



AMSAT-UK

Spectrum Forum Meeting – Saturday 28th October 2017

Spectrum Report – Amateur-Satellite Service

About AMSAT-UK

AMSAT-UK represents the interests of amateur satellite operators in the UK and is at the forefront of amateur satellite construction.

The thrill of communicating via satellites orbiting in space has led amateurs to develop stations for the VHF, UHF and Microwave bands when they may not have otherwise done so. Having established a satellite capable station many have gone on to discover the fascination of terrestrial DX working, so helping generate more activity in these allocations which are sometimes overlooked by amateurs who start out on the HF bands.

The FUNcube project

All four spacecraft carrying FUNcube payloads continue to operate nominally with all of them providing transponder capabilities for amateurs around the world. Additionally, three of them also provide telemetry and mission data downlinks for schools and colleges and everyone who is interested in the space environment.

On November 21 the FUNcube-1 spacecraft will be celebrating its fourth birthday in space. Over 1150 stations around the world have been receiving its telemetry data and uploading it to the AMSAT-UK Data Warehouse.

A FUNcube payload is being developed for Jordan's first CubeSat JY1SAT, the name is a tribute to His Majesty the Late King Hussein of Jordan JY1. The payload will provide a linear transponder for SSB/CW communications and a beacon for educational outreach. JY1SAT will also have the capability of transmitting pre-recorded images using the Slow Scan Digital Video (SSDV) mode.

Work is progressing with the payload for the ESA's Student Earth Orbiter spacecraft ESEO. This will carry a 1260 MHz to 145 MHz FM transponder and a telemetry beacon.

International Space Station

AMSAT-UK members supported the contact on August 8 between astronaut Paolo Nespoli IZ0JPA on the International Space Station link-up and the young people from across IARU Region 1 attending the Youngsters on the Air (YOTA) event at Gilwell Park.

On the first contact the HamTV Digital Amateur Television pictures on 2395 MHz were successfully received and participants were able to see Paolo Nespoli IZ0JPA floating in the Columbus module of the ISS. There appeared to be an issue with the Ericsson transceiver on the ISS and a second contact

took place during the next orbital pass with Paolo operated the amateur radio station (Kenwood TM-D710 transceiver) located in the Russian Service Module.

Work is progressing on the [InterOperable Radio System](#) (IORS) Safety Data Package for the ISS that will replace most of the on-board amateur radio hardware. It is called “interoperable” because it is being designed to be operated anywhere on ISS. But specifically, it will be used in the two areas: the Columbus Module and the Russian Service Module. Interoperability allows ARISS to leverage existing ISS power cables, it can be moved between modules in the event of on-orbit failures, and it supports common training and operations.

Microwave Transponder Satellites

The [Es'hail-2](#) satellite carrying 2.4 GHz to 10 GHz linear (SSB/CW) and DATV transponders is expected to be launched into a geostationary orbit in 2018.

AMSAT-NA is developing an amateur radio [Phase 4B payload](#) for a geosynchronous satellite. The potential footprint could extend over the US from the Mid-Pacific to Africa with coverage at times of the British Isles and parts of Western Europe.

AMSAT-NA plan to fly 5 GHz to 10 GHz transponders on the [Heimdallr satellite](#) which will go into orbit around the Moon.

The Hunan Amateur Radio Club has developed a constellation of six satellites which are expected to be launched into low Earth orbit in the next few months. They have downlinks in the 2.4 GHz and 5.8 GHz bands and an uplink in 5.6 GHz.

Spectrum

AMSAT-UK welcomed the robust RSGB response to the Ofcom statement on permitting the use of Wi-Fi in 5725-5850 MHz which includes the key Amateur-Satellite Service Space-to-Earth (downlink) allocation at 5830-5850 MHz.

In talking about the interference that would be caused to the Fixed Satellite Service (FSS) uplinks by the proposed use of Wi-Fi in this band Ofcom said:

“...once it becomes clear that this band will become used for Wi-Fi worldwide it will become less attractive for new satellites.”

The very weak signals from amateur radio satellites in this band are much more susceptible to interference than FSS uplinks. If Ofcom considers the interference from Wi-Fi will be strong enough to drive out FSS users then it is clear that in the long-term our allocation at 5830-5850 MHz will be rendered unusable in the same way that 2400-2450 MHz has become unusable for downlinks in built-up areas. This would leave the Amateur-Satellite Service without any usable downlink spectrum between 438 MHz and 10.450 GHz.

It remains an aspiration that the Amateur-Satellite Service allocations at UHF and Microwaves should align with the weak-signal sections of the bands. In particular it is desirable that the European Common Frequency Allocation Table Footnote EU17 sub-bands, **3400-3410 MHz**, **5660-5670 MHz** and **10360-10370 MHz** along with **50-51 MHz** and a new 10 MHz wide L-band segment become available to the Amateur-Satellite Service for both Earth-to-Space and Space-to-Earth communications.

Annual Colloquium

AMSAT-UK's 2017 Colloquium was held as part of the RSGB Convention. The British Amateur Television Club (BATC) provided a webcast live to a world-wide audience. Videos of the presentations are available on the [AMSAT-UK YouTube Channel](#).

Other Activities

On October 19, 2017 the AMSAT-UK [FUNcube Yahoo Group](#) had 3,813 members, the [Twitter Account](#) 7,042 followers and the [AMSAT-UK Facebook Page](#) having 3,258 likes.

AMSAT-UK hosts the [Amateur Satellite Frequency Coordination Status](#) pages for the IARU. These pages give details of the many Amateur Radio satellite projects under development.

AMSAT-UK October 2017
<http://www.amsat-uk.org/>

