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| **Communication Protocol Document**  **for SSPA 9820303800**  **Customer P/N: PSP7051011** | | |
| **Engineering Approval** | **Date** | C:\Users\amit_m\Desktop\LOGOs\LOGO-KRATOS_GMI_EYAL.jpg |
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| **Customer Approval** | **Date** |
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# Scope

The purpose of this document is to detail the serial communication protocol used for controlling the SSPA 303800 in debug and calibration mode from a PC through a GUI.

# Relevant Documents

Customer specification – PSP7051011 rev A

# Communication Protocol

## Introduction

The host PC communicates with the SSPA through a standard UART protocol carrying Eyal proprietary protocol frame.

## Hardware definitions

The communication protocol between PC and SSPA is a standard UART protocol using Half-duplex, 8 data bits, 1 stop bit, no parity. Baud rate is: 38400.

The SSPA is a slave and the PC is the master. All communications will be initiated by the master.

Support for two simultaneous communication ports is required to be able to communicate with both SSPA and simulator at the same time

## Frame structure

The frame is constructed from 10 header bytes then the variable length data payload and completed with a checksum byte.

The data length must not exceed the 2k.

The header structure begins with a preamble byte, which is project proprietary. For this project the preamble is 0x23 (S). The preamble is followed by a command byte which is described in the following tables. The next two bytes are the length of the data. Next comes the data which can be up to 216 – 1 bytes long and then the frame ends in a checksum byte. The checksum is the result of the XOR of all bytes in the frame.

Tx frame:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| BYTES | 1 | 1 | 2 | 1 | n |  | 1 |
|  | 0x23 | CMD | LENGTH | TD0 | … | TDn | CHK |

Rx frame:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| BYTES | 1 | 1 | 2 | 1 | n |  | 1 |
|  | 0x23 | CMD | LENGTH | RD0 | … | RDn | CHK |

Figure 1: Serial frame structure

## Error codes

The target will return an error code in the CMD field when an error occurs. The following error codes are supported:

|  |  |  |
| --- | --- | --- |
| **Command** | **Code** | **Remarks** |
| Header error | 0xF0 |  |
| Command error | 0xF1 |  |
| Checksum error | 0xF2 |  |
| Data error | 0xF3 |  |
| Execution Error | 0xF4 |  |
| Time-out Error – Type 1 | 0xF5 |  |
| Time-out Error – Type 2 | 0xF6 |  |
| Time-out Error – Type 3 | 0xF7 |  |
| Message length error | 0xF8 |  |
| Data length | 0xF9 |  |
|  |  |  |
|  |  |  |
| Reserved | 0xFB |  |
| Reserved | 0xFC |  |
| Reserved | 0xFD |  |
| Reserved | 0xFE |  |
| Reserved | 0xFF |  |

