

# NEWSLETTER-AMSAT-EA

06/2020

JUNE

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Translation by Fernando EC1AME

## AO27

After several years being inactive, the AO27 is back operational thanks to the achievements of the control team in recent months.

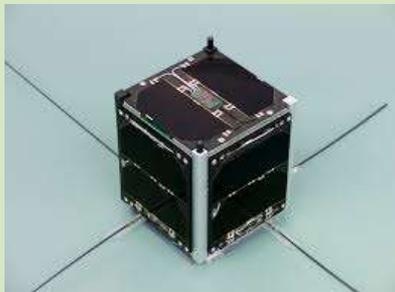
The satellite is activated in passes over the northern hemisphere on middle latitudes and for 4 minutes. Only one pass is activated per orbit and one ascending and another descending.

The satellite frequencies are:

436.795 RX - 145.850 TX FM



## FUNcube 1



After spending almost 8 months with continuous illumination, the FUNcube-1 has again some eclipse moments during each orbit.

The latest receptions of its telemetry report that the satellite has been running continuously without any problem. Satellite temperature has not reached excessive levels and the battery is operational. After three weeks of increasing eclipses the Battery is working perfectly and has not yet dropped below 8.1v.

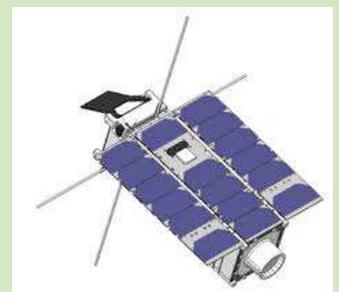
For all this the control team has changed the operating mode to continuous ham radio with the transponder ON and telemetry available at low power.

The frequencies are as follows: beacon at 435,605 MHz and reversing transponder, with the uplink centered at 145.965 MHz  $\pm$  30 kHz, and the downlink centered at 435,640 MHz  $\pm$  30 kHz.

## HUSKYSAT-1

After several weeks of testing, the Huskysat transponder is operational for you to use and test. There are some fades due to satellite orientation and not all passes have the same quality.

HuskySat-1 V/u inverted transponder, uplink 145,910 to 145,940, downlink 435.810 to 435.840, 1200 baud BPSK telemetry beacon at 435,800.



## Activities announced

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**Due to COVID-19,  
There are no satellite operations announced at this time.**

## Doing portable ops

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Operating in portable is one of the Outstanding activities in the world of satellite operators. To start it can be an occasion to encounter with nature and discover new places and, above all, with no mountains around, to be able to make contacts with satellites at 0 degrees elevation, or even with negative elevations, allowing contacts that would be impossible from home.



*Philippe EA4NF (@EA4NF\_SAT) activating South Florida, Key Largo*

On the other hand, the good choice of a place away from urban areas, allows enjoy clean reception quality away from any radio interference. In addition, operating satellites in portable allows to obtain the correct polarization of the antenna with a simple twist of the wrist. There is no more agile adjustment mechanism than this one of the operator in portable to maximize the reception and emission thru satellite.

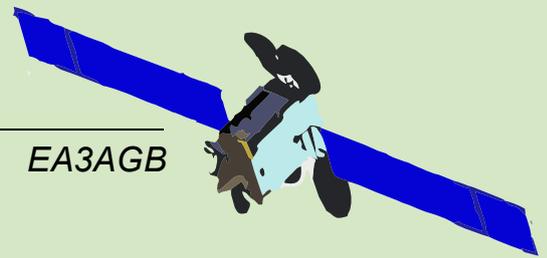
With very simple equipment, such as a small walkie of 4 or 5W and a beam antenna such the Arrow, Elk, loio or homebrew antennas, contacts can be easily done , even working in half-duplex.

**FM satellites, although overcrowded with operators, are a good way to start.**

We recommend starting by listening to some FM birds like SO-50, AO-91 or AO-92. You will be amazed to be able to listen to distant QSOs and make contacts you would never have thought you could do with just a few watts, a simple Portable UHF / VHF rig and a lightweight antenna that fits in your backpack.

Some operators like Philippe EA4NF (in the image) activate a multitude of Grids and countries for the international AMSAT community, making contacts sometimes at distances of more than 7,000 km! .

These activations allow us to keep our bands active, in addition to promoting this mode of transmission that is still unknown to many radio amateurs, a way to make QSOs that, remember, it does not depend on the propagation but on the passes of the satellites.

