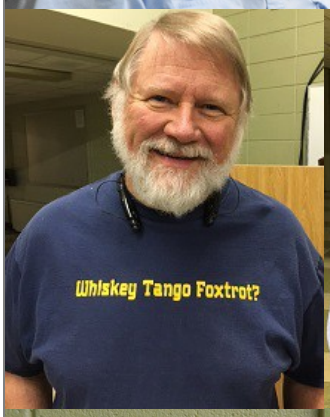
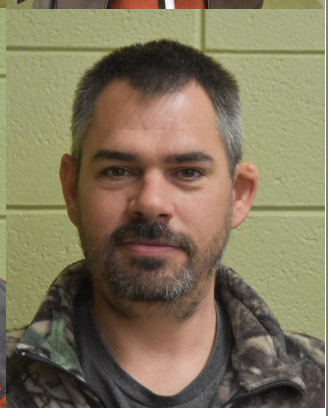
JOHNSON COUNTY RADIO AMATEURS CLUB, INC.
P.O. Box 93
Shawnee Mission, KS 66201

FEEDBACK

MARCH 2017





Top) a full house listens to Lee Ward, KØLW speak of engineering,regulatory and operational experiences with solar power. 2nd) Lee Ward, new member Robert Orr, KCØKDG, new ham David Albright, KEØDSV, 3rd) new hams Mainul Mamun, KEØMDZ, Jeff Bell, KEØJKM, Mike Hawkins, KEØMDQ, 4th) Newly re-active ham Leslie Pratt, KDØDBM

MARCH MEETINGS

***March 10** -- Public Service Events - Herb Fiddick, NZØF, Brian Short, KCØBS and Steve*

March 24** – TBA at **Faith Chapel Assembly of God, 15000 Newton, OPKS

The Johnson County Radio Amateurs Club normally meets on the 2nd and 4th Fridays of each month at 7:30 PM at the Overland Park Christian Church (north entrance), 7600 West 75th Street (75th and Conser), west of the Fire Station.

Much of the membership travels to the Pizza Shoppe at 8915 Santa Fe Drive for pizza buffet and an informal continuation/criticism/clarification of the topics raised at the meeting ... or anything else.

LEAVE THE CHURCH, TURN RIGHT (WEST) ON 75TH. TURN LEFT (SOUTH) ON ANTIOCH. TURN RIGHT (WEST) ON SANTA FE. THE PIZZA SHOPPE IS JUST PAST THE SONIC ON YOUR LEFT.

IN THIS ISSUE

-> FEEDBACK <-

A publication of the
Johnson County Radio Amateur Club, Inc.

