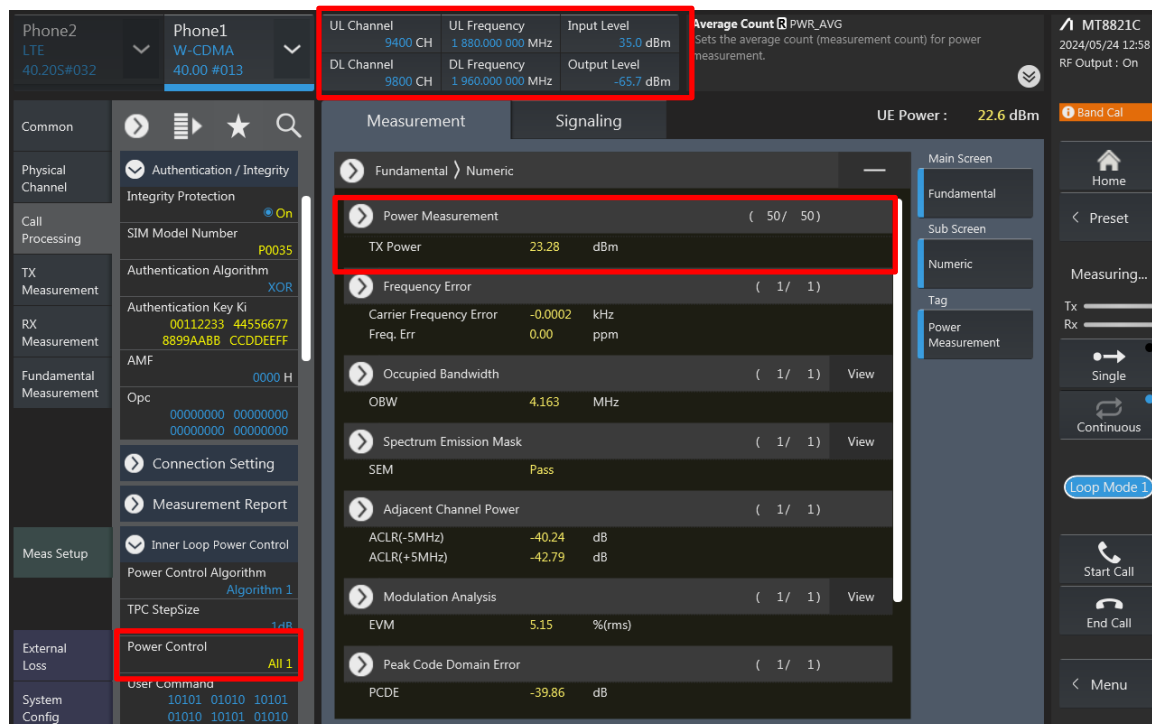


Power measurement connection diagram:

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>

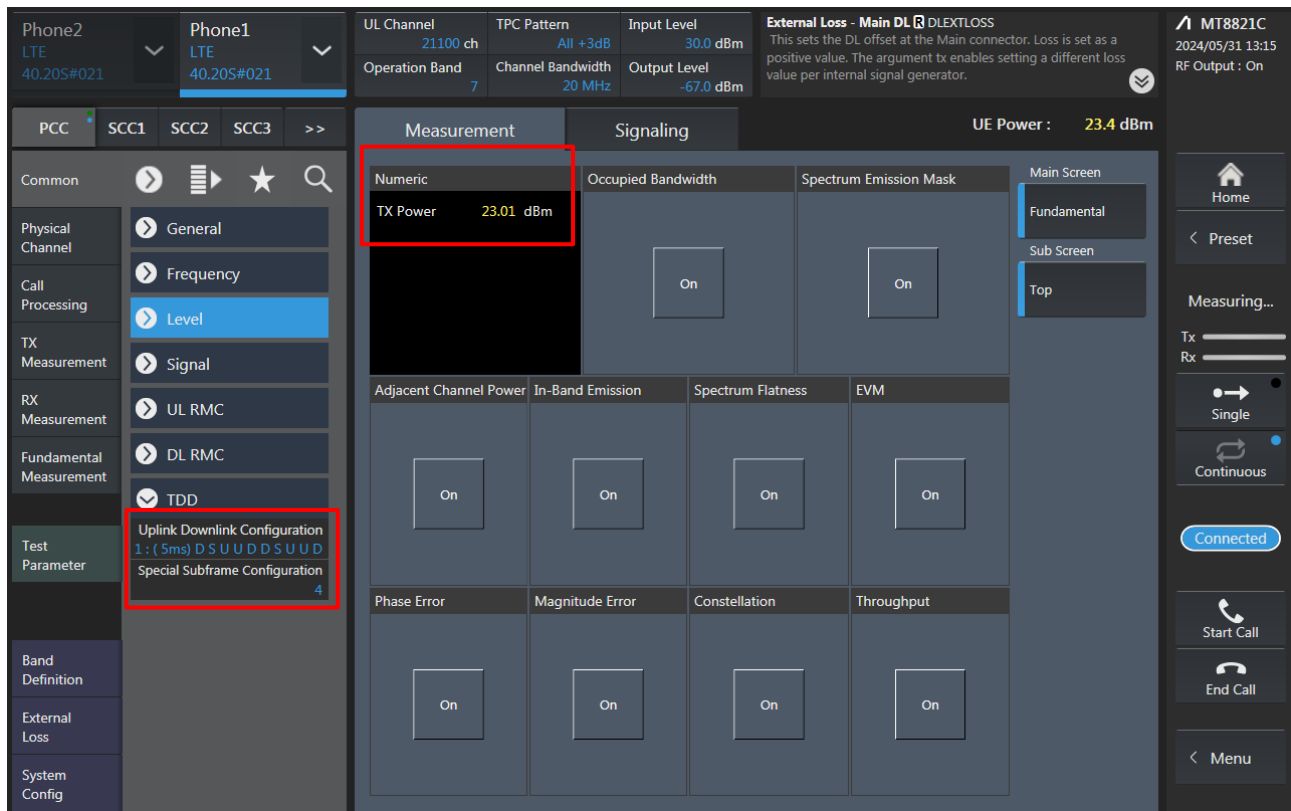


The screenshot displays the MT8821C software interface for WCDMA power measurement. The interface is divided into several sections:

- 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 results for Power Measurement. The results are as follows:

