



Application Note #5466

Activating Local Statistics Through the Data Port

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Requires firmware version 2.47 or higher.

The FreeWave FGR-series of radios can be made to send a Local Statistics package through it's data port. This packet includes packet receive ratio, noise level, signal level, and antenna reflected power (VSWR).

This information is sent as long as no other data is being sent or received by the data port. The packet is sent once per hop table cycle (Approximately every 2.4 seconds, at the default packet sizes of Max = 8, Min = 9). To activate this feature, set (5) Multipoint Parameters > (B) Diagnostics to a setting of 129.

The packet utilizes 16-bit CRC error-checking. The packet format is as follows:

\$00
\$10
\$00
\$01
\$00
\$02
\$04
Receive Ratio (Number of successfully received packets out of hop table size)
Noise level (in dBm)
Signal level (in dBm)
VSWR
CRCL
CRCH

The details of the CRC error-checking is as follows:

Type: CRC-16
Polynomial: $x^{16}+x^{15}+x^2+1$
Initial Value: \$FFFF



CRC computational detail:

The CRC is started by first preloading a 16-bit register to all 1's. Then a process begins of applying successive 8-bit bytes of the message to the current contents of the register. Only the eight bits of data in each character are used for generating the CRC. Start and stop bits, and the parity bit, do not apply to the CRC.

During generation of the CRC, each 8-bit character is exclusive ORed with the register contents. Then the result is shifted in the direction of the least significant bit (LSB), with a zero filled into the most significant bit (MSB) position. The LSB is extracted and examined. If the LSB was a 1, the register is then exclusive ORed with a preset, fixed value. If the LSB was a 0, no exclusive OR takes place.

This process is repeated until eight shifts have been performed. After the last (eighth) shift, the next 8-bit byte is exclusive ORed with the register's current value, and the process repeats for eight more shifts as described above.

The final contents of the register, after all the bytes of the message have been applied, is the CRC value.