

# **BRF6300 Release Note Firmware 2.0.38**

**BRF6300 3.11**

**Revision 0.1**

**March 13, 2006**

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## Revision Control

- Revision 0.1 (FW 2.0.38)
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## 1. Overview

This firmware release corresponds to the firmware version ROMed into the BRF6300 device. The version number of the current firmware release is 1.0.21.

- New features
- Current Bluetooth PICS supported
- Errata list

BRF6300 PG #	ROM Version	Flash Version
V3.0	1.0.21	
V3.11	2.0.38	

Table 1: Version His

## 2. Release Tracking

### 2.1 BRF6300 3.11

This firmware release corresponds to the firmware version ROMed into the BRF6300 3.11 device. The version number of the current firmware release is 2.0.38.

#### 2.1.1 Changes

#### 2.1.2 New Features and enhancements (BRF6300 3.0 Baseline)

- Proprietary protocol for BT HCI over SPI is supported.
- The specification for BT HCI over SDIO (Type-A SDIO) is supported for 1-bit SDIO bus.
- Host interface is detected automatically at power-up.
- Support for HV1 link with EDR
- Park functionality supported.
- PCM to Bluetooth Synchronization
- Enhanced HCILL

#### 2.1.3 Constraints

- Remote loopback not supported.
- VOHCI
  - local loopback not functional
  - Issue with lost packets during 3-EV5 connection.
- Change packet type to HV1 during SCO / eSCO can cause voice to disappear, leaving connection active.
- SDIO is not fully functional, VOHCI not supported.

### 3. PICS Pro Forma for Baseband

This Sub-Clause contains the PICS Pro Forma tables related to the capabilities for the BT Baseband protocol, based on revision 1.2 (dated 2003-11-05).

#### 3.1 Physical Channel

Item	Capability	Reference	Status	Support
1	Support frequency band and RF channels for USA, Japan and Europe (except France), 79-channel system.	BB, 2.1	M	Yes
2	Adaptive Frequency Hopping Kernel	BB, 2.6	M	Yes

Table 2: Frequency band and RF channels

C.1: Mandatory to support at least one of the frequency band and RF channels.

#### 3.2 Physical Links

Item	Capability	Reference	Status	Support
1	Support of ACL Link	BB, 5.2	M	Yes
2	Support of SCO Link	BB, 5.4	O	Yes
3	Support of eSCO Link	BB, 4.3	O	Yes
4	Support of medium rate ACL links	?	C.1	YES
5	Support of medium rate eSCO links	?	C.1	YES

Table 3: Link Types

Item	Capability	Reference	Status	Support
1	SCO links to same slave	BB, 5.4	C.1	Two SCO
2	SCO links to different slaves	BB, 5.4	O	Two SCO
3	SCO links from same master	BB, 5.4	C.1	Two SCO
4	SCO links from different masters	BB, 5.4	O	No

Table 4: SCO Link Support

C.1: Mandatory to support at least 1 link

Item	Capability	Reference	Status	Support
1	eSCO links to same slave	BB, 5.5	C.2	Two eSCO
2	eSCO links to different slaves	BB, 5.5	O	Two eSCO
3	eSCO links from same master	BB, 5.5	C.2	Two eSCO
4	eSCO links from different masters	BB, 5.5	O	Two eSCO*

Table 5: eSCO Link Support

\* At least 4 frames should be available on the BW

### 3.3 Packet Types

Item	Capability	Reference	Status	Support
1	Support of ID packet type.	BB, 6.5.1 BB 6.5.1.	M	Yes
2	Support of NULL packet type.	BB 6.5.1 BB, 6.5.1.2	M	Yes
3	Support of POLL packet type.	BB, 6.5.1 BB, 6.5.1.3	M	Yes
4	Support of FHS packet type.	BB, 6.5.1 BB, 6.5.1.4	M	Yes
5	Support of DM1 packet type.	BB, 6.5.1 BB, 6.5.1.5 BB, 6.5.4 BB, 6.5.4.1	M	Yes

