

11.2 Hotspot

The conducted power is normal for all bands except PCS1900, WCDMA1700, WCDMA1900, LTE band 2 and LTE band 4. There is power reduction enabled for PCS1900, WCDMA1700, WCDMA1900, LTE band 2 and LTE band 4. The power reduction is enabled when the user enables hotspot mode via the manufacturer software. The tables below show the measured powers with hotspot.

Table 11.11: The conducted power measurement results for GSM1900

GSM 1900MHz	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	25.80	25.62	25.40

Table 11.12: The conducted power measurement results for GPRS and EGPRS

PCS1900 GPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	25.80	25.62	25.40	-9.03dB	16.77	16.59	16.37
2 Txslots	23.57	23.54	23.33	-6.02dB	17.55	17.52	17.31
3Txslots	21.69	21.49	21.31	-4.26dB	17.43	17.23	17.05
4 Txslots	20.51	20.52	20.31	-3.01dB	17.50	17.51	17.30
PCS1900 EGPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	25.80	25.62	25.40	-9.03dB	16.77	16.59	16.37
2 Txslots	23.56	23.54	23.33	-6.02dB	17.54	17.52	17.31
3Txslots	21.69	21.48	21.30	-4.26dB	17.43	17.22	17.04
4 Txslots	20.51	20.51	20.31	-3.01dB	17.50	17.50	17.30

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 2Txslot for GPRS and EGPRS.

Table 11.13: The conducted Power for WCDMA

Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	I	20.16	20.23	20.25
Item	band	FDDII result		
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)
WCDMA	I	20.48	20.41	20.33

Table 11.14: The conducted Power for LTE

Band 2							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1909.3	21	19.90	0	20.18	1
		1880	21	19.82	0	19.70	1
		1850.7	21	19.84	0	20.01	1
	1RB Middle (3)	1909.3	21	19.93	0	20.20	1
		1880	21	19.92	0	19.76	1
		1850.7	21	20.01	0	19.96	1
	1RB Low (0)	1909.3	21	19.91	0	20.05	1
		1880	21	19.83	0	19.79	1
		1850.7	21	19.93	0	19.83	1
	3RB High (3)	1909.3	21	19.88	0	19.62	1
		1880	21	19.80	0	19.90	1
		1850.7	21	20.02	0	20.00	1
	3RB Middle (1)	1909.3	21	19.87	0	19.74	1
		1880	21	19.89	0	19.99	1
		1850.7	21	20.10	0	20.20	1
	3RB Low (0)	1909.3	21	19.81	0	19.75	1
		1880	21	19.82	0	19.92	1
		1850.7	21	20.04	0	20.14	1
	6RB (0)	1909.3	21	19.85	1	19.99	2
		1880	21	19.91	1	19.97	2
		1850.7	21	19.97	1	19.93	2
3 MHz	1RB High (14)	1908.5	21	19.91	0	20.22	1
		1880	21	19.83	0	19.78	1
		1851.5	21	19.93	0	19.91	1
	1RB Middle (7)	1908.5	21	19.87	0	20.19	1
		1880	21	19.75	0	19.57	1
		1851.5	21	19.95	0	19.94	1
	1RB Low (0)	1908.5	21	19.97	0	20.30	1
		1880	21	19.78	0	19.64	1
		1851.5	21	20.14	0	20.02	1
	8RB High (7)	1908.5	21	19.82	1	19.87	2
		1880	21	19.92	1	20.02	2
		1851.5	21	19.98	1	19.97	2
	8RB Middle (4)	1908.5	21	19.87	1	19.91	2
		1880	21	20.00	1	20.06	2
		1851.5	21	20.01	1	20.04	2

	8RB Low (0)	1908.5	21	19.90	1	19.86	2
		1880	21	19.93	1	20.07	2
		1851.5	21	20.06	1	20.08	2
	15RB (0)	1908.5	21	19.88	1	19.82	2
		1880	21	19.97	1	19.84	2
		1851.5	21	19.98	1	19.92	2
5 MHz	1RB High (24)	1907.5	21	20.10	0	20.03	1
		1880	21	20.04	0	19.74	1
		1852.5	21	19.67	0	19.43	1
	1RB Middle (12)	1907.5	21	19.92	0	20.05	1
		1880	21	19.96	0	19.95	1
		1852.5	21	19.87	0	19.57	1
	1RB Low (0)	1907.5	21	19.96	0	20.15	1
		1880	21	20.13	0	20.06	1
		1852.5	21	19.88	0	19.78	1
	12RB High (13)	1907.5	21	19.86	1	19.85	2
		1880	21	19.88	1	19.76	2
		1852.5	21	19.91	1	20.02	2
	12RB Middle (6)	1907.5	21	19.84	1	19.87	2
		1880	21	19.86	1	19.65	2
		1852.5	21	20.01	1	19.97	2
	12RB Low (0)	1907.5	21	19.87	1	19.89	2
		1880	21	19.92	1	19.60	2
		1852.5	21	20.06	1	19.99	2
	25RB (0)	1907.5	21	19.88	1	19.79	2
		1880	21	19.92	1	19.87	2
		1852.5	21	20.05	1	19.96	2
10 MHz	1RB High (49)	1905	21	20.05	0	20.06	1
		1880	21	20.06	0	19.96	1
		1855	21	19.87	0	19.94	1
	1RB Middle (24)	1905	21	19.94	0	20.08	1
		1880	21	20.26	0	20.07	1
		1855	21	20.10	0	20.01	1
	1RB Low (0)	1905	21	20.03	0	20.33	1
		1880	21	19.97	0	19.73	1
		1855	21	20.11	0	20.21	1
	25RB High (25)	1905	21	19.93	1	20.12	2
		1880	21	19.95	1	20.06	2
		1855	21	19.90	1	19.70	2
	25RB Middle (12)	1905	21	19.88	1	20.09	2
		1880	21	19.97	1	20.13	2
		1855	21	19.85	1	19.69	2

