## GITAI SC1 NTIA Space record data form

NTIA requires the following data for space related experiments using government shared spectrum. For each transmit frequency, please provide the data for both ends of the transmit-receive link. Use Part A to describe the satellite to ground information. Part B is for all ground to space transmit links.

For the SC1 spacecraft, this describes S Band Up and Down Links, and X Band Down Link, all with the same 10 ground stations, all located outside US&P.

## Part A: Space to Earth Downlink Data

Satellite Transmitter Data (Required for Each Frequency)

#### S Band Downlink

Transmit Frequency	y: 2264 MHz	
Satellite Name: SC1		
Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	PWR = 0.63W PWR01 W1	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	128 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
<b>RF Emissions Data</b>		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	128 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	32,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC, FEC Rate:1/2,	
Total Symbol Rate	128,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.

<b>D</b>		
Does transmitter have a beacon mode?	Yes □ No ⊠	BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND STATIONS ARE VISIBLE.
If transmitter has	Yes 🗆	
a beacon mode,	No 🗆	
can the beacon be		
commanded off?		
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL, V = VERTICAL,
		S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
		J = LINEAR POLARIZATION
Transmit Antenna	XAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Orientation (XAZ)		
Transmit Antenna	ANTENNA GAIN7,	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH
Dimension (XAD)	BEAMWIDTH70,	XAD01 16G030B
	XAD =	
	XAD01 07G070	
Type of satellite	Type = NONGEOSTATIONARY	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
(State = SPCE)		deostationalit on nondeostationalit
(City = Geo or		
Nongeo)		
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).
For	Inclination Angle45,	IF ANY SATELLITES ARE NONGEOSTATIONARY,
Nongeostationary	APOGEE IN KILOMETERS510,	REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS,
(Orbital Data)	PERIGEE IN KILOMETERS510,	ORBITAL PERIOD IN HOURS AND FRACTIONS OF
	ORBITAL PERIOD IN HOURS _1AND	HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE,
	FRACTIONS OF HOURS IN	REM04
	DECIMAL58_,	*ORB,98.0IN00510AP00510PE001.58H01NRT01,
	THE NUMBER OF SATELLITES IN THE	AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER
	SYSTEM1,	NONGEOSTATIONARY SATELLITE ADD AN
		ADDITIONAL
	ORB = ORB,45.0IN00510AP00510PE001.58H01NRT01	*ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
For	Mean Local Time of Ascending Node	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S
SunSynchronous	(MLTAN) =	ASCENDING NODE AND THE MEAN SUN, OFTEN
Nongeostationary	· · · · · · · · · · · · · · · · · · ·	EXPRESSED AS UNIT OF TIME (HH:MM)
Orbits		

State (RSC)	RSC = AZE	
	Azerbaijan	
City Name (RAL)	RAL = Absheron	
Latitude	Lat = 402759 N	
(DDMMSS)		
Longitude	Lon = 0492909 E	
(DDDMMSS)		
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN35, BEAMWIDTH2.4, AZIMUTHAL RANGE001- 360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS210, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, RAD = RAD01 35G02B001-360A00210H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY38,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN TH SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN, 0	e S945. Cubesat, SC1	

