REPORT
on the
WARSAW CONFERENCE
1975

THE INTERNATIONAL AMATEUR RADIO UNION
REGION 1 DIVISION
IARU REGION 1

Secretary: Roy F. Stevens, G2BVN
51 Pettits Lane, Romford, Essex RM1 4HJ, England.
THE INTERNATIONAL AMATEUR RADIO UNION
REGION 1 CONFERENCE
WARSZAWA 1975

Shown during the speech of SP5ED (left to right) YU3AA, VE3GJ, Prof. Dr. E. Kowalczyk, Monsieur M. Milli, Gen. L. Kolatkowski, SP5PZ, President of P2K, SP5FP, OH5NW and G2BN.
Monsieur Mill, Secretary-General of the ITU talks with SP5FM (left) and General L.Kolatkowski, SP5PZ, President of PZK.

Monsieur Mill speaking at the Opening of the Conference.
This Report has been compiled from the documents of the Warsaw Conference with the object of providing a convenient reference source to the recommendations and decisions of the Conference.

It is hoped that those responsible for giving effect to the actions required following the Conference will find the Report of assistance in this work.

CONTENTS

Introduction and Opening Ceremony
Recommendations from Committee A
Recommendations from Committee B
Recommendations from Committee C
Decisions of the Final Plenary Meeting
Annexed documents

MAY 1975
The tenth triennial conference of the Region 1 Division of the International Amateur Radio Union was held between 14 and 16 April, 1975 at Warsaw, Poland. Previous conferences were held at Paris (1950), Lausanne (1953), Stresa (1956), Bad Godesburg (1960), Malmo (1963), Opatija (1966), Brussels (1969) and Scheveningen (1972).

Thirty-five of the 42 member societies of the Division were represented by delegates or by proxy. The countries and national societies participating were:

- ARA (Algeria)
- IRTS (Ireland)
- RSF (USSR)
- ARI (Italy)
- LRAA (Liberia)
- RSGB (UK)
- ARM (Monaco)
- MARL (Malta)
- RSK (Kenya)
- BFRA (Bulgaria)
- MRAS (Hungary)
- RSZ (Zambia)
- CARS (Cyprus)
- NARS (Nigeria)
- SRAL (Finland)
- CRCC (Czechoslovakia)
- NRRL (Norway)
- SRJ (Yugoslavia)
- DARF (FR of Germany)
- OVSV (Austria)
- SSA (Sweden)
- BDR (Denmark)
- PZK (Poland)
- UBA (Belgium)
- FRA (Faeroes)
- RAAG (Greece)
- URE (Spain)
- FRR (Romania)
- RAL (Lebanon)
- USKA (Switzerland)
- IARC (Israel)
- REF (France)
- VERON (Netherlands)
- RL (Luxembourg)
- RKDD (German Dem Rep)

Also present at the conference were the President of the IARU, Mr. N. B. Eaton, VE3CJ; the Secretary of the Region 3 Association, Mr. D. H. Rankin, VK3QV; Mr. C. J. Thomas, G3PSM, IARUMS co-ordinator and Mr. A. Taylor, G3DME, chairman of the International Beacon Project.

The conference was held in the Palace of Culture and Science, an imposing building of more than 30 storeys located in the centre of the modern section of Warsaw. The host society was the Polish national organisation, Polski Zwiasek Krotkofalowcow.
Reception

During the evening of Monday 14 April a reception was held in the Hotel Forum and for which IARU Headquarters was the host. This was an ideal opportunity for delegates to become acquainted and for them to meet Mr. M. Mili, who, with Gen. L. Kolatkowski, SP5PZ, President of PZK, and Polish government representatives, was present at the reception.

Committee meetings

Meetings of Committees A and B were held on 14, 15, and 16 April with meetings of Committee C during the evenings of 14 and 15 April. The final plenary meeting which considered the recommendations of the three committees was held on the final conference day, Friday 16 April. Two working groups were set up from Committee A to consider (a) hf band plans, contests and allied matters, and (b) foxhunting. OJMXJ acted as convenor of the first mentioned group. In addition an ad hoc group of rtty operators met to consider the acceptance of standards.

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Opening Ceremony

The chairman of the Region 1 executive committee welcomed guests and delegates and introduced the Minister of Telecommunications of the Polish People's Republic, Prof. dr. Kowalczyk. The Minister extended greetings to the conference participants and stressed the development of the amateur service, which in Poland, was achieved with the help of the authorities. The Minister also said "thanks to continually expanding forms of activity the IARU plays an important role in co-ordination of actions connected with the amateur radio service and becomes a partner of the professional radio services. The proof of that is the presence to-day of the Secretary-General of the ITU, Mr. M. Mili".

The chairman then introduced Mr. M. Mili, who spoke of the benefits of the amateur service and said "you will therefore readily understand how much I, as Secretary-General of the International Telecommunication Union, appreciate the pleasure and honour of taking part with you today in this opening ceremony of the conference of Region 1 of the IARU which coincides with the celebration of its silver jubilee". Mr. Mili went on to mention the purposes of the amateur service and its valuable contribution to technical training. He noted the preparations for the 1979 conference already commenced and stressed the importance of this event. He stated the impossibility of forecasting the results of such a conference saying "but I am convinced that the half-century that has gone by has amply demonstrated the importance of the part played by radio amateurs and that once again you will have the sympathy of the conference on your side." Mr. Mili concluded by paying his respects to the representatives of the Polish government and recalling that two ITU meetings had been held in the same building. He then declared the conference open.

First Plenary Meeting

SM5ZD reminded delegates of the importance of the conference, one of the primary tasks of which was to prepare the amateur service for the 1979 WARC. He stressed that it was not only necessary to carry out a considerable amount of work whilst at Warsaw but it was of equal importance to ensure that decisions were acted upon after the close of the conference.

The first meeting concluded with the election of the chairman for the committees of the conference, these were:

Committee A (administrative and operational) Mr. L. v. d. Nadort, PA9LOU
Committee B (vhf/uhf/shf) Ir. C. van Dijk, PA9QC
Committee C (credentials and finance) Mr. J-B. Wolff, LX1JW

Election Committee, Mr. R. J. Hughes, G3GVV, G. Craiu, Y03RF and M. Bogosavljev, YU1SJ, were nominated as assistants to G3GVV.
CONFERENCE RECOMMENDATIONS

The following sections of the Report deal with the recommendations of the three committees of the Conference as approved by the final plenary meeting.

The text of the Recommendation is given together with such additional material as is necessary for an understanding of the purpose of the Recommendation and the action required from each Member Society.

The sequence of the Recommendations does not necessarily follow the order in which the items were considered in the committees.

COMMITTEE "A"


The Conference accepted document WA55 as the basis for negotiation with their national telecommunications administration. The recommendations from the 1975 Region 3 Association conference were presented and certain minor differences were noted.

The strongest possible emphasis was placed on the necessity for all national societies to take action with their national telecoms administration to secure acceptance of the recommendations contained in WA55 and as may be subsequently modified by information received during the period before 1979. To assist Societies with current information a "WARC 1979 Bulletin" will be prepared and distributed.

It was agreed at a joint meeting of Committees A and B that the principle of merging the amateur service and the amateur satellite service should be accepted. If this cannot be accomplished by the actions of administrations at an ITU conference then additional preferred bands shall be sought for the amateur satellite service.

ACTIONS

1(a) National Societies shall advise the Secretary Region 1, of the reactions of their administrations to the recommendations contained in WA55

(b) A letter shall be sent from Region 1 to all societies showing the differences between the proposals of Regions 1 and 3. Societies will advise the secretariat of their views.
(c) Advice stating the preferred bands for the amateur satellite service shall be provided by the AMSAT organisations (DL/NAG/G) and HA5WH. This material shall be sent to the Secretary, Region 1, by 31 DECEMBER, 1975, who will circulate the information to all member societies.

(d) Societies should advise the Secretary, Region 1 by 30 JULY, 1975 of the person to whom the second copy of the "WARC 1979 Bulletin" should be sent.

Refer to sections 1 and 2 of Committee B.

Annex 1. document WA55
Annex 2. document WA54 (amateur allocations)

2. Executive Committee

The Executive Committee elected at this Conference shall remain in office until the first Region 1 conference after the 1979 WARC.

The next Region 1 conference in 1978 shall be a working meeting devoted mainly to examine the preparations for the WARC and current amateur problems.

The Conference considered the comments contained in document WA35 concerning the administrative work of the Region 1 Division. It was agreed that it was desirable to obtain the services of a paid part-time general manager and secretarial assistance in order to increase the activity of Region 1 before the 1979 WARC. The financial aspects of this proposal were discussed and the high cost was recognised. It was then agreed that the annual contribution per licensed member should be raised to an amount between 1.55 and 2.00 Sw.Frs. in order to obtain the services of a paid secretariat. The amount that is considered necessary and the date on which the increased contribution shall be effective will be at the discretion of the Executive Committee.

This decision should be read in conjunction with the recommendation from Committee C accepted by the final plenary that the annual contribution should be increased to 80 Sw.cts. commencing on 1 January, 1976. The contribution for 1975 remains at 60 Sw.cts.

3. Conference Recommendations Booklet

The Conference agreed that the work involved in the preparation of this booklet should continue and accepted the first draft prepared by DL1XJ. The working group comprises DL1XJ, OH5NW, ON4VY and YU3AA.
At a subsequent meeting of the Executive Committee PAQOC was asked to approve the wording of items normally dealt with by Committee B. This was agreed and PAQOC will now act as convenor of the working group.

**ACTION:**

Working Group to submit a draft of the booklet to the Executive Committee for the meeting in Spring 1976.

4. **HF Band Plan**

The recommendations from the sub-committee were accepted and the following additions will be made.

