10.3.4 LTE Band 7

Output power table

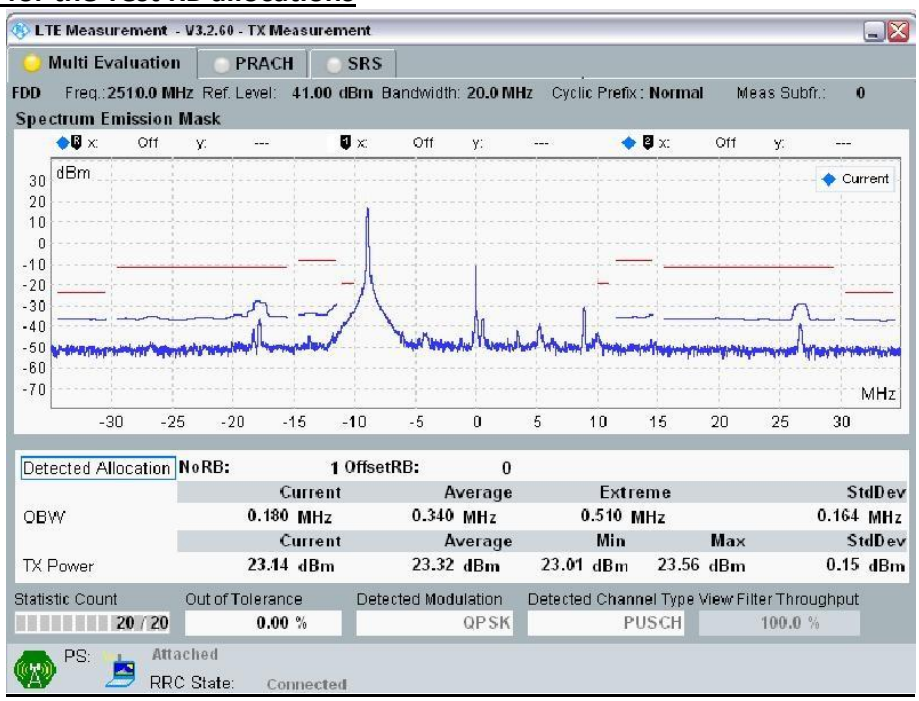
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	20	20850	2510.0	QPSK	1	0	0	23.1	15.0
					1	49	0	22.4	14.7
					1	99	0	22.3	14.5
					50	0	1	22.4	14.5
					50	24	1	21.8	14.4
					50	49	1	21.6	14.3
					100	0	1	22.4	14.0
				16QAM	1	0	1	22.3	14.4
					1	49	1	21.6	14.3
					1	99	1	21.5	14.2
					50	0	2	21.2	13.2
					50	24	2	20.9	13.0
					50	49	2	20.8	12.9
					100	0	2	20.3	13.0
		21100	2535.0	QPSK	1	0	0	23.0	14.9
					1	49	0	22.3	14.6
					1	99	0	22.2	14.4
					50	0	1	22.3	14.4
					50	24	1	21.7	14.3
					50	49	1	21.5	14.2
					100	0	1	22.1	14.3
				16QAM	1	0	1	22.2	14.3
					1	49	1	21.5	14.2
					1	99	1	21.4	14.1
					50	0	2	21.1	13.1
					50	24	2	20.8	12.9
					50	49	2	20.7	12.8
					100	0	2	20.2	12.9
		21350	2560.0	QPSK	1	0	0	22.9	14.8
					1	49	0	22.2	14.5
					1	99	0	22.1	14.3
					50	0	1	22.2	14.3
					50	24	1	21.6	14.2
					50	49	1	21.4	14.1
					100	0	1	22.2	14.2
				16QAM	1	0	1	22.1	14.2
					1	49	1	21.4	14.1
					1	99	1	21.3	14.0
					50	0	2	21.0	13.0
					50	24	2	20.7	12.8
					50	49	2	20.6	12.7
					100	0	2	20.1	12.8

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	15	20825	2507.5	QPSK	1	0	0	23.0	14.9
					1	37	0	22.3	14.6
					1	74	0	22.2	14.4
					36	0	1	22.3	14.4
					36	18	1	21.7	14.3
					36	35	1	21.5	14.2
					75	0	1	22.3	13.9
				16QAM	1	0	1	22.2	14.3
					1	37	1	21.5	14.2
					1	74	1	21.4	14.1
					36	0	2	21.1	13.1
					36	18	2	20.8	12.9
					36	35	2	20.7	12.8
					75	0	2	20.2	12.9
		21100	2535.0	QPSK	1	0	0	22.9	14.8
					1	37	0	22.2	14.5
					1	74	0	22.1	14.3
					36	0	1	22.2	14.3
					36	18	1	21.6	14.2
					36	35	1	21.4	14.1
					75	0	1	22.0	14.2
				16QAM	1	0	1	22.1	14.2
					1	37	1	21.4	14.1
					1	74	1	21.3	14.0
					36	0	2	21.0	13.0
					36	18	2	20.7	12.8
					36	35	2	20.6	12.7
					75	0	2	20.1	12.8
		21375	2562.5	QPSK	1	0	0	22.8	14.7
					1	37	0	22.1	14.4
					1	74	0	22.0	14.2
					36	0	1	22.1	14.2
					36	18	1	21.5	14.1
					36	35	1	21.3	14.0
					75	0	1	22.1	14.1
				16QAM	1	0	1	22.0	14.1
					1	37	1	21.3	14.0
					1	74	1	21.2	13.9
					36	0	2	20.9	12.9
					36	18	2	20.6	12.7
					36	35	2	20.5	12.6
					75	0	2	20.0	12.7

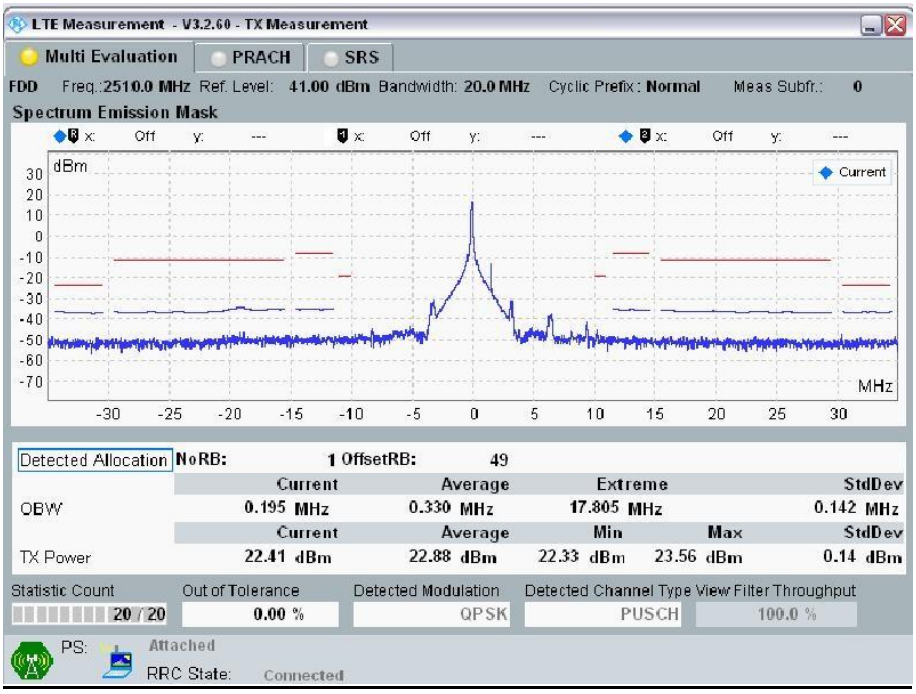
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	10	20800	2505.0	QPSK	1	0	0	23.0	14.9
					1	24	0	22.3	14.6
					1	49	0	22.2	14.4
					25	0	1	22.3	14.4
					25	12	1	21.7	14.3
					25	24	1	21.5	14.2
					50	0	1	22.3	13.9
				16QAM	1	0	1	22.2	14.3
					1	24	1	21.5	14.2
					1	49	1	21.4	14.1
					25	0	2	21.1	13.1
					25	12	2	20.8	12.9
					25	24	2	20.7	12.8
					50	0	2	20.2	12.9
		21100	2535.0	QPSK	1	0	0	22.9	14.8
					1	24	0	22.2	14.5
					1	49	0	22.1	14.3
					25	0	1	22.2	14.3
					25	12	1	21.6	14.2
					25	24	1	21.4	14.1
					50	0	1	22.0	14.2
				16QAM	1	0	1	22.1	14.2
					1	24	1	21.4	14.1
					1	49	1	21.3	14.0
					25	0	2	21.0	13.0
					25	12	2	20.7	12.8
					25	24	2	20.6	12.7
					50	0	2	20.1	12.8
		21400	2565.0	QPSK	1	0	0	22.8	14.7
					1	24	0	22.1	14.4
					1	49	0	22.0	14.2
					25	0	1	22.1	14.2
					25	12	1	21.5	14.1
					25	24	1	21.3	14.0
					50	0	1	22.1	14.1
				16QAM	1	0	1	22.0	14.1
					1	24	1	21.3	14.0
					1	49	1	21.2	13.9
					25	0	2	20.9	12.9
					25	12	2	20.6	12.7
					25	24	2	20.5	12.6
					50	0	2	20.0	12.7

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	5	20775	2502.5	QPSK	1	0	0	22.9	14.8
					1	12	0	22.2	14.5
					1	24	0	22.1	14.3
					12	0	1	22.2	14.3
					12	6	1	21.6	14.2
					12	11	1	21.4	14.1
					25	0	1	22.2	13.8
				16QAM	1	0	1	22.1	14.2
					1	12	1	21.4	14.1
					1	24	1	21.3	14.0
					12	0	2	21.0	13.0
					12	6	2	20.7	12.8
					12	11	2	20.6	12.7
					25	0	2	20.1	12.8
		21100	2535.0	QPSK	1	0	0	22.8	14.7
					1	12	0	22.1	14.4
					1	24	0	22.0	14.2
					12	0	1	22.1	14.2
					12	6	1	21.5	14.1
					12	11	1	21.3	14.0
					25	0	1	21.9	14.1
				16QAM	1	0	1	22.0	14.1
					1	12	1	21.3	14.0
					1	24	1	21.2	13.9
					12	0	2	20.9	12.9
					12	6	2	20.6	12.7
					12	11	2	20.5	12.6
					25	0	2	20.0	12.7
		21425	2567.5	QPSK	1	0	0	22.7	14.6
					1	12	0	22.0	14.3
					1	24	0	21.9	14.1
					12	0	1	22.0	14.1
					12	6	1	21.4	14.0
					12	11	1	21.2	13.9
					25	0	1	22.0	14.0
				16QAM	1	0	1	21.9	14.0
					1	12	1	21.2	13.9
					1	24	1	21.1	13.8
					12	0	2	20.8	12.8
					12	6	2	20.5	12.6
					12	11	2	20.4	12.5
					25	0	2	19.9	12.6

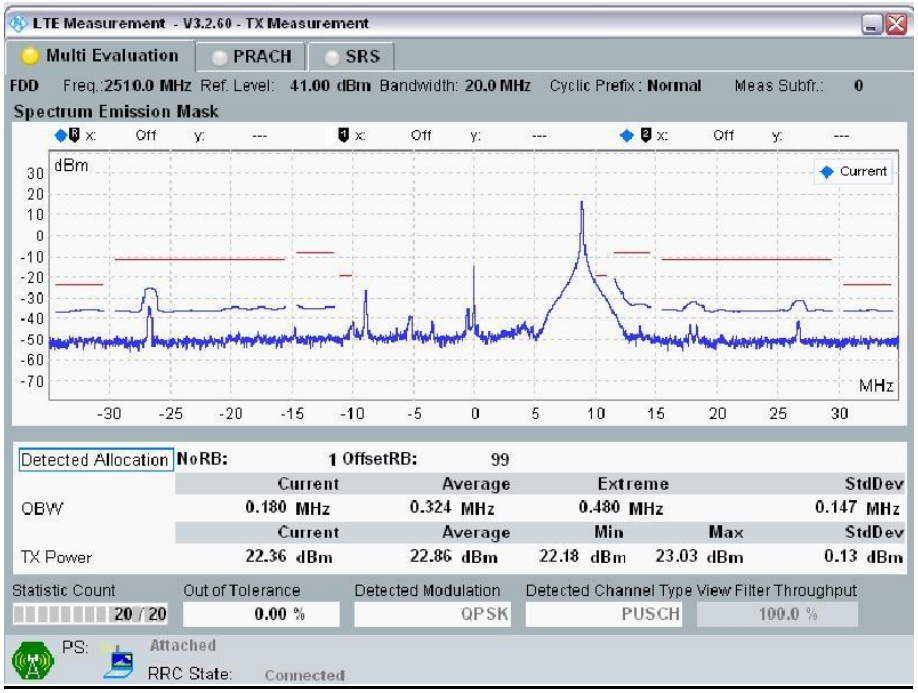
Spectrum Plots for the Test RB allocations



