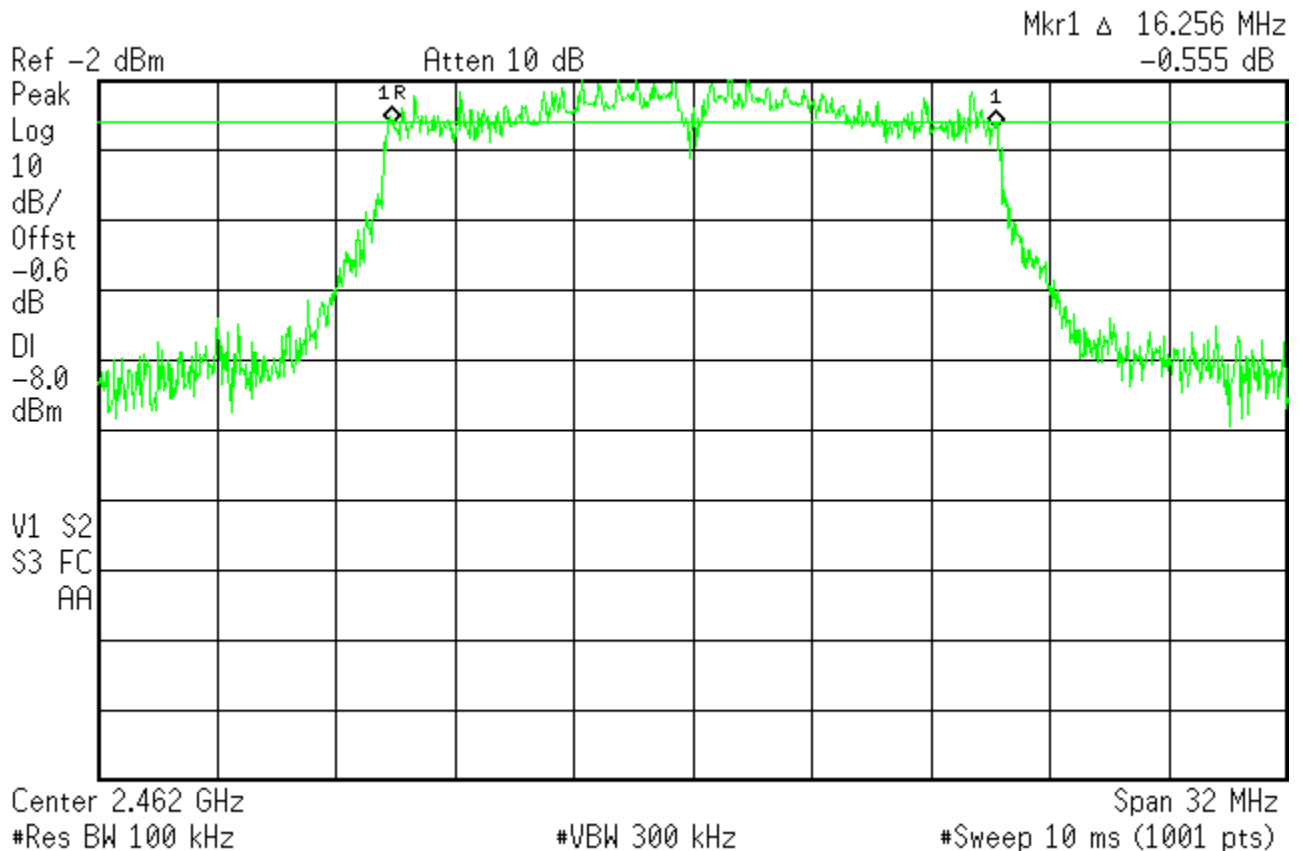
✧ Agilent 14:37:14 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
11	802.11 g	2462	16.256	500	Pass

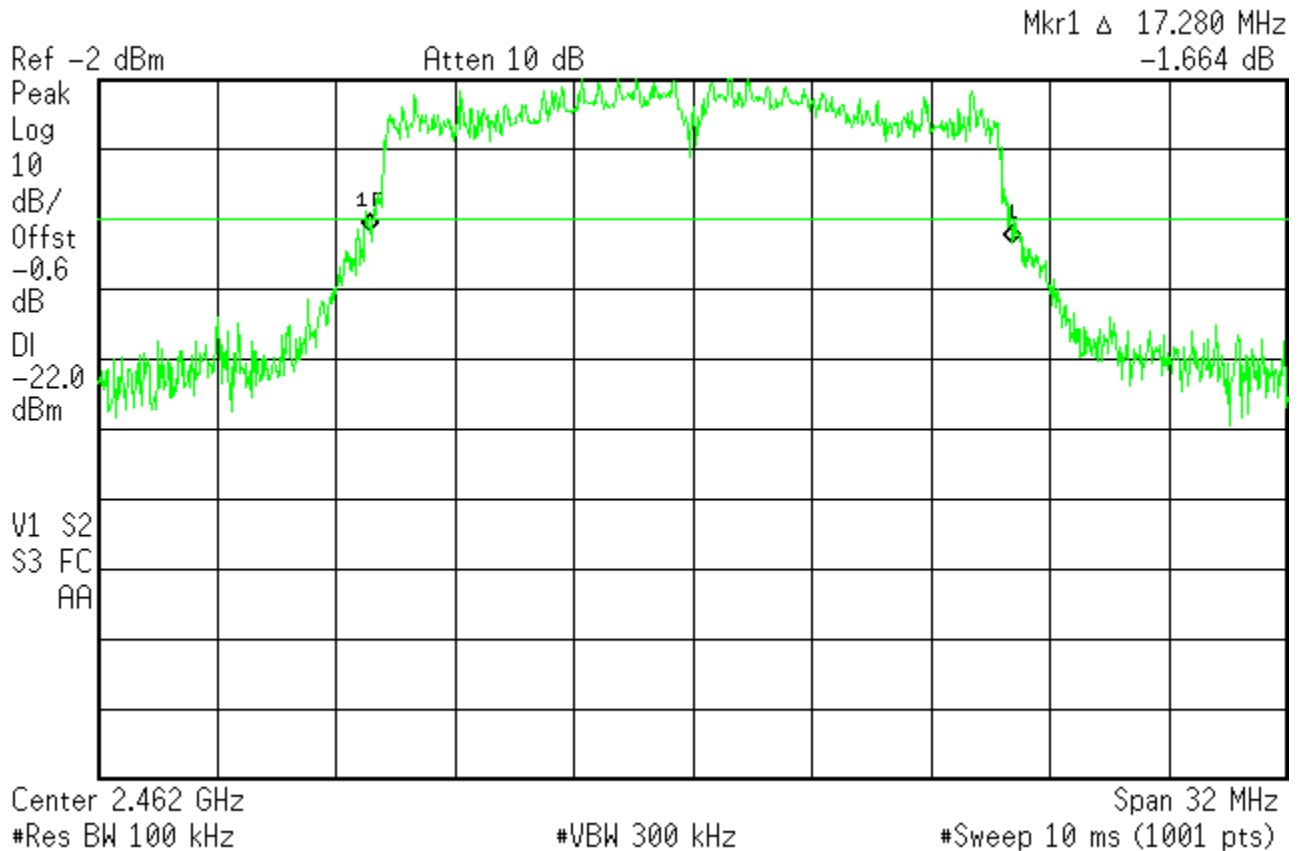
✧ Agilent 14:26:22 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
11	802.11 g	2432	17.28	500	Pass

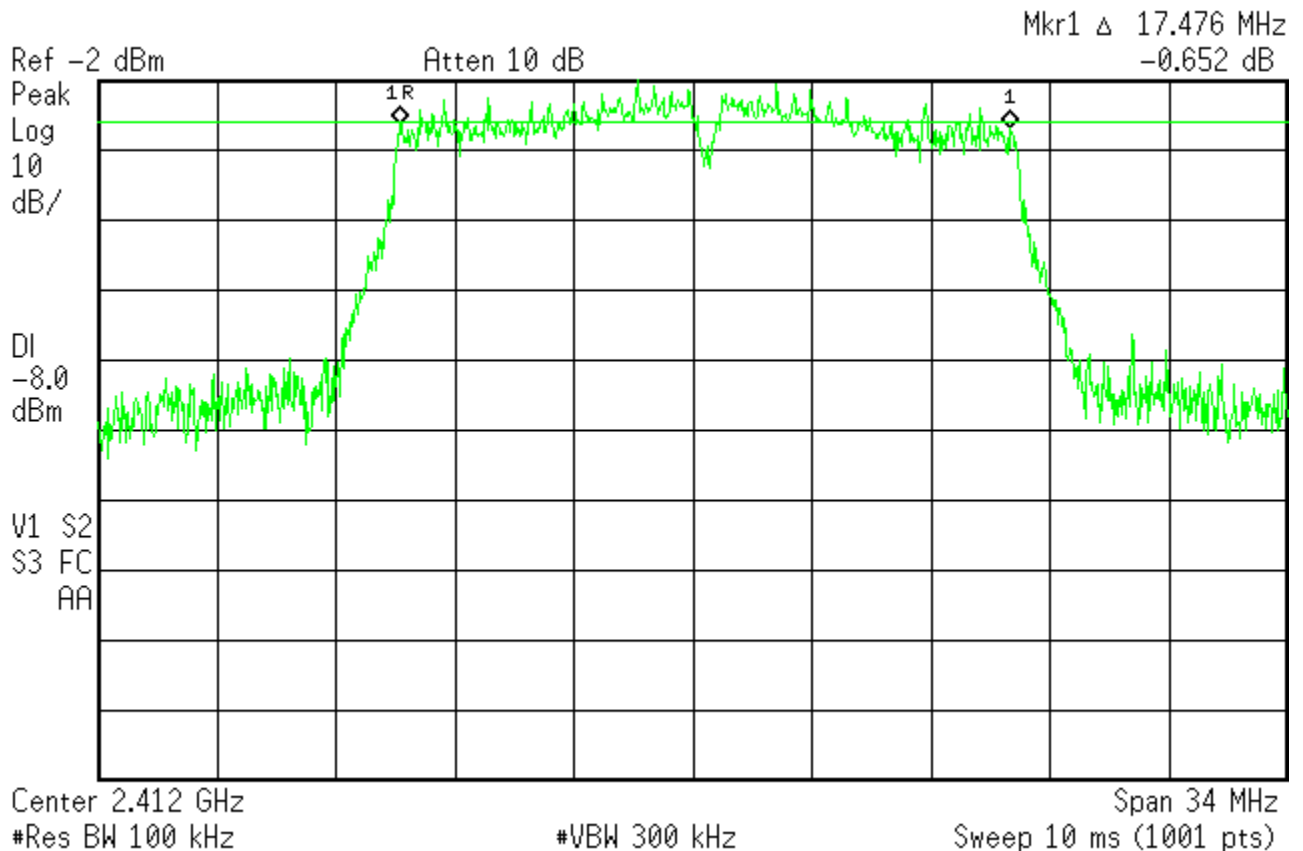
✱ Agilent 14:28:58 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
1	802.11 n	2412	17.476	500	Pass

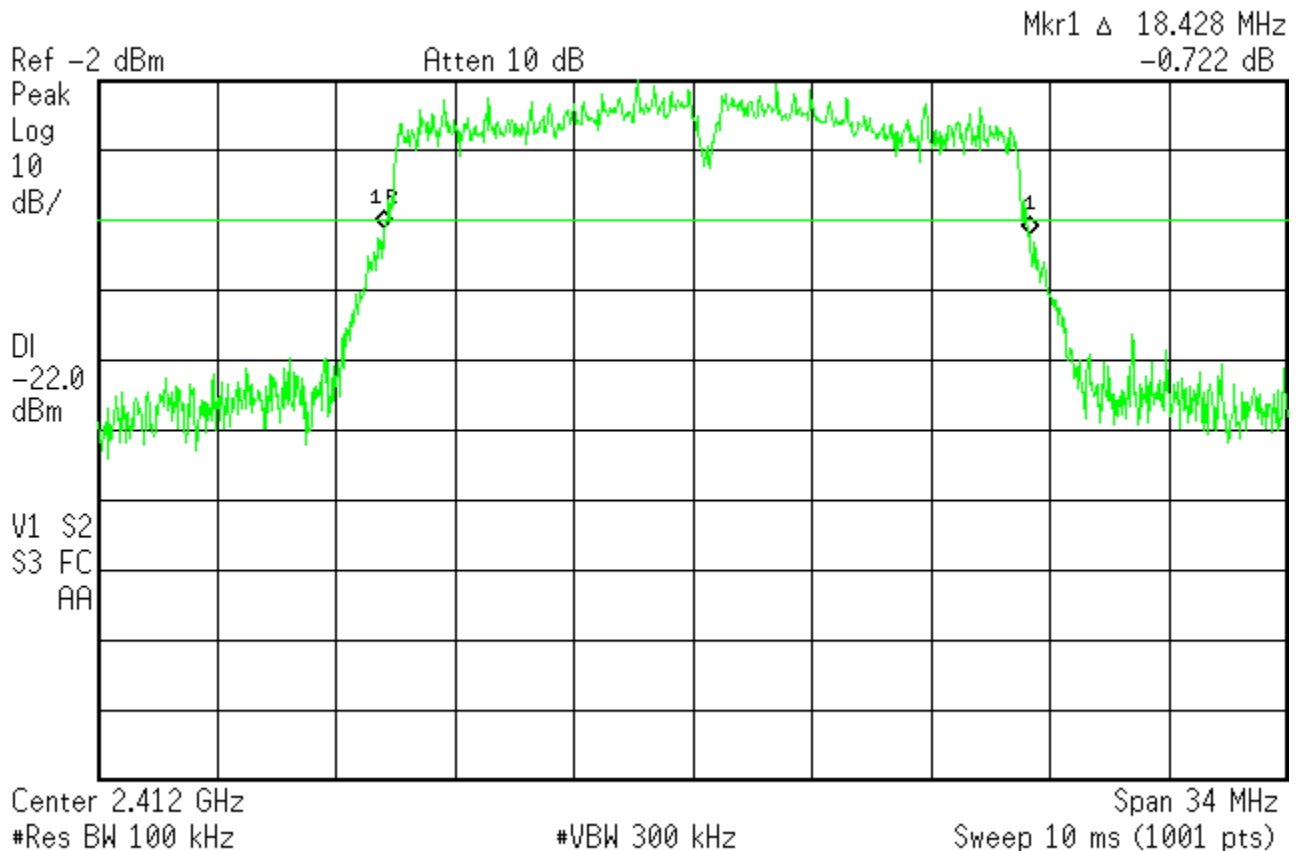
✱ Agilent 12:24:17 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
1	802.11 n	2412	18.428	500	Pass

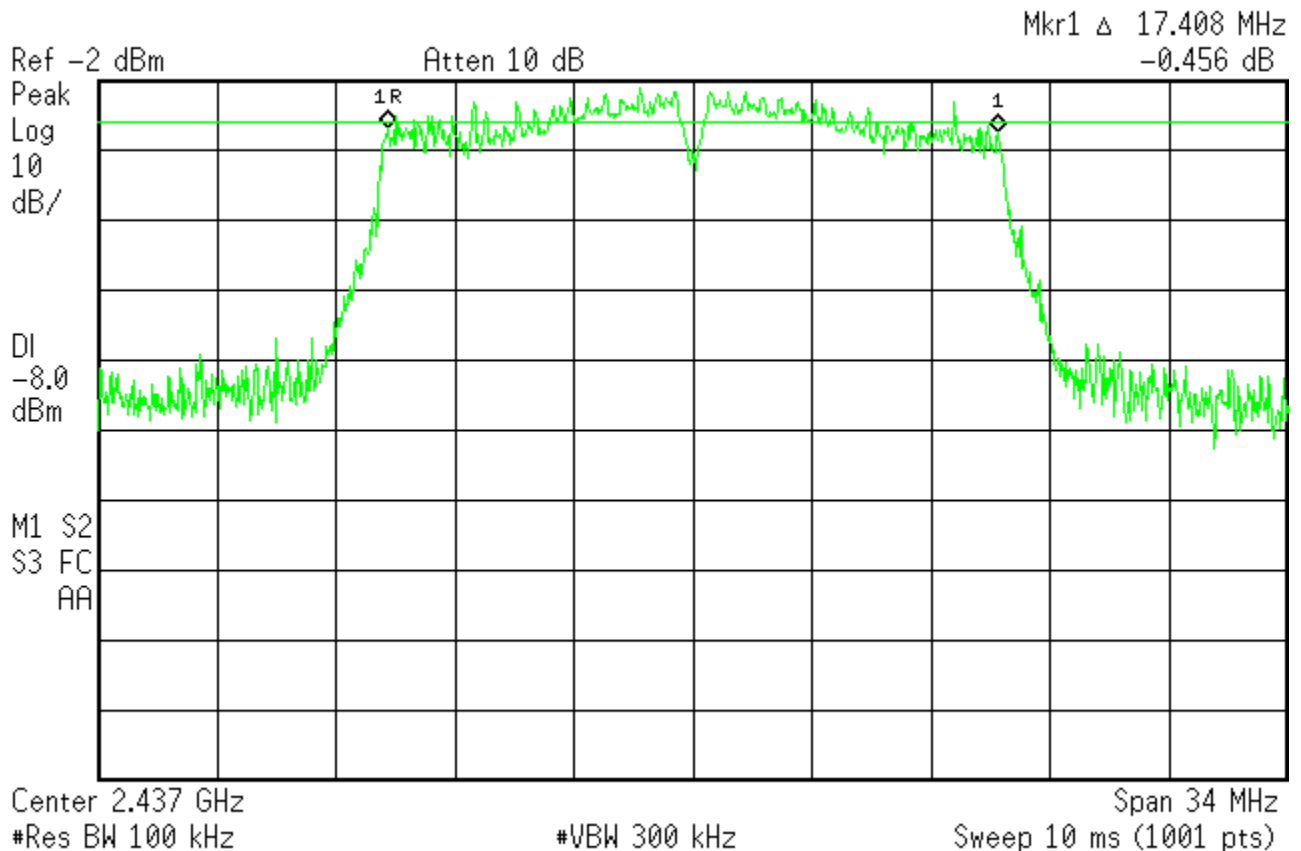
✱ Agilent 12:22:07 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	6 dB Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
6	802.11 n	2437	17.408	500	Pass

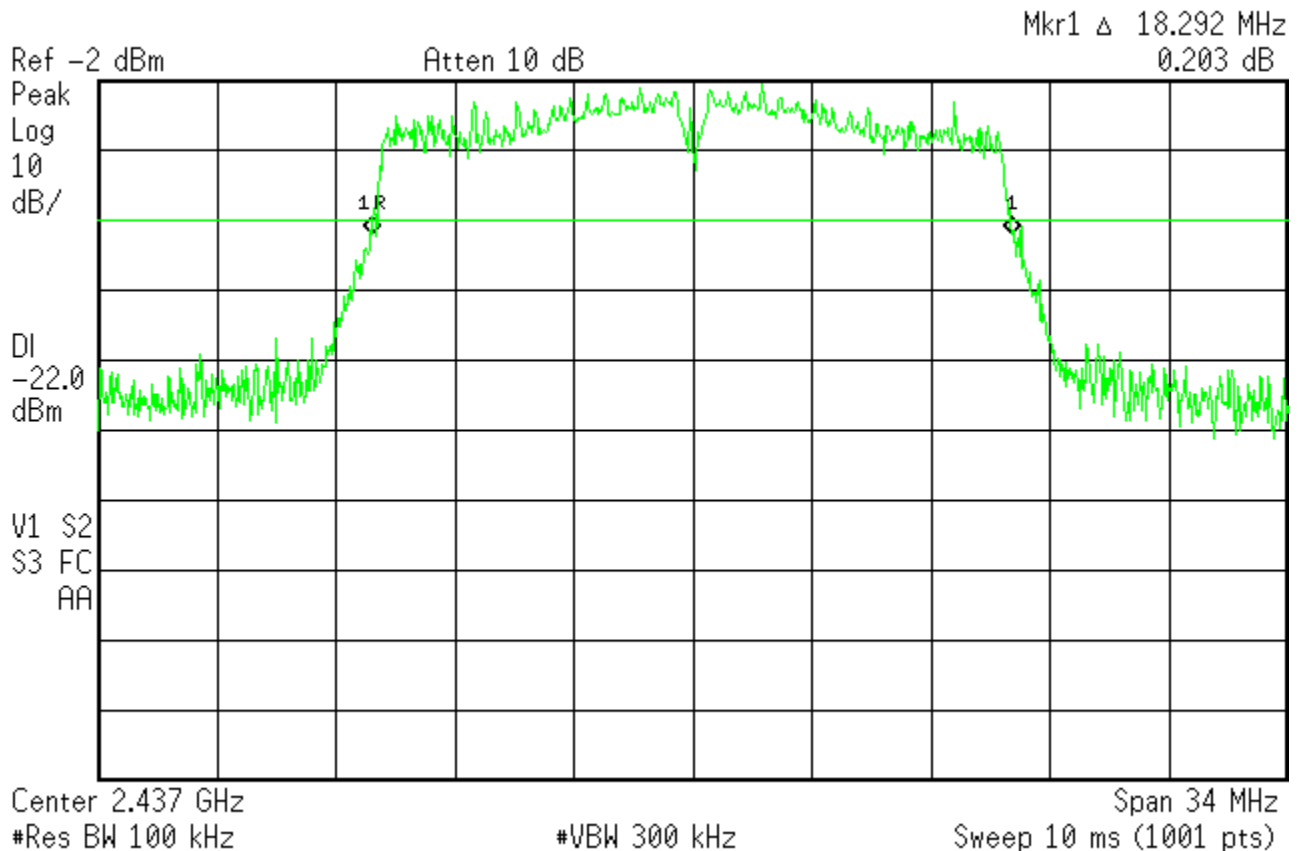
✱ Agilent 12:46:44 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-2-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
6	802.11 n	2437	18.292	500	Pass

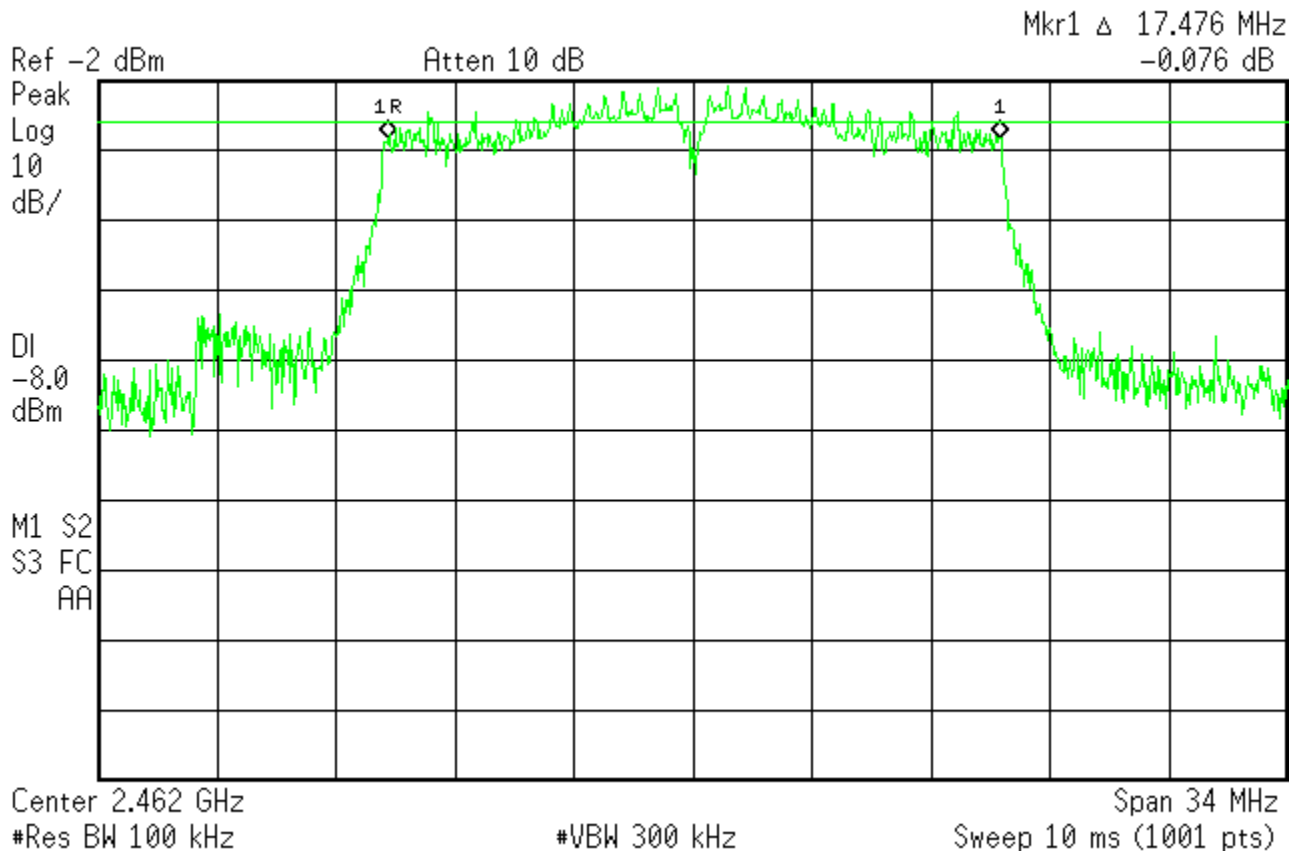
✧ Agilent 12:48:45 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		6 dB Emission Bandwidth	
DNB Job Number:	38044C		Date:	5-20-2013
Customer:	Teledyne			RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature	Relative Humidity		Barometric Pressure	
25°C	40%		99.2kpa	

Channel	Mode	Frequency (MHz)	6dB BW (MHz)	Minimum (kHz)	Result
11	802.11 n	2462	17.476	500	Pass

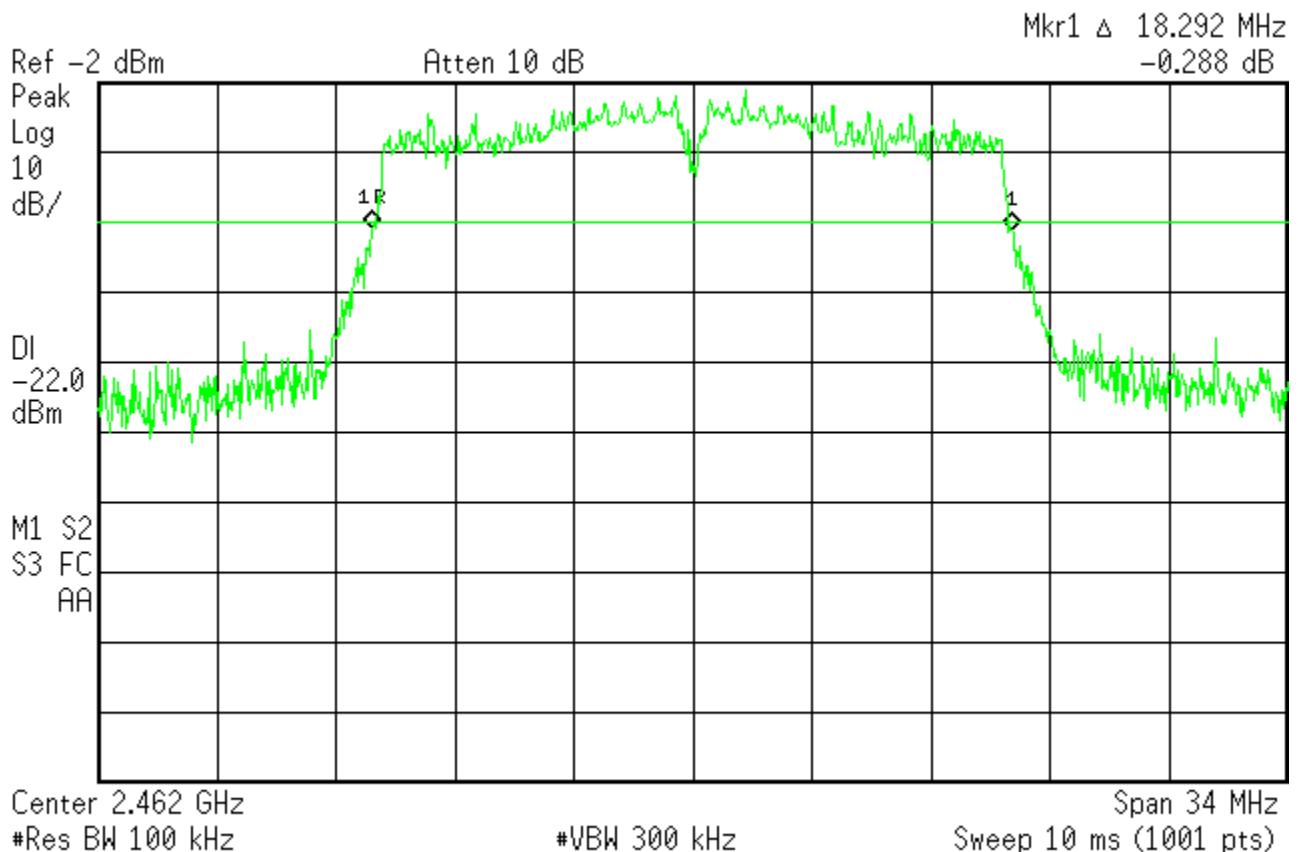
✱ Agilent 13:11:38 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	99% Emission Bandwidth	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne		RSS-210 A8.2(a) 15.247(a,2)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	40%		99.2kpa

Channel	Mode	Frequency (MHz)	99% BW (MHz)	Minimum (kHz)	Result
11	802.11 n	2432	18.292	500	Pass

✱ Agilent 13:04:38 May 20, 2013



15.247(b) (3), RSS-210 A8.4(4) Maximum Peak Output Power (Conducted)
ANSI C63.10 6.10.2.1

Test Procedure:

Connect the spectrum analyzer directly to antenna terminals. Operate EUT with a duty factor equal to or greater than 98%.

