Appendix H. – Power reduction verification

Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations.

Procedures for determining proximity sensor triggering distances

(KDB 616217 D04v01r02 §6.2)

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and output power was monitored. The Power measurements were conformed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
3. Step 1 and 2 were repeated for all individual power reduction mechanism and combinations thereof. For the combination cases, one mechanism was switched to a “triggered” state at a time; powers were conformed to be within tolerance after each additional mechanism was activated.

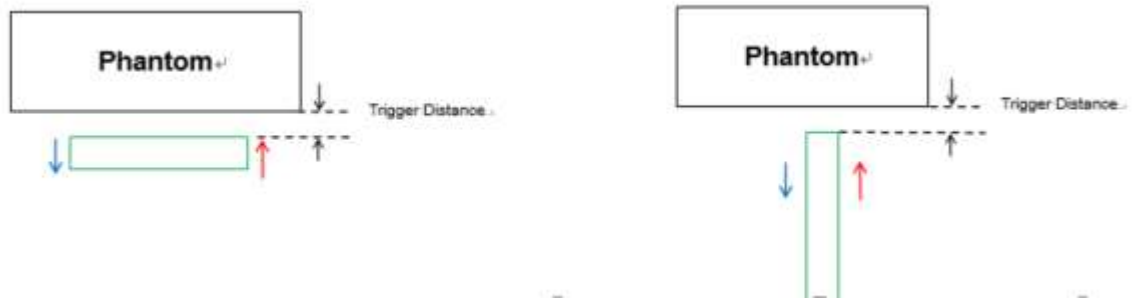
For detailed measurement conducted power results, please refer to the Section .11

1. Power Reduction Verification for Main 1 Ant

This device utilizes a power reduction mechanism for some wireless modes under some conditions when the device is being used in close proximity to the user's hand for Main1 Ant

FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in Proximity use conditions.

1.2 Proximity sensor triggering Distance Verification.



Proximity Sensor Trigger Distance Assessment KDB 616217 D04 §6.2 (Rear / Right / Top side)

LEGEND

→ Direction of DUT travel for determination of power reduction triggering point

→ Direction of DUT travel for determination of full power resumption triggering point

Tissue simulating liquid	Trigger distance Rear		Trigger distance Right Side		Trigger distance Right Corner Side		Trigger distance -Top	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
750MHz	22	23	8	9	9	10	21	22
835MHz	22	23	8	9	9	10	21	22
1750 MHz	22	23	8	9	9	10	21	22
1900 MHz	22	23	8	9	9	10	21	22
2600 MHz	22	23	8	9	9	10	21	22

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	27	26	25	24	23	22	21	20	19	18
GSM 850 1Tx	31.83	31.78	31.98	31.94	31.87	22.84	22.81	22.92	22.98	22.78
GSM 850 2Tx	30.97	31.05	30.95	31.02	31.12	21.43	21.35	21.52	21.46	21.38
GSM 850 3Tx	28.52	28.46	28.43	28.54	28.31	20.42	20.45	20.41	20.55	20.36
GSM 850 4Tx	26.36	26.50	26.41	26.53	26.46	17.82	17.75	17.81	17.82	17.82
GSM 1900 1Tx	29.30	29.33	29.43	29.44	29.41	20.48	20.58	20.53	20.42	20.60
GSM 1900 2Tx	27.45	27.56	27.43	27.43	27.45	19.47	19.40	19.47	19.35	19.41
GSM 1900 3Tx	26.52	26.49	26.41	26.48	26.43	17.38	17.46	17.51	17.33	17.42
GSM 1900 4Tx	23.55	23.52	23.52	23.44	23.46	15.58	15.58	15.51	15.44	15.48
UMTS Band 5	23.60	23.69	23.62	23.80	23.78	14.19	14.14	14.29	14.23	14.16
UMTS Band 4	23.92	23.98	23.93	23.81	23.83	13.32	13.17	13.27	13.18	13.22
UMTS Band 2	24.37	24.41	24.18	24.21	24.18	13.75	13.84	13.66	13.76	13.65
LTE Band 2	23.74	23.72	23.63	23.70	23.63	13.11	13.02	13.07	13.14	13.22
LTE Band 5	23.96	24.05	24.11	23.91	24.12	13.89	13.71	13.81	13.86	13.81
LTE Band 12	24.04	24.04	24.04	24.07	24.04	16.62	16.61	16.55	16.62	16.41
LTE Band 13	23.81	23.78	23.69	23.84	23.73	15.98	15.95	16.06	16.03	15.97
LTE Band 25	23.78	23.86	23.88	23.92	23.70	12.98	12.87	12.90	12.87	12.93
LTE Band 26	23.88	23.94	23.82	23.84	23.91	13.81	13.97	13.78	13.95	13.79
LTE Band 41	24.12	24.05	23.95	23.99	24.05	13.39	13.19	13.39	13.30	13.25
LTE Band 41(HPUE)	26.18	26.27	26.34	26.15	26.16	13.33	13.45	13.39	13.46	13.36
LTE Band 66	23.72	23.57	23.53	23.61	23.76	13.75	13.87	13.76	13.80	13.70
N5	24.81	24.89	24.97	24.95	24.75	16.78	16.73	16.75	16.95	16.87
N66	24.82	24.93	24.91	24.87	24.77	13.69	13.62	13.68	13.74	13.73

Rear side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	19	20	21	22	23	24	25	26	27	28
GSM 850 1Tx	22.78	22.63	22.61	22.72	22.64	31.92	31.78	31.75	31.72	31.89
GSM 850 2Tx	21.44	21.22	21.37	21.41	21.24	31.11	31.03	31.04	31.08	30.91
GSM 850 3Tx	20.49	20.44	20.39	20.36	20.48	28.34	28.32	28.19	28.24	28.21
GSM 850 4Tx	17.65	17.42	17.62	17.57	17.62	26.32	26.13	26.24	26.12	26.14
GSM 1900 1Tx	20.58	20.40	20.46	20.45	20.43	29.37	29.30	29.15	29.31	29.17
GSM 1900 2Tx	19.43	19.39	19.32	19.40	19.19	27.41	27.34	27.20	27.34	27.41
GSM 1900 3Tx	17.42	17.39	17.30	17.28	17.32	26.38	26.36	26.34	26.24	26.25
GSM 1900 4Tx	15.59	15.42	15.36	15.44	15.35	23.49	23.32	23.27	23.48	23.31
UMTS Band 5	14.19	14.12	13.98	14.04	14.11	23.65	23.44	23.61	23.63	23.65
UMTS Band 4	13.28	13.10	13.12	13.18	13.26	23.91	23.87	23.87	23.74	23.78
UMTS Band 2	13.78	13.77	13.73	13.71	13.67	24.33	24.12	24.27	24.19	24.23
LTE Band 2	13.1	12.89	12.90	12.87	12.90	23.71	23.54	23.65	23.54	23.64
LTE Band 5	13.72	13.56	13.53	13.51	13.58	24.01	23.88	23.77	23.83	23.88
LTE Band 12	16.4	16.31	16.21	16.38	16.31	24.01	23.85	23.90	23.81	23.88
LTE Band 13	16	15.97	15.95	15.92	15.87	23.77	23.65	23.74	23.55	23.66
LTE Band 25	12.81	12.75	12.60	12.72	12.66	23.72	23.64	23.49	23.54	23.68
LTE Band 26	13.76	13.61	13.63	13.61	13.54	24.01	23.84	23.98	23.85	23.93
LTE Band 41	13.39	13.20	13.23	13.36	13.19	24.03	23.95	23.96	23.79	23.86
LTE Band 41(HPUE)	13.27	13.13	13.09	13.23	13.19	26.18	26.08	25.99	26.10	26.11
LTE Band 66	13.74	13.72	13.73	13.52	13.62	23.49	23.48	23.36	23.44	23.24
N5	16.83	16.82	16.66	16.62	16.61	24.66	24.54	24.49	24.52	24.50
N66	13.67	13.52	13.64	13.62	13.55	24.82	24.78	24.67	24.59	24.60

Based on the most conservative measured triggering distance of 22mm, additional Body SAR measurements were required at 21mm from rear side for the above modes.

Right side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	13	12	11	10	9	8	7	6	5	4
GSM 850 1Tx	31.83	31.96	31.79	31.86	31.91	22.95	22.88	22.97	22.97	22.91
GSM 850 2Tx	31.08	31.12	30.99	31.11	31.03	21.57	21.49	21.52	21.37	21.38
GSM 850 3Tx	28.35	28.47	28.36	28.41	28.36	20.51	20.34	20.57	20.58	20.42
GSM 850 4Tx	26.37	26.48	26.32	26.44	26.33	17.76	17.83	17.90	17.79	17.87
GSM 1900 1Tx	29.29	29.43	29.44	29.39	29.44	20.59	20.45	20.43	20.55	20.38
GSM 1900 2Tx	27.41	27.47	27.42	27.53	27.34	19.50	19.34	19.51	19.39	19.40
GSM 1900 3Tx	26.54	26.39	26.60	26.54	26.55	17.47	17.50	17.42	17.33	17.28
GSM 1900 4Tx	23.59	23.51	23.60	23.44	23.42	15.63	15.55	15.65	15.50	15.60
UMTS Band 5	23.63	23.59	23.73	23.64	23.68	14.22	14.07	14.31	14.20	14.14
UMTS Band 4	23.85	23.91	23.77	23.84	23.94	13.39	13.21	13.32	13.25	13.22
UMTS Band 2	24.28	24.38	24.33	24.34	24.40	13.83	13.82	13.74	13.80	13.84
LTE Band 2	23.77	23.71	23.78	23.61	23.76	13.24	13.17	13.17	13.18	13.15
LTE Band 5	24.12	24.01	24.06	23.97	24.02	13.76	13.80	13.85	13.90	13.89
LTE Band 12	24.04	24.06	23.86	23.96	23.84	16.65	16.43	16.42	16.53	16.55
LTE Band 13	23.85	23.88	23.67	23.74	23.75	15.97	15.81	15.85	15.94	15.91
LTE Band 25	23.80	23.79	23.85	23.74	23.68	12.92	12.73	12.75	12.96	12.74
LTE Band 26	23.96	23.99	23.99	23.89	23.99	13.91	13.90	13.76	13.82	13.87
LTE Band 41	24.00	23.99	23.96	23.93	24.05	13.32	13.40	13.30	13.18	13.41
LTE Band 41(HPUE)	26.31	26.19	26.20	26.31	26.22	13.45	13.45	13.37	13.23	13.34
LTE Band 66	23.73	23.75	23.73	23.51	23.61	13.83	13.92	13.85	13.71	13.76
N5	24.91	24.97	24.77	24.97	24.98	16.82	16.92	16.75	16.74	16.81
N66	24.93	24.77	24.72	24.92	24.95	13.81	13.83	13.81	13.71	13.68

Right side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
GSM 850 1Tx	22.88	22.90	22.94	22.96	22.92	31.81	31.78	31.88	31.81	31.95
GSM 850 2Tx	21.57	21.45	21.48	21.45	21.47	31.05	31.03	31.13	31.02	31.00
GSM 850 3Tx	20.45	20.44	20.56	20.58	20.35	28.53	28.39	28.36	28.48	28.51
GSM 850 4Tx	17.81	17.89	17.71	17.70	17.83	26.49	26.53	26.41	26.42	26.52
GSM 1900 1Tx	20.59	20.57	20.42	20.47	20.51	29.35	29.42	29.22	29.29	29.25
GSM 1900 2Tx	19.41	19.38	19.54	19.39	19.34	27.51	27.39	27.40	27.33	27.57
GSM 1900 3Tx	17.50	17.48	17.52	17.46	17.53	26.45	26.54	26.40	26.59	26.62
GSM 1900 4Tx	15.62	15.50	15.52	15.46	15.42	23.48	23.51	23.45	23.41	23.41
UMTS Band 5	14.29	14.30	14.07	14.25	14.26	23.71	23.65	23.74	23.66	23.67
UMTS Band 4	13.41	13.40	13.35	13.30	13.22	23.91	23.78	23.85	23.78	23.77
UMTS Band 2	13.85	13.69	13.86	13.75	13.81	24.26	24.39	24.28	24.18	24.36
LTE Band 2	13.11	13.12	13.23	13.01	13.00	23.59	23.71	23.70	23.72	23.70
LTE Band 5	13.86	13.94	13.77	13.83	13.71	24.05	24.04	24.02	24.03	24.10
LTE Band 12	16.51	16.53	16.42	16.51	16.50	24.06	24.06	23.92	23.94	23.91
LTE Band 13	15.91	15.83	15.83	15.81	15.89	23.86	23.67	23.72	23.90	23.75
LTE Band 25	12.85	12.80	12.87	12.91	12.90	23.73	23.70	23.86	23.73	23.78
LTE Band 26	13.94	13.78	13.76	13.94	13.96	24.04	23.95	23.91	23.89	23.83
LTE Band 41	13.40	13.19	13.42	13.25	13.22	24.06	24.05	24.02	23.98	23.92
LTE Band 41(HPUE)	13.31	13.25	13.41	13.23	13.30	26.26	26.19	26.12	26.26	26.22
LTE Band 66	13.92	13.75	13.92	13.69	13.91	23.59	23.53	23.61	23.75	23.55
N5	16.89	16.89	16.85	16.91	16.84	24.91	24.79	24.78	24.86	24.74
N66	13.76	13.72	13.71	13.74	13.65	24.80	24.85	24.81	24.84	24.75

Based on the most conservative measured triggering distance of 8mm, additional Body SAR measurements were required at 7mm from right side for the above modes

Right Corner side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	14	13	12	11	10	9	8	7	6	5
GSM 850 1Tx	31.94	31.79	31.98	31.98	31.97	22.84	22.91	22.73	22.81	22.78
GSM 850 2Tx	31.03	30.97	31.15	31.05	31.03	21.44	21.49	21.55	21.59	21.53
GSM 850 3Tx	28.45	28.29	28.37	28.37	28.45	20.54	20.59	20.40	20.57	20.54
GSM 850 4Tx	26.38	26.43	26.48	26.34	26.33	17.91	17.88	17.76	17.86	17.83
GSM 1900 1Tx	29.37	29.27	29.39	29.29	29.30	20.58	20.48	20.55	20.56	20.43
GSM 1900 2Tx	27.44	27.35	27.38	27.57	27.33	19.40	19.45	19.36	19.52	19.43
GSM 1900 3Tx	26.63	26.60	26.60	26.60	26.56	17.38	17.34	17.29	17.35	17.49
GSM 1900 4Tx	23.44	23.49	23.46	23.36	23.57	15.56	15.61	15.59	15.61	15.52
UMTS Band 5	23.60	23.69	23.72	23.61	23.72	14.22	14.28	14.14	14.14	14.28
UMTS Band 4	23.97	23.98	23.79	23.76	23.78	13.23	13.31	13.21	13.28	13.22
UMTS Band 2	24.29	24.40	24.25	24.26	24.38	13.70	13.77	13.85	13.83	13.77
LTE Band 2	23.72	23.56	23.65	23.75	23.61	13.13	13.08	13.17	13.08	13.14
LTE Band 5	24.13	23.91	24.00	24.00	23.95	13.92	13.86	13.82	13.90	13.73
LTE Band 12	23.99	23.91	24.04	23.93	23.90	16.52	16.41	16.65	16.42	16.56
LTE Band 13	23.73	23.84	23.82	23.67	23.79	15.97	15.97	15.88	16.04	16.05
LTE Band 25	23.75	23.83	23.90	23.80	23.76	12.94	12.77	12.97	12.89	12.79
LTE Band 26	23.94	23.86	23.88	24.00	23.95	13.95	13.79	13.89	13.85	13.90
LTE Band 41	24.06	23.89	24.05	23.92	23.98	13.42	13.34	13.27	13.30	13.22
LTE Band 41(HPUE)	26.35	26.18	26.21	26.21	26.27	13.43	13.43	13.34	13.32	13.40
LTE Band 66	23.64	23.75	23.65	23.58	23.59	13.81	13.78	13.82	13.72	13.86
N5	24.88	24.83	24.88	24.94	24.87	16.86	16.75	16.96	16.72	16.96
N66	24.78	24.80	24.77	24.94	24.82	13.84	13.76	13.77	13.76	13.65

Right Corner side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	6	7	8	9	10	11	12	13	14	15
GSM 850 1Tx	22.79	22.75	22.84	22.92	22.96	31.90	31.88	31.91	31.77	31.84
GSM 850 2Tx	21.51	21.54	21.40	21.42	21.41	30.99	30.96	31.13	31.06	30.92
GSM 850 3Tx	20.40	20.51	20.46	20.35	20.40	28.44	28.38	28.43	28.43	28.35
GSM 850 4Tx	17.92	17.71	17.90	17.87	17.85	26.40	26.52	26.33	26.38	26.33
GSM 1900 1Tx	20.57	20.59	20.48	20.51	20.46	29.42	29.31	29.33	29.46	29.39
GSM 1900 2Tx	19.38	19.33	19.52	19.48	19.47	27.54	27.57	27.35	27.52	27.57
GSM 1900 3Tx	17.47	17.52	17.40	17.38	17.37	26.44	26.62	26.54	26.63	26.50
GSM 1900 4Tx	15.55	15.44	15.64	15.66	15.51	23.50	23.37	23.58	23.56	23.42
UMTS Band 5	14.30	14.12	14.30	14.11	14.23	23.76	23.65	23.75	23.58	23.68
UMTS Band 4	13.25	13.17	13.38	13.19	13.32	23.83	23.96	23.91	23.83	23.79
UMTS Band 2	13.89	13.75	13.82	13.88	13.81	24.32	24.41	24.36	24.21	24.26
LTE Band 2	13.20	13.02	13.18	13.07	12.99	23.62	23.55	23.66	23.57	23.67
LTE Band 5	13.90	13.75	13.75	13.70	13.71	24.12	23.98	24.03	24.08	23.95
LTE Band 12	16.57	16.41	16.55	16.49	16.49	23.95	23.84	23.95	24.07	24.08
LTE Band 13	15.93	15.93	15.90	16.01	15.90	23.79	23.67	23.77	23.72	23.72
LTE Band 25	12.90	12.78	12.89	12.90	12.77	23.90	23.68	23.77	23.75	23.90
LTE Band 26	13.89	13.80	13.96	13.73	13.79	23.96	23.82	23.96	23.85	24.02
LTE Band 41	13.24	13.32	13.41	13.24	13.31	24.02	23.93	23.98	24.04	23.96
LTE Band 41(HPUE)	13.40	13.38	13.35	13.37	13.40	26.33	26.26	26.27	26.15	26.27
LTE Band 66	13.92	13.84	13.93	13.88	13.72	23.65	23.71	23.69	23.53	23.52
N5	16.84	16.81	16.93	16.86	16.72	24.82	24.97	24.88	24.75	24.78
N66	13.65	13.68	13.75	13.73	13.65	24.82	24.83	24.78	24.75	24.73

Based on the most conservative measured triggering distance of 9mm, additional Body SAR measurements were required at 8mm from top side for the above modes.

Top side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	26	25	24	23	22	21	20	19	18	17
GSM 850 1Tx	31.84	31.85	31.81	31.85	31.84	22.85	22.94	22.96	22.79	22.80
GSM 850 2Tx	31.01	30.94	30.91	30.96	30.92	21.57	21.49	21.57	21.53	21.60
GSM 850 3Tx	28.47	28.52	28.54	28.33	28.31	20.59	20.52	20.56	20.42	20.56
GSM 850 4Tx	26.36	26.33	26.46	26.44	26.42	17.88	17.74	17.73	17.71	17.74
GSM 1900 1Tx	29.42	29.28	29.27	29.29	29.25	20.54	20.40	20.38	20.60	20.53
GSM 1900 2Tx	27.43	27.45	27.46	27.36	27.37	19.40	19.36	19.30	19.44	19.41
GSM 1900 3Tx	26.49	26.43	26.38	26.48	26.43	17.41	17.32	17.31	17.31	17.44
GSM 1900 4Tx	23.60	23.41	23.53	23.54	23.38	15.54	15.64	15.49	15.58	15.46
UMTS Band 5	23.64	23.64	23.68	23.58	23.75	14.26	14.26	14.21	14.10	14.14
UMTS Band 4	23.87	23.90	23.96	23.97	23.79	13.22	13.41	13.39	13.41	13.27
UMTS Band 2	24.36	24.31	24.19	24.27	24.39	13.71	13.74	13.69	13.85	13.75
LTE Band 2	23.66	23.62	23.65	23.71	23.57	13.10	13.21	13.12	13.00	13.15
LTE Band 5	24.13	24.04	23.98	23.96	24.05	13.82	13.88	13.80	13.89	13.89
LTE Band 12	23.90	23.94	24.07	23.99	24.04	16.47	16.50	16.46	16.52	16.58
LTE Band 13	23.85	23.69	23.75	23.79	23.85	15.95	15.92	16.04	15.82	15.92
LTE Band 25	23.80	23.73	23.71	23.87	23.70	12.88	12.77	12.84	12.78	12.95
LTE Band 26	23.87	23.96	23.89	23.98	23.88	13.88	13.82	13.80	13.74	13.87
LTE Band 41	23.96	24.04	24.09	23.95	23.93	13.43	13.18	13.36	13.29	13.33
LTE Band 41(HPUE)	26.32	26.19	26.28	26.24	26.27	13.31	13.23	13.34	13.39	13.43
LTE Band 66	23.66	23.52	23.53	23.75	23.68	13.89	13.72	13.71	13.69	13.73
N5	24.91	24.97	24.81	24.85	24.81	16.80	16.95	16.88	16.83	16.77
N66	24.82	24.81	24.94	24.85	24.88	13.83	13.71	13.77	13.85	13.74

Top side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	18	19	20	21	22	23	24	25	26	27
GSM 850 1Tx	22.80	22.73	22.82	22.82	22.84	31.89	31.84	31.96	31.83	31.92
GSM 850 2Tx	21.55	21.35	21.49	21.46	21.36	31.11	30.97	31.05	31.04	31.06
GSM 850 3Tx	20.42	20.56	20.48	20.51	20.54	28.54	28.42	28.35	28.46	28.50
GSM 850 4Tx	17.84	17.92	17.94	17.79	17.89	26.50	26.38	26.47	26.39	26.43
GSM 1900 1Tx	20.53	20.60	20.47	20.59	20.40	29.42	29.39	29.37	29.26	29.23
GSM 1900 2Tx	19.46	19.43	19.40	19.31	19.38	27.44	27.55	27.33	27.44	27.54
GSM 1900 3Tx	17.34	17.30	17.42	17.52	17.43	26.57	26.48	26.44	26.63	26.52
GSM 1900 4Tx	15.60	15.61	15.62	15.44	15.52	23.53	23.52	23.49	23.40	23.56
UMTS Band 5	14.30	14.13	14.18	14.23	14.23	23.69	23.59	23.57	23.78	23.62
UMTS Band 4	13.28	13.31	13.23	13.34	13.33	23.90	23.92	23.88	23.96	23.85
UMTS Band 2	13.73	13.85	13.84	13.88	13.73	24.42	24.36	24.41	24.29	24.24
LTE Band 2	13.11	13.10	13.16	13.00	13.13	23.66	23.76	23.71	23.54	23.75
LTE Band 5	13.93	13.94	13.71	13.71	13.72	24.13	24.11	24.08	23.95	23.96
LTE Band 12	16.52	16.42	16.51	16.49	16.58	24.01	23.91	23.87	23.88	23.99
LTE Band 13	15.93	16.04	15.82	15.90	15.99	23.90	23.82	23.71	23.88	23.92
LTE Band 25	12.98	12.73	12.92	12.75	12.91	23.86	23.75	23.89	23.83	23.71
LTE Band 26	13.84	13.78	13.90	13.83	13.94	24.02	23.90	24.00	23.99	23.95
LTE Band 41	13.36	13.33	13.22	13.28	13.43	23.98	23.93	24.10	24.06	24.06
LTE Band 41(HPUE)	13.46	13.39	13.29	13.27	13.43	26.21	26.22	26.27	26.32	26.18
LTE Band 66	13.87	13.74	13.79	13.70	13.69	23.58	23.69	23.73	23.69	23.74
N5	16.77	16.90	16.71	16.94	16.84	24.95	24.87	24.99	24.94	24.90
N66	13.69	13.73	13.76	13.64	13.73	24.77	24.76	24.79	24.86	24.72

Based on the most conservative measured triggering distance of 21mm, additional Body SAR measurements were required at 20mm from top side for the above modes.

