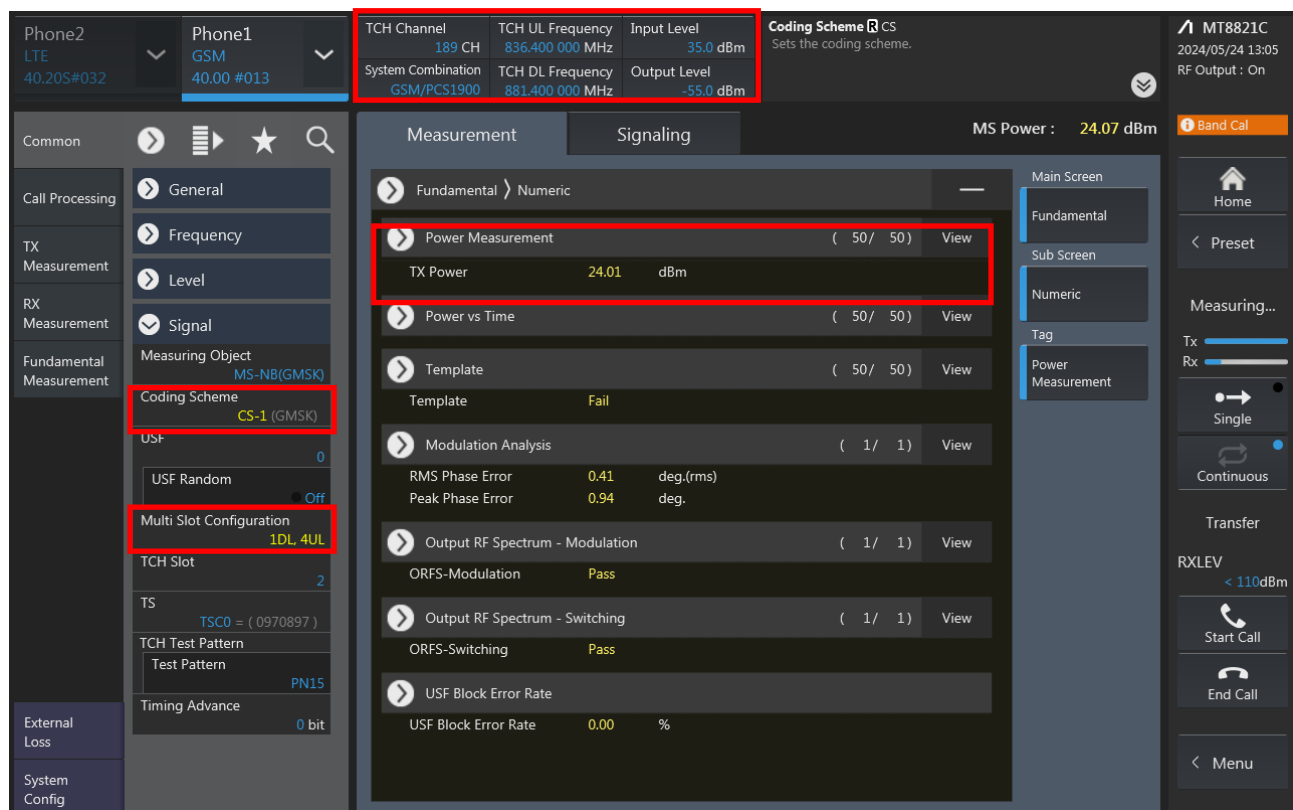


Appendix D-3. 2G/3G/LTE/5G FR1/UL and DL CA connection diagram

General Note:

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 MT8821C software interface for GSM testing. The top status bar shows 'Phone2 LTE 40.205#032' and 'Phone1 GSM 40.00 #013'. The 'TCH Channel' is set to 189 CH, with 'TCH UL Frequency' at 836.400 000 MHz and 'TCH DL Frequency' at 881.400 000 MHz. The 'Input Level' is 35.0 dBm and the 'Output Level' is -55.0 dBm. The 'Coding Scheme' is CS. The 'MS Power' is 24.07 dBm. The 'Fundamental' measurement screen shows 'Power Measurement' with 'TX Power' at 24.01 dBm. The 'Signal' measurement screen shows 'Power vs Time' and 'Template' (Fail). The 'Modulation Analysis' shows 'RMS Phase Error' at 0.41 deg.(rms) and 'Peak Phase Error' at 0.94 deg. The 'Output RF Spectrum - Modulation' shows 'ORFS-Modulation' as Pass. The 'Output RF Spectrum - Switching' shows 'ORFS-Switching' as Pass. The 'USF Block Error Rate' shows 'USF Block Error Rate' at 0.00 %.

