SMC Commands for Transponder Based Products, Application Notes

Overview

Introduction

In order to achieve future compatibility, the device dependant data is stored in a buffer for transponder based HFC devices. SMC commands can be used to access the device dependent data using offsets and length as described in this document. These commands are able to communicate with all transponder based HFC devices using the SMC protocol.

Purpose

The purpose of this document is to instruct HFC devices users how to apply the SMC commands to access the device dependent data stored in the buffer of the devices.

Audience

This document is intended for system engineers or managers responsible for operating and/or maintaining these products.

In This Document

SMC Commands

The following tables describe the formats of SMC commands and the commands set that can be applied.

SMC Command Message Format

The following table shows the format of a SMC command message.

DLE SOH	SMCId_Lo	SMCId_Hi	Command	Data	DLE ETX	CRC16_Lo	CRC16_Hi

SMC Response Message Format

The following table shows the format of a SMC response message.

DLE STX	SMCId_Lo	SMCId_Hi	MapByte(s)	Response	DLE ETX	CRC16_Lo	CRC16_Hi

Or

DLE ACK

Command Set Overview

The following table explains the content of each command set.

Command	Operation	Description	Type
0x00	Query Module Id	Return ONLY the type ID and Software version number of the module. ("ping" command)	Mandatory
0x01	Query Status/Config All	Return all available data of device	Mandatory
0x04	Read/Write SMC Address	Read or write SMC Address	Mandatory
0x0A	Repeat Last Reply	Return the results from previous SMC command	Mandatory
0x0B	Query Changed Data	Return the data changed in the common block	Mandatory
0x13	Read/Write Data Block	Read from or write to a variable sized block of data starting on a Virtual address	From 98xx series
0x16	Transmit Continuously	Set transmit caririer on for max. 255 sec	
0x17	Send Unique ID Now	Return Unique ID immediately	Plug & Play
0x18	Send UniqueID All /Unconfigured	Return Unique ID after 0-5 sec depended on Unique ID. Reply time is random	Plug & Play

The following tables contain detaileded information regarding each SMC command set.

Command 0x00 – Query Module ID

Response: The Type ID and Software version number of the module.
Purpose: This command quickly identifies the module installed at a given SMC address.

Data	None
Response	<Type><Version>

Command 0x01 – Query Status / Config All

Response: All available common data from current type of device.
Purpose: This command retrieves device dependent data. Refer to **Command 0x13** for more information.

Data	None
MapByte	0x88
Response	<Type><Version><Byte_0><Byte _1>….<Byte _29> + device dependent data<Bytes N>

Command 0x04 – Read / Write SMC Address

Response: The Type ID and Software version number of the module.
Purpose: This command reads or writes SMC Address.
Note: This command takes time to return the common data, refer to **Command 0x0B** for periodical updates.

- To read the SMC address:

Data	None
MapByte	0x88
Response	<Type><Version>

- To read the SMC address using a unique ID:

Data	<UniqueId_Byte0><UniqueId_Byte1>…<UniqueId_Byte5>
MapByte	0x88
Response	<Type><Version>

- To write the SMC address:

Data	<SMCId_Hi><SMCId_Lo>
Response	<DLE><ACK>

- To write the SMC address using a unique ID:

Data	<UniqueId_Byte0><UniqueId_Byte1>…<UniqueId_Byte5><SMCId_Hi><SMCId_Lo>
Response	<DLE><ACK>

Command 0x0A – Repeat Last Reply

Response: The previous command sent to the device.
Purpose: This command is used in case data from the last reply was corrupted or not processed correctly. Repeat the last full reply – either ACK or NAK.

Data	None
MapByte	Same as the previous command
Ext.MapByte	Same as the previous command
Response	Same as the previous command

Command 0x0B – Return Changed Data

Response: All changed data in the common block.
Purpose: This Command is used to query the data that was changed in the common block.

Data	None
MapByte	0x02
Response	<Offset1><Data1>…<OffsetN><DataN> / <DLE><ACK>

Command 0x13 – Read / Write Data Block

Purpose: This command allows read/write data block of a specific size from Offset.

- To Read Data Block:

Data	<Offset><BytesCnt_N>
MapByte	0x40
Ext.MapByte	0x08
Response	<Offset><ByteCnt_N><Byte_1><Byte_2>….<Byte_N>

- To Write Data Block:

Data	<Offset><ByteCnt_N><Byte_1><Byte_2>….<Byte_N>
Response	<DLE><ACK>

Command 0x16 –Transmit Continuously

Purpose: This command sets the transponder transmit carrier on for a specified number max. 255 seconds and will then return to normal operation.

Data	<No of seconds>
Response	<DLE><ACK>

Command 0x17 – Send Unique ID Now

Purpose: This command reads the unique ID.

Data	None
MapByte	0x01
Response	<UniqueId_Byte0><UniqueId_Byte1>…<UniqueId_Byte5>

Command 0x18 – Send Unique ID All/Unconfigured

Purpose: This command reads Unique ID.

Note: Reply is coming after random time max. 6 seconds.

Send unique ID All – the command is sent with 9999 SMC Address

Send unique ID Unconfigured –the command is sent with 9998 SMC Address

Data	None
MapByte	0x01
Response	<UniqueId_Byte0><UniqueId_Byte1>…<UniqueId_Byte5>

Command Set Field Description

The following table describes the command set field.

Field	Description
<SMCId_Lo>	Low byte of the 16 bit SMC Address or ID
<SMCId_Hi>	High byte of the 16 bit SMC Address or ID
<SMC_Version>	SMC Version. This value is 0x02 for SMCII compatible devices
<SMC_Media>	0: TTL Mode (Full duplex, unbalanced)
	1: EIA485 Full duplex
	2: EIA485 Half duplex (partyline mode)
CRC16_Lo	Low byte of the 16 bit CRC
CRC16_Hi	High byte of the 16 bit CRC
<Type>	One byte Type identifier
<Version>	Software Version number
<Offset>	Low byte of 16 bit memory address
<ByteCnt_N>	Where N is number of bytes to be read to or written from memory
<Byte_X>	Byte number X
<UniqueId_ByteX>	This is byte X of the transponders 6 bytes of unique ID array

Standalone Transponder

The following tables and lists describe the device dependent data and translation information.

Offset	Size	Description	Access	Run Time
0	6	UniqueId (MSB first)	RO	E²P
6	2	Tx Frequency (MSB first)	RW	E²P
8	2	Rx Frequency (MSB first)	RW	E²P
10	1	Tx Level	RW	E²P
11	1	Rx Level	RO	RAM
12	1	BAUD rate	RW	E²P
13	1	Temperature	RO	RAM
14	1	ADC's Window – voltage, Rx Level	RW	E²P
15	1	Unused	-	-
16	1	Voltage	RO	RAM
17	1	Last Error	RW	RAM
18	1	Port (Digital Input/Output) Direction Control Byte	RW	RAM
19	1	External ADC1 – Window	RW	E²P
20	1	External ADC1 – Value	RO	RAM
21	1	External ADC2 – Window	RW	E²P
22	1	External ADC2 – Value	RO	RAM
23	1	External ADC3 – Window	RW	E²P
24	1	External ADC3 – Value	RO	RAM
25	1	Port (Digital Input/Output port)	RW	RAM
26	1	Device Type Offset	RO	RAM
27	1	Unused	-	-
28	1	Unused	-	-
29	1	Size of Device depended data block	RO	RAM
30	1	Mode/Alarm byte	RO	RAM
31	1	Optical Input Level	RO	RAM
32	1	RSSI	RO	RAM

Offset 0 (RO): UniqueID

This offset represents the unique ID. It is identified using a 6 bytes number of Cisco's reserved block of MAC addresses.

