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

Federal Communications Commission

312 File Number: **SATMOD2020011400009**

Filing Description

Question	Response
Description	Horizons 2 drifting from 84.85 degree East to 73.8 degree West

Satellite Information

Question	Response
Select Orbit Type	GSO
Space Station or Satellite Network Name	Horizons 2
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
Fixed-Satellite Service		14000.0 MHz -14500.0 MHz	Receive
Fixed-Satellite Service		11700.0 MHz -12200.0 MHz	Transmit

Orbital Information For Geostationary Satellites

Section	Question	Response
Orbital Longitude Information	Orbital Longitude	74.0 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	0.05 degrees
Antenna Axis Attitude Accuracy	Roll	0.1 degrees
	Pitch	0.1 degrees
	Yaw	0.1 degrees

Receiving Beams 1:

Question	Response
Beam ID	NAVU
Receive Beam Frequency	14000.0 MHz -14500.0 MHz
Beam Type	Steerable
Polarization	V
Peak Gain	36.0 dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	90.0 degrees
G/T at Max. Gain Point	8.2 dB/K
Min. Saturation Flux Density	-105.1 dBW/m2
Max. Saturation Flux Density	-80.1 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	CONUS coverage

Receiving Beams 2:

Question	Response
Beam ID	NAHU
Receive Beam Frequency	14000.0 MHz -14500.0 MHz
Beam Type	Steerable
Polarization	H
Peak Gain	36.22 dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees

Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
G/T at Max. Gain Point	8.3 dB/K
Min. Saturation Flux Density	-105.1 dBW/m2
Max. Saturation Flux Density	-80.1 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	CONUS Horizontal

Receiving Beams 3:

Question	Response
Beam ID	BMHU
Receive Beam Frequency	14000.0 MHz -14500.0 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	36.14 dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
G/T at Max. Gain Point	8.5 dB/K
Min. Saturation Flux Density	-105.2 dBW/m2
Max. Saturation Flux Density	-80.2 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Boomerang Beam H up fixed to the platform

Receiving

Beams 4:

Question	Response
Beam ID	CMDH
Receive Beam Frequency	14000.0 MHz -14001.0 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
G/T at Max. Gain Point	-99.0 dB/K
Min. Saturation Flux Density	-90.1 dBW/m2
Max. Saturation Flux Density	-90.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Command

Receiving Beams 5:

Question	Response
Beam ID	CMDV
Receive Beam Frequency	14499.0 MHz -14500.0 MHz
Beam Type	Fixed
Polarization	V
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.03 degrees
Polarization Switchable	

Polarization Alignment Relative to the Equatorial Plane	90.0 degrees
G/T at Max. Gain Point	-99.0 dB/K
Min. Saturation Flux Density	-90.1 dBW/m2
Max. Saturation Flux Density	-90.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Command

Receiving Beams 6:

Question	Response
Beam ID	CMDL
Receive Beam Frequency	14000.0 MHz -14001.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-99.0 dB/K
Min. Saturation Flux Density	-90.1 dBW/m2
Max. Saturation Flux Density	-90.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Command

Receiving Beams 7:

Question	Response

Beam ID	CMLD
Receive Beam Frequency	14499.0 MHz -14500.0 MHz
Beam Type	Fixed
Polarization	LHCP
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	-99.0 dB/K
Min. Saturation Flux Density	-90.1 dBW/m2
Max. Saturation Flux Density	-90.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Command

Receiving Channels (22)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
CMDV	1.0	14499.5	TT&C
K01	36.0	14020.0	Service Link
K02	36.0	14060.0	Service Link
K17	36.0	14360.0	Service Link
K16	72.0	14298.0	Service Link
K15	72.0	14218.0	Service Link
K14	72.0	14138.0	Service Link
K13	72.0	14058.0	Service Link
K12	36.0	14460.0	Service Link
K11	36.0	14420.0	Service Link
K10	36.0	14380.0	Service Link
K09	36.0	14340.0	Service Link
K07	36.0	14260.0	Service Link
K06	36.0	14220.0	Service Link
K05	36.0	14180.0	Service Link
K04	36.0	14140.0	Service Link
K03	36.0	14100.0	Service Link
CMDH	1.0	14000.5	TT&C
K20	36.0	14480.0	Service Link
K19	36.0	14440.0	Service Link
K08	36.0	14300.0	Service Link
K18	36.0	14400.0	Service Link

Transmitting Beams 1:

Question	Response
Beam ID	NAVD
Transmit Beam Frequency	11700.0 MHz -12200.0 MHz
Beam Type	Steerable
Polarization	V
Peak Gain	34.48 dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	90.0 degrees
Max. Transmit EIRP Density	-22.0 dBW/Hz
Max. Transmit EIRP	53.6 dBW
Co- or Cross Polar Mode	C
Service Area Description	CONUS

Max. Power Flux Density

Information not provided.