State (RSC)	RSC = MEX	
	Mexico	
City Name (RAL)	RAL = La Paz	
Latitude (DDMMSS)	Lat = 240618 N	
Longitude (DDDMMSS)	Lon = 1102219 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN 35, BEAMWIDTH 2.5, AZIMUTHAL RANGE 001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 3.2, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3.3, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
	RAD01 35G02XB001-360A00003H003	
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY43,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = CLN Sri Lanka	
City Name (RAL)	RAL = Kandy	
Latitude (DDMMSS)	Lat = 071627 N	
Longitude (DDDMMSS)	Lon = 0804329 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY38,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = KOR	
	South Korea	
City Name (RAL)	RAL = Jeju	
Latitude (DDMMSS)	Lat = 332314 N	
Longitude (DDDMMSS)	Lon = 1261903 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN38, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS236, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, RAD = RAD01 38G002B001-360A00236H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.9, ANTENNA EFFICIENCY79,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = NZL	
	New Zealand	
City Name (RAL)	RAL = Awarua	
Latitude (DDMMSS)	Lat = 463141 S	
Longitude (DDDMMSS)	Lon = 1682245 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN35, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS16, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic	RAD01 35G002B001-360A00016H002   ANTENNA DIAMETER3.7,   ANTENNA EFFICIENCY38,	
Antennas) Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = AZR	
	Azores, Portugal	
City Name (RAL)	RAL = Santa Maria	
Latitude (DDMMSS)	Lat = 365951 N	
Longitude (DDDMMSS)	Lon = 0250810 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN35, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS194, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic	RAD01 35G002B001-360A00194H002     ANTENNA DIAMETER3.7,     ANTENNA EFFICIENCY38,	
Antennas)		
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = BUL	
	Bulgaria	
City Name (RAL)	RAL = Plana	
Latitude (DDMMSS)	Lat = 422859 N	
Longitude (DDDMMSS)	Lon = 0232643 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN36, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1106, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS4, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic	RAD01 36G002B001-360A01106H004   ANTENNA DIAMETER4.5,   ANTENNA EFFICIENCY33,	
Antennas) Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = AFS	
	South Africa	
City Name (RAL)	RAL = Pretoria	
Latitude	Lat = 255137 S	
(DDMMSS)		
Longitude	Lon = 0282714 E	
(DDDMMSS)		POLARIZATIONS INCLUDE:
Receive Antenna Polarization (RAP)	RAP = R	H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN35, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1392, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3,	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
	RAD = RAD01 35G002B001-360A01392H003	
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY38,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN, 0	2 S945. Cubesat, SC1	

State (RSC)	RSC = AUS	
	Australia	
City Name (RAL)	RAL = Nangetty	
Latitude (DDMMSS)	Lat = 290037 S	
Longitude (DDDMMSS)	Lon = 1152030 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN 35   BEAMWIDTH 2   AZIMUTHAL RANGE 001-360   THE SITE ELEVATION ABOVE MEAN SEA   LEVEL IN METERS 270   THE ANTENNA HEIGHT ABOVE TERRAIN   IN METERS 2   RAD =   RAD01 35G002B001-360A00270H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY38,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = CHL	
	Chile	
City Name (RAL)	RAL = Punta Arenas	
Latitude (DDMMSS)	Lat = 530228 S	
Longitude (DDDMMSS)	Lon = 0705050 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN35, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS39, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, RAD = RAD01 35G002B001-360A00039H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY38,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 1. Use S-Note 2. REM AGN,	e S945. Cubesat, SC1	

## X Band Downlink

Satellite Name: SC1		
Data Field	Data Answer	Description/Comments
Transmit Power (PWR)	PWR = 1.26W PWR01 W1	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	8 MHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	8 MHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	QPSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	4,000,000 bps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ⊠ No □ FEC Type:CC FEC Rate:1/2	
Total Symbol Rate	8,000,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Does transmitter have a beacon mode?	Yes □ No ⊠	BEACON MODE IS NORMALLY CONSIDERED A REGULAR AND PERIODIC SHORT DURATION TRANSMISSION THAT IS OFTEN USED TO ASSIST WITH TRACKING, DOPPLER COMPENSATION, OR SMALL SATELLITE IDENTIFICATION WHOSE TRANSMISSIONS ARE NOT LIMITED TO DURATIONS WHEN SUPPORTING GROUND STATIONS ARE VISIBLE.
If transmitter has a beacon mode, can the beacon be commanded off?	Yes 🗆 No 🗆	
Transmit Antenna Polarization (XAP)	XAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Transmit Antenna	XAZ = NB	NB= NARROWBEAM
Orientation (XAZ)		EC = EARTH COVERAGE

Transmit Antenna Dimension (XAD) Type of satellite (State = SPCE) (City = Geo or	ANTENNA GAIN12, BEAMWIDTH40, XAD = XAD02 12G040 Type = NONGEOSTATIONARY	NTIA FORMAT (XAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH XAD01 16G030B CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
Nongeo) For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	Inclination Angle45, APOGEE IN KILOMETERS510, PERIGEE IN KILOMETERS510, ORBITAL PERIOD IN HOURS _1AND FRACTIONS OF HOURS IN DECIMAL58_, THE NUMBER OF SATELLITES IN THE SYSTEM1, ORB = ORB,45.0IN00510AP00510PE001.58H01NRT01	IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)

