BRF6300 3.11

HCI Vendor Specific Commands

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Author Name	Description	Rev.	Date
Sean Block	Document creation Added HCI_VS_Set_UART_HCI_Baudrate_Island3 Added HCI_VS_BTSPI_Configuration Added HCI_VS_ HCILL_Parameters Added HCI_Set_Num_Of_HCI_Commands Added HCI_VS_Write_CODEC_Configue_Enhanced_Island3 Updated HCI_VS_Sleep_Mode_Configurations protocol mode values. Write_Wlan_Configuration Enable Mode parameters updated. ARMIO command set updated IO range. Write_GSM_Configuration IRQ wakeup type parameter added.	0.1	
Sean Block	10.6 : HCI_VS_Write_ I2C_Register_Enhanced 9.6 : Updated HCI_VS_Write_Pull_Resistor_Island3 parameters 9.5 : Updated HCI_VS_Configure_Clock_Sharing command parameters 8.25 : Updated HCI_VS_H5_parameters command parameters 8.17 : Updated HCI_VS_Read_Patch_Version returned fields 8.13 : Removed HCI_VS_Set_Just_Wakeup_Time	0.11	22.03.2006
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Abstract

This document lists the Texas Instruments vendor specific HCI (Host Controller Interface) commands and events, which are supported by the current release of the BRF6300.

TI vendor specific commands extend the functionality and flexibility provided by the HCI spec.

As new Firmware releases become available, new commands are added, providing extended functionality. Therefore, the commands are listed by Firmware number, for ease of use.

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1. Introduction

This document lists the Texas Instruments vendor specific HCI (Host Controller Interface) commands and events, which are supported by the current release of the BRF6150 PG 2.12 FW version 3.0.48 (unless otherwise specified).

TI vendor specific commands extend the functionality and flexibility provided by the HCI spec.

As new Firmware releases become available, new commands are added, providing extended functionality. Therefore, commands are listed by Firmware number, for ease of use.

Note: for all the commands that include negative numbers they should be written in 2's complement format.

1.1 How to read the internal FW version

The internal ROM SW version can be read by the standard HCI command Read_Local_Version_Information.
The internal ROM SW version is of the form: X.Y.Z; for example : the BRF6150 2.12 current SW version is 3.0.48.
The last return parameter, **LMP Subversion,** includes the SW version number as described below :

Bits 0-6 : FW Internal Version Freeze (21)
Bits 7-9,15 : Software Version (1.0)
Bits 10-14 : Project Name (for BRF6300 = 4 , BRF6150 = 3, BRF6100 = 2,)

Basically what will change between device versions are the first and second fields (FW Internal Version Freeze and SW Version).

2. Terms & Abbreviations

Abbreviation /Term	Meaning / Explanation
Island 1	BRF6100 – TI's Bluetooth® Single Chip
Island 2	BRF6150 – TI's Bluetooth® Single Chip
Island 3	BRF6300 – TI's Bluetooth® Single Chip
FW	Firmware
Host	The host processor which controls the baseband controller
HCI	Host Controller Interface
HW	Hardware
SW	Software

Table 1: Terms & Abbreviations

3. Reference Documents

Number	Document	Reference
1.	Bluetooth® Specification 1.1	BT Spec 1.1
2.	Bluetooth® Specification 1.2	BT Spec 1.2 D3 R2, April 1 2003

Table 2: Reference Documents

4. Host Interface

The BRF6300 FW supports UART HCI transport.

The protocol used complies with the Bluetooth HCI UART Transport layer specifications (H4).

4.1 UART Communication Settings

The following table describes the required settings:

Name	Setting
Baud rate	Default=115.2 Kbps can be changed by using HCI_VS command
Data bit	8
Parity bit	No Parity
Stop bit	1 stop bit
Flow control	RTS/CTS

Table 3: UART Communication Settings

5. HCI Packets Format

The HCI packets are transmitted and received in bytes, LSB first, using the following packet format:

First Byte	Last Byte
Packet Type Indicator (1byte)	HCI Packet (Variable length)

Table 4: HCI Packet Format

The Packet Types are described in the following table:

HCI Packet Type	Packet Type Indicator	Direction
HCI Command Packet	0x01	Host to baseband controller
HCI ACL Data Packet	0x02	Both
HCI SCO data Packet	0x03	Both
HCI Event Packet	0x04	Baseband controller to host

Table 5: HCI Packet Types

The HCI packets are described in the following sections. For further information refer to the Bluetooth specifications.

5.1 Command Packet

The command packet is used to transfer command data from the host to the baseband controller. The packet is used to transfer both standard and vendor specific HCI commands. The packet structure is described in the following figure:

First					Last
OCF	OGF	Length	Para0	Para1	- - - - - -

OCF:	10 Bit opcode command field, range: 0x00-0x3F (0x3E reserved for Bluetooth logo testing and 0x3F reserved for vendor-specific debug commands)
OGF:	6 Bit opcode group field.
Length:	Lengths of all of the parameters contained in this packet measured in bytes. (N.B.: total length of parameters, not number of parameters)
Para0,...ParaN:	Each command has a specific number of parameters associated with it. These parameters and the size of each of the parameters are defined for each command. Each parameter is an integer number of bytes in size.

Table 6: HCI Command Packet Structure

5.2 Event Packet

The event packet is used to transfer event data from the baseband controller to the host. The packet is used to transfer both standard and vendor specific HCI events. The packet structure is described in the following figure:

First				Last
Event Code	Length	Para0	Para1	- - - - - - -

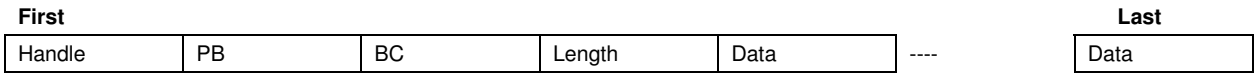
Event Code:	Each event is assigned a 1-Byte event code used to uniquely identify different types of events. Range: 0x00-0xFF (The event code 0xFF is reserved for the event code used for vendor-specific debug events. In addition, the event code 0xFE is also reserved for Bluetooth Logo Testing)

Length:	Lengths of all of the parameters contained in this packet measured in bytes. (N.B.: total length of parameters, not number of parameters)
Para0,...ParaN:	Each event has a specific number of parameters associated with it. These parameters and the size of each of the parameters are defined for each event. Each parameter is an integer number of bytes in size.

Table 7: HCI Event Packet Structure

5.3 ACL Data Packet

The ACL packet is used to transfer data to and from the baseband controller. The ACL packet structure is described in the following figure:



Handle:	12 Bit Connection Handle to be used for transmitting a data packet or segment. Range: 0x0000-0x0EFF (0x0F00 - 0x0FFF Reserved for future use)
PB:	2 Bit Packet Boundary Flag:
	00 - Reserved for future use
	01 - Continuing fragment packet of Higher Layer Message
	10 - First packet of Higher Layer Message (i.e. start of an L2CAP packet)
	11 - Reserved for future use
BC:	2 bit Broadcast Flag (in packet from baseband controller to Host Controller):
	00 - No broadcast (point-to-point).
	01 - Active Broadcast: packet is sent to all active slaves - Not support by Typhoon.
	10 - Piconet Broadcast: packet is sent to all slaves, including slaves in 'Park' mode.
	11 - Reserved for future use
Length:	2 Byte. Length of data measured in bytes.
Data:	ACL Data.

Table 8: HCI ACL Packet Structure

6. HCI Supported Commands and Events

This section lists all the HCI commands and events (BT spec 1.2) and whether they are supported in the current release.

6.1 Standard HCI Commands Status

The following table lists the standard HCI commands as defined in the Bluetooth protocol specifications:

Command name	Supported
Link Control Commands	
HCI_Inquiry	Yes
HCI_Inquiry_Cancel	Yes
HCI_Periodic_Inquiry_Mode	Yes
HCI_Exit_Periodic_Inquiry_Mode	Yes
HCI_Create_Connection	Yes
HCI_Disconnect	Yes
HCI_Create_Connection_Cancel	Yes
HCI_Add_SCO_Connection	Yes
HCI_Accept_Connection_Request	Yes
HCI_Reject_Connection_Request	Yes
HCI_Link_Key_Request_Reply	Yes
HCI_Link_Key_Request_Negative_Reply	Yes
HCI_PIN_Code_Request_Reply	Yes
HCI_PIN_Code_Request_Negative_Reply	Yes
HCI_Change_Connection_Packet_Type	Yes
HCI_Authentication_Requested	Yes
HCI_Set_Connection_Encryption	Yes
HCI_Change_Connection_Link_Key	Yes
HCI_Master_Link_Key	No
HCI_Remote_Name_Request	Yes
HCI_Remote_Name_Request_cancel	Yes
HCI_Read_Remote_Supported_Features	Yes
HCI_Read_Remote_Extended_Features	Yes
HCI_Read_Remote_Version_Information	Yes
HCI_Read_Clock_Offset	Yes
HCI_Read_LMP_Handle	Yes
HCI_Setup_Synchronous_Connection	Yes
HCI_Accept_Synchronous_Connection_Request	Yes
HCI_Reject_Synchronous_Connection_Request	Yes

Link Policy Commands	
HCI_Hold_Mode	Yes
HCI_Sniff_Mode	Yes
HCI_Exit_Sniff_Mode	Yes
HCI_Park_Mode	No
HCI_Exit_Park_Mode	No
HCI_QoS_Setup	Yes
HCI_Role_Discovery	Yes
HCI_Switch_Role	Yes
HCI_Read_Link_Policy_Settings	Yes
HCI_Write_Link_Policy_Settings	Yes
HCI_Read_default_link_policy_settings	Yes
HCI_Write_default_link_policy_settings	Yes
HCI_Flow_Specification	Yes
Host controller and baseband commands	
HCI_Set_Event_Mask	Yes
HCI_Reset	Yes
HCI_Set_Event_Filter	Yes
HCI_Flush	Yes
HCI_Read_PIN_Type	Yes
HCI_Write_PIN_Type	Yes
HCI_Create_New_Unit_Key	No, see note 1
HCI_Read_Stored_Link_Key	Yes
HCI_Write_Stored_Link_Key	Yes
HCI_Delete_Stored_Link_Key	Yes
HCI_Write_local_Name	Yes
HCI_Read_Local_Name	Yes
HCI_Read_Connection_Accept_Timeout	Yes
HCI_Write_Connection_Accept_Timeout	Yes
HCI_Read_Page_Timeout	Yes
HCI_Write_Page_Timeout	Yes
HCI_Read_Scan_Enable	Yes
HCI_Write_Scan_Enable	Yes
HCI_Read_Page_Scan_Activity	Yes
HCI_Write_Page_Scan_Activity	Yes
HCI_Read_Inquiry_Scan_Activity	Yes
HCI_Write_Inquiry_Scan_Activity	Yes

HCI_Read_Authentication_Enable	Yes
HCI_Write_Authentication_Enable	Yes
HCI_Read_Encryption_Mode	Yes
HCI_Write_Encryption_Mode	Yes
HCI_Read_Class_of_Device	Yes
HCI_Write_Class_of_Device	Yes
HCI_Read_Voice_Setting	Yes
HCI_Write_Voice_Setting	Yes
HCI_Read_Automatic_Flush_Timeout	Yes
HCI_Write_Automatic_Flush_Timeout	Yes
HCI_Read_Num_Broadcast_Retransmissions	Yes
HCI_Write_Num_Broadcast_Retransmissions	Yes
HCI_Read_Hold_Mode_Activity	Yes
HCI_Write_Hold_Mode_Activity	Yes
HCI_Read_Transmit_Power_Level	Yes
HCI_Read_Synchronous_Flow_Control_Enable	Yes
HCI_Write_ Synchronous_Flow_Control_Enable	Yes
HCI_Set_Host_Controller_To_Host_Flow_Control	Yes
HCI_Host_Buffer_Size	Yes
HCI_Host_Number_Of_Completed_Packets	Yes
HCI_Read_Link_Supervision_Timeout	Yes
HCI_Write_Link_Supervision_Timeout	Yes
HCI_Read_Number_Of_Supported_IAC	Yes
HCI_Read_Current_IAC_LAP	Yes
HCI_Write_Current_IAC_LAP	Yes
HCI_Read_Page_Scan_Period_Mode	No
HCI_Write_Page_Scan_Period_Mode	No
HCI_Set_AFH_Host_Channel_Classification	Yes
HCI_Read_Inquiry_Scan_Type	Yes
HCI_Write_Inquiry_Scan_Type	Yes
HCI_Read_Inquiry_Mode	Yes
HCI_Write_Inquiry_Mode	Yes
HCI_Read_Page_Scan_Type	Yes
HCI_Write_Page_Scan_Type	Yes
HCI_Read_AFH_Channel_Assessment_Mode	Yes
HCI_Write_AFH_Channel_Assessment_Mode	Yes

Informational Parameters	
HCI_Read_Local_Version_Information	Yes
HCI_Read_Local_Supported_Commands	Yes
HCI_Read_Local_Supported_Features	Yes
HCI_Read_local_Extended_Features	Yes
HCI_Read_Buffer_Size	Yes
HCI_Read_Country_Code	Yes
HCI_Read_BD_ADDR	Yes
Status Parameters	
HCI_Read_Failed_Contact_Counter	Yes
HCI_Reset_Failed_Contact_Counter	Yes
HCI_Read_Link_Quality	Yes
HCI_Read_RSSI	Yes
HCI_Read_AFH_Channel_Map	Yes
HCI_Read_Clock	Yes
Testing Commands	
HCI_Read_Loopback_Mode	Yes
HCI_Write_Loopback_Mode	Yes
HCI_Enable_Device_Under_Test_Mode	Yes

Table 9: Supported HCI commands

Notes:

1. It is mandatory for a Bluetooth device to support either a Unit key or a Combination key during the paring process. The BRF6150 supports the combination key, which is the stronger option.
Spec 1.2 specifically mentions that: 'The use of unit keys is deprecated since it is implicitly insecure.' (section 4.2.2.4 - creation of the link key).

When the host initiates the command 'change connection link key', both Bluetooth devices will be forced to change their link key (combination key) over the specific handle.

6.2 Standard HCI Events Status

The following table lists the standard HCI events as defined in the Bluetooth protocol specifications:

Events	Supported
Inquiry Complete event	Yes
Inquiry Result event	Yes
Connection Complete event	Yes
Connection Request event	Yes
Disconnection Complete event	Yes
Authentication Complete event	Yes
Remote Name Request Complete event	Yes
Encryption Change event	Yes
Change Connection Link Key Complete event	Yes
Master Link Key Complete event	No
Read Remote Supported Features Complete event	Yes
Read Remote Version Information Complete event	Yes
QoS Setup Complete event	Yes
Command Complete event	Yes
Command Status event	Yes
Hardware Error event	Yes
Flush Occurred event	Yes
Role Change event	Yes
Number Of Completed Packets event	Yes
Mode Change event	Yes
Return Link Keys event	Yes
PIN Code Request event	Yes
Link Key Request event	Yes
Link Key Notification event	Yes
Loopback Command event	Yes
Data Buffer Overflow event	Yes
Max Slots Change event	Yes
Read Clock Offset Complete event	Yes
Connection Packet Type Changed event	Yes
QoS Violation event	Yes
Page Scan Repetition Mode Change event	No (see note 1)
Flow Specification Complete event	Yes
Inquiry result with RSSI event	Yes
Read Remote Extended Features Complete Event	Yes

Events	Supported
Synchronous Connection Complete Event	Yes
Synchronous Connection Change Event	Yes

Table 10: Supported HCI Events

Notes:
1. The parameter Page_Scan_Repetition_Mode is supported, including the value R0, in all relevant HCI commands. Also, since there is a relation between the page trains repetition and this parameter, value R0 is handled according to spec in the page process too.

The only reason why R0 marked as not supported is that during R0, the page scan should open the RX correlator infinitely (pagescan interval = pagescan window). Actually in the BRF6300 the corelator will close and open between the page scan intervals.

This behavior can be seen on logic analyzer and can be interpreted that the R0 is not properly implemented - even that the implementation does the R0 perfectly, only with this small implementation limitation.

7. Obsolete HCI Vendor Specific Commands

The following list for HCI Vendor Specific commands are obsolete and are not supported in the BRF6300 ROM device. The obsolete vendor specific commands have been removed on account of irrelevence or have been replaced by advanced commands, supporting extra features in the BRF6300 device.

7.1 Obsolete Command list

- HCI_VS_Read_CODEC_Configuration_Island2 (0xFE09)
- HCI_VS_RF_Power_Control (0xFF1D)
- HCI_VS_Set_RF_Power_Table_Value (0xFF66)
- HCI_VS_RF_Tester_Con_TX (0xFF11)
- HCI_VS_RF_Tester_Con_RX (0xFF12)
- HCI_VS_ RF_Tester_Packet_TX (0xFF13)
- HCI_VS_RF_Tester_Exit_Test_Mode (0xFF14)
- HCI_VS_Read_RF_Register (0xFF60)
- HCI_VS_Write_RF_Register (0xFF61)
- HCI_VS_Set_RF_Trimming_Params (0xFF88)
- HCI_VS_Set_RF_Calibration_Params (0xFF89)
- HCI_VS_Enable_RF_Calibration (0xFF90)
- HCI_VS_Write_RF_S11_Values (0xFE20)
- HCI_VS_Set_RF_Temperature_Offset (0xFE21)
- HCI_VS_set_int_and_ext_Power_Table (0xFE29)
- HCI_VS_Set_Power_Calibration_Matrix (0xFE30)
- HCI_VS_set_int_PA_table_Class2 (0xFE43)
- HCI_VS_Set_RF_Calibration_Voltage_Level (0xFE0B)
- HCI_VS_Set_BBLDO_Trim_Offset (0xFE3F)
- HCI_VS_SET_IPM_VALUES (0xFE3B)
- HCI_VS_WRITE_XTAL_CURRENT_VALUES (0xFE1C)
- HCI_VS_RF_BER_BUILT_IN_SELF_TEST (0xFE19)
- HCI_VS_Set_Pcm_Loopback_Configuration (0xFE27)
- HCI_VS_Write_CODEC_Configuration_Island2 (0xFE08)
- HCI_VS_Long_Buffers_Mode(0xFE02)

7.2 Obsolete Command list – Continued

- HCI_VS_Set_Sleep_Mode (0xFF0C)
- HCI_VS_Set_Settling_Time_Island2 (0xFE0C)
- HCI_VS_Read_Pull_Resistors_Island2 (0xFE18)
- HCI_VS_Write_Pull_Resistors_Island2_Group_1 (0xFE16)
- HCI_VS_Write_Pull_Resistors_Island2_Group_2 (0xFE17)
- HCI_VS_RF_BER_BIST (0xFE19)
- HCI_VS_Host_Report_FREF_Drift (0xFE35)
- Host_Report_FREF_Drift_Over_Temperature
- HCI_VS_Scan_Sync_To_Host (0xFE3E)
- HCI_VS_Write_CODEC_Configuration_Island2 (0xFE08)

8. HCI Vendor Specific Commands – Supported Commands

These sections describe TI vendor specific HCI commands extending the functionality and flexibility provided by the HCI spec.

The commands described in the following section were implemented in the BRF6150 4.0.27 firmware version 2.23, and are also supported by the BRF6300 3.0.

8.1 HCI_VS_Write_BD_ADDR (0xFC06)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_BD_ADDR	0xFC06	New_BD_Addr	Status

Description:

This command sets the device BD address. The BD address should be sent over the UART with the MSB first!

For example the address 12 34 56 78 9A BC should be sent as 01 06 FC 06 12 34 56 78 9A BC.

Command Parameters:

New_BD_Addr: Size: 6 Bytes

Value	Parameter Description
0x000000000000 – 0xFFFFFFFFFFFF	BD address to write

Return Parameters:

Status Size: 1 Byte

Value	Parameter Description
0x00	Command Success
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event.

8.2 HCI_VS_Set_Frequency_Mode (0xFF06)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Frequency_Mode	0xFF06	Frequency Mode Frequency channel	Status

Description:

This command allows changing between normal hoping mode (79 channels Frequency hopping) and stopping the hop sequence to set a single frequency operation.

Default Value:

Frequency Mode = 0x00

Command Parameters:

Frequency Mode: Size: 1 Byte

Value	Parameter Description
0x00	79 Frequency Hopping Mode Reserved
0x01	Reserved
0x02	Reserved
0x03	Single Frequency Mode

Frequency channel Size: 1 Byte

Value	Parameter Description
0x00 to 0x4E (78 Decimal)	Specify frequency channel to use in Single Frequency Mode, field relevant only in Single Frequency Mode

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Success
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event.

8.3 HCI_VS_Get_Frequency_Mode (0xFF07)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Get_Frequency_Mode	0xFF07		Status Frequency Mode Frequency Channel

Description:

This command returns the current Frequency operation mode.

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Success.
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Frequency Mode	Size: 1 Byte
Value	**Parameter Description**
0x00	79 Frequencies Hopping Mode.
0x01	Reserved
0x02	Reserved
0x03	Single Frequency Mode

Frequency Channel	Size: 1 Byte
Value	**Parameter Description**
0x00 to 0x4E (78 Decimal)	Return the frequency channel used in Single Frequency Mode, field relevant only in Single Frequency Mode.

Events Generated:

Command Complete Event.

8.4 HCI_VS_Enable_Automatic_Hold (0xFF56)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Enable_Automatic_Hold	0xFF56	Enable_Automatic_Hold	Status

Description:

This command is used to enable / disable the automatic hold mode. If enabled, the device will automatically (without any request from the host) put the peer devices into hold mode prior to activities such as page, inquiry, etc.

The device issues 'Rescue Beacons' (Broadcast Null) during page and inquiry activities when there are active slaves, in order to keep them synchronized to the piconet.

When device is Master, the rescue beacons mechanism is always enabled. Therefore, the automatic hold feature is disabled by default, but can be enabled using this command.

When device is slave in a piconet, Automatic hold is enabled only on when single slave with voice.

Default Value:

Enable_Automatic_Hold = 0x00 (disabled)

Command Parameters:

Enable_Automatic_Hold: Size: 1 Byte

Value	Parameter Description
0x00	Automatic hold is disabled for all
0x01	Automatic hold is enabled for all
0x02	Automatic hold is enabled only on single slave with voice (default).
0x03	Automatic hold is enabled only to slaves.

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event.

8.5 HCI_VS_Set_QoS_Interval (0xFF33)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_QoS_Interval	0xFF33	Connection_Handle QoS_Interval	Status

Description:

This command is used to set the QOS interval spacing (in frames) between polls.

Default Value:

QoS interval = 0x13 (poll once every 19 frames)

Command Parameters:

Connection_Handle: Size: 2 Bytes

Value	Parameter Description
0x0001 – 0xFFFF	The connection handle number

QoS_Interval: Size: 1 Byte

Value	Parameter Description
0x00	Poll each frame
0x01-0xFF	Number of null/none frames between polls

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.6 HCI_VS_Read_Hardware_Register (0xFF00)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Hardware_Register	0xFF00	Register_Address	Status, Register_Value

Description:

This command returns the value of a specific hardware register. This command is used by TI for determining the values of proprietary registers and is not intended for open use.

Command Parameters:

Register_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Address of register

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Register value Size: 2 Bytes

Value	Parameter Description
0xXXXX	Value of register

Events Generated:

Command Complete Event

8.7 HCI_VS_Write_Hardware_Register (0xFF01)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_Hadrware_Register	0xFF01	Register_Address, Register_Value	Status

Description:

This command is used to assign a value to a hardware register. This command is used by TI for setting proprietary registers and is not intended for open use.

Command Parameters:

Register_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Address of register

Register_Value: Size: 2 Bytes

Value	Parameter Description
0xXXXX	Value to assign

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.8 HCI_VS_Read_Memory (0xFF02)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Memory	0xFF02	Memory_Address, Type	Status, Memory _Value

Description:

This command returns a specific memory address value.

Command Parameters:

Memory_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Legal address in memory

Type Size: 1 Byte

Value	Parameter Description
1	UINT8
2	UINT16
4	UINT32

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Memory_Value: Size: 1 / 2 / 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Any value

Events Generated:

Command Complete Event

8.9 HCI_VS_Write_Memory (0xFF03)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_Memory	0xFF03	Memory_Address, Type, Value	Status

Description:

This command is used to write a value into a specific memory address.

This command for software updates and patches.

Command Parameters:

Memory_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Memory address

Type: Size: 1 Byte

Value	Parameter Description
1	UINT8
2	UINT16
4	UINT32

Value: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	For types 1 and 2 (1 or 2 bytes), the most significant bytes are ignored

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.10 HCI_VS_Read_Memory_Block (0xFF04)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Memory_Block	0xFF04	Start_Memory_Address, Size (in bytes)	Status, Memory_Block_Value

Description:

This command returns a specific memory block value. Texas Instruments uses this command for SW patches and scripts.

Command Parameters:

Start_Memory_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Any legal address

Size (in bytes): Size: 1 Byte

Value	Parameter Description
1-200	Any value between 1-200

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Memory_Block_Value: Size: 1-200 Bytes

Value	Parameter Description
	Value of specified memory block

Events Generated:

Command Complete Event

8.11 HCI_VS_Write_Memory_Block (0xFF05)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Write_Memory_Block	0xFF05	Start_Memory_Address, Size, Values	Status

Description:

This command is used to write a value into a specific memory block address

TI uses this command for SW patches/scripts.

Command Parameters:

Start_Memory_Address: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Any legal address

Size (in bytes): Size: 1 Byte

Value	Parameter Description
1-200	Any value between 1-200

Values: Size: 1 – 200 Bytes

Value	Parameter Description
	Addresses increase from left to right

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.12 HCI_VS_Update_Uart_HCI_Baudrate (0xFF36)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Update_Uart_HCI_Baudrate	0xFF36	UART Baudrate	Status

Description:

This command is used to set the HCI UART baud rate.

Command Parameters:

UART Baudrate: Size: 4 Bytes

Value	Parameter Description
0x00000001- 0xFFFFFFFF	A new UART baud rate (in bits per seconds)

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01 - 0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.13 HCI_VS_Configure_ARMIO (0xFF1A)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Configure_ARMIO	0xFF1A	Port_Number, Port_Direction	Status

Description:

This command is used to determine the direction (Input or Output) of the IO terminals.

Command Parameters:

Port_Number Size: 1 Byte

Value	Parameter Description
0 - 19	The selected IO terminal (0 for IO0, 1 for IO1, etc.)

Port_Direction Size: 1 Byte

Value	Parameter Description
0x00	Direction is output
0x01	Direction is input

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.14 HCI_VS_Read_ARMIO_Port (0xFF1C)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_ARMIO_Port	0xFF1C	ARMIO_Port_Number	Status, Port_Value

Description:

This command is used to read the level of a specific IO terminal.

Command Parameters:

ARMIO_Port_Number Size: 1 Byte

Value	Parameter Description
0 - 19	The selected IO terminal to be read (0 for IO0, 1 for IO1, etc.)

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Port_Value Size: 1 BYTE

Value	Parameter Description
0x00	The input signal is low
0x01	The input signal is high

Events Generated:

Command Complete Event

8.15 HCI_VS_Write_ARMIO_Port (0xFF1B)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_ARMIO_Port	0xFF1B	ARMIO_Port_Number, ARMIO_Port_Level	Status

Description:

This command is used to determine the output level of a specific IO terminal. Note that the selected IO must be first configured to Output (see 8.13)

Command Parameters:

ARMIO_Port_Number Size: 1 Byte

Value	Parameter Description
0 - 19	The selected IO terminal (0 for IO0, 1 for IO1, etc.)

ARMIO_Port_Level Size: 1 Byte

Value	Parameter Description
0x00	Selected IO will be driven low
0x01	Selected IO will be driven high

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.16 HCI_VS_Read_Patch_Version (0xFF22)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Patch_Version	0xFF22	None	Status, PTCR value Patch Versions

Description:

This command is used to get all the internal details and version numbers of the loaded patches.

Remarks:

1. All reserved bits / bytes should be zero.
2. PTCR – Patch Trap Control Register (located at 0x01000030).

The following fields are:

1. Enabled Mask (4 bytes, PCTR bit mask)
2. Main Release Major Number (1 byte)
3. Main Release Minor Number (1 byte)
4. Patch Trap Package ID (1 byte)
5. Patch Trap Package Build Number (1 byte)

It contains a unique identification of the patch package and its correlation to the base SW version that is running on the device, whether it is a ROM or a FLASH device.

