

1. Not all MotoTRBO branded radios are capable of operating digital. Originally, all MotoTRBO radios were digitally equipped (from July 2007-September 2009). As of September 2009, Motorola began offering their MotoTRBO line of radios as analog only, with the option to upgrade them on-line. This was done as a cost saving measure to those who needed analog only radios. The analog only radios shipped from Motorola with a 'C' in the 4<sup>th</sup> to last digit.
2. As of March 11<sup>th</sup> 2011, Motorola discontinued offering their Mototrbo VHF and UHF radios as analog only (due to low sales of this particular model).
3. A number of the early XPR8300 repeaters and XPR series mobiles (during the demo era) were plagued with a serious failure.
  - a. After 20-35 minutes of heavy use, the repeater would lock itself up in a type of service diagnostic mode, not responding to any external RF signals. In most cases, the repeater would de-key itself and stay that way until power was reset. This was due to a defect during production of the multi-layer PC boards, and was resolved shortly thereafter. Repeaters and mobiles randomly affected were in the serial number range of [xxxTHCxxxx] to [xxxTHJxxxx]. As a reminder, not all were affected. To be safe, do a burn in test of the unit in question. Repeaters which exhibit this failure will need to be shipped back to Motorola.
  - b. Failure of an XPR8300 to communicate over its IP Ethernet connection. Some repeaters with serial numbers prior to 484TLE0000 were shipped with invalid MAC addresses. This can be easily confirmed upon reading the repeaters codeplug, and viewing its MAC address on the first home screen (XPR8300 folder). If the MAC address is any combination of all [FF] or [00] then it is affected by this issue. These repeaters might function properly when used with network Routers, but not when used with network Switches. Routers, fresh out of the box generally use the IP addresses associated with each network device, whereas network Switches utilize the network devices MAC address. This issue is not field repairable, replacing the repeaters indicator board (PMLN5269AS) will resolve the issue.
  - c. Unable to communicate to the repeater through both, its USB programming cable and its rear IP port. This has occurred to a couple repeaters that I know of and was repaired by replacing the PMLN5269AS board as well. This board carries both the USB and Ethernet controller chips.
4. The 1<sup>st</sup> Mototrbo repeaters offered by Motorola were the XPR8300's. As of March 31<sup>st</sup> 2011, the UHF and VHF versions of this repeater are no longer being sold by Motorola. The new XPR8400 replacement repeater has improved RFPA cooling, and expanded memory which allows for remote programming over its IP connection (if you so choose to purchase that additional option, which is simply a software key).
5. Initially, the XPR8300 repeaters were only capable of operating as an analog only repeater, or digital only repeater (but not as a mixed mode repeater). If you programmed/configured the repeater as an analog repeater, it would remain as an analog only repeater. If you programmed/configured the repeater as a digital repeater, it would remain as a digital only repeater. It wasn't until the release of Firmware version 1.6 that the XPR8300 repeaters were capable of operating mixed mode (if the additional upgrade option was purchased HKLN4456A). So if a user were to transmit into the repeater with an Analog signal, it would pass/handle his analog call as any other analog repeater would. If that same user were to transmit with a Mototrbo digital signal into the repeater, the repeater would pass/handle his transmission like any other digital TRBO repeater. Please be aware that a repeater that has been configured to operate on a Mixed Mode repeater channel will no longer support the use of its rear IP Ethernet port for the use of linking multiple repeaters. So not to confuse you, an XPR8300 repeater that has received the Mixed Mode upgrade option can be programmed with 3 channel types. Analog, Mixed Mode, and Digital. So it's your choice to select [digital] when programming the channel type, and still be able to take advantage of the IP site connect (linking of multiple Mototrbo repeaters).

