

The OVH ARC Newsletter
"OLE VIRGINIA HAMS" AMATEUR RADIO CLUB, INC.
Post Office Box 1255, Manassas, Va. 20108
Repeaters -- WA4FPM -- 146.970- & 224.660- & 442.200+
OVH Nodes -- 145.030 Port 2: 223.660 (SysOp Use Only) Port 3: 223.540 MHZ
BBS--BBSNVA/N4WJN (SYSOP--BILL)
<http://www.qsl.net/olevahams>

OLE VIRGINIA TIMES

AUGUST 1997

**Next meeting: August 18, 1997
NOVEC Basement Meeting Room**

Message from the President

To ALL OVH MEMBERS:

Greetings to all. It was great to see such a large gathering at the July meeting and hopefully the attendance will continue to grow over the next few months.

Upcoming events for OVH

September - I am going to contact John Kanode and see if he is available to speak at the September Meeting. For the past few years, John has attended a meeting as the guest speaker to provide information on what is happening at ARRL Headquarters and within the Roanoke division.

November - Just a reminder to all Volunteer Examiners that OVH will be holding a VE test session. If you can assist, please contact Harry, W4PVA.

Upcoming Contests: For those members who enjoy contesting, here is a reminder of what's coming up in the next few months. Contesting is a great way to improve operating skills, increase code speed and have lots of fun. My personal favorite is Sweepstakes. The ARRL has added an additional Canadian section to bring the total to 79, so getting the clean sweep is just a bit more difficult now!

September: 13-14 ARRL September VHF QSO Party

October: 26-27 CQ World Wide Phone*

November: 2-4 ARRL November Sweepstakes CW*

16-18 ARRL November Sweepstakes Phone*

*These are the dates that appear on the ARRL Website, but were listed as 1996.

73's RICK/KU3M

"OLE VIRGINIA HAMS"
 Post Office Box 1255
 Manassas, VA. 20108

OFFICERS

President: Rick Michael	KU3M	791-3775
Vice Pres: Charlie Dale	WA4YGI	361-3091
Secretary: Jeff Poulin	KF4JSV	361-5865
Treasurer: Jim Hawk	N3ODZ	361-2543

DIRECTORS

Bob McCann	N4RL	361-7335
Don (Butch) Blasdell	W4HJL	369-2877
Tim Wayne	KB4NR	494-2737

MEMBERSHIP CHAIRMAN

Bob Wikfors	KF4FJC	361-8059
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WEEKLY NETS

Thursdays - 8:00 PM	W4PVA (Harry)	368-6050
Sundays - 8:00 PM	KF4FJD (Lisa)	330-1473

HAMFEST 1998

TBD

FIELD DAY 1997

Rick Michael	KU3M	791-3775
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CLUB ROSTER

Blaine	KB4RKL	369-2877
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EDUCATION

Charlie	WA4YGI	361-3091
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CLUB EMERGENCY COORDINATOR

Harry *	W4PVA	368-6050
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ARES AREA EMERGENCY COORDINATOR

Erv	KT4DS	335-1029
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F.A.R. REP.

Alan *	KD4KBX	330-8844
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FINANCE

Mike	WV3H	753-9346
Pete	KB4RME	369-2436
Mary Lu	KB4EFP	369-2877
OVH Treas.	Jim/N3ODZ	361-2543

GENERATORS

Tommy	KA4AFU	369-2741
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HISTORIAN

T B D

HOME PAGE

Frank	K3TRM	266-0852
Milt	N4SN	369-7265

NEWSLETTER

Steve	KB4OF	368-6901
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NEWSLINE

Mike	WV3H	753-9346
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PACKET

Alan	KD4KBX	330-8844
Bill	N4WJN	590-9562

PICNIC

TBD

PROGRAM'S

Jim	WD4OJY	369-3940
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PUBLICITY