- The Region 1 band plan shall incorporate the following preferred operating frequencies for sstv -
  - 3735 - 7040 - 14 230 - 21 340 - 28 680kHz, all ± 5kHz
- For 28MHz beacons the preferred frequencies are -
  - 28 200 to 28 250kHz
- The preferred downlink frequencies for amateur satellites are -
  - 29 400 to 29 550kHz

It was recommended that the frequencies allocated to inter-continental working shall be given wider publicity in amateur journals.

**ACTION:**

All Societies to give publicity to the above recommendations

Annex 3: revised band plan

5. **Contests**

All Region 1 member societies when arranging contests in the hf bands are to include in the contest rules frequency limits for each band so that some frequency segments are left free of contest traffic.

**ACTION:**

All Member Societies.
6. Contributions to AMSAT

The final plenary approved a recommendation that contributions from Region 1 shall be available only to AMSAT-USA.

Refer to Recommendation 3 from Committee C concerning the amount of the contribution.

ACTION:

Executive Committee.

7. General specification for amateur transmitters

The text of document WA24 shall be published in national magazines for comment and a further specification shall be prepared following replies.

ACTION:

All Member Societies.


8. Criteria for defining the legal power for single sideband.

ACTION:

The document prepared by ARI shall be published in national magazines where appropriate.


9. RTTY standards

The following recommended standards were agreed:

(a) RTTY signalling speed to be 45.45 bauds. The use of a higher speed than 50 bauds is not considered appropriate at this time.

(b) RTTY transmission mode to be FSK - FM - on all bands with a preferred shift of 170Hz on HF bands - i.e. 30MHz and below - and 170/850Hz on VHF. Mark signal to be the higher radiated radio frequency.

(c) Reception of RTTY by means of a two-tone system is encouraged for optimum communications effectiveness.
(d) in the interests of bandwidth efficiency and communications effectiveness afsk operation on AM transmitters is not encouraged. Where afsk operation is used on vhf-uhf for local and autostart communications the use of FM transmitters is strongly encouraged. In the interests of bandwidth efficiency the use of a standard afsk shift of 170Hz is recommended. In this case the standard afsk tones should be 1275Hz - Space and 1445Hz - Mark. If 850Hz shift is used the Mark tone should be 2125Hz.

**ACTION:**
National societies shall publish the above standards and encourage their adoption.

10. SSTV standards

The appendix to WA85 was accepted with the addition "the modulating signal should not have a greater bandwidth than 3kHz".

**ACTION:**
National societies shall publish the above standards and encourage their adoption.

Annex 6: appendix to WA85, as amended.

11. Electromagnetic compatibility

IARU member societies should exert as much pressure as possible on their respective television manufacturers to bring about the adoption of such devices as standard in all television receivers. This will do much to relieve the social and domestic problems brought about by television interference, and to protect the public image of the radio amateur.

All subscribing member societies shall name a professional person - who also may be an amateur - to deal on their behalf with matters of EMC, particularly the insufficient immunity of electronic entertainment equipment. These names shall be notified to the secretary of Region 1 by 1 August, 1975. Further, the findings of these experts and other information shall be made available to all societies. When these names become available the Executive Committee will consider the formation of a Working Group with RSGB as convenor.

**ACTION:**
By National Societies in accordance with the above recommendations.

Annex 7: List of persons already nominated by national societies.
12. **IARU Monitoring System**

The Region 1 Division recognising the value of the IARUMS particularly in the preparations for the 1979 WARC, will give all possible support to national societies in the formation of an Intruder Watch to be recognised by their national administration.

**ACTION:**

Executive Committee and IARUMS co-ordinator, as appropriate.

13. **International Beacon Project**

The Region 1 Division shall

(a) continue to support the International Beacon Project.

(b) recommend to other regions that such work should take place and offers to assist, if required, and

(c) recommend to national societies to encourage scientific studies using beacons and to ensure wide publicity to the results.

**ACTION:**

Executive Committee and Chairman, IBP, as appropriate.

14. **27MHz operation**

Following receipt of information from member societies a new summary will be prepared for circulation.

**ACTION:**

SM5ZD for Executive Committee.

15. **Licensing conditions**

**ACTION:**

All member societies shall send to the Secretary, Region 1, a copy of their national licensing conditions.
16. Foxhunting

(a) SRJ agreed to investigate the possibility of organising the next European foxhunting championships.

(b) The Radio Klub DDR offers to organise the 1978 championships and will advise the Executive Committee during 1975 of their decision.

**ACTION:**
SRJ (Yugoslavia) and RKDDR (German Dem. Rep) as above.

(c) YO3JP, OE2JG and SM5ZD are nominated as International Referees for foxhunting.

(d) The future title of the sport of Foxhunting shall be recommended by the working group comprising FRR (Romania), MRAS (Hungary) and SRJ (Yugoslavia).

**ACTION:**
Foxhunting working group.

17. Region 1 championships of high speed reception and transmission

The Region 1 championships of high speed reception transmission will be open to both teams and individuals. The emphasis will be on the sporting aspect. FRR (Romania) will propose rules and co-ordinate arrangements for championships. The venue will be decided later. The Rules will be published in "Region 1 News".

**ACTION:**
FRR (Romania)

18. QSL cards

(a) All member societies are to intensify their contacts with the national and local customs services for the purpose of achieving preferential treatment of qsl shipments and exemption of customs charges for such shipments.

(b) Up-to-date information concerning UPU Regulations will be circulated.

**ACTIONS:**

(a) all member societies

(b) Secretary, Region 1
19. TELECOM 75

The financial commitment necessary to establish a stand at Telecom 75 was reported. It was agreed that all possible support shall be given by Region 1 to amateur radio activities at Geneva during the period of the LF/MF Broadcasting Conference and Telecom 75.

**ACTION:**

Executive Committee

20. **Documents submitted by DARO concerning new techniques and amateur facsimile standards will be referred to the VHF Working Group.**

**ACTION:**

VHF Working Group (attention PS/QC)
Recommendations accepted by the final plenary meeting and actions now required from vhf managers.

1. Amateur service frequency allocations

   References: WA83 - refer annex 8
               WA41 - extract below

WA41

For the future use of radio amateurs it is necessary that allocations above 40GHz shall be obtained. The following frequencies have been requested by ARRL and RSGB and it is recommended that all Region 1 societies shall request that the following bands be allocated to the amateur service.

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>Generated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 48 - 49GHz</td>
<td>2% 2 x 24GHz</td>
</tr>
<tr>
<td>2. 72 - 74</td>
<td>2.8% 3 x 24GHz; 7 x 10,368</td>
</tr>
<tr>
<td>3. 165 - 170</td>
<td>3% 7 x 24GHz; 16 x 10,368</td>
</tr>
<tr>
<td>4. 216 - 220</td>
<td>1.8% 9 x 24GHz; 21 x 10,368</td>
</tr>
<tr>
<td>5. 240 - 250</td>
<td>4% 10 x 24GHz; 24 x 10,368</td>
</tr>
</tbody>
</table>

Note:

(a) All in 'non allocated' regions of fairly low absorption
(b) All >~ 2%, ie suitable for free running oscillators (also typical amateur allocation).
(c) All contain harmonics 24-24.250GHz. 4 bands contain usable harmonics of 10.368MHz.
(d) Bands 2 and 4 especially interesting as:

3 x 24,192 = 72,576MHz = 7 x 10,368
9 x 24,192 = 217,728MHz = 21 x 10,368

RECOMMENDATION A

Amateur Service Frequency Allocations:

(a) that the strategy described in document WA83 be adopted as the basis for the defence of amateur frequency allocations above 30MHz in respect of terrestrial communications.
(b) that additional shf allocations be sought as set out in WA41.

(c) that an additional allocation be sought in the 220 to 225MHz band to align with world wide IARU strategy.

ACTION:

1. As part of each member society’s approaches to their national administrations to ensure that the provisions of Recommendation A are included - especially to note the proposed allocations in the 220-225MHz band.

2. To provide details of utilisation statistics as estimating the numbers of licensed operators using the current allocations in the range 30MHz to 1GHz, i.e. the 2m band and the 70cm band.

VHF Managers to send information to the Secretary Region 1 by 31 DECEMBER, 1975

3. VHF Managers will stimulate national interest in the microwave bands 1-30GHz. In addition DARC will direct special attention to the 2.3GHz band, and RSGB to the 10GHz band, by publishing information on the design of suitable equipment and results achieved on these bands, e.g. document WA30.

2. Amateur Satellite Service

RECOMMENDATION B

Amateur Satellite Service: as adopted in joint meeting of Committees A and B. Refer to Committee A, section 11.

ACTION:

1. Member Societies will maintain close contact with AMSAT, and where existing, AMSAT national organisations, to be fully informed on plans for the future.

2. Member Societies will discuss with their national administrations the alternative approaches to the WARC 1979 - either to merge the amateur service with the amateur satellite service (as recommended by the IARU Region 3 Association) or alternatively to attempt to extend existing amateur satellite service allocations. Member Societies are to report to the Secretary Region 1 by 31 DECEMBER, 1975.
3. Band Plans

RECOMMENDATION C

23cm band allocations: that the DARC proposal for an allocation of services in the band 1250 to 1300MHz be adopted as an initial plan subject to review later. Also that REF adopt the portion 1238 to 1240MHz for their narrow band operations analogous to those currently used by the remainder of Region 1 in the 1296 to 1298MHz band.

RECOMMENDATION D

Vhf/uhf/shf Band Plans: that the IARU Region 1 band plans for 2m, 70cm and 23cm, as set out in document WA61, previously drafted at the vhf Working Group meeting held in Braunal, W.Germany 13/14 October 1973 be adopted with minor amendments and additions.

