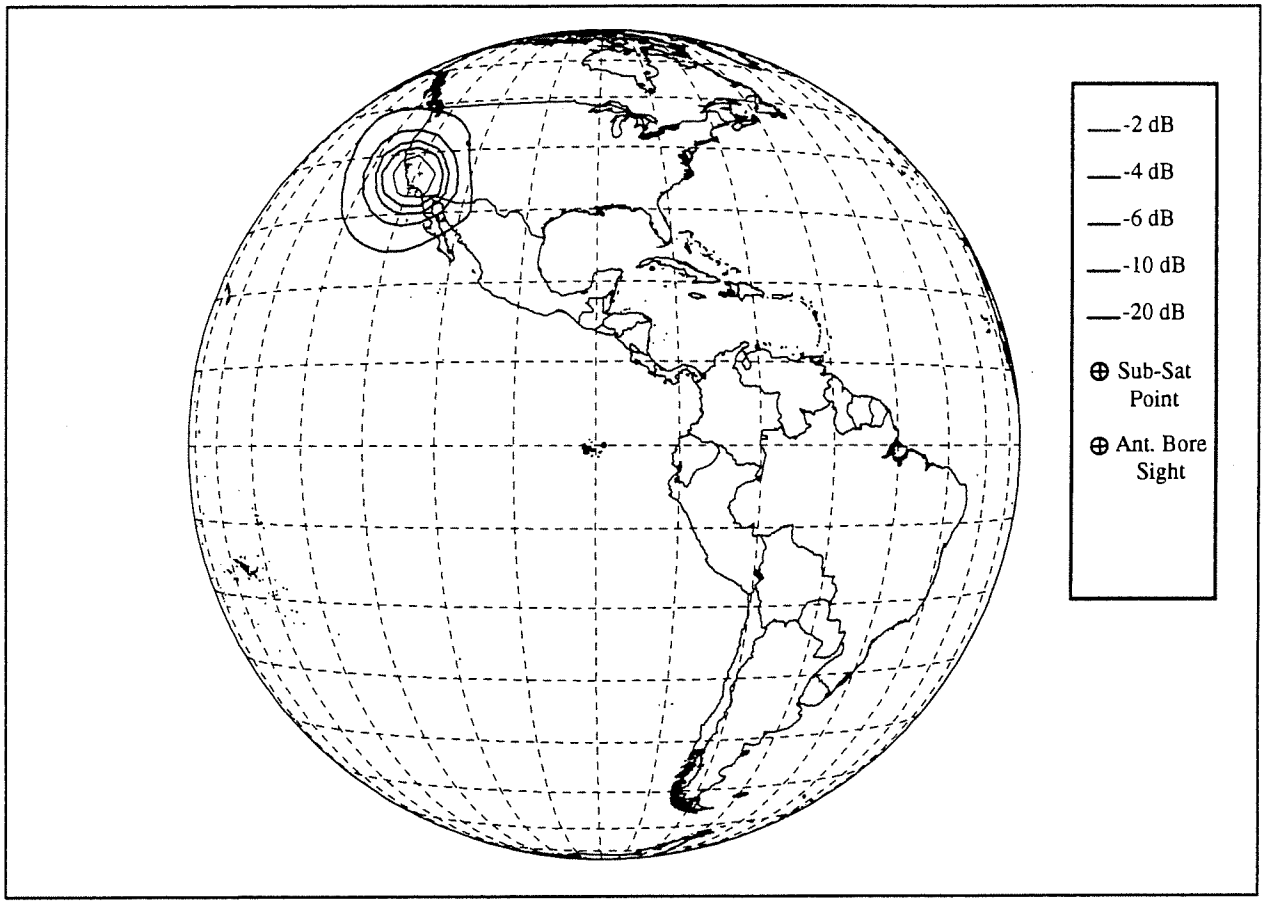
Telstar 8 (89° W)
Ka-Band CONUS Beam EIRP Contours
$EIRP_{max}$ = 62.0 dBW

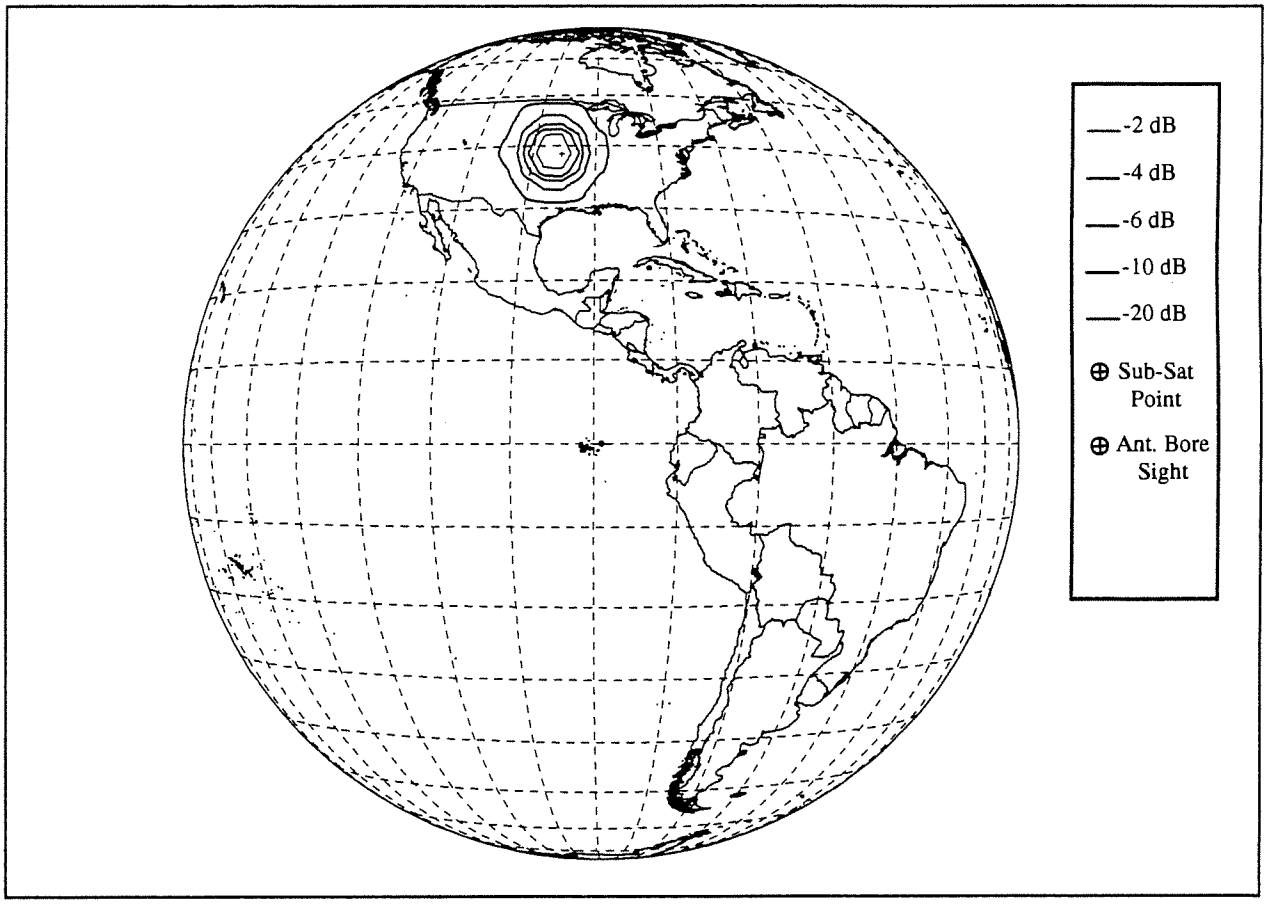


Space Station Receive Antenna Gain Contours and Service Area

1. **Longitude and Latitude lines shown at 10 degree intervals.**
2. **Contours shown are -2, -4, -6, -10, and -20 dB relative to maximum gain.**
3. **Maximum EIRP is 62.0 dBW.**
4. **Service area consists all visible areas within the -10 dB contour.**
5. **Does not include antenna pointing error.**

Figure 7-13. EIRP Contours for a Single Ka-band Spot Beam

Telstar 8 (89° W)
Ka-Band CONUS Beam G/T Contours
G/T_{max} = +15.0 dB/K



Space Station Receive Antenna Gain Contours and Service Area

1. **Longitude and Latitude lines shown at 10 degree intervals.**
2. **Contours shown are -2, -4, -6, -10, and -20 dB relative to maximum gain.**
3. **Maximum G/T is+15.0 dB/K**
4. **Service area consists all visible areas within the -10 dB contour.**
5. **Does not include antenna pointing error.**

Figure 7-14. G/T Contours for a Single Ka-band Spot Beam

8. DETAILED SERVICE DESCRIPTION

Detailed characteristics for some typical services are provided below.

It is important to note that the spacecraft EIRP and G/T levels provided in the following sections are at the edge of coverage. Thus, the service availability estimates and the link budgets are worst-case. And under these worst-case conditions, the users of the Telstar 8 will be provided with adequate service.

8.1. WIDEBAND DIGITAL (C-BAND, KU-BAND, KA-BAND).

Service characteristics are shown in Table 8-1. The spacecraft transponders are designed to support between 1 and 4 carriers of this type.

Table 8-1. Wideband Digital

	C-Band	Ku-Band	Ka-Band
Signal Characteristics			
Modulation	QPSK	QPSK	QPSK
Signals per Transponder	1	1	2
Information rate (Mbps)	40.0	40.0	60.0
Coding rate	0.750	.691	0.667
Application	CDV	CDV	CDV
Transponder Characteristics			
Bandwidth (MHz)	36	36	500
Single Carrier Saturated EIRP (dBW)	39.0	50.0	59.0
G/T (dB/K)	-3.0	0.0	12.0
Input Back Off (dB)/ Output Back Off (dB)	0.0/0.4	0.0/0.4	6.0/3.0
Transmit Earth Station			
Antenna Diameter (Meter)	7.0	4.5	1.8
Sidelobe Characteristics	29–25Logθ	29–25Logθ	29–25Logθ
Uplink Power Control (dB)	N/A	4.0	3.0
Receive Earth Station			
Antenna Diameter (Meter)	4.5	1.8	5.6
LNA Noise Temperature (K)	60	100	150
Performance Objectives			
End-to-End Availability (%)	99.9	99.9	99.5
Required E_b/N_o (dB)	5.5	6.0	5.5
Bit Error Rate	$1x\ 10^{-10}$	$1x\ 10^{-10}$	$1x\ 10^{-10}$

8.2. MEDIUM BANDWIDTH DIGITAL (C-BAND, KU-BAND, KA-BAND)

Service characteristics are shown in Table 8-2. The Telstar 8 transponders can support multiple carriers of this type.

Table 8-2. Medium Bandwidth Digital

	C-Band	Ku-Band	Ka-Band
Signal Characteristics			
Modulation	QPSK	QPSK	QPSK
Signals per Transponder	12	8	120
Information rate (Mbps)	3.0	3.0	5.0
Coding rate	.691	0.461	0.667
Application	CDV	CDV, Data	Data
Transponder Characteristics			
Bandwidth (MHz)	36	36	500
Single Carrier Saturated EIRP (dBW)	39.0	50.0	59.0
G/T (dB/K)	-3.0	0.0	12.0
Input Back Off (dB)/ Output Back Off (dB)	6.0/3.0	6.0/3.0	6.0/3.0
Transmit Earth Station			
Antenna Diameter (Meter)	3.8	4.5	1.8
Sidelobe Characteristics	29–25Logθ	29–25Logθ	29–25Logθ
Uplink Power Control (dB)	N/A	3.0	3.0
Receive Earth Station			
Antenna Diameter (Meter)	3.8	1.8	5.6
LNA Noise Temperature (K)	60	100	150
Performance Objectives			
End-to-End Availability (%)	99.9	99.9	99.5
Required E_b/N_o (dB)	5.5	6.0	5.5
Bit Error Rate	$1x\ 10^{-10}$	$1x\ 10^{-10}$	$1x\ 10^{-10}$

8.3. NARROWBAND DIGITAL (C-BAND, KU-BAND, KA-BAND)

Service characteristics are shown in Table 8-3. The Telstar 8 transponders are designed to support several hundreds of these types of carriers.

Table 8-3. Narrowband Digital

	C-Band	Ku-Band	Ka-Band
Signal Characteristics			
Modulation	QPSK	QPSK	QPSK
Signals per Transponder	310	200	1400
Information rate (Mbps)	0.128	0.128	0.200
Coding rate	.750	.461	0.461
Application	Data	Data	Data
Transponder Characteristics			
Bandwidth (MHz)	36	36	500
Single Carrier Saturated EIRP (dBW)	39.0	50.0	59.0
G/T (dB/K)	-3.0	0.0	12.0
Input Back Off (dB)/ Output Back Off (dB)	6.0/3.0	6.0/3.0	6.0/3.0
Transmit Earth Station			
Antenna Diameter (Meter)	3.8	1.2	1.2
Sidelobe Characteristics	29–25Logθ	29–25Logθ	29–25Logθ
Uplink Power Control (dB)	N/A	9.0	6.0
Receive Earth Station			
Antenna Diameter (Meter)	3.8	1.8	3.4
LNA Noise Temperature (K)	60	100	150
Performance Objectives			
End-to-End Availability (%)	99.9	99.9	99.5
Required E_b/N_o	5.5	5.5	5.5
Bit Error Rate	$1x\ 10^{-9}$	$1x\ 10^{-9}$	$1x\ 10^{-9}$

8.4. FM-TV (C-BAND, KU-BAND, EXTENDED KU-BAND)

Service characteristics are shown in Table 8-4.

Table 8-4. FM-TV

	C-Band	Ku-Band
Signal Characteristics		
Modulation	FM-TV	FM-TV
Signals per Transponder	1	1
Video Bandwidth (MHz)	4.2	4.2
Peak FM Deviation (MHz)	10.7	10.7
Pre-Emphasis and Weighting (dB)	12.8	12.8
Transponder Characteristics		
Bandwidth (MHz)	36	36
Single Carrier Saturated EIRP (dBW)	39.0	50.0
G/T (dB/K)	-3.0	1.0, -3.0
Input Back Off (dB) / Output Back Off (dB)	5.0/3.0	0.0/0.0
Transmit Earth Station		
Antenna Diameter (Meter)	7.0	4.5, 3.8
Sidelobe Characteristics	29–25Logθ	29–25Logθ
Uplink Power Control (dB)	N/A	4.0
Receive Earth Station		
Antenna Diameter (Meter)	4.5	4.5, 3.8
LNA Noise Temperature (K)	60	100
Performance Objectives		
End-to-End Availability (%)	99.9	99.9
Required C/N (dB)	14.0	14.0
Clear-Weather S/N (dB)	52.0	52.0

8.5. LINK BUDGETS

Tables 8-5 through 8-12 show the link budgets for the different services over different beams. The link budgets include all the relevant impairments, except at C-Band where the rain fade conditions are not shown. The link budgets have been performed at the edge-of-coverage of the indicated regions (for instance, at the edge of the defined CONUS region).

