

Applicant: Apple Inc.

FCC ID: BCG-E2380A

Correspondence Reference Number: 39568

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Date: March 8, 2011

1. Power Back-off

The power back-off of 1.5 dB applies only to the following configurations:

- Band: GSM850 and EGSM900
- Modulation: GMSK (CS1 – CS4 and MCS1 -- MCS 4)
- Mode: GPRS and EGPRS
- Number of uplink slots: 2

There is no power back-off for MCS 5-9 (8PSK).

The testing was not done for MCS 1-4 as the power back-off is the same as GPRS CS1-4. See test results for GPRS CS1 in Section 9.1 from Report 11U13664-1A, dated February 21, 2011.

2. Simultaneous SAR Test Data Summary

2.1 Simultaneous Transmission – Head

Test Position	Band	Cellular	Wi-Fi	Σ 1-g SAR (W/kg)
Head (LHS Touch)	UMTS Band V	1.00	0.651	1.651*
Head (RHS Touch)	UMTS Band V	0.833	0.583	1.416
Head (LHS Touch)	UMTS Band II	1.17	0.651	1.821*
Head (RHS Touch)	UMTS Band II	1.17	0.583	1.753*
Head (LHS Tilt)	UMTS Band V	0.433	0.871	1.304
Head (RHS Tilt)	UMTS Band V	0.45	0.698	1.148
Head (LHS Tilt)	UMTS Band II	0.411	0.871	1.282
Head (RHS Tilt)	UMTS Band II	0.549	0.698	1.247

NOTE:

- “LHS” means Left-Hand Side; “RHS” means Right-Hand Side.
- GSM Voice call with Hotspot Mode is not a supported configuration.
- All combinations in Hotspot Mode against the head where Σ 1-g SAR is > 1.6 W/kg are represented in the table above.

*Antenna Pair SAR to Peak Location Separation Ratio Σ 1-g SAR > 1.6 W/kg:

Σ 1-g SAR (W/kg)	Separation distance (cm) 3G-to-WiFi antenna	Antenna Pair SAR to Peak Location Separation Ratio
1.651	7.34	0.22
1.821	7.02	0.26
1.753	7.04	0.25

NOTE: This table indicates the actual measured distance between peak SAR locations.

The following are the detailed test results taken from Section 10 of Report 10U13135-2C1, dated June 17, 2010:

UMTS Band V

Left Hand Side

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Touch	4132	4357	826.4	0.891	0.647
			4183	4408	836.6	1.000	0.729
			4233	4458	846.6	0.998	0.723
		Tilt (15°C)	4132	4357	826.4		
			4183	4408	836.6	0.433	0.332
			4233	4458	846.6		

Right Hand Side

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Touch	4132	4357	826.4	0.642	0.457
			4183	4408	836.6	0.833	0.587
			4233	4458	846.6	0.802	0.568
		Tilt (15°C)	4132	4357	826.4		
			4183	4408	836.6	0.450	0.341
			4233	4458	846.6		

UMTS Band II

Left Hand Side

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Touch	9262	9662	1850.2	1.110	0.720
			9400	9800	1880.0	1.090	0.711
			9538	9938	1907.6	1.170	0.756
		Tilt (15°C)	9262	9662	1850.2		
			9400	9800	1880.0	0.411	0.261
			9538	9938	1907.6		

Right Hand Side

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Touch	9262	9662	1850.2	1.140	0.771
			9400	9800	1880.0	1.130	0.756
			9538	9938	1907.6	1.170	0.786
		Tilt (15°C)	9262	9662	1850.2		
			9400	9800	1880.0	0.549	0.335
			9538	9938	1907.6		

WiFi**Left Hand Side**

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
2.4 GHz	802.11b	Touch	1	2412		
			6	2437	0.651	0.296
			11	2462		
		Tilt (15°C)	1	2412	0.741	0.326
			6	2437	0.826	0.363
			11	2462	0.871	0.385

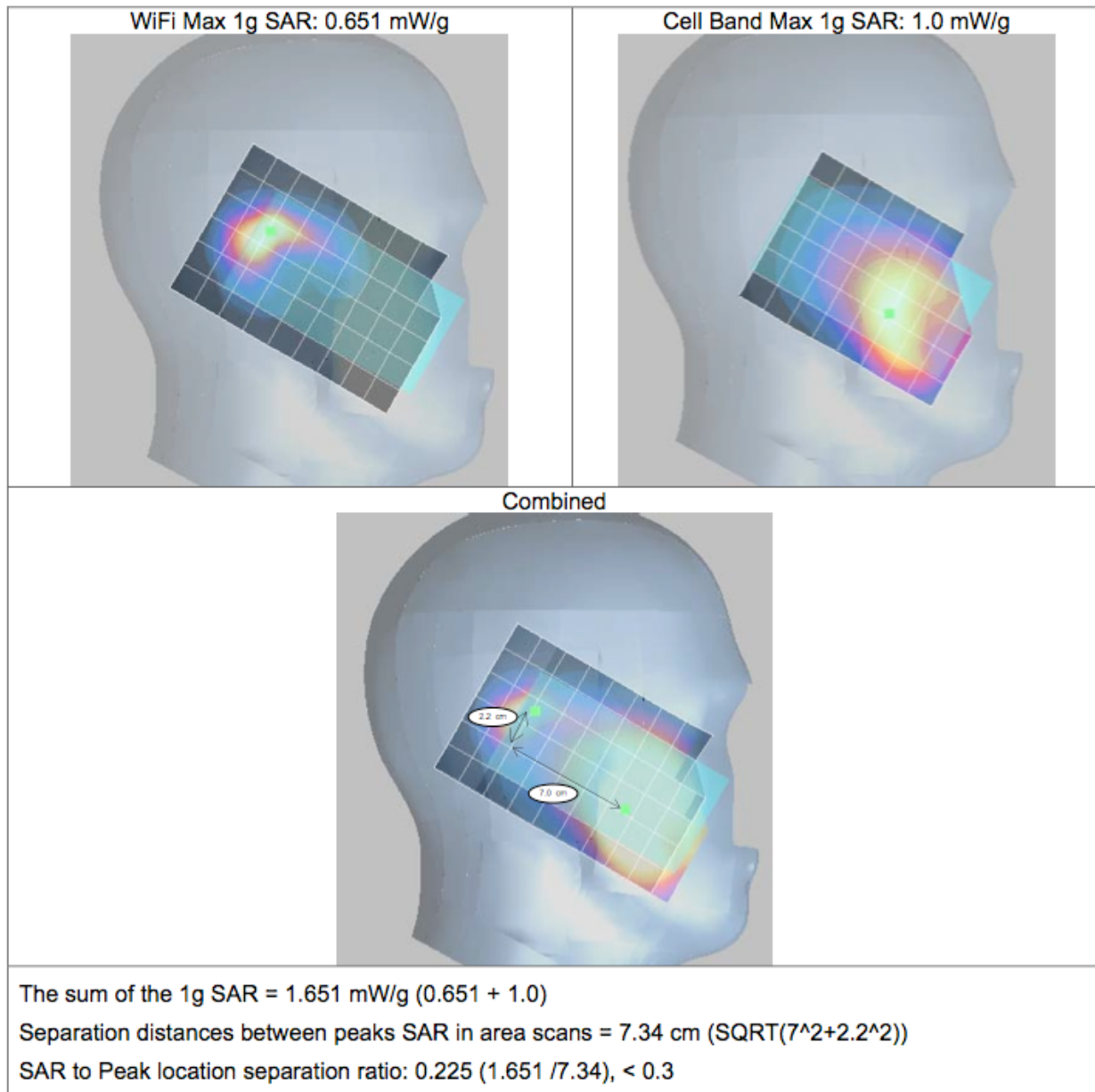
Right Hand Side

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
2.4 GHz	802.11b	Touch	1	2412		
			6	2437	0.583	0.263
			11	2462		
		Tilt (15°C)	1	2412		
			6	2437	0.698	0.311
			11	2462		

The following are plots based on the test results reported in Section 12 of Report 10U13135-2C1, dated June 17, 2010:

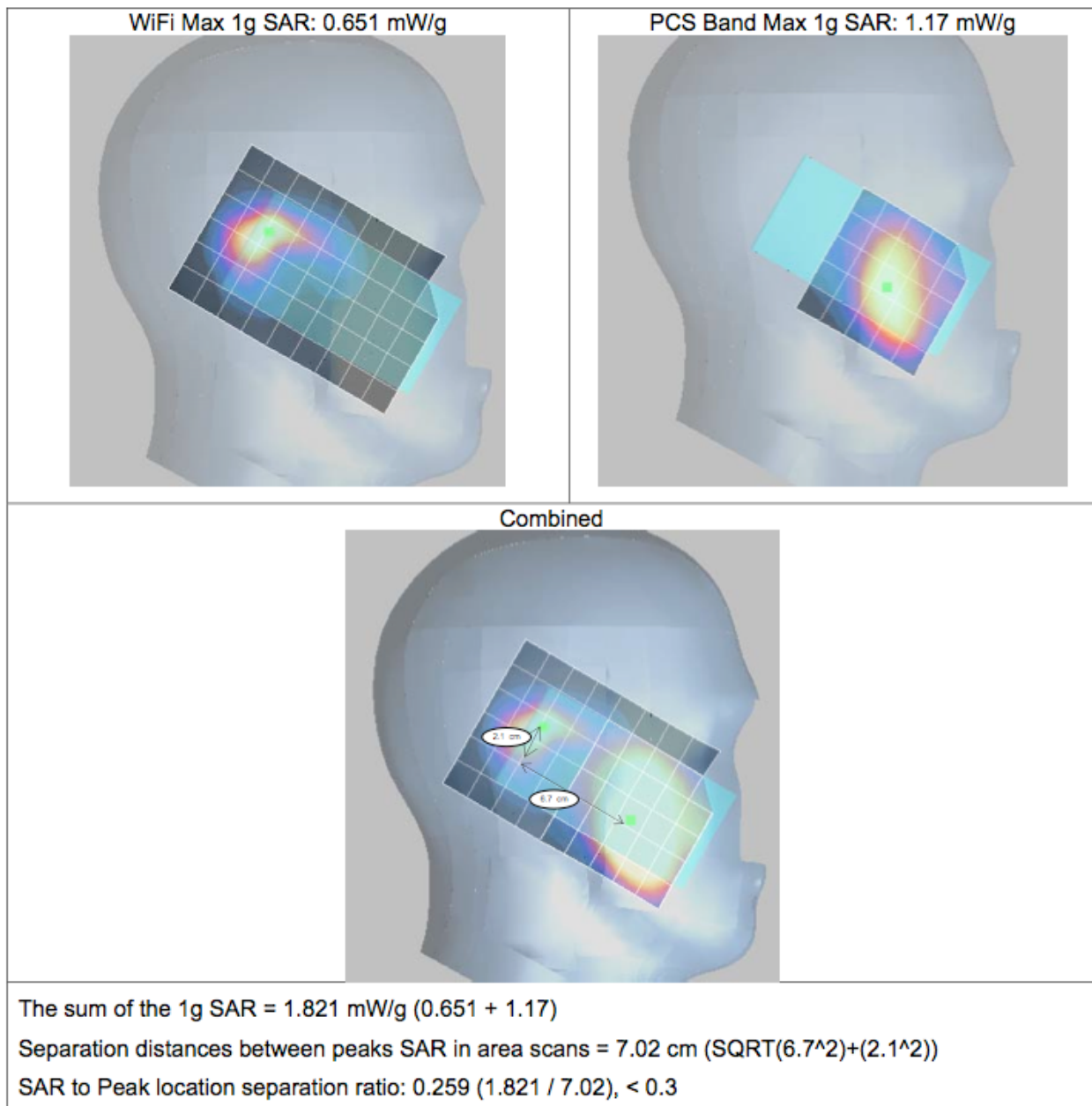
UMTS Band V

Separation distances between Peaks SAR in area scans for Head (LHS Touch) position



