

2016 Western Pacific 6m EME DXpedition

AN OPERATION CELEBRATING 50 YEARS OF VHF DXING!

INTRODUCTION

If you followed my V6M 6m EME DXpedition to Falalop Island last year, you will recall that I lost both my power supply and amplifier due to being limited to running the station off a single 110 VAC 15 A circuit breaker (which was quite old and corroded at that). Although I completed 37 EME contacts in the 3.5 moon passes before the equipment failed, I felt that there were many stations that I should have worked, and a repeat operation from V6M was warranted. And, although the logistics of getting to Falalop Island - as well as the lodging conditions - were challenging, the location there was very favorable for 6m EME. The site at Ulithi Adventure Lodge is at the south end of the island, and affords great ground gain on both moonrise and moonset.



V6M site on Falalop Island is shown by the yellow asterisk

Therefore, I put together a trip to a new DXCC, Palau, followed by a week on Falalop Island to give another chance to those who missed V6M last year. You can read more detailed account of operating 6m EME from Falalop in my 2015 summary report at <http://www.bigskyspaces.com/w7gj/V6M.pdf>.

One of the advantages of flying to Palau and Yap is that it is serviced by United Airlines, one of the few airlines also flying out of Missoula, Montana! Although expensive (United Airlines pretty much has exclusive commercial air service to Yap), it is one of the few airlines flying internationally that does not limit carry on luggage to 15 pounds. So, although it still must meet the small size requirements, you can pack your carry-on quite full with heavy, delicate radio equipment, and send along the less vulnerable gear as checked baggage. Regardless of the particular airlines involved, I always carry all my gear along with me, and try to schedule layovers as long as possible to allow plenty of time for the luggage to make it to the next connecting flight. Too many DXpeditions have fallen through because they tried to ship a large amount of equipment separately from the operators.

With my small carry on for this DXpedition, I was able to squeeze in the 6M1K2 amplifier, a pair of Meanwell RSP-2000-48 power supplies, the FT-857 and its cables, plus the main DC cable for the amp, along with my toolkit, a bag of coaxial connectors and the *Iridium GO!* satellite transponder.



Carry-on for this DXpedition

United Airlines does, however, hit you pretty hard (\$70) for the second piece of checked baggage and

even harder (\$200) for subsequent pieces. This really adds up when you have to re-check your bags multiple times along the way, due to flight connections being more than a few hours apart!



Checked suitcase carrying the feedline, and some small pieces of gear, plus an empty water bottle and some clothes



Second suitcase carrying the elevation mount plus all the hardware and guy lines for the antenna and mast

Because of the remote operating sites where I would not have access to the internet, KB3SII very generously loaned me his *Iridium GO!* satellite

transponder again so I could send daily updates from my *iPhone*. The updates often had lots of typing errors (from the self-correcting *iPhone* email feature and/or my large fingers on the tiny phone keypad), but it was a great help to be able to provide status updates and a list of worked stations on a regular basis. SM7FJE kindly reposted these updates on a special page on his website, so even stations who don't subscribe to the Magic Band EME email group could stay up to date on the operation.

EQUIPMENT

The revitalized portable 6m station this time was a Yaesu FT-857 with my Mirage KP-1/6 external preamplifier installed between the transceiver and a new M² 6M1K2 amplifier. The Yaesu transceiver (very generously provided by K7CW) replaced the KX3 transceiver I used last year because the new 6M1K2 requires 100w drive, and a number of people also complained that my JT65A signal from the KX3 was hard to copy last year (although I still think much of their decoding difficulties were simply due to conditions and a lack of familiarity in working DX EME stations during a pileup).

In order to insure that I was not limited again by a single low current circuit breaker, I decided to take a pair of new Meanwell RSP-2000-48 110/220 VAC switching power supplies (run in parallel) to provide the 50 VDC required by the amplifier and a new PowerWerx SS-30DV 110/220 VAC switching power supply to provide 12 VDC for the transceiver and preamplifier. That way, if necessary, I could operate each of the Meanwell power supplies off a different 110 VAC circuit breaker, avoiding last year's problem of overtaxing a 110 VAC single circuit. 4kw from the power supplies is certainly more than required to power the 6M1K2 amplifier, but the RSP-2000-48 units are the same physical size and weight as their 1000 watt counterparts, so it makes sense to take along excess power capability. This can be especially helpful since the DC output power of the supplies is quickly de-rated if the AC line voltage is low. The 50 VDC from the power supplies is connected to the 6M1K2 amplifier via a twisted pair of #8 stranded copper wire cables, attached to the #10 pigtails coming out of the amp using a 50A battery cable connector (NAPA part #740234, looking like a *really* big Anderson Power

Pole connector). The Meanwell power supplies (very generously donated from GW4WND at *The DX Shop*) were specially programmed to provide full power output for up to 60 second transmit periods, even down to 100 VAC input voltage. In fact, initial testing at home before leaving indicated full power output down to 92 VAC input line voltage!

A *RIGblaster Plug & Play* interface was used with my HP Windows 10 laptop computer to operate JT65A for EME mode from WSJT10. The antenna again was my 6M8GJ yagi with my home-made manual elevation mount and fed with 75' of low loss LMR600 low loss 50 ohm coaxial cable.

All elevation and azimuth antenna steering was done manually with tie-down lines attached to the yagi

through the screw eyes where the boom trusses attach, so as not to pull down and deform the boom.



T8GJ in PJ77hq

I had run several 6m EME skeds with Japanese hams vacationing in Koror, Palau and I always copied them on their moonrise, but they never copied anything

from me because of the high urban noise level and poor ground gain on their end. That was what convinced me to find someplace far from the city to go and properly activate T8 for weak signal work and make the first activation of 6m EME from Palau.

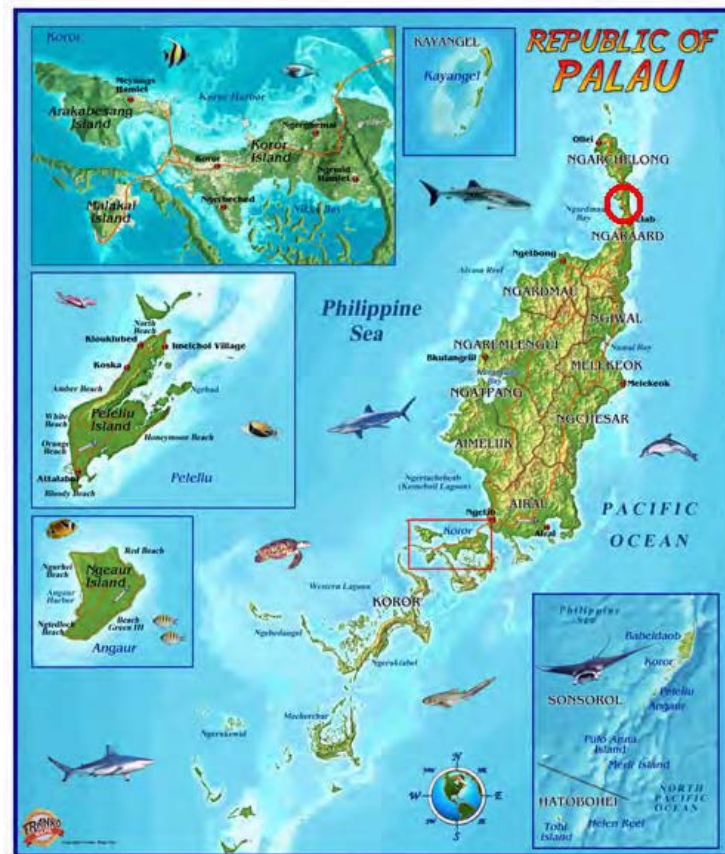


Popular “ham hotel” in downtown Koror

As shown on the map below, the chosen operating site was on top of the ridge at the narrowest part of the main island on Palau, in the small, remote village of Choll, with views out over the ocean to the east and west. The site is an hour's drive north of Koror, near the northern end of *Babeldaob Island*, the largest island in Palau.