Bill Gery, KA2FNK, President

Jaimie Charlton, ADØAB, Vice President

Ted Knapp, NØTEK, Secretary

Cal Lewandowski, KCØCL,Treasurer / FEEDBACK distribution

* * *

Chip Buckner, ACØYF, Editor

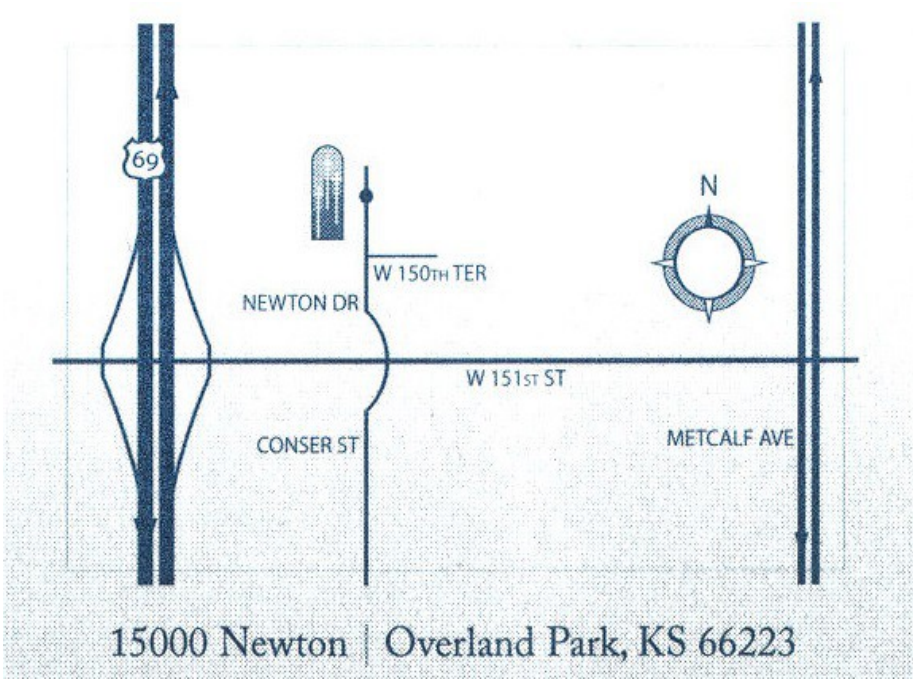
Charlie Van Way, NØCVW, Photography

Deb Buckner, KDØRYE, Contributing Editor

All email addresses are available at w0erh.org

Important:

The March 24 Meeting of the JCRAC will be at Faith Chapel Assembly of God at 15000 Newton, Overland Park, KS.



PRESIDENT'S CORNER

Here it is March. Where did February go? For me a work project consumed the entire month. This included an extended stay in Silver Spring, Maryland which is just outside Washington DC at Weather Service Headquarters. I returned to a large stack of mail, both snail and electronic. The 'fridge needs to be restocked. Two weeks on laundry kept the the washer and dryer busy the first day home.

Our clubs will be sponsoring the next WW1USA event. So please sign up to operate and help with the setup and tear down.

We have some work to do for Field Day this year. The tower at the park is going to be removed and the park is not sure whether there will be construction going on at the site at Field Day. We are looking at other possible location at the park.

– Bill Gery – WA2FNK

Johnson County Radio Amateurs Club - February 10, 2017

Attendance: Self introduction with name and call sign. 32 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the January 27, 2017 meeting were read and accepted with one opposed vote.

The Treasurer's report, as follows, was read and accepted unanimously.

Cash on Hand	$ 90.00	Repeater Operating Reserve	$ 960.65
Checking Account	$ 571.84	Memorial Fund	$ 310.00
Savings Account	$ 11,008.83		
Total	$ 11,670.67	Active Members	152

Old Business:

- We welcomed all 1st time visitors to tonight's Club meeting.
- Repeater Update – All are working well!
- Field Day 2017 will be at the Observation Tower in Shawnee Mission Park. Barb McKinney, KE0EGG will be getting prices and options for the dinner on that Saturday.
- WW1USA – over 1600 contacts were made during the January 28 and 29 event. The next WW1USA event will be April 29 – 30 and will be sponsored by our Club.
- We will not be able to have the March 24th Club Meeting at the Church due to room unavailability. The location for the March 24th meeting will be at the Faith Chapel Assembly of God 15000 Newton, Overland Park, KS.
- Two of our Club members have recently experienced health problems. They are Don Warkentien, W0DEW and Rich Zaban KC0VDH.

New Business:

- None.

Reports:

- 6 m – None.
- 10 m SSB Roundtable – 12 participated on February 9.
- 440 Wheat Shocker net – 14 Check-ins on February 8 and 10 Check-ins on February 1.
- 2m Wheat Shocker net – 22 Check-ins on February 9 and 17 Check-ins on February 2.
- HF Activity – North Cook Island, Africa, Morocco, Antarctica, China.

Announcements:

- Dayton Hamvention – May 19-21. John Raydo, K0IZ has room for additional rider to Dayton. See him for details.
- Watch Larry's List for upcoming events.

Business meeting adjourned at 7:49 PM

Program:

- The Program for this evening was a presentation on Waterproofing Connectors by Bill Brinker, WA0CBW.

Johnson County Radio Amateurs Club - February 24, 2017

Attendance: Self introduction with name and call sign. 45 signed the check in sheet. This was followed by the Pledge of Allegiance.

The Minutes from the January 10, 2017 meeting were read and accepted with one opposed vote.

The Treasurer's report, as follows, was read and accepted unanimously.

Cash on Hand	$ 90.00	Repeater Operating Reserve	$ 987.65
Checking Account	$ 157.38	Memorial Fund	$ 310.00
Savings Account	$ 11,008.83		
Total	$ 11,256.21	Active Members	157

Old Business:

- We welcomed all 1st time visitors to tonight's Club meeting.
- Repeater Update – All are working well!
- Field Day 2017 we were informed by Park officials that the possibility exist that the Observation Tower maybe be under demolition/re-construction during Field Day weekend. We are awaiting additional information. Barb McKinney, KE0EGG obtained prices and options for the dinner on that Saturday from Jack Stack BBQ and Chris Cakes.
- The next WW1USA event will be April 29 – 30 and will be sponsored by our Club.
- We will not be able to have the March 24th Club Meeting at the Church due to room unavailability. The location for the March 24th meeting will be at the Faith Chapel Assembly of God 15000 Newton, Overland Park, KS.

New Business:

- Rod Rodriguez, K6TBJ has Ararat Shrine Hambash tickets available at a discount.
- Al Rawitch, KØIMP made the suggestion that we video the Programs. Club leadership will discuss this idea.
- Due to the recent passing of PAST Club Leaders Gary Yantis, WØTM Repeater Trustee and Bill Jones, WØFN Treasurer and Secretary, a motion was made to update the Silent Key Plaque. The motion passed unanimously.
- Cal Lewandowski, KCØCL is looking for 3 people to help him with this year's Raffle that will take place during the Ensor Auction in October.

Reports:

- 6 m – None.
- 10 m SSB Roundtable – 8 participated on February 23.
- 440 Wheat Shocker net – 18 Check-ins on February 22 and 16 Check-ins on February 15.
- 2m Wheat Shocker net – 23 Check-ins on February 23 and 19 Check-ins on February 16.
- HF Activity – Pitcairn Island, Guantanamo Bay.

Announcements:

- Watch Larry's List for upcoming events.

Business meeting adjourned at 8:08 PM

Program:

- The Program for this evening was a presentation on "Solar. It's not just about the Sun" by Lee Ward, KØLW.

Gary Yantis, WØTM, SK

To the Editor:

I just saw in the March QST that Gary Yantis, WØTM was a silent key. I don't know when he died. Gary was trustee for the club's call for many, many years.

John Raydo, KØIZ

[Ed: John submitted a link to an article Gary had written about his beginnings in amateur radio for his local "Grand Mesa Contesters Club", which is reproduced, below.]

I've enjoyed contesting and DXing (preferably both at the same time) almost since the beginning when I was first licensed as KNØBHM in May, 1960. As a novice, I spent a few months on the 80 meter CW traffic nets then discovered DXing late one night when I worked a WV2 (a WA2 novice call in those days) after two hours of trying. After all these years still my most exciting DX contact! A few months later with a new transmitter, a VFO and a Gotham V80 vertical I was ready for big DX on 15 meters! I think it took about two years to reach DXCC and those early QSLs are still my favorite ones.

In those days, AM was still the predominate phone mode. Only the wealthiest hams could afford SSB equipment. "Wealthiest" to me was any ham that financed his hobby on more than the $2 a week allowance I received as a seventh grade student. It took either SSB or high power AM to work DX on phone. Plus most DX stations were only on CW anyway since few could afford anything other than homebrew or military surplus equipment. So I spent most of my time on CW. And that's never changed to this day. There have been years I've probably not plugged in a microphone. Nothing against phone– I've just always preferred CW. However, of late I've discovered how much fun an SSB contest can be with a voice keyer! Just push buttons and save your voice!

During the 60's when school didn't interrupt the important business of hamming I entered every contest. Sweepstakes, DX tests, state QSO parties – I was in them all and they were all fun. After that I somehow missed about twenty years of hamming. Marriage, making a living, raising kids – all the usual stuff. There were a few years I'd make only one or two contacts. Clearly not a good situation! I can tell you all hams from Kansas dream of a ham station on a mountaintop somewhere. Do hams born in Colorado all dream of a ham station in the middle of a flat-as-a-board wheat field? I've spent time in the Vail area every year since my first visit in 1968. I've been able to travel all over the world in my business and the mountains of Colorado are the best of any area on earth as far as I'm concerned. By 1993 I was ready for my mountaintop ham station. Easier said than done! But, with some luck, I found a great spot on Bellyache Ridge 20 miles west of Vail. It's definitely not Kansas! At 8,700 feet I have line-of-sight visibility of 30 to 40 miles in most directions.

In the five years since I got my station up and running, I've managed to enter most of the contests and have caught almost all of the DXpeditions. Being off the air so much for all those years my DXCC total is still only 328 (354 including deleted countries). The six I still need are KP1, KP5, VU4, BS7, 7O, and FT/X. The last two I have cards from but the operations (i.e. 7O1YGF) couldn't come up with enough "proof of valid license" to satisfy the ARRL.

Novice Station of the Month

Gary Yantis, KNØBHM, will receive a one-year free subscription to P.E. for submitting this picture of himself and his Novice station. Gary's shack, located in the attic of his home at 10809 Johnson Dr., Shawnee, Kansas, boasts a Globe Chief 90A transmitter and a Hallicrafters SX-99 receiver. His antenna is an "end-fed" wire. Just 13, Gary made 90 contacts in his first two weeks on the air. Congratulations, KNØBHM!

This is the first winning entry in our monthly photo contest. Why don't you try your luck? Send a picture of yourself and your Novice station to Herb S. Brier, W9EGQ, % POPULAR ELECTRONICS, P.O. Box 678, Gary, Ind., and you will be eligible for a free subscription. Photographs not chosen as prize winners will also be published as space permits.

July, 1961 93

A Hambone Story - Jaimie Charlton, ADØAB

Breakfast Club Troubleshooting

"Breakfast club, where's that?" queried the voice from the thing that looked a little like an old-fashioned cell phone sitting on the table. The table being located in a favorite fast food restaurant and around it with breakfasts in various stages of completion are sitting Jody, Dick, Frodo, Elmer and Dill.

Who are these guys, you ask? These are a few of the local hams who enjoy having breakfast and solving the world's problems together. Frodo, swallowing his last sip of coffee, picks up the handie talkie and responds to the voice.

"Hi, Hambone, come on over and join us. We're at the Burger King on Antioch."

"Great, I'll be right there."

So goes a typical breakfast club meeting. By the way, the breakfast isn't really a club. There are no membership lists, no dues, no scheduled meetings. It's just an informal gathering that springs to life most weekday mornings on the 2 meter repeater. No one knows who will show up.

"Hey, Dick, how's that boat anchor transmitter you got from Dom doing? Are you going to use it in the CW contest this weekend?" asked Elmer.

"It was doing pretty well when Dom had it, but now it seems to burn out capacitors."

"What did you do to it?"

"Not much. When I got it, Dom said he hadn't used it for decades. I looked inside and noticed that the electrolytics had swollen up a lot, so I replaced them," explained Dick.

"The transmitter worked fine for a while and then I heard a pop. When I looked to see what happened, I saw that one of the new caps had exploded."

Elmer asked, "What caused that?"

"I don't know, nothing else was changed and the transmitter worked right up until that cap blew. I replaced it and the transmitter worked fine, again. In fact, I made several contacts with it. Then, the same cap blew again. That's where it stands right now. Dead in the water with a bad cap," sighed Dick.

"You probably put the wrong voltage caps in. Replacements for very old caps are hard to find. New ones are all rated for lower voltages. Those old caps were much tougher," said Jody.