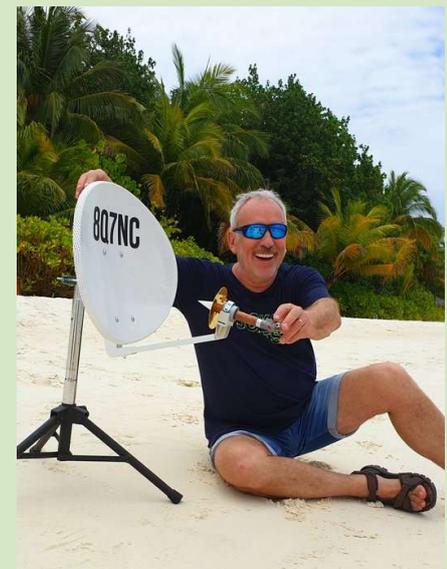


EA3AGB

4Z75V	KM72KE	SSB	4X6ZM
9K2OK	LL49AE	SSB	BURO,LOTW
9K2YM	LL48EQ	SSB	LOTW,EQSL
BG0AUB	NN34CH	SSB	LOTW
EA6WQ	JM19ON	SSB	LOTW
EP4HR	LL69GP	SSB	LOTW
GI75LIB	IN89RK	SSB	QRZ.COM
HB0TR	JN47SD	SSB	BURO,LOTW
E2STAYHOME	OK03IW	SSB	BURO,LOTW
IT9CHH	JM68OD	SSB	QRZ.COM
OE8GMQ	JN66RT	SSB	DIRECTA
OK1CDJ/P	JO60JJ	SSB	BURO,LOTW
PU2MBZ	GG56EW	SSB	DIRECTA
ZW8THANKS	GI840U	SSB	PS8RF
RP75N	LN13TL	SSB	UA6XT
RP75P	MO27SD	SSB	EQSL
ST2NH	KK65GP	SSB	EA7FTR
SV5BYR	KM46CK	SSB	DIRECTA
TR8CA	JJ40QL	SSB	LOTW,EQSL
R9LR	MO27QF	SSB	LOTW,EQSL
AT9SS	MJ89DX	SSB	LOTW
YL2GC	KO26AW	CW	QRZ.COM
ZS1LS	JF96FD	CW	BURO,LOTW



New setup of G8GKA



8Q7NC, Noel from Maldivas



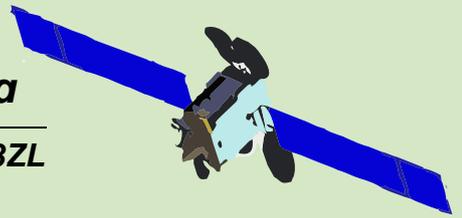
PS8RF from GI84



MOVPN, Antenna RX

# QO-100 - DXpedition Namibia, Sudáfrica y Botswana

Charly DK3ZL



## How it all began

In spring last year, during a journey of several weeks through Namibia and South Africa, I was regularly on the low-flying, earth orbiting satellites (LEOS) QRV with my call signs V5/DK3ZL and ZS/DK3ZL. I had been included in the "HAMSATS" WhatsApp group (a special chat of V5 and ZS radio amateurs about connections via LEOS), which stated on February 12th that a transponder called QO-100 on the geostationary satellite Es'hail-2 had been released for amateur radio communication.

On February 13, 2019 a short recording of a QSO by ZS4A was already posted in this group, on February 16 the first QSO between PA and ZS was reported by Remco with ZS1C in one of the DX clusters.

Immediately after my return home at the end of March, I took a closer look at the necessary technology. From my studies in Marburg (1972 - 1979) I knew Dr. Karl Meinzer (DJ4ZC) quite well. At that time he was the project manager in the Central Development Laboratory of the University of Marburg for various satellite projects of AMSAT-DL and I visited his laboratory several times and could directly observe the development of various satellites.

Since I had been in regular contact with him again for quite some time in a 10 meter Sunday round of radio friends in the Marburg area, it happened that he invited me directly to visit his self-built SAT station in Marburg on May 2, 2019, so that I could make my first QSOs over QO-100.

It was a great experience and I was immediately hooked. Afterwards I continued to do some research, got in contact with Sigi DG9BFC, who put together a station based on a Pluto SDR with a suitable power amplifier and a few weeks later I was finally QRV on the satellite from my own QTH. I did a lot of QSOs, but also listened quite often and by that gained further experience.

