MCPC TR－006 Ver.1.00
BT Watch for Mobile Phone Technical Reference （English Edition）
24/Nov./2005

Mobile Computing Promotion Consortium (MCPC)

Revision History

Version	Date	Location	Description
1.00	08/09/2005		Ver.1.00 was released

CONTENTS

1. General

This document adds to and expands on the MCPC HFP Technical Reference for Hands Free Profile (HFP) specification published by the Bluetooth Special Interest Group (SIG).

The current version of the HFP specifies usage scenarios surrounding calls. However, there are many usage scenarios that do not involve calls. Thus, we specify the application and implementation of the specification in relation to wristwatches that do not have any audio devices. Based on the Non-Audio Feature of the HFP, this specification is limited to the addition/extension of AT commands.

Ver1.0 specifies five basic applications, as listed below:

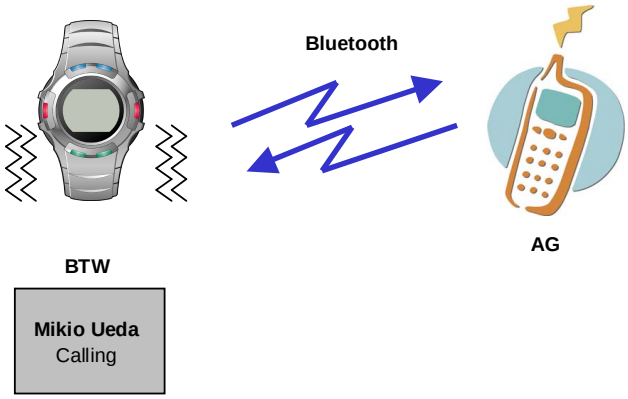
(1) Phone call alert function
(2) Mail alert function
(3) One-touch silent mode function
(4) Link disconnection alert function
(5) Time correction function

Other applications will be specified later.

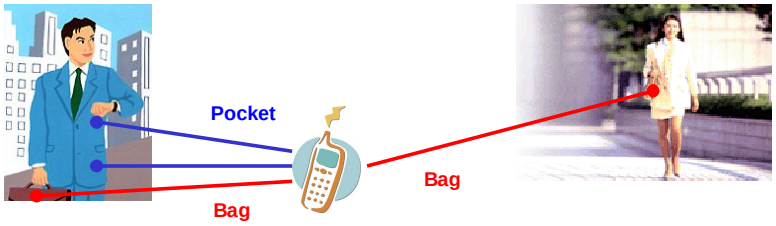
1.1 Systems

This technical reference defines the system configuration, as illustrated below.

AG device refers to a Bluetooth-enabled mobile phone. A BT Watch (BTW) is one that has at least a display, an operation button, and a vibration function.



1.2 Application



1.3 Overview of basic applications

(1) Phone call alert function

The phone call alert function uses the following BTW operations when the AG device receives a call.

1) Call termination

- The BTW will vibrate to notify the user that a phone call has been terminated, so no calls will be missed.
- The BTW will display the Caller ID. No-indication of Caller ID and public display of Caller ID will also be available.

2) Answer Hold

- A call can be put on Hold by pressing a key on the BTW, making it unnecessary for the user to immediately answer a mobile phone.

3) Call reject

- A call can be rejected by pressing a key on the BTW, enabling the user to clear the call immediately.

4) Ringing tone muting

- The ringing tone can be muted by pressing a key on the BTW, enabling the user to stop continuous ringing.

(2) Mail alert function

The mail alert function uses the following BTW operations when the AG device receives new mail.

This specification is for a simplified implementation that does not require multiple profiles. Advanced, complicated operations will use MAP (Message Access Profile) and are not specified here.

1) New mail display

- The BTW will vibrate to notify the user that new mail has arrived, so no new message will be missed.

2) Ringing tone muting

- The ringing tone can be muted by pressing a key on the BTW, enabling the user to stop continuous ringing.

3) Mail status display

- Mail status will be displayed on the BTW, enabling the user to view any unread messages.

(3) One-touch silent mode function

- The one-touch silent mode function of the BTW allows the user to simply switch the AG device's notice tone mode ON/OFF; it is useful when the user is on a train or in a conference.

(4) Link disconnection alert function

- The BTW will vibrate and display a message to notify the user that the link between the BTW and the AG device has been disconnected.

1) Left-behind alert function

- If the distance between the AG device and the BTW becomes too great and if the link between the two is disconnected for a certain length of time, the BTW will issue a notice that the AG device has been left behind.
- This function prevents the AG device from being left behind.

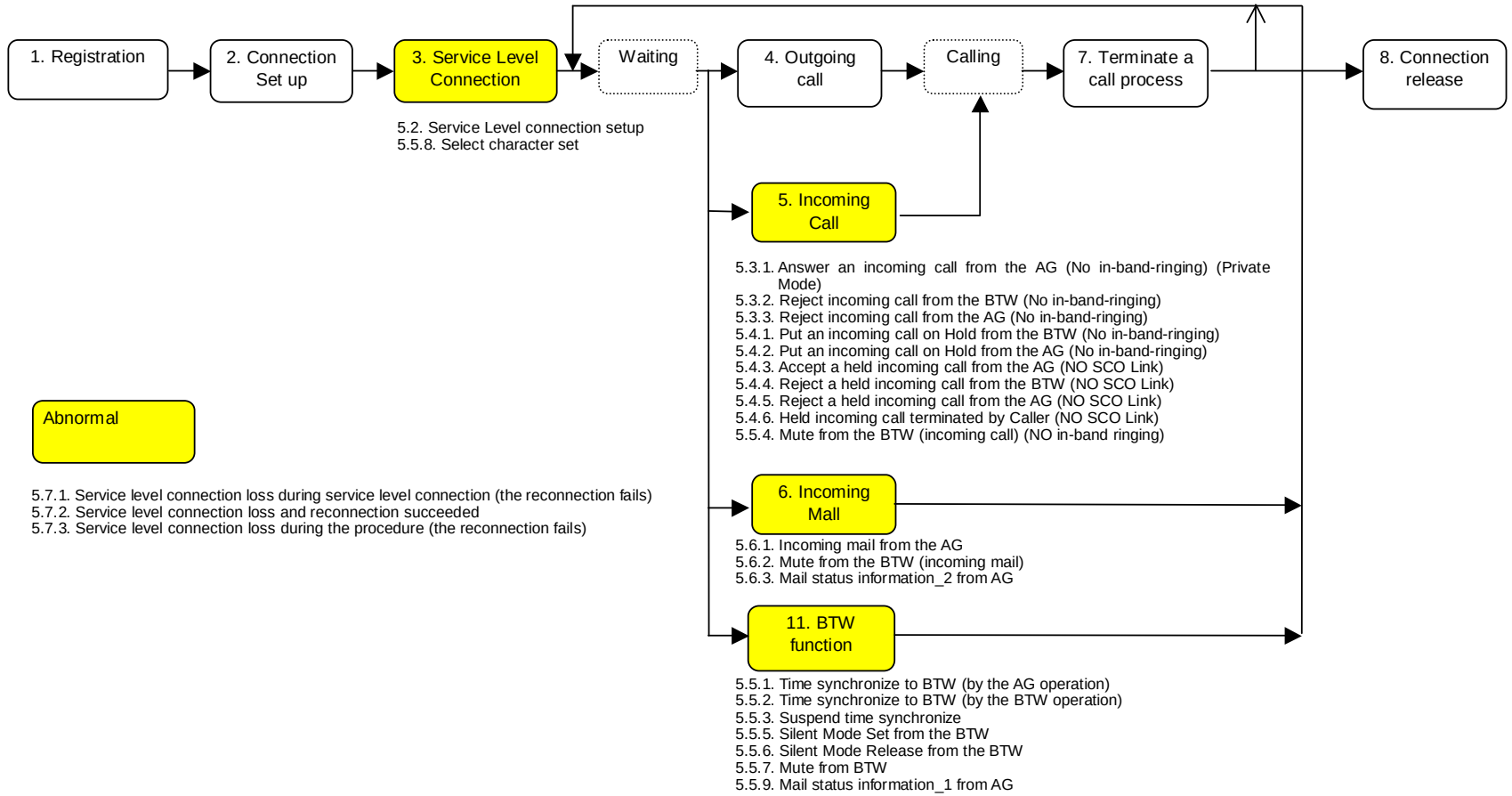
(5) Time correction function

- This function will transfer the correct time from the AG device to the BTW to correct the time displayed on the BTW.

2. State transition assumed in the technical reference

The figure below indicates the state transition diagram assumed in the technical reference. The AG (mobile phone) and BTW (BT Watch) operate interactively according to the hands-free profile.

2.1. Applicable state transition (BTW, Non Audio)



3. Scenario

This chapter describes scenarios for specific AG and BTW operations based on those described in the HFP specification. This chapter aims to:

- Clarify the standard specification to improve reader's understanding of it, and
- Avoid reader's misunderstanding sequences and parameters for interconnectivity.

The first table details normal usage scenarios and the second details abnormal (quasi-normal) usage scenarios.

3.1. Normal / Additional Usage Scenarios

Scenario Category	Scenario Name	Initial Status			Upon	Upon	Scenario Description	HFP Section
		SLC*[1]	AC*[2]	Call	BTW	AG		
Connection setup	Service level connection setup	X	X	X	M	M	Checks for Non-Audio and BTW function support	
Incoming call	Answer an Incoming call from the AG (No in-band-ringing) (Private Mode)	E	X	X	M	M	Notifies the BTW of the Caller ID	
	Reject incoming call from the BTW (No in-band-ringing)	E	X	X	M	M	Once the Caller ID is displayed on the BTW, the user can use the BTW to send an incoming call rejection notice to the AG device	
	Reject incoming call from the AG (No in-band-ringing)	E	X	X	M	M	Once the Caller ID is displayed on the BTW, the user can use the AG device to send an incoming call rejection notice to the BTW	
	Put an incoming call on Hold from the BTW (No in-band-ringing)	E	X	X	M	M	The user puts the call on the AG device on Hold using the BTW	
	Put an incoming call on Hold from the AG (No in-band-ringing)	E	X	X	M	M	The user puts the call on the AG device on Hold using the AG Device	
	Accept a held incoming call from the AG (NO SCO Link)	E	X	X	M	M	Using the AG device, the user can answer a call that has been on Hold	
	Reject a held incoming call from the BTW (NO SCO Link)	E	X	X	M	M	Using the BTW, the user can reject a call that has been put on Hold	
	Reject a held incoming call from the AG (NO SCO Link)	E	X	X	M	M	Using the AG device, the user can reject a call that has been on Hold	
	Held incoming call terminated by Caller (NO SCO Link)	E	X	X	M	M	The caller can end a call that has been put on Hold	
	Mute from the BTW (incoming call) (NO in-band ringing)	E	X	X	M	O	Stops the AG device from sounding the incoming call notice tone	
BTW function	Time synchronize to BTW by the AG operation	E	X	X	M*[3]	O	Either regularly or on user demand from the AG device, the AG device will issue a time synchronize request to the BTW and will notify the BTW of the current time for time synchronization	
	Time synchronize to BTW by the BTW operation	E	X	X	M*[3]	O	Either regularly or on user demand from the BTW, the BTW will issue a time synchronize request to the AG device, and the AG device will notify the BTW of the current time for time synchronization	
	Suspend time synchronize by the AG operation	E	X	X	M*[3]	O	If a call is terminated during time synchronize, this process will be interrupted to process the incoming call	
	Silent Mode Set from the BTW	E	X	X	M	O	Sets the AG device to silent and vibration mode from the BTW	
	Silent Mode Release from the BTW	E	X	X	M	O	Uses the BTW to release the AG device silent mode setting	
	Mute from BTW	E	X	X	M	O	Uses the BTW to stops the AG device ring tone from sounding	
	Select character set	E	X	X	M	M	Sets the AG device's character set	
	Mail status information_1 from AG	E	X	X	M	O	Notification of the status of already read mail is displayed on the AG device	
Incoming mail	Incoming mail from the AG	E	X	X	M	O	Incoming mail notification is displayed on the AG device	
	Mute from the BTW (incoming mail)	E	X	X	M	O	Uses the BTW to stop the AG device displaying notifications of incoming mail	
	Mail status information_2 from AG	E	X	X	M	O	Displays notification of unread mail on the AG device	

3.2. Abnormal Usage Scenarios

Scenario Category	Scenario Name	Initial Status			Upon	Upon	Scenario Description	HFP Section
		SLC*[1]	AC*[2]	Call	BTW	AG		
Abnormal	Service level connection loss during service level connection (the reconnection fails)	E	X	X	M	-	If the link between the AG device and the BTW is lost, the BTW will sound an alarm tone	
	Service level connection loss and reconnection succeeded	E	X	X	M	-	If the link between the AG device and the BTW is lost, the BTW will sound an alarm tone	
	Service level connection loss during the procedure (the reconnection fails)	E	X	?	M	-	If the link between the AG device and the BTW is lost, the BTW will sound an alarm tone	

E: Exist
X: Not Exist
?: Both cases are assumed
M: Mandatory
O: Option

*[1] SLC: Service Level Connection
*[2] AC: Audio Connection
*[3] Optional for devices that have no timekeeping function.

4. Recommended items

4.1. Recommendations for handling BTW and non-audio specification

Item	HFP	Recommendation		Reason
Service Level Connection	-	AG	Judged as available if the non-audio support bit is set.	Operation disabled unless both the AG device and the BTW support BTW functions.
		HF	Judged as available if the non-audio support bit is set. If HF supports BTW function and the AG device does not support BTW function, it is recommended that BTW is used to perform normal HFP operations. Or, if this is not possible, it is recommended that subsequent communication is cleared.	