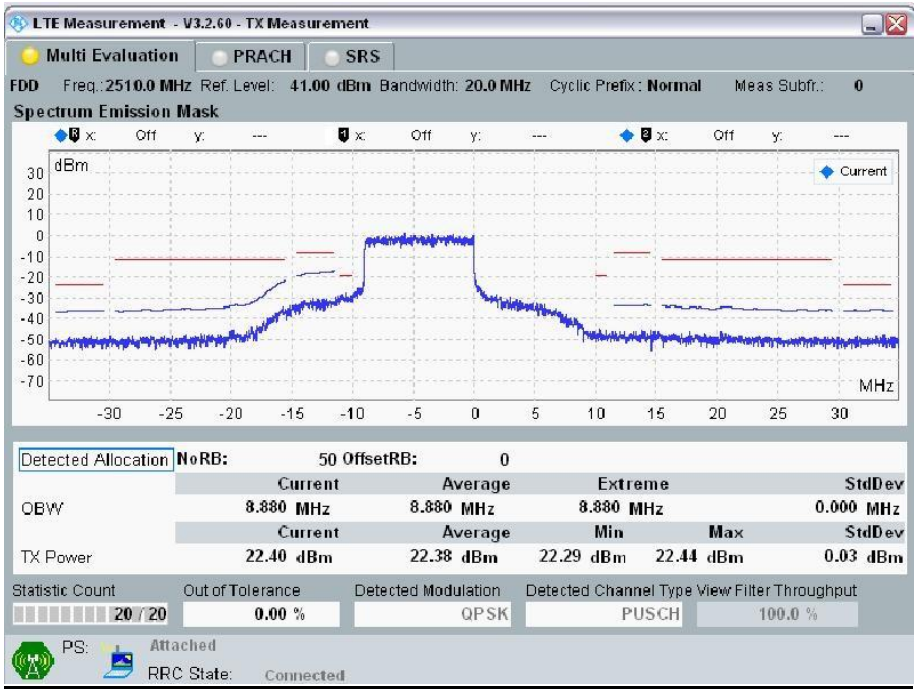
20MHz Band Width: Ch 20850, RB Size=1; RB Offset = 0



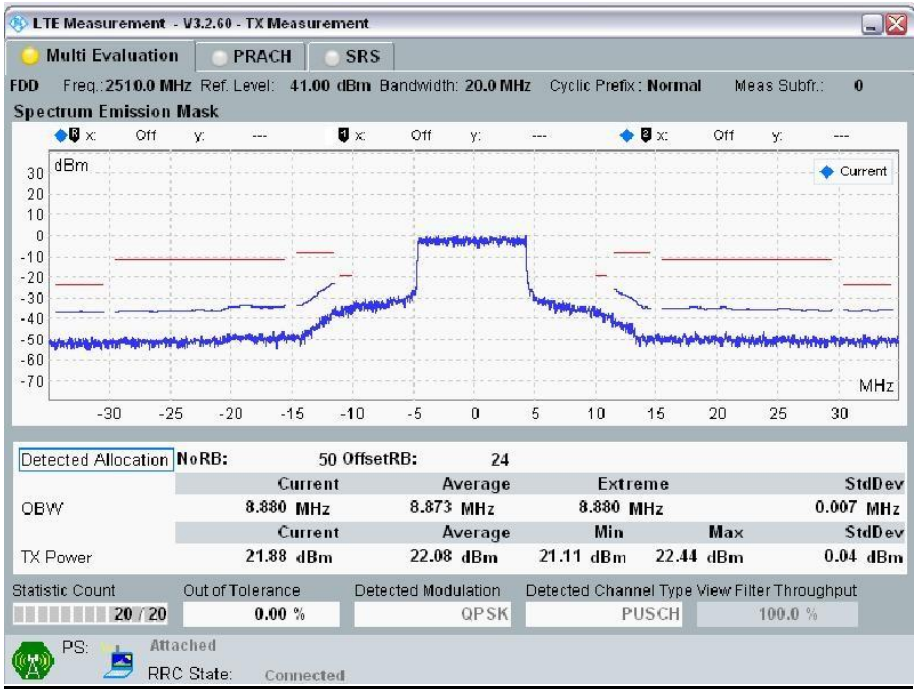
20MHz Band Width: Ch 20850, RB Size=1; RB Offset = 49



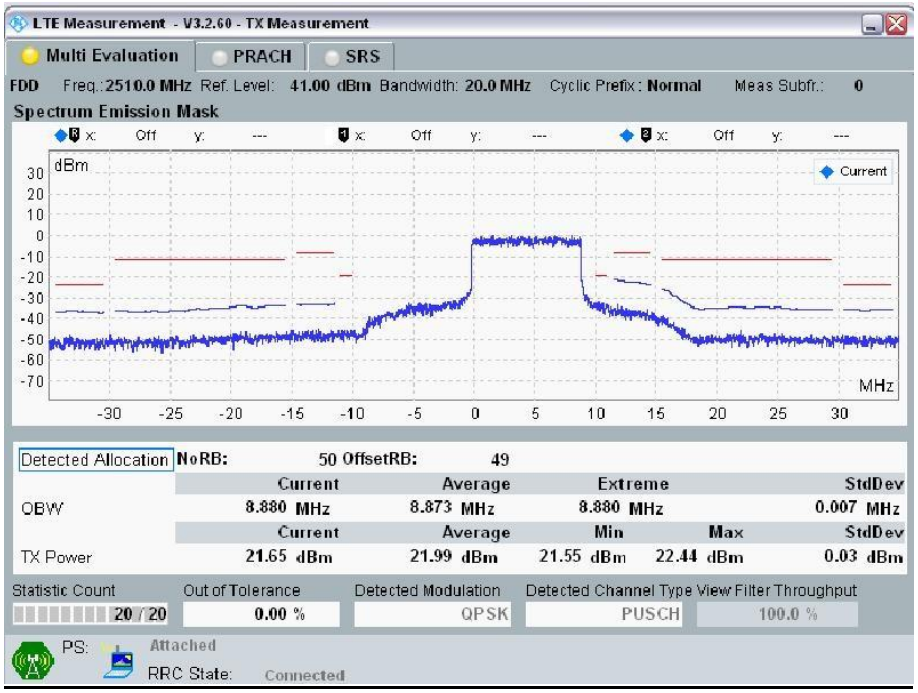
20MHz Band Width: Ch 20850, RB Size=1; RB Offset = 99



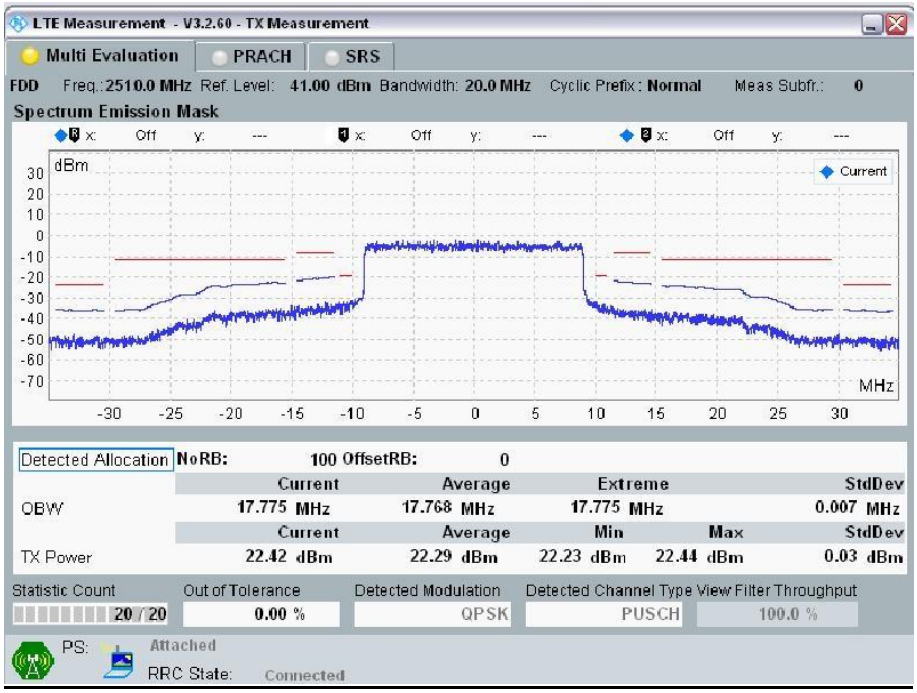
20MHz Band Width: Ch 20850, RB Size=50; RB Offset = 0



