

**XCAL-Mobile Verification Procedure**

**(Autocall VoLTE)**

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1. **Enter VoLTE(NR) Autocall Setting menu – method 1**

|  |  |
| --- | --- |
| Test item | Enter VoLTE(NR) Autocall Setting menu – method 1 |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Launch the Mobile App and select the VoLTE(NR) menu in order. Setting > Autocall > VoLTE(NR) |
| Criteria | 1. Check that the screen has moved to the scenario edit screen. |

1. **Enter VoLTE(NR) Autocall Setting menu – method 2**

|  |  |
| --- | --- |
| Test item | Enter VoLTE(NR) Autocall Setting menu – method 2 |
| Preparations | 1. License : [Autocall] VoLTE(NR)  2. Main screen mode : Main screen1 (Setting > Control > Main screen mode) |
| Test Procedure | 1. In Main screen mode 1, select Add[] or Edit[] Button on the VoLTE(NR) Autocall screen. |
| Criteria | 1. Check that the screen has moved to the scenario edit screen. |

1. **ESP information Logging (At the beginning)**

|  |  |
| --- | --- |
| Test item | ESP information Logging (At the beginning) |
| Preparations | 1. License: [Autocall] VoLTE (NR) |
| Test Procedure | 1. Launch the Mobile App and select the ESP info Logging (At the beginning) menu in order. Setting > Log data > ESP info Logging (At the beginning)  2. Select the Apply button at the bottom. |
| Criteria | 1. A window will pop up, like the one in the picture, to verify if Airplane mode is working. |

1. **ESP information Logging (Before VoLTE/SMS)**

|  |  |
| --- | --- |
| Test item | ESP information Logging (At the beginning) |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Launch the Mobile App and select the ESP info Logging (At the beginning) menu in order. Setting > Log data > ESP info Logging (At the beginning)  2. Select the Apply button at the bottom. |
| Criteria | 3. After creating the VoLTE scenario as shown below, select the Save button at the bottom.  4. To begin AutoCall, please click on the "Start" button. |

1. **Check ESP information Logging pop-up window.**

|  |  |
| --- | --- |
| Test item | Check ESP information Logging pop-up window |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Launch the Mobile App and uncheck the Setting > Log data > ESP info Logging (At the beginning) menu in the upper left corner.    3. After creating the VoLTE scenario as shown below, select the Save button at the bottom.  4. To begin AutoCall, please click on the "Start" button. |
| Criteria | 1. When trying to start VoLTE(NR) Autocall, if ESP info Logging option is off, check if a popup like the picture below occurs. |

1. **My Mobile ID**

|  |  |
| --- | --- |
| Test item | My Mobile ID |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. . Check the My Mobile ID.  2. Check the Phone number in order.  Settings > About phone > Phone number. |
| Criteria | 1. Please make sure the phone number of your smartphone is displayed accurately in the My Mobile ID section. |

1. **Enter Call Name**

|  |  |
| --- | --- |
| Test item | Enter Call Name |
| Preparations | 1. License: [Autocall] VoLTE |
| Test Procedure | 1. Press and hold the Call Name item to select it (For Existing Scenario). Or click on the blank space [text box] in Call Name to select it (For new Scenario).  2. Enter the desired Call Name in the text box. |
| Criteria | 1. Make sure for entering the keyboard text appears.  2. Check that numbers, letters, and special characters can be input. |

1. **Enter a blank for Call Name**

|  |  |
| --- | --- |
| Test item | Enter a blank for Call Name |
| Preparations | 1. License: [Autocall] VoLTE |
| Test Procedure | 1. Press and hold the Call Name item to select it (For Existing Scenario). Or click on the blank space [text box] in Call Name to select it (For new Scenario). 2. Leave the field blank and select the SAVE button at the bottom. |
| Criteria | 1. Check if the pop-up message” Call Name is blank” appears. |

1. **Enter Call Time**

|  |  |
| --- | --- |
| Test item | Enter Call Time |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Touch Idle, Setup, and Traffic of the Call Time item to enter a value. |
| Criteria | 1. Check that only numbers can be entered.  2. Check if Autocall proceeds according to the set call time.  (You can go to Traffic time before Setup time expires.) |

1. **Check input range of Call Time**

|  |  |
| --- | --- |
| Test item | Check input range of Call Time |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Click on Idle, Setup, and Traffic in the Call Time item to enter a value.  2. Attempt to enter a value greater than 10000. |
| Criteria | 1. Check that it is enforced to prevent entering a value greater than 10000. |

1. **Enter Total Time**

|  |  |
| --- | --- |
| Test item | Enter Total Time |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Check the checkbox to the right of Total Time.  2. Enter the Total Time value. |
| Criteria | 1. When the checkbox is uncheck, check whether input and modification of values ​​are not possible.  2. Check that only numbers can be entered. |

1. **Check the minimum value of Total Time input.**

|  |  |
| --- | --- |
| Test item | Check the minimum value of Total Time input |
| Preparations | 1.License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Check the checkbox to the right of Total Time.  2. In the Total Time value, enter a number less than the sum of all call times + 5 (release time) = smaller number than Idle + Setup + Traffic + Release Time(5sec)  3. Press the Save button at the bottom. |
| Criteria | 1. Please select the 'Total Time' option and type '0' to display the toast message.  1. When Using total time, it must be greater than the sum of idle + Setup + Traffic + Release(5Sec). If not, Check if the Toast message “Total Time is greater than equal” appears when saving.  1. When you type a number greater than 2147483648, a pop-up message saying '## is invalid' appears. |

1. **Enter Call Count**

|  |  |
| --- | --- |
| Test item | Enter Call Count |
| Preparations | 1.License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Touch the Call Count item to enter a value.  1. Set Blank in Call Count. |
| Criteria | 1. Make sure that only numbers can be entered.  2. When set blank in call count Toast message pop up as shown below appears.  3.Input range: 1 ~ 10000 (Range Error Toast: " XXXXX time range from 1 to 10000") |

1. **Check Call Count operation**

|  |  |
| --- | --- |
| Test item | Check Call Count operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. ESP info Logging option : ON  4. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. After entering the Call Count, select the Save button at the bottom.  2. Select the Start button on the main screen to start Autocall Test. |
| Criteria | 1. Check whether Autocall operates as many as the set count. |

1. **Enter Success time**

|  |  |
| --- | --- |
| Test item | Enter Success Time |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Check the box to the right of Success Time.  2. Enter a Success Time value. |
| Criteria | 1. When the checkbox is unchecked, check whether input and modification of values ​​are not possible.  2. Check that only numbers can be entered. |

1. **Check Success time operation**

|  |  |
| --- | --- |
| Test item | Check Success Time operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. ESP info Logging option : ON  4. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Check the box to the right of Success Time and enter a value.  2. Select the SAVE button at the bottom.  3. Start Autocall Test by selecting the Start button on the main screen.  4. After traffic progresses for the set success time, end the call.  (You must end the call by moving to the call screen without pressing the Stop button.)  5. After repeating steps 1 to 3, the call ends before traffic proceeds for the set success time.  (You must end the call by moving to the call screen without pressing the Stop button.) |
| Criteria | 1. Even if the traffic time does not expire, if the traffic proceeds as much as the Success time, check if the Call Result is judged as Success.    2. When the call is ended without traffic progressing as much as the success time, check whether the call result is judged as a call Drop or Drop-Bye. |

