

1-Jun-16		256ksps R1/2 HN INROUTE LINK BUDGET						
05:17 PM		Satellite: AMC2 (inclined) 22K IB		0.51m Remote in AMC-2, Phoenix Arizona		7.6m hub in AMC-2, Woodbine, MD		
BASELINE PARAMETERS				S U M M A R Y				
	Value	Unit						
CARRIER DATA	Carrier Info Rate	256	Kbps	% Avail S/C Power Req'd/Crr	2.84 %			
	FEC Code Rate	0.500		% Xponder Bandwidth Req'd/Crr	4.00 %			
	Crr Symbol Rate	256	Ksps	Clear Sky Link Margin	7.8 dB			
	CI Sky Req'd Ebi/No	2.1	dB	Power Equivalent Bandwidth	1.02 MHz			
	No of bits/symbol	2.0	Bits	Contract EIRP at reference contour	31.9 dBW			
	Demod BT Product	1.00		LINK PERFORMANCE				
	Spreading factor			CI Sky	Up Fade	Dn Fade	Unit	
	Spread Bandwidth	1024	kHz	Satellite SFD	-101.5	-101.5	-101.5	dBW/m2
SATELLITE DATA	Crr Spacing Fctr	1.41	x Rs	Agg Input B.O.	8.0	8.0	8.0	dB
	Carrier Spacing	1440	kHz	Input Backoff/Crr	23.5	24.5	23.5	dB
	Satellite	AMC2 (inclined) 22K IB		Crr Flux Density	-125.0	-126.0	-125.0	dBW/m2
	Location	-85.0	WL	Gain of a Sq meter	44.6	44.6	44.6	dBi
	Hub EIRP Contour	49.0	dBW	UPLINK				
	Remote G/T Contour	6.8	dB/K	BUDGET				
	Attn Setting	5.0	dB	Uplink Path Losses	207.4	208.4	207.4	dB
	Xponder Gain	199.1	dB	Carrier Up EIRP	37.8	37.8	37.8	dBW
GROUND SEGMENT DATA	SFD at remote	-101.5	dBW/m2	Satellite G/T	6.8	6.8	6.8	dB/K
	Xponder Bandwidth	36.0	MHz	C/N Uplink	6.7	4.7	5.7	dB
	Agg Input BO	8.0	dB	Saturation EIRP	49.0	49.0	49.0	dBW
	Agg Output BO	4.0	dB	Agg Output B.O.	4.0	4.0	4.0	dB
	Uplink Frequency	14.4310	GHz	Output Backoff/Crr	19.5	20.5	19.5	dB
	Dnlink Frequency	11.8110	GHz	Carrier Dn EIRP	29.5	28.5	29.5	dBW
	Tx Antenna Dia	0.51	meters	Dnlink Path Losses	205.7	205.7	207.4	dB
	HPA Max Output Pwr	24.5	Watts	BUDGET				
SITE GEOGRAPHIC DATA	Tx Antenna Gain	28.9	dBi	Rx Pointing Losses	0.4	0.4	0.4	dB
	Tx Pointing Losses	0.3	dB	CI Sky E/S G/T	35.1	35.1	35.1	dB/K
	Rx Antenna Dia	7.6	meters	Degradation in G/T	0.6	0.6	2.3	dB
	Rx Antenna Effcy	65	%	C/N Downlink	27.4	25.4	23.1	dB
	Rx Antenna Gain	56.9	dBi	C/N Uplink	6.7	4.7	5.7	dB
	Rx Pointing Losses	0.4	dB	C/N Downlink	27.4	25.4	23.1	dB
	Pre LNA Losses	0.2	dB	C/I Intermod (S/C)	38.6	37.6	38.6	dB
	LNA Noise Temp	90	K	C/I Uplink Adj Sat	7.8	6.8	7.8	dB
MARGINS	Ant,etc Temp	45	K	C/I Downlink Adj Sat	29.2	28.2	29.2	dB
	CI Sky Noise Temp	135	K	C/I Xpol	21.4	20.4	26.4	dB
	Uplink Rain Attn	1.0	dB	C/I Adjacent Carrier	17.0	16.0	17.0	dB
	Dnlink Rain Attn	1.7	dB	C/I co-freq beams	97.5	96.5	97.5	dB
	Up Fade Pwr Cntrl	0.0	dB	C/(Nu,d)	6.6	4.6	5.6	dB
	Target Link Availability E-E	97.7	%	C/(Nu,d,ims/c)	6.6	4.6	5.6	dB
	Tx E/S Location	AMC-2, Phoenix Arizona		C/(Nu,d,im,i)Total	3.9	2.3	3.3	dB
	Tx E/S Latitude	39.0	N	LINK MARGIN	7.8	6.2	7.2	dB
ISOLATION DATA	Tx E/S Longitude	-96.0	W	Symbol Rate	256	256	256	ksps
	Tx E/S Elev Angle	43.4	deg	FEC Code Rate	1/2	1/2	1/2	
	Rx E/S Location	AMC-2, Woodbine, MD		MODEM				
	Rx E/S Latitude	39.4	N	Minimum Ebi/No	2.1	2.1	2.1	dB
	Rx E/S Longitude	-77.1	W	10*log(Rbt/Noise BW)	-3.0	-3.0	-3.0	dB
	Rx E/S Elev Angle	43.7	deg	Minimum Req'd C/N	-3.9	-3.9	-3.9	dB
	S/C Isolation	36.0	dB	RF Head Max Output Power	19.5 Watts			
	Tx E/S Isolation	35.0	dB	Misc Feed Losses etc	4.7 dB			
LOSSES	Rx E/S Isolation	26.0	dB	E/S EIRP Req'd twds S/C	dBW			
	Uplink Free Sp Loss	207.1	dB	(Note: req'd to achieve link margin)				
	Dnlink Free Sp Loss	205.4	dB	HPA				
	Uplink Atmos Attn	0.3	dB	Tx Pointing Losses	0.3 dB			
Dnlink Atmos Attn	0.3	dB	Max Clear Sky EIRP towards S/C	37.8 dBW				
			RF Head Output BO (CI Sky)	0.0 dB				
			EIRP Density	13.7 dBW/4Hz				
			Calculated PSD Limit per link budget	-15.2 dBW/4Hz				
			Coordinated PSD Limit	-14.0 dBW/4Hz				

