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SERVICE:

PCsat N044 and Sapphire N045 provide a worldwide position, status and messaging service for mobile and handheld amateur radio satellite users. Grade of service depends on user adherence to Power levels, transmission Period, and Precedence criteria.

## POLICY STATEMENT:

PCsat (and Sapphire) are open systems in accordance with the ITU regulations for the Amateur Satellite Service. To provide the best overall throughput for the largest collection of users, PCsat and Sapphire digipeaters are protocol driven and require that all users adhere to the fundamental protocol requirements. Users that adhere to these published protocol and operating standards are very welcome.

## AGREEMENTS:

You may use PCsat and Sapphire if you adhere to the following agreements:

- 1) PCsat and Sapphire are for UI digipeating only. No CONNECTIONS either TO or THROUGH these Satellites are authorized.
- 2) Keep informed of the current protocol requirements via the PCsat web page and/or via bulletins in the downlink. As of activation on 3 Oct 2001, the requested routine uplink rate is only 1 routine position/status packet per 2 minutes. One-line messages may be somewhat more frequent in a dialog context. The BText from PCSAT will always announce the authorized routine rate for mobiles using the syntax: "OPS-Normal 2m rate...." etc.
- 3) Understand that the PCsat/Sapphire mission and your objective is to get mobile/HT positions and or status digipeated once or so per pass and to relay a few messages as needed. Share the resource. Minimize your transmissions..
- 4) Sapphire supports UI digipeating as only a secondary mission and should NOT be used if command stations are downloading other data on the channel. Also, Sapphire should not be used for any un-attended operations. Digipeating via Sapphire is only permissible from a manned station that can confirm that the satellite is not otherwise in use.
- 5) The PCsat uplink path can support 4 additional digipeater aliases besides its MYcall. The defaults are RELAY, WIDE, APRSAT and ARISS  
with a MYcall of W3ADO-1. We try to keep the MYCall of PCSAT-1 loaded after all resets, but due the unreliability of keeping PCsat  
in that mode, we also then try to set the UIDigi calls to RELAY, WIDE, ARISS and W3ADO-1, so that users can always use W3ADO-1.

These

then are the UNPROTO paths users might use:

UNPROTO APRS VIA RELAY (For compatibility with ground mobiles)  
UNPROTO APRS VIA WIDE (For compatibility with ground mobiles)  
UNPROTO APRS VIA ARISS (for compatibility with the ISS)

UNPROTO APRS VIA W3ADO-1(The default callsign for PCsat)

UNPROTO APRS VIA KE6QMD (for Sapphrie)

Like the terrestrial network, PCsat does callsign-substitution of its own MYCALL to indicate that it has digipeated the packet. Sapphire does not.

- 6) Use only the authorized power levels, channel and periodicity for your station class and precedence as posted and published below.

STATION CLASS	PWR	BAUD	UPLINK	PERIOD	DIGIPATH	DOWNLINK
Terminal Packet	50W	1200	145.827	5 min	APRSAT	145.827
APRS Base stn	50W	9600	435.250	5 min	APRSAT	145.827
Mobile	50W	9600	435.250	various	APRSAT	145.827
Handi-Talkie	5W	1200	145.827	various	APRSAT	145.827

Due to failure of the -Z solar panel, the UHF receivers are kept off to conserve power. THus the only public uplink on PCsat is 145.828 MHz. The un-published uplink for the 144.39 system is available for anyone with special needs.

Currently it appears that it takes more power than 5 watts to hit Sapphire. UPLINK is 145.945 and downlink is 437.095 +/- Doppler.

- 7) Routine operations after dark via PCsat are not welcome. Do not use PCsat in the dark unless you have a high priority requirement.
- 8) Use the shortest possible packets. Mic-E protocol or APRS compressed is preferred (typically 30 bytes or so). ALSO Use a short TX Delay (TXD) of about 200ms if possible.
- 9) Determine your own precedence based on your current communications requirements for each pass. In general, all use is routine except for special circumstances. Typical Special usage is for demonstrations, and long term events. Priority usage may be for VIP demos or special one-time events. Use good judgment, being fair to all other usrs. To alert other users to your precedence/priority, Set your period and position comment as follows:

STN CLASS	PRECEDENCE	PERIOD	ICON	POSITION COMMENT
Mobile/HT	Emergency	.2 min	any	EMERGENCY
	Priority	.5 min	any	PRIORITY
	Special	1 min	any	Special
	Routine	2 min	any	Off-duty,Enroute,...,etc
Termnl Pkt*	ALL	X * 2	N/A	Short BText
Base Stns	ALL	X * 2	House	Off-Duty
GPS Traker	ALL	X * 2	GPSxyz	N/A

Notice that terminal packet stations, base stations, and NMEA Trackers are requested to minimize QRM by setting their packet rates to the next longer period (twice as long) for any given precedence to account for their longer packets.

SAFE MODE: Whenever PCsat RESETS to "safe mode", we ask that all user

transmissions other than Emergency and Priority traffic cease. SAFE mode can be recognized by an ALL-ON telemetry configuration of 11111111 and the PCSAT-1 callsign changes to W3ADO-1.

If PCsat is in SAFE mode with 11111111 showing, then stop transmitting on the uplinks unless you have emergency or priority traffic. Notice that if you use the recommended Alias UNPROTO Paths of PCSAT-1, RELAY, WIDE, or ARISS then in safe mode, PCsat will automatically ignore your uplink and you are operating in accordance with the recommendations.

Remember, for now, no unattended operations are authorized via Sapphire.  
And no unattended routine operations via PCsat at night.

ACCEPTANCE: