GCF
Global Certification Forum

Certification News

LTE Advances

New features and enhancements to the LTE standards dominate GCF's work plan

CDMA2000

GCF to add field trials on live networks to CDMA device certification

Positioning & NFC

Testing of positioning and NFC functionalities expanded

GCF extends coverage of advanced device capabilities

Carrier aggregation, incremental enhancements to LTE introduced through successive 3GPP releases, and positioning capabilities all featured prominently in GCF's work plan since the last edition of Certification News *at the end of April. Work to bring CDMA device certification in even closer alignment with GCF's tried-and-tested processes for 3GPP devices continues to make good progress.*

As the development of 5G gains momentum worldwide, the GCF Board is discussing the challenges that the next generation mobile technology will create for the industry, device certification and GCF.

With 5G anticipated to incorporate multiple radio access technologies (RATs) capable of operating simultaneously, mobile devices will become even more complex than today's most sophisticated multimode smartphones. Expanding the scope and enhancing GCF certification to demonstrate interoperability between next generation devices and networks would be the logical way ahead for operators, device manufacturers and test companies to support the commercialisation and long-term success of 5G technologies.

GCF recognises that it will need to start preparing for the launch of 5G well in advance of the projected introduction towards the end of the decade. A continuation of the long-standing and close collaboration with 3GPP and other industry fora will be essential.

GCF's existing processes and practices, combined with its members' deep understanding of conformance and interoperability, offer a very solid foundation on which to build 5G certification. The certification of Multi-RAT devices is already intrinsic to GCF Certification and could provide relevant insights for 5G certification as the new standards emerge.

Engaging with industry worldwide

GCF continues to reach out to operators, manufacturers and other stakeholders with interests in mobile devices worldwide.

The second annual GCF China Workshop will take place in Xi'An on Tuesday 8 September 2015. With the generous support of China Unicom, the workshop is designed to explain the relevance and benefits of GCF mobile device Certification to China's manufacturers - whether targeting the domestic Chinese or export markets.

Later in the month, Bruce Jolly, GCF Business Development Manager, will attend Middle East Com 2015 in Dubai to meet with and encourage regional operators to join du from the UAE and STC from Saudi Arabia as members.

In November, Bruce and GCF General Manager Lars Nielsen will be among the 10,000 visitors expected at LTE Africa in Cape Town to raise awareness of GCF and Certification and its relevance for Africa.

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LTE advances

With nearly 62 per cent of devices certified in the first half of 2015 supporting LTE, it is perhaps no surprise that the GCF members place a lot of importance on ensuring the scope of certification remains in sync with the steady stream of useful enhancements and new features that continue to emerge from 3GPP.

GCF's processes ensure that Certification Criteria reflect the needs of the industry. A Work Item Proposal (WIP) is submitted by supporting members to Steering Group. If the Proposal is endorsed, a more detailed Work Item Description (WID) is defined and then approved within the most relevant GCF Agreement Group.

When compatible test platforms or live commercial networks suitable for field trials are in place, the responsible Agreement Group can activate the Work Item to add the new certification criteria to the certification scheme.

Band-specific Certification Criteria are often developed under an Umbrella Work Item – a practice that has been invaluable for efficiently managing the 21 FDD and TDD LTE bands which are currently included within GCF LTE Certification.

Carrier Aggregation & LTE Advanced

Carrier Aggregation has been the focus of much attention as operators and manufacturers seek to deliver ever higher bandwidth to end-users.

The Conformance and Interoperability Agreement Group meeting held in Minneapolis, USA in

Bruce Jolly, Business Development Manager, Dennis Fu, China Representative and Lars Nielsen, General Manager, promoting GCF at Mobile World Congress Shanghai in June.

April (CAG#42) activated a Work Item covering conformance testing of band combinations 1A-3A, 1A-7A, 1A-8A and 3A-20A. The meeting also approved a WID for band combinations 1A-28A and 3A-26A.

To help manage the explosion in the number of potential band combinations, 3GPP has introduced Network Requested CA Band Combination Capability Signaling. This enhances the reporting by a device to the network of the CA band combinations it can support. CAG#42 approved a Work Item Description to verify the Rel-11 enhanced reporting features. This WID covers FDD Bands 01, 02, 03, 04, 05, 07, 08, 12, 20, 25, 26, and 27 and TDD bands 38, 39, 40 and 41.