Transmitting Beams 2:

Question	Response
Beam ID	NAHD
Transmit Beam Frequency	11700.0 MHz -12200.0 MHz
Beam Type	Steerable
Polarization	H
Peak Gain	34.52 dBi
Antenna Pointing Error	0.19 degrees

Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-24.7 dBW/Hz
Max. Transmit EIRP	50.9 dBW
Co- or Cross Polar Mode	C
Service Area Description	CONUS

Max. Power Flux Density

Information not provided.

Transmitting Beams 3:

Question	Response
Beam ID	BMVD
Transmit Beam Frequency	11700.0 MHz -12200.0 MHz
Beam Type	Fixed
Polarization	V
Peak Gain	19.3 dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	90.0 degrees
Max. Transmit EIRP Density	-20.7 dBW/Hz
Max. Transmit EIRP	54.9 dBW
Co- or Cross Polar Mode	C
Service Area Description	BOOMERANG FIXED TO THE PLATFORM

Max. Power Flux Density

Information not provided.

Transmitting Beams 4:

Question	Response
Beam ID	TLMH
Transmit Beam Frequency	12198.38 MHz -12198.88 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-45.6 dBW/Hz
Max. Transmit EIRP	11.4 dBW
Co- or Cross Polar Mode	C
Service Area Description	TM

Max. Power Flux Density

Information not provided.

Transmitting Beams 5:

Question	Response
Beam ID	TLMG
Transmit Beam Frequency	12198.38 MHz -12198.88 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi

Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-45.6 dBW/Hz
Max. Transmit EIRP	11.4 dBW
Co- or Cross Polar Mode	C
Service Area Description	TELEMERTRY

Max. Power Flux Density

Information not provided.

Transmitting Beams 6:

Question	Response
Beam ID	TLMD
Transmit Beam Frequency	12195.75 MHz -12196.25 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-43.0 dBW/Hz
Max. Transmit EIRP	14.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	TM

Max. Power Flux Density

Information not provided.

Transmitting Beams 7:

Question	Response
Beam ID	TLMF
Transmit Beam Frequency	12195.75 MHz -12196.25 MHz
Beam Type	Fixed
Polarization	RHCP
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-43.0 dBW/Hz
Max. Transmit EIRP	14.0 dBW
Co- or Cross Polar Mode	C
Service Area Description	TM

Max. Power Flux Density

Information not provided.

Transmitting Beams 8:

Question	Response
Beam ID	ULC1
Transmit Beam Frequency	11701.487 MHz -11701.512 MHz
Beam Type	Fixed
Polarization	V

Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	90.0 degrees
Max. Transmit EIRP Density	-26.9 dBW/Hz
Max. Transmit EIRP	17.1 dBW
Co- or Cross Polar Mode	C
Service Area Description	BEACON

Max. Power Flux Density

Information not provided.

Transmitting Beams 9:

Question	Response
Beam ID	ULC2
Transmit Beam Frequency	12197.987 MHz -12198.012 MHz
Beam Type	Fixed
Polarization	H
Peak Gain	dBi
Antenna Pointing Error	0.19 degrees
Antenna Rotational Error	0.34 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	0.0 degrees
Max. Transmit EIRP Density	-28.5 dBW/Hz
Max. Transmit EIRP	15.5 dBW
Co- or Cross Polar Mode	C

Service Area Description	BEACON

Max. Power Flux Density

Information not provided.

Transmitting Channels (24)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
K11	36.0	12120.0	Service Link
K10	36.0	12080.0	Service Link
K09	36.0	12040.0	Service Link
K08	36.0	12000.0	Service Link
K07	36.0	11960.0	Service Link
K17	36.0	12060.0	Service Link
K16	72.0	11998.0	Service Link
K15	72.0	11918.0	Service Link
K14	72.0	11838.0	Service Link
K13	72.0	11758.0	Service Link
K12	36.0	12160.0	Service Link
TLMH	0.5	12198.63	TT&C
K20	36.0	12180.0	Service Link
K19	36.0	12140.0	Service Link
K18	36.0	12100.0	Service Link
ULC2	0.025	12198.0	TT&C
ULC1	0.025	11701.5	TT&C
TLMD	0.5	12196.0	TT&C
K01	36.0	11720.0	Service Link
K02	36.0	11760.0	Service Link
K03	36.0	11800.0	Service Link
K04	36.0	11840.0	Service Link
K05	36.0	11880.0	Service Link
K06	36.0	11920.0	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?	Yes
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
.mdb		GSO Antenna Gain Contour Data	GIMS file (*.mdb)	