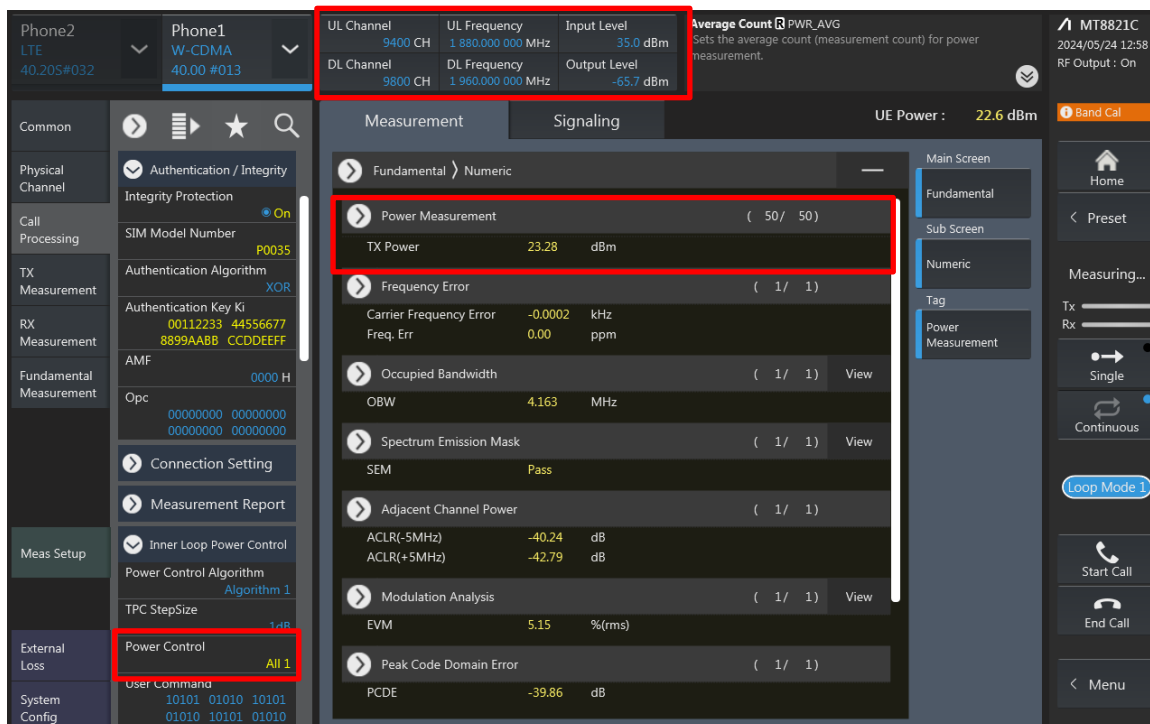


Power measurement connection diagram:

The power measurement for 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.

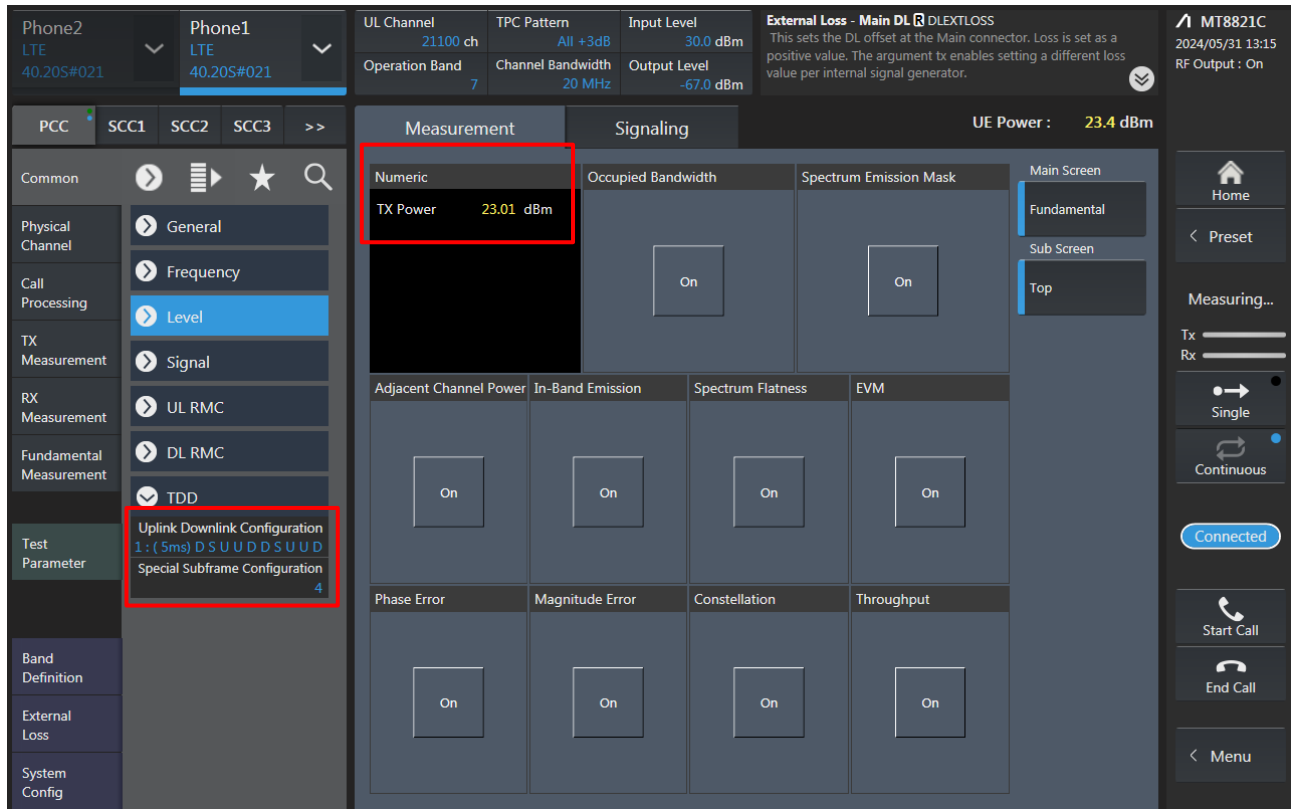
<WCDMA>



The screenshot displays the MT8821C software interface for WCDMA power measurement. The interface is divided into several sections:

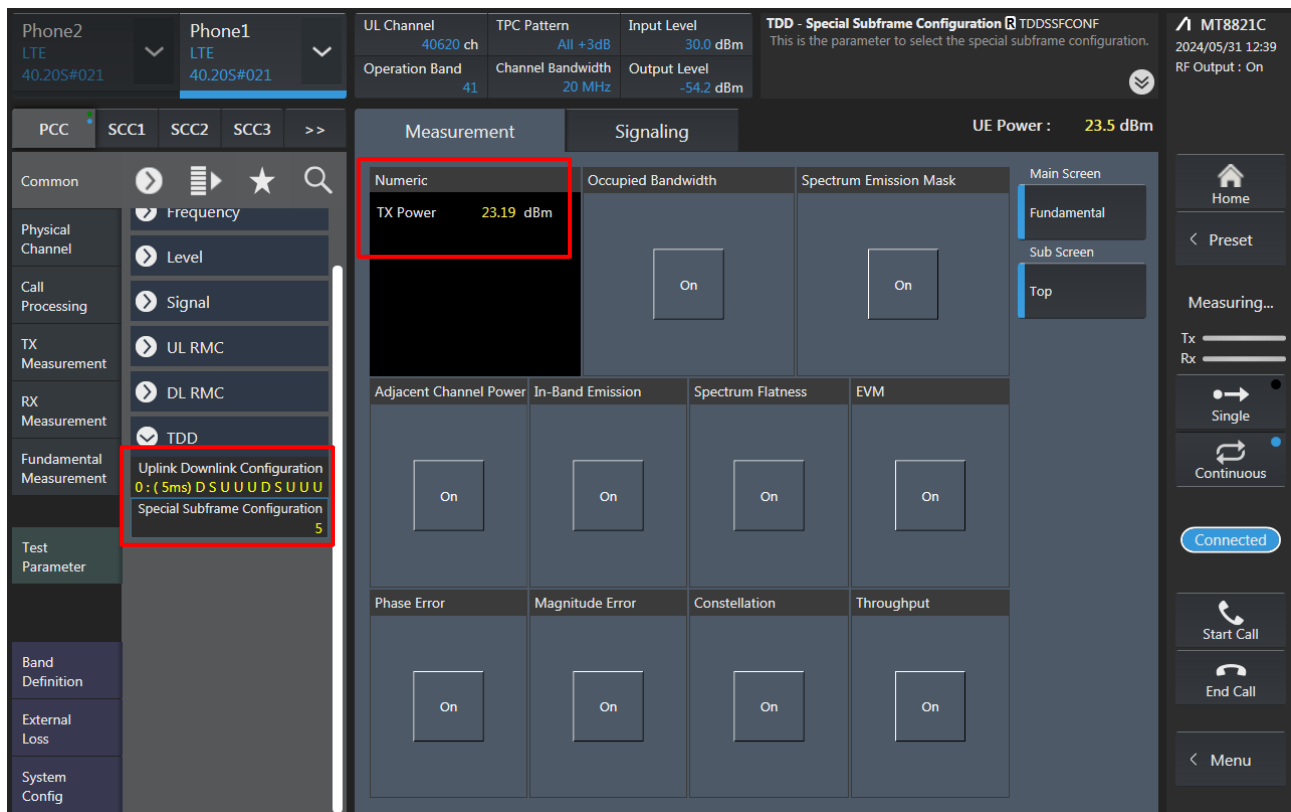
- Top Bar:** Shows Phone2 (LTE 40.205#032) and Phone1 (W-CDMA 40.00 #013). It also displays UL Channel (9400 CH), UL Frequency (1.880.000 000 MHz), Input Level (35.0 dBm), DL Channel (9800 CH), DL Frequency (1.960.000 000 MHz), and Output Level (-65.7 dBm). The Average Count (PWR_AVG) is shown as 22.6 dBm.
- Left Panel:** Contains various settings including Authentication / Integrity, SIM Model Number (P0035), Authentication Algorithm (XOR), Authentication Key Ki (00112233 44556677 8899AABB CCDDDEFF), AMF (0000 H), Opc (00000000 00000000 00000000 00000000), Connection Setting, Measurement Report, Inner Loop Power Control, Power Control Algorithm (Algorithm 1), TPC StepSize (1.4B), Power Control (All 1), User Command (10101 01010 10101 01010 10101 01010), and System Config.
- Main Panel:** Displays the Measurement section with the following data:
 - Power Measurement:** TX Power 23.28 dBm (50/50).
 - Frequency Error:** Carrier Frequency Error -0.0002 kHz, Freq. Err 0.00 ppm (1/1).
 - Occupied Bandwidth:** OBW 4.163 MHz (1/1).
 - Spectrum Emission Mask:** SEM Pass (1/1).
 - Adjacent Channel Power:** ACLR(-5MHz) -40.24 dB, ACLR(+5MHz) -42.79 dB (1/1).
 - Modulation Analysis:** EVM 5.15 %(rms) (1/1).
 - Peak Code Domain Error:** PCDE -39.86 dB (1/1).
- Right Panel:** Includes a Main Screen section with Fundamental and Sub Screen options, a Tag section with Power Measurement, and a Measuring... section with Single and Continuous modes. It also features a Loop Mode 1 button and a Menu button.

<LTE>



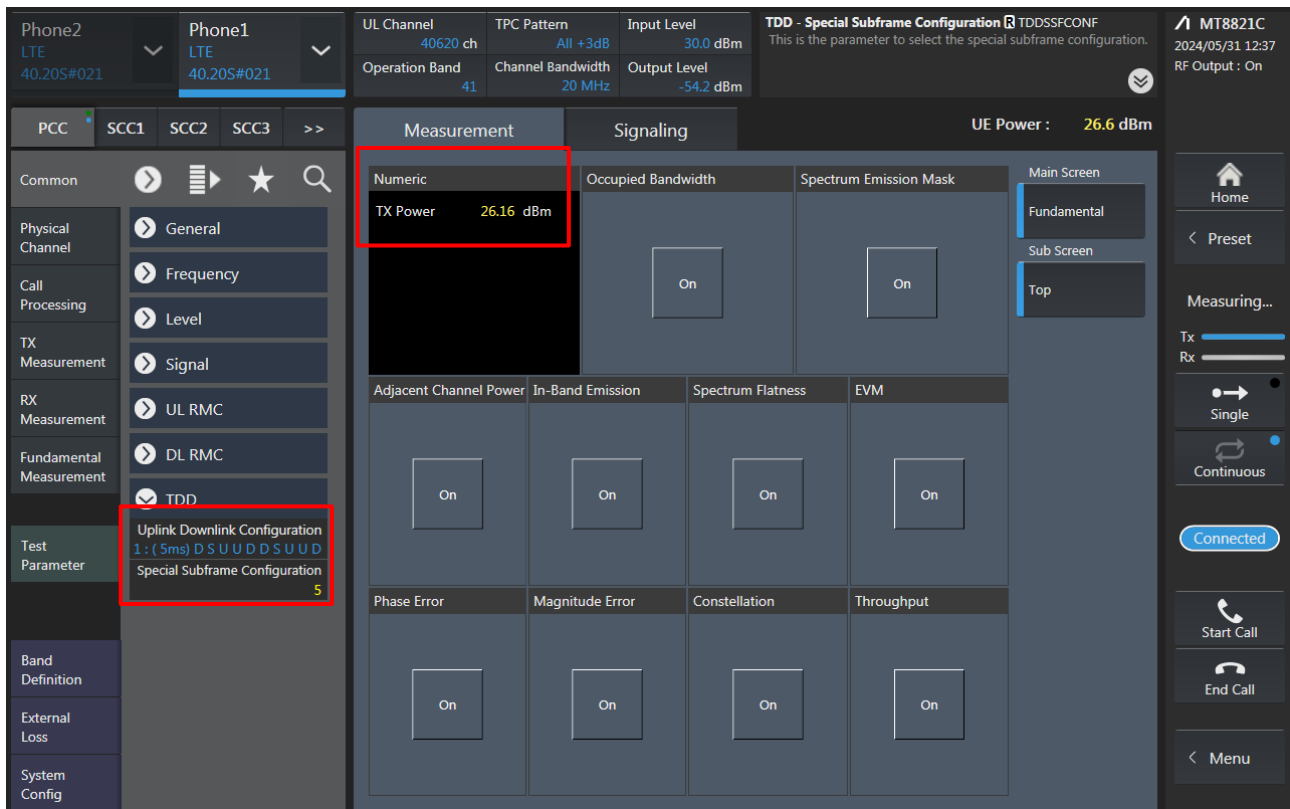
The screenshot shows the LTE test interface. On the left, a sidebar lists various test categories: Common, Physical Channel, Call Processing, TX Measurement, RX Measurement, Fundamental Measurement, Test Parameter, Band Definition, External Loss, and System Config. The 'Test Parameter' section is expanded, showing 'Uplink Downlink Configuration 1: (5ms) D S U U D D S U U D' and 'Special Subframe Configuration 4'. The main area displays 'Measurement' and 'Signaling' tabs. Under 'Measurement', 'TX Power' is highlighted with a red box, showing a value of 23.01 dBm. Other measurement options include Occupied Bandwidth, Spectrum Emission Mask, Adjacent Channel Power, In-Band Emission, Spectrum Flatness, EVM, Phase Error, Magnitude Error, Constellation, and Throughput. The 'Signaling' tab shows 'Occupied Bandwidth' and 'Spectrum Emission Mask' with 'On' buttons. The top status bar indicates 'Phone2 LTE 40.20S#021' and 'Phone1 LTE 40.20S#021'. The bottom right shows 'UE Power : 23.4 dBm' and a 'Connected' status.

