

Comparison Table of Space Networks and Satellites As of the Beginning of 2014

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The Table lists radio space networks appearing in the ITU Space Network List, as of January 2, 2014. There were 1079 entries of NOTIFIED space networks in the geostationary orbit. Satellites were taken from Issue 16 of the Classification of Geosynchronous Objects produced with the DISCOS Database and published at the ESA European Center in Darmstadt, Germany, on 27 February 2014. It reflects the situation at the beginning of 2014.

Radio space networks are supposed to transmit only if they are listed in the “notified” category. Physically, transmissions require the presence of a properly equipped satellite at the relevant orbital nominal position. Available data do not permit to find out which radio space networks are served by a satellite located at the same orbital position and which are not. Only if there is no satellite at the orbital position it is certain that the space networks cannot operate. The Table shows clearly such cases. In some cases even the permitted period of absence of 3 years has been exceeded. The Table lists all commercial satellites and most of satellites reserved for governmental services. Readers interested in commercial satellites only will find relevant diagrams and lists in monthly editions of satellites with Two Line Elements in Section 3 and 4.

In the present Table, the left-hand part lists space networks in boxes for each used nominal position. Satellites at, or close to, the nominal position appear in the right-hand part of a page. The last but one column contains the latest position in 2013.

The last column refers to tables in the “Classification”:

Objects in drift orbits **D** and in libration orbits **L** around one or both libration points have obviously not been included.

C1.nnn refers to Section 3, Objects with Two-Line-Elements data, Table 1, Satellites under longitude and inclination control. It contains 297 entries, the main body of TV satellites accessible with fixed antennas.

C2.nn refers to Section 3, Table 1, Satellites under longitude control. It contains 82 entries, reception of transmissions depending on technical parameters of antennas.

2C1.n refers to Section 4, Objects without Two-Line-Elements data, Table 2, Satellites under longitude and inclination control. It contains 8 entries, mostly transmissions for governmental services.

2C2.n refers to Section 4, Satellites under longitude control. It contains 49 entries, mostly transmissions for governmental services.

Objects of indeterminate status **U.n** and **Ind.n**: no sufficient data of 3 objects in Subsection 4.7 and of 9 objects in Section 6, Table 4 were available in 2013. Data from January and February 2014 permitted the determination of positions of 6 objects and expected positions of 4 objects. The total number of satellites in, or close to, nominal orbital positions is 446.

Comparison Table of Space Networks and Satellites

Version of 3 Mar 2014

Corrected 15.00E

SPACE NETWORKS - NOTIFIED			SATELLITES IN THE GEOSTATIONARY ORBIT			Classification
Nom. Long.	Adm	Space Network Name Org	COSPAR Int. Designation	Satellite Name	Longitude	Source
0.00 E	F USA	MSG USCID-A1	2012-035B	MSG 3 (Meteosat 10)	0.4 W	C1.297
1.00 E	RUS RUS RUS RUS	VOLNA-21 GALS-15 TOR-15M STATSIONAR-22				
2.00 E	HOL	NSS-20	1993-031A	Astra 1C, i=6.3	2.0 E	C2.1
3.00 E	F F F F F F	TELECOM-2C TELECOM 3C SYRACUSE-3F VIDEOSAT-8-KU-C SYRACUSE-31F TELECOM-4C GEOSAT-3E	2010-037B 2007-021A 2013-022A 2002-040B	Rascom-QAF 1R Eutelsat 3A, Xinnuo 3 Eutelsat 3D MSG 1,, (Meteosat-8),i=2.5	2.9 E 3.3 E 3.1 E 3.5 E	C1.2 C1.4 C1.3 C2.2
4.00 E	F USA USA F F	EUTELSAT 2-4E suspended MILSTAR 13 USGAE-2 EUTELSAT 3-4E suspended F-SAT-KU2-E-4E suspended				
4.80 E	S	SIRIUS-2	2007-057A	Sirius 4, Astra 4A	4.9 E	C1.5
5.00 E	USA S S S S LUX	USMB-5 SIRIUS-3B, suspended SIRIUS-P, suspended. TELE-X SIRIUS-5E, suspended. LUX-G3-2	2012-036A	SES-5	5.0 E	C1.6
5.50 E	CTI	RASCOM-C				
5.70 E	MLA MLA	MEASAT-SA1 MEASAT-5.7E				
6.00 E	G G G	SKYNET-4B SKYNET-4K SKYNET-5C	2007-007B	Skyнет 5A	6.0 E	C1.7
7.00 E	F USA F F F F F	EUTELSAT 2-7E USMB-6 EUTELSAT 3-7E EUTELSAT-KA-7E EUTELSAT-B1-7E F-SAT-KU2-E-7E EUTELSAT 1-3 F-SAT-KA-E-7E	2004-008A	Eutelsat W3A, 7A	7.0 E	C1.8
8.00 E	RUS RUS RUS RUS	VOLNA-15 STATSIONAR-18 GALS-7 TOR-8M	1997-008A	USA 130, DSP F18, i=11.3	8.1 E	2C2.1
8.50 E	USA	USGON-2				
9.00 E	F F	F-SAT-KA-E-9E EDRS-1	2006-007B 2010-069A	Hot Bird 7A , Eutelsat 9A KA SAT. Eutelsat	9.0 E 9.0 E	C1.10 C1.9
10.00 E	F F F BEL F F F F	EUTELSAT 2-10E EUTELSAT 3-10E MSG-S1 SATCOM-4/10E 3GSAT-G17R F-SAT-C-E-10E F-SAT-KU2-E-10E F-SAT-S-E-10E	2009-016A 2005-049B	Eutelsat W2A, 10A MSG 2, i=0.97, (Meteosat 9),	10.0 E 9.4 E	C1.11 C1.1
11.50 E	G	INTELSATN KA 11.5E, susp.				
11.80 E	I	SICRAL-3H	2009-020A	Sicral 1B	11.7 E	2C1.1
12.00 E	RUS RUS RUS RUS	PROGNOZ-2 TOR-18M GALS-17 STATSIONAR-27 VOLNA-27	2009-010A	Raduga 1-8, i=3.2	12.0 E	C2.3
13.00 E	F F F F F D D F	EUTELSAT 2-13E EUTELSAT 3-13E EUTELSAT-B1-13E EUTELSAT-KA-13E, suspen. F-SAT-KA-E-13E, suspended GENESIS-8 GENESIS-11 F-SAT-KU2-E-13E	2008-065A 2006-032A 2010-021B 2009-008B	Hot Bird 9, (Eutelsat 13C) Hot Bird 8,)Eutelsat 13B) COMSATBw-2 Eutelsat Hot Bird 13D	13.0 E 13.0 E 13.0 E 13.0 E	C1.12 C1.13 C1.15 C1.14
14.00 E	RUS	TOR-12M	2000-019A	Eutelsat Hot Bird 16C, i=1.8	14.5 E	C2.4
15.00 E	RUS RUS RUS	GALS-12 VOLNA-23 STATSIONAR-23				
16.00 E	F F F F F	EUTELSAT 2-16E EUTELSAT 3-16E F-SAT-KU2-E-16E EUTELSAT-KA-16E EUTELSAT-B1-16E	2011-057A 1998-013A	Eutelsat W3C, 16A Eutelsat 16B, Hot Bird 4, i=1.8	16.0 E 15.8 E	C1.16 C2.5
16.20 E	I I	SICRAL-2A, suspended SICRAL-3A				

