432 AND ABOVE EME NEWS
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CONDITIONS: July is usually a quiet month with no contests and little dxpedition activity. But the increasing popularity of EME on the microwave bands and two Microwave Activity Weekends (MWAs), one on 13 cm and the other on 6 cm helped keep July activity high. In Aug there is the 9 cm MWA coming up on 8/9 Aug. Unfortunately the 70 cm CW Activity Time Period (ATP) is on the same weekend as the MWA. It is on 9 Aug from 0000 to 0200 and 1000 to1200. Although no dxpeditions, XE1XA put Mexico on 1296 EME for the first time – see Max's report later in the newsletter (NL). Although there are no major dxpeditions on the horizon until Sept/Oct, SP/OK5EME will be QRV on 9 cm from 14–16 Aug during the Zieleniec Conference – see OK1DFC's report for more details. Try to keep 18-20 Sept open as rumor has it that there will be a GHz dxpedition this weekend. Early news of several additional dxpeditions including VT on 70 and 23 cm are included in this NL. The ARRL Microwave EME Contest (13 cm Up) is near on 5/6 Sept.

DK3WG: Jurg dk3wg@web.de had a busy month on 70 and 23 cm EME. On 432 using JT65B he made initials with RN6MA (who was using 2x38 el yagis and 80 W), UR3EE (using only a single 34 el yagi and 300 W), UX5UL, K9MRI for his first 432 EME QSO, AE7OV (using only 50 W) and DL1RPL. On 1296 Jurg made his first QSO on SSB with HB9Q (55/52), SM2CEW on CW, and on JT65C with DK0ZAB, SP5GDM, PE2TV and W1E.

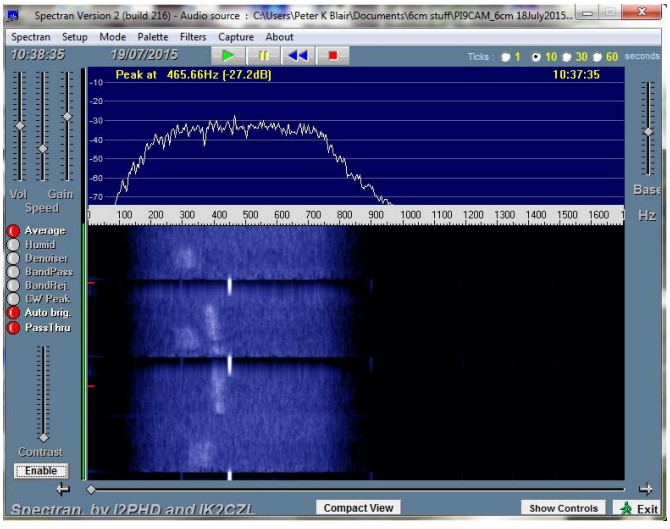
PJ7/PE1L: Rene (PE1L) renehasper@gmail.com reports that he, K5QE, PE1LTW and PA3FPQ will be QRV from Sint Maarten in locator FK88 from 29 Oct until 1 Nov on 144, 432, 1296 and possibly 2300 with a focus on the higher bands. More details can be found at the website http://www.emelogger.com/fs. See also TO2EME.

G3LTF: Peter g3ltf@btinternet.com participated in 2 microwave activity weekends (MAWs) this month -- I worked the following stations on 13 cm CW on 11 July OK1KIR, HB9Q, G4RGK, OK1KKD, SM2CEW, K2UYH (crossband - XB), PA3DZL, OH2DG, OZ4MM and OZ5G, and on SSB DK7LJ, UA3PTW and LX1DB, and on 12 July PA3DZL, OH2DG and OZ4MM, SM2CEW and OZ5G. I missed the JAs as my 2424 converter suffered from an image response problem after the last modifications, and I had not tried it on the dish. This is now cured thanks to help from JA4BLC. I could just hear OH3LWP on CW working OK1KIR, but not strong enough to ask for a test. I changed feeds to 70 cm for the ATP but activity was very low and I worked only NC1I, OZ4MM and UT5DL. During the 6 cm MAW, I worked on 18 July PI9CAM, PA3DZL, HB9SV for initial #54, PA0BAT, SM6FHZ, OH2DG, VE4MA, W5LUA, PA7JB, and ES5PC. It was great to have PI9CAM (#53) on 6 cm for the first time. The bad WX forecast here did not appear and although I was a bit late on and had to QRT early due to family visits. I think there were about 17 stations on the band during the day plus G4DDK providing SWL reports. I measured Moon noise as1.3 dB and sun noise of 16 dB at SF 97. Next day the WX was much more windy, but I managed QSOs with JA4BLC, PA3DZL, HB9SV and SM6FHZ before I had to QRT. With their 0.15 deg beamwidth, there was very little spreading on PI9CAM and it was interesting to see their signal with virtually the same width all day. The attached picture shows this with PI9CAM sending "K" near the centre and my echoes, much wider, a bit LF. →

G4BOA: John john@g4bao.com had a frustrating time during the 13 cm MAW -- I listened and called CQ on Sunday and was obviously being heard as I had couple of calls who were just below my copy threshold. I think one might have been UA3PTW and I copied K2UYH and OZ4MM on 2304. I spent a lot of time fiddling with my new K3's filter and NR settings, but couldn't find the magic settings before people "gave up on me". I ran out of moon before I could work anyone despite some very persistent QRZs! I noted that my echoes were very weak compared to some occasions in the past, despite the excess path losses being just moderate, so I need to have a look at my receiver again. I will be back trying again soon.