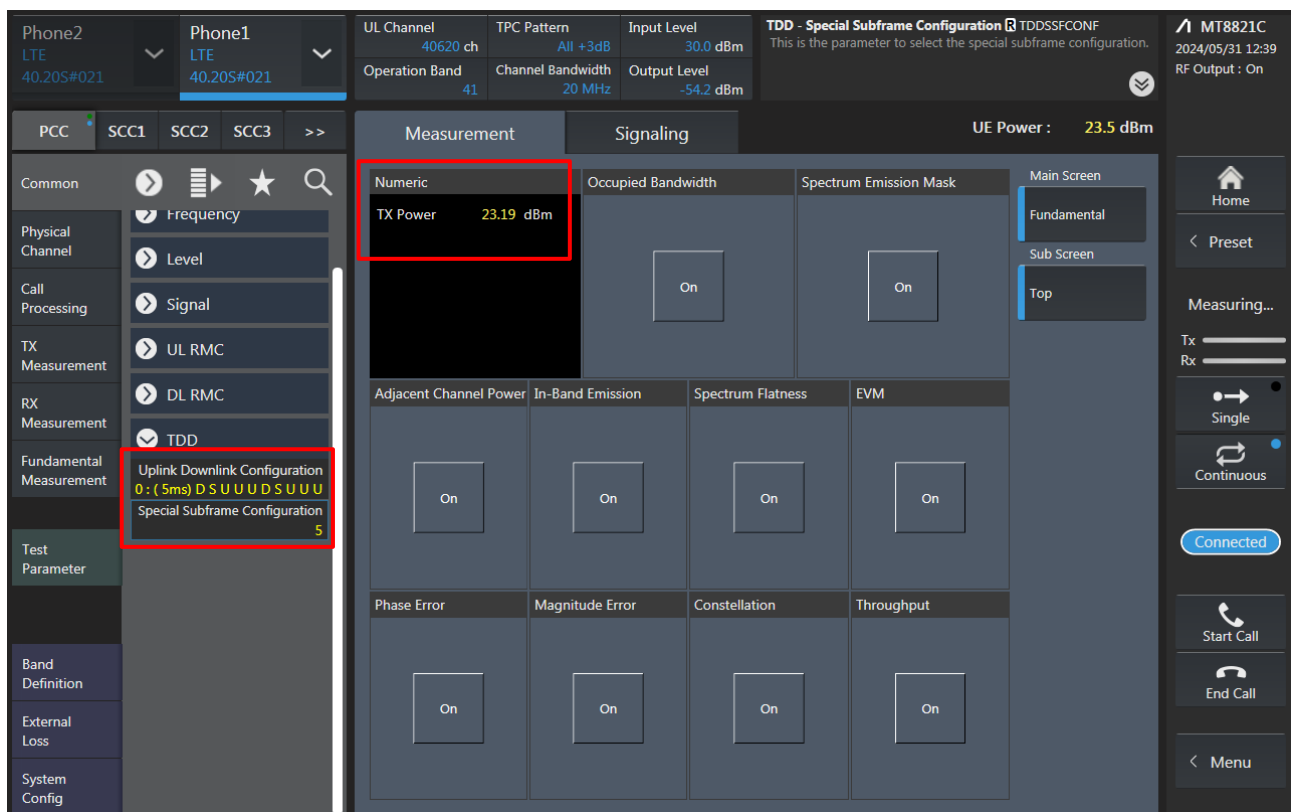
Measurement	Value	Unit
TX Power	23.28	dBm
Frequency Error	-0.0002	kHz
Carrier Frequency Error	0.00	ppm
Occupied Bandwidth	4.163	MHz
Spectrum Emission Mask	Pass	
Adjacent Channel Power	-40.24	dB
ACLR(-5MHz)	-42.79	dB
ACLR(+5MHz)		
Modulation Analysis	5.15	%(rms)
Peak Code Domain Error	-39.86	dB
PCDE		
- Right Panel:** Includes buttons for Home, Preset, Measuring..., Single, Continuous, Loop Mode 1, Start Call, End Call, and Menu.

<LTE>



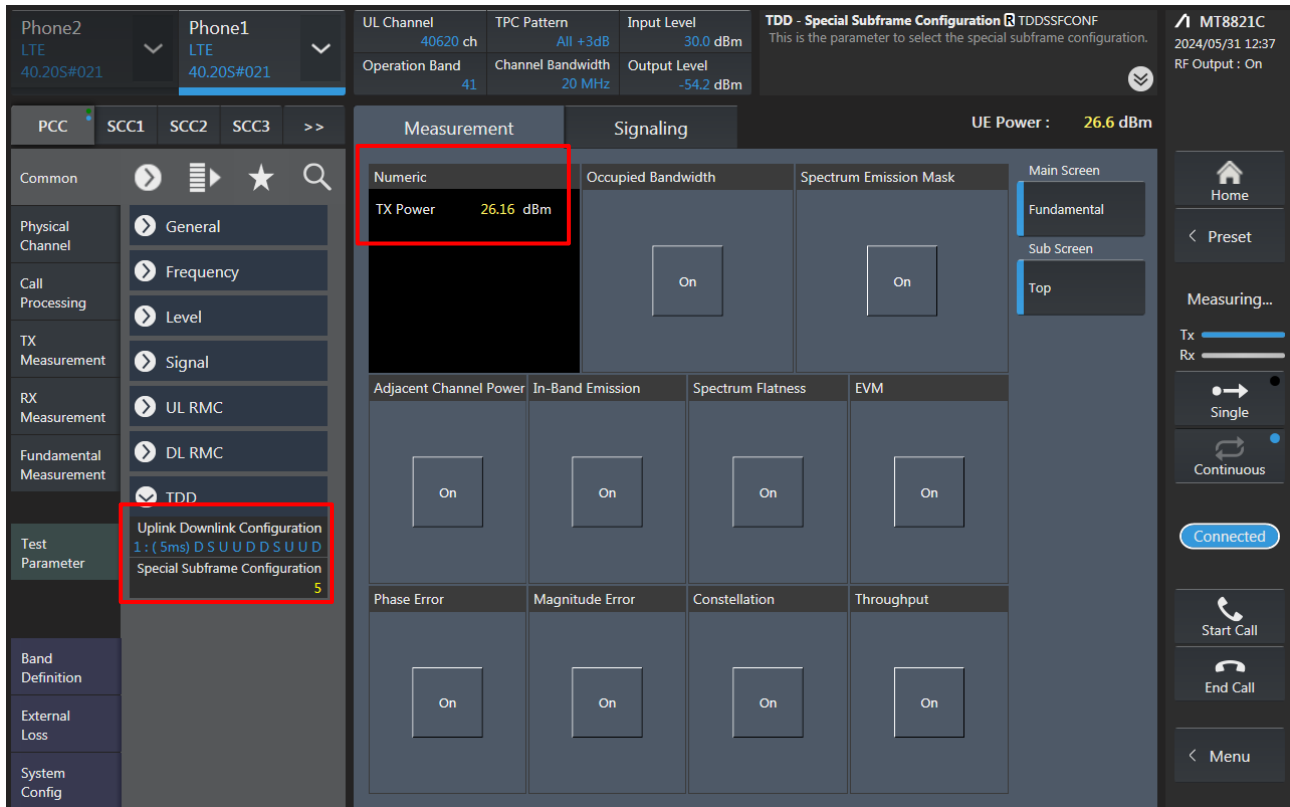
The screenshot shows the LTE measurement interface. The top bar displays 'Phone2' and 'Phone1' both set to 'LTE 40.20S#021'. The 'Measurement' tab is active, showing 'TX Power' at 23.01 dBm. The 'Signaling' tab shows 'Occupied Bandwidth' and 'Spectrum Emission Mask' both set to 'On'. The 'Main Screen' shows 'Fundamental' and 'Sub Screen' both set to 'On'. The 'Test Parameter' section shows '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 'External Loss - Main DL' is 0 dB. The 'MT8821C' status is '2024/05/31 13:15 RF Output : On'.

