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PAPER SATELLITES AND SPACE NETWORKS

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Abstract

A Comparative Table of notified space networks and satellites present at or near nominal orbital positions illustrates the occupation of the geostationary orbit. Clear distinction has to be made between a network as transmission of information on one hand and a satellite as a solid body orbiting the Earth on the other hand. Paper satellites do not exist but there is an overabundance of over 2500 separate requests for transmission frequencies. The situation has been made transparent by showing which networks are fit to transmit by having both, a notification by the ITU as well as an active satellite in a correct orbital position. There are 802 notified networks and at least 84 networks in the Broadcasting Satellite Service operated on 372 satellites. More than 165 notified networks do not have a satellite at relevant orbital position.

1. INTRODUCTION

The term “paper satellites” gives the impression that some satellites are not real but exist on paper only. In fact, the number of active satellites in the most populated region, the geostationary orbit, **GEO**, at the end of June 2008 was 372.

On the other hand, the number of requests for frequency bands for radio transmissions from satellites to ground stations exceeds 5000. The

requests exist only on paper until they have passed successfully through a coordinating process initiated by the International Telecommunication Union (ITU) and became “notified” space networks enjoying international recognition and protection. The ITU sieve is strict. In June 2008 only 802 networks in SNL, Section A1, made it and were supposed to transmit. The coordinating process is an attempt to prevent possible harmful interferences and eliminate interferences detected at a later stage.

In order to understand the problem at hand better, it is necessary to compare notified networks with reality, i.e. with active satellites in orbit. For that reason a Comparative Table has been set up listing side by side the “paper situation” of space communication networks with the “physical situation” of satellites in the geostationary orbit.

Also, the distinction between a network and a satellite has to be well understood. A space network is an electromagnetic transmission of information between radio stations in space and on the ground. A satellite is a solid body in outer space, in an orbit around the Earth. Official terminology, as well as its popular counterpart, evolved historically in such a way that the word “satellite” stands sometimes for the material body, sometimes for its function as the space component of a communication network. The present paper provides understanding. It is not a proposal for changing a widely used terminology.

2. THE COMPARATIVE TABLE

The operation of a space network depends on the presence of a satellite near the nominal orbital position of the network. There is

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tolerance in position because a transmission lobe covers with sufficient intensity a certain area. The ITU passed a rule that a satellite operating a space network has to be within an angle of 0.1 degree in latitude as well as longitude from the nominal orbital position.

The Comparative Table in the Annex shows the relation between “**notified space networks**” which enjoy international recognition and protection, and **active satellites** which are close to the nominal orbital position. Networks appear on the left, satellites on the right. The reference date for Networks is 3 June 2008, i.e. the date of issue of the ITU Space Network List. For satellites it is the end of June 2008.

The main parameter in the table is the nominal position (**Nom. long.**) shown in the first column in bold characters. All notified networks operating at the same nominal position are contained within horizontal lines. On the right, between the same horizontal lines, are satellites which could operate networks on the left.

Data on space networks have been taken from the ITU Quarterly Publication of the Space Network List¹ (**SNL**), Section A1, issue of 3 June 2008. The columns show a symbol for the notifying administration (**Adm**), for the organization operating the network (**Ntw org**), and the **Space Network Name**. The heading of that column in the SNL is “**Sat_name**”. As explained in the preface to the SNL, it identifies the space network, not the satellite. Names of networks are sometimes changed by operators, and some networks are known under more than one name. The last column shows the symbol for **frequency bands** according to table 1 of the preface to the SNL. E.g., the C band corresponds approximately to numbers 43 - 49, the

K_u band to 53 – 65, the K_a band to 75-80.

For satellites in the Broadcasting Satellite Services, BSS, Sections A10 and A11 of the SNL were used to supplement data of Section A1, in particular in cases when a satellite operates mostly networks in the BSS.

The right-hand half of the Comparative Table shows spacecraft launched before the end of June 2008. The first column gives the COSPAR international designator (**COSPAR Int. Desig.**) indicating the year of launch, the serial number of the launch in the year, and the serial letter of the object in the launch. The designator identifies the satellite in a unique way and for its entire lifetime.

The remaining columns show the **Satellite Name**, which sometimes is subject to a change², and **Status of Orbit** (see section 5). Notes concerning functions performed by the satellite, printed in red, appear on the same line or the line below, or in the left part of the table, wherever convenient. The notes are very brief in order not to extend the length of the table. More details on the satellite appear in the Encyclopedia of Satellites and Probes of the Czech Academy of Sciences³.

3. SPACE NETWORKS

The total number of entries in the **SNL**, Section A1, has grown rapidly in the past. It attained around 3000 entries back in 1998, it slightly exceeded 4000 entries in 2001 and attained 5770 in March 2007. Since that time, possibly reflecting new measures by the ITU, the number declined to 5164 entries in December 2007. It increased to 5507 in June 2008. Some networks are listed separately at different stages of coordination, thus the number of

separate networks is smaller than the number of entries. In the December 2007 issue of the SNL, there are 2940 separate networks only, a reduction of the “paper population” by 43%.

An administration wishing to bring a network into use has to submit an advance announcement to the ITU. The announcement appears in the SNL as class **A**. When a coordinating process to avoid possible harmful interference with existing networks is initiated, the network is denoted as class **C**. Its entry as class **A** is, in most cases, retained. If and when the process is successfully completed, the network is notified in the Master International Frequency Register and denoted as category **N**. As before, entries of the same network in classes **A** and **C** are frequently retained. A possible reason may be to preserve a record of changes which the network was subjected to in the course of the coordinating process. Thus, in the June 2008 issue of the SNL, Section A1, 802 networks were notified in the Master International Frequency Register and received international recognition and protection. From Sections A10 and A11, 84 networks in Broadcasting Satellite Service have been added, making thus a total of 886 Networks.

4. DUE DILIGENCE

The ITU has adopted measures, termed Due Diligence, to restrict the growth of space networks. Without these steps, the present number would have been even larger. A significant reduction is, however, in the hands of launching and operating agencies.

Administrations have to provide evidence of seriousness of intentions to establish a space network⁴ according to the ITU Resolution 49, Annex 2, of the World Radio Conference 2003. Among the many

data required are (i) Identity of the satellite network, (ii) Name of the satellite, and (iii) Orbital characteristics.

Item (i) refers to the term “space network” used in the title of the SNL.

Item (ii) refers to a satellite as a material body. Its unique identification is desirable. Launching names have the disadvantage of rather frequent changes. The COSPAR international designation is the best option for objects in orbit. It is unique, does not change but it is rarely used. It is assigned after a successful launch, therefore it is not available as pre-launch announcement.

Item (iii) refers, in the case of a GEO, to the geographic longitude of the nominal orbital position.

A summary of the data appeared in a table provided by the courtesy of the ITU⁵. The table lists the “ITU Name” as well as the “Commercial Name”. These two names are in most cases identical with the name of the space network and only rarely with the name of the satellite. The table lists networks in all three classes, A, C, N. That means, that only some of the networks have completed the coordinating process at the date of publication of the list.

The Administrative Due Diligence, together with the fees introduced in the Financial Due Diligence and Cost Recovery, and with the time limit of bringing into use, are very efficient measures adopted by the ITU for limiting the excessive number of applications for transmission frequencies.

5. SATELLITES IN THE GEO

For a meaningful comparison of space networks and satellites a reliable list of spacecraft and their positions in the GEO is required. The most authoritative information on objects

launched into outer space is provided by launching states. It appears in the UN Register in the form of governmental announcements⁶. Unfortunately it is not complete. An online searchable index listing all objects announced to the UN, as well as those not announced, appears at the same website. Additional information is, however, needed for computing actual positions of space objects at a given time. The best available and most reliable source of actual positions of objects in the geostationary orbit is the "Classification of Geosynchronous Objects" referring to situation at the end of each year⁷. It is based on the DISCOS database⁸ which uses as source of information the NASA Two-Line Elements⁹. These, in their turn, are based on observations of physical presence of satellites in orbit. Only objects larger than 1m can be tracked on a regular basis at the distance of the geostationary orbit. All active satellites can be tracked but small inactive objects cannot be routinely detected. The most recent issue of the "Classification" refers to the end of 2007. Results can be summarized as follows, showing the complexity of the population of the geostationary orbit:

- The total number of objects in and reasonably close to the geostationary orbit was 1150, 29 more than the year before, 68 more than two years before.

Table1, Objects with recently updated orbital elements:

- **Status C1:** 243 objects are controlled in longitude and latitude. These are suitable for transmissions to fixed antennas. Five satellites launched towards the end of 2007 were supplemented with data obtained in 2008 and have been added to that group. Launchings in the 12 years,

1996-2007, averaged 19 per year. In years 1993-1995 the rate was lower.

- **Status C2:** 75 objects are controlled in longitude only, requiring movable ground antennas. These objects have been launched in the 23 years 1985-2007. One satellite, ATS 3, survives from 1967.

- **Status D:** 458 objects are in a drift orbit passing through all longitudes. These could obviously not be associated with a nominal orbital position, just as the following group,

- **Status L1, L2, L3:** 145 objects are at a libration orbit, oscillating around the Eastern (92), Western (36), or both (17) stable points in the orbit,

Table 2, Objects without orbital elements determined during the last 6 months of 2007:

- **Status C:** 47 objects under control. Their recent orbital elements are not available in the NASA Two-Line Elements. Orbits of 36 objects out of those 47 can be determined from amateur observations. Most of these objects are used for governmental uses, such as reconnaissance or verification of international treaties. There are thus at least 11 active satellites in controlled orbits at unknown positions,

- **Status D, L1, L2:** a total of 7 objects, mostly retired satellites.

- **Status U:** Uncontrolled: 99 objects, mostly rocket stages and debris, a few payloads, without available orbital elements. These objects are old. The most recent three objects have been launched in 1998, 1994, and 1992 respectively.

- **Status UU:** uncontrolled un-catalogued: 67 objects, all of them debris, such as covers and restraint cables, or rocket bodies,

● **Status UI:** 146 unidentified objects which have been repeatedly observed but not correlated to a specific launch. 22 of these objects have provisional identification coinciding with objects of status C. and finally,

● **Status Ind:** 9 objects launched or maneuvered close to the end of 2007 of indeterminate status. Positions of five of the objects, all launched in November and December 2007, have been computed by P. Lála¹⁰, from one or more orbital elements determined in 2008. In the Comparative Table they appear under Status of Orbit **PL**.

Of interest to the problem of paper satellites are active objects at their nominal positions within ITU tolerances (Status C1), those controlled in longitude only (Status C2), objects of Status C, and objects of Status Ind.

Also considered were objects launched in the first half of 2008. Positions have been computed and listed by P. Lála, Status **PL**, as above, and/or by A. Vítek and published in the Encyclopedia (see ref. 3), Status **Enc**. The physical presence of all 372 satellites listed in the Comparative Table has been confirmed by data derived from observations.

The number of notified space networks in the ITU tables is larger than the number of active spacecraft in orbit. Allowance, however, has to be made to the fact that more than one space network can be operated on one satellite,

6. RELATING NOTIFIED SPACE NETWORKS WITH SATELLITES

Operators know which satellites operate which of the networks but do not always publish the fact. If such information is available, e.g., on the web, or if the name of the satellite is sufficiently close to the name of the network, a bullet ● was put near the

central line of the Comparative Table. An example is at nominal position 0.00 E. An ESA Meteosat network is operated by satellite 2006-049B, Meteosat 9. Very helpful in this respect was, e.g., the List of Satellites Approved to Provide Fixed-satellite Services in Canada¹¹.

In other cases, a possible match is a matter of conjecture. An example is at nominal position 4.00 E. Satellite 1997-049A, Hot Bird 3 = Eurobird 4, providing regional services in Europe in band K_u, may be operating networks EUTELSAT 2-4E or EUTELSAT 3-4E or both. Without more detailed information we cannot say if it operates also network EUTELSAT-KA-4E transmitting in band K_a or network TELECOM-4E transmitting in band C.

In case there is no satellite at a nominal position of a network, the network cannot transmit. Possibly a satellite is being prepared to take up the position and will be launched at a future time. An example is at nominal position 5.70 E, where network MEASAT-SA1 has no satellite to transmit from. There are 83 nominal positions with a total of 165 networks with no satellite at the relevant position. These networks could not operate at the end of June 2008.