WCDMA

Phone2	Phone1	UL Channel	UL Frequency	Input Level	Average Count	PWR_AVG
LTE	W-CDMA	9400 CH	1 880.000 000 MHz	35.0 dBm		
40.20S#032	40.00 #013	DL Channel	DL Frequency	Output Level		
		9800 CH	1 960.000 000 MHz	-65.7 dBm		

Common	Measurement	Signaling	UE Power
Physical Channel	Fundamental	Numeric	22.6 dBm
Call Processing	Power Measurement	(50/ 50)	
TX Measurement	TX Power	23.28 dBm	
RX Measurement	Frequency Error	(1/ 1)	
Fundamental Measurement	Carrier Frequency Error	-0.0002 kHz	
	Freq. Err	0.00 ppm	
	Occupied Bandwidth	(1/ 1) View	
	OBW	4.163 MHz	
	Spectrum Emission Mask	(1/ 1) View	
	SEM	Pass	
	Adjacent Channel Power	(1/ 1)	
	ACLR(-5MHz)	-40.24 dB	
	ACLR(+5MHz)	-42.79 dB	
	Modulation Analysis	(1/ 1) View	
	EVM	5.15 %(rms)	
	Peak Code Domain Error	(1/ 1)	
	PCDE	-39.86 dB	

Meas Setup	External Loss	System Config
Authentication / Integrity	Power Control	10101 01010 10101
Integrity Protection	All 1	01010 10101 01010
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		
1dB		
User Command		
10101 01010 10101		
01010 10101 01010		

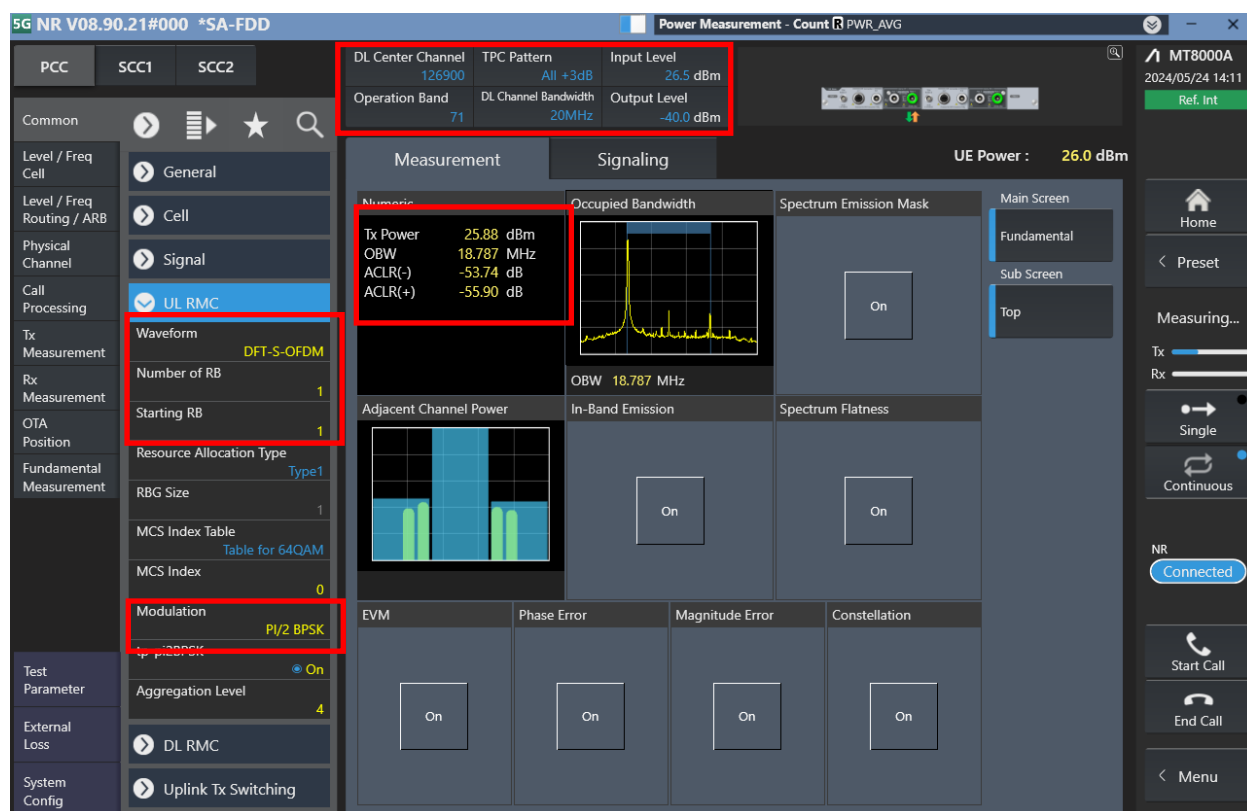
LTE

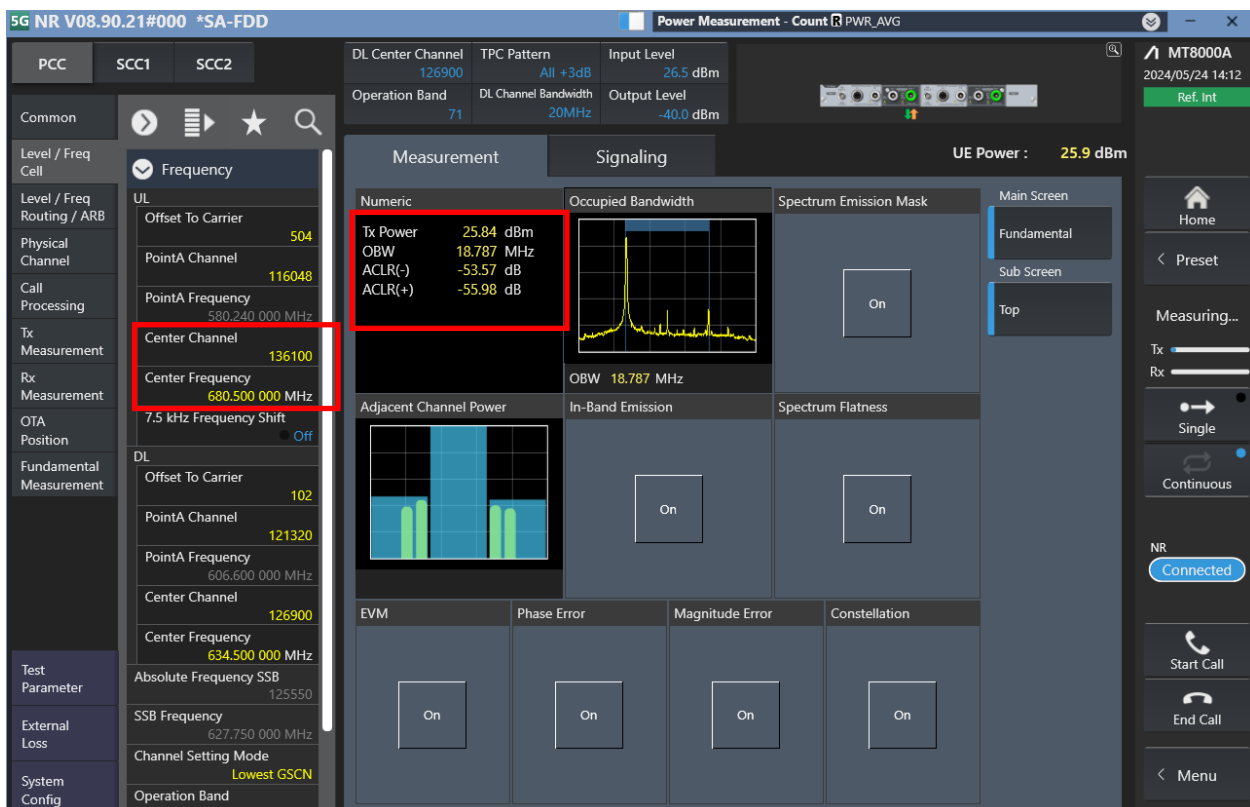
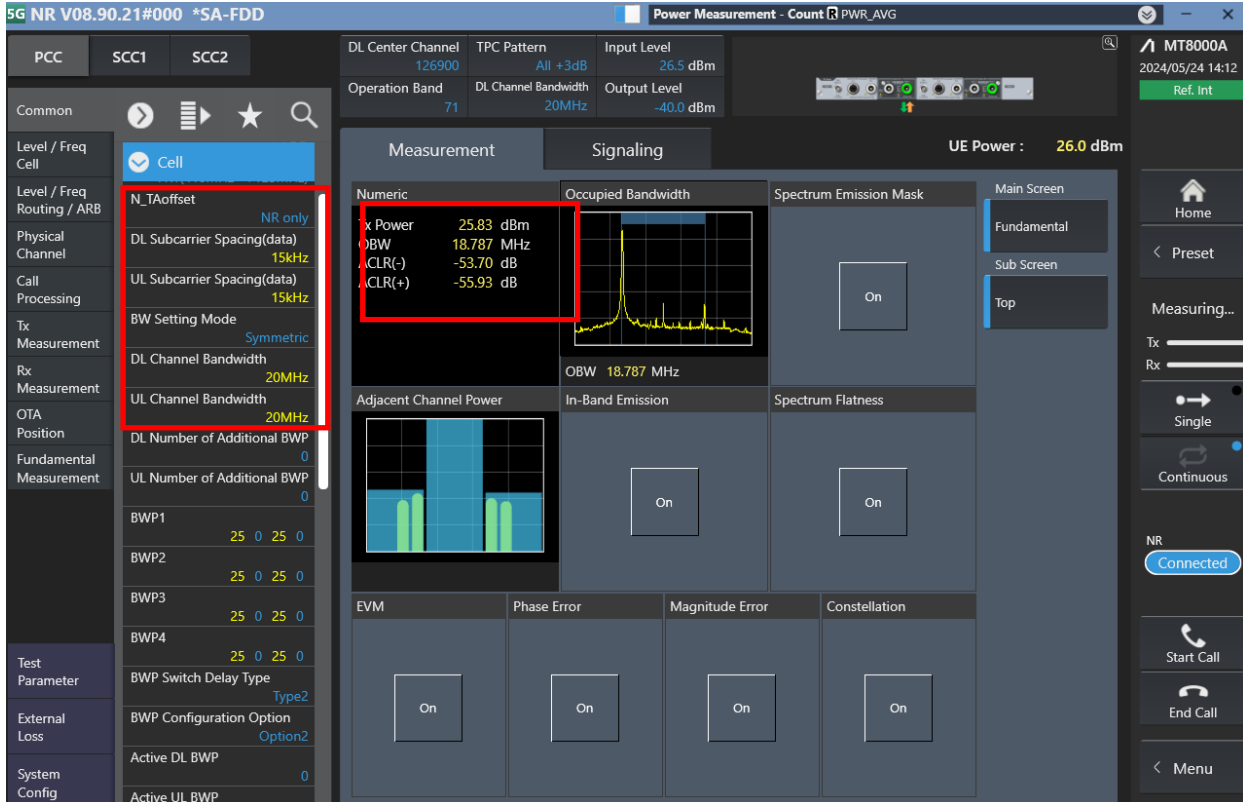
Phone2	Phone1	UL Channel	TPC Pattern	Input Level	Power Measurement - Meas. Count	PWR_AVG
LTE	LTE	18900 ch	All +3dB	35.0 dBm		
40.20S#032	40.20S#032	Operation Band	Channel Bandwidth	Output Level		
		2	20 MHz	-54.2 dBm		