<LTE TDD Power class 3>



The screenshot shows the LTE TDD Power class 3 measurement interface. The top bar displays 'Phone2' and 'Phone1' both set to 'LTE 40.20S#021'. The 'Measurement' tab is active, showing 'TX Power' at 23.19 dBm. The 'Signaling' tab shows 'Occupied Bandwidth' and 'Spectrum Emission Mask' both set to 'On'. The 'Main Screen' shows 'Fundamental' and 'Sub Screen' both set to 'On'. The 'Test Parameter' section shows 'Uplink Downlink Configuration 0: (5ms) D S U U U D S U U U' and 'Special Subframe Configuration 5'. The 'UE Power' is 23.5 dBm. The 'TDD - Special Subframe Configuration' is 0. The 'MT8821C' status is '2024/05/31 13:39 RF Output : On'.

<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

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

TDD - Special Subframe Configuration TDDSSCONF This is the parameter to select the special subframe configuration.

MT8821C 2024/05/31 12:37 RF Output : On

UE Power : 26.6 dBm

Measurement Signaling

Numeric Occupied Bandwidth Spectrum Emission Mask

TX Power 26.16 dBm

On On

Adjacent Channel Power In-Band Emission Spectrum Flatness EVM

On On On On

Phase Error Magnitude Error Constellation Throughput

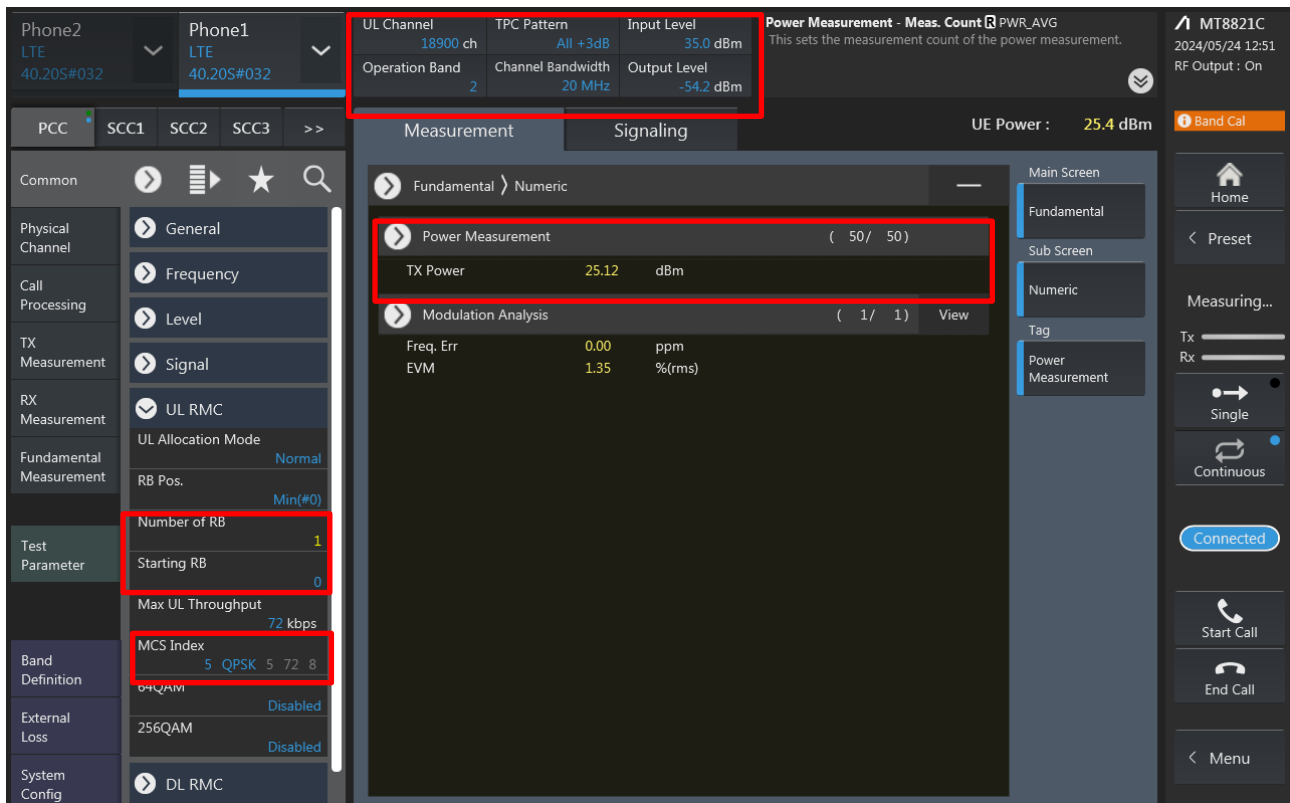
On On On On

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

General Frequency Level Signal UL RMC DL RMC TDD Uplink Downlink Configuration 1: (5ms) D S U U D D S U U D Special Subframe Configuration 5

Main Screen Fundamental Sub Screen Top

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



Phone2 LTE 40.20S#032 Phone1 LTE 40.20S#032

UL Channel 18900 ch TPC Pattern All +3dB Input Level 35.0 dBm

Operation Band 2 Channel Bandwidth 20 MHz Output Level -54.2 dBm

Power Measurement - Meas. Count PWR_AVG This sets the measurement count of the power measurement.

