

MICROWAVE PATH SURVEY REPORT

RADIO FREQUENCY INTERFERENCE (RFI) MEASUREMENT REPORT

Prepared For

ViaSat

San Jose (Tracy), CA

Transmit and Receive Earth Station 17-21 GHz and 27-31 GHz

March 31, 2015

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ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

On-site Radio Frequency Interference (RFI) measurements were performed on behalf of ViaSat, Inc. on March 31, 2015, at their proposed site in San Jose (Tracy), CA. The purpose of these measurements was to determine the relative RFI levels in the 17-21 and 27-31 GHz common carrier frequency band and their impact on digital down-link satellite reception. Measurements were performed at one designated location. The purpose of this report is to document the results of these measurements and to present recommendations.

The analysis in this report is based upon the following:

- Andrew 4.1 Meter Antenna
- Satellite Arc: 55 to 115 Degrees West Longitude
- Frequency Range Considered: 17 to 21 GHz and 27-31 GHz
- Interference Objective: -156 dBW/1 MHz
- Type of Reception: Digital
- Measured Antenna Center Line: 6.5 Feet Above Ground Level

1.2 Background

ViaSat, Inc is proposing to locate a new transmit/receive antenna at a new location of 37° 43' 16.6" N 121° 30' 38.3" ViaSat, Inc had requested that Comsearch conduct RFI measurements at the facility to assess the interference potential. This facility is currently nonoperational and measurements were done at a point near the proposed antenna locations.

The measured site is identified on a portion of a topographic map shown in Figure 1.2-1. An aerial photo of the site location is shown in Figure 1.2-2. A photo of the measurement using a GPS is shown in Figure 1.2-3. A photo of the surrounding cellular/PCS coverage is shown in Figure 1.2-4.

1.3 Constraints

The analysis in this report is based upon the following assumptions and constraints.

- The antenna selected will conform to the FCC reference pattern 32-25 Log θ as specified in 47CFR 25.209(a)(2).
- It is assumed that during the measurement period all of the terrestrial transmitters were active and operating at full transmit power for the licensed frequencies unless otherwise noted.
- The signal identification and frequencies analyzed are based upon information obtained from the various common carriers as to what frequencies were active at the time of the measurements and the traffic these frequencies were supposed to be carrying.
- The actual ground elevation of the site is based on the data from the topographic map.
- The interference objective of -156 dBW/1 MHz used throughout this report is based upon estimated link budget parameters and is subject to change. ViaSat, Inc should review the system parameters for this down-link in order to verify the viability of this objective.

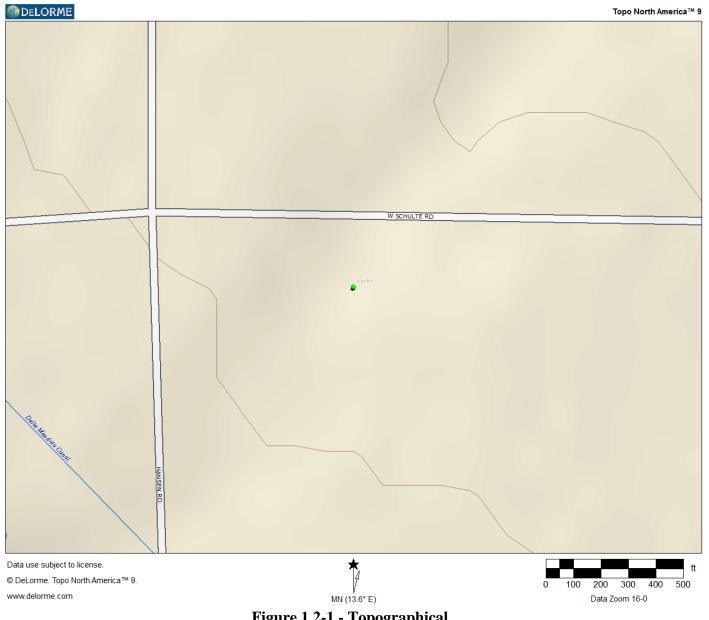


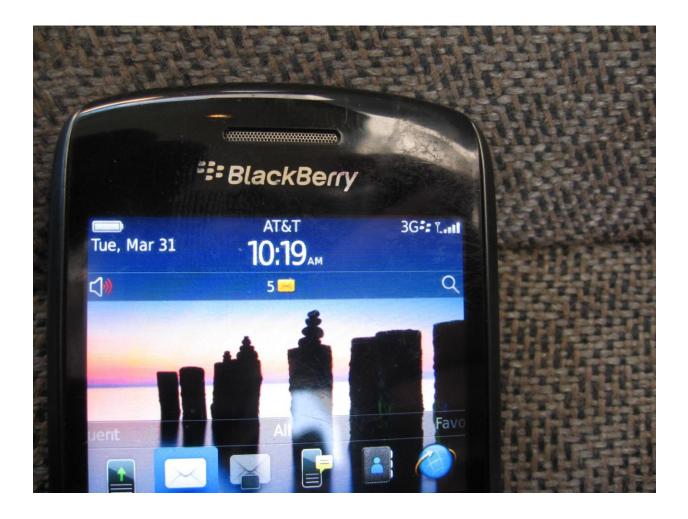
Figure 1.2-1 - Topographical



Figure 1.2-2 – Aerial Photograph



Figure 1.2-3 – GPS Photograph



TWO

TEST PROCEDURE

2.1 Calibration

Figures 2.1-1 is the block diagram of the test set for all bands to be tested. All test equipment used was allowed a proper warm-up period prior to calibration. The test set was calibrated by the signal substitution method, as recommended by NSMA, utilizing a synthesized signal generator. The reference signal from the signal generator was adjusted for the center frequency of each band to be tested and measured with a thermal power meter for calibrated reference test level (-60 dBm). This calibrated reference signal from the signal generator was then injected into the end of the coaxial cable of the test set at the point, which normally connects to the test antenna. A spectrum analyzer then measured the reference test signal level after passing through the test set. At this point, the spectrum analyzer was calibrated such that the top graticule of the spectrum analyzer display (-60 dBm) corresponded to the injected reference signal (-60 dBm) by utilizing the reference level offset function of the Anritsu –M52720T spectrum analyzer. Upon completion of the calibration process, a known reference level was obtained for the measured in a given set of spectrum analyzer display readings.

The following formula is used to transform the measured signal level as read on the spectrum analyzer display (dBm) to an isotropic reference signal level (dBW_I) as seen at the point of test:

 $dBW_I = LI - GA - 30$

Where: $dBW_I = Isotropic level in dBW$

LI = Level (dBm) of injected signal

GA = Test antenna gain

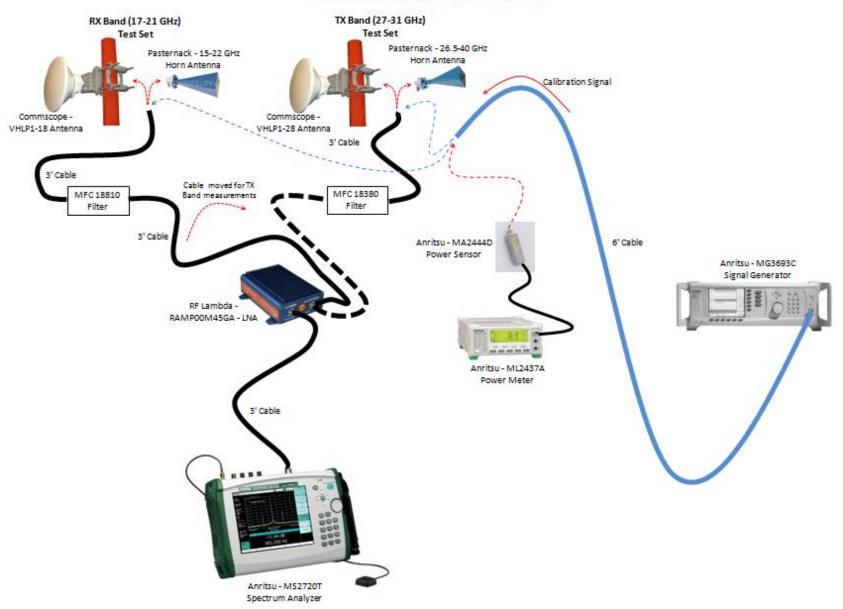
-30 =Conversion factor from dBm to dBW

at 19.5 GHz: $dBW_I = -60 dBm - 30 dB - 30 dB$

 $= -120 \text{ dBW}_{\text{I}}$

In this instance, the spectrum analyzer displayed measured signal level of -60 dBm equates to an isotropic signal level of -120 dBW_I.

