GCF
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Certification News

Carrier Aggregation

Major focus on developing conformance & interoperability testing for CA

Page 2

CDMA2000

CDMA-related activity gathers pace within GCF

Page 3

Membership

BT and Saudi Telecom among the latest companies to join GCF

Page 4

Connecting Globally

GCF Certification promotes the interoperability of mobile devices worldwide and contributes to economies of scale that benefit stakeholders across the mobile eco-system and end users. Leading operators and mobile device manufacturers from China, Europe, Japan, North America and South Korea support the scheme and are actively engaged in its ongoing evolution. GCF wants to ensure that the benefits of "test once, use anywhere" certification are also shared with growth markets such as India, Latin America and Africa. To meet this objective, GCF is proactively building relationships with the mobile industry in these regions.

The Telecommunications Standards Development Society India (TSDSI), an Organizational Partner of 3GPP, and GCF hosted a round table in New Delhi on 15 April to discuss requirements for device testing and certification in the Indian market. Participants included the Indian Cellular Association (ICA), Cellular Operators Association of India (COAI), Telecommunication Centres of Excellence (TCOE), Bureau of Indian Standards (BIS), Telecommunication Engineering Center (TEC) together with representatives of individual Indian manufacturers, operators, chipset suppliers and the test industry. ETSI's Seconded European Standardisation Expert in India (SESEI) also joined the discussion. Moderated by Dr. Asok Chatterjee, Director General of TSDSI, the meeting supported further investigation into device certification requirements for the Indian market.

GCF Business Development Manager Bruce Jolly attended the LTE Latin America 2015 conference in Rio de Janeiro, Brazil, 7-9 April, to learn more about the world's fourth largest regional market with 326 million unique mobile subscribers, and growth in

Warm welcome in the Middle East

GCF celebrated a milestone in its 16-year history recently when it held its first formal face-to-face meetings in the Middle East. In January, the Conformance and Interoperability Agreement Group (CAG) and the Field Trial Agreement Group (FTAG) met in Dubai.

UAE operator Du, who hosted the meetings, opened its own Terminal Innovation Lab in January to improve its own device testing and validation and this, together with GCF's presence, attracted the attention of the local media. Du has also become a Field Trial Qualified Operator, making its network available to device manufacturers and Recognised Test Organisations for the field trial element of GCF Certification.

Saudi Telecom Company (STC), another prominent Middle Eastern operator, has also recently joined GCF as an Operator Member.

Conformance & Interoperability

Delegates search in vain for the Delta 4 rocket that launched during SG#62 in Florida. While there were blue skies elsewhere, the direction of the launch was obscured by cloud.

Features and functionalities to be added to lab-based conformance and interoperability testing are agreed by operator and manufacturer members in the Steering Group (SG) and then developed and activated within CAG.

At CAG#41 in Dubai, FDD LTE band 12 (in the US **Lower SMH 700 MHz** band) and band 28 (the **APT 700 MHz** which is being deployed in various markets in both the Asia Pacific and Latin American regions) were brought within the scope of GCF. 18 different FDD LTE bands and four TDD LTE bands are now explicitly covered by GCF Certification.

Other LTE-related Work Items activated at CAG#41 included:

- Dual mode (FDD/TDD) Rel-9 operation for two band combinations: FDD Band 03 & TDD Band 40; FDD Band 28 & TDD Band 41
- Rel-9 Enhancements for Inter-band Conformance Testing between FDD Bands 01, 05 & 07
- Carrier Aggregation between FDD bands 5A & 7A
- Carrier Aggregation for two TDD band combinations: 39A & 41A; 40C & 41C
- Single Radio Voice Call Continuity in alerting phase (aSRVCC) for E-UTRA FDD band 21 and TDD bands 38, 39, 40 and 41.

Conformance and IOP Testing was also finalised for the Evolution of UICC based NFC Services and a number of Rel-10 enhancements for UTRA FDD (3G)

New Work Item Proposals

SG#62, the first meeting of the year for the GCF Steering Group, took place in Winter Park, Florida, USA in March. Juergen Meyer of BlackBerry, the SG Chair for 2015, was supported by the newly-elected Vice Chair, Tim Evans of NTT DOCOMO.

The meeting approved several Work Item

Proposals that will further update and expand the coverage of LTE within GCF Certification. A **Voice-over-LTE (VoLTE)** voice quality test Work Item will ensure the acoustic performance of VoLTE devices. The Work Item accommodates both narrowband (8 kHz sampling rate) and wideband VoLTE (16 kHz sampling). In developing the Work Item, CAG will consider the outcome of the GCF Task Force that is currently investigating the potential for harmonisation of **acoustic testing** between GCF and other organisations.