	25RB Low (0)	1905	21	19.96	1	19.97	2
		1880	21	19.88	1	20.07	2
		1855	21	20.13	1	19.98	2
	50RB (0)	1905	21	19.95	1	19.91	2
		1880	21	20.03	1	19.93	2
		1855	21	20.00	1	20.10	2
15 MHz	1RB High (74)	1902.5	21	19.84	0	20.03	1
		1880	21	20.09	0	20.29	1
		1857.5	21	19.97	0	20.17	1
	1RB Middle (37)	1902.5	21	19.85	0	20.27	1
		1880	21	19.75	0	20.06	1
		1857.5	21	19.85	0	20.07	1
	1RB Low (0)	1902.5	21	20.10	0	20.08	1
		1880	21	20.03	0	20.43	1
		1857.5	21	20.21	0	20.36	1
	36RB High (38)	1902.5	21	19.92	1	19.80	2
		1880	21	20.06	1	20.14	2
		1857.5	21	19.82	1	19.71	2
	36RB Middle (19)	1902.5	21	20.08	1	19.86	2
		1880	21	19.89	1	20.05	2
		1857.5	21	19.88	1	19.77	2
	36RB Low (0)	1902.5	21	19.95	1	19.85	2
		1880	21	19.99	1	20.12	2
		1857.5	21	19.97	1	19.90	2
	75RB (0)	1902.5	21	19.95	1	19.94	2
		1880	21	20.09	1	20.04	2
		1857.5	21	20.01	1	20.07	2
20 MHz	1RB High (99)	1900	21	19.82	0	20.13	1
		1880	21	19.86	0	20.16	1
		1860	21	19.85	0	20.35	1
	1RB Middle (50)	1900	21	19.94	0	20.12	1
		1880	21	19.82	0	20.21	1
		1860	21	20.00	0	20.29	1
	1RB Low (0)	1900	21	20.05	0	20.27	1
		1880	21	20.04	0	19.28	1
		1860	21	20.26	0	20.42	1
	50RB High (50)	1900	21	19.94	1	19.89	2
		1880	21	19.92	1	19.82	2
		1860	21	20.07	1	19.96	2
	50RB Middle (25)	1900	21	19.95	1	19.95	2
		1880	21	19.98	1	19.86	2
		1860	21	19.99	1	19.90	2

	50RB Low (0)	1900	21	20.12	1	19.98	2
		1880	21	20.02	1	19.94	2
		1860	21	20.11	1	20.09	2
	100RB (0)	1900	21	19.93	1	19.87	2
		1880	21	19.95	1	19.96	2
		1860	21	20.02	1	19.98	2
Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1754.3	21	19.61	0	19.26	1
		1732.5	21	19.42	0	19.45	1
		1710.7	21	19.62	0	19.75	1
	1RB Middle (3)	1754.3	21	19.51	0	19.60	1
		1732.5	21	19.48	0	19.44	1
		1710.7	21	19.73	0	19.53	1
	1RB Low (0)	1754.3	21	19.76	0	19.64	1
		1732.5	21	19.41	0	19.23	1
		1710.7	21	19.57	0	19.27	1
	3RB High (3)	1754.3	21	19.56	0	19.52	1
		1732.5	21	19.60	0	19.69	1
		1710.7	21	19.74	0	19.83	1
	3RB Middle (1)	1754.3	21	19.54	0	19.60	1
		1732.5	21	19.65	0	19.74	1
		1710.7	21	19.88	0	19.86	1
	3RB Low (0)	1754.3	21	19.63	0	19.56	1
		1732.5	21	19.70	0	19.61	1
		1710.7	21	19.81	0	19.64	1
	6RB (0)	1754.3	21	19.61	1	19.44	2
		1732.5	21	19.60	1	19.72	2
		1710.7	21	19.82	1	19.91	2
3 MHz	1RB High (14)	1753.5	21	19.60	0	19.54	1
		1732.5	21	19.47	0	19.44	1
		1711.5	21	19.54	0	19.66	1
	1RB Middle (7)	1753.5	21	19.42	0	19.67	1
		1732.5	21	19.37	0	19.39	1
		1711.5	21	19.63	0	19.51	1
	1RB Low (0)	1753.5	21	19.72	0	19.69	1
		1732.5	21	19.46	0	19.43	1
		1711.5	21	19.62	0	19.78	1
	8RB High (7)	1753.5	21	19.58	1	19.62	2
		1732.5	21	19.55	1	19.57	2
		1711.5	21	19.60	1	19.58	2

	8RB Middle (4)	1753.5	21	19.53	1	19.59	2
		1732.5	21	19.56	1	19.58	2
		1711.5	21	19.68	1	19.85	2
	8RB Low (0)	1753.5	21	19.57	1	19.61	2
		1732.5	21	19.59	1	19.36	2
		1711.5	21	19.82	1	20.00	2
	15RB (0)	1753.5	21	19.62	1	19.52	2
		1732.5	21	19.59	1	19.68	2
		1711.5	21	19.77	1	19.61	2
5 MHz	1RB High (24)	1752.5	21	19.86	0	20.03	1
		1732.5	21	19.57	0	19.84	1
		1712.5	21	19.45	0	19.38	1
	1RB Middle (12)	1752.5	21	19.58	0	19.89	1
		1732.5	21	19.64	0	19.67	1
		1712.5	21	19.39	0	19.36	1
	1RB Low (0)	1752.5	21	19.85	0	20.14	1
		1732.5	21	19.56	0	19.86	1
		1712.5	21	19.49	0	19.28	1
	12RB High (13)	1752.5	21	19.58	1	19.60	2
		1732.5	21	19.55	1	19.44	2
		1712.5	21	19.64	1	19.73	2
	12RB Middle (6)	1752.5	21	19.59	1	19.71	2
		1732.5	21	19.60	1	19.46	2
		1712.5	21	19.59	1	19.68	2
	12RB Low (0)	1752.5	21	19.60	1	19.62	2
		1732.5	21	19.63	1	19.78	2
		1712.5	21	19.82	1	19.76	2
	25RB (0)	1752.5	21	19.64	1	19.65	2
		1732.5	21	19.62	1	19.64	2
		1712.5	21	19.67	1	19.61	2
10 MHz	1RB High (49)	1750	21	19.75	0	19.67	1
		1732.5	21	19.55	0	19.77	1
		1715	21	19.52	0	19.43	1
	1RB Middle (24)	1750	21	19.67	0	19.84	1
		1732.5	21	19.89	0	19.76	1
		1715	21	19.74	0	19.61	1
	1RB Low (0)	1750	21	19.73	0	20.01	1
		1732.5	21	19.80	0	19.70	1
		1715	21	19.76	0	19.73	1
	25RB High (25)	1750	21	19.56	1	19.40	2
		1732.5	21	19.59	1	19.36	2
		1715	21	19.64	1	19.72	2