Ken	KM4UH	369-5287
-----	-------	----------

Q' MASTER

Jim	N3ODZ	361-2543
-----	-------	----------

REPEATER CONTROLLERS

Art	W1CRO	791-4330
Butch	W4HJL	369-2877
Milt	N4SN	369-7265
Kuss	WB4HFN	368-6435
Steve	KB4OF	368-6901
Tim	KB4NR	494-2737
Steve	N4OGR	361-0008
Alan	KD4KBX	330-8844

REPEATER TRUSTEE

Art	W1CRO	791-4330
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SCHOLARSHIP

Pete	KB4RME	369-2436
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SUNSHINE

Jan	KE4TMW	257-0897
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TECHNICAL COMMITTEE

Art	W1CRO	791-4330
Alan	KD4KBX	330-8844
Butch	W4HJL	369-2877
Jimmy	WA2QEJ	791-2932

The OVH Times is the official publication of the "Ole Virginia Hams" ARC is a non-profit organization dedicated to the promotion and enhancement of Amateur Radio. The OVH ARC meets at 8:00 PM every third Monday of the month, at the Northern Virginia Electric Coop, located at 10323 Lomond Dr., Manassas, VA. Prospective members are invited.

Local information can always be obtained, at any time, through the usage of the OVH repeaters (146.97- & 224.660- Mhz). All are welcome.

Permission is hereby granted for the reprinting of articles and quotations in this letter, provided full credit is given to the OVH ARC, and the author of the article. Contribution of printed articles by both members and non-members is encouraged. The deadline for submissions is the 9th of each month. Submissions should be forwarded to OVH TIMES EDITOR, Steve Meade KB4OF, PO Box 1418, Manassas, VA 20108-1418. Or to sameade@erols.com

Letters to the Editor and Classified Ads are accepted and welcome. Approx. Circulation - 170

**OLE VIRGINIA HAMS
AMATEUR RADIO CLUB, INC.**

**MINUTES OF MEETING
JULY 21, 1997**

Respectfully submitted,

The meeting was called to order by **Rick/KU3M**, at 8PM with the Pledge of Allegiance, oral roll call and signing the attendance sheet. There were 24 members and 3 guests at the meeting.

COMMITTEE REPORTS

Finance - Jim/N3ODZ, presented the Treasurer's Report. There were no questions or comments.

Hamfest - Jack/N4YIC, reported a \$6,000.00 profit from the 1997 Hamfest, down about \$2,600.00 from last year. Arrangements are in place for the Fairgrounds for next year with options for 1999 and for subsequent years. Jack received a well-deserved round of applause for all his efforts.

Field Day - Rick/KU3M, said the QSO count was about the same as last year although there were fewer operators. He thanked everyone who helped and participated. **Butch/W4HJL**, noted that one of the generators will need a new fuel pump.

ARES - Erv/KT4DS, reported that there are upcoming Skywarn classes in July, Basic II and Hurricanes, at the NWS. Also, there will be a Simulated Emergency Test (SET) on August 23. Contact Erv if you are interested in participating.

Home Page - Frank/K3TRM, reported that the OVH website has moved to a new location. He said the owner of the domain would appreciate a contribution from clubs which maintain a website there to help defray his expenses, but that this is NOT required. **Mary Lu/KB4EFP**, said it was a cost effective service and advertising for OVH. **Jack/N4YIC**, pointed out the website provides information about the Hamfest to anyone on the internet. **Tim/KB4NR**, moved that OVH contribute \$150.00 to the domain. **Jack/N4YIC**, and **Matt/KC4ZPM**, seconded the motion and it passed unanimously.

Membership - Lisa/KF4FJD, read in the names of four people up for a membership vote. **Art/W1CRO**, and **Tim/KB4NR**, seconded and all were accepted by acclamation. The new OVH members are **William/KF4SJF**; **George/KE2AM**; **Ellie/KF4NBO**; and **Joseph/NL7JT**. (Following the vote, Lisa asked the club to vote on a charity to receive the Hamfest bake sale proceeds. The Arthritis Foundation was chosen.)