1.3 Proximity Sensor Coverage for SAR measurements

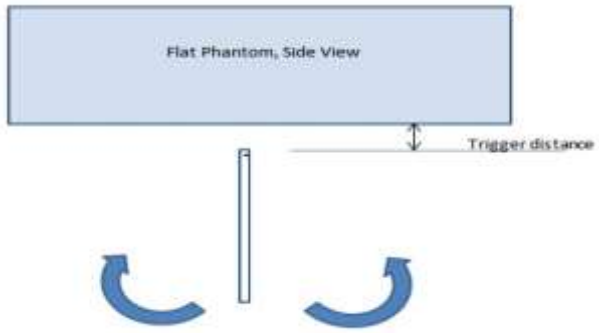
(KDB 616217 D04v01r02 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

1.4 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
835MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
1750 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
1900 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
2600 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On

1.5 Resulting test positions for Body SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance [mm]	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Body SAR [mm]
Main 1 Ant	Rear	22	N/A	N/A	21
	Right Side	8	N/A	N/A	7
	Right Corner	9	N/A	N/A	8
	Top	21	N/A	N/A	20

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.

2. Power reduction Verification for WLAN 1 Ant

This device utilizes a power reduction mechanism for some wireless modes under some conditions when the device is being used in close proximity to the user's hand for WLAN 1 Ant

FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in Proximity use conditions.

Mechanism(s)	Mode/Band	Device State Index	
		Un-triggered (Max Power) Except 38ch, 42ch, 50ch, 58ch, 62ch, 102ch, 106ch, 114ch	Mechanism 1: (Reduced Power)
Grip	2.4GHz 802.11g	17.32	12.26
Grip	2.4GHz 802.11b	18.42	12.18
Grip	2.4GHz 802.11n	17.74	12.06
Grip	2.4GHz 802.11ax SU	17.03	12.36
Grip	2.4GHz Bluetooth	15.8	8.96
Grip	5GHz 802.11a	17.56	7.86
Grip	5GHz 802.11n 20MHz	17.32	8.03
Grip	5GHz 802.11ac 20MHz	17.28	7.97
Grip	5GHz 802.11ax 20MHz SU	17.61	7.91
Grip	5GHz 802.11n 40MHz	16.31	8.52
Grip	5GHz 802.11ac 40MHz	16.55	8.52
Grip	5GHz 802.11ax 40MHz SU	16.03	7.93
Grip	5GHz 802.11ac 80MHz	15.20	8.85
Grip	5GH 802.11ax 80MHz SU	15.11	8.02
Grip	5GHz 802.11ac 160MHz	11.88	7.92
Grip	5GHz 802.11ax 160MHz SU	11.53	8.01
Grip	6GHz 802.11a	9.907	8.597
Grip	6GHz 802.11ax 20MHz	9.747	8.727
Grip	6GHZ 802.11ax 40MHz	8.95	7.73
Grip	6GHz 802.11ax 80MHz	8.94	7.74
Grip	6GHz 802.11ax 160MHz	8.91	7.82

Mechanism(s)	Mode/Band	Un-triggered (Max Power) Except 38ch, 42ch, 50ch, 58ch, 62ch, 102ch, 106ch, 114ch	triggered (Reduced Power)
NR, RSDB active	2.4GHz 802.11g	17.32	10.06
NR, RSDB active	2.4GHz 802.11b	18.42	10.12
NR, RSDB active	2.4GHz 802.11n	17.74	9.83
NR, RSDB active	2.4GHz 802.11ax SU	17.03	10.42
NR, RSDB active	2.4GHz Bluetooth	15.8	7.45
NR, RSDB active	5GHz 802.11a	17.56	5.62
NR, RSDB active	5GHz 802.11n 20MHz	17.32	6.10
NR, RSDB active	5GHz 802.11ac 20MHz	17.28	6.12
NR, RSDB active	5GHz 802.11ax 20MHz SU	17.61	6.65
NR, RSDB active	5GHz 802.11n 40MHz	16.31	6.27
NR, RSDB active	5GHz 802.11ac 40MHz	16.55	6.33
NR, RSDB active	5GHz 802.11ax 40MHz SU	16.03	6.41
NR, RSDB active	5GHz 802.11ac 80MHz	15.20	6.69
NR, RSDB active	5GH 802.11ax 80MHz SU	15.11	6.15
NR, RSDB active	5GHz 802.11ac 160MHz	11.88	6.25
NR, RSDB active	5GHz 802.11ax 160MHz SU	11.53	6.33
NR, RSDB active	6GHz 802.11a	9.907	6.567
NR, RSDB active	6GHz 802.11ax 20MHz	9.747	6.377
NR, RSDB active	6GHZ 802.11ax 40MHz	8.95	5.71
NR, RSDB active	6GHz 802.11ax 80MHz	8.94	5.77
NR, RSDB active	6GHz 802.11ax 160MHz	8.91	5.72

Tissue simulating liquid	Trigger distance Rear		Trigger distance Right Side		Trigger distance Right Corner Side		Trigger distance Top	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
2450MHz	20	21	8	9	9	10	24	25
5000MHz	20	21	8	9	9	10	24	25
6500MHz	20	21	8	9	9	10	24	25

Rear side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	25	24	23	22	21	20	19	18	17	16
2.4GHz 802.11g	17.90	17.99	17.83	17.82	18.00	12.82	12.80	12.76	12.83	12.80
2.4GHz 802.11b	17.72	17.68	17.80	17.74	17.80	12.61	12.65	12.53	12.56	12.67
2.4GHz 802.11n	17.74	17.55	17.57	17.57	17.59	12.42	12.49	12.43	12.41	12.53
2.4GHz 802.11ax SU	16.94	17.03	17.02	16.97	16.96	12.26	12.40	12.30	12.34	12.45
2.4GHz Bluetooth	16.32	16.33	16.46	16.38	16.40	9.79	9.76	9.87	9.85	9.87
5GHz 802.11a	17.15	17.11	17.14	17.07	17.07	8.16	8.18	8.22	8.21	8.19
5GHz 802.11n 20MHz	16.98	16.91	16.89	16.95	17.02	7.82	7.78	7.75	7.78	7.70
5GHz 802.11ac 20MHz	16.84	16.76	16.85	16.87	16.70	7.94	8.03	7.86	7.88	7.89
5GHz 802.11ax 20MHz SU	17.69	17.69	17.52	17.65	17.59	7.96	7.85	7.95	7.93	7.98
5GHz 802.11n 40MHz	16.06	16.01	16.10	16.17	16.03	8.02	7.93	7.98	7.97	7.85
5GHz 802.11ac 40MHz	16.02	16.04	16.12	15.98	16.09	7.36	7.43	7.34	7.37	7.50
5GHz 802.11ax 40MHz SU	15.98	16.07	16.13	16.10	15.96	7.89	7.98	7.97	8.02	7.99
5GHz 802.11ac 80MHz	14.83	14.80	14.90	14.78	14.92	8.64	8.77	8.64	8.62	8.79
5GH 802.11ax 80MHz SU	15.21	15.10	15.20	15.09	15.15	7.97	7.93	7.97	8.01	8.10
5GHz 802.11ac 160MHz	11.33	11.33	11.38	11.46	11.37	7.84	8.00	7.93	7.93	7.88
5GHz 802.11ax 160MHz SU	11.47	11.60	11.46	11.46	11.56	7.92	7.98	8.10	7.98	8.08
6GHz 802.11a	9.86	9.72	9.84	9.85	9.79	8.79	8.74	8.75	8.65	8.65
6GHz 802.11ax 20MHz	9.55	9.50	9.46	9.62	9.63	8.61	8.43	8.53	8.49	8.62
6GHZ 802.11ax 40MHz	8.89	8.97	8.90	9.01	8.91	7.63	7.80	7.72	7.74	7.66
6GHz 802.11ax 80MHz	8.87	9.01	8.96	8.93	9.02	7.67	7.67	7.82	7.70	7.64
6GHz 802.11ax 160MHz	8.89	8.83	8.92	9.02	9.00	7.83	7.86	7.80	7.73	7.89

Rear side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	25	24	23	22	21	20	19	18	17	16
2.4GHz 802.11g	12.83	12.86	12.83	12.75	12.74	17.93	17.94	17.88	17.81	17.92
2.4GHz 802.11b	12.57	12.63	12.62	12.56	12.61	17.79	17.77	17.85	17.67	17.76
2.4GHz 802.11n	12.41	12.41	12.50	12.50	12.49	17.55	17.57	17.68	17.69	17.59
2.4GHz 802.11ax SU	12.31	12.45	12.26	12.31	12.35	17.09	16.94	17.11	17.08	17.09
2.4GHz Bluetooth	9.74	9.86	9.83	9.74	9.78	16.41	16.29	16.32	16.39	16.37
5GHz 802.11a	8.26	8.22	8.16	8.13	8.22	17.03	17.04	17.15	17.08	17.09
5GHz 802.11n 20MHz	7.75	7.86	7.87	7.78	7.89	16.85	16.92	16.85	16.94	16.88
5GHz 802.11ac 20MHz	7.96	7.85	7.88	7.93	7.97	16.75	16.82	16.69	16.71	16.69
5GHz 802.11ax 20MHz SU	7.97	7.99	7.95	7.81	7.86	17.62	17.69	17.58	17.70	17.58
5GHz 802.11n 40MHz	7.87	7.91	7.87	8.00	7.91	16.14	16.09	16.07	16.02	16.07
5GHz 802.11ac 40MHz	7.33	7.50	7.35	7.37	7.41	16.03	15.97	15.97	16.13	16.03
5GHz 802.11ax 40MHz SU	7.90	7.90	8.02	7.96	7.85	15.93	16.09	15.93	16.03	16.12
5GHz 802.11ac 80MHz	8.71	8.81	8.77	8.75	8.66	14.74	14.81	14.77	14.89	14.79
5GH 802.11ax 80MHz SU	8.09	7.98	7.93	7.94	8.02	15.13	15.08	15.03	15.21	15.10
5GHz 802.11ac 160MHz	7.93	7.90	7.94	7.94	7.88	11.47	11.48	11.44	11.31	11.42
5GHz 802.11ax 160MHz SU	7.92	8.11	8.06	8.01	7.98	11.49	11.54	11.57	11.50	11.47
6GHz 802.11a	8.66	8.61	8.63	8.68	8.72	9.74	9.77	9.72	9.83	9.80
6GHz 802.11ax 20MHz	8.49	8.49	8.45	8.60	8.49	9.49	9.53	9.49	9.48	9.58
6GHZ 802.11ax 40MHz	7.70	7.66	7.71	7.71	7.68	8.84	8.98	8.85	9.00	9.03
6GHz 802.11ax 80MHz	7.78	7.66	7.82	7.73	7.80	8.98	8.99	8.95	9.01	8.93
6GHz 802.11ax 160MHz	7.78	7.86	7.88	7.79	7.82	8.86	8.87	9.01	8.92	8.85

Based on the most conservative measured triggering distance of 20mm, additional Body SAR measurements were required at 19mm from rear side for the above modes.

Right side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	13	12	11	10	9	8	7	6	5	4
2.4GHz 802.11g	17.84	17.83	17.87	17.80	17.94	12.72	12.78	12.76	12.84	12.86
2.4GHz 802.11b	17.76	17.81	17.69	17.85	17.83	12.53	12.51	12.68	12.57	12.57
2.4GHz 802.11n	17.62	17.71	17.66	17.69	17.54	12.54	12.37	12.42	12.40	12.44
2.4GHz 802.11ax SU	17.06	16.93	17.02	17.05	16.93	12.41	12.40	12.41	12.34	12.33
2.4GHz Bluetooth	16.43	16.45	16.36	16.45	16.38	9.83	9.81	9.70	9.88	9.82
5GHz 802.11a	16.99	17.02	16.99	17.15	17.11	8.14	8.25	8.15	8.19	8.18
5GHz 802.11n 20MHz	16.97	17.00	16.96	16.84	16.90	7.86	7.76	7.71	7.80	7.80
5GHz 802.11ac 20MHz	16.69	16.82	16.72	16.87	16.77	7.92	8.03	8.01	8.02	8.01
5GHz 802.11ax 20MHz SU	17.69	17.70	17.64	17.70	17.66	8.01	7.97	7.98	7.82	7.99
5GHz 802.11n 40MHz	16.13	16.09	16.06	16.09	16.14	7.95	7.99	7.97	7.97	8.04
5GHz 802.11ac 40MHz	16.08	16.10	16.02	15.96	16.02	7.33	7.51	7.39	7.47	7.40
5GHz 802.11ax 40MHz SU	16.07	16.03	15.98	15.98	16.07	7.92	7.91	7.97	7.91	7.89
5GHz 802.11ac 80MHz	14.92	14.92	14.84	14.91	14.90	8.82	8.80	8.79	8.63	8.68
5GH 802.11ax 80MHz SU	15.14	15.17	15.04	15.05	15.16	7.96	7.97	7.98	7.93	7.95
5GHz 802.11ac 160MHz	11.40	11.51	11.48	11.38	11.47	7.85	8.00	7.86	8.02	7.84
5GHz 802.11ax 160MHz SU	11.60	11.44	11.45	11.54	11.56	8.01	8.10	8.05	7.92	8.01
6GHz 802.11a	9.78	9.84	9.80	9.83	9.81	8.65	8.69	8.74	8.71	8.79
6GHz 802.11ax 20MHz	9.57	9.52	9.47	9.47	9.54	8.48	8.50	8.62	8.45	8.62
6GHZ 802.11ax 40MHz	8.86	8.86	8.96	8.91	8.97	7.77	7.74	7.71	7.79	7.78
6GHz 802.11ax 80MHz	8.95	8.95	8.91	8.87	8.92	7.67	7.78	7.71	7.69	7.65
6GHz 802.11ax 160MHz	8.89	9.00	8.87	8.94	8.88	7.85	7.84	7.81	7.75	7.82

Right side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
2.4GHz 802.11g	12.82	12.67	12.69	12.82	12.75	17.88	17.92	17.81	17.81	18.00
2.4GHz 802.11b	12.60	12.61	12.63	12.50	12.61	17.70	17.67	17.78	17.66	17.71
2.4GHz 802.11n	12.35	12.39	12.42	12.38	12.39	17.54	17.73	17.64	17.60	17.68
2.4GHz 802.11ax SU	12.32	12.42	12.28	12.36	12.39	16.97	16.99	17.01	16.99	16.97
2.4GHz Bluetooth	9.88	9.82	9.80	9.79	9.71	16.32	16.44	16.41	16.30	16.29
5GHz 802.11a	8.10	8.15	8.15	8.19	8.25	17.00	16.97	17.12	17.09	17.15
5GHz 802.11n 20MHz	7.76	7.82	7.75	7.81	7.73	16.84	16.93	16.93	16.99	16.86
5GHz 802.11ac 20MHz	7.97	7.85	8.02	7.93	7.89	16.79	16.79	16.70	16.79	16.83
5GHz 802.11ax 20MHz SU	7.88	7.90	7.89	7.91	7.86	17.61	17.54	17.54	17.55	17.67
5GHz 802.11n 40MHz	7.99	7.88	7.97	8.01	8.03	16.08	16.04	16.14	16.06	16.01
5GHz 802.11ac 40MHz	7.32	7.38	7.35	7.40	7.44	16.05	15.97	16.02	16.10	15.97
5GHz 802.11ax 40MHz SU	7.86	7.89	7.88	7.92	7.99	16.11	16.04	16.12	15.93	16.05
5GHz 802.11ac 80MHz	8.65	8.71	8.78	8.63	8.77	14.78	14.90	14.81	14.86	14.90
5GH 802.11ax 80MHz SU	8.08	8.12	7.96	8.09	8.05	15.15	15.03	15.01	15.04	15.05
5GHz 802.11ac 160MHz	7.88	7.90	8.01	7.97	7.86	11.48	11.35	11.32	11.48	11.32
5GHz 802.11ax 160MHz SU	8.06	8.07	7.94	8.10	8.01	11.52	11.60	11.46	11.55	11.50
6GHz 802.11a	8.63	8.69	8.64	8.73	8.76	9.79	9.76	9.74	9.73	9.73
6GHz 802.11ax 20MHz	8.44	8.53	8.60	8.51	8.56	9.60	9.63	9.52	9.60	9.53
6GHZ 802.11ax 40MHz	7.69	7.79	7.63	7.62	7.61	8.93	8.95	8.89	8.88	8.92
6GHz 802.11ax 80MHz	7.79	7.76	7.63	7.71	7.64	8.91	8.92	8.88	8.98	8.96
6GHz 802.11ax 160MHz	7.80	7.81	7.78	7.78	7.84	8.94	9.00	8.99	8.96	8.84

Based on the most conservative measured triggering distance of 8mm, additional Body SAR measurements were required at 7mm from right side for the above modes.

