

**LTE Downlink Carrier Aggregation configurations**

**1. DL Intra Band(contiguous)**

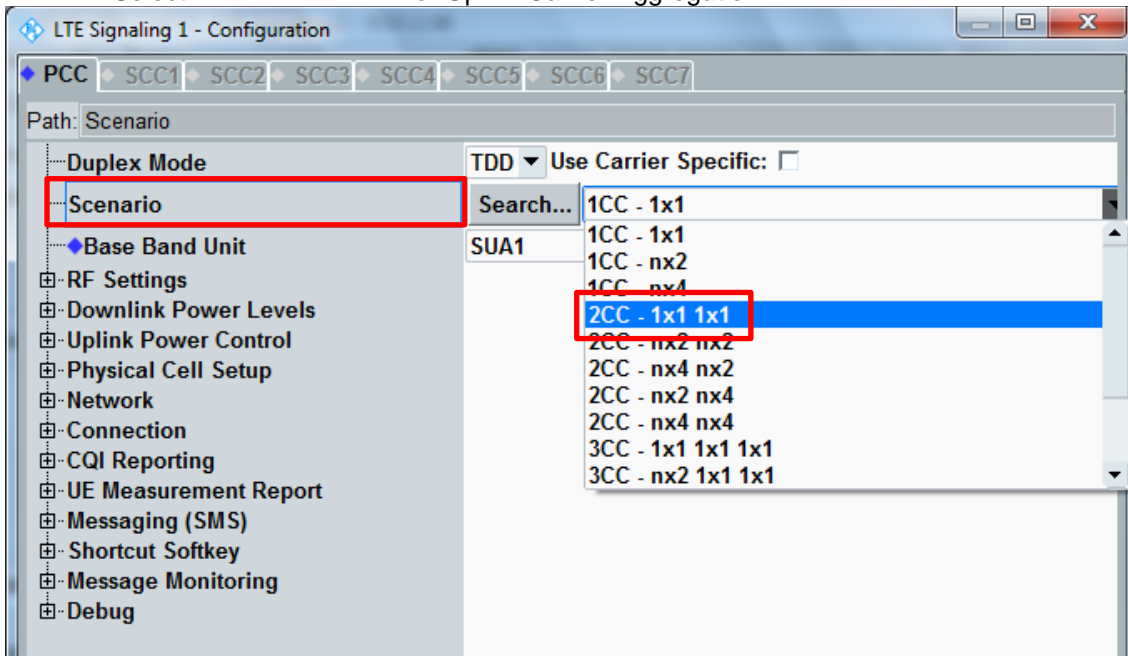
E-UTRA CA configuration	Bandwidth Combination	E-UTRA Band	Allowed Channel BW Per Carrier (MHz)					Max Aggregated BW
			1st Carrier	2nd Carrier	3rd Carrier	4th Carrier	5th Carrier	
41C	(0)	Band 41	10	20				40
			15	15, 20				
			20	10, 15, 20				
	(1)	Band 41	5, 10	20				40
			15	15, 20				
			20	5, 10, 15, 20				
	(2)	Band 41	10	15, 20				40
			15	10, 15, 20				
			20	10, 15, 20				
	(3)	Band 41	10	20				40
			20	20				
	41D	(0)	Band 41	10	20	15		
10				15, 20	20			
15				20	10, 15			
15				10, 15, 20	20			
20				15, 20	10			
20				10, 15, 20	15, 20			

**Note:**

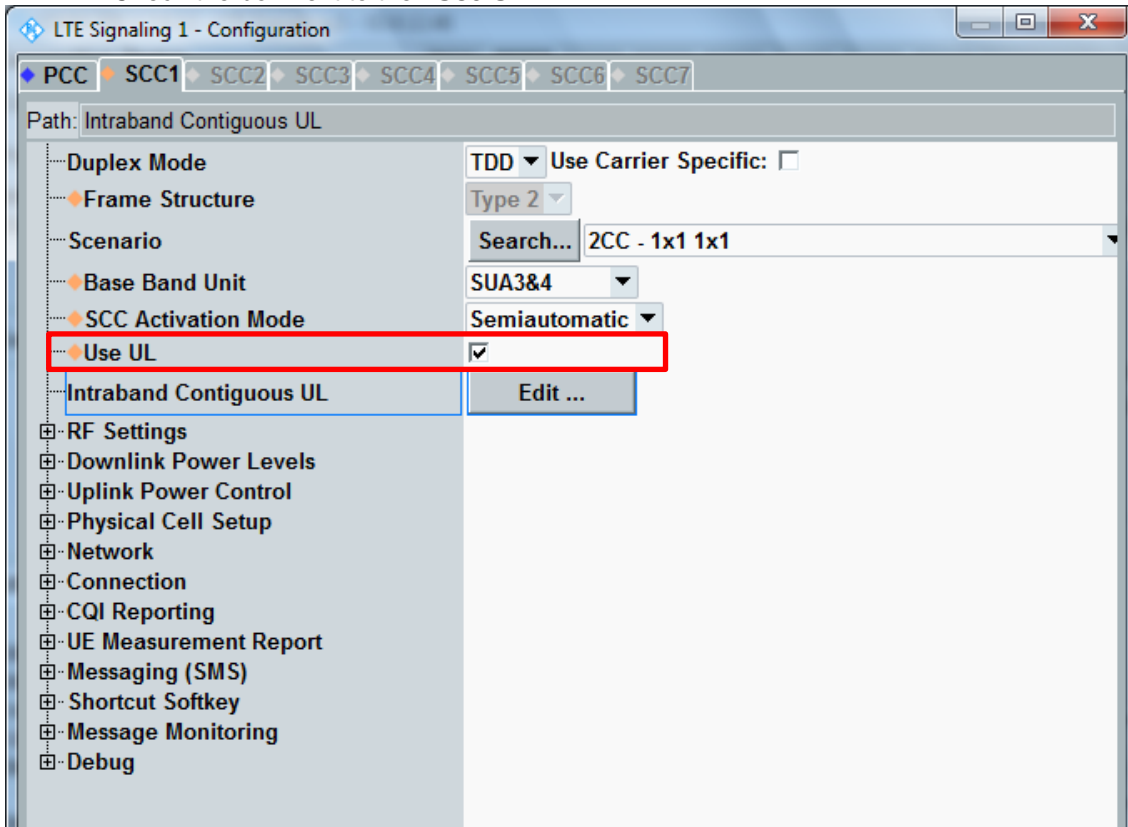
LTE CA\_41C are supported in both Uplink and Downlink, other CA configurations are supported only Downlink.