Technical - Art/W1CRO, reported that we now have three working repeaters: 2 meters, 220, and 440. The installation of the 440 cost about twice the projection but it is up and working. **Butch/W4HJL**, suggested getting the 2 meter repeater in shape as the next project.

NEW BUSINESS

Steve/N4OGR, is taking orders for OVH ball caps at a cost of \$9.00. Also, he reports that the storage facility is full. The next size room, 7 by 15 feet, would cost an extra \$400.00 a year. It has been established the current company offers the best rates in the area. We must dispose of some of the gear or get the larger room. The matter will be considered in the future.

Tim/KB4NR, suggested that a second person, besides the Treasurer, have check writing authority as a back-up. After a brief discussion, **Mary Lu/KB4EFP**, was nominated and voted in.

50-50 was won by **Boris/WF3J**. A second drawing for a subscription to Nuts and Volts magazine was won by **Ed/KZ7Z**.

The meeting adjourned at 8:58 PM.

Jeff/KF4JSV
Recording Secretary

SUNSHINE CORNER

New folks need to provide me with their birthdates, as the QRZ database no longer contains them. I can't celebrate your birthday if I don't know what it is!

For August, our birthday hams are: Stuart/W4PR, D. C./WD4FOX, Thomas/KE4PCV, John/N4MM, James/WA2QEJ, Bob/N4SCK, Ronald/K4RM, our president Rick/KU3M, Jim/WD4OJY, Tom/KC4VMV, Charles/WA8YCK, Mark/N3HIG, and the Voice of Manassas, Harry/W4PVA.

Recent newlyweds are Alan/KD4KBX and Zanka/no call yet. Best wishes for a long and happy life together!

Thanks, Jan/KE4TMW

AIR FORCE QSO Party

Amateur radio operators or "hams" from around the globe can celebrate the 50th anniversary of the Air Force in a high-tech way, with a worldwide radio "QSO party." The party is set for 12:01 a.m. Sept. 20 to 11:59 p.m. Sept. 21 Universal Coordinated Time. QSO is ham radio shorthand for "radio contact."

Hams are licensed by their governments to develop radio skills, improve radio science, provide disaster and public service communications, and build international goodwill. The U.S. Federal Communications Commission has issued such licenses to more than 700,000 people. Hundreds of thousands of citizens of other nations are similarly licensed by their governments.

The event is sponsored by the Air Force directorate of communications and information, and managed by the Razorback Radio Club of Honolulu. Its trustee, **Col. Bernie Skoch** (amateur radio call sign **K5XS**), is Pacific Air Force's director of communications and information.

Hams have a historical practice of using the Morse code to communicate. They couple this practice with modern communication techniques such as voice communications, radio teletype, television, facsimile, and even computer-to-computer communications over radio. Space shuttle astronauts communicate real-time information to classrooms worldwide via ham radio.

The QSO party has been structured to make contact with Air Force veterans attractive to participants by awarding "points" to those members who entered the Air Force the earliest, the colonel said. "A formula will be used which subtracts the year a radio operator first entered the U.S. Air Force from 1997," said Skoch. "Hams compete in the contest by adding up the point values for all of their contacts during the QSO party. "Certificates will be awarded to the top three finishers in each U.S. state and foreign country; a trophy will be awarded to the overall winner," he said.

For more details e-mail Skoch at 75376.12@Compuserve.com.

HICKAM AIR FORCE BASE, Hawaii (AFNS)

OVH BASEBALL CAPS

Be the second on your block (okay, the first if you live on a new block) to get your very own, one of a kind, classy, and good looking too, Baseball Cap in the official OVH colors!

The cap is made of taslon nylon, medium blue in color, with the OVH logo in red and the call sign in white. The caps are embroidered by Merlin's Custom Embroidery (who by the way are regulars at our Hamfest).

The cost is \$9.00 each in groups of eight or ten. If interested in having one of these unique hats please send me a check for \$9.00 made out to Steve Frick. Send the check to 246 Kent Drive, Manassas, VA 20111. When I have enough orders accumulated, I will place the order with Merlin.

