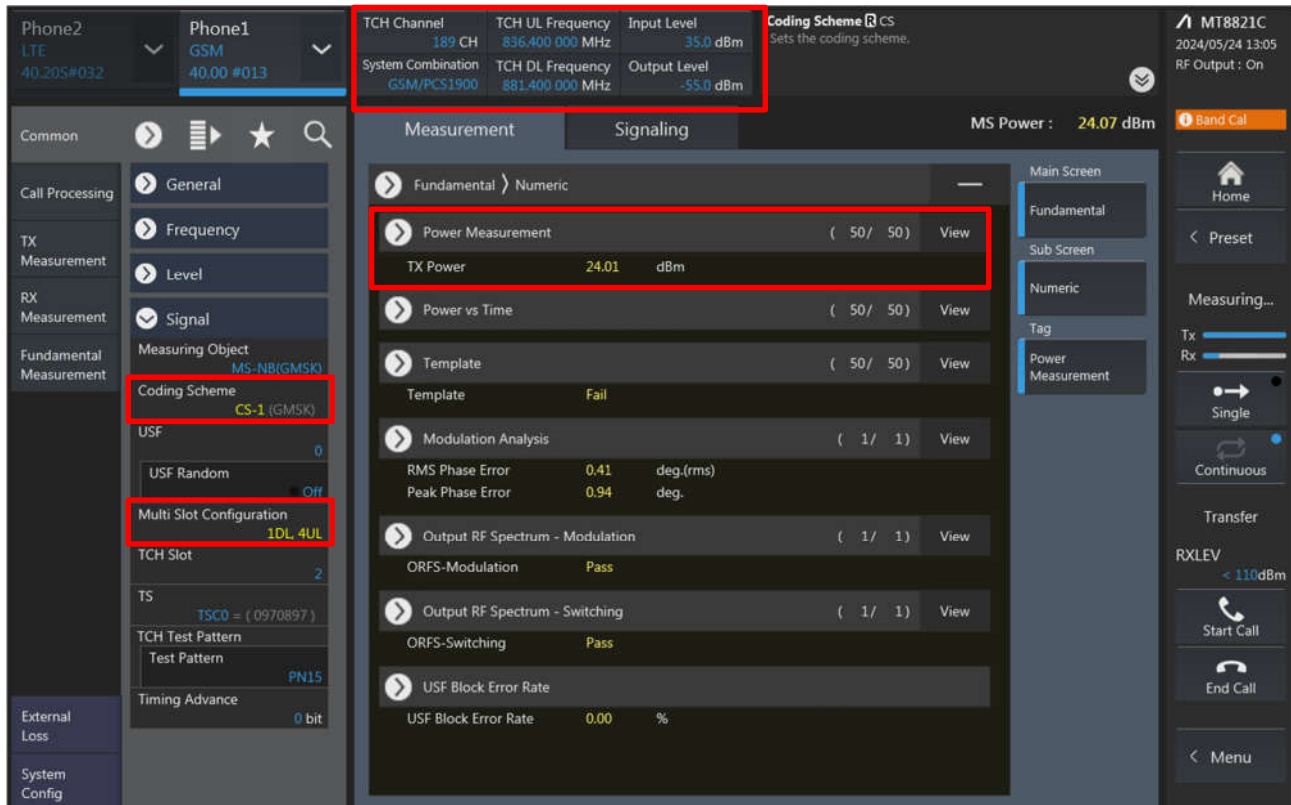


Power measurement connection diagram:

The power measurement for 2G/3G/LTE/5G FR1/UL and DL CA is to establish a connection between device and call box, and via call box to configure Bands, channel, BWs, RB size, carrier aggregation of CA, frequency channels, SCS and maximum output power. Hereunder is screenshot call box connection information for 2G/3G/LTE/5G FR1/UL and DL CA.

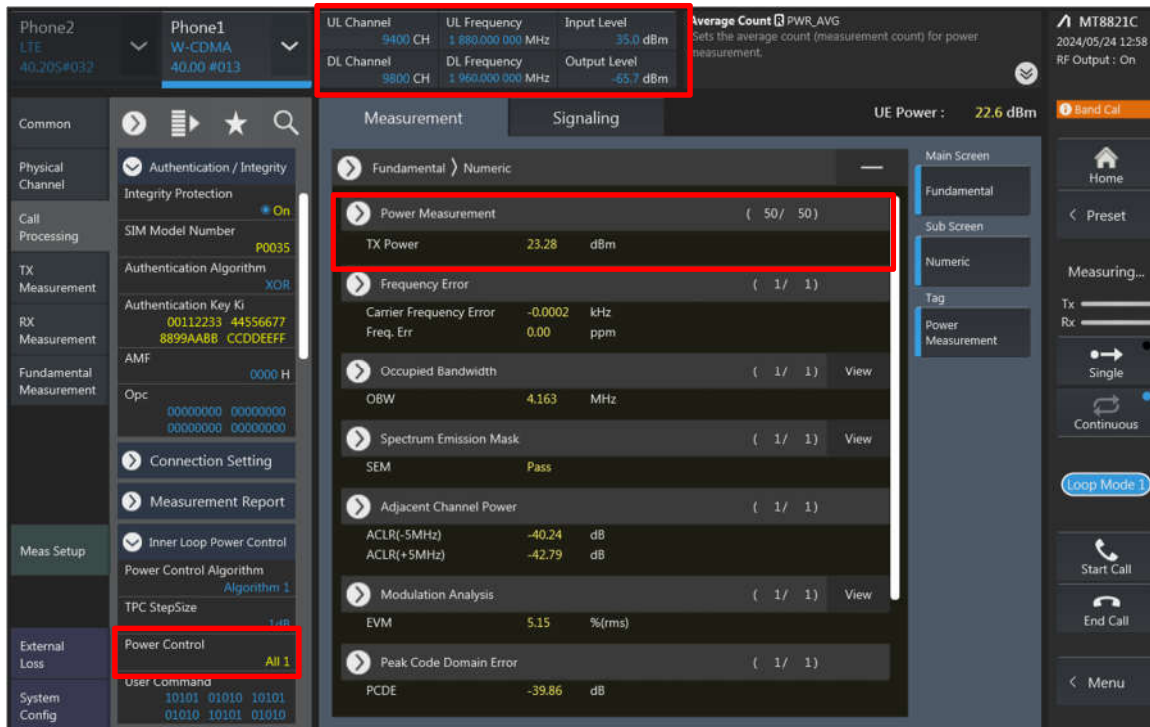
<GSM>



The screenshot displays the SPORTON LAB. software interface for GSM power measurement. The interface is divided into several sections:

