

interference scenarios, a SpaceCast™ satellite and an Expressway™ satellite are spaced 2° apart on the geostationary arc. The parameters for these two systems are given in Tables B-5 and B-6. The worst case scenarios are listed with their C/I values as scenarios #6 and #8 in Table B-2. The C/I results show that for Ku-band operations, Expressway™ and SpaceCast™ are compatible spaced 2° apart.

Scenario #5 is shown in Table B-11 as an example of how the C/I ratios for scenarios #5, 6, 7, and 8 are calculated.

**Table B-1. C/I Ratios for Various V-Band Scenarios.**

<b>Interference Scenario</b>	<b>Interfer. E/S Trans. Ant. Diameter, Sidelobe Level</b>	<b>Interf. E/S Rec. Ant. Diameter</b>	<b>Desired E/S Trans. Ant. Diameter</b>	<b>Desired E/S Rec. Ant. Dia., Sidelobe Level</b>	<b>C/I, dB</b>
1) SpaceCast™ interfer. with System-X	2.5 m, 29-25log(Theta)	0.45 m	2.5 m	0.45 m, 29-25log(Theta)	20.4
2) SpaceCast™ interfer. with Expressway™	2.5 m, 29-25log(Theta)	2.5 m	2.5 m	2.5 m, 29-25log(Theta)	27.4
3) System-X interfer. with SpaceCast™	2.5 m, 29-25log(Theta)	0.45 m	2.5 m	0.45 m, 29-25log(Theta)	20.4
4) Expressway™ interfer. with SpaceCast™	2.5 m, 29-25log(Theta)	2.5	2.5 m	1.0 m, 29-25log(Theta)	32.3

**Table B-2. C/I Ratios for Various Ku-Band Scenarios.**

<b>Interference Scenario</b>	<b>Interfer. E/S Trans. Ant., Sidelobe Level</b>	<b>Interf. E/S Rec. Ant. Diameter</b>	<b>Desired E/S Trans. Ant. Diameter</b>	<b>Desired E/S Rec. Ant. Dia., Sidelobe Level</b>	<b>C/I, dB</b>
5) SpaceCast™ interfer. with System-Y	2.5 m, 29-25log(Theta)	1.0 m	5.0 m	2.5 m, 29-25log(Theta)	25.4
6) SpaceCast™ interfer. with Expressway™ system	2.5 m, 29-25log(Theta)	2.5 m	2.5 m	2.5 m, 29-25log(Theta)	15.4
7) System-Y interfering with SpaceCast™	5.0 m, 29-25log(Theta)	2.5 m	2.5 m	1.0 m, 29-25log(Theta)	21.7 <sup>A</sup>
8) Expressway™ interfer. with SpaceCast™	2.5 m, 29-25log(Theta)	2.5	2.5 m	1.0 m, 29-25log(Theta)	22.9

A. This is a single entry case: it is assumed that only one System-Y transponder with a bandwidth of approximately 30 MHz interferes with SpaceCast™. But, if System-Y has several transponders which fill the entire 214 MHz bandwidth of the SpaceCast™ satellite, the C/I will decrease by about 8.5 dB.

**List of link parameters used in interference analyses**

**Table B-3. Uplink Parameter List for V-band Interference Analysis**

Uplink Parameter	SpaceCast™	Expressway™	System-X
Signal Frequency, GHz ( $\lambda$ in m)	48.7 (0.006156)	48.7 (0.006156)	48.7 (0.006156)
Earth Sta. Trans. Pwr., W (dBW)	50 (17.0)	30 (14.8)	50 (17.0)
Earth Sta. HPA Pwr. Backoff, dB	2.5	3	2.5
Number of Carriers	1	1	1
Earth Sta. Transmitter Losses, dB	1.0	1.0	1.0
Earth Sta. Ant. Diam., m	2.5	2.5	2.5
Earth Sta. Trans. Ant. On-Axis Gain, dBi	59.5 ( $\eta=0.55$ )	59.5 ( $\eta=0.55$ )	59.5 ( $\eta=0.55$ )
Earth Sta. Ant. Off-Axis Gain Pattern, dBi	29- 25log(Theta)	29- 25log(Theta)	29- 25log(Theta)
Satellite Max. Rec. Ant. Gain, dBi	58.0	52.0	58.0
Satellite Edge-of-Coverage Rec. Ant. Gain, dBi	55.0	49.0	55.0
Single Carrier Channel Bandwidth, MHz	300	300	300

**Table B-4. Downlink Parameter List for V-band Interference Analysis**

Downlink Parameter	SpaceCast™	Expressway™	System-X
Signal Frequency, GHz ( $\lambda$ in m)	41.0 (.007312)	41.0 (.007312)	41.0 (.007312)
Satellite Trans. Pwr., W (dBW)	100 (20.0)	100 (20.0)	100 (20.0)
Satellite HPA Pwr. Backoff, dB	2	2	2
Number of Carriers	10	10	10
Satellite Transmitter Losses, dB	1.0	1.0	1.0
Satellite Max. Trans. Ant. Gain, dBi	58.0	52.0	58.0
Satellite Edge-of-Coverage Trans. Ant. Gain, dBi	55.0	49.0	55.0
Earth Sta. Ant. Diameter, m	0.45, 1.0, 2.5	2.5	0.45, 1.0, 2.5
Earth Sta. Rec. Ant. On-Axis Gain, dBi	43.9, 50.8, 58.0 ( $\eta=0.65$ , 0.65, 0.55)	58.0	43.9, 50.8, 58.0 ( $\eta=0.65$ , 0.65, 0.55)
Earth Sta. Ant. Off-Axis Gain Pattern, dBi	29- 25log(Theta)	29- 25log(Theta)	29- 25log(Theta)
Single Carrier Channel Bandwidth, MHz	300	300	300

**Table B-5. Uplink Parameter List for Ku-band Interference Analysis**

Uplink Parameter	SpaceCast™	Expressway™	System-Y
Signal Frequency, GHz ( $\lambda$ in m)	13.0 (0.02306)	13.0 (0.02306)	13.0 (0.02306)
Earth Sta. Trans. Pwr., W (dBW)	100 (20.0)	100 (20.0)	50 (17.0)
Earth Sta. HPA Pwr. Backoff, dB	1.0	1.0	0
Number of Carriers	1	1	1
Earth Sta. Transmitter Losses, dB	0.3	0.3	0.3
Earth Sta. Ant. Diam., m	2.5	2.5	5
Earth Sta. Trans. Ant. On-Axis Gain, dBi	48.8 ( $\eta=0.65$ )	48.8	54.1 ( $\eta=0.55$ )
Earth Sta. Ant. Off-Axis Gain Pattern, dBi	29- 25log(Theta)	29- 25log(Theta)	29- 25log(Theta)
Satellite Max. Rec. Ant. Gain, dBi	37.0	37.0	35
Satellite Edge-of-Coverage Rec. Ant. Gain, dBi	34.0	34.0	32
Single Carrier Bandwidth, MHz	214	240	30