There are also cases when a satellite has no notified network at its position. Such a satellite may have terminated its activities, or it may be a spare to be brought into use at a later date. In fact, most of satellites having no corresponding notified network, have a pending application in the coordinating process. An example is satellite 1997-071A, Sirius 2, at 31.5 E. It was moved from its previous position at 4.80 E, where it had its network SIRIUS 2. Its services at 4.80 E have been taken over by 2007-057A, Sirius 4, in May 2008. At the same time Sirius 2 was moved to its new position at

31.5 E, where corresponding networks have classes A and C, but have not been “notified” at the time of the shift of position.

In general, the table considerably restricts the number of possibilities of matching networks with satellites but in some cases more detailed information may be desirable.

7. CONCLUSIONS

There are no “Paper Satellites”. There is, however an overabundance of over 2500 separate requests for transmission frequencies. Many requests appear in the lists repeatedly, according to their status in processing and coordinating with existing space networks. The ITU instituted administrative and financial measures, called Due Diligence, to curb the excessive number of applications. Only networks which do not interfere with earlier comers receive international recognition and protection. The work of the ITU is essential for preventing harmful interference among space telecommunication networks and for providing a forum for removing interference whenever it appears. A

Comparative Table listing both, space networks and satellites, illustrates the situation at occupied nominal orbital positions. It is proposed to maintain and regularly update the Comparative Table.

At the end of June 2008, there were 372 satellites in orbit operating not more than 886 networks duly notified or planned. The actual communication traffic is considerably less than the numbers would suggest because 165 networks are at nominal positions with no satellite present. Moreover, even if a satellite is present, there is no confirmation that it operates **all** networks at the relevant position. The situation is in constant change and evolution for several reasons. New ventures have been undertaken, some networks or satellites have been sold to other operators of networks or owners of satellites and acquired new names in the process.

The usage of the term “satellite” is ambiguous. Its context has to be considered to find out whether reference is made to a material body, or to a function provided by that material body.

References

¹ ITU Space Network List, Section A1, Editions of 3 December 2007, 3 March and 3 June 2008, Sections A1, A10 and A11 for Broadcasting Satellite Services. See at www.itu.int/ITU-R/space/snl.

² E.g., the satellite at 121W, EchoStar 9, is also known as Telstar 13, or Intelsat Americas 13, or Galaxy 23, or G 23.

³ Encyclopedia of Satellites and Probes of the Czech Academy of Sciences, author A. Vítek, at www.lib.cas.cz/space40.

⁴ Ram Jakhu: Legal Issues of Satellite Telecommunications, the Geostationary Orbit, and Space Debris, *Astropolitics*, 5, p.173-208.

⁵ ITU Space Network Systems Online, Special Query System: Administrative Due Diligence

Information (Res, 49), List of Geostationary and Non-geostationary Satellite Networks.

⁶ See at

www.unoosa.org/oosa/SORegister/index.html.

⁷ Classification of Geosynchronous Objects, Issue 10 by R. Choc and R. Jehn, February 2008, European Space Operations Centre, Darmstadt, Germany. Preceding issues cover years 1999-2007. For years 1990-1999 see Log of Objects Near the Geostationary Ring, Issues 1 to 20, also at ESOC, Darmstadt.

⁸ Established at the European Space Operations Centre in Darmstadt, Germany.

⁹ See at

ghrc.msfc.nasa.gov/orbit/tleformat.html.

¹⁰ P. Lála, Private communication. Computed from CelesTrak elements and published in the Encyclopedia, ref. 3.

¹¹ See www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf02104e.html.

Annex

Comparative Table of Space Networks and Satellites

Version of 21 August 2008

| SPACE NETWORKS - NOTIFIED | | | | | SATELLITES IN GEO | | | |
|---------------------------|---------|----------|----------------------|-----------------|--------------------|--|------------|-----------------|
| Nom. Long. | Adm org | Ntwk org | Space Network Name | Frequency bands | COSPAR Int. Desig. | Satellite Name | Mean Long. | Status of orbit |
| 0.00 E | F | ESA | METEOSAT | 3-33 | 2005-049B | MSG 2 Meteosat 9, i=0.93 MSG 2 | 0.05 E | C2 |
| | F | ESA | MSG | 17-35 | | | | |
| | USA | | USCID-A1 | 66-79 | | | | |
| 1.00 E | RUS | | GALS-15 | 49, 50 | | | | |
| | RUS | | STATSIONAR-22 | 43-47 | | | | |
| | RUS | | VOLNA-21 | 9-13 | | | | |
| 2.90 E | CTI | RAS | RASCOM-1F | 43-55 | 2007-063A | Rascom-QAF1 | 2.88 E | PL |
| | CTI | RAS | RASCOM-2F | 43-55 | | Regional services in Africa | | |
| 3.00 E | F | | SYRACUSE-3F | 33-82 | | Telecom 2C | | |
| | F | | TELECOM-2C | 33-57 | 1995-067A | Telecom 2C, i=3.82 | 3.05 E | C2 |
| | F | | TELECOM-3C | 43-48 | | | | |
| 4.00 E | F | EUT | EUTELSAT 2-4E | 33-57 | 1997-049A | Hot Bird 3 = Eurobird 4 Regional services in Europe | 4.02 E | C1 |
| | F | EUT | EUTELSAT 3-4E | 33-57 | | | | |
| | F | EUT | EUTELSAT-KA-4E | 76-78 | | | | |
| | F | | SMO-GEO-1B (BSS) | | | | | |
| | F | | TELECOM-4E | 47 | | | | |
| | USA | | MILSTAR-13 | 31-84 | | | | |
| | USA | | USGAE-2 | 31-84 | | | | |
| 4.80 E | S | | SIRIUS-2 (and BSS) | 33,57 | 2007-057A | Sirius 4 | 4.83 E | PL |
| | S | | SIRIUS-4.8E-BSS | | | Services in North and East Europe, North Africa | | |
| | S | | SIRIUS-4.8E-BSS-2 | | 1993-031A | Astra 1C, i=1.21 | 4.74 E | C2 |
| 5.00 E | S | | SIRIUS-30B | 52,55 | 1998-056B | Sirius 3 | 5.00 E | C1 |
| | S | | SIRIUS-30B-5E | 43-55 | | Services in Scandinavia and Greenland | | |
| | S | NOT | TELE-X (and BSS) | 33-57 | | | | |
| | S | | SIRIUS-5E-BSS | | | | | |
| | USA | | USMB-5 | 35 | | | | |
| 5.70 E | MLA | | MEASAT-SA1 | 43-48 | | | | |
| 6.00 E | G | | SKYNET-4B | 9-82 | | | | |
| | G | | SKYNET-4K | 9-35 | | | | |
| 7.00 E | F | EUT | EUTELSAT 1-3 | 52-57 | 2004-006A | Eutelsat W3A Services and Internet in Europe, Africa, Near East Eutelsat W3A | 7.00 E | C1 |
| | F | EUT | EUTELSAT 2-7E | 33-57 | | | | |
| | F | EUT | EUTELSAT 3-7E | 33-57 | | | | |
| | F | EUT | EUTELSAT EXB-7E | 52, 55 | | | | |
| | F | EUT | EUTELSAT-KA-7E | 76-78 | | | | |
| | USA | | USMB-6 | 35 | | | | |
| 8.00 E | RUS | | GALS-7 | 49, 50 | | | | |
| | RUS | | STATSIONAR-18 | 43, 47 | | | | |
| | RUS | | TOR-8M | 67-72 | | | | |
| | RUS | | VOLNA-15 | 9-13 | | | | |
| 8.50 E | USA | | USGON-2 | 35 | 2000-024A | USA 149,DSP F20 | 8.4 E | C |
| | | | | | | Radiation detection, particle and plasma analysis | | |
| 9.00 E | F | | F-SAT-30B | 43-55 | 1996-067A | Hot Bird 2 | 9.01 E | C1 |
| | F | EUT | EUTELSAT B-9E (BSS) | | | Services in Europe | | |
| | I | | INTERACT (BSS) | | | | | |
| 10.00 E | F | EUT | EUTELSAT 2-10E | 33-57 | 2000-052A | Eutelsat W1 Services in Europe, North Africa, Near East | 9.99 E | C1 |
| | F | EUT | EUTELSAT 3-10E | 33-57 | | | | |
| | F | EUT | EUTELSAT EXB 10E | 52, 55 | | | | |
| | F | EUT | EUTELSAT EXB-10E C | 43, 48 | | | | |
| | F | EUT | EUTELSAT-1 | 52-57 | | | | |
| | F | EUT | EUTELSAT-KA-10E | 65-78 | | | | |
| | F | EUT | EUTELSAT B-10E (BSS) | | | | | |
| | F | ESA | MSG-S1 | 33, 35 | | | | |
| 12.00 E | RUS | | GALS-17 | 49, 50 | 2001-037A | Cosmos-2379, i=3.51 | 11.98 E | C2 |
| | RUS | | PROGNOZ-2 | 33-42 | | Early warning of rocket launches | | |
| | RUS | | STATSIONAR-27 | 43, 47 | | | | |
| | RUS | | VOLNA-27 | 9-13 | | | | |
| 13.00 E | F | EUT | EUTELSAT 2-13E | 33-57 | | Three sat for direct TV in Eur, North Africa, Middle East | | |
| | F | EUT | EUTELSAT 3-13E | 33-57 | 2002-038A | Hot Bird 6 | 13.03 E | C1 |
| | F | EUT | EUTELSAT EXB-37.2W | 52, 55 | 2006-007B | Hot Bird 7A | 13.05 E | C1 |
| | F | EUT | EUTELSAT EXB-37.2WC | 43, 48 | 2006-032A | Hot Bird 8 | 13.05 E | C1 |
| | F | EUT | EUTELSAT-KA-13E | 76-78 | | Hot Bird 6 | | |
| | F | EUT | EUTELSAT B-13E (BSS) | | | | | |
| 14.00 E | RUS | | TOR-12M | 82 | | | | |
| 15.00 E | RUS | | GALS-12 | 49, 50 | | | | |
| | RUS | | STATSIONAR-23 | 43, 47 | | | | |
| | RUS | | VOLNA-23 | 9-13 | | | | |
| 16.00 E | F | EUT | EUTELSAT 2-16E | 33-57 | 1998-056A | Eutelsat W2 Services in Eur, North Africa, Near East, Mauritius, Reunion | 16.01 E | C1 |
| | F | EUT | EUTELSAT 3-16E | 33-57 | | | | |
| | F | EUT | EUTELSAT EXB-16E | 52, 55 | | | | |
| | F | EUT | EUTELSAT KA-16B | 76-78 | | | | |
| | F | EUT | EUTELSAT B-16E (BSS) | | | | | |

