CNMCC (4120) COMMISSIONING TESTS FOR FGB ELT(DT) CAPABILITY

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Purpose

Provide test scripts and results to commission the CNMCC for FGB ELT(DT) capability.

COMMENTS

Based on document C/S JC-35/6/10, the following table provides a list of MCC requirements to be tested to verify MCC capability to process FGB ELT(DT)s.

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| **MCC Requirement** | **“A” document links** | **Comments on Verification** | **Critical change covered** |
| Specific FGB ELT(DT) Beacon Message Validation | A.001 Tables 4-6, sections 4.2.1.1.3, 4.2.1.1.4, 4.2.1.1.5  A.005 section 4.2 | Use scripts to send SIT messages to the DMCC to verify a subset of FGB ELT(DT) and SGB beacon message validation rules. Verify filtering of SGB self-test transmissions. | **MCC-109** (Protocol validation for FGB ELT(DT) LP - bits 25=1, 26=0, 37-40=1001 and 41-42=11), **MCC-112** (FGB and SGB Message Validation, including ELT(DT)s) |
| Filter FGB ELT(DT) alerts prior to operational use | A.001 section 3.7.10 | For commissioning done prior to the declared operational use of FGB ELT(DT)s. | **MCC-47** (Operational Distribution of Alert Data for SGBs and FGB ELT(DT)s until the Cospas-Sarsat Council declares that they may be used operationally) |
| Filter Doppler position for ELT(DT)s | A.001 section 3.2.1  A.005 section 4.11 | For FGB ELT(DT)s |  |
| Filter DOA position for ELT(DT)s from LUTs not commissioned for fast moving beacons. | A.001 section 3.2.1  A.005 section 4.11 | Verify the DMCC capability to filter or distribute DOA position from a MEOLUT for ELT(DT)s, based on DMCC configuration indicating if the MEOLUT is commissioning for fast-moving beacons. | **MCC-39** (An MCC shall filter all DOA position data generated by a MEOLUT for ELT(DT)s, if the MEOLUT is not commissioned to provide DOA locations for fast-moving beacons |
| Distribute FGB ELT(DT) alerts to MCCs and SAR authorities | A.001 sections 3.2.3.2.2, 3.2.1, 3.2.3 and 3.7.8  A.005 section 4.11 | Includes verification of distribution to non-capable MCC, and filtering of test messages  *Include also processing of ELT(DT) alert without position, with encoded only, with DOA only, with Encoded and DOA that match, with encoded and DOA that do not match. Include also processing of uncorroborated alert with FGB ELT(DT)* | **MCC-18** (Data distribution changes and new message formats for ELT(DT) incident alert data.)  **MCC-174** (Message title "UNLOCATED UPDATE ALERT" when a SIT 185 message is sent for a new detection without position information.) See SGB test script, test 7-A-c. |
| Distribute ELT(DT) alerts to the LADR | A.001 sections 3.2.3.2.2 and 3.7.11.  A.002 Table C.2  A.005 sections 4.11, 3.4.5 | Verify distribution of alerts for the LADR (e.g., that each burst is distributed, to the associated nodal MCC by non-nodal MCCs and to a LADR capable nodal MCC by non-LADR capable nodal MCCs). Nodal MCC distribution to the LADR in XML format would only be verified should the details be finalized with ICAO  *Test for distribution to non-capable MCC, Processing of test message, Distribution and filtering of ELT(DT) alerts. Distribute ELT(DT) alerts to the LADR (or nodal MCC), Processing of uncorroborated FGB ELT(DT) alerts* | **MCC-43** (Filtering of Redundant Data for ELT(DT)s), **MCC-52** (For ELT(DT)s, the Action Word is Aw2 if only DOA position ins present, Aw2 if positions in the new alert (i.e., encoded and DOA position) match each other, Aw3 if only encoded position is present, Aw4 if positions in the new alert do not match each other.)  **MCC-62** (ELT(DT) located alert)  **MCC-81** (Distribution of ELT(DT) alerts to non-ELT(DT)-capable MCCs), **MCC-111** (Distribution of ELT(DT) alerts to the LADR), **MCC-151** (ELT(DT) alert distribution within 30 seconds of the earliest reference time), **MCC-152** (FGB ELT(DT) alert distribution of refined encoded position when the reference time differs by at least 3 seconds from the reference time of all previously sent alert)  **MCC-153** Distribution of the best ELT(DT) solution when the current time is at least 10 minutes more recent than the reference time of all previously sent alerts  **MCC-176** (Provision of the 3LD as "ZGA" in the SIT 185 message) |
| Process cancellation messages. | A.001 section 4.2.11  A.005 section 4.13 | Test for unconfirmed cancellation and confirmed cancellation. Limited testing for FGB ELT(DT)s. | **MCC-88** (Modified processing of non-ELT(DT) beacon messages when a new (non-cancellation) message is received after cancellation has been confirmed)  **MCC-159** (Clarify that FGB ELT(DT) Location Protocol Supplementary bits 115‐117 are validated only if the cancellation message sequence is not present  **MCC-172** (Reset to zero of the beacon status word when a message has been detected after the cancellation process is completed for an SGB or an FGB ELT(DT)) |
| Process data selectively | A.005 section 4.3.1  A.006 Table C-2, related reference to section 4.3.1 | Verify DMCC Operator ability to configure the DMCC to process FGB ELT(DT)s by Hex ID |  |
| Filter alert data for FGB ELT(DT)s | A.005 section 5.10.1. A.006 Table C-2, related references to section 4.3.2 | Verify filtering based on beacon ID for FGB ELT(DT)s |  |
| Generate SIT 185 messages for FGB ELT(DT)s | A.005 sections 3.5.1, 3.5.2 | Verify the generation of alert data specific to ELT(DT)s for RCCs, SPOCs and (as needed) non-capable MCCs. | **MCC-102** (Display of ELT(DT) encoded location and time of update (currency))  **MCC-104** (Other Encoded Information: Activation method for ELT(DT))  **MCC-115** (Provide either Aircraft Operator or refined encoded position in SPOC message for FGB ELT(DT)), **MCC-116** (Provide currency (FGB) or time (SGB) of encoded position update in SPOC message for ELT(DT)), **MCC-117** (Provide each vessel/aircraft identifier and Aircraft Operator relevant to User Class in SPOC message)  **MCC-118** (Provide encoded position uncertainty and altitude in SPOC message for FGB ELT(DT))  **MCC-119** (Provide encoded position altitude in feet (as well as metres) in SPOC message for FGB ELT(DT) and SGB), **MCC-139** (Provide note for ELT(DT) alerts)  **MCC-161** (SIT 185 message to Include seconds of the minute in the detect times for FGB ELT(DT)s) |
| Retrieval of ELT(DT) alert | A.005, section 3.10.1 Information Archival and Retrieval | Verify the capability to retrieve ELT(DT) from the MCC. Note: Critical change added to items in Table 1 from paper JC-35/6/10. | **MCC-143** (Retrieval of alerts for ELT(DT)s and SSAS beacons by beacon type) |