Offset 6,8 (RW): Tx/Rx Frequency

This offset represents the Tx/Rx frequency. It is defined as frequency *10.

Note: E.g. the number 1405 represents 140.5 MHz.

Range is 5-65 MHz for Tx and 45-174 MHz for Rx in steps of 0.2 MHz.

Offset 10 (RW) Tx Level

This offset represents the Tx level. It is defined as values from 0 to 13 representing levels 84, 86, 88 ….108, 110 dBuV.

Offset 11(RO): Rx Level

This offset represents the Rx level. It is defined as level = data*0.385 dBuV.

Offset 12 (RW): BAUD Rate

This offset represents the baud rate. It is defines as 9 for 9600, 19 for 19200, and 38 for 38400.

Offset 13 (RO): Temperature

This offset represents the temperature. It is defined as temp = (data * 0.6311) - 55 degrees Celsius.

Offset 14 (RW): ADC's Window – voltage, Rx Level

This offset represents the threshold of the ADC values for voltage and Rx level in LSB.

Offset 16 (RO): Voltage

This offset represents the supply voltage. It is defined as voltage = (data * 0.1198) V.

Offset 17 (RO): Last Error

This offset represents the last occurred error in the transponder.

Offset 18 (RW): Port (Digital Input/Output) Direction Control Byte

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
PTE7	PTE6	PTE5	PTE4			PTA1	

This offset represents the Direction Control Byte. All ports are input on power up/reset, therefore EMS must reconfigure this direction byte on transponder power up or reset.

Offset 25 (RW): Port (Digital Input/Output)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
PTE7	PTE6	PTE5	PTE4			PTA1	PWR UP

This offset represents the state of Digital Input/ Output ports as configured on offset 18. PWRUP represents the Power up/Reset flag.

TX1LSRF	Description
0	Running
1	Power Up/Reset

Offset 26 (RO): Device Type Offset

This offset represents the device type. It is "0" indicating Standalone Transponder.

Compact Broadband Amplifier A93212

The following tables and lists describe the product specific offsets for Amplifier A93212.

Offset	Size	Description		Access	Run Time
		Product parameters	Description in common data		
16	1	DCSupVol	(Voltage)	RO	RAM
20	1	ADC0	(External ADC1 – Value)	RO	RAM
22	1	DevMod	(External ADC2 – Value)	RO	RAM
24	1	ACRemSupVol	(External ADC3 – Value)	RO	RAM
25	1	RecSwi1	Port (Digital Input/Output Port)	RW	RAM

Offset 16 (RO): DCSupVol

This offset represents the Voltage. For A93212, it is DC Supply Voltage (24 VDC).It also presents that the supply voltage is defined as voltage = (data*0.1198) Volt.

Offset 20 (RO): ADC0

This offset shows a value indicating the specific Device Model group in use. The following table shows more detailed information.

When ADC0 = 0, use group number 0.When 1,use grope number 1….	
Group 9\	"Unknown,Unknown,Unknown,Unknown,Unknown,93223-X37,Unknown,93221-X38,Unknown,93228-X38"\
Group 8\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 7\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 6\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 5\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 4\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 3\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 2\	"Unknown,Unknown,Unknown,93212-X42,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 1\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 0\	"93218-X28,Unknown,93218-X38,93211-X32,93211-X38,Unknown,Unknown,Unknown,Unknown,Unknown"\

Offset 22 (RO): DevMod

This offset represents the Device Model. It indicates the specific Device Model in use for each group.

Offset 24 (RO): ACRemSupVol

This offset represents the AC Remote Supply Voltage in A93212.

Offset 25 (RW): RecSwi1

This offset represents the Reverse Switch 1 in A93212. The following table shows the bits to control RecSwi1.

RecSwi1	Bit4	Bit5
0dB	0	0
-6dB	0	1
Off	1	1

Compact Advanced Mini Amplifier A93199

The following tables and lists describe the product specific offsets for Amplifier A93199.

Offset	Size	Description		Access	Run Time
		Product parameters	Description in common data		
16	1	DCSupVol	(Voltage)	RO	RAM
20	1	ADC0	(External ADC1 – Value)	RO	RAM
22	1	DevMod	(External ADC2 – Value)	RO	RAM
24	1	ACRemSupVol	(External ADC3 – Value)	RO	RAM
25	1	RecSwi1, RecSwi2	Port (Digital Input/Output Port)	RW	RAM

Offset 16 (RO): DCSupVol

This offset represents the Voltage. In A93199, it is DC Supply Voltage (24 VDC).It also presents that the supply voltage is defined as voltage=(data*0.1198) Volt.

Offset 20 (RO): ADC0

This offset shows a value indicating the specific Device Model group in use. The following table shows more detailed information.

When ADC0 = 0, use group number 0.When 1,use grope number 1….	
Group 9\	"Unknown,Unknown,Unknown,GainStar,Unknown,93223-X37,Unknown,93221-X38,Unknown,93228-X38"\
Group 8\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 7\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 6\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 5\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 4\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 3\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 2\	"Unknown,Unknown,Unknown,93212-X42,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown"\
Group 1\	"Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,Unknown,93199-X36,93199-X28"\
Group 0\	"93218-X28,Unknown,93218-X38,93211-X32,93211-X38,Unknown,Unknown,Unknown,Unknown,Unknown"\

Offset 22 (RO): DevMod

This offset represents the Device Model. It indicates the specific Device Model in use for each group.

Offset 24 (RO): ACRemSupVol

This offset diaplays AC Remote Supply Voltage in A93199.

Offset 25 (RW): RecSwi1, RecSwi2

The offset **RecSwi1** represents the Reverse Switch 1 in A93199.

The following table shows the bits to control RecSwi1.

RecSwi1	Bit4	Bit5
0dB	0	0
-6dB	0	1
Off	1	1

The offset **RecSwi2** represents Reverse Switch 2 in A93199.

The following table shows the bits to control RecSwi1.

RecSwi1	Bit6	Bit7
0dB	0	0
-6dB	0	1
Off	1	1

Compact Mini EGC Amplifier A93240

The following tables and lists describe the product specific offsets for Amplifier A93240.

Offset	Size	Description	Access	Type
0	26	Used by TP, refer to SMC Protocol		
26	1	Offset To SW ID	RO	Unsigned
27	2	Unused	RO	Unsigned
29	1	Size Of Device Depended Data Block	RO	Unsigned
30	18	Product Type	RO	string
48	18	Serial Number	RO	string
66	2	HW configuration	RO	Unsigned
68	6	BW1	RO	String
74	6	BW2	RO	String
80	1	FW GAIN1	RO	unsigned
81	1	FW GAIN2	RO	unsigned
82	1	FW GAIN3	RO	unsigned
83	1	FW GAIN4	RO	unsigned
84	1	RW GAIN1	RO	Unsigned
85	1	RW GAIN2	RO	Unsigned
86	2	Interface Type	RO	Unsigned
88	12	Software ID	RO	string
100	2	Uptime	RO	Unsigned
102	2	Status	RO	Unsigned
104	2	Remote supply	RO	Signed
106	2	DC Supply	RO	Unsigned
108	2	Time In Service	RO	Unsigned
110	2	Setting	RW	Unsigned
112	2	Forward Input Att	RW	Signed
114	2	Forward Input EQ	RW	Signed
116	2	Forward Interstage Att	RW	Signed
118	2	Forward Interstage EQ	RW	Signed
120	2	Reverse Input Att	RW	Signed
122	2	Reverse Output Att	RW	Signed
124	2	Reverse Output EQ	RW	Signed

Offset 29: Size Of Device Depended Data Block (RO)

The size of the data block is a constant. This offset is used by the transponder on a POLL ALL command

Offset 30: Product Type (RO)

This offset is a zero terminated string with the part number of the product e.g. A93270.10240/ A93270.10340

Offset 48: Serial Number (RO)

This offset is a zero terminated string with the serial number of the device.