**LTE Uplink Carrier Aggregation – Output Power measurement procedures**

- Change the Scenario in the Configuration of LTE Signaling  
Select **“2CC – 1x1 1x1”** for Uplink Carrier Aggregation



- Check the box next to the **“Use UL”**



- Back to the LTE Signal screen, and then select the PCC tab, Set operating band, BW, channel and RB configurations for PCC

CMW 500 V 3.8.12 - LTE Signaling 1 - X3.8.12.48

Connection Status: PCC (selected), SCC1, SCC2, SCC3, SCC4, SCC5, SCC6, SCC7

Cell:

Packet Switched: ON

RRC State: Idle

SCC1 State: OFF

Event Log:

- 06:13:39 State 'Cell On', 2CC 1x1 1x1
- 06:13:21 Signaling Unit Startup
- 06:13:21 Data end to end enabled
- 06:13:20 Starting Data Application Unit

UE Info:

IMEI: ---

IMSI: ---

Voice Domain Pr...: ---

UE's Usage Setti...: ---

Default Bearer: IPv4 address IPv6 prefix

Dedicated Bearer: TFT Port Range DL / UL

Operating Band: Band 41

TDD

Channel: 40620 Ch

Frequency: 2593.0 MHz

Cell Bandwidth: 20.0 MHz

RS EPRE: -85.0 dBm/15kHz

Full Cell BW Pow.: -54.2 dBm

PUSCH Open Loop Nom.Power: 23 dBm

PUSCH Closed Loop Target Power: 24.0 dBm

Sched. User def. Channels

# RB: 100

Start RB: 0

Mod / TBSI: QPSK 5

Code Rate / TBS: 0.328 8760 0.583 144

Throughput: 3.478 Mbit/s 0.057 Mbit/s

64/256-QAM

Downlink Multicenter  Uplink Multicenter

LTE Signaling: ON

- Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1

CMW 500 V 3.8.12 - LTE Signaling 1 - X3.8.12.48

Connection Status: PCC, SCC1 (selected), SCC2, SCC3, SCC4, SCC5, SCC6, SCC7

Cell:

Packet Switc...: ON

RRC State: Idle

SCC1 State: OFF

Event Log:

- 06:13:39 State 'Cell On', 2CC 1x1 1x1
- 06:13:21 Signaling Unit Startup
- 06:13:21 Data end to end enabled
- 06:13:20 Starting Data Application Unit

UE Info:

IMEI: ---

IMSI: ---

Voice Domain ...: ---

UE's Usage S...: ---

Default Bearer: IPv4 address IPv6 prefix

Dedicated Be...: TFT Port Range DL / UL

Operating Band: Band 41

TDD

Channel: 40818 Ch

Frequency: 2612.8 MHz

Cell Bandwidth: 20.0 MHz

RS EPRE: -85.0 dBm/15kHz

Full Cell BW Pow.: -54.2 dBm

PUSCH Open Loop Nom.Power: 23 dBm

PUSCH Closed Loop Target Power: 24.0 dBm

PCC <-> SCC1 [Swap]

PCC -> SCC1 [Copy]

