

2008 ARRL 10 GHz And Up Contest—Aug 16-17 and Sep 20-21

By: Jon Platt, WØZQ

"If there is no struggle, there is no progress" – Frederick Douglass

Microwave testers understand the concept of struggle. To participate in this unique event, contestants must employ knowledge, skills, and expertise to assemble equipment, often trek to high places while experiencing the forces Mother Nature can bring to bear, all in the hope of contacting other like-minded contestants using frequencies in the Gigahertz range at distances measured in the hundreds of kilometers and far beyond line-of-sight. Intrepid 10 GHz testers that have stood with their dishes in the extreme wind and weather understand the concept of "struggle". But how do we measure "progress"--has the 10 GHz And Up contest made progress?

Signs of progress could be indicated by upward trends of scores, the number of participants, or the distances spanned over time. Let's stand back a bit and take a look. The very first 10 GHz contest was held in 1986. That contest attracted 52 contest entries and the winning score was 3,763 points based on 40 contacts with 18 unique stations. This year's 23rd running of the contest attracted 103 contest entries and the winning score was 79,450 points based on 383 contacts made with 25 unique stations. In 1986 the best DX was 229 km while this year's best 10 GHz DX was 1,094 km. By these measures we have indeed made progress!

Contest Highlights

This year the northeast part of the country found itself experiencing some rare and very exciting tropo conditions during the second weekend of the contest, September 20-21. On Saturday, Dale, AF1T and Mickie, W1MKY, operating from FN41oi and FN41ql on Martha's Vineyard, MA worked several stations in the Lake Ontario region including VE3SMA, VE3FN, VE3FHM, VE3NPB, and VE3ZV at a distance of 600 to 800 km. On 10 GHz, AF1T was running 10 watts into a 24-inch dish while W1MKY was running three watts into a 12-inch dish. Steve, VE3SMA reports that during his 690 km contact with this group he was running about 250 mW into a two-foot dish. Murray, VE3NPB, at a distance of 788 km, was using eight watts and a 20-inch dish. Murray reported that signals were remarkably loud, sometimes S8 or better. Murray also worked N1JEZ and K1LPS on Mount Washington (FN44ig) at 687 km, VE3FN/VE2 (FN26rf) at 527 km, and KT1J (FN34bi) at 494 km during this tropo event. Murray commented that "this contest really raised the bar for what's possible on 10 GHz".

Roger, VE3RKS, working from the same location with VE3SMA and VE3NPB, was able to make the grade from the Niagara Escarpment above Hamilton, ON to the group on Mount Washington, NH as well (687 km). Roger was running just 150 mW into a 17 dBi-horn antenna and made the contacts using SSB--very nice indeed!

On the same day, Steve, VE3ZV, operating from FN03au and running two watts to an 18-inch offset dish, worked W1GHZ (FN41ee) at 745 km, AF1T and W1MKY (FN41oi) at 801 km, N1JEZ and K1LPS (FN44ig) at 695 km with S9+ SSB signals, K1WHS (FN43mj) at 727 km, and KT1J (FN34bi) at 489 km. Steve, VE3ZV believes that his contact with AF1T and W1MKY may be a new Canada-to-US distance record. During this same time Ray, VE3FN, operating from the summit of Mont Tremblant, QC (FN26rf) with 12 watts and a two-foot dish, was surprised to hear the WA1ZMS 2 meter beacon (FM07fm), a distance of 1,053 km, at 20 over S9. It was during this time that he was able to connect with the AF1T and W1MKY duo at 620 km.

On Sunday, the tropo shifted a bit further east, taking the VE3's out of the picture but allowing for some long-haul contacts up and down the northeast shoreline. It was AF1T and W1MKY on Martha's Vineyard

who made the longest contact of the contest with Dex, W4DEX in Stanfield, NC (EM95tg) at a distance of 1,094 km. Dex was running 10 watts from a TWT to a two-foot dish mounted at 100 feet. Dale, AF1T reports that Dex was workable most of the day and at times peaked at S9. Other stations that were able to work W4DEX included W1GHZ on Block Island, RI (FN41ee) at 1,008 km, K1TEO, N1SAI, W1AIM, and N1JFU. Finally, AF1T also reports having worked K1MAP and NG4C (FM26aq) at 704 km with K1MAP running just 200 mW.

