

RF Protocol

This protocol is using Pulse Width modulation to encode a bit.

Bit Length = 7.8125 ms		
	Pulse Width	Waveform
Logic 0	1.95 ms	
Logic 1	5.98 ms	

There will be three sets of data frame to be transmitted. Between two data frames, there is a 23.4375ms space with no signal. Before transmitting the first data frame, the transmitter will be turn on for about 50ms. Each data frame includes sync bit, start bit, channel ID, encoded temperature, a fixed value, battery status, miscellaneous bit and check code.

Item	Bit	Description
1. Sync bit	11	00000000000b for 1st frame
	7	0000000b for 2nd frame
	7	0000000b for 3rd frame
2. Start bit	1	1b
3. Channel ID	3	Channel 1 / 2 / 3 = 001b / 000b / 010b.
4. Encoded temperature	11	Add 50.0 in BCD form. Then convert to HEX form.
5. Fixed value	7	32h
6. Battery status	1	1b for low battery. 0b for normal
7. Misc. bit	2	01b
8. Check code	4	CRC calculated from channel ID to misc. bit with P(x) = 11001b

Duty Cycle

$$\begin{aligned}
 &= [7(5.98) + 5(1.95) + 4.4175] / 100 \\
 &= [41.86 + 9.75 + 4.4175] / 100 \\
 &= 56.0275 / 100 \\
 &= \underline{0.56}
 \end{aligned}$$