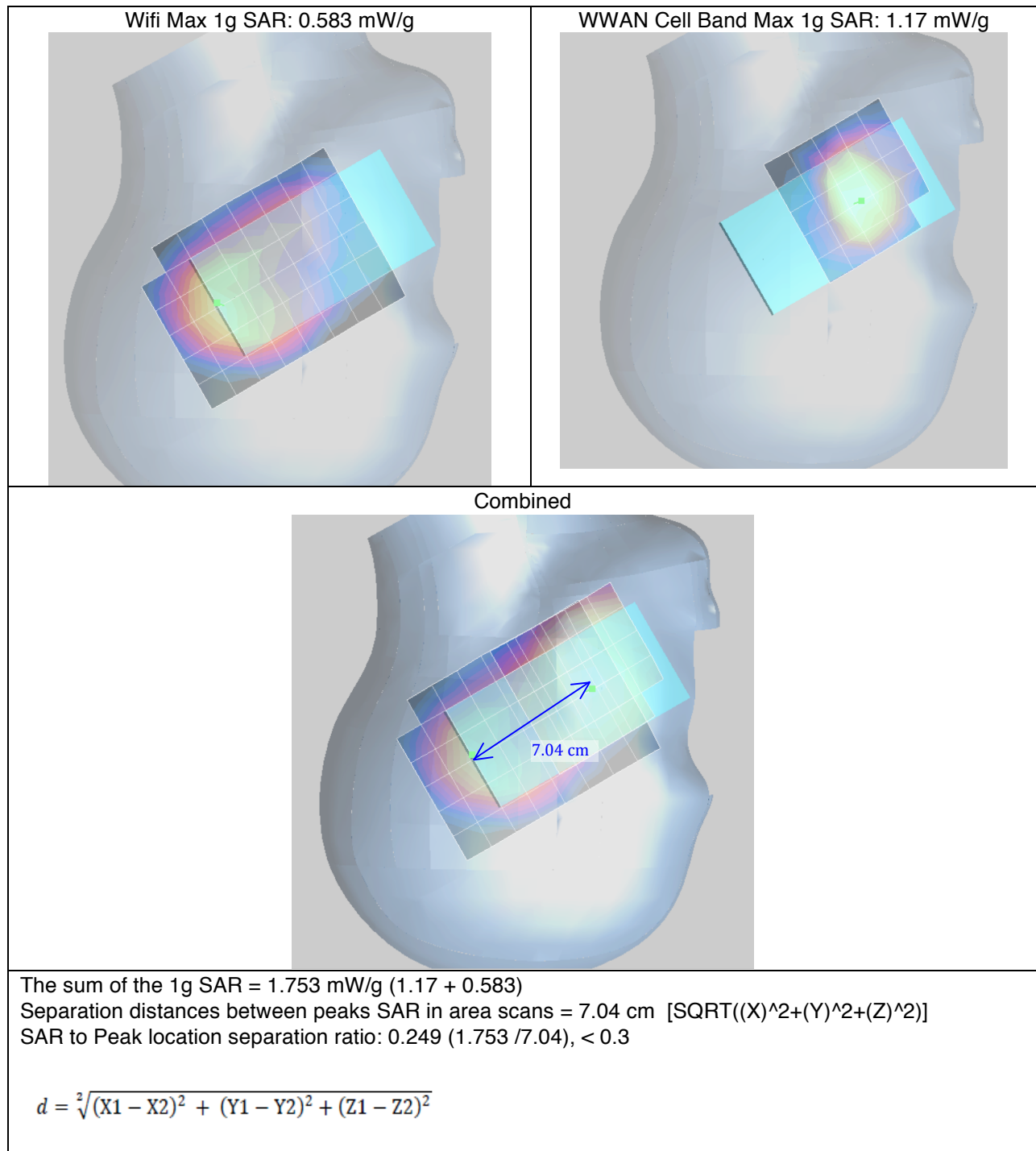
UMTS Band II

Separation distances between Peaks SAR in area scans for Head (LHS Touch) position



UMTS Band II

Separation distances between Peaks SAR in area scans for Head (RHS Touch) position



2.2 Simultaneous Transmission – Body-worn at 15mm Separation Distance

Test Position	Band	Cellular	Wi-Fi	Σ 1-g SAR (W/kg)
Body (LCD Down)	GPRS850 2 slots	1.11	0.073	1.183
Body (LCD Down)	UMTS Band II	0.433	0.073	0.506

NOTE:

- Simultaneous transmission SAR is not required for body-worn accessory or Wi-Fi Hotspot Mode because Σ 1-g SAR < 1.6 W/kg.
- The above table reflects the worst-case SAR for body-worn Hotspot Mode and under no conditions will Σ 1-g SAR be > 1.6 W/kg.