HIT THE ROAD. . .

. . .with TravelPlus for Repeaters™ CD-ROM!

This exciting new CD-ROM product enables you to locate repeaters along any travel route and access repeater data in ways you never thought possible. You can quickly find all the information you need to pre-program your rig or take along a sequential list of repeaters for your entire trip. The best part is that using TravelPlus is fast, easy and fun. If you can point and click a computer mouse, you can:

- Trace a route and find all repeaters within a specified range on whatever bands you select.
- Identify all repeaters within up to 500 miles of any location.
- Print map screens or repeater lists based on your travel route. Choose maps that display highways and cities in the US and Canada, or more detailed maps that add state highways in the US.
- Customize repeater information for your needs. Find repeaters for selected bands; select repeaters only for certain locations or regions; locate open repeaters and those with autopatch capability; sort alphabetically by state, region and location; sort by frequency in ascending or descending order; sort in reverse sequence order for your return trip.
- Includes the entire ARRL VHF/UHF Repeater DataSource.
- Save route files and repeater list files to disk for future reference or for linking routes from one map set to another.
- View Help Topics for all screens.

TravelPlus includes the entire ARRL Repeater DataSource for selecting, sorting and printing customer VHF/UHF repeater listings.

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September Phase 3D Launch Doubtful

From ARRL Headquarters
Newington, CT July 30, 1997
To all radio amateurs

The September 30 launch of the Phase 3D Amateur Radio satellite was put in grave doubt this week. It appears extremely unlikely that Phase 3D will be able to meet revised mechanical specifications in time to fly on schedule aboard the Ariane 502 rocket. AMSAT officials are holding out a glimmer of hope that the Ariane 502's schedule will slip just enough to let Phase 3D catch up again, but those chances are considered very slim. In a statement, AMSAT called the turn of events "very bad news."

AMSAT-NA President Bill Tynan, W3XO, confirmed that, in order to include Phase 3D, the Ariane 502's overall launch schedule would have to slip a month or two. But, he said, "if it goes on schedule, we won't go on '502.'" The latest setback for the next-generation Amateur Radio satellite came when the European Space Agency (ESA) significantly increased its estimate of vibration levels the Phase 3D payload would be exposed to aboard the Ariane 502. The revised estimates mean AMSAT will have to move fast to **make structural changes** in the Phase 3D spaceframe in order to withstand the anticipated rougher ride. Phase 3D Project Leader Karl Meinzer, DJ4ZC, told ESA in mid-July that the work required by the agency's **new information** would prevent AMSAT from delivering the spacecraft to Kourou, French Guiana, by the **specified August 10 date**. AMSAT brought in an independent structural engineer to review the spacecraft's **design and construction**. Since his report, AMSAT said that "substantial effort has been taking place at the Phase 3D Integration Lab in Orlando, Florida" to make and install the recommended structural reinforcements. That work continues.

If the Phase 3D payload is not going to be available on time, AMSAT must supply a "mass simulator" representing the Phase 3D spacecraft by September 5. Tynan was philosophical about the latest complication for the Phase 3D program. "This is the way engineering works sometimes. It's trade-offs and give-and-take with other people." He said it was too early to speculate on future launch possibilities.

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ARRL Exam Session Search for Virginia

Database last updated on Fri 08-Aug-1997 Sessions are listed in date order. 51 found in VA

08/09/97
10/11/97
12/13/97
Brown Snyder N4ZHV
703-434-3133
VEC: ARRL/VEC
Harrisonburg, VA 22801

08/09/97
10/11/97
12/13/97
Pat Wilson N5PW
804-932-9424
VEC: ARRL/VEC
Richmond, VA 23228

08/13/97
09/10/97
11/12/97
12/10/97
Charles D Lowery
804-572-1581
VEC: W5YI-VEC
South Boston, VA 24592

08/14/97
09/11/97
10/09/97
11/13/97
Pat Phelps KF4URC
757-421-9598
VEC: ARRL/VEC
Chesapeake, VA 23323