Work on Carrier Aggregation was continued at CAG#43 in Malaga, Spain in July with the activation of band combinations 21-13A, 3A-26A and 38C, and approval of WIDs for band combinations 2A-2A, 2A-4A and 4A-5A.

The same meeting also approved an umbrella Work Item Description for

the certification of Rel-12 devices incorporating LTE-Advanced Carrier Aggregation with three downlinks. So far, 42 inter-frequency combinations have been identified for 3DL Carrier Aggregation.

A related WID was also approved defining the requirements for the specific band combinations of 1A-3A-19A and 1A-19A-21A.

Voice over LTE

VoLTE remains a priority for many operators and device manufacturers. CAG#42 approved a VoLTE Voice Quality Test.

June's Steering Group Meeting in Beijing also addressed VoLTE.

The newly approved GSMA IR.92/VoLTE enhancements are referenced in a WIP that will provide a conformance testing regime for the CAT Forking Model and IMS Customized Alerting Tones (CAT) feature that will help facilitate the launch of interoperable IMS-based voice services.

LTE Enhancements

Several Work Item Descriptions

CDMA2000

Four Work Items relating to CDMA2000 devices together with three associated Test Items – which authorize the development of the required test cases – were approved at SG#63. CDMA2000-related Work Items are progressed through the Conformance and Interoperability Group 2 (CAG2) while test cases are developed in the Test Case Agreement Group 2 (TCAG2)

Areas to be covered include:

- Field Trial requirements for CDMA2000 devices – drawing on the experience GCF's long-established practice for 3GPP technologies to identify how field trials can enhance the robustness of CDMA device certification;
- Hybrid VoLTE - to test voice service interoperability on multi-mode CDMA/LTE networks;
- Voice over Wi-Fi and 3GPP2 interoperability – to enable operators to extend their voice service offerings to users by leveraging the existing IMS backend but carrying the voice payload over Wi-Fi;
- Wireless Interoperability Testing to enable IOT testing of a device to be performed against different network infrastructures conducted wirelessly over the air – rather than in the current cabled test environment.

Test Items were approved for the Hybrid VoLTE, Voice over Wi-Fi and 3GPP2 interoperability and the Wireless Interoperability Testing Work Items.

Asif Hamidullah, GCF's Convenor for CAG2 & TCAG2, attended the Verizon Test Fest in New Jersey in August to update stakeholders in the CDMA2000 eco-system on CDMA device certification within GCF.

Field Trial Agreement Group

FTAG continues to focus on streamlining the field trial component of GCF Certification. Recent initiatives have involved:

- Optimisation of VoLTE test cases to remove duplication and the addition of other new test cases to test inter-RAT handover and "voice call cancel";
- Continuing efforts to align FTAG Work Items with GSMA TS.11 - the principle reference for field trial test cases – to optimise testing through better classification of test results;
- Removing RCS 1.2 from Field Trial requirements now that it has been superseded by RCS 5.1 (Blackbird).

Recent updates and additions to field testing have included:

- The addition of A5/4 tests for GSM and 3G device testing;
- The introduction of WB-AMR Terminal-to-Terminal (T2T) on both GSM and 3G networks for devices that support both modes;

FTAG will support TCAG2 in the identification of field trial tests applicable to CDMA2000 devices.

In June, NTT DOCOMO became the first member of the GCF to open up a Voice-over-LTE (VoLTE) network for field trials. The move represented an important step in GCF's efforts to enable mobile device manufacturers to verify the interoperability of their devices with commercial VoLTE networks. Two additional operators have subsequently opened their networks for VoLTE testing and others are expected to follow.

News In Brief

Agreement Group Elections

Chris Hiesberger, of Sprint has been elected Chair of CAG2, the GCF Agreement Group responsible for the development and maintenance of Certification Criteria for CDMA2000/3GPP2 devices.

Luis Magana of PC Test Lab has been elected CAG2 Vice-Chair

Doug Roberts of Orange has been elected Vice-Chair of the Performance Agreement Group. PAG defines standardised means of quantifying and reporting agreed aspects of the performance of a mobile device that do not necessarily relate to interoperability.

