

Report Committee C5 – VHF/UHF/Microwave. Lillehammer 1999

To facilitate discussion at the plenary meeting the proposed recommendations have been collated on the first pages of this report. References to these can be found in the minutes

- A. The following 4 recommendations have been unanimously accepted by the Vienna 1998 meeting of the VHF/UHF/MW Committee, endorsed by the EC in April 1998. The committee C5 proposes the plenary to finally endorse those recommendations, marked C.5 A-D**

RECOMMENDATION C5.A (PAGE 6)

144.140 TO 144.160 MHz SHOULD BE LISTED IN "USAGE" SECTION OF THE 145 MHz BAND PLAN AS A RECOMMENDED, NON-EXCLUSIVE, ALTERNATIVE SEGMENT FOR EME OPERATION, SHARED WITH FAI OPERATION.

RECOMMENDATION C5.B (PAGE 6)

2435 MHz \pm 8 MHz MAY BE USED FOR ATV FOR SO LONG AS THERE IS NO ACTIVE SATELLITE USING THIS FREQUENCY. IN THE CASE OF AN ACTIVE SATELLITE AT THIS FREQUENCY, THE ATV USE WILL CEASE IMMEDIATELY.

RECOMMENDATION C5.C (PAGE 6)

FOR NARROW BAND OPERATION IN THE 24 GHz BAND THE SUB-BAND 24.192 TO 24.194 GHz IS RECOMMENDED. IN THOSE COUNTRIES WHERE THIS SUB-BAND IS NOT AVAILABLE THE ALTERNATIVE NARROW-BAND SEGMENT AT 24.048 TO 24.050 GHz IS RECOMMENDED.

RECOMMENDATION C5.D (PAGE 6)

WHEN LOGS FOR IARU REGION1 VHF/UHF/MICROWAVE CONTESTS ARE SUBMITTED ELECTRONICALLY, THE FORMAT DOCUMENTED IN VIE(98)05 SHOULD BE USED. IT IS RECOMMENDED THAT SOCIETIES USE THE SAME FORMAT IN THEIR OWN CONTESTS.

- B. The following draft recommendations have been approved by committee C.5 The plenary meeting is invited to accept these.**

RECOMMENDATION C5.1 (PAGE 10)

The table in " IARU Region 1 VHF/UHF Beacons - A guide to good practice" VHF Managers Handbook Page IXaA2, shall be amended.

The new table should be as follows;

Band	Freq. Spacing
50 MHz	1 kHz ¹
70 MHz	1 kHz
145 MHz	1 kHz
435 MHz	2 kHz
1.3 GHz	5 kHz

The reference to note 1 from the 70 MHz row and the 145 MHz row shall be deleted.

RECOMMENDATION C5.2 (PAGE 10)

The current IARU Region 1 technical Recommendation on FM ATV parameters in the microwave bands to be amended as follows for the bands 1.3 GHz to 10 GHz inclusive unless particular national allocations allow systems having a greater overall bandwidth. Above 24.0 GHz the existing recommendation may still be applied.

STANDARD FOR MICROWAVE FM ATV

Mode of emission:	F5/F3
Video bandwidth (3 dB):	5 MHz
Pre-emphasis:	CCIR recommendation 405.1
Colour sub-carrier frequency:	4.433618 MHz
Maximum instantaneous modulation index:	0.5
Peak deviation (with pre-emphasis):	3.5 MHz
Channel bandwidth:	12 MHz at -40 dB 18 MHz at -60 dB
Sound sub-carrier frequency:	5.5 or 6 MHz
Sound sub-carrier amplitude (with respect to peak video):	-14 dB
Sound sub-carrier modulation index:	0.2 0.07

Notes

1. A video filter having a -3 dB bandwidth of 5 MHz should be included in the modulating amplifier.
2. A video peak clipper should be included after the pre-emphasis but ~~after~~ before the video filter.
3. DC clamping of the video signal should be included to prevent the nominal carrier frequency from changing with different television scenes.
4. A RF output filter should be included to prevent out of band energy from whatever source from reaching the aerial system.
- ~~5. When it is necessary to reduce the transmitted bandwidth below that shown above the sound carrier should be reduced in level or be removed altogether.⁴~~

RECOMMENDATION C5.3 (PAGE 11)

The text of note iii to the 145 MHz bandplan to be amended as follows:

- iii. No packet-radio networks will be set up in the 145 MHz band ~~and no access from the 145 MHz band to networks on other bands will be allowed.~~

RECOMMENDATION C5.4 (PAGE 12)

The relevant parts of the rules for IARU Region 1 VHF/UHF contests are to be amended in such a way that errors in logged contacts are only giving a penalty to the "receiving station" and that the penalty for a logging error shall always be the loss of ALL POINTS for that contact.

RECOMMENDATION C5.5 (PAGE 13)

In IARU Region 1 VHF/UHF/MW contests the score for a contact between two stations operating from the same locator shall be 1 km.

RECOMMENDATION C5.6 (PAGE 13)

Item F in the procedure for organising IARU Region 1 VHF/UHF/MW Contests to be amended as follows:

- F. The organising society will allow a margin of one week for possible postal delays and will declare the entry closed on the ~~tenth~~ twelfth Sunday after the contest weekend. Entries received after this date will be returned to sender or -if agreed by the sender by mail or fax- be destroyed.

RECOMMENDATION C5.7 (13)

The requirement for a signed COVER SHEET to accompany the logs of participants to be deleted. Instead item D in the procedure for organising IARU Region 1 VHF/UHF/MW Contest to be amended as follows:

- D. In order to obtain the most important results as quickly as possible the following checking procedure ~~is strongly recommended~~ shall be followed: The VHF Manager or properly nominated Contest Committee in each country shall check a sufficient number of logs to establish the first three stations in each contest section by:
- checking all national contacts completely and applying the necessary penalties as given in the rules
 - checking all distances of claimed contacts with foreign stations by measurement or calculation and making corrections where necessary. The resulting total score shall also be checked.

