432 AND ABOVE EME NEWS
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VERY BEST SEASONS GREETINGS FOR A WONDERFUL NEW YEAR FROM ALL ON 70 CM & UP EME TO ALL

CONDITIONS: **Coming right up is the final weekend of the ARRL EME Contest on 18/19 Dec (check out http://darkside.cz/eme.php).** The Nov leg of the ARRL Contest produced some spectacular results. On 432 DL7APV is top with 117 QSOs, with a much smaller 4xLY system PA5Y reached 102 with (Conrad has extremely quiet QTH) and OK1TEH with his single yagi made 27. All were mixed mode. On 1296 OK2DL has the top mixed score with 139 QSOs of which 61 were on CW. The top CW score is from the SP6JLW team with an all CW score of 75x32. NC1I had an impressive 70 and 23 cm total of 156x76. There is not much coming up in the end of Dec or Jan. **The contest season will begin in Feb with the F5SE Memorial SSB Funtest 5/6 Feb. 13 cm is on Saturday and 23 cm on Sunday. The rules are shown below.** The first Dubus Contest weekend is not until March for 2 m and 70 cm. **There is a 70 cm CW activity time period (ATP) on 16 Jan from 0200 to 0400 and 1500 to 1700.** There are no conflicts and no excuses not to show up. There are no dxpeditions scheduled for Jan and nothing definite yet for Feb. The N1E State dxpedition was a great success – see NC1I's report on it in this newsletter (NL).

SSB CONTEST: The 13 cm SSB Funtest will be on 5 Feb (0000 to 2359), and the 23 cm SSB Funtest on 6 Feb (0000 to 2359). These events are intended to be fun. You do not need to transmit on SSB to participate. CW to SSB and vice-verse exchanges are encouraged and count for points. (Only one QSO between stations is allowed, i.e., you cannot work a station SSB to SSB and SSB to CW for extra points). Scoring is contact points x number of two letter Grid Sectors (IO, JM, FN, EM ...) worked. SSB to SSB contacts count as 2 points. SSB to CW (or CW to SSB) count as 1 point. The exchange is your Sector (IO, JM, etc.). Only the 2 sector letters need to be sent and copied by EME. The exchange of signal reports and/or 4 character grids is optional and not required. Operation may be by single or multiple operators from one location. No distinction for scoring will be made. This is a **Funtest** and meant to be similar to an activity event – the goal is to have fun. Communication on Loggers (HB9Q) is OK - ["TU FB QSO", "GM..", "73", etc. is OK]. Logs should be sent to the 432 and Up EME NL by email to alkatz@tcnj.edu ASAP after the end of the contests. (All logs for contest awards should have been received within the month following the contest). The top scoring station on each band will receive an attractively framed certificate that will be presented at the next International EME Conference (Prague 2022). Last year activity on 13 cm was quite low. If you have equipment for 13 cm, please come on for the Funtest. **2300 is an ideal band for SSB EME.**

TI5CDA operated 432 in EME Contest with 22 el HB LFA yagi and 100 W

DK3WG: Jurg dk3wg@web.de reports – I worked initials during Nov on 70 cm using JT65B with PA5Y, GM0HBK and N1H, and on 23 cm using Q65C EW7CC, AE6GD, K2QM, AA6I, UA5Y, KA6U, OK1USW and DL7APV. I plan to down size my QSL service at the end of 2021.

DL0SHF: Christoph (DF9CY) df9cy@web.de reports on activity during the ARRL Nov Contest weekend on 1296 -- This year, operation was a bit "short". Until summer, the transmitting side was not working. The PA driver was not working. It was replaced in the summer. Right after, I was very busy and away on many weekends. Then the ARRL was here; and I ran into trouble with the remote system, which refused to function. I cannot count how many times I tried to restart the PC. Finally, I removed all the control

software and made a complete fresh setup. This only partly helped, but I managed to make 35 QSOs on CW on 20/21 Nov with OM4XA, IK5VLS, KL6M, SM7FWZ, SP7DCS, IK2DDR, SP3XBO, DK5AI, F2CT, 9A5AA, RN6MA, SM5DGX, OK1DFC, VK4AFL, OK1CS, G3LTF, DF3RU, SP6JLW, IK3COJ, K0PRT, VA7MM, K3WM, IK3MAC, LA9NEA, OK2DL, SP9VFD, OK1CA, DL1AT, OK2PE, SK0CT, OK1KKD, IK6EIW, SP6ITF and RA3EC. G3WDG is also able to work remote from DL0SHF. Charlie contacted GM0PJD, CX2SC and KA1GT on 20 Nov using Q65C for an overall total of 38. I was also QRV on 23 cm on 11 Dec and made some Q65C QSOs. This was my first serious try of this mode. Although I did not change anything since the contest weekend, everything worked smoothly. Small stations could be worked easily. I QSO'd KN0WS, G7TZZ, FR5DN, SP5GDM, FG8OJ, RJ3DC, EA1IW, UA9FA, RX6AIA, DL7APV, IK2TIF - only 25 W, OK1USW, UA9YLU, YO2LAM and LZ4OC. I went QRT, when activity slowed down. Unfortunately, I will be away for the final leg of the ARRL Contest.

DL7APV's 1.8 m dish used on 1296 during the Contest

DL7APV: Bernd dl7apv@gmx.de was QRV in ARRL EME Contest on both 432 and 1296 EME – This year I finished the Nov part of the contest with 191 contacts on 3 bands. I made 54 QSOs on 2 m, 117 on 70 cm and 20 on 23 cm. I have not counted the mults as I do not plan to compete in the contest. On 70 cm, I had nearly the same result as last year. The activity was extremely good on 432 and produced some surprises as the appearance of VP8EME. I made 7 CW QSOs. Initials were all on digital unless noted with VE6BGT (CW), DL7URH, N4OGW, UA5Y, DL7UZO, UB8LAH, ND7M, YU2022NS and K7ATN. On 23 cm, I set up temporarily a solid 1.8 m dish with an f/D of 0.3, which does not fit with the DFC septum feed that I used. I suspect the effective size of dish was only around 1.3 m. I measured a Sun noise of only 4.5 dB and a CS/50 ohms of 5 dB. I used a DF1SR 150 W PA, which I ran at only 100 W with water cooling. I was, thus surprised by how many stations heard me. If WX allows, I will keep the setup in place outside for use in the last part of contest, and would welcome some CW QSOs. I heard SM4IVE, but could not get his attention. Using Q65C I worked NC1I, DF3RU, OK1CA, OK1DFC, UA3PTW, HB9Q, OK1KIR, UA5Y, IK5VLS, KB2SA, K7CA, SM5DGX, OK2DL, SK0CT, ON4AOI, SP5GDM, OM4XA and DL7YC. It was really tough to be on 3 bands at the same time, but fun and never boring due to low activity!

DL9KR: Jan bruinier@t-online.de reports excellent conditions on 432 during the Nov leg of the ARRL Contest -- I was only able to be on intermittently and worked 4 initials among 17 CW QSOs. **I have the following question. If a dxpedition stations returns to its previous site after having removed all equipment from the first operation, say with a pause of 2 years or so, does this count as one or two initials. I worked KB7Q twice each from DN44 and DN82. Do these QSOs count as 4 or 2 initials. [The answer seems obvious; 2 QSOs. When someone moves within the same grid, it does not count as a new initial. The move must be to a new grid to count as an initial. If this rule did not apply a portable operation could move all around and count as a large number of initials. The question gets more sticky when a dxpedition group has multiple operators, and some are the same and some are new. Is it the majority of operators that determines a club or group is new? I feel for the case of a dxpedition, it should be the organizers. Who supplies the majority of the equipment and makes it happen. (Not necessarily just the equipment used). Not everything is simple. This is a hobby and the point is to have fun. This is K2UYH's and OK1TEH's opinion. Others are welcome].**

G3LTF: Peter g3ltf@btinternet.com sends his EME Report for Nov -- I was active on 23 cm using only CW as usual in the ARRL Contest. I worked on 20 Nov OK1KIR, F5KUG, SM4GGC, SP6JLW, DF3RU, G4RGK, WA9FWD, OK2DL, RA3EC, OH1LRY, N8CQ, SK0CT, G4CCH, DG5CST, OK1KKD, OK1CA, WA6PY, K3WM for an initial #512, NQ7B, SP6ITF, IK5VLS, OK1CS, OH2DG, DL6SH, UA3PTW, KL6M, LZ2US, IK3MAC, UA5Y, SM7FWZ, PA3FXB, SP3XBO, IK3COJ, F2CT, HB9Q, SP7DCS, IK2DDR, IW2FZR and EA1IW #513; and continuing on 21 Nov SM6FHZ, K2UYH, OZ4MM, N4PZ, WK9P, K2QM #514, N5BF, K0PRT, W6YX, LA9NEA, DL7UDA, SM4IVE, KB7Q, VA7MM, DLOSHF, OK1DFC, PI9CAM, SM5DGX, SP9VFD #515, 9A5AA, DL7YC, F5JWF, DU3T, OK2PE, SP3YDE #516, DL1AT #517, PE1LWT, DL1SUZ #518 and GM0PJD for a total of 68 QSOs. Heard but not worked were OK2ULQ, VK5MC, VK4AFL, OM1XA, IZ2DJP, DJ3JJ, ES3RF, RN6MA, SM3KPC, FR5DN and VE4SA. Adding 6 initials was very pleasing! On 28 Nov, I was on 70 cm for the NH dxpedition and work N1H #487, followed by PA4VHF #488, S51LF and G4YTL. I hope to be on 70 cm for some of the time in the final leg of the contest.