<LTE TDD Power class 3>



The screenshot shows the LTE TDD Power class 3 test interface. The sidebar is similar to the previous screenshot, but the 'Test Parameter' section is expanded to show 'Uplink Downlink Configuration 0: (5ms) D S U U U D S U U U' and 'Special Subframe Configuration 5'. The main area displays 'Measurement' and 'Signaling' tabs. Under 'Measurement', 'TX Power' is highlighted with a red box, showing a value of 23.19 dBm. Other measurement options include Occupied Bandwidth, Spectrum Emission Mask, Adjacent Channel Power, In-Band Emission, Spectrum Flatness, EVM, Phase Error, Magnitude Error, Constellation, and Throughput. The 'Signaling' tab shows 'Occupied Bandwidth' and 'Spectrum Emission Mask' with 'On' buttons. The top status bar indicates 'Phone2 LTE 40.20S#021' and 'Phone1 LTE 40.20S#021'. The bottom right shows 'UE Power : 23.5 dBm' and a 'Connected' status.

<LTE TDD Power class 2>



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 TDDSSCONF

Operation Band 41

Channel Bandwidth 20 MHz

Output Level -54.2 dBm

UE Power : 26.6 dBm

Measurement

Signaling

Numeric

TX Power 26.16 dBm

Occupied Bandwidth

Spectrum Emission Mask

Adjacent Channel Power

In-Band Emission

Spectrum Flatness

EVM

Phase Error

Magnitude Error

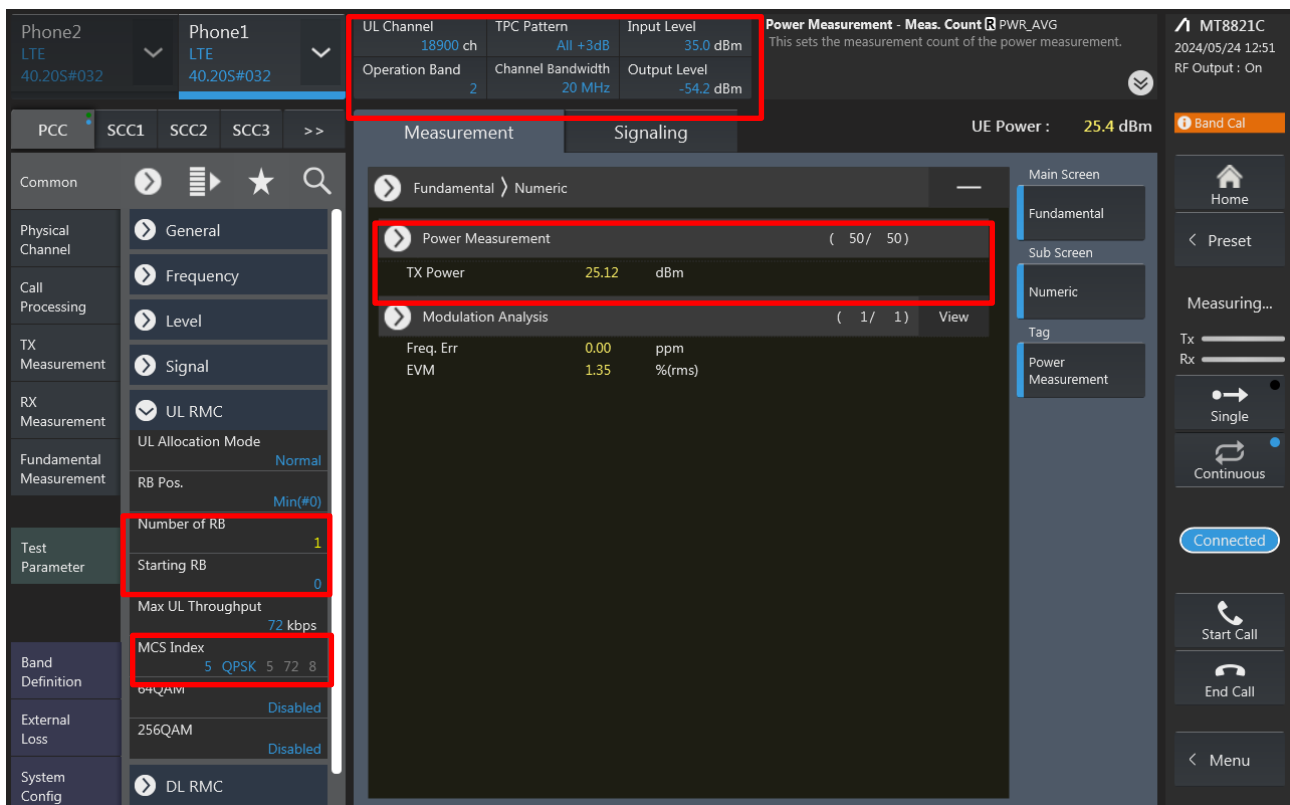
Constellation

Throughput

Test Parameter

Uplink Downlink Configuration 1: (5ms) D S U U D D S U U D

Special Subframe Configuration 5



Phone2 LTE 40.20S#032

Phone1 LTE 40.20S#032

UL Channel 18900 ch

TPC Pattern All +3dB

Input Level 35.0 dBm

Power Measurement - Meas. Count PWR_AVG

Operation Band 2

Channel Bandwidth 20 MHz

Output Level -54.2 dBm

UE Power : 25.4 dBm

Measurement

Signaling

Fundamental

Numeric

Power Measurement (50 / 50)

TX Power 25.12 dBm

Modulation Analysis (1 / 1) View

Freq. Err 0.00 ppm

EVM 1.35 %(rms)