Earth Station Data	Earth Station Data (Receiver) at Each Earth Station Location	
State (RSC)	RSC = AZE Azerbaijan	
City Name (RAL)	RAL = Absheron	
Latitude (DDMMSS)	Lat = 402759 N	
Longitude (DDDMMSS)	Lon = 0492909 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00

Receive Antenna Dimensions (RAD)	ANTENNA GAIN, BEAMWIDTH0.6, AZIMUTHAL RANGE001- 360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS210, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, RAD = RAD01 47G01B001-360A00210H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY50,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN, 0	2 S945. Cubesat, SC1	

State (RSC)	RSC = MEX	
	Mexico	
City Name (RAL)	RAL = La Paz	
Latitude (DDMMSS)	Lat = 240618 N	
Longitude (DDDMMSS)	Lon = 1102219 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN48,   BEAMWIDTH0.6,   AZIMUTHAL RANGE001-360,   THE SITE ELEVATION ABOVE MEAN SEA   LEVEL IN METERS3.2,   THE ANTENNA HEIGHT ABOVE TERRAIN   IN METERS3.3,   RAD =   RAD01 48G01XB001-360A00003H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY58,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = CLN Sri Lanka	
City Name (RAL)	RAL = Kandy	
Latitude (DDMMSS)	Lat = 071627 N	
Longitude (DDDMMSS)	Lon = 0804329 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN 47, , BEAMWIDTH 1, , AZIMUTHAL RANGE 001-360, , THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 462, , THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS 2, , RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic	RAD01 47G001B001-360A00462H002     ANTENNA DIAMETER3.7,     ANTENNA EFFICIENCY50,	
Antennas) Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = KOR	
	South Korea	
City Name (RAL)	RAL = Jeju	
Latitude (DDMMSS)	Lat = 332314 N	
Longitude (DDDMMSS)	Lon = 1261903 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN49, BEAMWIDTH1, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS236, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, RAD = RAD01 49G001B001-360A00236H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.9, ANTENNA EFFICIENCY79,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = NZL	
	New Zealand	
City Name (RAL)	RAL = Awarua	
Latitude (DDMMSS)	Lat = 463141 S	
Longitude (DDDMMSS)	Lon = 1682245 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN47, BEAMWIDTH1, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS16, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional	RAD01 47G001B001-360A00016H002     ANTENNA DIAMETER3.7,     ANTENNA EFFICIENCY50,	
Information (For Parabolic Antennas)		
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = AZR	
	Azores, Portugal	
City Name (RAL)	RAL = Santa Maria	
Latitude (DDMMSS)	Lat = 365951 N	
Longitude (DDDMMSS)	Lon = 0250810 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN 47 , BEAMWIDTH 1, , AZIMUTHAL RANGE 001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 194, , THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS 2, , RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic	RAD01 47G001B001-360A00194H002   ANTENNA DIAMETER3.7,   ANTENNA EFFICIENCY50,	
Antennas) Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = BUL	
	Bulgaria	
City Name (RAL)	RAL = Plana	
Latitude (DDMMSS)	Lat = 422859 N	
Longitude (DDDMMSS)	Lon = 0232643 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN47, BEAMWIDTH1, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1106, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS4, RAD =	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	RAD01 47G001B001-360A01106H004   ANTENNA DIAMETER4.5,   ANTENNA EFFICIENCY34,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = AFS	
	South Africa	
City Name (RAL)	RAL = Pretoria	
Latitude	Lat = 255137 S	
(DDMMSS)		
Longitude	Lon = 0282714 E	
(DDDMMSS)	RAP = R	POLARIZATIONS INCLUDE:
Receive Antenna Polarization (RAP)		H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
	D47	J = LINEAR POLARIZATION THE EARTH STATION RECEIVER ANTENNA
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD) Receive Antenna Additional	ANTENNA GAIN47, BEAMWIDTH1, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1392, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, RAD = RAD01 47G001B001-360A01392H003 ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY50,	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Information (For Parabolic Antennas)		
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data ⊠ Mission Payload Data ⊠	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN, 0	S945. Cubesat, SC1	

