

Introduction

The Orchestra Control Module (OCM or RF-Orchestra!) paging base station component has the ability to relay its current status via a list of Error Codes. When an error is detected the Error is logged in the OCM's error log. The error log can be read via the FIPS interface. Some of the errors are also reported as alarms to the Choreographer! through the OCM/BCM Plug-and-Play interface. The Choreographer! is notified of unsolicited alarms from the BCM asynchronously as, and when, the error condition occurs. Because the OCM does not support a network interface between itself and the Choreographer!, the BCM is also responsible for relaying specific OCM alarms to the Choreographer!. These items are denoted as "Reported as an SNMP Trap".

Definitions

Alarm - A report of a system performance degradation.

Alarm Severity - There are four categories of alarm severity

- **Critical:** The alarm has caused paging transmissions to stop indefinitely. Without user interaction, paging may not resume.
- **Major:** The alarm has caused a temporary interruption of paging transmissions. Paging will most likely resume without user intervention. Under some circumstances repetitive occurrences of these alarms will effectively disable the station.
- **Minor:** The alarm most likely has not caused any interruption of paging transmissions.
- **Informational:** The alarm is presented for the user's information only. No interruption of service has occurred.

Error - A report of a diagnosed problem or an information event. Some errors may trigger alarms, while others will not.

Event - A report of an occurrence of some action taken by the OCM. An Event is usually reported for the user's information, and **not** due to any adverse OCM operating condition.

Version Information

The information in this document shows the current status of the RF-O! errors for all releases of software up to and including:

RFO 1.2.5

Backwards compatibility is maintained between releases when appropriate. When an alarm is added the release version to first support the alarm is noted in the Version column of the tables. For example, the notation "1.0.4+" indicates the error was first seen in version 1.0.4, and is in every release thereafter. An obsolete error would be indicated by "1.0.0-1.0.4", indicating that the error was not included in any version after 1.0.4.

Reading the Error Logs on the OCM (A 104)

Error Logs can be read on the OCM via the FIPS "a 104" command. Entering "a 104" causes all currently logged errors to be displayed.

When the “a 104” FIPS command is issued, all currently logged errors are returned to the terminal. The example below shows a typical error log on the OCM.

```
RFO FIPS: a 104
```

```
RFO FIPS: <STATION_ERROR><LOG_ERROR><S_STATION_RESET><ROOT><354><1996/04/02.12:00:00><1>
```

Each log entry line contains the following information:

<Type><Action><Error Code><Caller><Line Num><Timestamp><Occurrences>

Type - helps determine which subsystem within the module is responsible for the error condition. The Type can take on values such as NVM, DSP, STATION_ERROR, GPS, etc.

Action - tells what action the error logging mechanism took when the error occurred. Action can be either RESET_STATION (fatal error, station was reset) or LOG_ERROR (non-fatal, error was logged, but station was not reset).

Error Code - used to identify individual errors. The tables in this document contain descriptions of each of the possible error codes.

Caller - Used for software debugging. The Caller represents the software source code module which logged the error.

Line Num - Used for software debugging. The Line Num is the physical line number of the calling software source code module from where the error was logged.

Timestamp - GPS time when the error occurred. Note: the GPS time is not known to the RFO immediately after reset. It is received from the RFB across the maintenance path. (The timestamp was not accurate in releases prior to RFO 1.2.5).

Occurrences - the number of times the current combination of Type, Action, Error Code, Caller, and Line Num have occurred since the log was last cleared. Note that different Callers can log the same Error Code, in which case separate log entries will be made.

Reading the Alarm Logs on the OCM (A 99)

The Alarm Log is used to hold error/alarm conditions that are relayed to the RFB via the Maintenance Path. All Alarm Log entries have a corresponding Error Log entry, but not all Error Log Entries appear in the Alarm Log. Alarm Logs are primarily reserved for RFO conditions that warrant immediate attention, signalling a module failure, or some other interruption of messaging traffic.

Alarm Logs can be read on the OCM via the FIPS “a 99” command. Entering “a 99” causes all currently logged alarms to be displayed.

When the “a 99” FIPS command is issued, all currently logged alarms are returned to the terminal. The example below shows a typical alarm log on the RFO.

```
RFO FIPS: a 99
```

```
RFO FIPS: RFO FIPS: RA 99
```

Reported Alarms

AL001 - Alarm Occurred Due to OCM Reset.

OK000 - Transmitter Disabled Due To High OCM Ambient Temperature.

OK000 - Transmitter Disabled - (Check Disabled Status via FIPS: A 83).

Each log entry line contains the following information:

XXYYY - <Description>

XX - (Alarm Status). Either **AL** or **OK**. **AL** indicates that the alarm is still active. **OK** indicates that the alarm occurred, but is now cleared.

YYY - (Alarm Count). If **XX** is **AL**, these three digits will indicate the number of occurrences of this alarm since the alarm log was last cleared. The alarm count goes to a maximum of 999, then stops counting. The count is set to 000 whenever the cause of the Alarm is no longer present, and the Alarm Status changes from **AL** to **OK**.

<Description> - A brief textual explanation of the alarm.

Clearing the Error Logs on OCM (A 111)

Enter the FIPS 'a 111' command to clear the OCM Error Log. Turning off the RFO, resetting the station using FIPS 'a 117' command, or pushing the RESET button on the RFO will NOT clear the error logs.

Clearing the Error Logs on OCM (A 103)

Enter the FIPS 'a 103' command to clear the OCM Alarm Log. Turning off the RFO, resetting the station using FIPS 'a 117' command, or pushing the RESET button on the RFO will NOT clear the alarm logs.

Using the Error Code Tables

The error, event, and alarm codes currently supported by the OCM (up to version RFO 1.2.5) are included in the tables below.