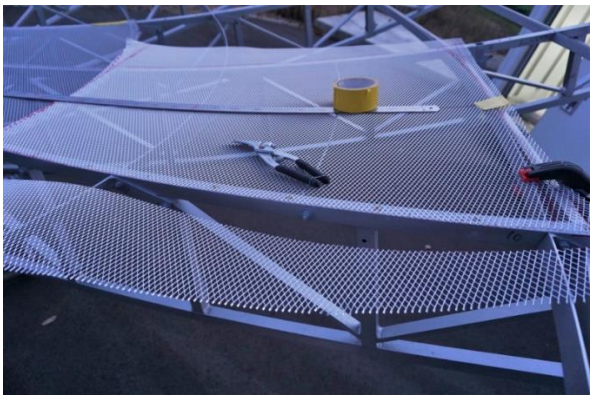
G4RGK: Dave zen70432@zen.co.uk reports on his active during the Nov ARRL Contest weekend -- The Nov leg of the contest was not kind to me. I had planned to do the first day on 70 cm with my yagis and Sunday on 23 cm with the dish. I spent a long time half asleep calling CQ on 70 cm CW at the start. I had no echoes which I initially put down to Faraday. At 0200 I went out in the wind and rain to see

that the elevation actuator worm drive had parted company with the rest of the actuator and that the antenna was looking at some random part of the sky. When daylight came, I made an attempt to fix it and was able to work PA5Y just after MR, but then it failed again; this time it was terminal. The second pass on 23 cm was a bit more successful, but I was only able to operate CW because my PC failed. I worked around 20 stations in the three or four hours that I was on; but the WX was appalling, so I give up and tied the dish down. I am working on repairs and should have them completed in time for the final weekend.

IK2DDR: Franco frankddr@teletu.it reports on his recent activity on 1296 EME – I have a 3.7 m mesh dish with OM6AA feed, VHF Design 300 W SSPA and dual stage preamp, and SG LAB-IC275E transverter. I am now up to mixed initial #187*. I added initials during Nov before the ARRL Contest using Q65C with EW7CC and DQ85ØDOM; and during the contest using Q65C with VA7MM, WA3RGQ and CE3VRT, then using CW with SKØCT, SP6JLW, F2CT, DL7UDA, W2BYP, OH2DG, KØPRT and N4PZ, back on Q65C K5QE, UA5Y, AA6I, K2QM, and K7CA, then on CW SM4IVE, PI9CAM and YL2GD, using again Q65C JH3AZC, OK2ULQ, DK1KW and OK1IL, back using CW DL1AT, and finally on Q65C KA6U, DL7APV, VE7ZD, RD9SAC, OK1USW, EA1IW, JA6AHB, UA9YLU, MO92HX and K3WM for a contest total of 34 QSOs.

IK2DDR's 3.7 m dish used on 1296 in the contest

JH1KRC: Mike jh1krc@syd.odn.ne.jp reports on his recent ARRL EME Contest results on 1296 -- My 4.4 m 20 years old TVRO dish needed to be refurbished. Old coax cables were measured and found to have too much loss. They were replaced with new Andrew cables. The insides of my OM6AA feed and its choke ring were cleaned and corrosion removed. Its position was carefully adjusted for best SN/CS ratio and echoes. I also worked to improve my RX intermod/saturation problems from a local telecom transmission tower only 300 m away. When pointed at the tower, power measure at the feed can be up to -16 dBm! A 1296 bandpass filter inserted after the LNA does not help. I now have replaced my high gain LNAs with a cavity input, single stage FHX-35LG LNA, followed by a 5-pole interdigital (very sharp) BPF and an isolator for safety. This arrangement seems to help, but still needs a little more gain. So, I have more work to do. I had great fun in the ARRL EME Contest. Operating only on CW, I made 34 QSOs and 7 initials. I contacted W6YX, WA9FWD, JA4BLC, DU3T for an initial (#), SP7DCS, OZ4MM, SK0CT (#), G4CCH, SM6FDZ, RA3EC, KL6M, DL6SH, OH1LRY, OK1CA, SP6JLW, LZ3US, SP6ITF, OH2DG, 9A5AA, OK1CS, DG5CST, IK3MAC, VA7MM (#), K3WM (#), N5BF (#), K2UYH, F2CT, UA3PTW, SM4IVE, SP3XBO (#), SP9VFD (#), OK1KKD, OK2DL and SM7FWZ. Heard were DJ3JJ, SM5SGX, OK2ULQ and a few other stations only partial copy. This contest's evening moonrise make for tough operating times, especially for stations in the east because of the very late night/morning operating hours. It would be better if contests could be scheduled for more sane operating times. I will be looking for small stations during the Dec weekend. I very much enjoy working very weak CW signals!



JH1KRC refurbing his 20 year old 4.4 m dish

K0PRT: Gary (WA2JQZ) gca7sky@aol.com writes about his organization's Deep Space Exploration Society (DSES) operation during the Nov ARRL Contest weekend -- We used our restored 60' dish on 1296. We operated for the full weekend, and with the Moon rising at sunset these were all-nighters. This turned out to be our smoothest and most successful weekend EME operation to date. AA0L and I were the primary operating team. AD0CY helped with the digital mode and made our two Q65C contacts. We made 45 contacts in total, 19 on the first night and 26 on the second. (Last year on the same contest weekend, we made only 25.) 42 of our contacts were CW, including 18 in a row during a pileup. We made one SSB QSO with DL6SH. Almost everything worked perfectly and smoothly. We consistently received strong signal reports, typically (579). We took some sleep during the lull in activity between our EU and VK/Asia window each night. We woke again around sunrise and went back on the air, but found very little activity. On Saturday morning we made only 2 QSOs and on Sunday morning none. We contacted DG5CST, DL6SH (SSB), DL7UDA, DF3RU, DL0SHF, SP6JLW, SP7DCS, SP9VFD, SP6ITF, SP3XBO, SK0CT, SM5DGX, SM6FHZ, SM7FWZ, SM4IVE, OK1KKD, OK1CA, OK1CS, OK2DL,

IK2DDR, IK3COJ, IK7EZN on Q65C, F5KUG, F6KRK, G4CCH, G3LTF, OH2DG, RA3EC, CX2SC on Q65C, DU3T, WA9FWD (WI), N8CQ (NC), NQ7B (twice AZ), WK9P (IN), N5BF (CA), WA6PY (CA), WB8HRW (OH), W2BYP (NY), K2UYH (NJ), K3MW (PA), W6YX (CA), KL6M (AK), VA7MM (BC) and VE6BGT (a DSES member, AB). Our equipment this year consists of an IC-1271A with a built-in low noise preamp (about 1 dB), a VHF Design 150 W amplifier at the feed, a Tokyo High Power intermediate power amp with built in Gasfet preamp, VHF Design 0.3 dB NF, 30 dB gain preamp at the feed and a KL6M feed with a choke. We plan to operate again for the final part of the contest in Dec. We hope to have more members participate. And we hope to operate more with Q65. Most of the time we use our 60' dish antenna for radio astronomy. We do hydrogen line studies, pulsar detection, SETI and total power measurements on frequencies near 408 MHz, 1296 and 1420 MHz. Since about a year and a half ago our software team implemented an automatic tracking system, which we have been using for EME and astronomy. More can be seen at http://dses.science/eme-earth-moon-earth-moon-bounce-communicating-on-the-weekend-of-november-20-21-2021.

KB7Q: Gene geneshea@gmail.com was active during the ARRL EME Contest on 1296 in Nov – I was happy to give out the MT multiplier on 23 cm during the contest weekend in spite of a combination rain, sleet, and snow the first evening. On the second evening WX improved and I saw a bright, full-moon in a cloudless sky. I QSO'd 35 stations including two on CW. Three new stations were logged bring my home 23 cm mixed initials total to #86* in just over a year on the band.