16.80 E	CHN	CTDRS-2-16.8E	2012-040A	Tian Lian 1-03	16.8 E	C1.17
17.00 E	RUS	INTERSPUTNIK-17E	2011-074A	Amos -5	17.0 E	C1.18
	RUS	INTERSPUTNIK-17E-CK				
19.00 E	LUX	LUX-KA-19E				
19.20 E	LUX	GDL-7	2008-057A	Astra 1M	19.2 E	C1.19
	LUX	GDL-6	2000-054A	Astra 2B	19.4 E	C1.23
	LUX	LUX-G3-19.2E	2006-012A	Astra 1KR	19.2 E	C1.21
			2007-016A	Astra 1L	19.2 E	C1.22
			1999-033A	Astra 1H	19.5 E	TLE Feb 2014
			2001-025A	Astra 2C	19.2 E	C1.20
20.00 E	ARS	.ARABSAT 2-C	2011-049B	Arabsat 5C	20.0 E	C1.24
	ARS	.ARABSAT 5C-20E				
21.00 E	USA	AFRIBSS	2013-011A	USA 241, SBIRS GEO-2, i=5.3	20.6 E	2C2.2
			1998-063A	AfriStar 1, i=1.3	21.0 E	C2.6
21.50 E	F	ARTEMIS-21.5E-DR	2001-029A	Artemis i=11.0	21.4 E	C2.7
	F	EUTELSAT 2-21.5E	2012-062B	Eutelsat 21B	21.5 E	C1.25
	F	ARTEMIS-21.5E-LM				
	F	EUTELSAT 3-21.5E				
	F	ARTEMIS-21.5-NAV				
	F	EUTELSAT 1-5				
23.00 E	RUS	VOLNA-17				
	RUS	GALS-8				
	RUS	STATIONAR-19				
23.50 E	D	DFS II-1	2010-021A	Astra 3B	23.5 E	C1.26
	D	DFS-1				
	LUX	LUX-G3-24.2E , suspended				
24.00 E	RUS	TOR-7M				
24.20 E	LUX	LUX-24.2E				
			2007-056B	Skynet 5B, i=0.45	24.3 E	C1.27
25.00 E	G	INMARSAT-3 IOR WEST	1998-006B	Inmarsat-3 F5, i=0.30	24.6 E	C1.29
	G	INMARSAT-4 25E	2005-044A	Inmarsat 4 F2, i=2.3	25.1 E	C2.8
			2013-038A	Alphasat	24.9 E	C1.28
25.50 E	F	EUTELSAT 1-8	2013-044A	Eutelsat 25B	25.5 E	C1.30
	F	EUTELSAT 3-25.5E				
	F	F-SAT-KU3-E-25.5E				
26.00 E	IRN	ZOHREH-2	2010-025A	Badr 5 = Arabsat 5B	26.0 E	C1.31
	ARS	.ARABSAT 2-B	2006-051A	Badr 4 = Arabsat 4B	26.0 E	C1.32
	ARS	.ARABSAT 1-B	2008-034B	Badr 6 = Arabsat 3C	26.0 E	C1.33
	ARS	.ARABSAT-EXT-C2				
	ARS	.ARABSAT-KA-26E				
	ARS	.ARABSAT 5B-26E				
	ARS	.ARABSAT-KU-26E				
28.20 E	LUX	LUX-28.2E	1998-050A	Astra 2A	28.2 E	C1.34
	LUX	LUX-G3-28.2E	2000-081A	Astra 2D, i=1.3	28.0 E	C2.9
			2011-041A	Astra 1N	28.2 E	C1.35
			2012-051A	Astra 2F	28.2 E	C1.36
28.5 E	D	DFS II-2	2001-011A	Eurobird 1, Eutelsat 28A	28.5 E	C1.38
	D	DFS-2	2008-065B	Eutelsat 28B, W2M	28.5 E	C1.37
29.00 E	USA	FLTSATCOM-C INDOC-1	1993-056A	USA 95 (UFO F2), i=9.5	28.7 E	2C2.3
	E	SECOMSAT B29E	2005-005A	XTAR-EUR	29.0 E	C1.39
30.00 E	USA	USGAE-16R	2008-011A	AMC-14, i=16.7	29.3 E	C2.10
			2002-001A	USA 164 Milstar 2 F3	30.0 E	2C2.4
30.50 E	ARS	.ARABSAT 2-A	2010-032B	Arabsat 5A = Badr 5A	30.5 E	C1.40
	ARS	.ARABSAT 5A-30.5E				
	ARS	.ARABSAT KA-30.5E				
31.00 E	TUR	TURKSAT-31E-A	1997-076A	Astra 1G	31.5 E	C1.42
	LUX	LUX-G3-4				
	TUR	TURKSAT-1B suspended	2012-043B	Hylas 2	31.0 E	C1.41
	TUR	TURKSAT-K1 suspended.	1995-055A	Asta 1E, i=3.0	31.3 E	C2.11
	TUR	TURKSAT-2b, suspended.				
	G	UKMMSAT-B1-TTC-C				
	G	UKJKSAT-1				
33.00 E	USA	USASAT-55I	2003-043A	Eurobird 3, Eutelsat 33A	33.1 E	C1.45
	USA	USASAT-60N				
	F	EUTELSAT 2-33E	2002-051A	Eurobird 3, Eutelsat 25C,W5	33.1 E	C1.44
	F	EUTELSAT 3-33E				
	F	EUTELSAT-KA-33E				
	F	F-SAT-KU3-E-33E				
	USA	USMB-7				
	USA	INTELSAT5 33E	1999-009B	Skynet 4E, i=8.6	32.3 E	C2.12
	USA	INTELSAT7 33E	1994-034A	Intelsat 702 , i=2.0	32.9 E	C2.13
	USA	INTELSAT8 33E				
	USA	INTELSAT9 33E	2011-016A	Intelsat New Dawn	32.9 E	C1.43
34.50 E	ARS	.ARABSAT 6E-34.5E				
35.00 E	RUS	PROGNOZ-3	1993-076A	NATO IV B, USA98, i=10.9	35.5 E	C2.14
	RUS	STATIONAR-D3				
	RUS	TOR-2M				
	RUS	STATIONAR-2				
	RUS	GALS-6				
	RUS	VOLNA-11				
36.00 E	RUS	RST-1				
	F	EUTELSAT 2-36E	2009-065A	Eutelsat W7, 36B	35.9 E	C1.46
	F	EUTELSAT 3-36E	2000-028A	Eutelsat W4(36A)	36.1 E	C1.47
	F	F-SAT-KU3-E-36E				
	F	EUTELSAT-KA-36E				
37.00 E			2001-005A	Sicral, i=5.2	37.0 E	2C2.5
38.00 E	PAK	PAKSAT-1				
	PAK	PAKSAT-1R1				
	PAK	PAKSAT-1R	2011-042A	PakSat-1R	38.0 E	C1.48

39.00 E	GRC CYP CYP	HELLAS-SAT KYPROS-SAT-C KYPROS-SAT-L4	2003-020A 2002-062A	Hellas Sat 2 Nimiq 2	39.0 E 39.0 E	C1.49 C1.50
39.50 E	G	DJCF-1A				
40.00 E	RUS RUS RUS RUS	LOUTCH-7, suspended EXPRESS-4, suspended EXPRESS-4B, suspended VOLNA 4R, suspended				
42.00 E	TUR TUR TUR TUR TUR	TURKSAT 1D TURKSAT-K2 TURKSAT-KX TURKSAT-1A TURKSAT-42E-A	2008-030B 2001-002A 2011-077A	Turksat 3A Turksat 2A (Eurasiasat 1) NigComSat-1R	42.0 E 42.0 E 42.5 E	C1.51 C1.52 C1.53
44.00 E	USA USA UAE UAE UAE	USGGR-4 USCSID-A2 EMARSAT-1E EMARSAT-1F EMARSAT-1F/M	2013-056A 2009-001A 2003-026A	Astra 2E USA 202, i=3.7 Thuraya 2, i=3.8	43.5 E 44.0 E 44.0 E	C1.54 2C2.6 C2.15
44.5 E	ARS/ARB	ARABSAT 7F-44.5E				
45.00 E	RUS RUS D RUS RUS RUS RUS	STATSIONAR-D4 VOLNA-3 EUROPE*STAR-1, suspended STATSIONAR-9 STATSIONAR-9A GALS-2 TOR-3	2000-068A	Europe*Star F1=Intelsat12	45.0 E	C1.55
46.00 E	G MLA	DJCF-1B MEASAT-46E	2013-006B 1996-026A	Azerspace 1 USA 118, Mercury 2, i=9.3	46.0 E 46.4 E	C1.56 2C2.7
47.00 E	F F F	SYRACUSE-3H SYRACUSE-31H SYRACUSE-4H	2005-041B	Syracuse 3A	47.0 E	C1.57
47.50 E	D	EUROPE*STAR-3, susp.	2001-019A 2009-047A	PAS 10, Intelsat 10, i=0.09 USA 207, PAN	47.6 E 47.7 E	C1.58 2C1.2
48.00 E	IND IND IND IND IND	INSAT-2T(48) INSAT-2(48) INSAT-EK48 INSAT -2M(48) INSAR-EK48R	2012-016A 1994-054A 1996-067A 1999-033A 1999-018A	Yahsat 1B USA 105, Mercury 1, i=9.3 Eutelsat 48A, Hot Bird 2, i=4.0 Astra 1H Eutelsat W3, i=0.9	47.6 E 48.0 E 48.3 E 48.1 E 48.0 E	C1.59 2C2.8 C2.17 TLE C2.16
49.00 E	USA RUS RUS RUS RUS RUS	USMB-8 TOR-16M ROSCOM-4 YAMAL-49E GALS-13 VOLNA-25 STATSIONAR-24	2003-053A	Yamal 200 N2 (Yamal 202)	49.0 E	C1.60
50.00 E	TUR TUR TUR TUR	TURKSAT-1C TURKSAT-K3 TURKSAT-C50E TURKSAT-50E-A	1999-005A 1997-046A	Telstar 6 = Galaxy 26 Intelsat 5, PAS 10, i=1.0	50.0 E 50.2 E	C1.62 C2.18
50.50 E	THA THA	THAICOM-C1 THAICOM-N1	1997-053A	NSS-803, Intelsat VIII F-3, i=1.3	50.5 E	C2.19
51.50 E	CHN	CHINASAT-51.5E, suspended.	1996-039A 1998-056B	Apstar 1A, i=7.4 Sirius 3, i=4.2	51.5 E 51.2 E	C2.21 C2.20
52.50 E	UAE	EMARSAT-1G	2011-016B 1994-070A 2011-034A	Yahsat 1A Astra 1D, i=5.4 USA 237	52.5 E 52.2 E 52.5 E	C1.63 C2.22 2C2.9
53.00 E	RUS G G G RUS RUS RUS	VOLNA-4 SKYNET-4C SKYNET-4L SKYNET-5D EXPRESS-5B EXPRESS-5KA EXPRESS-5	2012-075A 2003-060A	SkyNet 5D Ekspress AM-22, Sesat-2	52.5 E 53.0 E	C1.64 C1.65
55.00 E	RUS IND IND USA RUS RUS IND IND IND RUS	KUPON-1 INSAT-2(55) INSAT-2T(55) MILSTAR 4 KUPON-1T KUPON-1S INSAT-EK55R INSAT-EK55 INSAT-KU10(55)E KUPON-1M	2012-070A 2003-043E 1996-021A 2011-022A 2013-034A	Yamal-402, i=0.12 Insat 3E Astra 1F GSat-8, Insat 4G IRNSS-R1A (India)	54.9 E 55.1 E 54.9 E 55.1 E 54.9 E	C1.66 C1.68 C1.67 C1.69 C1.61
56.00 E	RUS	RST-2	1998-068A 1999-056A	Bonum 1, i=1.8 DirectV 1R	56.0 E 55.8 E	C2.24 C2.23
57.00 E	HOL HOL HOL USA USA HOL HOL	INTELSAT5A INDOC2 INTELSAT8 57E INTELSAT7 57E USGCSS PH3 INDOC-2 USGCSS PH3B INDOC-2 NSS-8 NSS-36	2000-065A 2009-058A	USA 153 (DSCS III B), i=3.9 NSS 12	56.8 E 57.0 E	2C2.10 C1.70
57.50 E	D	METEOSAT IODC 57.5E	1997-049B	Meteosat 7 i=8.8	57.5 E	C2.25
58.00 E	RUS	TOR-13M				
58.50 E	KAZ KAZ	KAZSAT1 suspended KAZSAT1M suspended				
58.75 E	CHN	COMPASS-58.75E	2012-008A	Beidou G5, DW11	58.7 E	C1.71