The first table, "RF-O! Transmitter Error Code Definitions" describes error codes found in the Error Log (RFO FIPS: A 104). The second table, "RF-O! Error Code / Alarm Code Cross-References" lists the Alarms found in the Alarm Log (RFO FIPS: A 99) along with their corresponding Error Log entry. All Alarm Log entries have a corresponding Error Log entry, but not all Error log entries have a corresponding Alarm Log entry.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 1 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_1PPS_INITIAL_SEARCH_FAILURE	Critical (Minor, if after RFB reset)	The Collector DSP has reported to the Host that the Xilinx is not detecting a 1 Pulse-Per-Second (1PPS) signal. NOTE: It is normal to experience these errors when GPS on RFB is not locked (within the first few minutes of RFB reset)	Check installation of GPS on RFB. Verify antenna is properly installed. Verify GPS tracking status on RFB with FIPS 'a 208' command. Check for recent RFB reset.
1.0.4+	E_1PPS_WATCHDOG_FIRED	Critical	The GPS 1PPS is misaligned or absent.	See E_1PPS_INITIAL_SEARCH_FAILURE above.
1.2.2+	E_AMPLITUDE_NOT_ALIGNED (formerly E_FM_NOT_ALIGNED)	Critical	The Amplitude Alignment parameters in the Exciter EEPROM are invalid. Beginning with RFO 1.2.2, if this error condition is detected at startup, the transmitter will be disabled by the RFO software. The transmitter will be re-enabled, once Power Control is Disabled, and the Amplitude Alignment is performed.	The Power Amplitude Alignment must be performed (A 76) at the site. Power Control must be disabled (W 992 0), prior to performing the Amplitude Alignment. Use "A 83 - Station Status" to determine Alignment/Calibration status.
1.0.4+	E_BAD_IMAGE_CRC	Critical	An application remote software download attempt failed.	New software has not been downloaded. User must re-attempt. See download procedure document for more details.
1.2.5+	E_BAD_WATTMETER_INDEX	Minor	A wattmeter reading was received from the Distributor DSP with an invalid wattmeter identifier (not one of the valid ID's for internal forward, external forward, internal reflected, or external reflected). The wattmeter reading is ignored.	If this error persists, please notify Motorola. It may signal a DSP/Host Interface problem.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 2 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_BAD_XILINX_PARAMETER	Critical	Invalid Xilinx type returned from the EEPROM.	Verify that Xilinx Type is '4' via FIPS 'r 710'. If it is not, execute 'w 710 4' and reboot RFO. If problem persists, contact Motorola.
1.0.4+	E_CHECK_COMMAND_FORMAT_ERROR	Major	Sent if the Distributor DSP detects that 1 (or more) of the Check Command fields of a PnP data path message is invalid. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If error persists, save error log and contact Motorola.
1.2.5+	E_CHECK_COMMAND_FREQ_FAIL	Major	The RFB and RFO do not agree on the current frequency. This error condition causes the transmitter to become disabled for 2 seconds, and DSP buffers to be flushed.	If error persists, save error log and contact Motorola.
1.2.5+	E_CHECK_COMMAND_KEY_FAIL	Major	The RFB and RFO do not agree on the keyup state. The RFO is either keyed when it is expected to be dekeyed, or dekeyed when it is supposed to be keyed. This error condition causes the transmitter to become disabled for 2 seconds, and DSP buffers to be flushed.	If error persists, save error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 3 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	E_CIRC_LOAD_TEMP_EXCEEDED	Critical	Indicates thermal switch in the Circulator has triggered, indicating High Circulator temperature. Transmitter is disabled. NOTE: Parameter 1030 must be set to 1 for RFO software to check for this condition.	Reset station. Allow Circulator to cool. Verify proper connection of cable from Circulator to EXT LOAD TEMP connector on back of RFO. Monitor for subsequent errors. If error persists, contact Motorola.
1.0.4+	E_CONTROL_COMMAND_FORMAT_ERROR	Major	Sent if the Distributor DSP detects that 1 (or more) of the Control Command fields of a PnP data path message is invalid. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If error persists, save error log and contact Motorola.
1.1.1+	E_CURRENT_STATE_INVALID	Major	An invalid input command is encountered in the key/dekey cycle.	If error persists, save error log and contact Motorola.
1.1.1+	E_CUTOVER_FAILED	Critical	The cutover to the new flash bank after a remote software download has failed.	Do NOT reset the RFO. Attempt the remote software download again as detailed in the RFO Remote Software Download Procedure.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 4 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	E_DISABLE_PAGING	Critical	The transmitter has been disabled (shut-down). There are several disable sources. Each is listed in the "A 83 -Station Status" screen. The transmitter can be disabled by the User (W 99 1), or by the Software. Software shutdowns occur due to High VSWR, High Reflected Power, AM/FM Clipping, Synthesizer Out of Lock, High Temperature, Bad Amplitude Alignment, Pendulum Unlock, UHSO Failures, PA Failures, etc.	Check the alarm log (A 99), error log, and station status (A 83) to determine the source of the disable. The alarm and error logs should describe the reason for the shutdown in greater detail. Take action based on the specific error causing the shutdown. (Specific error can be determined by matching timestamps with the E_DISABLE_PAGING error log entry)
1.0.4+	E_DSP1_STARTUP_FAILURE E_DSP2_STARTUP_FAILURE E_DSP3_STARTUP_FAILURE E_DSP4_STARTUP_FAILURE	Critical	An attempt to download code to one of the 4 DSP's failed. Occurs upon reset.	Reset RFO. If problem persists, contact Motorola. Possible DSP or OCM board failure.
1.0.4+	E_DSP_TIMEOUT_ON_OUTPUT	Critical	The DSP did not respond to a Host request within a designated time-out period.	Reset RFO. If problem persists, contact Motorola. Possible DSP or OCM board failure.
1.1.1+	E_DSP_TX_MODE_INVALID_MESSAGE_TYPE	Minor	RFO sends a buffer flush request to a DSP, but receives an invalid reply.	If error persists, save error log and contact Motorola.
1.1.1+	E_DSP_TX_MODE_INVALID_SOURCE_TASK	Minor	RFO Host receives a DSP reply from a source other than Distributor, Modulator, or Collector DSP.	If error persists, save error log and contact Motorola.
1.1.1+	E_DSP_TX_MODE_INVALID_STATE	Minor	The DSP flush mode is in an invalid state.	If error persists, save error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 5 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	E_DSP_TX_MODE_REPLIES_MISMATCH	Minor	The request mode sent to DSP does not match the mode from the DSP reply.	If error persists, save error log and contact Motorola.
1.1.1+	E_DSP_TX_MODE_REQ_REPLY_OUT_OF_SEQ	Minor	RFO Host receives invalid reply from DSPs after sending a flush request.	If error persists, save error log and contact Motorola.
1.1.1+	E_EEPROM_REPROG_PARMS_TO_DEFAULTS	Critical	The RFO software detected a new(blank) or corrupted EEPROM.	The OCM EEPROM parameter database has been reprogrammed and all parameters have been set to default.
1.0.4+	E_END_OF_COMMAND_ERROR	Minor	Sent if the Distributor DSP detects that the final word in any PnP command has an invalid termination indicator. Possible RFO/RFB PnP incompatibility. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If error persists, save error log and contact Motorola.
1.2.2+	E_EXCITER_AD_READ_FAIL	Critical	RFO was unable to read the Exciter A/D values via the SPI bus.	Verify proper installation of Exciter and OCM. Reset station. Error could indicate a problem with the Exciter, backplane, or OCM. If error persists, save error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 6 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_EXCITER_EEPROM_READ_FAIL	Major	The OCM was unable to read the data in the Exciter Serial EEPROM via the SPI bus. The Exciter Serial EEPROM contains the Internal and External Wattmeter Calibration, and the Amplitude Alignment data necessary for proper power output and leveling.	Verify proper seating of Exciter and OCM Module within the chassis. Clear error logs, then reset OCM. Error could indicate possible Exciter, backplane, and/or OCM module failure. If error persists, save error log and contact Motorola.
1.0.4+	E_EXCITER_EEPROM_WRITE_FAIL	Major	The OCM was unable to write data to the Exciter Serial EEPROM via the SPI bus. The Exciter Serial EEPROM contains the Internal and External Wattmeter Calibration, and the Amplitude Alignment data necessary for proper power output and leveling. This error would only occur during Write to Exciter EEPROM (A 72), Amplitude Alignment (A 76), or Internal or External Wattmeter/Detector Calibration (A 71)	Verify proper seating of Exciter and OCM Module within the chassis. Clear error logs, then reset OCM. Perform FIPS command which caused the error to occur (A 72, A 76, or A 71). Error could indicate possible Exciter, backplane, and/or OCM module failure. If error persists, save error log and contact Motorola.
1.0.4+	E_EXCITER_FRU_FAIL_ALARM	Critical	Catastrophic Exciter Failure Detected. This error is currently logged when the OCM repeatedly fails to lock one or both of the synthesizers on the Exciter.	Check for proper installation of Exciter. If problem persists, Exciter module should be replaced.
1.1.1+	E_EXTERNAL_DETECTOR_NOT_CALIBRATED	Major	The external power detector has not been calibrated. This check is performed when RFO boots.	ON SITE: Calibrate the detectors using FIPS 'a 71 x yyy' and a calibrated power meter.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 7 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_EXTERNAL_FORWARD_POWER_LOW	Major	Power Output is below the limit on the external forward power meter during an FM transmission. The limit is set by writing to Parameter 144. If you do not care to monitor this alarm, set Parameter 144 to its maximum value of 600 (Watts).	Check station output power level using FIPS 'a 80'. Verify that all RF connections are secure. If condition persists, this error could indicate a faulty external detector. Contact Motorola.
1.0.4+	E_EXTERNAL_REFLECTED_POWER_HIGH	Major	Power Output is above the limit on the external reflected power meter during an FM transmission. The limit is set by writing Parameter 146 to the desired level (less than one-fourth the FM Power Output setting of Parameter 994). Beginning with RFO 1.2.2, when this error is logged, and Power Control is Enabled, the transmitter will become disabled. The RFO must be reset to re-enable the transmitter.	This error normally indicates a possible short or open circuit between the External Detector and the antenna. Check all connections. Check station output power level using FIPS 'a 80'. Error could possibly indicate a faulty External Detector. If condition persists, contact Motorola.
1.1.1+	E_FFDS_INVALID_TX_MODE_REQUESTED	Minor	A DSP received an invalid DSP buffer flush request.	If error persists, save error log and contact Motorola.
1.1.1- 1.1.3	E_FM_NOT_ALIGNED (See E_AMPLITUDE_NOT_ALIGNED)	Major	The amplitude alignment in the Exciter EEPROM is invalid.	The Power Amplitude Alignment must be performed (A 76) at the site. Power Control must be disabled (W 992 0), prior to performing the Amplitude Alignment. Use "A 83 - Station Status" to determine Alignment/Calibration status.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 8 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_FREQ_OFFSET_ERROR	Major	An invalid/unsupported Sub-channel was received in the Plug-and-Play Control Command. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If errors persist, save error log and contact Motorola.
1.2.2+	E_HIGH_AMBIENT_TEMP_CUTBACK_ALARM	Major	The transmitter ambient temperature has exceeded the Ambient Temperature Cut-back Threshold (Parameter 3001). By default, this value is 45 (degrees C). Ambient temperature is measured at the temperature sensor on OCM.	Verify proper calibration of OCM temperature sensor. Read current ambient temperature (R 1026). If ambient temperature reading differs by more than 3 degrees from the transmitter site room temperature, the sensor is not calibrated correctly, and should be calibrated. If site temperature is above 45 degrees C (113 degrees F), station is operating properly. If errors persist, save error log and contact Motorola.
1.2.2+	E_HIGH_AMBIENT_TEMP_SHUTDOWN_ALARM	Major	The transmitter ambient temperature has exceeded the Ambient Temperature Shutdown Threshold (Parameter 3002). By default, this value is 60 (degrees C). Ambient temperature is measured at the temperature sensor on OCM.	If transmitter site room temperature exceeds 60 degrees C (140 degrees F), RFO is operating properly. If errors persist, save error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 9 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	E_HIGH_EXT_WM_VSWR_ALARM	Critical	RFO disabled the transmitter due to a VSWR (Voltage Standing Wave Ratio) reading of greater than 3.0 (Reflected Power is greater than one-fourth of the Forward Power) at the External Detector.	See "E_EXTERNAL_REFLECTED_POWER_HIGH"
1.2.2+	E_HIGH_INT_WM_VSWR_ALARM	Critical	RFO disabled the transmitter due to a VSWR reading of greater than 3.0 (Reflected Power is greater than one-fourth the Forward Power) at the Internal Detector.	See E_INTERNAL_REFLECTED_POWER_HIGH
1.0.4+	E_HIGH_STABILITY_REFERENCE_FAILURE	Critical	The OCM lost contact with the Ultra High Stability Reference (UHSO).	Verify RFB has power. Verify reference module is properly installed in RFB. Verify 10 MHz BNC cable is properly connected to both RFO and RFB on backplanes. Check that 10 MHz signal is present on backplane. If error persists, contact Motorola.
1.0.4+	E_ILLEGAL_IPS_COMMAND	Informational	An invalid FIPS command was entered. The command was ignored.	If command was entered correctly, verify that command is compatible with software version. See FIPS document for correct command formats.
1.0.4+	E_ILLEGAL_PARAMETER_WRITE	Informational	The user tried to write a Parameter which can only be written to by RFO software (Application Write Only). Command was ignored.	Only attempt to write to writable parameter ID's. See FIPS document for details.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 10 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_ILLTICKS	Minor	OS Error: Ticks input out of range.	If error persists, save error log and contact Motorola.
1.0.4+	E_ILLTIME	Minor	OS Error: Time of day input out of range.	If error persists, save error log and contact Motorola.
1.0.4+	E_INCOMPLETE_FRAME_ERROR	Major	The Distributor DSP has detected that a partial Frame fragment was received. Possibly due to error in PnP interface/protocol. NOTE: This is a Plug-and-Play Error. Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If error persists, save error log and contact Motorola.
1.1.1+	E_INTERNAL_DETECTOR_NOT_CALIBRATED	Major	The Internal Power Detector has not been calibrated. The RFO validates detector calibration at startup, or when Power Control is changed from Disabled to Enabled. Internal and External Detector Calibration values are stored in the Exciter Serial EEPROM.	ON SITE: Calibrate Internal Detector using the proper calibration procedure.(A 71).
1.0.4+	E_INTERNAL_FOWARD_POWER_LOW	Major	Power Output is below the limit on the Internal Forward Power Meter during an FM transmission. The limit is set by writing to Parameter 141. If you do not care to monitor this alarm, set Parameter 141 to its maximum value of 600 (Watts).	Check station output power level using FIPS 'a 80'. If condition persists, contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 11 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_INTERNAL_REFLECTED_POWER_H IGH	Critical	Power Output is above the limit on the Internal Reflected power meter. The limit is set by writing Parameter 143 to the desired level (less than one-fourth the FM Power Output setting of Parameter 994). Beginning with RFO 1.2.2, when this error is logged, and Power Control is Enabled, the transmitter will become disabled. The RFO must be reset to re-enable the transmitter.	This error normally indicates a possible short or open circuit between the Internal Detector and the antenna. Check all connections. Check station output power level using FIPS 'a 80'. Error could possibly indicate a faulty Internal Detector. If condition persists, contact Motorola.
1.1.1+	E_INVALID_AM_CONFIGURATION	Critical	This error occur during Power Control initialization, during startup. There are two possible causes: (1) There are no PA decks detected; (2) The current power level was set out of range per the Power Chart.	Check PA configuration using FIPS 'r 993'. Set output power using FIPS 'a 88 x y'. If condition persists, contact Motorola.
1.2.2+	E_INVALID_CHAN_OFFSET (formerly E_RFCC_INVALID_CHAN_OFFSET)	Major	An invalid sub-channel offset was received from the Plug-and-Play Control Command.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_INVALID_COMMAND_TYPE_ ERROR	Major	PnP Error: Error occurs if Plug-and-Play message does not match any possible Plug-and-Play commands. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If error persists, contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 12 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	E_INVALID_FM_CONFIGURATION	Major	This error occur during Power Control initialization, during startup. There are two possible causes: (1) There are no PA decks detected; (2) The current power level was set out of range per the Power Chart.	Check PA configuration using FIPS 'r 993'. Set output power using FIPS 'a 88 x y'. If condition persists, contact Motorola.
1.1.1+	E_INVALID_INPUT_RECEIVED	Major	An invalid input command is encountered in the key/dekey cycle.	If error persists, save error log and contact Motorola.
1.0.4+	E_INVALID_IPS_PORT	Informational	Host application attempted to connect to an invalid communications port.	Debug message only. Ignore.
1.2.2+	E_INVALID_MOD_TYPE (formerly E_RFCC_INVALID_MOD_TYPE)	Major	An invalid Modulation Type was received from the Plug-and-Play Control Command. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_INVALID_MODULATION_TYPE	Minor	An invalid modulation type (not AM or FM) is received in the Plug-and-Play message.	This error appears once when the RFO keys up the first time after reboot. Ignore. If the error persists, save the error log and contact Motorola.
1.1.1+	E_INVALID_NEXT_MODULATION_TYPE	Major	An invalid modulation type is received for the next transmission in the Plug-and-Play message. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 13 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	E_INVALID_NEXT_NUMBER_OF_SUBCHANNELS	Major	An invalid number of subchannels is received for the next transmission in the Plug-and-Play message.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_INVALID_NUMBER_OF_SUBCHANNELS	Major	The number of subchannels received for the transmission is out of range. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_INVALID_OPCODE	Informational	The DSP received an invalid/unsupported command from the Host.	Debug message only. Ignore.
1.1.1+	E_MOD1_INPUT_OVERFLOW_ERROR	Major	Both Modulator DSP's did not receive the same amount of data for each logical sub-channel. Interruption of the input stream to the modulator is caused by other Plug-and-Play Errors. In a multiple channel operation any Plug and Play error has the potential to cause a Mod1 or Mod2 Input Overflow error. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists (more than 10 occurrences per day), save error log and contact Motorola.
1.1.1+	E_MOD2_INPUT_OVERFLOW_ERROR	Major	(See E_MOD1_INPUT_OVERFLOW_ERROR) NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists (more than 10 occurrences per day), save error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 14 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_MODULATION_TYPE_ERROR	Major	An invalid/unsupported Modulation Type was received in the Plug-and-Play Control Command. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save error log and contact Motorola.
