

# **Nucleus SCM AIPS/FIPS Reference Manual**

Version: 1.30

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## Revision History:

Version	Date	Author	Change History
1.10	01/09/98	K. Simonelic	Add changes for 4.030 and 4.100 versions. Added this rev. history, not previously part of this document.
1.20	01/12/98	K. Simonelic	Various review updates. Change name of document.
1.30	02/16/98	K. Simonelic	Fixes from 4.100 integration testing.

**1.**

## OVERVIEW

There are two serial port interfaces for communicating to the SCM board in the Nucleus transmitter; AIPS and FIPS.

AIPS, (ASCII Integrated Paging System) is used by the NIU (Network Interface Unit) or other controller to transfer programming, alarm, and maintenance information to/from the SCM. AIPS was intended to be a machine to machine interface. AIPS is accessible via the NIU front panel 9-pin D-connector, or via a dial up modem connection. The External NIU **does not** communicate to the SCM via an AIPS interface.

FIPS (Friendly Integrated Paging System) is normally used by Motorola's factory during station programming, or for debugging/programming by development or field engineers. FIPS is accessed via the SCM's front panel 9-pin D-connector.

## CAUTION !

**AIPS and FIPS were originally created to aid in the programming, alignment, and development of the Nucleus transmitter software and hardware, and for communicating alarm and diagnostic information to the internal NIU. AIPS and FIPS affords the experienced user/technician the ability to diagnose station operation, or modify programming parameters locally or remotely. With this ability comes inherent dangers. Modifying certain parameters may adversely affect station operation or alignment. It is important that care be taken when using AIPS/FIPS commands, as there is limited error checking performed by the station software. Mis-typing commands, or entering commands that do not appear in "ACTION COMMANDS" on page 8 could have catastrophic results on station operation; it could take the station off the air and result in the need for a site visit, and potentially, require the replacement of station hardware. Similarly, writing a value to one of the read/write parameters may also cause catastrophic results.**

## 2. FIPS COMMUNICATIONS

### 2.1. Connecting via FIPS

Normally, when you are servicing a station at the site, you will want to use FIPS. Connect your dumb terminal (PC running terminal emulator software) through a NULL MODEM to the 9-pin D-connector on the front of the Nucleus SCM board (not the

NIU). The default settings for the terminal should be 9600 baud, 8 bits, and No Parity bit.

Press the ENTER key on the terminal several times until **ENTER PROTOCOL** is displayed on the screen. If you do not see **ENTER PROTOCOL**, check your connection. If you see some characters, the baud rate is probably incorrect. If you see nothing, you probably need to install or remove a NULL MODEM (Some cables have a NULL MODEM built in).

Once you see the **ENTER PROTOCOL** prompt, type:

**FIPS<CR>** (you can use upper or lower case)

If the Station Password is ENABLED you will see:

**ENTER PASSWORD**

Type:

**xxxx<CR>** (where xxxx is the station password, default is 6000)

You should now see the following displayed on the terminal screen:

**FIPS:**

You are now ready to send/receive FIPS commands.

## 2.2. FIPS Message Format

This FIPS handler in the SCM accepts commands or responses of the following form:

**[R | r | W | w | A | a] [ID code] [argument]<CR>**

The first field is the command/response type:

**R** or **r** = Read parameter

**W** or **w** = Write parameter

**A** or **a** = perform an Action

There are three types of FIPS commands; **Read, Write, or Action**. The **Read** command is used to read a value from the SCM parameter database. Similarly, the **Write** command is used to write a value to the parameter database. There are several **Action** commands, which cause the station to perform some type of action.

The **ID code** field is 1-3 ASCII characters which represents the parameter number for read and write commands, or the action ID for action commands.

Many commands and responses require an argument. The **argument** format is command-dependent, but is always composed of ASCII characters. Write parameter arguments range from a single ASCII number to a string of ASCII numbers representing a floating point number, such as 900.1000. Action commands may have numeric or string arguments.

All commands are terminated with an ASCII carriage return, <CR>.