Test Parameter

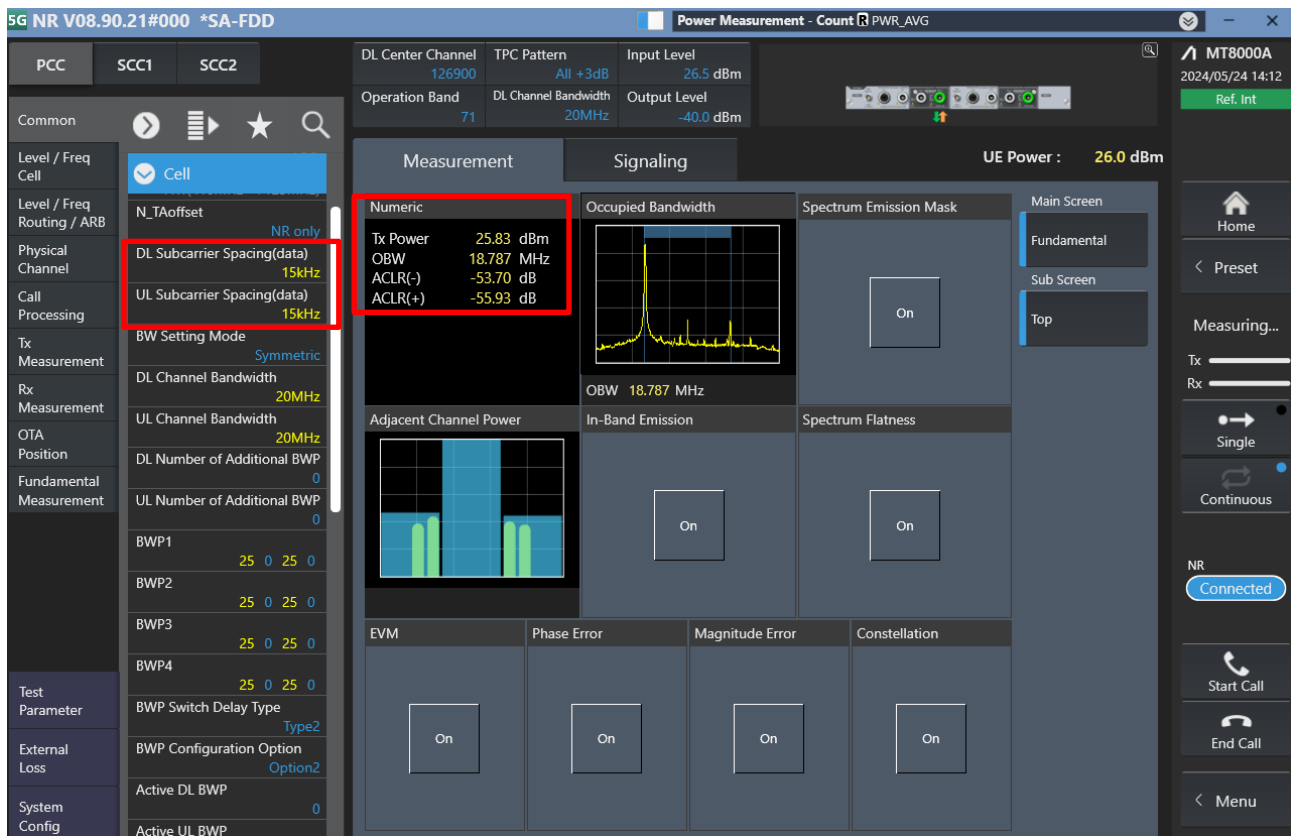
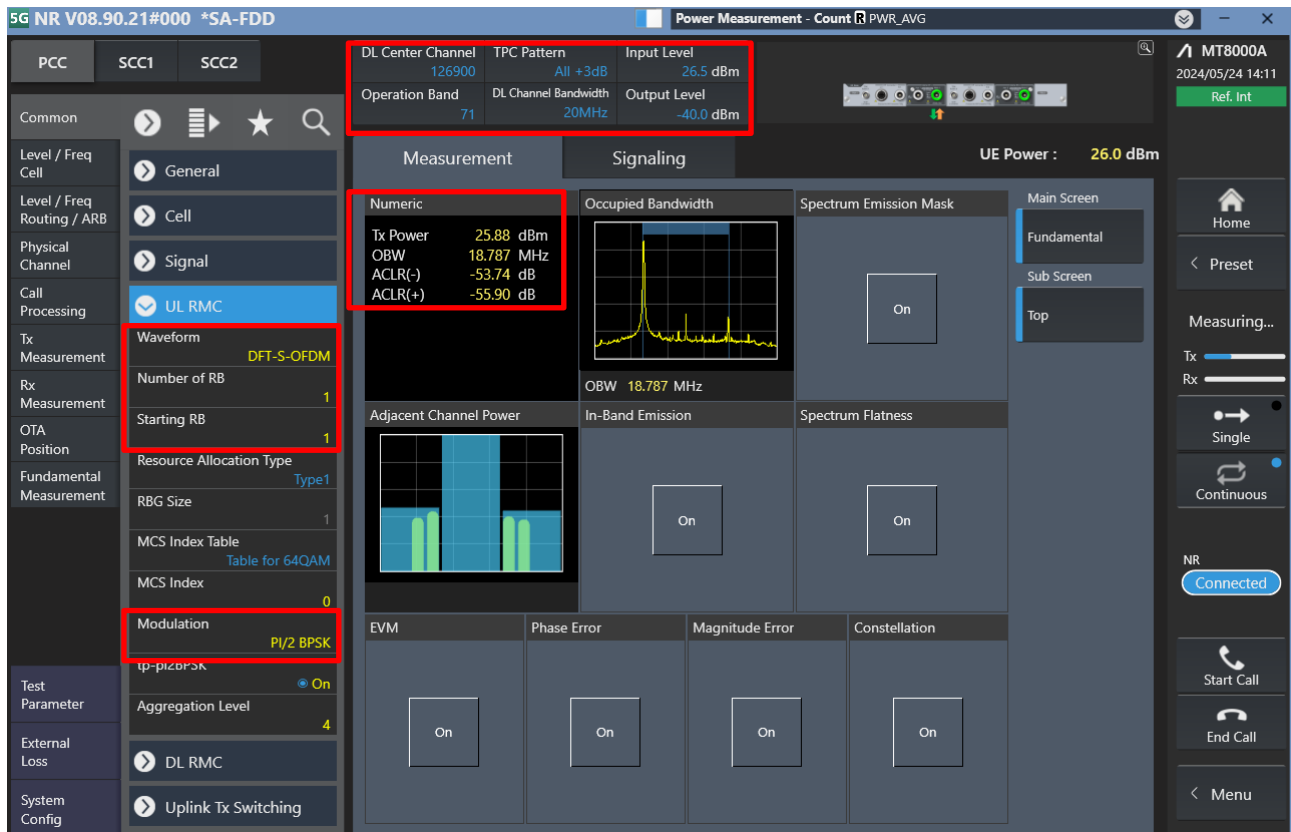
Number of RB 1

