



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

Edition 42  
25. December 2005  
Michael Kastelic, OE1MCU

## From the Past Chairman

The DAVOS meeting of C5 was a rather efficient one. This mostly due to the attitude of all participants who wished to get results. I thank you very much for that and in particular our ad hoc secretary, OH5LK, and our vice-chairman OE1MCU.

While typing this text the faces of all meeting participants are visible on the excellent photo on the table next to my screen. I was very much impressed by this unexpected gift. Thanks to all participants.

Looking back at almost 40 years in the committee of which three terms as chairman, I think we did mostly what could be expected. But, of course, some things can be better like more attention to action items between committee meetings and also a better contact with for example the microwave amateurs. Be aware that they are experimenting with advanced technologies but are very conservative in operational matters, like bandplanning.

I wish Michael a lot of fun as committee chairman . He represents the younger generation. But I am happy that an old hand like Ivan will provide support where required.

I have left the committee, but not amateur radio! Microwaves and contesting will keep me busy. Arie



## **Introduction**

Some time has gone by after Davos, and I again wish to express my thanks to Arie, PA0EZ, for his efforts and co-operation. I shall try to justify the high expectations placed in me. Ivan, OZ7IS is very active, and supports me with regard to questions that arise. Here are some ideas to solve them:

## **Mailing list**

The regular e-mail has been converted to a mailing list, with the advantage that archiving is possible, including later queries, and easier administration of the information disseminated.

## **VHF manager handbook**

Arie has digitised the VHF Manager Handbook, thereby laying the basis for the next Step. Right now, I am in the process of converting the Handbook to a cumulative PDF file, but some changes are needed to this end. This will, I think, give a better overview and the opportunity to use a search function, so that details can be accessed more swiftly. Attached please find the current listing of VHF managers. Please notify me of any errors and omissions.

## **Information Feedback**

In addition to what has been covered in the newsletter until now, I wish to add current events in various societies, especially those that may result in threats to our amateur bands. Unfortunately, we again and again will have to defend our allocated parts of the spectrum against intruders who try to use new standards as a pretext for edging into our bands.

Powerline, and recently UWB, are quite serious issues for our bands. This is why I try to disseminate information as far in advance as possible, and suggest steps to be taken.

## **Advance Information: 2007 INTERIM MEETING IN VIENNA**

The next interim meeting of the IARU Region 1 VHF/UHF/MW Committee will be held in Vienna on 24 /25 February 2007 (as decided in Davos). Please place a reservation in your scheduler.

## **VHF Contest Evaluation**

Any contest becomes much more attractive if the logs can be sent to an on-line system where the results are immediately available. Therefore, the Davos meeting has taken the required decisions.

SARA will prepare an automatic (robot) system during the coming one or two years. I will, in co-operation with SARA, work out a timetable with precise dates, to be published in national homepages and journals.

## **Contest Monitoring**

Each VHF Manager and/or national Contest Committee shall be responsible for monitoring during contests. Additional monitoring stations may be appointed, but these stations may not take part in the contest. The national VHF Manager/Contest Committee is responsible for disqualification based upon the results of monitoring.<sup>2</sup>

It looks as if it were very difficult to put this stipulation into practice. After all, most of the OMs who evaluate contests are also active contest operators. This rule, however, seems to have been overtaken by events, i.e. the electronic evaluation of the logs. Please let me know your opinion about this matter.

### **UWB (Ultra-WideBand)**

UWB looks as if it were a new threat to the microwave bands in particular:  
Description (text by OE3WOG) UWB:

UWB (as defined in ECC/DEC(06)AA) appears as a wireless connectivity system (similar to bluetooth), which will be used in a mass-market and will be implemented in consumer electronic devices, lap tops and cellular phones, motion detectors, etc. UWB, with its high level of mobility will be used by end users in outdoor environments, and it can not be limited to indoor use only.

As UWB transmitters operate on licensed frequencies, interference to existing radio receivers in this case is unavoidable. Enclosed please find the comments to UWB from RSGB and OeVSV and the draft ECC/DEC/(06)AA on UWB.

### **Guide to good practice beacons**

The few times Ivan checked the IARU conference home page after the conference he didn't seem to be able to find the final version of the "Guide to good practice beacons " it was produced during the conference. It was presented, agreed upon and given to both Jussi and Arie but what happened next?. Just in case you haven't got it either, it is attached.

