Exhibit B

Link Budgets for AMC-1 @ 130.9° W.L.

TECOM Antenna (SAA)
25° Skew – Los Angeles
35° Skew – Denver
45° Skew – Chicago
55° Skew – Jacksonville

QEST Antenna (GSAA)
25° Skew – Los Angeles
35° Skew – Denver
45° Skew – Chicago
55° Skew – Jacksonville

AMC-1 Coverage Contour

Link Budgets for SES-15 @ 129.0° W.L.

TECOM Antenna (SAA)
25° Skew – Los Angeles
35° Skew – Denver
45° Skew – Chicago
55° Skew – Jacksonville

QEST Antenna (GSAA)
25° Skew – Los Angeles
35° Skew – Denver
45° Skew – Chicago
55° Skew – Jacksonville

SES-10 Coverage Contour

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 25 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**1.024**	**Msps**	in bandwidth	**1.024**	**MHz**	
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

Inroute Signal:	QPSK 1/2		
Uplink Frequency (MHz):	14125.0		
Downlink Frequency (MHz):	12250.0		
Baseband BW (MHz):	1.024		
Spread BW (MHz):	1.024		
Required C/N (dB):	2.10		
Outroute Signal:	QPSK 3/4		
Uplink Frequency (MHz):	14125.0		
Downlink Frequency (MHz):	12250.0		
Bandwidth (MHz):	30		
Required C/N (dB):	4.20		
Satellite:	**AMC-1**		
Longitude (deg East):	-130.9		
Maximum Saturated Downlink EIRP (dBW):	50.4		
G/T towards Remote (dB/K):	6.10		
G/T towards NOC (dB/K):	5.25		
G/T Degradation (dB):	0		
Saturation Flux Density (dBW/m^2):	-92		
Attenuation Setting (dB):	7		
Saturated EIRP towards NOC (dBW):	49		
Saturated EIRP towards Remote (dBW):	48		
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13		
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**		
Remote:	**Los Angeles**		
Latitude (deg North):	33.943		
Longitude (deg East):	-118.409		
TX Antenna Gain (dBi):	28.80		
TX Power (dBm):	41.50		
TX Backoff (dB):	0.00		
Power into flange w losses (dBW/4 kHz):	**-12.58**		
Unimpaired EIRP Density (dBW/ 4 kHz)	**16.22**		
RX G/T (dB/K):	11.70		
Antenna Mispoint (dB):	0.50		
Rain Attenuation (dB):	0.00		
Atmospheric Attenuation (dB):	0.50		
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-14.00		
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.19**		

		Lat	Long
Remote:	**Los Angeles**	33.943	-118.409
NOC:	**Holmdel NJ**	40.395	-74.173

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	40.30	39.30	40.30	39.30
Uplink Path Loss (dB)	206.86	206.86	206.86	206.86
Spreading Loss (dB)	-162.40	-162.40	-162.40	-162.40
Flux Density at Satellite (dBW/m^2)	-122.10	-123.10	-122.10	-123.10
Uplink C/T (dB)	-160.46	-161.46	-160.46	-161.46
C/No (dB)	68.14	67.14	68.14	67.14
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-10.56	-10.56
Uplink C/N (dB)	**8.04**	**7.04**	**6.11**	**5.44**
Satellite downlink EIRP (dBW)	18.00	17.00	18.00	17.00
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-151.01	-153.01	-151.01	-153.01
C/No (dB)	77.59	75.59	77.59	75.59
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-10.56	-10.56
Downlink C/N (dB)	**17.49**	**15.49**	**9.76**	**9.35**
Cumulative C/N (dB)	7.57	6.46	4.55	3.96
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**5.47**	**4.36**	**2.45**	**1.86**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 25 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-13.7
Cross-Pol Uplink (dB):	-13.7
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-10.56**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Holmdel NJ**
Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**13.00**
Power into flange (dBW/ 4 kHz):	**-25.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-13.7
Cross-Pol Downlink (dB):	-13.7
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-10.56**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	73.10	72.10	73.10	72.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-89.92	-90.92	-89.92	-90.92
Uplink C/T (dB)	-129.12	-130.12	-129.12	-130.12
C/No (dB)	99.48	98.48	99.48	98.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**24.71**	**23.71**	**21.32**	**20.83**
Satellite downlink EIRP (dBW)	48.00	47.33	48.00	47.33
Downlink Path Loss (dB)	205.62	205.62	205.62	205.62
Downlink C/T (dB)	-145.92	-147.59	-145.92	-147.59
C/No (dB)	82.68	81.01	82.68	81.01
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.91**	**6.24**	**5.73**	**4.65**
Cumulative C/N (dB)	7.82	6.17	5.62	4.55
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.62**	**1.97**	**1.42**	**0.35**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 35 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**0.512**	**Msps**	in bandwidth	**1.024**	**MHz**	
Outroute signal:	**QPSK 2/3**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

			Lat	**Long**				
Satellite:	**AMC-1**	**Remote:**	**Denver**	39.86	-104.67			
Longitude (deg East):	-130.9	**NOC:**	**Holmdel NJ**	40.395	-74.173			
Maximum Saturated Downlink EIRP (dBW):	50.4							
G/T towards Remote (dB/K):	4.00							
G/T towards NOC (dB/K):	5.25							
G/T Degradation (dB):	0							
Saturation Flux Density (dBW/m^2):	-92							
Attenuation Setting (dB):	7							
Saturated EIRP towards NOC (dBW):	49							
Saturated EIRP towards Remote (dBW):	47.5							
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13							
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**							

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	38.80	37.80	38.80	37.80
Uplink Path Loss (dB)	207.06	207.06	207.06	207.06
Spreading Loss (dB)	-162.60	-162.60	-162.60	-162.60
Flux Density at Satellite (dBW/m^2)	-123.80	-124.80	-123.80	-124.80
Uplink C/T (dB)	-164.26	-165.26	-164.26	-165.26
C/No (dB)	64.34	63.34	64.34	63.34
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-9.78	-9.78
Uplink C/N (dB)	**7.25**	**6.25**	**5.32**	**4.66**
Satellite downlink EIRP (dBW)	14.20	13.20	14.20	13.20
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-154.81	-156.81	-154.81	-156.81
C/No (dB)	73.79	71.79	73.79	71.79
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-9.78	-9.78
Downlink C/N (dB)	**16.70**	**14.70**	**8.98**	**8.57**
Cumulative C/N (dB)	6.78	5.67	3.77	3.18
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**4.68**	**3.57**	**1.67**	**1.08**

Inroute Signal:	QPSK 1/2
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	12250.0
Baseband BW (MHz):	0.512
Spread BW (MHz):	1.024
Required C/N (dB):	2.10
Outroute Signal:	QPSK 2/3
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	3.20

Remote:	**Denver**
Latitude (deg North):	39.86
Longitude (deg East):	-104.67
TX Antenna Gain (dBi):	28.80
TX Power (dBm):	40.00
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	**-14.08**
Unimpaired EIRP Density (dBW/ 4 kHz)	**14.72**
RX G/T (dB/K):	11.70
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-14.00
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.66**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 35 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-12.9
Cross-Pol Uplink (dB):	-12.9
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-9.78**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC: **Holmdel NJ**

Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**13.00**
Power into flange (dBW/ 4 kHz):	**-25.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-12.9
Cross-Pol Downlink (dB):	-12.9
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	73.10	72.10	73.10	72.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-89.92	-90.92	-89.92	-90.92
Uplink C/T (dB)	-129.12	-130.12	-129.12	-130.12
C/No (dB)	99.48	98.48	99.48	98.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**24.71**	**23.71**	**21.32**	**20.83**
Satellite downlink EIRP (dBW)	47.50	46.83	47.50	46.83
Downlink Path Loss (dB)	205.82	205.82	205.82	205.82
Downlink C/T (dB)	-146.62	-148.29	-146.62	-148.29
C/No (dB)	81.98	80.31	81.98	80.31
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.21**	**5.54**	**5.30**	**4.15**
Cumulative C/N (dB)	7.13	5.48	5.19	4.06
Necessary C/N (dB)	3.20	3.20	3.20	3.20
Cumulative Outroute Link Margin (dB)	**3.93**	**2.28**	**1.99**	**0.86**