G4DDK: Sam jewell@btinternet.com writes -- I hastily put my 6 cm system back together with no real intention to be on for the MAW. With the dish re-located to the middle of the lawn (yes, I seem to have got away with it!), although the longer DC cable run caused problems. The 6 cm 25 W amplifier draws nearly 18 A (two separate Ferranti ex microwave link amplifiers combined) and the volts drop was just too great. I am rethinking what to do about power out at the dish. I'm favouring 48 V at the rear of the dish and a 48 to 12 V inverter. The current system is a squeezed waveguide feed (TNX PA7JB) to a 2.3 m dish. My Moon noise is about 0.6 dB. It was interesting to see how much easier it was to find Moon noise on 6 cm compared to 3 cm, due to the dish drive with the narrower beamwidth. It was a very interesting day and my thanks to PI9CAM in particular for taking time to send some JT4F(14DB) at best with copy down to at least (18DB). DL7YC, G3LTF and PA0BAT all were identified (519 to 529). Gerard was the most consistent signal, but all were relatively easy copy once I'd 'tuned' my ears to them. There was a surprising lack of libration on signals. At least two other stations were copied, but I just couldn't get the callsigns. I feel a bit more encouraged to do some more work on the 6 cm system, although I still need to sort out 3 cm.

HB9DRI: Alex hb9dri@emeham.com will be QRV from South Africa soon – on 7 Sept, I will travel to South Africa for professional reasons. I will be based in Pretoria and be there for the next 4 years. Thanks' to the excellent help of the SARL and the Independent Communication Authority of South Africa ICASA, I have already been issue my new call sign: I will be active as ZS6EME. My entire house and lab is already packed, The container will leave Switzerland next week (including my new 3.7 m solid dish) and I hope in the beginning of 2016 to start EME operations on 13 cm, and later on 23 cm and probably other higher bands. I don't have plans for EME on 2 m and 70 cm.



PI9CAM's "K" as received by G3LTF on 6 cm

JA4BLC: Yoshiro's ja4blc@web-sanin.co.jp July report – During the 13 cm MAW, I worked OK1KIR (559/559) and OH2DG (569/579) on

2320/2400. In the 6 cm MAW, I worked ES5PC (559/559), OH2DG (569/559), PA3DZL (559/559), SM6FHZ (559/559), PA0BAT (559/559) and G3LTF (559/559). My other activities were on 1296 where I worked on 12 July SP6ITF (559/559), and on 5760 where I QSO'd 20 July JA6CZD (O/M). I had problems with my 10 GHz TWT PS. It repeatedly tripped off many times. The power supply worked well without a TWT. I checked the resistance between the helix and cathode with a circuit tester. It showed a very high resistance, but when I pushed hard on the cable at the HV plug, the resistance lowered to 1M ohm. This repeated many times, so I decided to cut the HV cable and attached a new HV plug. The PS trip was cured and RF power was recovered!

KB2FCV: Jim james1787@aol.com is making progress on his 1296 EME station – The base for the mount is poured and in the ground. The az/el mechanics are coming along, just need to finish up the gear/sprocket for az. EL is complete, tested and it tracks the moon! With some great help from W2DRZ, I have his controller and encoders figured out and working. I plan to run cables out to the dish soon. Much of the 23 cm electronics is here (amp, transverter, LNA). I just need to build the feedhorn.

LU1CGB: Adrian adrian.sinclair@multiradio.com.ar sends news of his recent activities – My latest work on the 23 cm system seems to have produced good results. I installed new AZ/EL sensors and controller. I can now move my 3.6 m dish remotely, avoiding going to the dish every time to point properly; specially in winter! I also improved the RX performance by 6 dB by installing the LNA close to the feed. I still have much to do, but I'm very happy to be QRV again. There were excellent conditions the weekend of 1/2 Aug. I heard very nice echoes on WSJT as never before.

NC1I: Frank's frank@NC1I.COM July activity report -- July was a very busy month with work, travel, and working on our portable stations to take to VT this fall (and Rhode Island in the spring). I did however find some time for EME and worked the following on 70 cm: on 11 July at 0728 G3LGR (22 DB/13DB), 0744 RN6MA (23DB/22DB), 0755 UT5DL (08DB/06DB), 0758 DL8DAU (12DB/17DB), 0802 PA2CHR (14DB/16DB), 0810 YL3AG (19DB/19DB), 0848 DK3WG (3DB/4DB), 1233 GW3XYW (15DB/11DB), 1240 AE7OV (23DB/18DB) and at 1302 OH3LWP (8DB/13DB), on 12 July at 0822 PE1LWT (10DB/12DB), 0830 GW3XYW (16DB/10DB), 0844 G3LGR (23DB/15DB), 0859 RN6MA (22DB/12DB), 1025 G3LTF on CW (579/579), 1115 UT6UG (7DB/5DB), 1503 LU7HI (13DB/13DB) and 1512 DL8DAU (27DB/23DB), and on 18 July at 1346 GW3XYW (12DB/19DB), 1356 PE1LWT (12DB/11DB), 1407 LU8ENU (16DB/14DB) and at 1413 DL8DAU (11DB/20DB). I QSO'd on 23 cm on 12 July at 0919 UN7GK (17DB/10DB), 0934 OH3LWP (22DB/15DB), 0942 IK5EHI (14DB/O), 1129 PA3FXB (13DB/6DB), 1146 DL6SH (4DB/6DB) and at 1608 VE3KRP (16DB/7DB). I plan on being active the weekend of 8/9 Aug.