Revised band plans, refer annex 9.

ACTION:

1. Vhf managers to give maximum publicity to the newly adopted plans as quickly as possible.

2. REF (France) to implement RECOMMENDATION C in respect of the 1238 to 1240MHz band.

3. To rearrange national beacon allocations, if necessary - see section 6.

4. To arrange publication of the newly adopted 70cm repeater and simplex channel plan also the provisional 23cm repeater channel plan, see table 1.

TABLE 1

70cms - Simplex Channels

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU16</td>
<td>433.400MHz</td>
</tr>
<tr>
<td>SU17</td>
<td>433.425 MHz</td>
</tr>
<tr>
<td>SU18</td>
<td>433.450 MHz</td>
</tr>
<tr>
<td>SU19</td>
<td>433.475 MHz</td>
</tr>
<tr>
<td>SU20</td>
<td>433.500 MHz - International Mobile Calling</td>
</tr>
<tr>
<td>SU21</td>
<td>433.525 MHz</td>
</tr>
<tr>
<td>SU22</td>
<td>433.550 MHz - International Mobile Working</td>
</tr>
<tr>
<td>SU23</td>
<td>433.575 MHz</td>
</tr>
</tbody>
</table>
Repeater Channels

10 Channels

<table>
<thead>
<tr>
<th>Channel No.</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU0</td>
<td>433.000MHz</td>
<td>434.600MHz</td>
</tr>
<tr>
<td>RU1</td>
<td>433.025 &quot;</td>
<td>434.625 &quot;</td>
</tr>
<tr>
<td>RU2</td>
<td>433.050 &quot;</td>
<td>434.650 &quot;</td>
</tr>
<tr>
<td>RU3</td>
<td>433.075 &quot;</td>
<td>434.675 &quot;</td>
</tr>
<tr>
<td>RU4</td>
<td>433.100 &quot;</td>
<td>434.700 &quot;</td>
</tr>
<tr>
<td>RU5</td>
<td>433.125 &quot;</td>
<td>434.725 &quot;</td>
</tr>
<tr>
<td>RU6</td>
<td>433.150 &quot;</td>
<td>434.750 &quot;</td>
</tr>
<tr>
<td>RU7</td>
<td>433.175 &quot;</td>
<td>434.775 &quot;</td>
</tr>
<tr>
<td>RU8</td>
<td>433.200 &quot;</td>
<td>434.800 &quot;</td>
</tr>
<tr>
<td>RU9</td>
<td>433.225 &quot;</td>
<td>434.825 &quot;</td>
</tr>
</tbody>
</table>

Footnote:

It is noted that in the Federal Republic of Germany and in Switzerland a repeater system using an input/output separation of 7.6MHz is in use. This is valuable in utilising the whole band 430 to 440MHz and the retention of this system is recommended for the defence of the band.

23cms

<table>
<thead>
<tr>
<th>Channel No.</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>R20</td>
<td>1293.150</td>
<td>1260.150MHz</td>
</tr>
<tr>
<td>R22</td>
<td>1293.300</td>
<td>1260.300MHz</td>
</tr>
<tr>
<td>R24</td>
<td>1293.450</td>
<td>1260.450MHz</td>
</tr>
<tr>
<td>R26</td>
<td>1293.600</td>
<td>1260.600MHz</td>
</tr>
<tr>
<td>R28</td>
<td>1293.750</td>
<td>1260.750MHz</td>
</tr>
<tr>
<td>R30</td>
<td>1293.900</td>
<td>1260.900MHz</td>
</tr>
<tr>
<td>R32</td>
<td>1294.050</td>
<td>1261.050MHz</td>
</tr>
<tr>
<td>R34</td>
<td>1294.200</td>
<td>1261.200MHz</td>
</tr>
<tr>
<td>R36</td>
<td>1294.350</td>
<td>1261.350MHz</td>
</tr>
</tbody>
</table>

The peak deviation for fm repeater use should not exceed plus/minus 15kHz.

Note:

At a later date additional channels R21 etc. can be added, reducing spacing to 75kHz.

4. Amateur satellite band plans

RECOMMENDATION E

Amateur satellite band plans: that IARU Region 1 adopts the band plans recommended by the sponsors of each satellite system e.g. AMSAT for Oscar 7, but also informs sponsors that such band plans must be kept simple and that in the opinion of IARU Region 1 provision should be made in each case to segregate CW from telephony.
RECOMMENDATION F

Amateur Satellite Operating Practice: that IARU Region 1 adopts in principle the recommendations set out below.

ACTION:

VHF Managers to arrange publication of these recommendations and implement control as in recommendation 4 below.

Recommendations for amateur satellite operating practice:

1. IARU Region 1 member societies publicise the accepted recommendations for the schedule and power of operation, and make recommendations made by AMSAT, as regards the times, power employed, and means of operating through the OSCAR satellites.

2. All possible publicity should be given to both the schedule and power limitations, coupled with advice on the necessities of receiver improvement, by pre-amplifiers and low angle antenna to enable operators to monitor their own and other downlinks satisfactorily, thus ensuring that:

   (a) he does not transmit upon a frequency already in use

   (b) he avoids interference due to frequency shift following doppler change

   (c) he can identify any blocking caused by his own transmission and thus reduce power

   (d) he is capable of identifying the presence of other stations calling him.

3. Encouragement should be given in preventing Oscar users from:

   (a) transmitting unless he can monitor his transmission

   (b) to keep his form of emission to that section of the band similarly used.

   (c) to avoid long calls and slow operation

4. National Societies will supervise the implementation of these recommendations and take action as considered appropriate with persistent offenders.

5. Meteor Scatter

RECOMMENDATION G

Operating practice for meteor scatter: that operating procedure for ms operation set out in document WA79, as amended, be adopted for use within IARU Region 1 as standard.
ACTION:

VHF Managers to arrange publication of the adopted procedure, refer annex 10.

6. Scientific Studies and Beacons

RECOMMENDATION H

Sporadic E Investigations in Europe: that the proposal to establish beacon stations in Southern Europe as described in document WA59 (with the exception that the effective radiated power should desirably be limited to less than 50W) be adopted. Proposals should be submitted through Member Societies to the IARU Region 1 Sporadic-E coordinator M. Serge Canivenc, P8SH, and in consultation with RSGB in respect of beacon frequency allocation.

RECOMMENDATION J

Transatlantic Sporadic-E Investigations: that the proposals set out in document WA59 be adopted in order to promote an investigation of Sporadic-E propagation in the N. Atlantic area. It is also recommended that Region 2 be invited by Region 1 to encourage their Member Societies to set up beacon stations for this purpose in the 50MHz band, e.g. in Canada or USA. Region 1 Societies should then establish an observation network in consultation with M. Serge Canivenc., P8SH. Region 2 is invited to join this programme and to publicise the contents of document WA59.

RECOMMENDATION K

VHF Auroral Propagation: that the proposals set out in document WA32 be adopted and that Member Societies publicise the reporting form contained therein.

RECOMMENDATION L

VHF Receiving Stations: that Member Societies encourage receiving stations to participate in propagation studies connected with solar activity as described in document WA26 and to join existing warning networks.

ACTION:

1. VHF Managers to publicise recommendations H, J, K and L. Also to publish names of IARU Region 1 co-ordinators:

Sporadic-E: S. Canivenc, P8SH
6, rue du Pont-Neuf
22700 Ferro Guirec, France.

Auroral Propagation: C.E. Newton, G2PZK
2. VHF Managers are to review all national beacons and to submit to RSGB VHF Manager, G. Stone, G3FZL by 1 August, 1975 a request for a frequency allocation (or a specific frequency if appropriate) to each Regional Beacon - of effective radiated power 50W or greater. Frequencies retained for local beacons should as in the past be notified to the Secretary, Region 1, for publication in Region 1 News.

Note: it was agreed that the need for each beacon should be closely scrutinised with a view to reducing the total number, especially in the 144MHz band, where the increasing number of repeaters can be used instead. Beacons required for scientific observations should of course be retained.

7. Standards

7.1 RTTY

RECOMMENDATION N

RTTY Standards: that Member Societies adopt the rtty standards agreed in the joint committee A and B meeting. Refer Committee A, section 9.

ACTION

VHF Managers to be associated with publication of standards adopted - vhf managers to emphasise particularly the following recommendation.

In the interests of bandwidth efficiency and communications effectiveness afsk operation on am transmitters is not encouraged. Where afsk operation is used on vh-uhf for local and autostrat communications the use of fm transmitters is strongly encouraged. In the interests of bandwidth efficiency the use of a standard afsk shift of 170Hz is recommended. In this case the standard afsk tones should be 1275Hz - Space and 1445Hz - Mark. If 850Hz shift is used the Mark tone should be 2125Hz.

7.2 Microwave Radiation

RECOMMENDATION N

Microwave Radiation Hazards: member societies should bring the attention of their members to the dangers of microwave radiation from (100MHz up). Information on standards should be sought from National Administrations and for general guidance from document WA29.

ACTION

VHF Managers to publicise the above.
7.3 **Amateur TV**

No specific recommendations.

**ACTION**

1. The use of vestigial sideband techniques should be encouraged for use in the 70cm band. Also the Region 1 recommendation adopted in Scheveningen 1972 should be publicised - vision frequency 439.25MHz sound frequency 433.75MHz (5.5MHz system) and 433.25MHz (6MHz system).

2. The medium bandwidth ATV system developed by DG6MR known as SATV (Schmalband - ATV), details in document WA75, should be brought to the notice of ATV enthusiasts in the interests of bandwidth conservation in the 70cm band.

