

Imagination Factory Lux

European Communications Office
Nyropsgade 37, 4th floor
1602 Copenhagen
Denmark

Luxembourg, September the 9th 2016

To the kindly attention of Mr Alexander Gulyaev,

Subject: ESV Declaration of Imagination Factory Lux S.ä.r.l. for Ku Band Services

Dear Mr. Gulyaev,

Pursuant to Annex C of the Decision of the Electronic Communications Committee ("ECC") of 24 June 2005 on the free circulation and use of Earth Stations on board Vessels operating in fixed satellite service in frequency bands 14-14.5 GHz (Earth-to-space) and 10.7-11.7 GHz and 12.5-12.75 GHz (space-to-Earth), ECC/DEC/(05)10, Imagination Factory Lux S.ä.r.l. (the "Company") hereby declares that the ESVs operating in Europe under the satellite network operated by the Company comply with the requirements of the Decision, Resolution 902(WRC-03) and any restrictions notified to the European Radiocommunications Office (the "Office") by CEPT administrations under Decides 5 and 6 of the Decision.

Annex 1 contains the Network Operators details as well as technical specifications of ESV types used in the network and operating details of used satellite.

Please feel free to contact us for any clarification it may arise.

Sincerely,

Federico Masier
Chief Executive Officer

Imagination Factory Lux S.ä.r.l.
3, rue des Bains
L-1212 Luxembourg
R.C.S. Luxembourg B207152

EU VAT identification LU 28671445, Business authorization n. 10070773/0

NETWORK OPERATOR DETAILS

Network operator name	Imagination Factory Lux S.ä.r.l.
Network operator address	3, rue des Bains, L-1212 Luxembourg
Contact name	Federico Masier
Contact telephone number	+352 261177260
Contact e-mail address	federico@if-lux.com
Network control facility (NCF) designated point of contact	NOC Manager
NCF contact name	Michele Porelli
NCF contact telephone number	+352 621169900
NCF contact e-mail address	m.porelli@if-lux.com

TECHNICAL SPECIFICATIONS OF ESV TYPES USED INTO THE NETWORKS

- Antenna type AL-7103**

<u>ESV Antenna</u>	AL-7103
Antenna type	Orbit AL-7103
Antenna size	1.15 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	42.5 dBi @ 14.25 GHz
Max e.i.r.p. per carrier	53.5 dBW (with 16 watts BUC)
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	3 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

- Antenna type 4009**

<u>ESV Antenna</u>	4009
Antenna type	Cobham Seatel 4009
Antenna size	1.00 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	40.6 dBi @ 14.25 GHz
Max e.i.r.p. per carrier	48.6 dBW (with 8 watts BUC)
Min. operating elevation	10°
Pointing accuracy	0.2° RMS

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Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• Antenna type 5010

<u>ESV Antenna</u>	5010
Antenna type	Cobham Seatel 5010
Antenna size	1.20 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	42.1 dBi @ 14.25 GHz
Max e.i.r.p. per carrier	53.1 dBW (with 16 watts BUC)
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	3 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• Antenna type 5012

<u>ESV Antenna</u>	5012
Antenna type	Cobham Seatel 5012
Antenna size	1.24 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	43.0 dBi @ 14.25 GHz
Max e.i.r.p. per carrier	54.0 dBW (with 16 watts BUC)
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	3 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• Antenna type Sailor 900

<u>ESV Antenna</u>	Sailor 900
Antenna type	Cobham Sailor 900

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Antenna size	1.03 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	41.6 @ 14.25 GHz
Max e.i.r.p. per carrier	50.1 dBW
Min. operating elevation	10°
Pointing accuracy	0.2° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• **Antenna type Sailor 800**

<u>ESV Antenna</u>	Sailor 800
Antenna type	Cobham Sailor 800
Antenna size	0.83 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	40.6 @ 14.25 GHz
Max e.i.r.p. per carrier	48.1 dBW
Min. operating elevation	10°
Pointing accuracy	0.2° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• **Antenna type KNS Z8**

<u>ESV Antenna</u>	KNS Z8
Antenna type	KNS Z8 MKII
Antenna size	0.83 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	39.9 @ 14.50 GHz
Max e.i.r.p. per carrier	47.9 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK

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Multiple access scheme FDMA, TDMA

- **Antenna type KNS Z7**

<u>ESV Antenna</u>	KNS Z7
Antenna type	KNS Z7 MKII
Antenna size	0.75 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	39.2 @ 14.5 GHz
Max e.i.r.p. per carrier	47.2 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK
Multiple access scheme	FDMA, TDMA

