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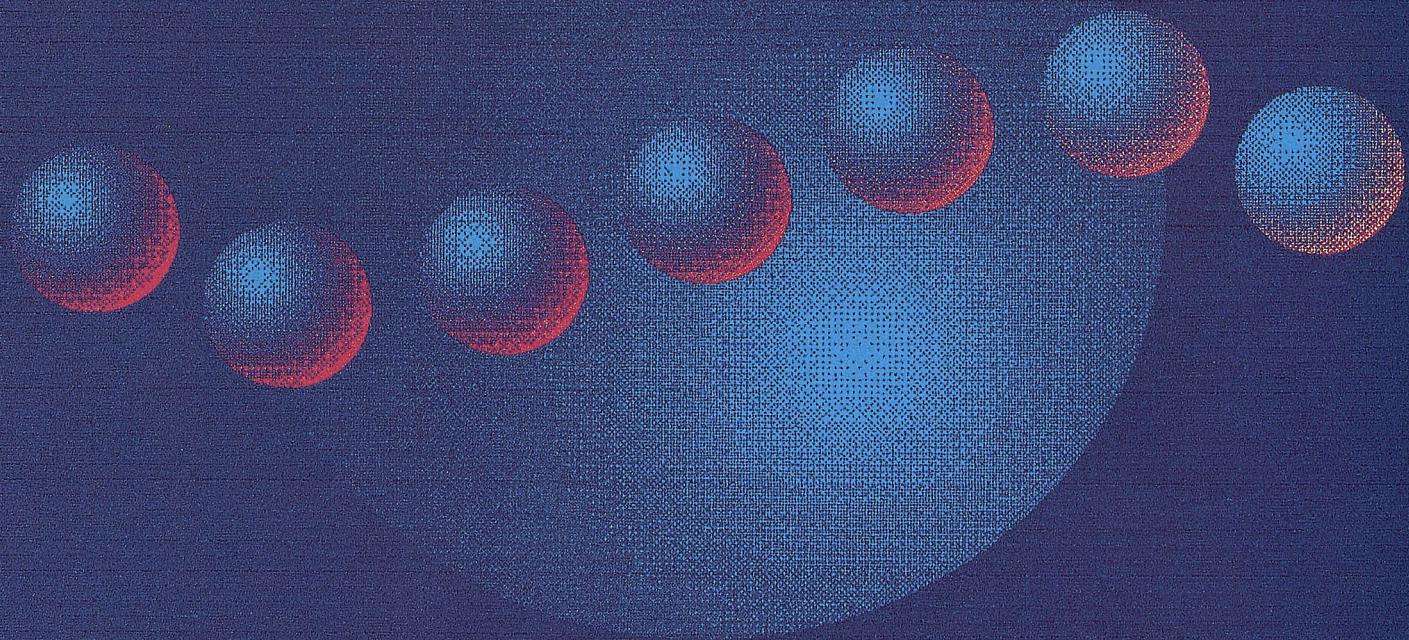
(ITU) للاتصالات الدولي الاتحاد في والمحفوظات المكتبة قسم أجزاء الضوئي بالمسح تصوير نتاج (PDF) الإلكترونية النسخة هذه والمحفوظات المكتبة قسم في المتوفرة الوثائق ضمن أصلية ورقية وثيقة من نقلأً.

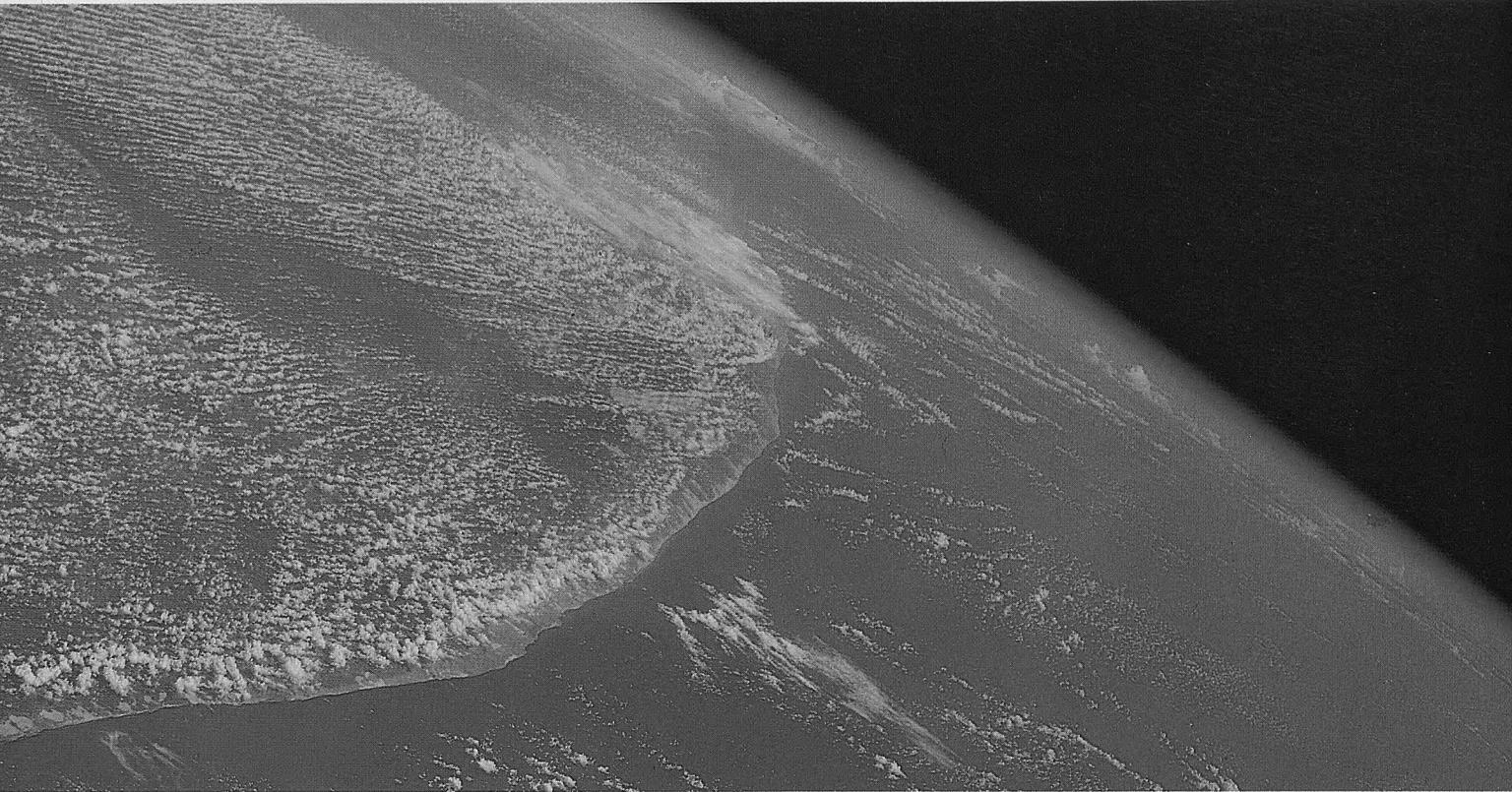
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Настоящий электронный вариант (PDF) был подготовлен в библиотечно-архивной службе Международного союза электросвязи путем сканирования исходного документа в бумажной форме из библиотечно-архивной службы МСЭ.

