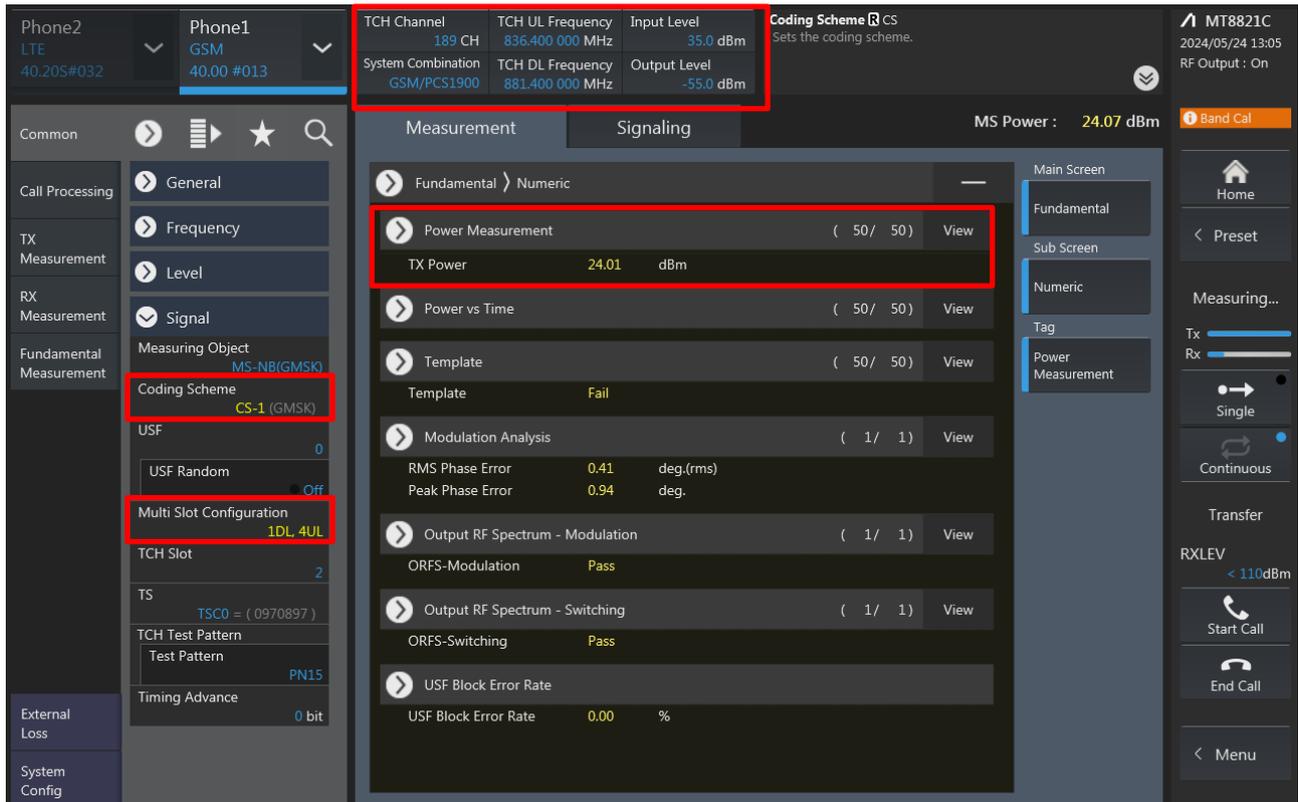


Power measurement connection diagram:

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 configuration and measurement settings for a GSM call. The interface is divided into several sections:

- Top Bar:** Shows 'Phone2 LTE 40.20S#032' and 'Phone1 GSM 40.00 #013'. A table lists:

TCH Channel	189 CH	TCH UL Frequency	836.400 000 MHz	Input Level	35.0 dBm
System Combination	GSM/PCS1900	TCH DL Frequency	881.400 000 MHz	Output Level	-55.0 dBm
- Left Panel:** Contains configuration options for 'Call Processing', 'TX Measurement', 'RX Measurement', and 'Fundamental Measurement'. Under 'Fundamental Measurement', 'Coding Scheme' is set to 'CS-1 (GMSK)' and 'Multi Slot Configuration' is set to '1DL, 4UL'. Other settings include 'Measuring Object: MS-NB(GMSK)', 'USF: 0', 'USF Random: Off', 'TCH Slot: 2', 'TS: TSCO = (0970897)', 'TCH Test Pattern: PN15', and 'Timing Advance: 0 bit'.
- Main Panel:** Shows 'Measurement' and 'Signaling' tabs. Under 'Measurement', 'Power Measurement' is selected, showing 'TX Power: 24.01 dBm'. Other items include 'Power vs Time', 'Template', 'Modulation Analysis' (RMS Phase Error: 0.41 deg.(rms), Peak Phase Error: 0.94 deg.), 'Output RF Spectrum - Modulation' (ORFS-Modulation: Pass), 'Output RF Spectrum - Switching' (ORFS-Switching: Pass), and 'USF Block Error Rate' (USF Block Error Rate: 0.00 %).
- Right Panel:** Shows 'MS Power: 24.07 dBm', 'Band Cal', and navigation buttons like 'Home', 'Preset', 'Measuring...', 'Single', 'Continuous', 'Transfer', 'Start Call', 'End Call', and 'Menu'.

<WCDMA>

The screenshot displays the WCDMA measurement interface. At the top, it shows 'Phone1 W-CDMA 40.00 #013'. The 'Measurement' tab is active, showing 'Fundamental' and 'Numeric' views. A red box highlights the 'Power Measurement' section, which includes 'TX Power' at 23.28 dBm. Other parameters shown include UL Channel (9400 CH), UL Frequency (1.880.000.000 MHz), Input Level (35.0 dBm), DL Channel (9800 CH), and DL Frequency (1.960.000.000 MHz). The 'External Loss' is set to 'All 1'. The UE Power is 22.6 dBm.

<LTE>

The screenshot displays the LTE measurement interface. At the top, it shows 'Phone1 LTE 40.20S#021'. The 'Measurement' tab is active, showing 'Numeric' and 'Occupied Bandwidth' views. A red box highlights the 'TX Power' at 23.01 dBm. Other parameters shown include UL Channel (21100 ch), TPC Pattern (All +3dB), Input Level (30.0 dBm), Operation Band (7), Channel Bandwidth (20 MHz), and Output Level (-67.0 dBm). The 'External Loss - Main DL' is set to 'DLEXTLOSS'. The UE Power is 23.4 dBm. 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 interface also shows various measurement results like Adjacent Channel Power, In-Band Emission, Spectrum Flatness, EVM, Phase Error, Magnitude Error, Constellation, and Throughput, all with 'On' status.



<LTE TDD Power class 3>

The screenshot displays the LTE TDD Power class 3 measurement interface. At the top, it shows two phone configurations: Phone2 (LTE, 40.20S#021) and Phone1 (LTE, 40.20S#021). Key parameters include UL Channel (40620 ch), TPC Pattern (All +3dB), Input Level (30.0 dBm), Operation Band (41), Channel Bandwidth (20 MHz), and Output Level (-54.2 dBm). The TDD - Special Subframe Configuration is set to TDDSSFCONF 5, with a note: "This is the parameter to select the special subframe configuration." The UE Power is 23.5 dBm. The interface is divided into Measurement and Signaling sections. The Measurement section includes a Numeric table with TX Power at 23.19 dBm, and various emission and error metrics (Occupied Bandwidth, Spectrum Emission Mask, Adjacent Channel Power, In-Band Emission, Spectrum Flatness, EVM, Phase Error, Magnitude Error, Constellation, Throughput) all set to "On". The Signaling section includes Main Screen (Fundamental, Sub Screen, Top) and a "Connected" status. A sidebar on the left lists various measurement categories, with "TDD" selected and its configuration (Uplink Downlink Configuration 0: (5ms) DSUUU DSUUU, Special Subframe Configuration 5) highlighted in a red box.

