



# International Amateur Radio Union Region 1 VHF - UHF - MW Newsletter

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## **Amateur Satellite Service - 2 Metre Usage**

Attached please find a document by Graham Shirville, G3VZV. This refers to a new satellite segment in the 2m band. We will discuss it in Vienna and make a decision.

## **2007 INTERIM MEETING IN VIENNA**

The next interim meeting of the IARU Region 1 VHF/UHF/MW Committee will be convened on 24 and 25 February 2007 at the InterCity Hotel in **Vienna**.

Any contributions for this meeting shall be received by OE1MCU **not later than 1 December 2006**. The contributions and the draft meeting agenda will be distributed to you and the member societies before 15 December 2006.

The Austrian society, ÖVSV, has kindly invited us to Vienna. ÖVSV has drafted the following schedule:

### **Friday, 23 February 2007:**

1200 - 2000 hrs: ÖVSV shuttle service from the airport to the hotel  
2000 - 2030 hrs: Welcome drink at the hotel  
2030 - 2200 hrs: Dinner

### **Saturday, 24 February 2007:**

0800 - 0900 hrs: Breakfast  
0900 - 1200 hrs: Committee meeting  
1200 - 1400 hrs: Lunch  
1400 - 1800 hrs: Committee meeting  
1940: Bus departs from the hotel to the restaurant  
20:00: Formal dinner

### **Sunday, 25 February 2007**

0800 - 0900 hrs: Breakfast  
0900 - 1200 hrs: Committee meeting  
1200 - 1400 hrs: Lunch  
1200 - 1800 hrs: ÖVSV shuttle service from the hotel to the airport

Hotel: InterCityHotelWien

([http://www.hotelclub.net/hotel.reservations/InterCityHotel\\_Vienna.htm](http://www.hotelclub.net/hotel.reservations/InterCityHotel_Vienna.htm))

The hotel is a 4 star hotel, located within easy reach (three minutes on foot) of a

main line railway station (Westbahnhof) and an underground station, from where the city centre (St. Stephan's Cathedral) can be reached in a few minutes. The HQ of ÖVSV lies within an eight minutes' walk of the hotel. We will use the comfortable and quiet meeting rooms and enjoy the good catering provided by the hotel.

Currently, ÖVSV is in direct negotiations with the hotel for the best price, which will be fixed at the end August 2006. ÖVSV will furnish payment details after your registration.

**Your binding registration is requested by ÖVSV not later than 20 December 2006.**

Additional information:

- Transport from and to the airport, the welcome drinks, and dinner on Friday and Saturday evening are sponsored by ÖVSV.
- We plan dinner in a typical Viennese restaurant (casual)
- At the ÖVSV-HQ, you are invited to use our internet access (WLAN) and office facilities as required.
- Please mail your reservations, your flight number and arrival time (on 27 February, and any other questions about the meeting to: [oe1mcu@oevsv.at](mailto:oe1mcu@oevsv.at)

Please meet the deadlines, so that we can run a smooth meeting!
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### **Friedrichshafen 2006**

Various committees have held meetings at Friedrichshafen. These were unofficial ones, and for information purposes only. My strategy is to convene only official meetings, inviting all member societies and interested OMs, so that all experts and member societies can share the same level of information.

### **VHF Manager Handbook**

The VHF Handbook is now available as a PDF file. The new handbook version 5.10 will be online next week. Changes with respect to the previous version are indicated at the top of the document, and highlighted in red in the document. In this way, changes can be easily spotted. I very much appreciate the efforts of those OMs who have pointed out mistakes to me (tnx to SP6LB, PA0EZ, OZ7IS). In this way, the Handbook can be updated as a joint effort.

### **IARU Contest 2005**

The final results of the IARU Region 1 UHF-Microwave Contest 2005 have been recalculated by the URE.

<http://www.ure.es/vhf/concursos/resultados2005/iaruuhf/totales/index.html>

# Increased Amateur Satellite Service 2 Metre Usage – A Discussion Paper by Graham Shirville G3VZV

(based on proposals raised at the AMSAT International Meeting held at UoS  
Guildford in July 2005)

The Amateur Satellite Service has, according to ITU decisions, access to the full allocation of 144-146MHz but, by agreement of all three IARU Regions, only uses a section of the allocation on an exclusive basis - namely 145.800 – 146.000 MHz.

