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Title: Technical Questions for Devices Operating in the 3650-3700 MHz Band under Part 90Z

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Question: What are the guidelines for providing an operational description, as required by 90Z, for a contention based protocol?

Answer: Guidelines are provided in the attachment below 552295_CBT Questions for 3650-3700 Band v01.

Attachment List: 552295 CBT Questions for 3650-3700 Band v01 published on: Month Day Year Time

Attachment 1 (552295 CBT Questions for 3650-3700 Band v01)

Technical questions for devices operating in the 3650-3700 MHz Band under Part 90Z

This document identifies several questions / information to help determine the capability of a device that may operate in the 3650 – 3700 MHz under part 90Z of our rules. The questions are only to be used as a guide by the applicant to describe how their system meets the requirements for 3650-3700 contention based protocol. The list is not intended to be exhaustive and may be modified in the future. There may be follow-up questions based on the responses provide by the applicant for authorization.

1 Restricted Certification under Part 90Z (3650-3675 Band)

1.1 Restricted Protocol Description
Address the key requirements for operation using restricted contention based protocol opportunities for other transmitters to operate. Please note that this requires recognizing like systems (similar to yours) that permit operation on a co-channel.

1.2 Describe the method to permit occupancy

1.3 Describe the action taken if two or more transmitters simultaneously access the same channel by the master and the client devices.

1.4 Describe opportunities for other similar systems to operate
Address how or if a different system operator using the same technology can operate in the same band.

2 Unrestricted Certification under Part 90Z (3650-3700 Band)

2. 1 Unrestricted Protocol Description

Address the key requirements for operation using unrestricted contention based protocol. Please note that this requires recognizing other systems (both similar to yours and different from yours) that operate on a co-channel. Indicate the strategy for sharing the spectrum in terms of:
● Does the system use spectrum sensing to determine if the other devices are transmitting and then find ways to share the bandwidth, or
● Have some other strategy?

2.2 Threshold detection to determine occupancy

2.2.1 Describe how your system determines if another system is using the spectrum. At what detection level – relative to 0 dBi receive antenna gain (busy channel threshold) does the device determine if another system is operating on the spectrum?

2.2.3 How long does the system observe to determine if the channel is busy – at the initial time and in between communications?

2.2.3 What is the bandwidth being monitored versus bandwidth occupied for all modes of operation?

2.2.4 How much variability is provided to the system operator to adjust busy channel detection threshold?

2.2.5 What is the operating system threshold (receive threshold) compared to the monitoring threshold (busy channel threshold)?

2.2.6 What additional checks does the system perform to determine if the spectrum is being used before initiating a transmission?

2.2.7 Does the master and the client perform the threshold detection? If master only performs the detection how does it determine if the client may interfere with the other system (hidden node detection mechanism)?

2.3 Action taken when occupancy is determined

2.3.1 What action does your system take when it determines occupancy? Does it vacate the channel or does it have some back-off and retry strategy? What is the impact of traffic on the spectrum sensing or avoidance performance?

2.3.3 If you use other means, please describe how the device determines the existence of other systems and what steps it takes to either share the channel or avoid its use.

2.3.4 Describe any mechanism that would limit a transmission from a remote station if only the master detects occupancy (hidden node avoidance mechanism).

2.4 Opportunities for other transmitters to operate

2.4.1 When describing occupancy profile, clarify any differences between start-up acquisition mode of spectrum and operational modes.

2.4.2 In operational mode, how long does the system transmit before stopping giving others a reasonable time to transmit before continuing?

2.4.3 Does the system (master and / or client) listen prior to every transmission? If no, explain.

2.4.4 Describe how the operational spectrum usage (on air time) is dependant on system load conditions (no load, typical and overload). For example, if a station does not have any information to transmit describe any regular or recurring transmission that may take place?

2.4.5 Describe if there are any limitations imposed by the contention protocol on what applications are used (i.e. limitations on Quality of Service).

2.4.6 Describe how applications or configuration of services can affect spectrum usage. To describe your occupancy sharing capability you can assume that two systems on a co-channel are the same (your systems being described). How would they share the spectrum?