After having been dealt with this way, the logs shall be sent to the organizing society, separated in sections (bands, where applicable) and accompanied by a list showing the details of all entrants and their claimed scores. This list shall be signed by the VHF Manager or Chairman of the National Committee of the country.

RECOMMENDATION C5.8 (PAGE 7)

The following definitions to be used in relation to the reporting of meteor scatter contacts.

- Ping: Reflection from an underdense meteor trail.
Burst: Reflection from an overdense meteor trail.

The relevant details to support this definition will be published in the VHF Managers Handbook and are found in annex 1 to the meeting report of committee C.5 (doc C5.31).

RECOMMENDATION C5.9 (PAGE 13)

In order to make the indication of special propagation modes possible the Tonality (T)

component of the RST reporting system (the 1-9 scale) will be extended with the following:

"a" For signals distorted by auroral propagation
"s" For signals distorted by "rain-scatter" propagation
"m" for signals distorted by multipath propagation.

(other letters can be added once the need arises)

and

the IARU contest rules shall be amended in such a way that for telegraphy contacts a letter may be given in stead of the numbers 1-9 for the tonality report.

RECOMMENDATION C5.10 (PAGE 8)

The longitude and latitude used for the determination of the QTH locator shall be based upon World Geodetic System 1984 (WGS-84).

RECOMMENDATION C5.11 (PAGE 14)

For NBFM repeaters on the 435 MHz band and above the following additional operational parameters may be adopted.

1. They may transmit continuous carrier when no talk-through traffic is present. This is known as beacon mode.
2. When in beacon mode, the callsign and locator of the repeater should be sent using FSK rather than the AFSK used in normal talk through mode This would not be audible to FM users of the repeater if the frequency shift is kept low, say 500 Hz, but would be easily copyable with an SSB receiver. It is suggested that the FSK identification should be sent at least, once per minute at 12 wpm.
3. The repeater may use right hand circular or mixed polarisation antennas to facilitate reception of the repeater by stations using horizontally polarised antennas.

MINUTES OF COMMITTEE C5 - VHF/UHF/MW Lillehammer September 18 – 25th 1999

1. Opening, Courtesies, Apologies.

The Chairman, PA0EZ, opened the meeting at 0915 on Monday 20th Sept 1999.

2. Introduction of delegates.

The chairman welcomed delegates from;

ARI (Italy), ARM(Monaco), CRC (Czech Republic), DARC (Germany), EDR (Denmark), ERAU(Estonia), HRS (Croatia), IRA (Iceland), IRTS (Ireland), NRRL(Norway), OEVSV (Austria), PZK (Poland), REF (France), ROARS(Oman), RSGB (Great Britain), SARL (South Africa), SRAL (Finland), SSA(Sweden), UBA (Belgium), URA (Andorra), URE (Spain), USKA (Switzerland), VERON (Netherlands), ZRS (Slovenia).

and observers VK3ADW (IARU vice president), MRASZ(Hungary)

The minutes were taken by G3UUT.

For the session on Monday Sept 20th written proxies were received;

EDR held the proxy for FRA (Faroes)

OEVSV held the proxy for SARA (Slovak Republic)

For the session on Tuesday Sept 21st written proxies were received;

EDR held the proxy for FRA (Faroes)

OEVSV held the proxy for SARA (Slovak Republic)

NRRL (Norway) held the proxy for IRA (Iceland)

For the session on Wednesday Sept 22nd written proxies were received;

OEVSV held the proxy for SARA (Slovak Republic)

In addition the proxy votes for the entire conference validated by Committee C2 would apply in this meeting. The ones held by societies with delegates present at the meeting were:

DARC (Germany) held the proxy for UARL (Ukraine)

SARL (South Africa) held the proxy for ZARS (Zimbabwe)

ROARS (Oman) held the proxy for ERAA (Egypt)

RSGB (United Kingdom) held the proxy for GARS(Gibraltar)

UBA (Belgium) held the proxy for RL(Luxembourg)

URA (Andorra) held the proxy for ARAS(Senegal)

USKA (Switzerland) held the proxy for AFVL (Liechtenstein)

All observers and delegates then introduced themselves.

3. Adoption of the final agenda. (C5.1 rev1)

The following amendments were made to the agenda.

Doc C5.10 is allocated to yellow doc C4.13.

Doc C5.13 was missed off the agenda and was allocated to agenda point 17.4.

Doc C5.14 will be considered under item 13.1 and not 17.3.

Doc C5.26 is allocated to green doc C3.32 (with its addendum) for agenda point 10.2

Doc C5.29 is allocated to the report of the frequency allocations coordinator.

Doc C5.30 is allocated to the report of the records coordinator.

OZ7IS asked if points 11.2 and 14.3 could be considered before Tuesday afternoon as the EDR EMC coordinator has to leave early. This was agreed.

This amended agenda was adopted unanimously.

4. Review of the minutes of the Vienna 1998 meeting.

4.1 Matters Arising

The Vienna 1998 report had been distributed in March 1998 to all present. There were no matters arising.

4.1a Review of action points

OH2LX had urged societies to publicise the auroral reporting form in the handbook. The chairman had not seen any reference to this in national magazines and asked again for magazine editors to publicise this request.

The frequency allocations coordinator still needs information on any new or changed frequency allocations. This is an important matter to all societies as it can help in getting new allocations and help to prevent their loss.

The letter on satellite frequencies to ZS5AKV had been written by The chairman.

The SRAL paper on the scientific background to meteor scatter reflections had not yet been done. As there was modified proposal on this issue at the conference this action was waived pending the discussion on this point.

The chairman has submitted the FM ATV proposal as doc C5.18 to this meeting.

The 3.4 GHz frequency allocation issue was postponed until SP5FM could be present.

4.1b Other Matters
None.

4.2 Confirmation of “Vienna Recommendations”

The following recommendations were adopted at the meeting of the VHF / UHF / Microwaves Committee in Vienna, February 1998, and have been adopted by the Executive Committee of IARU Region 1 at their meeting in May 1998 as interim IARU Region 1 policy until ratification at this conference. Consequently, Committee C5 recommends to the Plenary meeting of this Conference that the following be adopted:

RECOMMENDATION C5.A
RECOMMENDATION C5.B
RECOMMENDATION C5.C
RECOMMENDATION C5.D

5. Setting up of ad hoc committees.

A working group to work on FM ATV standards was proposed. G3VZV volunteered to act as convenor and VERON, DARC and OEVSU wished to participate.