	25RB Middle (12)	1750	21	19.62	1	19.63	2
		1732.5	21	19.66	1	19.62	2
		1715	21	19.63	1	19.71	2
	25RB Low (0)	1750	21	19.65	1	19.76	2
		1732.5	21	19.68	1	19.66	2
		1715	21	19.73	1	19.77	2
	50RB (0)	1750	21	19.68	1	19.57	2
		1732.5	21	19.60	1	19.64	2
		1715	21	19.59	1	19.58	2
15 MHz	1RB High (74)	1747.5	21	19.59	0	19.70	1
		1732.5	21	19.43	0	19.74	1
		1717.5	21	19.63	0	19.67	1
	1RB Middle (37)	1747.5	21	19.45	0	19.49	1
		1732.5	21	19.41	0	19.71	1
		1717.5	21	19.51	0	19.69	1
	1RB Low (0)	1747.5	21	19.81	0	19.67	1
		1732.5	21	19.69	0	20.02	1
		1717.5	21	19.87	0	19.95	1
	36RB High (38)	1747.5	21	19.66	1	19.63	2
		1732.5	21	19.52	1	19.67	2
		1717.5	21	19.68	1	19.60	2
	36RB Middle (19)	1747.5	21	19.65	1	19.72	2
		1732.5	21	19.62	1	19.75	2
		1717.5	21	19.58	1	19.63	2
	36RB Low (0)	1747.5	21	19.63	1	19.80	2
		1732.5	21	19.74	1	19.55	2
		1717.5	21	19.64	1	19.71	2
	75RB (0)	1747.5	21	19.67	1	19.74	2
		1732.5	21	19.65	1	19.50	2
		1717.5	21	19.70	1	19.73	2
20 MHz	1RB High (99)	1745	21	19.60	0	19.48	1
		1732.5	21	19.51	0	20.12	1
		1720	21	19.59	0	19.12	1
	1RB Middle (50)	1745	21	19.85	0	20.06	1
		1732.5	21	19.72	0	20.10	1
		1720	21	19.62	0	19.73	1
	1RB Low (0)	1745	21	20.02	0	20.08	1
		1732.5	21	19.84	0	20.16	1
		1720	21	19.80	0	20.09	1
	50RB High (50)	1745	21	19.69	1	19.67	2
		1732.5	21	19.60	1	19.62	2
		1720	21	19.65	1	19.76	2

	50RB Middle (25)	1745	21	19.57	1	19.64	2
		1732.5	21	19.60	1	19.65	2
		1720	21	19.85	1	19.88	2
	50RB Low (0)	1745	21	19.65	1	19.66	2
		1732.5	21	19.74	1	19.68	2
		1720	21	19.69	1	19.89	2
	100RB (0)	1745	21	19.64	1	19.63	2
		1732.5	21	19.63	1	19.59	2
		1720	21	19.75	1	19.63	2

11.3 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

Table 11.15: The conducted power measurement results for GSM850/1900

GSM 850MHz	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	33.13	32.99	32.95
GSM 1900MHz	Conducted Power (dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	30.19	30.01	30.22

Table 11.16: The conducted power measurement results for GPRS and EGPRS

GSM 850 GPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	33.13	32.98	32.95	-9.03dB	24.10	23.95	23.92
2 Txslots	31.58	31.51	31.34	-6.02dB	25.56	25.49	25.32
3Txslots	29.91	29.75	29.66	-4.26dB	25.65	25.49	25.40
4 Txslots	28.86	28.71	28.52	-3.01dB	25.85	25.70	25.51
GSM 850 EGPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	251	190	128		251	190	128
1 Txslot	33.12	32.98	32.94	-9.03dB	24.09	23.95	23.91
2 Txslots	31.58	31.51	31.34	-6.02dB	25.56	25.49	25.32
3Txslots	29.90	29.75	29.65	-4.26dB	25.64	25.49	25.39
4 Txslots	28.86	28.70	28.52	-3.01dB	25.85	25.69	25.51
PCS1900 GPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	30.19	30.01	30.22	-9.03dB	21.16	20.98	21.19
2 Txslots	28.70	28.52	28.60	-6.02dB	22.68	22.50	22.58
3Txslots	27.05	26.84	26.96	-4.26dB	22.79	22.58	22.70
4 Txslots	25.92	25.71	25.73	-3.01dB	22.91	22.70	22.72

PCS1900 EGPRS (GMSK)	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	810	661	512		810	661	512
1 Txslot	30.17	30.00	30.21	-9.03dB	21.14	20.97	21.18
2 Txslots	28.69	28.52	28.58	-6.02dB	22.67	22.50	22.56
3Txslots	27.03	26.84	26.95	-4.26dB	22.77	22.58	22.69
4 Txslots	25.90	25.70	25.72	-3.01dB	22.89	22.69	22.71

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslot for GPRS and EGPRS.

11.4 WCDMA Measurement result

Table 11.17: The conducted Power for WCDMA

Item	band	FDDV result		
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)
WCDMA	1	24.22	24.08	24.01
HSUPA	1	22.3	22.5	22.4
	2	21.4	21.4	21.5
	3	20.9	21.4	21.2
	4	21.8	21.9	21.9
	5	22.4	22.4	22.4
DC-HSDPA	1	22.28	22.28	22.22
	2	22.25	22.27	22.17
	3	22.26	22.28	22.17
	4	22.29	22.29	22.19
Item	band	FDDIV result		
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)
WCDMA	1	24.07	24.17	24.33
HSUPA	1	21.9	22	21.9
	2	21	21.2	21
	3	20.8	20.7	20.6
	4	21.4	21.6	21.4
	5	22	22.1	22
DC-HSDPA	1	22.28	22.26	22.29
	2	22.34	22.23	22.23
	3	22.35	22.18	22.20
	4	22.36	22.16	22.20

Item	band	FDDII result		
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)
WCDMA	1	24.19	24.21	24.11
HSUPA	1	21.4	22.1	22.2
	2	21	21.1	21.1
	3	20.6	20.6	21.2
	4	21.5	21.6	21.1
	5	22.1	22.1	22.2
DC-HSDPA	1	22.76	22.58	22.53
	2	22.82	22.55	22.51
	3	22.81	22.57	22.49
	4	22.86	22.52	22.42

