

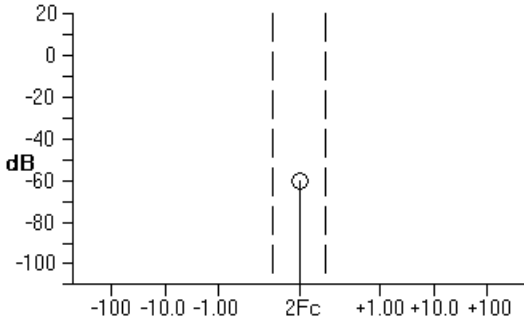
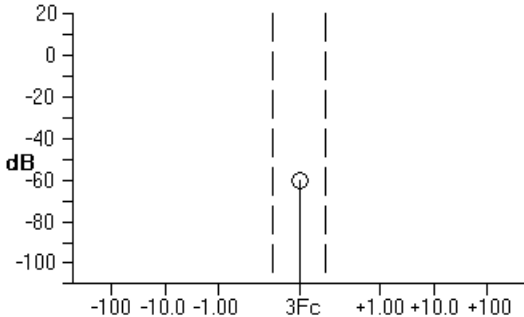
UNCLASSIFIED	
SECURITY SUMMARY & SPECIAL HANDLING REQUIREMENTS	
<p>The System Name is : NASA-ISRO SAR Mission (NISAR) Science Instruments</p> <p>The overall classification of this application is : UNCLASSIFIED</p>	
<p>Refer to your Security Manual for further guidance.</p>	
<p>The Application Level Special Handling is : A</p> <p>Approved for public release; distribution is unlimited (DoD Directive 5230.24)</p>	
DOWNGRADING INSTRUCTIONS	
	CLASSIFICATION UNCLASSIFIED

CLASSIFICATION UNCLASSIFIED		PAGE 2	
FULL RECORD PRINT FOR NASA-ISRO SAR MISSION (NISAR) SCIENCE INSTRUMENTS			
SELECTED FREQUENCIES			
(U) 1215.000 MHz - 1300.000 MHz		(U) 26250.00 MHz	
System Name (Nomenclature) (U) NASA-ISRO SAR Mission (NISAR) Science Instruments		Stage (U) 3 - Developmental	
Coord. ID/Coord. Num. J/F 12/		NTIA Certified (U) No	
Agency (U) NASA - National Aeronautics and Space Administration		Date Of Import 8/22/2016 3:22:36 PM (GMT)	
Overall Security Unclassified		Date/Time Last Mod. 8/26/2016 3:21:27 PM (GMT)	
Control Numbers:		Predefined Trunking? (U) No	
REFERENCES			
<p> Type : Previous Certification Ref. To Cert. : False Ref. ID : SPS-21527/1 Ref. Stage : 2 - Experimental Ref. Title : NASA-ISRO Synthetic Aperture Radar (NISAR) Mission Ka-band Payload Ref. Author : (U) NTIA Ref. Org. : (U) NASA Ref. Date : 2/24/2016 Ref. Is Class. : False </p>			
SYSTEM INFORMATION			
<p> System Description: (U) NASA-ISRO Synthetic Aperture Radar (NISAR) is the inaugural collaboration between National Aeronautics and Space Administration (NASA) and Indian Space Research Organization (ISRO) on an Earth Science mission, featuring an L-band SAR instrument from NASA and an S-band SAR instrument from ISRO. The NISAR is a science instrument payload and does not address the satellite TT&C links. The TT&C links will be addressed in a separate filing. </p> <p> System Relationship and Essentiality: (U) The Ka-band link is essential for dumping large amount of data daily, and the L-band is optimal choice for achieving science objectives. </p>			
ATTACHMENTS			
File Name (U) NASA NISAR_Stage 3-SupplementalInfo.docx	SPS Number	Date of Attachment 8/19/2016	
CLASSIFICATION UNCLASSIFIED			