1.0.4+	E_MP_BAD_CHECKSUM	Minor	Received packet did not match calculated checksum. Data is invalid and packet is discarded.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_BAD_FORMAT	Minor	Base error used for all invalid messages received on the Maintenance Path.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_COMMAND	Minor	The command received from the BCM is not recognized. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_EVENT_ID	Minor	Event ID requested does not have an associated entry in the event table. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_EVENT_LENGTH	Minor	The error string exceeds the maximum number of characters allowed. Error in table entry. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 15 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_MP_INVALID_VALUE_DESC_ENUM_LENGTH	Minor	The enumeration length of an enumerated type exceeds the maximum size allowed. Error in table entry. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_VALUE_DESC_ID	Minor	Value ID requested does not have an associated description in the value table. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_VALUE_ID	Minor	Value ID requested does not have an associated entry in the value table Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_INVALID_VALUE_LENGTH	Minor	The value length does not match the associated value format. Error in table entry. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_NO_LAST_RESPONSE	Minor	There is no last response to return when the OCM receives a request to send the last response. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_OUT_OF_SYNC_REPLY	Minor	Received sequence number is incorrect. BCM and OCM are out of sync. Possible maintenance path incompatibility between RFO and RFB.	Reset RFB to resynchronize interface. If error persists, contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 16 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_MP_SOURCE_TASK_ID_NOT_FOUND	Minor	Source task ID received does not exist. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_MP_UNEXPECTED_REPLY_OPCODE	Minor	The opcode received from the BCM is not recognized. Possible maintenance path incompatibility between RFO and RFB.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_NOBUF	Minor/Critical	OS Error: Operating System is unable to obtain free memory buffers for some form of messaging. There are many locations in the RFO software where this error may occur. Depending upon the location, the severity of this error may vary.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_NOT_ENOUGH_MEMORY	Minor	An attempt to allocate additional dynamic memory for a FIPS reply message failed.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_OVERWRITING_MOD_MODE_PARAMETERS	Major	This error occurs when a new modulation type is received by the RFO, while another modulation type is pending transmission. This error could signal a possible RFB or RFC timing/scheduling problem.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 17 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_PA_HS_TEMPERATURE_FAIL_DECK_1	Major	Power Amplifier 1 Heat Sink Temperature Has Exceeded the Ambient Temperature of the OCM by more than the amount specified by Parameter 1024 or 1025. Beginning with RFO 1.2.2, when Power Control is Enabled, exceeding parameter 1024 (PA vs. Ambient Temp Shutdown Offset), the transmitter will become disabled (shutdown) until the temperature of the PA deck lowers sufficiently.	Verify all fans are operational. Verify proper settings of parameters 1024 and 1025. Verify proper calibration of Ambient Temperature Sensor on OCM. (Check current Ambient Temperature by reading parameter Contact Motorola.
1.0.4+	E_PA_HS_TEMPERATURE_FAIL_DECK_2	Major	Power Amplifier 2 Heat Sink Temperature Has Exceeded the Ambient Temperature of the OCM by more than the amount specified by Parameter 1024 or 1025. See "PA_HS_TEMPERATURE_FAIL_DECK_1"	See PA_HS_TEMPERATURE_FAIL_DECK_1
1.0.4+	E_PA_INITIALIZATION_FAILED	Major	During startup, or when enabling Power Control, the RFO software was unable to read the PA EEPROM(s), and/or Analog to Digital Converters.	Verify proper installation of PA deck(s) and wiring. Verify all power supplies are turned on and functioning. Verify PA "SPI" cable is properly connected.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 18 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.5+	E_PA_TEMP_CUTBACK_ALARM	Major	The temperature of a PA exceeded the Ambient Temperature at the OCM temperature sensor, by more than the configured 3 dB Cutback amount (See Parameter 1025).	Verify Ambient Temperature Sensor is properly calibrated. Read Parameter 1026 to see current ambient temperature reading (if it appears too low, shutdown may not be warranted). Use “a 192 SHMI 4” trace to see PA and Ambient Temperature readings. Verify fans are working properly.
1.2.5+	E_PA_TEMP_SHUTDOWN_ALARM	Major	The temperature of a PA exceeded the Ambient Temperature at the OCM temperature sensor, by more than the configured Shutdown amount (See Parameter 1024).	Verify Ambient Temperature Sensor is properly calibrated. Read Parameter 1026 to see current ambient temperature reading (if it appears too low, shutdown may not be warranted). Use “a 192 SHMI 4” trace to see PA and Ambient Temperature readings. Verify fans are working properly.
1.0.4+	E_PARAMETER_MANAGER_BAD_STATUS	Critical	Returned when an error is encountered reading from or writing to Parameter NVM. The EEPROM may have failed.	Reboot station. If error returns, contact Motorola.
1.0.4+	E_PASSED_PARAMETER_OUT_OF_RANGE	Informational	Parameter passed to a function contained an invalid value.	Debug message. Ignore.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 19 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1- 1.1.3	E_PC_ENABLED_PARAMETER_WRITE_DISABLED (See I_PC_ENABLED_PARAMETER_WRITE_DISABLED)	Informational	A write or read is requested from FIPS to access some power related parameters when the power control is on and a valid amplitude alignment exists.	The command was ignored. Do not access the parameters below when the power control is on. The parameters include K factor (990), Tranlin attenuation level (974), exciter level (953), exciter feedback attenuator parameter (996), modulation DSP maximum deviation (2053), modulation DSP FM power (2054), modulation DSP voice pilot power (2055), or modulation DSP voice sideband power (2056).
1.0.4+	E_PENDULUM_NOT_LOCKED	Major	The Pendulum has fallen out of phase lock with the 10MHz Reference. This could be due to the absence of a 10MHz Reference, incorrect programming or failure of the RFO Synthesizer or incorrect programming or failure of the Pendulum IC.	Verify 10 MHz oscillator is properly installed, and Reference Module board is properly installed in RFB. Verify 10 MHz BNC cable is connected properly between RFO and RFB back-planes. Reset RFB. If problem persists, contact Motorola.
1.0.4+	E_PENDULUM_REFERENCE_FAILURE	Major	The Pendulum Clock is no longer detectable by the Host Microprocessor.	See E_PENDULUM_NOT_LOCKED above.
1.1.1+	E_POWER_CONTROL_SYNCHRONIZATION	Minor	Certain software tasks used in power control feature can not be synchronized when RFO is reset.	Reset RFO. If error persists, contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 20 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	E_POWER_LEVELING_FAILED	Major	Transmitter is disabled due to Power Leveling attempting to Gain or Attenuate the set power by more than 1.5 dB. Power Leveling, as indicated by parameter 2999, or via "A 83 - Station Status", should typically be no more than 0.5 or less than -0.5 dB. OCM needs to be reset to enable transmitter.	Verify Amplitude Alignment is valid (A 83). This problem could also occur if the carrier null procedure (A 74) was not performed prior to amplitude alignment and wattmeter calibration. Use "A 192 SPCQ 64" trace to monitor power readings, if readings appear to be sporadic (varying by more than +/- 15% of the desired power output), the coupler and/or detector may be defective. If problem persists, Contact Motorola.
1.0.4+	E_PS_INPUT_VOLT_ALARM_DECK_1	Major	Power Supply 1 voltage detected has fallen below specified limits, flagging a possible power supply failure.	Replace Power Supply 1.
1.0.4+	E_PS_INPUT_VOLT_ALARM_DECK_2	Major	Power Supply 2 voltage detected has fallen below specified limits, flagging a possible power supply failure.	Replace Power Supply 2.
1.0.4+	E_QFULL	Minor/Critical	OS Error: Cannot Send - Message queue full. The severity of this message depends upon where in the RFO software this error occurred.	May cause the RFO to reset. If error returns, save error log and contact Motorola.
1.0.4- 1.1.3	E_RFCC_INVALID_CHAN_OFFSET (See E_INVLAID_CHAN_OFFSET)	Major	An invalid sub-channel offset was received from the Plug-and-Play Control Command.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 21 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4- 1.1.3	E_RFCC_INVALID_MOD_TYPE (See E_INVALID_MOD_TYPE)	Major	An invalid Modulation Type was received from the Plug-and-Play Control Command.	If the error persists, save the error log and contact Motorola.
1.0.4- 1.1.3	E_RFCC_SYNTH1_LOCK (See E_SYNTH1_LOCK)	Critical	The attempt to reprogram the First Exciter Synthesizer failed.	Reboot RFO. If the error persists, save the error log and contact Motorola.
1.0.4- 1.1.3	E_RFCC_SYNTH2_LOCK_FAIL (See E_SYNTH2_LOCK_FAIL)	Critical	The attempt to reprogram the Second Exciter Synthesizer failed.	Reboot RFO. If the error persists, save the error log and contact Motorola.
1.0.4+	E_SPI_TIMEOUT	Major	A SPI access returned a time-out error. This indicates that the addresses SPI device did not respond within a defined time-out period.	Verify all backplane connections are secure and all boards tightly seated. If error persists, contact Motorola.
1.0.4+	E_SRAM_READ_FAULT	Minor	Attempt to read from Static RAM failed.	NOTE: It is normal to see these errors after reset in a totally operational RFO. If error occurs after RFO has completed startup, contact Motorola.
1.0.4+	E_SRAM_WRITE_FAULT	Major	Attempt to write to Static RAM failed.	Reboot RFO. If the error persists, save the error log and contact Motorola.
1.0.4+	E_START_TIME_ERROR	Major	An invalid Start Time was received in the Plug-and-Play Control Command. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 22 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_STATION_AM_CLIPPING_DETECTED (formerly E_EXCITER_AM_CLIPPING_DETECTED)	Major	The Exciter has indicated that it has clipped during an AM (Voice) transmission. Beginning with RFO 1.2.2, when Power Control is Enabled, this error condition will cause the transmitter to be disabled.	Verify that RFO amplitude is properly aligned to the correct FM output power. Verify that Internal and External Wattmeters are calibrated. These can be checked by using the "A 83 - Station Status" FIPS command. Verify that all RF connections on the RFO are properly connected. If error persists, contact Motorola.
1.1.1+	E_STATION_DEKEYED_KEY_STATE_MISMATCH	Major	This error occurs when the transmitter status is in the active state, but it should be in an inactive state.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_STATION_DEKEYED_MOD_MODE_MISMATCH	Major	The modulation type according to the Host processor, while keyed does not match the modulation type received from the Distributor DSP.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_STATION_DEKEYED_MOD_STATE_INVALID	Major	The current modulation type is invalid in the dekeyed state.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_STATION_FM_CLIPPING_DETECTED (formerly E_EXCITER_FM_CLIPPING_DETECTED)	Critical	The Exciter has indicated that it has clipped during an FM transmission. Beginning with RFO 1.2.2, when Power Control is Enabled, this error condition will cause the transmitter to be disabled.	Verify that RFO amplitude is properly aligned to the correct FM output power. Verify that Internal and External Wattmeters are calibrated. These can be checked by using the "A 83 - Station Status" FIPS command. Verify that all RF connections on the RFO are properly connected. If condition persists, contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 23 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	E_STATION_KEYED_KEY_STATE_MISMATCH	Major	This error occurs when the transmitter status is in the inactive state, but it should be in a active state.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_STATION_KEYED_MOD_MODE_MISMATCH	Major	The current modulation type is invalid in the keyed state.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_STATION_KEYED_NEXT_PROTOCOL_INVALID	Major	The next modulation type has not been received in the key state.	If the error persists, save the error log and contact Motorola.
1.0.4- 1.1.1	E_STATION_PA_DECK_FULL_POWER (See "I_STATION_PA_DECK_FULL_POWER")	Informational	Set during powerup to indicate that all PA's decks have been initialized correctly.	Ignore.
1.0.4- 1.1.1	E_STATION_TEMP_FULL_POWER (See "I_STATION_TEMP_FULL_POWER")	Informational	Set at startup to indicate that the RFO initially detected PA's running within proper temperature range.	Ignore.
1.0.4+	E_SWITCH_DEFAULT	Informational, Minor, Major, or Critical	Software Error. The value passed to a software conditional 'switch' statement did not match any of the tested values. The severity of this error depends upon where in the software this error is logged.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_SYMBOL_DATA_COMMAND_FORMAT_ERROR	Major	Sent if one or more of the Symbol Data Command fields are invalid. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 24 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	E_SYNTH1_LOCK (formerly E_RFCC_SYNTH1_LOCK_FAIL)	Critical	The attempt to reprogram the First Exciter Synthesizer failed. Beginning with RFO 1.2.2, the transmitter is disabled when several attempts to program both synthesizers has failed.	Reset RFO. If the error persists, save the error log and contact Motorola.
1.2.2+	E_SYNTH2_LOCK_FAIL (formerly E_RFCC_SYNTH2_LOCK_FAIL)	Critical	The attempt to reprogram the Second Exciter Synthesizer failed. Beginning with RFO 1.2.2, the transmitter is disabled when several attempts to program both synthesizers has failed.	Reset RFO. If the error persists, save the error log and contact Motorola.
1.1.1+	E_SYNTHESIZER_INITIALIZATION_FAILED	Critical	The two synthesizers on exciter can not be initialized and locked. This check is performed when RFO starts up and initializes the power control.	Reset RFO. Check synthesizers. If the error persists, save the error log and contact Motorola.
1.1.1+	E_TIMER_COUNT_PAST_REFERENCE_COUNT	Minor	The periodic timer which controls time-critical tasks. was delayed by a higher priority task, making it impossible to setup the next timer interrupt. The timer controls time-critical functions, such as wattmeter readings. The RFO will self-recover from this error condition. NOTE: It is normal for this error to be triggered at the same time as any of the Plug-and-Play Errors, when the DSP's are flushed.	If a large number of these errors occurs (more occurrences of this error than all of the PnP Errors combined), contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 25 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	E_TIMER_NOT_MULTIPLE_5_MILLISECOND	Minor	The time interval of the timer handler's periodic check is not an even multiples of 5 milliseconds. The interrupt is used to provide delays for sampling the detectors, performing periodic checks while the station is keyed/dekeyed, and enabling the next interrupt.	If error persists, contact Motorola.
1.1.1+	E_TRACE_INVALID_OPCODE	Minor	The Trace manager receives an invalid request.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_TRACE_INVALID_SOURCE_TASK	Minor	The Trace manager receives message from an invalid source.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_TRACE_INVALID_TRACE_MESSAGE	Minor	An unexpected command is received by Trace manager.	If the error persists, save the error log and contact Motorola.
1.1.1+	E_TXLIN_CARRIER_NULL_FAILED	Critical	This error occurs when RFO fails to null the Txlin carrier feed through component which is unacceptable for InFLEXion transmission.	Attempt to null the carrier feed through component (A 74) with Power Control Disabled (W 992 0) several times, prior to notifying Motorola.
1.0.4+	E_TXLIN_CHECKSUM_INVALID	Critical	The checksum reported by the Txlin (on the Exciter) for its registers, does not match the RFO's calculated value. This operation is performed whenever one of the Txlin registers is written by the RFO software.	Verify that Exciter and OCM are properly installed in the chassis. Error could indicate problem with Exciter, backplane, and/or OCM. Contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 26 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_TXLIN_CHECKSUM_TEST_REG_READ_FAIL	Critical	The RFO software was unable to read the Checksum Test Register from the Txlin on the Exciter.	Verify that Exciter and OCM are properly installed in the chassis. Error could indicate problem with Exciter, backplane, and/or OCM. Contact Motorola.
1.1.1+	E_TXLIN_INITIALIZATION_FAILED	Critical	RFO fails to initialize the Transmitter Linearization (Txlin) IC at startup.	Verify that Exciter and OCM are properly installed in the chassis. Error could indicate problem with Exciter, backplane, and/or OCM. Contact Motorola.
1.1.1+	E_TXLIN_NOT_LOCKED	Critical	The Oscillator on the Exciter Txlin failed to lock. The transmitter is disabled.	Verify that Exciter and OCM are properly installed in the chassis. Error could indicate problem with Exciter, backplane, and/or OCM. Contact Motorola.
1.0.4+	E_TXLIN_REGISTER_WRITE_FAIL	Critical	Indicates that an attempt to write one or more of the Txlin registers via the SPI bus has failed. Failure to properly write the Txlin registers may cause severe transmitter failure.	Verify that Exciter and OCM are properly installed in the chassis. Error could indicate problem with Exciter, backplane, and/or OCM. Contact Motorola.
1.0.4+	E_UNABLE_TO_START_TASKS	Critical	OS Error: An attempt to start one of the Station Software Tasks has failed.	Reset RFO. If the error returns, contact Motorola.
1.0.4+	E_UNDEFINED_1PPS_STATUS	Informational	The Collector DSP has returned a 1PPS status that does not match any of the statuses known to the Host.	Debug message. If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 27 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	E_UNEXPECTED_ELSE	Informational	The software took an undesired branch in a conditional statement.	Debug message. If the error persists, save the error log and contact Motorola.
1.0.4+	E_UNEXPECTED_OPCODE	Informational	A command passed to a task was not recognized by that task.	Debug message. If the error persists, save the error log and contact Motorola.
1.0.4+	E_UNEXPECTED_SYMBOL_COMMAND_ERROR	Major	Sent if a symbol data command arrives before a control command on PnP data path. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	If the error persists, save the error log and contact Motorola.
1.0.4+	E_VARIABLE_OUT_OF_RANGE	Informational	Variable passed to a routine was outside its allowed limits.	Debug message. Verify proper format of all FIPS commands. If the error persists, save the error log and contact Motorola.
1.0.4+	E_WORK_AHEAD_WINDOW_ERROR	Major	PnP Error: Sent if the arrival of the Plug-and-Play packet is outside the designated arrival window. NOTE: This is a Plug-and-Play Error . Transmitter was Disabled for 2 seconds, and DSP buffers were flushed.	A few of these errors per day is normal in a heavy traffic environment. If excessive amounts of these errors are logged, save the error log and contact Motorola.
1.0.4+	E_XILINX_DOWNLOAD_FAILURE	Critical	An error occurred while attempting to download a program to the Xilinx FPGA.	Reset RFO. If error occurs again, contact Motorola.
1.1.1+	I_DIP1_IS_ACTIVE	Informational	During reboot, the DIP Switch 1 on the RFO module was detected as ON.	Set the DIP switch to OFF unless performing a parameter database reset.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 28 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1+	I_DIP1_NOT_SET	Informational	During reboot, the DIP Switch 1 on the RFO module was detected as OFF.	No action necessary.
1.1.1+	I_DIP2_IS_ACTIVE	Informational	During reboot, the DIP Switch 2 on the RFO module was detected as ON.	Set the DIP switch to OFF unless performing a parameter database reset.
1.1.1+	I_DIP2_NOT_SET	Informational	During reboot, the DIP Switch 2 on the RFO module was detected as OFF.	No action necessary.
1.1.1+	I_CUTOVER_TO_BANK_1_SUCCESSFULLY	Informational	The cutover to flash bank A after a remote software download was performed.	No action necessary.
1.1.1+	I_CUTOVER_TO_BANK_2_SUCCESSFULLY	Informational	The cutover to flash bank B after a remote software download was performed.	No action necessary.
1.1.1+	I_DIP1_ACTIVE_BUT_IGNORED	Informational	During reboot, the DIP Switch 1 on the RFO module was detected as ON. However, since DIP2 was detected as OFF, the DIP1 was ignored.	Set the DIP switch to OFF unless performing a parameter database reset.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 29 of 34)

