**Data Stream for Gain Setting:**

Constructed as an array in: Construct Radio Registers Command

Encoded in: Send Radio Command

Each stream of data is constructed in the below way

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Leading 0's | Read | Notify | Address | Data | Sub-System |
| Number of bits | 6 bits | 1 bit | 1 bit | 16 bits | 32 bits | 8 bits |
| bit Positions | 64-59 | 58 | 57 | 56-41 | 40-8 | 7-0 |

An Example for the structure for the number of gain packets.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Packet  # | SS | Data | Addr | Flags | DataStream |
| 0 | 3 | 2 | 0 | False  False | 0000000000000000000000000000000000000000000000000000001000000011 |
| 1 | 3 | 1 | 0 | False  False | 0000000000000000000000000000000000000000000000000000000100000011 |
| 2 | 3 | 2147549188 | 0 | False  False | 0000000000000000000000001000000000000001000000000000010000000011 |
| 3 | 3 | 3 | 0 | False  False | 0000000000000000000000000000000000000000000000000000001100000011 |
| 4 | 3 | 8 | 0 | False  False | 0000000000000000000000000000000000000000000000000000100000000011​ |

Packet 0 is a header packet and tells us the number of packets containing data-address pairs

Packet 1 is a header packet and tells us the number of address elements

Packet 2 is a header packet and tells us the sequence number

Packet 3 is a data packet and tells us the data value

Packet 4 is the address packet and tells us the address value

**Inputs:**

**Sub-System** comes from Parse Scope VI\*

|  |  |
| --- | --- |
| **Name** | **Value** |
| Radio Config 0 | 3 |
| Radio Config 1 | 4 |

\*Table Not Completed - Can have more Names and corresponding values. (Global might be 0 or 1 etc)

**Data Value** comes from Construct ATR. The mode of calculation depends on the type of daugther board used.

|  |  |
| --- | --- |
| **Daughterboard used** | **Input Needed** |
| SBX, CBX | TX Configurations: Gain, Mixer Enable, Power Enable  RX Configurations: Gain, Mixer Enable, Power Enable  LO LPF Enable  Antenna Configuration  Daugtherboard name |
| UBX | TX Configurations: Gain, Mixer Enable, Power Enable  RX Configurations: Gain, Mixer Enable, Power Enable  CPLD Enable  SPI Address  Antenna Configuration  Daugterboard name |
| WBX | TX Configurations: Gain, Mixer Enable, Power Enable  RX Configurations: Gain, Mixer Enable, Power Enable  Antenna Configuration  Daugterboard name |

TX and RX configurations, LO LPF Enable, Antenna Configuration, CPLD Enable, SPI Address comes from the daugtherboard array and is set in the Calculate ATR Construction Data VI

Daughterboard Name comes from the decode DB IDS VI taken from the NIUSRPRIO session data field called EEPROM Header: Daugterboard ID's

|  |  |
| --- | --- |
| **Values** | **Daughterboard used** |
| Default | Unknown |
| 115..122 | UBX |
| 79, 82..83, 86..87, 98..99, 128..129 | WBX |
| 84..85, 100..101, 104..105, 130..131 | SBX |
| 102..103, 132..133 | CBX |

**Address Value** comes from ATR States VI and state comes from ATR Index from Register VI

|  |  |  |
| --- | --- | --- |
| **Value** | **Function** | **State** |
| 64 | TX, RX | Idle |
| 68 | RX | RX only |
| 72 | TX | TX only |
| 76 | TX,RX | Full Duplex |

**Flags** comes from Write Register Array VI