# Commands

## Commands list

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Group** | **Command** | **Function** | **Direction** | **Remarks** |
| SSPA | 0x00 | Get ID | Read | 0x12 – System. |
| SSPA | 0x01 | Get software version | Read | Not implemented. Returns 0. |
| SSPA | 0x02 | Get firmware version | Read |  |
| SSPA | 0x03 | Get hardware version | Read |  |
| SSPA | 0x05 | Get serial number | Read |  |
| SSPA | 0x11 | Get Status | Read |  |
| SSPA | 0x25 | Get discrete status | Read | Not operational status |
| SSPA | 0x26 | Set PSU output Voltage | Write |  |
| SSPA | 0x27 | Set VVA Attenuation | Write |  |
| SSPA | 0x29 | Set frequency band | Write |  |
| SSPA | 0x30 | Get PSU index | Read |  |
| SSPA | 0x31 | Get VVA index | Read |  |
| SSPA | 0x33 | Set DCA Bus mode | Write |  |
| SSPA | 0x34 | Set fine tune Bus mode | Write |  |
| SSPA | 0x35 | Set Debug Mode | Write | 00 (Default) – input discrete ON, ADC ON.  01 –input discrete ON, ADC OFF (synthetic).  10- input discrete OFF (synthetic), ADC ON.  11- input discrete OFF (synthetic), ADC OFF (synthetic). |
| SSPA | 0x36 | Set ADC Debug Mode | Write | Default (0) – off, 1 – On. |
| SSPA | 0x37 | Get table Indexes | Read |  |
| SSPA | 0x38 | Set DC4 mode | Write | Default (0) – off, 1 – On. |
| SSPA | 0x39 | CAL\_SAR control | Write | 00- ISO, 01- J5 ON, 10-J4 ON, 11- NA. |
| SSPA | 0x40 | Set ADC values in debug mode | Write |  |
| SSPA | 0x70 | Read FLASH | Read | Page 0, 1 or 2  Y is any HEX VAL |
| SSPA | 0x71 | Write Flash | Write | Page 0, 1 or 2.  Y is any HEX VAL |
| SSPA | 0x72 | Erase FLASH | Erase | 1 - Erase |
| Simulator | 0x80 | Get ID | Read | 0x12 – System. 0x34 – Sim. |
| Simulator | 0x81 | Get software version | Read | Not implemented. Returns 0. |
| Simulator | 0x82 | Get firmware version | Read |  |
| Simulator | 0x83 | Get hardware version | Read |  |
| Simulator | 0x85 | Get serial number | Read |  |
| Simulator | 0x90 | Set TxEnv params |  |  |
| Simulator | 0x91 | Set TxEnv enable. |  |  |
| Simulator | 0x92 | Get Simulator Status |  |  |
| Simulator | 0x93 | Set Int\_Set\_Preserve |  |  |
| Simulator | 0x94 | Set Tx\_strobe |  | Need to synchronize with TxEnv, Data change (DCA, FREQ, FT, DC4) and Preserve. |
| Simulator | 0x95 | Set Fine Tune level |  | 4 bits output: 6..13 for 46…44.6dBm |
| Simulator | 0x96 | Set FREQ Band |  |  |
| Simulator | 0x97 | Set DCA Dis. |  | 5 bits output for 0 to 21 |
| Simulator | 0x98 | Set GP params |  |  |
| Simulator | 0x99 | Set GP en. |  |  |
| Simulator | 0x9A | Set RF Gen. params |  |  |
| Simulator | 0x9B | Set RF Gen. en. |  |  |
| Simulator | 0x9C | Set SEU\_Recover |  | Debug only |
| Simulator | 0x9D | Set Sync Tx-Strobe enable |  | Synchronized |
| Simulator | 0x9E | Get Thermal supervisor temp | Read | I2C address 0x48 |
| Simulator | 0x9F | Set DC4 discrete | Write | Default (0) – off, 1 – On. |
| Simulator | 0xA0 | Set CAL\_SAR control | Write | 00- ISO, 01- J5 ON, 10-J4 ON, 11- NA. |
| Simulator | 0xA1 | Set Tx\_OVT\_Check | Write | 0- enable, 1- disable |

## 

## Details command description

### Standard commands

#### Get ID

|  |  |  |
| --- | --- | --- |
| Command | 0x00 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA | NA |
| RX data length (bytes) | 2 | |
| RX data structure |  |  |
| Description | Get System ID | |
| Notes | 0x12 - System | |

#### Get Software Version

|  |  |  |
| --- | --- | --- |
| Command | 0x01 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 10 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes | Not Available | |

#### Get Firmware Version

|  |  |  |
| --- | --- | --- |
| Command | 0x02 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 10 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes |  | |

#### Get Hardware Version

|  |  |  |
| --- | --- | --- |
| Command | 0x03 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 10 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes |  | |

#### Get Serial Number

|  |  |  |
| --- | --- | --- |
| Command | 0x04 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 4 | |
| RX data structure | Serial number | 2 byte |
| Description | Retrieves serial number | |
| Notes |  | |

