

## 432 AND ABOVE EME NEWS SEPTEMBER/OCTOBER 2019 VOL 48 #9

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**CONDITIONS:** We would like to express apologies for the delay of the NL as the authors were both busy at work. The Sept ARRL Microwave (MW) Contest was lots of fun for those that could be QRV. Unfortunately, a big part of Europe (EU) suffered from very bad weather (WX), which was especially a problem for operation on the MW bands. Although there was plenty of CW operation, [the ARRL Contest has a separate class for CW only operation], what was evident is that digital operation is growing on the MW bands. Activity was lower on 13 cm this year, but greater on 3 cm. It is difficult to identify a top scoring station because many operators limited the bands that they were active on. The SP6JLW/SP6OPN team were QRV separately on 3 and 13 cm respectively, but over had 35 QSOs for top total QSOs. OK1DFC was only on 3 cm but made 28 QSOs, top for 3 cm only. G3LTF was not on 3 cm but made 29 QSOs. The following weekend was the ARI EME Contest, which offers additive points for digital and CW QSOs; with CW contacts receiving a higher number of points. It will be interesting to see how well this arrangement works out. SM5GGC had the top QSO count of 48 with operation only on 1296. Besides the A21EME dxpedition starting on 19 Oct – see detail in this newsletter (NL); we just learned that KB7Q will be QRV on 70 cm in SD (DN83gh) on 16 Oct, and NB (DN82gp) on 20 Oct using the same proc and freq (432.090) as in the past. There is no 70 cm activity time period (ATP) because of the ARRL EME Contest. We are looking forward to the **first of the two ARRL EME Contest weekends for the 50 – 1296 bands on 19-20 Oct**. Rules can be found <http://www.arrl.org/eme-contest> and if you want to send info about your activity, you can do it via <http://darkside.cz/eme.php>. K1DS will be looking for reports and pictures of your ARRL EME Contest adventures for possible inclusion in the EME Contest report for QST - [rick1ds@hotmail.com](mailto:rick1ds@hotmail.com).



The 10th JA EME Conference on 13-15 Sept in Kyoto attract 55 EMEers– see JA4BLC's report

**8P5AB:** Kammie [macholder@yahoo.com](mailto:macholder@yahoo.com) on the east coast of Barbados is interested in 1296 EME. He has a 16' dish and invites interested hams to visit and help him setup for EME. [TNX Dan, HB9CRQ for forwarding this message].

**A21EME:** Dan (HB9CRQ) [dan@hb9q.ch](mailto:dan@hb9q.ch) reports all is proceeding according to plan for his 23 thru 3 cm dxpedition to Botswana – The one exception is that HB9COG will not be able to join us. Due to a heavy workload, Sam has to stay home and work. I will be supported by Sam's YL, Susanne, and the whole A21EME team. We expect to have a pretty good moonrise (MR) of about 10 deg and moonset (MS) close to 0°. This will give us a good moon windows for all continents including the US west coast. There should be Internet service on site, so we will be standing by on the HB9Q logger. We will be using again our dxpedition proven equipment: 1.5 m 1x2 mm mesh dish with on 23 cm 100 W at CP feedhorn; on 13 cm (all sub bands) 90 W at CP feedhorn; on 9 cm 80 W at CP feed; on 6 cm 80 W at CP feed; and 3 cm (all sub bands) 50 W at V-pol feed. On 18 Oct we will arrive in Johannesburg (ZS6) where we'll meet the other dxpedition members at ZS6JON's QTH. John provided all the work to get the licenses and find a suitable QTH. He prepared everything for hopefully a smooth run during the dxpedition. (Many thanks John!) On 20 Oct we will drive in a convoy of 5 to 6 cars to the Botswana border. This is a 5 hour trip. There, we will have to do all needed customs paperwork and physical checking. From there it is another hour by car to our QTH (KM25wk) north of the city of Gaborone. We should arrive early in the afternoon and immediately start to build the station to become QRV on moonrise late the evening of the same day. The activity will be as follows: 20/21 Oct QRV 1296.100 1st on JT65C from about 2330 to 0920; on 22 Oct QRV 23xx.100 1st JT65C from 0030 to 1030 with 2301.990 1st (and 2400.100 1st on request only - will be announced on HB9Q), for US-window 2304.100 1st (QSY will be announced on HB9Q); on 23 Oct QRV 3400.100 1st JT65C from 0120 to 1100 (with 3399.990 on request); on 24 Oct QRV 5760.100 1st QRA64D from 0200 to 1230; on 5 Oct QRV 10368.100 1st QRA64D from 0250 to 1340 (10450.100 1st on request only with QSY will be announced on HB9Q); 26 Oct 1296.100 1st JT65C from 0330 to 1440; 27 Oct QRV at most a few hours because we have to dismantle and pack the station. We need to do this with daylight for an early morning departure the next

day. The time and freq will be on to be announced on 26th. Now that WSJT-X 2.1.0 is available, we will use JT65C with Doppler Control (own Echo) - in other words, we listen on our own echo on 23, 13 and 9 cm. On 6 and 3 cm we will use QRA64D CFOM (Constant Frequency On Moon) (and if needed JT4F with full Doppler control to DX Grid). Hopefully more people will take advantage of automated Doppler control, which WSJT-X offers. Especially on 6 and 3 cm, it is a MUST for successful QRP operations. Although it is near the limit, we will work CW on all bands. However only with big-guns and after the pile-ups on JT/QRA are over. How big needs your station to be to work us? We have worked several stations with very small stations as the following list shows, so definitely give us a try. On 23 cm 2 m dish and 150 W at the feed, on 13 cm 2 m dish and 100 W at the feed, on 9 cm 2 m dish and 50 W at the feed, on 6 cm 1.5 m dish and 80 W at the feed, and on 3 cm 1.2 m solid dish with 40 W at the feed. QSL policy is only direct and must include SAE to: HB9Q, P.O.Box 133, CH-5737 Menziken. If you wish to sponsor this 23-3 cm activity, you are welcome to do so by using PayPal: dan@hb9q.ch (please mention your call). If you like to sponsor 6 m, 2 m and 70 cm activity please use PayPal [info@pa3cmc.nl](mailto:info@pa3cmc.nl). We are looking forward to the A21EME dxpedition and hope to work many if not all of you! Info on our next MW dxpedition will be posted a few days before we are QRV.

**DL3EBJ:** Chris [dl3ebj@t-online.de](mailto:dl3ebj@t-online.de) had a great weekend in the Sept ARI EME Contest -- I made on 23 cm 31 CW/SSB and 33 JT65C QSO's. I did not take note of my sunnoise, and the wind was not a problem. I made a few of random SSB QSOs during the contest and in general had lots of fun! You can see more info on my contest activities on my QRZ.COM page.

**DL7APV:** Bernd [dl7apv@gmx.de](mailto:dl7apv@gmx.de) has only 7 weeks to go before retiring at beginning of Nov when he will truly be able to devote his time to EME – I was at Weinheim (DL-VHF meeting) and met many EMEers there. Among them were DJ5AR, OE9ERC, DJ3FI, PA3CSG, DL1RPL, SM4IVE, DL6SH, DL1HYZ, DK5LA and DL8JJ. I realized the average of age of the HAM radio ops is increasing a lot! I worked a few new ones on 432 in Sept. QSO'd were KB7Q on the road in DN54, W9RM DM58 (9 wl and KW), DJ5AR (3 m dish and 200 W), DA0SAR (JN39 with a 15 el yagi and 200 W temporary station to demonstrate EME at a club meeting), VK3FUR and VK3CLR (both portable in PF95) and JR0WYF (PM95) for his first EME QSO. I was also QRV in the ARI Contest, but the Sun close to the Moon and there was geomagnetical storms. But the signals were quite good on Sunday and I made 12 QSOs while QRV.

**G3LTF:** Peter's [pkb100@btinternet.com](mailto:pkb100@btinternet.com) Sept report follows -- I was disappointed by the low activity during the 6 cm AW on 25 Aug. I worked on CW SM6CKU, K2UYH, UR5LX, and VE6TA. My sunnoise was 14.9 dB with an SF of 66. I looked for KB7Q in WY on 432 on 1 Sept. Gene was good copy, the equivalent of a (439) on CW, but I couldn't attract his attention - pity as he had a good signal on the peaks. In the ARRL MW Contest, I started on 21

Sept on 13 cm and worked (all on CW) UA3PTW, OK1KIR, RA3EME, SP6OPN, OK1CA, PA0PLY, SP3XBO, WD5AGO, G4CCH, K2UYH, OH1LRY, WA6PY, G4BAO, PA0BAT, and KL6M. (15 compared to 21 last year). I then changed the feed to 6 cm before the end of the 1st pass and worked VE6TA, K2UYH and HB9Q. At MR on the second pass I worked UA3PTW and JA4BLC, and then on 22 Sept SM6FHZ and VE6BGT for initial # 86 (and 7 QSOs). Skip has an excellent signal on 6 cm. I then changed the feed to 9 cm and worked WA6PY, OH1LRY, KL6M, SM3BYA, LZ1DX, K2UYH and HB9Q (for 7 QSOs). Activity seemed down from previous years, especially 13 cm, but maybe this was because of more stations concentrating on 3 cm. (I ended with a score of 29x28). Conditions were good, near moonset on 6 cm, close to the Doppler reversal point and with very slow libration, I was getting some amazing SSB echoes on the peaks. On 28 Sept, I was active in the ARI Contest, the wind was terrible and even on 23 cm it was hard to keep the dish on the Moon. I had to stop sometime before moonset, and the next day, Sunday, was worse. There was no possibility of any operation with wind gusts up to 42 mph. On the 28th I worked on 1296 CW SP6ITF, DL3EBJ, LZ1DX, F5KUG, SM4GGC, ES3RF, DJ2DY, IK1FJI, PA3FXB, PE1CHQ, G4YTL, ON5GS, SM6CKU, W4OP, IK3COJ, K5DN and K7CA (for a total of 17). I don't understand why in the ARI Contest, when points are there for CW as well as JT that more people don't call CQ on CW, but just hang out on the logger. A CW QSO is far quicker than one on JT. Maybe it's the difficulty in changing from one mode to the other. Neither contest was very satisfying (partly due to the WX). I am now looking forward to the DUBUS series of contests next year.