The following test messages are constructed to test the MCC capability (the CNMCC is the DMCC).

The China MEOLUT (4123) is configured in the DMCC as fast-moving beacon capable but not FGB processing anomaly capable. All tests in this script except test 6.1 use this MEOLUT which provides DOA locations for fast-moving beacons.

The China MEOLUT (4124) is configured in the DMCC as not fast-moving beacon capable, and as FGB processing anomaly capable. MEOLUT 4124 is used in test 6.1.

The JAMCC and the USMCC are configured in the DMCC as LGM and FGB ELT(DT) capable

In any simulated alert message, the associated data times (MF 14 or MF 14a/14b) are set to a current value (e.g., within the last 18 hours) so that the DMCC does not filter the alert as “old” data.

For tests that involve the use of encoded position, the satellite list (MF 83) should be updated to ensure that the encoded position is within the footprint of all satellites, so that the DMCC does not filter the encoded position, unless it is otherwise noted that the encoded position is outside the satellite footprint.

However, to facilitate testing that requires that the encoded position be within the satellite footprint, the DMCC may be configured to disable the satellite footprint check for encoded position, as feasible. *The satellite footprint check is disabled on the CNMCC*.

All operational MEO and LEO satellites will be configured as operational in the DMCC and associated TLEs/orbit vectors will be current within 7 days, to ensure that encoded position is properly validated.

The DMCC is configured to automatically distribute messages for the JAMCC and the China RCC to the test HMCC (JAMCCT) FTP server.

In the description of “Test Details and Results” below, the text “Internally sent” indicates that the test message was injected at the DMCC; otherwise, the message was sent to the DMCC by the HMCC. The sample SIT messages provided below contain many relevant input data field values (e.g., source MCC, destination MCC, SIT number, Source ID, beacon message, DOA position) but the actual send time, alert data times and list of satellites may differ from the corresponding values provided in the sample SIT message. If the test message is injected at the DMCC, then actual input SIT message will be included, as requested by the HMCC. Any tests performed by the DMCC as part of formal commissioning should be agreed in advance by the HMCC.

**Reporting detailed test results.** Results for a given test will be reported in a format similar to the test description. An example is provided below.

#### Test description: Send a SIT 145 message to the USMCC for an Albanian coded ELT(DT) with FGB message bits 41 – 42 = 11 (invalid value) and DOA position in Mexico. Expected result: the USMCC sends a SIT 185 Initial Located Alert to the Mexico SPOC with DOA position that notes the unreliable beacon message and does not send an NOCR to the FMCCnor an alert to the LADR(since the beacon message is not usable).

Test condition: sent SIT 145 message #**12345** to the USMCC **on 25 Feb 13:01** for an Albanian coded ELT(DT) with FGB message bits 41 – 42 = 11 (invalid value) and DOA position in Mexico.

Result: the USMCC sent SIT 185 Initial Located Alert message# **30001** to the Mexico SPOC with DOA position that noted the unreliable beacon message and did not send an NOCR to the FMCCnor an alert to the LADR.

Status: Passed

If the Status is “Failed”, then the description of the failure(s) is highlighted. A Status of “Failed” or “Partial Failure” is highlighted in Red. A Status of “Passed” is highlighted in Green. Once the DMCC passes a test that is previously failed, then the highlight is removed from the previous “Failed” test. Test results that are pending feedback from the DMCC are highlighted in blue. If a test passed, except for LADR capability, it is marked as such, “Passed (except LADR distribution)”.