Aside from the northeast's tropo openings, highlights were harder to come by. The expected DXpedition to XE2 did not appear to happen this year. However, Bernado, XE2HWB was active from DL27nt and once again made some nice long haul contacts using the California-Baja tropo duct at distances up to 872 km. To demonstrate how much fun we can have playing with microwaves, Steve, KB8VAO reports making a number of 10 GHz contacts in the 150 to 230 km range running nothing more than a homebrew omni-slot antenna from the comfort of his air-conditioned car.



**John Toscano, WØJT, making a 250 km contact on 10368.100 MHz from southwest Minnesota.
(Photo - Bruce Richardson, W9FZ)**

On the bands above 10 GHz, Steve, VE3SMA reports that he and VE3NPB (both EN92sn) were able to work VE3ZV (EN82sb) across the longest all-water path over Lake Erie, a distance of 173 km with 559 CW signals. Steve speculates that this may be a 24 GHz distance record for stations within Canada. Steve's 24 GHz system was running 500 mW to a 12-inch dish with both ends of the path located right on the beach. For some time now, several groups that work across the Great Lakes have reported low-altitude propagation enhancement that may be evaporation-duct propagation. What made this contact even more memorable is that it was VE3NPB's very first 24 GHz QSO using a brand new station that he just completed the night before the contest, this being the very first signal that he had ever heard with it! Murray's system had a 3 dB noise figure and was running 65 mW to a 16-inch dish. Without a tripod the system was mounted on a small folding workbench about 24 inches above the sand. The system on VE3ZV end of the link consisted of 200 mW and a 24-inch dish.

Way out west, Clint, KA7OEI was able to work Ron, K7RJ at a distance of 172 km on Light using both a high-power Luxion red LED system and a low-cost laser pointer system. Clint indicated that atmospheric haze quickly obliterated the coherency of the laser system so that scintillation distortion was not a problem, but that the LED system was a whole lot easier to point!

2008 Contest Results

Table 1 - Participation by Call Area

<i>Call Area</i>	<i>Entries</i>	<i>Call Area</i>	<i>Entries</i>
6	30	9	4
Ø	19	7	4
1	16	5	4
VE	8	3	2
8	7	2	2
4	6	DX	1

Table 2 – Top 10 Scores by Category

10 GHz Only	Score	10 GHz and Up	Score
WBØLJC	81,950	W6QIW	35,489
WØZQ	81,489	AA6IW	32,502
W9FZ	79,562	K6GZA	32,159
WA2VOI	78,258	KB8VAO	29,924
KCØP	65,311	W1GHZ	27,773
WØJT	58,952	N6RMJ	27,182
NØKP	55,889	N1JEZ	25,076
KDØJI	53,573	W6BY	20,807
KCØIYT	52,569	W6OYJ	20,230
WBØVHF	48,902	VE3ZV	17,957

Since 2003 we have seen a slow but steady decline in official entries. After operating in this contest, please make sure that you send in your log! **Table 1** shows this year's 103 logs, representing the lowest number of logs received since 2000. Of these 103 logs, 30 were from 6-land, 19 were from Ø-land, 16 were from 1-land, and 8 were received from VEs. Since operating in this contest requires a degree of coordination with others, it's no surprise that activity tends to be centered on regions that have active weak-signal clubs.



This year's 10 GHz Only winner, Gary Danelius, WBØLJC. (Photo - Bruce Richardson, W9FZ)

Table 2 shows the Top 10 Scores in both categories. Let's start in the 10 GHz Only category. From 76 logs, Gary Danelius, WBØLJC led the way with 81,950 points. Gary's first place finish was helped along with 383 contacts, the highest in the contest. Gary operated with the Northern Lights Radio Society who concentrated their resources on one fixed site and one rover pack that resulted in this club's members capturing all Top Ten spots in the 10 GHz Only category. Glenn Allen, KE6HPZ was able to work 56 different 10 GHz stations to capture first place for the highest number of unique calls worked. [Table 3](#) shows the calls of all stations entering the 10 GHz Only category.