Ku Antenna Link Budget

Inroute Signal:	QPSK 1/2
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	12250.0
Baseband BW (MHz):	0.512
Spread BW (MHz):	1.024
Required C/N (dB):	2.10
Outroute Signal:	QPSK 2/3
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	3.30
Satellite:	**AMC-1**
Longitude (deg East):	-130.9
Maximum Saturated Downlink EIRP (dBW):	50.4
G/T towards Remote (dB/K):	6.20
G/T towards NOC (dB/K):	5.25
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-92
Attenuation Setting (dB):	7
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	47.8
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**
Remote:	**Chicago**
Latitude (deg North):	41.8
Longitude (deg East):	-87.7
TX Antenna Gain (dBi):	28.80
TX Power (dBm):	39.00
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	**-15.08**
Unimpaired EIRP Density (dBW/ 4 kHz)	**13.72**
RX G/T (dB/K):	11.70
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-14.00
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.22**

Link Budget for satellite **AMC-1** **at** **-130.9** **degrees**

Skew operational limit: **45** **degrees**

Inroute signal:	**QPSK 1/2**	rate	**0.512**	**Msps**	in bandwidth	**1.024**	**MHz**
Outroute signal:	**QPSK 2/3**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	Long
Remote:	**Chicago**	41.8	-87.7
NOC:	**Holmdel NJ**	40.395	-74.173

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	37.80	36.80	37.80	36.80
Uplink Path Loss (dB)	207.29	207.29	207.29	207.29
Spreading Loss (dB)	-162.83	-162.83	-162.83	-162.83
Flux Density at Satellite (dBW/m^2)	-125.03	-126.03	-125.03	-126.03
Uplink C/T (dB)	-163.29	-164.29	-163.29	-164.29
C/No (dB)	65.32	64.32	65.32	64.32
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-10.74	-10.74
Uplink C/N (dB)	**8.22**	**7.22**	**6.29**	**5.62**
Satellite downlink EIRP (dBW)	15.17	14.17	15.17	14.17
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-153.84	-155.84	-153.84	-155.84
C/No (dB)	74.76	72.76	74.76	72.76
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-10.74	-10.74
Downlink C/N (dB)	**17.67**	**15.67**	**9.93**	**9.53**
Cumulative C/N (dB)	7.76	6.64	4.73	4.14
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**5.66**	**4.54**	**2.63**	**2.04**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 45 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-13.9
Cross-Pol Uplink (dB):	-13.9
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-10.74**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Holmdel NJ**
Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**13.00**
Power into flange (dBW/ 4 kHz):	**-25.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-13.9
Cross-Pol Downlink (dB):	-13.9
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-10.74**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	73.10	72.10	73.10	72.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-89.92	-90.92	-89.92	-90.92
Uplink C/T (dB)	-129.12	-130.12	-129.12	-130.12
C/No (dB)	99.48	98.48	99.48	98.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**24.71**	**23.71**	**21.32**	**20.83**
Satellite downlink EIRP (dBW)	47.80	47.13	47.80	47.13
Downlink Path Loss (dB)	206.05	206.05	206.05	206.05
Downlink C/T (dB)	-146.55	-148.22	-146.55	-148.22
C/No (dB)	82.05	80.39	82.05	80.39
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.28**	**5.61**	**5.34**	**4.21**
Cumulative C/N (dB)	7.20	5.55	5.23	4.11
Necessary C/N (dB)	3.30	3.30	3.30	3.30
Cumulative Outroute Link Margin (dB)	**3.90**	**2.25**	**1.93**	**0.81**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 55 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**0.256**	**Msps**	in bandwidth	**1.024**	**MHz**	
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

			Lat	**Long**				
Remote:	**Jacksonville**		30.494	-81.688				
NOC:	**Holmdel NJ**		40.395	-74.173				

Satellite:	**AMC-1**
Longitude (deg East):	-130.9
Maximum Saturated Downlink EIRP (dBW):	50.4
G/T towards Remote (dB/K):	5.00
G/T towards NOC (dB/K):	5.25
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-92
Attenuation Setting (dB):	7
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	48.3
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**

Remote:	**Jacksonville**
Latitude (deg North):	30.494
Longitude (deg East):	-81.688
TX Antenna Gain (dBi):	28.80
TX Power (dBm):	37.20
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	**-16.88**
Unimpaired EIRP Density (dBW/ 4 kHz)	**11.92**
RX G/T (dB/K):	11.70
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-14.00
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.03**

Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	4.20

Inroute Signal:	QPSK 1/2					
Uplink Frequency (MHz):	14125.0					
Downlink Frequency (MHz):	12250.0					
Baseband BW (MHz):	0.256					
Spread BW (MHz):	1.024					
Required C/N (dB):	2.10					
Inroute Path:		**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)		36.00	35.00	36.00	35.00
Uplink Path Loss (dB)		207.26	207.26	207.26	207.26
Spreading Loss (dB)		-162.80	-162.80	-162.80	-162.80
Flux Density at Satellite (dBW/m^2)		-126.80	-127.80	-126.80	-127.80
Uplink C/T (dB)		-166.26	-167.26	-166.26	-167.26
C/No (dB)		62.35	61.35	62.35	61.35
Noise BW (dB-Hz)		54.08	54.08	54.08	54.08
Interference (dB)		N/A	N/A	-10.77	-10.77
Uplink C/N (dB)		**8.26**	**7.26**	**6.33**	**5.66**
Satellite downlink EIRP (dBW)		12.20	11.20	12.20	11.20
Downlink Path Loss (dB)		206.24	206.24	206.24	206.24
Downlink C/T (dB)		-156.81	-158.81	-156.81	-158.81
C/No (dB)		71.79	69.79	71.79	69.79
Noise BW (dB-Hz)		54.08	54.08	54.08	54.08
Interference (dB)		N/A	N/A	-10.77	-10.77
Downlink C/N (dB)		**17.71**	**15.71**	**9.97**	**9.57**
Cumulative C/N (dB)		7.80	6.68	4.77	4.18
Necessary C/N (dB)		2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)		**5.70**	**4.58**	**2.67**	**2.08**

Ku Antenna Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Skew operational limit: 55 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-13.9
Cross-Pol Uplink (dB):	-13.9
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-10.77**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Holmdel NJ**
Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**13.00**
Power into flange (dBW/ 4 kHz):	**-25.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-13.9
Cross-Pol Downlink (dB):	-13.9
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-10.77**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	73.10	72.10	73.10	72.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-89.92	-90.92	-89.92	-90.92
Uplink C/T (dB)	-129.12	-130.12	-129.12	-130.12
C/No (dB)	99.48	98.48	99.48	98.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**24.71**	**23.71**	**21.32**	**20.83**
Satellite downlink EIRP (dBW)	48.30	47.63	48.30	47.63
Downlink Path Loss (dB)	206.02	206.02	206.02	206.02
Downlink C/T (dB)	-146.02	-147.69	-146.02	-147.69
C/No (dB)	82.58	80.92	82.58	80.92
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.81**	**6.14**	**5.68**	**4.58**
Cumulative C/N (dB)	7.72	6.07	5.56	4.48
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.52**	**1.87**	**1.36**	**0.28**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 20 **degrees**

Regulatory-Operational Elevation limit: 50 **degrees**

Inroute signal:	**QPSK 2/3**	rate	**1.024**	**Msps**	in bandwidth	**1.024**	**MHz**
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	Long
Remote:	**Los Angeles**	33.943	-118.409
NOC:	**Holmdel NJ**	40.395	-74.173

Inroute Signal:	QPSK 2/3
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	1.024
Spread BW (MHz):	1.024
Required C/N (dB):	4.20
Outroute Signal:	QPSK 5/6
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	5.40

Satellite:	**AMC-1**
Longitude (deg East):	-130.9
Maximum Saturated Downlink EIRP (dBW):	50.4
G/T towards Remote (dB/K):	6.10
G/T towards NOC (dB/K):	5.25
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-92
Attenuation Setting (dB):	7
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	48
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**

Remote:	**Los Angeles**
Latitude (deg North):	33.943
Longitude (deg East):	-118.409
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**43.58**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**17.40**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-14.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.00**