Ver	Error	Severity	Description/Cause	Action
1.1.1- 1.2.0	I_FFDS_FRAME_FLUSHED	Informational	<p>This signals the user that a transmission frame has been flushed by a DSP. It is normal for this message to be logged at startup, and occasionally during normal operation. This message is normally accompanied by one of the following Plug-N-Play error messages:</p> <p>E_CHECK_COMMAND_FORMAT_ERROR, E_CONTROL_COMMAND_FORMAT_ERROR E_END_OF_COMMAND_ERROR, E_FREQ_OFFSET_ERROR, E_INCOMPLETE_FRAME_ERROR, E_INVALID_COMMAND_TYPE_ERROR, E_INVALID_MOD_TYPE, E_INVALID_NEXT_MODULATION_TYPE E_INVALID_NUMBER_OF_SUBCHANNELS, E_MOD1_INPUT_OVERFLOW_ERROR, E_MOD2_INPUT_OVERFLOW_ERROR, E_MODULATION_TYPE_ERROR, E_START_TIME_ERROR, E_SYMBOL_DATA_COMMAND_FORMAT_ERROR, E_UNEXPECTED_SYMBOL_COMMAND_ERROR, E_WORK_AHEAD_WINDOW_ERROR,</p>	<p>It is normal for occasional occurrences of this Informational Message. If excessive (more than 10 per day) Plug-N-Play errors are received, there may be a network loading/delay issue between the RFC and the RFB, or a Plug-N-Play issue between the RFO and RFB.</p> <p>If excessive occurrences of this message are experienced, contact Motorola.</p>
1.2.2+	I_PAGING_ACCESS_DISABLED	Informational	The transmitter was disabled by a User (W 99 1).	If the transmitter is still disabled (see “A 83 - Station Status), and this is not the desired state, enable the transmitter by writing parameter 99 to 0. (W 99 0).