Common	Measurement	Signaling	UE Power
Physical Channel	Fundamental	Numeric	25.4 dBm
Call Processing	Power Measurement	(50/ 50)	
TX Measurement	TX Power	25.12 dBm	
RX Measurement	Modulation Analysis	(1/ 1) View	
Fundamental Measurement	Freq. Err	0.00 ppm	
	EVM	1.35 %(rms)	

Test Parameter	Band Definition	External Loss	System Config
General	5 QPSK	Disabled	DL RMC
Frequency	5 72 8		
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			
256QAM			
Disabled			
DL RMC			

5G NR FR1



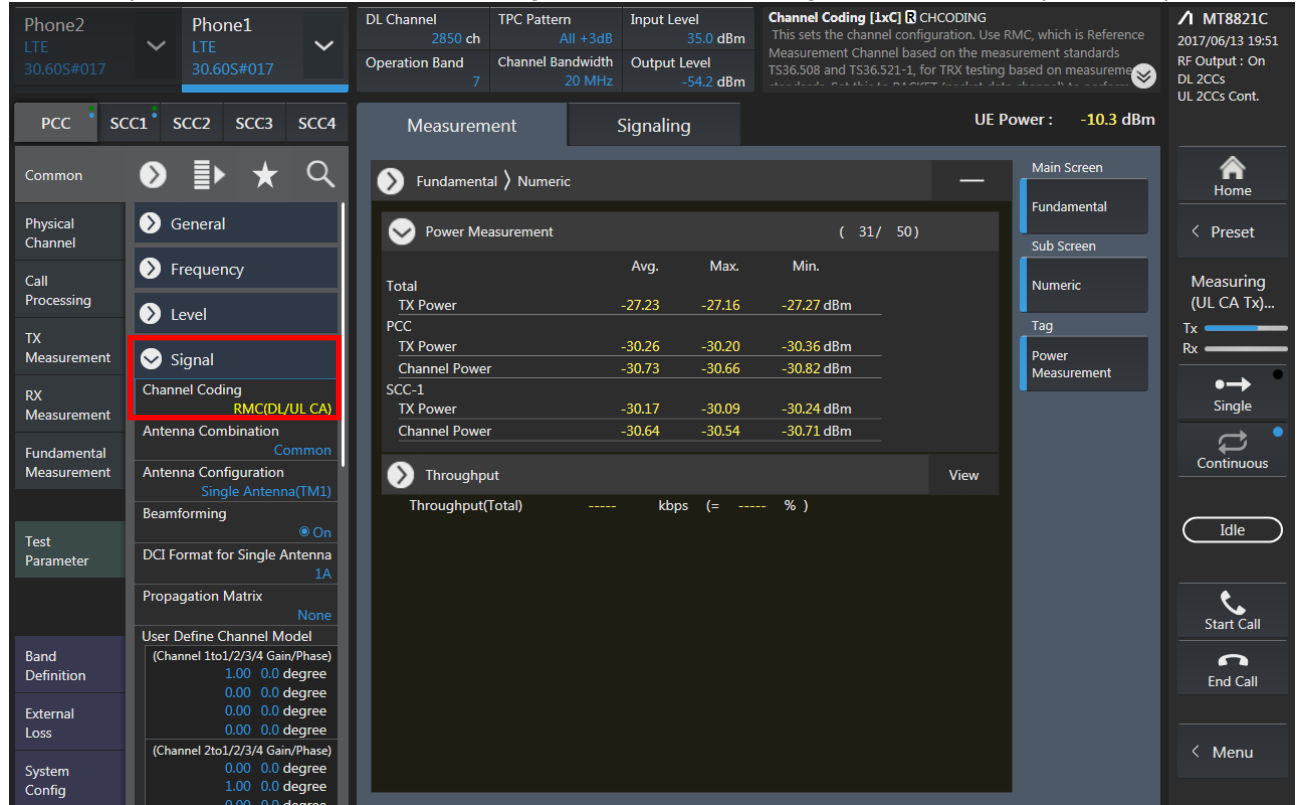


LTE Uplink and Downlink Carrier Aggregation configurations:

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

For example, Uplink Carrier Aggregation:

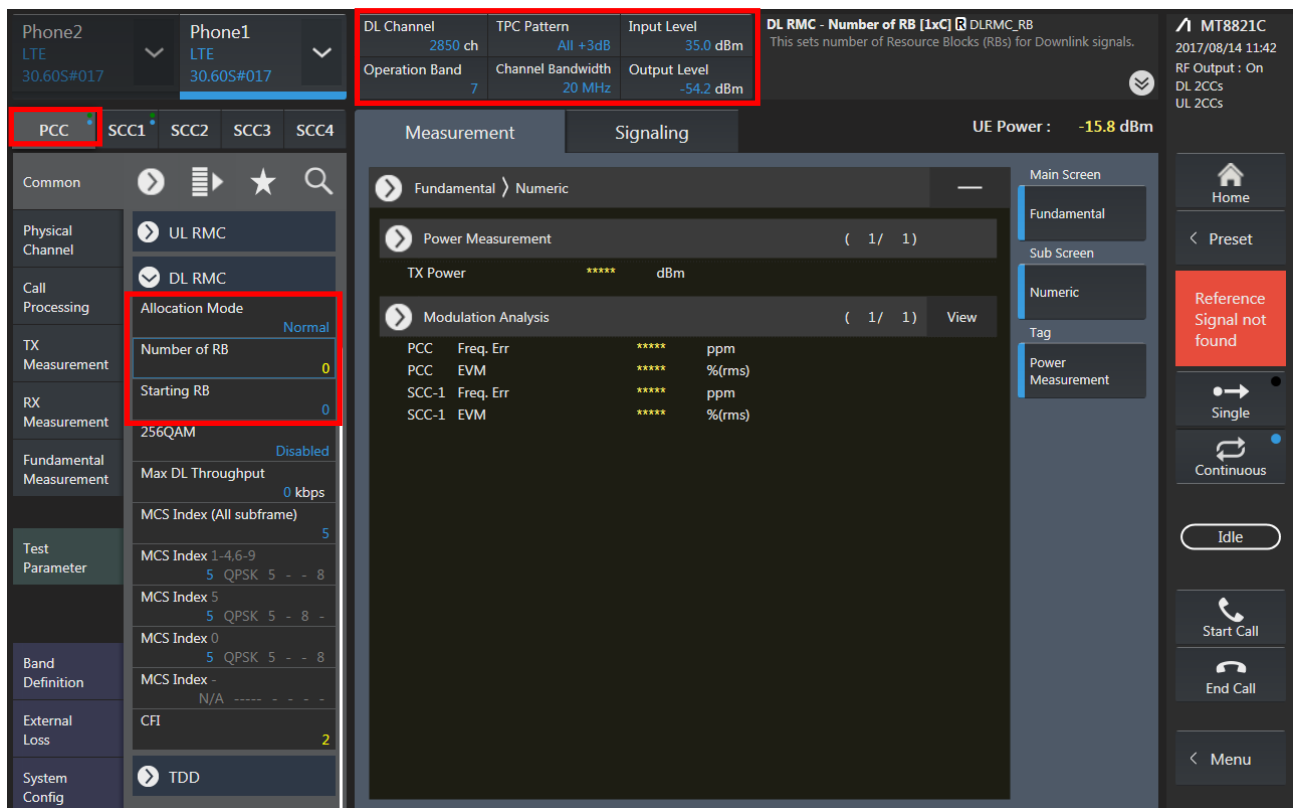
Detailed operation: PCC → Common → Signal → Channel Coding → Select **【RMC (DL/UL CA)】**