Table 6: Common packet types

Item	Capability	Reference	Status	Support
1	Support of DH1 packet type.	BB, 6.5.4 BB, 6.5.4.2	M	Yes
2	Support of DM3 packet type.	BB, 6.5.4 BB, 6.5.4.3	O	Yes
3	Support of DH3 packet type.	BB, 6.5.4 BB, 6.5.4.4	O	Yes
4	Support of DM5 packet type.	BB, 6.5.4 BB, 6.5.4.5	O	Yes
5	Support of DH5 packet type.	BB, 6.5.4 BB, 6.5.4.6	O	Yes
6	Support of AUX1 packet type.	BB, 6.5.4 BB, 6.5.4.7	O	No
7	Support 2-DH1 packet type		C.1	Yes
8	Support 2-DH3 packet type		C.2	Yes
9	Support 2-DH5 packet type		C.2	Yes
10	Support 3-DH1 packet type		C.3	Yes
11	Support 3-DH3 packet type		C.4	Yes
12	Support 3-DH5 packet type		C.5	Yes

Table 7: ACL packet type



Item	Capability	Reference	Status	Support
1	Support of HV1 packet type.	BB, 6.5.2 BB, 6.5.2.1	M	Yes
2	Support of HV2 packet type.	BB, 6.5.2 BB, 6.5.2.2	O	Yes
3	Support of HV3 packet type.	BB, 6.5.2 BB, 6.5.2.3	O	Yes
4	Support of DV packet type.	BB, 6.5.2 BB, 6.5.2.4	M	Yes

Table 8: SCO packet type

Item	Capability	Reference	Status	Support
1	Support of EV3 packet type.	BB, 6.5.3 BB, 6.5.3.1	M	Yes
2	Support of EV4 packet type.	BB, 6.5.3 BB, 6.5.3.2	O	Yes
4	Support of EV5 packet type.	BB, 6.5.3 BB, 6.5.3.3	O	Yes
5	Support 2-EV3 packet type		C.1	Yes
6	Support 2-EV5 packet type		C.2	Yes
7	Support 3-EV3 packet type		C.3	Yes
8	Support 3-EV5 packet type		C.4	Yes

Table 9: eSCO packet type

## 3.4 Access Procedures

Item	Capability	Reference	Status	Support
1	Support paging	BB, 8.3.2	M	Yes
2	Support page scan	BB, 8.3.1	M	Yes
5	Supports Interlaced Scan during Page Scan	BB, 2.4	O	Yes

Table 10: Page procedures

Item	Capability	Reference	Status	Support
1	Supports mandatory scan mode	BB, 8.3 BB, Table 6.5	M	Yes

Table 11: Paging Schemes

Item	Capability	Reference	Status	Support
1	Supports paging mode R0	BB, 8.3.1 BB, Table 8.1	C.1	No
2	Supports paging mode R1	BB, 8.3.1 BB, Table 8.1	C.1	Yes
3	Supports paging mode R2	BB, 8.3.1 BB, Table 8.1	C.1	Yes

Table 12: Paging modes

C.1: At least one of the paging scan modes must be supported.

Item	Capability	Reference	Status	Support
1	Supports Npage >=1	BB, 8.3.2 BB, Table 8.2	O	Yes
2	Supports Npage >=128	BB, 8.3.2 BB, Table 8.2	O	Yes
3	Supports Npage >=256	BB, 8.3.2 BB, Table 8.2	M	Yes

Table 13: Paging train repetition

**Note:** The master should use Npage >= 256 unless it knows what SR mode the slave uses.

Item	Capability	Reference	Status	Support
1	Support inquiry.	BB, 8.4.2	O	Yes
2	Inquiry scan with first FHS.	BB, 8.4.2	O	Yes
3				
4				
5	Supports the dedicated inquiry access code.	BB, 6.3.1	O	Yes
6	Supports Interlaced Scan during Inquiry scan.	BB, 2.5	O	Yes

Table 14: Inquiry procedures

## 3.5 Network Capabilities

Item	Capability	Reference	Status	Support
1	Broadcast messages.	BB, 7.6.1 BB, 7.6.5	O	Yes
2	Point to Multi-Point connections.	BB, 1	O	Yes, 7 connections

