

432 AND ABOVE EME NEWS

JULY 2020 VOL 49 #7

EDITOR: AL KATZ, K2UYH; DEPT. ELECTRICAL/COMPUTER ENGINEERING, THE COLLEGE OF NEW JERSEY, PO BOX 7718 EWING, NJ 08628, TEL (W 609-584-8424), (C 609-947-3889), E-MAIL alkatz@tcnj.edu
ASSOCIATE EDITOR AND REFLECTOR/NETNEWS MATEJ PETRZILKA, OK1TEH, SIMUNKOVA 1609/21, 18200, PRAHA 8, CZECH REPUBLIC, TEL (+420 603 489 490), E-MAIL ok1teh@seznam.cz
CW INITIAL LIST G4RGK, DAVID DIBLEY, E-MAIL zen70432@zen.co.uk, AT: <http://www.zen70432.zen.co.uk/Initials/index.html>
SUN & EXTRATERRESTRIAL NOISE LIST MANAGED BY OK1TEH: http://www.ok2kkw.com/next/nl_k2uyh/sun_table.xls
EME INFORMAL NETS: 14.345, ~1500 SATURDAY AND SUNDAY, NET COORDINATOR: OPEN
ON0EME EME BEACON, 1296.000 IS QRV WHEN MOON >10°, SEND RX REPORTS TO WALTER (ON4BCB) on4bc@gmail.com
DL0SHF 3 CM EME BEACON, 10368.025, SEND INFO & QUESTIONS TO PER (DK7LJ) per@per-dudek.de.
NL EMAIL DISTRIBUTION and EMAIL LIST CORD: WARREN, W2WD wbutler@ieee.org
THE NL WEB VERSION IS PRODUCED BY REIN, W6SZ rein0zn@gmail.com, AT: <http://www.nitehawk.com/rasmit/em70cm.html>

CONDITIONS: This month's newsletter (NL) is a bit shorter than usual with no new contests or dxpeditions since the last NL. It is just meant to fill the gap between the June and Aug NL. The main news is the **23 cm VK3UM Memorial/DUBUS CW EME Contest is on 18/19 July** - see complete rules at <http://www.marsport.org.uk/dubus/EMEContest2020web.pdf>. There should be plenty of activity this weekend no matter what mode you operate. However, if you have never tried CW on 1296, this would be an ideal time to do so. The serious contest stations will not be using the HB9Q Logger. Just tune in one of the many big signals that will be calling CQ on CW and call them back. It may take a few calls, but you will be surprised how easy it is to make CW QSOs. The following weekend, 25/26 July will also attract some interesting activity. It will be a microwave activity weekend (MAW) with 3 cm operation on Saturday and 13 cm operation Sunday. The next MAW will be on 15/16 Aug with 9 cm on Saturday and 6 cm on Sunday. (MAWs are an attempt to generate activity on specific MW bands. Come on and make QSOs, use the reflector, use any mode, just be activate on the band. **The July 70 cm CW activity time period (ATP) is on 19 July from 0400-0600 and 1300-1500.** Sunday 26 July will be an encore of last year's very successful SSTV EME Day - see the following:

PI9CAM SECOND ANNUAL LUNAR LANDING SSTV

EME DAY: Jan (PA3FXB) pa3fxb@amsat.org announces an EME SSTV party on 23 cm -- Because of COVID-19 the Dwingeloo dish has been closed for several months. But in the last few weeks, we started opening up again in a small and cautious way. In 2019, we celebrated the 50 years Anniversary of the Moon landing. PI9CAM celebrated with all kind of special activities. One of the activities was doing SSTV via the Moon. We did it on the exact date 50 years later; however, EME conditions were not the best. Nevertheless, we saw many stations joining the SSTV party, and were surprised to see pictures even with small dishes! This year, we are going to try again and plan to make it an annual event. The Lunar Landing EME SSTV Party this year will be on **Sunday 26 July**. Moon conditions will be better than last year. The Moon is not very high in the northern hemisphere but much closer than last year, so we expect stronger signals and better images. We will transmit lunar landing and space related images on **1296.110**. We will use SSTV **mode MARTIN 2**. SSTV software used here is **MMSSTV**. We are curious to see and hear from you what results you get. Of course, a

bigger antenna is better, but we have had some surprisingly good SSTV reports in the past from moderate dish stations. Even with a 2.5 or 3 m dish you should be able to see some distinguishable images. We also encourage you to try sending SSTV images yourself and see what the results will be. We will be on the HB9Q logger to coordinate. We will start shortly after our moonrise and will stay active depending on activity. We hope to see many images off the Moon!