1-Jun-16		1024ksp R1/2 HN INROUTE LINK BUDGET			
05:05 PM		Satellite: AMC2 (inclined) 20K IB			
		0.51m Remote in AMC-2, Phoenix Arizona		7.6m hub in AMC-2, Woodbine, MD	
BASELINE PARAMETERS		Value	Unit	S U M M A R Y	
CARRIER		Carrier Info Rate	1024 Kbps	% Avail S/C Power Reqd/Crr	2.83 %
DATA		FEC Code Rate	0.500	% Xponder Bandwidth Reqd/Crr	4.00 %
		Crr Symbol Rate	1024 Ksps	Clear Sky Link Margin	1.7 dB
		CI Sky Req'd Ebi/No	2.1 dB	Power Equivalent Bandwidth	1.02 MHz
		No of bits/symbol	2.0 Bits	Contract EIRP at reference contour	31.9 dBW
		Demod BT Product	1.00	LINK PERFORMANCE	
		Carrier Bandwidth	1024 kHz	CI Sky	Up Fade
		Crr Spacing Fctr	1.41 x Rs	Dn Fade	Unit
		Carrier Spacing	1440 kHz	Satellite SFD	-101.5
SATELLITE		Satellite	AMC2 (inclined) 20K IB	Agg Input B.O.	8.0
DATA		Location	-85.0 WL	Input Backoff/Crr	23.5
		Hub EIRP Contour	49.0 dBW	Crr Flux Density	-125.0
		Remote G/T Contour	6.8 dB/K	Gain of a Sq meter	44.6
		Attn Setting	5.0 dB	Uplink Path Losses	207.4
		Xponder Gain	199.1 dB	Carrier Up EIRP	37.8
		SFD at remote	-101.5 dBW/m2	Satellite G/T	6.8
		Xponder Bandwidth	36.0 MHz	C/N Uplink	6.7
		Agg Input BO	8.0 dB	Saturation EIRP	49.0
		Agg Output BO	4.0 dB	Agg Output B.O.	4.0
		Uplink Frequency	14.4000 GHz	Output Backoff/Crr	19.5
		Dnlink Frequency	11.7800 GHz	Carrier Dn EIRP	29.5
GROUND		Tx Antenna Dia	0.51 meters	Dnlink Path Losses	205.7
SEGMENT		HPA Max Output Pwr	24.5 Watts	Rx Pointing Losses	0.4
DATA		Tx Antenna Gain	28.9 dBi	CI Sky E/S G/T	35.1
		Tx Pointing Losses	0.3 dB	Degradation in G/T	0.6
		Rx Antenna Dia	7.6 meters	C/N Downlink	27.4
		Rx Antenna Effcy	65 %	C/N Uplink	6.7
		Rx Antenna Gain	56.9 dBi	C/N Downlink	27.4
		Rx Pointing Losses	0.4 dB	C/I Intermod (S/C)	26.5
		Pre LNA Losses	0.2 dB	C/I Uplink Adj Sat	7.8
		LNA Noise Temp	90 K	C/I Downlink Adj Sat	29.1
		Ant,etc Temp	45 K	C/I Xpol	21.4
		CI Sky Noise Temp	135 K	C/I Adjacent Carrier	17.0
		Rx Clr Sky G/T	35.1 dB/K	C/I co-freq beams	97.5
RAIN		Uplink Rain Attn	1.0 dB	C/(Nu,d)	6.6
MARGINS		Dnlink Rain Attn	1.7 dB	C/(Nu,d,ims/c)	6.6
		Up Fade Pwr Cntrl	0.0 dB	C/(Nu,d,im,i)Total	3.8
		Target Link Availability E-E	97.7 %	LINK MARGIN	1.7
SITE		Tx E/S Location	AMC-2, Phoenix Arizona	Symbol Rate	1024
GEOGRAPHIC		Tx E/S Latitude	39.0 N	FEC Code Rate	1/2
DATA		Tx E/S Longitude	-96.0 W	Minimum Ebi/No	2.1
		Tx E/S Elev Angle	43.4 deg	10*log(Rbt/Noise BW)	3.0
		Rx E/S Location	AMC-2, Woodbine, MD	Minimum Req'd C/N	2.1
		Rx E/S Latitude	39.4 N	RF Head Max Output Power	19.5 Watts
		Rx E/S Longitude	-77.1 W	Misc Feed Losses etc	4.7 dB
		Rx E/S Elev Angle	43.7 deg	E/S EIRP Req'd twds S/C	43.3 dBW
XPOL		S/C Isolation	36.0 dB	(Note: req'd to achieve link margin)	
ISOLATION		Tx E/S Isolation	35.0 dB	HPA Tx Pointing Losses	0.3 dB
DATA		Rx E/S Isolation	26.0 dB	Max Clear Sky EIRP towards S/C	37.8 dBW
		Uplink Free Sp Loss	207.1 dB	RF Head Output BO (CI Sky)	0.0 dB
MISC		Dnlink Free Sp Loss	205.4 dB	EIRP Density	13.7 dBW/4Hz
LOSSES		Uplink Atmos Attn	0.3 dB	Calculated PSD Limit per link budget	-15.2 dBW/4Hz
		Dnlink Atmos Attn	0.3 dB	Coordinated PSD Limit	-14.0 dBW/4Hz