8. **VHF Contests**

**RECOMMENDATION**

Co-ordination of VHF/UHF/SHF contests: in order to promote greater uniformity in the timing (and perhaps style) of European VHF/UHF/SHF contests, all member societies are invited to send well in advance (say annually) concise details in English of their contests calendar (dates, times etc) to the Secretary of IARU Region 1 for publication in Region 1 News and to all VHF managers for general information.

**ACTION**

VHF Managers to compile annually their national VHF/UHF/SHF contest programme and send a copy in the English language to Secretary Region 1 for publication. The date for the first contribution is not later than 31 December, 1975.
1. Proxy votes

The following appointments were approved:

- Cyprus - CARS held by VERON
- Ireland - IRPS " " VERON
- Spain - URE " " DARC
- Israel - IARC " " SRAL
- Faeroes - CRA " " BDR
- Greece - RAAG " " RSGB
- Malta - MARL " " RSGB
- Nigeria - NARS " " DRAA

2. Annual Contribution

It was agreed that the annual contribution should be increased to £80 Sw. Each, with effect 1 January 1976. See also Section 2 of Committee A.

ACTION:
Treasurer.

3. Investment of Region 1 funds

There was considerable discussion concerning the low rate of interest payable on deposit account in Swiss banks. This amounts to 3.5% less 30% withholding tax. It was suggested that an investment in Swiss Francs in the Luxembourg International Bank would give a higher rate of interest (7.5%) and security of funds.

RECOMMENDATION 1.

The Executive Committee should consider the possibility of investing the funds of Region 1 in ways that will produce a greater amount of interest.

ACTION:
Executive Committee.
RECOMMENDATION 2

The Executive Committee should examine the membership figures to ascertain if they appear to be reasonably correct in the light of other information.

ACTION:

Executive Committee.

5. AMSAT Contribution

The spokesman for AMSAT, DC7AS, reported on the plans for the launch of a new satellite before 1979. The cost of this is estimated at between 100,000 dollars and 120,000 dollars US. In order to help meet these costs it was requested that the present annual contribution to AMSAT of 3,500 Sw.Frs should be doubled for each of the next three years.

RECOMMENDATION 3

The Conference accepts in principle the need for increased contribution to AMSAT and the Executive Committee shall examine the possibility of finding all or part of the additional amount which should be a minimum of 7000 Sw.Frs.
DECISIONS OF THE FINAL PLENARY MEETING

Executive Committee

The result of the election was as follows:

Chairman: L.v.d.Nadort, PA8LCU
Vice-Chairman: W.Nietyksza, SP5FM
Treasurer: Kjell W.Strom, SM6CPI
Secretary: R.F.Stevens, G2BVN
Members: Dr.J.Rottger, DJ3CR
         H.Walcott-Benjamin, EL2BA
         J.Znidarsic, YU3AA

Chairman of the VHF Working Group

The Conference agreed that the present Chairman, Ir.C.van Dijk, PA8QC, should remain in office until the first Region 1 Conference after 1979.

Next Conference

Invitations for the 1978 Conference were received from the societies of Hungary, Italy, Liberia and Monaco. By a majority vote the invitation of HUNGARY was accepted.
Annex 1 - document WA55 - the amateur service-frequency planning

Annex 2 - document WA54 - amateur service allocations

Annex 3 - HF band plan (as amended)

Annex 4 - document WA24 - general specification for amateur transmitters

Annex 5 - document WA48 - criteria for defining the legal power for ssb

Annex 6 - document WA65 - (annex as amended)

Annex 7 - document WA51 - emc working group

Annex 8 - document WA83 - WARC 1979, planning of frequencies above 30MHz

Annex 9 - 2m, 70cm and 23cm band plans (as amended)

Annex 10 - document WA79 (amended) - meteor scatter qso procedure
THE INTERNATIONAL AMATEUR RADIO UNION
REGION 1 DIVISION CONFERENCE

Palace of Culture and Science,
Warsaw, Poland.

14-18 April, 1975

Committee "A"  document WA55

THE AMATEUR SERVICE - FREQUENCY PLANNING

Introduction:

The usable radio frequency spectrum is a priceless but free national resource, available to and used by all nations to fulfill their communications requirements. Technique has progressively developed to improve the capacity of the spectrum and this is particularly true of the amateur service which has the largest number of stations of any of the services recognised by the International Telecommunication Union.

From the beginnings of radio amateurs have always existed, individuals who responded to a scientific challenge and who carried out pioneer work in a new science. In the early days of radio there were few regulations and allocations of the frequencies then in use. The various users were all to be found in the same portion of the spectrum and mutual interference could not be avoided. It became obvious that the rapidly growing number of stations could not use the spectrum in an efficient way without setting aside bands for essential traffic in order to minimise interference. Between the end of World War I and January 1929, when the regulations adopted by the 1927 Washington Conference came into force with the status of an international treaty, the spectrum below 200 metres was used by many stations including those operated by radio amateurs. At the Washington Conference an amateur was defined as a duly authorised person interested in radioelectric practice with a purely personal aim and without pecuniary interest. The definition was subsequently expanded to that which now appears in Article I of the 1968 Radio Regulations, i.e. "a service of self training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest". At the 1971 Space Conference the definition of amateur-satellite service was added.

Amateur Service Usage:

The reasons for continuing scientific activity by radio amateurs are expressed in these principles:

A). Improvement and development of the amateur service to provide for increasing skills in both the communication and technical fields,

B). Continuation and widening of the proven ability of the amateur to make vital contributions to the science of radio,

C). Expansion of the reservoir of trained operators, technicians and electronics specialists which now exists within the amateur service. The acquisition of skills by the radio amateur places no burden on the community, a fact of considerable importance where national resources may be limited.
D). Recognition and improvement on the value of the amateur service to the community as a voluntary communication organisation particularly proficient in providing emergency communications.

The amateur service flourishes in existing conditions by the creation and adoption of new techniques. Its worth, nationally and internationally, can be shown by reference to the technical projects in which radio amateurs are engaged. The extension of radio transmissions to frequencies above 30 MHz was primarily due to the efforts of amateurs who had been denied the use of other frequencies. Broadcasting and other services were not slow to take advantage of the pioneer work of radio amateurs. At the present day the technological impact of the amateur service continues to be reflected in the adoption by communications interests of techniques resulting from their work. The cost of their contribution to technology is borne by the radio amateurs themselves. They comprise one of the largest potential reservoirs in the world for basic non-directed research which would be impossible to justify commercially in view of the cost. In the field of propagation research the amateur service has a proven record of valuable participation. This work stems from the early days of radio when amateurs successfully used frequencies that were then regarded as worthless but which now carry a high proportion of the world's radio traffic. In latter years there was world-wide co-operation during the International Geophysical Year and during the International Quiet Sun Year. Work carried out by radio amateurs was analysed and the results were freely available on an international basis.

OSCAR is an acronym for orbiting satellites carrying amateur radio. The objective was to design and build satellites that would operate in the bands allocated to the amateur service and that would permit radio amateurs to make useful contributions to the field of space communication. The first satellite was launched in December 1961 and the satellites now orbiting the earth are the sixth and seventh of the series. OSCAR-7 is a highly sophisticated communications satellite, designed and built by radio amateurs at a fraction of the estimated commercial cost of 2 million dollars. OSCAR satellites have been the basis for training in space techniques at schools and colleges while the use and observations of the satellite have produced a valuable published output of technical material.

Frequency allocations:

The amateur service is dependent on the support of national administrations in order to obtain and maintain adequate frequency allocations. The amateur service, more than any other radio service, is suffering from the congestion experienced in the bands between 3 and 30 MHz. Relative to other services, the number of stations operating per kilohertz in the amateur bands is exceptionally high. In order to make possible efficient operation under such conditions the amateur service has continually exploited techniques such as the use of the minimum power necessary to effect communication, single frequency working, narrow band transmission techniques, reduction in receiver bandwidth, the use of directional aerials, in-band changes of frequency to avoid interference and the use of speech processing systems. It is considered that the amateur service is more conservative in space and more efficient in the use of the radio spectrum than any other service.
Frequency allocations to the amateur service — below 500MHz

ITU CONFERENCES...
WASHINGTON - 1927

CAIRO - 1938
Europe
Americas
Remainder

ATLANTIC CITY - 1947
Region I
Region II
Region III

GENEVA - 1959
Region I
Region II
Region III

KEY
Exclusive
Shared
Partially shared
Figure 1 shows the history of frequency allocations to the amateur service. The first international conference in which amateurs were considered took place at Washington in 1927. At this conference amateur allocations totalling 3485kHz were made in bands between 1715kHz and 60MHz. No allocations above the latter frequency were made at the 1927 conference. As a result of demands by other services for space in the high frequency range of amateur allocations some of these have been reduced and the amateur service has been required to share portions or all of some of the bands with other services. The gradual erosion of the 7MHz band since the Washington Conference of 1927 is particularly evident. The long term tendency has been to give allocations to the amateur service in higher frequency regions that other users consider to be of little value. However, as amateurs have developed communication techniques in these areas other services have made further demands for spectrum space, generally at the expense of the amateur service.

In 1974 the amateur service has a total allocation of 3,500kHz in six bands between 1,500kHz and 29.7MHz. However, in Region 1 the position is less favourable and the total allocation to the amateur service in this portion of the spectrum is only 2,900kHz. Of this, 2,500kHz is exclusive to the amateur service with 1,700kHz concentrated in the band 28.0 to 29.7MHz. For an appreciable portion of each solar cycle this band is unable to sustain consistent long distance communication.

Very considerable difficulties are imposed on the amateur service in sharing with other services. In many countries the maximum power level permitted to amateur stations is a dc input to the final stage of 150watts. This contrasts heavily with the powers of many kilowatts used by stations sharing the allocation. The position is rendered less favourable by the transmission of marker signals over long periods. Many stations transmit continuous idle signals for hours on end, a fact noted by the 1974 Maritime Mobile conference. These factors combined with a steady increase in the number of stations in the amateur service have led to increased efficiency in the utilisation of the radio spectrum but this alone is not enough to ensure the future development of the amateur service.

