

Applicant: Apple Inc.

FCC ID: BCG-E2380B

Correspondence Reference Number: 39567

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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 8.1 from Report SAR_APPLE-072-11001_FCC_rev5, dated February 23, 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	0.987	0.695	1.682*
Head (RHS Touch)	UMTS Band V	0.850	0.554	1.404
Head (LHS Touch)	UMTS Band II	1.170	0.695	1.865*
Head (RHS Touch)	UMTS Band II	1.140	0.554	1.694*
Head (LHS Tilt)	UMTS Band V	0.447	0.881	1.362
Head (RHS Tilt)	UMTS Band V	0.481	0.733	1.214
Head (LHS Tilt)	UMTS Band II	0.418	0.881	1.299
Head (RHS Tilt)	UMTS Band II	0.531	0.733	1.264

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
1.682	7.15	0.24
1.865	6.96	0.27
1.694	7.14	0.24

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 10U13135-1C3, 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	0.918	0.661
			4183	4408	836.6	0.973	0.720
			4233	4458	846.6	0.987	0.731
		Tilt (15°C)	4132	4357	826.4		
			4183	4408	836.6	0.447	0.340
			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	0.674	0.507
			4183	4408	836.6	0.833	0.625
			4233	4458	846.6	0.850	0.639
		Tilt (15°C)	4132	4357	826.4		
			4183	4408	836.6	0.481	0.363
			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	1.170	0.770
			9400	9800	1880.0	1.150	0.750
			9538	9938	1907.6	1.150	0.749
		Tilt (15°C)	9262	9662	1850.2		
			9400	9800	1880.0	0.418	0.263
			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	0.784
			9400	9800	1880.0	1.090	0.741
			9538	9938	1907.6	1.140	0.770
		Tilt (15°C)	9262	9662	1850.2		
			9400	9800	1880.0	0.531	0.322
			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	0.695	0.305
			11	2462		
		Tilt (15°C)	1	2412	0.701	0.306
			6	2437	0.852	0.368
			11	2462	0.881	0.375