### System Commands

#### Get Status

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x11 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 0 | |  |
| TX data structure | NA | NA |  |
| RX data length (bytes) | 46 | |  |
| RX data structure | THERM\_VPTAT(temperature)  Main temperature index  CS\_5V (5V current)  CS\_28V (28V current)  CS\_9V(9V current)  Vdd\_28V  Vdd\_9V  Vdd\_5V  Vdd\_4V  Vgg\_N5V  DETECTOR voltage  PRM\_ temperature  CS\_48V (48V current)  VIN\_F (48V filtered voltage)  Inrush\_48V(unfiltered voltage)  VTM\_TM (VTM temperature)  PSU temperature  Pulse width  Pulse period  Freq. bit (input to SSPA)  FT bit (input to SSPA)  DCA bit (input to SSPA)  CAL\_SAR bit (input to SSPA) | 2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte | 12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  16 bit – 100nS ticks  16 bit – 100nS ticks  4 bit  5 bit  6 bit  2 bit |
| Description | Get System monitoring status | |  |
| Notes | 0x12 – System  Conversion formulas:  TBD | | |

#### Get Discrete Status – Bus mode

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x25 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 0 | |  |
| TX data structure | NA |  |  |
| RX data length (bytes) | 1 | |  |
| RX data structure | 5 Discrete status  Ready count  Int. under voltage count  Int. over voltage count  Protection count  SEU event count | 1 byte  bit 0  bit 1  bit 2  bit 3  bit 4 | 5 bit (LSB) |
| Description | Get system 5 discrete status via bus-mode | |  |
| Notes |  | | |

#### NaN in T.E

#### Set PSU Output Voltage

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x26 - ? | |  |
| Operation | Write | |  |
| TX data length (bytes) | 8 | |  |
| TX data structure | Vdd\_28V  Vdd\_9V  Vdd\_5V  Vdd\_4V | 2 byte DL DM  2 byte DL DM  2 byte DL DM  2 byte DL DM | 10 bit  10 bit  10 bit  10 bit |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set PSU output voltage using DAC | |  |
| Notes |  | |  |

#### Set VVA Attenuation

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x27 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 2 | |  |
| TX data structure | Attenuation | DL DM | 10 bit – 0-3.3V |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set RF VVA attenuation using DAC | |  |
| Notes |  | |  |

#### Set DCA with Bus Mode

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x33 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 2 | |  |
| TX data structure | DCA value | DL DM | (DCA1 byte 0, DCA2 byte 1) |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set Fine-Tune value using bus-mode | | debug only |
| Notes |  | |  |

#### Set System Mode

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x35 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 2 | |  |
| TX data structure | Val | DL DM |  |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set system to open loops for calibration | | debug only |
| Notes | 00 (Default) – input discrete ON, ADC ON.  01 –input discrete ON, ADC OFF (synthetic).  10- input discrete OFF (synthetic), ADC ON.  11- input discrete OFF (synthetic), ADC OFF (synthetic). | | |

#### Set ADC System Mode

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x36 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 2 | |  |
| TX data structure | Val | DL DM |  |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set system ADCs to debug mode | | debug only |
| Notes | Default (0) - Operational. 1 – Debug. | | |

#### Get System Table Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x37 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 0 | |  |
| TX data structure | NA |  |  |
| RX data length (bytes) | 23 | |  |
| RX data structure | DCA index  Fine Tune index  Frequency index  VVA temperature index  VVA temperature TBL value  DCA offset (VVA) value  Fine Tune offset (VVA) value  Saturation offset (VVA) value  VVA cumulative value  PSU cumulative value  PSU Fine-Tune offset  PSU temperature value  DCA1 value  DCA1 value | 1 byte  1 byte  1 byte  1 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  1 byte  1 byte | 8 bit  8 bit  8 bit  8 bit  10 bit  10 bit  10 bit  16 bit  16 bit  16 bit  16 bit  16 bit  5 bits  5 bits |
| Description | Get Tables index values for debugging | |  |
| Notes |  | | |

#### Set DC4 ON and OFF

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x38 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | DC4 mode |  | 1 bit –("0" DC4 OFF, "1" DC4 ON) |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set DC4 (CW operation) ON and OFF | |  |
| Notes |  | |  |

#### Control CAL\_SAR switches

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x39 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | CAL\_SAR | DL DM | 2 bits –  "00" ALL OFF  "01" J5 ON, J4 OFF  "10" J4 ON, J5 OFF  "11" NA |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Switches control for J4 and J5 outputs | |  |
| Notes |  | |  |