CLASSIFICATION		UNCLASSIFIED		PAGE 3	
FULL RECORD PRINT FOR NASA-ISRO SAR MISSION (NISAR) SCIENCE INSTRUMENTS					
TARGET DATES					
System Termination:(U) 12/31/2024		System Activation: (U) 9/1/2021		System Approval:(U) 9/1/2017	
NSEP Use: (U) No			ITU Waiver: (U) No		
Number Of Units:(U) 1					
Estimated Cost of the System(U) \$ 808000000					
Replacement Information: (U)Not Applicable					
STATIONS					
<div>Station Name : (U) NISAR</div> <div>Station Locations</div> <div>(U)NISAR, (U) Space</div> <div>Location Type : (U) Non-geostationary Satellite</div> <div>Apogee : (U) 747 km</div> <div>Perigee : (U) 747 km</div> <div>Equatorial Inclination : (U) 98.0 degrees</div> <div>Period Of Orbit : (U) 5986 s</div> <div>Transmitters</div> <div>Nomenclature : (U) NISAR Ka-band</div> <div>Nomenclature : (U) L-band Radar Transmitter</div> <div>Receivers</div> <div>Nomenclature : (U) NISAR L-band Receiver</div> <div>Antennas</div> <div>Nomenclature : (U) Ka-Band HGA</div> <div>Nomenclature : (U) L-Band Antenna</div>					
<div>Station Name : (U) Svalbard, TrollSat, Fairbanks, and Punta Arenas</div> <div>Antenna Height : (U) 11.0 m</div> <div>Min. Point Angle : (U) 0.000 degrees</div> <div>Station Locations</div> <div>(U)Svalbard, (U) Norway</div> <div>Location Type : (U) Single Point</div> <div>Lat/Lon : (U) 78 13'57"N 15 23'23"E</div> <div>(U)TrollSat, (U) Antarctica</div> <div>Location Type : (U) Single Point</div> <div>Lat/Lon : (U) 72 0'0"S 2 31'27"E</div> <div>(U)Fairbanks, (U) Alaska</div> <div>Location Type : (U) Single Point</div> <div>Lat/Lon : (U) 64 51'31"N 147 51'18"W</div> <div>(U)Punta Arenas NISAR, (U) Chile</div> <div>Location Type : (U) Single Point</div> <div>Lat/Lon : (U) 52 56'17"S 70 51'26"W</div>					
CLASSIFICATION		UNCLASSIFIED			

CLASSIFICATION		UNCLASSIFIED		PAGE 4	
FULL RECORD PRINT FOR NASA-ISRO SAR MISSION (NISAR) SCIENCE INSTRUMENTS					
<div>Receivers Nomenclature : (U) Ka-band Rx</div> <div>Antennas Nomenclature : (U) Ka-band Antenna</div>					
<div>Station Name : (U) Earth Surface - Generic</div> <div>Antenna Height : (U) 0.000 m</div> <div>Min. Point Angle : (U) 0.000 degrees</div>					
STATION INFORMATION					
Transmitting Station: (U)NISAR - Generic			Receiving Station: (U)Earth Surface - Generic		
Station Class: E3			Radio Service: Earth Exploration-Satellite (active)		
LINK INFORMATION					
Transmitter: (U) L-band Radar Transmitter			Transmitter Antenna: (U) L-Band Antenna		
Receiver: (U) Generic			Receiver Antenna: (U) Generic		
Coupling Loss: (U) 0.000 dB			SP. Power Density: (U) -65.4 dBw/Hz		
SELECTED MODES					
Frequency (U) 1215.000 MHz - 1300.000 MHz (U) 1257.500 MHz		Emission Designator (U) 7M00Q3N (U) 84M0Q3N		Power (U) 1440 W Peak (U) 1440 W Peak	
				Notes PRI PRI	
STATION INFORMATION					
Transmitting Station: (U)NISAR			Receiving Station: (U)Svalbard, TrollSat, Fairbanks, and Punta Arenas		
Station Class: EW			Radio Service: Earth Exploration-Satellite		
LINK INFORMATION					
Transmitter: (U) NISAR Ka-band			Transmitter Antenna: (U) Ka-Band HGA		
CLASSIFICATION		UNCLASSIFIED			

CLASSIFICATION		UNCLASSIFIED		PAGE 5	
FULL RECORD PRINT FOR NASA-ISRO SAR MISSION (NISAR) SCIENCE INSTRUMENTS					
Receiver: (U) Ka-band Rx			Receiver Antenna: (U) Ka-band Antenna		
Coupling Loss: (U) 2.50 dB			SP. Power Density: (U) -92.5 dBw/Hz		
SELECTED MODES					
Frequency (U) 26250.00 MHz		Emission Designator (U) 1G50G1D		Power (U) 1.00 W Mean	
				Notes SEC	
CLASSIFICATION		UNCLASSIFIED			