**G4RFR's 3 cm feed assembly**

**G4RFR:** John (G0API) [john.g0api@gmail.com](mailto:john.g0api@gmail.com) reports on his club's (G4RFR - Flight Refuelling ARS) in IO90 work on the development of their 10 GHz system -- We now have the latest JPL data running on our in-house built and designed stepper motors Auto tracker. Tracking is now totally hands free and can be interrupted or fully controlled via a mobile phone interface - handy for parking the 12 mm lock down bolt in the 13 mm hole. We have been running a Siemens 10 W TWTA for last few random sessions; whilst improving the harmonic suppression of a 250 W Thompson TWTA. Our control interface has been integrated to run either tube. We lost an Octagon LNB. Its first stage device was taken out by a WG switch glitch.

Looking for the cause with a fast scope, we could see that occasional pulses were > 100 mW. The LNB had survived for over 30 mins while we were running > 100 W output through the WG relay before failure. We are currently running a Golden Interstar LNB, which has been regularly tested to give 5.8 dB Sky/Ground noise with a home brew WG16 transition. (It is easily externally locked to 25 MHz and costs £12.99 in the UK). We QSO'd on 26 Sept during the ARI Contest W3SZ (18DB/17DB), F6BKB (17DB/14DB) and VE4MA (18DB/15DB) all on JT4F, and on 29 Sept using QRA64D OK1KIR (17DB/13DB), OK2AQ (15DB/17DB) and M0EYT (14DB/15DB), and on CW G4NNS (339/449), all using the 10 W TWTA.

**HB9Q:** Dan [dan@hb9q.ch](mailto:dan@hb9q.ch) sends a summary of his group's recent activity – Initials worked from mid May to the end of Aug are on 70 cm, all using JT65B, **SV9/HB9CRQ (DXCC 166)**, F8GHE, UN7CL, XV9LR, VE2TWO, VK5QI (12 el yagi and 55 W), YO2NAA (15 el yagi and 30 W), KG5CCI (17 el yagi and 50 W), OM1LD, DL9DBJ, K7CA and OH6PX (23 el yagi and 50 W) for a total of 1092 mixed initials and 166 DXCC; on 23 cm, all using JT65C, SV9/HB9CRQ (also with CW), W3CJK (67 el yagi and 30 W for first EME), **VE2TWO**, W8MQW (2.4 m dish and 20 W), G7TZZ (2.4 m dish and 2 W for first EME), UA1OEJ (4 x 24 el yagi and 250 W for first EME), G4OMT (60 el yagi and 4.4 W!!! for first EME), OK8HAK, **K6MG (also with CW for NE)**, GM0PJD, **K6MG (also with CW for SD)**, **K6MG (also with CW for ND)**, **K6MG (also with CW for MT)**, ES3RF, ON4BCV (1.9 m dish and 5 W for first EME), **K6MG (also with CW for WY)**, ZS4A, RM8A (2x 16 el yagi and 80 W for first EME) and N1NK (67 el yagi and 120 W) for a total of 704 mixed initials, 44 WAS and 124 DXCC; on 13 cm, all using JT65C, **SV9/HB9CRQ (also in CW, DXCC 66)**, **K6MG (NE)**, **K6MG (also with CW in SD)**, **K6MG (with CW in ND)**, **K6MG (WY)**, **K6MG (MT)** and PA0HRK for a total of 182 mixed initials, 19 WAS and 66 DXCC; on 9 cm, all using JT65C, **SV9/HB9CRQ (also with CW for DXCC 36)** and KD3UY for 77 mixed initials and 36 DXCC; on 6 cm all using CW, **SV9/HB9CRQ (also with QRA64D for DXCC 40)**, G4NNS/p, SP6JLW, SP0VHF (with QRA64D), TM1MOON (using SSB), VK6DSL/p (using SSB) for a total of 87 mixed initials and 40 DXCC, and on 3 cm, using QRA64D and CW, **SV9/HB9CRQ (DXCC 38)** for a total of 170 mixed initials and 38 DXCC. On 1296, we still need the following 6 states to complete WAS: AL, AR, DE, KY, MS and WV. We can work easily stations running 1 yagi (40-70 el) and 15 W or 1.5 m dish and 10 W. Any help is very much welcome!

**IK1FJ:** valter [valter\\_dls@yahoo.it](mailto:valter_dls@yahoo.it) was **QRV** in the ARI Contest on 1296 – I was on for much of the contest but on Sunday in the afternoon the wind built up and I was forced to QRT. I only operated CW and made QSOs with DL3EBJ, LZ1DX, G3LTF, SM4GGC, PA3FXB, G4YTL, IK5VLS, IK3COJ, SP6AIF, ON5GS, SP6ITF, SM6CKU, W4OP, K5DN, K7CA, LZ2US, K2UYH, OZ4MM, HB9Q and DUP with DL3EBJ but on SSB. My total was 19 QSOs. On Saturday, the Sun was close to the Moon, and I

had a bit of degradation from the resulting noise. I lost some stations because they call for only 20/30 second and I could not tune in their signals quickly enough. Anyway, I enjoyed the contest and am now looking forward to seeing you in the ARRL Contest (on CW/SSB only). I am using a 3.2 m dish with about 700 W @ feed and < 0.3 NF LNA, but am working on a BIG tube amplifier that will replace my present Kuhne SSPA - see photo in the last NL.

**JA4BLC:** Yoshiro [ja4blc@web-sanin.co.jp](mailto:ja4blc@web-sanin.co.jp) reports on his recent activities -- We Japanese EMEers had our 10th JA-EME conference in KYOTO on 13-15 Sept. JF3HUC chaired the conference and also handled local arrangements. 55 EMEers attended from all over the country. It was a very full and enjoyable weekend. The next conference will be held in 2021, in the JA1 district and be led by JH1KRC. My EME activity at the end of the summer was very small. On 25 Aug I worked on 5760 JA1WQF (559/559). In the ARRL MW Contest, I worked on 5760 UR5LX (O/O), JA8ERE (579/559), OK1CA (559/569), K2UYH (O/O), G3LTF (559/569), UA3PTW (559/569) and SM6FHZ (569/559). The following weekend in the ARI Contest, I worked on 5760 JA6XED (559/559), JF3HUC (569/569) and OH2DG (569/569).

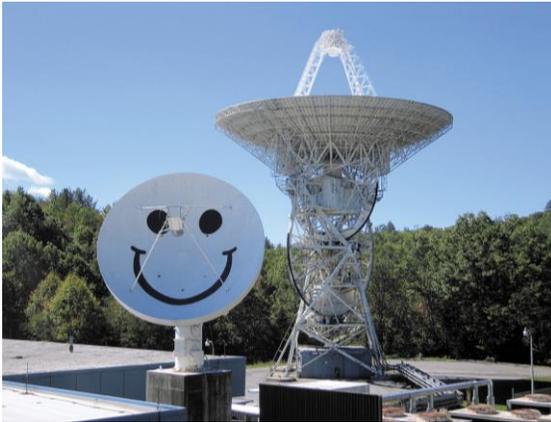
**KA1GT:** Bob [ka1gt@hotmail.com](mailto:ka1gt@hotmail.com) reports for the NL -- This month I've mostly been playing around with a small 10 GHz RX system using an 85 x 91 cm offset fed dish. I've added motorized polarization rotation to the linear feed. During the ARRL MW EME Contest I copied a number of stations using QRA64D including DJ5BW (16DB), OZ1LPR (10DB) and on CW (425), W3SZ (16DB), HB9Q (18DB), RA3EME (15DB), OK1KIR (15DB), OK1DFC (16DB), DF1OI (16DB), DL7KY (14DB) and SP6JWL on CW (425). A number of other stations were seen but not decoded. I was also on 1296 for part of the first day of the ARI EME Contest and made about a dozen QSOs.



