



Printed Circuit

Amateur Radio News from Council Bluffs, IA
January 1993
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Discrimination

That is the general term for the circuitry that recovers the modulation from an FM radio signal. Edwin Armstrong was the inventor of FM and started a system of commercial radio broadcasts using FM. Armstrong was also the guy who figured out (mathematically) what Lee DeForest had done when DeForest invented the Audion tube. DeForest, who lived briefly in Council Bluffs IA, put the third electrode in Fleming's diode tube or 'Valve' but couldn't figure out why the thing had amplification or gain. Armstrong was a man of intellect and explained it in mathematical terms noting that the ratio of spacing between plate and cathode versus grid and cathode determined gain.

Back to FM. In the old days there were several different types of FM detector. Ratio detector, Foster-Seeley discriminator, and quadrature detector were names given to various circuit arrangements. The quadrature detector also called (remember this when we start thinking digitally) Gated Beam Detector, was commonly used in TV sound circuits partly because it involved only one auxiliary tuned circuit and employed only one tube. Current implementations of FM detectors are often quadrature detectors using digital techniques and an IC with a zillion transistors in it.

A quadrature detector lends itself well to current receivers

continued on page 3

Railroad Mobile

On Friday morning after the Christmas meeting, December 11th, Jay KB6IHB rode into town on AMTRAK and had a conversation with a couple of guys on .94. He was Eastbound and seated on the left side of the railroad car. Equipment included an H/T and dual band COMET duck suction cupped to the window.

Jay lives in Tecate, Mexico 45 mi. SE of San Diego or 30 mi East of Tijuana. He runs 2M, 220, 440, and 1.2Gc. only and says there are about 65 1.2 Gc. repeaters between Orange County (L.A.) and San Diego.

He also mentioned that in a first class AMTRAK compartment, he had access to an AC plug to charge his equipment and that the food was pretty good. Didn't know if the conditions would be as good back in the coach.

de 'I Hate Breakers'

Contents

DX	2
Hamfests	3
Minutes	4
Prize List	5
Want Ads	6
Roster	7

interest
inside

Printed Circuit

is the official newsletter of the South West Iowa Amateur Radio Club and is distributed monthly to all members in good standing. Information about member activities is solicited and you don't even have to write it up. Just send info to the editor (WA0ZQG @ WB0BLR IA) via Packet or if you are not so equipped have a friend of yours who IS on Packet do so.

Club Meeting
4th Thursday, 28 January 1992
7:30PM @ Red Cross
Program will tentatively be:
ANALOG to DIGITAL CONVERSION

Club Officers

Pres.	Roger	N0SYE
V.Pres	Paul	WB0GXD
Sec/Treas	Rich	WA0ZQG
Trustee	Fred	WB0BLR

Board Members

We don't get that formal.

ARL EC (Ed N0JJQ)	
asst. EC (Larry N0JJP)	
ARL District EC (Terry KS0L)	
Club Program Chmn. (Paul GXD)	
Field Day Chairman . . . (?)	
Official Observer (John CMC)	
(ARL appointee)	
Repeater Use Coordinator . . .	
(for Public Svc. Events)	
Technical Adviser (Paul GXD)	

Dues are collected on a calendar year basis and are \$12. You could include a donation of a couple of bucks for the first class mailing of your newsletter and some more for the operation and maintenance of the .82R- repeater owned by the club.

Pay by check so that whether you give the money to any responsible member or send it to the Treasurer at Box 661, 51502 you have a record of the payment in case the VOLUNTEER labor fails to do everything right.

Send all newsletter business to:
Rich Swig
46 Rolling Hills
Council Bluffs, IA 51503

or call

The President

Our new president Roger N0SYE hasn't had his license long but he's been around Amateur Radio forever. His brother Lee W0VF was Bob WD0FDE's (Surplus Sales) Elmer back in the sixties. Roger has been an active SWL since the mid eighties. He lives in north Council Bluffs near the Black Angel monument in the cemetery (high hill) just in back of where Les LHW used to live. (But up the hill to the east.)

Roger has a couple of antennas and two ICOM receivers that he uses for FM broadcast, Ham, and pirate radio listening. He has ATV receive capability and is interested in getting on Packet. Hindering all this is the time he spends working at Dean's camera over at 114th & Dodge in Omaha. He used to do professional photography and took the pictures we all saw of Bud and Lorraines Christmas lights this year. (Bud & Lorraine won 1st place in Co. Blfs.)

