
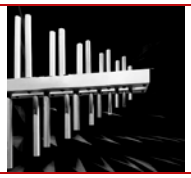
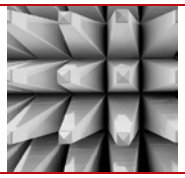

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# Annex F LTE CA data

**Appendix to Test Report No.: 1-6965/13-14-02**

DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

## Testing Laboratory

**CETECOM ICT Services GmbH**
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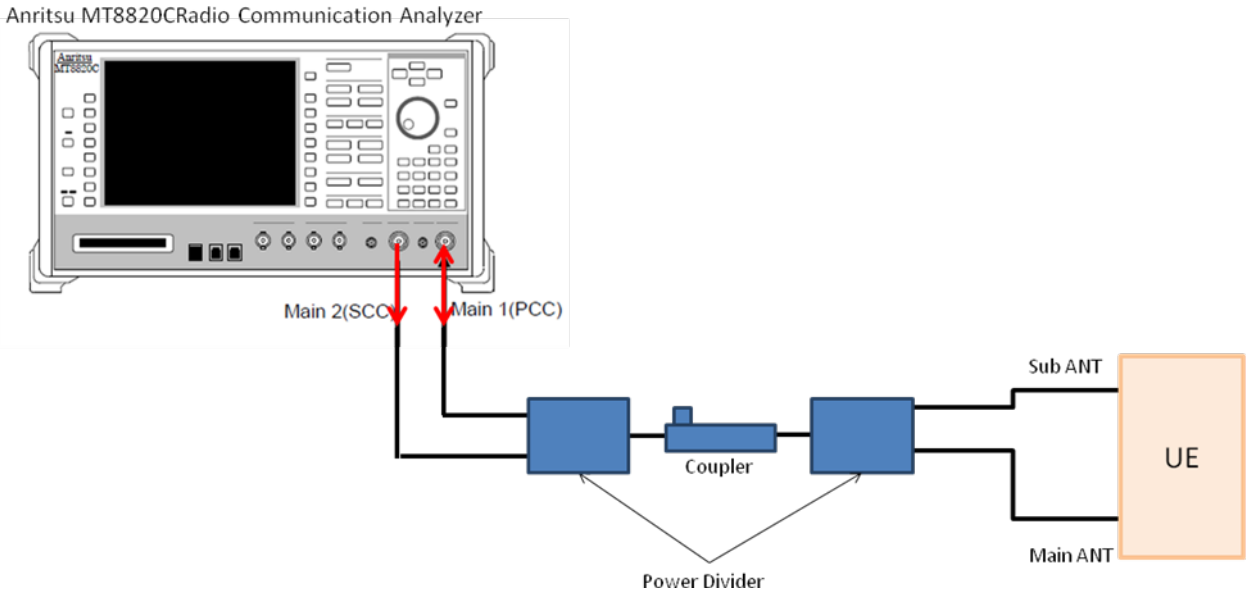
**Accredited Test Laboratory:**
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01

**Annex F presents the measurement setup for LTE Carrier Aggregation conducted measurements and detailed test results as they were provided by the customer.**

