

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 9844
FCC ID : IHDT56VF5
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

This is a data re-used report which is only valid together with the original test report. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA693004-04	Rev. 01	Initial issue of report	Nov. 29, 2016

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, 9844** are as follows.

Equipment Class	Frequency Band		Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
			Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.40	0.78	0.78	1.53
		GSM1900	0.63	0.80	0.80	
	WCDMA	Band V	0.38	0.67	0.67	
	LTE	Band 5	0.47	0.74	0.74	
DTS	WLAN	2.4GHz WLAN	0.61	<0.10	<0.10	1.24
DSS		2.4GHz Bluetooth		<0.10		0.85
NII		5GHz WLAN	1.11	0.18	0.20	1.53
Date of Testing:			2016/10/12 ~ 2016/10/26			

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Testing Site	
Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W. Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	9844
FCC ID	IHDT56VF5
IMEI Code	SIM1: 351865080013536 SIM2: 351865080013544
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 5: 824 MHz ~ 849 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	· GSM/GPRS/EGPRS · RMC/AMR 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · HSPA+ (16QAM uplink is not supported) · LTE: QPSK, 16QAM · 802.11b/g/n HT20 · 802.11a/n/ HT20/HT40 · Bluetooth v3.0+EDR, Bluetooth v4.0 LE, Bluetooth v4.2 LE
HW Version	DVT2(V5.0)
SW Version	cedric-userdebug 7.0 NPP25.73 270 intcfg,test-keys
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 1. This device supported VoIP in GPRS, EGRPS, WCDMA and LTE (e.g. 3rd party VoIP) and LTE Supports VoLTE operation. 2. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). 3. This device supports GRPS/EGRPS mode up to multi-slot class 12. 4. 802.11n-HT40MHz does not support at WLAN 2.4GHz. 5. This device does not support DTM operation. 6. The device has 2 SIM slots and supports dual SIM dual Standby. 7. This device has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (Single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.	

4.2 Specification of Accessory

Specification of Accessory				
AC Adapter	Brand Name	Motorola (Acbel)	Model Name	C-P35
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
Battery	Brand Name	Motorola (ATL)	Model Name	GK40
	Power Rating	3.8Vdc, 2685/2800mAh (Min/Typ)	Type	Li-ion
Earphone	Brand Name	Motorola	Model Name	SJYN1181B
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable	Brand Name	Motorola (Liqi)	Model Name	L25W-051000100AL
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05										
FCC ID	IHDT56VF5									
Equipment Name	Mobile Cellular Phone									
Operating Frequency Range of each LTE transmission band	LTE Band 5: 824 MHz ~ 849 MHz									
Channel Bandwidth	LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz									
uplink modulations used	QPSK, and 16QAM									
LTE Voice / Data requirements	Voice and Data									
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3									
	Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)		
		1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz			
		QPSK	> 5	> 4	> 8	> 12	> 16		> 18	≤ 1
		16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16		≤ 18	≤ 1
	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2		
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)									
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.									
LTE Release	R10, Cat 4									
CA Support	NO									

Transmission (H, M, L) channel numbers and frequencies in each LTE band								
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

**4.4 Re-use of Measured Data****4.4.1 Introduction Section**

This application re-uses data collected on a similar device. The subject device of this application (Model: 9844, FCC ID: IHDT56VF5) is electrically identical to the reference device (Model: 9369, 9847, FCC ID: IHDT56VF2) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

4.4.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Product Equality Declaration "PED" file.

The re-used RF data includes the following bands provided in Appendix A (Sporton SAR Report No. FA693004 for the reference device Model: 9369, 9847, FCC ID: IHDT56VF2):

- GSM850/1900,
- WCDMA Band V,
- LTE Band 5
- 2.4G/5GHz WLAN
- Bluetooth

Spot check for WWAN and WLAN are performed for ensure that SAR measurement for both device are the same. So, the original SAR value can represent this application.