20MHz Band Width: Ch 20850, RB Size=50; RB Offset = 24



20MHz Band Width: Ch 20850, RB Size=50; RB Offset = 49



20MHz Band Width: Ch 20850, RB Size=100; RB Offset = 0

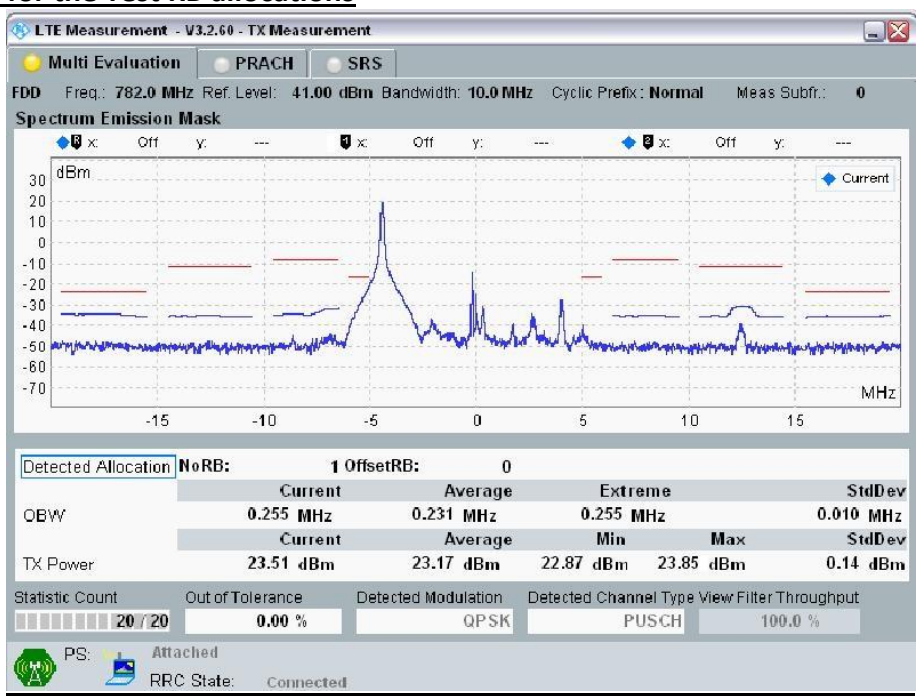
10.3.5 LTE Band 13

Output power table

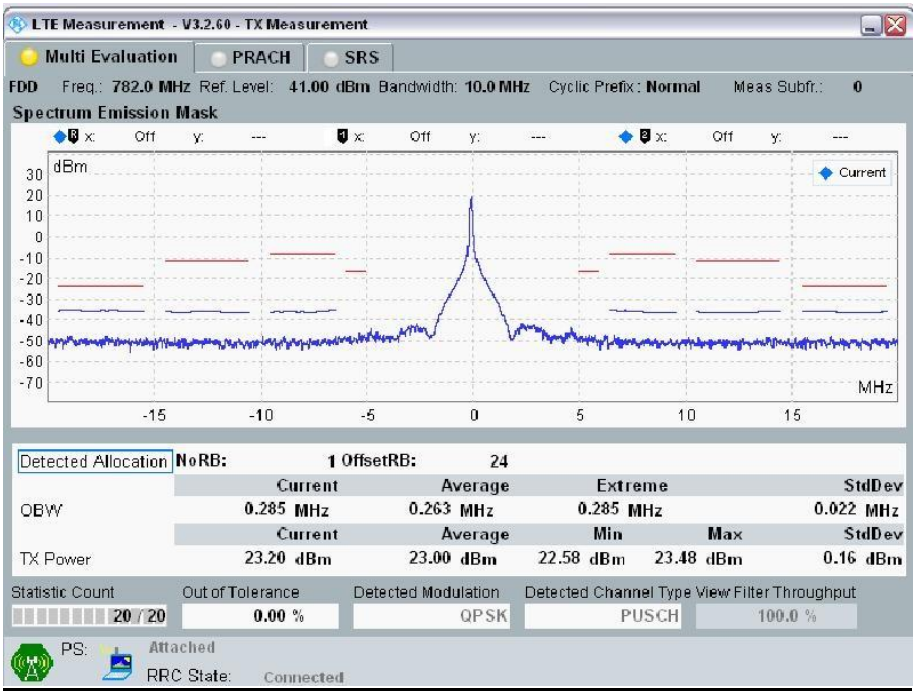
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
13	10	23230	782.0	QPSK	1	0	0	23.5	19.7
					1	24	0	23.2	19.4
					1	49	0	22.9	19.4
					25	0	1	22.8	18.9
					25	12	1	22.7	18.6
					25	24	1	22.8	18.5
					50	0	1	22.8	18.7
				16QAM	1	0	1	22.8	18.8
					1	24	1	22.4	18.5
					1	49	1	22.1	18.4
					25	0	2	21.7	17.8
					25	12	2	21.4	17.6
					25	24	2	21.1	17.5
					50	0	2	21.1	17.4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
13	5	23205	779.5	QPSK	1	0	0	23.4	19.6
					1	12	0	23.1	19.7
					1	24	0	22.8	19.4
					12	0	1	22.7	18.8
					12	6	1	22.6	18.7
					12	11	1	22.7	18.7
					25	0	1	22.7	18.7
				16QAM	1	0	1	22.7	18.8
					1	12	1	22.3	18.9
					1	24	1	22.0	18.6
					12	0	2	21.6	17.8
					12	6	2	21.3	17.8
					12	11	2	21.0	17.7
					25	0	2	21.0	17.8
		23230	752.0	QPSK	1	0	0	23.4	19.6
					1	12	0	23.1	19.6
					1	24	0	22.8	19.4
					12	0	1	22.7	18.7
					12	6	1	22.6	18.7
					12	11	1	22.7	18.6
					25	0	1	22.7	18.7
				16QAM	1	0	1	22.7	18.9
					1	12	1	22.3	18.8
					1	24	1	22.0	18.6
					12	0	2	21.6	17.8
					12	6	2	21.3	17.7
					12	11	2	21.0	17.7
					25	0	2	21.0	17.7
		23255	784.5	QPSK	1	0	0	22.3	19.3
					1	12	0	22.0	19.4
					1	24	0	21.7	19.2
					12	0	1	21.6	18.5
					12	6	1	21.5	18.5
					12	11	1	21.6	18.5
					25	0	1	21.6	18.5
				16QAM	1	0	1	21.6	18.6
					1	12	1	21.2	18.7
					1	24	1	20.9	18.4
					12	0	2	20.5	17.6
					12	6	2	20.2	17.5
					12	11	2	19.9	17.5
					25	0	2	19.9	17.5

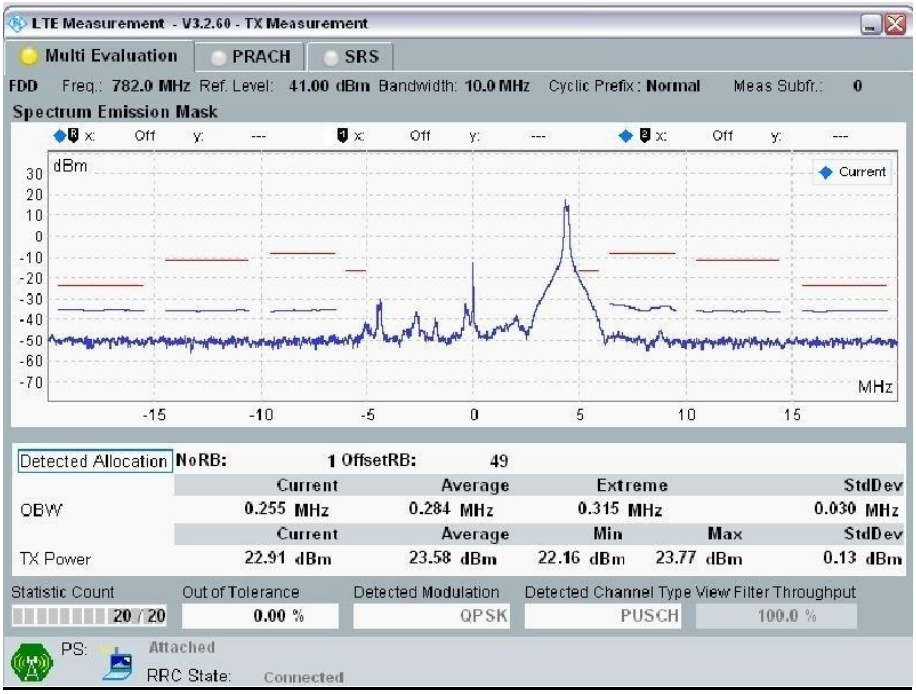
Spectrum Plots for the Test RB allocations



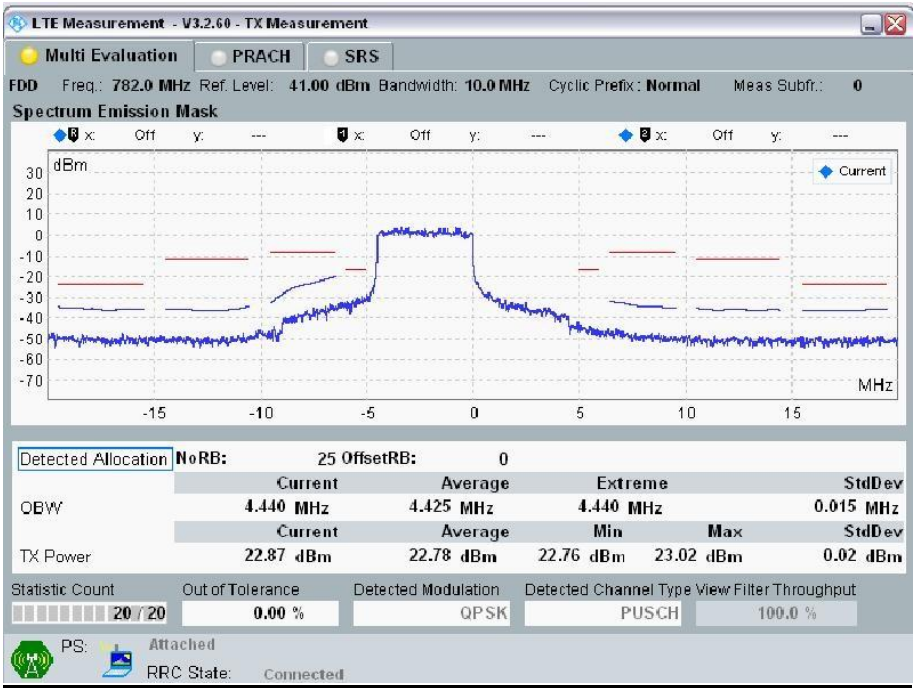
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 0



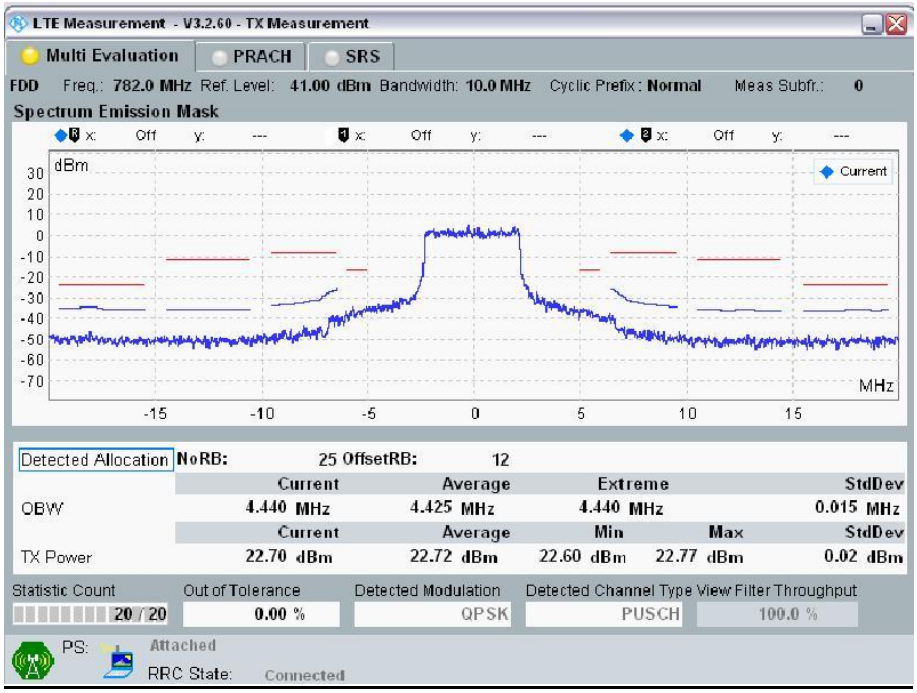
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 24



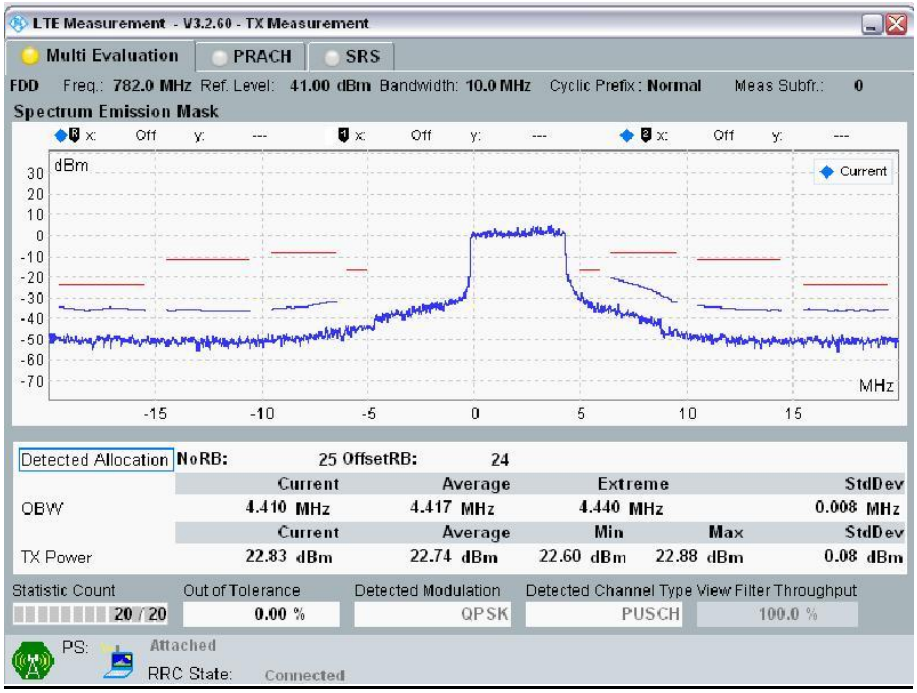
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 49



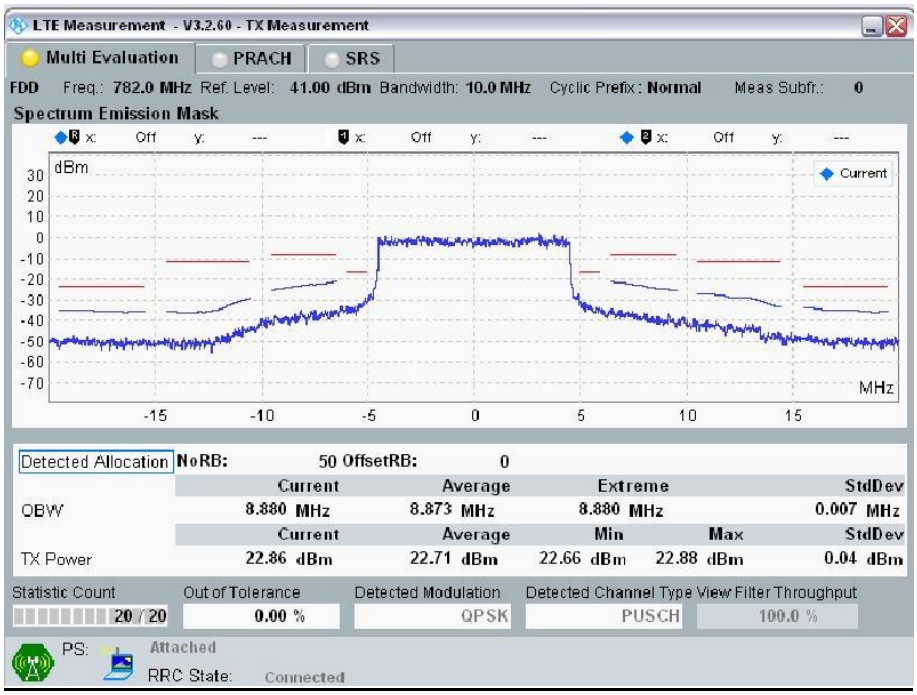
10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 0



