



Sound Card Packet *with AGWPE*

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Most recent AGWPE version is: [2013.415_15](#) Apr 2013

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Deciphering Packet Frame Headers

AGWPE follows the [AX.25 protocol](#) that is the standard for ham radio packet, however, AGWPE does not use the standard TNC2 packet frame display status protocol, but a more comprehensive custom protocol developed by the program author, George SV2AGW.

If your terminal program (e.g. AGWterm) is set to display packet frame headers, you will see these status indicators and can follow what AGWPE is doing and how it is interacting with another station. This can sometimes be helpful in [diagnosing connection problems](#).

Listed below are the explanations for each type of packet frame header.

Note that within the packets, there may be these additional indicators:

- **PID** is the "protocol identifier". PID=**F0** means the frame contains text -- "**F0**". If the frame contained TCP/IP data, the ID would be "**CC**". Other identifiers are used for NET/ROM , Flexnet, Apple Talk, etc.
- **P** and **F** mean Poll and Final. The P and F "bits" are used to indicate when a reply or ack (acknowledgement) is desired. For example, when the sending station includes a P bit in the packet header, it means "respond immediately to this packet". If the P bit is missing, the destination station will wait for additional

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packets until one appears with the P bit and then acknowledge all of the packets at once. The sending station controls how many packets AGWPE will send without a P bit by setting the MAXframe parameter. For example, if MAXFrame is set to 5, four (4) packets will be sent without the P bit and the fifth will contain the P bit. The destination station will respond to the fifth packet with an ack that includes the F bit to indicate the last number of the packet frame sequence which is received.

All packets frames are identified by number, the first number being 0 (zero) and the last being 7. After 7, the numbering sequence restarts at 0 (zero). The numbering system is used to track packets, so that each receiving station can compare how many packets were sent to it and how many it has received. If a packet is missing, the receiving station will request a re-transmission of numbered packets.

Packet frame headers:

<UI pid=F0 Len=32> - an unconnected frame (e.g. beacon) sent to no station in particular but to everyone, i.e. . The PID is "F0" since it contains simple ASCII text. (UI frames are used in APRS, for example.) Len=32 means the packet contains 32 characters.

<SABM P> - a request from station A to station B for a connection. The P bit is used to request an immediate reply. (Set Asynchronous Balanced Mode)

<UA F > - the reply from station B to station A accepting the connection request. It is also used to accept a disconnection <DISC> request. The F is used to tell station A that all packets were received successfully. (If station B could not accept the request, it would send a DM frame; see below.)

<DM F > - a refusal to accept the original connection request, perhaps because another connection is in progress.

<DISC P> - a request from either station to disconnect from the other. (This is

accepted with a UA frame).

<I P R3 S0 pid=F0 Len=28 > - this is an information (I) packet containing data (text, etc). The P requests an immediate acknowledgment. If the P were absent, then the receiving station would delay its acknowledgement until it received a frame with a P in it. R3 indicates that the station last received the other station's packet #2 and is ready to receive #3. S0 indicates that this packet being sent is # 0 (zero). Len=28 means the packet contains 28 characters.

<RR P/F R1 > - this is a "ready to receive" (RR) packet simply acknowledging receipt of packet #0 and ready to receive #1.

<REJ P/F R1 > - this is reject (REJ) packet meaning that the packet just received was out of sequence or a duplicate or not received accurately; ready to receive packet #1 instead.

The REJ can also be sent by a TNC to indicate its buffer is full and it is not ready to receive (NRN)]. In addition, some AX.25 implementations, e.g. BPQ-DOS node, use a REJ packet instead of P; immediately after the last packet in a sequence (maxframe), a REJ is also sent to force an acknowledgement by the receiving station.

Another frame that is rarely seen is a FRMR (Frame Reject). It would be sent if the packet received had an invalid control field or an illegal data field or a data field that was too long or other problem. In general, you will not see such a frame unless you are writing your own AX.25 code and testing it.

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