The value of the PTCR is set by the Post Patch Load handler, at the end of patch loading. Only the enabled patch functions (a bit mask of the lowest bits) should be one, according to the patch package contents.

Note:

After HW / HCI reset the PTCR equals zero, the patch is erased and therefore the patch version equals zero too. Only after a patch is loaded, the command HCI_VS_Read_Patch_Version will return non-zero values.

Command Parameters:

None

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Failure (See Table 12: List of HCI Error Codes)

Versions	Size: 8 Bytes
Value	**Parameter Description**
Bytes 0-2	Bit mask of active patch traps. Every bit holds the value of the corresponding patch out of the possible 24 traps. The value is read from the PTCR (Page Trap Control Register). For every bit: 0=Patch disabled, 1=Patch enabled.
Byte 3	Reserved E.g. : In a patch trap package that enables patch functions 1, 2 and 3, bytes 0-1 will be 0x0007.
Byte 4	Main **Release Major** Number – the upper byte of the base SW version that the patch package is referred. E.g.: In a patch for SW version 3.0.35, byte 2 will be 0x03.
Byte 5	Main **Release Minor** Number – the lower byte of the base SW version that the patch package is referred. E.g.: In a patch for SW version 3.0.35, byte 3 will be 0x23 (35, the 0 before the 35 is ignored).
Byte 6	Patch Trap **Package ID** – A unique number for the patch package. A patch package contains up to 12 different patch traps. E.g.: In patch package #2, byte 4 will be 0x02.
Byte 7	Patch Trap Package **Build Number** – A unique number for patch package build number. This is a serial number within the patch package. E.g.: In patch package #2, in release (build no.) #4 - byte 5 will be 0x04.

Example – the following value is read: 00 0007 03 23 02 04. This means the following:

00 – command succeeded
0007 – bit mask of 12 bits where the 3 least significant bits are 1 (111b = 7), patch trap 1, 2 and 3 are used.
03 23 – the SW version that the patch trap referred to is 3.0.35.
02 04 – the patch trap package ID is 2, build number 4.

Events Generated:

Command Complete Event

8.17 HCI_VS_Set_DBG_Pins (0xFF32)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_DBG_Pins	0xFF32	DBG1 DBG2 DBG3 DBG4 DBG5 DBG6 DBG7 DBG8	Status

Description:

This command is used to set the debug pins configuration.

Note:

The 'X' in the DBGX command parameter refers to the specific debug pin (1-8)

There are eight debug pins and therefore eight parameters should be used.

Command Parameters:

DBGX Size: 1 Byte

Value	Parameter Description
0x00-0xff	0x00 –0xfe – new value 0xff – don't change this pin configuration

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. Failure (See Table 11: List of HCI Error Codes)

Events Generated:

Command Complete Event

8.18 HCI_VS_Goto_Address (0xFF83)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Goto_Adress	0xFF83	Adress Param1 Param2 Param3 Param4	Status

Description:

This command is used to jump to a specific address.

Command Parameters:

Adress: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Address of a function. Note: in order for this program to work right the address should be address of function.

Param1, Param2, Param3 , Param4: Size: 4 Bytes

Value	Parameter Description
0xXXXXXXXX	Parameters given to the relevant function

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Failure (See Table 11: List of HCI Error Codes).

Events Generated:

Command Complete Event

8.19 HCI_VS_Read_I2C_Register (0xFE0F)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_I2C_Register	0xFE0F	Slave_ID PVT Clock Working Frequency Sub Address	Status

Description:

This command reads a stream of bytes (1 to 16 bytes) on the I2C bus. In case that I2C bus is disabled during init, I2C bus is enabled, I2C reads are performed and then I2C bus is disabled again. It is the user responsibility to make sure I2C bus is multiplexed out on IO2 / IO3 (when I2C is disabled).

Please note that for usage with BRF6300 3.11 device the Read_I2C_Register_Enhanced vendor specific command should be used.

Command Parameters:

Slave_ID Size: 1 byte

Value	Parameter Description
Codec 1 – 0x71 Codec 2 – 0x1A E2PROM – 0x50	I2C Slave ID

PVT Clock Size: 1 byte

Value	Parameter Description
0	Pre-scale clock divider factor

Working Frequency Size: 2 Bytes

Value	Parameter Description
Codec – 0x190 E2PROM – 0x64	Working Frequency of the I2C device (KHz). 0x190 – 400KHz, 0x64 – 100KHz

Sub address Size: 1 byte

Value	Parameter Description
	I2C Slave device internal register address

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0	Command Succeeded.

Events Generated:

Command Complete Event

8.20 HCI_VS_Write_I2C_Register (0xFE0E)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_I2C_Register	0xFE0E	Slave_ID PVT Clock Working Frequency Sub Address Data Length Data	Status

Description:

This command writes a stream of bytes (1 to 16 bytes) on the I2C bus. In case that I2C bus is disabled during init : the I2C bus is enabled, I2C writes are performed and then I2C bus is disabled again. It is the user responsibility to make sure that the I2C bus is multiplexed out on IO2/IO3 (when I2C is disabled).

Please note that for usage with BRF6300 3.11 device the Write_I2C_Register_Enhanced vendor specific command should be used.

Command Parameters:

Slave_ID Size: 1 byte

Value	Parameter Description
Codec 1 – 0x71 Codec 2 – 0x1A E2PROM – 0x50	I2C Slave ID

PVT Clock Size: 1 byte

Value	Parameter Description
0	Pre-scale clock divider factor

Working Frequency Size: 2 Bytes

Value	Parameter Description
0x190 0x64	Working Frequency of the I2C device (KHz). 0x190 (Codec) – 400KHz, 0x64 (E2PROM)– 100KHz

Sub address Size: 1 byte

Value	Parameter Description
0 - 255	I2C Slave device internal register address

Data Length Size: 1 byte

Value	Parameter Description
1 - 16	Data Length (in bytes), maximum data length is 16 bytes (FIFO length)

Data Size: 1 - 16 Bytes

Value	Parameter Description
	Stream of bytes from left to right

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0	Command Succeeded.

Events Generated:

Command Complete Event

8.21 HCI_VS_Enable_Protocol_Viewer (0xFF68)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Enable_Protocol_Viewer	0xFF68	Enable	Status

Description:

This command is used to Enable / Disable the protocol viewer.

Command Parameters:

Enable Size: 1 Byte

Value	Parameter Description
0x00	Disable protocol viewer.
0x01	Enable protocol viewer.

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.22 HCI_VS_Write_SCO_Configuration (0xFE10)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_SCO_Configuration	0xFE10	Connection type (Host / Codec) TX buffer size TX buffer max latency Accept packet with bad CRC	Status TX buffer size Num of buffers

Description:

Once this command is issued, it is valid for all the new SCO channels going to be created. It is used to determine the following parameters :

SCO connection type - Host (voice over HCI) or Codec

TX packet length that will be used for flow control calculations.

TX buffer max latency determines how much time the data can be in the TX buffer before it is flushed out. This parameter is applicable only if flow control is disabled. If flow control is enabled, then the host is in charge to regulate the data flow to keep the latency within limits.

Once this command is used, the next 'Read Buffer Size Command' will return the new buffer size and an appropriate number of buffers.

Command Parameters:

Connection type Size: 1 Byte

Value	Parameter Description
0x0	Codec connection
0x1	Host connection
0xFF	Don't change

TX Buffer size **Size: 1 Byte**

Value	Parameter Description
0x0	Keep current packet size
0x1 – 0xFF	New packet size in bytes

TX buffer max latency **Size: 2 Byte**

Value	Parameter Description
0	Keep current max latency
1 – 720	New max latency in bytes.

Accept packet with bad CRC Size: 1 Byte

Value	Parameter Description
0x0	Reject packet with bad CRC
0x1	Accept packet with bad CRC
0xFF	Don't change

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

TX Buffer size Size: 1 Byte

Value	Parameter Description
0x0	Illegal value.
0x1 – 0xFF	New buffer size in bytes.

Num of buffers: Size: 1 Byte

Value	Parameter Description
0x00-0xFF	Number of available buffers.

Events Generated:

Command Complete Event

8.23 HCI_VS_Read_SCO_Configuration (0xFE11)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_SCO_Configuration	0xFE11	-	Status CH#0 Connection type (Host / Codec) CH#0 TX buffer (packet) size CH#0 Num of buffers CH#0 TX buffer max latency CH#0 Accept packet with bad CRC CH#1 Connection type (Host / Codec) CH#1 TX buffer (packet) size CH#1 Num of buffers CH#1 TX buffer max latency CH#1 Accept packet with bad CRC

Description:

This command is used to read the current SCO configuration. It returns the parameters currently valid for each of the SCO channels. If the channel is active, it returns the configured parameters. If the channel is not active, then the default configuration is returned (the configuration that will be used if a new connection will be created).

Default Values:

None

Command Parameters:

None

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

CH#X Connection type Size: 1 Byte

Value	Parameter Description
0x0	Codec connection
0x1	Host connection

CH#X TX Buffer size — Size: 1 Byte

Value	Parameter Description
0x0	Illegal value.
0x1 – 0xFF	New buffer size in bytes.

CH#X Num of buffers: — Size: 1 Byte

Value	Parameter Description
0x00-0xFF	Number of available buffers.

CH#X TX buffer max latency — Size: 2 Byte

Value	Parameter Description
0x00 – 0xFFFF	Max latency in bytes.

CH#X Accept packet with bad CRC — Size: 1 Byte

Value	Parameter Description
0x0	Reject packet with bad CRC
0x1	Accept packet with bad CRC

Events Generated:

Command Complete Event

8.24 HCI_VS_H5_parameters (0xFE26)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_H5_parameters	0xFE26	HW Flow Control Reserved Reserved Retransmit Timeout Reserved Reserved Reserved	

Description:

This command is necessary if HW flow control is used.

This command can also be used to setup the retransmission timeout.

Command Parameters:

HW Flow Control	Size: 1 byte
Value	**Parameter Description**
0/1	0 = Do not change. (Leave the current flow control as it is). 1 = Change to HW (CTS/RTS) If the host wants to use HW flow control, then it has to do 2 steps: Step 1: To make H5 link establishment with: SW flow control = disable. Step 2: To send this command with value '1' in this field.

Reserved	Size: 1 byte
Value	**Parameter Description**
0	Reserved. Use value of '0' for future compatibility

Reserved	Size: 1 byte
Value	**Parameter Description**
0	Reserved. Use value of '0' for future compatibility

Retransmit Timeout	Size: 2 Bytes
Value	**Parameter Description**
1 - 0xFFFF	In BT Frames (x 1.25ms), Minimum time before retransmission. The default of the BRF6150 is 500ms, which is good for very slow host such HCI-tester. A faster host may set this time to something like 20ms. This value is used only for error recovery, which supposed to happen rarely. Note that if you want to change this value, you still have to write a correct value, in the "HW flow control" field. It is recommended to write '0' in the "HW flow control", if you only want to change the "Retransmit Timeout" field.

Reserved	Size: 1 byte
Value	**Parameter Description**
0	Reserved. Use value of '0' for future compatibility

Reserved	Size: 1 byte
Value	**Parameter Description**
0	Reserved. Use value of '0' for future compatibility

Reserved	Size: 1 byte
Value	**Parameter Description**
0	Reserved. Use value of '0' for future compatibility

Events Generated:

Command Complete Event

8.25 HCI_VS_ Set_PCM_Loopback_Enable (0xFE28)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_PCM_Loopback_Enable	0xFE28	PCM_loopback_enable	Status

Description:

This command is used to enable the loopback on the PCM bus between the PCM input data to the PCM output data.

Command Parameters:

PCM_loopback_Enable Size: 1 Byte

Value	Parameter Description
0	Stop PCM loopback operation
1	Start PCM loopback operation

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.26 HCI_VS_Set_Min_Sleep_Time (0xFE2C)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Min_Sleep_Time	0xFE2C	Minimum_Deep_Sleep_Time (in frames)	Status

Description:

This command is used to prevent the device from going to deep sleep when the wake up time is smaller than the minimum deep sleep time.

Command Parameters:

Minimum_Deep_Sleep_Time Size: 1 Byte

Value	Parameter Description
Any	Minimum sleep time In frames (Default - 4 frames)

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.27 HCI_VS_Set_Max_Voice_Connections (0xFE2F)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Max_Voice_Connections	0xFE2F	Max_Voice_Connections	Status

Description:

This command sets the maximum voice connections the BRF devicewill create.

This command affects also on the number of voice channels the BRF device will create in local loopback mode. When entering local loop back mode, the BRF device creates 1 ACL connection and X SCO connections (X is 0-2 according to the parameter in this command).

NOTE: the command only affects the creation of new voice channels. It will not disconnect the connections that already exist (if there are more than specified in the command).

Command Parameters:

Max_Voice_Connections Size: 1 byte

Value	Parameter Description
0-2	Max Voice Connections: 0 – no voice connections 1 – one voice connection 2 – two voice connections

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.28 HCI_VS_Set_Max_ACL_Connections (0xFE34)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Max_ACL_Connections	0xFE34	Max_ACL_Connections	Status

Description:

This command sets the maximum ACL connections the BRF6150 will create.

NOTE: the command affects only the creation of new ACL connections. It will not disconnect ACLs that already exists (if there are more than specified in the command).

Command Parameters:

Max_ACL_Connections Size: 1 byte

Value	Parameter Description
0-7	Max ACL Connections:

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.29 HCI_VS_Start_VS_Lock (0xFE37)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Start_VS_Lock	0xFE37	Major Version Number Minor Version Number	Status

Description:

This command protects the BRF6300 firmware from downloading and running an inappropriate patch code. It checks the device internal firmware version and compares it to the command parameters. If there is a match, no change will happen and the patch will be executed. If there is no match, all the successive vendor specific commands in the patch will be locked, i.e. their execution is skipped and a Command Complete message with a SUCCESS error code will be sent to the host.

The VS_Lock can be released only by the Stop_VS_Lock command or by a HW/SW reset.

In case that VS_Lock is on, all error messages are printed in the Bluetooth Logger only.

All protected segments of HCI scripts/patch should be wrapped with the Start_VS_Lock & Stop_VS_Lock commands, un order to protect the BT device from performing commands that are version specific (e.g. Patch code which is unique to a specific firmware version).

The internal ROM SW version can be read by the standard HCI command Read_Local_Version_Information.
The internal ROM SW version is of the form: X.Y.Z; Example : for the BRF6150 2.12 the current SW version is 3.0.48.