TABLE  
OF ARTIFICIAL  
SATELLITES  
LAUNCHED IN 1989

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# Settling in.

Traveling at 23,000 miles per hour, Europe's manned orbiter Hermes will quickly leave the coast of Somalia in its wake. And head into the sixteenth sunset of the day.

Just over the horizon, a rendezvous awaits. The Columbus Attached Module, an inhabited scientific platform moored to America's Space Station, prepares for a link-up. Hovering at a safe distance—Columbus Free Flyer, an automated plant for medical and crystal research. And tracking along a heliosynchronous orbit six degrees due west is the Columbus Polar Platform, a complex remote-sensing satellite dedicated to the study of our planet's ice-caps.

In less than a decade, Europe's ambitious agenda in space is scheduled to become a reality. Alcatel Espace looks forward to working with the European Space Agency, and partners like NASA and CNES, to make the process of settling in a little easier.

Our contribution? Earth-to-orbit transmission links. An orbital computer-driven video master station. Keyboard and display sets for the Columbus workstation. And the kind of innovative scientific and telecommunications payload packages for which Alcatel Espace has forged an international reputation over twenty-five years, and across more than fifty multi-venture spacecraft programs.

ALCATEL  
ESPACE

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A	1989-01-1	Argo/Myri	1989-01-A
B	1989-01-2	Nikabone	1989-01-B
C	1989-01-3		1989-01-C
D	1989-01-4		1989-01-D
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D	1989-01-186		1989-01-D
E	1989-01-187		1989-01-E
F	1989-01-188		1989-01-F
G	1989-01-189		1989-01-G
H	1989-01-190		1989-01-H
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L	1989-01-194		1989-01-L
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C	1989-01-211		1989-01-C
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C	1989-01-237		1989-01-C
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H	1989-01-242		1989-01-H
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O	1989-01-249		1989-01-O
P	1989-01-250		1989-01-P
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B	1989-01-262		1989-01-B
C	1989-01-263		1989-01-C
D	1989-01-264		1989-01-D
E	1989-01-265		1989-01-E
F	1989-01-266		198





Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data			Frequencies Transmitter power	Observations
				Perigee (km) Apogee (km)	Period (min)	Inclination (degree)		
<b>Cosmos-1987</b> to <b>Cosmos-1989</b>	1989-1-A to 1989-1-C	USSR (Baikonur)	10 Jan.	19 113 19 140	675 65			Three satellites launched into near circular orbit. Instruments to test a space navigation system for aircraft and ocean-going ships
<b>Cosmos-1990</b>	1989-2-A	USSR	12 Jan.	192 259	88.7 82.6			Exploration of Earth resources. Photography of seismically active regions of the USSR including Armenia. Recovered on 11 February 1989
<b>Cosmos-1991</b>	1989-3-A	USSR	18 Jan.	216 401	90.4 70			Recovered on 1 February 1989
<b>Gorizont-17</b> 3-axis stabilized; solar panels	1989-4-A	USSR (Baikonur)	26 Jan.	36 506	1473 1.3	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)		Television and multichannel radiocommunications
<b>Cosmos-1992</b>	1989-5-A	USSR (Baikonur)	26 Jan.	777 814	100.7 74			
<b>Intelsat-5A F15</b> 3-axis stabilized; height: 6.6 m; 2 solar arrays	1989-6-A	International INTELSAT (Kourou)	27 Jan.	35 355 35 709	1423.1 0.3	6/4 and 14/11 GHz bands (communications)		Commercial telecommunications. Replaces <i>Intelsat-5A F12</i> which has been moved to the Atlantic region
<b>Cosmos-1993</b>	1989-7-A	USSR	28 Jan.	180 382	89.9 64.8			Recovered on 27 March 1989
<b>Progress-40</b> modified <i>Soyuz</i> spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1989-8-A	USSR (Baikonur)	10 Feb.	193 262	88.8 51.6			Expendable supply craft. Docked with the <i>Mir-1</i> space complex on 12 February 1989. Corrected <i>Mir-1's</i> flight trajectory. Undocked and disintegrated on re-entry on 5 March 1989
<b>Cosmos-1994</b> to <b>Cosmos-1999</b>	1989-9-A to 1989-9-F	USSR (Plesetsk)	10 Feb.	1403 1442	114.1 82.6			
<b>Cosmos-2000</b>	1989-10-A	USSR	10 Feb.	191 275	88.8 82.3			Earth resources exploration. Recovered on 3 March 1989

<b>Cosmos-2001</b>	1989-11-A	USSR (Plesetsk)	14 Feb.	613 39 342	709 62.8	5.7-6.3 GHz (reception)	Television and multichannel radiocommunications
<b>Cosmos-2002</b>	1989-12-A	USSR	14 Feb.	187 2315	110.4 65.8	1.4 GHz (reception)	Decayed on 15 October 1989
<b>USA-35</b>	1989-13-A	United States (Khartoum)	14 Feb.	20 010 20 455	720.0 55.1	1.4 GHz (reception)	Decayed on 15 October 1989
<b>Molnya-1 (75)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1989-14-A	USSR (Plesetsk)	15 Feb.	486 38 937	698 62.5	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications
<b>Cosmos-2003</b>	1989-15-A	USSR	17 Feb.	249 271	89.5 62.8		Recovered on 3 March 1989
<b>EXOS-D (Akebono)</b>	1989-16-A	Japan Institute of Space and Aeronautical Science (Kagoshima)	21 Feb.	276 10 474	211.3 75.1	2280.5 MHz 400.45 MHz	Study of formation of auroras in the upper atmosphere
<b>Cosmos-2004</b>	1989-17-A	USSR	22 Feb.	993 1031	105.1 83		Decay on 30 November 1989
<b>Meteor-2 (18)</b> cylinder; 2750 kg; 2 solar panels	1989-18-A	USSR (Plesetsk)	28 Feb.	951 974	104.1 82.5		Meteorology. Instruments for obtaining global of cloud layers and the underlying surface in the visible and infra-red ranges of the spectrum, and for the constant observation of the streams of penetrating radiation in circumterrestrial space
<b>Cosmos-2005</b>	1989-19-A	USSR	2 March	197 347	89.7 62.8		Recovered on 25 April 1989
<b>JCSAT-1</b> Hughes-type HS 393 spin-stabilized cylinder; diameter: 3.7 m; height: 10 m	1989-20-A	Japan (Kourou)	6 March	35 782 35 793	1436.2 0.1		Japanese communications satellite. Thirty-two transponders of 20 W
<b>MOP-1</b>	1989-20-B	International EUMETSAT (Kourou)	6 March	35 214 35 886	1424.0 1.2		Meteorology

