



SAR EVALUATION REPORT

Applicant Name:
LG Electronics U.S.A., Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
01/11/19 - 02/05/19
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1901080002-01-R4.ZNF

FCC ID: ZNFG820UM

APPLICANT: LG ELECTRONICS U.S.A., INC.

DUT Type: Portable Handset
Application Type: Class II Permissive Change
FCC Rule Part(s): CFR §2.1093
Model: LM-G820UM
Additional Model(s): LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM, LM-G820QM, LMG820QM, G820QM, LM-G820QM5, LMG820QM5, G820QM5, LM-G820QM6, LMG820QM6, G820QM6
Permissive Change(s): See FCC Change Document

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	CDMA/EVDO BC10 (B20)	817.90 - 823.10 MHz	< 0.1	0.16	0.13	N/A
PCE	CDMA/EVDO BCD (B234)	824.70 - 848.31 MHz	< 0.1	0.16	0.16	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.40	0.56	1.06	2.82
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.11	0.19	0.19	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.42	0.49	1.00	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	< 0.1	0.15	0.15	N/A
PCE	UMTS 1755	1712.4 - 1752.6 MHz	0.49	0.69	1.03	2.37
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.40	0.57	1.08	2.94
PCE	LTE Band 71	665.5 - 695.5 MHz	0.33	0.44	0.44	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.48	0.63	0.63	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.62	0.80	0.80	N/A
PCE	LTE Band 14	790.5 - 795.5 MHz	0.55	0.72	0.72	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	< 0.1	0.16	0.16	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	< 0.1	0.18	0.18	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.37	0.51	0.84	2.19
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.29	0.55	1.02	2.68
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.37	0.52	0.52	3.03
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.29	0.43	0.72	3.14
CBE	LTE Band 48	3552.5 - 3697.5 MHz	0.31	0.28	0.28	N/A
PCE	LTE Band 41	2496.5 - 2687.5 MHz	0.48	0.28	0.53	N/A
DTS	2.4 GHz WLAN	2412 - 2482 MHz	0.96	0.61	0.80	N/A
NI	U-NI-1	5180 - 5240 MHz	N/A	N/A	0.40	N/A
NI	U-NI-2A	5260 - 5320 MHz	0.45	0.38	N/A	1.67
NI	U-NI-2C	5500 - 5720 MHz	0.52	0.24	N/A	0.86
NI	U-NI-3	5745 - 5825 MHz	0.40	0.38	0.38	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.20	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.59	1.58	1.59	3.48

Note: This revised Test Report (S/N: 1M1901080002-01-R4.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.


Randy Ortañez
President



The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 1 of 134

TABLE OF CONTENTS

1	DEVICE UNDER TEST	3
2	LTE INFORMATION	13
3	INTRODUCTION	14
4	DOSIMETRIC ASSESSMENT	15
5	DEFINITION OF REFERENCE POINTS	16
6	TEST CONFIGURATION POSITIONS	17
7	RF EXPOSURE LIMITS	21
8	FCC MEASUREMENT PROCEDURES.....	22
9	RF CONDUCTED POWERS.....	30
10	SYSTEM VERIFICATION.....	78
11	SAR DATA SUMMARY	83
12	FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS.....	108
13	SAR MEASUREMENT VARIABILITY	122
14	ADDITIONAL TESTING PER FCC GUIDANCE	124
15	EQUIPMENT LIST	130
16	MEASUREMENT UNCERTAINTIES.....	131
17	CONCLUSION.....	132
18	REFERENCES	133

APPENDIX A: SAR TEST PLOTS

APPENDIX B: SAR DIPOLE VERIFICATION PLOTS

APPENDIX C: PROBE AND DIPOLE CALIBRATION CERTIFICATES

APPENDIX D: SAR TISSUE SPECIFICATIONS

APPENDIX E: SAR SYSTEM VALIDATION

APPENDIX F: DUT ANTENNA DIAGRAM & SAR TEST SETUP PHOTOGRAPHS

APPENDIX G: POWER REDUCTION VERIFICATION

APPENDIX H: DOWNLINK LTE CA RF CONDUCTED POWERS

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 2 of 134

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
CDMA/EVDO BC10 (\$90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (\$22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
WMC	Data	500 Hz - 4 kHz

1.2 Power Reduction for SAR

This device uses a power reduction mechanism for SAR compliance. The power reduction mechanism is activated when the device is used in close proximity to the user's body. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device. Detailed descriptions of the power reduction mechanism are included in the operational description.