"I bought them at the electrical supply store. The clerk found some in the back that were pretty close to the originals."

"What does the transmitter use for a rectifier?" asked Jac.

"The original schematic shows a tube, but the transmitter actually has a diode bridge. There are some other changes, too. The rig isn't exactly like the diagram."

"That could be your problem. The resistance of the diode bridge is much lower than the original tube. You're probably getting a big inrush current. It's the bridge that's blowing the caps."

"That's unlikely," argued Dill. "It's only a small transmitter. Its power transformer can't supply enough inrush current to blow anything."

"Well, something blew the caps," Jody shot back. "That filter choke probably has a winding shorted to ground."

"That can't be it. A short to ground would result in no voltage and probably blow the diodes, too," countered Dill.

Just as the argument was getting good, Hambone walked in, sat down at the end of the table and began wrapping himself around a giant breakfast burrito. "What's happening, guys?"

Dick responded, "Dom gave me his old novice transmitter to play with. It works fine when it works, but it keeps blowing filter caps. I don't know why."

"Do you have it here?"

"No, sorry, it's at home."

"Well, is it a spark transmitter, or did Dom go hollow state?"

Not to be outdone by Hambone's snarky question, Dick said, "Oh, it's hollow state, all right. I have a book about how tubes work in case you want to learn something."

"Does it have bleeder resistors across the caps?" asked Jac, trying to stay in the game. "If it doesn't have bleeder resistors, voltages can get pretty high and blow stuff."

see HAMBONE on page 7

from HAMBONE on page 6

"It does, " answered Dick. "Each of the caps in series has the same value bleeder across it to equalize the voltages. They both seem to be good."

"You didn't say the caps were in series," said Jody. "But, I still think the problem is with the diodes. There's gotta be AC getting to the caps and damaging them."

"This is a chance to use your oscilloscope," added Roy, who heretofore had been quiet. "It's great for finding AC ripple and hum."

"Hey guys," said Elmer swallowing the last of his coffee and getting ready to leave. "I've gotta get going. Dick, why don't you bring that transmitter over this afternoon? We'll find the problem whatever it is. I don't think speculating without any info is going to get it fixed."

----- *Later* ----

Dick's truck has just pulled up in front of Elmer's place. Elmer and Hambone are helping carry the transmitter and a box of spare and replacement parts along with a six-pack of ice cold 'accessories'.

"Boy you sure brought a lot of stuff," exclaimed Hambone. "I'll get Unck's oscilloscope, his capacitor analyzer, Variac, dummy load and meters. We'll find out what's wrong with this thing."

"Thanks guys," added Dick.

"Hold on there, Hammy. Let's see what we have here before you go dragging out all that stuff," said Elmer as he and Dick carefully placed the transmitter, bottom up, on the workbench.

"But Unck, the guys at breakfast said you need all this stuff to find the problem."

"Yes, they did and they meant well. But remember, they were speculating and offering solutions without having any actual information about the problem. We engineers and technicians love to do that. It's a lot of fun. And, it is so much easier to solve a problem when you don't have any facts getting in the way.

Dick, let's have a look at the schematic. Which capacitors are burning out?"

"It's these two right here, C3 and C4," replied Dick as he flattened out the schematic. "They're both rated at 450 volts and connected in series. These resistors, here, are the voltage equalizing bleeder resistors and are connected in parallel with the caps."

"Where are the caps in the transmitter?" asked Hambone.

"Right here. These are two new ones. The original caps were swollen and leaking gook. You can see a hole in this new cap where it blew. I think it's C3," said Dick pointing to an orange cardboard tube with wires sticking out and a small hole clearly visible in one end.

"There's your problem!" announced Elmer. "Capacitor C3 is wired backwards."

"What?"

"Look here. The schematic shows C3 and C4 connected in series, positive to negative, with the positive terminal of C3 connected to your high voltage and the negative terminal of C4 tied to ground. But you've got the negative terminal of C3 connected to the high voltage. That's backwards," said Elmer as he sketched a schematic showing the capacitors as they were wired into the transmitter.

