Retlif Testing Laboratories

101 New Boston Road, Goffstown, NH 03045
603-497-4600 - Fax: 603-497-5281

CORPORATE OFFICE
795 Marconi Avenue
Ronkonkoma, NY 11779
631-737-1500 Fax 631-737-1497
(A NY Corporation)

BRANCH LABORATORIES
3131 Detwiler Road
Harleysville, PA 19438
215-256-4133 Fax 215-256-4130

WASHINGTON
REGULATORY OFFICE
703-533-1614 Fax 703-533-1612

MEMBER ACIL

FCC/IC Test Report
on

MicroStrain, Inc.
Model Number: SerialLink

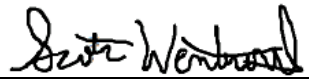
Customer Name:	MicroStrain, Inc.
Customer P.O:	006810-00
Date of Report:	September 15, 2009
Test Report No:	R-5184N, Rev. A
Test Start Date:	June 4, 2009
Test Finish Date:	June 8, 2009
Test Technician:	Matthew Seamans
Laboratory Supervisor:	Todd Hannemann
Branch Manager:	Scott Wentworth
Report Prepared By:	Jamie Ramsey

Our letters, procedures and reports are for the exclusive use of the customer to whom they are addressed and their communication or the use of the name of Retlif Testing Laboratories must receive our prior written approval. Our letters, procedures and reports apply only to the sample tested and are not necessarily indicative of the qualities of apparently identical or similar products. The letters, procedures and reports and the name of Retlif Testing Laboratories or insignia are not to be used under any circumstances in advertising to the general public. This test report shall not be reproduced, except in full, without the written approval of Retlif Testing Laboratories.

Certification and Signature

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.

Todd Hannemann
Laboratory Supervisor
NARTE ATL-0255-T



Scott Wentworth
Branch Manager
NVLAP Approved Signatory

Non-Warranty Provision
The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

Non-Endorsement
This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Technical Information

Applicant		Manufacturer	
Name:	MicroStrain, Inc.	Name:	MicroStrain, Inc.
Address:	459 Hurricane Lane, Suite 102	Address:	459 Hurricane Lane, Suite 102
City, State, Zip:	Williston, VT 05495	City, State,Zip:	Williston, VT 05495

Test Specifications:

FCC Rules and Regulations Part 15, Subpart C, Para. 15.247

Radio Standards Specification, RSS-210, Issue 7, June, 2007 and RSS-GEN, Issue 2, June 2007

Test Procedure: ANSI C63.4:2003

Test Sample Description

Test Sample: 2.4 GHz Direct Sequence Spread Spectrum Wireless Module

Brandname: MicroStrain

Model: SerialLink

Serial Number: SL30360012-0010

FCC ID: XJQMSLINK0001

IC ID: 8505A-MSLINK0001

Type: Direct Sequence Spread Spectrum Transmitter Module

Power Requirements: 6 VDC

Frequency of Operation: 2400 to 2483.5MHz

Antenna/Connector: ¼ wave helical whip/reverse polarity sma connector

Tests Performed

The test methods performed on the EUT are shown below:

FCC Part 15, Subpart C	Industry Canada RSS-210 Issue 7, June 2007	Industry Canada RSS-GEN Issue 2, June 2007	Test Method
15.247(a)(2)	A8.2(a)	N/A	Bandwidth
15.247(b)(3)	A8.4(4)	N/A	Power Output
15.247(d)	A8.5	N/A	Antenna Port, Conducted Emissions
15.247(e)	A8.2(b)	N/A	Power Spectral Density
15.247 (d) 15.209(a)/15.205	A8.5	N/A	Transmitter Spurious Radiated Emissions, Restricted Bands
N/A	N/A	7.2.3	Receiver Spurious Radiated Emissions
15.207 (a)	N/A	7.2.2	Conducted Emissions, Power Leads, 150 kHz to 30 MHz

Requirements and Test Results

Requirement:
FCC Section 15.247(a)(2)
Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz
Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands. The minimum 6 dB bandwidths shall be at least 500 kHz.

IC RSS-210, A8.2(a) - Digital Modulation Systems
The minimum 6 dB bandwidth shall be at least 500 kHz.

- Results:
  The minimum 6 dB bandwidth measured 3 MHz which complies with the requirement that the Bandwidth be no less than 500 kHz.

Requirement:
FCC Sections 15.247(b)(3)
Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz
The maximum peak conducted output power of the intentional radiator shall not exceed the following:

For systems using digital modulation in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antenna and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antenna and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

IC RSS-210, A8.4(4) - Transmitter Output Power and e.i.r.p. Requirements
For systems employing digital modulation techniques operating in the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz, the maximum peak conducted output power shall not exceed 1 Watt. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 Watts.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power (RSS-Gen).

- Results:
  The device operates in the 2400 – 2483.5MHz band. The maximum peak output power was measured and was found to be 0.045 Watts, in compliance with the specified limit of 1 watt. As the device uses a 0dB gain antenna the EIRP limit is also met.

Requirements and Test Results (con't)

Requirement:
FCC Section 15.247(d):
Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) must also comply with the radiated emissions limits specified in Section 15.209(a) (see Section 15.205(c)).

IC RSS-210, A8.5 - Out of Band Emissions:
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 of RSS-210 is not required.

- Results:
  In any 100 kHz bandwidth outside the frequency band in which the Spread spectrum intentional radiator was operating, the radio frequency power that was produced by the intentional radiator was at least 20 dB below that in the 100 kHz bandwidth within the band that contained the highest level of the desired power. Radiated emissions measurements were performed on all emissions observed during conducted measurements which fell within the restricted bands specified in 15.205(a) and were found to be in compliance with the limits specified in 15.209(a).

Requirement:
FCC Section 15.247(e):
Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

IC RSS-210, A8.2(b) - Digital Modulation Systems:
The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration. This power spectral density shall be determined in accordance with the provisions of Section A8.4(4); (i.e. the power spectral density shall be determined using the same method for determining the conducted output power).

- Results:
  The power spectral density conducted from the intentional radiator to the antenna was not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density was determined in accordance with Section 15.247(b)(3), herein. The same method of determining the conducted output power was used to determine the power spectral density.

Requirement:
FCC Section 15.209(a) - Radiated Emission Limits, General Requirements
Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 1.

IC RSS-210, 2.6 - General Field Strength Limits:
Table 1 shows the general field strength limits of unwanted emissions, where applicable, for transmitters operating in accordance with the provisions specified in this RSS.

Table 1 - Radiated Emission Limits

Frequency of Emission (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 to 88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960	500	3

- Results:
  The field strength of spurious radiated emissions did not exceed the limits specified in Table 1.

Requirements and Test Results (con't)

Requirement:
FCC Section 15.207(a) - Conducted Limits
For an intentional radiator that is dc powered and subject to modular approval, the radio frequency voltage that is conducted back onto the power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits shown in Table 2, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of the paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

IC RSS-GEN, Section 7.2.2:
Transmitter and Receiver DC Power Lines Conducted Emission Limits
The purpose of this test is to measure unwanted radio frequency currents induced in any DC conductor external to the module which could conduct interference to other equipment via the electrical network.

For an intentional radiator that is dc powered and subject to modular approval, the radio frequency voltage that is conducted back onto the power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

The conducted emissions shall be measured with a 50 ohm/50 microhenry line impedance stabilization network.

Table 2 - Conducted Emission Limits

Frequency of Emission (MHz)	**Conducted Limit (dBµV)**	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50
*Decreases due to logarithm of the frequency		

- Results:
  The conducted emissions observed did not exceed the limits specified in Table 2.

15.247 (i) RF Exposure

Spread Spectrum Transmitters operating under 15.247 are categorically excluded from routine environmental evaluation for demonstrating RF exposure compliance with respect to MPE or SAR limits however per 15.247(i) must be operated in a manner that ensures the public is not exposed to RF energy levels in access of the commission's guidelines. The user/installation manual contains the proper cautionary statements and specifies that the device be installed and operated so that a minimum separation distance of 20m will maintained Based on the transmitter power and maximum antenna gain (see calculation below) the 20cm separation distance exceeds the calculated distance for acceptable MPE power density levels to meet both the Occupational/Controlled Exposure and the General Population/Uncontrolled Exposure requirements of 1.1310. The calculation below uses the more stringent General Population MPE Limits.

$$S = \frac{PG}{4Dsq}$$

D = Minimum Separation Distance in cm

S = Max allowed Power Density in mW/cmsq

Per 1.1310 For Frequency of 2400MHz = 1mW/cmsq

Power = Max Power Input to Antenna = 45mW

Gain = Max Power Gain of Antenna = 0dBi = 1 numeric

$$1\text{mW/cmsq} = \frac{45 \times 1}{4\ (3.14) \times Dsq} = \frac{45}{12.56 \times Dsq}$$

$$Dsq = \frac{45}{12.56 \times 1} = 3.58$$

D = sq. root 3.58 = 1.89cm

RSS 102 RF Exposure

Per RSS-102 Section 2.5.2 RF Exposure evaluation is not required if the separation distance between the user and antenna is greater than 20cm and the EUT operates above 1.5GHz with a maximum EIRP of less than 5W. The user/installation manual contains the proper cautionary statements and specifies that the device be installed and operated so that a minimum separation distance of 20m will maintained

Spectrum Analyzer Desensitization Considerations

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements. FCC specified bandwidths of 100 kHz and 1 MHz were utilized below and above 1 GHz, respectively.

Modifications

No Modifications were made during the course of this testing program in order to demonstrate compliance with the specified requirements.

Equipment Lists

Bandwidth

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4961B	Attenuator	Narda	DC - 18 GHz	757C-30dB	1/20/2009	1/20/2010
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

Conducted Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
5030C	10 DB Atten. (50 ohm)	Narda	DC - 12.4 GHz	757C-10	7/23/2008	7/23/2009
7032	LISN	Rohde & Schwarz	N/A	ESH 3-Z5	12/16/2008	12/16/2009
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

Radiated Spurious Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3116	Pre-Amplifier	Miteq	0.1 GHz - 18 GHz	AFS42-35	1/21/2009	1/21/2010
3117	Power Supply	B&K Precision	0-30 Vdc, 3.0 A	1630	1/31/2008	1/31/2010
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	8/20/2008	8/20/2009
3430	Horn Antenna	MCS Corporation	18 GHz - 26.5 GHz	K-5039	1/12/2009	1/12/2010
4029B	Test Site Attenuation	Retlif	3 / 10 Meters	RNH	7/21/2008	7/21/2009
4961B	Attenuator	Narda	DC - 18 GHz	757C-30dB	1/20/2009	1/20/2010
5072	Preamplifier	Miteq	18 GHz-40 GHz	JS4-18004000-30	10/1/2008	10/1/2009
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

Peak Power Output

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4961B	Attenuator	Narda	DC - 18 GHz	757C-30dB	1/20/2009	1/20/2010
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

Antenna Conducted Out of Band Emissions/ Power Spectral Density

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4961B	Attenuator	Narda	DC - 18 GHz	757C-30dB	1/20/2009	1/20/2010
R425B	Spectrum Analyzer	Agilent	100 Hz - 26.5 GHz	E7405A;A	5/11/2009	5/11/2010

Test Photograph(s)
Bandwidth
FCC Part 15, Subpart C, Section 15.247(a)(2)
RSS-210, Section A8.2(a)

Test Photograph(s)
Bandwidth

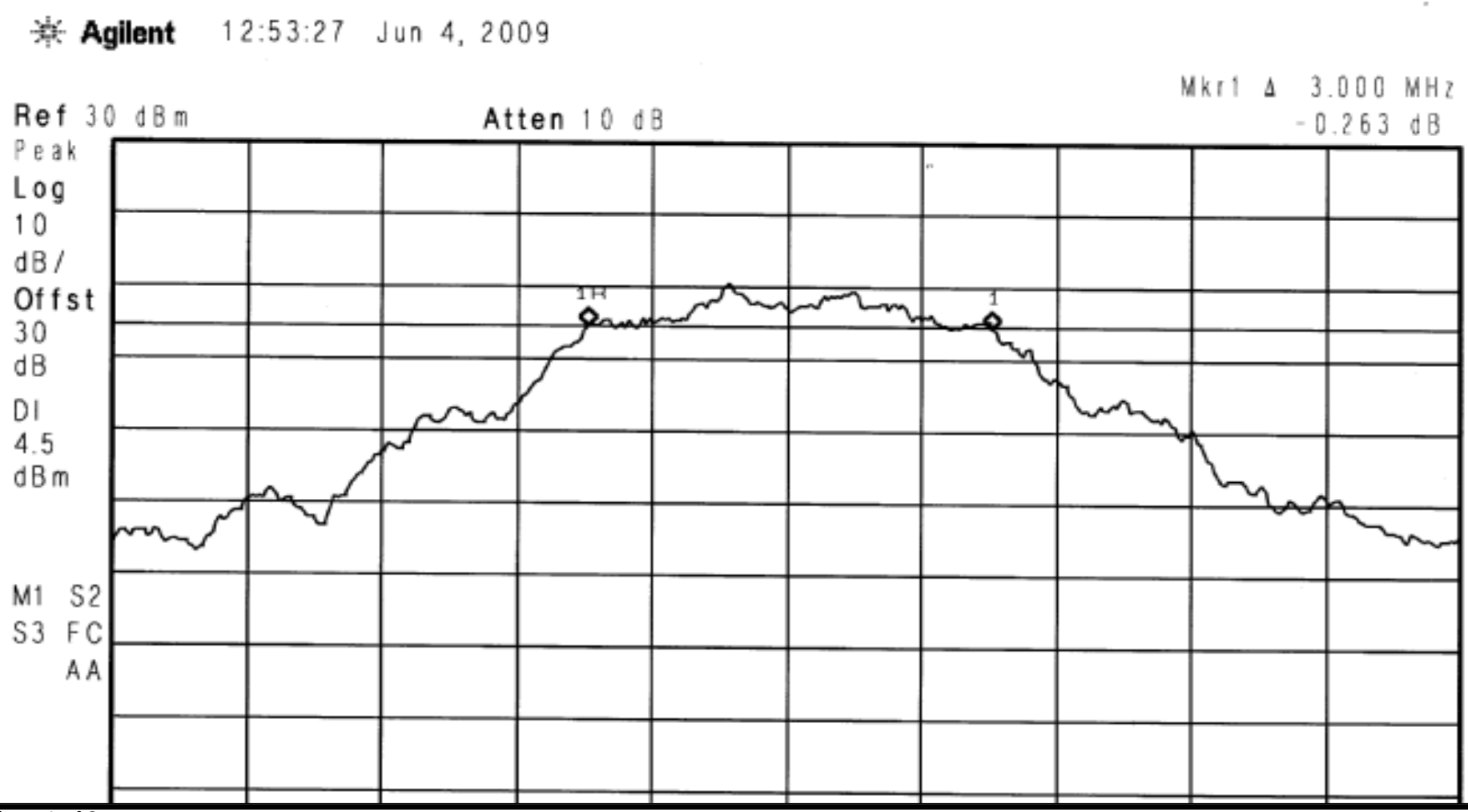
Test Setup

Test Data
Bandwidth
FCC Part 15, Subpart C, Section 15.247(a)(2)
RSS-210, Section A8.2(a)

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

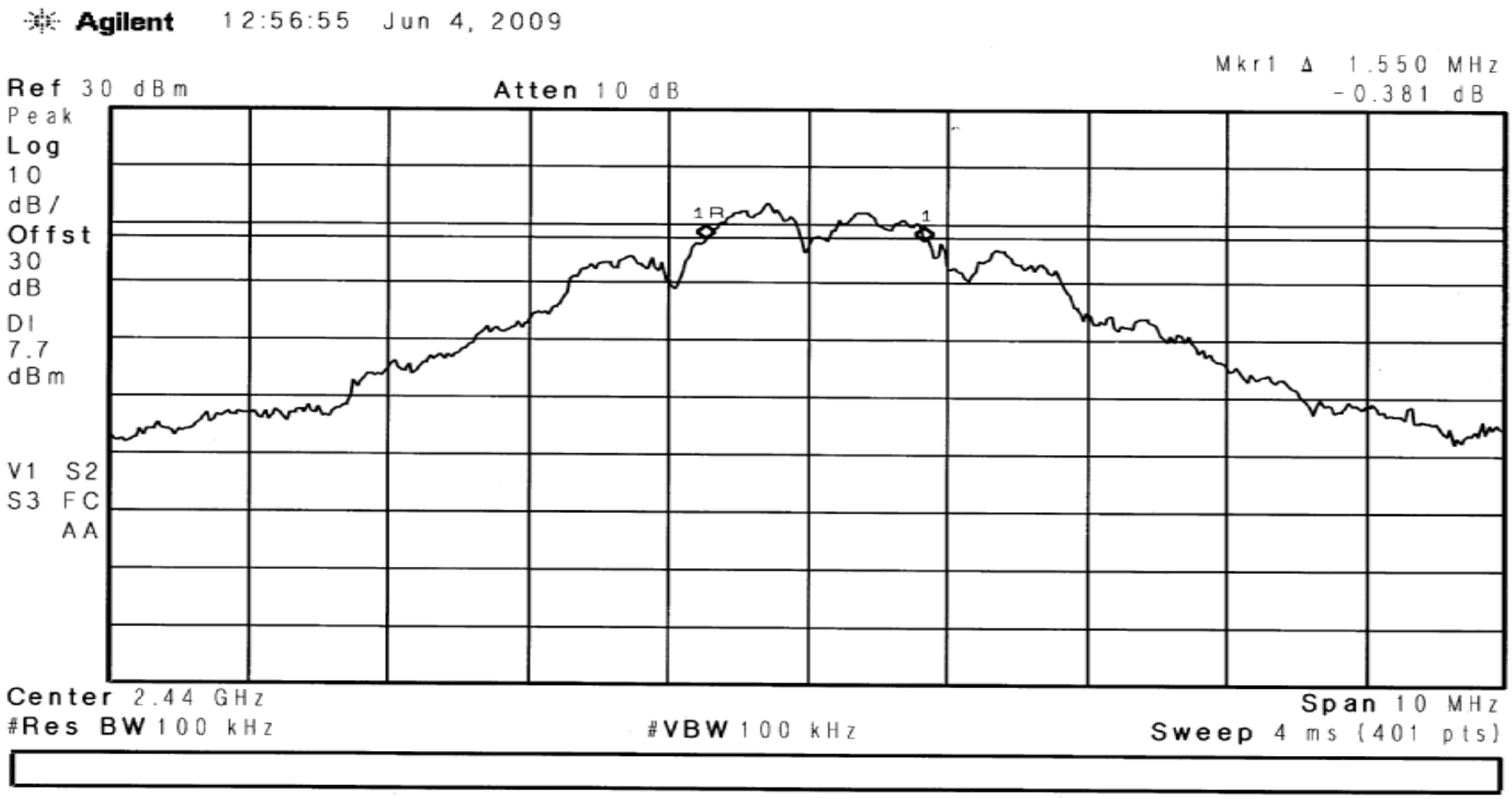
Test Method:	**Bandwidth**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(a)(2) / RSS210A8.2(a)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz; Bandwidth 3MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

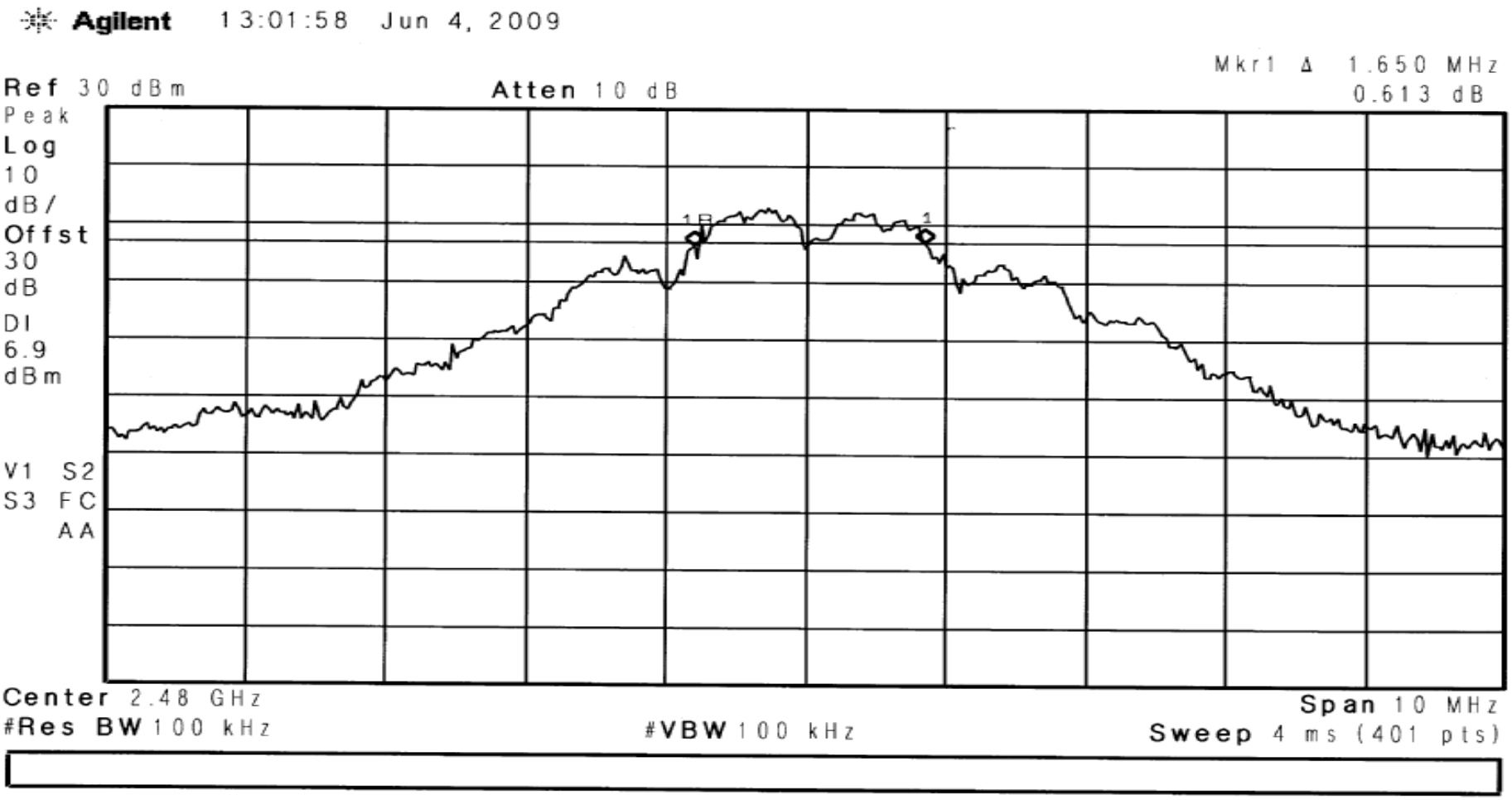
Test Method:	**Bandwidth**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(a)(2) / RSS210A8.2(a)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz; Bandwidth 1.550MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Bandwidth**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(a)(2) / RSS210A8.2(a)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz; Bandwidth 1.650MHz				