## The idea, my intentions and the preparations

In late autumn I slowly started to prepare for another trip to Southern Africa. When extending my private licenses V5/DK3ZL and ZS/DK3ZL for my new tour through Namibia and South Africa in spring 2020, I noticed that there was no station on QO-100 QRV in Namibia yet. The main problem was probably to get suitable transmission hardware on site. Most of the amateurs had large satellite dishes (from 1.5 to 6 meters in diameter) in their garden or on their roofs (due to the formerly complex reception of normal satellite TV). But the supply of up- and down-converters, frequency stable LNBS or even SDR components is almost impossible. Imports from China are on the road for months on end and are often subject to loss through theft.

That's why I decided to bring and donate some finished components for satellite stations for my friends in the NARL directly from DL.

As a supporting member (with hardware support for the 2m/70cm repeater system in Namibia) of the NARL (Namibian Amateur Radio League) since 2019 and after consultation with Werner V51JP, the head of the NARL, I applied for the special callsign V55QO for special activities over QO-100 and after only two weeks the license was granted.

So the starting signal for the "secret operation" to permanently activate Namibia as a new DXCC country on QO-100 was given.

After Derek V51DM had already been working for weeks in Swakopmund on the construction of his own station, I helped him to set up his system from mid December. He was the first station from Namibia to be activated via QO-100 QRV on December 22, 2019. I had the honour to make the first connection with him.

After my landing on January 17, 2020 we immediately put my DXPatrol system into operation at Werner V51JP and together with my portable station under V55QO there were always three V5 callsigns in the air during my expedition. The first goal of my mission, namely to enable and promote regular radio operation by local stations from Namibia via QO-100, was thus fulfilled.

### The itinerary and the equipment



The route with all activated grids



The award at the end of the journey

The route with all activated grids the award at the end of the journey During my expedition from 16 January to 19 March 2020, I covered a total of 8800 kilometres on mainly gravel and sand tracks in my faithful Toyota Hilux 4X4 (of the two spare tyres I took with me I had to use one after 7500 kilometres!), activated 17 different grids (11 in Namibia, 5 in South Africa and 1 in Botswana) and have set up and dismantled my QO-100 portable station 20 times.

### My station

My station consisted of a modified Pluto with a following PA (built by Sigi DG9BFC), which emits about 15 watts at 19 volts, the dual band POTY feed (built by Jörg DJ4ZZ) and a 75 cm off-set dish from a hardware store in Windhoek. My laptop was running the SDR console by Simon Brown.



*The Pluto with peripherals*



*All in one bag*



*The antenna with feed*



*Everything stowed away in my trunk*

## **Antarctica, school contacts**

A very special event for me during my expedition was the activation of Neumayer III Station DP0GVN in Antarctica via QO-100 on the evening of 28 January 2020.

In the first days of April 2019 at the Funktag in Kassel I had talked to Felix DL5XL about the great possibilities of a stationary SAT system in the Antarctic, especially as a back-up communication system in case of an emergency as well for scientific exchange of ideas with school stations and so I have offered him my full support. The fact that a short time later AMSAT-DL took over the professional responsibility for this project was excellent, because we all know by now how successful their activity and achievement is down there.

Of course Felix as an experienced CW-operator had done the very first QSOs in CW (I therefore had to teach my Pluto on that day how to operate CW), but I was very happy to be allowed to do the very first SSB QSO with him afterwards. In the following days of my journey I have often, partly together with Felix, made school contacts. Felix reported then about his "cool" job and had in addition often a scientist at the Mike, I was with 35 to 40 degrees outside temperatures and the wild African animals around me a genuine antipole to the South Pole.

That was a lot of fun and my second goal for my expedition was reached.

## Beginner seminars for information and motivation

Another great story during my trip was the spontaneous QO-100 seminar in my hotel room in Bloemfontein. Gary had told the radio friends in Bloemfontein that I would definitely interrupt my trip to him there for an overnight stay. So it happened that at 7pm suddenly five ZS4 callsigns were gathered in my room, all of them very interested in being able to do their first QSO over QO-100.

The situation became very funny when we were in QSO with Gary ZS6YI and at the same time Danie ZS4JJ (he lives in Bloemfontein) was listening to us at home on the satellite.

He was and is the first and only active person in this area on QO-100 and was very surprised when he heard his five buddies all at once one after the other in QSOs on QO-100. For a short moment he did not understand the world anymore. After solving the riddle we all laughed very much and I invited him the next morning for breakfast in my hotel for a nice chat. A firmly planned highlight of my trip was my lecture at the Vaal University of Technology (VUT).