1-Jun-16		1024ksp R1/2 HN INROUTE LINK BUDGET			
05:20 PM		Satellite: AMC2 (inclined) 22K IB			
		0.51m Remote in AMC-2, Phoenix Arizona		7.6m hub in AMC-2, Woodbine, MD	
BASELINE PARAMETERS		Value	Unit	S U M M A R Y	
				% Avail S/C Power Req'd/Crr	2.84 %
				% Xponder Bandwidth Req'd/Crr	4.00 %
				Clear Sky Link Margin	1.7 dB
				Power Equivalent Bandwidth	1.02 MHz
				Contract EIRP at reference contour	31.9 dBW
CARRIER		Carrier Info Rate	1024 Kbps	LINK PERFORMANCE	
		FEC Code Rate	0.500	CI Sky	Up Fade
		Crr Symbol Rate	1024 Ksps	Dn Fade	Unit
DATA		CI Sky Req'd Ebi/No	2.1 dB	Satellite SFD	-101.5 -101.5 -101.5 dBW/m2
		No of bits/symbol	2.0 Bits	Agg Input B.O.	8.0 8.0 8.0 dB
		Demod BT Product	1.00	Input Backoff/Crr	23.5 24.5 23.5 dB
		Carrier Bandwidth	1024 kHz	Crr Flux Density	-125.0 -126.0 -125.0 dBW/m2
		Crr Spacing Fctr	1.41 x Rs	Gain of a Sq meter	44.6 44.6 44.6 dBi
		Carrier Spacing	1440 kHz	Uplink Path Losses	207.4 208.4 207.4 dB
SATELLITE		Satellite	AMC2 (inclined) 22K IB	Carrier Up EIRP	37.8 37.8 37.8 dBW
		Location	-85.0 WL	Satellite G/T	6.8 6.8 6.8 dB/K
		Hub EIRP Contour	49.0 dBW	C/N Uplink	6.7 4.7 5.7 dB
		Remote G/T Contour	6.8 dB/K	Saturation EIRP	49.0 49.0 49.0 dBW
		Attn Setting	5.0 dB	Agg Output B.O.	4.0 4.0 4.0 dB
DATA		Xponder Gain	199.1 dB	Output Backoff/Crr	19.5 20.5 19.5 dB
		SFD at remote	-101.5 dBW/m2	Carrier Dn EIRP	29.5 28.5 29.5 dBW
		Xponder Bandwidth	36.0 MHz	Dnlink Path Losses	205.7 205.7 207.4 dB
		Agg Input BO	8.0 dB	Rx Pointing Losses	0.4 0.4 0.4 dB
		Agg Output BO	4.0 dB	CI Sky E/S G/T	35.1 35.1 35.1 dB/K
		Uplink Frequency	14.4310 GHz	Degradation in G/T	0.6 0.6 2.3 dB
		Dnlink Frequency	11.8110 GHz	C/N Downlink	27.4 25.4 23.1 dB
GROUND		Tx Antenna Dia	0.51 meters	C/N Uplink	6.7 4.7 5.7 dB
		HPA Max Output Pwr	24.5 Watts	C/N Downlink	27.4 25.4 23.1 dB
		Tx Antenna Gain	28.9 dBi	C/I Intermod (S/C)	26.5 25.5 26.5 dB
		Tx Pointing Losses	0.3 dB	C/I Uplink Adj Sat	7.8 6.8 7.8 dB
SEGMENT		Rx Antenna Dia	7.6 meters	C/I Downlink Adj Sat	29.2 28.2 29.2 dB
		Rx Antenna Effcy	65 %	C/I Xpol	21.4 20.4 20.4 dB
DATA		Rx Antenna Gain	56.9 dBi	C/I Adjacent Carrier	17.0 16.0 17.0 dB
		Rx Pointing Losses	0.4 dB	C/I co-freq beams	97.5 96.5 97.5 dB
		Pre LNA Losses	0.2 dB	C/(Nu,d)	6.6 4.6 5.6 dB
		LNA Noise Temp	90 K	C/(Nu,d,ims/c)	6.6 4.6 5.6 dB
		Ant,etc Temp	45 K	C/(Nu,d,im,i)Total	3.8 2.3 3.2 dB
		CI Sky Noise Temp	135 K	LINK MARGIN	1.7 0.2 1.1 dB
		Rx Clr Sky G/T	35.1 dB/K	Symbol Rate	1024 1024 1024 ksp/s
RAIN		Uplink Rain Attn	1.0 dB	FEC Code Rate	1/2 1/2 1/2
		Dnlink Rain Attn	1.7 dB	Minimum Ebi/No	2.1 2.1 2.1 dB
MARGINS		Up Fade Pwr Cntrl	0.0 dB	10*log(Rbt/Noise BW)	3.0 3.0 3.0 dB
		Target Link Availability E-E	97.7 %	Minimum Req'd C/N	2.1 2.1 2.1 dB
SITE		Tx E/S Location	AMC-2, Phoenix Arizona	RF Head Max Output Power	19.5 Watts
		Tx E/S Latitude	39.0 N	Misc Feed Losses etc	4.7 dB
GEOGRAPHIC		Tx E/S Longitude	-96.0 W	E/S EIRP Req'd twds S/C	dBW
DATA		Tx E/S Elev Angle	43.4 deg	(Note: req'd to achieve link margin)	
		Rx E/S Location	AMC-2, Woodbine, MD	Tx Pointing Losses	0.3 dB
		Rx E/S Latitude	39.4 N	Max Clear Sky EIRP towards S/C	37.8 dBW
		Rx E/S Longitude	-77.1 W	RF Head Output BO (CI Sky)	0.0 dB
		Rx E/S Elev Angle	43.7 deg	EIRP Density	13.7 dBW/4Hz
ISOLATION		S/C Isolation	36.0 dB	Calculated PSD Limit per link budget	-15.2 dBW/4Hz
		Tx E/S Isolation	35.0 dB	Coordinated PSD Limit	-14.0 dBW/4Hz
DATA		Rx E/S Isolation	26.0 dB		
MISC		Uplink Free Sp Loss	207.1 dB		
		Dnlink Free Sp Loss	205.4 dB		
LOSSES		Uplink Atmos Attn	0.3 dB		
		Dnlink Atmos Attn	0.3 dB		