Figures 2.1-2(A-H) displays the spectrum photographs of the described calibration procedure employed during these measurement.



Test Set Equipment Diagram

Figure 2.1-1 Receive Test Equipment Block

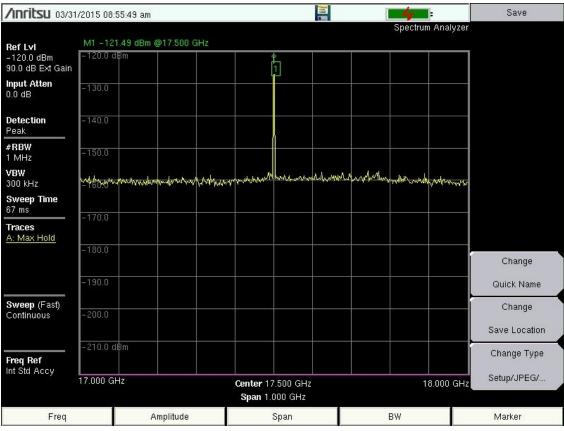


Figure 2.1-2 (A) Calibration Spectrum Photo 17.5 GHz

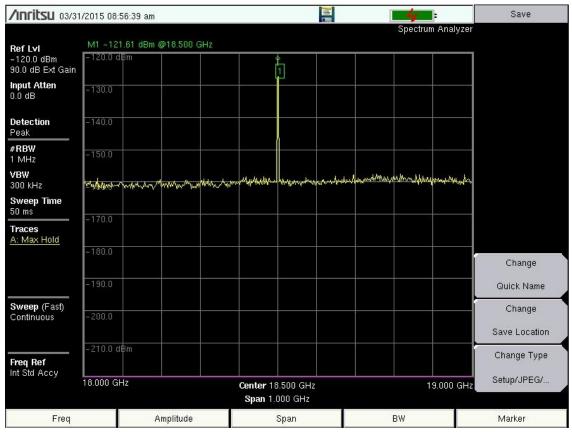
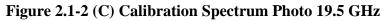


Figure 2.1-2 (B) Calibration Spectrum Photo 18.5 GHz

/INFITSU 03/3	1/2015 08:57:43 :	am			-4	Save
				Part 1	Spectrum Ar	alyzer
lef Lvl	M1 -121.20 dB	3m @19.500 GHz				
120.0 dBm	–120.0 dBm		Ê.			
0.0 dB Ext Gain			1			
n put Atten .0 dB	-130.0					
etection eak	-140.0				<u>.</u>	
RBW MHz	-150.0			<u></u>		
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races : Max Hold					a a	
	-180.0					Change
	-190.0					Quick Name
weep (Fast)						Change
ontinuous	-200.0					Save Location
req Ref	–210.0 dBm					Change Type
nt Std Accy	19.000 GHz					s.cu. Setup/JPEG/
	13.000 GH2		Center 19.500 GH Span 1.000 GH:		20.00	0 GHz
Freq		Amplitude	Span		BW	Marker



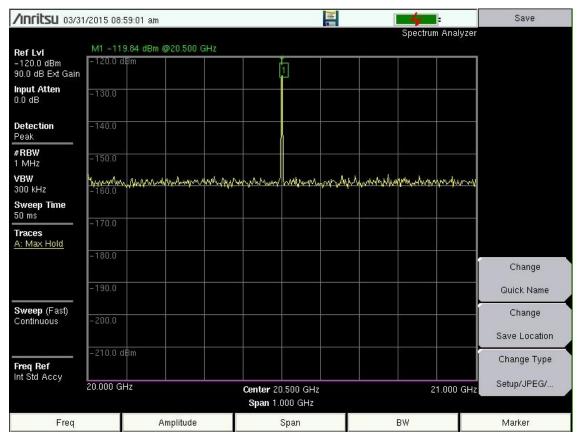


Figure 2.1-2 (D) Calibration Spectrum Photo 20.5 GHz

inritsu 03/31	/2015 09:00:04 am				-4		Save
					Spectrum	Analyzer	
ef Lvl	M1 -122.44 dBm @	027.500 GHz				100	
120.0 dBm	–120.0 dBm						
0.0 dB Ext Gain			1				
put Atten 0 dB	-130.0						
etection eak	-140.0				2		
RBW MHz	-150.0		*	<u>.</u>		<u></u>	
'BW 00 kHz	the	manan	mprocess with	happenerserately	Augunua and and	n wantaata	
weep Time 7 ms	-170.0						
races A: Max Hold	±170.0						
	-180.0						Change
	-190.0						Quick Name
weep (Fast)							Change
ontinuous	-200.0						Save Location
	-210.0 dBm						Change Type
req Ref It Std Accy					s - 5		
	27.000 GHz		Center 27.500 G		28	.000 GHz	Setup/JPEG/
			Span 1.000 GH	ΗZ			

Figure 2.1-2 (E) Calibration Spectrum Photo 27.5 GHz

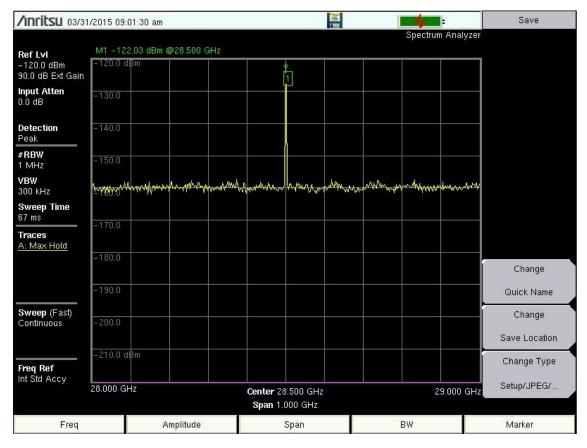


Figure 2.1-2 (F) Calibration Spectrum Photo 28.5 GHz

/INFILSU 03/31	/2015 09:02:45 an	1			4	:	Save
					Spectru	um Analyzer	
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			1				
n put Atten .0 dB	-130.0						
etection eak	-140.0					<u> </u>	
RBW MHz	-150.0					<u></u>	
'BW 00 kHz	Muthanyan	mantingenge	www.www.www.	www.whiteway	hannanthan		
weep Time O ms	-170.0						
races :: Max Hold						o	
	-180.0						Change
	-190.0						Quick Name
weep (Fast)							Change
ontinuous	-200.0						Save Location
req Ref t Std Accy	-210.0 dBm						Change Type
n olu n ecy	29.000 GHz		Center 29.500 (Span 1.000 GF			30.000 GHz	Setup/JPEG/
Freq		Amplitude	Span		BW		Marker

Figure 2.1-2 (G) Calibration Spectrum Photo 29.5 GHz

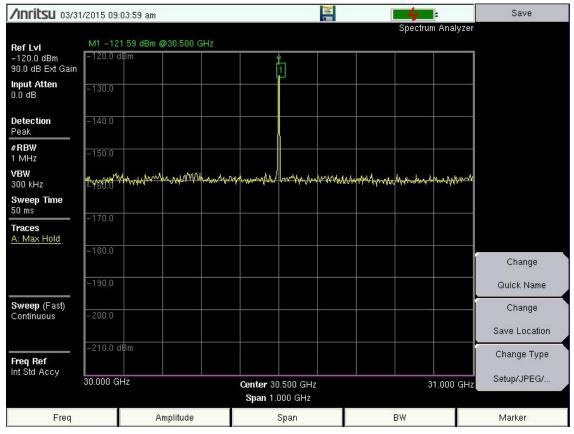


Figure 2.1-2 (H) Calibration Spectrum Photo 30.5 GHz

2.2 Methodology

Upon arriving at the existing earth station site, azimuth and horizon elevation measurements were performed to evaluate if any satellite arc obstructions exist. The coordinates of the existing earth station site were verified on the DeLorme topographic map. Photographs were taken to document the satellite arc (clearance) and are included in this report.

After site coordinates and horizon elevations were verified, the test equipment was set up and calibrated to measure the RF environment. Measurements were conducted at the proposed earth station location for the 17-21 and 27-31 GHz band. After the equipment calibration was completed, the test antenna was mounted on an extendable tower and elevated to a height of 6.5 feet. This height is greater than the centerline of the earth station antenna. The antenna was rotated 360 degrees (scanning), once in each polarization, while activating the peak hold function of the spectrum analyzer. This enabled the analyzer to maintain and display the maximum signal level received for all frequencies under consideration. After the initial documentation of interference, all interference conflicts if observed were peaked on to determine the azimuth and the level of the interference source.