Hail to the chief.

DX

There has been some good DX on the bands even with the marginal propagation we've had this fall. Some rare stations like ET (Ethiopia), VU7 (Lacidives), and 5R (Madagascar), have been on and not to hard to work only time consuming.

Some good DX coming up in December:

DL1VU will be on a Pacific tour of:	
T32VU starting Nov. 23 and then to -	
KH5/DL1VU	Palmyra
T31AF	Canton Island
T30VU	Western Kiribate
T33VU	Banabu
C2INI	Nauru

Quite at trip, don't you think?

There are many good DX stations on in December so if you're interested in DXing try the usual DX frequencies, 14195 kc., 21295, 28495, 7195, plus or minus QRM. They usually work split and listen up about 5kc. If I hear a pile up but can't hear the DX I always go down 5kc. and see if I can hear them around there.

It seems there's a lot to learn if you do much DXing especially when you get to the real rare ones.

Good DX and see you on the bands.
73 from AA0BS

Discrimination

because it can be thought of as a digital addition technique. A reference signal (think ones and zeroes of a square wave rather than phase of a sine wave) that is 90 degrees out of phase is compared with an FM signal. When the FM signal varies in phase a little, the two signals are either more nearly in phase or more out of phase. (Out of phase in digital square waves means signal A is a 'one' while signal B is a 'zero.') If you ADD the two signals you get a variation between 2 and 0 with the average being 1. When everything is working correctly and the reference is 90 degrees out of phase, an unmodulated signal gives a '1' and modulation produces variations above and below a '1' output.

REFERENCE



90° PHASE SHIFT



Two aspects of FM detection affect YOU and your new 2M FM radio. A very weak signal will be heard better if it is NOT FULLY MODULATED. Therefore, don't yell into the mike if the guy on the other end says you're weak. Part of the reason for this is the squelch function. It looks for high frequency audio and when it finds it, the audio circuits get shut off. Weak signals have noise which includes high audio freqs plus high deviation (yelling) spreads what little signal you have over a wider bandwidth.

Second, there are various standards for FM deviation. We use 3 to 5 kc. deviation resulting in a bandwidth (channel) of 15 to 30 kc. width. TV and FM broadcasters use 25 and 75 kc. deviation respectively resulting in a channel width of a couple of hundred kc. That means that when you tune your wideband 2M H/T to 179.75 Mc. to pick up the audio from TV Ch. 7, it's going to sound overdeviated and if the signal is weak, the squelch will operate. Turn the squelch down and use your talented ears to hear through the distortion.

de WA0ZQG

The Action

UPCOMING EVENTS

- =====
- Jan 10 TX Hunt from UNO @ 3PM
 - Jan 16 3rd ann'l CAMERON MO Hamfest
Saturday 9AM-4PM S3 admitt.
Gaylen WB0W [REDACTED]
 - Jan 23-25 VHF Sweepstakes Contest
 - Jan 28 SWIARC club mtg. * * * * *
 - Feb 14 34/94 HAMBASH in KCMO
Bob W0AT [REDACTED]
 - Feb 14 TX Hunt from UNO @ 3PM
 - Feb 20-21 ARL DX CW Contest
 - Feb 25 SWIARC club mtg. * * * * *
 - Mar 7 UNDERWOOD IA Flea Market
by SWIARC. Exit 17 off I-80
then lmi West. FREE admitt.
 - Mar 14 TX Hunt from UNO @ 3PM
 - Mar 25 SWIARC club mtg. * * * * *
 - Apr 5 ARL 144 Mc. Spring Sprint
 - Apr 13 ARL 222 Mc. Spring Sprint
 - Apr 21 ARL 432 Mc. Spring Sprint
 - Apr 23-25 DAYTON Hamvention BIGGEST!
 - May 1 ARL 902/1296/2304Mc Contest
 - May 21,22 SIOUX CITY Hamboree XV
call Dick W0PZO for info
or Al W0PEX for Flea tables
 - May 22 PHD Club Convention in KCMO
[REDACTED]
 - Jun 26,27 FIELD DAY Generators, solar
panels and wire dipoles.
 - Sep 25,26 10-10 Int'l Club convention
WICHITA KS @ Ramada center