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| **MCC Requirement** | **Comments** | **Test Condition and Results** |
| **Section 1,2,3:**  **Beacon Message Validation** | Test details provided below. As a rule, all beacon message fields are set to valid values, except for the fields that are explicitly set to invalid values. Prerequisite: before running any of these tests, ensure that the DMCC properly processes an FGB ELT(DT) alert with no beacon message errors; e.g., by running test 1) in section “Filter FGB ELT(DT) alerts prior to operational use”**.** |  |
| FGB ELT(DT):  bits 41 – 42 = 11 | **Test Message 1.1**Send a SIT 145 message to the CNMCC for an Albanian coded ELT(DT) 19338000003FDFF with FGB message bits 41 – 42 = 11 (invalid value) and DOA position in China (40.104,116.209).Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with DOA position that notes the unreliable beacon message and does not send an NOCR to the JAMCCnor an alert to the LADR through the JAMCC(since the beacon message is not usable). | Input:. Result: Status: |
| FGB ELT(DT):  bits 107 - 108 = 11 | **Test Message 2.1**Send a SIT 145 message to the CNMCC for an Albanian coded ELT(DT) 19330000003FDFF with FGB message bits 107 – 108 = 11 (invalid value) and DOA position in China (40.104,116.209).Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with DOA position that notes the unreliable beacon message and does not send an NOCR to the JAMCC nor an alert to the LADR through the JAMCC (since the beacon message is not usable). | Input:.  . Result:.Status: |
| FGB ELT(DT):  bits 113 – 114 = 00 and bits 115 – 117 not = 000 | **Test Message 3.1**Send a SIT 145 message to the CNMCC for an Albanian coded ELT(DT) 1933000000BFDFF with FGB message bits 113 – 114 = 00 and bits 115 – 117 = 001 (invalid value), other message bits valid, and DOA position in China (40.104,116.209).Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with DOA position that notes the unreliable beacon message and does not send an NOCR to the JAMCC nor an alert to the LADR through the JAMCC (since the beacon message is not usable). | Input: Result: Status: |
| **Section 4:**  **Filter FGB ELT(DT) alerts prior to operational use** | **Test Message 4.1**  Prerequisite: the DMCC capability to distribute a FGB ELT(DT) alert has been verified.  **Have the DMCC disable ELT(DT) alert processing**.  Send a SIT 145 message to the DMCC for a valid ELT(DT) Spanish coded beacon with DOA position (40.104,116.209) in China, ensuring that the alert is not redundant (e.g., the beacon ID is new).  Expected result: the DMCC does not distribute the alert (i.e., no alert to the local SPOC/RCC, no NOCR to the JAMCC and no alert for the LADR through the JAMCC).  Note: **Once the test is complete, have the DMCC re-enable ELT(DT) alert processing**. | Input:  Result:  Status: |
| **Section 5:**  **Filter Doppler position for ELT(DT)s** | **Test Message 5.1**  Send a SIT 125 message to the DMCC for a valid ELT(DT) China coded beacon with Doppler position in Australia and Singapore, encoded position (35,135) in Japan within the satellite footprint, that does not match the Doppler. The alert is not redundant as the beacon ID is new.  Expected result: the DMCC does not distribute the alert to Doppler position (i.e., no alert to the JAMCC due to Doppler). Distribution based only on beacon message (SIT 122) message sent to the JAMCC based on the encoded position only which is also for LADR via JAMCC. The DMCC sends a NOCR to the local RCC in national format with no reference to the Dopplers that shall be filtered. | Input:  Result:  Status: |
| **Section 6:**  **Filter DOA position for ELT(DT)s from LUTs not commissioned for fast moving beacons.** | **Test Message 6.1**  Overview: Verify the DMCC capability to filter or distribute DOA position from a MEOLUT for ELT(DT)s, based on DMCC configuration indicating if the MEOLUT is commissioning for fast-moving beacons.  Prerequisite: the DMCC (CNMCC) is configured to treat China MEOLUT 4124 as not commissioned to provide DOA locations for fast-moving beacons.  Send a SIT 145 message to the CNMCC from MEOLUT 4124 for an Albanian coded ELT(DT), with DOA position (40.104,116.209) in China and encoded position in Qatar (25.5,51.5) within the satellite footprints.  Expected result: the CNMCC sends no alert message to the China RCC (as DOA from fast moving beacon) but sends a SIT 142 message to the JAMCC (which includes the alert for the LADR) and an optional SIT 136 (pro-active NOCR) message to the JAMCC. | Input:Result: Status: |