KN0WS: Carl carlhasbargen@q.com discusses his ARRL Contest weekend -- After my troubles last month on 13 cm, my plan was to head north and do two moon passes on 23 cm using my 16' polar-mounted dish. For the spring ARI contest, when I had 70 cm feed troubles on my 20' dish, I switched to good old 23 cm. Since the ARRL contest weekends are later this year, I thought I might try my backyard extended 2.4 m dish [see picture in last NL] on 1296 in Dec, when snow will keep me off of my northern property. So, all of my ARRL eggs this year are in the 23 cm basket. In Nov, on Friday, I set up everything up, but although I could see at one point 24 EME signals off the Moon with MAP65 on my FunCube SDR, I heard Nil from my radio and saw nothing on my WSJT display. I lost my primary and backup TS-2000x radios a year ago when melting snow drenched them in my tent. Since then, I have been depending upon a used TS-2000x that I purchased as a replacement. It failed on 144 last month when I was using it as an IF for 13 cm. This time I lost 23 cm. Every time I set up for EME, I have to re-connect everything and then tear it all down again; thus, I am at some risk for a misadventure. It is frustrating as I had used my fist several radios for years without troubles. After the failure, I went to bed and slept for 8 hours and got up Saturday morning. I looked to the west at the Moon over JA and VK, sighed, and then went about the task of taking the gear down from my 16' dish, stowing it for the winter, setting up scaffolding and then taking the mesh off my 20' dish for the winter. My failure on 70 cm during the spring ARI Contest seemed to be related to the loop feed, so I also took that down for assessment and repair this winter. I then had the idea of trying it with my transportable stress dish. I set it up this summer to do testing with the idea of taking it back to NE to try with G3LTF on 70 cm CW. If it checked out, I could operate the second Moon pass with it on 70 cm. As a bonus, if I could work Peter with it now, it would give me some confidence that I could use the same dish in NE next year. I was able to put 550 W into the loop feed using CW. The SWR out of the feed was only 1.05, and gratefully the TS2000 was still working on 70 cm! I then moved my tent to the 15' portable dish and set it up with the 70 cm feed. I finished wiring everything up just as the Moon came up. It was still behind some trees and my 16' dish when I decoded a big signal from DL7APV. I thought I would try to reply, but the power amplifier indicated a "load failure". When I investigated, I found a broken solder joint in my loop feed! I had no propane torch up there, but after spending all day setting up, and knowing it was my last Moon pass this year up north, I tried to use a candle to heat the copper to re-solder the joint without success. Thus, by midnight I had everything torn down and packed for my drive home. Since, I have received a new ICOM-9700 and inserted a Leo Bodnar GPS injector board. I then spent the better part of 4 days struggling to get my computer, sequencer and radio to play nice with each other. Finally on Saturday 11 Dec, I was able to use my 2.4 m back yard dish with my septum feed to do some 23 m QSO's off the Moon! Using Q65D, I worked YO2LAM (14DB), DL0SHF (5DB), N5BF (19DB), KB2SA (22DB) and N0CTR (23DB). K5DOG was (22DB) and saw me (18DB), but we did not complete. FG8OJ saw me (26DB) but I could not see him. I plan to operate using digital modes for two 4-hour windows during the upcoming contest weekend. Hopefully Murphy will stay away for a while.

N1H: Frank frank@NC1I.COM reports on his groups 432 dxpedition to NH – It was challenging but overall, a success. We had some antenna issues, which may have prevented completion of a few QSOs; but still managed to work 52 different stations and had 3 CW QSOs. We had to set everything up in cold rain and snow on Friday. Over the weekend, we had to deal with damaged phasing lines, water in connectors, and winter weather. There was only about 1" of snow accumulation Friday, but everything was icy and slippery until late Sunday morning. Temperatures reached as low as -8 degs C and winds from Saturday afternoon until very early Sunday morning gusted to 70 kmph. The weather was much better on Sunday making disassembly much easier than set up on Friday. We missed some operating time over the two Moon passes while we attempted to fix our phasing lines. We had brought a spare phasing line with us, so we were able to replace one of the damaged phasing lines. At 3:00 AM local time Sunday, we removed another phasing line (in -8 deg C weather) and found water in both connectors. We did not take off any of the other phasing lines, but it's likely there was water in some of the other connectors. We will assemble new phasing lines before our next DXP (hopefully spring of 2022

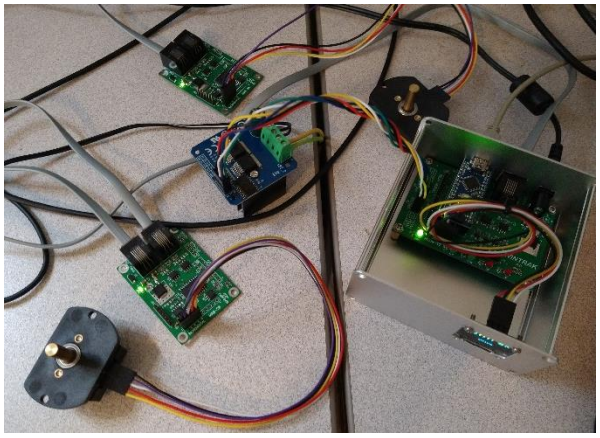
depending on the pandemic). Stations worked on 27 Nov were UA3PTW, ON4AOI, ZS4TX, DL8FBD, PA5Y, PA3HDG, PA2V, K4EME, PF6IK, W2HRO, PA3DZL, N9XG, DL9KR on CW (569/569), SM7THS, UT6UG, RD3FD, UX5UL, F1RJ, DK3WG, YO8RHI, W7JW, DL7APV, AA5C, PA4VHF, UA4AQL, OH6UW, IZ2DJP, OH4LA, HB9Q, DL5FN, K5QE, PA9R, DL8DAU, PA2CHR, WP4G, DL9LBH, K5DOG, KD2LGX, N1QG, K2UYH, W7MEM, and JF6CTK - Masa called us when our moon was only 1.2 degs in elevation and we easily completed just before the Moon disappeared over the horizon! On 28 Nov we added DF7KB, OK1TEH - outstanding (21DB) with his single yagi, OK1KIR, OH2DG, G4YTL, OK1KIR CW (O/O), S51LF, GM0HBK, G3LTF CW (569/559), DF2VJ and W5LUA - just as we were shutting down. This was one of our most challenging dxpeditions due to the problems with our phasing lines and the winter weather. Even though it was exhausting, we still had a good time; and it was nice to be able to provide a new State for many that we worked. We were assisted by KA1QFE (set up and breakdown) and KU1RT (setup). Without their help we probably could not have done this dxpedition. We would also like to thank Alyson's Orchard in Walpole NH for allowing us the opportunity to use the site again. It will take us at least a few weeks to have new cards printed, so it will probably be early Jan before QSL cards go out. As with our past dxpeditions, we will automatically send cards to all stations worked. We will use the qrz.com address unless requested to send the card to a different address. Return cards are not necessary but welcome. Return cards can be sent to the NC1I qrz.com address.

N1H's dxpedition station uses four M2 432-12EME yagis with pol rotation, BEKO HLV-1470 SSPA set at about 700 W and WD5AGO 0.29 dB NF cavity LNA to Icom IC9700 with Leo Bodnar board for stability.

N5BF: Courtney courtney.duncan.n5bf@gmail.com sends his 23 cm EME report for Nov -- Although not as many QSOs this year in the Nov 1296 ARRL Contest weekend as last year, I had an interesting time and worked several new stations and lots of old ones, some easy and some more difficult. The larger dish (completed summer 2020) now in its second season and the new IF rig, an IC-705 with advanced spectral display and filtering features, are very helpful. But, the key (as in all contesting) is to keep something going all the time, either a CQ or tuning and answering stations. The tally for the Nov weekend is 52 QSOs with 29 multipliers. Since my last report but before the contest started, I had three mixed initials, AE6GD (18DB/14DB) #245*, W1LY (14DB/13DB) #246* and K3WM (4DB/8DB) #247*. Initials added in the contest were SP3YDE (13DB/13DB) #248*, DL4DTU (18DB/21DB) #249*, and DK5AI (20DB/24DB) #250* in a rapid pileup (13 minutes total for all three) followed later by a completion with K0PRT (559/539) on CW for #251* after having barely missed last year. Sunday began with UA5Y (12DB/8DB) #252* and later K2QM (3DB/5DB) #253* and NT6V (15DB/19DB) #254*. Most exciting was a middle of the night QSO with JH1KRC (559/559) #255* using CW after three failures in previous years. This QSO was enabled on this end by the superior audio and filter handling of the new IC-705 IF rig and possibly some cumulative experience on my part. And, unusual patience on both ends. This QSO took over half an hour to complete, but was solid in the end. Right at the end of the Sunday pass, right when the Moon was already partially obscured by pine boughs and was getting down into the top of an oak tree (at which point it's all ambient noise and no more signals), I worked JH3AZC (17DB/20DB) #256*. I had seen that call around the community for several years, but not heard it on the air until that moment. Since the contest weekend, I have made a few QSOs to tune up and check the station in preparation for the Dec weekend. I am looking forward to working many of you for another fifty or so!

