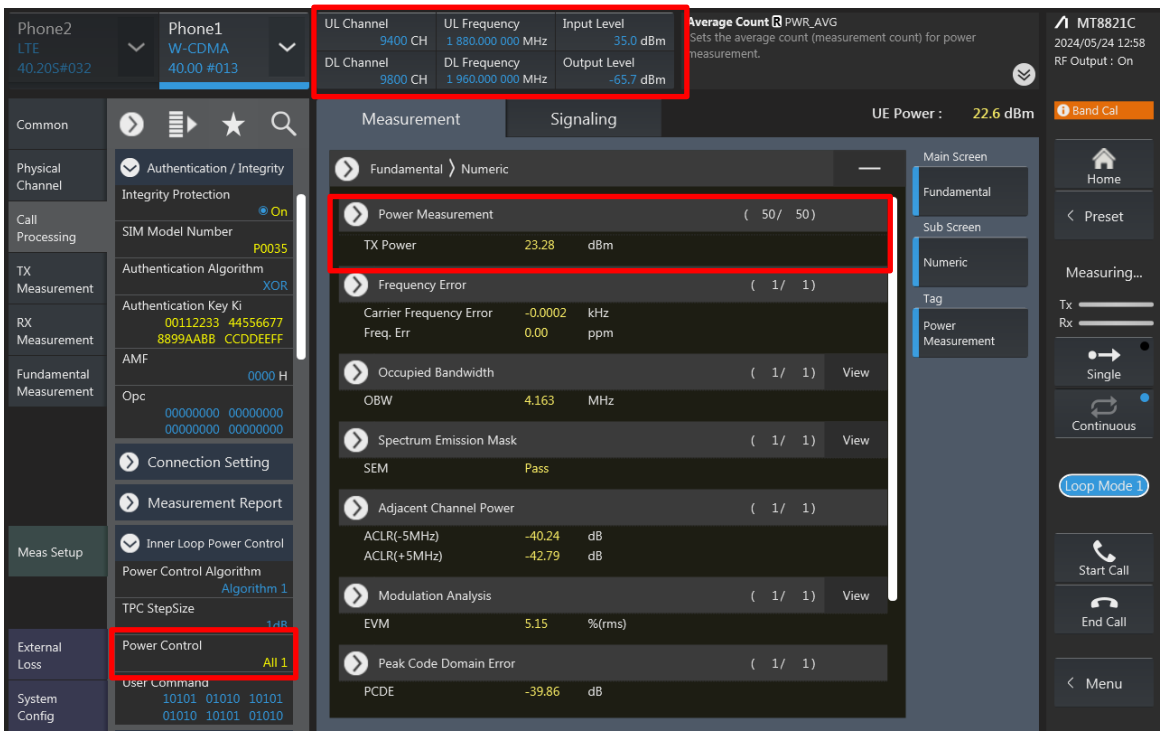
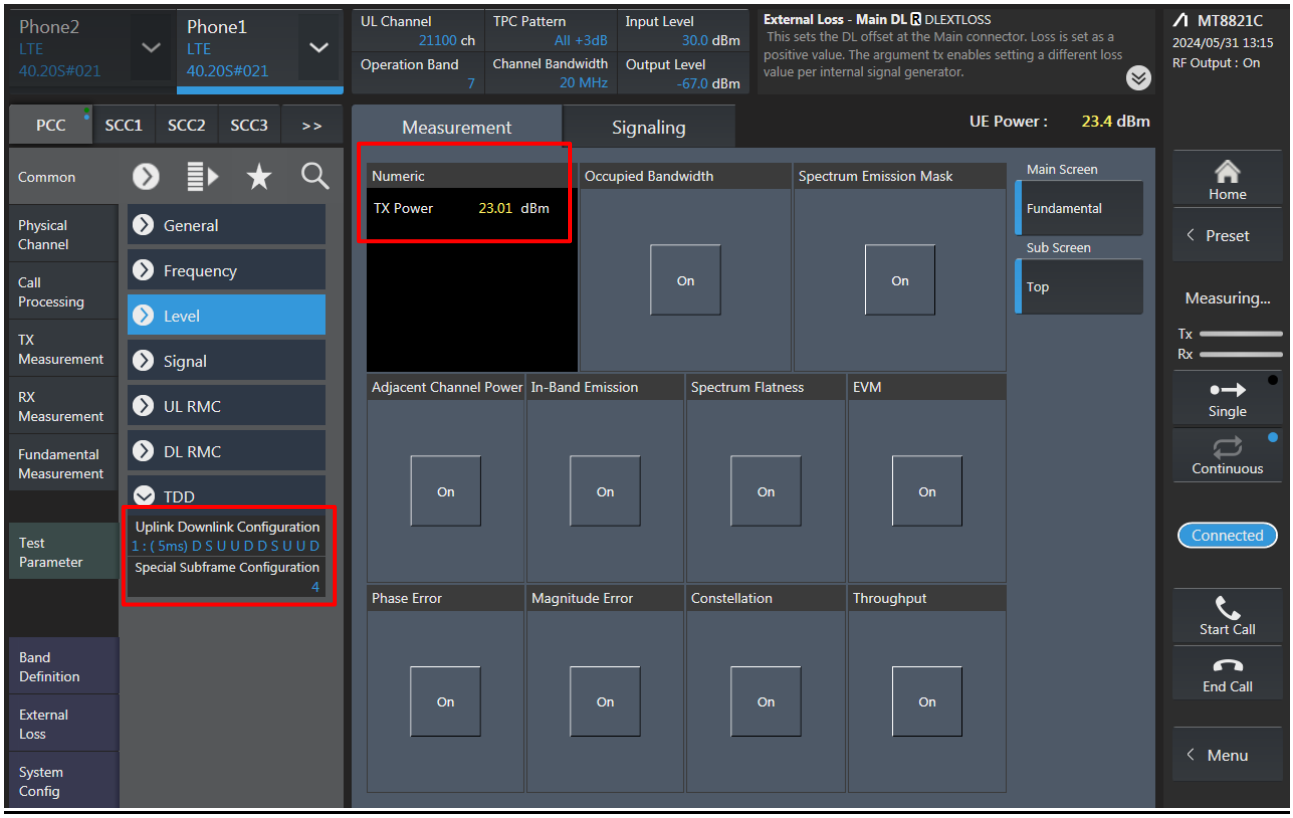
Power measurement connection diagram:

The power measurement for 3G/LTE/5G FR1 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 3G/LTE/5G FR1 and DL CA.

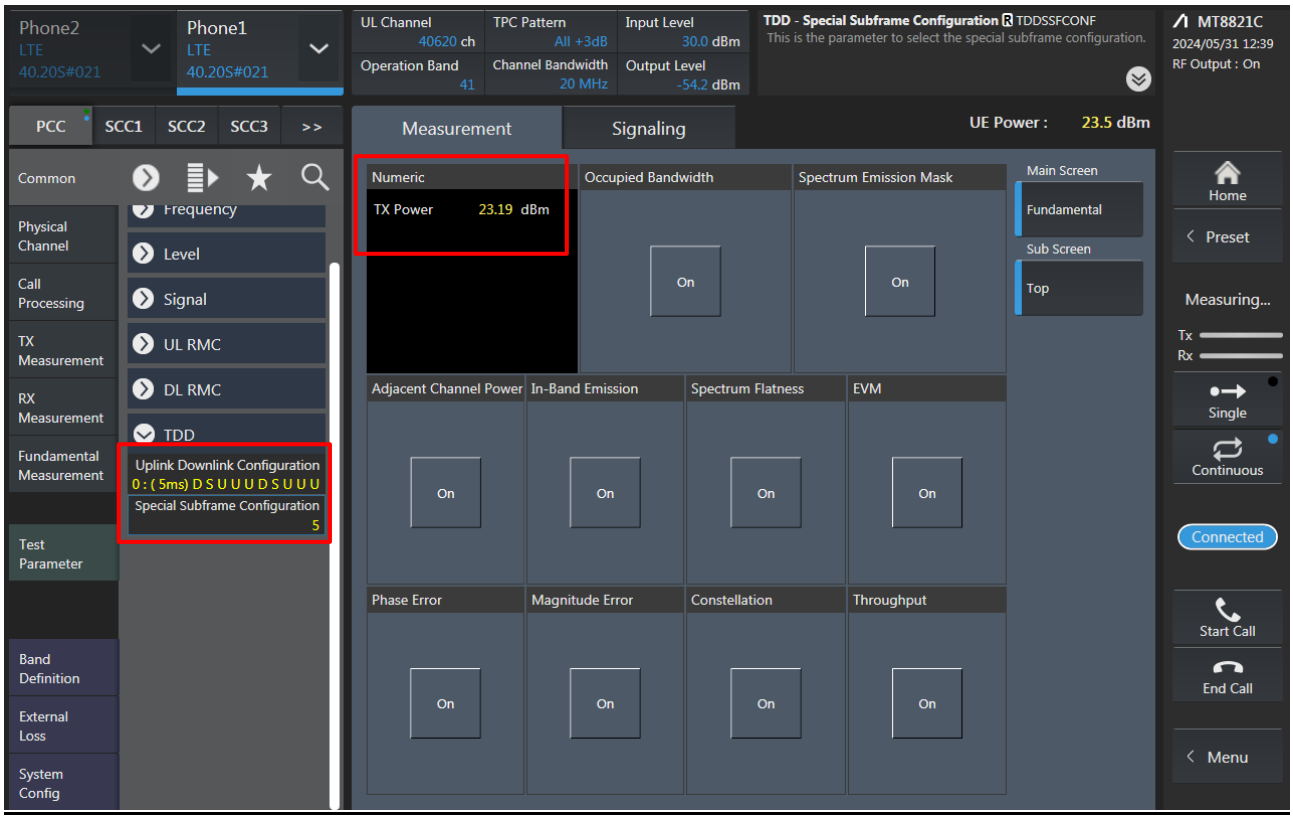
<WCDMA>



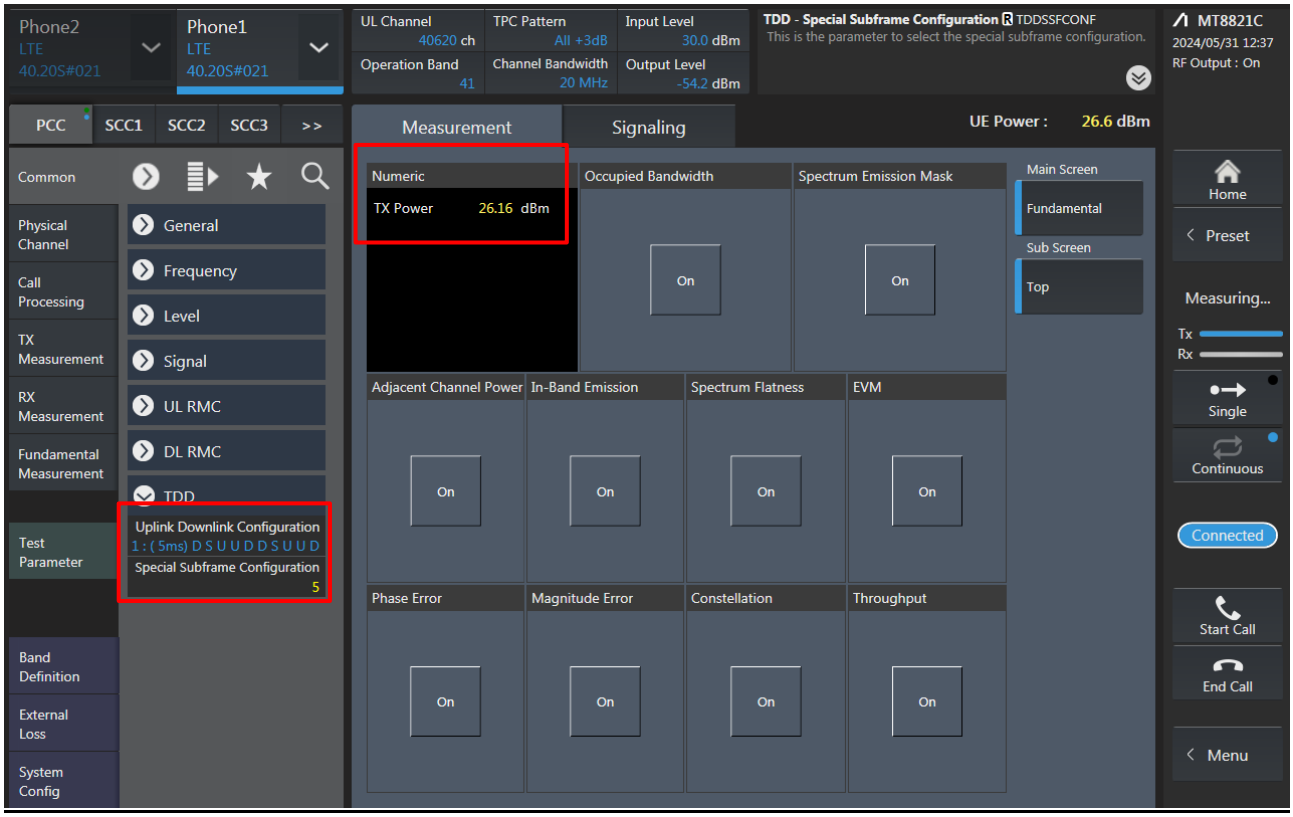
<LTE>

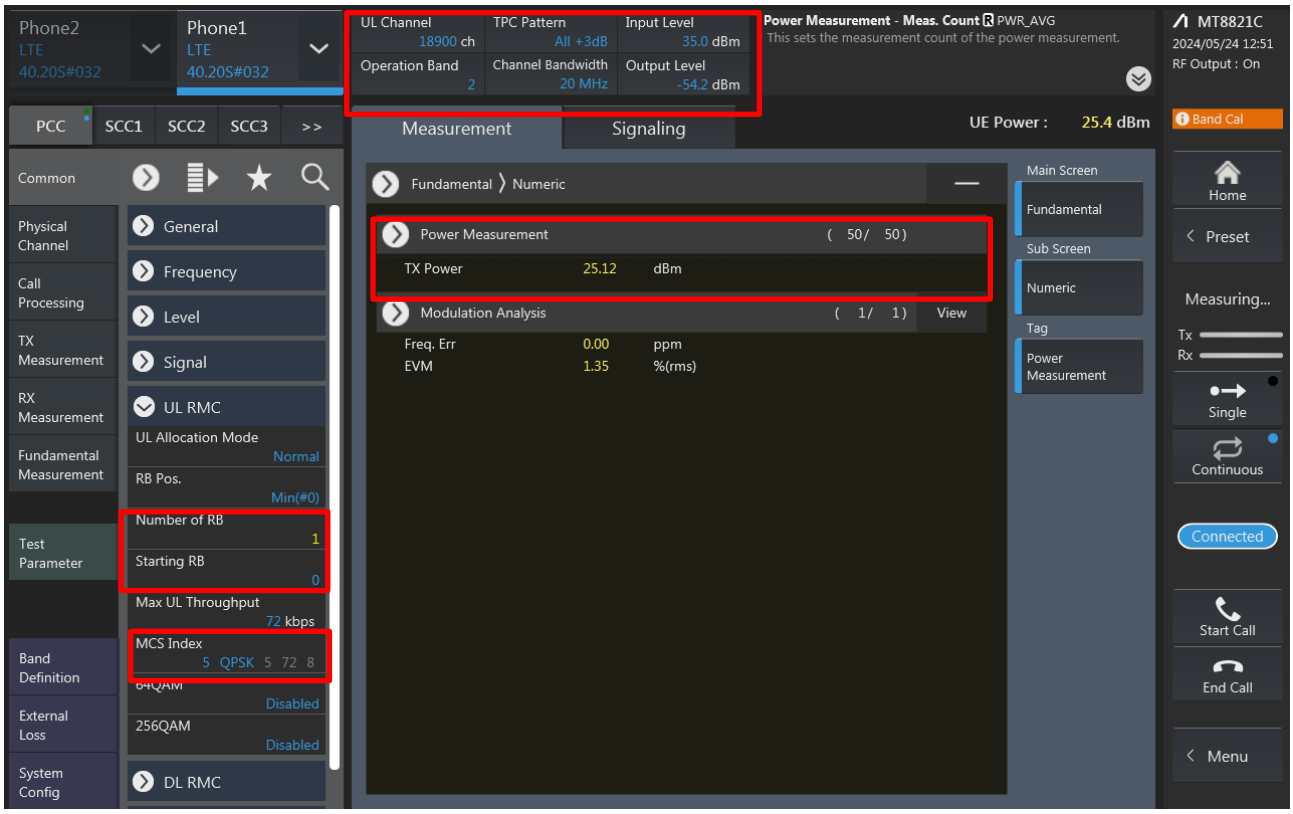


<LTE TDD Power class 3>

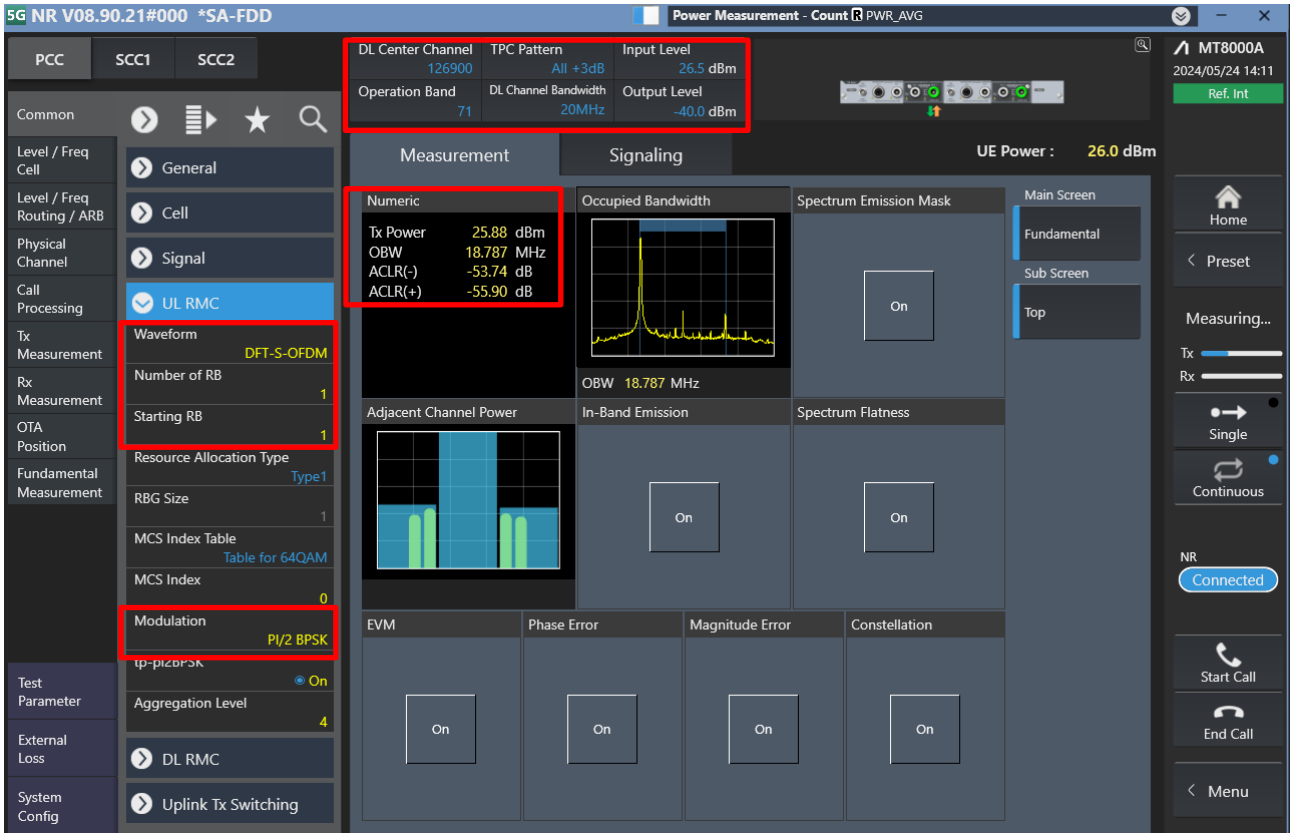


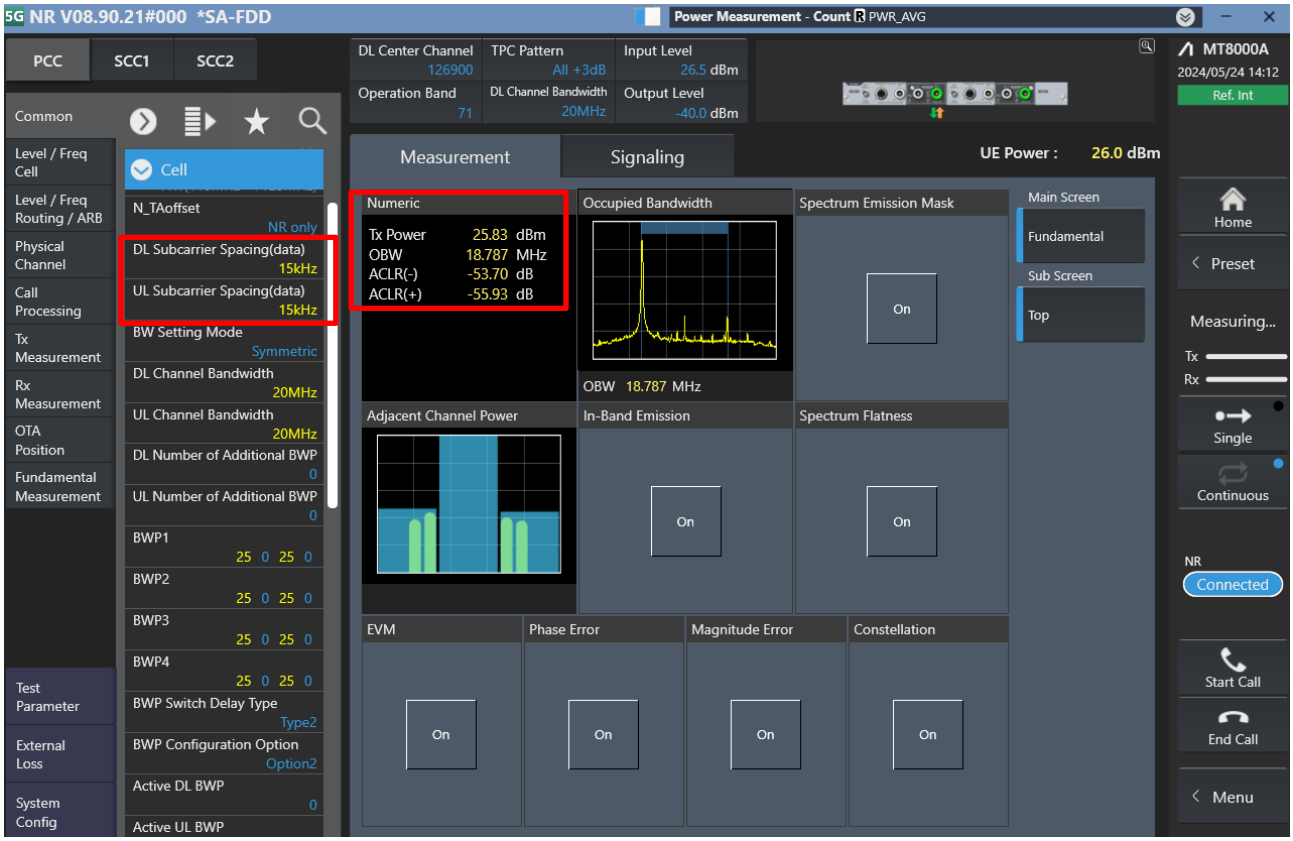
<LTE TDD Power class 2>

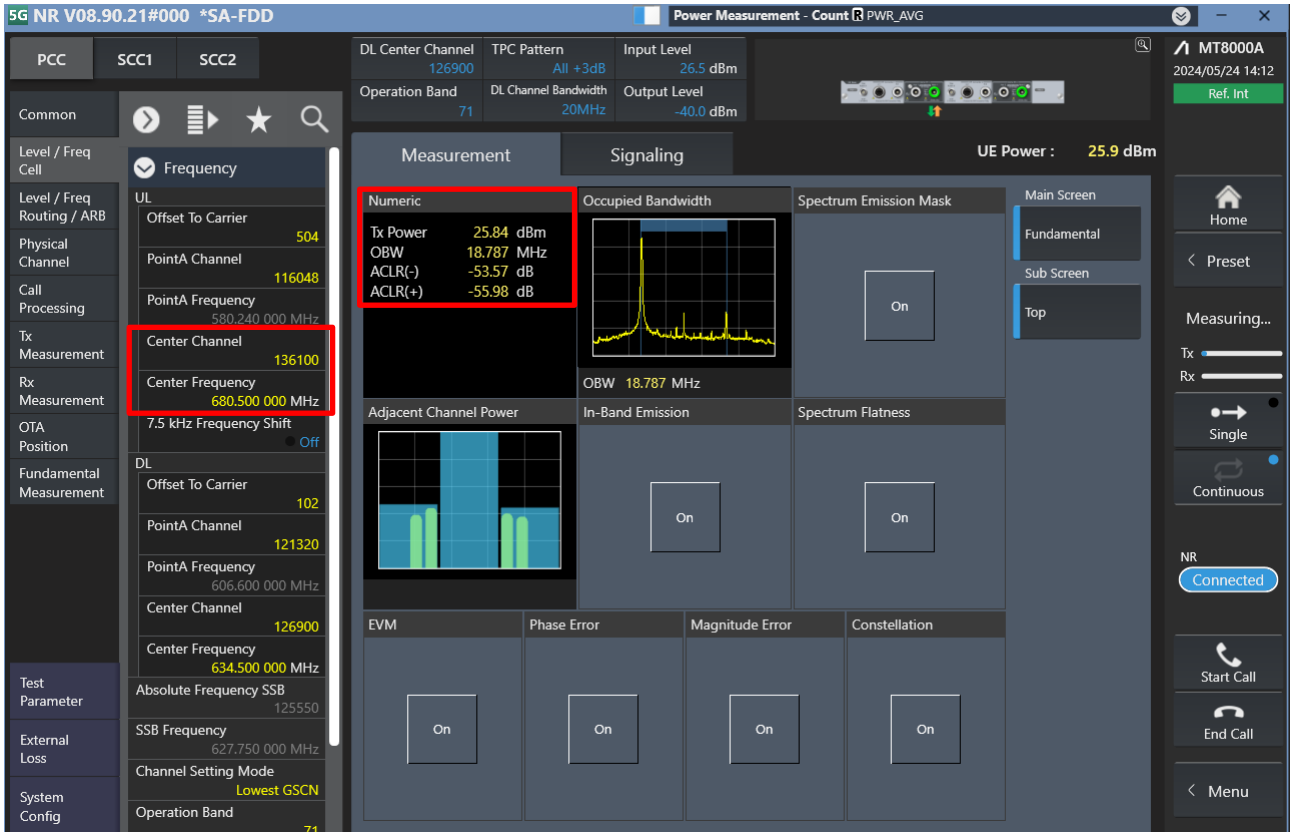




<5GNR FR1>

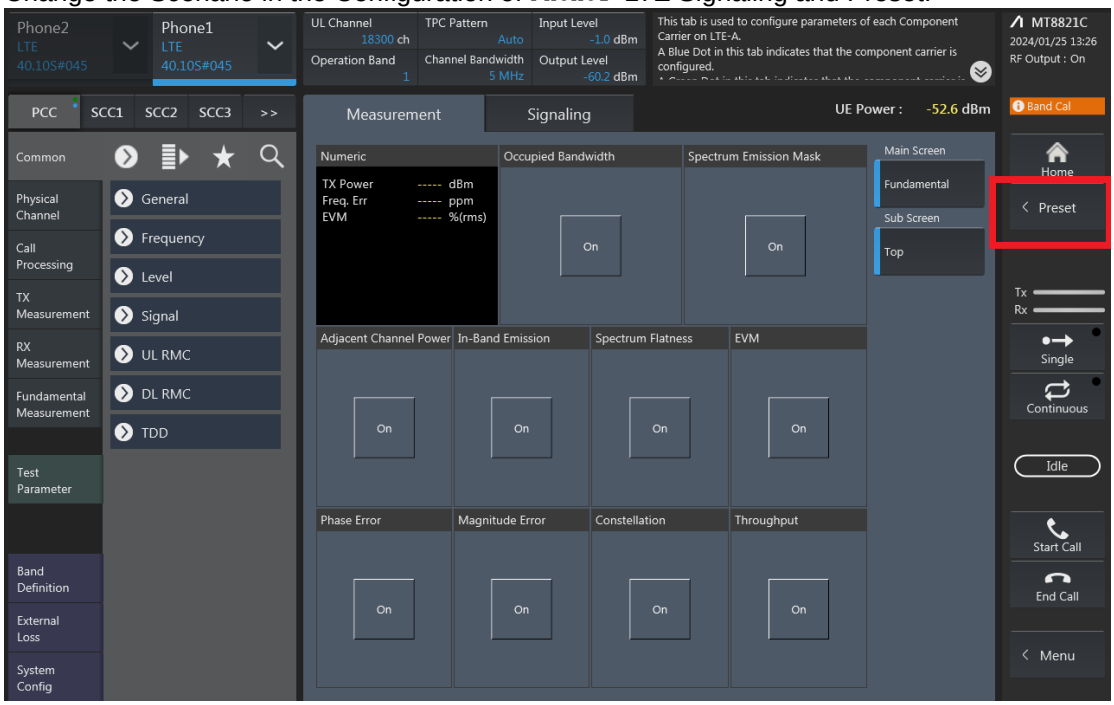

5G NR V08.90.21#000 *SA-FDD
Power Measurement - Count R PWR_AVG
PCC
SCC1
SCC2
DL Center Channel 126900
TPC Pattern All +3dB
Input Level 26.5 dBm
Operation Band 71
DL Channel Bandwidth 20MHz
Output Level -40.0 dBm
MT8000A
2024/05/24 14:11
Ref. Int
Common
Level / Freq Cell
Level / Freq Routing / ARB
Physical Channel
Call Processing
Tx Measurement
Rx Measurement
OTA Position
Fundamental Measurement
Test Parameter
External Loss
System Config
General
Cell
Signal
UL RMC
Waveform 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
Modulation PI/2 BPSK
Aggregation Level 4
DL RMC
Uplink Tx Switching
Measurement
Signaling
UE Power : 26.0 dBm
Numeric
Tx Power 25.88 dBm
OBW 18.787 MHz
ACLR(-) -53.74 dB
ACLR(+) -55.90 dB
Occupied Bandwidth
OBW 18.787 MHz
Spectrum Emission Mask
Main Screen
Fundamental
Sub Screen
Top
Adjacent Channel Power
In-Band Emission
Spectrum Flatness
EVM
Phase Error
Magnitude Error
Constellation
On
Home
Preset
Measuring...
Tx
Rx
Single
Continuous
NR
Connected
Start Call
End Call
Menu


5G NR V08.90.21#000 *SA-FDD
Power Measurement - Count R PWR_AVG
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
MT8000A
2024/05/24 14:12
Ref. Int
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
Cell
N_TAoffset NR only
DL Subcarrier Spacing(data) 15kHz
UL Subcarrier Spacing(data) 15kHz
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
Measurement
Signaling
UE Power : 26.0 dBm
Numeric
Tx Power 25.83 dBm
OBW 18.787 MHz
ACLR(-) -53.70 dB
ACLR(+) -55.93 dB
Occupied Bandwidth
OBW 18.787 MHz
Spectrum Emission Mask
Main Screen
Fundamental
Sub Screen
Top
Adjacent Channel Power
In-Band Emission
Spectrum Flatness
EVM
Phase Error
Magnitude Error
Constellation
On
Home
Preset
Measuring...
Tx
Rx
Single
Continuous
NR
Connected
Start Call
End Call
Menu

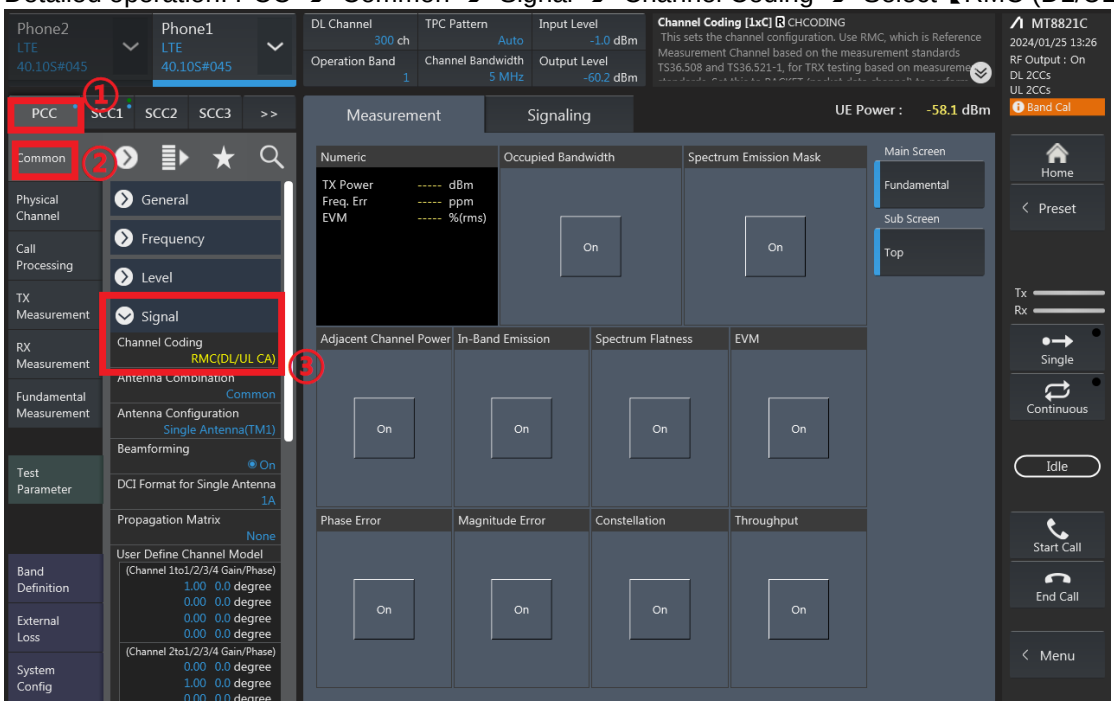

5G NR V08.90.21#000 *SA-FDD
Power Measurement - Count R PWR_AVG
PCC
SCC1
SCC2
DL Center Channel 126900
TPC Pattern All +3dB
Input Level 26.5 dBm
Operation Band 71
DL Channel Bandwidth 20MHz
Output Level -40.0 dBm
MT8000A
2024/05/24 14:12
Ref. Int
Common
Level / Freq Cell
Level / Freq Routing / ARB
Physical 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
Signaling
UE Power : 25.9 dBm
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
Main Screen
Fundamental
Sub Screen
Top
Adjacent Channel Power
In-Band Emission
On
Spectrum Flatness
On
EVM
On
Phase Error
On
Magnitude Error
On
Constellation
On
Home
Preset
Measuring...
Tx
Rx
Single
Continuous
NR
Connected
Start Call
End Call
Menu

LTE Downlink Carrier Aggregation configurations:

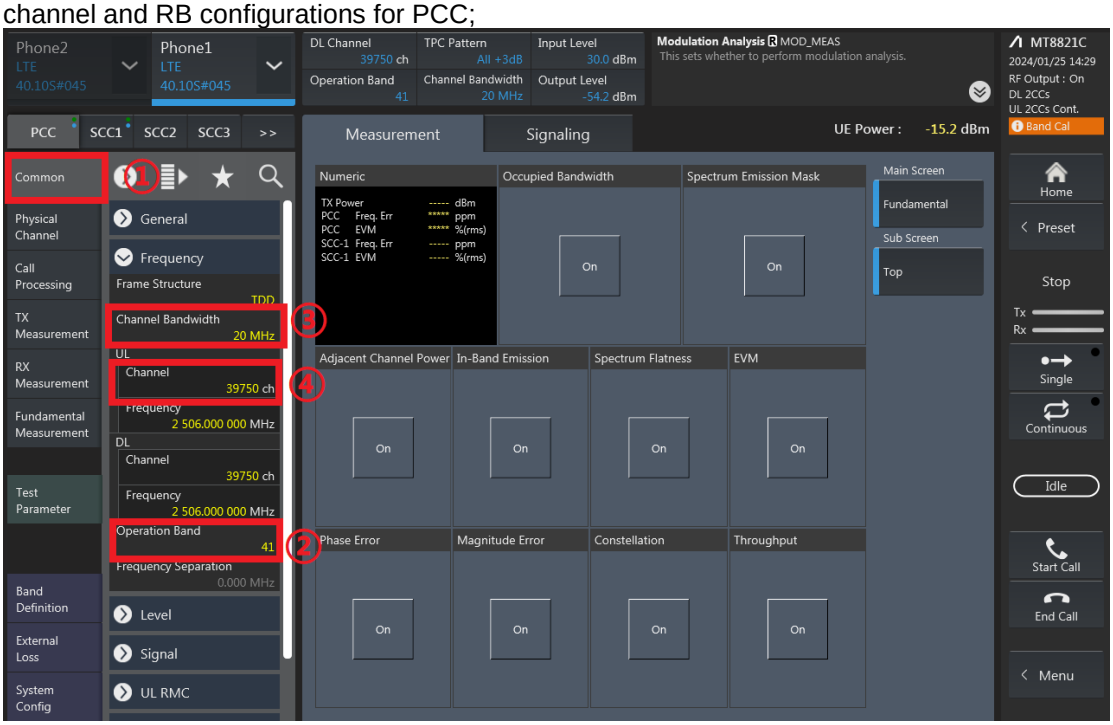
1. Change the Scenario in the Configuration of Phone1 LTE Signaling and Preset.



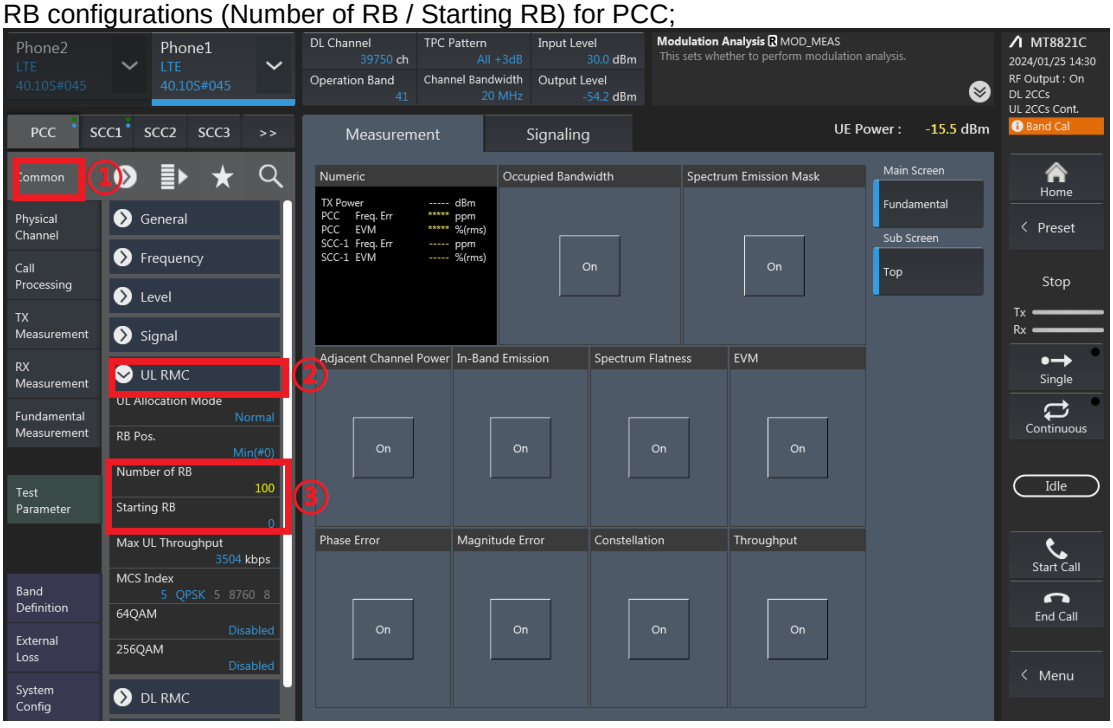
2. If Select “RMC (DL/UL CA)” for Uplink Carrier Aggregation;
If Select “RMC (DL CA)” for Downlink Carrier Aggregation.
For example, Uplink Carrier Aggregation:
Detailed operation: PCC ➔ Common ➔ Signal ➔ Channel Coding ➔ Select【RMC (DL/UL CA)】



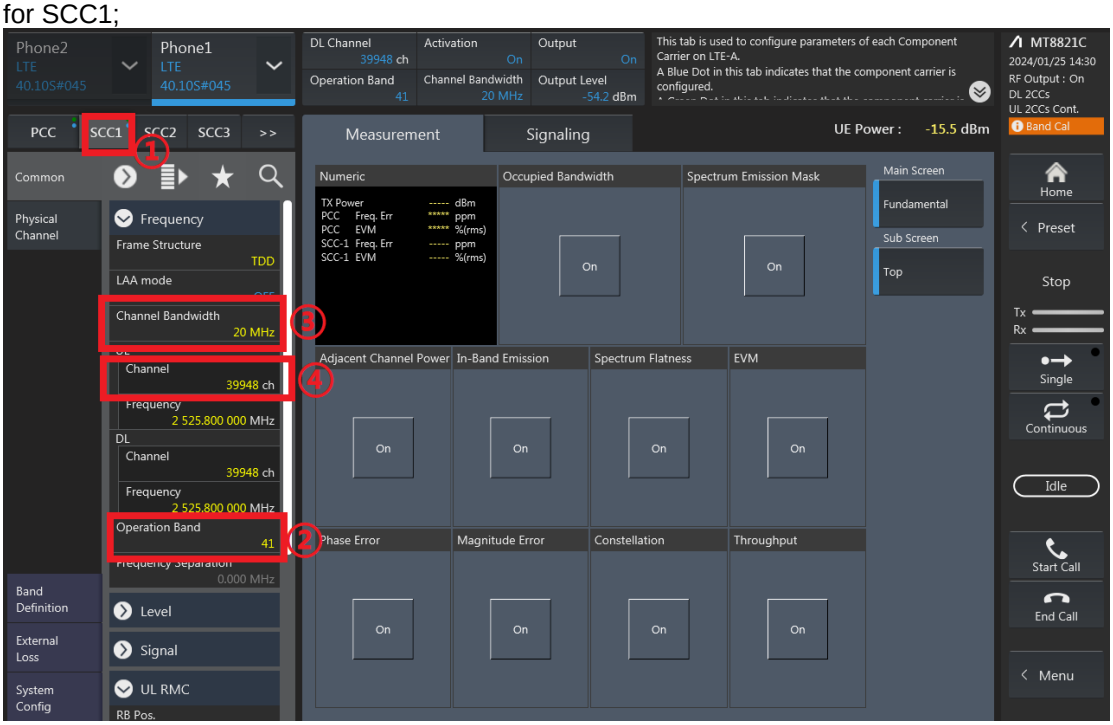
3. PCC parameter Settings: on the screen, and then select the PCC tab and Set operating band, BW, channel and RB configurations for PCC;