60.00 E	USA	USGCSS PH3 INDOC	2009-017A	USA204 (WGS F2)	60.2 E	2C1.3
	USA	USGCSS PH3B- INDOC				
	USA	USGOVSAT-10				
	USA	INTELSAT6 60E				
	USA	INTELSAT8 60E				
	USA	INTELSAT9 60E	2002-007A	Intelsat 904	60.0 E	C1.72
60.75 E	F	CP 60.75E				
62.00 E	USA	INTELSAT7 62E				
	USA	USMB-9				
	USA	INTELSAT8 62E				
	USA	INTELSAT6 62E				
	USA	INTELSAT9 62E	2001-039A	Intelsat 902	62.0 E	C1.73
63.00 E	D	GENESIS-9	2009-054B	COMSATBw-1	63.0 E	C1.74
64.00 E	G	INMARSAT 3 IOR-1	2013-073A	Inmarsat 5 F1	63.0 E	Expected
	G	INMARSAT GSO-2N				
	USA	INTELSAT9 64E	2002-041A	Intelsat 906	64.1 E	C1.75
	USA	INTELSAT8 64E				
	USA	INTELSAT7 64E				
64.50 E	G	INMARSAT-2 IOR 1	1996-020A	Inmarsat 3-F1, i=1.5	64.5 E	C2.26
65.00 E	G	INMARSAT GSO-2H	2013-045A	Amos-4	65.0 E	TLE Feb 2014
66.00 E	USA	INTELSAT9 66E	2010-065B	Intelsat 17	66.0 E	C1.76
	USA	INTELSAT7 66E	1997-007A	Intelsat 26, JC-Sat 4	65.8 E	C2.27
			1999-052A	Galsxy 27, Telstar 7, i=0.6	66.2 E	C2.28
			2004-004A	USA 176, DSP F22, i=5.7	66.1 E	2C2.11
68.00 E	USA	USASAT-14I-2	2003-041A	USA 171 (Adv.Orion 3), i=6.9	68.0 E	2C2.12
68.50 E	USA	USASAT-14I-3	1998-052A	PAS 7 = Intelsat 7, i=0.6	68.6 E	C2.29
	USA	USASAT-60C, suspended	2012-043A	Intelsat 20	68.6 E	C1.77
	USA	USASAT-14I, suspended				
69.00 E	RUS	TOR-14M				
	RUS	GALS-14				
70.00 E	RUS	VOLNA-19				
	USA	USGON-1				
	USA	USTRO-6				
	RUS	STATSIONAR-20	2013-062A	Raduga-1 M3	70.0 E	C1.78
	RUS	GALS-16				
	RUS	TOR-17M				
	TON	TONGASAT-H70				
70.50 E	F	EUTELSAT-E-70.5E				
	F	EUTELSAT 3-70.5E	2012-069A	Eutelsat 70B	70.5 E	C1.79
	F	F-SAT-KU3-E-70.5E				
72.00 E	USA	FLTSATCOM-C INDOC-2	1990-002B	Leasat 5 ,i=10.33. i=10.8	72.0 E	C2.30
	USA	USASAT-14J-2, suspended				
	USA	KASATCOM-3	2012-011A	Intelsat 22	72.1 E	C1.80
	USA	USASAT-14J	1999-063A	USA 146 (UFO F10), i=5.1	71.9 E	2C2.13
	AUS	DEF-R-SAT-2A				
72.10 E	AUS	ADFUHF-2				
74.00 E	IND	INSAT-1B	2002-002A	Insat 3C	74.0 E	C1.81
	IND	INSAT-2(74)	2002-043A	Kalpana-1 (MetSat-1), i=4.0	74.0 E	C2.31
	IND	INSAT-2K(74)				
	IND	INSAT-2T(74)	2013-044B	Gsat 7	74.0 E	C1.83
	IND	INSAT-2M(74)	2007-037A	Insat 4CR	74.0 E	C1.82
	IND	INSAT-EK(74)				
	IND	INSAT-2E(74)				
	IND	INSAT-EK74R				
75.00 E	RUS	INTERBELAR-2	2004-007A	Mbsat	74.7 E	C1.84
	USA	FLTSATCOM-C INDOC-3	1999-053A	LMI 1, ABS-1	75.0 E	C1.85
	USA	USMB-10	1996-003A	Koreasat 2, ABS-1A, i=6.1	74.8 E	C2.32
	USA	USCSID-A3	1990-097B	USA 67 (SDS 2F2), i=16.1	75.4 E	2C214
	RUS	INTERSPUTNIK-75E-CK	2003-057A	USA 174 (UFO F11), i=3.6	75.7 E	2C2.15
	RUS	INTERSPUTNIK-75E-O				
76.00 E	RUS	GOMS-M	2011-001A	Elektro-L1, GOMS 2	76.1 E	C1.86
76.50 E	CHN	APSTAR-4	2012-013A	Apstar 7	76.5 E	C1.87
	CHN	APSTAR-76E				
77.00 E	RUS	CSSRD-2				
	CHN	CTDRS-1-77E				
77.50 E	KAZ	KAZSAT7				
78.50 E	THA	THAICOM-A2	2006-020B	Thaicom 5	78.5 E	C1.88
	THA	THAICOM-AK2	2011-069A	Asiasat 7	78.6 E	C1.89
	THA	THAICOM-G1K				
	THA	THAICOM-N2				
	THA	THAICOM-A2B				
79.60 E	CHN	CHINASAT-34A	2006=024C	USA 189 NRL Upperr Stage/Sat	78.7 E	2C216
80.00 E	RUS	STATSIONAR-1				
	RUS	PROGNOZ-4	2011-048A	Cosmos 2473	79.9 E	C1.90
	RUS	POTOK-2	2005-010A	Ekspress AM-2	80.0 E	C1.91
	RUS	EXPRESS-6				
	RUS	EXPRESS-6KA				
	CHN	CHINASAT-31	2008-019A	Tian Lian 1A (CTDRS-1)	80.1 E	C1.92
	RUS	EXPRESS-6B				
	RUS	FOTON-2				
	CHN	COMPASS-80E	2012-059A	Beidou G6, DW16	80.1 E	C1.93
	CHN	CTDRS-1-80E				
	RUS	VOLNA-8R				
81.75 E	RUS	YAMAL-E3				