T8GJ site in Choll is shown by the yellow asterisk



Red circle shows location of Choll on the main island of Palau



Main room of the community center, or “bai” in Choll

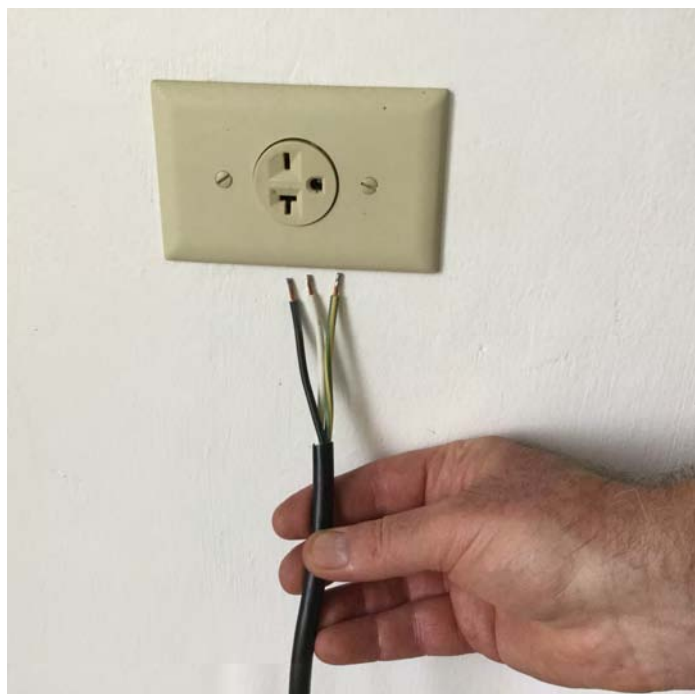
At my request, Arlene Singeo at *M&A ECO Beach Bungalows* in Choll made special arrangements early in 2016 with the local state governor to install a bed and refrigerator in one end of the community center/storm shelter there, and reserve the building for our use.

The site provides good common moon windows with horizon-only stations in eastern North America and western Europe. This very rural site and several others currently under development in the area (with views to either east or west) are available for rent through that small locally owned resort.



End of the shelter partitioned off with bedroom and living area

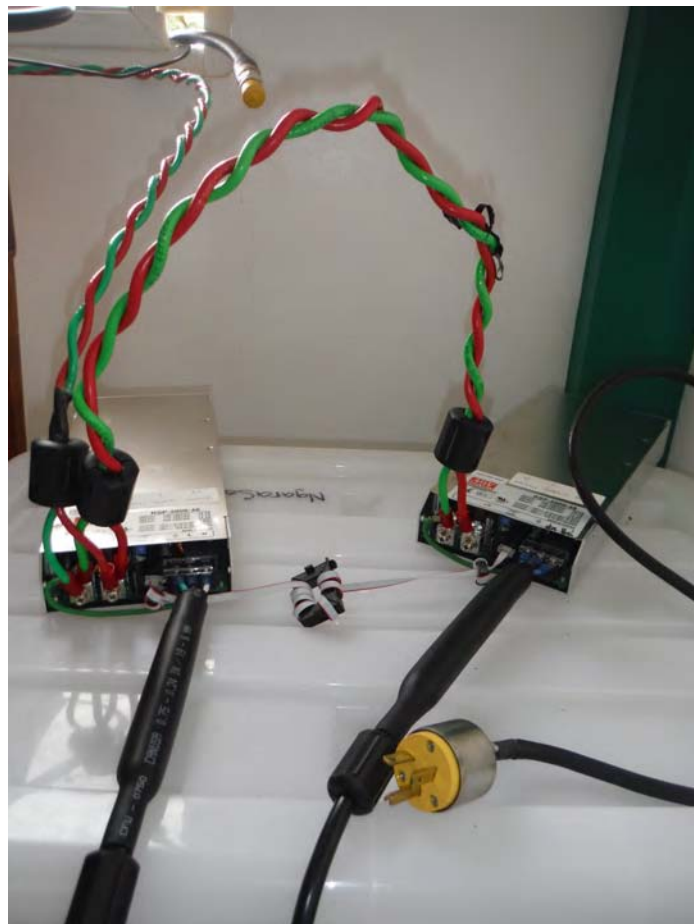
We left Montana on Monday August 15, arrived in Choll late Wednesday night and set up the antenna as scheduled, starting at dawn Thursday morning. I was pleasantly surprised to find that the building where I would be setting up the station had a 220 VAC outlet (for the amplifier power supplies) right next to the operating position, as well as a 110 VAC outlet near the floor (for running everything else).



220 outlet to mate with the special conversion cable I brought

Having 220 VAC was a very pleasant surprise, and would assure smooth full kw output during the entire operation. XYL Karen was with me on this leg of the trip, and she rented a car, spending the entire day Thursday driving the hour south to Koror, and tracking down three different hardware stores before

finding the particular 220 plug needed to activate the equipment that evening.



The new custom plug installed and ready for use – note all the ferrite filters on all the power leads

While Karen was out shopping for the correct 220 VAC plug, I assembled and raised the antenna by myself.



6M8GJ assembly along the east sided of the building



Antenna ready for raising, facing southwest into the wind

Starting at 6 am, I had the antenna up by mid afternoon as the storm clouds were moving in from the west. A video of the solo antenna raising is at <https://youtu.be/j8m3wfUFPkM>.



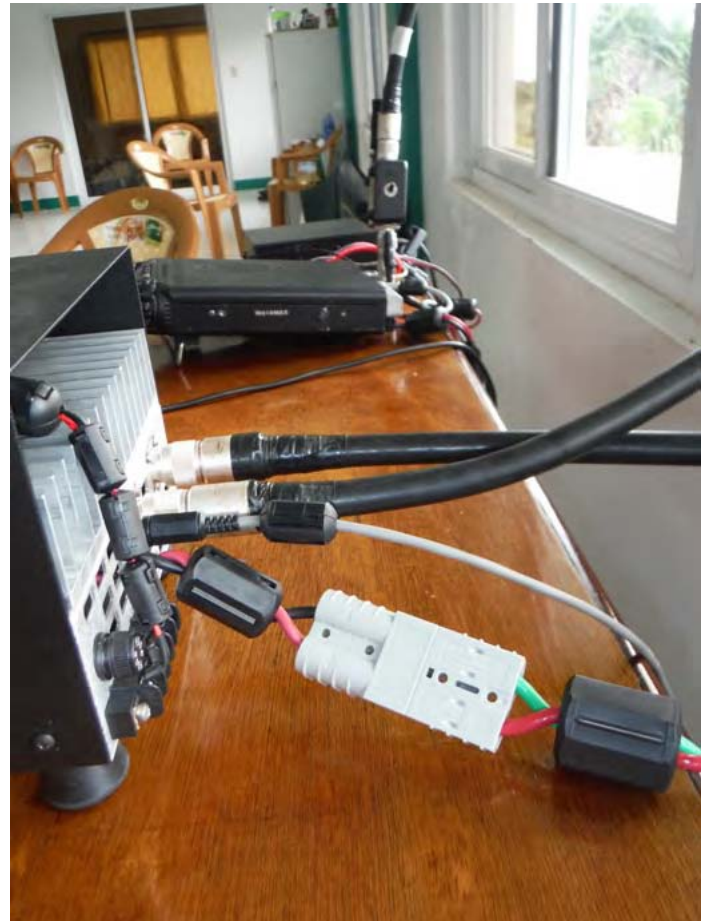
6M8GJ up and ready to work at moonrise!