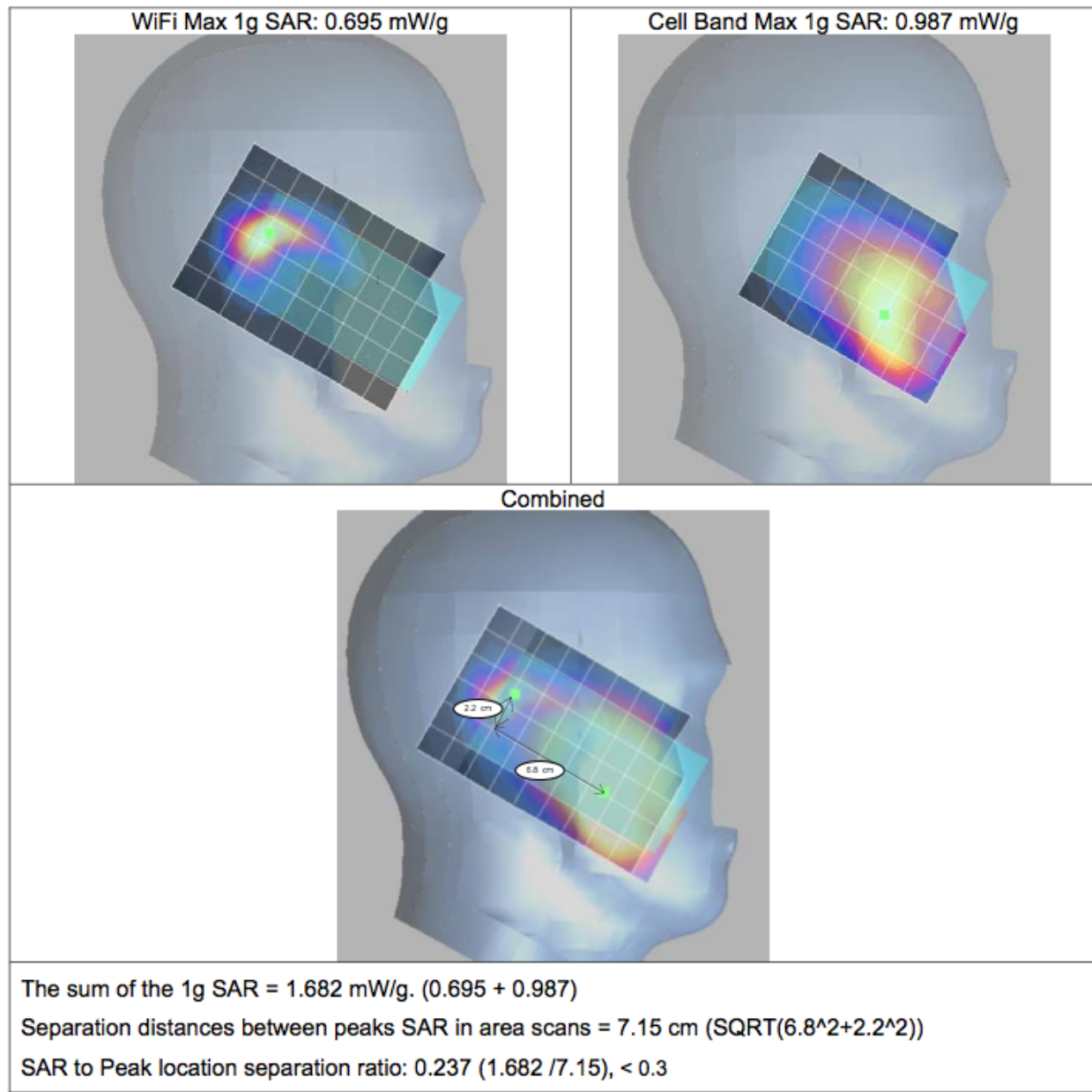
Right Hand Side

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	0.554	0.248
			11	2462		
		Tilt (15°C)	1	2412		
			6	2437	0.733	0.321
			11	2462		

The following are plots based on the test results reported in Section 12 of Report 10U13135-1C3, dated June 17, 2010:

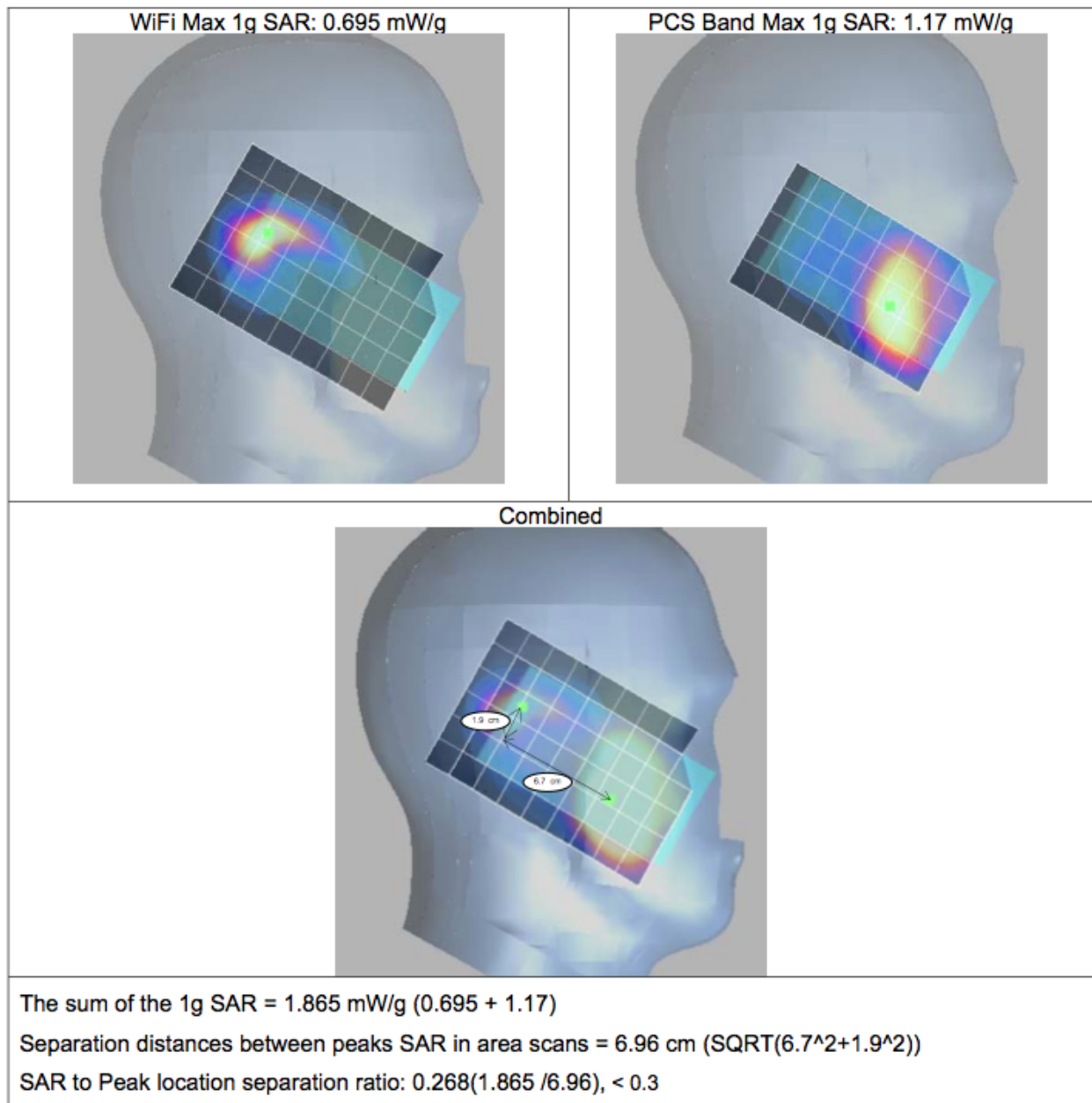
UMTS Band V

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



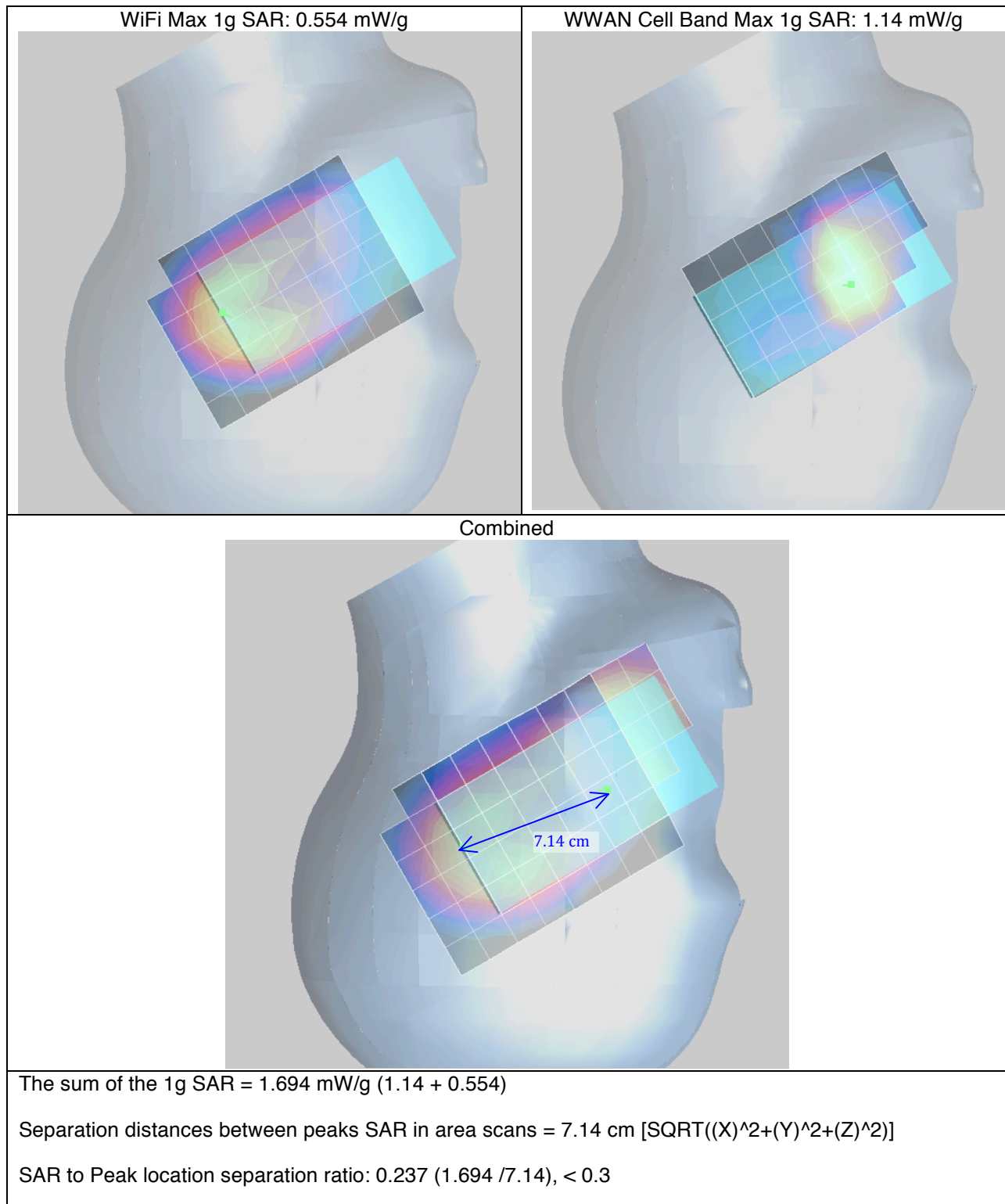
UMTS Band II

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	0.067	1.177
Body (LCD Down)	UMTS Band II	0.424	0.067	0.491

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 10U13135-1C3, 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	0.728	0.533
		Face down	128	824.2	0.757	0.549
			190	836.6	0.847	0.616
			251	848.8	0.854	0.624
		w/ headset	251	848.8	0.696	0.498
	GPRS 1 slots	Face up	190	836.6	0.692	0.508
		Face down	190	836.6	0.677	0.500
	GPRS 2 slots	Face up	128	824.2	0.985	0.723
			190	836.6	1.090	0.800
			251	848.8	1.080	0.804
		Face down	128	824.2	1.050	0.764
			190	836.6	1.110	0.813
			251	848.8	1.090	0.800
		w/ headset	190	836.6	1.060	0.788
	EGPRS 1 slots	Face up	190	836.6	0.195	0.142
		Face down	190	836.6	0.215	0.156
	EGPRS 2 slots	Face up	190	836.6	0.382	0.283
		Face down	190	836.6	0.425	0.311
		w/ headset	190	836.6	0.305	0.214

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	0.277	0.180
		w/ headset	661	1880.0	0.285	0.189
		Face down	661	1880.0	0.230	0.154
	GPRS 1 slots	Face up	661	1880.0	0.255	0.168
		Face down	661	1880.0	0.269	0.178