The present day constraints on the amateur service can be grouped under three headings:

A). lack of suitable frequencies capable of supporting communication during the usual daily and yearly ionospheric propagation variations,

B). congestion and continuing interference due to the large and increasing number of amateur stations, and

C). intolerable sharing arrangements with other services.

The characteristics of the 7.0MHz band make it suitable for carrying medium and long distance communication for the greater part of any sunspot cycle. This is an exclusive amateur service allocation in all regions although the bandwidth varies as between regions. Many broadcasting stations are operating and causing harmful interference in the exclusive world wide amateur segment (7.0 - 7.1MHz) contrary to No.115 of the Radio Regulations. Broadcast stations using high power direct transmission across Region 2 in contravention of Resolutions 10 and 117 of the Radio Regulations.
100kHz between 14,250kHz and 14,350kHz of the 14MHz allocation is shared with fixed stations in the USSR. However, in the exclusive world wide segment between 14,000kHz and 14,250kHz there are many stations operating, mainly of fixed service and military origin. This allocation is responsible for more reports of harmful interference than any other amateur band.

The allocations at 21MHz and 28MHz are not free from transmissions causing harmful interference and these comprise mainly harmonics and spurious emissions from broadcast stations.

During 1973 the Monitoring System of the International Amateur Radio Union collated 1170 reports of harmful interference to stations of the amateur service. Of this number 61 per cent were positively identified and 55 per cent of this number comprised transmissions originating in the USSR. Instances of harmful interference divided by allocation were:

- 7MHz - 194
- 14MHz - 590
- 21MHz - 265
- 28MHz - 121

The latest available information reveals a total of 480,000 stations of the amateur service now in operation. Of this number a survey has shown that 60 per cent of the operators concentrate the major portion on their activity in the three allocations at 3.5, 7 and 14MHz. The bandwidth of these three allocations in Region 2 totals 1,150kHz, whilst in Region 1 the total is only 750kHz. In both cases the exclusive amateur allocation totals 350kHz. Since the distribution of activity between these three allocations is similar there is a possible loading of 290 amateur stations per kilohertz in Region 2 and 380 stations per kilohertz in Region 1. If it is assumed that 10 per cent of the potentially active stations are in actual operation at any given time the band loading in Region 1 becomes 38 stations per kilohertz. The actual figures are in fact higher than these because of the denial to the amateur service of portions of the spectrum used by commercial stations employing high power and high gain aerial systems.

Allocations to the major services in the spectrum between 3MHz and 30MHz are as follows:

<table>
<thead>
<tr>
<th>Service</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeronautical</td>
<td>1770kHz</td>
<td>8 per cent</td>
</tr>
<tr>
<td>Broadcasting</td>
<td>2150kHz</td>
<td>10 per cent</td>
</tr>
<tr>
<td>Amateur</td>
<td>2500kHz</td>
<td>12 per cent</td>
</tr>
<tr>
<td>Maritime</td>
<td>3650kHz</td>
<td>18 per cent</td>
</tr>
<tr>
<td>Fixed</td>
<td>10250kHz</td>
<td>50 per cent</td>
</tr>
</tbody>
</table>

Any evaluation of the amount of spectrum space and the order of frequency bands allocated to the amateur service must take account of ionospheric propagation. It would appear that the frequency relationships adopted for all services were originally based on harmonic interference problems without appreciable concern for the factor of ionospheric propagation.
A realistic approach must be taken in advocating additional high frequency allocations for the amateur service, an approach which will provide dependable communications paths between amateur stations irrespective of predictable ionospheric variations. In recent years the practice of commercial long distance communication has undergone radical changes. With the existence of communications satellites services are transferring from high frequency bands to the gigahertz portion of the radio spectrum. This and the development of the cable network will doubtless have a major effect on the use of frequencies below 30MHz. Therefore, it is considered that the World Administrative Radio Conference to be held in 1979 will be a logical opportunity for re-establishing amateur service allocations below 30MHz.

The Future:

If suitably located bands of frequencies are allocated to the amateur service its communication efficiency will be dramatically improved. The application of ionospheric predictions to paths over which amateurs communicate has shown that certain additional bands of frequencies would provide a tremendous improvement in communication. It can be demonstrated that new amateur allocations at 10, 18 and 24MHz would in many cases more than double the communications efficiency of particular paths. This would then enable further progress to be made towards the ultimate target, that of the most efficient use of the radio spectrum. Frequencies in the portions mentioned are at present used by the fixed service. However, the submarine cable expansion and the satellite communication service are now reported to carry the bulk of the fixed service traffic.

With a steady increase in the number of amateur service stations, expected to reach 1 million by 1982, the amateur service now stands at the crossroads. Its future existence and value is largely dependent on the alleviation of the current congestion. The background and the present position of the amateur service have been briefly discussed. Recommendations for spectrum utilisation in the future have been made. What is urgently required is a realistic evaluation of the amateur service, its worth and its present spectrum allocations, to be followed by measures which will ensure the continuance of the service as an international resource.

RECOMMENDATIONS TO MEMBER SOCIETIES

1. In order to achieve the expansion of the frequencies allocated to the amateur service it is VITALLY necessary that an approach shall be made to each national telecommunications administration to obtain acceptance of a world wide and unified plan.

The approach must be made by the national society of the country concerned. However the IARU will place all existing information at the disposal of the national societies and will provide advice and assistance when so requested.
2. The following points are submitted as part of the world wide plan for the expansion of amateur frequencies and modified according to the position in Region 1:

(i) obtain an amateur exclusive segment in the band 1800-2000kHz
(ii) obtain an amateur exclusive segment in the band 3500-3800kHz
(iii) expand 7000-7100 to 7000-7200kHz amateur exclusive
(iv) eliminate sharing with the fixed service 14250-14350kHz
(v) establish new amateur bands:
    10.1 to 10.6MHz (now allocated to the fixed service)
    18.1 to 18.6MHz (now allocated to the fixed service)
    24.0 to 24.5MHz (now allocated to the fixed and landmobile services)

NOTE

The total number of stations in the amateur service, given as 480,000 in this paper, is now considered to be greater, due mainly to the large number of stations in Japan, said to be between 200,000 and 300,000. However, it should be noted that in a number of countries a single operator may hold more than one licence ("station" licences). The correct total number cannot be accurately given but it is certainly greater than the number quoted in this document.

This fact gives even more power to the figures showing the congestion and band loading for stations of the amateur service.
Committee "A & B"

THE AMATEUR SERVICE

1. ITU Regulations

The Radio Regulations (No.78) define the amateur service as "a service of self-training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest." The frequency bands allocated to the amateur service are in some cases shared with other services, in others allocated on an exclusive basis. This allocation is different for the three ITU Regions:

- **Region 1**: Europe and Africa
- **Region 2**: The Americas
- **Region 3**: Asia, Australasia, Oceania

<table>
<thead>
<tr>
<th>Band</th>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>160m</td>
<td>In the F.R. of Germany, Denmark, Finland, Ireland, Netherlands, United Kingdom, Switzerland, Czechoslovakia and the Republic of South Africa, Administrations may allocate up to 200kHz to their amateur service within the band 1715-2000kHz. The mean power of any amateur station shall not exceed 10 watts.</td>
<td>1600-2000kHz, shared with Fixed, Mobile and Radionavigation services on an equal basis.</td>
<td>The LORAN system has priority. Other emissions shall not cause harmful interference to LORAN.</td>
</tr>
<tr>
<td>3500 - 3800kHz</td>
<td>Shared with Fixed and Mobile Services on an equal basis.</td>
<td>3500 - 4000kHz, Shared with Fixed and Mobile Services on an equal basis.</td>
<td>3500 - 3900kHz, Shared with Fixed and Mobile Services. Australia: 3500-3700kHz only. India: 3890-3900kHz only.</td>
</tr>
<tr>
<td>7000 - 7100kHz (incl. Amateur-Satellite)</td>
<td>Amateur-Satellite 7000 - 7100kHz</td>
<td>7000 - 7100kHz (incl. Amateur-Satellite)</td>
<td></td>
</tr>
<tr>
<td>Band</td>
<td>Region 1</td>
<td>Region 2</td>
<td>Region 3</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>20m</td>
<td>14000 - 14350kHz</td>
<td>(14000 - 14250kHz also for Amateur-Satellite)</td>
<td></td>
</tr>
<tr>
<td>USSR</td>
<td>14250 - 14350kHz</td>
<td>also allocated to the Fixed Service.</td>
<td></td>
</tr>
<tr>
<td>15m</td>
<td>21000 - 21450kHz</td>
<td>(also Amateur-Satellite)</td>
<td></td>
</tr>
<tr>
<td>11m</td>
<td>No allocation</td>
<td>26960 - 27230kHz</td>
<td>Australia and New Zealand only: 26960 - 27230kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared with Fixed and Mobile Services.</td>
<td>Shared with Fixed and Mobile Services.</td>
</tr>
<tr>
<td>10m</td>
<td>28000 - 29700kHz</td>
<td>(also Amateur-Satellite)</td>
<td></td>
</tr>
<tr>
<td>South Africa:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6m</td>
<td>50 - 54MHz</td>
<td>All other countries: No allocation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Malaya and Singapore 51 - 54MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>India, Indonesia, Iran, Pakistan: No amateur allocation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia: 56-58MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>New Zealand: 51-53MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shared with Fixed and Mobile Services.</td>
</tr>
<tr>
<td>2m</td>
<td>144 - 146MHz</td>
<td>144-146MHz</td>
<td>146-148MHz shared with Fixed and Mobile Services in China, India and Japan.</td>
</tr>
<tr>
<td>(also Amateur-Satellite)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>430 - 440MHz</td>
<td></td>
<td>420 - 450MHz</td>
<td>Shared with Radiolocation on secondary basis</td>
</tr>
<tr>
<td>70cm</td>
<td>Shared with Radio location on equal basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom:</td>
<td></td>
<td>420 - 450MHz</td>
<td>on secondary basis</td>
</tr>
<tr>
<td></td>
<td>435 - 436MHz: for amateur-satellite, on condition that no harmful interference is caused. (1567A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band</td>
<td>Region 1</td>
<td>Region 2</td>
<td>Region 3</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>27cm</td>
<td>1215 - 1300MHz (on secondary basis) shared with radiolocation service</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F.R. of Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1250 - 1300MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13cm</td>
<td>2300 - 2450MHz (on secondary basis) shared with fixed, mobile and radiolocation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F.R. of Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2300 - 2350MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9cm</td>
<td>In OE, 4X4, PAO, 3370 - 3500MHz (on secondary basis) shared with radiolocation and is allocated to amateur service on secondary basis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DL and G 3400-3475MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5cm</td>
<td>5650 - 5850MHz (on secondary basis) shared with radiolocation service</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F.R. of Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5650 - 5775MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5750 - 5770MHz used for radio astronomy observations, all practical steps to be taken to protect these observations from harmful interference.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3cm</td>
<td>10000 - 105000MHz (on secondary basis) shared with radiolocation service</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F.R. of Germany and Switzerland</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10250 - 10500MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2cm</td>
<td>24 - 24.05GHz (exclusive)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amateur and Amateur-Satellite</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24.05 - 24.25GHz (on secondary basis) shared with radiolocation service</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All bands, where no sharing is mentioned, are allocated to the Amateur Service on an exclusive basis.
### IARU REGION 1 HF BAND PLAN