| **Section 7,8:**  **Distribute FGB ELT(DT) alerts to MCCs and SAR authorities** | This series of tests checks that FGB ELT(DT) alerts are properly filtered and distributed according to A.001 and A.002. This test series includes verification of the distribution of alerts to non-capable MCCs, and the filtering of test messages.  This test series also includes the processing of ELT(DT) alert without position, with encoded only, with DOA position only, with encoded and DOA positions that match, and with encoded and DOA positions that do not match.  Finally, this test series includes processing of uncorroborated alert with FGB ELT(DT)  Prerequisite: some expected test results require that the DMCC is compliant with the rule in A.001 section 3.2.3.2.2 item c), that every ELT(DT) burst (defined by a 3 second period) is sent within the first 30 seconds of beacon activation (per requirement MCC-151, due Sept. 2022), rather than within the first 10 minutes. | Detailed tests described below. |
| Distribution to non-capable MCC | **Test Message 7.1**  Not relevant as the CNMCC does not distribute SITs to non-capable MCCs (as the JAMCC and USMCC are FGB ELT(DT) capable MCCs). | Input:Result: Status: Not Relevant. |
| Processing of test message | MCCs shall filter alert data (including NOCRs) associated with test protocol beacon messages (including SGB messages with bit 43 =1 in the 154-bit main field and FGB ELT(DT) messages with bits 43 – 66 = all “1”s or all “0”s).  **Test Message 8.1** Send a SIT 145 message to the CNMCC for an Greek coded ELT(DT) Location Test protocol with bits 43 – 66 = all “1”s, and DOA position in the USA.Expected result: the CNMCC does not send a SIT 145 message to the JAMCC (either for LADR or alerting Greece or USA) and does not send an optional NOCR message to the JAMCC. **Test Message 8.2** Send a SIT 145 message to the CNMCC for an Italian coded ELT(DT) Location Test protocol with bits 43 – 66 = all “0”s, and DOA position in the USA.Expected result: the CNMCC does not send a SIT 145 message to the JAMCC (for alerting or LADR), nor an optional NOCR message to the JAMCC. **Test Message 8.3** Send a SIT 145 message to the CNMCC for a Norway ELT(DT) with bits 43 – 65 = all “1”s and bit 66 set to 0, and DOA position in the USA.Expected result: the CNMCC sends a SIT 145 message to the JAMCC and an optional pro-active NOCR (SIT 137 message) to the JAMCC (for the USMCC). | Input 8.1:Result. Status: Input 8.2:Result: Status: Input 8.3:Result:. Status: |
| **Section 9:**  **Distribution and filtering of ELT(DT) alerts**  **Generate SIT 185 messages for FGB ELT(DT)s**  **Distribute ELT(DT) alerts to the LADR (or nodal MCC)** | Prerequisite: the DMCC shall configure the distribution to the nodal JAMCC for the LADR. The DMCC does not send messages directly to the LADR as JAMCC is nodal MCC. The China MEOLUT 4123 is configured for fast-moving beacons.  Note: Some messages 2 to 9 require satellite footprint checks for encoded position.  Due to the 10 minute timing rule for distributing ELT(DT) alerts (introduced by MCC-153), the tests in section 9 assume that tests 9.1 to 9.6 are sent at 0601, test 9.7 at 0606 and tests 9.8 and 9.9 are sent at 0611.  **Test Message 9.1**  Send a SIT 142 message to the CNMCC for a Hong Kong coded ELT(DT) with a 24 Bit Address and a 3LD in PDF-2, and no encoded position.  Expected result: the CNMCC sends a SIT 142 message to the JAMCC both as an alert (for the HKMCC) and for the LADR.  **Test Message 9.2**  Send a SIT 142 message to the CNMCC for the same ELT(DT) with an encoded 3LD and coarse encoded position (40,116) in China within the satellite footprints, and the same reference time as message 1 (time of last burst).  Expected result: the CNMCC sends a SIT 185 Initial Located Alert message to the China RCC, an optional SIT 136 (NOCR) message to the HKMCC via the JAMCC and a SIT 142 to the JAMCC message (to be forwarded to the LADR) due to the first position. The SIT 185 includes seconds of the minute in the detect times for FGB ELT(DT)s (in MF #48).  **Test Message 9.3**  Send a SIT 145 message to the CNMCC for the same ELT(DT) and the same encoded position in China within the satellite footprint, DOA position (20.160,106.120) in Vietnam and the same reference time as message 1 (time of last burst).  Expected result: the CNMCC sends a SIT 185 Position Conflict message to the China RCC, and a SIT 146 message to the JAMCC (both for alerting and for LADR).  **Message is sent to the LADR** since the position data is not “redundant” as the first DOA processed for this beacon (per A.001 section 3.12 – “*To provide alert data to the LADR, each MCC shall send an alert for an ELT(DT) received from its associated LUTs to its associated nodal MCC when: … b) position data\* in the new alert has not been previously sent to the associated nodal MCC in an alert received from its associated LUTs with a reference time within three (3) seconds of the reference time of the new alert; …*’).  **Test Message 9.4**  Send a SIT 145 message to the CNMCC for the same ELT(DT) and the same encoded position in China within the satellite footprint, matching DOA position in China (40.001,116.001) and a reference time that differs by one (1) second from the reference time (time of last burst) for all previously sent alerts.  Expected result: the CNMCC does not send any message.  **Test Message 9.5**  Send a SIT 145 message to the CNMCC for the same ELT(DT) and the same encoded position in China within the satellite footprint, matching DOA position in China (40.001,116.001) and a reference time that differs by four (4) seconds from the reference time (time of last burst) for all previously sent alerts.  