**KB7Q's operation from WY with 38 el yagi**

**KB7Q:** Gene [geneshea@gmail.com](mailto:geneshea@gmail.com) had a highly successful mini dxpedition to WY on 432 – My 1 Sept trip to WY (DN54) for some 70 cm EME action came off with few issues. The IC-9700 continues to impress me, but of course a high-lonesome of the Beartooth Plateau is not much of a challenge for IMD. With my QRP station, 550 W

and a single long yagi, I was pleased to work 18 stations: DL7APV (21DB), DK3WG (26DB), PA2V (25DB), G4RGK (17DB), OK1KIR (17DB), ZS4TX (16DB), UT6UG (20DB), UA3PTW (13DB), UX5UL (20DB), DL8FDB (25DB), K4EME (22DB), ZS6JON (16DB), PH100KLM (19DB), PA0BAT (26DB), W7MEM (18DB), K2UYH (24DB), G4TYL (27DB) and DL8GP (26DB), all on JT65B. XE2AT was also decoded, but we didn't complete a QSO. I'm trying to do my part to up the activity on 70 cm! My most gratifying contact was with K4EME – despite some medical challenges, Cowles was able to get his whole array assembled and back into the air just in time to work me and knock off another State toward his WAS. That made the whole trip worth it right there. See Pictures and > info of the adventure at <http://kb7qgrid.blogspot.com>.



26 m dish at PARI

**KF4MYT:** Carmelo (KN4WRV) [ccpampillonio@gmail.com](mailto:ccpampillonio@gmail.com) reports on his group's effort to conduct EME experiments as part of an educational student research project -- During our artist residencies at Wave Farm (Acra, NY) and Pioneer Works (Brooklyn, NY), our project involved using moonbounce on the 1296 band to research how the *EME channel* affects signals (simple transmissions such as test tones, CW, voice, etc.). Our team consisted of me and Samuel Hertz, and Lamar (KF4MYT), our adviser and the CTO at the Pisgah Astronomical Research Institute (PARI) in Rosman, NC – see <https://www.pisgahconservancy.org/pisgah/pari.html>. The plan was to use a single 1296 23CM49 M2 yagi with a 60 W amp to send signals to the Moon that would be received with a 26 m radio telescope at the PARI center. However, a lightning storm put the receiver at PARI out of operation. We then scrambled to find a ham station capable of receiving their signals. Fortunately, several stations were able to participate. We sincerely appreciate their helping us with this project! PI9CAM was able to successfully receive us at Dwingeloo. Jan was kind enough to provide recordings and screenshots of the spectrum waterfalls. Jan could see our signal pretty clearly on the waterfall. Data from the OK1KIR and DJ5BV groups were also especially helpful. We're now analyzing the data. We are interested in how doppler shift affects transmission character through time, as well as how varying atmospheric conditions affect audio at different receiving locations. This is the reason why some of the test sounds, for example, were continuous tones with a fine-tuned, slowly changing

harmonic; while other sounds, such as the tuned "clicks", demonstrate doppler effect on impulses, which is important in audio processing studies of special interest to us. Our project is both an art and a research project. Our main goal was to collect as much documentation from our transmissions as possible. We sincerely appreciate everyone's cooperation and assistance – thank you!

**KL6M:** Mike [melum@alaska.net](mailto:melum@alaska.net) was QRV in the ARRL MW Contest and writes -- Not my best contest, but still had a fantastic time! I was on 13 and 9 cm made 7 QSOs including on 13 cm G4CCH for initial #60; but after only an hour of operation my AZ motor controller blew a fuse. I didn't know it would be an easy fix until the morning. It was pitch dark and pouring rain, so I went to bed. I changed feeds to 9 cm and worked only 7 QSOs. The highlight was the VKs. I worked VK3NX on my moonset at less than 2 degrees EL, but no other QSOs on moonset, despite a very good European window. I later worked VK4AFL (569/589) on his moonrise, and still later HB9Q (599/599) - thanks. I QSO'd WA6PY and G3LTF on both bands with excellent signals. It seems that activity was very low, but this impression could have been due to so many different bands in play at the same time. All my QSOs are on CW.

**KNOWS:** Carl [carlhasbargen@q.com](mailto:carlhasbargen@q.com) writes about his experiences on 3 cm during the MW contest -- Two years ago I was happy to have 11 QSOs on 13 cm for the ARRL MW EME weekend. Last year I had an ambitious plan to try 13, 9 and 3 cm all in the same weekend, but I had trouble with my gear and ended up driving off my northern property with no QSOs as the Moon rose high. I have had a year to repair gear, but apparently got distracted by other things! When I took my 13 cm amplifier apart two weeks ago for inspection, it seemed fine. It turned out my transverter had failed. I had been told by Kuhne that they do not like selling their transverters to folks who use the TS2000 because it can have power surges at the onset of transmission. My unit tends to do that, so I wonder if that is how the transverter failed. I hate to order another one, if I will just damage it, as well. So, this year I thought I would just try my little back yard 1.8 m dish on 3 cm on Saturday and on 6 cm on Sunday. As it turned out, although I saw W3SZ (17DB) and RA3EME (15DB) on QRAD64 during the first moonpass, I only had a single QSO with OZ1LPR (10DB) before I was rained out. Rather than switch to 6 cm for the next moonpass, I decided there should be more people to work on 3 cm. I was able to hear DF1OI (13DB), UR5LX (20DB), DC7KY (13DB), HB9Q (17DB), F5VKQ (DB18) and VE4MA (17DB) but only QSO'd OK1DFC (15DB), OK1CA (18DB) and OK1KIR (15DB) – all from OK. Four QSOs is a modest first weekend start, but it beats zero from last year! I think my 3 cm amplifier was only putting out about 18 W. WSJT-X version 1.8.0 kept having troubles, so perhaps I need to upgrade by next year? My contest preparation was compromised this year by a family medical event but do plan to be QRV for the ARRL Contest on 432 on Saturday and 1296 Sunday. My daughter-in-law, Amber, had a liver transplant and is still clinging to life. For those of you who pray, I would be grateful for prayers of support for her.

**LU1C:** Adrian [lu1cgb@gmail.com](mailto:lu1cgb@gmail.com) writes that LU1C will be active in the ARRL EME Contest – We're back this year with the LU1C call for the ARRL contest with the team of LU8ENU, LU1AEE and LU9DO. We are ready on 13, 23, 70 and 200 cm. We plan to test on 13 cm with a Pluto SDR driving an 20 W SSPA with a 1.8 m dish. We wish all a very good time on the contest!

**N5BF:** Courtney's [courtney.duncan.n5bf@gmail.com](mailto:courtney.duncan.n5bf@gmail.com) Sept 23 cm EME report – I made 13 QSOs in the Fall ARI event; but no initials. The Moon was near the equator, thus my normal 4-5 hour window with Europe was nearer to 1~2 hours each day. Further, the Moon was barely far enough off the Sun on Saturday for me to operate at all. With my 3 m dish, whenever I would update pointing, the noise would come up about 1 dB. I don't have the fine pointing resolution to do better. Several EU stations worked me urgently Sunday morning as their last QSOs of the contest. They were at 10 degs elevation or less. Of my 13 QSOs one was CW with the rest JT65C. Two of those were Italian stations, so my yet-to-be checked score is 32. Tried the Pacific pass Saturday afternoon, but my schedule and Moon window missed VK/JA by a few minutes on either side, so I didn't get to find out how well I can work bigger stations to the west through my current trees. All this notwithstanding, the contest went pretty well considering that I'm sitting on the bottom of the EME world here in Southern California. Before the contest, I made 8 QSOs on the 27/28 Aug weekend including an initial DG0FE (15DB/13DB) using JT65C for mixed initial #160\* and my 28th QSO with K5DOG. A change to a DB6NT LNA did not improve my sunnoise significantly. I wonder if SFUs are somewhat low this season? An attempt with ZL3RC did not succeed, although I did get a (30DB) decode of his CQ and saw the RRR traces during a QSO with another station. Roger and I will be able to make it once we've made some improvements on both ends. I'll be at MUD in TX, and hoping to learn more about feeds and LNAs there.

**OK1CA:** Franta [strijavka@upcmil.cz](mailto:strijavka@upcmil.cz) reports on his ARRL MW EME Contest operation -- I was QRV in MW Contest on Saturday on both 13 and 6 cm using two feeds at the same time. In the focus of my 10 m dish, I had a feed (and TRX) for 6 cm, and mounted above it another feed for 13 cm (with an LNA). The 6 cm feed is right at dish boresight. When I switched to 13 cm, I had to move the antenna's elevation + 2°. I worked a total of 13 QSOs using CW on 13 cm including an initial with PA0PLY for #152; and using JT65C UA3TCF for a digital initial (#16). On 6 cm I made CW QSOs with JA4BLC, UR5LX, JA8ERE, SM6FHZ, VE6BGT and VE6TA. Due to the high declination of the Moon, signal spreading was higher than usual. On Saturday afternoon I installed equipment for the 3 cm band in my 4.2 m dish. I was QRV shortly after my moonrise but worked only SP6JLW, OH2DG and OK1DFC all with CW. From JA, I heard only JA1WQF on both CW and QRA64D, but I couldn't connect with him using CW crossband. On Sunday morning on 3 cm, I QSO'd ZS1LS (#33) using QRA64D from JF96 and several more CW stations including an initial with WA9FWD #93 – this is the 6<sup>th</sup> band that I have worked

John on EME! I also connected using QRA64D with KN0WS (# 34). At 3 cm I measured the sunnoise at 18.4 dB (SFU 66) and the moonnoise as 3.4 dB. I made 28 QSOs on CW and 4 QSO on digital for a total of 32 QSOs in two days of operation on three bands. Both days, the WX was beautiful with very low relative humidity with a minimum of 40%.