1. **Additional Delay**

|  |  |
| --- | --- |
| Test item | Additional Delay |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Check the box to the right of Additional Delay and enter a value. 2. Set Blank in Additional delay, and check criteria 4. 3. Enter a value in Additional Delay. 4. Press the SAVE button at the bottom to save the scenario. |
| Criteria | 1. Check Additional Delay whether default it is in Uncheck state & value is 0 sec. 2. When the checkbox is unchecked, check whether input and modification of values ​​are not possible. 3. Check that only numbers can be entered. 4. Check that after save as blank in additional delay, Popup “**Additional Delay should greater than 0**” appears.  1. Input range: 1 ~ 10000 (Range Error Toast: " Additional delay time range from 1 to 10000") |

**9. Call Type**

|  |  |
| --- | --- |
| Test item | Call Type |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Input Idle: 5, Setup: 25, Traffic: 30, Dial Number: (the other terminal's phone number).  2. Create a scenario by setting Call Type: Origination and execute Autocall.  3. Save the scenario by changing to Call Type: Continuous and execute Autocall.  4. Change to Call Type: Termination to save the scenario and run Autocall.  5. During setup time 4, another terminal makes a call to the smartphone running Autocall. |
| Criteria | 1. Call Type **Origination**: Check if Origination dials the number entered in Dial Number.  2. Call Type **Continuous**: In Continuous, the outgoing operation is performed like Origination, and the traffic time is set to 2147483 (about 600 hours, about 25 days).  3. In Call Type: Continuous, check that the Traffic time and Total time fields are disabled.  4. Call Type **Termination**: Check if the call is received when the call rings in Termination. |

1. **Bluetooth connection**

|  |  |
| --- | --- |
| Test item | Bluetooth connection |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Two Smartphone |
| Test Procedure | 1. Input Idle: 5, Setup: 25, Traffic: 30 in both terminals.  2. One smartphone selects Call Type: **MtoM ORG** and the other smartphone selects Call Type: **MtoM TER**.  3. Turn on the Bluetooth Status option on both smartphones to search for the other device to connect to.    4. In ORG, it operates as a Master as shown in the picture on the left, and in MtoM TER, it operates as a Slave as in the picture on the right to find a master terminal to connect to.  5. Select the displayed Master terminal and try to connect.  6. After connecting, turn off the Bluetooth Status option to randomly disconnect the connection. |
| Criteria | 1. Call Type: Check if the Bluetooth Status option can be set only when in MtoM ORG, MtoM TER.  2. Call Type: Check whether pop-up windows for Master and Slave are generated according to MtoM ORG and MtoM TER, respectively.  3. On the Slave side, the Master side terminal is displayed in the list, and when you try to connect, check if it is connected normally.  4. Check if ‘Connected’ is displayed in Bluetooth Status when connected normally.  5. When connected normally, call the other party's phone number and check if it is automatically entered in the Dial Number.  6. Check if the text ‘Paring Disconnected’ is displayed in Bluetooth Status when the connection is disconnected. |

1. **MtoM ORG / MtoM TER**

|  |  |
| --- | --- |
| Test item | MtoM ORG / MtoM TER |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. In both terminals, input Idle : 5, Setup : 25, Traffic : 30.  2. One smartphone selects Call Type: MtoM ORG and the other smartphone selects Call Type: MtoM TER.  3. Connect the two terminals via the Bluetooth Status option and save the scenario.  4. On the MtoM ORG side, select the Autocall Start button.    5. During traffic, select the Stop button on one terminal to stop Autocall.  6. Call Count: Set to 2 or higher to execute Autocall again. |
| Criteria | 1. If the MtoM ORG side executes an autocall, check if the MtoM TER side autocall is also executed automatically.  2. Please verify if you click on the Start button on MtoM TER side, check that Autocall Start is not possible and pop-up “Termination Mode” appears.  3. If you press the Stop button on either terminal during traffic, check if the AutoCall stops in the other terminal as well.  4. Call count: When there are 2 or more counts, check if the Sync works in the Call Start and Call End operations. (Simultaneous Start, Simultaneous End) |

1. **Alternation**

|  |  |
| --- | --- |
| Test item | Alternation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. In both terminals, input Idle: 5, Setup: 25, Traffic: 30.  2. Call Type: After setting MtoM ORG and MtoM TER respectively, connect via Bluetooth.  3. Turn on Alternation option, set Call Count to 2 or higher and save the scenario.  4. On the MtoM ORG side, select the Autocall Start button. |
| Criteria | 1. Check if the Alternation option is selectable only when Call Type: MtoM ORG, MtoM TER.  2. Check whether the MtoM ORG, MtoM TER side terminal proceeds with the Autocall by alternately sending and receiving calls. |

1. **Enter Dial Number**

|  |  |
| --- | --- |
| Test item | Enter Dial Number |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Enter a random number in the Dial Number option field. |
| Criteria | 1. Make sure that only numbers and symbols can be entered. |

1. **Check Send Type Command**

|  |  |
| --- | --- |
| Test item | Check Send Type Command |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Set Call Type : Origination, Continuous, MtoM ORG and check Send Type (Solo only) , End Type options.  2. Set Call Type : Termination, MtoM TER and check Send Type(Solo only) , Answer Type, End Type options. |
| Criteria | In Send Type, make sure the options below are selectable.  **Send Type**  (It can only be checked in the XCAL-Solo version, and in the XCAL-Mobile version, Send Type: API–Send is fixed and the option is not displayed.)  - API-Send  - ADB Shell-Send  - Qualcomm-Send |

1. **Check Answer Type Command**

|  |  |
| --- | --- |
| Test item | Check Answer Type Command |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Set Call Type : Origination, Continuous, MtoM ORG and check Send Type, End Type options.  2. Set Call Type : Termination, MtoM TER and check Send Type, Answer Type, End Type options. |
| Criteria | In Answer Type, make sure the options below are selectable.  **Answer Type**  - API-Answer  - ADB Shell-Send  - ADB Shell-Headset hook  - Qualcomm-Handset  - Broadcast–Headset Hook  - ADB SHELL Home |

1. **Check End Type Command**

|  |  |
| --- | --- |
| Test item | Check End Type Command |
| Preparations | 1. License: [Autocall] VoLTE(NR) |
| Test Procedure | 1. Set Call Type: Origination, Continuous, MtoM ORG and check Send Type, End Type options.  2. Set Call Type: Termination, MtoM TER and check Send Type, Answer Type, End Type options. |
| Criteria | In End Type, make sure the options below are selectable.  **End Type**  - API-End  - ADB Shell–End call  - ADB Shell-Headset hook  - Qualcomm-Handset end  - Qualcomm-Call end  - Broadcast-Headset Hook |

1. **PickUp Delay**

|  |  |
| --- | --- |
| Test item | PickUp Delay |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Select Call Type: Termination, MtoM TER, and check the Pickup Delay option.  2. Set Call Type: Termination, Pickup Delay: At Once and save the scenario.  3. Select the Autocall Start button.  4. During setup time, the other smartphone makes a call to the smartphone running Autocall.  5. Repeat steps 2 to 4 above while changing the Pickup Delay as shown below.  - 500ms  - 1000ms  - 1500ms  - 2000ms  - 2500ms  - 3000ms |
| Criteria | 1. For Call Type: Termination, MtoM TER only, check if the Pickup Delay option is selectable.  2. Check that all of the items below are selectable in the Pickup Delay option.  - At once  - 500ms  - 1000ms  - 1500ms  - 2000ms  - 2500ms  - 3000ms  3. When the phone starts ringing, check whether Termination Side wait for the amount of time set in Pickup Delay to receive the call. |