FIPS commands are NOT case-sensitive, unlike AIPS commands which must be entered in all capital letters.

## **2.3. Commonly Used FIPS Command Examples**

### **2.3.1. Reading Current Forward Power via FIPS**

From Table 2, we determine that the parameter number for the current forward power reading is 131 (FORWARD\_POWER).

The following command will retrieve the current forward power reading:

**R 131 <CR>**

The response to this command is:

**RR 131 xxx** (where xxx is the current forward power in Watts)

**NOTE:** The FORWARD\_POWER parameter gives the latest KEYED power reading. If the station is dekeyed it will not return 0 Watts (unless the station has not keyed since it was last reset).

### **2.3.2. Changing SCM Front Panel Serial Port to 19200 Baud via FIPS**

The parameter number associated with the front panel serial port (FPSP) is 140 (FPSP\_BAUD\_RATE). We determine that 5 corresponds to 19200 baud. To change the baud rate to 19200 type the following:

**W 140 5<CR>**

**NOTE:** The Front Panel Serial Port baud rate is only set during station power up. For the change above to take effect, reset the station (via A 117 FIPS command, or by pressing the 1 and 3 buttons on the front panel simultaneously). You will also need to change the baud rate of the terminal you are using to communicate with the SCM.

### **2.3.3. Reading the SCM Flash ROM Bank Software Versions via FIPS**

From Table 1 below, we determine that action command 33 (RSDM\_GET\_VERSION, Remote Software Download Manager Version) is the command used to retrieve the Flash ROM Bank Versions. Type the following to get the versions of software residing in the Active and Inactive Flash ROM banks:

**A 34<CR>**

The SCM responds after approximately 7 seconds with a message similar to:

**RA 34 3.210 2.920**

**NOTE:** The Active Software Flash Bank is left-most version number. If there is only one valid Flash bank, only one version will be returned. Read parameter 901 to determine whether Bank A or Bank B is currently active.

### **3. AIPS COMMUNICATIONS**

#### **3.1. Connecting via AIPS**

Normally, AIPS is used when communicating with the SCM via a dumb terminal through the NIU. This is normally done remotely via a dial up modem connected or installed in the Internal NIU. See the Internal NIU Configuration of the Nucleus Paging Station User's Guide for details on connecting to the NIU.

Once you have connected to the NIU and the "NUCNIU>" prompt is displayed, enter the following to begin communicating to the SCM via AIPS:

NUCNIU> **scm cmd nucleus<CR>** (Not case-sensitive)

The following prompt will be displayed:

**Enter SCM command:**

The NIU is now ready to transfer AIPS commands to the SCM. All AIPS commands must be in UPPER-case.

#### **3.2. AIPS Message Format**

This AIPS handler accepts commands or responses of the following form:

**[CR | CW | CA] [ID code] [argument]<CR>**

The second field is the command/response type:

**CR = Command Read parameter**

**CW = Command Write parameter**

**CA = Command perform IPS Action**

The **ID code** field is 1-3 ASCII characters which represents the parameter number for read and write commands, or the IPS action ID for action commands.

Many commands and responses require an argument. The **argument** format is command-dependent, but is always composed of ASCII characters. Write parameter arguments range from a single ASCII number to a string of ASCII numbers representing a floating point number, such as 900.1000. Action commands may have numeric or string arguments. All commands are terminated with an ASCII carriage return, <CR>.

**NOTE:** When using AIPS via the NIU certain commands may not be supported due to limitations on the NIU user interface.

### 3.3. Common AIPS Command Examples

#### 3.3.1. Reading Output Power via AIPS

From Table 2, we determine that the parameter number for the current output power setting (assuming Channel-mapped power is disabled) is 88 (NORMAL\_POWER\_LEVEL).