In the 10 GHz And Up category with 27 logs, Steven Miller, W6QIW claimed first place with a score of 35,489 points. Steven also captured first place for the most number of contacts in this category with 178 and the most number of unique calls worked with 61. Of the 27 competitors in this group, 25 reported contacts on 24 GHz, 7 on 47 GHz, 4 on 75 GHz, and one on Light. The best 24 GHz DX was reported by N6TEB and AA6IW at 258 km, the best 47 GHz DX was reported by K6GZA at 149 km, while KA1OJ, W1FKF, WA1MBA, and W1RIL all reported 75 GHz contacts in the 42 to 45 km range. The lone Light contact was reported by KA7OEI at a distance of 172 km. All of the 10 GHz And Up entries are shown in [Table 4](#).

Analysis

The following six graphs provide additional analysis for the 10 GHz And Up contest. This contest started in 1986 and the 10 GHz And Up category was added to the contest in 1996. The rules have remained stable over this time period.

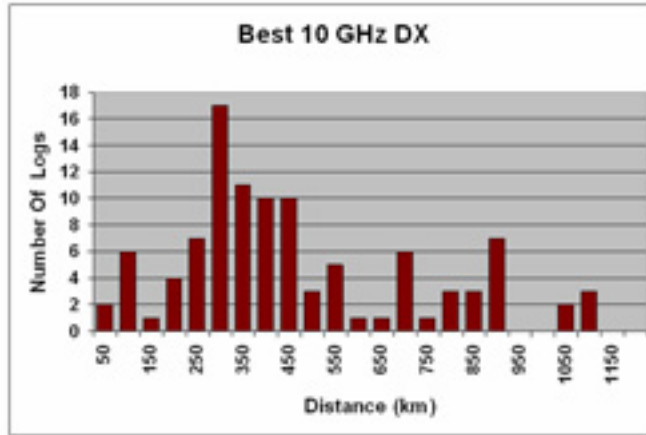


Figure 1 — This graph shows the farthest DX worked on 10 GHz. Seventeen entrants had their maximum DX in the 300 km range.