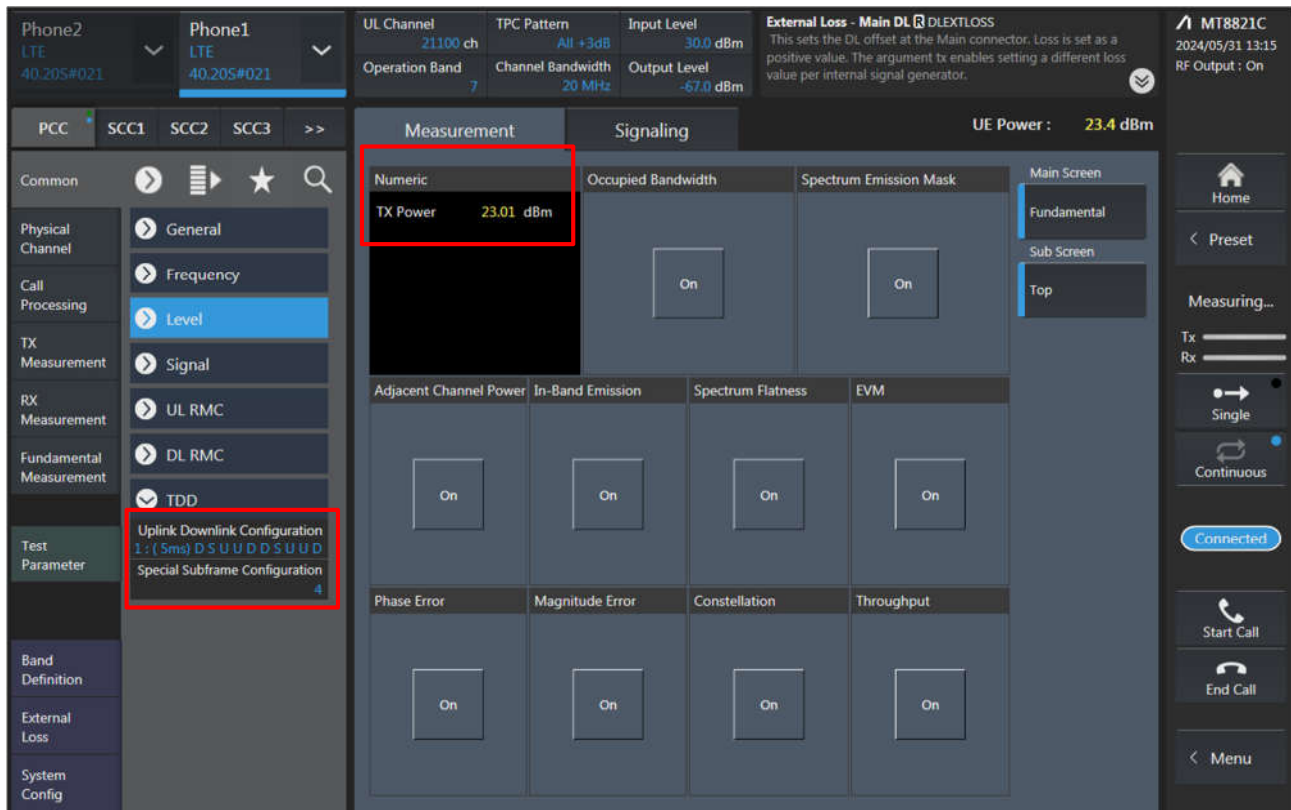
- Top Bar:** Shows Phone2 (LTE 40.205#032) and Phone1 (GSM 40.00 #013). The TCH Channel is 189 CH, TCH UL Frequency is 836.400 000 MHz, Input Level is 35.0 dBm, TCH DL Frequency is 881.400 000 MHz, and Output Level is -55.0 dBm. The Coding Scheme is CS.
- Left Panel:** Contains navigation options like Call Processing, TX Measurement, RX Measurement, Fundamental Measurement, and External Loss. The 'Fundamental Measurement' section is expanded, showing 'Coding Scheme' as CS-1 (GMSK) and 'Multi Slot Configuration' as 1DL, 4UL.
- Main Panel:** Displays the 'Measurement' tab with 'Fundamental' and 'Numeric' views. The 'Power Measurement' section shows 'TX Power' as 24.01 dBm. The 'Modulation Analysis' section shows 'RMS Phase Error' as 0.41 deg.(rms) and 'Peak Phase Error' as 0.94 deg. The 'Output RF Spectrum - Modulation' and 'Output RF Spectrum - Switching' sections show 'ORFS-Modulation' and 'ORFS-Switching' as 'Pass'. The 'USF Block Error Rate' section shows 'USF Block Error Rate' as 0.00 %.
- Right Panel:** Shows the 'Main Screen' with 'Fundamental' and 'Sub Screen' options. The 'Tag' section shows 'Power Measurement'. The 'Transfer' section shows 'RXLEV' as < 110dBm. The 'Start Call' and 'End Call' buttons are visible.

<WCDMA>



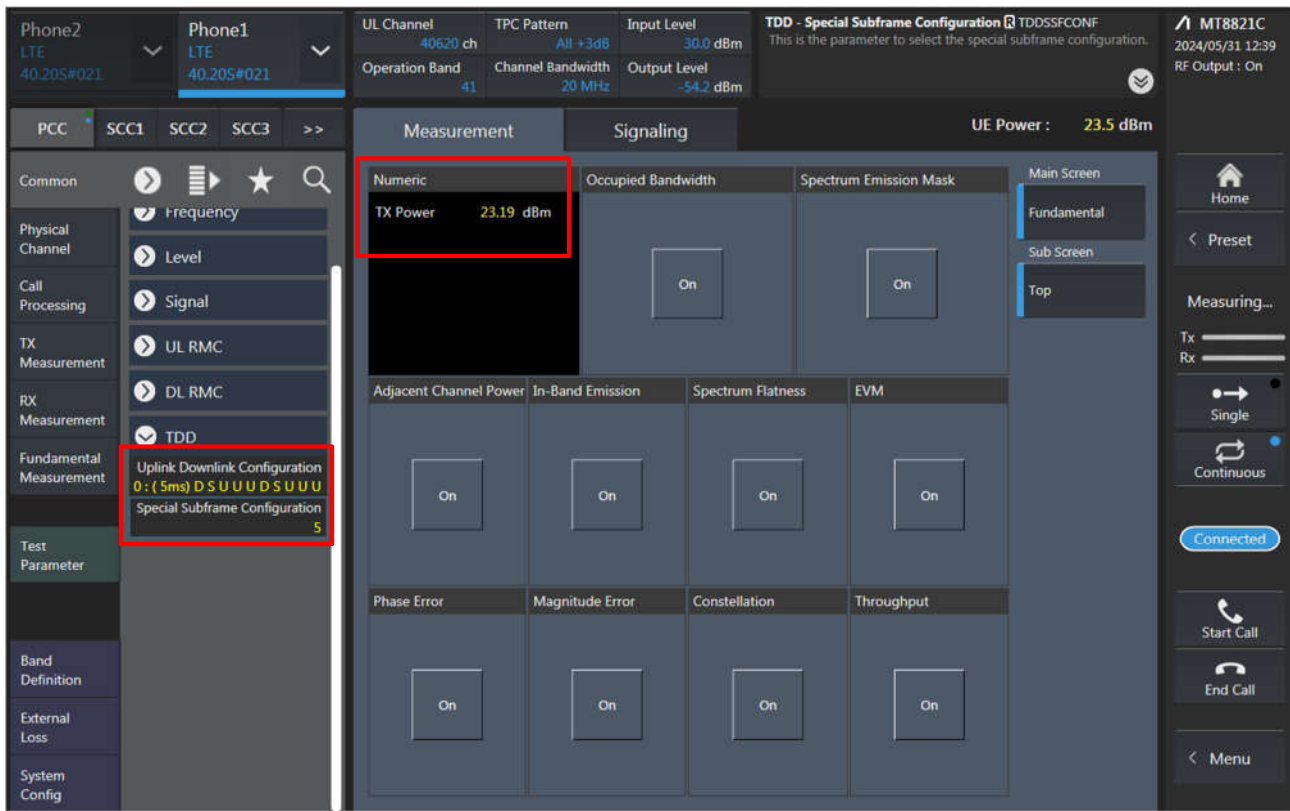
The screenshot shows the WCDMA measurement interface. The top bar displays 'Phone2 LTE 40.205#032' and 'Phone1 W-CDMA 40.00 #013'. The 'Measurement' tab is active, showing a list of metrics. A red box highlights the 'Power Measurement' section, which includes 'TX Power' at 23.28 dBm. Another red box highlights the 'UL Channel' and 'DL Channel' settings, showing 'UL Channel 9400 CH' and 'DL Channel 9800 CH'. The 'UE Power' is 22.6 dBm. The 'Fundamental' screen is selected, showing various measurement results like Frequency Error, Occupied Bandwidth, and Adjacent Channel Power.

<LTE>



The screenshot shows the LTE measurement interface. The top bar displays 'Phone2 LTE 40.205#021' and 'Phone1 LTE 40.205#021'. The 'Measurement' tab is active, showing a list of metrics. A red box highlights the 'TX Power' at 23.01 dBm. Another red box highlights the 'Uplink Downlink Configuration' section, showing 'Uplink Downlink Configuration 1: (5ms) D S U U D D S U U D' and 'Special Subframe Configuration 4'. The 'UE Power' is 23.4 dBm. The 'Fundamental' screen is selected, showing various measurement results like Occupied Bandwidth, Spectrum Emission Mask, and Adjacent Channel Power.