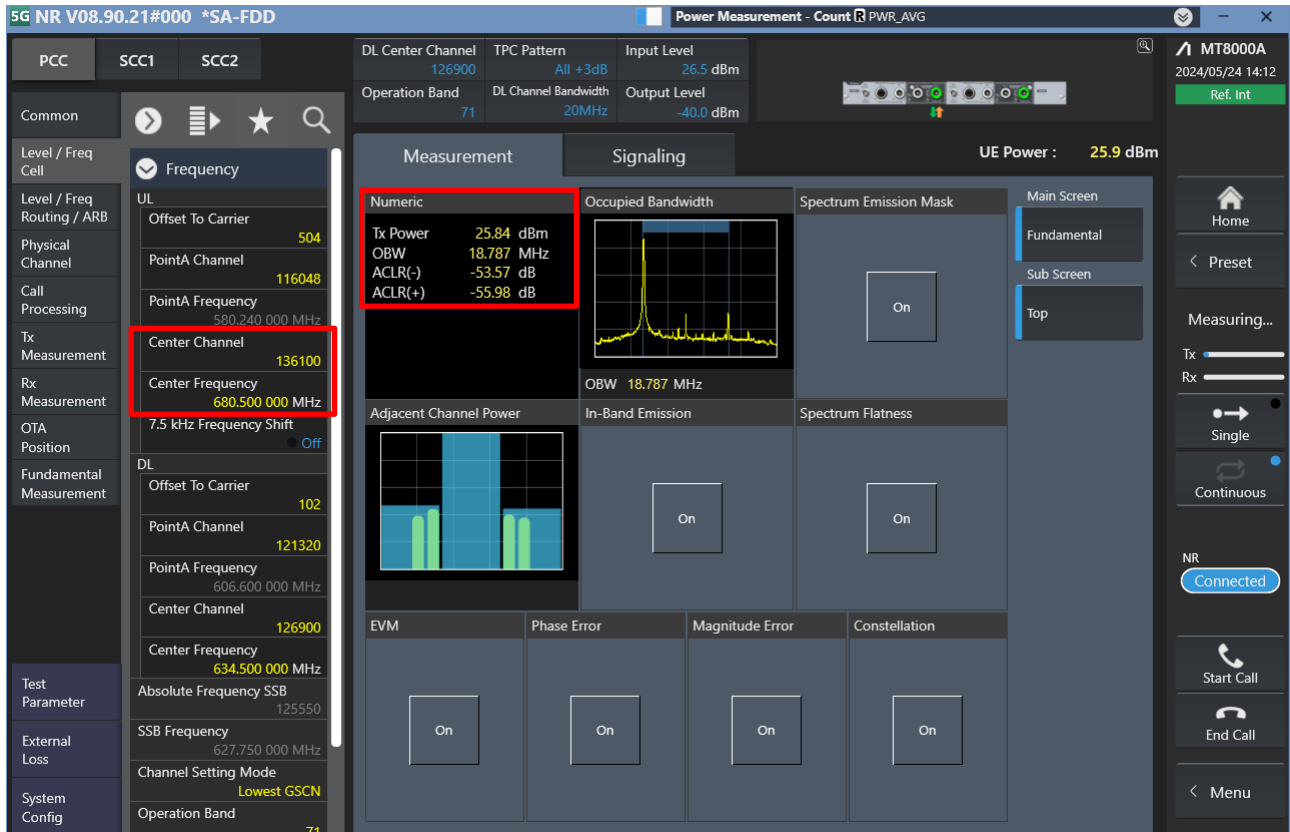
Starting RB 0

Max UL Throughput 72 kbps

MCS Index 5 QPSK 5 72 8

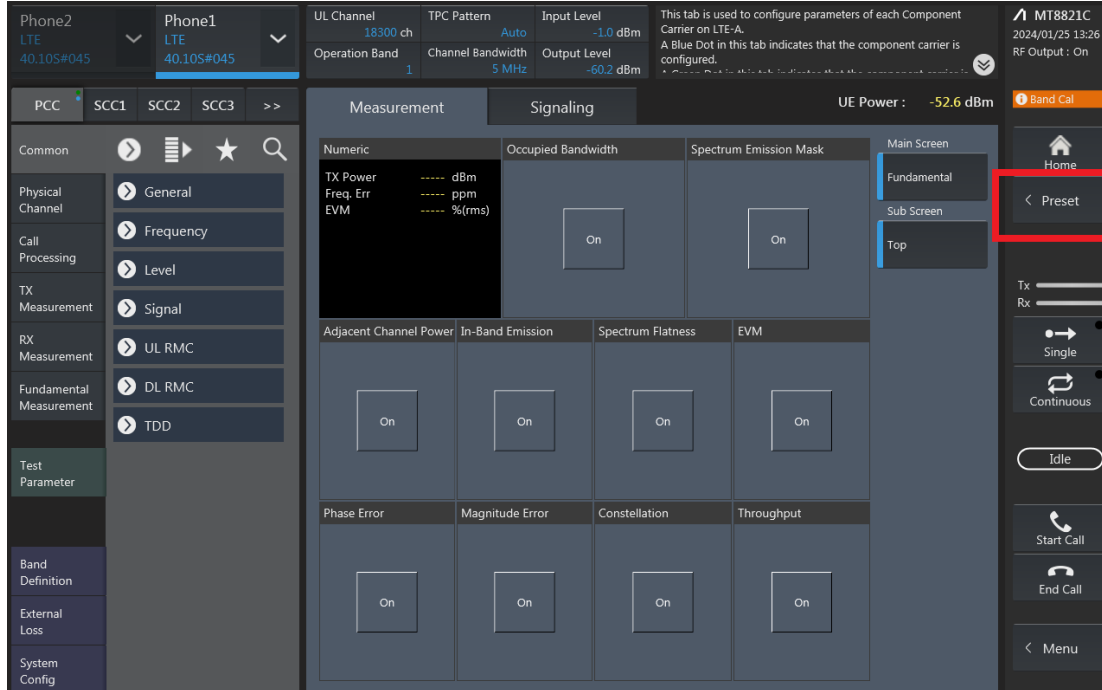
<5G NR FR1>





LTE Uplink and Downlink Carrier Aggregation configurations:

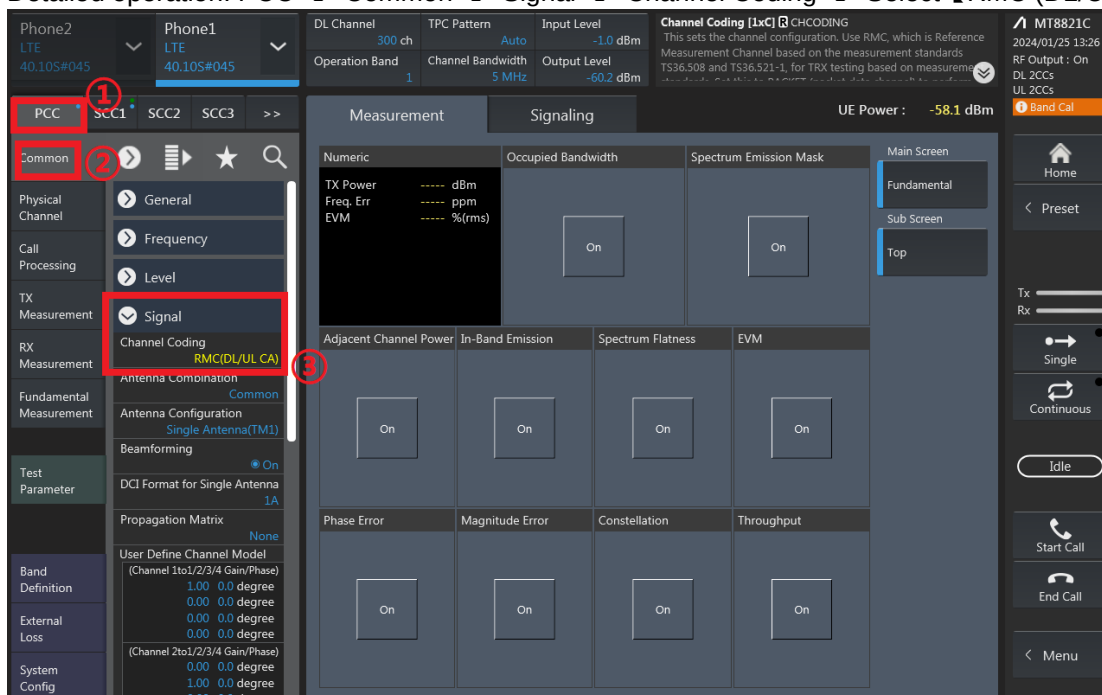
1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.



