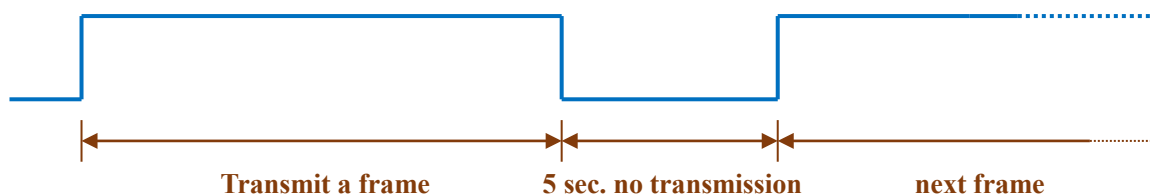


CAS-6 Satellite CW Telemetry Beacon Encoding Format

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1、 Telemetry beacon transmission timing:



2、 Satellite callsign : BJ1SO

3、 Telemetry modulation and encoding:

- (1) Modulation: CW;
- (2) Encoding: Morse Code;
- (3) Transmitting speed: 22wps;
- (4) Numeric telemetry data encoding:

Numeral	Encoding
0	T
1	A
2	U
3	V
4	4
5	E
6	6
7	B
8	D
9	N



4、 Content of a telemetry frame

Transmission Sequence	Content of Transmission	Note	Encoding
1	BJ1SO	Satellite Callsign	Standard Morse Code
2	DFH	Start Identifier	Standard Morse Code
3	CH1	Telemetry Data Channel 1	Encoded Morse Code
4	CH2	Telemetry Data Channel 2	Encoded Morse Code
5	CH3	Telemetry Data Channel 3	Encoded Morse Code
6	CH4	Telemetry Data Channel 4	Encoded Morse Code
7	CH5	Telemetry Data Channel 5	Encoded Morse Code
8	CH6	Telemetry Data Channel 6	Encoded Morse Code
9	CH7	Telemetry Data Channel 7	Encoded Morse Code
10	CH8	Telemetry Data Channel 8	Encoded Morse Code
11	CH9	Telemetry Data Channel 9	Encoded Morse Code
12	CH10	Telemetry Data Channel 10	Encoded Morse Code
13	CH11	Telemetry Data Channel 11	Encoded Morse Code
14	CH12	Telemetry Data Channel 12	Encoded Morse Code
15	CH13	Telemetry Data Channel 13	Encoded Morse Code
16	CH14	Telemetry Data Channel 14	Encoded Morse Code
17	CH15	Telemetry Data Channel 15	Encoded Morse Code
18	CH16	Telemetry Data Channel 16	Encoded Morse Code
19	CH17	Telemetry Data Channel 17	Encoded Morse Code
20	CH18	Telemetry Data Channel 18	Encoded Morse Code
21	CH19	Telemetry Data Channel 19	Encoded Morse Code
22	CAMSAT	Stop Identifier	Standard Morse Code
23	CAMSAT	Stop Identifier	Standard Morse Code

5、Content of telemetry data channel

Channel	Name of Parameter	Type	Data Range		Description and Equation
			N(min)	N(max)	
CH1	Data frame mark	Status	—	—	①
CH2	Current operating mode	Status	000	111	②
CH3	Primary power supply voltage	Data	000	200	/10 (V)
CH4	Primary power supply current	Data	000	500	(mA)
CH5	DC / DC converter output voltage	Data	000	500	(N+256) /100 (V)
CH6	DC / DC converter output current	Data	000	600	N+256 (mA)
CH7	OBC power voltage	Data	000	500	Nx2/100 (V)
CH8	OBC temperature	Data	064	199	N-64 (The last two number) (°C) ④
CH9	RF power amplifier temperature	Data	064	199	(°C) ④
CH10	Receiver AGC voltage	Data	000	500	N/100 (V)
CH11	RF forward power	Data	000	500	(mW)
CH12	RF reflected power	Data	000	500	/10 (mW)
CH13	CPU Reset Counter	Data	00H	FFH	W0 Display in decimal
	Command transmission counter	Data	0H	7H	W1B7~B5 Display in decimal
	CRC check result	Status	0B	1B	W1B4 1: Correct, 0: Error
CH14	Instruction counter 1	Data	000H	FFFH	W1B3~B0W2 Display in decimal
CH15	Instruction counter 2	Data	000H	FFFH	W3W4B7~B4 Display in decimal
CH16	Telemetry frames received counter	Data	0H	FH	W4B3~B0 Display in decimal
	Telemetry frames transmitted counter	Data	00H	FFH	W5 Display in decimal
CH17	Instruction counter 3	Data	000H	FFFH	W6, W7 B7~B4 Display in decimal
CH18	Instruction counter 4	Data	00H	FFH	W7B3~B0,W8B7~B0 Display in decimal
CH19	FLASH successfully configured flag	Status	0B	1B	W9B7 0: Succeed, 1: Failure
	Telemetry data packet counter	Data	0H	7H	W9B6~B4 Display in decimal
	Satellite Number	Status	1	6	W9B3~B0 ③
	Software version number	Status	0	15	W10B7~B4 Display in decimal

Note:

(1) CH1 Data frame mark:

AAA: Telemetry

BBB: FLASH Download Succeed

CCC: FLASH Download Failure

(2) CH2 Current operating mode:

001:Mode 1 (CW Beacon, Transmit Per 6 minutes)

010:Mode 2 (CW Beacon, Continuously)

011:Mode 3 (CW Beacon + Linear Transponder)

100:Mode 4 (CW Beacon + Telemetry)



101:Mode 5 (CW Beacon + Telemetry + Linear Transponder)

110:Mode 6 (Test Mode)

(3) CH19 Satellite Number:

001: CAS-6

010: Reserved

011: Reserved

100: Reserved

101: Reserved

110: Reserved

(4) Temperature:

First character =0, T= -N(Last Two characters)

First character=1, T= +N(Last Two characters)

(5) Example: W3W4B7~B4 =

bit7(Word3) bit6(Word3) bit5(Word3) bit4(Word3) bit3(Word3) bit2(Word3) bit1(Word3) bit0(Word3) bit7(Word4) bit6(Word4) bit5(Word4) bit4(Word4)