Sched. User def. Channels

# RB: 100

Start RB: 0

Mod / TBSI: QPSK 5

Code Rate / TBS: 0.328 8760 0.583 144

Throughput: 3.478 Mbit/s 0.057 Mbit/s

64/256-QAM

Downlink Multicenter  Uplink Multicenter

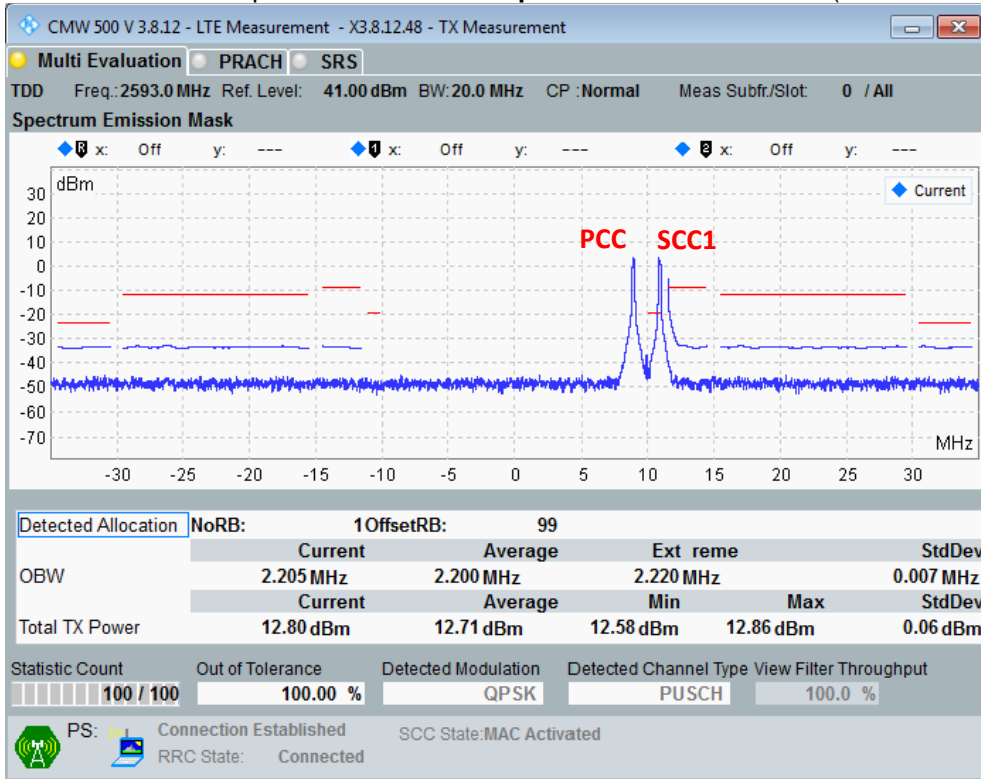
LTE Signaling: ON

- Click the **“Connect”** button at the bottom of the screen, if necessary, turn the Airplane mode on/off in the DUT

The screenshot displays the CMW 500 V 3.8.12 - LTE Signaling 1 - X3.8.12.48 interface. The main window is titled "LTE" and shows the following sections:

- Connection Status:** Shows "Connection Established", "RRC State: Connected", and "SCC1 State: MAC Activated".
- Event Log:** Lists events such as "State 'Connection Established'", "EPS Dedicated Bearer Established", "SCC1: MAC Activated", "SCC1: RRC Added", "SCC1: On", and "SCC1: Off".
- UE Info:** Displays details like IMEI (355346630026654), IMSI (001010123456063), Voice Domain (IMS PS Voice preferred CS), UE's Usage S... (Data centric), Default Bearer (IPv4 address 192.168.48.129), and Dedicated Be... (5005 - 5008 / 5005 - 5008).
- Configuration:** Shows "Operating Band: Band 41", "Downlink: 40818 Ch", "Uplink: 40818 Ch", "Frequency: 2612.8 MHz", "Cell Bandwidth: 20.0 MHz", "RS EPRE: -85.0 dBm/15kHz", "Full Cell BW Pow.: -54.2 dBm", "PUSCH Open Loop Nom.Power: 23 dBm", and "PUSCH Closed Loop Target Power: 24.0 dBm".
- Buttons:** Includes "Swap", "Copy", "Send SMS", "Inter/Intra-RAT ...", and "Config ...".
- Bottom Bar:** Contains "Detach", "Disconnect" (highlighted with a red box), "SCC1 Off", and "Send SMS".

- Check the spectrum of UL CA in **Spectrum Emission Mask** (LTE Tx Meas.)



- Read the output power of UL CA in **TX Measurement** (LTE Tx Meas.)

**TX Measurement**

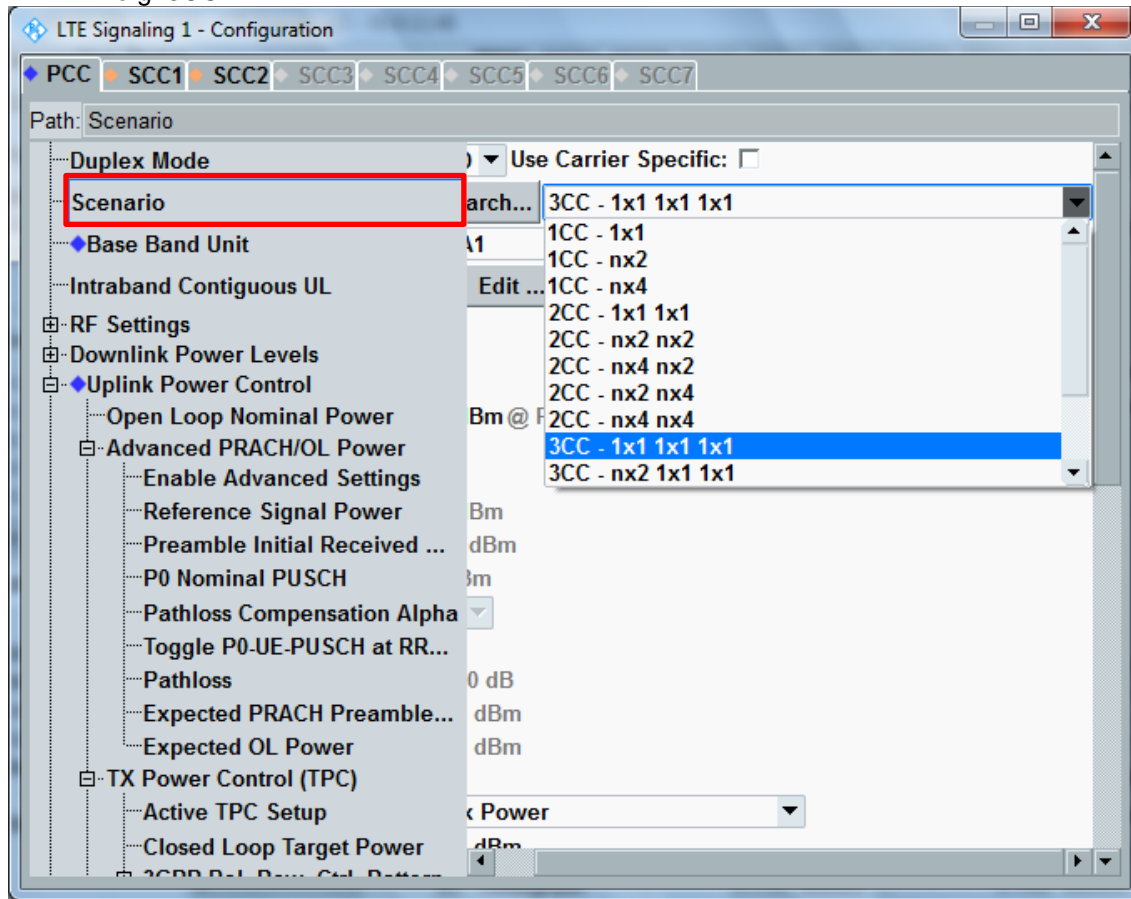
	Current	Average	Extreme	StdDev
EVM RMS [%] I/h	0.70	0.75	0.74	0.79
EVM Peak [%] I/h	1.80	2.34	1.97	2.34
EVM DMRS [%] I/h	0.72	0.71	0.85	0.96
MErr RMS [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr Peak [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr DMRS [%] I/h	NCAP	NCAP	NCAP	NCAP
PhErr RMS [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr Peak [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr DMRS [°] I/h	NCAP	NCAP	NCAP	NCAP
IQ Offset [dBc]	-70.19	-72.51	-65.49	5.47
IQ Gain Imbalance [dB]	NCAP	NCAP	NCAP	NCAP
IQ Quadrature Error [°]	NCAP	NCAP	NCAP	NCAP
Freq Error [Hz]	3.51	0.63	9.37	3.76
Timing Error [Ts]	-6.50	-6.34	-6.82	0.16
OBW [MHz]	2.21	2.20	2.21	0.00
	Current	Average	Min	Max
TX Power [dBm]	12.62	12.66	12.59	12.76
Peak Power [dBm]	20.43	19.93	19.14	20.69
RB Power [dBm]	9.80	9.82	9.76	9.90