Table 15: Piconet capabilities

Item	Capability	Reference	Status	Support
1	Act as Master in one Piconet and as Slave in another Piconet.	BB, 1	O	Yes
2	Act as Slave in more than one Piconet.	BB 1	O	Yes

Table 16: Scatternet capabilities

Item	Capability	Reference	Status	Support
1	A-Law	BB, 9.1	O	Yes
2	U-Law	BB, 9.1	O	Yes
3	CVSD	BB, 9.2	O	Yes
4	Transparent Synchronous Data	BB, 5.4 BB, 5.5	O	Yes

Table 17: Synchronous Coding Schemes

## 4. PICS Proforma for LM

This Sub-Clause contains the PICS Proforma tables related to the capabilities for the BT Link Manager protocol, based on revision 1.2 (dated 2003-11-05).

### 4.1 General Response Messages

Item	Capability	Reference	Status	Support
1	Accept message	LMP, 2.7	M	Yes
2	Reject message	LMP, 2.7	M	Yes

Table 18: Response messages

### 4.2 Supported Features (general statement)

Note: This table refers to the values in the LM feature request message. It is used within these PICS as a general statement that will be used as prerequisite for other tables.

Item	Capability	Reference	Status	Support
1	3-slot packets.	LMP, 4.1.10 LMP 3.3	O	Yes
2	5-slot packets.	LMP, 4.1.10 LMP 3.3	O	Yes
3	Encryption.	LMP, 4.2.5 LMP 3.3	O	Yes
4	Slot offset	LMP, 4.4.1 LMP 3.3	O	Yes
5	Timing accuracy	LMP, 4.3.1 LMP 3.3	O	Yes
6	Role switch (master/slave)	LMP, 4.4.2 LMP 3.3	O	Yes
7	Hold mode	LMP, 4.5.1 LMP 3.3	O	Yes
8	Sniff mode	LMP, 4.5.3 LMP 3.3	O	Yes
9	Park mode	LMP, 4.5.2 LMP 3.3	O	No
10	Power control	RF, 3 LMP, 4.1.3 LMP 3.3	C.1	Yes
11	Channel quality driven data rate	LMP, 4.1.7 LMP 3.3	O	Yes
12	SCO link	LMP, 4.6.1 LMP 3.3	O	Yes
13	RSSI	LMP 3.3	O	Yes
14	Broadcast Encryption	LMP, 4.2.5 LMP 3.3	O	No
15	eSCO Link	LMP, 4.6.2	O	Yes
16	Adaptive Frequency Hopping	LMP, 4.1.4	M	Yes
17	Medium rate ACL			Yes
18	Medium rate eSCO			Yes

Table 19: Supported features

C.2: Mandatory if Anonymous mode (C:2/15) is supported, otherwise Optional.

## 4.3 Authentication

Item	Capability	Reference	Status	Support
1	Initiate authentication before connection completed.	LMP, 4.2.1	O	Yes
2	Initiate authentication after connection completed	LMP, 4.2.1	O	Yes
3	Respond to authentication request.	LMP, 4.2.1	M	Yes

Table 20: Authentication

## 4.4 Pairing

Item	Capability	Reference	Status	Support
1	Initiate pairing before connection completed.	LMP, 4.2.2	O	Yes
2	Initiate pairing after connection completed.	LMP, 4.2.2	O	Yes
3	Respond to pairing request.	LMP, 4.2.2.1 LMP, 4.2.2.3	M	Yes
4	Use fixed PIN and request responder to initiator switch.	LMP, 4.2.2.2	C.1	Yes
5	Use variable PIN.	LMP, 4.2.2.2	C.1	Yes
6	Accept initiator to responder switch.	LMP, 4.2.2.2	C.2	Yes

Table 21: Pairing

C.1: Mandatory to support at least one of LMP 4/4 and LMP 4/5

C.2: Mandatory to support if LMP 4/5 and (LMP, 4/1 or LMP, 4/2) is supported

## 4.5 Link Keys

Item	Capability	Reference	Status	Support
1	Creation of link-key – unit key.	LMP, 4.2.2.4	C.1	No
2	Creation of link-key – combination key.	LMP, 4.2.2.4	C.1	Yes
3	Initiate change of link key.	LMP, 4.2.3	O	Yes
4	Accept change of link key.	LMP, 4.2.3	M	Yes
7	Accept pairing with Unit Key	LMP, 4.2.2.4	O	Yes

Table 22: Link keys

C.1: Mandatory to support at least one of the key types.