The following command will retrieve the power output setting:

**CR 88<CR>**

The response to this command is:

**RR 88 xxx<CR>** (where xxx is the current operating power in Watts)

#### 3.3.2. Changing Nucleus Operating Power via AIPS

The following example will change the operating power of the station to 100 Watts:

**CW 88 100<CR>**

**NOTE:** The SCM does a minimal amount of error checking when commands are entered via FIPS or AIPS. If you try to write a value that is not valid, the SCM will not accept the change. To be certain that the SCM accepted the change, you may want to read the parameter immediately after writing it.

#### 3.3.3. Resetting the Nucleus SCM via AIPS

From Table 1 below, we determine that the command to reset the Nucleus is 117. To execute the command type:

**CA 117 <CR>**

**NOTE:** After executing this command, the SCM will go through a reset. You will not be able to communicate to the NIU (or SCM) until the SCM completes resetting.

4.



**Table 1: FIPS/AIPS Action Commands**

Command Abbreviation	Action ID	▼ Software Version	Description
RSDM_SWITCH_BANKS	33	✗ 2.340+	Causes Station to Switch Active Flash Bank, then resets the station.
RSDM_GET_VERSION	34	2.340+	Returns Active and Inactive Flash Bank Version numbers. Active bank is displayed first. This action requires approx. 7 seconds to complete.
RSDM_UPDATE_DORMANT_BANK	35	4.000+	Copies the content of the Active Flash Bank into the Inactive Flash Bank. Returns Inactive Flash Bank Version numbers. This action requires approx. 70 seconds to complete.
READ_ALL_ALARMS	99	2.340+	Displays Active Alarm 4-digit codes. (use 162 to interpret alarms)
CLEAR_SINGLE_ACTUAL_ALARM	102	2.340+	Clears specified alarm from log. Will only clear the alarm if it is "clearable". Format: A 102 FFFF (where FFFF is the 4-digit alarm code to be cleared).
CLEAR_ALL_ACTUAL_ALARMS	103	2.340+	Clears Alarm Log (ALARM LED on front of station will go off after this command is sent)
INITIATE_SOFTWARE_DOWNLOAD	114	✗ 2.340+	Command used to initiate software download into Bank B. If the station does not receive Flashdownload information within 20 seconds, the station will reset.
KEY_STATION	115	✗ 2.340+	Causes the station to key on the current channel
DEKEY_STATION	116	✗ 2.340+	Dekeys the station
INITIATE_STATION_RESET	117	✗ 2.340+	Causes station reset
READ_ACTUAL_INT_WM_POWER	153	2.340+	Returns Forward followed by Reflect Power in Watts. Will return 0 0 if the station is dekeyed.
LIST_ALL_ALARM_IDS	161	2.410+	Lists all current supported Alarm IDs. The first two characters of the value returned represents the number of alarms supported (in hexadecimal). Every 4 hex characters thereafter represents the Alarm IDs.
XLATE_ALARM_ID_TO_STRING	162	2.410+	Returns the verbose interpretation of the Alarm IDs. For example, "a 162 F881" returns "HIGH REFLECTED POWER".
STATION_MINIMAL_MODE_RESET	177	✗ 3.210+	Allows remote resetting of a station that has gone into Minimal Mode. Older software requires that the station power be turned off, then on, to remove it from Minimal Mode. The station enters Minimal Mode when the station experiences sev-

				eral resets within a short period of time, usually indicating a serious station failure condition.
AUTO_PA_CAL_START	180	x	3.210+	Causes the station equipped with a Nucleus II PA to key and calibrate the power out. <b>NOTICE:</b> The Calibration is done on the Mean Frequency. In multi-freq stations this may not be a valid FCC approved frequency, therefore the station must be connected to an RF Load (other than the transmit antenna) during the PA calibration procedure.

## ACTION COMMANDS

5.