The screenshot shows the SPORTON LAB. LTE test software interface. The 'Signal' menu is highlighted in red, and 'Channel Coding' is selected, showing 'RMC(DL/UL CA)' as the chosen option. The 'Power Measurement' section displays the following data:

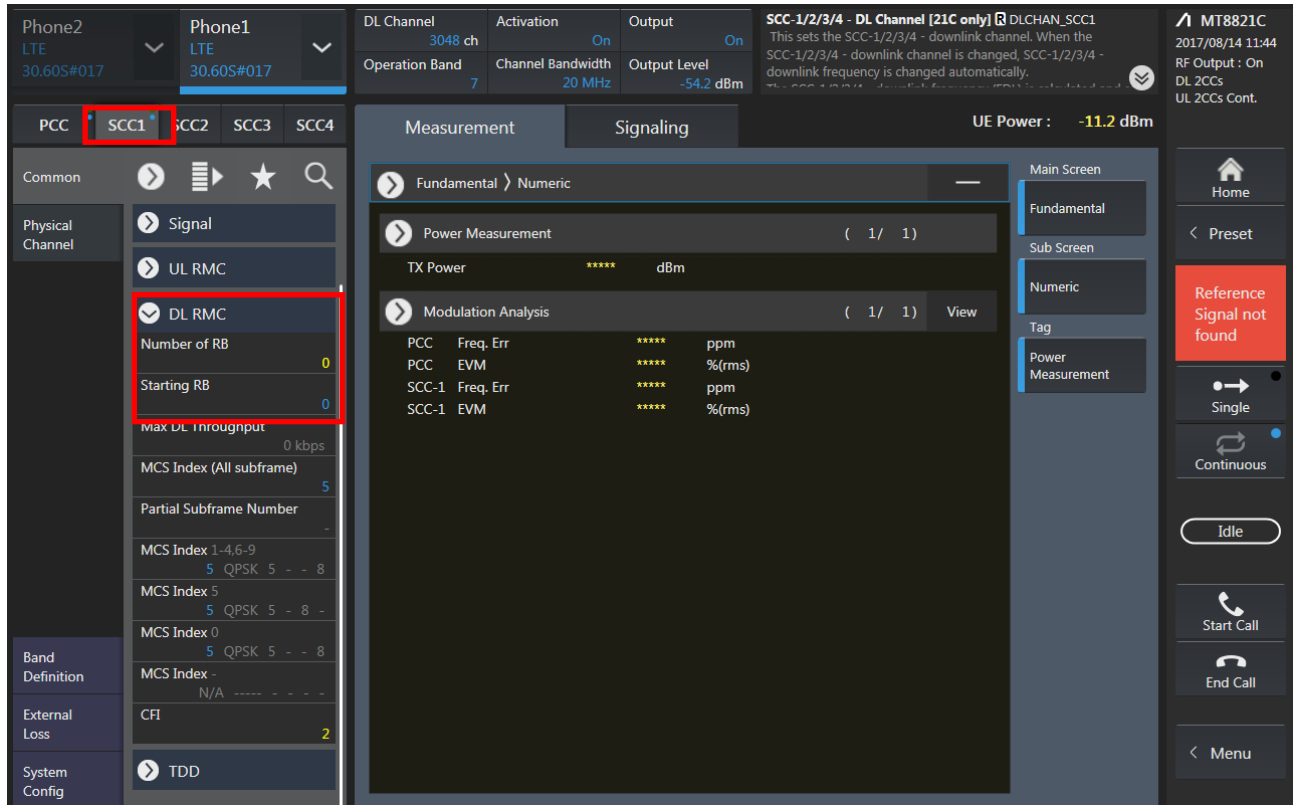
	Avg.	Max.	Min.
Total TX Power	-27.23	-27.16	-27.27 dBm
PCC TX Power	-30.26	-30.20	-30.36 dBm
PCC Channel Power	-30.73	-30.66	-30.82 dBm
SCC-1 TX Power	-30.17	-30.09	-30.24 dBm
SCC-1 Channel Power	-30.64	-30.54	-30.71 dBm