Table 8-5. C-Band NAFTA Beam (CONUS) Link Budget Summaries (Clear Weather) for the 36-MHz Transponders

Parameter	FM-TV	Wide-band Digital	Medium-Band Digital	Narrow-band Digital	
Carrier Frequency (GHz)	6.250	6.250	6.250	6.250	
Carriers / Transponder	1	1	12	310	
Uncoded Bit Rate (Mbps)	N/A	40.0	3.0	0.128	
Coding Rate	N/A	0.750	0.691	0.750	
Modulation	FM	QPSK	QPSK	QPSK	
Noise Bandwidth (dB-Hz)	75.5	74.3	63.4	47.6	**U**
Transmit Antenna Diameter (m)	7.0	7.0	3.8	3.8	**P**
Transmit Antenna Gain (dBi)	51.4	51.4	46.1	46.1	**L**
Carrier EIRP (dBW)	72.0	74.9	64.6	44.5	**I**
SFD @ 0 dB pad (dBW/m^2)	-92	-92	-92	-92	**N**
Attenuation Pad (dB)	6.0	7.0	11.0	5.0	**K**
Total Path Loss* (dB)	200.6	200.6	200.6	200.6	
Transponder Input Back Off (dB)	5.0	0.0	6.0	6.0	
Satellite G/T (dB/K)	-3	-3	-3	-3	
C/N_{th} Uplink (dB)	26.7	26.0	26.6	20.5	
Carrier Frequency (GHz)	4.025	4.025	4.025	4.025	
Saturated Single carrier EIRP (EOC)	39.2	39.2	39.2	39.2	**D**
EIRP / Carrier (dBW)	37.0	38.4	25.2	11.1	**O**
Receive Antenna Diameter (m)	4.5	4.5	3.8	3.8	**W**
Receive Antenna Gain (dBi)	43.4	43.4	42.0	42.0	**N**
Total Path Loss* (dB)	196.8	196.8	196.8	196.8	**L**
LNA Noise Temperature (K)	60	60	60	60	**I**
System Noise Temperature (K)	100	100	100	100	**N**
Earth Station G/T (dB/K)	23.4	23.0	21.6	21.6	**K**
C/N_{th} Downlink (dB)	17.3	20.1	16.1	15.9	
C/N_{th} Uplink (dB)	26.7	26.0	26.6	20.5	
C/N_{th} Downlink (dB)	17.3	20.1	16.1	15.9	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	25.9	26.2	27.8	25.7	**M**
C/I Downlink (Adj. Sat.) (dB)	23.0	23.2	22.3	22.2	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	14.7	12.5	11.4	11.2	**I**
Required C/N (dB)	14.0	7.8	7.9	7.7	**T**
Link Margin (dB)	0.7	4.7	4.5	3.5	**E**

*Total Path Loss for Uplink and Downlink includes antenna mispointing, polarization misalignment, and atmospheric losses.

Table 8-6. Ku-Band NAFTA BEAM (SE CONUS) Link Budget Summaries (Clear Weather)

Parameter	FM-TV	Wideband Digital	Medium-Band Digital	Narrow-band Digital	
Carrier Frequency (GHz)	14.25	14.25	14.25	14.25	
Carriers / Transponder	1	1	8	200	
Uncoded Bit Rate (Mbps)	N/A	40.0	3.0	0.128	
Coding Rate	N/A	0.691	0.461	0.500	
Modulation	FM	QPSK	QPSK	QPSK	
Noise Bandwidth (dB-Hz)	75.5	74.6	65.1	51.1	U
Transmit Antenna Diameter (m)	4.5	4.5	4.5	1.2	P
Transmit Antenna Gain (dBi)	54.7	54.5	54.5	43.2	L
Carrier EIRP (dBW)	73.8	69.4	61.8	40.7	I
SFD @ 0 dB pad (dBW/m^2)	-98.0	-98.0	-98.0	-98.0	N
Attenuation Pad (dB)	8.0	4.0	12.0	5.0	K
Total Path Loss* (dB)	207.7	207.7	207.6	207.6	
Transponder Input Back Off (dB)	0.0	0.0	6.0	6.0	
Satellite G/T (dB/K)	0.0	0.0	0.0	0.0	
C/N_{th} Uplink (dB)	19.0	15.6	17.6	10.6	
Carrier Frequency (GHz)	11.95	11.95	11.95	11.95	
Saturated Single carrier EIRP (EOC)**	50.0	50.0	50.0	48.0	D
EIRP / Carrier (dBW)	50.0	49.6	38.0	22.0	O
Receive Antenna Diameter (m)	4.5	1.8	1.8	6.0	W
Receive Antenna Gain (dBi)	52.9	44.9	44.9	55.4	N
Total Path Loss* (dB)	205.8	205.9	206.0	206.0	L
LNA Noise Temperature (K)	100	100	100	100	I
System Noise Temperature (K)	150	170	170	170	N
Earth Station G/T (dB/K)	31.3	22.4	22.4	32.6	K
C/N_{th} Downlink (dB)	28.3	20.2	18.1	24.0	
C/N_{th} Uplink (dB)	19.0	15.6	17.6	10.6	
C/N_{th} Downlink (dB)	28.3	20.2	18.1	24.0	C
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	O
C/I Uplink (Adj. Sat.) (dB)	29.2	25.3	27.3	20.0	M
C/I Downlink (Adj. Sat.) (dB)	27.5	25.4	23.3	24.8	P
C/I Cross-Polarization (dB)	27.0	27.0	27.0	27.0	O
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	S
Overall C/N (dB)	17.2	11.0	11.2	8.5	I
Required C/N (dB)	14.0	6.9	5.2	5.5	T
Link Margin (dB)	3.2	4.1	6.0	3.0	E

*Total Path Loss for Uplink and Downlink includes antenna mispointing, polarization misalignment, and atmospheric losses.
**EOC for Southeast CONUS.

Table 8-7. Ku-Band NAFTA BEAM (SE CONUS) Link Budget Summaries (Fade Conditions)

Parameter	FM-TV	Wideband Digital	Medium-Band Digital	Narrow-band Digital	
UPLINK RAIN					
C/N_{th} Uplink (dB)	17.4	15.6	17.6	9.1	
C/N_{th} Downlink (dB)	28.1	20.2	18.1	24.5	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	27.6	25.3	27.3	20.0	**M**
C/I Downlink (Adj. Sat.) (dB)	27.3	25.4	23.3	24.8	**P**
C/I Cross-Polarization (dB)	26.0	27.0	27.0	24.5	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	15.9	11.0	11.2	7.3	**I**
Required C/N (dB)	14.0	6.9	5.2	5.5	**T**
Link Margin (dB)	1.9	4.1	6.0	1.8	**E**
DOWNLINK RAIN					
C/N_{th} Uplink (dB)	19.0	15.6	17.6	10.6	
C/N_{th} Downlink (dB)	17.7	10.3	8.2	18.1	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	29.2	25.3	27.3	20.0	**M**
C/I Downlink (Adj. Sat.) (dB)	27.5	25.4	23.3	24.8	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	21.5	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	14.6	7.8	7.7	8.1	**I**
Required C/N (dB)	14.0	6.9	5.2	5.5	**T**
Link Margin (dB)	0.6	0.9	1.5	2.6	**E**

Table 8-8. C-Band South America Beam Link Budget Summary

Parameter	FM-TV	Wideband Digital	Medium-Band Digital	Narrow-band Digital	
Carrier Frequency (GHz)	6.250	6.250	6.250	6.250	
Carriers / Transponder	1	1	24	620	
Uncoded Bit Rate (Mbps)	N/A	80.0	3.0	0.128	
Coding Rate	N/A	0.750	0.691	0.750	
Modulation	FM	QPSK	QPSK	QPSK	
Noise Bandwidth (dB-Hz)	75.5	77.3	63.4	49.3	**U**
Transmit Antenna Diameter (m)	9.0	7.0	3.8	3.8	**P**
Transmit Antenna Gain (dBi)	53.5	51.4	46.1	46.1	**L**
Carrier EIRP (dBW)	75.0	69.9	62.1	42.0	**I**
SFD @ 0 dB pad (dBW/m^2)	-92	-92	-92	-92	**N**
Attenuation Pad (dB)	12	5.0	11.0	5.0	**K**
Total Path Loss* (dB)	200.6	200.6	200.6	200.6	
Transponder Input Back Off (dB)	8.0	6.0	6.0	6.0	
Satellite G/T (dB/K)	-4.0	-3.0	-4.0	-4.0	
C/N_{th} Uplink (dB)	23.2	17.5	22.6	16.5	
Carrier Frequency (GHz)	4.025	4.025	4.025	4.025	
Saturated Single carrier EIRP (EOC)	42.0	42.0	42.0	42.0	**D**
EIRP / Carrier (dBW) **	37.0	39.0	25.2	11.1	**O**
Receive Antenna Diameter (m)	4.5	4.5	3.8	3.8	**W**
Receive Antenna Gain (dBi)	43.4	43.4	42.0	42.0	**N**
Total Path Loss* (dB)	196.6	196.6	196.6	196.6	**L**
LNA Noise Temperature (K)	60	60	60	60	**I**
System Noise Temperature (K)	100	100	100	100	**N**
Earth Station G/T (dB/K)	23.4	23.0	21.6	21.6	**K**
C/N_{th} Downlink (dB)	17.4	17.2	15.8	15.8	
C/N_{th} Uplink (dB)	26.7	26.0	26.6	20.5	
C/N_{th} Downlink (dB)	17.4	17.2	15.8	15.8	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	28.1	23.2	27.3	26.2	**M**
C/I Downlink (Adj. Sat.) (dB)	25.0	23.6	26.3	26.2	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	14.7	10.8	11.7	10.7	**I**
Required C/N (dB)	14.0	7.8	7.4	7.7	**T**
Link Margin (dB)	0.7	3.0	4.3	3.0	**E**

*Total Path Loss for Uplink and Downlink includes antenna mispointing, polarization misalignment, and atmospheric losses.

** Because of spacecraft DC power limitations, the TWTAs are expected to be operated at around 3 to 4 dB OBO.

Table 8-9. Ku-Band South America Beam (Brazil Coast) Link Budget Summaries (Clear Weather)

Parameter	FM-TV	Wideband Digital	Medium-Band Digital	Narrow-band Digital	
Carrier Frequency (GHz)	14.25	14.25	14.25	14.25	
Carriers / Transponder	1	1	8	200	
Uncoded Bit Rate (Mbps)	N/A	40.0	3.0	0.128	
Coding Rate	N/A	0.691	0.461	0.500	
Modulation	FM	QPSK	QPSK	QPSK	
Noise Bandwidth (dB-Hz)	75.5	74.6	65.1	51.1	**U**
Transmit Antenna Diameter (m)	9.0	6.0	3.8	1.8	**P**
Transmit Antenna Gain (dBi)	60.7	57.0	53.1	46.6	**L**
Carrier EIRP (dBW)	76.6	74.5	62.9	45.0	**I**
SFD @ 0 dB pad (dBW/m^2)	-98.0	-98.0	-98.0	-98.0	**N**
Attenuation Pad (dB)	11.0	9.0	13.0	9.0	**K**
Total Path Loss* (dB)	207.5	207.5	207.5	207.5	
Transponder Input Back Off (dB)	0.0	0.0	6.0	6.0	
Satellite G/T (dB/K)	0.0	0.0	0.0	0.0	
C/N_{th} Uplink (dB)	18.0	12.9	10.6	10.6	
Carrier Frequency (GHz)	11.95	11.95	11.95	11.95	
Saturated Single carrier EIRP (EOC)	48.0	48.0	48.0	48.0	**D**
EIRP / Carrier (dBW)	48.0	47.6	36.0	22.0	**O**
Receive Antenna Diameter (m)	4.5	1.8	1.2	4.5	**W**
Receive Antenna Gain (dBi)	53.2	44.9	41.4	52.9	**N**
Total Path Loss* (dB)	205.8	205.9	205.9	205.9	**L**
LNA Noise Temperature (K)	90	90	90	90	**I**
System Noise Temperature (K)	150	180	180	180	**N**
Earth Station G/T (dB/K)	31.4	22.1	18.6	30.1	**K**
C/N_{th} Downlink (dB)	25.1	17.5	11.8	18.2	
C/N_{th} Uplink (dB)	21.5	20.6	18.6	14.6	
C/N_{th} Downlink (dB)	25.1	17.5	11.8	18.2	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.2	25.4	28.6	22.1	**M**
C/I Downlink (Adj. Sat.) (dB)	27.7	22.4	28.8	23.2	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	18.3	13.0	9.1	10.0	**I**
Required C/N (dB)	14.0	6.9	5.1	5.5	**T**
Link Margin (dB)	4.3	6.1	4.0	4.5	**E**

*Total Path Loss for Uplink and Downlink includes antenna mispointing, polarization misalignment, and atmospheric losses.

Table 8-10. Ku-Band South America Beam (Brazil Coast) Link Budget Summaries (Fade Conditions)

Parameter	FM-TV	Wideband Digital	Medium -Band Digital	Narrowband Digital	
UPLINK RAIN					
C/N_{th} Uplink (dB)	21.5	20.6	18.6	9.4	
C/N_{th} Downlink (dB)	25.1	17.5	11.8	13.4	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.2	25.4	28.6	22.1	**M**
C/I Downlink (Adj. Sat.) (dB)	27.7	22.4	28.8	23.2	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0		**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	18.3	13.0	9.1	6.7	**I**
Required C/N (dB)	14.0	6.9	5.1	5.5	**T**
Link Margin (dB)	4.3	6.1	4.0	1.2	**E**
DOWNLINK RAIN					
C/N_{th} Uplink (dB)	18.0	20.6	18.6	14.6	
C/N_{th} Downlink (dB)	18.4	11.5	6.5	8.6	**C**
C/I Intermod. (Satellite)(dB)	N/A	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.2	25.4	28.6	22.1	**M**
C/I Downlink (Adj. Sat.) (dB)	27.7	22.4	28.8	23.2	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0		**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	N/A	**S**
Overall C/N (dB)	15.9	9.9	5.5	6.5	**I**
Required C/N (dB)	14.0	6.9	5.1	5.5	**T**
Link Margin (dB)	1.9	3.0	0.4	1.0	**E**

Table 8-11. Ka-Band Link Budget Summaries (Clear Weather)

Parameter	Wideband Digital	Medium-Band Digital	Narrow-band Digital	
Carrier Frequency (GHz)	30.00	30.00	30.00	
Carriers / Transponder	2	120	1400	
Uncoded Bit Rate (Mbps)	60.0	2.5	0.200	
Coding Rate	0.667	0.667	0.461	
Modulation	QPSK	QPSK	QPSK	
Noise Bandwidth (dB-Hz)	76.5	64.0	53.4	**U**
Transmit Antenna Diameter (m)	1.8	1.8	1.2	**P**
Transmit Antenna Gain (dBi)	53.2	53.2	49.7	**L**
Carrier EIRP (dBW)	64.1	64.4	42.2	**I**
SFD @ 0 dB pad (dBW/m^2)	-100.0	-100.0	-100.0	**N**
Attenuation Pad (dB)	9.0	21.0	16.0	**K**
*Total Path Loss (dB)	215.0	215.0	215.0	
Transponder Input Back Off (dB)	6.5	6.0	6.0	
Satellite G/T (dB/K)	12.0	12.0	12.0	
C/N_{th} Uplink (dB)	12.6	16.3	13.8	
Carrier Frequency (GHz)	20.20	20.20	20.20	
Saturated Single carrier EIRP (EOC)	59.0	59.0	59.0	**D**
EIRP / Carrier (dBW)**	51.0	33.2	22.5	**O**
Receive Antenna Diameter (m)	5.6	5.6	3.4	**W**
Receive Antenna Gain (dBi)	58.9	58.9	54.9	**N**
*Total Path Loss (dB)	211.6	211.6	211.6	**L**
LNA Noise Temperature (K)	150	150	150	**I**
System Noise Temperature (K)	265	265	265	**N**
Earth Station G/T (dB/K)	34.3	34.3	30.4	**K**
C/N_{th} Downlink (dB)	26.4	21.2	17.2	
C/N_{th} Uplink (dB)	12.6	16.3	13.8	
C/N_{th} Downlink (dB)	26.4	21.2	17.2	**C**
C/I Intermod. (Satellite)(dB)	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.0	30.0	30.0	**M**
C/I Downlink (Adj. Sat.) (dB)	30.0	30.0	30.0	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	**S**
Overall C/N (dB)	8.8	11.1	9.3	**I**
Required C/N (dB)	6.7	8.5	5.1	**T**
Link Margin (dB)	2.1	2.6	4.2	**E**

*Total Path Loss for Uplink and Downlink includes antenna mispointing, polarization misalignment, and atmospheric losses.