OK1DFC: Zdenek ok1dfc@seznam.cz will be at the MW and EME meeting in Poland, Zieleniec, and plans to be active during the meeting, 14–16 Aug on 9 cm -- I will use my 3.2 m portable dish under the call SP/OK5EME. I hope to catch many 9 cm stations during weekend. During this short SP dxpedition, I plan to test a new 9 cm setup for pointing accuracy, radiation angle, etc. The Moon is close to the Sun, but the small radiation angle of our systems, it will not be a big problem. I was expecting to participate on 6 cm MAW, but last month I was traveling so much that there was no chance to finish up everything. The 6 cm TRV is ready and the new SSPA is giving 50 W at the feed. Thanks to OK1CA for checking out my 6 cm septum feed and LNA. I had a chance to test Sun noise and all looks good. I was also expecting to go in Aug on a major EME dxpedition, but my busy QRL scheduled has forced me to postpone this trip.

OK1KIR: Vlada and Tonda vladimir.masek@volny.cz report that they have finally received their long awaited 23 cm DXCC certificate dated 23 March, 2015 -- We initially received one without a number, this one is numbered #3. During the MAW on 13 cm we worked on 11 July at 0317 JA4BLC (559/559) (XB), 0423 G3LTF (569/579), 0528 HB9Q (599/599), 0730 G4RGK (O/O), 0807 OZ4MM (569/569), 0850 OK1KKD (569/579), 0913 LX1DB (57/56) on SSB, 0949 DK7LJ (56/34) on SSB, 1053 K2UYH (579/579), 1106 SM2CEW (569/579) and 1138 OH3LWP (O/O) for initial #143 (using tropo equipment 1.8 m and 400 W). We only heard OH2DG and UA3PTW. On JT65C we worked at 0754 OZ5G (18DB/O) for digital initial {#30} and at 1125 OH3LWP (22DB/19DB) {#31}. Due to low activity on 13 cm, we moved on Sunday 12 July to 23 cm and worked at 0622 UA9YLU (569/579) for initial #378, MO field and a new CW DXCC, 0655 DK3WG (549/559) #379, 1008 OH3LWP (O/O) #380 using his tropo dish 1.8 m and 200 W and 1207 SP6ITF (569/589). On JT65C we worked at 0622 R4YM (24DB/17DB), 0836 UN7GK (13DB/13DB) with a great signal but no CW operation, 0912 UA4LCF (15DB/12DB) and 0959 OH3LWP (20DB/13DB). On Monday13 July we worked on 23 cm at 1403 XE1XA (569/569) #381 for 1st XE-OK QSO on 23 cm and EK field. Max renovated his old 5 m dish (used already in 1986 for the 1st XE-OK QSO on 70 cm) and pushed 300 W from his SSPA to a septum feed. Unfortunately we missed the 6 cm AW due to other commitments.

ON4BCB: Walter on4bcb@gmail.com is preparing for 10 GHz EME and plans to go circular – I am reading my 4.9 m dish (4x4 mm mesh) for3 cm operation. I will be using an OM6AA circular septum WR75 WG feed (on both ports) – for more details see https://www.flickr.com/photos/pe1rki/19129674703/. It is basically a super VE4MA feed. I decided to use circular polarization because this was agreed to be the standard back at the 2002 EME Conference in Prague. The match of my feed is good (RX RL 18.3 dB, TX RL 24.5 dB) and isolation excellent (28.7 dB) - TNX HB9BBD measurements. I have 80 W from a RW1136 TWT and a 0.76 dB (with adapter) NF LNA.

PA3DZL: Jac pa3dzl@ziggo.nl was QRV for the 6 cm MAW – There were nice conditions during the 6 cm weekend despite the Moon being at apogee, and the signals were UFB. I worked on Saturday OH2DG, DL7YC, HB9SV for initial #49, JA4BLC, SM6FHZ, PI9CAM #50, G3LTF, ES5PC, PAØBAT and W5LUA, and on Sunday SM6FHZ, JA1WQF, G3LTF, VE4MA, LX1DB and VE6TA. A nice surprise was the 2 initials. Great signals and good show from PI9CAM with a temporary setup on the 25 m Dwingeloo dish and only 10 W! There was very little libration fading on PI9CAMs signals. With this size dish they only illuminate a small part of the moon. Their beamwidth is only 0.15 deg! They must have a super tracking system. The strongest signals this weekend were from SM6FHZ, DL7YC, PAØBAT and LX1DB. My station was 3.7 m Andrew solid f/d 0.34 dish, >100 W @ feed and <0.5 dB NFLNA. TNX to G3LTF for organizing the MAWs.