N8CQ: Gary gabercr@gmail.com was QRV on 1296 during the ARRL Nov Contest Weekend and also discusses here his new Windows RazTrak EME tracking system -- I look forward to operating next weekend and final leg of ARRL EME Contest. I did operate limited hours in Nov leg. I would like to report on progress of the port of my RazTrak EME tracker to Windows. VA3TO and myself developed a new MABMPU encoder board that now supports popular incremental encoders in addition to a number of absolute encoders. The pulse count is retained in hardware using FRAM memory technology. This was our solution to avoid the continual lost pulse counts using incremental encoders. MABMPU v2.0 boards with high resolution encoders have been tested by several now using dual axis slew drives and SpidRas retrofits. In order to configure the initial operating parameters of incremental encoders, I needed a way to configure pulses/revolution, total pulse count, and index pulse (z-pulse) settings. I determined the easiest way to do this was to add few new commands to my RazTrak EME tracking system, which uses the US Digital SEI bus to communicate with the encoders located at the antenna. Since this would only work on my RazTrak system and many already use the MABMPU encoder boards on other trackers, I decided that a tool was needed to configure the encoders for other systems. One thing led to another, and VA3TO and myself decided to build the entire interface as a windows tracking system named

WinTrak. This is a fully featured miniature hardware tracking interface that supports two BTS-7960 PWM modules, two 4-channel relay modules, 4 transistor switches, QLED screen for status, and attaches to a PC using USB. The heart of WinTrak is an inexpensive Arduino Nano with a port of my RazTrak SEI interface running on the Arduino. All features in my standalone RazTrak system will be supported in WinTrak also. Assembled and unassembled PCB's will be available by Christmas. If there is enough interest, we may build front and rear panels for project boxes.



N8CQ's WinTrak with encoders

NC1I: Frank frank@NC1I.COM reports on his group's Nov ARRL Contest multi-band, 70 and 23 cm operation -- It was an interesting contest weekend. I was disappointed to only work 57 stations on 432 the first pass. Based on that I did not have very high expectations for the second pass but did add 39 more to the log for a total of 96 for the first weekend of the contest. That number is lower than I had hoped but I guess not bad. On a positive note, I was quite surprised to work 28 North American stations (including five from Texas). That's more than I typically work over both weekends. I was also very pleased to work 15 JA's, 2 VK's, and a ZL during our relatively short window with that part of the world. What surprised me the most was my unusually low number of EU QSO's. Many of the regulars are missing from my log. Hopefully, this means that there are many more to be worked the second weekend! Considering it was near apogee, I thought conditions were good. I worked 6 single yagi (relatively short) stations that were running 50 W or less. Most of those small station QSO's were quite easy with several dB of margin. My first weekend totals on 432 were 96 QSO's and 46 multipliers. Initials (mixed mode) worked since my last report were N9XG and AA9MY pre-contest, YO8RHI, UA5Y, KB0Z, SM6CEN, DL7URH, HB9EHD, N4OGW, YU2NS, K7ATN and GW4ZHI all during the contest. After the contest I added initials with TI5CDA and SP2WRH. SP2WRH was my digital initial {#500} on 432! We did something different this year for 1296. W1QA operated 1296 remotely from his home QTH. This worked well, but there are still a few things that need to be improved to make remote operation more efficient. Unfortunately, CW operation is not yet possible with the remote setup, but we will work on that early next year. We will try and have an operator in the shack for at least a few hours during the Dec contest weekend, so that we can work CW. First weekend totals on 1296 were 60 QSO's and 32 multipliers. 1296 Initials added since my last report were KA6U, SK0CT, and K3WM (all pre-contest), and SP3YDE, K2QM, DL7APV, K5QE, NT6V, UA5Y, PA3CSG, ON4LX, EW7CC, and DU3T (also a new DXCC) during the contest. Weather permitting, we will try and put significant time/effort into the second contest weekend.

OK1CA: Franta fr.strihavka@seznam.cz send his Nov report to the NL: In the Nov part of the ARRL EME Contest I was QRV on 23 cm, and made a total of 104 QSOs, which is quite a good result for 17 hours of my operation. The activity was high, and I made using CW 66 QSOs and 30 multipliers. Initials were SP3YDE, SK0CT, K0PRT, SP9VFD, DL1SUZ and ON5AA to bring me to #391. I also made 38 QSOs using Q65C, of which 23 stations were new to me. Special for me were QSOs with FG8OJ for new DXCC, and two new US states, MT and RI. There were a lot of US stations QRV with digital in the Contest. The activity from the east was very weak, only VK5MC and JH1KRC. Since I have a good signal, I had a pileup on both CW and Q65C. I can make CW QSOs twice as fast as Q65-60C. It would probably be better to use Q65-30 in the Contest, as recommended and operated by KA1GT. It was an interesting comparison and I think it's good to use both types of modes; most stations on 23 cm can.

OK1KIR: Vlada vlada.masek@volny.cz and Tonda write on their club's Nov EME -- During the Nov leg of ARRL EME Contest on 19 to 21 Nov, we were active on 23 cm with our focus mostly on finding new stations. In the contest, we will enter only for the 13 cm band. With CW we worked SP3YDE for initial #494, RA3EC, G3LTF, SK0CT #495, OK1CA, FG8OJ #496 and CW DXCC 84 (Burt's 1st CW QSO!), OE3JPC #497 and EA1IW #498. We worked using Q65C before the contest OK1UGA and VE3KRP, during the contest IQ2DB for digital initial {#440}, OK1UGA, K2UYH, RA4HL, DL1SUZ, CE3VRT, DK1KW, W5AFY {#441}, KB7Q, GM0PDJ, VE7ZD, FG8OJ, K2QM {#442}, YO2LAM {#443}, UA3PTW, DL7UDA, RN6MA, RX6AIA, JH3AZC, LA3EQ, OK1DFC, IK2TIF, JA4LJB, OK1USW, EA1IW {#444}, SM4GGC, UA3TCF, EI2FG, PA3FXB, IK7EZN, DL7APV {#445}, SP2CSQ, I0NAA, OH3DP, OH1RLY, ON4BCV, G4ALH, K5QE, AA6I, ON4LX, AE6GD {#446}, W6YX, W2LPL, KB2SA, UA5Y, N0CTR, KA1GT, IK5VLS, OM4XA, CX2SC, WA3RGQ, VA7MM, OZ9KY, N5BF and IK2DDR for a total 64 QSOs, 8 on CW and 56 on CW. On the next weekend, 28 Nov, we were on 70 cm for N1H State dxpedition. We worked with Q65B at 0812 N1H (11DB/16DB) for digital initial {#301}, 0927 F1RJ (16DB/16DB) {#302}, 1044 OH4LA (20DB/20DB {#303}, 1113 PA4VHF (11DB/11DB) and 1117 GM0HBK (18DB/17DB) {#304}. Further with CW at 1004 N1H (539/549) for initial #402.

OK1TEH: Matej's ok1tehlist@seznam.cz report for the Nov round of the ARRL EME Contest on 432 – As last year, I only operated on the 432 band. On 2 m strong interference from local WiFi and on 23 cm QRM due to my short distance from OK1CS made operation on these bands almost

impossible. On 432 I used only one 5.7 m long 23 el DK7ZB yagi followed by 15 m of H1000 coax to 750 W SSPA made by OK1VPZ, with an ATF54143 LNA near to the dipole also made by OK1VPZ. I was QRV all weekend and tried mainly to call CQ using JT65B, always choosing a period to be reported as much as possible near QRO stations such as DL7APV on EME skimmer LiveCQ.eu. My results for the first round were 27 QSOs and 3 initials (mixed mode) with PA5Y #154*, UA5Y #155*and IW4ARD #156*, including one CW QSO with DL9KR. About 2/3 of the stations are still running JT65B, while 1/3 of the stations are trying the new Q65B mode (mainly from the USA). Conditions were not very good as the Moon was almost at apogee. I called with no reply DK3WG, LZ1DX, KD2LGX and W5LUA. I missed many frequently heard contesters. Otherwise, I was very pleased with the increased activity from North American stations, which is indeed not the rule in ARRL contests in recent years. It was also nice to make random QSOs to VK4 and VE6. On the other hand, I was not able to work on CW SM2CEW and PI9CAM, which I heard but the fast changing Faraday rotation apparently did not favor a complete QSO. I usually don't make many new stations in the next round, but my initial QSO status gives me a decent chance that I could perhaps break my personal record of 34 QSOs. The weekend after the contest, I switched on my rig on Sunday and was very pleased by the excellent 70 cm EME signal of N1H from NH. Signal was stable around (24DB) level for very long time periods. Many thanks for great dxpedition!