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	41.48	40.48	41.48	40.48
Uplink Path Loss (dB)	206.86	206.86	206.86	206.86
Spreading Loss (dB)	-162.40	-162.40	-162.40	-162.40
Flux Density at Satellite (dBW/m^2)	-120.92	-121.92	-120.92	-121.92
Uplink C/T (dB)	-159.28	-160.28	-159.28	-160.28
C/No (dB)	69.33	68.33	69.33	68.33
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-11.71	-11.71
Uplink C/N (dB)	**9.22**	**8.22**	**7.28**	**6.62**
Satellite downlink EIRP (dBW)	19.18	18.18	19.18	18.18
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-149.83	-151.83	-149.83	-151.83
C/No (dB)	78.78	76.78	78.78	76.78
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-11.71	-11.71
Downlink C/N (dB)	**18.67**	**16.67**	**10.91**	**10.51**
Cumulative C/N (dB)	8.76	7.64	5.72	5.13
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Inroute Link Margin (dB)	**4.56**	**3.44**	**1.52**	**0.93**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 20 **degrees**

Regulatory-Operational Elevation limit: 50 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-14.9
Cross-Pol Uplink (dB):	-14.9
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-11.71**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC: **Holmdel NJ**

Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-14.9
Cross-Pol Downlink (dB):	-14.9
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-11.71**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	75.10	74.10	75.10	74.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-87.92	-88.92	-87.92	-88.92
Uplink C/T (dB)	-127.12	-128.12	-127.12	-128.12
C/No (dB)	101.48	100.48	101.48	100.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**26.71**	**25.71**	**22.12**	**21.75**
Satellite downlink EIRP (dBW)	48.00	48.00	48.00	48.00
Downlink Path Loss (dB)	205.62	205.62	205.62	205.62
Downlink C/T (dB)	-145.52	-146.02	-145.52	-146.02
C/No (dB)	83.08	82.58	83.08	82.58
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.31**	**7.81**	**5.97**	**5.67**
Cumulative C/N (dB)	8.25	7.74	5.87	5.57
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**2.85**	**2.34**	**0.47**	**0.17**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 30 **degrees**

Regulatory-Operational Elevation limit: 35 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**1.024**	**Msps**	in bandwidth	**1.024**	**MHz**
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	Long
Remote:	**Denver**	39.86	-104.67
NOC:	**Holmdel NJ**	40.395	-74.173

Inroute Signal:	QPSK 1/2
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	1.024
Spread BW (MHz):	1.024
Required C/N (dB):	2.10
Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	4.20
Satellite:	**AMC-1**
Longitude (deg East):	-130.9
Maximum Saturated Downlink EIRP (dBW):	50.4
G/T towards Remote (dB/K):	4.00
G/T towards NOC (dB/K):	5.25
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-92
Attenuation Setting (dB):	7
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	47.5
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**
Remote:	**Denver**
Latitude (deg North):	39.86
Longitude (deg East):	-104.67
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**42.88**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**16.70**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-14.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.00**

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	40.78	39.78	40.78	39.78
Uplink Path Loss (dB)	207.06	207.06	207.06	207.06
Spreading Loss (dB)	-162.60	-162.60	-162.60	-162.60
Flux Density at Satellite (dBW/m^2)	-121.82	-122.82	-121.82	-122.82
Uplink C/T (dB)	-162.28	-163.28	-162.28	-163.28
C/No (dB)	66.33	65.33	66.33	65.33
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-8.77	-8.77
Uplink C/N (dB)	**6.22**	**5.22**	**4.30**	**3.63**
Satellite downlink EIRP (dBW)	16.18	15.18	16.18	15.18
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-152.83	-154.83	-152.83	-154.83
C/No (dB)	75.77	73.77	75.77	73.77
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-8.77	-8.77
Downlink C/N (dB)	**15.67**	**13.67**	**7.97**	**7.56**
Cumulative C/N (dB)	5.76	4.64	2.75	2.16
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**3.66**	**2.54**	**0.65**	**0.06**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 30 **degrees**

Regulatory-Operational Elevation limit: 35 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-11.9
Cross-Pol Uplink (dB):	-11.9
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-8.77**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Holmdel NJ**
Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-11.9
Cross-Pol Downlink (dB):	-11.9
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-8.77**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	75.10	74.10	75.10	74.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-87.92	-88.92	-87.92	-88.92
Uplink C/T (dB)	-127.12	-128.12	-127.12	-128.12
C/No (dB)	101.48	100.48	101.48	100.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**26.71**	**25.71**	**22.12**	**21.75**
Satellite downlink EIRP (dBW)	47.50	47.50	47.50	47.50
Downlink Path Loss (dB)	205.82	205.82	205.82	205.82
Downlink C/T (dB)	-146.22	-146.72	-146.22	-146.72
C/No (dB)	82.38	81.88	82.38	81.88
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.61**	**7.11**	**5.55**	**5.23**
Cumulative C/N (dB)	7.56	7.05	5.46	5.14
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.36**	**2.85**	**1.26**	**0.94**

GSAA Link Budget

Inroute Signal:	QPSK 1/2
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	1.024
Spread BW (MHz):	1.024
Required C/N (dB):	2.10
Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	4.20

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 40 **degrees**

Regulatory-Operational Elevation limit: 25 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**1.024**	**Msps**	in bandwidth	**1.024**	**MHz**
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	Long
Remote:	**Chicago**	41.8	-87.7
NOC:	**Holmdel NJ**	40.395	-74.173

Satellite:	**AMC-1**
Longitude (deg East):	-130.9
Maximum Saturated Downlink EIRP (dBW):	50.4
G/T towards Remote (dB/K):	6.20
G/T towards NOC (dB/K):	5.25
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-92
Attenuation Setting (dB):	7
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	47.8
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**11.65**

Remote:	**Chicago**
Latitude (deg North):	41.8
Longitude (deg East):	-87.7
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**41.58**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**15.40**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-14.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-14.00**

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	39.48	38.48	39.48	38.48
Uplink Path Loss (dB)	207.29	207.29	207.29	207.29
Spreading Loss (dB)	-162.83	-162.83	-162.83	-162.83
Flux Density at Satellite (dBW/m^2)	-123.35	-124.35	-123.35	-124.35
Uplink C/T (dB)	-161.60	-162.60	-161.60	-162.60
C/No (dB)	67.00	66.00	67.00	66.00
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-9.43	-9.43
Uplink C/N (dB)	**6.89**	**5.89**	**4.97**	**4.30**
Satellite downlink EIRP (dBW)	16.85	15.85	16.85	15.85
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-152.15	-154.15	-152.15	-154.15
C/No (dB)	76.45	74.45	76.45	74.45
Noise BW (dB-Hz)	60.10	60.10	60.10	60.10
Interference (dB)	N/A	N/A	-9.43	-9.43
Downlink C/N (dB)	**16.34**	**14.34**	**8.63**	**8.22**
Cumulative C/N (dB)	6.43	5.31	3.42	2.82
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**4.33**	**3.21**	**1.32**	**0.72**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 40 **degrees**

Regulatory-Operational Elevation limit: 25 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-12.5
Cross-Pol Uplink (dB):	-12.5
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-9.43**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC: **Holmdel NJ**

Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-12.5
Cross-Pol Downlink (dB):	-12.5
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.43**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	75.10	74.10	75.10	74.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-87.92	-88.92	-87.92	-88.92
Uplink C/T (dB)	-127.12	-128.12	-127.12	-128.12
C/No (dB)	101.48	100.48	101.48	100.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**26.71**	**25.71**	**22.12**	**21.75**
Satellite downlink EIRP (dBW)	47.80	47.80	47.80	47.80
Downlink Path Loss (dB)	206.05	206.05	206.05	206.05
Downlink C/T (dB)	-146.15	-146.65	-146.15	-146.65
C/No (dB)	82.45	81.95	82.45	81.95
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**7.68**	**7.18**	**5.60**	**5.28**
Cumulative C/N (dB)	7.63	7.12	5.50	5.18
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.43**	**2.92**	**1.30**	**0.98**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 50 **degrees**
Regulatory-Operational Elevation limit: 25 **degrees**

Inroute signal:	**QPSK 1/2**	rate	**0.512**	**Msps**	in bandwidth	**1.024**	**MHz**	
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