** Because of spacecraft DC power limitations, the TWTAs are expected to be operated between 3 and 5 dB OBO.

Table 8-12. Ka-Band Link Budget Summaries (Fade Conditions)

Parameter	Wideband Digital	Medium -Band Digital	Narrowband Digital	
UPLINK RAIN				
C/N_{th} Uplink (dB)	9.6	16.3	13.8	
C/N_{th} Downlink (dB)	23.4	18.2	17.2	**C**
C/I Intermod. (Satellite)(dB)	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.0	30.0	30.0	**M**
C/I Downlink (Adj. Sat.) (dB)	30.0	30.0	30.0	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	**S**
Overall C/N (dB)	6.8	8.9	9.3	**I**
Required C/N (dB)	6.7	8.5	5.1	**T**
Link Margin (dB)	0.1	0.4	4.2	**E**
DOWNLINK RAIN				
C/N_{th} Uplink (dB)	26.2	33.5	29.4	
C/N_{th} Downlink (dB)	14.5	13.5	13.3	**C**
C/I Intermod. (Satellite)(dB)	N/A	16.0	16.0	**O**
C/I Uplink (Adj. Sat.) (dB)	30.0	30.0	30.0	**M**
C/I Downlink (Adj. Sat.) (dB)	30.0	30.0	30.0	**P**
C/I Cross-Polarization (dB)	27.0	27.0	27.0	**O**
C/I Intermod.(Earth Station) (dB)	N/A	N/A	N/A	**S**
Overall C/N (dB)	8.7	10.3	6.5	**I**
Required C/N (dB)	6.7	8.5	5.1	**T**
Link Margin (dB)	2.0	1.8	1.4	**E**

9. STATION KEEPING AND ANTENNA POINTING ACCURACY

The mission objectives of maintaining antenna axis attitude (also called antenna pointing) during the spacecraft orbital life are met with combinations of attitude sensors, actuators and control algorithms flight proven on many SS/L programs. These combinations form a multitude of control modes designed to carry out specific tasks and are divided into three main mission categories, namely:

1. The transfer orbit mission in which the various modes function to place the spacecraft in the proper orbital position and in the proper satellite attitude for sun and earth acquisition.
2. The synchronous orbit mission in which the various modes function to maintain the satellite in proper orbital position. Regularly scheduled spacecraft maneuvers will be performed to keep the Telstar 8 satellite inside the "station-keeping box," which will be ±0.05 degrees from the nominal orbital slot. Maneuvers will also be performed to prevent the orbit inclination from exceeding 0.1 degrees.
3. The syncronous orbit mission to maintain precise RF beam pointing throughout the life of the spacecraft. The expected pointing error for all of the C-band, Ku-band, and Ka-band antennas is less than 0.1 degrees.

The attitude control system (ACS) for the synchronous orbit mission features flight-proven control algorithms successful in many previous SS/L programs, extremely low-drift ring laser gyros and two-axis gimbal-controlled Stationary Plasma Thrusters (SPT) used to achieve significant fuel savings during North-South Stationkeeping (NSSK). For high reliability, all key components are fully redundant and cross-strapped.

During each mission mode phase, the ACS uses unique combinations of Sun, Earth, and inertial (gyro) sensors to provide attitude information to the attitude control processor (ACE). Using flight-proven algorithms, the control processor acts upon the sensor inputs and generates commands to one or more of the various spacecraft torque actuators to maintain the spacecraft's desired attitude., The ACS also controls the two axis Stationary Plasma Thrusters (SPT) gimbals during NSSK thrusting to maintain spacecraft pointing during maneuvers.

The control system hardware for Telstar 8 has been used in many SS/L satellites, including the Intelsat-IX, Intelsat-VII, INSAT, Arabsat, Superbird, and N-Star satellites.

10.POWER FLUX DENSITIES

Through a combination of spacecraft design and, where necessary, operational constraints (backed-off operation of the transponders and sufficient dispersal of the energy), Loral will ensure that the earth station and space station emission level comply with the restrictions and recommendations set forth by the FCC and the ITU.

For the NAFTA beam in the 3.7 to 4.2 GHz frequency range, Table 10-1 shows that the maximum expected flux density for a downlink earth station anywhere on the earth is –152.7 $dBW/m^2/4$ kHz, a value which is compliant with the ITU requirements. The SA beam coverage is designed such that the minimum expected elevation angle is greater than 25 degrees; the maximum expected flux density in the SA beam is –149.7 $dBW/m^2/4$ kHz which is compliant

with the ITU regulations. At elevation angles less than 25 degrees, the SA beam provides sufficient roll-off to satisfy the ITU flux density requirements for earth station elevation angles lower than 25 degrees.

For the Ka-band downlink spot beams, Table 10-1 also shows that the maximum expected flux density for a downlink earth station is –127.1 dBW/ m^2/1 MHz (or –151.1 dBW/ m^2/4 kHz), which is significantly lower than the maximum value of -118 dBW/ m^2/1 MHz under consideration by the industry.[1]

In addition, the Telstar 8 Ka-band payload has been designed to ensure that the Ka-band transmit earth stations, which access the satellite, are compliant with the FCC requirements for blanketed licensing.[1]

[1] See the "Second Report of the GSO FSS Ka-Band Blanket Licensing Industry Working Group; IB Docket No. 98-172."

Table 10-1. Maximum Downlink Power Flux Densities (PFD)

NAFTA-BEAM (C-Band)				
	FM TV	**Wideband Digital**	**Multi-Carrier Digital**	**Narrowband Digital**
Carriers per Transponder	1	1	4	310
Maximum EIRP[1,2] (dBW)	45.7	45.7	45.7	45.7
EIRP / Carrier[3] (dBW)	37.0	42.7	28.9	14.8
Spreading factor(dB)	-162.7	-162.7	-162.7	-162.7
Energy Dispersal (dB)	-63.0	-74.3	-63.4	-44.2
Conversion to 4 kHz (dB)	+36	+36	+36	+36
PFD (dBW/m^2/4 kHz)	-152.7	-158.3	-161.2	-156.1
SA-BEAM (C-Band)				
	FM TV	**Wideband Digital**	**Multi-Carrier Digital**	**Narrowband Digital**
Carriers per Transponder	1	1	24	620
Maximum EIRP[1,2] (dBW)	45.2	45.2	45.2	45.2
EIRP / Carrier[3] (dBW)	37.0	42.2	28.4	14.3
Spreading factor(dB)	-162.7	-162.7	-162.7	-162.7
Energy Dispersal (dB)	-63.0	-77.3	-63.4	-49.3
Conversion to 4 kHz (dB)	+36	+36	+36	+36
PFD (dBW/m^2/4 kHz)	-149.7	-161.8	-161.7	-161.7
Ka-Band Spot Beams				
	FM TV	**Wideband Digital**	**Multi-Carrier Digital**	**Narrowband Digital**
Carriers per Transponder	N/A			
Maximum EIRP[2] (dBW)	N/A	62.0	62.0	62.0
EIRP / Carrier (dBW)	N/A	62.0	35.2	22.5
Spreading factor(dB)	N/A	-162.7	-162.7	-162.7
Energy Dispersal (dB)	N/A	-86.4	-64.0	-48.4
Conversion to 4 kHz (dB)	N/A	+36	+36	+36
PFD (dBW/m^2/4 kHz)	N/A	-151.1	-155.5	-152.6

[1] Maximum EIRP occurs for xpndrs with 100-W TWTAs. For xpndrs with 37-W TWTAs, maximum EIRP is 41.2 dBW.

[2] Maximum EIRP occurs at beam peak.

[3] For digital traffic, the 100-W TWTAs will be operated at 3 dB OBO.

11. THE TELEMETRY, TRACKING, AND CONTROL (TT&C) SUBSYSTEM

The Telemetry, Tracking, and Control (TT&C) subsystem provides positive margins for command and telemetry in all mission modes. All components have extensive heritage in SS/L flight programs. The Omni antennas are lightweight, open-ended waveguide types that are fix-mounted and require no deployment. The NAFTA C-band transmit antennas are used for on-station transmission of the spacecraft telemetry. The subsystem takes advantage of the redundant Traveling Wave Tube Amplifiers (TWTA) in the communications payload by using the spares and switching network.

The principal functions of the TT&C subsystem are:

a. Reception, amplification, and demodulation of microwave command signals to a bit stream for subsequent command interpretation and processing

b. Modulation and transmission of all telemetry data, providing spacecraft status

The TT&C subsystem consists of the following hardware elements:

a. Two dual-frequency command receivers, operating on both the 5.9265- and 6.4235- GHz uplink carriers. The command receivers are cross-strapped to the redundant command decoders

b. Two telemetry transmitters, each operating at 4.1950 and 4.1995 GHz. The transmitters are cross-strapped with the redundant telemetry encoders

c. Two command antennas, consisting of wide beam linear antenna elements on the earth (+Z) axis, and medium beam linear antenna elements on the anti-earth (–Z) axis

d. Two telemetry antennas, with each antenna consisting of wide beam linear antenna elements on the earth (+Z) axis, and medium beam linear antenna elements on the anti-earth (-Z) axis

e. Minor microwave components including filters, diplexers, switches, power splitters, isolators, and cables

All digital functions following bit detection, such as command processing and telemetry formatting, are implemented in the Data Handling Subsystem.

The TT&C subsystem is configured to meet the unique requirements of pre-launch, transfer orbit, and on-station synchronous orbit operations. The transfer-orbit antennas provide continuous command and telemetry access. When on-station, the primary paths for command and telemetry use the communications subsystem high-gain antenna, with the Omni, or transfer orbit, antennas available as a back-up.

An on-station contingency mode (autonomous or commandable) is available to provide continuous antenna coverage. The Data Handling Subsystem automatically detects contingency situations and turns on the telemetry TWTAs and switches the telemetry path to the Omni antennas. Command capability is always available via the Omni antennas.

A functional block diagram of the TT&C subsystem is shown in Figure 11-1. Although omitted from the figure for clarity, each command receiver has two ranging outputs for cross strapping to both telemetry transmitters.

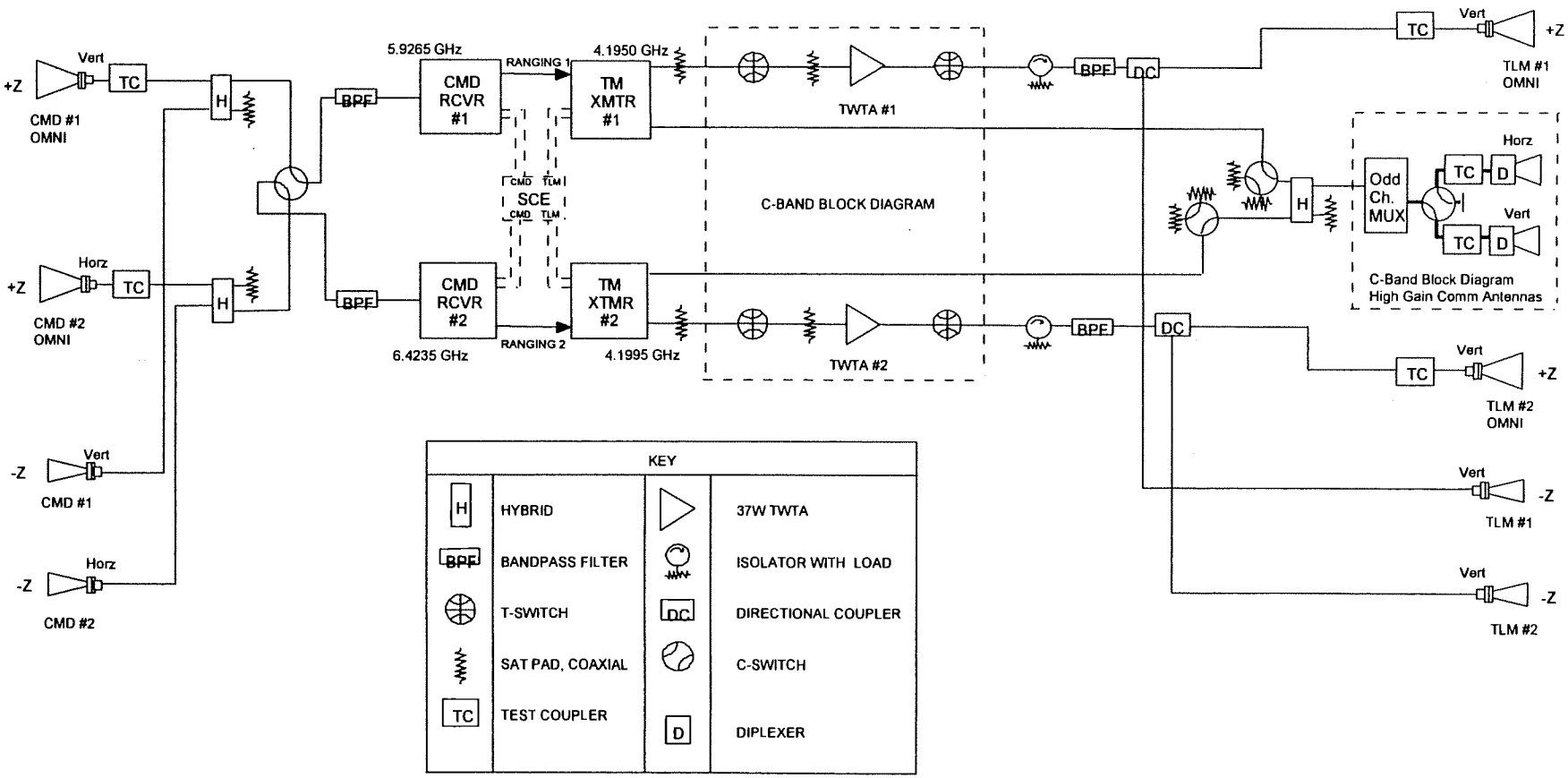


Figure 11-1. TT&C Subsystem Functional Block Diagram

12.PHYSICAL CHARACTERISTICS OF THE SPACECRAFT

The structure subsystem is derived from SS/L's heritage FS1300 spacecraft that started with Intelsat-VIIA and has continued with design modifications and enhancements for growing payload requirements. This structure is closest in similarity to the structure being qualified for Intelsat-IX, which is an extended version of SS/L's heritage FS1300. This is a low risk approach because:

a. Heritage structural designs and proven concepts are for almost all of the primary structure.

b. New structure, if required, will be based on heritage concepts and will be qualified for the spacecraft

c. Heritage materials, including composites, are used.

d. Existing manufacturing procedures and processes are used

e. Existing ground handling equipment is used

Three-dimensional analyses are performed with state-of-the-art software to provide the spacecraft component layout details. The use of this powerful tool permits the identification and resolution of design and layout issues well before satellite assembly begins. In addition, the resultant 3-D models are used for numerical control machining of parts and as a virtual mock-up for other subsystems to use in their designs.

Sophisticated software packages are also used to model the structure, and extensive testing is performed. to derive a mass-efficient structure which meets all strength and stiffness requirements

Tables 12-1 and 12-2 contain the mass and power budgets for the proposed spacecraft. A drawing for the satellite is provided in Figure 12-1.

