**HSER37442-eFAST Retrofit IO Interface Control Document**

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## 3.6 ARINC 717 QAR Input Data

*ICD\_221*

### 3.6.1 A717 Configuration Request

*ICD\_222*

IOI objects are used for the ADRF to communicate to the IO's A717 Manager to request a reconfiguration of the A717 Module and to disable A717 data processing.

The items that can be reconfigured are:

* Barker Code Reverse Bit Sync
* Data Rate (Number of words per subframe)
* Encoding format (Bipolar Return Zero or Harvard Bi-Phase)

When A717 data processing is disabled, the A717 Manager will no longer process subframe data and will only report its status via the A717 Status Message.

*ICD\_224*

#### 3.6.1.1 ADRF A717 Configuration Request

*ICD\_237*

The **ADRF Configuration Request Message** consists of the following items:



*ICD\_239*

The following is the IOI XML configuration information for the Configuration Request IOI location produced by the ADRF:

<producedItem

name = "ADRF\_A717\_CONFIG\_REQ"

productionRate = "aperiodic"

messageForm = "4B"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:1"

comment = "ADRF to A717 Manager Request for Reconfiguraiton"

></producedItem>

*ICD\_225*

#### 3.6.1.2 A717 Configuration Response

*ICD\_238*

The **A717 Configuration Response Message** consists of the following items:



*ICD\_240*

The following is the IOI XML configuration information for the Configuration Response IOI location produced by the A717 Manager:

<producedItem

name = "A717\_ADRF\_CONFIG\_ACK"

productionRate = "aperiodic"

messageForm = "4B"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

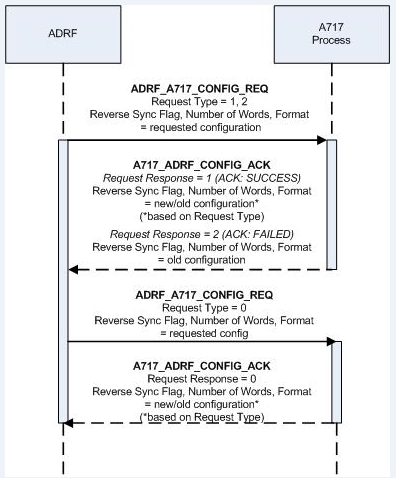
bufferOptions = "queueDepth:1"

comment = "A717 Manager to ADRF Response for Reconfiguraiton"

></producedItem>

*ICD\_226*

The following flow diagram provides an overview of the communication:



*ICD\_227*

The ADRF initializes ADRF\_A717\_CONFIG\_REQ.Request Type to 0.

*ICD\_228*

The ADRF samples A717\_ADRF\_CONFIG\_ACK at a rate no slower than 1 Hz.

*ICD\_229*

The ADRF sets ADRF\_A717\_CONFIG\_REQ as follows to request the A717 Manager to reconfigure the A717 Module:

* Request Type = 1
* Reverse Sync, Number of Words and Format = new configuration values

*ICD\_230*

The ADRF sets ADRF\_A717\_CONFIG\_REQ as follows to request the A717 Manager to disable the A717 Module:

* Request Type = 2

(Note: A flag will be stored to NVM indicating that A717 is disabled and no A717 data will be processed but the A717\_STATUS\_MSG will still be output at 1 Hz)

*ICD\_245*

After attempting to reconfigure or disable the A717 Module, the A717 Manager sets A717\_ADRF\_CONFIG\_ACK to one of the following sets of values:

**A717 Module was successfully disabled**

* Request Response = 1
* Reverse Sync, Number of Words and Format = original configuration values

**A717 Module was successfully configured** **or disabled**

* Request Response = 1
* Reverse Sync, Number of Words and Format = new configuration values

**A717 Manager failed to write new configuration**

* Request Response = 2
* Reverse Sync, Number of Words and Format = original configuration values

*ICD\_231*

When the ADRF detects A717\_ADRF\_CONFIG\_ACK.Request Response transition from 0 to a non-zero value, it sets ADRF\_A717\_CONFIG\_REQ.Request Type = 0.

*ICD\_232*

If 3 seconds have elapsed since the ADRF set ADRF\_A717\_CONFIG\_REQ.Request Type to a 1 and the ADRF has not detected a transition from 0 to a non-zero value in A717\_ADRF\_CONFIG\_ACK.Request Response, the ADRF sets ADRF\_A717\_CONFIG\_REQ.Request Type = 0.

*ICD\_233*

When the A717 Manager detects ADRF\_A717\_CONFIG\_REQ.Request Type transition from 1 to 0, it sets A717\_ADRF\_CONFIG\_ACK.Request Response = 0.

*ICD\_234*

If 3 seconds have elapsed since the A717 Manager set A717\_ADRF\_CONFIG\_ACK. Request Response to a non-zero value and the A717 Manager has not detected a transition from 1 to a 0 in ADRF\_A717\_CONFIG\_REQ.Request Type, the A717 Manager sets A717\_ADRF\_CONFIG\_ACK.Request Response = 0.

*ICD\_235*

### **3.6.2 A717 Status Message**

*ICD\_223*

An IOI object is used for the A717 Manager to communicate to the ADRF the current status of the A717 Module.

*ICD\_249*

The **A717 Status Message** consists of the following items:



*ICD\_236*

The following is the IOI XML configuration information for the A717 Status Message IOI location produced by the A717 Manager:

<producedItem

name = "A717\_STATUS\_MSG"

productionRate = "1000000"

messageForm = "8B"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:5"

comment = "A717 Manager to ADRF Status Message"

></producedItem>

*ICD\_241*

The A717 Manager will update A717\_STATUS\_MSG at a 1Hz rate.

*ICD\_242*

### **3.6.3 A717 Subframe Data**

*ICD\_243*

IOI objects are used for the A717 Manager to transfer A717 subframe data to the ADRF.

*ICD\_244*

The following is the IOI XML configuration information for the A717 Subframe 1 IOI location produced by the A717 Manager:

<producedItem

name = "A717Subframe1"

productionRate = "1000000"

messageForm = "1024L"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:automatic"

comment = "64, 128, 256, 512 or 1024 words depending on A717 rate"

></producedItem>

*ICD\_247*

The following is the IOI XML configuration information for the A717 Subframe 2 IOI location produced by the A717 Manager:

<producedItem

name = "A717Subframe2"

productionRate = "1000000"

messageForm = "1024L"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:automatic"

comment = "64, 128, 256, 512 or 1024 words depending on A717 rate"

></producedItem>

*ICD\_248*

The following is the IOI XML configuration information for the A717 Subframe 3 IOI location produced by the A717 Manager:

<producedItem

name = "A717Subframe3"

productionRate = "1000000"

messageForm = "1024L"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:automatic"

comment = "64, 128, 256, 512 or 1024 words depending on A717 rate"

></producedItem>

*ICD\_250*

The following is the IOI XML configuration information for the A717 Subframe 4 IOI location produced by the A717 Manager:

<producedItem

name = "A717Subframe4"

productionRate = "1000000"

messageForm = "1024L"

messageUnits = ""

bufferType = "slidingWindowRingBuffer"

bufferOptions = "queueDepth:automatic"

comment = "64, 128, 256, 512 or 1024 words depending on A717 rate"

></producedItem>

*ICD\_251*