**OK1DFC:** Zdenek [ok1dfc@seznam.cz](mailto:ok1dfc@seznam.cz) is QRV again and was active in the ARRL MW Contest -- I was QRV during the MW weekend with my new 2.4 m offset dish - (See my webpage for more details). Contest seemed activity lower than in the past, but I still worked 28 QSOs. RX performance of the new dish is excellent. Operation was using CW unless noted (mainly QRA64D). Stations contacted were OZ1LPR, DLOEF for initial #23, RA3EME on JT for digital initial (#27), F5VKQ on JT (9DB/12DB) (#28), F4VTA on JT (10DB/11DB) (#29), W3SZ on JT (9DB/15DB) (#30), SP6JLW, G4NNS #24, OK1CA on JT (8DB/14DB), OK2AQ, UR5LX, JA1WQF, SP3XBO #25, OK1CA DUP, ZS1LS on JT (12DB/14DB) (#31), HB9Q on JT (9DB/14DB), OK1KIR on JT (6DB/10DB), 9A5AA #26 and DXCC 25, KN0WS on JT (16DB/19DB) (#32), SM2CEW #27, K2UYH on JT (13DB/13DB), WA9FWD #28, PA0BAT on JT, DB6NT, VE4MA, OH2DG, DF1OI and VE4MA on JT (17DB/14DB). I heard WA6PY in QSO twice, but did not find him with a CQ. During week after the contest I added on 25 Sept at 1152 SM6CKU using JT4F (19DB/17DB) (#33), 1320 SM6CKU (559/559) #30, 1336 OK2AQ (O/O) #31 and 1401 OK2AQ on QRA64D (13DB/12DB), and on 26 Sept at 0405 VK7ZBX in QE37PH using QRA64D (14DB/18DB) (#34) and new distance record on 16,357 km and 0721 F1PYR (579/569). Unfortunately, I was not at home during weekend and missed the ARI EME Contest. I am working on feedhorns that I will use to test my dish on 24 GHz. I expect to be QRV there with in a week. On 6 and 9 cm I need to extend my feeds with flares and will test on those bands with the 2.5 m dish soon. The building of a new 8 m offset dish is in progress. I have in production the mast made from a 600 mm dia pipe that is 3.8 m long with gears for azimuth, and also the system for elevation. So, I hope to be back on lower bands soon too. If anybody want try a QSO, send me an email. More info is at <http://www.vhf.cz/text-arrl-eme-mw-cast-u-ok1dfc/>.



OK1DFC's new 2.5 m dish with 3 cm feed

**OK1KIR:** Vlada and Tonna [vlada.masek@volny.cz](mailto:vlada.masek@volny.cz) send news on their Aug/Sept/Oct EME – In Aug we finally found a good day for a 3 cm trial with ZL3RC in RE66FL. It was a quite short window at very low elevations just at our MR and Roger's MS. The MR elevation forced Roger to find a suitable outside place (winter time in ZL). Besides all the troubles Roger had to overcome finding a suitable portable site, a (HV 220 kV line, just above him, was disturbing his PC. His PC had the wrong time. He was only able to point to the Moon after calibrating with the Sun. Nevertheless, we succeeded on 24 Aug at 2256 using CFOM QRA64D mode **ZL3RC (19DB/17DB)** for digital initial {190}. We received a nice 1000 Hz tone at 2234 at 2 degs. It was only Roger's second 3 cm EME QSO, but it **established a new OK distance record of 18,213 km!** Roger used a 1.2 m dish and 60 W, which was left there by VK7MO after his 3 cm world record QSO with G3WDG. Our sincere TNX to Rex! On 24 Aug, we also worked on 3 cm CFOM with QRA64D at 0852 OK2AQ (17DB/13DB) when testing equipment. On 70 cm, we QSO'd on 1 Sept at 1621 **KB7Q (15DB/O) {#238} portable in WY**. After we switched to 3 cm, where we tried with **ZS1LS** but only (-/17DB). It was probably due to Allan's trouble with pointing his 3 m dish to Moon. We were next QRV for the ARRL MW Contest. We participated only on 13 cm. We worked on 21 Sept using CW at 0003 OK1CA (579/579), 0017 UA3PTW (569/589), 0021 RA3EME (569/579), 0038 JJ1NNJ (559/559), 0057 G3LTF (569/579), 0105 SP6OPN (579/569), 0206 SP3XBO (559/569), 0437 PA0PLY (559/559) for initial #174, 0626 WD5AGO (559/559), 0728 K2UYH (569/569), 0916 PA0BAT (579/579), 0928 OH1LRY (559/579), 0950 WA6PY (569/579), 1001 KL6M (579/579), 1043 G4CCH (579/589), 1119 HB9Q (599/599) and 2349 DL7YC (579/579); and on 22 Sept using CW at 0435 OK1KKD (569/569), 0449 F5JWF (569/589) and 0959 VE6TA (579/589), and using JT65C 0330 UA3TCF (18DB/19DB), 0338 PA0PLY (14DB/6DB) for digital initial {#68}, 0416 RA3EME (13DB/12DB) {#69}, 0537 PA0HRK (9DB/8DB) {#70}, 0614 G4BAO (15DB/18DB), 0814 WA3RGQ (19DB/O) and 1132 LU1CGB (22DB/O). LZ1DX was decoded with JT65C, but CWNRR as Ned was having trouble with RX. We had terrible interference on 2301.9 (VK band) and on 2304 (KL, etc.) when beaming towards Prague capital during MR at low elevations. It was probably due not only to WiFi, but also by growing the growing amount of mobile LTE base stations. Fortunately, we were able to eliminate this interference by inserting a big filter (7 resonators for BW of 2300-2320) with extremely sharp attenuation skirt below 2300 after our VLNA (G4DDK). The filter is bypassed by a transfer relay to enable receiving of JA stations. We hope that this fix will remain successful for some time! On 22 Sept when the 13 cm band was silent, we switched to 3 cm after finding a few new initials on the HB9Q logger. After solving a strange problem with WSJT-X decoding, we worked (out of the contest) using QRA64D at 0716 **ZS1LS (16DB/10DB) {#191}** and JF field, 0726 OK1DFC (10DB/6DB), 0732 W3SZ (8DB/9DB) {#192}, 0750 RA3EME (9DB/9DB) {#193} and 0836 KN0WS (21DB/15DB) {#194}; and using CW 0904 WA9FWD (O/O) for initial #128 and WI as new US State.

Unfortunately, we did not catch UA3TCF before his MS. When we found on HB9Q a new station on 13 cm, we again reinstalled the 13 cm feed to get VE6TA and LU1CGB as multipliers for the contest. **Our total count on 13 cm for contest 27x19 (22 CW + 5 JT65C QSOs).** We apologize to others on 3 cm for being in the contest on 13 cm, not on 3 cm or in multiband class, where the participation without the 2 m band makes no sense if you want to be competitive in the contest. On 3 cm we tried to QSO on 26 and 27 Sept EA8DBM (heard and CWNRR at OK1DFC and OK2AQ), but Alex suffered all the time from 3 m dish pointing difficulties and was only able to hit the Moon just occasionally with only up to 1.5 dB of Moon noise. Our long trial was closed when Alex announced a serious failure of his tracking gear. We did work on 24 Sept on 3 cm using QRA64D at 0536 JA1WQF (14DB/12DB), 0715 F6BKB (12DB/10DB) {#195} and 1144 OK2AQ (13DB/10DB). **We returned to 3 cm for the ARI Trophy** and worked on 28 Sept using CW at 0906 IW2FZR (559/579), 0912 G4NNS (559/579), 0933 OH2DG (569/579), 0950 UA3TCF (549/559) #129 and 1322 OK2AQ (O/O); (at MR ZL3RC cancelled announced operation due to gusty winds); using QRA64D at 0518 OK2AQ (13DB/15DB), 0634 JA1WQF (11DB/12DB), 0751 UN6PD (13DB/10DB), 0807 F6BKB (12DB/10DB), 0840 UA3TCF (15DB/11DB) {#196}, 1026 SM6CKU (17DB/17DB) with JT4F {#197}, 1217 W3SZ (18DB/11DB) with JT4F; (we then had a PC problem with decoding on WSJT-X and were forced to continue only with WSJT10 and to ask for JT4F and performing a manual CFOM); and 1237 F5VKQ (18DB/12DB); and on 29 Sept using CW at 0852 DB6NT (579/569), 0920 9A5AA (559/569), 0932 DL4DTU (O/O) #130 (their first 3 cm EME QSO with 1.8 m dish and 50 W), 1050 UR5LX (549/559), 1148 SM6CKU (549/569) and 1234 LX1DB (589/589), and using JT4F [?] 1126 DL4DTU (15DB/16DB) {#198}, 1224 DL6ABC (11DB/16DB), 1330 G4RFR (13DB/17DB) and 1507 M0EYT (13DB/15DB). We also heard DC7KY (13DB) and OZ1LPR (10DB) when working DL4DTU. **In the ARI contest we ended with 11 CW and 12 digital QSOs but only one I multiplier (IW2FZR) for 168 points in B-mixed category on 10 GHz.**