Item	HFP	Recommendation		Reason
-	-	AG	Do not perform any Audio connection	No audio devices present in the BTW
Call active		AG	Set Private Mode only	No audio devices present in the BTW
Incoming call, SLC	-	AG	NO SCO Link specification No in-band ringing specification	No audio devices present in the BTW
Call active	-	BTW	Reject audio path connection request	No audio devices present in the BTW

4.2. Prohibited items in the non-audio specification

Item	HFP	Recommendation		Reason
-		AG/BTW	Audio path switch operation prohibited (Private Mode → Hands-free Mode)	No audio devices present in the BTW

4.3. Recommendations for the time synchronize function

Item	HFP	Recommendation		Reason
Time synchronize method	-	Time transmission side	With a single time notice, the reception side runs time synchronization. For second switching, if the transmission side is unable to issue a time notice because of the way it is implemented, then to avoid a synchronization error of up to one second, it is recommended that at least two sets of time notification be performed consecutively so that the second digit can takes count-up. Where greater synchronization precision is desired, it is recommended that time notices be repeated several times in a second.	Aims to improve the precision of time synchronization. However, synchronization errors can be caused by the overhead time consumed in the time notice on the time transmission side and that consumed to set the internal clock on the time reception side. This depends on the implementation.
		Time reception side	If the second digit is incremented, it is recommended that this is immediately reflected in the internal clock.	

4.4. Recommendations for the mail alert function

Item	HFP	Recommendation		Reason
New mail	-	AG	If new mail arrives at the server access and a SMS is received, issue +CIEV: (mail=1).	To ensure notification is issued only once when new mail arrives
Unread/read mail	-	AG	At transition to mail unread state, issue +CIEV: (message=1) At transition to mail read state, issue +CIEV: (message=0)	To notify the user of the mail status i.e. unread/read

4.5. Recommendations for the phone ringing tone/mail ringing tone mute functions

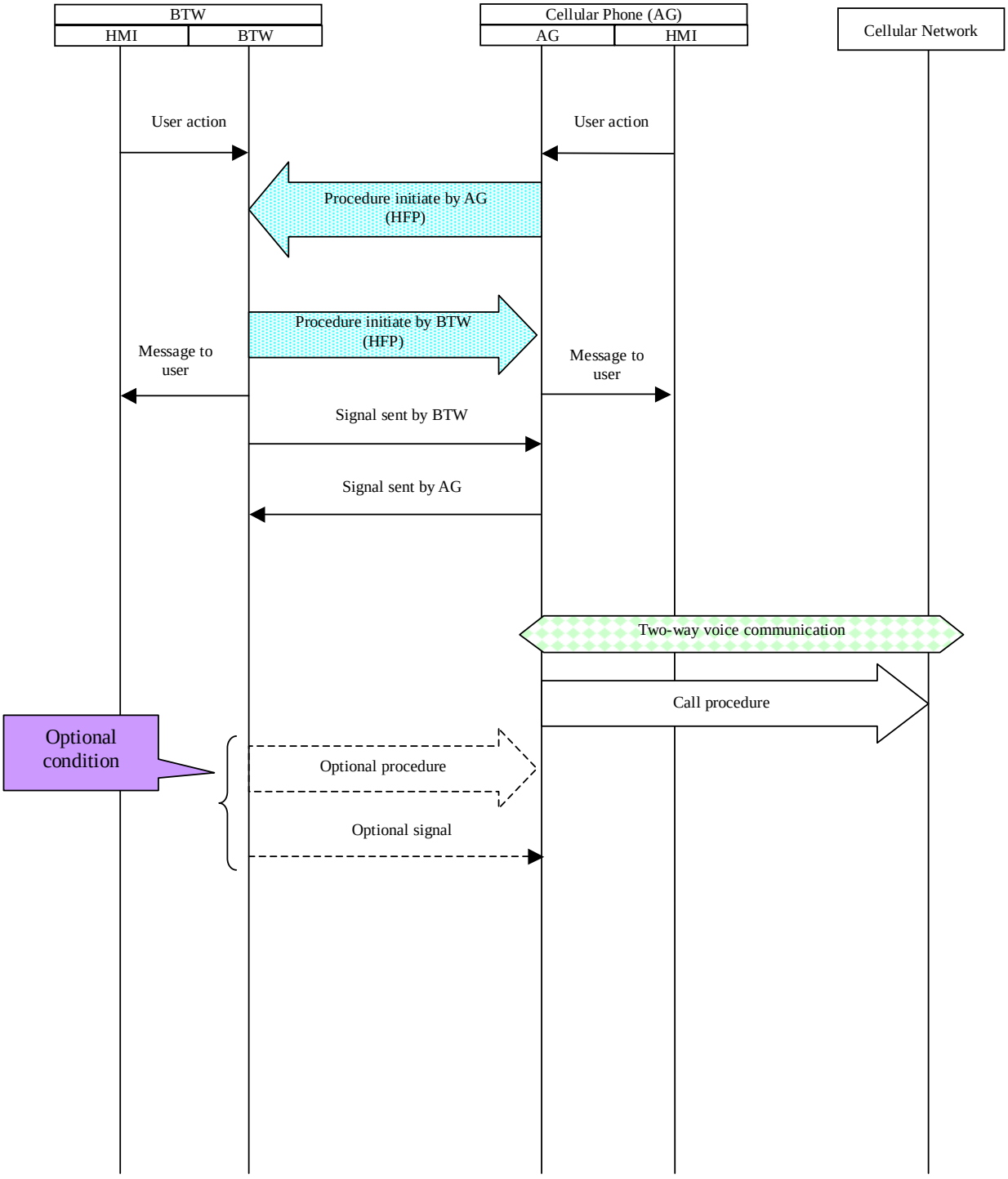
Item	HFP	Recommendation		Reason
Notice tone shutoff	-	AG	Aims to prevent the current notice tone from sounding; the level of notice tone setting is temporary and once the operation is completed, the AG device value is returned to its usual setting	To temporarily stop the tone from sounding
Notice tone shutoff	-	AG	Disable the command reception function in all instances other than during the sounding of the notice tone	To temporarily stop the tone from sounding
Setting	-	AG	Only use the notice tone setting to temporarily stop the tone from sounding; thereafter, restore the normal settings.	To temporarily stop the tone from sounding

4.6. Recommendations for one-touch silent mode setting

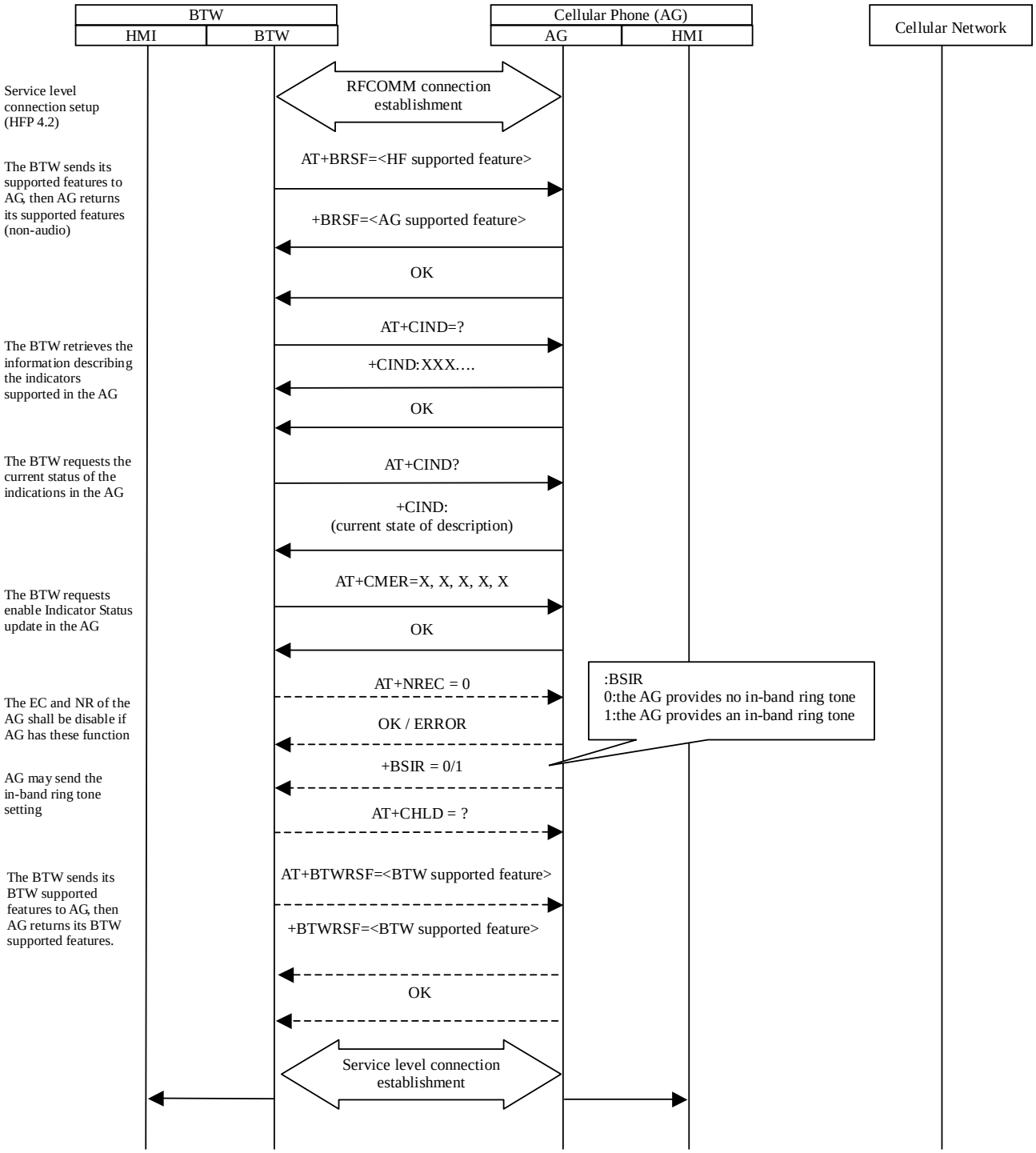
Item	HFP	Recommendation		Reason
Setting	-	AG	If the AG device receives a silent mode enable command, it will enable vibration.	To leave AG notice means
Setting	-	AG	Setting is permanent operation	