CLASSIFICATION UNCLASSIFIED		PAGE 6
TRANSMITTER EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) L-band Radar Transmitter		Manufacturer: (U) JET PROPULSION LABORATORY
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/19/2016 6:13:13 PM (GMT)
Fcc Acc. Number:		Radar/Comm: (U) Radar
Model Name: (U) NISAR L-SAR		Output Device: (U) Other
Tuning Method: (U) Programmable Frequency Synthesizer		Supp. of Harmonics: (U) Yes
Freq. Stability: (U) 0.2ppm		
POWER		
Power Type: Peak Envelope		
Power: (U) 1440 W		
2ND HARMONIC CURVE		
(UNCLASSIFIED)		
Atten. -60.0 dB	Offset (Fo) 0.00000 kHz	 <p>A graph showing the 2nd harmonic curve. The y-axis is labeled 'dB' and ranges from -100 to 20. The x-axis ranges from -100 to +100. A vertical dashed line is at 2Fc. A data point is plotted at 2Fc with a value of -60 dB.</p>
3RD HARMONIC CURVE		
(UNCLASSIFIED)		
Atten. -60.0 dB	Offset (Fo) 0.00000 kHz	 <p>A graph showing the 3rd harmonic curve. The y-axis is labeled 'dB' and ranges from -100 to 20. The x-axis ranges from -100 to +100. A vertical dashed line is at 3Fc. A data point is plotted at 3Fc with a value of -60 dB.</p>
CLASSIFICATION UNCLASSIFIED		

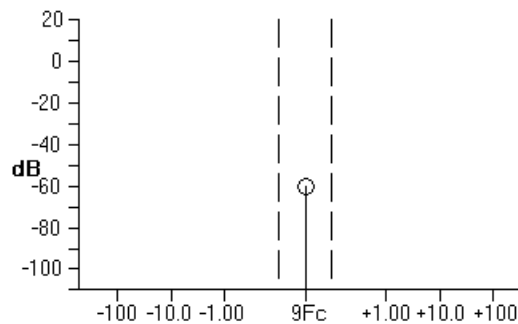
TRANSMITTER EQUIPMENT CHARACTERISTICS

OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-60.0 dB

Offset (Fo)
0.00000 kHz

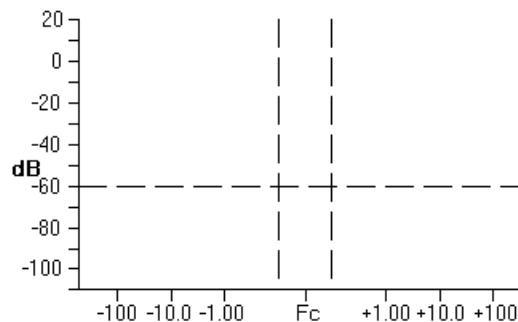


SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission

Atten.
-60.0 dB



FREQUENCIES

Fixed Frequency: (U) 1257.500 MHz

EMISSION DESIGNATORS

Em. Designator: (U) 84M0Q3N

Necessary BW: (U) 84000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 195000 kHz

Spread Spectrum: No

Radar Type: (U) FM Pulse Radar

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

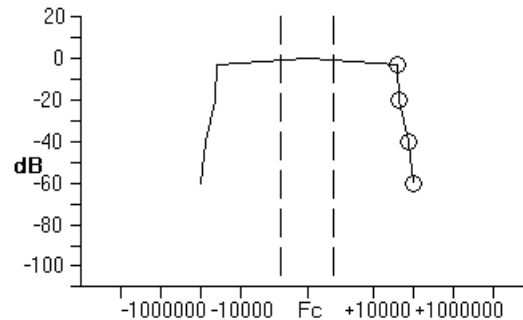
Level Offset (Fo)

-3.00 dB 39000 kHz

-20.0 dB 42000 kHz

-40.0 dB 75000 kHz

-60.0 dB 97500 kHz



PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 1600 pps

Pulse Rise Time: (U) 0.0000130 ms

Justification: (U) Short rise time is to achieve better range resolution. Filters are used to attenuate the spectrum outside of mainlobe.

Pulse Fall Time: (U) 0.0000130 ms

Pulse Width: (U) 0.0400 ms

Pulse Duty Cycle: (U) 6.400 %

Pulse Comp. Ratio: (U) 3080

FREQUENCIES

Tuning Range: (U) 1215.000 MHz - 1300.000 MHz

Tuning Method: (U) Programmable Frequency

Tuning Increment: (U) 1000.0 kHz
Synthesizer

Freq Stability: (U) 0.2ppm

Number of Frequencies Required: (U) 1

Min. Separation: (U) 1.000000 MHz

Supp. of Harmonics: (U) Yes

EMISSION DESIGNATORS

Em. Designator: (U) 7M00Q3N

Necessary BW: (U) 7000.0 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 148000 kHz

Spread Spectrum: No

Radar Type: (U) FM Pulse Radar

TRANSMITTER EQUIPMENT CHARACTERISTICS

(Cont.)