## Read/Write Parameters

**Table 2: Nucleus SCM Parameter Database ID's**

Parameter Abbreviation	Param ID	▼ Software Version	Description/ Front Panel Menu Location
LOW_SPEED_OFFSET	70	2.340+	TX/TX CHN OFFSETS/LOW SPEED OFFSET (Hz)
HIGH_SPEED_OFFSET	71	2.340+	TX/TX CHN OFFSET/HIGH SPEED OFFSET (Hz)
INT_WM_FWD_PWR_LIMIT	75	2.340+	ASET/FWD PWR ALM PT (Watts) <b>NOTE:</b> Parameters 75 and 77 are used when Channel Mapped Power is DISABLED. When channel mapped power is ENABLED, parameters 472-478 and 503-510 should be used to set internal wattmeter forward and reflected alarm trip points.
INT_WM_RFL_PWR_LIMIT	77	2.340+	ASET/RFL PWR ALM PT (Watts)
RATED_POWER_LEVEL	78	2.340+	CNFG/MAX PWR (Watts)
FIXD_CUTBK_PWR_REDUCE_REQ	87	2.340+	CNFG/BATTERY REVERT SETUP/FIXED CUTBK RED % (%)
NORMAL_POWER_LEVEL	88	2.340+	TX/TX CHN PWR/OPERATING PWR <b>NOTE:</b> Parameters 88 is used when Channel Mapped Power is DISABLED. When channel mapped power is ENABLED, parameters 633-641 should be used to set individual channel power settings.
TX_FREQ_BAND	89	2.700+	STN/TX FREQ RANGE Exciter Frequency Band 0=VHF R1, 1=VHF R2, 2=UHF R1, 3=UHF R2, 4=900 R1, 5=280MHz, 6=900 R2, 7=VHF H1, 8=VHF H2, 9=VHF H3, 10=VHF H4,11=322MHz, 12=UHF R2,13=UHF R4
T_EQ_R_FREQ_SHIFT_DISABLED	92	2.710+	TX/SPECIAL TX SETUP/TX=RX 0=DISABLED, 1=ENABLED
PS_BATTERY_TYPE	96	2.340+	CNFG/BATTERY REVERT SETUP/BATTERY TYPE 2 = Sealed Lead Calcium 5 = DISABLED
PS_BATTERY_CHARGING	98	2.600+	CNFG/BATTERY REVERT SETUP/BATTERY TYPE 0=DISABLED, 1=ENABLED
PAGING_ACCESS_DISABLED	99	✗ 2.340+	DIS/PAGING ACCESS 0=ENABLED,1=DISABLED

MAINT_ACCESS_DISABLED	100	x	2.340+	DIS/MAINT ACCESS 0=DISABLED, 1=ENABLED
TX_EQ_RX_CHANNEL	101		2.900+	TX/SPECIAL TX SETUP/TX=RX CHANNEL 0=Chan 1, 1=Chan 2,....
STARTUP_CHANNEL	103		2.340+	NO MENU ITEM Channel changed to after power reset (Default 0 = Channel 1)
CURRENT_CHANNEL_NUMBER	105		2.340+	STN/CURRENT TX CHN 0=Chan 1, 1=Chan 2,...
DEMODULATOR_INVERT	107	x	2.340+	RX/RX OUTPUT 0=Not Inverted, 1=Inverted
SYSTEM_TIMER_ALARM_VALUE	108		2.340+	STN/SYS TIMER ALARM Unit - Minutes Must be 2,15,30,60,90,120 or 180.
STATION_PTT_STATUS	119		2.340+	NO MENU ITEM 0=No PTT Req, 1=Line, 2=Local, 3=Diagnostics,4=Service
STATION_MODULATION_TYPE	120		2.340+	NO MENU ITEM 0=Analog 1=Binary
WILDCARD_1	121		2.340+	NO MENU ITEM Alarm mapped to Wildcard Output 1 (Default = 64064, or hex FA40, PA FAIL)
WILDCARD_2	122		2.340+	Alarm mapped to Wildcard Output 2 (Default = 63625, or hex F889, SYNTH OUT OF LOCK)
WILDCARD_3	123		2.340+	Alarm mapped to Wildcard Output 3 (Default = 63488, or hex F800, NOT DE- FINED)
WILDCARD_4	124		2.340+	Alarm mapped to Wildcard Output 4 (Default = 63647, or hex F89F) When either Internal or External Wattmeter Low Forward Power Alarm occurs, WC4 output is activated.
WILDCARD_5	125		2.340+	Alarm mapped to Wildcard Output 5 (Default = 63648, or hex F8A0) When either Internal or External Wattmeter High Reflected Power Alarm occurs, WC5 is activated.
WILDCARD_6	126		2.340+	Alarm mapped to Wildcard Output 6 (Default = 63622, or hex F886, BATTERY REVERT)
WILDCARD_7	127		2.340+	Alarm mapped to Wildcard Output 7 (Default = 63627, or hex F88B, PA FAN)
WILDCARD_8	128		2.340+	Alarm mapped to Wildcard Output 8 (Default = 63642, or hex F89A, SYS TIMER)