Offset 66: HW Configuration (RO)

This offset is represents the hardware configuration. Refer to the following tables for more detailed information.

Bit	Name	Description	
		0	1
15	FW Bandwidth Control	Not Supported	Supported
14	FW Gain Control	Refer to the following table	
13		0	N/A
12	Reverse Gain Control	Not Supported	Supported
11	Spare	0	
10	Spare	0	
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Spare	0	
5	Tri-State Switch Support	Not Supported	Supported
4	Cable Simulator	Not Supported	Supported
3	Tamper Switch	Not Supported	Supported
2	DC Measurement Support	Not Supported	Supported
1	AC Measurement Support	Not Supported	Supported
0	Transponder Support	Not Supported	Supported

FW Gain control	Bit 15	Bit 14
1 FW Gain Supported	0	0
2 FW Gain Supported	0	1
3 FW Gain Supported	1	0
4 FW Gain Supported	1	1

Offset 68/74: BW1, BW2

These offsets are a string that shows the forward bandwidth, .e.g. 862 MHz and 1 GHz.

Offset 80/81/82/83: FW GAIN1, FW GAIN2, FW GAIN3, FW GAIN4

These offsets represent the forward gain. They are in units of dB.

In order to ensure FW GAIN1 as the default gain, it is set to be the same as the lowest gain.

Offset 84/85: RW GAIN1, RW GAIN2,

These offsets represent the reverse gain. They are in units of dB. The value “0” represents the passive return path.

In order to ensure RW GAIN1 as the default gain, it is set to be the same as the lowest gain.

Offset 86: Interface Type (RO)

This offset is a number used to identify the interface to this device. This number remains the same if no changes are made to the order or number of data in the Data Block.

Offset 88: Software ID (RO)

This offset is a zero terminated string which uniquely identifies the software in the amplifier.

Offset 100: Uptime (RO)

This offset represents number of hours since the last time the processor of the amplifier was reset.

Offset 102: Status (RO)

This offset represents the status information. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
15	Spare	0	
14	Spare	0	
13	Spare	0	
12	Spare	0	
11	Spare	0	
10	Spare	0	
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Spare	0	
5	Spare	0	
4	Tamper Switch	Intact	Compromised
3	Local Access To Device	LCI Not Connected	LCI Connected
2	Transponder Access To Device	TP Not Connected	TP Connected
1	Remote Power Type	Remote Power is DC	Remote Power is AC
0	Remote Connected	No Remote Power	Remote Power

Offset 104: Remote Supply (RO)

This offset represents the voltage on the remote power supply line. Units are V.

In case of AC voltage the measured value is Vpp/2. It's a signed value.

Offset 106: DC Supply (RO)

This offset represents the measured voltage of the "24 V supply" in units of 0.1 Volt

Offset 108: Time In Service

This offset represents the number of days the product has been in service.

Time in service is increased by 1 for each 24 of non-interrupted service. Refer to the following tables for more detailed information.

Bit	Name	Description	
		0	1
15	Forward Bandwidth	BW1	BW2
14	Forward Gain	Refer to the following table on FW Gain	
13			
12	RW Gain	RW1 Gain	RW2 Gain
11	Reverse Tri-state Switch	Refer to the following table on Reverse Tri-state Switch	
10			
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Spare	0	
5	Spare	0	
4	Spare	0	
3	Spare	0	
2	Spare	0	
1	Spare	0	
0	Spare	0	

FW Gain	Bit 14	Bit 13
Gain 1	0	0
Gain 2	0	1
Gain 3	1	0
Gain 4	1	1

Reverse Tri-State Switch	Bit 11	Bit 10
0 dB	0	0
-6 dB	0	1
OFF	1	1

Offset 112-124: (RW)

These offsets represent the values of the different attenuators. The value is stored in units of 0.1 dB

If it is set to a non-valid value, it will be corrected automatically to the nearest valid value by the amplifiers processor. Typical step is 0.5 dB

Compact EGC Amplifier A93251

The following tables and lists describe the product specific offsets for Amplifier A93251.

Offset	Size	Description	Access	Type
0	26	Used by TP, refer to SMC Protocol		
26	1	Offset To SW ID	RO	Unsigned
27	2	Unused	RO	Unsigned
29	1	Size Of Device Depended Data Block	RO	Unsigned
30	18	Product Type	RO	string
48	18	Serial Number	RO	string
66	2	HW configuration	RO	Unsigned
68	6	BW1	RO	String
74	6	BW2	RO	String
80	1	FW GAIN1	RO	unsigned
81	1	FW GAIN2	RO	unsigned
82	1	FW GAIN3	RO	unsigned
83	1	FW GAIN4	RO	unsigned
84	1	RW GAIN1	RO	Unsigned
85	1	RW GAIN2	RO	Unsigned
86	2	Interface Type	RO	Unsigned
88	12	Software ID	RO	string
100	2	Uptime	RO	Unsigned
102	2	Status	RO	Unsigned
104	2	Remote supply	RO	Signed
106	2	DC Supply	RO	Unsigned
108	2	Time In Service	RO	Unsigned
110	2	Setting	RW	Unsigned
112	2	Forward Input Att	RW	Signed
114	2	Forward Input EQ	RW	Signed
116	2	Forward Interstage Att	RW	Signed
118	2	Forward Interstage EQ	RW	Signed
120	2	Reverse Input Att	RW	Signed
122	2	Reverse Output Att	RW	Signed
124	2	Reverse Output EQ	RW	Signed
126	2	Forward Total Gain	RW	Signed
128	2	Forward Input Att MAX	RO	Signed
130	2	Forward Input EQ MAX	RO	Signed
132	2	Forward Interstate Att MAX	RO	Signed
134	2	Forward Interstate EQ MAX	RO	Signed
136	2	Reverse Input Att MAX	RO	Signed
138	2	Reverse Output Att MAX	RO	Signed
140	2	Reverse Output EQ MAX	RO	Signed

Offset	Size	Description	Access	Type
142	2	Forward Input Att MIN	RO	Signed
144	2	Forward Input EQ MIN	RO	Signed
146	2	Forward Interstate Att MIN	RO	Signed
148	2	Forward Interstate EQ MIN	RO	Signed
150	2	Reverse Input Att MIN	RO	Signed
152	2	Reverse Output Att MIN	RO	Signed
154	2	Reverse Output EQ MIN	RO	Signed

Offset 29: Size Of Device Depended Data Block (RO)

The size of the data block is a constant. This offset is used by the transponder on a POLL ALL command

Offset 30: Product Type (RO)

This offset is a zero terminated string with the part number of the product e.g. A93251.XXX

Offset 48: Serial Number (RO)

This offset is a zero terminated string with the serial number of the device.

Offset 66: HW Configuration (RO)

This offset is represents the hardware configuration. Refer to the following tables for more detailed information.