1. **PickUp Count**

|  |  |
| --- | --- |
| Test item | PickUp Count |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Select Call Type: Termination, MtoM TER, and check the Pickup Count option.  2. Create a scenario by selecting an **Answer Type: API-Answer**, to prevent automatically answering calls.  3. Set Call Type: Termination, Pickup Count: 2 or higher and save the scenario.  4. Select the Autocall Start button.  5. During setup time, the other smartphone makes a call to the smartphone running Autocall.  6. Repeat steps 2 to 4 while changing the number and interval of Pickup Count.  - Number of times: 1 to 5  - Interval: 500 ~ 3000ms  7. Set Answer Type: Shell-Headset hook, ADB SHELL Home and check the Pickup Count option. |
| Criteria | 1. For Call Type: Termination, MtoM TER only, check if the Pickup Delay option is selectable.  2. Check that the Pickup Count option is selectable as shown below.  - Number of times: 1 to 5  - Interval: 500 ~ 3000ms  3. If you do not receive a call, check whether the call reception command operates as many times as you set for each time interval set in Pickup Count. (Event log occurs)  4. Check select Answer Type: Shell-Headset hook, ADB In SHELL Home, verify that Pickup Count is fixed as 1, It cannot modify. |

1. **Reject call**

|  |  |
| --- | --- |
| Test item | Reject call |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Select Call Type: Termination, MtoM TER, and check Reject call and Reject delay options.  2. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  3. Turn on the Reject call option in the terminal on the termination side, and input Reject delay: 3.  4. Save the created scenario and run Autocall on both terminals.  5. Connect Bluetooth by setting Call Type: MtoM ORG, MtoM TER, and repeat steps 2~4. |
| Criteria | 1. When Call Type: Termination, MtoM TER, check if Reject call, Reject delay options are selectable.  2. Make sure that the Reject delay text box is active only when you turn on the Reject call option.  3. If the Reject call option is turned on, when the phone rings, it waits for the Reject delay time and then checks whether the phone hangs up.  4. Check whether the command to end the call works with the command set as End Type.  5. Call Type: Termination, MtoM Check if “**Declined by User**” event occurs on the TER side.  6. Call Type: When testing in MtoM ORG, MtoM TER, check if “**Declined by C.P**” event occurs in MtoM ORG. |

1. **Check Release time operation**

|  |  |
| --- | --- |
| Test item | Check Release Time operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Input Idle: 5, Setup: 25, Traffic: 30, Dial Number: (the other terminal's phone number).  2. Call Count: Set to 2 or higher.  3. Create a scenario by setting Call Type: Origination and execute Autocall. |
| Criteria | 1. After the call is ended and the release time of 5 seconds has elapsed, check whether the next call is proceeded. |

1. **Check Packet Capture Size Operation**

|  |  |
| --- | --- |
| Test item | Check Packet Capture Size operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Input Idle: 5, Setup: 25, Traffic: 30, Dial Number: (the other terminal's phone number).  2. Create Origination and Termination scenarios, respectively, and execute Autocall.  3. After the call ends, obtain the generated log file (.drm). (path: Internal Storage/XCAL-Mobile/Logging) |
| Criteria | 1. Open the log file (.drm) with XCAP-Analyzer to check if all Packet Capture Size settings are logged without restrictions.  (If the packet capture option is set to None, or the traffic time is too short to send and receive packets, the packet message option may be disabled because packets are not saved.)  2. Select any packet with a total length of 100 bytes or more and check the actual captured packet size.  (It must be checked the actual captured packet size, not the Total Length.) |

1. **Network condition**

|  |  |
| --- | --- |
| Test item | Network Condition |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Set the Network Condition option equal to the current network condition.   (To Set Current network: Settings>Connections>Mobile Network>Network mode)    2. Select Save and run Autocall.  3. Set the Network Condition option to be different from the current network state.  4. Select Save and execute Autocall. |
| Criteria | 1. Verify that it is set to the default as **None**.  2. Check that the Network Condition options are as shown below.  -NONE  -NR(SA)  -NR(NSA)  -LTE  -WCDMA  -GSM  3. When setting the same Network Condition as the current network, check whether Traffic Start and ‘Success’ are judged normally.  4. Check if the ‘Skip call’ event occurs when Network Condition is set differently from the current network. |

1. **Check Airplane Mode operation**

|  |  |
| --- | --- |
| Test item | Check Airplane Mode operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Dial Number : (phone number of the other device).  2. Turn on the Airplane Mode option and create a VoLTE scenario.  3. Select Save and run Autocall. |
| Criteria | 1. Make sure it is set to None by default (Airplane Mode unchecked).  2. When Autocall is executed, during Idle time, check if Airplane Mode operates ON/OFF. |

1. **Success Result**

|  |  |
| --- | --- |
| Test item | Success Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle: 5, Setup: 25, Traffic: 30, Call Count: 1.  2. Execute Autocall and initiate a phone call.  3. Wait for the traffic time to pass and the call to end.  4. Select Success time checkbox and enter Success time: 10sec.  5. Initiate Autocall and initiate a phone call.  6. When the traffic time exceeds 10 seconds, end the phone call.  (You must end the call by moving to the call screen without pressing the Stop button.)  7. When the Autocall is finished, check the details by selecting the call result history of the most recently executed Autocall.  8. Connect the smartphone to the PC using a type C cable.  9. Copy the log file (.drm) created in the **Internal Storage >XCAL-Mobile > Logging** path of the smartphone to the PC.  10. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  11. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  12 Check in the Filter Tree, **Common > Voice Call** item in Filter > **Apply**, and check whether the Result for **Success** is logged. |
| Criteria | 1. After Traffic Start, check whether the call result is judged as Success when the call progresses for the set traffic time.  2. If success time is set, even if all traffic time has not elapsed, check whether the call proceeds over the success time and ends as Success.    3. Verify that Success is logged in the log file (.drm). |

1. **Setup Fail Result**

|  |  |
| --- | --- |
| Test item | Setup Fail Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  2. Execute Autocall, do not answer the phone on receiving terminal when the phone rings.  3. Wait for all setup time to pass and Autocall to end.  (If the termination does not ring during the setup time, or if the termination does not answer the call even though the origination makes a call, an event may be randomly generated.)  4. When the autocall is finished, select the call result history of the most recently executed autocall and check the details.  5. Connect the smartphone to the PC using a type C cable.  6. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the smartphone internal storage to the PC.  7. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  8. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  9 Check **Common > Voice** Call item in Filter and check if Setup Fail is logged. |
| Criteria | 1. Check if the Call Result is judged as Setup Fail when traffic does not enter within the set setup time.    2. Check if Setup Fail is logged in the log file (.drm). |

1. **Drop Result**

|  |  |
| --- | --- |
| Test item | Drop Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  2. Execute Autocall and initiate a phone call.  3. When traffic time starts, end the call.  (You must end the call by moving to the call screen without pressing the Stop button.)  4. When the autocall is finished, select the call result history of the most recently executed autocall and check the details.  5. Connect the smartphone to the PC using a type C cable.  6. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the internal storage of the smartphone to the PC.  7. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  8. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  9. Check **Common > Voice Call** item in Filter and check if Call Drop is logged. |
| Criteria | 1. After Traffic Start, check if the **Drop** or **Drop-Bye** event occurs when the network conditions change.  (Logs the event differently depending on the criterion for determining that the phone was hung up.  If ‘Voice State: Offhook > Idle’ is judged first, it is logged as **Drop**,  If ‘SIP Packet: Bye Message’ is judged first, it is logged as **Drop-Bye**.  Both Drop and Drop-Bye events are valid results.)    2. Check if the Call drop is logged in the log file (.drm). |