			EXPIRED)
PS_BATTERY_REVERT_ACT	130	2.340+	NO MENU ITEM 1=Battery Revert Active 0=Inactive
FORWARD_POWER	131	2.340+	STAT/FWD PWR
REFLECTED_POWER	132	2.340+	STAT/RFL PWR
PSTN_PORT_MODE	133	x 2.340+	NO MENU ITEM Internal NIU/SCM Comm Port 12=FIPS, 15=AIPS(default)
FPSP_BAUD_RATE	140	2.340+	NO MENU ITEM Front Panel Serial Port Baud Rate 1=1200, 2=2400, 3=4800, 4=9600, 5=19200, 6=38400 (Default 9600)
EXT_WM_FWD_PWR_LIMIT	141	2.340+	ASET/EXT WM FWD PWR ALM PT (Watts) <b>NOTE:</b> Parameters 141 and 142 are used when Channel Mapped Power is DISABLED. When channel mapped power is ENABLED, parameters 535-542 and 567-574 should be used to set internal wattmeter forward and reflected alarm trip points.
EXT_WM_RFL_PWR_LIMIT	142	2.340+	ASET/EXT WM RFL PWR ALM PT (Watts)
VSWR	143	2.340+	STAT/VSWR
EXT_WM_VSWR	144	2.340+	STAT/EXT WM VSWR
EXT_WM_FORWARD_POWER	145	2.340+	STAT/EXT WM FWD PWR
EXT_WM_REFLECTED_POWER	146	2.340+	STAT/EXT WM RFL PWR
BOOT_SW_VERSION_ID	147	2.340+	STAT/SOFTWARE VERSIONS/BOOT
ACTIVE_APPL_SW_VERSION_ID	148	2.340+	STAT/SOFTWARE VERSIONS/APPLICATION
TX_EXCITER_SW_VERSION_ID	149	2.340+	STAT/SOFTWARE VERSIONS/EXCITER
DORMANT_APPL_SW_VERSION_ID	152	2.340+	NO MENU Inactive Flash Bank Software Version
WIB_HW_VERSION_ID	156	2.340+	Wireline Interface Board HW ID
SW_VERSION_CHECKING	157	2.340+	NO MENU ITEM 2=DO NOT Download Exciter Software at startup (Run exciter software out of EPROM) 1=Download Exciter Software from SIMM, if Exciter is downloadable.
P_TX_ALIGNMENT_ID	158	2.340+	NO MENU ITEM Holds the 4-level alignment ID contained in the exciter. This should match the SCM ID, parameter 887, when the station is properly aligned.
EXT_WM_TYPE	159	2.340+	CNFG/EXT WATTMETER TYPE 0=None, 1=Class 1, 2=Class 2, 3=Class 3