OK2DL: Marek ok2dl@seznam.cz writes about the Nov EME Contest -- The Moon was in the sky during night, so I didn't sleep very much. Plus, I made a tactical mistake on Friday. Before the contest I drank a cup of green tea. It was at 11 pm LT. I hadn't slept earlier and was unable to get any additional sleep before the contest started 2 hours later. I started the contest on time, but the stations from the east were gone. I logged mostly EU and a couple of NA stations. The moon set on Saturday around 8 am LT. By then, I had logged 53 contacts. During the contest, I alternated between CW and digi traffic using my second SDR to listen in on the CW segment to see what was going on there. I worked zero VKs and only five JAs, but I logged ten OKs! Quite a few stations were from the US and Canada, 38 in all. Initials were SK0CT, K3WM, AE6GD, K5QE, K2QM, EA1IW, SP9VFD, UA5Y, WB8HRW, W5AFY, N2END, NT6V, DL7APV, SP2CSQ, JH3AZC and SM0BSO. My total for the weekend was 61 CW and 78 Q65C/JT65C QSOs for 139 valid contacts in all. I am excited to see what I can do in the Dec round. [Translated by OK1TEH from Merek's blog at ok2dl.eu].

OK2PE: Karel ok2pe@kbb.cz was QRV on 23 cm in the Nov leg of the ARRL Contest – I used CW only and was QRV only from the start of the contest at 0000 until 0136 when the Moon was blocked by trees. During the short period, I worked OK1CA, DG5CST, OK2DL, SP6JLW and SK0CT for an initial (#) – all with excellent signals. I continued operation at 1903 adding DL0SHF, LZ2US, G4CCH, OZ4MM, OK1CS (#) and OK1KKD (#), IK3MAC, DU3T and HB9Q. Then I packed up and went to bed. In the morning I operated portable in the Czech VHF/UHF Tropo Contest on 70 cm. It was rainy and cold, but a good event. After returning from the hill, I thawed out by evening and got ready for the next Moon pass. I logged PI9CAM, SP7DCS, SM4IVE, OK2ULQ, UA3PTW, DF3RU, F2CT and G3LTF for a total of 22 QSOs. No big hit-parade, but I was only able to operate for about 7 hours due to the limited moon-window at my valley QTH. I was still quite satisfied. My station is a 3.2 m mesh dish and 500 W. The main improvement I see is in my VLNA tuning (NF = 0.22 dB). I also plan to add WSJT during the Winter. I was pleasantly surprised by the participation of Czech stations, 10 in all! I am curious about what the Dec round will bring?

OK2ULQ: Peter ok2ulq@seznam.cz reports on his results during Nov part of ARRL Contest -- I started on Saturday evening after moonrise. Before starting I managed to solve a problem in the WSJT-X configuration and so used both CW and Q65C. I finished on Sunday around midnight our time. The result of my efforts was 57 QSOs. Of these 21 were on CW, 15 initials and 8 with OK stations. I am looking forward to seeing more stations in Dec. [Translated by OK1TEH from Peter's blog at https://ok2ulq.blogspot.com].

OK2ULQ's screens show high 1296 activity in contest

OM4XA: Fero cesnekf@gmail.com reports on the Nov round of ARRL EME Contest -- I was looking forward to the contest as I could not operate last year due to a delay in hamshack construction. This year everything was ready. I was on 1296 and started near the beginning on Saturday. I finished the first moonpass with 17 QSOs, but was not very happy with the result. I started the second pass about an hour and a half after moonrise, since that direction is shadowed by my neighbor's house. I can see the Moon only at 13° elevation. I lasted until Sunday morning. The activity was very good and I didn't feel the sleep deficit. I ended feeling pretty good. I started the final pass also an hour late and stayed on the band until the end of the contest. In total I made 72 QSOs, excluding one DUP. There were 12 CW contacts, the rest with were using Q65C with an occasional JT65C QSO. There were 17 initials added, all by digi to bring me to digi initial {#136} with W3HMS, OK2DL, K7CA, W6YX, DK5AI, UA5Y, DL1SUZ, EA1IW, K2QM, OK2ULQ, N2END, AE6GD, VA7MM, SP3YDE, SK0CT, DL7APV and UA3TCF and 2 CW initials to bring me to #36 with SP6JLW and SM4IVE. I failed to make contacts with JA and VK stations. There was nice participation from the USA; two new states were added for WAS. Most QSOs were from USA - 16, DL - 11 and OK - 7. If nothing goes wrong hopefully some more contacts will be added in Dec.

PA4VHF: Dick pa4vhf@gmail.com sends his latest activity report – Using 4 x 27 el YU1CF yagis and about 250 W at the feed, I was quite active in Nov on 432 and worked a number of stations. I added YU7C with 2 yagis and SM3LBN to my list of mixed initials (#*). In the ARRL Contest on 19/21 Nov I worked on digi unless noted 7M2PDT, HB9Q, K2UYH, NC1I, PA5Y, K5QE, PA2V, DL7APV, JJ3JHP, SM4GGC, DF3RU, VK2CMP, VK4EME, YO8RHI with 2 yagis (#*), RU4AN, S56P, G4FUF, SM2CEW CW, DL9KR CW, I2FHW CW (#), S51LF, UB4UAA, KD2LGX, RD3FD, OK1TEH, VE6TA, VE4MA (#*), K4EME (#*), W7JW (#*), W4ZST with 2 yagis (#*), UA5Y (#*) and DL7URH (#*) for a total 31 QSOs. After the contest, I QSO'd N1H (#*), DK3WG, OH4LA (#*), DF7KB (#*), PA3DZL, OK1KIR and G3LTF CW (#) to bring my 70 cm mixed initial total to #141*.

RD3FD: Sergey ***kuzserge@yandex.ru*** was QRV in Nov part of ARRL contest -- I worked on 70 cm with my modest setup despite some problems with WX, 27 QSOs with one CW in 15 countries and 3 US States. From UA I logged only UA5Y and UB4UAA. Last year I had 33 QSOs in two rounds. Hopefully there will be someone to work with in the final round. [OK1TEH translated from vhfdx.ru].

PA5Y: Conrad g0ruz@g0ruz.com did very well in the ARRL Contest on 432 but had a PC disaster and lost most of his log -- I lost part of my database for N1MM logger that I used for the EME Contest. This was the first (and last) time that I did not use a paper log! Fortunately, with some help, I was able to recover it. I ended with 102 QSOs on 70 cm of which 6 were on CW.

SP6JLW: Andrzej (SP6JLW) and team members Jacek (SP8OPN) and Pawel (SQ6OPG) sp6jlw@wp.pl send info on their participation in 50-1296 parts of the ARRL EME Contest – During the Nov weekend we operated under the callsign SP6JLW, in the "Multi operator CW only" category. We were only on 23 cm in Nov. We put off the 70 cm band for Dec; however, this is not definite. The turnout of CW stations is decreasing; we have not yet decided whether it will be worthwhile to operate CW exclusively on 70 cm, or jump between 70 cm and 23 cm to pick up missed stations. Our Nov QSO list is SK0CT, G4CCH, G3LTF, OK2DL, SM4GGC, DF3RU, N8CQ, WA9FWD, OH1LRY, G4RGK, RA3EC, DG5CST, OK1KKD, OK2PE, SP6ITF, SP7DCS, K0PRT, IK5VLS, OK1CA, SM5GDX, F5KUG, VA7MM, SP3YDE, WK9P, YL2GD, SQ7B, WA6PY, VE4SA, N4PZ, W6YX, IK3MAC, KL6M, IK3COJ, OK1CS, DL6SH, UA3PTW, SM6FHZ, VK4AFL, FR5DN, SP3XBO, UA5Y, F5JWF, VK5MC, OH2DG, F2CT, SP9VFD, JH1KRC, DK5AI, LZ2US, IQ2DB, IK2DDR, ES3RF, SM7FWZ, F6KRK, OM4XA, RN6MA, DJ7FJ, DL7UDA, SM5EPO, PE1LWT, AA4MD, OZ4MM, K2UYH, VE6BGT, WB2BYP, 9A5AA, K2QM, N5BF, PA3FXB, SM4IVE, DL0SHF, OK1DFC, IK6EW, VK4AFL, PI9CAM, OK2ULQ for a total score of 75x32.

SP9VFD: Raf's rgrygorow@gmail.com 23 cm activity report for the Nov part of the ARRL EME Contest -- I was active in the contest in the "single operator CW only" category. I made 32 QSOs with JH1KRC, YL2GD, SM7FWZ, I5MPK, G3LTF, SM4IVE, SM6FHZ, K2UYH, SM5DGX, WA6PY, KL6M, WA9FWD, K2QM, W2BYP, K0PRT, G4RGK, DL6SH, F2CT, UA3PTW, OK2DL, F5KUG, IK3MAC, DG5CST, DF3RU, SP7DCS, SP6JLW, OK1CS, SP6ITF, OK1CA, OK1KKD, DL0SHF and G4CCH. This was my first time on 1296 EME. Special thanks to JH1KRC for his patience. I heard many other stations and hope to work them in the Dec part. Before, I was on only 432 EME with a linear pol homemade 8 x 23 el yagi array. After much time spent in my garage/garden, I was at last able to complete my new dish (6.4 m, f/d=0.4) and mount. The dish tower and AZ/EL rotators with OE5JFL controller are my homemade construction. At present, I'm using a RA3AQ feed, 80 ~ 60 W SSPA (the power fads and my plan is to change for Dec) and a HB G4DDK LNA. The system still needs a bit of optimization, but the first measurements are very encouraging. The Sun/CS noise = 17 dB at an SF=71 and CS/G = 6.7 dB. Details of my homemade dish project are at https://drive.google.com/drive/folders/1y7kbamQ6S-ULFED3GCKwpHeDUq1rfnvX?usp=sharing.