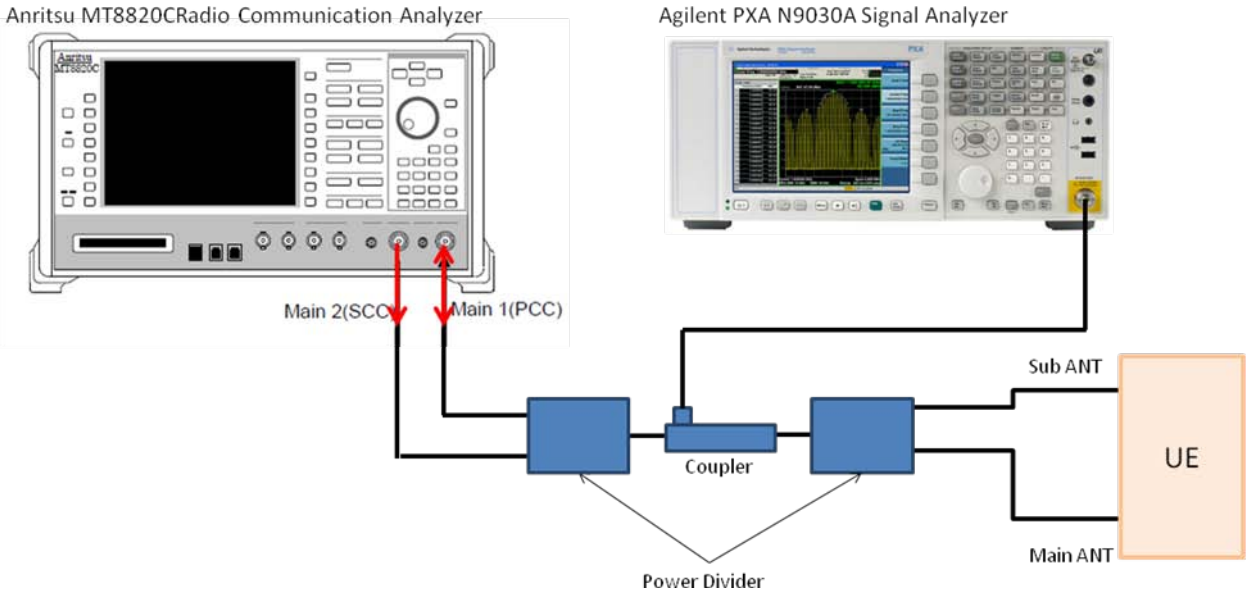
# 1 Table of contents

## 1.1 Description of measurement

Measurement setup for output power measurement




Measurement setup for DL spectrum



## 1.2 LTE - Carrier Aggregation B4

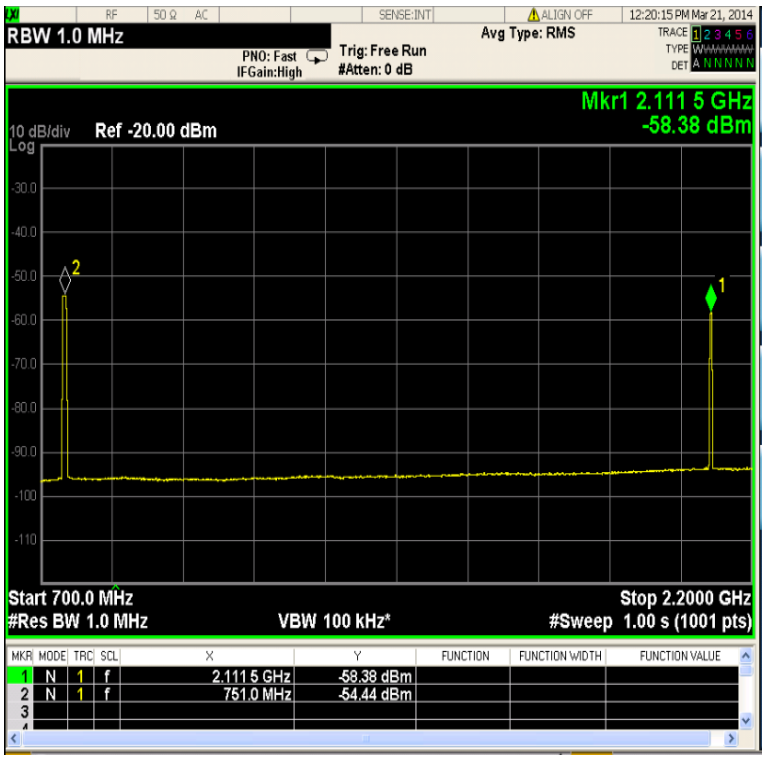
| | | | Output Power (conducted_CA) | | | Output Power (Conducted_Non-CA) | | Deviaton (nonCA - CA) [dB] | |
|---|---|---|---|---|---|---|---|---|---|
| BW [MHz] | Channel / Frequency [MHz] | Resource block allocation | Average Output Power [dBm] | Average Output Power [dBm] | SCC setting (band 13) | Average Output Power [dBm] | Average Output Power [dBm] | | |
| | | | QPSK | 16-QAM | | QPSK | 16-QAM | QPSK | 16-QAM |
| 5 | 19975 / 1712.5 | 100% RB | 22.1 | 21.0 | 10 MHz BW 100% RB | 22.2 | 21.1 | 0.1 | 0.1 |
| | 20175 / 1732.5 | 100% RB | 21.7 | 20.8 | 10 MHz BW 100% RB | 21.8 | 20.8 | 0.1 | 0.0 |
| | 20375 / 1752.5 | 100% RB | 22.0 | 21.0 | 10 MHz BW 100% RB | 22.1 | 21.2 | 0.1 | 0.2 |
| 10 | 20000 / 1715.0 | 100% RB | 22.1 | 21.1 | 10 MHz BW 100% RB | 22.2 | 21.1 | 0.1 | 0.0 |
| | 20175 / 1732.5 | 100% RB | 21.8 | 20.8 | 10 MHz BW 100% RB | 21.8 | 20.9 | 0.0 | 0.1 |
| | 20350 / 1750.0 | 100% RB | 22.1 | 20.9 | 10 MHz BW 100% RB | 22.1 | 21.1 | 0.0 | 0.2 |

Table 1: Results for LTE B4 default power.

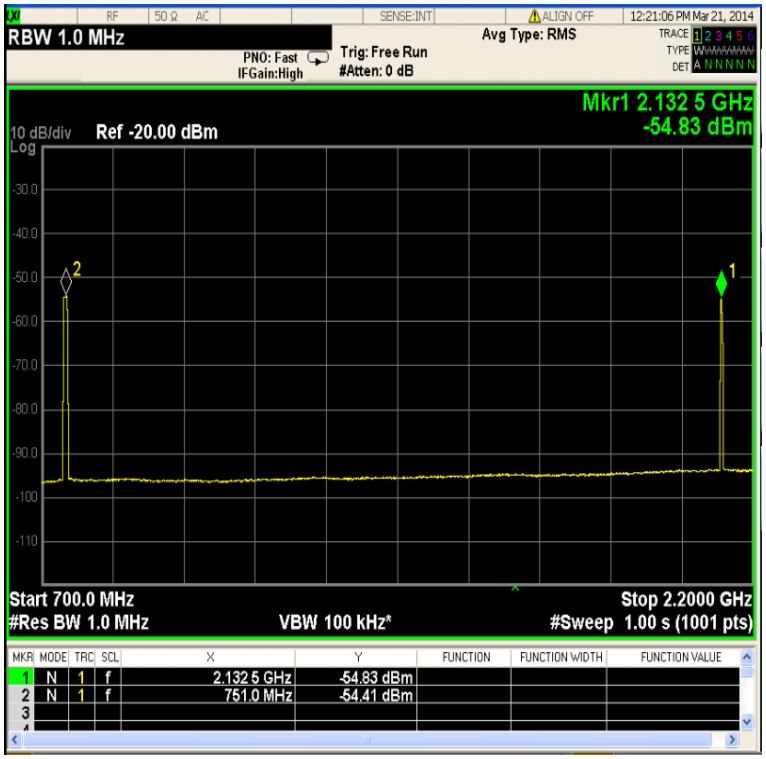
| | | | Output Power (conducted_CA) | | | Output Power (Conducted_Non-CA) | | Deviaton (nonCA - CA) [dB] | |
|---|---|---|---|---|---|---|---|---|---|
| BW [MHz] | Channel / Frequency [MHz] | Resource block allocation | Average Output Power [dBm] | Average Output Power [dBm] | SCC setting (band 13) | Average Output Power [dBm] | Average Output Power [dBm] | | |
| | | | QPSK | 16-QAM | | QPSK | 16-QAM | QPSK | 16-QAM |
| 5 | 19975 / 1712.5 | 100% RB | 13.0 | 13.1 | 10 MHz BW 100% RB | 12.5 | 12.6 | -0.5 | -0.5 |
| | 20175 / 1732.5 | 100% RB | 13.0 | 13.0 | 10 MHz BW 100% RB | 12.5 | 12.5 | -0.5 | -0.5 |
| | 20375 / 1752.5 | 100% RB | 13.1 | 13.1 | 10 MHz BW 100% RB | 12.6 | 12.6 | -0.5 | -0.5 |
| 10 | 20000 / 1715.0 | 100% RB | 13.2 | 13.2 | 10 MHz BW 100% RB | 12.7 | 12.7 | -0.5 | -0.5 |
| | 20175 / 1732.5 | 100% RB | 13.2 | 13.0 | 10 MHz BW 100% RB | 12.7 | 12.5 | -0.5 | -0.5 |
| | 20350 / 1750.0 | 100% RB | 13.3 | 13.2 | 10 MHz BW 100% RB | 12.8 | 12.7 | -0.5 | -0.5 |