Analyzer settings

- 1) Set the RBW and VBW to the maximum available.
- 2) Set the band limits as appropriate for the power measurement.
- 3) Turn averaging off.
- 4) Set sweep to automatic.
- 5) Set the span just large enough to capture the emission.
- 6) Use a peak detector on max hold.
- 7) The analyzer should be in linear display mode.
- 8) Let the emission stabilize before making a final reading.

Bandwidth correction method. Using largest available analyzer RBW, the BW correction factor is $10 \log[(6\text{dB BW or emission})/(\text{analyzer RBW})]$.

Test Setup:

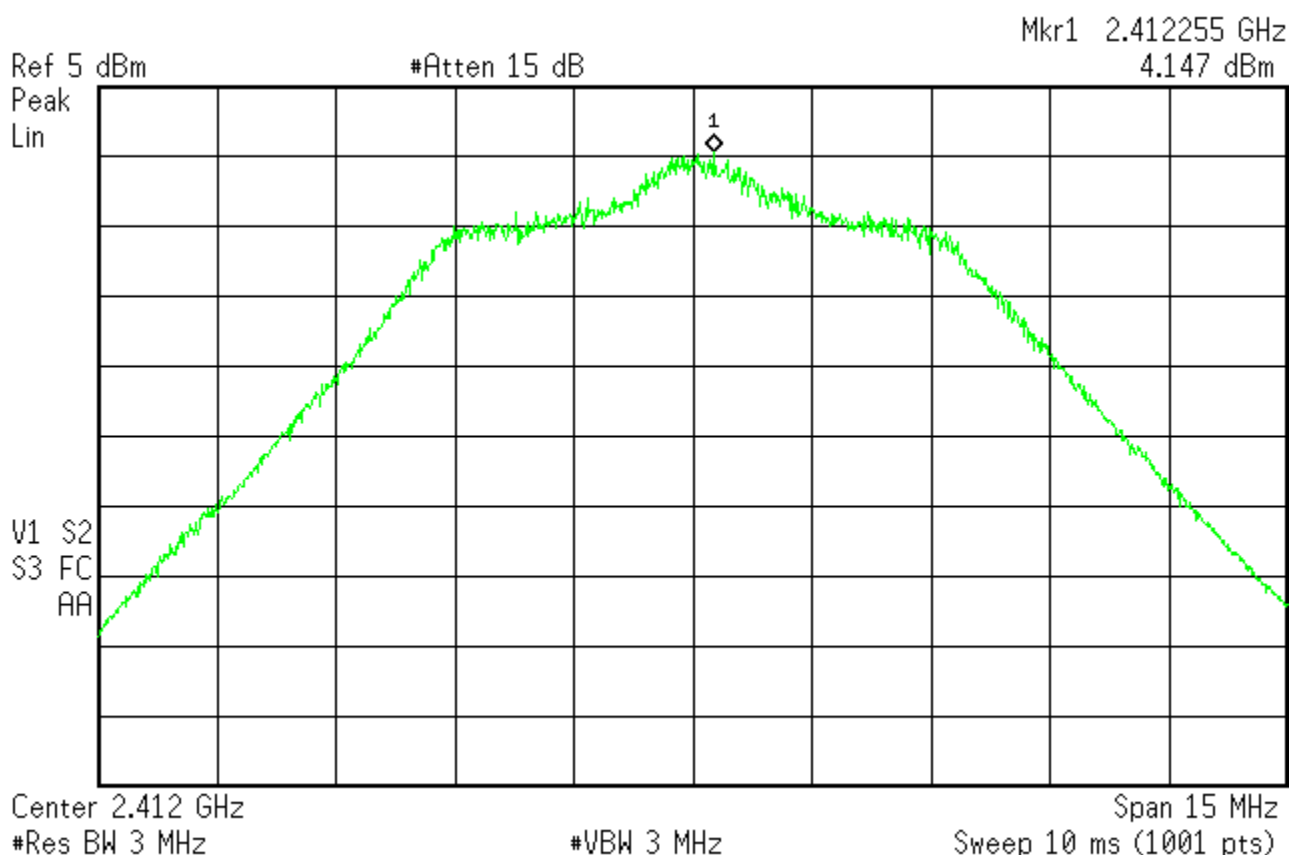


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
1	802.11b	2412	4.15	5.29	9.44	30	-20.56	P

✱ Agilent 14:24:57 May 30, 2013

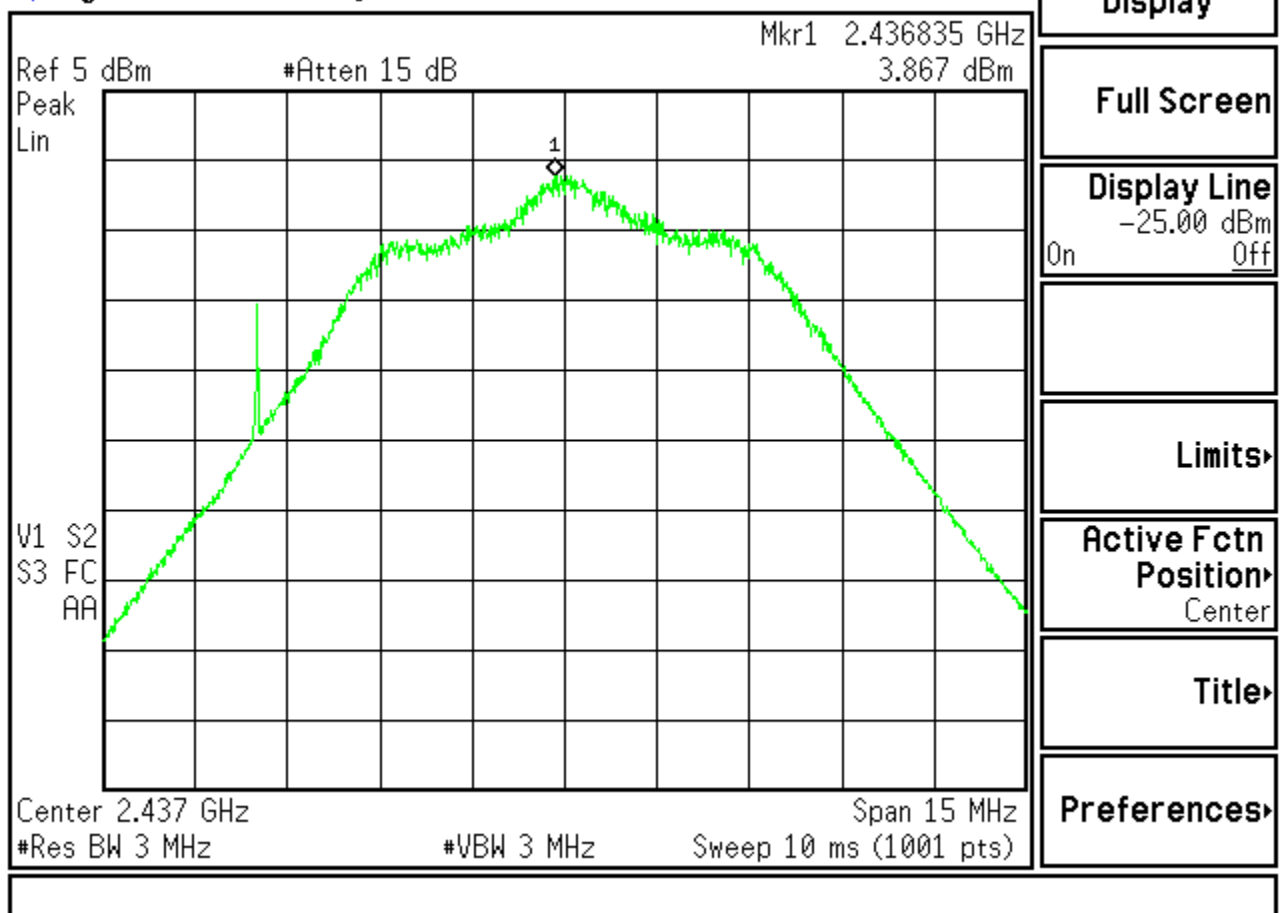


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
6	802.11b	2437	3.87	5.29	9.16	30	-20.84	P

✱ Agilent 14:18:08 May 30, 2013

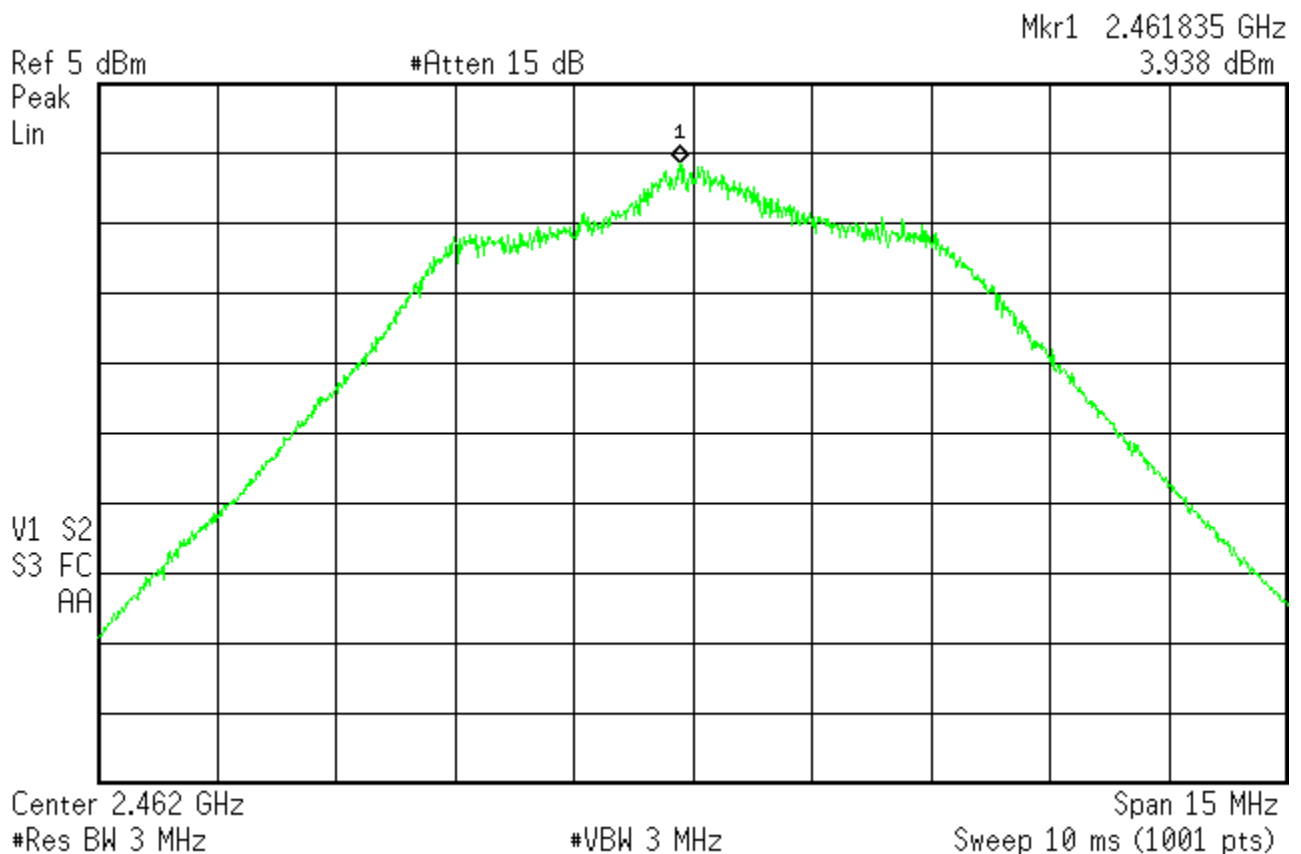


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Peak Output Power (Conducted)	
	DNB Job Number:	38044C	Date:	5-30-2013
	Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
	Model Number:	S20	Specification:	
	Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
11	802.11b	2462	3.94	5.29	9.23	30	-20.77	P

✱ Agilent 14:08:29 May 30, 2013

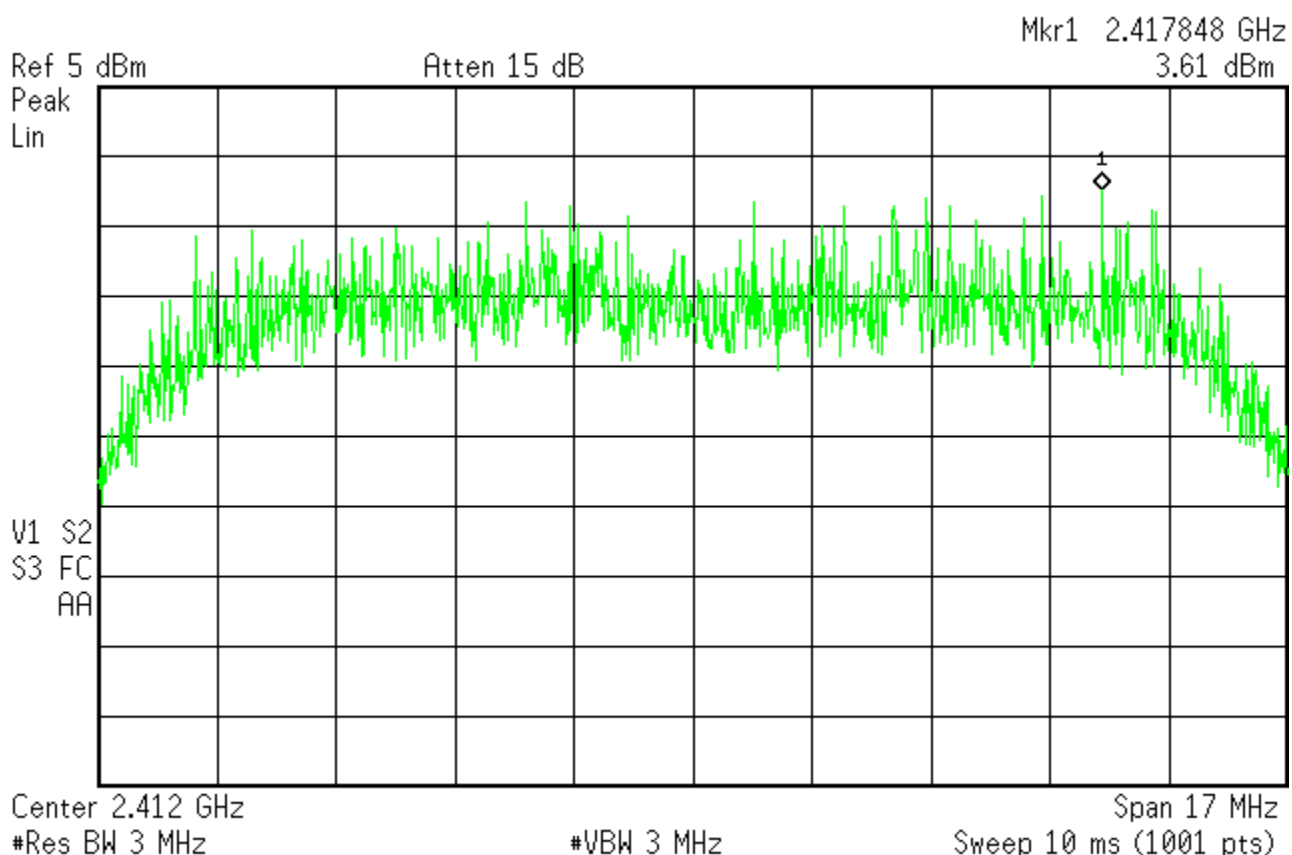


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
1	802.11g	2412	3.61	7.37	10.98	30	-19.02	P

✱ Agilent 15:25:18 May 30, 2013

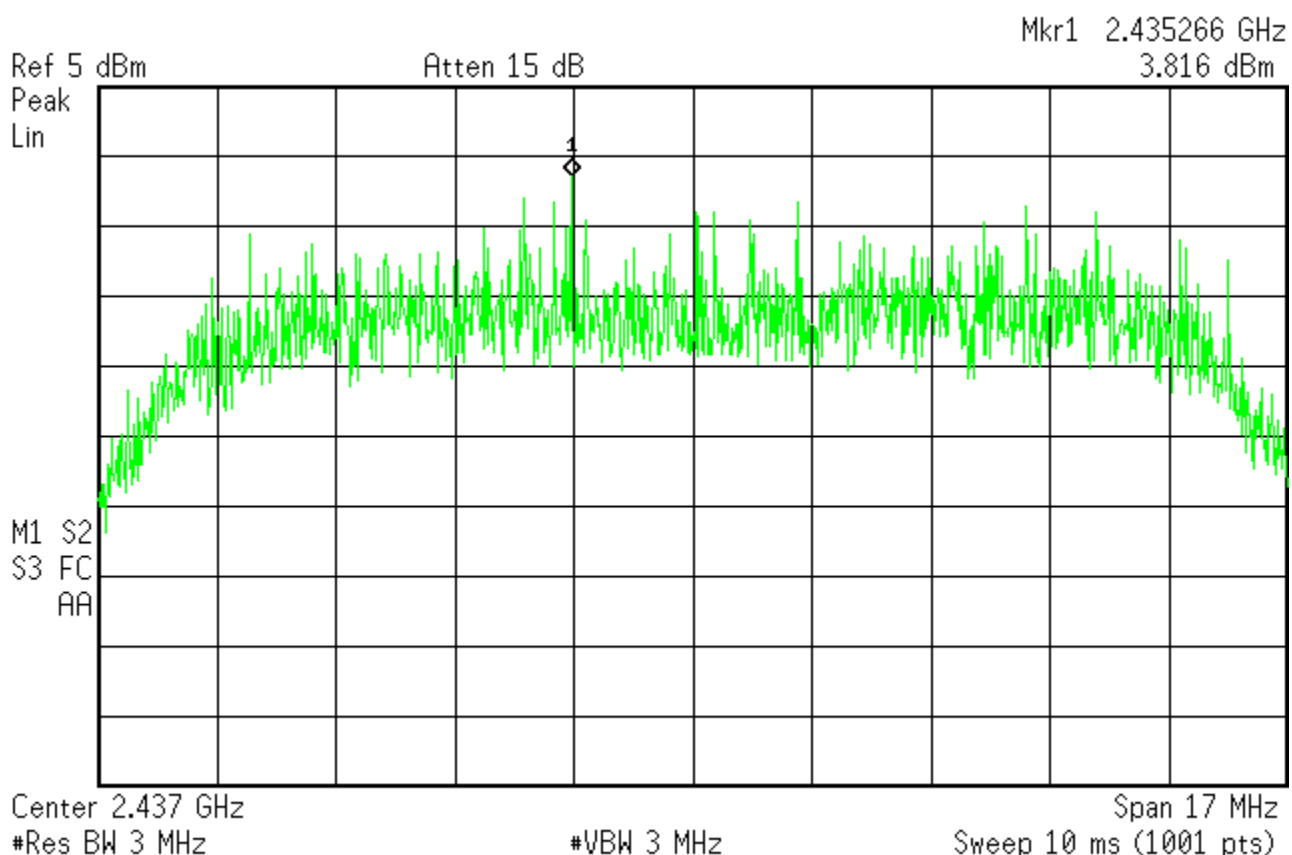


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210
Model Number:	S20	Specification:	A8.4(4)
Description:	Oceanographic Measurement Instrument		15.247(b, 3)

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
6	802.11g	2437	3.82	7.37	11.19	30	-18.81	P

✱ Agilent 15:32:40 May 30, 2013

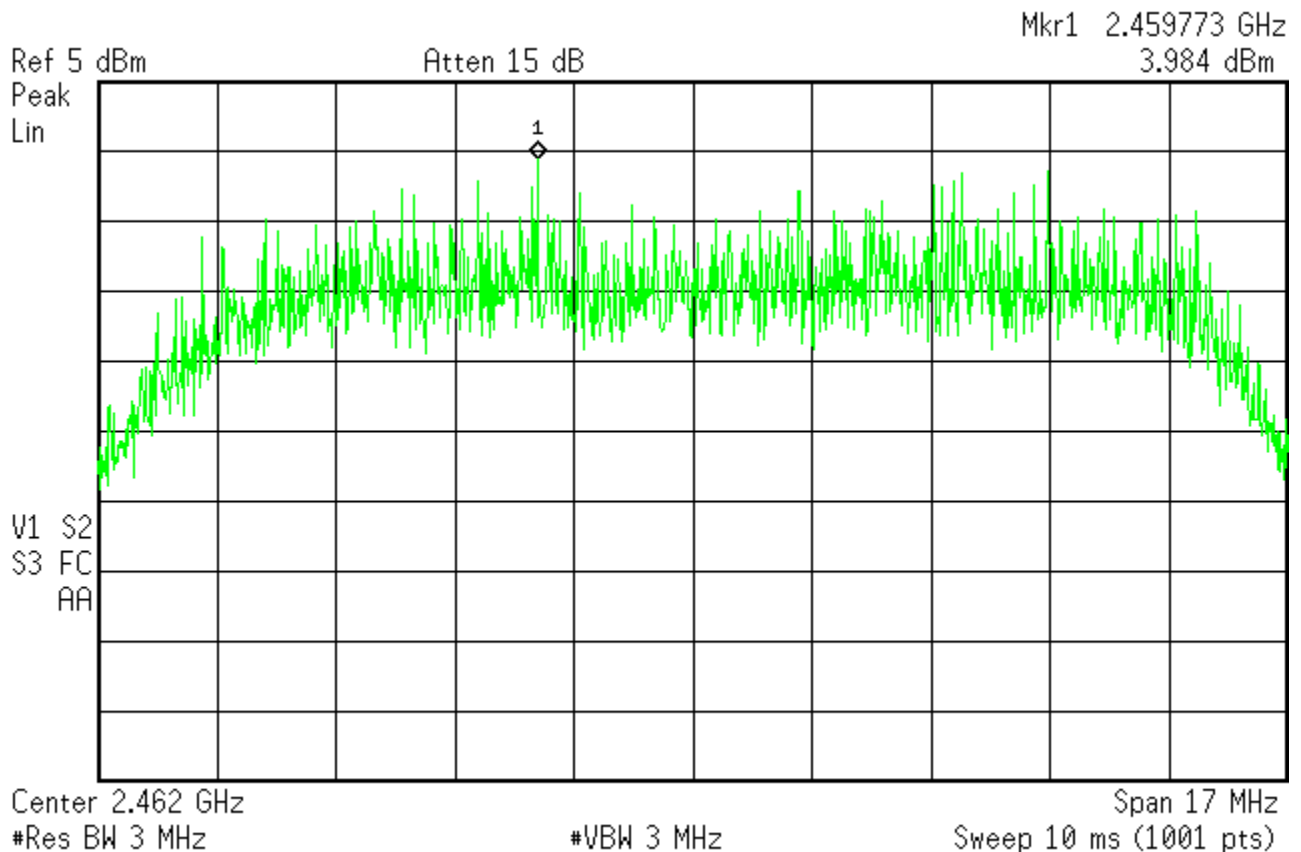


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
11	802.11g	2462	3.98	7.37	11.35	30	-18.65	P