**Table B-6. Downlink Parameter List for Ku-band Interference Analysis**

Downlink Parameter	SpaceCast™	Expressway™	System-Y
Signal Frequency, GHz ( $\lambda$ in m)	11.0 (.02725)	11.0 (.02725)	11.0 (.02725)
Satellite Trans. Pwr., W (dBW)	150 (21.8)	25 (14.0)	50 (17.0)
Satellite HPA Pwr. Backoff, dB	0	0	0
Number of Carriers	1	1	1
Satellite Transmitter Losses, dB	0.6	0.5	0.5
Satellite Max. Trans. Ant. Gain, dBi	37.0	37.0	35
Satellite Edge-of-Coverage Trans. Ant. Gain, dBi	34.0	34.0	32
Earth Sta. Ant. Diameter, m	1.0, 2.5	2.5	2.5
Earth Sta. Rec. Ant. On-Axis Gain, dBi	39.7, 47.3 ( $\eta=0.70, 0.65$ )	47.3	47.3 ( $\eta=0.65$ )
Earth Sta. Ant. Off-Axis Gain Pattern, dBi	29- 25log(Theta)	29- 25log(Theta)	29- 25log(Theta)
Single Carrier Bandwidth, MHz	214	240	30

**Interference analyses: typical calculations**

**Table B-7. V-band Interference Analysis: SpaceCast™ Interfering With System-X, Scenario #1 (2° separation)**

<b>Uplink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. (SpaceCast™) E/S TX Power	17.0	dBW
Interf. E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Interf. E/S TX losses	-1.0	dB
Interf. E/S Ant. Trans. Gain toward X Sat.	20.4	dB <sub>i</sub>
EIRP toward X Sat.	33.9	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
Max. X Satellite Rec. Ant. Gain	58.0	dB <sub>i</sub>
<b>(I)<sub>uplink</sub></b>	<b>-130.3</b>	<b>dBW</b>
Desired (System-X) E/S TX Power	17.0	dBW
Desired E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Desired E/S TX losses	-1.0	dB
Desired E/S Ant. Trans. Gain On-Axis (2.5 m, effic. = 0.55)	59.5	dB <sub>i</sub>
EIRP	73.0	dBW
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
X Sat. Edge-of-Coverage Rec. Ant. Gain	55.0	dB <sub>i</sub>
<b>(C)<sub>uplink</sub></b>	<b>-94.2</b>	<b>dBW</b>
<b>(C/I)<sub>uplink</sub> = (C)<sub>uplink</sub> - (I)<sub>uplink</sub></b>	<b>36.1</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

**Table B-7. V-band Interference Analysis: SpaceCast™ Interfering With System-X, Scenario #1 (2° separation) (cont'd)**

<b>Downlink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. Satell. (SpaceCast™) TX Pwr.	20.0	dBW
Interf. Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Interf. Satellite TX losses	-1.0	dB
Max. Interf. Satellite Trans. Ant. Gain	58.0	dBi
EIRP toward System-X E/S	65.0	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
Sys.-X E/S Ant. Rec. Gain toward Interf. Satell.	20.4	dBi
<b>(I)<sub>downlink</sub></b>	<b>-133.3</b>	<b>dBW</b>
Desired X-Satellite TX Power	20.0	dBW
Desired X-Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Desired X-Satellite TX losses	-1.0	dB
Desired X-Satell. Edge-of-Coverage Trans. Ant. Gain	55.0	dBi
EIRP	62.0	dBW
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
Sys.-X E/S Ant. Rec. Gain On-Axis (0.45 m dia., effic. = 0.65)	43.9	dBi
<b>(C)<sub>downlink</sub></b>	<b>-112.8</b>	<b>dBW</b>
<b>(C/I)<sub>downlink</sub> = (C)<sub>downlink</sub> - (I)<sub>downlink</sub></b>	<b>20.5</b>	<b>dB</b>
<b><math>C/I = ( (C/I)_{\text{uplink}}^{-1} + (C/I)_{\text{downlink}}^{-1} )^{-1}</math></b>	<b>20.4</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

**Table B-8. V-band Interference Analysis: SpaceCast™ Interfering With Expressway™, Scenario #2 (2° separation)**

<b>Uplink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. (SpaceCast™) E/S TX Power	17.0	dBW
Interf. E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Interf. E/S TX losses	-1.0	dB
Interf. E/S Ant. Trans. Gain toward Expressway™ Sat.	20.4	dB
EIRP toward Expressway™ Sat.	33.9	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
Max. Expressway™ Satellite Rec. Ant. Gain	52.0	dB
<b>(I)<sub>uplink</sub></b>	<b>-136.3</b>	<b>dBW</b>
Desired(Expressway™) E/S TX Pwr	14.8	dBW
Desired E/S HPA Backoff	-3.0	dB
Per Carrier Loss	-0.0	dB
Desired E/S TX losses	-1.0	dB
Desired E/S Ant. Trans. Gain On-Axis	59.5	dB
EIRP	70.3	dBW
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
Expressway™ Sat. Edge-of-Coverage Rec. Ant. Gain	49.0	dB
<b>(C)<sub>uplink</sub></b>	<b>-102.9</b>	<b>dBW</b>
<b>(C/I)<sub>uplink</sub> = (C)<sub>uplink</sub> - (I)<sub>uplink</sub></b>	<b>33.4</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

Table B-8. V-band Interference Analysis: SpaceCast™ Interfering With Expressway™ ,  
Scenario #2 (2° separation) (cont'd)

Downlink Budget Item	Value	Unit
Interf. Satell. (SpaceCast™) TX Pwr.	20.0	dBW
Interf. Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Interf. Satellite TX losses	-1.0	dB
Max. Interf. Satellite Trans. Ant. Gain	58.0	dBi
EIRP toward Expressway™ E/S	65.0	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
Expressway™ E/S Ant. Rec. Gain toward Interf. Satell.	20.4	dBi
<b>(I)<sub>downlink</sub></b>	<b>-133.3</b>	<b>dBW</b>
Desired(Expressway™) Sat. TX Pwr.	20.0	dBW
Desired Satellite HPA Bkoff.	-2.0	dB
Per Carrier Loss	-10.0	dB
Desired Satellite TX losses	-1.0	dB
Desired Satellite Edge-of-Coverage Trans. Ant. Gain	49.0	dBi
EIRP	56.0	dBW
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
Expressway™ E/S Ant. Rec. Gain On-Axis	58.0	dBi
<b>(C)<sub>downlink</sub></b>	<b>-104.7</b>	<b>dBW</b>
<b>(C/I)<sub>downlink</sub> = (C)<sub>downlink</sub> - (I)<sub>downlink</sub></b>	<b>28.6</b>	<b>dB</b>
<b>C/I = ( (C/I)<sub>uplink</sub><sup>-1</sup> + (C/I)<sub>downlink</sub><sup>-1</sup> )<sup>-1</sup></b>	<b>27.4</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

**Table B-9. V-band Interference Analysis: System-X Interfering With SpaceCast™, Scenario #3 (2° separation)**

<b>Uplink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. (System-X) E/S TX Power	17.0	dBW
Interf. E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Interf. E/S TX losses	-1.0	dB
Interf. E/S Ant. Trans. Gain toward SpaceCast™ Sat.	20.4	dB <sub>i</sub>
EIRP toward SpaceCast™ Sat.	33.9	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
Max. SpaceCast™ Satellite Rec. Ant. Gain	58.0	dB <sub>i</sub>
<b>(I)<sub>uplink</sub></b>	<b>-130.3</b>	<b>dBW</b>
Desired (SpaceCast™) E/S TX Power	17.0	dBW
Desired E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Desired E/S TX losses	-1.0	dB
Desired E/S Ant. Trans. Gain On-Axis (2.5 m, effc. = 0.55)	59.5	dB <sub>i</sub>
EIRP	73.0	dBW
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
SpaceCast™ Sat. Edge-of-Coverage Rec. Ant. Gain	55.0	dB <sub>i</sub>
<b>(C)<sub>uplink</sub></b>	<b>-94.2</b>	<b>dBW</b>
<b>(C/I)<sub>uplink</sub> = (C)<sub>uplink</sub> - (I)<sub>uplink</sub></b>	<b>36.1</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