			Lat	**Long**				
Remote:	**Jacksonville**		30.494	-81.688				
NOC:	**Holmdel NJ**		40.395	-74.173				

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	38.28	37.28	38.28	37.28
Uplink Path Loss (dB)	207.26	207.26	207.26	207.26
Spreading Loss (dB)	-162.80	-162.80	-162.80	-162.80
Flux Density at Satellite (dBW/m^2)	-124.52	-125.52	-124.52	-125.52
Uplink C/T (dB)	-163.97	-164.97	-163.97	-164.97
C/No (dB)	64.63	63.63	64.63	63.63
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-10.06	-10.06
Uplink C/N (dB)	**7.53**	**6.53**	**5.61**	**4.94**
Satellite downlink EIRP (dBW)	14.48	13.48	14.48	13.48
Downlink Path Loss (dB)	206.24	206.24	206.24	206.24
Downlink C/T (dB)	-154.52	-156.52	-154.52	-156.52
C/No (dB)	74.08	72.08	74.08	72.08
Noise BW (dB-Hz)	57.09	57.09	57.09	57.09
Interference (dB)	N/A	N/A	-10.06	-10.06
Downlink C/N (dB)	**16.98**	**14.98**	**9.26**	**8.85**
Cumulative C/N (dB)	7.07	5.95	4.05	3.46
Necessary C/N (dB)	2.10	2.10	2.10	2.10
Cumulative Inroute Link Margin (dB)	**4.97**	**3.85**	**1.95**	**1.36**

Inroute Signal: QPSK 1/2
Uplink Frequency (MHz): 14125
Downlink Frequency (MHz): 12250
Baseband BW (MHz): 0.512
Spread BW (MHz): 1.024
Required C/N (dB): 2.10

Outroute Signal: QPSK 5/6
Uplink Frequency (MHz): 14125
Downlink Frequency (MHz): 12250
Bandwidth (MHz): 30
Required C/N (dB): 5.40

Satellite: AMC-1
Longitude (deg East): -130.9
Maximum Saturated Downlink EIRP (dBW): 50.4
G/T towards Remote (dB/K): 5.00
G/T towards NOC (dB/K): 5.25
G/T Degradation (dB): 0
Saturation Flux Density (dBW/m^2): -92
Attenuation Setting (dB): 7
Saturated EIRP towards NOC (dBW): 49
Saturated EIRP towards Remote (dBW): 48.3
Max Authorized Downlink EIRP (dBW/4 kHz): 13
Max Actual Downlink EIRP (dBW/4 kHz): **11.65**

Remote: Jacksonville
Latitude (deg North): 30.494
Longitude (deg East): -81.688
TX Antenna Gain (dBi): 33.60
Coax and Skew Module losses (dB): 5.2
Radome Loss (dB): 0.5
TX Power (dBm): **40.38**
TX Backoff (dB): 0.00
Power into flange w losses (dBW/4 kHz):
Unimpaired EIRP Density (dBW/ 4 kHz) **14.20**
RX G/T (dB/K): 12.60
Antenna Mispoint (dB): 0.50
Rain Attenuation (dB): 0.00
Atmospheric Attenuation (dB): 0.50

Coord. limit into flng rel FCC 29-25log (dBW/4 kHz): **-14.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz): **-14.00**

GSAA Link Budget

Link Budget for satellite AMC-1 **at** -130.9 **degrees**

Regulatory-Operational Skew limit: 50 **degrees**

Regulatory-Operational Elevation limit: 25 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-13.2
Cross-Pol Uplink (dB):	-13.2
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-10.06**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC: **Holmdel NJ**

Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**9 m**
RX Antenna Gain (dBi):	**58.5**
Antenna Noise Temp (K):	**64**
Antenna LNA Temp (K):	**70**
Total Noise Temp (K):	134.00
Antenna G/T (dB/K):	37.23
TX Antenna Gain (dBi):	60.1
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

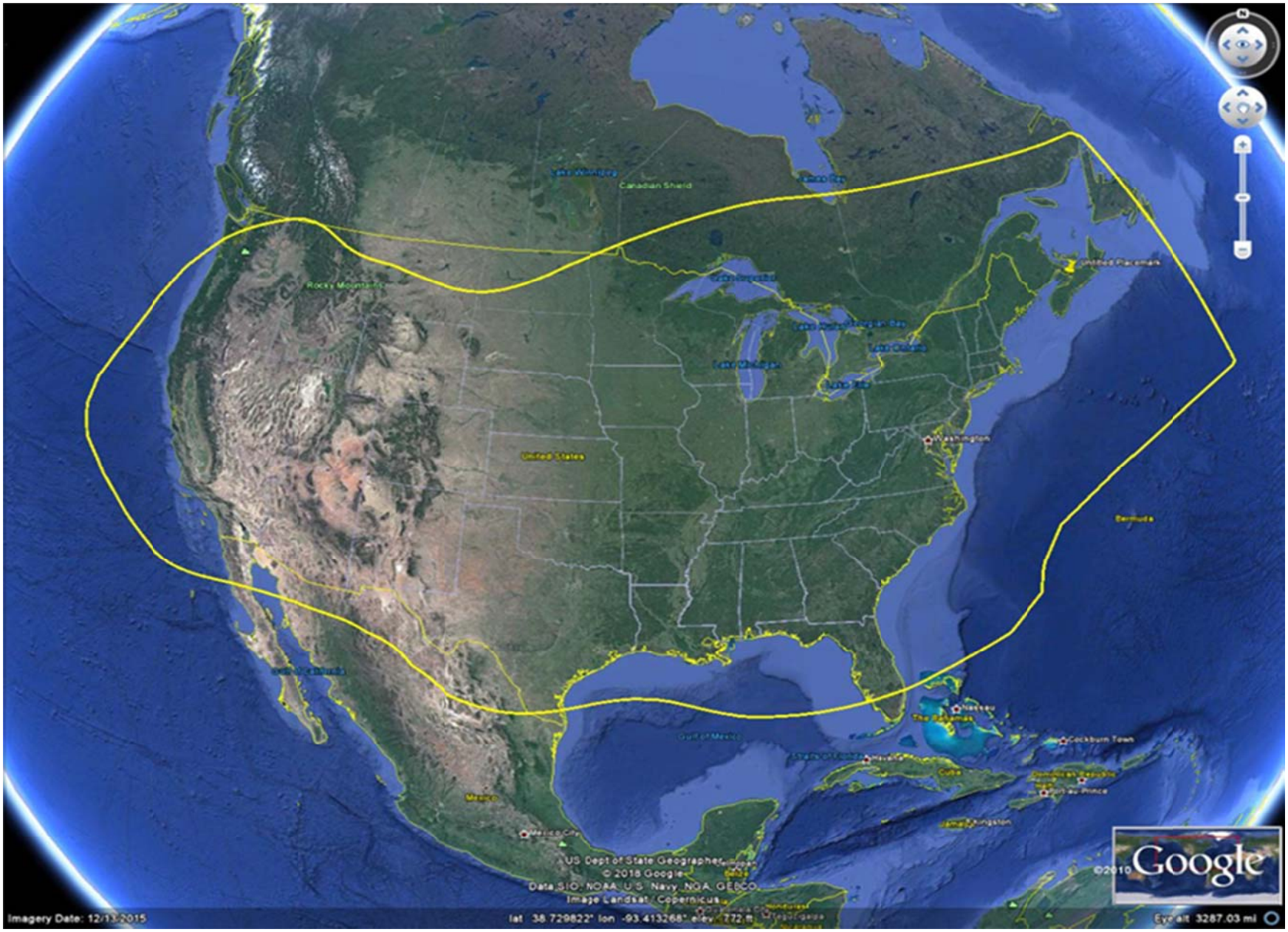
Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-13.2
Cross-Pol Downlink (dB):	-13.2
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-10.06**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	75.10	74.10	75.10	74.10
Uplink Path Loss (dB)	207.47	207.47	207.47	207.47
Spreading Loss (dB)	-163.02	-163.02	-163.02	-163.02
Flux Density at Satellite (dBW/m^2)	-87.92	-88.92	-87.92	-88.92
Uplink C/T (dB)	-127.12	-128.12	-127.12	-128.12
C/No (dB)	101.48	100.48	101.48	100.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**26.71**	**25.71**	**22.12**	**21.75**
Satellite downlink EIRP (dBW)	48.30	48.30	48.30	48.30
Downlink Path Loss (dB)	206.02	206.02	206.02	206.02
Downlink C/T (dB)	-145.62	-146.12	-145.62	-146.12
C/No (dB)	82.98	82.48	82.98	82.48
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.21**	**7.71**	**5.92**	**5.61**
Cumulative C/N (dB)	8.15	7.64	5.81	5.51
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**2.75**	**2.24**	**0.41**	**0.11**