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HughesNet LINK BUDGET

5:13 PM

Satellite: AMC2 (inclined) 8K
 0.51 m Remote Located in AMC-2, Phoenix Arizona
 Crr EIRP Density = 12.1 dBW/4 KHz

BASELINE PARAMETERS		Value	Unit	SUMMARY				
				% Avail S/C Power Req'd/Crr	100.0 %			
				% Xponder Bandwidth Req'd/Crr	100.0 %			
				Clear Sky Link Margin	2.4 dB			
				Power Equivalent Bandwidth	36.0 MHz			
				EIRP at 51.4 dBW reference contour	50.9 dBW			
				LINK PERFORMANCE				
	CARRIER	Carrier Info Rate	21450 Kbps	CI Sky	Up Fade	Dn Fade	Unit	
		Net FEC Code Rate	0.500					
		Transmit Symbol Rate	30000 Ksps					
		CI Sky Req'd Es/No	1.3 dB					
	DATA	No of bits/symbol	2.0 Bits	Satellite SFD	-92.2	-92.2	-92.2 dBW/m2	
		Demod BT Product	1.00	Agg Input B.O.	3.0	3.0	3.0 dB	
		Crr Noise Bandwidth	30000 KHz	Input Backoff/Crr	3.0	3.0	3.0 dB	
		Carrier Spacing	36000 KHz	Crr Flux Density	-95.2	-95.2	-95.2 dBW/m2	
	SATELLITE	Satellite	AMC2 (inclined) 8K	UPLINK	Gain of a Sq meter	44.5	44.5	44.5 dBi
		Location	-85.0 WL	BUDGET	Uplink Path Losses	207.4	212.4	207.4 dB
		EIRP Contour at Remote	50.1 dBW		Carrier Up EIRP	67.1	72.1	67.1 dBW
		G/T Contour at Hub	5.0 dB/K		Satellite G/T	5.0	5.0	5.0 dB/K
		Attn Setting	9.0 dB		C/N Uplink	18.6	18.6	18.6 dB
		Xponder Gain	189.3 dB		EIRP Contour	50.1	50.1	50.1 dBW
	DATA	SFD at Hub	-92.2 dBW/m2		Agg Output B.O.	0.5	0.5	0.5 dB
		Xponder Bandwidth	36.0 MHz		Output Backoff/Crr	0.5	0.5	0.5 dB
		Agg Input BO	3.0 dB		Carrier Dn EIRP	49.6	49.6	49.6 dBW
		Agg Output BO	0.5 dB	DOWNLINK	Dnlink Path Losses	205.7	205.7	206.1 dB
		Uplink Frequency	14.160 GHz	BUDGET	Rx Pointing Losses	0.2	0.2	0.2 dB
		Dnlink Frequency	11.860 GHz		CI Sky E/S G/T	9.6	9.6	9.6 dB/K
					Degradation in G/T	0.8	0.8	1.2 dB
					C/N Downlink	6.4	6.4	5.6 dB
	GROUND	Tx Antenna Dia	7.6 meters		C/N Uplink	18.6	18.6	18.6 dB