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data			Frequencies Transmitter power	Observations
				Perigee (km)	Apogee (km)	Inclination (degree)		
<b>STS-29</b> space shuttle <i>Discovery</i>	1989-21-A	United States NASA (Kennedy Space Center)	13 March	305 337	91.0 28.5			Reusable spacecraft. Crew: M. L. Coats, J. F. Buchli, J. E. Blaha, R. C. Springer and J. P. Bagian. Landed at Edwards Air Force Base on 19 March 1989
<b>TDRS-4</b>	1989-21-B	United States launched from <i>STS-29</i>	13 March	35 653 35 832	1433.9 0.2	in geostationary-satellite orbit at 41° W	2 and 14-15 MHz bands	Tracking and data relay satellite for the United States Space Programme
<b>Cosmos-2006</b>	1989-22-A	USSR	16 March	249 402	90.8 62.9			Recovered on 31 March 1989
<b>Progress-41</b> modified <i>Soyuz</i> spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.5 m	1989-23-A	USSR (Baikonur)	16 March	193 260	89.7 51.6			Expendable supply craft. Docked with <i>Mir-1</i> on 18 March 1989. Undocked and disintegrated on re-entry on 25 April 1989
<b>Cosmos-2007</b>	1989-24-A	USSR	23 March	190 300	89.1 64.8			Decayed on 22 September 1989
<b>Cosmos-2008</b> to	1989-25-A	USSR (Plesetsk)	24 March	1445 1510	115.2 74			
<b>Cosmos-2015</b>	1989-25-H							
<b>USA-36</b>	1989-26-A	United States	24 March	482 503	94.5 47.7			Experimental missile hunting satellite equipped with a laser radar, seven video imaging cameras and an infra-red imager
<b>Tele-X</b>	1989-27-A	Scandinavia (Kourou)	2 April	30 510 35 817	1304.1 0.1	14/12 GHz band		Scandinavian telecommunications and television. Six transponders
<b>Cosmos-2016</b>	1989-28-A	USSR	4 April	973 1026	104.9 82.9			
<b>Cosmos-2017</b> <i>Cosmos-2018</i> <i>Cosmos-2001</i>	1989-29-A	USSR	6 April	244 284	89.7 62.8			Recovered on 19 April 1989

<b>Raduga-23</b> 3-axis stabilized; 5 tonnes; solar panels	1989-30-A	USSR (Baikonur)	14 April	36 523	1474 1.4 in geostationary-satellite orbit	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>Cosmos-2018</b>	1989-31-A	USSR	20 April	194 350	89.7 62.8		Recovered on 19 June 1989
<b>Foton-2</b>	1989-32-A	USSR	26 April	225 402	90.5 62.8		Space material studies. Recovered on 11 May 1989
<b>STS-30</b> space shuttle <i>Atlantis</i>	1989-33-A	United States NASA (Kennedy Space Center)	4 May	297 331	90.8 28.9	S band UHF	Reusable spacecraft. Landed at Edwards Air Force Base on 8 May 1989
<b>Magellan</b>	1989-33-B	United States launched from STS-30	4 May		trans-Venus trajectory		Global mapping of Venus by means of a radar mapping device
<b>Cosmos-2019</b>	1989-34-A	USSR	5 May	247 268	89.5 62.9		Recovered on 18 May 1989
<b>USA-37</b>	1989-35-A	United States Department of Defense	10 May				
<b>Cosmos-2020</b>	1989-36-A	USSR	17 May	180 365	89.7 64.8		Recovered on 15 July 1989
<b>Cosmos-2021</b>	1989-37-A	USSR	24 May	204 302	89.3 70		Space research, orbital measurement and radio telemetry. Recovered on 6 July 1989
<b>Resurs-F</b>	1989-38-A	USSR	25 May	188 263	88.7 82.3		Large scale multizonal and spectrozonal spanning. Recovered on 17 June 1989
<b>Cosmos-2022</b>	1989-39-A	USSR (Baikonur)	31 May	19 133 19 158	676.0 64.8		
<b>Cosmos-2023</b>	1989-39-B	USSR (Baikonur)	31 May	18 582 19 140	664.5 64.8		
<b>Cosmos-2024</b>	1989-39-C	USSR (Baikonur)	31 May	19 118 19 155	675.4 64.8		
<b>Cosmos-2025</b>	1989-40-A	USSR	1 June	252 275	89.6 62.8		Space research, orbital measurement and radio telemetry. Recovered on 15 June 1989

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data			Frequencies Transmitter power	Observations
				Perigee (km) Apogee (km)	Period (min)	Inclination (degree)		
Superbird-A	1989-41-A	Japan (Kourou)	5 June	35 628 35 831	1433.1 0.1		17-29 GHz	Japanese communications satellite. Carries 29 transponders
DFS-1	1989-41-B	Fed. Rep. of Germany (Kourou)	5 June	35 646 35 878	1434.8 0.2			
Cosmos-2026	1989-42-A	USSR	7 June	969 1022	104.8 82.9			Space research, orbital measurement and radio telemetry
Molnya-3 (35) 3-axis stabilized; 1500 kg	1989-43-A	USSR (Plesetsk)	8 June	631 40 696	747 62.9	5.9-6.2 MHz (reception) 3.6-3.9 MHz (emission)		Television and multichannel radiocommunications
USA-38	1989-44-A	United States	10 June	20 094 20 276	781.1 54.6			Navigation
Cosmos-2027	1989-45-A	USSR	14 June	484 522	94.06 65.9			
USA-39	1989-46-A	United States Department of Defense (Vandenberg)	14 June					
Cosmos-2028	1989-47-A	USSR	16 June	217 314	89.5 70			Space research, orbital measurement and radio telemetry. Recovered on 6 July 1989
Raduga-1 (1)	1989-48-A	USSR (Baikonur)	21 June	36 538	1472 1.5 in geostationary-satellite orbit			Telephone and telegraph radiocommunications
Resurs-F2	1989-49-A	USSR	27 June	195 262	88.7 82.6			Multizonal and multispectral photography of varied scales. Recovered on 11 July 1989
Nadezhda	1989-50-A	USSR	4 July	979 1026	104.9 83			Navigational system for determining the location of ships. International search and rescue system for ships and aircraft in distress
Cosmos-2029	1989-51-A	USSR	5 July	193 270	88.8 82.3			Recovered on 19 July 1989