4.4.3 Spot Check Verification Data Section

Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Original model (FCC ID: IHDT56VF2)				Spot check model (FCC ID: IHDT56VF5)				Deviation
										Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	6	2437	17.53	18	0.535	0.609	17.23	18	0.414	0.505	-17.08%
WLAN 5.3GHz	-	-	-	-	802.11a 6Mbps	Right Tilted	0mm	64	5320	12.78	13.50	0.158	0.214	13.19	13.50	0.197	0.243	13.55%
WLAN5.5GHz	-	-	-	-	802.11a 6Mbps	Left Cheek	0mm	116	5580	15.35	15.50	0.932	1.109	15.18	15.50	0.960	1.187	7.03%
WLAN 5.8GHz	-	-	-	-	802.11a 6Mbps	Left Cheek	0mm	165	5825	14.94	15.50	0.322	0.421	14.89	15.50	0.309	0.409	-2.85%
GSM850	-	-	-	-	GPRS 2 Tx slots	Back	10mm	128	824.2	30.41	31.00	0.681	0.780	30.59	31.00	0.647	0.711	-8.85%
GSM1900	-	-	-	-	GPRS 2 Tx slots	Front	10mm	810	1909.8	28.13	29.50	0.582	0.798	27.79	29.50	0.576	0.854	7.02%
WCDMA V	-	-	-	-	RMC12.2Kbps	Back	10mm	4132	826.4	23.02	24.00	0.535	0.670	23.08	24.00	0.539	0.666	-0.60%
LTE Band 5	10M	QPSK	1	25	-	Back	10mm	20525	836.5	22.67	24.00	0.548	0.744	23.39	24.00	0.550	0.633	-14.92%
WLAN5.3GHz	-	-	-	-	802.11a 6Mbps	Top Side	10mm	36	5180	12.96	13.50	0.152	0.198	12.95	13.50	0.179	0.233	17.68%
Bluetooth	-	-	-	-	1Mbps	Back	10mm	39	2441	11.89	12.50	0.044	0.055	11.85	12.50	0.043	0.054	-1.82%

Note: In the table above, all the deviation of SAR test results are compliant with uncertainty budget.

4.4.4 Reference detail Section

Equipment Class	Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
PCE	IHDT56VF2	RF Exposure(FA693004)	All sections applicable
DSS	IHDT56VF2	RF Exposure(FA693004)	All sections applicable
DTS (BLE)	IHDT56VF2	RF Exposure(FA693004)	All sections applicable
DTS (WLAN 2.4GHz)	IHDT56VF2	RF Exposure(FA693004)	All sections applicable
NIII (WLAN 5GHz)	IHDT56VF2	RF Exposure(FA693004)	All sections applicable

5. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Hotspot
5.	GSM Voice + Bluetooth		Yes		
6.	GPRS/EDGE + Bluetooth		Yes		WWAN VoIP
7.	WCDMA+ Bluetooth		Yes		WWAN VoIP
8.	LTE + Bluetooth		Yes		WWAN VoIP
9.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		
10.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		WWAN VoIP
11.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		WWAN VoIP
12.	LTE + WLAN5.3/5.5GHz	Yes	Yes		WWAN VoIP
13.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes	Yes	
14.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	WWAN VoIP
15.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	WWAN VoIP
16.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	WWAN VoIP
17.	GSM Voice + WLAN5GHz+Bluetooth		Yes		
18.	GPRS/EDGE + WLAN5GHz+Bluetooth		Yes		WWAN VoIP
19.	WCDMA + WLAN5GHz+Bluetooth		Yes		WWAN VoIP
20.	LTE + WLAN5GHz+Bluetooth		Yes		WWAN VoIP

5.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN	5GHz WLAN				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Right Cheek	0.401	0.609	0.726	1.01	1.13		
		Right Tilted	0.286	0.609	0.585	0.90	0.87		
		Left Cheek	0.383	0.609	1.109	0.99	1.49		
		Left Tilted	0.308	0.265	0.938	0.57	1.25		
	GSM1900	Right Cheek	0.334	0.609	0.726	0.94	1.06		
		Right Tilted	0.152	0.609	0.585	0.76	0.74		
		Left Cheek	0.633	0.609	1.109	1.24	1.74	0.03	#1
		Left Tilted	0.160	0.265	0.938	0.43	1.10		
WCDMA	Band V	Right Cheek	0.367	0.609	0.726	0.98	1.09		
		Right Tilted	0.257	0.609	0.585	0.87	0.84		
		Left Cheek	0.375	0.609	1.109	0.98	1.48		
		Left Tilted	0.252	0.265	0.938	0.52	1.19		
LTE	Band 5	Right Cheek	0.466	0.609	0.726	1.08	1.19		
		Right Tilted	0.330	0.609	0.585	0.94	0.92		
		Left Cheek	0.424	0.609	1.109	1.03	1.53		
		Left Tilted	0.329	0.265	0.938	0.59	1.27		

