

CH-5 (Beacon)

No.	Item	Unit	CH-5 (UHF-Down)	Comment
	Modulation / Format		A1A /Morse	
	Bit rate (BR)	bps	5	
(1)	Transmission frequency	MHz	437	
(2)	Transmission power	dBm	20.0	0.1 W
(2a)	Bandwidth	kHz	0.5	
(2b)	Maximum power density	dBW/Hz	-37.0	= $(2) - [10\log(2b) - 60]$
(3)	Transmitter feeder loss	dB	0.5	
(4)	Transmitter antenna gain	dBi	0.0	
(5)	EIRP	dBm	19.5	= $(2) - (3) + (4)$
(6)	Polarization loss	dB	3.0	
(7)	Communication distance	km	192,200	half of earth-moon distance
(8)	Elevation Angle	deg	5	
(9)	Transmission loss in free space	dB	190.9	= $32.4 + 20\log(f[\text{MHz}]) + 20\log(d[\text{km}])$
(10)	Ionospheric absorption loss	dB	0.5	
(11)	Rainfall loss	dB	0.1	
(12)	Antenna pointing loss	dB	0.2	
(13)	Receiver antenna gain	dBi	20.0	
(14)	Receiver feeder loss	dB	1.0	
(15)	Receiver input signal power	dBm	-155.7	= $(5) - (6) - (9) - (10) - (11) - (12) + (13) - (14)$
(16)	Receiver noise power density	dBm/Hz	-164.8	-123 dBm(Typ)@3kHz
(17)	C/N0 (Expected)	dBHz	16.9	= $(15) - (16) - 10\log_{10}(\text{BW}/3\text{kHz})$
(18)	Loss/gain in mod/demod proc.	dB	0.4	Gain is shown by minus.
(19)	Noise bandwidth	dBHz	7.0	= $10\log(\text{BR})$
(20)	S/N0 (Required)	dB	8.4	BER=1.0E-4
(21)	C/N0	dBHz	15.4	= $(19) + (20)$
(22)	Margin	dB	1.5	= $(17) - (21)$