# IARU REGION 1 VHF / UHF BEACONS. A GUIDE TO GOOD PRACTICE.

Beacon transmitters have long been used to indicate the presence of VHF openings and have contributed significantly to our knowledge of propagation. As the numbers of beacons is increasing rapidly and the amount of spectrum available for them is under pressure it is important that beacon builders are aware of the technical parameters required, the reasons for them and the procedure to be followed to obtain an agreed frequency.

It is not intended that this document should specify the exact purpose of a beacon, its power level or the number of beacons in any country, as this should be agreed within the national society concerned. It is also not intended to be applied rigorously to experimental beacons or beacons with a special purpose. It should however apply to the vast majority of VHF/UHF beacons for propagation monitoring purposes.

## 1. CO-ORDINATION PROCEDURE.

The existing requirement for co-ordination of regional beacons will be retained. For non-coordinated beacons the beacon proposal should be agreed with the national society (with consultation with neighbouring societies where appropriate) and a provisional frequency chosen. If the beacon has an ERP of greater than 10W then the frequency should be submitted to the IARU Region 1 VHF beacon co-ordinator to check for potential interference problems.

## 2. TRANSMISSION MODE

Amplitude or Frequency shift keying (A1A or F1A) may be used according to the scheme below. The beacon radiates on its nominal frequency during the period where no information is transmitted. It then moves to "space", 250/400Hz below and then keys back to nominal ("mark") while transmitting its information. In this way the transmission sounds like A1A in a SSB receiver set to receive USB.

## 3. FREQUENCY SPACING

All coordinated and notified beacons should operate within the beacon segment of the band plan and be on a frequency which is in accordance to the table below.

Band	50 MHz	70 MHz	145 MHz	435 MHz	1.3 GHz
Frequency ppm Tolerance Hz	4 200	2.8 200	1.4 200	1.0 400	0.8 1000
Spacing between beacons kHz	1	1	1	1	2-3kHz
F1A Frequency shift Hz	250	250	400	400	400
Frequency at "space" Hz	nominal - 250	nominal - 250	nominal - 400	nominal - 400	nominal - 400

## 4. MESSAGE

As beacons are often heard at very low signal levels, together with spurious signals, it is important the message is simple, unambiguous and repeated frequently. It is also necessary to have a period without information ("carrier") for frequency checking

purposes and signal strength measurement and also to make it easy to distinguish the frequency when using FSK.

Maximum Morse code keying speed should not exceed 60 characters per minute.

The beacon message should consist of a callsign and possible other information for identification and a period without information ("carrier"). The message may also contain other information if required, e.g. locator, automatic identification and information in MGM modes. The total cycle period should not exceed 60 seconds and the "carrier" period without information should not exceed 30 seconds.

For alternative modes the cycle period is F1A + Alternate mode. For example, a beacon transmitting PSK31 would send one period of PSK31 followed by one period of either F1A or A1A. If several alternative modes is used then the total cycle could be F1A/A1A + mode 1 + mode2 + F1A/A1A, repeating continuously.

## **5. OPERATION**

Operation should be 24 hour continuous. If beacons change parameters during the transmission this must be reflected in the message transmitted.

## **6. STATUS**

It is important that the operational parameters and the status of each beacon are widely known. The information should be sent to the IARU Region 1 VHF beacon coordinator via the local beacon coordinator or spectrum manager at least once per annum or when the operational parameters are changed to ensure that the IARU Region 1 beacon list is up to date.

This document replaces the documents: IXa.A2, VIb.B1 of the VHF Managers handbook.

Revised 13<sup>th</sup> September 2005

Davos Conference

ZS5JF/OZ7IS

## CEPT DRAFT ECC DECISION (06)AA ON HARMONISED CONDITIONS FOR DEVICES USING UWB TECHNOLOGY IN BANDS BELOW 10.6 GHZ



### Joint response from the Radio Society of Great Britain, UK Microwave Group and Amsat-UK.

#### Introduction

This response is a joint one from the Radio Society of Great Britain (RSGB, [www.rsgb.org.uk](http://www.rsgb.org.uk)) and its affiliates UK Microwave Group (UKuG, [www.microwavers.org](http://www.microwavers.org)) and Amsat-UK ([www.uk.amsat.org](http://www.uk.amsat.org)).

Draft ECC Decision (06)AA [1] covers UWB transmissions principally in the 3.1-10.6GHz range. This range includes a number of allocations for the Amateur Service and Amateur Satellite Service (as defined by the ITU).

