# XW-1 Store-forward Transponder User's Manual

**BA1DU Alan Kung**
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## ■ OVERVIEW

XW-1 amateur satellite shared a bandwidth of 16kHz FM analog voice transponder's radio frequency channel with data store-and-forward function. FM voice communications relay accessed by the PL 67Hz tone, data store-and-forward communications system using AFSK modulation, the baseband modem is ITU-T V.23 standard, code rate of 1200bps.

Data communication link layer protocol based on the AX.25, and applications layer protocol used PACSAT with upload and download short messages and documents, the download directory and other functions. Using the WISP MSPE, files can be uploaded via File Transfer Level 0 text files, through the Directory Broadcasting download directory, and via File Broadcasting download the SMS files.

FM/Digital store-forward transponder output power is two Watts, the uplink channel works on 145.825MHz and the downlink channel works on 435.675MHz.

## ■ PHYSICAL LAYER SPECIFICATIONS

| PAYLOAD | MODE | UPLINK （MHz） | DOWNLINK （MHz） | POLARZATION | MODUL | PROTOCOL |
|---|---|---|---|---|---|---|
| FM Voice Repeater | VU (JA) | 145.8250 | 435.6750 | Uplink: LHCP Downlink: RHCP | FM | 67Hz PL |
| Digital store and forward transponder | VU (JD) | 145.8250 | 435.6750 | Uplink: LHCP Downlink: RHCP | AFSK | 1200BPS ITU-T V.23 AX.25 and PACSAT |

## ■ BBS SPECIFICATIONS

| ITEMS | SPECIFICATIONS |
|---|---|
| Broadcast Callsign | BJ1SA-11 |
| BBS Callsign | BJ1SA-12 |
| Baud | Upload and download rate 1.2Kbps |

| Total BBS memory | 128k bytes |
| --- | --- |
| Number of simultaneous users | **Upload:** manxman number of users are three (i.e., allow up to three users to connect to the File Transfer Level 0 system, the first four user's request will be rejected by the system).<br><br>**Download:** does not limit the number of users, include to download directory and file. |
| Massage storage time | Files will be deleted automatically after five days |
| Upload file size | Normal SMS file size limit to no more than 512 bytes (including content of the message and the PACSAT file header, PACSAT file header of about 200 bytes).<br><br>But allows only one user to upload larger than 512 bytes less than 48K of file. (I.e., for 0 to 512 bytes file can be up to three users; for 513 bytes to 48K file only allow one user to upload, and can not be accepted by the BBS if file size is larger than 48K bytes). |

## ■ TNC CONFIGURATIONS

| COMMAND and CONFIGURATION | MEANING |
| --- | --- |
| PACLEN 255 | Configure TNC's manxman packet length as 255. |
| ALFDISP off | Close TNC to automatically add line breaks character (0x0A) in the data frame. |

## ■ WISP SOFTWARE CONFIGURATIONS

| ITEMS | CONFIGURATION |
| --- | --- |
| Broadcast Callsign | BJ1SA-11 |
| BBS Callsign | BJ1SA-12 |
| Serial port data rate between WISP and TNC | Must be faster than 1200Kbps, the proposed 9600bps. |
| Packet Length in WISP TNC Setup | Must be less than TNC default PACLEN, the proposed 200 bytes. |

## ■ TROUBLESHOOTING

| | PROBLEM | SOLUTION |
|---|---|---|
| 1 | Difficult to upload file | 1. If you can not login, check the links are normal.<br><br>2. Check WISP, TNC packet length setting. If the TNC is set packet length is less than WISP setup, the frame might not be upload.<br><br>3. If login takes a long time, and the upload speed is very slow, check the ground equipment of the PL 67Hz tone must be turned off, as well as power, frequency and other parameters |
| 2 | Difficult to download file | Check WISP MSPE if there is any CRC error, if so, probably because ALFDISP the value of On, set the TNC command ALFDISP off, close the TNC automatically add line breaks character. |