"How come it worked for a while?" asked Hammy.

"I can explain that," added Dill who, unable to keep away from a good puzzle, just wandered into the shack.

"Hi Dill."

"Hi guys. Electrolytic capacitors create their internal insulation electrochemically. It's the voltage acting on the chemical inside them that creates and maintains the very thin insulation between the foil plates. If you reverse the voltage by connecting the capacitor backwards, you also reverse the chemical reaction inside the cap and destroy the insulation. When that happens, you get a short and the cap blows. The cap didn't blow right away because it takes a little while for the reverse reaction to take effect.

Those caps are connected in series because the transmitter's 600 volts is too high for one cap. By connecting two 450 volt caps in series, you get the effect of one 900 volt cap. Those resistors are there to be sure the high voltage divides equally across both caps. Without them, one cap might get too much voltage and burn out.

Only one of those caps has blown, but it's a good idea to replace both of them while you're at it."

see HAMBONE on page 8

from HAMBONE on page 7

"But doesn't putting the two caps in series cut their effective capacitance in half and add hum in the signal?" asked Dick.

"It does, but you compensate by using capacitors with higher capacitance. For example, if you need 20 microfarads of capacitance at least 600 volts like this circuit does, you put two 40 microfarad caps, each rated at 450 volts, in series. This gives you the equivalent of a 20 microfarad 900 volt cap. Works fine, lasts a long time."

While Dick, Hammy and Dill discussed the intricacies of filter capacitors, Elmer was busy installing new caps.

"Let's give it a try," said Elmer. "Hammy, please turn on my receiver over there and set it to 7025 kilohertz. That's the frequency of my one and only 40 meter crystal."

With that, Elmer applied power and the guys watched as the tubes began to glow, the high voltage rose to 700 volts and the old transmitter, once again, came to life.

"Wow! That's great," exclaimed Dick as he pressed the key and a loud note was clearly audible from the receiver. "But how come you didn't follow any of the solutions the breakfast club offered?"

"Those guys all had good ideas, but they sort of assumed that the problem was more complex than it was," said Elmer. "You can more or less divide troubleshooting into two big categories: the equipment worked at one time, but now it doesn't; and, this is a new start-up and the equipment has never worked.

The breakfast club tacitly assumed that the equipment worked at one time because Dom had used it in his novice days. Therefore, they were focused on finding an electronic problem. The only piece of information available was that you replaced some capacitors, twice. But that wasn't explored.

In reality, although this equipment had worked for Dom in the past, it had never worked since you replaced the capacitors. Therefore, the logical thing is to look for a construction error rather than some obscure electronic problem. Comparing the build with the schematic revealed the problem."

With that, they closed up the transmitter and opened the six-pack of 'accessories' that Dick had so thoughtfully brought.

Remembering

Tom Wheeler, NØGSG writes:

I am saddened to report the passing of former JCRAC member and leader Bill Jones, WØFN, as reported in the February HARC Herald. Bill was a very active ham in the Kansas City area and over the years participated in many clubs, public service events, and other volunteer efforts. He was a W5YI volunteer examiner and in that capacity helped many people become hams or upgrade their license. Bill served the JCRAC as Treasurer from 1992 to 1995 [he was then succeeded by Mac, W0LQV (SK)], and Vice President from 1996 to 1998. He was also one of the original supporters of the JCRAC 145.29 repeater when it was first built in 1993. Bill was an avid Heathkit fan and accumulated an impressive collection of Heathkits, all restored to factory condition. Bill's ham radio legacy continues with his son Jon, N0JK, who is the editor of QST's "The World about 50 MHz" column. Bill was a gentleman statesman for ham radio - - he will be missed.

