



MIMO SAR Test results

Head SAR Test																			
System & Position					DUT & Accessory			Power							SAR				
Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	Bluetooth	DH5 1Mbps	Right Tilted	0mm	Ant 7+5(5)	DSI 2		39	2441	14.30	16.00	1.479	77.07	1.298	-0.05	0.170	0.326		0.000
	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 7+5(5)	DSI 2		39	2441	14.30	16.00	1.479	77.07	1.298	0.04	0.642	1.233		0.000
												1.000		1.000			0.000		0.000
Hotspot SAR Test																			
System & Position					DUT & Accessory			Power							SAR				
Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	Bluetooth	DH5 1Mbps	Right Side	5mm	Ant 7+5(5)	DSI 7	Open	39	2441	13.80	15.50	1.479	77.07	1.298	0.02	0.662	1.271		0.000
	Bluetooth	DH5 1Mbps	Top Side	5mm	Ant 7+5(5)	DSI 7	Open	39	2441	13.80	15.50	1.479	77.07	1.298	0.13	0.225	0.432		0.000
												1.000		1.000			0.000		0.000
	Bluetooth	DH5 1Mbps	Right Side	5mm	Ant 7+5(5)	DSI 11	Close	39	2441	14.30	16.00	1.479	77.07	1.298	0.06	0.572	1.098		0.000
	Bluetooth	DH5 1Mbps	Bottom Side	5mm	Ant 7+5(5)	DSI 11	Close	39	2441	14.30	16.00	1.479	77.07	1.298	-0.07	0.211	0.405		0.000
												1.000		1.000			0.000		0.000
	Bluetooth	DH5 1Mbps	Right Side	0mm	Ant 7+5(5)	DSI 5/6	Open	39	2441	14.30	16.00	1.479	77.07	1.298	-0.12		0.000	1.040	1.997
	Bluetooth	DH5 1Mbps	Top Side	0mm	Ant 7+5(5)	DSI 5/6	Open	39	2441	14.30	16.00	1.479	77.07	1.298	0.08		0.000	0.284	0.545
												1.000		1.000			0.000		0.000
	Bluetooth	DH5 1Mbps	Right Side	0mm	Ant 7+5(5)	DSI 10/12	Close	39	2441	14.30	16.00	1.479	77.07	1.298	0.11		0.000	0.873	1.676
	Bluetooth	DH5 1Mbps	Bottom Side	0mm	Ant 7+5(5)	DSI 10/12	Close	39	2441	14.30	16.00	1.479	77.07	1.298	-0.02		0.000	0.291	0.559
												1.000		1.000			0.000		0.000
Bpdy worn SAR Test																			
System & Position					DUT & Accessory			Power							SAR				
Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	Bluetooth	DH5 1Mbps	Front	5mm	Ant 7+5(5)	DSI 3	Open	39	2441	14.30	16.00	1.479	77.07	1.298	0.17	0.349	0.670		0.000
												1.000		1.000			0.000		0.000
	Bluetooth	DH5 1Mbps	Front	5mm	Ant 7+5(5)	DSI 10	Close	39	2441	14.30	16.00	1.479	77.07	1.298	-0.11	0.319	0.612		0.000

MIMO SAR verification results

Bluetooth MIMO (Head)			
DSI 2 SISO Ant7 Plimit (dBm)	13.9	SISO Ant7 Pmax (dBm)	17.9
DSI 2 SISO Ant5 Plimit (dBm)	15.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	1.03	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	0.642
Reported SAR _{MIMO}	1.233	Calc.SAR	2.724

Bluetooth MIMO(Open Hotspot)			
DSI 7 SISO Ant7 Plimit (dBm)	12.9	SISO Ant7 Pmax (dBm)	17.9
DSI 7 SISO Ant5 Plimit (dBm)	16.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	12.9	Total uncertainty (dB)	1.5
SAR design target (W/kg)	1.03	Back off	0
Measured MIMO Ptest (dBm)	13.80	Measured MIMO SAR at meas. Ptest (W/kg)	0.662
Reported SAR _{MIMO}	1.271	Calc.SAR	2.620

Bluetooth MIMO (Close Hotspot)			
DSI 11 SISO Ant7 Plimit (dBm)	13.9	SISO Ant7 Pmax (dBm)	17.9
DSI 11 SISO Ant5 Plimit (dBm)	16.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	1.03	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	0.572
Reported SAR _{MIMO}	1.098	Calc.SAR	2.508