1. **Network Changed Result**

|  |  |
| --- | --- |
| Test item | System Transition Drop Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle: 5, Setup: 25, Traffic: 30, Call Count: 1.  2. In Network Condition, select the current network condition (ex. None, LTE).  3. Turn on the Network Changed option.  4. Run Autocall and initiate a phone call.  5. When traffic time starts, it worsens the network condition.  (Use a shield box or go underground to weaken the reception signal.)  6. When the network status changes (ex. LTE > 3G), check if a drop event occurs.  7. When Autocall is finished, select the Call Result history of the most recently executed Autocall to check the Detail.  8. Connect the smartphone to the PC using a C type cable.  9. Copy the log file (.drm) created in the **Internal storage >XCAL-Mobile** > **Logging** path of the smartphone to the PC.  10. Open the Log file (.drm) using the XCAP tool and open the Logging Message.  11. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  12. Check **Common > Voice Call** item in Filter and check if Success – RAT Change is logged. |
| Criteria | 1. After Traffic Start, check if the Success – RAT Change event occurs when the call does not proceed as long as the traffic time set and ends the call manually.  2. Check if the Success – RAT Change is logged in the log file (.drm). |

1. **RTP Timeout Drop Result**

|  |  |
| --- | --- |
| Test item | RTP Timeout Drop Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State: LTE or NR  3. Two Smartphone  4. ESP info Logging option: ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle: 5, Setup: 25, Traffic: 30, Call Count: 1.  2. In Network Condition, select the current network condition (ex. LTE).  3. Turn on the **RTP Timeout Drop** option.  4. Run Autocall and initiate a phone call.  5. When traffic time starts, it worsens the network condition.  (Use a shield box or go underground to weaken the reception signal.)  6. When RTP Drop – Timeout Event occurs, check if a drop event occurs.  7. When Autocall is finished, select the Call Result history of the most recently executed Autocall to check the Detail.  8. Connect the smartphone to the PC using a C type cable.  9. Copy the log file (.drm) created in the **Internal Storage** > **XCAL-Mobile** > **Logging** path of the smartphone to the PC.  10. Open the Log file (.drm) using the XCAP tool and open the Logging Message.  11. Logging Enable **Filter Tree**, **Filter View**, and **Detail View** in Logging Message.  12. Check **Common > Voice Call** item in Filter and check if Call **Drop** is logged. |
| Criteria | 1. After Traffic Start, when RTP Packet is not received for as long as the time entered in RTP Timeout Drop (poor communication environment), check if RTP Drop - Timeout event occurs.  2. Check if RTP Drop - Timeout is logged in the log file (.drm). |

1. **RTP Packet Loss Count**

|  |  |
| --- | --- |
| Test item | RTP Packet Loss Count |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle: 5, Setup: 25, Traffic: 30, Call Count: 1.  2. In Network Condition, select the current network condition (ex. LTE).  3. Turn on the RTP Packet Loss Count option and enter a number.  4. Run Autocall and initiate a phone call.  5. When traffic time starts, it worsens the network condition.  (Use a shield box or go underground to weaken the reception signal.)  6. When RTP packet loss occurs, check if a drop event occurs.  7. When Autocall is finished, select the Call Result history of the most recently executed Autocall to check the Detail.  8. Connect the smartphone to the PC using a C type cable.  9. Copy the log file (.drm) created in the **Internal Storage** > **XCAL-Mobile** > **Logging** path of the smartphone to the PC.  10. Open the Log file (.drm) using the XCAP tool and open the Logging Message.  11. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  12. Check **Common > Voice Call** item in Filter and check if Call Drop is logged. |
| Criteria | 1. After Traffic Start, when RTP packet loss is accumulated as much as the number entered in RTP Packet Loss Count (defective communication environment), check if a drop event occurs.    2. Check if RTP Drop - Timeout is logged in the log file (.drm). |

1. **End By User Result**

|  |  |
| --- | --- |
| Test item | End By User Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  2. Execute Autocall and initiate a phone call.  3. When the traffic time starts, press the Stop button to stop the call.  4. When the autocall is finished, select the call result history of the most recently executed autocall and check the details.  5. Connect the smartphone to the PC using a type C cable.  6. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the internal storage of the smartphone to the PC.  7. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  8. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  9 In Filter, check Common > Voice Call, and check if EndByUser is logged. |
| Criteria | 1. Check if the End By User event occurs when the user presses the Stop button during autocall to stop the autocall.    2. Make sure End By User is logged in the log file (.drm). |

1. **Traffic Start Conditions**

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| --- | --- |
| Test item | Traffic Start Conditions |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  2. Execute Autocall and initiate a phone call.  3. Wait for the traffic time to pass and the call to end.  4. Connect the smartphone to the PC using a C type cable.  5. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the internal storage of the smartphone to the PC.  6. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  7. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message |
| Criteria | 1. When one or more of the conditions below (No. 2) are satisfied within the setup time, check whether it is judged as Traffic Start.  2. Open the log file (.drm) with Analyzer and check if there is a message or Voice State corresponding to the following.   * SIP : INVITE msg   In Filter, check ‘**PacketFromMobile > Rx Data > TCP or UDP > SIP’**, ‘**PacketFromMobile > Tx Data > TCP or UDP > SIP**’ and check the logging message below.   * SIP : 200 OK, 200 OK ACK msg and First RTP   In Filter, check ‘**PacketFromMobile > Rx Data > TCP or UDP > SIP’**, ‘**PacketFromMobile > Tx Data > TCP or UDP > SIP**’ and ‘**PacketFromMobile > Rx Data > UDP >** **RTP**’ and check the Logging message below.   * QCI : 1 (DL EPS SM : \_Activate dedicated EPS bearer context request)   In Filter, check ‘**LTE > LTE-Qualcomm > NAS Signaling Messages > Activate dedicated EPS bearer context request’** and check ‘QCI: 1’ in the Detail of the Logging message below.   * Voice State (System into > Voice State : Ringing Change to Offhook) |

1. **SIP Setup time**

|  |  |
| --- | --- |
| Test item | SIP Setup time |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 3.  2. Execute Autocall and initiate a phone call.  3. Wait for the traffic time to pass and the call to end  4. Connect the smartphone to the PC using a C type cable.  5. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the internal storage of the smartphone to the PC.  6. Open the Log file (.drm) using the XCAP tool, and open the Parameter Tree.  7. In the Parameter Tree, check Packet Message Analysis > SIP > VoLTE/VoNR Call Setup Latency > MO Call Setup Latency/MO Call Setup Latency > SIP Invite to SIP 180 (Ringing)/ SIP Invite to SIP Invite 200 OK. |
| Criteria | 1. Check if the SIP Setup time logged in the log file (.drm) and the SIP Setup time displayed in the Call Result history are the same.  (In Call Result history, the value rounded to one decimal places is displayed.) |

1. **Call Index**

|  |  |
| --- | --- |
| Test item | Call Index |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphone  4. ESP info Logging option : ON  5. Two USIM with HD Voice (VoLTE) support  6. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 3.  2. Execute Autocall and initiate a phone call.  3. Wait for the traffic time to pass and the call to end  4. Connect the smartphone to the PC using a C type cable.  5. Copy the log file (.drm) created in the **XCAL-Mobile > Logging** path of the internal storage of the smartphone to the PC.  6. Use the XCAP tool to open the log file (.drm) and open the Logging Message.  7. Logging Enable Filter Tree, Filter View, and Detail View in Logging Message.  8. Check **Common > Voice Call** item in Filter, and check if call index is logged in order. |
| Criteria | 1. In the log file (.drm), check that the call indexes are logged in order. |