- **Antenna type KNS Z10**

<u>ESV Antenna</u>	KNS Z10
Antenna type	KNS Z10 MKII
Antenna size	100 cm
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	41.1 @ 14.50 GHz
Max e.i.r.p. per carrier	50.1 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

- **Antenna type KNS Z12**

<u>ESV Antenna</u>	KNS Z12
Antenna type	KNS Z12 MKII
Antenna size	1.20 m
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	42.5 @ 14.5 GHz
Max e.i.r.p. per carrier	51.5 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

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Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• **Antenna type INTELLIAN V80**

<u>ESV Antenna</u>	INTELLIAN V80
Antenna type	INTELLIAN V80
Antenna size	83 cm
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	40.0 @ 14.50 GHz
Max e.i.r.p. per carrier	49.0 dBW
Min. operating elevation	10°
Pointing accuracy	0.2° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• **Antenna type INTELLIAN V100**

<u>ESV Antenna</u>	INTELLIAN V100
Antenna type	INTELLIAN V100
Antenna size	103 cm
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	41.6 @ 14.5 GHz
Max e.i.r.p. per carrier	50.6 dBW
Min. operating elevation	10°
Pointing accuracy	0.2° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• **Antenna type SEA TEL 4006**

<u>ESV Antenna</u>	SEA TEL 4006
Antenna type	SEA TEL 4006
Antenna size	100 cm

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Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	40.0 @ 14.00 GHz
Max e.i.r.p. per carrier	49.0 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

• Antenna type SEA TEL 4010

<u>ESV Antenna</u>	SEA TEL 4010
Antenna type	SEA TEL 4010
Antenna size	100 cm
Transmit frequency bands	13.75 – 14.50 GHz
Transmit peak gain	39.90 @ 14.25 GHz
Max e.i.r.p. per carrier	48.9 dBW
Min. operating elevation	10°
Pointing accuracy	0.1° RMS

Waveform definition

Number(s) of carriers per ESV	1
Maximum occupied bandwidth(s) per carrier	2 MHz
Modulation	BPSK, QPSK, 8PSK
Multiple access scheme	FDMA, TDMA

OPERATING DETAILS OF EACH SATELLITE

ITU Filing satellite name	EUTELSAT 3-4E
Satellite operator name	EUTELSAT
GEO longitude	3.1° EAST
Satellite service area (text description and/or a figure of the area)	European coverage

Forward Channel details (Satellite to ESV)	
Transponder downlink centre frequency	10.991,67 MHz
Transponder downlink bandwidth	72 MHz

Return Channel details (ESV to satellite)	
Transponder uplink centre frequency	14.291,67 MHz
Transponder uplink bandwidth	72 MHz

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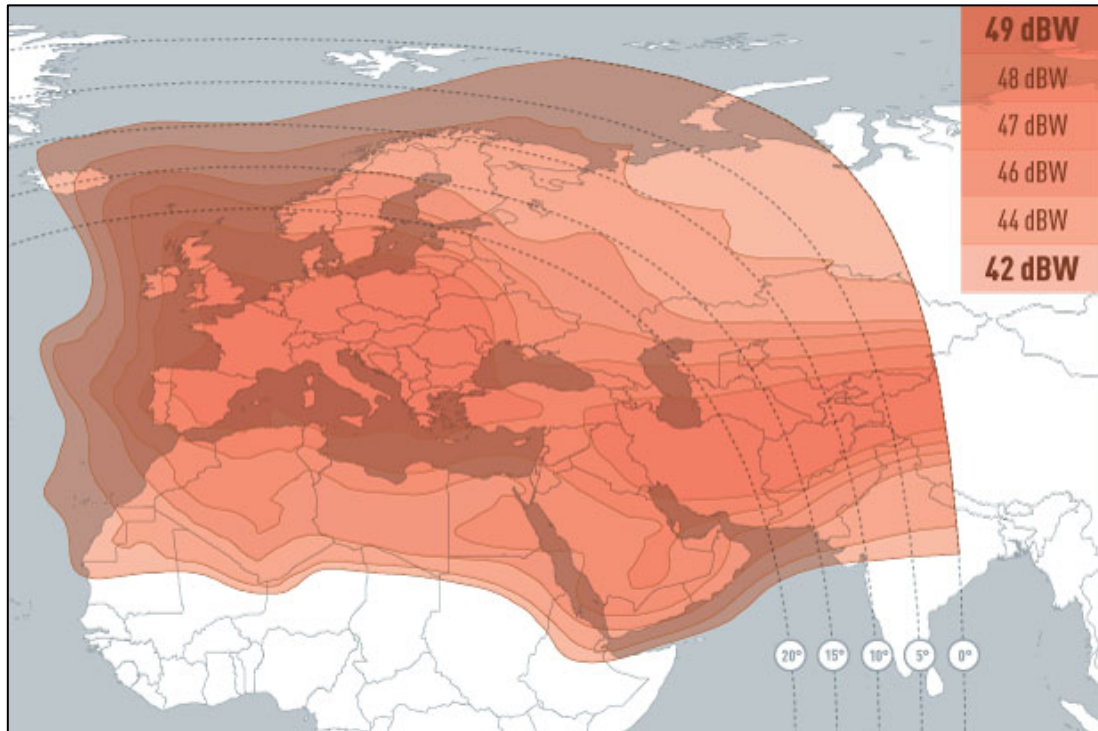