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 30 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	I_PC_ENABLED_PARAMETER_WRITE_DISABLED)	Informational	An attempt to write to one or more of the Power Amplitude Parameters was made while Power Control (PC) was Enabled. This log entry is intended to inform the user, that the values entered will not be recognized by the RFO software while Power Control is Enabled, but will be used by the station once/if Power Control is Disabled. NOTE: This error log entry will occur approximately 6 times if the "Initialize Amplitude Alignment" command (A 75) is entered while Power Control is Enabled.	No Action Required. It is important to note that while Power Control is enabled, the RFO uses calculated values for power amplitude settings, not the values stored in the Parameter Database. The calculated values can be found via the "A 87" command. Attempting to write any of the following parameters while Power Control is Enabled will cause this message to be logged: Phase Training Scale (982), K-Factor (990), Tranlin Attenuation Level (974), Exciter Attenuator Level (953), Txlin Attenuator (954), Exciter Feedback Attenuator (996), Maximum Deviation (2053), Modulation FM power (2054), Modulation Voice Pilot Power (2055), or Modulation Voice Sideband Power (2056).
1.2.2+	I_STATION_PA_DECK_FULL_POWER (formerly E_STATION_PA_DECK_FULL_POWER)	Informational	Set when RFO goes from a cutback or shutdown state to full power operation, due to recovery from a PA failure.	If error occurs excessively, along with E_STATION_PA_DECK_CUTBACK, or E_STATION_PA_DECK_SHUT_DOWN, this could indicate PA failures. Verify proper PA and Power Supply installation. Contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 31 of 34)

