



# Wi-Fi Event Checklist

Updated 07/26/2018

No.	Task	Sub Task	Recommended Time	Date Completed	Notes
1	<b>Pre-Event Planning</b>				
	a	Designate/recruit a Wi-Fi expert to assist with event planning and to help on tournament day.	6 weeks prior to event.		
	b	Provide designated Wi-Fi expert with the appropriate training documents.	6 weeks prior to event.		
2	<b>Consult with the venue's IT staff</b>				
	a	Review the proposed dates and times for the <i>FIRST</i> Tech Challenge event.	At least 4 weeks prior to event.		
	b	Can all 2.4GHz Wi-Fi networks in the venue (that would affect the rooms used by the event) be turned off for the <i>FIRST</i> Tech Challenge event?	At least 4 weeks prior to event.		
	c	Can the remaining Wi-Fi networks at the venue that cannot be turned off be moved to a single wireless channel?	At least 4 weeks prior to event.		
	d	Are there any Wi-Fi suppressors present in or near the venue?	At least 4 weeks prior to event.		
	e	If there are Wi-Fi suppressors, can they be turned off for the <i>FIRST</i> Tech Challenge	At least 4 weeks prior to event.		
	f	Is staff aware of any other potential sources of interference (wireless audio/visual equipment, Bluetooth devices in the venue, microwave ovens, etc.)?	At least 4 weeks prior to event.		
	g	If there are other potential sources of interference, can they be turned off for the <i>FIRST</i> Tech Challenge event?	At least 4 weeks prior to event.		

No.	Task	Sub Task	Recommended Time	Date Completed	Notes
	<b>h</b>	Does the IT staff have any guidelines or restrictions on <i>FIRST</i> Tech Challenge-related wireless networks operating in the venue? - Does your event require a Wi-Fi Network for the scoring system? - Each Robot-Driver Station pair will have its own Wi-Fi network.	At least 4 weeks prior to event.		
	<b>i</b>	Will there be an active guest Wi-Fi network to access the Internet at the venue? - If so, what is the SSID/name of the network? - If so, what are the login credentials for the guest network?	At least 4 weeks prior to event.		
	<b>j</b>	Can the IT staff designate an IT staff member to be the primary point of contact that can be available for questions/support prior to and during the event?	At least 4 weeks prior to event.		
<b>3</b>	<b><i>Wireless survey of the venue</i></b>				
	<b>a</b>	List all Wi-Fi networks by channel for the 2.4GHz band.	At least 4 weeks prior to event.		
	<b>b</b>	If feasible, measure non-802.11 wireless activity in the 2.4GHz band.	At least 4 weeks prior to event.		
	<b>c</b>	Visually check for potential sources of interference (such as access points, wireless audio/visual equipment, Bluetooth devices, microwave ovens, etc.) in the 2.4GHz band.	At least 4 weeks prior to event.		
<b>4</b>	<b><i>Test Wi-Fi connectivity at the venue</i></b>				
	<b>a</b>	Use Driver Station/Robot Controller (DS/RC) pair to measure ping times on the Wi-Fi channels that are being considered for use by the teams during the event.	At least 4 weeks prior to event.		
	<b>b</b>	Use DS/RC pair to see if Wi-Fi suppression is present (test on different channels).	At least 4 weeks prior to event.		
	<b>c</b>	Run a "NullOp" op mode to test Wi-Fi connectivity at various points in the venue.	At least 4 weeks prior to event.		
	<b>d</b>	If feasible, use an actual robot and drive robot in driver-controlled mode to check for latency and reliability of connection.	At least 4 weeks prior to event.		

No.	Task	Sub Task	Recommended Time	Date Completed	Notes
<b>5</b>		<b><i>Determine how to distribute Teams over available wireless channels</i></b>			
	<b>a</b>	How many teams will be participating at the <i>FIRST</i> Tech Challenge event?	At least 4 weeks prior to event.		
	<b>b</b>	How many clean wireless channels will be available at the <i>FIRST</i> Tech Challenge event (preferably non-overlapping)?	At least 4 weeks prior to event.		
	<b>c</b>	Does the number of teams per channel exceed 40? If so, consider distributing teams across multiple channels (requires that teams' Android devices have the ability to switch Wi- Fi direct channels).	At least 4 weeks prior to event.		
<b>6</b>		<b><i>Provide attendees with guidelines for wireless activity for the event.</i></b>			
	<b>a</b>	With the exception of the teams' robot controllers and driver stations, all Wi-Fi devices should be turned off when in or near the venue.	At least 1 week prior to event.		
	<b>b</b>	Other wireless devices (including Bluetooth-enabled devices) should be turned off when in or near the venue.	At least 1 week prior to event.		
	<b>c</b>	Teams, spectators, and volunteers are not permitted to operate their own wireless access points anywhere in the venue.	At least 1 week prior to event.		
	<b>d</b>	Intentionally disrupting the wireless control network for a <i>FIRST</i> Tech Challenge robot is ungracious behavior and subject to major penalties under the game rules.	At least 1 week prior to event.		
<b>7</b>		<b><i>Pre-match preparations.</i></b>			
	<b>a</b>	If you are requiring that teams be distributed over multiple Wi-Fi channels, assign each team their operating channel and verify that the team has switched to this Wi-Fi Direct channel.	At the start of the day (prior to the matches).		
	<b>b</b>	Verify that the IT staff has performed its agreed upon actions (e.g., turning off wireless networks, moving other wireless networks to different channels, etc.).	At the start of the day (prior to the matches).		

No.	Task	Sub Task	Recommended Time	Date Completed	Notes
	c	Do a quick wireless survey to see what wireless networks are present on the 2.4GHz band (by channel). - Check to see if there are any new or unexpected networks on the spectrum. - If there are any new or unexpected networks on the spectrum see if it is possible to disable or move these networks to channels that won't interfere with the robots.	At the start of the day (prior to the matches).		
	d	Use Driver Station/Robot Controller pair to measure ping times on the Wi-Fi channels that will be used by the teams. Verify that the ping times still remain low on these channels.	At the start of the day (prior to the matches).		
	e	Use DS/RC pair to see if Wi-Fi suppression is present (test on the channels that will be used by the teams for the event).	At the start of the day (prior to the matches).		
	f	Run a "NullOp" op mode to test Wi-Fi connectivity at various points in the venue. Test the channels that will be used by the teams for the event.	At the start of the day (prior to the matches).		
	g	If feasible, use an actual robot and drive robot in driver-controlled mode to check for latency and reliability of connection.	At the start of the day (prior to the matches).		
<b>8</b>	<b><i>Monitor wireless spectrum during the event.</i></b>				
	a	Use a tool such as Wi-Fi Analyzer to monitor wireless networks in the venue.	Throughout day.		
	b	Use Driver Station/Robot Controller pair to measure ping times on the designated competition channels.	Throughout day.		
	c	If feasible, measure non-802.11 wireless activity (using a tool like a Fluke or NETSCOUT AirCheck meter).	Throughout day.		
	d	If feasible, use an appropriate tool (like Wireshark) to monitor channels for malicious wireless activity.	Throughout day.		