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SUBJECT	Microwave Beacon Bands		
Society	RSGB	Country:	UK
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Introduction

The growth in Beacon numbers in the microwave bands, especially in Europe continues and is proving difficult to accommodate within the current bandplans. Modifications to microwave bandplans are proposed which will add capacity for beacons in a logical manner to minimise mutual interference and maximise spectrum efficiency.

Background

Microwave Beacons support a number of important functions:-

- Distant beacons provide indications of good propagation conditions
- Local Beacons can be invaluable aids in setting up and testing an amateur's own equipment and stimulating activity
- National and IARU Registered beacons demonstrate utilisation of spectrum
- In addition, temporary/personal/experimental beacons may fulfil some of the roles above

All these functions are valid but there is a fundamental problem that local beacons may block a useful frequency for DX reception in its vicinity at its nominal and adjacent frequencies, depending on its accuracy and spectral width (or phase noise).

A presentation at the 2007 Vienna Interim IARU-R1 meeting by OZ7IS highlighted the relentless growth in beacon numbers. In addition amateur narrowband equipment and reporting techniques have also been improving, making spare frequencies or frequency re-use increasingly difficult in popular bands such as 23cms and 10GHz for new beacons, whilst preserving the ability to receive valuable DX beacons.

At present there is no IARU guidance on distinguishing between local beacons and DX ones in coordination procedures or bandplans. It is unreasonable to ban extra beacons, therefore a way must be found to accommodate them.

The microwave beacon sub-bands are generally 200kHz wide in the x.800 - x.995 MHz ranges of each microwave band. There are a large number of beacons in all microwave bands from 23cms to 24GHz. However the only microwave bands with a designated beacon segment in the IARU VHF Handbook are 23cms and 2.3GHz.

Informal soundings suggest that spectrum below x.800MHz range is now under-utilised and is well suited to support a modest expansion of the beacon sub-bands. The issues are:-

- a) How much expansion should there be?
- b) How could additional frequencies be best used?
- c) How should microwave beacons be noted in the IARU-R1 handbook/bandplans?

Key points and proposal

Consideration of frequencies below x.800MHz suggests that 50-100kHz of spectrum may be available in microwave bands without significantly impacting other uses. It is important to provide a consistent scheme that can apply to all popular microwave bands so we propose a 50kHz expansion, as this is likely to be most acceptable.

One simple option would be to just extend the entire narrowband beacon segment downwards by 50kHz into the x.750-x.800MHz range, but this may not be the most efficient use. Therefore the key points are that:-

- a) In the microwave bands, local beacons, which should be 10W ERP max, may preferably be placed in the x.750-x.800MHz range of the relevant narrowband segment, adjacent to, but outside of the exclusive propagation beacon segments. In this range, the lower powers will permit greater frequency reuse. This permits traditional propagation beacon frequencies to be used more efficiently and minimise cases of local/mutual interference.
- b) We also propose that the main 200kHz beacon frequency bands be clearly noted in the IARU-R1 VHF Handbook in the 3.4-24GHz bandplans. This is purely for clarity and to reflect current practice. At present only 23cms and 2.3GHz have such designations.

Recommendations

The following proposals are made:

1. In the bands 23cms to 24GHz, the range x.750-x.800MHz of each narrowband segment may be designated for Local Beacon use (10W ERP max) by National Societies.
2. To note the use of x.800-x.995 MHz for propagation beacons in the usage columns of the narrowband sections of the 3.4, 5.7, 10 and 24GHz IARU bandplans. For example:-
3400.800-3400.995 MHz - Propagation Beacons Only
3. Conference to consider formally incorporating 1) into the IARU-R1 bandplans as usage notes similar to 2) as per example below

10,368.750-10368.800 MHz - Local Beacons, 10W ERP max
10,368.800-10368.995 MHz - Propagation Beacons only
4. Local beacons need not be IARU-coordinated, but National societies should inform the IARU R1 Beacon coordinator of such local beacons and bandplan use.
5. That Section 10 of the IARU-R1 VHF Handbook has the text of Proposal a) above added to document the guidance for local beacons

RSGB welcomes comments on the size, scope and structure of the proposed bandplan changes, but is determined that the issue be fully addressed and resolved at the Conference