Setting up the station inside after the antenna was up

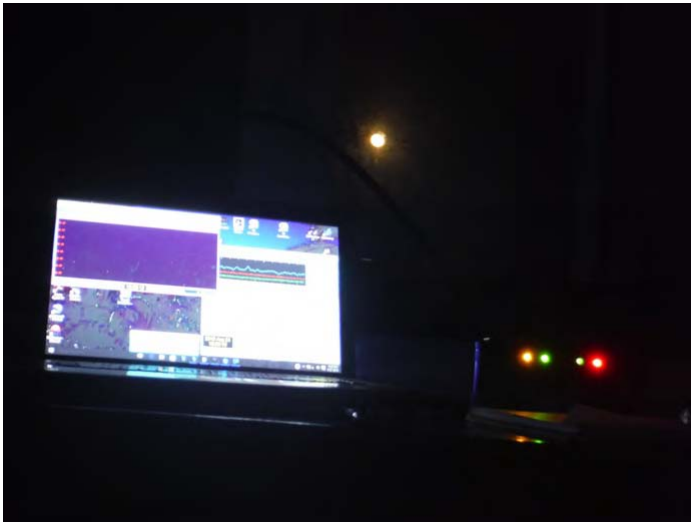


The T8GJ station setup, cooling fans not shown



View of the rear of the equipment with leads liberally filtered

I was QRV by moonrise just after sunset, and soon the typhoon rains and winds moved in. As I started copying moonset stations in eastern North America, a tree was blown down across the power lines, and I lost power for most of the NA window. By the time the power returned, I was only able to complete with KR7O on the West Coast, so Robert had the honor of the first EME contact with T8GJ! The next couple of moonrise windows were plagued by line noise until it finally rained again and cleared up the line noise.



Moonrise through the window to the east between clouds

The antenna was installed on the south side of the building, because I didn't want to aim into the ham shack or the building while the moon was moving across the southern sky. In retrospect, since I really was only able to operate the antenna while it was pointing east or west, I think the flat lawn on the north side of the building (also with great views to the ocean on both moonrise and moonset, and slightly farther from the power lines to the east) might have been a better location for the antenna.



6M8GJ installed off the south side of the building

Despite intermittent line noise to the east, a high Kp index, a couple of untimely power outages, and the inability to elevate high enough for horizon-only stations in western NA and eastern EU, 49 6m EME contacts were made, plus two terrestrial contacts with Guam, 800 miles to the northeast. 23 additional stations were copied via EME. The contacts yielded a total of 21 DXCC with an additional 5 DXCC copied from T8GJ. I was copied by Asian stations and would have worked all continents if they had

ever called me, but they didn't need T8, so they just listened. The results appear on the following page.

After the NA moonset on Friday August 29, I had to quickly dismantle and pack up the antenna so all the equipment could be packed and transported Saturday morning down to Koror to prepare for my flight out that night. Saturday afternoon, we had a chance to spend some time exploring Koror.



The aquarium in Koror



Museum display of the invasive poisonous Singapore Ant that left several open wounds on my back.

Log of T8GJ 2016 EME Activation by W7GJ

#	STATION	DATE	UTC	BEST
				JT65A
#	WORKED	DATE	TIME	SIGS
1	KR7O	08/18/16	1257	-22
2	IW5DHN		1844	-29
3	ES6RQ		1850	-25
4	S57RR		1908	-25
5	ON4GG		1945	-27
6	ON4IQ		2002	-18
7	G8BCG		2018	-23
8	OH2BC		2040	-27
9	GW4WND		2055	-25
10	GD0TEP		2118	-22
11	KG7H	08/19/16	1100	-28
12	OA4TT		1146	-26
13	SM7FJE		1934	-22
14	HA0DU		1958	-25
15	N7NW	08/20/16	1420	-26
16	DL8YHR		2018	-29
17	G8VR		2056	-18
18	DK2PH		2120	-26
19	LZ2CC		2129	-27
20	S59A		2134	-25
21	F6BKI		2138	-22
22	CT1HZE		2206	-23
23	ZS6NK		2224	-25
24	ZS4TX		2236	-24
25	DF9OX		2306	-27
26	EA8DBM		2312	-20
27	W6XU	08/21/16	1458	-29
28	OH6MIK		2028	-23
29	SP4MPB		2048	-24
30	OK1RD		2104	-26
31	0Z4VV		2123	-22
32	HA7TM		2126	-18
33	LZ2WO	08/22/16	0004	-17
34	K6MYC		1558	-24
35	S51V		2202	-26
36	SP3RNZ	08/23/16	0038	-25
37	W7GJ		1656	-27
38	ZL3NW		2208	-21
39	W1JJ	08/24/16	1452	-26
40	KB8RQ		1538	-24
41	K2ZD		1600	-25
42	N3CXV		1640	-25
43	N8JX		1748	-30
44	KJ9I		1817	-26
45	K6QXY		1916	-26
46	K4PI	08/25/16	1556	-25
47	W5ADD		1638	-27
48	W7JW		1659	-25
49	W8PAT		1808	-25

#	STATION	DATE	UTC	BEST
				JT65A
#	COPIED	DATE	TIME	SIGS
1	EA6SX			-22
2	EA6VQ			-20
3	EI3KD			-19
4	F5LNU			-25
5	G3WOS			-26
6	G4BWP			-18
7	GM4WJA			-26
8	K4MM			-26
9	K7CW			-17
10	K7RWT			-25
11	N3XX			-22
12	N8JX			-23
13	NJ6P			-27
14	OK7XX			-21
15	OZ1DJJ			-23
16	S51DI			-25
17	W3XO			-28
18	W6XU			-29
19	W7MEM			-22
20	W7UT			-22
21	W9JN			-25
22	WA4NJP			-30
23	ZL2DX			-24

Terrestrial Direct Contacts:

STATION	WORKED	DATE	UTC	TIME	SIGS
KG6DX		08/19/16	1100	-28	
KG6JDX		08/24/16	0746	51	(USB)
KG6DX			0757	59	(USB)



V6M in PK90va

Because of the equipment failure last summer, which was the result of trying to operate the entire station on a single overloaded 15A 110 VAC circuit breaker, I decided to add a return trip to the same location to make up for some of the contacts I missed the first time around. I stayed at the Ulithi Adventure Lodge again this year, and I had taken down information from their main circuit breaker box last year, to insure that I would be able to have access to 220 VAC with a proper dedicated circuit breaker right from the start of the operation this time.

The Council of Tamol, made up of all the chiefs from the outer islands in Yap State, had issued a restriction on any tourist visits to the outer islands, due to the fact that the area was still being rebuilt from the devastating "super typhoon" *Maysak* 18 months earlier. As a result, Pacific Missionary Airways was forbidden to transport anyone without a special permit approving passage, issued by the Council.