Measurement	Value
Numeric	
TX Power	23.19 dBm

Occupied Bandwidth	Spectrum Emission Mask
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

<5G NR FR1>

DL RMC Configuration:

- 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 Results:

- Tx Power: 25.88 dBm
- OBW: 18.787 MHz
- ACLR(-): -53.74 dB
- ACLR(+): -55.90 dB

Modulation: PI/2 BPSK

Other Parameters:

- Waveform: DFT-S-OFDM
- Number of RB: 1
- Starting RB: 1
- Resource Allocation Type: Type1
- RBG Size: 1
- MCS Index Table: Table for 64QAM
- MCS Index: 0
- Aggregation Level: 4

DL Subcarrier Spacing Configuration:

- DL Subcarrier Spacing(data): 15kHz
- UL Subcarrier Spacing(data): 15kHz

Measurement Results:

- Tx Power: 25.83 dBm
- OBW: 18.787 MHz
- ACLR(-): -53.70 dB
- ACLR(+): -55.93 dB

Other Parameters:

- N_TAoffset: NR only
- BW Setting Mode: Symmetric
- DL Channel Bandwidth: 20MHz
- UL Channel Bandwidth: 20MHz
- DL Number of Additional BWP: 0
- UL Number of Additional BWP: 0
- BWP1: 25 0 25 0
- BWP2: 25 0 25 0
- BWP3: 25 0 25 0
- BWP4: 25 0 25 0
- BWP Switch Delay Type: Type2
- BWP Configuration Option: Option2
- Active DL BWP: 0
- Active UL BWP: 0



5G NR V08.90.21#000 *SA-FDD

Power Measurement - Count PWR_AVG

MT8000A
2024/05/24 14:12
Ref. Int

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

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

Frequency

UL

Offset To Carrier 504

PointA Channel 116048

PointA Frequency 580.240 000 MHz

Center Channel 136100

Center Frequency 680.500 000 MHz

7.5 kHz Frequency Shift Off

DL

Offset To Carrier 102

PointA Channel 121320

PointA Frequency 606.600 000 MHz

Center Channel 126900

Center Frequency 634.500 000 MHz

Absolute Frequency SSB 125550

SSB Frequency 627.750 000 MHz

Channel Setting Mode Lowest GSCN

Operation Band 71

Measurement

Numeric

Tx Power 25.84 dBm

OBW 18.787 MHz

ACLR(-) -53.57 dB

ACLR(+) -55.98 dB

Occupied Bandwidth

OBW 18.787 MHz

Spectrum Emission Mask

On

Adjacent Channel Power

In-Band Emission

On

Spectrum Flatness

On

EVM

On

Phase Error

On

Magnitude Error

On

Constellation

On

UE Power : 25.9 dBm

Main Screen

Fundamental

Sub Screen

Top

Home

Preset

Measuring...