6. Remote channel steering a repeater. You can remote channel steer an XPR repeater between analog, digital, and mixed mode via the accessory pins by changing their logic states in a binary order. Please keep in mind that when doing so, the repeater may be un-usable for up to 45 seconds after toggling its channel steering I/O pins. As a foot note, channel steering may also be carried out via the Motorola RDAC [Remote Diagnostic and Access Control software]. This requires an XPR8300 repeater to be tied to a network of some kind (via the rear RJ45 connector on the rear of the unit).
7. Initially, the Mototrbo line of radios offered by Motorola were capable of sending DTMF tones only while operating in analog mode. It wasn't until the release of R01.07.00 firmware that sending DTMF tones while operating in digital mode was made possible. Just hold down the PTT and push the DTMF buttons accordingly.
8. Originally, the audio quality offered by the Mototrbo line of radios fell short of expectations. I remember one comment in particular "It sounds like you have a mouth full of marbles". It wasn't until later, when Motorola had released Firmware version R01.07.00 that those not so positive comments were quickly replaced by praise to Motorola . Firmware version R01.07.00 really did wonders to improve the audio clarity, and I don't think I've heard a bad comment since.
9. Measuring RF power out form a MotoTRBO radio is done while the radio is operating in analog. This, due to the fact that while the radio is operating in digital mode (TDMA Time Division Multiple Access) it is only transmitting part of the time (pulsing on and off) and will yield a much lower output reading.
10. In order to program and or configure a MotoTRBO radio, you will need the required software and programming cable from Motorola. The genuine Motorola programming cables will run you \$60.00-\$110.00ea. The programming software, with firmware upgrades, Remote Diagnostics and Access Control tool including 3 years of updates can be had directly from Motorola for a price (about \$350.00). As a foot note, you may build your own mobile / repeater programming cable for under \$10.00, but if your not a techie, and do not have the proper crimpers / eyes for the job, I'd play it safe and just purchase one from Motorola. You don't want to toast your radio.
11. When building out an IP Site Connect system, you MUST NOT duplicate any "RADIO ID's" on the network. This includes Repeaters and other type of application / system admin tool you will ever be typing into your system (such as RDAC, Genwatch, iTRBO, TRBOnet, Smart PTT, etc). You may find the RADIO ID within the GENERAL SETTINGS folder in the Customer Programming Software=CPS. Duplicating a [RADIO ID] on your network will cause the network devices to constantly reset their network connections.
12. When setting up a dedicate DSL circuit for an IP Site Connected MotoTRBO repeater, a separate DSL modem and router may cause you un-wanted headaches down the road. As in the case if both were loose power at the same time, then regain power at the same time, the repeater might not re-acquire the network. For this reason, the N6DVA group (when starting out) utilized a Netopia 3347 DSL modem/switch all in one unit. This model comes equipped with wireless as well.
13. A dedicated broadband connection and static IP is HIGHLY recommended for each TRBO repeater which is intended to be part of an IP site connected system. This is done to help ensure stability of a system. Some individuals are currently running their TRBO IP site connected repeaters from shared home residential networks. This sharing of home networks has caused them issues time and time again. Forcing them to investigate the means by which to remotely reset their modem, router, switch, and TRBO repeaters as the intermittent issues sporadically occur.
14. To ensure the highest level of stability, a dedicated business class circuit, static IP, and the utilization of a switch directly to your equipment. The use of routers have shown to be problematic, as they intermittently foul up the port forwarding to the TRBO devices.

15. When using the CPS programming software for the 1<sup>st</sup> time, be sure to click [VIEW] from the top tool bar, and [EXPERT] from the drop down menu. This will allow you to see all programmable parameters.
16. If your planning on using a MotoTRBO radio / repeater within the Amateur Radio spectrum, please be aware that the receivers on the MotoTRBO line of radios are tighter than most. This can lead to analog audio being clipped or muted on voice peaks when Amateur Radios used on the system over deviate (which many of them do new right out of the box).
17. When configuring a Motorbo repeater in digital mode for the 1<sup>st</sup> time, or while performing firmware upgrades, please be mindful to check the 'BEACON' field within the 'NETWORK' folder. I have heard of several instances where individuals were standing around scratching their heads, wondering why the repeater seemed to be transmitting a pulse every 60 seconds.
18. Before buying a used radio, check the firmware version via the front display. Radios with their Firmware beginning with the letter 'D' instead of the traditional 'R' have been programmed with Motorola Lab software and are termed Development radios. If you attempt to send such a radio into Motorola, it will not be coming back.
19. Radios will not scan while the operator of the radio is utilizing the on screen menus.
20. The highest capacity battery Motorola offers for the XPR series portables is the PMNN4077B 2200mAH lithium ion Impres battery which is not listed when 'BROWSING' their catalog. It may be found with s 'SEARCH'.
21. Third party software developers are;

System Administration Tools:

The Genesis Group <http://www.genesisworld.com/GW3/TRBO>

**This software is a MUST HAVE if you're administering a network.**

Remote Dispatch, Logging, GPS Tracking:

Neocom Software <http://www.trbonet.com>

Elcomplus <http://www.smartptt.com>

HermesTRX <http://www.microcom.eu>

NeoNyte <http://www.streetrek.com>

CTI Products <http://www.ctiproducts.com/turbovui.html>

22. Allows Smart Call Routing and Bridging of Multiple Independent IP Site Connect Systems.  
C-Bridge : Rayfield Communications <http://www.rayfield.net>

NOTES;

XPR Portable radio blank generic option board part number is PLMN5496AS

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