Bluetooth MIMO (Open Body worn)			
DSI 3 SISO Ant7 Plimit (dBm)	16.4	SISO Ant7 Pmax (dBm)	17.9
DSI 3 SISO Ant5 Plimit (dBm)	16.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	1.03	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	0.349
Reported SAR _{MIMO}	0.670	Calc. SAR	1.777

Bluetooth MIMO (Close Body worn)			
DSI 10 SISO Ant7 Plimit (dBm)	16.4	SISO Ant7 Pmax (dBm)	17.9
DSI 10 SISO Ant5 Plimit (dBm)	17.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	1.03	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	0.319
Reported SAR _{MIMO}	0.612	Calc. SAR	1.604

Bluetooth MIMO (Open Handheld)			
DSI 5/6 SISO Ant7 Plimit (dBm)	15.9	SISO Ant7 Pmax (dBm)	17.9
DSI 5 SISO Ant5 Plimit (dBm)	17.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	2.55	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	1.040
Reported SAR _{MIMO}	1.997	Calc. SAR	4.256

Bluetooth MIMO (Close Handheld)			
DSI 12 SISO Ant7 Plimit (dBm)	17.9	SISO Ant7 Pmax (dBm)	17.9
DSI 10 SISO Ant5 Plimit (dBm)	17.9	SISO Ant5 Pmax (dBm)	17.9
Duty Cycle %	77.07	MIMO Pmax (dBm)	13.4
Ptest (dBm)	13.4	Total uncertainty (dB)	1.5
SAR design target (W/kg)	2.55	Back off	0
Measured MIMO Ptest (dBm)	14.30	Measured MIMO SAR at meas. Ptest (W/kg)	0.873
Reported SAR _{MIMO}	1.676	Calc. SAR	3.293



MIMO SAR conducted power

Default DSI 2/3/4/5/6/10/11/12																				
Mode	Channel	Frequency (MHz)	Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5	
			Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit
BR / EDR	CH 00	2402	14.60	15.90	13.90	15.90	17.27	18.90	12.10	13.90	10.90	12.90	14.55	16.00	12.20	13.90	11.00	12.90	14.65	16.00
	CH 39	2441	15.10	16.00	14.30	16.00	17.73	19.00	12.50	14.00	11.40	13.00	15.00	16.50	12.60	14.00	11.50	13.00	15.10	16.50
	CH 78	2480	13.90	15.00	13.40	15.00	16.67	18.00	11.20	13.00	10.70	12.00	13.97	15.50	11.30	13.00	10.80	12.00	14.07	15.50

Mode	Channel	Frequency (MHz)	Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5	
			Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit
LE	CH 00	2402	12.78	14.00	11.82	13.00	15.34	16.54	8.36	10.00	7.62	9.00	11.02	12.50
	CH 19	2440	13.05	14.00	11.94	13.00	15.54	16.54	8.53	10.00	7.85	9.00	11.21	12.50
	CH 39	2480	11.74	13.00	11.36	13.00	14.56	16.00	7.54	9.00	7.22	9.00	10.39	12.00

DSI 7																				
Mode	Channel	Frequency (MHz)	Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5	
			Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit
BR / EDR	CH 00	2402	14.20	15.00	13.50	15.00	16.87	18.00	12.10	13.50	10.90	12.50	14.55	16.00	12.20	13.50	11.00	12.50	14.65	16.00
	CH 39	2441	14.60	15.50	13.80	15.50	17.23	18.50	12.50	14.00	11.40	13.00	15.00	16.50	12.60	14.00	11.50	13.00	15.10	16.50
	CH 78	2480	13.50	14.50	13.00	14.50	16.27	18.00	11.20	13.00	10.70	12.00	13.97	15.50	11.30	13.00	10.80	12.00	14.07	15.50

Mode	Channel	Frequency (MHz)	Ant 7+5(7)		Ant 7+5(5)		Ant 7+5		Ant 7+5(7)		Ant 7+5(5)		Ant 7+5	
			Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 1Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit	Average power (dBm) 2Mbps	Tune-up Limit
LE	CH 00	2402	12.78	14.00	11.82	13.00	15.34	16.54	8.36	10.00	7.62	9.00	11.02	12.50
	CH 19	2440	13.05	14.00	11.94	13.00	15.54	16.54	8.53	10.00	7.85	9.00	11.21	12.50
	CH 39	2480	11.74	13.00	11.36	13.00	14.56	16.00	7.54	9.00	7.22	9.00	10.39	12.00