Upon completion of the RF testing, the measured signal levels were transposed to earth station interference levels after accounting for the addition of the corresponding earth station antenna gain.

THREE

DATA PRESENTATION

The following section contains the tables and spectrum photos pertaining to the site location measured.

3.1 San Jose (Tracy), CA

- Table 3.1-1 presents a site data sheet including all pertinent site information.
- Figures 3.1-1 and 3.1-2 are the photographs depicting the existing earth station site and satellite arc.
- Figures 3.1-3 through 3.1-10 are the RF spectrum photographs depicting the interference environment at the test site.

TABLE 3.1-1

MEASUREMENT SITE DATA SHEET

1.	SYSTEM NAME:	ViaSat, Inc
2.	CITY AND STATE:	San Jose (Tracy), CA
3.	SITE IDENTIFICATION:	Tracy
4.	COORDINATES: (NAD 1983)	LATITUDE: 37° 43' 16.6" N LONGITUDE: 121° 30' 38.3" W
5.	GROUND ELEVATION:	173 feet AMSL
6.	MEASUREMENT DATE AND TIMES:	March 31, 2015
7.	GEOSTATIONARY ARC RANGE: SATELLITE POSITIONS: AZIMUTH: ELEVATION:	55W – 115W 104.9° – 169.4° 9.8° / 45.7°
8.	GEOSTATIONARY ARC VISIBILITY:	Satellite arc has no blockage at this time



North

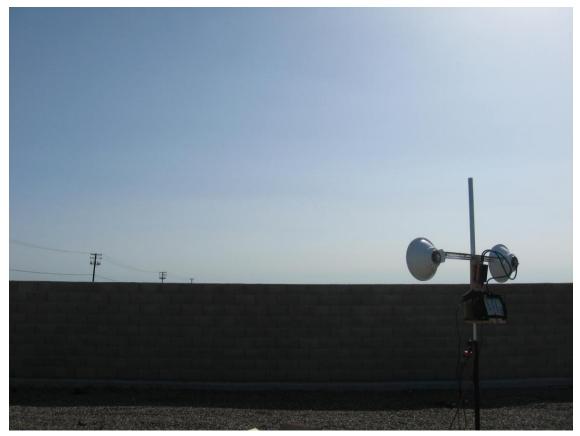


East

Figure 3.1-1 Earth Station Site Photographs



South



West

Figure 3.1-1 (cont.) Earth Station Site Photographs

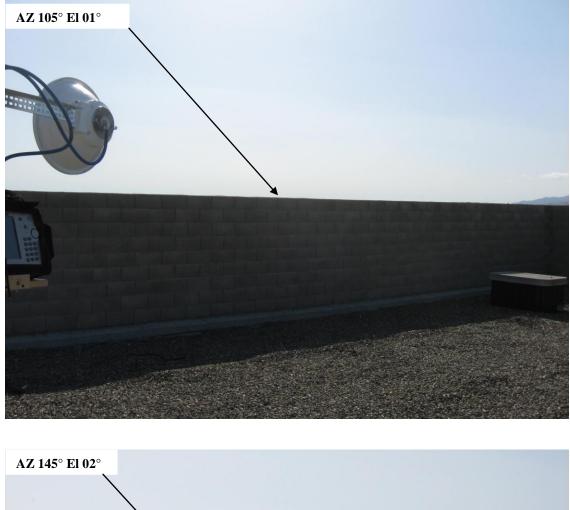




Figure 3.1-2 Horizon Photographs of Earth Station Site





Figure 3.1-2 (cont.) Horizon Photographs of Earth Station Site

/INFILSU 03/3	1/2015 09:25:28	3 am			4	: Save	
Ref Lvl	M1 -157.87	dBm @17.515 426 4	97 GHz		Spectrum	Analyzer	
120.0 dBm 0.0 dB Ext Gain	-120.0 dBm						
put Atten 0 dB	-130.0						
etection eak	-140.0			2	· 2 · · ·		
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BW D0 kHz	-160.0	mannow water	menter and the second	have benchered	who have been and the	www.auguna	
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	-190.0					Quick Na	ume
veep (Fast) ontinuous	-200.0					Chang Save Loca	
eq Ref Std Accy	-210.0 dBm					Change T	ype
	17.000 GHz		Center 17.500 Span 1.000 G		18	3.000 GHz Setup/JPE	G/
Freq		Amplitude	Span		BW	Marker	

Figure 3.1-3 (A) Spectrum Photos 17-18 GHz 1MHz Res BW Horizontal Pol 360°

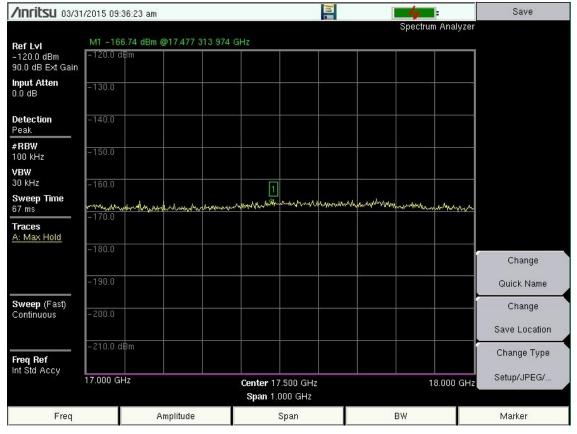


Figure 3.1-3 (B) Spectrum Photos 17-18 GHz 100 kHz Res BW Horizontal Pol 360⁰

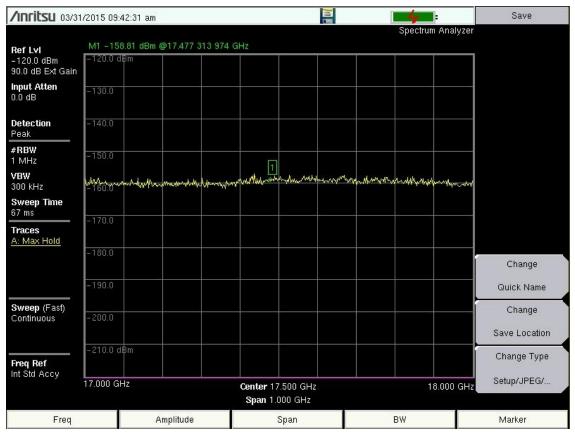


Figure 3.1-3 (C) Spectrum Photos 17-18 GHz 1MHz Res BW Horizontal Pol Worst Case

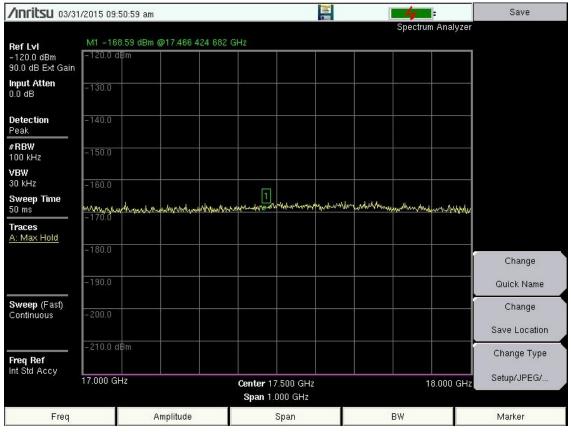


Figure 3.1-3 (D) Spectrum Photos 17-18 GHz 100 KHz Res BW Horizontal Pol Worst Case