6. Report from Chairman

The Chairman's report is contained in Doc C5.2

DF7VX agreed with the point in the report that IARU region 1 should elect a satellite coordinator. The chairman suggested it was up to the meeting if it wished to pursue the matter further and it would be brought up in agenda item 12.2.

7.Reports from the propagation studies coordinators.

The report from the auroral coordinator, OH2LX, is available as doc C5.20. The committee thanked him for his activities and report.

The Chairman presented a report from G3YLA, the Sporadic E coordinator (C5.27). G3YLA requested that a special effort be made during the millennium year for a full year of data from as many people as possible. E layer reports should be submitted, in any format (ideally in database format) to jbac@cunimb.demon.com. G3YLA suggested a possible award for people making confirmed Sporadic E QSOs over 2000 km in the year 2000 . The committee thanked G3YLA for this interesting informative report and wished him every success with his planned activities.

G4ASR notes that G3YLA does not state the band for the award but assumes that it is 145 MHz.

The chairman welcomed the idea of an award but indicated that help would be needed to organise it. G3YLA would need to publish the rules for the award and to adjudicate it. There would also be a need for someone to produce and manage the award. RSGB offered to do this provided that G3YLA can be the award adjudicator.

Action PA0EZ, G3YLA, RSGB

The chairman urged societies to inform their membership about the activities of the propagation coordinators by producing articles and to encourage people to report interesting contacts.

ZS5AKV commented that he felt the scientific language of IARU reports was not easy for the average amateur reader. They need to be in a more readable form for editors of journals. The chairman felt that another person may be needed to do a translation from the scientific outputs of the coordinators to articles for general use.

OE1MCU, the "unofficial coordinator for Tropo Propagation" reported that he is planning a web based databank which could take all sorts of information on contacts for propagation research and will publicise it when available. The meeting thought this was a worthwhile project and that it should be supported.

Action OE1MCU

7.1 Meteor data collected by amateurs

Doc C5.3. SRAL had proposed a similar document to this at Vienna but it was not accepted. This time many people felt there was too little information and there was difficulty for operators to know the difference between an underdense and an overdense meteor trail.

A working group was set up under the chairmanship of OH5LK with PA0SON, DF7VX, HA5EA and G4ASR to look at how this proposal can be made more acceptable.

The explanatory text produced by the working group was accepted and will be put into the propagation studies section of the handbook with a cross reference to the operating procedures section. The text is attached to this report in annex 1. With this reference the SRAL proposal was accepted resulting in recommendation C5.8.

7.2 Need for and election of coordinators

There are currently coordinators for sporadic E and aurora, there is doubt about whether investigating tropo propagation at VHF is worthwhile and of scientific value except on the higher microwave bands where rain scatter, water absorption etc become significant. The meeting was asked to review the need for and the purpose of these positions in the future.

There was general feeling that auroral coordination was useful. The chairman therefore actioned all societies to support the auroral coordinator by having local reps who will forward information.

Action ALL

G4ASR supported the work of G3YLA, the sporadic E coordinator, he is a well known meteorologist and has written a number of articles. He gets a lot of information from the UK and DJ3TF the DL sporadic E coordinator also sends him all his data.

The purpose of a tropospheric propagation coordinator would be to collect information and to inform the amateur community about tropospheric propagation particularly in the microwave bands. This would include other related modes like tropo backscatter along coastlines. The output would be in the form of information and statistics on interesting contacts that are being made and what might be possible given ideal working conditions and sites etc. G3UUT suggested that "tropospheric propagation coordinator" might not be the best title as it is often difficult to classify contacts and it should include other modes such as FAI, ionoscatter etc.

The chairman stated that there was sufficient support for the auroral and Sporadic E coordinators and that a suitable person would be required if the tropospheric propagation coordinator job was to be a success He would approach possible candidates. DARC offered its support. **Action PA0EZ, DARC**

8. Report from the Records Coordinator.

GM4ANB publishes his up to date DX records on his web site, on the RSGB VHF committee web site and also in the handbook. His report was not yet available but it was hoped to receive it before the end of the conference.

GM4ANB had indicated his willingness to stay on as the records coordinator and this was agreed by the meeting with thanks.

8.1 Determination of locators

Doc C5.6 SRAL. The meeting had some difficulty in understanding the exact mapping problem described in the paper. LA4LN presented a good logical explanation of the situation and that document was approved for inclusion in the handbook. The text is attached to those minutes in annex 2. The SRAL proposal resulted in recommendation C5.10. **Action PA0EZ**

9. Report from the Beacon Coordinator

G3UUT presented his report in doc C5.28 and a copy of the latest beacon list was given to all present.

HA5EA commented that he had been invited to a meeting in Slovenia of a joint Slovenian, Austrian and Hungarian project on beacons financed by the EC Phare programme. The output of this project is a very impressive handbook "Beacon 99" which contains information on a number of projects of great interest for beacon builders and microwave enthusiasts in the bands from 1.3 to 10 GHz.

There was a discussion about the beacon time sharing issues raised in the report. DF7VX was concerned about this affecting school projects which were listening for beacons on 2m. OH6DD felt that the only knowledge of time sharing so far was the IBP project which had been approved at Vienna and that it was important to have continuous beacons on the VHF bands.

ZS5JF suggested that an ad hoc group should get together to discuss this issue under the chairmanship of G3UUT. This was agreed with members ZS5JF, OH6DD, HB9PQX and G3USF. (See point 17.4).

The meeting thanked G3UUT for his excellent work, in particular in coordinating the flawless change of the 145 MHz beacon frequencies.

10.1 Report from the frequency allocations co-ordinator.

The frequency co-ordinator's (GM4ANB) report, (doc C5.29) was presented. This is an easy to use guide to the differences in frequency allocations between all region 1 countries. It also highlights the differences in the DX segments of each band.