The UK Regulatory Authority, Ofcom, held a public consultation between January and March 2005, based at the time on a draft copy of ECC Report 64 [2]. Despite many representations from Amateurs, Industry and one other EU Regulatory Authority, Ofcom decided to largely ignore the concerns raised and the basis of interference assessments in ECC Report 64. We therefore do not consider Ofcom to be fully representative of the UK position.

We are aware of the extensive deliberations that have occurred in ECC TG3 and the ITU concerning UWB, and hold the firm belief that the FCC mask is wholly inadequate. We are also aware that since Report 64 was issued, the Bluetooth SIG has agreed to incorporate UWB, which is likely to greatly increase the numbers of mobile and outside devices.

We recognise that UWB short-range links will have a useful role, and observe that UWB vendors are exerting considerable pressure for their adoption. However we do not believe they should receive exceptional treatment. We stress that UWB must fully comply with the International Radio Regulations and that all such devices must operate on a non-protected, non-interference basis.

The decision correctly identifies bands in the 6-9GHz range for where UWB technology should ideally be located as exemplified by the sentence:-

“It should be noted that the ECC Decision intends to deliver a clear message that the band 6 to 9GHz is identified in Europe for long-term UWB operation without additional mitigation techniques.”

We do of course recognise that UWB operation in the 3-5GHz range may also be possible. In order to protect our services (notably in the 3.40-3.41GHz band where EU17 applies) we urge the adoption of the mask proposals without undue concessions to UWB proponents. We seek thorough consideration of any mitigation techniques before permitting the substantial relaxation as per Mask Note-1

In general we applaud the ECC Draft Decision and would urge its adoption subject to reservations we have at 3.4GHz and Outdoor Usage as detailed more fully below.

Our standpoint, reasoning and requests are laid out in more detail below.

## General Regulatory Considerations

Footnotes EU17 and EU23 to the European Frequency Tables state that CEPT administrations are requested wherever possible to maintain specified Amateur sub-bands in such a way as to facilitate the reception of Amateur and Amateur Satellite Service emissions with minimal power flux densities.

Additional background regarding the Amateur Service position at these frequencies and the EU notes is provided in the Annex.

## Comments in regard to points in the Consultation

### UWB Definition

We are happy to see the suggested definition (which is consistent with that used in Report 64) to be incorporated

### Maximum mean e.i.r.p. density in the band 3.1–4.8GHz with DAA (Detect and Avoid)

We request that when evaluating DAA and other mitigation techniques, full consideration of EU17 is given regard to the band 3.40 to 3.41GHz where narrowband amateur weak signal flux activity is centred. A major concern is that amateur equipment spends high proportions of its time in receive mode - a 'hidden terminal' situation. This would be compounded should outdoor UWB usage rise.

### Maximum mean e.i.r.p. density in the band 6–9GHz

We are pleased that the mask stops at 9GHz before falling to much lower levels prior to our 10GHz band. We urge that this be adopted and ask that requests for relaxation to 10GHz and above are resisted.

### Phased approach in the band 4.2–4.8GHz

Whilst not an amateur band, we are in favour of a tight 2010 sunset date in order to send the right signal to UWB developers that the 6-9GHz band is preferred as a permanent solution for UWB. Some UWB equipment is already available for this higher band. This has parallels to the firm restrictions on 24GHz UWB Car Radar, which encourage 79GHz development.

### Indoor Usage

Ideally, we would prefer UWB to be limited to indoor use but recognise that this is difficult to enforce. The best approach may be to set explicit activity or duty cycle limits within UWB transceivers, which is relatively technology-neutral. The limits might for example then preclude low compression continuous hi-definition video streams outside of the original MPEG2/4 assumptions. Section-2 of the draft decision preamble echoes this concern but it needs to be incorporated into Considering and Decides.

### Outdoor Usage

The draft decision uses ECC Report 64 as its basis for below 3GHz, above 10GHz and for its assumption on outdoor devices. ECC Report 64 Section-2 states that 88% of Type-1 UWB devices are indoors and 10% outdoors (the other 2% being Type-II imagers, which are out of scope). Draft Decision 06(AA) which references Report 64 incorrectly quotes the indoor/outdoor ratio as 80% and 20% - a factor of two difference for outdoor devices. Report 64 also assumes a 5% UWB activity factor.