✱ Agilent 15:38:44 May 30, 2013

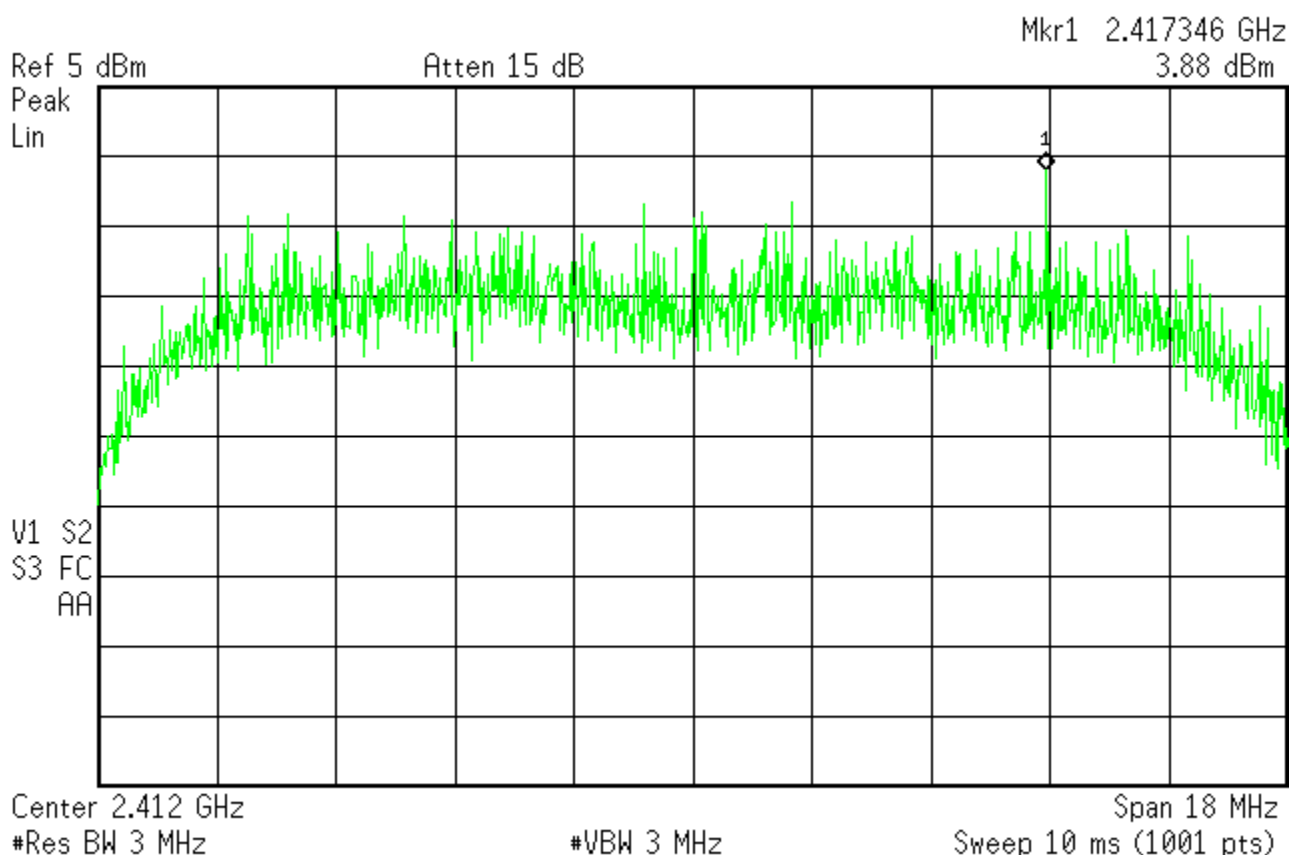


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210
Model Number:	S20	Specification:	A8.4(4)
Description:	Oceanographic Measurement Instrument		15.247(b, 3)

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
1	802.11n	2412	3.88	7.66	11.54	30	-18.46	P

✱ Agilent 16:03:55 May 30, 2013

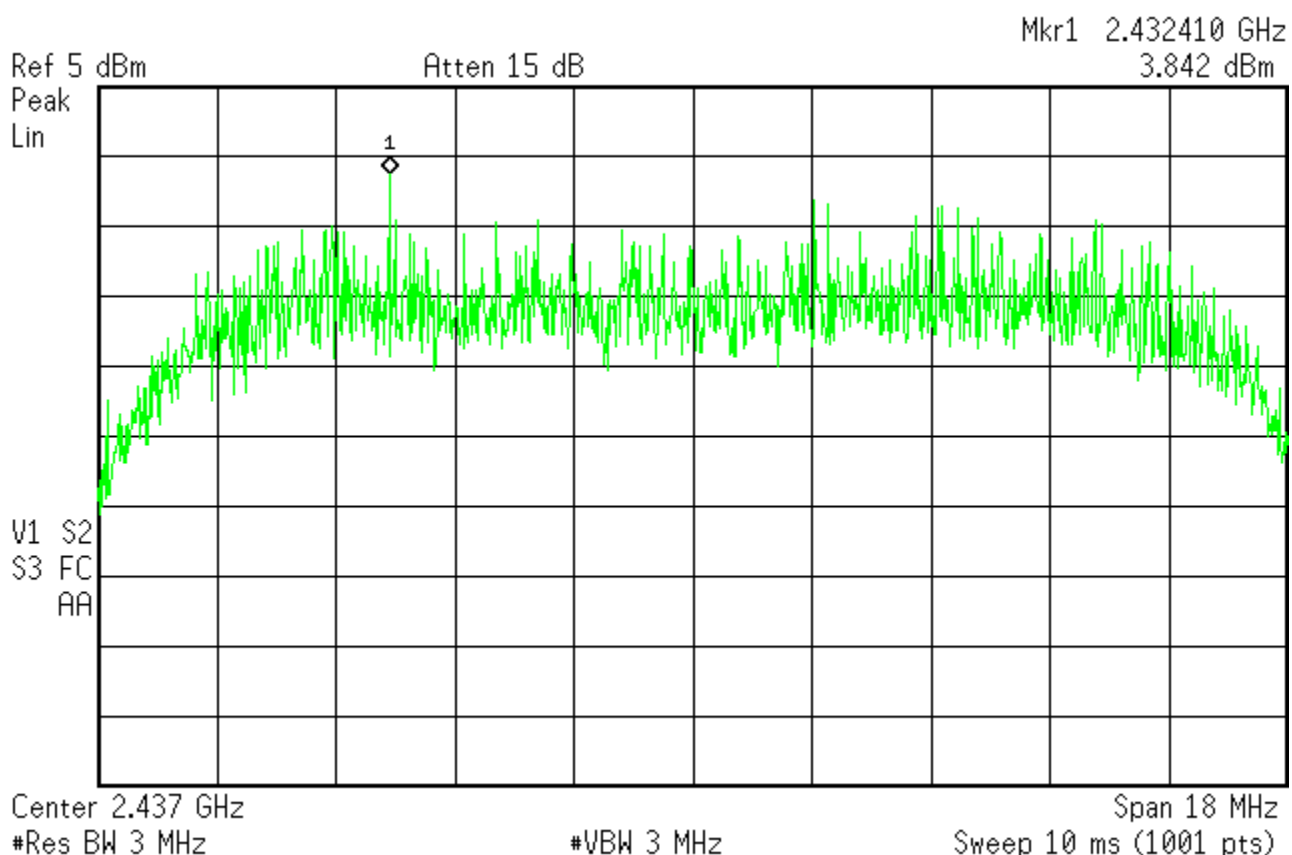


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
6	802.11n	2437	3.84	7.66	11.5	30	-18.5	P

✱ Agilent 15:58:37 May 30, 2013

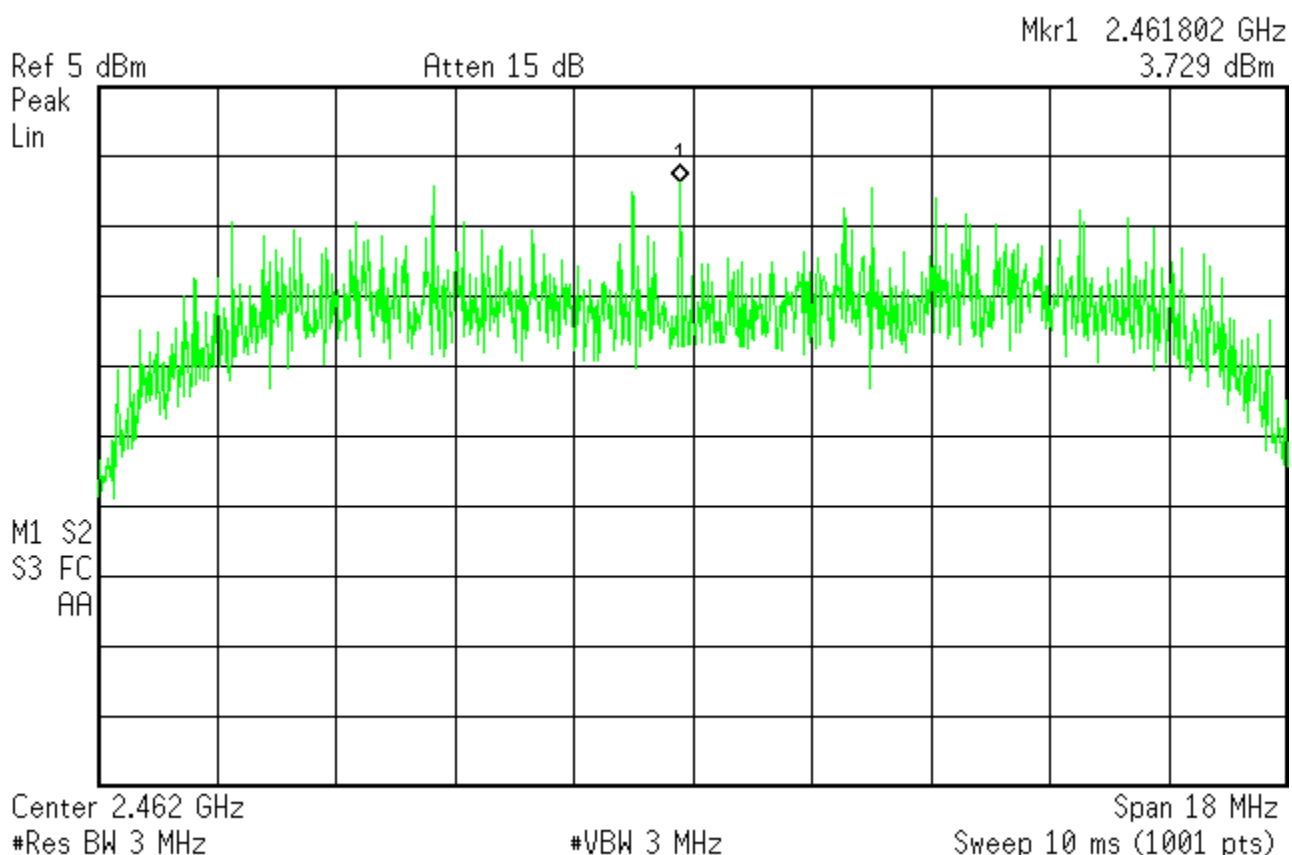


	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Peak Output Power (Conducted)	
DNB Job Number:	38044C	Date:	5-30-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.4(4) 15.247(b, 3)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		

Environmental conditions		
Ambient Temperature	Relative Humidity	Barometric Pressure
22°C	47%	99.7kPa

Channel	Mode	Frequency (MHz)	Meter reading(dBm)	Correction Factor(dB)	Corrected (dBm)	Limit	Delta	P/F
11	802.11n	2462	3.73	7.66	11.39	30	-18.61	P

✱ Agilent 15:52:53 May 30, 2013



15.247(c), RSS-210 A8.5 Spurious RF Conducted Emissions
ANSI C63.10 6.7

Use the following spectrum analyzer settings:

Span	=	Wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g. harmonics) from the lowest frequency generated in the EUT up through the 10 th harmonic. Typically, several plots are required to cover this entire span.
RBW	=	100kHz
VBW	=	100kHz
Sweep	=	auto
Detector	=	peak
Trace	=	max. hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

Requirement: The maximum out-of-band emissions shall not exceed 20dBc

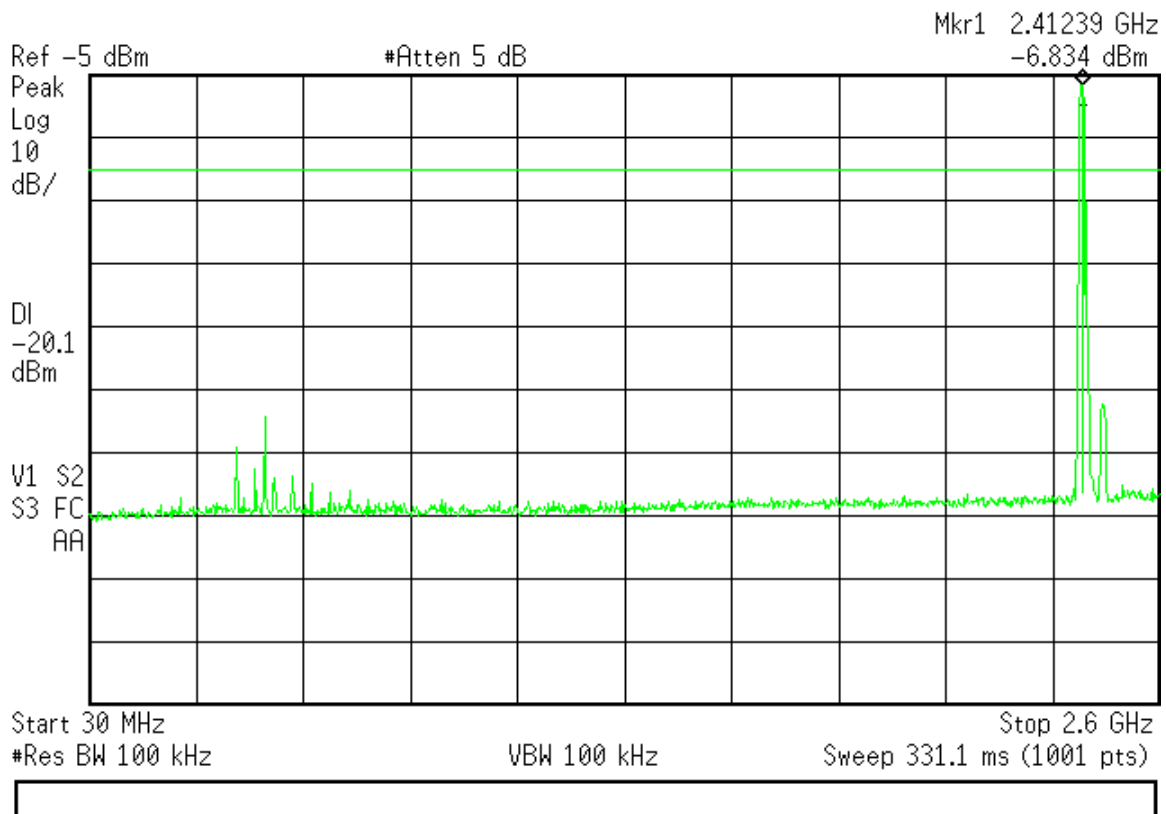
Test Setup:



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 b	2412	30 – 2600	Pass

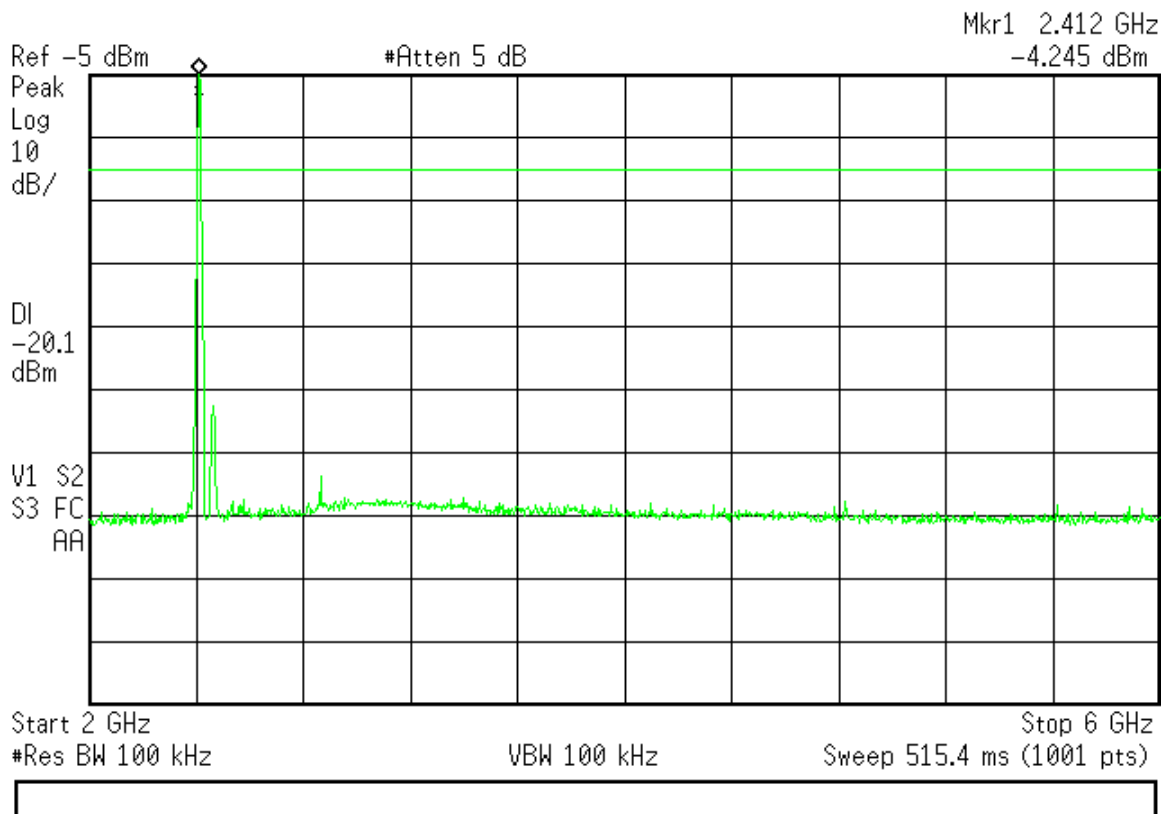
Agilent 14:57:56 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 b	2412	2000 – 6000	Pass

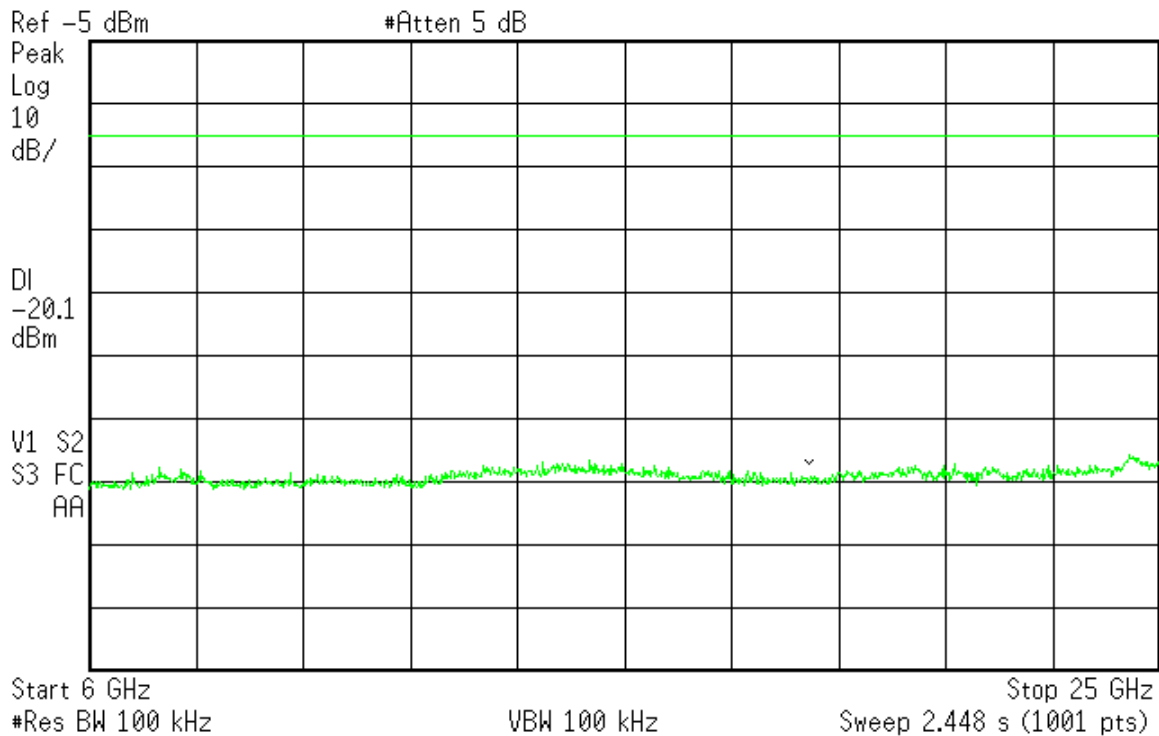
Agilent 15:04:47 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 b	2412	6000 – 25000	Pass

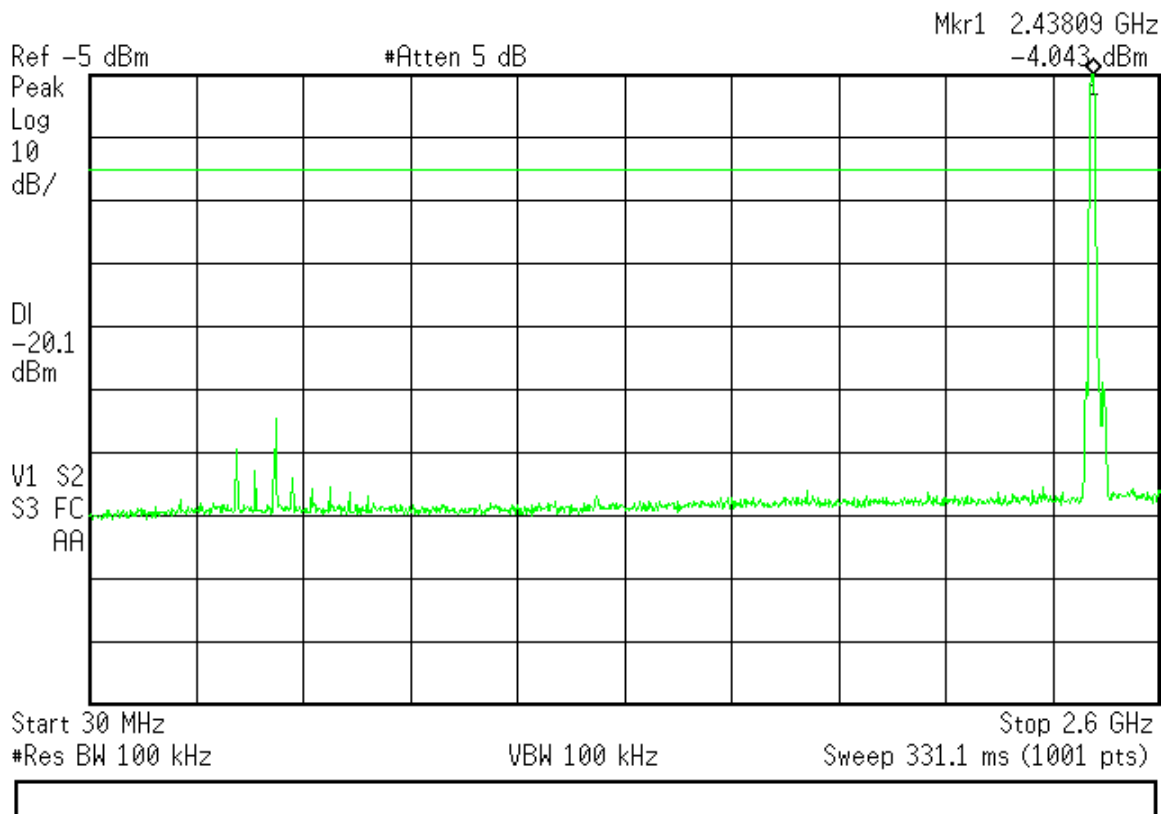
✱ Agilent 15:58:12 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 b	2437	30 – 2600	Pass

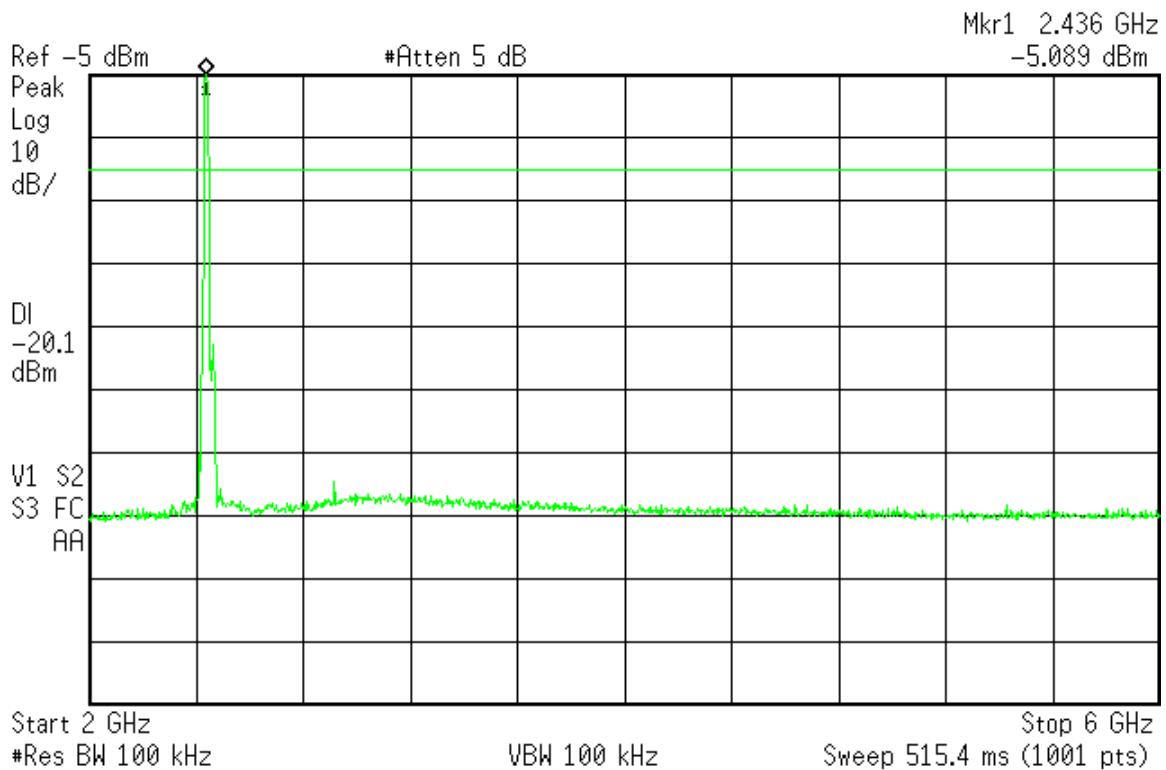
Agilent 14:54:38 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 b	2437	2000 – 6000	Pass

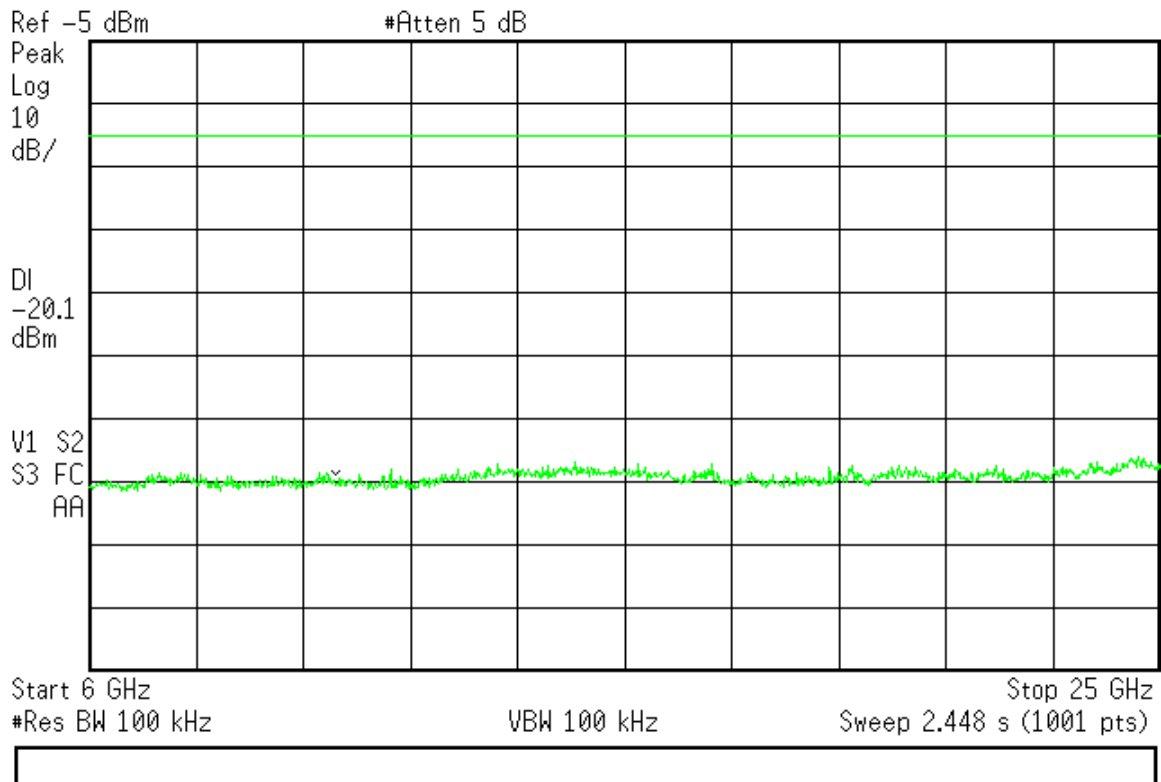
✧ Agilent 15:13:51 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 b	2437	6000 - 25000	Pass