However, with the help of some influential local people, assurances that I was taking all my own freeze-dried food, was self supporting, and was not really going as a tourist and a last minute personal visit to the Council on Monday morning August 29 with the pilot (while the PMA plane was being loaded with baggage), I was able to secure the necessary the special "yellow sheet" permitting my passage to Falalop Island on Ulithi Atoll.



PMA flight landing at Ulithi Atoll airport on Falalop Island

A video of the landing on Falalop is available for viewing at <https://youtu.be/KQ2OrA4jo9Q>

As soon as I arrived on Falalop Island late that morning, I began unpacking and getting things set up. The first step, in case I needed extra time to sort things out or try to locate spare extension cords on the island, was installing the 220 VAC circuit breaker I had brought with me into their main power box on the first floor. I found an extension cord at the lodge which - with the addition of the several small extension cords I had brought along - would just reach to the amplifier power supplies in my room. The room also was just close enough to the antenna for the feedline to reach the station. Getting the 220 VAC up there turned out to be fortuitous because there was only one 110 VAC outlet that worked in my room, and that had to run the rest of the station, the room light, fan and the air conditioner, as shown in the photo to the lower right.



Feedline and 220 VAC just reaching the southeast corner room



Power cords attached to the 220 VAC circuit breaker



Power supplies and amp in line with the cooling fan



The power situation resolved, I quickly began assembly of the antenna. The antenna and feedline were up by sunset, and I moved on to assembling the equipment inside under lamp light. I was QRV as scheduled for the first moonrise, and the first contact in the log was OA4TT.



6M8GJ up and ready for first moonrise on August 29



Station in my room by the entrance of the 220 and feedline

There had been some repairs to parts of the lodge this year, so the roof did not leak in my room, and a

newly installed air conditioner, along with a directional fan aimed at my power supplies and amplifier, kept the equipment very cool during the entire operation at a kw output for hour after hour. The toilet still needed a bucket of water for flushing, and there was no running water for taking a shower, but I was provided with desalinized water to boil for the freeze-dried meals I had mailed ahead of time to Yap and brought over with me to Falalop Island.



Aiming the antenna visually during New Moon

The major operational challenges from V6M included a power outage during a critical operating window, a new metal roof overhang that obstructed the clear shot over the water during the far northern moonsets until the end of the trip, and high TEC during the afternoons and evenings that interfered with effective European contacts during V6M moonsets.



Moonset just behind the overhang of the new metal roof

I also had the same antenna aiming constraints as in T8, and was unable to elevate high enough to match the windows with horizon-only stations in western NA and eastern EU. Despite these obstacles, I completed contacts with an additional 43 stations in 14 DXCC via 6m EME to add to the 37 that were

completed in August 2015. 19 additional stations in 5 more DXCC were copied via EME. The detailed log is shown following some current photos from around the island.



Devastation is still very apparent on Falalop



Shell of the Ulithi Atoll High School still awaiting repair



One of the many houses being rebuilt by foreign subcontractors funded through USAID



All the street lights stay on all the time, due to damaged sensors



Renovated church on Falalop Island



Flowers with bi-colored leaves on Falalop



Collecting small crabs in front of the lodge for her father's fishing bait



Flowers are everywhere in this tropical climate



Children playing down at the beach in front of the lodge



The outdoor local barber shop on Falalop Island



A smaller spider on the doorway threshold at the lodge- I was told by a Peace Corps worker that there were no poisonous plants or insects on Falalop Island



Obligatory selfie of V6M at the airport to prove to the IOTA organizers that I was really there!



Dominic, KG6TWZ, a local villager on Falalop is now V63YDY and anxious to try to obtain a radio to activate Falalop



Luggage scale at the Ulithi Airport



The 6m EME station at the Ulithi airport awaiting weighing for departure on the Monday morning PMA flight back to Yap

Log of V6M 2016 EME Activation by W7GJ

BEST					BEST			
#	STATION		UTC	JT65A	#	STATION	JT65A	
	<u>WORKED</u>	<u>DATE</u>	<u>TIME</u>	<u>SIGS</u>		<u>COPIED</u>	<u>SIGS</u>	
1	OA4TT	8/29/2016	2008	-23	1	EA6VQ	-21	
2	K4PI		2018	-23	2	EI3KD	-24	
3	VE5UF		2026	-26	3	ES6RQ	-22	
4	W9GA		2030	-23	4	F5LNU	-26	
5	N3CXV		2054	-24	5	G8VR	-19	
6	W9JN		2100	-26	6	K4MM	-26	
7	W6XU		2106	-27	7	K7CW	-17	
8	WA9LFO		2126	-25	8	K7LED	-21	
9	K9VTG		2204	-27	9	K7RWT	-19	
10	HA0DU	8/30/2016	0336	-21	10	KD7DCR	-30	
11	G8BCG		0340	-25	11	LA8AJA	-25	
12	HA7TM		0428	-22	12	N8JX	-21	
13	F6BKI		0422	-23	13	OH7KM	-27	
14	EA8BDM		0508	-16	14	VE3MMQ	-25	
15	S51V		0628	-26	15	W3XO	-21	
16	N3XX		1954	-25	16	W5ADD	-24	
17	K0DAS		2055	-20	17	W6SR	-23	
18	W7GJ		2102	-26	18	W7MEM	-25	
19	N8GTI		2146	-25	19	ZS6NK	-22	
20	N0LNO		2318	-28				
21	OZ4VV	8/31/2016	0404	-22				
22	S59P		0532	-20				
23	NU0P		2110	-26				
24	WA4NJP		2150	-26				
25	KC0SKM		2304	-20				
26	AC0RA		2310	-24				
27	LZ2CC		9/1/2016	0514	-19			
28	S51DI			0530	-28			
29	9A8A			0550	-23			
30	G5WQ	0556		-21				
31	LZ2DF	0622		-20				
32	G4FUF	0556		-24				
33	LZ2WO	0728		-26				
34	NR0X	2204		-21				
35	OH6MIK	9/2/2016		0528	-27			
36	LZ2HM		0606	-24				
37	S51ZO		0640	-17				
38	DF9OX		0908	-24				
39	K0EGQ	9/3/2016	0020	-23				
40	KD0WTE		0040	-22				
41	ZL2DX		0728	-29				
42	DK2PH		0742	-26				
43	G3WOS		0834	-26				

CONTRIBUTIONS

Many thanks to local hams AJ7LL, K7VK, led by experienced EME'er KB7Q, who came out to run the W7GJ home station while I was in the Pacific!



KB7Q at the W7GJ home station, being guided by my cat, Taji

I can't express enough gratitude and appreciation for all the support I received from so many dedicated Magic Band operators. It was your help that made this trip possible, and I only regret that the operation did not last long enough for me to contact all of you. I hope I can make it up to you by giving you a 6m EME contact from another rare DXCC next year.

