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

Federal Communications Commission

312 File Number: **SATMOD2019121700148**

Filing Description

Question	Response
Description	Applicant requests authority to modify the authorized orbital location for the SkySat-16 to SkySat-21 satellites to include the inclination range 40 degrees to 60 degrees and the operational orbital altitude for SkySat-3 to include 400 km.

Satellite Information

Question	Response
Select Orbit Type	NGSO
Space Station or Satellite Network Name	S2862 SkySat Constellation
Estimated Lifetime of Satellite(s) From Date of Launch	6 Years
Will the space station(s) operate on a Common Carrier basis?	No

Operating Frequency Bands (2)

Nature of service	Description	Frequency Band(s)	Mode Type
Earth Exploration-Satellite Service		8025.0 MHz -8400.0 MHz	Transmit
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	6
Orbit Epoch Date	07/01/2020
Celestrial Reference Body	Earth

Orbital Plane 1:

Question	Response
Number of Satellites in Plane	3
Inclination Angle	53.0 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5554.0 seconds
Apogee	400.0 km
Perigee	400.0 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	240.0
2	120.0
3	0.0

Orbital Plane 2:

Question	Response
Number of Satellites in Plane	3
Inclination Angle	53.0 degrees
Right Ascension of Ascending Node	0.0 degrees
Argument of Perigee	0.0 degrees
Orbital Period	5554.0 seconds
Apogee	400.0 km
Perigee	400.0 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	300.0
2	180.0
3	60.0

Receiving Beams 1:

Question	Response
Beam ID	CMD
Receive Beam Frequency	2025.0 MHz -2110.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	2.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-27.4 dB/K
Min. Saturation Flux Density	-106.0 dBW/m2
Max. Saturation Flux Density	-82.5 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	XVE

Receiving Channels (2)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
CMD2	0.124	2083.0	TT&C
CMD1	0.124	2081.0	TT&C

Transmitting Beams 1:

Question	Response
Beam ID	TTC
Transmit Beam Frequency	8025.0 MHz -8400.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	5.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-53.1 dBW/Hz
Max. Transmit EIRP	0.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	XVE

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	-153.3	-151.3	-149.6	-148.0	-146.7	-140.2

Transmitting Beams 2:

Question	Response
Beam ID	PLD
Transmit Beam Frequency	8025.0 MHz -8400.0 MHz

Beam Type	Fixed
Polarization	RHCP
Peak Gain	27.0 dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-53.5 dBW/Hz
Max. Transmit EIRP	23.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	XVE

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	-153.6	-151.7	-149.9	-148.4	-147.0	-140.5

Transmitting Channels (10)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
PLD5	100.0	8200.0	Feeder Link
PLD6	100.0	8325.0	Feeder Link
PLD1	60.0	8075.0	Feeder Link
PLD2	60.0	8200.0	Feeder Link
TTC4	0.512	8380.0	TT&C
TTC3	0.512	8375.0	TT&C
TTC2	0.256	8380.0	TT&C
TTC1	0.256	8375.0	TT&C
PLD4	100.0	8075.0	Feeder Link
PLD3	60.0	8325.0	Feeder Link

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
ttc_x-band.pdf	TTC	NGSO Antenna Gain Data	PDF file (*.pdf)	
payload_antenna.pdf	PLD	NGSO Antenna Gain Data	PDF file (*.pdf)	
ttc_s-band.pdf	CMD	NGSO Antenna Gain Data	PDF file (*.pdf)	