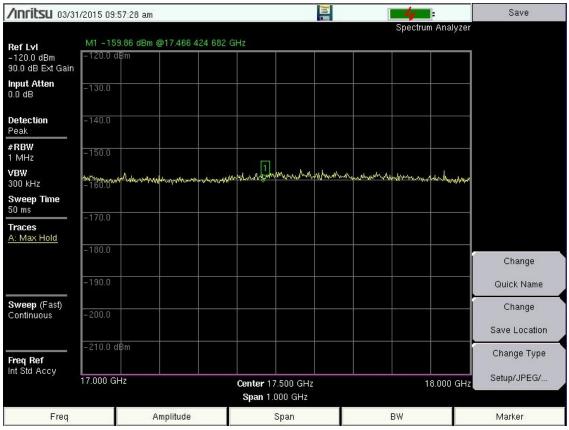


Figure 3.1-3 (E) Spectrum Photos 17-18 GHz 1MHz Res BW Vertical Pol 360⁰

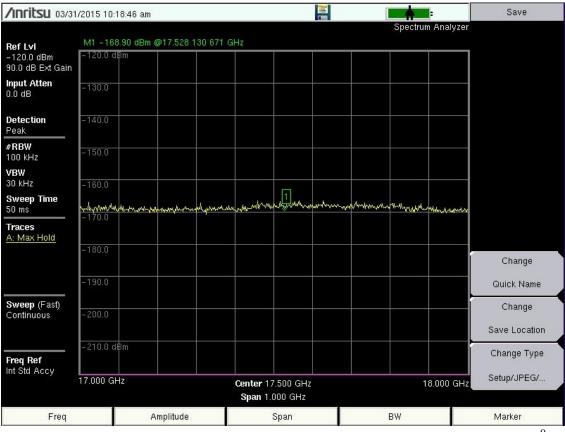


Figure 3.1-3 (F) Spectrum Photos 17-18 GHz 100 kHz Res BW Vertical Pol 360⁰

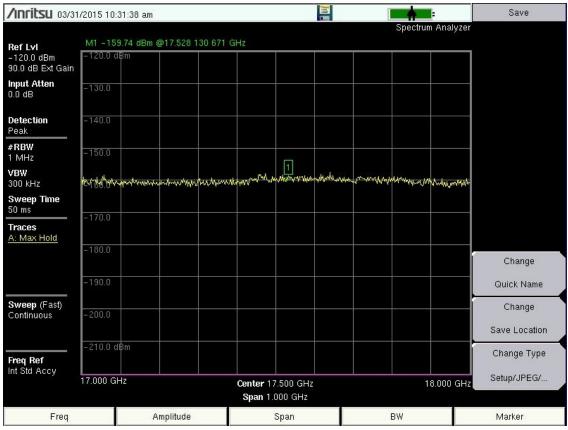


Figure 3.1-3 (G) Spectrum Photos 17-18 GHz 1 MHz Res BW Vertical Pol Worst Case

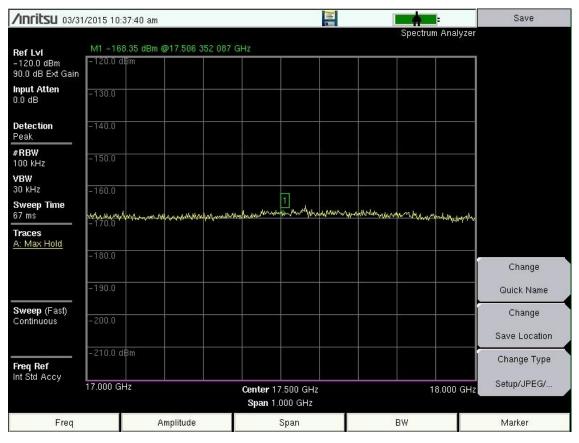


Figure 3.1-3 (H) Spectrum Photos 17-18 GHz 100 kHz Res BW Vertical Pol Worst Case

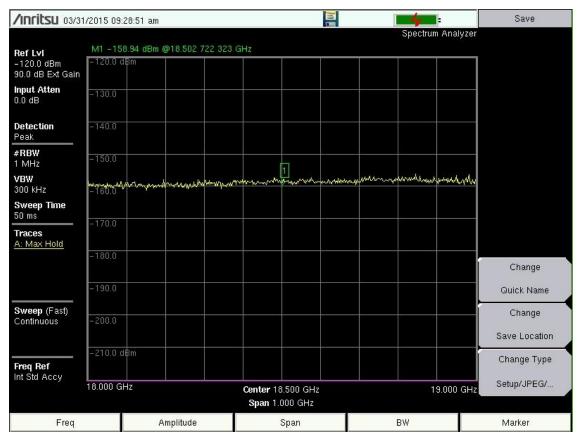


Figure 3.1-4 (A) Spectrum Photos 18-19 GHz 1MHz Res BW Horizontal Pol 360⁰

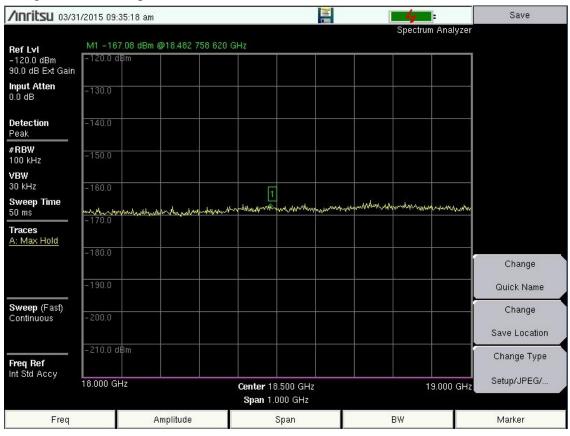


Figure 3.1-4 (B) Spectrum Photos 18-19 GHz 100 kHz Res BW Horizontal Pol 360⁰

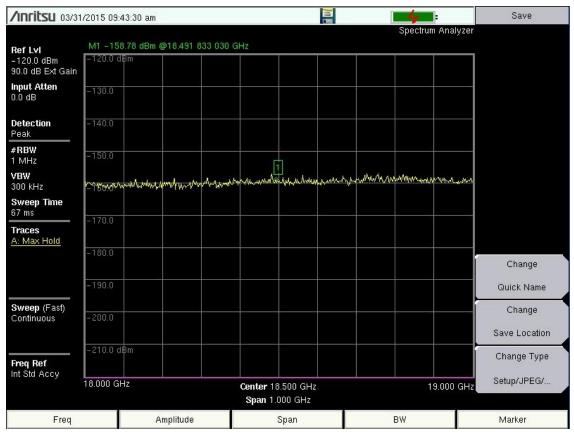


Figure 3.1-4 (C) Spectrum Photos 18-19 GHz 1MHz Res BW Horizontal Pol Worst Case

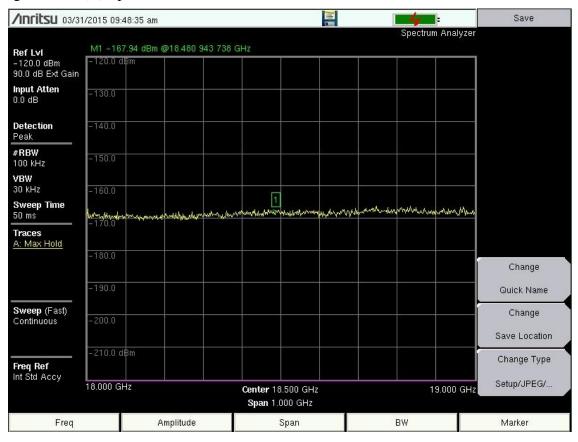


Figure 3.1-4 (D) Spectrum Photos 18-19 GHz 100 kHz Res BW Horizontal Pol Worst Case