Tx

Rx

Single

Continuous

NR

Connected

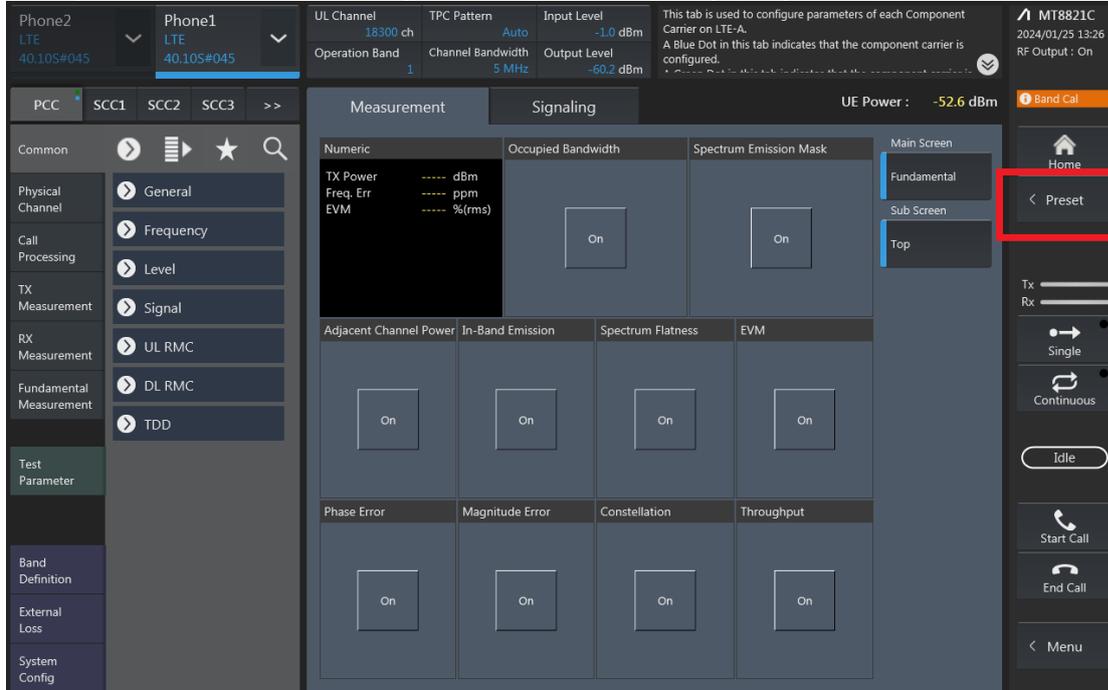
Start Call

End Call

Menu

LTE Uplink and Downlink Carrier Aggregation configurations:

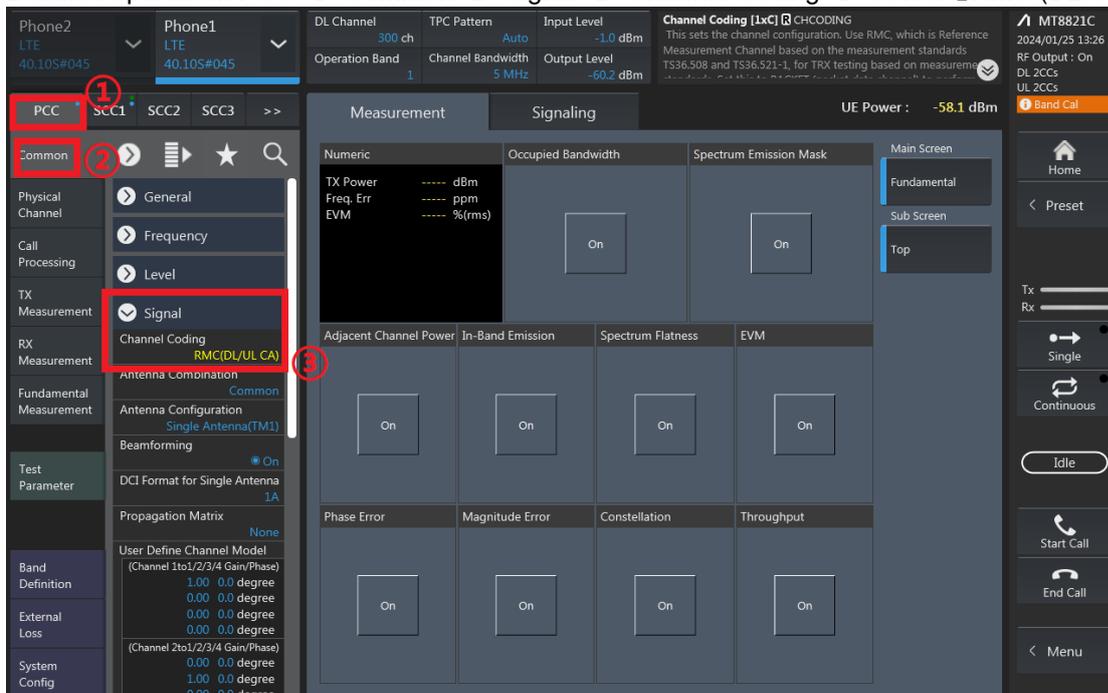
1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.