Certification Criteria for Intra-band and Inter-band **Carrier Aggregation** are being updated in advance of operators migrating their networks to support capabilities specified in Rel-10 and later 3GPP releases. This work will also be relevant to the certification of LTE Advanced devices and support for transmission bandwidths greater than the 20 MHz typically specified for Rel-8/9.

With LTE being deployed in approaching 20 different FDD bands, the number of potential Carrier Aggregation band combinations is growing exponentially. 3GPP Rel-10 introduced a means for a device to report which Carrier Aggregation band combinations it supported, however the feature can only differentiate between a maximum of 128 band combinations.

Networks-requested **CA Band Combination Capability Signaling** in Rel-11 allows a network to request the

device to report its CA Band Combination Capability in a certain order. This capability will now be included in GCF.

CoMP - Coordinated Multi-Point Operation - is a tool to improve access to high data rates, improve cell-edge throughput and increase the overall throughput of LTE networks. The technique decouples the point that transmits downlink control from that which receives uplink control data. Assessing a device's compliance with the 3GPP's Rel-11 CoMP requirements will enable operators to take advantage of the technique.

MDT - Minimization of Drive Test has been introduced in 3GPP to provide operators with tools to improve the quality of LTE and HSPA network coverage. An alternative to manual drive testing, MDT enables a handset to make automatic measurements and log the data against its location for later analysis offline. Two new Work items will allow the certification of eMDT – which includes Immediate MDT and Logged MDT functionality – in Rel-10 and Rel-11 devices.

LTE Broadcast

The next CAG meeting will continue the development of GCF's coverage of LTE Broadcast (eMBMS) which is being trialed at a number of iconic stadia around the world as a means of augmenting the experience of spectators with simultaneous video broadcasts. A number of umbrella work items relating to LTE Broadcast already exist. CAG#42 will progress the testing of basic Rel-9 and Rel-10 LTE-Broadcast in FDD Bands 01 and 03. In addition, eMBMS Service Continuity FDD in Rel-11, will addresses mobility aspects. The incorporation of a feature into Certification is typically a prelude to the introduction of commercial services.

Field Trials

The Field Trial Agreement Group (FTAG) also met in Dubai and updated Work Items relating to **RCS** and **VoLTE** with the addition of new test cases drawn from GSMA's TS.11 Device Field and Lab Test Guidelines.

FTAG also updated some of its processes relating to **TDD LTE** devices which must now be field trialled in TDD networks.

New Field Trial Work Items

With some network operators are preparing to introduce IMS/ **Voice-over-WiFi** services, SG approved a new Field Trial Work Item aiming to ensure proper interworking of IMS/VoWiFi capable terminals with WiFi and 3GPP live networks. This will complement existing related Work Items covering the **GSMA IR.92** profile for Multimedia Telephony Services for IMS (**MTSI**), **SMS over IMS**, **IMS Emergency Call** and **IMS/VoLTE** Field Trials. The new Field Trial requirements will be applicable to WiFi-capable devices that support IMS, VoLTE and VoWiFi.

High-profile revelations over the past year have increased operators' focus on ensuring the confidentiality of customer communications. Many operators are upgrading their encryption algorithms. A pair of Work Items has been introduced to cover Field Trials for **A5/4 Ciphering** and **GEA4 Ciphering**. Applicable to GSM and GPRS devices respectively, the Work Items will include tests for Stationary and Handover to 3G usage scenarios. Both the updated ciphering technologies use 128 bit encryption keys in place of the 64bit keys used on their predecessors – A5/3 and GEA3 respectively.

CDMA2000

Since December 1, 2014, GCF has been the only recognised certification scheme for CDMA2000/3GPP2 based devices. As for 3GPP features and functionalities, SG decides whether a new CDMA2000-related feature should be brought into GCF certification. Once this is agreed, two new groups undertake the work: the CDMA Conformance and Interoperability Agreement Group (CAG2) develops conformance and interoperability certification criteria for CDMA2000 capable devices. The CDMA Test Case Development Agreement Group (TCAG2) defines test specifications in those cases where appropriate specifications are not available from other industry or standards organisations.

Both Agreement Groups are now active and 27 delegates attended the CAG2#6/TCAG#6 meetings hosted by Qualcomm in San Diego, California, in February.

Chris Hiesberger of Sprint chairs CAG2 while Luis Magna of PCTest Lab is Vice Chair. (TCAG2 will elect a Chair and Vice Chair at its next meeting.) 26 test specifications inherited from the CDMA Certification Forum were converted into the established GCF format, reviewed and activated.