Table 2: Results for LTE B4 back off power.

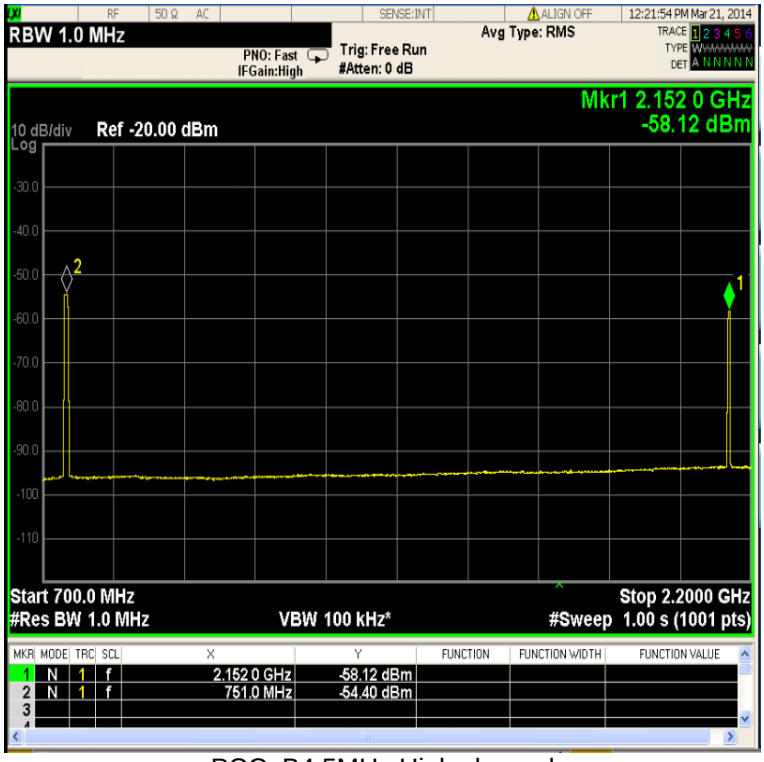
## 1.3 LTE Carrier Aggregation B4 spectrums