AMC-1 @ 130.9 W.L. - North America Ku-Band Beam Coverage



Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 25 **degrees**

Inroute signal:	**8PSK 2/3**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	Long
Remote:	**Los Angeles**	33.943	-118.409
NOC:	**South Mountain**	34.143	-119.031

Inroute Signal: 8PSK 2/3
Uplink Frequency (MHz): 14125.0
Downlink Frequency (MHz): 20000.0
Baseband BW (MHz): 2.048
Spread BW (MHz): 2.048
Required C/N (dB): 7.81

Outroute Signal: QPSK 3/4
Uplink Frequency (MHz): 29500.0
Downlink Frequency (MHz): 12250.0
Bandwidth (MHz): 30
Required C/N (dB): 4.20

Satellite: **SES-15**
Longitude (deg East): -129
Maximum Saturated Downlink EIRP (dBW): 51.75
G/T towards Remote (dB/K): 13.00
G/T towards NOC (dB/K): 13.00
G/T Degradation (dB): 0
Saturation Flux Density (dBW/m^2): -101.8
Attenuation Setting (dB): 8
Saturated EIRP towards NOC (dBW): 49
Saturated EIRP towards Remote (dBW): 49
Max Coordinated Downlink EIRP (dBW/ 4kHz): 13
Max Actual Downlink EIRP (dBW/4 kHz): **13.00**

Remote: **Los Angeles**
Latitude (deg North): 33.943
Longitude (deg East): -118.409
TX Antenna Gain (dBi): 28.80
TX Power (dBm): 40.60
TX Backoff (dB): 0.00
Power into flange w losses (dBW/4 kHz): **-16.49**
Unimpaired EIRP Density (dBW/ 4 kHz) **12.31**
RX G/T (dB/K): 11.70
Antenna Mispoint (dB): 0.50
Rain Attenuation (dB): 0.00
Atmospheric Attenuation (dB): 0.50

Coord. limit into flng rel FCC 29-25log (dBW/4 kHz): -18.00
Power into flange rel to FCC 29-25log (dBW/4 kHz): **-18.10**

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	39.40	38.40	39.40	38.40
Uplink Path Loss (dB)	206.85	206.85	206.85	206.85
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-122.99	-123.99	-122.99	-123.99
Uplink C/T (dB)	-154.45	-155.45	-154.45	-155.45
C/No (dB)	74.15	73.15	74.15	73.15
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-21.15	-21.15
Uplink C/N (dB)	**11.04**	**10.04**	**10.64**	**9.72**
Satellite downlink EIRP (dBW)	32.81	31.81	32.81	31.81
Downlink Path Loss (dB)	209.87	209.87	209.87	209.87
Downlink C/T (dB)	-146.26	-148.26	-146.26	-148.26
C/No (dB)	82.34	80.34	82.34	80.34
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-21.15	-21.15
Downlink C/N (dB)	**19.23**	**17.23**	**17.07**	**15.75**
Cumulative C/N (dB)	10.43	9.28	9.75	8.75
Necessary C/N (dB)	7.81	7.81	7.81	7.81
Cumulative Inroute Link Margin (dB)	**2.62**	**1.47**	**1.94**	**0.94**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 25 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-25.5
Cross-Pol Uplink (dB):	-25.5
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-21.15**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**5.00**
Power into flange (dBW/ 4 kHz):	**-33.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-25.5
Cross-Pol Downlink (dB):	-25.5
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-21.15**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	61.50	60.50	61.50	60.50
Uplink Path Loss (dB)	213.25	213.25	213.25	213.25
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-100.89	-101.89	-100.89	-101.89
Uplink C/T (dB)	-138.75	-139.75	-138.75	-139.75
C/No (dB)	89.86	88.86	89.86	88.86
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**15.08**	**14.08**	**14.56**	**13.66**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.61	205.61	205.61	205.61
Downlink C/T (dB)	-144.91	-145.91	-144.91	-145.91
C/No (dB)	83.69	82.69	83.69	82.69
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.92**	**7.92**	**6.32**	**5.74**
Cumulative C/N (dB)	7.98	6.98	5.71	5.09
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.78**	**2.78**	**1.51**	**0.89**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 35 **degrees**

Inroute signal:	**OQPSK 4/5**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	**Long**			
Remote:	**Denver**	39.86	-104.67			
NOC:	**South Mountain**	34.143	-119.031			

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	38.40	37.40	38.40	37.40
Uplink Path Loss (dB)	207.04	207.04	207.04	207.04
Spreading Loss (dB)	-162.58	-162.58	-162.58	-162.58
Flux Density at Satellite (dBW/m^2)	-124.18	-125.18	-124.18	-125.18
Uplink C/T (dB)	-155.64	-156.64	-155.64	-156.64
C/No (dB)	72.96	71.96	72.96	71.96
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-20.23	-20.23
Uplink C/N (dB)	**9.85**	**8.85**	**9.47**	**8.54**
Satellite downlink EIRP (dBW)	31.62	30.62	31.62	30.62
Downlink Path Loss (dB)	209.87	209.87	209.87	209.87
Downlink C/T (dB)	-147.45	-149.45	-147.45	-149.45
C/No (dB)	81.15	79.15	81.15	79.15
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-20.23	-20.23
Downlink C/N (dB)	**18.03**	**16.03**	**15.99**	**14.63**
Cumulative C/N (dB)	9.23	8.09	8.59	7.59
Necessary C/N (dB)	6.09	6.09	6.09	6.09
Cumulative Inroute Link Margin (dB)	**3.14**	**2.00**	**2.50**	**1.50**

Inroute Signal:	OQPSK 4/5
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	20000.0
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	6.09
Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	29500.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	4.20
Satellite:	**SES-15**
Longitude (deg East):	-129
Maximum Saturated Downlink EIRP (dBW):	51.75
G/T towards Remote (dB/K):	13.00
G/T towards NOC (dB/K):	13.00
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-101.8
Attenuation Setting (dB):	8
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	49
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**
Remote:	**Denver**
Latitude (deg North):	39.86
Longitude (deg East):	-104.67
TX Antenna Gain (dBi):	28.80
TX Power (dBm):	39.60
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	**-17.49**
Unimpaired EIRP Density (dBW/ 4 kHz)	**11.31**
RX G/T (dB/K):	11.70
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-18.00
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.07**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 35 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-24.3
Cross-Pol Uplink (dB):	-24.3
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-20.23**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**5.00**
Power into flange (dBW/ 4 kHz):	**-33.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-24.3
Cross-Pol Downlink (dB):	-24.3
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-20.23**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	61.50	60.50	61.50	60.50
Uplink Path Loss (dB)	213.25	213.25	213.25	213.25
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-100.89	-101.89	-100.89	-101.89
Uplink C/T (dB)	-138.75	-139.75	-138.75	-139.75
C/No (dB)	89.86	88.86	89.86	88.86
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**15.08**	**14.08**	**14.56**	**13.66**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.80	205.80	205.80	205.80
Downlink C/T (dB)	-145.10	-146.10	-145.10	-146.10
C/No (dB)	83.50	82.50	83.50	82.50
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.73**	**7.73**	**6.21**	**5.62**
Cumulative C/N (dB)	7.82	6.82	5.62	4.99
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.62**	**2.62**	**1.42**	**0.79**

Ku Antenna Link Budget

Inroute Signal:	OQPSK 2/3
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	20000.0
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	4.33
Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	29500.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	4.20