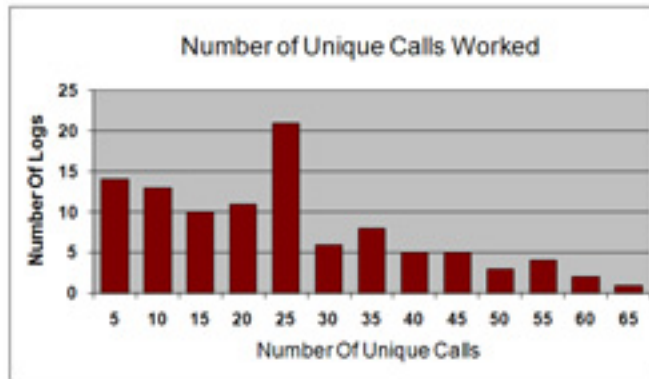


Figure 2 – 2008 Number of Unique Calls Worked Histogram

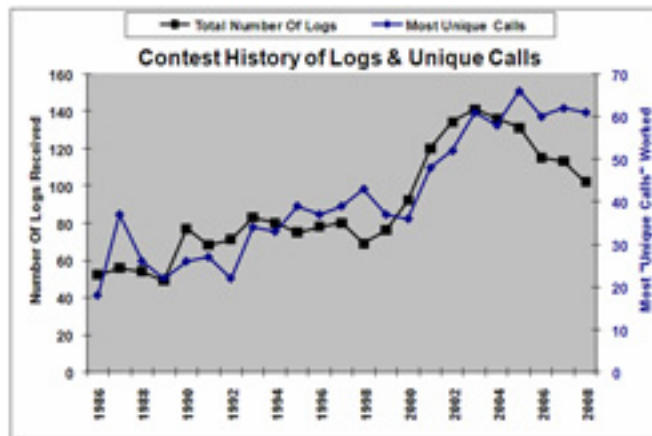


Figure 3 – Contest History: Number of Logs Submitted & Number of Unique Calls

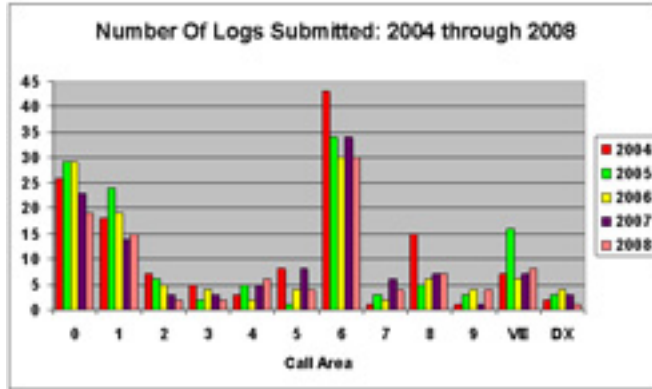


Figure 4 – Contest History: Logs Received By Call Area For 2004 Through 2008



Members of the NLRs Roverpack working through the early morning haze. (Photo - Bruce Richardson, W9FZ)

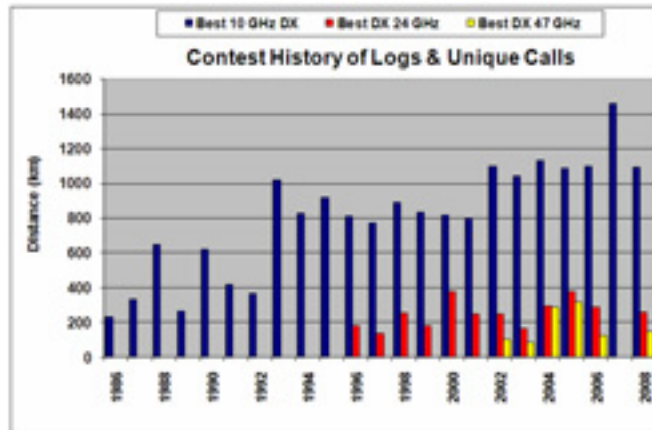


Figure 5 – Contest History: Best DX By Bands



Figure 6 – Contest History: Top Score

Figure 1 shows a histogram for the “Best 10 GHz DX” from all 103 logs submitted this year. The most common “Best DX” distance was 250 to 300 km with 18 stations logging their best DX in this range. The average “Best 10 GHz” DX was 440 km and the median distance was 365 km. [Table 5](#) shows the DX leaders on each band. These are great distances being spanned on the microwave bands!

Figure Two is a second histogram showing the number of logs received containing different numbers of unique calls within those logs. The spike at 20 to 25 is caused by the large number of logs submitted by the NLRs group that operated in a collaborative way and who all worked between 21 and 25 unique call signs. [Table 6](#) shows the stations with the top totals of QSOs in the log.

Figure 3 shows the history of logs received (left Y-axis) and unique calls worked (right Y-axis) since the start of the 10 GHz And Up contest in 1986. The highest number of logs was received in 2003--141 logs. Since 2001 there has been a slight but steady decline. At the same time, the highest reported “Number of Unique Calls Worked” has hovered around 60. This may indicate that while the number of active participants has stayed about the same, the number of participants who submit logs has been decreasing. The Best DX by band has made three abrupt changes since the 10 GHz & Up category was added to the contest in 1996. The Best DX by band over the contest's history is shown in **Figure 5**. 1996 was the first year that the 10 GHz And Up category was added, allowing contacts on 24 GHz and above. This graph represents only terrestrial contacts, excluding EME. From 1986 to 1992 the “Best DX” was less than about 600 km. From 1993 to 2001 the range jumped to 800 to 1,000 km. Then from 2002 to 2008 the range jumped to 1,100 km with one excursion to the all time record of 1,460 km in 2007. By comparison, starting in 1996, the “Best DX” on 24 GHz and 47 GHz have held relatively steady at about 200 to 350 km. The all-time “Best DX” for 24 GHz is 375 km, a path completed twice, once in 2000 and again in 2005, and 313 km on 47 GHz, also in 2005. Figure 5 shows that this year, 18 stations reported making contacts of 250-300 km on 10 GHz!