<table>
<thead>
<tr>
<th>Band</th>
<th>Type of emission</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5 - 3.6MHz</td>
<td>cw (2)</td>
</tr>
<tr>
<td>3.5</td>
<td>± 20kHz</td>
</tr>
<tr>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>3.5 - 3.8</td>
<td>rtty (1)</td>
</tr>
<tr>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>7 - 7.04MHz</td>
<td>cw and phone (2,3)</td>
</tr>
<tr>
<td>7.04</td>
<td>± 5kHz</td>
</tr>
<tr>
<td>7.04 - 7.1</td>
<td>rtty (1)</td>
</tr>
<tr>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>14-14.1MHz</td>
<td>cw and phone</td>
</tr>
<tr>
<td>14.09</td>
<td>± 10kHz</td>
</tr>
<tr>
<td>14.1 - 14.35</td>
<td>rtty (1)</td>
</tr>
<tr>
<td>21 - 21.15MHz</td>
<td>cw and phone</td>
</tr>
<tr>
<td>21.1</td>
<td>± 20kHz</td>
</tr>
<tr>
<td>21.15 - 21.45</td>
<td>rtty (1)</td>
</tr>
<tr>
<td>28 - 28.2MHz</td>
<td>cw and phone</td>
</tr>
<tr>
<td>28.1</td>
<td>± 50kHz</td>
</tr>
<tr>
<td>28.2 - 29.7</td>
<td>rtty (1)</td>
</tr>
<tr>
<td></td>
<td>cw and phone</td>
</tr>
</tbody>
</table>

**NOTES**

(1) for rtty, recommended section of operation shared with cw.

(2) 3 500 to 3 510 and 3 790 to 3 800 reserved for intercontinental working.

(3) 3 635 to 3 650 is used by USSR stations for intercontinental working.

(4) for sstv recommended operating frequencies are: 3 735, 7 040, 14 230, 21 340, 28 680, all ± 5kHz.

(5) for beacons, 28.2 to 28.25MHz is recommended.

(6) for the downlink of amateur satellites, 29.4 to 29.55MHz is recommended.
GENERAL SPECIFICATION FOR AMATEUR TRANSMITTERS

R S C B

This paper seeks to set a standard that all amateur transmitters should meet, whether commercially manufactured or home constructed. The parameter levels suggested have been arrived at by the author and members of the RSCB Technical and Publications Committee. These standards do not apply to the microwave frequency bands, 2300MHz and higher, where wideband techniques are likely to be used.

Table 1 shows the suggested standards to be met and the following paragraphs give the justification for the quoted levels.

1. Frequency stability
This parameter has to be specified under a number of different conditions likely to be met during the operation of the transmitter.

(a) Temperature Variation: Although there may be temperatures encountered outside the ranges shown, they are likely to be very short term, bearing in mind the well being of the operator. The limits specified are:

Fixed Station  + 5°C to + 35°C
Mobile/Portable Station  - 10°C to 40°C

(b) Power supply variation:
A.C. Mains Supply:  ± 10%
Nominal 6 volt lead-acid battery:  5.5 to 7.5 volts
Nominal 12 volt lead-acid battery:  11 to 15 volts
Nominal 24 volt lead-acid battery:  22 to 30 volts

(c) Time Interval: The requirements for frequency stability are different for short and long time intervals. For this specification "short term" is less than 5 minutes, "long term" is equal to or greater than 5 minutes.

2. Spurious Frequency modulation of an Amplitude Modulated Transmitter
This is the shift of the carrier frequency of an amplitude modulated transmitter, both with and without carrier, at a syllabic rate, in sympathy with the intended amplitude modulation.

3. Accuracy of frequency setting
These standards are for band-edge operation as well as all other parts of the amateur bands. In most cases these will exceed the requirements of the National Licence Administration.
4. **Harmonic suppression**
   This is stated for two frequency ranges, 0-30MHz and frequencies above 30MHz. In cases of interference to other services caused by harmonic radiation from the transmitter, the figures quoted will need to be exceeded by an amount sufficient to remove the interference.

5. **Spurious suppression**
   The same comments apply in cases of interference as in (3).

6. **Modulation hum and noise**
   The 'Maximum modulation level' is the maximum rms power transmitted during 'peaks' of modulation.

7. **Modulation distortion**
   The same comments as in (5) apply.

8. **Modulation bandwidth**
   The specification applies to all modes except tv (A5) on frequencies below 1000MHz and in the internationally agreed sub-bands for narrow-band transmissions.

   If these standards are met, the resulting transmission will be acceptable to other users of the frequency spectrum, assuming that their receiving equipment is satisfactory.

---

Richard Baker, G3USB
RSGB Technical Committee,
<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>STANDARD</th>
</tr>
</thead>
</table>
| 1. Frequency stability | **a)** FM/AM  
| | Short Term: ± 100Hz  
| | Long Term: ± 500Hz  
| 2. Spurious Frequency modulation of an Amplitude Modulated Transmitter | **b)** CW/SSB  
| | Short Term: ± 30Hz  
| | Long Term: ± 200Hz  
| 3. Accuracy of Frequency Setting | A.M.: 50Hz  
| | C.W.: 10Hz  
| 4. Harmonic frequency suppression | Preset crystal control: ± 1kHz  
| | Variable frequency oscillator (vfo) or Variable crystal oscillator (vxo) ± 2kHz  
| 5. Spurious frequency suppression | **a)** < 30MHz  
| | To be ≤-40dB relative to the peak output power without exceeding 10mW.  
| | **b)** > 30MHz  
| | To be ≤-60dB relative to the peak output power without exceeding 100uW.  
| | To be ≤-60dB relative to the peak output power without exceeding 100uW.  
| | To be ≤-40dB relative to the maximum modulation level.  
| | To be ≤10% third harmonic distortion at 85% of the maximum modulation level.  
| 6. Modulation hum and noise | The modulator should be so designed that the transmitted bandwidth of the resultant modulated transmission is no more than 25kHz measured at a level of -60dB relative to the peak output power. (See note regarding tv-A5).  
| 7. Modulation distortion |  
| 8. Modulation bandwidth | }
CRITERIA FOR DEFINING THE LEGAL POWER FOR SINGLE SIDEBAND

A R I

Following the new Postal Law of 1973 the regulations in Italy concerning the activity of private stations, including radio amateurs, have been modified.

The obsolete regulations concern only the modes A1 and A3. As a consequence there has been considerable confusion concerning the definition of legal power when using SSB.

The policy of ARI has been concerned with an assessment of legal power using the two tone test. The definition of legal power using the peak power input with a single tone modulating the transmitter is not considered practical. The main reason for this is that the majority of transmitters in use are unable to support the peak power input without the risk of serious damage.

The compromise design of a great many of the commercial and home built equipment means that the power supply capability is limited to peaks of short duration whose repetition has a syllabic rate but they are unable to carry a large average current. With high currents the available voltage drops considerably and the input power becomes very much less. When considering the dissipation of the power valves the situation is generally worse. Valves with only 50 watts of average dissipation are in many cases subject to an input of 140 watts and dissipate 60 watts. Such a test prolonged for a few minutes leads to the melting of the glass envelope.

For a safe test in which the assessment of legal power is more realistic ARI has supported the proposal concerning the two tone test because the average power as read by the meter is much less than before. In this case the class AB or B amplifiers no longer work for 100 per cent of the time, there are some short periods of rest. Though the maximum signal power remains at its full value the average input current is lessened. In the case of a class B amplifier the reading is about 64 per cent of the maximum amplitude. In the case of class AB, according to the different working conditions, the average current shown by the meter may be of higher percentage.