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 45 **degrees**

Inroute signal:	**OQPSK 2/3**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	**Long**	
Satellite:	**SES-15**	**Remote:**	**Chicago**	41.8	-87.7	
Longitude (deg East):	-129	**NOC:**	**South Mountain**	34.143	-119.031	
Maximum Saturated Downlink EIRP (dBW):	51.75					
G/T towards Remote (dB/K):	13.00					
G/T towards NOC (dB/K):	13.00					
G/T Degradation (dB):	0					
Saturation Flux Density (dBW/m^2):	-101.8					
Attenuation Setting (dB):	8					
Saturated EIRP towards NOC (dBW):	49					
Saturated EIRP towards Remote (dBW):	49					
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13					
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**					
Remote:	**Chicago**					
Latitude (deg North):	41.8					
Longitude (deg East):	-87.7					
TX Antenna Gain (dBi):	28.80					
TX Power (dBm):	38.20					
TX Backoff (dB):	0.00					
Power into flange w losses (dBW/4 kHz):	**-18.89**					
Unimpaired EIRP Density (dBW/ 4 kHz)	**9.91**					
RX G/T (dB/K):	11.70					
Antenna Mispoint (dB):	0.50					
Rain Attenuation (dB):	0.00					
Atmospheric Attenuation (dB):	0.50					
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-18.00					
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.03**					

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	37.00	36.00	37.00	36.00
Uplink Path Loss (dB)	207.26	207.26	207.26	207.26
Spreading Loss (dB)	-162.80	-162.80	-162.80	-162.80
Flux Density at Satellite (dBW/m^2)	-125.80	-126.80	-125.80	-126.80
Uplink C/T (dB)	-157.26	-158.26	-157.26	-158.26
C/No (dB)	71.34	70.34	71.34	70.34
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-18.91	-18.91
Uplink C/N (dB)	**8.23**	**7.23**	**7.87**	**6.94**
Satellite downlink EIRP (dBW)	30.00	29.00	30.00	29.00
Downlink Path Loss (dB)	209.87	209.87	209.87	209.87
Downlink C/T (dB)	-149.07	-151.07	-149.07	-151.07
C/No (dB)	79.53	77.53	79.53	77.53
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-18.91	-18.91
Downlink C/N (dB)	**16.41**	**14.41**	**14.47**	**13.09**
Cumulative C/N (dB)	7.61	6.47	7.01	6.00
Necessary C/N (dB)	4.33	4.33	4.33	4.33
Cumulative Inroute Link Margin (dB)	**3.28**	**2.14**	**2.68**	**1.67**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 45 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-22.7
Cross-Pol Uplink (dB):	-22.7
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-18.91**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**5.00**
Power into flange (dBW/ 4 kHz):	**-33.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-22.7
Cross-Pol Downlink (dB):	-22.7
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-18.91**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	61.50	60.50	61.50	60.50
Uplink Path Loss (dB)	213.25	213.25	213.25	213.25
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-100.89	-101.89	-100.89	-101.89
Uplink C/T (dB)	-138.75	-139.75	-138.75	-139.75
C/No (dB)	89.86	88.86	89.86	88.86
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**15.08**	**14.08**	**14.56**	**13.66**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	206.02	206.02	206.02	206.02
Downlink C/T (dB)	-145.32	-146.32	-145.32	-146.32
C/No (dB)	83.28	82.28	83.28	82.28
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.51**	**7.51**	**6.09**	**5.49**
Cumulative C/N (dB)	7.64	6.64	5.51	4.87
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.44**	**2.44**	**1.31**	**0.67**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 55 **degrees**

Inroute signal:	**OQSK 1/2**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 3/4**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	Long
Remote:	**Jacksonville**	30.494	-81.688
NOC:	**Woodbine MD**	39.376	-77.081

Inroute Signal:	OQSK 1/2
Uplink Frequency (MHz):	14125.0
Downlink Frequency (MHz):	20000.0
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	3.06
Outroute Signal:	QPSK 3/4
Uplink Frequency (MHz):	29500.0
Downlink Frequency (MHz):	12250.0
Bandwidth (MHz):	30
Required C/N (dB):	4.20
Satellite:	**SES-15**
Longitude (deg East):	-129
Maximum Saturated Downlink EIRP (dBW):	51.75
G/T towards Remote (dB/K):	13.00
G/T towards NOC (dB/K):	13.00
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-101.8
Attenuation Setting (dB):	8
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	49
Max Coordinated Downlink EIRP (dBW/ 4kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**
Remote:	**Jacksonville**
Latitude (deg North):	30.494
Longitude (deg East):	-81.688
TX Antenna Gain (dBi):	28.80
TX Power (dBm):	36.20
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	**-20.89**
Unimpaired EIRP Density (dBW/ 4 kHz)	**7.91**
RX G/T (dB/K):	11.70
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	-18.00
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.04**

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	35.00	34.00	35.00	34.00
Uplink Path Loss (dB)	207.22	207.22	207.22	207.22
Spreading Loss (dB)	-162.77	-162.77	-162.77	-162.77
Flux Density at Satellite (dBW/m^2)	-127.77	-128.77	-127.77	-128.77
Uplink C/T (dB)	-159.22	-160.22	-159.22	-160.22
C/No (dB)	69.38	68.38	69.38	68.38
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-17.20	-17.20
Uplink C/N (dB)	**6.26**	**5.26**	**5.93**	**5.00**
Satellite downlink EIRP (dBW)	28.03	27.03	28.03	27.03
Downlink Path Loss (dB)	210.41	210.41	210.41	210.41
Downlink C/T (dB)	-151.57	-153.57	-151.57	-153.57
C/No (dB)	77.03	75.03	77.03	75.03
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-17.20	-17.20
Downlink C/N (dB)	**13.91**	**11.91**	**12.24**	**10.79**
Cumulative C/N (dB)	5.58	4.41	5.02	3.98
Necessary C/N (dB)	3.06	3.06	3.06	3.06
Cumulative Inroute Link Margin (dB)	**2.52**	**1.35**	**1.96**	**0.92**

Ku Antenna Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Skew operational limit: 55 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-20.7
Cross-Pol Uplink (dB):	-20.7
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-17.20**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Woodbine MD**
Latitude (deg North):	39.376
Longitude (deg East):	-77.081
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**5.00**
Power into flange (dBW/ 4 kHz):	**-33.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-20.7
Cross-Pol Downlink (dB):	-20.7
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-17.20**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	61.50	60.50	61.50	60.50
Uplink Path Loss (dB)	213.78	213.78	213.78	213.78
Spreading Loss (dB)	-162.93	-162.93	-162.93	-162.93
Flux Density at Satellite (dBW/m^2)	-101.43	-102.43	-101.43	-102.43
Uplink C/T (dB)	-139.28	-140.28	-139.28	-140.28
C/No (dB)	89.32	88.32	89.32	88.32
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**14.55**	**13.55**	**14.08**	**13.17**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.99	205.99	205.99	205.99
Downlink C/T (dB)	-145.29	-146.29	-145.29	-146.29
C/No (dB)	83.32	82.32	83.32	82.32
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.54**	**7.54**	**6.11**	**5.51**
Cumulative C/N (dB)	7.57	6.57	5.47	4.82
Necessary C/N (dB)	4.20	4.20	4.20	4.20
Cumulative Outroute Link Margin (dB)	**3.37**	**2.37**	**1.27**	**0.62**

GSAA Link Budget

Inroute Signal:	8PSK 4/5
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	10.00
Outroute Signal:	QPSK 5/6
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	5.40
Satellite:	**SES-15**
Longitude (deg East):	-129
Maximum Saturated Downlink EIRP (dBW):	51.75
G/T towards Remote (dB/K):	13.00
G/T towards NOC (dB/K):	13.00
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-101.8
Attenuation Setting (dB):	8
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	49
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**
Remote:	**Los Angeles**
Latitude (deg North):	33.943
Longitude (deg East):	-118.409
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**42.69**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**13.50**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-18.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.00**

Link Budget for satellite **SES-15** **at** **-129.0** **degrees**

Regulatory-Operational Skew limit: **15** **degrees**

Regulatory-Operational Elevation limit: **50** **degrees**

Inroute signal:	**8PSK 4/5**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**

		Lat	Long
Remote:	**Los Angeles**	33.943	-118.409
NOC:	**South Mountain**	34.143	-119.031

