TEXAS
INSTRUMENTS

BRF6300 Release Note
Firmware 1.21

BRF6300 3.0

Revision 0.1

July 7, 2005

Revision Control

- Revision 0.1 (FW 1.0.21)

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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	

Table 1: Version History

2. Release Tracking

2.1 BRF6300 3.0

This firmware release corresponds to the firmware version ROMed into the BRF6300 3.0 device. The version number of the current firmware release is x.0.xx.

2.1.1 Changes

2.1.1.1 New Features and enhancments
- Enhanced Data Rate EDR Support
- Improved power management architechture
    - Better ripple immunity
    - Reduced external BOM
- Mutiple IAC (Inquiry Access Code) for faster and power saving inquires. Upto 3 IAC simultaneously
- Improved PCM interface
- Fast UART

2.1.2 Constraints

2.1.2.1 Park
- Park Mode is not supported in current ROM version.
- Power control algorithm inactive during EDR connection.

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.

Errata list

4.16 H5 – CRC in unreliable packets

Description	In H5, although CRC is enabled, unreliable packets do not include the CRC bytes
Internal numbering	21480
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

4.17 R2 Page Repetition Mode

Description	During page or master/slave switch, an FHS packet is sent to peer with the wrong scan_repetition_mode. Instead of sending the local page scan mode the value received from host via the HCI_Create_Connection command. This may prolong the connection process or cause paging to fail in some cases.
Internal numbering	21484
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

4.18 DH1 packets instead of DV packets in HV1

Description	In some cases of unsuccessful SCO re-negotiation on an existing HV1 link, DH1 packets will be transmitted instead of DV packets
Internal numbering	20949
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

4.19 Wrong Error Code for reject Pairing

Description	Wrong error code sent when rejecting a paring request received from a peer device. Error code should be PAIRING NOT ALLOWED instead of KEY MISSING
Internal numbering	22219
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

4.20 Authentication collision with very fast peer

Description	This issue was found during an IOP session in UPF-21. Performing authentication during connection establishment, with a specific peer device. During connection creation: LMP_in_rand was received before the link_key_req_event was sent to the host. As a result the pin_code_req_event was sent twice to the host , causing the pairing process to fail.
Internal numbering	22388
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

4.21 LMP and HCI Versions show BT 1.2

Description	HCI_Read_Local_Version_Information returns HCI and LMP versions 1.2 instead of 2.0.
Internal numbering	20553
Temporary actions/Setting	Issue solved in development base line. To be delivered in Stacked RAM release

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