Right Corner side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	14	13	12	11	10	9	8	7	6	5
2.4GHz 802.11g	17.80	17.92	17.95	17.86	17.89	12.66	12.85	12.86	12.76	12.81
2.4GHz 802.11b	17.80	17.69	17.74	17.69	17.69	12.66	12.63	12.51	12.69	12.53
2.4GHz 802.11n	17.55	17.62	17.68	17.57	17.55	12.50	12.35	12.53	12.50	12.37
2.4GHz 802.11ax SU	17.05	17.09	16.99	17.07	17.07	12.37	12.28	12.29	12.40	12.31
2.4GHz Bluetooth	16.31	16.48	16.34	16.35	16.45	9.87	9.86	9.78	9.85	9.75
5GHz 802.11a	17.10	17.09	17.15	17.07	17.12	8.17	8.13	8.21	8.23	8.21
5GHz 802.11n 20MHz	16.91	16.89	16.87	17.01	16.89	7.72	7.74	7.78	7.81	7.81
5GHz 802.11ac 20MHz	16.79	16.74	16.84	16.81	16.72	7.96	7.98	7.99	8.02	7.98
5GHz 802.11ax 20MHz SU	17.53	17.68	17.68	17.66	17.62	7.86	7.85	7.97	7.95	7.98
5GHz 802.11n 40MHz	16.06	15.99	16.09	16.09	16.02	8.04	7.88	7.88	7.94	7.86
5GHz 802.11ac 40MHz	16.00	15.99	16.15	15.98	16.08	7.43	7.35	7.35	7.42	7.47
5GHz 802.11ax 40MHz SU	16.03	16.05	16.01	16.08	15.95	7.97	7.85	7.93	7.92	8.00
5GHz 802.11ac 80MHz	14.76	14.84	14.92	14.76	14.79	8.79	8.69	8.67	8.68	8.76
5GH 802.11ax 80MHz SU	15.05	15.02	15.12	15.07	15.15	7.97	7.98	8.09	8.08	8.00
5GHz 802.11ac 160MHz	11.51	11.38	11.44	11.38	11.40	7.95	7.95	7.85	7.87	8.02
5GHz 802.11ax 160MHz SU	11.54	11.51	11.53	11.46	11.47	8.10	7.92	8.05	8.10	8.02
6GHz 802.11a	9.67	9.78	9.83	9.72	9.77	8.79	8.70	8.67	8.75	8.75
6GHz 802.11ax 20MHz	9.51	9.47	9.47	9.45	9.53	8.63	8.51	8.48	8.59	8.49
6GHZ 802.11ax 40MHz	8.91	8.98	8.90	8.85	9.00	7.73	7.80	7.71	7.66	7.78
6GHz 802.11ax 80MHz	9.03	8.91	8.99	9.02	9.02	7.78	7.82	7.69	7.80	7.74
6GHz 802.11ax 160MHz	8.97	8.93	8.91	8.95	8.88	7.77	7.89	7.86	7.88	7.86

Right Corner side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	6	7	8	9	10	11	12	13	14	15
2.4GHz 802.11g	12.74	12.70	12.84	12.79	12.67	17.80	17.83	17.89	18.00	17.83
2.4GHz 802.11b	12.54	12.50	12.65	12.67	12.52	17.68	17.70	17.80	17.75	17.77
2.4GHz 802.11n	12.39	12.35	12.49	12.46	12.44	17.57	17.62	17.70	17.55	17.59
2.4GHz 802.11ax SU	12.29	12.43	12.43	12.34	12.30	16.99	17.12	17.02	17.01	17.03
2.4GHz Bluetooth	9.85	9.75	9.69	9.86	9.74	16.44	16.34	16.35	16.45	16.33
5GHz 802.11a	8.10	8.18	8.16	8.26	8.14	17.02	17.10	17.04	16.98	17.10
5GHz 802.11n 20MHz	7.70	7.87	7.81	7.79	7.89	16.94	16.90	17.02	16.97	16.99
5GHz 802.11ac 20MHz	7.95	7.98	7.95	8.00	7.96	16.76	16.86	16.79	16.79	16.76
5GHz 802.11ax 20MHz SU	7.90	8.00	7.95	7.83	7.88	17.54	17.51	17.70	17.58	17.59
5GHz 802.11n 40MHz	7.89	8.01	7.91	8.05	7.98	16.11	16.11	16.05	16.13	15.99
5GHz 802.11ac 40MHz	7.32	7.50	7.35	7.39	7.34	16.12	16.00	16.15	16.00	16.08
5GHz 802.11ax 40MHz SU	7.85	7.86	7.89	8.03	7.97	16.01	16.00	16.01	16.08	16.12
5GHz 802.11ac 80MHz	8.64	8.81	8.82	8.81	8.73	14.93	14.86	14.84	14.86	14.86
5GH 802.11ax 80MHz SU	8.05	7.95	7.95	8.01	8.08	15.09	15.20	15.13	15.05	15.08
5GHz 802.11ac 160MHz	7.96	7.87	7.98	7.94	7.84	11.35	11.40	11.36	11.44	11.38
5GHz 802.11ax 160MHz SU	7.94	8.06	8.10	8.04	7.91	11.53	11.51	11.62	11.51	11.47
6GHz 802.11a	8.74	8.80	8.77	8.69	8.62	9.86	9.85	9.71	9.76	9.82
6GHz 802.11ax 20MHz	8.52	8.49	8.62	8.55	8.62	9.61	9.59	9.59	9.54	9.52
6GHZ 802.11ax 40MHz	7.65	7.65	7.63	7.75	7.69	8.87	8.96	8.95	8.86	9.04
6GHz 802.11ax 80MHz	7.77	7.66	7.76	7.82	7.74	8.90	8.85	9.01	8.87	9.05
6GHz 802.11ax 160MHz	7.89	7.87	7.89	7.88	7.90	8.98	8.90	8.85	8.94	8.86

Based on the most conservative measured triggering distance of 9mm, additional Body SAR measurements were required at 8mm from right corner side for the above modes.

Top side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	28	27	26	25	24	23	22	21	20	19
2.4GHz 802.11g	17.86	17.87	17.87	17.92	17.82	12.70	12.85	12.82	12.74	12.70
2.4GHz 802.11b	17.69	17.81	17.72	17.68	17.82	12.58	12.68	12.58	12.67	12.65
2.4GHz 802.11n	17.55	17.61	17.58	17.59	17.61	12.39	12.38	12.51	12.50	12.48
2.4GHz 802.11ax SU	16.96	17.07	16.99	16.99	17.12	12.31	12.27	12.29	12.41	12.27
2.4GHz Bluetooth	16.37	16.33	16.34	16.29	16.33	9.73	9.79	9.81	9.80	9.78
5GHz 802.11a	17.00	17.11	17.06	17.07	17.09	8.23	8.12	8.26	8.27	8.14
5GHz 802.11n 20MHz	17.02	16.88	16.84	16.98	16.95	7.79	7.75	7.85	7.71	7.77
5GHz 802.11ac 20MHz	16.87	16.68	16.84	16.72	16.74	7.85	7.89	7.96	7.91	8.02
5GHz 802.11ax 20MHz SU	17.69	17.63	17.55	17.64	17.54	7.84	7.87	7.81	7.96	7.90
5GHz 802.11n 40MHz	16.10	16.08	16.13	16.07	16.18	8.00	7.86	7.92	7.88	7.92
5GHz 802.11ac 40MHz	16.06	15.96	16.15	16.05	16.08	7.35	7.36	7.49	7.31	7.44
5GHz 802.11ax 40MHz SU	15.95	16.08	15.98	16.10	15.93	7.84	7.96	7.87	7.84	7.89
5GHz 802.11ac 80MHz	14.85	14.78	14.81	14.89	14.84	8.72	8.78	8.67	8.81	8.75
5GH 802.11ax 80MHz SU	15.09	15.16	15.20	15.21	15.03	8.08	7.94	7.96	8.11	8.09
5GHz 802.11ac 160MHz	11.48	11.41	11.39	11.39	11.46	7.83	7.97	7.84	7.98	7.94
5GHz 802.11ax 160MHz SU	11.45	11.62	11.46	11.54	11.55	7.92	8.05	7.96	7.97	8.09
6GHz 802.11a	9.77	9.80	9.78	9.71	9.67	8.71	8.77	8.71	8.62	8.78
6GHz 802.11ax 20MHz	9.50	9.60	9.49	9.47	9.50	8.50	8.62	8.49	8.47	8.58
6GHZ 802.11ax 40MHz	8.92	8.95	8.86	9.00	8.98	7.69	7.65	7.67	7.67	7.77
6GHz 802.11ax 80MHz	8.86	8.98	9.01	8.99	8.92	7.64	7.65	7.72	7.67	7.69
6GHz 802.11ax 160MHz	8.99	9.02	8.86	9.02	9.01	7.79	7.80	7.88	7.88	7.88

Top side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
2.4GHz 802.11g	12.84	12.71	12.72	12.66	12.66	17.99	17.95	17.82	17.96	17.92
2.4GHz 802.11b	12.58	12.59	12.64	12.58	12.58	17.85	17.80	17.71	17.73	17.82
2.4GHz 802.11n	12.46	12.38	12.37	12.47	12.54	17.59	17.54	17.64	17.68	17.56
2.4GHz 802.11ax SU	12.44	12.38	12.45	12.29	12.44	16.98	16.95	17.08	16.95	16.95
2.4GHz Bluetooth	9.74	9.79	9.79	9.88	9.76	16.39	16.37	16.46	16.40	16.48
5GHz 802.11a	8.18	8.09	8.24	8.22	8.14	17.04	17.03	17.07	17.07	17.13
5GHz 802.11n 20MHz	7.80	7.75	7.73	7.89	7.77	16.85	16.96	16.99	16.96	16.96
5GHz 802.11ac 20MHz	7.98	7.98	8.00	7.97	7.98	16.85	16.87	16.87	16.72	16.69
5GHz 802.11ax 20MHz SU	7.91	7.97	7.91	8.00	7.92	17.70	17.68	17.59	17.52	17.53
5GHz 802.11n 40MHz	7.89	8.02	7.94	7.89	7.87	16.08	16.07	16.08	16.12	16.03
5GHz 802.11ac 40MHz	7.39	7.33	7.41	7.42	7.42	16.06	16.01	16.12	16.16	16.00
5GHz 802.11ax 40MHz SU	7.91	7.84	7.90	7.85	8.01	16.12	16.03	16.06	15.95	16.09
5GHz 802.11ac 80MHz	8.73	8.68	8.68	8.74	8.69	14.75	14.76	14.90	14.75	14.87
5GH 802.11ax 80MHz SU	7.98	8.03	8.04	7.93	8.01	15.18	15.05	15.02	15.21	15.14
5GHz 802.11ac 160MHz	7.91	8.01	7.88	7.87	7.98	11.43	11.33	11.40	11.39	11.43
5GHz 802.11ax 160MHz SU	7.97	7.98	7.91	8.04	8.09	11.44	11.49	11.59	11.63	11.63
6GHz 802.11a	8.80	8.69	8.78	8.73	8.78	9.75	9.78	9.78	9.75	9.73
6GHz 802.11ax 20MHz	8.56	8.52	8.57	8.61	8.44	9.53	9.53	9.44	9.51	9.45
6GHZ 802.11ax 40MHz	7.63	7.74	7.70	7.79	7.63	8.85	8.90	8.84	9.02	8.85
6GHz 802.11ax 80MHz	7.83	7.75	7.70	7.77	7.75	9.02	8.87	8.88	8.87	8.98
6GHz 802.11ax 160MHz	7.75	7.77	7.81	7.83	7.85	8.97	8.93	8.94	8.96	8.91

Based on the most conservative measured triggering distance of 24mm, additional Body SAR measurements were required at 23mm from top side for the above modes.

2.1 Proximity Sensor Coverage for SAR measurements

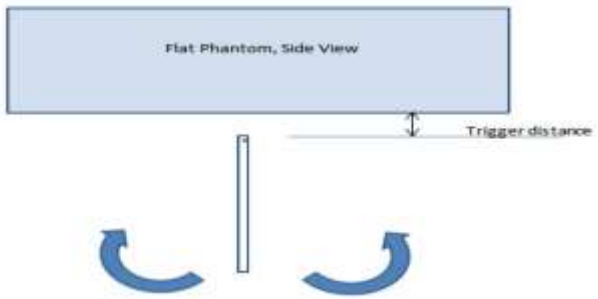
(KDB 616217 D04v01r02 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

2.2 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Top side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz	24 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz	24 mm	On	On	On	On	On	On	On	On	On	On	On
6500MHz	24 mm	On	On	On	On	On	On	On	On	On	On	On

2.3 Resulting test positions for Body SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance [mm]	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Body SAR [mm]
WLAN 1 Ant	Rear	20	N/A	N/A	19
	Right	8	N/A	N/A	7
	Right Corner	9	N/A	N/A	8
	Top	24	N/A	N/A	23

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.

3. Power reduction Verification for WLAN 2 Ant

This device utilizes a power reduction mechanism for some wireless modes under some conditions when the device is being used in close proximity to the user's hand for WLAN 2 Ant

FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in Proximity use conditions.

Mechanism(s)	Mode/Band	Un-triggered (Max Power)	Mechanism 1: (Reduced Power)
Grip	2.4GHz 802.11g	17.51	12.18
Grip	2.4GHz 802.11b	18.40	12.15
Grip	2.4GHz 802.11n	17.76	12.00
Grip	2.4GHz 802.11ax SU	16.71	12.08
Grip	2.4GHz Bluetooth	14.66	7.83
Grip	5GHz 802.11a	17.85	7.79
Grip	5GHz 802.11n 20MHz	17.52	7.96
Grip	5GHz 802.11ac 20MHz	17.51	8.01
Grip	5GHz 802.11ax 20MHz SU	17.33	7.78
Grip	5GHz 802.11n 40MHz	16.55	8.50
Grip	5GHz 802.11ac 40MHz	16.79	8.89
Grip	5GHz 802.11ax 40MHz SU	15.80	7.69
Grip	5GHz 802.11ac 80MHz	15.61	8.85
Grip	5GH 802.11ax 80MHz SU	14.72	7.74
Grip	5GHz 802.11ac 160MHz	12.10	7.97
Grip	5GHz 802.11ax 160MHz SU	12.01	7.98
Grip	6GHz 802.11a	9.597	8.427
Grip	GHz 802.11ax 20MHz	8.267	6.847
Grip	6GHZ 802.11ax 40MHz	8.13	7.03
Grip	6GHz 802.11ax 80MHz	8.16	7.05
Grip	6GHz 802.11ax 160MHz	8.19	7.08

Mechanism(s)	Mode/Band	Un-triggered (Max Power)	Un-triggered (Reduced Power)
NR, RSDB active	2.4GHz 802.11g	17.51	9.67
NR, RSDB active	2.4GHz 802.11b	18.40	9.75
NR, RSDB active	2.4GHz 802.11n	17.76	9.47
NR, RSDB active	2.4GHz 802.11ax SU	16.71	9.36
NR, RSDB active	2.4GHz Bluetooth	14.66	6.33
NR, RSDB active	5GHz 802.11a	17.85	5.67
NR, RSDB active	5GHz 802.11n 20MHz	17.52	6.15
NR, RSDB active	5GHz 802.11ac 20MHz	17.51	6.24
NR, RSDB active	5GHz 802.11ax 20MHz SU	17.33	6.51
NR, RSDB active	5GHz 802.11n 40MHz	16.55	6.30
NR, RSDB active	5GHz 802.11ac 40MHz	16.79	6.47
NR, RSDB active	5GHz 802.11ax 40MHz SU	15.80	6.26
NR, RSDB active	5GHz 802.11ac 80MHz	15.61	6.97
NR, RSDB active	5GH 802.11ax 80MHz SU	14.72	6.86
NR, RSDB active	5GHz 802.11ac 160MHz	12.10	6.82
NR, RSDB active	5GHz 802.11ax 160MHz SU	12.01	6.89
NR, RSDB active	6GHz 802.11a	9.597	6.847
NR, RSDB active	6GHz 802.11ax 20MHz	8.267	6.247
NR, RSDB active	6GHZ 802.11ax 40MHz	8.13	5.49
NR, RSDB active	6GHz 802.11ax 80MHz	8.16	5.50
NR, RSDB active	6GHz 802.11ax 160MHz	8.19	5.52

Tissue simulating liquid	Trigger distance – Rear		Trigger distance – Left Side		Trigger distance – Left Corner Side		Trigger distance – Top	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
2450MHz	18	19	8	9	9	10	21	22
5000MHz	18	19	8	9	9	10	21	22
6500MHz	18	19	8	9	9	10	21	22

Rear side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	23	22	21	20	19	18	17	16	15	14
2.4GHz 802.11g	17.37	17.32	17.35	17.39	17.50	12.08	12.14	12.04	11.99	12.00
2.4GHz 802.11b	18.22	18.35	18.28	18.22	18.27	11.99	11.97	12.02	11.95	12.08
2.4GHz 802.11n	17.59	17.62	17.59	17.65	17.74	11.92	11.87	11.97	11.84	11.91
2.4GHz 802.11ax SU	16.71	16.51	16.68	16.71	16.71	11.99	11.96	12.04	11.92	12.08
2.4GHz Bluetooth	14.64	14.52	14.54	14.55	14.51	7.65	7.82	7.76	7.79	7.83
5GHz 802.11a	17.77	17.65	17.77	17.84	17.84	7.59	7.63	7.68	7.66	7.70
5GHz 802.11n 20MHz	17.50	17.42	17.50	17.33	17.51	7.80	7.94	7.77	7.81	7.86
5GHz 802.11ac 20MHz	17.44	17.45	17.48	17.40	17.36	7.94	7.87	7.98	7.96	7.93
5GHz 802.11ax 20MHz SU	17.29	17.21	17.18	17.20	17.21	7.76	7.77	7.59	7.61	7.59
5GHz 802.11n 40MHz	16.46	16.47	16.39	16.39	16.38	8.33	8.31	8.36	8.50	8.49
5GHz 802.11ac 40MHz	16.75	16.78	16.69	16.72	16.67	8.78	8.81	8.72	8.75	8.72
5GHz 802.11ax 40MHz SU	15.64	15.76	15.75	15.68	15.66	7.59	7.62	7.51	7.69	7.55
5GHz 802.11ac 80MHz	15.42	15.58	15.58	15.43	15.50	8.70	8.80	8.82	8.73	8.79
5GH 802.11ax 80MHz SU	14.71	14.71	14.61	14.70	14.71	7.70	7.58	7.71	7.55	7.59
5GHz 802.11ac 160MHz	12.04	11.99	11.91	12.06	12.06	7.95	7.77	7.78	7.84	7.88
5GHz 802.11ax 160MHz SU	11.87	11.90	12.00	11.88	11.87	7.92	7.81	7.88	7.88	7.94
6GHz 802.11a	9.55	9.49	9.58	9.44	9.44	8.32	8.35	8.36	8.24	8.39
6GHz 802.11ax 20MHz	8.21	8.13	8.15	8.18	8.26	6.78	6.83	6.83	6.73	6.72
6GHZ 802.11ax 40MHz	8.12	8.13	7.96	8.04	7.97	6.89	6.92	7.01	7.01	6.94
6GHz 802.11ax 80MHz	8.09	8.10	8.16	8.11	8.00	6.88	7.00	6.93	6.98	7.04
6GHz 802.11ax 160MHz	8.19	8.04	8.18	8.03	8.11	6.93	7.05	6.92	6.99	6.88

Rear side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	15	16	17	18	19	20	21	22	23	24
2.4GHz 802.11g	12.12	12.16	11.99	12.00	12.07	17.45	17.33	17.43	17.51	17.44
2.4GHz 802.11b	12.01	12.02	11.97	12.15	12.10	18.37	18.35	18.39	18.30	18.38
2.4GHz 802.11n	11.82	11.81	11.84	11.97	11.80	17.63	17.66	17.63	17.72	17.63
2.4GHz 802.11ax SU	11.99	12.08	12.03	12.03	11.89	16.58	16.58	16.52	16.66	16.66
2.4GHz Bluetooth	7.83	7.64	7.80	7.65	7.76	14.54	14.59	14.52	14.52	14.58
5GHz 802.11a	7.72	7.72	7.76	7.66	7.67	17.84	17.82	17.82	17.67	17.82
5GHz 802.11n 20MHz	7.85	7.82	7.92	7.95	7.94	17.32	17.34	17.44	17.43	17.34
5GHz 802.11ac 20MHz	7.82	7.95	7.96	7.84	7.98	17.31	17.43	17.45	17.38	17.45
5GHz 802.11ax 20MHz SU	7.66	7.64	7.76	7.75	7.70	17.14	17.20	17.24	17.15	17.24
5GHz 802.11n 40MHz	8.41	8.43	8.47	8.46	8.32	16.46	16.43	16.36	16.42	16.42
5GHz 802.11ac 40MHz	8.87	8.72	8.81	8.87	8.82	16.65	16.59	16.67	16.73	16.77
5GHz 802.11ax 40MHz SU	7.68	7.69	7.68	7.55	7.50	15.62	15.69	15.71	15.61	15.79
5GHz 802.11ac 80MHz	8.73	8.72	8.83	8.69	8.65	15.52	15.52	15.44	15.48	15.43
5GH 802.11ax 80MHz SU	7.72	7.56	7.67	7.58	7.72	14.64	14.63	14.57	14.54	14.60
5GHz 802.11ac 160MHz	7.77	7.84	7.81	7.86	7.93	12.09	11.98	12.00	12.08	12.03
5GHz 802.11ax 160MHz SU	7.95	7.90	7.97	7.90	7.82	11.95	11.99	11.91	11.89	11.83
6GHz 802.11a	8.39	8.36	8.25	8.30	8.24	9.53	9.51	9.43	9.45	9.54
6GHz 802.11ax 20MHz	6.78	6.76	6.84	6.66	6.79	8.11	8.18	8.27	8.25	8.17
6GHZ 802.11ax 40MHz	7.00	6.85	6.92	7.02	7.01	7.98	8.12	7.94	8.05	8.07
6GHz 802.11ax 80MHz	6.96	6.99	6.89	6.89	6.97	8.04	7.97	8.00	8.07	8.01
6GHz 802.11ax 160MHz	6.91	7.02	6.88	6.93	7.02	8.02	8.16	8.00	8.03	7.99

Based on the most conservative measured triggering distance of 18mm, additional Body SAR measurements were required at 17mm from rear side for the above modes.