State (RSC)	RSC = AUS	
	Australia	
City Name (RAL)	RAL = Nangetty	
Latitude (DDMMSS)	Lat = 290037 S	
Longitude (DDDMMSS)	Lon = 1152030 E	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN47,   BEAMWIDTH1,   AZIMUTHAL RANGE001-360,   THE SITE ELEVATION ABOVE MEAN SEA   LEVEL IN METERS270,   THE ANTENNA HEIGHT ABOVE TERRAIN   IN METERS2,   RAD =   RAD01 47G001B001-360A00270H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY50,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

State (RSC)	RSC = CHL	
	Chile	
City Name (RAL)	RAL = Punta Arenas	
Latitude (DDMMSS)	Lat = 530228 S	
Longitude (DDDMMSS)	Lon = 0705050 W	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = RAZ01 V05	THE EARTH STATION RECEIVER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (RAZ), V00 TO V90, EXAMPLE, RAZ01 V00
Receive Antenna Dimensions (RAD)	ANTENNA GAIN_47, BEAMWIDTH1, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS39, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, RAD = RAD01 47G001B001-360A00039H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: RAD01 16G030B001-360A00357H006
Receive Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY50,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE SATELLITE WILL COMMUNICATE WITH THE EARTH STATION IN THE SPACE TO EARTH DIRECTION (DOWNLINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT
Supported Operations	Satellite Health and Status Data $oxtimes$ Mission Payload Data $oxtimes$	SATELLITE HEALTH AND STATUS TELEMETRY AND/OR MISSION PAYLOAD DATA
FCC notes: 3. Use S-Note 4. REM AGN,	e S945. Cubesat, SC1	

# Part B: Ground Stations, Earth to Space link data:

Transmit Frequency	/: 2070 MHz	
State (XSC)	XSC = AZE	
	Azerbaijan	
City Name (XAL)	XAL = Absheron	
Latitude	Lat = 402759 N	
(DDMMSS)		
Longitude	Lon = 0492909 E	
(DDDMMSS)		
Transmit Power (PWR)	PWR = PWR01 W32	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ⊠ No □   FEC Type:CC	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Transmit Antenna Orientation (XAZ)	XAZ = XAZ01 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Earth Station Transmitter Data (Required for Each Frequency at Each Earth Station Location)

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS210, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, XAD = XAD01 35G003B001-360A00210H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA DIAMETER 3.7	
Additional	ANTENNA EFFICIENCY 49 ,	
Information (For	· · · · · · · · · · · · · · · · · · ·	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequence	y: 2070 MHz	
State (XSC)	XSC = MEX	
	Mexico	
City Name (XAL)	XAL = La Paz	
Latitude	Lat = 240618 N	
(DDMMSS)		
Longitude	Lon = 1102219 W	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W26	INPUT TERMINAL, EXAMPLE, PWR01 W2
		TRANSMIT POWER UNITS INCLUDE: W = WATT,
		K = KILOWATT,
		M = MEGAWATT
Necessary	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Bandwidth		FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
<b>RF Emissions Data</b>		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes ⊠ No □	
Correction Coding	FEC Type:CC,	
U	FEC Rate:1/2,	
	-,,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
		OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL,
FOIdHZation (AAF)		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
		J = LINEAR POLARIZATION
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF
Orientation (XAZ)	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN36, BEAMWIDTH3, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS3.2, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3.3, XAD = XAD01 36G003B001-360A00003H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna Additional Information (For Parabolic Antennas)	ANTENNA DIAMETER3.7, ANTENNA EFFICIENCY66,	
Number of Satellite Contacts Supported Per Day	1	NUMBER OF TIMES THE EARTH STATION WILL COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Expected Duration of Each Contact	10 minutes	AVERAGE DURATION OF EACH CONTACT