Statistic Count: 100 / 100  
 Out of Tolerance: 0.00 %  
 Detected Modulation: QPSK  
 Detected Channel Type: PUSCH  
 View Filter Throughput: 100.0 %

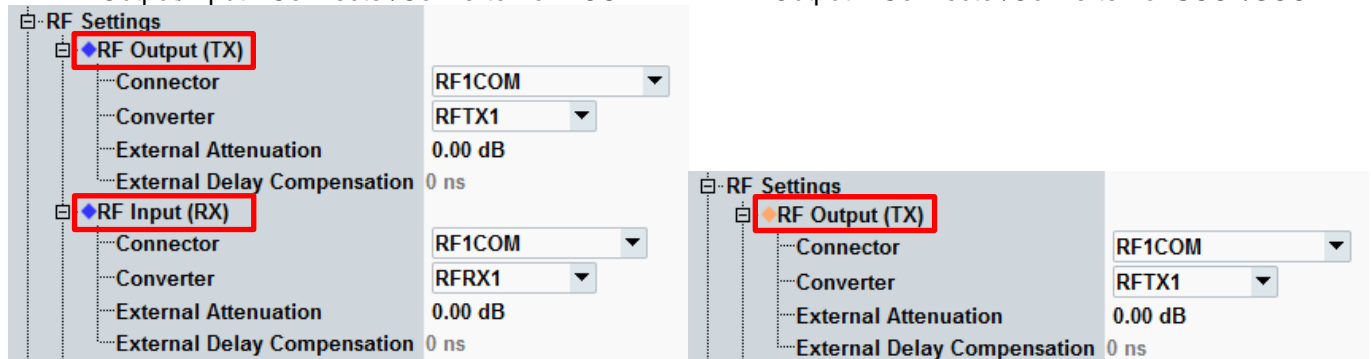
PS: Connection Established  
 RRC State: Connected  
 SCC State: MAC Activated

**LTE Downlink Carrier Aggregation - Output Power measurement procedures**

- Change the Scenario in the Configuration of LTE Signaling  
e.g. 3CC – 1x1 1x1 1x1



- Set the RF Output/Input Connector and Converter for PCC/SCC1/SCC2 in each tab.  
<RF Output/Input - Connector/Converter for PCC>      <RF Output – Connector/Converter for SCC1/SCC2>



- Back to the LTE Signal screen, and then select the PCC tab, Set operating band, BW, channel and RB configurations for PCC

The screenshot displays the LTE Signaling 1 - X3.8.12.48 interface. At the top, the 'PCC' tab is selected and highlighted with a red box. Below the tab bar, the 'Connection Status' section shows 'Cell' with a signal strength indicator, 'Packet Switched' as 'Connection Established', and 'RRC State' as 'Connected'. The 'Event Log' section shows a series of events for SCC2 and SCC1. The 'UE Info' section displays IMEI, IMSI, Voice Domain Preference, and Default Bearer information. The main configuration area is divided into 'Downlink' and 'Uplink' sections. The 'Downlink' section shows 'Operating Band' as 'Band 66', 'Channel' as '67036 Ch', 'Frequency' as '2170.0 MHz', and 'Cell Bandwidth' as '20.0 MHz'. The 'Uplink' section shows 'Channel' as '132572 Ch', 'Frequency' as '1770.0 MHz', and 'Cell Bandwidth' as '20.0 MHz'. The 'Sched.' dropdown is set to 'User def. Channels'. The 'Throughput' section shows 'Downlink' as '8.734 Mbit/s' and 'Uplink' as '0.144 Mbit/s'. The 'LTE Signaling' indicator is 'ON'. The bottom navigation bar includes buttons for 'Detach', 'Disconnect', 'SCC1 activate MAC', 'Multiple SCC Actions', 'Send SMS', 'Inter/Intra-RAT ...', and 'Config ...'.