MT8821C 2024/05/24 12:51 RF Output : On

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)

Number of RB 1

Starting RB 0

Max UL Throughput 72 kbps

MCS Index 5 QPSK 5 72 8

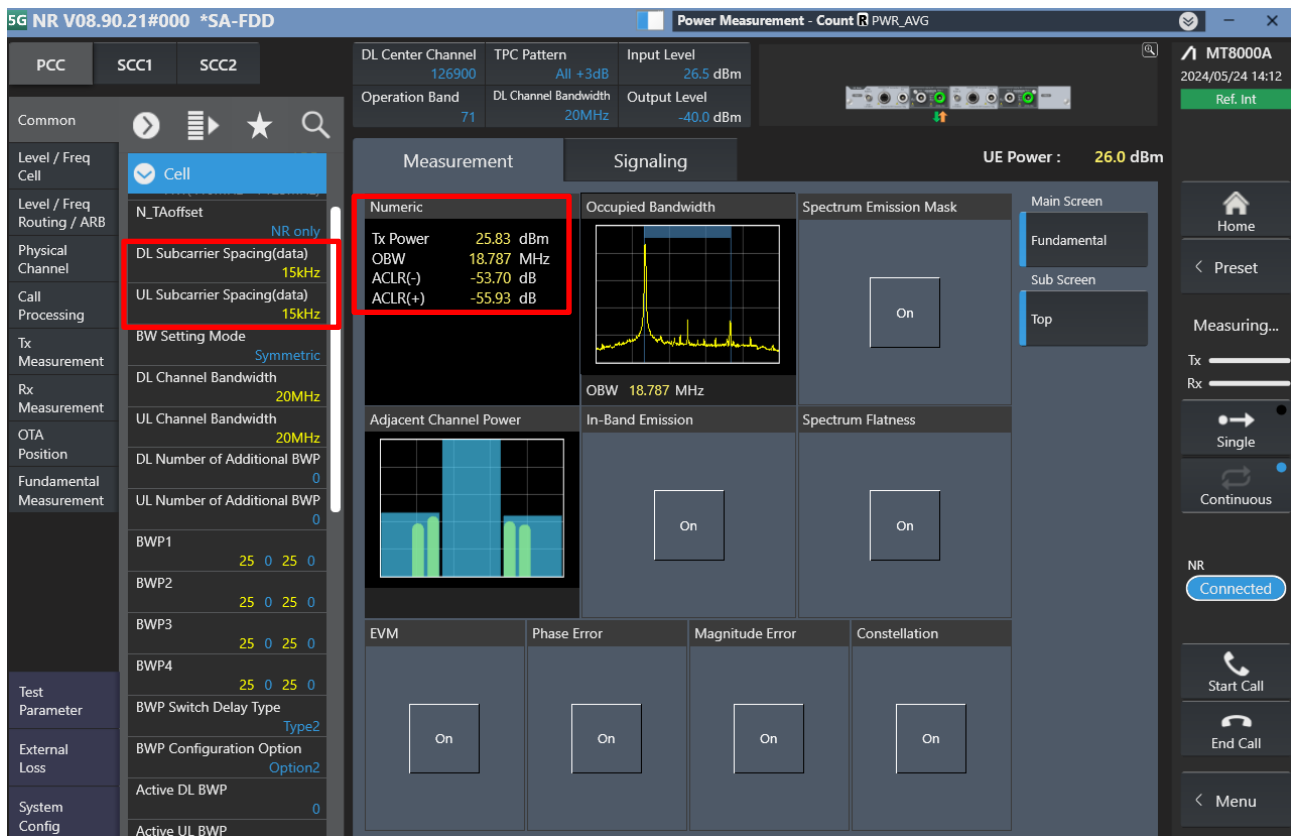
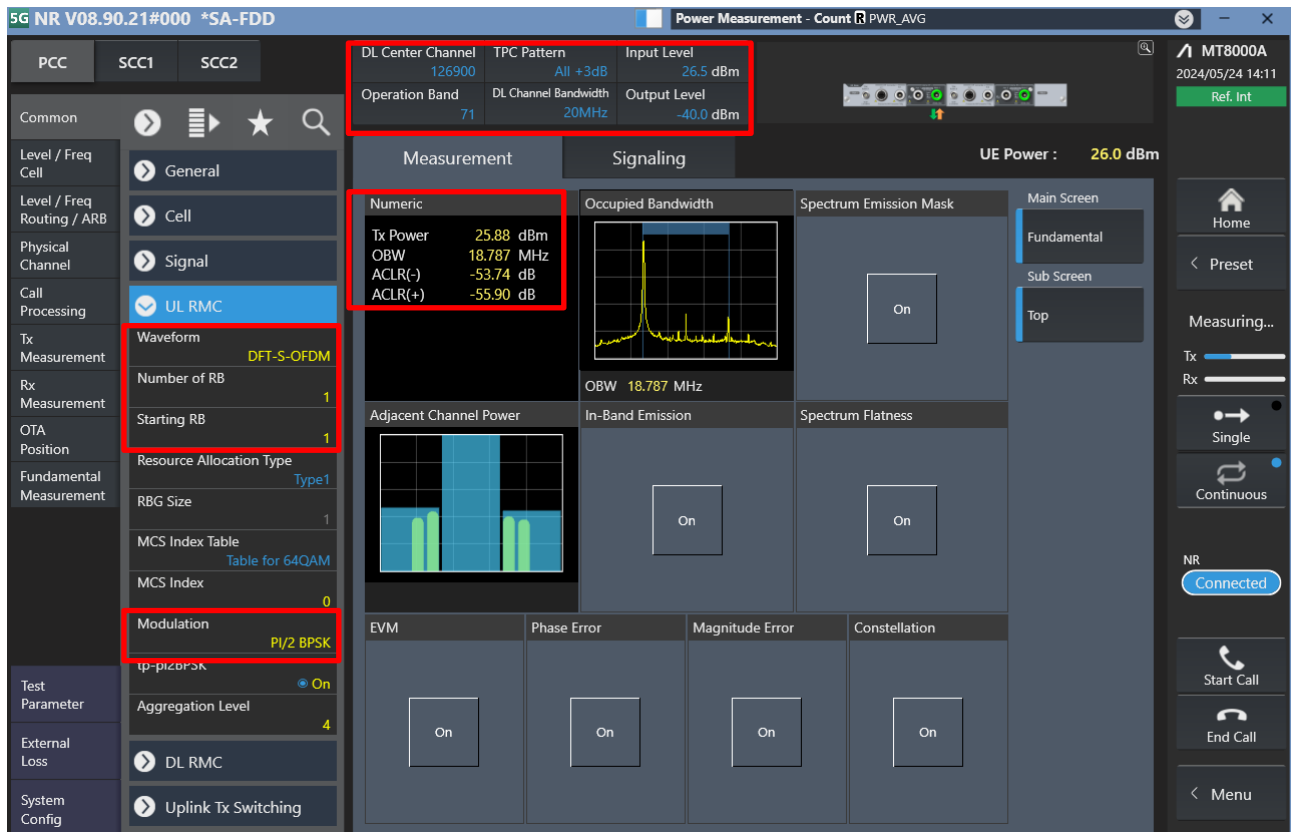
Common Physical Channel Call Processing TX Measurement RX Measurement Fundamental Measurement Test Parameter Band Definition External Loss System Config

