

Technical Bulletin #1

This document provides best-practice recommendations for using your X-System. If you have any questions after reviewing this document, please call Customer Support at 1.800.749.2761 or consult the additional product documentation available at <http://www.coachcomm.com/x-system-support>.

X-Cart Mast Height Recommendation

As we noted in last season's [technical bulletin](#), CoachComm had been contacted by several customers and network production personnel on an alternative mast deployment option for the X-System. ESPN specifically reached out to us on several occasions as they are eager to find a solution to the obstruction the mast can present during televised games. We understand and appreciate the issue; therefore, we have been analyzing X-System data from various X-System "ATA" customers that deploy a 12-ft. mast to determine whether system performance would be significantly impacted. The "ATA" systems deploy a mast 6 feet lower than that of an X-Cart. Based on the data, and on recent X-System improvements, our recommendation moving forward is that lowering the mast to a height of 12 feet (on X-Carts) is acceptable.

X-System's original design and deployment of the X-Cart took into consideration competing wireless traffic, antenna propagation, legal transmit power, and line-of-sight obstructions (bodies.) However, since the original design, at least twenty "ATA" X-Systems, whose maximum mast height is 12 feet, have been deployed with no perceivable loss in performance when compared to an X-Cart mast. The link quality (LQ) data from two of those ATA systems' game day performance is being provided on page page 3 of this bulletin.

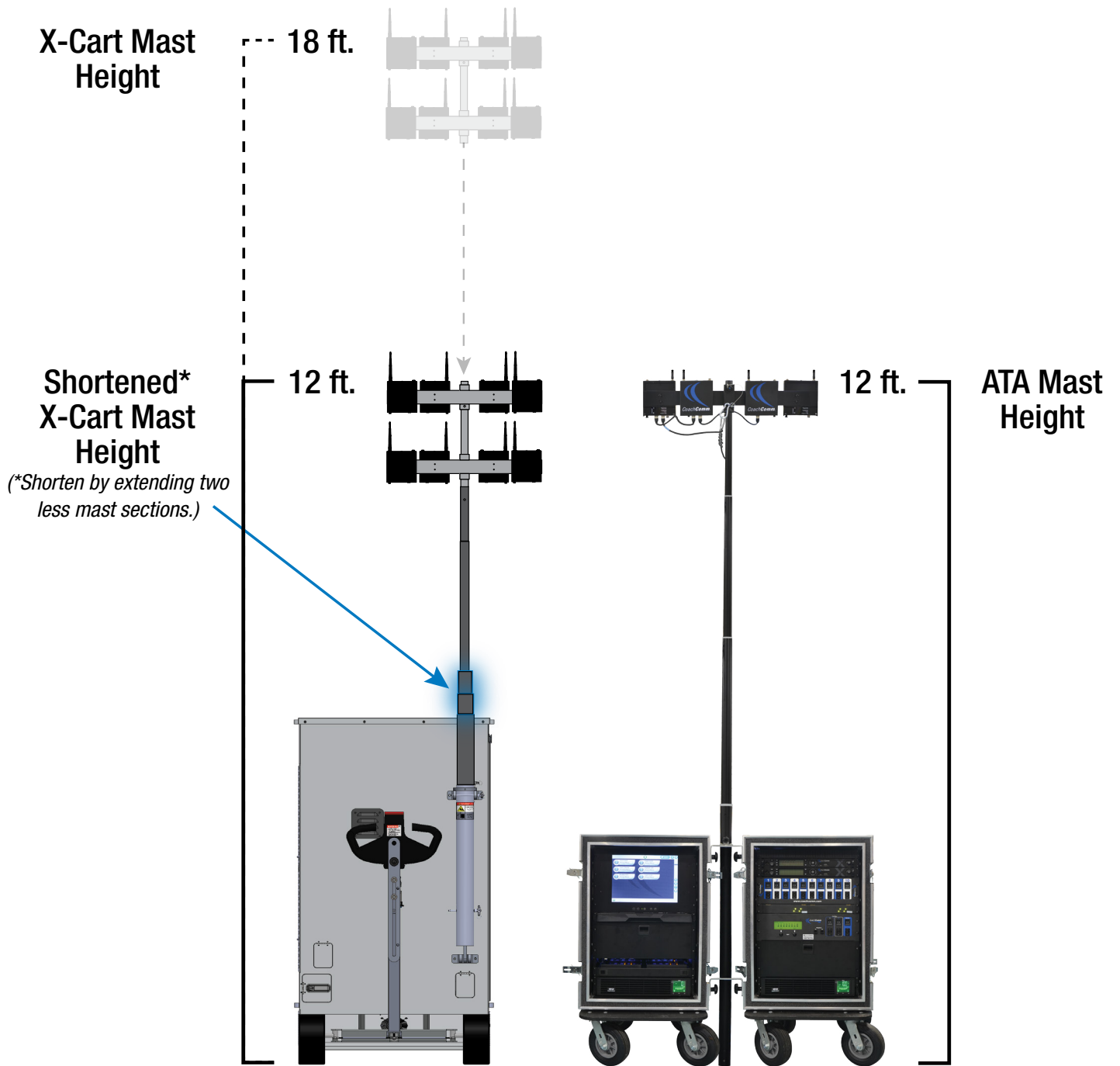
In addition, and more importantly, in 2019* we developed a new Radio Pack antenna that can improve coverage by as much as 7 dB (double the range!) Many of our customers' Radio Packs have already received this upgrade, while the remaining will be upgraded as part of their X-System's off-season maintenance. This antenna upgrade will further enhance the overall X-System performance to the point where lowering the mast to 12 feet can be done with confidence.