The last return parameter, **LMP Subversion,** includes the SW version number as described below:

Bits 0-6 : FW Internal Version Freeze (26, 35,43, 48,21)
Bits 7-9,15 : Software Version (2.0, 3.0, 1.0)
Bits 10-14 : Project Name (BRF6300 = 4 , BRF6150 = 3 , BRF6100 = 2)

Basically what will change between device versions are the first and second fields (FW Internal Version Freeze and SW Version).

For BRF6300 3.0, Firmware version 1.0.21 the LMP Subversion value is 0x1095 (4245) that translates into 1.0.21

Command Parameters:

Major Version Number Size: 1 byte

Value	Parameter Description
0x00..0xFF	The major number (Software Version) of the SW version (The X of the X.Y.Z → for 2.12 it is 3).

Minor Version Number Size: 1 byte

Value	Parameter Description
0x00..0xFF	The minor number (FW Internal Version Freeze) of the SW version (The Z of the X.Y.Z → for 2.12 it is 35).

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.30 HCI_VS_Stop_VS_Lock (0xFE38)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Stop_VS_Lock	0xFE38		Status

Description:

The Stop_VS Lock command clears any lock by a previous command. It terminates a protected script segment and assures that all the script's next commands will be executed independently of the SW version.

All the protected segments of HCI patch/scripts should be wrapped with the Start_VS Lock & Stop_VS Lock commands to protect the BT device from performing commands that are version specific (e.g. Patch code which is unique to a specific firmware version).

Command Parameters:

None

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.31 HCI_VS_Calculate_ROM_Checksum (0xFE3A)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Calculate_ROM_Checksum	0xFE3A		Status

Description:

This command calculates the ROM Checksum and returns it as 16 Bit value.

For example the checksum for software version 3.0.48 is 0x196C.

Return Parameters:

Check SUM Size: 2 Bytes

Value	Parameter Description
0xXXXX	Checksum result.

Events Generated:

Command Complete Event

8.32 HCI_VS_Configure_Error_Statistics (0xFF92)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Configure_Error_Statistics	0xFF92	Error_Statistics_Mode BER_Min_Resolution PER_Min_Resolution Auto_Reset	Status

Description:

This command is used to enable/disable the Error Statistics algorithm and for setting the preferred resolutions and Auto reset of the BER / PER. It needs to be executed in order to enable the BER and PER statistics windows in Link Quality Monitor application.

Command Parameters:

Error_Statistics_Mode: Size: 1 Byte

Value	Parameter Description
0x00	Disable the error statistics algorithm (BER/PER statistics)
0x01	Enable the error statistics algorithm

BER_Min_Resolution: Size: 1 Byte

Value	Parameter Description
0x00 0x01-0x05	0x00 - the algorithm does not have any threshold (i.e. it collects data without checking how many bits/packets have been received) 0x01 – BER total bits resolution < 100 bits 0x02 - 100 < BER total bits resolution < 1000 bits 0x03 - 1000 < BER total bits resolution < 10000 bits 0x04 - 10000 < BER total bits resolution < 100000 bits 0x05 - BER total bits resolution >= 100000 bits

PER_Min_Resolution: Size: 1 Byte

Value	Parameter Description
0x00 0x01-0x05	0x00 - the algorithm does not have any threshold (i.e. it collects data without checking how many bits/packets have been received) 0x01 – PER total packets resolution < 100 packets 0x02 - 100 < PER total packets resolution < 1000 packets 0x03 - 1000 < PER total packets resolution < 10000 packets 0x04 - 10000 < PER total packets resolution < 100000 packets 0x05 - PER total packets resolution >= 100000 packets

Auto_Reset: Size: 1 Byte

Value	Parameter Description
0x00	Use default
1 - 20	After Auto_Reset*400 msec, the algorithm database is auto cleared; the default value is 20*400 msec = 8 seconds

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.33 HCI_VS_Read_Error_Statistics (0xFF93)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Error_Statistics	0xFF93	Request, Connection Handle	Status, BER, PER, both BER & PER

Description:

This command returns the current BER, PER (or both of them) for the specified connection.

Command Parameters:

Request:	Size: 1 Byte
Value	**Parameter Description**
0x01 0x02 0x03	Read BER Read PER, Read both BER & PER

Connection handle:	Size: 2 Bytes
Value	**Parameter Description**
0x0001 – 0xFFFF	Connection handle

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00 0x01-0xFF	Command Succeeded. Command failed. See Table 11: List of HCI Error Codes.

BER Resolution:	Size: 1 Byte
Value	**Parameter Description**
0x00 0x01 – 0x05	Not enough resolution - BER is not relevant – show previous BER Possible resolution values

BER:	Size: 4 Bytes
Value	**Parameter Description**
0x00 – 0xFFFFFFFF	The current BER value multiply by 1 million

PER Resolution:	Size: 1 Byte
Value	**Parameter Description**
0x00 0x01 – 0x4	Not enough resolution - PER is not relevant – show previous PER Possible resolution values

PER:	Size: 4 Bytes
Value	**Parameter Description**
0x00 – 0xFFFFFFFF	The current PER value multiply by 1 million

Events Generated:

Command Complete Event

8.34 HCI_VS_Get_System_Status (0xFE1F)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Get_System_Status	0xFE1F		Status SW version X SW version Z Chip revision Chip mode FREF Slow clock used Process type Deep sleep mode Whitening mode CDC mode Self test Hopping mode UART baud rate Temperature detected I2C status

Description:

This command returns the current system parameters.

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0/1	0 – Success, 1- Illegal command

SW version (X):	Size: 1 Byte
Value	**Parameter Description**
0 - 0xFF	This parameter returns the X value of the SW version being used (see section 1.1 for the SW version X.Y.Z structure).

SW version (Z):	Size: 1 Byte
Value	**Parameter Description**
0 - 0xFF	This parameter returns the Z value of the SW version being used (see section 1.1 for the SW version X.Y.Z structure).

Chip Revision:	Size: 1 Byte
Value	**Parameter Description**
0 - 0xFF	This parameter returns the HW revision.

Chip mode: Size: 1 Byte

Value	Parameter Description
0	Reserved mode
1	TI mode
2	Reserved, for TI internal use only
3	Reserved, for TI internal use only
4	Reserved
5	Reserved

FREF: Size: 2 Byte

Value	Parameter Description
0 - 0x9600	This parameter returns the fast clock being used. The value in KHz.

Slow clock used: Size: 1 Byte

Value	Parameter Description
0	Internal slow clock used
1	External slow clock is used

Process type detected: Size: 1 Byte

Value	Parameter Description
0	Weak process detected
1	Nominal process detected
2	Strong process detected

Deep sleep mode: Size: 1 Byte

Value	Parameter Description
0	Deep sleep disabled
1	Reserved
2	HCILL deep sleep enabled
3-8	For future use

Whitening mode: Size: 1 Byte

Value	Parameter Description
0	Whitening enabled
1	Whitening disabled

CDC mode: Size: 1 Byte

Value	Parameter Description
0	CDC disabled
1	CDC enabled

Self test: Size: 1 Byte

Value	Parameter Description
0	Self test failed
1	Self test passed

Hopping mode: Size: 1 Byte

Value	Parameter Description
0	Frequency hopping
1	Single frequency TX & RX
2	Only TX Single frequency
3	Only RX Single frequency

UART baud rate: Size: 4 Bytes

Value	Parameter Description
0 - 0x00249F00	This parameter returns the baud rate on the UART. The value is in bps.

Temperature Index: Size: 1 Byte

Value	Parameter Description
0	Hot
1	Room
2	Cold
3	Warm
4	Cool

I2C Status: Size: 1 Byte

Value	Parameter Description
0	I2C is enabled
1	E2PROM is connected
2	CODEC is connected
3-7	For future use

8.35 HCI_VS_Get_Encryption_Key_Params (0xFF24)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Get_Encryption_Key_Params	0xFF24		Status Preferred Key Max Key Min Key

Description:

This command returns the Encryption Key Parameters.

Command Parameters:

None

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Preferred Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 16)

Max Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 16)

Min Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 5)

Events Generated:

Command Complete Event

8.36 HCI_VS_Set_Encryption_Key_Params (0xFF25)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Encryption_Key_Params	0xFF25	Preferred Key Max Key Min Key	Status

Description:

This command is used to set encryption key parameters.

Command Parameters:

Preferred Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 16)

Max Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 16)

Min Key: Size: 1 Byte

Value	Parameter Description
0xXX	(Default 5)

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

8.37 HCI_VS_Set_Supported_Features (0xFF26)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Supported_Features	0xFF26	Byte Bit Support	Status

Description:

This command is used to set the local device Supported Features. For information regarding the specific bits meaning, please refer to the Bluetooth spec.

Command Parameters:

Byte Size: 1 Byte

Value	Parameter Description
0	Byte 0
1	Byte 1
2	Byte 2
3	Byte 3
4	Byte 4
5	Byte 5
6	Byte 6
7	Byte 7

Bit Size: 1 Byte

Value	Parameter Description
0xXX	0…7 - Single bit, 0xXX – WHOLE byte value

Support Size: 1 Byte

Value	Parameter Description
0	Not supported
1	Supported
0xFF	Change WHOLE byte

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

8.38 HCI_VS_Set_AFH_Mode (0xFF39)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_AFH_Mode	0xFF39	Connection handle Mode	Status

Description:

This command is used to enable / disable AFH mode for each connection or for all the slaves.

Command Parameters:

Connection handle: Size: 2 Bytes

Value	Parameter Description
0x01 – 0xFF	Connection handle (0xFF = all slaves)

Mode: Size: 1 Byte

Value	Parameter Description
0x00 - 0x01	0 = Enable AFH mode 1 = Disable AFH mode

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00 0x01-0xFF	Command Succeeded. Command failed. See See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

8.39 HCI_VS_Set_Whitening_Mode (0xFF0A)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Whitening_Mode	0xFF0B	Whitening Mode	Status

Description:

This command is used to set Whitening Mode.

Command Parameters:

Whitening Mode: Size: 1 Byte

Value	Parameter Description
0x00	Enable whitening mode
0x01	Disable whitening mode

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

8.40 HCI_VS_H5_deep_sleep_parameters (0xFE25)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_H5_deep_sleep_parameters	0xFE25	Minimum UART idle time Just wakeup time Delay after sending sleep	

Description:

BRF6150 does not need permission from the host in order to enter sleep mode when working with the H5 protocol, therefore, the BRF6150 may go to sleep, just before the host wants to send a packet. This may lead to wakeup / woken cycle, or to a retransmission cycle.

With the help of this command, we can minimize the probability of this situation.

There are 2 ways of determining when the BRF will send a SLEEP message to the host:

1. Minimum UART Idle time – when used, the BRF will send a SLEEP message to the host if there is no activity on the UART for a duration specified by this parameter
2. Just Wakeup Time – when used the BRF will not send the host a SLEEP message until this time expires or there was another communication from the host (meaning it is responsive). This timer starts when the host wakes up the BRF. This timer does not apply when the BRF wakes up the host. In this case the internal BRF default applies which is about 100ms

Delay after sending sleep – this parameter can be used to determine the time from the logical SLEEP state (acknowledged SLEEP in the protocol) and until the BRF will physically enter a low power mode. This can be used to support faster response in case of frequent Sleep then immediate Wakeup situations; however it may effect power consumption.

Command Parameters:

Minimum UART idle time	Size: 2 Bytes
Value	**Parameter Description**
0x0000-0xFFFF	This parameter determines amount of UART idle time (no UART activity) before the BRF will send a SLEEP message to the host. Parameter units are in Bluetooth frames (x 1.25ms) Default of this field is 0 – meaning not in use.

Just wakeup time	Size: 2 Bytes
Value	**Parameter Description**
0x0000-0xFFFF	This parameter defines the time from host waking up the BRF and until the BRF sends a SLEEP message to the host. Parameter units are in Bluetooth frames (x 1.25ms) Default of this field is 400 (500ms)

Delay after sending sleep	Size: 2 Bytes
Value	**Parameter Description**
0-0xFFFF	This parameter determines the time from the logical SLEEP state (acknowledged SLEEP in the protocol) and until the BRF will physically go to a low power mode. Parameter units are in Bluetooth frames (x 1.25ms) Default of this field is 0 – meaning not used

Events Generated:

Command Complete Event

8.41 HCI_VS_Set_Acl_Free_Max_Slots_Params (0xFE42)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_Acl_Free_Max_Slots_Params	0xFE42	Enable multislots with voice in slave, Acl_Free, TX Limit, Max TX slots to use, Max RX slots to use	Status

Description:

This command is used to adjust the Max_TX_slots and Max_RX_slots in voice connection according to the acl_free slots and to the host limit.

This command is used to optimize Bandwidth utilization during certain voice scenarios.

The default configuration of the slave is to use single slot packet with voice. If it is enabled then the slave will also use multislots packets with voice. The master will use in default multislots packet in voice according to the ACL_Free table. It can also be changed to single slot packet with voice if all the ACL_Free table entries will be updated to 1.

Please refer to application note BT-AN-0049 for configuration of full bandwidth with voice.

Command Parameters:

Enable multislots with voice in slave — Size: 1 Byte

Value	Parameter Description
0x00 – 0x01	enable multislots pacets in voice connection.

Acl_Free — Size: 1 Byte

Value	Parameter Description
4,6,8,10	Free acl slots between voice reservd slots.

TX_Limit — Size: 1 Byte

Value	Parameter Description
1,3,5	Maximum tx slots allowed by the host and peer.

Max TX slots to use — Size: 1 Byte

Value	Parameter Description
1,3,5	Max tx slots to use

Max RX slots to use — Size: 1 Byte

Value	Parameter Description
1,3,5	Max rx slots to use

Return Parameters:

Status: Size: 1 byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

9. New 6300 HCI Vendor Specific Commands (FW 1.0.21)

9.1 HCI_VS_Long_Buffers_Mode_Island3 (0xFD02)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Long_Buffers_Mode_Island3	0xFD02	Long Buffers Mode	Status

Description:

When long buffers mode is enabled, the software uses buffers of 1021 bytes for HCI ACL packets received from host. Otherwise, the software uses buffers of 339 bytes for HCI ACL packets received from host.

Please note that this command replaces the BRF6150 VS command.

Default :

After power-up and HCI reset, long buffers mode is disabled.