Bit	Name	Description	
		0	1
15	FW Bandwidth Control	Not Supported	Supported
14	FW Gain Control	Refer to the following table	
13			
12	Reverse Gain Control	Not Supported	Supported
11	FW Total Gain Control	Not Supported	Supported
10	Spare	0	
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Range Available	Not Supported	Supported
5	Tri-State Switch Support	Not Supported	Supported
4	Cable Simulator	Not Supported	Supported
3	Tamper Switch	Not Supported	Supported
2	DC Measurement Support	Not Supported	Supported
1	AC Measurement Support	Not Supported	Supported
0	Transponder Support	Not Supported	Supported

FW Gain control	Bit 15	Bit 14
1 FW Gain Supported (Valid to set Gain1)	0	0
2 FW Gain Supported (Valid to set Gain1/Gain2)	0	1
3 FW Gain Supported(Valid to set Gain1/Gain2/Gain3)	1	0
4 FW Gain Supported(Valid to set Gain1/Gain2/Gain3/Gain4)	1	1

- **Offset 68/74: BW1, BW2**

These offsets are a string that shows the forward bandwidth, .e.g. 862 MHz and 1 GHz.

- **Offset 80/81/82/83: FW GAIN1, FW GAIN2, FW GAIN3, FW GAIN4**

These offsets represent the forward gain. They are in units of dB.

In order to ensure FW GAIN1 as the default gain, it is set to be the same as the lowest gain.

- **Offset 84/85: RW GAIN1, RW GAIN2,**

These offsets represent the reverse gain. They are in units of dB. The value “0” represents the passive return path.

In order to ensure RW GAIN1 as the default gain, it is set to be the same as the lowest gain.

- **Interface Type (RO)**

This offset is a number used to identify the interface to this device. This number remains the same if no changes are made to the order or number of data in the Data Block.

- **Software Id (RO)**

This offset is a zero terminated string which uniquely identifies the software in the amplifier.

- **Uptime (RO)**

This offset represents number of hours since the last time the processor of the amplifier was reset.

Status (RO)

This offset provides the status information. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
15	Spare	0	
14	Spare	0	
13	Spare	0	
12	Spare	0	
11	Spare	0	
10	Spare	0	
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Spare	0	
5	Spare	0	
4	Tamper Switch	Intact	Compromised
3	Local Access To Device	LCI Not Connected	LCI Connected
2	Transponder Access To Device	TP Not Connected	TP Connected
1	Remote Power Type	Remote Power is DC	Remote Power is AC
0	Remote Connected	No Remote Power	Remote Power

Remote Supply (RO)

This offset represents the voltage on the remote power supply line. Units are V.

In case of AC voltage the measured value is Vpp/2. The value “1” indicates that the AC measurement support is available.

Note: the value is a signed value.

DC Supply (RO)

This offset represents the measured voltage of the “24 V supply” in units of 0.1 Volt. The value “1” indicates that the DC measurement support is available.

Time In Service

This offset represents the number of days the product has been in service.

Time in service is increased by 1 for each 24 of non-interrupted service. Refer to the following tables for more detailed information.

Bit	Name	Description	
		0	1
15	Forward Bandwidth	BW1	BW2
14	Forward Gain	Refer to the following table on FW Gain	
13			
12	RW Gain	RW1 Gain	RW2 Gain
11	Reverse Tri-state Switch	Refer to the following table on Reverse Tri-state Switch	
10			
9	Spare	0	
8	Spare	0	
7	Spare	0	
6	Spare	0	
5	Spare	0	
4	Spare	0	
3	Spare	0	
2	Spare	0	
1	Spare	0	
0	Spare	0	

FW Gain	Bit 14	Bit 13
Gain 1	0	0
Gain 2	0	1
Gain 3	1	0
Gain 4	1	1

Reverse Tri-State Switch	Bit 11	Bit 10
0 dB	0	0
-6 dB	0	1
OFF	1	1

Offset 112-124: (RW)

These offsets represent the values of the different attenuators. The value is stored in units of 0.1 dB

If it is set to a non-valid value, it will be corrected automatically to the nearest valid value by the amplifiers processor. Typical step is 0.5 dB

- **Offset 126: Forward Total Gain (RW)**

This offset provides another way to control the gain of the amplifier. Modifying this value will affect FW Gain selection, FW interstate attenuator and forward input attenuator.

This offset is available when the value of FW Total Gain Control is “1” in HW Configuration.

- **Offset 128-150: (RO)**

These offset provides the ranges for attenuation and equalization values. Modifying may return a bad value.

This offset is available when the value of FW Total Gain Control is “1” in HW Configuration.

Compact Dual Output EGC Amplifier A93270

The following tables and lists describe the product specific offsets for Amplifier A93270.

Offset	Size	Description	Access	Type
0	26	Used by TP, refer to SMC Protocol		
26	1	Offset To SW ID	RO	Unsigned
27	2	Unused	RO	Unsigned
29	1	Size Of Device Depended Data Block	RO	Unsigned
30	13	Product Type	RO	string
43	13	Serial Number	RO	string
56	2	Interface Type	RO	Unsigned
58	12	Software ID	RO	string
70	2	Uptime	RO	Unsigned
72	1	Status1	RO	Unsigned
73	1	AMP Temperature	RO	Signed
74	2	Remote Supply	RO	Signed
76	1	DC 12 V Supply	RO	Signed
77	2	DC 24 V Supply	RO	Signed
79	2	Forward Path 1 Gain	RO	Signed
81	2	Forward Path 2 Gain	RO	Signed
83	2	Time In Service	RO*	Unsigned
85	1	Setting1	RW	Union
86	1	Setting2	RW	Union
87	1	Forward input Att(RW)	RW	Unsigned
88	1	Forward Input EQ	RW	Unsigned
89	1	Forward Second Interstage Att Port 1 (RW)	RW	Unsigned
90	1	Forward Second Interstage EQ 1	RW	Unsigned
91	1	Forward Second Interstage Att Port 2 (RW)	RW	Unsigned
92	1	Forward Second Interstage EQ 2	RW	Unsigned
93	1	Reverse Input Att Port 1	RW	Unsigned
94	1	Reverse Input Att Port 2	RW	Unsigned
95	1	Reverse Output EQ	RW	Unsigned
96	1	Reverse Output Att	RW	Unsigned
97	13	AGC Module Product Type	RO	string
110	13	AGC Module Serial Number	RO	string
123	2	AGC Module Interface Type	RO	Unsigned
125	12	AGC Module Software ID	RO	string
137	1	AGC Module Status 1	RO	Unsigned
138	1	AGC Module Status 2	RO	Unsigned
139	1	AGC Module Temperature	RO	Unsigned
140	1	AGC Module Overband Tilt	RO	Unsigned
141	2	AGC Module Frequency Level 0	RO	Signed