10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 12



10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 24



10MHz Band Width: Ch 23230, RB Size=50; RB Offset = 0

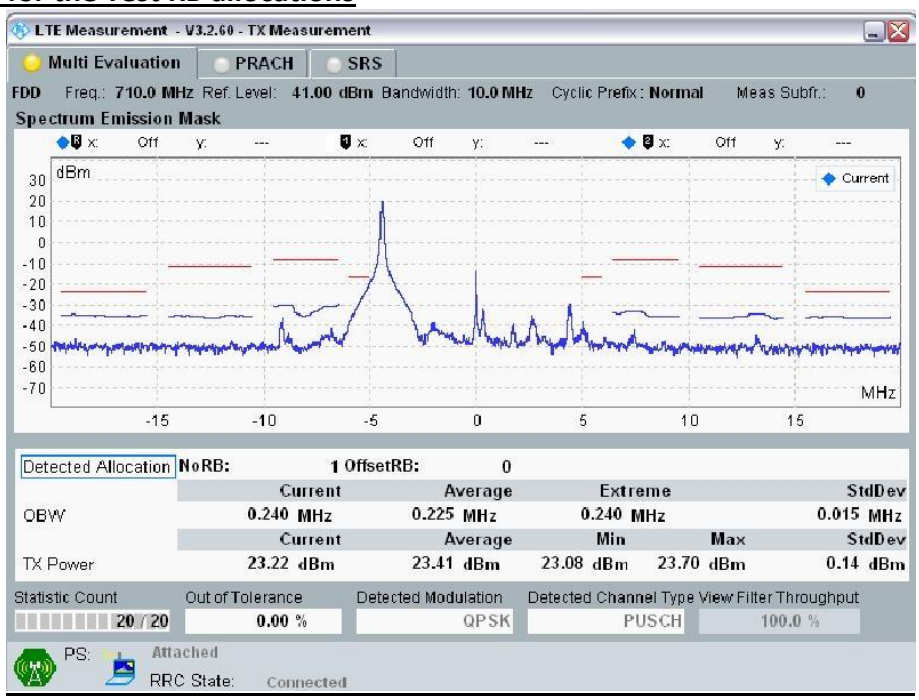
10.3.6 LTE Band 17

Output power table

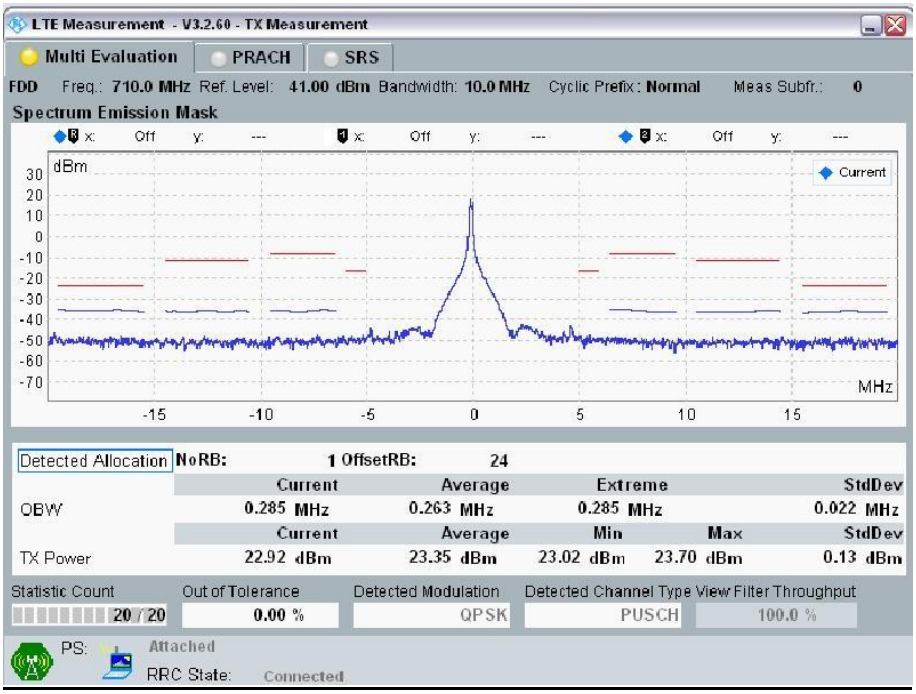
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
17	10	23780	709.0	QPSK	1	0	0	23.1	19.9
					1	24	0	22.8	19.7
					1	49	0	22.6	19.6
					25	0	1	22.3	19.1
					25	12	1	22.0	19.0
					25	24	1	21.9	18.9
					50	0	1	22.3	18.9
				16QAM	1	0	1	22.2	19.0
					1	24	1	21.9	18.9
					1	49	1	21.8	18.8
					25	0	2	21.3	18.1
					25	12	2	21.2	17.9
					25	24	2	21.1	17.8
					50	0	2	21.4	17.7
		23790	710.0	QPSK	1	0	0	23.2	20.0
					1	24	0	22.9	19.8
					1	49	0	22.7	19.7
					25	0	1	22.4	19.2
					25	12	1	22.1	19.1
					25	24	1	22.0	19.0
					50	0	1	22.4	19.0
				16QAM	1	0	1	22.3	19.1
					1	24	1	22.0	19.0
					1	49	1	21.9	18.9
					25	0	2	21.4	18.2
					25	12	2	21.3	18.0
					25	24	2	21.2	17.9
					50	0	2	21.5	17.8
		23800	711.0	QPSK	1	0	0	23.0	19.8
					1	24	0	22.7	19.6
					1	49	0	22.5	19.5
					25	0	1	22.2	19.0
					25	12	1	21.9	18.9
					25	24	1	21.8	18.8
					50	0	1	22.2	18.8
				16QAM	1	0	1	22.1	18.9
					1	24	1	21.8	18.8
					1	49	1	21.7	18.7
					25	0	2	21.2	18.0
					25	12	2	21.1	17.8
					25	24	2	21.0	17.7
					50	0	2	21.3	17.6

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	
								W/o Power back-off	W/ Power back-off
17	5	23755	706.5	QPSK	1	0	0	23.1	19.6
					1	12	0	22.8	19.7
					1	24	0	22.6	19.4
					12	0	1	22.3	18.8
					12	6	1	22.0	18.7
					12	11	1	21.9	18.7
					25	0	1	22.3	18.7
				16QAM	1	0	1	22.2	18.8
					1	12	1	21.9	18.9
					1	24	1	21.8	18.6
					12	0	2	21.3	17.8
					12	6	2	21.2	17.8
					12	11	2	21.1	17.7
					25	0	2	21.4	17.8
		23790	710.0	QPSK	1	0	0	23.1	19.6
					1	12	0	22.8	19.6
					1	24	0	22.6	19.4
					12	0	1	22.3	18.7
					12	6	1	22.0	18.7
					12	11	1	21.9	18.6
					25	0	1	22.3	18.7
				16QAM	1	0	1	22.2	18.9
					1	12	1	21.9	18.8
					1	24	1	21.8	18.6
					12	0	2	21.3	17.8
					12	6	2	21.2	17.7
					12	11	2	21.1	17.7
					25	0	2	21.4	17.7
		23825	713.5	QPSK	1	0	0	22.0	19.3
					1	12	0	21.7	19.4
					1	24	0	21.5	19.2
					12	0	1	21.2	18.5
					12	6	1	20.9	18.5
					12	11	1	20.8	18.5
					25	0	1	21.2	18.5
				16QAM	1	0	1	21.1	18.6
					1	12	1	20.8	18.7
					1	24	1	20.7	18.4
					12	0	2	20.2	17.6
					12	6	2	20.1	17.5
					12	11	2	20.0	17.5
					25	0	2	20.3	17.5

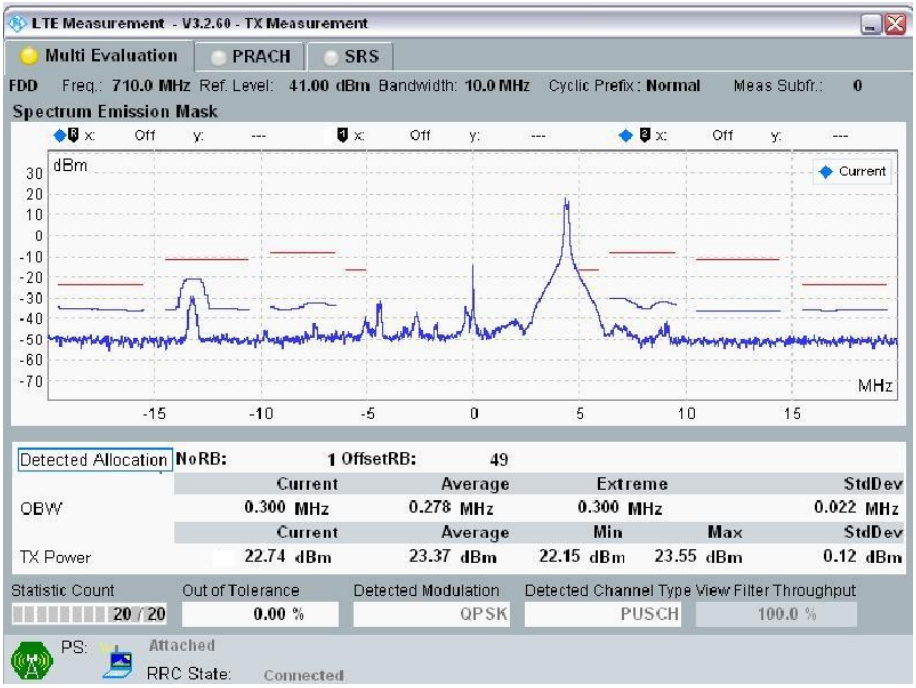
Spectrum Plots for the Test RB allocations



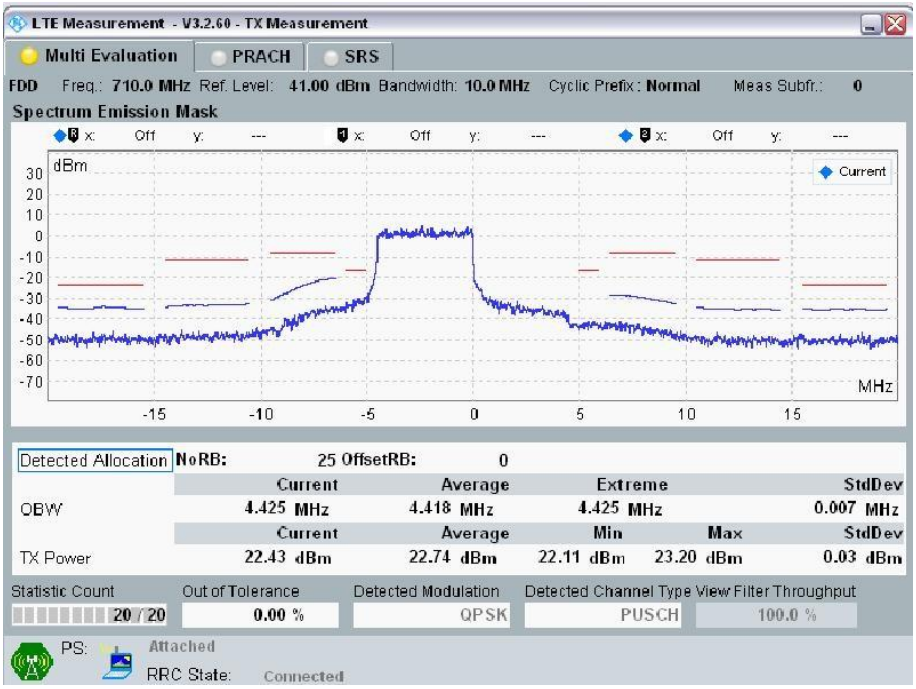
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 0