## 4.6 Encryption

Item	Capability	Reference	Status	Support
1	Initiate encryption.	LMP, 4.2.5.1	O	Yes
2	Accept encryption requests.	LMP, 4.2.5.1	M	Yes
5	Key size negotiation.	LMP, 4.2.5.2	M	Yes
6	Start encryption.	LMP, 4.2.5.3	C.1	Yes
7	Accept start of encryption.	LMP, 4.2.5.3	M	Yes
8	Stop encryption.	LMP, 4.2.5.4	C.1	Yes
9	Accept stop of encryption.	LMP, 4.2.5.4	M	Yes

Table 23: Encryption

C.1: Mandatory to support if acting as a Master.

## 4.7 Information requests

Item	Capability	Reference	Status	Support
1	Request clock offset information.	LMP, 4.3.2	O	Yes
2	Respond to clock offset requests.	LMP, 4.3.2	M	Yes

Table 24: Clock offset information

Item	Capability	Reference	Status	Support
1	Send slot offset information	LMP, 4.4.1	C.1	Yes

Table 25: Slot offset information

C.1: Mandatory to support if support of LMP, 13/1 (Master/Slave switch)

Item	Capability	Reference	Status	Support
1	Request timing accuracy information.	LMP, 4.3.1	O	Yes
2	Respond to timing accuracy information requests.	LMP, 4.3.1	C.1	Yes

Table 26: Timing accuracy information

C.1: Mandatory to support if support of LMP, 2/5 is stated in the feature request.

Item	Capability	Reference	Status	Support
1	Request LM version information.	LMP, 4.3.3	O	Yes
2	Respond to LM version information requests.	LMP, 4.3.3	M	Yes

Table 27: LM version information

Item	Capability	Reference	Status	Support
1	Request supported features	LMP, 4.3.4	C.1	Yes
2	Respond to supported features requests.	LMP, 4.3.4	M	Yes
3	Request extended feature mask	LMP, 4.3.4	C.2	Yes

Table 28: Feature support

C.1: Mandatory to support if any of the optional features in LMP, 2/1-3, LMP, 2/5, LMP, 2/7-12, LMP, 2/14-16, LMP, 26/1 is requested by the IUT.

C.2: Mandatory if a feature requiring another features page is supported, otherwise optional.

Item	Capability	Reference	Status	Support
1	Request name information	LMP, 4.3.5	O	Yes
2	Respond to name requests.	LMP, 4.3.5	M	Yes

Table 29: Name information

## 4.8 Link Handling

Item	Capability	Reference	Status	Support
1	Request Master Slave switch	LMP, 4.4.2	O	Yes
2	Accept Master Slave switch requests.	LMP, 4.4.2	C.1	Yes

Table 30: Role switch

C.1: Mandatory to support if support of LMP, 2/6 is stated in the feature request

Item	Capability	Reference	Status	Support
1	Detach connection	LMP, 4.1.2	M	Yes

Table 31: Detach

Item	Capability	Reference	Status	Support
1	Force hold mode	LMP, 4.5.1 LMP, 4.5.1.2	O	Yes
2	Request hold mode	LMP, 4.5.1 LMP, 4.5.1.3	C.1	Yes
3	Respond to hold mode requests.	LMP, 4.5.1 LMP, 4.5.1.3	C.2	Yes
4	Accept forced hold mode	LMP, 4.5.1.1 LMP, 4.5.1.2	C.2	Yes

Table 32: Hold mode

C.1: Mandatory to support if LMP 15/1 (Forced Hold mode) is supported

C.2: Mandatory to support if support of LMP 2/7 is stated in the feature request

Item	Capability	Reference	Status	Support
1	Request sniff mode	LMP, 4.5.3 LMP, 4.5.3.2	O	Yes
2	Respond to sniff mode requests.	LMP, 4.5.3.2	C.1	Yes
3	Request un-sniff	LMP, 4.5.3.2	C.3	Yes
4	Accept un-sniff requests	LMP, 4.5.3.2	C.2	Yes

Table 33: Sniff mode

C.1: Mandatory to either re-negotiates or rejects the sniff request.

