

## Es'hail-2 Wideband Transponder – Operating Guidelines and Bandplan - Initial Version

The following operating guidelines and proposed bandplan are designed to enable the most efficient use of the 8MHz wide transponder for all users. It is expected that these initial guidelines will be further developed after commissioning.

### **Coordination**

Due to the very large number of variations of transmission parameters, it is essential that all users notify their transmission parameters on the co-ordination chat room page that has been established by AMSAT-DL and the BATC at [www.....](#) (URL tbd)

### **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)

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. No transmissions should have a downlink signal with a higher power density than the Beacon – the web-based spectrum monitor will enable users to set their uplink power to achieve this.

### **Transmission Modes**

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

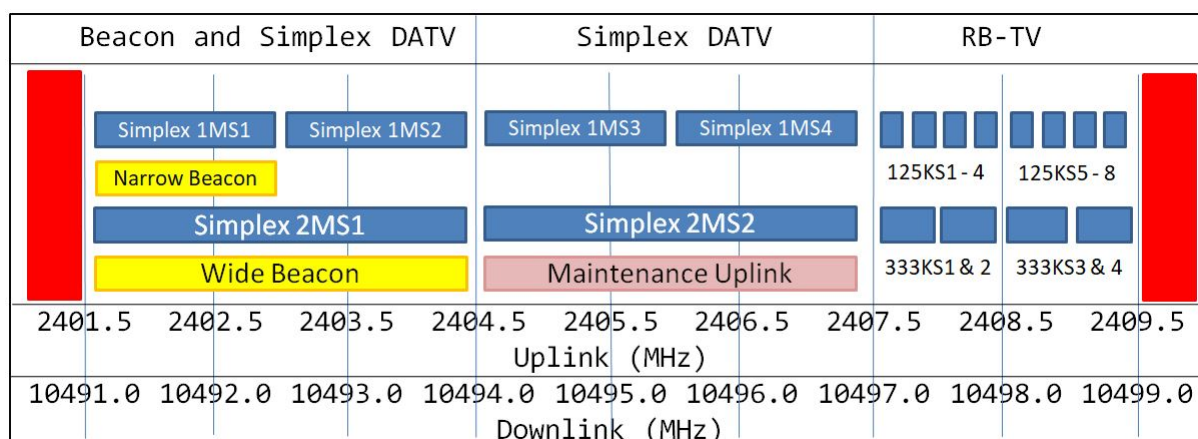
To enable easy decoding PIDs should be set as: Video 256, Audio, 257, PMT 32 or 4095, PCR 256 or 258. Service Name should be set to CallSign. PMT PIDs 4000 – 4010 should not be used. Users are encouraged to experiment with higher-order DVB-S2 modes at lower symbol rates (for example 333 KS 32APSK) to conserve bandwidth for other users.

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 to announce their plans on the chat room page, and to always monitor it.

### **Beacon**

The beacon will initially run 24/7, but it is anticipated that, as more users become active, this will be reduced to a shorter period every hour.

## Initial Bandplan



1. The maintenance uplink will only be used very occasionally, but users are requested to give it absolute priority when notified.
2. DVB-S2 users are requested to use the steepest roll-off that their equipment is capable of to reduce the possibility of adjacent channel interference.
3. Recommended spot frequencies for various usages and symbol rates are listed below

Role	Symbol Rate	Uplink Freq MHz	Downlink Freq MHz	Designator	Notes
Beacon Wide	2MS	2403.0	10492.5	2MS1	Initial Beacon Mode
Beacon Narrow	1MS	2402.25	10491.75	1MS1	Possible future beacon mode
Simplex	2MS	2403.0	10492.5	2MS1	Only available outside beacon hours
Simplex	2MS	2406.0	10495.5	2MS2	
Simplex	1MS	2402.25	10491.75	1MS1	Only available outside beacon hours
Simplex	1MS	2403.75	10493.25	1MS2	Only available outside beacon hours or when beacon is in narrow mode
Simplex	1MS	2405.25	10494.75	1MS3	Only available if 2MS2 not in use
Simplex	1MS	2406.75	10496.25	1MS4	Only available if 2MS2 not in use
Simplex	333KS	2407.75	10497.25	333KS1	
Simplex	333KS	2408.25	10497.75	333KS2	
Simplex	333KS	2408.75	10498.25	333KS3	
Simplex	333KS	2409.25	10498.75	333KS4	
Simplex	125KS	2407.625	10497.125	125KS1	Only available if 333KS1 not in use
Simplex	125KS	2407.875	10497.375	125KS2	Only available if 333KS1 not in use
Simplex	125KS	2408.125	10497.625	125KS3	Only available if 333KS2 not in use
Simplex	125KS	2408.375	10497.875	125KS4	Only available if 333KS2 not in use
Simplex	125KS	2408.625	10498.125	125KS5	Only available if 333KS3 not in use
Simplex	125KS	2408.875	10498.375	125KS6	Only available if 333KS3 not in use
Simplex	125KS	2409.125	10498.625	125KS7	Only available if 333KS4 not in use
Simplex	125KS	2409.375	10498.875	125KS8	Only available if 333KS4 not in use

4. Uplink 2401.5 – 2409.5 MHz RHCP, Downlink 10491 – 10499 MHz Horizontal.