#### Set ADC value in debug mode

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x40 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 44 | |  |
| TX data structure | THERM\_VPTAT(temperature)  CS\_5V (5V current)  CS\_28V (28V current)  CS\_9V(9V current)  Vdd\_28V  Vdd\_9V  Vdd\_5V  Vdd\_4V  Vgg\_N5V  DETECTOR voltage  PRM\_ temperature  CS\_48V (48V current)  VIN\_F (48V filtered voltage)  Inrush\_48V(unfiltered voltage)  VTM\_TM (VTM temperature)  PSU temperature  Pulse width  Pulse period  Freq. bit (input to SSPA)  FT bit (input to SSPA)  DCA bit (input to SSPA)  CAL\_SAR bit (input to SSPA) | 2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte  2 byte | 12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  12 bit  16 bit – 100nS ticks  16 bit – 100nS ticks  4 bit  5 bit  6 bit  2 bit |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set System monitoring status (debug mode) | |  |
| Notes | 0x40 – System  Conversion formulas:  TBD | | |

#### Read Flash

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x70 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 2 | |  |
| TX data structure |  | PG |  |
| RX data length (bytes) | Up to 264 | |  |
| RX data structure | 00  01  ..  LL | 1 byte  1 byte  1 byte  1 byte |  |
| Description | Read data from system flash | |  |
| Notes |  | | |

#### Write Flash

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x71 | |  |
| Operation | Write | |  |
| TX data length (bytes) | Up to 264 | |  |
| TX data structure | PG  00  ..  LL | 1 byte  1 byte  1 byte  1 byte |  |
| RX data length (bytes) | 00 | |  |
| RX data structure | NA |  |  |
| Description | Read data from system flash | |  |
| Notes |  | | |

#### Read Flash

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x72 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | EF | 1 byte | 1 – Erase Flash |
| RX data length (bytes) | 00 | |  |
| RX data structure | NA |  |  |
| Description | Erase system flash | |  |
| Notes |  | | |

### Simulator Standard commands

#### Get Simulator ID

|  |  |  |
| --- | --- | --- |
| Command | 0x80 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA | NA |
| RX data length (bytes) | 2 | |
| RX data structure |  |  |
| Description | Get System ID | |
| Notes | 0x34 - System | |

#### Get Simulator Software Version

|  |  |  |
| --- | --- | --- |
| Command | 0x81 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 5 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes | Not Available | |

#### Get Simulator Firmware Version

|  |  |  |
| --- | --- | --- |
| Command | 0x82 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 5 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes |  | |

#### Get Simulator Hardware Version

|  |  |  |
| --- | --- | --- |
| Command | 0x83 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 5 | |
| RX data structure | Major version  Minor version  Day  Month  Year | 2 byte  2 byte  2 byte  2 byte  2 byte |
| Description | Retrieves version structure | |
| Notes |  | |

#### Get Simulator Serial Number

|  |  |  |
| --- | --- | --- |
| Command | 0x85 | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA |  |
| RX data length (bytes) | 2 | |
| RX data structure | Serial number | 2 byte |
| Description | Retrieves serial number | |
| Notes |  | |

### Simulator Commands

#### Set TX-INHIBIT Params

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x90 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 6 | |  |
| TX data structure | Pulse width  Pulse period  Delay  Strobe\_en  Int\_set\_preserve\_en | 2 byte  2 byte  2 byte | 100n ticks |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set Modulation pulse -generator pulse-period, pulse-width and delay | | |
| Notes |  | | |

#### Set TX-INHIBIT Enable

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x91 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | EN | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set modulation enable | | |
| Notes |  | | |

#### Get Simulator Status

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x92 | |  |
| Operation | Read | |  |
| TX data length (bytes) | 0 | |  |
| TX data structure | NA |  |  |
| RX data length (bytes) | 6 | |  |
| RX data structure | Ready count  Int. under voltage count  Int. over voltage count  Protection count  SEU event count  Tx\_OVT\_Hazard | 1 byte  1 byte  1 byte  1 byte  1 byte  1 byte | LSB “1” -ready  8 bit – “1” OK  8 bit – “1” OK  8 bit – “0” OK  8 bit – “0” OK  8 bit – “1” OK |
| Description | Get system 6 discrete status via simulator | |  |
| Notes |  | | |