Downlink	Uplink
Channel: 67036 Ch	Channel: 132572 Ch
Frequency: 2170.0 MHz	Frequency: 1770.0 MHz
Cell Bandwidth: 20.0 MHz	Cell Bandwidth: 20.0 MHz
RS EPRE: -85.0 dBm/15kHz	
Full Cell BW Pow.: -54.2 dBm	
PUSCH Open Loop Nom.Power: 23 dBm	
PUSCH Closed Loop Target Power: 24.0 dBm	
# RB: 100	# RB: 1
Start RB: 0	Start RB: 0
Mod / TBSI: QPSK 5	Mod / TBSI: QPSK 10
Code Rate / TBS: 0.330 8760	Code Rate / TBS: 0.583 144
Throughput: 8.734 Mbit/s	Throughput: 0.144 Mbit/s

- Select the SCC1/SCC2 tab, set operating band, BW, channel and RB configurations for SCC1/SCC2

CMW 500 V 3.8.12 - LTE Signaling 1 - X3.8.12.48

Connection Status

Cell: Connection Established

Packet Switch...: Connection Established

RRC State: Connected

SCC1 State: OFF

SCC2 State: OFF

Event Log

- 06:36:17 SCC2: Off
- 06:36:17 SCC2: On
- 06:36:17 SCC2: RRC Added
- 06:36:16 SCC1: Off
- 06:36:16 SCC1: On
- 06:36:16 SCC1: RRC Added
- 06:36:12 SCC2: MAC Activated

UE Info

IMEI: 355346630026654

IMSI: 001010123456063

Voice Domain ...: IMS PS Voice preferred CS

UE's Usage S...: Data centric

Default Bearer: IPv4 address IPv6 prefix 192.168.48.129

Dedicated Be...: TFT Port Range DL / UL 5005 - 5008 / 5005 - 5008

Operating Band: Co-location active with PCC FDD

Downlink:  Uplink:

Channel: 66536 Ch

Frequency: 2120.0 MHz

Cell Bandwidth: 20.0 MHz

RS EPRE: -85.0 dBm/15kHz

Full Cell BW Pow.: -54.2 dBm

PCC <-> SCC1 Swap

PCC -> SCC1 Copy

Sched.: User def. Channels

# RB: 100

Start RB: 0

Mod / TBSI: QPSK 5

Code Rate / TBS: 0.330 8760

Throughput: 8.734 Mbit/s

Downlink Multicliaster

Buttons: Detach, Disconnect, SCC1 activate MAC, Multiple SCC Actions, Send SMS, Inter/Intra-RAT ..., Config ...

LTE Signaling: ON

CMW 500 V 3.8.12 - LTE Signaling 1 - X3.8.12.48

Connection Status

Cell: Connection Established

Packet Switch...: Connection Established

RRC State: Connected

SCC1 State: OFF

SCC2 State: OFF

Event Log

- 06:36:17 SCC2: Off
- 06:36:17 SCC2: On
- 06:36:17 SCC2: RRC Added
- 06:36:16 SCC1: Off
- 06:36:16 SCC1: On
- 06:36:16 SCC1: RRC Added
- 06:36:12 SCC2: MAC Activated

UE Info

IMEI: 355346630026654

IMSI: 001010123456063

Voice Domain ...: IMS PS Voice preferred CS

UE's Usage S...: Data centric

Default Bearer: IPv4 address IPv6 prefix 192.168.48.129

Dedicated Be...: TFT Port Range DL / UL 5005 - 5008 / 5005 - 5008

Operating Band: Band 71 FDD

Downlink:  Uplink:

Channel: 68761 Ch

Frequency: 634.5 MHz

Cell Bandwidth: 20.0 MHz

RS EPRE: -85.0 dBm/15kHz

Full Cell BW Pow.: -54.2 dBm

PCC <-> SCC2 Swap

PCC -> SCC2 Copy

Sched.: User def. Channels

# RB: 100

Start RB: 0

Mod / TBSI: QPSK 5

Code Rate / TBS: 0.330 8760

Throughput: 8.734 Mbit/s

Downlink Multicliaster

Buttons: Detach, Disconnect, SCC2 activate MAC, Multiple SCC Actions, Send SMS, Inter/Intra-RAT ..., Config ...

LTE Signaling: ON



- Connect and Activate MAC for all SCCs

Connection Status

Cell: Connection Established

RRC State: Connected

SCC1 State: OFF

SCC2 State: OFF

Event Log

06:36:17 SCC2: Off

06:36:17 SCC2: On

06:36:17 SCC2: RRC Added

06:36:16 SCC1: Off

06:36:16 SCC1: On

06:36:16 SCC1: RRC Added

06:36:12 SCC2: MAC Activated

UE Info

IMEI: 355346630026654

IMSI: 001010123456063

Voice Domain: IMS PS Voice prefer

UE's Usage S...: Data centric

Default Bearer: IPv4 address IPv6

5 (cmw50...): 192.168.48.129

Dedicated Be...: TFT Port Range DL

6 (->5, Def...): 5005 - 5008 / 500

Multiple SCC Actions

SCC	State	Action
SCC1	OFF	activate MAC
SCC2	OFF	activate MAC

Multiple SCC Actions

Send SMS Inter/Intra-RAT ...

LTE Signaling ON

- Read the output power of DL CA in TX Measurement (LTE Tx Meas.)