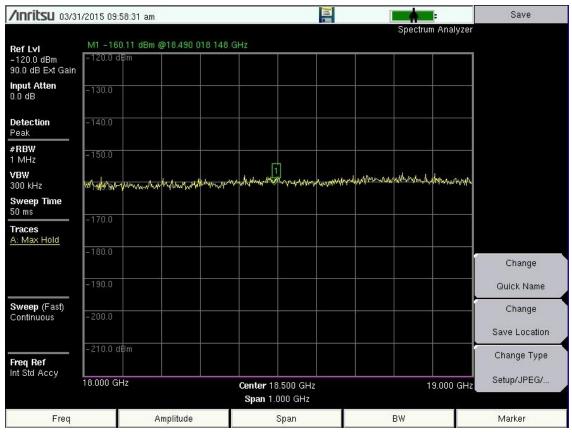


Figure 3.1-4 (E) Spectrum Photos 18-19 GHz 1MHz Res BW Vertical Pol 360⁰

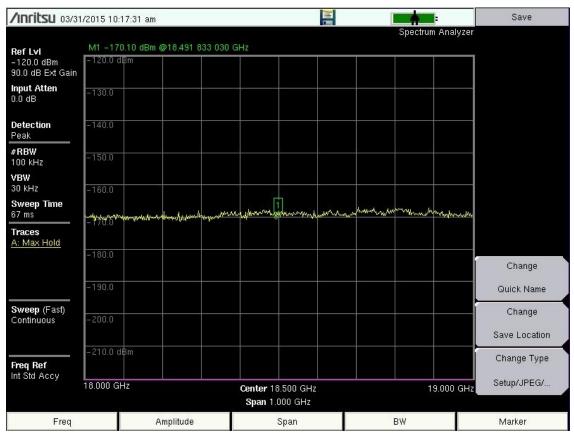


Figure 3.1-4 (F) Spectrum Photos 18-19 GHz 100 kHz Res BW Vertical Pol 360⁰

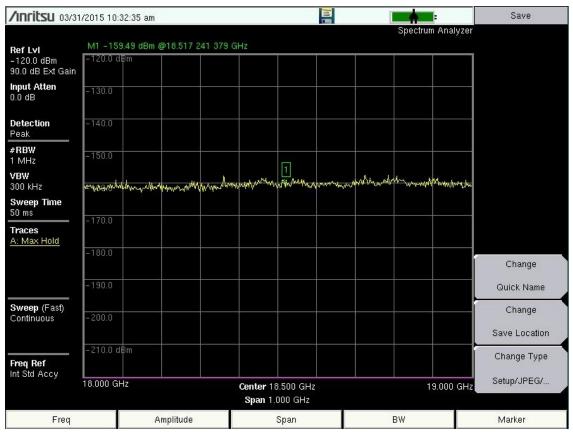


Figure 3.1-4 (G) Spectrum Photos 18-19 GHz 1 MHz Res BW Vertical Pol Worst Case

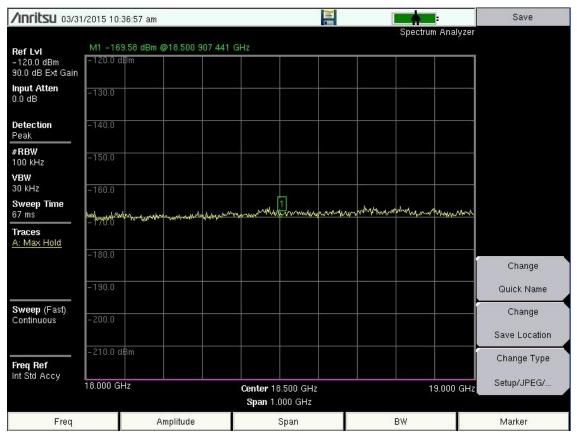


Figure 3.1-4 (H) Spectrum Photos 18-19 GHz 100 kHz Res BW Vertical Pol Worst Case

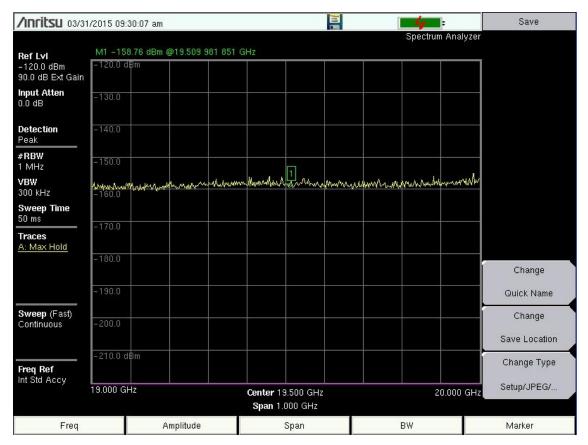


Figure 3.1-5 (A) Spectrum Photos 19-20 GHz 1MHz Res BW Horizontal Pol 360⁰

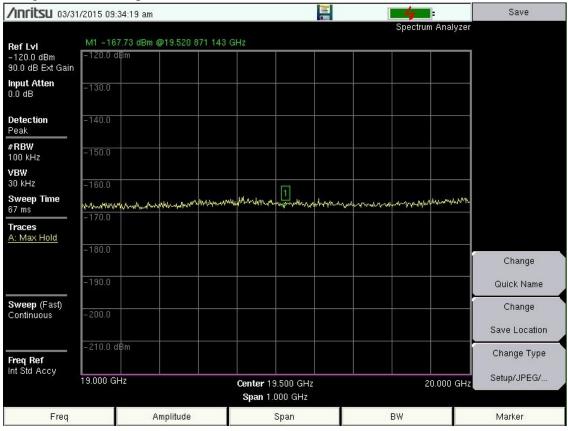


Figure 3.1-5 (B) Spectrum Photos 19-20 GHz 100 kHz Res BW Horizontal Pol 360⁰

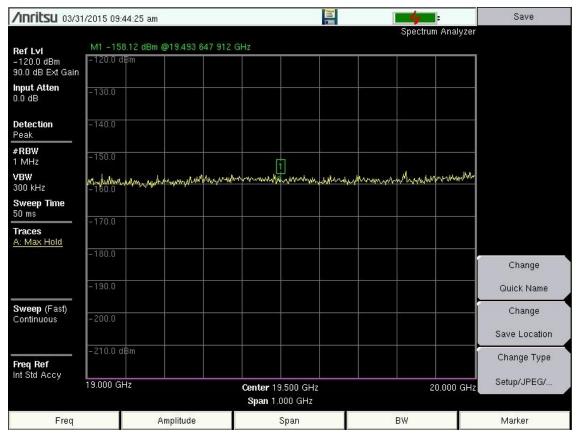


Figure 3.1-5 (C) Spectrum Photos 19-20 GHz 1MHz Res BW Horizontal Pol Worst Case

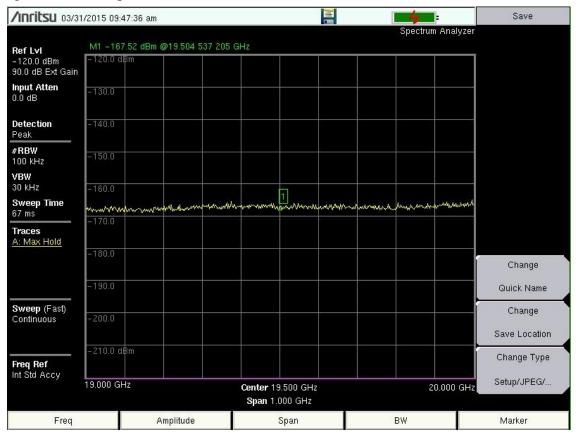


Figure 3.1-5 (D) Spectrum Photos 19-20 GHz 100 kHz Res BW Horizontal Pol Worst Case

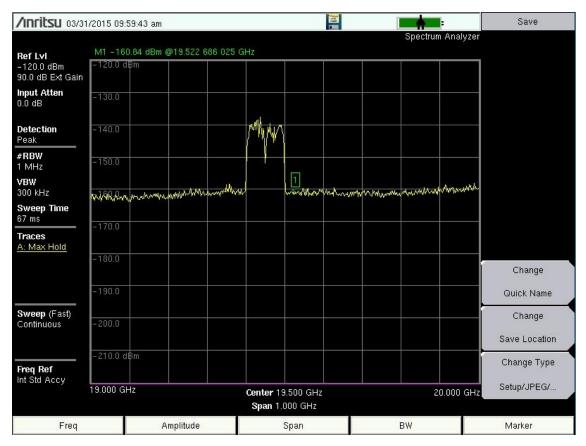


Figure 3.1-5 (E) Spectrum Photos 19-20 GHz 1MHz Res BW Vertical Pol 360⁰

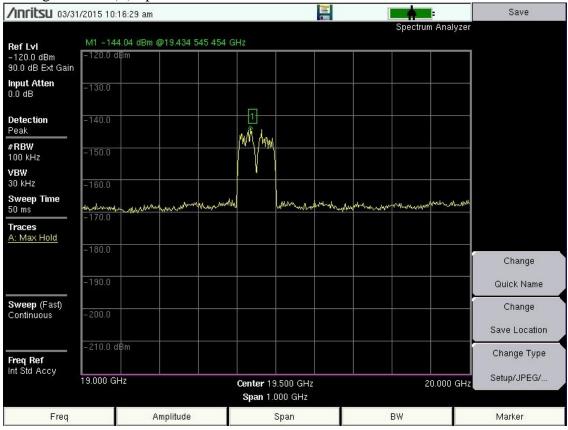


Figure 3.1-5 (F) Spectrum Photos 19-20 GHz 100 kHz Res BW Vertical Pol 360⁰

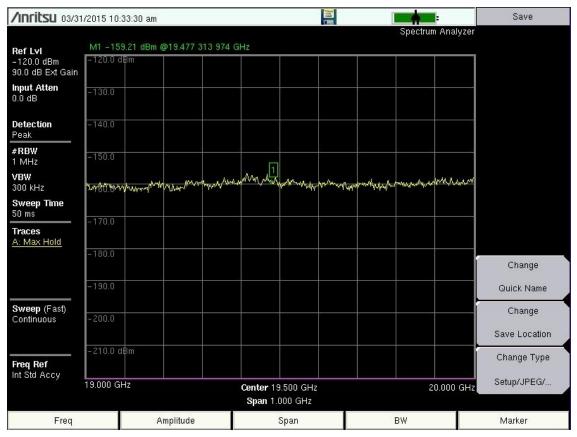


Figure 3.1-5 (G) Spectrum Photos 19-20 GHz 1 MHz Res BW Vertical Pol Worst Case

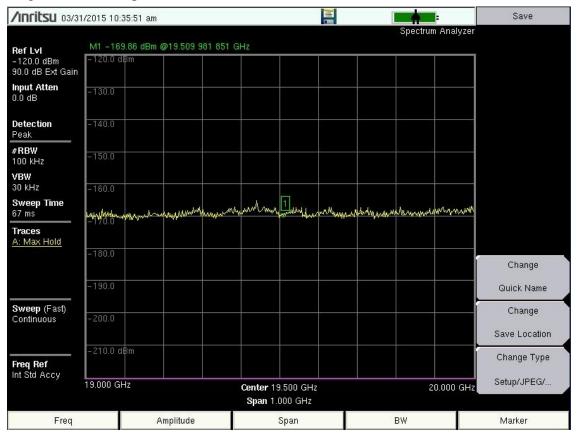


Figure 3.1-5 (H) Spectrum Photos 19-20 GHz 100 kHz Res BW Vertical Pol Worst Case