Table 12-1. Telstar 8 Mass Budget

Component	Mass (kg)
Payload	507
Bus	1717
Subtotal	2224
Margin (5%)	111
Total	2335
Propellant / Pressurant	2052
Separation Mass	4386

Table 12-2. Telstar 8 Power Budget

Subsystem	Autumnal Equinox (W)	Summer Solstice (W)	Eclipse (W)
Payload	11502	11502	11502
Bus	2449	1608	1844
Total	13979	13112	13366
Solar Array EOL Capability	15300	13756	
Batt Cap (80% DOD, cell Failed)			13704
Failed String	270	248	
Shadow String		389	
Power Margin w/ Failed Circuit / 80% Batt DOD	1051	7	338

TELSTAR 8 Satellite Configuration

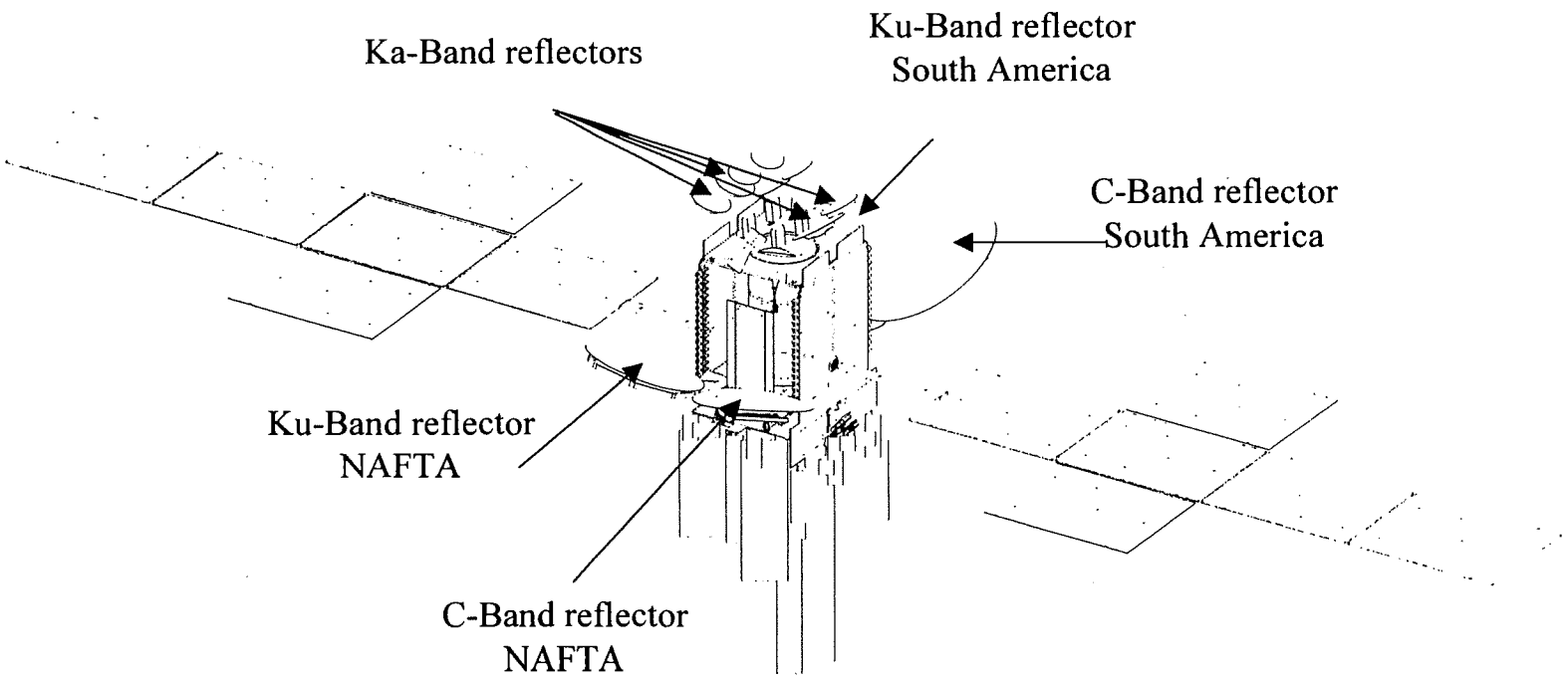


Figure 12-1. Drawing of Proposed Spacecraft

The Satellite will be loaded with sufficient fuel to obtain a 15-year lifetime. The various subsystems of the bus and payload systems include sufficient redundancy to provide a probability of mission success of 0.75 at 15 years. Mission success is defined as all C-, Ku-, and Ka-band transponders are operational.

13. KEY MILESTONE DATES

The satellite is under construction. The completion of construction is expected to occur in April 2002. Launch is expected in July 2002.

14. PUBLIC INTEREST CONSIDERATIONS

Please see the attached narrative.

APPENDIX B

TELSTAR 8

ORBITAL INTERFERENCE ANALYSIS

APPENDIX B

TELSTAR 8

ORBITAL INTERFERENCE ANALYSIS

1. OVERVIEW

The adjacent satellite interference analysis presented in this appendix demonstrates that the TELSTAR 8 satellite design will not present any new challenges to the two-degree satellite spacing coordination process. Adjacent satellite coordination is a necessity in the two-degree satellite spacing environment. The TELSTAR 8 satellite will be no more interfering, nor difficult to coordinate with the adjacent satellite operators, than other proposed domestic satellites or satellites already licensed by the FCC.

It is recognized within the satellite industry that the carrier type most difficult to coordinate is the analog video (i.e., FM-TV) carrier; this is especially true when the adjacent satellite is transmitting narrowband digital (e.g., VSAT) traffic. It is expected that TELSTAR 8 will carry predominantly digital services. The expected low percentage use of FM-TV will facilitate the coordination of this type of traffic because Loral will have flexibility to place FM-TV on those transponders that will minimally impact sensitive digital traffic on the adjacent satellites. Loral will in all instances coordinate the use of FM-TV with the adjacent satellite operators.

II. BACKGROUND

The 1983 decision by the Federal Communications Commission to reduce the spacing of domestic communication satellites in the geostationary orbit was based upon extensive analyses represented by the George Sharp "Adjacent Satellite Interference Program"[1]. The Commission's conclusion that two-degree spacing was feasible for C-band and Ku-band satellites depended upon the ability of earth station antennas to provide sufficient interference discrimination for satisfactory system performance. Differences in satellite transmission power density and receiver sensitivity characteristics play an important part in determining interference levels, but the principal reliance for controlling interference in a co-coverage environment is placed on the discrimination properties of earth station antennas. Therefore, in order to help achieve the two degree spacing objective, the Commission ordered that future earth station antenna side lobe characteristics be improved by 3 dB to conform to a gain envelope G(dB)=29-25Log(theta), where theta is the angle in degrees from the antenna beam axis. It was also recognized by the Commission and the FCC Reduced Orbital Spacing Advisory Committee that frequency coordination of carriers among the satellite operators would be required in order to make two degree spacing viable.

In particular, FM-TV and narrowband SCPC services typically require frequency displacement of their carriers in order to perform satisfactorily at two-degree satellite spacing. In recognition of this fact, the Advisory Committee recommended carrier frequency offset between FM-TV and narrowband carriers to allow their coordination. This technique, of offsetting the two incompatible carrier types, causes some portion of the SCPC transponder to be considered "unusable" for the narrowband SCPC carriers. Indeed, the FCC has recognized that "[t]he general effect of 2-degree spacing will be to reduce the amount of bandwidth available for such [narrowband] services when the adjacent satellites carry wideband transmission"[2]. The amount of frequency offset that is required between the carriers, and hence the portion of the transponder that would be considered unusable for the narrowband SCPC carriers varies and is dependent on many factors. These include the characteristics of the SCPC carriers, the actual off-axis performance of the earth station

[1] Report and Order, CC Docket No. 81-704, FCC 83-184, released August 16, 1983.

[2] Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations, Report and Order, 48 Fed. Reg. 40233 released August 16, 1983, at para.26.

antenna, the characteristics of the interfering analog video signal, and the relative performance of the two satellites.

A more effective coordination technique is to group service types with similar power spectral densities in designated portions of the frequency spectrum. This can be done, for example, by using the lower end of the frequency band for lower power spectral density services such as VSAT data and the upper end of the frequency band for higher power spectral density carriers such as FM-TV. Wideband digital carriers are typically compatible with both FM-TV and narrowband digital carriers, and would well fill the transition area between the two service types. This technique of band segmentation could help maximize the useable bandwidth of all satellite transponders across the geostationary arc.

In the absence of a standardized frequency plan at Ku-band, some satellite operators have not been able to load their satellite effectively following such a band-segmentation approach. For example, while VSAT-type services are typically bandwidth limited and are more efficiently loaded into wide transponders, some Ku-band frequency plans do not position the wider transponders at the lower end of the frequency band. New technologies, such as the growing use of compressed digital video transmissions will help to reduce the use of analog video transmission, especially at Ku-band, and will help to ease the coordination conflicts inherent in the 2-degree satellite spacing environment.

III. INTERFERENCE ANALYSIS PROGRAM

The basis of the inter-satellite interference analysis presented herein is the George Sharp "Adjacent Satellite Interference Analysis" (ASIA) program. The ASIA program is an update of the FCC Single Entry Satellite Interference Program.

The basic equations used in the ASIA program are derived from the Radio Regulations and the ITU guidelines in which single-entry interference is calculated between wanted carriers and interfering carriers of satellite networks using earth station to satellite links. The assumptions used in this model include the following:

1. All satellite networks have a common service area,

2. Wanted and interfering carriers have the same center frequencies unless specifically stated otherwise,

3. Differences in carrier bandwidths and transmission power are factored into the resulting interference protection ratios calculated by the program,

4. Satellites are spaced relatively close in orbit, at 2 and 4 degrees, so that antenna patterns of adjacent satellite networks are similar, particularly in terms of polarization performance,

5. Earth station antennas have the same side lobe gain characteristics of 29-25Log(theta) regardless of size. Thus, sidelobe gains of earth station antennas are assumed to be 21.5 dB at an off-axis spacing of 2 degrees and 13.9 dB at 4 degrees spacing,

6. The topocentric pointing angle of earth stations is slightly larger than the geocentric angles of satellite orbit spacing of two and four degrees. However the customary practice, as in the ASIA program, is to assume that using the geocentric angles in interference calculations compensates for antenna pointing and satellite station keeping errors,

7. Cross-polarization isolation provides a fixed amount of additional antenna discrimination (10 dB),

8. Interference calculations are based on clear weather conditions,

IV. ANALOG VIDEO SPECTRUM MASKS

The analog video spectrum mask used in the ASIA program is the FCC Reduced Orbital Spacing Advisory Committee mask. This mask is represented here as follows:

SPECTRAL DENSITY (dB/c/Hz)	FREQUENCY OFFSET +/- f (MHz)
0	$0 < \|f\| < 1$
-63	$1 < \|f\| < 3$
-67	$3 < \|f\| < 7$
-57.308-1.385f	$7 < \|f\|$

V. INTERFERENCE CRITERIA OBJECTIVES

The interference criteria objectives recommended by the FCC Reduced Orbital Spacing Advisory Committee are listed in Table B-1, as single-entry protection ratios of carrier-to-interference ratio, expressed as a C/I value for an FM carrier or an Eb/I_o value for a digital carrier. The Eb/ I_o value of 25 dB for full-transponder digital is probably too conservative considering the capabilities of modern modems. Eb/ I_o is converted to C/I for use in the ASIA program using the formula:

$$C/I = Eb/ I_o + 10\text{Log}(n \times FEC),$$

Where:
n = bits per symbol (e.g. 2 for QPSK)
FEC = total forward error correction ratio

Aggregate interference levels are approximately 4 dB less than single-entry levels, based on co-frequency, co-polarized, co-coverage, and homogeneous arrays of equally spaced satellites. This is probably a conservative estimate since it is expected that in actual practice many satellites will have RF services with carrier frequencies which are offset relative to each other, as well as empty guard bands opposite some carriers. The actual carrier-to-interference ratio objectives input to the ASIA program are close to the values that would be derived from Table B-1 and are shown in Table B-3.

VI. SATELLITE SYSTEM PARAMETERS FOR INTERFERENCE ANALYSIS

In order to demonstrate that the TELSTAR 8 satellite design will accommodate the FCC-mandated two-degree spacing requirement, it is sufficient to look at typical carriers from the neighboring satellites (GE 3 at 87° WL and Galaxy VII 91° WL) and from TELSTAR 8. The levels of interference, introduced by Telstar 8 into the neighboring satellites, and the levels of interference, introduced by the neighboring satellites into Telstar 8, can be computed by the ASIA program.

For C- band, the inputs to the ASIA program are three typical carriers (FM-TV, Wideband Digital, and Digital SCPC between 1.544 and 3.3 Mbps) for Telstar 8, Galaxy VII, and GE 3. For Ku-band, the inputs to the ASIA program are four typical carriers (FM-TV, Wideband Digital, Digital SCPC between 1.544 and 3.3 Mbps, and Digital SCPC of about 64 kbps) for Telstar 8, Galaxy VII, and GE 3. Carriers 1 through 3 (1

through 4 for Ku-band) are for Telstar 8 and are grouped under the name T8; carriers 4 through 6 (5 through 8 for Ku-band) are for Galaxy VII and are grouped under the name GAL; and carriers 7 through 9 (9 through 12 for Ku-band) are for GE 3 and are grouped under the name GE. The ASIA program computes the level of interference caused by each type of carrier.

VII. INTERFERENCE ANALYSIS AND RESULTS

In all of the analyses SCPC carriers were restricted to frequencies at least 1 MHz away from the FM-TV carrier center frequency. This corresponds to a FM-TV frequency spectral density of -63 dBc/Hz (relative to the unmodulated carrier level), based on the FCC Advisory Committee Mask. The results can be scaled to large frequency separations directly by reducing the Carrier-to-Interference (C/I) ratio deficit shown in the tables by the corresponding relative video mask level at different frequency offsets. For example, a 4 dB advantage is gained by restricting SCPC carriers to frequencies at least 3 MHz away from a FM-TV carrier center frequency.

The computation results from the ASIA program show, which combinations of signals fail to meet the interference objectives, and by how much, under the conservative assumptions used. A blank in the table indicates that the interference criteria is met or exceeded.

VIII. INTERPRETATION OF RESULTS

A. FM-TV and SCPC

At two-degree spacing, interference from FM-TV into SCPC services for co-polarized signals exceeds the objective C/I values by up to 12 dB for C-band (see matrix element (9,1) in Table B-5a) and 13 dB for Ku-band (see matrix element (1,8) in Table B-5b). This is to be expected because of the relatively high power density of the FM-TV carrier. These shortfalls could be made up by additional frequency offsets, or most effectively by band segmentation. As previously stated, Loral expects that at C- and Ku-band TELSTAR 8 will transmit predominantly digital services. The low percentage of FM-TV will allow flexibility in traffic loading so as to avoid the adjacent satellites' narrowband digital carriers.

The additional analysis made for four-degree satellite spacing (co-frequency, co-polarization) demonstrates that most of the interference protection shortfalls are reduced at the wider spacing. Some of the most sensitive VSAT services still do not meet the C/I objective. Loral and other satellite operators recognize that these sensitive carriers require a more diligent coordination effort.

This analysis reinforces the fact that FM-TV and SCPC carriers are incompatible in a co-frequency, co-polarized arrangement with two degree and sometimes four degree satellite spacing. Standard coordination techniques, including careful loading to effect frequency-offset and cross-polarization discrimination make it possible to operate both signal types successfully.

B. FM-TV into FM-TV

At C-band, the results show that the Telstar 8, Galaxy VII, and GE 3 spacecraft will be able to provide FM TV service without introducing significant interference into the neighboring satellites' FM TV signals. Any shortfall in C/I ratio could be overcome by introducing carrier frequency offsets (6 MHz is typical) between the neighboring satellites.

At Ku-band, Table B-5b shows that the maximum shortfall in C/I ratio is 2 dB (see matrix element (9,1)). This short fall could be overcome by a small modification in the protection ratio or by introducing carrier frequency offsets (6 MHz is typical) between the neighboring satellites

C. SCPC into SCPC

In general, for both C- and Ku-band these services are compatible as long as the FCC's blanket VSAT authorization limits are not exceeded[3]. There are a few cases in which the protection ratio are exceeded (see matrix elements (6,3) and (9,3) in Table B-5b) for C-band, but is expected that coordination can be achieved by band segmentation or modest modification of the protection ratios. In cases where the authorization limits are exceeded or where special protection is required, frequency offsets between especially sensitive carriers and the higher spectral density SCPC carriers can be employed effectively. The industry has successfully demonstrated such an approach.

D. Wideband Digital

As a general rule, satellite pad settings and transmitted power levels of digital carriers on adjacent satellites will allow the carriers to operate compatibly. Indeed, the ASIA results show that the wideband digital carriers usually introduce negligible levels of interference at C- and Ku-band. However, there are some cases at C- and Ku-band where the wideband digital transmissions cause some interference into the adjacent satellite digital carriers (see matrix elements (5,2), (6,2) and (9,2) in Table B-5a and matrix elements (6,2) and (8,10) in Table B-5b). However, by slightly lowering the C/I objectives, the interference from wideband digital carriers into other wideband digital or SCPC carriers can be brought to acceptable levels. Detailed analysis would be performed during the coordination process to ensure that, in the cases where the C/I objectives are reduced, the signal quality is adequate.

IX. CONCLUSION

The adjacent satellite interference analysis has demonstrated:

- The TELSTAR 8 satellite design will not present any new challenges to the two-degree satellite spacing coordination process. While there are certain combinations of carrier types, which are not compatible in a co-frequency, co-polarized arrangement with two-degree spacing, this is not a consequence of the TELSTAR 8 design.

- Flexibility in the TELSTAR 8 satellite traffic loading and carrier-to-interference ratio objectives combined with band-segmentation, frequency offsets and cross-polarization arrangements will be enough to accommodate coordination at two degree spacing.