**Table B-9. V-band Interference Analysis: System-X Interfering With SpaceCast™, Scenario #3 (2° separation) (cont'd)**

<b>Downlink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. Satell. (System-X) TX Pwr.	20.0	dBW
Interf. Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Interf. Satellite TX losses	-1.0	dB
Max. Interf. Satellite Trans. Ant. Gain	58.0	dBi
EIRP toward SpaceCast™ E/S	65.0	dBW
Interfering Trans. BW Mismatch	0.0	dB
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
SpaceCast™ E/S Ant. Rec. Gain toward Interf. Satell.	20.4	dBi
<b>(I)<sub>downlink</sub></b>	<b>-133.3</b>	<b>dBW</b>
Desired (SpaceCast™) Satellite TX Power	20.0	dBW
Desired Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Desired Satellite TX losses	-1.0	dB
Desired Satell. Edge-of-Coverage Trans. Ant. Gain	55.0	dBi
EIRP	62.0	dBW
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
SpaceCast™ E/S Ant. Rec. Gain On-Axis (0.45 m dia., effic. = 0.65)	43.9	dBi
<b>(C)<sub>downlink</sub></b>	<b>-112.8</b>	<b>dBW</b>
<b>(C/I)<sub>downlink</sub> = (C)<sub>downlink</sub> - (I)<sub>downlink</sub></b>	<b>20.5</b>	<b>dB</b>
<b><math>C/I = ( (C/I)_{\text{uplink}}^{-1} + (C/I)_{\text{downlink}}^{-1} )^{-1}</math></b>	<b>20.4</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

**Table B-10. V-band Interference Analysis: Expressway™ Interfering With SpaceCast™, Scenario #4 (2° separation)**

<b>Uplink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. (Expressway™) E/S TX Power	14.8	dBW
Interf. E/S HPA Backoff	-3.0	dB
Per Carrier Loss	-0.0	dB
Interf. E/S TX losses	-1.0	dB
Interf. E/S Ant. Trans. Gain toward SpaceCast™ Sat.	20.4	dB <sub>i</sub>
EIRP toward SpaceCast™ Sat.	31.2	dBW
Interfering Trans. BW Mismatch	-0.0	dB
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
Max. SpaceCast™ Satellite Rec. Ant. Gain	58.0	dB <sub>i</sub>
<b>(I)<sub>uplink</sub></b>	<b>-133.0</b>	<b>dBW</b>
Desired (SpaceCast™) E/S TX Power	17.0	dBW
Desired E/S HPA Backoff	-2.5	dB
Per Carrier Loss	-0.0	dB
Desired E/S TX losses	-1.0	dB
Desired E/S Ant. Trans. Gain On-Axis (2.5 m, effic. = 0.55)	59.5	dB <sub>i</sub>
EIRP	73.0	dBW
Space Loss(217.6) <sup>A</sup> + Atm. Loss (4.6)	-222.2	dB
SpaceCast™ Sat. Edge-of-Coverage Rec. Ant. Gain	55.0	dB <sub>i</sub>
<b>(C)<sub>uplink</sub></b>	<b>-94.2</b>	<b>dBW</b>
<b>(C/I)<sub>uplink</sub> = (C)<sub>uplink</sub> - (I)<sub>uplink</sub></b>	<b>38.8</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

Table B-10. V-band Interference Analysis: Expressway™ Interfering With SpaceCast™, Scenario #4 (2° separation) (cont'd)

Downlink Budget Item	Value	Unit
Interf. Satell. (Expressway™) TX Pwr.	20.0	dBW
Interf. Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Interf. Satellite TX losses	-1.0	dB
Max. Interf. Satellite Trans. Ant. Gain	52.0	dBi
EIRP toward SpaceCast™ E/S	59.0	dBW
Interfering Trans. BW Mismatch	-0.0	dB
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
SpaceCast™ E/S Ant. Rec. Gain toward Interf. Satell.	20.4	dBi
<b>(I)<sub>downlink</sub></b>	<b>-139.3</b>	<b>dBW</b>
Desired (SpaceCast™) Satellite TX Power	20.0	dBW
Desired Satellite HPA Backoff	-2.0	dB
Per Carrier Loss	-10.0	dB
Desired Satellite TX losses	-1.0	dB
Desired Satell. Edge-of-Coverage Trans. Ant. Gain	55.0	dBi
EIRP	62.0	dBW
Space Loss(216.1) <sup>A</sup> + Atm. Loss (2.6)	-218.7	dB
SpaceCast™ E/S Ant. Rec. Gain On-Axis (1.0 m dia. <sup>B</sup> , effic. = 0.65)	50.8	dBi
<b>(C)<sub>downlink</sub></b>	<b>-105.9</b>	<b>dBW</b>
<b>(C/I)<sub>downlink</sub> = (C)<sub>downlink</sub> - (I)<sub>downlink</sub></b>	<b>33.4</b>	<b>dB</b>
<b><math>C/I = ((C/I)_{\text{uplink}}^{-1} + (C/I)_{\text{downlink}}^{-1})^{-1}</math></b>	<b>32.3</b>	<b>dB</b>

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

B. Because a SpaceCast™ earth station's receiver bandwidth varies as a function of its antenna size, the 1.0-m antenna receiver is the worst case, not the 0.45-m antenna receiver.

Table B-11. Ku-band Interference Analysis: SpaceCast™ Interfering With System-Y, Scenario #5 (2° separation)

Uplink Budget Item	Value	Unit
Interf. (SpaceCast™) E/S TX Power	20.0	dBW
Interf. E/S HPA Backoff	-1.0	dB
Per Carrier Loss	0.0	dB
Interf. E/S TX losses	-0.3	dB
Interf. E/S Ant. Trans. Gain toward Y Sat.	20.4	dB <sub>i</sub>
EIRP toward Y Sat.	39.1	dBW
Interfering Trans. BW Mismatch	-8.5	dB
Space Loss (206.1) <sup>A</sup> + Atm. Loss (0.5)	-206.6	dB
Max. Y Satellite Rec. Ant. Gain	35.0	dB <sub>i</sub>
(I) <sub>uplink</sub>	-141.0	dBW
Desired (System-Y) E/S TX Power	17.0	dBW
Desired E/S HPA Backoff	0.0	dB
Per Carrier Loss	0.0	dB
Desired E/S TX losses	-0.3	dB
Desired E/S Ant. Trans. Gain On-Axis (5 m dia., effic. = 0.55)	54.1	dB <sub>i</sub>
EIRP	70.8	dBW
Space Loss (206.1) <sup>A</sup> + Atm. Loss (0.5)	-206.6	dB
Y Sat. Edge-of-Coverage Rec. Ant. Gain	32.0	dB <sub>i</sub>
(C) <sub>uplink</sub>	-103.8	dBW
(C/I) <sub>uplink</sub> = (C) <sub>uplink</sub> - (I) <sub>uplink</sub>	37.2	dB

A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.