ESPN will be continuing discussions at the conference level to ensure they're able to provide a quality broadcast to the millions of viewers at home. For our part, and in an effort to ensure proper antenna orientation, our support team is performing a minor modification to the antenna mast and tube on all X-Carts. This modification will enable customers to index (lock) their mast position after deploying the mast to 12 feet (extending two less sections) or 15 feet (extending one less section.) The diagram on page page 2 further illustrates this mast height comparison and reduction instructions.

As part of your pre-season preparation, we encourage you to test your systems at the 12-foot mast height during scrimmages or practices. If you have any questions please do not hesitate to reach out to us.

**The new Radio Pack antenna was implemented June of 2019. The majority of all packs manufactured or shipped following June 30, 2019, will likely already have the new pack antenna. If you purchased your X-System in 2019 and are unsure which revision of Radio Pack you have, please contact our support team to confirm.*

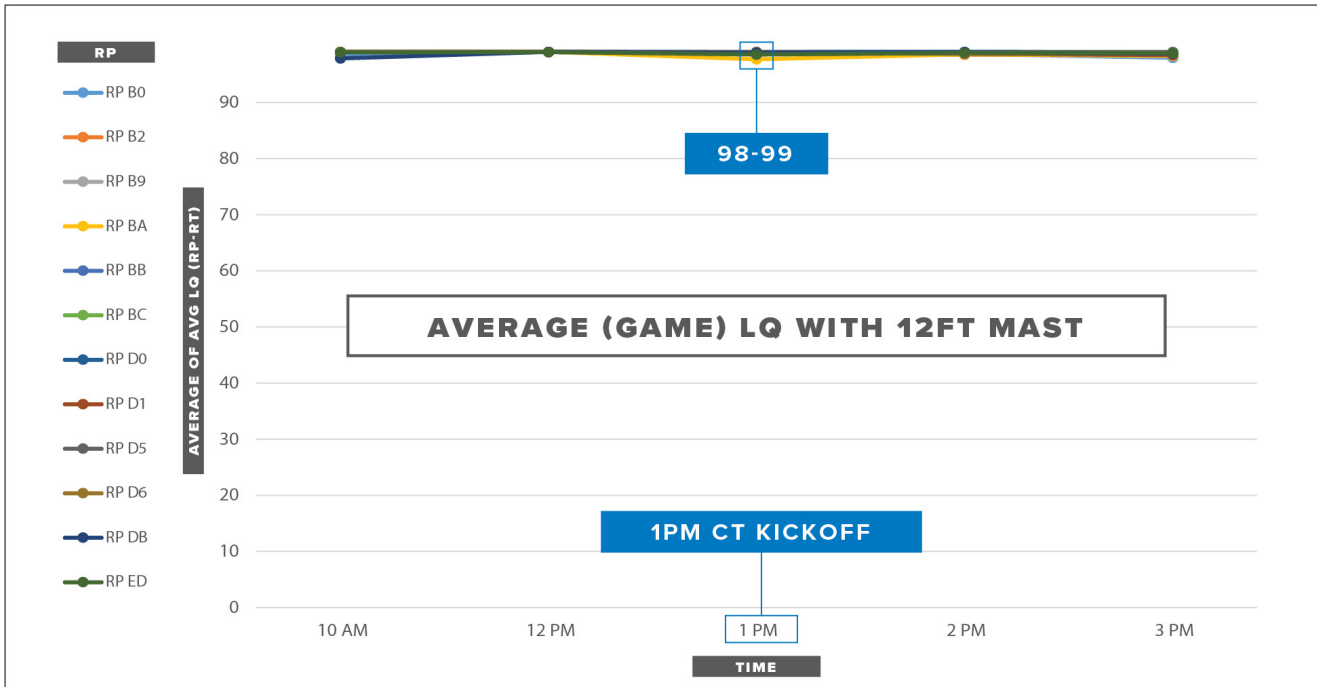
X-Cart and ATA Masts



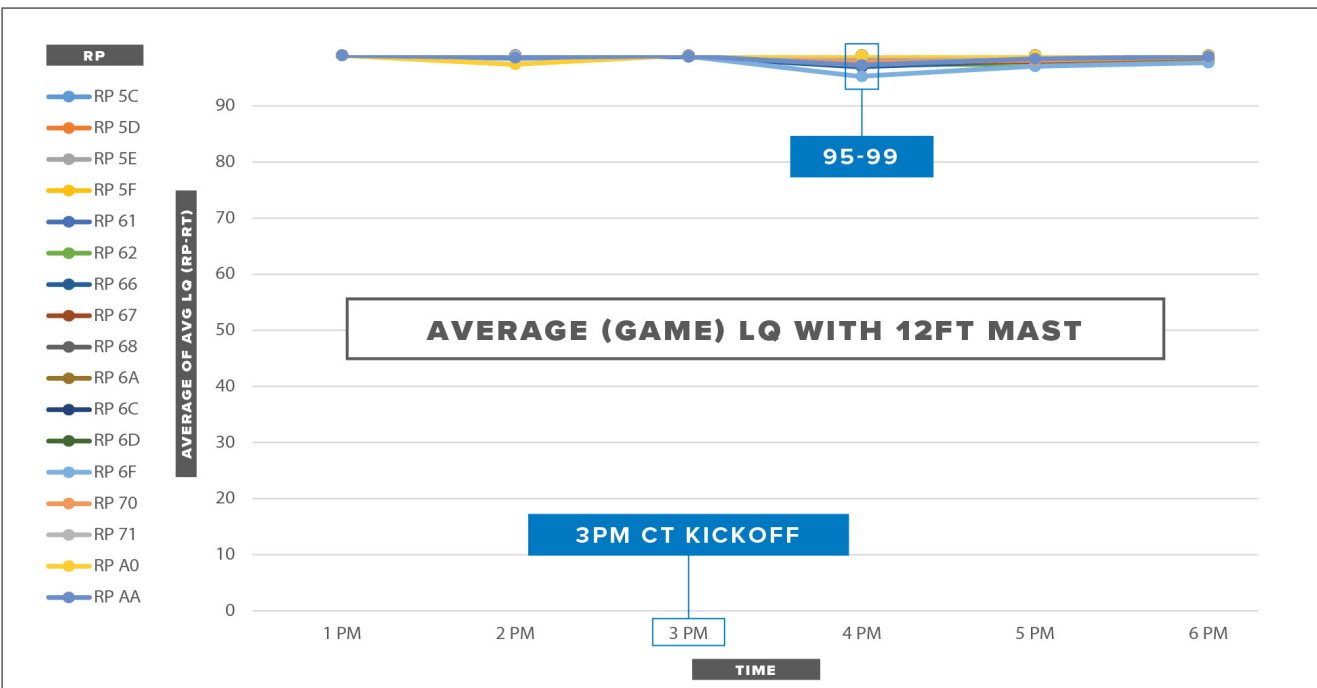
Drawing Not To Scale
Measurement From Ground

X-System In-Game Evaluation - Radio Signal Strength (RSSI) and Link Quality (LQ)

School A - 94% of reported LQs were 98-99



School B - 95% of reported LQs were 98-99



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