SP9VFD's newly constructed 6.4 m dish used on 1296

UA3PTW: Dmitry ua3ptw@inbox.ru was active on 432 and 1296 EME in Nov and added initials on 70 cm using CW with VE6BGT; and using JT65B with M0CTP, K5DNL, DL7URH, N4OGW, K7ATN, TI5CDA temporarily on 432 with 22 el yagi and 100 W and N1H NH dxpedition, and on 23 cm using JT65C with K2QM, AE6GD, 9A5M and YL2FZ; and using Q65C with EA1IW and KA6U. [TNX to DK3WG for forwarding this report].

UA4AQL: Al ua4aql@inbox.ru is active on 432 – In Nov, I had initial QSOs using JT65B with AA5C, JJ3JHP and UA5Y; and using Q65B with N1H dxpedition in NH and DF7KB. [TNX to DK3WG for forwarding this report].

UA5Y: Alex (RA3EME) **ra3eme@mail.ru** reports on his contest group's experiences during the Nov ARRL Contest weekend -- All went pretty well. We found activity from EU

was a bit lower than last year, but there were more stations on from the USA. I was pleased with my new 5 m dish. On 1296 we could freely work SSB; on 432 it noticeably added to our ability to work stations. On 2 m we had TX problems and difficulty with antenna pointing due to nasty WX as well as heavy interference. On 432 we used my new dish and two pol PY2BS feed, a GS35 PA, SDR with MAP65 for reception and TS2000 with WSJT-X for transmission. The two pols definitely helped RX. We had a PA breakdown the last night. The liquid coolant pump became unplugged, which resulted in a break in the tube's cooling jacket and 3 liters of fluid poured into the room. We lost about an hour, and then another hour working on the amplifier while the seal was fixed and everything put back together. We worked on the 1296 from Saturday to Sunday; and also had a breakdown. We lost about 1.5 hours, otherwise 1296 worked great. We end with 50 QSOs on 432, 87 on 1296 and 102 on 144 for a 70 and 23 cm total of 137 and an overall for three bands of 230 (mixed modes)! I was very happy with our results. By Dec we hope correct the problems and be back on with the same operating schedule. [OK1TEH translated this report from vhfdx.ru; and notes to not miss RA3EME's movies (in Russian) at https://www.youtube.com/channel/UCtuaLyGMleNVWsgjzudnlsg/videos.

UT5DL: Slava currently is QRT on 70 cm EME -- I live in an apartment building. There is a neighbor who thinks I have the right to install an antenna on the roof, but only over my apartment. It is a good thing I live on the top floor! My EME antennas has been there since the early 90's. For yagis with a long boom such an area will not do. Sadly, I had to dismantle yagis to avoid a confrontation. [OK1TEH translated this report from vhfdx.ru].

VE6TA: Grant ve6ta@xplornet.com sends a summary of his ARRL Nov weekend activity – I was on 432 during almost all the contest period. Stations worked using CW were I2FHW, UA3PTW, DL7APV, VE6BGT, K2UYH and SM2CEW. It was nice to see VE6BGT get on a new band with a great signal. It would also be nice to see more CW activity on 432. Using JT65B, I worked VE4MA, PA5Y, S56P, G4FUF, UA5Y, WP4G, K5QE, DF7KB, OK1TEH, S51LF, W4ZST, NC1I, K2UYH, PA2CHR, K4EME, ES3RF - on moonset, as well as VK2CMP, W7JW, DF3RU, PA3HDG, YU2NS - special event call, UB4UAA, YL2GD, PA4VHF, W5LUA, PA2V and OH4LA. On Sunday installed a 222 feed to work K1WHS easily on JT65B for mixed initial #16* and a new state on that band to end with a total of 33 QSOs. I hope to be QRV on 23 cm during the Dec weekend looking for new stations.

VK2CMP: Mick vk2cmp@me.com sends a couple of highlights from the Nov leg of the ARRL Contest -- During the contest I made my first CW QSO off the Moon with DL9KR. Just 3 hours before my moonrise and the start of the contest, I commissioned a new 4 x 21 el X-pol array from YU1CF. A few weeks earlier, I had a tower winch failure that destroyed the original planned upgrade. Needless to say, I was extremely disappointed! During the raising of the array, I realized that I had not connected my back up pulley system. As I was about to connect it, the tower winch failed. This additional pulley system was not part of the tower design but my own addition. I was upset as I normally take nothing for granted. My career started in civil aviation, where safety and redundancy was the norm. I having experienced many things fail that were designed not to fail. I worked on a triple redundancy radio system which still failed. This experience effects how you build and maintain things. Fortunately, Goran supplied the new X-pols in record time. I have had superb results with the new array. I added 14 initials and 2 new DXCCs during the contest. I will provide a further update once I get to exercise the new setup more.

WA6PY: Paul pchominski@maxlinear.com> was QRV during the ARRL Nov EME Contest weekend – On 23 cm, on 20/21 Nov I QSO'd using CW G3LTF, RA3EC, DG5CST, UA3PTW, SP7DCS, F5KUG, G4RGK, G4CCH, SP6ITF, OK1CA, OK1KKD, W6YX, VA7MM, SP6JLW, SK0CT, N8CQ, IK2DDR, NQ7B, IK3MAC, OK2DL, KL6M, SM5DGX, K0PRT, WA9FWD, OH2DG, SP9VFD, SM6FHZ, DF3RU, 9A5AA, WK9P, DL6SH, OK1CS, OZ1MM, N4PZ, K2UYH, LZ2US, VE6BGT, SM7FWZ, N5BF and IK3COJ for a total of 41 QSOs. I didn't operate during the JA/VK window. I plan to be QRV in Dec, but probably only during the first Moon pass; and will be on 1296 during JA/VK window. I will also check 432 for CW. On 24 GHz, on 30 Nov I completed a CW QSO with VE4MA, although spreading was above 230 Hz.

W5AFY: Dan wb5afy@wb5afy.net writes on his Nov ARRL Contest activity – I was QRV on 23 cm EME on 20/21 Nov for the first time in 11 years. Using a new KL6M feed installed in my 5 m dish with my GS-15 driver only at 300 W, I worked 25 stations all on Q65C. QSO'd were KA1GT, NC1I, WA3RGO, CX2SC, RN6MA, W1LY, PA3FXB, OK1KIR, Y02LAM, CE3VRT, RA4HL, KB7Q, K7CA, VE3KRP, W1PV, DK1KW, IK5VLS, DK5AI, AE5GD, OK2DL, UA5Y, KB2SA, W3CJK, DL7UDA and N0CTR. After the contest on 26 Nov, I added KL6M (569/579) on CW. I plan to be QRV the second weekend on 23 cm again.

YU2022NS: Zivko (YT7CO) yt7co.ziko@gmail.com writes that the Novi Sad Radio Club (YU7BPQ) to celebrate the selection of the city of Novi Sad as the 2022 European Capital of Culture activated the call YU2022NS during Nov part of ARRL EME Contest on 70 cm. Over the weekend they worked using JT65B PA5Y, PA2V, S56P, NC1I, UA3PTW, VE6TA, DL7APV, YL2GD, S51LF and VK4EME for a total of 10 QSOs. The equipment was 2 x 27 el yagis on horz pol, an LA 250 W SSPA and 0.8 dB NF preamp. The call YU2022NS will be QRV during 2021and 2022. The setup was lent to the club by YU7C.