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 3 of 134

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 2G/3G/4G Maximum Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	34.2	34.2	33.2	31.2	29.2	26.7	26.7	25.7	25.7
	Nominal	33.7	33.7	32.7	30.7	28.7	26.2	26.2	25.2	25.2
GSM/GPRS/EDGE 1900	Maximum	31.2	31.2	30.2	28.2	26.2	26.2	26.2	25.2	25.2
	Nominal	30.7	30.7	29.7	27.7	25.7	25.7	25.7	24.7	24.7

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	25.5	24.5	24.5	24.5
	Nominal	25.0	24.0	24.0	24.0
UMTS Band 4 (1750 MHz)	Maximum	25.5	24.5	24.5	24.5
	Nominal	25.0	24.0	24.0	24.0
UMTS Band 2 (1900 MHz)	Maximum	25.2	24.2	24.2	24.2
	Nominal	24.7	23.7	23.7	23.7

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	25.5
	Nominal	25.0
CDMA/EVDO BC0 (§22H)	Maximum	25.5
	Nominal	25.0
PCS CDMA/EVDO	Maximum	25.2
	Nominal	24.7

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 4 of 134	

Mode / Band		Modulated Average (dBm)
LTE Band 71	Maximum	25.5
	Nominal	25.0
LTE Band 12	Maximum	25.5
	Nominal	25.0
LTE Band 17	Maximum	25.5
	Nominal	25.0
LTE Band 13	Maximum	25.5
	Nominal	25.0
LTE Band 14	Maximum	25.5
	Nominal	25.0
LTE Band 26 (Cell)	Maximum	25.5
	Nominal	25.0
LTE Band 5 (Cell)	Maximum	25.5
	Nominal	25.0
LTE Band 66 (AWS)	Maximum	24.5
	Nominal	24.0
LTE Band 4 (AWS)	Maximum	24.5
	Nominal	24.0
LTE Band 25 (PCS)	Maximum	25.2
	Nominal	24.7
LTE Band 2 (PCS)	Maximum	25.2
	Nominal	24.7
LTE Band 30	Maximum	23.7
	Nominal	23.2
LTE Band 7	Maximum	23.7
	Nominal	23.2
LTE Band 48	Maximum	22.7
	Nominal	22.2
LTE Band 41 (PC3)	Maximum	25.2
	Nominal	24.7
LTE Band 41 (PC2)	Maximum	27.7
	Nominal	27.2

1.3.2 2G/3G/4G Reduced Output Power

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 4 (1750 MHz)	Maximum	23.5	22.5	22.5	22.5
	Nominal	23.0	22.0	22.0	22.0
UMTS Band 2 (1900 MHz)	Maximum	23.2	22.2	22.2	22.2
	Nominal	22.7	21.7	21.7	21.7

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	23.2
	Nominal	22.7

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 5 of 134

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	23.5
	Nominal	23.0
LTE Band 4 (AWS)	Maximum	23.5
	Nominal	23.0
LTE Band 25 (PCS)	Maximum	23.2
	Nominal	22.7
LTE Band 2 (PCS)	Maximum	23.2
	Nominal	22.7
LTE Band 30	Maximum	21.2
	Nominal	20.7
LTE Band 7	Maximum	21.2
	Nominal	20.7
LTE Band 41 (PC2)	Maximum	25.2
	Nominal	24.7

1.3.3

WLAN Bluetooth Maximum Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
Channel		1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	20.5	20.5	20.5
	Nominal	19.5	19.5	19.5
IEEE 802.11g (2.4 GHz)	Maximum	17.0	19.5	17.0
	Nominal	16.0	18.5	16.0
IEEE 802.11n (2.4 GHz)	Maximum	16.0	18.5	16.0
	Nominal	15.0	17.5	15.0
IEEE 802.11ac (2.4 GHz)	Maximum	16.0	18.5	16.0
	Nominal	15.0	17.5	15.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	64-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	17.0	19.0	17.0	19.0	17.0	19.0	18.0							
	Nominal	16.0	18.0	16.0	18.0	16.0	18.0	17.0							
IEEE 802.11n (5 GHz)	Maximum	17.0	19.0	17.0	19.0	17.0	19.0	18.0	13.5	16.0	13.0	16.0			
	Nominal	16.0	18.0	16.0	18.0	16.0	18.0	17.0	12.5	15.0	12.0	15.0			
IEEE 802.11ac (5 GHz)	Maximum	17.0	19.0	17.0	19.0	17.0	19.0	18.0	13.5	16.0	13.0	16.0	14.0	11.0	14.0
	Nominal	16.0	18.0	16.0	18.0	16.0	18.0	17.0	12.5	15.0	12.0	15.0	13.0	10.0	13.0

FCC ID: ZNFG820UM			SAR EVALUATION REPORT			Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset			Page 6 of 134	

Mode / Band		Modulated Average - MIMO (dBm)		
Channel		1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	23.5	23.5	23.5
	Nominal	22.5	22.5	22.5
IEEE 802.11g (2.4 GHz)	Maximum	20.0	22.5	20.0
	Nominal	19.0	21.5	19.0
IEEE 802.11n (2.4 GHz)	Maximum	19.0	21.5	19.0
	Nominal	18.0	20.5	18.0
IEEE 802.11ac (2.4 GHz)	Maximum	19.0	21.5	19.0
	Nominal	18.0	20.5	18.0