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

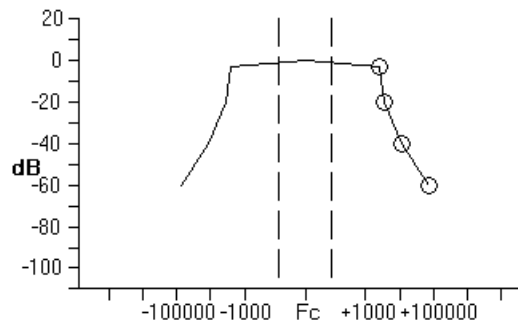
Level **Offset (Fo)**

-3.00 dB 2500.0 kHz

-20.0 dB 3500.0 kHz

-40.0 dB 11500 kHz

-60.0 dB 74000 kHz



PULSE CHARACTERISTICS

Pulse Repetition Rate: (U) 1600 pps

Pulse Rise Time: (U) 0.0000130 ms

Justification: (U) Short rise time is to achieve better range resolution. Filters are used to attenuate the spectrum outside of mainlobe.

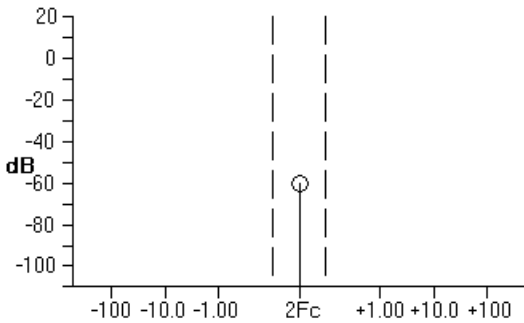
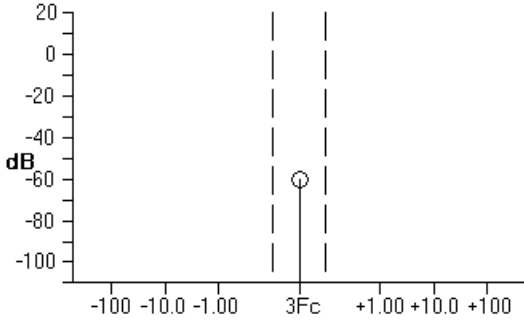
Pulse Fall Time: (U) 0.0000130 ms

Pulse Width: (U) 0.0250 ms

Pulse Duty Cycle: (U) 4.000 %

Pulse Comp. Ratio: (U) 125

Pulse Freq. Deviation: (U) 2000.0 kHz

CLASSIFICATION UNCLASSIFIED		PAGE 10	
TRANSMITTER EQUIPMENT CHARACTERISTICS			
Nomenclature: (U) NISAR Ka-band		Manufacturer: (U) JET PROPULSION LABORATORY	
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12	
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/18/2016 11:02:09 PM (GMT)	
Fcc Acc. Number:		Radar/Comm: (U) Communications	
Model Name:		Output Device: (U) Gallium Arsinide Field Effect Transistor	
Tuning Method: (U) Voltage Controlled Oscillator		Supp. of Harmonics: (U) No	
Freq. Stability: (U) 2ppm			
POWER			
Power Type: Mean			
Power: (U) 1.00 W			
2ND HARMONIC CURVE			
(UNCLASSIFIED)			
Atten. -60.0 dB	Offset (Fo) 0.00000 kHz	 <p>The graph shows the 2nd harmonic curve. The y-axis is labeled 'dB' and ranges from -100 to 20. The x-axis ranges from -100 to +100. A vertical dashed line is at 2Fc. A data point is plotted at 2Fc with a value of -60.0 dB.</p>	
3RD HARMONIC CURVE			
(UNCLASSIFIED)			
Atten. -60.0 dB	Offset (Fo) 0.00000 kHz	 <p>The graph shows the 3rd harmonic curve. The y-axis is labeled 'dB' and ranges from -100 to 20. The x-axis ranges from -100 to +100. A vertical dashed line is at 3Fc. A data point is plotted at 3Fc with a value of -60.0 dB.</p>	
CLASSIFICATION UNCLASSIFIED			