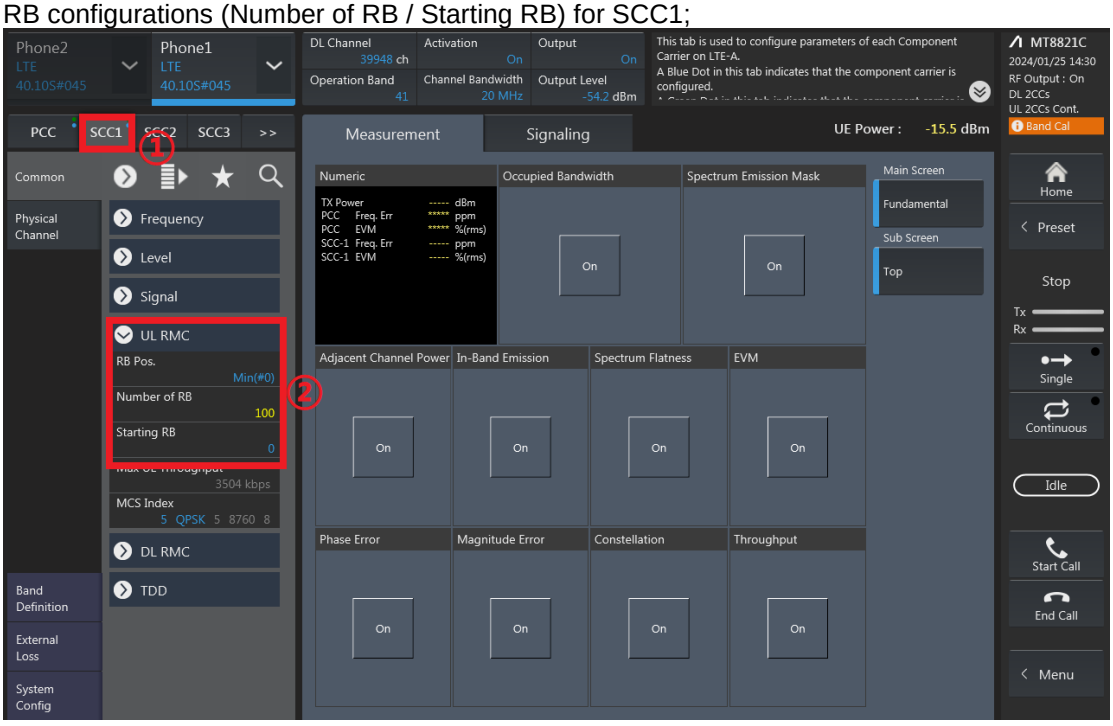
RB configurations (Number of RB / Starting RB) for PCC;



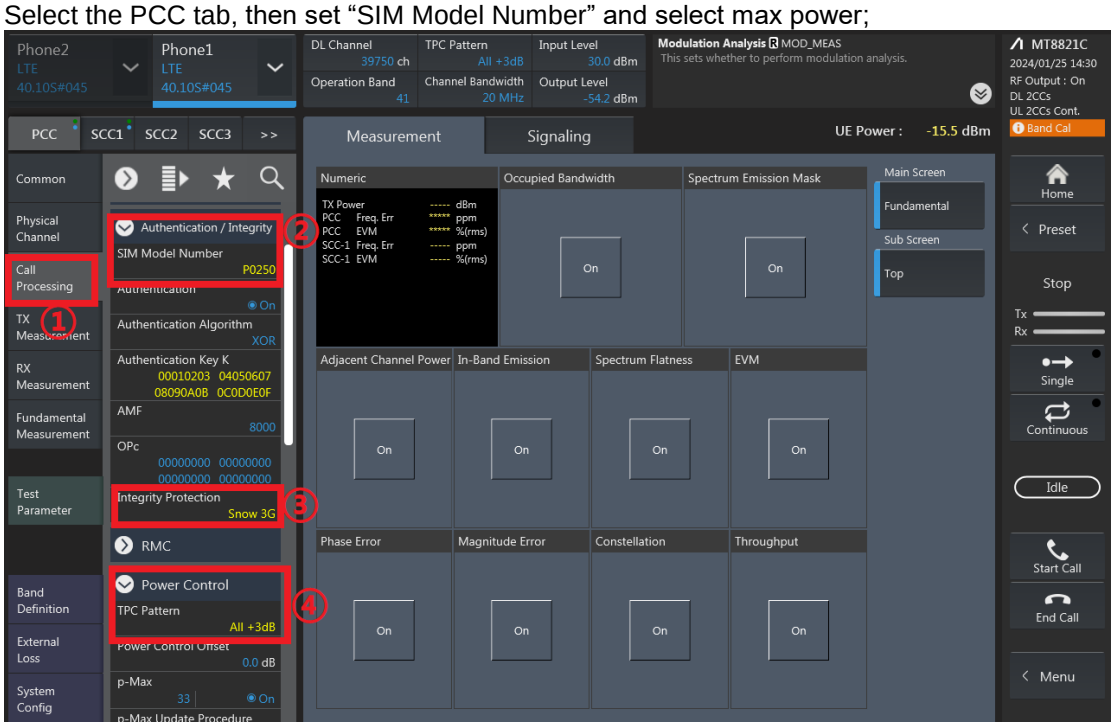
4. SCC parameter Settings: Select the SCC1 tab, Set operating band, BW, channel, and RB configurations for SCC1;



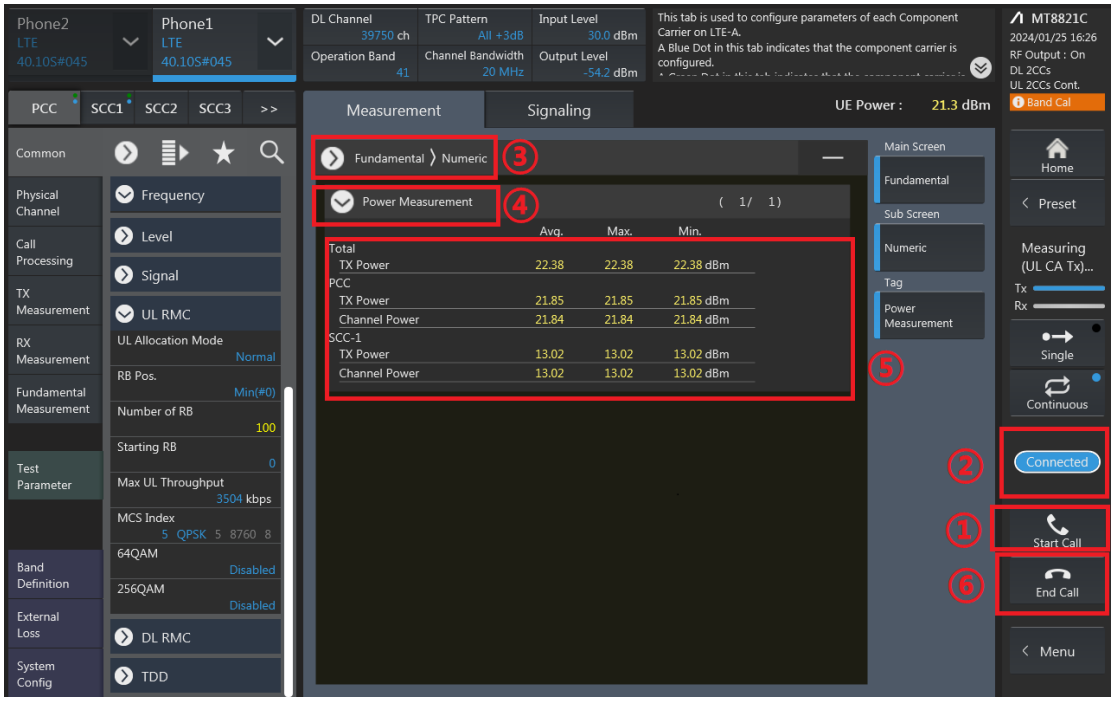
RB configurations (Number of RB / Starting RB) for SCC1;