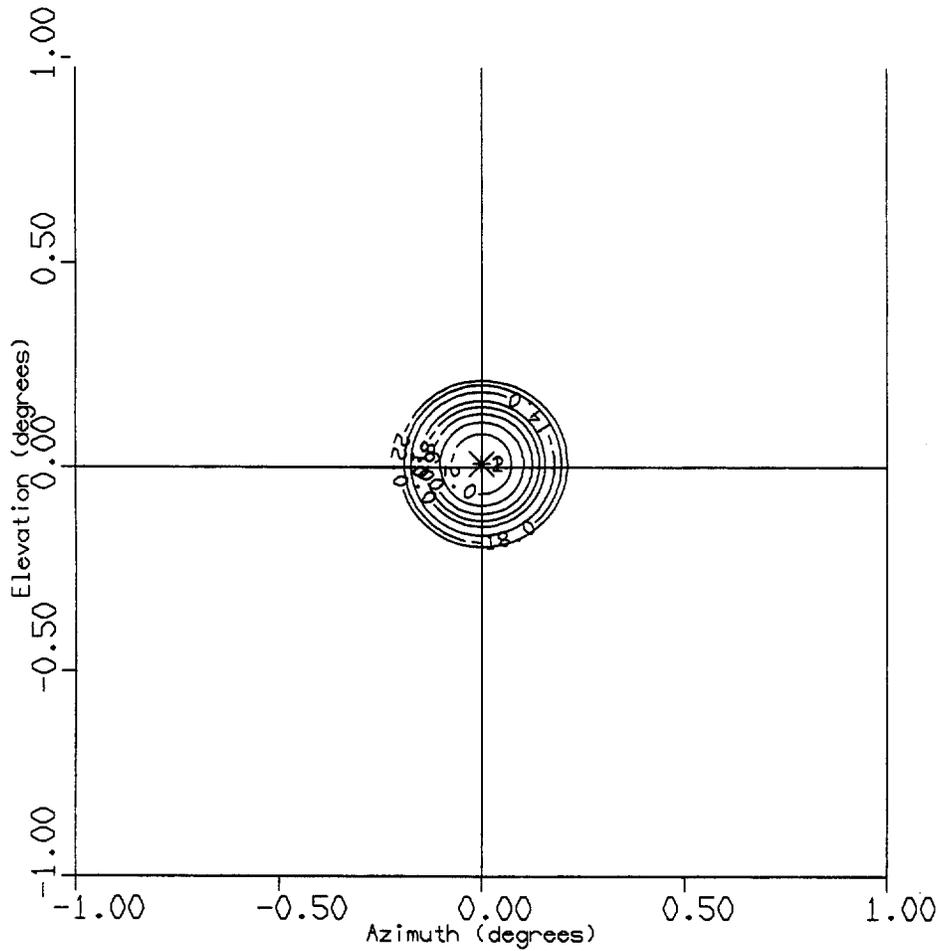
**Table B-11. Ku-band Interference Analysis: SpaceCast™ Interfering With System-Y, Scenario #5 (2° separation) (cont'd)**

<b>Downlink Budget Item</b>	<b>Value</b>	<b>Unit</b>
Interf. Satell. (SpaceCast™) TX Pwr.	21.8	dBW
Interf. Satellite HPA Backoff	-0.0	dB
Per Carrier Loss	-0.0	dB
Interf. Satellite TX losses	-0.6	dB
Max. Interf. Satellite Trans. Ant. Gain	37.0	dBi
EIRP toward System-Y E/S	58.2	dBW
Interfering Trans. BW Mismatch	-8.5	dB
Space Loss (204.6) <sup>A</sup> + Atm. Loss (0.2)	-204.8	dB
Sys.-Y E/S Ant. Rec. Gain toward Interf. Satell.	20.4	dBi
<b>(I)<sub>downlink</sub></b>	<b>-134.7</b>	<b>dBW</b>
Desired Y-Satellite TX Power	17.0	dBW
Desired Y-Satellite HPA Backoff	-0.0	dB
Per Carrier Loss	-0.0	dB
Desired Y-Satellite TX losses	-0.5	dB
Desired Y-Satell. Edge-of-Coverage Trans. Ant. Gain	32.0	dBi
EIRP	48.5	dBW
Space Loss (204.6) <sup>A</sup> + Atm. Loss (0.2)	-204.8	dB
Sys.-Y E/S Ant. Rec. Gain On-Axis (2.5 m dia., effic. = 0.65)	47.3	dBi
<b>(C)<sub>downlink</sub></b>	<b>-109.0</b>	<b>dBW</b>
<b>(C/I)<sub>downlink</sub> = (C)<sub>downlink</sub> - (I)<sub>downlink</sub></b>	<b>25.7</b>	<b>dB</b>
<b><math>C/I = ( (C/I)_{\text{uplink}}^{-1} + (C/I)_{\text{downlink}}^{-1} )^{-1}</math></b>	<b>25.4</b>	<b>dB</b>

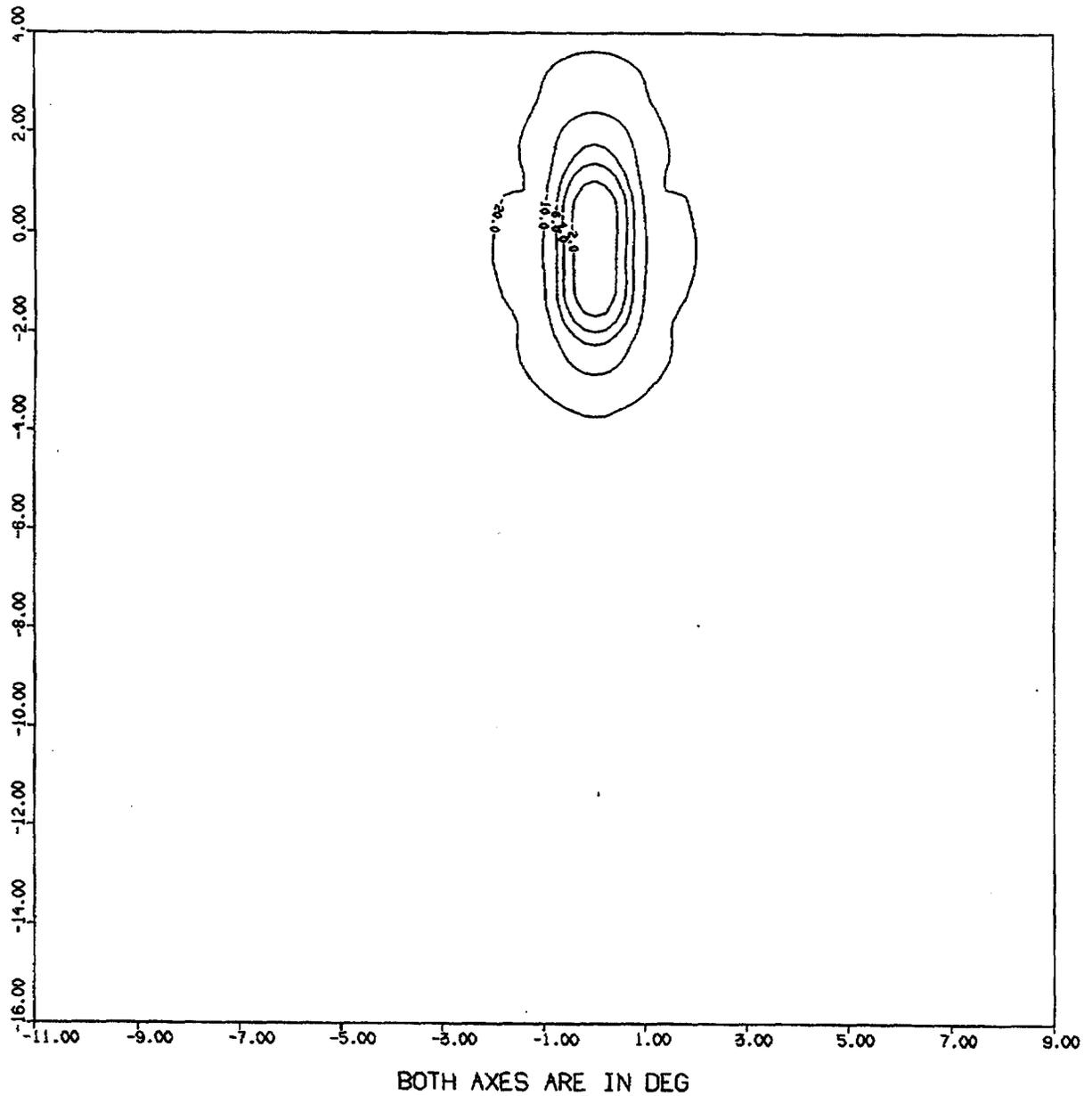
A. Assuming 37,000 km slant range; other losses also assumed to be the same for the interfering signal and the desired signal.