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;

The screenshot shows the PCC parameter settings interface. The left sidebar has 'Common' selected. The main area shows 'Measurement' and 'Signaling' tabs. Red boxes highlight the following settings:

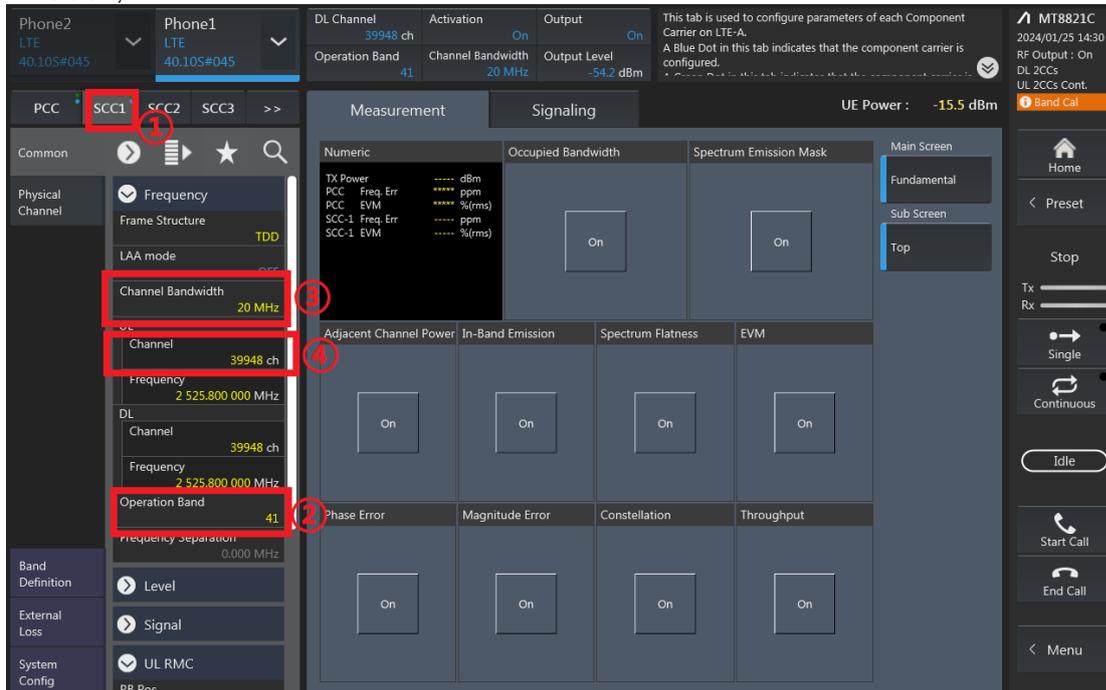
- Channel Bandwidth:** 20 MHz
- Channel:** 39750 ch
- Operation Band:** 41
- Frequency:** 2 506.000 000 MHz