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Ref Lvi	M1 -15	8.9 <mark>6 dBm (</mark>	⊉20.511 79	96 733 GI	Ηz				Spectrur	n Analyzer	
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Input Atten 0.0 dB	-130.0								2		
Detection Peak	-140.0								о — .		
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VBW 300 kHz	100.0	and the second second	Northernorth	WWW-ANYA	mballynge	www.www.	mmmml	manyanya	himana	manythe	
Sweep Time 50 ms	-170.0	8				9	6.	22	s 8		
Traces <u>A: Max Hold</u>									a n		
	-180.0										Change
	-190.0										Quick Name
Sweep (Fast) Continuous	-200.0				3						Change Save Location
Freq Ref Int Std Accy	-210.0 c	IBm									Change Type
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Freq		A	mplitude			Span		7	BW		Marker

Figure 3.1-6 (A) Spectrum Photos 20-21 GHz 1MHz Res BW Horizontal Pol 360°

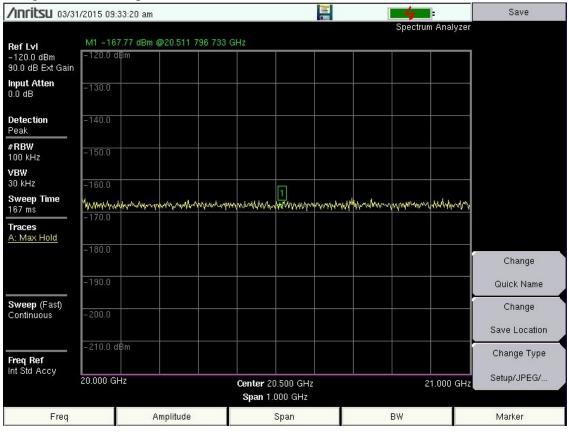


Figure 3.1-6 (B) Spectrum Photos 20-21 GHz 100 kHz Res BW Horizontal Pol 360°

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Ref Lvl	M1 -159.61 dE	m @20.524 500 90	7 GHz		Spectru	m Analyzer	
120.0 dBm 0.0 dB Ext Gain	-120.0 dBm						
n put Atten 1.0 dB	-130.0						
Detection Peak	-140.0					2	
RBW MHz	-150.0						
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	-190.0						Quick Name
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							Save Location
req Ref It Std Accy	-210.0 d₿m						Change Type
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Freq		Amplitude	Span		BW		Marker

Figure 3.1-6 (C) Spectrum Photos 20-21 GHz 1MHz Res BW Horizontal Pol Worst Case

/INFILSU 03/31	/2015 09:46:03 am			Save
Ref LvI	M1 -168.39 dBm @20.524 500 907	7 GHz	Spectrum Analyzer	
-120.0 dBm 90.0 dB Ext Gain	-120.0 dBm			
Input Atten 0.0 dB	-130.0			
Detection Peak	-140.0			
#RBW 100 kHz	-150.0			
VBW 30 kHz	-160.0			
Sweep Time 167 ms	how washing with an and a second second	handerstand hand hand hand hand hand hand hand h	mmontanondutranalyanativa	
Traces A: Max Hold	-180.0			
	-190.0			Change
Sweep (Fast)	- 150.0			Quick Name
Continuous	-200.0			Change Save Location
Freq Ref Int Std Accy	-210.0 dBm			Change Type
	20.000 GHz	Center 20.500 GHz Span 1.000 GHz	21.000 GHz	Setup/JPEG/
Freq	Amplitude	Span	BW	Marker

Figure 3.1-6 (D) Spectrum Photos 20-21 GHz 100 kHz Res BW Horizontal Pol Worst Case

/INFILSU 03/31	/2015 10:	13:32 am					[=	Save
Ref Lvl	M1 -16	1.69 dBm @20.53	1 760 435	GHz				Spectrum	n Analyzer	
-120.0 dBm 90.0 dB Ext Gain	-120.0 d	Bm.								
Input Atten 0.0 dB	-130.0									
Detection Peak	-140.0							i i	C	
#RBW 1 MHz	-150.0	<u> </u>						et		
VBW 300 kHz	Lichnew	and the warme	~~~~	Mannaman	1 WWWWWWW	howhowa	Mrsh ward	which have	ANNIN AN	
Sweep Time 50 ms										
Traces A: Max Hold	-170.0							2 D.		
	-180.0									Change
	-190.0									Quick Name
Sweep (Fast) Continuous	-200.0							5		Change Save Location
Freq Ref Int Std Accy	-210.0 d									Change Type
	20.000 G	Hz			0.500 GHz 000 GHz			2	1.000 GHz	Setup/JPEG/
Freq		Amplitud	e		Span		1	BW		Marker

Figure 3.1-6 (E) Spectrum Photos 20-21 GHz 1MHz Res BW Vertical Pol 360⁰

/INFILSU 03/3*	1/2015 10:14:51	am				-		Save
						Spectrum	Analyzer	
Ref Lvl		Bm @20.531 760	435 GHz					
120.0 dBm	-120.0 dBm							
90.0 dB Ext Gain								
nput Atten 1.0 dB	-130.0					5		
Detection Peak	-140.0					9 E		
RBW 00 kHz	-150.0							
/BW								
30 kHz	-160.0							
Sweep Time 67 ms	Multimore and	and a subserve of the second	man	www.manupunt	hang man	upper proton of the second	any ward	
Fraces A: Max Hold	a 5							
	-180.0						1	Change
	-190.0							Quick Name
Sweep (Fast)								Change
Continuous	-200.0							3 -
								Save Location
req Ref	-210.0 dBm							Change Type
nt Std Accy						5 6		
	20.000 GHz		Center 2	20.500 GHz		21.	000 GHz	Setup/JPEG/
			Span 1	.000 GHz				
Freq		Amplitude		Span		BW		Marker

Figure 3.1-6 (F) Spectrum Photos 20-21 GHz 100 kHz Res BW Vertical Pol 360°

/INFILSU 03/31	/2015 10:34:20) am				Save
					Spectrum A	malyzer
Ref Lvl		dBm @20.488 203 ;	266 GHz			
120.0 dBm	–120.0 dBm					
0.0 dB Ext Gain						
put Atten 0 dB	-130.0				5 6	
etection eak	-140.0			0	0	
RBW MHz	-150.0			<u> </u>	<i>e</i> 3	
BW 30 kHz	- metterymm	www.www.www.w	how how way where the second	mannahana	Makerton Mar	myhyteth
weep Time O ms	170.0					
races A: Max Hold	-170.0					
	-180.0					Change
	-190.0					Quick Name
weep (Fast) ontinuous	-200.0				5	Change
						Save Location
req Ref	-210.0 dBm					Change Type
it Std Accy	20.000 GHz		C			Setup/JPEG/
	20.000-0112		Center 20.500 Span 1.000 G		21.0	000 GHz
Freq		Amplitude	Span		BW	Marker

Figure 3.1-6 (G) Spectrum Photos 20-21 GHz 1 MHz Res BW Vertical Pol Worst Case

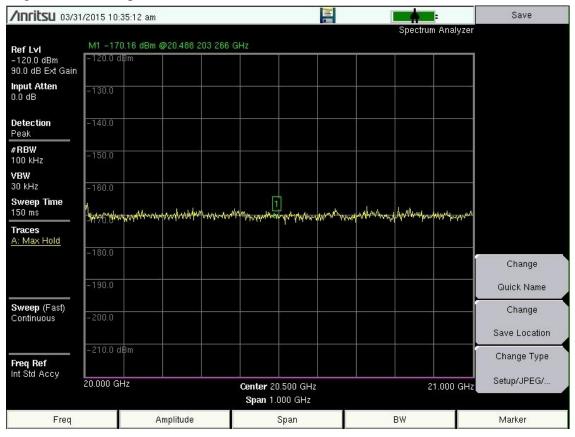


Figure 3.1-6 (H) Spectrum Photos 20-21 GHz 100 kHz Res BW Vertical Pol Worst Case