82.00 E	USA	USMB-11	2013-038B	Insat 3D	82.1 E	C1.95
	USA	USGGR-8				
	USA	USCSID-A4	1999-006A	Jcsat-4A	82.0 E	C1.94
	J	N-SAT-82E				
AUS	DEF-R-SAT-1A					
83.00 E	IND	INSAT-2(83)	2005-049A	Insat 4A	83.0 E	C1.96
	IND	INSAT-2K (83)				
	IND	INSAT-2E83	2011-034A	GSat-12	83.0 E	C1.98
	IND	INSAT-2M(83)	2012-051B	GSat-10	83.0 E	C1.97
	IND	INSAT-EK83				
IND	INSAT-EK83R					
84.00 E	CHN	CHINASAT-84B				
85.00 E	RUS	VOLNA-5	2010-002A	Raduga-1M2	85.0 E	C1.100
	RUS	STATIONAR-3				
	RUS	TOR-4M				
	USA	USTRO-9				
	RUS	GALS-3				
	RUS	TOR-4				
	USA	INTELSAT6 85E	2009-067A	Intelsat IS-15	85.1 E	C1.101
	USA	INTELSAT KFOS 85E				
	USA	INTELSAT7 85E	2007-063B	Horizons-2	84.9 E	C1.99
USA	INTELSAT8 85E					
USA	TDRS 85E	1995-035B	TDRS 7, i=13.9	84.8 E	C2.33	
85.40 E	RUS	STATIONAR-D5				
	RUS	SADKO-1				
86.50 E	CHN	FY-2B	2006-053A	FengYun 2D, i=2.1	87.0 E	C2.34
	CHN	FY-2BS				
	KAZ	KAZSAT2	2011-035B	KazSat-2	86.5 E	C1.102
	KAZ	KAZSAT2M				
RUS	KUPOON-4M					
87.50 E	CHN	DFH-3-OC	2012-067A	Chinasat 12, ZX 12	87.5 E	C1.103
	CHN	DFH-3-OCM				
	CHN	CHINASAT-1				
88.00 E	SNG	ST-1A	2011-022B	ST-2	88.0 E	C1.104
	SNG	ST-1A-CK				
	AUS	ADF WEST-2				
	AUS	DDSP-2				
2012-003A	USA 233, WGS F4	88.4 E	2C1.4			
89.00 E	USA	TDRS 89E	2000-034A	TDRS 8, i=5.1	89.1 E	C2.35
90.00 E	RUS	VOLNA-8	2003-053B	Yamal 200 N1 (Yamal 201)	90.0 E	C1.105
	RUS	STATIONAR-6				
	RUS	EXPRESS-7C				
	USA	MILSTAR 5	2006-024A	USA 187, Mitex OSC, i=0.8	89.5 E	2C2.17
	USA	USTRO-7				
	RUS	LOUTCH-3	2012-061B	Yamal 300K	90.1 E	C1.106
RUS	EXPRESS-7B					
RUS	EXPRESS-7					
90.75 E	J	DRTS-90.75E	2002-042B	Kodama (DRTS), i=2.6	90.8 E	C2.36
	J	N-SAT-90.75E				
91.50 E	MLA	MEASAT-91.5E	2009-032A	Measat-3A	91.5 E	C1.108
	MLA	MEASAT-1	2006-056A	Measat 3	91.5 E	C1.107
	MLA	MEASAT-IC 91.5E				
	MLA	MEASAT-1R				
	MLA	MEASAT-AK 91.5				
92.00 E	USA	USMB-12	2011-011A	USA 227, NROL-27, i=4.8	92.1 E	2C2.18
	USA	USCSID-A5				
92.20 E	CHN	CHNBSAT-92.2E	2008-028A	Zhongxing 9, Chinasat 9	92.2 E	C1.109
	CHN	APSTAR-92E				
	CHN	SINOSAT-92.2E				
	CHN	CHINASAT-92.2E				
93.00 E	AUS	DEF-R-SAT-3A	1997-036A	Superbird A3, i=4.4	93.0 E	C2.37
	J	JMCS-93E				
93.50 E	IND	INSAT-2(93.5)	2003-013A	Insat 3A	93.5 E	C1.110
	IND	INSAT-2K(93.5)	2007-007A	Insat 4B	93.5 E	C1.111
	IND	INSAT-2M(93.5)				
	IND	INSAT-2T(93.5)	2011-019A	USA 230, SBIRS-GEO 1, i=5.3	94.0 E	2C2.19
	IND	INSAT-EK93.5				
	IND	INSAT-EK93.5R				
	IND	INSAT-2E93.5				
95.00 E	HOL	INTELSAT KA 95E	2013-071A	SES-8	95.0 E	Expected
	HOL	INTELSAT8 95E				
	HOL	INTELSAT7 95E				
	HOL	INTELSAT5A 95E	2002-057A	NSS 6	95.0 E	C1.112
	HOL	NSS-9				
	RUS	CSDRN-M suspended				
	HOL	NSS-KA41				
RUS	CSDRN	2010-063A	USA 223 (NROL-32), i=4.5	95.6 E	2C2.20	
96.50 E	RUS	STATIONAR-14	2008-003A	Ekspress AM-33	96.5 E	C1.113
	RUS	LOUTCH-9				
	RUS	EXPRESS-8				
	RUS	EXPRESS-8B				
97.50 E	CHN	SINOSAT-3				
98.00 E	RUS	PROGNOZ-8	2012-028A	Chinasat 2A, ZX 2A	98.3 E	C1.114
	CHN	CHINASAT-22				
	CHN	CHINASAT-3				
	CHN	DFH-3A-OC				
	CHN	CHINASAT-44				
CHN	CHINASAT-64					
98.50 E	UAE	EMARSAT-4S	2008-001A	Thuraya 3, i=4.6	98.7 E	C2.38

99.00 E	RUS	STATSIONAR-T					
	RUS	STATSIONAR-T2					
100.00 E	USA	FLTSATCOM-A INDOC-4	1986-096A	USA 20,(FLTSATC. F7), i=14.2	99.5 E	2C2.21	
	USA	USNN-4					
100.50 E	CHN	ASIASAT-EKZ	2009-042A	Asiasat 5	100.5 E	C1.115	
	CHN	ASIASAT-E					
	CHN	ASIASAT-EK1					
	CHN	ASIASAT-EKS					
	CHN	ASIASAT-EKX					
101.50 E	CHN	CHINASAT-45 suspended	2006-038A	Zhongxing-22A, FH1, i=3.4	101.5 E	C2.40	
103.00 E	RUS	STATSIONAR-21					
	RUS	LOUTCH-5	1989-035A	USA 37, Vortex 6. I=7.5	102.3 E	2C2.22	
	USA	USGON-3					
	CHN	STW-2	2003-052A	Zhongxing-20, i=1.0	103.3 E	C2.41	
	RUS	EXPRESS-9	2000-013A	Ekspress 2A, i=6.9	103.0 E	C2.39	
	USA	USTRO-8					
	RUS	EXPRESS-9B					
	CHN	CHINASAT-65					
	CHN	DFH-4-OB					
	CHN	DFH-3-OB					
104.00 E	AUS	DDSP-104E					
	AUS	ADF WEST 5					
105.00 E	AUS	ASIABSS	2000-016A	AsiaStar	105.0 E	C1.116	
	CHN	FY-2A	2008-066A	FengYun 2E, i=1.6	104.5 E	C2.42	
	CHN	FY-2AS					
	CHN	CHINASAT-46					
105.50 E	CHN	ASIASAT-CK-1	1999-013A	Asiasat 3S	105.5 E	C1.117	
	CHN	ASIASAT-1					
	CHN	ASIASAT-CKS					
	CHN	ASIASAT-CK					
	CHN	ASIASAT-CKX					
	CHN	ASIASAT-CKZ, suspended					
106.50 E	USA	USMB-13					
107.70 E	INS	INDOSTAR-1					
	INS	INDOSTAR-1A					
108.00 E	INS	PALAPA-B1	2009-027A	Indostar II/Protostar II, SES-7	108.2 E	C1.118	
	INS	PALAPA-B1-EC					
	INS	PALAPA-C2	1999-042A	Telkom 1	108.0 E	C1.119	
108.20 E	G	AM-SAT A4, suspended	2000-059A	GE-1A, NSS-11	108.2 E	C1.120	
109.00 E	G	INMARSAT-3 POR WEST,sus					
109.65 E	J	TAIKI-109.65	2010-056B	BSAT-3B, i=0.65	109.9 E	C1.121	
109.85 E	J	BS-3N					
	J	BSAT-109.85	2007-036B	BSAT-3A	109.8 E	C1.122	
110.00 E	USA	USGGR-11					
	USA	USCSID-A6	2000-080A	USA 153, SDS 3 FR2, I=6.3	110.2 E	2C2.23	
	J	N-SAT-110	2000-060A	N-SAT-110, JCSAT-110	110.1 E	C1.124	
	J	BSAT-110	2011-041B	BSat-3c, Jcsat-110R	110.0 E	C1.123	
	J	N-SAT-110E					
	J	JMCS-2					
	J	BS-3					
110.50 E	CHN	CHINASAT-6	2011-026A	Zhongxing 10	110.5 E	C1.126	
	CHN	CHINASAT-2					
	CHN	CHINASAT-33					
	CHN	CHINASAT-33	2010-024A	Beidou DW 4, G3	110.5 E	C1.125	
	CHN	COMPASS-110.5E					
111.50 E	IND	INSAT-KU10(111.5)E					
113.00 E	INS	PALAPA-B2	2009-046A	Palapa D1	113.0 E	C1.128	
	KOR	KOREASAT-113E	2006-034A	Mugunghwa 5, Koreasat-5	113.1 E	C1.129	
	KOR	KOREASAT-2	2012-002A	Fengyun 2F	112.0 E	C1.127	
	INS	PALAPA-C1-K					
	KOR	INFOSAT-B					
	KOR	KOREASAT-113X					
	INS	PALAPA-C1					
115.50 E	CHN	DFH-4-OD	2007-031A	Zhongxing 6B	115.5 E	C1.131	
	CHN	CHINASAT-MSB4	2013-020A	Chinasat 11, ZX 11	115.5 E	C1.130	
	CHN	DFH-3-OD					
	CHN	DFH-5-OD					
	CHN	CHINASAT-115.5E					
116.00 E	CHN	ASIASAT-B					
	KOR	INFOSAT-C	2010-070B	Koreasat 6	116.0 E	C1.133	
	KOR	KOREASAT-1	1999-046A	Mugunghwa3,Koreasat 3,ABS7	115.9 E	C1.132	
116.20 E	KOR	COMS-116.2E					
118.00 E	INS	PALAPA-B3	2005-046A	Telkom 2	118.0 E	C1.134	
	INS	PALAPA-C3-K suspended					
	INS	PALAPA-C3					
	INS	PALAPA-B3 TT&C					
	INS	PALAPA-B3-EC suspended					
	INS	PALAPA-C3X					
119.50 E	THA	THAICOM-1P1	2005-028A	Thaicom 4	119.5 E	C1.135	
120.00 E	THA	THAICOM-AK3	2001-033A	USA 159, DSP F21, I=7.9	119.6 E	2C2.24	
	THA	THAICOM-A3, suspended					
	THA	THAICOM-A3B, suspended.					
	THA	THAICOM-G2K					
	THA	THAICOM-N3., suspended					
121.00 E	CHN	DFH-3-OE					
	AUS	DEF-R-SAT-4B 121.0E					