<LTE TDD Power class 3>



Phone2 LTE 40.20S#021 Phone1 LTE 40.20S#021

UL Channel 40620 ch TPC Pattern All +3dB Input Level 30.0 dBm TDD - Special Subframe Configuration TDDSSFCNF This is the parameter to select the special subframe configuration. MT8821C 2024/05/31 12:39 RF Output : On

Operation Band 41 Channel Bandwidth 20 MHz Output Level -54.2 dBm

Measurement Signaling UE Power : 23.5 dBm

Numeric Occupied Bandwidth Spectrum Emission Mask Main Screen

TX Power 23.19 dBm On On

Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

On On On On

Phase Error Magnitude Error Constellation Throughput

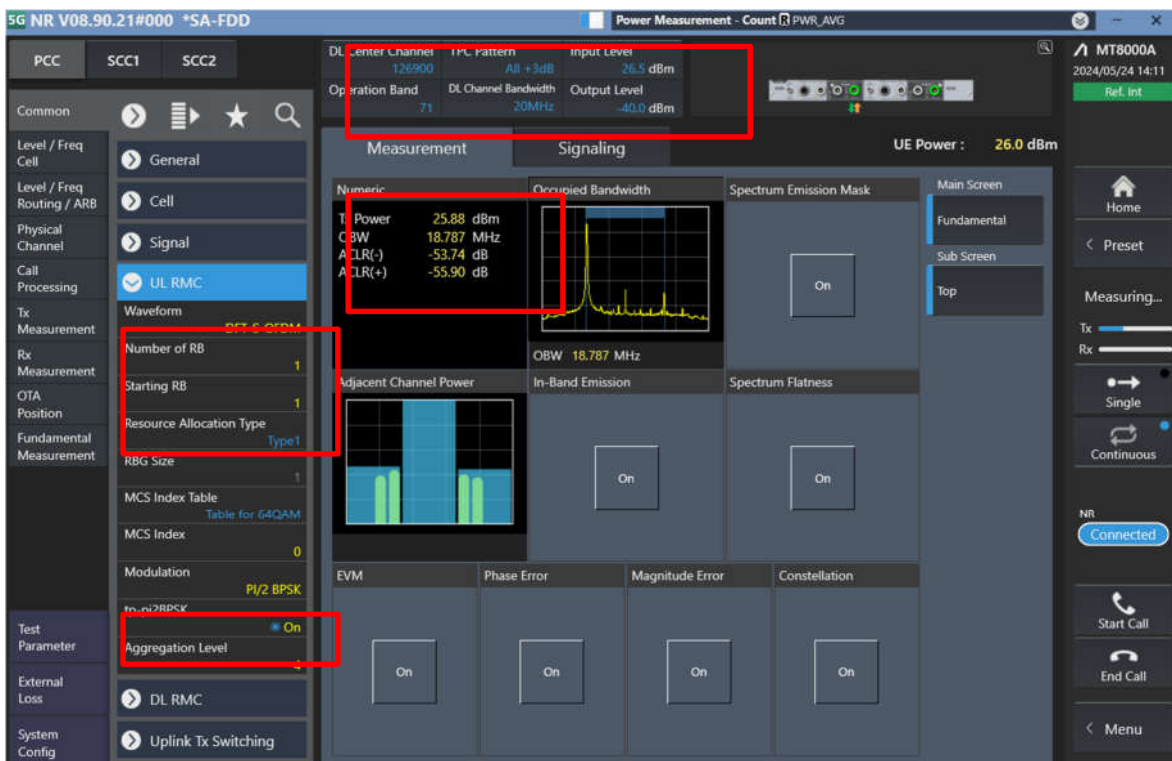
On On On On

Common Physical Channel Call Processing TX Measurement RX Measurement Fundamental Measurement Test Parameter Band Definition External Loss System Config

Frequency Level Signal UL RMC DL RMC TDD Uplink Downlink Configuration 0 : (5ms) D S U U U D S U U U Special Subframe Configuration 5

Home Preset Measuring... Tx Rx Single Continuous Connected Start Call End Call Menu

<5G NR FR1>



5G NR V08.90.21#000 *SA-FDD Power Measurement - Count PWR_AVG MT8000A 2024/05/24 14:11 Ref. Int