08/14/97
09/11/97
10/08/97
10/09/97
11/13/97
12/11/97
Joseph Kolb
540-766-3121
VEC: ARRL/VEC
Galax, VA 24333

08/16/97
John T Berry AF4CY
540-543-2580
VEC: ARRL/VEC
Culpeper, VA 22701

08/16/97
09/20/97
10/18/97
11/15/97
Tony Amato
804-717-2436
VEC: W5YI-VEC
Richmond, VA 23075

09/27/97
11/29/97
Harry Kepley
804-642-3517
VEC: W5YI-VEC
Hayes, VA 23062

09/28/97
10/19/97
11/16/97
12/07/97
Charles L Beard AD4ST
804-386-4651
VEC: ARRL/VEC
Lynchburg, VA 24502

11/22/97
Carolyn Cavanagh AC4SK
540-373-7076
VEC: ARRL/VEC
Spotsylvania, VA 22553

In the US you can search by
ZIP code: Your ZIP code:
Distance: 20 miles 50 miles 100 miles
Downloaded from ARRL Web Site
Dates consolidated for space

08/16/97
09/21/97
10/19/97
11/16/97
Terrance V Vlugg
540-890-6782
VEC: ARRL/VEC
Roanoke, VA 24016

08/16/97
11/08/97
Michael Weber
703-450-2304
VEC: ARRL/VEC
Sterling, VA 20165

08/30/97
10/25/97
11/22/97
Mark W Mullins
540-926-8193
VEC: W5YI-VEC
Clintwood, VA 24228

09/06/97
10/04/97
11/01/97
12/06/97
Walt M Sickmen KT4PI
540-452-2363
VEC: ARRL/VEC
Big Stone Gap, VA 24219

09/08/97
11/10/97
Jimmy L. Flanary K4LMP
703-452-4592
VEC: ARRL/VEC
Gate City, VA 24251

09/26/97
Jim McCloud N4LZJ
540-786-8012
VEC: ARRL/VEC
Stafford, VA 22554

09/27/97
Ivan R Webb Jr
540-964-9540
VEC: ARRL/VEC
Coeburn, VA 24230

09/27/97
11/29/97
Harry Kepley N4THN
804-642-3517
VEC: W5YI-VEC
Gloucester, VA 23321

2 METER INTERFERENCE - A New Source

Taken from ARNS Bulletin

*Volume XLVI, No. 8
August 1997*

We tend to think of 2M interference as arising from distant repeaters, from those hams who "kerchunk" the repeater, from ignition noise and other sources. But it's possible to have interference from sources operating on much different frequencies. This article, written by Vic Black-AB6SO, appeared in the May 1997 issue of "PARAgraphs", the newsletter of the Palo Alto Amateur Radio Association, Wally Porter-K6URO Editor.

Intermodulation distortion (IMD) occurs when we get unwanted products from mixer schemes when a weak signal outside of the receive frequency squeaks by a receiver band pass filter, mixes with a desired signal and is amplified. We see something akin to this when a high power paging transmitter up around 152 MHz mixes with a weaker 2-meter FM signal in a receiver IF chain. Now Paul Bennet-N7OCS, of McMinnville, Oregon has identified another potential source of 2-meter interference: third harmonics from portable telephones, baby room monitors and 49 MHz "walkie-talkies". As Paul states it, "The 6M Citizens' Band was specifically chosen by the FCC so that any 3rd harmonic interference would fall in the amateur 2M band and not in the nearby business/public service bands". In an e-mail message, Bennet asserts that Sony portable telephones are some of the worst offenders, but he didn't mention whether he had tested any other brands or, if so, how the tests were conducted.

Apparently, some hams are receiving strong harmonics on 2-meter simplex frequencies. These may sound like malicious jamming of the ham bands, but in reality the "jammers" don't know they're causing interference. They don't identify themselves because they aren't on the radio, as far as they are concerned. Not much can be done about it, either, since both the portable telephones and 2-meter handie-talkies are FCC Type 15 devices and must accept whatever unintentional interference they receive. (An interesting aside: it is illegal to listen to portable telephone conversations. If you hear this type of interference, promise not to listen to it).