		HPA Max Output Pwr	150.0 Watts		C/N Downlink	6.4	6.4	5.6 dB
		Waveguide Losses	2.0 dB		C/I Intermod (S/C)	99.0	99.0	99.0 dB
		Tx Antenna Gain	59.2 dBi		C/I Uplink Adj Sat	17.6	17.6	17.6 dB
		Tx Pointing Losses	0.6 dB	COMPOSITE	C/I Dnlink Adj Sat	8.1	8.1	8.1 dB
		Max EIRP Toward S/C	78.4 dB	LINK	C/I Xpol	18.4	18.2	18.4 dB
	SEGMENT	Rx Antenna Dia	0.51 meters		C/I Intermod (E/S)	28.0	18.0	28.0 dB
	DATA				C/(Nu,d)	6.2	6.2	5.3 dB
		Rx Antenna Gain	28.6 dBi		C/(Nu,d,ims/c)	6.2	6.2	5.3 dB
		Rx Pointing Losses	0.2 dB		C/(Nu,d,im,i)Total	3.7	3.5	3.2 dB
		Pre LNA Losses	0.1 dB		LINK MARGIN	2.4	2.2	1.9 dB
		LNA Noise Temp	43 K		Modulation	QPSK	QPSK	QPSK
		Ant,etc Temp	28 K		FEC Rate	1/2	1/2	1/2
		CI Sky Noise Temp	71 K		Minimum Req'd Ebi/No	1.3	1.3	1.3 dB
		Rx Crr Sky G/T	9.6 dB/K	MODEM	10*log(Rbt/Noise BW)	3.0	3.0	3.0 dB
	RAIN	Uplink Rain Attn	5.0 dB		Minimum Req'd C/N	1.3	1.3	1.3 dB
		Dnlink Rain Attn	0.4 dB		E/S EIRP/Crr Req'd (CI Sky)	67.1 dBW		
	MARGINS	Up Fade Pwr Cntrl	5.0 dB		Tx Gain - Pointing Loss	58.6 dB		
		Target Link Availability E-E	97.71 %		Waveguide Losses	2.0 dB		
					Tx Power Req'd/Cxr (clear sky)	10.5 dBW		
	SITE	Tx E/S Location	AMC-2, Woodbine, MD		HPA	11.2 watts		
		Tx E/S Latitude	39.4 N		Uplink Power Control	5.0 dB		
		Tx E/S Longitude	-77.1 W		TX Power Req'd/Cxr (full UPC)	15.5 dBW		
	GEOGRAPHIC	Tx E/S Elev Angle	44 deg			35.4 watts		
	DATA				Dnlink EIRP Dens @ Beam Peak (51.4 dBW)	12.1 dBW/4KHz		
		Rx E/S Location	AMC-2, Phoenix Arizona					
		Rx E/S Latitude	39.0 N					
		Rx E/S Longitude	-96.0 W					
		Rx E/S Elev Angle	43.4 deg					
	ISOLATION	S/C Isolation	36.0 dB					
	DATA	Tx E/S Isolation	35.0 dB					
		Rx E/S Isolation	20.0 dB					
	MISC	Uplink Free Sp Loss	207.0 dB					
	LOSSES	Dnlink Free Sp Loss	205.4 dB					
		Uplink Atmos Attn	0.4 dB					
		Dnlink Atmos Attn	0.2 dB					