Special thanks also to the following hams whose very generous contributions made this Pacific DXpedition possible:

SM7FJE, KJ9I, G8VR, KB7Q, K7CW, ZL3NW, K2ZD, N3XX, K6QXY, W6XU, DL8YHR, DF9OX, G8BCG, W5ADD, ON4IQ, ZS4TX, K6EME, GW4WND at [The DX Shop](#), N7IP, KR7O, OH2BC, KB3SI, K5QE, YO9HP, EA8DBM, SP3RNZ, W8PAT, GD0TEP, S51DI, IW5DHN, KG7H, K7RWT, S57RR, K4PI, KT1J, OZ4VV, N7NW, OA4TT, F6BKI, W7JW, W3XO, [SMIRK](#), W9GA, LZ2WO, SP4MPB, K0DAS, N0LNO, K0EGQ, KC0SKM, AC0RA, NR0X

SUMMARY

Operating 6m EME from a location in the TEP Zone is challenging because there is almost always high ionization (TEC) around you during the daytime and evening. My best success has always been operating in the middle of the night, when there is little ionospheric activity to interfere with the moon-bound signals. Unfortunately, it is virtually impossible to have both moonset and moonrise take place during the middle of the night, so some compromises have to be made. When the antenna is elevated, the local high TEC becomes less of a factor. However, when operating near the equator, the moon can be quite high in the sky - higher than it is possible to elevate a single yagi. That certainly was a factor from both T8 and V6 during this trip. But through diligent operation, 92 contacts were completed on 6m EME, and new DXCC were provided to a number of deserving stations. I think that is pretty good, considering the 37 stations I worked last year from V6M were thoughtful enough to stay out of the way this time to let others have a shot at a new DXCC.

CONCLUSION

One disappointment was the small number of horizon-only callers from eastern NA. I did have a number of prime windows for those stations to call during their moonset, but there were very few calling. Those horizon-only stations who *were* calling had great signals from *their* ground gain while I was doing the elevating on my end.

I consider my portable 6m EME station to really be quite minimal, since it is tough for me to work stations my size or smaller. If you are just starting out on 6m EME, you might want to email for skeds any of the stations I copied, since they are all capable of working my small portable 6m EME station.

Thanks for all the contacts, and the patience and persistence of all the callers! I am already investigating licensing and potential sites for next year's 6m EME DXpedition, so stay tuned for more information! And there is plenty of time for you to put together a 6m array with elevation so you aren't left out if I am unable to elevate high enough to match your moonset or moonrise! And just as exciting is the fact that we hope to have a couple more dB sensitivity in the WSJT software by next year! Good luck and continued good Magic Band DXing!