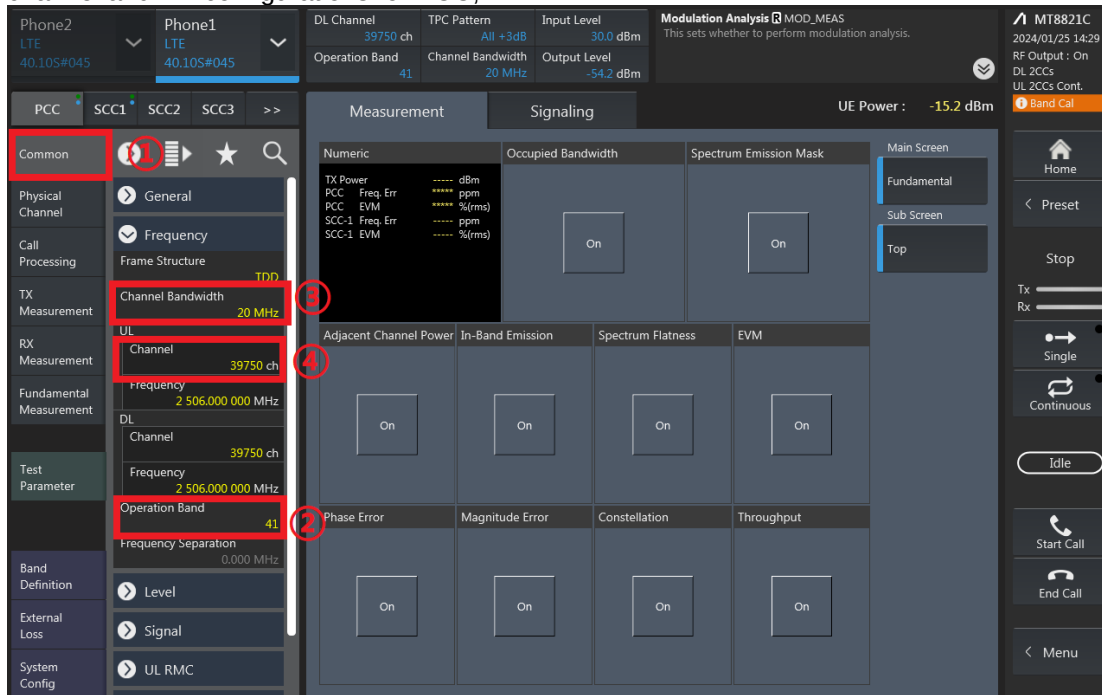
2. If Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
If Select "RMC (DL CA)" for Downlink Carrier Aggregation.

For example, Uplink Carrier Aggregation:

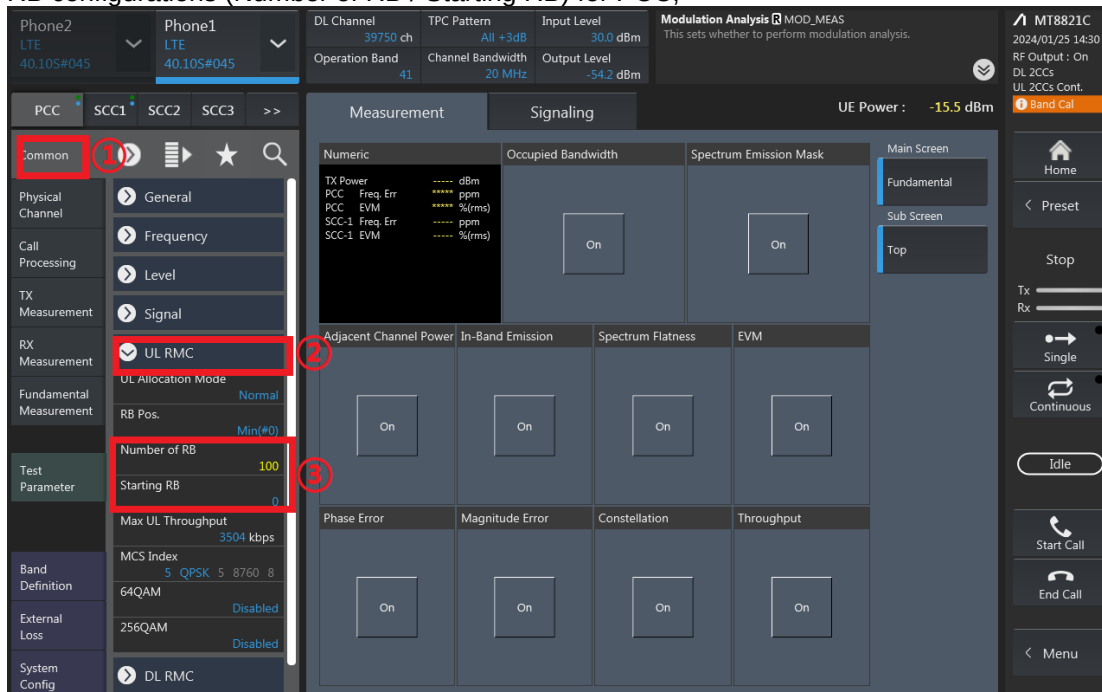
Detailed operation: PCC → Common → Signal → Channel Coding → Select 【RMC (DL/UL CA)】



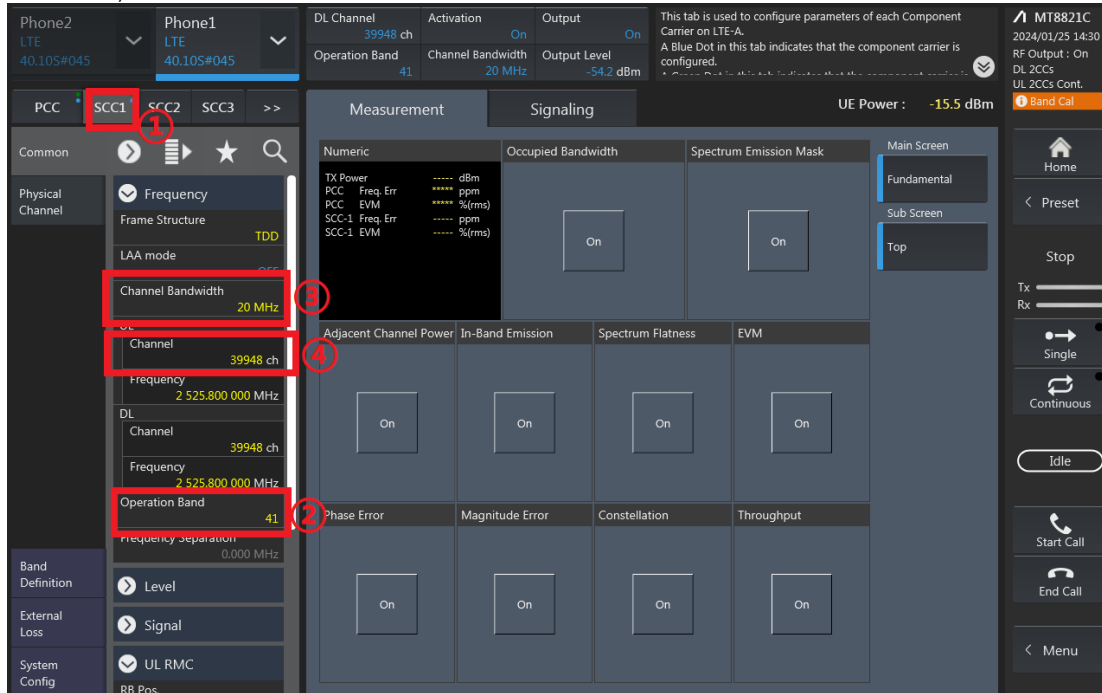
3. PCC parameter Settings: on the screen, and then select the PCC tab and Set operating band, BW, channel and RB configurations for PCC;