5. Sequence chart

5.1. Conventions used in sequence chart

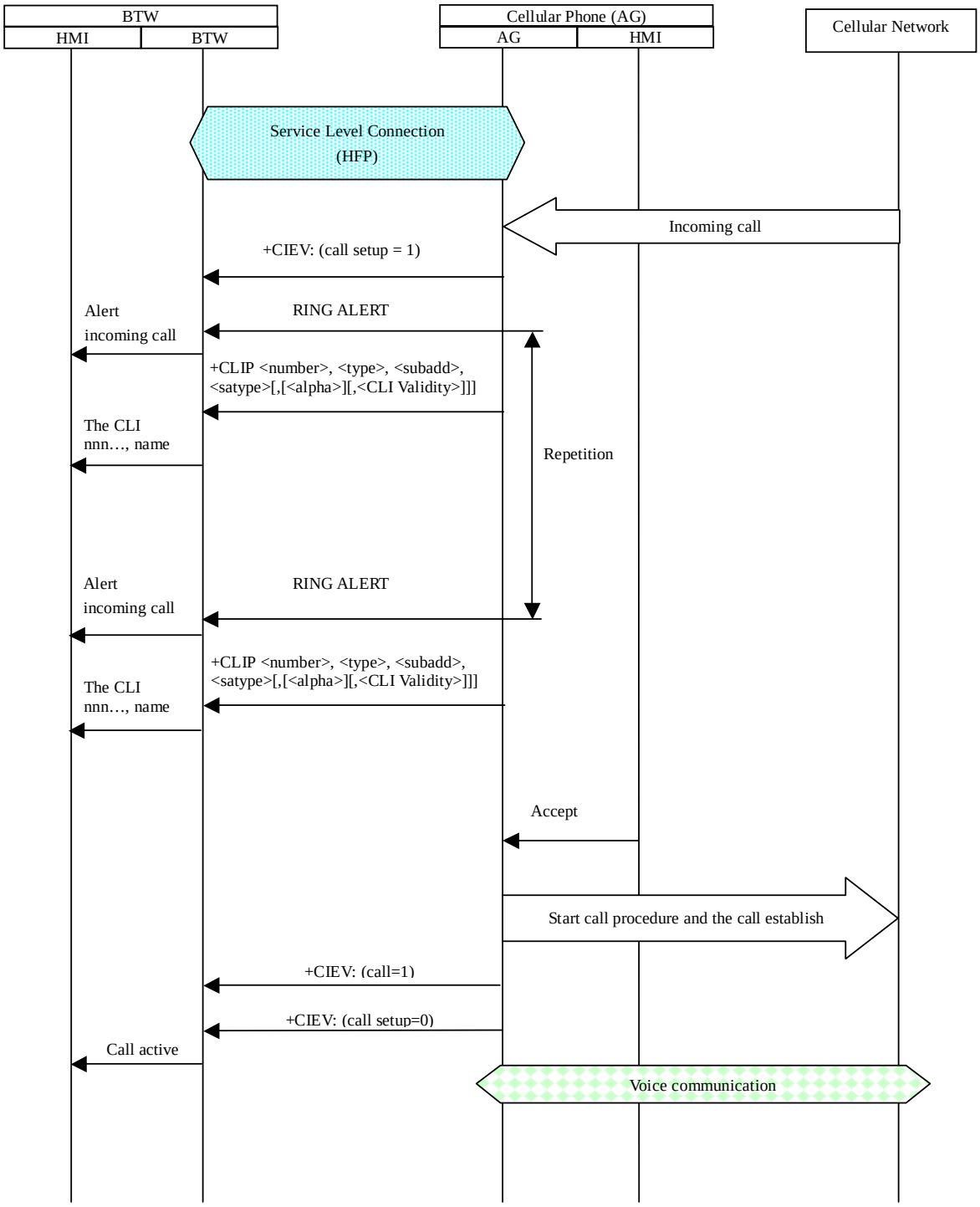


5.2. Service Level connection setup



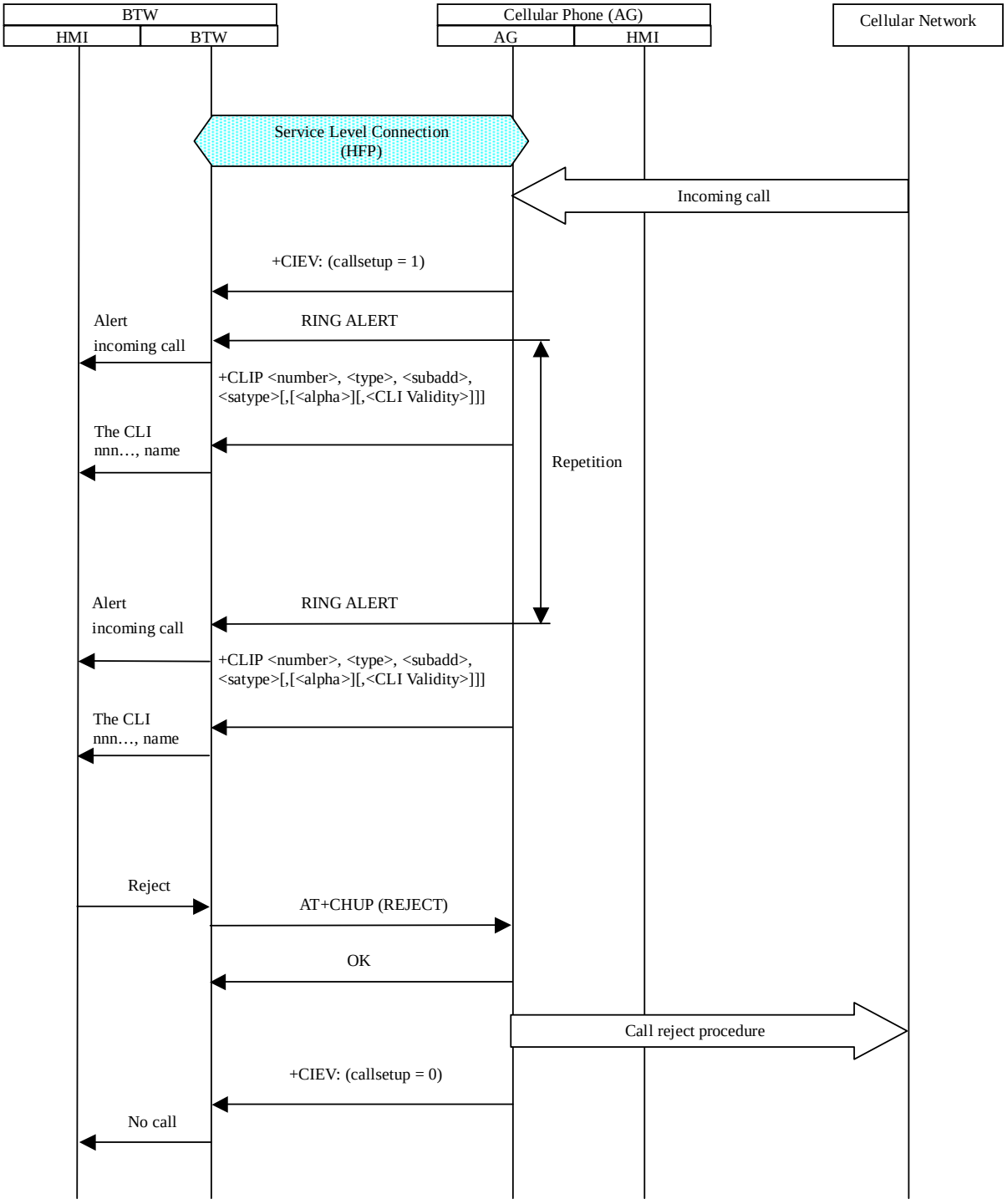
5.3. Incoming call

5.3.1. Answer an Incoming call from the AG (No in-band-ringing) (Private Mode)



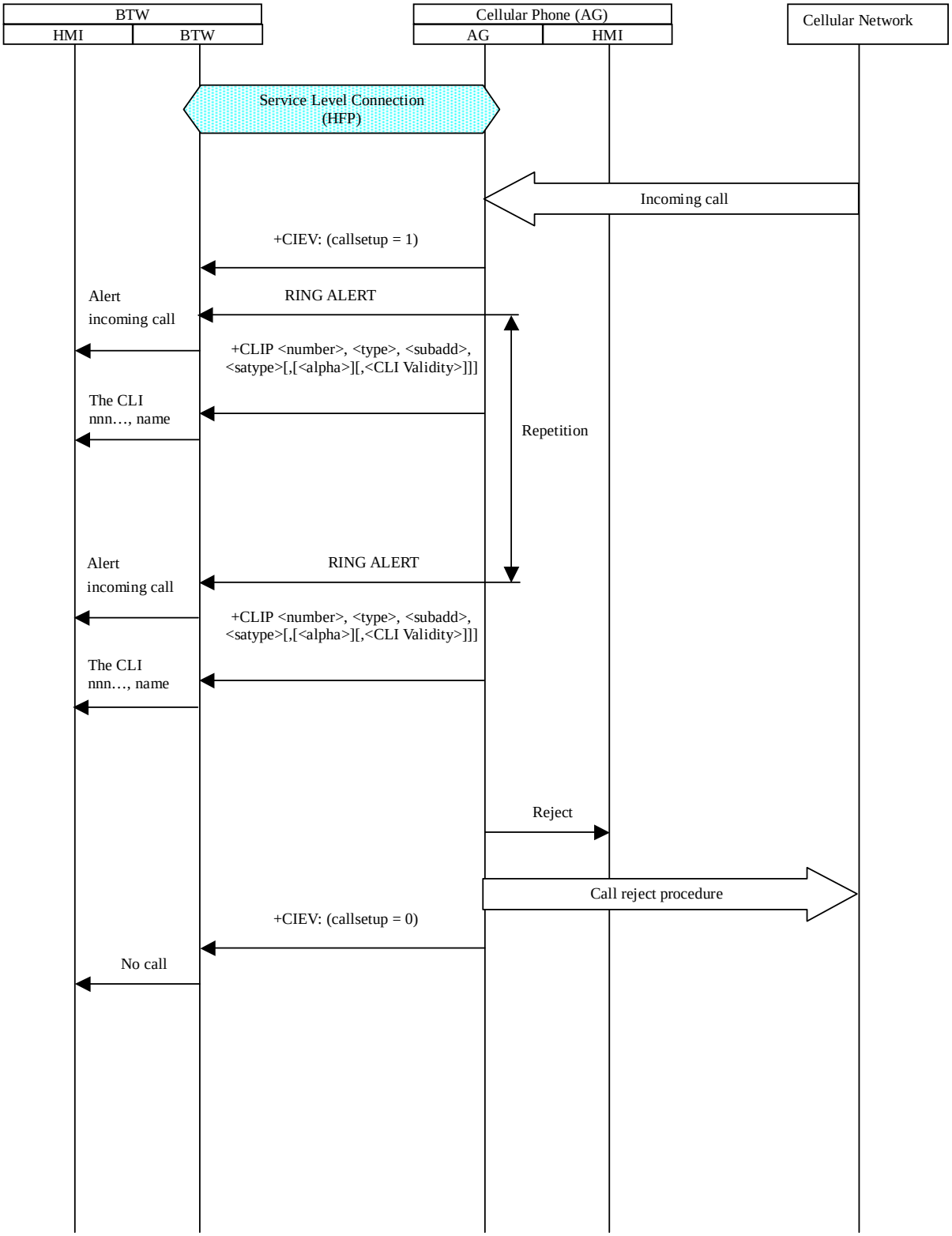
5.3. Incoming call

5.3.2. Reject incoming call from the BTW (No in-band-ringing)



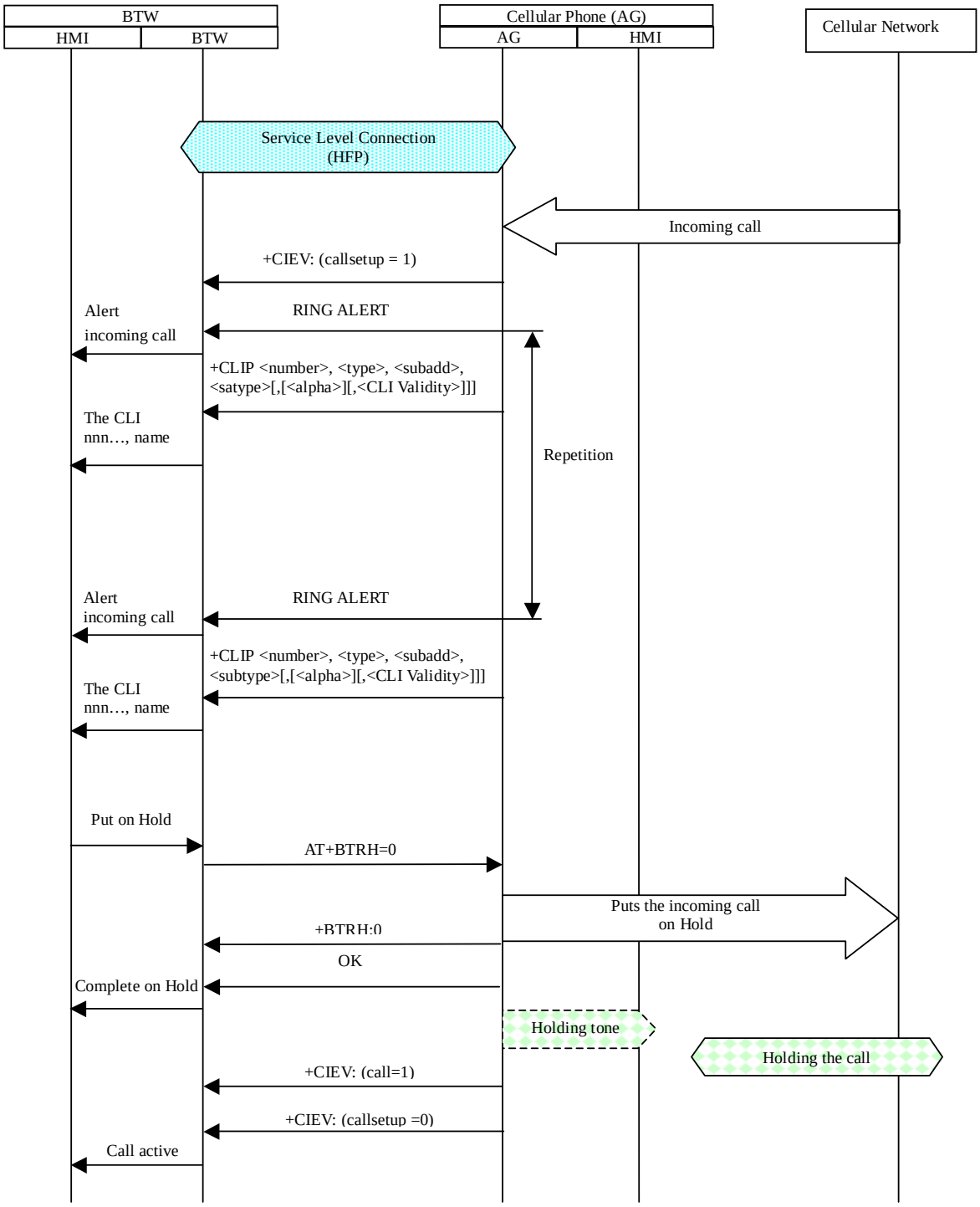
5.3. Incoming call

5.3.3. Reject incoming call from the AG (No in-band-ringing)



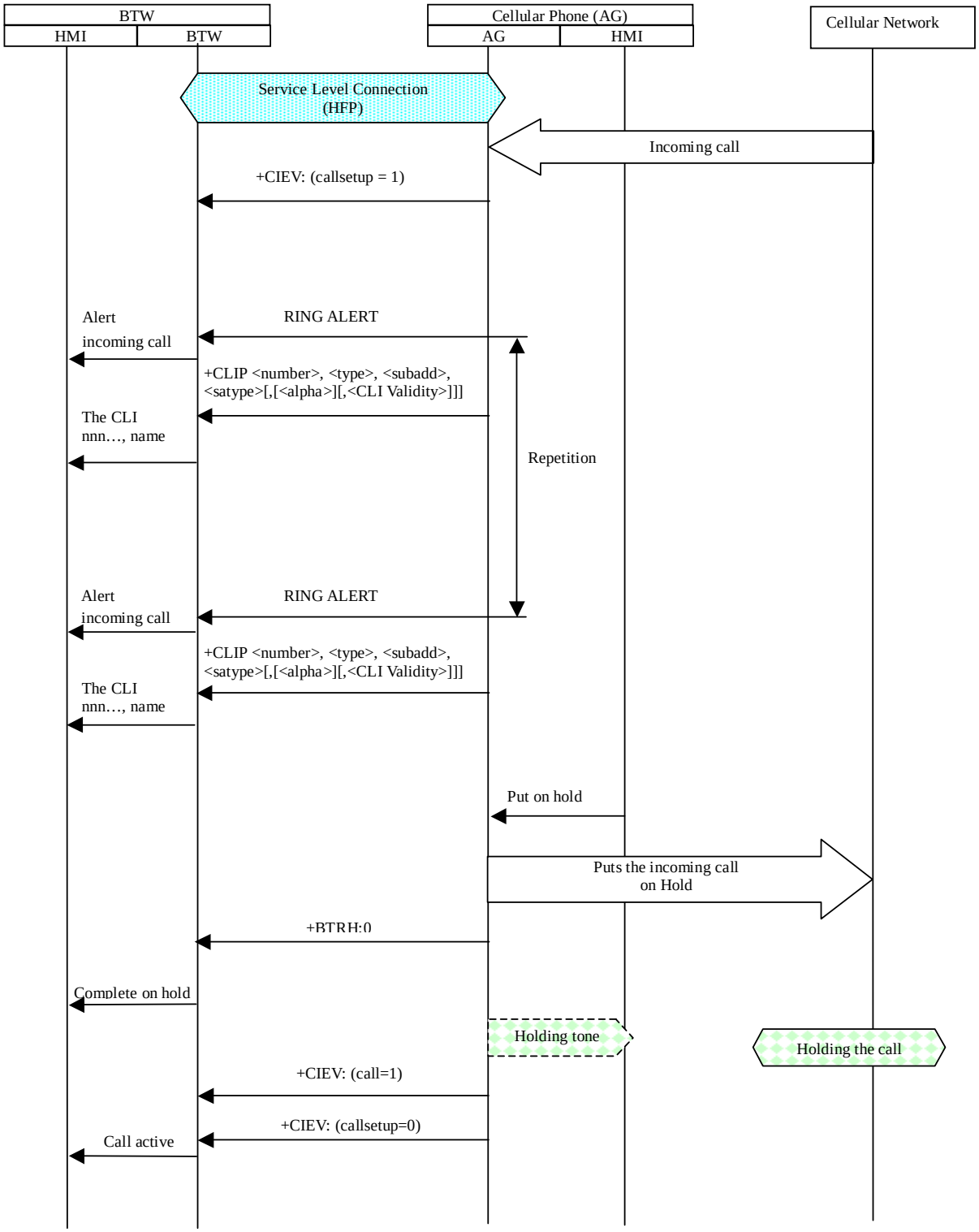
5.4. Response and Hold

5.4.1. Put an incoming call on Hold from the BTW (No in-band-ringing)



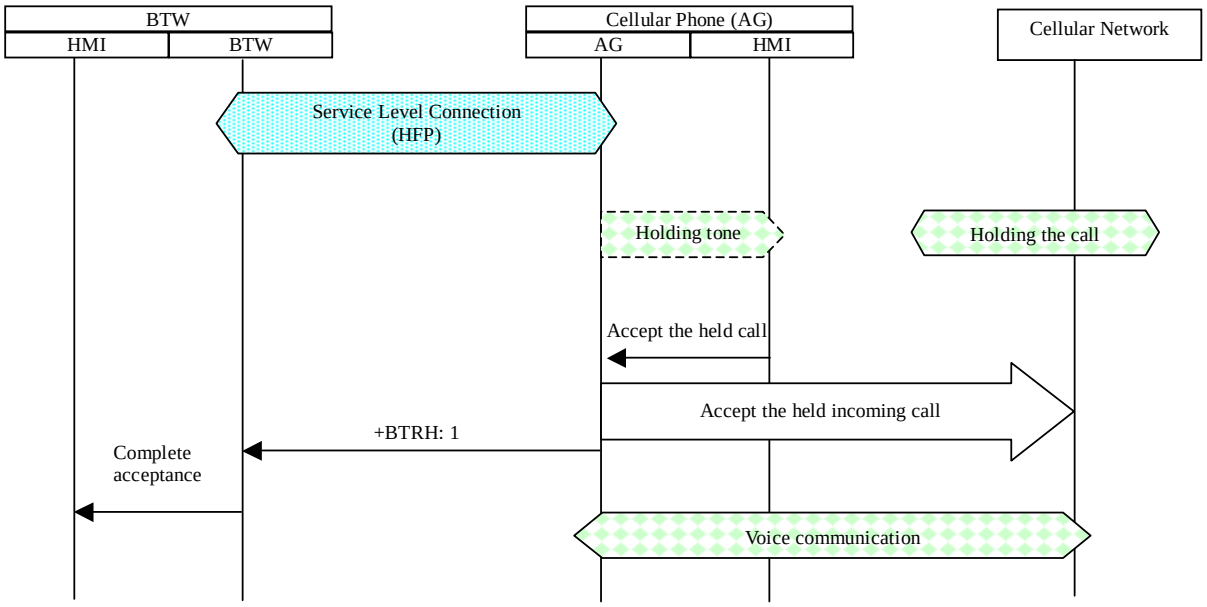
5.4. Response and Hold

5.4.2. Put an incoming call on Hold from the AG (No in-band-ringing)



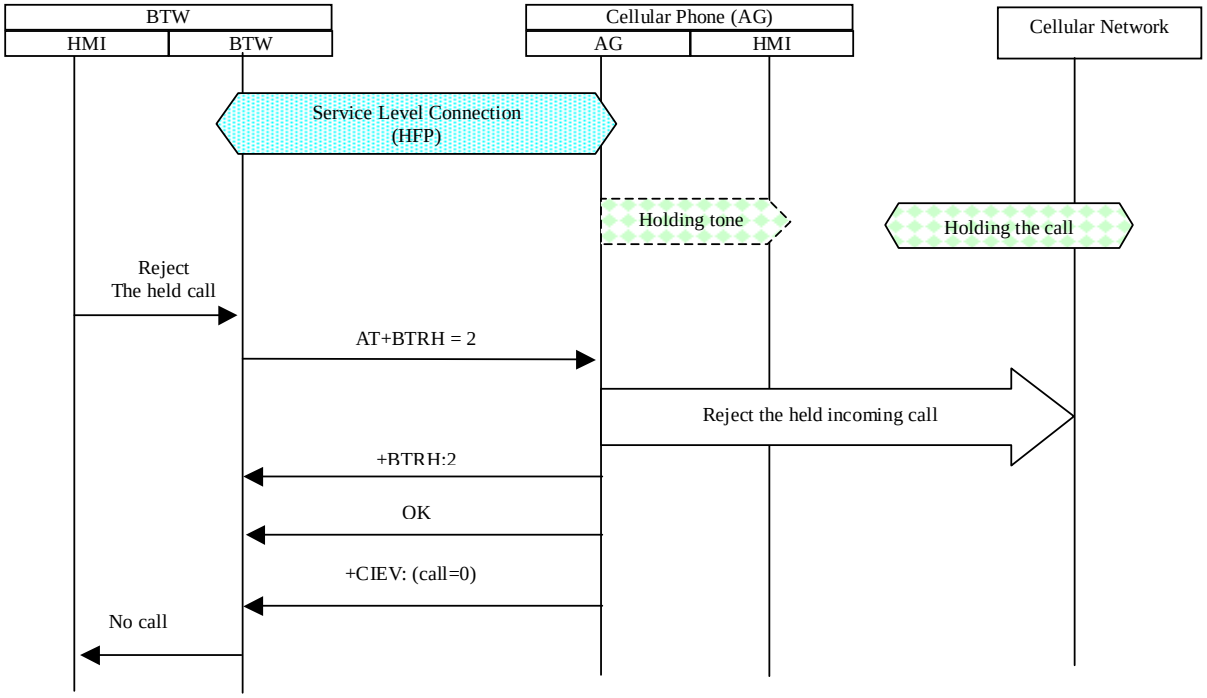
5.4. Response and Hold

5.4.3. Accept a held incoming call from the AG (NO SCO link)



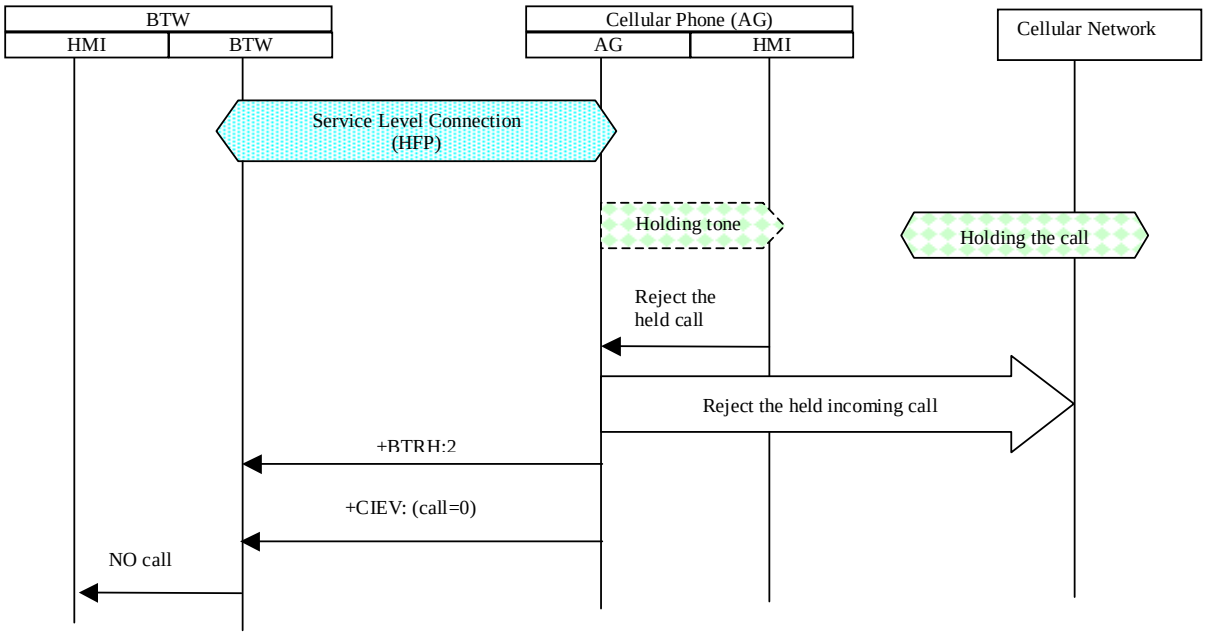
5.4. Response and Hold

5.4.4. Reject a held incoming call from the BTW (NO SCO link)