Ver	Error	Severity	Description/Cause	Action
1.2.2+	I_STATION_TEMP_FULL_POWER (formerly E_STATION_TEMP_FULL_POWER)	Informational	Set when one or more PA's has gone from a cutback state, due to high temperature, back to full power operation (temperature of PA decreased sufficiently to allow full power operation to continue)	Excessive logging of this message along with E_STATION_PA_DECK_CUTBACK, or E_STATION_PA_DECK_SHUT_DOWN errors, indicates PA operating temperature problems.
1.0.4+	S_OCM_TX_CONTROL_ERROR	Critical	A PnP Control Command was invalid. Reported as an SNMP Trap.	Verify proper PnP interface connections. If the error persists, save the error log and contact Motorola.
1.0.4+	S_OCM_TX_DATA_ERROR	Major	A PnP Symbol Data Command was invalid. Reported as an SNMP Trap.	Verify proper PnP interface connections. If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 32 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	S_OCM_TX_PAGING_DISABLED	Major/ Critical	<p>This error is logged on the RFB, but sourced by the RFO. An error occurred on the RFO which caused the RFO to become disabled. When disabled, the TX_OK line between the RFO and RFB is deasserted, notifying the RFB to stop sending PnP data.</p> <p>The following errors on the RFO currently cause the transmitter to be disabled:</p> <p>E_AMPLITUDE_NOT_ALIGNED E_CIRC_LOAD_TEMP_EXCEEDED E_DISABLE_PAGING E_EXCITER_AD_READ_FAIL E_EXCITER_FRU_FAIL_ALARM E_EXTERNAL_REFLECTED_POWER_HIGH E_HIGH_AMBIENT_TEMP_SHUTDOWN_ALARM E_HIGH_EXT_WM_VSWR_ALARM E_HIGH_INT_WM_VSWR_ALARM E_HIGH_STABILITY_REFERENCE_FAILURE E_INTERNAL_REFLECTED_POWER_HIGH E_PA_AD_2_TEST_VOLTAGE_FAIL_DECK_1 E_PA_AD_2_TEST_VOLTAGE_FAIL_DECK_2 E_PA_AD_1_TEST_VOLTAGE_FAIL_DECK_1 E_PA_AD_1_TEST_VOLTAGE_FAIL_DECK_2 E_PA_FAIL_SHUTDOWN_ALARM E_PA_TEMP_SHUTDOWN_ALARM E_PA1_PS_AD_SPI_READ_FAIL E_PA2_PS_AD_SPI_READ_FAIL E_PENDULUM_NOT_LOCKED E_PENDULUM_REFERENCE_FAILURE E_POWER_LEVELING_FAILED E_STATION_AM_CLIPPING_DETECTED E_STATION_FM_CLIPPING_DETECTED E_SYNTH1_LOCK_FAIL E_SYNTH2_LOCK_FAIL E_TXLIN_NOT_LOCKED I_PAGING_ACCESS_DISABLED</p> <p>Reported as an SNMP Trap.</p>	<p>Check for related error messages through RFO FIPS.</p> <p>If the error persists, save the error log and contact Motorola.</p>