[3] Routine Licensing of Large Networks of Small Antenna Earth Stations operating in the 12/14 GHz Frequency Bands, 55 F.R. 15067 (April 22, 1986).

Table B-1 Advisory Committee Recommended Protection Ratios

COMMUNICATIONS TRAFFIC MODE	SINGLE-ENTRY CO-FREQUENCY PROTECTION RATIO
1. Frequency Modulated Television (FM/TV)	C/I-se = 22 dB to 28 dB
2. Frequency Division Multiplexed-Frequency Modulated (FDM-FM) Channels	Interference from an adjacent satellite shall contribute a maximum of 1000 picowatts of noise in the worst baseband channel
3. Digital data Channels - Full Transponder Power Occupying Full Transponder Bandwidth	Eb/I_o -se = 25 dB
4. Single Channel Per Carrier (SCPC) Medium Bit Rate Digital Data (3 Mbps)	Eb/ I_o -se = 20 dB
5. Single Channel Per Carrier (SCPC) Low Bit Rate Digital Data (64 kbps)	Eb/ I_o -se = 20 dB
6. Frequency Modulated Single Channel per Carrier (FM-SCPC) Message Voice Service	Interference from an adjacent satellite shall contribute a maximum of 1000 picowatts of noise in the worst baseband channel
7. Frequency Modulated Single Channel per Carrier (FM-SCPC) Program Audio	C/I-se = 24 dB
8. Companded Single Sideband Channels	Interference from an adjacent satellite shall contribute a maximum of 1000 picowatts of noise in the worst baseband channel
9. Spread Spectrum Channels	Eb/ I_o -se = 20 dB

Table B-2a: Domestic Satellite R.F. Carrier Listing – 6/4 GHz

Carrier Number	Signal Type & (channels)	Bandwidth (MHz)	E.S. Antennas (m) up/down	EIRP (dBW) up/down
1: T8	TV/FM (1)	36.000	11.0/ 7.0	78.7/37.0
2: T8	QPSK/ 45 MBPS	31.000	10.0/10.0	83.6/39.2
3: T8	QPSK/ 3.300 M8PS (6)	2.000	5.0/ 3.8	61.9/28.2
4: GAL	TV/FM (1)	32.000	10.0/ 7.0	79.7/37.5
5: GAL	QPSK/ 60 M8PS	36.000	8.0/ 8.0	79.7/37.5
6: GAL	QPSK/ 1.554 MBPS (24)	.882	5.0/ 3.8	59.3/19.4
7: GE	TV/FM (1)	36.000	10.0/ 7.0	81.0/37.0
8: GE	QPSK/ 60 MBPS	34.300	10.0/10.0	80.5/37.0
9: GE	QPSK/ 1.554 MBPS (24)	1.030	5.0/ 3.8	57.2/21.2

Table B-2b: Domestic Satellite R.F. Carrier Listing – 14/12 GHz

Carrier Number	Signal Type & (channels)	Bandwidth (MHz)	E.S. Antennas (m) up/down	EIRP (dBW) up/down
1: T8	TV/FM (2)	27.000	5.5/ 8.1	71.9/49.0
2: T8	QPSK/ 45 MBPS	36.000	5.5/ 5.5	77.6/48.8
3: T8	QPSK/ 3 M8PS (10)	1.800	4.6/ 2.4	61.6/35.9
4: T8	BPSK/ 64 KBPS (250)	.115	1.8/ 9.2	43.2/21.9
5: GAL	TV/FM (2)	23.300	6.1/ 6.1	73.1/43.8
6: GAL	QPSK/ 45 M8PS	25.700	3.7/ 3.7	72.6/47.0
7: GAL	QPSK/ 1.544 MBPS (18)	1.170	2.6/ 2.6	63.0/32.1
8: GAL	QPSK/ 64 K8PS (400)	.049	1.2/ 3.7	40.8/18.5
9: GE	TV/FM (1)	36.000	8.1/ 6.1	81.0/44.0
10: GE	QPSK/ 30 MBPS	24.000	4.6/ 3.7	81.0/44.0
11: GE	QPSK/ 1.544 MBPS (24)	1.029	4.6/ 2.4	65.2/25.4
12: GE	BPSK/125 KBPS (90)	.250	1.8/ 6.1	52.6/21.0

Table B-3a Link Parameters for C-band

CARRIER	COMPANY	TYPE	RF BANDWIDTH (MHz)	NO. OF CHAN	CODE RATE/ MOD. INDEX	BOT MOD. FREQ. (MHz)	TOP MOD. FREQ. (MHz)	AVE. TALKER LEVEL (dBm0)	CPAND PREMP NOISE WEIGH (dB)	PHASE TYPE	DATA RATE (MBPS)	CHAN. SPACE (MHz)	TRANSPONDER FREQUENCY UP (GHz)	TRANSPONDER FREQUENCY DN (GHz)	POL UP	POL DN	EARTH STATION TRANSMITTER POWR (dBW)	EARTH STATION TRANSMITTER DIAM (m)	EARTH STATION TRANSMITTER GAIN (dB)	--SATELLITE--- RECEIVER GAIN (dB)	--SATELLITE--- RECEIVER TEMP (K)	--SATELLITE--- XMTR EIRP (dBW)	-EARTH STATION RECEIVER DIAM (m)	-EARTH STATION RECEIVER GAIN (dB)	-EARTH STATION RECEIVER TEMP (K)
1	T8	1	36.000	1	2.857	.025	4.200	.0	12.8	0	.000	.000	6.145	3.920	0	1	23.8	11.0	54.9	27.3	650.	37.0	7.0	47.0	118
2	T8	2	31.000	1	.875	.000	.000	.0	.0	4	45.000	.000	6.145	3.920	0	1	25.6	10.0	58.0	27.3	650.	39.2	10.0	54.5	65
3	T8	3	2.000	6	1.000	.000	.000	.0	.0	4	3.300	5.000	6.145	3.920	0	1	4.0	5.0	57.9	27.3	650.	28.2	3.8	39.2	129
4	GAL	1	32.000	1	2.857	.020	4.200	.0	12.8	0	.000	.000	6.145	3.920	1	0	25.4	10.0	54.3	28.4	642.	37.5	7.0	50.4	126
5	GAL	2	36.000	1	1.000	.000	.000	.0	.0	4	60.000	.000	6.145	3.920	1	0	27.4	8.0	52.3	28.4	642.	37.5	8.0	48.4	126
6	GAL	3	.882	24	.875	.000	.000	.0	.0	4	1.554	1.400*	6.145	3.920	1	0	7.0	5.0	52.3	28.4	642.	19.4	3.8	48.4	126
7	GE	1	36.000	1	2.857	.020	4.200	.0	12.8	0	.000	.000	6.145	3.920	1	0	26.7	10.0	54.3	26.5	640.	37.0	7.0	52.5	150
8	GE	2	34.300	1	.000	.000	.000	.0	.0	4	60.000	.000	6.145	3.920	1	0	26.2	10.0	54.3	26.5	640.	37.0	10.0	49.8	150
9	GE	3	1.030	24	.875	.000	.000	.0	.0	4	1.554	1.500*	6.145	3.920	1	0	4.9	5.0	52.3	26.5	640.	21.2	3.8	43.8	150

Table B-3b Link Parameters for Ku-band

CARRIER	COMPANY	TYPE	RF BANDWIDTH (MHz)	NO. OF CHAN	CODE RATE/ MOD. INDEX	BOT MOD. FREQ. (MHz)	TOP MOD. FREQ. (MHz)	AVE. TALKER LEVEL (dBm0)	CPAND PREMP NOISE WEIGH (dB)	PHASE TYPE	DATA RATE (MBPS)	CHAN. SPACE (MHz)	TRANSPONDER FREQUENCY UP (GHz)	TRANSPONDER FREQUENCY DN (GHz)	POL UP	POL DN	EARTH STATION TRANSMITTER POWR (dBW)	EARTH STATION TRANSMITTER DIAM (m)	EARTH STATION TRANSMITTER GAIN (dB)	--SATELLITE--- RECEIVER GAIN (dB)	--SATELLITE--- RECEIVER TEMP (K)	--SATELLITE--- XMTR EIRP (dBW)	-EARTH STATION RECEIVER DIAM (m)	-EARTH STATION RECEIVER GAIN (dB)	-EARTH STATION RECEIVER TEMP (K)
1	T8	1	27.000	2	2.200	.001	4.200	.0	12.8	0	.000	.000	14.250	11.950	0	1	22.7	5.5	49.2	26.6	651.	49.0	8.1	58.5	204
2	T8	2	36.000	1	.750	.000	.000	.0	.0	4	45.000	.000	14.250	11.950	0	1	21.5	5.5	56.1	26.6	651.	48.8	5.5	54.5	275
3	T8	3	1.800	10	1.000	.000	.000	.0	.0	4	3.000	3.000	14.250	11.950	0	1	6.7	4.6	54.9	26.6	651.	35.9	2.4	47.1	281
4	T8	3	.115	250	.667	.000	.000	.0	.0	2	.064	.135*	14.250	11.950	0	1	-3.0	1.8	46.2	26.6	651.	21.9	9.2	59.5	174
5	GAL	1	23.300	2	1.778	.025	4.200	.0	13.8	0	.00029	.200	14.250	11.950	1	0	16.0	6.1	57.1	29.9	650.	43.8	6.1	55.6	240
6	GAL	2	25.700	1	.875	.000	.000	.0	.0	4	45.000	.000	14.250	11.950	1	0	22.9	3.7	49.7	29.9	650.	47.0	3.7	48.2	240
7	GAL	3	1.170	18	.750	.000	.000	.0	.0	4	1.544	1.641*	14.250	11.950	1	0	10.2	2.6	52.8	29.9	650.	32.1	2.6	51.2	240
8	GAL	3	.049	400	.750	.000	.000	.0	.0	4	.064	.068*	14.250	11.950	1	0	-1.9	1.2	42.7	29.9	650.	18.5	3.7	51.2	240
9	GE	1	36.000	1	2.571	.025	4.200	.0	12.8	0	.000	.000	14.250	11.950	1	0	21.2	8.1	59.8	27.0	795.	44.0	6.1	56.3	175
10	GE	2	24.000	1	.750	.000	.000	.0	.0	4	30.000	.000	14.250	11.950	1	0	26.7	4.6	54.3	27.0	795.	44.0	3.7	51.8	175
11	GE	3	1.029	24	.750	.000	.000	.0	.0	4	1.544	1.125*	14.250	11.950	1	0	7.0	4.6	58.2	27.0	795.	25.4	2.4	54.5	175
12	GE	3	.250	90	.500	.000	.000	.0	.0	2	.125	.325*	14.250	11.950	1	0	5.9	1.8	46.7	27.0	795.	21.0	6.1	55.4	175

Table B-4a Thermal Noise Summary for C-band

EARTH-TO-SHACE			SPACE-TO-EARTH											SINGLE ENTRY INTERFERENCE OBJ+						
			PATH	RCV		PATH	RCV	C/No - (dB-Hz)			C/N - (dB)			LINK	THERMAL NOISE					IMPAIR-
CAR-	COM-	EIRP	LOSS*	G/T	EIRP	LOSS*	G/T								S/N	Eb/No		S/I	C/In	C/Itv	MENT
RIER	PANY	(d8W)	(d8)	(dB/K)	(d8W)	(dB)	(dB/K)	UP	DN	TOTAL	UP	DN	TOTAL	(pW0p)	(dB)	(dB)	(pW0p)	(dB)	(dB)	(dB)	GRADE
1	T8	78.7	200.1	-.8	37.0	196.3	26.3	106.4	95.6	95.2	30.8	20.0	19.7		58.2			=60.1	28.0	28.0	<4.54>
2	T8	83.6	200.1	-.8	39.2	196.4	36.4	111.3	107.8	106.2	36.4	32.9	31.3			29.6			27.4		
3	T8	61.9	200.1	-.8	28.2	196.2	18.1	89.6	78.7	78.4	26.6	15.7	15.3			13.2			23.0		
4	GAL	79.7	200.1	.3	37.5	196.4	29.4	108.5	99.1	98.6	33.5	24.0	23.6		62.1			=60.1	28.0	28.0	<4.54>
5	GAL	79.7	200.1	.3	37.5	196.3	27.4	108.5	97.2	96.9	33.0	21.6	21.3			19.1			28.0		
6	GAL	59.3	200.1	.3	19.4	196.3	27.4	88.1	79.1	78.6	28.7	19.6	19.1			16.7			22.4		
7	GE	81.0	200.1	-1.6	37.0	196.4	30.7	107.9	99.9	99.3	32.4	24.4	23.7		62.3			=60.1	28.0	28.0	<4.54>
8	GE	80.5	200.1	-1.6	37.0	196.3	28.0	107.4	97.3	96.9	32.1	22.0	21.6			19.2			25.0		
9	GE	57.2	200.1	-1.6	21.2	196.2	22.0	84.1	75.6	75.1	24.0	15.5	14.9			13.2			20.0		

Table B-4a (CONT'D) Thermal Noise Summary for C-band

*** F O O T N O T E S ***

L I N K P A R A M E T E R S

SIGNAL TYPE INDEX	POLARIZATION TYPE INDEX	POLARIZATION ISOLATION MATRIX (dB)						
			INTERFERING SENSE					
			0	1	2	3	4	5
0 = FDM/FM	0 = HORIZONTAL	0	.0	.0	.0	.0	.0	.0
1 = TV/FM	1 = VERTICAL							
2 = DIGITAL		D 1	.0	.0	.0	.0	.0	.0
3 = SCPC/PSK	2 = 20 DEG CANTED HORIZONTAL	E						
4 = SCPC/FM	3 = 20 DEG CANTED VERTICAL	S 2	.0	.0	.0	.0	.0	.0
5 = CSSB/AM		I						
6 = SS/PSK	4 = LEFT-HAND CIRCULAR	R 3	.0	.0	.0	.0	.0	.0
	5 = RIGHT-HAND CIRCULAR	E						
		D 4	.0	.0	.0	.0	.0	.0
		5	.0	.0	.0	.0	.0	.0

SPECTRA ASSUMMED FOR INTERFERENCE INTO SCPC & PSK

TV/FM: FCC ADVISORY COMMITTEE

FDM/FM: GAUSSIAN, EXCEPT FOR THOSE MARKED WITH "+" UNDER SIGNAL TYPE

* INDICATES SCPC AND SMALL FDMA CARRIERS WHOSE TRANSPONDER FREQUENCY PLANS AVOID +- .0 MHz AT THE TRANSPONDER CENTER.

"PLAN" UNDER CHANNEL SPACING INDICATES A FIXED FREQUENCY PLAN.

Table B-4a (CONT'D) Thermal Noise Summary for C-band

THERMAL NOISE SUMMARY

* PATH LOSSES INCLUDE FREE SPACE LOSS FOR A 10 DEGREE ELEVATION ANGLE, CLEAR SKY ATMOSPHERIC LOSSES, AND ANTENNA POINTING LOSSES IN THE RANGE OF 0.0-0.5 dB. POINTING LOSSES ARE INCLUDED ONLY FOR THE THERMAL NOISE C/N, NOT IN INTERFERENCE CALCULATIONS.