C.2: Mandatory to support if support of LMP, 2/8 is stated in the feature request.

C.3: If LMP, 16/2 (Request sniff mode) is supported then mandatory to support.

Item	Capability	Reference	Status	Support
1				
2	Request park mode	LMP, 4.5.2 LMP, 4.5.2.2 LMP, 4.5.2.3	O	No
3	Respond to park mode requests.	LMP, 4.5.2 LMP, 4.5.2.2 LMP, 4.5.2.3	C.1	No
4	Set up broadcast scan window.	LMP, 4.5.2.3	O	No
5	Accept changes to the broadcast scan window	LMP, 4.5.2.3	C.1	No
6	Modify beacon parameters.	LMP, 4.5.2.4	O	No
7	Accept modification of beacon parameters.	LMP, 4.5.2.4	C.1	No
8	Request Unpark using PM_ADDR	LMP, 4.5.2.5	C.2	No
9	Request Unpark using BD_ADDR	LMP, 4.5.2.5	C.2	No (*)
10	Slave requested Unpark	LMP, 4.5.2.5 BB, 8.9.6	O	No
11	Accept Unpark using PM_ADDR	LMP, 4.5.2.5	C.3	No
12	Accept Unpark using BD_ADDR	LMP, 4.5.2.5	C.3	No

Table 34: Park mode

C.1: Mandatory to support if support of LMP, 2/ 9 is stated in the feature request.

C.2: If LMP, 17/3 (respond to Park mode request) is supported then at least one of LMP, 17/ 9 (Unpark using PM\_ADDR) or LMP, 17/10 (Unpark using BD\_ADDR) is mandatory to support.

C.3: Mandatory to support LMP 17/3 (Respond to park mode requests) is supported.

(\*) For a Master, needs to be enabled using a HCI Vendor Specific command (HCI\_VS\_Config\_Park\_Attributes).



Item	Capability	Reference	Status	Support
1	Request to increase power.	LMP, 4.1.3	C.1	Yes
2	Request to decrease power.	LMP, 4.1.3	C.1	Yes
3	Respond when Max power reached.	LMP, 4.1.3	C.2	Yes
4	Respond when Min power reached.	LMP, 4.1.3	C.2	Yes

Table 35: Power control

C.1: Mandatory to support if support of LMP 2/13 is stated

C.2: Mandatory to support if support of LMP 2/10 is stated

Item	Capability	Reference	Status	Support
1	Set link supervision timeout value.	LMP, 4.1.6	O	Yes
2	Accept link supervision timeout setting.	LMP, 4.1.6	M	Yes

Table 36: Link supervision timeout

## 4.9 Quality of Service

Item	Capability	Reference	Status	Support
1	Channel quality driven change between DM and DH packet types.	LMP, 4.1.7	C.1	Yes
2	Force/Request change of Quality of Service.	LMP, 4.1.8 LMP, 4.1.8.1	M	Yes
3	Request change of Quality of Service.	LMP, 4.1.8 LMP, 4.1.8.2	M	Yes

Table 37: Quality of service

C.1: Mandatory to support if support LMP, 2/11 is stated in the feature request.

## 4.10 SCO Links

Item	Capability	Reference	Status	Support
1	Initiate SCO link as Master.	LMP, 4.6.1 LMP, 4.6.1.1	O	Yes
2	Initiate SCO link as Slave.	LMP, 4.6.1 LMP, 4.6.1.2	O	Yes
3	Accept SCO links.	LMP, 4.6.1 LMP, 4.6.1.1 LMP, 4.6.1.2	O	Yes
4	Remove SCO link, as Master.	LMP, 4.6.1 LMP, 4.6.1.5	C.1	Yes
5	Remove SCO link, as Slave.	LMP, 4.6.1 LMP, 4.6.1.5	C.1	Yes
6	Negotiate SCO link parameters, as Master.	LMP, 4.6.1 LMP, 4.6.1.3	C.4	Yes
7	Negotiate SCO link parameters, as Slave	LMP, 4.6.1 LMP, 4.6.1.4	C.4	Yes
8	Enter and exit eSCO using Medium Rate Packets			Yes

