QO-100 Wideband Transponder – 2020 Operating Guidelines and Bandplan

The following updated operating guidelines and bandplan are designed to enable the most efficient use of the QO-100 wideband transponder for all users.

Coordination

Due to the very large number of potential users, all transmitting stations should monitor the wideband spectrum monitor and the co-ordination chat window that has been established by AMSAT-DL and the BATC at https://eshail.batc.org.uk/wb/

Transponder Usage

As a general principle, the transponder should be only be used for short-duration tests and contacts. The only long-duration (more than 10 minute) transmissions should be:
- The TV beacon channel uplinked from Qatar or Bochum.
- Video of the live proceedings of AMSAT and Amateur TV Lectures and Conferences of wide interest. Examples might include:
  o National AMSAT Conferences
  o National Amateur TV Conventions

The following content is unacceptable:
- Recordings of events, or broadcast of events, not explicitly concerned with Amateur Satellites or Amateur TV
- Transmission of any copyright material (such as movies or TV channels)
- Repeated transmission of test videos unless essential for equipment alignment
The relaying of terrestrial Amateur TV Repeaters is discouraged unless the content is of exceptional amateur radio interest.

Transmission Power

All uplink transmissions should use the minimum power possible. QPSK transmissions should have a downlink signal with at least 1 dB lower power density than the Beacon – the web-based spectrum monitor enables users to set their uplink power to achieve this. Transmissions with symbol rates of less than 333 kS using 8PSK, 16 APSK or 32 APSK should use the minimum power density required to achieve successful reception.

Transmission Modes

Transmissions should use DVB-S2 where possible. For normal standard definition transmissions, 2 MS is the maximum symbol rate that should routinely be used.

To enable easy decoding the following DVB PIDs are recommended: Video 256, Audio, 257, PMT 32 or 4095, PCR 256 or 258. Service Name should be set to CallSign. PMT PIDs 4000 – 4010 should not be used.

On Wednesdays (UTC time), experimenters are encouraged to try other modes – perhaps 6 MS using the whole transponder for brief (less than 10 minute) periods. It is essential that users announce their plans on the chat room page, and always monitor it.

Experiments using unusual modes (for example ranging) should use the lower 1.5 MHz of the "Wide and Narrow DATV" Segment.

Beacon

The beacon transmits continuously (10491.5 MHz, DVB-S2, SR 1500 kS) to provide a test signal and to allow new users to precisely align their antennas.

Bandplan
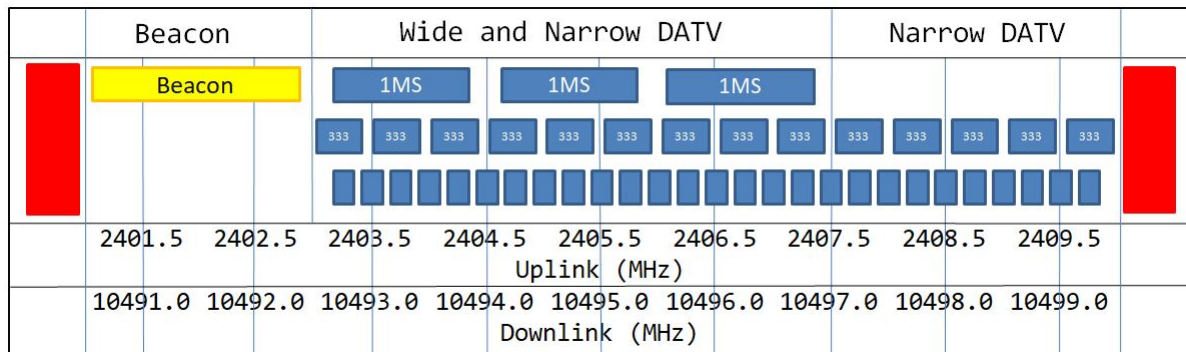
1. Narrow DATV transmissions should be confined to the "Narrow DATV" section, but may use the "Wide and Narrow DATV" section if the Narrow DATV section is fully occupied.

2 A maintenance uplink occupying 10494.0 MHz – 10497.0 MHz will be used very occasionally; users are requested to give it absolute priority when notified.

3. Recommended spot frequencies for various usages and symbol rates are listed below.

Mode	Symbol Rate	Uplink Freq MHz	Downlink Freq MHz	Notes
Beacon	1500 kS	2402.0	10491.5	Beacon DVB-S2 FEC 4/5
Wide	1 MS	2403.75	10493.25	1.5 MS and 2 MS transmission should use this part of the band
Wide	1 MS	2405.25	10494.75	
Wide	1 MS	2406.75	10496.25	
Narrow	333 kS	2403.25	10492.75	Use these 14 frequencies for 500 kS, 333 kS and 250 kS
	Then every 500 kHz until			
Narrow	333 kS	2409.75	10499.25	Use frequencies above 10497.0 first
Very Narrow	125 kS	2403.25	10492.75	Use these 27 frequencies for 125 kS, 66 kS and 33 kS
	Then every 250 kHz until			
Very Narrow	125 kS	2409.75	10499.25	Use frequencies above 10497.0 first

4. Uplink 2401.0 – 2410.0 MHz RHCP, Downlink 10490.5 – 10499.5 MHz Horizontal.