In the preceding example the average current is now only 135mA instead of 200mA and the average power is 95 watts while the dissipation drops to 35 watts which is an acceptable value for a short time.
Although it is considered that the two tone test is the most convenient method of checking the power input the method suffers from the disadvantage that the peak to average ratio of the envelope power is only 3dB. In the case of speech the peak to average ratio ranges around 12 to 15dB so that an average power higher than encountered during normal service must be maintained during this test in order to drive the transmitter to a peak value similar to that attained when using speech.

In the case of transmitters designed to handle high peaks with acceptable distortion but not large average power it is seen that the compromise is acceptable provided that the testing does not cause the transmitter to overheat.

It is considered that this method of ascertaining the power of an ssb transmitter is simple to use and the peak envelope power may be deduced from the formula,

\[ \text{pep} = W_{in} \left(1.57 - 0.57 \frac{I_0}{I_a}\right) \]

where \( W_{in} \) = power input during two tone test
\( I_0 \) = no signal plate current
\( I_a \) = plate current to produce \( W_{in} \)

It is noted that the administrations of several different countries in Region 1 use different criteria to ascertain the power input. It is suggested that the adoption of the two tone test and the unified international standard would be an advantage. Also it is desirable that the IARU should prepare standardised data to supply to the constructors in the countries of Region 1.

The equipment to be included in the design of an amateur transmitter in order to determine the ssb power should include a two tone generator (800 and 2,000Hz) and an extra position on the meter switch to measure the level at which the legal power is attained. Also the meter should show the maximum current in the final stage for which linear operation is maintained. This latter point is not a matter for regulation but each member society of the IARU should co-operate in the reduction of interference caused by intermodulation products from amplifiers driven into heavy distortion.

In our opinion it is not possible to expect a cathode ray oscilloscope in every amateur station but the technical advisers of Region 1 societies should make available all possible information which will assist in the correct operation of ssb transmitters without using laboratory techniques.
If it were possible to attain correct interpretation from input and output meters many amateurs would be happy to be able to transmit a cleaner signal without causing splatter. However, it is possible that these simple indications may not be completely satisfactory because of the lack of correlation between dc meter readings and the quality of the output of the amplifier. It is our opinion that if a method of "trial and error" was developed many newcomers would be willing to improve the quality of their signals.

Marino Miceli, I4SN.
Proposed recommended standards and frequencies for slow-scan television operation within Region 1.

* Line speed: 16.6Hz (60mS)
  Frame speed: 7.2 seconds
  Lines/Frame: 120
  Aspect ratio: 1:1

**Scanning:**
- Horizontal: Left to right
- Vertical: Top to bottom

**Sync. pulse duration:**
- Horizontal: 5mS
- Vertical: 30mS

**Sub-carrier frequencies**
- Sync.: 1200Hz
- Black: 1500Hz
- White: 2300Hz

**Preferred operating frequencies:**
- 80 metres: 3730 - 3740kHz
- 40 metres: 7040 - 7045kHz
- 20 metres: 14225 - 14235kHz
- 15 metres: 21335 - 21345kHz
- 10 metres: 28675 - 28685kHz

* Note: Line and frame speeds are dependent on the frequency of the mains supply. Figures given are for 50Hz. The corresponding figures for 60Hz are 15Hz (66mS) line speed and 8 seconds frame speed.
THE INTERNATIONAL AMATEUR RADIO UNION
REGION 1 DIVISION CONFERENCE

Palace of Culture and Science,
Warsaw, Poland.
14-18 April, 1975

Committee "A"

EMC OF ELECTRONIC ENTERTAINMENT EQUIPMENT

Executive Committee

Since the 1972 Conference the following persons have been nominated to act on behalf of their societies:

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Bulevar Revolucije 44/11, Belgrade.

Zambia - Larry Franklin, 9J2LF,
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Chingola.
THE WORLD ADMINISTRATIVE RADIO CONFERENCE 1979 -
PLANNING OF AMATEUR SERVICE FREQUENCIES
ABOVE 30MHz

RSGB

Introduction:

As is well-known the whole radio frequency spectrum will be reviewed in 1979 and the amateur service will be competing with many powerful organisations and interests to preserve existing allocations and, where the case is good, to press for more frequencies.

The purpose of this paper, which is complementary to WA55, is to stimulate all those responsible for amateur frequency band matters above 30MHz to develop united policies to further the common interests of radio amateurs throughout the world. At the present time there is a less co-ordinated approach to these frequencies than the hf bands mainly for historical reasons in that until the advent of space communication, the operational range was in the main quasi-optical (the low vhf's such as the 50MHz band being an exception).

The position is now radically different. Firstly, space communication as mentioned above has completely changed our approach, and secondly, world trade has stimulated the need for standardisation to some degree, eg 144MHz band equipment.

Need for immediate action

Amateur service allocations above 30MHz need to be examined immediately:-

(a) on a regional basis
(b) on a world basis

to study each particular allocation to identify priorities for retention within each (confidential information to assist our representatives at the WARC who will be in national delegations - and the IARU delegation who will attend the Conference) and to develop a strong case for the retention of each and every allocation. There must also be, as far as possible, a co-ordinated view of possible new allocations supported by a powerful case for these. In some cases a world view will be possible, in other cases a regional view only.
IARU must therefore develop a complete plan for the retention and expansion of frequencies above 30MHz and the ground work must start with national representatives. They will together formulate plans which, when agreed, can be used to brief national governmental authorities of the needs of the amateur service and can be used as the foundation for the defence of our bands in the future.

**Suggested Approach:**

To simplify the approach the following segregation of interests is suggested:

(a) 30MHz - 1GHz terrestrial  
(b) 1GHz and up terrestrial  
(c) space communications

In the case of (a) and (b) whilst world co-ordination is a desirable aim, a degree of regional difference is acceptable based upon local considerations. In the case of (c) world co-ordination is essential.

**30MHz - 1GHz terrestrial**

**Existing Region 1 allocations (see paper WA42):**

- 144-146MHz — almost all countries  
- 432-435MHz — most countries - some with wider allocation than this

The greatest number of vhf workers use these bands and utilisation can easily be demonstrated in the case of 144MHz less so 432MHz. However, 432MHz is the lowest allocation practicable for amateur television. It is necessary to develop some utilisation statistics with inputs from every member society. Also the prime purpose for which these allocations are used must be clearly stated, eg mobile communication, ATV, study of radio wave propagation, EMC etc.

Consideration should be given to possible new allocations within this spectrum eg 50MHz, 70-72MHz, 220MHz. Previous studies have shown the probability of achievement to be small but now is the time to re-appraise the situation.

**1GHz and up-terrestrial**

These bands are in the main the province of the true experimenter both technically and in radio propagation. Retention cannot be justified by utilisation statistics, eg how can we support the retention of the 10-10.5GHz band 500MHz wide. It is in these bands that certain priorities for retention must be clearly defined. The first obvious points are those previously adopted by IARU Region 1 for crystal controlled operation based upon a relationship to 144 and 1152MHz. These are:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Times</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>144 MHz</td>
<td>8</td>
<td>1152 MHz</td>
</tr>
<tr>
<td>144 MHz</td>
<td>3</td>
<td>432 MHz</td>
</tr>
<tr>
<td>1152 MHz</td>
<td>2</td>
<td>2304 MHz</td>
</tr>
<tr>
<td>1152 MHz</td>
<td>3</td>
<td>3456 MHz</td>
</tr>
</tbody>
</table>
As yet it is believed that no other priority segments within these bands have been defined. Action must be taken forthwith do do this. Also to provide examples of the way in which these allocations are used for scientific experimentations etc. The case for further allocations to the amateur service in the band 1-24GHz is considered weak: the greatest problem here will be to retain what we have. Frequencies above 24GHz have yet to be allocated to the amateur service - paper WA41 is submitted for discussion as the basis for future planning.

Space Communication

The only bands above 30MHz allocated to the amateur satellite service are 144-146MHz; 435-438MHz and 24 - 24.05GHz

The latter allocations were achieved due to the co-ordinated efforts of member societies and IARU and only after very considerable discussion and extensive lobbying at the 1971 Space Conference.

Previous consideration was centered upon the radiation from satellite to ground (the down link) and allocations were made subject to no harmful interference to ground services. Results from recent OSCAR satellites demonstrate the achievement of non-interference due of course to the very low power flux in relation to co-sharing earth services. This can be developed to demonstrate that the amateur satellite service can be tolerated by others sharing the bands and could be used in supporting a case for more allocations. A decision needs to be taken in association with AMSAT (and any other amateur space organisation) to see what additional bands could profitably be made available, eg around 1296 and 2304MHz.

An unexpected problem has been encountered since the Space Conference concerning ground to satellite communication (the up-link). Some authorities have forbidden up-link communications on other than frequencies allocated to the amateur space service notwithstanding the fact that such frequencies are within allocations to the amateur service. Thus, technically many amateurs are at present operating illegally through OSCAR-7 mode B - the up-link is outside the band 435-438MHz. It is necessary therefore either to have designated up-link frequencies or to seek agreement to the use of existing amateur service allocations for amateur satellite service up-link frequencies.

World Co-ordination:

From the above considerations certain world co-ordination is possible. Space communication is, of course, already a world problem. However, allocations above 30MHz should be studied in order to develop a world IARU strategy for certain bands which need as a matter of urgency to be identified. Obvious ones are: 144-146; 432-438; 1296-1298MHz etc.

Conclusion:

The future of the amateur service and amateur satellite service is at considerable risk and a very serious threat will exist to all allocations above 30MHz in 1979. A co-ordinated plan of action must be developed immediately both in IARU Region 1, Regions 2 and 3 and IARU worldwide. This problem suggests an initial approach for Region 1 and urges all member societies to come to the Warsaw Conference prepared to debate the issues and to commence the development of a powerful strategy for the defence of our frequency allocations in 1979.

