

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 10645
FCC ID : IHDT56WD4
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

We, SPORTON International (ShenZhen) 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 (ShenZhen) INC., the test report shall not be reproduced except in full.



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA721309-02	Rev. 01	Initial issue of report	Mar. 31, 2017

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, 10645** are as follows.

Equipment Class	Frequency Band		Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
			Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 10mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.35	0.59	0.58	1.37
		GSM1900	<0.10	1.14	0.79	
	WCDMA	Band V	0.37	0.68	0.64	
		Band II	0.22	0.63	1.18	
	LTE	Band 5	0.29	0.59	0.58	
		Band 7	0.21	0.69	0.66	
DTS	WLAN	2.4GHz WLAN	0.75	0.19	0.19	1.37
Date of Testing:			2017/2/28 ~ 2017/3/7			

Equipment Class	Frequency Band	Highest SAR Summary
		Product specific 10g SAR (W/kg) (Gap 0mm)
Licensed	WCDMA Band II	3.24

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 4.0W/kg as averaged over any 10 gram of tissue for extremity SAR) 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 (ShenZhen) INC.
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan District, Shenzhen City, Guangdong Province, China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

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	10645
FCC ID	IHDT56WD4
IMEI Code	SIM1: 355633080007445 SIM2: 355633080014458
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	• GSM/GPRS/EGPRS • RMC/AMR 12.2Kbps • HSDPA • HSUPA • DC-HSDPA • HSPA+ • LTE: QPSK, 16QAM • 802.11b/g/n HT20 • Bluetooth v3.0+EDR/Bluetooth v4.0 LE/Bluetooth v4.1 LE/ Bluetooth v4.2 LE
HW Version	B4-3
SW Version	nicklaus_oem_userdebug_7.0_NMA25.11_122_intcfg-test-keys_oem
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. 802.11n-HT40 is not supported in 2.4GHz WLAN. 2. This device 2.4GHz WLAN supports Hotspot operation. 3. This device supported VoIP in GPRS, EGPRS, WCDMA, LTE (e.g. 3rd party VoIP), LTE supports VoLTE operation. 4. This device supports GRPS/EGPRS mode up to multi-slot class 12. 5. The dual SIM card mobile has 2 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 dual SIM1 card to perform all tests. 6. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA Band II.	

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05										
FCC ID	IHDT56WD4									
Equipment Name	Mobile Cellular Phone									
Operating Frequency Range of each LTE transmission band	LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz									
Channel Bandwidth	LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz									
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 Version	R8, Cat 4									
CA Support	Not Supported									
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		
LTE Band 7										
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510		
M	21100	2535	21100	2535	21100	2535	21100	2535		
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560		

5. Re-use of Measured Data

5.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: 10645, FCC ID: IHDT56WD4) is electrically identical to the reference device (Model: 10710, IHDT56WD3) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

5.2 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 RF Report No. FA721309 for the reference device Model: 10710, IHDT56WD3):

- GSM850/1900,
- WCDMA Band V/II,
- LTE Band 5/7
- 2.4G 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.

5.3 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: IHDT56WD3)				Spot check model (FCC ID: IHDT56WD4)				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	Right Cheek	0	6	2437	17.22	17.50	0.704	0.751	17.22	17.50	0.710	0.757	0.80%
GSM 850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10	189	836.4	29.22	29.5	0.550	0.587	29.22	29.5	0.513	0.547	-6.81%
GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10	810	1909.8	25.96	26.5	1.010	1.144	25.96	26.5	0.977	1.106	-3.32%
WCDMA Band V	-	-	-	-	RMC 12.2Kbps	Right Side	10	4132	826.4	23.12	23.5	0.621	0.678	23.12	23.5	0.623	0.680	0.29%
WCDMA Band II	-	-	-	-	RMC 12.2Kbps	Back	10	9538	1907.6	22.58	23	1.070	1.179	22.58	23	1.170	1.289	9.33%
LTE Band 5	10M	QPSK	1RB	0Offset	-	Right Side	10	20525	836.5	23.66	24	0.548	0.593	23.66	24	0.457	0.494	-16.69%
LTE Band 7	20M	QPSK	1RB	0Offset	-	Bottom Side	10	21100	2535	22.63	23	0.630	0.686	22.63	23	0.708	0.771	12.39%

Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Original model (FCC ID: IHDT56WD3)				Spot check model (FCC ID: IHDT56WD4)				Deviation
						Average Power (dBm)	Tune-Up Limit (dBm)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	
WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	9400	1880	22.55	23	2.921	3.240	22.55	23	3.410	3.782	16.73%

