Approved by OMB 3060-0678
Estimated Burden: up to 80 hours
April 2016

Federal Communications Commission

312 File Number: **SATMOD2019080200070**

Filing Description

Question	Response
Description	Global 1-4 satellite network to add Global 5-16

Satellite Information

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	BlackSky Global Constellation
Estimated Lifetime of Satellite(s) From Date of Launch	3 Years
Will the space station(s) operate on a Common Carrier basis?	No

Operating Frequency Bands (5)

Nature of service	Description	Frequency Band(s)	Mode Type
Earth Exploration-Satellite Service		8025.0 MHz -8400.0 MHz	Transmit
Space Operation Service		400.0 MHz -401.0 MHz	Transmit
Space Operation Service		401.0 MHz -402.0 MHz	Transmit
Space Operation Service		449.75 MHz -450.25 MHz	Receive
Earth Exploration-Satellite Service		2025.0 MHz -2110.0 MHz	Receive

Orbital Information For Non-Geostationary Satellites

Question	Response
Total Number of Satellites in the active constellation	16
Orbit Epoch Date	01/01/2020
Celestrial Reference Body	Earth

Orbital Plane 1:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	97.46 degrees
Right Ascension of Ascending Node	76.1 degrees
Argument of Perigee	344.59 degrees
Orbital Period	5665.0 seconds
Apogee	506.66 km
Perigee	473.97 km
Active Service Arc Begin Angle with respect to Ascending Node	-90.0 degrees
Active Service Arc End Angle with respect to Ascending Node	90.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	73.5

Orbital Plane 2:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	97.73 degrees
Right Ascension of Ascending Node	76.2 degrees
Argument of Perigee	15.44 degrees
Orbital Period	5777.3 seconds
Apogee	597.44 km
Perigee	564.16 km
Active Service Arc Begin Angle with respect to Ascending Node	-90.0 degrees
Active Service Arc End Angle with respect to Ascending Node	90.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	252.9

Orbital Plane 3:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	45.02 degrees
Right Ascension of Ascending Node	338.13 degrees
Argument of Perigee	304.06 degrees
Orbital Period	5615.4 seconds
Apogee	462.17 km
Perigee	438.16 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.02 degrees
Active Service Arc End Angle with respect to Ascending Node	45.02 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	149.7

Orbital Plane 4:

Question	Response
Number of Satellites in Plane	1
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	98.12 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5726.6 seconds
Apogee	540.0 km

Perigee	540.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	80.3

Orbital Plane 5:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	300.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5615.2 seconds
Apogee	450.0 km
Perigee	450.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	180.0
2	0.0

Orbital Plane 6:

Question	Response
Number of Satellites in Plane	2

Inclination Angle	50.0 degrees
Right Ascension of Ascending Node	300.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5739.0 seconds
Apogee	550.0 km
Perigee	550.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-50.0 degrees
Active Service Arc End Angle with respect to Ascending Node	50.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	180.0
2	0.0

Orbital Plane 7:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	14.3 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5615.2 seconds
Apogee	450.0 km
Perigee	450.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	46.0
2	226.0

Orbital Plane 8:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	45.0 degrees
Right Ascension of Ascending Node	324.1 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5739.0 seconds
Apogee	550.0 km
Perigee	550.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-45.0 degrees
Active Service Arc End Angle with respect to Ascending Node	45.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	85.0
2	265.0

Orbital Plane 9:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	55.0 degrees
Right Ascension of Ascending Node	43.3 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5615.2 seconds

Apogee	450.0 km
Perigee	450.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-55.0 degrees
Active Service Arc End Angle with respect to Ascending Node	55.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	304.0
2	124.0

Orbital Plane 10:

Question	Response
Number of Satellites in Plane	2
Inclination Angle	55.0 degrees
Right Ascension of Ascending Node	2.5 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5739.0 seconds
Apogee	550.0 km
Perigee	550.0 km
Active Service Arc Begin Angle with respect to Ascending Node	-55.0 degrees
Active Service Arc End Angle with respect to Ascending Node	55.0 degrees

Mean Anomaly For Each Satellite

Satellite Number	Mean Anomaly (degrees) at the Orbit Epoch Date
1	295.0
2	115.0

Receiving Beams 1:

Question	Response
Beam ID	SRC
Receive Beam Frequency	2071.775 MHz -2071.975 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	6.0 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	0.5 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-23.8 dB/K
Min. Saturation Flux Density	-33.0 dBW/m2
Max. Saturation Flux Density	-32.6 dBW/m2
Co- or Cross Polar Mode	C

Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Longyearbyen Norway (LYR), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Receiving Beams 2:

Question	Response
Beam ID	URX
Receive Beam Frequency	450.185 MHz -450.215 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	1.4 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-25.9 dB/K
Min. Saturation Flux Density	-56.3 dBW/m2
Max. Saturation Flux Density	-40.0 dBW/m2
Co- or Cross Polar Mode	X

Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Receiving Beams 3:

Question	Response
Beam ID	SRX
Receive Beam Frequency	2071.775 MHz -2071.975 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	-6.3 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	0.5 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-23.8 dB/K
Min. Saturation Flux Density	-45.8 dBW/m2
Max. Saturation Flux Density	-44.9 dBW/m2

Co- or Cross Polar Mode	X
Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Longyearbyen Norway (LYR), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Receiving Beams 4:

Question	Response
Beam ID	URC
Receive Beam Frequency	450.185 MHz -450.215 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.4 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
G/T at Max. Gain Point	-22.9 dB/K
Min. Saturation Flux Density	-53.3 dBW/m2