Test Photograph(s)
Power Output
FCC Part 15, Subpart C, Section 15.247(b)(3)
RSS-210, Section A8.4(4)

Test Photograph(s)
Power Output

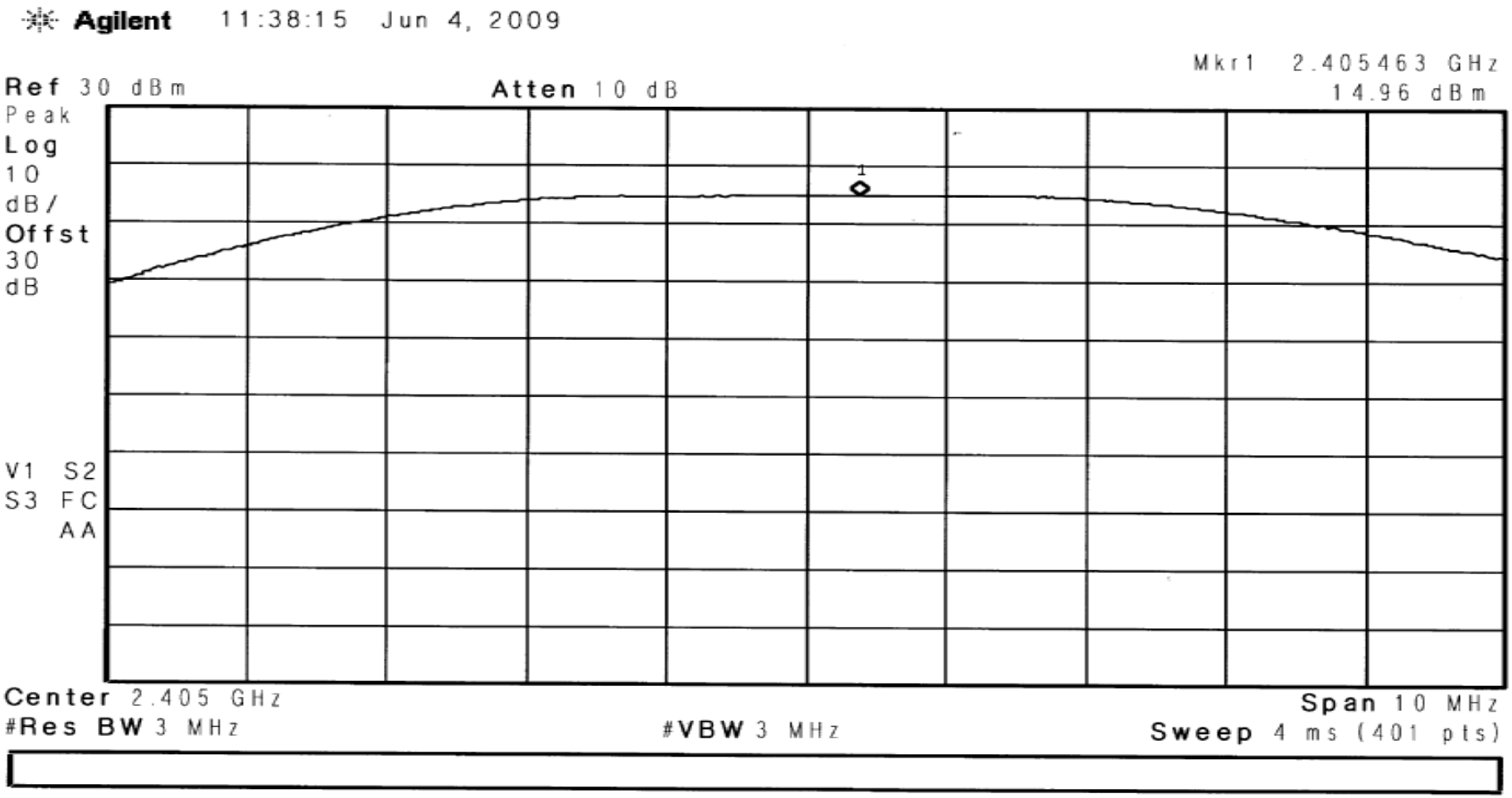
Test Setup

Test Data
Power Output
FCC Part 15, Subpart C, Section 15.247(b)(3)
RSS-210, Section A8.4(4)

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

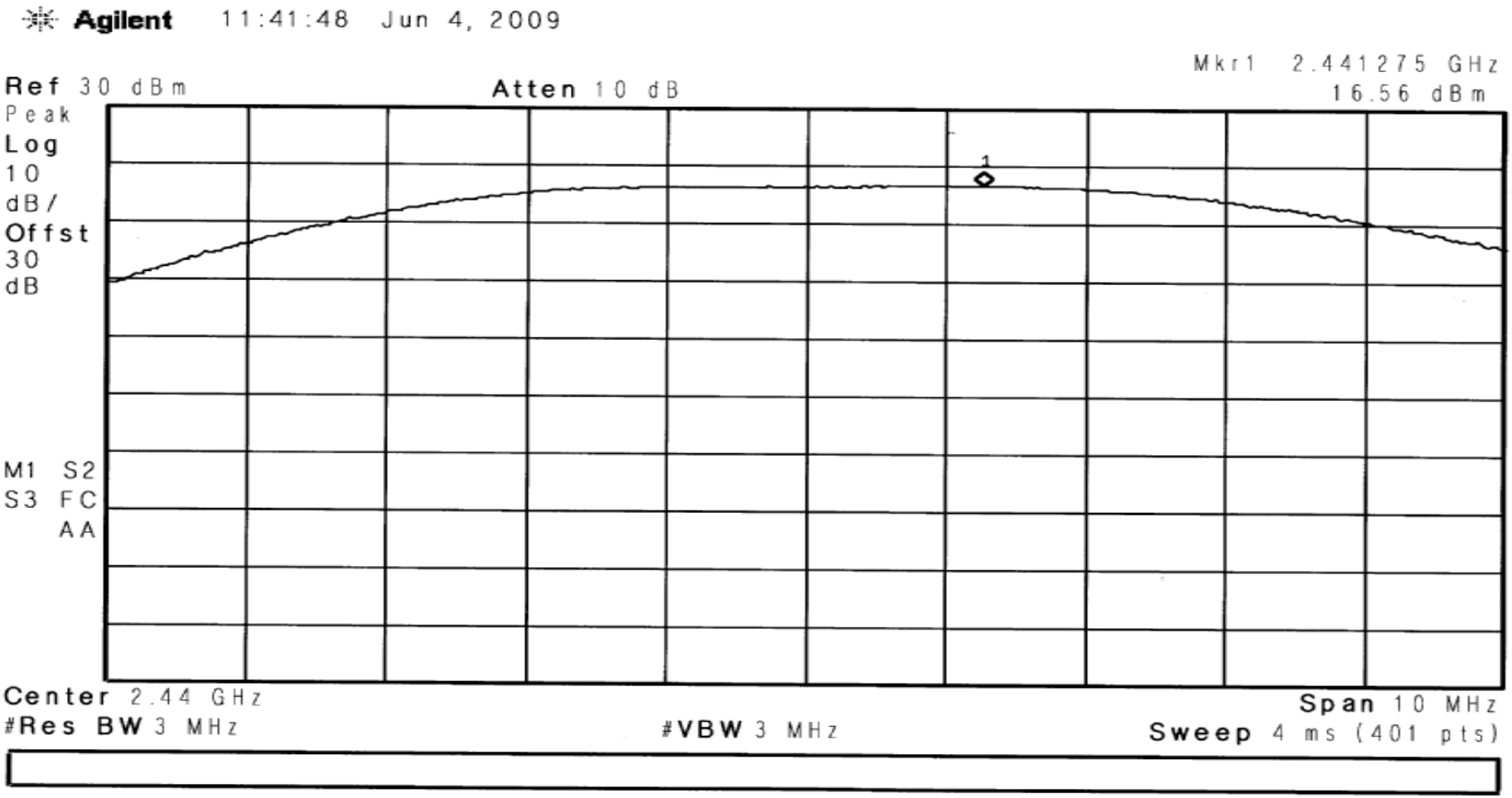
Test Method:	**Peak Power Output**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(b)(3) / RSS210A8.4(4)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz; 14.96dBm (0.031 W)				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

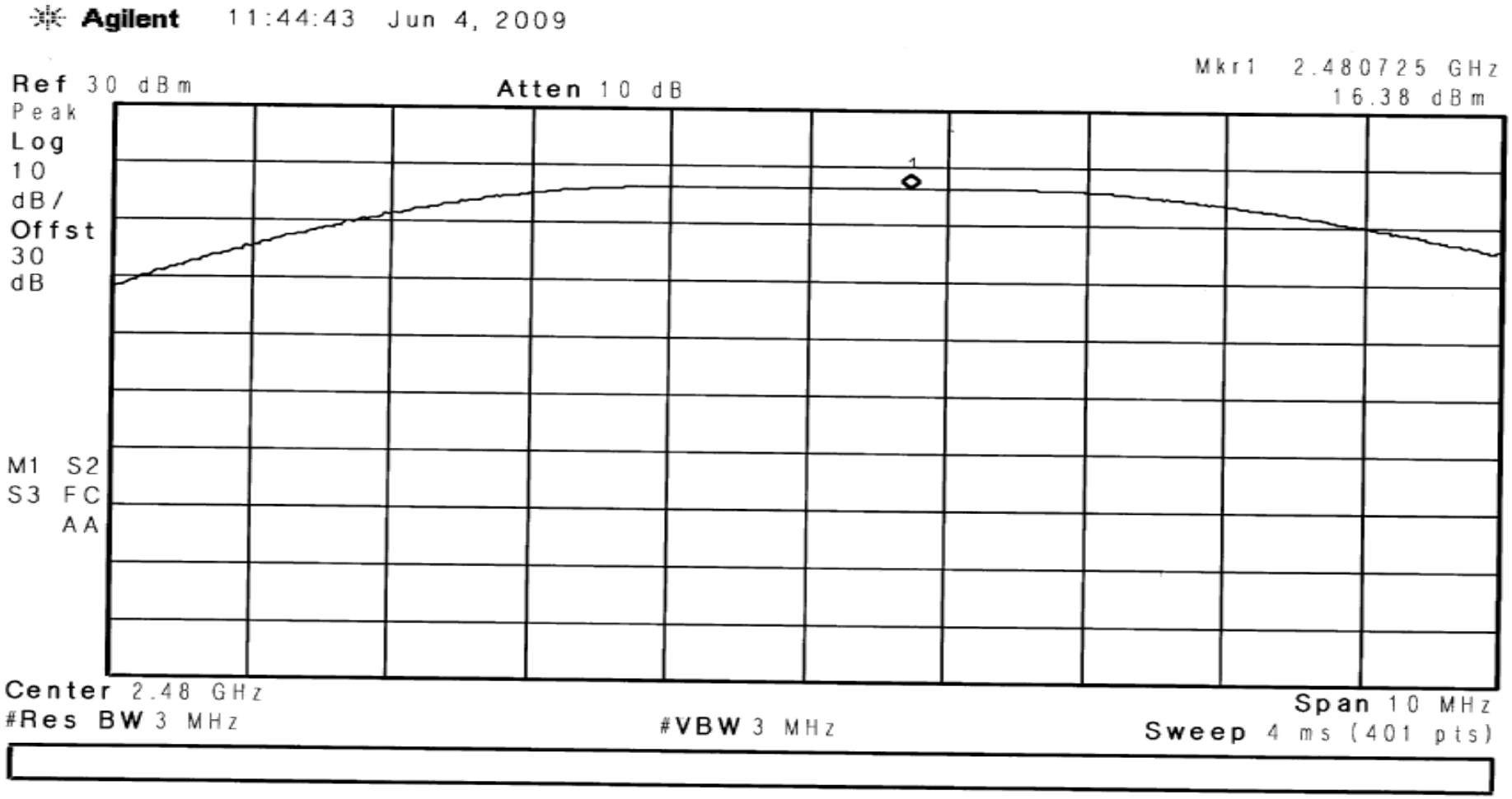
Test Method:	**Peak Power Output**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(b)(3) / RSS210A8.4(4)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz; 16.56 dBm (0.045 W)				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Peak Power Output**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(b)(3) / RSS210A8.4(4)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz; 16.38dBm (0.043W)				



Test Photograph(s)
Antenna Port Conducted Emissions
FCC Part 15, Subpart C, Section 15.247(d)
RSS-210, Section A8.5

Test Photograph(s)
Conducted Emissions

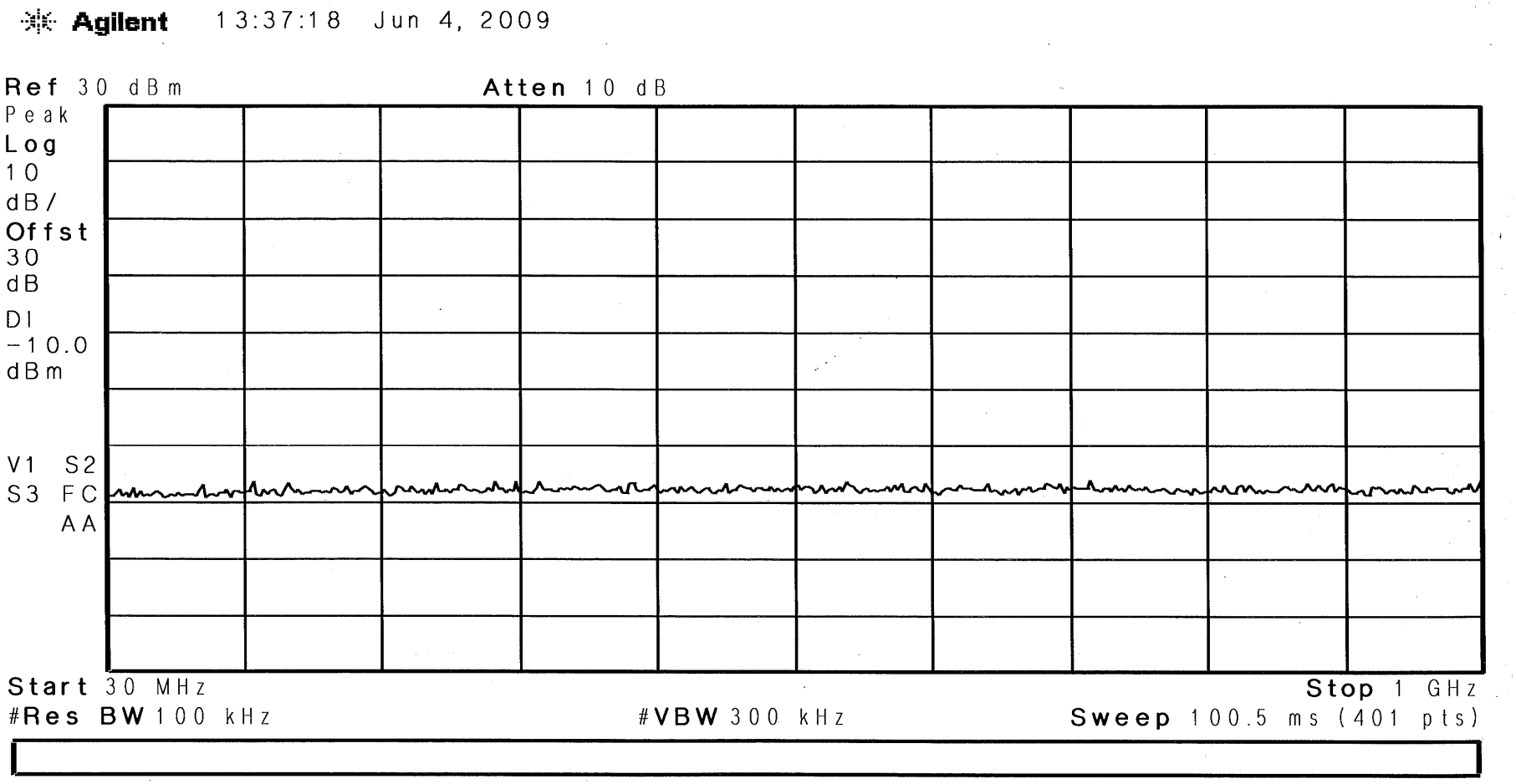
Test Setup

Test Data
Antenna Port Conducted Emissions
FCC Part 15, Subpart C, Section 15.247(d)
RSS-210, Section A8.5

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

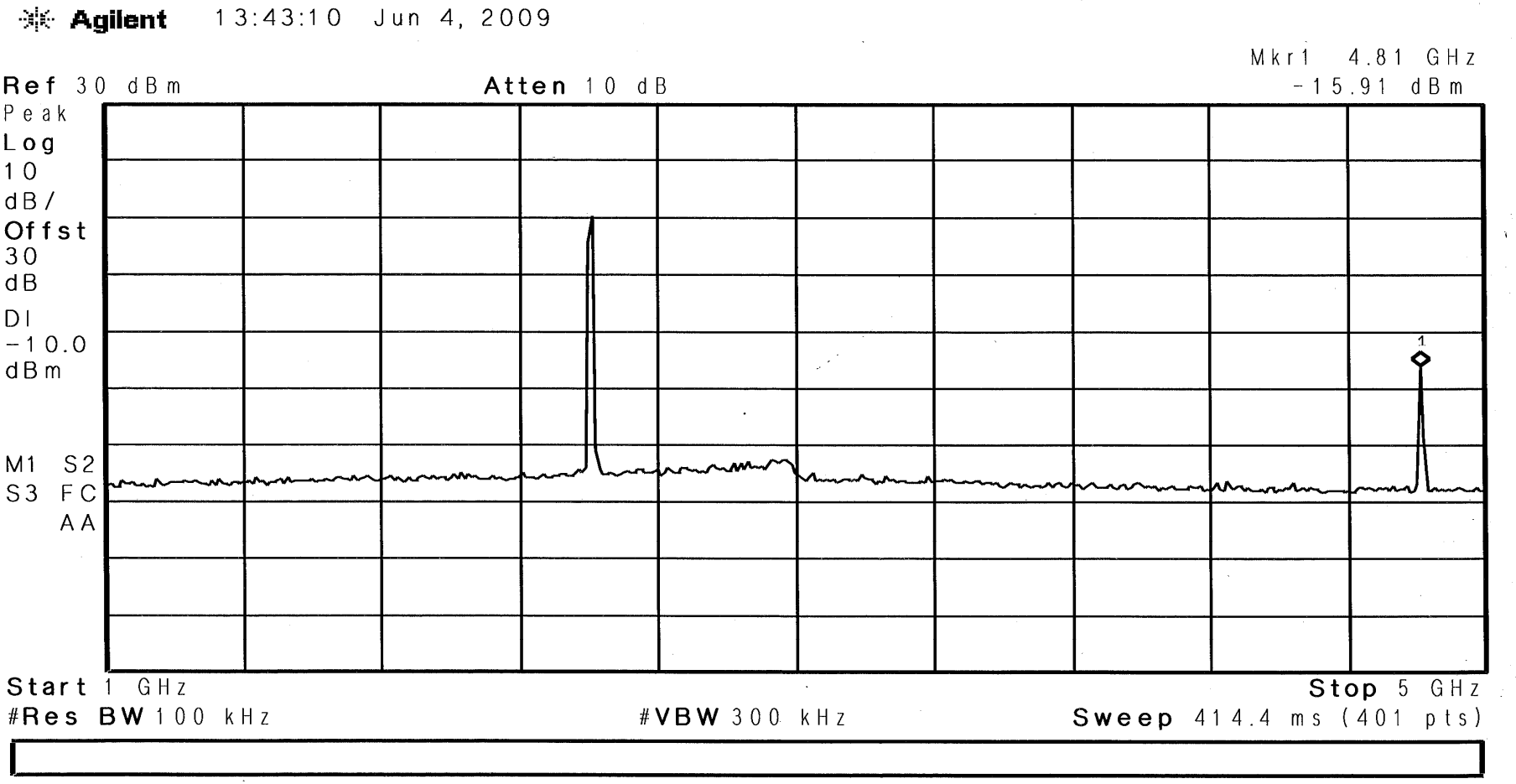
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