122.00 E	CHN	ASIASAT-A	2003-014A	AsiaSat 4	122.1 E	C1.136
	CHN	ASIASAT-AK				
	CHN	ASIASAT-AK1				
	CHN	ASIASAT-AKS				
	CHN	ASIASAT-AKX				
122.20 E	CHN	ASIASAT-AKZ				
123.00 E	INS	GARUDA-2	2000-011A	Garuda 1, i=1.3	123.0 E	C2.43
123.50 E	CHN	FY-2C	2004-042A	FengYun 2C, i=5.1	123.7 E	C2.44
	CHN	FY-2CS				
124.00 E	J	JCSAT-FO-124E				
	J	JCSAT-3B	2012-023A	JCSAT-13	124.0 E	C1.137
	J	N-SAT-124E				
	J	SJC-1				
125.00 E	CHN	STW-1	2010-042A	Zhongxing 6A, Chinasat 6A	125.0 E	C1.138
	CHN	DFH-3-OA				
	CHN	DFH-4-OA				
	CHN	CHINASAT-49				
	CHN	CHINASAT-MSB5				
			1995-022A	USA 110 (Adv. Orion 1),i=11.9,	126.9 E	2C2.25
127.50 E	J	JCSAT-T-127.5E				
128.00 E	RUS	STATSIONAR-D6				
	RUS	GALS-10	2006-033A	JCSAT 10 (JCSat 3A)	128.0 E	C1.139
	J	N-SAT-128				
	RUS	TOR-6M				
	RUS	STATSIONAR-15				
	J	JCSAT-FO-128E	2009-044A	JCSAT 12 (JCSAT-RA)	127.9 E	C1.140
	RUS	VOLNA -9				
	RUS	TOR-6				
	J	N-SAT 128E				
	J	JCSAT-3A				
128.20 E	KOR	COMS-128.2E	2010-032A	Cheollian, Coms 1	128.3 E	C1.141
130.00 E	RUS	GALS-5				
	CHN	SINOSAT-3C	2011-047A	Zhongxing-1A = Chinasat 1A	129.8 E	C1.142
	RUS	TOR-10M				
	RUS	PROGNOZ-5				
	CHN	DFH-3A-OD				
	CHN	CHNSAT-130E				
	CHN	CHNSAT-2-130E				
	CHN	CHINASAT-4	2010-064A	Zhongxing 20A	1300 E	C1.143
131.00 E	CHN	APSTAR-1				
132.00 E	J	JCSAT-FO-132E	2006-010A	JCSAT 9, 5A	132.0 E	C1.146
	J	D-STAR-1				
	J	N-STAR-A				
	J	N-STAR-A2				
	VTN	VINASAT-4A2	2008-018A	Vinasat -1	131.9 E	C1.145
	J	N-STAR-F				
	J	N-SAT-M-132E				
	VTN	VINASAT-4A3	2012-023B	Vinasat- 2	131.9 E	C1.144
	VTN	VINASAT-TTC				
134.00 E	CHN	APSTAR-2	2005-012A	Apstar 6	134.0 E	C1.147
	CHN	CHINASAT-134E				
	TON	TONGASAT C/KU-2				
	TON	TOGASAT-2/134E				
	TON	TONGASAT AP-2				
136.00 E	J	JCSAT-FO-136E	2002-035B	N-Star 3 (N-Star c), i=2.238	136.0 E	C2.45
	J	D-STAR-2				
	J	N-STAR-B				
	J	N-STAR-B2				
	J	N-STAR-E				
138.00 E	CHN	APSTAR 5-KU	2004-024A	Telstar 18 (Apstar 5)	138.00E	C1.148
	CHN	CHINASAT-138E				
	TON	TONGASAT C/KU-3				
	TON	TONGASAT 2/138E				
	TON	TONGASAT AP-3				
140.00 E	RUS	LOUTCH-4				
	RUS	STATSIONAR 7	2013-077A	Ekspress AM-5		Expected
	RUS	EXPRESS-10				
	RUS	EXPRESS-10KA				
	J	MTSAT-140E	2005-006A	Himawari-6, MTSAT-1R	140.0 E	C1.151
	J	MTSAT-B-140E				
	CHN	CHINASAT-32				
	CHN	COMPASS-140E	2010-001A	Beidou DW 3, G1	140.0 E	C1.149
	j	GMS-140E				
	J	MTSAT-C-140E				
	RUS	VOLNA 6				
	RUS	EXPRESS-10B	2005-023A	Ekspress AM-3	140.0 E	C1.150
140.40 E	CHN	CHINASAT-35B				
142.00 E	CHN	APSTAR-142E				
C	THA	THAICOM-G3K	1999-033A	Chinasat 5A, ZX-5A	142.0 E	C1.152
143.00 E	J	WINDS-A	2008.007A	Kizuna (Winds)	143.0 E	C1.153
143.50 E	G	INMARSAT-3 POR-3				
	G	INMARSAT-4 143.5E	2005-009A	Inmarsat 4 F1, i=2.6	143.5 E	C2.46
143.72 E	J	N-SAT-143.72E				
144.00 E	J	JMCS-1				
	J	N-SAT-146				
	J	JMCS-C2-X	2008-038A	Superbird C2	143.9 E	C1.154
	J	JMCS-1R				
	J	SUPERBIRD-C				
	J	SUPERBIRD-C2				

144.50 E	CHN	CHINASAT-35C				
145.00 E	RUS	LOUTCH-10, suspdended				
	RUS	STATIONAR-16, suspended				
	RUS	EXPRESS-11, suspended				
	RUS	VOLNA-6R, suspended.				
	USA	USGON 6				
	J	MTSAT C-145E				
	J	MTSAT-B-145E	2006-004A	MTSAT-2	145.0 E	C1.155
146.00 E	INS	PALAPA PAC-KU 146 E,s	2006-059A	Kiku-8 (ETS VIII), i=3.2	145.8 E	C2.47
	INS	PALAPA PAC C 146E,susp				
	J	ETS-8				
148.00E	MLA	MEASAT-2	1996-063B	Measat-2 = AfricaSat-2, i=5.3	148.0 E	C2.48
	MLA	MEASAT-148E				
	MLA	MEASAT-2R				
150.00 E	J	JCSAT-1	1997-075A	JC-Sat 5, i=3.2,	150.0 E	C2.49
	USA	USGCSS PH3B W PAC-3				
	J	N-SAT-M-160E	2000-001A	USA 148, DSCS III B-08, I=4.5	149.8 E	2C2.26
	J	JCSAT-1R				
	J	JCSAT-FO-150E				
150.50 E	INS	PALAPA-C4	1996-030A	Palapa C2, i=3.2	150.5 E	C2.50
152.00 E	AUS	AUSSAT B 152E MOB	2007-044A	Optus D2	152.0 E	C1.156
	AUS	AUSSAT B 152E MXL				
	AUS	AUSSAT B 152E				
	USA	USGAE-9R	2001-009A	USA 157 (Milstar-2F2), i=6.6	152.1 E	2C2.27
154.00 E	J	JCSAT-2	2002-015A	JC-SAT 8, 2A	154.0 E	C1.157
	J	JCSAT-2R				
	J	JCSAT-FO-154E				
156.00 E	AUS	AUSSAT B 156E S	2009-044B	Optus D3	156.0 E	C1.159
	AUS	AUSSAT B 156E R	2003-028B	Optus C1 (Defense C1)	156.0 E	C1.158
	AUS	AUSSAT B 156E				
	AUS	AUSSAT B 156EMOB				
	AUS	AUSSAT B 156E MXL				
	AUS	AUSSAT B 156E MC				
	AUS	AUSSAT B 156E NZ				
	AUS	ADF 156E GOV				
	AUS	AUSSAT C 156E GOVR				
	AUS	AUSSAT C 156E FSS				
	AUS	AUSSAT C 156E GOV				
	AUS	AUSSAT D 156E FSS				
157.00 E	USA	INTELSAT 5A 157E	1995-023A	Intelsat VIIA F-1, i=2.0	157.0 E	C2.51
	USA	INTELSAT8 157E				
	USA	INTELSAT6 157E				
	USA	INTELSAT7 157E				
158.00 E	J	JMCS-3A, suspended				
	J	SUPERBIRD-A2-R, suspended				
	J	SUPERBIRD-A, suspended.				
	J	SUPERBIRD-A2, suspended.				
160.00 E	AUS	AUSSAT B 160E R	2006-043B	Optus D1	160.0 E	C1.161
	AUS	AUSSAT B 160E MOB				
	AUS	AUSSAT B 160E MXL				
	AUS	AUSSAT B 160E S				
	AUS	AUSSAT B 160E MC				
	AUS	AUSSAT B 156E				
	AUS	AUSSAT B 160E NZ				
	CHN	COMPASS-160E	2010-057A	Beidou DW 6, G4	160.0 E	C1.160
162.00 E	J	JMCS-3B	2000-012A	Superbird 4, B2	162.0 E	C1.162
	J	N-SAT-162E				
	J	SUPERBIRD-B2-R				
	J	CHINASAT-163E				
	J	SUPERBIRD-B2-KA				
	J	SUPERBIRD-B				
163.00 E	CHN	CHINASAT-163E	1994-043A	Apstar 1. i=8.0	163.1 E	C2.52
164.00 E	AUS	AUSSAT B 164E MOB	1994-055A	Optus B3, i=5.2	164.0 E	C2.53
	AUS	AUSSAT B 164E				
	AUS	AUSSAT B 164E MXL				
166.00 E	USA	USASAT-14H	2012-030A	Intelsat 19, IS 19	166.0 E	C1.164
	RUS	PROGNOZ-6	2012-012A	Cosmos 2479	165.9 E	C1.163
	USA	USASAT-60B				
167.00 E	RUS	VSSRD-2	2011-074B	Luch-5A, i=4.08	167.1 E	C1.166
	RUS	VSSRD-2M	2011-032A	Tian Lian 1-02	167.0 E	C1.167
169.00 E	USA	USASAT-14G	1998-065A	Intelsat 8, PAS 8	169.0 E	C1.165
	USA	USASAT-60J				
172.00 E	USA	FLTSATCOM- W PAC	2005-052A	AMC 23	172.0 E	C1.168
	USA	FLTSATCOM-C W PAC-1				
	USA	KASATCOM-5				
	USA	USASAT-14K	1998-016A	USA 138 (UFO F8), i=5.8	171.5 E	2C2.28
	USA	USASAT-60A				
175.00 E	USA	USGCSS PH3 W PAC	2007-046A	USA 195 (WGS F1)	175.0 E	2C1.5
	USA	USGCSS PH3B W PAC				
	USA	USGOVSAT-12				
176.80 E	CHN	CTDRS-2-176.8E, suspended				
177.00 E	USA	INTELSAT7 177E				
177.50 E	USA	MILSTAR 14				
	USA	USGAE 4				

