



# NEWSLETTER-AMSAT-EA

01/2020  
JANUARY

## HAPPY 2020

We'd like to wish you a very Happy Year 2020. Gone is a year of small successes in our association, like the new edition of the special station AM1SAT and the new diploma celebrating the 2019 IberRadio Communications HamFest which was a success.

At the end of the year we were given the opportunity to put two satellites into orbit, so we began working against the clock on Genesis satellites (a reduced version of what Easat-2 will be) so that they were ready to put them into orbit during the first quarter of this year 2020.

We cannot forget the launch of Fossa-1, a pocketQube developed by a Spanish team and put into orbit on December 6 at 0756 from New Zealand aboard a Rocket Lab Electron rocket.

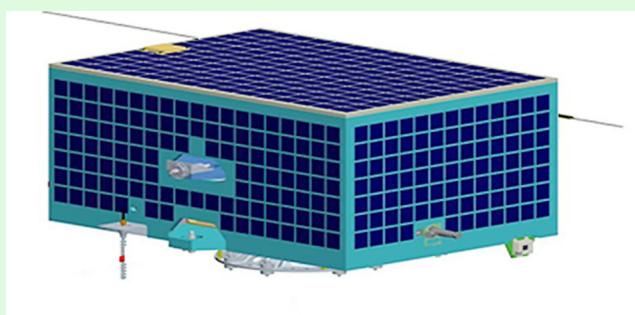
We hope that this new year is a great year with new achievements for all Fans of this little / big world of amateur satellites.

*Thanks To All !*

## CAMSAT CAS-6

On December 20, 2019 Camsat CAS-6 was launched and put into orbit using a CZ-4B vehicle from the Taiyuan satellite launch center in China.

The satellite has an SSO orbit and an apogee of 629km with an inclination of 97.89°, the orbit period its 97 minutes. It has a mass of 35 kg and a three-axis stabilization system with its surface + facing the earth.

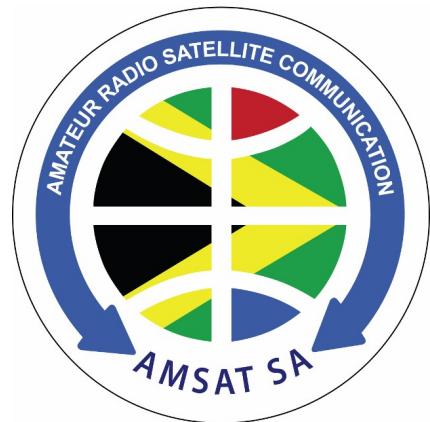


Amateur radio Payload:

- .Call signal: BJ1SO
- .VHF antenna: a 1 / 4λ monopole antenna with a maximum gain of 0 dBi is in the side + Z
- .UHF antenna: a 1 / 4λ monopole antenna with a maximum gain of 0 dB is at - Z side
- .CW telemetry beacon: 145.910 MHz 17dBm
- .AX.25 4.8k Baud GMSK Telemetry: 145.890 MHz 20dBm
- .U / V linear transponder downlink: 145.925 MHz 20dBm, bandwidth 20 kHz, inverted
- .U / V linear transponder uplink: 435.280 MHz

## AfriCUBE SDR

The AMSAT SA team of the Amateur Radio League of South Africa (SARL) has changed its focus on the development of cubesat AfriCUBE so that it is finally formed by a SDR-based digital transponder that under Anton's leadership Janovsky ZR6AIC has already reached an advanced stage of development and soon will be ready to undergo the first field tests.