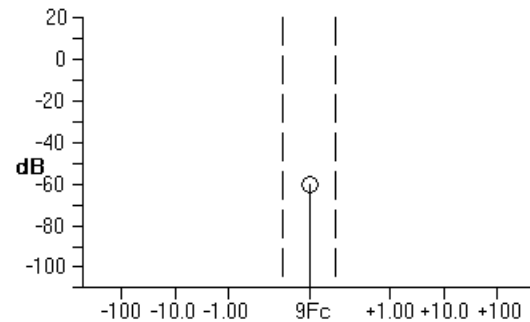
TRANSMITTER EQUIPMENT CHARACTERISTICS

OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-60.0 dB

Offset (Fo)
0.00000 kHz

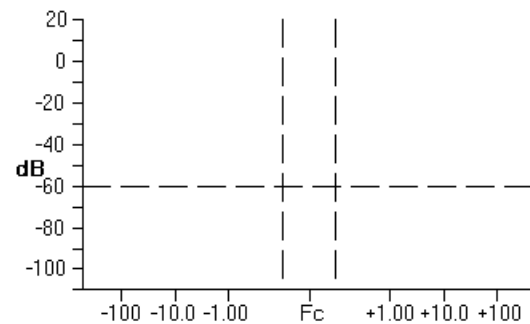


SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission

Atten.
-60.0 dB



FREQUENCIES

Fixed Frequency: (U) 26250.00 MHz

EMISSION DESIGNATORS

Em. Designator: (U) 1G50G1D

Necessary BW: (U) 1500000 kHz

Measured/Calculated: (U) Calculated

Occupied Bandwidth: (U) 1500000 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Dig. Modulation Type:
(U) OQPSK - Offset Quadrature Phase Shift
Keying

Digital Bit Rate: (U) 17000000000 bps

CLASSIFICATION UNCLASSIFIED		PAGE 12										
TRANSMITTER EQUIPMENT CHARACTERISTICS												
Number of Digital States: (U) 4												
		Digital Pulse Format: (U) Non-return to Zero										
FUNDAMENTAL CURVE												
(UNCLASSIFIED)												
<p>Meas/Calc: Calculated</p> <table><tr><th>Level</th><th>Offset (Fo)</th></tr><tr><td>-3.00 dB</td><td>335000 kHz</td></tr><tr><td>-20.0 dB</td><td>750000 kHz</td></tr><tr><td>-40.0 dB</td><td>1250000 kHz</td></tr><tr><td>-60.0 dB</td><td>1750000 kHz</td></tr></table>		Level	Offset (Fo)	-3.00 dB	335000 kHz	-20.0 dB	750000 kHz	-40.0 dB	1250000 kHz	-60.0 dB	1750000 kHz	
Level	Offset (Fo)											
-3.00 dB	335000 kHz											
-20.0 dB	750000 kHz											
-40.0 dB	1250000 kHz											
-60.0 dB	1750000 kHz											
CLASSIFICATION UNCLASSIFIED												

CLASSIFICATION UNCLASSIFIED		PAGE 13																								
RECEIVER EQUIPMENT CHARACTERISTICS																										
Nomenclature: (U) NISAR L-band Receiver		Manufacturer: (U) JET PROPULSION LABORATORY																								
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12																								
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/19/2016 5:50:01 PM (GMT)																								
Model Name: (U) NISAR L-band Receiver		Fcc Acc. Number:																								
Image Reject: (U) 60.0 dB		Oscillator Tuned: (U) Below																								
Cond. Undesired Em.: (U) -90.0 dBm		Proxy: No																								
Homodyne: No																										
FREQUENCIES																										
Fixed Frequency: (U) 1257.500 MHz Synthesizer		Tuning Method: (U) Programmable Frequency																								
		Freq. Stability: (U) 0.2ppm																								
EMISSION DESIGNATORS																										
Em. Designator: (U) 84M0Q3N		Sensitivities Sensitivity: (U) -91.5 dBm Necessary BW: (U) 84000 kHz Perf. Value: (U) 10 Noise Figure: (U) 3.50 dB Noise Temp. (U) 359 K Spur. Reject (U) 60.0 dB Intermod. Reject: (U) 60.0 dB Adj. Channel Sel.: (U) 60.0 dB Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)																								
IF SELECTIVITY CURVE																										
<p align="center">(UNCLASSIFIED)</p> <div> <div> <p>Measured/Calculated: Measured</p> <p>IF Freq. (Fk): 57.50000 MHz</p> <table> <tr> <td>Atten.</td> <td>Offset (Fo)</td> </tr> <tr> <td>3.00 dB</td> <td>42750 kHz</td> </tr> <tr> <td>20.0 dB</td> <td>46800 kHz</td> </tr> <tr> <td>60.0 dB</td> <td>200000 kHz</td> </tr> </table> </div> <div> <table border="1"> <caption>IF Selectivity Curve Data Points (Estimated)</caption> <thead> <tr> <th>Frequency Offset (kHz)</th> <th>Attenuation (dB)</th> </tr> </thead> <tbody> <tr> <td>-1000000</td> <td>-60</td> </tr> <tr> <td>-100000</td> <td>-20</td> </tr> <tr> <td>-10000</td> <td>0</td> </tr> <tr> <td>0 (Fk)</td> <td>0</td> </tr> <tr> <td>10000</td> <td>0</td> </tr> <tr> <td>100000</td> <td>-20</td> </tr> <tr> <td>1000000</td> <td>-60</td> </tr> </tbody> </table> </div> </div>			Atten.	Offset (Fo)	3.00 dB	42750 kHz	20.0 dB	46800 kHz	60.0 dB	200000 kHz	Frequency Offset (kHz)	Attenuation (dB)	-1000000	-60	-100000	-20	-10000	0	0 (Fk)	0	10000	0	100000	-20	1000000	-60
Atten.	Offset (Fo)																									
3.00 dB	42750 kHz																									
20.0 dB	46800 kHz																									
60.0 dB	200000 kHz																									
Frequency Offset (kHz)	Attenuation (dB)																									
-1000000	-60																									
-100000	-20																									
-10000	0																									
0 (Fk)	0																									
10000	0																									
100000	-20																									
1000000	-60																									
CLASSIFICATION UNCLASSIFIED																										