PCC SCC1 SCC2

DL Center Channel 126900 TPC Pattern All +3dB Input Level 26.5 dBm

Operation Band 71 DL Channel Bandwidth 20MHz Output Level -40.0 dBm

Measurement Signaling UE Power : 26.0 dBm

Numeric Occupied Bandwidth Spectrum Emission Mask Main Screen

TX Power 25.88 dBm OBW 18.787 MHz On

CBW 18.787 MHz

ACLR(-) -53.74 dB

ACLR(+) -55.90 dB

Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

On On On

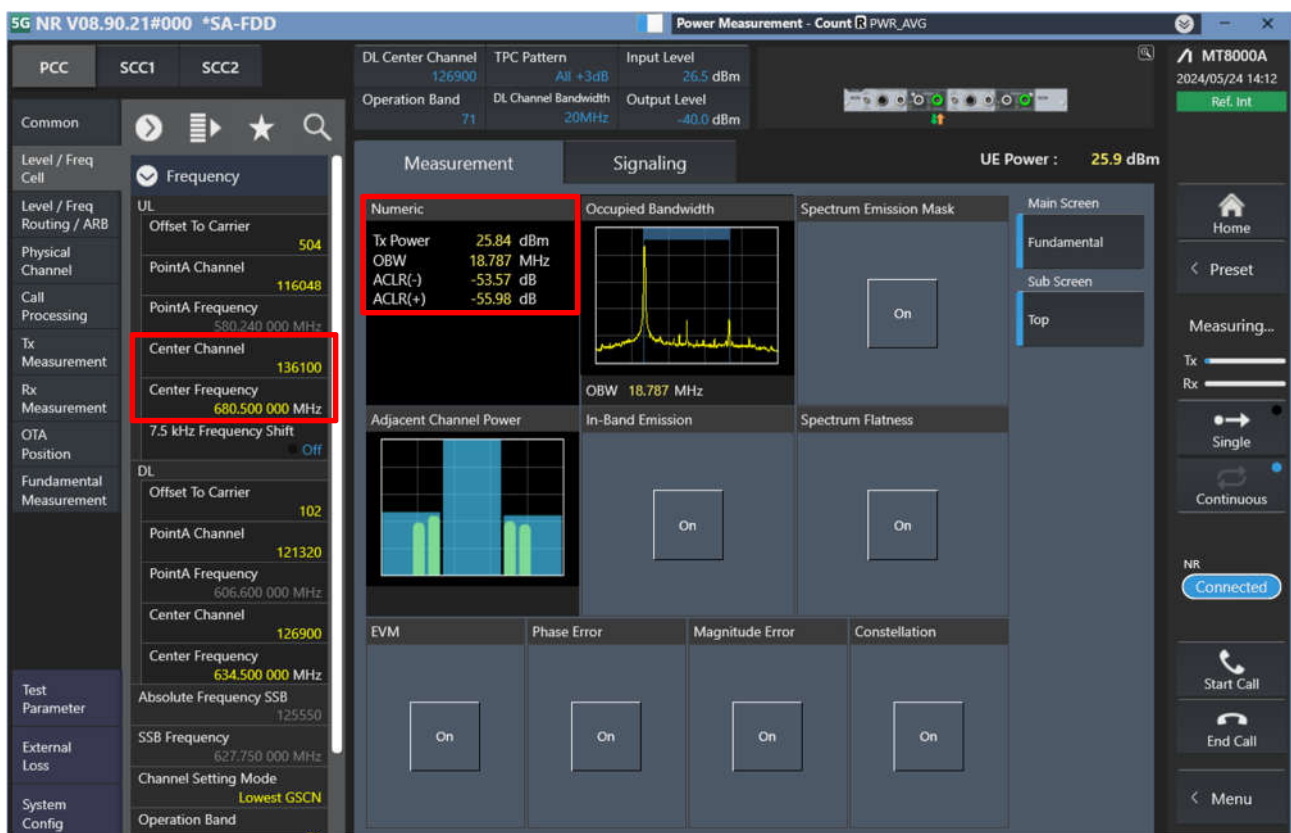
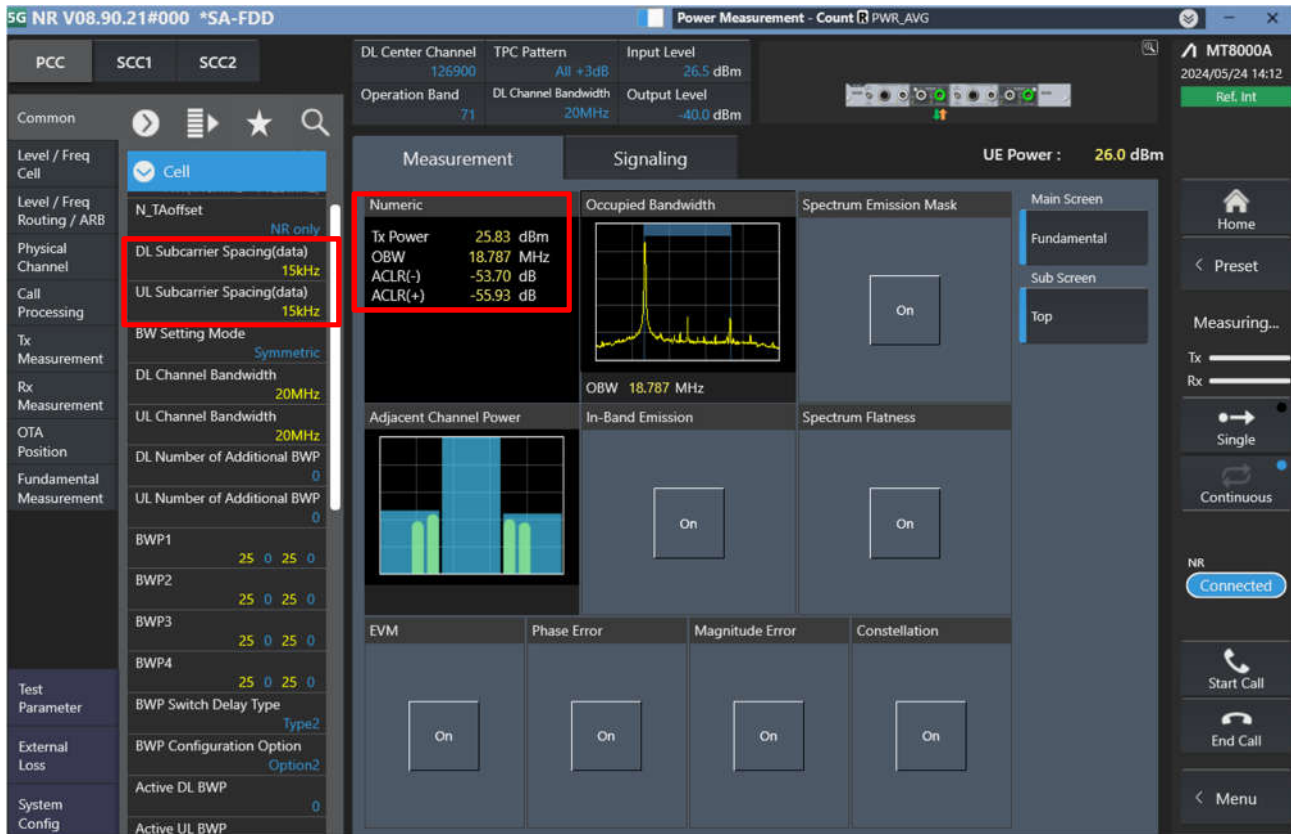
Phase Error Magnitude Error Constellation

On On On On

Common Level / Freq Cell Level / Freq Routing / ARB Physical Channel Call Processing Tx Measurement Rx Measurement OTA Position Fundamental Measurement Test Parameter External Loss System Config

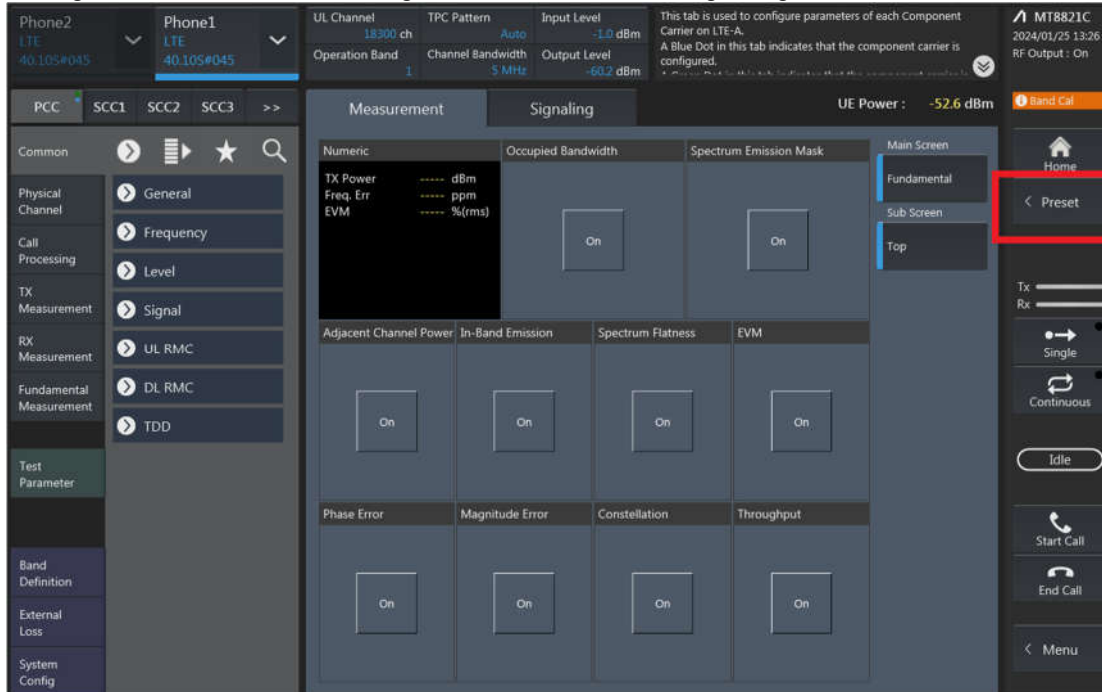
General Cell Signal UL RMC Waveform Number of RB 1 Starting RB 1 Resource Allocation Type Type1 RBG Size 1 MCS Index Table Table for 64QAM MCS Index 0 Modulation P/2 BPSK Aggregation Level On

Home Preset Measuring... Tx Rx Single Continuous Connected Start Call End Call Menu