PI9CAM: Jan (PA3FXB) jvm@netvisit.nl reports on 5760 EME -- On Saturday 18 July we were active on 6 cm. It has been a long time since we tried 6 cm for the first time back in Nov 2009. We had not announced this activity until the last moment as it was very uncertain we would succeed. Back in 2009 the feed was mounted in a very much 'offset way' (because there simply was no room for all the feeds in the focus). We knew that it would be far from optimal but we simply wanted to try. It worked but was difficult and we made only 5 QSOs. Much of the 6 cm gear that we used then was borrowed from kind fellow hams for that weekend. Now, after the big restoration, we are step by step gathering stuff for the microwave bands. We recently were able to take over a complete 6 cm station from G4BAO. When you have it, you want to use it. So we were looking for a way to do a first test. Especially because we really wanted to know whether the 'not so good' results in 2009 were only caused by the offset position of the feed or whether there was something wrong with the big dish itself. Theoretically the dish should be OK up to 5 GHz. We found historical papers saying it was once used professionally on 5 GHz, but it didn't say how well it performed. SM6FHZ asked us a few weeks ago, if we had any plans to become QRV on 5.7 GHz. And he mentioned the upcoming 6 cm MAW. That inspired us to make an effort to get things going. Two weeks ago, we mounted the feed in a very very temporary way in the 23 cm feed. We measured more than 22 dB of Sun noise! No preamp, just the transverter. So that was looking good! Last week we did all the preparations to make TX possible. On Saturday, we started in the morning to once again create a very temporary setup, but this time with TX possibility. At around 1130 everything was installed and we started measuring Sun and Moon noise. The RX setup was a bit different than during the RX only test (much less total gain) and that had a bad effect on our sensitivity. Only 14 dB of Sun noise and 1.1 dB of Moon noise were measured. Our TX power was 10 W, but the echoes were very nice! We started tuning the band and found SM6FHZ for our first QSO. Ingolf had a great signal. RX was difficult for two reasons: 1) the rather insensitive RX setup, and 2) we only have a beamwidth of 0.15 degs. So we only can listen to a small part of the Moon. We worked SM6FHZ, G3LTF, PA3DZL, PA0BAT, DL7YC, ES5PC, SP6GWN, HB9SV, PA7JB, OH2DG, SM6FHZ (SSB), SM/PA2DW (SSB), VE4MA, W5LUA, K2UYH and VE6TA. G4DDK gave us a (13DB) SWL report on JT4F. We now know our beloved 120 tons of historical steel are OK on 6 cm! And we learned that the tracking software has been really improved over the last few years as we were able to keep our very narrow beam on the Moon all the time. Back in

2009 that was far more difficult. Our next test will probably be an RX test on 3 cm to see how well the big dish performs there.

SM2CEW: Peter sm2cew@telia.com sends the follow NL report -- After a long period of silence on 13 cm due to an expired high power license, I was again active with an extended license during the 13 cm MAW on 11/12 July. On the first day my signals were not good, probably due to a slightly misaligned feed position. After correction for the 2nd pass, I was greeted with fine echoes and was hearing quite well. I worked G3LTF, OK1KIR, UA3PTW, OZ4MM, OH2DG, OZ5G for an initial (#), OK1KKD (#), K2UYH and PA3DZL. I had a sked with KL6M on the 14th but unfortunately Mike had tracking problems, so we did not complete. Jac PA3DZL was also listening and we made a QSO with each other right at the end of my moon window at 2 degs elevation here. I will try with Mike again in the coming weeks. 2300 will be our 4th EME band when we make it. All of the above QSO's were on CW, of course! I just installed my new OE5JFL/HB9DRI tracker in the dish, I plan to use on the microwave bands. It is a 2.3 m prime focus dish. I had to postponed the installation in June as a bird had nested in the azimuth drive. But now the birds have flown out of their nest and I have access to my MW dish again. I will be QRV on 10 GHz in the coming months. I am planning to replace my 20 W SSPA with a 60 W TWT that I acquired last summer. I expect this will enable me to hear my echoes on 10 GHz. I still have plenty of improvements to take care of before I am satisfied with the performance on 10 GHz. At the moment I am hearing quite well, but my TX signal is not good.