G.M.C. Stone, G3FZL
VHF Manager.
VHF BAND PLANS

2m Band Plan

<table>
<thead>
<tr>
<th>MHz</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>144-000-144-010</td>
<td>E-M-E</td>
</tr>
<tr>
<td>144-036</td>
<td>CW calling</td>
</tr>
<tr>
<td>144-100</td>
<td>CW random ms</td>
</tr>
<tr>
<td>144-150</td>
<td>Upper limit cw</td>
</tr>
<tr>
<td>144-200</td>
<td>SSB random ms</td>
</tr>
<tr>
<td>144-300</td>
<td>SSB calling</td>
</tr>
<tr>
<td>144-500</td>
<td>SSTV calling</td>
</tr>
<tr>
<td>144-600</td>
<td>RTTY calling</td>
</tr>
<tr>
<td>144-700</td>
<td>FAX calling</td>
</tr>
<tr>
<td>144-900</td>
<td>Regional beacon</td>
</tr>
<tr>
<td></td>
<td>centre</td>
</tr>
<tr>
<td>145-000-145-225</td>
<td>Repeater input—RO to RS</td>
</tr>
<tr>
<td>145-300</td>
<td>RTTY (local)</td>
</tr>
<tr>
<td>145-500</td>
<td>Mobile calling</td>
</tr>
<tr>
<td>145-600 (S20), 145-625</td>
<td>FM simplex</td>
</tr>
<tr>
<td>145-550 (S22), 145-575</td>
<td>FM simplex</td>
</tr>
<tr>
<td>145-660-145-825</td>
<td>Repeater output</td>
</tr>
</tbody>
</table>

Notes:
1. Established simplex frequencies on repeater output channels may be retained.
2. The segment 145 250-145-500 MHz may be allocated, if desired, to FM channels.
3. No regional planning for beacons of ERP less than 50W.
4. Regional planning for beacons of ERP more than 50W.
5. CW permitted over whole band. CW exclusive 144-0-144-150 MHz.
6. Channelized nets should not operate in this portion at any time.
7. Local traffic should operate above 145 MHz during contests and band openings.

70cm Band Plan

<table>
<thead>
<tr>
<th>MHz</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>432-000-432-010</td>
<td>E-M-E</td>
</tr>
<tr>
<td>432-050</td>
<td>CW calling</td>
</tr>
<tr>
<td>432-100</td>
<td>CW random ms</td>
</tr>
<tr>
<td>432-200</td>
<td>SSB random ms</td>
</tr>
<tr>
<td>432-300</td>
<td>SSB calling</td>
</tr>
<tr>
<td>432-500</td>
<td>SSTV calling</td>
</tr>
<tr>
<td>432-600</td>
<td>RTTY calling</td>
</tr>
<tr>
<td>432-700</td>
<td>FAX calling</td>
</tr>
<tr>
<td>432-900</td>
<td>Regional beacon</td>
</tr>
<tr>
<td>432-000-432-225</td>
<td>Repeater input—RO to RS</td>
</tr>
<tr>
<td>433-25</td>
<td>TV sound (6 MHz system)</td>
</tr>
<tr>
<td>433-30</td>
<td>RTTY</td>
</tr>
<tr>
<td>433-500-433-575</td>
<td>Simplex channels—SU16 to SU23 (25 kHz)</td>
</tr>
<tr>
<td>433-75</td>
<td>TV sound (4 MHz system)</td>
</tr>
<tr>
<td>434-60-434-825</td>
<td>Repeater output</td>
</tr>
<tr>
<td>439-25</td>
<td>TV vision (Vestigial side-band system)</td>
</tr>
</tbody>
</table>

Notes:
1. HP and DL repeater system: Inputs 431-0/431-15, outputs 438-6/439-1
2. No regional planning for beacons—ERP of less than 50 W.
3. Regional planning for beacons—ERP of more than 50 W.
4. CW permitted over whole band. CW exclusive 432-0-432-150 MHz.
5. Channelized nets should not operate in this portion at any time.
6. Local traffic should operate above 435 MHz during contests and band openings.

23cm Band Plan

<table>
<thead>
<tr>
<th>MHz</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,296-000-1,296-010</td>
<td>E-M-E</td>
</tr>
<tr>
<td>1,296-050</td>
<td>CW calling</td>
</tr>
<tr>
<td>1,296-300</td>
<td>SSB calling</td>
</tr>
<tr>
<td>1,296-500</td>
<td>SSTV calling</td>
</tr>
<tr>
<td>1,296-700</td>
<td>RTTY calling</td>
</tr>
<tr>
<td>1,296-900</td>
<td>FAX calling</td>
</tr>
<tr>
<td>1,297-300</td>
<td>Regional beacon</td>
</tr>
<tr>
<td></td>
<td>centre</td>
</tr>
</tbody>
</table>

Notes:
1. No regional planning for beacons—ERP of less than 50 W.
2. Regional planning for beacons—ERP of more than 50 W.
3. CW permitted over whole band. CW exclusive 1,296-0-1,296-150 MHz.
4. Local traffic should operate above 1,297 MHz during contests and band openings.
5. France has no allocation 1,296-1,298 MHz.
Committee "B"  
(document WA79  
(amended)

MEETOR SCATTER QSO PROCEDURE

General

The goal is naturally to make a qso by meteor scatter reflection as easy and as fast as possible. As the reflections are of very short duration the normal qso procedure as such is not readily applicable. Thus certain measures must be taken to ensure that a maximum of correct and unmistakable information is received.

The best meteor showers are mostly strong enough to make some of these measures unnecessary but to encourage the use of all generally listed meteor showers there is no reason why the suggested procedure could not always be used. Still, the door should be open to development in traffic technique and amount demands at any time.

Timing

Firstly, all meteor scatter enthusiasts living in the same area should agree on the same transmit periods as far as possible to avoid interference. As a general recommendation it could be said that northbound and westbound transmissions should occur on odd multiples of the agreed time sequence starting at full hour. e.g. HH,00 - HH,05, HH,10 - HH,15 .... The preferable timing sequences are 5 minutes on cw and 1 minute on ssb. However, other timing sequences are possible.

The question of mutual interference and rapidly diminishing tolerances of timing must be kept in mind when the sequence is shortened.

Choice of Frequency

Since the frequencies 144.100±5kHz (cw) and 144.200±5kHz have been allotted to random ms-work in IARU Region 1 it is recommended that these frequencies should not be used for normal ms-work, especially during strong and popular meteor showers.

The choice of pre-arranged frequencies should in every case be taken into account in order to avoid popular transmission channels.

CW speeds

Speeds from 100 to 300 letters/min. are commonly used but in random ms-work a speed of more than 200 letters/min is not advisable. The speed should always be agreed upon before the test (especially if a multi-speed tape recorder is not available at both ends). Note that many operators are unable to reach the upper limit. Also note that the PTT in some countries requires the calls at the beginning and the end of the transmission not faster than 100 letters/min. The word DE must also be inserted at these times.
Calling Procedures

The test starts with one of the stations calling the other: H05AIR GW3ZTH H05AIR GW3ZTH........ the word DE is not used if not required by the national PTT. If the intention is to make a random ms-qso the message is as follows: CQ MS GW3ZTH..... The letters MS can be omitted.

Reporting System

The report consists of two numbers:

<table>
<thead>
<tr>
<th>First number (burst duration)</th>
<th>Second number (signal strength)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Only pings, no information (into to be used in qso's)</td>
<td>6. S2 to S3</td>
</tr>
<tr>
<td>2. Bursts up to 5 seconds</td>
<td>7. S4 to S5</td>
</tr>
<tr>
<td>3. Bursts 5 to 10 seconds</td>
<td>8. S6 to S7</td>
</tr>
<tr>
<td>4. Bursts 20 to 120 seconds</td>
<td>9. S8 to S9</td>
</tr>
</tbody>
</table>

5. Bursts exceeding 120 seconds

Reporting Procedure

A report is sent when there is positive evidence of having received the correspondence or the own callsign or a part of them.

The report is given as follows: H05AIR GW3ZTH 26 26........ The report must not be changed during the qso in spite of the fact that the signal strength might well justify it.

Confirmation Procedure

As soon as either operator copies both the calls and the report he can start sending a confirmation. This means that all letters and numbers are correctly received.

Confirmation message: GW3ZTH LZ1AB R26 R26......... Alternatively, should one of the participants have an R in his callsign the report could possibly be sent as GW3ZTH I4BER RR27 RR27 ........ When either operator receives a confirmed report (e.g. R27) and all the other required information is complete, he must confirm with a string of R's, adding callsigns at both the start and the end of the transmission.

When the other operator has received this he may respond in the same manner (usually for three periods). Example of a confirmative message: GW3ZTH H05AIR RRRRRRRRRR RRRRRRRRRR ......... RRRRRRRRRR ......... GW3ZTH H05AIR.
Note:

Should one of the operators receive the R report at an early stage of the qso he cannot add any further information to the other station at this stage. If agreed upon by the other party the following strings might be used to inform the other operator of the missing information that he wants:

BB = both calls missing
MM = my call missing
YY = your call missing
SS = duration and signal strength missing
OO = all information missing

The operator should now respond by transmitting the required information only. This approach shall be used with great caution to prevent confusion.

Sked Duration

Every uninterrupted sked period must be considered as a separate trial. This means that it is not possible to break off and recontinue during the qso. Sked periods are usually in the range of 1 to 3 hours.

Meteor Scatter work on ssb

Qso's are conducted in the same way as on cw. Letters and numbers are pronounced as they are and in English if no other language is settled for in advance. The exception is R which is pronounced ROGER.

Note: The underlined parts in the text should be considered as definite rules.

(This amended form of WA79 has been drafted by a sub-committee of Committee B, consisting of participants of the delegations of DL, HA, I, LZ, OH, OK, 3M and SP).