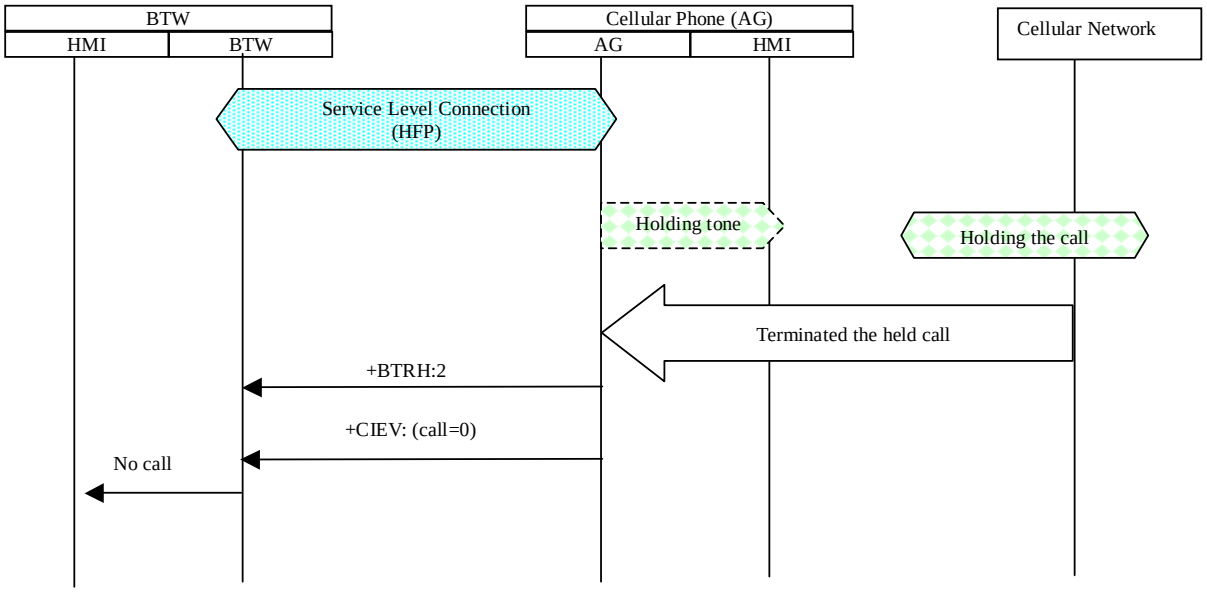
5.4. Response and Hold

5.4.5. Reject a held Incoming call from the AG (NO SCO link)



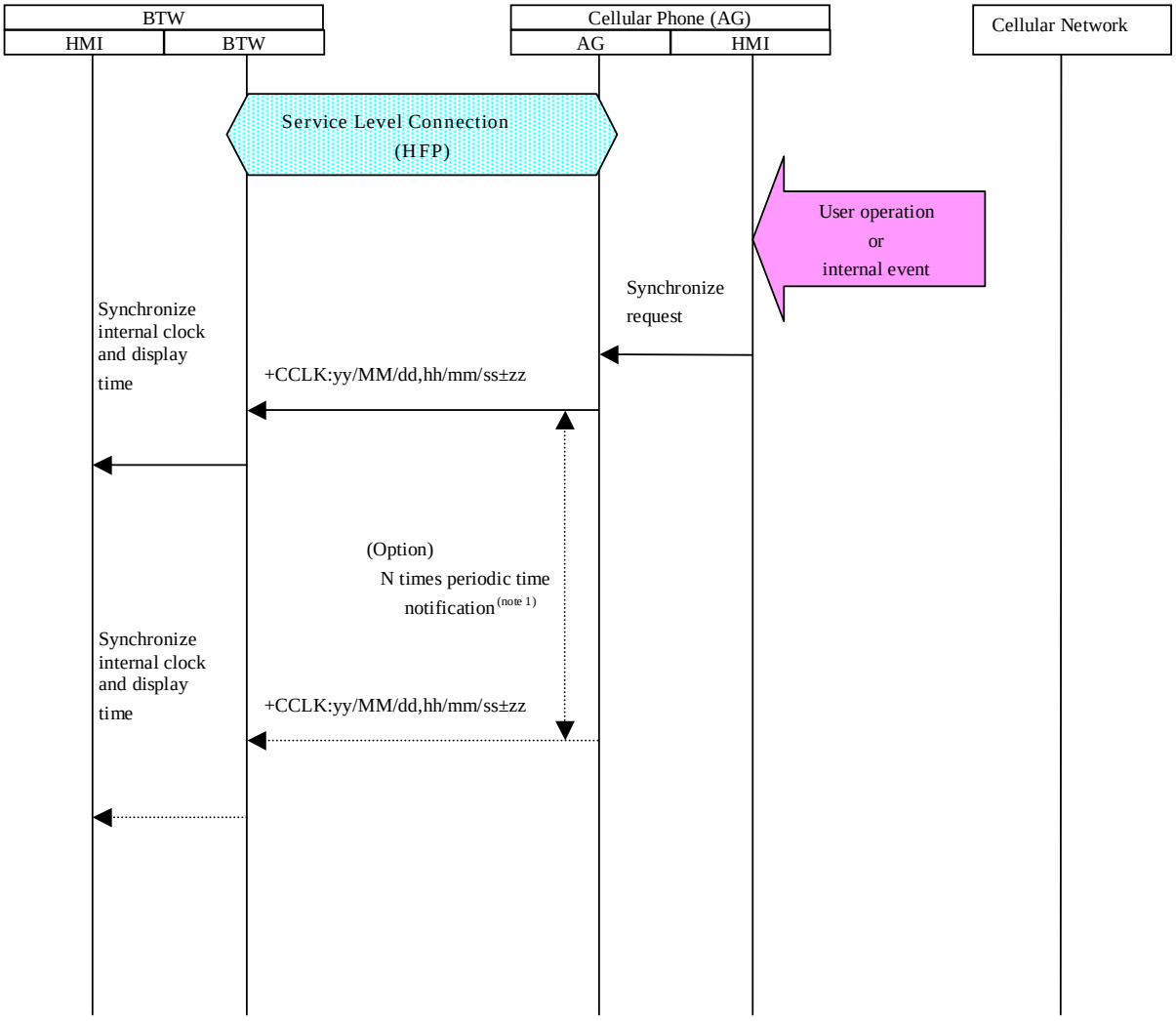
5.4. Response and Hold

5.4.6. Held incoming call terminated by Caller (NO SCO link)



5.5. BTW Function

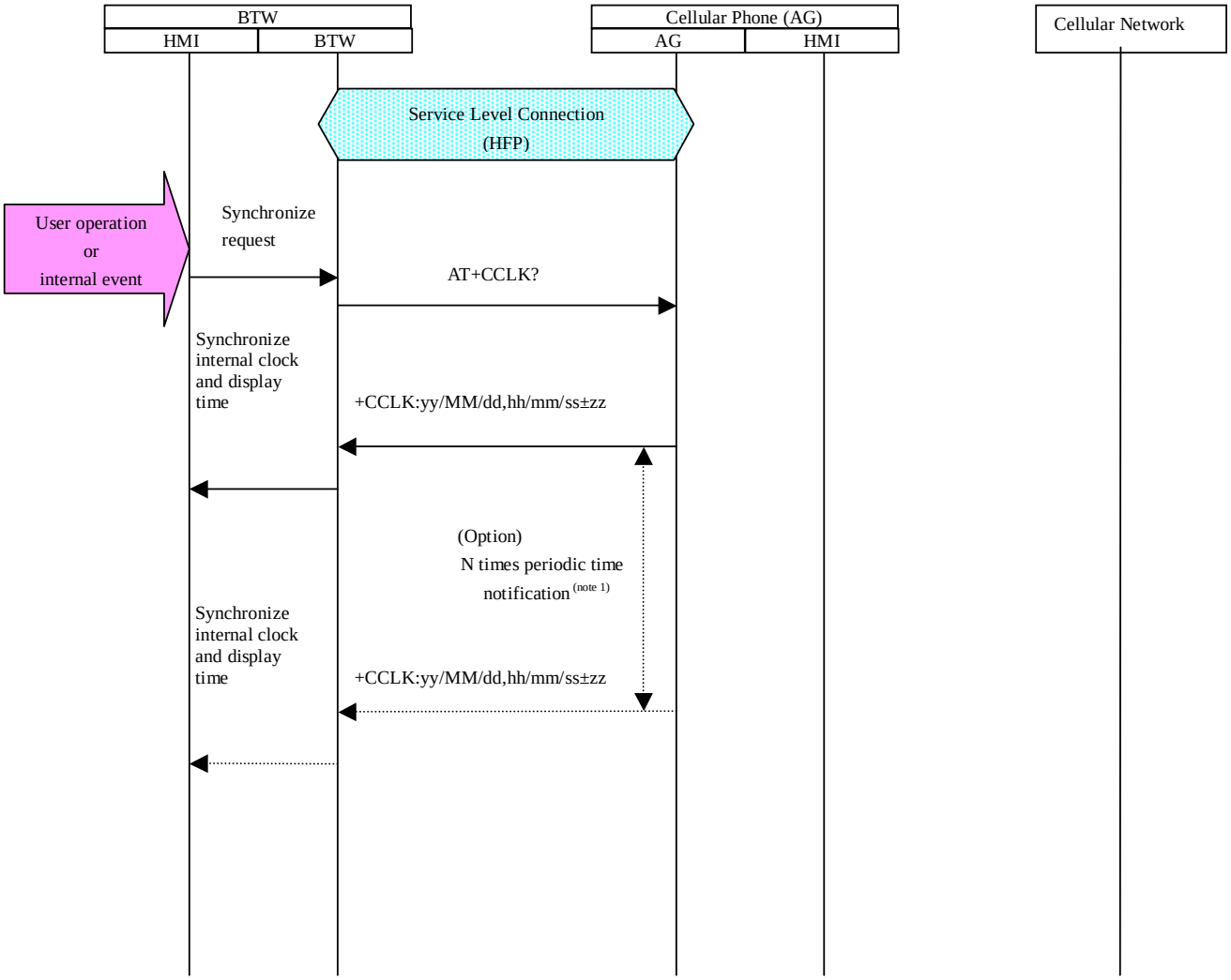
5.5.1. Time synchronize to BTW by the AG operation



Note 1: With a single time notice, the reception side runs time synchronization. For second switching, if the transmission side is unable to issue a time notice because of the way it is implemented, then to avoid a synchronization error of up to one second, it is recommended that at least two sets of time notifications are sent so that the second digit can takes count-up. Where greater synchronization precision is desired, it is recommended that the time notification be repeated several times in a second. This depends on the implementation.

5.5. BTW Function

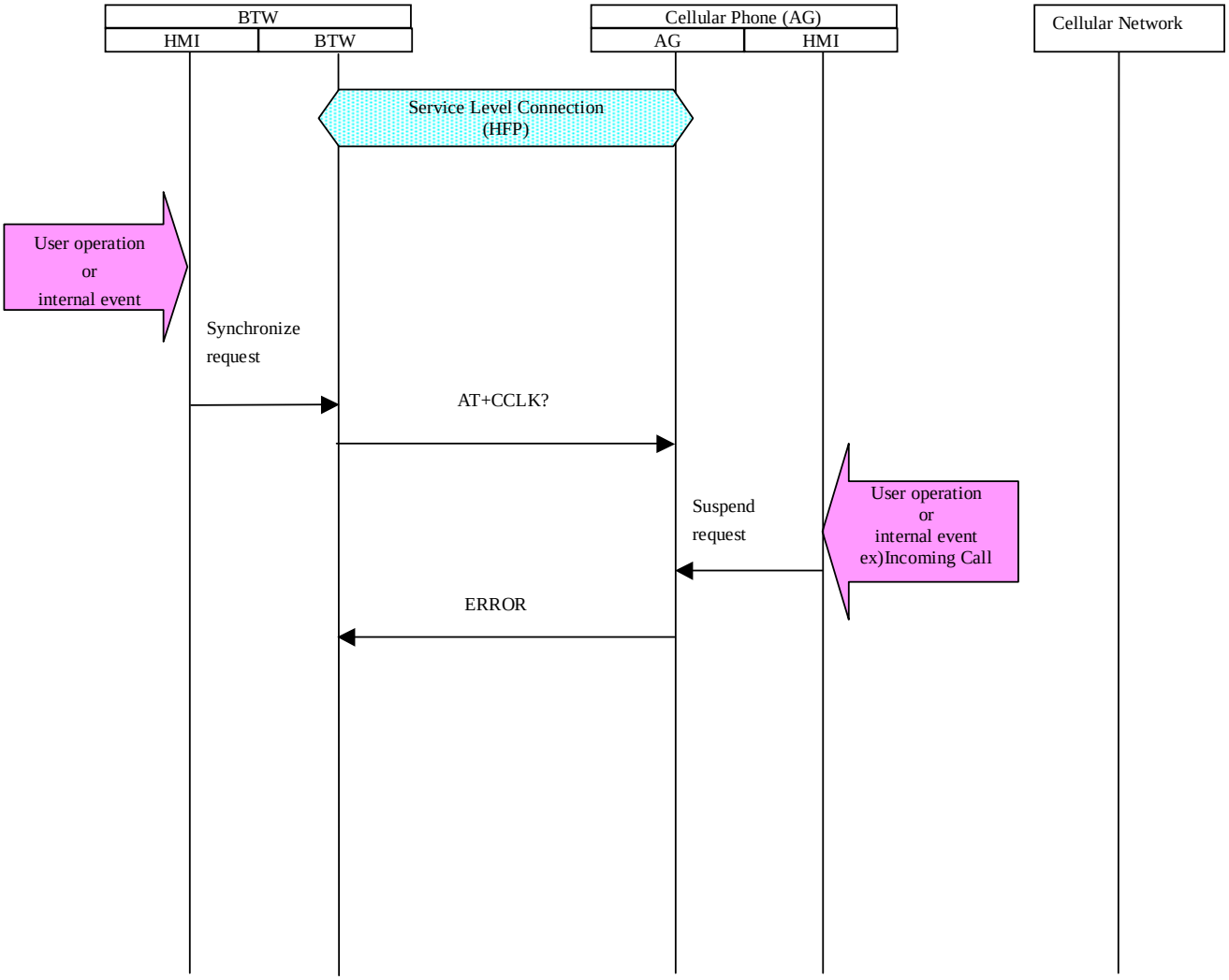
5.5.2. Time synchronize to BTW by the BTW operation