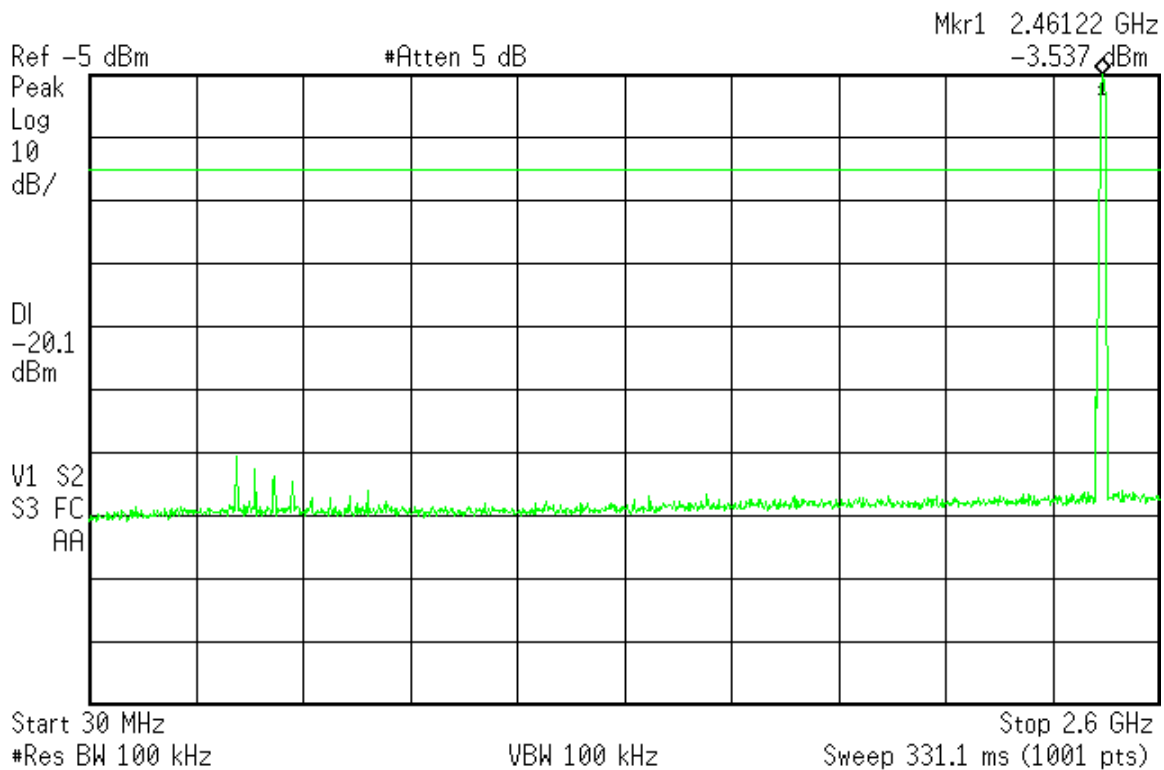
✱ Agilent 16:01:21 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 b	2462	30 – 2600	Pass

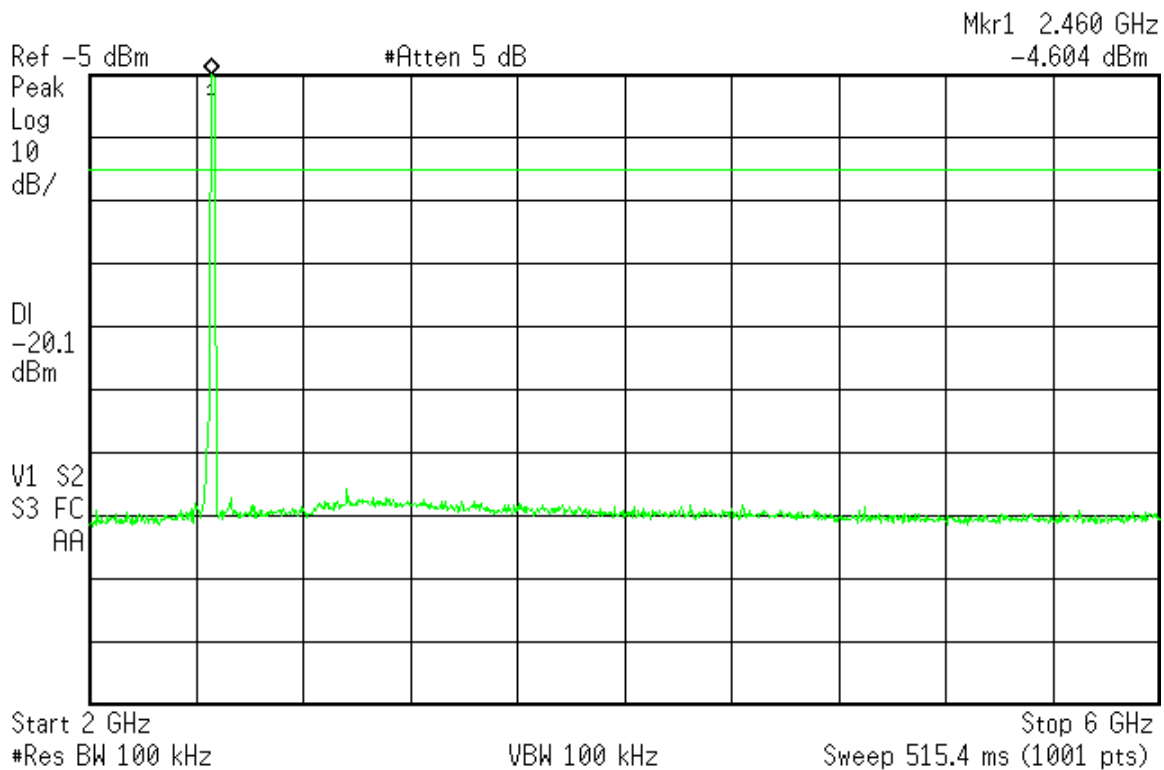
✧ Agilent 14:52:06 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 b	2462	2000 – 6000	Pass

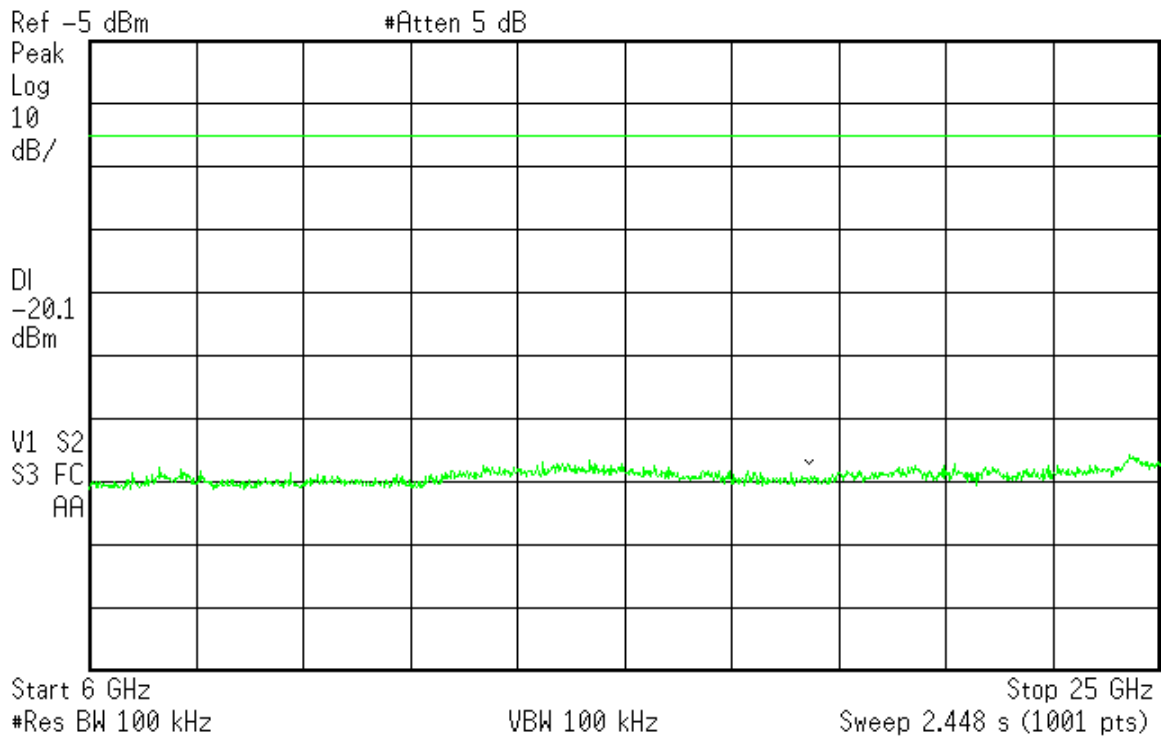
✱ Agilent 15:18:49 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	2-19-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 b	2462	6000 - 25000	Pass

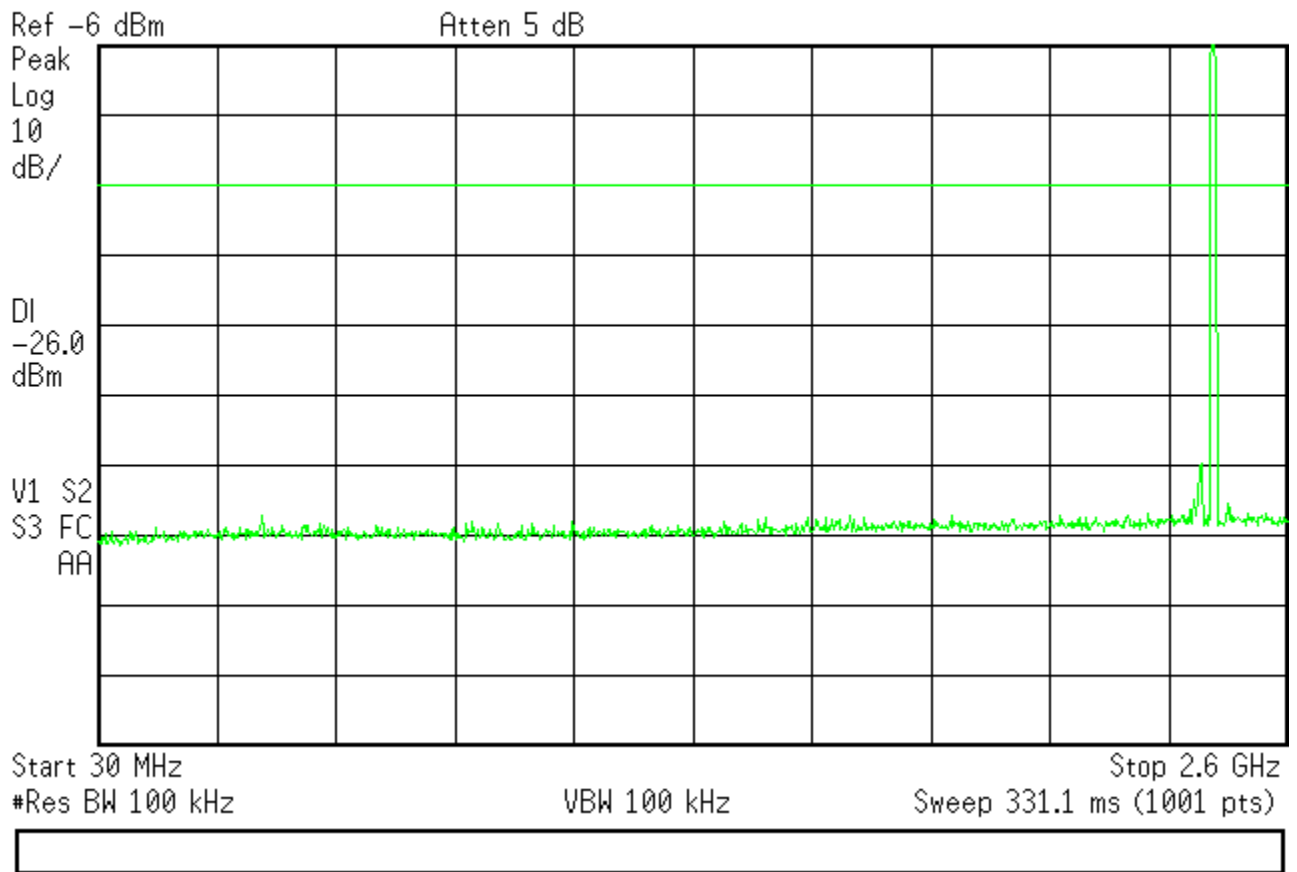
✱ Agilent 15:58:12 Feb 19, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 g	2412	30 – 2600	Pass

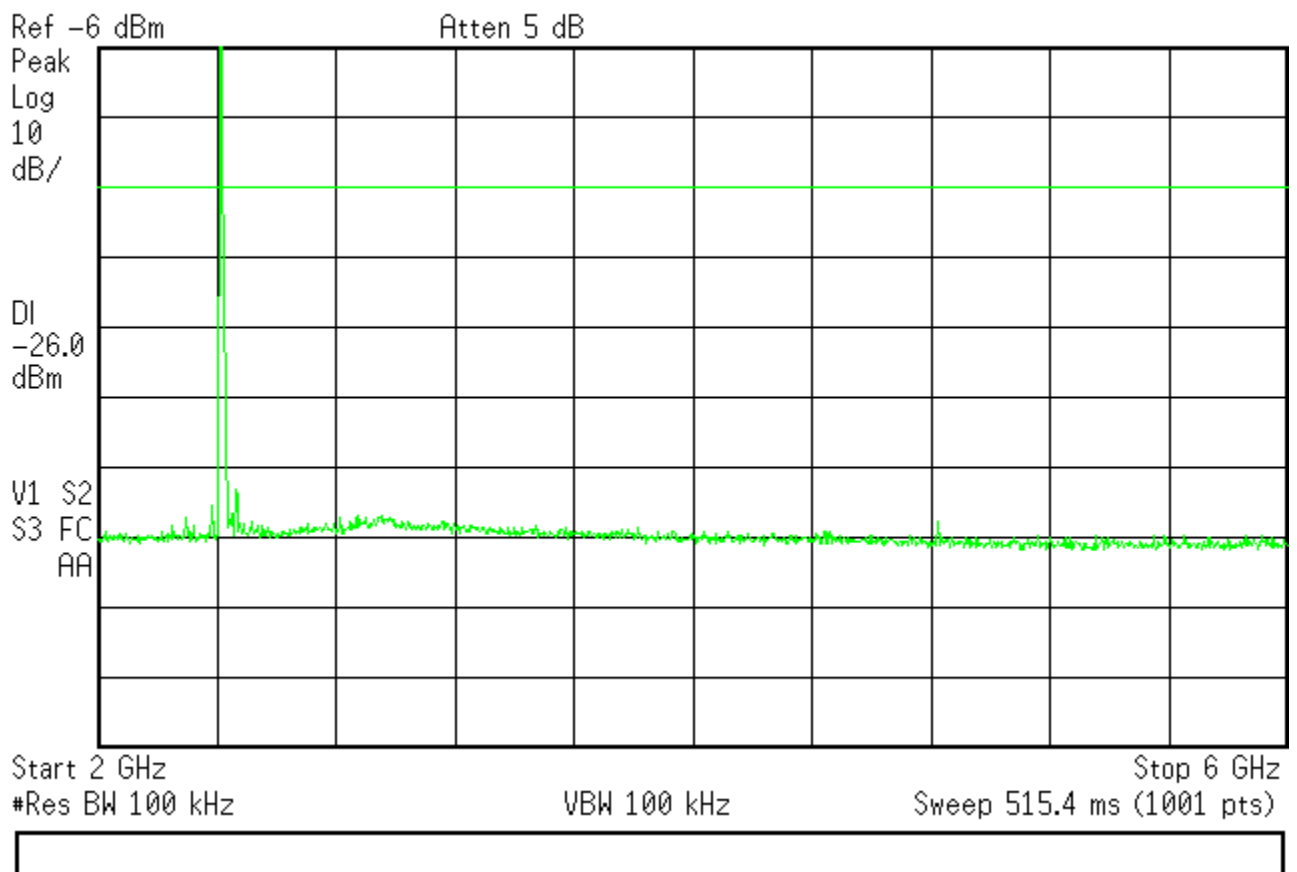
✱ Agilent 09:22:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 g	2412	2000 – 6000	Pass

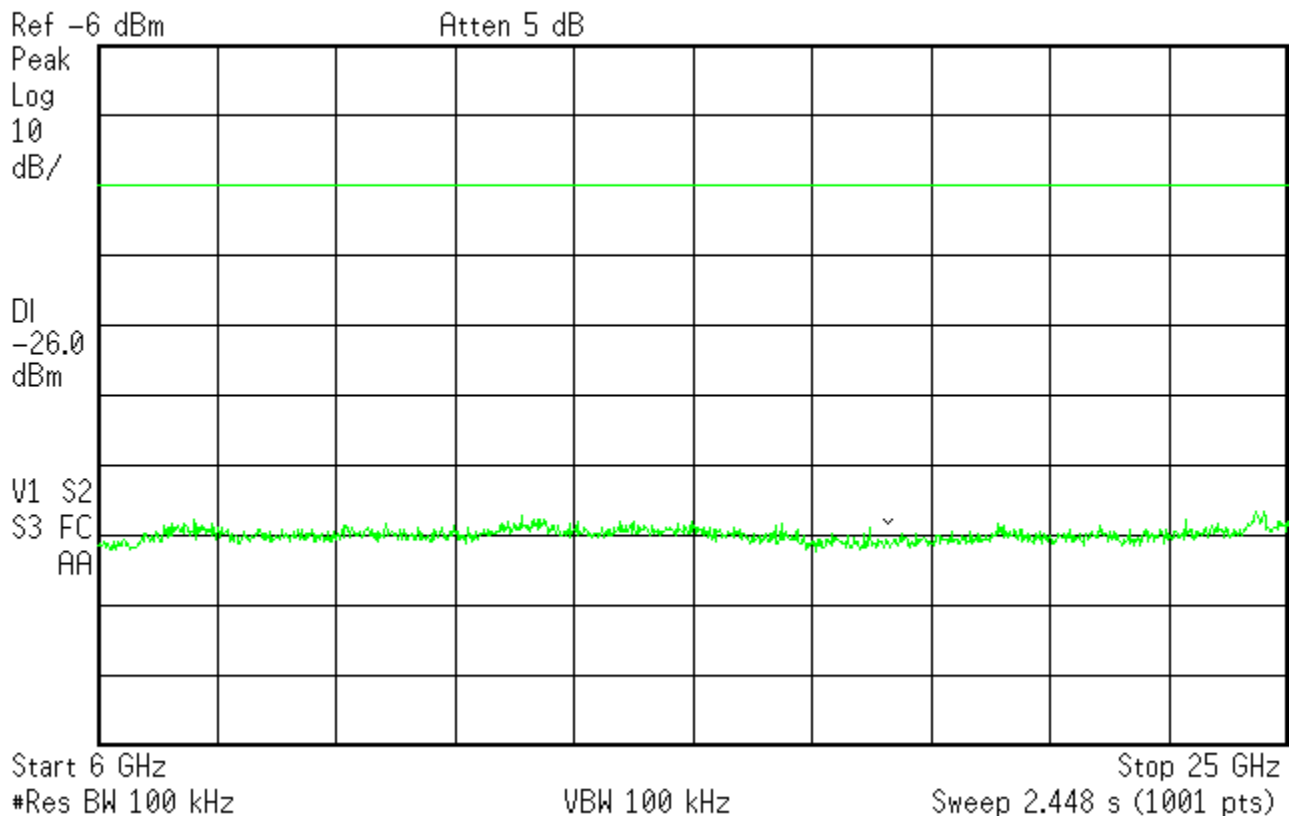
* Agilent 09:19:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 g	2412	6000 – 25000	Pass

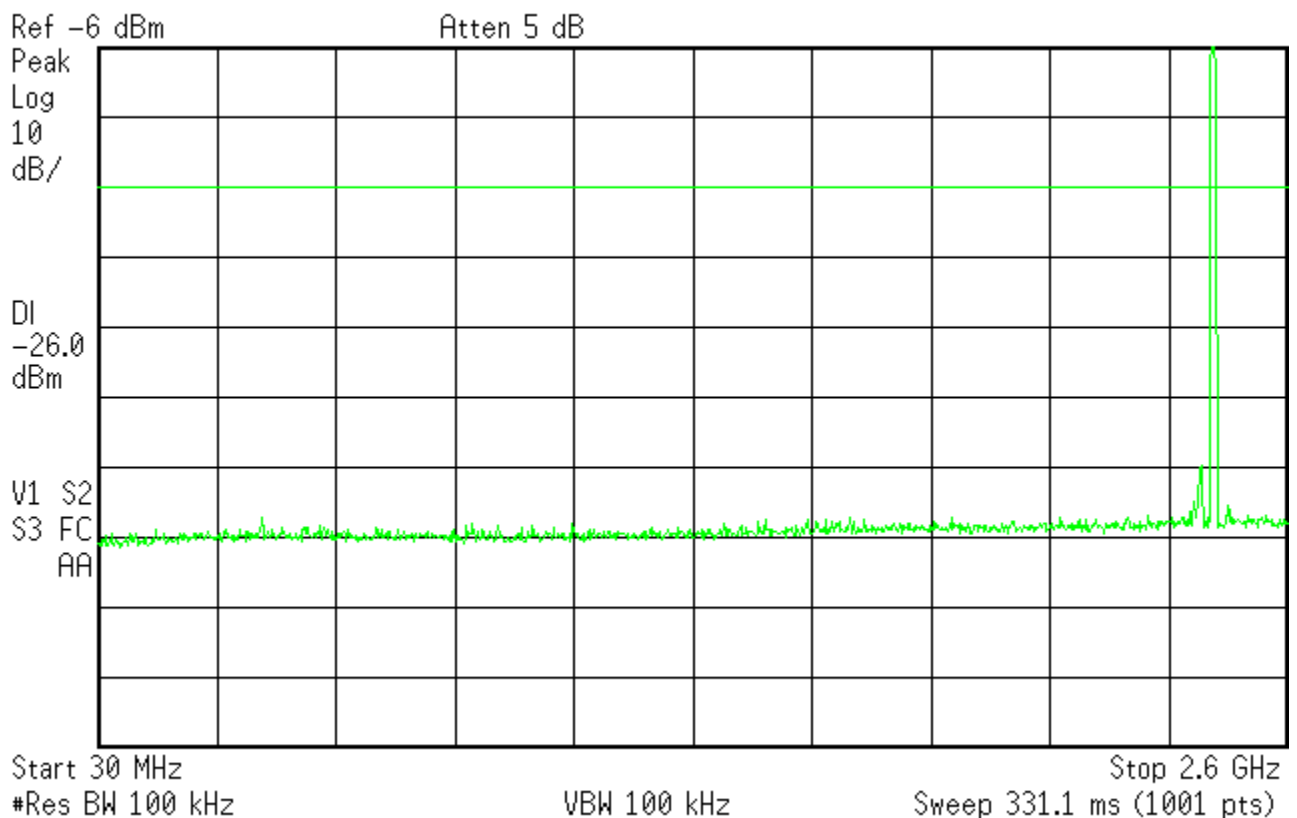
✱ Agilent 09:18:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 g	2437	30 – 2600	Pass

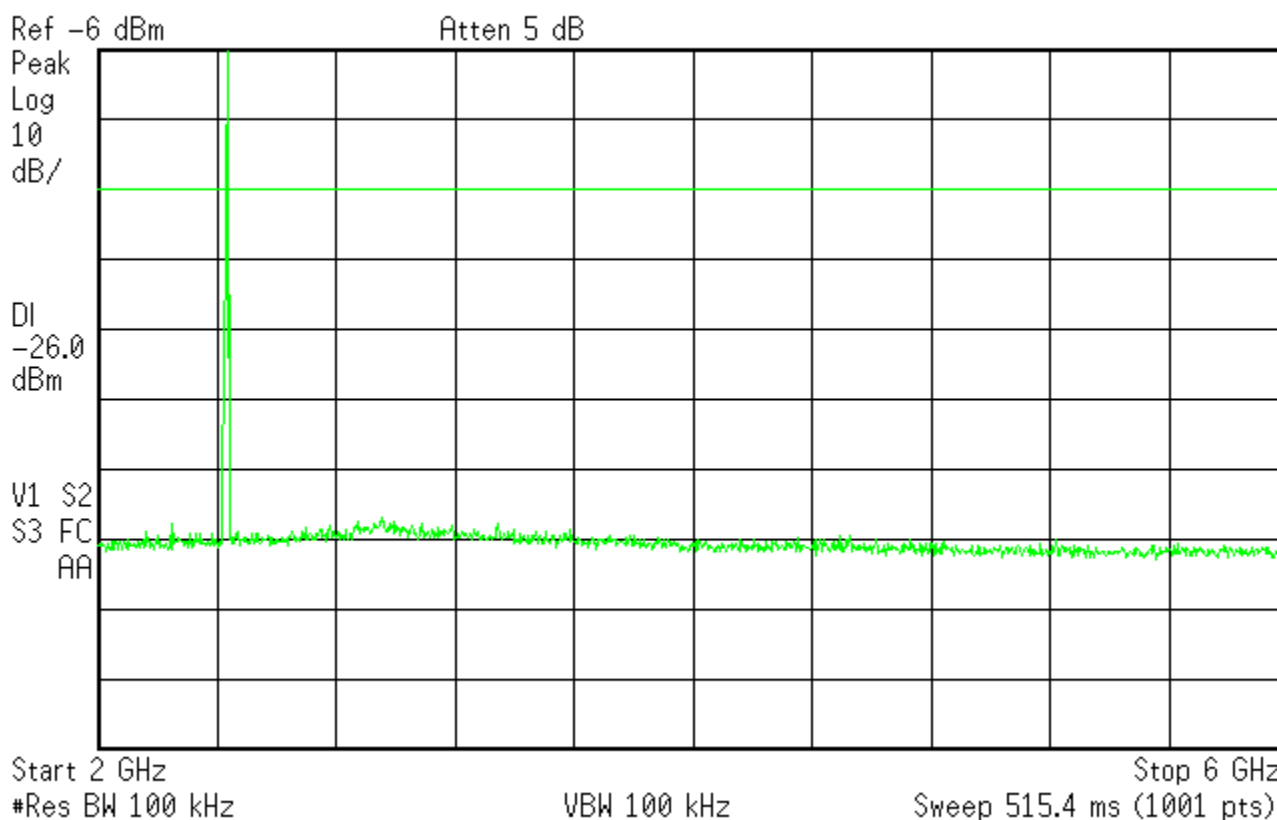
✱ Agilent 09:22:13 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity	Barometric Pressure	
25°C	39%	98.9kPa	