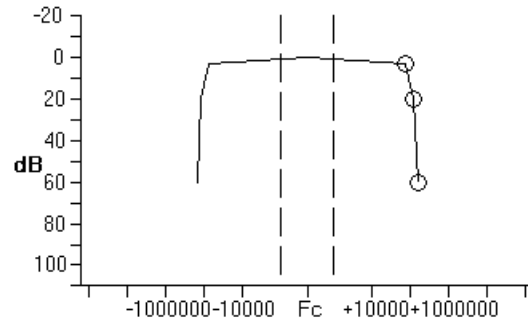
RECEIVER EQUIPMENT CHARACTERISTICS

RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

Atten.	Offset (Fo)
3.00 dB	74500 kHz
20.0 dB	120000 kHz
60.0 dB	150000 kHz



FREQUENCIES

Tuning Range: (U) 1215.000 MHz - 1300.000 MHz

Tuning Method: (U) Programmable Frequency

Tuning Increment: (U) 1000.0 kHz

Synthesizer

Freq. Stability: (U) 0.2ppm

EMISSION DESIGNATORS

Em. Designator: (U) 7M00Q3N

Sensitivities

Sensitivity: (U) -91.5 dBm

Necessary BW: (U) 7000.0 kHz

Perf. Value: (U) 10

Noise Figure: (U) 3.50 dB

Noise Temp. (U) 359 K

Spur. Reject (U) 60.0 dB

Intermod. Reject: (U) 60.0 dB

Adj. Channel Sel.: (U) 60.0 dB

Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)

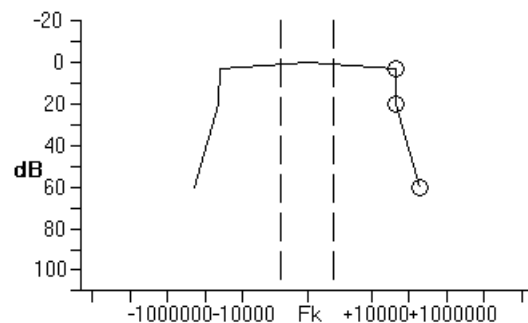
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

IF Freq. (Fk): 57.50000 MHz

Atten.	Offset (Fo)
3.00 dB	42750 kHz
20.0 dB	46800 kHz
60.0 dB	200000 kHz



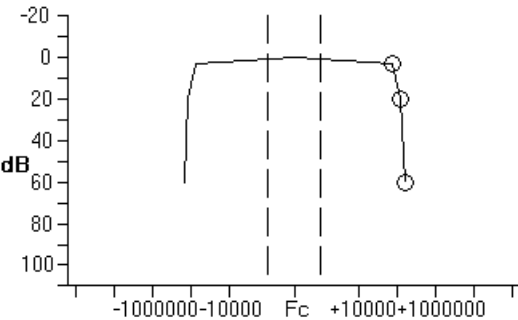
RECEIVER EQUIPMENT CHARACTERISTICS

RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

Atten.	Offset (Fo)
3.00 dB	74500 kHz
20.0 dB	120000 kHz
60.0 dB	150000 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 16								
RECEIVER EQUIPMENT CHARACTERISTICS										
Nomenclature: (U) Ka-band Rx		Manufacturer: (U) VIASAT TECHNOLOGIES CO.								
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12								
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/26/2016 3:13:46 PM (GMT)								
Model Name: (U) VHR-3200		Fcc Acc. Number:								
Image Reject: (U) 60.0 dB		Oscillator Tuned: (U) Above								
Cond. Undesired Em.: (U) 90.0 dBm		Proxy: No								
Homodyne: No										
FREQUENCIES										
Fixed Frequency: (U) 26250.00 MHz		Tuning Method: (U) Digital Synthesizer								
		Freq. Stability: (U) 2ppm								
EMISSION DESIGNATORS										
Em. Designator: (U) 1G50G1D		Sensitivities Sensitivity: (U) -50.0 dBm Necessary BW: Perf. Value: (U) 10 Noise Figure: (U) 3.53 dB Noise Temp. (U) 364 K Spur. Reject (U) 60.0 dB Intermod. Reject: (U) 60.0 dB Adj. Channel Sel.: (U) 60.0 dB Perf. Crit.: (U) S/N - Signal to Noise Ratio (dB)								
IF SELECTIVITY CURVE										
<p align="center">(UNCLASSIFIED)</p> <div> <div> Measured/Calculated: Measured IF Freq. (Fk): 260.0000 MHz <table> <tr> <td>Atten.</td> <td>Offset (Fo)</td> </tr> <tr> <td>3.00 dB</td> <td>325000 kHz</td> </tr> <tr> <td>20.0 dB</td> <td>331000 kHz</td> </tr> <tr> <td>60.0 dB</td> <td>355000 kHz</td> </tr> </table> </div> <div> </div> </div>			Atten.	Offset (Fo)	3.00 dB	325000 kHz	20.0 dB	331000 kHz	60.0 dB	355000 kHz
Atten.	Offset (Fo)									
3.00 dB	325000 kHz									
20.0 dB	331000 kHz									
60.0 dB	355000 kHz									
CLASSIFICATION UNCLASSIFIED										

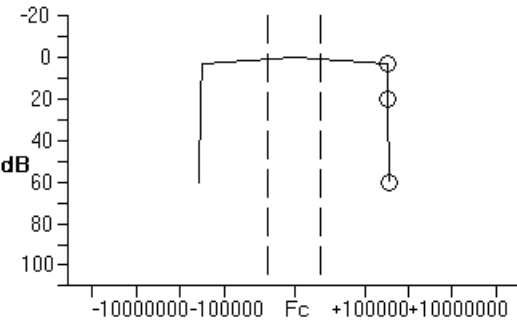
RECEIVER EQUIPMENT CHARACTERISTICS

RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

Atten.	Offset (Fo)
3.00 dB	325000 kHz
20.0 dB	331000 kHz
60.0 dB	355000 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 18
ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) L-Band Antenna		Manufacturer: (U) JET PROPULSION LABORATORY
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/18/2016 6:47:48 PM (GMT)
Model Name: (U) NISAR L-band Antenna		Antenna Type: (U) Parabolic Reflector
Antenna Category: Aperture		
FREQUENCIES		
Lower Frequency Limit: (U) 1125.000 MHz Upper Frequency Limit: (U) 1645.000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Horizontal and Vertical		Atten. Rel/Act: (U) Actual dBi
Dish Diameter: (U) 12.0 m		Capable of Blanking: (U) Yes
BEAMWIDTH		
Horizontal: (U) 2.00 degrees		Vertical: (U) 2.00 degrees
SCAN CHARACTERISTICS		
Horizontal Scan Type: (U) Electronic Scan Sector		Horizontal Scan Rate:
Vertical Scan Type:		Vertical Scan Rate:
GAIN		
Main Beam: (U) 33.8 dBi		1st Horz. Side Lobe Lvl.: (U) 22.0 dB
		1st Ver. Side Lobe Lvl.: (U) 18.4 dB
		1st Horz. Pos.: (U) 4.00 degrees
		1st Vert. Pos.: (U) 4.00 degrees
CLASSIFICATION UNCLASSIFIED		