Offset	Size	Description	Access	Type
143	2	AGC Module Frequency Level 1	RO	Signed
145	2	AGC Module Frequency Level 2	RO	Signed
147	2	AGC Module Frequency Level 3	RO	Signed
149	2	AGC Module Frequency Level 4	RO	Signed
151	2	AGC Module Frequency Level 5	RO	Signed
153	2	AGC Module Frequency Level 6	RO	Signed
155	2	AGC Module Frequency Level 7	RO	Signed
157	2	AGC Module Frequency Level 8	RO	Signed
159	2	AGC Module Frequency Level 9	RO	Signed
161	1	AGC Module Frequency number	RO	Unsigned
162	1	AGC Module Current Frequency Address Index	RO	Unsigned
163	4	AGC Module High Pilot Frequency	RO	Unsigned
167	2	AGC Module High Pilot Level	RO	Unsigned
169	4	AGC Module Low Pilot Frequency	RO	Unsigned
173	2	AGC Module Low Pilot Level	RO	Unsigned
175	1	AGC Module Frequency Address Index	RW*	Unsigned
176	4	AGC Module Frequency 0	RW	Unsigned
180	4	AGC Module Frequency 1	RW	Unsigned
184	4	AGC Module Frequency 2	RW	Unsigned
188	4	AGC Module Frequency 3	RW	Unsigned
192	4	AGC Module Frequency 4	RW	Unsigned
196	4	AGC Module Frequency 5	RW	Unsigned
200	4	AGC Module Frequency 6	RW	Unsigned
204	4	AGC Module Frequency 7	RW	Unsigned
208	4	AGC Module Frequency 8	RW	Unsigned
212	4	AGC Module Frequency 9	RW	Unsigned
216	1	AGC Module Setting	RW	Union
217	4	AGC Module High Pilot Frequency	RW	Unsigned
221	2	AGC Module High Pilot Level Setting	RW	Unsigned
223	4	AGC Module Backup High Pilot Frequency	RW	Unsigned
227	2	AGC Module Backup High Pilot Level Setting	RW	Unsigned
229	4	AGC Module Low Pilot Frequency	RW	Unsigned
233	2	AGC Module Low Pilot Level Setting	RW	Unsigned
235	4	AGC Module Backup Low Pilot Frequency	RW	Unsigned
239	2	AGC Module Backup Low Pilot Level Setting	RW	Unsigned
241	1	AGC Module Cable Temperature	RW	Signed
242	1	AGC Module Cascade Number	RW	Unsigned
243	2	Product Year	RO	Unsigned
245	1	Product Month	RO	Unsigned
246	1	Product Day	RO	Unsigned
247	3	PCBA Part Number	RO	Unsigned
250	2	PCBA Revsion Number	RO	string

Offset 29: Size of Device Depended Data Block (RO)

The size of the data block is a constant. This offset is used by the transponder on a POLL ALL command

Offset 30: Product Type (RO)

This offset is a zero terminated string with the part number of the product e.g. A93270.10240/ A93270.10340

Offset 43: Serial Number (RO)

This offset is a zero terminated string with the serial number of the device.

Offset 56: Interface Type (RO)

This offset is a number used to identifying the interface to this device. This number remains if the order or number of data in the Data Block is not changed.

Offset 58: Software ID (RO)

This offset is a zero terminated string witch uniquely identifies the software in the amplifier/amplifier.

Offset 70: Uptime (RO)

This offset represents the number of hours since the last time when the processor of the amplifier was reset.

Offset 72: Status (RO)

This offset represents the status information. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Reserved	0	
6	Reserved	0	
5	AGC Module mounted	not mounted	mounted
4	Tamper Switch	Intact	Compromised
3	Local Access To Device	LCI not connected	LCI connected
2	Transponder module mounted	not mounted	mounted
1	Remote Power Type	DC	AC
0	Remote Power Connected	No remote power	Remote power

Offset 73: AMP Temperature (RO)

This offset represents the measured temperature of the amplifier. It is measured in units of 1° C.

Offset 74: Remote Supply (RO)

This offset represents the measured voltage on the remote power supply line. Units are V. In case of AC voltage the measured value is Vpp/2. Note the value is a signed

value.

Offset 76: DC 12 V Supply (RO)

This offset represents the the measured voltage of the “12 V supply” in the unit of 0.1 Volt

Offset 77: DC 24 V Supply (RO)

This offset represents the measured voltage of the “24 V supply” in the unit of 0.1 Volt.

Offset 79: Forward Gain 1(RO)

This offset represents the total gain of forward path 1 in the unit of 0.1 dB.

Offset 81: Forward Gain 2(RO)

This offset represents the total gain of forward path 2 in the unit of 0.1 dB.

Offset 83: Time in service (RO)

This offset represents the number of days the product has been in service. Time in service is increased by 1 for each 24 hours of non-interrupted service.

Offset 85: Setting 1(RW)

This offset represents the status information for Setting 1. Refer to the following tables for more detailed information.

Bit	Name	Description	
		0	1
7	Reserved	0	
6	Forward ECO Port 1	OFF	ON
5	Forward Output Port 1	OFF	ON
4	Reverse Path Gain	20dB	25dB
2,3	Return Port1 Off, –6dB, 0dB	Refer to the following table	
1	Reserved	0	
0	Forward Bandwidth	BW1(862MHZ)	BW2(1GHZ)

Reverse Tri-state Switch	Bit 3	Bit 2
0dB	0	0
-6dB	0	1
OFF	1	0
Spare	1	1

Offset 86: Setting 2 (RW)

This offset represents the status information for Setting 2. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Reserved	0	
6	Forward ECO Port 2	OFF	ON
5	Forward Output Port 2	OFF	ON
4	Reserved	0	
2,3	Return Port2 Off, –6dB, 0dB	Refer to the above table	
1	Reserved	0	
0	Reserved	0	

Offset 87: Forward Input Att (RW)

This offset represents the forward input attenuation value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

Note: In AA mode, this value is from AGC Module.

Offset 88: Forward input EQ (RW)

This offset represents the forward input equalizer value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

Note: In AA mode, this value is from AGC Module.

Offset 89: Forward Second Interstage Att Port 1 (RW)

This offset represents the value of forward interstage attenuation 1. Typical step is 0.5 dB and range 0~18 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed, AGC function is on and AGC Module status bit "AGC data" is ready, AMP will get this value from AGC Module.

Offset 90: Forward Second Interstage EQ 1 (RW)

This offset represents the value of forward interstage equalizer 1. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~14 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed and AGC function is on, it is controlled by AGC Module.

Offset 91: Forward Second Interstage Att Port 2 (RW)

This offset represents the value of forward interstage attenuator 2. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed, AGC function is on and AGC Module status bit "AGC data" is ready, AMP will get this value from AGC Module.

- **Offset 92: Forward Second Interstage EQ 2 (RW)**

This offset represents the value of forward interstage equalizer 2. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~14 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed and AGC function is on, it is controlled by AGC Module.

- **Offset 93: Reverse Input Att Port 1 (RW)**

This offset represents the value of reverse input attenuator. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~20 dB.

- **Offset 94: Reverse Input Att Port 2 (RW)**

This offset represents the reverse input attenuation 2 value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~20 dB.

- **Offset 95: Reverse Output EQ (RW)**

This offset represents the reverse input equalizer 1 value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~15 dB.

- **Offset 96: Reverse Output Att (RW)**

This offset represents the reverse output attenuation 1 value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

- **Offset 97: AGC Module Product Type (RO)**

This offset is a zero terminated string with the part number of the AGC Module.

- **Offset 110: AGC Module Serial Number (RO)**

This offset is a zero terminated string with the serial number of AGC Module.

- **Offset 123: AGC Module Interface Type (RO)**

This offset represents the number used to identify the interface to this device. This number remains the same if no changes are made to the order or number of data in the Data Block.

- **Offset 125: AGC Module Software ID (RO)**

This offset is a zero terminated string with the software ID of AGC Module.

