

		Downlink				Uplink
		FM 9600	FM 1200	CW beacon	Digi-singer	FM command
Beam objective(s)	[-]	Backup FM (mission and satellite off-time housekeeping (OTHK))	Satellite real time HK (RTHK), backup FM (mission and OTHK)	Beacon transmission	Digi-singer data	Command (main)
Type of emission	[-]	F1D	F2D	A1A	F3E	F2D
Orbital altitude	[km]	410	410	410	410	410
Slant range distance at 10 degree	[km]	1473	1473	1473	1473	1473
Transmitting central frequency	[Hz]	437375000	437375000	437375000	437375000	145000000
Bandwidth	[Hz]	2.600.E+04	1.600.E+04	5.000.E+02	1.600.E+04	1.600.E+04
Transmitter output	[W]	0.8	0.8	0.1	0.8	14
Transmitter output	[dBW]	-0.96910013	-0.96910013	-10	-0.96910013	11.46128036
Maximum power density	[dBW/Hz]	-4.512.E+01	-4.301.E+01	-3.699.E+01	-4.301.E+01	-3.058.E+01
Light speed	[m/s]	3.000.E+08	3.000.E+08	3.000.E+08	3.000.E+08	3.000.E+08
Transmission power supply loss	[dB]	1	1	1	1	2.16
Transmitting antenna gain	[dBi]	2.15	2.15	2.15	2.15	18
EIRP transmission	[dBW]	0.18089987	0.18089987	-8.85	0.18089987	27.30128036
Transmitting antenna pointing loss	[dB]	1	1	1	1	1
Free path loss	[dB]	148.6	148.6	148.6	148.6	139.0
Polarization loss	[dB]	3	3	3	3	1
Atmospheric absorption loss	[dB]	0	0	0	0	0
Rain attenuation	[dB]	0	0	0	0	0
Reception power supply loss	[dB]	2.16	2.16	2.16	2.16	1
Receiving antenna pointing loss	[dB]	1	1	1	1	1
Receiver's received power	[dBW]	-1.239.E+02	-1.239.E+02	-1.329.E+02	-1.239.E+02	-1.222.E+02
G/T reception	[dB/K]	-10.93	-10.93	-10.93	-10.93	-30.39
Receiving antenna gain	[dBi]	18	18	18	18	2.15
Demodulator loss	[dB]	1	1	1	1	1
Receiver noise	[dB]	2	2	2	2	2
System noise temperature	[K]	300	300	300	300	900
System noise temperature	[dBK]	24.77	24.77	24.77	24.77	29.54
Sky noise temperature degradation	[dB]	0	0	0	0	0
System required data rate	[bps]	9600	1200	100		1200
Modulation scheme	[-]	GMSK	AFSK	CW	F3E	AFSK
Acceptable BER	[-]	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
Boltzmann constant	[J/K]	1.38E-23	1.38E-23	1.38E-23	1.38E-23	1.38E-23
Boltzmann constant	[dBW/Hz·K]	228.6	228.6	228.6	228.6	228.6
Required Eb/No	[dB]	11.5	11.5	11.5	11.5	11.5
Received C/No	[dBHz]	64.2	64.2	55.2	64.2	83.5
Required C/No	[dBHz]	51.32	42.29	31.50	22.19	42.29
System margin	[dB]	12.9	21.9	23.7	42.0	41.2