| | | | | | | | | |
|---------|-----|-----------|-----------------------|--------|-----------|--|---------|----|
| 16.20 E | I | SICRAL-2A | 9-82 | • | 2001-005A | Sicral, i=0.49 Milit.comm | 16.20 E | C2 |
| 17.00 E | BLR | IK | INTERSPUTNIK-17E | 47 | | | | |
| 19.00 E | LUX | | :LUX-KA-19E | 67-76 | | | | |
| 19.20 E | LUX | | GDL-6 | 52-57 | 1996-021A | Astra 1F BSS, FSS Europe | 19.20 E | C1 |
| | LUX | | GDL-6 (30B) | 52, 55 | 1997-076A | Astra 1G | 19.20 E | C1 |
| | LUX | | GDL -7 | 52, 57 | 1999-033A | Astra 1H | 19.19 E | C1 |
| | LUX | | GDL-30B-5 | 43-55 | 2006-012A | Astra 1KR | 19.21 E | C1 |
| | LUX | | DBL-G4-19.2E (BSS) | | 2007-016A | Astra 1L HDTV for Europe | 19.23 E | C1 |
| 20.00 E | ARS | ARB | ARABSAT 2-C | 43-48 | | | | |
| | ARS | ARB | ARABSAT-VC20E (BSS) | | | | | |
| 21.00 E | USA | | AFRIBSS | 48 | • | 1998-063A AfriStar 1 = AfriBSS Africa, SW Europe, Near East | 21.01 E | C1 |
| 21.50 E | F | ESA | ARTEMIS-21.5E-DR | 33-78 | • | 2001-029A Artemis, i=6.10 | 21.42 E | C2 |
| | F | ESA | ARTEMIS-21.5E-LM | 25-57 | | Services for Europe, North Africa, Middle East | | |
| | F | EUT | EUTELSAT 1-5 | 52-57 | | 1999-018A Eutelsat W3 | 21.61 E | C1 |
| | F | EUT | EUTELSAT 2-21.5E | 33-57 | | Direct TV for Europe, North Africa, Near East, Turkey | | |
| | F | EUT | EUTELSAT 3-21.5E | 33-57 | | | | |
| | F | EUT | EUTELSAT-KA-21.5E | 76-78 | | | | |
| | LUX | | LUX-30B-8 | 43-55 | | | | |
| | LUX | | DBL-G4-21.5E (BSS) | | | | | |
| 23.00 E | RUS | | GALS-8 | 49, 50 | | | | |
| | RUS | | ROSCOM-3 | 47-79 | | | | |
| | RUS | | STATSIONAR-19 | 43, 47 | | | | |
| | RUS | | STATSIONAR-M8 | 52,57 | | | | |
| | RUS | | VOLNA-17 | 9-13 | | | | |
| 23.50 E | D | | DFS-1 | 33-78 | | 1995-055A Astra 1E BSS,FSS Europe | 23.51 E | C1 |
| | LUX | | LUX-30B-6 | 52-55 | 2002-015B | Astra 3A Direct TV in Germ | 23.52 E | C1 |
| | LUX | | DBL-G4-23.5E (BSS) | | | | | |
| 25.00 E | G | | INMARSAT-3 IOR WEST | 25-47 | | 1998-006B Inmarsat-3 F5, i=0.41 Comm. with ships, airplanes | 25.01 E | C2 |
| 25.50 E | F | EUT | EUTELSAT 1-8 | 3-57 | | 1998-057A Eurobird 2 = HotBird 5 | 25.77 E | C1 |
| | F | EUT | EUTELSAT EXB-25.5E | 52- 55 | | Operated by Arabsat | | |
| | F | EUT | EUTELSAT EXB-25.5E C | 43, 48 | | | | |
| 26.00 E | ARS | ARB | ARABSAT 1-B | 43, 47 | | 1999-009A Arabsat 3A | 25.93 E | C1 |
| | ARS | ARB | ARABSAT 2-B | 43-57 | | 2006-051A Badr 4 | 26.01 E | C1 |
| | ARS | ARB | ARABSAT-VB26E (BSS) | | | 1997-046A PAS 5=Arabsat 2C | 26.17 E | C1 |
| | IRN | | ZOHREH-2 | 52, 57 | | Services for the League of Arab states | | |
| | IRN | | IRNDBS-2 (BSS) | | | | | |
| 27.00 E | BLR | IK | INTERSPUTNIK-27E | 43-48 | | | | |
| 28.00 E | | | | | | 1993-056A USA 95 = UFO 2 Milit Com | 28.1 E | C |
| 28.20 E | LUX | | LUX-30B-7 | 43-55 | | 2000-081A Astra 2D Direct TV | 28.19 E | C1 |
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| 33.00 E | F | EUT | EUTELSAT 2-33E | 52-57 | | | | |
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| | GRC | GRC 15002 (BSS) | | | Sevices for Europe, Middle East, South Africa | |
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| 47.00 E | F | SYRACUSE-3H | 33-82 | 2005-041B | Syracuse 3A Mllit. comm. | 47.01 E C1 |
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| | D | EUROPE*STAR-3B (BSS) | | | Mainly international phone | |
| 48.00 E | F | EUT EUTELSAT 3-48E | 33-57 | | | |
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| 53.00 E | F | EUT EUTELSAT EXB-44E | 52, 55 | | | |
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| | G | SKYNET-4C | 9-82 | 1999-009B | Skynet 4E, i=4.24 Military | 53.02 E C2 |
| | G | SKYNET-4L | 35 | 2007-056B | Skynet 5B Military comm. | 52.71 E PL |
| 55.00 E | IND | INSAT-2 (55) | 17-47 | 2003-043E | Insat 3E | 54.99 E C1 |
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| | HOL | INTELSAT8 57E | 43-57 | | | |
| | UAE | YAHSAT-BSS-57E | | | | |
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| | USA | USGCSS PH3 INDOC-2 | 31-49 | | | |
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| 57.50 E | | For ranging purposes | | 1997-049B | Meteosat 7, i=3.85 | 57.43 E C2 |
| 58.00 E | RUS | TOR-13M | 67-82 | | | |
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| | USA | INTELSAT8 60E | 43-57 | | | | | | |
| | G | INTELSAT KUEXT60E BSS | | | | | | | |
| | USA | USGCSS PH3 INDOC | 31-50 | | | | | | |
| | USA | USGCSS PH3B INDOC | 31-50 | | | | | | |
| | UAE | YAHSAT-BSS-60E | | 2003-008A USA167 Military comm. | 59.9 E | C | | | |
| 62.00 E | USA | INTELSAT6 62E | 43-57 | • 2001-039A Intelsat 902 | 61.99 E | C1 | | | |
| | USA | INTELSAT7 62E | 43-57 | | | | | | |
| | USA | INTELSAT8 62E | 43-57 | | | | | | |
| | CHN | CHNBSAT-62E (BSS) | | | | | | | |
| | USA | USMB-9 | 35 | | | | | | |
| 63.00 E | USA | INTELSAT5A INDOC3 | 43-57 | | | | | | |
| 64.00 E | | | | 1996-020A Inmarsat 3 F-1 | 63.97 E | C1 | | | |
| | G | INMARSAT-3 IOR-1 | 25-47 | • 2005-009A Inmarsat 4 F-1, i=2.40 | 63.92 E | C2 | | | |
| | USA | INTELSAT7 64E | 43-57 | | | | | | |
| | USA | INTELSAT8 64E | 43-57 | • 2002-041A Intelsat 906 | 64.17 E | C1 | | | |
| 64.50 E | G | INMARSAT-2 IOR 1 | 25-47 | | | | | | |
| 65.00 E | G | INMARSAT-3 IOR-2 | 25-47 | | | | | | |
| 66.00 E | G | INTELSAT KA 66E | 65-78 | • 1995-001A Intelsat VII F-4 | 66.03 E | C1 | | | |
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| | USA | INTELSAT5A 66E | 43-57 | | | | | | |
| | USA | INTELSAT7 66E | 43-57 | | | | | | |
| 67.50 E | UAE | YAHSAT-BSS-67.5E | | 1993-073B Meteosat 6, i=7.07 out | 67.47 E | C2 | | | |
| 68.00 E | USA | USASAT-14I-2 | 43-57 | | | | | | |
| 68.50 E | USA | USASAT-14I | 43-57 | 2001-019A Pan American Satellite 10 | 68.57 E | C1 | | | |
| | | | | 1998-052A Pan American Satellite 7 | 68.66 E | C1 | | | |
| | | | | Services for East Europe, Africa, Middle East, Asia | | | | | |
| 69.00 E | RUS | GALS-14 | 49, 50 | | | | | | |
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| | RUS | STATSIONAR-20 | 43, 47 | Civil serv. for Orbita 2, military comm. possibly on GALS | | | | | |
| | RUS | VOLNA-19 | 9-13 | Mobile stations on Volna | | | | | |
| | USA | USGON-1 | 35 | 2001-033A USA 159 = DSP F21 | 69.3 E | C | | | |
| | TON | TONGASAT-H70 | 43-57 | Early warning, radiation detection, sci. equipment | | | | | |
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| | F | EUTELSAT EXB-70.5E C | 43, 48 | | | | | | |
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| 72.00 E | AUS | DEF-R-SAT-2A | 23,26 | 1999-063A USA 146 = UFO F10 | 72.8 E | C | | | |
| | USA | FLTSATCOM-C INDOC-2 | 9-82 | | | | | | |
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| | USA | KASATCOM-3 | 72-79 | | | | 1990-097B USA 67 = SDS 2F2 | 72.9 E | C |
| | | | | | | | Probably military comm. with satellites in LEO | | |
| | USA | USASAT-14J | 43-57 | 1995-040A Pan American Satellite 4 | 72.01 E | C1 | | | |
| | USA | USASAT-14J-2 | 43-57 | 2003-057A USA 174 = UFO F11 | 71.3 E | C | | | |
| | | | | Direct TV to Near East, India and South Africa | | | | | |
| | | | | Military communications | | | | | |
| 73.50 E | F | EUTELSAT EXB-73.5E | 52, 55 | | | | | | |
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| 74.00 E | IND | INSAT-1B | 17-47 | 2002-043A Kalpana-1 = Metsat-1 | 74.00 E | C1 | | | |
| | IND | INSAT-2 (74) | 17-47 | Meteorology | | | | | |
| | IND | INSAT-EK 74R | 52 | 2002-002A Insat 3C | 74.00 E | C1 | | | |
| | IND | INSAT-2C | 43-48 | Regional services in the Indian Subcontinent | | | | | |
| | IND | INSAT-2K (74) | 52, 57 | 2004-036A GSAT 3 = Edusat | 74.02 E | C1 | | | |
| | IND | INSAT-2M (74) | 37-47 | Educational programs for remote areas in India | | | | | |
| | IND | INSAT-2T (74) | 43, 47 | 2007-037A Insat 4CR | 74.02 E | C1 | | | |
| | IND | INSAT-2E74 | 43 | Services for Indian Subcontinent | | | | | |
| 75.00 E | USA | FLTSATCOM-C INDOC-3 | 9-82 | 1999-053A LMI | 74.99 E | C1 | | | |
| | USA | USCID-A3 | 66-79 | Services for Russia, CIS, East and central Europe, parts of Asia and Africa | | | | | |
| | USA | USMB-10 | 35 | | | | | | |
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| | RUS | GOMS-M | 17-77 | | | | | | |
| 76.50 E | CHN | APSTAR-4 | 43-57 | • 1997-062A Apstar 2R = Telestar 10 | 76.50 E | C1 | | | |
| | | | | Regional services for Europe, Middle East, Japan, & Austr. | | | | | |
| 77.00 E | RUS | CSSRD-2 | 43-59 | | | | | | |
| 78.50 E | THA | THAICOM-A2 | 43, 47 | 1994-065B Thaicom 2 | 78.53 E | C1 | | | |
| | THA | THAICOM-A2B | 43-57 | Services for Thailand and several countries in Asia | | | | | |
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| | | | | Services for Thailand and SE Asia | | | | | |