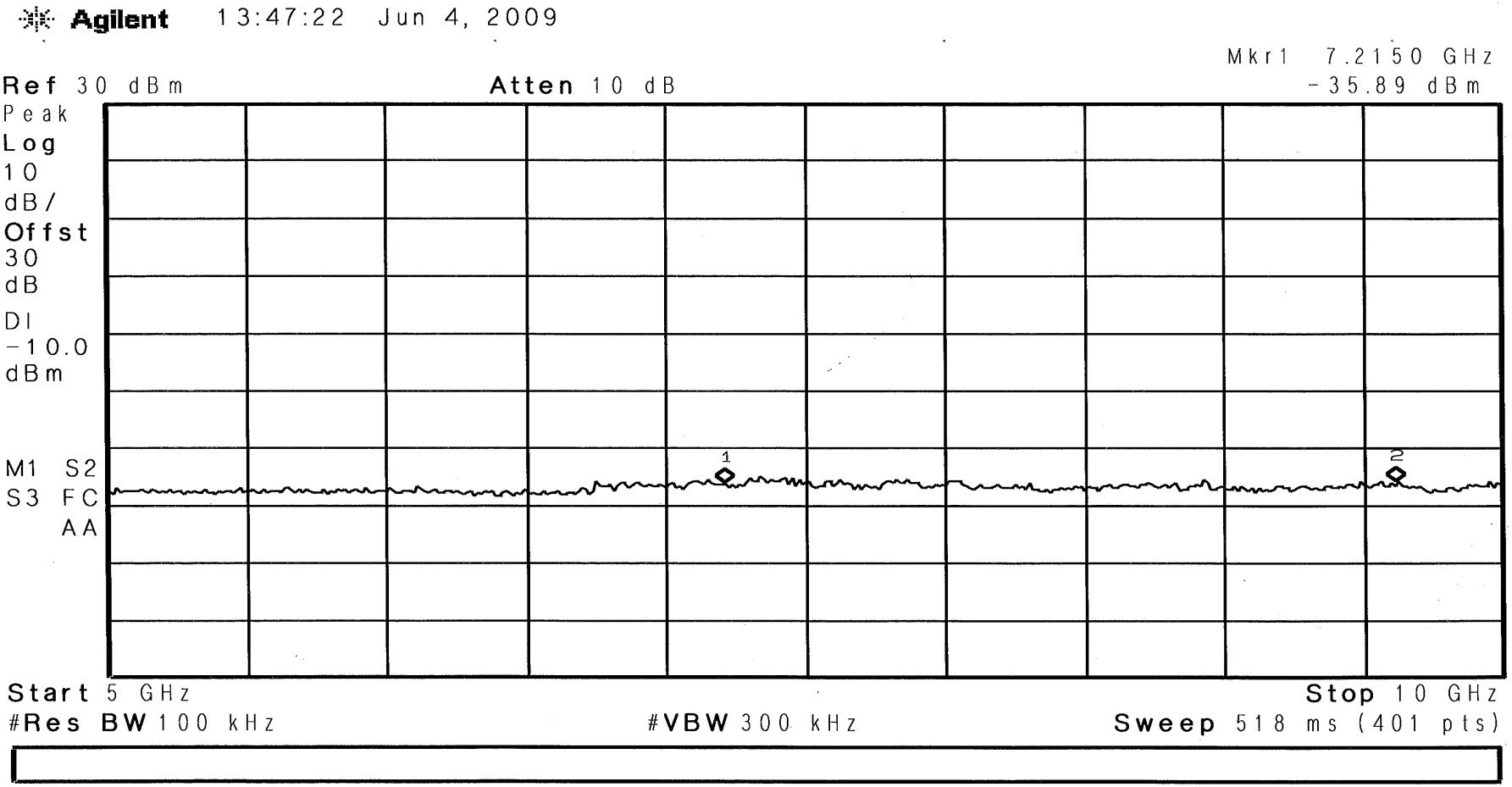
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

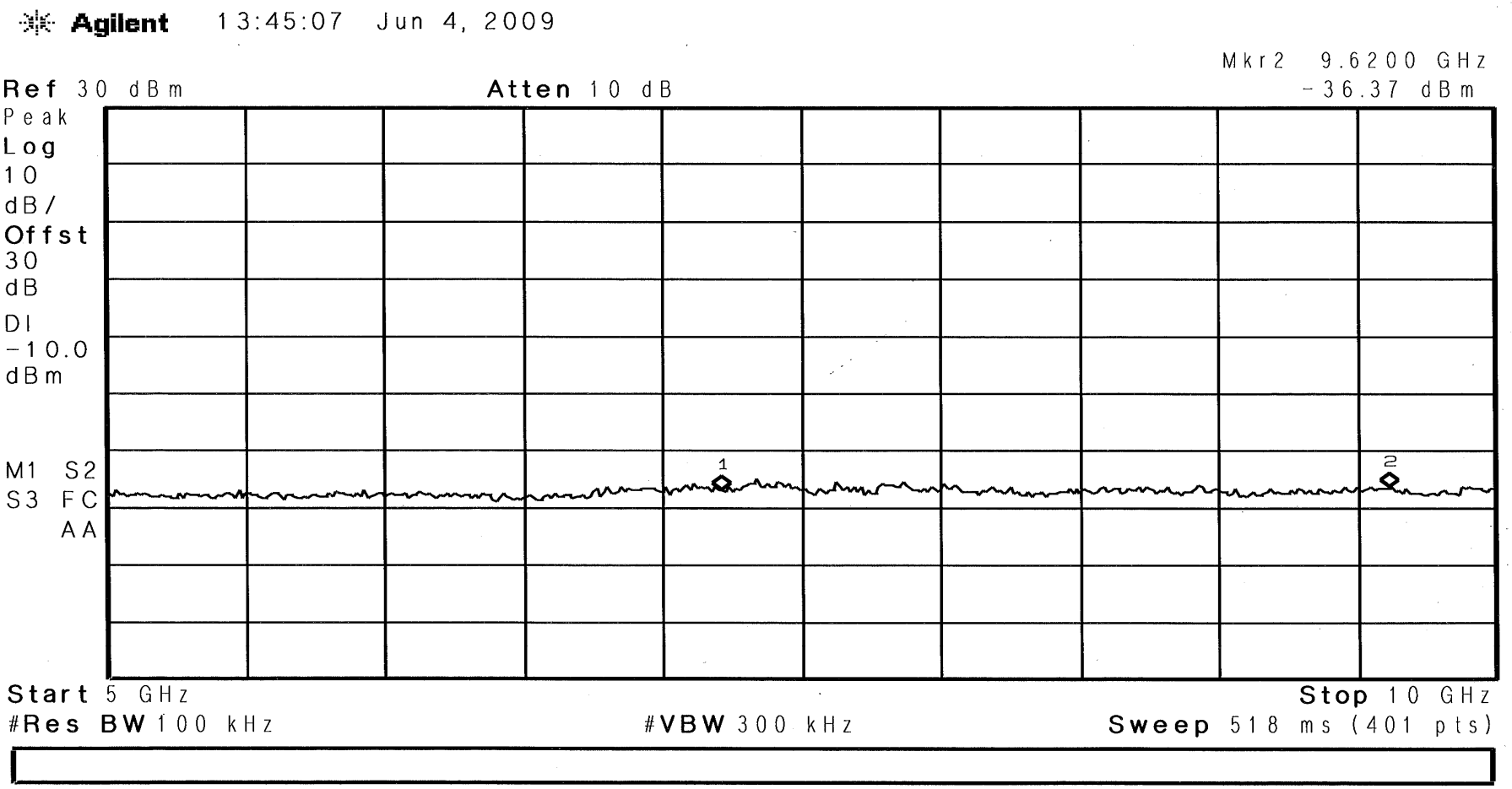
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

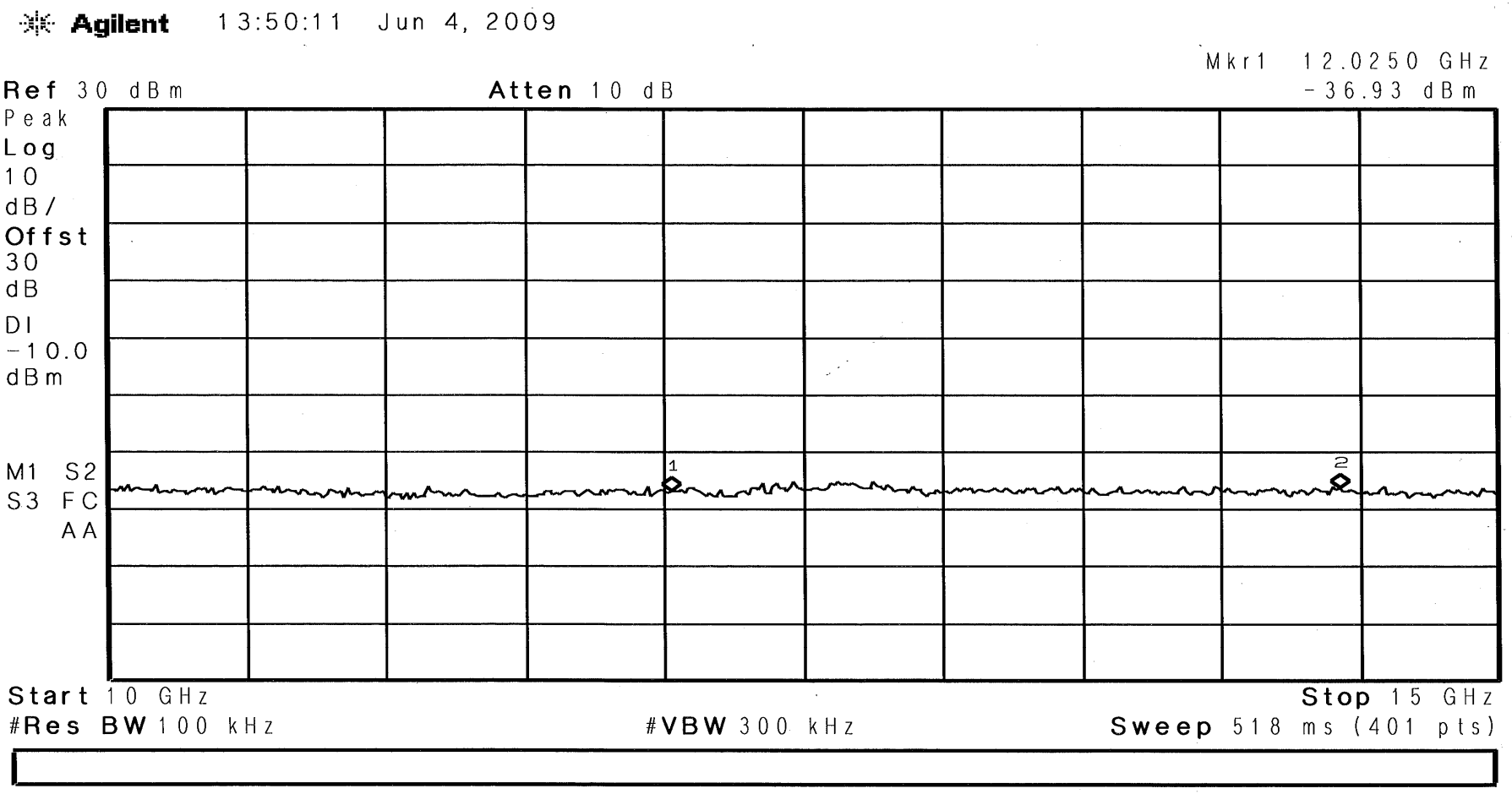
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5	0		**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

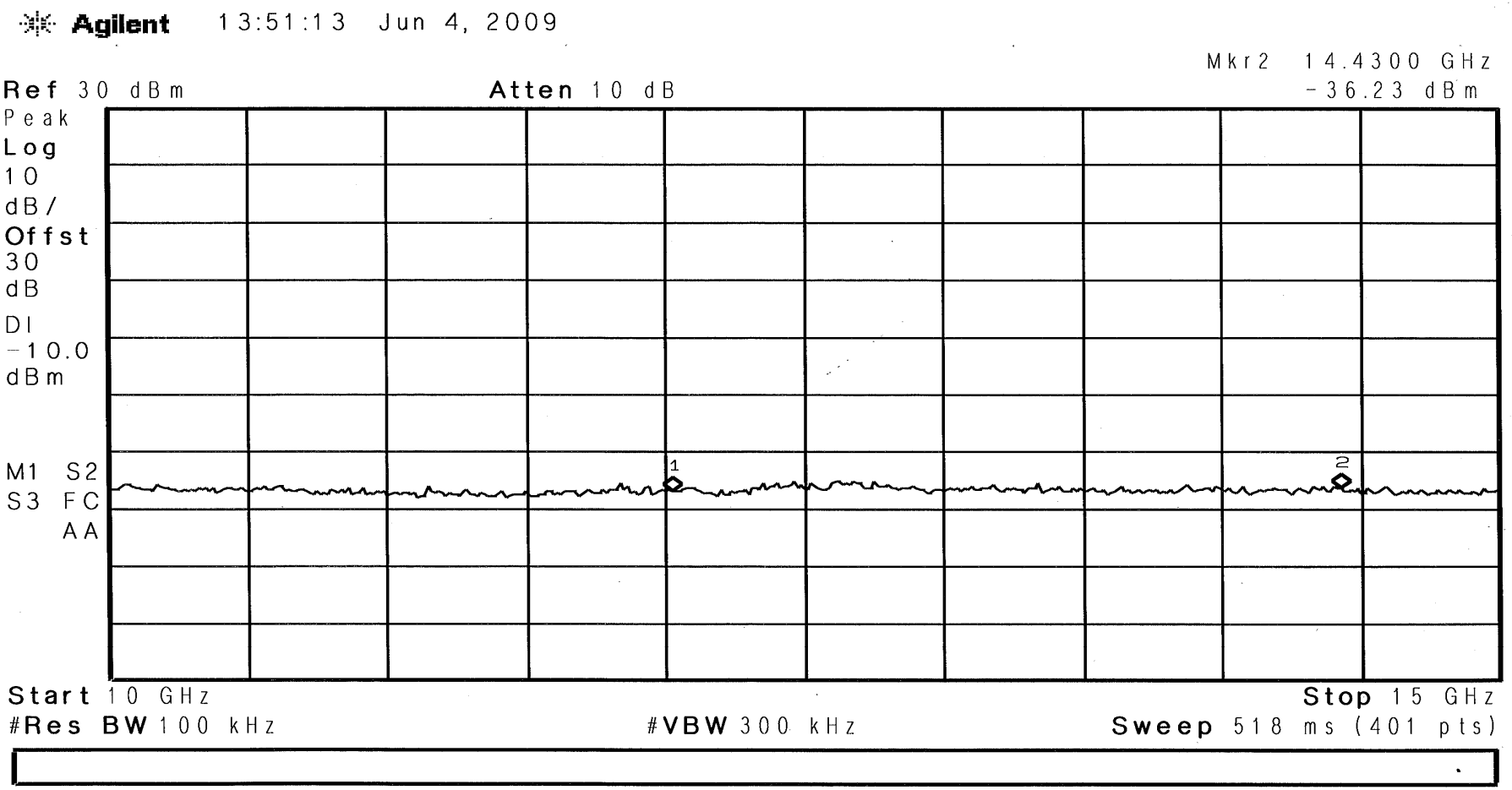
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

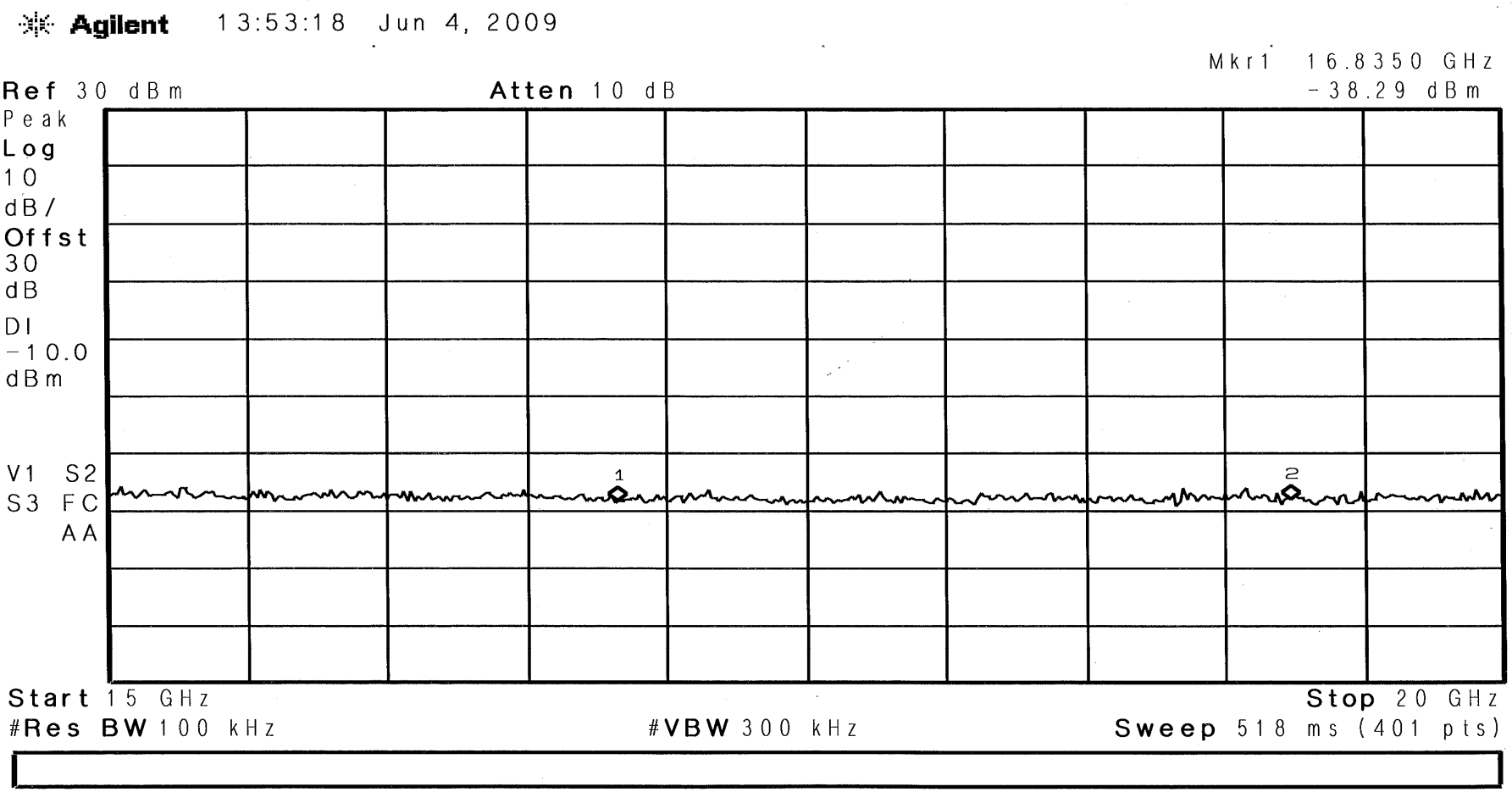
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

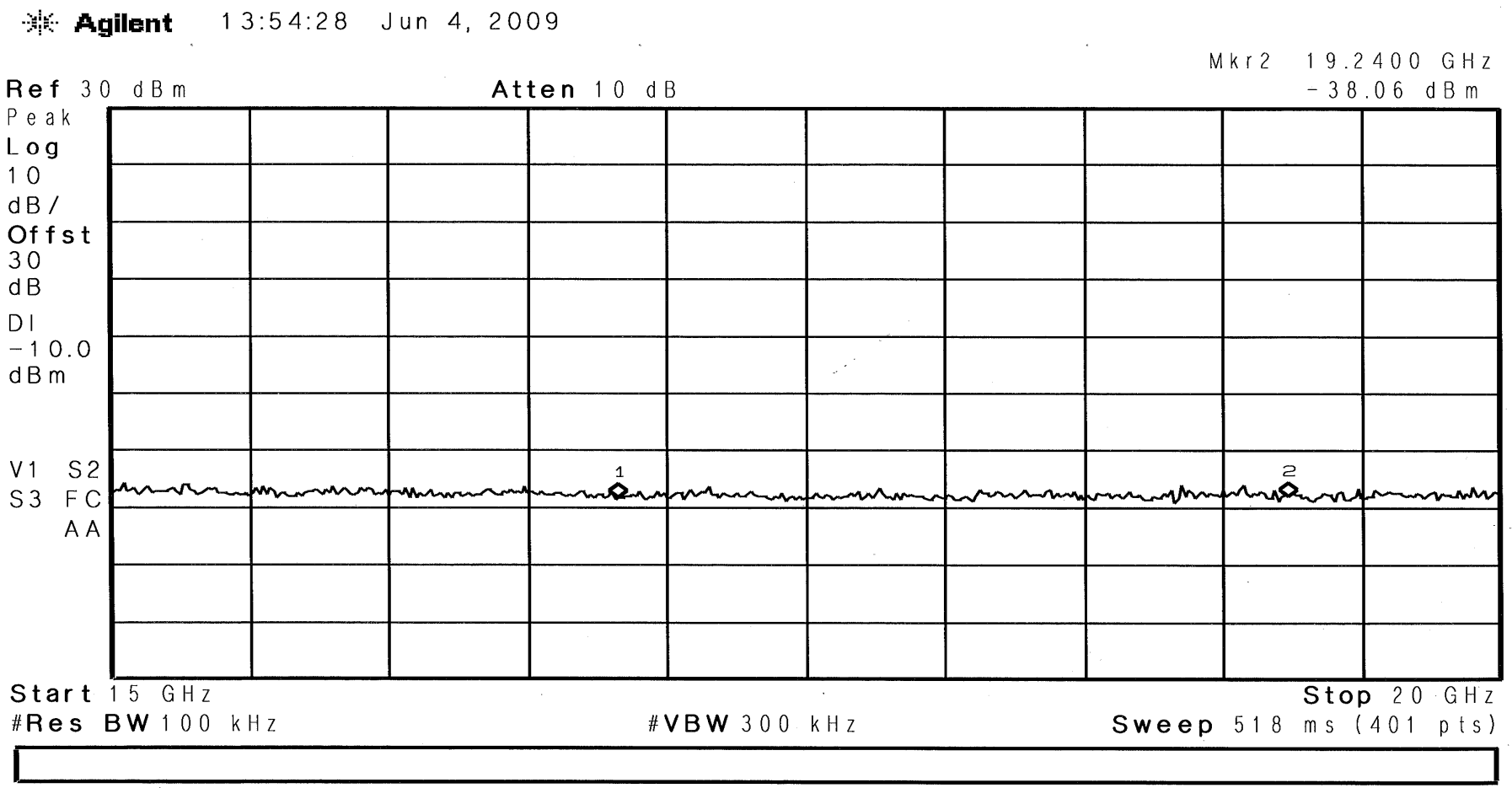
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