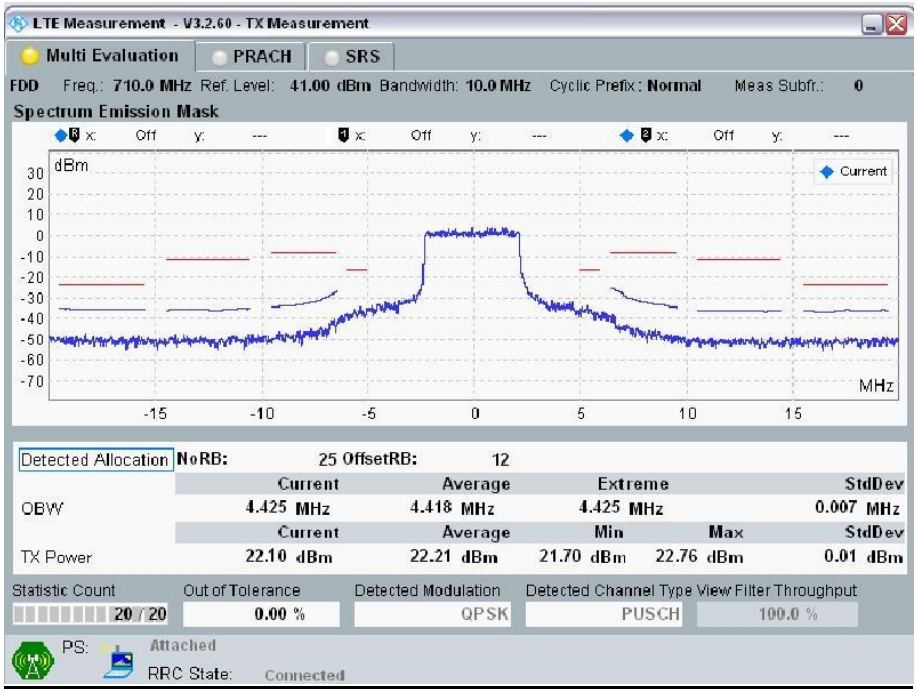
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 24



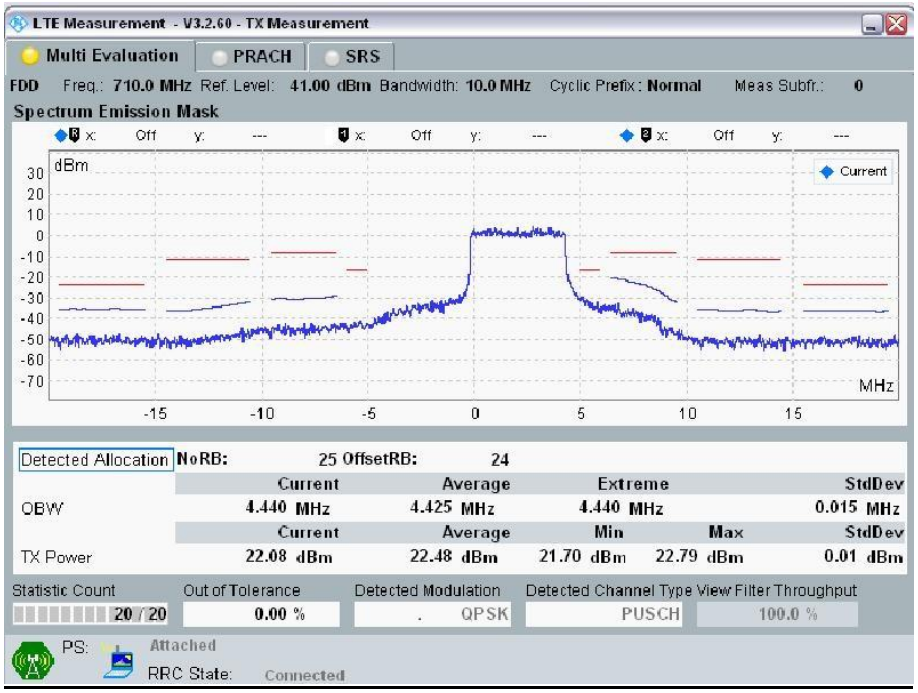
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 49



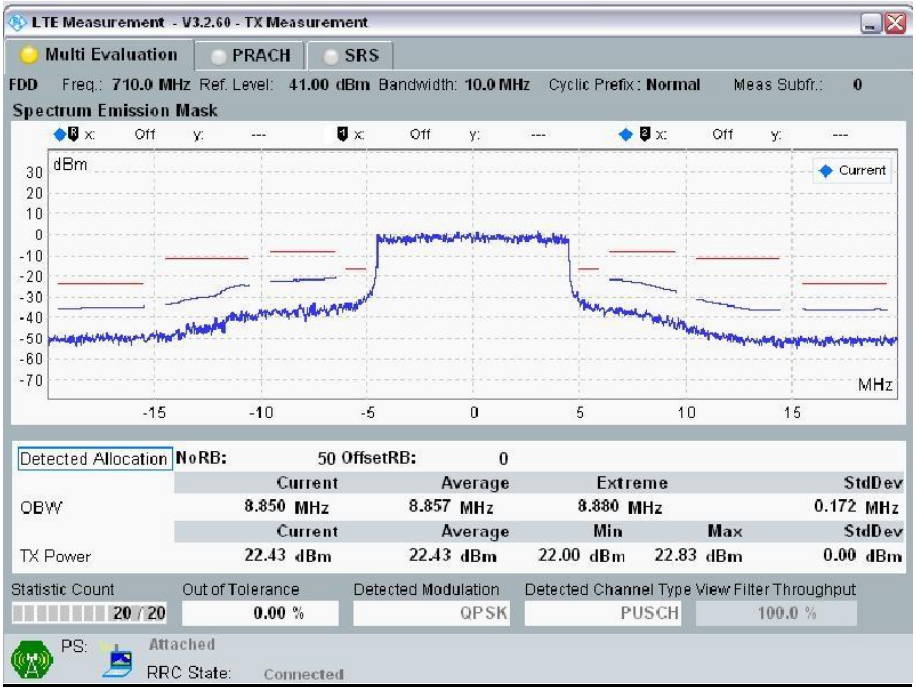
10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 0



10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 12



10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 24



10MHz Band Width: Ch 23790, RB Size=50; RB Offset = 0

11 Summary of SAR Test Exclusion Configurations

11.1 Standalone SAR Test Exclusion Calculations

Since the Dedicated Host Approach is applied, the standalone SAR test exclusion procedure in KDB 447498 section4.3.1 is applied in conjunction with KDB 616217 section 4.3 to determine the minimum test separation distance:

1. According to KDB 447498 Section 4.1 5) if the antenna is at close proximity to user then the outer surface of the DUT should be treated as the radiating surface. The test separation distance is then determined by the smallest distance between the outer surface of the device and the user. For the purposes of this report close proximity has been defined as closer than 50 mm. For antennas <50 mm from the rear or edge the separation distance used for the estimated SAR calculations is 0 mm.
2. When the minimum test separation distance is < 5mm, a distance of 5mm is applied to determine SAR test exclusion.
3. When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.
4. If the antenna to DUT adjacent edge or bottom separation distance >50mm the actual antenna to user separation distance is used to determine SAR exclusion and estimated SAR value.

Refer to Appendix for the specific details on the antenna-to-antenna and antenna-to-edge distances used for test exclusion calculations.

11.1.1 SAR Exclusion Calculations for Wi-Fi Antenna < 50mm from the User

According to KDB 447498 v05 r02 in section 4.3.1, if the calculated threshold value is > 3 then SAR testing is required.

For WWAN

Full Power, Proximity Sensor Off.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS850	824.2	28.5	708	17.78	19.99	59.5	162.25	140.75	36.2	32.2	>50mm	>50mm	>50mm
WWAN	GPRS1900	1850.2	25.5	355	17.78	19.99	59.5	162.25	140.75	27.2	24.2	>50mm	>50mm	>50mm
WWAN	WCDMA Band II	1852.4	24.5	282	17.78	19.99	59.5	162.25	140.75	21.6	19.2	>50mm	>50mm	>50mm
WWAN	WCDMA Band IV	1712.4	24.5	282	17.78	19.99	59.5	162.25	140.75	20.8	18.5	>50mm	>50mm	>50mm
WWAN	WCDMA Band V	826.4	24.5	282	17.78	19.99	59.5	162.25	140.75	14.4	12.8	>50mm	>50mm	>50mm
WWAN	LTE Band 2	1880	23.5	224	17.78	19.99	59.5	162.25	140.75	17.3	15.4	>50mm	>50mm	>50mm
WWAN	LTE Band 4	1732.5	23.5	224	17.78	19.99	59.5	162.25	140.75	16.6	14.7	>50mm	>50mm	>50mm
WWAN	LTE Band 5	824.7	23.5	224	17.78	19.99	59.5	162.25	140.75	11.4	10.2	>50mm	>50mm	>50mm
WWAN	LTE Band 7	2502.5	23.5	224	17.78	19.99	59.5	162.25	140.75	19.9	17.7	>50mm	>50mm	>50mm
WWAN	LTE Band 13	782	23.5	224	17.78	19.99	59.5	162.25	140.75	11.1	9.9	>50mm	>50mm	>50mm
WWAN	LTE Band 17	710	23.5	224	17.78	19.99	59.5	162.25	140.75	10.6	9.4	>50mm	>50mm	>50mm

Power back off, Proximity Sensor On.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS850	824.2	20.5	112	2.78	2.99				20.3	20.3			
WWAN	GPRS1900	1850.2	16.5	45	2.78	2.99				12.2	12.2			
WWAN	WCDMA Band II	1852.4	16.0	40	2.78	2.99				10.9	10.9			
WWAN	WCDMA Band IV	1712.4	16.0	40	2.78	2.99				10.5	10.5			
WWAN	WCDMA Band V	826.4	20.0	100	2.78	2.99				18.2	18.2			
WWAN	LTE Band 2	1880	16.0	40	2.78	2.99				11.0	11.0			
WWAN	LTE Band 4	1732.5	16.0	40	2.78	2.99				10.5	10.5			
WWAN	LTE Band 5	824.7	20.0	100	2.78	2.99				18.2	18.2			
WWAN	LTE Band 7	2502.5	15.0	32	2.78	2.99				10.1	10.1			
WWAN	LTE Band 13	782	20.0	100	2.78	2.99				17.7	17.7			
WWAN	LTE Band 17	710	20.0	100	2.78	2.99				16.9	16.9			

11.1.2 SAR Exclusion Calculations for Wi-Fi Antenna > 50mm from the User

According to KDB 447498 v05 r02, if the calculated Power threshold is less than the output power then SAR testing is required.

For WWAN

Full Power, Proximity Sensor Off.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS850	824.2	28.5	708	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	217.42	782.00	905.77
WWAN	GPRS1900	1850.2	25.5	355	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	205.28	1232.78	1017.78
WWAN	WCDMA Band II	1852.4	24.5	282	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	205.21	1232.71	1017.71
WWAN	WCDMA Band IV	1712.4	24.5	282	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	209.63	1237.13	1022.13
WWAN	WCDMA Band V	826.4	24.5	282	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	217.34	783.43	664.98
WWAN	LTE Band 2	1880	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	204.40	1231.90	1016.90
WWAN	LTE Band 4	1732.5	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	208.96	1236.46	1021.46
WWAN	LTE Band 5	824.7	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	217.41	782.33	664.12
WWAN	LTE Band 7	2502.5	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	189.82	1217.32	1002.32
WWAN	LTE Band 13	782	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	219.15	1292.12	1077.12
WWAN	LTE Band 17	710	23.5	224	17.78	19.99	59.5	162.25	140.75	<50mm	<50mm	222.98	709.33	607.57

Power back off, Proximity Sensor On.