K2UYH: I (Al) alkatz@tcnj.edu teamed with W2HRO and K2TXB for a multi-operator multi-band entry for the ARRL EME Contest. The plan was to have W2HRO operate the first night on 1296. Paul could start before I had moon. I would operate on 432. If activity became slow at Paul's QTH, I could switch over to 1296 with my bigger dish to try to attract new contacts. The second day we would reverse

and follow the same procedure. Unlike the MW Contest there were no serious problems and all amazingly worked well. NE2U came over for the second night to keep me company and operated for several hours. Before the contest, I QSO'd on 432 using Q65B on 17 Nov W7JW (23DB/14DB) for mixed initial #1051*, K5DOG (11DB/14DB) and ND7M (15DB/20DB) #1052*; and on 19 Nov VP8EME (21DB/17DB) #1053* and DXCC 138* after months of trying to arrange a sked and PA3HDG (9DB/13DB). In the contest, we worked on 20 Nov, on 432 using JT65B unless noted S56P (O/O), WP4G (10DB/O), N1QG (16DB/15DB), 0233 RD3FD (16DB/O), UT5EC (9DB/O) #1054*, DF7KB (13DB/13DB), DB8NK (21DB/O), K4EME (2DB/12DB), S51LF (21DB/17DB), VP8EME (19DB/18DB), OK1TEH (18DB/22DB), PA5Y (4DB/7DB), LZ1DB (11DB/15DB), UA5Y (4DB/O), YL2DG (19DB/O), VE6TA (559/559) CW, 0441 I2FHW (559/559) CW, PA3HDG (18DB/12DB), KB0Z (19DB/22DB), W4ZST (12DB/O), 0523 PA4VHF (21DB/9DB), K5QE (5DB/17DB), DL7APV (1DB/1DB), KD2LGX (22DB/O), OH2DG (7DB/14DB), PA2CHR (13DB/O), VE6TA (11DB/O) DUP, NC1I (1DB/2DB), JJ3JHP (14DB/22DB) #1055*, JH7BAY (17DB/17DB), JR0WFY (24DB/O) #1056*, VK4EME (5DB/15DB), JH7PAV (18DB/O), ZL3AAD (18DB/18DB), 1020 VK2CMP (11DB/23DB), 1030 WA1FXK (22DB/O), JF6CTK (14DB/13DB), 7M2PDT (12DB/O) and JH7OPT (22DB/22DB); and on 1296 using JT65C unless noted NC1I (18DB/18DB), ON4QQ (25DB/16DB), KA1GT (22DB/17DB), IQ2DB (17DB/18DB) for mixed initial #703*, DL1SUZ (22/18DB), VE3KRP (20DB/15DB), SM4GGC (19DB/16DB), OK1KIR (8DB/9DB), K2QM (8DB/9DB), 0337 KB2SA (19DB/19DB), YO2LAM (12DB/15DB) #704*, CX2SC (17DB/18DB) #705*, SM5DGX (6DB/9DB), OK1CA (6DB/5DB), WA3RGQ (16DB/13DB), KB7Q (24DB/20DB), 0528 DK3WG (17DB/17DB), KA1GT (16DB/9DB) DUP, GM0PJD (20DB/14DB), OK2DL (5DB/8DB), PA3FXB (19DB/14DB), W6YX (7DB/O), ON4AOI (16DB/12DB), K7CA (15DB/19DB), CE3VRT (22DB/22DB) #706*, VA7MM (13DB/O), N5BF (19DB/14DB) and NT6V (20DB/19DB) #707*; on 21 Nov, on 432 using JT65B unless noted G4FUF (22DDB/O) #1057*, 0056 N9XG (16DB/O) #1058*, UB4UAA (21DB/O), IW4ARD (15DB/O), YO8RHI (23DB/O), W7JW (21DB/21DB), AA5C (23DB/21DB), F6HLC (23DB/O), UA3PTW (6DB/O), W5LUA (14DB/O), JE1TNL (22DB/21DB) and JR7PJS (22DB/13DB) for total of 50x28 on 432; and on 1296 using JT65C unless noted W1PV (11DB/15DB), OK1DFC (1DB/1DB), OM4XA (9DB/4DB), RN6MA (13DB/1DB), DK1KW (12DB/22DB) #708*, 0247 K4EME (8DB/O), W3HMU (10DB/6DB), UA5Y (10DB/6DB), F6KRK (559/569) CW, NQ7B (559/569) CW, WK9P (569/599) CW, SP6ITF (559/579) CW, OK1CA (579/579) CW DUP, G4CCH (579/589) CW, DF3RU (579/569), WB8HRW (559/569) CW, 0400 VE4SA (569/559) CW, DL7UDA (579/579) CW, SP6JLW (589/589) CW, OK1KKD (579/579) CW, F5KUG (569/579) CW, SP3XBO (569/579) CW, SP9VFD (569/579) CW for initial #440, 9A5AA (559/579) CW, IK3COJ (559/579) CW, K0PRT (569/559) CW, N4PZ (579/589) CW, G3LTF (569/579) CW, IK2DDR (569/569) CW, WA6PY (569/569) CW, OK1CS (579/589) CW, VE6BGT (589/589) CW, K3WM (569/569) CW #441, LZ2US (579/579) CW, KL6M (589/589), SM7FWZ (569/579) CW, OZ4MM (589/589) CW, LA9NEA (14DB/11DB), IK7EZN (14DB/11DB), IK5VLS (11DB/9DB), K5QE (17DB/26DB) Q65C, W3CJK (8DB/7DB), NT6V (9DB/14DB) DUP and 0835 R4MR (559/O) CW #442, JH1KRC (569/569) CW, DU3T (569/559) CW, VK4AFL (559/559), AA4MD (12DB/25DB) and JH4LJB (11DB/5DB) #712* for a total of 74x39 on 1296 and an overall 432 and 1296 score of 124x67. After the contest I added on 27 Nov at 1330 N1H (10DB/17DB) using Q65C in NH #1059*. I copied them on CW (559), but they had troubles copying me and suggested we try the next day, but they had already shut down by the time I was able to be QRV. My plans are to work on optimizing my 3 and 6 cm feeds for better performance on these bands, WX permitting. I will be looking for you all during the F2SE memorial SSB Funtest on 5/6 Feb.

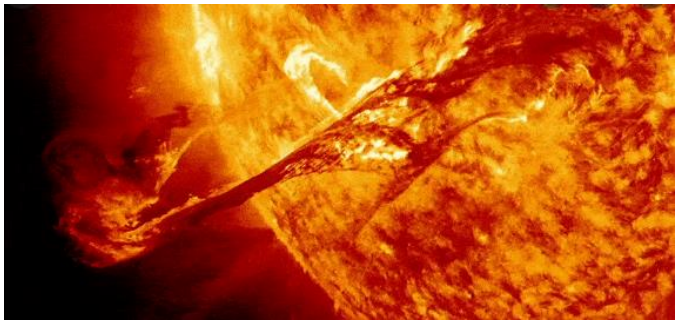
FOR SALE: OK1TEH: has still for sale a 3 m solid dish with massive ribs that is usable for EME thru 24 GHz. Any offer will be considered. Contact Matej at ok1tehlist@seznam.cz for more info. **OK1YK** has for sale his full 13 cm setup including 160 W PA, septum feed and transverter for EU300. See for more info https://ok1yk.blogspot.com/. **PA3DZL** have for sale a used SPID RAEL Elevation Rotator + Controller; also 10 GHz SMA Directional Couplers, Omi-Spectra, Pwr 50 W with 10 dB and 16 dB Coup for Freq. 6.0-18 GHz; Marconi Bandpass Filters for 1296 with SMA connectors and attenuation on 1296 of <0.2 dB, at 1000 MHz -74 dB and 1600 MHz -68.5 dB; and SMA attenuators DC-18 GHz, 2 W, values: 1 dB, 2 dB, 3 dB, 4 dB, 6 dB, 8 dB, 15 dB and 20 dB. Email Jac for pictures and prices at pa3dzl@icloud.com.

NET/CHAT/LOGGER NEWS: DL1SUZ is actively seeking skeds on 13 cm. Since the ARRL MW EME Contest he added PY2BS on 2320 for South America. **F2CT** has not been active since the Nov ARRL contest/party. I do hope to participate during the final leg on 23 cm. **NT6V** is a new 1296 station using a 2.4 m folding dish and 600 W SSPA mounted on a W2HRO tripod design using a 3" dual axis slew drive. Michael was QRV during the Nov leg of the ARRL EME Contest and will be used by students at University of CA Berkley. **WK9P** was QRV on 1296 using CW only during the Nov Contest with his big TH327 final. Tim is also now QRV on 3 cm and GPS locked his system. **N4PZ** was also active on 1296 using CW only during the contest weekend. **UX4IJ** has dismantled his 70 cm array. **OK1VUM** is new on 70 cm EME using an array of 32 x 9 el yagis and a 400 W PA. He already has worked using CW DK3WG and DL7APV. The details of Mila's antenna can be seen (in Czech) at https://www.ok1kze.com/radioklub/klubove-akce/stavba-velke-anteny-pro-432-mhz.

K1DS ON EME CONTEST CABBRILLO LOGS: For the past few years, I have been helping EME ops to convert various log formats to Cabrillo and submitting for them. I know this has not been an easy transition, however, there are now "Apps" on the ARRL website to assist with Cabrillo conversion and submission. Over the past few years there have been more stations active and submitting logs.

PLEASE submit you logs. The more documented activity, the greater attention by the ARRL. Even a 1 QSO log is of value. I may not be a significant EME station, but I do hope to be active on the third weekend. I look forward to hearing from you with your contest experiences and station pictures for the QST on-line EME contest summary and commentary.