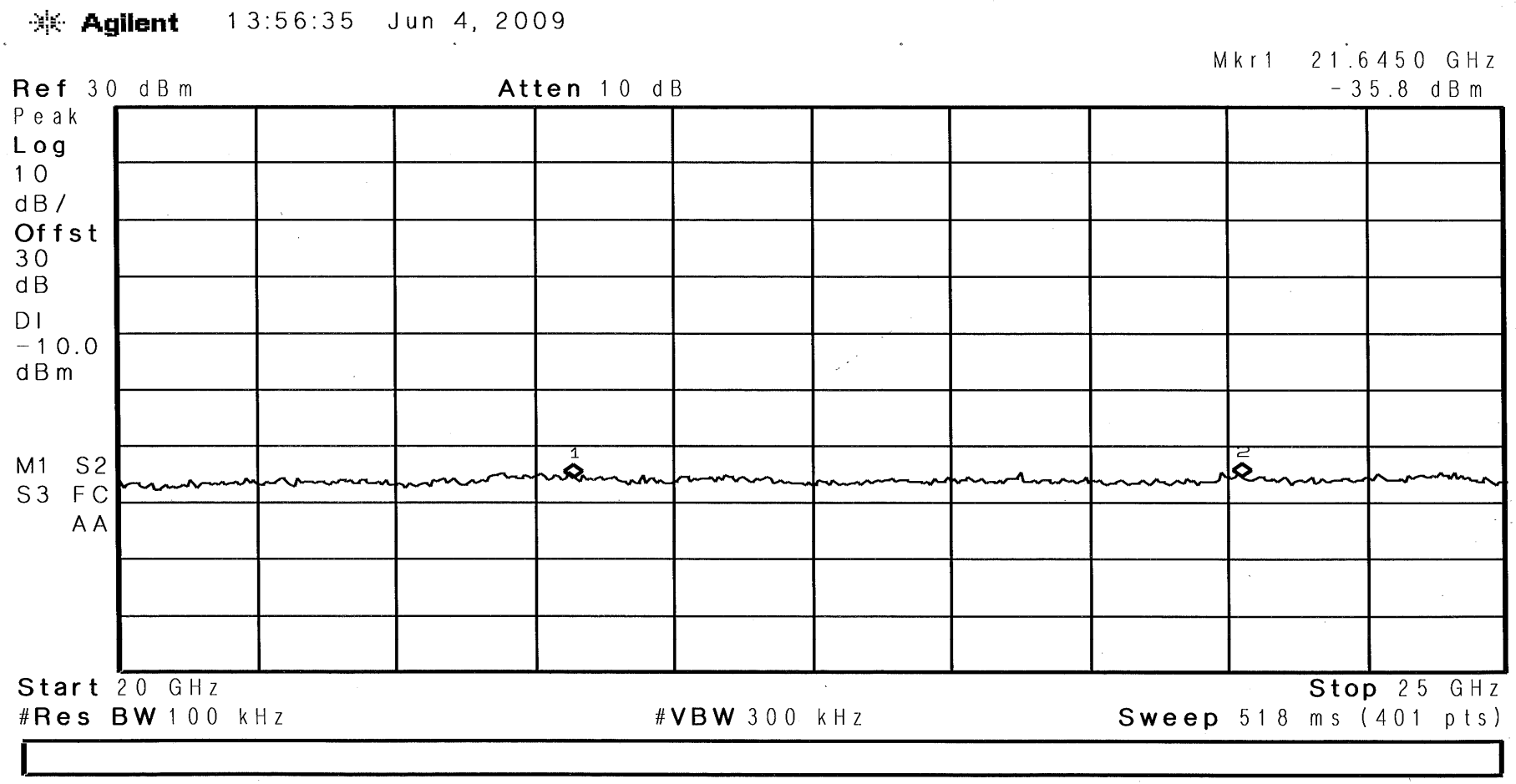
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

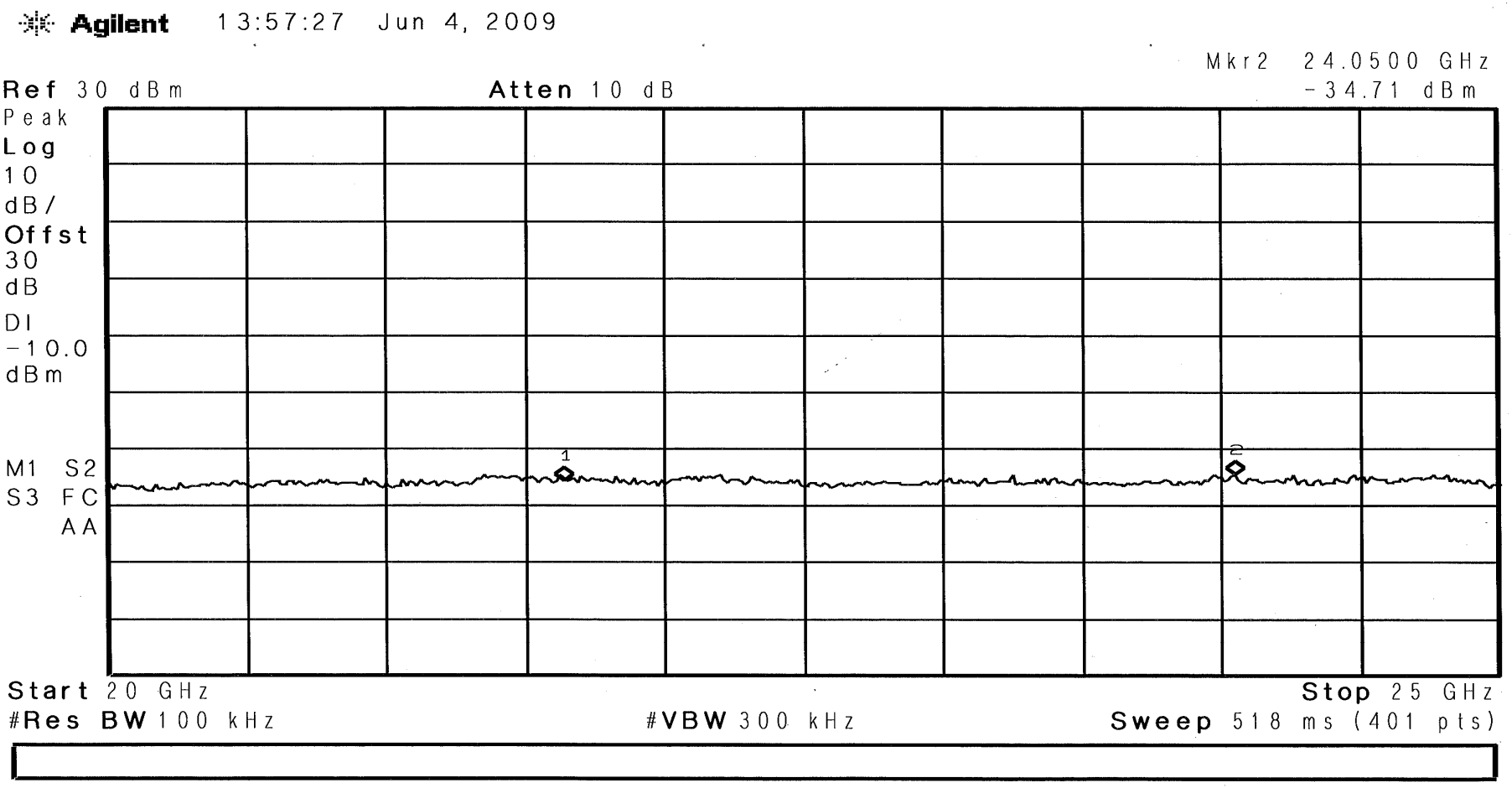
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

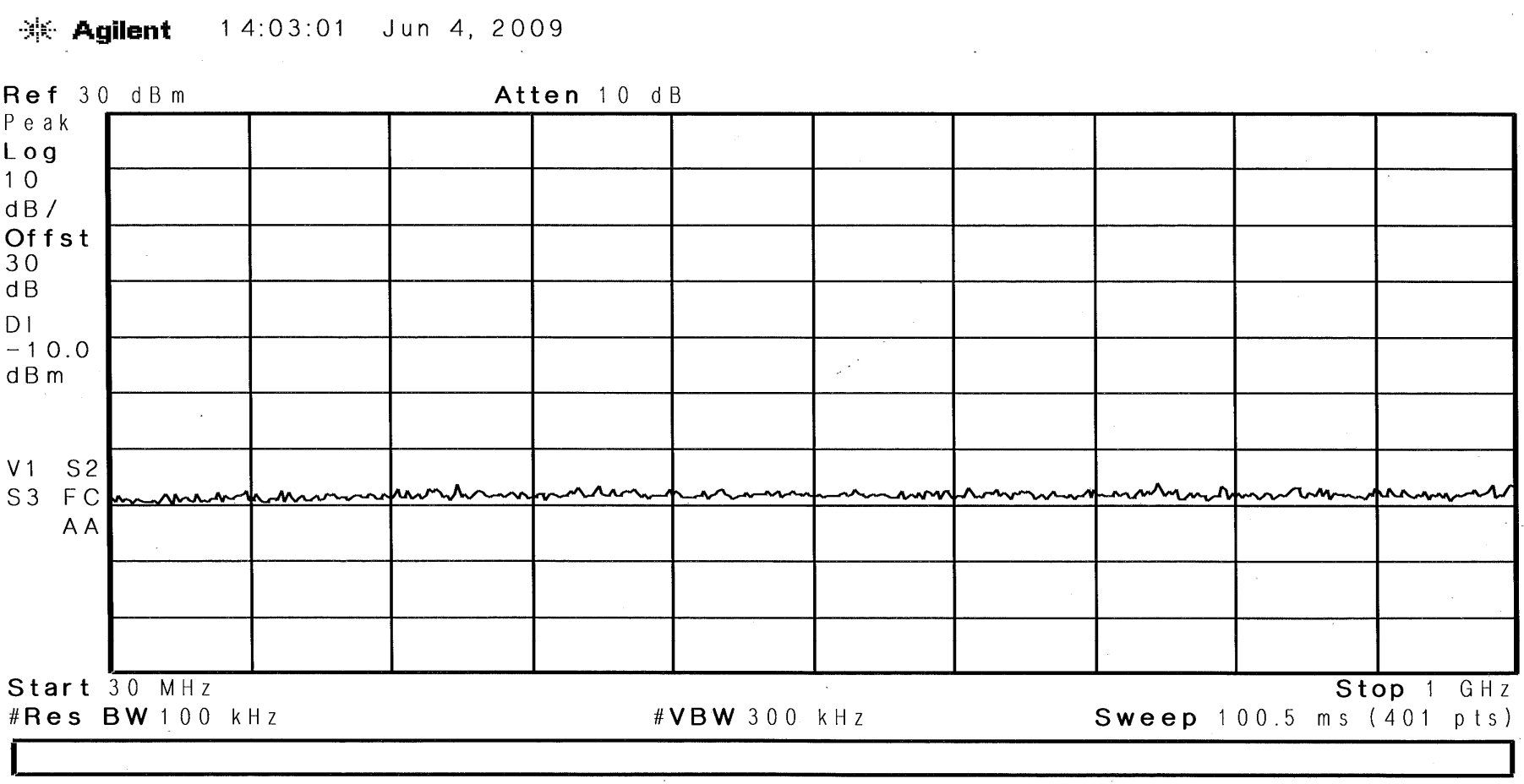
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

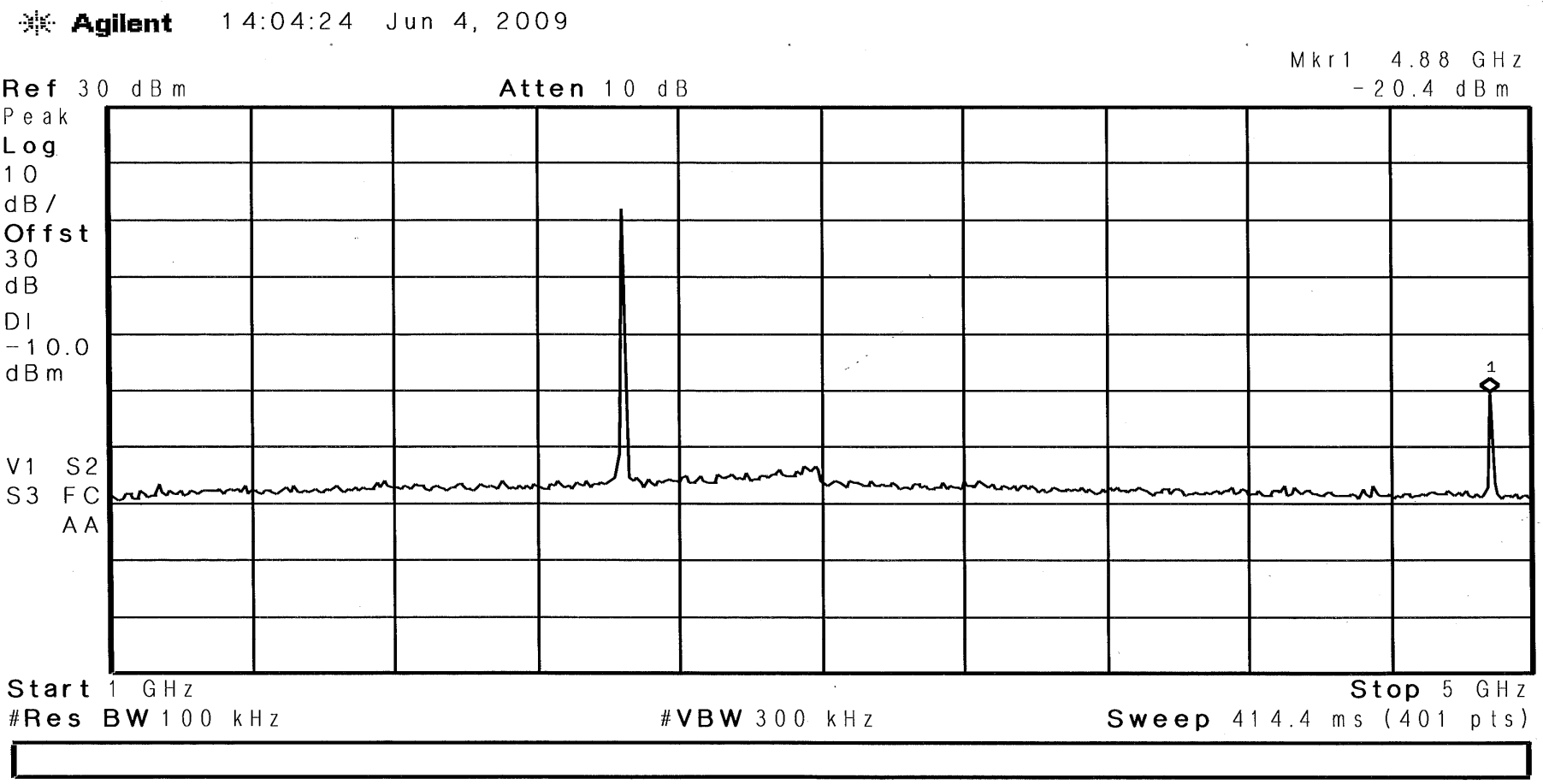
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

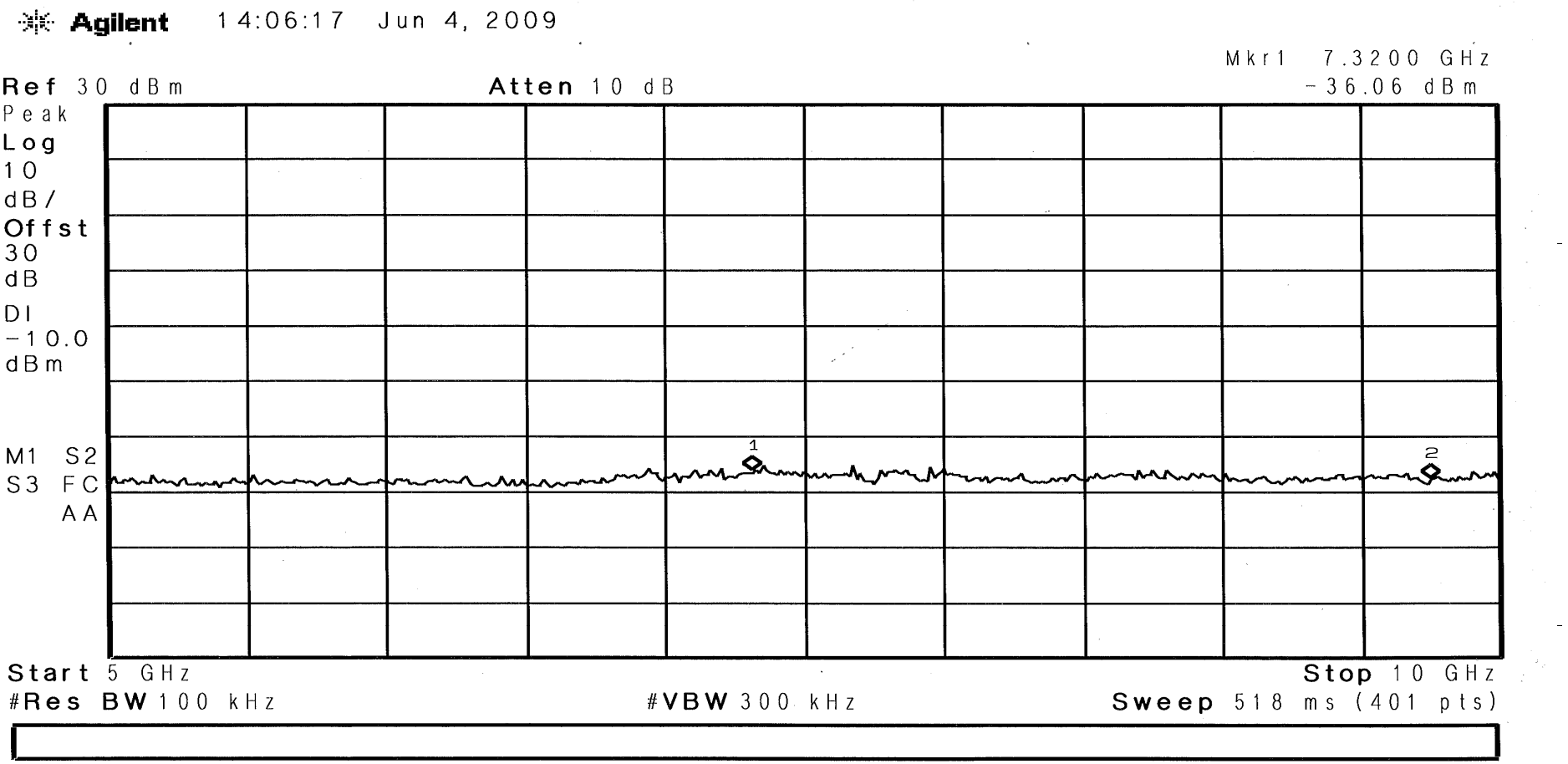
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