Expected result: the CNMCC sends a SIT 185 DOA Position Match message to the China RCC, a SIT 145 message to the JAMCC (both as alert and for LADR).  **Test Message 9.6**  Send a SIT 145 message to the CNMCC for the same ELT(DT) and the same encoded position in China within the satellite footprint, conflicting DOA position located in China (40.001,116.001) and a reference time that differs by 31 seconds from the earliest reference time (time of last burst) for all previously received alerts (the reference time is outside the 30 second threshold to send each new burst).  Expected result: the CNMCC only sends a SIT 146 to the JAMCC message for the LADR.  **Test Message 9.7**  Send a SIT 145 message to the CNMCC for the same ELT(DT) and the same encoded position in China within the satellite footprint, DOA position in Chinese Taipei (22.031,120.421) and a reference time that differs by 301 seconds from the reference time (time of last burst) for all alerts previously sent to MCCs or SAR authorities (i.e., message 9.6).  Expected result: due to the new Service Area (TAMCC), the DMCC sends a SIT 146 message to the JAMCC (both as conflict alert and for LADR) and a SIT 185 Position Conflict message to China RCC.  **Test Message 9.8**  Send a SIT 145 message to the DMCC for the same ELT(DT), no encoded position, DOA position located in Chinese Taipei, and reference time that differs by 300 seconds from the most recent reference time (time of last burst) for all alerts previously sent to SAR authorities (i.e., message 9.7).  Expected result: the CNMCC only sends a SIT 145 for the LADR through the JAMCC.  **Test Message 9.9**  Send a SIT 142 message to the DMCC for the same ELT(DT) and new coarse encoded position located in China (40,117) within the satellite footprint and the same reference time as the previous message.  Expected result: initially the CNMCC sends a SIT 142 to the JAMCC (for the LADR only).  After 10 minutes from the reference time in F-7 (the last alert sent), the CNMCC will send a SIT 185 to China with the data from F-8 (the best solution not yet sent, F-8 has DOA location vs coarse encoded location in F-9) and a SIT 142 to the JAMCC. | Input 9.1:Result: Status: Input 9.2:Result: Status: Input 9.3:Result: Status: Input 9.4:Result:. Status: Input 9.5:Result:. Status: Input 9.6:Result: Status: Input 9.7:Result: Status: Input 9.8:Result: Status: Input 9.9:Result: Status: |
| **Section 10:**  **Processing of uncorroborated FGB ELT(DT) alerts** | Prerequisite: the DMCC shall configure the source local MEOLUT 4123 as fast-moving beacon DOA location accuracy capable but not processing anomaly capable.  **Test Message 10.1**  1) Send a SIT 142 message to the CNMCC for unregistered China coded ELT(DT) beacon, and encoded position (36,128) located in South Korea **within the satellite footprint**, and uncorroborated alert (i.e., the associated detect times per Message Fields #14a and #14b in document C/S A.002 are within 2.5 seconds and from a single satellite per Message Field #83).  Expected result: the CNMCC sends a SIT 185 NOCR to the China RCC and a SIT 142 to the JAMCC (for the LADR and as alert)  **Test Message 10.2**  Not required as CNMCC only communicates with LGM MCCs (JAMCC and USMCC). | Input 10.1:Result: Status: |
| **Section 11,12:**  **Process data selectively** | Overview: Verify the DMCC Operator ability to configure the DMCC to process FGB ELT(DT)s by Hex ID.  Prerequisites: the DMCC properly filters alerts for test coded ELT(DT)s when no special filtering is enabled, per “Processing of test message” (in Section 8) above.  **Test Message 11.1**  Prerequisites: the DMCC shall force the distribution to the local China RCC for the Mexican ELT(DT) Test beacon: 2B337FFFFFBFDFF. Send a SIT 145 message to the CNMCC for this Mexican test coded ELT(DT) with beacon message bits 43 – 66 = all “1”s (Test), and DOA position in South Korea (37,126).Expected result: the CNMCC sends a SIT 145 to JAMCC (for LADR) and a SIT 185 Initial Alert (Unlocated) message to the China RCC. **Test Message 11.2**  Prerequisite: the DMCC shall force the distribution to the China RCC for Mexican ELT(DT) Test beacon 2B330000003FDFF.  Send a SIT 145 message to the DMCC for this Mexican coded ELT(DT) Location Test protocol with bits 43 – 66 = all “0”s (Test), and DOA position in South Korea (37,126).  Expected result: the DMCC sends a SIT 145 to JAMCC (for LADR) and sends a SIT 185 INITIAL ALERT to the China RCC. | Input 11.1:Result:Status:Input 11.2:Result:Status: |
| Filter alert data for FGB ELT(DT)s | Overview: Verify DMCC filtering based on beacon ID for FGB ELT(DT)s  **Test Message 12.1**  Prerequisite: the DMCC shall filter the distribution for the French ELT(DT) beacon 1C737AE006BFDFF  Send a SIT 145 message to the CNMCC for this French coded ELT(DT) beacon, encoded position (+52.500/-108.5) in Canada **within the satellite footprint** and DOA position in China (40,116).  Expected result: the CNMCC does not send any message to local SPOC/RCC, nor to the JAMCC, nor an NOCR to JAMCC, nor a message for the LADR through the JAMCC. Remove filtering for this beacon. | Input 12.1:Result:Status: |