<b>Gorizont-18</b> 3-axis stabilized; solar panels	1989-52-A	USSR (Baikonur)	5 July	35 100 in geostationary-satellite orbit	1401 1.5	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>Olympus</b> 2595 kg at launch	1989-53-A	Europe ESA (Kourou)	12 July	33 304 36 113 in geostationary-satellite orbit at 19° W	1381.4 0.2	14/12, 17/19-20, 28 and 30 GHz bands	Communications
<b>Cosmos-2030</b>	1989-54-A	USSR	12 July	177 373	89.7 67.2		Recovered on 29 July 1989
<b>Resurs-F3</b>	1989-55-A	USSR	18 July	195 253	88.6 82.6		Multizonal and multispectral photography of varied scales. Recovered on 8 August 1989
<b>Cosmos-2031</b>	1989-56-A	USSR	18 July	200 283	89.0 50.5		Recovered on 15 September 1989
<b>Cosmos-2032</b>	1989-57-A	USSR	20 July	193 275	88.8 82.3		Recovered on 3 August 1989
<b>Cosmos-2033</b>	1989-58-A	USSR	24 July	410 436	92.3 65.0		
<b>Cosmos-2034</b>	1989-59-A	USSR	25 July	988 1026	105 82.9		
<b>Cosmos-2035</b>	1989-60-A	USSR	2 August	191 268	88.8 82.6		Recovered on 16 August 1989
<b>STS-28</b> space shuttle <i>Columbia</i>	1989-61-A	United States Department of Defense (Kennedy Space Center)	8 August	314 317	90.5 56.9		Reusable spacecraft. Crew: B. Shaw, D. Leetsma, D. Richards, J. Adamson and M. Brown. Landed at Edwards Air Force Base on 13 August 1989
<b>USA-40</b>	1989-61-B	United States Department of Defense launched from <i>STS-28</i>	8 August				
<b>USA-41</b>	1989-61-C	United States Department of Defense launched from <i>STS-28</i>	8 August				

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data			Frequencies Transmitter power	Observations
				Perigee (km) Apogee (km)	Period (min)	Inclination (degree)		
<b>TVSat-2</b> 2080 kg; solar panels	1989-62-A	Fed. Rep. of Germany (Kourou)	8 August	35 554 35 785	1429.9 0.2	in geostationary-satellite orbit at 19° W	12 and 17 GHz bands	Direct-broadcasting satellite
<b>Hipparcos</b>	1989-62-B	Europa ESA (Kourou)	8 August	223 35 632	628.9 7.0			Astronomical research. Apogee motor failed to light and the satellite failed to reach its correct orbit
<b>Resurs-F4</b>	1989-63-A	USSR	15 August	192 258	89.0 82.3			Equipment for taking multizonal and multispectral photographs of varied scales. Recovered on 14 September 1989
<b>USA-42</b>	1989-64-A	United States	18 August	20 113 20 249	717.9 55.0			Navigation
<b>Cosmos-2036</b>	1989-65-A	USSR	22 August	248 273	89.6 62.8			Recovered on 5 September 1989
<b>Progress-M (1)</b>	1989-66-A	USSR (Baikonur)	23 August	191 235	88.5 51.6			First of a new series of automatic cargo spacecraft. Decayed on 1 December 1989
<b>BSB-R1 (Marco Polo-1)</b> Hughes-type HS 376	1989-67-A	United Kingdom British Satellite Broadcasting Co. (Kennedy Space Center)	27 August	35 777 35 787	1435.76 0.15	14/11-12 GHz band		Direct-broadcasting satellite. D-MAC modulation
<b>Cosmos-2037</b>	1989-68-A	USSR	28 August	1503 1537	116.1 73.6			Launched by the <i>Tsiklon</i> rocket
<b>USA-43</b>	1989-69-A	United States Department of Defense (Vandenberg)	4 Sept.	38 113 33 304	102 178.4	30 GHz (downlink) 1410° 1310° 38° 38° (uplink)		Communication system for determining the location of ships and aircrafts and relay system for telephone and television circuits
<b>USA-44</b>	1989-69-B	United States Department of Defense (Vandenberg)	4 Sept.	38 103 33 300	102 178.4	30 GHz (downlink) 34-37° 61.1° (uplink) 31-33° 61.1° (uplink) 31-33° 61.1° (uplink)		Recovered on 19 July 1990

<b>GMS-4 (Himawari-4)</b>	1989-70-A	Japan (Tanegashima)	5 Sept.	in geostationary-satellite orbit at 140° E	2280.72 MHz; 5 W 1694.0 MHz; 2 W 468.875 MHz; 4 W 468.883 MHz; 4 W 468.924 MHz; 4 W 1681.6 MHz; 20 W 1684.0 MHz; 20/2 W 1687.1 MHz; 20 W 1691.0 MHz; 20 W	Meteorology	
<b>Cosmos-3010</b>	1989-71-V	United States (Cape Canaveral Air Force Station)	13 Sept.	10 days		Communication system test	
<b>Soyuz-TM 8</b> 7 tonnes at launch	1989-71-A	USSR (Baikonur)	5 Sept.	387 407	92.7 51.6	Docked with the <i>Mir-1</i> orbital complex on 7 September 1989	
<b>USA-45</b>	1989-72-A	United States Department of Defense (Vandenberg)	6 Sept.			Navigation	
<b>Resurs-F5</b>	1989-73-A	USSR	6 Sept.	189 261	88.7 82.3	Equipment for taking multizonal and multispectral photographs of varied scales. Equipment from the Federal Republic of Germany for biotechnological experiments in low-gravity conditions. Recovered on 22 September 1989	
<b>Cosmos-2038</b> to <b>Cosmos-2043</b>	1989-74-A to 1989-74-F	USSR (Plesetsk)	14 Sept.	1394 1435	114 82.6	Recovered on 30 October 1989	
<b>Cosmos-2044</b>	1989-75-A	USSR	15 Sept.	216 294	89.3 82.3	Carries two monkeys, other biological objects and instruments for studying the influence of weightlessness and cosmic radiation on living organisms. Recovered on 29 September 1989	
<b>Cosmos-2045</b>	1989-76-A	USSR	22 Sept.	216 322	89.6 70	Recovered on 2 October 1989	
<b>USA-46 (FLTSATCOM-8)</b> 3-axis stabilized hexagon	1989-77-A	United States (Kennedy Space Center)	25 Sept.	35 774 35 791	1413.4 5.0	8/7 GHz band	
				in geostationary-satellite orbit		Government communications	
<b>Molnya-1 (76)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1989-78-A	USSR (Plesetsk)	27 Sept.	650 38 960	702 62.8	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data			Frequencies Transmitter power	Observations
				Perigee (km)	Apogee (km)	Inclination (degree)		
Cosmos-2046	1989-79-A	USSR	27 Sept.	412 431		92.8 65		
Intercosmos-24 (Aktivnyi)	1989-80-A	USSR	28 Sept.	505 2492		115.9 82.6		Study of low-frequency electromagnetic emissions
Magion-2	1989-80-B	Czechoslovakia launched from <i>Intercosmos-24</i>	3 Oct.	504 2494		115.9 82.5		Simultaneous research with <i>Intercosmos-24</i>
Gorizont-19 3-axis stabilized; solar panels	1989-81-A	USSR (Baikonur)	28 Sept.	35 753	1434 1.3	5.7-6.2 GHz (reception)		Television and multichannel radiocommunications
					in geostationary-satellite orbit	3.4-3.9 GHz (emission)		
Cosmos-2047	1989-82-A	USSR	3 Oct.	178 357		89.5 67.2		Recovered on 21 November 1989
Cosmos-2048	1989-83-A	USSR	17 Oct.	248 270		89.4 62.8		Recovered on 26 October 1989
STS-34 space shuttle <i>Atlantis</i>	1989-84-A	United States NASA (Kennedy Space Center)	18 Oct.	295 323	90.5 34.3			Reusable spacecraft. Crew: M. McCulley, S. W. Lucid, F. Chang-Diaz and E. S. Baker. Landed at Edwards Air Force Base on 23 October 1989
Galileo	1989-84-B	United States launched from <i>STS-34</i>	18 Oct.					Remote sensing of Jupiter and its satellites
USA-47	1989-85-A	United States	21 Oct.					Navigation
Meteor-3 (3)	1989-86-A	USSR	24 Oct.	1191 1228	109.5 82.6			Meteorology. Optical-mechanical scanning television, radiometric equipment and a geophysical instrument
Intelsat-6A F2 3-axis stabilized	1989-87-A	International INTELSAT (Kourou)	27 Oct.	in geostationary-satellite orbit		6/4 and 14/11 GHz bands		Thirty-eight C-band and ten K-band transponders. Commercial telecommunications
Cosmos-2049	1989-88-A	USSR	17 Nov.					
COBE	1989-89-A	United States (Vandenberg)	18 Nov.					Monitoring of cosmic background radiation