The chairman thanked John for his good work over the years as frequency allocations coordinator and stated that as he is currently working in the USA, GM4ANB wishes to relinquish the frequency allocations coordinator job and a successor is required. **Action PA0EZ**

The chairman will take on the job on a temporary basis but would like nominations for the job from societies either one person or two with a split between VHF and microwave as indicated by GM4ANB in VHF newsletter 23. **Action ALL, PA0EZ**

10.2 Discussion of CEPT and ITU activities.

The chairman welcomed SP5FM to the meeting who gave an oral presentation of his report, and the activities of CEPT and ITU. There was a question and answer session;

Q. EA3BRA Is there a date when the Band 1 TV TXs must stop?

A. SP5FM. There is no specific date and it differs between countries except that there is a 2008 date for full implementation of the European common spectrum review.

Q G3USF. There is great interest in a spot frequency allocation near 40 MHz for beacon use. Is it possible to get this allocated more widely.

A. SP5FM. He agrees that there is a gap in the spectrum in this area however he is concerned that there should not be too big demands by amateurs for more spectrum in the light of the pressure on 430-440 MHz and so this should be done carefully and slowly. There is nothing to stop individual societies approaching their regulatory authorities for a beacon spot frequency near 40.7 MHz.

Q G4OUT. Have there been any developments on 70 MHz?

A SP5FM. There was only one country really supporting the addition of this band to the ECA - the UK. Other countries are prioritising 50 MHz.

Q HA5EA. On 144 MHz there is pressure in some countries for mobile and SRD sharing on 144 MHz

– is this happening in other countries?

A SP5FM. The Italian administration got no support from other countries when proposing this sharing.

Q OZ7IS. We share 2.4 GHz with ISM and the ISM goes higher in frequency. Why can we not share the rest of the band with ISM?

A SP5FM. The ISM band goes up to 2500 MHz but there are also mobile satellites, radio location and many footnotes in this area and spectrum.

VK3ADW congratulated Region 1 on its work in being able to convert the footnotes about amateur satellite operation into visible allocations and the chairman thanked SP5FM for his presentation and hard work on behalf of the amateur service.

11. Administrative Matters.

11.1 VHF Managers Handbook

There is the need for an expert to rewrite the satellite section. ZS5AKV volunteered and experts from VERON and DARC were also volunteered. **Action PA0EZ, ZS5AKV, DARC**

There was considerable discussion as to how the handbook should be made available as the region 1 office has not had any requests for paper copies recently. The VHF managers handbook version 4.0 is available on the RSGB VHF committee web site but the latest version is 4.1. The meeting felt that to cut costs it should only be available in electronic form preferably via a web site or email except in exceptional cases. A number of delegates felt that HQs of all member societies should be notified and sent a new version whenever it becomes available. There was an inconclusive discussion as to which format the electronic version should use with arguments being put for HTML, Word7 and PDF formats.

It was agreed that an ad hoc committee, chaired by ZS5AKV, would look at this issue and report later. **Action ZS5AKV**

11.2 EMC and SRD/LPD interference

This item is moved to agenda point 14.3.

12. Satellite matters.

12.1 The IARU Region1 discussion on ARISS frequencies

The chairman introduced the subject and brought the meetings attention to paper C5.23 which gives the background information to the issue. This contains annex 1 which is the original ZS5AKV (IARU satellite adviser) paper at Vienna, annex 2 which is the output letter from Vienna to ZS5AKV summarising the IARU region1 policy on the subject and annex 3 which is a reply from ZS5AKV. Note that C5.23 appendix 3 is not relevant to this issue and has been numbered in error.

ZS5JF introduced doc C5.17 looking for a frequency allocation for the future international space station (ISS). The frequencies requested were the same as at Vienna and Tel Aviv. The ARISS team has a logistical problem with other RX frequencies and only those in the mentioned in the document are suitable. ZS5AKV acknowledges that this is a problem issue and that not enough liaison was done early on in the process but that it is now a fait accompli. He pointed out the fact that satellite operation is about the only aspect of amateur radio that is of high profile and of public interest and thus is important for the future of amateur radio. ZS5AKV also states that region 2 have moved a large number of APRS repeaters to accommodate the space station operation. The chairman noted that region 1 also removed it's repeaters on R8 (145.8/145.2).

OE1MCU wished to know what had happened since Tel Aviv and why it has not been possible for NASA to re-consider these frequencies over this period of time?

I8CVS showed a transparency of the 145.8-146 MHz satellite band. He proposed that 145.2 is used for uplink and 145.8 MHz be used for downlink 145.8 MHz cannot be used as the uplink as it will interfere with the receivers in other satellites. This is effectively the opposite way round to the Vienna output letter. He also suggested using frequencies in the 435/6 and 438 region as a duplex pair. He would like the next six-monthly NASA-ARRL-AMSAT meeting to check out these frequencies and report back.

DF7VX stated that the point about propagation research using beacons in paper C5.17 is not true. They have been used for IEEE papers (see VHF managers handbook).

OZ7IS proposed the use of dual band duplex with 70cm/ 145.8. This should not now be a problem due to the ready availability of dual band equipments.

The chairman asked what is the bandwidth of the ISS RX input filter and antenna.

ZS5AKV stated that at beginning of the ISS project a 2m station was proposed and the three frequencies were cleared very early on in the project. G3VZV noted that when NASA, AMSAT and ARRL get together they tend to forget the rest of the world which is why the frequencies were chosen as they were. Region 1 has a choice. Turn it off over Europe or remove three or four beacons. DF7VX indicates that this could actually be at least five beacons depending on the bandwidth of the ISS receiver and the logistical problems of doing this are very significant.

OZ7IS. Clarifies that there is only one frequency under discussion – 144.490 MHz if this is available then 450 and 470 are not required. This was agreed by ZS5AKV.

A vote was taken to extend the application of footnote Q to the bandplan at least to the next conference. This was overwhelmingly rejected by the meeting. A vote was taken on the other two frequencies 144.450/470 MHz and the use of these frequencies was also overwhelmingly rejected.