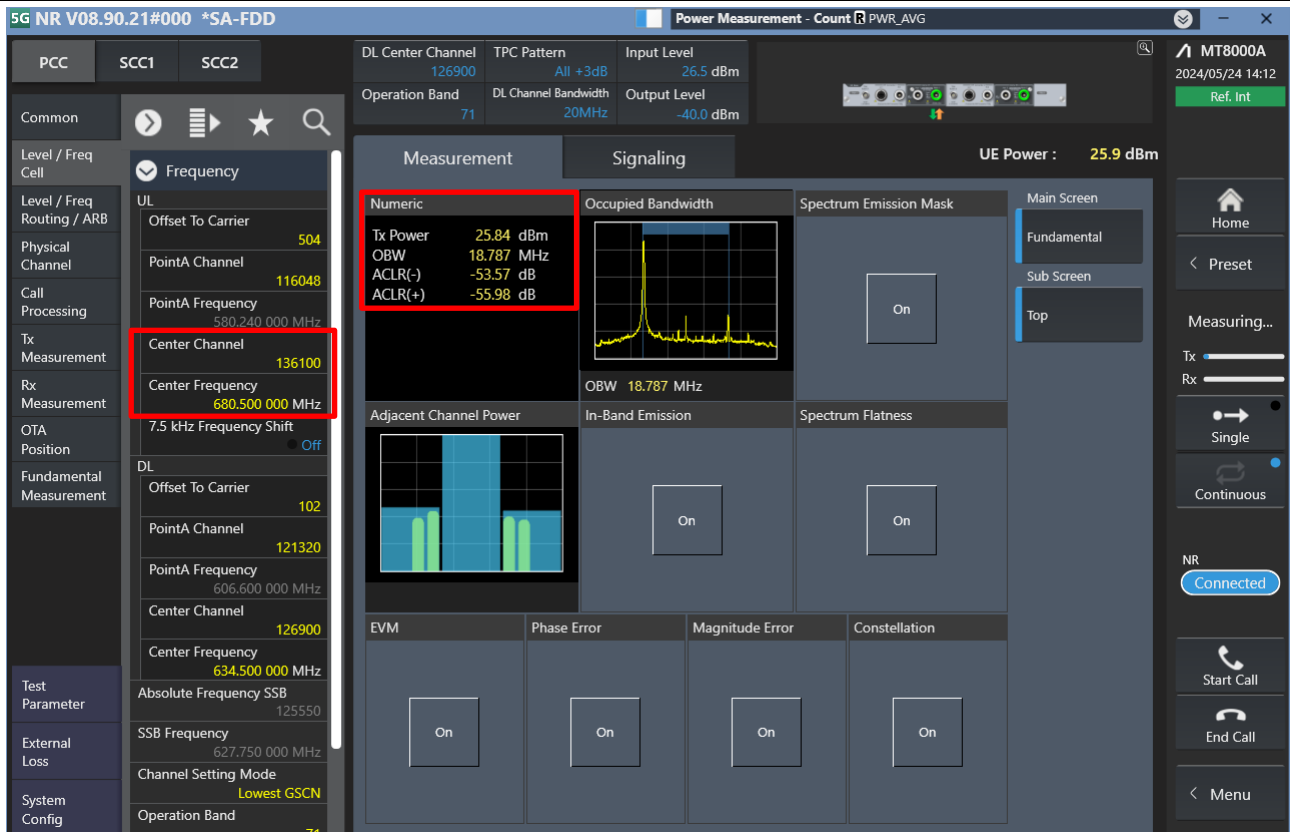
General Frequency Level Signal UL RMC UL Allocation Mode Normal RB Pos. Min(#0) Number of RB 1 Starting RB 0 Max UL Throughput 72 kbps MCS Index 5 QPSK 5 72 8 256QAM Disabled 256QAM Disabled DL RMC