Left side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	13	12	11	10	9	8	7	6	5	4
2.4GHz 802.11g	17.43	17.43	17.43	17.50	17.32	12.07	12.15	12.03	12.15	11.99
2.4GHz 802.11b	18.27	18.33	18.36	18.34	18.22	12.09	12.05	12.08	11.96	12.12
2.4GHz 802.11n	17.68	17.57	17.76	17.64	17.59	11.86	11.90	11.92	11.85	11.88
2.4GHz 802.11ax SU	16.61	16.52	16.60	16.57	16.56	12.04	11.88	11.96	11.99	12.04
2.4GHz Bluetooth	14.58	14.56	14.63	14.48	14.62	7.74	7.81	7.82	7.69	7.81
5GHz 802.11a	17.74	17.70	17.71	17.77	17.66	7.70	7.62	7.70	7.78	7.77
5GHz 802.11n 20MHz	17.46	17.48	17.38	17.45	17.42	7.85	7.77	7.89	7.92	7.85
5GHz 802.11ac 20MHz	17.40	17.37	17.46	17.33	17.50	7.85	7.89	7.98	7.96	7.90
5GHz 802.11ax 20MHz SU	17.29	17.33	17.23	17.29	17.24	7.58	7.74	7.59	7.62	7.65
5GHz 802.11n 40MHz	16.48	16.53	16.38	16.49	16.47	8.44	8.43	8.43	8.42	8.41
5GHz 802.11ac 40MHz	16.74	16.65	16.67	16.68	16.67	8.80	8.89	8.82	8.72	8.79
5GHz 802.11ax 40MHz SU	15.63	15.71	15.68	15.70	15.61	7.52	7.56	7.67	7.59	7.65
5GHz 802.11ac 80MHz	15.55	15.44	15.53	15.44	15.53	8.74	8.84	8.71	8.67	8.78
5GH 802.11ax 80MHz SU	14.60	14.57	14.57	14.62	14.54	7.64	7.59	7.63	7.73	7.66
5GHz 802.11ac 160MHz	12.06	11.97	12.00	11.99	11.91	7.93	7.95	7.91	7.88	7.91
5GHz 802.11ax 160MHz SU	11.91	11.83	11.90	11.87	12.01	7.83	7.95	7.91	7.94	7.91
6GHz 802.11a	9.55	9.53	9.48	9.43	9.46	8.42	8.31	8.27	8.35	8.29
6GHz 802.11ax 20MHz	8.17	8.23	8.17	8.16	8.25	6.82	6.75	6.70	6.78	6.67
6GHZ 802.11ax 40MHz	7.93	7.99	8.12	8.03	7.98	6.90	6.90	6.97	6.83	6.92
6GHz 802.11ax 80MHz	8.11	8.05	8.10	8.02	7.99	6.95	6.92	6.98	6.91	6.91
6GHz 802.11ax 160MHz	8.14	8.11	8.12	8.00	8.17	7.05	6.98	7.01	7.02	6.88

Left side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
2.4GHz 802.11g	12.05	12.02	12.10	12.17	12.05	17.50	17.49	17.43	17.40	17.51
2.4GHz 802.11b	12.09	12.01	12.08	12.15	12.14	18.21	18.35	18.39	18.32	18.25
2.4GHz 802.11n	11.99	11.81	11.96	11.89	11.95	17.66	17.74	17.57	17.69	17.69
2.4GHz 802.11ax SU	11.94	11.94	11.97	12.00	11.95	16.66	16.58	16.51	16.58	16.69
2.4GHz Bluetooth	7.76	7.65	7.78	7.81	7.72	14.51	14.63	14.48	14.61	14.61
5GHz 802.11a	7.70	7.71	7.79	7.66	7.60	17.68	17.78	17.78	17.69	17.71
5GHz 802.11n 20MHz	7.89	7.83	7.89	7.96	7.77	17.49	17.45	17.36	17.46	17.48
5GHz 802.11ac 20MHz	7.91	7.88	7.90	7.86	7.96	17.51	17.34	17.40	17.34	17.50
5GHz 802.11ax 20MHz SU	7.75	7.63	7.64	7.70	7.62	17.24	17.26	17.26	17.17	17.21
5GHz 802.11n 40MHz	8.42	8.50	8.44	8.47	8.39	16.37	16.38	16.45	16.41	16.50
5GHz 802.11ac 40MHz	8.72	8.70	8.77	8.82	8.74	16.73	16.76	16.60	16.66	16.68
5GHz 802.11ax 40MHz SU	7.62	7.52	7.62	7.67	7.65	15.69	15.73	15.61	15.69	15.73
5GHz 802.11ac 80MHz	8.83	8.81	8.84	8.82	8.69	15.51	15.42	15.59	15.57	15.51
5GH 802.11ax 80MHz SU	7.73	7.68	7.73	7.60	7.65	14.60	14.66	14.64	14.63	14.61
5GHz 802.11ac 160MHz	7.77	7.84	7.82	7.96	7.78	12.01	12.10	12.08	11.97	12.03
5GHz 802.11ax 160MHz SU	7.96	7.94	7.95	7.96	7.88	12.00	11.84	11.89	11.82	11.87
6GHz 802.11a	8.38	8.40	8.36	8.24	8.33	9.54	9.44	9.46	9.51	9.54
6GHz 802.11ax 20MHz	6.81	6.77	6.70	6.68	6.81	8.08	8.14	8.20	8.26	8.15
6GHZ 802.11ax 40MHz	7.02	7.02	6.95	6.92	6.90	8.11	7.99	8.12	8.09	8.08
6GHz 802.11ax 80MHz	6.89	7.04	7.05	7.02	6.98	8.10	8.02	8.09	7.97	8.03
6GHz 802.11ax 160MHz	6.88	6.91	7.03	7.07	6.92	8.12	8.00	8.08	8.08	8.03

Based on the most conservative measured triggering distance of 8mm, additional Body SAR measurements were required at 7mm from left side for the above modes.

Left Corner side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	14	13	12	11	10	9	8	7	6	5
2.4GHz 802.11g	17.36	17.35	17.42	17.44	17.34	12.01	12.13	12.07	12.09	12.03
2.4GHz 802.11b	18.24	18.33	18.30	18.20	18.39	12.10	12.12	12.15	11.98	12.02
2.4GHz 802.11n	17.73	17.60	17.61	17.63	17.76	11.90	11.86	11.84	11.92	11.81
2.4GHz 802.11ax SU	16.65	16.54	16.55	16.59	16.63	11.96	11.89	11.97	11.90	11.93
2.4GHz Bluetooth	14.50	14.62	14.48	14.48	14.59	7.67	7.78	7.77	7.80	7.75
5GHz 802.11a	17.74	17.83	17.83	17.77	17.66	7.70	7.68	7.75	7.67	7.74
5GHz 802.11n 20MHz	17.41	17.42	17.50	17.46	17.38	7.80	7.84	7.78	7.89	7.92
5GHz 802.11ac 20MHz	17.38	17.33	17.51	17.33	17.32	7.83	8.00	7.93	8.00	7.87
5GHz 802.11ax 20MHz SU	17.18	17.26	17.31	17.14	17.16	7.69	7.63	7.60	7.61	7.61
5GHz 802.11n 40MHz	16.41	16.46	16.43	16.55	16.46	8.41	8.39	8.35	8.49	8.39
5GHz 802.11ac 40MHz	16.65	16.60	16.61	16.69	16.69	8.82	8.86	8.79	8.76	8.84
5GHz 802.11ax 40MHz SU	15.77	15.76	15.79	15.78	15.72	7.52	7.65	7.55	7.64	7.61
5GHz 802.11ac 80MHz	15.44	15.44	15.54	15.57	15.61	8.76	8.80	8.66	8.82	8.77
5GH 802.11ax 80MHz SU	14.67	14.62	14.54	14.57	14.70	7.64	7.70	7.71	7.60	7.64
5GHz 802.11ac 160MHz	11.99	12.01	11.94	12.05	12.02	7.80	7.96	7.88	7.94	7.81
5GHz 802.11ax 160MHz SU	11.82	11.89	11.82	11.85	11.88	7.89	7.90	7.79	7.88	7.94
6GHz 802.11a	9.50	9.44	9.48	9.50	9.42	8.33	8.34	8.29	8.30	8.38
6GHz 802.11ax 20MHz	8.25	8.08	8.14	8.08	8.25	6.65	6.65	6.66	6.84	6.68
6GHZ 802.11ax 40MHz	8.10	7.94	7.99	7.99	8.05	6.85	6.97	6.98	7.02	6.89
6GHz 802.11ax 80MHz	8.15	8.05	8.05	8.09	8.00	6.90	7.04	6.92	6.85	7.02
6GHz 802.11ax 160MHz	8.07	8.05	8.06	8.19	8.07	6.89	6.95	7.08	6.89	6.93

Left Corner side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	6	7	8	9	10	11	12	13	14	15
2.4GHz 802.11g	12.08	12.09	12.14	12.15	12.08	17.34	17.43	17.33	17.46	17.43
2.4GHz 802.11b	12.03	12.01	12.10	12.13	12.02	18.33	18.27	18.34	18.27	18.34
2.4GHz 802.11n	11.92	11.95	11.93	11.85	11.84	17.68	17.64	17.72	17.64	17.69
2.4GHz 802.11ax SU	11.96	11.98	12.05	12.07	11.99	16.59	16.63	16.62	16.56	16.57
2.4GHz Bluetooth	7.81	7.65	7.76	7.76	7.73	14.62	14.58	14.48	14.51	14.59
5GHz 802.11a	7.61	7.73	7.75	7.63	7.65	17.71	17.77	17.65	17.81	17.78
5GHz 802.11n 20MHz	7.86	7.87	7.88	7.78	7.92	17.34	17.47	17.42	17.44	17.45
5GHz 802.11ac 20MHz	7.85	7.90	7.95	7.90	7.81	17.35	17.45	17.35	17.50	17.38
5GHz 802.11ax 20MHz SU	7.68	7.63	7.72	7.62	7.68	17.27	17.24	17.21	17.32	17.32
5GHz 802.11n 40MHz	8.50	8.42	8.47	8.46	8.42	16.53	16.45	16.47	16.48	16.37
5GHz 802.11ac 40MHz	8.84	8.88	8.73	8.71	8.75	16.70	16.63	16.64	16.66	16.62
5GHz 802.11ax 40MHz SU	7.62	7.56	7.61	7.66	7.51	15.60	15.62	15.75	15.66	15.66
5GHz 802.11ac 80MHz	8.81	8.73	8.79	8.71	8.79	15.44	15.45	15.56	15.44	15.52
5GH 802.11ax 80MHz SU	7.72	7.58	7.72	7.59	7.60	14.66	14.62	14.69	14.70	14.61
5GHz 802.11ac 160MHz	7.94	7.84	7.83	7.87	7.79	12.03	11.94	12.05	12.08	11.99
5GHz 802.11ax 160MHz SU	7.84	7.94	7.93	7.91	7.94	11.97	11.92	11.92	11.96	11.96
6GHz 802.11a	8.36	8.35	8.27	8.42	8.33	9.56	9.53	9.53	9.57	9.54
6GHz 802.11ax 20MHz	6.84	6.67	6.74	6.70	6.75	8.17	8.26	8.24	8.13	8.21
6GHZ 802.11ax 40MHz	6.97	6.93	6.91	6.96	6.89	7.98	8.00	8.11	8.03	8.07
6GHz 802.11ax 80MHz	6.99	7.03	6.85	6.89	6.98	8.14	7.98	8.13	8.07	7.98
6GHz 802.11ax 160MHz	7.04	6.99	7.00	7.08	7.06	8.00	8.15	8.02	8.14	8.14

Based on the most conservative measured triggering distance of 9mm, additional Body SAR measurements were required at 8mm from left corner side for the above modes.

Top side – EUT Moving toward (trigger) to the Phantom

Mode	Distance to DUT Output power (dBm)									
	26	25	24	23	22	21	20	19	18	17
2.4GHz 802.11g	17.32	17.35	17.38	17.49	17.35	12.02	12.01	12.00	11.99	12.14
2.4GHz 802.11b	18.23	18.27	18.23	18.37	18.22	12.08	12.05	12.07	12.07	12.10
2.4GHz 802.11n	17.74	17.70	17.72	17.63	17.72	12.00	11.92	11.98	11.88	11.91
2.4GHz 802.11ax SU	16.53	16.58	16.56	16.57	16.68	11.89	11.88	11.89	11.90	12.04
2.4GHz Bluetooth	14.48	14.65	14.55	14.58	14.59	7.64	7.75	7.65	7.66	7.78
5GHz 802.11a	17.68	17.75	17.67	17.77	17.73	7.67	7.70	7.61	7.78	7.74
5GHz 802.11n 20MHz	17.34	17.47	17.33	17.37	17.33	7.91	7.81	7.85	7.77	7.93
5GHz 802.11ac 20MHz	17.48	17.31	17.50	17.34	17.46	7.84	7.88	7.84	7.95	7.97
5GHz 802.11ax 20MHz SU	17.25	17.32	17.18	17.21	17.23	7.72	7.64	7.64	7.75	7.68
5GHz 802.11n 40MHz	16.47	16.44	16.46	16.55	16.51	8.30	8.47	8.47	8.48	8.40
5GHz 802.11ac 40MHz	16.59	16.75	16.72	16.62	16.70	8.78	8.84	8.74	8.85	8.74
5GHz 802.11ax 40MHz SU	15.65	15.66	15.69	15.76	15.62	7.52	7.57	7.63	7.59	7.57
5GHz 802.11ac 80MHz	15.57	15.45	15.48	15.43	15.41	8.82	8.74	8.67	8.74	8.77
5GH 802.11ax 80MHz SU	14.68	14.69	14.65	14.66	14.67	7.67	7.68	7.59	7.58	7.70
5GHz 802.11ac 160MHz	12.05	12.08	12.09	12.00	11.92	7.85	7.91	7.80	7.93	7.81
5GHz 802.11ax 160MHz SU	11.99	11.82	11.99	11.96	11.95	7.92	7.85	7.80	7.80	7.89
6GHz 802.11a	9.42	9.52	9.55	9.42	9.41	8.28	8.35	8.23	8.31	8.39
6GHz 802.11ax 20MHz	8.14	8.08	8.08	8.13	8.21	6.73	6.74	6.67	6.83	6.75
6GHZ 802.11ax 40MHz	7.95	8.07	8.11	8.09	8.06	6.99	6.89	7.01	6.97	7.02
6GHz 802.11ax 80MHz	8.10	8.10	8.16	8.10	8.00	6.97	7.03	6.97	6.90	7.00
6GHz 802.11ax 160MHz	7.99	8.02	8.01	8.03	8.09	7.04	6.89	7.02	6.97	6.95

Top side – EUT Moving away (Release) from the Phantom

Mode	Distance to DUT Output power (dBm)									
	18	19	20	21	22	23	24	25	26	27
2.4GHz 802.11g	12.08	12.05	12.00	12.03	12.12	17.36	17.33	17.34	17.40	17.41
2.4GHz 802.11b	12.01	11.97	11.98	12.12	12.00	18.32	18.29	18.31	18.27	18.22
2.4GHz 802.11n	11.87	11.84	11.94	11.90	11.84	17.70	17.64	17.72	17.64	17.74
2.4GHz 802.11ax SU	12.04	12.01	12.02	11.89	11.91	16.62	16.62	16.66	16.55	16.64
2.4GHz Bluetooth	7.78	7.72	7.79	7.78	7.68	14.52	14.64	14.53	14.49	14.66
5GHz 802.11a	7.65	7.76	7.64	7.71	7.60	17.70	17.77	17.85	17.76	17.83
5GHz 802.11n 20MHz	7.83	7.94	7.82	7.83	7.83	17.40	17.47	17.38	17.39	17.43
5GHz 802.11ac 20MHz	7.86	7.99	7.91	7.95	8.01	17.33	17.39	17.42	17.39	17.32
5GHz 802.11ax 20MHz SU	7.75	7.60	7.58	7.73	7.66	17.27	17.14	17.31	17.32	17.29
5GHz 802.11n 40MHz	8.33	8.38	8.46	8.43	8.38	16.39	16.37	16.38	16.53	16.49
5GHz 802.11ac 40MHz	8.86	8.70	8.71	8.82	8.80	16.77	16.68	16.64	16.60	16.78
5GHz 802.11ax 40MHz SU	7.67	7.60	7.62	7.65	7.56	15.66	15.79	15.68	15.71	15.64
5GHz 802.11ac 80MHz	8.66	8.74	8.85	8.76	8.68	15.44	15.55	15.60	15.60	15.56
5GH 802.11ax 80MHz SU	7.57	7.59	7.58	7.67	7.70	14.56	14.67	14.65	14.61	14.52
5GHz 802.11ac 160MHz	7.84	7.82	7.86	7.83	7.80	12.09	11.98	12.00	11.93	12.10
5GHz 802.11ax 160MHz SU	7.80	7.80	7.83	7.86	7.97	11.88	11.95	11.88	11.81	12.00
6GHz 802.11a	8.29	8.29	8.29	8.27	8.36	9.55	9.54	9.56	9.58	9.42
6GHz 802.11ax 20MHz	6.83	6.84	6.75	6.81	6.71	8.14	8.11	8.09	8.24	8.13
6GHZ 802.11ax 40MHz	6.88	6.85	6.98	6.97	6.93	7.98	7.97	8.03	7.97	8.12
6GHz 802.11ax 80MHz	7.04	6.95	6.91	7.01	6.87	8.04	7.99	8.13	8.05	8.04
6GHz 802.11ax 160MHz	6.94	6.93	7.05	7.05	6.99	8.04	8.05	8.10	8.18	8.09

Based on the most conservative measured triggering distance of 21mm, additional Body SAR measurements were required at 20mm from top side for the above modes.

3.1 Proximity Sensor Coverage for SAR measurements

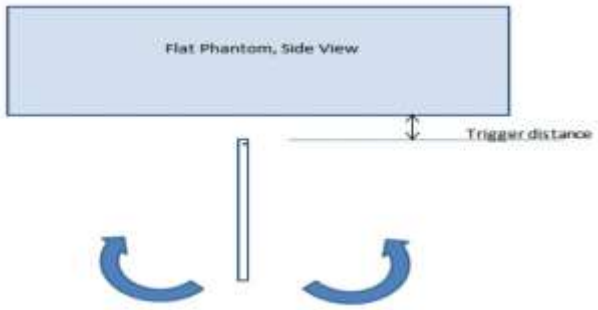
(KDB 616217 D04v01r02 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

3.2 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On
6500 MHz	21 mm	On	On	On	On	On	On	On	On	On	On	On

3.3 Resulting test positions for Body SAR measurements

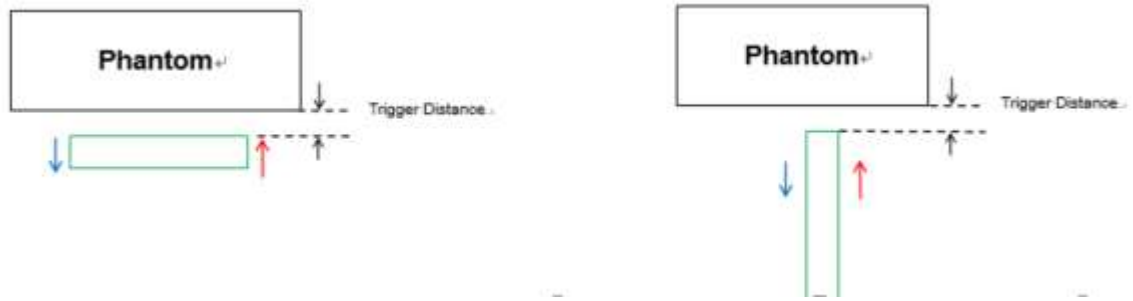
Wireless technologies	Position	§6.2 Triggering Distance [mm]	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Body SAR [mm]
WLAN 2 Ant	Rear	18	N/A	N/A	17
	Left	8	N/A	N/A	7
	Left Corner	9	N/A	N/A	8
	Top	21	N/A	N/A	20

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.

4. Power reduction Verification for Sub 1 Ant

This device utilizes a power reduction mechanism for some wireless modes under some conditions when the device is being used in close proximity to the user's hand for Sub 1 Ant
FCC KDB Publication 616217D04v01r02 section 6 was used as a guideline for selection SAR test distances for this device when being used in Proximity use conditions.

4.2 Proximity sensor triggering Distance Verification.



Proximity Sensor Trigger Distance Assessment KDB 616217 D04 §6.2 (Rear / Right / Bottom side)

LEGEND

→ Direction of DUT travel for determination of power reduction triggering point

→ Direction of DUT travel for determination of full power resumption triggering point

Tissue simulating liquid	Trigger distance - Rear		Trigger distance – Right Side		Trigger distance - Bottom	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
1900 MHz	18	19	8	9	24	25

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	23	22	21	20	19	18	17	16	15	14
LTE Band 2	23.23	23.38	23.36	23.31	23.18	13.08	13.06	13.20	13.20	13.05

Rear side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	15	16	17	18	19	20	21	22	23	24
LTE Band 2	13.23	13.05	13.17	13.23	13.08	23.33	23.22	23.28	23.27	23.29

Based on the most conservative measured triggering distance of 18mm, additional Body SAR measurements were required at 17mm from top side for the above modes.

Right side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	13	12	11	10	9	8	7	6	5	4
LTE Band 2	23.26	23.24	23.29	23.23	23.19	13.09	13.09	13.23	13.13	13.20

Right side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	5	6	7	8	9	10	11	12	13	14
LTE Band 2	13.22	13.11	13.11	13.07	13.15	23.28	23.36	23.22	23.33	23.37

Based on the most conservative measured triggering distance of 8mm, additional Body SAR measurements were required at 7mm from top side for the above modes.

Bottom side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	29	28	27	26	25	24	23	22	21	20
LTE Band 2	23.32	23.30	23.33	23.19	23.21	13.12	13.11	13.23	13.19	13.22

Bottom side – EUT Moving away (Release) from the Phantom

Distance	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
LTE Band 2	13.07	13.09	13.15	13.07	13.08	23.31	23.28	23.37	23.21	23.27

Based on the most conservative measured triggering distance of 24mm, additional Body SAR measurements were required at 23mm from top side for the above modes.

4.3 Proximity Sensor Coverage for SAR measurements

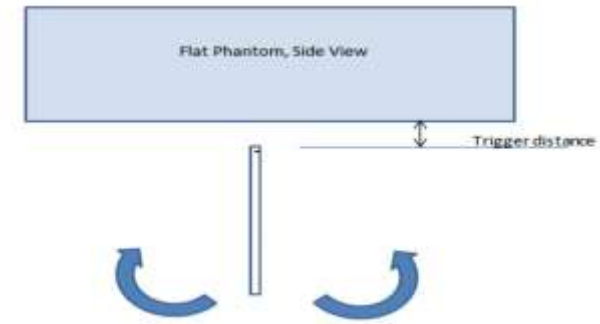
(KDB 616217 D04v01r02 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

4.4 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Bottom side) KDB 616217 §6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Bottom side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
1900 MHz	24 mm	On	On	On	On	On	On	On	On	On	On	On

4.5 Resulting test positions for Body SAR measurements

Wireless technologies	Position	§6.2 Triggering Distance [mm]	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for Body SAR [mm]
Sub 1 Ant	Rear	18	N/A	N/A	17
	Right Side	8	N/A	N/A	7
	Bottom	24	N/A	N/A	23

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.

Appendix I. – DL CA Power Measurement/ 5G NR Call Box Setup

1. LTE Down-link Carrier Aggregation Conducted Powers

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers(CCs) supported by test product implementation. For those configurations required by April 2018 TCBC Workshop notes, conducted power measurements with LTE Carrier Aggregation(CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s)(SCC) on the downlink only.