VEC TESTS

- =====
- Usually last Saturday of even numbered
months in Co. Bluffs. Call [REDACTED]
 - Usually last Tuesday of odd numbered
months in Omaha NE. Call [REDACTED]
 - Feb 27 IA Wstn. Coll./Robert Looft
6:30PM continuing Ed. Ctr.
Call Lorraine [REDACTED]
 - Apr 24 Iowa Western Comm. College
6:30PM Bud or Lorraine [REDACTED]

DOUGHNUT NETS (DO-NETS)

- =====
- Daily 3-5 PM Ground Cow
info .94 or 7.00 104th & Fort
 - Daily 11:30 AM Wendy's/Bellevue
info 7.21 Galvin Rd.
 - Tuesday 8 AM Shoney's Co.Blfs
info 6.82 Madison Ave ex
 - Friday night 8-10 PM Bonanza rest'rnt
info 7.21 2+blks fr S'Rds
 - Saturday morn 9-10 AM Downtown Cafe
info 7.21 Mission St.Blvu
 - Saturday morn 8-10 AM Best Western CB
info 6.82 nr Dog Track
 - Saturday nite 7-9 PM Hiway Diner
info 5.45 84th & H (Oma)
 - Saturday nite 10-1AM Denny's 88th-
info 7.00 88th & Maple

Meeting Minutes

Members attending the SWIARC mtg in September were:

Fred BLR *
Paul GXD
Bud GYG *
Al JJK *
Bill MYA *
Rob SNW
Jim TPK *
Dick TPL
Don YQY *
Rich ZQG

The six with the star are ARRL members as well. The program was a tape of the SSI DXpedition provided by Bud GYG. His wife Lorraine AAØBS contributed to the expedition, made contact with them on the last day, bought the tape, and got the two section QSL card.
signed, Rich

November: SWIARC Mtg Minutes
Path: WBØBLR

These are NOT the official minutes. Al JJK keeps those. Only nine people attended the November meeting. Al, the sec'y/treasurer presided in the absence of any other officers.

Present were:

Al JJK sec'y/treas and Rig Manual Historian
Fred BLR rprr trustee and Packet Sysop
Paul GXD CBF Node operator
Bud GYG next year's newsletter mailer
Rob SNW young guy and Packet op
Rog SYE next year's president
Jim TPK &
Dick TPL our newest license holders
Rich ZQG Packet op & next year's sec/treas

We firmed up the conditions of the December mtg slash Christmas party. It'll be Thursday Dec 10 at the Lewis Township vol. fire barn opposite Maguire's quick shop/66 gas station on Hwy 92 1 mile east of I-29. Show up at 6PM with TWO dishes of food and your own utensils. Pot luck. Club supplies pop. There will also be a \$5/junk box gift exchange. Bring something. See what you get. We also discussed the Saturday Mar 7 '93 Flea Mkt to be held in Underwood IA. (2nd annual) We authorized \$110 to buy door prizes. FREE Admission.

In discussing the proposed club newsletter it was mentioned we ought to generate further interest in the club with block buster programs such as . . .

Packet stuff - BBSs operation and tech descriptions
Trip to FCC in Grand Island NE

Trip to Harriman dispatch center (U.P.) in Omaha

911 trip (see the Ken 7950 there)
The program wasn't much. Rich brought a 12V 1.5A commercial supply and mentioned that the commercial ones (not Amateur - bigtime stuff) often have deluxe features not found on Astrons. He discussed how to make your own schematic by observing number of diodes, number of wires in the xfmr secondary, size and voltage of the filter cap, and any common ICs like the venerable 723 voltage regulator chip which came out in the late 1960s. Hard part is actually ringing out the wires with an ohm eater. Paul GXD ended the discussion by saying, "Hey Rich I recognize that particular supply -Want a schematic?"
signed, Assistant Secretary

CHRISTMAS MEETING MINUTES
Thursday, Dec. 10 1992

Bill KAØMYA was at the Lewis Township fire barn before anyone else but barely in front of Bud and Lorraine. The early birds were talking on .82 to Bob AEX who had forgotten about the dinner meeting, but upon hearing about a free meal and good company, look who is on top of the attendance list.