Offset 137: AGC Module Status (RO)

This offset represents the status information for the AGC module. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	EQ out of AGC High End	OK	Too high (ΔEQ>4 dB)
6	EQ out of AGC Low End	OK	Too low (ΔEQ<-4 dB)
5	High Freq Pilot High level	OK	Too high (High Pilot level detected >120 dBuV)
4	High Freq Pilot Low Level	OK	Too low (High Pilot level detected <80 dBuV)
3	Low Freq Pilot High level	OK	Too high (High Pilot level detected >120 dBuV)
2	Low Freq Pilot Low Level	OK	Too low (High Pilot level detected <80 dBuV)
1	ATT out of AGC High End	OK	Too high (ΔEQ>4 dB)
0	ATT out of AGC Low End	OK	Too low (ΔEQ<-4 dB)

Notes:
1. If ΔATT or ΔEQ>4dB, there will be alarm, and meanwhile, the amp will only tune up to 4 dB.
2. If ΔATT/ΔEQ=4 dB, which means the ATT/EQ value in the amplifier increase by 4 dB. For example, if the ATT/EQ in amplifier now is 5 dB, and ΔATT/ΔEQ=4 dB, then ATT/EQ will change to 5+4=9 dB

Offset 139: AGC Module Temperature (RO)

This offset represents the measured temperature of AGC module in the unit of 1° C.

Offset 140: AGC Module Overband Tilt (RO)

This offset represents the overband between the highest frequency and the lowest frequency in the unit of 0.1 dB. Its maximum value is 25.5 dB

Offset 141-161: AGC Module Frequency 0 ~9 (RW)

These offsets are 4 byte coded software number MSB first LSB last and in the unit of 0.1 KHZ. It stores the measured frequency.

0~9 is its index number. This index number plus AGC Module Frequency Address Offset in section get the actual frequency index number in AGC Module.

The 4th byte stores its pilot type. Please see the table below.

Byte	Value	Description
4	0-Analog, 1-QAM 6M, 2-QAM 7M, 3-QAM 8M, Others are reserved	Pilot type
1,2,3	47 to 1002 MHz in the unit of 0.1 KHZ	Frequency

Offset 176-212: AGC Module AGC Module Frequency Level 0 ~9 (RO)

These offsets are 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the measured frequency's level.

0~9 is its index number. This index number plus AGC Module Frequency Address Offset in section get the actual frequency level index number in AGC Module.

Offset 161: AGC Module Frequency Number (RO)

This offset represents the number of frequencies measured in AGC Module.

Offset 138: AGC Module Status 2 (RO)

This offset represents the status information for the AGC module 2. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Attenuator	valid	Invalid
6	Tuner sleep	Not sleep	Sleep
5	AA time out	Not time out	Time out
4	Pilots drop out	Not drop out	Drop out
3	AGC mode	Not active	Active
2	EQ	Invalid	Valid
1	Active low pilot	Main low pilot	Backup low pilot
0	Active high pilot	Main high pilot	Backup high pilot

Offset 163: AGC Module High Pilot Frequency (RO)

This offset represents the active high pilot frequency in the unit of 0.1 KHZ.

Offset 167: AGC Module High Pilot Level (RO)

This offset represents the active high pilot level in the unit of 0.1 dBuV.

Offset 169: AGC Module Low Pilot Frequency (RO)

This offset represents the active high pilot frequency in the unit of 0.1 KHZ.

Offset 173: AGC Module Low Pilot Level (RO)

This offset represents the active high pilot level 0.1 dBuV

Offset 162: AGC Module Current Frequency Address Offset (RW)

This offset represents the current 10 frequencies' base offset address. Its value should be less than the 11.10 AGC Module Frequency number. And when AGC Module detects AGC Module Frequency Address Offset changed, it should also be updated immediately.

If the AGC Module frequency number is less than or equal to 10, it should always be 0.

Offset 216: AGC Module Setting (RW)

This offset represents the AGC Module Setting. The following tables provide more detailed information.

Bit	Name	Description	
		0	1
7	Spare	0	N/A
6	Spare	0	N/A
5	Spare	0	N/A
4	Spare	0	N/A
3	Spare	0	N/A
1, 2	Control Mode	OFF	ON
0	Spare	0	N/A

Control Mode	Bit 2	Bit 1
STANDBY	0	0
AA	0	1
Fixed Gain	1	0
AGC	1	1

Note: When set to AA mode, AMP runs once AA operation and after that AMP will clear AA mode automatically.

Offset 167: AGC Module High Pilot Level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the high measured frequency level.

Offset 163: AGC Module Backup High Pilot Frequency (RW)

This offset is a 4 byte coded software number MSB first LSB last and in the unit of 0.1 KHZ. It stores the backup high measured frequency.

Offset 227: AGC Module Backup High Pilot Level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0. 1 dBuV. It stores the backup high measured frequency level.

Offset 173: AGC Module Low Pilot Level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the low measured frequency level.

Offset 241: AGC Module Cable Temperature (RW)

value	0	1	2	3	4	5	6	7	8	9~254	255
Temperature(℃)	-20	-10	0	10	20	30	40	50	60	not used	auto

Note: When the value is 0~8, it is working in manual temperature compensation mode. If it is 255, it is working in auto temperature compensation mode.

- **Product Year (RO)**

This offset is a big-edian 2 bytes number. It stores the product year, e.g. 2011.

- **Product Month (RO)**

This offset is a one byte number. It stores the product month, e.g. 09.

- **Product Day (RO)**

This offset is a one byte number. It stores the product day, e.g. 09.

- **PCBA Part Number (RO)**

This offset is a 3 byets big-edian number. It stores the PCB part number, e.g. 4029498.

- **PCBA Revsion Number (RO)**

The first byte of this offset represents ASCII number "_', and the second byte stores the ACSII letter, e.g. "_A".

Compact Single Output EGC Amplifier A93280

The following tables and lists describe the product specific offsets for Amplifier A93280.

Offset	Size	Description	Access	Type
0	26	Used by TP, refer to SMC Protocol		
26	1	Offset To SW ID	RO	Unsigned
27	2	Unused	RO	Unsigned
29	1	Size Of Device Depended Data Block	RO	Unsigned
30	13	Product Type	RO	string
43	13	Serial Number	RO	string
56	2	Interface Type	RO	Unsigned
58	12	Software id	RO	string
70	2	Uptime	RO	Unsigned
72	1	Status1	RO	Unsigned
73	1	AMP temperature	RO	Unsigned
74	2	Remote supply	RO	Signed
76	1	DC 12 V Supply	RO	Signed
77	2	DC 24 V Supply	RO	Signed
79	2	Forward Path 1 Gain	RO	Signed
81	2	Reserved	RO	Signed
83	2	TimeInService	RO*	Unsigned
85	1	Setting1	RW	Union
86	1	Reserved	RW	Union
87	1	Forward input Att(RW)	RW	Unsigned
88	1	Forward Input EQ	RW	Unsigned
89	1	Forward Second Interstage Att Port 1 (RW)	RW	Unsigned
90	1	Forward Second Interstage EQ 1	RW	Unsigned
91	1	Reserved	RW	Unsigned
92	1	Reserved	RW	Unsigned
93	1	Reverse Input Att Port 1	RW	Unsigned
94	1	Reverse Input Att Port 2	RW	Unsigned
95	1	Reverse Output EQ	RW	Unsigned
96	1	Reverse Output Att	RW	Unsigned
97	13	AGC Module product type	RO	string
110	13	AGC Module serial number	RO	string
123	2	AGC Module interface type	RO	Unsigned
125	12	AGC Module software id	RO	string
137	1	AGC Module status 1	RO	Unsigned
138	1	AGC Module status 2	RO	Unsigned
139	1	AGC Module temperature	RO	Unsigned
140	1	AGC Module Overband tilt	RO	Unsigned
141	2	AGC Module Frequency Level 0	RO	Signed