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HughesNet LINK BUDGET

5:10 PM

Satellite: AMC2 (inclined) 12K
 0.51 m Remote Located in AMC-2, Phoenix Arizona
 Crr EIRP Density = 12.1 dBW/4 KHz

BASELINE PARAMETERS		Value	Unit	SUMMARY			
				% Avail S/C Power Reqd/Crr	100.0 %		
				% Xponder Bandwidth Reqd/Crr	100.0 %		
				Clear Sky Link Margin	1.8 dB		
				Power Equivalent Bandwidth	36.0 MHz		
				EIRP at 51.4 dBW reference contour	50.9 dBW		
				LINK PERFORMANCE			
	CARRIER	Carrier Info Rate	21450 Kbps	CI Sky	Up Fade	Dn Fade	Unit
		Net FEC Code Rate	0.500				
		Transmit Symbol Rate	30000 Ksps				
		CI Sky Req'd Es/No	1.3 dB				
	DATA	No of bits/symbol	2.0 Bits	Satellite SFD	-96.7	-96.7	-96.7 dBW/m2
		Demod BT Product	1.00	Agg Input B.O.	3.0	3.0	3.0 dB
		Crr Noise Bandwidth	30000 KHz	Input Backoff/Crr	3.0	3.0	3.0 dB
		Carrier Spacing	36000 KHz	Crr Flux Density	-99.7	-99.7	-99.7 dBW/m2
	SATELLITE	Satellite	AMC2 (inclined) 12K	UPLINK	Gain of a Sq meter	44.5	44.5 44.5 dBi
		Location	-85.0 WL	BUDGET	Uplink Path Losses	207.4	212.4 207.4 dB
		EIRP Contour at Remote	50.1 dBW		Carrier Up EIRP	62.6	67.6 62.6 dBW
		G/T Contour at Hub	5.0 dB/K		Satellite G/T	5.0	5.0 5.0 dB/K
		Attn Setting	9.0 dB		C/N Uplink	14.0	14.0 14.0 dB
		Xponder Gain	193.8 dB		EIRP Contour	50.1	50.1 50.1 dBW
	DATA	SFD at Hub	-96.7 dBW/m2		Agg Output B.O.	0.5	0.5 0.5 dB
		Xponder Bandwidth	36.0 MHz		Output Backoff/Crr	0.5	0.5 0.5 dB
		Agg Input BO	3.0 dB		Carrier Dn EIRP	49.6	49.6 49.6 dBW
		Agg Output BO	0.5 dB	DOWNLINK	Dnlink Path Losses	205.7	205.7 206.1 dB
		Uplink Frequency	14.240 GHz	BUDGET	Rx Pointing Losses	0.2	0.2 0.2 dB
		Dnlink Frequency	11.940 GHz		CI Sky E/S G/T	9.7	9.7 9.7 dB/K
					Degradation in G/T	0.8	0.8 1.2 dB
					C/N Downlink	6.4	6.4 5.5 dB
	GROUND	Tx Antenna Dia	7.6 meters		C/N Uplink	14.0	14.0 14.0 dB