| **Section 13: Process FGB unconfirmed cancellation messages** | Overview: test the DMCC capability to generate a confirmed FGB cancellation message, if and only if, the required sequence (3 cancellation messages within 110 seconds, with no intervening non-cancellation message) is met.  **Test Message 13.1**  1) Send a SIT 145 message to the CNMCC for a USA coded ELT(DT) with a non-cancellation beacon message and a 3LD in PDF-2, DOA position (40.104,116.209) in China, and no encoded position.  Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with DOA position and Activation Type “Automatic By External Means (Avionics)”, an optional SIT 137 (NOCR) message to the JAMCC (for the USMCC) and a SIT 145 to the JAMCC for the LADR.  **Test Message 13.2**  2) Send a SIT 145 message with two solutions to the CNMCC with the same data as in message 1, except that each beacon message indicates cancellation, the Latitude (MF 25) is +0.01 degrees in solution 1 and +0.02 degrees in solution 2, and the Time of Last Burst (MF 14b) is +5 seconds in solution 1 and +10 seconds in solution 2.  Expected result: for each solution, the CNMCC sends a SIT 185 Position Update Alert to the China RCC with DOA position, a SIT 145 message to the JAMCC (for the LADR). The SIT 185 shall not include the mention MANUAL for the activation Type, as not provided in previous nor current message.  **Test Message 13.3**  3) Send a SIT 145 message to the CNMCC with a non-cancellation beacon message, with the same data as in solution 1 of message 2, except that the Time of Last Burst (MF 14b) is +25 seconds vs the reference time in message 1.  Expected result: the CNMCC sends a SIT 185 Position Update Alert with DOA position to the China RCC, a SIT 145 message to the JAMCC (for the LADR).  **Test Messge 13.4**  4) Send a SIT 145 message to the CNMCC with a cancellation beacon message, with the same data as in solution 1 of message 2, except that the Time of Last Burst (MF 14b) is +100 seconds (within the 110 second threshold for cancellation) from message 1 and the DOA position is in South Korea (i.e., a new Service area, so the new alert should be sent).  Expected result: the CNMCC sends a SIT 185 Position Update Alert to the China RCC with DOA position, a SIT 145 message to the JAMCC (as an alert and for the LADR). Cancellation is not confirmed due to the intervening non-cancellation message. | Input 13.1: Result:  Status: Input 13.2: Result:  Status: Input13.3: Result:  Status: Input 13.4: Result:  Status: |
| **Section J:**  **Process FGB confirmed cancellation messages** | Overview: test the DMCC capability to generate a confirmed FGB cancellation message, if and only if, the required sequence (3 cancellation messages within 110 seconds, with no intervening non-cancellation message) is met.  **Test Message 14.1**  1) Send a SIT 145 message to the CNMCC for a USA coded ELT(DT) with a non-cancellation beacon message, a 3LD in PDF-2, and DOA position (40.104,116.209) in China.  Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with DOA position, an optional SIT 137 (NOCR) message to the JAMCC (for the USMCC) and SIT 145 to the JAMCC for the LADR.  **Test Message 14.2**  2) Send a SIT 145 message with two solutions to the CNMCC with the same data as in message 1, except that each beacon message indicates cancellation, the Latitude (MF 25) is +0.01 degrees in solution 1 and +0.02 degrees in solution 2, and the Time of Last Burst (MF 14b) is +10 seconds in solution 1 and +20 seconds in solution 2.  Expected result: for each solution, the CNMCC sends a SIT 185 Position Update Alert to the China RCC with DOA position, a SIT 145 message to the JAMCC for the LADR.  **Test Message 14.3**  3) Send a SIT 145 message to the CNMCC with the same data as in solution 1 of message 2, except that the Time of Last Burst (MF 14b) is +112 seconds (outside the 110 second threshold for confirmed cancellation).  Expected result: the CNMCC sends a SIT 145 to the JAMCC for the LADR, and does not send an alert to the China RCC (as the data time exceeds the 30 second threshold and is less than the 10 minute threshold).  **Test Message 14.4**  4) Send a SIT 145 message to the CNMCC with the same data as in solution 2 of message 2, except that the Time of Last Burst (MF 14b) is +108 seconds and is +6 seconds from the time in message 3 (within the 110 second threshold for cancellation, for 3 separate bursts).  Expected result: the CNMCC sends a SIT 185 User Cancellation Alert to the China RCC with DOA position, a SIT 145 message to the JAMCC for the LADR.  **Test Message 14.5**  5) Send a SIT 145 message to the CNMCC with the same data as in message 1 (with a non-cancellation beacon message), except that the Time of Last Burst (MF 14b) is 5 seconds prior to the time of the earliest burst used to confirm cancellation (i.e., in solution 2 of message 2).  