



International Amateur Radio Union Region 1



2017 General Conference – Landshut, Germany

16 – 23 September 2017

Subject	Frequency segments for Unmanned Machine Generated Mode (UMGM) in the 2 m, 70 and 23 cm Bands		
Society	REF	Country:	France
Committee	C5	Paper Number	LA17_C5_25
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1. Introduction

The objective of this proposal is to define a new allocation of frequency segments to facilitate further development of Unmanned Machine Generated Mode experiments (UMGM). The proposal is a follow-up recommendation to the withdrawal of the WSPR frequency allocation (VIE 16_C5_Rec_27: remove all dedicated WSPR spot frequencies and footnotes from the VHF Managers Handbook).

The proposal below make deliberately no reference to any specific digital mode to fulfil requirements of 144 MHz Narrowband Modernisation approach, with the objective to create more flexibility and provide more opportunities for future experiments.

2. Background

By nature, the location and time of operation of stations participating in such experiments change dynamically and cannot practically be centrally coordinated as the well-established and fully coordinated static beacon sub-bands. This proposal still aim to protect the static beacon sub-band.

There are, to day, a growing number of new modes to experiment with. A specific allocation of frequency to each mode would be too complex and inefficient; however, a lack of defined segment and agreed frequencies for these experiments will make international technical co-ordination of such experiments difficult and prone to un-guided local initiatives which will most likely lead to inefficiencies and perturbations.

3. Key points and proposal

The general principle of the proposed approach is to define, in each of the 2 m, 70 cm and 23 cm bands, a segment with three clearly identified frequencies and modulation bandwidth characteristics. These segments are reserved for UMGM experiments without any mention of specific mode or protocols but only definition of centre frequencies and modulation bandwidth characteristics.

In each segment the three frequencies are labelled UMGM 1 to 3 with for each of them a “channel bandwidth” and modulation bandwidth characteristics (see **table 1** below).

- On the 2 m Band, the 6-kHz segment from 144,4915 to 144,4975 MHz is proposed since it has been traditionally considered as guard band between the beacon segment and an “All Modes” allocation.

The 144,500 MHz “Image mode centre frequency” should be changed to a recommended “Image mode centre frequency USB” to avoid possible interference in FM mode considering that this mode is not optimal for such usage.

- On the 70 cm band a similar situation exists above the beacon segment. The 432,500 MHz APRS frequency would be recommended to migrate to 432,525 MHz. The 6 kHz UMGM segment could then be located from 432,4915 to 432,4975 MHz.
- On the 23 cm band, since there is no guard slot above the beacon segment with a wider band activity, the 6-kHz segment can be placed just below the local beacon segment from 1 296,7415 to 1 296,7475 MHz

We propose to consider the following Unmanned Machine Generated Mode bandwidths:

- UMGM1 is the centre frequency maximum modulation bandwidth 50 Hz.
- UMGM2 is the centre frequency maximum modulation bandwidth 500 Hz.
- UMGM3 is the centre frequency maximum modulation bandwidth 2 700 Hz.

The recommended maximum transmit/receive ratio over one hour period should be not more than 50%.

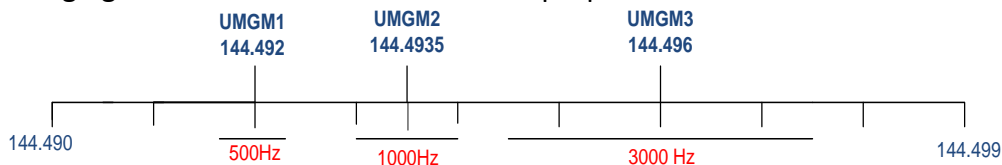
4. Recommendations

1. To introduce Unmanned Machine Generated Mode experiments (“UMGM”) segments on the 2 m, 70 and 23 cm bands, with centre frequency and recommended modulation bandwidths as summarized in table 1 below, assuming a duty cycle below 50%.

	Segment UMGM	Frequency UMGM 1	Frequency UMGM 2	Frequency UMGM 3
2m Band	144 4915-144 4975	144 492	144493.5	144 496
70cm band	432 491-432 499	432 492	432493.5	432 496
23 cm Band	1296 741,5-1296 747,5	1 296 742	1 296 744	1 296 746
Channel Bandwith		500 Hz	1000 Hz	3000 Hz

Table 1

The following figure shows with more details the proposed scheme on the 2 m band:



2. To update the 2 m band plan by renaming the 144,500 MHz “Image mode centre frequency” to “Image mode centre frequency - USB” to limit possible interferences.
3. To update the 70 cm band plan by shifting the 432,500 MHz APRS frequency to 432,525 MHz.