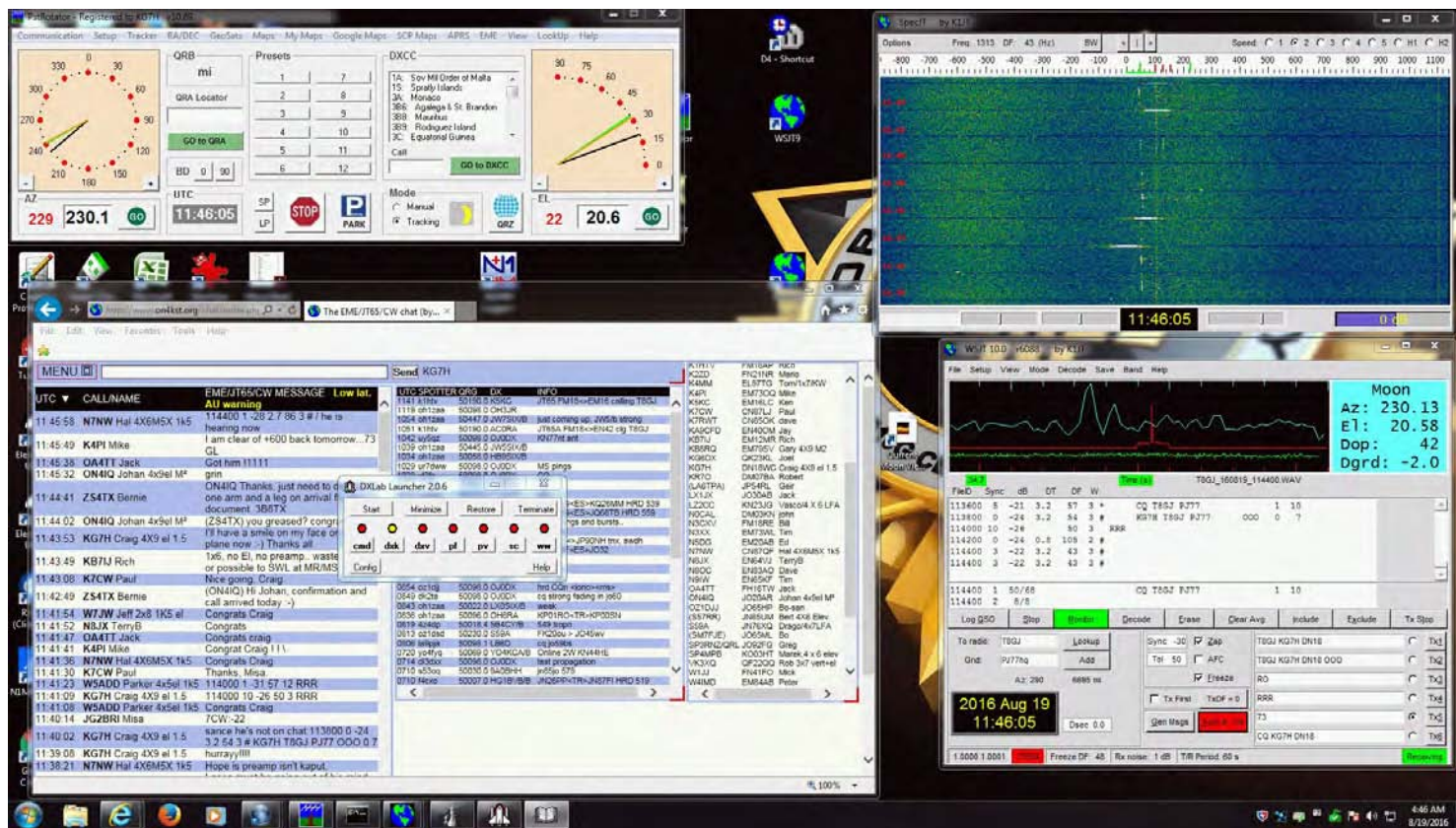


The DXShop

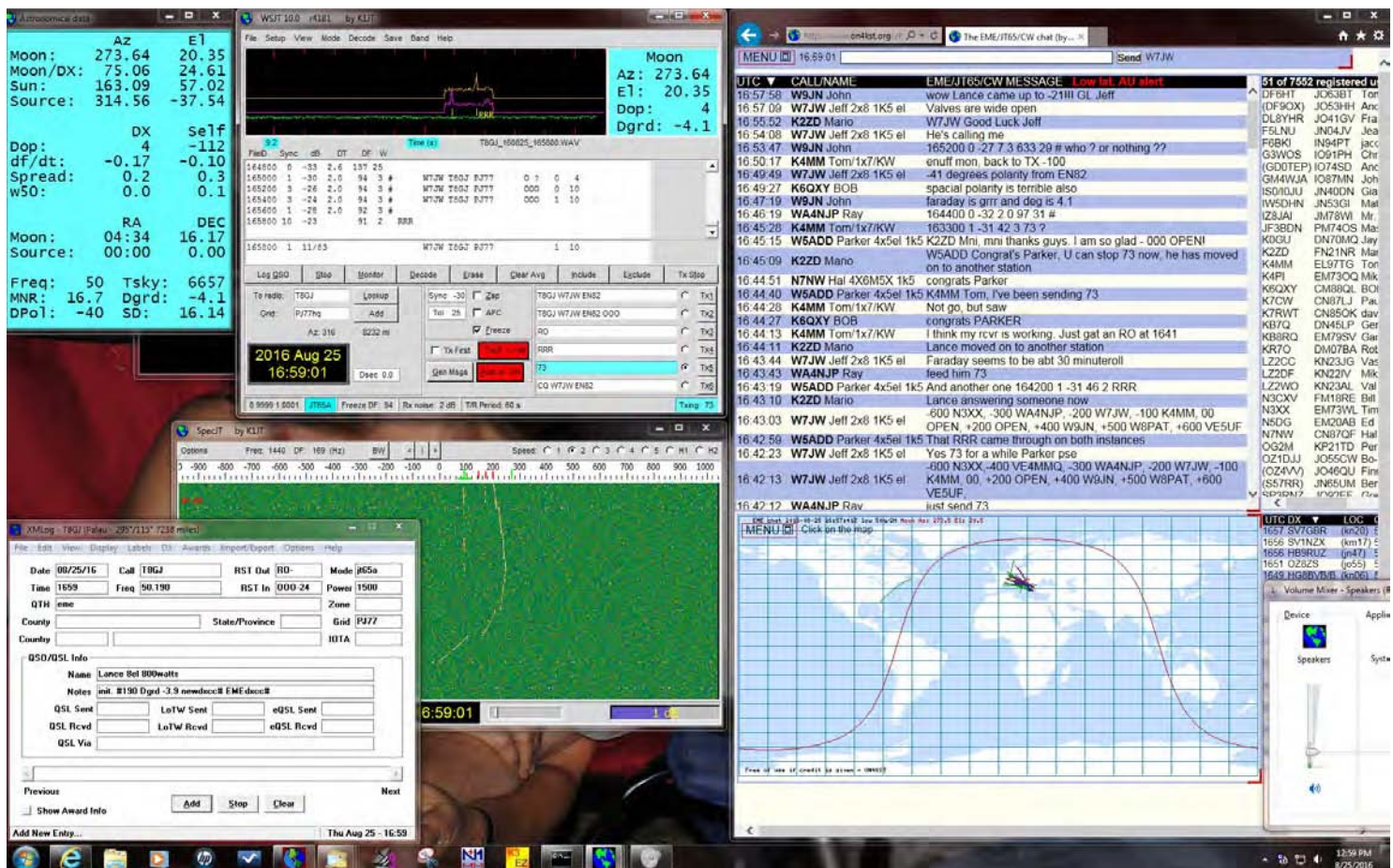
APPENDIX

The following photos provide an idea what my 6m EME signal looked like to others, and what I saw from my end while I was working the pileups. Part of the reason I am able to complete with so many stations is that I ask callers to send me reports