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| 80.00 E | CHN | COMPASS-80E | 23, 45 | 2000-082A | Beidou 1B, i=0.65 | 80.34 E | C2 |
| | CHN | CHNSAT-80E (BSS) | | | Regional navigation for surface, river, sea transport | | |
| | RUS | EXPRESS-6 | 43-57 | 2005-010A | Ekspres AM-2 | 80.00 E | C1 |
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| | URS | LOUTCH-8 | 52, 57 | | Near East, Indian Subcontinent | | |
| | RUS | POTOK-2 | 43, 47 | 2000-036A | Cosmos 2371 i=5.31 | 79.82 E | C2 |
| | RUS | PROGNOZ-4 | 33-42 | | Military Telecommunications | | |
| | URS | STATSIONAR-1 | 43, 47 | | | | |
| 80.50 E | F | EUT EUTELSAT EXB-80.5E | 52, 55 | | | | |
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| 83.00 E | IND | INSAT-1D | 17-47 | 1999-016A | Insat 2E | 82.99 E | C1 |
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| 83.50 E | F | EUT EUTELSAT EXB-83.5E | 52, 55 | | | | |
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| 85.00 E | URS | GALS-3 | 49, 50 | 2004-010A | Raduga-1 i=2.48 | 85.07 E | C2 |
| | RUS | STATSIONAR-3 | 43, 47 | | Civil services for Orbita 2, military comm. possibly on Gals, | | |
| | URS | VOLNA-5 | 9-27 | | mobile serices on Volna, experimental on Loutch | | |
| | URS | TOR-4 | 67-82 | | | | |
| | USA | INTELSAT7 85E | 43-57 | | | | |
| | USA | INTELSAT8 85E | 52-57 | 1996-035A | Intelsat VII F-6 = 709 | 85.15 E | C1 |
| | USA | USABSS-29 (BSS) | | | | | |
| | USA | TDRS 85E | 33-59 | 1988-091B | TDRS West, i=10.77 | 84.72 E | C2 |
| | URS | TOR-4M | 67-82 | | Comm. with LEO and Space Shuttle, intercontinental com. | | |
| 85.40 E | RUS | STATSIONAR-D5 | 47, 48 | | | | |
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| 86.00 E | F | EUT EUTELSAT EXB-86E | 52, 55 | | | | |
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| 86.50 E | CHN | FY-2B | 17-33 | 2006-053A | Feng Yun 2D, i=1.64 | 86.42 E | C2 |
| | CHN | FY-2BS | 17-35 | | Radiometer, collection of meteo data | | |
| 87.50 E | CHN | CHINASAT-1 | 43, 47 | 1998-033A | Zhongwei 1 | 87.48 E | C1 |
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| 88.00 E | SNG | ST-1A | 43-57 | 1998-049A | ST-1 Reg.serv. in Asia | 88.00 E | C1 |
| 88.50 E | F | EUT EUTELSAT EXB-88.5E | 52, 55 | | | | |
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| 90.00 E | RUS | EXPRESS-7 | 43-57 | 1999-047B | Yamal-100 No 2 i=4.08 | 89.79 E | C2 |
| | RUS | LOUTCH-3 | 52, 57 | 2003-053B | Yamal 200 No 1 | 90.00 E | C1 |
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| | MLA | MEASAT-AK 91.5 | 53-57 | | Services in Asia, Australia,E Europe, Africa | | |
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| | USA | USMB-12 | 35 | | | | |
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| 93.50 E | IND | INSAT-1C | 17-47 | 2003-013A | Insat 3A (data and meteo) | 93.50 E | C1 |
| | IND | INSAT-2 (93.5) | 17-47 | 2007-007A | Insat 4B | 93.50 E | C1 |
| | IND | INSAT-2B | 43, 48 | | Regional services in South Asia | | |
| | IND | INSAT-2K (93.5) | 52, 57 | | | | |
| | IND | INSAT-2M (93.5) | 37-47 | | | | |
| | IND | INSAT-2T (93.5) | 47 | | | | |
| 95.00 E | RUS | CSDRN | 43-59 | | | | |
| | HOL | INTELSAT KA 95E | 78 | 2002-057A | NSS 6 | 95.01 E | C1 |
| | HOL | INTELSAT5A 95E | 52, 57 | | Services in Middle East, Indian Subcontinent, Australia | | |
| | HOL | INTELSAT7 95E | 52-57 | | | | |
| | HOL | INTELSAT8 95E | 52-57 | | | | |
| 96.50 E | RUS | EXPRESS-8 | 43-57 | 2008-003A | Express-AM 33 | 96.49 E | PL |
| | RUS | LOUTCH-9 | 52, 57 | | Services for Russia, CIS, SE Asia, W Pacific | | |
| | RUS | STATSIONAR-14 | 43, 47 | | | | |
| 98.00 E | CHN | CHINASAT-22 | 11 | 2000-003A | Zhongxing-22 | 97.99 E | C1 |
| | CHN | CHINASAT-3 | 43, 47 | 2006-038A | Zhongxing-22A | 98.01 E | C1 |
| | RUS | PROGNOZ-8 | 35 | | Both satelltes internal services in China | | |
| 98.5 E | UAE | | | 2008-001A | Thuraya 3 | 98.47 E | PL |
| | | | | | Services in Europe, CIS, N. Africa, Middle East, India | | |
| 99.00 E | RUS | STATSIONAR-T | 47 | 2001-014A | Ekran 21=Ekran M,i=4.57 | 99.14 E | C2 |
| | RUS | STATSIONAR-T2 | 47 | | TV in Russian Federation, CIS | | |
| | | | | 2008-028A | Zhongxing-9 | 92.20 E | Enc |
| | | | | 1986-096A | USA 20 = Fltsatcom F7 | 99.6 E | C |

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| 100.00 E | | | | 1990-002B Leasat 5=Syncom4F5,i=7.4 | 100.04 E | C2 |
| | | | | Both, USA 20 and Leasat 5, military | | |
| | | | | 2006-048A Xinnuo 2, i=0.69 | 100.00 E | C2 |
| | | | | Services in China, including Hong Kong, Macao, Taiwan | | |
| 100.50 E | CHN | ASIASAT-E | 43-48 | 1995-064A AsiaSat 2 | 100.51 E | C1 |
| | CHN | ASIASAT-EK1 | 53-57 | Services in Asia Pacific region | | |
| | CHN | ASIASAT-EKX | 53,54 | | | |
| 103.0 E | CHN | DFH-3-OB | 47 | 2003-052A Zhongxing-20 | 103.01 E | C1 |
| | CHN | STW-2 | 43, 47 | Internal services in China | | |
| | RUS | EXPRESS-9 | 43-57 | 2000-013A Ekspres-2A, i=1.88 | 102.84 E | C2 |
| | RUS | LOUTCH-5 | 52, 57 | Control of KazSat lost on June 8, 2008 | | |
| | RUS | STATSIONAR-21 | 43, 47 | 2006-022A KazSat-1 | 102.99 E | C1 |
| | USA | USGON-3 | 35 | 2004-004A USA 176 = DSP F22 | 103.7 E | C |
| | | | | Early warning, Radiation Detection, plasma analysis | | |
| 105.00 E | AUS | ASIABSS | 48 | 2000-016A AsiaStar | 105.00 E | C1 |
| | CHN | CHINASAT-46 | 35 | Services in Asia, SE Europe, NE Africa | | |
| | CHN | FY-2A | 28-33 | 2004-042A Feng Yun 2C i=2.21 | 104.42 E | C2 |
| | CHN | FY-2AS | 17-35 | Radiometer, coll. of meteo data, monitoring space environ. | | |
| 105.50 E | CHN | ASIASAT-1 | 43, 47 | 1999-013A Asiasat 3S | 105.50 E | C1 |
| | CHN | ASIASAT-CK | 43-57 | Services in Far East, CIS, India | | |
| | CHN | ASIASAT-CK1 | 53-57 | | | |
| 106.50 E | USA | USMB-13 | 35 | | | |
| 107.70 E | INS | INDOSTAR-1 | 43, 47 | 1997-071B Cakrawatra 1, i=2.46 | 107.65 E | C2 |
| | | | | Services for Indonesia | | |
| 108.00 E | INS | PALAPA-B1 | 43, 47 | 1999-042A Telkom 1 | 107.99 E | C1 |
| | INS | PALAPA-C2 | 43, 47 | Regional services in SE Asia, N. Australia | | |
| | CHN | CHNBSAT-108E (BSS) | | 2000-059A GE-1A, AAP-1 | 108.20 E | C1 |
| | | | | Services in China, SE Asia, India | | |
| 109.00 E | G | INMARSAT-3 POR WEST | 25-47 | 1992-021B Inmarsat 2-F4, i=3.41 | 109.00 E | C2 |
| 109.85 E | J | BS-3N (and BSS) | 57 | 1994-040B BS-3N HDTV in Japan | 109.83 E | C1 |
| | J | BSAT-109.85 | 53 | 1997-016B BSAT-1A Direct TV in Japan | 109.73 E | C1 |
| | J | TAIKI-109.65-34.5 (BSS) | | 2001-011B BSAT-2A Direct TV in Japan | 109.87 E | C1 |
| | J | NB-SAT-109.85AAE (BSS) | | 2003-028A BSAT-2C Direct TV in Japan | 109.86 E | C1 |
| 110.00 E | J | BS-3 (and BSS) | 33-57 | | | |
| | J | BSAT-110 | 53 | 2007-036B BSAT 3A Direct TV in Japan | 109.78 E | C1 |
| | J | N-SAT-110 | 53-57 | 2000-060A NSAT-110 Serv. in Japan | 110.05 E | C1 |
| | J | NB-SA 110-AAE (BSS) | | | | |
| | USA | USCSID-A6 | 66-79 | | | |
| | USA | USGGR-11 | 23, 26 | | | |
| 110.50 E | CHN | CHINASAT-2 | 43, 47 | 1998-044A Sinosat 1 | 110.50 E | C1 |
| | CHN | CHINASAT-6 | 43-57 | Services in China and SE Asia | | |
| | CHN | COMPASS-110.5E | 23, 45 | 2003-021A Beidou 3 | 110.50 E | C1 |
| | IND | INSAT-2 (111.5) | 17-47 | Regional navigation in transport | | |
| 113.00 E | KOR | KOREASAT-2 (and BSS) | 53-57 | 2006-034A Mugunghwa 5 | 113.04 E | C1 |
| | INS | PALAPA-B2 | 43, 47 | Direct TV for E Asia, military comm. for Korea | | |
| | INS | PALAPA-C1 | 43-52 | 1996-030A Palapa C2 | 113.01 E | C1 |
| | | | | TV and data for Indonesia and ASEAN | | |
| 116.00 E | CHN | ASIASAT-B | 43-47 | 2007-031A Zhongxing 6B | 115.56 E | C1 |
| | | | | TV for China, SE Asia, W Pacific, Oceania | | |
| | KOR | INFOSAT-C | 67-79 | 1996-003A Mugunghwa 2, i=098 | 116.35 E | C2 |
| | KOR | KOREASAT-1 | 53-57 | 1999-046A Mugunghwa 3 = Koreasat 3 | 115.95 E | C1 |
| | | | | 1993-069A Gorizont 28 Drifting ? | 116.93 E | C2 |
| 118.00 E | INS | PALAPA-B3 | 43, 48 | 2005-046A Telkom 2 Asia-Pacific | 118.00 E | C1 |
| 120.00 E | J | GMS-120E | 20, 35 | | | |
| | THA | THAICOM-A3 | 43, 47 | 2005-028A Thaicom 4 SE Asia-Austral | 119.41 E | C1 |
| | THA | THAICOM-AK3 | 54, 57 | 1993-078B Thaicom 1 | 120.00 E | C1 |
| 121.00 E | AUS | DEF-R-SAT-4B 121.0 E | 23-79 | | | |
| | CHN | DFH-3-OE | 43, 47 | | | |
| 122.00 E | CHN | ASIASAT-A | 43, 47 | 2003-014A AsiaSat 4 | 122.14 E | C1 |
| | CHN | ASIASAT-AK | 43-57 | Services for China, CIS, Korea, Australia, New Zealand | | |
| | CHN | ASIASAT-AK1 | 53-57 | | | |
| | CHN | ASIASAT-DTH-A1 (BSS) | | | | |
| | LAO | LSTAR 4B (BSS) | | | | |
| 123.00 E | | | | 2000-011A Garuda 1, i=0.42 SE Asia | 123.01 E | C2 |
| 123.50 E | CHN | FY-2C | 17-33 | | | |
| | CHN | FY-2CS | 17-35 | | | |
| 124.00 E | J | JCSAT-3B | 53-57 | 1999-006A JC-Sat 6 | 123.93 E | C1 |
| | J | SJC-1 | 53-57 | Services in SE Asia, Australia, New Zealand, Hawaii | | |
| 125.00 E | CHN | DFH-3-OA | 43, 47 | 2007-021A Xinnuo 3 = Sinosat 3 | 125.01 E | C1 |
| | CHN | STW-1 | 43, 47 | Services for China, including Hong Kong, Macao, Taiwan | | |
| 128.00 E | RUS | GALS-10 | 49, 50 | | | |
| | RUS | STATSIONAR-15 | 43, 47 | | | |
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| | RUS | TOR-6 | 67-82 | | | |
| | RUS | VOLNA-9 | 9-13 | | | |
| | J | JCSAT-3A | 53-57 | 2006-033A JC-Sat 3A, i=0.33 | 127.63 E | C2 |
| | | | | Services in Japan, SE Asia, Oceania, Hawaii | | |
| | J | N-SAT-128 | 53-57 | 1997-075A JC-Sat 5 | 128.00 E | C1 |
| | | | | Services in E, SE Asia, Australia, New Zealand, Hawaii | | |