Transmit Frequency		
State (XSC)	XSC = CLN Sri Lanka	
City Name (XAL)	XAL = Kandy	
Latitude	Lat = 071627 N	
(DDMMSS)		
Longitude	Lon = 0804329 E	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W32	INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
••		
Necessary	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Bandwidth		FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes 🛛 No 🗆	
Correction Coding	FEC Type:CC,	
C	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
		OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL,
POIdTIZALIOTI (AAP)		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF
Orientation (XAZ)	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS462, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, XAD = XAD01 35G003B001-360A00462H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA DIAMETER 3.7 ,	
Additional	ANTENNA EFFICIENCY49,	
Information (For		
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		EARTH TO STACE DIRECTION (OF INKS) EACH DAT
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequence	y: 2070 MHz	
State (XSC)	XSC = KOR	
	South Korea	
City Name (XAL)	XAL = Jeju	
Latitude	Lat = 332314 N	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 1261903 E	
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W6	INPUT TERMINAL, EXAMPLE, PWR01 W2
(1.001()		TRANSMIT POWER UNITS INCLUDE: W = WATT,
		K = KILOWATT,
		M = MEGAWATT
Necessary	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Bandwidth		FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC,	
	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
		OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL
		MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL,
- ( - )		V = VERTICAL, S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
Transmit Antenna	XAZ =	J = LINEAR POLARIZATION THE EARTH STATION TRANSMITTER ANTENNA
		MINIMUM OPERATING ANGLE OF
Orientation (XAZ)	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN, BEAMWIDTH2, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS236, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, XAD = XAD01 37G002B001-360A00236H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA	
Additional	DIAMETER3.9,	
Information (For	ANTENNA	
Parabolic	EFFICIENCY70,	
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL COMMUNICATE WITH THE STATELLITE IN THE
Satellite Contacts		EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequency	y: 2070 MHz	
State (XSC)	XSC = NZL	
	New Zealand	
City Name (XAL)	XAL = Awarua	
Latitude	Lat = 463141 S	
(DDMMSS)		
Longitude	Lon = 1682245 E	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W32	INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
		M = MEGAWATT
Necessary	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST
Bandwidth		SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON
		THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC,	
	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
Total Symbol Rate	50,000 sps	OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL
		MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL,
Polarization (XAP)		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA
Orientation (XAZ)		MINIMUM OPERATING ANGLE OF
	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01
		V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS16, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2, XAD = XAD01 35G003B001-360A00016H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA DIAMETER3.7,	
Additional	ANTENNA	
Information (For	EFFICIENCY49,	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		EARTH TO STACE DIRECTION (OF INKS) EACH DAT
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequency	y: 2070 MHz	
State (XSC)	XSC = AZR	
	Azores, Portugal	
City Name (XAL)	XAL = Santa Maria	
Latitude	Lat = 365951 N	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 0250810 W	
Transmit Power (PWR)	PWR = PWR01 W32	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT, M = MEGAWATT
Necessary Bandwidth	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:  CC	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA
Orientation (XAZ)	XAZ01 V05	MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35,   BEAMWIDTH3,   AZIMUTHAL RANGE001-360,   THE SITE ELEVATION ABOVE MEAN SEA   LEVEL IN METERS194,   THE ANTENNA HEIGHT ABOVE TERRAIN   IN METERS2,   XAD =   XAD01 35G003B001-360A00194H002	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA	
Additional	DIAMETER3.7,	
Information (For	ANTENNA EFFICIENCY49,	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequency	y: 2070 MHz	
State (XSC)	XSC = BUL	
	Bulgaria	
City Name (XAL)	XAL = Plana	
Latitude	Lat = 422859 N	
(DDMMSS)		
Longitude (DDDMMSS)	Lon = 0232643 E	
Transmit Power (PWR)	PWR = PWR01 W100	TRANSMIT POWER SUPPLIED TO THE ANTENNA INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE: W = WATT, K = KILOWATT,