SSTV signal received by XE1XA last year

DK3WG: Jurg dk3wg@web.de in the short period between the end of June and the beginning of July reports – I was quite active but only added initials on 432 using JT65B with SQ9CYD, and on 1295 using JT65C with KD5FZX, OM4XA and UA9FAD.

UA3PTW: Dmitry ua3ptw@inbox.ru since his last report, added initials at the end of June/beginning of July on 432 using JT65B RU4AN, and on 1296 using JT65C G7TZZ, KF2T, KD5FZX, UA9FAD, LU1HKO and OM4XA. [TNX to DK3WG for forwarding this report].

UA9FAD: Victor ua9fad@mail.ru is now on from LO88aa on 1296 EME – I am using a 3 m dish and 100 W SSPA. I recently had initial QSOs using JT65C with ON4QQ, UA9FA, K5DOG, ES3RF, UA3PTW, OH2DG, SM5DGX, DK5AI, I5YDI, DF2VJ, IK3COJ, SM4GGC, DK3WG, G4YTL, 4X1AJ, UA3TCF, DG0FE and GM0PJD. [TNX to DK3WG for forwarding this report].

UA6AH: Nickolay is now QRV from KN94 on 1296 EME – I worked using JT65C UA4AAV, DF3RU and G4FQI among others. [TNX to DK3WG for this report].

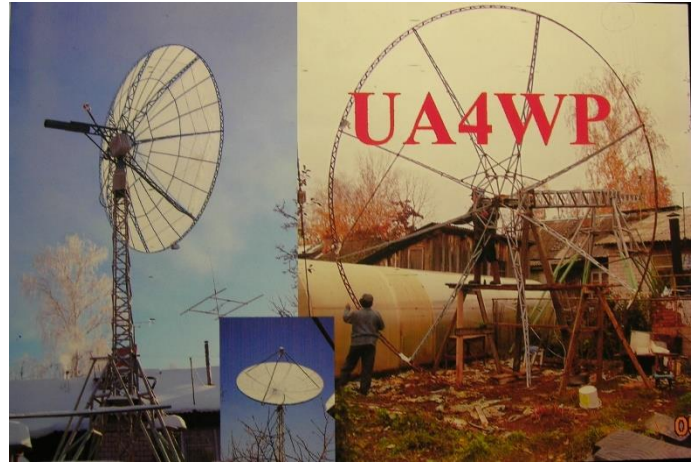
VK2CMP: Mick green4wd@me.com sends his story on how he developed his current 432 EME system -- All my great projects start with a procrastination phase during which I conceive the truly greatest solution. For months my prototype 15LFA-JT yagi sat in the middle of my workshop. I must have walked 100 miles contemplating the antennas. I finally completed 4 x K1JT/G0KSC designed 15LFA-JT (cross) yagis in time for use on the last weekend of June. First reports were encouraging. Using JT65B DL7APV was (9DB) and DK3WG (17DB). This was 6 dB better than my previous best contacts. I also contacted VK4EME; and by the end of the weekend had added JA4UMN, DL8DAU, ZS4TS, G4YTL and PA2V to my log. My approach was to use end mounted fiberglass boom yagis, and the same 3/2 wavelength power dividers as K1JT. This allowed me to reduce the coax to the LNA by close to 4 m. The LNAs are a WD5AGO cavity design with 19 dB gain and 0.2 dB NF. After discussing my high QRM location with Tommy, he suggested that he replace the 2nd stage of the LNA with an additional filter and then I utilize my existing Kuhne LNAs (0.45 dB NF and 20 dB gain) for the additional gain required to run the IQ+ that drives MAP65. I also use a Kuhne transverter with WSJT-X split off the H pol feed. The upgraded antennas include a new enclosure that was mounted in front of the rotator to allow the carriage that the array is mounted on to be lowered down the mast for maintenance. I painted everything 'Manor Red' to match the house tiles and gutters on my street. The neighbors used to say they thought I worked for ASIO (CIA) with all the shiny aluminum up there. Mind you I'm not sure what they thought when they saw me in the back yard wearing a welding helmet to double check my az/el pointing using the Sun!