Offset	Size	Description	Access	Type
143	2	AGC Module Frequency Level 1	RO	Signed
145	2	AGC Module Frequency Level 2	RO	Signed
147	2	AGC Module Frequency Level 3	RO	Signed
149	2	AGC Module Frequency Level 4	RO	Signed
151	2	AGC Module Frequency Level 5	RO	Signed
153	2	AGC Module Frequency Level 6	RO	Signed
155	2	AGC Module Frequency Level 7	RO	Signed
157	2	AGC Module Frequency Level 8	RO	Signed
159	2	AGC Module Frequency Level 9	RO	Signed
161	1	AGC Module Frequency number	RO	Unsigned
162	1	AGC Module Current Frequency Address Index	RO	Unsigned
163	4	AGC Module high pilot frequency	RO	Unsigned
167	2	AGC Module high pilot level	RO	Unsigned
169	4	AGC Module low pilot frequency	RO	Unsigned
173	2	AGC Module low pilot level	RO	Unsigned
175	1	AGC Module Frequency Address Index	RW*	Unsigned
176	4	AGC Module Frequency 0	RW	Unsigned
180	4	AGC Module Frequency 1	RW	Unsigned
184	4	AGC Module Frequency 2	RW	Unsigned
188	4	AGC Module Frequency 3	RW	Unsigned
192	4	AGC Module Frequency 4	RW	Unsigned
196	4	AGC Module Frequency 5	RW	Unsigned
200	4	AGC Module Frequency 6	RW	Unsigned
204	4	AGC Module Frequency 7	RW	Unsigned
208	4	AGC Module Frequency 8	RW	Unsigned
212	4	AGC Module Frequency 9	RW	Unsigned
216	1	AGC Module Setting	RW	Union
217	4	AGC Module high pilot frequency	RW	Unsigned
221	2	AGC Module high pilot level setting	RW	Unsigned
223	4	AGC Module backup high pilot frequency	RW	Unsigned
227	2	AGC Module backup high pilot level setting	RW	Unsigned
229	4	AGC Module low pilot frequency	RW	Unsigned
233	2	AGC Module low pilot level setting	RW	Unsigned
235	4	AGC Module backup low pilot frequency	RW	Unsigned
239	2	AGC Module backup low pilot level setting	RW	Unsigned
241	1	AGC Module Cable temperature	RW	Unsigned
242	1	AGC Module Cascade Number	RW	Unsigned
243	2	Product Year	RO	Unsigned
245	1	Product Month	RO	Unsigned
246	1	Product Day	RO	Unsigned
247	3	PCBA Part Number	RO	Unsigned
250	2	PCBA Revsion Number	RO	string

Offset 29: Size Of Device Depended Data Block (RO)

The size of the data block is a constant. This offset is used by the transponder on a POLL ALL command

Offset 30: Product Type (RO)

This offset is a zero terminated string with the part number of the product e.g. A93280.XXX

Offset 43: Serial Number (RO)

This offset is a zero terminated string with the serial number of the device.

Offset 56: Interface Type (RO)

This offset is a number used to identifying the interface to this device. This number remains if the order or number of data in the Data Block is not changed.

Offset 58: Software ID (RO)

This offset is a zero terminated string witch uniquely identifies the software in the amplifier/amplifier.

Offset 70: Uptime (RO)

This offset represents the number of hours since the last time when the processor of the amplifier was reset.

Offset 72: Status (RO)

This offset represents the status information. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Reserved	0	
6	Reserved	0	
5	AGC Module mounted	not mounted	mounted
4	Tamper Switch	Intact	Compromised
3	Local Access To Device	LCI not connected	LCI connected
2	Transponder module mounted	not mounted	mounted
1	Remote Power Type	DC	AC
0	Remote Power Connected	No remote power	Remote power

Offset 73: AMP Temperature (RO)

This offset represents the measured amplifier's temperature. Units are 1° C.

Offset 74: Remote Supply (RO)

This offset represents the measured voltage on the remote power supply line. Units are V. In case of AC voltage the measured value is Vpp/2. Note the value is a signed value.

Offset 76: DC 12 V Supply (RO)

This offset represents the measured voltage of the "12 V supply" in the unit of 0.1 Volt

Offset 77: DC 24 V Supply (RO)

This offset represents the measured voltage of the "24 V" in the unit of 0.1 Volt.

Offset 79: Forward Gain 1(RO)

This offset represents the total gain of forward path 1 in the unit of 0.1 dB.

Offset 83: Time in service (RO)

This offset represents the number of days the product has been in service. Time in service is increased by 1 for each 24 hours of non-interrupted service.

Offset 85: Setting 1(RW)

This offset represents the setting information. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Gain Mode	40 dB	32 dB
6	Forward Power Saving	OFF	ON
5	Reserved	-	
4	Reserved	-	
2,3	Return Port1 Off, –6 dB, 0 dB	Refer to the following table	
1	Reserved	-	
0	Forward Bandwidth	BW1 (862 MHZ)	BW2 (1 GHZ)

Reverse Tri-state Switch	Bit 3	Bit 2
0 dB	0	0
-6 dB	0	1
OFF	1	0
Spare	1	1

Offset 87: Forward Input Att (RW)

This offset represents the forward input attenuation value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

Note: In AA mode, this value is from AGC Module.

Offset 88: Forward Input EQ (RW)

This offset represents the forward input equalizer value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

Note: In AA mode, this value is from AGC Module.

- **Offset 89: Forward Output Att (RW)**

This offset represents the value of forward interstage attenuation. Typical step is 0.5 dB and range 0~10 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed, AGC function is on and AGC Module status bit "AGC data" is ready, AMP will get this value from AGC Module.

- **Offset 90: Forward Output EQ (RW)**

This offset represents the value of forward interstage equalizer 1. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~14 dB.

It is user configurable when AGC function is turned off. But when AGC Module is installed and AGC function is on, it is controlled by AGC Module.

- **Offset 93: Reverse Input Att 1 (RW)**

This offset represents the value of reverse input attenuator. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~20 dB.

- **Offset 94: Reverse Gain Control (RW)**

This offset represents the reverse gain control. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~20 dB.

- **Offset 95: Reverse Output EQ (RW)**

This offset represents the reverse input equalizer 1 value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~15 dB.

- **Offset 96: Reverse Output Att (RW)**

This offset represents the reverse output attenuation 1 value. The value is stored in the unit of 0.1 dB. Typical step is 0.5 dB and range 0~18 dB.

- **Offset 97: AGC Module Product Type (RO)**

This offset is a zero terminated string with the part number of the AGC Module.

- **Offset 110: AGC Module Serial Number (RO)**

This offset is a zero terminated string with the serial number of AGC Module.

- **Offset 123: AGC Module Interface Type (RO)**

This offset represents the number used to identify the interface to this device. This number remains the same if no changes are made to the order or number of data in the Data Block.

- **Offset 125: AGC Module Software ID (RO)**

This offset is a zero terminated string with the software ID of AGC Module.