Rick Wilson, WØKT, who reports that he was active in the KC Amateur Radio Club when he lived in Roeland Park, writes to update friends on his circumstances:

I have enjoyed editing the [Bellevue Amateur Radio Club] Spark Gap since 2009, but I have been suffering from progressive muscle weakness, now diagnosed as ALS. In a couple of years, it will kill me. Being a member of KCARC, WIARC, and, finally, BARC has been important to me.

I have completed my bucket list of ham radio accomplishments, the last being the completion of an EME QSO. I am proud that I have never called CQ DX. Chasing DX is fun, but is best done with ears first, then key.Anyway, why discourage, for example, a WD6 who is looking for his first Nebraska? He would prefer your nonexcluswive CQ. One of the most exciting QSOs I ever had was with a staiton in Maryland who wored me for his fiftieth state on 2 meters.

My wife, Mary Anne, AB9CB, my two daughters, and their spouses are giving me personal support in the Omaha area. I would appreciate your thoughts and prayers.

More on "The Amateur's" problems with the VHF Shoot-Out

In the last issue of the FEEDBACK, your editor--The Amateur--was wondering about how he could game next year's VHF shoot-out. Bill Brinker, Jaimie Charlton and Tom Wheeler all had advice, but after the the dust cleared, and the FEEDBACK went to press, Jaimie had one more thing to say.

Everything that was said was correct but, we all got off on tangents and did not directly answer Chip's original question which was, "During the recent VHF shoot-out, when Tom/Lon were measuring RF at the receiver, what was being measured?" He went on to speculate, "... that you/they were measuring energy at a particular point (the receiving antenna) within a particular band of frequencies (146.00 MHz ±) over a specific time period. Am I close?"

The answer to that part of his question is that he is almost spot on correct. The receiving device, whatever it is, measures received *power* because that's the only thing electromagnetic radiation can transmit. Given that Chip, like most people, is a bit wobbly on the difference between energy (joules) and the flow of energy, power (watts), I'd say he was correct in his supposition.

These next two points are either for Chip's clarification or, are nit picky. The other guys already know this.

The receiving antenna does not receive power at a point, but rather over an area known as the antenna's aperture. That's because the power being transmitted by a radio wave (transmitter's power) is spread out over the entire surface of that wave. To visualize that weird concept, think of a transmitter and a non-directional antenna way out in space far from any obstructions. The wave front would be the surface of a sphere surrounding the the antenna. Clearly, this sphere is expanding at the speed of light so its surface area--measured in square meters--is getting larger and larger fast.

Since the transmitter's radiated power is measured in watts and all of it present at sphere's surface, the power available is measured in watts per square meter.

Let's take a hypothetical example. Instead of being in the church, we are doing the shootout in space. The HT/antenna under test is radiating 5 watts and the receiver is located 20 meters away. For our purposes, the sphere's surface containing the transmitter's power is 20 meters in radius which gives it a surface area of about 419 square meters.

Therefore, the power available at the receiver is 5 watts divided by 419 or about 12 milliwatts per square meter.

The aperture of your receiving antenna in square meters (unfortunately, not directly or simply related to its size) determines how much power you can extract from the wave front. Obviously, if you had an antenna that completely surrounded the transmitter, you'd get the whole 5 watts.

So, why do different transmitting antennas make a difference in the received signal? Simple, they concentrate power in a favored direction. Up close, they would not be surrounded by a sphere as in the example, but by some other shape which increased the watts per square meter in some areas over others. The total radiated power is still only 5 watts.

The DMR power thing is also simple. If the DMR HT is transmitting on a single timeslot, its average transmitted power is about on-half of the power it transmits when sending conventional FM. If it is transmitting on both timeslots simultaneously, its output power is the same as when it's transmitting conventional FM. So, set your DMR HT to send on a single timeslot before giving it to Tom Then secretly switch it to FM when you transmit to Lon and you get about a 3dB boost. The problem is fooling Tom which is unlikely to happen.

Bottom line, Chip, you were right all along. Possibly more than you know. By limiting the bandwidth, you got out of a really sitcky problem whose solution turned physics on its head.