Table 38: SCO links

C.1: Mandatory to support if LMP, 21/1 (Initiating SCO links, as Master) is supported

C.2: Mandatory to support if LMP, 21/2 (Initiating SCO links, as Slave) is supported

C.3: Mandatory to support if LMP, 21/1 (Initiating SCO links, as Master) or LMP, 21/3 (Accept SCO links) is supported

C.4: Mandatory to support if LMP, 21/2 (Initiating SCO links, as Slave) or LMP, 21/3 (Accept SCO links) is supported

## 4.11 Multi-Slot Packages

Item	Capability	Reference	Status	Support
1	Accept maximum allowed number of slots to be used.	LMP, 4.1.10	C.1	Yes
2	Request maximum number of slots to be used.	LMP, 4.1.10	C.1	Yes
3	Accept request of maximum number of slots to be used.	LMP, 4.1.10	C.1	Yes

Table 39: Multi-slot packages

C.1: Mandatory to support if LMP, 2/1 and/or LMP, 2/2 is stated in the feature request.

## 4.12 Paging Scheme

Item	Capability	Reference	Status	Support
1	Request page mode to use.	LMP, 4.1.9 LMP, 4.1.9.1	O	No
2	Accept suggested page mode.	LMP, 4.1.9 LMP, 4.1.9.1	O	No
3	Request page scan mode to use.	LMP, 4.1.9 LMP, 4.1.9.2	O	No
4	Accept suggested page scan mode.	LMP, 4.1.9 LMP, 4.1.9.2	O	No

Table 40: Paging scheme

## 4.13 Connection Establishment

Item	Capability	Reference	Status	Support
1	Create connection for higher layers.	LMP, 4.1.1	M	Yes
2	Respond to request to establish connections for higher layers.	LMP, 4.1.1	M	Yes
3	Indicate that link set-up is completed.	LMP, 4.1.1	M	Yes
4	Enter Medium Rate			Yes
5	Exit Medium Rate			Yes

Table 41: Connection establishment

## 4.14 Test Mode

Item	Capability	Reference	Status	Support
1	Activate test mode.	LMP, 4.7.1	O	Yes
2	Ability to reject activation of test mode if test mode is disabled.	LMP, 4.7.1	M	Yes
3	Control test mode.	LMP, 4.7.2	O	Yes
4	Ability to reject test mode control commands if test mode is disabled.	LMP, 4.7.2	M	Yes

Table 42: Test mode

## 4.15 Adaptive Frequency Hopping

Item	Capability	Reference	Status	Support
1	Support AFH switch as master	LMP, 4.1.4	O	Yes
2	Support AFH switch as slave	LMP, 4.1.4	M	Yes
3	Support Channel Classification reporting as master	LMP, 4.1.5	C.1	Yes
4	Support Channel Classification reporting as slave	LMP, 4.1.5	C.2	Yes
5	Support Channel Classification from host	LMP, 4.1.5	C.3	Yes
6	Support Channel Classification	LMP, 4.1.5	O	Yes

Table 43: Adaptive Frequency Hopping

C.1 - Optional if LMP, 26/6 is supported, otherwise excluded.

C.2 - Mandatory if LMP, 26/6 is supported, otherwise excluded.

C.3 - Mandatory if LMP, 26/1 or LMP 26/4 is supported, otherwise optional.

## 5. Errata list

### 5.1 HCI\_Reset during Testmode

Description	Device is unable to create a new connection after sending HCI_Reset during testmode. This issue can be bypassed with host workaround.
Internal numbering	
Temporary actions/Setting	Issue can be bypassed by Host operation.

### 5.2 Switch with Scatternet

Description	Low probability issue with role switch during scatternet mode , requiring device reset.
Internal numbering	
Temporary actions/Setting	Issue solved in development base line. To be delivered in next release

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