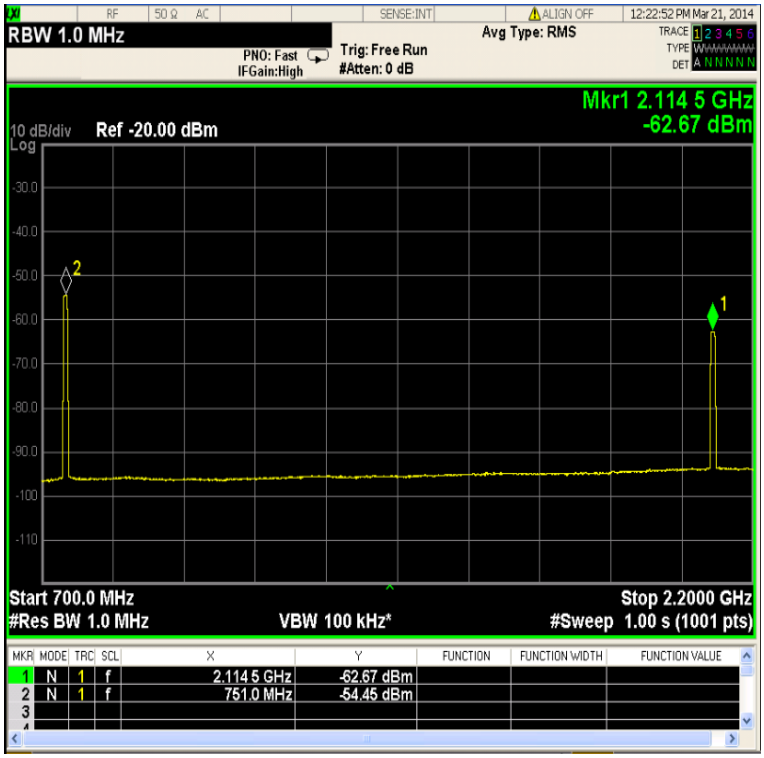

PCC: B4 5MHz Low channel
SCC: B13 10MHz



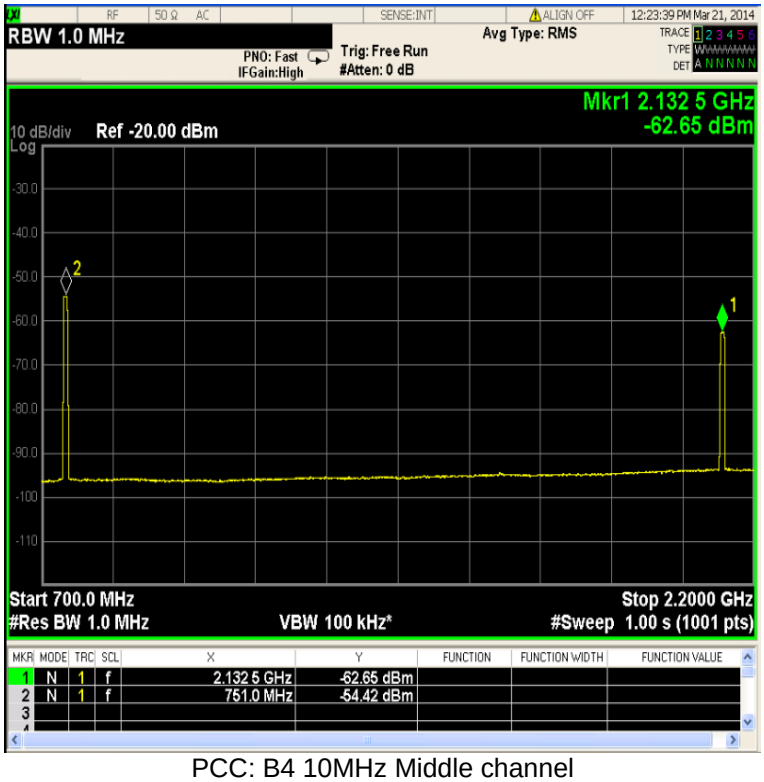

PCC: B4 5MHz Middle channel
SCC: B13 10MHz



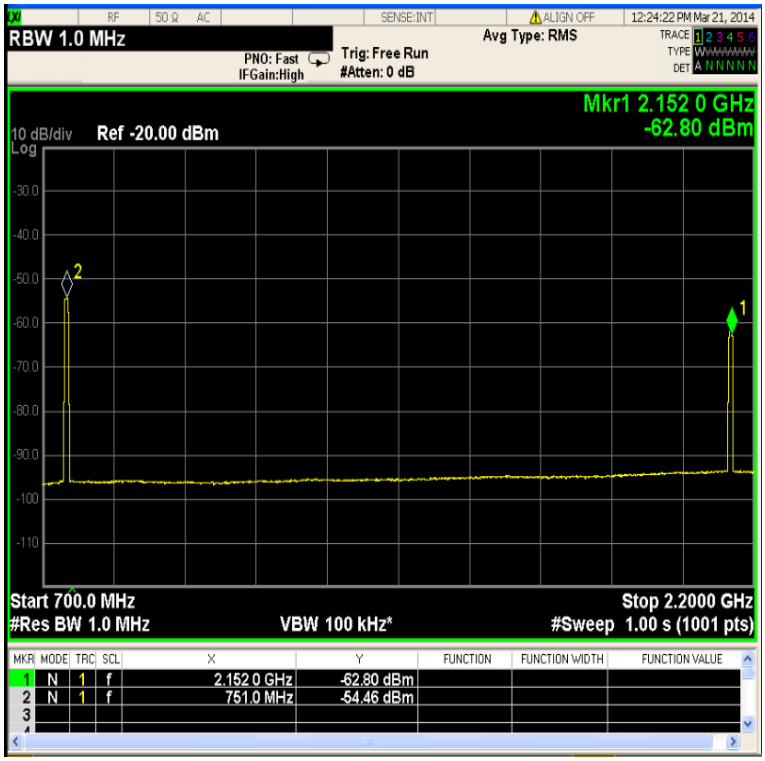

PCC: B4 5MHz High channel
SCC: B13 10MHz




PCC: B4 10MHz Low channel
SCC: B13 10MHz




PCC: B4 10MHz Middle channel
SCC: B13 10MHz




PCC: B4 10MHz High channel
SCC: B13 10MHz

## 1.4 LTE - Carrier Aggregation B13

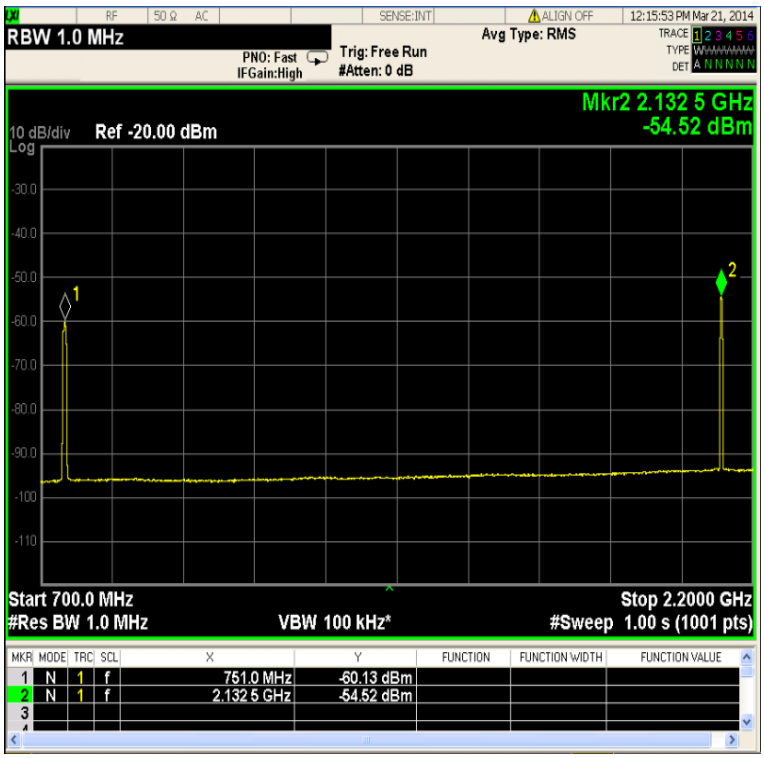
| | | | Output Power (conducted_CA) | | | Output Power (Conducted_Non-CA) | | Deviaton (nonCA - CA) [dB] | |
|---|---|---|---|---|---|---|---|---|---|
| BW [MHz] | Channel / Frequency [MHz] | Resource block allocation | Average Output Power [dBm] | Average Output Power [dBm] | SCC setting (band 13) | Average Output Power [dBm] | Average Output Power [dBm] | | |
| | | | QPSK | 16-QAM | | QPSK | 16-QAM | QPSK | 16-QAM |
| 10 | 23230 / 782 | 100% RB | 21.9 | 21.0 | 5 MHz BW 100% RB | 22.3 | 21.3 | 0.4 | 0.3 |
| | 23230 / 782 | 100% RB | 21.9 | 21.0 | 10 MHz BW 100% RB | 22.3 | 21.3 | 0.4 | 0.3 |

Table 3: Results for LTE B13 default power.