RADIOASTRONOMY CORNER BY OK1TEH: Dear Astro corner readers, this time we don't have any special topic regarding pure radioastronomy except for some interesting info related to unusual activity of solar class star EK Draconis. It was observed to be producing incredibly strong Coronal Mass Ejections (CMEs). CMEs are large expulsions of plasma and magnetic field from a star such as our Sun. This could happen to our Solar system. It would result in a super-massive radio-aurora and very dangerous conditions on our planet. This topic will be more relevant to us in the future when our Sun might produce greater solar maximums. The EK Draconis is a much younger and therefore a much more turbulent version of the Sun, but we should still be wary. It's only a matter of time before a similar dragon's roar comes to the Earth. So, what happened? After a giant solar storm, the star EK Draconis spews out a massive stream of photons and charged particles that are far more powerful than anything scientists have observed in our solar system. The system is 111 light-years away. EK Draconis resembles our Sun, only younger; very young, in fact, at only about 100 million years old. An explosion occurred here back in April 2020, ejecting a cloud of hot plasma. The observations were made using NASA's Transiting Exoplanet Survey Satellite (TESS) and Kyoto University's SEIMEI telescope. Back in 2019, the same team of scientists came up with the idea that stellar flares can exceed what we observe on the Sun by 1 to 2 orders of magnitude. Of course, the question arises whether we should start worrying. Let's assume not, that this is an unlikely event and, moreover, typical of younger stars; as stars age, these processes lose their intensity. But then the question arises as to whether similar events might have affected the Earth in the past. Mars, study co-author Yuta Notsu of the University of Colorado suggests that the red planet may have lost its once-dense atmosphere as a result of similar events. The coronal mass ejection is usually preceded by a burst of radiation. On EK Draconis, the CME followed the radiation ejection by about 30 min. The first phase, the filament eruption, produced a stream of electrically charged particles moving at speeds of up to 1 million km/h. The study published in Nature Astronomy, [www.nature.com/articles/s41550-021-01532-8]. We might ask, if such big star activity (from near stars) could resulting in an enormous noise outburst that could be detectable by amateur-radio astronomers? Well probably not, but if you have a different idea, please let us know your opinion.



Picture of a Coronal Mass Ejection from our Sun

FINAL: We want you to know the reports received for this NL were filled with Holiday Greetings and THANK YOUs for the many great QSOs during the contest weekend. We have not printed them to save space, but we our expressing your well wishes here for everyone! This has been a difficult year because of COVID with many silent keys. Let's hope and pray for a better year in 2022.

► This month we have DL7APV's Moon Calendar at the end of this NL. Much TNX Bernd.

► Among the recent SKs is **K3IO (ex-W3IWI).** Tom was President Emeritus of AMSAT and at true Amateur Radio satellite pioneer. He was the first to put Alaska on 1296 EME. He died on 28 Sept at 82. Another is G4WJS. Bill, although not active off the Moon, was involved in the development of WSJT-X software and helped countless EMEers with its application. RIP Tom and Bill, you will be fondly remembered.

► See DL9KR's report for a discussion on what constitutes an initial when clubs/dxpeditions are involved.

► OK1TEH worked during Gemenids 2021 ER1AN on 70 cm MS and observed that Moldavia has never been activated on UHF/Microwave EME.

► PE1CHQ of the team PI9CAM is interested in long delayed echoes. Harry at harrykeizer1@gmail.com would appreciate receiving any information/experiences you may have about this strange phenomenon. Some known LDE links are http://www.k3pgp.org/lde2.htm and https://www.df5ai.net/Material/articles5.html#ArticlesLDE

► Have you made your plans for EME2022 Prague. It will be in Aug 2022; less than a year away!

► We will be looking for you in the final weekend of the 2021 ARRL EME Contest on 18/19 Dec. Look for OK1TEH and K2UYH. We wish you much success in the contest, great DX, a wonderful holiday season, and a healthy and happy New Year. 73, Al – K2UYH and Matej – OK1TEH.

Lunar weekend calendar 2022

Compiled by DL7APV

2400_Sat/ 0000 Sun GMT	Decl/ °	Loss/ dB	Sun offset/ °	Temp 432/ K	contest dates & meetings	Comments
Jan 01/02	-26,5	+0,3	11	240		Sun close
Jan 08/09	-0,5	-1,3	-82	25		Day PM
Jan 15/16	+25,8	-1,9	-159	40	ATP 2-4 & 16:30-18:30	Night
Jan 22/23	+2,8	-1,0	120	25		Day AM
Jan 29/30	-26,9	**0**	29	140		Day AM
Feb 05/06	+3,3	-1,2	-62	30	SSB FUN Contest Sa 13cm/Sun 23cm	Day PM
Feb 12/13	+25,9	-1,8	-141	30	ATP 1-3 & 15-17	Night
Feb 19/20	-1,9	-0,8	138	30		Night
Feb 26/27	-26,6	-0,2	46	50		Day AM
Mar 05/06	+6,9	-1,3	-41	30	Eu VHF/UHF Tropo	Day PM
Mar 12/13	+25,5	-1,8	-122	30	DUBUS/REF CW 2m/70cm	Day PM
Mar 19/20	-6,4	-0,6	157	30		Night
Mar 26/27	-29,6	-0,4	62	35		Day AM
Apr 02/03	+10,3	-1,4	-21	30		Sun close
Apr 09/10	+24,5	-1,7	-103	20	DUBUS/REF CW 9cm ATP 13-15 & 21-23 ARI spring contest	Day PM
Apr 16/17	-10,4	-0,3	177	30		Night
Apr 23/24	-23,3	-0,5	78	30		Day AM
May 00/01	+13,8	-1,6	-1	35		Sun noise
May 07/08	+22,9	-1,8	-84	20	Eu VHF/UHF Tropo DUBUS/REF CW 23cm ATP 12-14 & 20-22	Day PM
May 14/15	-13,8	**-0,1**	-163	35		Night
May 21/22	-20,3	-0,5	95	25	**Dayton (Xenia) HAMvention**	Day AM
May 28/29	+17,1	-1,7	18	35	DUBUS/REF CW 3cm+up	Sun close
June 04/05	+20,6	-1,8	-65	**15**	EU 23&up Tropo ATP 11-13 & 19-21	Day PM
June 11/12	-17,0	**-0,1**	-144	35	ARRL VHF Tropo	Night
June 18/19	-16,9	-0,4	113	25		Day AM
June 25/26	+20,2	-1,8	36	35	**HAM Radio** DUBUS/REF CW 13cm	Day AM

July 02/03	+17,6	-1,8	-47	20	Eu VHF/UHF Tropo ATP 9-11 & 17-19	Day PM
July 09/10	-20,1	-0,2	-124	40		Day PM
July 16/17	-13,3	-0,3	132	25	CQ WW VHF	Day AM
July 23/24	+22,8	-1,8	54	40	DUBUS/REF CW 6cm	Day AM
July 30/31	+14,1	-1,7	-28	20		Sun close
Aug 06/07	-23,1	-0,3	-107	45	ARRL UHF Tropo	Day PM
Aug 13/14	-9,7	-0,3	152	25	**19th EME Conference Praha**	Night
Aug 20/21	+24,8	-1,8	73	45	ATP 1-3 & 10-12	Day AM
Aug 27/28	+10,3	-1,5	-9	20		Sun noise
Sept 03/04	-25,7	-0,4	-90	100	**Eu VHF Tropo**	Day PM
Sept 10/11	-5,9	-0,4	172	25	ARRL VHF Tropo	Night
Sept 17/18	+26,2	-1,8	91	45	**ARRL 1st leg** ATP 0-2 & 9-11	Day AM
Sept 24/25	+6,5	-1,3	10	20	ARI Autumn contest	Day AM
Oct 01/02	-27,4	-0,4	-74	240	Eu UHF Tropo	Day PM
Oct 08/09	-2,0	-0,6	-168	25		Night
Oct 15/16	+26,9	-1,8	110	40	**ARRL 2nd leg**	Day AM
Oct 22/23	+2,9	-1,1	31	25		Day AM
Oct 29/30	-28,0	-0,3	-59	160		Day PM
Nov 05/06	+2,6	-0,9	-149	30	Eu VHF CW Tropo	Night
Nov 12/13	+27,0	-1,9	129	30	**ARRL 3rd leg**	Day AM
Nov 19/20	-0,7	-1,1	51	30		Day AM
Nov 26/27	-27,5	**0**	-43	60		Day PM
Dec 03/04	+6,9	-1,1	-130	25		Day PM
Dec 10/11	+26,3	-1,9	147	25	ATP 5-7 & 10-22	Night
Dec 17/18	-4,4	-1,1	72	30		Day AM
Dec 24/25	-26,3	**+0,2**	-25	40	Xmas	Sun close
Dec 31/ Jan1	+11,3	-1,2	-111	30	HNY	Day PM

ATP=**A**ctivity**T**ime**P**eriod (UTC) for 432MHz, see homepage of SM2CEW or EME pages send reports to K2UYH & Dubus, 432 MHz activity times should boost the 432MHz CW EME activity. See some big guns in CW within 432.010 and 432.050 MHz.

Sun Offset *vs* Time of Day for Visible Moon						
-180°	**-120°**	**-30°**	**0°**	**+30°**	**+120°**	**+180°**