SM2CEW's new 2.3 m dish for 3 cm EME

SM6FHZ: Ingolf ingolf.fhz@gmail.com report on the 6 cm MWA -- On Saturday signals were quite nice in spite of the Moon being very close to Apogee. Signals were clearly affected by the extra path loss. I worked OH2DG, HB9SV for an initial (#), DL7YC, JA1WQF, PA3DZL, JA4BLC, PI9CAM (#), ES5PC, G3LTF, PA0BAT, PI9CAM on SSB, W5LUA, VE4MA and PA7JB (#) for 14 QSO's with 3 initials. I also heard S59DCD on two occasions and called a both times, but could not complete a QSO - sorry. If anyone heard and called me without getting a response, please let me know. PI9CAM on 6 cm was a nice surprise. I had a visit from PA2DW and SM6CMU in the afternoon, so a SSB QSO on 6 cm in Dutch was conducted between SM/PA2DW and PI9CAM! The WX was mostly sunny with some wind, but not as bad as the forecast predicted. Sunday was a bit slower than Saturday. I spent some time doing maintenance on the outer door to the shack. Sanding, cleaning and painting, while having a close watch on the SDR screen from 5760.080 to 5760.120, and calling a CQ now and then. At the end of the day, I managed to burnout the speed control of the azimuth drive. I can now not use automatic tracking as the AZ-drive is much too fast and it will bounce back and forth from going CW to going CCW and back again due to too large movements. I had to stop operation and take down the RF-head from the dish in pouring rain and high wind. The speed control is repairable, but I see myself spending too much time on mending the equipment rather than building new rigs. On Sunday, I worked PA3DZL, SM4DHN, HB9SV and G3LTF. I also heard JA4BLC, PA0BAT, OH2DG, JA1WQF and DL7YC. I must say the standard of the 6 cm stations is very high. There were very nice signals in spite of the near apogee Moon position. We might need new stations with smaller dishes and less power to bring some challenge and excitement into 6 cm EME again – hi. I am sure we all invite new stations to come and try 6 cm EME. I am sure they will be most welcome and appreciated by everyone. I think that about a 2.4 m dish and a 25 W GaN PA would be workable for many stations on the band today. It would be very rewarding for the new stations as well. 6 cm seem to be growing into a new, reasonable easy to get on EME band TNX to the availability of GaN power transistors at a reasonable cost: http://www.digikey.com/product-detail/en/CGH55030F2/CGH55030F2-ND/2835449, http://www.digikey.com/product-detail/en/ CGH40035F/CGH40035F-ND/1944140 and http://www.illipe.se/EME_2015/GaN_SSPA_5760_20150602.pdf. This weekend, I also tried out a new NE3511 pre-amp with a HMC717 second stage and it provided a clear improvement of measured Moon noise both due to better NF of the first stage and higher total gain to mask the cable loss and transverter NF.

TM8PB: Guy (F2CT) F2CT@wanadoo.fr reports his team's 6 cm contest results -- After the nice results during DUBUS on 10 GHz EME contest, we decide to participate in 5.7 GHz contest. Our team included F3ME, F5BQP, F1EBK and me. We used our big dish's original C band feed without any modification (RL = 22 dB). On TX we had 70 w at feed with a GaAs FET TIM 5359-80SL on LHCP. On RX we used an LNA with a NF = 0.6 dB, 22 dB gain on RHCP. These were connected to WR137 rotary joints just under the PB8 dish. We measured a Sun noise of 24.6 dB with SF = 137 and Moon noise of 4.8 dB. Logged on Saturday 13 June at *0424* OH2DG (559/569), 0432 JA6CZD (559/589), 0438 OK1KIR (559/569), 0443 ES5PC (559/589), 0450 F1PYR (559/579), 0457 G3LTF (559/579), 0505 SQ6OPG (559/589), 0510 DL7YC (579/589), 0515 OK1CA (579/589), 0519 JA4BLC (569/589), 0529 UA3PTW (559/589), 0601 SV3AAF (559/579), 0612 PA3DZL (559/579), 0621 F6DWG (519/559), 1934 F5HRY (559/559), 0727 S59DCD (559/569), 0734 S57NML (559/579), 0825 SM6FHZ (579/579), 0859 SQ6OPG (55/57) SSB, 0906 OK1KIR (55/55) SSB, 0911 G3LTF (55/55) SSB, 0931 G4NNS (569/579), 0943 LX1DB (58/58) SSB, 1239 VE6TA (559/589), 1244 W5LUA (579/589), 1249 VE4MA (569/579), 1303 K2UYH (569/589), 1317 WA6PY (559/589), 1333 IK3COJ (559/559 and 1339 SM6PGP (569/589) and 1451 PA3DZL (55/55), and Sunday 14 June 0518 JA1WQF (559/589), 0550 UR5LX (519/519), 0624 ON5RR (559/559), 0637 JA4BLC (569/589), 0653 UA4AAV (559/569), 0745 SM4DHN (569/569), 0750 IZ2DJP (559/579), 0854 S59DCD (55/33) on SSB, 0916 DL7YC (57/58) on SSB, 0922 F5HRY (52/55) on SSB, 1223 W5LUA (57/57) and 1309 SP6GWN (559/559) for a total of 44 QSOs, 36 on CW and 7 on SSB.

TO2EME: Rene (PE1L) renehasper@gmail.com reports that he, K5QE, PE1LTW and PA3FPQ will be QRV from Saint Martin (DXCC FS) in locator FK88kb from 22 Oct until 27 Oct on 144, 432, 1296 and possibly 2300. They hope to be QRV as much as possible. More details can be found at the website http://www.emelogger.com/fs. After this activation we will be active also from the Dutch part of the island which counts as separate DXCC (PJ7).

UA3PTW: Dmitry ua3ptw@inbox.ru was QRV off the Moon in July. He added initials on 432 using JT65B with RN6MA, YL3AG and UX5UL, on 1296 using JT65C with VE3NXK, W1E, ZS6JON and R6CS, and on 5760 using CW with G3LTF, OH2DG, PA3DZL, TM8BP, F1PYR, LX1DB, W5LUA, WA6PY, JA6CZD and VE4MA.

UN6PD: Nickolay was active from Kazakhstan on 1296 in July. He worked using JT65C JA6AHB, PA3CQE, SM7FWZ, OK2DL, PE1CHQ, PA3FXB, W5LUA and W1E.