Average Factor

$$\begin{aligned}
 &= 20 \log (0.56) \\
 &= \underline{-5.0dB}
 \end{aligned}$$

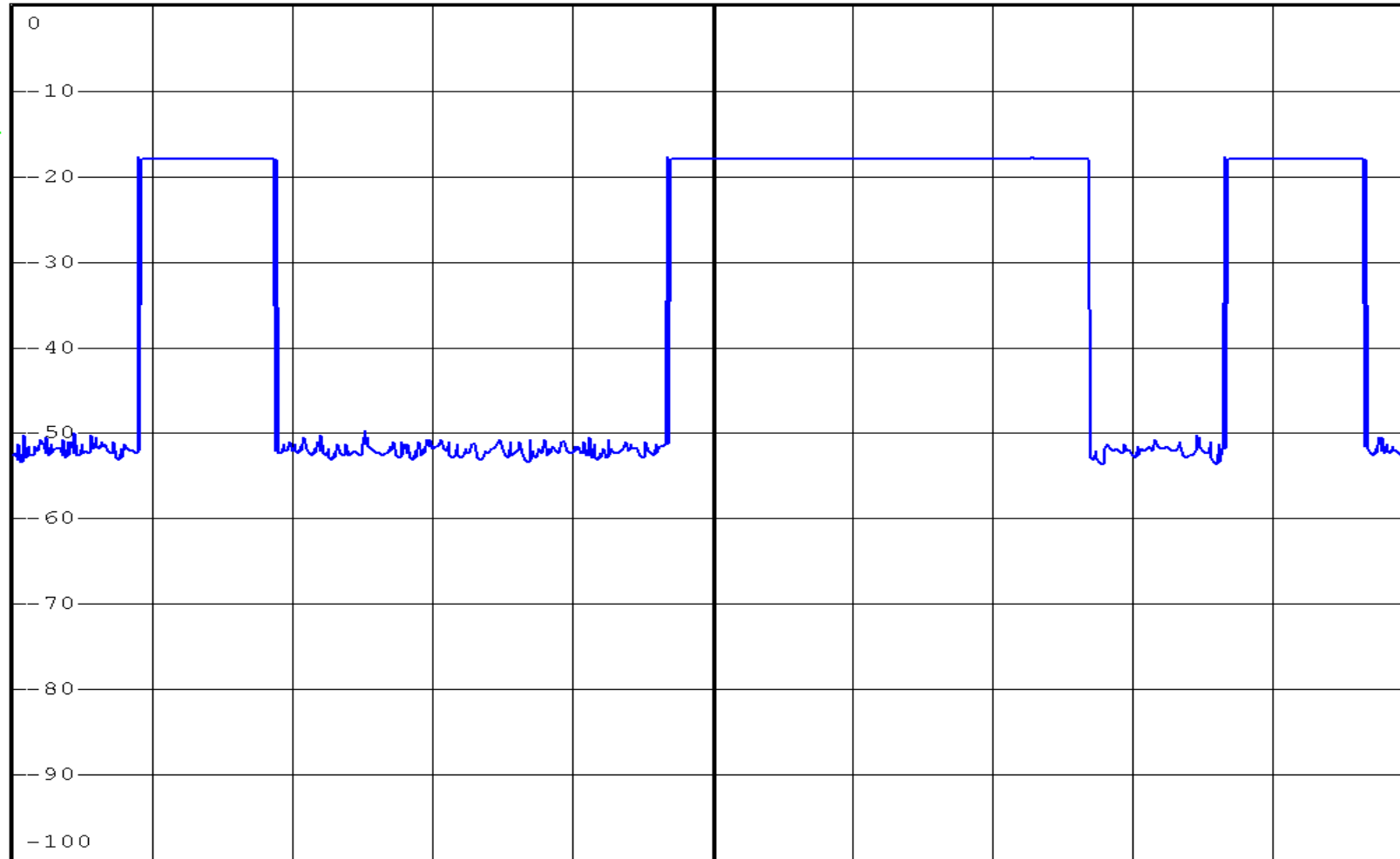


RBW 3 MHz
VBW 10 MHz
SWT 20 ms

Ref 0 dBm Att 30 dB

1 PK *
CLRWR

✱
A
SGL



Center 434.024 MHz

2 ms/



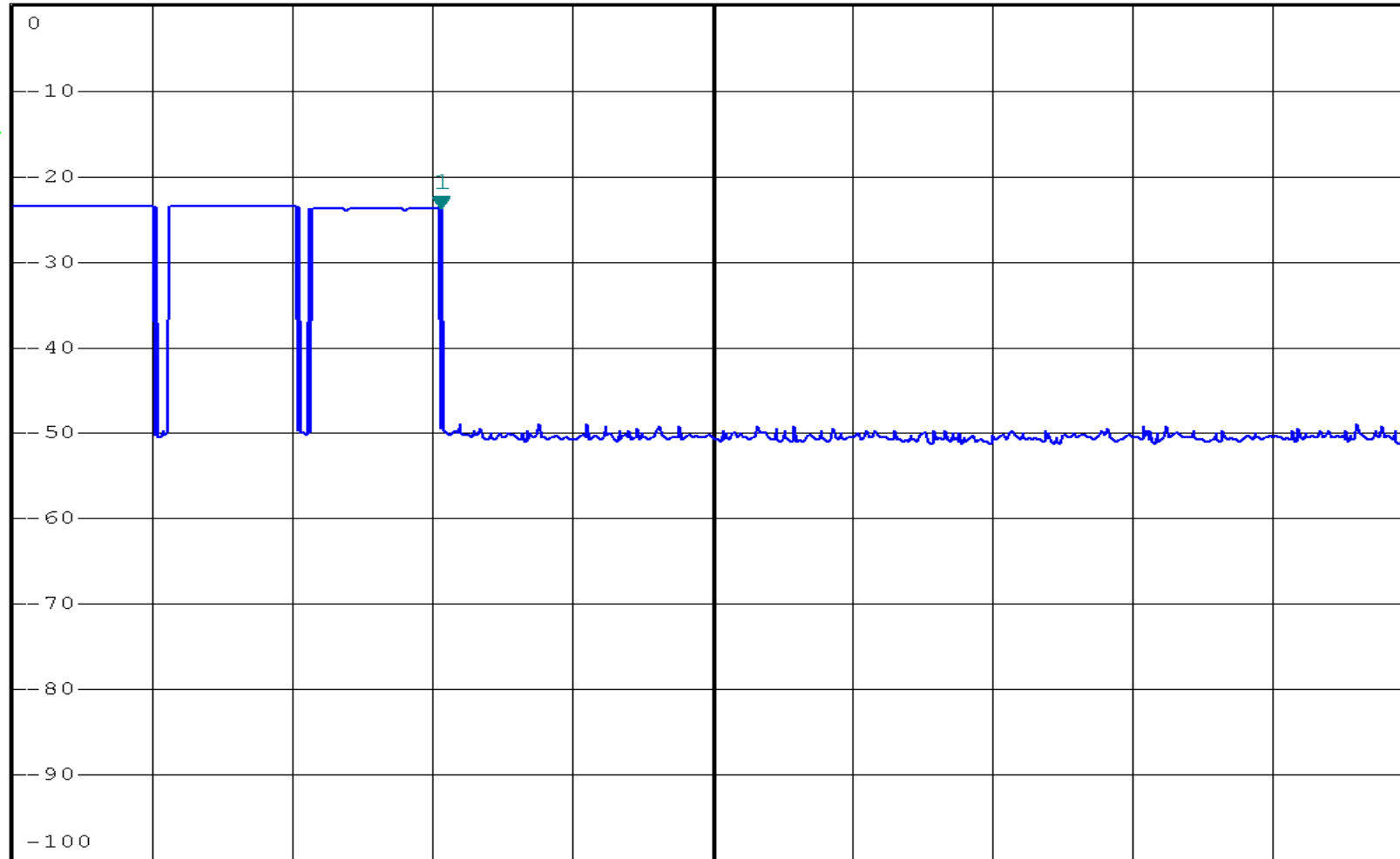
RBW 3 MHz Marker 1 [T1]
 VBW 10 MHz -23.76 dBm
 SWT 3 s 918.000000 ms

Ref 0 dBm

Att 30 dB

1 PK *
 CLRWR

★
 A
 SGL



Center 434.024 MHz

300 ms/