		HPA Max Output Pwr	150.0 Watts		C/N Downlink	6.4	6.4 5.5 dB
		Waveguide Losses	2.0 dB		C/I Intermod (S/C)	99.0	99.0 99.0 dB
		Tx Antenna Gain	59.3 dBi		C/I Uplink Adj Sat	13.1	13.1 13.1 dB
		Tx Pointing Losses	0.6 dB		C/I Dnlink Adj Sat	8.2	8.2 8.2 dB
		Max EIRP Toward S/C	78.5 dB		C/I Xpol	18.4	18.2 18.4 dB
	SEGMENT	Rx Antenna Dia	0.51 meters		C/I Intermod (E/S)	28.0	18.0 28.0 dB
	DATA				C/(Nu,d)	5.7	5.7 5.0 dB
		Rx Antenna Gain	28.6 dBi		C/(Nu,d,ims/c)	5.7	5.7 5.0 dB
		Rx Pointing Losses	0.2 dB		C/(Nu,d,im,i)Total	3.1	3.0 2.7 dB
		Pre LNA Losses	0.1 dB		LINK MARGIN	1.8	1.7 1.4 dB
		LNA Noise Temp	43 K		Modulation	QPSK	QPSK QPSK
		Ant,etc Temp	28 K		FEC Rate	1/2	1/2 1/2
		CI Sky Noise Temp	71 K		Minimum Req'd Ebi/No	1.3	1.3 1.3 dB
		Rx Clr Sky G/T	9.7 dB/K	MODEM	10*log(Rbt/Noise BW)	3.0	3.0 3.0 dB
					Minimum Req'd C/N	1.3	1.3 1.3 dB
	RAIN	Uplink Rain Attn	5.0 dB		E/S EIRP/Crr Req'd (CI Sky)	62.6 dBW	
		Dnlink Rain Attn	0.4 dB		Tx Gain - Pointing Loss	58.7 dB	
	MARGINS	Up Fade Pwr Cntrl	5.0 dB		Waveguide Losses	2.0 dB	
		Target Link Availability E-E	97.71 %		Tx Power Req'd/Cxr (clear sky)	5.9 dBW	
					HPA	3.9 watts	
					Uplink Power Control	5.0 dB	
					TX Power Req'd/Cxr (full UPC)	10.9 dBW	
						12.4 watts	
	SITE	Tx E/S Location	AMC-2, Woodbine, MD		Dnlink EIRP Dens @ Beam Peak (51.4 dBW)	12.1 dBW/4KHz	
		Tx E/S Latitude	39.4 N				
		Tx E/S Longitude	-77.1 W				
	GEOGRAPHIC	Tx E/S Elev Angle	44 deg				
	DATA						
		Rx E/S Location	AMC-2, Phoenix Arizona				
		Rx E/S Latitude	39.0 N				
		Rx E/S Longitude	-96.0 W				
		Rx E/S Elev Angle	43.4 deg				
	ISOLATION	S/C Isolation	36.0 dB				
		Tx E/S Isolation	35.0 dB				
	DATA	Rx E/S Isolation	20.0 dB				
	MISC	Uplink Free Sp Loss	207.0 dB				
		Dnlink Free Sp Loss	205.5 dB				
	LOSSES	Uplink Atmos Attn	0.4 dB				
		Dnlink Atmos Attn	0.2 dB				