Note 1: With a single time notice, the reception side runs time synchronization. For second switching, if the transmission side is unable to issue a time notice because of the way it is implemented, then to avoid a synchronization error of up to one second, it is recommended that at least two sets of time notifications are sent so that the second digit can takes count-up. Where greater synchronization precision is desired, it is recommended that the time notification be repeated several times in a second. This depends on the implementation.

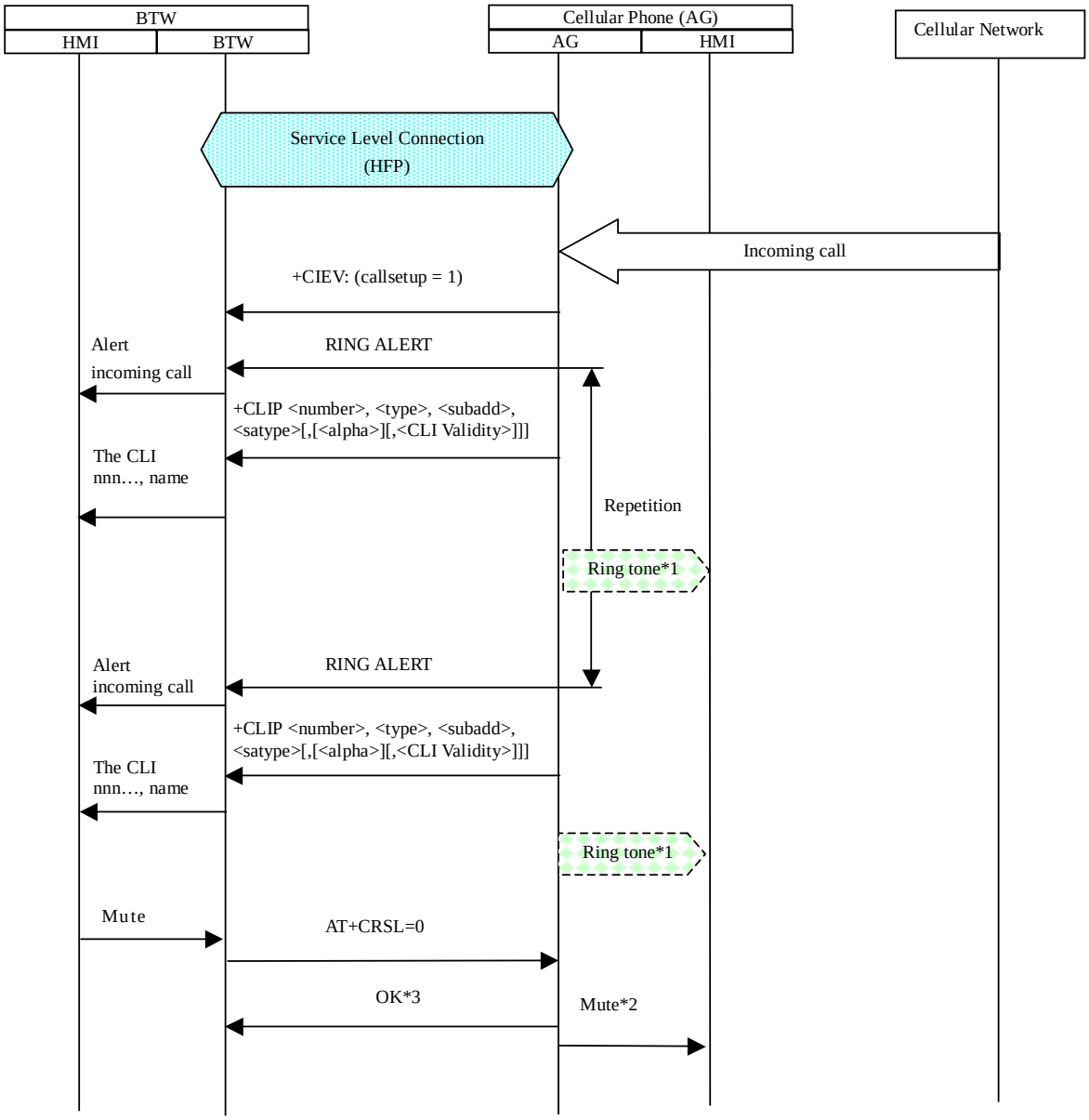
5.5. BTW Function

5.5.3. Suspend time synchronize



5.5. BTW Function

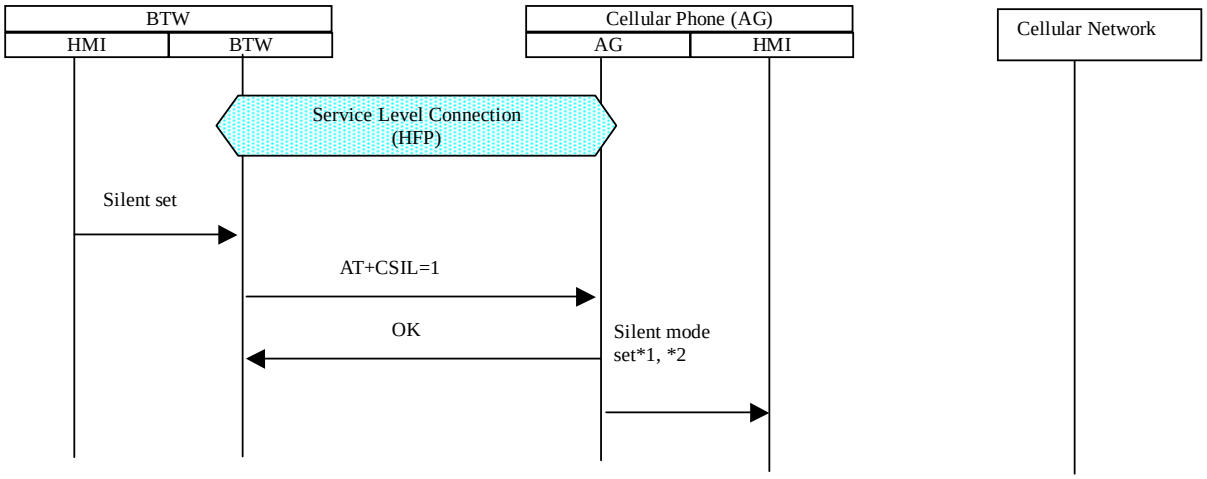
5.5.4. Mute from the BTW (incoming call) (NO in-band ringing)



Note 1: Assumes the mode where the AG device sounds a tone when there is an incoming call.
Note 2: Restores the previous tone setting once the AG device's incoming call notice tone is muted.
Note 3: This command is only accepted while the AG device is sounding an incoming call notice tone; otherwise, it is processed as an error.