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 g	2437	2000 – 6000	Pass

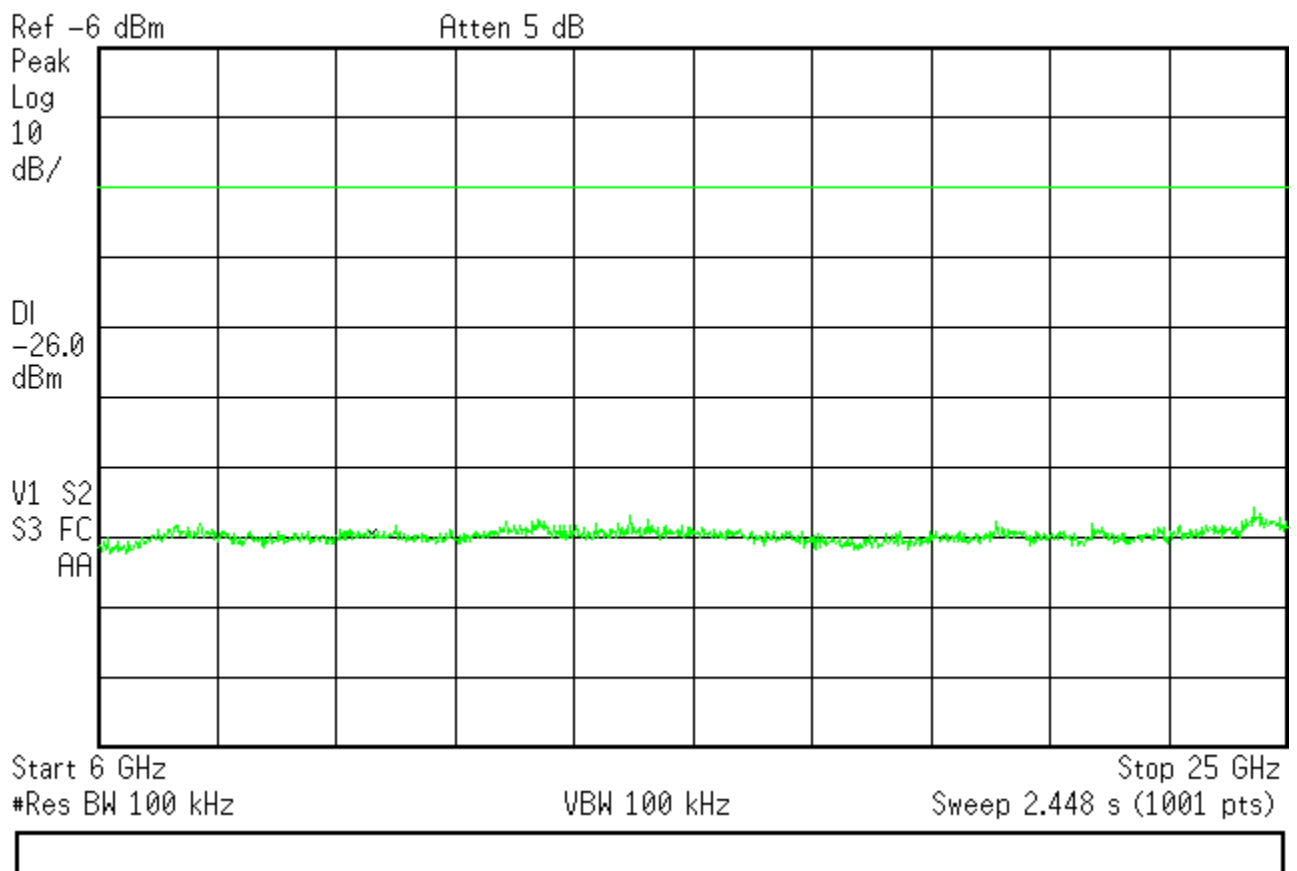
✱ Agilent 09:23:04 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 g	2437	6000 - 25000	Pass

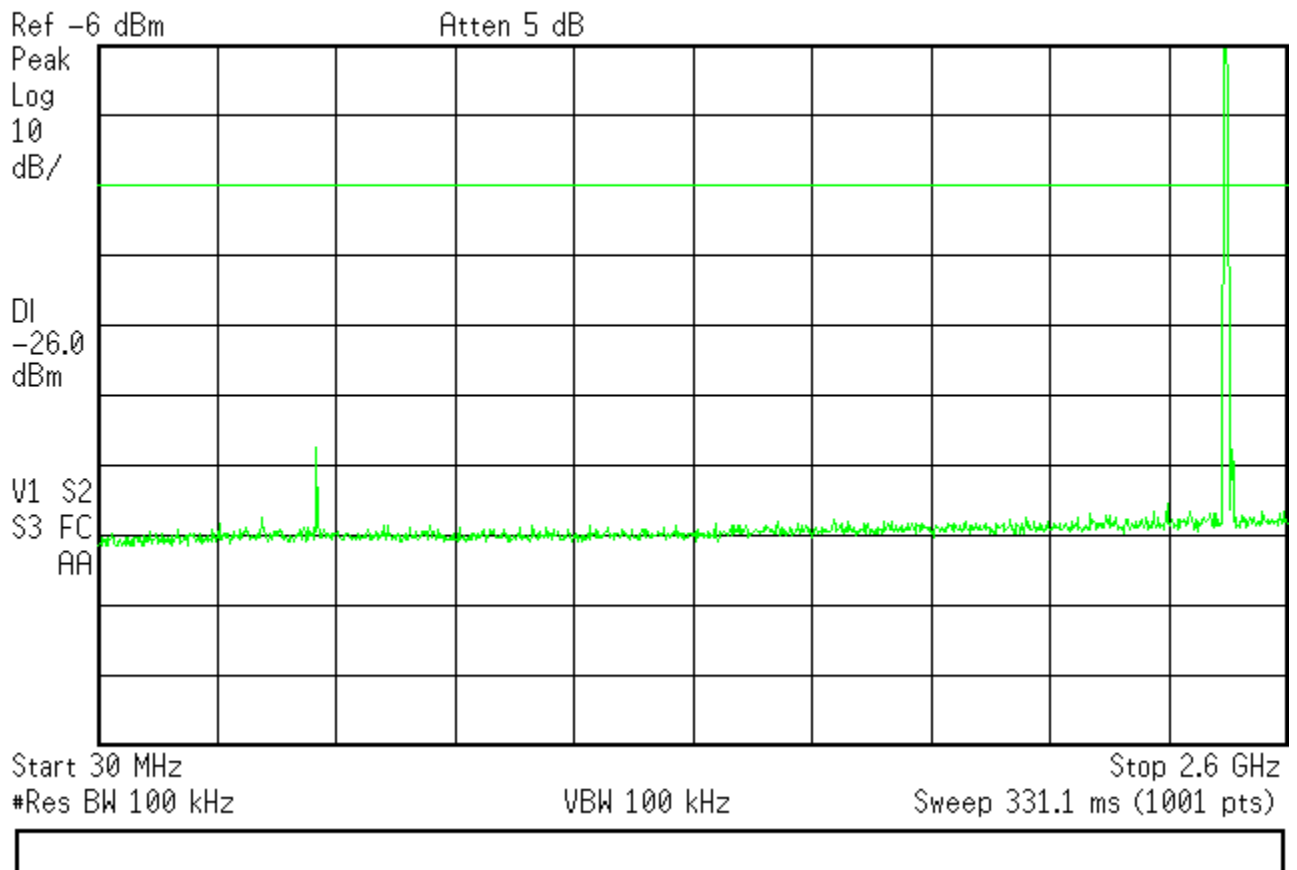
✱ Agilent 09:24:24 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 g	2462	30 – 2600	Pass

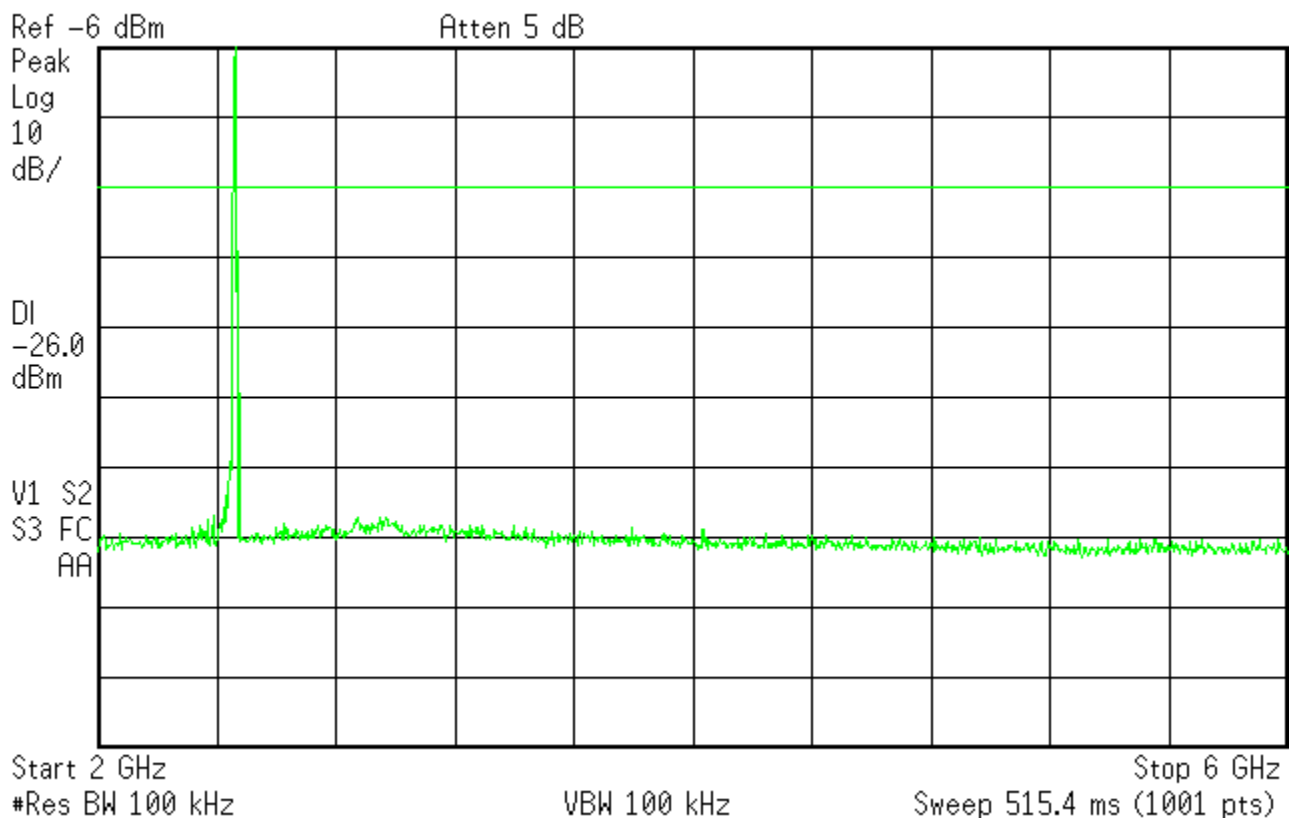
* Agilent 09:30:10 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 g	2462	2000 – 6000	Pass

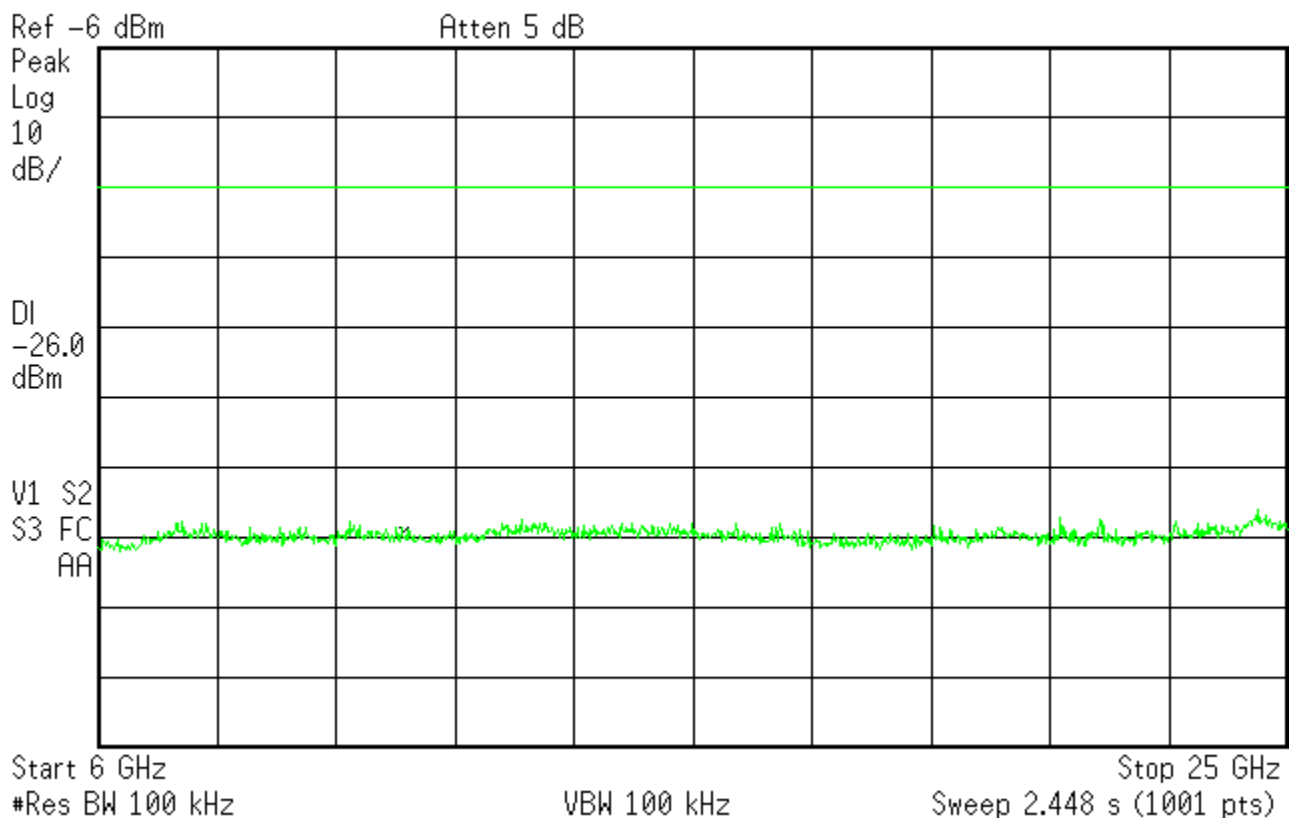
✱ Agilent 09:27:44 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 g	2462	6000 - 25000	Pass

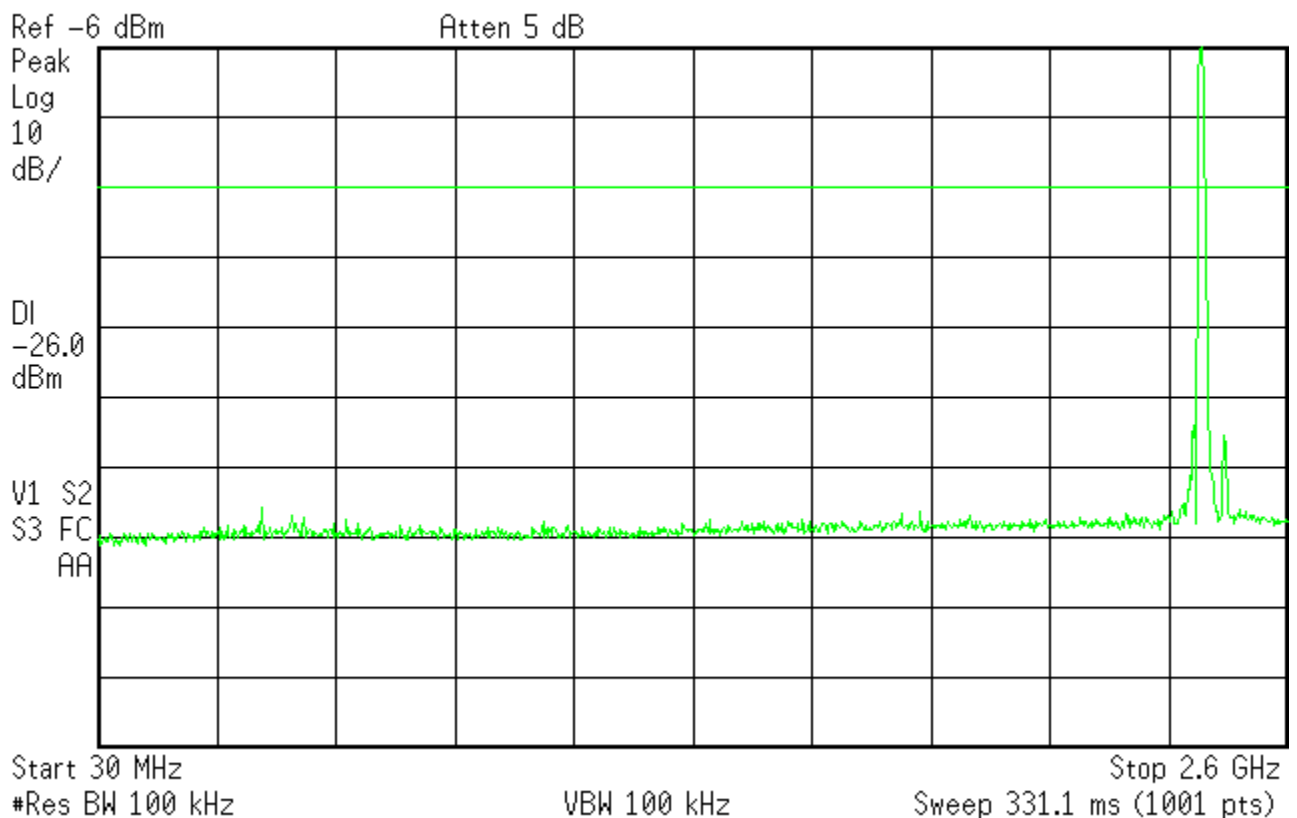
✱ Agilent 09:26:39 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 n	2412	30 – 2600	Pass

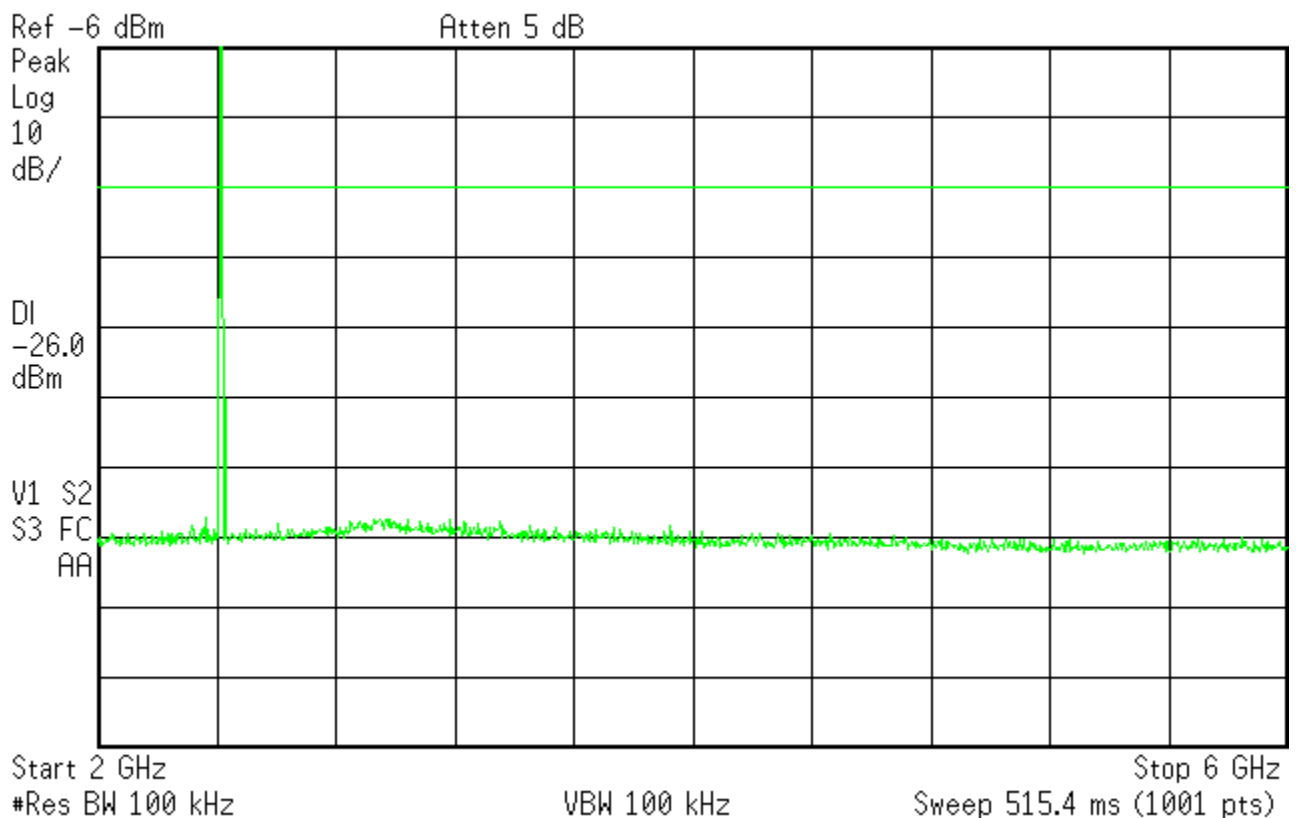
✱ Agilent 09:04:36 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 n	2412	2000 – 6000	Pass

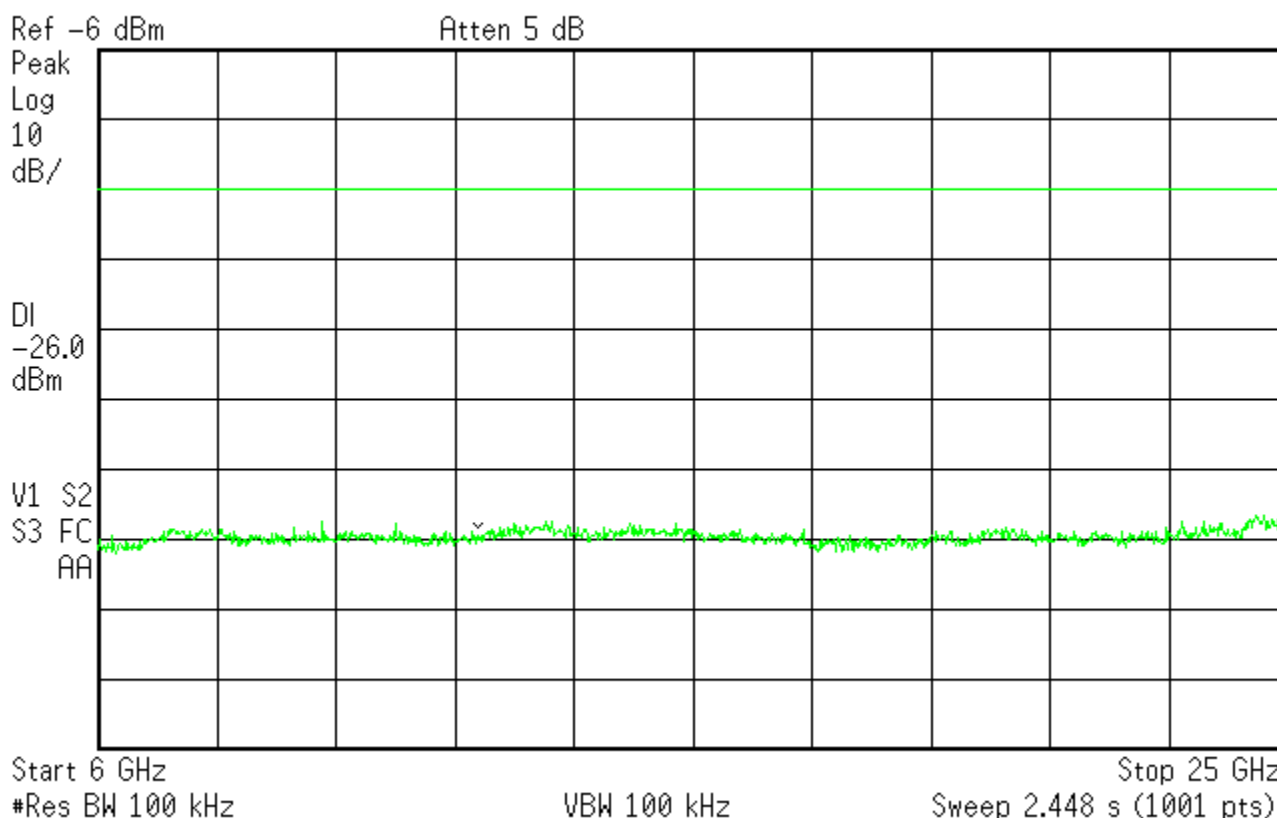
* Agilent 09:05:45 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity	Barometric Pressure	
25°C	39%	98.9kPa	

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
1	802.11 n	2412	6000 – 25000	Pass