6/1/2016

HughesNet LINK BUDGET

5:11 PM

Satellite: AMC2 (inclined) 10K
 0.51 m Remote Located in AMC-2, Phoenix Arizona
 Crr EIRP Density = 12.1 dBW/4 KHz

BASELINE PARAMETERS		Value	Unit	SUMMARY					
				% Avail S/C Power Req'd/Crr			100.0	%	
				% Xponder Bandwidth Req'd/Crr			100.0	%	
				Clear Sky Link Margin			1.8	dB	
				Power Equivalent Bandwidth			36.0	MHz	
				EIRP at 51.4 dBW reference contour			50.9	dBW	
				LINK PERFORMANCE		Cl Sky	Up Fade	Dn Fade	Unit
CARRIER	Carrier Info Rate	21450	Kbps	Satellite SFD	-96.6	-96.6	-96.6	dBW/m2	
	Net FEC Code Rate	0.500		Agg Input B.O.	3.0	3.0	3.0	dB	
	Transmit Symbol Rate	30000	Ksps	Input Backoff/Crr	3.0	3.0	3.0	dB	
	CI Sky Req'd Es/No	1.3	dB	Crr Flux Density	-99.6	-99.6	-99.6	dBW/m2	
DATA	No of bits/symbol	2.0	Bits	UPLINK					
	Demod BT Product	1.00		BUDGET					
	Crr Noise Bandwidth	30000	KHz	Gain of a Sq meter	44.5	44.5	44.5	dBi	
	Carrier Spacing	36000	KHz	Uplink Path Losses	207.4	212.4	207.4	dB	
SATELLITE	Satellite	AMC2 (inclined) 10K			Carrier Up EIRP	62.7	67.7	62.7	dBW
	Location	-85.0 WL			Satellite G/T	5.0	5.0	5.0	dB/K
	EIRP Contour at Remote	50.1 dBW			C/N Uplink	14.1	14.1	14.1	dB
	G/T Contour at Hub	5.0 dB/K			DOWNLINK				
	Attn Setting	9.0 dB			BUDGET				
	Xponder Gain	193.7 dB			EIRP Contour	50.1	50.1	50.1	dBW
	SFD at Hub	-96.6 dBW/m2			Agg Output B.O.	0.5	0.5	0.5	dB
	Xponder Bandwidth	36.0 MHz			Output Backoff/Crr	0.5	0.5	0.5	dB
	Agg Input BO	3.0 dB			Carrier Dn EIRP	49.6	49.6	49.6	dBW
	Agg Output BO	0.5 dB			Dnlink Path Losses	205.7	205.7	206.1	dB
GROUND SEGMENT	Uplink Frequency	14.218 GHz			Rx Pointing Losses	0.2	0.2	0.2	dB
	Dnlink Frequency	11.882 GHz			CI Sky E/S G/T	9.6	9.6	9.6	dB/K
	Tx Antenna Dia	7.6 meters			Degradation in G/T	0.8	0.8	1.2	dB
	HPA Max Output Pwr	150.0 Watts			C/N Downlink	6.4	6.4	5.5	dB
	Waveguide Losses	2.0 dB			COMPOSITE				
	Tx Antenna Gain	59.3 dBi			LINK				
	Tx Pointing Losses	0.6 dB			C/N Uplink	14.1	14.1	14.1	dB
	Max EIRP Toward S/C	78.4 dB			C/N Downlink	6.4	6.4	5.5	dB
	Rx Antenna Dia	0.51 meters			C/I Intermod (S/C)	99.0	99.0	99.0	dB
	Rx Antenna Gain	28.6 dBi			C/I Uplink Adj Sat	13.2	13.2	13.2	dB
RAIN MARGINS	Rx Pointing Losses	0.2 dB			C/I Dnlink Adj Sat	8.1	8.1	8.1	dB
	Pre LNA Losses	0.1 dB			C/I Xpol	18.4	18.2	18.4	dB
	LNA Noise Temp	43 K			C/I Intermod (E/S)	28.0	18.0	28.0	dB
	Ant,etc Temp	28 K			C/(Nu,d)	5.7	5.7	5.0	dB
	CI Sky Noise Temp	71 K			C/(Nu,d,ims/c)	5.7	5.7	5.0	dB
	Rx Clr Sky G/T	9.6 dB/K			C/(Nu,d,im,i)Total	3.1	3.0	2.7	dB
	Uplink Rain Attn	5.0 dB			LINK MARGIN	1.8	1.7	1.4	dB
	Dnlink Rain Attn	0.4 dB			Modulation	QPSK	QPSK	QPSK	
	Up Fade Pwr Cntrl	5.0 dB			FEC Rate	1/2	1/2	1/2	
	Target Link Availability E-E	97.71 %			Minimum Req'd Ebi/No	1.3	1.3	1.3	dB
SITE GEOGRAPHIC DATA	Tx E/S Location	AMC-2, Woodbine, MD			MODEM				
	Tx E/S Latitude	39.4 N			10*log(Rbt/Noise BW)	3.0	3.0	3.0	dB
	Tx E/S Longitude	-77.1 W			Minimum Req'd C/N	1.3	1.3	1.3	dB
	Tx E/S Elev Angle	44 deg			E/S EIRP/Crr Req'd (Cl Sky)			62.7 dBW	
	Rx E/S Location	AMC-2, Phoenix Arizona			Tx Gain - Pointing Loss			58.7 dB	
ISOLATION DATA	Rx E/S Latitude	39.0 N			EARTH STATION				
	Rx E/S Longitude	-96.0 W			Waveguide Losses			2.0 dB	
	Rx E/S Elev Angle	43.4 deg			Tx Power Req'd/Cxr (clear sky)			6.0 dBW	
	S/C Isolation	36.0 dB			HPA			4.0 watts	
	Tx E/S Isolation	35.0 dB			Uplink Power Control			5.0 dB	
MISC LOSSES	Rx E/S Isolation	20.0 dB			TX Power Req'd/Cxr (full UPC)			11.0 dBW	
	Uplink Free Sp Loss	207.0 dB						12.7 watts	
	Dnlink Free Sp Loss	205.4 dB			Dnlink EIRP Dens @ Beam Peak (51.4 dBW)			12.1 dBW/4KHz	
	Uplink Atmos Attn	0.4 dB							
	Dnlink Atmos Attn	0.2 dB							