The two Further issues on paper C5.17 were then discussed, rescinding the policy of channelisation below 145 MHz and a review of the beacon band. There was little support for either issue.

12.2 A Region 1 satellite coordinator

The chairman asked the societies for volunteers for the position of IARU region 1 satellite coordinator. He will write a terms of reference document and send it to the VHF managers. The main parts of the job would be;

To advise the C5 committee on matters concerning amateur satellites.

To liase between the C5 committee and the IARU Satellite Advisor.

To keep the C5 committee up to date on the state of relevant satellite developments.

This is an important task and should help to avoid the problems discussed in 12.1 above.

Action ALL, PA0EZ

13. Technical Standards

13.1 Beacons

Doc C5.14. This paper proposes changes to the frequency spacing table in “Guide to good practice in the VHF managers handbook. It was discussed together with the VERON amendment.

DF7VX pointed out that currently the frequency of many existing beacons in the 435 MHz and 1.3 GHz bands do not meet the recommended spacings and would they need to be moved? G3UUT replied that he had no intention of asking existing beacons to move but wanted sensible guidelines for planning new beacons.

OH6DD felt that it would be better to have a narrower spacing than 5 kHz on 23 cm as he did not feel that frequency stability was a problem. ZS5JF felt that 1ppm was easily possible with TCXOs. G3UUT felt that stability was still an issue and he did not wish to force beacon builders on 23cm to have to use high stability oscillators and frequency synthesisers.

The proposal with the VERON amendment was agreed and resulted in recommendation C5.1.

13.2 ATV

Doc 5.18. G3VZV presented the results of the ad hoc group in an annex to C5.18 (based on a paper by DL2CH). This was accepted unanimously and will form recommendation C5.2.

14. Bandplanning

14.1 Bandplanning concepts

C5.10 (C4.13) This is a general approach to bandplanning and could be more significant if accepted by the HF committee. The chairman asked for reactions to the document.

DARC. The idea behind this proposal is important however on 145 MHz we have narrow band modes at both ends of the band so it must be a long term approach to adapt our bandplans according to those principles.

OE1MCU observed that the 145 MHz band plan is now working well and could see no reason to change it.

The conclusion was that it is an interesting contribution to guide the planning in the future but that immediate changes should not be done to band plans that are working well.

14.2 145 MHz Bandplan

14.2a APRS

APRS (Automatic Packet Reporting System) is being increasingly used across Europe and SRAL ask if a coordinated frequency should be available. There were many comments as follows.

ON500. APRS is a single frequency packet radio application.

OE1MCU. If it is manned then it can go in the all modes section. If it is unmanned then it should go in the digital(packet) section.

ZS5AKV. For the system to operate effectively it needs digipeaters therefore one coordinated frequency must be used as in the USA.

LA4LN stated that this is an AX25 mode using callsigns and position information therefore it is amateur radio. 144.8125 MHz has been agreed by NRAU in the Nordic countries with link frequencies in the 435 MHz band. A single frequency is not necessarily needed and should be anywhere in the digital segment determined by local circumstances. The preferred frequency in GB is 144.800 MHz.

OH6DD. Noted that APRS is also used in OH for emergency communications. He thinks that there are simple crystal controlled devices used for this purpose therefore a coordinated frequency is important.

The proposal was rejected by a small majority. PA0EZ actioned all societies to ensure that they are aware of the APRS situation and the frequencies already in use in region 1. A paper on the subject is required for the next meeting.

Action ALL

14.2 b Manned space operations frequency

This issue was discussed in point 12.1.

14.2c Spot frequency for HF DX

Doc C5.25. The meeting felt that there should not be a footnote for every usage of a particular frequency and noted that other well known frequencies such as 14.345 and 28.885 MHz are not in the bandplan. The proposal was not supported however it was noted that it is not a problem for individual societies to put usage footnotes for particular channels in their bandplans. Frequencies currently in use for this purpose are 145.400 EDR, 145.375 NRRL.

14.2d 145 MHz access to data networks

UBA amended its proposal C5.24 to seek to remove the second part of the footnote *and no access from the 145 MHz band to networks on other bands will be allowed.*

There was concern from a number of delegates that the footnote is not widely followed at present.

However if it was completely removed it would be difficult to put pressure on users to go to other bands. The meeting agreed to remove the second part of the footnote from the bandplan resulting in recommendation C5.3.

14.2e A Usage frequency for PSK31

Although not an input paper this issue was brought up in the newsletter. Frequencies around 144.610 and 432.610 MHz have been proposed by VERON and those are generally used elsewhere.

14.3 The future of the 435 MHz band

Doc C5.5 EMC

OZ8CY (IARU region 1 EMC coordinator) presented the current state of EMC problems on the band and commented that there is not much that amateurs can do to prevent interference from SRDs and LPDs. He suggests that amateurs must learn to live with these devices and adopt a professional attitude. Problems with bad devices, however, must be reported so that the authorities can take action.

VK3ADW states that LIPDs (Low Interference Potential Devices) have to be licensed in VK. They must not cause interference and have no protection from other band users. However commercial pressures are now a problem and this issue is starting to become a problem.

Doc C5.7. The Future of the 435 MHz Band

OZ7IS introduced the paper noting that there was now a very significant problem with interference from SRDs and LPDs and that the region from 433 to 435 MHz was more or less unusable

I8CVS stated that the 435-436 MHz was allocated to satellites long ago and will be used by phase 3d and that there will be problems with mutual interference. Italy already has a problem with a repeater on 435.450 MHz that will get worse if this proposal goes ahead.

PA0SON presented the VERON amendment. They feel that a region-wide change to the allocation is not necessary but that it is acceptable in those countries that have a smaller allocation.

OE1MCU comments that AMSAT have the right to allocate spectrum within the satellite band and must be consulted first before action of this type is taken.

HA5EA states that the problem of changing the bandplan is very complicated and difficult and must be done by changing the whole bandplan rather than part of it.

G3VZV. The part of the band that is under used in the UK is 432.4-432.8 MHz and should be included in any review of the usage of 70cm. There is enough spectrum if it is used correctly.