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| 130.00 E | URS | GALS-5 | 49, 50 | 1996-039A Apstar 1A, i=2.48 | 130.02 E | C2 |
| | RUS | PROGNOZ-5 | 33-42 | Services in China, Philippines, Thailand, India, Singapore | | |
| | RUS | T0R-10M | 67-82 | | | |
| | TON | TONGASAT AP-1 | 43, 47 | | | |
| | TON | TONGASAT C/KU-1 | 43-57 | | | |
| 131.00 E | CHN | APSTAR 1 | 43, 47 | | | |
| 132.00 E | J | NSTAR-A | 37-39 | 2006-010A JCSA 9 | 131.99 E | C1 |
| | | | | Services in Japan, SE Asia, Oceania, Hawaii | | |
| | | | | 2008-018B Vinasat 1 | 131.96 E | PL |
| | | | | Services for Vietnam, SE Asia, India, Japan, Australia | | |
| 134.00 E | CHN | APSTAR-2 | 43-57 | 2005-012A Apstar 6 | 134.00 E | C1 |
| | CHN | CHNSAT-134E (BSS) | | | | |
| | J | NB-SAT-134A (BSS) | | | | |
| | TON | TONGASAT AP-2 | 43, 47 | | | |
| | TON | TONGASAT C/KU-2 | 43-57 | Services in China, Taiwan, SE Asia, Hawaii | | |
| 136.00 E | J | CS-3B | 33-77 | 2002-035B N-Star 3 = N Star c | 135.95 E | C1 |
| | J | N-STAR-B | 37-79 | Mobil phones in Japan | | |
| 138.00 E | CHN | APSTAR-5-KU | 53-57+F694 | 2004-024A Telstar 18 = Apstar 5 | 138.03 E | C1 |
| | TON | TONGASAT AP-3 | 43, 47 | Services in China, SE Asia, Australia, Hawaii | | |
| | TON | TONGASAT C/KU-3 | 43-57 | | | |
| 140.00 E | CHN | COMPASS-140E | 23, 45 | 2000-069A Beidou 1A, i=0.74 | 140.00 E | C2 |
| | RUS | EXPRESS-10 | 43-57 | Regional navigation in transport | | |
| | RUS | LOUTCH-4 | 52, 57 | 2005-023A Ekspress AM-3 | 140.01 E | C1 |
| | RUS | STATSIONAR-7 | 43, 47 | Services in Siberia, Far East, Paific region | | |
| | URS | VOLNA-6 | 25-27 | | | |
| | J | MTSAT-140E | 20-79 | 2005-006A Himawari-6 = MTSat-1R | 140.22 E | C1 |
| | J | GMS-140E | 17-35 | Airtraffic, meteo, tsunami warning | | |
| 142.00 E | | | | 1994-043A Apstar 1, i=3.10 | 142.04 E | C2 |
| | | | | Services in China, Taiwan, Philippines, Singapore, Thailand | | |
| 142.50 E | TON | TONGASAT-AP4 | 43, 47 | | | |
| | TON | TONGASAT C/KU-4 | 43-57 | | | |
| 143.00 E | | | | 2008-007A Kizuna | 142.97 E | PL |
| | | | | Services for Japan, Korea China, SE Asia | | |
| 143.50 E | | Operational lifetime 2010 | | 1990-093A Inmarsat 2-F1, i=5.36 | 143.51 E | C2 |
| 144.00 E | J | N-SAT-146 | 53-57 | 2004-007A MBSAT-1 | 144.07 E | C1 |
| | KOR | SKDAB-2 | 53, 57 | Services in Japan, Korea | | |
| | J | SUPERBIRD-C | 53-57 | 1997-036A Superbird C | 144.01 E | C1 |
| | J | JMCS-1 | 49, 50 | Services in NE, SE Asia, Japan, Hawaii | | |
| | INS | PALAPA PACIFIC-3 | 43, 47 | | | |
| 145.00 E | RUS | EXPRESS-11 | 43-57 | 2000-029A Gorizont 33, i=5.35 | 144.85 E | C2 |
| | RUS | LOUTCH-10 | 52, 57 | Internal services in Russia, CIS. Loutch, Volna | | |
| | RUS | STATSIONAR-16 | 43, 47 | | | |
| | USA | USGON-6 | 35 | 1997-008A USA 130 = DSP F18 | 145.8 E | C |
| | J | Airtraffic. Meteo imager, data collection | | Early warning, Radiation Detection, Plasma Analyser | | |
| | | Spare for Beidou 1A at 140.00E | | 2006-004A MTSAT-2 | 145.00 E | C1 |
| | | | | 2007-003A Beidou 4, i=5.38 | 145.05 E | PL |
| 146.00 E | INS | Intended position 144.00 E | | 1997-042A Agila 2 = Mabuhay 1 | 145.97 E | PL |
| | | Mobile phones, Caesium atomic clock | | Regional services in SE Asia | | |
| | | | | 2006-059A Kiku 8 = ETS VIII | 146.02 E | PL |
| 148.00 E | MLA | MEASAT-148E | 53 | 1996-063B Measat 2 | 147.99 E | C1 |
| | MLA | MEASAT-2 | 43-57 | Services in SE Asia, Australia | | |
| 150.00 E | J | JCSAT-1 | 53-57 | 1997-007A JC-Sat 4 | 150.00 E | C1 |
| | J | JCSAT-1R | 43-57 | JC-Sat 4 | | |
| | USA | USGCCS PH3B W PAC-3 | 31-50 | Services in E Asia, Austr., New Zealand, India, Hawaii | | |
| 152.00 E | AUS | AUSSAT A 152E | 53-57 | 1992-037A USA 82 Military Comm. | 150.0 E | C |
| | AUS | AUSSAT A 152E PAC | 53-57 | 2007-044A Optus D2 | 152.08 E | C1 |
| | AUS | AUSSAT B 152E MOB | 25-57 | 2001-009A USA 157 = Milstar 2F2 | 152.1 E | C |
| | AUS | AUSSAT B 152E MXL | 25-57 | Military communications | | |
| | AUS | AUS BSS 152E | | | | |
| 153.50 E | BLR IK | INTERSPUTNIK-153.5EQ | 47 | | | |
| 154.00 E | J | JCSAT-2 | 53-57 | 2002-015A JC-Sat 8 = JC Sat 2A | 154.00 E | C1 |
| | J | JCSAT-2R | 53, 54 | Services in Japan, E Asia, Oceania, Hawaii, Australia | | |
| 156.00 E | AUS | AUSSAT A 156E | 53-57 | | | |
| | AUS | AUSSAT B 156E | 53-57 | | | |
| | AUS | AUSSAT B 156E MC | 53-57 | | | |
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| | AUS | AUSSAT B 156E MXL | 25-57 | | | |
| | AUS | AUSSAT B 156E NZ | 53-57 | | | |
| | AUS | AUSSAT B 156E R | 27-53 | | | |
| | AUS | AUSSAT B 156E S | 54-79 | | | |
| | AUS | AUSSAT C 156E FSS | 53-57 | 2003-028B Optus C1, Defence C1 | 156.01 E | C1 |
| | AUS | AUSSAT C 156E GOV | 9 | FSS for Australia, SE Asia, Hawaii. Military comm. | | |
| | AUS | AUSSAT C 156E BSS | | | | |
| 157.00 E | USA | INTELSAT5A 157E | 43-57 | 1989-087A Intelsat VI F-2, i=5.58 | 157.02 E | C2 |
| | USA | INTELSAT6 157E | 43-57 | | | |
| | USA | INTELSAT7 157E | 53, 54 | | | |
| | USA | INTELSAT8 157E | 43-57 | | | |
| | G | INTELSAT KUEXT 157E (BSS) | | | | |
| 158.00 E | J | SUPERBIRD-A | 49-77 | 1992-084A Superbird A1, i=2.14 | 158.01 E | C2 |
| | J | SUPERBIRD-A2 | 53-57 | | | |
| | J | SUPERBIRD-A2-KA | 65-75 | | | |

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| 160.00 E | AUS | AUSSAT A 160E | 53-57 | 2006-043B Optus D1 Direct TV, Internet,data for Australia, New Zealand | 160.01 E | C1 |
| | AUS | AUSSAT A 160E PAC | 53-57 | | | |
| | AUS | AUSSAT B 160E | 53-57 | | | |
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| | AUS | AUSSAT B 160E R | 27, 53 | | | |
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| | J | AUSSAT C 160E BSS | 1-33 | | | |
| 162.00 E | J | JMCS-3B | 49, 50 | 2000-012A Superbird 4 | 162.03 E | C1 |
| | J | SUPERBIRD-B | 49-77 • | | | |
| | J | SUPERBIRD-B2 | 53, 57 | | | |
| 163.50 E | RUS | YAMAL-E5 | 43, 47 | | | |
| 164.00 E | AUS | AUSSAT A 164E | 53-57 | 1992-054A Optus B1, i=1.46 Mobile phones in Australia, SW Pacific. Laser reflector 1994-055A Optus B3 Laser reflector. Covers Australia, SW part of Pacific Moved in 2008 | 164.00 E | C2 |
| | AUS | AUSSAT A 164E PAC | 53, 57 | | | |
| | AUS | AUSSAT B 164E | 27-79 | | | |
| | AUS | AUSSAT B 164E MOB | 25-57 | | | |
| | AUS | AUSSAT B 164E MXL | 25-57 | | | |
| | AUS | AUS BSS 164E (BSS) | 25-57 | | | |
| 166.00 E | RUS | PROGNOZ-6 | 33-42 | 1998-065A PAS 8 = IS 8 Direct TV and other services in Pacific region | 166.01 E | C1 |
| | USA | USASAT-14H | 43-57 • | | | |
| 167.00 E | RUS | VSSRD-2 | 43-59 | | | |
| 169.00 E | USA | USASAT-14G | 43-57 • | 1994-040A PAS 2 = IS 2 Direct TV to China,NE Asia, Australia, New Zealand | 169.01 E | C1 |
| 172.00 E | USA | FLTSATCOM W PAC | 9-50 | 1998-016A USA 138 = UFO F8 Military communications 2005-052A AMC 23 =Worldsat 3 Services for the Pacific Region | 172.3 E | C |
| | USA | FLTSATCOM-C W PAC-1 | 31-82 | | | |
| | USA | KASATCOM-5 | 72-79 | | | |
| | USA | USASAT-14K | 43-57 • | | | |
| | G | AM-SAT 172E (BSS) | 43-57 | | | |
| 174.00 E | USA | INTELSAT5A PAC1 | 43-57 | 1991-055A Intelsat VI F-5=605,i=3.04 | 174.00 E | C2 |
| | USA | INTELSAT7 174E | 43-57 | | | |
| | USA | INTELSAT8 174E | 43-57 • | | | |
| 175.00 E | USA | USGCSS PH3 W PAC | 31-50 | 2000-001A USA 148 Military communications | 175.2 E | C |
| | USA | USGCSS PH3B W PAC | 31-50 | | | |
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| | USA | INTELSAT7 177E | 43-57 | | | |
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| 177.50 E | USA | MILSTAR 14 | 31-84 | | | |
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| 178.00 E | G | INMARSAT-3 POR-2 | 25-47 • | 1996-070A Inmarsat 3-F3 | 178.06 E | C1 |
| 179.00 E | G | INMARSAT-3 POR-1 | 25-47 | | | |
| 179.50 E | G | INMARSAT-2 POR 1 | 25-47 | | | |
| 180.00 | USA | INTELSAT5 PAC3 | 43-57 | 1993-066A Intelsat VII F-1 = 701 1993-046A USA 93 Military Comm. | 180.02 E | C1 |
| | USA | INTELSAT7 180E | 43-57 • | | | |
| | USA | USGCSS PH3 W PAC-2 | 31-50 | | | |
| | USA | USGCSS PH3B W PAC-2 | 31-50 | | | |
| 177.00 W | USA | FLTSATCOM-A W PAC | 49, 50 | 1995-003A USA 108 = UFO F4 Military communications 1997--053A Intelsat VIII F-3 = NSS 803 | 177.6 W | C |
| | USA | FLTSATCOM-C W PAC-2 | 9-82 | | | |
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| | HOL | INTELSAT7 183E | 43-57 | | | |
| | HOL | INTELSAT8 183E | 43-57 • | | | |
| 175.00 W | USA | Edu, medical, cultural serv. to Pacific islan. | | 1987-022A GOES 7=Peacesat,i=10.4 | 175.00W | C2 |
| 174.30 W | USA | USASAT-14E | 43, 47 | | | |
| 174.00 W | USA | TDRS 174W | 33-59 | 1993-003B TDRS 6, i=7.91 Intersatellite and intercontinental services | 173.75W | C2 |
| 171.00 W | USA | TDRS WEST | 33-59 | 1991-054B TDRS 5, i=8.60 Intersatellite comm. with LEO, Space Shuttle | 171.00W | C2 |
| 170.00 W | URS | GALS-4 | 49,5 | | | |
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| 160.00 W | RUS | ESDRN | 43-59 | | | |