				4=Class 4
TX_EXCITER_HW_VERSION_ID	160		2.340+	Exciter Hardware ID 0,1 = Non-Downloadable 2+ = Software Downloadable
MONITOR_RX_OUTPUT	161	x	2.340+	RX/MONITOR RX OUTPUT 1=Analog 2=TTL/C-NET
REAL_TIME_CLOCK_YEAR	162		2.340+	STN/SET STATION TIME/YEAR
REAL_TIME_CLOCK_MONTH	163		2.340+	STN/SET STATION TIME/MONTH
REAL_TIME_CLOCK_DAY	164		2.340+	STN/SET STATION TIME/DAY
REAL_TIME_CLOCK_HOUR	165		2.340+	STN/SET STATION TIME/HOUR
REAL_TIME_CLOCK_MINUTE	166		2.340+	STN/SET STATION TIME/MINUTE
REAL_TIME_CLOCK_SECOND	167		2.340+	STN/SET STATION TIME/SECONDS
EXT_CIRC_PRESENT	168		2.340+	OPT1/EXT CIRCULATOR 0=Not Present 1=Present
STATION_TYPE	170		2.340+	NO MENU ITEM 1=High Speed Nucleus
INTERNAL_RX_TYPE	171	x	2.340+	CNFG/RX TYPE 0=None, 1= Internal Link, 2=Internal Monitor
DE_EMPHASIS_ENABLE	175	x	2.340+	RX/RX DEEMPHASIS 0=Disabled, 1=Enabled
RX_BAND	176		2.340+	RX/RX FREQ RANGE 0=Midband, 1=VHF R1, 2=VHF R2, 3=280 MHz, 4=322 MHz, 5=UHF R1, 6=UHF R2, 7=UHF R3, 8=UHF R4, 9=800 MHz, 10=900 MHz, 11=900 R1, 12=900 R2
FREQ_REFERENCE_TYPE	180	x	4.000+	REFERENCE FREQ SOURCE 0 = Internal UHSO, 1 = Internal HSO, 2 = External 5 MHz, 3 = External 10 MHz, 4= Internal NIU
LOW_SPEED_SPLATTER_FILTER	182	x	2.340+	TX/LOW SPEED SPLATTER FILER 0=88 usec, 2=140 usec, 3=250 usec, 8=160 usec
HIGH_SPEED_SPLATTER_FILTER	183	x	2.340+	TX/HIGH SPEED SPLATTER FILTER 0=88 usec, 8=160 usec
RX_SQUELCH_RESP	184		2.340+	NO MENU ITEM 0=Internal Rx Squelched, 1=Unsquelched
IDLE_DEVIATION	186	x	2.340+	TX/IDLE DEVIATION 0=NULL, 1=Space, 2=Mark
KEY_SYMBOL	187		2.700+	SERV/SELECT SYMBOL 1=Staircase, 2=DADA, 3=EBEB, 4=Continuous A, 5=Cont B, 6=Cont D, 7=Cont E, 8=Cont C

				<p>2=POCSAG_125, 3=POCSAG_150, 4=FLEX, 5=POCSAG_88, 6=POCSAG_100, 7=FLEX_1600_2L, 8=REFLEX</p> <p>Note: The DSP uses only 3 different protocol modes, ERMES, ReFlex, and Flex/POCSAG. Thus, settings 1-7 are functionally equivalent. The numbers are only included for Ericsson I20 spec. compatibility, they do not have meaning for a Nucleus station.</p>
SCM_HW_VERSION_ID	229		4.000+	<p>STAT/SCM HARDWARE VERSION</p> <p>0=Non I20 SCM 1=I20 Compatible SCM</p>
I20_DSP_ENABLE	230	X	4.000+	<p>NO MENU ITEM</p> <p>0=SYLC_INTERFACE 1=I20_INTERFACE</p> <p>Changes to this parameter will cause the station to reset.</p>
P_FLEX1600_LOW_SPEED	231		4.000+	<p>NO MENU ITEM</p> <p>FLEX_BAUD_1600_FLEX = 0, FLEX_BAUD_1600_POCSAG=1</p>
RXDSP_SANITY_CHECK_ENABLED	235		4.000+	<p>NO MENU ITEM</p> <p>0=disabled, 1=enabled</p> <p>This parameter is not stored in NVM. It is always enabled after a station reset. This parameter provides a means to temporarily disable this function for testing purposes.</p>
P_CHN_MAP_I20_PROTOCOL	236	X	4.100+	<p>NO MENU ITEM</p> <p>0=CHN_MAP_DISABLED 1=REFLEX_ONLY 2=ERMES_ONLY</p>
P_CHN_MAP_I20_REFLEX_CNFG	237		4.100+	<p>NO MENU ITEM</p> <p>Holds the channel numbers which are mapped to ReFlex-only. Each bit corresponds to a channel number, bit 0 = channel 1, bit 19 = chn 20. A set bit maps ReFlex to the corresponding channel.</p>
P_CHN_MAP_I20_ERMES_CNFG	238		4.100+	<p>NO MENU ITEM</p> <p>Holds the channel numbers which are mapped to ERMES-only. Each bit corresponds to a channel number, bit 0 = channel 1, bit 19 = chn 20. A set bit maps ERMES to the corresponding channel.</p>
P_HW_SELECT_PROTOCOL_CNTL	239	X	4.100+	<p>NO MENU ITEM</p> <p>0=HW_PROTOCOL_CNTL</p>