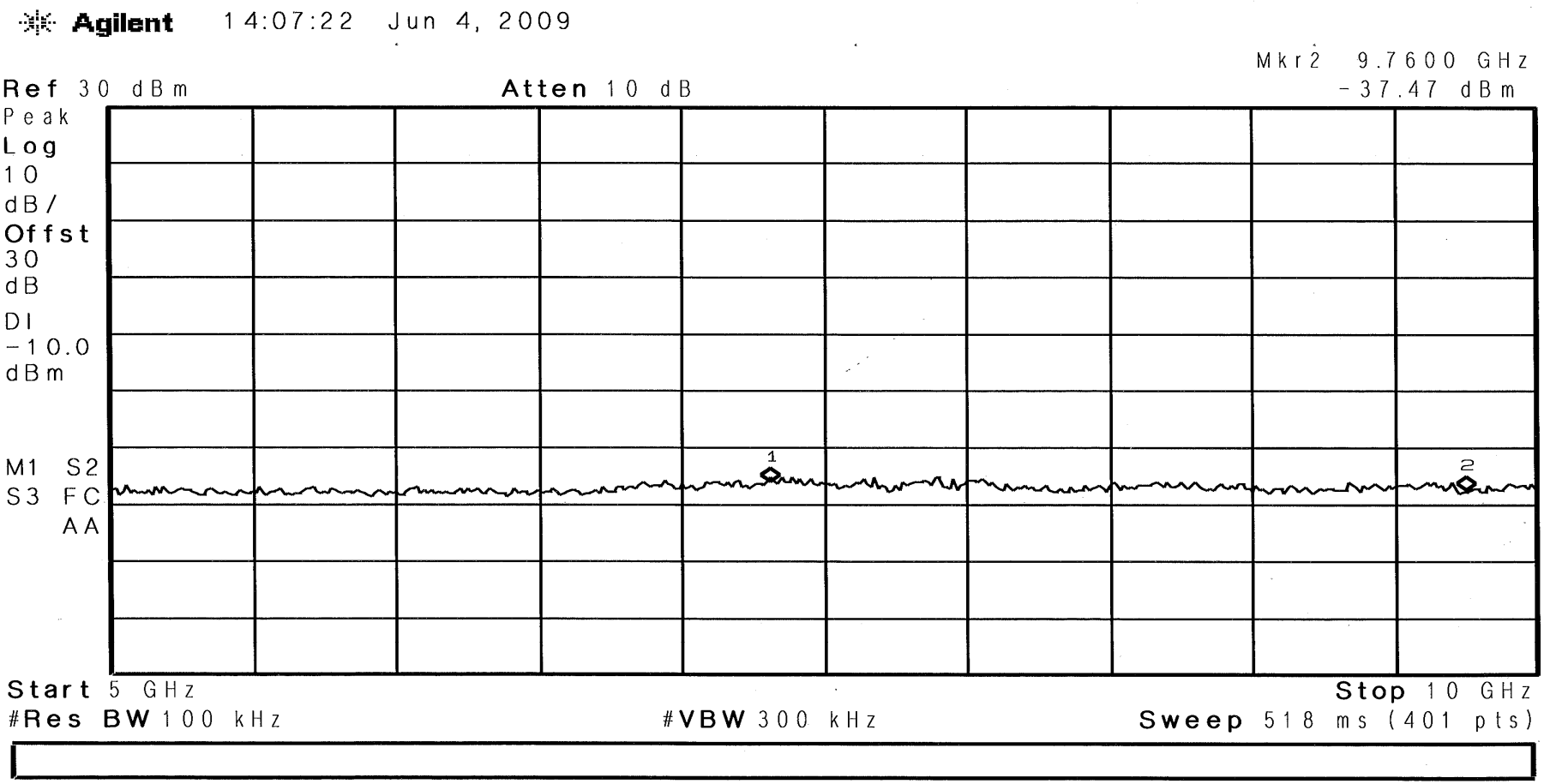
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

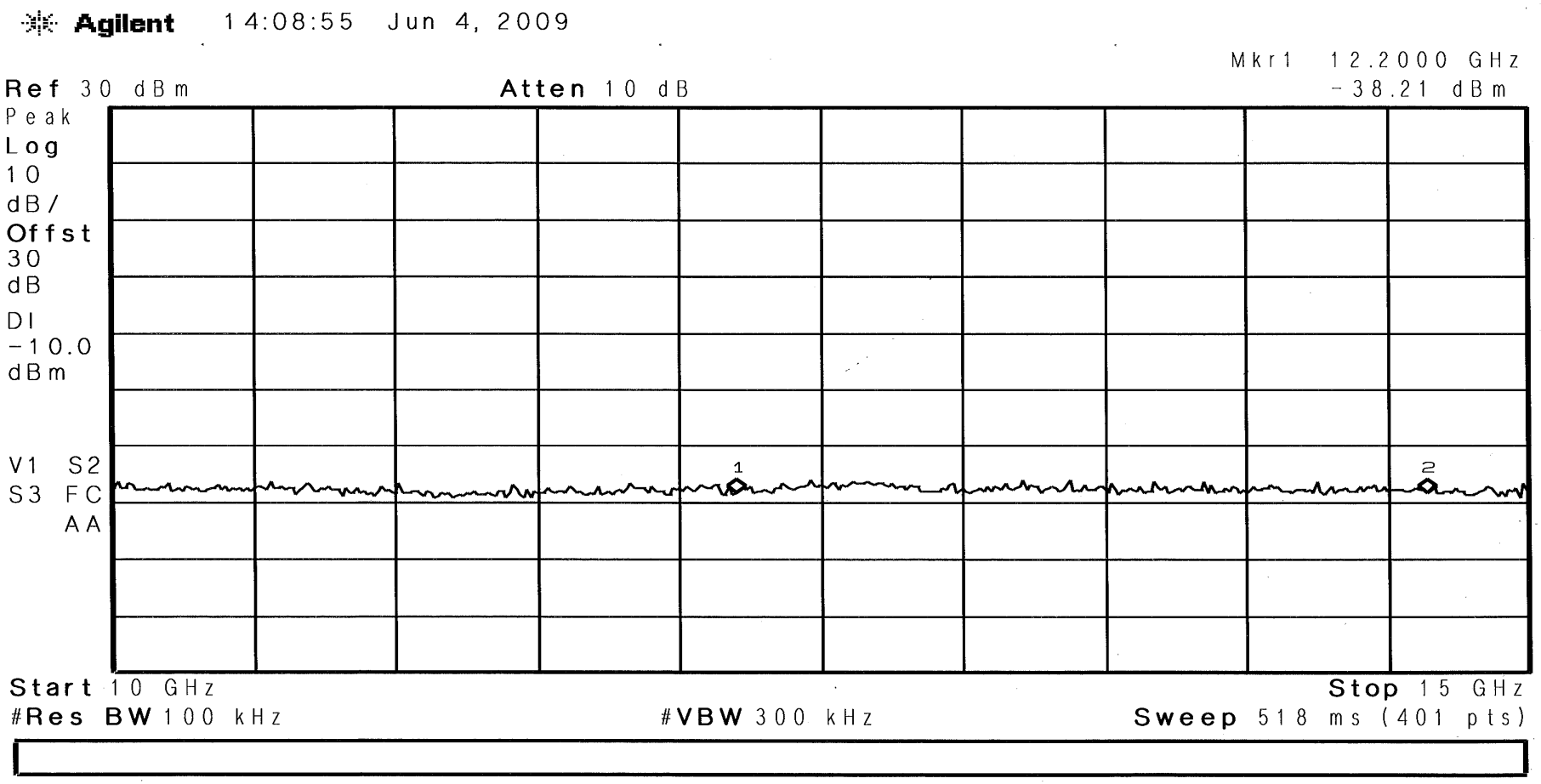
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

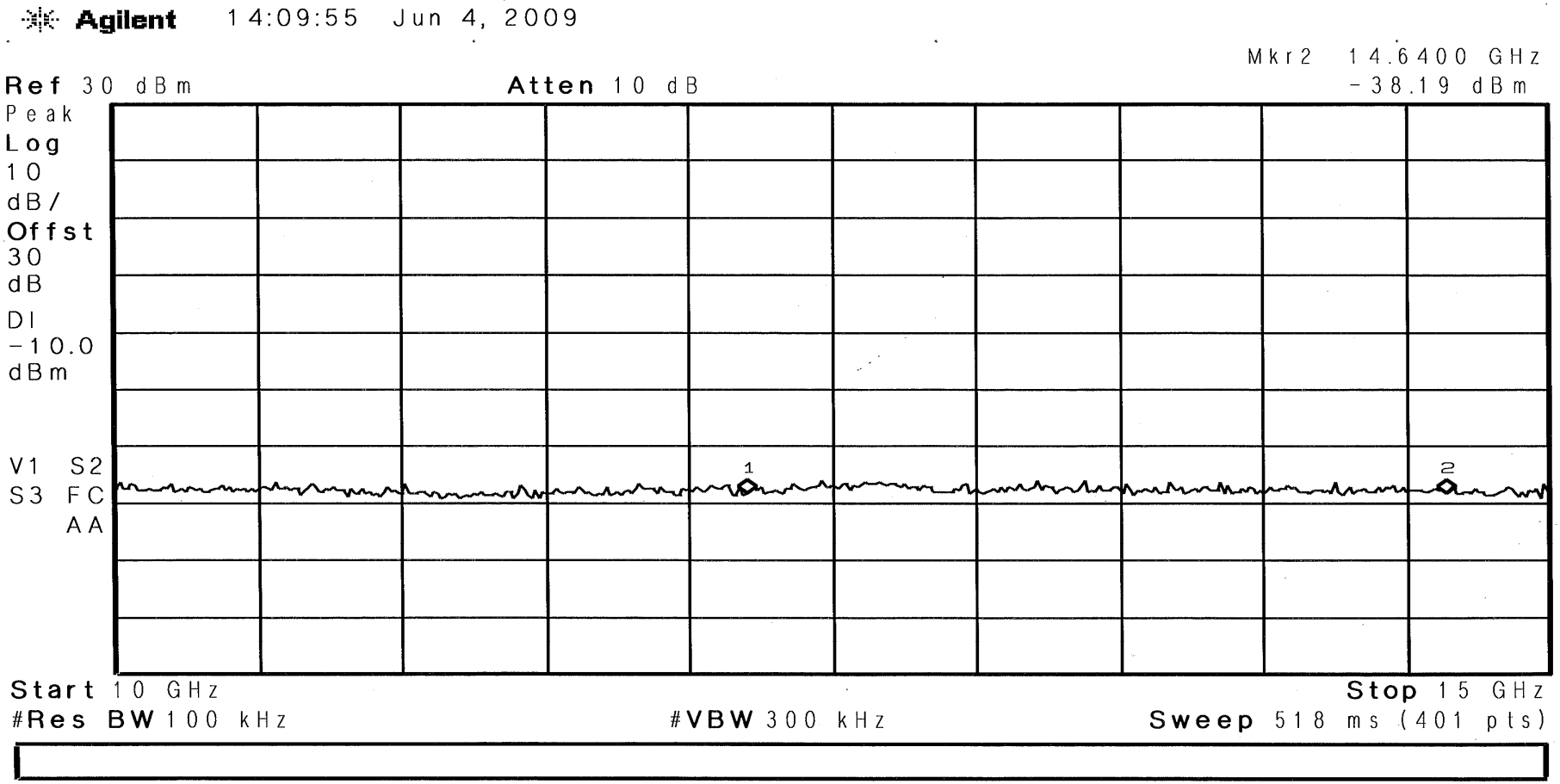
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

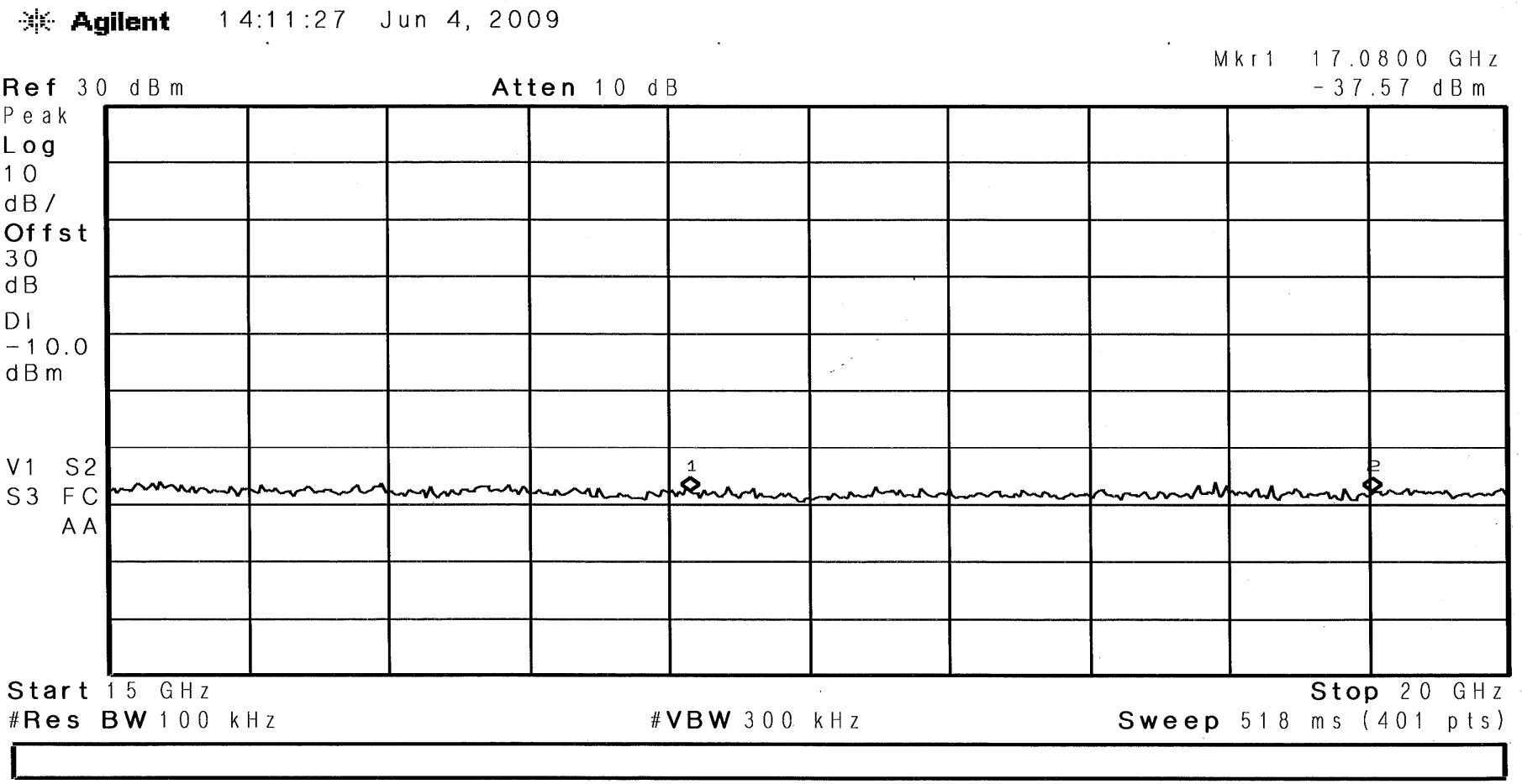
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

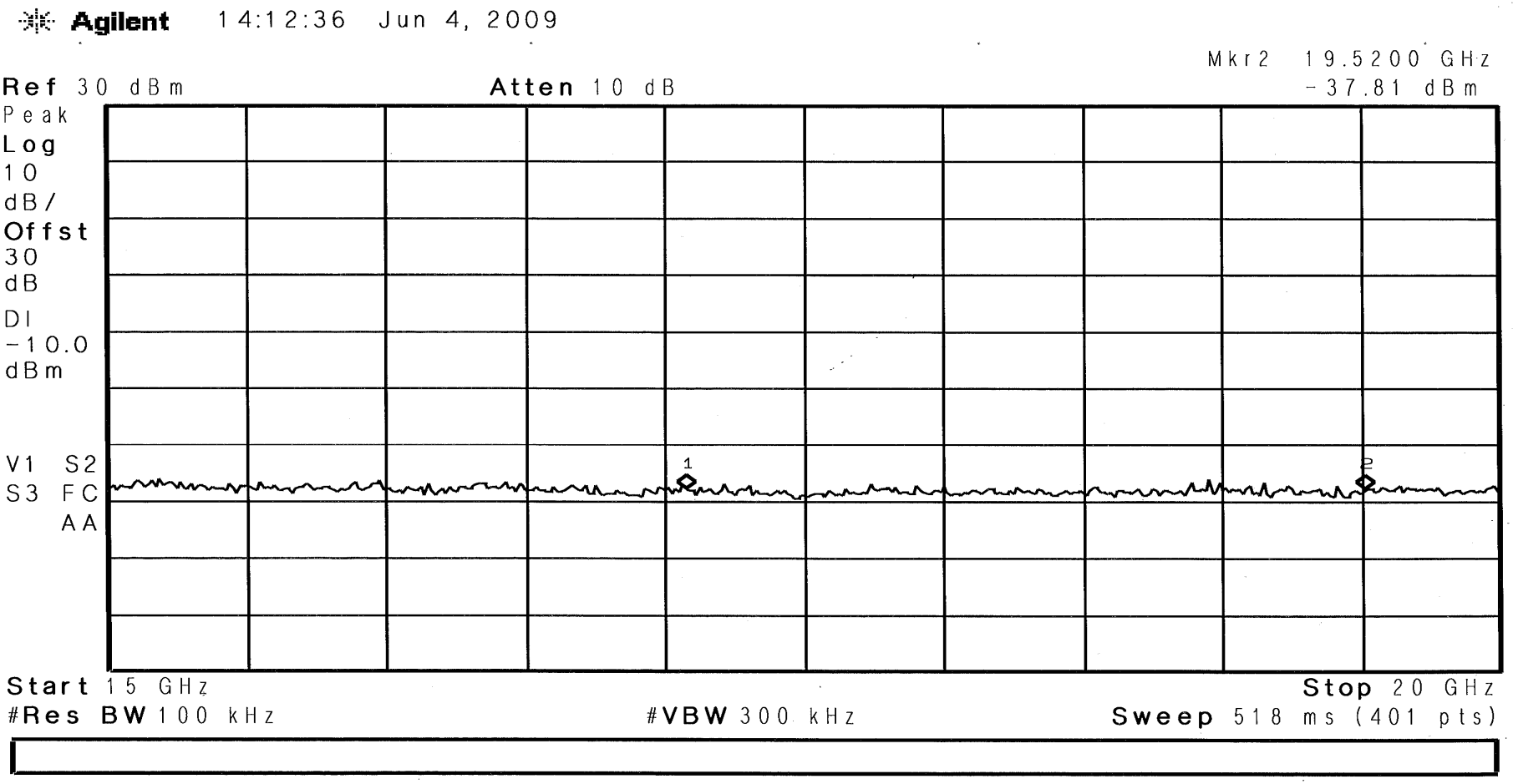
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

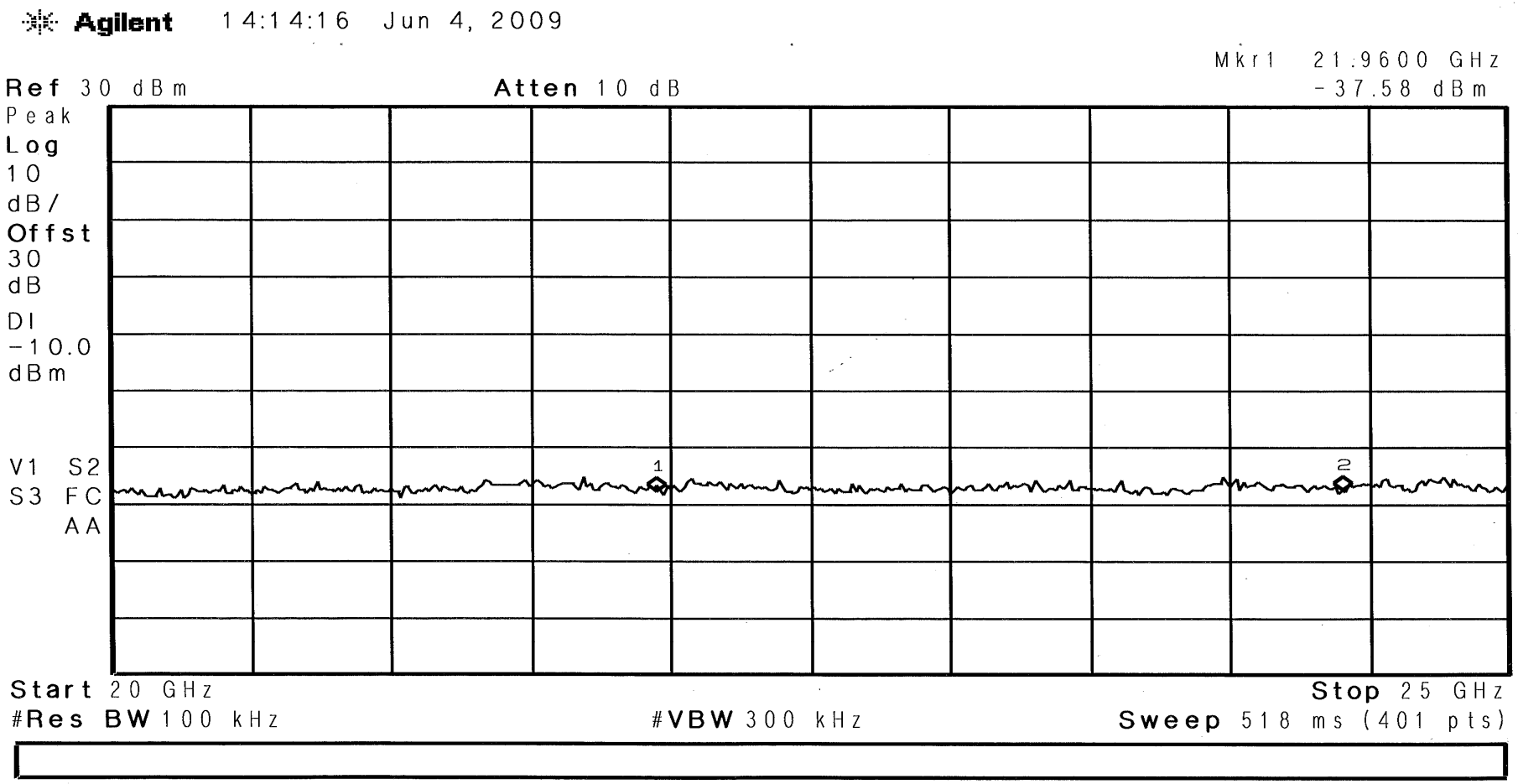
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