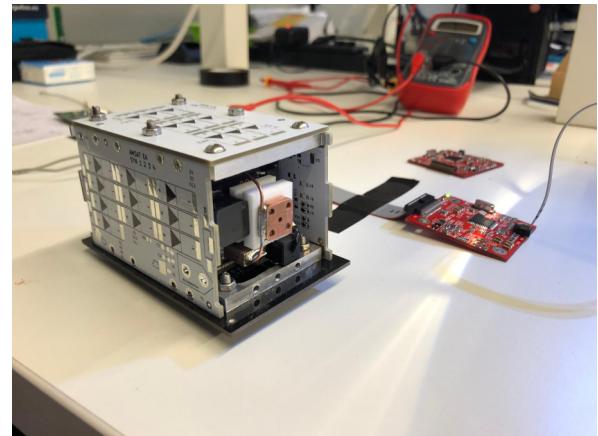


Work is currently being carried out on board control and in the documentation to ensure a launch opportunity. Hans van de Groenendal, ZS6AKV will work on the assignments of frequency. AMSAT SA continues its dialogue with SANSA and its contractor to place a transponder on EOSAT-1, a planned satellite of High Earth observation performance designed to produce data for a wide range of Earth observation applications. The development of AfriCUBE will improve this opportunity.

## GÉNESIS Sats of AMSAT-EA

AMSAT-EA has registered with the IARU and the Spanish administration the GÉNESIS-L and GÉNESIS-N satellites for launch in mid-2020.

This opportunity has arisen because the American company Firefly has offered a free launch (DREAM program) for the opening flight of its Alpha rocket. This flight will depart from the American base of Vandenberg in California.



To achieve this, since the end of the summer of 2019, the hardware and software designed for EASAT-2 has been adapted to a simpler and low-cost version, and we did it on a rush, in order to have everything ready on time.

These twin satellites (with small differences) are PocketQubes of 1.5P format and are almost finished. The difference with EASAT-2 is that only the part of the linear transponder receiver will fly and an integrated one will be used for the generation of ASK / CW, as well as the right solar panels for the estimated life in orbit of around one month (300km). An experimental ion propellant delivered by Applied Ion Systems is also incorporated for testing in space.

In the coming weeks, the thermo vacuum and vibration tests required by the launcher will be carried out and if it is satisfactory it is expected to be able to deliver the satellites to the United States in March.

## **AMSAT-EA HADES SAT**

As some of you have already seen on our website and on social media, we have announced the construction in 2020 of a fourth satellite: Hades, for which the flight reservation has already been made with the Alba Orbital broker. This satellite, which is going to be able to be launched thanks to the help of a sponsor, is going to be a twin satellite of EASAT-2 and, like this one, it shares a platform with the GENESIS. All are finally pocketQubes 1.5P. Hades and EASAT-2 will fly on the same flight. In the next few days we also hope to announce that the reservation of the payment has been made for this one, which, as many of you already know, is the first project that we launched, a long time ago.

I want to thank all the people who are deeply involved in the construction of the GENESIS , EASAT-2 and Hades. Without the selfless help of all of them, everything would be much more complicated and this includes members of AMSAT, the QRP Club, people in their personal capacity, companies and students.



As we reported at the end of the year, GÉNESIS satellites have emerged from the opportunity to launch on a Firefly Alpha rocket. In this program we are working together with Fossa, who is centralizing communications with Firefly and which will also launch two satellites, as well as with the Greek foundation LibreSpace, which launches two satellites and has designed the ejector.

We were both AMSAT and Fossa with LibreSpace members who were in Spain at the end of 2019 to perform the thermo vacuum and vibration tests, which were satisfactory. We liked spending time with them and exchanging ideas and opinions.

So far the GENESIS are doing well. They are very advanced. The most critical point is to pass the vibration tests. By the end of February they should be ready for delivery in the United States.

The GENESIS will be repeaters of ASK and CW with an estimated orbital life of a month or two at most, but their primary function is to deliver all possible telemetry to be able to validate the platform, since they will serve so that EASAT-2 and Hades can work for as long as possible in space, as its estimated orbit is much higher.

EASAT-2 and Hades will incorporate, if everything is finished, a complete linear transponder, which will allow the transmission of analog and digital signals. Your solar panels will be space specific and will incorporate all the possible improvements that we detect in GENESIS.

We have to keep in mind that the possibility of failure of the Firefly Alpha rocket itself is high, being a first launch, but we cross our fingers so that everything goes well and see our GENESIS orbiting and transmitting their signals.