5.5. BTW Function

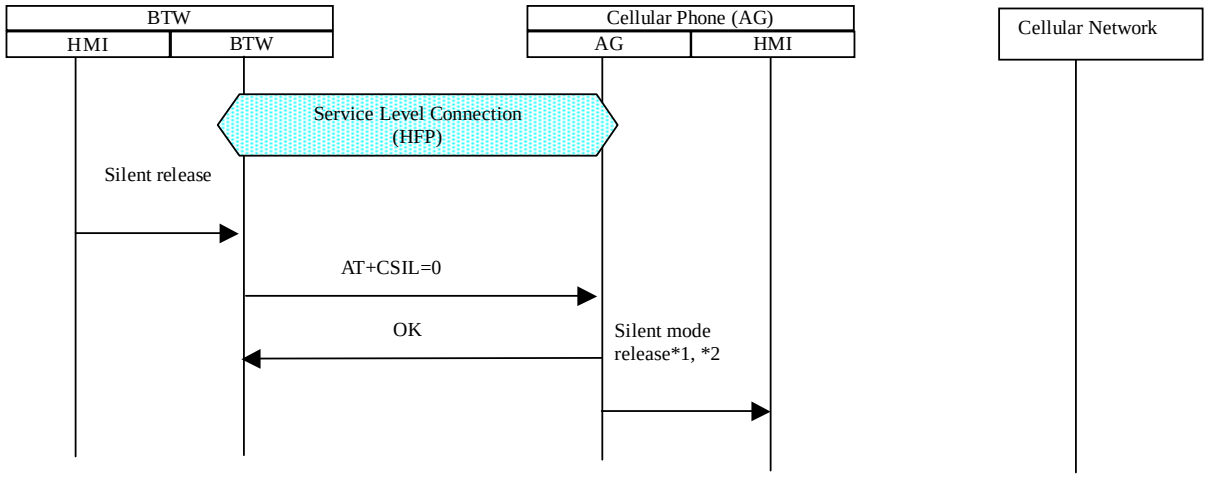
5.5.5. Silent Mode Set from the BTW



Note 1: If the command is received, the AG device enables the vibration notice at the same time as it switches to silent mode.
Note 2: Setting is permanent operation.

5.5. BTW Function

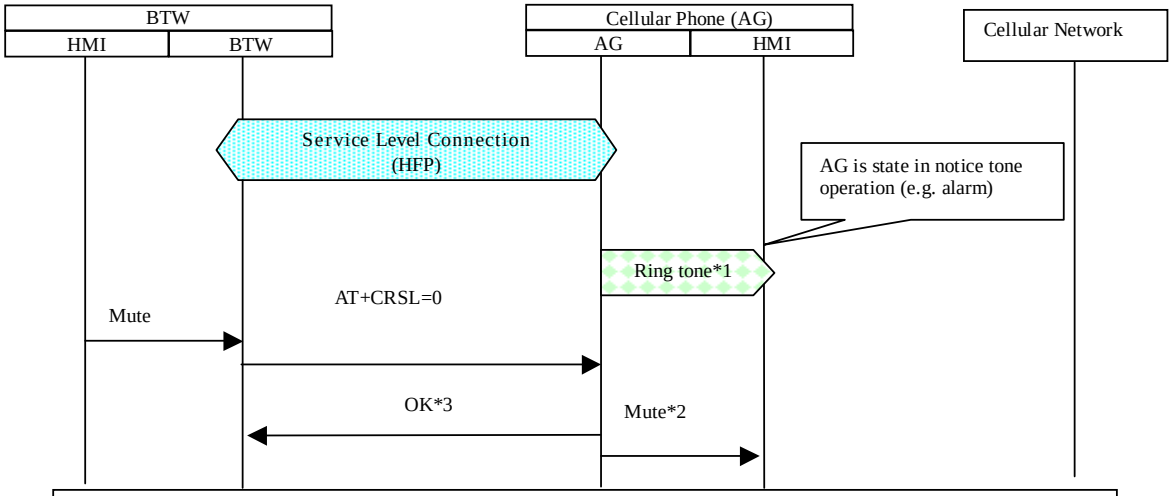
5.5.6. Silent Mode Release from the BTW



Note 1: If the command is received, the AG device releases the silent mode setting and restores the normal mode.
Note 2: Setting is permanent operation.

5.5. BTW Function

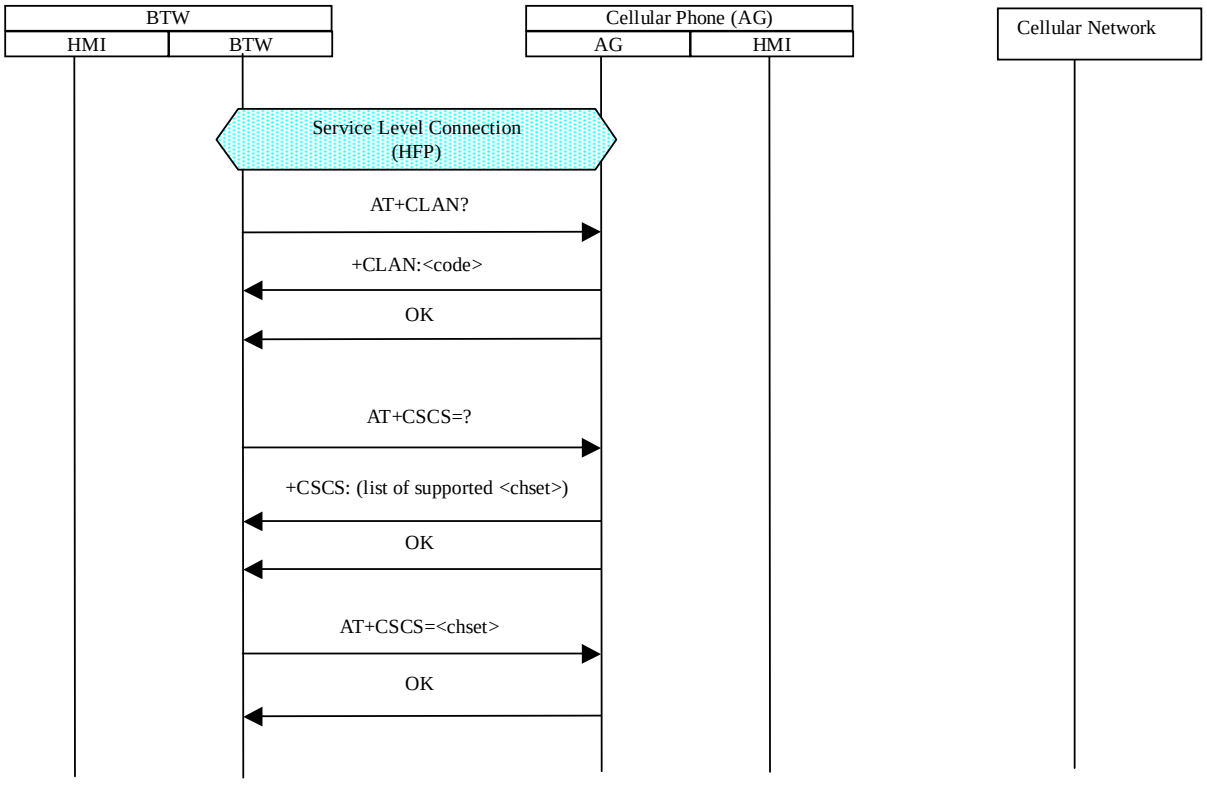
5.5.7. Mute from the BTW



Note 1: Assumes the mode where the AG device sounds a tone.
Note 2: Restores the previous tone level once the AG device's notice tone is muted.
Note 3: This command is only accepted while the AG device is sounding a notice tone; otherwise, it is processed as an error.

5.5. BTW Function

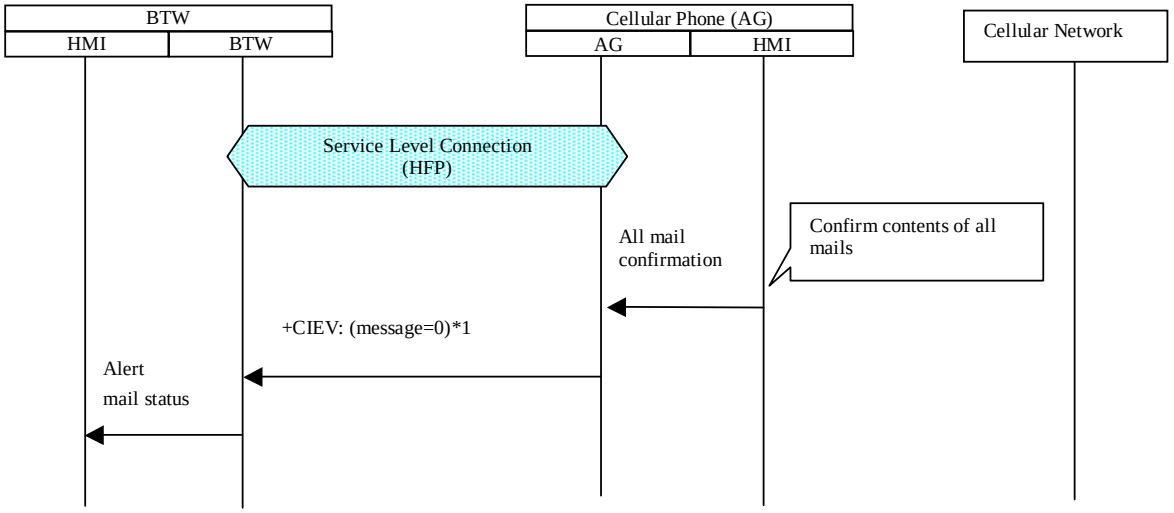
5.5.8. Select character set



Note: It is recommended that the character set is specified during service level connection setup.

5.5. BTW Function

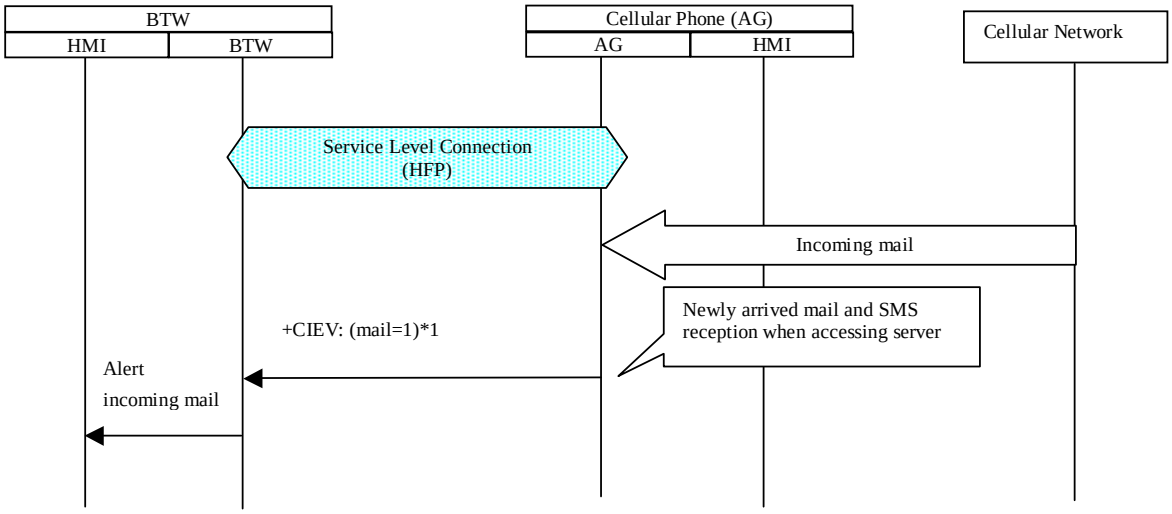
5.5.9. Mail status information_1 from the AG



Note 1: Issued when contents of all received mails are confirmed.