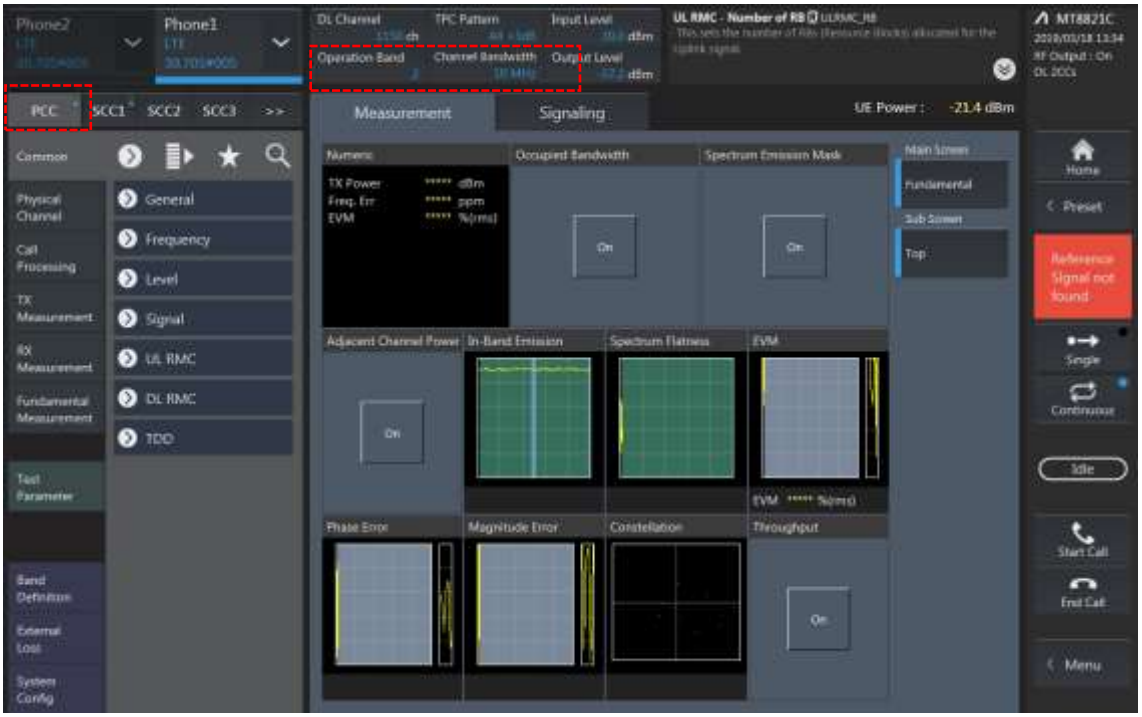
Downlink Carrier aggregation:

1. This device only supports downlink carrier aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Per FCC KDB publication 941225 D05A v01r02, Section C)3)b)ii), PCC uplink channel was selected at downlink carrier aggregation combinations. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
4. For continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to multiple of 300kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521.
5. For non-continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
6. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.

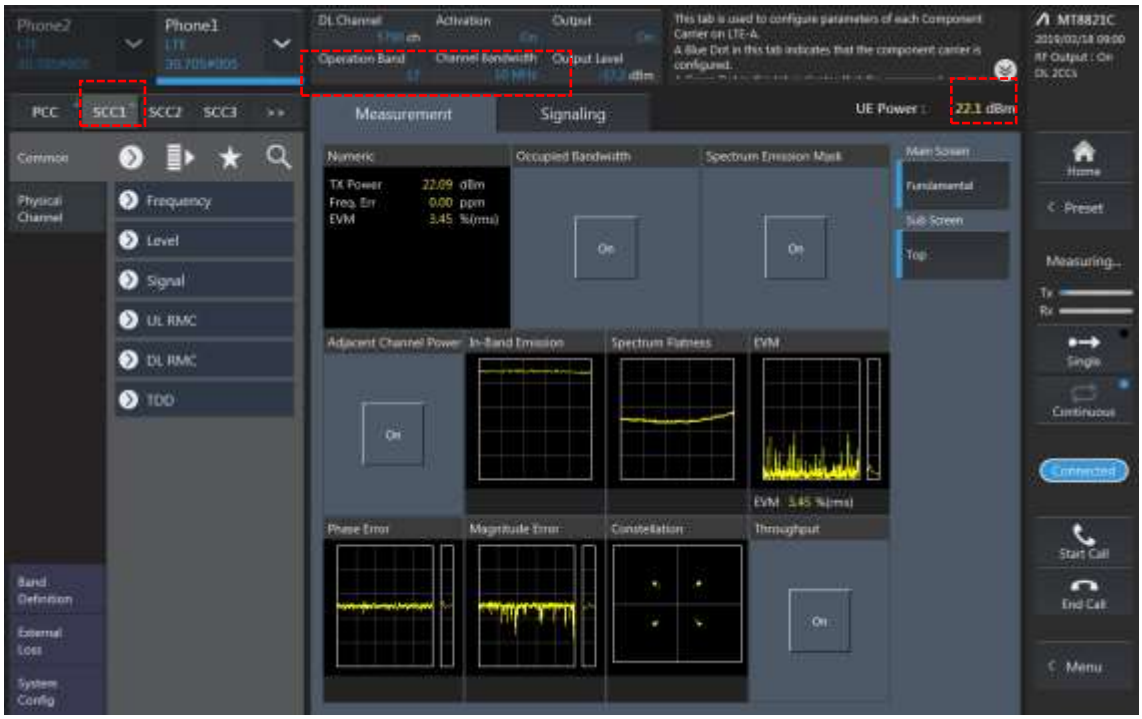
Power Measurement setup

LTE Down Link 2CA Call Setup

PCC Setting : Channel/ RB/ BW/ Modulation



SCC Setting : Channel/ RB/ BW/ Modulation and call Connection



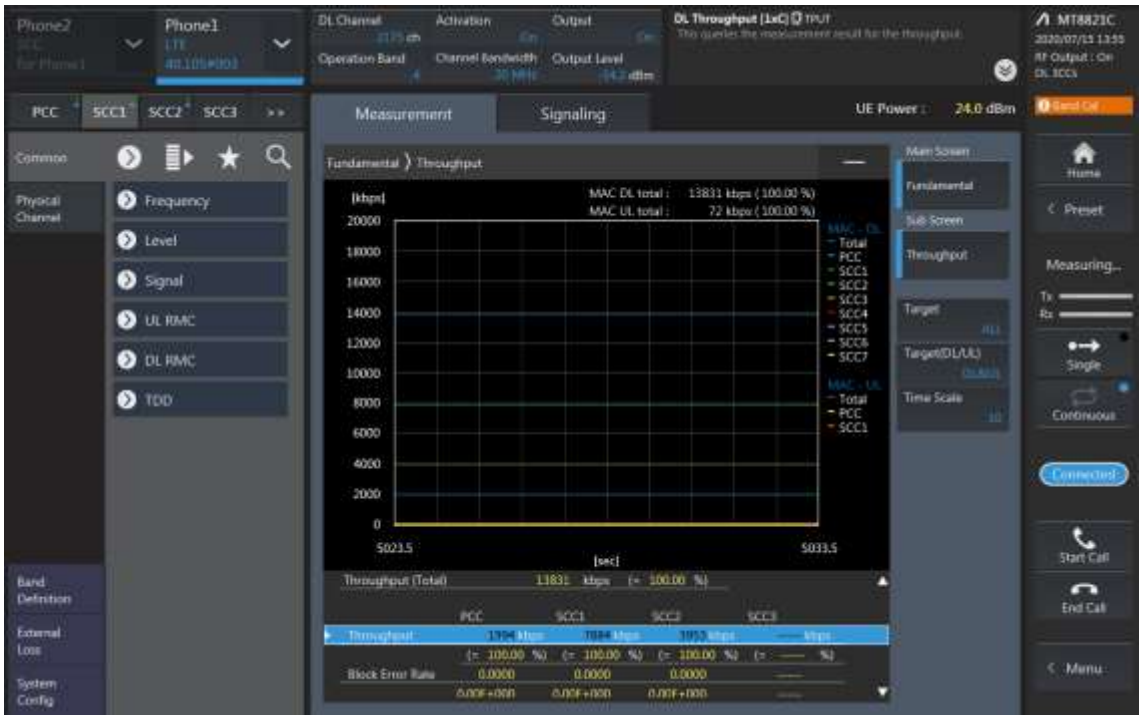
2CA Downlink Carrier aggregation Maximum conducted Powers

Combination	PCC									SCC				Tx Power		
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled(dBm) (2)	Deviaion (2)-(1)
2A-2A	2	5	18900	1880	900	1960	QPSK	1	12	2	20	1100	1980	24.10	24.07	-0.03
2C	2	5	18900	1880	900	1960	QPSK	1	12	2	20	983	1968.3	24.10	24.05	-0.05
2A-4A(0,2)	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	24.10	24.05	-0.05
2A-4A(1)	2	5	18900	1880	900	1960	QPSK	1	12	4	10	2175	2132.5	24.10	24.01	-0.09
2A-4A(0,2)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	23.62	23.61	-0.01
2A-4A(1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	10	900	1960	23.62	23.59	-0.03
2A-5A(0,1)	2	5	18900	1880	900	1960	QPSK	1	12	5	10	2525	881.5	24.10	24.10	0.00
2A-5A(0)	5	10	20525	836.5	2525	881.5	QPSK	1	24	2	20	900	1960	24.14	24.19	0.05
2A-5A(1)	5	10	20525	836.5	2525	881.5	QPSK	1	24	2	10	900	1960	24.14	24.05	-0.09
2A-12A(0,1,2)	2	5	18900	1880	900	1960	QPSK	1	12	12	10	5095	737.5	24.10	24.08	-0.02
2A-12A(0)	12	5	23095	707.5	5095	737.5	QPSK	1	12	2	20	900	1960	24.16	24.15	-0.01
2A-12A(1)	12	3	23095	707.5	5095	737.5	QPSK	1	7	2	20	900	1960	24.19	24.10	-0.09
2A-12A(2)	12	5	23095	707.5	5095	737.5	QPSK	1	12	2	10	900	1960	24.19	24.14	-0.05
2A-13A(0,1)	2	5	18900	1880	900	1960	QPSK	1	12	13	10	5230	751	24.10	24.02	-0.08
2A-13A(0)	13	10	23230	782	5230	751	QPSK	1	24	2	20	900	1960	23.92	23.98	0.06
2A-13A(1)	13	10	23230	782	5230	751	QPSK	1	24	2	10	900	1960	23.92	23.90	-0.02
2A-17A	2	5	18900	1880	900	1960	QPSK	1	12	17	10	5790	740	24.10	24.04	-0.06
2A-17A	17	10	23790	710	5790	740	QPSK	1	24	2	10	900	1960	23.72	23.73	0.01
2A-66A(0,2)	2	5	18900	1880	900	1960	QPSK	1	12	66	20	66786	2145	24.10	24.18	0.08
2A-66A(1)	2	5	18900	1880	900	1960	QPSK	1	12	66	10	66786	2145	24.10	24.06	-0.04
2A-66A(0,2)	66	20	132572	1770	67036	2170	QPSK	1	0	2	20	900	1960	23.78	23.70	-0.08
2A-66A(1)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	2	10	900	1960	23.60	23.59	-0.01
4A-4A(0)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	23.62	23.53	-0.09
4A-4A(1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	10	2000	2115	23.62	23.56	-0.06
4A-5A(0,1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	5	10	2525	881.5	23.62	23.54	-0.08
4A-5A(0)	5	10	20525	836.5	2525	881.5	QPSK	1	24	4	10	2175	2132.5	24.14	24.08	-0.06
4A-5A(1)	5	10	20525	836.5	2525	881.5	QPSK	1	24	4	20	2175	2132.5	24.14	24.09	-0.05
4A-12A(0,1,2,3,4)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	12	10	5095	737.5	23.62	23.67	0.05
4A-12A(0,3)	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	24.16	24.08	-0.08
4A-12A(1,4)	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	10	2175	2132.5	24.16	24.06	-0.10
4A-12A(2)	12	3	23095	707.5	5095	737.5	QPSK	1	7	4	20	2175	2132.5	24.19	24.12	-0.07
4A-13A(0,1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	13	10	5230	751	23.62	23.53	-0.09
4A-13A(0)	13	10	23230	782	5230	751	QPSK	1	24	4	20	2175	2132.5	23.92	23.83	-0.09
4A-13A(1)	13	10	23230	782	5230	751	QPSK	1	24	4	10	2175	2132.5	23.92	23.99	0.07
4A-17A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	17	10	5790	740	23.62	23.53	-0.09
4A-17A	17	10	23790	710	5790	740	QPSK	1	24	4	10	2175	2132.5	23.72	23.65	-0.07
5A-41A	5	10	20525	836.5	2525	881.5	QPSK	1	24	41	20	40620	2593	24.14	24.11	-0.03
5A-66A	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	24.14	24.07	-0.07
5A-66A	66	20	132572	1770	67036	2170	QPSK	1	0	5	10	2525	881.5	23.78	23.72	-0.06
12A-66A(0,3)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	10	66786	2145	24.16	24.24	0.08
12A-66A(1,4)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	24.16	24.14	-0.02
12A-66A(2)	12	3	23095	707.5	5095	737.5	QPSK	1	7	66	20	66786	2145	24.19	24.18	-0.01
12A-66A(5)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	15	66786	2145	24.16	24.10	-0.06
12A-66A(0)	66	1.4	131979	1710.7	68443	2110.7	QPSK	1	3	12	10	5095	737.5	23.61	23.57	-0.04
12A-66A(1,2,4)	66	20	132572	1770	67036	2170	QPSK	1	0	12	10	5095	737.5	23.78	23.72	-0.06
12A-66A(3)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	12	10	5095	737.5	23.60	23.51	-0.09
12A-66A(5)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	12	5	5095	737.5	23.60	23.57	-0.03
26A-41A	26	5	27015	846.5	9015	891.5	QPSK	1	0	41	20	40620	2593	24.35	24.42	0.07
41A-41A PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41490	2680	24.26	24.25	-0.01
41A-41A PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41490	2680	26.36	26.29	-0.07
41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	24.26	24.35	0.09
41C PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	26.36	26.31	-0.05
66A-66A	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	23.78	23.70	-0.08
66B	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	66	15	66554	2121.8	23.60	23.59	-0.01
66C	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66838	2150.2	23.78	23.78	0.00

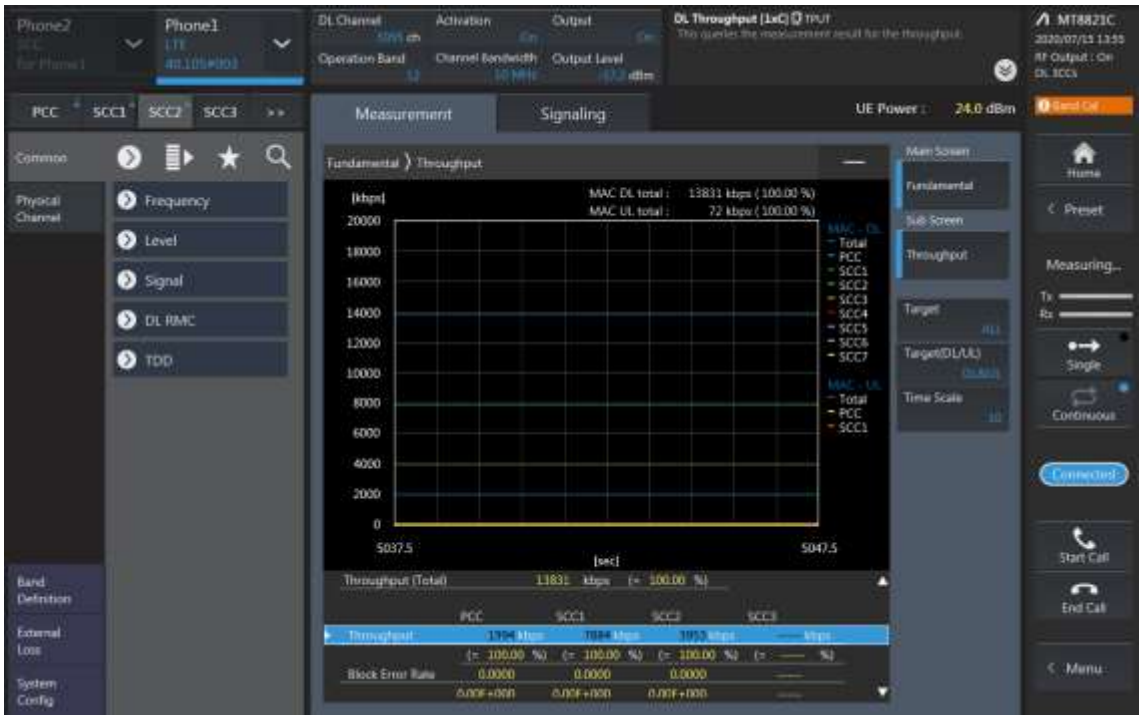
LTE Down Link 3CA Call Setup

PCC Setting: Channel /RB/BW/Modulation

SCC1 Setting : Channel /RB/BW/Modulation



SCC2 Setting (Channel /RB/BW/Modulation)and call Connection

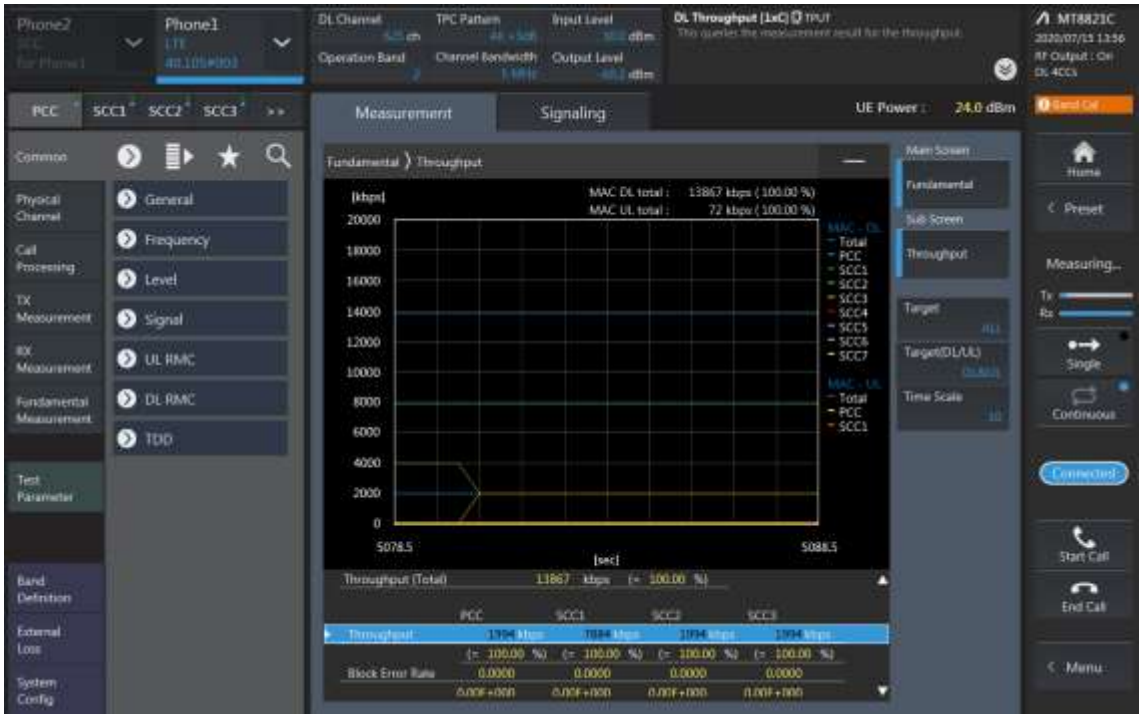


3CA Downlink Carrier aggregation conducted Powers

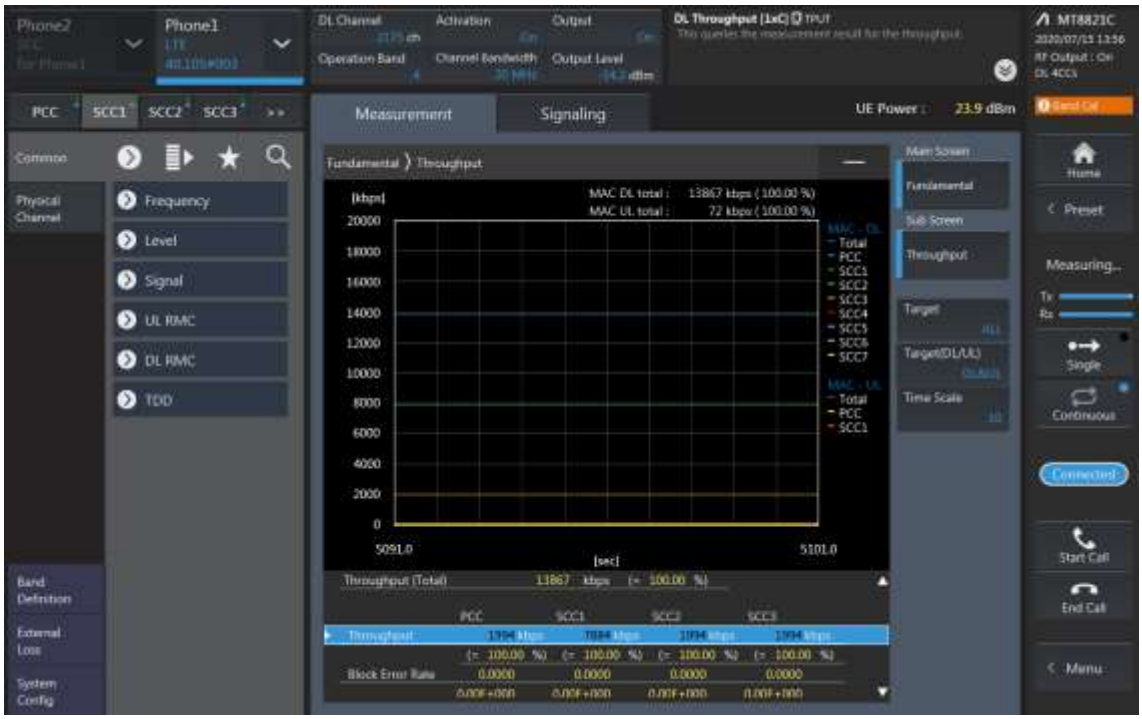
Combination	PCC									SCC				SCC				Tx Power		Delta (2)-(1)
	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modulation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	
2A-4A-5A	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	5	10	2525	881.5	24.10	23.91	-0.19
2A-4A-5A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	5	10	2525	881.5	23.62	23.44	-0.18
2A-4A-5A	5	10	20525	836.5	2525	881.5	QPSK	1	24	2	20	900	1960	4	20	2175	2132.5	24.14	24.03	-0.11
2A-4A-13A	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	13	10	5230	751	24.10	24.08	-0.02
2A-4A-13A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	13	10	5230	751	23.62	23.46	-0.16
2A-4A-13A	13	10	23230	782	5230	751	QPSK	1	24	2	10	900	1960	4	20	2175	2132.5	23.92	23.82	-0.10
4A-4A-12A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	12	10	5095	737.5	23.62	23.59	-0.03
4A-4A-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	4	10	2350	2150	24.16	23.97	-0.19
5A-66A-66A	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	66	20	67236	2190	24.14	24.07	-0.07
5A-66A-66A	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	5	10	2525	881.5	23.78	23.68	-0.10
26A-41C	26	5	27015	846.5	9015	891.5	QPSK	1	0	41	20	40620	2593	41	20	40818	2612.8	24.35	24.21	-0.14
41A-41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41292	2660.2	41	20	41490	2680	24.26	24.07	-0.19
41A-41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41490	2680	24.26	24.26	0.00
41A-41C PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41292	2660.2	41	20	41490	2680	26.36	26.32	-0.04
41A-41C PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	41490	2680	26.36	26.33	-0.03
41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	24.26	24.07	-0.19
41D PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	40146	2545.6	26.36	26.17	-0.19