## APPENDIX C: ANTENNA COVERAGE



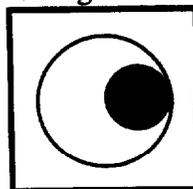
**Figure C-1. V-band Receive/Transmit Satellite Antenna Gain Contours. For both RHCP and LHCP. Maximum gain = 58 dBi, maximum G/T = 29.4 dB/K.**



**Figure C-2. Ku-Band Receive/Transmit Elliptical Beam Contours. For both RHCP and LHCP. Maximum gain = 37 dBi, maximum G/T = 10.9 dB/K.**

Each 0.15 deg beam is steerable within a 0.30 deg circle. Map shows 0.30 deg coverage circles. Box shows 0.15 deg beam inside a 0.30 deg beam. The 0.15 deg beams will be deployed over a maximum of 40 uplink and 40 downlink areas within the coverage shown.

beam use @  
enlarged scale

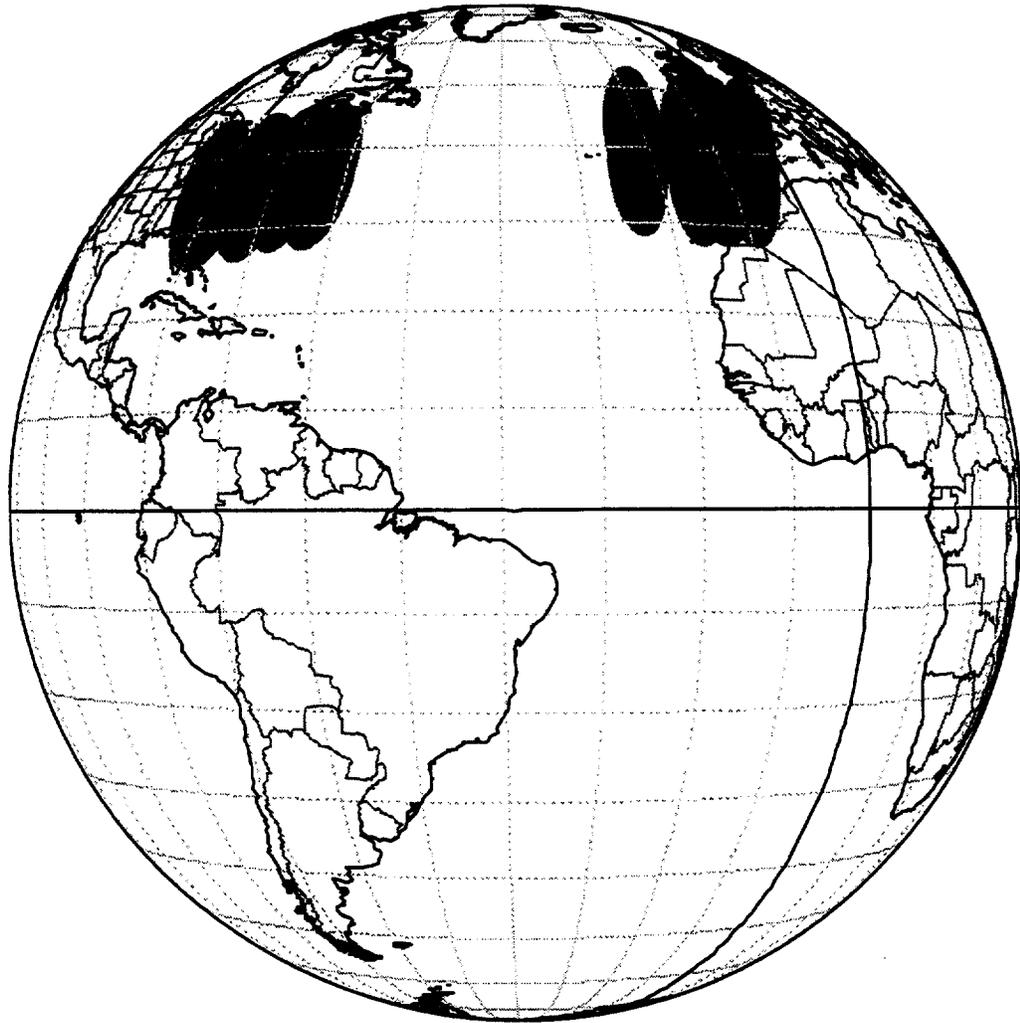


39 W



Figure C-3. V-band Satellite Coverage at 39° W

“Elliptical” beams provide Ku-band coverage as shown in shaded regions.

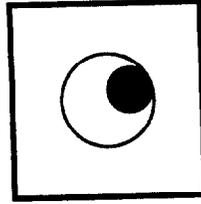


39 W

Figure C-4. Ku-band Satellite Coverage at 39° W

Each 0.15 deg beam is steerable within a 0.30 deg circle. Map shows 0.30 deg coverage circles. Box shows 0.15 deg beam inside a 0.30 deg beam. The 0.15 deg beams will be deployed over a maximum of 40 uplink and 40 downlink areas within the coverage shown.