5.6. Incoming Mail

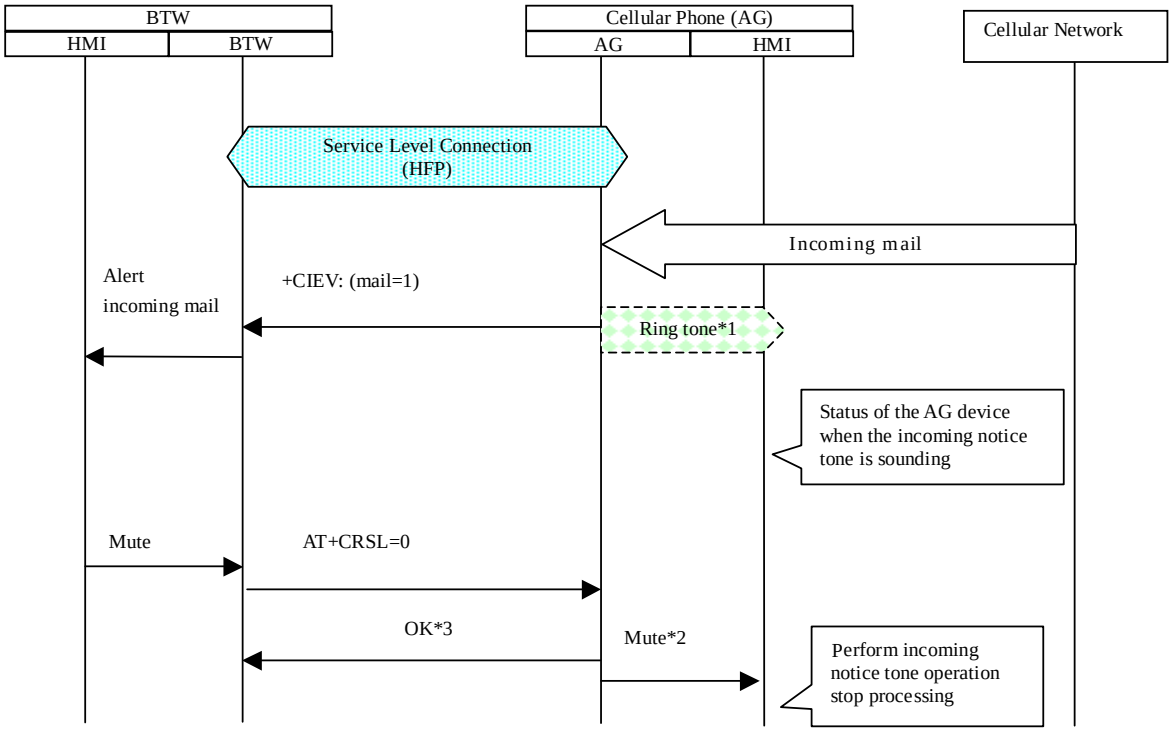
5.6.1. Incoming mail from the AG



Note 1: Issued when new mail is received.

5.6. Incoming Mail

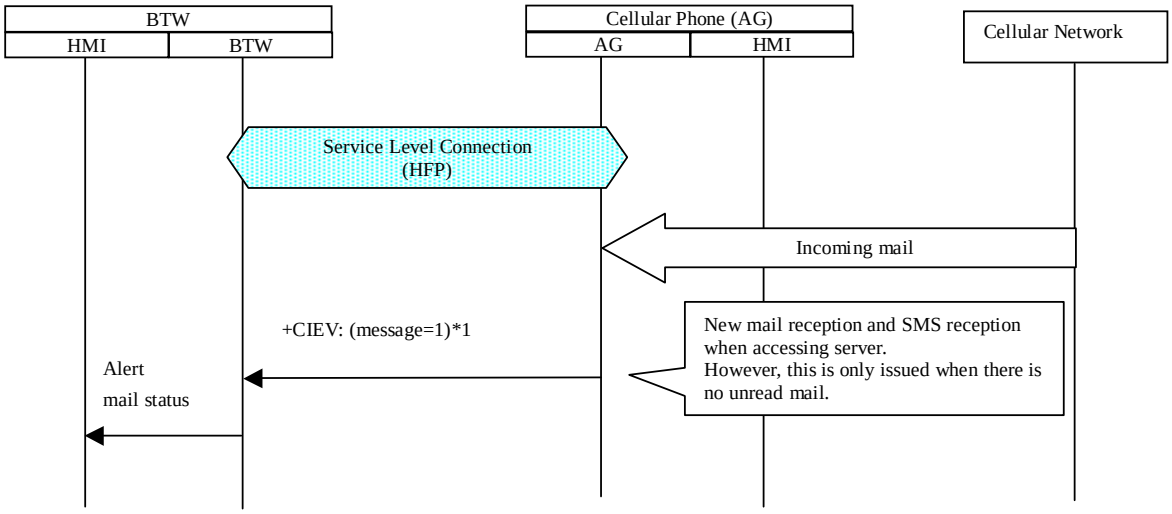
5.6.2. Mute from the BTW (incoming mail)



Note 1: Assumes the mode where the AG device sounds a tone on receipt of new mail.
Note 2: Restores the previous tone level once the AG device's mail reception tone is muted.
Note 3: This command is only accepted while the AG device is sounding a mail reception notice tone; otherwise, it is processed as an error.

5.6. Incoming Mail

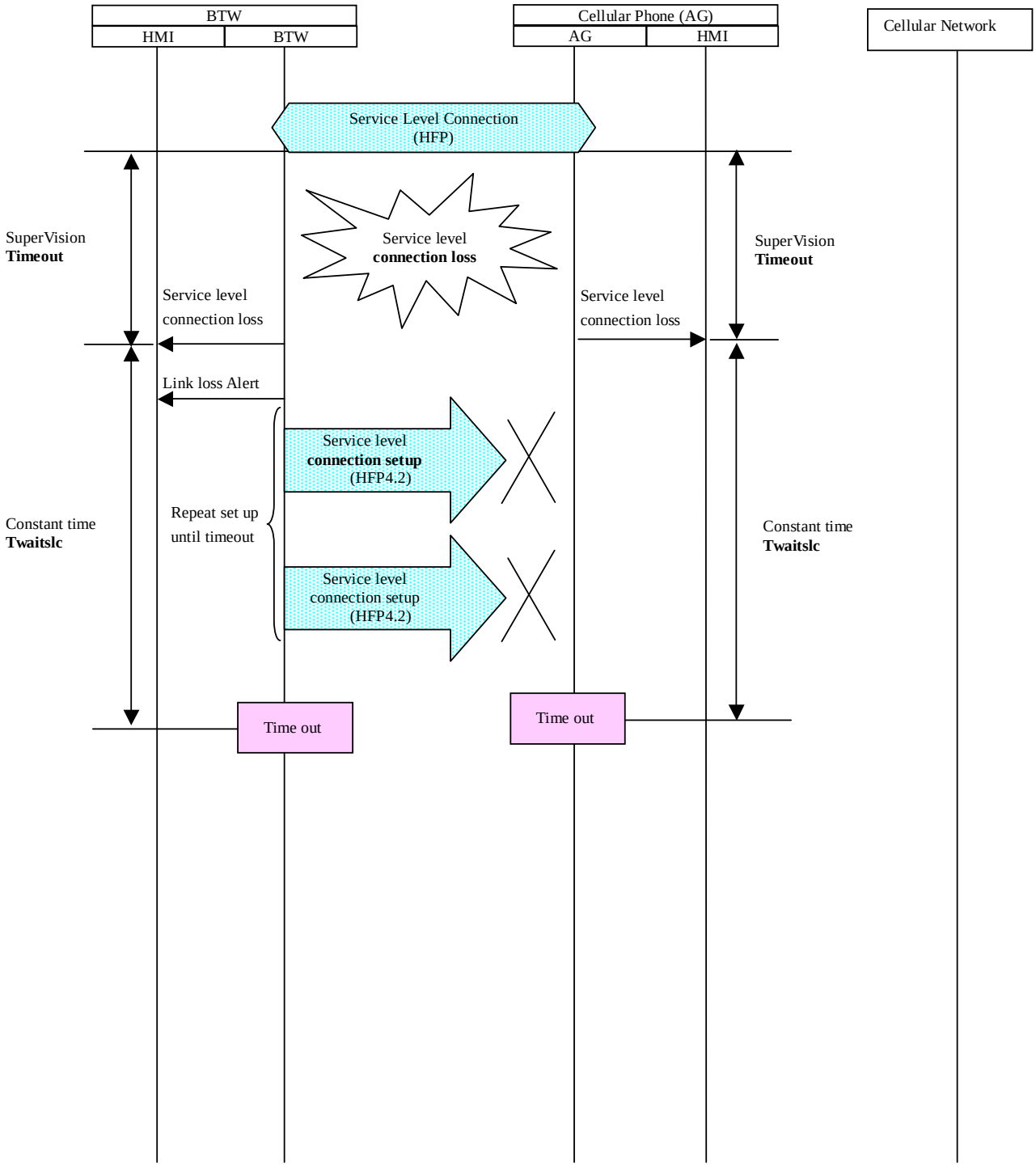
5.6.3. Mail status information_2 from the AG



Note 1: This is issued when unread mail is generated.