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| 159.00 W | RUS | PROGNOZ-7 | 33-42 | | | |
| 150.00 W | USA | Intelsat. comm. with LEO, Space Shuttle Military communications | | 1995-035B TDRS 7, i=9.85 1995-060A USA 115 = Milstar DFS-2 | 150.62W 150.0 W | C2 C |
| 148.00 W | USA | USABSS-9 (BSS) | | 1995-073A EchoStar 1 Internet for USA, Alaska, Hawaii 1996-055A EchoStar 2 Direct TV for USA, Alaska, Hawaii | 148.05W 147.92W | C1 C1 |
| 145.00 W | USA | FLTSATCOM-C W PAC-3 USGON-7 | 9-11 35 | 1989-046A USA 39 = DSP-F14 | 145.0 W | C |
| 144.00 W | USA | P-197-2 P92-6 HOL NSS-BSS 143.5W USA USCID-W2 USA USLL-PAC | 31, 35 31, 35 66-79 84 | 2000-046A USA 162 Probably a military satellite | 143.8 W | C |
| 142.00 W | | Operational | | 1997-027A Inmarsat 3-F4 | 141.99W | C1 |
| 141.00 W | USA | P-197-3 P92-5 USCID-W1 USLL-PAC2 | 31, 35 31, 35 66-79 84 | | | |
| 139.00 W | USA | USASAT-22I US SATCOM 1-R | 43, 47 43, 47 | 2000-081B GE 8 = Americom 8 TV, Internet for USA and the Caribbean | 138.96W | C1 |
| 137.00 W | USA | USASAT-22G USASAT-22J | 43, 47 47 | 2000-054B GE 7 = Americom 7 TV, Internet for USA and the Caribbean | 136.98W | C1 |
| 135.00 W | USA | GOES WEST GOES WEST-1 USASAT-21A | 1-33 17-35 43, 47 | 2000-022A GOES 11 Imager, radiometer, space env. monitoring, SRSAT 2004-003A GE 10 = Americom 10 Distribution of TV programs in the US | 135.23W 134.99W | C1 C1 |
| | USA | USGCSS PH3B E PAC | 31-50 | 1997-065A USA 134 Milit. comm. | 135.1 W | C |
| 134.00 W | USA | USASAT-11D | 43, 47 | | | |
| 133.00 W | USA | USASAT-22A | 43, 47 | 2005-041A Galaxy 15 TV, Internet for USA, Alaska, Hawaii. Navigation. | 133.00W | C1 |
| 131.00 W | USA | USASAT-22H | 43, 47 | 2004-017A GE 11 = Americom 11 Distribution of TV programs in the US, Alaska, Hawaii | 130.99W | C1 |
| 130.00 W | USA | USGCSS PH3 E PAC-2 USGCSS PH3B E PAC-2 USRDS WEST | 31-50 31-50 27 | 1995-038A USA 113 Military communications | 130.2 W | C |
| 129.00 W | USA | USASAT-24N | 43-57 | 1999-052A Telstar 7=Intelsat Amer.11 Distribution of TV programs | 128.99W | C1 |
| | CAN | CAN-BSS 7 | | 1999-050A EchoStar 5 Direct TV, HDTV, Internet to USA,Alaska,Hawaii,Portorico | 128.84W | C1 |
| 128.00 W | USA | ASC-1 | 43-57 | | | |
| 127.00 W | USA | USASAT-24O | 43, 47 | 2003-044A Galaxy 13 = Horizons-1 HDTV, Internet to US,Alaska,Hawaii,Mexico, Portorico | 126.99W | C1 |
| 125.00 W | | | | 2003-013B Galaxy 12 US,Alaska,Hawa 2005-030A Galaxy 14 TV, Internet to US, Alaska, Hawaii, Caribbean | 125.10W 124.99W | C1 C1 |
| 123.00 W | USA | USASAT-24P G IOMBSS-2 123.50W | 43-57 | 2000-002A Galaxy 10R 2007-016B Galaxy 17 North America 2008-024A Galaxy 18 | 122.99W 123.02W 123.07W | C1 PL PL |
| 121.00 W | USA | USASAT-31G PNG PACSTAR-L4 | 67-78 43, 47 | 2003-034A EchoStar 9=Int.Amer.13 TV in USA, Alaska, Hawaii, Mexico, Central America | 121.00W | C1 |
| 120.00 W | USA | MILSTAR 6 | 31-84 | | | |
| 119.00 W | USA | USABSS-10 (BSS) | 53, 54 | 2004-016A Direc-TV-7S TV in USA, Alaska, Hawaii, Portorico, Virgin Islands | 119.14W | C1 |
| | USA | USABSS-7 | 53 | 2002-006A EchoStar 7 Direct TV in cont. USA, Alaska, Hawaii | 118.90W | C1 |
| 118.70 W | CAN | ANIK E-D | 43-57 | 2007-009A Anik F3 Regional services in the N. American continent | 118.69W | C1 |
| | USA | USABSS-4 BSS 118.80W | | | | |
| 116.90 W | G | INTELSAT KA 243.1E | 76-78 | | | |
| 116.80 W | MEX | MORELOS 2 | 43-57 | 1998-070A Satmex 5 TV and data to N and S America | 116.69W | C1 |
| 115.00 W | | | | 2006-049A XM Radio 4 (Blues) Radio transmission in digital quality | 114.99W | C1 |
| 114.90 W | CAN | ANIK D-2 | 43, 47 | | | |
| 113.50 W | MEX | MORELOS 1 | 43-57 | | | |
| 113.00 W | MEX | SOLIDARIDAD 2M | 25-57 | 2006-020A Satmex 6 Services for cont. US, NAFTA countries, Carib., S America | 113.07W | C1 |
| | MEX | SOLIDARIDAD 2MA | 25-57 | 1994-065A Solidaridad 2 Services for Central America, SW USA, W South America | 113.19W | C1 |
| | MEX | SOLIDARIDAD-2 | 43-57 | | | |
| | USA | USASAT-31T | 78 | | | |
| 111.10 W | CAN | ANIK E-B ANIK-F2 | 43-57 53 | 2006-054A Wild Blue 1 Internet in US 2004-027A Anik F2 Services in Canada, US, Hawaii, Caribbean | 110.92W 111.23W | C1 C1 |
| 110.20 W | USA | USABSS-6 (BSS) | 53 | 2006-003A EchoStar 10 TV to networks in USA, Alaska, Hawaii,Portorico, Cuba 2000-038A EchoStar 6 Direct TV, Internet to US, Alaska, Hawaii, Portorico | 110.19W 110.26W | C1 C1 |
| 110.00 W | USA | USABSS-5 (BSS) | 53 | 2002-039A EchoStar 8 TV and Internet in USA, Alaska, Hawaii, Portorico 2002-023A Direc-TV-5 TV in USA, Alaska, Hawaii, Portorico, Virgin Islands | 110.00W 109.93W | C1 C1 |
| 109.20 W | MEX | SOLIDARIDAD 1M | 25-57 | | | |
| | MEX | SOLIDARIDAD 1MA | 25-57 | | | |
| | MEX | SOLIDARIDAD-1 | 43-57 | | | |

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|----------|-----|---------------------------|--------|------------------------------|--|---------|----|
| 107.30 W | CAN | ANIK E-A | 43-57 | • | 2000-076A Anik F1 | 107.30W | C1 |
| | CAN | ANIK-F1 | 52-57 | | Services in Canada, USA, Mexico, Hawaii, S America 2005-036A Anik F1R | 107.29W | C1 |
| 106.50 W | CAN | MSAT | 25-57 | | 1996-022A MSAT, i=0.49 | 106.49W | C2 |
| | CAN | MSAT(30B) | 52, 55 | | | | |
| 105.00 W | USA | ATS-5 | 1-25 | | 1967-111A ATS 3, i=10.27 | 105.30W | C2 |
| | USA | FLTSATCOM-C E PAC-1 | 9-82 | | 1995-057A USA 114 = UFO F6 | 105.9 W | C |
| | USA | USASAT-23H | 53,57 | | Military communications 2004-041A Americom 15 | 105.01W | C1 |
| | USA | USASAT-31K | 68-78 | | TV in cont. USA, Alaska, Hawaii, Mexico 2006-018A GOES N | 105.36W | C1 |
| | | | | | Radiometer, Space Environment Monitor, etc 2006-054B AMC-18 | 104.94W | C1 |
| 104.30 W | | Inactive ? | | | 1985-035A Gstar 1, i=9.47 | 104.34W | C2 |
| 103.00 W | USA | USASAT-24F | 43-57 | • | 1996-054A Americom 1 = GE 1 | 103.01W | C1 |
| | USA | USASAT-31L | 76-78 | | Distribution of TV in North America | | |
| 102.80 W | | | | | 2005-015A Spaceway 1 | 102.81W | C1 |
| | | | | | HDTV in North America | | |
| | | | | | 2007-032A DirecTV 10 | 102.71W | C1 |
| 101.20 W | USA | USABSS-1 (BSS) | 53, 65 | | 2001-052A DirecTV-4S | 101.16W | C1 |
| | | | | | TV in cont. USA, Alaska, Hawaii | | |
| 101.00 W | USA | ACS-1 | 25-27 | | 1999-060A Americom 4 =GE 4 | 101.06W | C1 |
| | USA | USASAT-7D | 43-57 | | Distribution of TV in North, Central, and South America 1995-019A AMSC-1, I=3.15 | 100.95W | C2 |
| | USA | USASAT-31M | 43-57 | | 2006-043A DirecTV-9S | 101.11W | C1 |
| | USA | USABSS-21 (BSS) | | | Distribution of TV in cont. USA, Alaska, Hawaii | | |
| 100.80 W | USA | USABSS-2 (BSS) | 53, 65 | | 2005-019A DirecTV-8 | 100.79W | C1 |
| | | | | | Direct TV in cont. USA, Alaska, Hawaii, Portorico, Virgin I. | | |
| 100.00 W | USA | FLTSATCOM E PAC | 9-50 | | 1995-027A USA 111 = UFO F5 | 100.4 W | C |
| | USA | FLTSATCOM-B EASTPAC | 72, 82 | | Military communications | | |
| | USA | FLTSATCOM-C E PAC-2 | 9-82 | | | | |
| | USA | USRDSS CENTRAL | 27 | | | | |
| 99.00 W | | | | | 2005-046B Spaceway 2 | 99.19W | C1 |
| | USA | USASAT-24J | 43-57 | • | HDTV for North America 2006-023A Galaxy 16 | 98.99W | C1 |
| | USA | USASAT-31N | 69-78 | | Services in USA, Canada, Alaska, Hawaii 2008-013A DirecTV-11 | 97.86W | PL |
| 98.00 W | | Operational lifetime 2010 | | | HDTV in USA | | |
| 97.00 W | USA | USASAT-24D | 43-57 | • | 1991-018A Inmarsat 2-F2, i=4.49 | 99.6 W | C2 |
| | USA | USASAT-6A | 53, 57 | | 1997-026A Telstar 5=Intelsat Amer. 5 | 97.00W | C1 |
| 95.00 W | USA | COMSTAR D-2 | 43, 47 | | Services in USA, Canada, Alaska, Hawaii, Mexico, Caribb. 2007-036A Spaceway 3 | 94.91W | C1 |
| | USA | USASAT-23F | 52, 57 | • | Internet in North and Central America, Hawaii, part S Amer Galaxy 3C | | |
| | USA | USASAT-24L | 43-57 | • | Galaxy 3C | 95.05W | C1 |
| | USA | USASAT-6C | 53, 57 | | 2002-030A Galaxy 3C | | |
| 93.50 W | USA | USASAT-12B | 43, 47 | | Direct TV, Internet in North and South America | | |
| 93.00 W | USA | USASAT-24S | 43-57 | • | 1999-005A Telstar 6=Intelsat Amer. 6 | 93.02W | C1 |
| | USA | USASAT-24V | 53 | | Services in USA, Alaska, Hawaii, Canada, Mexico, Carib. 2008-016A ICO G1 | 92.82W | PL |
| 92.00 W | B | SBTS B4 | 43, 47 | | Mobile services for cont. USA, Portorico, Virgin Islands 1998-016A Brasilsat B2 Moved in 2008 | 92.03W | PL |
| 91.00 W | CAN | CANSAT KA-2 | 71, 78 | | 1999-027A Nimitz 1 TV for Canada | 91.11W | C1 |
| | USA | USASAT-24K | 43-57 | • | 1999-071A Galaxy 11 | 90.99W | C1 |
| | CAN | BSS2X (BSS) at 91.10W | | | TV in North and Central America, Hawaii, Carib., Brasil | | |
| | USA | USASAT-9A | 53, 57 | | 1993-078A DirecTV-1 Antennas 30 cm | 91.14W | C1 |
| 90.00 W | USA | MILSTAR 1 | 31, 35 | | 2003-012A USA 169 = Milstar-2F4 | 90.00W | C |
| | USA | USGAE-1 | 31-84 | | Military communications | | |
| 89.00 W | USA | USASAT-24E | 43-57 | • | 2005-022A Telsar 8=Intelsat Amer. 8 | 89.00W | C1 |
| | USA | USASAT-31S | 71-78 | | Direct TV to North, Central, South America, Hawaii | | |
| 87.00 W | USA | SPACENET-3 | 43-57 | | 1997-050A GE 3 = Americom 3 | 87.06W | C1 |
| | USA | USASAT-24T | 43, 53 | | Distribution of TV in North America | | |
| 85.00 W | USA | USASAT-3C | 43, 47 | | 1997-002A GE 2 = Americom 2 | 84.99W | C1 |
| | USA | USASAT-24U | 43, 53 | | Distribution of TV in North America | | |
| | USA | USASAT-9C | 53, 57 | | 2004-048A AMC 16 | 85.00 W | C1 |
| | USA | USASAT-31U | 68-78 | | Distribution of TV in North America Alaska, Hawaii, Mexico | | |
| | | | | | 2001-018A XM Radio 1 (Roll) | 85.20W | C1 |
| | | | | 2001-012A XM Radio 2 (Rock) | 85.23W | C1 | |
| | | | | 2005-008A XM Radio 3 (Rhytm) | 85.10W | C1 | |
| 84.00 W | B | B-SAT P | 43, 47 | • | 1998-006A Brasilsat B-3A | 84.01W | C1 |
| | | | | | Services in Brasil and MERCOSUL 2003-024A GE 12 = Americom 9 | 83.75W | C1 |
| | | | | | Serviceas for USA, Canada, Mexico, Caribbean | | |