LTE Down Link 4CA Call Setup

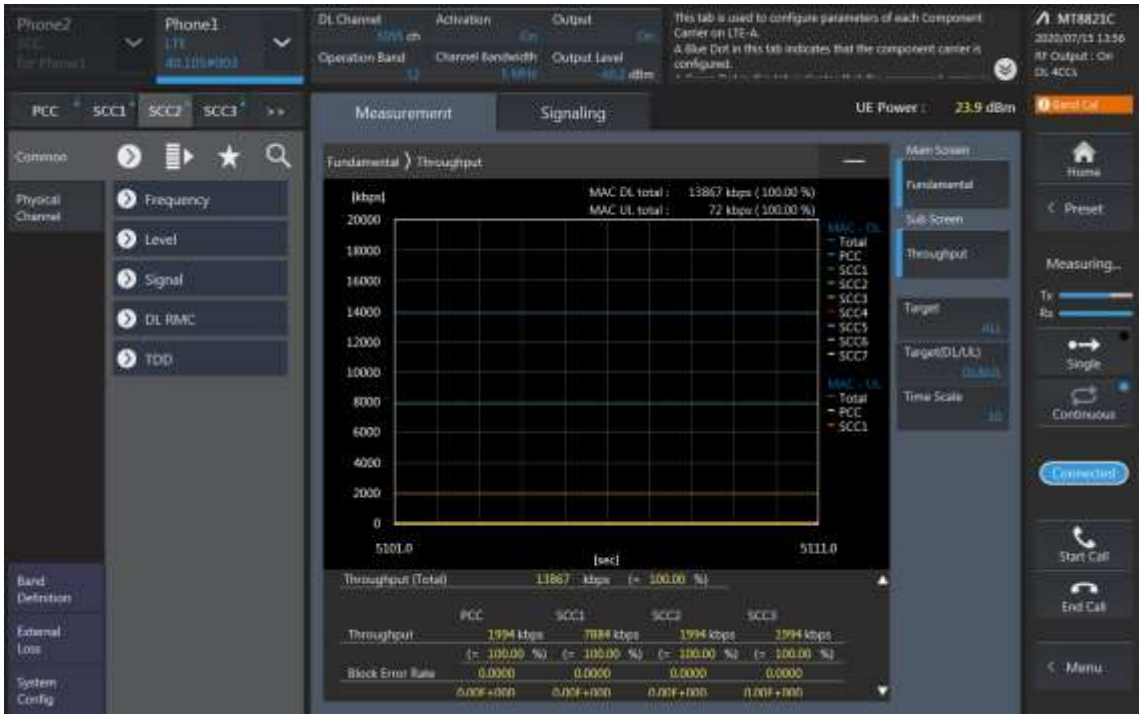
PCC Setting: Channel /RB/BW/Modulation



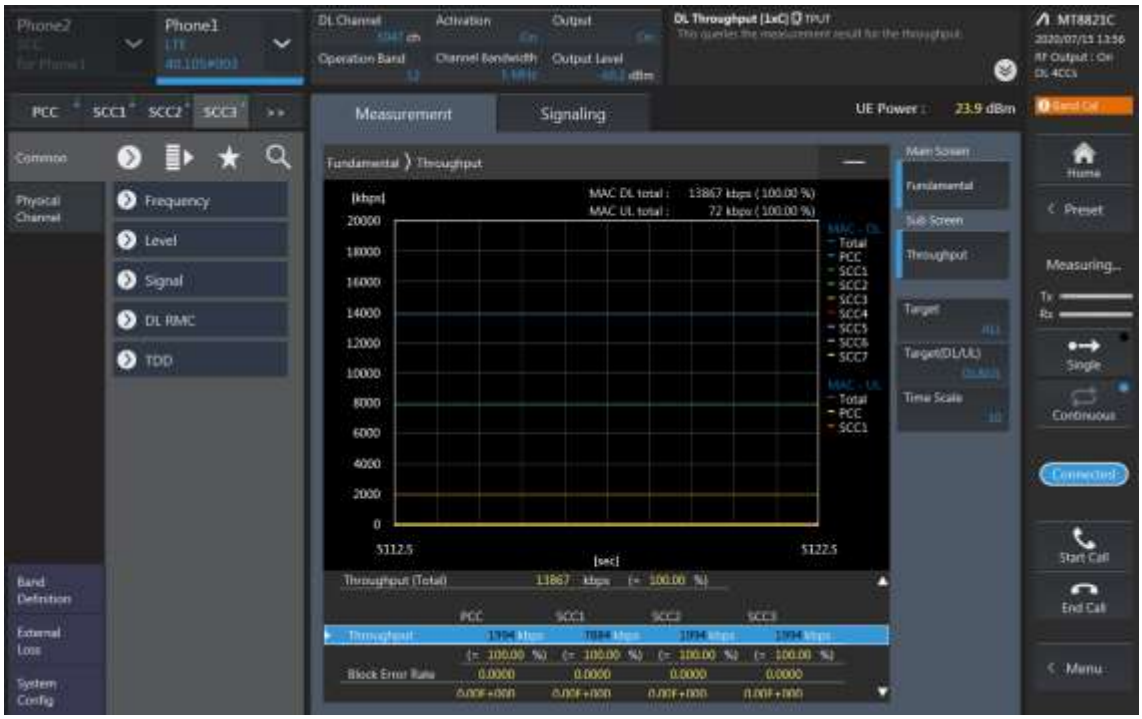
SCC1 Setting (Channel /RB/BW/Modulation)and call Connection



SCC2 Setting (Channel /RB/BW/Modulation)and call Connection



SCC3 Setting (Channel /RB/BW/Modulation)and call Connection

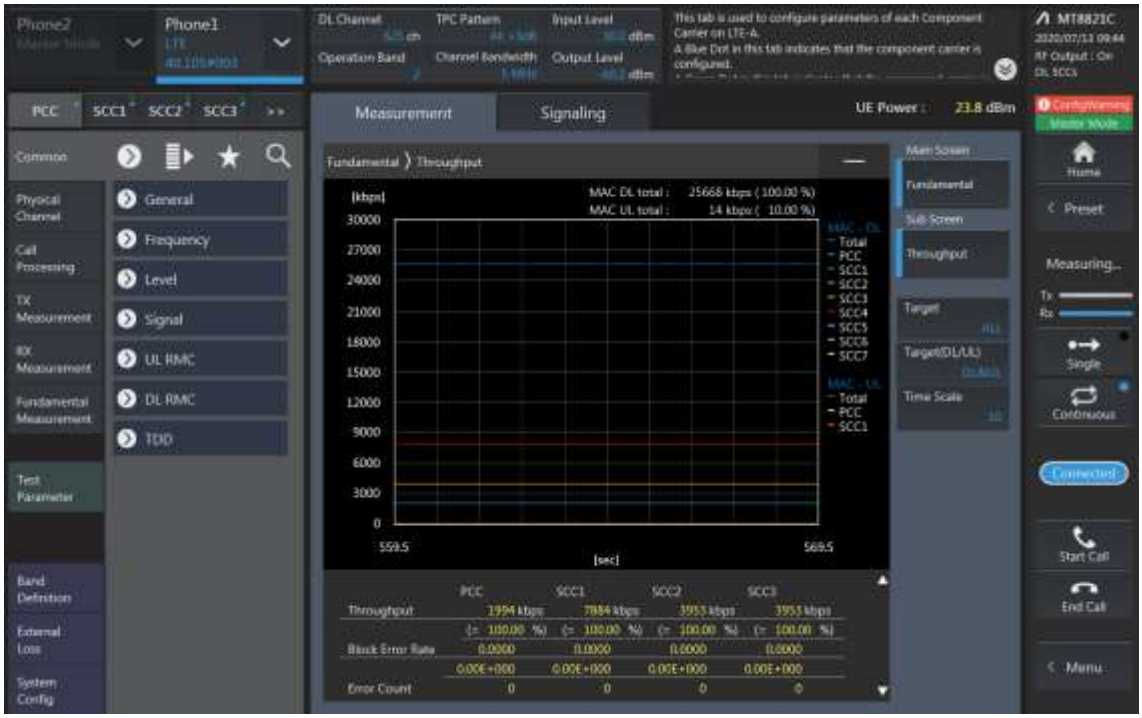


4CA Downlink Carrier aggregation conducted Powers

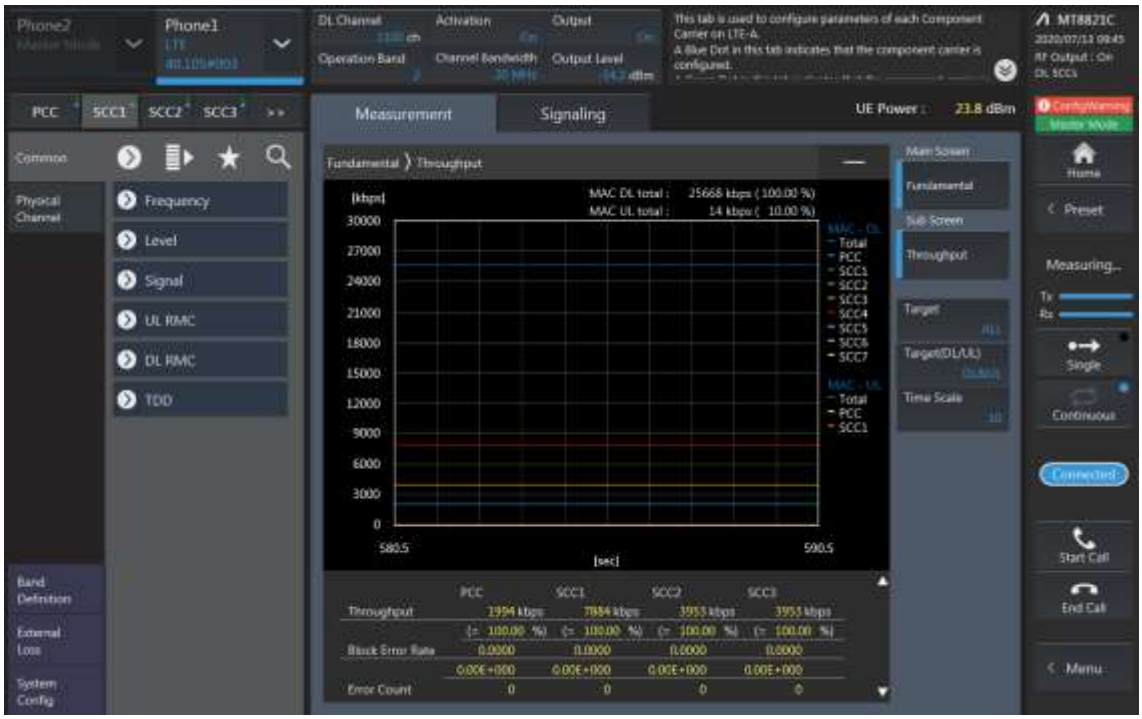
Combination	PCC									SCC				SCC				SCC				Tx Power		Delta (2)-(1)
	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modulation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	
41A-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.18	-0.08
41A-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	41	20	41490	2680	24.26	24.21	-0.05
41A-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	26.36	26.21	-0.15
41A-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	40146	2545.6	41	20	41490	2680	26.36	26.22	-0.14
41C-41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41292	2660.2	41	20	41490	2680	24.26	24.20	-0.06
41C-41C PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	41292	2660.2	41	20	41490	2680	26.36	26.30	-0.06

LTE Down Link 5CA Call Setup

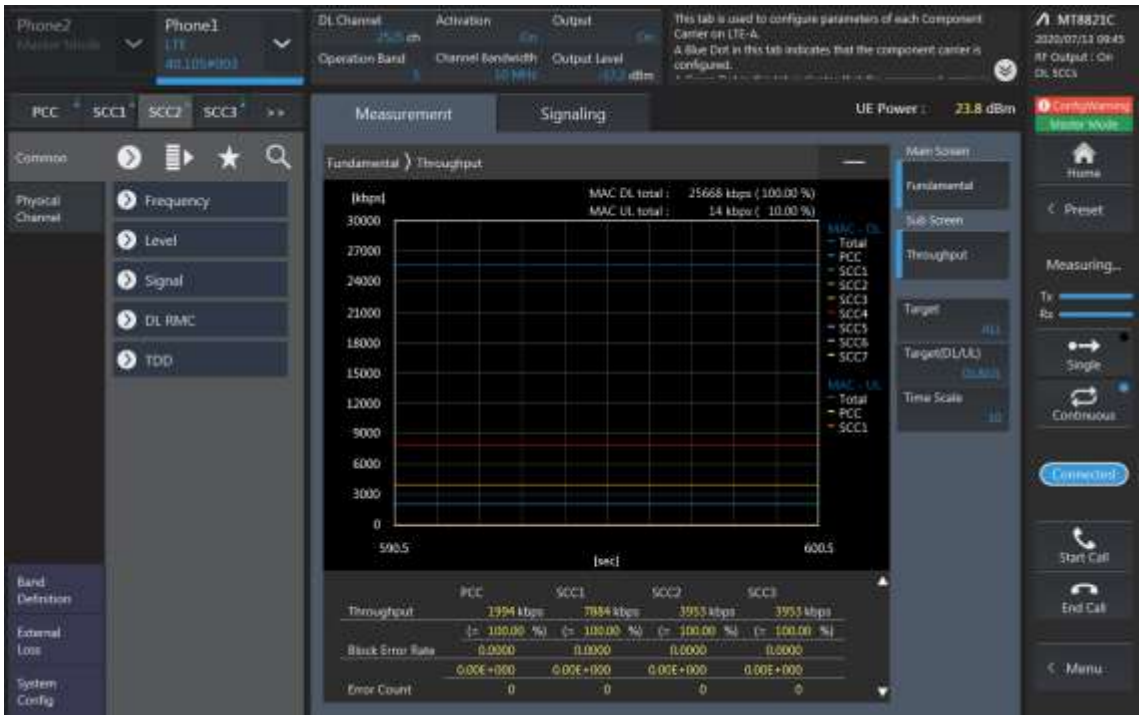
PCC Setting: Channel /RB/BW/Modulation



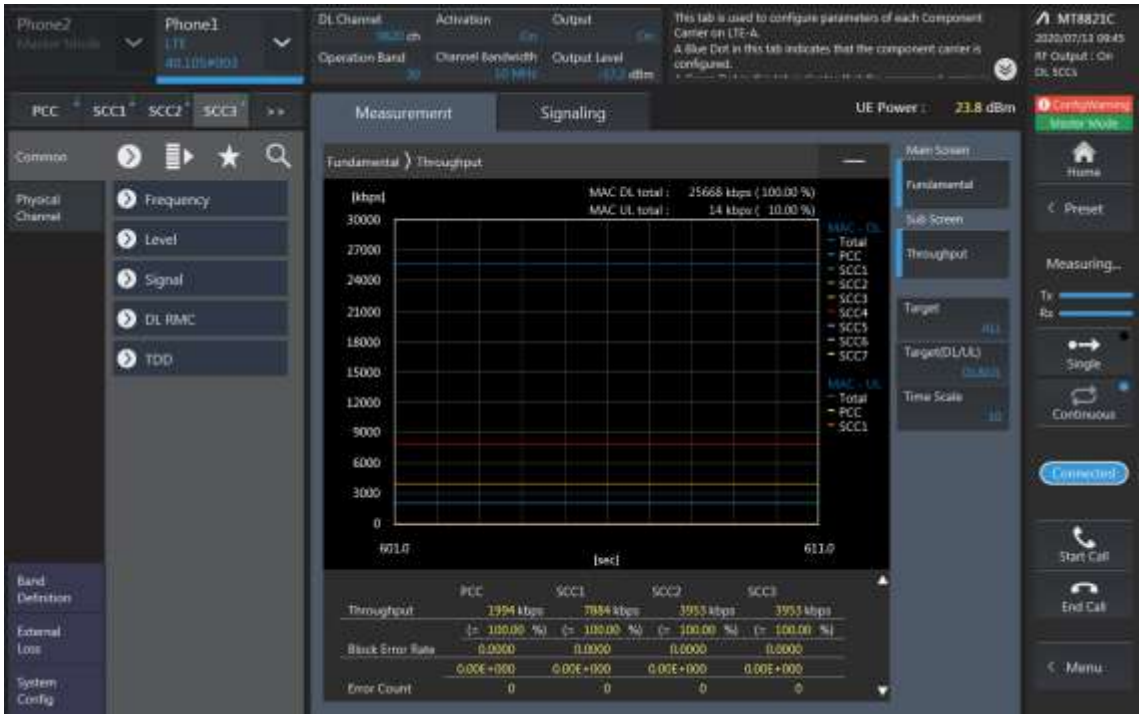
SCC1 Setting (Channel /RB/BW/Modulation)and call Connection



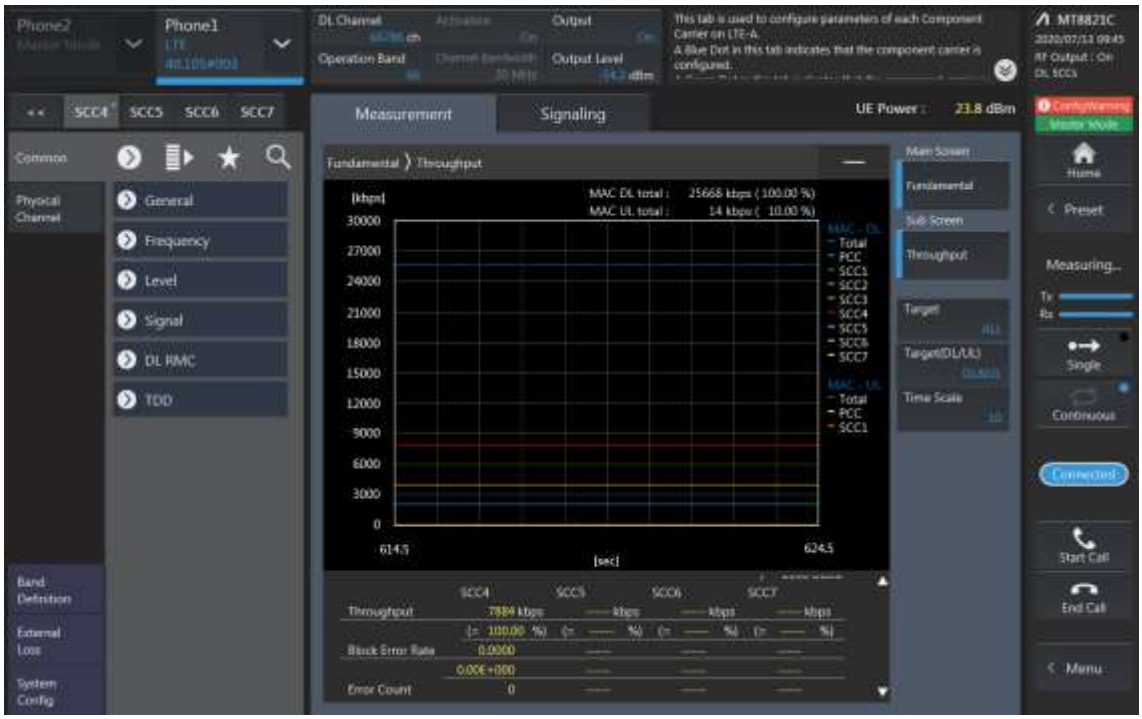
SCC2 Setting (Channel /RB/BW/Modulation)and call Connection



SCC3 Setting (Channel /RB/BW/Modulation)and call Connection



SCC4 Setting (Channel /RB/BW/Modulation)and call Connection



5CA Downlink Carrier aggregation conducted Powers

Combination	PCC									SCC				SCC				SCC				SCC				Tx Power		Delta (2)-(1)
	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modulation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	
41C-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.17	-0.09
41C-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.18	-0.08
41C-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	26.36	26.26	-0.10
41C-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	40146	2545.6	41	20	41292	2660.2	41	20	41490	2680	26.36	26.31	-0.05

LTE 4X4 MIMO Downlink Standalone Conducted Power

(Per TCBC Workshop note May 2017)

