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

Federal Communications Commission

312 File Number: **SESMFS2019021400088**

Filing Description

Question	Response
Description	ECHOSTAR-23 DBS satellite network

Satellite Information

Question	Response
Select Orbit Type	GSO
Space Station or Satellite Network Name	ECHOSTAR-23
Estimated Lifetime of Satellite(s) From Date of Launch	15 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
Direct Broadcast Satellite (DBS) Service		12200.0 MHz -12700.0 MHz	Transmit
Fixed-Satellite Service		17300.0 MHz -17800.0 MHz	Receive

Orbital Information For Geostationary Satellites

Section	Question	Response
Orbital Longitude Information	Orbital Longitude	73.0 degrees
	Hemisphere of Orbital Longitude	W
Longitudinal Tolerance or East /West Station-Keeping	Toward West	0.05 degrees
	Toward East	0.05 degrees
Inclination Excursion or North /South Station-Keeping Tolerance	Inclination Excursion or North /South Station-Keeping Tolerance	0.07 degrees
Eccentricity	Max. Eccentricity	4.6E-4
Antenna Axis Attitude Accuracy	Roll	0.1 degrees
	Pitch	0.1 degrees
	Yaw	0.1 degrees

Receiving Beams 1:

Question	Response
Beam ID	CMDL
Receive Beam Frequency	17300.0 MHz -17310.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Min. Cross-Polar Isolation within Service Area	30.0 dB
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	3.8 dB/K
Min. Saturation Flux Density	-93.0 dBW/m2
Max. Saturation Flux Density	-73.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth (command beam)

Receiving Beams 2:

Question	Response
Beam ID	RXR
Receive Beam Frequency	17300.0 MHz -17800.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees

Antenna Rotational Error	0.1 degrees
Min. Cross-Polar Isolation within Service Area	31.6 dB
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.0 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-79.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	-2 dB contour

Receiving Beams 3:

Question	Response
Beam ID	RXL
Receive Beam Frequency	17300.0 MHz -17800.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Min. Cross-Polar Isolation within Service Area	31.6 dB
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	13.0 dB/K
Min. Saturation Flux Density	-100.0 dBW/m2
Max. Saturation Flux Density	-79.0 dBW/m2
Co- or Cross Polar Mode	C

Service Area Description	-2 dB contour

Receiving Beams 4:

Question	Response
Beam ID	CMDR
Receive Beam Frequency	17790.5 MHz -17791.5 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Min. Cross-Polar Isolation within Service Area	30.0 dB
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	3.8 dB/K
Min. Saturation Flux Density	-93.0 dBW/m2
Max. Saturation Flux Density	-73.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth (command beam)

Receiving Channels (34)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
U02	26.0	17338.58	Feeder Link
U01	26.0	17324.0	Feeder Link
CMD1	1.0	17791.0	TT&C
U028	26.0	17688.5	Feeder Link
U03	26.0	17353.16	Feeder Link
U04	26.0	17367.74	Feeder Link
U05	26.0	17382.32	Feeder Link
U06	26.0	17396.9	Feeder Link
U07	26.0	17411.48	Feeder Link
U08	26.0	17426.06	Feeder Link
U09	26.0	17440.64	Feeder Link
U10	26.0	17455.22	Feeder Link
U11	26.0	17469.8	Feeder Link
U12	26.0	17484.38	Feeder Link
U13	26.0	17498.96	Feeder Link
U14	26.0	17513.54	Feeder Link
U15	26.0	17528.12	Feeder Link
CMD2	10.0	17305.0	TT&C
U16	26.0	17542.7	Feeder Link
U17	26.0	17557.28	Feeder Link
U18	26.0	17571.86	Feeder Link
U19	26.0	17586.44	Feeder Link
U20	26.0	17601.02	Feeder Link
U21	26.0	17615.6	Feeder Link

U22	26.0	17630.18	Feeder Link
U23	26.0	17644.76	Feeder Link
U24	26.0	17659.34	Feeder Link
U25	26.0	17673.92	Feeder Link
U26	26.0	17688.5	Feeder Link
U27	26.0	17703.08	Feeder Link
U29	26.0	17732.24	Feeder Link
U30	26.0	17746.82	Feeder Link
U31	26.0	17761.4	Feeder Link
U32	26.0	17775.98	Feeder Link

Transmitting Beams 1:

Question	Response
Beam ID	TX2L
Transmit Beam Frequency	12200.0 MHz -12700.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-20.8 dBW/Hz
Max. Transmit EIRP	53.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	CONUS

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):
Hz	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0

Transmitting Beams 2:

Question	Response
Beam ID	TX2R
Transmit Beam Frequency	12200.0 MHz -12700.0 MHz

Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-20.8 dBW/Hz
Max. Transmit EIRP	53.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	CONUS

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):
Hz	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0

Transmitting Beams 3:

Question	Response
Beam ID	TX1L
Transmit Beam Frequency	12200.0 MHz -12700.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-20.8 dBW/Hz
Max. Transmit EIRP	53.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	CONUS

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):
Hz	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0

Transmitting Beams 4:

Question	Response
Beam ID	TX1R
Transmit Beam Frequency	12200.0 MHz -12700.0 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-20.8 dBW/Hz
Max. Transmit EIRP	53.0 dBW

Co- or Cross Polar Mode	C
Service Area Description	CONUS

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):
Hz	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0

Transmitting Beams 5:

Question	Response
Beam ID	TLM
Transmit Beam Frequency	12200.0 MHz -12210.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.1 degrees
Antenna Rotational Error	0.1 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-42.2 dBW/Hz
Max. Transmit EIRP	14.8 dBW
Co- or Cross Polar Mode	C
Service Area Description	Visible Earth (telemetry beam)

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):
Hz	-50.0	-50.0	-50.0	-50.0	-50.0	-50.0

Transmitting Channels (33)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
D02	26.0	12238.58	Service Link
D01	26.0	12224.0	Service Link
D16	26.0	12442.7	Service Link
D15	26.0	12428.12	Service Link
D14	26.0	12413.54	Service Link
D13	26.0	12398.96	Service Link
D12	26.0	12384.38	Feeder Link
D11	26.0	12369.8	Service Link
D10	26.0	12355.22	Service Link
D09	26.0	12340.64	Service Link
D08	26.0	12326.06	Service Link
D07	26.0	12311.48	Service Link
D27	26.0	12603.08	Service Link
D26	26.0	12588.5	Service Link
D25	26.0	12573.92	Service Link
D24	26.0	12559.34	Service Link
TLM1	10.0	12205.0	TT&C
D32	26.0	12675.98	Service Link
D31	26.0	12661.4	Service Link
D30	26.0	12646.82	Service Link
D29	26.0	12632.24	Service Link
D28	26.0	12617.66	Service Link
D23	26.0	12544.76	Service Link
D22	26.0	12530.18	Service Link

D21	26.0	12515.6	Service Link
D20	26.0	12501.02	Service Link
D19	26.0	12486.44	Service Link
D18	26.0	12471.86	Service Link
D17	26.0	12457.28	Service Link
D06	26.0	12296.9	Service Link
D05	26.0	12282.32	Service Link
D04	26.0	12267.74	Service Link
D03	26.0	12253.16	Service 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?	Yes
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
ECHO-23 Beams.mdb		GSO Antenna Gain Contour Data	GIMS file (*.mdb)	ECHO-23 GIMSDB