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|---------|--------------------------|---|--|---|--------------------------------|--------------------|
| 82.00 W | CAN CAN | CANSAT KA-3 CAN-BSS1X (BSS) | 71, 78 | 2002-062A Nimiq 2 Sevices for Canada 1995-029A DirecTV-3 Antenna 30 cm | 82.00W 81.99W | C1 C1 |
| 81.00 W | USA | USASAT-9D | 53, 57 | 1990-091A SBS VI Moved here in 2008 1996-033A Galaxy IX | 80.93W 80.98W | PL C1 |
| 79.00 W | USA USA | TDRS CENTRAL TDRS-C2 | 33-59 33-59 | 1992-060B Satcom C-3, i=3.02 Services in cont. USA, Alaska, Hawaii, Portorico 1998-063B GE 5 = Americom 5 Distribution of TV in cont. USA | 79.06W 79.00W | C2 C1 |
| 77.00 W | MEX MEX USA | QUETZSAT-77 (BSS) MEX-TVD1 (BSS) at 76.80 USASAT-24Q | 43-59 | 1998-028A EchoStar 4, i=0.46 2000-020A Galaxy IV R, i=1.32 | 76.98W 76.85W | C2 C2 |
| 76.00 W | USA | USASAT-12C | 43, 47 | | | |
| 75.00 W | USA USA | GOES EAST GOES-EAST-1 | 17-33 17-35 | 2001-031A GOES 12, i=0.46 Imager, radiometer, Space env. monitoring, SARSAT 1994-049A Brazilsat B1, i=0.79 Services in Brasil and MERCOSUL | 75.00W 75.01W | C2 C2 |
| 74.00 W | USA USA USA | USASAT-15B USASAT-22E USASAT-35V | 53, 57 43, 47 43-57 | 2007-063B Horizons 2 Services in cont. USA, SE Canada, Caribbean | 74.07W | PL |
| 72.50W | CAN | CAN BSS 3 at 72.70W | | 1999-056A DirecTV-1R Direct TV | 72.50W | C1 |
| 72.00 W | ARG USA | NAHUEL-C USASAT-8B | 52-57 • 43, 47 | 1997-002B Nahuel 1A, i=0.40 Direct TV in South and Central America 2000-067A GE 6 = Americom 6 Direct TV, Internet in North and Central America | 71.82W 72.00W | C2 C1 |
| 70.00 W | B B B USA | SBTS B1 SBTS C1 SISCOMIS-3 USRDSS EAST | 43, 47 52-57 49, 50 27 | 2000-046A Brasilsat B4 Services in Brasil and MERCOSUL 2008-018B Star One C2 Services for Latin America, milit. communications | 70.01W 70.05W | C1 PL |
| 68.00 W | USA | MILSTAR-8 | 31-84 | | | |
| 65.00 W | B B B | SBTS B2 SBTS A2 SISCOMIS-2 | 43, 47 • 43, 47 49, 50 | 2007-056A Star One C1 To replace Brazilsat 2 | 64.98W | PL |
| 63.00 W | B B | B-SAT E B-SAT I | 43, 47 • 52-57 | 2004-001A Estrela do Sul 1 Brasil, S. America, Internet in airplanes in N. Atlantic | 63.05W | C1 |
| 62.00 W | USA | TDRS 62W | 33-59 | 2002-011A TDRS 9, i=3.61 Satellites in LEO, Space Shuttle, ISS | 62.26W | C2 |
| 61.50 W | USA | USABSS-8 (BSS) | 53, 54 | 2003-033A Rainbow 1=Cablevision 1 1997-059A EchoStar 3 TV, Internet in cont. USA, Alaska, Hawaii | 61.65W 61.48W | C1 C1 |
| 61.00 W | B B F F USA | B-SAT-Q SBTS B3 EUT EUTELSAT EXB-64W EUT EUTELSAT EXB-64W C USMB-1 | 53 • 43, 47 • 52, 55 43, 48 35 | 2004-031A Amazonas Amazonas Services in Spanish and Portuguese in Americas, Caribbean, W. Europe | 61.02W | C1 |
| 60.00 W | | Operational | | 1997-019A GOES 10, i=2.27 Imager, Radiometer, Space Env. Monitoring, X Ray Sensor | 59.79W | C2 |
| 58.00 W | USA USA USA | USASAT-26G(30B) USASAT-25G USASAT-26G | 52, 55 43, 47 52-57 | 2000-043A PAS 9 Direct TV, Ir nternet in Americas, Caribbean, W Europe | 58.00W | C1 |
| 55.50 W | USA USA USA G | INTELSAT5A 304.5E INTELSAT7 304.5E INTELSAT8 304.5E INTELSAT KUEXT 304.5 (BSS) | 43-57 45-53 43-57 • (BSS) | 1996-037A Intelsat 805 | 55.50W | C1 |
| 55.00 W | G G | INMARSAT-2 AOR WEST INMARSAT-3 AOR WEST | 25-47 25-47 | | | |
| 54.00 W | G | INMARSAT-3 AORWEST2 | 25-47 | | | |
| 53.00 W | USA USA USA USA | INTELSAT IBS 307E INTELSAT5A CONT1 INTELSAT7 307E INTELSAT8 307E | 43-57 43-57 43-57 • 43-57 | 1996-015A Intelsat 707 = VIIA F-2 2005-044A Inmarsat 4F2, i=2.51 | 53.00W 52.76W | C1 C2 |
| 52.50 W | USA | USGCSS PH3B W ATL | 31-50 | 2003-040A USA 170 | 52.7 W | C |
| 50.00 W | USA USA | INTELSAT5A CONT2 INTELSAT7 310E | 43-57 43-57 • | 1995-013A Intelsat VII F-5 = 705 | 50.10W | C1 |
| 49.00 W | USA | TDRS 49W | 33-59 | 1983-026B TDRS EAST, i=12.91 1994-084A USA 107 = DSP F17 Military communications | 48.88W 49.4 W | C2 C |
| 47.00 W | USA | USASAT-25E | 43, 47 | | | |
| 46.00 W | USA | TDRS 46W | 33-59 | 1989-021B TDRS 4, i=9.30 Intersatellite, Intercontinental services | 45.92W | C2 |
| 45.00 W | USA USA USA USA | USASAT-13I(30B) USASAT-13I USASAT-13I-2 USASAT-25D | 52, 55 43-57 • 52, 57 • 43-53 • | 2000-072A PAS 1R = Intelsat 1R PAS 1R = Intelsat 1R PAS 1R = Intelsat 1R | 45.01W | C1 |
| 43.00 W | USA USA | USASAT-25C USASAT-26C | 43, 47 • 53-57 • | 1996-002A PAS 3R = Intelsat 3R PAS 3R = Intelsat 3R Direct TV in Americas 1998-075A PAS 6B = Intelsat 6B Direct TV in S. America 2007-044B Intelsat 11 | 43.01W 43.16W 43.19W | C1 C1 C1 |
| 42.50 W | USA USA | USGCSS PH3 MID-ATL USGCSS PH3B MID-ATL | 31-50 31-50 | | | |