Offset 137: AGC Module Status (RO)

Bit	Name	Description	
		0	1
7	EQ out of AGC High End	OK	Too high (ΔEQ>4 dB)
6	EQ out of AGC Low End	OK	Too low (ΔEQ<-4 dB)
5	High Freq Pilot High level	OK	Too high (High Pilot level detected >120 dBuV)
4	High Freq Pilot Low Level	OK	Too low (High Pilot level detected <80 dBuV)
3	Low Freq Pilot High level	OK	Too high (High Pilot level detected >120 dBuV)
2	Low Freq Pilot Low Level	OK	Too low (High Pilot level detected <80 dBuV)
1	ATT out of AGC High End	OK	Too high (ΔEQ>4 dB)
0	ATT out of AGC Low End	OK	Too low (ΔEQ<-4 dB)

Notes:

3. If ΔATT or ΔEQ>4dB, there will be alarm, and meanwhile, the amp will only tune up to 4 dB.
4. If ΔATT/ΔEQ=4 dB, which means the ATT/EQ value in the amplifier increase by 4 dB. For example, if the ATT/EQ in amplifier now is 5 dB, and ΔATT/ΔEQ=4 dB, then ATT/EQ will change to 5+4=9 dB

Offset 139: AGC Module Temperature (RO)

This offset represents the measured AGC Module's temperature in the unit of 1° C.

Offset 140: AGC Module Overband Tilt (RO)

This offset represents the overband between the highest frequency and the lowest frequency in the unit of 0.1 dB. Its maximum value is 25.5 dB

Offset 141-161: AGC Module Frequency 0 ~9 (RW)

These offsets are 4 byte coded software number MSB first LSB last and in the unit of 0.1 KHZ. It stores the measured frequency.

0~9 is its index number. This index number plus AGC Module Frequency Address Offset in section get the actual frequency index number in AGC Module.

The 4th byte stores its pilot type. Please see the table below.

Byte	Value	Description
4	0-Analog, 1-QAM 6M, 2-QAM 7M, 3-QAM 8M, Others are reserved	Pilot type
1,2,3	47 to 1002 MHz in the unit of 0.1 KHZ	Frequency

Offset 176-212: AGC Module AGC Module Frequency Level 0 ~9 (RO)

These offsets are 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the measured frequency's level.

0~9 is its index number. This index number plus AGC Module Frequency Address Offset in section get the actual frequency level index number in AGC Module.

Offset 161: AGC Module Frequency Number (RO)

This offset represents the number of frequencies measured in AGC Module.

Offset 138: AGC Module Status 2 (RO)

This offset represents the status information for the AGC module 2. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Attenuator	valid	Invalid
6	Tuner sleep	Not sleep	Sleep
5	AA time out	Not time out	Time out
4	Pilots drop out	Not drop out	Drop out
3	AGC mode	Not active	Active
2	EQ	Invalid	Valid
1	Active low pilot	Main low pilot	Backup low pilot
0	Active high pilot	Main high pilot	Backup high pilot

Offset 163: AGC Module High Pilot Frequency (RO)

This offset represents the active high pilot frequency in the unit of 0.1 KHZ.

Offset 167: AGC Module High Pilot Level (RO)

This offset represents the active high pilot level in the unit of 0.1 dBuV.

Offset 169: AGC Module Low Pilot Frequency (RO)

This offset represents the active high pilot frequency in the unit of 0.1 KHZ.

Offset 173: AGC Module Low Pilot Level (RO)

This offset represents the active high pilot level 0.1 dBuV

Offset 162: AGC Module Current Frequency Address Offset (RW)

This offset represents the current 10 frequencies' base offset address. Its value should be less than the 11.10 AGC Module Frequency number. And when AGC Module detects AGC Module Frequency Address Offset changed, it should also be updated immediately.

If the AGC Module frequency number is less than or equal to 10, it should always be 0.

Offset 216: AGC Module Setting (RW)

This offset represents the setting information for the AGC module. Refer to the following table for more detailed information.

Bit	Name	Description	
		0	1
7	Spare	0	N/A
6	Spare	0	N/A
5	Spare	0	N/A
4	Spare	0	N/A
3	Spare	0	N/A
1, 2	Control Mode	OFF	ON
0	Spare	0	N/A

Control Mode	Bit 2	Bit 1
STANDBY	0	0
AA	0	1
Fixed Gain	1	0
AGC	1	1

Note: When set to AA mode, AMP runs once AA operation and after that AMP will clear AA mode automatically.

Offset 167: AGC Module High Pilot Level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the high measured frequency level.

Offset 163: AGC Module Backup High Pilot Frequency (RW)

This offset is a 4 byte coded software number MSB first LSB last and in the unit of 0.1 KHZ. It stores the backup high measured frequency.

Offset 227: AGC Module backup high pilot level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0. 1 dBuV. It stores the backup high measured frequency level.

Offset 173: AGC Module Low Pilot Level (RW)

This offset is a 2 byte coded software number MSB first LSB last and in the unit of 0.1 dBuV. It stores the low measured frequency level.

Offset 241: AGC Module Cable temperature (RW)

value	0	1	2	3	4	5	6	7	8	9~254	255
Temperature(℃)	-20	-10	0	10	20	30	40	50	60	not used	auto

Note: When the value is 0~8, it is working in manual temperature compensation mode. If it is 255, it is working in auto temperature compensation mode.

Offset 243: Product Year (RO)

This offset is a big-edian 2 bytes number. It stores the product year, e.g. 2011.

Offset 245: Product Month (RO)

This offset is a one byte number. It stores the product month, e.g. 09.

- **Offset 246: Product Day (RO)**

This offset is a one byte number. It stores the product day, e.g. 09.

- **Offset 247: PCBA Part Number (RO)**

This offset is a 3 byets big-edian number. It stores the PCB part number, e.g. 4029498.

- **Offset 250: PCBA Revision Number (RO)**

The first byte of this offset represents ASCII number "_', and the second byte stores the ACS II letter, e.g. "_A".

For Information

Support Telephone Numbers

This table lists the Technical Support and Customer Service numbers for your area.

Region	Centers	Telephone and Fax Numbers
North America	Cisco Services Atlanta, Georgia United States	For *Technical Support*, call: Toll-free: 1-800-722-2009 Local: 678-277-1120 (Press **2** at the prompt) For *Customer Service*, call: Toll-free: 1-800-722-2009 Local: 678-277-1120 (Press **3** at the prompt) Fax: 770-236-5477 E-mail: customer-service@cisco.com
Europe, Middle East, Africa	Belgium	For *Technical Support*, call: Telephone: 32-56-445-197 or 32-56-445-155 Fax: 32-56-445-061 For *Customer Service*, call: Telephone: 32-56-445-444 Fax: 32-56-445-051 E-mail: service-elc@cisco.com
Japan	Japan	Telephone: 81-3-5908-2153 or +81-3-5908-2154 Fax: 81-3-5908-2155
Korea	Korea	Telephone: 82-2-3429-8800 Fax: 82-2-3452-9748 E-mail: songk@cisco.com
China (mainland)	China	Telephone: 86-21-2401-4433 Fax: 86-21-2401-4455 E-mail:repaircentercn@external.cisco.com
All other Asia-Pacific countries & Australia	Hong Kong	Telephone: 852-2588-4746 Fax: 852-2588-3139 E-mail: support.apr@sciatl.com
Brazil	Brazil	Telephone: 11-55-08-9999 Fax: 11-55-08-9998 E-mail: fattinl@cisco.com or ecavalhe@cisco.com

Region	Centers	Telephone and Fax Numbers
Mexico, Central America, Caribbean	Mexico	For *Technical Support*, call: Telephone: 52-3515152599 Fax: 52-3515152599 For *Customer Service*, call: Telephone: 52-55-50-81-8425 Fax: 52-55-52-61-0893
All other Latin America countries	Argentina	For *Technical Support*, call: Telephone: 54-23-20-403340 ext 109 Fax: 54-23-20-403340 ext 103 For *Customer Service*, call: Telephone: 770-236-5662 Fax: 770-236-5888 E-mail: keillov@cisco.com

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