Multi Evaluation PRACH SRS

FDD Freq.: 1770.0 MHz Ref. Level: 41.00 dBm BW: 20.0 MHz CP: Normal Meas Subfr/Slot: 0 / All

TX Measurement

	Current	Average	Extreme	StdDev
EVM RMS [%] I/h	0.64	0.71	0.68	0.71
EVM Peak [%] I/h	1.51	2.64	1.96	2.23
EVM DMRS [%] I/h	0.61	0.65	0.61	0.60
MErr RMS [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr Peak [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr DMRS [%] I/h	NCAP	NCAP	NCAP	NCAP
PhErr RMS [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr Peak [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr DMRS [°] I/h	NCAP	NCAP	NCAP	NCAP
IQ Offset [dBc]	-52.22	-52.32	-49.92	0.85
IQ Gain Imbalance [dB]	NCAP	NCAP	NCAP	NCAP
IQ Quadrature Error [°]	NCAP	NCAP	NCAP	NCAP
Freq Error [Hz]	0.51	0.09	-5.38	1.33
Timing Error [Ts]	-6.30	-5.63	-8.52	2.54
OBW [MHz]	0.27	0.27	0.32	0.02
	Current	Average	Min	Max
TX Power [dBm]	13.51	13.48	13.30	13.59
Peak Power [dBm]	18.40	18.60	17.80	19.50
RB Power [dBm]	13.48	13.46	13.37	13.50

Statistic Count: 100 / 100

Out of Tolerance: 0.00 %

Detected Modulation: QPSK

Detected Channel Type: PUSCH

View Filter Throughput: 100.0 %

PS: Connection Established

RRC State: Connected

Multi Evaluation RUN

RF Settings

Trigger

Display

Signaling Parameter

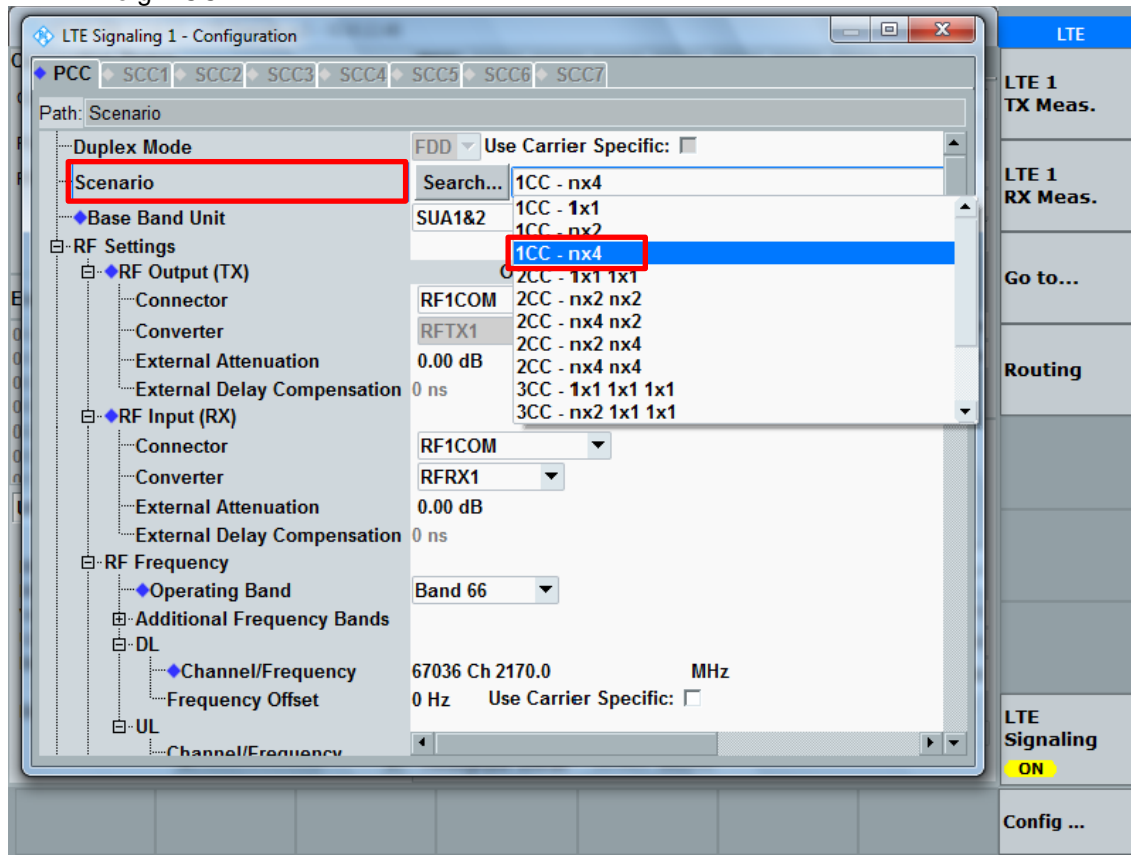
LTE Signaling ON

Select View ...