1. **XCAL-POLQA installation**

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| --- | --- |
| Test item | XCAL-POLQA installation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test Procedure | 1. Turn on the MOS Settings option and install the XCAL-POLQA application.  2. Allow the necessary permissions for the XCAL-POLQA application behavior. |
| Criteria | 1. Check the installation ‘CHECK’ button.  - If you press the ‘CHECK’ button, the currently installed version of XCAL-POLQA is displayed.  - If XCAL-POLQA is not installed or is different from the supported version, you can install a fresh version.  2. Check the Permission ‘CHECK’ button.  - If the permission for XCAL-POLQA is not allowed, the permission permission popup can be generated through the button above.  - If you have already allowed the permission by running the application, the additional permission grant popup does not occur.  3. If XCAL-POLQA is not installed and Autocall is executed with the MOS Settings option turned on, a warning pop-up message will appear. |

1. **MOS Measurement Type option**

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| --- | --- |
| Test item | MOS Measurement Type option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | Check that the following items exist in the Measurement type option.  - Simplex (Recording mode)  - Simplex (Play mode)  - TimeSync Half-Duplex |

1. **MOS Calculation option**

|  |  |
| --- | --- |
| Test item | MOS Calculation option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | Check that the following items exist in the Calculation option.  - None (Recording Only)  - POLQA MOS (P.863) |

1. **MOS TimeSync Type option**

|  |  |
| --- | --- |
| Test item | MOS TimeSync Type option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | Check if the following items exist in the TimeSync type option.  - NTP time  - Traffic time |

1. **MOS Original/Play file option**

|  |  |
| --- | --- |
| Test item | MOS Original/Play file option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | 1. Original File and Play File may vary depending on the sales region of the license you have.  2. Confirm that you can select a file with a .wav extension in the smartphone's internal storage through the ADD File button. |

1. **MOS BQ Threshold**

|  |  |
| --- | --- |
| Test item | MOS BQ Threshold |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | 1. B.Q Treshold, C.B.Q Check if a number can be entered.  2. Check if an integer can be input in C.B.Q Count. |

1. **MOS Saving Wave**

|  |  |
| --- | --- |
| Test item | MOS Saving Wave |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | Check all checkboxes in the options below to check whether Check or Uncheck is possible.  - Save wave stream to Wave file  - Save wave stream to DRM file  - Automatic Level Alignment |

1. **MOS Play volume**

|  |  |
| --- | --- |
| Test item | MOS Play volume |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Turn on the MOS Settings option and check the sub-options. |
| Criteria | Check that the Play Volume value can be entered as in the range below.  - Solo Play volume : 65 ~ 115  - Mobile Play volume : 5 ~ 100 |

1. **MOS Add wave file**

|  |  |
| --- | --- |
| Test item | MOS Add wave file |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS |
| Test procedure | 1. Request a sample sound source from the R&D person in charge.  2. Add/copy the delivered sample sound source to the smartphone's internal storage > Download path.  3. Select MOS Settings > Add wave file > Add Wave. |
| Criteria | 1. Check if you can select the sample sound source added in Original File, Play File. |

1. **POLQA V3 Option**

|  |  |
| --- | --- |
| Test item | POLQA V3 Option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V3  3. License: [Fuction] MOS |
| Test procedure | 1. Add [Fuction] POLQA V3 to your XCAL-Mobile license.  2. Check the MOS Settings sub-option in the Voice Autocall scenario. |
| Criteria | 1. [Fuction] If you have a POLQA V3 license, check that the POLQA V3 option is displayed as a sub-option in MOS Settings. |

1. **POLQA V3 License Key files**

|  |  |
| --- | --- |
| Test item | POLQA V3 License Key files |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V3  3. License: [Fuction] MOS |
| Test procedure | 1. Add [Fuction] POLQA V3 to your XCAL-Mobile license.  2. Select Menu > About > License Manager in the upper right corner.    3. Select POLQA License > Generate License Key.    3. Check the License Key file created in the smartphone's internal storage > Opticom > polqa, and deliver the file to the R&D person in charge.  4. After receiving the 4 files below from the R&D person in charge, add/copy the files to the smartphone's internal storage > Opticom > polqa path.  5. After adding the license files (4), check the MOS Settings sub-options. |
| Criteria | 1. [Fuction] When you have the POLQA V3 license and all license files (4 pieces), check if the POLQA V3 item is displayed as POLQA License: OK. |

1. **Check MOS measurement (Recording Only, Play Only)**

|  |  |
| --- | --- |
| Test item | Check MOS measurement (Recording Only, Play Only) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. When using XCAL-Solo, connect the audio jacks of the Solo device to each smartphone.  6. Save the scenario you created and run Autocall. |
| Criteria | 1. Check that the MOS value is being measured on the Origination (Recording) side. (MOS : 1.000 ~ 5.000)  2. Check if the event log below occurs on the Origination(Recording) side.  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]MOSLQO : #(#-#)  3. Check if the event log below occurs on the Termination (Play) side.  - [MOS]Play start  - [MOS]Plat end  3. Check that the MOS values ​​measured in Call Result History are saved. |

1. **Check MOS measurement (Half-Duplex)**

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| Test item | Check MOS measurement (Half-Duplex) |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. When using XCAL-Solo, connect the audio jacks of the Solo device to each smartphone.  6. Save the scenario you created and run Autocall. |
| Criteria | 1. Check if the MOS values ​​are being measured alternately on the Origination and Termination side.  (MOS: 1.000 ~ 5.000)  2. Check if the event log below occurs on the Origination and Termination side.  1) Paly  - [MOS]Play start  - [MOS]Plat end  2) Record  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]MOSLQO : #(#-#)  3. Check that the MOS values ​​measured in Call Result History are saved. |

1. **At MtoM, Check MOS measurement (Recording Only, Play Only)**

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| Test item | Check MOS measurement (Recording Only, Play Only) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: MtoM ORG, MtoM TER, respectively.  2. Connect the two terminals configured with MtoM ORG and MtoM TER via Bluetooth.  3. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 10.  4. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  5. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  6. Save the scenario you created and run Autocall. |
| Criteria | 1. Check that the MOS value is being measured on the Origination (Recording) side. (MOS : 1.000 ~ 5.000)  2. Check if the event log below occurs on the Origination(Recording) side.  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]MOSLQO : #(#-#)  3. Check if the event log below occurs on the Termination (Play) side.  - [MOS]Play start  - [MOS]Plat end  3. Check that the MOS values ​​measured in Call Result History are saved. |

1. **At MtoM, Check MOS measurement (Half-Duplex)**

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| --- | --- |
| Test item | Check MOS measurement (Half-Duplex) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphones  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: MtoM ORG, MtoM TER, respectively.  2. Connect the two terminals configured with MtoM ORG and MtoM TER via Bluetooth.  3. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 10.  4. Set both Origination and Termination to Measurement type: Half-Duplex.  5. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  6. Save the scenario you created and run Autocall. |
| Criteria | 1. Check if the MOS values ​​are being measured alternately on the Origination and Termination side.  (MOS: 1.000 ~ 5.000)  2. Check if the event log below occurs on the Origination and Termination side.  1) Paly  - [MOS]Play start  - [MOS]Plat end  2) Record  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]MOSLQO : #(#-#)  3. Check that the MOS values ​​measured in Call Result History are saved. |