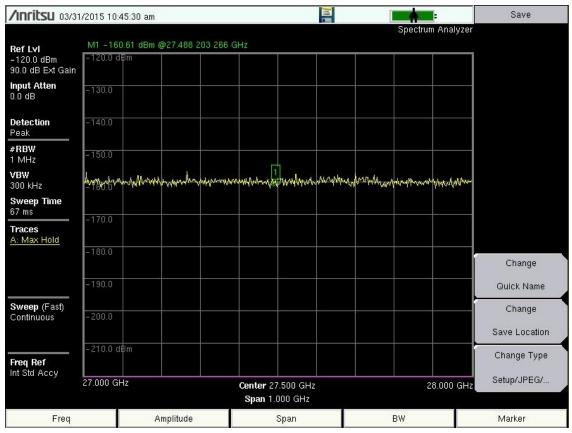


Figure 3.1-7 (A) Spectrum Photos 27-28 GHz 1MHz Res BW Horizontal Pol 360⁰

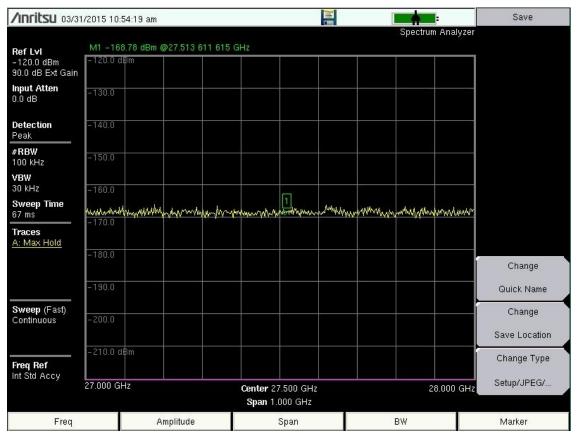


Figure 3.1-7 (B) Spectrum Photos 27-28 GHz 100 kHz Res BW Horizontal Pol 360⁰

/INFITSU 03/31	/2015 11:01:36 am		Save
Ref Lvl	M1 -159.58 dBm @27.513 611 615 GHz	Spectrum Analyzer	
-120.0 dBm 90.0 dB Ext Gain	-120.0 dBm		
Input Atten 0.0 dB	-130.0		
Detection Peak	-140.0		
#RBW 1 MHz	-150.0		
VBW 300 kHz		and the second state of th	
Sweep Time 50 ms	-170.0		
Traces <u>A: Max Hold</u>			
	-180.0		Change
)	-190.0		Quick Name
Sweep (Fast) Continuous	-200.0		Change Save Location
Freq Ref Int Std Accy	-210.0 dBm		Change Type
	27.000 GHz Center 27. Span 1.0		Setup/JPEG/
Freq	Amplitude S	pan BW	Marker

Figure 3.1-7 (C) Spectrum Photos 27-28 GHz 1MHz Res BW Vertical Pol 360⁰

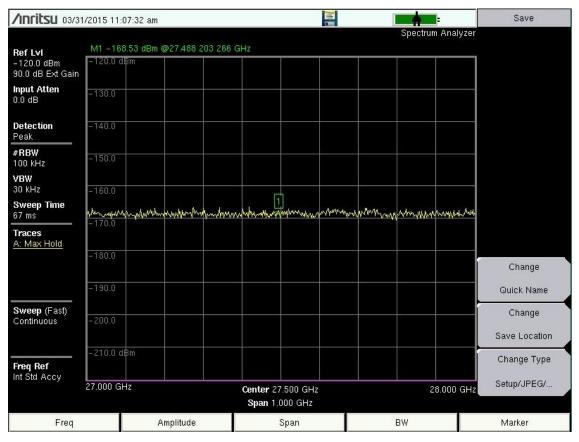


Figure 3.1-7 (D) Spectrum Photos 27-28 GHz 100 kHz Res BW Vertical Pol 360⁰

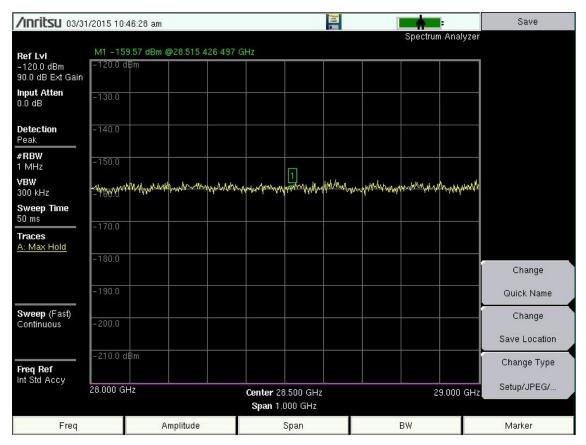


Figure 3.1-8 (A) Spectrum Photos 28-29 GHz 1MHz Res BW Horizontal Pol 360⁰

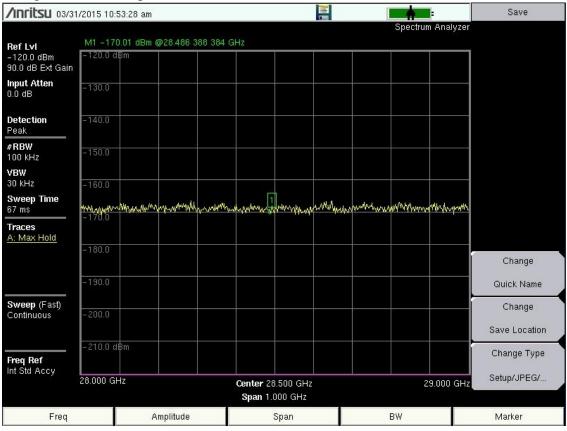


Figure 3.1-8 (B) Spectrum Photos 28-29 GHz 100 kHz Res BW Horizontal Pol 360⁰

/INCITSU 03/31	/2015 11:02:27 am			Save
Ref Lvl	M1 -159.78 dBm @28.482 758 6	20 GHz	Spectrum Analyzer	
-120.0 dBm 90.0 dB Ext Gain	–120.0 dBm			
Input Atten 0.0 dB	-130.0			
Detection Peak	-140.0			
#RBW 1 MHz	-150.0			
VBW 300 kHz	manterproventing	manhamananananananananan	where the second second second	
Sweep Time 67 ms	-170.0		ρ. <u>0</u> . σ. σ. σ.	
Traces <u>A: Max Hold</u>				
	-180.0			Change
	-190.0			Quick Name
Sweep (Fast) Continuous	-200.0			Change Save Location
Freq Ref Int Std Accy	–210.0 d₿m			Change Type
	28.000 GHz	Center 28.500 GHz Span 1.000 GHz	29.000 GHz	Setup/JPEG/
Freq	Amplitude	Span	BW	Marker

Figure 3.1-8 (C) Spectrum Photos 28-29 GHz 1MHz Res BW Vertical Pol 360°

/Inritsu 03/31	/2015 11:06:42 an	n					Save
					Spectr	um Analyzer	
Ref Lvl	M1 -169.14 dBn	n @28.497 277 6	76 GHz				
-120.0 dBm	-120.0 dBm						
90.0 dB Ext Gain							
nput Atten).0 dB	-130.0						
Detection Peak	-140.0			2			
RBW 00 KHz	-150.0	<u></u>	<u></u>	<u>.</u>	85		
/BW	Contraction and						
30 kHz	-160.0		-				
Sweep Time 50 ms	-170.0	where	manuman	which when when when when when when when whe	monorman	nallinenseady	
Traces A: Max Hold	a 5.						
	-180.0					1	Change
	-190.0						Quick Name
Sweep (Fast)							Change
Continuous	-200.0						Save Location
Freq Ref	-210.0 dBm						Change Type
nt Std Accy	28.000 GHz		Center 28.5			29.000 GHz	Setup/JPEG/
			Span 1.000			20.000 0112	
Freq		Amplitude	Sp		BW		Marker

