

Lunar Distance	1	5	10	15	20	25	30	35	40	45	50	55	60			
Calculated C/N0	38.47	24.49	18.47	14.94	12.44	10.51	8.92	7.58	6.42	5.4	4.49	3.66	2.9			
OOK (threshold = 0.5)																
Noise Amplitude	0.0035	0.017	0.0355	0.055	0.072	0.095	0.11	0.122	0.135	0.1785	0.252	0.282	0.295	0		
Signal Power	-49.89	-49.34	-49.89	-49.34	-49.34	-49.34	-49.34	-49.34	-49.89	-47.69	-46.59	-47.14	-46.59	-49.34		
Noise Power	-88.35	-74.62	-68.02	-64.18	-61.43	-59.23	-58.13	-57.03	-56.48	-53.74	-50.99	-50.44	-49.34	-100.99		
Measured C/N0	38.46	25.28	18.13	14.84	12.09	9.89	8.79	7.69	6.59	6.05	4.4	3.3	2.75	51.65		
Message Received	n	n	n	n	n	n	n	n	n	n	n	n	n	n		
Bits Received	519387	1185914	987723	859857	1016646	1	1	1	1	1	1	1	1	762477		
Bit Errors	0	1396	5426	17740	107757									1		
BER (threshold = 0.0001)	0.001177151126	0.005493443	0.02063133754	0.1059926464	1	1	1	1	1	1	1	1	1	0.000001311514		
Packets Received	1509	3447	2871	2499	2955	1	1	1	1	1	1	1	1	2216		
Erroneous Packets	0	1026	2433	2499	2955									1		
PER	0	0.2976501305	0.8474399164	1	1	0	0	0	0	0	0	0	0	0.000451263537		
Notes	n=4,side1	n=5,side0	n=5,side0	n=6,side1	n=6,side1	Access code not found for any of these, BER = 1								n=0, side0, extra test case, no noise added		
BPSK																
Noise Amplitude	0.011	0.058	0.105	0.17	0.22	0.283	0.34	0.4	0.455	0.545	0.58	0.665	0.74			
Signal Power	-42.2	-41.65	-41.65	-42.2	-42.42	-42.59	-42.55	-42.36	-41.85	-41.2	-41.83	-41.59	-41.11			
Noise Power	-80.66	-66.92	-61.43	-57.58	-54.92	-53.02	-51.05	-49.57	-48.93	-47	-46.44	-45.45	-44.21			
Measured C/N0	38.46	25.27	19.78	15.38	12.5	10.43	8.5	7.21	7.08	5.8	4.61	3.86	3.1			
Message Received	y	y	y	y	y	y	y	y	y	n	n	n				
Bits Received	5011990	4743143	3168017	3993164	2865436	2597693	2352077	3037484	2710841	2514207	2488730	3729884	3550579			
Bit Errors	0	0	0	0	1	2	93	951	4615	16712	25758	79674	127952			
BER	0	0	0	0	0.000000348987	0.000000769913	0.000039539521	0.000313088068	0.001702423713	0.006647026279	0.01034985716	0.02136098603	0.03603693933			
Packets Received	14569	13788	9209	11608	8329	7551	6837	8829	7880	7308	7234	10842	10321			
Erroneous Packets	0	0	0	0	1	2	93	902	3478	6557	7024	10836	10321			
PER	0	0	0	0	0.000120062432	0.000264865580	0.01360245722	0.1021633254	0.4413705584	0.8972359059	0.9709704175	0.9994465966	1			
Notes	side1	side0	side0, aiming mo	side0	side1, surprised t	side0	side1	side0	side0	side1	side1	side1	side1			
OFDM																
Noise Amplitude	0	0.0014	0.0028													
Signal Power	-69.67	-70.77	-71.32													
Noise Power	-103.19	-94.95	-89.45													
Measured C/N0	33.52	24.18	18.13	0	0	0	0	0	0	0	0	0	0			
Message Received	y															
Bits Received	1348104	414144	1	1	1	1	1	1	1	1	1	1	1			
Bit Errors	0	0														
BER	0	0	0	0	0	0	0	0	0	0	0	0	0			
Packets Received	3918	1203	1	1	1	1	1	1	1	1	1	1	1			
Erroneous Packets	0	0														
PER	0	0	0	0	0	0	0	0	0	0	0	0	0			
Notes	surprised by how No output received for noise above .22															
OOK (threshold = 0.216e*(1.46*average))																
Noise Amplitude	0.0035	0.017	0.0355	0.055	0.072	0.095	0.11	0.122	0.135	0.1785	0.252	0.282	0.295	0		
Signal Power	-49.89	-49.34	-49.89	-49.34	-49.34	-49.34	-49.34	-49.34	-49.89	-47.69	46.59	47.14	46.59	-49.34		
Noise Power	-88.35	-74.62	-68.02	-64.18	-61.43	-59.23	-58.13	-57.03	-56.48	-53.74	50.99	50.44	49.34	-100.99		
Measured C/N0	38.46	25.28	18.13	14.84	12.09	9.89	8.79	7.69	6.59	6.05	-4.4	-3.3	-2.75	51.65		
Message Received	y	n	n	n	n	n	n	n	n	n	n	n	y			
Bits Received	519465	1185914	987723	860812	1052767	363745	614112	1	1	1	1	1	1	762477		
Bit Errors	178	110	3950	17249	45639	36264	70588							0		
BER (threshold = 0.000342660237)	0.000092755461	0.003999096913	0.02003805709	0.04335147283	0.09969621576	0.1149432025	1	1	1	1	1	1	1			
Packets Received	1510	3447	2871	2502	3060	1057	1785	1	1	1	1	1	1	2216		
Erroneous Packets	160	106	2121	2501	3060	1057	1785							0		
PER	0.1059602649	0.03075137801	0.7387669801	0.9996003197	1	1	1	0	0	0	0	0	0	0		
Average	0.4978282255	0.506048336	0.5398235746	0.5983790218	0.6751308996	0.8154770175	0.9309441485	1.03959304	1.164508521	1.688569719	2.889140266	3.493488983	3.770086363	0.5020711511		
Median	0.50748634	0.5152766	0.544252	0.59534013	0.66334796	0.79221857	0.8994245	1.0022271	1.1202817	1.6207167	2.7763462	3.358983	3.625017	0.5120931		

**OOK BER**

Legend:

- BER (threshold =  $0.216e^{(1.46 \cdot \text{average})}$ )
- Best BER
- BER (threshold = 0.5)

Lunar Distance (km)	BER (threshold = $0.216e^{(1.46 \cdot \text{average})}$ )	Best BER	BER (threshold = 0.5)
0	0.0003	-	-
5	0.0001	0.0001	0.001
10	0.005	0.004	0.008
15	0.02	0.015	0.03
20	0.1	0.04	0.1
25	0.1	0.08	0.5
30	0.12	0.1	1.0
35	1.0	0.12	1.0
40	1.0	0.15	1.0
45	1.0	1.0	1.0