if they see my trace. That way, I can identify callers who have the best opportunity to complete with me quickly at any given time. This procedure is explained in detail on my web page at

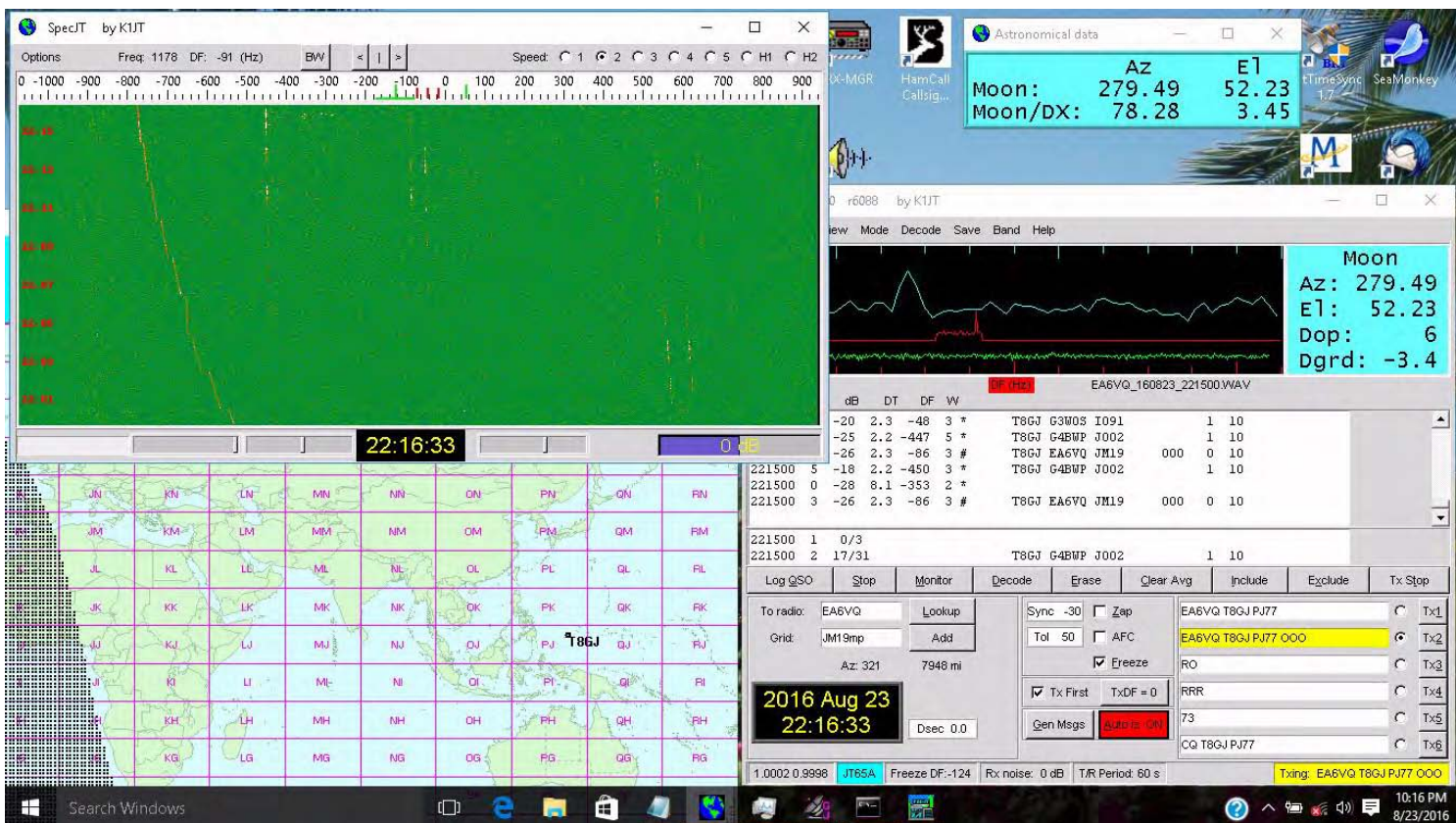
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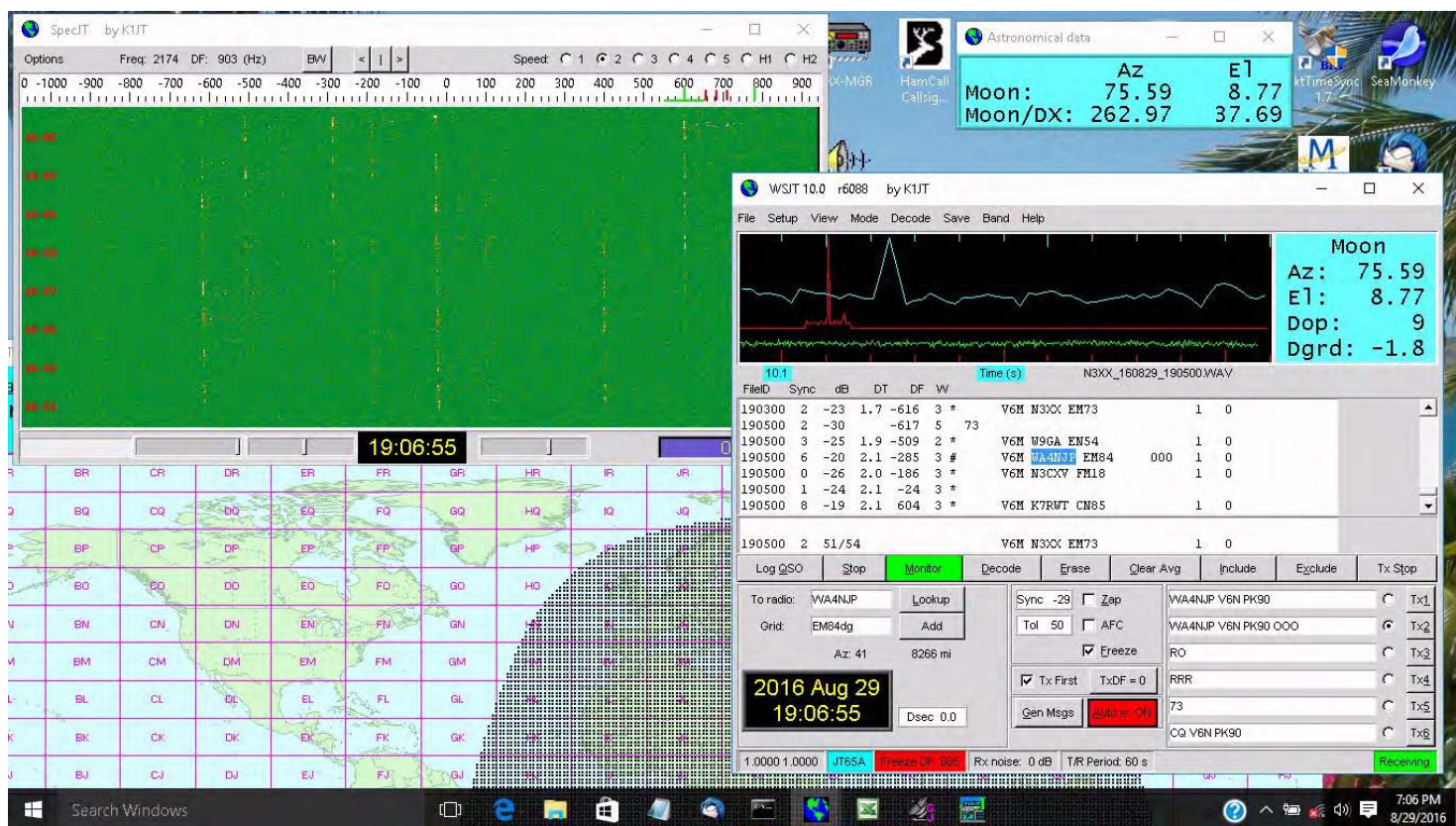
KG7H working T8GJ