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

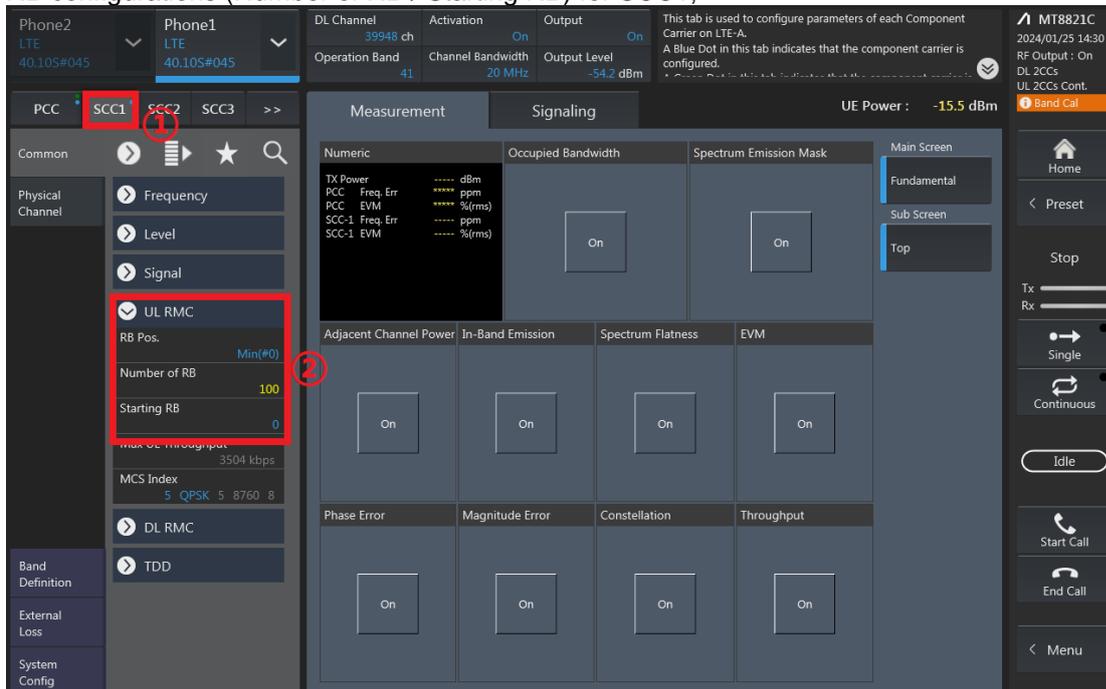
The screenshot shows the RB configurations interface. The left sidebar has 'UL RMC' selected. The main area shows 'Measurement' and 'Signaling' tabs. Red boxes highlight the following settings:

- UL RMC:** (checked)
- Number of RB:** 100
- Starting RB:** 0

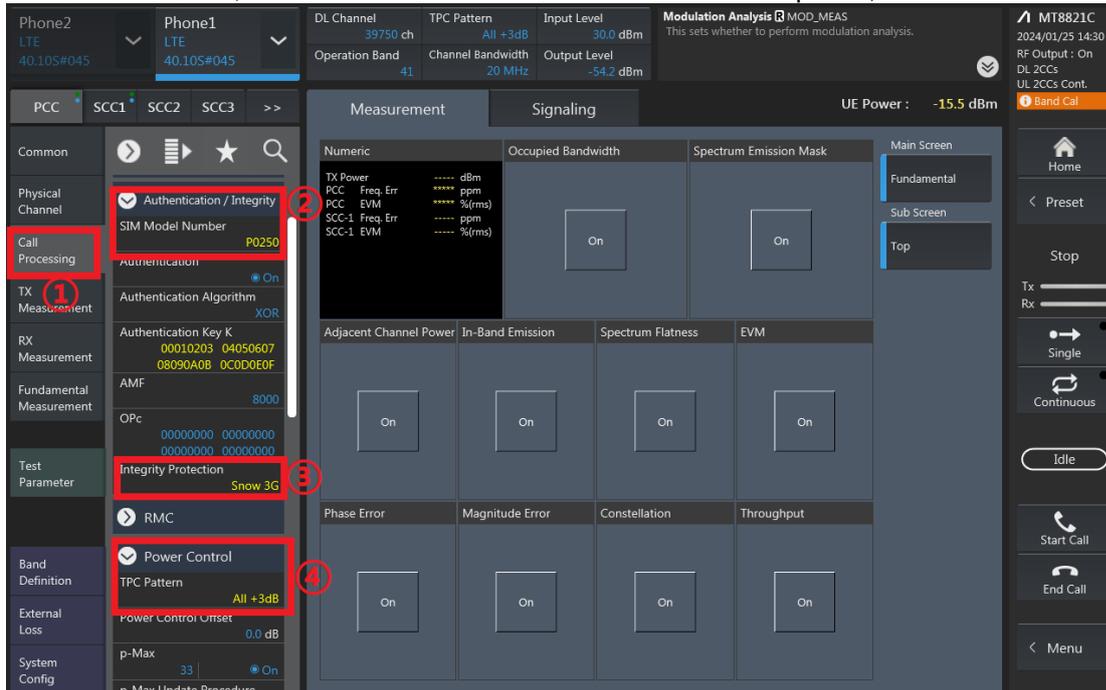
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