Command Parameters:

Long Buffers Mode	Size: 1 Byte
Value	**Parameter Description**
0	Disable
1	Enable

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.2 HCI_VS_Set_PCM_Loopback_Configuration_Island3 (0xFD04)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_PCM_Loopback_Configuration_Island3	0xFD04	PCM loopback delay	Status

Description:

This command is used to configure the default PCM loopback delay on the bus between the PCM data input to the PCM output data. The new delay will affect the next pcm loopback channel enabled.

In case a pcm loopback channel is already activated, disable it and then enable it again in order to use the new delay.

Command Parameters:

PCM loopback delay	Size: 2 Byte
Value	Parameter Description
0x0001 - 0x0544	This value define the delay in sample units (i.e. number of Frame sync) between the input sample to BRF6300 and the output of the same sample from BRF6300

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.3 HCI_VS_ Write_Codec_Config_Island3 (0xFD06)

Command	Opcode	Command Parameters	Size
Write_codec_config_Island3	0xFD06	PCM clock rate	2 bytes
		PCM clock direction	1 byte
		Frame sync frequency	4 bytes
		Frame sync duty cycle	2 bytes
		Frame sync edge	1 byte
		Frame sync polarity	1 byte
		Reserved**	1 byte
		CH#1 data out size	2 bytes
		CH#1 data out offset	2 bytes
		CH#1 data out edge	1 byte
		CH#1 data in size	2 bytes
		CH#1 data in offset	2 bytes
		CH#1 data in edge	1 byte
		Reserved	1 byte
		CH#2 data out size	2 bytes
		CH#2 data out offset	2 bytes
		CH#2 data out edge	1 byte
		CH#2 data in size	2 bytes
		CH#2 data in offset	2 bytes
		CH#2 data in edge	1 byte
		Reserved	1 byte

Description:

This command is used to configure the codec interface parameters and include configuration of the PCM clock rate which is relevant when BT core is generating the clock. This command MUST be used by the host in order to use PCM interface.

Default Values :

Default Values	Hardware Default	HCI Tester Command
PCM clock rate	N.A	2048 [KHz]
PCM direction	1 (Input)	0 (Output)
Frame sync frequency	N.A	8000 [Hz]
Frame sync duty cycle	N.A	1
Frame sync edge	0 (rising edge)	0 (rising edge)
Frame sync polarity	0 (active high)	0 (active high)
Reserved	N.A	0
CH#1 data out size	0	16
CH#1 data out offset	0	1
CH#1 data out edge	0 (rising edge)	0 (rising edge)
CH#1 data in size	0	16
CH#1 data in offset	0	1
CH#1 data in edge	0 (rising edge)	1 (falling edge)
Reserved	N/A	0
CH#2 data out size	0	16
CH#2 data out offset	0	17
CH#2 data out edge	0 (rising edge)	0 (rising edge)
CH#2 data in size	0	16
CH#2 data in offset	0	17
CH#2 data in edge	0 (rising edge)	1 (falling edge)
Reserved	N.A	0

Command Parameters:

PCM clock rate	Size: 2 Bytes
Value	**Parameter Description**
64 – 16000	The PCM clock rate is between 64k to 4096k (for Master mode) or 64K to 16M (for Slave mode), it influence other parameters like wait cycles and frequency rate calculation and therefore shall be configured even if external clock is used

PCM direction	Size: 1 Byte
Value	**Parameter Description**
0x00	PCM clock and Fsync direction is output (codec_IF is Master on PCM bus) and sampled on rising edge
0x01	PCM clock and Fsync direction is input (codec_IF is Slave on PCM bus)

Frame sync frequency	Size: 4 Bytes
Value	**Parameter Description**
100Hz – 173KHz	Actual frame sync frequency in Hz.

Frame sync duty cycle	Size: 2 Bytes
Value	**Parameter Description**
0x0000	50 % of Fsync period
0x0001 – 0xFFFF	Number of cycles of PCM clock

Frame sync edge	Size: 1 Byte
Value	**Parameter Description**
0x00	Driven/sampled at rising edge
0x01	Driven/sampled at falling edge

Frame sync polarity	Size: 1 Byte
Value	**Parameter Description**
0x00	Active-high
0x01	Active-low

Reserved		Size: 1 Byte (Bit field)
bit	**Name**	**Parameter Description**
0		Parameter should be set to 0.

CH#X data out size	Size: 2 Bytes
Value	**Parameter Description**
0x0001.. 0x0280	Sample size in bits for each codec Fsync. The value is between 1bit to ????bits. In case data size is greater than 24 bits, the size should be able to divide by 8. (for example 1-24,32,40,48…)

CH#X data out offset	Size: 2 Bytes
Value	**Parameter Description**
0x00.. 0xFF	Number of PCM clock cycles between rising of frame sync to data start

CH#X out edge	Size: 1 Byte
Value	**Parameter Description**
0x00	Data driven at rising edge
0x01	Data driven at falling edge

CH#X data in size	Size: 2 Bytes
Value	**Parameter Description**
0x0001.. 0x0280	Sample size in bits for each codec FSYNC. The value is between 1bit to ????bits. In case data size is greater than 24 bits, the size should be able to divide by 8. (for example 1-24,32,40,48…)

CH#X in offset	Size: 2 Bytes
Value	**Parameter Description**
0x00.. 0xFF	Number of PCM clock cycles between rising of frame sync to data start

CH#X in edge	Size: 1 Byte
Value	**Parameter Description**
0x00	Data sampled at rising edge
0x01	Data sampled at falling edge

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.4 HCI_VS_Read_Modify_Write_Hardware_Register (0xFD09)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Read_Modify_Write_Hardware_Register	0xFD09	Register Address, Register Value, Register Mask	Status

Description:

This command is used to assign a value into a hardware register, using a bit mask, thus, changing only the requested bits.

Command Parameters:

Register Address:	Size: 4 Bytes
Value	Parameter Description
0xXXXXXXXX	The HW register address (32 bit)

Register Value:	Size: 2 Bytes
Value	Parameter Description
0xXXXX	The value to be written. Bits that equal 0 in the mask will be ignored.

Register Mask:	Size: 2 Bytes
Value	Parameter Description
0xXXXX	The bit mask of the bits that will be over-written. In every bit: 0=No change 1=Change. For every bit that equals 1 in the mask, the write value is taken from the corresponding bit the the Value field.

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.5 HCI_VS_Configure_Clock_Sharing (0xFD0A)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Configure_Clock_Sharing	0xFD0A	Internal (OR/AND) Enable Polarity Clock Sharing Output mode Input pull enable Output pull enable	status

Description:

This command configures the selected clock sharing mode.

Note that prior to sending this command the clock sharing configuration is determined by external CLK_SEL pin.

Default values:

Default behavior is determined by the CLK_SEL pin. The below values are the register defaults which only take place when sending this command.

Polarity	=	0	
Internal (OR/AND) Enable	=	1	(Internal OR is configured).
Tri - state output Enable	=	0	(Output mode is selected)
Input pull enable	=	0	
Output pull enable	=	0	

Command Parameters:

Polarity:	Size: 1 Byte
Value	**Parameter Description**
0x0	Active low polarity – determines the Int_Clk_Req polarity and the selected logic (OR/AND) if Internal Enable is set
0x1	Active high polarity

Internal (OR/AND) Enable	Size: 1 Byte
Value	**Parameter Description**
0x0	Internal (OR/AND*) disabled
0x1	Internal (OR/AND*) enabled

* OR/AND is selected according to the configured polarity

Clock Sharing Output Mode	Size: 1 Byte
Value	**Parameter Description**
0x0	Output mode is determined according to CLK_SEL pin
0x1	Output is Tri-state
0x2	Output enabled
0x3	Wired OR (Clk_Req=L, output is Z; Clk_Req=H, output is enabled (L)
0x4	Wired AND (Clk_Req=L, output is L; Clk_Req=H, output is Z, Open Collector)

Input pull Enable	Size: 1 Bytes
Value	**Parameter Description**
0x0	Input pull (on IO15) is disabled
0x1	Input pull (on IO15) is enabled

Output pull Enable	Size: 1 Bytes
Value	**Parameter Description**
0x0	Output pull (on IO0) is disabled
0x1	Output pull (on IO0) is enabled

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.6 HCI_VS_Write_Pull_Resistor_Island3 (0xFD0B)

Command	Opcode	Command Parameters
HCI_VS_Write_Pull_Resistor_Island3	0xFD0B	IO0 (Clock_Req_Out) IO1 IO2 IO3 IO4 IO5 IO6 (RTS HCI) IO7 (BT_WakeUp) IO8 (AUD_IN) IO9 (AUD_OUT) IO10 (AUD_CLK) IO11 (AUD_FSYNC) IO12 (CTS_HCI) IO13 (RTS_HCI) IO14 IO15 IO16 IO17 IO18 (Tx_DBG) IO19 (Rx_HCI) JTAG TMS JTAG TCK JTAG TDI JTAG TDO Data Bus (D0-D15) Addr Bus nFOE nCS0 rnw

Description:
The BRF6300 has a pull resistor on each digital IO pad. This command configures the disabling / enabling the pull resistors on each IO pad. The pull can be disabled while it's polarity is fixed (either PullUp or PullDown). The BRF6300 does not support configurable pull polarity.

By default, during power-up, all IO pads are with pull resistors enabled (except IO0 & IO15 which are used for the clock sharing mechanism and their pulls are configured according to the CLK_SEL pad). Some pull resistors of some IO pads are disabled by the SW during the init sequence (e.g. UART lines, Tx DBG).

Default values:

For default values please see BRF6300 Data Sheet.

Command Parameters:

IOX	Size: 1 Byte
Value	**Parameter Description**
0x0	Disable pull resistor on IOX
0x1	Enable pull resistor on IOX
0xFF	Don't change

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

9.7 HCI_VS_Sleep_Mode_Configurations (0xFD0C)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Sleep_Mode_Configurations	0xFD0C	Big Sleep Enable Deep Sleep Enable Deep Sleep protocol mode Output IO select (Reserved) Output pull enable Input pull enable Reserved Deassertion Timeout	status

* Currently only IO7 is used for BT_WakeUp.

Description:

This command configures the sleep mode to be used.

Note that prior to sending this command deep sleep is disabled.

Default values:

Deep sleep is disabled by default.

Command Parameters:

Big sleep enable	Size: 1 Byte
Value	**Parameter Description**
0x0	Big sleep is disabled
0x1	Big sleep is enabled

Deep sleep enable	Size: 1 Byte
Value	**Parameter Description**
0x0	Deep sleep is disabled
0x1	Deep sleep is enabled

Deep sleep protocol mode	Size: 1 Byte
Value	**Parameter Description**
0x0	HCILL
0x1	Reserved
0x2	Reserved
0x3	Reserved
0x4	Reserved
0x5	Reserved
0x6	SPI Protocol
0x7	SDIO Protocol
0x8	Reserved

Output IO select	Size: 1 Byte
Value	**Parameter Description**
0x00 - 0xFF	**Value must be set to 0xFF**, Reserved for future usage.

Output pull Enable	Size: 1 Bytes
Value	**Parameter Description**
0x0	Output pull is disabled
0x1	Output pull is enabled
0xFF	Don't change

Input pull Enable	Size: 1 Bytes
Value	**Parameter Description**
0x0	Input pull is disabled
0x1	Input pull is enabled
0xFF	Don't change

Reserved	Size: 1 Byte
Value	**Parameter Description**
0x00 - 0xFF	**Value must be set to 0x00**, Reserved for future usage.

Deassertion Timeout	Size: 2 Bytes
Value	**Parameter Description**
0x00 (Default)	Timeout value set to zero.
0x0001 - 0xFFFF	Timeout in msec from the last host transaction before the BRF device will initiate or enter Deep Sleep. Please refer to the HCI_VS_HCILL_Parameters command for information on controlling the behavior of HCILL deep sleep protocol.

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Appendix B for HCI error codes.

Events Generated:

Command Complete Event

9.8 HCI_VS_Fast_Clock_Configuration (0xFD0E)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Fast_Clock_Configuration	0xFD0E	XTAL Enable Normal wakeup settling time Fast wakeup settling time Fast wakeup enable XTAL Boost gain XTAL Normal gain Fast Clock Input AC/DC Coupled Slow clock accuracy	status

Description:

This command configures the BRF6300 fast clock configuration.

Default values:

XTAL Enable	=	1
Normal wakeup settling time	=	5000 (5mS)
Fast wakeup settling time	=	2000 (2mS)
XTAL Boost gain	=	0xF
XTAL Normal gain	=	0x0
Fast wakeup enable	=	0
Fast Clock Input AC/DC Coupled	=	No AC Coupling
Slow clock accuracy	=	250 PPM

Command Parameters:

XTAL Enable	Size: 1 Byte
Value	**Parameter Description**
0x0	XTAL (OSC cell) is disabled, external FREF configuration is used.
0x1	XTAL (OSC cell) is enabled, XTAL configuration can be used (note that in this case external FREF configuration can also be used, the disadvantage is current consumption).
0xFF	Don't change

Normal wakeup settling time	Size: 4 Byte
Value	**Parameter Description**
0 - 124999	Normal WakeUp settling time (in uS), this parameter is used for waking up from internal event.

Fast wakeup settling time	Size: 4 Byte
Value	**Parameter Description**
0 - 124999	Fast WakeUp settling time (in uS), this parameter can be used in order to reduce wake up time when waking up from Host event.

Fast wakeup enable	Size: 1 Byte
Value	**Parameter Description**
0	Fast wakeup is disabled (slow wakeup on all wakeup events)
1	Fast wakeup is enabled (fast wakeup is enabled on wakeup event from Host – BT_Wakeup / Rx_ON)

XTAL Boost Gain	Size: 1 Byte
Value	**Parameter Description**
0x0 – 0xF	This parameter determines the initial gain of the OSC cell. This parameter is only relevant in XTAL configuration mode (XTAL Enable = 1)

XTAL Normal Gain	Size: 1 Byte
Value	**Parameter Description**
0x0 – 0xF	This parameter determines the steady state gain of the OSC cell. This parameter is only relevant in XTAL configuration mode (XTAL Enable = 1)

Fast Clock Input AC/DC Coupled	Size: 1 Byte
Value	**Parameter Description**
	This parameter determines whether AC/DC Coupled is used on the fast clock input
0	DC Coupled is used
1	AC Coupled is used
0xFF	Don't change

Slow Clock Accuracy	Size: 1 Byte
Value	**Parameter Description**
0 - 255	Slow Clock drift in PPM

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00 0x01-0xFF	Command Succeeded. Command failed. See Appendix B for HCI error codes.