**ZL3RC checking Sun noise on 3 cm end of QSO**

**OK2AQ:** Mirek [mirek@kasals.com](mailto:mirek@kasals.com) reports on experiences during the MVAW, and MW part of the ARRL EME and the ARI Contests all on 10 GHz -- As usual, I operated from my cottage in the JN89eu. During the MVAW for 3 cm on 24 Aug and for 6 cm for 25 Aug there was unfortunately very low participation. Even some other active stations were only on the logger. I worked on 10 GHz using QRA64D OH2DG (14DB/14DB), OK1KIR (13DB/17DB) and F5VKQ (19DB/19DB) for mixed initial #69\*, and on Sunday using CW SP6JLW (O/O). Most of my time was spent for experiments to measure the frequency accuracy, and Sun and Moon noise measurements. After my QSO with OK1KIR, we compared frequency and found that our frequency did not differ by more than 15 Hz in absolute terms, including the Doppler offset compensation of ~ -11 kHz and the signal's spread by the Moon's libration of 115 Hz. I again checked my system on Friday (20 Sept) prior to the ARRL contest, which yielded a sunnoise of 9.5 dB at SFU of 60, and a moonnoise of 0.6 dB. All was OK. I have a new LO synthesizer in my MW transverter that I wanted to test in operation. I worked in the ARRL MW Contest using QRA64D OZ1LPR (11DB/18DB), OK1DFC (14DB/12DB), UR5LX (18DB/16DB), RA3EME (12DB/16) #70\*, W3SZ (18DB/18DB) #71\*, PA0BAT (17DB/13DB), HB9Q (14DB/24DB), OK1CA (15DB/13DB), F5VKQ (15DB/15DB), DF1OI (13DB/15DB), VE4MA (17DB/15DB), DL0EF (13DB/16DB) using JT4F, and with CW SP6JLW (O/O) and OK1CA (O/O) for a score of  $(13 \times 100) \times 11 = 14300$  points. During the ARI EME Trophy compared to the previous weekend, the Moon's declination was significantly lower and the Moon was in perigee. Smaller spread and very little degradation meant really good conditions. On Saturday morning, I had a sked with ZL3RC in a 10 minute common window. However, Roger could not set up his 4' dish because of strong wind and we could not run. I began the contest on JT65C with OK1KIR (10DB/13DB) and then had a nice crossband QSO with JA1WQF (14DB/13DB). I then switched to QRA64D to QSO UN6PD (19DB/17DB), UR5LX (17DB/15DB), SM6CKU (17DB/16DB), UA3TCF #75\* (17DB/18DB) and DL6ABC (15DB/20DB); using JT4F F5VKQ (13DB/13DB), W3SZ (16DB/15DB), F6BKB #76\*, DL4DTU #80\* (15DB/19DB), G3RFR (15DB/17DB) and M0EYT #81\*. Also succeed using CW with IW2FZR (O/O) #74\*, OH2DG (O/O) #77\*, OK1KIR (O/O), G4NNS (O/O) #78\* (O/O), DB6NT (O/O) #79\* and LX1DB (559/559). Overall, I made 19 QSOs with my 1.2 m offset dish, 42 W on TX and 0.8 dB NF LNA. My score was  $[(6 \times 4) + (13 \times 1)] \times 2 = 74$  points.

**ON0EME:** Eddy (ON7UN) [ejespers@telenet.be](mailto:ejespers@telenet.be) reports that the beacon SSPA has continued to have troubles since the last NL – In the beginning of Sept, the PA was re-installed again. We received several suggestions on the mods, and implemented the following changes to our W6PQL PA. 1) The output board was glued to the copper spreader using Silver Epoxy (CW2400). 2) The soldering of the components back to the new board was done using Pb, Sn, Ag solder (2% silver). 3) A new MRF13750H has been soldered to the heat spreader. 4) 4 output capacitors in parallel were mounted vertically at the output. 5) The VDD is now set at 40 VDC and the output power is around

400 W. We cross our fingers and hopefully these modifications will hold. [Since this report we have heard of no 1296 Beacon problems. Eddy reported very consistent performance].

**ON5GS:** Dirk [dirk.reyners@telenet.be](mailto:dirk.reyners@telenet.be) had terrible WX during the ARI Contest on 1296 -- I unlocked my dish and pointed it to the Moon despite the awful rain and wind. There was some activity, although the signals seemed weaker than in past contests. I was QRV on Saturday from 1200 to 1530 and worked using CW SP6ITF, DL3EBJ, SM4GGC, G3LTF, IK1FJI, SM6CKU, IK3COJ and K5DN; and using JT65C VE3KRP, LU8ENU, IW8RRF, LZ1DX, DL3EBJ and K5DOG for a total of 14 QSOs. My thanks to LZ1DX, who switched to SSB to make a voice contact with me. Ned had a very strong signal!

**PA0PLY:** Jan [pa0ply@pa0ply.nl](mailto:pa0ply@pa0ply.nl) reports on his ARRL MW Contest on 13 cm -- The day before the contest, I was checking my 2320 system and found G4BAO QRV. We QSO'd fairly easy (18DB/15DB). During the contest I was visited by Murphy in various ways; I had an RFI problem with my VK5DJ dish controller, and had to switch to manual tracking during the first Moon pass. Luckily the Moon was perfectly visible. After switching from the JT to the CW mode, the WSJT-X program did not want to CAT control my TS2000X anymore. I was able to find a work around and had the TRX function controlled by WSJT-X. During the second pass, I was able to kill the RFI in my controller, which made operating much more convenient. So far no solution to CAT problem with the TS2000. I may have damaged the RS232 driver in the TS2000. [WSJT-X is not CW friendly. Try changing the rig control to no rig]. I worked using JT65C unless noted UA3PTW, OK1KIR (and CW), RA3EME, OK1CA (CW only), G3LTF (CW only), G4CCH (and CW), OH1LRY, WA3RGQ, PA0BAT, PA0HRK, DL7YC (CW only) and SP3XBO (CW only) for a total of 12 QSOs. This was my first time running 13 cm in a contest. Signals were great; but due to XB (crossband) operation, it was a little confusing as how to operate. I would hear European stations calling on 2304 and 2320. It seems XB only works calling on 2320 and listening on 2304, and not vice versa, Hi. [I call and call CQ and CQX on 2304 but rarely get a reply on 2320]. I need to review the PLL oscillator hard version to see if I can also RX on 2400 for the JAs. I ran a 3 m dish and approx 50 W at the feed with a G4DDK LNA. [See the FOR SALE section for info on the status of the 24 GHz KLNAs].

**PA2DW:** Dick [gtc@kpnmail.nl](mailto:gtc@kpnmail.nl) had some problems during the ARI Contest -- The contest was a total disaster here. First of all, we had heavy rain, which caused the trees that are partially blocking my Moon window to have wet leaves. I found that leaves attenuate much more on RX than on TX especially when they are wet. My neighbor saw my sad face in the garden when I tried to remove some branches and said he will cut the tree for the next day. This was very nice of him; however, the storm was much worse on Sunday and forced me to keep the dish in the locked position. Another handicap was the sunnoise. The Sun is rather active these days and was close to the

Moon during my window. A 2.4 m dish has a relative wide angle on 23 cm, so I did pick up a lot of sunnoise. The bottom line is that all I made was just two QSOs on 23 cm. On 3 cm I could not operate at all because of all the rain. The PA is unprotected against rain, so I had no chance to activate 3 cm. What a day!

**PH100KLM:** Peter (PA2V) [peter@pa2v.com](mailto:peter@pa2v.com) sends news on PH100KLM -- I am activating this special events call from time to time on 432 EME to celebrate the 100th anniversary of KLM. I particularly want to complete WAC using this call. Please have a look for PH100KLM on the next high declination weekend in Oct. I will be on HB9Q most of the time. WSJT software versions have some difficulties with extremely long call. It is just too many characters with some station calls. With short calls it is not a problem. When this happens, just sent the missing parts in the next transmission (the remaining letters). QSL cards for PH100KLM can be send via buro or direct via PA3DVA. Have a look at <QRZ.com> for more info.