1. **Check Playing Wave files operation**

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| Test item | Check Playing Wave files operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: (Origination, Termination pair) or (MtoM ORG, MtoM TER pair).  2. Connect the two terminals configured with MtoM ORG and MtoM TER via Bluetooth.  3. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 10.  4. Set both Origination and Termination to Measurement type: Half-Duplex.  5. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  6. Save the scenario you created and run Autocall.  7. Return to the Scenario Edit screen and change the Original File and Play File arbitrarily.  (However, the Original File and Play File must be the same.)  8. Repeat steps 1-7 above 10 or more times. |
| Criteria | 1. When playing the selected wave file, make sure that the corresponding wave file is correctly found and played.  2. When Autocall starts, check if a play Error popup occurs because it cannot find a sound source. |

1. **Check Original/Play Wave files display**

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| --- | --- |
| Test item | Check Original/Play Wave files display |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: (Origination, Termination pair) or (MtoM ORG, MtoM TER pair).  2. Connect the two terminals configured with MtoM ORG and MtoM TER via Bluetooth.  3. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 10.  4. Set both Origination and Termination to Measurement type: Half-Duplex.  5. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  6. Save the scenario you created and run Autocall.  7. Return to the Scenario Edit screen and change the Original File and Play File arbitrarily.  (However, the Original File and Play File must be the same.)  8. Repeat steps 1-7 above 10 or more times. |
| Criteria | 1. Make sure that the selected wave file is displayed in Autocall Statistics > Call Info. |

1. **Check POLQA ITU & Library Version**

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| --- | --- |
| Test item | Check POLQA ITU & Library Version |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. Save the scenario you created and run Autocall. |
| Criteria | 1. When MOS measurement is in progress at both terminals, check if the POLQA ITU & Library version displayed in the Event Log is as follows.  - POLQA version (Library) : v3.16, ITU version : v2.4 |

1. **Check POLQA V3 Operation**

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| --- | --- |
| Test item | Check POLQA V3 Operation |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V3  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone |
| Test procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 30, and Call Count: 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. In the POLQA V3 option, check and select POLQA License: OK.  5. Set the Original File and Play File to the same AmEng\_SWB\_6s.wav file on both smartphones.  6. Save the created scenario and execute Autocall. |
| Criteria | 1. When MOS measurement is in progress on both terminals, check if the POLQA ITU & Library version displayed in the Event Log is as follows.  - POLQA version (Library) : v3.16, ITU version : v3.0 |

1. **Check M2E Delay operation**

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| Test item | Check M2E Delay operation |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. License: [Fuction] **M2E(Mouth to Ear) Delay**  5. Network State : LTE or NR  6. Two Smartphone  7. ESP info Logging option : ON  8. Two USIM with HD Voice (VoLTE) support |
| Test procedure | 1. Write a scenario by setting two smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. M2E Delay: Turn on the option to NTP (fixed).  6. When using XCAL-Solo, connect the audio jacks of the Solo device to the smartphone respectively.  7. Save the scenario you created and run Autocall.  8. Call Type: MtoM ORG, MtoM TER Connect two smartphones by Bluetooth.  9. M2E Delay: Save the scenario by modifying it with MtoM and execute Autocall. |
| Criteria | 1. Check if the ME2 Delay option is displayed in the UI only when you have an M2E (Mouth to Ear) Delay license.  2. In Call Type: Origination, Termination, check if the ME2 Delay option item is fixed to NTP and cannot be selected.  3. In Call Type: MtoM ORG, MtoM TER, check if ME2 Delay option item is selectable among MtoM and NTP.  4. Check if the event log below occurs on the Origination and Termination side.  1) Paly  - [MOS]Play start  - [MOS]Plat end  2) Record  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]mpfDelayVsTimeBufferInp : # ms  - [Result]MOSLQO : #(#-#)  - [M2E Delay] # ms |

1. **Check CSV File**

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| --- | --- |
| Test item | Check CSV File |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. When using XCAL-Solo, connect the audio jacks of the Solo device to each smartphone.  6. Save the scenario you created and run Autocall.  7. On both smartphones, obtain the CSV file created in the smartphone internal storage > XCAL-Mobile > Logging path. |
| Criteria | 1. Check that the following items are properly logged inside the CSV file on the Origination side.  - XCAL-Mobile/Solo Version  - Setup time  - Traffic time  - MOS(min)  - MOS(max)  - MOS(Avg)  2. Check that the following items are properly logged inside the Termination side CSV file.  - XCAL-Mobile/Solo Version  - Setup time  - Traffic time  - MOS(min)  - MOS(max)  - MOS(Avg) |

1. **Check Saving Wave operation**

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| --- | --- |
| Test item | Check Saving Wave operation |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support  8. Install the XCAP tool  (For how to install and use the XCAP tool, contact the administrator and refer to the XCAP test procedure) |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. When using XCAL-Solo, connect the audio jacks of the Solo device to each smartphone.  6. Check the Save wave stream to Wave file option.  7. Save the scenario you created and run Autocall.  8. Uncheck Save wave stream to Wave file option and check Save wave stream to DRM file.  9. Save the modified scenario and run the Autocall.  10. Check both Save wave stream to Wave file and Save wave stream to DRM file options.  11. Save the modified scenario and run the Autocall.  12. Obtain 3 log files (.drm) each executed. |
| Criteria | 1. Open the log file (.drm) of VoLTE(NR) Autocall executed by checking only the Save wave stream to Wave file option with Analyzer and check if **Main Tree > Graph > VoLTE(NR) & Video Quality > Wave (Rec)** item is disabled Confirm.  2. For VoLTE(NR) Autocall executed by checking only the Save wave stream to Wave file option, check whether the recorded wave file is saved in the **smartphone internal storage > XCAL-Mobile > Logging > MOSData** path.  3. Open the log file (.drm) of VoLTE(NR) Autocall executed by checking the Save wave stream to DRM file option only, and activate **Main Tree > Graph > VoLTE(NR) & Video Quality > Wave(Rec)**. make sure it is turned on.  4. For VoLTE(NR) Autocall executed by checking only the Save wave stream to DRM file option, check that there is no recorded wave file in the smartphone **internal storage > XCAL-Mobile > Logging > MOSData** path.  5. Check all Save wave stream to Wave file and Save wave stream to DRM file options and open the log file (.drm) of VoLTE(NR) Autocall executed with Analyzer **Main Tree > Graph > VoLTE(NR) & Video Quality > Wave (Rec)** Check if the item is activated.  6. For VoLTE(NR) Autocall executed by checking both Save wave stream to Wave file and Save wave stream to DRM file options, the recorded wave file is saved in the smartphone **internal storage > XCAL-Mobile > Logging > MOSData** path. make sure it is turned on. |

1. **Vocoder MOS Mode(QC Only)**

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| Test item | Vocoder MOS Mode(QC only) |
| Preparations | 1. License: [Autocall] VoLTE  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone(Including Qualcomm chipset)  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. Check Vocoder MOS Mode option in Qualcomm chipset terminal.  6. When using XCAL-Solo, connect the audio jacks of the Solo device to the smartphone respectively.  7. Save the scenario you created and run Autocall. |
| Criteria | 1. Check that the Vocoder MOS Mode option is displayed in the UI only on Qualcomm chipset terminals.  2. Check the check box of Vocoder MOS Mode (QC only) to check whether Check or Uncheck is possible.  (MOS: 1.000 ~ 5.000)  3. Check that the MOS value is being measured on the Origination (Recording) side.  4. Check if the event log below occurs on the Origination (Recording) side.  - [MOS]Start recording(#-#)  - [MOS]Stop recording(#-#)  - Start calculation(#-#)  - [Result]POLQA\_OK  - [Result]POLQA version : 3.160000  - [Result]ITU version : 2.4  - [Result]Processing Mode : ~ band  - [Result]POLQA run duration : 0.### sec (Under 1 sec)  - [Result]Attenuation : #  - [Result]MOSLQO : #(#-#)  5. Check if the Tx MOS BQ Fail popup occurs when a MOS value below the Rx Threshold occurs. |