VE6TA: Grant ve6ta@xplornet.com sends the following update on his EME activity – I am busy removing the old 1/4" hardware cloth from my 18' dish and creating a plan to recover it with 1/8" hardware cloth. Ultimately I am trying to improve the performance on 3400 and 5760 with this dish. I hope to have it up in time for the fall EME season. The 10' dish continues to perform well on the 5 and 10 GHz bands. I was QRV in a short window for the 6 cm MAW. I managed to work PI9CAM for initial #22, VE4MA, K2UYH, W5LUA, LX1DB and PA3DZL. Signals and echoes were still quite good despite the apogee conditions.

WA2FGK: Herb (K2LNS) wa2fgk@yahoo.com reports their dish mount is repaired for the 4th time – This time we hopefully made it strong enough for our 300 pounds of antenna. We are working on our 2304 system and plan to be QRV on the Moon in the ARRL Microwave EME Contest. We have switched transverters so we will be able to listen on all 3 receive bands. We expect to have about 80 W at the feed of our 10' dish.

WA6PY: Paul pchomins@san.rr.com was QRV in 6 cm DUBUS contest in June. I QSO'd 11 x 10. During my JA window the RX of my TS2000 starts to be intermittent. First I suspected problems with LNA and transverter, later I found that the problem was in TS2000. I heard JA6CZD very strong, but my RX problems didn't alow me to QSO him. During next few days I found that there was a problem with AF muting. A 100 kohm resistor was broken. I was not QRV in July for the MAW on 6 cm due to poor weather. Last weekend I was able to get my RW248 TWT running and tested on 6 cm. This tube was designed for 3.6-4.2 GHz. I'm getting now 30 W at the feed compare to 15 W from RW85. I hope to be active in the 9 cm AW in Aug.

W1E??: Bob (W1QA) bob@w1qa.com writes that he and NC1I will be putting VT on 70 and 23 cm EME— Our plan is ambitious. As of this time we have help setting up (70 cm) on Sunday 25 October and help taking down 23 cm on Sunday 1 Nov. We do not yet have any help committed to assist with the changeover from 70 cm to 23 cm on Friday 27 Nov, but don't think that it will be a big problem. It is our intention to activate VT for two days on each of the bands. It has been about 30 years since our last EME dxpedition to VT and we're pleased to announce we've got plans to return! NC1I and I recently visited a dairy farm in southern VT to check out the site and discuss an EME dxpedition. We couldn't be more pleased with the location and the welcoming hospitality extended to us. The grid locator is FN32rs; the call will be announced later. The station will be comprised of the same equipment we recently used for the W1E 23 cm Connecticut operation plus 70 cm with QRO and multiple antennas. Our goal remain the same: setup a station to work as many people as possible. We are still working on the logistics - here's the first pass of what we are planning: Bring equipment on-site on Saturday 24 Oct. There is a chance that we may consider operating a 70 cm moon pass Saturday night into Sunday, 24/25 Oct. We will return the next week - exact days to be determined. Possibly operating moon passes on 70 cm Wed and Thu nights 28/29 and 29/30 Oct. We will switch to 23 cm for the weekend (Fri/Sat and Sat/Sun moon passes), which are also over the period of the ARRL EME contest. We'll breakdown sometime during the day on Sunday 1 Nov and head home. We are glad to answer any questions you may have; look for more updates to be posted here as we get closer to the dates.

XE1XA: Max general.manager@corix.us is now QRV on 1296 -- I have spent almost one year of my spare time on refurbishing my 5 m dish and associated systems. I removed about 190 rusted screws and bolts and replaced them with S.S. hardware (a hard lesson to be learned), changed cables, repaired motors, built a new AZ/EL controller (my design + help from a digital engineer) and replaced the EL actuator arm (all rusted) with a new S.S. one. I am using a new 250 W SSPA and AGO LNA. The results have been very good. I made my first QSO on 11 July with K2UYH on CW and then SSB. I have since added OK1KIR and W5LUA with strong signals on both sides. I have a problem with the LCD in my AZ/EL controller, but expect to have this fixed very soon.