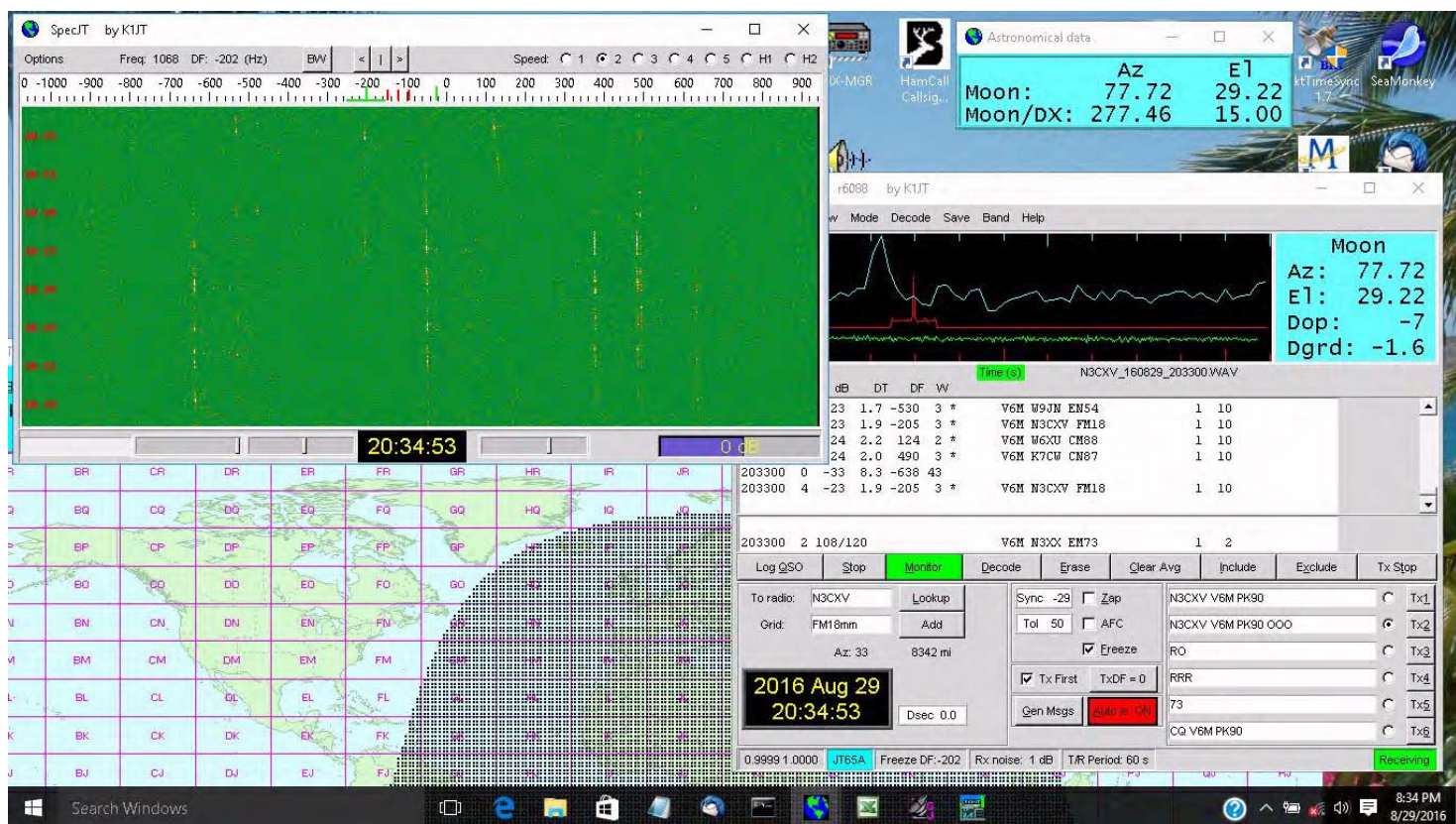
W7JW working T8GJ



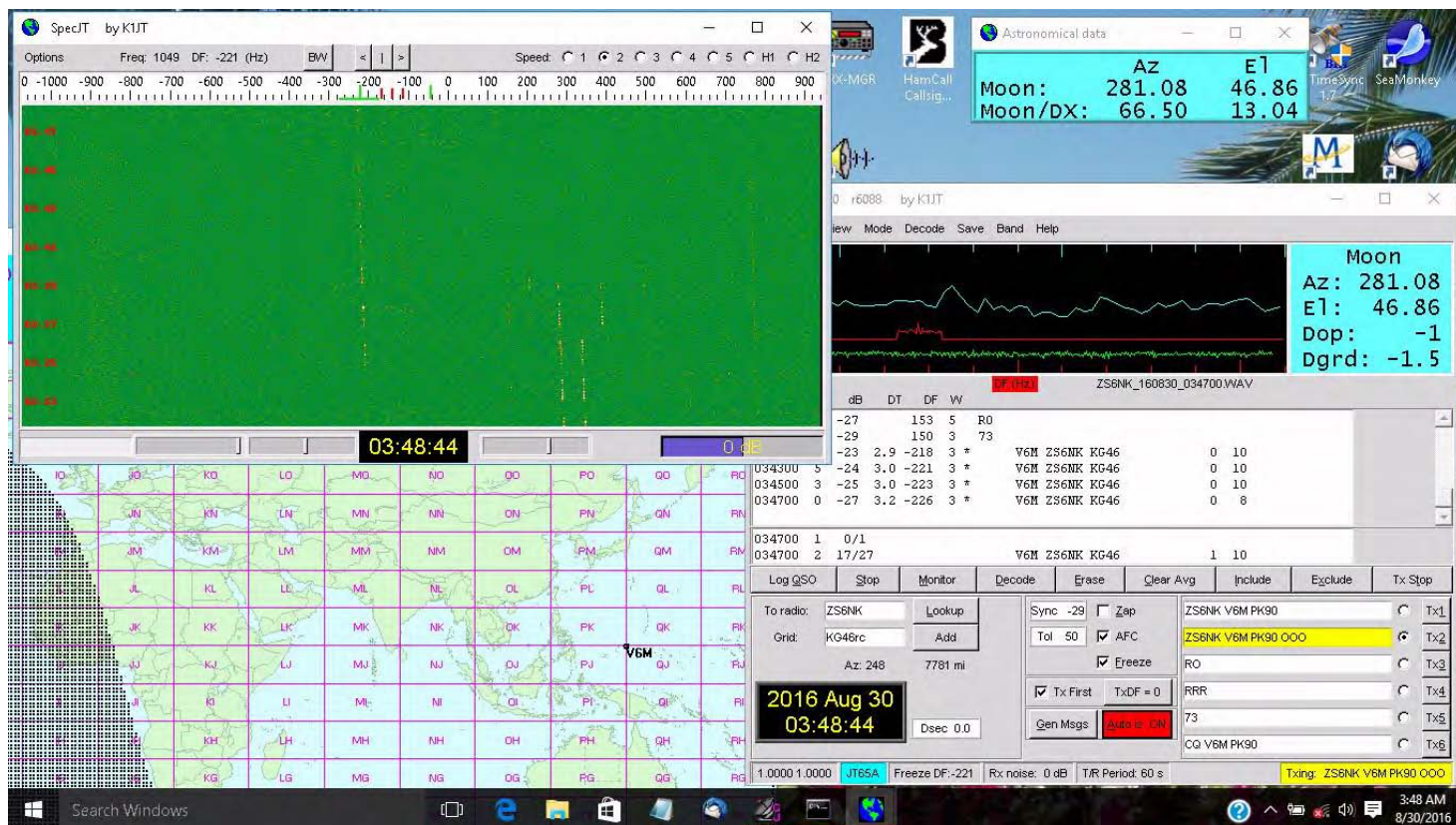
T8GJ selecting a caller who reports copying his trace, and tries to answer him



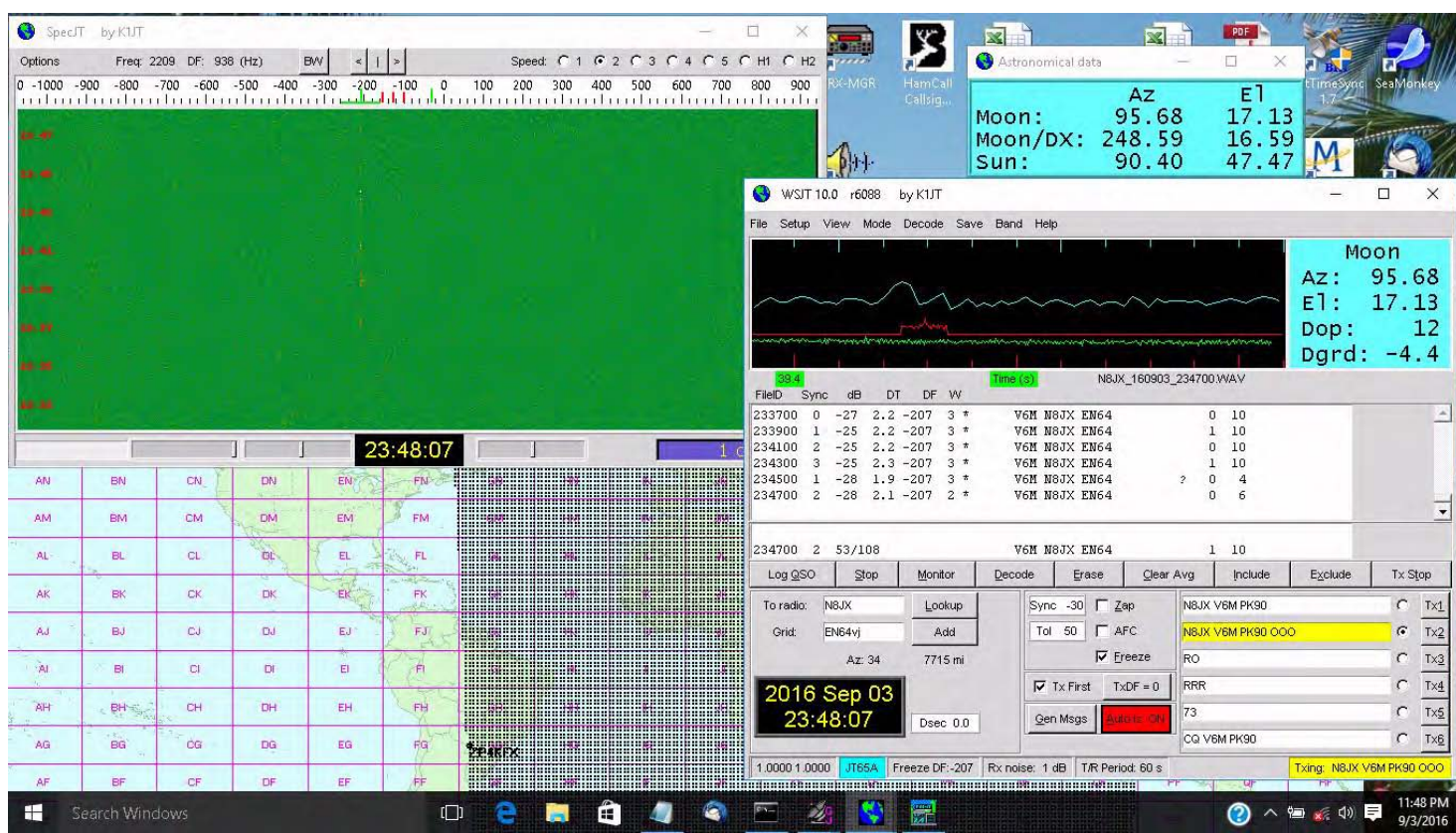
During the first moonrise, V6M selects a caller who reports copying his trace, and tries to answer him



Later during the first night at V6M, after the antenna is elevated to match the moonset along the East Coast of North America



V6M trying to work ZS6NK after completing with G8BCG



V6M trying to answer N8JX – if no callers appear to be copying his trace, V6M picks a station and tries to work him