VK3ADW thinks that the proposal will have ramifications in region 2 and 3 and feels that the satellite coordinators must be involved.

At this point a vote was taken, the VERON amendment was rejected by nine to thirteen votes and the main EDR proposal was overwhelmingly rejected. Due to the serious nature of the topic an ad hoc group was set up to look further into the issue, chaired by OZ7IS. This produced an interesting proposal for a complete re-layout of the 432-435 MHz segment of the band based the following points;

The beacon band will stay as a 200 kHz segment but be moved down in frequency. Repeaters will still use 25 kHz channel spacing. It will be mandatory for the bottom 200 kHz of the repeater output segment to use CTCSS to mitigate any remaining LPD interference.

This document was well received and the chairman proposed that it be added as annex 3 to the conference minutes. OZ7IS was asked to provide an input document along these lines for the next conference.

Action OZ7IS

It was noted that there were some locally used segments that could not be fitted into this plan such as a wide band digital area and the linear transponders used in Germany. OZ7IS felt that there was simply not enough room to fit everything into the six MHz but these issues could easily be dealt with locally. OZ7IS also presented another document for 4.8 MHz repeater and digipeater spacing which gave more flexibility for satellite applications in case a 500 kHz segment in the satellite segment would have been available. It was also noted that there are additional problems in Italy which only has a 4 MHz allocation (432-433 and 435-438 MHz).

15 Contests

15.1 Contest Rules

15.1a Error penalties

G4OUT presented doc C5.9 proposing that only the receiving station should be penalised when logging errors occur. Two questions were raised, what happens if the receiving station does not log the contact and how do we tell who has made the error if there is a typing mistake?

The proposal was accepted.

15.1b Log error penalties

G4OUT presented doc C5.11 on penalties for logging errors. This was accepted and together with the result from 15.1a forms recommendation C5.4.

15.1c Points for within locator contacts.

G4OUT presented doc C5.12 to propose 3 km for contacts within the same locator square.

OE1MCU is against this proposal as in microwave contests distances could be very close. HB9PQX suggested that, for microwave contests, a micro-locator system should be used to get the correct distance. OZ7IS agrees that no valid contact should score zero points and proposes every kilometre

or fraction thereof counts as one point. G4OUT suggests that a solution would be to restrict this proposal to 1296 MHz and lower. The chairman thinks this could be difficult for the handbook. EA3BRA suggests 1 km rather than 3 km but ZS5JF noted that the diagonal of the square is much greater than 3 km.

A vote was taken. There was a big majority in favour of same locator contacts counting for 1 km and this resulted in recommendation C5.5.

15.1d Time limits for submission

G4OUT introduced doc C5.16 to increase the time limits from 10 weeks to 12 weeks. G4OUT agrees as RSGB sometimes has difficulty if there is a problem adjudicating the contest locally or if there are two contests close together. SP6LB did not feel the need for an extension of the time limit.

The proposal was accepted and resulted in recommendation C5.6.

15.1e Publication of preliminary results

Doc C5.19. This was accepted.

15.2 Electronic logs; experiences

The chairman asked for experiences of electronic logs (based on Reg1test).

F5FLN feels that the format is slightly too complicated and feels it would be better if it was simplified. OK2ZI mentions a program by OK1DUO which is readily available on the web which can output the reg1test file. G4OUT states that in the UK 80-90% of contest logs received are in electronic format. F5FLN and HB9PQX asked if there is any special software that will take into account all the logs and come up with a final result. It was stated that TACLOG MANAGER by OZ1FDJ and LOGGER by SM0LCB will do this job.

15.3 Cover sheet requirements

G4OUT presented doc C5.21. There has been a problem with the cover sheet in electronic logs as the rules state that the cover sheet must be signed. The chairman introduced the VERON amendment to this paper. ZS5JF corrected the grammar and the paper and amendment were accepted unanimously resulting in recommendation C5.7.

15.4 Societies that are willing to organise future IARU R1 Contests

Volunteers were sought to organise future Region 1 contests. After some discussion the following list was compiled.

	VHF/UHF/MW	ATV	50 MHz
2000	DARC	UBA	HRS
2001	ARI	REF	ARI
2002	SRAL	RSGB	CRC
2003			SSA

16 Operating

VERON introduced doc C5.8 which is a modification of the document presented at Vienna. OZ7IS suggests that the Latin word Pluvio ie a P be used for the rain scatter abbreviation. G4ASR suggested rs for rain scatter but it was pointed out that this would cause problems with contest programs. The paper was accepted unanimously as written resulting in recommendation C5.9.

17 Beacon Matters

17.1 145 MHz transatlantic beacon project

The chairman put forward F6ETI (who runs the F5XAR transatlantic beacon) for the vacant post of transatlantic beacon coordinator. This was accepted.

17.2 Repeaters in beacon mode

Doc C5.15. G3UUT introduced the proposal and pointed out that this was not a paper from RSGB but from him as the beacon coordinator. He also introduced an amendment to remove its application to the 50 MHz band. He stressed that this was to be used at the discretion of national societies and was not intended to alter the intended planning or usage of the repeater.

VERON put in an amendment to extend the frequency limit to 432 MHz and to only be applicable to NBFM repeaters. ZS5JF was concerned that this definition of modulation was vague and could include digital devices. G3UUT stated that his intention had been for the application to voice repeaters.

DF7VX was concerned about the extra power consumption of the repeater which often had to be paid for by amateurs. G4ASR pointed out that it is not mandatory for the repeater to transmit carrier. EA3BRA asked if the repeater should transmit at full power or lower power in this mode. G3UUT felt that this could be at the discretion of the local group or national society. OH6DD noted that they have a beacon that acts similarly to this but moves by 25 kHz into the beacon band when in beacon mode. OH5LK was concerned that mobile receiver squelch would be always open due to the continuous carrier. G3UUT commented that this could be solved by using CTCSS and by removing the tone when in beacon mode. OZ7IS felt that polarisation is a problem on the 432 and 1296 MHz band.

VERON also amended their amendment to remove 50 MHz and a vote was taken. The amended proposal was accepted unanimously. This resulted in recommendation C5.11.