11.5 LTE Measurement result

Table 11.18: The conducted Power for LTE

Band 2							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1909.3	24	23.15	0	22.46	1
		1880	24	23.20	0	22.28	1
		1850.7	24	23.10	0	22.37	1
	1RB Middle (3)	1909.3	24	23.30	0	22.57	1
		1880	24	23.34	0	22.33	1
		1850.7	24	23.17	0	22.42	1
	1RB Low (0)	1909.3	24	23.28	0	22.53	1
		1880	24	23.22	0	22.35	1
		1850.7	24	23.19	0	22.41	1
	3RB High (3)	1909.3	24	23.30	0	22.24	1
		1880	24	23.22	0	22.32	1
		1850.7	24	23.21	0	22.33	1
	3RB Middle (1)	1909.3	24	23.38	0	22.34	1
		1880	24	23.24	0	22.23	1
		1850.7	24	23.15	0	22.30	1
	3RB Low (0)	1909.3	24	23.33	0	22.31	1
		1880	24	23.20	0	22.19	1
		1850.7	24	23.12	0	22.27	1
	6RB (0)	1909.3	24	22.32	1	21.31	2
		1880	24	22.29	1	21.35	2
		1850.7	24	22.27	1	21.27	2
3 MHz	1RB High (14)	1908.5	24	23.19	0	22.53	1
		1880	24	23.17	0	22.31	1
		1851.5	24	23.23	0	22.27	1

	1RB Middle (7)	1908.5	24	23.22	0	22.65	1
		1880	24	23.14	0	22.15	1
		1851.5	24	23.30	0	22.28	1
	1RB Low (0)	1908.5	24	23.54	0	22.73	1
		1880	24	23.31	0	22.36	1
		1851.5	24	23.32	0	22.34	1
	8RB High (7)	1908.5	24	22.31	1	21.30	2
		1880	24	22.30	1	21.28	2
		1851.5	24	22.24	1	21.25	2
	8RB Middle (4)	1908.5	24	22.33	1	21.37	2
		1880	24	22.27	1	21.37	2
		1851.5	24	22.26	1	21.26	2
	8RB Low (0)	1908.5	24	22.30	1	21.31	2
		1880	24	22.35	1	21.45	2
		1851.5	24	22.29	1	21.29	2
	15RB (0)	1908.5	24	22.33	1	21.32	2
		1880	24	22.34	1	21.36	2
		1851.5	24	22.28	1	21.32	2
5 MHz	1RB High (24)	1907.5	24	23.39	0	22.40	1
		1880	24	23.16	0	22.45	1
		1852.5	24	23.05	0	22.14	1
	1RB Middle (12)	1907.5	24	23.38	0	22.46	1
		1880	24	23.42	0	22.55	1
		1852.5	24	23.07	0	22.12	1
	1RB Low (0)	1907.5	24	23.57	0	22.50	1
		1880	24	23.35	0	22.51	1
		1852.5	24	23.09	0	22.16	1
	12RB High (13)	1907.5	24	22.29	1	21.36	2
		1880	24	22.31	1	21.31	2
		1852.5	24	22.23	1	21.28	2
	12RB Middle (6)	1907.5	24	22.25	1	21.35	2
		1880	24	22.38	1	21.35	2
		1852.5	24	22.24	1	21.29	2
	12RB Low (0)	1907.5	24	22.32	1	21.37	2
		1880	24	22.33	1	21.32	2
		1852.5	24	22.18	1	21.24	2
	25RB (0)	1907.5	24	22.30	1	21.30	2
		1880	24	22.34	1	21.35	2
		1852.5	24	22.22	1	21.27	2
10 MHz	1RB High (49)	1905	24	23.42	0	22.65	1
		1880	24	23.33	0	22.31	1
		1855	24	23.21	0	22.35	1

	1RB Middle (24)	1905	24	23.20	0	22.46	1
		1880	24	23.39	0	22.45	1
		1855	24	23.45	0	22.55	1
	1RB Low (0)	1905	24	23.32	0	22.51	1
		1880	24	23.41	0	22.47	1
		1855	24	23.31	0	22.50	1
	25RB High (25)	1905	24	22.36	1	21.46	2
		1880	24	22.39	1	21.42	2
		1855	24	22.31	1	21.25	2
	25RB Middle (12)	1905	24	22.27	1	21.39	2
		1880	24	22.35	1	21.35	2
		1855	24	22.29	1	21.27	2
	25RB Low (0)	1905	24	22.39	1	21.49	2
		1880	24	22.34	1	21.33	2
		1855	24	22.30	1	21.28	2
	50RB (0)	1905	24	22.34	1	21.29	2
		1880	24	22.37	1	21.36	2
		1855	24	22.25	1	21.32	2
15 MHz	1RB High (74)	1902.5	24	23.26	0	22.25	1
		1880	24	23.30	0	22.38	1
		1857.5	24	23.31	0	22.29	1
	1RB Middle (37)	1902.5	24	23.16	0	22.31	1
		1880	24	23.20	0	22.24	1
		1857.5	24	23.21	0	22.28	1
	1RB Low (0)	1902.5	24	23.39	0	22.65	1
		1880	24	23.40	0	22.49	1
		1857.5	24	23.38	0	22.47	1
	36RB High (38)	1902.5	24	22.33	1	21.36	2
		1880	24	22.35	1	21.42	2
		1857.5	24	22.19	1	21.21	2
	36RB Middle (19)	1902.5	24	22.30	1	21.29	2
		1880	24	22.34	1	21.41	2
		1857.5	24	22.21	1	21.35	2
	36RB Low (0)	1902.5	24	22.36	1	21.30	2
		1880	24	22.39	1	21.47	2
		1857.5	24	22.27	1	21.40	2
	75RB (0)	1902.5	24	22.30	1	21.35	2
		1880	24	22.38	1	21.39	2
		1857.5	24	22.26	1	21.30	2
20 MHz	1RB High (99)	1900	24	23.20	0	22.43	1
		1880	24	23.18	0	22.56	1
		1860	24	23.16	0	22.44	1

	1RB Middle (50)	1900	24	23.70	0	22.77	1
		1880	24	23.36	0	22.58	1
		1860	24	23.23	0	22.57	1
	1RB Low (0)	1900	24	23.50	0	22.54	1
		1880	24	23.52	0	22.74	1
		1860	24	23.22	0	22.59	1
	50RB High (50)	1900	24	22.27	1	21.30	2
		1880	24	22.19	1	21.37	2
		1860	24	22.18	1	21.24	2
	50RB Middle (25)	1900	24	22.20	1	21.36	2
		1880	24	22.24	1	21.40	2
		1860	24	22.21	1	21.28	2
	50RB Low (0)	1900	24	22.33	1	21.40	2
		1880	24	22.36	1	21.41	2
		1860	24	22.24	1	21.31	2
	100RB (0)	1900	24	22.32	1	21.30	2
		1880	24	22.35	1	21.38	2
		1860	24	22.20	1	21.26	2
Band 4							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	1754.3	24	22.81	0	22.11	1
		1732.5	24	22.83	0	21.99	1
		1710.7	24	22.89	0	21.84	1
	1RB Middle (3)	1754.3	24	22.91	0	22.20	1
		1732.5	24	22.96	0	22.03	1
		1710.7	24	23.25	0	22.25	1
	1RB Low (0)	1754.3	24	22.88	0	22.13	1
		1732.5	24	22.85	0	22.10	1
		1710.7	24	23.12	0	22.17	1
	3RB High (3)	1754.3	24	23.10	0	22.40	1
		1732.5	24	22.84	0	21.89	1
		1710.7	24	22.98	0	22.28	1
	3RB Middle (1)	1754.3	24	23.09	0	22.30	1
		1732.5	24	22.90	0	21.96	1
		1710.7	24	22.96	0	22.26	1
	3RB Low (0)	1754.3	24	22.98	0	22.25	1
		1732.5	24	22.92	0	21.97	1
		1710.7	24	23.02	0	22.31	1
	6RB (0)	1754.3	24	22.03	1	21.05	2
		1732.5	24	21.86	1	20.84	2
		1710.7	24	22.04	1	21.13	2

