



312 File Number: **SATMOD2019051600039**

Filing Description

Question	Response
Description	Silkwave Africa is applying to modify the Afristar-2 license to launch and operate the replacement L-Band satellite at 21E longitude orbital location

**Satellite
Information**

Question	Response
Select Orbit Type	GSO
Space Station or Satellite Network Name	S2666
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
Other Satellite Service (please specify)	BSS (Sound)	7025.0 MHz -7075.0 MHz	Receive
Other Satellite Service (please specify)	BSS (Sound)	1452.0 MHz -1492.0 MHz	Transmit

**Orbital
Information For
Geostationary
Satellites**

Section	Question	Response
Orbital Longitude Information	Orbital Longitude	21.0 degrees
	Hemisphere of Orbital Longitude	E
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	0.1 degrees
Antenna Axis Attitude Accuracy	Roll	0.1 degrees
	Pitch	0.1 degrees
	Yaw	0.1 degrees

Receiving
Beams 1:

Question	Response
Beam ID	X1
Receive Beam Frequency	7025.0 MHz -7075.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	4.0 dB/K
Min. Saturation Flux Density	-115.0 dBW/m2
Max. Saturation Flux Density	-70.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Uplink area description

Receiving
Beams 2:

Question	Response
Beam ID	X2
Receive Beam Frequency	7025.0 MHz -7075.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees

Polarization Switchable	Yes
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
G/T at Max. Gain Point	4.0 dB/K
Min. Saturation Flux Density	-115.0 dBW/m2
Max. Saturation Flux Density	-70.0 dBW/m2
Co- or Cross Polar Mode	C
Service Area Description	Uplink area description

Receiving
Channels (3)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
3	1.0	7074.0	TT&C
1	50.0	7050.0	Feeder Link
2	1.0	7072.0	TT&C

**Transmitting
Beams 1:**

Question	Response
Beam ID	L1
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	L-Band transmit service area

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* BW:	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

**Transmitting
Beams 2:**

Question	Response
Beam ID	L2
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz

Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	L-Band Service area

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²
	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting Beams 3:

Question	Response
Beam ID	L3
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees

Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	L-Band Service area

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²
* BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting Beams 4:

Question	Response
Beam ID	L4
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz

Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	L-Band Service area

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²	(dBW/m ²
* BW:	/BW):	/BW):	/BW):	/BW):	/BW):	/BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting Beams 5:

Question	Response
Beam ID	L5
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	

Max. Power Flux Density

Transmitting
Beams 6:

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* BW:	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Question	Response
Beam ID	L6
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* BW:	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):	(dbW/m ² /BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting
Beams 7:

Question	Response
Beam ID	L7
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz
Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* BW:	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting
Beams 8:

Question	Response
Beam ID	L8
Transmit Beam Frequency	1452.0 MHz -1492.0 MHz

Beam Type	Spot
Polarization	LHCP
Peak Gain	30.0 dBi
Antenna Pointing Error	0.12 degrees
Antenna Rotational Error	0.0 degrees
Polarization Switchable	
Polarization Alignment Relative to the Equatorial Plane	45.0 degrees
Max. Transmit EIRP Density	-5.9 dBW/Hz
Max. Transmit EIRP	69.7 dBW
Co- or Cross Polar Mode	C
Service Area Description	

Max. Power Flux Density

	* 0° - 5°	* 5° - 10°	* 10° - 15°	* 15° - 20°	* 20° - 25°	* 25° - 90°
* BW:	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):	(dBW/m ² /BW):
1.0 MHz	-161.0	-152.0	-144.0	-140.0	-136.0	-130.0

Transmitting
Channels (3)

Channel ID	Channel Bandwidth (MHz)	Center Frequency s (MHz)	Feeder Link, Service Link or TT&C
3	1.0	1491.0	TT&C
1	25.0	1479.5	Service Link
2	1.0	1453.0	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?	Yes
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)?	No

Attachments

File Name	Beam	Field	Attachment Type	Description
X-band.gxt	X2	GSO Antenna Gain Contour Data	GXT file (*.gxt)	X2 Uplink Antenna Data
L-band-1.gxt	L1	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L1 Transmit beam
X-band.gxt	X1	GSO Antenna Gain Contour Data	GXT file (*.gxt)	X1 Uplink Antenna Data
X-Band Uplink Service Area.pdf	X1	Service Area Diagram	PDF file (*.pdf)	Uplink area
X-Band Uplink Service Area.pdf	X2	Service Area Diagram	PDF file (*.pdf)	Uplink area
L Band Service Area Diagram.pdf	L1	GSO Antenna Gain Contour Data	PDF file (*.pdf)	L-Band transmit service area
L-band-2.gxt	L2	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L2 Transmit beam
L Band Service Area Diagram.pdf	L2	GSO Antenna Gain Contour Data	PDF file (*.pdf)	L-Band Service area
L Band Service Area Diagram.pdf	L2	GSO Antenna Gain Contour Data	PDF file (*.pdf)	L-Band Service Area
L-band-3.gxt	L3	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L3 Transmit beam
L Band Service Area Diagram.pdf	L3	GSO Antenna Gain Contour Data	PDF file (*.pdf)	L-Band Service area
L-band-4.gxt	L4	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L4 transmit beam
L Band Service Area Diagram.pdf	L4	Service Area Diagram	PDF file (*.pdf)	L-Band Service area
L Band Service Area Diagram.pdf	L5	Service Area Diagram	PDF file (*.pdf)	L5 Service area
L-band-5.gxt	L5	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L5 Transmit beam

<u>L-band-6.gxt</u>	L6	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L6 Transmit beam
<u>L Band Service Area Diagram.pdf</u>	L6	Service Area Diagram	PDF file (*.pdf)	L6 Service Area
<u>L-band-7.gxt</u>	L7	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L7 Transmit beam
<u>L Band Service Area Diagram.pdf</u>	L7	Service Area Diagram	PDF file (*.pdf)	L7 Service area
<u>L-band-8.gxt</u>	L8	GSO Antenna Gain Contour Data	GXT file (*.gxt)	L8 Transmit beam
<u>L Band Service Area Diagram.pdf</u>	L8	Service Area Diagram	PDF file (*.pdf)	L8 Service area