Bob	WØAEX	-
Fred	WBØBLR	Velda
Lorraine	AAØBS	Bud
Paul	WBØGXD	Marcia
Rhonda	NØIKK	Greg
Al	WØJJK	-
Larry	KAØJRQ	-
Terry	KSØL	-
Bill	KAØMYA	Ruth
Greg	KVØØ	Rhonda
Rob	NØSNW	-
Roger	NØSYE	-
Jim	NØTPK	-
Dick	NØTPL	Alce
Rich	WAØZQG	Patsy

Not wanting the food to get cold, we commenced dealing with it around 6:25 PM. Paul's wife Marcia began the meal with a few words appropriate for the occasion and season. Someone noted that HE is a zero lander. (GØD)

By 7:35PM Al was able to open the business meeting in order to acknowledge our '92 officers (OCA, JJP, JJK, BLR) and install our new ones.

Roger	NØSYE	President
Paul	WBØGXD	V. Pres.
Rich	WAØZQG	Sec'y/Treas.

and still Fred WBØBLR Trustee

CONT. NEXT PAGE

Minutes CONT.

The treasurer stated that we had about \$1288 in the account plus around a hundred deposited recently. (AEX and GXD contributed cash dues, while BLR, O/IKK, and MYA wrote checks to be deposited)

The potential editor of our proposed newsletter offered possible names for it. Greg O had suggested 'Printed Circuit'; Rob SNW liked 'Off The Air'; the editor liked 'River City Radio' or 'SWIG ARC'; and after a discussion most people favoured P.C.

Fred BLR had a repeater committee report consisting of two words. 'Works fine.'

The gavel was passed to Roger NØSYE and the motion for adjournment which had almost been proposed twice before was moved, seconded, and approved in a few milliseconds.

The food and desserts were discussed while Rich handed out the exchange presents. It was all good but some noted that Velda made some 2 1/4 in. diameter ham meatballs and Lorraine brought a relish tray that would rival the ones you get at a good restaurant

like Club 64 used to have. Only those who brought presents got one in exchange. Looking over their shoulders you could see what they got:

Lorraine	Casio calculator - solar pwr
Paul	Dual 12V power supply just as advertised in HAM HUM
Bud	8 inch speaker in cabinet
Al	4 inch external spkr in cabinet.
Larry	Casio calculator
Greg	2 little speakers
Rob	RF plugs
Roger	(Ladd) Johnson CB pwr supply brand new in unopened box
Dick	Wire antenna handbook
Jim	Repeater directory
Rich	Box of parts incl. cap/res/wire and wall plug p/s

Greg almost got the dual 12V supply but the originator of the package (it was heavy) kept saying something about don't shake it the spheres of Plutonium might roll together, and he traded boxes with Paul.

Everyone thought that this was an unusually good meeting and were reluctant to leave. Thanks to those who helped Bill MYA clean up.
de WAØZQG

Ak Prizes

The Ak club December meeting has always included some food. Lately Dennis GPD has been making it into a door prize extravaganza with about 100 prizes. At a regular meeting around 80-100 members show up. Estimates for the Christmas meeting range to over 200 attendees, many from Lincoln and Fremont NE.

The new president of the Bellevue club Chuck NØBTC was there as was our new president Roger NØSYE. Bellevue's officers are:

Chuck	NØBTC	Pres.
Sid	WØWWH	V. Pres.
Phil	KFØGU	Secretary
John	N4OWG	Treasurer

Former HAM HUM editor (he did it for 35 years) Dick WØYZV and his wife Julie showed up. Quite a few women were in attendance. My wife said, "Let's buy some raffle tickets." Strange since she expresses annoyance at some of the larger boxes occupying space in our basement.

After the election was over and all the board nominated volunteers were accepted (Bill KEØXQ is pres.) Dennis got on with the business of the door prizes. He has written a BASIC program for his SHARP laptop which helps in selecting the winners and randomly assigning them the prizes. There were 101 winners to be thus assigned. The winners of the good prizes were:

Harp	WBØMWB	YAESU 411 2M H/T
Milt	KØKKP	KANTR. KPC3 TNC

With so many prizes available a number of people loaded up with prize tickets. It is rumored that Milt KKP loaded up the most. He accumulated:
Kantronics KPC3 advanced Packet TNC
3/8 in. SEARS power drill
Smoke detector
2 of those Johnson CB 12V pwr/supp.
2 blank VHS video tapes
'Ducky Clip' - an extender cable to put your rubber duck on your cap.
It's useful at a hamfest or any crowd.