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 33 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	S_OCM_TX_POWER_CUTBACK	Major	<p>This error is logged on the RFB, but originates from the RFO. Caused by an intentional power cutback on the OCM due to: Power Supply Failure, PA High Temperature, or Power Clip, etc. The following RFO error codes cause this error to appear on the RFB:</p> <p style="margin-left: 20px;">E_EXTERNAL_FORWARD_POWER_LOW E_INTERNAL_FORWARD_POWER_LOW E_HIGH_AMBIENT_TEMP_CUTBACK_ALARM E_PA_TEMP_CUTBACK_ALARM E_PA_FAIL_CUTBACK_ALARM</p> <p style="text-align: center;">Reported as an SNMP Trap.</p>	<p>Check for related error messages in RFO error log through RFO FIPS</p> <p>Take appropriate action based on the error causing the problem.</p>
1.0.4+	S_OCM_TX_POWER_OUTPUT	Major	<p>This error is logged on the RFB, but originates from the RFO. This error signals that there is a problem on the RFO, but the transmitter continues to key at full power (no cutback or disable). The following RFO errors cause this alarm to appear on the RFB:</p> <p style="margin-left: 20px;">E_PS_INPUT_VOLT_ALARM_DECK_1 E_PS_INPUT_VOLT_ALARM_DECK_2 E_PA_HS_TEMPERATURE_FAIL_DECK_1 E_PA_HS_TEMPERATURE_FAIL_DECK_2</p> <p style="text-align: center;">Reported as an SNMP Trap.</p>	<p>Determine reason for this error in the RFO logs.</p> <p>Take appropriate action based on the error causing the problem.</p>
1.0.4+	S_OCM_TX_TRANSMITTER_RESET	Major	<p>OCM software reset occurred. Reported as an SNMP Trap.</p>	<p>Determine reason for OCM reset. If reset occurs frequently, save the error log and contact Motorola.</p>