Events Generated:

Command Complete Event

9.9 HCI_VS_Host_Report_FREF_Drift_Island3 (0xFD10)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Host_Report_FREF_Drift_Island3	0xFD10	Initial FREF drift (ppm) Number of temperature ranges	Status

Description :

The host uses this command in order to report to the device the actual FREF – after the host calculated the real drift.

The temperature drift fields are relative to the initial drift.

If the field value is 0xFF then the previous value is kept.

Due to the large number of parameters – the command is split to parts.

Note : The Host_Repost_FREF_Drift_Island3 VS Command requires a software update to function correctly in hardware version BRF6300 3.0 , firmware 1.0.24

Command Parameters:

Initial FREF drift:	Size: 2 Byte
Value	**Parameter Description**
-1000...+1000 / 0xFFFF	The initial clock drift reported by the host.

Number of temperature ranges:	Size: 1 Byte
Value	**Parameter Description**
1 – 10	Number of temperature ranges that influence the FREF clock.

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.

0x01-0xFF	Command failed.

Events Generated:

Command Complete Event

9.10 HCI_VS_DRP_Tester_Packet_TX_RX (0xFD15)

Command	Opcode	Command Parameters	Return Parameters
	0xFD15	Frequency_Mode TX Single Frequency Index RX Single Frequency Index ACL Packet Type ACL Packet Data Pattern ACL Packet Data Length Power Level Disable Whitening PRBS9 Init value	Status

Description:

This command is used to determine the packet transmission parameters.

Command Parameters:

Frequency Mode:	Size: 1 Byte
Value	**Parameter Description**
0x00 , 0x03	0x00 – 79 frequencies (Hopping) 0x03 – single frequency

TX Single Frequency Index:	Size: 1 Byte
Value	**Parameter Description**
00 – 78	00 – 78 in 79 frequency mode (decimal; Freq = 2402 + 2i, for i = 0 , 1, 2 , ..39 and Freq = 2403 + 2(i-40) for i = 40, 41, ..78 where i is the channel number)

RX Single Frequency Index:	Size: 1 Byte
Value	**Parameter Description**
00 – 78 0xFF	00 – 78 in 79 frequency mode (decimal; Freq = 2402 + 2i, for i = 0 , 1, 2 , ..39 and Freq = 2403 + 2(i-40) for i = 40, 41, ..78 where i is the channel number) 0xFF – Disable RX (packet TX only)

ACL Packet Type:	Size: 1 Byte
Value	**Parameter Description**
0x00	DM1
0x01	DH1
0x02	DM3
0x03	DH3
0x04	DM5
0x05	DH5
0x06	2-DH1
0x07	2-DH3
0x08	2-DH5
0x09	3-DH1
0x0A	3-DH3
0x0B	3-DH5

ACL Packet Data Pattern: Size: 1 Byte

Value	**Parameter Description**
0x00	all 0
0x01	all 1
0x02	ZOZO (101010101010101010)
0x03	FOFO (1111000011110000)
0x04	Ordered (1,2,3,4…)
0x05	PRBS9 (Pesudo random bit sequence)

ACL Packet Data Length:	Size: 2 Bytes
Value	**Parameter Description**
0 – 17	DM1
0 – 27	DH1
0 – 121	DM3
0 – 183	DH3
0 – 224	DM5
0 – 339	Dh5

Power Level:	Size: 1 Byte
Value	**Parameter Description**
0-7	0 = Min output power 7 = Max output power

Disable Whitening:	Size: 1 Byte
Value	**Parameter Description**
0x00	enable whitening
0x01	disable whitening

PRBS9 Init value:	Size: 2 Bytes
Value	**Parameter Description**
0x0000 – 0x01FF	Used only in PRBS9 patterns for initialization of the PRBS9 data.

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.11 HCI_VS_DRP_Tester_Continous_TX (0xFD16)

Command	Opcode	Command Parameters	Return Parameters
	0xFD16	Modulation scheme Test Pattern BT Frequency Channel Power Level Generator Init value EDR Generator Mask	Status

Description:

This command is used to test the RF transceiver in continuous transmission mode.

Activation of the transmitter is done as described in the BB scripts under TX START (activation of DTX Scripter).

The selection of which pattern will be done by setting the PN generator will different base value and feedback.

The script also enables generating a user defined pattern (or correcting definitions without a patch) by setting new PN init value & mask).

Command Parameters:

Modulation scheme:	Size: 1 Byte
Value	**Parameter Description**
0x00	CW
0x01	GFSK (1M rate)
0x02	π/4 DPSK (2M rate)
0x03	8 DPSK (3M rate)

Test Pattern:	Size: 1 Byte
Value	**Parameter Description**
0x00	PN9 Mode
0x01	PN15 Mode
0x02	ZOZO Mode
0x03	All 1
0x04	All 0
0x05	F0F0 mode
0x06	FF00 mode
0x07	User defined

BT Frequency Channel:	Size: 1 Byte
Value	**Parameter Description**
0-78	Frequency channel, range 0-78 (decimal; Freq = 2402 + 2i, for i = 0 , 1, 2 , ..39 and Freq = 2403 + 2(i-40) for i = 40, 41, ..78 where i is the channel number)

Power Level:	Size: 1 Byte
Value	**Parameter Description**
0-7	7 = Max Output power 0 = Min Output power

There parameters are relevant only for USER DEFINED pattern

Generator Init value	Size: 4 Byte
Value	**Parameter Description**
0x00000000- 0x00FFFFFF	Generator init value – used in GFSK and EDR mode (only for USER DEFINED)

EDR Generator Mask:	Size: 4 Byte
Value	**Parameter Description**
0x00000000- 0x00FFFFFF	EDR Generator mask value – used in EDR mode only (only for USER DEFINED)

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.12 HCI_VS_DRP_Tester_Continous_RX (0xFD17)

Command	Opcode	Command Parameters	Return Parameters
	0xFD17	BT Frequency Channel ADPLL Loop mode	

Description:

This command gets the BT channel index and ADPLL loop mode and sets the device to continues RX in the defined loop mode.

Command Parameters:

BT Frequency Channel	Size: 1 Byte
Value	**Parameter Description**
0-78	Frequency channel, range 0-78 (decimal; Freq = 2402 + 2i, for i = 0 , 1, 2 , ..39 and Freq = 2403 + 2(i-40) for i = 40, 41, ..78 where i is the channel number)

ADPLL Loop mode	Size: 1 Byte
Value	**Parameter Description**
0	Open loop = 0
1	Close loop = 1

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.13 HCI_VS_DRP_Tester_Exit_DRP_Test_Mode (0xFD18)

Command	Opcode	Command Parameters	Return Parameters
	0xFD18		

Description:

This command is used to exit Continuous TX, Continuous RX, Packet TX_RX and BER_Meter modes

Command Parameters : None.

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

9.14 HCI_VS_Write_GSM_Configuration (0xFD19)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_GSM_Configuration	0xFD19	Scan_Sync_Enable Clock_is_active_pull_enable Minimum page scan interval Minimum inquiry scan interval IRQ Wakeup type	

Description:

This command enables or disables the feature of synchronizing the Bluetooth scans to the cellular host wake-up instances, when the host is in standby mode.

In systems where the host wakes up every time the Bluetooth needs a clock, it is possible to synchronize the Bluetooth scan activities (Page and Inquiry scans) to the cellular host wake-up instances (network synchronization), when the host is in standby mode. This feature can save significant amount of power since it consolidates most of the wake up events in the system (the cellular host and the Bluetooth) during standby mode (when both are in standby).

Synchronization is achieved by giving up the periodicity of the Bluetooth scans, and scanning in a variable period that is determined by the host wake up intervals.

Command Parameters :

Scan_Sync_Enable:		**1 Byte**
Value	**Parameter Description**	**Default Value**
0x0 - Enable scan synchronization, “clock is active” line is connected to IO2 0x1 - Enable scan synchronization, “clock is active” line is connected to IO4 only at WSP package. 0x2 - Enable scan synchronization, “clock is active” line is connected to IO5 only at uBGA package 0x3 - Disable scan synchronization.	Enables or disables sync scan feature.	0

Clock_is_active_pull_enable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - Input pull (on selected input IO) is disabled 0x1 - Input pull (on selected input IO) is enabled 0xFF – Do not Change	Enables or disables input pull while clock is active	0xFF

Minimum page scan interval		2 Byte
Value	**Parameter Description**	**Default Value**
0x0012 – 0x1000	The minimal value between the page scans in baseband slots	0x0800

Minimum inquiry scan interval		2 Byte
Value	**Parameter Description**	**Default Value**
0x0012 – 0x1000	The minimal value between the inquiry scans in baseband slots	0x0800

IRQ Wakeup type		1 Byte
Value	**Parameter Description**	**Default Value**
0x00	Slow	
0x01	Fast	
0xFF	Do not change	Default Value

Return Parameters:

Status:	1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

9.15 HCI_VS_Write_Wlan_Configuration (0xFD1D)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_Wlan_Configuration	0xFD1D	Enable Mode PA_OFF_polarity Priority_select Connection_handle_select Connection_handle_enable_disable Freq_mask_enable Freq_mask WLAN0_mux WLAN0_pull_enable WLAN1_mux WLAN1_pull_enable WLAN2_mux WLAN2_pull_enable WLAN3_mux WLAN3_pull_enable Disable_WLAN	

Description:
The following vendor specific command configures the operation of the WLAN coexistence mechanism.

Command Parameters:

Enable Mode		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 – SG1.0 Mode 0x1 – Reserved 0x2 – SG2.0 Mode 0x3 – Reserved 0x4 – Reserved 0x5 – Reserved 0xff – Do not change	Defines the operation mode of the WLAN interface	

PA_OFF_polarity		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 – PA off is active low 0x1 – PA off is active high 0xff – Do not change	Defines operation of PA	

Priority_select		2 Byte
Value	**Parameter Description**	**Default Value**
0x0000 – Priorty disabled 0x0001 – SCO/eSCO instant 0x0002 – Prioryt asserted during whole eSCO window 0x0004 – Prioryt asserted during FHS/ID slots 0x0008 – Priority asserted during SNIFF 0x0010 – Priorty asserted during Hold attempts 0x0020 – During Inquiry Scan 0x0040 – During Inquiry 0x0080 – During Page Scan 0x0100 – During Page 0x0200 – During Park 0x0400 – During during TDD 0x0800 – During first successful sniff attempt only 0x1000 – During park beacon only 0x2000 – During eSCO window only in master mode	Defines operations that should have priority lines on	

Connection_handle_select		2 Byte
Value	**Parameter Description**	**Default Value**
0x0 – 0xEFF – Connection handle 0xF000 – Disable at all handles 0xFFFF – Do not change	Defines the behavior with respect to connection handles	

Connection_handle_enable_disable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 – Disable 0x1 - Enalbe	Disable/Enable priority on the given handle	

Freq_mask_enable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 – No freq mask is given 0x1 – Enalbe on WLAN0 pin 0x2 – Enable on WLAN1 pin 0x3 – Enalbe on WLAN2 pin 0xFF – Do not change value	Defines behavior with respect to the freq mask	

Freq_mask		10 Bytes
Value	**Parameter Description**	**Default Value**
0xffff:ffff:ffff:ffff:ffff – Do not change 0x1-0x7fff:ffff:ffff:ffff:ffff - Enable each one of the frequencies that should be masked by this bit map	Defines frequency mask priority.	

WLAN0_mux		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - WLAN0 on IO2 0x1 - WLAN0 on IO4 0x2 - WLAN0 on IO5 0x3 - WLAN0 on BT_WAKE_UP 0x4 - WLAN0 on IO14 0x5 - WLAN0 on IO17 0xff - Don't Change	Defines the output of WLAN0 signal	

WLAN0_pull_enable		1Byte
Value	**Parameter Description**	**Default Value**
0x0 - Input pull (on selected input IO) is disabled 0x1 - Input pull (on selected input IO) is enabled 0xff - Don't Change	Defines WLAN0 pull	

WLAN1_mux		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - WLAN1 on IO4 0x1 - WLAN1 on EXT_CLK_REQ 0xff - Don't Change	Defines the output of WLAN1 signa1	

WLAN1_pull_enable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - Input pull (on selected input IO) is disabled 0x1 - Input pull (on selected input IO) is enabled 0xff - Don't Change	Defines the behaviour of the pull on the WLAN1 input	

WLAN2_mux		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - WLAN2 on TX_DBG 0x1 - WLAN2 on IO2 0x2 - WLAN2 on IO3 0x3 - WLAN2 on IO14 0x4 - WLAN2 on IO16	Defines the output of WLAN2 signal	

WLAN2_pull_enable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - Input pull (on selected input IO) is disabled 0x1 - Input pull (on selected input IO) is enabled 0xff - Don't Change	Defines the behaviour of the pull on the WLAN2 input	

WLAN3_mux		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - PA_OFF on IO1 0x1 - PA_OFF on TX_DBG 0xff - Don't Change	Defines the output of WLAN3 signal	

WLAN3_pull_enable		1 Byte
Value	**Parameter Description**	**Default Value**
0x0 - Input pull (on selected input IO) is disabled 0x1 - Input pull (on selected input IO) is enabled 0xff - Don't Change	Defines the behaviour of the pull on the WLAN3 input	

Disable		1 Byte
Value	**Parameter Description**	**Default Value**
0x1 – Disable WLAN interface 0x0 – Do not do anything	Disables WLAN interface	

Return Parameters:

Status:	Size: 1 Byte
Value	**Parameter Description**
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

9.16 HCI_VS_DRP_Enable_RF_Calibration (0xFD20)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_ DRP_ENABLE_RF_CALIBRATION	0xFD20	Mode Calibration Procedure Selection Override Temp Condition	Status

Description:

Enables RF Calibration for running immediately or periodically.

Define the calibration procedures needed to be run each time during periodic calibration.

When enabling periodic calibration, the calibration should start run immediately if in standby mode.

Command Parameters:

Mode:	Size: 1 Byte
Value	**Parameter Description**
0x00	Activate the calibration one time, Perform Immediately.
0x01-0xFD	Activate the calibration each 'Mode' 10*seconds periodically.
0xFE	Keep the periodic calibration.
0xFF	Stop the periodic calibration.