				1=XM_CHN_MAP_PROTOCOL_CNTL
P_EPIC_TEMPERATURE	240		4.100+	NO MENU ITEM Holds the current temperature from the Epic IC in Celsius.
CHN_1_LOW_FWD_PWR_PT to CHN_32_LOW_FWD_PWR_PT	471 to 502		2.410 to 3.200	CHN 1 - 32 FWD CHAN MAPPED ALM PT (Watts)
CHN_1_HIGH_RFL_PWR_PT to CHN_32_HIGH_RFL_PWR_PT	503 to 534		2.410 to 3.200	CHN 1 - 32 HIGH REFLECTED CHAN MAPPED ALM PT (Watts)
CHN_1_EXT_LOW_FWD_PWR_PT to CHN_32_EXT_LOW_FWD_PWR_PT	535 to 566		2.410 to 3.200	CHN 1 - 32 EXT FWD ALM PT (Watts)
CHN_1_EXT_HIGH_RFL_PWR_PT to CHN_32_EXT_HIGH_RFL_PWR_PT	567 to 698		2.410 to 3.200	CHN 1 - 32 EXT RFL ALM PT (Watts)
CHANNEL_1_FREQUENCY_VALUE to CHANNEL_32_FREQUENCY_VALUE	601 to 632	x	2.410 to 3.200	TX/CHN FREQS CHN 1 - 32 FREQ (MHz)
CHN_1_LOW_FWD_PWR_PT to CHN_8_LOW_FWD_PWR_PT	471 to 478		3.300 to 3.400	CHN 1 - 8 FWD CHAN MAPPED ALM PT (Watts)
CHN_1_HIGH_RFL_PWR_PT to CHN_8_HIGH_RFL_PWR_PT	503 to 510		3.300 to 3.400	CHN 1 - 8 HIGH REFLECTED CHAN MAPPED ALM PT (Watts)
CHN_1_EXT_LOW_FWD_PWR_PT to CHN_8_EXT_LOW_FWD_PWR_PT	535 to 542		3.300 to 3.400	CHN 1 - 8 EXT FWD ALM PT (Watts)
CHN_1_EXT_HIGH_RFL_PWR_PT to CHN_8_EXT_HIGH_RFL_PWR_PT	567 to 574		3.300 to 3.400	CHN 1 - 8 EXT RFL ALM PT (Watts)
CHANNEL_1_FREQUENCY_VALUE to CHANNEL_8_FREQUENCY_VALUE	601 to 608	x	3.300 to 3.400	TX/CHN FREQS CHN 1 - 8 FREQ (MHz)
CHN_1_LOW_FWD_PWR_PT to CHN_20_LOW_FWD_PWR_PT	471 to 490		4.000+	CHN 1 - 20 FWD CHAN MAPPED ALM PT (Watts)
CHN_1_HIGH_RFL_PWR_PT to CHN_20_HIGH_RFL_PWR_PT	503 to 522		4.000+	CHN 1 - 20 HIGH REFLECTED CHAN MAPPED ALM PT (Watts)
CHN_1_EXT_LOW_FWD_PWR_PT to CHN_20_EXT_LOW_FWD_PWR_PT	535 to 554		4.000+	CHN 1 - 20 EXT FWD ALM PT (Watts)
to CHN_20_EXT_HIGH_RFL_PWR_PT	567 to		4.000+	CHN 1 - 20 EXT RFL ALM PT (Watts)