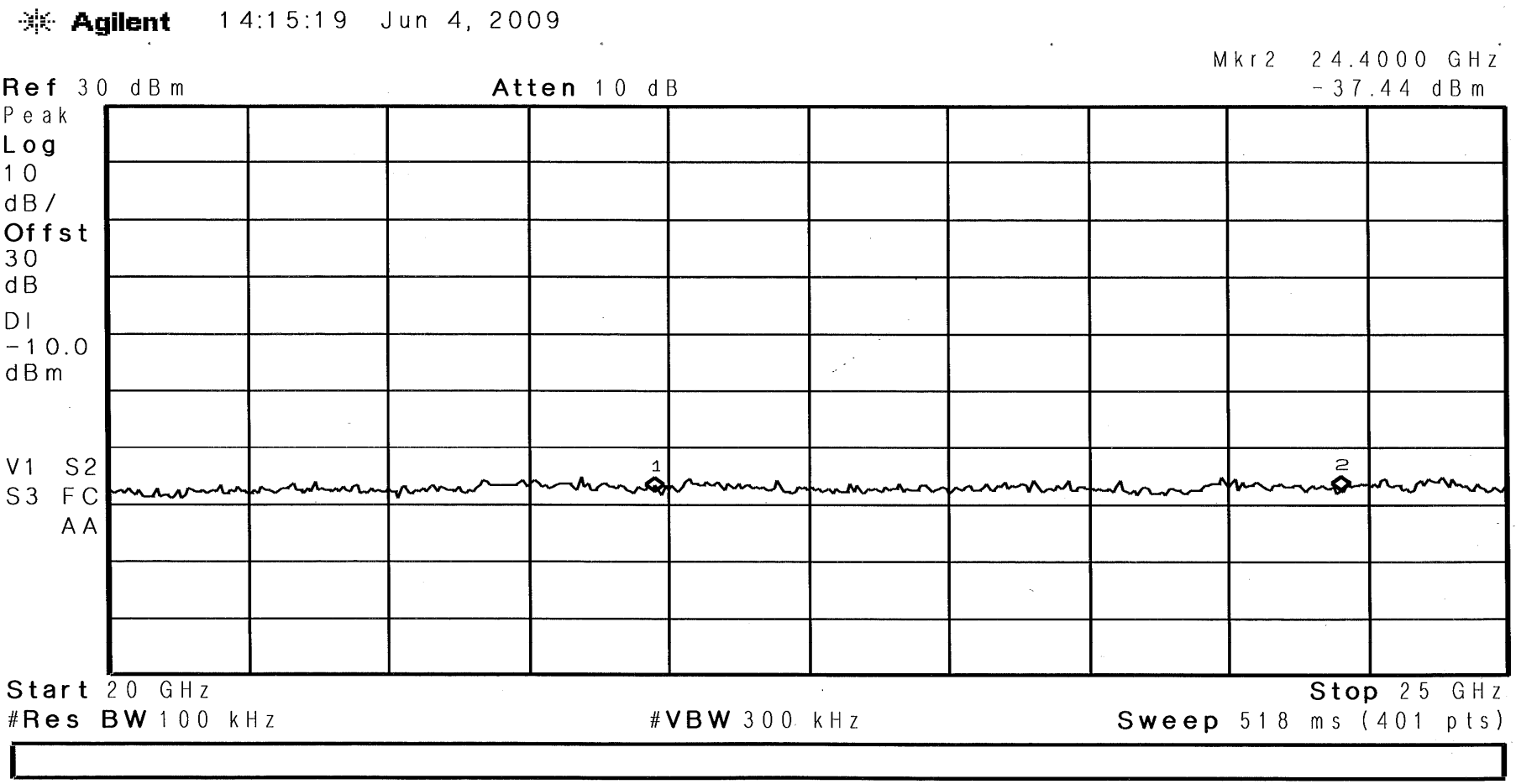
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

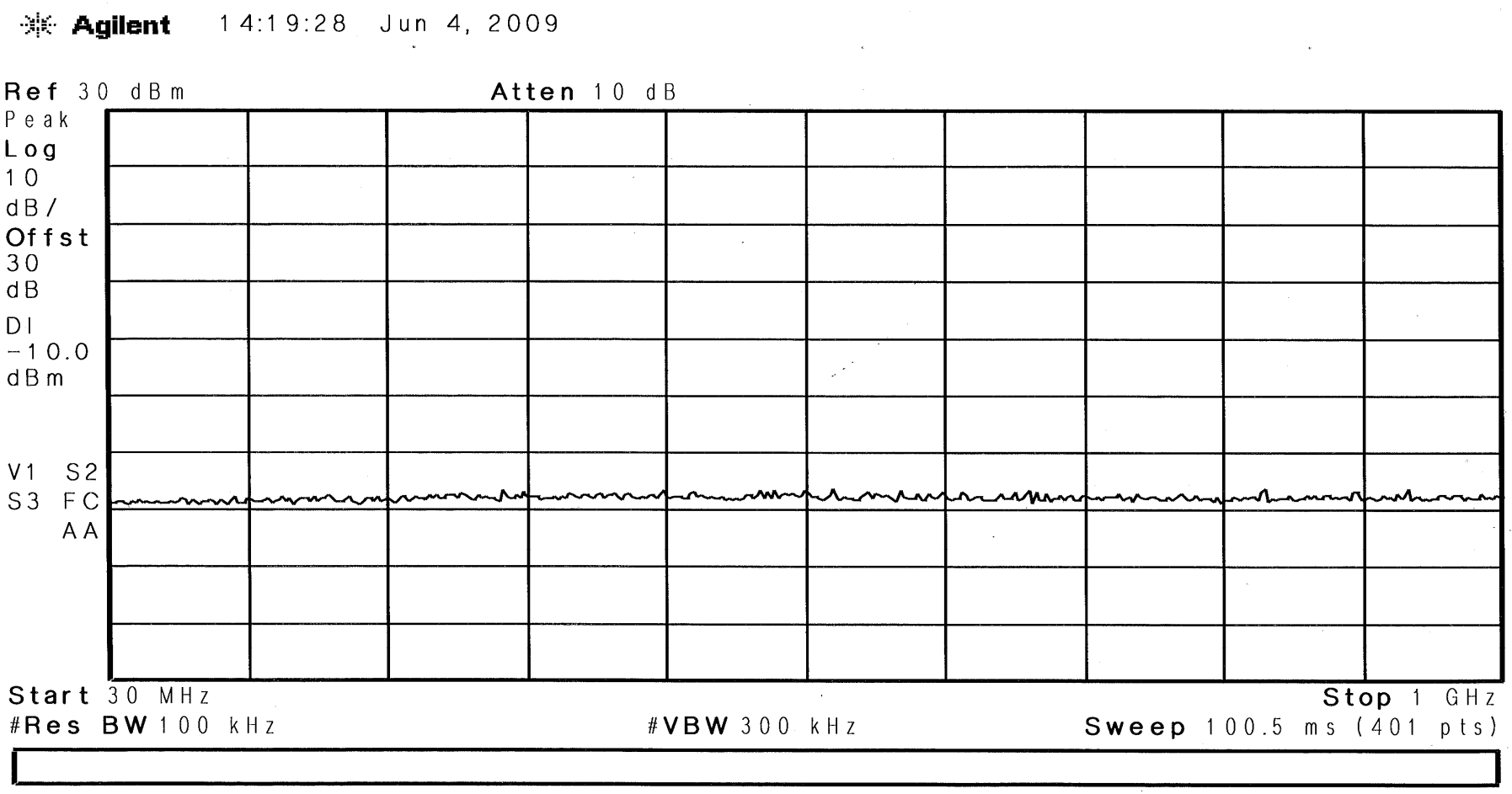
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

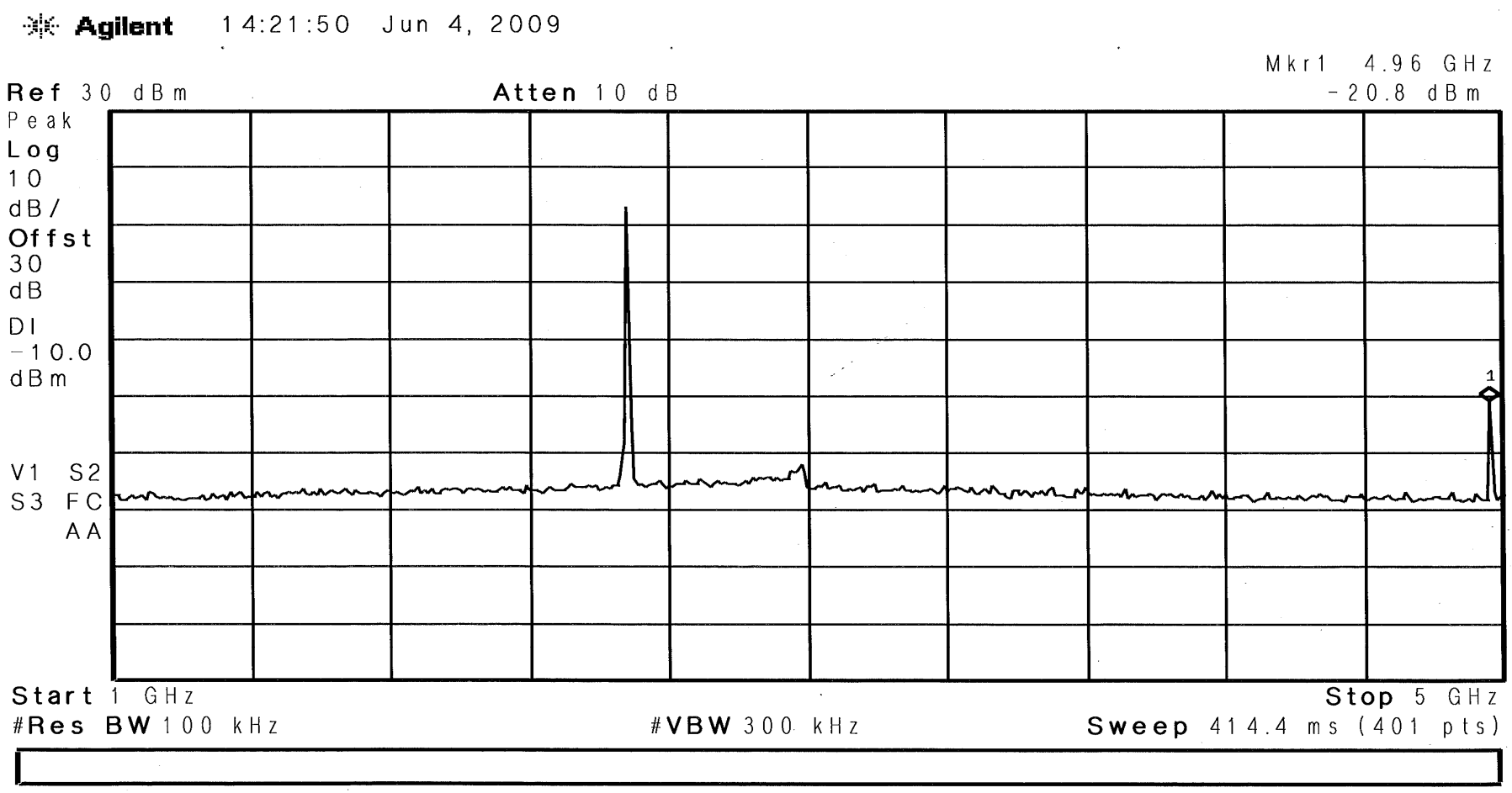
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

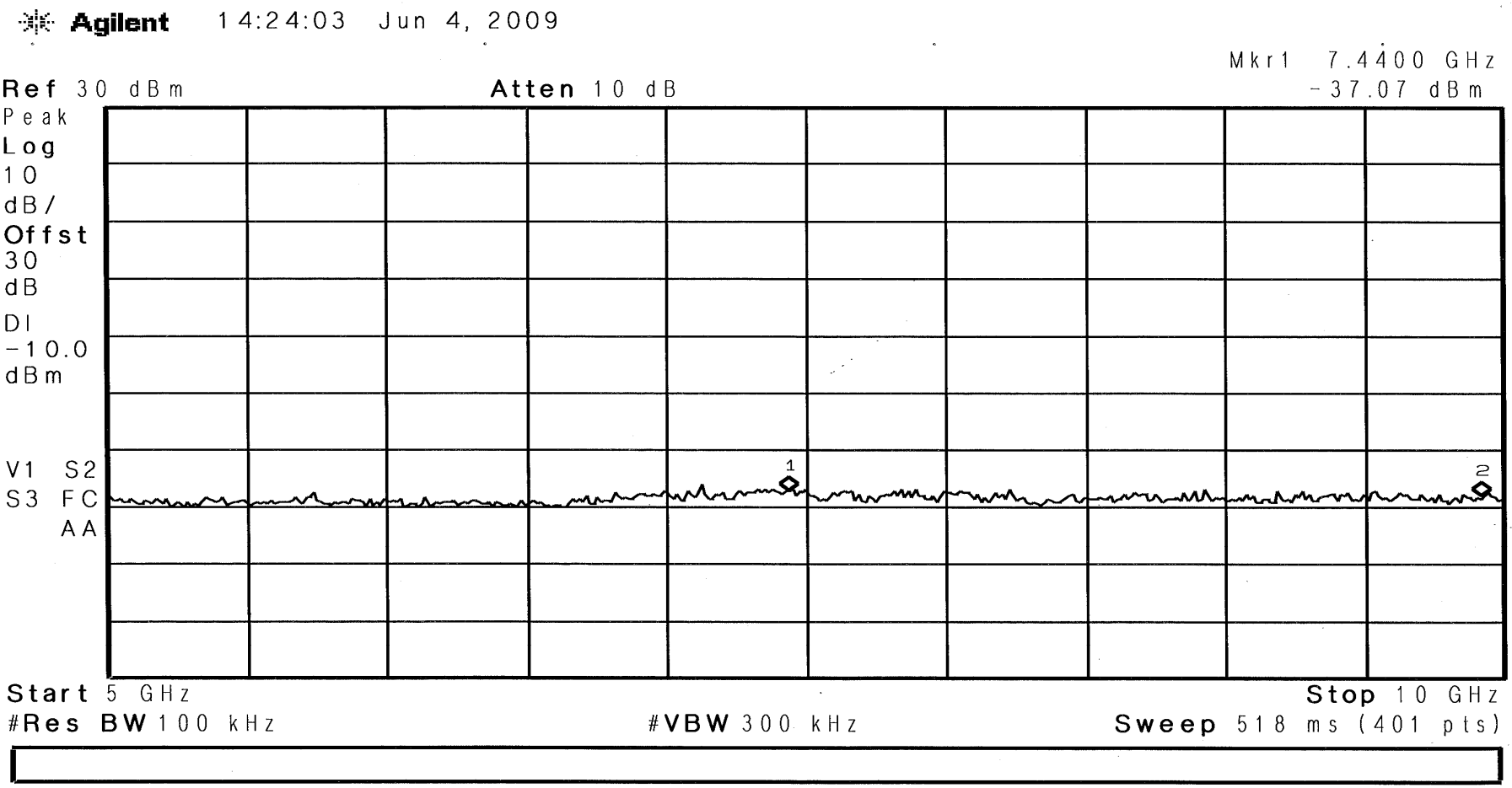
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

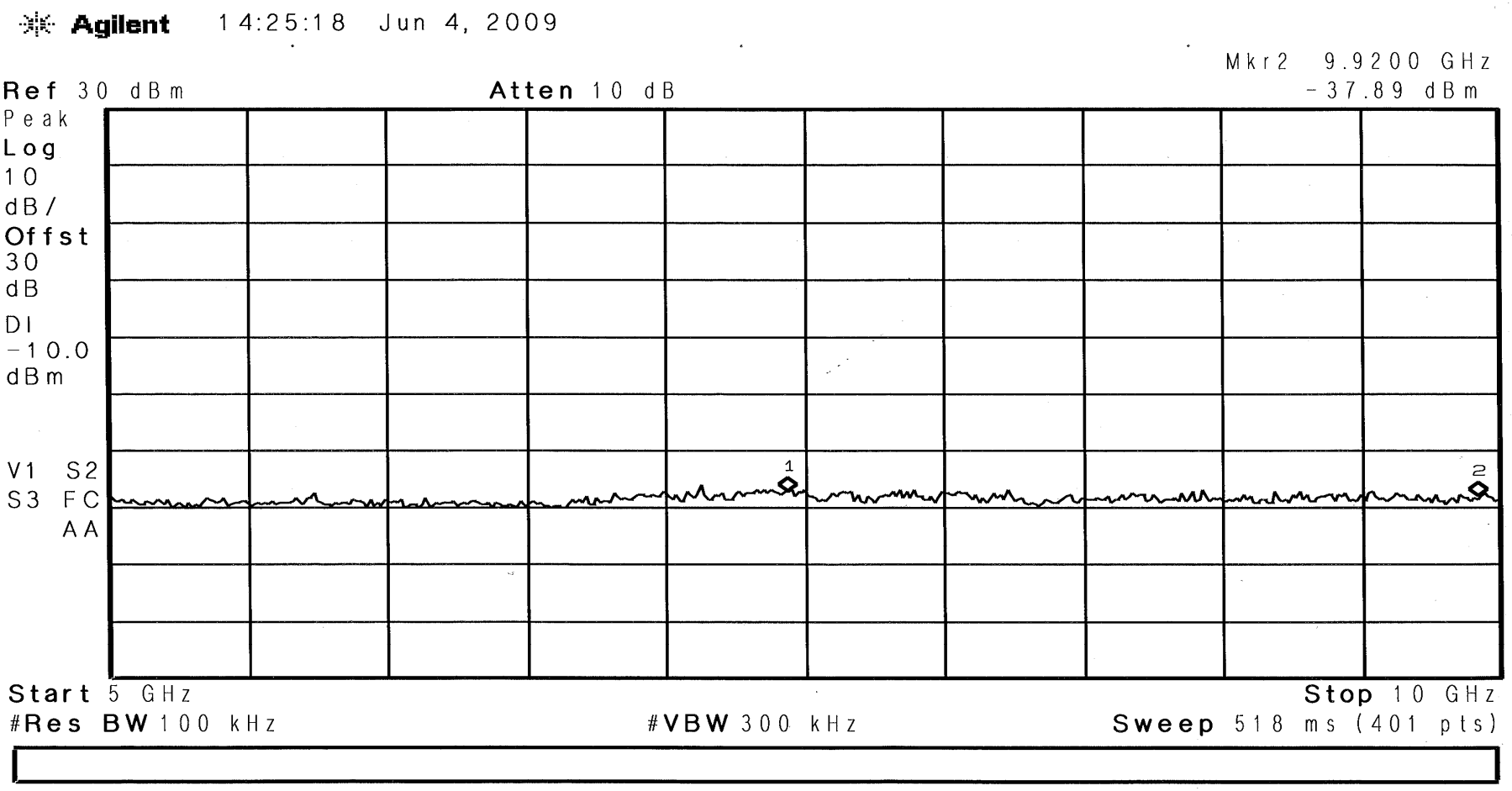
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

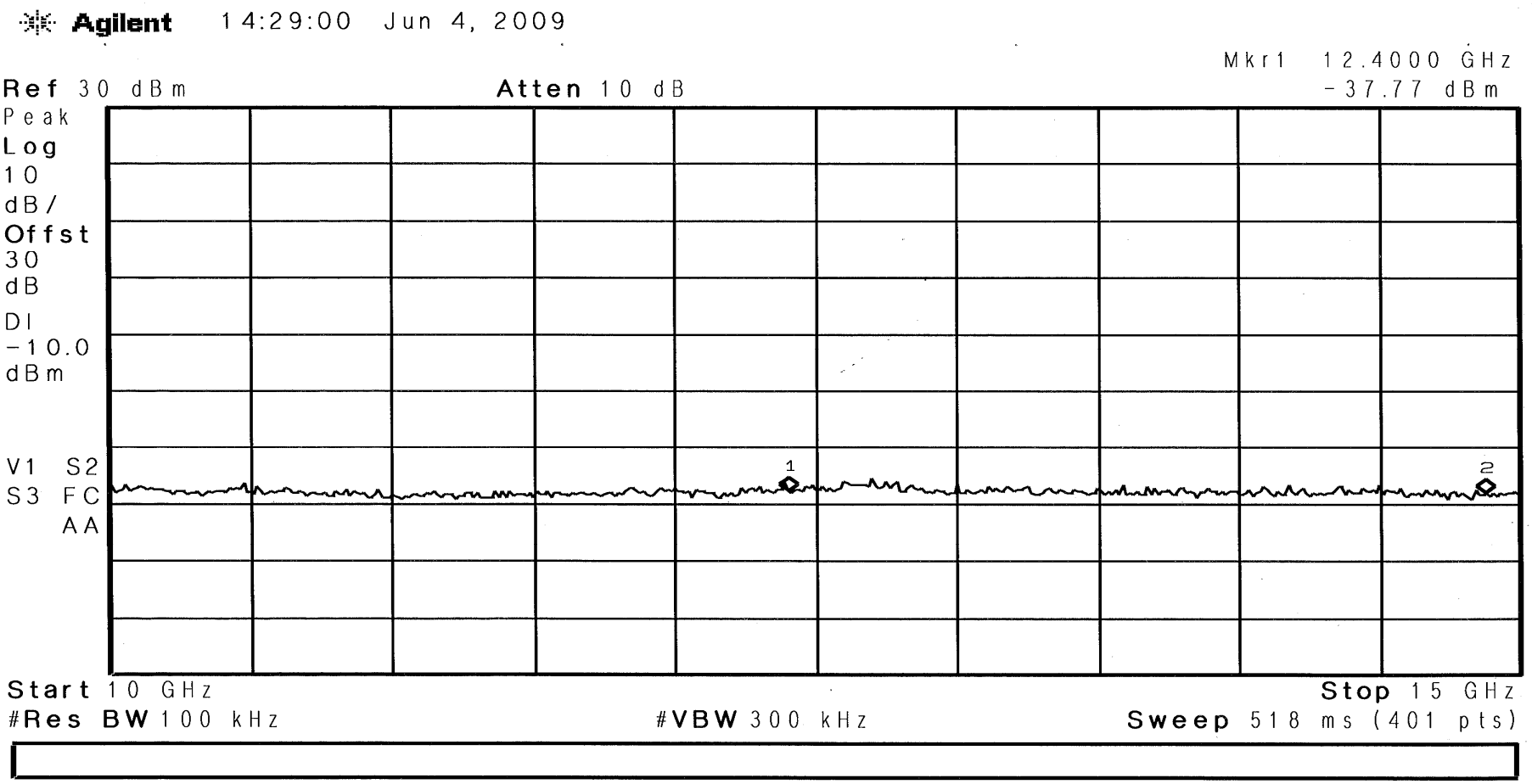
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