17.3 Amendments to "A guide to..."

Doc C5.14 was dealt with in 13.1.

17.4 Frequencies for multiband time sharing beacons

G3UUT introduced doc C5.13. OZ7IS was unhappy that frequencies in the beacon band had been chosen and suggested 50.010 MHz, however it was noted that this was an eme frequency. The original proposal of 50.050 and 70.050 MHz was accepted.

Doc C5.32, an output document from an ad hoc group on time sharing beacons was discussed. This document was felt to be a good clarification of the possibilities for this type of beacon and it was decided to attach it as annex 4 to the minutes for information with the possibility of inclusion in the handbook after the next meeting.

18 Election of VHF/UHF/Microwaves Committee Chairman 1999-2001

Nominations for the chairman of the VHF / UHF / MICROWAVE committee for the next term were received as follows; URE nominated PA0EZ, seconded by DARC
SARL nominated G4ASR, seconded by REF.

A secret ballot was held and the result was G4ASR eight, PA0EZ twenty-two.

It was agreed to put forward the candidature of PA0EZ to the Final Plenary Meeting.

19 Any other business

Unmanned stations in Germany

DF7VX showed a slide of all the automatic stations in DL showing that there are about 3000 in total.

Location of the interim meeting

The chairman noted that there will be a mid-term meeting early in 2001. The chairman had received an invitation from EDR proposing that this meeting should be held in Copenhagen. There is also the standing invitation from OEVSU for Vienna. UBA added that it will be the fiftieth anniversary of IARU shortly and that it started in Copenhagen. F5FLN asked if the interim meeting should go ahead given the IARU's financial problems. The chairman noted that the meeting will only go ahead if there are sufficient papers. OE1MCU noted that Vienna is a low cost venue and is easily accessible for many eastern European countries. It was unanimously agreed that Vienna should be the venue.

20 Closure of the meeting

The chairman thanked the delegates for their contributions and co-operation and closed the meeting at 14.35hr.

21 Additional meeting

An additional session of Committee C.5 was held on Wednesday from 22.15-22.45 hrs. The only subject was to discuss the proposal from the Chairman to extend the validity of note q. to the 145 MHz bandplan with another 3 years, but only in the non-European part of Region 1

The proposal, however, only received a very small support and note q, therefore, will be deleted from the 145 MHz bandplan.

DEFINITION FOR PING AND BURST FOR SCIENTIFIC ANALYSIS ON AMATEUR RADIO METEOR SCATTER

SRAL Finland

At the moment there is no common and exact definition for a ping. For the analysis of scientific data the old way of defining a ping and a burst, which depended on information / no information, is not relevant.

Therefore for the correct analysis the following definitions should be used:

Ping: Reflection from an underdense meteor trail.

Burst: Reflection from an overdense meteor trail.

Background:

Radio Amateurs have used the term "ping" to describe a "short" reflection. Most of the European operators define "ping" as a reflection too short to pass information. This definition was most likely evolved in the 1970's, when high speed CW (then < 600 LPM) gained popularity in Europe. With the less efficient equipment used those days, the shorter reflections were either too short to pass full characters due to slow speed and/or too weak to decode with the equipment available at that time.

Some operators define "ping" as a reflection from an underdense meteor trail and "burst" as a reflection from an overdense trail. This is also how "ping" and "burst" are described in The VHF/UHF DX Book (published by RSGB). Generally it can be said that most good reflections come from overdense trails and short/less usable reflections (pings) from underdense trails. Overdense and underdense reflections can be roughly separated by duration of the reflection (reference 1).

The principal difference of underdense and overdense trail is the mechanism that re-emits RF-energy. On underdense trails the RF-energy penetrates the trail and makes electrons oscillate and re-radiate energy, while on overdense trails, no penetration occurs and the trail is modeled as a metallic cylinder reflecting RF-energy. When receiving meteor reflections the audible differences are found in signal strength, duration and decaying shape.

CW speeds used in MS have increased since 1970's by about four times and new digital equipment (i.e. DTR) make copying useful information from a weak reflection now much more easier. The old way of defining a ping has thus become invalid and does have serious lack of logic by definition, while the underdense/overdense division is based on well known and studied physical facts, as described in scientific literature.

It would also be extremely useful, if MS working results published i.e. in DUBUS were of scientific use. Such working results could be used by people like OH5IY, who are doing scientific research on meteor scatter. QSO information in DUBUS contain the number of pings and bursts of every contact. This information is of little use, however, if ping is understood as a reflection with no information, thus depending on speed used. Instead, if ping is defined as an underdense reflection this kind of information would be of great value. The relative number of underdense and overdense reflections could be compared between different showers and between consecutive hours in the same shower. This would provide us new knowledge of meteor showers and sporadic meteors.

Aid for defining underdense and overdense trails:

Underdense and overdense reflections can be roughly separated by duration of the reflection (which varies by frequency). The threshold is not sharp, but a simple approximation can be made. On 50 MHz overdense trail durations are typically greater than 0.5 s (reference 1) and maximum underdense trail durations approximately 0.5-1 s (reference 2).

In the following table a 1 s reflection on 50 MHz has been taken as upper limit for the underdense

trails. Durations for other frequencies have been derived from it according to following formula (reference 3):

$$t = \left(\frac{300}{f} \right)^2 / 36$$

where t = duration in seconds,
f = frequency in MHz

Maximum duration of an underdense reflection (ping):

Frequency	Duration	CW speed	Number of letters received
50 MHz	1 s	100 LPM	2
		1000 LPM	17
		2000 LPM	33
70 MHz	0.5 s	100 LPM	1
		1000 LPM	8
		2000 LPM	17
144 MHz	0.1 s	100 LPM	0
		1000 LPM	2
		2000 LPM	4
432 MHz	0.013 s	100 LPM	0
		1000 LPM	0
		2000 LPM	0

This table corresponds well with the situation as presently encountered on the popular 144 MHz band. For example, a reflection on 144 MHz with the speed of 1000 LPM containing up to two letters when decoded would be a ping. On the 432 MHz band pings are so short in duration (less than 0.013s) as to be almost impossible to detect.