Thank you very much again and happy 2020 to all,

Félix EA4GQS  
President of AMSAT-EA



*antennas of KE9AJ*

**AD0DX** (Ron), **KG5GT** (Brian) and **KE4AL** (Robert) will be active as W5M / mm from the mouth of the Mississippi River (EL58) on 4 January between 1430z and 2030z, FM and linear satellites.

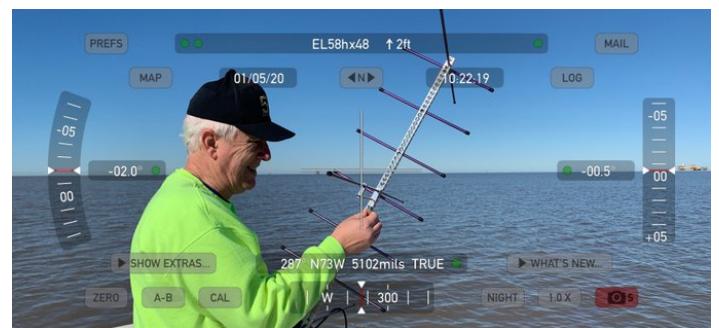
**VE3FU** (Chris), **VE9CB** (Dave) and **VO1HP** (Frank), will be active as VO2AC in the CQ160CW contest from January 24 to 26. If time allows, they may be active on FM satellites from GO11 as VO2AC or VO2AAA. Depending on the weather and the agenda they could activate FO93, FO93, GO02, GO11, Go12, GO22 as they go along the road.

**6F3A**, Isla de Perez EL52 will be active on sats from 11 to 17 of February. They could also be active from EL50, EL51 as XE1AY / MM.

**AD0DX** (Ron), **N6UA** (Doug) and **W3ARD** (Josh) will be active from the Big Bend National Park (DL88) on March 16 and 17.



*W5M/mm*



*W5M/mm*

## FORUM AMSAT

From AMSAT-EA we want to promote among the community of Spanish speaking ham radio ops, the divulgation thru the internet of all kind of knowledge about our hobby.

That is why were mind you that our association has a forum in which anyone can participate, even if you are not a member.

We en courage you to take advantage of this space to make your inquiries, start discussions, share your concern sor help other hobby partners transmitting your wis dom.

Our forum is here:

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

## **EA5TT “minimalist” satellite mode**

Fortunately I live very close to the Natural Park del Turia, and I love it whenever I have some time for a ride in that park, alone or with Mari Carmen, EB5AN.



*Photo 1*

That is why not to miss the passes of FM satellites, especially the AO-91 and 92, which are working great, I began to think about building an antenna that is not very fancy, fit in a pocket, and had better performance than the handy dual band rubber duck that I normally use.... Oh, and it had to be an antenna that works well, nice and Cheap (well, “to be nice” is not a must:-)



*Photo 2*

Also if I could place it directly on the laptop, even better, so I could avoid carrying the coaxial and eliminate the losses .... I've always liked to experiment with antennas on my own, so I focused on an antenna that I had seen published in a book years ago, In the article its dimensions were for HF, 40 and 15 meters, but nothing prevented me to make new measurements and experiment with it.

That's how I built the antenna seen in photo 1, it is a Double Zeppelin, in 145 it behaves like a dipole slightly shortened, while in 435 its  $2 \times \frac{5}{8}$  of wave, which gives you about 3 dB of gain over a dipole. Each arm measures 43 cm and the line of emphasis 6 cm .The electrician card confers rigidity and the connector is a PL, to which after I added an adapter. The thread used is a 1.5mm electrical wire.



*Photo 3*

You can see the complete set to work satellites in the Photo 2, and fits in a pocket ...

Finally you can see me in photos 3 and 4 in different passes working the satellites mentioned. I did 2 qso ... and listened to many stations .... ;-) what for the minimalist of the Installation is not bad at all.



As a note of interest let me comment that at reception you listen to the satellite with a maximum signal of 5 or 6, receiving the SSTV from the ISS with 9+.

I hope these lines arouse curiosity and the interest of more than one, and that you dust off that WT that you have hidden somewhere, and bring it back to life

You are going to have fun... I promise !

**73, EA5TT, Manolo**