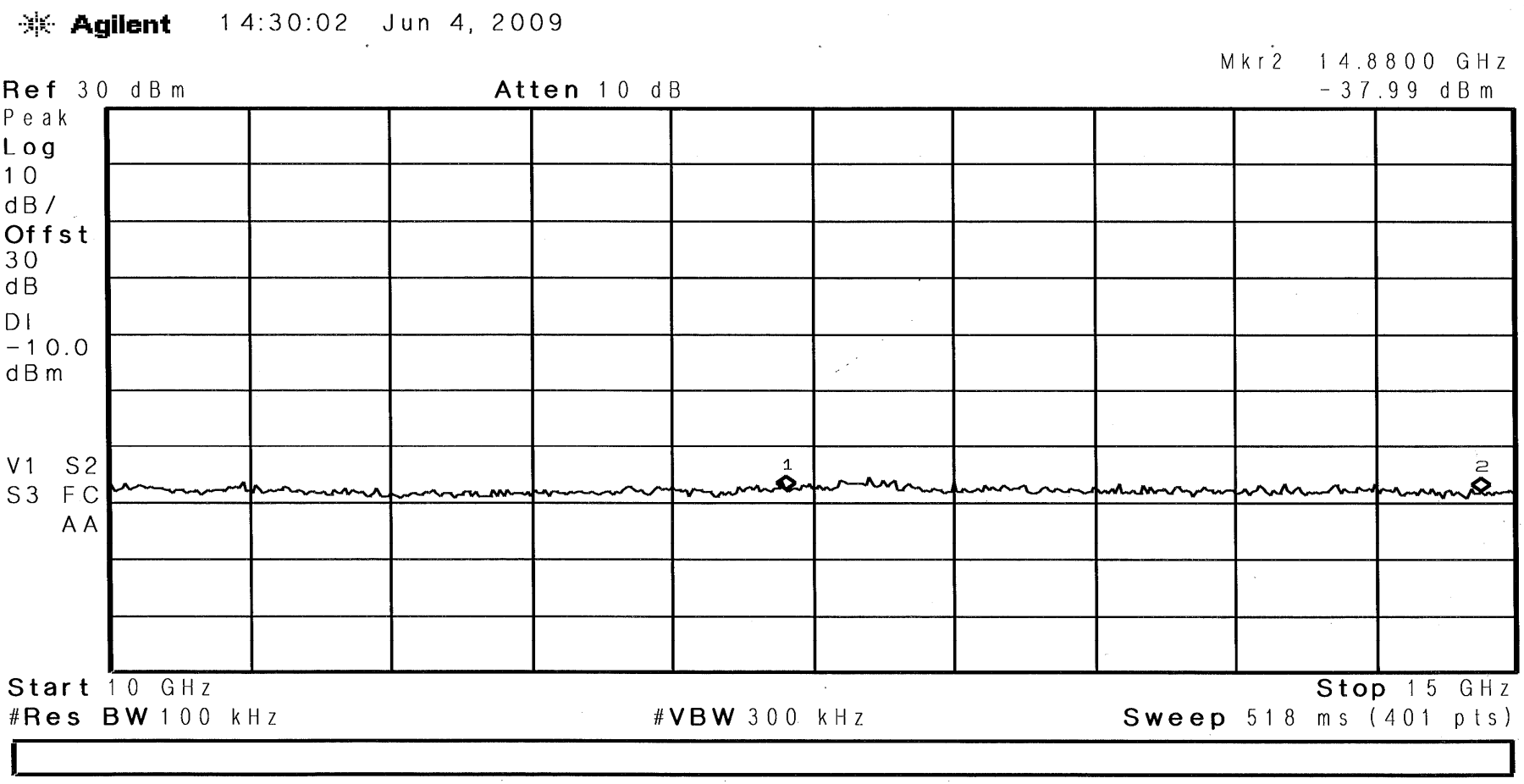
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

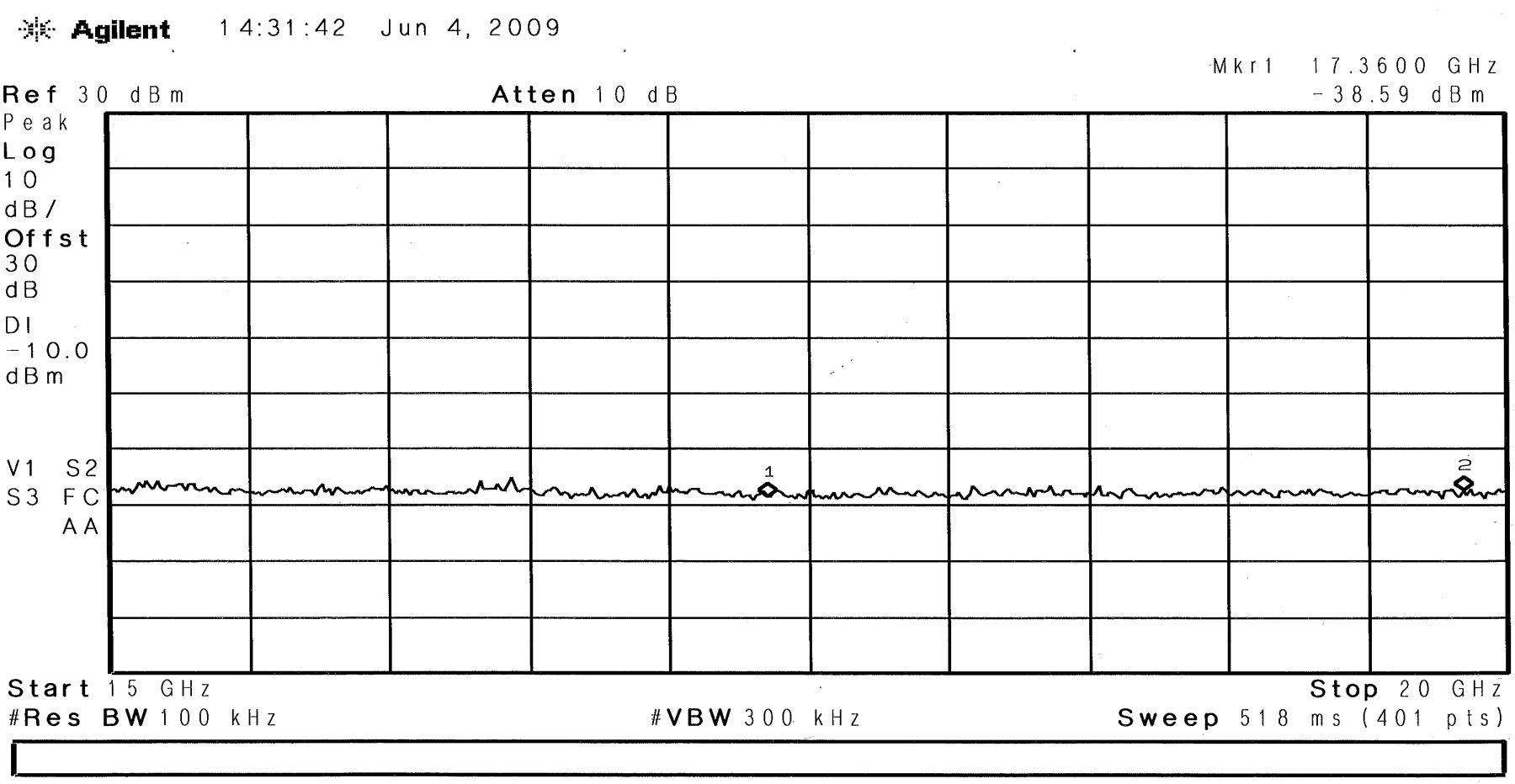
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

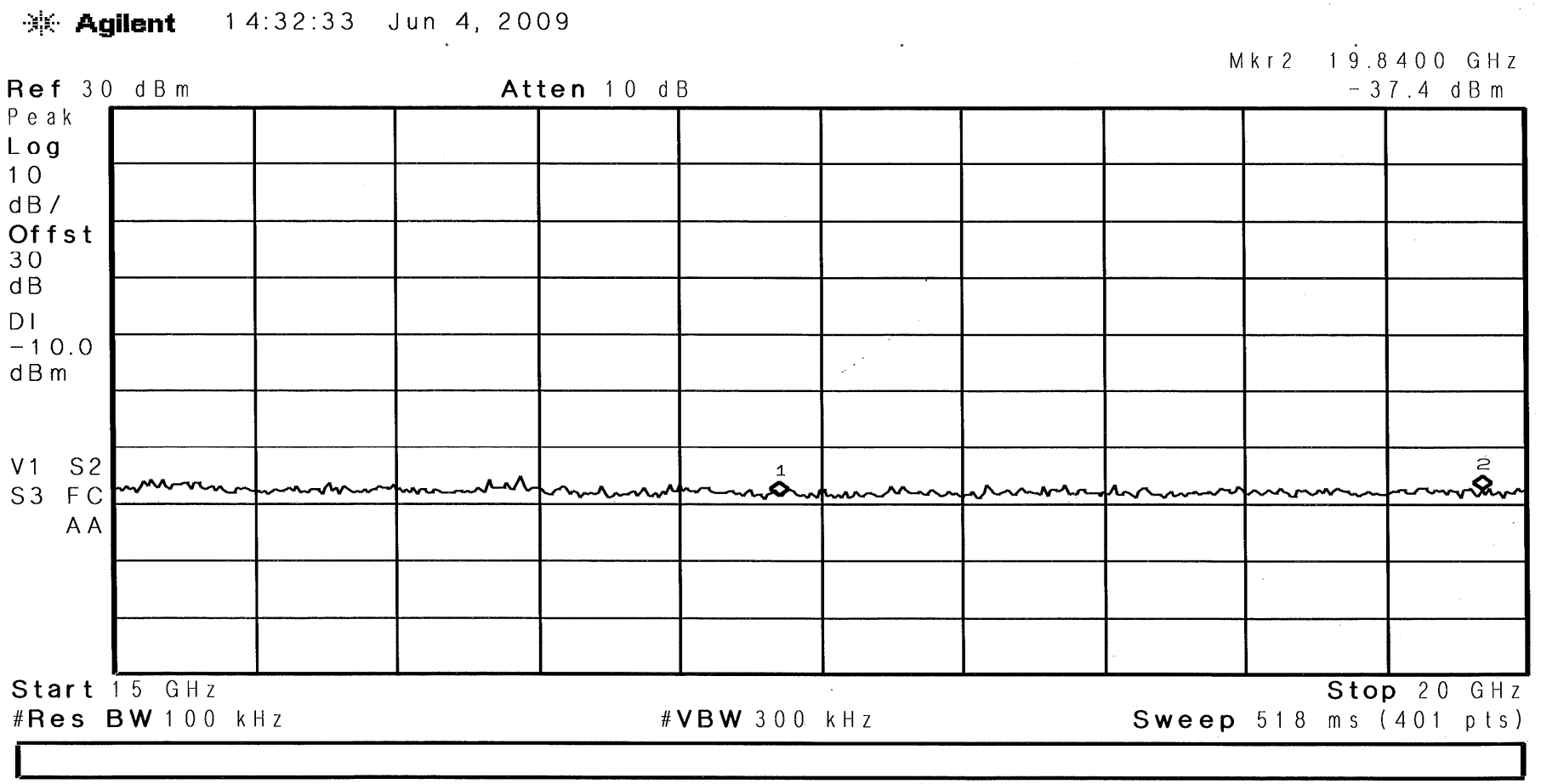
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

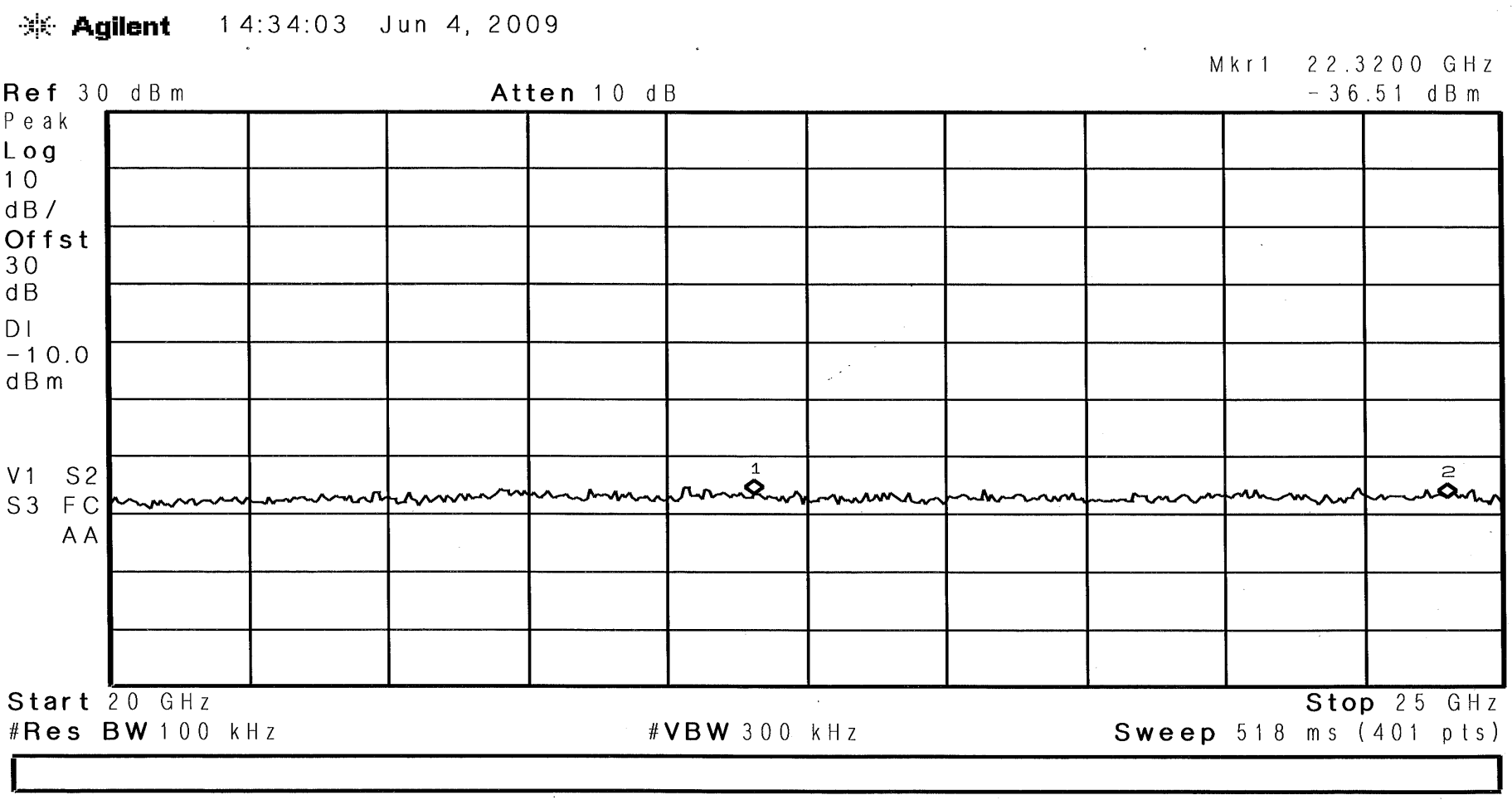
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

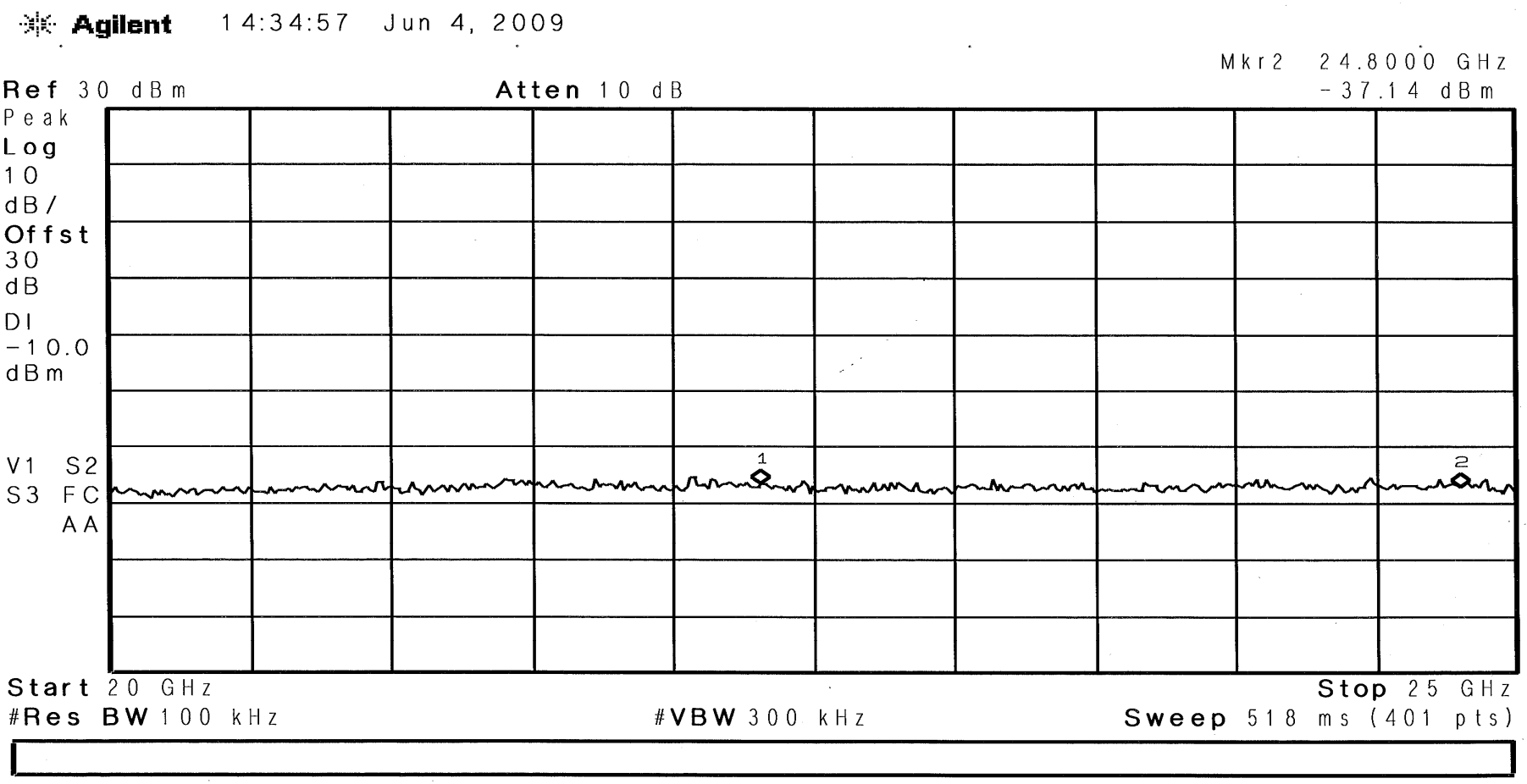
Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Out of Band Emissions Conducted**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(d) / RSS210A8.5			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



Test Photograph(s)
Power Spectral Density
FCC Part 15, Subpart C, Section 15.247(e)
RSS-210, Section A8.2 (b)