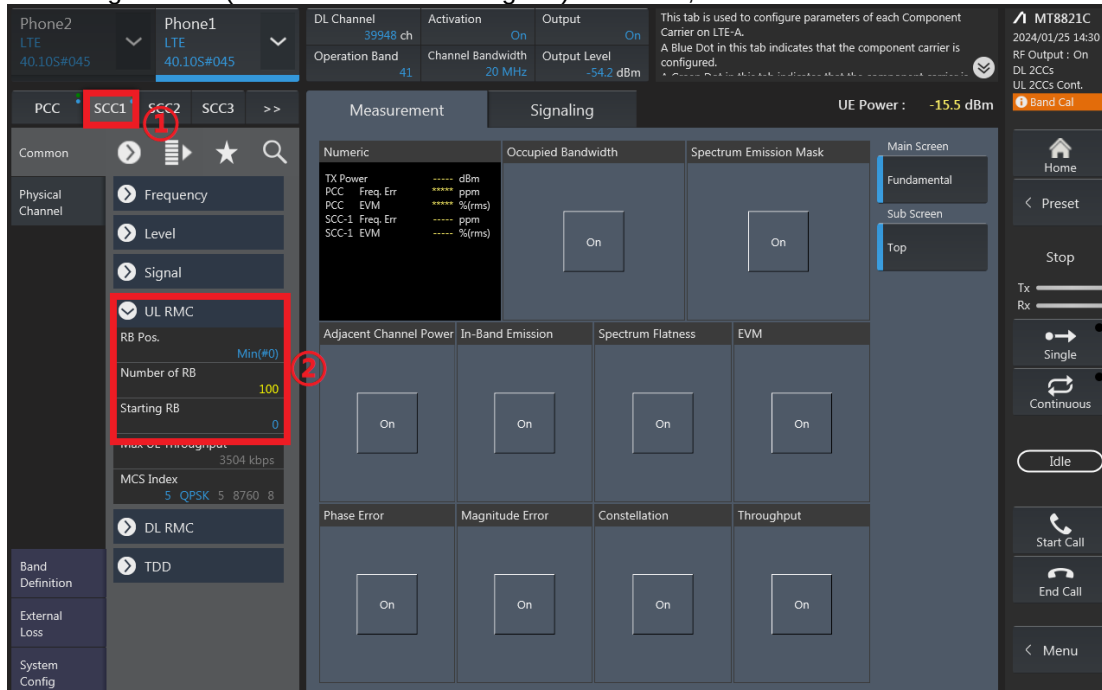
RB configurations (Number of RB / Starting RB) for PCC;



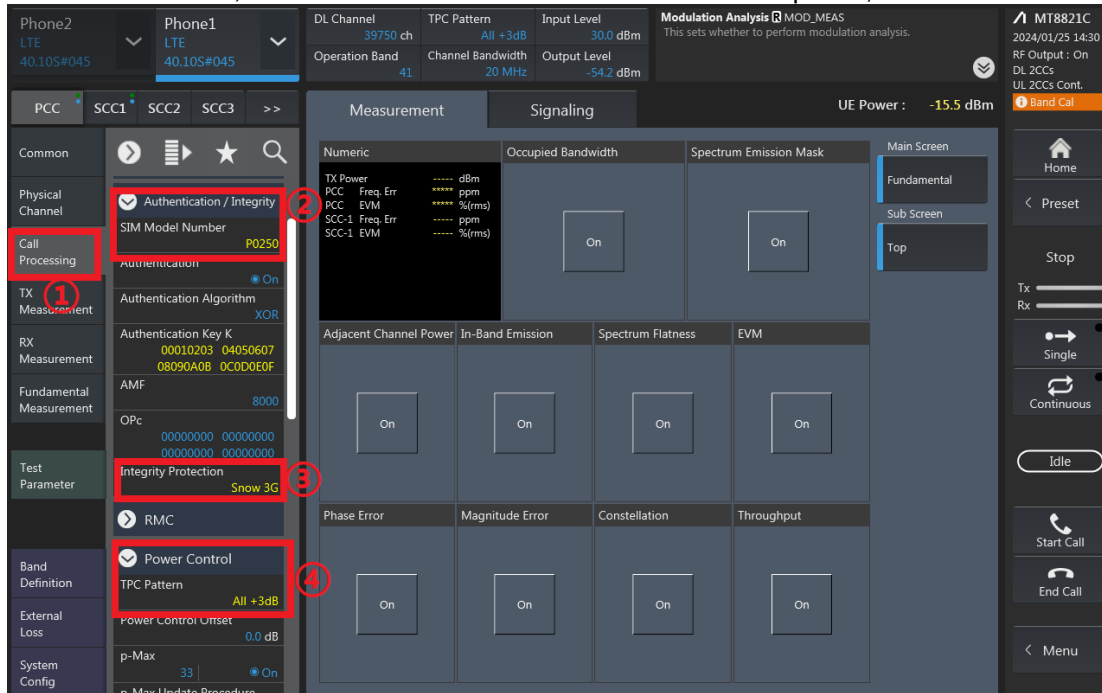
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