3 MHz	1RB High (14)	1753.5	24	22.84	0	22.15	1
		1732.5	24	22.81	0	21.92	1
		1711.5	24	22.78	0	22.07	1
	1RB Middle (7)	1753.5	24	22.76	0	22.19	1
		1732.5	24	22.89	0	21.93	1
		1711.5	24	23.06	0	22.15	1
	1RB Low (0)	1753.5	24	22.92	0	22.24	1
		1732.5	24	22.93	0	22.21	1
		1711.5	24	23.16	0	22.26	1
	8RB High (7)	1753.5	24	21.96	1	20.92	2
		1732.5	24	21.88	1	21.16	2
		1711.5	24	21.89	1	20.80	2
	8RB Middle (4)	1753.5	24	21.99	1	20.91	2
		1732.5	24	21.90	1	21.19	2
		1711.5	24	22.05	1	20.90	2
	8RB Low (0)	1753.5	24	21.91	1	20.85	2
		1732.5	24	21.94	1	21.23	2
		1711.5	24	22.00	1	20.81	2
	15RB (0)	1753.5	24	21.99	1	20.91	2
		1732.5	24	21.93	1	21.10	2
		1711.5	24	22.04	1	20.85	2
5 MHz	1RB High (24)	1752.5	24	22.81	0	22.19	1
		1732.5	24	22.78	0	22.05	1
		1712.5	24	22.85	0	21.88	1
	1RB Middle (12)	1752.5	24	22.88	0	22.21	1
		1732.5	24	22.93	0	22.13	1
		1712.5	24	22.87	0	21.94	1
	1RB Low (0)	1752.5	24	23.05	0	22.35	1
		1732.5	24	22.95	0	22.15	1
		1712.5	24	22.90	0	22.02	1
	12RB High (13)	1752.5	24	22.05	1	21.15	2
		1732.5	24	21.92	1	21.00	2
		1712.5	24	21.95	1	20.89	2
	12RB Middle (6)	1752.5	24	21.97	1	20.90	2
		1732.5	24	21.90	1	21.13	2
		1712.5	24	21.84	1	20.95	2
	12RB Low (0)	1752.5	24	22.00	1	20.99	2
		1732.5	24	21.85	1	21.11	2
		1712.5	24	22.04	1	21.07	2
	25RB (0)	1752.5	24	22.02	1	21.05	2
		1732.5	24	21.89	1	20.99	2
		1712.5	24	22.01	1	20.98	2

10 MHz	1RB High (49)	1750	24	22.82	0	22.30	1
		1732.5	24	22.71	0	21.90	1
		1715	24	23.15	0	22.16	1
	1RB Middle (24)	1750	24	22.90	0	22.33	1
		1732.5	24	23.00	0	22.02	1
		1715	24	23.22	0	22.43	1
	1RB Low (0)	1750	24	22.95	0	22.40	1
		1732.5	24	23.06	0	22.08	1
		1715	24	23.18	0	22.29	1
	25RB High (25)	1750	24	21.95	1	21.04	2
		1732.5	24	21.88	1	20.92	2
		1715	24	22.07	1	21.01	2
	25RB Middle (12)	1750	24	22.00	1	21.13	2
		1732.5	24	21.97	1	20.95	2
		1715	24	22.05	1	20.95	2
	25RB Low (0)	1750	24	21.92	1	21.03	2
		1732.5	24	22.01	1	21.13	2
		1715	24	22.06	1	20.96	2
	50RB (0)	1750	24	21.96	1	21.02	2
		1732.5	24	21.93	1	20.93	2
		1715	24	22.02	1	21.05	2
15 MHz	1RB High (74)	1747.5	24	22.84	0	21.94	1
		1732.5	24	22.77	0	22.15	1
		1717.5	24	22.92	0	22.14	1
	1RB Middle (37)	1747.5	24	22.76	0	21.88	1
		1732.5	24	22.75	0	22.08	1
		1717.5	24	22.95	0	22.26	1
	1RB Low (0)	1747.5	24	22.99	0	21.98	1
		1732.5	24	23.25	0	22.36	1
		1717.5	24	23.23	0	22.38	1
	36RB High (38)	1747.5	24	21.98	1	20.91	2
		1732.5	24	21.93	1	20.92	2
		1717.5	24	22.00	1	20.95	2
	36RB Middle (19)	1747.5	24	21.88	1	20.88	2
		1732.5	24	21.99	1	20.94	2
		1717.5	24	21.97	1	20.91	2
	36RB Low (0)	1747.5	24	21.96	1	20.90	2
		1732.5	24	22.06	1	21.03	2
		1717.5	24	22.02	1	21.16	2
	75RB (0)	1747.5	24	21.95	1	20.89	2
		1732.5	24	21.96	1	20.94	2
		1717.5	24	21.98	1	21.03	2