SAR test exclusion for LTE DL 4x4 MIMO should be determined by

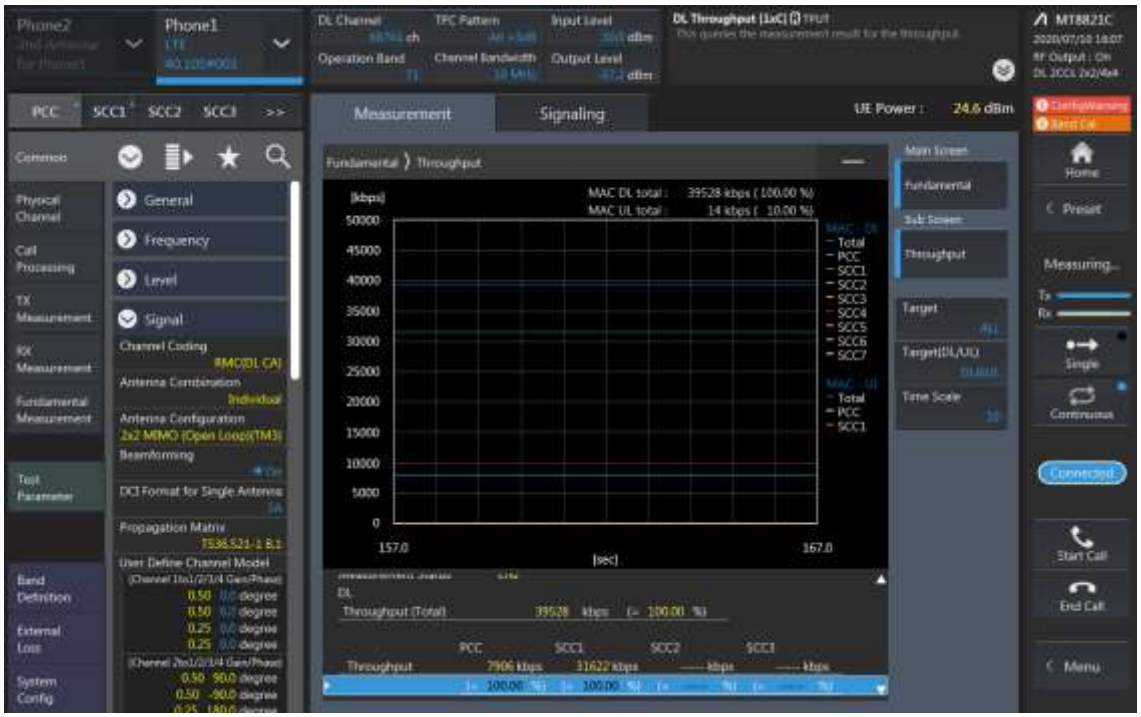
–UL power measurements with and without DL MIMO

–using the highest UL output power configuration without DL MIMO to confirm that UL output with DL MIMO is < ¼ dB higher

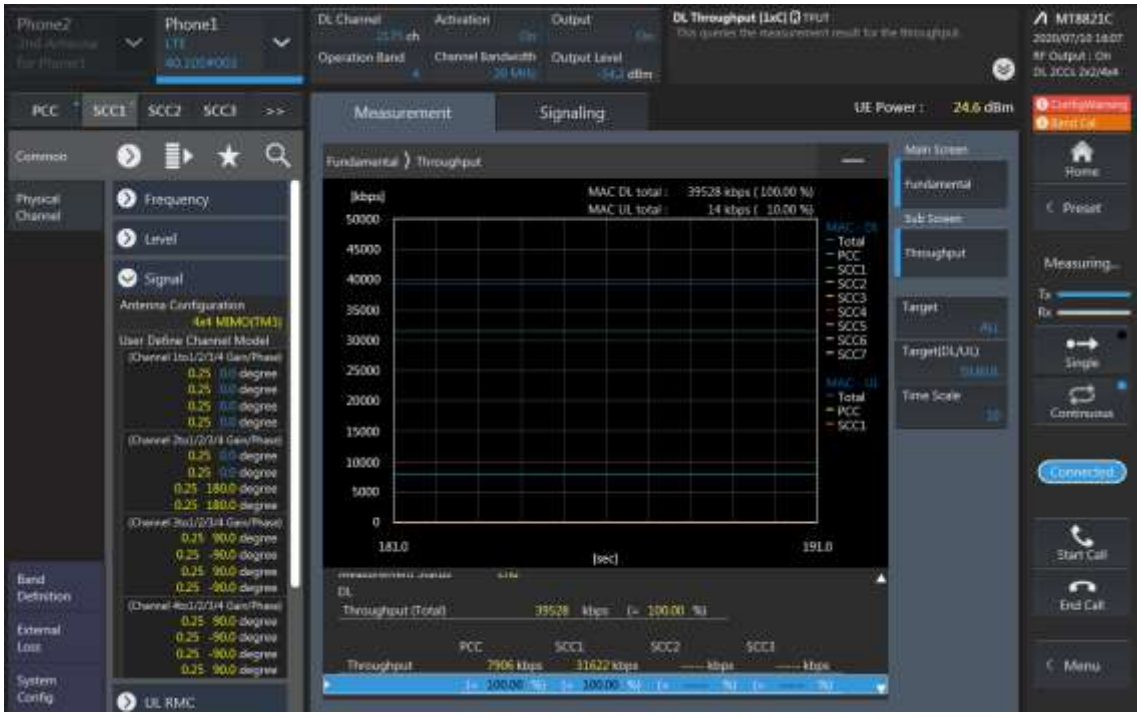
–for DL MIMO with carrier aggregation, the same SAR test exclusion procedure should be considered

LTE Down Link 2CA 4x4 MIMO Call Setup

PCC Setting : Channel/ RB/ BW/ Modulation



SCC Setting : Channel/ RB/ BW/ Modulation and call Connection

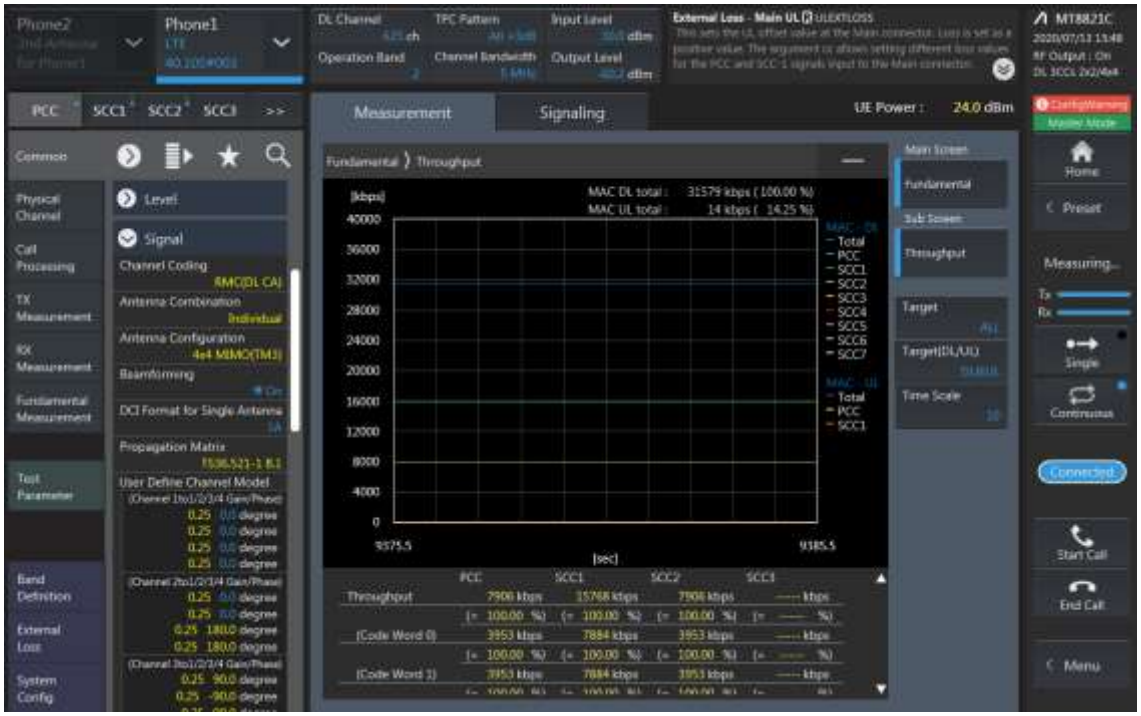


LTE Downlink 2CA 4X4 MIMO Maximum Conducted Power

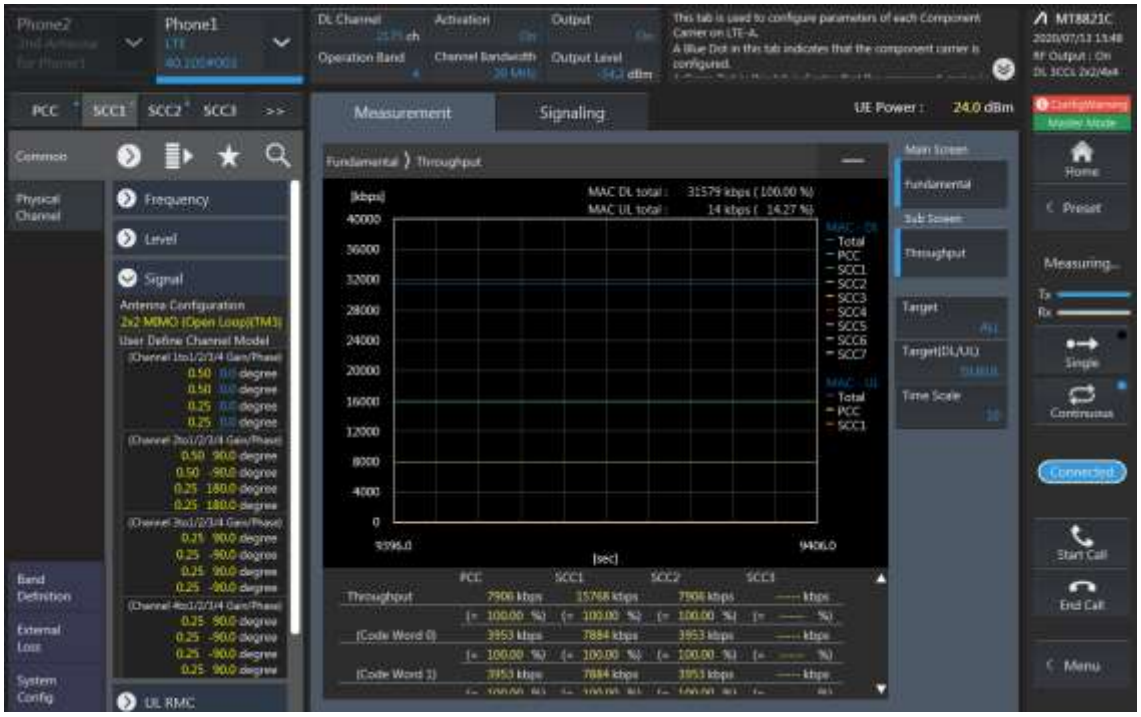
Combination	PCC									SCC				Tx Power		
	Band	BW	PCC UL Channel	PCC UL Frequency	PCC DL Channel	PCC DL Frequency	Modulation	RB	offset	Band	BW	SCC DL Channel	SCC DL Frequency	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled(dBm) (2)	Deviaion (2)-(1)
2A-[4A](0,2)	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	24.10	24.05	-0.05
2A-[4A](1)	2	5	18900	1880	900	1960	QPSK	1	12	4	10	2175	2132.5	24.10	24.05	-0.05
2A-[4A](0,2)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	23.62	23.53	-0.09
2A-[4A](1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	10	900	1960	23.62	23.53	-0.09
2A-[66A](0,2)	2	5	18900	1880	900	1960	QPSK	1	12	66	20	66786	2145	24.10	24.08	-0.02
2A-[66A](1)	2	5	18900	1880	900	1960	QPSK	1	12	66	10	66786	2145	24.10	24.05	-0.05
2A-[66A](0,2)	66	20	132572	1770	67036	2170	QPSK	1	0	2	20	900	1960	23.78	23.71	-0.07
2A-[66A](1)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	2	10	900	1960	23.60	23.52	-0.08
4A-[4A](0)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	23.62	23.59	-0.03
[4A]-4A(0)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	23.62	23.58	-0.04
[4A]-[4A](0)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	23.62	23.59	-0.03
4A-[4A](1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	10	2000	2115	23.62	23.53	-0.09
[4A]-4A(1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	10	2000	2115	23.62	23.61	-0.01
[4A]-[4A](1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	10	2000	2115	23.62	23.55	-0.07
[4A]-5A(0,1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	5	10	2525	881.5	23.62	23.58	-0.04
[4A]-5A(0)	5	10	20525	836.5	2525	881.5	QPSK	1	24	4	10	2175	2132.5	24.14	24.05	-0.09
[4A]-5A(1)	5	10	20525	836.5	2525	881.5	QPSK	1	24	4	20	2175	2132.5	24.14	24.06	-0.08
[4A]-12A(0,1,2,3,4)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	12	10	5095	737.5	23.62	23.54	-0.08
[4A]-12A(0,3)	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	24.16	24.14	-0.02
[4A]-12A(1,4)	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	10	2175	2132.5	24.16	24.08	-0.08
[4A]-12A(2)	12	3	23095	707.5	5095	737.5	QPSK	1	7	4	20	2175	2132.5	24.19	24.19	0.00
[4A]-13A(0,1)	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	13	10	5230	751	23.62	23.60	-0.02
[4A]-13A(0)	13	10	23230	782	5230	751	QPSK	1	24	4	20	2175	2132.5	23.92	23.83	-0.09
[4A]-13A(1)	13	10	23230	782	5230	751	QPSK	1	24	4	10	2175	2132.5	23.92	23.89	-0.03
[4A]-17A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	17	10	5790	740	23.62	23.56	-0.06
[4A]-17A	17	10	23790	710	5790	740	QPSK	1	24	4	10	2175	2132.5	23.72	23.71	-0.01
5A-[41A]	5	10	20525	836.5	2525	881.5	QPSK	1	24	41	20	40620	2593	24.14	24.13	-0.01
5A-[41A]	41	20	39750	2506	39750	2506	QPSK	1	12	5	10	2525	881.5	24.26	24.23	-0.03
5A-[66A]	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	24.14	24.06	-0.08
5A-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	5	10	2525	881.5	23.78	23.69	-0.09
12A-[66A](0,3)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	10	66786	2145	24.16	24.12	-0.04
12A-[66A](1,4)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	24.16	24.14	-0.02
12A-[66A](2)	12	3	23095	707.5	5095	737.5	QPSK	1	7	66	20	66786	2145	24.19	24.18	-0.01
12A-[66A](5)	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	15	66786	2145	24.16	24.10	-0.06
12A-[66A](0)	66	1.4	131979	1710.7	68443	2110.7	QPSK	1	3	12	10	5095	737.5	23.61	23.56	-0.05
12A-[66A](1,2,4)	66	20	132572	1770	67036	2170	QPSK	1	0	12	10	5095	737.5	23.78	23.78	0.00
12A-[66A](3)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	12	10	5095	737.5	23.60	23.51	-0.09
12A-[66A](5)	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	12	5	5095	737.5	23.60	23.50	-0.10
26A-[41A]	26	5	27015	846.5	9015	891.5	QPSK	1	0	41	20	40620	2593	24.35	24.31	-0.04
26A-[41A]	41	20	39750	2506	39750	2506	QPSK	1	12	26	15	8865	876.5	24.26	24.22	-0.04
41A-[41A] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41490	2680	24.26	24.18	-0.08
[41A]-41A PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41490	2680	24.26	24.20	-0.06
[41A]-[41A] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41490	2680	24.26	24.21	-0.05
41A-[41A] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41490	2680	26.36	26.35	-0.01
[41A]-41A PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41490	2680	26.36	26.32	-0.04
[41A]-[41A] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41490	2680	26.36	26.36	0.00
[41C] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	24.26	24.22	-0.04
[41C] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	26.36	26.36	0.00
66A-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	23.78	23.68	-0.10
[66A]-66A	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	23.78	23.74	-0.04
[66A]-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	23.78	23.75	-0.03
[66B]	66	5	131997	1712.5	66461	2112.5	QPSK	1	12	66	15	66554	2121.8	23.60	23.56	-0.04
[66C]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66838	2150.2	23.78	23.73	-0.05