We therefore request that the following additional consideration be added to ECC/DEC/(06)AA:-

that ECC Report 64 used 88:10 as the basis for indoor/outdoor ratio, and that higher outside numbers or activity ratios would call this basis into question

### Market Penetration

We also highlight the following in the Considerations:-

- f) that by their nature UWB devices will operate in bands that have been allocated to radio services;
- g) that UWB devices shall not cause harmful interference to those radio Services;

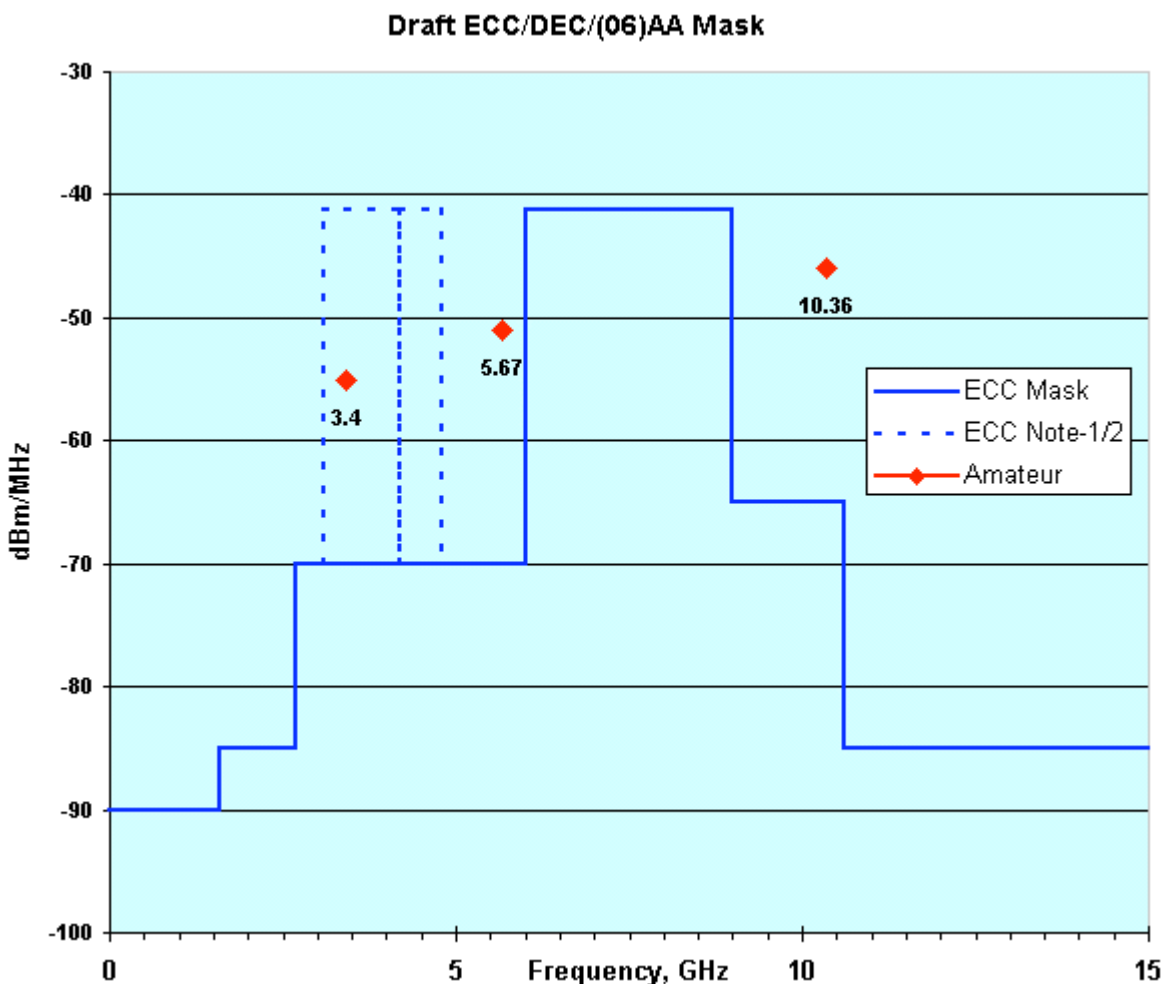
- z) that, in order to support procedures of review of ECC Decisions, administrations are encouraged to collect market data on the numbers and types of UWB devices being placed on national markets;
- dd) that, to avoid harmful interference, it is important to minimise the outdoor activity of UWB, but it is impractical to prevent the incidental outdoor use of handheld UWB devices;

Given f), g), and a relatively low level of outside usage assumed in Report 64, we contend that it is necessary to strengthen the capture of market data. Clauses z) and dd) are quite weak in this regard. The decision should incorporate a firmer commitment to gather data for regular reviews of market penetration and interference reports in the 'Decides' section.