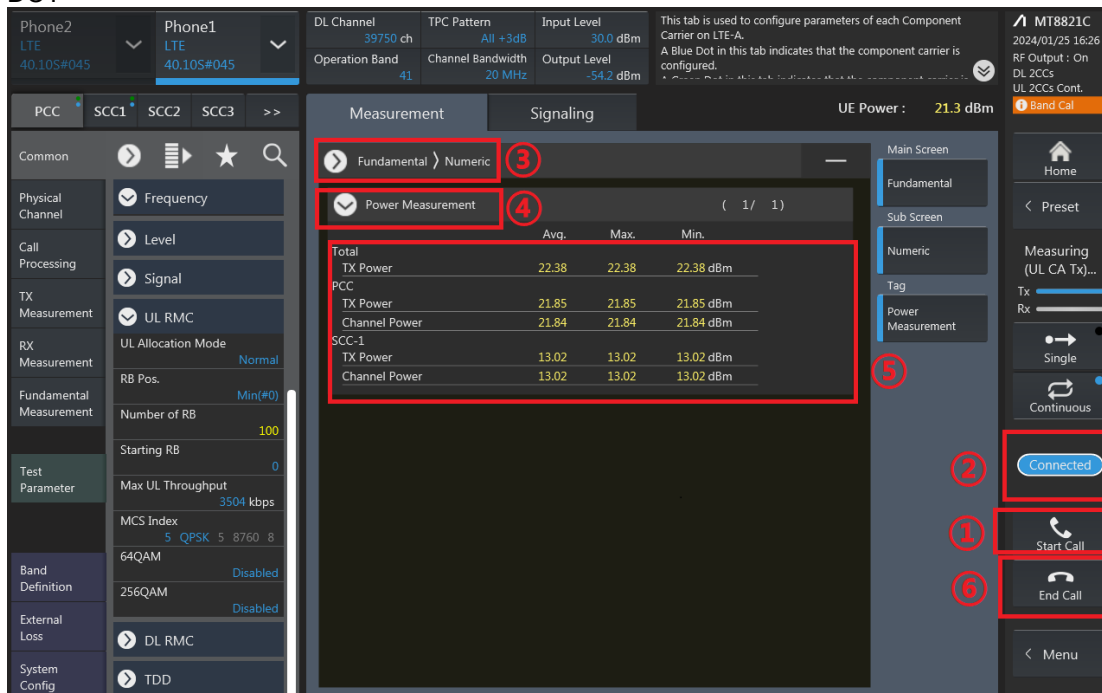
RB configurations (Number of RB / Starting RB) for SCC1;



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

Uplink CA Power

Ant2								
CA_2C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
18700	18898	QPSK	1	99	1	0	22.53	24.50
18900	19098	QPSK	1	99	1	0	22.75	24.50
19100	18902	QPSK	1	0	1	99	22.53	24.50

Ant2								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	99	1	0	22.54	24.50
21100	21298	QPSK	1	99	1	0	22.67	24.50
21350	21152	QPSK	1	0	1	99	22.62	24.50

Ant2								
CA_38C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
37850	38048	QPSK	1	99	1	0	23.29	25.00
37901	38099	QPSK	1	99	1	0	23.45	25.00
38150	37952	QPSK	1	0	1	99	23.33	25.00

Ant2								
CA_66C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132072	132270	QPSK	1	99	1	0	22.73	24.50
132322	132520	QPSK	1	99	1	0	22.76	24.50
132572	132374	QPSK	1	0	1	99	22.61	24.50

Ant2								
CA_66B								
Combination 15MHz+5MHz (75RB+25RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132047	132140	QPSK	1	74	1	0	22.62	24.50
132322	132415	QPSK	1	74	1	0	22.71	24.50
132597	132504	QPSK	1	0	1	24	22.52	24.50

Ant3								
CA_42C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
42190	42388	QPSK	1	99	1	0	23.99	25.00
42590	42788	QPSK	1	99	1	0	24.12	25.00
42990	42792	QPSK	1	0	1	99	24.06	25.00

Uplink CA DSI4&5 Power

Ant2								
CA_2C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
18700	18898	QPSK	1	99	1	0	18.12	20.00
18900	19098	QPSK	1	99	1	0	18.35	20.00
19100	18902	QPSK	1	0	1	99	18.22	20.00

Ant2								
CA_38C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
37850	38048	QPSK	1	99	1	0	17.26	19.00
37901	38099	QPSK	1	99	1	0	17.32	19.00
38150	37952	QPSK	1	0	1	99	17.18	19.00

Ant2								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	99	1	0	15.70	17.50
21100	21298	QPSK	1	99	1	0	15.85	17.50
21350	21152	QPSK	1	0	1	99	15.72	17.50

Ant2								
CA_66C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132072	132270	QPSK	1	99	1	0	18.66	20.50
132322	132520	QPSK	1	99	1	0	18.89	20.50
132572	132374	QPSK	1	0	1	99	18.71	20.50

Ant2								
CA_66B								
Combination 15MHz+5MHz (75RB+25RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132047	132140	QPSK	1	74	1	0	18.54	20.50
132322	132415	QPSK	1	74	1	0	18.81	20.50
132597	132504	QPSK	1	0	1	24	18.65	20.50

Ant3								
CA_42C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
42190	42388	QPSK	1	99	1	0	21.95	23.00
42590	42788	QPSK	1	99	1	0	22.08	23.00
42990	42792	QPSK	1	0	1	99	21.78	23.00

Uplink CA DSI1&3 Power

Ant2								
CA_2C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
18700	18898	QPSK	1	99	1	0	21.15	23.00
18900	19098	QPSK	1	99	1	0	21.33	23.00
19100	18902	QPSK	1	0	1	99	21.18	23.00

Ant2								
CA_38C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
37850	38048	QPSK	1	99	1	0	23.29	25.00
37901	38099	QPSK	1	99	1	0	23.45	25.00
38150	37952	QPSK	1	0	1	99	23.33	25.00

Ant2								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	99	1	0	20.66	22.50
21100	21298	QPSK	1	99	1	0	20.85	22.50
21350	21152	QPSK	1	0	1	99	20.64	22.50

Ant2								
CA_66C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132072	132270	QPSK	1	99	1	0	22.73	24.50
132322	132520	QPSK	1	99	1	0	22.76	24.50
132572	132374	QPSK	1	0	1	99	22.61	24.50

Ant2								
CA_66B								
Combination 15MHz+5MHz (75RB+25RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132047	132140	QPSK	1	74	1	0	22.62	24.50
132322	132415	QPSK	1	74	1	0	22.71	24.50
132597	132504	QPSK	1	0	1	24	22.52	24.50

Ant3								
CA_42C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
42190	42388	QPSK	1	99	1	0	20.84	22.00
42590	42788	QPSK	1	99	1	0	21.01	22.00
42990	42792	QPSK	1	0	1	99	20.88	22.00

Uplink CA DSI2&6 Power

Ant2								
CA_2C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
18700	18898	QPSK	1	99	1	0	22.53	24.50
18900	19098	QPSK	1	99	1	0	22.75	24.50
19100	18902	QPSK	1	0	1	99	22.53	24.50

Ant2								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	99	1	0	22.54	24.50
21100	21298	QPSK	1	99	1	0	22.67	24.50
21350	21152	QPSK	1	0	1	99	22.62	24.50

Ant2								
CA_38C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
37850	38048	QPSK	1	99	1	0	23.29	25.00
37901	38099	QPSK	1	99	1	0	23.45	25.00
38150	37952	QPSK	1	0	1	99	23.33	25.00

Ant2								
CA_66C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132072	132270	QPSK	1	99	1	0	22.73	24.50
132322	132520	QPSK	1	99	1	0	22.76	24.50
132572	132374	QPSK	1	0	1	99	22.61	24.50

Ant2								
CA_66B								
Combination 15MHz+5MHz (75RB+25RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
132047	132140	QPSK	1	74	1	0	22.62	24.50
132322	132415	QPSK	1	74	1	0	22.71	24.50
132597	132504	QPSK	1	0	1	24	22.52	24.50

Ant3								
CA_42C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
42190	42388	QPSK	1	99	1	0	20.84	22.00
42590	42788	QPSK	1	99	1	0	21.01	22.00
42990	42792	QPSK	1	0	1	99	20.88	22.00