Before I planned this trip Gary ZS6YI had asked me to do a lecture about the possibilities to get on QO-100. On Friday afternoon, March 6th, I drove with Gary in my car to the university and we quickly set up my portable station with the help of some of the about 25 "listeners" who arrived, some of them from 60 km away, even one YL among them. However, "deviations" from my setup routine caused a problem.

In South Africa and Namibia all 230 Volt wall sockets are equipped with a separate switch. I had gotten into the habit of always setting this switch to "OFF", then doing all the wiring completely whilst leaving all the equipment switched on. But somehow someone had set the main switch on the power supply for Pluto to "OFF" (probably for safety reasons), but I didn't know anything about it. So I was even more surprised when no satellite signal at all was received. The Pluto was running with the console supported through the USB port of my laptop, BUT the LNB didn't have 14 volts without the power supply. There was simply no signal at all from the QO-100.

It took about 15 minutes with some sweat on my forehead until I found this "mistake", but after that it became a very successful event. In the meantime some of the participants are active on the satellite. So my third goal for this trip was reached.



*A part of audience*



*Antenna setup*

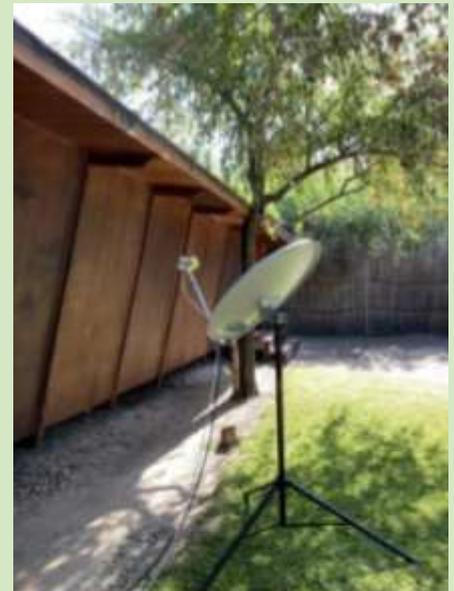
## Do you have a room with a clear sky view to the north available?

With this "strange-sounding" question I have quite often somehow irritated some employees at the reception of the lodges during my round trip through Namibia and South Africa.

But after clarification they all were always very helpful. Most of the times, after a short check of the situation, I could find a room with a good antenna location, that means free sky view to the satellite. Especially helpful was an APP with the view to the QO-100 position in the sky through the camera lens on my mobile phone. With it I could immediately recognize any obstacles and make a decision. I was able to do this for example in the Riverdance Lodge at the Okavango very successfully (see pictures).



*Veranda, window-railings and house entrance*



*The final solution*

## Smaller obstacles

During my trip there were often smaller problems, for example the antenna in Canyon Valley (Namibia) was blown away by a storm. I was on a photo tour at the Fish River Canyon and when I returned to my house, the following picture appeared: Only the good Flex 10 cable prevented the antenna from being completely smashed on the ground

A real disaster happened later in Robertson (South Africa). Due to a sudden, unexpected and quite heavy gust of wind the complete antenna with tripod fell down about 3 meters and the LNB carrier broke off. With my Super-Glue and a professional tape bandage I saved the situation in 30 minutes and was QRV again.



*After the storm blow*



*Crash*

A highlight of a very different kind was the activity in Cape Town, where I had to use my satellite dish "indoors" for the first time. In the hotel, which I had booked for five days, there was absolutely no possibility to install the antenna outside of the building with a free sky view to the north. So finally I had to stay in a corner room on the 4th floor, which was the only one with a bigger window facing north-east.

With the help of Jonathan ZS1ARB we finally managed to find an optimal antenna position after almost 90 minutes of trying. I thought I might have relatively good reception, but while transmitting I unfortunately had to notice that my signal was at least 15 to 20 dB less than usual on the satellite. The reason was probably the double glass with possibly also a special coating. In order to be able to align the dish to the sky at all, I had the idea to put it into the four legs of a flipped chair (see picture). The exact elevation was then achieved by "millimeter by millimeter" lifting the backrest of the chair from the floor using various books and magazines.

In the end, the small edition of the "New Testament", found in one of the drawers, added another 3 dB.