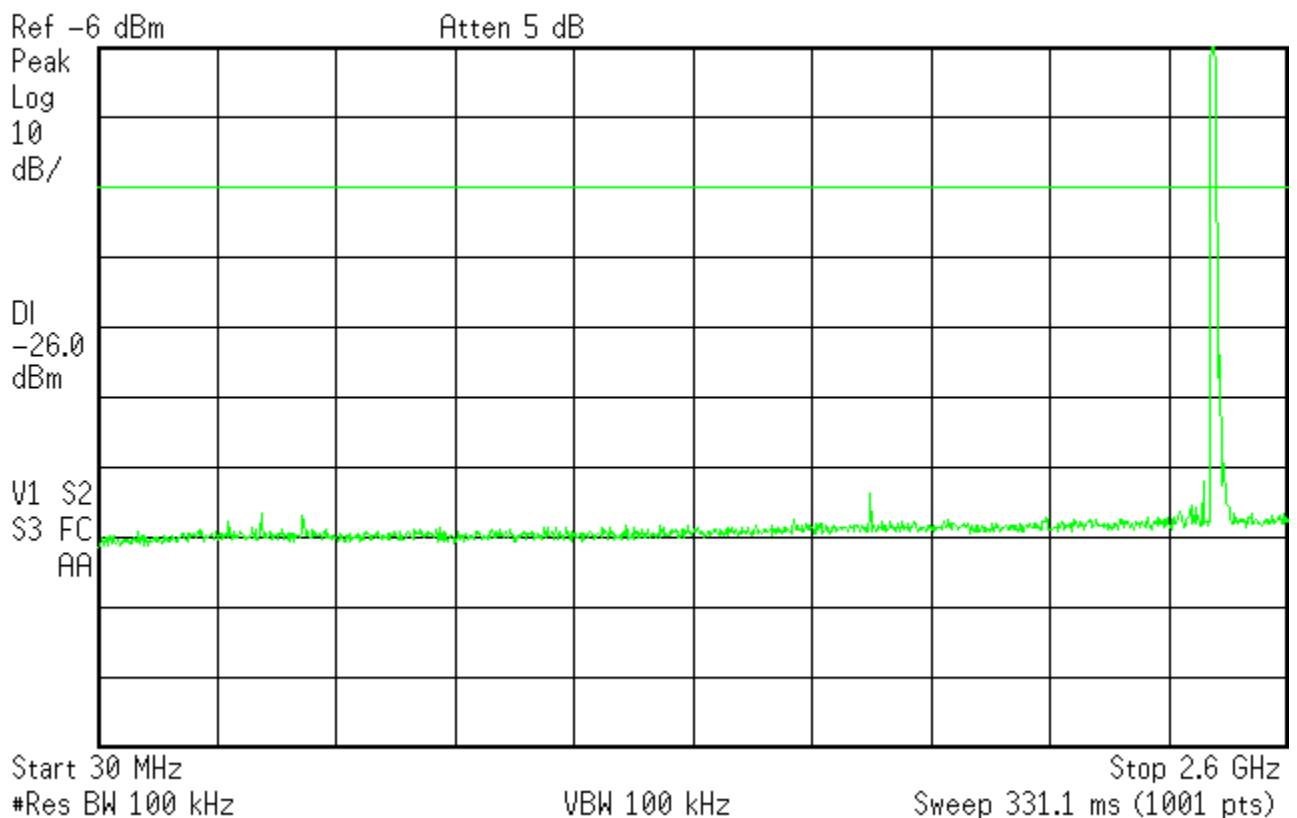
✱ Agilent 09:07:27 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 n	2437	30 – 2600	Pass

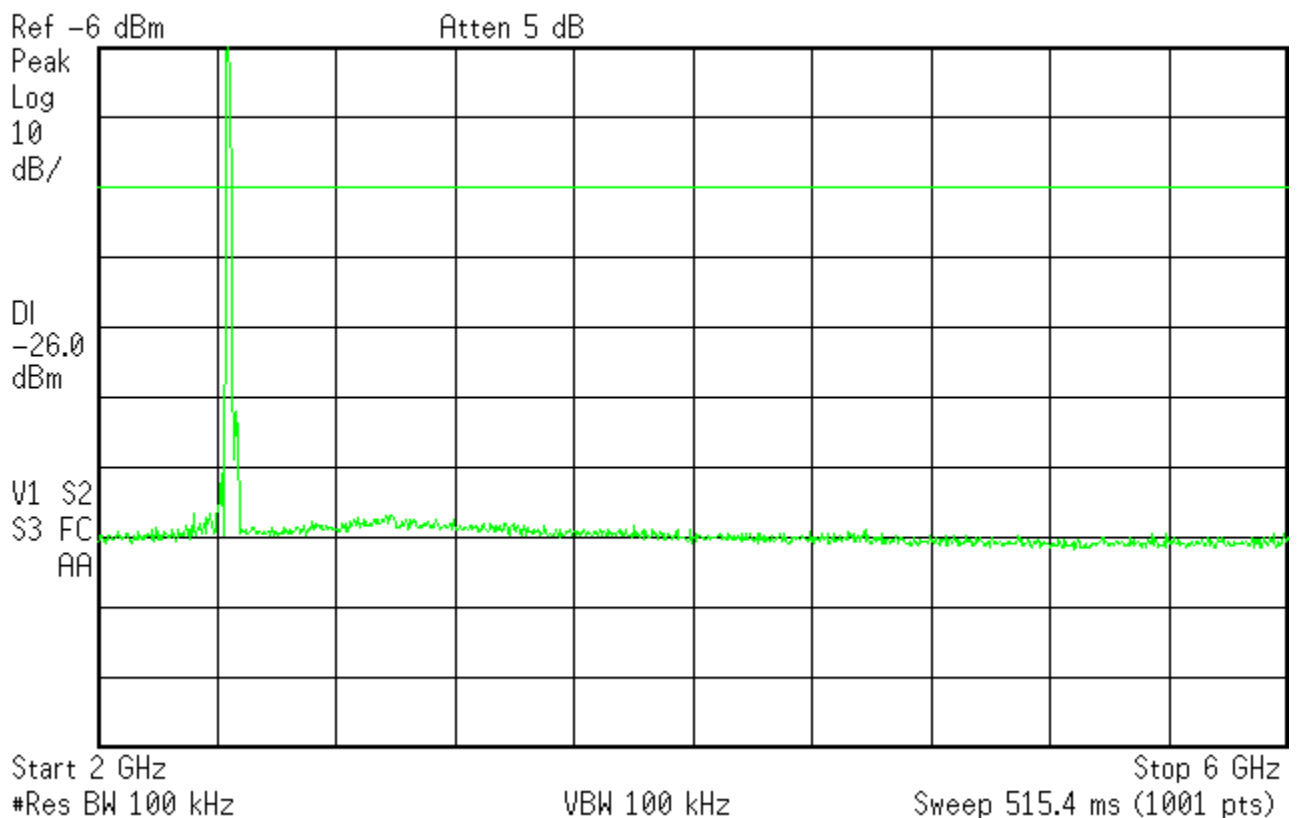
✱ Agilent 09:02:39 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 n	2437	2000 – 6000	Pass

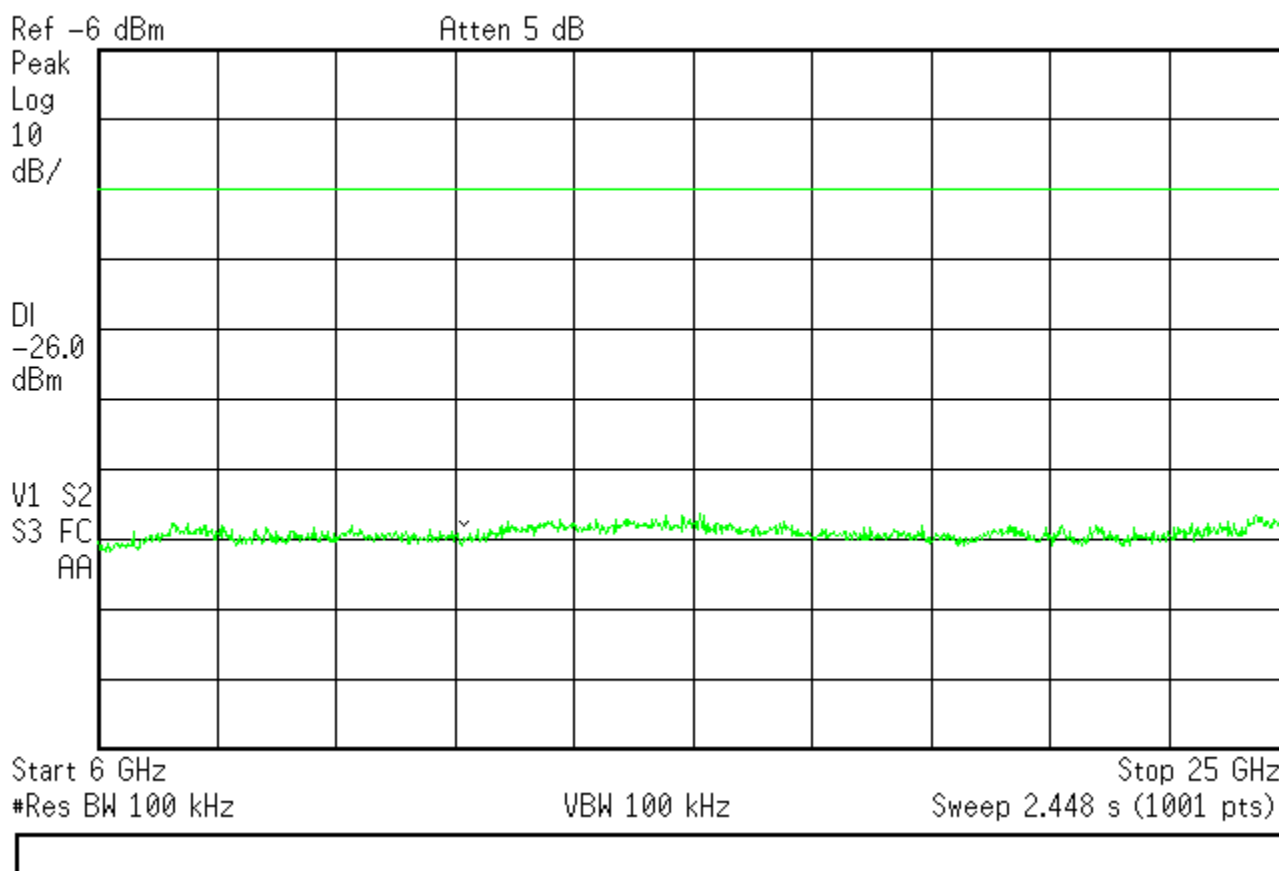
✱ Agilent 09:00:58 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity	Barometric Pressure	
25°C	39%	98.9kPa	

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
6	802.11 n	2437	6000 - 25000	Pass

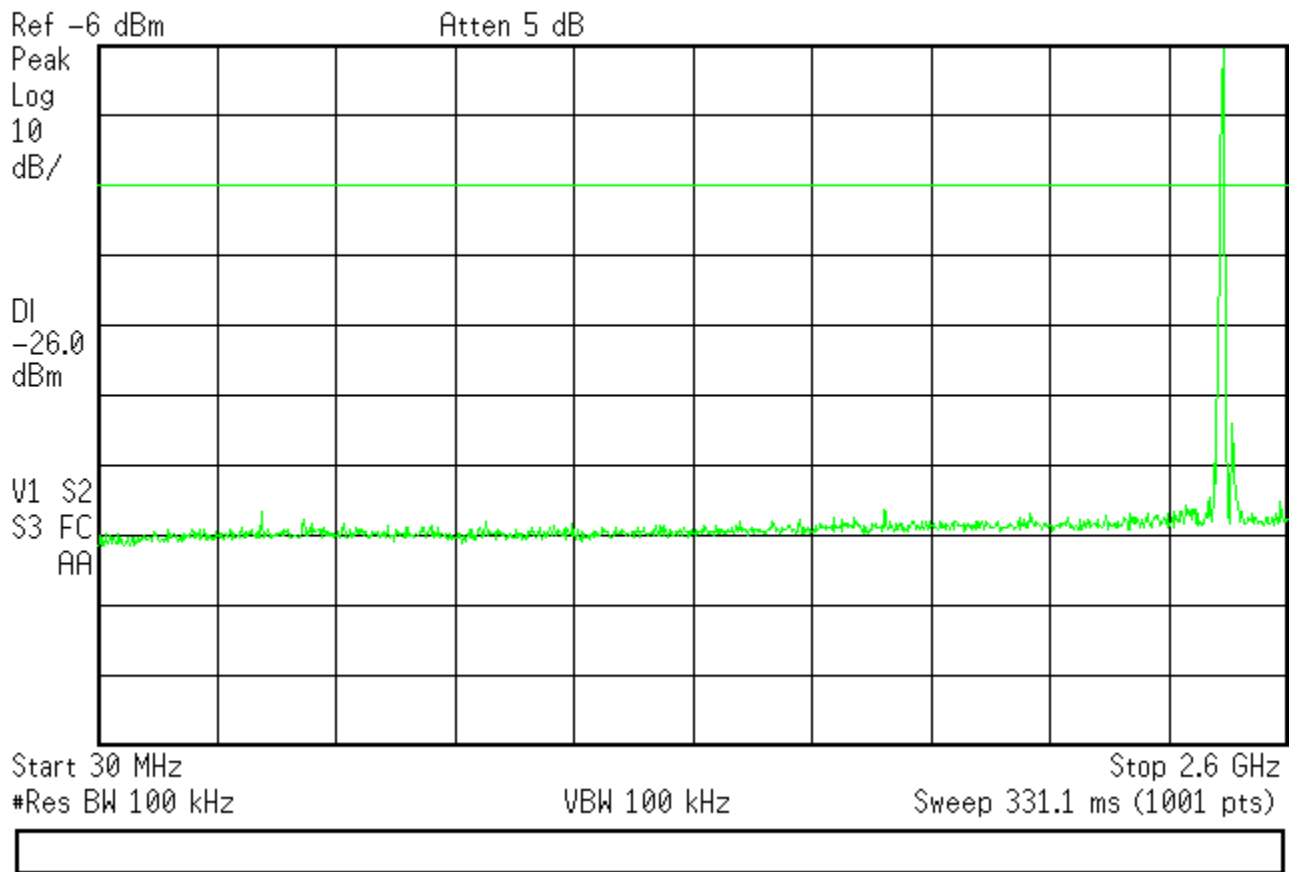
✱ Agilent 08:59:03 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 n	2462	30 – 2600	Pass

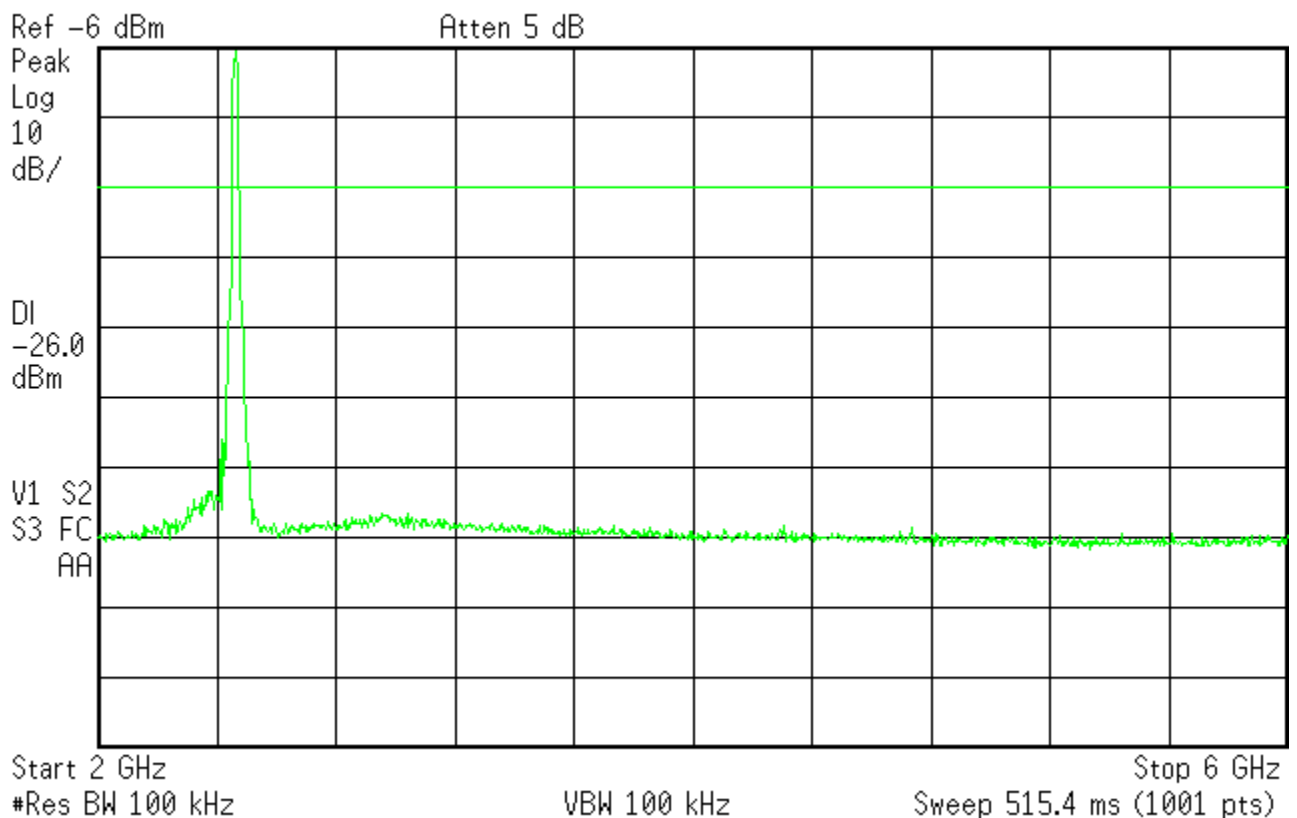
✱ Agilent 08:52:53 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 n	2462	2000 – 6000	Pass

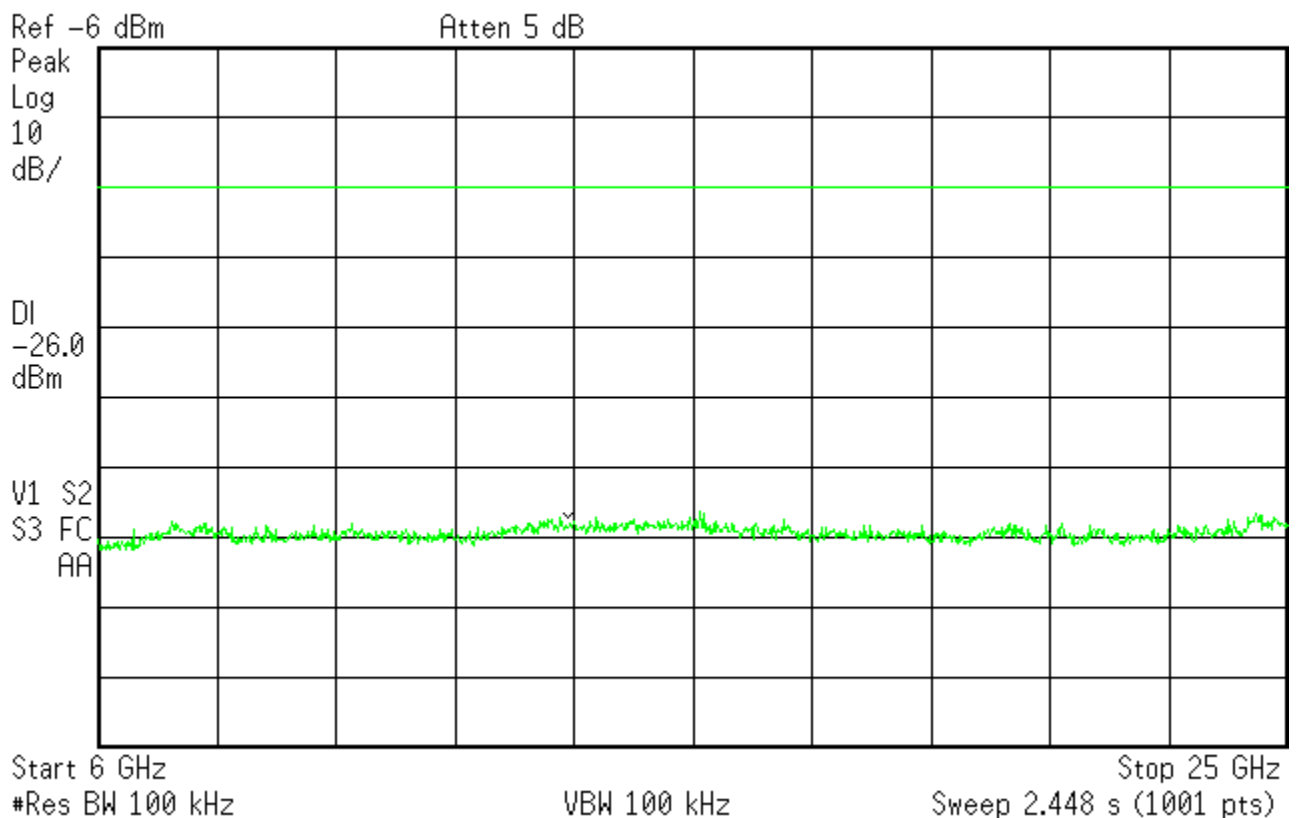
✱ Agilent 08:54:57 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spurious Emissions (Conducted)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
25°C	39%		98.9kPa

Channel	Mode	Frequency (MHz)	Sweep (MHz)	Result
11	802.11 n	2462	6000 - 25000	Pass

✱ Agilent 08:56:55 May 22, 2013



15.247 (c), RSS-210 A8.5 Band Edge Measurements

ANSI C63.10 6.9.2.4

Procedure:

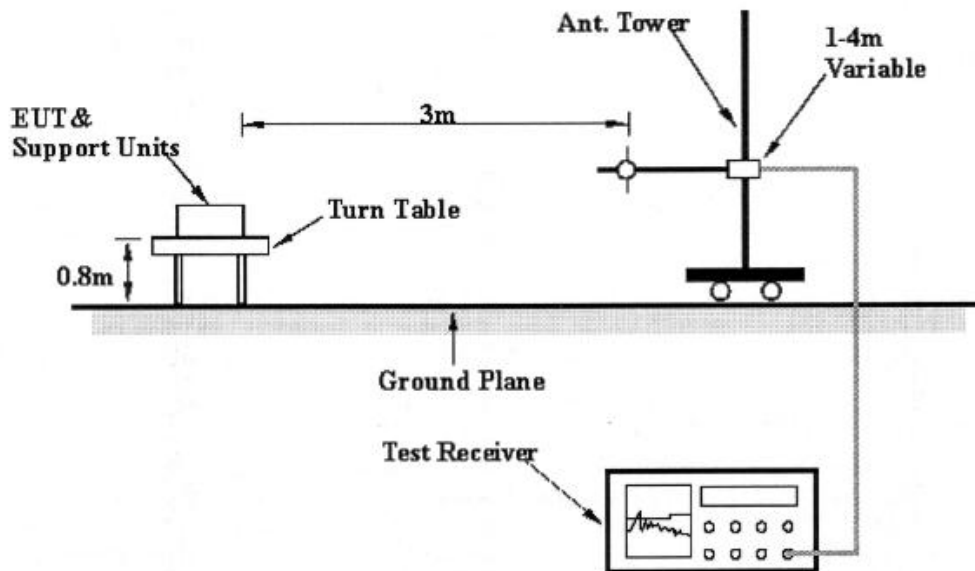
Use the following spectrum analyzer settings:

Span	>	50MHz
RBW	>	1MHz
VBW	>	3MHz
Sweep	=	auto
Detector	=	peak
Trace	=	max hold

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.

Requirement: The maximum out-of-band emissions shall not exceed 20dBc

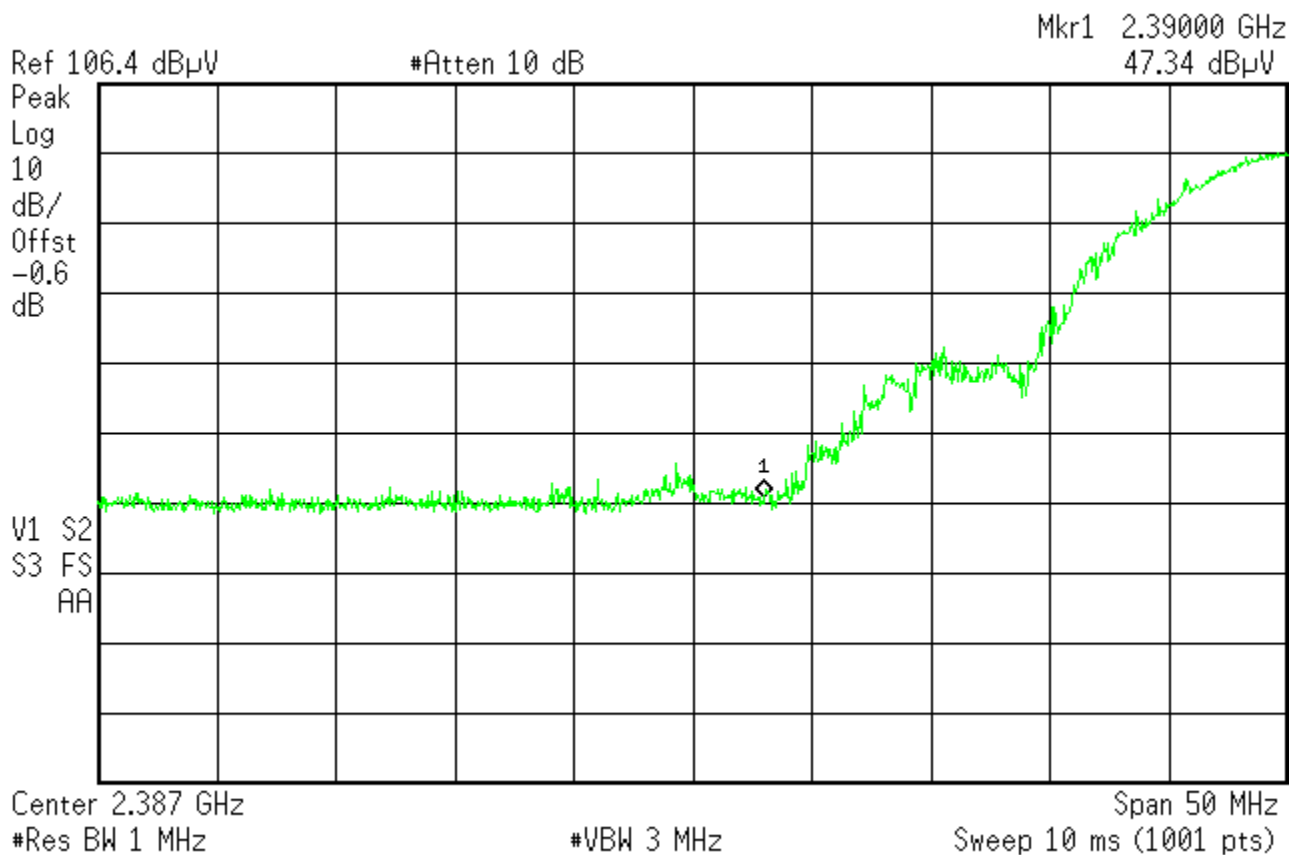
Test Setup:



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Band Edge Measurements (Radiated)	
DNB Job Number:	38044C	Date:		5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
23°C		27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
1	802.11 b	2412	2390	-20	pass