178.00 E	G USA USA USA USA	INMARSAT-3 POR-2 INTELSAT6 178E INTELSAT9 178E INTELSAT7 178E INTELSAT8 178E	1996-070A	Inmarsat 3-F3, i=0.9	178.1 E	C2.54
180.00 E	USA USA USA USA	USGCSS PH3 W PAC-2 INTELSAT7 180E USGCSS PH3B W PAC-2 INTELSAT5 PAC3	1995-038A	USA 113, DSCS III B=07, I=8.5	179.8 E	2C2.29
177.00 W	HOL HOL USA USA HOL HOL HOL HOL	INTELSAT5 183E INTELSAT IBS 183E FLTSATCOM-C W PAC-2 IRIS-8A INTELSAT5A 183E INTELSAT8 183E INTELSAT7 183E NSS-19	2011-056A	Intelsat 18, IS-18	180.0 W	C1.169
			2012-009A	USA 234, MUOS, i=4.4	176.9 W	2C2.30
			2002-015B	Astra 3A, i=1.3	176.9 W	TLE Feb 2014
			2009-008A	NSS 9	177.0 W	C1.170
174.00 W	USA	TDRS 174W	2002-055A	TDRS-10, i=1.95	174.3 W	C2.55
171.00 W	USA	TDRS WEST	2013-004A	TDRS 11	170.9 W	C1.171
170.00 W	RUS RUS RUS RUS RUS RUS	TOR-5M STATIONAR-10A VOLNA-7 STATIONAR-D2 STATIONAR 10 GALS-4 TOR-5				
168.00 W	RUS RUS	POTOK-3 FOTON-3				
167.50 W	USA	TDRS 167.5W	1991-054B	TDRS 5, i=13.0	167.6 W	C2.56
165.00 W	USA	USGON-4	2000-024A	USA 149 (DSP F20), i=8.8	165.4 W	2C2.31
164.20 W	USA	TDRS 164.2W				
160.00 W	RUS	ESDRN				
159.00 W	RUS	PROGNOZ-7				
150.00 W	USA	USGAE-10R	1995-060A	USA 115(Milstar DSF-2), i=10.9	150.0 W	2C2.32
145.00 W	USA USA	USGON-7 FLTSATCOM-C W PAC-3				
144.00 W	USA USA USA USA USA	USLL-PAC P92-6 P-197-2 USTRO-2 USCSID-W2				
142.00 W	G G	INMARSAT-3 POR EAST INMARSAT-2 POR EAST	1991-018A	Inmarsat 2-F2, i=9.2	142.0 W	C2.57
141.00 W	USA USA USA USA USA	P-92-5 P-197-3 USLL-PAC2 USTRO-3 USCSID-W1	2001-046A	USA 162 (SDS 3F3), i=6.8	141.2 W	2C2.33
139.00 W	USA	USASAT-22I	2000-081B	GE 8 (Aurora 3), AMC-8	139.0 W	C1.172
137.00 W	USA USA	USASAT-22G USASAT-22J	2000-054B	GE 7, AMC-7	137.0 W	C1.173
135.00 W	USA USA USA USA USA USA	GOES WEST USGCSS PH3B E PAC USASAT-21A GOES-WEST-1 USASAT-22K GOES WEST-2	2004-003A 2003-008A 2010-008A	AMC-10 (GE 10) USA 167 (DSCS III A-3), i=2.1 GOES 15	135.0 W 135.3 W 134.8 W	C1.175 2C234 C1.174
133.00 W	USA USA USA USA	USASAT-22A USASAT-35Y USASAT-50B LM RPS-133W	2005-041A	Galaxy 15	133.0 W	C1.176
131.00 W	USA USA	USASAT-22H USASAT-35A	2004-017A	AMC-11 (GE-11)	131.0 W	C1.177
130.00 W	USA USA	USGCSS PH3 E PAC-2 USGCSS PH3B E PAC-2	1997-065A	USA134(DSCS III F10), i=6.9	130.1 W	2C235
129.00 W	USA CAN	USASAT-24N CAN-BSS7 TTC	2008-063A 2003-013B	Ciel 2 Galaxy 12	128.8 W 129.0 W	C1.179 C1.178
128.00 W	USA	ASC-1				
127.00 W	USA USA USA USA J	USASAT-35C USASAT-24O USASAT-50A USNN-3 N-SAT-127W	2003-044A	Galaxy 13, Horizons-1	127.0 W	C1.180
125.00 W	USA G USA USA	USASAT-22B AM-SAT 125W USASAT-50C USASAT-35D	2005-030A	Galaxy 14	125.0 W	C1.181
			2008-038B	AMC 21	124.9 W	C1.182
123.00 W	USA USA USA	USASAT-24P USASAT-35E USASAT-60H	2008-024A	Galaxy 18	123.0 W	C1.183
121.00 W	USA PNG USA	USASAT-31G PACSTAR-L4 USASAT-23G	2003-034A 2013-058A	Galaxy 23, Echostar 9, Telstar 13 Sirius FM-6	121.0 W 120.5 W	C1.184 C1.185
120.00 W	USA	MILSTAR 6	2013-041A	USA 244, WGS SV-6	121.9 W	2C1.6
119.00 W	USA USA	USABSS-10 USABSS-7	2004-016A	DirectTV 7S	119.0 W	C1.186

118.70 W	CAN CAN CAN CAN	ANIK E-D CANSAT KA-SX CANSAT KA-5 CANSAT-18	2007-009A 2002-006A 2010-010A	Anik F3 EchoStar 7 Echostar 14	118.7 W 118.8 W 118.9 W	C1.189 C1.187 C1.188
116.80 W	MEX MEX MEX	MORELOS-2 MEXSAT 116.8 KU EXT SATMEX-8	2013-012A	Satmex 8	116.8 W	C1.190
116.15 W	USA	USASAT-28G				
115.00 W	G USA	IOMSAT-11A USASAT-28G	2006-049A 2011-059A 2001-018A 1998-070A 2001-012A	XM Radio 4 (Blues) ViaSat-1 XM Radfio 1 (Roll) Satmex 5, i=0.6 Sirius XM-2 (Rock)	115.2 W 115.1 W 115.2 W 114.9 W 115.3 W	C1.193 C1.194 C1.191 C2.58 C1.192
114.90 W	CAN MEX MEX MEX	CANSAT-17 MEXSAT 114.9L-CEXT-X MEXSAT 114.9 KU EXT MEXSAT-114.9C-KU	2012-075B	Mexsat 3	114.8 W	TLE Feb 2014
113.50 W	MEX	MORELOS 1				
113.00 W	MEX MEX MEX MEX MEX	SOLIDARIDAD 2 SOLIDARIDAD 2M SOLIDARIDAD-2MA SATMEX-7 MEXSAT 113KU EXT	2006-020A	Satmex 6	113.0 W	C1.195
			1993-074A	USA 97, DSCS III B-10, i=8.8	111.7 W	2C2.36
111.10 W	CAN CAN CAN CAN C	ANIK-F2 CANSAT KA-4 CANSAT-24 ANIK E-B	2004-027A 2006-054A 2009-035A	Anik F2 Wildblue 1 Terrestar 1, i= 4.0	111.1 W 111.2 W 111.0 W	C1.196 C1.197 C2.59
110.20 W	USA	USABSS-6	2006-003A	EchoStar 10	110.2 W	C1.198
110.00W	USA	USABSS-5	2008-035A 2002-023A	Echostar 11 DirecTV-5	110.1 W 110.1 W	C1.200 C1.199
109.20 W	CAN	CANSAT-33				
107.30 W	USA CAN CAN CAN CAN	LM-RPS-107.3W CANSAT-34 ANIK-F1 ANIK E-A	2012-035A 2013-014A 2005-036A 2000-076A	Echostar 17 Anik G1 Anik F1R Anik F1	107.1 W 107.3 W 107.3 W 107.3 W	C1.204 C1.201 C1.203 C1.202
106.50 W	CAN	MSAT	1996-022A	MSAT, i=56	106.5 W	C2.60
105.00 W	USA USA USA USA USA USA USA G	ATS-5 FLTSATCOM-C E PAC-1 USASAT-23H USASAT-31K USASAT-35G GIBSAT A1	2004-041A 1995-057A 2013-050A 2006-054B 2009-033A	AMC-15 USA 114(UFO F6), i=7.6 USA 246, AEHF SV-3, i=4.8 AMC-18 GOES 14	105.0 W 105.2 W 105.3 W 104.9 W 105.4 W	C1.206 2C2.38 2C2.37 C1.207 C1.205
103.00 W	USA USA USA CAN	USASAT-24F USASAT-31L USASAT-35H CAN-BSS19	1996-054A 2005-015A 2011-035A 2007-032A 1995-019A	GE 1 Spaceway 1 SES-3 DirecTV 10 AMSC-1, i=8.1	103.0 W 102.9 W 103.1 W 102.8 W 103.3 W	C1.209 C1.210 C1.208 C1.211 C2.61
102.80 W	USA	USASAT-70W	2009-075A	DirecTV 12	102.7 W	C1.212
101.20 W	USA	USABSS-1	2010-061A	SkyTerra	101.3 W	C1.213
101.00 W	USA USA USA USA USA USA	ACS-1 MCS-1 USASAT-31M USASAT-35I MSV-1A USASAT-7D	2006-043A 2010-016A 2001-052A	DirecTV 9S SES-1 DirecTV-4S	101.1 W 101.0 W 101.2 W	C1.215 C1.216 C1.214
100.80 W	USA	USABSS-2	2005-019A	DirecTV-8	100.8 W	C1.217
100.00 W	USA USA	FLTSATCOM-E PAC FLTSATCOM-C E PAC-2	1995-003A	USA 108, UFO F4,, i=8.2	99.8 W	2C2.39
99.20 W	USA	USASAT-70V	2008-013A	DirecTV 11	99.2 W	C1.218
99.00 W	USA USA USA USA	USASAT-35J USASAT-31N USASAT-60G USASAT-24J	2005-046B 2006-023A	Spaceway 2 Galaxy 16	99.1 W 99.0 W	C1.219 C1.220
98.00 W	G G	INMARSAT-3 AOR WEST3 INMARSAT-4 98W	2008-039A	Inmarsat 4F3, i=3.0	97.7 W	C2.62
97.00 W	USA USA	USASAT-24D USASAT-35K	2008-045A	Galaxy 19	97.0 W	C1.221
96.80 W	USA	USOBO-2				
96.00 W	USA	USASAT-28L	2009-034A 2000-038A	Sirius FM5 Echostar 6, i=1.7	96.0 W 96.2 W	C1.222 C2.63
95.00 W	USA USA USA USA G USA USA	COMSTAR D-2 USASAT-23F USASAT-24L USASAT-35L UKSAT-10 USASAT-60F USASAT-700	2007-036A 2002-030A	Spaceway 3 Galaxy 3C	94.9 W 95.0 W	C1.224 C1.233
93.00 W	USA USA G	USASAT-24S USASAT-35M ICO-G	1997-026A 2008-016A	Telstar 5 = Galaxy 25 ICOG1, i=4.4	93.1 W 928 W	C1.225 C2.64
92.00 W	B	SBTS B4	1998-006A	Brasilsat B3, i=1.5	92.0 W	C2.65
91.10 W	CAN	CAN-BSS2 TTAC	2012-026A	Nimiq 6	91.1 W	C1.226
91.00 W	USA USA USA USA CAN	USASAT-35N USASAT-9A USASAT-24K USASAT-60E CANSAT-30	2007-016B	Galaxy 17	91.0 W	C1.227