**SM2CEW:** Peter [sm2cew@telia.com](mailto:sm2cew@telia.com) was active on 3 cm during the ARRL MW weekend – I was only QRV for limited time around my moonset. I worked SP6JLW, OH2DG, DB6NT for an initial (#), OZ1LPR, OK1DFC (#) and RA3EME (#), for a total of 6 QSOs all using CW. The strongest signal heard was W7CJO, but unfortunately I never heard Jim call CQ. I did CQ quite a bit, but it seemed as if I was not being heard by others, despite having good echoes. Maybe people were chasing stations on the logger instead of listening carefully on the band. Due to the low declination (restricted visibility) and daytime Moon – conflicting with a multitude of social commitments, I could not be for the ARI contest.

**SM4GGC:** Stig [sm4ggc@gmail.com](mailto:sm4ggc@gmail.com) operated in the ARI Contest on 1296 – I worked on Saturday using CW SP6ITF, LZ1DX, DL3EBJ, IK3COJ, G3LTF, IK1FJI, G4YTL, LZ2US, SM6CKU, ON5GS and W4OP, and with JT65C IW8RRF, ES3RF, PA3FXB, JA6AHB, LA3EQ, DL3EBJ, LZ4OC, LU8ENU, RN6MA, IK5VLS, LZ1DX, K7CA, K5DOG and N5BF; and on Sunday using CW F6ETI, OZ4MM, IZ1BPN, F5KUG, IK5VLS, PA3FXB and IK5QLO, and using JT65C VK3AXH, VK2JDS, SM6CKU, HB9Q, SV1CAL, DF2VJ, OK1YK, DL7UDA, I7FNW, DK0ZAB, VE3KRP, K2UYH and OK1IL. I ended with 18 CW QSOs and 27 JT65C QSOs for a total of 45 QSOs. On Saturday my reception degraded by Sun noise about 1 dB. The WX was not optimal with periods of on and off lite rain, but did not significantly affect my operation. The station remains a 3.9 m dish with septum feed, 500 W TX and a G4DDK LNA.

**SM6CKU:** Ben reports his activity on during the ARI Contest weekend – Although I was QRV during the 28/29 Sept weekend, I did not participate in the contest. I worked on Saturday, on 10 GHz OK2AQ, OK1KIR, F5VKQ, UN6PD and UA3TCF using digital modes, and on 1296 SM4GGC, W4OP, G3LTF, SP6ITF, ON5GS, K5DN, IK1FJI, DL3EBJ, IK3COJ, PA3FXB and LZ1DX using CW, plus EW1AA with JT65C; and on Sunday, on 1296 PA3FXB, IW8RRF, SM4GGC, OK1YK, LA3EQ, DF2VJ,

IK5VLS, LZ4OC and SV1CAL using JT65C, and F5KUG, OZ4MM, F1PYR and IK5VLS on CW, and on 10 GHz 9A5AA and OK1KIR on CW, and DL6ABC and W3SZ using JT4F. Activity was not high on either band. All together I made 38 QSOs with 21 on CW and 17 on digital modes. I used on 23 cm an 8 m dish and 400 W, and on 3 cm a 4 m dish with a CP feed and 15 W.

**SM6HFZ:** Ingolf [ingolf.fhz@gmail.com](mailto:ingolf.fhz@gmail.com) reports on his 6 cm activity during the ARRL MW Contest -- I was only QRV on 6 cm during the contest; and can reiterate comments that 6 cm seems to have lost its popularity when compared to previous years. I managed to make QSOs on 21 Sept with OK1CA, UR5LX, VE6BGT for an initial (#) and VE6TA, and on 22 Sept JA4BLC, G3LTF, UA6PTW and F5IGK (#) for a total of 8x7. All QSOs were on CW and without any logger soliciting. It was a great pleasure to work 2 new stations without any pre-notice. This was a very nice surprise. I heard no other stations on the band, but understand I missed a few. Maybe because I did not call CQ constantly on an empty band, nor operated all night. I did spend 45 minutes early Sunday morning on the Moon, but went back to resting afterward. No US stations were heard. This was quite a surprise. I do understand that running multi-band during this contest is a masterpiece in compromise.

**SP6JLW:** Andy (SP6JLW) sends news of the Klodzka Grupa's EME activity during the ARRL MW Contest -- We worked in parallel (continuously) on two bands, 13 and 3 cm. We have equipment for two other microwave bands (6 and 9 cm), but a few years ago we decided that during the contest we would not change antennas/feeds during the contest. We also felt that changes in the ARRL EME Contest rules would increase participation. We operated in the CW only, multi-operator, single band category with SP6OPN on 13 cm and SP6JLW on 3 cm. On 13 cm, SP6OPN scored 12x10 with RA3EME, UA3PTW, OK1KIR, OK1CA, G3LTF, SP3XBO, K2UYH, WA6PY, KL6M, F5JWF, ON5RR and VE6TA. On 3 cm, SP6JLW scored 23x19 with OZ1LPR, RA3EME, DL0EF, SP3XBO, IW2FZR, F5JWF, WA6PY, F5IGK, WA9FWD, OH2DG, SM2CEW, W7CJO, OK1DFC, OK1CA, JA1WQF, OK2AQ, W3SZ, DB5NT, 9A5AA, UR5LX, G4NNS, VE4MA and K2UYH.



SP6OPN used a 6.5 m dish on 13 cm and SP6JLW used a 4 m dish for 3 cm

**SP9VFD:** Rafal [sp9vfd@protonmail.com](mailto:sp9vfd@protonmail.com) in JN99 is preparing for ARRL EME Contest operation on 70 cm in a big way -- EME had fascinated me since I started in the hobby back in 1991 at the age of 15. At the time, my favorite reading was the UHF guide by SP6LB. But it was not until 2007 that I made my first EME contact on 144. Using 4 x 9 el F9FT yagis mounted on a balcony. Since then I have made dozens of 144 EME QSOs. After many years, I am now returning to the EME on 432. I am presently assembling of 8 x 23 el DK7ZB yagis with a gain of ~ 17 dBd (length 560 cm). I have checked each yagi individually. I have all the pieces for the phasing harness including 8 IOJXX splitter with 8 N sockets and one 7/16 connector. The antenna rotation system is in place in the array trolley. Tracking is still realized manually but I have an HB OE5JFL controller finished and HH-12 encoders. I have a TS-2000X and a IC-9700 plus a parallel SDRplay RSPduo receiver. QRO is under preparation with the first 400 W LDMOS SSPA near final test, and a 2xGS35b tube PA on the deck. I plan to be QRV before the first part of ARRL EME contest using both JT65B and CW. Look for me on 70 cm.



**SP9VFD's 70 cm LNA box**

**UR5LX:** Sergey [ur5lx@ukr.net](mailto:ur5lx@ukr.net) (KO70wk) was on 6 and 3 cm in the ARRL MW Contest -- I used my 2 m offset dish on both band with 40 W on 6 cm where I QSO'd JA4BLC, OK1CA, JA8ERE, SM6FHZ and VE6BGT for initial # 44. On 3 cm, I used 20 W and worked OK1DFC for an initial #95, OK2AQ, RA3EME, JA1WQF, OZ1LPR, ZS1LS #96 new DXCC and Africa for WAC, OK1CA, SP6JLW and W3SZ #97. I ended with a score on 6 cm of 5x4 and on 3 cm 8x6 for a total of 13x10. [Sergey suggests that the ARRL MW Contest be changed to be similar to the DUBUS contests with multiple weekend. But where do we find all the weekends?]

**VE3KRP:** Fast Eddie [eddie@tbaytel.net](mailto:eddie@tbaytel.net) sends info on his Aug/Sept 23 cm EME activity -- I worked on 23 cm, on 31 Aug using JT65 WX4F, RA2FGG and N5BF; I was next on the air to give out a few points to the guys in the ARI Contest, but it was windy that weekend, so my dish time was limited, on 28 Sept using JT65C DL3EBJ, LZ1DX, IK5VLS, PA3FXB, ES3RF, ON5GS, IW8RRF, LU8ENU, K5DOG and K7CA, and on 29 Sept using JT65C SM4GGC, DF2VJ, I7FNW, OK1YK, SV1CAL and K2UYH.

My ARI total was 15 QSOs. It's getting cold here (first frost this weekend), and almost time to announce the antenna season over.

**VE6BGT:** Skip's [macaulay.skip@gmail.com](mailto:macaulay.skip@gmail.com) Sept submission -- I finally got to test my new 6 cm feed assembly during the ARRL MW contest weekend. I had been testing it with echoes before this and had found an intermittent IF cable from the transverter. I believe I now have all the bugs worked out - finally. The first night, I worked SM6FHZ (559/559) for my 1st contact, then OK1CA (569/559), HB9Q (569/579), UR5LX (559/339) and VE6TA (449/449). The next day I was swinging the dish over to swap feeds to go on 9 cm, and as I watched the dish move, I received an email from G3LTF asking me to consider getting on 6 cm. I decided to stay on 6 cm and later worked G3LTF (579/579), UA3PTW (559/449) and SM6FHZ (569/569) DUP. So, I ended with a score of 7x7 on 6 cm only. I was quite tickled at how good everything worked except the RF output sample port off from the 100 W dual GaN amp. It wasn't showing me a reliable output back in the shack. I went off the GaN drain current and adjust the drive to what I thought was around 80 W. Later on, I hooked it up on the bench and was surprised that I was probably only putting out 50 W, if lucky! I now need to rework the output indication circuit.