Max. Saturation Flux Density	-37.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Receiving Channels (2)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
UHFU	0.03	450.2	TT&C
SU	0.2	2071.875	TT&C

Transmitting Beams 1:

Question	Response
Beam ID	UTX2
Transmit Beam Frequency	400.86 MHz -400.89 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	1.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-35.3 dBW/Hz
Max. Transmit EIRP	3.7 dBW
Co- or Cross Polar Mode	X
Service Area Description	Worldwide for early ops only. Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-135.2	-133.2	-131.4	-129.8	-128.5	-122.0

Transmitting Beams 2:

Question	Response
Beam ID	UTC2
Transmit Beam Frequency	400.86 MHz -400.89 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-32.3 dBW/Hz

Max. Transmit EIRP	6.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Worldwide for early ops only. Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-132.2	-130.2	-128.4	-126.8	-125.5	-119.0

Transmitting Beams 3:

Question	Response
Beam ID	XTC
Transmit Beam Frequency	8025.0 MHz -8225.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	16.2 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	0.5 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-55.7 dBW/Hz
Max. Transmit EIRP	23.2 dBW
Co- or Cross Polar Mode	C
Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Longyearbyen Norway (LYR), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-155.6	-153.6	-151.8	-150.2	-148.9	-142.4

Transmitting Beams 4:

Question	Response
Beam ID	XTX
Transmit Beam Frequency	8025.0 MHz -8225.0 MHz
Beam Type	Fixed
Polarization	LHCP

Peak Gain	2.9 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	0.5 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-69.0 dBW/Hz
Max. Transmit EIRP	9.92 dBW
Co- or Cross Polar Mode	X
Service Area Description	Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Longyearbyen Norway (LYR), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-168.9	-166.9	-165.1	-163.5	-162.2	-155.7

Transmitting Beams 5:

Question	Response
Beam ID	UTX
Transmit Beam Frequency	401.0 MHz -401.515 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	1.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-35.3 dBW/Hz
Max. Transmit EIRP	3.7 dBW
Co- or Cross Polar Mode	X
Service Area Description	Worldwide for early ops only. Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-135.2	-133.2	-131.4	-129.8	-128.5	-122.0

Transmitting Beams 6:

Question	Response
Beam ID	UTC
Transmit Beam Frequency	401.0 MHz -401.515 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	4.1 dBi
Antenna Pointing Error	2.0 degrees
Antenna Rotational Error	2.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-32.3 dBW/Hz

Max. Transmit EIRP	6.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	Worldwide for early ops only. Ground Stations in North Pole AK (FAI), Awarua Plains NZ (IVC), Usingen Germany (FRA), Harmon Guam (GUM), and Chitose Japan (CTS). Additional to be operated in Chile, South Africa, W. Australia, Greece, NE USA, and Qatar.

Max. Power Flux Density

* BW:	* 0° - 5° (dbW/m^2 /BW):	* 5° - 10° (dbW/m^2 /BW):	* 10° - 15° (dbW/m^2 /BW):	* 15° - 20° (dbW/m^2 /BW):	* 20° - 25° (dbW/m^2 /BW):	* 25° - 90° (dbW/m^2 /BW):
4.0 kHz	-132.2	-130.2	-128.4	-126.8	-125.5	-119.0

Transmitting Channels (9)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
UD6	0.03	401.085	TT&C
UD8	0.03	400.875	TT&C
UD3	0.03	401.225	TT&C
UD2	0.03	401.375	TT&C
UD4	0.03	401.155	TT&C
XD	200.0	8125.0	TT&C
UD1	0.03	401.5	TT&C
UD7	0.03	401.015	TT&C
UD5	0.03	401.4375	TT&C

Certification Questions

Question	Response
Are the applicable service area coverage requirements of 25.143(b)(2)(ii) and (iii), or 25.144(a)(3)(i), or 25.145(c)(1) and (2), or 25.146(i)(1) and (2), or 25.148(c), or 25.225 met?	N/A
Are the applicable frequency tolerances of 25.202(e) and out-of-band emission limits of 25.202(f)(1),(2), and (3) met?	Yes
Are the cessation of emissions requirements of 25.207 met?	Yes
Are the applicable power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application?	
For NGSO applications, are the applicable equivalent-power-flux-density limits of 25.208 met, and is the appropriate technical showing provided within the application?	N/A
Are the applicable full-frequency-reuse requirements of 25.210 met?	
If the application is for a 17/24 GHz BSS space station, will it be operated at an offset location with full power and interference protection in accordance with 25.262(b)?	

Attachments

File Name	Beam	Field	Attachment Type	Description
URC.pdf	URC	NGSO Antenna Gain Data	PDF file (*.pdf)	
UTC2.pdf	UTC2	NGSO Antenna Gain Data	PDF file (*.pdf)	
XTX.pdf	XTX	NGSO Antenna Gain Data	PDF file (*.pdf)	
XTC.pdf	XTC	NGSO Antenna Gain Data	PDF file (*.pdf)	
UTX2.pdf	UTX2	NGSO Antenna Gain Data	PDF file (*.pdf)	
UTX.pdf	UTX	NGSO Antenna Gain Data	PDF file (*.pdf)	
UTC.pdf	UTC	NGSO Antenna Gain Data	PDF file (*.pdf)	
URX.pdf	URX	NGSO Antenna Gain Data	PDF file (*.pdf)	
SRX.pdf	SRX	NGSO Antenna Gain Data	PDF file (*.pdf)	
SRC.pdf	SRC	NGSO Antenna Gain Data	PDF file (*.pdf)	