Expected result: the CNMCC filters the alert as the cancellation has been confirmed. No messages expected for the RCC nor the LADR through the JAMCC.  **Test Message 14.6**  6) Send a SIT 145 message to the CNMCC with the same data as in message 1 (with a non-cancellation beacon message), except that the Time of Last Burst (MF 14b) is 10 seconds before the time of the latest burst used to confirm the most recent cancellation, and DOA position (40.104,116.209) in China (but in “conflict” with the previous DOA China).  Expected result: the CNMCC treats the alert as a new beacon activation, and sends a SIT 185 Initial Located Alert to the China RCC with DOA position, an optional SIT 137 (NOCR) message to the JAMCC (for the USMCC) and a SIT 145 to the JAMCC for the LADR. | Input 14.1: Result**:**  Status: Input 14.2: Result**:**  Status: Input 14.3: Result:  Status: Input 14.4: Result**:**  .  Status:  Input 14.5:  Result:  Status:  Input 14.6:  Result:    Status: |
| **Section 15:**  **Distribution and filtering of ELT(DT) alerts to the LADR (based on 3LD availability)** | Verify the DMCC compliance with the A.001 section 3.12 requirement to retroactively send an alert with refined encoded position and no 3LD to the LADR once the 3LD is available in a subsequent alert.  Applicable only for nodal MCC (see section 3.12 Location of an Aircraft in Distress Repository (LADR) for ELT(DT) Alert Data of DDP).  For non nodal MCC, the specification is:  *To provide alert data to the LADR, each MCC shall send an alert for an ELT(DT) received from its associated LUTs to its associated nodal MCC when:*  *a) the reference time (i.e., detect time) of the new alert differs by at least three (3) seconds from the reference time of all previous alerts received from its associated LUTs; or*  …  **Test Message 15.1**  Send a SIT 142 message to the CNMCC for a Hong Kong coded ELT(DT) with a 24 Bit Address, refined encoded position in China (40.167,116.139) **in the satellite footprint** and no 3LD.  Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC, an optional SIT 136 (NOCR) message to the JAMCC (for the USMCC) and SIT 142 to the JAMCC (for the LADR even though there is no 3LD, a non-nodal MCC forwards to the nodal).  **Test Message 15.2**  Send a SIT 142 message to the CNMCC for the same ELT(DT) with an encoded 3LD in PDF-2 and coarse encoded position in China (40,116) **within the satellite footprint**, and a reference time (time of last burst) of +5 seconds.  Expected result: the CNMCC sends a SIT 185 Position Update alert to the China RCC and a SIT 142 to the JAMCC for the LADR with the 3LD (with coarse encoded position). | Input 15.1:Result: Status: Input 15.2:Result: Status: |
| **Section L:**  **Additional Testing** | Tests to assess compliance to critical changes MCC-151 (FGB ELT(DT) alert distribution of refined encoded position when the reference time differs by at least 3 seconds from the reference time of all previously sent alert).    **Test Message 16.1**  Send a SIT 142 message to the CNMCC for a South Korean coded ELT(DT) with an encoded 3LD in PDF-2 and coarse encoded position in China (40,116) in the satellite footprint.  Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC, an optional SIT 136 (NOCR) message to the JAMCC (for KOMCC), and a SIT 142 to the JAMCC (for the LADR with the 3LD).    **Test Message 16.2**  Send a SIT 142 message to the CNMCC for the same ELT(DT) and a refined encoded position in China (40.167,116.139) within the satellite footprint, and same reference time (time of last burst).  Expected result: the DMCC sends a SIT 185 Position Update alert to the China RCC and one SIT 142 to the JAMCC (for the LADR with the 3LD as it is the first refined encoded position). | Input 16.1:Result: Status: Input 16.2:Result: Status: |
|  | **Test Message 16.3**  Test to assess compliance to critical changes MCC-176 (Provision of the 3LD as "ZGA" in the SIT 185 message).  If a beacon message contains the value “ZGA” as the Aircraft Operator; then the aircraft operator designator shall be provided as “ZGA (AIRCRAFT OPERATOR NOT AVAILABLE)” in the MF#51 of SIT 185.    Italian coded ELT(DT) with 3LD set to ZGA, and DOA position in China (41.104,114.209)  Expected result: the CNMCC sends a SIT 185 Initial Located Alert to the China RCC with ZGA as 3LD and sends an optional SIT 137 to the JAMCC (for the ITMCC) and a SIT 145 to the JAMCC (as an alert and for the LADR). | Input 16.3:Result: Status: |
| **Section 17:**  **Retrieval of ELT(DT) alert** | Request the DMCC operator to provide information (first and last detection times, last position, beacon ID) for a specific ELT(DT) previously exchanged during the test.  **Test Message 17.1**  SIT 915 to CNMCC requesting information related to beacon 2DD255E077BFDFF in tests 13.1 to 13.4. | Input 17.1:  Result:  Status: |

**Table 1 - MCC Commissioning Detailed Tests for FGB ELT(DT) Capability**

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