CLASSIFICATION UNCLASSIFIED		PAGE 19
ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) Ka-band Antenna		Manufacturer: (U) VIASAT TECHNOLOGIES CO.
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/26/2016 1:51:50 PM (GMT)
Model Name: (U) Model 8010D		Antenna Type: (U) Parabolic Reflector
Antenna Category: Aperture		
FREQUENCIES		
Lower Frequency Limit: (U) 25000.00 MHz Upper Frequency Limit: (U) 28000.00 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Right and Left Hand Circular		Atten. Rel/Act: (U) Relative dB
Vert. Min. Elev.: (U) 5.00 degrees		Vert. Max. Elev.: (U) 90.0 degrees
Dish Diameter: (U) 7.32 m		
BEAMWIDTH		
Horizontal: (U) 0.230 degrees		Vertical: (U) 0.230 degrees
SCAN CHARACTERISTICS		
Horizontal Scan Type: (U) Tracker		Horizontal Scan Rate:
Vertical Scan Type: (U) Tracker		Vertical Scan Rate:
GAIN		
Main Beam: (U) 61.3 dBi		1st Horz. Side Lobe Atten.: (U) 20.0 dB
		1st Ver. Side Lobe Atten.: (U) 20.0 dB
		1st Horz. Pos.: (U) 0.300 degrees
		1st Vert. Pos.: (U) 0.300 degrees
CLASSIFICATION UNCLASSIFIED		

CLASSIFICATION UNCLASSIFIED		PAGE 20
ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) Ka-Band HGA		Manufacturer: (U) JET PROPULSION LABORATORY
NTIA Approval Status: (U) Unapproved		Coordination ID: J/F 12
Date of Import: 8/22/2016 3:22:36 PM (GMT)		Date/Time Last Mod.: 8/18/2016 11:11:32 PM (GMT)
Model Name: (U) Ka-band HGA		Antenna Type: (U) Aperture
Antenna Category: Aperture		
FREQUENCIES		
Lower Frequency Limit: (U) 25500.00 MHz Upper Frequency Limit: (U) 27000.00 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Right and Left Hand Circular		Atten. Rel/Act: (U) Relative dB
Dish Diameter: (U) 0.700 m		
BEAMWIDTH		
Horizontal: (U) 1.10 degrees		Vertical: (U) 1.10 degrees
SCAN CHARACTERISTICS		
Horizontal Scan Type: (U) Mechanically Steerable		Horizontal Scan Rate:
Vertical Scan Type: (U) Mechanically Steerable		Vertical Scan Rate:
GAIN		
Main Beam: (U) 42.0 dBi		1st Horz. Side Lobe Atten.: (U) 17.0 dB
		1st Ver. Side Lobe Atten.: (U) 17.0 dB
		1st Horz. Pos.: (U) 1.80 degrees
		1st Vert. Pos.: (U) 1.80 degrees
CLASSIFICATION UNCLASSIFIED		

Table of Contents For
(U) NASA-ISRO SAR Mission (NISAR) Science Instruments

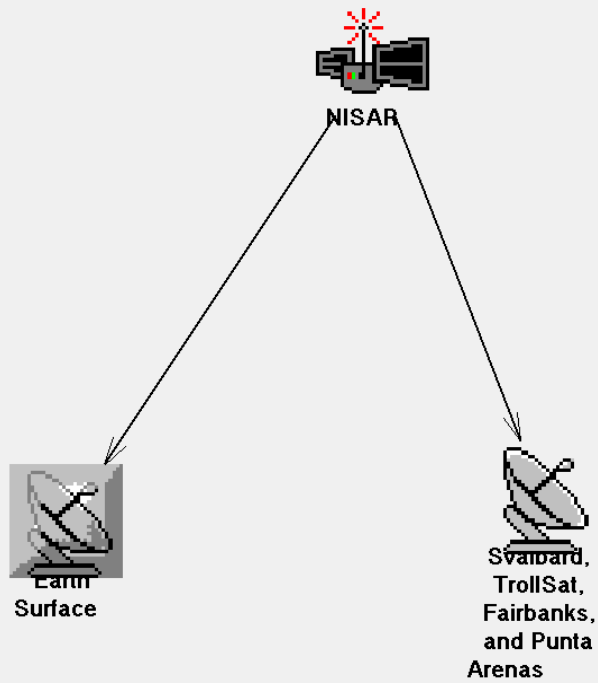
1. (U) Security Page
2. (U) Full Record Print
- Detail Transmitters
 6. (U) L-band Radar Transmitter
 10. (U) NISAR Ka-band
- Detail Receivers
 13. (U) NISAR L-band Receiver
 16. (U) Ka-band Rx
- Detail Antennas
 18. (U) L-Band Antenna
 19. (U) Ka-band Antenna
 20. (U) Ka-Band HGA

ALSO:

- (U) Line Diagram

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Line Diagram: NASA-ISRO SAR Mission (NISAR) Science



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