**VK4AFL:** Trevor [tbenton@bigpond.net.au](mailto:tbenton@bigpond.net.au) was QRV on 9 cm in the MW contest -- I only worked three stations in the contest, WA6PY, KL6M and VK3NX. All were easy QSO. I am finding that 3.4 GHz is an excellent EME band apart from the non-international frequency allocation with strong signals from stations using low power. Manual tracking and Doppler correction is also not difficult.

**WA6PY:** Paul's [pchominski@maxlinear.com](mailto:pchominski@maxlinear.com) MW EME Contest report -- I was QRV in the contest and QSO'd on 3 cm 9A5AA, DL0EF, F5JWF, G4NNS, IW2FZR, OH2DG, OZ1LPR, SP6JLW and VE4MA on CW. I heard SP3XBO and OK1DFC and very often some strong digital signals. When I didn't hear any new station, I switched to 13 or 9 cm. On 13 cm, I worked G3LTF, KL6M, OH1LRY, OK1CA, OK1KIR and SP6OPN. I also heard K2UYH. On 9 cm, I QSO'd G3LTF, KL6M, OH1LRY, SM3BYA, VK3NX and VK4AFL. Someone called me in parallel with OH1LRY, but they never come back again. I ended with a score on 3 cm of 9x9, on 13 cm 6x5 and on 9 cm 6x5 for a total of 21x19. Changing my system over to 6 cm takes me over one hour in the dark. Having a relatively short window to EU, I decided to keep 9 cm on the dish and a try to work some VKs few hours later. VK4AFL was on 3399.800. I called CQ for 20 minutes on 3399.800 without success, then I tried to recall on the frequency that I had worked VK3NX few years ago. I don't have a computer with emails in the shack. Intuitively, I tuned 2 MHz down from 3400.100, to 3398.100, and called CQ twice. Fortunately, VK3NX called me back. I think we should agree upon a common EME calling frequency for the 9 cm band in VK, which will be convenient also for EU stations. Working efficiently world-wide on 5 microwave band including 24 GHz in one weekend is simply impossible. On the top of this overcrowded band selection problem, activity is

divided between CW and digital modes. Some years ago I did 25 QSO's on 13 cm, 9 QSO on 9 cm and 12 QSO's on 10 GHz. This weekend I've have less than half of that total even though there was a similar Moon declination.

**WK9P:** Tim [тчerrone@yahoo.com](mailto:тчerrone@yahoo.com) is coming on 1296 EME and sends history -- I was first licensed 25 years ago, and am a HB tube guy at heart. I've made some 2 m EME contacts on JT65, but I am really interested in 1296 EME. N4PZ turned me on to 1296 by demonstrating S8 echoes in his shack. With his help I met N8OU, who give me a 14.5' dish and a few other items including (4) tube GS15B cavity PA. I now have the dish mounted with a feed and am copying ON0EME S7 to S8; and hope to be QRV in the ARRL EME Contest this year.



**WK9P's 14.5' dish with 1296 feed**

**ZS1LS:** Saul [allan@rfdesign.co.za](mailto:allan@rfdesign.co.za) is now QRV on 3 cm and was active in the ARRL MW Contest -- I have been assembling a 3 cm quick change feed system for some time and was able to do some initial tests in late Aug that resulted in contacts on 24 Aug with OH2DG using QRA64D and on 31 Aug F5VKQ using JT4F. From these results, it became apparent I had some dish pointing errors to deal with as well as needing a way to confirm I was actually transmitting RF, back in my shack. Some modifications ensued. On the weekend of the MW contest, it did not look promising as it was raining all day on Friday. However, it cleared up sufficiently on Saturday morning to get the feed up for the Moon pass. I managed to work HB9Q, W3SZ and OZ1LPR using QRA64D – although not in the contest. On Sunday, I worked RA3EME, OK1CA, OK1DFC, DL0EF, UR5LX, OK1KIR and DF1OI all using QRA64D for 7 contest QSOs. My equipment consists of a 3 m RFhamdesign dish with 1.2 mm mesh and 18 W at

the feed using vertical polarization. My LNA is a waveguide X-LNA type. Further improvements that need attention are a system to measure Moon noise and getting CW operation figured out. Although I am not sure that I have enough transmit power, I am told these 3 cm tests are a first from ZS.

**OK1TEH:** Matej [ok1tehlist@seznam.cz](mailto:ok1tehlist@seznam.cz) writes – I was QRV only during Sept ARI Contest on 70 cm with my single yagi and worked DL7APV (14DB), HB9Q (15DB), JA6AHB (24DB) and ZS4TX (28DB) for 4 QSOs, all using JT65B. I saw but did not work PA2V and DK3WG. I am looking forward to working more of you on 432 during upcoming ARRL EME Contest.

**K2UYH:** Al [alkatz@tcnj.edu](mailto:alkatz@tcnj.edu) reports – I was active for the 6 cm MWAW on 26 Aug, but was disappointed by the low turnout and only QSO'd at 0940 OH2DG (559/559), 0950 G3LTF (559/569) and partial at 0955 SM6CKU – QRZ, but was lost. I was using CW and heard no digital activity. I had planned to operate the next day on 3 cm, but it was raining and windy; so I decided it was not worth the effort. I was on 432 on 1 Sept to work at 1809 KB7Q (20DB/O) using JT65B in WY for mixed initial #990\*, and again after switching preamps at 1857 KB7Q (16DB/O). For the ARRL MW Contest I was joined at different time by K2QVF, NE2U, W2ORH and K2YY. We had a good time; but I was disappointed by our results, which were down on all bands except 3 cm, where I had problems last year. We started on 21 Sept on 13 cm and worked using CW at 0722 G3LTF (569/569) XB, 0732 RA3EME (559/559), 0753 G4CCH (579/579) XB, 0806 OK1CA (569/579), 0816 HB9Q (589/579), 0819 SP6OPN (579/569) and 0833 UA3PTW (569/559) - G4LDR was called XB many times without reply, then switch to 6 cm to QSO using CW at 1031 G3LTF (559/559), 1033 HB9Q (579/559), 1142 VE6TA (559/559), 1355 JA8ERE (559/559) and 1519 JA4BLC (559/559); the next day on 21 Sept we started on 3 cm and worked using QRA64D at 0727 RA3EME (9DB/12DB) for mixed initial #44\*, 0802 OZ1LPR (7DB/16DB), 0814 OK1DFC (13DB/15DB) and on CW 0906 SP6JLW (579/579) – (usually the problem on 3 cm is hearing, but this time it was being heard; we called many times without response), finally switched to 9 cm to work using CW at 1048 G3LTF (579/569) and 1056 KL6M (569/569), and with JT65C at 1124 HB9Q (1DB/8DB) 1138 KD3UY (16DB/14DB) and 1214 WA3RGQ (9DB/O) for mixed initial #64\*. It was at this point that my AZ drive failed. It turned out that after more than 30 years, the welds on the bracket that holds my drive motor in place had failed. It seemed impossible to quickly fix. I went thru my junk and found a bracket from a bed frame that I was able to make work. I switched to 13 cm to add at 1444 WD5AGO (559/559). I took a short break and when I returned moved my dish around to my VK/JA window, but discovered that my fix needed additional tweaking. I was going to look for the VKs on 9 cm. However, by the time I was ready to operate again, the Moon was too far into the trees to see moonnoise and I never found my echoes. It was a very frustrating way to end the contest. We scored on 13 cm 8x5, on 9 cm 5x5, on 6 cm 5x4 and on 3 cm 4x4 for a total of 22x18. Less than our usually score on 13 cm

alone. I also operated on 1296 during the ARI Contest. I contacted on 28 Aug using CW at 1524 WA6PA (559/-) lost, 1531 SP6ITF (559/579), 1534 W4OP (569/569), 1546 LZ2US (579/589), 1550 IK3COJ (559/569), 1600 IK5VLS (559/559), 1610 DL3EBJ (559/569) and 1634 IK4FJI (559/579), and on JT65C 1650 K7CA (1DB/6DB), 1658 DL3EBJ (1DB/10DB), 1704 N5BF (3DB/14DB), 1711 LU8ENU (14DB/9DB) and 1724 KA1GT (4DB/4DB), and using CW 1828 N5BF (559/569); and on 29 Sept using JT65C at 1428 SM4GGC (22DB/18DB), 1434 PA3FXB (16DB/O), 1438 I7FNW (20DB/15DB), 1446 DF7VJ (20DB/19DB), 1454 IK5VLS (12DB/15DB), 1504 OK1IL (8DB/16DB), 1516 IW8RPF (19DB/17DB) for mixed initial #613\*, 1524 ES3RF (10DB/O) #614\*, 1528 SV1CAL (11DB/O), 1534 VE3KRP (10DB/12DB) and 1628 LZ1DB (6DB/19DB), and on CW at 1644 K5DOG (3DB/1DB), 1721 G4FQI (1DB/4DB) and 1728 XE1XA (1DB/1DB), and finally on CW at 1737 XE1XA (569/569) for at total of 29 QSO both CW and JT. I like the idea of counting both CW and JT contacts with the same station for points. It definitely increases contest activity, but requires some rethinking of your operating strategy. We are planning to be QRV for the remaining ARRL EME Contest weekends.