## Current Use

It is used for both for satellite uplinks and downlinks. It is the most popular of the Amateur Satellite allocations for the following reasons:

- It is the only band between 30 MHz and 24 GHz that we have primary use and hence some control. The 435 MHz, 1.26, 2.4, 5.6, 5.8, and 10 GHz bands are all shared with either high power users (radars) or large numbers of consumer devices which raise the noise floor.
- 144 MHz is the best band for amateur satellite downlinks due to ease of on board RF power generation and efficiency thereof and the reduced path losses.
- Receiving equipment is widely available; this is an important consideration in many countries where Amateur Satellites are seen as an important tool in encouraging young people to pursue technical self-training.
- Ready availability of launch opportunities where size constraints mean Attitude Control is not be possible. The lack of attitude control mandates the use of simple omni-directional antennas. This in turn means the use of VHF due to the lower path losses.

Although, in theory, our primary status should prevent this, there has been a dramatic increase in levels of unlicensed usage in the 2 metre band in a large number of countries in ALL IARU regions. It is therefore apparent that we should start to use 144.800 – 146.000 primarily for downlinks to overcome the interference that is caused to uplinks. This part of the 2 metre band is presently quite heavily used by Amateur Satellites. In addition, on the International Space Station, there is an Amateur Packet Repeater and Voice operation from the Amateurs onboard are also taking place in this narrow segment.

## Future Use Requirements

An area that has been growing rapidly has been the development of Amateur Satellites by university students. Already large numbers of students have been involved in developing Amateur Satellites; this growth activity is beneficial to both the students and the wider Amateur community. The students of today are becoming our successors and supporters of tomorrow.

There is, under development, a very small (triple cubesat), university student satellite using a Linear Transponder for CW/SSB use with a bandwidth of 40-50 kHz. The uplink will be on 435 MHz and the downlink on 144 MHz. It is expected that more of these projects will materialise and developments are also taking place to develop DSP based AGC systems for these transponders to remove the “alligator effect” problem.

It is also anticipated that additional and unexpected launch opportunities may occur where this sort of transponder could be quickly/easily incorporated.

There is therefore a need for an additional Satellite segment at 144 MHz that could be used for linear transponder downlinks for CW/SSB operation. Given that these transponders might have a bandwidth of perhaps 40 kHz, the use of a segment approximately 50kHz wide would be required to allow for Doppler shift, which can be as high as +/- 3 kHz.

It has been reported that there is a reduced level of terrestrial CW/SSB activity on 2 metres in all countries in recent years and this may provide an opportunity. In particular, at least in Region 1, the segment between 144.315 and 144.365 MHz has become much quieter. Except in major VHF contests it is rare to find high levels of activity in this section.

### **Discussion points**

1+ To permit satellites, operating in the Amateur Satellite Service, which incorporate “linear” transponders, which are generally used for narrow band non channelised signals, to use, on a **non exclusive basis**, the section of the 2 meter band 144.315 –144.365MHz for downlink (satellite to ground) mode only, by amending the bandplans in each IARU Region.

An analysis of current band use and operator flexibility in this part of the 2 metre band suggests that this would be compatible with the existing terrestrial activities around the world and would have no detrimental affect on them.

Amateur Satellite “linear” transponders operating in this section of the band might even have the additional benefit of helping to stimulate both terrestrial CW/SSB operation and new narrow band modes.

2+ The presence of interfering non-amateur signals in the 145.80-146.00MHz part of this band, in many parts of the world, is well documented. To prevent the retransmission of interfering terrestrial signals, satellites in the Amateur Satellite Service that plan to use the 2 meter Amateur band are encouraged to use this band for downlink (satellite to ground) modes only, regardless of modulation type

### **Proposal**

These ideas be discussed at the forthcoming IARU Region 1 VHF Managers meeting in Vienna and, at the same time, be circulated for discussion in the two other IARU regions