VK2CMP's new 4 cross yagi array

K2UYH: I (Al) alkatz@tcnj.edu did not do much EME in the short time period since the last NL – I did QSO on 21 June on 1296 using JT65C at 1413 UA6AH (14DB/13DB) for mixed initial #639* and at 1829 LU1HKO (10DB/15DB) #640*; and on 28 June on 432 using JT65B at 2010 ZS4TX (15DB/15DB) for mixed initial #1017*, 2051 WP4G (17DB/O) #1018* - it is 25 years since met in PR at Arecibo and 2110 SQ7CYD (5DB/16DB) #1019*. I plan to be QRV of the 1296 CW contest and the MWAWS the following

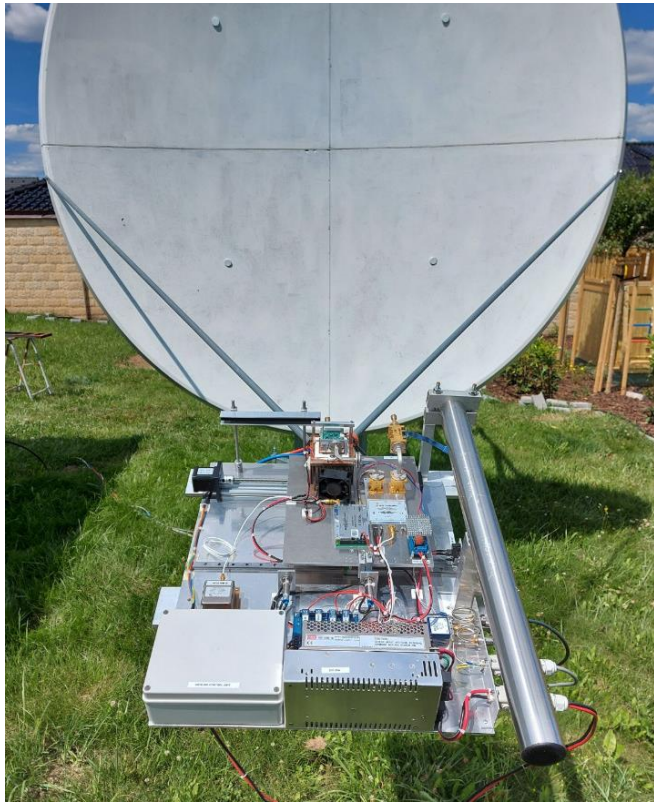
week. Because of the MWAWS, I may miss PI9CAM's SSTV day. We had great fun last year.



UA4WP new 6 m dish

OK1DFC on 47 GHz: Today I finally finished after 6 months of effort my first 47 GHz transverter for EME and performed some RX tests. TX tests must wait until I finish a 10 W SSPA. My existing 130 mW is just not enough. When I finished my 24 GHz EME system and made EME expeditions to 4U1ITU and SPOVHF, I thought it would be the last band that I would try on EME. It took only about a year before I began planning EME operation on 47 GHz. I had to start from scratch. Everything was new. I used a classic, transverter from DB6NT and a programmable oscillator with a double temperature stabilized 10 MHz TCXO. The transverter gives 70 mW of power and a 5 dB NF. It will be mounted on an aluminum plate 6 mm thick and 500 x 600 mm across. This plate will be placed at the focus of the dish and support the SSPA and other critical parts of the system. For a VLNA, I was helped by friends in Japan. Huge thanks go to JA1WQF. My 47 GHz VLNA has a 2.4 dB NF and 24 dB of gain and includes a Peltier cooling cell. More details are on my webpage. I originally planned to use a 2.4 m offset dish that I had on hand. When I tested it on the Sun, the results were terrible. The Sun did not appear as a point and was much wider than expected. It took me a while to figure out why the dish was not working. It turns out that although a solid dish, the conductive mesh encapsulated in the fiberglass reflector was not dense enough for use on 47 GHz. It is 6 mm; while $\lambda/4$ is only 1.5 mm! After a long search, I was able to locate a 2.6 m offset dish made from one piece of aluminum. So, I sold the existing antenna and bought this new one; and started building a new mount with a pointing tolerance of 0.01 degs. Thus, everything from the beginning again – HI HI. My plan is to have the new dish fully operational in Sept. The autumn is when EME conditions are generally the best on this band. For a feed, I am staying with a W2IMU design – classic for offset dishes. I asked OK2QA for help to simulate the radiation pattern to know if an additional collar or chock ring might be needed. For T/R switching rather than use an expensive and difficult to obtain WR22 waveguide relay, I have decided to mechanically move the position of the feed – in this arrangement the feeds (one for TX and a second for RX). This approach also eliminates the loss of