	GPRS 2 slots	Face up	661	1880.0	0.339	0.222
		Face down	661	1880.0	0.367	0.243
		w/ headset	661	1880.0	0.268	0.177
	EGPRS 1 slots	Face up	661	1880.0	0.097	0.060
		Face down	661	1880.0	0.101	0.066
	EGPRS 2 slots	Face up	661	1880.0	0.189	0.122
		Face down	661	1880.0	0.194	0.128
		w/ headset	661	1880.0	0.147	0.097

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	0.765	0.564
			4233	4458	846.6		
		Face down	4132	4357	826.4		
			4183	4408	836.6	0.753	0.553
			4233	4458	846.6		
		w/ headset	4233	4458	846.6	0.634	0.446

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	0.405	0.266
			9538	9938	1907.6		
		Face down	9262	9662	1850.2		
			9400	9800	1880.0	0.424	0.281
			9538	9938	1907.6		
		w/ headset	9400	9800	1880.0	0.342	0.215

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	0.051	0.028
			11	2462		
		Face down	1	2412		
			6	2437	0.065	0.036
			11	2462		
		w/ headset	6	2437	0.067	0.037

2.3 Simultaneous Transmission – Hotspot Mode at 10mm Separation Distance

Test Position	Band	Cellular	Wi-Fi	Σ 1-g SAR (W/kg)
Back side	GPRS850 2 slots	1.14	0.129	1.269
Back side	UMTS Band II	0.679	0.129	0.808

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 8.4 from Report SAR_APPLE-072-11001_FCC_rev5, dated February 23, 2011:

GSM850

Band	Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
GSM 850	190	836.6	GPRS 2 Uplink Timeslots	Front	1.07	Plot 1	Photo 1
				Back	1.14	Plot 2	Photo 2
				Bottom Edge	0.196	Plot 3	Photo 3
				Left Edge	1.08	Plot 4	Photo 4
				Right Edge	0.706	Plot 5	Photo 5
			GPRS 1 Uplink Timeslot	Front	0.911	Plot 6	Photo 1
				Back	0.949	Plot 7	Photo 2
				Bottom Edge	0.19	Plot 8	Photo 3
				Left Edge	0.826	Plot 9	Photo 4
				Right Edge	0.707	Plot 10	Photo 5
			EGPRS 2 Uplink Timeslots	Front	0.568	Plot 11	Photo 1
				Back	0.624	Plot 12	Photo 2
				Left Edge	0.548	Plot 13	Photo 4
			EGPRS 1 Uplink Timeslot	Back	0.291	Plot 14	Photo 2
	128	824.4	GPRS 2 Uplink Timeslots	Back	1.14	Plot 15	Photo 2
				Front	0.995	Plot 16	Photo 1
				Left Edge	0.834	Plot 17	Photo 4
			GPRS 1 Uplink timeslots	Back	0.82	Plot 18	Photo 2
				Front	0.804	Plot 19	Photo 1
				Left Edge	0.928	Plot 20	Photo 4
	251	848.8	GPRS 2 Uplink Timeslots	Back	1.13	Plot 21	Photo 2
				Front	1.1	Plot 22	Photo 1
				Left Edge	1	Plot 23	Photo 4
			GPRS 1 Uplink Timeslots	Back	0.849	Plot 24	Photo 2
				Front	0.997	Plot 25	Photo 1
				Left Edge	0.95	Plot 26	Photo 4

GSM1900

Band	Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
PCS 1900	661	1880	GPRS 2 Uplink Timeslots	Front	0.606	Plot 38	Photo 1
					0.489		
				Back	0.619	Plot 39	Photo 2
					0.504		
				Bottom Edge	0.353	Plot 40	Photo 3
				Left Edge	0.441	Plot 41	Photo 4
					0.309		
				Right Edge	0.176	Plot 42	Photo 5
					0.142		
			GPRS 1 Uplink Timeslot	Front	0.437	Plot 43	Photo 1
					0.359		
				Back	0.453	Plot 44	Photo 2
					0.370		
				Bottom Edge	0.267	Plot 45	Photo 3
				Left Edge	0.322	Plot 46	Photo 4
					0.229		
				Right Edge	0.125	Plot 47	Photo 5
					0.101		
			*EGPRS 2 Uplink Timeslots	Back	0.658	Plot 48	Photo 2
			*EGPRS 1 Uplink Timeslot	Back	0.477	Plot 49	Photo 2

UMTS Band V

Band	Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
PCS 1900	661	1880	GPRS 2 Uplink Timeslots	Front	0.606	Plot 38	Photo 1
					0.489		
				Back	0.619	Plot 39	Photo 2
					0.504		
				Bottom Edge	0.353	Plot 40	Photo 3
				Left Edge	0.441	Plot 41	Photo 4
					0.309		
				Right Edge	0.176	Plot 42	Photo 5
					0.142		
			GPRS 1 Uplink Timeslot	Front	0.437	Plot 43	Photo 1
					0.359		
				Back	0.453	Plot 44	Photo 2
					0.370		
				Bottom Edge	0.267	Plot 45	Photo 3
				Left Edge	0.322	Plot 46	Photo 4
					0.229		
				Right Edge	0.125	Plot 47	Photo 5
					0.101		
			*EGPRS 2 Uplink Timeslots	Back	0.658	Plot 48	Photo 2
			*EGPRS 1 Uplink Timeslot	Back	0.477	Plot 49	Photo 2

UMTS Band II

Band	Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
WCDMA FDD II	9400	1880	RMC	Front	0.674	Plot 50	Photo 1
					0.542		
				Back	0.679	Plot 51	Photo 2
					0.564		
				Bottom Edge	0.391	Plot 52	Photo 3
				Left Edge	0.466	Plot 53	Photo 4
					0.333		
				Right Edge	0.195	Plot 54	Photo 5
					0.151		

WiFi

Band	Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
WLAN	6	2437	802.11b	Front	0.117	Plot 55	Photo 1
				Back	0.129	Plot 56	Photo 2
				Top Edge	0.282	Plot 57	Photo 6
				Left Edge	0.082	Plot 58	Photo 3
				Right Edge	0.063	Plot 59	Photo 4