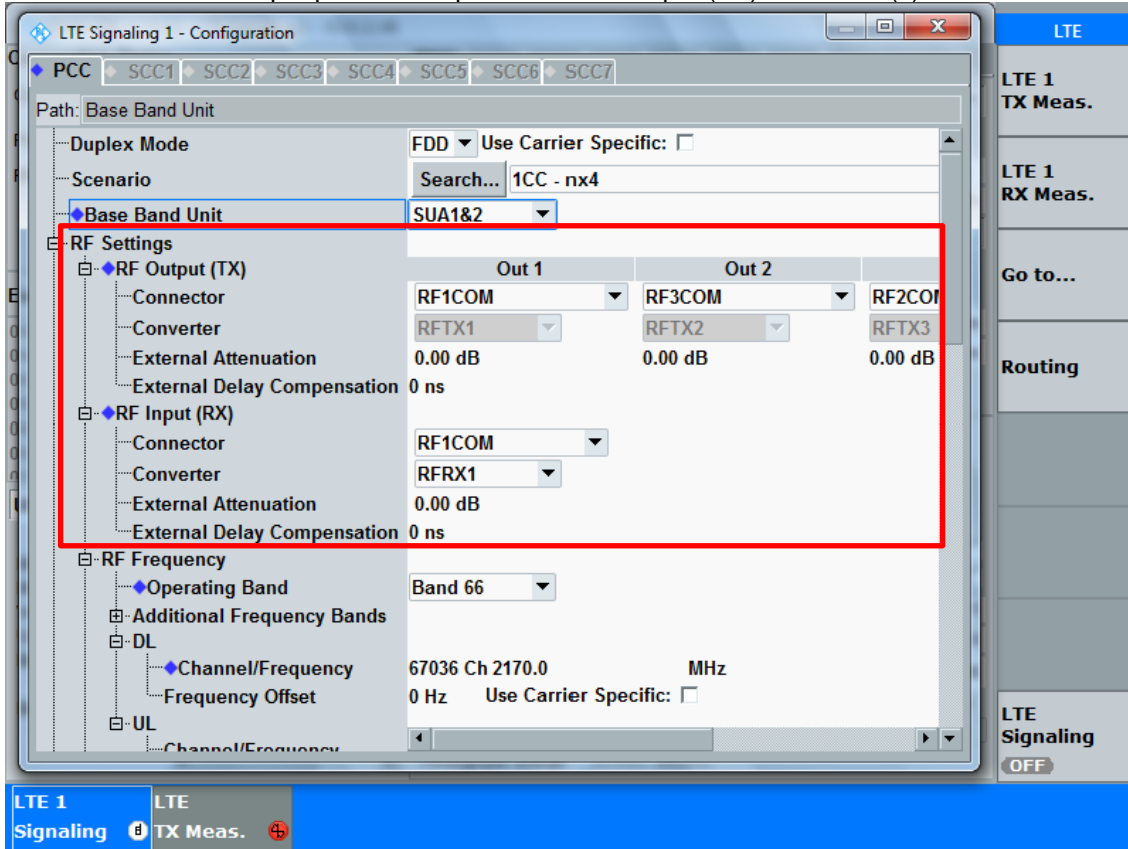
Config ...

**LTE Downlink 4x4 MIMO - Output Power measurement procedures**

- Change the Scenario in the Configuration of LTE Signaling  
e.g. 1CC – nx4



- Set the RF Output/Input Connector and Converter for PCC.  
DL MIMO output ports correspond with RF Output (TX) Connector(s).



- Back to the LTE Signal screen, set operating band, BW, channel and RB configurations for PCC

- Check the Throughput of DL 4x4 MIMO in LTE Rx Measurement.

	Over All		Stream 1		Stream 2	
	Relative	Absolute	Relative	Absolute	Relative	Absolute
ACK	99.99%	19598	99.99%	9799	99.99%	9799
NACK	0.01%	2	0.01%	1	0.01%	1
DTX	0.00%	0	0.00%	0	0.00%	0
BLER	0.01%		0.01%		0.01%	
<b>Throughput</b>	<b>Relative</b>	<b>Mbit/s</b>	<b>Relative</b>	<b>Mbit/s</b>	<b>Relative</b>	<b>Mbit/s</b>
Average	99.99%	17.47	99.99%	8.73	99.99%	8.73
Minimum		17.38				
Maximum		17.47				

- Read the output power of DL CA in TX Measurement (LTE Tx Meas.)

	Current	Average	Extreme	StdDev
EVM RMS [%] I/h	0.64	0.71	0.83	0.04
EVM Peak [%] I/h	1.51	2.23	3.27	0.38
EVM DMRS [%] I/h	0.61	0.60	1.02	0.10
MErr RMS [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr Peak [%] I/h	NCAP	NCAP	NCAP	NCAP
MErr DMRS [%] I/h	NCAP	NCAP	NCAP	NCAP
PhErr RMS [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr Peak [°] I/h	NCAP	NCAP	NCAP	NCAP
PhErr DMRS [°] I/h	NCAP	NCAP	NCAP	NCAP
IQ Offset [dBc]	-52.22	-52.32	-49.92	0.85
IQ Gain Imbalance [dB]	NCAP	NCAP	NCAP	NCAP
IQ Quadrature Error [°]	NCAP	NCAP	NCAP	NCAP
Freq Error [Hz]	0.51	0.09	-5.38	1.33
Timing Error [Ts]	-6.30	-5.63	-8.52	2.54
OBW [MHz]	0.27	0.27	0.32	0.02
	<b>Current</b>	<b>Average</b>	<b>Min</b>	<b>Max</b>
TX Power [dBm]	13.51	13.48	13.30	13.59
Peak Power [dBm]	18.40	18.60	17.80	19.50
RB Power [dBm]	13.48	13.46	13.37	13.50

**LTE Downlink Carrier Aggregation Combinations**

The DL CA power measurement conditions for various CC's combinations were determined according LTE DL CA SAR Test Exclusion guidance in TCB workshop note (April 2018). Only yellow highlighted cells need power measurement. The following power measurements were performed with a single carrier uplink; CA for this particular project only supports one (1) uplink and up to four (4) downlinks.

**LTE Release 10 Carrier Aggregation**

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset
2CC#1	41C			3CC#1	41D		

**LTE Uplink Carrier Aggregation Combinations**

**Maximum Output Power (Tune-up Limit) for LTE UL Carrier Aggregation**

UL CA shall be tested based on the worst-case SAR configuration determined from non-CA SAR testing result. The channel BW, channel number, RB Allocation, etc. would be selected to allow contiguous CA of PCC and SCC. Uplink output power for UL CA is the total power measured across the PCC and SCC.

UL CA power measurements were performed with QPSK modulation based on the worst-case standalone SAR. The tune-up limits are provided in table below. The UL CA mode power measurements represent the total power across both carriers. Measurements were made for all supported PCC bandwidths using the channel/RB combination resulting in the highest standalone output power at the least MPR (0 dB). SCCs were set to use configurations similar to the PCC to establish conservative or worst case equivalent SAR test conditions (highest maximum power with MPR of 0 dB).