Main Screen Fundamental Sub Screen Numeric Tag Power Measurement

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

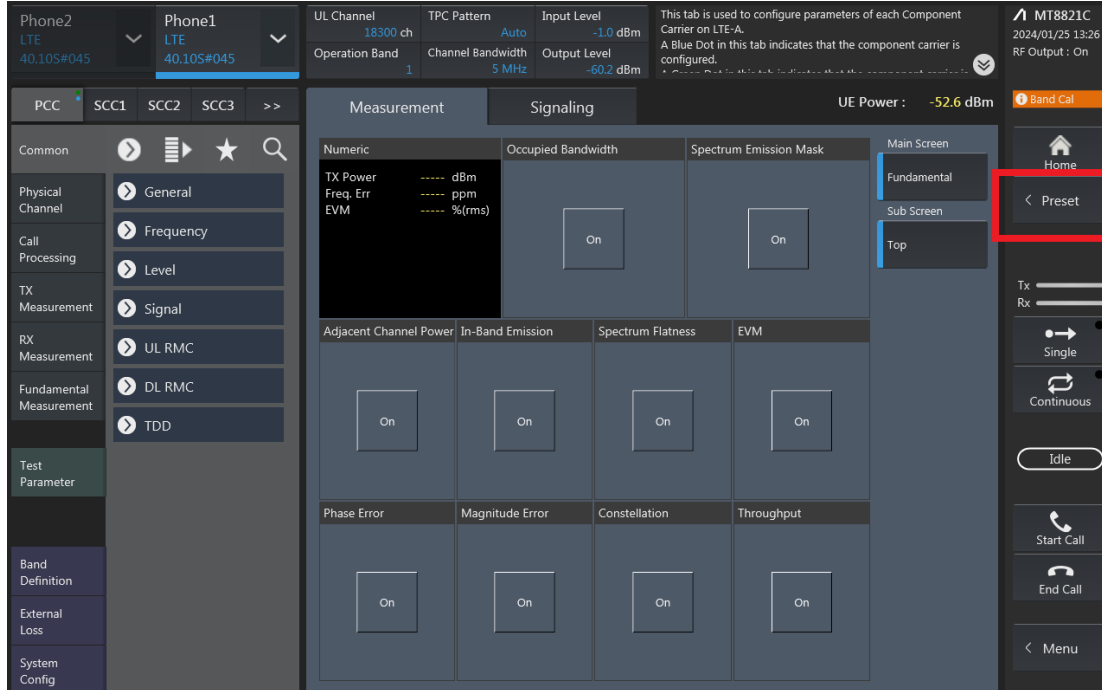
<5G NR FR1>





LTE Uplink and Downlink Carrier Aggregation configurations:

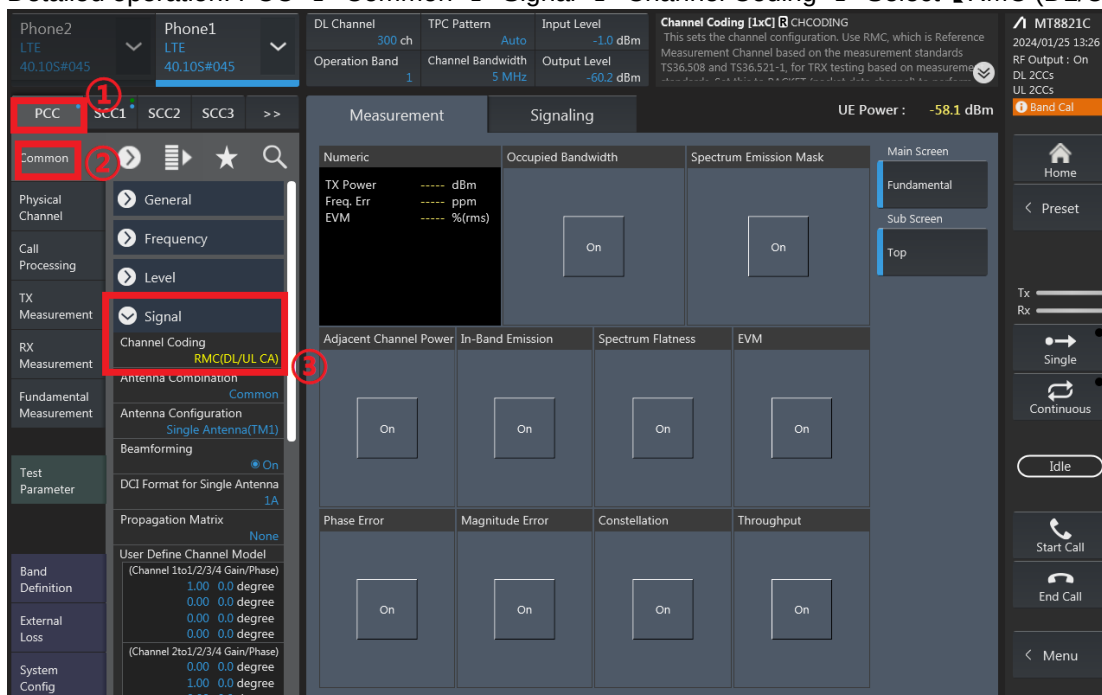
1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.



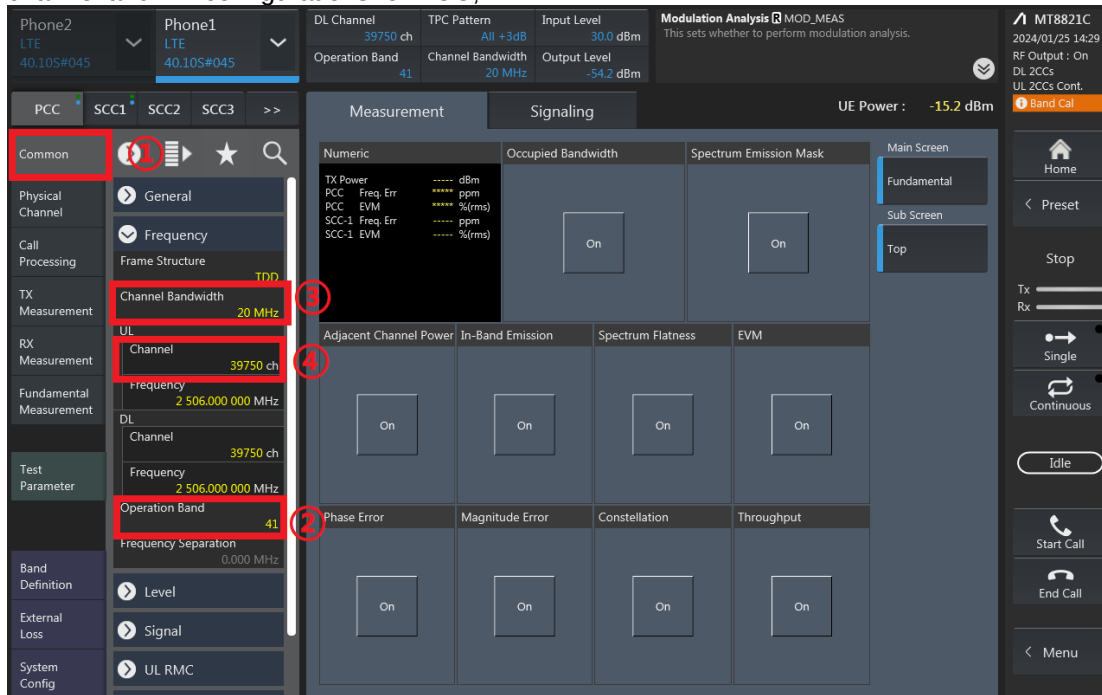
2. If Select "RMC (DL/UL CA)" for Uplink Carrier Aggregation;
If Select "RMC (DL CA)" for Downlink Carrier Aggregation.