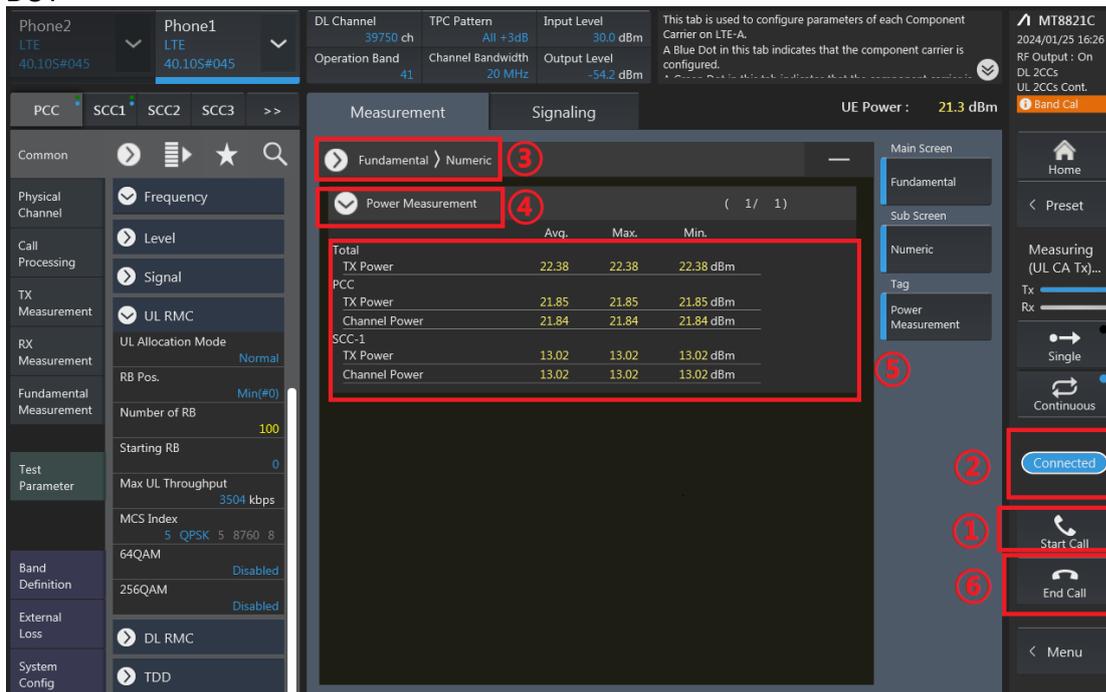
RB configurations (Number of RB / Starting RB) for SCC1;



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

Full Power

CA_7C Ant 1								
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	22.71	24.00
21100	21298	QPSK	1	99	1	0	22.76	24.00
21350	21152	QPSK	1	0	1	99	22.69	24.00

ECl 2

CA_7C Ant 1								
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	22.71	24.00
21100	21298	QPSK	1	99	1	0	22.76	24.00
21350	21152	QPSK	1	0	1	99	22.69	24.00

ECl 3

CA_7C Ant 1								
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	17.99	19.60
21100	21298	QPSK	1	99	1	0	18.27	19.60
21350	21152	QPSK	1	0	1	99	18.09	19.60

ECl 6

CA_7C Ant 1								
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	20.13	21.40
21100	21298	QPSK	1	99	1	0	20.24	21.40
21350	21152	QPSK	1	0	1	99	19.91	21.40

ECl 7

CA_7C Ant 1								
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	18.12	19.40
21100	21298	QPSK	1	99	1	0	18.33	19.40
21350	21152	QPSK	1	0	1	99	18.12	19.40