Figure 1: EUTELSAT 3-4E downlink European coverage

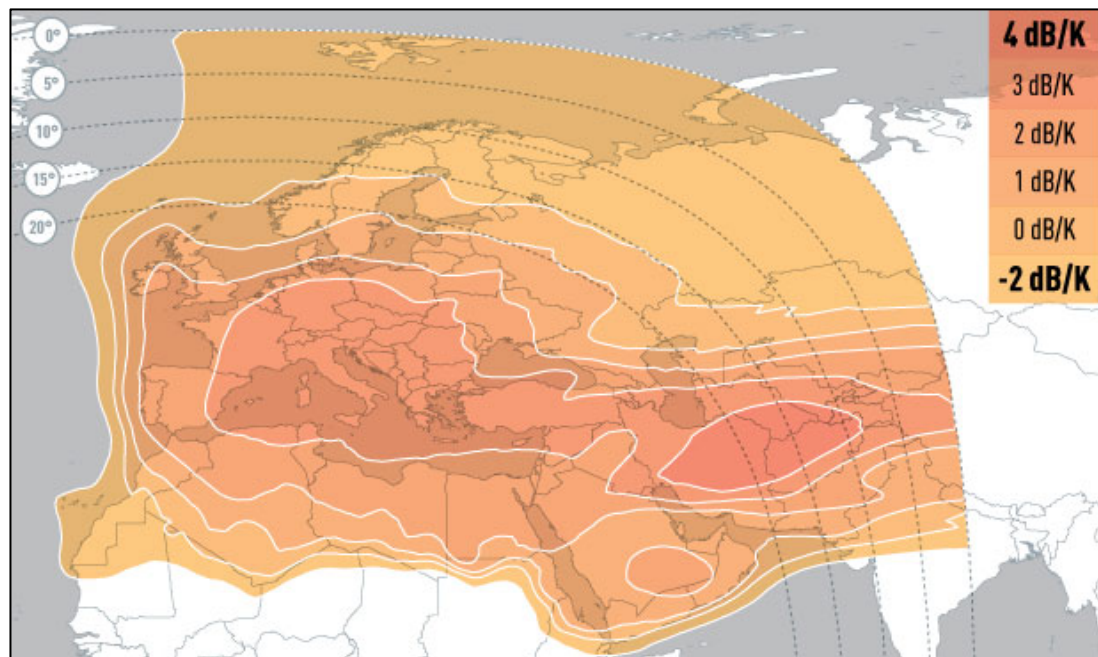


Figure 2: EUTELSAT 3-4E uplink European coverage

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ITU Filing satellite name	YAMAL-402
Satellite operator name	GAZPROM SPACE SYSTEMS
GEO longitude	55° EAST
Satellite service area (text description and/or a figure of the area)	European coverage

Forward Channel details (Satellite to ESV)

Transponder downlink centre frequency	11.095 MHz
Transponder downlink bandwidth	54 MHz

Return Channel details (ESV to satellite)

Transponder uplink centre frequency	14.095 MHz
Transponder uplink bandwidth	54 MHz