	586			
CHANNEL_1_FREQUENCY_VALUE to CHANNEL_20_FREQUENCY_VALUE	601 to 620	x	4.000+	TX/CHN FREQS CHN 1 - 20 FREQ (MHz)
ARITHMETIC_MEAN_CHANNEL	633		2.340+	TX/MEAN FREQ (MHz)
ARITHMETIC_MEAN_CHANNEL	621		4.000+	TX/MEAN FREQ (MHz)
CHANNEL_1_POWER_VALUE to CHANNEL_32_POWER_VALUE	634 to 665		2.410 to 3.200	TX/TX CHN PWR CHN 1 - 32 PWR (Watts)
CHANNEL_1_POWER_VALUE to CHANNEL_8_POWER_VALUE	634 to 641		3.300 to 3.400	TX/TX CHN PWR CHN 1 - 8 PWR (Watts)
CHANNEL_1_POWER_VALUE to CHANNEL_20_POWER_VALUE	634 to 643		4.000+	TX/TX CHN PWR CHN 1 - 20 PWR (Watts)
ARITH_MEAN_CHN_POWER_VALUE	666		2.410+	TX/MEAN FREQ PWR (Watts)
ARITH_MEAN_CHN_POWER_VALUE	654		4.000+	TX/MEAN FREQ PWR (Watts)
CHN_MAPPED_PWR_CNFG	667	x	2.410+	OPT1/CHN MAPPED PWR 0=Disable, 1=Enabled
RX_CHN_1_FREQUENCY_VALUE	681		2.340+	RX/RX CHN FREQ (MHz)
NOMINAL_BINARY_DEVIATION	700	x	2.340+	TX/NOMINAL BINARY DEVIATION (Hz)
TX_DATA_POLARITY	701	x	2.340+	TX/SPECIAL TX SETUP/TX DATA INVERT 0=Disabled, 1=Enabled
SPECIAL_KEY_OPTION	704	x	2.340+	CNFG/SPECIAL KEY SELECT 0=None, 1=CD INT, 2=CD EXT, 3=Special, 4=FAST LOW, 5=FAST HIGH, 6=EXT LOW, 7=EXT HIGH (Normal C-Net systems use EXT LOW)
ANTENNA_RELAY_STATE	705	x	2.340+	OPT1/ANTENNA RELAY 0=Disabled,1=Enabled
STATION_CONFIGURATION	706	x	2.340+	CNFG/CONTROL 1=Internal CNET (Internal NIU) 2=External SyLC
USER_PASSWORD	707	x	2.340+	STN/PASSWORD
RX_CHANNEL_SPACING	708	x	2.340+	RX/CHN SPACING 0=12.5 KHz, 1=20 KHz, 2=25 KHz
ANTENNA_RELAY_MODE	710	x	3.210+	NO MENU ITEM 0=Normal (Switch Relay on every key/de- key) 1=Relay Saver Mode (Only switch to Rx when instructed by the NIU--during Mainte- nance)
P_ALIGNMENT_ID	887		2.340+	STAT/SOFTWARE VERSIONS/ALIGN- MENT ID/SCM Holds the 4-level alignment ID contained in

			the SCM. This should match the exciter ID, parameter 158, when the station is properly aligned.
P_ALIGNMENT_TEMPERATURE	888	2.340+	NO MENU ITEM Temperature in Celsius when the 4-level alignment was performed.
ACTIVE_FLASH_BANK	901	2.340+	NO MENU ITEM (Use in conjunction with "A 114" - which always downloads to Bank B). 1=Flash Bank A is active 2=Flash Bank B is active