UPLINK LOSSES = 199.6 + .2 dB + Pointing Loss
DOWNLINK LOSSES = 196.1 + .1 dB + Pointing Loss

+ THE TV/FM INTERFERENCE OBJECTIVE IS EITHER THE S/I OR C/I VALUE(S) WITHOUT THE "=". THE VALUE(S) WITH THE "=" ARE FOR COMPARISON ONLY. IF THE S/I HAS THE "=", THEN THE C/I OBJECTIVE IS USED AND THE S/I IS THE EQUIVALENT LEVEL FROM A CO-CHANNEL TV/FM INTERFERER. IF THE C/Is HAVE "=", THEN THE S/I OBJECTIVE IS USED AND THE C/Is INDICATE THE EQUIVALENT SINGLE ENTRY LEVELS IN FOR A NOISE-LIKE INTERFERER (C/In) AND FOR A CO-CHANNEL TV/FM INTERFERER (C/Itv). CCIR Rec. 500-1 IMPAIRMENT GRADES ARE GIVEN FOR THE AGGREGATE TV/FM C/I = C/Itv - 4 dB INTO A "REASONABLELY CRITICAL STILL SCENE". THE IMPAIRMENT GRADES ARE:

5.0 = IMPERCEPTIBLE (Never achieved)
4.6 = JUST PERCEPTIBLE OR JUST UNPERCEPTIBLE (Highest achievable grade)
4.3 = APPROXIMATE GRADE FOR CATV AGGREGATE OBJECTIVE OF 18 dB
4.0 = PERCEPTIBLE, BUT NOT ANNOYING
3.0 = SLIGHTLY ANNOYING
2.0 = ANNOYING
1.0 = VERY ANNOYING

Table B-4b Thermal Noise Summary for Ku-band

EARTH-TO-SHACE			SPACE-TO-EARTH					C/No - (dB-Hz)			C/N - (dB)			SINGLE ENTRY INTERFERENCE OBJ+ LINK THERMAL NOISE						
CAR-RIER	COM-PANY	EIRP (dBW)	PATH LOSS* (dB)	RCV G/T (dB/K)	EIRP (dBW)	PATH LOSS* (dB)	RCV G/T (dB/K)	UP	DN	TOTAL	UP	DN	TOTAL	(pW0p)	S/N (dB)	Eb/No (dB)	(pW0p)	S/I (dB)	C/In (dB)	C/Itv (dB) IMPAIR-MENT GRADE
1	T8	71.9	207.8	-1.5	49.0	206.3	35.4	91.2	106.7	91.0	16.9	32.4	16.7		52.2			=51.8	22.0	22.0<4.18>
2	T8	77.6	208.1	-1.5	48.8	206.3	30.1	96.6	101.2	95.3	21.0	25.6	19.7			18.8			25.0	
3	T8	61.6	208.1	-1.5	35.9	206.2	22.6	80.6	80.9	77.7	18.0	18.4	15.2			13.0			20.0	
4	T8	43.2	207.8	-1.5	21.9	206.3	37.1	62.5	81.3	62.4	11.9	30.7	11.8			14.3			20.0	
5	GAL	73.1	208.1	1.8	43.8	206.3	31.8	95.4	97.9	93.4	21.7	24.2	19.8		53.8			=50.0	22.0	22.0<4.09>
6	GAL	72.6	207.8	1.8	47.0	206.2	24.4	95.2	93.8	91.4	21.1	19.7	17.3			14.9			27.4	
7	GAL	63.0	208.1	1.8	32.1	206.3	27.4	85.3	81.8	80.2	24.6	21.1	19.5			18.3			21.2	
8	GAL	40.8	207.8	1.8	18.5	206.3	27.4	63.4	68.2	62.1	16.5	21.3	15.2			14.1			21.2	
9	GE	81.0	208.1	-2.0	44.0	206.3	33.9	99.5	100.2	96.8	23.9	24.6	21.2		58.6			=59.2	28.0	28.0<4.52>
10	GE	81.0	208.1	-2.0	44.0	206.3	29.4	99.5	95.7	94.2	25.7	21.9	20.4			19.4			25.0	
11	GE	65.2	208.1	-2.0	25.4	206.3	32.1	83.7	79.8	78.3	23.6	19.6	18.2			16.4			20.0	
12	GE	52.6	207.8	-2.0	21.0	206.3	33.0	71.4	76.3	70.2	17.4	22.3	16.2			19.2			20.0	

Table B-4b (CONT'D) Thermal Noise Summary for Ku-band

*** F O O T N O T E S ***

L I N K P A R A M E T E R S

SIGNAL TYPE INDEX	POLARIZATION TYPE INDEX
0 = FDM/FM	0 = HORIZONTAL
1 = TV/FM	1 = VERTICAL
2 = DIGITAL	
3 = SCPC/PSK	2 = 20 DEG CANTED HORIZONTAL
4 = SCPC/FM	3 = 20 DEG CANTED VERTICAL
5 = CSSB/AM	
6 = SS/PSK	4 = LEFT-HAND CIRCULAR
	5 = RIGHT-HAND CIRCULAR

POLARIZATION ISOLATION MATRIX (dB)

DESIRED SENSE	INTERFERING SENSE 0	1	2	3	4	5
0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0

SPECTRA ASSUMMED FOR INTERFERENCE INTO SCPC & PSK

TV/FM: FCC ADVISORY COMMITTEE

FDM/FM: GAUSSIAN, EXCEPT FOR THOSE MARKED WITH "+" UNDER SIGNAL TYPE

* INDICATES SCPC AND SMALL FDMA CARRIERS WHOSE TRANSPONOER FREQUENCY PLANS AVOID +- .0 MHz AT THE TRANSPONDER CENTER.

"PLAN" UNDER CHANNEL SPACING INDICATES A FIXED FREQUENCY PLAN.

Table B-4b (CONT'D) Thermal Noise Summary for Ku-band

THERMAL NOISE SUMMARY

* PATH LOSSES INCLUDE FREE SPACE LOSS FOR A 20 DEGREE ELEVATION ANGLE, CLEAR SKY ATMOSPHERIC LOSSES, AND ANTENNA POINTING LOSSES IN THE RANGE OF 0.0-0.5 dB. POINTING LOSSES ARE INCLUDED ONLY FOR THE THERMAL NOISE C/N, NOT IN INTERFERENCE CALCULATIONS.

UPLINK LOSSES = 207.6 + .2 dB + Pointing Loss
DOWNLINK LOSSES = 205.9 + .2 dB + Pointing Loss

+ THE TV/FM INTERFERENCE OBJECTIVE IS EITHER THE S/I OR C/I VALUE(S) WITHOUT THE "=". THE VALUE(S) WITH THE "=" ARE FOR COMPARISON ONLY. IF THE S/I HAS THE "=", THEN THE C/I OBJECTIVE IS USED AND THE S/I IS THE EQUIVALENT LEVEL FROM A CO-CHANNEL TV/FM INTERFERER. IF THE C/Is HAVE "=", THEN THE S/I OBJECTIVE IS USED AND THE C/Is INDICATE THE EQUIVALENT SINGLE ENTRY LEVELS IN FOR A NOISE-LIKE INTERFERER (C/In) AND FOR A CO-CHANNEL TV/FM INTERFERER (C/Itv). CCIR Rec. 500-1 IMPAIRMENT GRADES ARE GIVEN FOR THE AGGREGATE TV/FM C/I = C/Itv - 4 dB INTO A "REASONABLELY CRITICAL STILL SCENE". THE IMPAIRMENT GRAOES ARE:

5.0 = IMPERCEPTIBLE (Never achieved)
4.6 = JUST PERCEPTIBLE OR JUST UNPERCEPTIBLE (Highest achievable grade)
4.3 = APPROXIMATE GRAOE FOR CATV AGGREGATE OBJECTIVE OF 1B dB
4.0 = PERCEPTIBLE, BUT NOT ANNOYING
3.0 = SLIGHTLY ANNOYING
2.0 = ANNOYING
1.0 = VERY ANNOYING

Table B-5a Single Entry Margin for C-Band (dB) (2.00 Degree Spacing)

Antenna Patterns as given ; A = Geocentric Angle

WANTED \ INTERFERING	1	2	3	4	5	6	7	8	9
1	-3.1	-5.3	-1.5	-3.8	-4.2	.6	-3.7	-3.6	-.8
2	6.1	4.0	8.7	5.2	4.6	9.7	4.9	5.4	9.3
3	-14.1	-6.4	-5.3	-14.7	-4.8	2.5	-14.6	-4.2	1.3
4	.2	-1.9	2.3	-.6	-1.0	3.8	-.7	-.3	3.2
5	-1.4	-3.5	.4	-2.1	-2.6	2.3	-2.0	-1.9	1.0
6	-10.8	-2.5	-2.1	-11.6	-1.3	3.0	-11.7	-.6	2.4
7	1.8	-.3	3.9	1.0	.2	5.3	.8	1.0	4.4
8	2.5	.4	4.3	1.8	1.4	6.2	1.9	2.0	4.9
9	-11.7	-3.5	-3.0	-12.5	-2.1	2.8	-12.5	-1.4	1.8

Table B-5b Single Entry Margin for Ku-band (dB) (2.00 Degree Spacing)

SINGLE ENTRY MARGIN (dB) (2.00 DEGREE SPACING)

Antenna Patterns as given ; A = Geocentric Angle

WANTED \ INTERFERING	1	2	3	4	5	6	7	8	9	10	11	12
1	5.2	6.9	11.3	8.0	8.7	5.2	5.5	4.2	7.0	1.7	7.5	3.2
2	2.1	5.7	9.3	7.5	7.9	5.9	6.9	5.9	8.1	3.8	9.6	5.3
3	-11.3	3.2	5.0	7.6	-2.7	3.1	6.7	9.1	-4.4	1.8	9.7	6.1
4	-11.9	3.3	4.9	4.5	-2.3	1.0	.1	2.0	-7.2	-3.4	3.1	-1.7
5	.9	8.7	12.2	10.1	9.8	9.2	9.7	8.6	6.8	7.2	12.5	7.9
6	-7.2	-3.0	.5	-.4	-1.6	-3.0	-1.3	-2.2	-.6	-4.1	1.5	-1.9
7	-10.0	4.4	5.2	7.9	-1.6	4.4	6.2	8.8	-3.0	3.4	11.2	8.0
8	-13.4	1.5	2.4	2.1	-4.3	.1	-.5	-.5	-7.9	-3.5	2.9	-1.9
9	-2.0	1.4	4.5	3.9	3.4	2.6	4.3	3.8	5.2	2.7	8.1	4.7
10	-3.0	1.2	4.2	4.5	2.3	2.0	4.4	4.3	4.7	3.4	8.9	6.7
11	-11.0	3.3	3.8	7.4	-2.7	3.8	5.8	8.5	-3.3	4.7	11.5	9.8
12	-10.0	4.6	5.0	8.1	-1.3	4.1	4.1	6.1	-3.6	1.8	8.1	4.7

Table B-6a Combinations Failing to Meet Single Entry Interference Objectives at C-band (dB) [2° Spacing]

Antenna Patterns as given : A = Geocentric Angle

WANTED LINK		INTERFERING LINK --> 1	2	3	4	5	6	7	8	9
T8	1	3	5	2	4	4		4	4	1
T8	2									
T8	3	*	6	5	*	5		*	4	
GAL	4		2		1	1		1	1	
GAL	5	1	4		2	3		2	2	
GAL	6	*	3	2	*	1		*	1	
GE	7		1							
GE	8									
GE	9	*	3	3	*	2		*	1	

Table B-6b Combinations Failing to Meet Single Entry Interference Objectives at Ku-band (dB) [2° Spacing]

Antenna Patterns as given : A = Geocentric Angle

WANTED LINK		INTERFERING LINK --> 1	2	3	4	5	6	7	8	9	0	1	2
T8	1												
T8	2												
T8	3	*			3				4				
T8	4	*			2				7	3		2	
GAL	5												
GAL	6	7	3		1	2	3	1	2	1	4		2
GAL	7	*			2				3				
GAL	8	*			4		1	1	8	4		2	
GE	9	2											
GE	10	3											
GE	11	*			3				3				
GE	12	*			1				4				

Table B-9b Failure Summary for Ku-band

(NUMBER)

	SATELLITE SPACING				
	2.00 DEG	4.00 DEG	.00 DEG	.00 DEG	.00 DEG
TOTAL COMBINATIONS	144	144	144	144	144
TOTAL FAILURES	36	7	0	0	0
FAILS BY:					
.0 - 1.5 dB	6	1			
1.5 - 2.5 dB	8	1			
2.5 - 3.5 dB	8	2			
3.5 - 4.5 dB	5	2			
4.5 - 5.5 dB	0	0			
5.5 - 6.5 dB	0	1			
6.5 - 7.5 dB	2	0			
7.5 - 8.5 dB	1	0			
8.5 - 9.5 dB	0	0			
MORE THAN 9.5 dB	6	0			

(PERCENT)

	SATELLITE SPACING				
	2.00 DEG	4.00 DEG	.00 DEG	.00 DEG	.00 DEG
TOTAL FAILURES	25.0 %	4.9 %	.0 %	.0 %	.0 %
FAILS BY:					
.0 - 1.5 dB	4.2 %	.7 %			
1.5 - 2.5 dB	5.6 %	.7 %			
2.5 - 3.5 dB	5.6 %	1.4 %			
3.5 - 4.5 dB	3.5 %	1.4 %			
4.5 - 5.5 dB	.0 %	.0 %			
5.5 - 6.5 dB	.0 %	.7 %			
6.5 - 7.5 dB	1.4 %	.0 %			
7.5 - 8.5 dB	.7 %	.0 %			
8.5 - 9.5 dB	.0 %	.0 %			
MORE THAN 9.5 dB	4.2 %	.0 %			

UNION INTERNATIONALE DES TELECOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
OFICINA DE RADIOCOMUNICACIONES

CIRCULAIRE HEBDOMADAIRE / DATE WEEKLY CIRCULAR / DATE CIRCULAR SEMANAL / FECHA	SECTION SPECIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.°

STATION SPATIALE SPACE STATION ESTACIÓN ESPACIAL	**USASAT-35O**	ou or o	STATION(S) TERRIENNE(S) EARTH STATION(S) ESTACIÓN(ES) TERRENA(S)	**TYPE/TYPICAL/TIPO**

ADMINISTRATION RESPONSABLE RESPONSIBLE ADMINISTRATION ADMINISTRACIÓN RESPONSABLE	**USA**
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE INFORMATION RECEIVED BY THE BUREAU ON INFORMACIÓN RECIBIDA POR LA OFICINA EL	**25.10.1999**

Ces renseignements ont été reçus par le Bureau des radiocommunications en vertu du RR1074 et son publiés en application du RR1078. Ils font l'objet de l'une des deux procédures suivantes, indiquées ci-dessous par un X dans la case pertinente.

This information has been received by the Radiocommunication Bureau pursuant to RR1074 and is published in accordance with RR1078. It is subject to one of two procedures, indicated below by an X in the relevant box.

Esta información ha sido recibida por la Oficina de Radiocomunicaciones de conformidad con RR1074 y se publica en virtud de RR1078. Está sujeta a uno de los dos procedimientos siguientes, señalado con una X en la casilla apropriada.

Une demande de coordination a été envoyée conformément au RR1073 aux administrations indiquées ci-dessous. En application du RR1078, le Bureau a ajouté, le cas échéant, le symbole des autres administrations (identifiées par *) dont les services sont susceptibles d'être affectés.
Toute administration dont le symbole apparaît dans la présente Section Spéciale accuse immédiatement réception, par télégramme, des données concernant la coordination (RR1082).

A request for coordination has been sent in accordance with RR1073 to the administrations indicated below. In conformity with RR1078, the Bureau has added, as appropriate, the symbols of any other administrations (identified by *) whose services are likely to be affected.
Any administration whose symbol appears in the present Special Section shall acknowledge receipt of the coordination data immediately by telegram (RR1082).

De conformidad con RR1073, se ha enviado una solicitud de coordinación a las administraciones indicadas más abajo. Conforme a RR1078, la Oficina ha añadido adecuadamente el símbolo de las demás administraciones (identificadas por un *) cuyos servicios pueden resultar efectados.
Las administraciones cuyo símbolo aparece en la presente Sección Especial deberán acusar recibo inmediatamente por telegrama de la información referente a la coordinación (RR1082).

DEMANDE DE COORDINATION (RR1060) ADRESSEE A REQUEST FOR COORDINATION (RR1060) ADDRESSED TO SOLICITUD DE COORDINACIÓN (RR1060) DIRIGIDA A	**ARG, B, BLR/IK, CUB/IK, G, INS, LUX, MLA, VEN/ASA**
DATE LIMITE POUR LA DECISION (RR1084) : EXPIRY DATE FOR DECISION (RR1084): FECHA LÍMITE PARA LA DECISIÓN (RR1084):	

Les dispositions du RR1066 s'appliquent à ces assignetions qui sont publiées uniquement pour information.

The provisions of RR1066 apply to these assignments, which are published for information only.

Las disposiciones de RR1066 se aplican a estas esignaciones, que se publican a título de información únicamente.