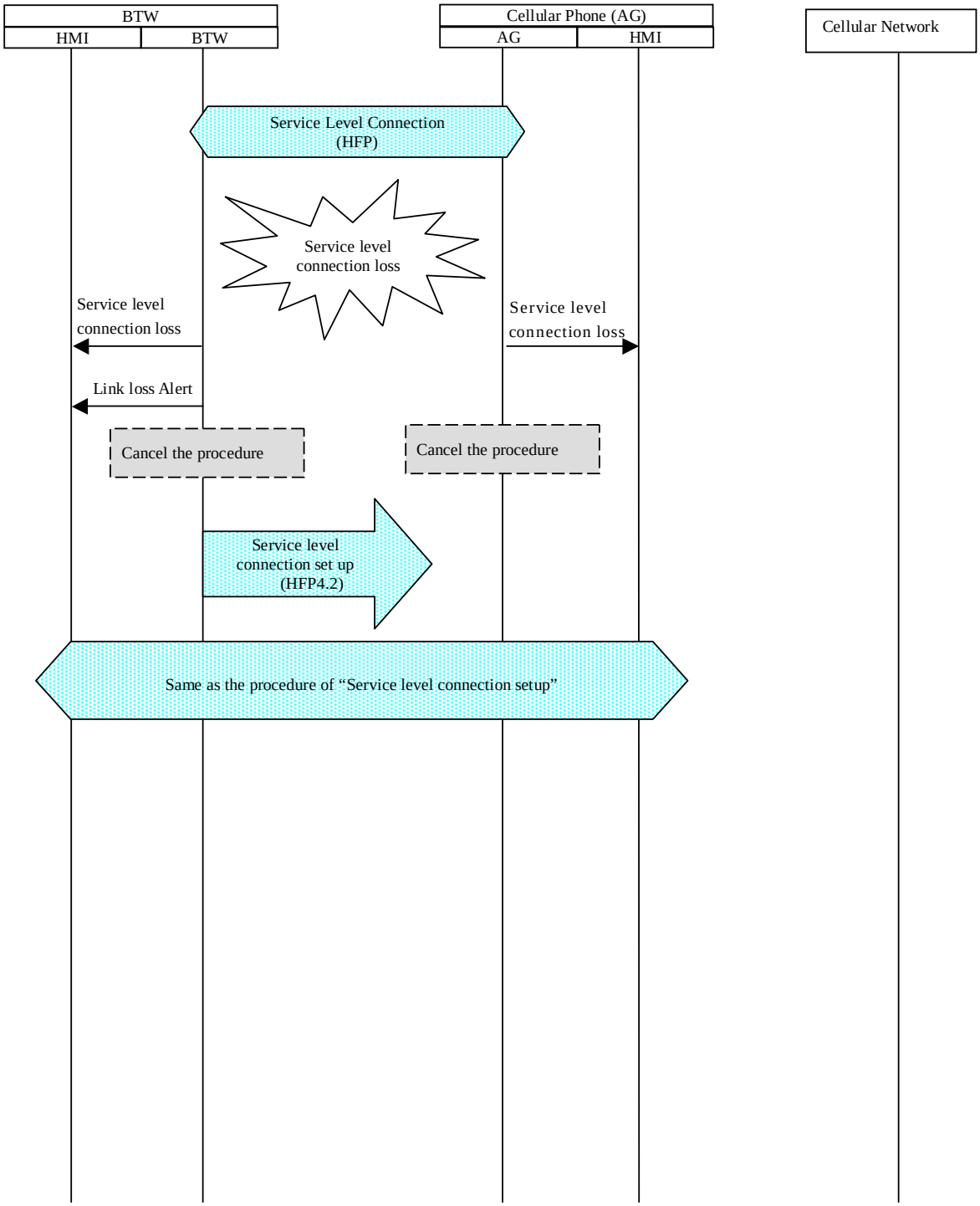
5.7. Link loss alert

5.7.1. Service level connection loss during service level connection (the reconnection fails)



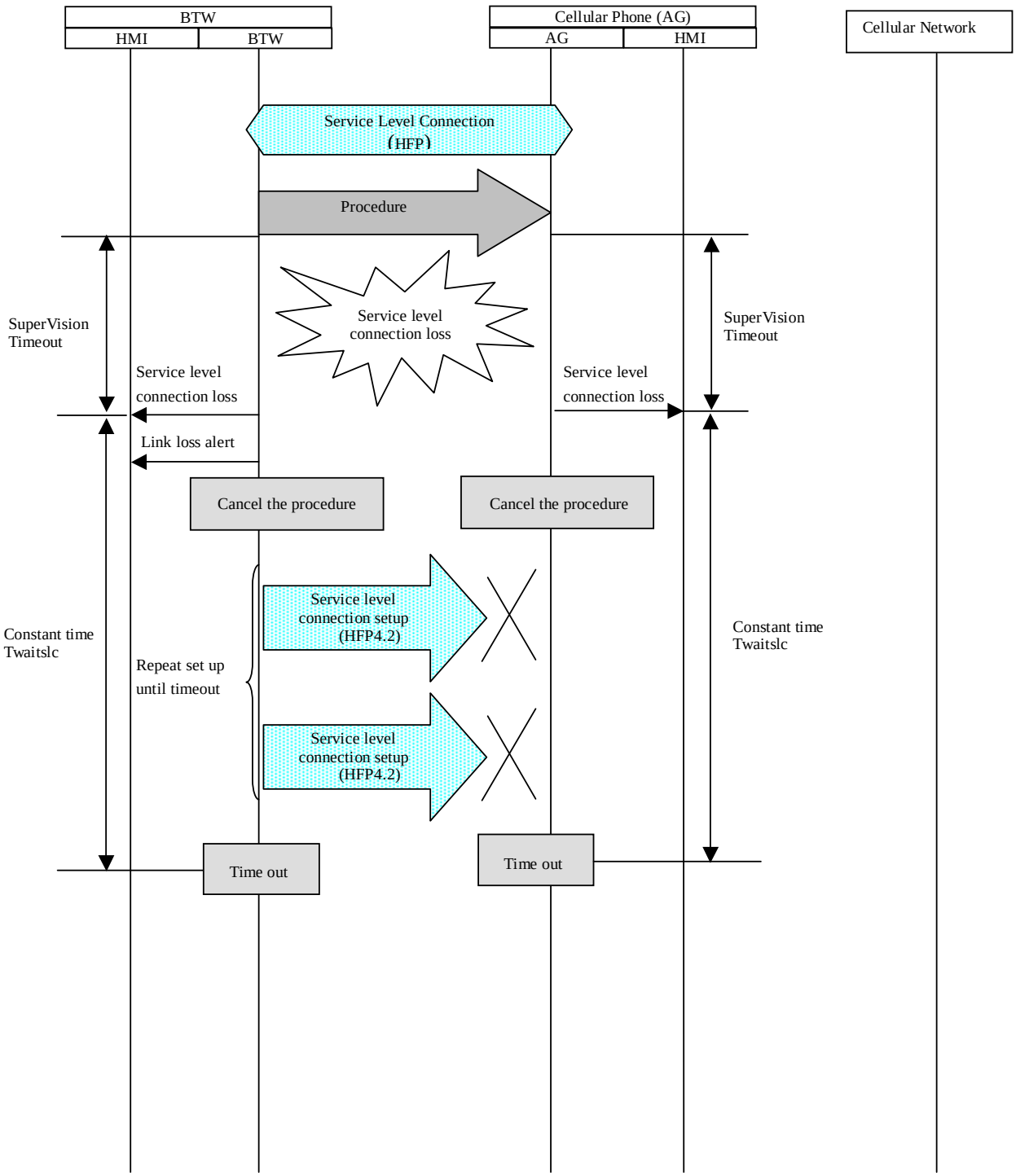
5.7. Link loss alert

5.7.2. Service level connection loss and reconnection succeeded



5.7. Link loss alert

5.7.3. Service level connection loss during the procedure (the reconnection fails)



6. Addition and expansion of AT command functions

This chapter lists additions and extensions of AT command functions; it also describes the recommended parameters and range to achieve better connectivity between the AG device and the BTW.

6.1. BTW function/Non-Audio support notice

Command	Parameter	Value, Range	Reason	Spec
+BRSF=	<HF supported feature>	?:non audio: Supported 1/Notsupported 0	Due to HF support judged	Bluetooth SIG, Hands-Free Profile (HFP) v1.0 v1.5
Result Code	**Parameter**	**Value, Range**	**Reason**	**Spec**
+BRSF:	<AG supported feature>	?:non audio: Supported 1/Not supported 0	Due to AG support judged	Bluetooth SIG, Hands-Free Profile (HFP) v1.0 v1.5

*?) Bit applied depends on the BT-SIG decision. Judgment is also available via BTWRSF.

BTW function/Non-Audio support notice

Command	Parameter	Value, Range		Reason	Spec
+BTWRSF=	<BTW supported feature>	BTW	0 non-audio 1 Time synchronize	To notify support of BTW function	New
Result Code	**Parameter**	**Value, Range**		**Reason**	**Spec**
+BTWRSF:	<AG (BTW) supported feature>	AG	0 non-audio 1 Time synchronize 2 mute of caller sound 3 mute of mailer sound 4 mute of sound 5 silent mode set/release 6 mail arrived information 7 mail status information	To notify the AG device's support for BTW function	New

Definition of new commands

BTW Retrieve Supported Feature: AT+BTWRSF

Syntax: AT+BTWRSF=<BTW supported features bitmap>

Description: Notifies the AG of the supported features available in the BTW, and requests information about the supported features in the AG. The supported features shall be represented as a decimal value.

Values: <BTW supported features bitmap>: a 32 bit unsigned integer representing a bitmap of the supported features in the BTW as follows:

Bit Feature

0 non-audio

1 Time synchronize

2-31 Unused (available for other extensibility)

The unused bits (2-31) shall be initialized to Zero.

+BTWRSF (BTW Retrieve Supported Features)

Syntax: +BTWRSF: <AG (BTW) supported features bitmap>

Description: Result code sent by the AG in response to the AT+BTWRSF command, used to notify the BTW what features are supported in the AG. The supported features shall be represented as a decimal value.

Values: <AG supported features bitmap>: a 32 bit unsigned integer representing a bitmap of the supported features in the AG as follows:

Bit Feature

0 non-audio

1 Time synchronize

2 mute of caller sound

3 mute of mailer sound

4 mute of sound

5 silent mode set/release

6 mail arrived information

7 mail status information

8-31 Unused (available for other extensibility)

The unused bits (8-31) shall be initialized to Zero.

6.2. Incoming call, caller display function

Result Code	Parameter	Value, Range	Reason	Spec
+CLIP:	<alpha>	Name MAX:24byte	Without transferring the telephone book, directly displays the caller name	3GPP TS 27.007

6.3. Incoming call, ringing tone, notice tone muting function

Command	Parameter	Value, Range	Reason	Spec
+CRSL=	<level>	0	Stop notice tone by BTW operation	3GPP TS 27.007

6.4. Mail notice function

Command	Parameter	Value, Range	Reason	Spec
+CIND	<ind>	"mail" 1: Mail generated 0: No mail generated	Incoming mail indicated	MCPC GL-008 "USB hands-free specification"
		"message" 1: Unread mail present 0: No unread mail present	Mail confirm state indicated	3GPP TS 27.007
Result Code	**Parameter**	**Value, Range**	**Reason**	**Spec**
+CIEV:	<mail>	1: Mail generated	To notify new mail reception	MCPC GL-008 "USB hands-free specification"
+CIEV	<message>	1: Unread mail present 0: No unread mail present	To notify mail unread/read state	3GPP TS 27.007

6.5. Character set

Command	Parameter	Value, Range	Reason	Spec
+CLAN?			BTW asks AG for used language	3GPP TS 27.007
Result Code	**Parameter**	**Value, Range**	**Reason**	**Spec**
+CLAN:	<code>	Language code	AG notifies BTW of used language	3GPP TS 27.007 ISO639

Command	Parameter	Value, Range	Reason	Spec
+CSCS=?			BTW asks AG for supported character set list	3GPP TS 27.007
+CSCS=	<chset>	UTF-8 or SJIS*)	BTW notifies AG of character set used	3GPP TS 27.007
Result Code	**Parameter**	**Value, Range**	**Reason**	**Spec**
+CSCS:	List of supported<chset>	UTF-8 or SJIS support is mandatory	AG notifies BTW of supported character set list.	3GPP TS 27.007

*) Depending on AG support character set.

6.6. Other silent mode setting functions

Command	Parameter	Value, Range	Reason	Spec
+CSIL=	<mode>	0: Silent Mode Release 1:Silent Mode set	By BTW operation, to set AG silent mode	3GPP TS 27.007

6.7. Other time correction functions

Command	Parameter	Value, Range	Reason	Spec
+CCLK?			BTW queries AG time	3GPP TS 27.007
Result Code	**Parameter**	**Value, Range**	**Reason**	**Spec**
+CCLK:	<time>:	"yy/MM/dd, hh:mm:ss±zz"	To transfer AG side's time information for BTW time correction	3GPP TS 27.007

7. Sample use cases

- Use cases for caller display

  - Mr. A, salesperson, thirties

    A day in the life of a car dealer salesperson, a male, nears the end of the fiscal year.
    He is expecting a favorable message soon from a client saying: “Decided to buy your car”.
    He cannot miss phone calls from his clients.
    He must, however, still pay attention to other customers and attend meetings, keeping his mobile phone in silent mode.
    Under such conditions, BT Watch’s incoming alert function will notify him of an incoming call by vibrating and will display the name of the caller so he can see if it is an important client or not. Even when he is in the meeting, he can receive quiet and reliable notification of the call. This will enable him to provide good customer service and successfully receive orders from clients. His sales performance was the best for the year in his sales office.

  - Mr. B, company staff member, twenties, newlywed

    Mr. B is a busy company worker. His wife is due to have a baby and is past the baby’s due date. He cannot take holidays and his wife’s mother will take care of her and the first baby.
    Her mother will call him when his wife goes to hospital once contractions start.
    He is always anxious about his wife and today he must go on a long distance business trip.
    While he is walking through a crowd of people, it will be hard for him to identify the ring tone of his own phone, compared to numerous others. In this situation, BT Watch’s incoming alert function will be useful.
    When he is in a car, his BT Watch will vibrate to let him know there is a call and will display the Caller ID, letting him know that the call is from his wife’s mother.
    Immediately calling his company to request a day off, he can then go to the hospital and attend his wife’s delivery.
    His good relationship with his wife and relatives will be strengthened by his love and kindness towards his wife; his BT Watch enables him to be with his wife whenever necessary.

  - Ms. C, female office worker, twenties

    Ms. C always keeps her mobile phone in her bag. Privately, she sets her mobile phone to play a melody when a call comes in. During business hours, she sets the phone to silent mode but this doesn’t always work very well as the phone is in her bag. The incoming call alert function of the BT Watch is useful in this situation. Even though her mobile is kept in her bag, it can notify her of an incoming call quietly and reliably through the BT Watch so that she never misses calls from her friends. This long-awaited function has meant that she does not have to switch off her mobile. She becomes friendlier and enjoys life with an increasing number of friends.

○ Use case for rejecting a call

A user is preoccupied with an important business negotiation, and is unable to respond to any phone calls.

His company calls him on his mobile phone, which is set to silent mode and is kept in his bag. As it is connected with his BT Watch via Bluetooth, the watch will vibrate and display the incoming call from his company. He will see the call but his business counterpart will not be aware of it.

Unable to interrupt this important business meeting, he will use the call reject function on the BT watch so that he can reject the call from his mobile phone.

Once the business talks have been closed successfully, he can pick up the message left by his company from the Call Completion service.

○ Use case for the Hold function

Mr. A, company worker, forties

Mr. A takes the 8:00 train as usual to get into his office. The train becomes crowded as per usual and he cannot move even one inch.

The BT Watch's vibration lets him know there is an incoming call but he is unable to take his phone out of his bag and even if he could, it would be impossible to talk in such a crowd.

He is expecting a call from Mr. B about a meeting they are having. Mr. A can Hold the call from MR B using his BT Watch and can get off the train at the nearest station to take the call.

Once he is a place where there is less of a crowd, he can take out his mobile phone and start talking.

The caller is, as expected, Mr. B, who he talked with yesterday.

Mr. B asks him to delay the starting time of today's meeting by 30 minutes.

Mr. A agrees with Mr. B, puts the mobile phone back into his bag and gets back on the train.

Use cases below refer to the AG device's optional functions. It is recommended that these be implemented in so far as possible.

○ Use case for time synchronize

Use case: 1

Using Bluetooth, this mobile phone regularly synchronizes the BT Watch with the clock within the mobile phone. The user does not expend any effort to keep the BT Watch's time. Or, the user may set the BT Watch's time directly from the mobile phone.

Use case: 2.

If you travel to the United States, for example, the clock within the mobile phone is automatically adjusted to the local time. The BT Watch will also be automatically reset to the local time. No manual time correction is required.

Use case: 3.

During time synchronization, if the mobile phone receives a call, it can be accepted as an incoming call is given priority over synchronization.

○ Use case for the muting function

Mr. A, young company worker

The ring tone of Mr. A's mobile phone starts to sound in his bag whilst he is attending a meeting with a client.

Mr. A brings around mobile phone into his bag with canceling silent mode to avoid unnoticed incoming call.

Today, without changing this setting, he attends a meeting with a client.

Now he is making a presentation in front of a white board, and he suddenly remembers his phone's ring tone is set at the highest level. His mobile is in his bag and is not near him but he can set it to mute using his BT Watch.

○ Use case for the silent mode function

Mr. B, mid-level company worker

Mr. B has to make a presentation to an important client at 9:00 this morning.

He usually gets to the office at 9:00, though this morning he leaves home earlier to prepare for the presentation.

As the client is very interested in the project, upper management, including the executive director, director and managers of the client company will be at the presentation.

Now, Mr. B's presentation starts. When he ends his explanation of the abstract, someone's mobile phone starts ringing in the quiet meeting room.

He sees an embarrassed colleague with a mobile phone. This reminds Mr. B that his phone is also not set to silent mode. When he is leaving home in the morning, he usually changes the ring tone to silent mode. Today, however, he forgot to make the change as he was busy.

He wants to stop his mobile phone from ringing during the presentation but he cannot take the phone out of his pocket to set the silent mode as he does not want to interrupt the meeting in front of guests. His BT Watch is useful in this case.

Even during his presentation, he can use the BT Watch to set his mobile phone to silent mode.

When his presentation is almost finished, a vibration from the mobile phone in his pocket tells him there is an incoming call; this is unnoticed by others in the meeting room. The BT

Watch helped him to avoid an embarrassing situation. The presentation is successfully closed and the clients are very satisfied with his presentation. The contract with the client is promising.

List of participants (BT application BT Watch SWG)

Name of participant	Company (Alphabetical order)
Satomi Michitsuta	Casio Computer Co., Ltd.
Sadao Nagashima	Casio Computer Co., Ltd.
Yasuo Kuroki	Casio Computer Co., Ltd.
Hiroyuki Kihara	Citizen Watch Co., Ltd.
Masashi Masuda	Citizen Watch Co., Ltd.
Michihiro Enokida	Citizen Watch Co., Ltd.
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Takamasa Kawaguchi	Hitachi, Ltd.
Kazuhiko Sawaki	Johnson Controls Automotive Systems
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Hiroyuki Morimoto	Mitsubishi Electric Corporation
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MCPC TR-006 Ver.1.0
MCPC BT Watch
for Mobile Phone Technical Reference

September 8, 2005

Issued by: Mobile Computing Promotion Consortium (MCPC)
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