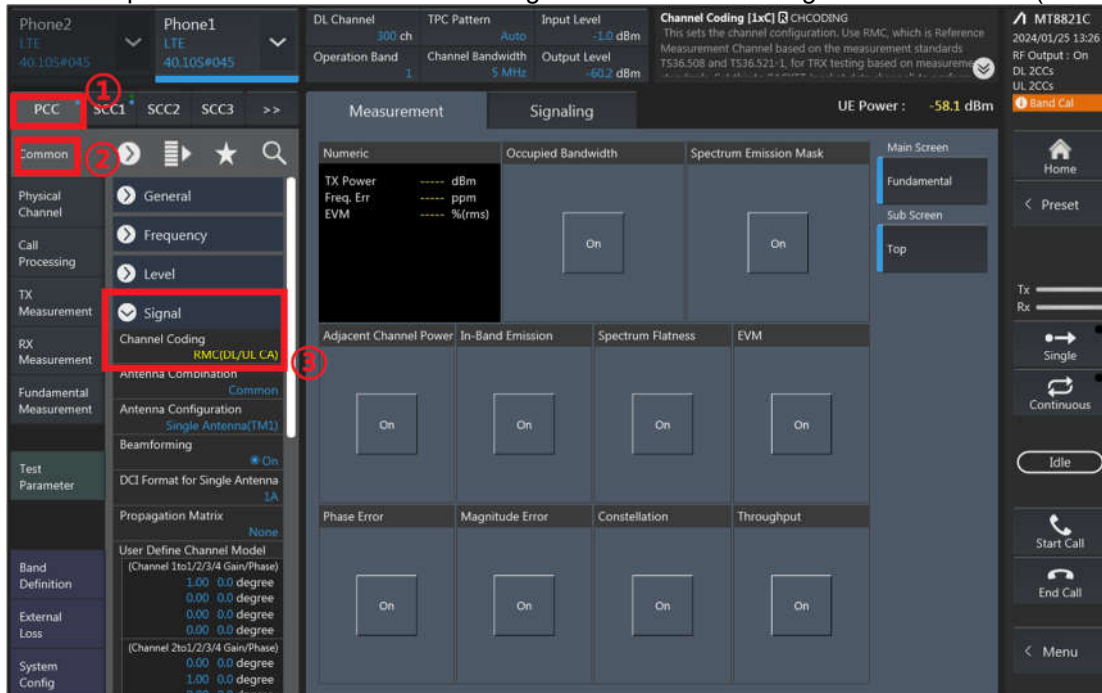
LTE Uplink and Downlink Carrier Aggregation configurations:

1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.

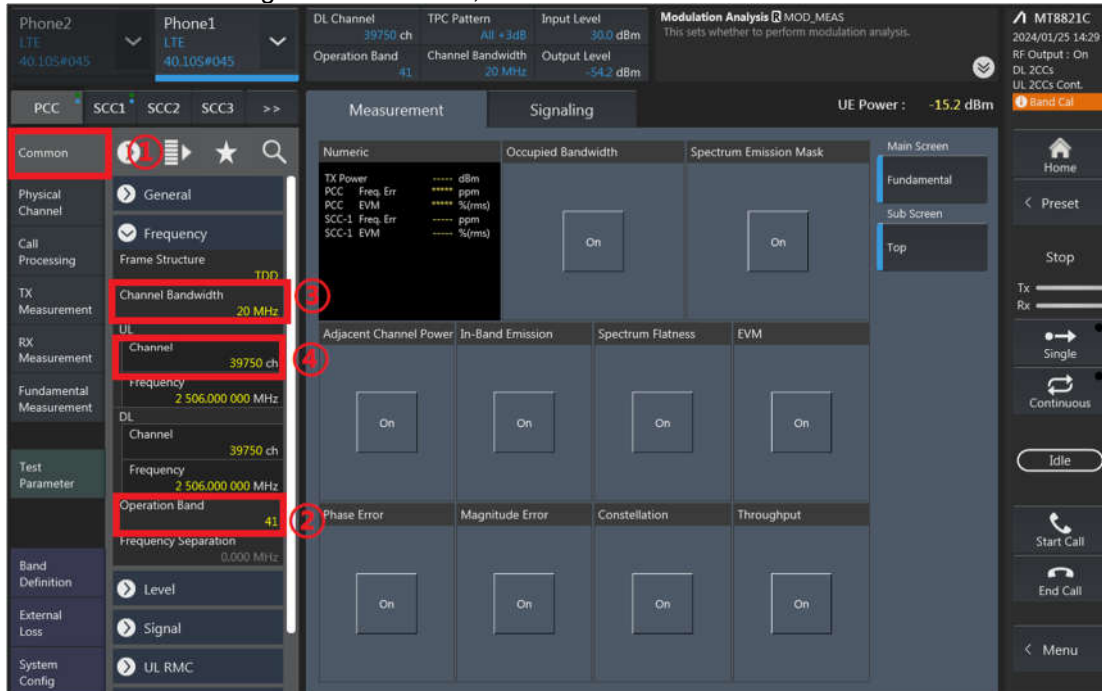


2. If Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
If Select "RMC (DL CA)" for Downlink Carrier Aggregation.
For example, Uplink Carrier Aggregation:

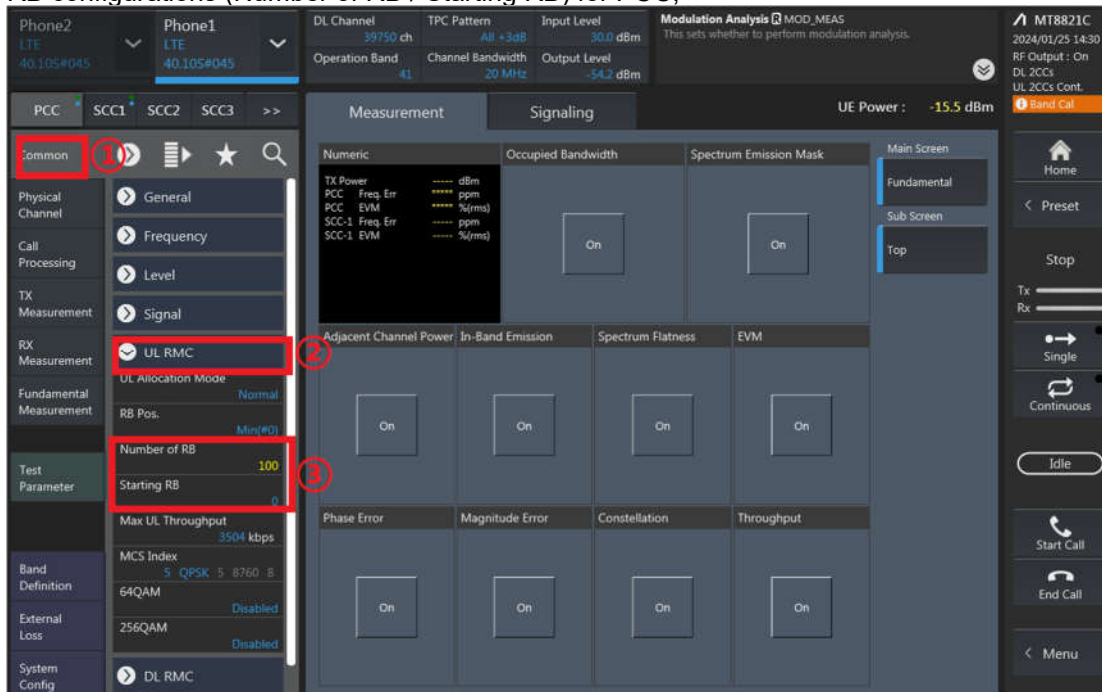
Detailed operation: PCC → Common → Signal → Channel Coding → Select 【RMC (DL/UL CA)】