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

5.4 Reference detail Section

Equipment Class	Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
PCE (2G/3G/4G)	IHDT56WD3	RF Exposure(FA721309)	All sections applicable
DTS (BLE)	IHDT56WD3	RF Exposure(FA721309)	All sections applicable
DSS (BER)	IHDT56WD3	RF Exposure(FA721309)	All sections applicable
DTS (WLAN)	IHDT56WD3	RF Exposure(FA721309)	All sections applicable

6. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Mobile Cellular Phone			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

6.1 Head Exposure Conditions Head Exposure Conditions

WWAN Band		Exposure Position	1	2	1+2 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	
			1g SAR (W/kg)	1g SAR (W/kg)	
GSM	GSM850	Right Cheek	0.346	0.751	1.10
		Right Tilted	0.202	0.751	0.95
		Left Cheek	0.323	0.751	1.07
		Left Tilted	0.174	0.751	0.93
	GSM1900	Right Cheek	0.048	0.751	0.80
		Right Tilted	0.037	0.751	0.79
		Left Cheek	0.077	0.751	0.83
		Left Tilted	0.020	0.751	0.77
WCDMA	Band II	Right Cheek	0.135	0.751	0.89
		Right Tilted	0.128	0.751	0.88
		Left Cheek	0.218	0.751	0.97
		Left Tilted	0.090	0.751	0.84
	Band V	Right Cheek	0.363	0.751	1.11
		Right Tilted	0.235	0.751	0.99
		Left Cheek	0.372	0.751	1.12
		Left Tilted	0.210	0.751	0.96
LTE	Band 5	Right Cheek	0.269	0.751	1.02
		Right Tilted	0.173	0.751	0.92
		Left Cheek	0.288	0.751	1.04
		Left Tilted	0.152	0.751	0.90
	Band 7	Right Cheek	0.120	0.751	0.87
		Right Tilted	0.095	0.751	0.85
		Left Cheek	0.210	0.751	0.96
		Left Tilted	0.070	0.751	0.82

6.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	1+2 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	
			1g SAR (W/kg)	1g SAR (W/kg)	
GSM	GSM850	Front	0.407	0.189	0.60
		Back	0.575	0.189	0.76
		Left side	0.587	0.189	0.78
		Right side	0.548		0.55
		Top side		0.189	0.19
		Bottom side	0.057		0.06
	GSM1900	Front	0.715	0.189	0.90
		Back	0.791	0.189	0.98
		Left side	0.056	0.189	0.25
		Right side	0.041		0.04
		Top side		0.189	0.19
		Bottom side	1.144		1.14
WCDMA	Band II	Front	0.359	0.189	0.55
		Back	0.377	0.189	0.57
		Left side	0.075	0.189	0.26
		Right side	0.090		0.09
		Top side		0.189	0.19
		Bottom side	0.633		0.63
	Band V	Front	0.450	0.189	0.64
		Back	0.636	0.189	0.83
		Left side	0.672	0.189	0.86
		Right side	0.678		0.68
		Top side		0.189	0.19
		Bottom side	0.059		0.06

WWAN Band		Exposure Position	1	2	1+2 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	
			1g SAR (W/kg)	1g SAR (W/kg)	
LTE	Band 5	Front	0.397	0.189	0.59
		Back	0.579	0.189	0.77
		Left side	0.554	0.189	0.74
		Right side	0.593		0.59
		Top side		0.189	0.19
		Bottom side	0.056		0.06
	Band 7	Front	0.623	0.189	0.81
		Back	0.662	0.189	0.85
		Left side	0.204	0.189	0.39
		Right side	0.186		0.19
		Top side		0.189	0.19
		Bottom side	0.686		0.69

6.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)		
GSM	GSM850	Front	0.407	0.189	0.126	0.60	0.53
		Back	0.575	0.189	0.126	0.76	0.70
	GSM1900	Front	0.715	0.189	0.126	0.90	0.84
		Back	0.791	0.189	0.126	0.98	0.92
WCDMA	Band II	Front	0.991	0.189	0.126	1.18	1.12
		Back	1.179	0.189	0.126	1.37	1.31
	Band V	Front	0.450	0.189	0.126	0.64	0.58
		Back	0.636	0.189	0.126	0.83	0.76
LTE	Band 5	Front	0.397	0.189	0.126	0.59	0.52
		Back	0.579	0.189	0.126	0.77	0.71
	Band 7	Front	0.623	0.189	0.126	0.81	0.75
		Back	0.662	0.189	0.126	0.85	0.79

Test Engineer : Nick Hu



Appendix A. Reference Report

Please refer to Sporton report number FA721309 which is issued separately.