Even Felix DL5XL was totally enthusiastic about my crazy setup in the room, because chance wanted it that he was flown out from Antarctica to Cape Town at the same time as I was in Cape Town with Jonathan (ZS1ARB). So, one evening we accompanied together from my hotel room the communication of Roman (HB9HCF) at the microphone of DP0GVN with the club station of the DARC headquarters DA0RC in Baunatal.



*Yeah, where is it, the satellite?*

## The very different licensing procedures in Africa

It was very interesting to see how differently fast a license can be granted in the African countries.

For V55QO it was just less than 2 weeks direct in Windhoek. Absolutely no problems. During a WhatsApp phone call with Gary ZS6YI on a Sunday afternoon still in the desert area of southern Namibia, I got the idea if it would be possible to be on the air with another special call sign during my upcoming trip through ZS. Gary, a man of action, says only "wait a moment". And this meant that already after 24 hours, while I was setting up my system in Springbok for the first time in ZS, I got the call: "You have a go for ZS95QO". Gary had done all he could on Sunday which brought three important signatures on the special paper on Monday and on Tuesday I had the license as PDF on my mobile. The number 95 stands for "95 years SARL" and the QO was approved as a concession especially for my special activities on the QO-100 satellite.

My application for a call sign for Botswana (A2) turned out to be much more difficult. After almost 3 months of frustrating efforts with the friendly support of Gary's South African radio friend Mike (ZS1E), who is licensed in Botswana himself, filling out countless documents, some of which never arrived at the office in Gaborone, my license with the incredibly exotic call sign A2DQ319 was finally confirmed by WhatsApp through a document which reached me the day before I entered Botswana.

The activity in Botswana resulted from the fact that I was on my way from South Africa to Windhoek on March 11th, but due to the huge distance I had to stay for one night in a hotel in Botswana. After 600 kilometres and a special corona check (including temperature measurement) at the border I reached my accommodation in the evening and immediately set up my station. And then things really took off!!! .

## What does a "pile-up" on QO-100 mean? How should I act?

Normally there is a complete uncontrolled mess of calling station (I call it shark feeding, the English call it feeding frenzy) = the absolute chaos on one and the same frequency.

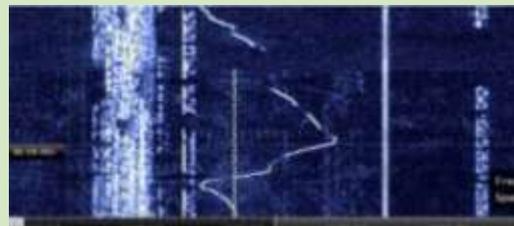
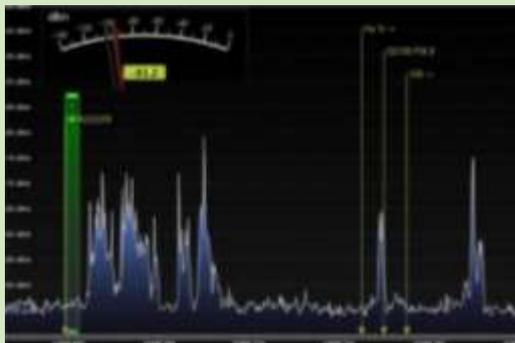
I would therefore like to take the opportunity here to present my recommendation (from my current experience) for the behaviour when rare stations appear on QO-100. The big difference between a "pile-up" on shortwave and QO-100 is that on this geostationary satellite EVERYONE hears EVERYBODY approximately with the same level. This means that, different from the situation on hf, where a calling European usually does NOT hear the other Europeans calling with him or he hears them very weak (dead zone, propagation), he can pick up the response of the DX station almost undisturbed and react correctly.

On QO-100, however, the DX station's response will always be lost in the turmoil of all other uncontrolled calling stations.

Therefore it is **ABSOLUTELY IMPORTANT** that a DX station, if it notices that more than 5 stations are responding on its frequency, immediately switches to split operation. This is the only way to ensure that its responses are well received by all the

others, and to allow a relatively fast contest style operation with report exchange to give as many as possible the opportunity to contact the rare DX station.

Usually listening from 5 to 10 kHz above (5 to 10 up) by the DX station is offered, I myself have tested different ranges, most extreme it was in Botswana, where I even had to go up to listen 20 kHz up.



With this operating technique I was able to log 90 contacts in the first hour as A2DQ319, that was 1.5 contacts per minute. In the second hour it was still 45 call signs. One more tip: spell out your own call sign TWICE clearly and slowly, perhaps right after that you should spell your last two letters again very briefly, then please wait. It's also worth calling more often at the top end of the pileup, because the density of callers is usually lower there.