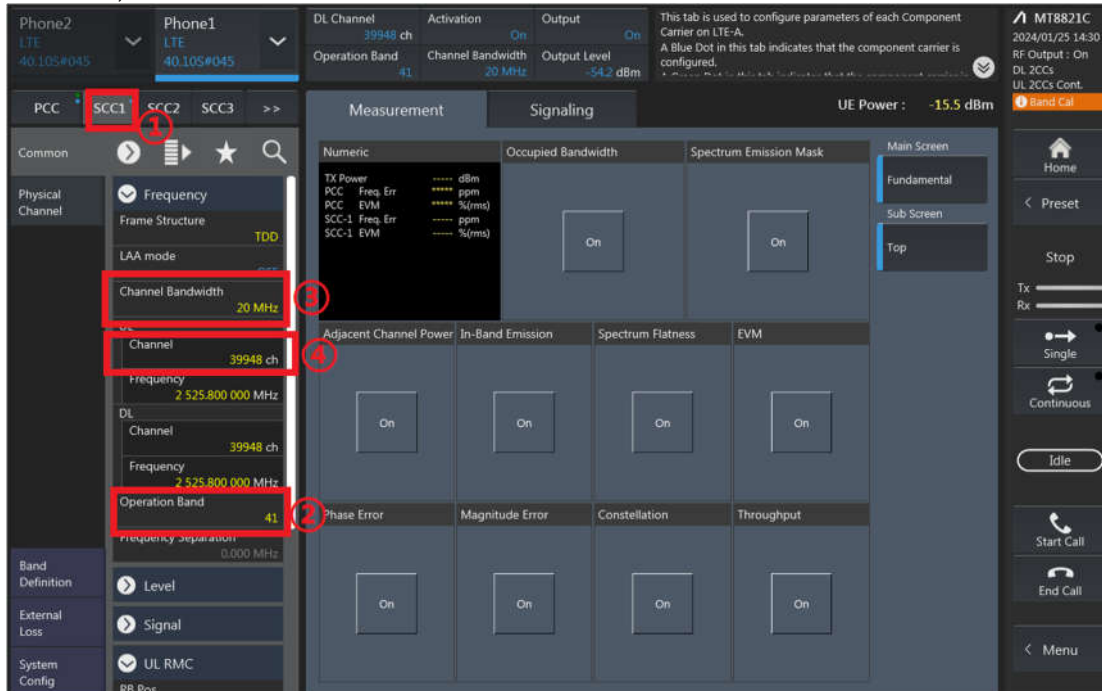
3. PCC parameter Settings: on the screen, and then select the PCC tab and Set operating band, BW, channel and RB configurations for PCC;



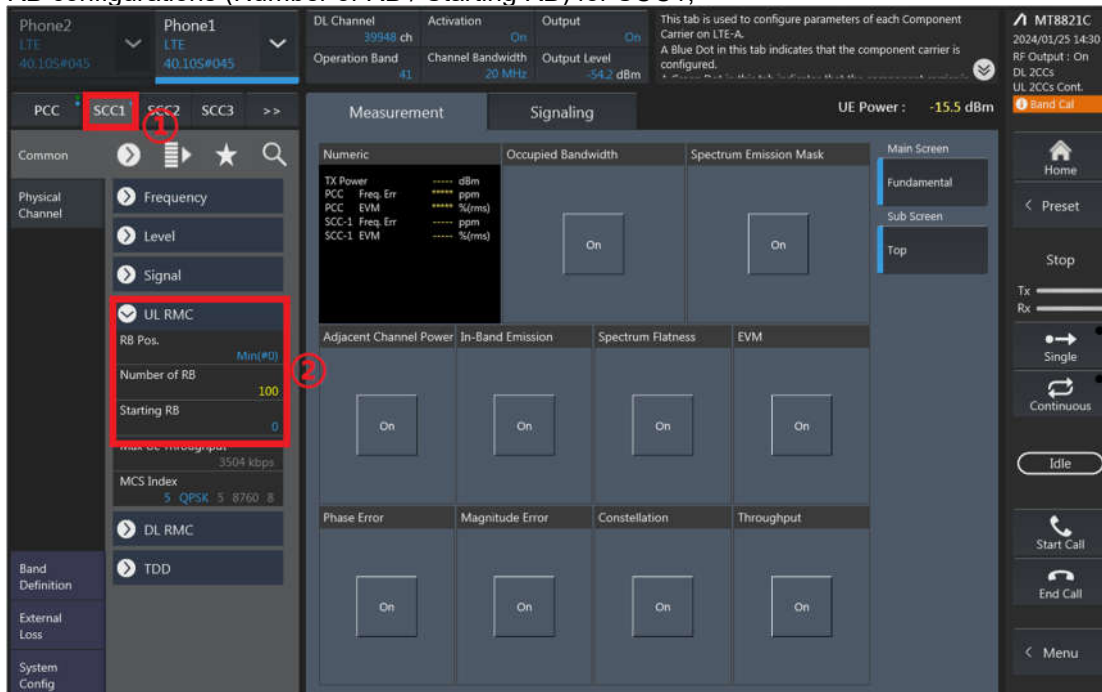
RB configurations (Number of RB / Starting RB) for PCC;



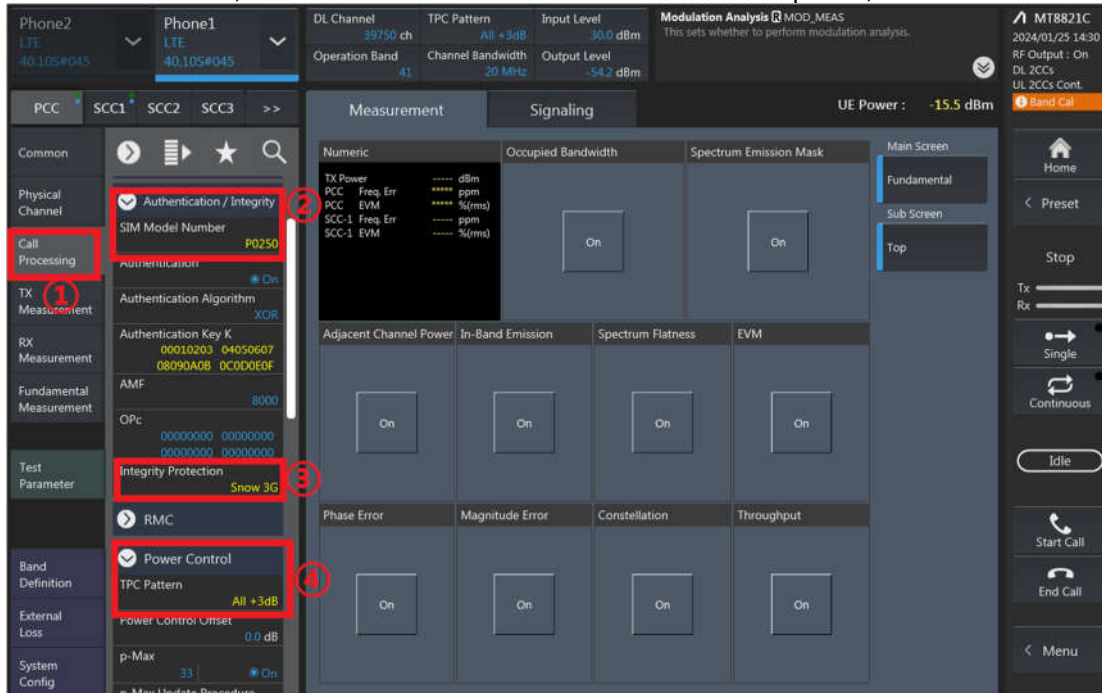
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



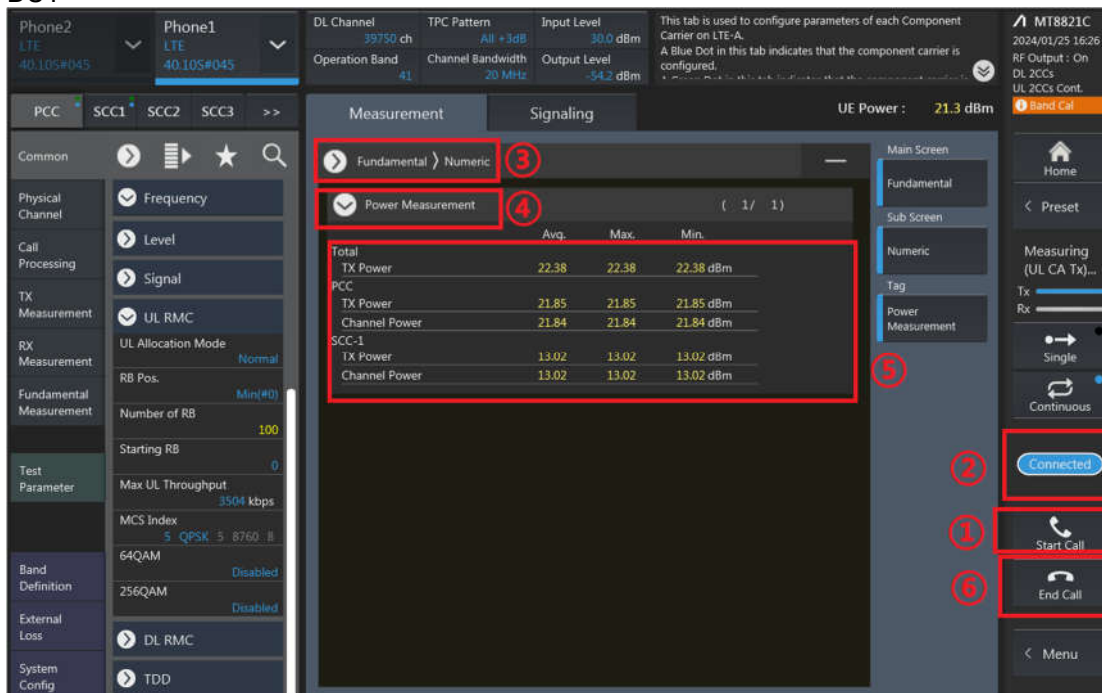
RB configurations (Number of RB / Starting RB) for SCC1;