the WR22 switch (~ 0.5 dB). My results as of 13 July are a Moon noise = 0.77 dB with a clear sky, elevation of 25 degs, temp +8 degs C and a humidity 46%; and Sun noise = 7.7 dB made under the same conditions except at a temp +14 degs C and a humidity 53%. The SSPA is hardest, but I am working on a solution. I hope to be QRV soon and have chance to test RX performance with some EME signals. I'll be also QRV with just my 2.4 m offset antenna on 1296 for the upcoming VK3UM/DUBUS EME Contest. In addition to calling stations, I will also call CQ on 1296.025-030.



OK1DFC's 47 GHz during tests

FOR SALE: PA2DW has for sale a perfectly working HP 435B power meter plus 8482A power head (100 mW) for 100 kHz to 4.2 GHz. He is asking EU500 or a reasonable offer. If interested contact Dick at qtc@kpnmail.nl. **JH1KRC** is looking for Is looking for hot-dipped zinc plated thread cutting screw, 1/4"x1" long Tek screw type 25, hex flange. He needs 600 pcs. These are for a 20' dish. He is looking for ideas on where to locate suitable hardware. Anyone with and idea please contact Mike at jh1krc@syd.odn.ne.jp.

FINAL: There is a correction from last month. We indicated (under the picture) that HB9CRQ's dish was 1.8 m. It is only 1.5 m!

► **I5WBE** sends the results of ARI's EME Spring Trophy Contest. 297 logs were received. This is a significant increase over 2019. We are hoping for a similar turnout for Autumn Contest on 19/20 Sept. All Stations submit logs (in the same categories) for both the spring and fall will compete for the final 2020 Trophy based on the sum of their scores in both sessions.

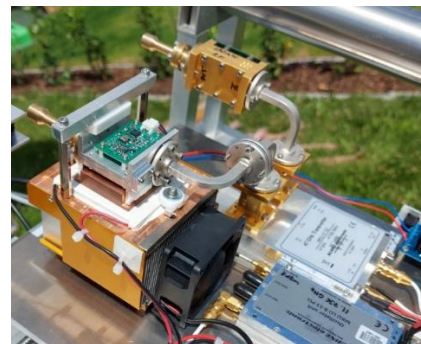
144 MHz Mix	First Place
Cat. A-mix, <6 wl	IK8YSS
Cat.B-mix.<11 wl	IK1UWL
Cat.C-mix.<20 wl	PA5Y
Cat. CW & SSB	YO2AMU
432 MHz Mix	DL7APV
1296 MHz	
Category A-Mix	PA3FXB
Category B-Mix	DL3EBJ
Cat. A-CW & SSB	IK1FJI
Category MW Mix	
2.3 GHz.	IK3COJ
10 GHz.	OK1DFC
24 GHz.	LX1DB
Mult iBand Mix	OK1DFC

► **BG2BHC:** Wei bg2bhc@gmail.com reports that there are 2 microsattellites orbiting the Moon that should be of interest to EMEers. These satellites have been used for long base line interferometry – see <https://www.nature.com/articles/s41467-020-17272-8> for the details.

► **G4DDK and G4BAO** have written a short book on microwave EME. It was intended to be part of a bigger book that never happened, but still has plenty of very useful information. It is on the UKuG Wiki at [https://wiki.microwavers.org.uk/Microwave EME](https://wiki.microwavers.org.uk/Microwave_EME).

► Reminder that the next EME Conference will be in Prague on 19–22 Aug 2021. The 2020 Conference was postponed because of COVID-19 – the last NL.

► This is not intended to be a normal NL. It is just a gap filler before all the reports arrive from the VK3UM Memorial CW EME DUBUS Contest. Both of us plan to be active off the Moon on 18/19 July for the contest. There should be plenty of activity on the bands no matter what mode you operate and plenty of great signals. Also don't forget the 13 and 3 cm MWAWS the following weekend. We will be looking for you off the Moon! 73, AI – K2UYH and Matej – OK1TEH.



OK1DFC 47 GHz feeds