Test Photograph(s)
Power Spectral Density

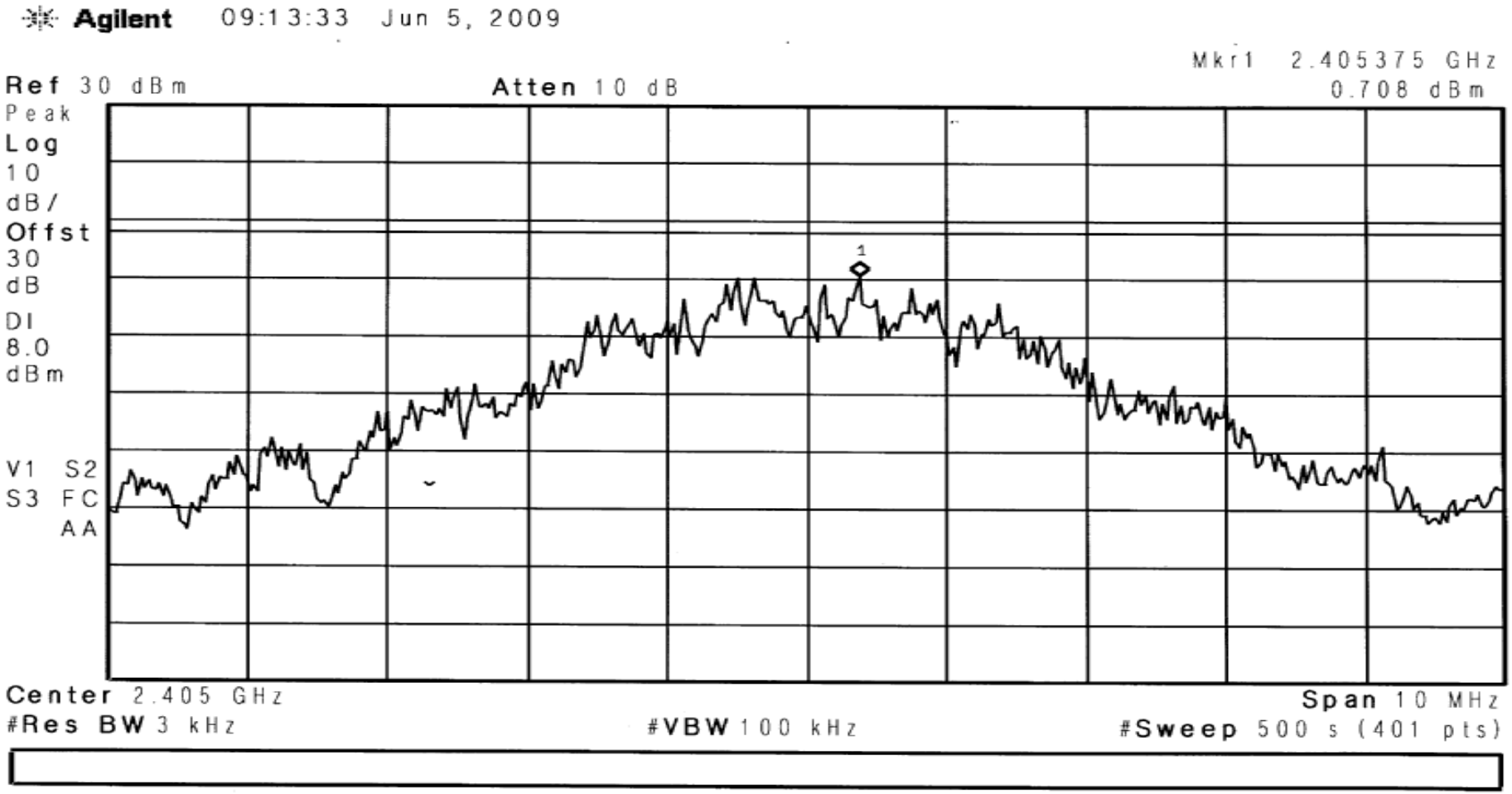
Test Setup

Test Data
Power Spectral Density
FCC Part 15, Subpart B, Section 15.247(e)
RSS-210, Section A8.2 (b)

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

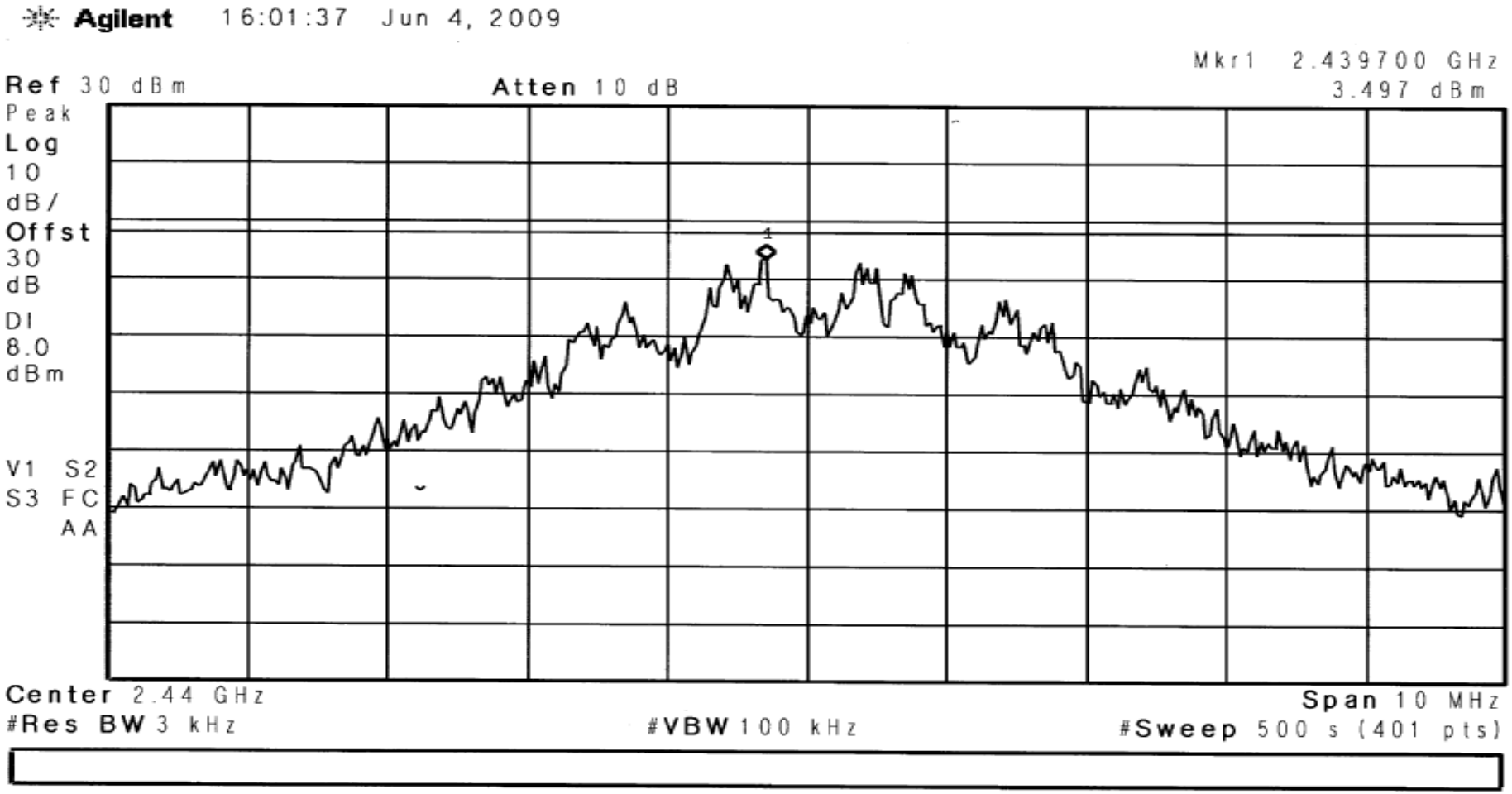
Test Method:	**Power Spectral Density**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(e) / RSS210A8.2(b)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2405MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

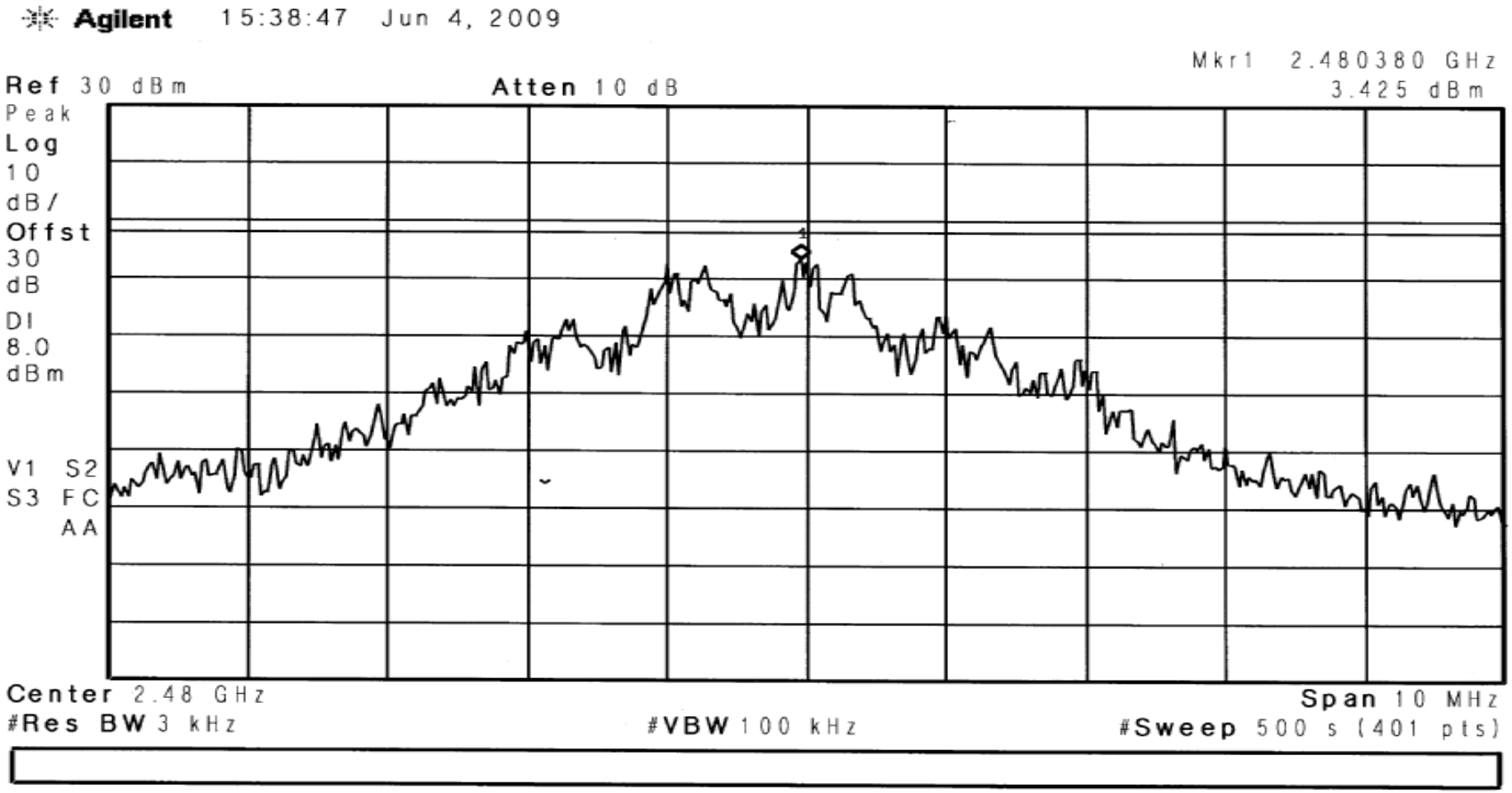
Test Method:	**Power Spectral Density**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(e) / RSS210A8.2(b)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2440MHz				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**Power Spectral Density**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.247(e) / RSS210A8.2(b)			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Transmit frequency: 2480MHz				



Test Photograph(s)
Radiated Spurious Emissions
FCC Part 15, Subpart C, Section 15.247(d)
RSS-210, Section A8.5
RSS-Gen, Section 7.2.3

Test Photograph(s)
Radiated Spurious Emissions

Test Setup, Horizontal Antenna Polarization

Test Setup, Vertical Antenna Polarization

Test Photograph(s)
Radiated Spurious Emissions

Test Setup

Test Data
Radiated Spurious Emissions
FCC Part 15, Subpart C, Section 15.247(d)
RSS-210, Section A8.5
RSS-Gen, Section 7.2.3

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Band Edge Emissions Radiated		
Customer:	MicroStrain, Inc.	**Job No:**	R5184N
Test Sample:	2.4 GHz Direct Sequence Spread Spectrum Wireless Module		
Model No:	SerialLink	**Serial No:**	SL30360012-0010
Test Specification:	FCC Part 15.247(d) / RSS 210 A8.5		
Operating Mode:	Transmitting signal		
Technician:	M.Seamans	**Date:**	9/14/2009
Notes:	Transmit Frequency: 2405 and 2480MHz Peak Detector 1MHz bandwidth Testing performed at 3 Meters		

Test Frequency	Antenna Position EUT Orientation	Uncorrected Reading	Correction Factor						Corrected Reading	Spurious Limit
MHz	(H/V) - Axis	dBuV	dB						dBuV/m	dBuV/m
2400.00	V/Y	42.09	6.46						48.55	54.00
2483.50	V/Y	44.02	7.64						51.66	54.00

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Out of Band Emissions Radiated		
Customer:	MicroStrain, Inc.	**Job No:**	R5184N
Test Sample:	2.4 GHz Direct Sequence Spread Spectrum Wireless Module		
Model No:	SerialLink	**Serial No:**	SL30360012-0010
Test Specification:	FCC Part 15.247(d) / RSS 210 A8.5		
Operating Mode:	Transmitting signal		
Technician:	M.Seamans	**Date:**	6/8/2009
Notes:	Transmit Frequency: 2405MHz Peak Detector Testing performed at 3 Meters		

Test Frequency	Antenna Position EUT Orientation	Uncorrected Reading	Correction Factor						Corrected Reading	Spurious Limit
MHz	(H/V) - Axis	dBuV	dB						dBuV/m	dBuV/m
4810.00	V/Z	44.04	6.02						50.06	54.00
12025.00	-	-	-	-					-	I
19240.00	-	-	-	-					-	54.00

Data Sheet 1 of 1 R5184N

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	Out of Band Emissions Radiated		
Customer:	MicroStrain, Inc.	**Job No:**	R5184N
Test Sample:	2.4 GHz Direct Sequence Spread Spectrum Wireless Module		
Model No:	SerialLink	**Serial No:**	SL30360012-0010
Test Specification:	FCC Part 15.247(d) / RSS 210 A8.5		
Operating Mode:	Transmitting signal		
Technician:	M.Seamans	**Date:**	6/8/2009
Notes:	Transmit Frequency: 2440MHz Peak Detector Testing performed at 3 Meters		

Test Frequency	Antenna Position EUT Orientation	Uncorrected Reading	Correction Factor						Corrected Reading	Spurious Limit
MHz	(H/V) - Axis	dBuV	dB						dBuV/m	dBuV/m
4880.00	V/Z	44.23	6.32						50.55	54.00
7320.00	-	-	-	-					-	
12200.00	-	-	-	-					-	
19520.00	-	-	-	-					-	54.00

Data Sheet 1 of 1 R5184N

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

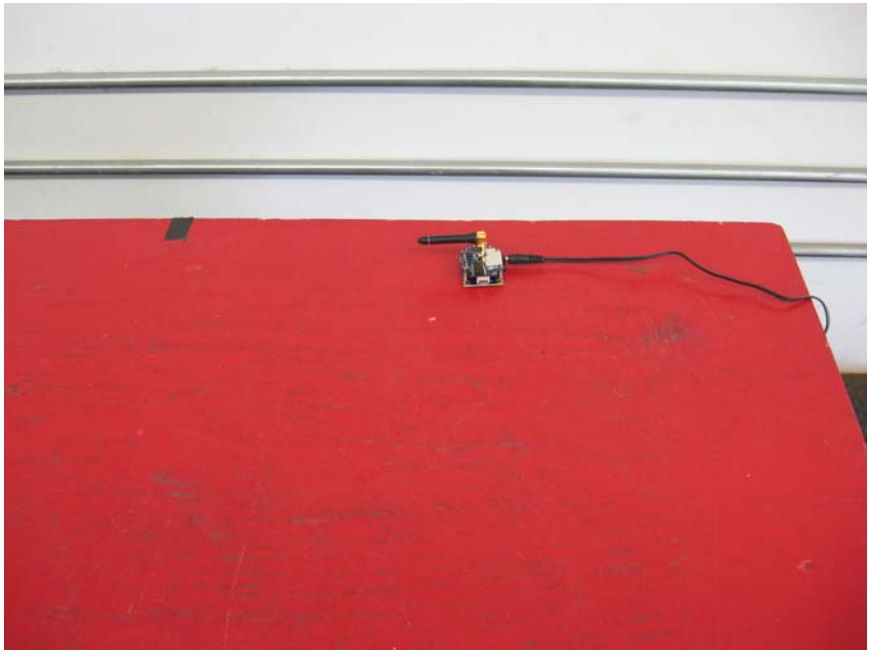
Test Method:	Out of Band Emissions Radiated		
Customer:	MicroStrain, Inc.	**Job No:**	R5184N
Test Sample:	2.4 GHz Direct Sequence Spread Spectrum Wireless Module		
Model No:	SerialLink	**Serial No:**	SL30360012-0010
Test Specification:	FCC Part 15.247(d) / RSS 210 A8.5		
Operating Mode:	Transmitting signal		
Technician:	M.Seamans	**Date:**	6/8/2009
Notes:	Transmit Frequency: 2480MHz Peak Detector Testing performed at 3 Meters		

Test Frequency	Antenna Position EUT Orientation	Uncorrected Reading	Correction Factor						Corrected Reading	Spurious Limit
MHz	(H/V) - Axis	dBuV	dB						dBuV/m	dBuV/m
4960.00	V/Z	43.63	6.45						50.08	54.00
7440.00	-	-	-	-					-	
12400.00	-	-	-	-					-	
19840.00	-	-	-	-					-	54.00

Data Sheet 1 of 1 R5184N

Test Photograph(s)
Conducted Emissions, Power Leads
FCC Part 15, Subpart C, Section 15.207(a)
RSS-GEN, Section 7.2.2

Test Photograph(s)
Conducted Emissions



Test Setup

Test Photograph(s)
Conducted Emissions

Test Setup

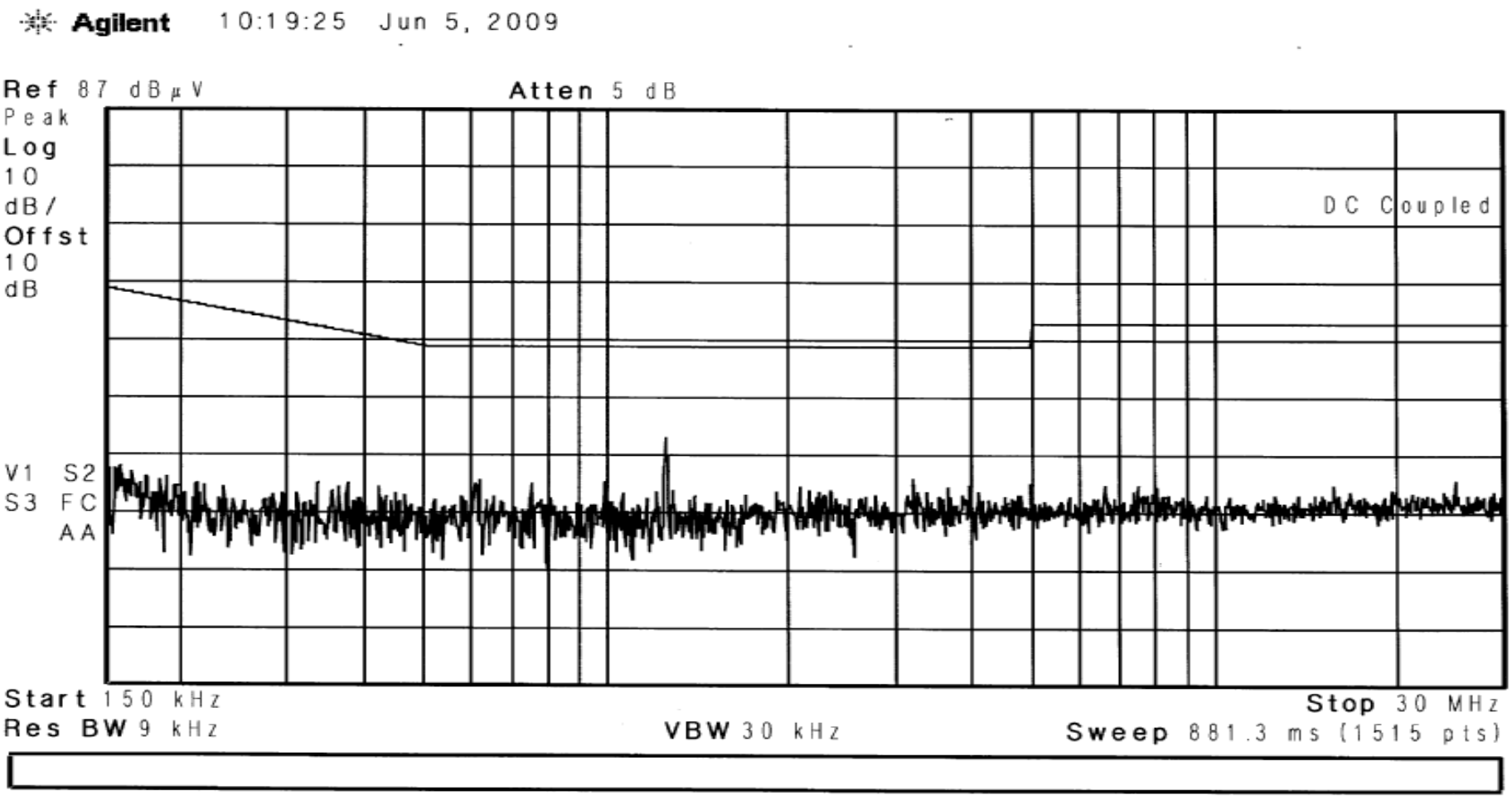
Test Setup

Test Data
Conducted Emissions, Power Leads
FCC Part 15, Subpart C, Section 15.207(a)
RSS-GEN, Section 7.2.2

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**DC Line Conducted Emissions**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.207 / RSS Gen 7.2.2			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Lead Tested: Positive 6VDC				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	**DC Line Conducted Emissions**				
Customer:	MicroStrain, Inc.	**Test Sample:**	2.4 GHz Direct Sequence Spread Spectrum Wireless Module	**Job No:**	R5184N
Model No:	SerialLink	**Serial No:**	SL30360012-0010	**Technician:**	M.Seamans
Test Specification:	FCC Part 15.207 / RSS Gen 7.2.2			**Date:**	6/8/2009
Operating Mode:	Transmitting signal				
Notes:	Lead Teated: Return 6VDC