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

LTE bandS	Modulation	BW (MHz)	Ch.	Freq. (MHz)	RB offset	LTE Rel 8TX.power (dBm)	DL 4X4 MIMO TX.power (dBm)	Delta
LTE Band 42	QPSK	20M	42190	3460	1/0	22.98	22.87	0.11
LTE Band 43	QPSK	20M	44590	3650	1/0	22.72	22.67	0.05
LTE Band 38	QPSK	20M	38000	2595	1/0	23.15	23.07	0.08
LTE Band 7	QPSK	20M	21100	2535	1/0	22.21	22.17	0.04
LTE Band 41	QPSK	20M	40620	2593	1/0	23.14	23.11	0.03
LTE Band 48	QPSK	20M	55830	3609	1/0	22.72	22.67	0.05

Downlink CA Power

2CA DL

CA List	PCC									SCC					Power	
	LTE Band	BW Ant	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	DL Antenna Configuration	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	DL Antenna Configuration	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
CA_2A-2A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 2	5M	1987.5	1175		23.29	23.41
CA_2A-4A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 4	20M	2132.5	2175		23.25	23.41
	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 2	20M	1960	900		23.12	23.33
CA_2A-5A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 5	10M	881.5	2525		23.41	23.41
	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 2	20M	1960	900		23.81	24.03
CA_2A-7A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 7	20M	2655	3100	4x4MIMO	23.19	23.41
	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 2	20M	1960	900		22.09	22.21
CA_2A-12A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 12	10M	737.5	5095		23.34	23.41
	Band 12	Ant1	10M	707.5	23095	QPSK	1	0		Band 2	20M	1960	900		23.97	24.10
CA_2A-13A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 13	10M	751	5230		23.22	23.41
	Band 13	Ant1	10M	782	23230	QPSK	1	0		Band 2	20M	1960	900		24.05	24.11
CA_2A-14A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 14	10M	763	5330		23.22	23.41
	Band 14	Ant1	10M	793	23330	QPSK	1	0		Band 2	20M	1960	900		24.05	24.13
CA_2A-66A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 66	20M	2155	66886		23.41	23.41
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 2	20M	1960	900		23.27	23.35
CA_2A-71A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 71	20M	683	68786		23.29	23.41
	Band 71	Ant1	20M	683	133322	QPSK	1	0		Band 2	20M	1960	900		23.64	23.71
CA_4A-4A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 4	5M	2152.5	2375		23.11	23.33
CA_4A-5A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 5	10M	881.5	2525		23.15	23.33
	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 4	20M	2132.5	2175		23.84	24.03
CA_4A-7A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 7	20M	2655	3100	4x4MIMO	23.14	23.33
	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 4	20M	2132.5	2175		22.05	22.21
CA_4A-12A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 12	10M	737.5	5095		23.28	23.33
	Band 12	Ant1	10M	707.5	23095	QPSK	1	0		Band 4	20M	2132.5	2175		23.98	24.10
CA_4A-13A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 13	10M	751	5230		23.24	23.33
	Band 13	Ant1	10M	782	23230	QPSK	1	0		Band 4	20M	2132.5	2175		23.99	24.11
CA_4A-48A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 48	20M	3609	55830	4x4MIMO	23.11	23.33
CA_4A-71A	Band 4	Ant1	20M	1732.5	20175	QPSK	1	0		Band 71	20M	683	68786		23.23	23.33
	Band 71	Ant1	20M	683	133322	QPSK	1	0		Band 4	20M	2132.5	2175		23.62	23.71
CA_5A-5A	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 5	5M	891.5	2625		23.95	24.03
CA_5A-7A	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 7	20M	2655	3100	4x4MIMO	23.94	24.03
	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 5	10M	881.5	2525		22.10	22.21
CA_5A-48A	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 48	20M	3609	55830	4x4MIMO	23.85	24.03
CA_5A-66A	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 66	20M	2155	66886		23.87	24.03
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 5	10M	881.5	2525		23.20	23.35
CA_5B	Band 5	Ant1	10M	836.5	20525	QPSK	1	0		Band 5	5M	888.7	2597		23.82	24.03
CA_7A-7A	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 7	5M	2687.5	3425	4x4MIMO	22.14	22.21
CA_7A-12A	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 12	10M	737.5	5095		22.16	22.21
	Band 12	Ant1	10M	707.5	23095	QPSK	1	0		Band 7	20M	2655	3100	4x4MIMO	23.94	24.10
CA_7A-66A	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 66	20M	2155	66886		22.02	22.21
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 7	20M	2655	3100	4x4MIMO	23.19	23.35
CA_7C	Band 7	Ant2	20M	2535	21100	QPSK	1	0	4x4MIMO	Band 7	20M	2554.8	3298	4x4MIMO	22.06	22.21
CA_12A-66A	Band 12	Ant1	10M	707.5	23095	QPSK	1	0		Band 66	20M	2155	66886		24.09	24.10
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 12	10M	737.5	5095		23.21	23.35
CA_12B	Band 12	Ant1	10M	707.5	23095	QPSK	1	0		Band 12	5M	743.5	5155		24.02	24.10
CA_13A-48A	Band 13	Ant1	10M	782	23230	QPSK	1	0		Band 48	20M	3609	55830	4x4MIMO	24.04	24.11
CA_13A-66A	Band 13	Ant1	10M	782	23230	QPSK	1	0		Band 66	20M	2155	66886		23.94	24.11
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 13	10M	751	5230		23.13	23.35
CA_14A-66A	Band 14	Ant1	10M	793	23330	QPSK	1	0		Band 66	20M	2155	66886		23.96	24.13
	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 14	10M	763	5330		23.20	23.35
CA_41A-41A	Band 41	Ant2	20M	2593	40620	QPSK	1	0	4x4MIMO	Band 41	5M	2687.5	41565	4x4MIMO	22.90	23.14
CA_41C	Band 41	Ant2	20M	2593	40620	QPSK	1	0	4x4MIMO	Band 41	20M	2612.8	40818	4x4MIMO	22.91	23.14
CA_48A-48A	Band 48	Ant6	20M	3609	55830	QPSK	1	0	4x4MIMO	Band 48	5M	3697.5	56715	4x4MIMO	22.51	22.72
CA_48C	Band 48	Ant6	20M	3609	55830	QPSK	1	0	4x4MIMO	Band 48	20M	3628.8	56028	4x4MIMO	22.67	22.72
CA_48A-71A	Band 71	Ant1	20M	683	133322	QPSK	1	0		Band 48	20M	3609	55830	4x4MIMO	23.65	23.71
CA_66A-66A	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 66	5M	2197.5	67311		23.14	23.35
CA_66A-71A	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 71	20M	683	68786		23.35	23.35
	Band 71	Ant1	20M	683	133322	QPSK	1	0		Band 66	20M	2155	66886		23.56	23.71
CA_66B	Band 66	Ant1	15M	1745	132322	QPSK	1	0		Band 66	5M	2164.3	66979		23.29	23.35
CA_66C	Band 66	Ant1	20M	1745	132322	QPSK	1	0		Band 66	20M	2164.8	66984		23.32	23.35
CA_2C	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 2	20M	1979.8	1098		23.22	23.38
CA_2A-48A	Band 2	Ant1	20M	1880	18900	QPSK	1	0		Band 48	20M	3609	55830	4x4MIMO	23.24	23.29
CA_48A-66A	Band 66	Ant1	20M	1745	132322	QPSK	1	0	4x4MIMO	Band 48	20M	3609	55830		23.13	23.26