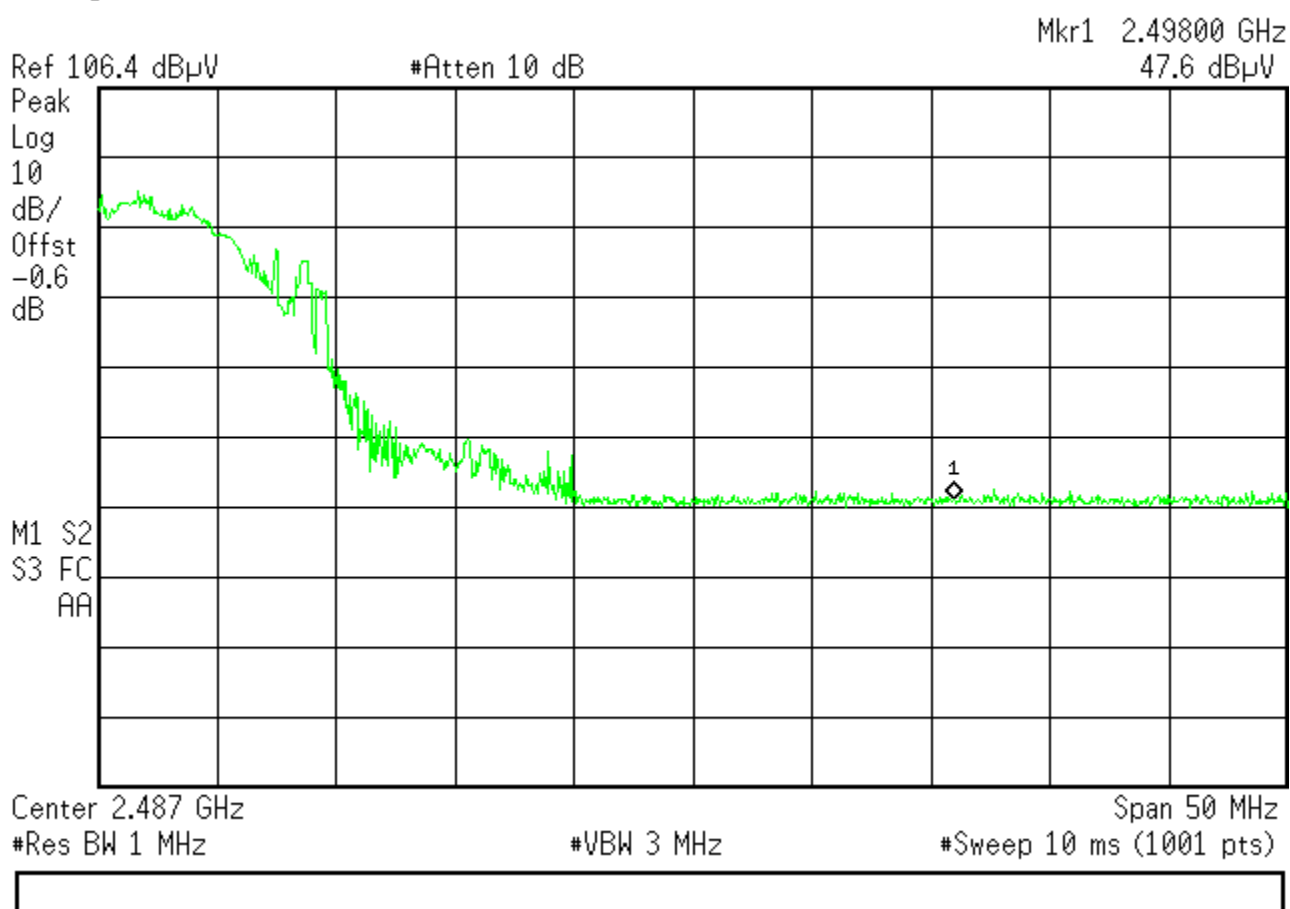
✱ Agilent 11:55:14 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Band Edge Measurements (Radiated)	
DNB Job Number:	38044C		Date:	5-2-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
23°C		27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
3	802.11 b	2462	2498	-20	pass

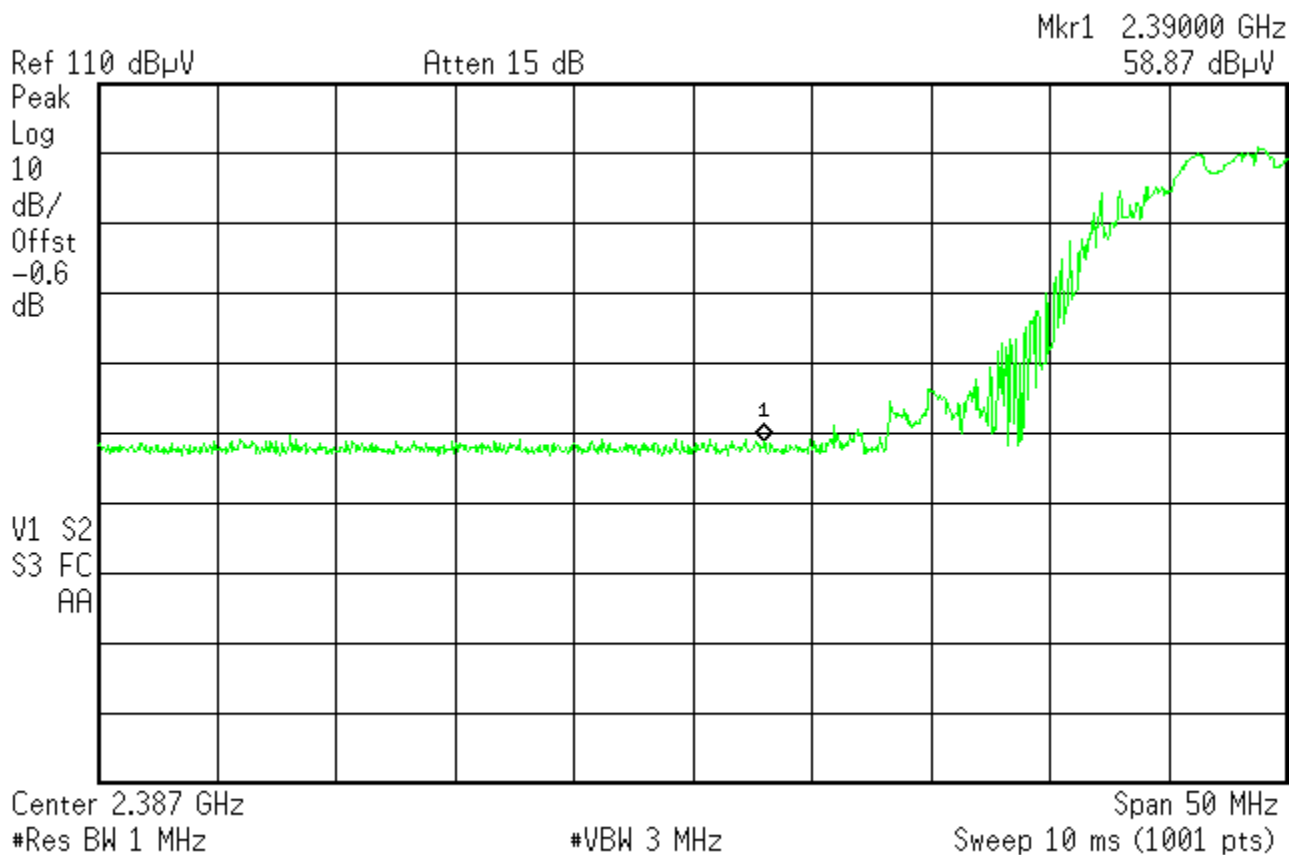
* Agilent 12:15:54 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Band Edge Measurements (Radiated)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
23°C	27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
1	802.11 g	2412	2390	-20	pass

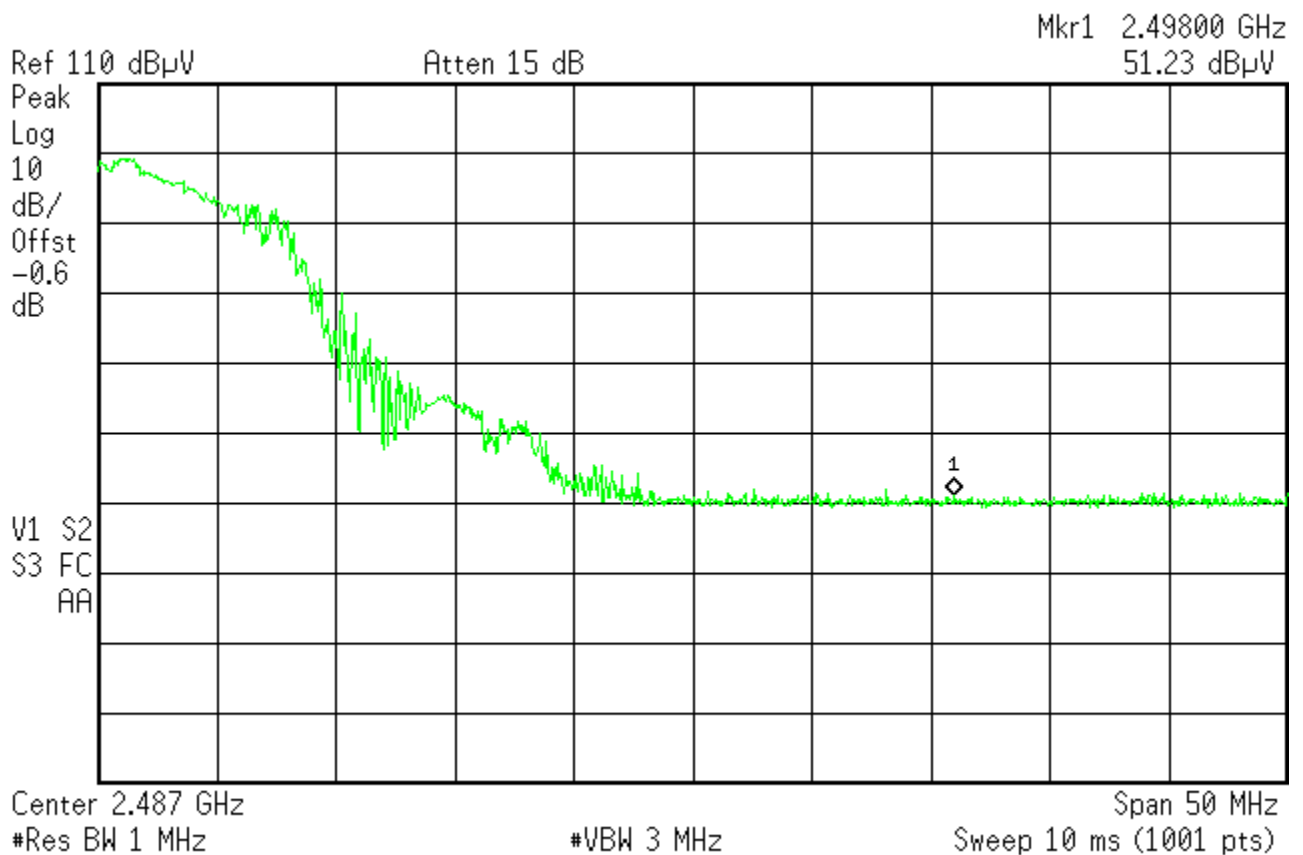
✱ Agilent 15:41:24 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Band Edge Measurements (Radiated)	
DNB Job Number:	38044C	Date:	5-22-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
23°C	27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
11	802.11 g	2462		-20	pass

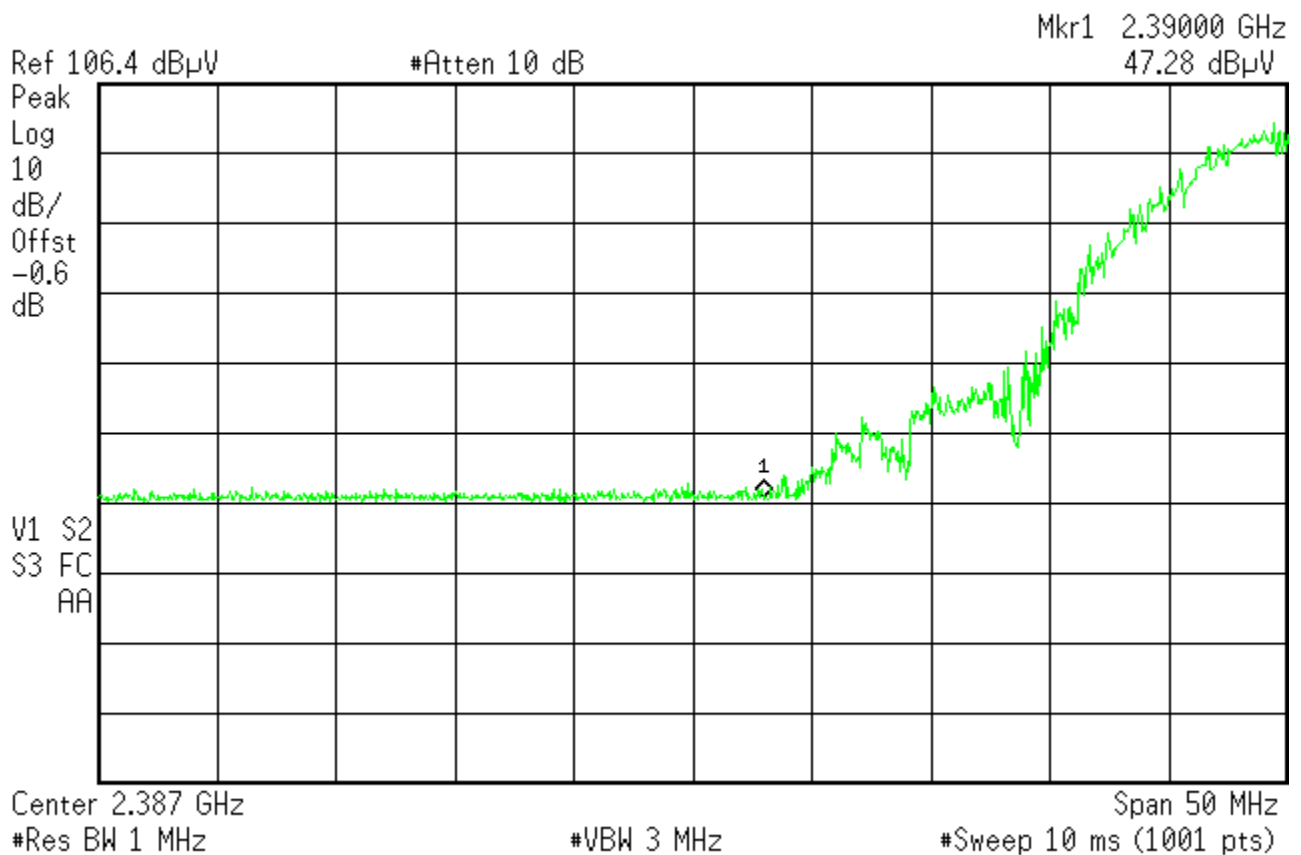
* Agilent 15:47:52 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Band Edge Measurements (Radiated)	
DNB Job Number:	38044C	Date:	5-22-13
Customer:	Teledyne RD Instruments		RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
23°C	27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
1	802.11 n	2412	2390	-20	pass

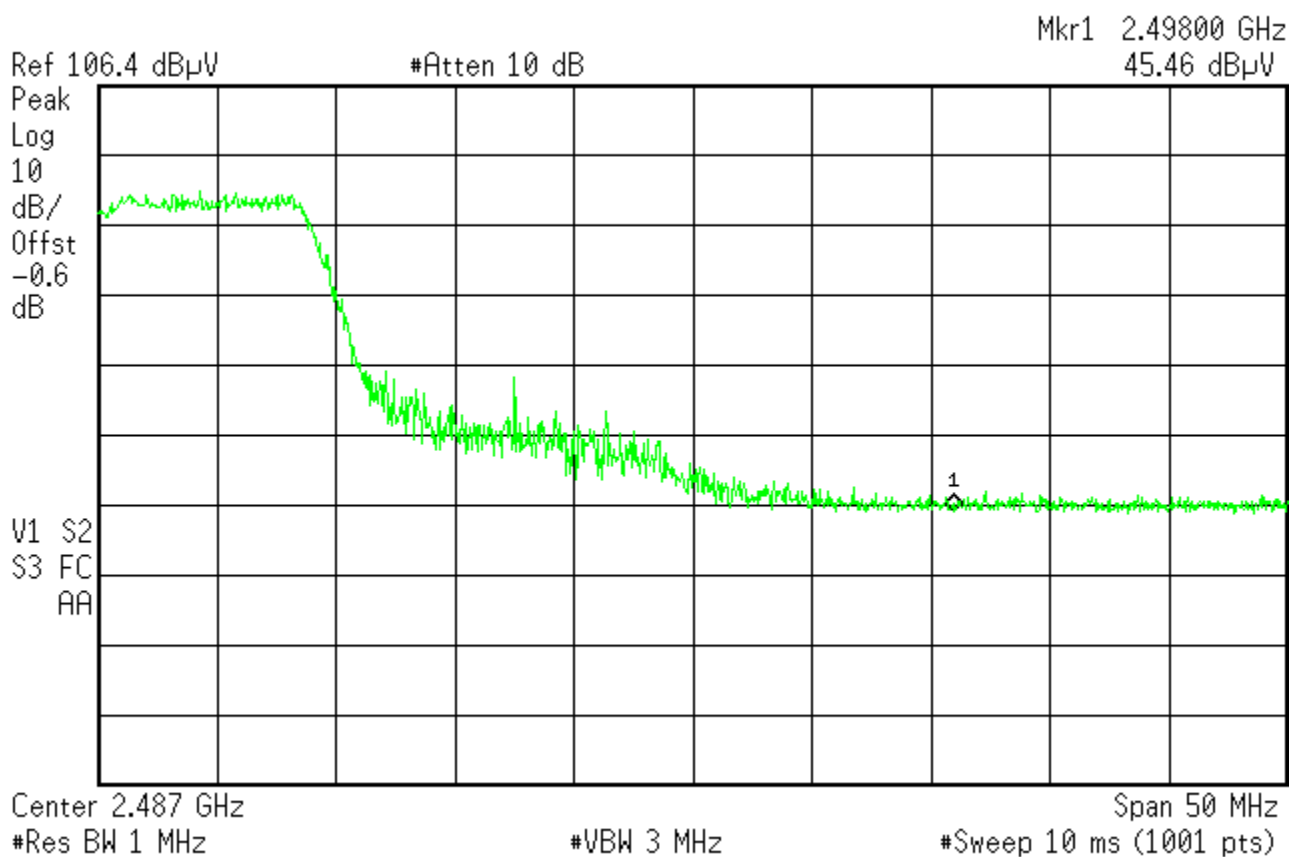
✱ Agilent 12:06:03 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Band Edge Measurements (Radiated)	
DNB Job Number:	38044C		Date:	5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.5 15.247(c)
Model Number:	Sentinel	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
23°C		27%		99.2kPa

Channel	Mode	Frequency (MHz)	Band Edge (Mhz)	Minimum dBc	Result
11	802.11 n	2462	2498	-20	pass

* Agilent 12:11:19 May 22, 2013



Please see page 79 for radiated measurements of spike in the 2.4835 – 2.5GHz restricted band.

	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Radiated Emissions (spurious)	
DNB Job Number:	18093D	Date:	2-28-2013
Customer:	Teledyne		Teledyne
Model Number:	S20	Specifiction:	
Description:	Transmitter		
Channel 11 2.4835 – 2.5GHz		Mode: 802.11 n	

Frequency (MHz)	Meter (dBμV)	Cable (dB)	Antenna (dB)	Amp (dB)	Corrected (dBμV)	Limit (dBμV)	Margin (dB)	Polarity	Detector
2485	41.63	0.1	29.0	31.6	39.13	74	-34.87	V	Peak
2485	27.77	0.1	29.0	31.6	25.27	54	-28.73	V	Average
2485	40.13	0.1	29.0	31.6	37.63	74	-36.37	H	Peak
2485	27.82	0.1	29.0	31.6	25.23	54	-28.7	H	Average

15.247 (d), RSS-210 A8.2(b) Peak Power Spectral Density
ANSI C63.10 6.11.2.3

Procedure:

Connect the antenna port to be measured to the spectrum analyzer input. Configure the spectrum analyzer as described below.

- a) Set CENTER FREQUENCY to the channel to be measured
- b) Set SPAN = 20MHz
- c) Set REFERENCE Level = 20dBm
- d) Set ATTENUATION as close to 0dBm as possible
- e) Set SWEEP TIME = coupled
- f) Set RBW = 3kHz
- g) Set VBW = 10kHz
- h) Set detector = peak
- i) Set MKR = center frequency
- j) Set TRACE = clear write

After viewing the EUT waveform on the spectrum analyzer, perform the following spectrum analyzer functions to capture the trace:

Set Span = 300kHz

Set SWEEP TIME = 100 s

Set TRACE = MAX HOLD

Set MKR = PEAK SEARCH

Record the marker level for the particular mode.

Requirement: The PPSD shall not exceed 8dBm

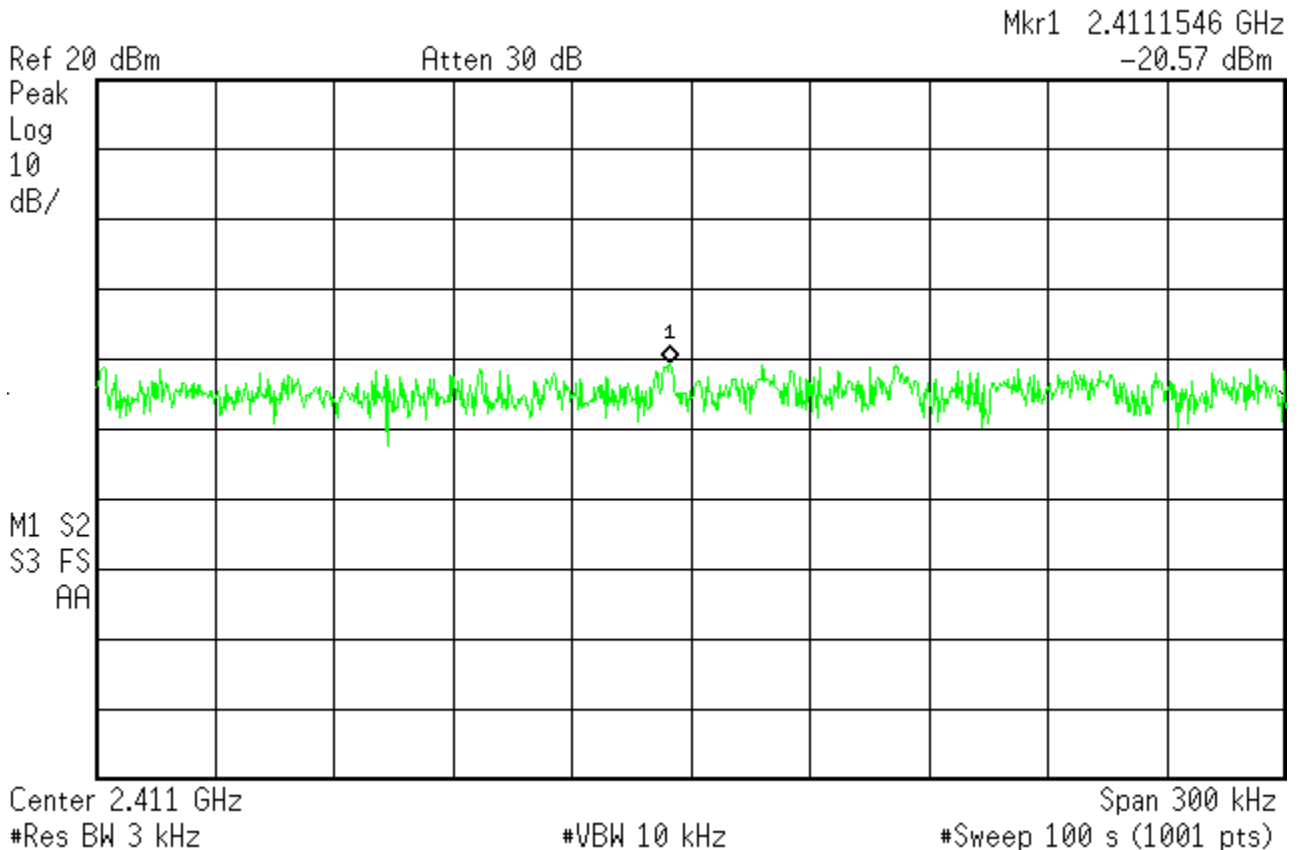
Test Setup:



	5969 Robinson Ave. Riverside, CA 92503 (951) 637-2630	Spectral Density (Conducted)	
DNB Job Number:	38044C	Date:	5-8-2013
Customer:	Teledyne RD Instruments		RSS-210
Model Number:	S20	Specification:	A8.2(b)
Description:	Oceanographic Measurement Instrument		15.247(d)
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
24°C	32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
1	802.11 b	2412	-20.57	8	Pass

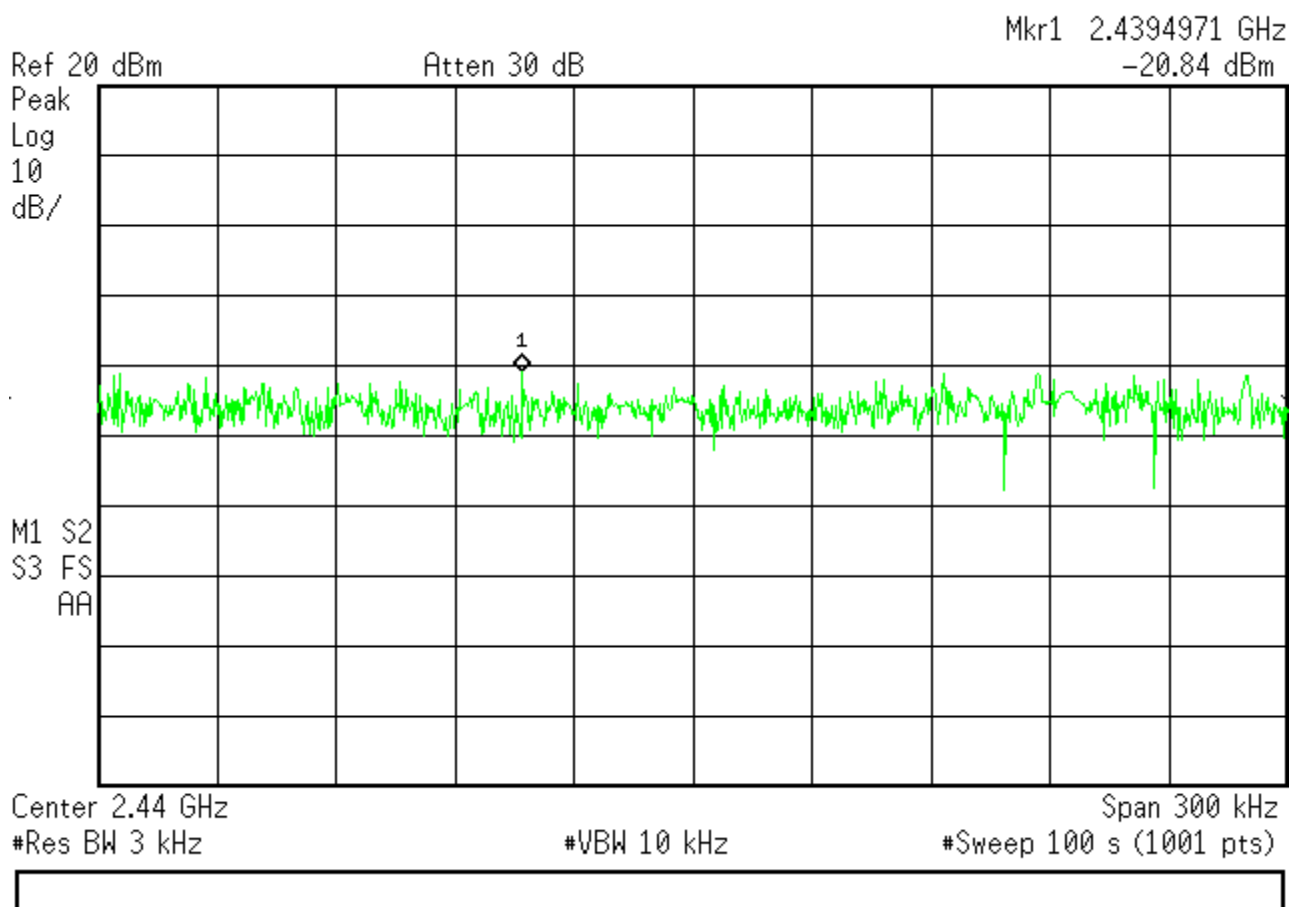
✱ Agilent 09:46:23 May 8, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-8-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
6	802.11 b	2437	-20.84	8	Pass