5. Select the PCC tab, then set “SIM Model Number” and select max power;



6. Click the “Connect” button at the Right of the screen, if necessary, turn the Airplane mode on/off in the DUT



7. The inter-band DLCA test method is similar to intra-band ULCA, and DLCA test method is similar to intra-band ULCA too.

Uplink CA Power

CA_41C_Ant 4									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
39750	39948	QPSK	1	0	0	0	Default	25.12	26.70
40185	39987	QPSK	1	0	0	0	Default	25.15	26.70
40620	40422	QPSK	1	0	0	0	Default	25.08	26.70
41055	40857	QPSK	1	0	0	0	Default	24.86	26.70
41490	41292	QPSK	1	0	0	0	Default	24.83	26.70
39750	39948	QPSK	1	0	0	0	ECI 1	20.12	20.70
40185	39987	QPSK	1	0	0	0	ECI 1	20.16	20.70
40620	40422	QPSK	1	0	0	0	ECI 1	20.08	20.70
41055	40857	QPSK	1	0	0	0	ECI 1	19.90	20.70
41490	41292	QPSK	1	0	0	0	ECI 1	19.87	20.70
39750	39948	QPSK	1	0	0	0	ECI 3	21.65	22.20
40185	39987	QPSK	1	0	0	0	ECI 3	21.68	22.20
40620	40422	QPSK	1	0	0	0	ECI 3	21.61	22.20
41055	40857	QPSK	1	0	0	0	ECI 3	21.46	22.20
41490	41292	QPSK	1	0	0	0	ECI 3	21.46	22.20
39750	39948	QPSK	1	0	0	0	ECI 4	25.12	26.70
40185	39987	QPSK	1	0	0	0	ECI 4	25.15	26.70
40620	40422	QPSK	1	0	0	0	ECI 4	25.08	26.70
41055	40857	QPSK	1	0	0	0	ECI 4	24.86	26.70
41490	41292	QPSK	1	0	0	0	ECI 4	24.83	26.70
39750	39948	QPSK	1	0	0	0	ECI 5	20.11	20.70
40185	39987	QPSK	1	0	0	0	ECI 5	20.15	20.70
40620	40422	QPSK	1	0	0	0	ECI 5	20.10	20.70
41055	40857	QPSK	1	0	0	0	ECI 5	19.86	20.70
41490	41292	QPSK	1	0	0	0	ECI 5	19.88	20.70

CA_41C_Ant 2									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
39750	39948	QPSK	1	0	0	0	Default	23.78	25.00
40185	39987	QPSK	1	0	0	0	Default	23.88	25.00
40620	40422	QPSK	1	0	0	0	Default	23.58	25.00
41055	40857	QPSK	1	0	0	0	Default	23.28	25.00
41490	41292	QPSK	1	0	0	0	Default	23.01	25.00
39750	39948	QPSK	1	0	0	0	ECI 1	23.78	25.00
40185	39987	QPSK	1	0	0	0	ECI 1	23.88	25.00
40620	40422	QPSK	1	0	0	0	ECI 1	23.58	25.00
41055	40857	QPSK	1	0	0	0	ECI 1	23.28	25.00
41490	41292	QPSK	1	0	0	0	ECI 1	23.01	25.00
39750	39948	QPSK	1	0	0	0	ECI 3	23.38	24.50
40185	39987	QPSK	1	0	0	0	ECI 3	23.49	24.50
40620	40422	QPSK	1	0	0	0	ECI 3	23.09	24.50
41055	40857	QPSK	1	0	0	0	ECI 3	22.83	24.50
41490	41292	QPSK	1	0	0	0	ECI 3	22.63	24.50
39750	39948	QPSK	1	0	0	0	ECI 4	23.78	25.00
40185	39987	QPSK	1	0	0	0	ECI 4	23.88	25.00
40620	40422	QPSK	1	0	0	0	ECI 4	23.58	25.00
41055	40857	QPSK	1	0	0	0	ECI 4	23.28	25.00
41490	41292	QPSK	1	0	0	0	ECI 4	23.01	25.00
39750	39948	QPSK	1	0	0	0	ECI 5	23.41	24.50
40185	39987	QPSK	1	0	0	0	ECI 5	23.46	24.50
40620	40422	QPSK	1	0	0	0	ECI 5	23.11	24.50
41055	40857	QPSK	1	0	0	0	ECI 5	22.86	24.50
41490	41292	QPSK	1	0	0	0	ECI 5	22.62	24.50

CA_41C_Ant 5									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
39750	39948	QPSK	1	0	0	0	Default	24.61	26.70
40185	39987	QPSK	1	0	0	0	Default	24.78	26.70
40620	40422	QPSK	1	0	0	0	Default	24.76	26.70
41055	40857	QPSK	1	0	0	0	Default	24.58	26.70
41490	41292	QPSK	1	0	0	0	Default	24.65	26.70
39750	39948	QPSK	1	0	0	0	ECI 1	21.13	22.20
40185	39987	QPSK	1	0	0	0	ECI 1	21.33	22.20
40620	40422	QPSK	1	0	0	0	ECI 1	21.27	22.20
41055	40857	QPSK	1	0	0	0	ECI 1	21.08	22.20
41490	41292	QPSK	1	0	0	0	ECI 1	21.19	22.20
39750	39948	QPSK	1	0	0	0	ECI 3	22.09	23.20
40185	39987	QPSK	1	0	0	0	ECI 3	22.31	23.20
40620	40422	QPSK	1	0	0	0	ECI 3	22.26	23.20
41055	40857	QPSK	1	0	0	0	ECI 3	22.07	23.20
41490	41292	QPSK	1	0	0	0	ECI 3	22.18	23.20
39750	39948	QPSK	1	0	0	0	ECI 4	22.08	23.20
40185	39987	QPSK	1	0	0	0	ECI 4	22.31	23.20
40620	40422	QPSK	1	0	0	0	ECI 4	22.27	23.20
41055	40857	QPSK	1	0	0	0	ECI 4	22.08	23.20
41490	41292	QPSK	1	0	0	0	ECI 4	22.15	23.20
39750	39948	QPSK	1	0	0	0	ECI 5	21.13	22.20
40185	39987	QPSK	1	0	0	0	ECI 5	21.33	22.20
40620	40422	QPSK	1	0	0	0	ECI 5	21.27	22.20
41055	40857	QPSK	1	0	0	0	ECI 5	21.08	22.20
41490	41292	QPSK	1	0	0	0	ECI 5	21.19	22.20