LIST OF ORBITATIONAL SPACE STATIONS BY CRITICAL POSITION							
CRITICAL POSITION: EQUATORIAL, GEOSTATIONARY, LOW EARTH AND HIGH EARTH ORBITS							
STS-33 space shuttle <i>Discovery</i>	1989-90-A	United States NASA (Kennedy Space Center)	23 Nov.				Space transportation System 33. Reusable spacecraft. Crew: F. D. Gregory (commander), J. E. Blaha, M. L. Carter, F. S. Musgrave and K. C. Thornton. Landed at Edwards Air Force Base on 27 November 1989
No name 2700 kg	1989-90-B	United States National Security Agency launched from STS-33		geosynchronous orbit			Similar to 1985-10-B
Cosmos-2050	1989-91-A	USSR	23 Nov.	603 39 342	709 62.8		Exploration of outer space
Cosmos-2051	1989-92-A	USSR	24 Nov.	305 456	92.8 64.8		
Kvant-2 cylinder; 5.8 × 4.15 m; 11 tonnes	1989-93-A	USSR	26 Nov.	344 413	91.8 51.6		Docked with <i>Mir-1</i> space complex on 6 December 1989
Molnya-3 (36) 3-axis stabilized; 1500 kg	1989-94-A	USSR (Plesetsk)	28 Nov.	662 40 600	156 62.5	5.9-6.2 GHz (reception) 3.6-3.9 GHz (emission)	Television and multichannel radiocommunications
Cosmos-2052	1989-95-A	USSR	30 Nov.	175 373	89.7 67.2		
Granat	1989-96-A	USSR	1 Dec.	2000 200 000	5880 51.6		Research on X and gamma radiation. Experiments from USSR, France, Denmark and Bulgaria
USA-49	1989-97-A	United States	11 Dec.				
Raduga-24 3-axis stabilized; 5 tonnes; solar panels	1989-98-A	USSR (Baikonur)	15 Dec.	36 551	1475 1.5 in geostationary-satellite orbit	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television and multichannel radiocommunications
Progress-M2	1989-99-A	USSR (Baikonur)	20 Dec.				Expendable supply craft. Docked with <i>Mir-1</i>
Cosmos-2053	1989-100-A	USSR	27 Dec.	527 548	95.2 73.6		
Cosmos-2054	1989-101-A	USSR	27 Dec.	36 436	1469 1,5	SHF band	Telecommunication relay

ESA = European Space Agency

EUMETSAT = European Organization for the Exploitation of Meteorological Satellites

INTELSAT = International Telecommunications Satellite Organization

NASA = National Aeronautics and Space Administration (United States)

*The following satellites have decayed since the preparation of the "Table of artificial satellites launched in 1988" published in May 1989*

<i>satellite</i>	<i>international number</i>	<i>decay</i>
OSO-2	1965-7-A	9 August 1989
OPS-7353	1965-21-A	31 December 1989
Cosmos-103	1965-112-A	2 January 1990
Cosmos-122	1966-57-A	14 November 1989
Cosmos-156	1967-39-A	23 October 1989
Cosmos-184	1967-102-A	2 April 1989
Cosmos-206	1969-19-A	22 April 1989
Cosmos-851	1976-85-A	5 August 1989
Cosmos-1064	1978-119-A	12 November 1989
Sage	1979-13-A	11 April 1989
Molnya-1 (43)	1979-31-A	9 December 1989
Bhaskara	1979-51-A	17 February 1989
Ariane-6	1979-104-A	27 November 1989
SMM	1980-14-A	2 December 1989
Cosmos-1179	1980-37-A	18 July 1989
Cosmos-1310	1981-95-A	3 April 1989
Cosmos-1345	1982-26-A	27 September 1989
Cosmos-1427	1982-121-A	5 October 1989
Cosmos-1453	1983-34-A	8 May 1989

<i>satellite</i>	<i>international number</i>	<i>decay</i>
Cosmos-1501	1983-101-A	26 May 1989
Exos-3 (Ohzora)	1984-15-A	19 July 1989
LDEF-1	1984-34-B	20 January 1990
Cosmos-1601	1984-104-A	29 November 1989
Cosmos-1662	1985-50-A	16 November 1989
USA-13	1985-114-A	11 May 1989
Cosmos-1813	1987-4-A	13 March 1989
Cosmos-1868	1987-61-A	2 March 1989
Cosmos-1870	1987-64-A	29 July 1989
Cosmos-1902	1987-103-A	30 December 1988
Cosmos-1958	1988-60-A	21 March 1989
Soyuz-TM 6	1988-75-A	21 December 1988
Horizon-1	1988-87-A	14 January 1989
Cosmos-1979	1988-101-A	25 December 1989
Soyuz-TM 7	1988-104-A	27 April 1989
Cosmos-1984	1988-110-A	13 February 1989
Progress-39	1988-114-A	7 February 1989
Cosmos-1986	1988-116-A	11 February 1989

Galaxy-10	1980-01-N	19 Nov.
Galaxy-11	1980-02-N	17 Nov.
Galaxy-12	1980-03-N	18 Nov.
Galaxy-13	1980-04-N	33 Nov.
Galaxy-14	1980-05-N	

Galaxy-15	1980-06-N	19 Nov.
Galaxy-16	1980-07-N	19 Nov.
Galaxy-17	1980-08-N	19 Nov.
Galaxy-18	1980-09-N	19 Nov.
Galaxy-19	1980-10-N	19 Nov.