Necessary Bandwidth	100 kHz	M = MEGAWATT THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA. FORMULAS CAN BE FOUND IN ANNEX J OF THE NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error Correction Coding	Is FEC used? Yes ⊠ No □ FEC Type:CC, FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna Polarization (XAP)	XAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Transmit Antenna Orientation (XAZ)	XAZ = XAZ01 V05	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35.8, BEAMWIDTH2.2, AZIMUTHAL RANGE_001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1106, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS4, XAD = XAD01 36G002B001-360A01106H004	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA	
Additional	DIAMETER4.5,	
Information (For	ANTENNA EFFICIENCY40,	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE
Supported Per		EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequency	y: 2070 MHz	
State (XSC)	XSC = AFS	
	South Africa	
City Name (XAL)	XAL = Pretoria	
Latitude	Lat = 255137 S	
(DDMMSS)		
Longitude	Lon = 0282714 E	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W32	INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
Nocossan	100 kHz	M = MEGAWATT THE WIDTH OF FREQUENCY BAND WHICH IS JUST
Necessary Bandwidth	100 KH2	SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Balluwiutii		FORMULAS CAN BE FOUND IN ANNEX J OF THE
RF Emissions Data		NTIA MANUAL. 2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON
		THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC,	
	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME OVERHEAD RESULTING IN THE TOTAL SYMBOL RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL, V = VERTICAL,
		S = HORIZONTAL AND VERTICAL,
		L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR,
		J = LINEAR POLARIZATION
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA
Orientation (XAZ)	XAZ01 V05	MINIMUM OPERATING ANGLE OF ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE 001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS1392, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, XAD = XAD01 35G003B001-360A01392H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA	
Additional		
	DIAMETER3.7,	
Information (For	ANTENNA EFFICIENCY49,	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		EARTH TO STACE DIRECTION (OF INNS) EACH DAT
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequence	y: 2070 MHz	
State (XSC)	XSC = AUS	
	Australia	
City Name (XAL)	XAL = Nangetty	
Latitude	Lat = 290037 S	
(DDMMSS)		
Longitude	Lon = 1152030 E	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W32	INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
NI	400.111	M = MEGAWATT THE WIDTH OF FREQUENCY BAND WHICH IS JUST
Necessary	100 kHz	SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Bandwidth		FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC,	
-	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
,		OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL,
		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
<b>T</b>		J = LINEAR POLARIZATION
Transmit Antenna	XAZ =	THE EARTH STATION TRANSMITTER ANTENNA MINIMUM OPERATING ANGLE OF
Orientation (XAZ)	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE 001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS270, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS2_,	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
	XAD =	
	XAD01 35G003B001-360A00270H002	
Transmit Antenna	ANTENNA DIAMETER3.7,	
Additional	ANTENNA EFFICIENCY49,	
Information (For		
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		EARTH TO STACE DIRECTION (OF INNS) EACT DAT
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Transmit Frequence	y: 2070 MHz	
State (XSC)	XSC = CHL	
	Chile	
City Name (XAL)	XAL = Punta Arenas	
Latitude	Lat = 530228 S	
(DDMMSS)		
Longitude	Lon = 0705050 W	
(DDDMMSS)		
Transmit Power	PWR =	TRANSMIT POWER SUPPLIED TO THE ANTENNA
(PWR)	PWR01 W32	INPUT TERMINAL, EXAMPLE, PWR01 W2 TRANSMIT POWER UNITS INCLUDE:
		W = WATT,
		K = KILOWATT,
		M = MEGAWATT
Necessary	100 kHz	THE WIDTH OF FREQUENCY BAND WHICH IS JUST SUFFICIENT TO SUCCESSFULLY TRANSFER DATA.
Bandwidth		FORMULAS CAN BE FOUND IN ANNEX J OF THE
		NTIA MANUAL.
RF Emissions Data		2-SIDED EMISSION BANDWIDTH VALUES
-3 dB bandwidth	100 kHz	
-20 dB bandwidth		
-40 dB bandwidth		
-60 dB bandwidth		
Modulation Type	2FSK	THE METHOD USED TO SUPERIMPOSE DATA ON THE CARRIER, EXAMPLE, BPSK, QPSK, GMSK.
Data Rate	25,000 bps	INFORMATION DATA RATE
Forward Error	Is FEC used? Yes $oxtimes$ No $\Box$	
Correction Coding	FEC Type:CC,	
_	FEC Rate:1/2,	
Total Symbol Rate	50,000 sps	DATA RATE COMBINED WITH FEC AND FRAME
,		OVERHEAD RESULTING IN THE TOTAL SYMBOL
		RATE AT THE INPUTE TO THE SYMBOL MAPPER/MODULATOR.
Transmit Antenna	XAP = R	POLARIZATIONS INCLUDE:
Polarization (XAP)		H = HORIZONTAL,
		V = VERTICAL,
		S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR,
		R = RIGHT HAND CIRCULAR,
		T = RIGHT AND LEFT HAND CIRCULAR,
Tuenensit Autom	XA7 -	J = LINEAR POLARIZATION THE EARTH STATION TRANSMITTER ANTENNA
Transmit Antenna	XAZ =	MINIMUM OPERATING ANGLE OF
Orientation (XAZ)	XAZ01 V05	ELEVATION (XAZ), V00 TO V90, EXAMPLE, XAZ01 V00