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	40.59	39.59	40.59	39.59
Uplink Path Loss (dB)	206.85	206.85	206.85	206.85
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-121.80	-122.80	-121.80	-122.80
Uplink C/T (dB)	-153.26	-154.26	-153.26	-154.26
C/No (dB)	75.35	74.35	75.35	74.35
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-22.00	-22.00
Uplink C/N (dB)	**12.23**	**11.23**	**11.80**	**10.88**
Satellite downlink EIRP (dBW)	34.00	33.00	34.00	33.00
Downlink Path Loss (dB)	205.61	205.61	205.61	205.61
Downlink C/T (dB)	-140.81	-142.81	-140.81	-142.81
C/No (dB)	87.79	85.79	87.79	85.79
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-22.00	-22.00
Downlink C/N (dB)	**24.68**	**22.68**	**20.12**	**19.31**
Cumulative C/N (dB)	11.99	10.93	11.20	10.30
Necessary C/N (dB)	10.00	10.00	10.00	10.00
Cumulative Inroute Link Margin (dB)	**1.99**	**0.93**	**1.20**	**0.30**

GSAA Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 15 **degrees**

Regulatory-Operational Elevation limit: 50 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-26.7
Cross-Pol Uplink (dB):	-26.7
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-22.00**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-26.7
Cross-Pol Downlink (dB):	-26.7
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-22.00**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	71.50	70.50	71.50	70.50
Uplink Path Loss (dB)	206.85	206.85	206.85	206.85
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-90.89	-91.89	-90.89	-91.89
Uplink C/T (dB)	-122.35	-123.35	-122.35	-123.35
C/No (dB)	106.25	105.25	106.25	105.25
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**31.48**	**30.48**	**23.27**	**23.10**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.61	205.61	205.61	205.61
Downlink C/T (dB)	-144.51	-145.01	-144.51	-145.01
C/No (dB)	84.09	83.59	84.09	83.59
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**9.32**	**8.82**	**6.53**	**6.26**
Cumulative C/N (dB)	9.29	8.79	6.44	6.17
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**3.89**	**3.39**	**1.04**	**0.77**

GSAA Link Budget

Inroute Signal:	8PSK 2/3
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	7.81
Outroute Signal:	QPSK 5/6
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	5.40
Satellite:	**SES-15**
Longitude (deg East):	-129
Maximum Saturated Downlink EIRP (dBW):	51.75
G/T towards Remote (dB/K):	13.00
G/T towards NOC (dB/K):	13.00
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-101.8
Attenuation Setting (dB):	8
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	49
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**
Remote:	**Denver**
Latitude (deg North):	39.86
Longitude (deg East):	-104.67
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**42.19**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**13.00**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-18.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.00**

Link Budget for satellite **SES-15** **at** **-129.0** **degrees**

Regulatory-Operational Skew limit: **25** **degrees**

Regulatory-Operational Elevation limit: **35** **degrees**

Inroute signal:	**8PSK 2/3**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	Long
Remote:	**Denver**	39.86	-104.67
NOC:	**South Mountain**	34.143	-119.031

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	40.09	39.09	40.09	39.09
Uplink Path Loss (dB)	207.04	207.04	207.04	207.04
Spreading Loss (dB)	-162.58	-162.58	-162.58	-162.58
Flux Density at Satellite (dBW/m^2)	-122.49	-123.49	-122.49	-123.49
Uplink C/T (dB)	-153.95	-154.95	-153.95	-154.95
C/No (dB)	74.65	73.65	74.65	73.65
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-21.51	-21.51
Uplink C/N (dB)	**11.54**	**10.54**	**11.12**	**10.21**
Satellite downlink EIRP (dBW)	33.31	32.31	33.31	32.31
Downlink Path Loss (dB)	205.61	205.61	205.61	205.61
Downlink C/T (dB)	-141.50	-143.50	-141.50	-143.50
C/No (dB)	87.10	85.10	87.10	85.10
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-21.51	-21.51
Downlink C/N (dB)	**23.98**	**21.98**	**19.56**	**18.73**
Cumulative C/N (dB)	11.30	10.24	10.54	9.64
Necessary C/N (dB)	7.81	7.81	7.81	7.81
Cumulative Inroute Link Margin (dB)	**3.49**	**2.43**	**2.73**	**1.83**

GSAA Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 25 **degrees**
Regulatory-Operational Elevation limit: 35 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-26.0
Cross-Pol Uplink (dB):	-26.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-21.51**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-26.0
Cross-Pol Downlink (dB):	-26.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-21.51**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	71.50	70.50	71.50	70.50
Uplink Path Loss (dB)	206.85	206.85	206.85	206.85
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-90.89	-91.89	-90.89	-91.89
Uplink C/T (dB)	-122.35	-123.35	-122.35	-123.35
C/No (dB)	106.25	105.25	106.25	105.25
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**31.48**	**30.48**	**23.27**	**23.10**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.80	205.80	205.80	205.80
Downlink C/T (dB)	-144.70	-145.20	-144.70	-145.20
C/No (dB)	83.90	83.40	83.90	83.40
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**9.13**	**8.63**	**6.43**	**6.16**
Cumulative C/N (dB)	9.10	8.60	6.34	6.07
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**3.70**	**3.20**	**0.94**	**0.67**

GSAA Link Budget

Inroute Signal:	8PSK 2/3
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	7.81
Outroute Signal:	QPSK 5/6
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	5.40
Satellite:	**SES-15**
Longitude (deg East):	-129
Maximum Saturated Downlink EIRP (dBW):	51.75
G/T towards Remote (dB/K):	13.00
G/T towards NOC (dB/K):	13.00
G/T Degradation (dB):	0
Saturation Flux Density (dBW/m^2):	-101.8
Attenuation Setting (dB):	8
Saturated EIRP towards NOC (dBW):	49
Saturated EIRP towards Remote (dBW):	49
Max Authorized Downlink EIRP (dBW/4 kHz):	13
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**
Remote:	**Chicago**
Latitude (deg North):	41.8
Longitude (deg East):	-87.7
TX Antenna Gain (dBi):	33.60
Coax and Skew Module losses (dB):	5.2
Radome Loss (dB):	0.5
TX Power (dBm):	**41.19**
TX Backoff (dB):	0.00
Power into flange w losses (dBW/4 kHz):	
Unimpaired EIRP Density (dBW/ 4 kHz)	**12.00**
RX G/T (dB/K):	12.60
Antenna Mispoint (dB):	0.50
Rain Attenuation (dB):	0.00
Atmospheric Attenuation (dB):	0.50
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-18.00**
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.00**

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 35 **degrees**

Regulatory-Operational Elevation limit: 25 **degrees**

Inroute signal:	**8PSK 2/3**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	Long
Remote:	**Chicago**	41.8	-87.7
NOC:	**South Mountain**	34.143	-119.031

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	39.09	38.09	39.09	38.09
Uplink Path Loss (dB)	207.26	207.26	207.26	207.26
Spreading Loss (dB)	-162.80	-162.80	-162.80	-162.80
Flux Density at Satellite (dBW/m^2)	-123.71	-124.71	-123.71	-124.71
Uplink C/T (dB)	-155.17	-156.17	-155.17	-156.17
C/No (dB)	73.43	72.43	73.43	72.43
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-20.60	-20.60
Uplink C/N (dB)	**10.32**	**9.32**	**9.93**	**9.01**
Satellite downlink EIRP (dBW)	32.09	31.09	32.09	31.09
Downlink Path Loss (dB)	205.61	205.61	205.61	205.61
Downlink C/T (dB)	-142.72	-144.72	-142.72	-144.72
C/No (dB)	85.88	83.88	85.88	83.88
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-20.60	-20.60
Downlink C/N (dB)	**22.76**	**20.76**	**18.54**	**17.67**
Cumulative C/N (dB)	10.08	9.02	9.37	8.45
Necessary C/N (dB)	7.81	7.81	7.81	7.81
Cumulative Inroute Link Margin (dB)	**2.27**	**1.21**	**1.56**	**0.64**