RF-O! Error/Alarm Code Definitions

Table 1 - RF-O! Transmitter Error Code Definitions (Sheet 34 of 34)

Ver	Error	Severity	Description/Cause	Action
1.0.4+	S_RSR_DOUBLE_FAULT_MON_RESET	Major	The last reset was caused by the double bus fault monitor.	If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_EXTERNAL_TOTAL_SYSTEM_RESET	Informational	The last reset was caused by an external signal driving RESET_H.	Ignore. If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_LOSS_OF_CLOCK_RESET	Major	The last reset was caused by a loss of frequency reference to the clock sub-module.	If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_POWER_UP_RESET	Informational	The last reset was caused by the power-up reset circuit.	Ignore. If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_SOFT_RESET_PIN_RESET	Informational	The last reset was caused by an external signal driving RESET_S. (Reset button on RFO was pushed)	Ignore. If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_SOFTWARE_RESET	Informational	The last reset was caused by the CPU32+ executing a RESET instruction.	Ignore. If the error persists, save the error log and contact Motorola.
1.0.4+	S_RSR_SOFTWARE_WATCHDOG_RESET	Informational	The last reset was caused by a software watchdog time-out.	Ignore. If the error persists, save the error log and contact Motorola.
1.0.4+	S_STATION_RESET	Informational	Issued upon any Station Reset or Station Power-up.	Ignore. If the error persists, save the error log and contact Motorola.

RF-O! Error/Alarm Code Definitions

Table 2 - RF-O! Error Code / Alarm Code Cross-Reference (Sheet 1 of 3)

Alarm Text (A 99)	Corresponding Error Code (A 104)
16.8MHz Pendulum Reference Not Phase Locked.	E_PENDULUM_NOT_LOCKED
16.8MHz Pendulum Reference Not Detected.	E_PENDULUM_REFERENCE_FAILURE
Alarm Occurred Due to OCM Reset.	S_STATION_RESET
Catastrophic Exciter Failure Detected.	E_EXCITER_FRU_FAIL_ALARM
Check Command Frequency Mismatch.	E_CHECK_COMMAND_FREQ_FAIL
Check Command Station Key State Mismatch.	E_CHECK_COMMAND_KEY
Circulator Load Temperature Limit Exceeded.	E_CIRC_LOAD_TEMP_EXCEEDED
Clipping Detected by the Tranlin During FM Transmission.	E_STATION_FM_CLIPPING_DETECTED
Clipping Detected by the Tranlin During Voice Transmission.	E_STATION_AM_CLIPPING_DETECTED
Exciter Synthesizer 1 Has Failed to Lock.	E_SYNTH1_LOCK_FAIL
Exciter Synthesizer 2 Has Failed to Lock.	E_SYNTH2_LOCK_FAIL
Exciter Tranlin IC 236 MHz Oscillator Failed to Lock.	E_TXLIN_NOT_LOCKED
Failed to Read A to D Converter via SPI on PA 1 Power Supply.	E_PA1_PS_AD_SPI_READ_FAIL
Failed to Read A to D Converter via SPI on PA 2 Power Supply.	E_PA2_PS_AD_SPI_READ_FAIL
Failed to Read the Exciter A to D Converter.	E_EXCITER_AD_READ_FAIL
High External Wattmeter VSWR (Greater than 3.0).	E_HIGH_EXT_WM_VSWR_ALARM
High Internal Wattmeter VSWR (Greater than 3.0).	E_HIGH_INT_WM_VSWR_ALARM
PA 1 A to D Converter 1 Test Voltage Failure.	E_PA_AD_1_TEST_VOLTAGE_FAIL_DECK_1

RF-O! Error/Alarm Code Definitions

Table 2 - RF-O! Error Code / Alarm Code Cross-Reference (Sheet 2 of 3)

Alarm Text (A 99)	Corresponding Error Code (A 104)
PA 2 A to D Converter 1 Test Voltage Failure.	E_PA_AD_1_TEST_VOLTAGE_FAIL_DECK_2
PA 1 Power Supply A to D Converter Test Voltage Failure.	E_PA_AD_2_TEST_VOLTAGE_FAIL_DECK_1
PA 2 Power Supply A to D Converter Test Voltage Failure.	E_PA_AD_2_TEST_VOLTAGE_FAIL_DECK_2
PA Failure. Transmitter Cutback. (See FIPS: A 83)	E_PA_FAIL_CUTBACK_ALARM
PA Failure. Transmitter Shutdown. (See FIPS: A 83)	E_PA_FAIL_SHUTDOWN_ALARM
Power Amplifier 1 Operating Temperature Has Exceeded Specification.	E_PA_HS_TEMPERATURE_FAIL_DECK_1
Power Amplifier 2 Operating Temperature Has Exceeded Specification.	E_PA_HS_TEMPERATURE_FAIL_DECK_2
Power Amplitude Not Aligned. Transmitter Shutdown.	E_AMPLITUDE_NOT_ALIGNED
Power Output is Above the Limit on the External Reflected Power Meter	E_EXTERNAL_REFLECTED_POWER_HIGH
Power Output is Above the Limit on the Internal Reflected Power Meter	E_INTERNAL_REFLECTED_POWER_HIGH
Power Output is Below the Limit on the External Forward Power Meter	E_EXTERNAL_FORWARD_POWER_LOW
Power Output is Below the Limit on the Internal Forward Power Meter	E_INTERNAL_FORWARD_POWER_LOW
Power Output Too High/Low to Auto Level. Check Wattmeter Calibration.	E_POWER_LEVELING_FAILED
Power Supply 1 Current Detected Has Fallen Below Specified Limits.	E_PS_INPUT_VOLT_ALARM_DECK_1
Power Supply 2 Current Detected Has Fallen Below Specified Limits.	E_PS_INPUT_VOLT_ALARM_DECK_2
Transmitter Cutback Due To High PA Temperature.	E_PA_TEMP_CUTBACK_ALARM
Transmitter Disabled - (Check Disabled Status via FIPS: A 83).	E_DISABLE_PAGING

RF-O! Error/Alarm Code Definitions

Table 2 - RF-O! Error Code / Alarm Code Cross-Reference (Sheet 3 of 3)

Alarm Text (A 99)	Corresponding Error Code (A 104)
Transmitter Disabled By User (FIPS: W 99 1).	I_PAGING_ACCESS_DISABLED
Transmitter Disabled Due To High OCM Ambient Temperature.	E_HIGH_AMBIENT_TEMP_SHUTDOWN_ALARM
Transmitter Disabled Due To High PA Temperature.	E_PA_TEMP_SHUTDOWN_ALARM
Ultra-High Stability Reference Oscillator Not Detected.	E_HIGH_STABILITY_REFERENCE_FAILURE