Figure 3.1-8 (D) Spectrum Photos 28-29 GHz 100 kHz Res BW Vertical Pol 360°

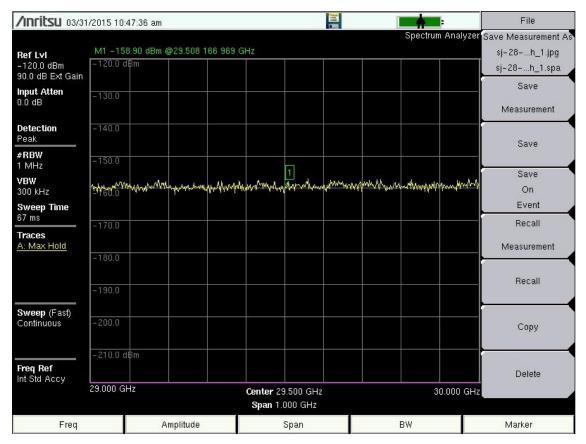


Figure 3.1-9 (A) Spectrum Photos 29-30 GHz 1MHz Res BW Horizontal Pol 360⁰

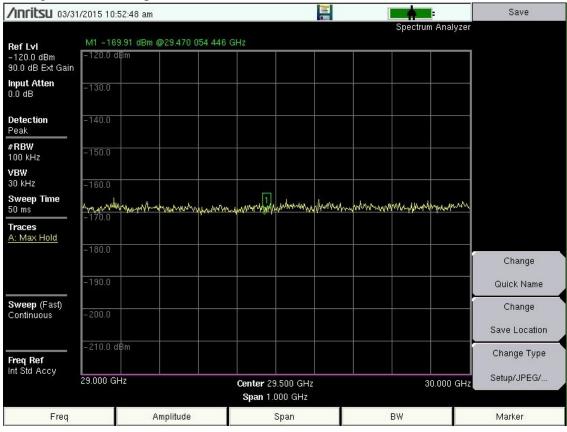


Figure 3.1-9 (B) Spectrum Photos 29-30 GHz 100 kHz Res BW Horizontal Pol 360⁰

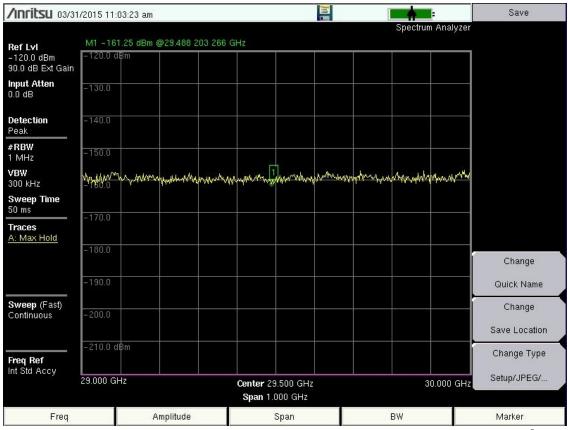


Figure 3.1-9 (C) Spectrum Photos 29-30 GHz 1MHz Res BW Vertical Pol 360°

/INFILSU 03/31	/2015 11:05:5	53 am					1		:	Save
								Spectrur	n Analyzer	
ef Lvl	M1 -169.61	dBm @29.488	203 266 GI	Ηz						
120.0 dBm	–120.0 dBm									
0.0 dB Ext Gain										
n put Atten .0 dB	-130.0							.		
etection 'eak	-140.0							d i		
RBW 00 kHz	-150.0			·		<u> </u>	÷	2°		
/BW										
30 kHz	-160.0									
Sweep Time 50 ms	170.0	mann	www.www.www.ww	mand they	Mindiana	montana	Maringon	harman	mymmym	
F races A: Max Hold						6.		a. 5	2.	
	-180.0								1	Change
	-190.0									Quick Name
weep (Fast)										Change
Continuous	-200.0									Save Location
req Ref	-210.0 dBm									Change Type
nt Std Accy	29.000 GHz			Center 29	500 CH-				0.000 GHz	Setup/JPEG/
				Span 1.0						

Figure 3.1-9 (D) Spectrum Photos 29-30 GHz 100 kHz Res BW Vertical Pol 360⁰

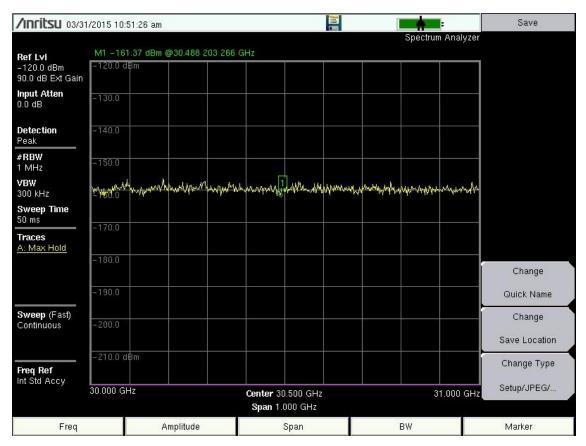


Figure 3.1-10 (A) Spectrum Photos 30-31 GHz 1MHz Res BW Horizontal Pol 360⁰

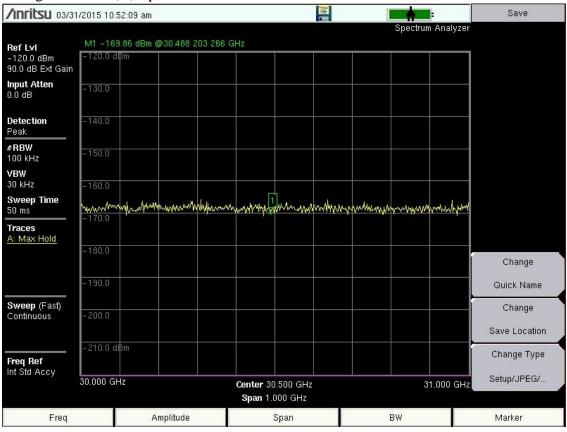


Figure 3.1-10 (B) Spectrum Photos 30-31 GHz 100 kHz Res BW Horizontal Pol 360⁰

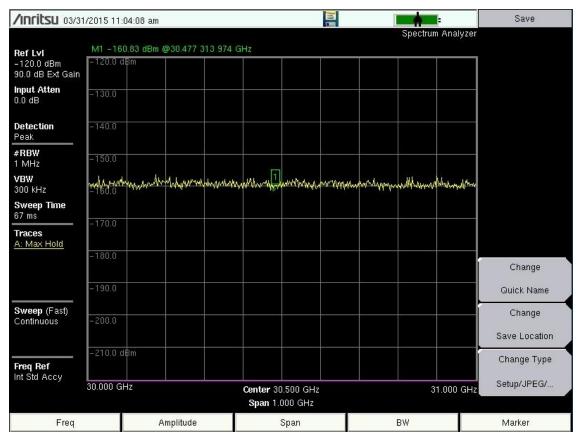


Figure 3.1-10 (C) Spectrum Photos 30-31 GHz 1MHz Res BW Vertical Pol 360⁰

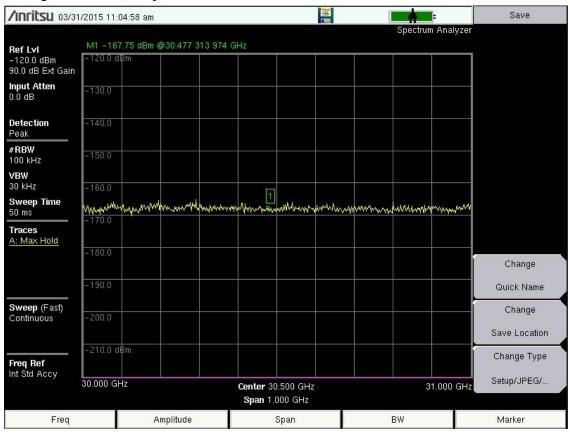


Figure 3.1-10 (D) Spectrum Photos 30-31 GHz 100 kHz Res BW Vertical Pol 360⁰

FOUR

SUMMARY OF RESULTS

The results of the measurements conducted at the proposed ViaSat, Inc site in San Jose (Tracy), CA are presented in this section.

Arc Clearance:

There is no potential satellite arc blockage at this site. Final arc clearance will depend on antenna placement.

Ku-Band Measurements:

There was one (See Section Five) radio frequency interference case measured at this site above the noise floor of the test equipment. Three cases were predicted with a possibility of 5 conflicts.

FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 <u>Conclusions</u>

There was one signal measured above the -156 dBW/ 1 MHz interference objective for digital reception at this site. The signal has a site name of SCO07400ATRCY and is at an Azimuth of 72.2°. See Below.

The satellite arc has no potential blockage from 55W through 115W.

5.2 <u>Recommendations</u>

It is recommended that frequency coordination of this site be initiated to protect this location at the more stringent digital receive interference objective.