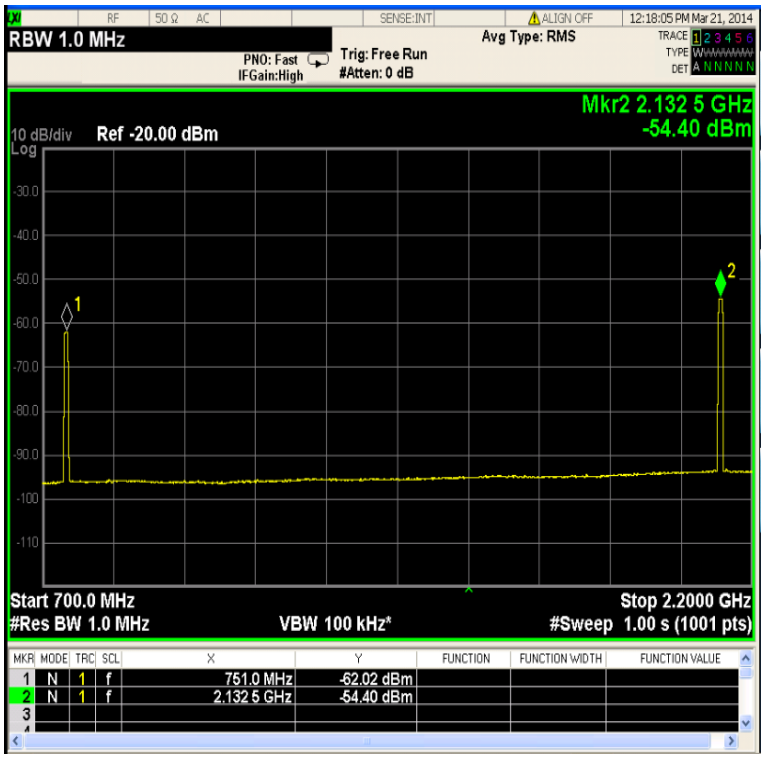
| | | | Output Power (conducted_CA) | | | Output Power (Conducted_Non-CA) | | Deviaton (nonCA - CA) [dB] | |
|---|---|---|---|---|---|---|---|---|---|
| BW [MHz] | Channel / Frequency [MHz] | Resource block allocation | Average Output Power [dBm] | Average Output Power [dBm] | SCC setting (band 13) | Average Output Power [dBm] | Average Output Power [dBm] | | |
| | | | QPSK | 16-QAM | | QPSK | 16-QAM | QPSK | 16-QAM |
| 10 | 23230 / 782 | 100% RB | 18.9 | 19.0 | 5 MHz BW 100% RB | 19.1 | 19.1 | 0.2 | 0.1 |
| | 23230 / 782 | 100% RB | 18.9 | 19.0 | 10 MHz BW 100% RB | 19.1 | 19.1 | 0.2 | 0.1 |

Table 4: Results for LTE B13 back off power.

## 1.5 LTE Carrier Aggregation B13 spectrums




PCC: B13 10MHz Middle channel
SCC: B4 5MHz




PCC: B13 10MHz Middle channel
SCC: B4 10MHz

## 1.6 Test Equipment

| Equipment | Type | Manufact. | Serial No. | Last Calibration | Next Calibration |
|---|---|---|---|---|---|
| Radio Communication Analyzer | MT8820C | Anritsu | 6.201E+09 | 04.2014 | 03.2015 |
| Signal Analyzer | N9030A | Agilent | MY51380404 | 07.26.2013 | 07.26.2014 |
| DC Power Supply | E3632A | Agilent | MY52470209 | n.a | n.a |
| Power Splitter | ZN2PD2-50-S+ | Mini-Circuits | 60400627 | n.a | n.a |
| Power Divider | 6005180 | KRYTAR | 100778 | n.a | n.a |
| Directional Coupler | 4226-20 | narda | 3473 | n.a | n.a |

## 1.7 Device under test

The measurements were performed with following sample:

HW: A (AP1)
CB No.: CB5126DPGG
IMEI: 000440245-224394-6