NaN in T.E

#### Set Int\_Set\_Preserve

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x93 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | EN | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Applying values for temperature compensation | | |
| Notes | 0 –changes are forbidden, 1 – allow changes | | |

#### Set TX-STROBE

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x94 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | ST | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set Tx-Strobe (200nS pulse) | | |
| Notes |  | | |

#### Set OUT-TUNE

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x95 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | ST | 1 byte | 4 bit |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set output power word (through simulator) | | |
| Notes | 0110 – for power 46 dBm, 1101 – for 44.6dBm | | |

Check Formula -

sprintf ( szFormatedString, "UUT Init :: Set Fine tune Value %0.1lfdB", lfDB\_FineTuneValue );

LOG( CLB\_LINE\_NORMAL, szFormatedString );

ucFineTuneVal = ( unsigned char )((( 39.7 - lfDB\_FineTuneValue ) \* 5.0 ) + 4.0 );

SSPAMO\_2913\_Set\_FineTuneAttenuator( hUnitUnderTest, lfDB\_DelayReceive, ucFineTuneVal );

#### Set Freq. Band

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x96 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | FR | 1 byte | 3 bit |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set Freq. Band (through simulator) | | |
| Notes | 8 Freq. bands according to flash table | | |

#### Set DCA Discretes

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x97 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | DCA | 1 byte | 5 bit |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set DCA output power through simulator | | |
| Notes | 20 values available in total 0, 3…21 and 32 (max. Att.) | | |

T.E – No Change

#### Set GP Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x98 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 6 | |  |
| TX data structure | Pulse width  Pulse period  Delay | 2 byte  2 byte  2 byte | 100n ticks |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set GP internal pulse -generator pulse-period, pulse-width and delay | | |
| Notes |  | | |

#### Set GP Enable

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x99 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | EN | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set GP internal pulse-generator enable | | |
| Notes |  | | |

#### Set RF Gen. Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x9A | |  |
| Operation | Write | |  |
| TX data length (bytes) | 6 | |  |
| TX data structure | Pulse width  Pulse period  Delay | 2 byte  2 byte  2 byte | 100n ticks |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set RF Gen. internal pulse -generator pulse-period, pulse-width and delay | | |
| Notes |  | | |

#### Set RF Gen. Enable

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x9B | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | EN | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set RF Gen. internal pulse-generator enable | | |
| Notes |  | | |

#### Set SEU Recover

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x9C | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | RC | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set SEU recover | | |
| Notes | TBD | | |

#### Set Synchronized Tx-Strobe

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x9D | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | Sync Tx-Strobe | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set on/off Tx-Strobe sync. to Tx-Inhibit (300 nS before) | | |
| Notes |  | | |

#### Get Thermal Supervisor

|  |  |  |
| --- | --- | --- |
| Command | 0x9E | |
| Operation | Read | |
| TX data length (bytes) | 0 | |
| TX data structure | NA | NA |
| RX data length (bytes) | 2 | |
| RX data structure |  |  |
| Description | Get thermal supervisor - two’s-complement 9 bits with 0.5°C/bit | |
| Notes | Sign extension will be implemented | |

#### Set Simulator discrete DC4

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0x9F | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | Set DC4 mode On/Off | 1 byte | 0 – off, 1- on |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Set DC4 discrete on/off | | |
| Notes | \*In order to operate SSPA in CW mode it is required to set DC4 On and Fine tune 1111 | | |

#### Simulator discrete CAL SAR control

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0xA0 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 0 | |  |
| TX data structure | CAL SAR | 00- ISO, 01- J5 ON, 10-J4 ON, 11- NA. |  |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Reset of SEU event | | |
| Notes |  | | |

#### Simulator discrete Tx\_OVT\_Check control

|  |  |  |  |
| --- | --- | --- | --- |
| Command | 0xA1 | |  |
| Operation | Write | |  |
| TX data length (bytes) | 1 | |  |
| TX data structure | Tx\_OVT\_Check | 1 byte | 0 – ON, 1- OFF |
| RX data length (bytes) | 0 | |  |
| RX data structure | NA |  |  |
| Description | Simulates the SSPA over temperature hazard | | |
| Notes |  | | |