Figure 6 shows the top scores from 1986 to 2008. Again, the 10 GHz And Up category did not start until 1996. Overall scores have been slowly rising; in 2002 XE2/W6YLZ, KØRZ, and AD6FP all cracked the 100 k point barrier for the first time. Since 2002, scores have continued to stay above pre-2002 levels but have shown much more volatility. That is most likely due to the impact of local weather during the contest weekends and/or organization efforts at the local level.



This year's 10 GHz Only 3rd-place winner Bruce Richardson, W9FZ. (Photo - Bruce Richardson - W9FZ)

Looking Ahead – The 24th Running

So the struggle continues. Without struggle, there is no progress. As a microwave contester, how many times have we heard nothing but hiss from our receiver when we are trying out a new and challenging path? But when it all comes together, through perseverance and know-how coupled with a bit of luck, we do hear the other stations signal, the excitement has no bound, and progress is made. Make sure to catch the fun and adventure that is the ARRL's 10 GHz And Up contest on August 15-16 and September 19-20, 2009 and make sure that you submit your log!

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Table 3 - Logs Submitted in the 10 GHz Only Category

AA2LY, AF1T, KØAWU, KØHAC, KØJSP, K1LPS, K1MAP, K2STO, K6HLH, K6NKC, K6QG, K6WCI, K7RJ, K9MK, KA1LMR, KA1ZD, KB7NIE, KCØIJB, KC6UQH, KCØIYT, KCØP, KD0EJT, KDØJI, KE6HPZ, KH6WZ, KI5WL, KI6HHU, KJ6HZ, KK6MK, KMØT, KM5PO, KN6VR, KØKFC, KØVXM, NØUK, N1SAI, N6JV, N6LL, N6NB, N9JIM, N9RIN, NO5K, NØAKC, NØKP, NTØV, VE2PIJ, VE3FN, VE3OIL, VE3RKS, VE3RWN/W6, WØJT, W1AUV, W1MKY, W1VT, W2KV, W3HMS, W4DEX, W6SR, W9FZ, W9SZ, WA2BTR, WA2VOI, WA3PTV, WA5YWC, WA6KBL, WA6QYR, WA8RJF, WBØVHF, WB6CWN, WB8TGY, WBØLJC, WJ9B/R, WØGHZ, WØPHD, WØZQ, and XE2HWB

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Table 4 – Logs Submitted in the 10 GHz And Up Category

AA6IW, AF6IF, K2YAZ, K4RSV, K6GZA, KA1OJ, KA7OEI, KB8VAO, KC6QHP, KI4NPV, N1JEZ, N6RMJ, N6TEB, NE8I, NN9X, VE3NPB, VE3SMA, VE3ZV, W1FKF, W1GHZ, W1JHR, W1RIL, W6BY, W6OYJ, W6QIW, WA1MBA, and WA8VPD.

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Table 5 - Distance Leaders by Band

10 GHz	Best DX (km)
AF1T	1094
W1MKY	1094
W4DEX	1088
N1SAI	1008
W1GHZ	1008
XE2HWB	872
KB8VAO	871

W6QIW	871
AA6IW	871
N6LL	864
WB6CWN	864
KE6HPZ	863
K6WCI	810
N6TEB	810
VE3ZV	801
VE3NPB	788
K6GZA	782
W2KV	755
N6NB	741
24 GHz	
N6TEB	258
AA6IW	257
KA1OJ	205
N1JEZ	205
W6QIW	193
W6BY	193
VE3NPB	173
VE3ZV	173
VE3SMA	172
47 GHz	
K6GZA	149
W1RIL	45
W1MBA	42
KA1OJ	42
W1FKF	42
300+ GHz	
KA7OEI	172
K7RJ	172

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Table 6 - Top 10 Total QSO's Completed

10 GHz Only	QSOs	10 GHz and Up	QSOs
WBØLJC	383	W6QIW	178
WØZQ	379	AA6IW	158
W9FZ	376	KB8VAO	157
WA2VOI	371	K6GZA	127
KCØP	300	N6RMJ	117
WØJT	285	KA1OJ	114
NØKP	273	W1GHZ	113
KDØJI	267	W6BY	106
KCØIYT	266	W1FKF	105
KH6WZ	243	VE3ZV	94