In general, portable telephones produce very weak signals. Usually they won't cause problems. What happens, though, if the third harmonic comes up on a repeater input? if the repeater doesn't require a sub-audible PL tone, we may all hear the conversation. If a particularly strong telephone signal falls on a repeater output it may create noise on the repeater channel. I made a chart of portable telephone base and remote (handset) frequencies and their third harmonics in MHz to check for potential interference.

The chart highlights standard 2-meter FM frequencies which could be affected by the harmonics. Other frequencies on the chart might possibly cause intermod distortion depending on the construction and the EF frequencies used in the ham repeaters. Some telephone remotes have harmonics which fall directly on repeater input frequencies. This could become a problem for a repeater located on top of a tall, high occupancy building (such as an apartment building) where people use portable telephones.

This chart is based on standard 15 kHz wide channels for 2 meters. If the channels are either fewer in number and wider, or narrower but more numerous, then there are even more chances for interference. Some parts of the US (Southeast and Pacific Northwest) use a 20 kHz channel spacing on 2 meters. This allows more spectrum for out of tolerance third harmonics to interfere. The new IARU Region One standard, to be phased in over several years, is for 12.5 kHz channels in order to fit more channels into a

given piece of spectrum. This is being implemented immediately in the UK. This may be the way of the future in the US also. It might provide more channels for potential third harmonic interference.

Notice that this chart assumes that the consumer products are operating exactly on frequency, at specified power, with low harmonic output and with the original antenna and power supply. A channel 6 handset operating at 49.07 (i.e. 10 kHz low) might function marginally for its intended purpose but its third harmonic would then come up on the output of a 147.210 repeater. If a consumer replaces the antenna or battery on a portable telephone in order to increase range, then the effective radiated signal will be stronger. There's room for lots of combinations and permutations to create havoc. It gets even more complicated if you look at other services which can interact to cause interference. This shouldn't be forgotten by the "Little LEO" Personal Communicator Service (PCS) industry which claims to believe it can use very sensitive satellite receivers and still share the bands with other services.

Maybe this isn't all bad, though. I believe that adversity should be viewed as an opportunity. Or, as Arthur D. Little once said, "Research serves to make building-stones out of stumbling blocks." Perhaps by pulling the frequency a bit, amplifying the third harmonic, and filtering out the fundamental it might be possible to make a good FM T-hunt transmitter from a discarded portable telephone handset. Will you be the first to try it?

Channel	Base Freq.	Base 3rd Harmonic	Handset Freq.	Handset 3rd Harmonic	Affected 2-meter Frequency
1	43.72	131.16	48.76	146.28	146.88 (-) rep. input
2	43.74	131.22	48.84	146.52	Simplex
3	43.82	131.46	48.86	146.58	*Simplex
4	43.84	131.52	48.92	146.76	146.76 (-) rep. output
5	43.92	131.76	49.02	147.06	147.06 (+) rep. output
6	43.96	131.88	49.08	147.24	147.24 (+) rep. output
7	44.12	132.36	49.10	147.30	147.30 (+) rep. output
8	44.16	132.48	49.16	147.48	Simplex
9	44.18	132.54	49.20	147.60	147.00 (+) rep. input
10	44.20	132.60	49.24	147.72	147.12 (+) rep. input
11	44.32	132.96	49.28	147.84	147.24 (+) rep. input
12	44.36	133.08	49.36	148.08	Intermod source?
13	44.40	133.20	49.40	148.20	Intermod source?
14	44.46	133.38	49.46	148.38	Intermod source?
15	44.48	133.44	49.50	148.50	Intermod source?
16	46.61	139.83	49.67	149.01	Intermod source?
17 (B)	46.63	139.89	49.845	149.535	Intermod source?
18 (C)	46.67	140.01	49.86	149.58	Intermod source?
19	46.71	140.13	49.77	149.31	Intermod source?
20 (D)	46.73	140.19	49.875	149.625	Intermod source?
21 (A)	46.77	140.31	49.83	149.49	Intermod source?
22 (E)	46.83	140.49	49.89	149.67	Intermod source?
23	46.87	140.61	49.93	149.79	Intermod source?
24	46.93	140.79	49.99	149.97	Intermod source?
25	46.97	140.91	49.97	149.91	Intermod source?