References:

1. The evolution of meteor burst communications system, P.S. Cannon & A.P.C Reed, Journal of the Institution of Electronic and Radio Engineers, Vol. 57. No. 3, pp 101-112, May/June 1987.
2. J.A.Weitzen & al., An Estimate of the Capacity of the Meteor Burst Channel, IEEE Transactions on Communications, Vol.Com-32, No.8. August 1984.
3. W.T. Ralston & al. Distribution of underdense meteor trail durations and duty cycle and applications to meteor scatter communication system design. Radio Science, Volume 28, Number 5, pp 747-757, September-October 1993.

**BASIS FOR DETERMINATION OF LOCATORS AMENDMENT FROM NRRL (Norway)
(PROPOSAL ORIGINALLY SUBMITTED BY SRAL Finland)**

The SRAL proposes the WGS-84 geodetic system as a basis for converting latitude and longitude into a Maidenhead Locator.

The SRAL proposal is important, because it thereby establishes the necessary link of the World-Wide Maidenhead Locator system with an international geodetic system.

The latitude and longitude system of the Earth must be linked to a “zero point”. This point may be called a geodetic center point. There are many such points in use; by cities, countries, continents, and for the whole world. These “zero points” are usually not coincidental. Therefore it is important to establish which geodetic system the Maidenhead Locator System should be linked to.

When using a map or a GPS (Global Positioning Satellite) receiver to determine a Maidenhead Locator, it is possible to have the map or the GPS receiver calculate the locator on the basis of many different geodetic systems. In Europe the most commonly geodetic system used up to recent time has been the European Datum of 1950, called ED-50.

The few last years more and more maps use their latitude and longitude linked to the newer world-wide geodetic system World Geodetic System 1984, called WGS-84.

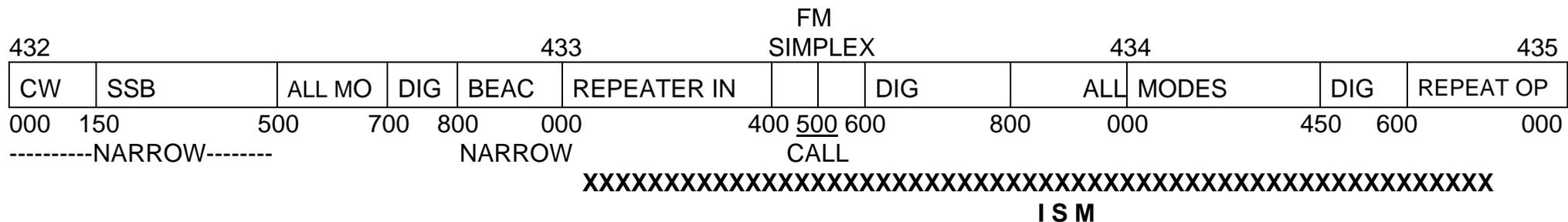
The difference between latitude/longitude on ED-50 versus WGS-84 is of the order of 300 meters. This has no practical consequence to radio amateurs calculating their Maidenhead Locator square other than the radio amateurs close to the square borders. Then it has consequence for contest square multipliers.

NRRL wants to suggest a clarification of the important proposal submitted by SRAL:

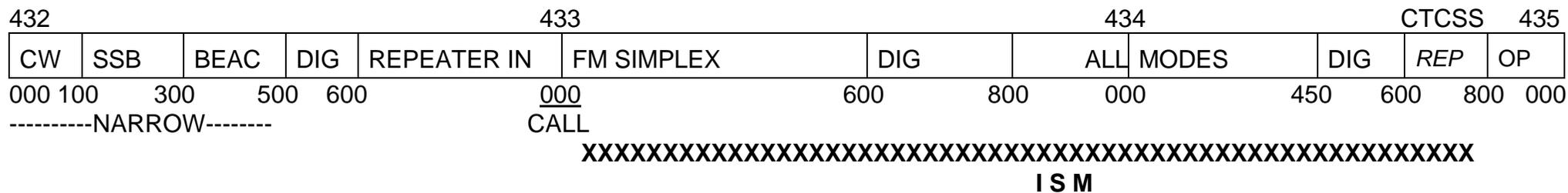
The World Geodetic System 1984 (WGS-84) should be the geodetic system on which the Maidenhead Locator System should be based.

Reference: VHF Manager's Handbook, Section III L.

EXISTING IARU REGION 1 BANDPLAN FOR 432 - 435 MHz:



PROPOSED NEW IARU REGION 1 BANDPLAN FOR 432 - 435 MHz:



FM repeater split 2 MHz; 16 channels: *432.600/434.600; 626; 650; 675; 700; 725; 750; 775; 800; 825; 850; 875; 900; 925; 950; 975.*

Repeater frequencies given in *italics* can be used with CTCSS (sub-audible tone squelch system) to help reducing the ISM interference.

Source : Ad hoc Lillehammer working group on the future of VHF beacons
Output paper

Subject : Future policy on time sharing beacons

The group felt that the following statements could form the basis of a policy towards the use of time sharing beacons on VHF.

1. In the spirit of the advancement of amateur radio, new developments in the field of beacons should be encouraged and be able to be explored within the present framework of the beacon bands.
2. It is recognised that the traditional VHF beacon transmitting continuous carrier is a very important part of VHF/UHF radio for checking propagation and equipment and should continue to be the heart of the beacon network.
3. That new beacon types such as time sharing beacons should be allowed on an experimental basis at the discretion of the IARU region 1 beacon coordinator. They should not be seen as a replacement for the traditional continuous beacon but rather as a new enhancement to the present system.
4. The use of time sharing beacons and other new developments should not be seen as a way of reducing the amount of spectrum required for beacons. However on bands where there is overcrowding in the beacon spectrum the use of time sharing beacons for this purpose should be allowed on an experimental basis.
5. Several approaches may be tried out as it is not yet clear what the optimum parameters are for time /frequency sharing e.g.
 - Time sharing on the same frequency on a single band i.e. 50 MHz within a small geographical area.
 - A Multiband timesharing network within a larger geographical area.