For example, Uplink Carrier Aggregation:

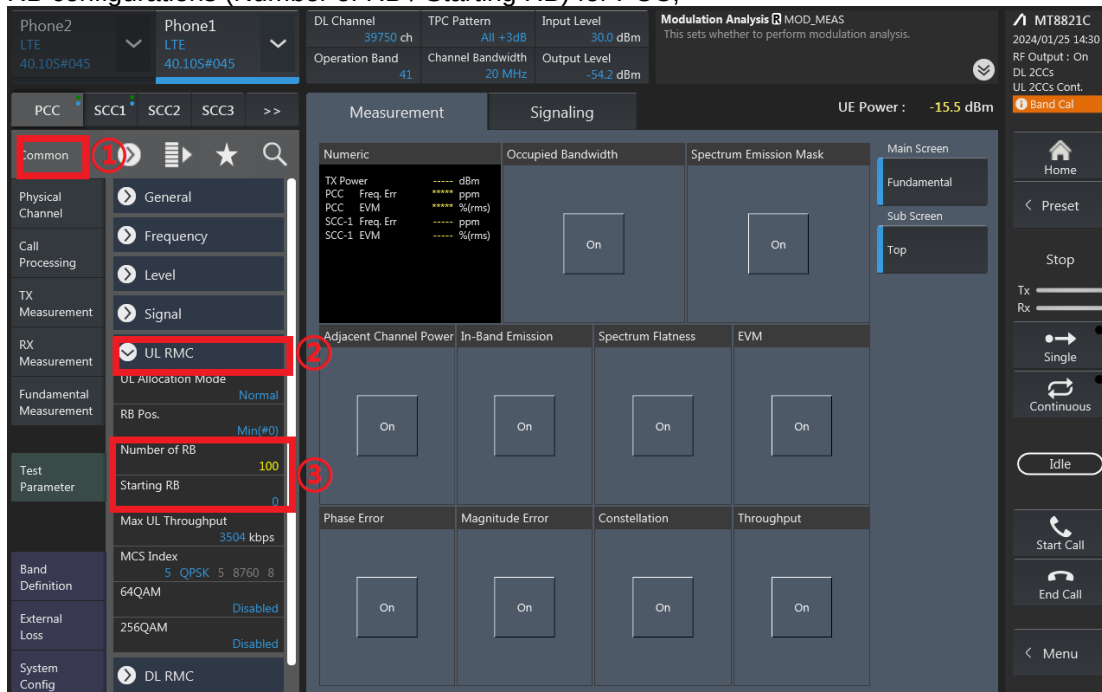
Detailed operation: PCC → Common → Signal → Channel Coding → Select 【RMC (DL/UL CA)】



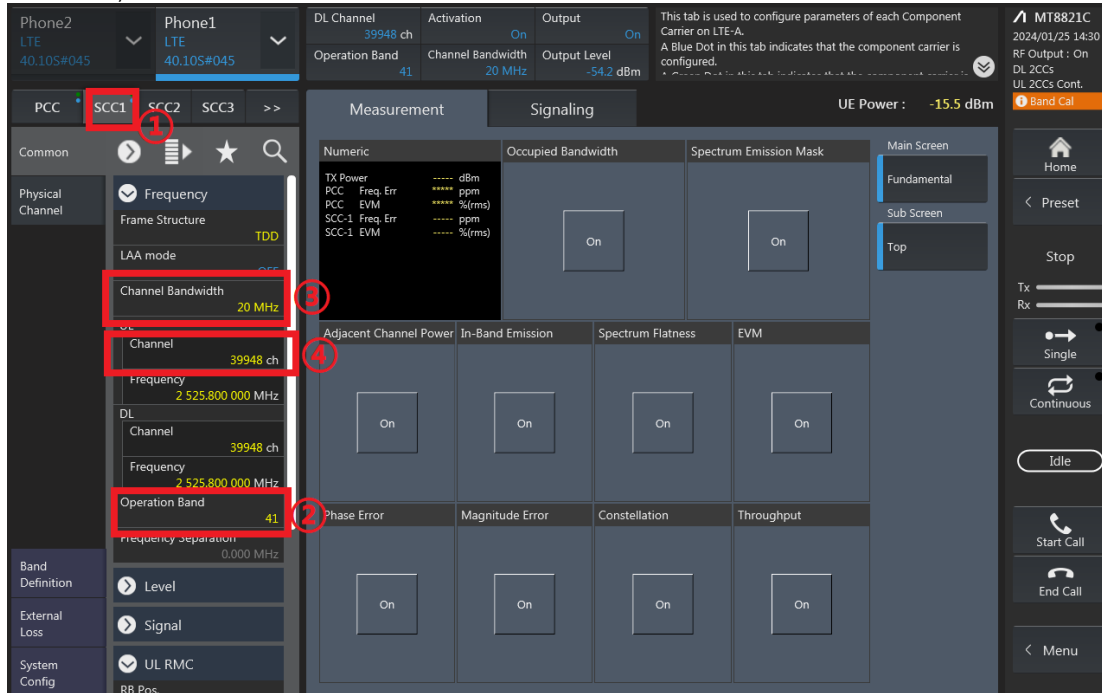
3. PCC parameter Settings: on the screen, and then select the PCC tab and Set operating band, BW, channel and RB configurations for PCC;