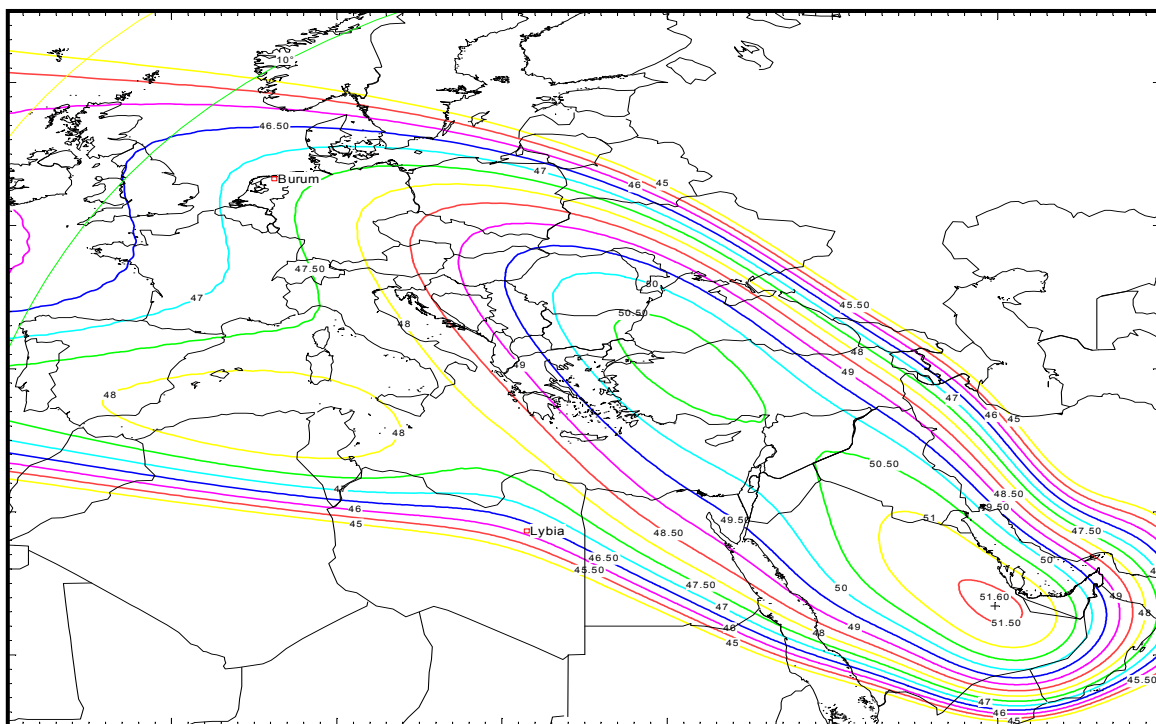


Figure 3: YAMAL-402 downlink European coverage

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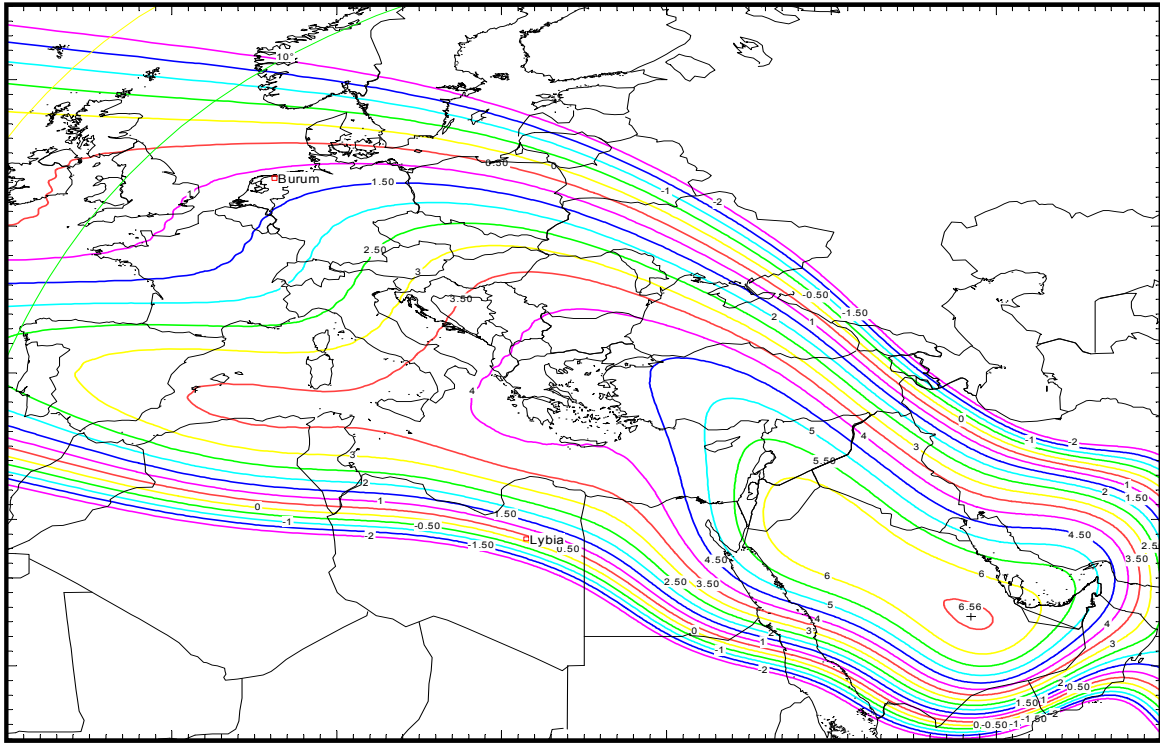


Figure 4: YAMAL-402 uplink European coverage

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