Harp MWB also won quite a few prizes but he was just lucky, not spending quite as much for tickets as Milt. SWIARC president Roger SYE picked up a Johnson 12V power supply and some wire cutters. HAM HUM editor Scott EI won a razor knife (useful in editing a paper) and a cash envelope. Rich ZQG whose wife wanted to really load up on some of those 'good' prizes got a

CONT. ON PAGE 6

Want Ads

WANTED: All mode Packet TNC like KAM or AEA 232. I have one to monitor 2M and want another for HF and other modes.
Call Chuck N0AZ, [REDACTED]

FOR SALE: Newer model REALISTIC scanner. Multi-band. 10 channel. Includes box and maybe manual \$75
Call Joel N0BND, [REDACTED]
leave message on answering mach.

FOR SALE: LAMBDA variable regulated power supply. 0-34Volt up to 4A. 3" tall. Both Volt and Amp meters Regulated to 0.1% \$ 30- (works out to 50c/lb)

WANTED: Cheap 2M beam antenna. Also want cheap Packet TNC.
Call Brent N0EMI, [REDACTED]

FOR SALE: DRAKE T4X HF transmitter and matching AC-4 power supply. This all band transmitter has xtals for 5 bands. Has slots for more crystals which can put it on ANY freq between 1.8-30 Mc. Runs 150W output. \$ 179
Call Al W0JJK, [REDACTED]

FOR SALE: Commercially made open frame dual 12V power supply. (All AC is heat shrink insulated) Each side adjustable from 9-16V and each is limited @ 1.5A. 11x3x5" tall \$ 15
Call Rich WA0ZQG, [REDACTED]

FOR SALE: GALAXY 6N2 dual band tr'cvr. This unique example of Galaxy engineering runs 100W+ input to tube final. Includes separate p/s and original engineering drawings COLLECTORS TAKE NOTE! One of two in existence. The other has no drawings or schematic.
Call Al W0JJK, [REDACTED]

FOR SALE: Looong serial cable for any computer. 18 wires. Shielded. \$ 8
Call Rich WA0ZQG, [REDACTED]

FOR SALE: DRAKE TR-4 5 band HF transceiver plus remote VFO. VFO is mounted in power supply cabinet. D-104 Mic and 444D mic with Swan name on it. Xmtr puts out LOTS! B&W AT-110 5 band inverted V antenna.
SUPER SCANNER 3 element CB ant. converted to 10M includes indoor directional switch.
SWR bridge.
Operating table, chair, shelves for rigs or magazines.
Whole package for \$ 400
IC-2SAT 2M mini H/T with all the new features. \$ 200
IC-24AT dual band H/T. Wideband receive on both bands plus aircraft receive and 902 Mc band FM receive and maybe a little below that. Heheh. \$ 300
HTX-202 Radio Shack 2M H/T \$ 150
HTX-100 Radio Shack 10M 25W transceiver \$ 100
Call Hanno WU0S, [REDACTED]
or leave number at [REDACTED]

Hanno said some of these prices are negotiable.

ILLITERATE ?

Write for
free information

Ak Prizes CONT. FROM P. 5

Johnson power supply and a package of black plastic wire ties. She lamented that 'we missed the boom box by one.'

In addition to the award of a plaque to the outgoing president, Ellen WB0HWF who has done secretarial duties and generally kept the club together for umpteen years, was awarded a cartoon caricature painting of herself done by a local cartoonist. Very nice and well deserved too. Jim N0ORV is taking over her record keeping duties and seems enthusiastic enough to perhaps equal her record of accuracy and consistency.

de WA0ZQG

Packet Stats

The WOODBRIDGE WIRELESS Club letter from editor KP4TE in VA lists 72 Packet BBS operators in the MD and VA area. 43 are on 2M; 13 on 220 Mc, and 16 are on 440 Mc. The 2M freqs in use are:

145.01	145.51	145.61
.03	.53	.63
.05	.57	.65
.07	.59	.67
.09		.69
		145.73
and 147.57		.77

BBS programs in use by the operators include N2GTE, AA4RE, MSYS, WA7MBL, and W0RLI. Former Nebraska resident (Bellevue) Hoss WA5ZAI runs the 'Whirly' system on 145.03, 145.05, and 224.52 from Mount Vernon VA. Send him a hello on Packet.

de WIRELOOSE 12/92

IF YOU DO NOT HAVE
A STAR BEFORE YOUR
CALLSIGN YOU DO NOT

→
GET A NEWSLETTER
NEXT MONTH.