LTE Down Link 3CA 4x4 MIMO Call Setup

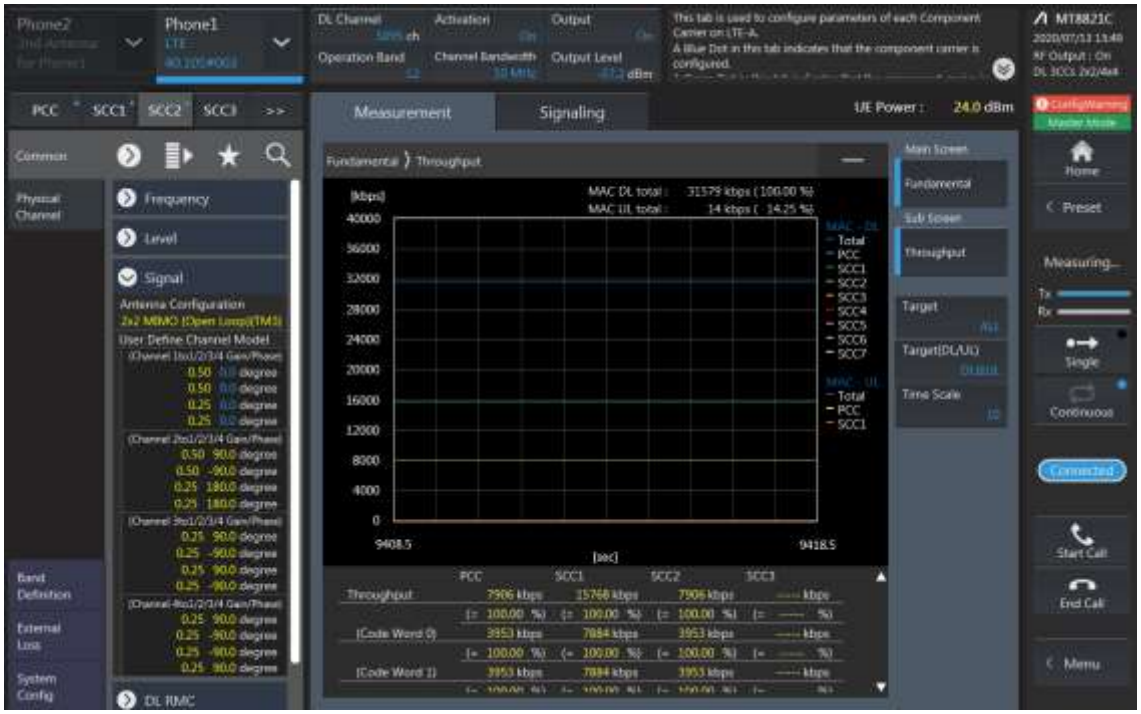
PCC Setting: Channel /RB/BW/Modulation



SCC1 Setting : Channel /RB/BW/Modulation



SCC2 Setting (Channel /RB/BW/Modulation)and call Connection

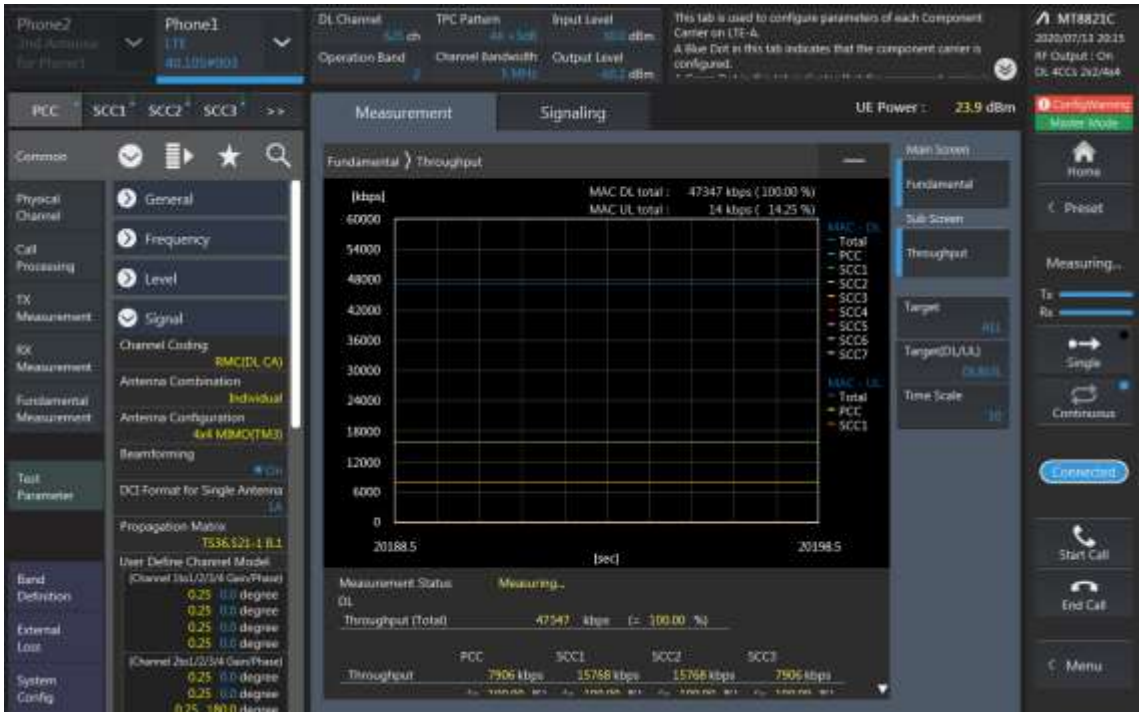


LTE Downlink 3CA 4X4 MIMO Maximum Conducted Power

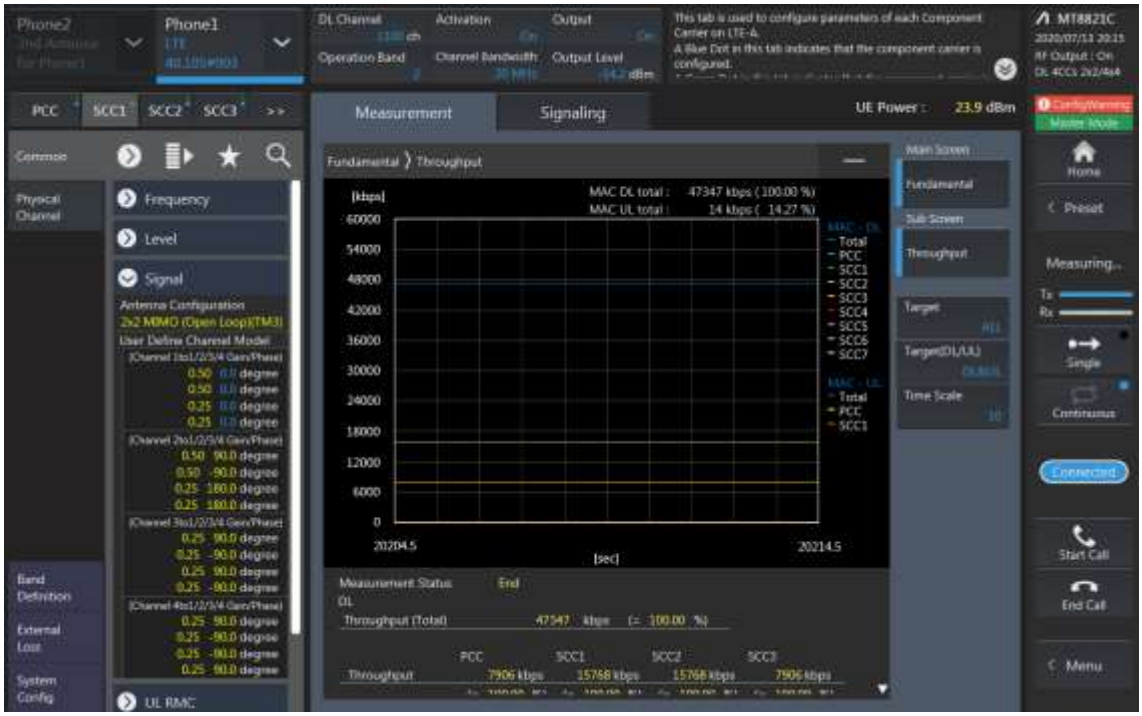
Combination	PCC									SCC				SCC				Tx Power		Delta (2)-(1)
	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modulation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	
2A-[4A]-5A	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	5	10	2525	881.5	24.10	24.10	0.00
2A-[4A]-5A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	5	10	2525	881.5	23.62	23.60	-0.02
2A-[4A]-5A	5	10	20525	836.5	2525	881.5	QPSK	1	24	2	20	900	1960	4	20	2175	2132.5	24.14	24.11	-0.03
2A-[4A]-13A	2	5	18900	1880	900	1960	QPSK	1	12	4	20	2175	2132.5	13	10	5230	751	24.10	24.05	-0.05
2A-[4A]-13A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	2	20	900	1960	13	10	5230	751	23.62	23.59	-0.03
2A-[4A]-13A	13	10	23230	782	5230	751	QPSK	1	24	2	10	900	1960	4	20	2175	2132.5	23.92	23.85	-0.07
4A-[4A]-12A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	12	10	5095	737.5	23.62	23.61	-0.01
[4A]-4A-12A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	12	10	5095	737.5	23.62	23.54	-0.08
[4A]-[4A]-12A	4	5	20375	1752.5	2375	2152.5	QPSK	1	12	4	20	2050	2120	12	10	5095	737.5	23.62	23.61	-0.01
4A-[4A]-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	4	10	2350	2150	24.16	24.10	-0.06
[4A]-4A-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	4	10	2350	2150	24.16	24.11	-0.05
[4A]-[4A]-12A	12	5	23095	707.5	5095	737.5	QPSK	1	12	4	20	2175	2132.5	4	10	2350	2150	24.16	24.10	-0.06
5A-66A-[66A]	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	66	20	67236	2190	24.14	24.12	-0.02
5A-[66A]-66A	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	66	20	67236	2190	24.14	24.09	-0.05
5A-[66A]-[66A]	5	10	20525	836.5	2525	881.5	QPSK	1	24	66	20	66786	2145	66	20	67236	2190	24.14	24.08	-0.06
5A-66A-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	5	10	2525	881.5	23.78	23.69	-0.09
5A-[66A]-66A	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	5	10	2525	881.5	23.78	23.73	-0.05
5A-[66A]-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	5	10	2525	881.5	23.78	23.76	-0.02
12A-66A-[66A]	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	66	20	67236	2190	14.16	14.14	-0.02
12A-[66A]-66A	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	66	20	67236	2190	14.16	14.17	0.01
12A-[66A]-[66A]	12	5	23095	707.5	5095	737.5	QPSK	1	12	66	20	66786	2145	66	20	67236	2190	14.16	14.18	0.02
12A-66A-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	12	10	5095	737.5	23.78	23.65	-0.13
12A-[66A]-66A	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	12	10	5095	737.5	23.78	23.71	-0.07
12A-[66A]-[66A]	66	20	132572	1770	67036	2170	QPSK	1	0	66	20	66536	2120	12	10	5095	737.5	23.78	23.69	-0.09
26A-[41C]	26	5	27015	846.5	9015	891.5	QPSK	1	0	41	20	40620	2593	41	20	40818	2612.8	24.35	24.29	-0.06
26A-[41C]	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	26	15	8865	876.5	24.26	24.26	0.00
41A-[41C] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41292	2660.2	41	20	41490	2680	24.26	24.19	-0.07
[41A]-41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41292	2660.2	41	20	41490	2680	24.26	24.21	-0.05
[41A]-[41C] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41292	2660.2	41	20	41490	2680	24.26	24.21	-0.05
41A-[41C] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41490	2680	24.26	24.26	0.00
[41A]-41C PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41490	2680	24.26	24.20	-0.06
[41A]-[41C] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	41490	2680	24.26	24.24	-0.02
41A-[41C] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41292	2660.2	41	20	41490	2680	26.36	26.36	0.00
[41A]-41C PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41292	2660.2	41	20	41490	2680	26.36	26.33	-0.03
[41A]-[41C] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41292	2660.2	41	20	41490	2680	26.36	26.31	-0.05
41A-[41C] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	41490	2680	26.36	26.33	-0.03
[41A]-41C PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	41490	2680	26.36	26.32	-0.04
[41A]-[41C] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	41490	2680	26.36	26.32	-0.04
[41D] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	24.26	24.20	-0.06
[41D] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	39948	2525.8	41	20	40146	2545.6	26.36	26.33	-0.03

LTE Down Link 4CA 4x4 MIMO Call Setup

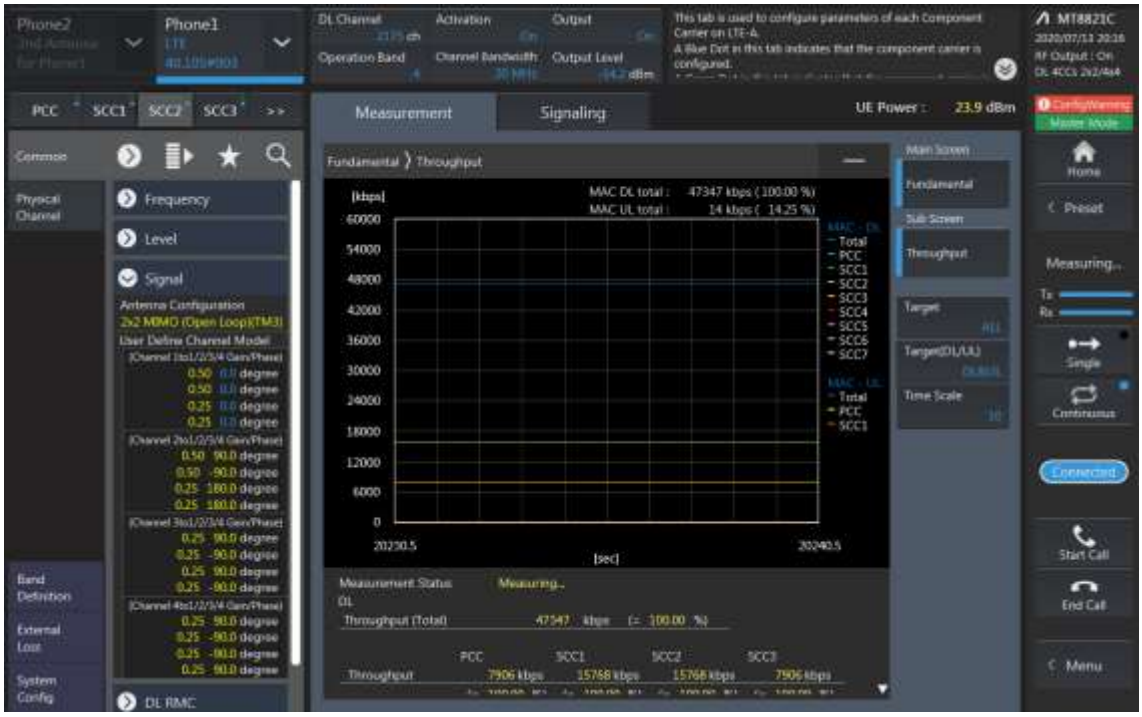
PCC Setting: Channel /RB/BW/Modulation



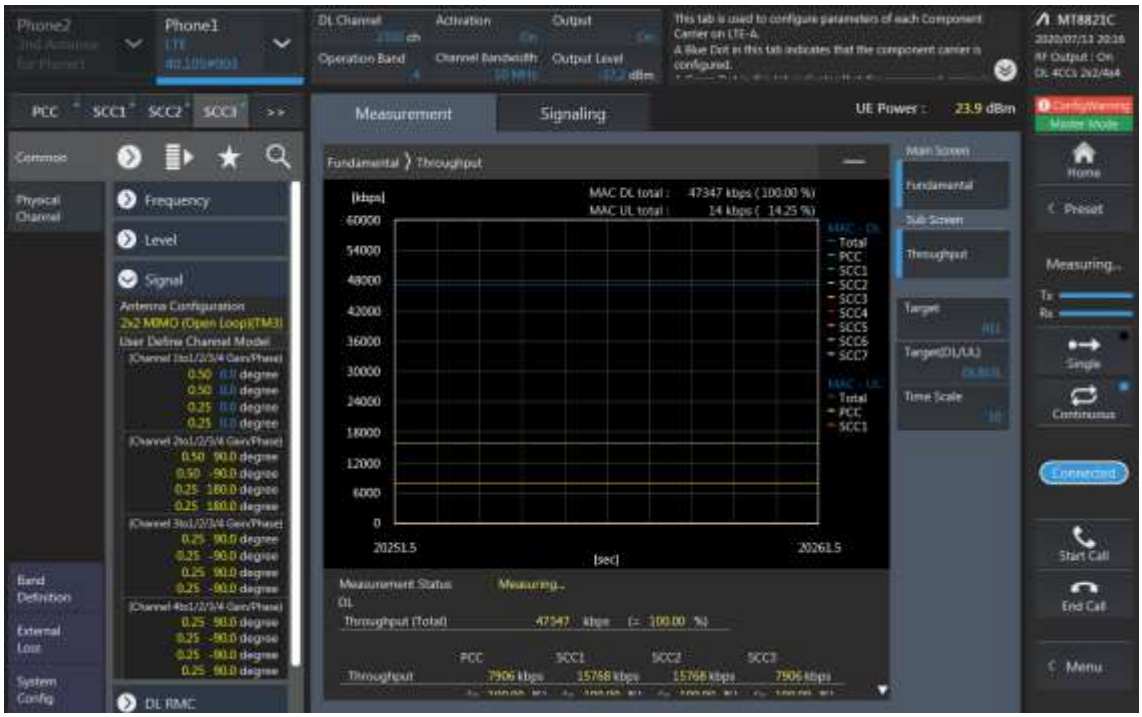
SCC1 Setting : Channel /RB/BW/Modulation



SCC2 Setting (Channel /RB/BW/Modulation) and call Connection



SCC3 Setting (Channel /RB/BW/Modulation) and call Connection



LTE Downlink 4CA 4X4 MIMO Maximum Conducted Power

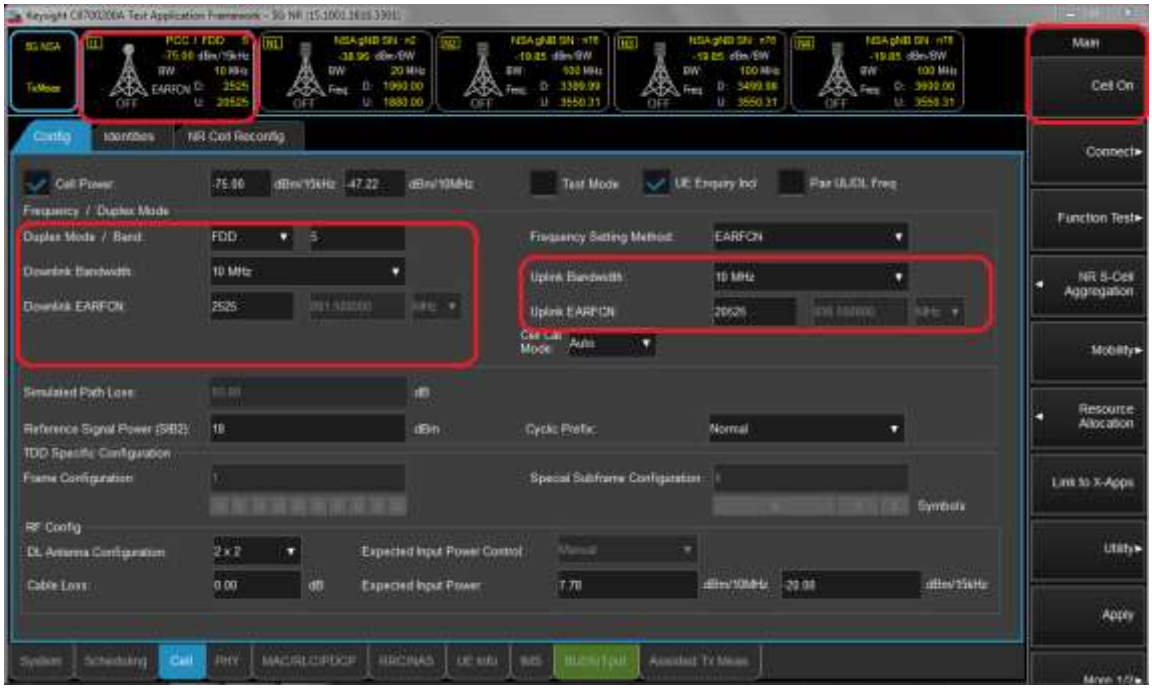
Combination	PCC									SCC				SCC				SCC				Tx Power		Delta (2)-(1)
	Band	BW	PCC UL Ch.	PCC UL Freq.	PCC DL Ch.	PCC DL Freq.	Modulation	RB	RB offset	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	Band	BW	SCC DL Ch.	SCC DL Freq.	LTE Single Carrier Tx Power (dBm) (1)	LTE Tx Power with DL CA Enabled (dBm) (2)	
41A-[41D] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.24	-0.02
[41A]-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.25	-0.01
[41A]-[41D] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	24.26	24.16	-0.10
41A-[41D] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	41	20	41490	2680	24.26	24.23	-0.03
[41A]-41D PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	41	20	41490	2680	24.26	24.17	-0.09
[41A]-[41D] PC3	41	5	39750	2506	39750	2506	QPSK	1	12	41	20	39867	2517.7	41	20	39984	2529.4	41	20	41490	2680	24.26	24.21	-0.05
41A-[41D] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	26.36	26.31	-0.05
[41A]-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	26.36	26.32	-0.04
[41A]-[41D] PC2	41	20	39750	2506	39750	2506	QPSK	1	0	41	20	41094	2640.4	41	20	41292	2660.2	41	20	41490	2680	26.36	26.27	-0.09
41A-[41D] PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	40146	2545.6	41	20	41490	2680	26.36	26.34	-0.02
[41A]-41D PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	40146	2545.6	41	20	41490	2680	26.36	26.34	-0.02
[41A]-[41D] PC2	41	20	39750	2506	39750	2506	QPSK	1	12	41	20	39948	2525.8	41	20	40146	2545.6	41	20	41490	2680	26.36	26.29	-0.07

2. 5G NR Call Box Setup

Procedure used to establish output Power measurement for NR Bands

Select operating band, BW and Channel.

- Click Cell on button in the right of Test application screen.
- Turn the LTE Cell On using “ON/OFF” Key.

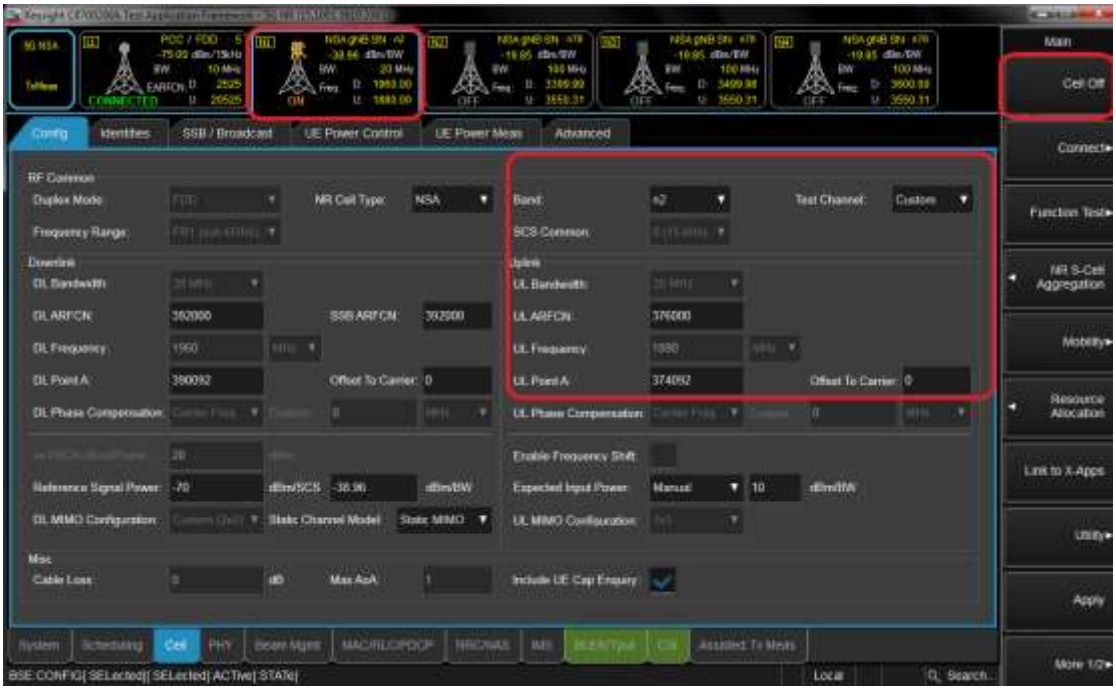


- Turn the Airplane Mode On and then turn the Airplane mode off.
- Select All down bits for UL Power control Mode in LTE.

Setup for NR Band

- Select waveform for Setting NR Band (PHY->PUSCH->Enable Transform Precoder)
  - Enable : DFT-s-OFDM, Disable : CP-OFDM

- Select operating band, BW, SCS and Channel.
- Turn the NR Cell On using “ON/OFF” Key.

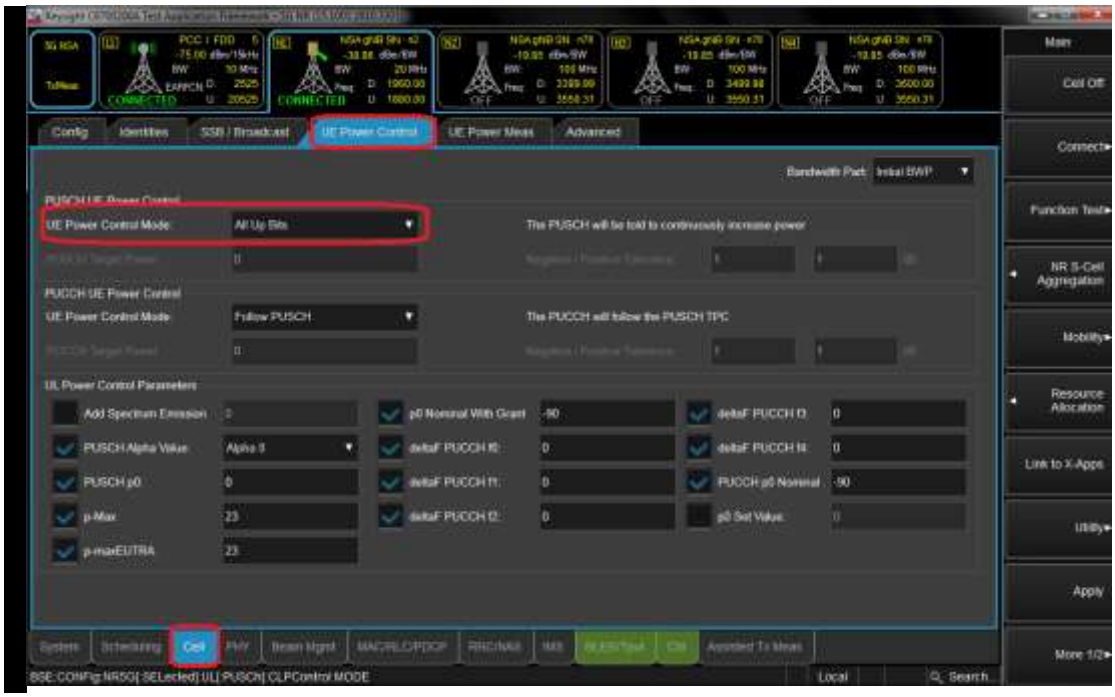


Connect NR S-Cell Aggregation

- Click NR S-Cell Aggregation
- Check the Cell 1's DL and UL box(PCC) and than Click Apply.
- Check the message summary If message shows NR Msg 5, It is connected.

Max Power setting

- Click "Cell in the bottom of screen.
- Click "UE Power control" than change UE Power control mode to All Up bits.



Selecting Start RB/Count/MCS

- Select the each test configurating (Start RB, Count, MCS).

View Tx Power

- Click “Link to X-Apps.”(Please refer to Figure-7)
- Select “Channel Power”.