The following are the detailed test results taken from Section 10 of Report 10U13135-2C1, dated June 17, 2010:

GSM850

Body with 1.5 cm separation distance

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GSM	Face up	190	836.6	0.760	0.559
		Face down	128	824.2	0.740	0.540
			190	836.6	0.824	0.603
			251	848.8	0.838	0.615
		w/ headset	251	848.8	0.586	0.407
	GPRS 1 slots	Face up	190	836.6	0.620	0.456
		Face down	190	836.6	0.635	0.464
	GPRS 2 slots	Face up	128	824.2	0.937	0.688
			190	836.6	0.994	0.732
			251	848.8	1.020	0.751
		Face down	128	824.2	0.953	0.693
			190	836.6	1.050	0.766
			251	848.8	1.110	0.809
		w/ headset	251	848.8	0.871	0.618
	EGPRS 1 slots	Face up	190	836.6	0.193	0.141
		Face down	190	836.6	0.198	0.143
	EGPRS 2 slots	Face up	190	836.6	0.378	0.280
		Face down	190	836.6	0.392	0.286
		w/ headset	190	836.6	0.229	0.161

GSM1900**Body with 1.5 cm separation distance**

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GSM	Face up	661	1880.0	0.271	0.170
		w/ headset	661	1880.0	0.200	0.131
		Face down	661	1880.0	0.267	0.174
	GPRS 1 slots	Face up	661	1880.0	0.255	0.163
		Face down	661	1880.0	0.263	0.173
	GPRS 2 slots	Face up	661	1880.0	0.321	0.211
		Face down	661	1880.0	0.346	0.227
		w/ headset	661	1880.0	0.281	0.177
	EGPRS 1 slots	Face up	661	1880.0	0.090	0.060
		Face down	661	1880.0	0.096	0.063
	EGPRS 2 slots	Face up	661	1880.0	0.183	0.121
		Face down	661	1880.0	0.195	0.127
		w/ headset	661	1880.0	0.162	0.107

UMTS Band V**Body with 1.5 cm separation distance**

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Face up	4132	4357	826.4		
			4183	4408	836.6	0.728	0.536
			4233	4458	846.6		
		Face down	4132	4357	826.4		
			4183	4408	836.6	0.774	0.567
			4233	4458	846.6		
		w/ headset	4233	4458	846.6	0.540	0.385

UMTS Band II**Body with 1.5 cm separation distance**

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Face up	9262	9662	1850.2		
			9400	9800	1880.0	0.424	0.275
			9538	9938	1907.6		
		Face down	9262	9662	1850.2		
			9400	9800	1880.0	0.433	0.283
			9538	9938	1907.6		
		w/ headset	9400	9800	1880.0	0.331	0.219

WiFi

Body with 1.5 cm separation distance

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
2.4 GHz	802.11b	Face up	1	2412		
			6	2437	0.055	0.030
			11	2462		
		Face down	1	2412		
			6	2437	0.073	0.041
			11	2462		
		w/ headset	6	2437	0.072	0.040

2.3 Simultaneous Transmission – Hotspot Mode at 10mm Separation Distance

Test Position	Band	Cellular	Wi-Fi	Σ 1-g SAR (W/kg)
Left edge	UMTS Band V	1.03	0.047	1.077
Front side	UMTS Band II	0.661	0.121	0.782
Back side	GPRS850 2 slots	0.984	0.142	1.126
Back side	UMTS Band II	0.660	0.142	0.802

NOTE:

- Simultaneous transmission SAR is not required for body-worn accessory or Wi-Fi Hotspot Mode because Σ 1-g SAR is < 1.6 W/kg.
- The above table reflects the worst-case SAR for Hotspot Mode and under no conditions will Σ 1-g SAR be > 1.6 W/kg.