The standalone power measurement is the power for the PCC in the non-CA mode (i.e. single carrier power). In all cases the UL CA power is less than or equal to the standalone power, which is in accordance with the tune-up limits in table below.

According to November 2017 TCB workshop, Uplink CA SAR Test Guidance as follows;

- a) When the maximum output for UL CA is ≤ standalone LTE mode (without CA)
  - PCC is configured according to the highest standalone SAR configuration tested
  - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC.
- b) When the Reported SAR for UL CA configuration, described above, is > 1.2 W/kg, UL CA SAR is also required for all required test channels (PCC based).
- c) UL CA SAR is also required for standalone SAR configurations > 1.2 W/kg when they are scaled to the UL CA power level.

SAR measurement is not required for the 16QAM and 64QAM. When the highest maximum output power for 16QAM and 64QAM is ≤ 0.25 dB higher than the QPSK or when the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.

RF Exposure conditions	Antenna	E-UTRA CA configuration (BCS)	Bands		UL																				
			PCC		SCC		PCC						SCC						MPR	Standalone	PCC + SCC				
			1st	2nd	Modulation	RB	Offset	BW	Freq	ch	Modulation	RB	Offset	BW	Freq	ch	LTE Rel.8	Aggregated BW			MPR	Tune-Up Limit	CA power (total PCC+SCC)	Delta	3GPP Rel.
Head	Ant.B	CA_41C(0)(1)(2)(3)	41C	41C	QPSK	1	0	20	2636.5	41055	QPSK	1	99	20	2616.7	40857	0	24.33	40	0	25.0	24.38	-0.05	16	
Bodyworn & Hotspot	Ant.B	CA_41C(0)(1)(2)(3)	41C	41C	QPSK	1	0	20	2593.0	40620	QPSK	1	99	20	2573.2	40422	0	23.55	40	0	24.0	23.30	0.25	16	
Head	Ant.F	CA_41C(0)(1)(2)(3)	41C	41C	QPSK	1	0	20	2680.0	41490	QPSK	1	99	20	2660.2	41292	0	19.13	40	0	20.0	19.03	0.10	16	
Bodyworn & Hotspot	Ant.F	CA_41C(0)(1)(2)(3)	41C	41C	QPSK	1	0	20	2680.0	41490	QPSK	1	99	20	2660.2	41292	0	21.65	40	0	22.5	21.40	0.25	16	

**Note:**

Standalone output power values are referenced from Sec.9.3 in the SAR Part.1 Test Report.

**LTE Release 10 Carrier Aggregation with 4x4 MIMO**

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset
2CC#1	[41C]			3CC#1	[41D]		

## Single Carrier Downlink 4x4 MIMO output power results

LTE Bands	Modulation	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	LTE Rel 8 Tx. Power [dBm]	DL 4x4 MIMO Tx. Power [dBm]	Delta
41	QPSK	20	41055	2636.5	1/0	24.33	24.27	-0.06

**Note:**

According to LTE Test Conditions in TCB workshop (May, 2017), SAR is excluded for LTE downlink 4x4 MIMO operation when uplink output with DL MIMO does not exceed highest uplink output power configuration without DL MIMO by more than 1/4 dB. And for DL MIMO with carrier aggregation, the same SAR test exclusion procedure is considered.



**DL CA output power results**

E-UTRA CA configuration (BCS)	Bands				UL								DL												LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta				
	PCC	SCC1	SCC2	SCC3	PCC				PCC				SCC1				SCC2				SCC3										
	1st	2nd	3rd	4th	Band	Mode	BW (MHz)	Channel	Freq. (MHz)	RB Allocation	RB offset	Band	BW (MHz)	Channel	Freq. (MHz)	Band	BW (MHz)	Channel	Freq. (MHz)	Band	BW (MHz)	Channel	Freq. (MHz)	Band				BW (MHz)	Channel	Freq. (MHz)	
41C	41C	41C			41	QPSK	20	41055	2636.5	1	0	41	20	41055	2636.5	41	20	41253	2656.3										24.33	24.36	0.03
41D	41D	41D	41D		41	QPSK	20	41055	2636.5	1	0	41	20	41055	2636.5	41	20	41253	2656.3	41	20	41451	2676.1						24.33	24.45	0.12

**Note:**

1. Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.
2. When the same frequency band is used for both contiguous and non-contiguous in DL CA Intra band, power was measured using the configuration with the largest aggregated bandwidth and maximum output power among the contiguous and non-contiguous in DL CA Intra band configurations.

**DL CA with 4x4 MIMO output power results**

E-UTRA CA configuration (BCS)	Bands				UL										DL										LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta						
	PCC	SCC1	SCC2	SCC3	PCC										SCC1													SCC2				SCC3	
	1st	2nd	3rd	4th	Band	Mode	BW (MHz)	Channel	Freq. (MHz)	RB Allocatio	RB offset	Band	BW (MHz)	Channel	Freq. (MHz)	Band	BW (MHz)	Channel	Freq. (MHz)	Band	BW (MHz)	Channel	Freq. (MHz)	Band				BW (MHz)	Channel	Freq. (MHz)			
[41C]	[41C]	[41C]			[41]	QPSK	20	41055	2636.5	1	0	[41]	20	41055	2636.5	[41]	20	41253	2656.3											24.33	24.37	0.04	
[41D]	[41D]	[41D]	[41D]		[41]	QPSK	20	41055	2636.5	1	0	[41]	20	41055	2636.5	[41]	20	41253	2656.3	[41]	20	41451	2676.1							24.33	24.41	0.08	

**Note:**

1. Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.
2. When the same frequency band is used for both contiguous and non-contiguous in DL CA Intra band, power was measured using the configuration with the largest aggregated bandwidth and maximum output power among the contiguous and non-contiguous in DL CA Intra band configurations.

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