20 MHz	1RB High (99)	1745	24	22.83	0	22.22	1
		1732.5	24	22.90	0	22.11	1
		1720	24	22.76	0	22.09	1
	1RB Middle (50)	1745	24	23.01	0	22.35	1
		1732.5	24	23.14	0	22.31	1
		1720	24	22.95	0	22.25	1
	1RB Low (0)	1745	24	22.91	0	22.31	1
		1732.5	24	23.21	0	22.29	1
		1720	24	23.15	0	22.32	1
	50RB High (50)	1745	24	21.94	1	20.94	2
		1732.5	24	21.90	1	20.89	2
		1720	24	22.03	1	20.92	2
	50RB Middle (25)	1745	24	21.88	1	20.92	2
		1732.5	24	21.96	1	20.96	2
		1720	24	22.12	1	21.07	2
	50RB Low (0)	1745	24	21.97	1	20.97	2
		1732.5	24	22.13	1	21.05	2
		1720	24	22.09	1	21.14	2
	100RB (0)	1745	24	21.97	1	20.96	2
		1732.5	24	22.06	1	20.94	2
		1720	24	22.09	1	21.06	2
Band 5							
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
1.4 MHz	1RB High (5)	848.3	24	23.34	0	22.31	1
		836.5	24	23.33	0	22.59	1
		824.7	24	23.40	0	22.45	1
	1RB Middle (3)	848.3	24	23.46	0	22.37	1
		836.5	24	23.51	0	22.66	1
		824.7	24	23.45	0	22.50	1
	1RB Low (0)	848.3	24	23.48	0	22.44	1
		836.5	24	23.47	0	22.61	1
		824.7	24	23.27	0	22.35	1
	3RB High (3)	848.3	24	23.42	0	22.32	1
		836.5	24	23.15	0	22.43	1
		824.7	24	23.48	0	22.58	1
	3RB Middle (1)	848.3	24	23.43	0	22.39	1
		836.5	24	23.26	0	22.49	1
		824.7	24	23.46	0	22.48	1
	3RB	848.3	24	23.44	0	22.46	1

	Low (0)	836.5	24	23.28	0	22.45	1
		824.7	24	23.45	0	22.35	1
	6RB (0)	848.3	24	22.42	1	21.42	2
		836.5	24	22.27	1	21.31	2
		824.7	24	22.35	1	21.37	2
3 MHz	1RB High (14)	847.5	24	23.43	0	22.50	1
		836.5	24	23.17	0	22.23	1
		825.5	24	23.32	0	22.31	1
	1RB Middle (7)	847.5	24	23.48	0	22.49	1
		836.5	24	23.07	0	22.11	1
		825.5	24	23.35	0	22.32	1
	1RB Low (0)	847.5	24	23.51	0	22.61	1
		836.5	24	23.23	0	22.32	1
		825.5	24	23.40	0	22.35	1
	8RB High (7)	847.5	24	22.47	1	21.53	2
		836.5	24	22.34	1	21.43	2
		825.5	24	22.45	1	21.42	2
	8RB Middle (4)	847.5	24	22.46	1	21.52	2
		836.5	24	22.30	1	21.27	2
		825.5	24	22.47	1	21.40	2
	8RB Low (0)	847.5	24	22.48	1	21.54	2
		836.5	24	22.24	1	21.22	2
		825.5	24	22.39	1	21.36	2
	15RB (0)	847.5	24	22.47	1	21.36	2
		836.5	24	22.29	1	21.28	2
		825.5	24	22.45	1	21.43	2
5 MHz	1RB High (24)	846.5	24	23.27	0	22.37	1
		836.5	24	23.33	0	22.38	1
		826.5	24	23.40	0	22.63	1
	1RB Middle (12)	846.5	24	23.30	0	22.39	1
		836.5	24	23.26	0	22.34	1
		826.5	24	23.48	0	22.58	1
	1RB Low (0)	846.5	24	23.45	0	22.45	1
		836.5	24	23.55	0	22.69	1
		826.5	24	23.43	0	22.66	1
	12RB High (13)	846.5	24	22.43	1	21.46	2
		836.5	24	22.33	1	21.33	2
		826.5	24	22.44	1	21.48	2
	12RB Middle (6)	846.5	24	22.45	1	21.53	2
		836.5	24	22.21	1	21.21	2
		826.5	24	22.46	1	21.52	2

	12RB Low (0)	846.5	24	22.47	1	21.55	2	
		836.5	24	22.27	1	21.28	2	
		826.5	24	22.48	1	21.53	2	
	25RB (0)	846.5	24	22.46	1	21.37	2	
		836.5	24	22.24	1	21.35	2	
		826.5	24	22.41	1	21.51	2	
10 MHz	1RB High (49)	844.0	24	23.30	0	22.38	1	
		836.5	24	23.28	0	22.34	1	
		829.0	24	23.16	0	22.57	1	
	1RB Middle (24)	844.0	24	23.34	0	22.43	1	
		836.5	24	23.45	0	22.44	1	
		829.0	24	23.43	0	22.75	1	
	1RB Low (0)	844.0	24	23.44	0	22.32	1	
		836.5	24	23.56	0	22.66	1	
		829.0	24	23.36	0	22.73	1	
	25RB High (25)	844.0	24	22.48	1	21.38	2	
		836.5	24	22.31	1	21.30	2	
		829.0	24	22.27	1	21.28	2	
	25RB Middle (12)	844.0	24	22.41	1	21.30	2	
		836.5	24	22.19	1	21.33	2	
		829.0	24	22.32	1	21.31	2	
	25RB Low (0)	844.0	24	22.37	1	21.26	2	
		836.5	24	22.25	1	21.36	2	
		829.0	24	22.44	1	21.46	2	
	50RB (0)	844.0	24	22.41	1	21.40	2	
		836.5	24	22.26	1	21.28	2	
		829.0	24	22.36	1	21.34	2	
	Band 17							
	Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM	
		RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR
	5 MHz	1RB High (24)	713.5	24	23.01	0	22.23	1
			710	24	23.25	0	22.37	1
			706.5	24	23.04	0	22.05	1
1RB Middle (12)		713.5	24	23.15	0	22.31	1	
		710	24	22.94	0	22.23	1	
		706.5	24	23.16	0	22.35	1	
1RB Low (0)		713.5	24	23.00	0	22.07	1	
		710	24	23.48	0	22.26	1	
		706.5	24	23.09	0	22.14	1	
12RB High (13)		713.5	24	22.18	1	21.24	2	
		710	24	22.14	1	21.22	2	
		706.5	24	22.19	1	21.33	2	

	12RB Middle (6)	713.5	24	22.25	1	21.28	2
		710	24	22.22	1	21.23	2
		706.5	24	22.12	1	21.29	2
	12RB Low (0)	713.5	24	22.10	1	21.10	2
		710	24	22.08	1	21.06	2
		706.5	24	22.27	1	21.42	2
	25RB (0)	713.5	24	22.24	1	21.25	2
		710	24	22.16	1	21.20	2
		706.5	24	22.14	1	21.26	2
10 MHz	1RB High (49)	711	24	23.06	0	22.20	1
		710	24	23.27	0	22.31	1
		709	24	23.13	0	22.19	1
	1RB Middle (24)	711	24	22.76	0	22.10	1
		710	24	23.75	0	22.67	1
		709	24	23.02	0	22.20	1
	1RB Low (0)	711	24	23.26	0	22.48	1
		710	24	23.00	0	22.33	1
		709	24	23.50	0	22.53	1
	25RB High (25)	711	24	22.13	1	21.00	2
		710	24	22.02	1	21.12	2
		709	24	22.06	1	21.06	2
	25RB Middle (12)	711	24	22.14	1	21.05	2
		710	24	22.12	1	21.23	2
		709	24	22.10	1	21.26	2
	25RB Low (0)	711	24	22.18	1	21.10	2
		710	24	22.27	1	21.28	2
		709	24	22.29	1	21.46	2
	50RB (0)	711	24	22.13	1	21.13	2
		710	24	22.11	1	21.08	2
		709	24	22.17	1	21.23	2