Transmit Antenna Dimensions (XAD)	ANTENNA GAIN35, BEAMWIDTH3, AZIMUTHAL RANGE001-360, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS39, THE ANTENNA HEIGHT ABOVE TERRAIN IN METERS3, XAD = XAD01 35G003B001-360A00039H003	EXAMPLE ASSUMING NONGEOSTATIONARY, 16 DBI GAIN, 30 DEGREE BEAMWIDTH, AZIMUTHAL RANGE FROM 001-360, SITE ELEVATION OF 357 METERS, AND ANTENNA HEIGHT ABOVE TERRAIN OF 6 METERS: XAD01 16G030B001-360A00357H006
Transmit Antenna	ANTENNA DIAMETER 3.7 .	
Additional	ANTENNA EFFICIENCY 49 ,	
Information (For	,	
Parabolic		
Antennas)		
Number of	1	NUMBER OF TIMES THE EARTH STATION WILL
Satellite Contacts		COMMUNICATE WITH THE STATELLITE IN THE EARTH TO SPACE DIRECTION (UPINKS) EACH DAY
Supported Per		
Day		
Expected	10 minutes	AVERAGE DURATION OF EACH CONTACT
Duration of Each		
Contact		

Satellite Receive Sp	ecifications	
Receive Antenna Polarization (RAP)	RAP = R	POLARIZATIONS INCLUDE: H = HORIZONTAL, V = VERTICAL, S = HORIZONTAL AND VERTICAL, L = LEFT HAND CIRCULAR, R = RIGHT HAND CIRCULAR, T = RIGHT AND LEFT HAND CIRCULAR, J = LINEAR POLARIZATION
Receive Antenna Orientation (RAZ)	RAZ = NB	NB= NARROWBEAM EC = EARTH COVERAGE
Receive Antenna Dimension (RAD)	ANTENNA GAIN7, BEAMWIDTH70, RAD = 07G070B	NTIA FORMAT(RAD), EXAMPLE, FOR 16 DBI ANTENNA GAIN AND 30 DEGREE BEAMWIDTH RAD01 16G030B
Type of satellite (State = SPCE) City = Geo or Nongeo	Type = NONGEOSTATIONARY	CHOOSE EITHER: GEOSTATIONARY OR NONGEOSTATIONARY
For Geostationary Satellites	Longitude =	IF ANY SATELLITES ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE IN DDDMMSS FORMAT (XLG AND/OR RLG).
For Nongeostationary (Orbital Data)	Inclination Angle45, APOGEE IN KILOMETERS510, PERIGEE IN KILOMETERS510, ORBITAL PERIOD IN HOURS _1AND FRACTIONS OF HOURS IN DECIMAL58_, THE NUMBER OF SATELLITES IN THE SYSTEM1, ORB = ORB,45.0IN00510AP00510PE001.58H01NRR01	IF ANY SATELLITES ARE NONGEOSTATIONARY, REPORT ITS INCLINATION ANGLE, APOGEE IN KILOMETERS, PERIGEE IN KILOMETERS, ORBITAL PERIOD IN HOURS AND FRACTIONS OF HOURS IN DECIMAL, THE NUMBER OF SATELLITES IN THE SYSTEM, THEN T01, EXAMPLE, REM04 *ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT ENDING IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
For SunSynchronous Nongeostationary Orbits	Mean Local Time of Ascending Node (MLTAN) =	MLTAN IS THE ANGLE BETWEEN AN ORBIT'S ASCENDING NODE AND THE MEAN SUN, OFTEN EXPRESSED AS UNIT OF TIME (HH:MM)