Calibration Procedure Selection:		Size: 2 Byte
Value	**Parameter Description**	**Default Mode (After Init)**
Bit 0	Pre RF Init	Disable
Bit 1	Calib_ADC calibration	Enable
Bit 2	Temperature Recognition	Enable
Bit 3	HVBGAP calibration	Disable
Bit 4	Device compensation Trimming	Enable
Bit 5	DPA compensation and power control	Enable
Bit 6	LDO's voltage read	Disable
Bit 7	Course Open Loop Calibration	Enable
Bit 8	DCO Current Optimization	Enable
Bit 9	Reserved	Disable (Default Requirement)
Bit 10	KDCO Calibration Procedure	Enable
Bit 11	DCO open loop calibration	Disable
Bit 12	IFA gain calibration	Disable
Bit 13	IFA pole calibration	Disable
Bit 14	ADC gain Calibration	Disable
Bit 15 (0xFFFF)	Don't Change	

Override temp condition	Size: 1 Byte
Value	**Parameter Description**
0x00	Activate the calibrations only if the temperature has changed
0x01	Activate the calibrations at every periodic calibration

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

9.17 HCI_VS_DRP_ Set_Power_Table (0xFD25)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_DRP_ SET_POWER_TABLE	0xFD25	Process Type	Status
		Temperature Range	
		Power Table Type	
		Level 0 value	
		Level 1 value	
		Level 2 value	
		Level 3 value	
		Level 4 value	
		Level 5 value	
		Level 6 value	
		Level 7 value	
		External PA Enable control	

Description:

This command sets the power table of the given process, temperature & type.

The "External PA Enable control" field is relevant only when the field "Power Table Type" is Ext PA.

Command Parameters:

Process Type	Size: 1 Byte
Value	**Parameter Description**
0x00 – 0x02	Update power table only if matches current process
0x0F	Regardless of process.

Temperature range	Size: 1 Byte
Value	**Parameter Description**
0x00 – 0x04	Update power table for the relevant temperature range
0x0F	Change for all temperatures (only if process matched)

Power Table Type	Size: 1 Byte
Value	**Parameter Description**
0x00	GFSK Power table
0x01	2-EDR power table
0x02	3-EDR power table
0x03	External PA power table

Level n value (n=0..7)	Size: 1 Byte
Value	**Parameter Description**
0x00 – 0xFF	Selects the value to set in the table entry.

External PA control	Size: 1 Byte
Value	**Parameter Description**
Bit 0	External PA activation for power level 0 (0 is off, 1 is on)
Bit 1	External PA activation for power level 1 (0 is off, 1 is on)
Bit 2	External PA activation for power level 2 (0 is off, 1 is on)
Bit 3	External PA activation for power level 3 (0 is off, 1 is on)
Bit 4	External PA activation for power level 4 (0 is off, 1 is on)
Bit 5	External PA activation for power level 5 (0 is off, 1 is on)
Bit 6	External PA activation for power level 6 (0 is off, 1 is on)
Bit 7	External PA activation for power level 7 (0 is off, 1 is on)

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

9.18 HCI_VS_ DRP_ Set_External_PA_Mode (0xFD26)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_DRP_ SET_EXTERNAL_PA_MODE	0xFD26	PA Mode Setting1 Setting2 EXT_PA_CMD1 Select EXT_PA_CMD2 Select EXT_PA_EN Select nEXT_PA_EN Select	Status

Description:

Controls MUX and activation for Analog / Digital PA.

OFF Mode – hardware is connected to external PA, but RF path is configured through RX path (so PA can be off all the time).

Command Parameters:

PA Mode	Size: 1 Byte
Value	**Parameter Description**
0x00	Class 2 configuration with class 1 hardware, External PA off route RF path to receive (switches set to RX, EXT_PA_EN low, nEXT_PA_EN is high).
0x01	DAC controls analog PA
0x02	PWM controls analog PA
0x03	Digital PA
0xFF	Don't change

Setting1	Size: 1 Byte
Value	**Parameter Description**
When in DAC mode	
0x00 – 0xFE	Values for resistance trim
0xFF	Don't change
When in PWM mode	
0x00 – 0xFE	Values for ramp up / down
0xFF	Don't change
When in Digital PA mode	
0x00 – 0xFE	Values for ramp up / down step size
0xFF	Don't change

Setting2	Size: 1 Byte
Value	**Parameter Description**
	When in PWM mode
0x00 – 0xFE	Duration of fast charge activation
0xFF	Don't change
	When in Digital PA mode
0x00 – 0x0FE	Values for ramp down step size
0xFF	Don't change

EXT_PA_CMD1 Select	Size: 1 Byte
Value	**Parameter Description**
0	TX_DBG
1	IO2
2	IO4
3	BT_WAKE_UP
4	IO16
5	IO17
0xFF	Don't change

EXT_PA_CMD2 Select	Size: 1 Byte
Value	**Parameter Description**
0	TX_DBG
1	IO3
2	BT_WAKE_UP
3	EXT_CLK_REQ
4	IO14
5	IO17
0xFF	Don't change

EXT_PA_EN Select	Size: 1 Byte
Value	**Parameter Description**
0	IO1
1	IO2
2	IO14
0xFF	Don't change

nEXT_PA_EN Select	Size: 1 Byte
Value	**Parameter Description**
0	TX_DBG
1	IO3
2	IO4
3	IO16
4	EXT_CLK_REQ
0xFF	Don't change

Return Parameters:

Status:	Size: 1 Byte
Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes.

Events Generated:

Command Complete Event

10. 6300 HCI Vendor Specific Commands (FW 2.0.38)

10.1 HCI_VS_Set_UART_HCI_Baudrate_Island3

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Set_UART_HCI_Baudrate_Island3		Divider Oversampling Swallow Period Middle of Bit	status

Description:

This command configures the BRF6300 UART baudrate. This command should be used in conjunction with the UART Baudrate Calculator PC application. Please note that the parmeter values are decimal.

Divider Size: 2 Byte

Value	Parameter Description
1 - 152	Divider value

Oversampling Size: 1 Byte

Value	Parameter Description
1 - 32	Oversampling value

Swallow period Size: 1 Byte

Value	Parameter Description
0 - 63	Swallow value

Middle of bit Size: 1 Byte

Value	Parameter Description
0 - 15	Middle of bit value

Return Parameters:

Status: Size: 1 Bytes

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed.

Events Generated:

Command Complete Event

10.2 HCI_VS_BTSPI_Configuration (0xFD41)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_BTSPI_Configuration		BTSPI Bits Direction (LSB First Enable) BTSPI Clock Polarity (Data Changed on rising enable) BTSPI Clock Frequency BTSPI DO 3's Enable BTSPI Fast Wakeup Enable BTSPI Mode BTSPI DO Pull Enable BTSPI DI Pull Enable BTSPI Clock Pull Enable BTSPI IRQ Pull Enable BTSPI CS Pull Enable Spare [4Bytes]	status

Description:

This command configures the BRF6300 SPI configuration. Please note that when using SPI this command is required to be sent to device directly after device initialization. Please note that the device wakeup mode is MSB and Specific polarity as defined by SPI specification.

Default values:

Bits Direction:	MSB First
Clock Polarity:	Output changed on rising edge, Sample on Falling edge
Clock Frequency:	6.5MHz
DO 3's Enable:	Disable
Fast Wakeup Enable:	Disable
BT SPI Mode:	H4 with SPI flow control
DO Pull Enable:	Enable
DI Pull Enable:	Enable
Clock Pull Enable:	Enable
IRQ Pull Enable:	Enable
CS Pull Enable:	Enable

Command Parameters:

Bits Direction (LSB First Enable) Size: 1 Byte

Value	Parameter Description
0x0	MSB First on SPI data
0x1	LSB First on SPI data
0xFF	Don't change

Clock Polarity (Data Changed on rising enable) Size: 1 Byte

Value	Parameter Description
0x0	Output changed on falling edge, Sampling on rising edge
0x1	Output changed on rising edge, Sampling on falling edge
0xFFFFFFFF	Don't change

Clock Frequency [KHz] Size: 1 Byte

Value	Parameter Description
0x0 – 0xFFFE	BTSPI Clock input frequency [KHz] (0-65534KHz)
0xFFFFFFFF	Don't change

BTSPI DO 3's Enable Size: 1 Byte

Value	Parameter Description
0x0	BTSPI DO is output always
0x1	BTSPI DO is in tri-state mode when the CS is de-asserted
0xFFFFFFFF	Don't change

BTSPI Fast Wakeup Enable Size: 1 Byte

Value	Parameter Description
0x0	BTSPI Fast wakeup from sleep is disabled
0x1	BTSPI Fast wakeup from sleep is enabled
0xFFFFFFFF	Don't change

BTSPI Mode Size: 1 Byte

Value	Parameter Description
0x0	Reserved
0x1	BTSPI
0xFF	Don't change

BTSPI DO Pull Enable Size: 1 Byte

Value	Parameter Description
0x0	Disable BTSPI DO pull up resistor
0x1	Enable BTSPI DO pull up resistor
0xFFFFFFFF	Don't change

BTSPI DI Pull Enable — Size: 1 Byte

Value	Parameter Description
0x0	Disable BTSPI DI pull up resistor
0x1	Enable BTSPI DI pull up resistor
0xFFFFFFFF	Don't change

BTSPI Clock Pull Enable — Size: 1 Byte

Value	Parameter Description
0x0	Disable BTSPI Clock pull up resistor
0x1	Enable BTSPI Clock pull up resistor
0xFFFFFFFF	Don't change

BTSPI IRQ Pull Enable — Size: 1 Byte

Value	Parameter Description
0x0	Disable BTSPI IRQ pull up resistor
0x1	Enable BTSPI IRQ pull up resistor
0xFFFFFFFF	Don't change

BTSPI CS Pull Enable — Size: 1 Byte

Value	Parameter Description
0x0	Disable BTSPI CS pull up resistor
0x1	Enable BTSPI CS pull up resistor
0xFFFFFFFF	Don't change

BTSPI Spare Bytes — Size: 4 Byte

Value	Parameter Description
0x0	Do Nothing
0xFFFFFFFF	Don't change

Return Parameters:

Status: — Size: 1 Bytes

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed.

Events Generated:

Command Complete Event

10.3 HCI_VS_ HCILL_Parameters (0xFD2B)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_ HCILL_PARAMETERS	0xFD2B	inactivity_timeout retransmit_timeout rts_pulse_width	Status

Description:

This command is used to control the behavior of HCILL deep sleep protocol.

Command Parameters:

inactivity_timeout: Size: 2 Byte

Value	Parameter Description
0x0000-0xFFFF	Time from UART inactivity to sending sleep_ind packet. If this value is equal to 0, then device will never send sleep_ind packet. Unit is frames (1.25 ms)

retransmit_timeout: Size: 2 Byte

Value	Parameter Description
0x0000-0xFFFF	Time from sending WAKEUP_IND packet, to a retransmission of this packet. If this value is equal to 0, then no retransmission is done. Unit is frames (1.25 ms).

rts_pulse_width: Size: 1 Byte

Value	Parameter Description
0x00-0xFF	Each WAKEUP_IND packet may be accompanied by a short pulse on RTS pin. This parameter controls the minimum width of this pulse. If this value is equal to 0, then no pulse will be sent. Unit is frames (1.25 ms).

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See **Error! Reference source not found.** on page **Error! Bookmark not defined.**

Events Generated:

Command Complete Event

10.4 HCI_Set_Num_Of_HCI_Commands (0xFD03)

Command	Opcode	Command Parameters	Return Parameters
HCI_Set_Num_Of_HCI_Commands	0xFD03	Cmd_control	Status

Description:

Control the number of command buffers reported to the host.

Command Parameters:

Cmd_control Size: 1 Byte

Value	Parameter Description
1 - 4	Number of maximum command buffers to report to the host.

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See **Error! Reference source not found.** on page **Error! Bookmark not defined.**

Events Generated:

Command Complete Event

10.5 HCI_VS_Write_CODEC_Config_Enhanced_Island3 (0xFD07)

Command	**Opcode**	**Command Parameters**	**Size**
Write_codec_config_enhanced_Island3	0xFD07	PCM clock shutdown	1 Byte
		PCM clock start	2 Bytes
		PCM clock stop	2 Bytes
		Reserved	1 Byte
		CH#1 din order	1 Byte
		CH#1 dout order	1 Byte
		CH#1 dout mode	1 Byte
		CH#1 dout duplication	1 Byte
		CH#1 tx_dup_value	4 Bytes
		CH#1 data quant	1 Byte
		Reserved	1 Byte

		CH#2 din order	1 Byte
		CH#2 dout order	1 Byte
		CH#2 dout mode	1 Byte
		CH#2 dout duplication	1 Byte
		CH#2 tx_dup_value	4 Bytes
		CH#2 data quant	1 Byte
		Reserved	1 Byte

Description:

This command is used to configure enhanced configuration of the codec interface. This command is optional and may not be used when all default parameters are acceptable. When this command is used, it must come after Write_codec_config_Island3 and not before it.