Orbital position		Space station	Frequency bands GHz																			
0	1		2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40		
178.00 W C	USA	USASAT-13K			4	6																
177.00 W A	USA	FLTSATCOM-A W PAC	0	C1		5	6	7	8													
175.00 W A	PNG	PACSTAR A-2			4	6					12	13	14									
175.00 W C	PNG	PACSTAR-2									13	14										
174.00 W A	USA	TDRS 174W			2	4	6															
172.50 W A	TON	TONGASAT C-4																				
171.00 W N	USA	TDRS WEST			2																	
171.00 W A	USA	USASAT-14E				4	6	7	8				14	15								
170.00 W N	URS	GALS-4																				
170.00 W N	URS	STATSIONAR-10				4	5	6														
170.00 W A	URS	STATSIONAR-10A				4	6															
170.00 W C	URS	STATSIONAR-D2				4	6															
170.00 W C	URS	TOR-5																				
170.00 W N	URS	VOLNA-7	0	1		4	6															
169.50 W A	URS	FOTON-3				4	6															
168.00 W N	URS	POTOK-3				4																
165.00 W A	USA	USASAT-13L								11	12	14										
160.00 W N	URS	ESDRN							11	12	14											
159.00 W C	URS	PROGOZO-7			2	4																
155.00 W C	URS	STATSIONAR-26				4	5	6														
149.00 W N	USA	ATS-1	0		0	4	6															
148.00 W A	USA	MILSTAR 12	0	0	2																	
146.00 W A	MEX	AMIGO-2								12												
146.00 W C	USA	USASAT-20C				4	6															
145.00 W A	MEX	MORELOS 4				4	6			12	14											
145.00 W C	URS	VOLNA-21M	1						7	8												
145.00 W A	USA	FLTSATCOM-A PAC	0																			
144.00 W A	USA	USASAT-20B				4	6															
143.00 W N	USA	US SATCOM-6				4	6															
141.00 W A	MEX	MORELOS 3				4	6				12	14										
140.00 W C	USA	USASAT-17C				4	6															
139.00 W N	USA	US SATCOM I-R				4	6															
137.00 W A	USA	USASAT-17B				4	6															
136.00 W A	MEX	AMIGO-1								12	14		17									
136.00 W N	USA	USASAT-16D																				
135.00 W N	USA	GOES WEST	0	1	2					12	14											
135.00 W N	USA	US SATCOM-1				4	6															
135.00 W A	USA	USASAT-21A				4	6															
135.00 W N	USA	USGCCS PH2 E PAC			C2			7	8													
135.00 W N	USA	USGCCS PH3 E PAC				4	6															
134.00 W N	USA	USASAT-11D								12	14											
134.00 W C	USA	USASAT-16C																				
133.00 W A	USA	USASAT-22A																				
132.00 W C	USA	USASAT-11C								12	14											
131.00 W N	USA	US SATCOM 3-R				4	6															

Orbital position	Space station	Frequency bands GHz																			
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40
130.00 W C	USA	ACS-3																			
130.00 W C	USA	USASAT-10D																			
130.00 W A	USA	USGCCS PH2 E PAC-2																			
130.00 W A	USA	USGCCS PH3 E PAC-2																			
130.00 W A	USA	USRDSS WEST																			
128.00 W N	USA	ACS-1																			
128.00 W N	USA	COMSTAR D-1																			
127.00 W A	USA	USASAT-21B																			
126.00 W C	USA	USASAT-10C																			
126.00 W N	USA	USASAT-20A																			
125.00 W A	USA	USASAT-22B																			
124.00 W C	USA	USASAT-10B																			
123.50 W N	USA	WESTAR-2																			
123.00 W N	USA	WESTAR-5																			
122.00 W N	USA	USASAT-10A																			
120.00 W A	USA	MILSTAR 6	0		2																
120.00 W C	USA	SPACENET-1				4	6														
119.00 W A	USA	OMRDSS WEST	1	2		5	6														
119.00 W N	USA	US SATCOM-2				4	6														
118.70 W C	CAN	ANIK C-3																			
116.50 W N	MEX	MORELOS 2				4	6														
114.90 W C	CAN	ANIK C-1																			
113.50 W N	MEX	MORELOS 1				4	6														
110.50 W N	CAN	ANIK D-2			C4	C6															
110.50 W C	CAN	ANIK E-B				4	6														
110.00 W N	CAN	ANIK C-2																			
107.30 W C	CAN	ANIK E-A				4	6														
106.50 W A	CAN	MSAT	0	C1	2																
106.00 W A	ASA	SIMON BOLIVAR 1				4	6														
105.00 W N	USA	ATS-5	0	1																	
105.00 W N	USA	FLTSATCOM-A EAST PAC	0																		
105.00 W C	USA	GSTAR-2																			
104.50 W N	CAN	ANIK D-1				4	6														
103.00 W C	USA	GSTAR-1																			
101.00 W C	USA	USASAT-16B																			
101.00 W C	USA	USASAT-17A				4	6														
100.00 W A	USA	ACCS-1																			
100.00 W A	USA	ACTS																			
100.00 W N	USA	FLTSATCOM E PAC	0																		
100.00 W N	USA	FLTSATCOM-B EAST PAC																			
100.00 W A	USA	USRDSS CENTRAL			1	2	5	6													
99.00 W A	USA	USASAT-22C			</																

Orbital position		Space station	Frequency bands GHz																			
			0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40
95.00 W N	USA	USASAT-6C										12	14									
93.50 W N	USA	USASAT-12B				4		6														
93.00 W C	USA	USASAT-16A										12	14									
91.00 W C	USA	USASAT-9A										12	14									
91.00 W C	USA	WESTAR 6-S				4		6														
91.00 W N	USA	WESTAR-3				4		6														
90.00 W A	USA	MILSTAR 1	0		2																C20	C*
89.00 W A	ASA	SIMON BOLIVAR-B				4		6														
89.00 W A	USA	OMRDSS EAST		1	2		5	6				12	14									
89.00 W A	USA	USASAT-24E				4		6				12	14									
88.50 W C	USA	SPACENET-3				4		6				12	14									
88.50 W A	USA	USASAT-12D				4		6														
87.00 W N	USA	COMSTAR D-3				4		6														
87.00 W A	USA	USASAT-9B										12	14									
86.00 W N	USA	ATS-3	0																			
86.00 W N	USA	USASAT-3C				4		6														
85.00 W A	ARG	NAHUEL-2				4		6				12	14									
85.00 W C	USA	USASAT-9C										12	14									
83.00 W A	CUB	STSC-1				4		6														
83.00 W C	USA	USASAT-9D				4		6				12	14									
81.00 W N	USA	USASAT-7B				4		6														
81.00 W N	USA	USASAT-7D				4		6				12	14									
80.00 W A	ARG	NAHUEL-1				4		6				12	14									
79.00 W N	USA	TDRS CENTRAL		2													14	15				
79.00 W A	USA	TDRS-C2		2													14					
79.00 W C	USA	USASAT-11A										12	14									
79.00 W N	USA	USASAT-12A				4		6				12	14									
79.00 W A	USA	USASAT-24F				4		6				12	14									
77.50 W A	ASA	SIMON BOLIVAR-A				4		6														
77.00 W C	USA	USASAT-11B										12	14									
76.00 W C	USA	USASAT-12C				4		6														
75.40 W A	CLM	COLOMBIA 1A				4		6														
75.40 W N	CLM	SATCOL-1A				4		6														
75.40 W N	CLM	SATCOL-1B				4		6														
75.00 W A	CLM	COLOMBIA 2				4		6														
75.00 W N	CLM	SATCOL-2				4		6														
75.00 W N	USA	GOES EAST	0	1	2																	
75.00 W C	USA	USASAT-18A															12	14				
74.00 W A	USA	USASAT-22E				4		6														
74.00 W C	USA	USASAT-7A				4		6														
73.00 W C	USA	USASAT-18B															12	14				
72.00 W A	ASA	SIMON BOLIVAR-C				4		6														
72.00 W C	USA	ACS-2		1																		
72.00 W N	USA	USASAT-8B				4		6														
71.00 W C	USA	USASAT-18C															12	14				
70.00 W C	B	SATS-1				4		6														
70.00 W N	B	SBTS AI				4		6														
70.00 W A	B	SISCOMIS 3							7	8												
70.00 W A	USA	FLTSATCOM-B W ATL																			20	
70.00 W A	USA	USRDSS EAST		1	2	5	6															
69.00 W C	USA	USASAT-7C				4		6									12	14				