beam use @  
enlarged scale



60 W

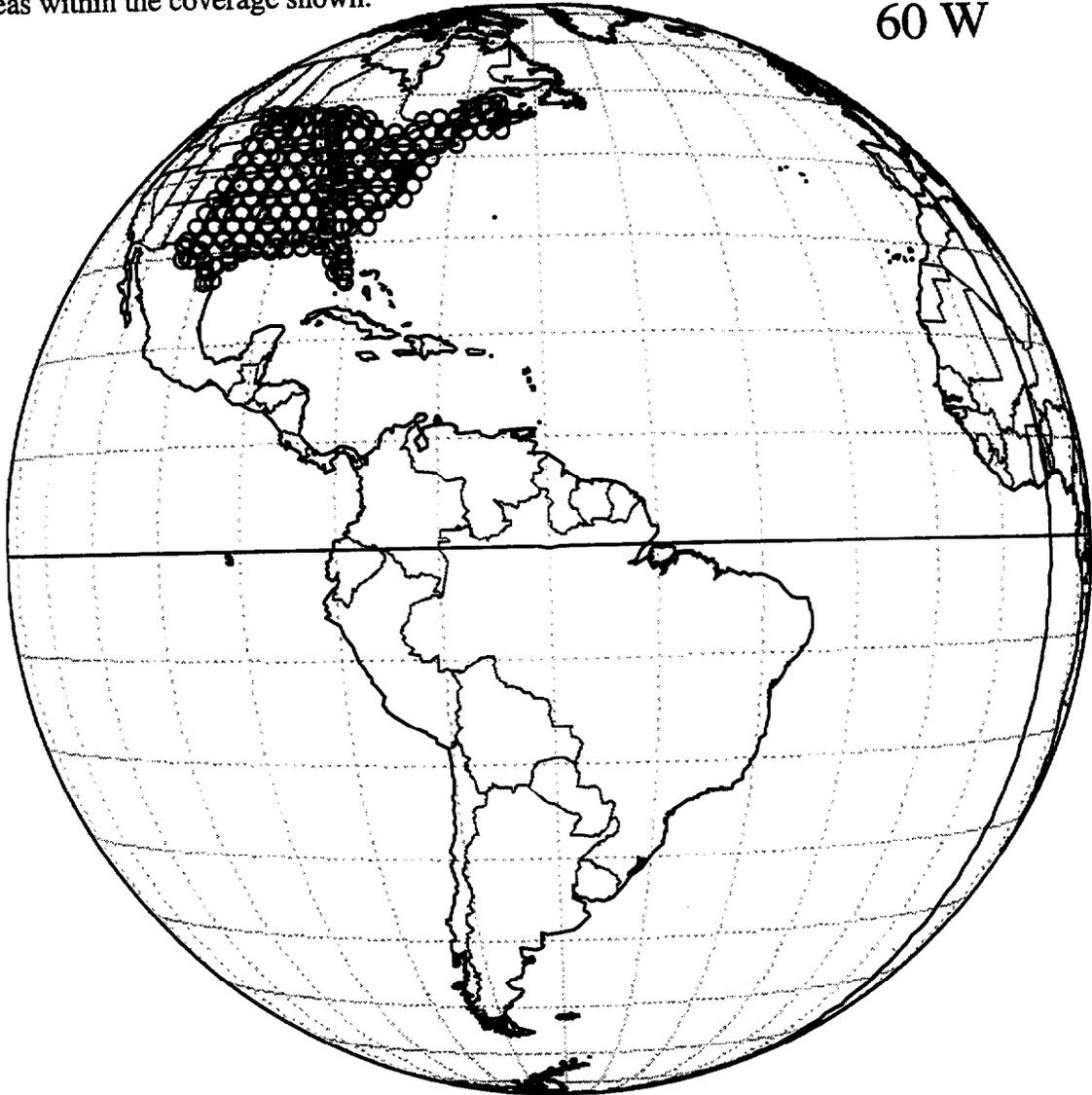


Figure C-5. V-band Satellite Coverage at 60° W (Eastern U.S. Service)

“Elliptical” beams provide Ku-band coverage as shown in shaded regions.

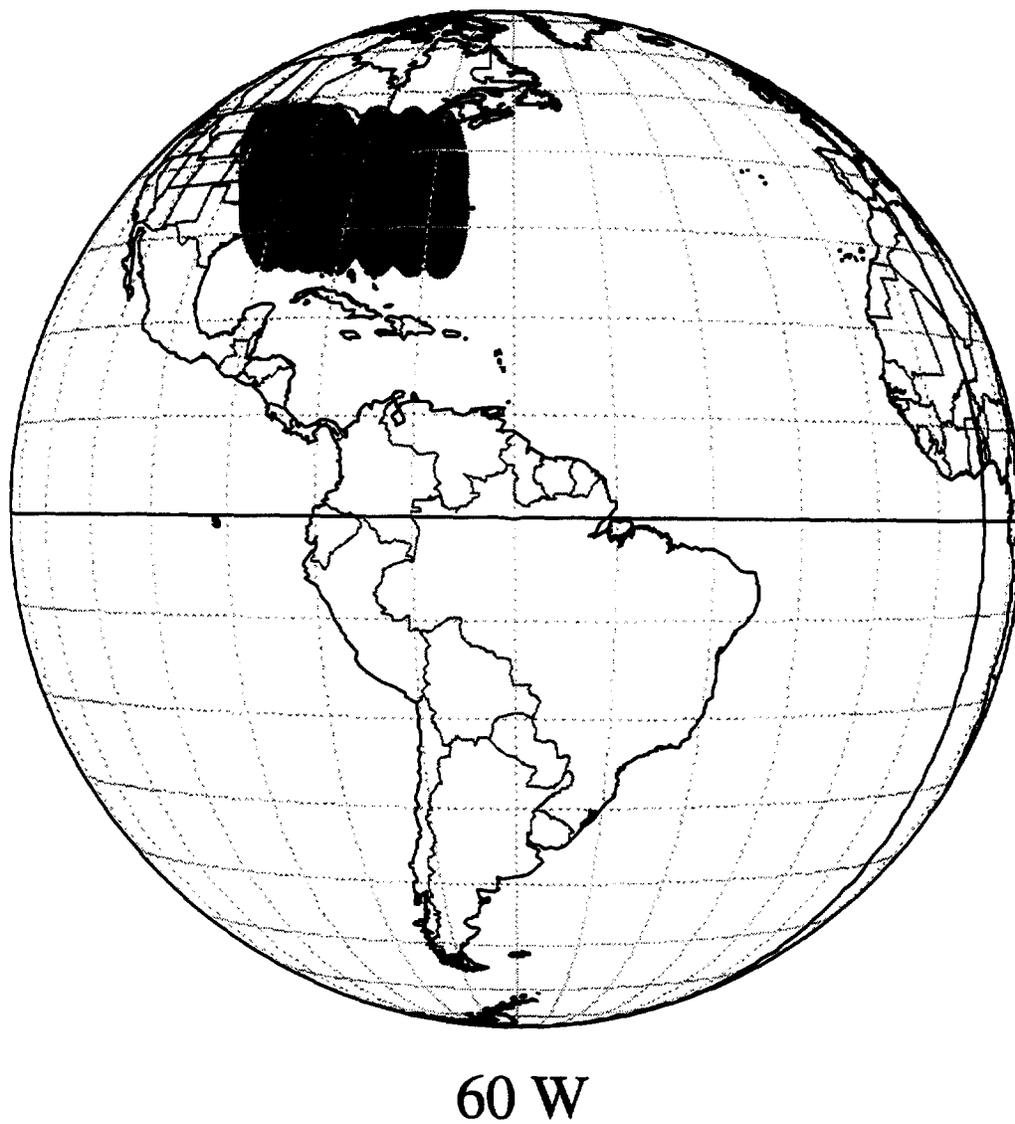
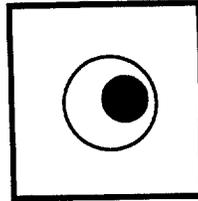