Items	Description	Description	Descripcion	RES. 46	WIC No.
A1a	Name of the space station	Nom de la station spatiale	Nombre de la estación espacial		1
A1f	Notifying administration	Administration notificatrice	Administración notificante		2
A2a	Date of bringing into use	Date de mise en service	Fecha de puesta en servicio		48
A2b	Period of validity (year)	Période de validité (année)	Periodo de validez (año)		49
A3a	Operating agency	Organisme exploitant les stations	Compañía explotadora		50
A3b	Address of the administration responsible for the station	Adresse de l'administration responsable de la station	Dirección de la administración responsable de la estación		51
A4a1	Nominal longitude of a geostationary space station (degree)	Longitude nominale d'une station spatiale géostationnaire (degré)	Longitud nominal de una estación espacial geoestacionaria (grado)		8
A4a2a	Longitudinal tolerance	Tolérance de longitude	Tolerancia longitudinal		9
A4a2b	Inclination excursion	Excursion d'inclinaison	Excursión de inclinación		10
A4a3	Visibility arc	Arc de visibilité	Arco de visibilidad		11
A4a4	Service arc	Arc de service	Arco de servicio		12
A4a5	Reasons for service arc < arc of visibility	Raisons pour lesquelles l'arc de service < l'arc de visibilité	Razones por las que el arco de servicio < el arco de visibilidad		13
A5 /A6	Coordination information	Information de la coordination	Información de la coordinación		46
A13	Reference to Special Sections	Référence aux Sections Spéciales	Referencia a las Secciones Especiales		52
B1a	Designation of the satellite antenna beam	Désignation du faisceau de l'antenne du satellite	Designación del haz de la antena del satélite		28
B1b	Old beam designation	Ancienne désignation du faisceau	Designación anterior del haz		
B2	Transmission/reception indicator	Indicateur d'émission/réception	Indicador de transmisión/recepción		29
B3a1 /B3b1 /B3b2a	Maximum antenna gain (dBi)	Gain maximal d'antenne (dBi)	Ganancia máxima de la antenna (dBi)		31
B3a2 /B3b2b	Antenna gain contour diagram	Diagramme des contours de gain de l'antenne	Diagrama de los contornos de ganancia de la antena		34
B3d	Pointing accuracy (degree)	Précision de pointage (degré)	Precisión de puntería (grado)		32
B3e1	Radiation diagram	Diagramme de rayonnement	Diagrama de radiación		35
B3e2	Reference pattern	Diagramme de référence	Diagrama de referencia		35
B3e3	Coefficient A	Coefficient A	Coeficiente A		35
B3e4	Coefficient B	Coefficient B	Coeficiente B		35
B3f	Antenna gain vs orbit longitude diagram	Diagramme du gain d'antenne en fonction de la longitude de l'orbite.	Diagrama de la ganancia de la antena en función de la longitud de la órbita		36
C2a	Assigned frequency	Fréquence assignée	Frecuencia asignada		53
C3a	Assigned frequency band (kHz)	Bande de fréquences assignée (kHz)	Banda de frecuencias asignada (kHz)		41
C4a	Class of station	Classe de station	Clase de estación		39
C4b	Nature of service	Nature du service	Naturaleza del servicio		40
C5a	Receiving system noise temperature (Kelvin) in the case of a space station	Température de bruit du système de réception (Kelvin) dans le cas d'une station spatiale	Temperatura de ruido del sistema receptor (Kelvin) en el caso de una estación espacial		42
C6a	Type of polarization	Type de polarisation	Tipo de polarización		33
C6b	Polarization angle (degree)	Angle de polarisation (degré)	Ángulo de polarización (grado)		33
C7a	Designation of emission	Désignation de l'émission	Denominación de la emisión		56
C8a1 /C8b1	Maximum power supplied to the antenna (dBW)	Puissance maximale fournie à l'antenne (dBW)	Potencia máxima suministrada a la antena (dBW)		57
C8a2 /C8b2	Maximum power density (dB(W/Hz))	Densité maximale de puissance (dB(W/Hz))	Densidad máxima de potencia (dB(W/Hz))		58
C8c1	Minimum peak power (dBW)	Valeur minimale de la puissance en crête (dBW)	Valor mínimo de la potencia en la cresta (dBW)		
C8c2	Minimum power density (dB(W/Hz))	Densité minimale de puissance (dB(W/Hz))	Densidad mínima de potencia (dB(W/Hz))		
C8d /C8g	Maximum total peak power (dBW)	Valeur maximale de la puissance en crête totale (dBW)	Potencia en la cresta de la envolvente total máxima (dBW)		
C8e	Carrier-to-noise ratio (dB)	Rapport porteuse/bruit (dB)	Relación portadora/ruido (dB)		
C10a1	Name of the associated space station	Nom de la station spatiale associée	Nombre de la estación espacial asociada		71
C10a2	Previous name of the associated space station	Ancien nom de la station spatiale	Nombre anterior de la estación espacial		71
C10a3	Type of associated space station	Type de station spatiale associée	Tipo de la estación espacial asociada		
C10a4	Nominal longitude of the associated geostationary space station	Longitude nominale de la station spatiale géostationnaire associée	Longitud nominal de la estación espacial geoestacionaria asociada		

C10a5	Designation of the antenna beam of the associated space station	Désignation du faisceau de l'antenne de la station spatiale associée	Designación del haz de la antena de la estación espacial asociada	73
C10b1	Name of the associated earth station	Nom de la station terrienne associée	Nombre de la estación terrena asociada	59
C10b2	Previous name of the associated earth station	Ancien nom de la station terrienne	Nombre anterior de la estación terrena	
C10b3	Type of associated earth station	Type de station terrienne associée	Tipo de la estación terrena asociada	62
C10b4	Country symbol	Symbole de pays	Símbolo de país	61
C10b5	Geographical coordinates	Coordonnées géographiques	Coordenadas geográficas	63
C10c1a	Class of station of the associated earth station	Classe de station de la station terrienne associée	Clase de estación de la estación terrena asociada	65
C10c1b	Nature of service of the associated earth station	Nature du service de la station terrienne associée	Naturaleza del servicio de la estación terrena asociada	66
C10c2	Isotropic gain of the antenna (dBi)	Gain isotrope de l'antenne (dBi)	Ganancia isótropa de la antenna (dBi)	67
C10c3	Beamwidth (degree)	Ouverture du faisceau (degré)	Abertura del haz (grado)	68
C10c4a	Reference radiation pattern	Diagramme de rayonnement de référence	Diagrama de radiación de referencia	70
C10c4b	Radiation pattern diagram of the associated earth station	Diagramme de rayonnement	Diagrama de radiación	69
C10c4c1	Radiation pattern diagram coefficient A	Coefficient A du diagramme de rayonnement	Coeficiente A del diagrama de radiación	
C10c4c2	Radiation pattern diagram coefficient B	Coefficient B du diagramme de rayonnement	Coeficiente B del diagrama de radiación	
C10c4c3	Radiation pattern diagram coefficient C	Coefficient C du diagramme de rayonnement	Coeficiente C del diagrama de radiación	
C10c4c4	Radiation pattern diagram coefficient D	Coefficient D du diagramme de rayonnement	Coeficiente D del diagrama de radiación	
C10c4c5	Radiation pattern diagram angle	Angle du diagramme de rayonnement	Ángulo del diagrama de radiación	
C10c5	Receiving system noise temperature (Kelvin) of the associated earth station	Température de bruit du système de réception (Kelvin) de la station terrienne associée	Temperatura de ruido del sistema receptor (Kelvin) de la estación terrena asociada	64
C11a1	Service area no. (GIMS)	Numéro de zone de service (GIMS)	Número de zona de servicio (GIMS)	43-44
C11a2	Service area symbol	Symbole de la zone de service	Símbolo de la zona de servicio	43-44
C11a3	Service area diagram attachment	Diagramme de zone de service annexe	Diagrama de la zona de servicio anexo	43-44
D1a	Serial number of the strap	Numéro de série de la connexion	Número de serie de la conexión	75
D1b	Uplink beam designation	Désignation du faisceau de réception	Designación del haz de recepción	76
D1c	Downlink beam designation	Désignation du faisceau d'émission	Designación del haz de transmisión	77
D1d	Uplink assigned frequency	Assignations de fréquence sur les liaisons montantes	Asignaciones de frecuencia de enlace ascendente	78
D1e	Downlink assigned frequency	Assignations de fréquence sur les liaisons descendantes	Asignaciones de frecuencia de enlace descendente	79
D2a1	Lowest equivalent satellite link noise temperature	Température de bruit équivalente la plus faible de la liaison par satellite	Temperatura de ruido equivalente más baja del enlace por satélite	80
D2a2	Associated transmitting gain (lowest)	Gain de transmission associé (plus faible)	Ganancia de transmisión asociada (más baja)	81
D2b1	Satellite link noise temperature for highest ratio of gain/noise	Température de bruit équivalente de liaison par satellite pour le rapport gain/température bruit le plus élevé	Temperatura de ruido equivalente del enlace por satélite para la relación más elevada ganancia/ruido	82
D2b2	Associated transmitting gain (highest)	Gain de transmission associé (plus élevé)	Ganancia de transmisión asociada (más elevada)	83
D2c	Line number for a given set of equivalent satellite link noise temperatures and transmission gain values	Numéro de ligne pour un groupe donné températures de bruit équivalente de la liaison par satellite et les gains de transmission	Número de serie para un grupo dado de temperaturas de ruido equivalente del enlace por satélite y las ganancias de transmisión	88
D2d	Associated receiving earth station name	Nom de la station terrienne réceptrice associée	Nombre de la estación terrena receptora asociada	84
2D	Findings: Date from which an assignment is taken into account according to RR1061-1065 or 2.5 of the procedure in Annex 1 to Resolution 46	Conclusions: Date à partir de laquelle une assignation est prise en compte en accord avec les RR1061-1065 ou 2.5 de la procédure dans l'Annex 1 à la Résolution 46	Conclusiones: Fecha a partir de la cual una asignación es tomada en cuenta de acuerdo con RR1061-1065 ó 2.5 del procedimiento del Anexo 1 a la Resolución 46	
13A	Findings: Conformity with Radio Regulations; Table No. 13A of the preface to the IFL	Conclusions: En conformité avec le Règlement des radiocommunications; Tableau No. 13A de la Préface à la Liste Internationale des Fréquences	Conclusiones: En conformidad con los Reglamentos de radiocomunicaciones; Tabla No.13A del Prefacio a la Lista Internacional de frecuencias	
13B1	Findings: Reference to a provision, appendix or resolution	Conclusions: Référence à une disposition, appendice ou résolution	Conclusiones: Referencia a una disposición, apéndice o resolución	
13B2	Findings: Remarks conceming the findings entered in column 13A; Table No.13B of the preface to the IFL	Conclusions: Remarques concernant les conclusions inscrites à la colonne 13A; Tableau No.13B de la Préface à la Liste Internationale des Fréquences	Conclusiones: Comentarios correspondientes a las conclusiones inscritas en la columna 13A; Tabla No.13B del Prefacio a la Lista Internacional de frecuencias	
13B3	Findings: Date relating to the review of the findings	Conclusions: Date relative à un réexamen des conclusions	Conclusiones: Fecha relativa a una revisión de las conclusiones	
13C	Remarks	Observations	Observaciones	47
BR1	Date of receipt	Date de réception	Fecha de recepción	3

BR2	Administration serial number	Numéro de série de l'administration	Número de serie de la administración	
BR3a	Provision reference code	Code référence de la disposition	Código de referencia de la disposición	5
BR3b	Category of notification	Catégorie de notification	Categoría de notificación	5
BR6a	Identification number of the network	Numéro d'identification du réseau à satellite	Número de identificación de la red	4
BR6b	Old identification number of the network	Ancienne numéro d'identification du réseau à satellite	Número anterior de la identificación de la red	
BR7a	Identification number of the group	Numéro d'identification du groupe	Número de la identificación del grupo	45
BR7b	Old identification number of the group	Ancienne numéro d'identification du groupe	Número anterior de la identificación del grupo	
BR14	Symbol and number of the Special Section	Symbole et numéro de la Section Spéciale	Símbolo y número de la Sección Especial	7
BR20	WIC number	Numéro de WIC	Número de WIC	6
BR21	Part of the WIC	Partie de WIC	Parte del WIC	

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: /

BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14NH | R

A4a1 Orbital long.: 89 W | *A4a2a* Long. tolerance: 0.05 W - 0.05 E | *A4a2b* Inclination excursion: 0.1

A4a3 Visibility arc: 136 W - 55 W | *A4a4* Service arc: 136 W - 55 W | *A4a5* Reason for arc diff.:

☐ *B1a/B1b* Beam designation: 14NH | *B2* Emi-Rcp: R | *B3a1/B3b1/B3b2a* Max. ant. gain: 33 | *B3d* Pointing accuracy: 0.1

B3a2/B3b2b Ant. gain cont. diag.: 3 | *B3f* Ant. gain vs orbit long. diag.: 4

B3e1 Rad. diag.: | *B3e2* Ref. pat.: | *B3e3* Coef. A: | *B3e4* Coef. B:

BR7a/BR7b Group id.: 25 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: | RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	-2.7	-78.3	11
2	32M0G7W--	32.5	-42.6	-3.2	-78.3	11
3	32M0F8W--	27	-36	10.8	-52.2	25
4	5M00G7W--	24.4	-42.6	-11.2	-78.3	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.		*C10c1a/C10c1b* Cls. / Nat.			*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
☐ TYPICAL 11 METER		T			1	TC	CP	62.4	0.12	REC-580							

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

BR7a/BR7b Group id.: 26 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: | RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14NH | R

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	5	-70.6	11
2	32M0G7W--	32.5	-42.6	4.5	-70.6	11
3	32M0F8W--	27	-36	21.5	-41.5	25
4	5M00G7W--	24.4	-42.6	-3.5	-70.6	11
5	38K4G7W--	3.2	-42.6	-24.9	-70.6	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 4.5 METER		T		1 TC CP	54.7	0.3	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

BR7a/BR7b Group id.: 27 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	10.5	-65.1	11
2	32M0G7W--	32.5	-42.6	10	-65.1	11
3	5M00G7W--	24.4	-42.6	2	-65.1	11
4	38K4G7W--	3.2	-42.6	-19.2	-65.1	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 2.4 METER		T		1 TC CP	49.2	0.57	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14NH R

BR7a/BR7b Group id.: 82 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	16.5	-59.1	11
2	32M0G7W--	32.5	-42.6	16	-59.1	11
3	5M00G7W--	24.4	-42.6	8	-59.1	11
4	38K4G7W--	3.2	-42.6	-13.2	-59.1	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.		*C10c1a/C10c1b* Cls. / Nat.		*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 1.2 METER		T			1	TC CP	43.2	1.14	REC-580							

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

BR7a/BR7b Group id.: 83 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	20.6	-55	11
2	32M0G7W--	32.5	-42.6	20.1	-55	11
3	5M00G7W--	24.4	-42.6	12.1	-55	11
4	38K4G7W--	3.2	-42.6	-9.1	-55	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14NH R

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 0.75 METER		T		1 TC CP	39.1	1.82	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

B1a/B1b Beam designation: 14NV | *B2* Emi-Rcp: R | *B3a1/B3b1/B3b2a* Max. ant. gain: 33 | *B3d* Pointing accuracy: 0.1
B3a2/B3b2b Ant. gain cont. diag.: 3 | *B3f* Ant. gain vs orbit long. diag.: 4
B3e1 Rad. diag. | *B3e2* Ref. pat. | *B3e3* Coef. A | *B3e4* Coef. B

BR7a/BR7b Group id.: 28 | *BR14* Special Section
C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33
C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram

A5/A6 Coordination: RR1060 R ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b | *BR25* Reason for C8c/C8e absent

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	-2.7	-78.3	11
2	32M0G7W--	32.5	-42.6	-3.2	-78.3	11
3	32M0F8W--	27	-36	10.8	-52.2	25
4	5M00G7W--	24.4	-42.6	-11.2	-78.3	11

C2a Assigned frequency

14.04	G	14.12	G	14.2	G	14.28	G	14.36	G	14.44	G
14.08	G	14.16	G	14.24	G	14.32	G	14.4	G	14.48	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 11 METER		T		1 TC CP	62.4	0.12	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

BR7a/BR7b Group id.: 29 | *BR14* Special Section
C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33
C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14NV R