XE1XA with his 5 m dish now QRV on 23 cm

K2UYH: I alkatz@tcnj.edu had some problems but was reasonably active in July – I worked on 432 on 3 July at 0536 KJ7OG (22DB/16DB) JT65B for mixed initial #888*, and on 10 July 5760 at 0925 UA3PTW (559/559) CW for initial #34 and DXCC 18. Just before this last QSO, my digital readouts stopped functioning, but started up again to allow me to complete the QSO. But the problem returned the next day for the 13 cm MAW. I ended up using my backup AZ readout (circle and TV camera) and moonnoise for tracking. But, I had noise problems (XM satellite?) that degraded my moonnoise much of the time. As a result I only QSO'd on 11 July at 1055 OK1IR (579/579), 1108 G3LTF (569/569) XB and 1119 LX1DB (589/579) XB, and on 12 July at 1128 OH2DG (559/559), 1157 SM2CEW (559/569) XB, 1222 PA3DZL (559/559) XB and 1231 OZ4MM (569/569). All QSOs were on CW. I also had a partial with OH3LWP (21DB/-) using JT65C. Ari was not able to decode me. On 11 July, I switched over to 1296 to give at 1604 XE1XA (569/559) his first 23 cm EME QSO and my initial #355 and mixed initial #498*. This QSO was also my 1296 DXCC* 105. [When I gathered my cards for the DXCC application, I discovered that I had missed 4 countries and was actually at DXCC 100 back on 29 Nov 2014 when I worked PZ5UD]. After our CW QSO, I called Max on SSB and he also completed (55/55) his first SSB EME QSO. Because of my tracking problems, I did not attempt to switch over to 70 cm for the CW ATP – sorry. I fixed my readouts prior to the 6 cm MAW on the following weekend. The problem turned out to be an intermittent cable that finally went bad. But in the process of finding the fix, I lost my calibrations. It thus took me longer to find the Moon than I expected on Saturday. I did look at Sun noise, which was 13 dB, but I do not think I had everything optimized at the time. I worked on 18 July at 1710 PI9CAM (569/559) #35, 1721 PA7JB (559/559) #36, 1821 VE4MA (559/559), 1850 VE6TA (559/559) and 1858 W5LUA (579/559), and on 19 July at 1735 IZ2DJP (O/O) #37. I had to QRT early and missed PA3CZD who was calling CQ at the time I shut down with an excellent signal. On 1296, I QSOed on 25 July at 2035 EA1RJ (23DB/17DB) JT65C #499*, and on 1 Aug at 0251 ON5GS (449/559) #356, 0302 DK0SF (569/579), 0320 LU1CGB (21DB/18DB) JT65C, 0617 W7MEM (17DB/13DB) JT65C and 0649 PY2BS (10DB/O) JT65C. I was also on 432 on 1 Aug and worked at 0433 UT5DL (21DB/18DB), 0456 W7AMI (19DB/O), 0500 W7MEM (O/O) and 0552 ON4AOI (17DB/16DB) all on JT65B. I plan to be on for the 9 cm MAW.

NET/REFL/CHAT NEWS: **HB9SCT** at the Institute for Astronomy In Zurich is interested in the OE0EME beacon. **OK1MS** on 2 m has reached EME initial #1000 on CW! This is quite a feat, especially on 2 m where CW EME has declined in recent years. On 70 cm DL9KR is not too far behind at #964 reported in June.

FOR SALE: **N6ZE/K1FJM** has for sale a brand new Tonna 4-way 50 ohm 432-435 power divider. Contact Jeff at n6ze@aol.com if you are interested. **G4HUP** is getting ready to place an order for crystals. If you have a needs for room temp or high spec crystals, **now** is a good time to let him know! The process is that he obtains a quotation against your spec first, confirms that the quote is acceptable with you before placing the order. Delivery is usually in about 5 weeks after order commitment - you pay just before the final delivery. He also carries some 'standard' values in stock. Contact Dave at g4hup@btinternet.com.

6 CM MAW SUN AND MOON NOISE MEASUREMENTS (18/19 July) BY G3LTF: Eight stations supplied measurements of both Sun and Moon noise. The note describes how I used the results to estimate Moon temperature. If both measurements are made accurately then the dish size and system temperature, Tsys, do not affect the answer, although it is easier to make accurate measurements with higher S/N ratios. The other key factor is the accuracy with which we know the Sun flux at the time of measurement. I derived a set of values for Sun flux using the timed daily values from the Learmonth Observatory, http://www.ips.gov.au/pipermail/ips-iflux-dailyvalues/2015-July/004782.html. They make measurements at 4995 and 8800 MHz and list extrapolated values, which enable a 5760 MHz value to be derived with a reasonable degree of confidence. At this time the Sun was quiet and there was little change over the two days. Knowing the dish diameter and the sun's angular diameter, I derived a correction factor (generally known as the beam fill factor, C,), which takes account of the fact that when an antenna beam-width is comparable to the sun's diameter, it collects less of the flux. I used the fully rigorous treatment known as the Boven method. The antenna beamwidth is derived from the dish diameter. I then calculated the G/T for each station as follows: G/T= {8*Pi*(Y-1)*k*C}/{(L^2)*Fs where Y=sun noise /Cold sky ratio, k = Boltzmann's constant, L= wavelength (52.1 mm) and Fs= Sun flux. Using the G/T value, I then used the same equation (re-arranged) with the Moon noise/Cold sky ratio measurement to calculate the Moon flux, Fm. This was then corrected using Boven with the Moon distance at the reported time of measurement used to calculate the Moon's angular diameter. Being close to new moon, the moon temperature will be close to the mean value. The Moon flux is related to its temperature, Tm, as follows:

Fm = {2*k*Tm*A}/{L^2} where A is the solid angle subtended by the Moon given by (Pi/4)*(Dm)^2 and Dm is its angular diameter in radians. Finally, taking the assumed value for Moon temperature (218 K) from previous work, http://moonbouncers.org/WorkingTogether%20to%20Improve%20EMECalc_v2.pdf, I calculated the G/T from the Moon noise to cold sky ratio so there are two values of G/T; one calculated from Moon temperature and one from Sun flux, which you can see are in most cases quite close. Commentary: 1) The table below shows the results from the spread-sheet. In most cases the G/T value is probably accurate enough for stations to use it to compare with their calculated G/T obtained from the most recent versions of EMEcalc using the appropriate feed. (The 3 ring chaparral feed with the rings 0.05 L back is now in the catalogue). The result from LX1DB looks as though there might possibly be some compression in the Sun noise measurement. I'm not sure what to conclude from the PI9CAM result. They knew that they had very low sensitivity in the AW. The last line in the results table is a measurement made by PI9CAM two weeks earlier of the Sun only. The G/T from that, 7 dB higher, agrees with their parameter model. However is the 261.9 K result due to the 0.15 degree beam pointing at the small (8%) bright, area of the Moon where the temperature will be the same as a full moon, i.e about 230 K? We won't know without more measurements. 2) The Moon model in EMEcalc assumes a uniform body temperature. Taking the mean of all the measurements gives a value of 231 K, deleting the outliers gives 224 K. I was expecting 218 K. 3) You can put your assumed or measured parameters into EMECalc V10.09, and see how the G/T result compares to these measurements. SM6FHZ's are very close, mine tells me that my dish efficiency is very low (due to profile errors). The widely used 3 ring Chaparral feed with the rings 0.05 L back is now in the list of feed types, so there is no excuse for not doing this check. My thanks to everyone who participated.

Callsign	YdB Sun	YdB Moon	Sunflux Learmonth	Moon Dist. Km	Dish diam.m	Beamwidth Deg	G/T Sun dB	G/T Moon dB	Difference dB	Moon Temp. K
SM6FHZ	17.18	1.6	153	398,681	5.5	0.662	27.27	27.17	0.1	212.9
G3LTF	15.7	1.27	154.5	396,156	6	0.607	25.88	26.09	-0.21	228.9
PA3DZL	14.5	0.95	154	398,681	3.7	0.984	23.97	24.12	-0.15	225.3
PA7JB	12.5	0.5	154	396,231	2.3	1.583	21.61	20.81	0.8	181.4
LX1DB	13.8	1	157.5	398,809	3	1.214	23	24.24	-1.24	290.2
VE4MA	12	0.5	157.5	400,946	2.3	1.583	20.98	20.91	0.07	214.5
PI9CAM	14	1.1	154	396,231	25	0.146	32.74	33.54	-0.8	261.9
G4DDK	10.5	0.4	154	396,231	2.3	1.583	19.45	19.79	-0.34	235.5
PI9CAM	22.1		187		25	0.146	40.15			

FINAL: I have been thinking of ways to increase EME activity on the microwave bands. I propose to start a WAC Club supported by the 70 cm up EME NL and any other EME organizations. Perhaps DUBUS would be interested in being a sponsor. To get into this *exclusive* club you must work WAC on one of the UHF/microwave bands. [Other groups may be interested in doing something similar for 6 and 2 m]. An incentive would be to add WAC on as many bands as possible, particularly at the microwave frequencies. I would appreciate hearing your thoughts on this idea. Several stations already have WAC on 13 (OK1KIR, OK1CA and HB9Q) and 6 cm (OK1KIR and W5LUA).

The number DXCC certificates for 1296 are being sent out. So far 3 certificates have been awarded to HB9Q, DJ9YW and OK1KIR. The OK1KIR is working on putting together a table of early DXCC and WACs. I plan to contact the ARRL to see if we can get this data directly from them.

VK3UM has announced that the updated version of his EME Calculator (V10.08) is now available from my web site. Significant improvements have been incorporated in Mesh loss, spill over, feed through and dish efficiency. TX power can now be reduced down to 50 mW if required. (And it was requested for a reason!) My sincere thanks to G3LTF for his considerable patience and assistance with suggestions and practical confirmation measurements during the development process. Thanks also to G3WDG for his beta testing and suggestions as well.

The 16th SP international technical UHF/SHF/EME meeting in Zieleniec will take place on 14-16 Aug in Zieleniec. Zieleniec is small village about 900 m ASL practically on the SP6/OK1 border and easily accessible by a car. This meeting in organized by well known EMEers SP6JLW, SP6GWB and SP6OPN and consist of interesting technical sessions as well as a flea market, and BBQ with beer. Talks start on 14 Aug after 1800 local time, while the main program is on Saturday. This year G4SWX will present on 2 m transatlantic tests, OK1VPZ on Smith charts, SP6JLW on a power supply for a QRO SSPA, OK1TEH on VHF/UHF contesting, OK1DFC will demonstrate 9 cm portable EME, and more! See http://hamradio.pl/sp6kbl/klub/news.php additional info.

Correction - the caption of the W1E photo on the last page of the last (July) NL says "with transverter and 500 W SSPA on table". The Kuhne 23 cm transverter was at the operating position in the trailer and the SSPA is a Kuhne 23 cm kW. Also on the table is the 50 vdc power supply and dummy load connected to circulator dump port.

EME2016 in Venice on 19-21 Aug 2016 is now 378 days away! The web site is under construction and gathering a list of those planning to attend-see http://www.eme2016.org/.

Reports and the technical material are needed. PSE keep them coming! I plan to be QRV for the 9 cm MAW and hopefully the 70 cm ATP. I shall be looking for you off the Moon. 73, Al – K2UYH

XE1XA's shack with 23 cm gear

I0NAA Mario & XYL Maria (bottom) with (top) K2UYH and XYL during recent visit to Princeton area. Mario is recently QRV on 23 cm – see June NL.