The following are the detailed test results taken from Section 10 of Report 11U13664-1A, dated February 21, 2011:

GSM850

Body with 1.0 cm separation distance (Wireless routers incorporated in device)

Test position	Mode	UL Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Front side (Face up)	GPRS 2 slots	128	824.2	0.730	0.532
		190	836.6	0.825	0.606
		251	848.8	0.889	0.661
	GPRS 1 slots	190	836.6	0.757	0.556
Back side (Face down)	GPRS 2 slots	128	824.2	0.790	0.567
		190	836.6	0.901	0.652
		251	848.8	0.984	0.720
	GPRS 1 slots	190	836.6	0.796	0.575
	EGPRS 2 slots	190	836.6	0.506	0.361
	EGPRS 1 slots	190	836.6	0.253	0.184
Left edge	GPRS 2 slots	190	836.6	0.703	0.486
	GPRS 1 slots	190	836.6	0.622	0.431
Right edge	GPRS 2 slots	190	836.6	0.409	0.270
	GPRS 1 slots	190	836.6	0.382	0.253
Bottom edge	GPRS 2 slots	190	836.6	0.236	0.135
	GPRS 1 slots	190	836.6	0.207	0.119

GSM1900

Body with 1.0 cm separation distance (Wireless routers incorporated in device)

Test position	Mode	UL Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Front side (Face up)	GPRS 2 slots	661	1880.0	0.552	0.333
	GPRS 1 slots	661	1880.0	0.408	0.248
	EGPRS 2 slots	661	1880.0	0.301	0.181
	EGPRS 1 slots	661	1880.0	0.145	0.092
Back side (Face down)	GPRS 2 slots	661	1880.0	0.539	0.321
	GPRS 1 slots	661	1880.0	0.394	0.234
Left edge	GPRS 2 slots	661	1880.0	0.524	0.281
	GPRS 1 slots	661	1880.0	0.385	0.207
Right edge	GPRS 2 slots	661	1880.0	0.247	0.138
	GPRS 1 slots	661	1880.0	0.188	0.105
Bottom edge	GPRS 2 slots	661	1880.0	0.333	0.186
	GPRS 1 slots	661	1880.0	0.249	0.138

UMTS Band V

Body with 1.0 cm separation distance (Wireless routers incorporated in device)

Test position	Mode	UL Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Front side (Face up)	R99 12.2kbps RMC	4132	826.4		
		4183	836.6	0.795	0.584
		4233	846.6		
Back side (Face down)	R99 12.2kbps RMC	4132	826.4	0.719	0.516
		4183	836.6	0.862	0.626
		4233	846.6	0.820	0.592
Left edge	R99 12.2kbps RMC	4132	826.4	0.893	0.616
		4183	836.6	0.917	0.629
		4233	846.6	1.030	0.705
Right edge	R99 12.2kbps RMC	4132	826.4		
		4183	836.6	0.601	0.402
		4233	846.6		
Bottom edge	R99 12.2kbps RMC	4132	826.4		
		4183	836.6	0.239	0.136
		4233	846.6		

UMTS Band II

Body with 1.0 cm separation distance (Wireless routers incorporated in device)

Test position	Mode	UL Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Front side (Face up)	R99 12.2kbps RMC	9262	1850.2		
		9400	1880.0	0.661	0.399
		9538	1907.6		
Back side (Face down)	R99 12.2kbps RMC	9262	1850.2		
		9400	1880.0	0.660	0.401
		9538	1907.6		
Left edge	R99 12.2kbps RMC	9262	1850.2		
		9400	1880.0	0.607	0.327
		9538	1907.6		
Right edge	R99 12.2kbps RMC	9262	1850.2		
		9400	1880.0	0.265	0.150
		9538	1907.6		
Bottom edge	R99 12.2kbps RMC	9262	1850.2		
		9400	1880.0	0.404	0.221
		9538	1907.6		

WiFi

Body with 1.0 cm separation distance (Wireless routers incorporated in device)

Test position	Mode	UL Ch No.	f (MHz)	SAR (mW/g)	
				1-g	10-g
Front side (Face up)	802.11b	1	2412		
		6	2437	0.121	0.060
		11	2462		
Back side (Face down)	802.11b	1	2412		
		6	2437	0.142	0.075
		11	2462		
Left edge	802.11b	1	2412		
		6	2437	0.047	0.024
		11	2462		
Right edge	802.11b	1	2412		
		6	2437	0.038	0.020
		11	2462		
Top edge	802.11b	1	2412		
		6	2437	0.121	0.061
		11	2462		