A5/A6 Coordination: RR1060 R ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	5	-70.6	11
2	32M0G7W--	32.5	-42.6	4.5	-70.6	11
3	32M0F8W--	27	-36	21.5	-41.5	25
4	5M00G7W--	24.4	-42.6	-3.5	-70.6	11
5	38K4G7W--	3.2	-42.6	-24.9	-70.6	11

C2a Assigned frequency

14.04	G	14.12	G	14.2	G	14.28	G	14.36	G	14.44	G
14.08	G	14.16	G	14.24	G	14.32	G	14.4	G	14.48	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 4.5 METER		T		1 TC CP	54.7	0.3	REC-580						

Findings: *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

BR7a/BR7b Group id.: 30 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 3

A5/A6 Coordination: RR1060 R ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	10.5	-65.1	11
2	32M0G7W--	32.5	-42.6	10	-65.1	11
3	5M00G7W--	24.4	-42.6	2	-65.1	11
4	38K4G7W--	3.2	-42.6	-19.2	-65.1	11

C2a Assigned frequency

14.04	G	14.12	G	14.2	G	14.28	G	14.36	G	14.44	G
14.08	G	14.16	G	14.24	G	14.32	G	14.4	G	14.48	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 2.4 METER		T		1 TC CP	49.2	0.57	REC-580						

Findings: *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14NV | R

13C Remarks:

BR7a/BR7b Group id.: 84 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram:

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	16.5	-59.1	11
2	32M0G7W--	32.5	-42.6	16	-59.1	11
3	5M00G7W--	24.4	-42.6	8	-59.1	11
4	38K4G7W--	3.2	-42.6	-13.2	-59.1	11

C2a Assigned frequency

14.04	G	14.12	G	14.2	G	14.28	G	14.36	G	14.44	G
14.08	G	14.16	G	14.24	G	14.32	G	14.4	G	14.48	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 1.2 METER		T		1 TC CP	43.2	1.14	REC-580						

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

BR7a/BR7b Group id.: 85 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram:

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	20.6	-55	11
2	32M0G7W--	32.5	-42.6	20.1	-55	11
3	5M00G7W--	24.4	-42.6	12.1	-55	11
4	38K4G7W--	3.2	-42.6	-9.1	-55	11

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14NV R

C2a Assigned frequency

14.04	G	14.12	G	14.2	G	14.28	G	14.36	G	14.44	G
14.08	G	14.16	G	14.24	G	14.32	G	14.4	G	14.48	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 0.75 METER		T		1 TC CP	39.1	1.82	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

B1a/B1b Beam designation: 14SH | *B2* Emi-Rcp: R | *B3a1/B3b1/B3b2a* Max. ant. gain: 33 | *B3d* Pointing accuracy: 0.1
B3a2/B3b2b Ant. gain cont. diag.: 5 | *B3f* Ant. gain vs orbit long. diag.: 6
B3e1 Rad. diag. | *B3e2* Ref. pat. | *B3e3* Coef. A | *B3e4* Coef. B

BR7a/BR7b Group id.: 127 | *BR14* Special Section
C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33
C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram: 5
A5/A6 Coordination: RR1060 R ARG B CUB/IK MLA VEN/ASA BLR/IK LUX
A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b | *BR25* Reason for C8c/C8e absent

A13 Ref. to Special Sections		
1	AR11/A	1872

C7a Design. of emission		*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	-2.7	-78.3	11
2	32M0G7W--	32.5	-42.6	-3.2	-78.3	11
3	32M0F8W--	27	-36	10.8	-52.2	25
4	5M00G7W--	24.4	-42.6	-11.2	-78.3	11

C2a Assigned frequency

14.48	G	14.4	G	14.32	G	14.24	G	14.16	G	14.08	G
14.44	G	14.36	G	14.28	G	14.2	G	14.12	G	14.04	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 11 METER		T		1 TC CP	62.4	0.12	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

BR7a/BR7b Group id.: 128 | *BR14* Special Section

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14SH | R

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 2.4 METER		T		1 TC CP	49.2	0.57	REC-580							

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

BR7a/BR7b Group id.: 130 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33
C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	16.5	-59.1	11
2	32M0G7W--	32.5	-42.6	16	-59.1	11
3	5M00G7W--	24.4	-42.6	8	-59.1	11
4	38K4G7W--	3.2	-42.6	-13.2	-59.1	11

C2a Assigned frequency

14.48	G	14.4	G	14.32	G	14.24	G	14.16	G	14.08	G				
14.44	G	14.36	G	14.28	G	14.2	G	14.12	G	14.04	G				

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 1.2 METER		T		1 TC CP	43.2	1.14	REC-580							

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review
13C Remarks

BR7a/BR7b Group id.: 131 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33
C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: /

BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14SH R

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	20.6	-55	11
2	32M0G7W--	32.5	-42.6	20.1	-55	11
3	5M00G7W--	24.4	-42.6	12.1	-55	11
4	38K4G7W--	3.2	-42.6	-9.1	-55	11

C2a Assigned frequency

14.48	G	14.4	G	14.32	G	14.24	G	14.16	G	14.08	G
14.44	G	14.36	G	14.28	G	14.2	G	14.12	G	14.04	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 0.75 METER		T		1 TC CP	39.1	1.82	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

B1a/B1b Beam designation: 14SV | *B2* Emi-Rcp: R | *B3a1/B3b1/B3b2a* Max. ant. gain: 33 | *B3d* Pointing accuracy: 0.1

B3a2/B3b2b Ant. gain cont. diag.: 5 | *B3f* Ant. gain vs orbit long. diag.: 6

B3e1 Rad. diag. | *B3e2* Ref. pat. | *B3e3* Coef. A | *B3e4* Coef. B

BR7a/BR7b Group id.: 31 | *BR14* Special Section

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33

C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram

A5/A6 Coordination: RR1060 R ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b | *BR25* Reason for C8c/C8e absent

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	-2.7	-78.3	11
2	32M0G7W--	32.5	-42.6	-3.2	-78.3	11
3	32M0F8W--	27	-36	10.8	-52.2	25
4	5M00G7W--	24.4	-42.6	-11.2	-78.3	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14SV | R

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 11 METER		T		1 TC CP	62.4	0.12	REC-580						

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 32 | *BR14* Special Section:

C4a Class of station: EC	*C3a* Assigned freq. band: 36000	*C5a* Noise temperature: 600
C4b Nature of service: CP	*C6a* Polarization type: V	*C6b* Polarization angle:	*C8d/C8g* Max. pwr: 33
C11a1 Service area no.:	*C11a2* Service area:	*C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1 36M0G7W--	33	-42.6	5	-70.6	11
2 32M0G7W--	32.5	-42.6	4.5	-70.6	11
3 32M0F8W--	27	-36	21.5	-41.5	25
4 5M00G7W--	24.4	-42.6	-3.5	-70.6	11
5 38K4G7W--	3.2	-42.6	-24.9	-70.6	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G								
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G								

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 4.5 METER		T		1 TC CP	54.7	0.3	REC-580						

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 33 | *BR14* Special Section:

C4a Class of station: EC	*C3a* Assigned freq. band: 36000	*C5a* Noise temperature: 600
C4b Nature of service: CP	*C6a* Polarization type: V	*C6b* Polarization angle:	*C8d/C8g* Max. pwr: 33
C11a1 Service area no.:	*C11a2* Service area:	*C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt.: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 14SV | R

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	10.5	-65.1	11
2	32M0G7W--	32.5	-42.6	10	-65.1	11
3	5M00G7W--	24.4	-42.6	2	-65.1	11
4	38K4G7W--	3.2	-42.6	-19.2	-65.1	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 2.4 METER		T		1 TC CP	49.2	0.57	REC-580						

Findings: | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 86 | *BR14* Special Section:

☐ | *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600
C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33
C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	16.5	-59.1	11
2	32M0G7W--	32.5	-42.6	16	-59.1	11
3	5M00G7W--	24.4	-42.6	8	-59.1	11
4	38K4G7W--	3.2	-42.6	-13.2	-59.1	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 1.2 METER		T		1 TC CP	43.2	1.14	REC-580						

Findings: | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 87 | *BR14* Special Section:

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: /

BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 14SV R

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 600

C4b Nature of service: CP | *C6a* Polarization type: V | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 5

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK MLA VEN/ASA BLR/IK LUX

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	20.6	-55	11
2	32M0G7W--	32.5	-42.6	20.1	-55	11
3	5M00G7W--	24.4	-42.6	12.1	-55	11
4	38K4G7W--	3.2	-42.6	-9.1	-55	11

C2a Assigned frequency

14.02	G	14.1	G	14.18	G	14.26	G	14.34	G	14.42	G
14.06	G	14.14	G	14.22	G	14.3	G	14.38	G	14.46	G

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 0.75 METER		T		1 TC CP	39.1	1.82	REC-580						

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

☐ *B1a/B1b* Beam designation: 6NH | *B2* Emi-Rcp: R | *B3a1/B3b1/B3b2a* Max. ant. gain: 30.4 | *B3d* Pointing accuracy: 0.1

B3a2/B3b2b Ant. gain cont. diag.: 1 | *B3f* Ant. gain vs orbit long. diag.:

B3e1 Rad. diag.: | *B3e2* Ref. pat.: | *B3e3* Coef. A: | *B3e4* Coef. B:

BR7a/BR7b Group id.: 3 | *BR14* Special Section:

☐ *C4a* Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 470

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 1

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	-0.3	-75.9	12.9
2	32M0G7W--	32.5	-42.6	-0.8	-75.9	12.9
3	32M0F8W--	30	-33	11.3	-51.7	25
4	5M00G7W--	26.1	-40.9	-8.9	-75.9	12.9
5	38K4G7W--	4.9	-40.9	-30.1	-75.9	12.9

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-350 | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: | 6NH | R

C2a Assigned frequency

6385	M	6305	M	6225	M	6145	M	6065	M	5985	M
6345	M	6265	M	6185	M	6105	M	6025	M	5945	M

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.		*C10c1a/C10c1b* Cls. / Nat.			*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 13 METER		T			1	TC	CP	56.7	0.24	REC-580							

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 5 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 470
C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33
C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 1

A5/A6 Coordination: RR1060 | R | ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	5	-70.6	12.9
2	32M0G7W--	32.5	-42.6	4.5	-70.6	12.9
3	32M0F8W--	30	-33	16.6	-46.4	25
4	5M00G7W--	26.4	-40.6	-3.6	-70.6	12.9
5	38K4G7W--	5.2	-40.6	-24.8	-70.6	12.9

C2a Assigned frequency

6385	M	6305	M	6225	M	6145	M	6065	M	5985	M
6345	M	6265	M	6185	M	6105	M	6025	M	5945	M

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.		*C10c1a/C10c1b* Cls. / Nat.			*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.		*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 7 METER		T			1	TC	CP	51.4	0.44	REC-580							

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:
13C Remarks:

BR7a/BR7b Group id.: 6 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 36000 | *C5a* Noise temperature: 470
C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33
C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 1

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: / |
BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 6NH R

A5/A6 Coordination: RR1060 R ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	36M0G7W--	33	-42.6	10.3	-65.3	12.9
2	32M0G7W--	32.5	-42.6	9.8	-65.3	12.9
3	32M0F8W--	30	-33	21.9	-41.1	25
4	5M00G7W--	26.4	-40.6	1.7	-65.3	12.9
5	38K4G7W--	5.2	-40.6	-19.5	-65.3	12.9

C2a Assigned frequency

6385	M	6305	M	6225	M	6145	M	6065	M	5985	M
6345	M	6265	M	6185	M	6105	M	6025	M	5945	M

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 3.8 METER		T		1 TC CP	46.1	0.81	REC-580						

Findings | *2D* Date: | *13A* Conformity with RR: | *13B1* Provision: | *13B2* Remarks: | *13B3* Date of Review:

13C Remarks:

BR7a/BR7b Group id.: 13 | *BR14* Special Section:

C4a Class of station: EC | *C3a* Assigned freq. band: 72000 | *C5a* Noise temperature: 470

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle: | *C8d/C8g* Max. pwr: 33

C11a1 Service area no.: | *C11a2* Service area: | *C11a3* Service area diagram: 1

A5/A6 Coordination: RR1060 R ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b: | *BR25* Reason for C8c/C8e absent:

C2a Assigned frequency	
6045	M
5965	M
6125	M
6205	M
6285	M
6365	M

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	72M0G7W--	33	-45.6	-0.3	-78.9	9.9
2	36M0G7W--	33	-42.6	-0.3	-75.9	12.9
3	32M0G7W--	32.5	-42.6	-0.8	-75.9	12.9
4	32M0G7W--	31.5	-43.6	-3.8	-78.9	9.9
5	32M0F8W--	30	-33	11.3	-51.7	25
6	32M0F8W--	27	-36	11.3	-51.7	25
7	5M00G7W--	26.4	-40.6	-8.9	-75.9	12.9
8	5M00G7W--	23.4	-43.6	-11.9	-78.9	9.9
9	38K4G7W--	5.2	-40.6	-30.1	-75.9	12.9
10	38K4G7W--	2.2	-43.6	-33.1	-78.9	9.9

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A | *A1a* Station name: USASAT-35O | *A1f* Notifying adm.: USA/ | *BR1* Date of receipt: 25.10.1999 | *BR20/BR21* WIC no./part: /

BR6a/BR6b Id. no.: 2 | *BR3a/BR3b* Provision reference: S9.6 C | *BR2* Adm. serial no.: 6NH R

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 13 METER		T		1 TC CP	56.7	0.24	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

BR7a/BR7b Group id.: 14 | *BR14* Special Section

C | *C4a* Class of station: EC | *C3a* Assigned freq. band: 72000 | *C5a* Noise temperature: 470

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33

C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram: 1

A5/A6 Coordination: RR1060 R ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b | *BR25* Reason for C8c/C8e absent

C2a Assigned frequency	
6045	M
5965	M
6125	M
6205	M
6285	M
6365	M

A13 Ref. to Special Sections		
1	AR11/A	1872

	C7a Design. of emission	*C8a1/C8b1* Max. peak pwr	*C8a2/C8b2* Max. pwr dens.	*C8c1* Min. peak pwr	*C8c2* Min. pwr dens.	*C8e* C/N ratio
1	72M0G7W--	33	-45.6	5	-73.6	9.9
2	36M0G7W--	33	-42.6	5	-70.6	12.9
3	32M0G7W--	32.5	-42.6	4.5	-70.6	12.9
4	32M0G7W--	31.5	-43.6	1.5	-73.6	9.9
5	32M0F8W--	30	-33	16.6	-46.4	25
6	32M0F8W--	27	-36	16.6	-46.4	25
7	5M00G7W--	26.4	-40.6	-3.6	-70.6	12.9
8	5M00G7W--	23.4	-43.6	-6.6	-73.6	9.9
9	38K4G7W--	5.2	-40.6	-24.8	-70.6	12.9
10	38K4G7W--	2.2	-43.6	-27.8	-73.6	9.9

C10b1 Assoc. earth station name	*C10b4* Ctry	*C10b3* Type	*C10b5* Geographical coord.	*C10c1a/C10c1b* Cls. / Nat.	*C10c2* Max. iso. gain	*C10c3* Bmwdth	*C10c4a* Ref. pattern	*C10c4b* Rad. diag.	*C10c4c* Coef A	Coef B	Coef C	Coef D	Phi1
TYPICAL 7 METER		T		1 TC CP	51.4	0.44	REC-580						

Findings | *2D* Date | *13A* Conformity with RR | *13B1* Provision | *13B2* Remarks | *13B3* Date of Review

13C Remarks

BR7a/BR7b Group id.: 15 | *BR14* Special Section

C | *C4a* Class of station: EC | *C3a* Assigned freq. band: 72000 | *C5a* Noise temperature: 470

C4b Nature of service: CP | *C6a* Polarization type: H | *C6b* Polarization angle | *C8d/C8g* Max. pwr: 33

C11a1 Service area no. | *C11a2* Service area | *C11a3* Service area diagram: 1

A5/A6 Coordination: RR1060 R ARG B CUB/IK G INS MLA VEN/ASA BLR/IK

A2a Date of bringing into use: 16.12.2002 | *A2b* Period of valid.: 20 | *A3a* Op. agency: 120 | *A3b* Adm. resp.: A | *BR24* Value of type C8b | *BR25* Reason for C8c/C8e absent