**Construct 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 x packets.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Packet  # | SS | Data | Addr | Flags | DataStream |
| 1 | 3 | 2 | 0 | False  False | 0000000000000000000000000000000000000000000000000000001000000011 |
| 2 | 3 | 1 | 0 | False  False | 0000000000000000000000000000000000000000000000000000000100000011 |
| 3 | 3 | 2147549188 | 0 | False  False | 0000000000000000000000001000000000000001000000000000010000000011 |
| 4 | 3 | 3 | 0 | False  False | 0000000000000000000000000000000000000000000000000000001100000011 |
| 5 | 3 | 8 | 0 | False  False | 0000000000000000000000000000000000000000000000000000100000000011​ |

The Subsystem ID is calculated in the below manner from the Input:

1. Identification - 0  
 2. Board Config - 1  
 3. Global Config - 2  
 4. Radio 0 Config - 3  
 5. Radio 0 Config - 4  
 6. Synchronization - 5  
 7. Time - 6  
 8. Future Events - 7  
 9. GPS - 8

Each of the Incoming packet is encoded into a 5 separate packets in the above seen structure.

**Stream 1 Information:**

|  |  |
| --- | --- |
| Sub System ID | X(Refer page1) |
| Address | 0(Always 0) |
| Data | Number of Address elements and data elements per stream of packets.  For gain/LO config, we know that each stream of packets have only 1 address and data element so this value is always 2. |
| Read | True or False flag |
| Notify | True or False flag |

**Stream 2 Information:**

|  |  |
| --- | --- |
| Sub System ID | X(Refer page1) |
| Address | 0(Always 0) |
| Data | Constant SID packet value = 1(always 1) |
| Read | True or False flag |
| Notify | True or False flag |

**Stream 3 Information:**

|  |  |
| --- | --- |
| Sub System ID | X(Refer page1) |
| Address | 0(Always 0) |
| Data | Sequence number of the packet\* |
| Read | True or False flag |
| Notify | True or False flag |

**Stream 4 Information:**

|  |  |
| --- | --- |
| Sub System ID | X(Refer page1) |
| Address | 0(Always 0) |
| Data | Incoming Data value from the packet |
| Read | True or False flag |
| Notify | True or False flag |

**Stream 5 Information:**

|  |  |
| --- | --- |
| Sub System ID | X(Refer page1) |
| Address | 0(Always 0) |
| Data | Incoming Address value from the packet |
| Read | True or False flag |
| Notify | True or False flag |