11.6 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78 (2480MHz)
GFSK	7.22	7.19	6.94

The average conducted power for Wi-Fi is as following:

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	17.57	17.49	17.32	17.05
6	17.20	/	/	/
11	17.51	/	/	/

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	15.17	14.93	14.72	14.38	14.03	12.45	11.98	10.76
6	14.65	/	/	/	/	/	/	/
11	14.95	/	/	/	/	/	/	/

802.11n (dBm) - HT20 (2.4G)

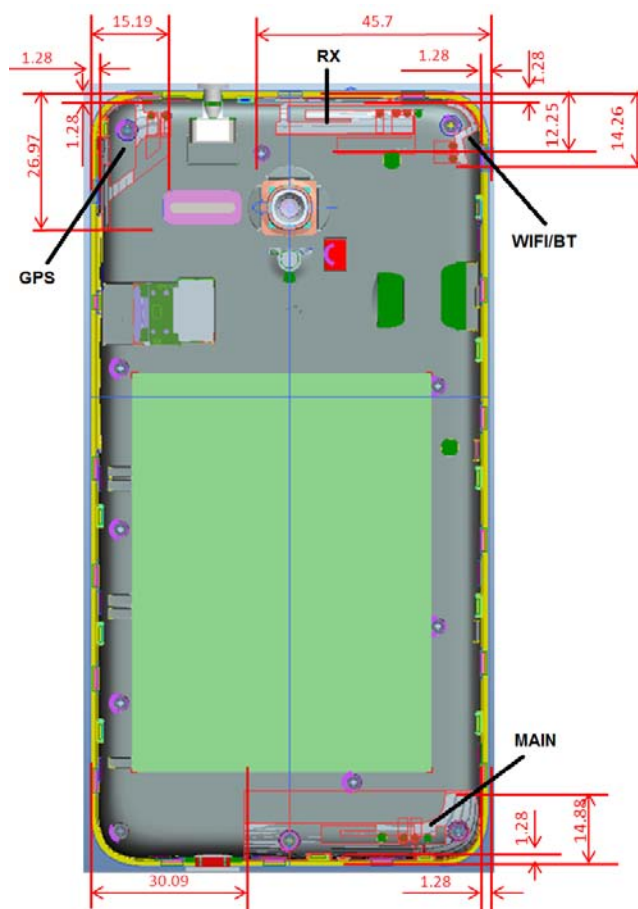
Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	13.09	12.67	12.31	11.98	11.45	9.99	8.79	8.57
6	12.61	/	/	/	/	/	/	/
11	12.89	/	/	/	/	/	/	/

12 Simultaneous TX SAR Considerations

12.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter. For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

12.2 Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR v01, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna	Yes	Yes	Yes	No	No	Yes
WLAN antenna	Yes	Yes	Yes	No	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Table 12.1: Standalone SAR test exclusion considerations

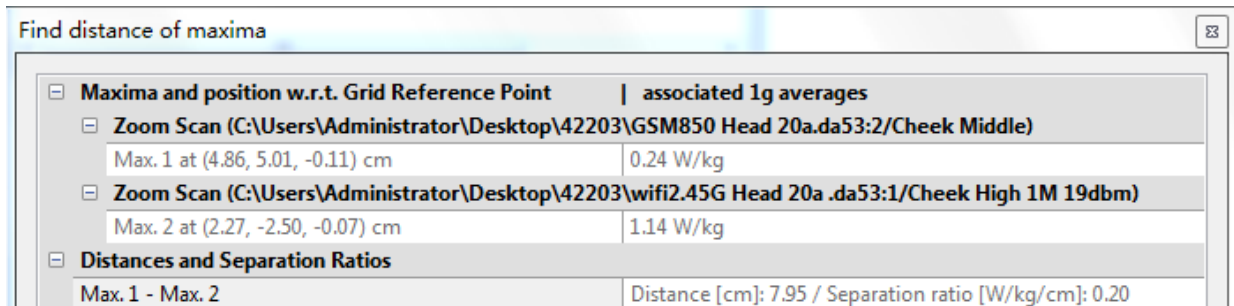
Band/Mode	F(GHz)	Position	SAR test exclusion threshold (mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	9	7.94	Yes
		Body	19.20	9	7.94	Yes
2.4GHz WLAN 802.11 b	2.45	Head	9.58	18.5	70.79	No
		Body	19.17	18.5	70.79	No

13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WLAN

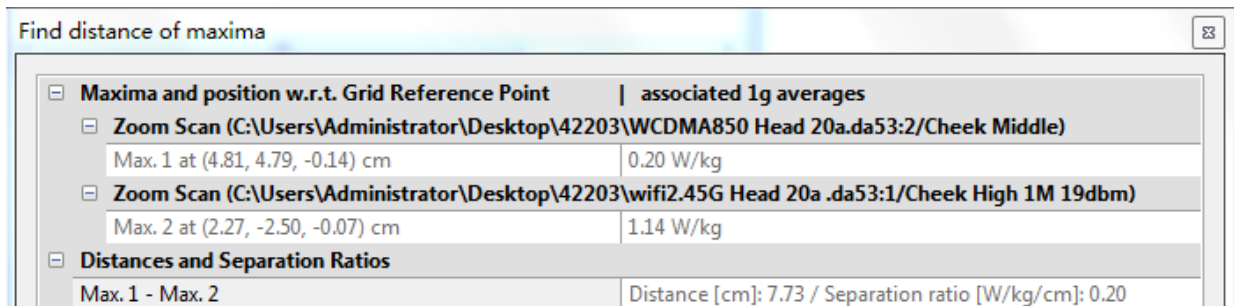
	Band	Position	Main antenna	WLAN	Sum	Distance (mm)	Ratio
Maximum reported SAR value for Head	WCDMA 1700	Left hand, Touch cheek	0.47	0.61	1.08	/	/
	GSM 850	Right hand, Touch cheek	0.27	1.46	1.73	79.5	0.03
	WCDMA 850		0.25		1.71	77.3	0.03
	WCDMA 1700		0.23		1.69	96.9	0.02
	LTE Band 4		0.18		1.64	98.8	0.02
	LTE Band 5_1RB		0.23		1.69	74.7	0.03
	LTE Band 5_25RB		0.17		1.63	79.5	0.03
	LTE Band 17		0.16		1.62	79.9	0.03
Maximum reported SAR value for Body	LTE Band 2	Rear 10mm	0.77	0.46	1.23	/	/
	WCDMA 1900	Bottom 10mm	1.01	/	1.01	/	/
	WCDMA 1900	Bottom 15mm	1.36	/	1.36	/	/

According to the KDB 447498 D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by $(SAR_1 + SAR_2)^{1.5}/R_i$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.



Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point associated 1g averages	
Zoom Scan (C:\Users\Administrator\Desktop\42203\GSM850 Head 20a.da53:2\Cheek Middle)	
Max. 1 at (4.86, 5.01, -0.11) cm	0.24 W/kg
Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1\Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 7.95 / Separation ratio [W/kg/cm]: 0.20

Picture 13.1 Distance evaluation for GSM 850 and WLAN



Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point associated 1g averages	
Zoom Scan (C:\Users\Administrator\Desktop\42203\WCDMA850 Head 20a.da53:2\Cheek Middle)	
Max. 1 at (4.81, 4.79, -0.14) cm	0.20 W/kg
Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1\Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 7.73 / Separation ratio [W/kg/cm]: 0.20

Picture 13.2 Distance evaluation for WCDMA 850 and WLAN

Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point	associated 1g averages
Zoom Scan (C:\Users\Administrator\Desktop\42203\W1700 Head 29a.da53:1/Cheek Middle 21A)	
Max. 1 at (5.50, 6.63, 0.24) cm	0.19 W/kg
Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1/Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 9.69 / Separation ratio [W/kg/cm]: 0.16

Picture 13.3 Distance evaluation for WCDMA 1700 and WLAN

Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point	associated 1g averages
Zoom Scan (D:\MII2015\I15Z42203\LTE-Band 4 Head 29a.da53:2/Cheek Middle 1RB_Low)	
Max. 1 at (5.67, 6.77, 0.31) cm	0.15 W/kg
Zoom Scan (D:\MII2015\I15Z42203\wifi2.45G Head 20a.da53:1/Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 9.88 / Separation ratio [W/kg/cm]: 0.15

Picture 13.4 Distance evaluation for LTE Band 4 and WLAN

Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point	associated 1g averages
Zoom Scan (C:\Users\Administrator\Desktop\42203\LTE Band 5 Head 29a.da53:0/Cheek Middle 1RB_Low)	
Max. 1 at (5.02, 4.45, -0.13) cm	0.21 W/kg
Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1/Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 7.47 / Separation ratio [W/kg/cm]: 0.21

Picture 13.5 Distance evaluation for LTE Band 5_1RB and WLAN

Find distance of maxima	
Maxima and position w.r.t. Grid Reference Point	associated 1g averages
Zoom Scan (C:\Users\Administrator\Desktop\42203\LTE Band 5 Head 29a.da53:2/Cheek High 25RB_High)	
Max. 1 at (4.85, 5.02, -0.12) cm	0.15 W/kg
Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1/Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 7.95 / Separation ratio [W/kg/cm]: 0.18

Picture 13.6 Distance evaluation for LTE Band 5_25RB and WLAN

Find distance of maxima	
☐ Maxima and position w.r.t. Grid Reference Point	associated 1g averages
☐ Zoom Scan (C:\Users\Administrator\Desktop\42203\LTE Band 17 Head 29a.da53:0/Cheek Middle 1RB_Middle)	
Max. 1 at (5.27, 4.90, -0.06) cm	0.15 W/kg
☐ Zoom Scan (C:\Users\Administrator\Desktop\42203\wifi2.45G Head 20a.da53:1/Cheek High 1M 19dbm)	
Max. 2 at (2.27, -2.50, -0.07) cm	1.14 W/kg
☐ Distances and Separation Ratios	
Max. 1 - Max. 2	Distance [cm]: 7.99 / Separation ratio [W/kg/cm]: 0.18

Picture 13.7 Distance evaluation for LTE Band 17 and WLAN

Table 13.2: The sum of reported SAR values for main antenna and Bluetooth

	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Left hand, Touch cheek	0.47	0.33	0.80
Highest reported SAR value for Body	Rear 10mm	0.77	0.17	0.94
	Bottom 10mm	1.01	/	1.01
	Bottom 15mm	1.36	/	1.36

BT* - Estimated SAR for Bluetooth (see the table 13.3)

Table 13.3: Estimated SAR for Bluetooth

Position	F (GHz)	Distance (mm)	Upper limit of power *		Estimated _{1g} (W/kg)
			dBm	mW	
Head	2.441	5	9	7.94	0.33
Body	2.441	10	9	7.94	0.17

* - Maximum possible output power declared by manufacturer

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW)/(min. test separation

distance,mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

Conclusion:

According to the above tables, the sum of reported SAR values is > 1.6W/kg, but the SAR to peak location separation ratio < 0.04. So the simultaneous transmission SAR with volume scans is not required.

14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom.

The distance is 10mm for normal bands and AP ON, 15mm for AP OFF and just applied to the condition of body worn accessory.

It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-gSAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or >1.2W/kg.

The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{\text{Target}} - P_{\text{Measured}})/10}$$

Where P_{Target} is the power of manufacturing upper limit;

P_{Measured} is the measured power in chapter 11.

Table 14.1: Duty Cycle

Duty Cycle	
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for AP OFF	1:2
GPRS&EGPRS for AP ON	1:4
WCDMA & LTE	1:1

14.1 SAR results for Fast SAR

Table 14.1-1: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 23.0 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
848.8	251	Left	Touch	Fig.1	33.13	33.5	0.211	0.23	0.274	0.30	-0.03
836.6	190	Left	Touch	/	32.99	33.5	0.175	0.20	0.252	0.28	0.10
824.2	128	Left	Touch	/	32.95	33.5	0.164	0.19	0.236	0.27	0.08
836.6	190	Left	Tilt	/	32.99	33.5	0.104	0.12	0.148	0.17	0.14
836.6	190	Right	Touch	/	32.99	33.5	0.191	0.21	0.244	0.27	0.16
836.6	190	Right	Tilt	/	32.99	33.5	0.096	0.11	0.137	0.15	0.14