CA_41C_Ant 3									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
39750	39948	QPSK	1	0	0	0	Default	24.06	25.50
40185	39987	QPSK	1	0	0	0	Default	24.27	25.50
40620	40422	QPSK	1	0	0	0	Default	24.01	25.50
41055	40857	QPSK	1	0	0	0	Default	23.78	25.50
41490	41292	QPSK	1	0	0	0	Default	23.71	25.50
39750	39948	QPSK	1	0	0	0	ECI 1	19.09	20.50
40185	39987	QPSK	1	0	0	0	ECI 1	19.28	20.50
40620	40422	QPSK	1	0	0	0	ECI 1	18.97	20.50
41055	40857	QPSK	1	0	0	0	ECI 1	18.81	20.50
41490	41292	QPSK	1	0	0	0	ECI 1	18.77	20.50
39750	39948	QPSK	1	0	0	0	ECI 3	19.10	20.50
40185	39987	QPSK	1	0	0	0	ECI 3	19.30	20.50
40620	40422	QPSK	1	0	0	0	ECI 3	18.97	20.50
41055	40857	QPSK	1	0	0	0	ECI 3	18.81	20.50
41490	41292	QPSK	1	0	0	0	ECI 3	18.74	20.50
39750	39948	QPSK	1	0	0	0	ECI 4	24.06	25.50
40185	39987	QPSK	1	0	0	0	ECI 4	24.27	25.50
40620	40422	QPSK	1	0	0	0	ECI 4	24.01	25.50
41055	40857	QPSK	1	0	0	0	ECI 4	23.78	25.50
41490	41292	QPSK	1	0	0	0	ECI 4	23.71	25.50
39750	39948	QPSK	1	0	0	0	ECI 5	19.07	20.50
40185	39987	QPSK	1	0	0	0	ECI 5	19.31	20.50
40620	40422	QPSK	1	0	0	0	ECI 5	18.99	20.50
41055	40857	QPSK	1	0	0	0	ECI 5	18.79	20.50
41490	41292	QPSK	1	0	0	0	ECI 5	18.77	20.50

CA_42C_Ant 6									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
42190	42388	QPSK	1	0	0	0	Default	25.19	25.70
42590	42392	QPSK	1	0	0	0	Default	25.25	25.70
42990	42792	QPSK	1	0	0	0	Default	25.20	25.70
42190	42388	QPSK	1	0	0	0	ECI 1	18.24	18.70
42590	42392	QPSK	1	0	0	0	ECI 1	18.28	18.70
42990	42792	QPSK	1	0	0	0	ECI 1	18.20	18.70
42190	42388	QPSK	1	0	0	0	ECI 3	20.25	20.70
42590	42392	QPSK	1	0	0	0	ECI 3	20.27	20.70
42990	42792	QPSK	1	0	0	0	ECI 3	20.17	20.70
42190	42388	QPSK	1	0	0	0	ECI 4	25.19	25.70
42590	42392	QPSK	1	0	0	0	ECI 4	25.25	25.70
42990	42792	QPSK	1	0	0	0	ECI 4	25.20	25.70
42190	42388	QPSK	1	0	0	0	ECI 5	18.24	18.70
42590	42392	QPSK	1	0	0	0	ECI 5	18.28	18.70
42990	42792	QPSK	1	0	0	0	ECI 5	18.20	18.70

CA_42C_Ant 8									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
42190	42388	QPSK	1	0	0	0	Default	22.38	24.00
42590	42392	QPSK	1	0	0	0	Default	22.39	24.00
42990	42792	QPSK	1	0	0	0	Default	22.28	24.00
42190	42388	QPSK	1	0	0	0	ECI 1	19.41	21.00
42590	42392	QPSK	1	0	0	0	ECI 1	19.44	21.00
42990	42792	QPSK	1	0	0	0	ECI 1	19.26	21.00
42190	42388	QPSK	1	0	0	0	ECI 3	21.06	22.50
42590	42392	QPSK	1	0	0	0	ECI 3	21.11	22.50
42990	42792	QPSK	1	0	0	0	ECI 3	20.94	22.50
42190	42388	QPSK	1	0	0	0	ECI 4	22.38	24.00
42590	42392	QPSK	1	0	0	0	ECI 4	22.39	24.00
42990	42792	QPSK	1	0	0	0	ECI 4	22.28	24.00
42190	42388	QPSK	1	0	0	0	ECI 5	19.41	21.00
42590	42392	QPSK	1	0	0	0	ECI 5	19.44	21.00
42990	42792	QPSK	1	0	0	0	ECI 5	19.26	21.00

CA_42C_Ant 7									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
42190	42388	QPSK	1	0	0	0	Default	23.94	25.00
42590	42392	QPSK	1	0	0	0	Default	23.93	25.00
42990	42792	QPSK	1	0	0	0	Default	23.85	25.00
42190	42388	QPSK	1	0	0	0	ECI 1	17.38	18.50
42590	42392	QPSK	1	0	0	0	ECI 1	17.35	18.50
42990	42792	QPSK	1	0	0	0	ECI 1	17.28	18.50
42190	42388	QPSK	1	0	0	0	ECI 3	18.93	20.00
42590	42392	QPSK	1	0	0	0	ECI 3	18.97	20.00
42990	42792	QPSK	1	0	0	0	ECI 3	18.82	20.00
42190	42388	QPSK	1	0	0	0	ECI 4	18.93	20.00
42590	42392	QPSK	1	0	0	0	ECI 4	18.97	20.00
42990	42792	QPSK	1	0	0	0	ECI 4	18.82	20.00
42190	42388	QPSK	1	0	0	0	ECI 5	17.38	18.50
42590	42392	QPSK	1	0	0	0	ECI 5	17.35	18.50
42990	42792	QPSK	1	0	0	0	ECI 5	17.28	18.50

CA_42C_Ant 9									
Combination 20MHz+20MHz (100RB+100RB)									
PCC Channel	SCC Channel	Modulation	PCC		SCC		Power State	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset			
42190	42388	QPSK	1	0	0	0	Default	21.75	23.00
42590	42392	QPSK	1	0	0	0	Default	21.77	23.00
42990	42792	QPSK	1	0	0	0	Default	21.52	23.00
42190	42388	QPSK	1	0	0	0	ECI 1	21.75	23.00
42590	42392	QPSK	1	0	0	0	ECI 1	21.77	23.00
42990	42792	QPSK	1	0	0	0	ECI 1	21.52	23.00
42190	42388	QPSK	1	0	0	0	ECI 3	16.28	17.50
42590	42392	QPSK	1	0	0	0	ECI 3	16.29	17.50
42990	42792	QPSK	1	0	0	0	ECI 3	16.05	17.50
42190	42388	QPSK	1	0	0	0	ECI 4	21.23	22.50
42590	42392	QPSK	1	0	0	0	ECI 4	21.31	22.50
42990	42792	QPSK	1	0	0	0	ECI 4	21.03	22.50
42190	42388	QPSK	1	0	0	0	ECI 5	16.28	17.50
42590	42392	QPSK	1	0	0	0	ECI 5	16.29	17.50
42990	42792	QPSK	1	0	0	0	ECI 5	16.05	17.50

Downlink CA Power

CA Configuration (BCS)	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
CA_41A-42A	Band 41	20M	2593	40620	QPSK	1	0	Band 42	20M	3500	42590	23.88	25.22

CA Configuration (BCS)	PCC							SCC1				SCC2				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
CA_41A-42C	Band 41	20M	2593	40620	QPSK	1	0	Band 42	20M	3500	42590	Band 42	20M	3519.8	42788	24.15	25.22
CA_41C-42A	Band 41	20M	2593	40620	QPSK	1	0	Band 41	20M	2612.8	40818	Band 42	20M	3500	42590	23.98	25.22
CA_41D	Band 41	20M	2680	41490	QPSK	1	0	Band 41	20M	2660.2	41292	Band 41	20M	2640.4	41094	24.31	25.22

CA Configuration (BCS)	PCC							SCC1				SCC2				SCC3				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
CA_41C-42C	Band 41	20M	2593	40620	QPSK	1	0	Band 41	20M	2612.8	40818	Band 42	20M	3500	42590	Band 42	20M	3519.8	42788	24.08	25.22