

Receiver Squelch Methods and Rational for Allowing Re-use of Repeater Frequency Pairs

Several people have commented about hearing other repeaters on the "TEAC" frequencies. This is normal when propagation conditions are very good and receivers are operated with squelch control only. There are a limited number of repeater frequency pairs available and a plan for allocation of repeater frequency pairs was set up in Texas by the Texas VHF FM Society. The Texas VHF FM Society <http://www.txvhffm.org> is the coordinating body recognized by the ARRL and FCC in Texas. The Texas VHF FM Society also works with neighboring states to preclude interference issues. This organization has worked long and hard to insure non-interference between repeaters under normal predictable propagation conditions.

Originally, repeaters were not required to have receive tone control but as repeater density increased a method of allowing repeaters to be spaced closer together. (http://www.txvhffm.com/index.php?option=com_content&task=view&id=58&Itemid=38) The Texas VHF FM Society addressed this in 1999 by requiring all new repeater systems to have additional access control. (http://www.txvhffm.com/index.php?option=com_content&task=view&id=62&Itemid=38) Continuous inaudible tone squelch, DCTS, or tone burst are all available options, but most systems use inaudible tone squelch. The TEAC 145.43 MHz repeater is grandfathered and does not have to have input tone squelch, but all other TEAC repeaters require tone squelch access control. It is important to remember that just because you hear another repeater when one of the TEAC repeaters is not transmitting, the chances of actual interference are non-existent. The local system will have significantly higher signal levels and therefore will "capture" the receiver.

It is also permissible to transmit a tone from a repeater to enable receivers to use tone operated squelch. Again the 145.43 MHz repeater does not have this capability in the current configuration. Equipment age and design of the 145.43 MHz repeater system probably precludes easy addition of this feature. Many Motorola Micor repeaters have this capability, but the 444.825 MHz repeater does not at this time (status of tone encode circuit is unknown) because tone decode on repeater receive is handled by add on tone decode module and not by the Motorola Micor repeater. Both of the Kenwood TRK repeaters 147.28 MHz and 443.550 MHz transmit squelch control tones. Generally decoding tone squelch is not recommended as it prevents monitoring of the repeater output frequencies for simplex transmission made by transceivers without tone encoding capabilities. Consult the ARES Emergency Plan for recommended emergency monitoring practice.

In the spring of each year particularly during early morning hours (drive time), two meter signals are often heard from other parts of Texas or sometimes even from Florida due to excellent propagation conditions. While this article is not intended to be a study on VHF and UHF propagation, you can do further reading on the effects of weather conditions and fronts and solar radiation on propagation.

Texas repeater listings for the frequencies that TEAC currently share:

145.43 mHz

Output	City	County	Callsign	Last Update	Notes	Zone
145.4300	BALMORHEA	REEVES	N5SOR	01-11-2009 13:28:21	88.5l	5
145.4300	DALLAS	DALLAS	K5DM	11-17-2009 21:31:09	110.9e	1
145.4300	JACKSONVILLE	CHEROKEE	KI5P	01-11-2009 16:32:32	136.5	1
145.4300	KILLEEN	BELL	NB5U	07-07-2008 03:00:00		1
145.4300	KINGWOOD	HARRIS	W5SI	01-03-2009 22:08:55	e	2
145.4300	PLEASANTON	ATASCOSA	KD5ZR	01-11-2009 14:56:20	100.0(CA)er	4

[147.28 mHz](#)

Output	City	County	Callsign	Last Update	Notes	Zone
147.2800	BUFFALO	LEON	W5UOK	10-11-2009 20:55:14	123.0	2
147.2800	EDNA	JACKSON	AI5E	10-10-2009 22:25:03	167.9	3
147.2800	EL PASO	EL PASO	KD6CUB	01-25-2009 14:11:37	67.0l	5
147.2800	FORT WORTH	TARRANT	W5SJZ	01-11-2009 17:07:30	110.9(CA)	1
147.2800	HUMBLE	HARRIS	W5SI	01-03-2009 22:08:45	100.0el	2
147.2800	MIDLAND	MIDLAND	KB5MBK	10-12-2009 21:55:30	88.5l	5
147.2800	PIPE CREEK	BANDERA	WD5FWP	07-07-2008 03:00:00	O(CA)156.7	4
147.2800	ROCKDALE	MILAM	AF5C	10-03-2008 16:57:45	O162.2	2
147.2800	SAN ANTONIO	BEXAR	WD5FWP	01-11-2009 15:25:05	162.2(CA)	4
147.2800	WILLS POINT	VAN ZANDT	KK5AU	01-11-2009 17:04:34	136.5erWX	1

10 entries found... Frequency = 147.280

[444.825 mHz](#)

Output	City	County	Callsign	Last Update	Notes	Zone
444.8250	BOYD	WISE	W5OYS	01-09-2009 22:43:14	110.9	1
444.8250	BROWNFIELD	TERRY	W5HFT	12-02-2009 21:31:19		5
444.8250	BURNET	BURNET	KB5YKJ	12-02-2009 21:24:57	114.8	4
444.8250	KINGWOOD	HARRIS	W5SI	12-09-2008 22:28:57	O103.5	2
444.8250	SULPHUR SPRINGS	HOPKINS	N4RAP	01-09-2009 23:50:19	C	1

5 entries found... Frequency = 444.825

[443.550 mHz](#)

Output	City	County	Callsign	Last Update	Notes	Zone
443.5500	ARGYLE	DENTON	WB5NDJ	01-08-2009 22:23:04	110.9	1
443.5500	HUMBLE	HARRIS	W5SI	01-03-2009 22:08:33	103.5el	2
443.5500	ROCKWALL	ROCKWALL	K5GCW	11-16-2009 13:57:30	162.2e	1
443.5500	VICTORIA	VICTORIA	KC5WUA	01-03-2009 22:18:00	103.5ax	3

4 entries found... Frequency = 443.55

Most often this feature is called Private Line (Motorola), Selective Calling (GE) or just tone squelch. Generally, there are three possibilities for setting receive tones in the range of currently available transceivers..

1. Receive tone decode was an option or not available on many old transceivers like Heathkit, Kenwood FT-7800, etc. In many of these transceivers tone encode on transmit was also an additional separate option.
2. Many transceivers must have the same tone as the transmit side so the only option is to turn the tone decode (receive) on or off.
3. The newest transceivers require setting the decode tone frequency and enabling it. ICOM's IC-2720, Kenwood 700, and the Yaesu FT-8900 are good examples of these type of transceivers.

Please let me know if you have any questions.

Richard
KD5URB