90.00 W	USA USA	MILSTAR 1 USGAE-1	2003-012A	USA 169 (Milstar-2 F4), i=5.2	89.91 W	2C2.40
89.00 W	USA USA USA	USASAT-24E USASAT-31S USASAT-35O	2005-022A	Intelsat Amer.8, Telstar 8, G-28	89.0 W	C1.228
87.00 W	USA USA	USASAT-24T USASAT-35P	2013-075A 2011-049A	Tupac Katari, TKSat 1 SES-2	87.0 W	Expected C1.229
86.50 W	CAN	CAN-BSS9	1999-027A	Nimiq	86.5 W	C1.230
85.20 W	USA	USASAT-28K	2010-053A 2002-015B	Sirius XM-5 Astra 3A	85.2 W	C1.231 TLE
85.10 W	USA	USASAT-28F	2005-008A	XM Radio 3 (Rhythm)	85.1 W	C1.232
85.00 W	USA USA USA USA	USASAT-24U USASAT-9C USASAT-35Q USASAT-31U	2004-048A	AMC 16	85.0 W	C1.233
84.00 W	B	B-SAT P	2000-046A 2000-007A	Brasilsat B4 Hispasat 1C	83.9 W	C1.234 TLE Feb 2014
83.00 W	USA USA	USASAT-24V USASAT-35R	2003-024A	AMC-9 (GE-12)	83.0 W	C1.235
82.00 W	CAN CAN CAN	CANSAT KA-3 CANSAT-31 CAN-BSS1 TTAC	2008-044A	Nimiq 4	82.0 W	C1.236
81.00 W	ARG	P-P-SAT-1	1998-063B 1997-002A 1990-021A	AMC-5 (GE5), i=3.0 GE 2, i=1.9 Intelsat 6 F-3, i=9.9	80.9 W 80.8 W 80.6 W	C2.68 C2.66 C2.67
79.00 W	USA USA USA USA	TDRS-CENTRAL TDRS-C2 USASAT-24W USASAT-35T	2010-006A	Intelsat 16	79.0 W	C1.237
78.00 W	URG	VENESAT-1	2008-055A	Venesat-1, Simon Bolivar	78.0 W	C1.238
77.00 W	USA	USASAT-24Q	2002-039A 1995-073A 1992-037A 2011-054A	EchoStar 8 Echostar 1 USA 82, DSCS III B-12, i=10.1 QuetzSat-1	76.9 W 77.1 W 76.5 W 77.0 W	C1.241 C1.239 2C2.41 C1.240
75.00 W	USA B B USA USA	GOES EAST B-SAT-S SISCOMIS-4 GOES-EAST-1 GOES-EAST-2	2006-018A 2012-062A	GOES N, i=0.34, Goes 13 Star One C3	74.7 W	C1.243 C1.242
74.00 W	USA USA USA USA	USASAT-22E USASAT-15B, suspended USASAT-60L, suspended USASAT-35V, suspended.				
72.00 W	ARG USA	NAHUJEL-C USASAT-35W	2009-050A 2000-067A	Nimiq 5 GE 6, AMC-6	72.7 W	C1.244 C1.245
70.00 W	B B B B	SBTS B1 SBTS C1 SISCOMIS-3 B-SAT-1C	2008-018B	Star One C2	70.0 W	C1.246
68.00 W	USA B	MILSTAR 8 B-SAT-1J	2010-039A	USA 214 (AEHF SV-1), i=2.6	68.1 W	2C2.42
67.00 W	CLM/ASA	SIMON BOLIVAR 2	1999-060A 1997-050A	GE 4, AMC-4 AMC-3, GE-3	67.0 W	C1.247 C1.248
65.00 W	B B B B	SBTS B2 SISCOMIS-2 B-SAT-1R B-SAT-R	2007-056A	Star One C1	65.0 W	C1.249
63.00 W	B B	B-SAT E B-SAT I	1995-016A 2011-021A	Brasilsat B2, i=5.0 Telstar 14 (Estrela do Sul 2)	63.2 W	C2.69 C1.250
62.00 W	USA	TDRS 62W				
61.50 W	USA USA	USABSS-8 USABSS-17	2012-065A 2003-033A 1997-059A	Echostar 16 Rainbow 1, Echostar 12 Echostar 3	61.5 W	C1.253 C1.251 C1.252
61.00 W	B B B USA	SBTS B3 B-SAT-O B-SAT-1O USMB-1	2009-054A 2013-006A	Amazonas 2 Amazonas 3	61.0 W	C1.254 C1.255
60.00 W	USA	GOES 60W				
58.00 W	USA USA USA	USASAT-25G USASAT-26G-3 USASAT-26G	2012-045A	Intelsat 21	58.0 W	C1.256
55.50 W	USA USA USA	INTELSAT8 304.5E INTELSAT9 304.5E INTELSAT7 304.5E	1999-071A 1998-037A	Galaxy 11 Intelsat 805	55.6 W	C1.257 C1.258
55.00 W	G	INMARSAT-2 AOR WEST				
54.00 W	G G	INMARSAT-3 AOR WEST2 INMARSAT GSO-2J	1997-027A	Inmarsat 3-F4, i=3.4	53.9 W	C2.70
53.00 W	USA USA USA USA G	INTELSAT7 307E INTELSAT IBS 307E, susp. INTELSAT8 307E, suspended INTELSAT9 307E, suspended INMARSAT GSO-2L	2012-057A	Intelsat 23	53.0 W	C1.259
52.50 W	USA	USGCSS PH3B W ATL	2003-040A 2013-024A	USA 170 (DSCS III B-6), i=0.52 USA 243, WGS SV-5	52.7 W	ZARYA 2C1.7
50.00 W	USA USA USA	INTELSAT7 310E INTELSAT10 310E INTELSAT9 310E	2000-072A	PAS 1R, Intelsat 1R	50.0 W	C1.260
49.40 W	USA	USOBO 3	1994-084A	USA 107 (DSP F17), i=12.9	49.1 W	2C2.43
49.00 W	USA	TDRS 49W	1988-091B	TDRS-West, i=14.3	48.7 W	C2.71
48.00 W	B	B-SAT-1W				

47.00 W	USA	USASAT-25E	1994-064A	NSS 703, Intelsat VII F-3,i=3.7	47.0 W	C2.72
	G	GIBSAT-8B	1998-014A	NSS 806	47.5 W	C1.261
46.00 W	USA	TDRS 46W	1993-003B	TDRS 6, i=12.5	45.9 W	C2.73