We thank CEPT for this opportunity to comment. We would be pleased to provide additional information on request or participate in any future discussions.

Permission is granted for a copy of this response to be placed in the public domain

RSGB, UKuG & Amsat-UK, December 2005



The plot above is mask level specified in the Annex of the Draft Decision, compared to the protection levels that Report 64 determined are necessary for the Amateur Services



## Annex: Amateur Services Allocations

Band, MHz	Comment
3400-3475	EU17* applies to 3400-3410 where weak signal flux narrowband activity is centred
5650-5850	EU17* & EU23** apply to 5660-5670 and 5830-5850 The Amateur Satellite Service has allocations in this band
10000-10500	EU17* & EU23** apply to 10360-10370 and 10450-10500 The Amateur Satellite Service has allocations in this band

### Amateur Services Allocations within the 3.1-10.6GHz UWB Range

#### Notes to the European Allocation Tables

**\*EU17:** In the sub-bands 3400-3410MHz, 5660-5670MHz, 10.36-10.37GHz, 10.45-10.46GHz the amateur service operates on a secondary basis. In making assignments to other services, CEPT administrations are requested wherever possible to maintain these sub-bands in such a way as to facilitate the reception of amateur emissions with minimal power flux densities.

**\*\*EU23:** In the sub-bands 5660-5670MHz (earth to space), 5830-5850 MHz (space to earth) and 10.45 - 10.50GHz the amateur-satellite service additionally operates on a secondary and non-interference basis to other services. In making assignments to other services, CEPT administrations are requested wherever possible to maintain these allocations in such a way as to facilitate the reception of amateur emissions with minimal power flux densities.

#### References

- [1] CEPT Draft ECC Decision (06)AA, "On Harmonised Conditions for Devices Using UWB Technology in Bands Below 10.6GHz", November 2005
- [2] "The Protection Requirements of Radiocommunications Systems Below 10.6GHz from Generic UWB Applications", CEPT Report 64, Helsinki, February 2005



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**To: Secretariate of Electronic Communication Committee ECC**

7. Dec. 2005

**Subject: Formal Response to: UWB > Draft ECC/DEC(06)AA / Cover note to draft <**

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### Introduction:

The „Österreichischer Versuchssenderverband“ (ÖVSV) is the national organisation that represents the interests of 6.000 licensed Austrian Radio Amateurs. The organisation was founded in 1926. We are member of IARU and organised with more than 3 Million Amateur Radio Operators around the world. “Amateur Radio Service” is specified within the ITU Radio Regulations and has been granted access to frequencies between 135KHz up to 250GHz, on primary or on secondary basis.

### Abstract:

UWB (as defined in ECC/DEC(06)AA) appears as a wireless connectivity system (similar to Bluetooth) which will be used in a mass market and will be implemented in consumer electronic devices, lap tops and cellular phones, motion detectors, etc. UWB with its high grade of mobility will be used by end users in outdoor environments also and cannot be granted for indoor use only.

As UWB transmitters operates on top of licensed frequencies, interference to existing radio receivers in will be unavoidable this case.

### UWB and Amateur Radio:

Operation of UWB as specified in Annex 1 of ECC/DEC will affect the 2,3/3,4/5,7 and 10 GHz (IARU Region 1 bandplan) Amateur frequency bands. Radio Amateurs use FM, SSB, CW and digital modes (DVB-T, BPSK, JT65) narrowband modulation techniques to communicate with satellites, interplanetary spacecrafts (AMSAT P5E) and/or in weak signal conditions, even using the moon as reflector. The receiver bandwidth (depending on type of modulation being used), varies between 30Hz and 18 MHz, receiver noise figures are in the range between 1 to 3dB. This corresponds to a receiver sensitivity of -150 to -137dBm. UWB devices with a mean e.i.r.p. density of -41,3dBm/MHz would generate a noise (interference) level of -81,3dBm in a 100Hz receiver bandwidth and will desensitise the receiver sensitivity by approx. 70dB. (antenna gain = path loss)

To minimize the risks of interference we propose to adapt the mean e.i.r.p emission level to **-85dBm/MHz** on all relevant Amateur Radio frequency bands (e.g. 3,4/5,7/10 GHz). Partly this can easily be achieved by changing the upper frequency limit from 10,6 GHz to **10,0 Ghz in Annex 1**.

Thank you for considering our input.

Respectfully submitted,

Michael Zwingl  
President OEVS  
Austrian Amateur Radio Society  
Member of IARU