5.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN	5GHz WLAN				
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Front	0.603	0.094	0.198	0.70	0.80		
		Back	0.780	0.094	0.038	0.87	0.82		
		Left side	0.426			0.43	0.43		
		Right side	0.501	0.094	0.198	0.60	0.70		
		Top side		0.094	0.198	0.09	0.20		
		Bottom side	0.096			0.10	0.10		
	GSM1900	Front	0.798	0.094	0.198	0.89	1.00		
		Back	0.795	0.094	0.038	0.89	0.83		
		Left side	0.350			0.35	0.35		
		Right side	0.151	0.094	0.198	0.25	0.35		
		Top side		0.094	0.198	0.09	0.20		
		Bottom side	0.358			0.36	0.36		
WCDMA	Band V	Front	0.482	0.094	0.198	0.58	0.68		
		Back	0.670	0.094	0.038	0.76	0.71		
		Left side	0.487			0.49	0.49		
		Right side	0.554	0.094	0.198	0.65	0.75		
		Top side		0.094	0.198	0.09	0.20		
		Bottom side	0.068			0.07	0.07		
LTE	Band 5	Front	0.541	0.094	0.198	0.64	0.74		
		Back	0.744	0.094	0.038	0.84	0.78		
		Left side	0.509			0.51	0.51		
		Right side	0.626	0.094	0.198	0.72	0.82		
		Top side		0.094	0.198	0.09	0.20		
		Bottom side	0.087			0.09	0.09		

**5.3 Body-Worn Accessory Exposure Conditions**

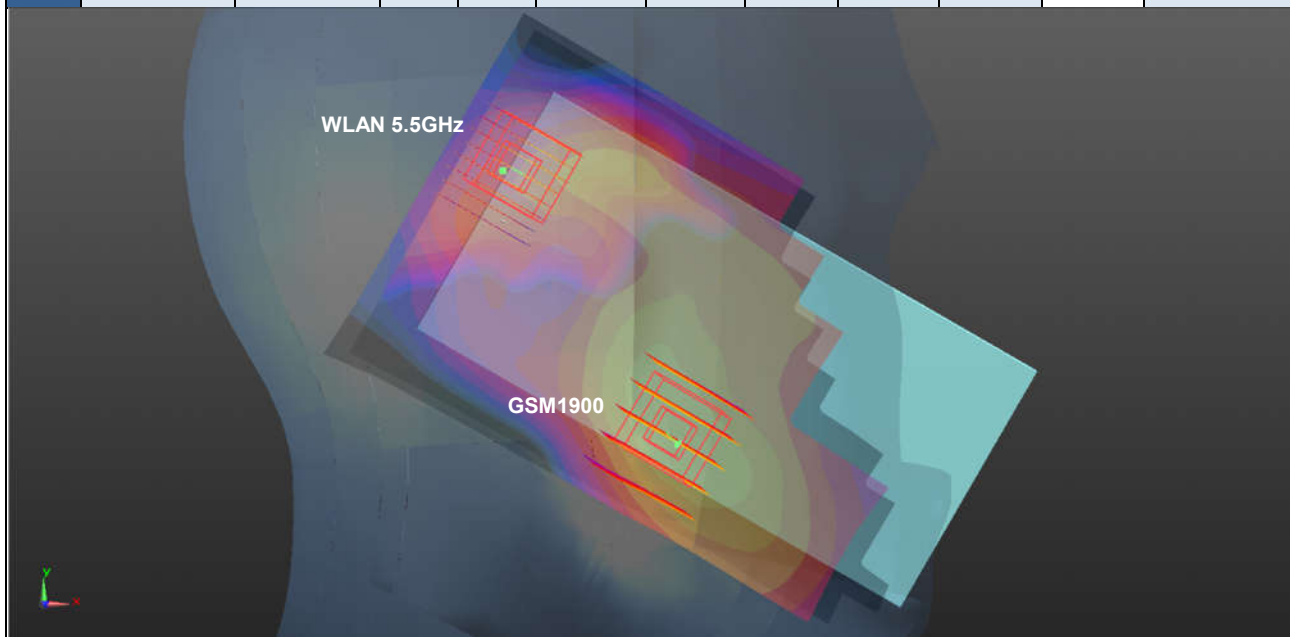
WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth						
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)						
GSM	GSM850	Front	0.603	0.094	0.184	0.029	0.70	0.79	0.63	0.82		
		Back	0.780	0.094	0.184	0.055	0.87	0.96	0.84	1.02		
	GSM1900	Front	0.798	0.094	0.184	0.029	0.89	0.98	0.83	1.01		
		Back	0.795	0.094	0.184	0.055	0.89	0.98	0.85	1.03		
WCDMA	Band V	Front	0.482	0.094	0.184	0.029	0.58	0.67	0.51	0.70		
		Back	0.670	0.094	0.184	0.055	0.76	0.85	0.73	0.91		
LTE	Band 5	Front	0.541	0.094	0.184	0.029	0.64	0.73	0.57	0.75		
		Back	0.744	0.094	0.184	0.055	0.84	0.93	0.80	0.98		

5.4 SPLSR Evaluation and Analysis

General Note:

$SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.

Case #1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Left Cheek	0.633	0	0.0618	0.249	-0.172	87.5	1.74	0.03	Not required
	WLAN5.5GHz		1.109	0	0.0168	0.324	-0.173				



Test Engineer : Nick Hu



Appendix A. Original Report

Please refer to Sporton report number FA693004 which is issued separately.