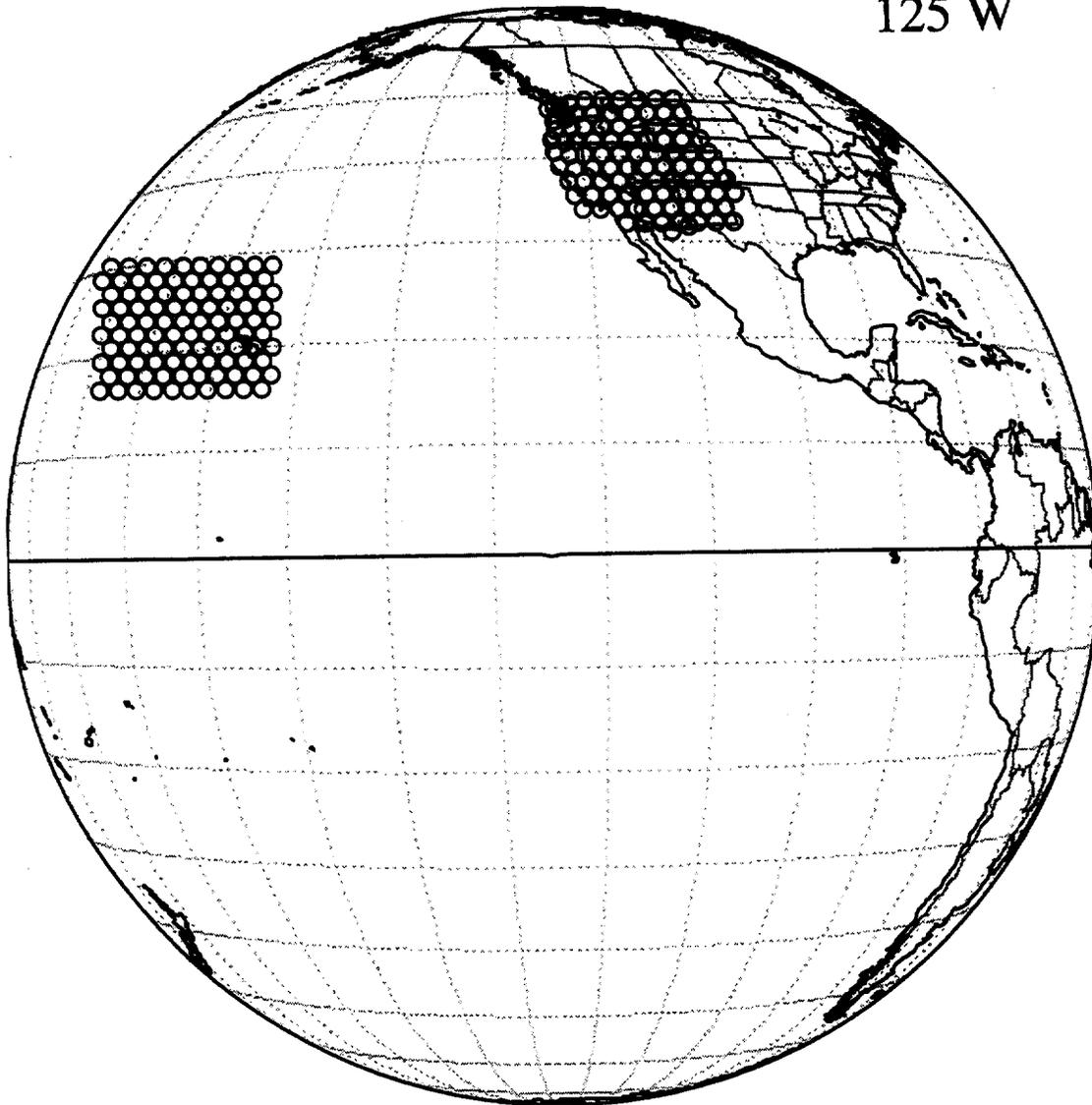
Figure C-6. Ku-band Satellite Coverage at 60° W (Eastern U.S. Service)

Each 0.15 deg beam is steerable within a 0.30 deg circle. Map shows 0.30 deg coverage circles. Box shows 0.15 deg beam inside a 0.30 deg beam. The 0.15 deg beams will be deployed over a maximum of 40 uplink and 40 downlink areas within the coverage shown.

beam use @  
enlarged scale

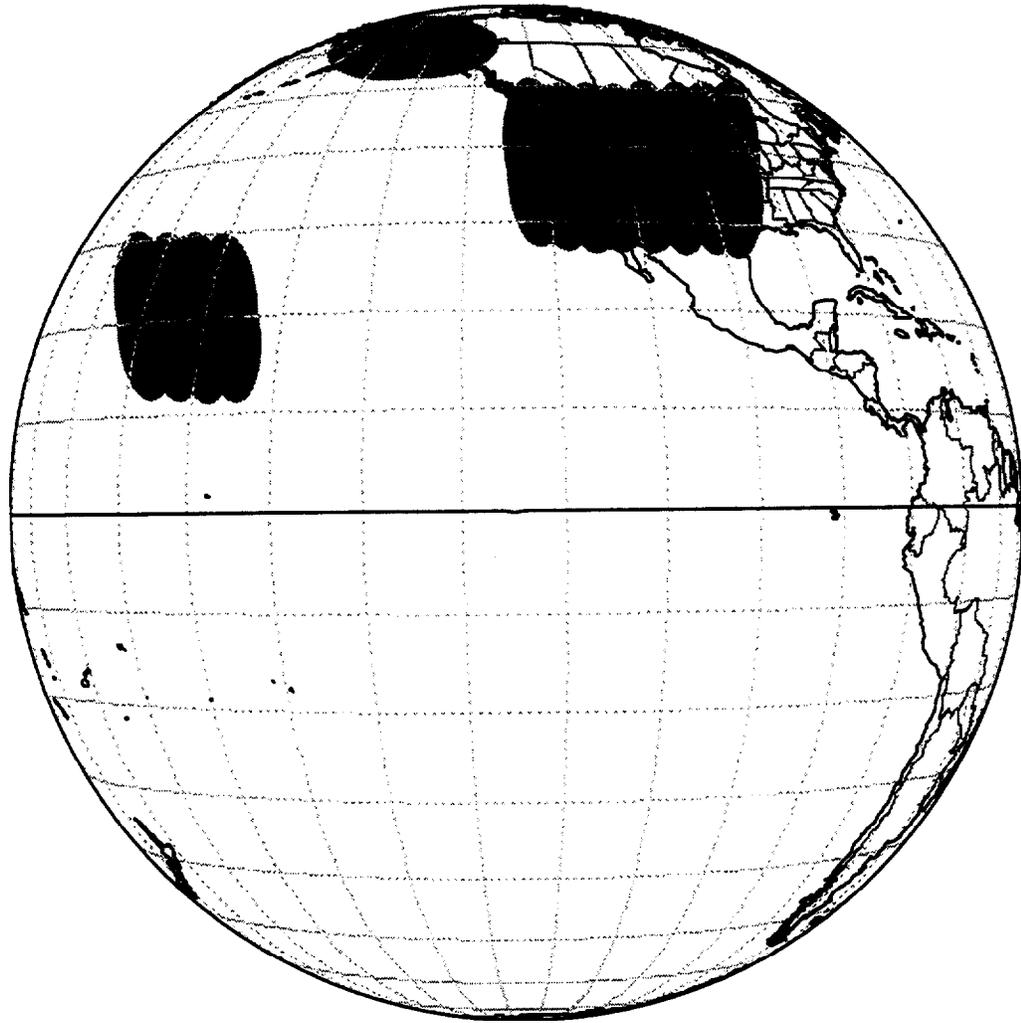


125 W



**Figure C-7. V-band Satellite Coverage at 125° W (Western U.S. Service)**

“Elliptical” beams provide Ku-band coverage as shown in shaded regions.