SEE DUES NOTICE ON
PAGE 2.

VEC Test Results

Our December 12 test session in Council Bluffs went real well. We even had refreshments including cookies, cider, and coffee which everyone attending enjoyed. There were 11 candidates who took 23 tests. Licenses earned were:

4 No Code Techs
2 Techs

Several people passed elements that did not upgrade at this time. VEs supervising were:

Lorraine Bogle	AA0BS
Bud Bogle	K0GYG
Terry Lindsley	KS0L
Greg Ross	KV00

Member List

Last	First	Call	Phone
Renolet	Bob	* W0AEX	-
Rush	Chuck	* N0AZ	-
Chirhart	Don	KA0BKU	-
Lagerstrom	Jerry	* KG0BL	-
Groce	Fred	* WB0BLR	-
Mueller	Joel	N0BND	-
Bogle	Lorraine	* AA0BS	-
Fernald	Frank	W0BTE	-
Bane	Mac	N0CSI	-
Pinkerton	Betty	N0DGM	-
Hoff	Ted	KB0DJK	-
Page	Harold	* N0DMO	-
Flearl	Warren	AA0DW	-
Brunow	Mike	N0DZV	-
Clausen	Greg	* N0EKT	-
Headley	Brent	* N0EMI	-
Oden	Don	K0GIS	-
Martin	Dennis	N0GPD	-
Thomas	Phil	KF0GU	-
Blain	Paul	* WB0GXD	-
Bogle	Bud	* K0GYG	-
Ross	Rhonda	* N0IKK	-
Wall	Dwain	KA0IOJ	-
Lindsley	Barb	* N0IVI	-
McMillan	Al	W0JJK	-
Wohlers	Larry	N0JJP	-
Caskey	Ed	N0JJQ	-
Workman	Larry	KA0JRQ	-
Lindsley	Terry	* KS0L	-
Wilson	Gordon	KA0LDD	-
Ball	Ruth	N0LFR	-
Clausen	Wes	* W0LGQ	-
Bolton	Howard	K0LPJ	-
Miller	Elizabeth	KB0MPY	-
Wohlers	Meleah	N0MPZ	-
Mott	Bill	* KA0MYA	-
Ross	Greg	* KV00	-
Sieck	Bob	KA0OCA	-
Thomas	Jim	* N0OPQ	-
Sheffield	John	* N4OWG	-
Gill	Jim	* N0RMO	-
Hendrix	Darrell	N0ROD	-
McPherson	Mike	WB0SMC	-
Schweer	Rob	* N0SNW	-
O'Dell	Bernard	KA0SRK	-
Petersen	Chuck	* N0SYC	-
Rodenburg	Mitch	N0SYD	-
Darrington	Roger	* N0SYE	-
Croson	Jim	* N0TPK	-
Croson	Dick	* N0TPL	-
Sudds	Chuck	K0TVD	-
Tucker	Ken	W0UIZ	-
Brenneman	Bob	* W0UQJ	-
Burke	Larry	WB0VUI	-
Tedesco	Andy	WB0WKC	-
Reade	Sid	W0WWH	-
Perazzo	Don	* W0YQY	-
Swig	Rich	* WA0ZQG	-
Van de Water	Don	WB0ZWE	-
Larson	Robert	* -	-
Sayler	Mike	-	-

First Class Mail

S. W. I. A. R. C.
P. O. Box 661
Council Bluffs, IA
51502

Rush Limbaugh, popular radio talk show host, is heard on over 500 AM radio stations nationwide. Locally you may hear him on KKAR 1180 or KLIN 1400 from 11 - 2 PM. WHO 1040 carries the show from 1 - 4 PM and KFEQ 680 has it from 2 - 5 PM. Joe WAOWRI reports hearing the show occasionally on 25.87 Mc. WFLA in Tampa FL uses the frequency for a studio to transmitter (STL) link using Frequency Modulation.

info de WAOWRI, WBOBLR, WOJJK, KVOO, and KA4ZZQ
at meeting hosted by Dennis NOGPD and his wife.