1. **Bad Quality Result**

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| Test item | Bad Quality Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphone  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. On the Origination side, enter a high value of 4.5 or higher for Bad Quality Threshold to create a scenario for Bad Quality to occur.  6. Save the scenario you created and run Autocall.  7. Modify the scenario to cause Bad Quality by entering a low value of 1.0 or less for Bad Quality Threshold.  8. Save the scenario you created and run Autocall. |
| Criteria | 1. If a MOS value smaller than the value set by Bad Quality Threshold occurs at least once, check whether the call result is logged as B.Q (Bad Quality).  2. If the MOS value that is less than the value set by Bad Quality Threshold never occurs, check that the Call Result is logged as Success. |

1. **Continuous Bad Quality Result**

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| --- | --- |
| Test item | Continuous Bad Quality Result |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. Two Smartphones  6. ESP info Logging option : ON  7. Two USIM with HD Voice (VoLTE) support |
| Test Procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set to Measurement type: Simplex (Play Only).  4. On both smartphones, set Original File and Play File to AmEng\_6s\_SWB.wav file identically.  5. On the Origination side, enter a high value of 4.5 or higher for Continuous Bad Quality Threshold to create a scenario for Continuous Bad Quality to occur.  6. Enter C.B.Q Count : 2.  7. Save the scenario you created and run Autocall.  8. Modify the scenario to cause Continuous Bad Quality by entering a low value of 1.0 or less for Continuous Bad Quality Threshold.  9. Save the scenario you created and run Autocall. |
| Criteria | 1. Check if the C.B.Q event is processed if it is continuously measured below the set C.B.Q Threshold for the number of times set in Continuous B.Q Count.  2. If a MOS value smaller than the value set by Bad Quality Threshold occurs less than C.B.Q Count, check whether the Result is logged as Success. |

1. **Audio jack Unplugged Error**

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| Test item | Audio jack Unplugged Error |
| Preparations | 1. XCAL-Solo v5.00 Only  2. License: [Autocall] VoLTE(NR)  3. Network State : LTE or NR  4. Two Smartphones |
| Test Procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 30, and Call Count: 1.  3. Origination side Measurement type: Simplex (Recording Only),  Termination side is set as Measurement type : Simplex(Play Only).  4. Set the Original File and Play File to the same AmEng\_6s\_SWB.wav file on both smartphones.  5. Save the written scenario, disconnect the audio jack from the smartphone, and execute Autocall. |
| Criteria | 1. When Autocall starts, if the audio jack is missing, check if the following pop-up window is created. |

1. **Edit DTMF Scenario**

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| Test item | Edit DTMF Scenario |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphones. |
| Test procedure | 1. Turn on the Send DTMF during traffic time option in the Voice Scenario Settings screen  2. Add the DTMF to be generated through the ‘+’ button at the top left and select the type.  3. If you select Delay, you can enter a Time (ms) value.  4. Enter the number of times to repeat the created DTMF scenario in the Repeat field at the top right.  5. Click the Save button to save the created DTMF scenario. |
| Criteria | 1. If you turn on the Send DTMF option, check if the DTMF Scenario Setting pop-up window is created.  2. Confirm that dial DTMF is additionally created with the + button.  3. Confirm that the bottom item in the dial DTMF list is deleted with the – button. |

1. **DTMF Scenario Option**

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| --- | --- |
| Test item | DTMF Scenario Option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphones. |
| Test procedure | 1. Turn on the Send DTMF during traffic time option in the Voice Scenario Settings screen  2. Add the DTMF to be generated through the ‘+’ button at the top left and select the type.  3. If you select Delay, you can enter a Time (ms) value.  4. Enter the number of times to repeat the created DTMF scenario in the Repeat field at the top right.  5. Click the Save button to save the created DTMF scenario. |
| Criteria | 1. Check if you can select the desired item among 0~9, \*, #, and delay in DTMF type.  2. When dial DTMF is selected, check that Time(ms) is fixed as 1000ms and cannot be changed.  3. When delay is selected, check if a value other than 1000 can be entered in the Time (ms) field. |

1. **Default Call app change pop-up**

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| Test item | Default Call app change pop-up |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphones. |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. On ORG side, turn on Send DTMF during traffic time option  4. Add the DTMF to be generated through the ‘+’ button at the top left and select the type.  5. Click the Save button to save the created DTMF scenario.  6. Save the VoLTE(NR) Autocall scenario you created and run the Autocall. |
| Criteria | When saving a scenario with the Send DTMF during traffic time option turned on, make sure that a pop-up occurs where you can change the default phone app. |

1. **Send DTMF during traffic time operation**

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| Test item | Send DTMF during traffic time operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. Two Smartphones. |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. On ORG side, turn on Send DTMF during traffic time option  4. Add the DTMF to be generated through the ‘+’ button at the top left and select the type.  5. If you select Delay, you can enter a Time (ms) value.  6. Enter the number of times to repeat the created DTMF scenario in the Repeat field at the top right.  7. Click the Save button to save the created DTMF scenario.  8. Save the VoLTE(NR) Autocall scenario you created and run the Autocall.  9. Listen to the smartphone that created the DTMF scenario to see if DTMF occurs during the call. |
| Criteria | 1. Confirm that the DTMF scenario created through the SAVE button is saved.  2. Check if the popup window is closed without saving the DTMF scenario created through the CANCEL button.  3. Check if DTMF occurs in the other terminal according to the set DTMF scenario. |

1. **Silence Detection Play Sound**

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| --- | --- |
| Test item | Silence Detection Play Sound |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Function] **Silence Detection** |
| Test procedure | 1. Enter the Voice Autocall scenario editing screen.  2. Turn on the Silence Detection Setting option and set it to Play Sound : Recording Only.  3. Save the VoLTE(NR) Autocall Scenario you created and run the Autocall. |
| Criteria | 1. Check that the following items are selectable in the Play Sound option.  - Recording Only  - loop1\_2\_8000\_2.wav  2. Check if the ‘loop1\_2\_8000\_2.wav’ file is saved in XCAL-Mobile > Logging > SilenceDetectionData in the smartphone internal storage. |

1. **Silence Detection Play Volume**

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| --- | --- |
| Test item | Silence Detection Play Volume |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Function] **Silence Detection** |
| Test procedure | 1. Enter the Voice Autocall scenario editing screen.  2. Turn on the Silence Detection Setting option and set it to Play Sound : Recording Only.  3. Save the VoLTE(NR) Autocall Scenario you created and run the Autocall. |
| Criteria | 1. Check if the Play volume in XCAL-Solo version can be adjusted to a value between 65 and 115.  2. Check if the value between Play volume: 5-100% can be adjusted in XCAL-Mobile version. |

1. **Silence Detection Add wave file**

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| Test item | Silence Detection Add wave file |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Function] **Silence Detection** |
| Test procedure | 1. Request a sample sound source from the R&D person in charge.  2. Add/copy the delivered sample sound source to the smartphone's internal storage > Download path.  3. Select Silence Detection Settings > Add wave file > Add Wave.  2. Select the sample sound source stored in the smartphone's internal storage > Download path. |
| Criteria | 1. Make sure you can select the sample sound you added in Play Sound. |