45.00 W	USA	USASAT-13I	2009-064A	Intelsat IS-14	45.0 W	C1.263
	USA	USASAT-13I-2	2010-034A	Echostar 15	45.1 W	C1.262
	USA	USASAT-25D				
	USA	USASAT-55G				
	USA	USASAT-60I				
43.00 W	USA	USASAT-55F	2007-044B	Intelsat IS-11	43.0 W	C1.264
	USA	USASAT-25C	2000-043A	PAS 9 Intelsat 9, i=1.0	43.1 W	C2.74
	USA	USASAT-26C				
	USA	USASAT-50D				
42.50 W	USA	USGCCS PH3 MID- ATL				
	USA	USGCCS PH3B MID-ATL				
41.00 W	USA	TDRS-EAST-ISS				
	USA	TDRS EAST	2002-011A	TDRS 9, i=2.6	41.1 W	C2.75
40.50 W	HOL	INTELSAT5A 319.5E	2013-026A	SES-6	40.5 W	C1.265
	HOL	INTELSAT K 319.5E				
	HOL	INTELSAT7 319.5E				
	HOL	INTELSAT8 319.5E				
	HOL	NSS-18				
	HOL	NSS-35				
	HOL	NSS-57, suspended				
HOL	INTELSAT IBS 319.5E					
39.00 W	USA	USGAE-17R	1994.009A	USA 99 (Milstar DSF-1), i=9.8	39.0 W	2C2.44
	G	DJCF-2A				
38.00 W	USA	USGON-5				
37.50 W	USA	USASAT-25A	2009-009A	Telstar11N	37.56 W	C1.266
	USA	USASAT-26A	2005-003A	AMC 12, NSS 10	37.4 W	C1.267
	USA	USASAT-25A-1				
34.50 W	USA	INTELSAT8 325.5E	2004-031A	Amazonas 1	36.0 W	C1.268
	USA	INTELSAT6 325.5E	2002-016A	Intelsat 903	34.5 W	C1.269
	USA	INTELSAT9 325.5E				
34.00 W	G	SKYNET-4D				
	G	SKYNET-4M	2001-005B	Skynet 4F, i=7.1	34.0 W	C2.76
33.50 W	G	SKYNET-5A				
	G	UKDIGISAT-3	2010-065A	HYLAS-1	33.5 W	C1.270
31.50 W	G	UKDIGISAT-4A TT&C				
	USA	INTELSAT9 328.5E	2008-034A	Protostar 1, Intelsat 25	31.5 W	C1.271
30.40 W	USA	INTELSAT8 328.5E				
	USA	USDKH2				
30.00 W	E	HISPASAT-2B KU				
	E	HISPASAT-2A KU	2006-007A	Spainsat	30.0 W	C1.272
	E	HISPASAT-2C3 KU	2002-044A	Hispasat 1D	30.0 W	C1.273
	E	HISPASAT-2D KU	2010-070A	Hispasat 1E	30.0 W	C1.274
	USA	USMB-2				
	USA	USGGR-3				
	USA	USCSID-E4				
	E	HISPASAT-2AKA				
	E	HISPASAT-2B 30KA				
	E	HISPASAT-2AX				
	E	HISPASAT-1DKU				
E	HISPASAT-1					
29.50 W	USA	INTELSAT8 330.5E				
	USA	INTELSAT9 330.5E	1993-066A	Intelsat 701, i=1.7	29.5 W	C2.77
	USA	INTELSAT6 330.5E				
27.50 W	USA	INTELSAT7 332.5E				
	USA	INTELSAT6 332.5E				
	USA	INTELSAT8 332.5E				
	USA	INTELSAT9 332.5E	2003-007A	Intelsat 907	27.5 W	C1.275
26.50 W	RUS	STATSIONAR-D1	1998-029A	USA 139 (Adv.Orion 2), i=9.0	26.4 W	2C2.45
	RUS	VOLNA-13				
	RUS	TOR-1M				
	RUS	STATSIONAR-17				
	RUS	GALS-1				
26.00 W	G	DJCF-2B				
25.00 W	RUS	GALS-9				
	RUS	VOLNA-1A				
	RUS	STATSIONAR-8				
	RUS	TOR-9M				
24.50 W	USA	INTELSAT7 335.5E				
	USA	INTELSAT6 335.5E				
	USA	INTELSAT8 335.5E				
	USA	INTELSAT9 335.5E	2002-027A	Intelsat 905	24.5 W	C1.276
24.00 W	RUS	PROGOZ-1				
	USA	USCSID-E3				
23.00 W	USA	FLTSATCOM-ATL				
22.50 W	USA	FLTSATCOM-C E ATL-1	1996-042A	USA 127 (UFO F7), i=6.8	22.8 W	2C2.46
	USA	KASATCOM-2				
22.00 W	HOL	NSS-16	2012-007A	SES 4	22.0 W	C1.277
21.50 W	HOL	INTELSAT K 338.5E				
	HOL	INTELSAT5A 338.5E				
	HOL	INTELSAT8 338.5E				
	HOL	INTELSAT7 338.5E				
20.20 W	BEL	SATCOM-4/20.2W				
20.00 W	USA	INTELSAT7 340E				
	USA	INTELSAT6 340E				
	USA	INTELSAT8 340E				
	USA	INTELSAT9 340E				
	HOL	NSS-31	2002-019A	NSS-7	20.0 W	C1.278

19.00 W	USA	USMB-3				
18.00 W	USA	INTELSAT7 342E	2001-024A	Intelsat 901	18.0 W	C1.279
	USA	INTELSAT8 342E				
	USA	INTELSAT9 342E				
17.80 W	G	SKYNET-5E	2008-030A	Skynet 5C	17.8 W	C1.280
16.00 W	RUS	ZSSRD-2	2012-061A	Luch 5B, i=1.0	15.9 W	C2.78
	RUS	WSDRN-M	2012-019A	USA 235, AEHF 2, i=2.9	16.5 W	2C2.47
	RUS	WSDRN				
15.50 W	USA	FLTSATCOM-C E ATL-2	1989-077A	USA46 (FLTSATCOM F8),i=12.0	15.4 W	2C248
	G	INMARSAT-3 AOR EAST	1996-053A	Inmarsat 3-F2	15.5 W	C1.281
	G	INMARSAT-2 AOR EAST				
15.00 W	USA	USASAT-14L	1999-059A	Orion 2, Telstar 12	15.0 W	C1.282
14.50 W	RUS	GOMS-1M				
	RUS	GOMS 14.5W				
14.00 W	RUS	VOLNA-2	2002-029A	Ekspress A4, i=3.7	14.0 W	C2.79
	RUS	EXPRESS-2B				
	RUS	EXPRESS-2				
13.50 W	RUS	POTOK-1				
	RUS	FOTON-1				
13.00 W	USA	P92-4				
	USA	P-197-4				
	USA	USCSID-E2				
	USA	USTRO-4				
12.50 W	USA	USLL-ATL2				
	F/EUT	EUTELSAT 3-12.5W	2002-040A	Atlantic Bird 1, Eutelsat 12W A	12.5 W	C1.283
	F	F-SAT-KU2-E-12.5W				
12.00 W	USA	USGCSS PH3B ATL				
	USA	USGOVSAT-8	2009-068A	USA 211 (WGS F3)	12.0 W	2C1.8
	USA	TDRS 12W				
11.00 W	RUS	EXPRESS-3	2009-007A	Ekspress AM-44	11.0 W	C1.284
10.00 W	USA	USLL-ATL	2012-033A	USA 236, SDS 3 F7, i=3.7	9.9 W	2C2.49
	USA	P92-3	2011-011A	USA 227 (NROL 27), i=4.81	10.0 W	2C2.48
	USA	P-197-5				
	USA	USMB-4				
	USA	USCSID-E1				
	USA	USTRO-5				
	F	MSG-S2				
9.50 W	RUS	KUPON-3				
8.00 W	F	TELECOM-2A, suspended	2001-042A	,Atlantic Bird 2, Intelsat 8W A	8.0 W	C1.285
	F	TELECOM-3A, suspended				
	F	SYRACUSE-3C, suspended				
	F	SYRACUSE-31C, suspended				
	F	TELECOM-4A, suspended				
	F	VIDEOSAT-6-KA				
	F	F-SAT-KU-E-8W				
	F	VIDEOSAT-6				
7.00 W	EGY	NILESAT-103	2000-046B	Nilesat 102	7.0 W	C1.289
			2010-037A	Nilesat 201	7.0 W	C1.288
			2011-051A	Atlantic Bird 7, Eutelsat 7W A	7.5 W	C1.287
			2002-038A	Euelsat 8 West C	7.4 W	C1.286
5.00 W	F	TELECOM-2B	2002-035A	Atlantic Bird 3, Eutelsat 3W A	5.0 W	C1.291
	F	TELECOM-3B				
	F	SYRACUSE-3E	2006-033B	Syracuse 3B	5.2 W	C1.290
	F	VIDEOSAT-7-KA				
	F	TELECOM-4B				
	F	SYRACUSE-31E				
	F	SYRACUSE-4E				
	F	F-SAT-KU-E5W				
	F	VIDEOSAT-7				
4.00 W	ISR	AMOS 1-B	2003-059A	Amos 2	4.0 W	C1.292
	ISR	AMOS 2-B	2008-022A	Amos 3	4.0 W	C1.293
	ISR	AMOS 3-A	1998-035A	Thor III, i=3.1	4.3 W	C2.80
3.00 W	RUS	GALS-11	1997-042A	Agila 2 =ABS 3, i=2.4	3.1 W	C2.81
	RUS	STATIONAR-M2				
	RUS	INTERSPUTNIK-3W				
	RUS	TOR-11M				
	RUS	INTERSPUTNIK-3W-CK				
	RUS	INTERSPUTNIK-3W-Q				
1.00 W	G	SKYNET-4A	1990-079A	Skynet 4C, i=12.7	1.4 W	C2.82
	G	SKYNET-4J				
	USA	INTELSAT8 359E	2004-022A	Intelsat 10-02	1.0 W	C1.294
	G	SKYNET-5B				
	USA	INTELSAT9 359E				
	USA	INTELSAT10 359E				
	USA	INTELSAT7 359E				
	NOR		2008-006A	Thor 2R, Thor 5	0.7 W	C1.296
	NOR		2009-058B	Thor 6	0.8 W	C1.295