#### The outcome of my journey:

During my expedition I had about 2500 individual contacts via QO-100, of course because of the special call signs very often in "contest style", but also very many in the form of longer, very nice conversations about various topics, especially about the wildlife in Africa which fascinates me so much.

I was very positively surprised to hear how many people daily only listened to my QSOs. At the end of the journey suddenly call signs, which were unknown to me until then, came back to me to at least have done a QSO with me at the end. They all had only listened. That really astonished me and gave me the feeling to have done everything correctly.

During the trip I had unbelievably beautiful experiences and experienced the "Hamspirit" among amateur radio operators. I was invited for a few days to stay at Derek's farm, the Ongava Private Game Reserve with its countless rhinoceroses and lions. I took a river trip on the Okavango high in the north, where I was able to solve my acute medical problems, which had arisen after 3 weeks, with the very appreciated support from the radio friends from Windhoek. I made later a hot air balloon ride over the Namib desert in the South of Namibia, then crossing with Jonathan ZS1ARB from Cape Town an adventurous pass with him on his motorbike and me in my SUV on impossible gravel roads on steep slopes in a mountain range of the semi-desert Karoo. Lived with Gary ZS6YI some days in his very private paradise with wonderful adventures and very special meetings with his friends.

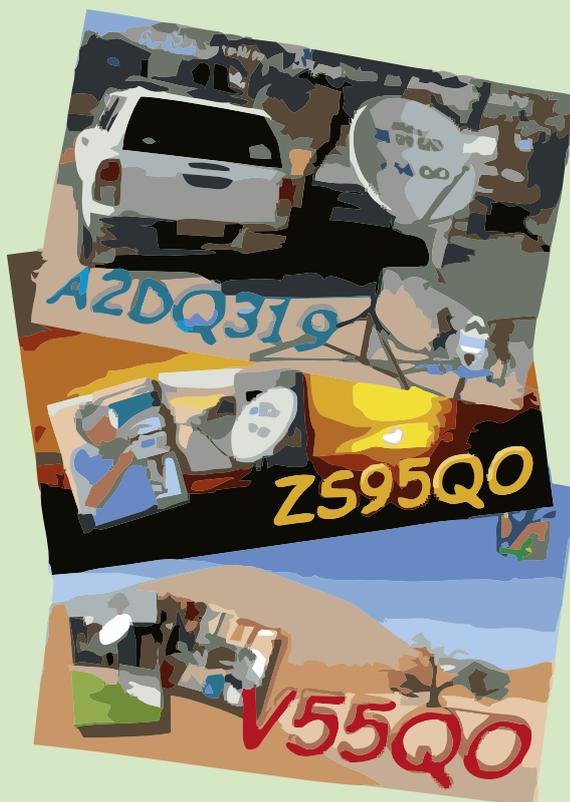
On top of that came the great experience that the community of amateurs who are on the QO-100 QRV is also something very special. It was interesting how during my journey through the grids quite often the same call signs came up again and again,

one knew each other then somehow, almost familiarly, some even have asked daily about my health, that was very touching. I have probably reached my planned goals, because in Namibia there are now four call signs with the possibility to communicate via QO-100: Derek (V51DM) in Swakopmund, Robert (V51RS) and his XYL Angela (V51SA) and Werner (V51JP) in Windhoek. The special callsign V55QO will remain and will be activated from time to time.

In South Africa I activated Jonathan (ZS1ARB), animated Tom (ZS1TA) to have fun with QO-100 as soon as possible and created a station for Pieter (C88SPY) in Mozambique together with Gary (ZS6YI). Unfortunately he could not pick up his station because of the "lock down" by Corona.

And I was able to bring Botswana (A2) into the air on QO-100 for the second time ever.

73, Charly DK3ZL



## AMSAT-EA FORUM

From AMSAT-EA we want to promote among the community of Spanish amateur radio ops to spread the knowledge about our hobby through the internet. That's why we remember that our association has a forum in which anyone can participate, even if you are not a member. We encourage you to take advantage of this space to make your inquiries, start debates, share your concerns or help others.

Here is a link to the AMSAT-EA FORUM:

<http://foro.amsat-ea.org>



## AMSAT-EA products in the URE store

For several weeks you have at your disposal several products of AMSAT-EA personalized with your callsign on the URE website.



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