Default Values:	**HW default**	**HCI Tester command**
PCM clock shutdown	0 (Disable)	0 (Disable)
PCM clock start	0	0
PCM clock stop	0	0
Reserved	N.A	0
CH#1 din order	0 (MSB-first)	0 (MSB-first)
CH#1 dout order	0 (MSB-first)	0 (MSB-first)
CH#1 dout mode	2 (input when idle)*	2 (input when idle)
CH#1 dout duplication	0 (last sample)	0 (last sample)
CH#1 tx_dup_value	0	0
CH#1 data quant	0	0
Reserved	N.A	0
CH#2 din order	0 (MSB-first)	0 (MSB-first)
CH#2 dout order	0 (MSB-first)	0 (MSB-first)
CH#2 dout mode	2 (input when idle)*	2 (input when idle)
CH#2 dout duplication	0 (last sample)	0 (last sample)
CH#2 tx_dup_value	0	0
CH#2 data quant	0	0
Reserved	N.A	0

* Set by SW in Init

PCM clock shutdown Size: 1 Byte

Value	**Parameter Description**
0x00	PCM clock shutdown feature is disabled
0x01	PCM clock shutdown feature is enabled. Time of start/stop is defined in the following 2 fields (used in Master mode only)

PCM clock start — Size: 2 Bytes

Value	Parameter Description
0x0000..0xFFFF	Number of PCM clock cycles relative to the PCM frame sync to start PCM clock (for example – start 2 clocks before frame sync)

PCM clock stop — Size: 2 Bytes

Value	Parameter Description
0x0000..0xFFFF	Number of PCM clock cycles relative to the PCM frame sync to stop PCM clock (for example – stop 20 clocks after frame sync)

CH#X din order — Size: 1 Byte

Value	Parameter Description
Bit 0 = 0	Data driven MSB-first
Bit 0 = 1	Data driven LSB-first
Bit 1 = 0	Don't swap bytes within the sample.
Bit 1 = 1	swap bytes within the sample in bit-wise mode when data size > 8 ([XYZ]->[ZYX])
Bit 2 = 0	Don't shift sample.
Bit 2 = 1	Shift sample by (24|16-dout_size) bits from MSB to LSB (Controls sample alignment inside internal register (23:0) in bit-wise mode only)

CH#X dout order — Size: 1 Byte

Value	Parameter Description
Bit 0 = 0	Data driven MSB-first
Bit 0 = 1	Data driven LSB-first
Bit 1 = 0	Don't swap bytes within the sample.
Bit 1 = 1	swap bytes within the sample in bit-wise mode when data size > 8 ([XYZ]->[ZYX])
Bit 2 = 0	Don't shift sample.
Bit 2 = 1	Shift sample by (24|16-dout_size) bits from MSB to LSB (Controls sample alignment inside internal register (23:0) in bit-wise mode only)

CH#X dout mode — Size: 1 Byte

Value	Parameter Description
0x00	Always 3-state (input)
0x01	Always output
0x02	Switch to 3-state (input) when idle

0x03	Always 3-state (input)

CH#X dout duplication Size: 1 Byte

Value	Parameter Description
0x00	Retransmit last sample when no data available
0x01	Transmit DUP_VALUE when no data available

CH#X tx_dup_value Size: 4 Bytes

Value	Parameter Description
0x00000000 ..0x00FFFFFF	Replacement value to transmit when no data is available

CH#X data quant Size: 1 Byte

Value	Parameter Description
	In bit-wise mode, the basic data unit is the whole sample (8-24bits). In byte-wise mode, the basic data unit is one byte
0x00	Bit-wise mode. Possible if both data in and data out size are up to 24bits
0x01	Byte-wise mode

Return Parameters:

Status: Size: 1 Byte

Value	Parameter Description
0x00	Command Succeeded.
0x01-0xFF	Command failed. See Table 11: List of HCI Error Codes

Events Generated:

Command Complete Event

10.6 HCI_VS_Write_I2C_Register_Enhanced (0xFD36)

Command	Opcode	Command Parameters	Return Parameters
HCI_VS_Write_I2C_Register	0xFD36	Slave ID PVT Clock Working Frequency Address Access Size Sub Address Data Length Data	Status

Description:

This command writes a stream of bytes (1 to 16 bytes) on the I2C bus. In case that I2C bus is disabled during init the I2C bus is enabled, I2C writes are performed and then I2C bus is disabled again. It is the user responsibility to make sure I2C bus is muxed out on IO17/3 (when I2C is disabled). This is an enhanced version of HCI_VS_Write_I2C_Register since it controls the address access size. The address space can be up to 2 bytes (64Kbytes). The sub - address can be one or two bytes according to the address access size in the previous field.

The VS command should only be used when FM is not working to avoid I2C collisions.

Command Parameters:

Slave ID — Size: 1 Byte

Value	Parameter Description
CODEC 1 – 0x71 CODEC 2 – 0x1A E2PROM – 0x50	I2C Slave ID

PVT Clock — Size: 1 Byte

Value	Parameter Description
0	Pre-scale clock divider factor

Working Frequency — Size: 2 Bytes

Value	Parameter Description
0x190, 0x64	Working Frequency of the I2C device. 0x190 - CODEC 0x64 - E2PROM

Address Access Size — Size: 1 Byte

Value	Parameter Description
1-2	States the number of bytes used for the sub-address.

Sub address — Size: 2 Byte

Value	Parameter Description
0-255/0-65536	I2C Slave device internal register address. The value depends on the address access size (1 or 2 bytes).

Data Length — Size: 1 Byte

Value	Parameter Description
1-16	Data Length (in bytes) (FIFO length)

Data — Size: 1 - 16 Bytes

Value	Parameter Description
	Stream of bytes from left to right

Return Parameters:

Status: — Size: 1 Byte

Value	Parameter Description
0	Command Succeeded.

Events Generated:

Command Complete Event

Examples

This section will provide some examples for commands and their responses and how they should look like as hex dumps:

10.7 HCI_Write_Device_Under_Test_Mode

SENT Command:	HCI_Write_Device_Under_Test_Mode (Hex Code: 0x1803 Param Len: 0)
Outgoing Dump (HEX):	01 03 18 00
RCVD Event from HCI:	HCI_Command_Complete (Hex Code: 0x0e Param Len:
Parameters	Num HCI Cmd Packets : 1 (0x01)
	Cmd Code : 0x1803 (HCI_Write_Device_Under_Test_Mode)
	Status : Success (0x00)
Incoming Dump (HEX):	04 0e 04 01 03 18 00

10.8 HCI_Write_Scan_Enable

SENT Command:	HCI_Write_Scan_Enable (Hex Code: 0x0c1a Param Len: 1)
Parameters	Enable Flag : 3 (0x03)
Outgoing Dump (HEX):	01 1a 0c 01 03
RCVD Event:	HCI_Command_Complete (Hex Code: 0x0e Param Len: 4)
Parameters	Num HCI Cmd Packets: 1 (0x01)
	Cmd Code: 0x0c1a (HCI_Write_Scan_Enable)
	Status: Success (0x00)
Incoming Dump (HEX):	04 0e 04 01 1a 0c 00

10.9 HCI_VS_Write_RF_Register

SENT Command:	HCI_VS_Write_RF_Register (Hex Code: 0xff61 Param Len: 5)	
Parameters	Address:	133 (0x85)
	Value:	30326 (0x7676)
	Freq Enable:	0 (0x00)
	TX Power:	0 (0x00)
Outgoing Dump (HEX):	01 61 ff 05 85 76 76 00 00	
RCVD Event:	HCI_Command_Complete (Hex Code: 0x0e Param Len: 4)	
Parameters	Num HCI Cmd Packets :	1 (0x01)
	Cmd Code :	0xff61 (HCI_VS_Write_RF_Register)
	Return Parameters:	00
Incoming Dump (HEX):	04 0e 04 01 61 ff 00	

10.10 HCI_VS_Write_Hardware_Register

SENT Command:	HCI_VS_Write_Hardware_Register (Hex Code: 0xff01 Param Len: 6)	
Parameters	Address:	4294944276 (0xffffa614)
	Value:	1 (0x0001)
Outgoing Dump (HEX):	01 01 ff 06 14 a6 ff ff 01 00	
RCVD Event:	HCI_Command_Complete (Hex Code: 0x0e Param Len: 4)	
Parameters	Num HCI Cmd Packets :	1 (0x01)
	Cmd Code :	0xff01 (HCI_VS_Write_Hardware_Register)
	Return Parameters:	00
Incoming Dump (HEX):	04 0e 04 01 01 ff 00	

10.11 HCI_Create_Connection (Unsuccessful)

SENT Command:	HCI_Create_Connection (Hex Code: 0x0405 Param Len: 13)	
Parameters:	BD_ADDR of remote device:	29-09-19-73-aa-aa
	Packet Types Supported:	0x0008 (DM1)
	Page Scan Repetition Mode:	1 (0x01)
	Page Scan Mode :	0 (0x00)
	Clock Offset:	0 (0x0000)
	Allow Role Switch:	0 (0x00)
Outgoing Dump (HEX):	01 05 04 0d aa aa 73 19 09 29 08 00 01 00 00 00 00	
RCVD Event (HEX):	HCI_Command_Status (Hex Code: 0x0f Param Len: 4)	
Parameters:	Status:	Success (0x00)
	Num HCI Cmd Packets:	1 (0x01)
	Command Opcode:	HCI_Create_Connection (0x0405)
Incoming Dump (HEX):	04 0f 04 00 01 05 04	
RCVD Event:	HCI_Connection_Complete (Hex Code: 0x03 Param Len: 11)	
Parameters:	Status:	Page Timeout (0x04)
	Connection Handle:	1 (0x0001)
	BD_ADDR of remote:	29-09-19-73-aa-aa
	Link Type:	1 (0x01)
	Encryption Mode:	0 (0x00)
Incoming Dump (HEX):	04 03 0b 04 01 00 aa aa 73 19 09 29 01 00	

11. Appendix A, HCI Error Codes

HCI Error Codes	Decimal Value	Hex Value
HCI_SUCCESS	0	0x00
HCI_ERR_ILLEGAL_COMMAND	1	0x01
HCI_ERR_NO_CONNECTION	2	0x02
HCI_ERR_HW_FAILURE	3	0x03
HCI_ERR_PAGE_TIMEOUT	4	0x04
HCI_ERR_AUTH_FAILURE	5	0x05
HCI_ERR_KEY_MISSING	6	0x06
HCI_ERR_MEMORY_FULL	7	0x07
HCI_ERR_CONNECTION_TOUT	8	0x08
HCI_ERR_MAX_NUM_OF_CONNECTIONS	9	0x09
HCI_ERR_MAX_NUM_OF_SCOS	10	0x0A
HCI_ERR_CONNECTION_EXISTS	11	0x0B
HCI_ERR_COMMAND_DISALLOWED	12	0x0C
HCI_ERR_HOST_REJECT_RESOURCES	13	0x0D
HCI_ERR_HOST_REJECT_SECURITY	14	0x0E
HCI_ERR_HOST_REJECT_DEVICE	15	0x0F
HCI_ERR_HOST_TIMEOUT	16	0x10
HCI_ERR_UNSUPPORTED_VALUE	17	0x11
HCI_ERR_ILLEGAL_PARAMETER_FMT	18	0x12
HCI_ERR_PEER_USER	19	0x13
HCI_ERR_PEER_LOW_RESOURCES	20	0x14
HCI_ERR_PEER_POWER_OFF	21	0x15
HCI_ERR_CONN_CAUSE_LOCAL_HOST	22	0x16
HCI_ERR_REPEATED_ATTEMPTS	23	0x17
HCI_ERR_PAIRING_NOT_ALLOWED	24	0x18
HCI_ERR_UNKNOWN_LMP_PDU	25	0x19
HCI_ERR_UNSUPPORTED_REM_FEATURE	26	0x1A
HCI_ERR_SCO_OFFSET_REJECTED	27	0x1B
HCI_ERR_SCO_INTERVAL_REJECTED	28	0x1C
HCI_ERR_SCO_AIR_MODE	29	0x1D
HCI_ERR_INVALID_LMP_PARAM	30	0x1E
HCI_ERR_UNSPECIFIED	31	0x1F
HCI_ERR_UNSUPPORTED_LMP_FEATURE	32	0x20
HCI_ERR_ROLE_CHANGE_NOT_ALLOWED	33	0x21
HCI_ERR_LMP_RESPONSE_TIMEOUT	34	0x22
HCI_ERR_LMP_ERR_TRANS_COLLISION	35	0x23
HCI_ERR_LMP_PDU_NOT_ALLOWED	36	0x24

HCI_ERR_ENCRYPTION_NOT_ACCEPTABLE	37	0x25
HCI_ERR_UNIT_KEY_USED	38	0x26
HCI_ERR_QOS_NOT_SUPPORTED	39	0x27
HCI_ERR_INSTANT_PASSED	40	0x28
HCI_ERR_PAIRING_UNIT_KEY_NOT_SUPPORTED	41	0x29
HCI_ERR_DIFF_TRANS_COLLISION	42	0x2A
Reserved	43	0x2B
HCI_ERR_QOS_UNACCEPTABLE_PARAM	44	0x2C
HCI_ERR_QOS_REJECTED	45	0x2D
HCI_ERR_CH_CLASS_UNSUPPORTED	46	0x2E
HCI_ERR_INSUFFICIENT_SECURITY	47	0x2F
HCI_ERR_OUT_OF_MANDATORY_RANGE	48	0x30
Reserved	49	0x31
HCI_ERR_ROLE_SWITCH_PENDING	50	0x32
Reserved	51	0x33
HCI_ERR_RESERVED_SLOT_VIOLATION	52	0x34
HCI_ERR_SWITCH_FAILED	53	0x35
Reserved for Future Use	54-255	0x36-0xFF

Table 11: List of HCI Error Codes

12. Appendix B, HCI Vendor Specific Hardware Error Codes

HCI Error Codes	Decimal Value	Hex Value	Host Recovery
UART_HCI_NO_ERRS	0	0x00	NA
UART_HCI_ERR_NO_BUFFERS_COMMAND	1	0x01	Auto HCI Reset
UART_HCI_ERR_NO_BUFFERS_ACL_DATA	2	0x02	HW Reset
UART_HCI_ERR_NO_BUFFERS_SCO_DATA	3	0x03	HW Reset
UART_HCI_ERR_NO_BUFFERS_EVENT	4	0x04	NA
UART_HCI_ERR_NO_BUFFERS	5	0x05	NA
UART_HCI_ERR_BAD_TYPE	6	0x06	Auto HCI Reset
UART_HCI_ERR_BAD_LEN	7	0x07	Auto HCI Reset
UART_HCI_ERR_LOCAL_RESET	8	0x08	NA
UART_HCI_ERR_OVERRUN	9	0x09	Auto HCI Reset
UART_HCI_ERR_PARITY	10	0x0A	Auto HCI Reset
UART_HCI_ERR_FRAMING	11	0x0B	Auto HCI Reset
UART_HCI_ERR_BREAK	12	0x0C	Auto HCI Reset
HCI_HW_ERR_FAULT_RADIO_EVENT	13	0x0D	HCI Reset

Table 12: List of HCI Vendor Specific Hardware Error Codes

The column “Host Recovery” contains the required Host’s action in order to recover from the reported HW error:

HCI Reset: HCI Reset command is required.

HW Reset: Hardware Reset is required.

Auto HCI Reset: HCI Reset is done automatically 8 seconds (approx.) after recognizing the error in the BT device. The Host should take no action.

Auto HW Reset: HW Reset (Watchdog) is done automatically in the BT device. The Host should take no action.

NA: Error code is reserved for future use or not applicable. The Host should take no action.

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