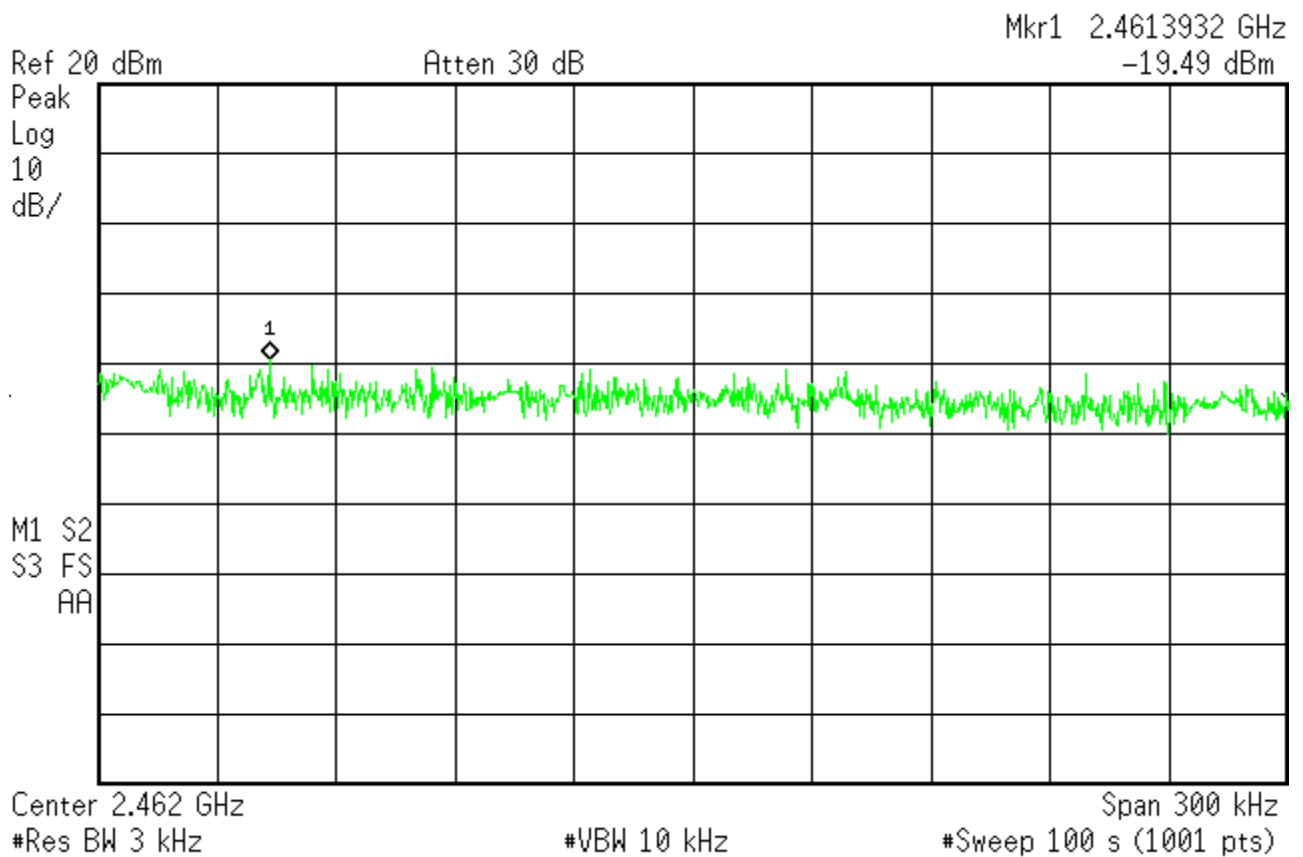
✱ Agilent 10:03:18 May 8, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spectral Density (Conducted)	
DNB Job Number:	38044C	Date:	5-8-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
24°C	32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
11	802.11 b	2462	-19.49	8	Pass

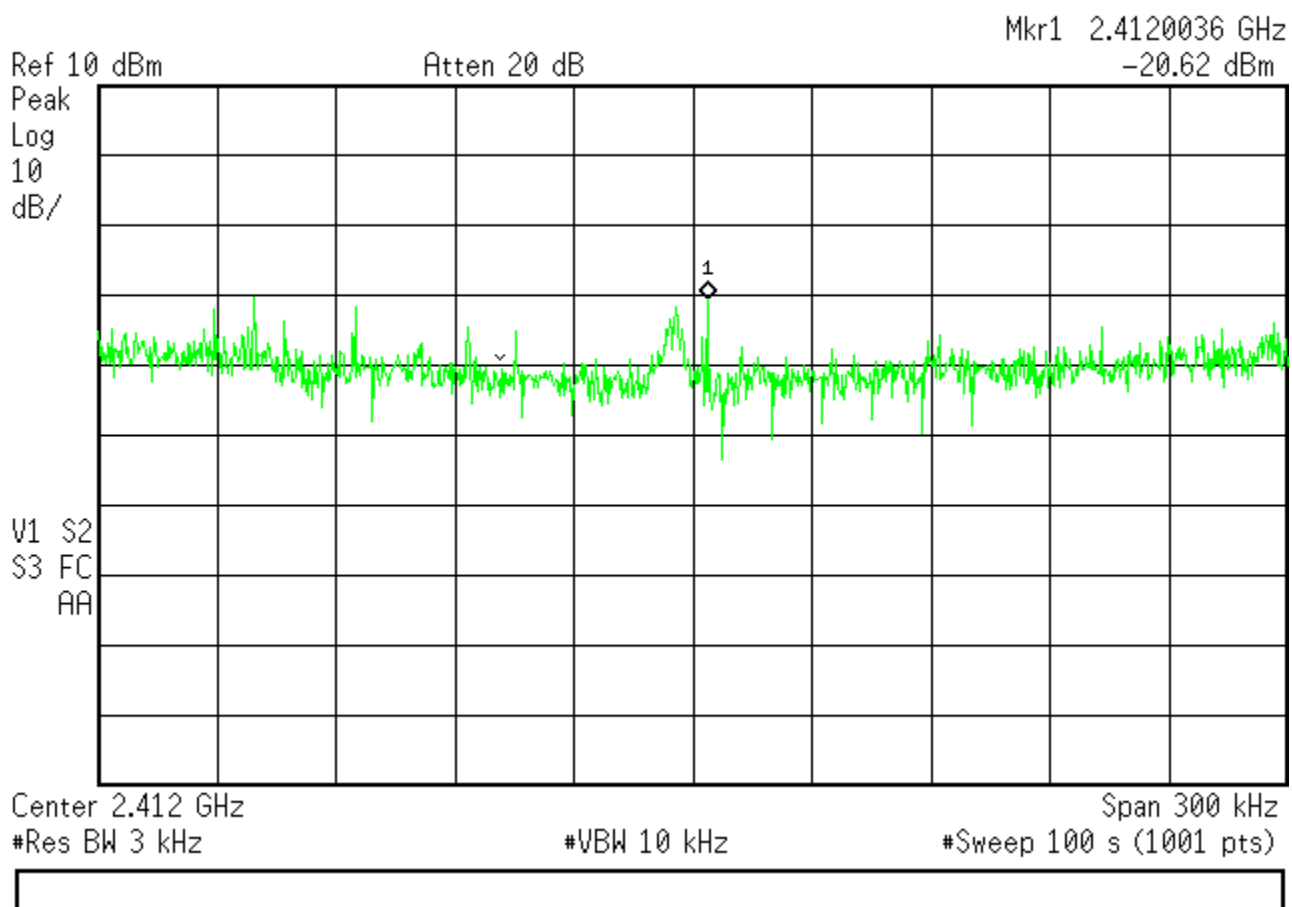
✱ Agilent 11:25:16 May 8, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951) 637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
1	802.11 g	2412	-20.62	8	Pass

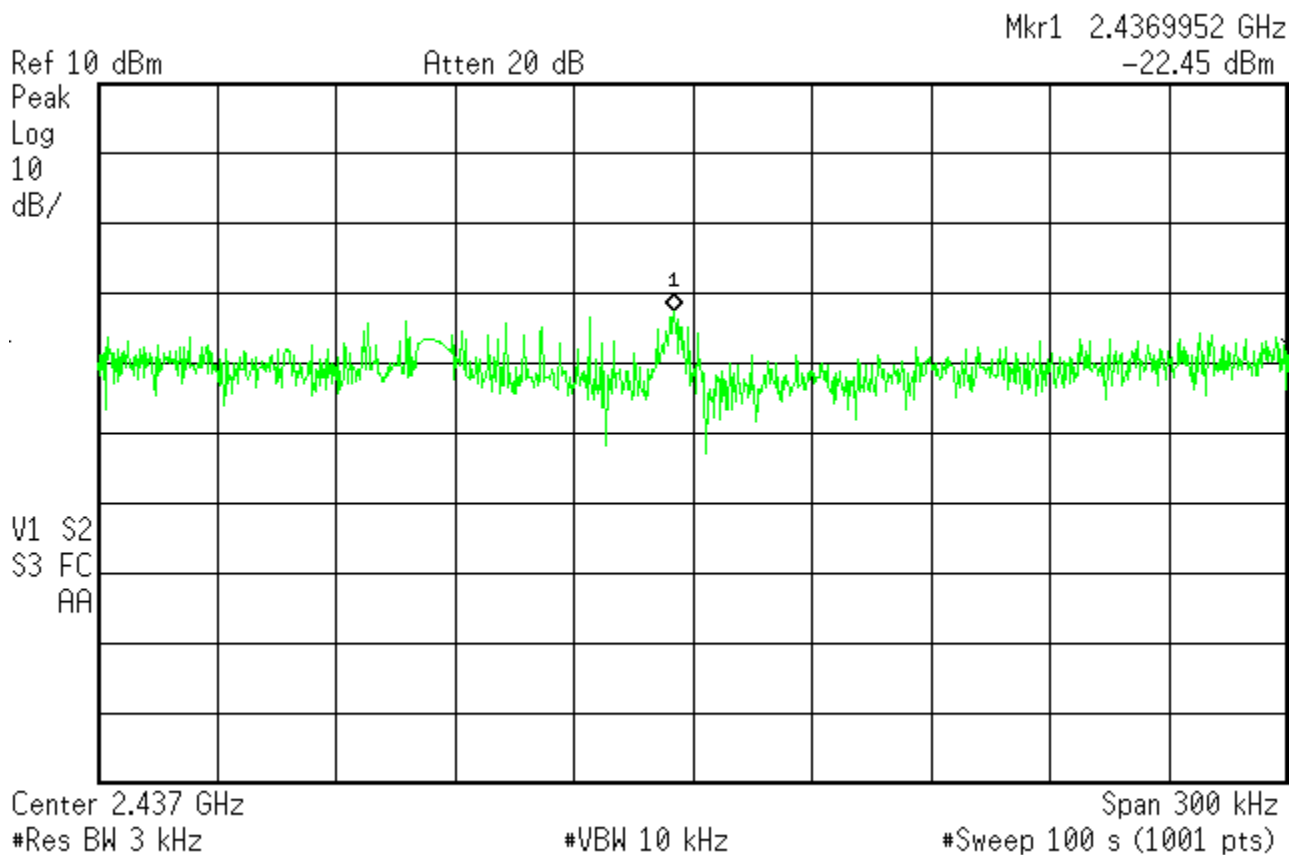
✱ Agilent 10:01:18 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
6	802.11 g	2437	-22.45	8	Pass

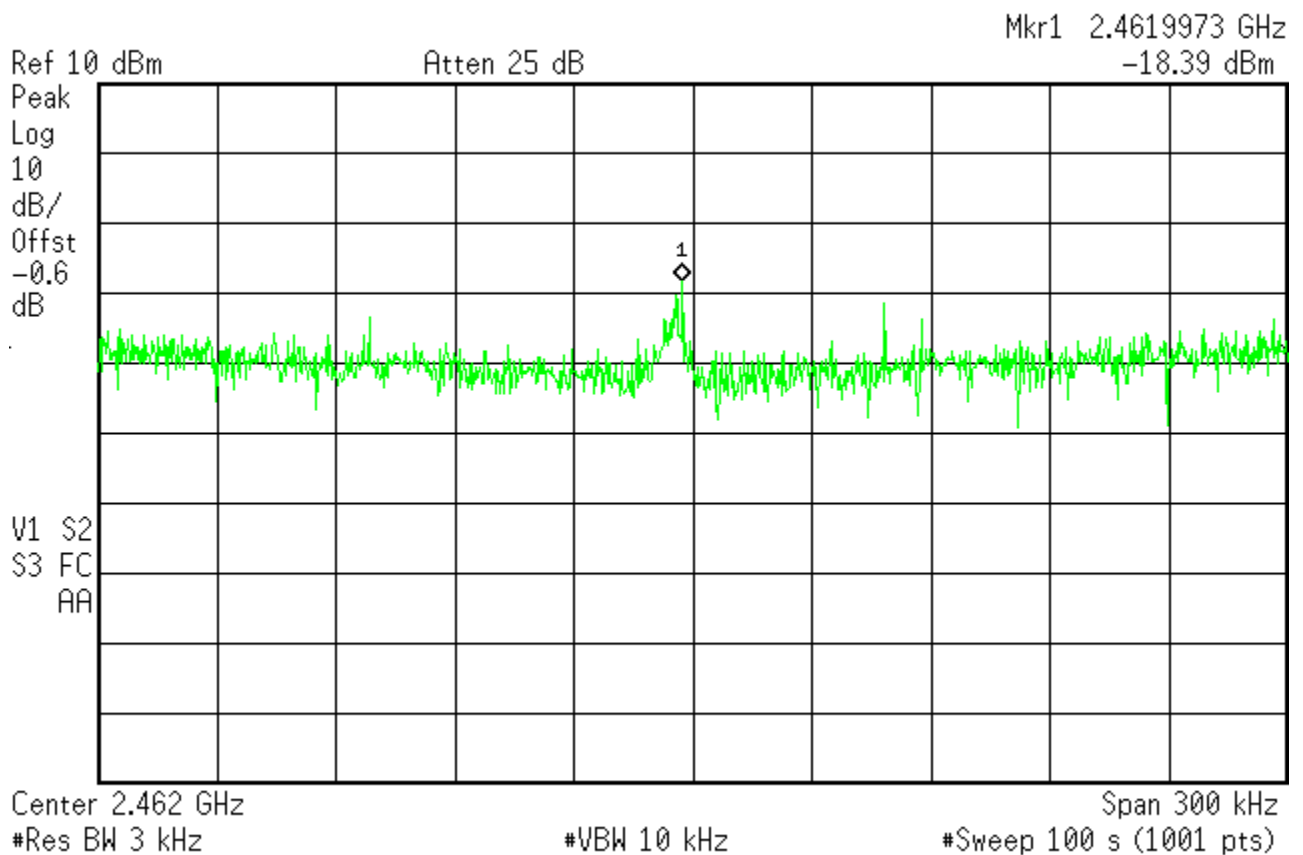
✱ Agilent 09:56:37 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
11	802.11 g	2462	-18.39	8	Pass

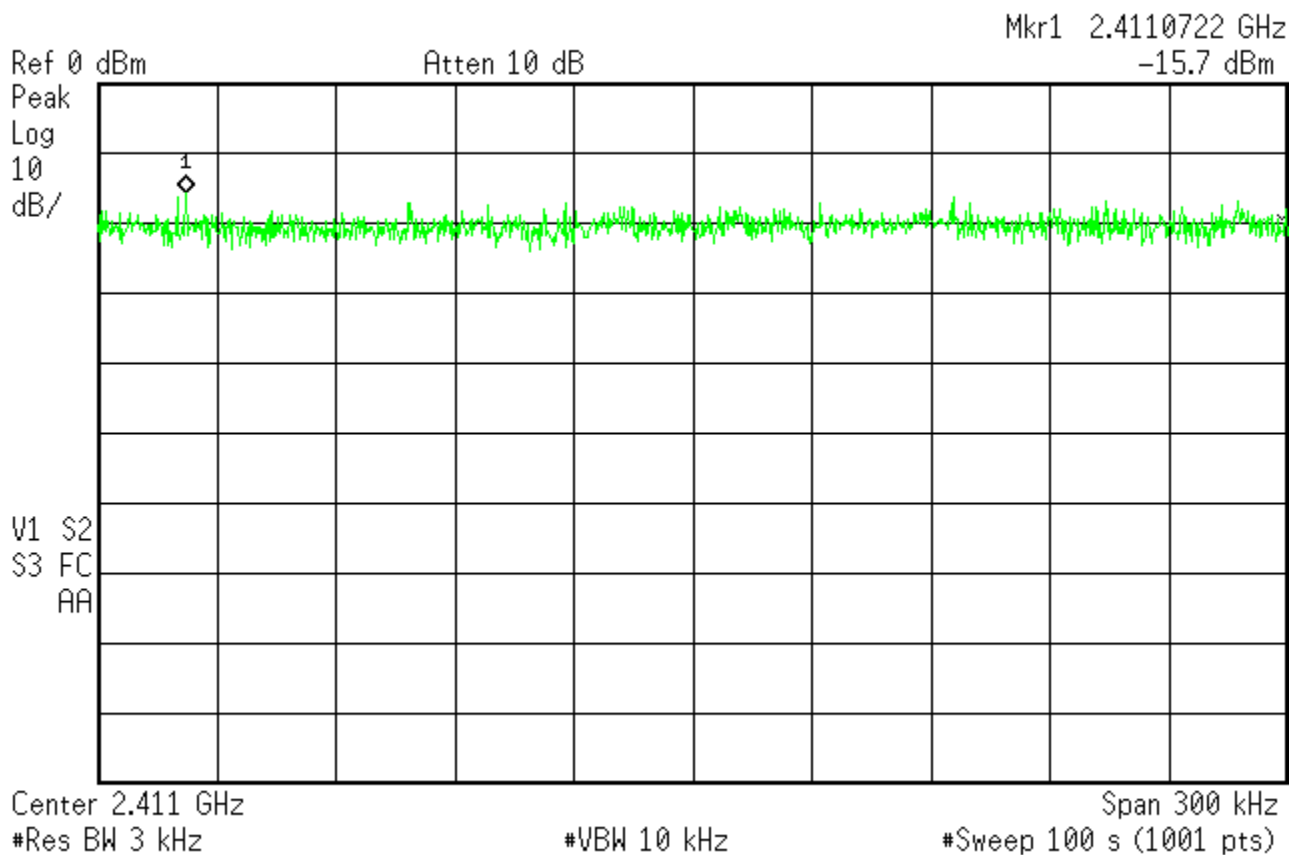
✱ Agilent 15:22:20 May 22, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951) 637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-20-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
1	802.11 n	2412	-15.7	8	Pass

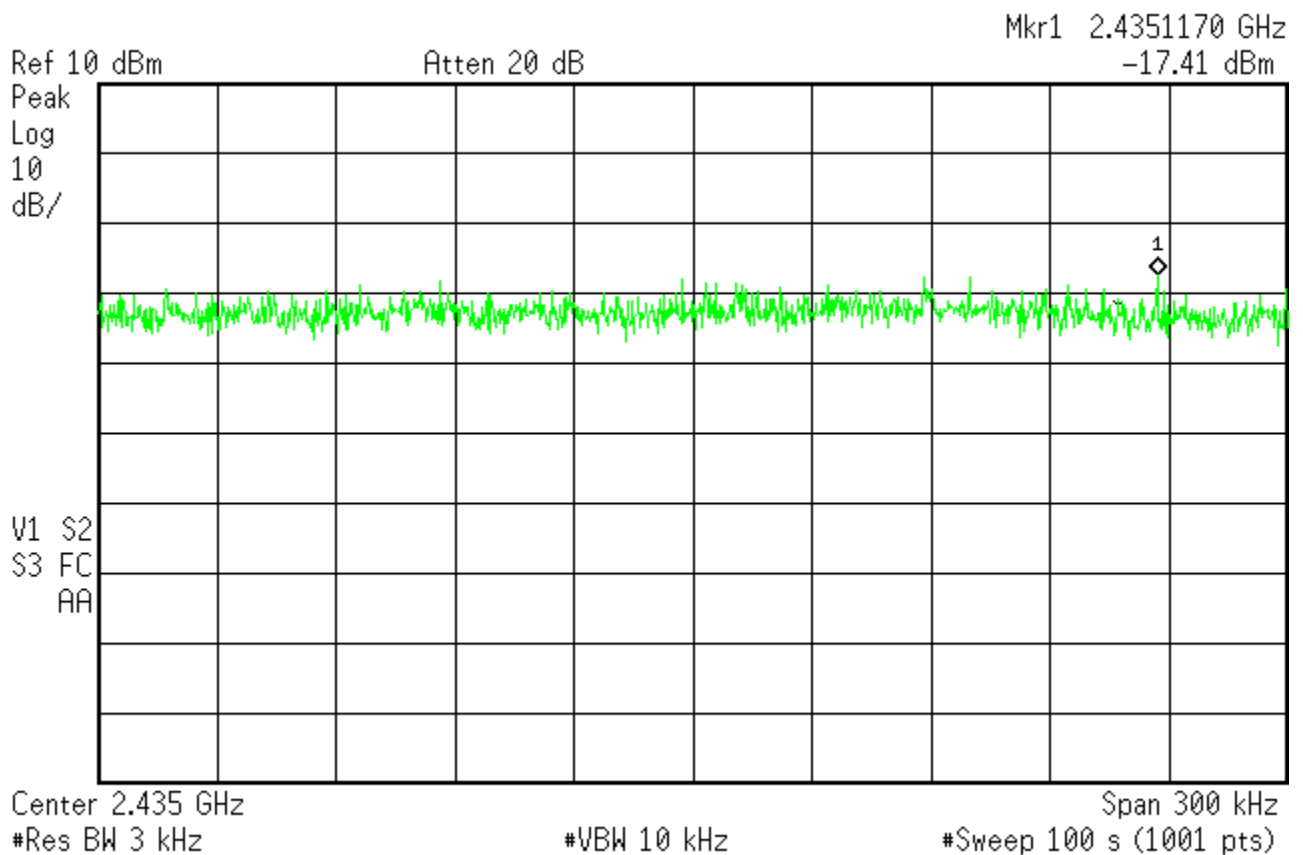
✱ Agilent 15:10:02 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630	Spectral Density (Conducted)	
DNB Job Number:	38044C	Date:	5-20-2013
Customer:	Teledyne RD Instruments		RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:	
Description:	Oceanographic Measurement Instrument		
Environmental conditions			
Ambient Temperature	Relative Humidity		Barometric Pressure
24°C	32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
6	802.11 n	2437	-17.41	8	Pass

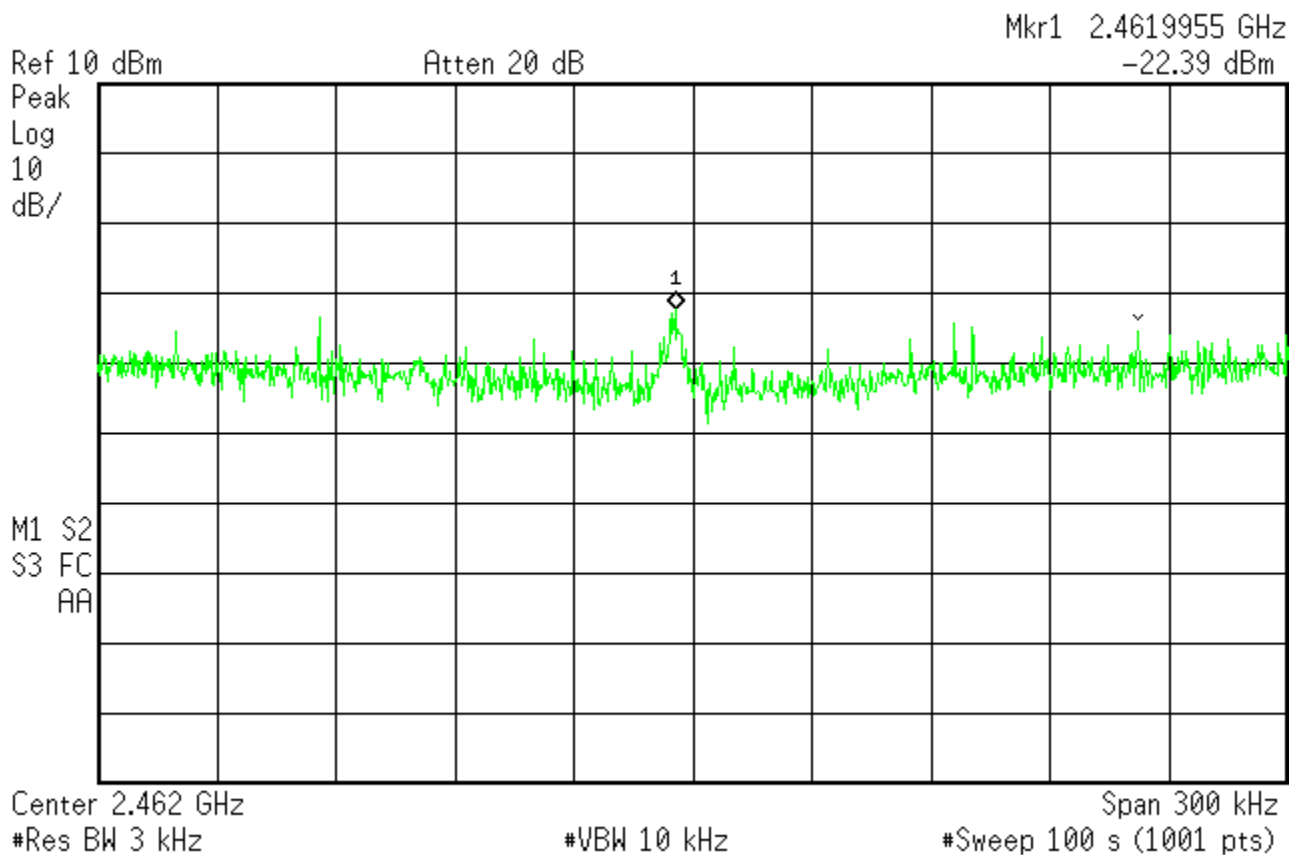
✱ Agilent 15:24:49 May 20, 2013



	5969 Robinson Ave. Riverside, CA 92503 (951)637-2630		Spectral Density (Conducted)	
DNB Job Number:	38044C		Date:	5-22-2013
Customer:	Teledyne RD Instruments			RSS-210 A8.2(b) 15.247(d)
Model Number:	S20	Specification:		
Description:	Oceanographic Measurement Instrument			
Environmental conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
24°C		32%		99.5kPa

Channel	Mode	Frequency (MHz)	Peak (dBm)	Limit (dBm)	Result
11	802.11 n	2462	-22.39	8	Pass

✱ Agilent 08:47:44 May 22, 2013



2.1033 (b) (7) Equipment Photographs

To be filed as a separate attachment.

End Of Report