Device Statistics

261 mobile devices were certified during the first half of 201. This represents a slight decline compared with the 271 devices certified in the first six months of 2014 – which set a record for total certifications over the full year. 47 of the devices were modules and a further 13 were devices that derived their mobile connected from a GCF-Certified module.

New Test Platforms

CAG approves test platforms that support test cases used within GCF Certification. CAG#43 approved two new platforms:

- COMPRION UT3 Platform and R&S CMW500
- COMPRION UT3 Platform and ANRITSU MD8475A

Membership Matters

GCF has welcomed the following new members since the last edition of *Certification News*:

Manufacturers
- Honeywell, USA
- Infomark, Korea
- Mundo Reader, Spain
- OnePlus, China
- Telecom Y Novatenco, Spain
- Zound Industries, Sweden

Associate Manufacturers
- Caterpillar Inc, USA
- Clover Networks, USA
- Toshiba, UK

Observers
- Industrial Technology Research Institute (ITRI), Taiwan
- Verkotan, Finland

POSITIONING & LOCATION

Location based services have become an important feature of smart phones and for location tracking or emergency services in cellular phones. CAG#42 approved seven Work Item Descriptions covering various aspects of the operation of GPS, GLONASS, Galileo and OTDOA capabilities.

The Chinese-developed BeiDou Navigation System – BDS - is rapidly emerging as an important alternative to the GPS, GLONASS and Galileo systems, particularly in the large Chinese market. SG#63 approved a WIP for conformance testing of A-BDS on 3G and LTE devices. This WIP had been translated into four detailed Work Item Descriptions by the time of CAG#43 in July which were duly approved.

UICC-based NFC services

GCF has been supporting the implementation of UICC-based NFC service since September 2013. The initial Work Item referenced GSMA TS.26 NFC Handset Requirements V5.0 and GSMA NFC Handset Test Book 3.0.

At CAG#42 in April 2015, CAG activated a Work Item supporting the Continued Evolution of UICC-based NFC services.

In June, SG#63 in Shanghai approved a new Work Item covering further evolution of UICC-based NFC services. A detailed Work Item Description, that now references the latest GSMA NFC Handset Test Book V.6.0 TS.27, was approved at CAG#43 in July. Activation of the Work Item is anticipated at CAG#44 in Beijing in October.

LTE Advances

relating to enhancements to 3GPP standards have been approved at the last two CAG meetings:

- Rel-10 EPS Enhancements for FDD Band 02;
- Rel-10 Enhanced Downlink Multiple Antenna Transmission for bands for FDD bands 02, 04, 05, 13 and TDD bands 38, 39, 40 and 41;
- Rel-11 E-UTRA Improved Minimum Performance Requirements to improve interference rejection in FDD bands 01, 02, 03, 04, 05, 13, 19, 21, 28 and TDD bands 38, 39, 40 and 41;
- Rel-11 Coordinated Multi-Point Operation (CoMP) for FDD bands 01, 02, 03, 04, 05, 07, 12, 13, 25, 26, and TDD Bands 38, 39, 40 and 41;
- Rel-12 Single Radio Voice Call Continuity (before ringing) for FDD bands 01, 03, 19, 21 and 28.

At CAG#43 in July, three WIDs were approved that will pave the way for Band 42 to become the fifth TDD band to be included in GCF Certification. The three WIDs cover Rel-8 versions of the RF, E-UTRA Protocol and EPC Protocol areas of LTE standards.

CAG#43 also activated Work Items covering:

- Rel-10 EPS and E-UTRA Enhancements for FDD band 02 and TDD bands 38, 39. 40 and 41;
- Rel-11 TDD additional special sub-frame configuration.

LTE Broadcast

Two further Work Items supporting e-MBMS, or "LTE-Broadcast", have been activated. CAG#42 activated Rel-9 e-MBMS for FDD Band 13 while the following meeting extended the test coverage to FDD Bands 01 and 03.

In the meantime, CAG#42 approved the Work Item Description for Rel-11 e-MBMS Service Continuity for FDD Bands 01, 03 and carrier aggregation band combination 1A-3A.