**NET/REFLECTOR NEWS:** **K1DS** plans to be QRV with a small system on 70 and 23 cm (and 2 m too) during both remaining ARRL EME Contest weekends from EL96 in Florida. **K5CHG** has an impressive webpage documenting his efforts to get on 70 and 23 cm EME. See <http://kd5chg-eme.blogspot.com/>. **PY2BS** was QRV on 9 cm in Sept and was looking for skeds. **W3SZ** is now on 3 cm from FN10wh with a 2.4 m dish and 200 W. This is the same setup as Roger used several years ago, but with more power on TX, and is no longer portable from his Jeep. It is now at a fixed location and NOT the same grid as used before – i.e., a new initial. He was quite successful during the MW and ARI contests on 3 cm.

**FOR SALE:** **IZ4BEH** has for sale a 23 cm station consisting of a Khune MKU13G3 xverter, 18 W M57762 driver amp, 350 W 4xMRFE6S9160 SSPA, PE1RKI low pass filter, 0.4 dB NF preamp, TX relay, needed power supplies and possibility a 10 MHz high stability source. All is in a closed box for outdoor use. Also included is the control box and cables, and a Yaesu FT100 that was used as the 144 IF. Asking price is 1000 euro plus shipment. Write [iz4beh@yahoo.it](mailto:iz4beh@yahoo.it) if interested. (He also has a 2 m EME station for sale). **W3XS** in OR is looking for an SSPA for 1296 EME. Is anything available? Contact Bill at [billw3xs@gmail.com](mailto:billw3xs@gmail.com) if you have anything available. **PA0PLY** reports that work on the 24 GHz KLNAs are moving along. However, all the issues with the pilot batch have not yet been satisfactorily solved. The PCB and housing are now redesigned and have been ordered. They expect to start delivery by the end of 2020.

**TECHNICAL CORNER:** Matej, OK1TEH released newly updated table of Sun-noise measurements, check out: [http://www.ok2kkw.com/next/nl\\_k2uyh/sun\\_table.xls](http://www.ok2kkw.com/next/nl_k2uyh/sun_table.xls). There are new data from 10 and 24 GHz.

**RADIO ASTRONOMY CORNER: The hunt for super-massive Pulsars** -- While we often talk about Pulsars (neutron stars), at our astronomical corner, we should know the phenomenon called Chandrasekhar limit, which define the maximum mass of stable white dwarf star. The currently accepted value of the Chandrasekhar limit is about 1.4 solar mass ( $2.765 \times 10^{30}$  kg). Consequently, a white dwarf with a mass greater than this limit is subject to further gravitational collapse, evolving into a different type of stellar remnant, such as a neutron star. The less known phenomenon is called the Tolman–Oppenheimer–Volkoff limit (or TOV), which defines the upper limit of the Pulsar's mass. If the mass get above the limit, the star will collapse to some denser form such as a black hole (or theoretically to a quark star). The limit isn't precisely set, but it's considered to be 2.27 of solar masses. On 16 Sept, NRAO released an interesting article that the Green Bank Telescope (GBT) observed the most massive Neutron Star Ever Detected, Almost, too Massive to Exist! The Neutron Star J0740+6620 is a pulsar with a spin period of about 2.88 milliseconds and 2.17 masses of the Sun (which is 333,000 times the mass of the Earth). The star was detected about 4,600 light-years from Earth. The discovery is one of many random results, says Maura McLaughlin, which emerged during regular observations made as part of the search for gravitational waves.

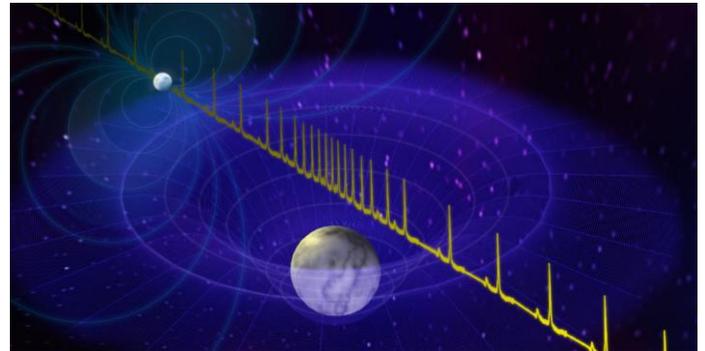


Illustration of a massive pulsar signal

"We tried to detect gravitational waves coming from the pulsars on the Green Bank Radio Telescope," says Maura McLaughlin. "To do this, we had to observe a large number of pulsars, which are fast-spinning neutron stars. This discovery is not a treatise on gravitational waves, but one of the many important results that have arisen from our observations." The weight of the pulsar was measured by a phenomenon known as "Shapiro Delay". Essentially, the gravity of the white dwarf, who is a guide to the neutron star, curves the space around it in accordance with Einstein's general theory of relativity. This means that the individual pulses emitted by the pulsar travel along a slightly longer orbit as they propagate through the deformed spacetime around the white dwarf. From this delay, we can calculate the mass of the white dwarf, which will reveal the mass of the neutron star for a change based on the known laws of body circulation in a binary system. More at:

<https://public.nrao.edu/news/2019-gbt-massive-ns/>

<https://data.nanograv.org/>

<https://phys.org/news/2019-09-astronomers-massive-neutron-star.html>

J0740+6620's position & data:

Right ascension $\alpha$ (J2000)	07 <sup>h</sup> 40 <sup>m</sup> 45 <sup>s</sup> .79492(2)
Declination $\delta$ (J2000)	+66°20'33"5593(2)
Galactic longitude $l$ (deg)	149.7
Galactic latitude $b$ (deg)	29.6
Epoch (MJD)	57017
Proper motion $\mu_\alpha = \dot{\alpha} \cos \delta$ (mas yr <sup>-1</sup> )	-10.3(2)
Proper motion $\mu_\delta$ (mas yr <sup>-1</sup> )	-31.0(2)
Spin period $P$ (ms)	2.88573641085019(2)
Period derivative $\dot{P}$ (10 <sup>-20</sup> s s <sup>-1</sup> )	1.2184(4)
Characteristic age $\tau$ (Gyr)	3.75
Spin-down luminosity $\dot{E}$ (erg s <sup>-1</sup> )	2.0 × 10 <sup>34</sup>

**FINAL:** This has been a very busy time. We both want to operate (not just write the NL) and have family and to keep in balance. Thanks for your understanding and support.

▶ If you have any info you want to share on your 70 cm & Up Sun noise or sky sources measurements, please send

them to [ok1teh\(x\)seznam.cz](http://ok1teh(x)seznam.cz). Matej has been maintaining a directory of this information.

▶ Correction to SM6FHZ's 6 cm report in the last NL. It was written that Ingolf did not complete a QSO with VK6DLS; however, he actually worked VK6DLS on SSB. The QSO was the last thing VK6DLS did before going QRT. Ingolf notes It was not easy for them to understand him due to a problem with their RX system, but that they were very strong at his end. It took some persuasion by Ingolf via the HB9Q logger to have them to listen carefully for him on the right frequency because of the large Doppler shift on VK6DLS' moonset. In any case they made it.

▶ G4RGK is updating the CW EME listings of initials, DXCC, etc. Please send Dave your updates ASAP to [g4rgk@radiobong.myzen.co.uk](mailto:g4rgk@radiobong.myzen.co.uk).

▶ PSE keep the reports and news coming. We will be QRV in the ARRL Contest and looking for you off the Moon. 73, AI – K2UYH and Matej – OK1TEH



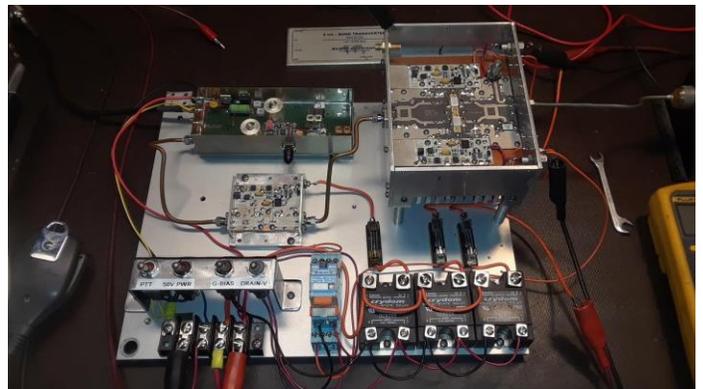
Great picture of F6CT's dish



K1RS's yagi that he will use in the contest on 70 cm



IW3FZR's 23 cm feed



VE6BGT's 6 cm system and feed below – all HB