1. **Silence Detection Start Condition**

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| Test item | Silence Detection Start Condition |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. License: [Fuction] **Silence Detection**  4. Two Smartphone |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. On the Origination side, turn on the Silence Detection Setting option and set it to Play Sound : Recording Only.  4. Silence Check : Set to 100ms.  5. Save the VoLTE(NR) Autocall Scenario you created and run the Autocall. |
| Criteria | After first detecting a voice (more than 1 second), it is checked whether silence is checked every time interval selected in Silence Check. |

1. **Check Silence Detection operation**

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| Test item | Check Silence Detection operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. License: [Fuction] **Silence Detection**  4. Two Smartphones |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. On the Origination side, turn on the Silence Detection Setting option and set it to Play Sound : Recording Only.  4. Silence Check : Set to 100ms.  5. Save the VoLTE(NR) Autocall Scenario you created and run the Autocall. |
| Criteria | Check if the Event Log below occurs at the same time as Traffic Start.  - Start delay time is 5000ms  - Start SilenceDetection task  - Start playing mode (play sound: occurs when loop1\_2\_8000\_2.wav is selected)  - Start detection mode (Play sound: Occurs when Recording Only is selected)  - Detect audio. Start silence detection (Occurs when a voice is first detected for more than 1 second)  - Stop detection mode (Occurs when traffic ends) |

1. **Silence Check interval option**

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| Test item | Silence Check interval option |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. Network State : LTE or NR  3. License: [Fuction] **Silence Detection**  4. Two Smartphones |
| Test procedure | 1. Create a scenario by setting Two Smartphones to Call Type: Origination, Termination, respectively.  2. Enter Idle : 5, Setup : 25, Traffic : 30, Call Count : 1.  3. On the Origination side, turn on the Silence Detection Setting option and set it to Play Sound : Recording Only.  4. Silence Check : Set to 100ms.  5. Save the VoLTE(NR) Autocall Scenario you created and run the Autocall.  6. Execute Autocall by changing Silence Check to 200~3000ms. |
| Criteria | After the ‘Start SilenceDetection task’ Event log has occurred, when the other device does not make any sound, check whether Silence Detection occurs at every time interval set in ‘Silence Check’. |

1. **Silence Detection Sound Logging**

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| Test item | Silence Detection Sound Logging |
| Preparations | 1. XCAL-Solo v5.00 Only  2. License: [Autocall] VoLTE(NR)  3. Network State : LTE or NR  4. License: [Fuction] **Silence Detection**  5. Two Smartphones |
| Test procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 30, and Call Count: 1.  3. On the Origination side, turn on the Silence Detection Setting option and set it to Play Sound: Recording Only.  4. Silence Check : Set to 100ms.  5. Save the created Voice Autocall scenario and execute Autocall.  6. The termination side makes a random sound to generate a Silence Detection event.  7. Secure the DRM file created in the internal storage > port1 > drm path on the Origination-side Solo3 device.  8. After copying the DRM file to the PC, open the file directly and check the contents with Log Viewer.  9. Select 0x20FD (raw data of the sound source recorded by Silence Detection) in the All Log code tree. |
| Criteria | 1. Select 0x20FD data and check if the total length is 1624 bytes.  - 24 bytes (header) + 1600 bytes (payload) |

1. **Check EMOS Mute event log**

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| Test item | Check EMOS Mute event log |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 30, and Call Count: 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Set the Original File and Play File to the same AmEng\_SWB\_6s.wav file on both smartphones.  5. When using XCAL-Solo, connect the audio jack of the Solo device to the smartphone respectively.  6. Save the created scenario and execute Autocall.  7. Change the measurement type to Simplex (Recording Mode) or Simplex (Play Mode) to execute Autocall. |
| Criteria | Check the event log to see if the phone call starts and mute before proceeding with MOS Play/Record. |

1. **Check EMOS Mute actual operation**

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| Test item | Check EMOS Mute actual operation |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones. |
| Test procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 30, and Call Count: 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Set the Original File and Play File to the same AmEng\_SWB\_6s.wav file on both smartphones.  5. When using XCAL-Solo, connect the audio jack of the Solo device to the smartphone respectively.  6. Save the created scenario and execute Autocall.  7. Change the measurement type to Simplex (Recording Mode) or Simplex (Play Mode) to execute Autocall. |
| Criteria | ‘After the ‘Request MOS mute On’ event log occurs, audibly confirms whether external voice input is actually blocked.  (When making a sound, the other party's terminal should not hear the sound.) |

1. **Check the MOS bar graph**

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| Test item | Check the MOS bar graph |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a scenario by setting the two smartphones to Call Type: Origination, Termination respectively.  2. Enter Idle: 5, Setup: 25, Traffic: 70, Call Count: 1.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Set the Original File and Play File to the same AmEng\_SWB\_6s.wav file on both smartphones.  5. When using XCAL-Solo, connect the audio jack of the Solo device to the smartphone respectively.  6. Save the created scenario and execute Autocall.  7. Slide the event log screen to the left to check the MOS value measurement result. |
| Criteria | Check whether the MOS value result is displayed along with the bar graph whenever the MOS value measurement is finished on the recording side. |

1. **EMOS stabilization test (AmEng\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (AmEng\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **AmEng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (AmEng\_WB\_6s.wav)**

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| Test item | EMOS stabilization test (AmEng\_WB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **AmEng\_WB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (AmEng\_SWB\_6s.wav)**

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| --- | --- |
| Test item | EMOS stabilization test (AmEng\_SWB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **AmEng\_SWB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (BrEng\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (BrEng\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (BrEng\_WB\_6s.wav)**

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| --- | --- |
| Test item | EMOS stabilization test (BrEng\_WB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_WB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (BrEng\_SWB\_6s.wav)**

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| --- | --- |
| Test item | EMOS stabilization test (BrEng\_SWB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_SWB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (German\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (German\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test(German\_WB\_6s.wav)**

|  |  |
| --- | --- |
| Test item | EMOS stabilization test (German\_WB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_WB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (German\_SWB\_6s.wav)**

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| Test item | EMOS stabilization test (German\_SWB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **BrEng\_SWB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (Female-Eng\_NB\_5s.wav)**

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| Test item | EMOS stabilization test (Female-Eng\_NB\_5s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **Female-Eng\_NB\_5s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (Male-Eng\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (Male-Eng\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **Male-Eng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (New\_Female-Eng\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (New\_Female-Eng\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **New\_Female-Eng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (New\_Male-Eng\_NB\_6s.wav)**

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| Test item | EMOS stabilization test (New\_Male-Eng\_NB\_6s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **New\_Male-Eng\_NB\_6s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |

1. **EMOS stabilization test (TTA-M2\_5s.wav)**

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| Test item | EMOS stabilization test (TTA-M2\_5s.wav) |
| Preparations | 1. License: [Autocall] VoLTE(NR)  2. License: [Fuction] POLQA V2  3. License: [Fuction] MOS  4. Network State : LTE or NR  5. two smartphones |
| Test procedure | 1. Create a shipment by setting two smartphones to each Call Type: Origination, Termination.  2. Enter Idle : 5, Setup : 25, Traffic : 70, Call Count : 100.  3. Set both Origination and Termination to Measurement type: Half-Duplex.  4. Similarly, set the Original File and Play File to the **TTA-M2\_5s.wav** file on your smartphone.  5. Save the reservation schedule and execute Autocall. |
| Criteria | Check that the following problems do not occur during the measurement of the MOS value of 100 Calls.  - Play errors  - Record errors  - Calculation omissions and errors  - MOS value drop (2.0 or lower) |