International Amateur Radio Union Region 1
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Subject	Minutes of C5 ATV Working Group		
Society		Country:	
Committee:	C5	Paper number:	VAR14_
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Task: To consider papers relevant to ATV -
VA14_C5_11 RSGB – Band plan Updates (item to clarify 144 ATV talk back)
VA14_C5_12 DARC - Usage of DATV in the 70 cm Band - Request for Discussion
VA14_C5_35 OEVSV - Proposal to protect Amateur Satellites in 435-438 from ATV

Note: The update of ATV Contest rules (inc for DATV) is also relevant, but excluded from this group

Attendees: RSGB, DARC, OEVSV, SARL, REF, CRC, VERON, SSA

Clarification of 144MHz Talkback (VA14_C5_11)
The working group agreed with the C5-11 TV proposal that 144.525 talk back be removed from the VHF Handbook as it is unnecessary and not used. This will leave 144.750 as the clearly designated frequency, which will help support activity and contests

Introduction of 70cm DATV Papers

Prior to introducing the papers the Chairman highlighted that there had been no guidance for DATV until in Vienna-2013, "8.8.11 IARU Region 1 Technical Recommendation for Digital ATV", was introduced – but this did not include 70cm

VA14_C5_12 – DARC introduced this and highlighted it proposed that this did need a discussion as DATV in 70cm is developing (and AGAF in DL is quite keen on updated guidance). It was noted by others there was some limited use of 70cm for DATV repeater outputs

VA14_C5_35 – OEVSV introduced updated version of their paper (which was largely some editorial changes only). The Chairman highlighted that this paper had caused serious concerns. OEVSV clarified they do recognise and support innovation and that in particular their prime concern was 70cm repeater **outputs** in the 435-438 band, and any other activity that might interfere with amateur satellites

One of the drivers for DATV development was that the narrower bandwidths enabled easier access to spectrum, when other frequencies become restricted or unavailable. In addition it is a good demonstration of innovative amateur radio. There is also some ongoing small use of analogue SATV (mainly in Netherlands)

It was agreed that the 70cm band plan was based on analogue standards and needed modifying
Useful points are that:-

- ATV (inc in 435-438) is covered only by note-c, which gives amateur satellite priority in any case
- When originally created, Note-m would have been for 434 MHz datacomms and not TV. It is also only within the all-modes sections
- And avoid any other high duty cycle transmissions

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IARU Region-1 satellite advice is that the amateur satellites with active transponders are coordinated towards at the bottom of the satellite band, whilst most cubesats are at the top end. Compatibility with both the amateur satellite service as well as other Primary users is a key objective, as already required by the VHF Handbook

Considerable discussion occurred in the working group on the balance of:

- Protection of satellites and other restrictions, versus
- The need to foster innovation in both 70cm and potentially lower VHF frequencies where space may be available for new DATV developments

Additional data provided that was very helpful included:-

- Video of new reduced bandwidth DTV (<1MHz) (from a recent BATV meeting in the UK)
- Statistics on distribution of satellites in the 435-438 band
- Information from Graham G3VZV regarding the frequency coordination strategy for amateur satellites
- A reminder that many commercial TV receivers (for DVB-S, DVB-T etc) which are typically used by DATV at present cannot decode at very low symbol rates (eg <<2Mbs/s)
- Examples of measured spectrum masks

Whilst very low ATV bandwidths are to be encouraged, anything too low at this time would be seen to be too prescriptive

Recommendations

Changes are required in various parts of the VHF Handbook

TV Repeater Transmissions (general recommendation)

In any band where there is serious compatibility issue, TV Repeater Outputs must minimise their overall transmissions to reduce the potential for interference. In such bands, continuous beacon or testcard transmissions are a particular problem and should be phased out in favour of short regular transmissions or transmit-on-demand.

DATV Technical Recommendation Changes

A 435 MHz entry is added to the technical recommendation table for Digital ATV with 2MHz and 2Mb/s max bandwidths

Add new footnotes (below table)

- The bandwidths in the table above are recommended maximums. Development of narrower bandwidths are strongly encouraged as equipment allows

- DATV operators should ensure they transmit ‘clean’ signals in order to avoid adjacent channel interference. Particular attention is recommended regarding power amplifier linearity and the transmitted output spectrum

- Other frequency bands are permitted if the bandwidth is compatible. Any ATV operation should avoid interference to narrowband frequency centres in the relevant band plan

70cm Band Plan Change

And also add a new general footnote in 1.1:-

- ATV Repeater outputs are not permitted in the 435MHz band

Note-c to be modified

- ATV operators should be encouraged to use the microwave allocations where available, but may continue to use the 435 MHz band ~~where permitted by the licensing authority~~. In case of interference between ATV and the Amateur Satellite Service, the Satellite Service shall have priority.

- Any remaining legacy wideband ATV usage in the 435MHz band should be phased out in favour of narrower bandwidth, more compatible, modes such as DATV or SATV

- For ATV transmissions, ~~in the 435 MHz band should take place in the segment 434.000 - 440.000 MHz. The video carrier should be below 434.500 MHz or above 438.500 MHz. n~~ational societies should provide guidance to their members on the exact frequencies to be used, with due consideration of the interests of other users.

Introduce a new footnote to the band plan:-

DATV & SATV

As the national 70cm allocations vary considerably, it is not possible in the VHF Handbook to specify exact centre frequencies for DATV/SATV operation – but it should be where its bandwidth is compatible with other uses.

If the 435-438MHz amateur satellite section is used for ATV, it shall be on the following basis:-

- ATV (like Voice) Repeater outputs are not permitted
- ATV Internet gateways are not permitted
- ATV Repeater inputs are permitted (eg for cross band usage)
- ATV Simplex usage is permitted
- Transmission times by ATV users should be as short as possible
- Any usage should also be compliant with the Region 1 Technical Recommendations for DATV/SATV and in particular the maximum bandwidth
- Centre frequencies of ATV usage in the amateur satellite section shall be chosen to place its bandwidth at the upper end of the amateur satellite section

Background Information

Mike DK3WN has provided the following useful information below
This shows how current frequency coordination places educational cubsesat towards the top of the 435-438MHz amateur satellite allocation, whilst amateur transponder satellites are generally allocated towards the bottom near 435MHz.