At SG#62, the following CDMA-related conformance Work Item Proposals, were agreed, together with associated Test Item Proposals where required:

1xeCSFB testing allows Operators deploying devices that support both 3GPP and 3GPP2 technologies to ensure proper functioning of "**fall back**" from LTE to 1xRTT.

News In Brief

Nick Baustert re-elected as board chair

Following on from the election of new board members at GCF's Annual General Meeting in December, Nick Baustert of Sprint was re-elected as Chair of the GCF Board of Directors for 2015 at the first meeting of the new board year in January.

2014 GCF Device Analysis

LTE was incorporated in 52 per cent of mobile devices certified by the Global Certification Forum in 2014, up from just under 40 per cent in 2013. LTE was a feature in 282 certified devices, up 62 per cent compared with the total of 171 LTE devices certified in 2013. For more insights into the scale and scope of GCF Certification, download the 2014 Device Analysis white paper at http://www.globalcertificationforum. org/news-events/downloads.html

Associate Manufacturers

Introduced in late 2013, Associate Manufacturer membership is available to manufacturers who want to certify products that incorporate mobile connectivity based on GCF-Certified embedded modules. 11 companies have already joined as GCF Associate Manufacturer Members and six devices were successfully certified during the first year of the scheme.

New Test Platforms

CAG approves test platforms that support test cases used within GCF Certification. CAG#41 approved: Anritsu ME7873LA LTE-Advanced RF Test System.

Connecting Globally

smartphone connections of 77 per cent CAGR between 2010 and 2013[1].

Continuing growth in both adoption and data traffic has focused attention on quality of service: operators in some markets have been sanctioned for poor network performance. In Rio, Bruce explored how certification could help operators identify and address issues that can be attributed to devices that are not compliant with global standards.

GCF Programme Manager Chris Hogg will be attending the M2M World Congress in London, 28-29 April, to continue to build contacts with companies involved in M2M and the Internet of Things.

Having met with more than 50 export focused Chinese manufacturers at Mobile World Congress in March, GCF aims to build on these contacts at Mobile World Congress Shanghai, 15-17 July. A GCF workshop in Xi An during September is also being planned for Chinese manufacturers.

The GCF Office team has also been canvassing existing members on a one to-one basis to understand their perspectives on the evolving industry landscape and the implications for device certification. The anonymised insights and data being gathered are valuable inputs to the development of GCF's overall strategy.

[1]*GSMA Mobile Economy Latin America 2014*

CDMA2000

LTE-C2K iRAT testing allows devices supporting both 3GPP and 3GPP2 technologies to be tested to ensure the transition between LTE and C2K technologies functions correctly.

Supported on many multi-mode 3GPP2 devices, **Hybrid 1X & LTE** functionality provides a mechanism for supporting 1X Voice & SMS and LTE data on a single radio device that communicates independently with CSMA2000 and LTE networks.

While Hybrid 1X & LTE is already being IOT tested, the Work Item will define a set of conformance tests covering scenarios that are not adequately covered in the current Cabled-IOT testing environment.

A Test Item Proposal has also been approved covering **Cross Band Load Balancing (CBLB)** testing. When the loading on one band in a dual band device exceeds an activation threshold while the loading on a second band is below an acceptance threshold, Cross Band Load Balancing enables a percentage of eligible dual band mobiles that register on the loaded band to be redirected to the second band to promote optimal system performance.

Illustrating how CDMA2000 is now "business-as-usual" for GCF, SG#62 also approved CDMA-related Work Items for CAG. The availability of devices supporting both LTE TDD and CDMA2000 has created a need to verify **EPS TDD-to-CDMA2000 Inter-RAT** functionality and performance. Two Work Items cover the protocol aspects of mobility scenarios between LTE/SAE TDD and CDMA2000 for various Band combinations in Rel-8 and Rel-9 TDD devices.

Membership Matters

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

Operators
- BT Group, UK
- Saudi Telecom Company, Saudi Arabia

Associate Operators
- United Wireless Communications, USA
- Nex-Tech Wireless, USA

Associate Manufacturers
- Elo Touch Solutions, USA

Client Vendors
- Summit Tech Multi-Media Communications, Canada

Observers
- A Test Lab Techno, China
- Shenzen Hua Mei Na Testing Technology, China

Thom Erickson of Qualcomm stood down from the GCF Board at the Annual General Meeting held last December. Thom was a driving force in the initiative to bring CDMA certification into GCF. A common certification scheme embracing 3GPP and 3GPP2 wireless technologies has the potential to realize efficiencies and generate benefits across the mobile and associated industries and will be a lasting legacy to Thom's efforts.

Test once, use anywhere