Technical Note

Conventional Radio Interoperability in Motorola Control Systems

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Introduction

Since the first MOSCAD RTU was introduced to the market, various models of Motorola conventional radios had been used with Motorola RTUs. In cases where new RTUs are added to existing systems with newer radio models, or when legacy radios are replaced with newer models, it is important to make sure the radios can interoperate in the same system.

The purpose of this technical note is to provide important information on Motorola radio interoperability in control systems that use MOSCAD, MOSCAD-L, MOSCAD-M, ACE3600, and Front End Processors (FEPs) such as MCP-M and IP Gateway. The radios discussed in this document are Motorola conventional radios.

Channel Monitor Resolution Parameter (MDLC Slot Time)

The MDLC protocol uses a slotted time channel access algorithm for radio communications. The Channel Monitor Resolution parameter sets the time slot period (in milliseconds) in the RTU/FEP. The types of radios used in the system determine the value of this parameter (typically 100 to 300 ms).

Please note that the Channel Monitor Resolution parameter should be the same in all the RTUs/FEPs in the system. When different radios are used in the system, the parameter is determined by the radio that requires the longest slot time.

For example, in a system which uses both 200 ms and 300 ms radios, the Channel Monitor Resolution parameter should be set to 300 ms in all the RTUs/FEPs in the system. To determine how to set up the Channel Monitor Resolution parameter in RTUs in your system, see the table on the following page.

First Warm-up Delay Parameter

When the radio's PTT is activated, the radio starts transmitting a carrier wave. The other radios on the same frequency channel that receive the carrier wave activate the Channel Monitor and signal the RTU that the channel is busy. For each type of radio, there is a specific delay between the activation of the PTT in the transmitting radio and the activation of the channel monitor signal in the receiving radios. The types of radios that are used in the system determine the value of this parameter (typically 200 to 350 ms in Motorola conventional radios).

Please note that this parameter should be the same in all the RTUs that reside on the same frequency channel and communicate with each other. When different radios reside on the same frequency channel, the parameter is determined by the radio that requires the longest Warm-up.

For example, in a system which uses both 200 ms and 300 ms radios on the same channel, the First Warm-up parameter should be set to 300 ms in all the RTUs. To determine how to set up the First Warm-up Delay parameter in RTUs in your system, see the table on the following page.

F1-F2 Repeater Considerations

When the system uses an F1-F2 repeater, the First Warm-up Delay Parameter should be longer from the values in the table below. Also the Channel Monitor Resolution Parameter might be longer. In this case, the parameter setting in the system is determined by the RTUs/FEP radios and the repeater's performance.

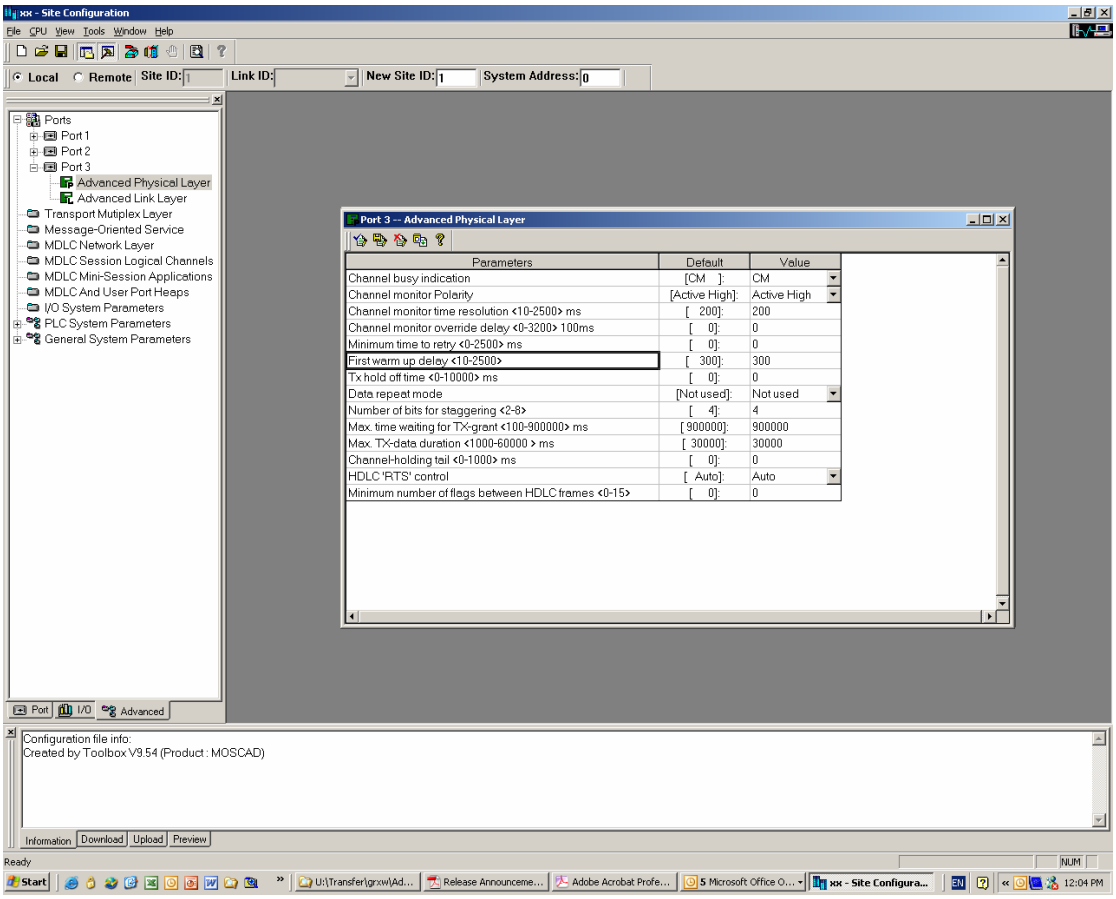
For technical support concerning setting parameters in system with F1-F2 repeaters, please contact Motorola technical support.

Parameter Setting for Motorola Conventional Radios in MOSCAD / ACE3600 Systems

Radio	Modulation	First Warm-Up Delay [ms]	Channel Monitor Resolution [ms]
XTL5000 analog conventional operation	DPSK only	300	200
CDM750	FSK & DPSK @ 12.5 KHz channel spacing	200	100
	DFM @ 25KHz channel spacing	200	100
CM140;CM200;EM200;GM3188; GM338;GM339; GM340; GM350	FSK & DPSK @ 12.5 KHz channel spacing	300	200
	DFM @ 25KHz channel spacing	300	200
MCS2000; Maxtrac	FSK & DPSK @ 12.5 KHz channel spacing	200	100
	DFM @ 25KHz channel spacing	200	100
MTS2000	FSK & DPSK @ 12.5 KHz channel spacing	300	200
HT1000	DPSK only	300	200

Setting the Parameters in the MOSCAD/MOSCAD-L ToolBox

The Channel Monitor Resolution and First Warm-up Delay parameters are set in the **Site configuration -> Port 3 -> Advanced Physical Layer** screen.



Setting the Parameters in the ACE3600 STS

The Channel Monitor Resolution and First Warm-up Delay parameters are set in the **Site -> Port Tab -> Port X -> Advanced Configuration -> Physical Tab** screen.