NTIA Space Record Data Form
Rev. 3/26/2020

0029-EX-CM-2020

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.

Part A: Space to Earth Downlink Data

Satellite Transmitter Data

Transmit Frequency: 9600 MHz		
Satellite Name: Capella-2 (Sequoia)		
Data Field	**Data Answer**	**Description/Comments**
Polarization (XAP)	XAP = H	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 = LIENAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB = NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN 48.0 dB, BEAMWIDTH 0.7 degrees, XAD = XAD01 48G001B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of Satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude =	IF ANY SATELLITE ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG)
For Nongeostationary (Orbit Data)	INCLINATION ANGLE 97.88 degrees, APOGEE IN KILOMETERS 620 km, PERIGEE IN KILOMETERS 620 km,	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

	ORBITAL PERIOD IN HOURS 1 AND FACTIONS OF HOURS IN DECIMAL 61, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 98.0IN00620AP00620PE001.61H01NRT01	*ORB,98.0IN00510AP00510PE001.58H01NRT01, AND FOR SPACE-TO-SPACE COMMUNICATIONS WITH ANOTHER NONGEOSTATIONARY SATELLITE ADD AN ADDITIONAL *ORB FOR IT END IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
Note: This frequency is used for the spacecraft radar Earth remote sensing payload, therefore no corresponding receive stations are listed.		

Transmit Frequency: 8027 MHz		
Satellite Name: Capella-2 (Sequoia)		
Data Field	**Data Answer**	**Description/Comments**
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 = LIENAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB = NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN 5.6 dB, BEAMWIDTH 98 degrees, XAD = XAD02 05G098B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of Satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude =	IF ANY SATELLITE ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG)
For Nongeostationary (Orbit Data)	INCLINATION ANGLE 97.88 degrees, APOGEE IN KILOMETERS 620 km, PERIGEE IN KILOMETERS 620 km, ORBITAL PERIOD IN HOURS 1 AND FACTIONS OF HOURS IN DECIMAL 61, THE NUMBER OF SATELLITES IN THE SYSTEM 1,	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 END IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

	ORB = 98.0IN00620AP00620PE001.61H01NRT01	
Earth Station Data (Receiver 1)		
State (RSC)	RSC = Oregon	
City Name (RAL)	RAL = Boardman	
Latitude (DDMMSS)	Lat = 455116 N	
Longitude (DDDMMSS)	Lon = 1193754 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 101 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD01 38G002B000-360A00101H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 2)		
State (RSC)	RSC = Ohio	
City Name (RAL)	RAL = Kilevile	
Latitude (DDMMSS)	Lat = 400600 N	
Longitude (DDDMMSS)	Lon = 0831149 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ02 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00

Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 288 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD02 38G002B000-360A00288H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 3)		
State (RSC)	RSC = Ireland	
City Name (RAL)	RAL = Dublin	
Latitude (DDMMSS)	Lat = 532044 N	
Longitude (DDDMMSS)	Lon = 0061651 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ03 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 8 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD03 38G002B000-360A00008H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 4)		
State (RSC)	RSC = Sweden	
City Name (RAL)	RAL = Vasteras	
Latitude (DDMMSS)	Lat = 591929 N	
Longitude (DDDMMSS)	Lon = 0180406 N	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ04 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 22 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 22 meters, RAD04 38G002B000-360A00022H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 5)		
State (RSC)	RSC = South Africa	
City Name (RAL)	RAL = Cape Town	
Latitude (DDMMSS)	Lat = 335556 S	
Longitude (DDDMMSS)	Lon = 0183152 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ05 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 20 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD05 38G002B000-360A00020H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 6)		
State (RSC)	RSC = Bahrain	
City Name (RAL)	RAL = Manama	

Latitude (DDMMSS)	Lat = 260448 N	
Longitude (DDDMMSS)	Lon = 0503302 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ06 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 65 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD06 38G002B000-360A00065H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 7)		
State (RSC)	RSC = Australia	
City Name (RAL)	RAL = Sydney	
Latitude (DDMMSS)	Lat = 335045 S	
Longitude (DDDMMSS)	Lon = 1510418 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ07 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 22 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters,	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

	RAD07 38G002B000-360A00022H003	
Earth Station Data (Receiver 8)		
State (RSC)	RSC = Norway	
City Name (RAL)	RAL = Svalbard	
Latitude (DDMMSS)	Lat = 781354 N	
Longitude (DDDMMSS)	Lon = 0152238 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ08 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 450 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD08 38G002B000-360A00008H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 9)		
State (RSC)	RSC = Norway	
City Name (RAL)	RAL = Troll	
Latitude (DDMMSS)	Lat = 720041 S	
Longitude (DDDMMSS)	Lon = 0023317 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ09 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees,	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

	AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 1371 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD09 38G002B000-360A01371H003	
Earth Station Data (Receiver 10)		
State (RSC)	RSC = Chile	
City Name (RAL)	RAL = Punta Arenas	
Latitude (DDMMSS)	Lat = 530950 S	
Longitude (DDDMMSS)	Lon = 0705502 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ10 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 24 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD10 38G002B000-360A00024H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 11)		
State (RSC)	RSC = Greece	
City Name (RAL)	RAL = Tripoli	
Latitude (DDMMSS)	Lat = 375901 N	
Longitude (DDDMMSS)	Lon = 0234339 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ11 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 84 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD11 38G002B000-360A00084H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 12)		
State (RSC)	RSC = New Zealand	
City Name (RAL)	RAL = Awarua	
Latitude (DDMMSS)	Lat = 463003 S	
Longitude (DDDMMSS)	Lon = 1682212 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ12 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 9 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD12 38G002B000-360A00009H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 13)		
State (RSC)	RSC = South Africa	
City Name (RAL)	RAL = Hartebeesthoek	
Latitude (DDMMSS)	Lat = 255325 S	

Longitude (DDDMMSS)	Lon = 0274109 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ13 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 1386 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD13 38G002B000-360A01386H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

Transmit Frequency: 8212.5 MHz		
Satellite Name: Capella-2 (Sequoia)		
Data Field	**Data Answer**	**Description/Comments**
Polarization (XAP)	XAP = T	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 = LIENAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB = NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN 20.6 dB, BEAMWIDTH 19.5 degrees, XAD = XAD03 20G019B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of Satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude =	IF ANY SATELLITE ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG)

For Nongeostationary (Orbit Data)	INCLINATION ANGLE 97.88 degrees, APOGEE IN KILOMETERS 620 km, PERIGEE IN KILOMETERS 620 km, ORBITAL PERIOD IN HOURS 1 AND FACTIONS OF HOURS IN DECIMAL 61, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 98.0IN00620AP00620PE001.61H01NRT01	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 END IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01
Earth Station Data (Receiver 1)		
State (RSC)	RSC = Oregon	
City Name (RAL)	RAL = Boardman	
Latitude (DDMMSS)	Lat = 455116 N	
Longitude (DDDMMSS)	Lon = 1193754 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ01 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 101 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD01 38G002B000-360A00101H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 2)		
State (RSC)	RSC = Ohio	
City Name (RAL)	RAL = Kilevile	
Latitude (DDMMSS)	Lat = 400600 N	
Longitude (DDDMMSS)	Lon = 0831149 W	

Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ02 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 288 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD02 38G002B000-360A00288H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 3)		
State (RSC)	RSC = Ireland	
City Name (RAL)	RAL = Dublin	
Latitude (DDMMSS)	Lat = 532044 N	
Longitude (DDDMMSS)	Lon = 0061651 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ03 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 8 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD03 38G002B000-360A00008H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

Earth Station Data (Receiver 4)		
State (RSC)	RSC = Sweden	
City Name (RAL)	RAL = Vasteras	
Latitude (DDMMSS)	Lat = 591929 N	
Longitude (DDDMMSS)	Lon = 0180406 N	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ04 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 22 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 22 meters, RAD04 38G002B000-360A00022H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 5)		
State (RSC)	RSC = South Africa	
City Name (RAL)	RAL = Cape Town	
Latitude (DDMMSS)	Lat = 335556 S	
Longitude (DDDMMSS)	Lon = 0183152 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ05 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees,	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

	AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 20 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD05 38G002B000-360A00020H003	
Earth Station Data (Receiver 6)		
State (RSC)	RSC = Bahrain	
City Name (RAL)	RAL = Manama	
Latitude (DDMMSS)	Lat = 260448 N	
Longitude (DDDMMSS)	Lon = 0503302 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ06 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 65 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD06 38G002B000-360A00065H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 7)		
State (RSC)	RSC = Australia	
City Name (RAL)	RAL = Sydney	
Latitude (DDMMSS)	Lat = 335045 S	
Longitude (DDDMMSS)	Lon = 1510418 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ07 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 22 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD07 38G002B000-360A00022H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 8)		
State (RSC)	RSC = Norway	
City Name (RAL)	RAL = Svalbard	
Latitude (DDMMSS)	Lat = 781354 N	
Longitude (DDDMMSS)	Lon = 0152238 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ08 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 450 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD08 38G002B000-360A00008H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 9)		
State (RSC)	RSC = Norway	

City Name (RAL)	RAL = Troll	
Latitude (DDMMSS)	Lat = 720041 S	
Longitude (DDDMMSS)	Lon = 0023317 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ09 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 1371 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD09 38G002B000-360A01371H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 10)		
State (RSC)	RSC = Chile	
City Name (RAL)	RAL = Punta Arenas	
Latitude (DDMMSS)	Lat = 530950 S	
Longitude (DDDMMSS)	Lon = 0705502 W	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ10 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 24 meters,	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

	THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD10 38G002B000-360A00024H003	
Earth Station Data (Receiver 11)		
State (RSC)	RSC = Greece	
City Name (RAL)	RAL = Tripoli	
Latitude (DDMMSS)	Lat = 375901 N	
Longitude (DDDMMSS)	Lon = 0234339 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ11 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 84 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD11 38G002B000-360A00084H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 12)		
State (RSC)	RSC = New Zealand	
City Name (RAL)	RAL = Awarua	
Latitude (DDMMSS)	Lat = 463003 S	
Longitude (DDDMMSS)	Lon = 1682212 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ12 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 9 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD12 38G002B000-360A00009H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006
Earth Station Data (Receiver 13)		
State (RSC)	RSC = South Africa	
City Name (RAL)	RAL = Hartebeesthoek	
Latitude (DDMMSS)	Lat = 255325 S	
Longitude (DDDMMSS)	Lon = 0274109 E	
Antenna Polarization (RAP)	RAP = T	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 = LIENAR POLARIZATION
Antenna Azimuth (RAZ)	RAZ = RAZ13 V00	THE EARTH STATION RECEIVER ANTENNA AZIMUTH (RAZ), THE MINIMUM ANGLE OF ELEVATION V00 TO V90, EXAMPLE, RAZ01 V00
Antenna Dimension (RAD)	ANTENNA GAIN 38.1 dB, BEAMWIDTH 2.0 degrees, AZIMUTH RANGE 0 – 360 degrees, THE SITE ELEVATION ABOVE MEAN SEA LEVEL IN METERS 1386 meters, THE ANTENNA HEIGHT ABOUT TERRAIN IN METERS 3 meters, RAD13 38G002B000-360A01386H003	EXAMPLE ASSUMING NONGEOSTATIONARY RAD01 16G030B000-360A00357H006

Transmit Frequency: 1643.5 MHz		
Satellite Name: Capella-2 (Sequoia)		
Data Field	**Data Answer**	**Description/Comments**
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 = LIENAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB = NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN 9.5 dB, BEAMWIDTH 60 degrees, XAD = XAD04 09G060B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of Satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = R01 RLA 000000 N RLG 1433000 E R02 RLA 000000 N RLG 0642400 E R03 RLA 000000 N RLG 0980000 W R04 RLA 000000 N RLG 0244800 E	IF ANY SATELLITE ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG)
For Nongeostationary (Orbit Data)	INCLINATION ANGLE 97.88 degrees, APOGEE IN KILOMETERS 620 km, PERIGEE IN KILOMETERS 620 km, ORBITAL PERIOD IN HOURS 1 AND FACTIONS OF HOURS IN DECIMAL 61, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 98.0IN00620AP00620PE001.61H01NRT01 *ORB,03.1IN35806AP35781PE023.93H04NRR01 *ORB,03.0IN35806AP35782PE023.93H04NRR02 *ORB,03.1IN35804AP35783PE023.93H04NRR03 *ORB,02.4IN35802AP35784PE023.93H04NRR04	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 END IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

Transmit Frequency: 1671.5 MHz
Satellite Name: Capella-2 (Sequoia)

Data Field	Data Answer	Description/Comments
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 = LIENAR POLARIZATION
Orientation (XAZ)	XAZ = NB	NB = NARROWBEAM EC = EARTH COVERAGE
Antenna Dimension (XAD)	ANTENNA GAIN 9.5 dB, BEAMWIDTH 60 degrees, XAD = XAD05 09G060B	(NTIA format (XAD), EXAMPLE, XAD01 16G030B)
Type of Satellite (State = SP) (City = geo or non)	Type = Nongeostationary	Choose either: Geostationary or Nongeostationary
For Geostationary	Longitude = R01 RLA 000000 N RLG 1433000 E R02 RLA 000000 N RLG 0642400 E R03 RLA 000000 N RLG 0980000 W R04 RLA 000000 N RLG 0244800 E	IF ANY SATELLITE ARE GEOSTATIONARY, REPORT ITS LATITUDE AS 000000N (XLA AND/OR RLA) AND REPORT ITS LONGITUDE (XLG AND/OR RLG)
For Nongeostationary (Orbit Data)	INCLINATION ANGLE 97.88 degrees, APOGEE IN KILOMETERS 620 km, PERIGEE IN KILOMETERS 620 km, ORBITAL PERIOD IN HOURS 1 AND FACTIONS OF HOURS IN DECIMAL 61, THE NUMBER OF SATELLITES IN THE SYSTEM 1, ORB = 98.0IN00620AP00620PE001.61H01NRT01 *ORB,03.1IN35806AP35781PE023.93H04NRR01 *ORB,03.0IN35806AP35782PE023.93H04NRR02 *ORB,03.1IN35804AP35783PE023.93H04NRR03 *ORB,02.4IN35802AP35784PE023.93H04NRR04	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 END IN R01, EXAMPLE, REM05 *ORB,72.9IN03209AP00655PE013.46H01NRR01

Part B: Ground Stations, Earth to Space Link data:

The proposed Capella system will also receive transmissions on the following frequencies. However, in each case, these transmissions will be permitted by authorizations held by third parties. Because The Capella system will not transmit on these frequencies, Capella is not seeking corresponding experimental authorization to engage in these transmissions. These receive-only frequencies are listed here for informational purposes only.

- 2035-2037 MHz — Earth to space.
- 1518 MHz-1559 — GEO to LEO.