

Distance From Earth To Satellite: (m)	449373800
Distance From Telescope to Satellite: (m)	6.15E+07
Boltzmann's Constant:	1.3806503E-23

Telescope to Satellite Link:

Modulation Scheme	$\pi/4$ QPSK
Pulse Shape:	Raised Cosine
Carrier Frequency: (Hz)	3.01750000E+10
Wavelength: (m)	9.94200497E-03
Bandwidth: (Hz)	5.00E+08
Information Rate: (bps)	2.40E+08
Bit Rate: (bps)	4.80E+08
Symbol Rate: (bps)	2.40E+08

Satellite Antenna D: (m)	0.5
Satellite Antenna Aem: (m ²)	0.196349541
Satellite Antenna Aperture Efficiency:	0.7
Satellite Antenna Gain: (Linear)	17473.89985
Satellite Antenna Gain: (dBi)	42.42389842
Satellite Tsys: (K)	303

Telescope Antenna D: (m)	300
Telescope Antenna Aem: (m ²)	70685.83472
Telescope Antenna Aperture Efficiency:	0.9
Telescope Antenna Gain: (Linear)	8.08791936E+09
Telescope Antenna Gain: (dBi)	99.07836812
Telescope Tsys: (K)	20

Noise Power: (W)	2.0916852E-12
Noise Power: (dB)	-116.7950368

Path Loss: (dB)	217.8122201
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Desired C/N: (dB)	1.2
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Required Transmit Power: (dB)	-39.28508323
Required Transmit Power: (W)	0.000117894

Distance From Earth To Satellite: (m)	449373800
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Satellite to DSN Link:

Modulation Scheme	$\pi/4$ QPSK
Pulse Shape:	Raised Cosine
Carrier Frequency: (Hz)	2.81750000E+10
Wavelength: (m)	1.06477374E-02
Bandwidth: (Hz)	5.00E+08
Information Rate: (bps)	2.40E+08
Bit Rate: (bps)	4.80E+08
Symbol Rate: (bps)	2.40E+08

Satellite Antenna D: (m)	0.5
Satellite Antenna Aem: (m ²)	0.196349541
Satellite Antenna Aperture Efficiency:	0.7
Satellite Antenna Gain: (Linear)	15234.32212
Satellite Antenna Gain: (dBi)	41.82823134
Satellite Tsys: (K)	303

DSN Antenna D: (m)	34
DSN Antenna Aem: (m ²)	907.920277
DSN Antenna Aperture Efficiency:	0.41
DSN Antenna Gain: (Linear)	4.12597675E+07
DSN Antenna Gain: (dBi)	76.15526776
DSN Tsys: (K)	28.8

Noise Power: (W)	1.9881364E-13
Noise Power: (dB)	-127.0155382

Path Loss: (dB)	234.4912056
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Desired C/N: (dB)	1.2
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Required Transmit Power: (dB)	-9.307831626
Required Transmit Power: (W)	0.117278077

Distance From Earth To Satellite: (m)	449373800
Distance From Telescope to Satellite: (m)	6.15E+07
Boltzmann's Constant:	1.3806503E-23

DSN to Satellite Link:

Modulation Scheme	$\pi/4$ QPSK
Pulse Shape:	Raised Cosine
Carrier Frequency: (Hz)	3.41750000E+10
Wavelength: (m)	8.77834674E-03
Bandwidth: (Hz)	5.00E+08
Information Rate: (bps)	2.40E+08
Bit Rate: (bps)	4.80E+08
Symbol Rate: (bps)	2.40E+08

Satellite Antenna D: (m)	0.5
Satellite Antenna Aem: (m ²)	0.196349541
Satellite Antenna Aperture Efficiency:	0.7
Satellite Antenna Gain: (Linear)	22413.63685
Satellite Antenna Gain: (dBi)	43.50512331
Satellite Tsys: (K)	303

DSN Antenna D: (m)	34
DSN Antenna Aem: (m ²)	907.920277
DSN Antenna Aperture Efficiency:	0.41
DSN Antenna Gain: (Linear)	6.07038133E+07
DSN Antenna Gain: (dBi)	77.83215973
DSN Tsys: (K)	28.8

Noise Power: (W)	2.0916852E-12
Noise Power: (dB)	-116.7950368

Path Loss: (dB)	236.1680976
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Desired C/N: (dB)	1.2
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Required Transmit Power: (dB)	-0.764222189
Required Transmit Power: (W)	0.838644264

Distance From Earth To Satellite: (m)	449373800
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Boltzmann's Constant:	1.3806503E-23

Satellite to Telescope Link:

Modulation Scheme	$\pi/4$ QPSK
Pulse Shape:	Raised Cosine
Carrier Frequency: (Hz)	3.21750000E+10
Wavelength: (m)	9.32400932E-03
Bandwidth: (Hz)	5.00E+08
Information Rate: (bps)	2.40E+08
Bit Rate: (bps)	4.80E+08
Symbol Rate: (bps)	2.40E+08

Satellite Antenna D: (m)	0.5
Satellite Antenna Aem: (m ²)	0.196349541
Satellite Antenna Aperture Efficiency:	0.7
Satellite Antenna Gain: (Linear)	19867.00476
Satellite Antenna Gain: (dBi)	42.98132396
Satellite Tsys: (K)	303

Telescope Antenna D: (m)	300
Telescope Antenna Aem: (m ²)	70685.83472
Telescope Antenna Aperture Efficiency:	0.9
Telescope Antenna Gain: (Linear)	9.19558506E+09
Telescope Antenna Gain: (dBi)	99.63579366
Telescope Tsys: (K)	20

Noise Power: (W)	1.3806503E-13
Noise Power: (dB)	-128.5991631

Path Loss: (dB)	218.3696456
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Desired C/N: (dB)	1.2
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Required Transmit Power: (dB)	-51.64663509
Required Transmit Power: (W)	6.84442E-06