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)					Calculated Threshold Value				
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
WWAN	GPRS850	824.2	20.5	112	2.78	2.99				<50mm	<50mm			
WWAN	GPRS1900	1850.2	16.5	45	2.78	2.99				<50mm	<50mm			
WWAN	WCDMA Band II	1852.4	16.0	40	2.78	2.99				<50mm	<50mm			
WWAN	WCDMA Band IV	1712.4	16.0	40	2.78	2.99				<50mm	<50mm			
WWAN	WCDMA Band V	826.4	20.0	100	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 2	1880	16.0	40	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 4	1732.5	16.0	40	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 5	824.7	20.0	100	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 7	2502.5	15.0	32	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 13	782	20.0	100	2.78	2.99				<50mm	<50mm			
WWAN	LTE Band 17	710	20.0	100	2.78	2.99				<50mm	<50mm			

11.1.3 SAR Required Test Configuration

For WWAN

Full Power, Proximity Sensor Off

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS850	Yes	Yes	Yes	No	No
GPRS1900	Yes	Yes	Yes	No	No
WCDMA Band II	Yes	Yes	Yes	No	No
WCDMA Band IV	Yes	Yes	Yes	No	No
WCDMA Band V	Yes	Yes	Yes	No	No
LTE Band 2	Yes	Yes	Yes	No	No
LTE Band 4	Yes	Yes	Yes	No	No
LTE Band 5	Yes	Yes	Yes	No	No
LTE Band 7	Yes	Yes	Yes	No	No
LTE Band 13	Yes	Yes	Yes	No	No
LTE Band 17	Yes	Yes	Yes	No	No

Note(s):

1. Yes = SAR is required.
2. No = SAR is not required.
3. This product has two back cover, one is flatness back cover that is more conservative to against the flat phantom, the other one back cover that has card reader function, beside the thickness is more than flatness back cover (please kindly find the attachments 21.5). Therefore, the back cover with card reader SAR is not required at Rear position.

Power back off, Proximity Sensor On

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS850	Yes	Yes	No	No	No
GPRS1900	Yes	Yes	No	No	No
WCDMA Band II	Yes	Yes	No	No	No
WCDMA Band IV	Yes	Yes	No	No	No
WCDMA Band V	Yes	Yes	No	No	No
LTE Band 2	Yes	Yes	No	No	No
LTE Band 4	Yes	Yes	No	No	No
LTE Band 5	Yes	Yes	No	No	No
LTE Band 7	Yes	Yes	No	No	No
LTE Band 13	Yes	Yes	No	No	No
LTE Band 17	Yes	Yes	No	No	No

Note(s):

1. Yes = SAR is required.
2. No = SAR is not required.
3. This product has two back cover, one is flatness back cover that is more conservative to against the flat phantom, the other one back cover that has card reader function, beside the thickness is more than flatness back cover (please kindly find the attachments 21.5). Therefore, the back cover with card reader SAR is not required at Rear position.

12 Exposure Limit

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	2.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: **Whole-Body SAR** is averaged over the entire body, **partial-body SAR** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. **SAR for hands, wrists, feet and ankles** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:

are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:

are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

13 Tissue Dielectric Properties

13.1 Test Liquid Confirmation

Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values

The relative permittivity and conductivity of the tissue material should be within ± 5% of the values given in the table below 5% may not be easily achieved at certain frequencies.

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE 1528 2013 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in IEEE 1528 2013 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE 1528 2013

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

13.2 Typical Composition of Ingredients for Liquid Tissue Phantoms

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

alt: 99^{+}% Pure Sodium Chloride Sugar: 98^{+}% Pure Sucrose
Water: De-ionized, 16 MΩ^{+} resistivity HEC: Hydroxy thyl Cellulose
DGBE: 99^{+}% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra-pure): Polyethylene glycol mono [4-(1, 1, 3, 3-tetramethylbutyl)phenyl]ether

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

13.3 Simulating Liquids Parameter Check Results

Date	Band	Freq(MHz)	Measured			Standard		Δ		Limit (%)
			e' (εr)	e''	σ	e' (εr)	σ	e' (εr)	σ	±5
2015/3/31	Body 900	824.2	53.61	20.55	0.94	55.24	0.97	-2.96%	-2.93%	±5
		836.6	53.47	20.54	0.95	55.20	0.97	-3.13%	-1.72%	±5
		848.8	53.33	20.49	0.97	55.16	0.99	-3.31%	-1.99%	±5
2015/3/31	Body 900	826.4	53.61	20.55	0.94	55.24	0.97	-2.95%	-2.68%	±5
		836.6	53.47	20.54	0.95	55.20	0.97	-3.13%	-1.72%	±5
		846.6	53.39	20.51	0.96	55.17	0.98	-3.22%	-1.91%	±5
2015/3/31	Body 900	829	53.54	20.55	0.95	55.22	0.97	-3.05%	-2.38%	±5
		836.5	53.47	20.54	0.95	55.20	0.97	-3.13%	-1.73%	±5
		844	53.39	20.51	0.96	55.17	0.98	-3.23%	-1.97%	±5
2015/3/31	Body 1900	1850.2	51.98	14.33	1.47	53.30	1.52	-2.49%	-3.09%	±5
		1880	51.86	14.40	1.50	53.30	1.52	-2.71%	-1.04%	±5
		1909.8	51.75	14.54	1.54	53.30	1.52	-2.90%	1.46%	±5
2015/3/31	Body 1900	1852.4	51.97	14.34	1.48	53.30	1.52	-2.49%	-2.88%	±5
		1880	51.86	14.40	1.50	53.30	1.52	-2.71%	-1.04%	±5
		1907.6	51.76	14.51	1.54	53.30	1.52	-2.89%	1.19%	±5
2015/3/31	Body 1900	1855	51.96	14.34	1.48	53.30	1.52	-2.52%	-2.77%	±5
		1880	51.86	14.40	1.50	53.30	1.52	-2.71%	-1.04%	±5
		1905	51.76	14.51	1.54	53.30	1.52	-2.90%	1.03%	±5
2015/4/2	Body 2450	2412	50.13	14.54	1.95	52.75	1.91	-4.98%	1.83%	±5
		2437	50.10	14.74	2.00	52.72	1.94	-4.97%	3.03%	±5
		2442	50.11	14.78	2.00	52.71	1.94	-4.93%	3.22%	±5
		2450	50.14	14.81	2.02	52.70	1.95	-4.86%	3.36%	±5
		2462	50.18	14.87	2.03	52.68	1.97	-4.76%	3.37%	±5
		2472	50.18	14.88	2.04	52.67	1.98	-4.74%	3.12%	±5
2015/4/2	Body 900	826.4	53.42	21.03	0.97	55.24	0.97	-3.29%	-0.41%	±5
		836.6	53.29	20.97	0.97	55.20	0.97	-3.45%	0.36%	±5
		846.6	53.20	20.96	0.99	55.17	0.98	-3.57%	0.24%	±5
2015/4/2	Body 900	829	53.38	21.03	0.97	55.22	0.97	-3.33%	-0.11%	±5
		836.5	53.29	20.97	0.97	55.20	0.97	-3.45%	0.35%	±5
		844	53.20	20.96	0.98	55.17	0.98	-3.58%	0.18%	±5
2015/4/6	Body 750	782	55.33	22.75	0.99	55.41	0.97	-0.15%	2.34%	±5
2015/4/6	Body 750	709	56.02	23.23	0.91	55.69	0.96	0.58%	-4.72%	±5
		710	56.02	23.23	0.92	55.69	0.96	0.59%	-4.59%	±5
		711	56.02	23.23	0.92	55.68	0.96	0.60%	-4.47%	±5
2015/4/7	Body 1800	1712.4	51.35	15.97	1.52	53.53	1.46	-4.07%	3.73%	±5
		1732.4	51.14	15.63	1.50	53.48	1.48	-4.37%	1.83%	±5
		1752.6	50.83	15.86	1.54	53.43	1.49	-4.87%	3.69%	±5
2015/4/7	Body 1800	1715	51.37	15.94	1.52	53.52	1.47	-4.02%	3.60%	±5
		1732.5	51.30	15.76	1.52	53.48	1.48	-4.08%	2.69%	±5
		1750	51.11	15.62	1.52	53.43	1.49	-4.34%	2.05%	±5
2015/4/16	Body 750	782	55.91	22.65	0.98	55.41	0.97	0.91%	1.87%	±5
2015/4/16	Body 750	709	56.61	23.34	0.92	55.69	0.96	1.66%	-4.26%	±5
		710	56.61	23.34	0.92	55.69	0.96	1.67%	-4.14%	±5
		711	56.61	23.34	0.92	55.68	0.96	1.67%	-4.01%	±5
2015/4/16	Body 900	824.2	53.66	21.01	0.96	55.24	0.97	-2.86%	-0.75%	±5
		836.6	53.52	20.95	0.97	55.20	0.97	-3.03%	0.23%	±5
		848.8	53.29	20.88	0.98	55.16	0.99	-3.38%	-0.14%	±5
2015/4/16	Body 900	826.4	53.66	21.01	0.96	55.24	0.97	-2.85%	-0.50%	±5
		836.6	53.52	20.95	0.97	55.20	0.97	-3.03%	0.23%	±5
		846.6	53.34	20.85	0.98	55.17	0.98	-3.30%	-0.29%	±5
2015/4/16	Body 900	829	53.62	21.00	0.97	55.22	0.97	-2.91%	-0.25%	±5
		836.5	53.52	20.95	0.97	55.20	0.97	-3.03%	0.22%	±5
		844	53.34	20.85	0.98	55.17	0.98	-3.32%	-0.34%	±5
2015/4/27	Body 900	826.4	52.82	20.53	0.94	55.24	0.97	-4.37%	-2.75%	±5
		836.6	52.72	20.47	0.95	55.20	0.97	-4.48%	-2.06%	±5
		846.6	52.55	20.41	0.96	55.17	0.98	-4.74%	-2.40%	±5
2015/5/4	Body 1800	1712.4	52.96	14.78	1.41	53.53	1.46	-1.07%	-3.98%	±5
		1732.4	52.87	14.78	1.42	53.48	1.48	-1.13%	-3.68%	±5
		1752.6	52.80	14.85	1.45	53.43	1.49	-1.17%	-2.91%	±5
2015/5/6	Body 1900	1852.4	51.45	14.29	1.47	53.30	1.52	-3.48%	-3.26%	±5
		1880	51.38	14.40	1.50	53.30	1.52	-3.61%	-1.08%	±5
		1907.6	51.29	14.46	1.53	53.30	1.52	-3.78%	0.80%	±5
2015/5/6	Body 1900	1850.2	51.46	14.29	1.47	53.30	1.52	-3.46%	-3.34%	±5
		1880	51.38	14.40	1.50	53.30	1.52	-3.61%	-1.08%	±5
		1909.8	51.29	14.47	1.54	53.30	1.52	-3.78%	1.01%	±5

14 Measurement Uncertainty

According to KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz section 2.8.2, SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

15 System Performance Check

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications. The system performance check results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Body simulating liquid of the following parameters.
- The DASY4/DASY5 system with an E-field probe EX3DV4 SN:3665 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15 mm (below 1 GHz) and 10 mm (above 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 10mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube integration (dx=dy= 5 mm, dz= 5 mm).
- Distance between probe sensors and phantom surface was set to 3.0 mm.
- The dipole input power (forward power) was 100 mW±3%.
- The results are normalized to 1 W input power.

Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)		
				1g/10g	Head	Body
D750V3	1015	2015/1/23	750	1g	8.17	8.61
				10g	5.40	5.70
D835V2	4d063	2014/8/28	850	1g	9.24	9.35
				10g	6.05	6.21
D835V2	4d015	2015/3/20	850	1g	9.24	9.35
				10g	6.05	6.21
D1800V2	2d062	2015/2/19	1800	1g	38.7	38.4
				10g	20.4	20.4
D1900V2	5d056	2015/2/18	1900	1g	40.2	39.8
				10g	21.3	21.3
D2450V2	728	2014/5/20	2450	1g	52.6	50.2
				10g	24.5	23.4

15.1 System Performance Check Results

Date	System Dipole			Parameters	Target	Measured	Deviation[%]	Limited[%]
	Type	Serial No.	Liquid					
2015/3/31	D835V2	4d063	Body	1g SAR:	9.35	9.71	3.85	± 5
				10g SAR:	6.21	6.47	4.19	± 5
2015/3/31	D1900V2	5d056	Body	1g SAR:	40.20	40.10	-0.25	± 5
				10g SAR:	21.30	20.80	-2.35	± 5
2015/4/2	D2450V2	sn728	Body	1g SAR:	50.20	51.10	1.79	± 5
				10g SAR:	23.40	23.50	0.43	± 5
2015/4/2	D835V2	4d063	Body	1g SAR:	9.35	9.08	-2.89	± 5
				10g SAR:	6.21	5.95	-4.19	± 5
2015/4/6	D750V3	1015	Body	1g SAR:	8.61	9.01	4.65	± 5
				10g SAR:	5.70	5.95	4.39	± 5
2015/4/7	D1800V2	2d062	Body	1g SAR:	38.40	39.40	2.60	± 5
				10g SAR:	20.40	20.80	1.96	± 5
2015/4/16	D835V2	4d015	Body	1g SAR:	9.34	9.43	0.96	± 5
				10g SAR:	6.16	6.24	1.30	± 5
2015/4/16	D750V3	1015	Body	1g SAR:	8.61	8.76	1.74	± 5
				10g SAR:	5.70	5.79	1.58	± 5
2015/4/27	D835V2	4d015	Body	1g SAR:	9.34	9.21	-1.39	± 5
				10g SAR:	6.16	6.10	-0.97	± 5
2015/5/4	D1800V2	2d062	Body	1g SAR:	38.40	37.90	-1.30	± 5
				10g SAR:	20.40	20.40	0.00	± 5
2015/5/6	D1900V2	5d056	Body	1g SAR:	40.20	40.10	-0.25	± 5
				10g SAR:	21.30	20.80	-2.35	± 5

16 SAR Measurements Results

GPRS850:

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
							Tune up limit	Measured			
On	GPRS 850	4	Edge 1	190	836.6	0	20.5	20.3	0.588	0.616	
			Rear	190	836.6	0	20.5	20.3	0.898	0.940	
			Rear	128	824.2	0	20.5	20.2	0.849	0.910	1
			Rear	251	848.8	0	20.5	20.1	0.846	0.928	1
Off	GPRS 850	4	Edge 1	190	836.6	17	28.5	28.2	0.769	0.824	
			Rear	190	836.6	15	28.5	28.2	1.090	1.168	
			Rear	128	824.2	15	28.5	28.1	0.917	1.005	1
			Rear	251	848.8	15	28.5	28.2	1.100	1.179	1
			Rear	251	848.8	15	28.5	28.2	1.210	1.297	2
			Edge 2	190	836.6	0	28.5	28.2	0.265	0.284	
			Edge 1	190	836.6	17	28.5	28.2	0.644	0.690	3

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
2. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   2.1 Original SAR = 1.10 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.21 W/kg < 1.45W/kg
   2.3 SAR variation= 10.0% < 20%
3. Spot Check-back cover with card reader.

GPRS1900:

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
							Tune up limit	Measured			
On	GPRS 1900	4	Edge 1	661	1880.0	0	16.5	16.4	0.712	0.729	
			Rear	661	1880.0	0	16.5	16.4	0.790	0.808	
			Rear	512	1850.2	0	16.5	16.3	0.710	0.743	1
			Rear	810	1909.8	0	16.5	16.3	0.851	0.891	1
			Rear	810	1909.8	0	16.5	16.3	0.846	0.886	2
			Edge 1	661	1880.0	0	16.5	16.4	0.641	0.656	3
Off	GPRS 1900	3	Edge 1	661	1880.0	17	25.4	24.6	0.689	0.828	
			Edge 1	512	1850.2	17	25.4	24.5	0.704	0.866	1
			Edge 1	810	1909.8	17	25.4	24.4	0.743	0.935	1
			Rear	661	1880.0	15	25.4	24.6	0.755	0.908	
			Rear	512	1850.2	15	25.4	24.5	0.702	0.864	1
			Rear	810	1909.8	15	25.4	24.4	0.795	1.001	1
			Edge 2	661	1880.0	0	25.4	24.6	0.217	0.261	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
2. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   2.1 Original SAR = 0.851 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.846 W/kg < 1.45W/kg
   2.3 SAR variation= 0.5 % < 20%
3. Spot Check-back cover with card reader.

WCDMA Band II:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	9538	1907.6	0	16.0	15.6	0.789	0.865	
		Edge 1	9262	1852.4	0	16.0	15.4	0.743	0.853	1
		Edge 1	9400	1880.0	0	16.0	15.4	0.720	0.827	1
		Rear	9538	1907.6	0	16.0	15.6	0.913	1.001	
		Rear	9262	1852.4	0	16.0	15.4	0.808	0.928	1
		Rear	9400	1880.0	0	16.0	15.4	0.840	0.964	1
		Rear	9538	1907.6	0	16.0	15.6	0.887	0.973	2
		Edge 1	9538	1907.6	0	16.0	15.6	0.777	0.852	3
Off	Rel 99 RMC 12.2Kbps	Edge 1	9538	1907.6	17	24.5	23.4	0.535	0.689	
		Rear	9538	1907.6	15	24.5	23.4	0.591	0.761	
		Edge 2	9538	1907.6	0	24.5	23.4	0.210	0.271	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
2. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   2.1 Original SAR = 0.913 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.887 W/kg < 1.45W/kg
   2.3 SAR variation= 2.8 % < 20%
3. Spot Check-back cover with card reader.

WCDMA Band IV:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	1413	1732.6	0	16.0	15.7	0.994	1.065	
		Edge 1	1312	1712.4	0	16.0	15.7	0.961	1.030	1
		Edge 1	1513	1752.6	0	16.0	15.6	0.871	0.955	1
		Rear	1413	1732.6	0	16.0	15.7	0.695	0.745	
		Edge 1	1413	1732.6	0	16.0	15.7	0.910	0.975	2
		Edge 1	1413	1732.6	0	16.0	15.7	0.845	0.905	3
Off	Rel 99 RMC 12.2Kbps	Edge 1	1413	1732.6	17	24.5	23.2	0.310	0.418	
		Rear	1413	1732.6	15	24.5	23.2	0.509	0.687	
		Edge 2	1413	1732.6	0	24.5	23.2	0.110	0.148	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
2. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   2.1 Original SAR = 0.994 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.910 W/kg < 1.45W/kg
   2.3 SAR variation= 8.4% < 20%
3. Spot Check-back cover with card reader.

WCDMA Band V:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	4132	826.4	0	20.0	19.5	0.650	0.729	
		Rear	4132	826.4	0	20.0	19.5	0.865	0.971	
		Rear	4182	836.4	0	20.0	19.3	0.855	1.005	1
		Rear	4233	846.6	0	20.0	19.3	0.817	0.960	1
		Rear	4132	826.4	0	20.0	19.5	0.840	0.942	2
		Edge 1	4132	826.4	0	20.0	19.5	0.553	0.620	3
Off	Rel 99 RMC 12.2Kbps	Edge 1	4132	826.4	17	24.5	24.0	0.450	0.505	
		Rear	4132	826.4	15	24.5	24.0	0.615	0.690	
		Edge 2	4132	826.4	0	24.5	24.0	0.193	0.217	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
2. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   2.1 Original SAR = 0.865 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.840 W/kg < 1.45W/kg
   2.3 SAR variation= 2.8 % < 20%
3. Spot Check-back cover with card reader.

LTE Band 2 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	19100	1900.0	0	1	0	16.0	16.0	0.955	0.955	
			19100	1900.0	0	1	49	16.0	15.9	0.839	0.859	1
			19100	1900.0	0	1	99	16.0	15.8	0.765	0.801	1
			19100	1900.0	0	50	0	16.0	15.7	0.775	0.830	
			19100	1900.0	0	50	24	16.0	15.4	0.712	0.817	1
			19100	1900.0	0	50	49	16.0	15.3	0.679	0.798	1
			19100	1900.0	0	100	0	16.0	15.6	0.752	0.825	2
			18700	1860.0	0	1	0	16.0	15.9	1.040	1.064	1
			18900	1880.0	0	1	0	16.0	15.9	1.020	1.044	1
			18700	1860.0	0	50	0	16.0	15.2	0.784	0.943	1
			18900	1880.0	0	50	0	16.0	15.6	0.803	0.880	1
		Rear	19100	1900.0	0	1	0	16.0	16.0	0.919	0.919	
			19100	1900.0	0	1	49	16.0	15.9	0.806	0.825	1
			19100	1900.0	0	1	99	16.0	15.8	0.773	0.809	1
			19100	1900.0	0	50	0	16.0	15.7	0.724	0.776	
			19100	1900.0	0	50	24	16.0	15.4	0.672	0.772	1
			19100	1900.0	0	50	49	16.0	15.3	0.660	0.775	1
			19100	1900.0	0	100	0	16.0	15.6	0.695	0.762	1
			18700	1860.0	0	1	0	16.0	15.9	0.832	0.851	1
			18900	1880.0	0	1	0	16.0	15.9	0.893	0.914	1
			18700	1860.0	0	50	0	16.0	15.2	0.673	0.809	1
			18900	1880.0	0	50	0	16.0	15.6	0.720	0.789	1
		Edge1	18700	1860.0	0	1	0	16.0	15.9	1.000	1.023	3
			18700	1860.0	0	1	0	16.0	15.9	1.030	1.054	4
Off	QPSK	Edge1	19100	1900.0	17	1	0	23.5	23.0	0.466	0.523	
			19100	1900.0	17	50	0	23.5	22.4	0.398	0.513	
		Rear	19100	1900.0	15	1	0	23.5	23.0	0.418	0.469	
			19100	1900.0	15	50	0	23.5	22.4	0.348	0.448	
		Edge2	19100	1900.0	0	1	0	23.5	23.0	0.138	0.155	
			19100	1900.0	0	50	0	23.5	22.4	0.101	0.130	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r03 section 4.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. (Per KDB 941225 D05 v02r03 section 4.2.3)
3. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   3.1 Original SAR = 1.040 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.000 W/kg < 1.45W/kg
   3.3 SAR variation= 3.8 % < 20%
4. Spot Check-back cover with card reader.

LTE Band 4 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20300	1745.0	0	1	0	16.0	16.0	0.988	0.988	
			20300	1745.0	0	1	49	16.0	15.8	0.831	0.870	1
			20300	1745.0	0	1	99	16.0	15.7	0.732	0.784	1
			20300	1745.0	0	50	0	16.0	15.7	0.733	0.785	
			20300	1745.0	0	100	0	16.0	15.6	0.712	0.781	2
			20050	1720.0	0	1	0	16.0	15.9	1.040	1.064	1
			20175	1732.5	0	1	0	16.0	15.9	1.000	1.023	1
			20050	1720.0	0	1	0	16.0	15.9	1.030	1.054	3
			20050	1720.0	0	1	0	16.0	15.9	0.950	0.972	4
		Rear	20300	1745.0	0	1	0	16.0	16.0	0.706	0.706	
			20300	1745.0	0	50	0	16.0	15.7	0.561	0.601	
Off	QPSK	Edge1	20300	1745.0	17	1	0	23.5	23.0	0.277	0.311	
			20300	1745.0	17	50	0	23.5	22.8	0.234	0.275	
		Rear	20300	1745.0	15	1	0	23.5	23.0	0.405	0.454	
			20300	1745.0	15	50	0	23.5	22.8	0.337	0.396	
		Edge2	20300	1745.0	0	1	0	23.5	23.0	0.123	0.138	
			20050	1745.0	0	50	0	23.5	22.8	0.090	0.106	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r03 section 4.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. (Per KDB 941225 D05 v02r03 section 4.2.3)
3. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   3.1 Original SAR = 1.040 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.030 W/kg < 1.45W/kg
   3.3 SAR variation= 0.9 % < 20%
4. Spot Check-back cover with card reader.