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Orbital position	Space station	Frequency bands GHz																				
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40	
40.50 W C	USAIT INTELSAT5A 319.5E			2	4	6			11	12		14										
37.50 W C	F VIDEOSAT-2				4	5	6															
37.50 W C	URS STATSIONAR-25								11			14										
37.50 W C	USA USASAT-13A				4	6			11			14										
34.50 W N	USAIT INTELSAT5 ATL4				4	6																
34.50 W C	USAIT INTELSAT5A ATL3				4	6			11			14										
34.50 W C	USAIT INTELSAT6 325.5E				4	5	6		11	12		14										
34.50 W A	USAIT INTELSAT7 325.5E				4	6			11			14										
34.00 W A	G INM INMARSAT AOR-CENT 1A	1	4	6			7	8														
33.00 W A	G SKYNET 4D	0																				*
32.50 W A	F ESA MARECS ATL3	1	4	6																		
32.00 W A	G INM INMARSAT AOR-CENT 2A	1	4	6			7	8	11	12	13	14										
31.00 W A	E HISPASAT-1									11	12	13	C17									
31.00 W N	G BSB-1																					
31.00 W C	IRL EIRESAT-1																					
31.00 W N	USAIT INTELSAT4A ATL4				4	6																
31.00 W C	USAIT INTELSAT5 ATL6				4	6				11			14									
31.00 W C	USAIT INTELSAT5A ATL6				4	6				11			14									
27.50 W N	USAIT INTELSAT5A ATL2				4	6																
27.50 W N	USAIT INTELSAT6 332.5E		C4 C5 C6							11			14									
27.50 W A	USAIT INTELSAT7 332.5E		4	6						11	12		14									
26.50 W N	URS GALS-1																					
26.50 W C	URS STATSIONAR-17			4	5	6		7	8													
26.50 W C	URS STATSIONAR-DI			4	6																	
26.50 W C	URS TOR-1																					*
26.50 W C	URS VOLNA-13	0	1																			
26.00 W N	F ESA MARECS ATL1	0	1	4	6																	
26.00 W C	G INM INMARSAT AOR-CENT	1	4	6			7	8														
25.00 W C	URS GALS-9																					
25.00 W N	URS STATSIONAR-8			4	5																	*
25.00 W C	URS TOR-9																					
25.00 W A	URS VOLNA-IA	C0	1																			
25.00 W C	URS VOLNA-JM	1																				
24.50 W N	USAIT INTELSAT5A ATL1			4	6			11			14											
24.50 W N	USAIT INTELSAT6 335.5E		C4 C5 C6					11			14											
24.00 W A	G INM INMARSAT AOR-CENT 2	1	4	6																		
24.00 W N	URS PROGOZ-1		2					7	8													
23.00 W N	USA FLTSATCOM ATL	0																				*
23.00 W N	USA FLTSATCOM-B EAST ATL																					
21.50 W N	USAIT INTELSAT MCS ATL C	1	4	6					11			14										
21.50 W N	USAIT INTELSAT4A ATL1			4	6				11			14										
21.50 W C	USAIT INTELSAT5A 338.5E			4	6																	
20.00 W C	LUX GDL-4			4	6																	
20.00 W A	USA ACS-4	1																				
19.00 W A	D TV-SAT 2		2							12			17									
19.00 W N	F TDF-1		C2						11	12		17										
19.00 W A	F TDF-2		C2						11	12		17										
19.00 W N	F ESA L-SAT		C2						12	13	14	17	18	19	20	*	*	*				
19.00 W A	I SARIT																					
19.00 W A	LUX LUX-SAT																					
19.00 W A	SUI SUI-19W/1																					

Orbital position	Space station	Frequency bands GHz																				
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40	
18.50 W N	USAIT INTELSAT MCS ATL A	C1																				
18.50 W N	USAIT INTELSAT5 ATL2																					
18.00 W N	BEL SATCOM PHASE-3	0	1	2																		
18.00 W A	URS GOMS-IM																					
18.00 W C	USAIT INTELSAT IBS 342E																					
18.00 W C	USAIT INTELSAT5A 342E																					
18.00 W A	USAIT INTELSAT7 342E																					
17.80 W A	BEL SATCOM-4	C0																				
16.00 W N	URS WSDRN																					
16.00 W C	URS ZSSRD-2																					
16.00 W A	USA MILSTAR 3	0	2																			
15.00 W C	G INM INMARSAT AOR-EAST	1																				
15.00 W A	URS FOTON-1																					
15.00 W N	USA FLTSATCOM-A ATL	0																				
15.00 W N	USA MARISAT-ATL	0	1	2	4	6																
14.00 W C	URS GOMS-I	0	1	2	4	6																
14.00 W N	URS LOUTCH-1																					
14.00 W C	URS MORE-14	1																				
14.00 W N	URS VOLNA-2	1																				
14.00 W N	URS POTOK-1																					
12.00 W N	F ESA HIPPARCOS	2																				
12.00 W N	USA USGCCS PH2 ATL	2																				
12.00 W N	USA USGCCS PH3 ATL	2																				
11.00 W C	F F-SAT 2	2																				
11.00 W C	URS LOUTCH-6																					
11.00 W N	URS STATSIONAR-11																					
10.00 W C	F ESA METEOSAT S2	0	2																			
9.00 W A	USA MILSTAR 2	0	2																			
8.00 W N	F TELECOM-1A	2	4																			
8.00 W C	F TELECOM-2A	2	4																			
8.00 W A	F ZENON-A	1	2																			
5.00 W A	F LOCTSTR OUEST	1	2																			
5.00 W N	F TELECOM-IB	2	4																			