- PCC parameter Settings: select the PCC tab and Set operating band, BW, channel and RB configurations for PCC.



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The left sidebar contains various configuration tabs, with 'PCC' selected. The main area shows the 'PCC' configuration settings, including 'DL Channel' (2850 ch), 'TPC Pattern' (All +3dB), 'Input Level' (35.0 dBm), 'Operation Band' (7), 'Channel Bandwidth' (20 MHz), and 'Output Level' (-54.2 dBm). The 'DL RMC - Number of RB [1x] [3] DLRMC_RB' is set to 1. The 'Allocation Mode' is set to 'Normal'. The 'Number of RB' is set to 0, and the 'Starting RB' is set to 0. The '256QAM' is set to 'Disabled'. The 'Max DL Throughput' is set to 0 kbps. The 'MCS Index (All subframe)' is set to 5. The 'MCS Index 1-4,6-9' is set to 5 QPSK. The 'MCS Index 5' is set to 5 QPSK. The 'MCS Index 0' is set to 5 QPSK. The 'MCS Index -' is set to N/A. The 'CFI' is set to 2. The 'System Config' is set to TDD. The 'UE Power' is set to -15.8 dBm. The 'Reference Signal not found' message is displayed in a red box on the right side of the interface.

3. SCC parameter Settings: select the SCC tab and Set operating band, BW, channel and RB configurations for SCC.



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The top section shows the 'Phone1' configuration with 'LTE' and '30.60S#017'. The 'DL Channel' is set to '3048 ch', 'Activation' is 'On', and 'Output' is 'On'. The 'Channel Bandwidth' is '20 MHz' and 'Output Level' is '-54.2 dBm'. The 'SCC-1/2/3/4 - DL Channel [21C only]' is selected, and the 'DLCHAN_SCC1' is set to 'DLCHAN_SCC1'. The 'UE Power' is '-11.2 dBm'.

The 'Physical Channel' section is expanded, showing 'Signal', 'UL RMC', and 'DL RMC' (selected). The 'DL RMC' settings are: 'Number of RB' (0), 'Starting RB' (0), 'Max DL Throughput' (0 kbps), 'MCS Index (All subframe)' (5), 'Partial Subframe Number' (-), 'MCS Index 1-4,6-9' (5 QPSK 5 - - 8), 'MCS Index 5' (5 QPSK 5 - - 8), 'MCS Index 0' (5 QPSK 5 - - 8), and 'MCS Index -' (N/A - - - - -). The 'Band Definition' is 'CFI', 'External Loss' is '2', and 'System Config' is 'TDD'.

The 'Measurement' section is expanded, showing 'Fundamental' and 'Modulation Analysis'. The 'Modulation Analysis' table shows the following data:

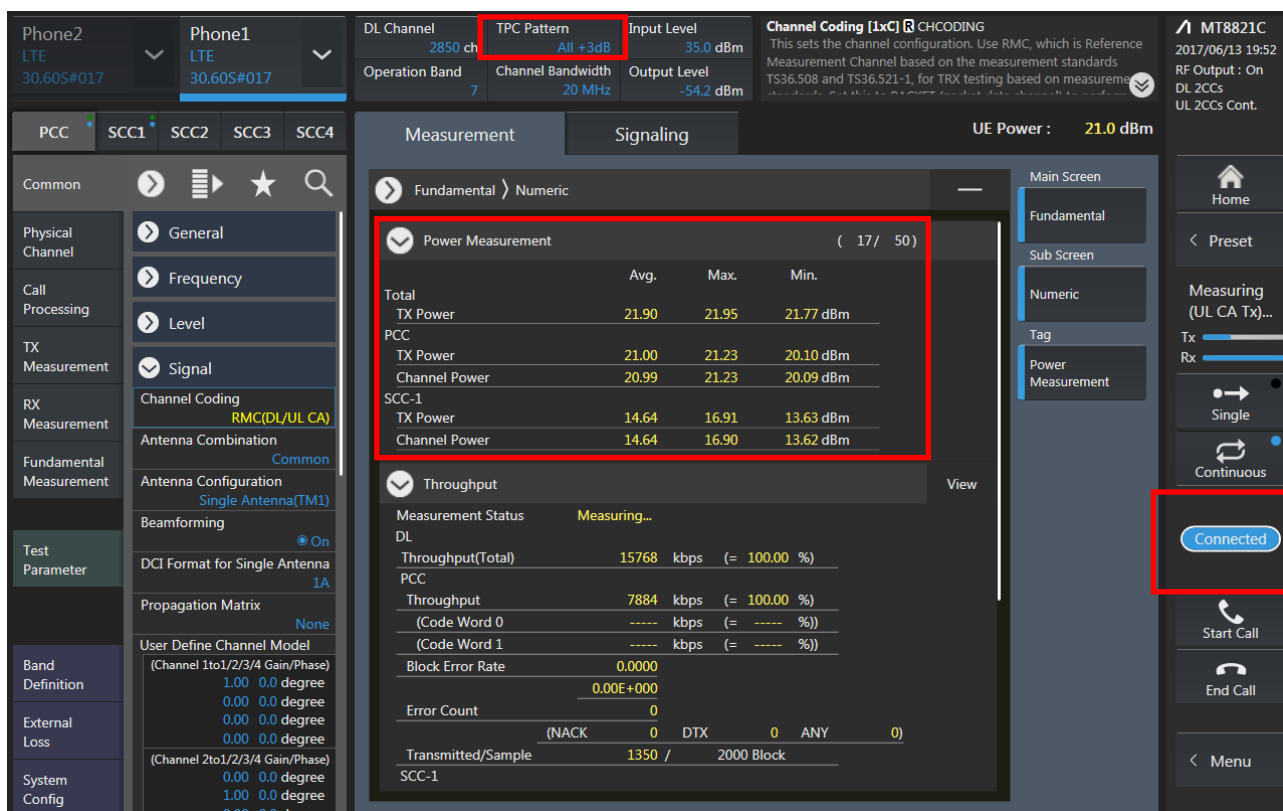
PCC	Freq. Err	*****	ppm
PCC	EVM	*****	%(rms)
SCC-1	Freq. Err	*****	ppm
SCC-1	EVM	*****	%(rms)

The 'Main Screen' section shows 'Fundamental' and 'Sub Screen' (selected). The 'Tag' section shows 'Power Measurement'.

The 'Reference Signal not found' message is displayed in a red box. The 'Single' and 'Continuous' buttons are visible, along with the 'Idle' button. The 'Start Call' and 'End Call' buttons are also present.

4. Select the PCC tab, and select max power;

Click the “Connect” button at the Right of the screen.



The screenshot displays the SPORTON LAB. FCC SAR TEST REPORT interface. The PCC tab is selected, and the 'Connect' button is highlighted. The interface shows various measurement parameters and a table of results.

Measurement Parameters:

- DL Channel: 2850 ch
- TPC Pattern: All +3dB
- Input Level: 35.0 dBm
- Channel Coding [1xC] CHCODING
- Operation Band: 7
- Channel Bandwidth: 20 MHz
- Output Level: -54.2 dBm
- UE Power: 21.0 dBm

Measurement Results Table:

	Avg.	Max.	Min.
Total TX Power	21.90	21.95	21.77 dBm
PCC TX Power	21.00	21.23	20.10 dBm
Channel Power	20.99	21.23	20.09 dBm
SCC-1 TX Power	14.64	16.91	13.63 dBm
Channel Power	14.64	16.90	13.62 dBm

Throughput Results:

- Measurement Status: Measuring...
- DL Throughput(Total): 15768 kbps (= 100.00 %)
- PCC Throughput: 7884 kbps (= 100.00 %)
- (Code Word 0): ----- kbps (= ----- %)
- (Code Word 1): ----- kbps (= ----- %)
- Block Error Rate: 0.0000
- Error Count: 0
- Transmitted/Sample: 1350 / 2000 Block

Buttons and Controls:

- Home
- Preset
- Measuring (UL CA Tx)...
- Single
- Continuous
- Connected (highlighted)
- Start Call
- End Call
- Menu