*Note: 146.58 is in the 2 meter simplex band, but is not a standard 15 kHz "channel". It could sound like a station that is slightly off frequency. Portable telephone channels 1 - 15 were authorized June 5, 1995 and the original channels were renumbered 16 - 25. Low power handie-talkies and baby room monitors use the handset frequencies marked A - E.

Coaxial Cable Attenuation Ratings

Nominal attenuation db/100 feet at (MHz)

RG/U CABLE	1.0	10	50	100	200	400	900	1000	3000	5000
55,6A,212	.26	.83	1.9	2.7	4.1	5.9	6.5	9.8	23.0	32.0
8 MINI,8X		1.1	2.5	3.8	5.4	7.9	8.8	13.0	26.0	
LMR -240				1.9	2.7	4.1	7.5	8.0		
8,8A,10A,213	.15	.55	1.3	1.9	2.7	4.1	7.5	8.0	16.0	27.0
9913,9086,9096			0.9	1.4	1.8	2.6	4.2	4.5		13.0
4XL8IIA,FLEXI 4XL			0.9	1.4	1.8	2.6	4.2	4.5		13.0
LMR-400			.9	1.2		2.5	4.1	4.3		
LMR-500			.7	1.0		2.0	3.2	3.4		
LMR-600			.6	.8		1.4	2.5	2.7		
8214		.60	1.2	1.7	2.7	4.2		7.8	14.2	22.0
9095			1.0	1.8	2.6	3.8	6.0	7.5		
9,9A,9B,214	.21	.66	1.5	2.3	3.3	5.0	7.8	8.8	18.0	27.0
11,11A,12,12A, 13,13A,216	.19	.66	1.6	2.3	3.3	4.8		7.8	16.5	26.5
14,14A,217	.12	.41	1.0	1.4	2.0	3.1		5.5	12.4	19.0
17,17A,18,18A, 218,219	.06	.24	.62	.95	1.5	2.4		4.4	9.5	15.3
55B,223	.30	1.2	3.2	4.8	7.0	10.0	14.3	16.5	30.5	46.0
58	.33	1.2	3.1	4.6	6.9	10.5	14.5	17.5	37.5	60.0
58A,58C	.44	1.4	3.3	4.9	7.4	12.0	20.0	24.0	54.0	83.0
59,59B	.33	1.1	2.4	3.4	4.9	7.0	11.0	12.0	26.5	42.0
62,62A,71A,71B	.25	.85	1.9	2.7	3.8	5.3	8.3	8.7	18.5	30.0
62B	.31	.90	2.0	2.9	4.2	6.2		11.0	24.0	38.0
141,141A,400 142,142A	.30	.90	2.1	3.3	4.7	6.9		13.0	26.0	40.0
174	2.3	3.9	6.6	8.9	12.0	17.5	28.2	30.0	64.0	99.0
178B,196A	2.6	5.6	10.5	14.0	19.0	28.0		46.0	85.0	100
188A,316	3.1	6.0	9.6	11.4	14.2	16.7		31.0	60.0	82.0
179B	3.0	5.3	8.5	10.0	12.5	16.0		24.0	44.0	64.0
393,235		.6	1.4	2.1	3.1	4.5		7.5	14.0	21.0
402		1.2	2.7	3.9	5.5	8.0		13.0	26.0	26.0
405								22.0		
LDF4-50A	.06	.21	.47	.68	.98	1.4	2.2	2.3	4.3	5.9
LDF5-50A	.03	.11	.25	.36	.53	.78	1.2	1.4	2.5	3.5

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