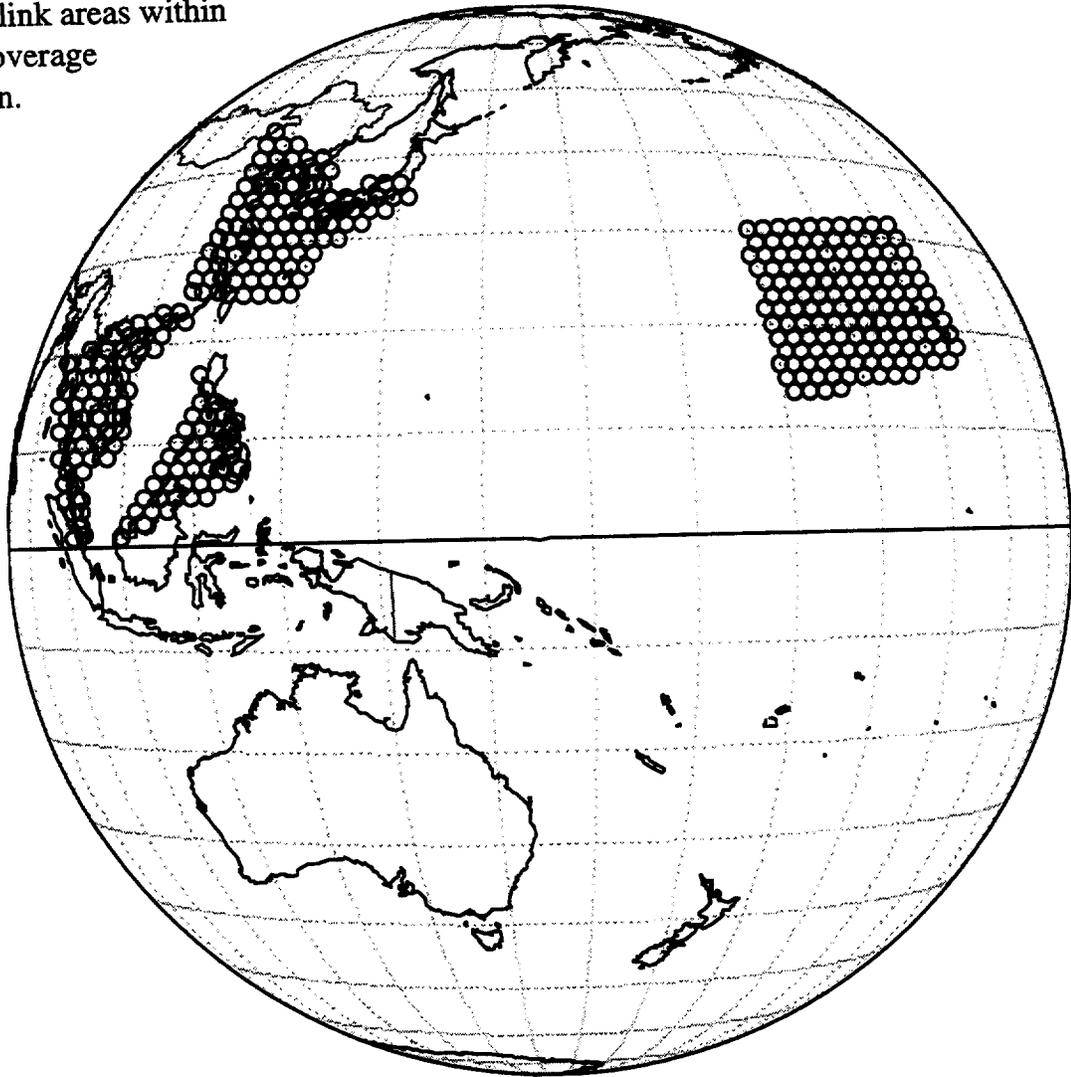
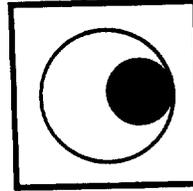


125 W

Figure C-8. Ku-band Satellite Coverage at 125° W (Western U.S. Service)

Each 0.15 deg beam is steerable within a 0.30 deg circle. Map shows 0.30 deg coverage circles. Box shows 0.15 deg beam inside a 0.30 deg beam. The 0.15 deg beams will be deployed over a maximum of 40 uplink and 40 downlink areas within the coverage shown.

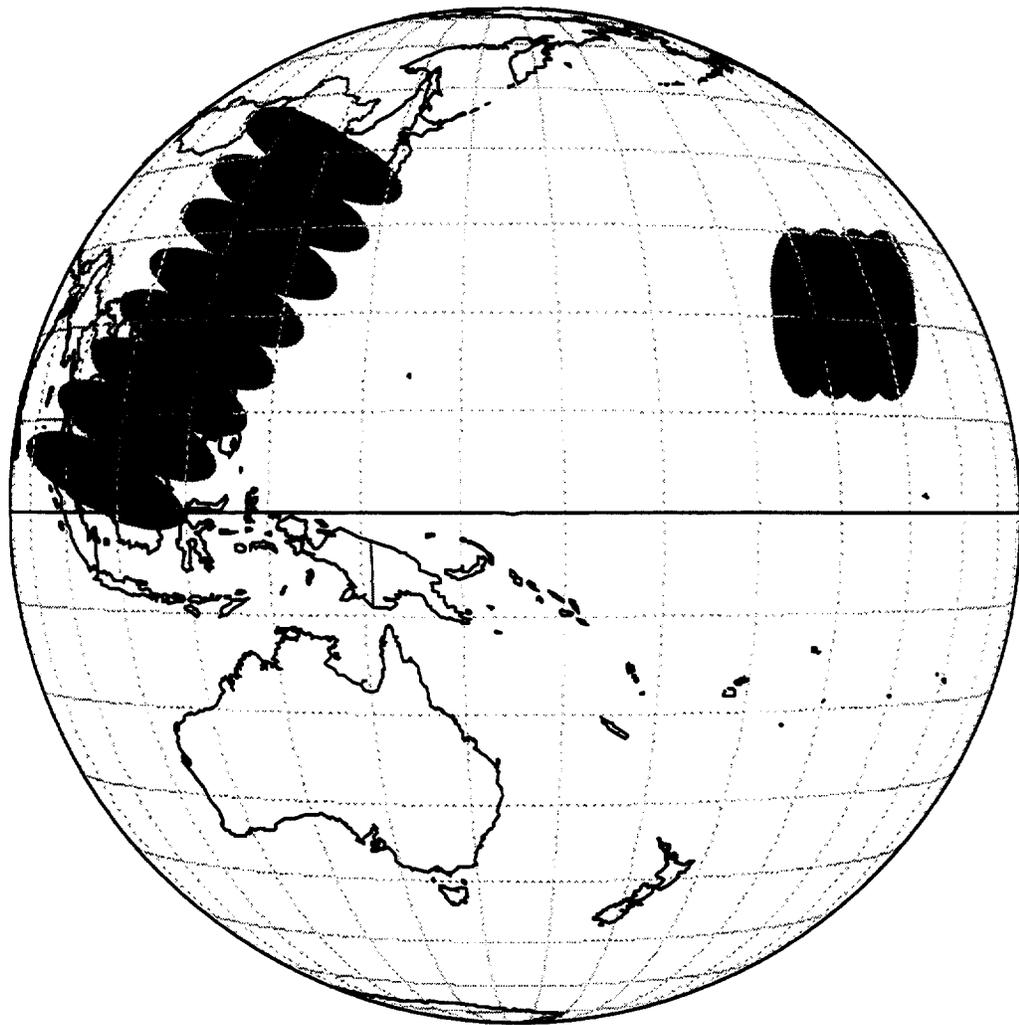
beam use @  
enlarged scale



155 E

Figure C-9. V-band Satellite Coverage at 155° E

“Elliptical” beams provide Ku-band coverage as shown in shaded regions.



155 E

Figure C-10. Ku-band Satellite Coverage at 155° E