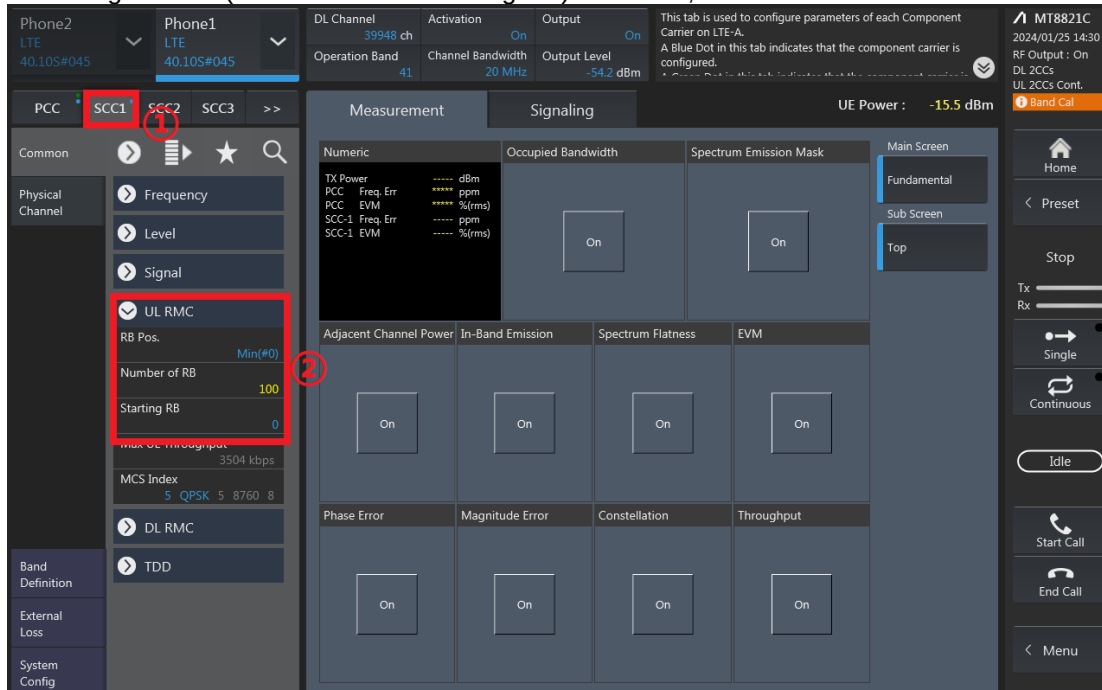
RB configurations (Number of RB / Starting RB) for PCC;



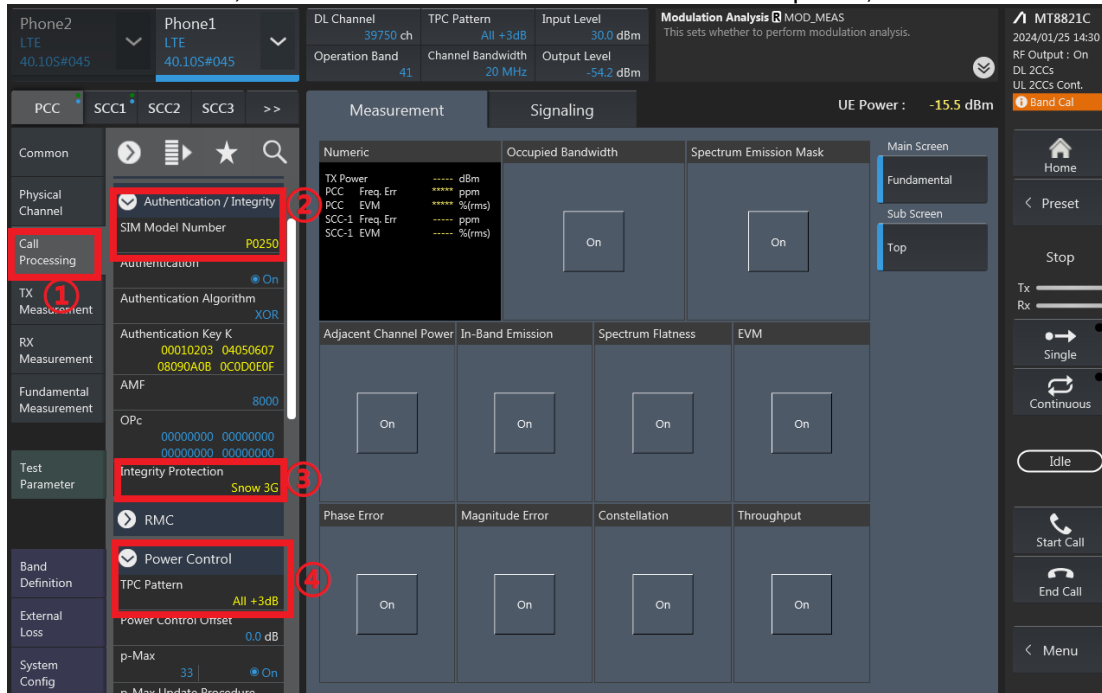
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



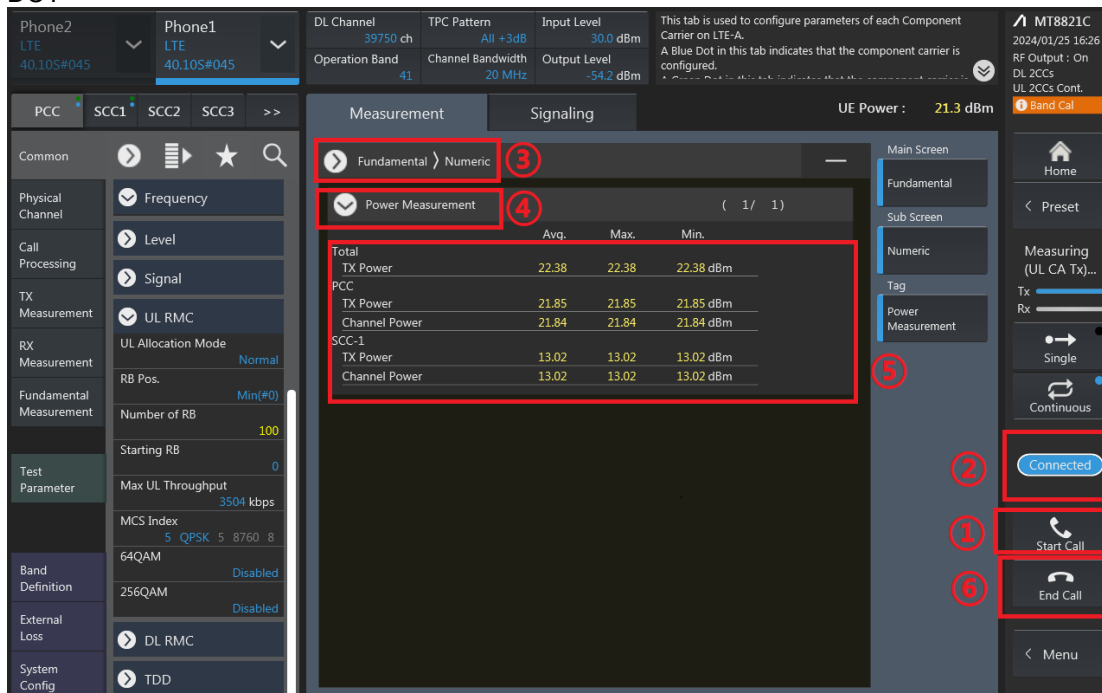
RB configurations (Number of RB / Starting RB) for SCC1;



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