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|---------|-----|-----------------------------|--------|--|--------|----|---------------------|--------|-----|
| 41.00 W | USA | TDRS EAST | 33-59 | 2002-055A TDRS 10, i=2.45 Intersatellite comm. with LEO, Space Shuttle, ISS | 40.84W | C2 | | | |
| 40.50 W | HOL | INTELSAT IBS 319.5E | 43-57 | 1998-014A Intelsat 806 = NSS 806 | 40.50W | C1 | | | |
| | HOL | INTELSAT K 319.5E | 53, 57 | | | | | | |
| | HOL | INTELSAT5A 319.5E | 43-57 | | | | | | |
| | HOL | INTELSAT7 319.5E | 43-57 | | | | | | |
| | HOL | INTELSAT8 319.5E | 43-57 | | | | | | |
| | MCO | MCO-BSS-40.5W | | | | | | | |
| 39.00 W | G | DJCF-2A | 23-54 | 1994-009A USA 99 = Milstar DFS-1 Military communications | 38.8 W | C | | | |
| | | | | 1991-080B USA 75 = DSP F16 Early warning, radiation detection, plasma analyser | 38.9 W | C | | | |
| 38.00 W | USA | USGON-5 | 35 | | | | | | |
| 37.50 W | USA | USASAT-25A | 43, 47 | 2005-003A Americom 12=Worldsat 2 Services in Americas, Europe, Africa | 37.40W | C1 | | | |
| | USA | USASAT-26A | 52-57 | 1994-079A Telstar 11=Orion 1, i=3.44 Data e-mail in N America, Europe, N Africa | 37.53W | C2 | | | |
| 34.50 W | USA | INTELSAT6 325.5E | 43-57 | 2002-016A Intelsat 903 | 34.51W | C1 | | | |
| | USA | INTELSAT7 325.5E | 43-57 | | | | | | |
| | USA | INTELSAT8 325.5E | 43-52 | | | | | | |
| 34.00 W | G | SKYNET-4D | 9-82 | 1998-002A Skynet 4D, i=4.26 Military communications | 34.21W | C2 | | | |
| | G | UKDIGISAT-4A (BSS)at 33.50W | | 2001-005B Skynet 4F, i=2.47 Military communications | 33.94W | C2 | | | |
| | G | SKYNET-4M | 35-50 | | | | | | |
| 31.50 W | USA | INTELSAT8 328.5E | 43-57 | 1997-009A Intelsat VIII F-1 = 801 | 31.50W | C1 | | | |
| 31.00 W | USA | INTELSAT5A ATL6 | 43-57 | | | | | | |
| 30.00 W | E | HISPASAT-1 (and BSS) | 33-57 | 2000-007A Hispasat 1C Services in Spanish in Europe, Central and S. America | 30.04W | C1 | | | |
| | E | HISPASAT-1C | 52, 55 | | | | | | |
| | E | HISPASAT-2A KU | 54, 57 | | | | | | |
| | E | HISPASAT-2A X | 49, 50 | | | | | | |
| | E | HISPASAT-2AKA | 67-78 | | | | | | |
| | E | HISPASAT-2B 30KA | 72, 79 | | | | | | |
| | E | HISPASAT-2B KU | 52, 57 | | | | | | |
| | E | HISPASAT-2C3 KU | 52-57 | | | | | | |
| | E | HISPASAT-2D KU | 52-57 | | | | | | |
| | E | HISPASAT 2U3 (BSS) | | | | | | | |
| | USA | USCID-E4 | 66-79 | 2002-044A Hispasat 1D Services in Spanish in Europe, Central and S. America | 29.99W | C1 | | | |
| | USA | USGGR-3 | 23, 26 | | | | | | |
| | USA | USMB-2 | 35 | | | | | | |
| 29.50 W | USA | INTELSAT6 330.5E | 43-57 | | | | | | |
| | USA | INTELSAT8 330.5E | 43-57 | | | | | | |
| 27.50 W | USA | INTELSAT6 332.5E | 43-57 | 2003-007A Intelsat 907 | 27.46W | C1 | | | |
| | USA | INTELSAT7 332.5E | 43-57 | | | | | | |
| | USA | INTELSAT8 332.5E | 43-57 | | | | | | |
| 26.50 W | URS | GALS-1 | 49, 50 | | | | | | |
| | RUS | STATSIONAR-17 | 43, 47 | | | | | | |
| | RUS | STATSIONAR-D1 | 49, 50 | | | | | | |
| | RUS | STATSIONAR-D1-30B | 43 | | | | | | |
| | RUS | VOLNA-13 | 9-13 | | | | | | |
| | RUS | TOR-1M | 67-82 | | | | | | |
| | G | DJCF-2B | 23-54 | | | | | | |
| 25.00 W | RUS | GALS-9 | 49, 50 | | | | | | |
| | RUS | STATSIONAR-8 | 43, 47 | | | | | | |
| | RUS | TOR-9M | 67-82 | | | | | | |
| | RUS | VOLNA-1A | 9-13 | | | | | | |
| 24.50 W | USA | INTELSAT6 335.5E | 43-57 | 2002-027A Intelsat 905 | 24.52W | C1 | | | |
| | USA | INTELSAT7 335.5E | 43-57 | | | | | | |
| | USA | INTELSAT8 335.5E | 43-57 | | | | | | |
| 24.00 W | F | EUTELSAT EXB-24W | 52, 55 | | | | | | |
| | F | EUTELSAT EXB-24W C | 43, 48 | | | | | | |
| | RUS | PROGNOZ-1 | 33-42 | | | | | | |
| | USA | USCID-E3 | 66-79 | | | | | | |
| 23.00 W | USA | FLTSATCOM ATL | 9-50 | 1996-042A USA 127 = UFO F7 Military communications | 23.3W | C | | | |
| 22.50 W | USA | FLTSATCOM-B EAST ATL | 72, 82 | | | | | | |
| | USA | FLTSATCOM-C E ATL-1 | 9-82 | | | | | | |
| | USA | KASATCOM-2 | 72, 79 | | | | | | |
| 21.50 W | HOL | INTELSAT K 338.5E | 52-57 | 2002-019A NSS-7 Services for Americas, Europe, Africa, Near and Middle East | 21.96W | C1 | | | |
| | HOL | INTELSAT5A 338.5E | 43-57 | | | | | | |
| | HOL | INTELSAT7 338.5E | 43-57 | | | | | | |
| | HOL | INTELSAT8 338.5E | 43-57 | | | | | | |
| 20.00 W | USA | INTELSAT6 340E | 43-57 | 1990-021A Intelsat 603, i=5.05 | 19.94W | C2 | | | |
| | USA | INTELSAT7 340E | 43-57 | | | | | | |
| | USA | INTELSAT8 340E | 43-57 | | | | | | |
| 19.00 W | USA | USMB-3 | 35 | 1996-026A USA 118 = Mercury 2 | 20.7 W | C | | | |
| 18.00 W | F | EUTELSAT EXB-18W | 52, 55 | 2001-024A Intelsat 901 | 18.00W | C1 | | | |
| | F | EUTELSAT EXB-18W C | 43, 48 | | | | | | |
| | F | EUTELSAT B-18W (BSS) | | | | | | | |
| | USA | INTELSAT IBS 342E | 43-57 | | | | | | |
| | USA | INTELSAT5A 342E | 43-57 | | | | | | |
| | USA | INTELSAT7 342E | 43-57 | | | | | | |
| | USA | INTELSAT8 342E | 43-57 | | | | | | |
| | BEL | SATCOM PHASE-3 | 49, 50 | | | | | | |
| 17.80 W | BEL | SATCOM 4 | 49, 50 | | | | 2008-030A Skynet 5C | 17.78W | Enc |

| | | | | | | | |
|----------------|-----|--------------------------|--------|-----------|---|--------|----|
| 17.00 W | G | INMARSAT-3 AOR EAST2 | 25-47 | | | | |
| 16.00 W | RUS | WSDRN | 43-59 | | | | |
| | RUS | ZSSRD-2 | 43-59 | | | | |
| | RUS | ZSSRD-2 (30B) | 52 | | | | |
| 15.50 W | USA | FLTSATCOM-C E ATL-2 | 9-82 | 1989-077A | USA 46 = Fltsatcom F8 | 16.0 W | C |
| | G | INMARSAT-2 AOR EAST | 25-47 | | | | |
| | G | INMARSAT-3 AOR EAST | 25-47 | • | 1996-053A Inmarsat 3-F2 | 15.49W | C1 |
| 15.00 W | USA | USASAT-14L | 52-57 | • | 1999-059A Telstar 12 = Orion 2 | 15.00W | C1 |
| | | | | | TV and data in East USA, S. America, Europe, Middle East | | |
| 14.80 W | F | EUT EUTELSAT-KA-14.8W | 76-78 | | | | |
| 14.50 W | RUS | GOMS-1M | 17-77 | | | | |
| 14.00 W | RUS | EXPRESS-2 | 43-57 | • | 2002-029A Ekspres A1R | 14.00W | C1 |
| | RUS | STATIONAR-4 | 43, 47 | | Distribution of TV, data, Internet | | |
| | RUS | IK STATIONAR-4A | 43, 47 | | | | |
| | URS | LOUTCH-1 | 52, 57 | • | 1996-034A Gorizont 32, I=8.17 | 14.20W | C2 |
| | URS | VOLNA-2 | 25-27 | • | Services in Russia, CIS, system Loutch, Volna | | |
| 13.50 W | RUS | FOTON-1 | 43, 47 | | | | |
| | RUS | POTOK-1 | 43, 47 | | | | |
| 13.00 W | USA | P-197-4 | 31, 35 | | | | |
| | USA | P92-4 | 31, 35 | | | | |
| | USA | USCSID-E2 | 79 | | | | |
| 12.50 W | F | EUT EUTELSAT-3-12.5W | 33-57 | | 2002-040A Atlantic Bird 1 | 12.48W | C1 |
| | F | EUT EUTELSAT EXB-12.5W | 52, 55 | | Direct TV, phone, data, Internet for Europe, N and S Amer. | | |
| | F | EUT EUTELSAT-KA-12.5W | 76-78 | | | | |
| | USA | USLL-ATL2 | 84 | | | | |
| 12.00 W | USA | USGCSS PH3B ATL | 31-50 | | 2000-065A USA 153 Military Comm. | 12.1 W | C |
| | F | EUT EUTELSAT B-12W (BSS) | | | | | |
| 11.00 W | RUS | EXPRESS-3 | 43-57 | • | 2000-031A Ekspres 3A | 11.0W | C1 |
| | URS | LOUTCH-6 | 52, 57 | | Regional distribution of TV, data incl. Internet | | |
| | URS | STATIONAR-11 | 43, 47 | | | | |
| | F | F-SAT 2 | 54, 57 | | | | |
| 10.00 W | F | ESA MSG-S2 | 33, 35 | | | | |
| | USA | P-197-5 | 31, 35 | | | | |
| | USA | P92-3 | 31, 35 | | | | |
| | USA | USCSID-E1 | 66-79 | | 2000-080A USA 155 | 10.1 W | C |
| | USA | USLL-ATL | 84 | | Probably military communications | | |
| | USA | USMB-4 | 35 | | | | |
| 9.50 W | RUS | KUPON-3 | 52, 57 | | | | |
| 8.00 W | F | TELECOM-2A | 33-57 | | | | |
| | F | TELECOM-30B | 52, 55 | | 1996-044B Telecom 2D, i=1.53 | 7.90W | C2 |
| | F | TELECOM-3A | 43, 47 | | Phone, TV., gov. communications | | |
| | F | VIDEOSAT-6 | 33-57 | • | 2001-042A Atlantic Bird 2 | 8.08W | C1 |
| | F | SYRACUSE-3C | 33-82 | | Services for Americas, Europe, N. Africa, Middle East | | |
| | F | RADIOSAT-6C (BSS) | | | | | |
| 7.00 W | F | GEOSAT-30B | 52, 55 | | 1998-013A Hot Bird 4=Atlantic Bird 4 | 7.18W | C1 |
| | F | TELECOM-4D | 43-48 | | Regional services in Europe | | |
| | EGY | NILESAT-102 (BSS) | | | 2000-046B Nilesat 102 | 6.99W | C1 |
| | F | RADIOSAT-5C (BSS) | | | 1998-024A Nilesat 101 | 6.97W | C1 |
| | F | F-SAT-E-BSS-7W | | | Both sat. services for N. Africa, Near East | | |
| 5.00 W | F | Syracuse-3E | 33-82 | | 2006-033B Syracuse 3B | 5.19W | C1 |
| | F | TELECOM-2B | 33-57 | | Military comm. for France and NATO | | |
| | F | TELECOM-3B | 43-48 | • | 2002-035A Atlantic Bird 3 | 5.01W | C1 |
| | F | VIDEOSAT-7 | 33-57 | • | TV, radio and Internet in Europe, Africa, M. East, Americas | | |
| 4.00 W | ISR | AMOS 1-B | 52, 57 | | 1996-030B AMOS 1 | 3.99W | C1 |
| | ISR | AMOS-II 4W | 52, 55 | | 2003-059A AMOS 2 | 3.99W | C1 |
| | NOR | BIFROST-4W-BSS | | | 2008-021A AMOS 3 | 2.45W | PL |
| | HNG | CERES-1 | 52, 55 | | TV, data in Middle East, Central Europe | | |
| | F | RADIOSAT-4C (BSS) | | | | | |
| 3.50 W | | Standby for Meteosat 9 | | | 2002-040B MSG 1=Meteosat 8,i=0.44 | 3.46W | C2 |
| 3.00 W | RUS | GALS-11 | 49, 50 | | | | |
| | RUS | STATIONAR-M2 | 52, 57 | | | | |
| | RUS | TOR-11M | 67-82 | | | | |
| | BLR | IK INTERSPUTNIK-3W | 43-57 | | | | |
| | BLR | IK INTERSPUTNIK-3W-Q | 43-57 | | | | |
| 1.00 W | USA | INTELSAT5A CONT4 | 43-57 | | | | |
| | USA | INTELSAT7 359E | 43-57 | | | | |
| | USA | INTELSAT8 359E | 43-57 | • | 2004-022A Intelsat 10-02 | 0.97W | C1 |
| | G | SKYNET-4A | 9-82 | | 1990-079A Skynet 4C, i=8.67 Military | 1.00W | C2 |
| | G | SKYNET-4J | 31, 35 | | 2007-007B Skynet 5A Military comm. | 1.10W | C1 |
| 0.80 W | NOR | BIFROST (and BSS) | 57 | | 2008-006A Thor 5 Scandinavia, W Eur | 0.62W | PL |
| | NOR | BIFROST-2-FSS | 52, 55 | | 1997-025A Thor II | 0.74W | C1 |
| | NOR | BIFROST-3-FSS | 52, 55 | | 1998-035A Thor III | 0.84W | C1 |
| | NOR | BIFROST-BSS-0.8W-NOR | | | Both sat. for Scandinavia, Greenland, N. E. Europe | | |
| | NOR | BIFROST-19 (BSS) | | | | | |