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Summary: C5 Beacon Coordinator Annual Report

When I was appointed at the General Conference in 2017, I was faced with the dilemma of not knowing where my predecessor had ended and the starting point to fill my new responsibilities with life. Many thoughts came to my mind, but somehow I did not find the right beginning. So I decided to start from scratch. It meant a lot of work, of course, but with the perspective that once this work was done, it would certainly be easier in the future.

Why start from scratch now? From my predecessor I only got a completely outdated beacon list, which was not really something to start with. It was more or less a mess. After many conversations I came to the conclusion to start again.
The IARU needs its own beacon list to fulfil the task of coordination. However, IARU must be able to rely on its own database and not be dependent on any data collections. Coordination is particularly important on the lower VHF bands above 30 MHz because of their long range. The resource frequency is scarce for the beacons, even if the beacons are an essential part of the worldwide amateur radio service. But this will be discussed later in this report.

Now that the cornerstones for a new beacon database have been established, the question was asked by different stakeholders: ' Why another new database? We do have Beaconspot.uk or mmmonvhf.de?" The question is quite simple to answer: These data collections feed themselves from sources, like DX clusters or entries of different radio amateurs, who observe beacons. The recorded frequency data scatters very strongly, since not all observers are able to indicate the exact frequency. As useful and helpful as these pages are for practical radio operation, they are of little use for effective frequency coordination. Nobody knows the operating parameters of a beacon better than the system operator. So why not ask the national VUS managers who should be in contact with them for a revised and up-to-date database?
The required data should be queried by the national VUS managers from the beacon operators and then passed on to the IARU-R1 beacon coordinator so that he can summarise them in a "master list". The more accurate this list is, the better the coordination task can be mastered.

In June 2018, I discussed with OM Sören, DO5SBM, what such a "master list" could look like? I rented a server for a small fee and Sören programmed the SQL database. Step by step the database has been growing and the system gets new features and updates frequently.

The current status can be seen at www.iaru-r1-c5-beacons.org .

Now it is time to fill this database with content. Hopefully this beacon list will be updated

by the national VUS managers. Currently we are already at 410 entries. However, there are still some country participations missing. Our C5-Chairman Jacques, ON4AVJ, has already requested twice.

In the meantime, we are still busy providing the database with new interfaces, so that VUS managers or national beacon coordinators can update this database. New search criteria, a dashboard for news around beacons, and, and, and.

This IARU-R1 beacon master list should be available as a reference for online databases such as BeaconSpot and mmmonvhf, since the data in the IARU list should match the operating parameters of the beacons.

Coordinated beacons in 2018 were:
LA2SIX 50MHZ new
LA8SIX 50MHz new
SV1SIX 50MHz qsy
SV9SIX 50MHz qsy
DB0THE 144MHz new
DB0GHZ 10.368 MHz saved with new keeper!

The coordination data can be found in the database.

With each newly received data set of a VHF manager, the QRG change to 50 MHz was also immediately requested, if beacons below 50,400 MHz are still in operation. Only SV asked for a new QRG for the 50 MHz beacons and got new frequencies. A few beacons that send below 50.010 should do QSY immediately, as they stand in the way of the Synchronized Beacon project. e.g. I0JXX

Once again, I ask you to send me updated beacon lists so that the coordination of new beacon requests can be processed more quickly and effectively.

A basis for discussion:

The beacon issue is of great concern to me at the moment, because there is a lot to be done both nationally and internationally.
On a national level it is, among other things, a successful beacon rescue after the builder had passed away (DB0GHZ a beacon on Helgoland on 3cm). But of course also requests from the national licensing authority regarding coordination and assistance requests from beacon operators.

Internationally I am busy with the "introduction" of a new digital mode "PI4" for beacons for automatic observation. A group around BO, OZ2M, is trying to establish this kind of transmission. PI4, Pharus Ignus 4, was developed especially for beacons. I'm in close contact with Bo, who currently started a survey about PI4.

As with the repeater stations, the question of the pros and cons of digital operating modes for beacons arises here. It has been shown that for many the universe is only black or white. If you're not in favour, you're against it. "We don't need digitization for beacons! There doesn't seem to be an in-between. Nevertheless for me it is important to address and deepen this topic. At the same time, however, it is important to deal

with it so sensitively that no hostility is provoked.

Basically it is important to be aware that beacons belong to the "core business" of the amateur radio service. Even more so than repeater stations, where amateur radio topics hardly play a role nowadays. So it is not surprising that some national authorities question the meaning of amateur radio in its current form.

For this reason, I included OM Andreas, DJ5AR, in the team, because he observes beacons himself, works a lot with young people and tries to make them familiar with the technical-scientific aspect of amateur radio.

We are both convinced that it is important to strengthen amateur radio in its technical-scientific basic meaning, so that we can secure this hobby also for future generations. In this context the beacons are part of it and must move more into the foreground again.

More in the foreground does not mean, however, that we now start to install as many beacons as possible, but that we consider how beacons can be embedded meaningfully in a structure so that they fulfil their tasks of serving as signal sources and enabling propagation observations. In no case should wild growth occur here, which is why certain standardizations are necessary. On the one hand, amateur radio is an experimental radio service, which is why there should be no arbitrary restrictions. On the other hand, a beacon for band observation does not have to be able to transmit all possible transmission types and certainly not SSTV images.
A beacon must transmit the call and the locator in CW and offer a maximum of one digital mode. The default at the moment is PI4. On my own beacon DB0MMO this mode has been running for a year already.

There are already considerations on how to reconcile the standard beacons and possible experimental beacons. So you could use the first 80 kHz in a 100 kHz segment for coordinated standard beacons with powers of 2 Watt and more and coordinate them according to the expected audibility range. The remaining 20 kHz could also be available for experimental or local beacons of any kind. All modes of interest would be possible, possibly a power limitation would have to be considered. If necessary and useful, such beacons could also be coordinated at any time and "moved" to the area for standard beacons.
In this way, the purpose of the beacons is to enable band observations and at the same time to provide the experimental beacons with an appropriate playground.

It is important to communicate these concepts to the radio amateurs and to make them aware of the importance of beacons. At the same time it has to be made clear that we have to handle the resource frequency sensibly and that the coordination of beacons of supra-regional importance is important. Therefore it is important to give a suitable field for experimentations to those who simply want to build and commission a beacon.

Another consideration is to install a system of WebSDRs complementary to the beacon system. A few that cover VHF bands are already in use in exposed locations and show what is possible. In distant regions beacons can be observed that cannot be heard at their own location. This would make it possible to practically estimate the geographical shift of overreaches. You can get an impression of the activity on the

bands and, if necessary, rotate the antenna in interesting directions. Special permissions, such as for beacons, are not required. Locations of HAMNET nodes could also be considered, as these are often exposed and the WebSDRs could be connected directly via HAMNET. This would also enhance this area of amateur radio and make it interesting for one or the other.

Andreas has already published this in an article about beacons and their coordination in the DARC magazine CQ-DL. This is still being edited and made available to various other magazines also in English.

For me it is important to emphasize the importance of radio beacons for band observation and to create a basis for discussion on how the community of radio amateurs deals with beacons in the future. The fact that beacons represent the technical and scientific aspect of amateur radio makes it all the more important to focus on them in order to give amateur radio a long-term future and to protect the scarce resource frequency from commercial users.

73, Mathias Klug, DH4FAJ
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