GSAA Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 35 **degrees**
Regulatory-Operational Elevation limit: 25 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-24.7
Cross-Pol Uplink (dB):	-24.7
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-20.60**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**South Mountain**
Latitude (deg North):	34.143
Longitude (deg East):	-119.031
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-24.7
Cross-Pol Downlink (dB):	-24.7
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-20.60**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	71.50	70.50	71.50	70.50
Uplink Path Loss (dB)	206.85	206.85	206.85	206.85
Spreading Loss (dB)	-162.39	-162.39	-162.39	-162.39
Flux Density at Satellite (dBW/m^2)	-90.89	-91.89	-90.89	-91.89
Uplink C/T (dB)	-122.35	-123.35	-122.35	-123.35
C/No (dB)	106.25	105.25	106.25	105.25
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**31.48**	**30.48**	**23.27**	**23.10**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	206.02	206.02	206.02	206.02
Downlink C/T (dB)	-144.92	-145.42	-144.92	-145.42
C/No (dB)	83.68	83.18	83.68	83.18
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.91**	**8.41**	**6.31**	**6.03**
Cumulative C/N (dB)	8.88	8.38	6.22	5.95
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**3.48**	**2.98**	**0.82**	**0.55**

GSAA Link Budget

Inroute Signal:	QPSK 4/5
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Baseband BW (MHz):	2.048
Spread BW (MHz):	2.048
Required C/N (dB):	6.09
Outroute Signal:	QPSK 5/6
Uplink Frequency (MHz):	14125
Downlink Frequency (MHz):	12250
Bandwidth (MHz):	30
Required C/N (dB):	5.40

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 50 **degrees**

Regulatory-Operational Elevation limit: 30 **degrees**

Inroute signal:	**QPSK 4/5**	rate	**2.048**	**Msps**	in bandwidth	**2.048**	**MHz**	
Outroute signal:	**QPSK 5/6**	rate	**30**	**Msps**	in bandwidth	**30**	**MHz**	

		Lat	**Long**	
Satellite:	**SES-15**	**Remote:**	**Jacksonville**	30.494	-81.688	
Longitude (deg East):	-129	**NOC:**	**Woodbine MD**	40.395	-74.173	
Maximum Saturated Downlink EIRP (dBW):	51.75					
G/T towards Remote (dB/K):	13.00					
G/T towards NOC (dB/K):	13.00					
G/T Degradation (dB):	0					
Saturation Flux Density (dBW/m^2):	-101.8					
Attenuation Setting (dB):	8					
Saturated EIRP towards NOC (dBW):	49					
Saturated EIRP towards Remote (dBW):	49					
Max Authorized Downlink EIRP (dBW/4 kHz):	13					
Max Actual Downlink EIRP (dBW/4 kHz):	**13.00**					
Remote:	**Jacksonville**					
Latitude (deg North):	30.494					
Longitude (deg East):	-81.688					
TX Antenna Gain (dBi):	33.60					
Coax and Skew Module losses (dB):	5.2					
Radome Loss (dB):	0.5					
TX Power (dBm):	**39.39**					
TX Backoff (dB):	0.00					
Power into flange w losses (dBW/4 kHz):						
Unimpaired EIRP Density (dBW/ 4 kHz)	**10.20**					
RX G/T (dB/K):	12.60					
Antenna Mispoint (dB):	0.50					
Rain Attenuation (dB):	0.00					
Atmospheric Attenuation (dB):	0.50					
Coord. limit into flng rel FCC 29-25log (dBW/4 kHz):	**-18.00**					
Power into flange rel to FCC 29-25log (dBW/4 kHz):	**-18.00**					

Inroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint/ Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	37.29	36.29	37.29	36.29
Uplink Path Loss (dB)	207.22	207.22	207.22	207.22
Spreading Loss (dB)	-162.77	-162.77	-162.77	-162.77
Flux Density at Satellite (dBW/m^2)	-125.47	-126.47	-125.47	-126.47
Uplink C/T (dB)	-156.93	-157.93	-156.93	-157.93
C/No (dB)	71.67	70.67	71.67	70.67
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-19.19	-19.19
Uplink C/N (dB)	**8.56**	**7.56**	**8.20**	**7.27**
Satellite downlink EIRP (dBW)	30.33	29.33	30.33	29.33
Downlink Path Loss (dB)	206.21	206.21	206.21	206.21
Downlink C/T (dB)	-145.08	-147.08	-145.08	-147.08
C/No (dB)	83.52	81.52	83.52	81.52
Noise BW (dB-Hz)	63.11	63.11	63.11	63.11
Interference (dB)	N/A	N/A	-19.19	-19.19
Downlink C/N (dB)	**20.41**	**18.41**	**16.74**	**15.77**
Cumulative C/N (dB)	8.28	7.21	7.63	6.70
Necessary C/N (dB)	6.09	6.09	6.09	6.09
Cumulative Inroute Link Margin (dB)	**2.19**	**1.12**	**1.54**	**0.61**

GSAA Link Budget

Link Budget for satellite SES-15 **at** -129.0 **degrees**

Regulatory-Operational Skew limit: 50 **degrees**

Regulatory-Operational Elevation limit: 30 **degrees**

Inroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-23.0
Cross-Pol Uplink (dB):	-23.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-19.19**

Outroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-10.0
Cross-Pol Downlink (dB):	-25.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-9.78**

NOC:	**Woodbine MD**
Latitude (deg North):	40.395
Longitude (deg East):	-74.173
Antennna diameter (m):	**5.8 m**
RX Antenna Gain (dBi):	**53**
Antenna Noise Temp (K):	**70**
Antenna LNA Temp (K):	**96**
Total Noise Temp (K):	166.00
Antenna G/T (dB/K):	30.80
TX Antenna Gain (dBi):	56.5
TX backoff (dB):	**0.00**
Conducted TX Power to Antenna (dBW):	**15.00**
Power into flange (dBW/ 4 kHz):	**-23.75**
Antenna mis-point (dB):	0.5
Rain Attenuation (dB):	0
Atmospheric Attenuation (dB):	0.5

Inroute Downlink Interference

Adjacent Channel Downlink (dB):	-30.0
Adjacent Satellite Downlink (dB):	-23.0
Cross-Pol Downlink (dB):	-23.0
Intermod Downlink (dB):	-30.0
Cumulative Interf. Downlink (dB):	**-19.19**

Outroute Uplink Interference

Adjacent Channel Uplink (dB):	-30.0
Adjacent Satellite Uplink (dB):	-30.0
Cross-Pol Uplink (dB):	-30.0
Intermod Uplink (dB):	-30.0
Cumulative Interf. Uplink (dB):	**-23.98**

Outroute Path:	**Ideal Link**	**Mispoint/ Rain/ Atmospheric Losses**	**Ideal w/ Satellite/ Cross-pol Interference**	**Mispoint / Intermod/ Satellite/ Cross-pol Interference**
EIRP towards satellite (dBW)	71.50	70.50	71.50	70.50
Uplink Path Loss (dB)	207.44	207.44	207.44	207.44
Spreading Loss (dB)	-162.99	-162.99	-162.99	-162.99
Flux Density at Satellite (dBW/m^2)	-91.49	-92.49	-91.49	-92.49
Uplink C/T (dB)	-122.94	-123.94	-122.94	-123.94
C/No (dB)	105.66	104.66	105.66	104.66
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	N/A	N/A	-23.98	-23.98
Uplink C/N (dB)	**30.89**	**29.89**	**23.17**	**22.99**
Satellite downlink EIRP (dBW)	49.00	49.00	49.00	49.00
Downlink Path Loss (dB)	205.99	205.99	205.99	205.99
Downlink C/T (dB)	-144.89	-145.39	-144.89	-145.39
C/No (dB)	83.72	83.22	83.72	83.22
Noise BW (dB-Hz)	74.77	74.77	74.77	74.77
Interference (dB)	**N/A**	**N/A**	**-9.78**	**-9.78**
Downlink C/N (dB)	**8.94**	**8.44**	**6.33**	**6.05**
Cumulative C/N (dB)	8.92	8.41	6.24	5.96
Necessary C/N (dB)	5.40	5.40	5.40	5.40
Cumulative Outroute Link Margin (dB)	**3.52**	**3.01**	**0.84**	**0.56**

SES-15 @ 129 W.L. - North America Ku-Band Beam Coverage