LTE Band 5 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20600	884.0	0	1	0	20.0	19.5	0.436	0.489	
			20600	884.0	0	25	0	20.0	18.6	0.336	0.464	
		Rear	20600	884.0	0	1	0	20.0	19.5	0.632	0.709	
			20600	884.0	0	25	0	20.0	18.6	0.516	0.712	
		Edge1	20600	884.0	0	1	0	20.0	19.5	0.411	0.461	1
Off	QPSK	Edge1	20600	884.0	17	1	0	23.5	23.0	0.333	0.374	
			20600	884.0	17	25	0	23.5	22.1	0.273	0.377	
		Rear	20600	884.0	15	1	0	23.5	23.0	0.374	0.420	
			20600	884.0	15	25	0	23.5	22.1	0.323	0.446	
		Edge2	20600	884.0	0	1	0	23.5	23.0	0.151	0.169	
			20600	884.0	0	25	0	23.5	22.1	0.117	0.162	

Note(s):

1. Spot Check-back cover with card reader.

LTE Band 7 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20850	2510.0	0	1	0	15.0	15.0	1.330	1.330	
			20850	2510.0	0	1	49	15.0	14.7	1.070	1.147	1
			20850	2510.0	0	1	99	15.0	14.5	1.060	1.189	1
			20850	2510.0	0	50	0	15.0	14.5	0.937	1.051	
			20850	2510.0	0	50	24	15.0	14.4	0.935	1.074	1
			20850	2510.0	0	50	49	15.0	14.3	0.871	1.023	1
			20850	2510.0	0	100	0	15.0	14.0	0.911	1.147	2
			21100	2535.0	0	1	0	15.0	14.9	1.220	1.248	1
			21350	2560.0	0	1	0	15.0	14.8	1.270	1.330	1
			21100	2535.0	0	50	0	15.0	14.4	0.973	1.117	1
			21350	2560.0	0	50	0	15.0	14.3	0.913	1.073	1
			20850	2510.0	0	1	0	15.0	15.0	1.240	1.240	3
			20850	2510.0	0	1	0	15.0	15.0	1.180	1.180	4
		Rear	20850	2510.0	0	1	0	15.0	15.0	0.508	0.508	
			20850	2510.0	0	50	0	15.0	14.5	0.385	0.432	
Off	QPSK	Edge1	20850	2510.0	17	1	0	23.5	23.1	0.519	0.569	
			20850	2510.0	17	50	0	23.5	22.4	0.523	0.674	
		Rear	20850	2510.0	15	1	0	23.5	23.1	0.367	0.402	
			20850	2510.0	15	50	0	23.5	22.4	0.350	0.451	
		Edge2	20850	2510.0	0	1	0	23.5	23.1	0.068	0.075	
			20850	2510.0	0	50	0	23.5	22.4	0.053	0.068	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r03 section 4.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. (Per KDB 941225 D05 v02r03 section 4.2.3)
3. Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03)
   3.1 Original SAR = 1.330 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.240 W/kg < 1.45W/kg
   3.3 SAR variation= 6.7 % < 20%
4. Spot Check-back cover with card reader.

LTE Band 13 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	23230	782.0	0	1	0	20.0	19.7	0.529	0.567	
			23230	782.0	0	25	0	20.0	18.9	0.472	0.608	
		Rear	23230	782.0	0	1	0	20.0	19.7	0.705	0.755	
			23230	782.0	0	25	0	20.0	18.9	0.634	0.817	
		Edge1	23230	782.0	0	1	0	20.0	19.7	0.477	0.511	1
Off	QPSK	Edge1	23230	782.0	17	1	0	23.5	23.5	0.219	0.219	
			23230	782.0	17	25	0	23.5	22.8	0.205	0.241	
		Rear	23230	782.0	15	1	0	23.5	23.5	0.355	0.355	
			23230	782.0	15	25	0	23.5	22.8	0.334	0.392	
		Edge2	23230	782.0	15	1	0	23.5	23.5	0.133	0.133	
			23230	782.0	15	25	0	23.5	22.8	0.127	0.149	

Note(s):

1. Spot Check-back cover with card reader.

LTE Band 17 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	23790	710.0	0	1	0	20.0	20.0	0.718	0.718	
			23790	710.0	0	25	0	20.0	19.2	0.580	0.697	
		Rear	23790	710.0	0	1	0	20.0	20.0	0.706	0.706	
			23790	710.0	0	25	0	20.0	19.2	0.497	0.598	
		Edge1	23790	710.0	0	1	0	20.0	20.0	0.678	0.678	1
Off	QPSK	Edge1	23790	710.0	17	1	0	23.5	23.2	0.191	0.205	
			23790	710.0	17	25	0	23.5	22.4	0.152	0.196	
		Rear	23790	710.0	15	1	0	23.5	23.2	0.280	0.300	
			23790	710.0	15	25	0	23.5	22.4	0.226	0.291	
		Edge2	23790	710.0	17	1	0	23.5	23.2	0.147	0.158	
			23790	710.0	17	25	0	23.5	22.4	0.125	0.161	

Note(s):

1. Spot Check-back cover with card reader.

17 Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance v05, introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

SAR₁ is the highest Reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest Reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

R_i is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$

A new threshold of 0.04 is also introduced in the draft KDB. Thus, in order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / R_i < 0.04$$

17.1 Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Dedicated Host Approach criteria for SAR test exclusion is likewise applied to SAR estimation, with certain distinctions between test exclusion and SAR estimation:

   - When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied for SAR estimation; this is the same between test exclusion and SAR estimation calculations.
   - When the separation distance from the antenna to an adjacent edge is > 5 mm but ≤ 50 mm, the actual antenna-to-edge separation distance is applied for SAR estimation.
   - When the minimum test separation distance is > 50 mm, the estimated SAR value is 0.4 W/kg

17.2 Sum of the SAR for Simultaneous Transmission Analysis

All Wi-Fi 1-g SAR values were taken form results record in SAR report T150210W06-SF, submitted under FCC ID GKR-YP00064B.

17.2.1 Sum of the SAR for WLAN & WWAN

GPRS850+2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 850	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	1.297	0.851		2.148	Yes
	802.11b	6	1.297		0.732	2.029	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

GPRS850+5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 850	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	1.297	0.770		2.067	Yes
	802.11a	60	1.297		1.232	2.529	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

GPRS1900+2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 1900	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	1.001	0.851		1.852	Yes
	802.11b	6	1.001		0.732	1.733	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

GPRS1900+5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 1900	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	1.001	0.770		1.771	Yes
	802.11a	60	1.001		1.232	2.233	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band II+2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band II	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	1.001	0.851		1.852	Yes
	802.11b	6	1.001		0.732	1.733	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band II +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band II	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	1.001	0.770		1.771	Yes
	802.11a	60	1.001		1.232	2.233	Yes

Note(s):

As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band IV +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band IV	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.745	0.851		1.596	No
	802.11b	6	0.745		0.732	1.477	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band IV +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band IV	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.745	0.770		1.515	No
	802.11a	60	0.745		1.232	1.977	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band V+2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band V	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	1.005	0.851		1.856	Yes
	802.11b	6	1.005		0.732	1.737	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

WCDMA Band V +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band V	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	1.005	0.770		1.775	Yes
	802.11a	60	1.005		1.232	2.237	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 2 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 2	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.919	0.851		1.770	Yes
	802.11b	6	0.919		0.732	1.651	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 2 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 2	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.919	0.770		1.689	Yes
	802.11a	60	0.919		1.232	2.151	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 4 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 4	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.706	0.851		1.557	No
	802.11b	6	0.706		0.732	1.438	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 4 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 4	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.706	0.770		1.476	No
	802.11a	60	0.706		1.232	1.938	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 5 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 5	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.712	0.851		1.563	No
	802.11b	6	0.712		0.732	1.444	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 5 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 5	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.712	0.770		1.482	No
	802.11a	60	0.712		1.232	1.944	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 7 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 7	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.508	0.851		1.359	No
	802.11b	6	0.508		0.732	1.240	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 7 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 7	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.508	0.770		1.278	No
	802.11a	60	0.508		1.232	1.740	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 13 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 13	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.817	0.851		1.668	Yes
	802.11b	6	0.817		0.732	1.549	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 13 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 13	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.817	0.770		1.587	No
	802.11a	60	0.817		1.232	2.049	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 17 +2.4G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 17	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band		
Rear	802.11b	6	0.706	0.851		1.557	No
	802.11b	6	0.706		0.732	1.438	No

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

LTE Band 17 +5G Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			Σ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 17	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band		
Rear	802.11a	153	0.706	0.770		1.476	No
	802.11a	60	0.706		1.232	1.938	Yes

Note(s):
As the Sum of the SAR is not greater than 1.6W/Kg, so SPLSR is not required.

17.2.2 Sum of the 1g SAR for Body Exposure Condition

GPRS850 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			GPRS 850	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	1.297	0.851		2.148	17.66	0.02	1
	802.11b	6	1.297		0.732	2.029	21.24	0.01	2

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

GPRS850 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			GPRS 850	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	153	1.297	0.770		2.067	17.44	0.02	3
	802.11a	60	1.297		1.232	2.529	21.15	0.02	4

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

GPRS1900 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			GPRS 1900	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	1.001	0.851		1.852	17.74	0.01	5
	802.11b	6	1.001		0.732	1.733	21.26	0.01	6

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

GPRS1900 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			GPRS 1900	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11a	153	1.001	0.770		1.771	17.54	0.01	7
	802.11a	60	1.001		1.232	2.233	21.16	0.02	8

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

WCDMA Band II + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			WCDMA Band II	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	1.001	0.851		1.852	18.59	0.01	9
	802.11b	6	1.001		0.732	1.733	21.78	0.01	10

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

WCDMA Band II + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			WCDMA Band II	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11a	153	1.001	0.770		1.771	18.42	0.01	11
	802.11a	60	1.001		1.232	2.233	21.63	0.02	12

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

WCDMA Band IV + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			WCDMA Band IV	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.745		1.232	1.977	20.97	0.01	13

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

WCDMA Band V + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			WCDMA Band V	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	1.005	0.851		1.856	17.91	0.01	14
	802.11b	6	1.005		0.732	1.737	21.55	0.01	15

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

WCDMA Band V + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			WCDMA Band V	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	153	1.005	0.770		1.775	17.68	0.01	16
	802.11a	60	1.005		1.232	2.237	21.46	0.02	17

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 2 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 2	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	0.919	0.851		1.770	18.40	0.01	18
	802.11b	6	0.919		0.732	1.651	21.76	0.01	19

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 2 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 2	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	153	0.919	0.770		1.689	18.21	0.01	20
	802.11a	60	0.919		1.232	2.151	21.64	0.01	21

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 4 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 4	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.706		1.232	1.938	20.66	0.01	22

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 5 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 5	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.712		1.232	1.944	21.14	0.01	23

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 7 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 7	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.508		1.232	1.740	21.08	0.01	24

Note(s):
The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 13 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 13	Wi-Fi Main 2.4 GHz Band	Wi-Fi Aux 2.4 GHz Band				
Rear	802.11b	6	0.817	0.851		1.668	18.21	0.01	25

Note(s):

The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 13 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 13	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.817		1.232	2.049	21.26	0.01	26

Note(s):

The SPLSR is rounded to two decimal digits and ≦0.04

LTE Band 17 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario			∑ 1-g SAR (W/kg)	Calculated distance (cm)	SPLSR	Figure
			LTE Band 17	Wi-Fi Main 5 GHz Band	Wi-Fi Aux 5 GHz Band				
Rear	802.11a	60	0.706		1.232	1.938	21.02	0.01	27

Note(s):

The SPLSR is rounded to two decimal digits and ≦0.04

18 Equipment List & Calibration Status

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Cycle(year)	Calibration Due
S-Parameter Network Analyzer	Agilent	E5071C	MY46213916	1	2015/6/25
Electronic Probe kit	Hewlett Packard	85070D	N/A	N/A	N/A
Power Meter	Agilent	4416	GB41291611	1	2015/9/4
Power Sensor	Agilent	8481H	MY41091956	1	2015/9/4
Data Acquisition Electronics (DAE)	SPEAG	DAE4	1305	1	2015/12/10
Data Acquisition Electronics (DAE)	SPEAG	DAE4	877	1	2016/3/18
Dosimetric E-Field Probe	SPEAG	EX3DV4	3665	1	2015/5/21
750 MHz System Validation Dipole	SPEAG	D750V3	1020	1	2016/1/22
835 MHz System Validation Dipole	SPEAG	D835V2	4d063	1	2015/8/27
835 MHz System Validation Dipole	SPEAG	D835V2	4d015	1	2016/3/19
1800 MHz System Validation Dipole	SPEAG	D1800V2	2d062	1	2016/2/18
1900 MHz System Validation Dipole	SPEAG	D1900V2	5d056	1	2016/2/17
2450 MHz System Validation Dipole	SPEAG	D2450V2	728	1	2015/5/19
Robot	Staubli	RX90L	F02/5T69A1/A/01	N/A	N/A
Amplifier	Mini-Circuit	ZVE-8G	665500309	N/A	N/A
Amplifier	Mini-Circuit	ZHL-1724HLN	D072602#2	N/A	N/A

19 Facilities

All measurement facilities used to collect the measurement data are located at

☐ No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

☐ No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

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21 Attachments

Exhibit	Content
1	System Performance Check Plots
2	SAR Test Data Plots
3	SPLSR Plots
4	Calibration Data Report
5	T150302W01-SF PHOTOs

END OF REPORT