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Orbital position	Space station	Frequency bands GHz																			
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40
87.50 E A	CHN DFH-3-0C				4		6														
90.00 E N	URS LOUTCH-3					1	4	6			11				14						
90.00 E C	URS MORE-90				C4		C6														
90.00 E N	URS STATSIONAR-6			1																	
90.00 E N	URS VOLNA-8																				
90.00 E A	USA MILSTAR 5	0	2																		C20
93.50 E N	IND INSAT-IC	0		4	5	6															C*
93.50 E C	IND INSAT-2B	0		4	5	6															
95.00 E N	URS CSDRN											11			14						
96.50 E C	URS LOUTCH-9											11			14						
96.50 E N	URS STATSIONAR-14				C4		C6														
98.00 E C	CHN CHINASAT-3					4		6													
99.00 E N	URS STATSIONAR-T							6													
99.00 E N	URS STATSIONAR-T2							6													
103.00 E A	CHN DFH-3-0B					4		6													
103.00 E C	CHN STW-2					4		6													
103.00 E C	URS LOUTCH-5											11			14						
103.00 E C	URS STATSIONAR-2I					4	5	6													
105.00 E A	CHN FY-2A	0	1	2	4	6															
105.50 E C	G ASIASAT-C				4		6														
105.50 E A	TON TONGASAT C-5					4		6													
108.00 E N	INS PALAPA-B1					4		6													
110.00 E N	J BS-2						2								12		14				
110.00 E C	J BS-3						2								12		14				
110.00 E N	J BSE						2										14				
110.50 E C	CHN CHINASAT-2					4		6													
113.00 E N	INS PALAPA-B2					4		6													
115.50 E A	CHN DFH-3-0D					4		6													
115.50 E A	TON TONGASAT C-6					4		6													
116.00 E C	G ASIASAT-B					4		6													
118.00 E N	INS PALAPA-B3					4		6													
121.50 E A	TON TONGASAT C-7					4		6													
122.00 E C	G ASIASAT-A					4		6													
124.00 E C	J SCS-1B														12		14		17	18	19
125.00 E A	CHN DFH-3-0A					4		6													
125.00 E N	CHN STW-1					4		6													
128.00 E C	J SCS-1A														12		14		17	18	19
128.00 E C	URS GALS-10								7	8											
128.00 E N	URS STATSIONAR-15					4	5	6													
128.00 E C	URS STATSIONAR-D6					4		6													
128.00 E C	URS TOR-6																		18	19	20
128.00 E C	URS VOLNA-9	0	1																		
128.00 E C	URS VOLNA-9M	1																			
130.00 E N	J ETS-2	0	1	2								11									
130.00 E A	TON TONGASAT AP-1					4		6													
130.00 E N	URS GALS-5									7	8										
130.00 E C	URS PROGNOZ-5					2															
130.00 E C	URS TOR-10																		18	19	20
131.00 E A	TON TONGASAT C-8					4		6													
132.00 E N	J CS-2A					2	4	6											17	18	19
132.00 E N	J CS-3A					2	4	6											17	18	19

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Orbital position	Space station	Frequency bands GHz																				
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40	
133.00 E A	USA MILSTAR 7	0	2														C20			C*		
134.00 E A	TON TONGASAT AP-2			4	6																	
134.00 E A	USA ACS-6	1		2	4	6																
135.00 E N	J CSE			2	4	6											17	18	19	20	*	*
136.00 E N	J CS-2B			2	4	6											17	18	19	*		
136.00 E N	J CS-3B			2	4	6											17	18	19	*		
138.00 E A	TON TONGASAT AP-3				4	6																
140.00 E N	J GMS-2	0	1	2																		
140.00 E N	J GMS-3	0	1	2																		
140.00 E C	J GMS-4	0	1	2																		
140.00 E N	URS LOUTCH-4																					
140.00 E C	URS MORE-140	1		4	6																	
140.00 E N	URS STATIONAR-7			4	6																	
140.00 E N	URS VOLNA-6	1																				
142.50 E A	TON TONGASAT AP-4			4	6																	
145.00 E N	URS STATIONAR-16			4	6																	
148.00 E A	TON TONGASAT AP-5			4	6																	
150.00 E N	J ETS-5	1	2	5	6																	
150.00 E C	J JCSAT-1																					
150.00 E A	USA MILSTAR 15	0	2																			
151.00 E A	TON TONGASAT AP-8			4	6																	
152.00 E A	USA MILSTAR 11	0	2														C20		C*			
154.00 E A	J ETS-6-FS		2	4	6																	
154.00 E A	J ETS-6-IS		2																			
154.00 E A	J ETS-6-MSS		2																			
154.00 E A	J ETS-6-T		2																			
154.00 E C	J JCSAT-2																					
154.00 E A	TON TONGASAT AP-7			4	6																	
156.00 E A	AUS AUSSAT B2																					
156.00 E A	AUS AUSSAT B2 MC	1																				
156.00 E A	AUS AUSSAT B2-MOB																					
156.00 E A	AUS AUSSAT B2-NZ	1																				
156.00 E A	AUS AUSSAT B2-R																					
156.00 E A	AUS AUSSAT B2-S																					
156.00 E N	AUS AUSSAT-2																					
157.00 E A	TON TONGASAT AP-6			4	6																	
158.00 E C	J SUPERBIRD-A					7	8															
160.00 E A	AUS ACSAT-I					7	8															
160.00 E A	AUS AUSSAT BI																					
160.00 E A	AUS AUSSAT BI MC																					
160.00 E A	AUS AUSSAT BI-MOB	1																				
160.00 E A	AUS AUSSAT BI-NZ																					
160.00 E A	AUS AUSSAT BI-R	1																				
160.00 E A	AUS AUSSAT BI-S																					
160.00 E N	AUS AUSSAT-1																					
160.00 E N	J GMS-160E	0	1	2																		
160.00 E A	TON TONGASAT C-3			4	6	7	8															
162.00 E C	J SUPERBIRD-B																					
164.00 E N	AUS AUSSAT PAC3																					
164.00 E N	AUS AUSSAT-3																					
164.00 E A	TON TONGASAT C-2			4	6																	

Orbital position	Space station	Frequency bands GHz																					
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20	>20	>30	>40		
166.00 E C	URS GOMS-2	0	1	2																			
166.00 E A	URS GOMS-2M	0	1	2																			
166.00 E C	URS PROGNOZ-6																						
167.00 E N	URS VSSRD-2																						
167.45 E A	PNG PACSTAR A-1	C1																					
167.45 E C	PNG PACSTAR-1																						
170.00 E C	USA USASAT-13M																						
170.75 E A	TON TONGASAT C-1																						
171.00 E A	USA ACS-5																						
172.00 E N	USA FLTSATCOM W PAC	0																					
172.00 E N	USA FLTSATCOM-B WEST PAC																						
174.00 E N	USA ITALSAT5 PAC1																						
174.00 E C	USA ITALSAT5A PAC1																						
174.00 E A	USA ITALSAT7 174E																						
175.00 E N	USA USGCCS PH2 W PAC																						
175.00 E C	USA USGCCS PH3 W PAC	2																					
176.50 E N	USA MARISAT-PAC	0	1																				
177.00 E N	USA ITALSAT5 PAC2																						
177.00 E C	USA ITALSAT5A PAC2																						
177.00 E A	USA ITALSAT7 177E																						
177.50 E A	G INM INMARSAT POR-II	1																					
177.50 E A	USA MILSTAR 14	0		2																			
178.00 E N	F ESA MARECS PAC1	0	1																				
179.50 E A	G INM INMARSAT POR-I	1																					
180.00 E A	USA USGCCS PH2 W PAC-2																						
180.00 E N	USA USGCCS PH3 W PAC-2	2																					
180.00 E N	USA ITALSAT MCS PAC A	C1																					
180.00 E N	USA ITALSAT5 PAC3																						
180.00 E C	USA ITALSAT5A PAC3																						
180.00 E A	USA ITALSAT7 180E																						

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