Mode / Band		Modulated Average - MIMO (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	64-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	20.0	22.0	20.0	22.0	20.0	22.0	21.0							
	Nominal	19.0	21.0	19.0	21.0	19.0	21.0	20.0							
IEEE 802.11n (5 GHz)	Maximum	20.0	22.0	20.0	22.0	20.0	22.0	21.0	16.5	19.0	16.0	19.0			
	Nominal	19.0	21.0	19.0	21.0	19.0	21.0	20.0	15.5	18.0	15.0	18.0			
IEEE 802.11ac (5 GHz)	Maximum	20.0	22.0	20.0	22.0	20.0	22.0	21.0	16.5	19.0	16.0	19.0	17.0	14.0	17.0
	Nominal	19.0	21.0	19.0	21.0	19.0	21.0	20.0	15.5	18.0	15.0	18.0	16.0	13.0	16.0

Mode/Band		Modulated Average (dBm)
Bluetooth	Maximum	12.0
	Nominal	11.0
Bluetooth LE	Maximum	8.0
	Nominal	7.0

1.3.4

WLAN Reduced Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
Channel		1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	17.5		
	Nominal	16.5		
IEEE 802.11g (2.4 GHz)	Maximum	17.0	17.5	17.0
	Nominal	16.0	16.5	16.0
IEEE 802.11n (2.4 GHz)	Maximum	16.0	17.5	16.0
	Nominal	15.0	16.5	15.0
IEEE 802.11ac (2.4 GHz)	Maximum	16.0	17.5	16.0
	Nominal	15.0	16.5	15.0

FCC ID: ZNFG820UM			SAR EVALUATION REPORT			Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset			Page 7 of 134	

Mode / Band		Modulated Average - Single Tx Chain (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	64-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	14.5	14.5	14.5	14.5	14.5	14.5	14.5							
	Nominal	13.5	13.5	13.5	13.5	13.5	13.5	13.5							
IEEE 802.11n (5 GHz)	Maximum	14.5	14.5	14.5	14.5	14.5	14.5	14.5	13.5	14.5	13.0	14.5			
	Nominal	13.5	13.5	13.5	13.5	13.5	13.5	13.5	12.5	13.5	12.0	13.5			
IEEE 802.11ac (5 GHz)	Maximum	14.5	14.5	14.5	14.5	14.5	14.5	14.5	13.5	14.5	13.0	14.5	14.0	11.0	14.0
	Nominal	13.5	13.5	13.5	13.5	13.5	13.5	13.5	12.5	13.5	12.0	13.5	13.0	10.0	13.0

Mode / Band		Modulated Average - MIMO (dBm)		
	Channel	1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	20.5		
	Nominal	19.5		
IEEE 802.11g (2.4 GHz)	Maximum	20.0	20.5	20.0
	Nominal	19.0	19.5	19.0
IEEE 802.11n (2.4 GHz)	Maximum	19.0	20.5	19.0
	Nominal	18.0	19.5	18.0
IEEE 802.11ac (2.4 GHz)	Maximum	19.0	20.5	19.0
	Nominal	18.0	19.5	18.0

Mode / Band		Modulated Average - MIMO (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	64-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	17.5	17.5	17.5	17.5	17.5	17.5	17.5							
	Nominal	16.5	16.5	16.5	16.5	16.5	16.5	16.5							
IEEE 802.11n (5 GHz)	Maximum	17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.5	17.5	16.0	17.5			
	Nominal	16.5	16.5	16.5	16.5	16.5	16.5	16.5	15.5	16.5	15.0	16.5			
IEEE 802.11ac (5 GHz)	Maximum	17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.5	17.5	16.0	17.5	17.0	14.0	17.0
	Nominal	16.5	16.5	16.5	16.5	16.5	16.5	16.5	15.5	16.5	15.0	16.5	16.0	13.0	16.0

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 8 of 134	

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a “phablet.”

Table 1-1
Device Edges/Sides for SAR Testing

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
EVDO BC10 (\$90S)	Yes	Yes	No	Yes	Yes	No
EVDO BC0 (\$22H)	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 71	Yes	Yes	No	Yes	Yes	No
LTE Band 12	Yes	Yes	No	Yes	Yes	No
LTE Band 13	Yes	Yes	No	Yes	Yes	No
LTE Band 14	Yes	Yes	No	Yes	Yes	No
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 7	Yes	Yes	No	Yes	No	Yes
LTE Band 48	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-2A and U-NII-2C operations are disabled.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix F.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 9 of 134

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	1x CDMA voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
22	LTE + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
26	CDMA/EVDO data + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
27	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
28	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
29	CDMA/EVDO data + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	GPRS/EDGE + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
32	GPRS/EDGE + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	GPRS/EDGE + 2.4 GHz Bluetooth	Yes^*	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
34	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	GPRS/EDGE + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz Wi-Fi Ant 1 + 5 GHz Wi-Fi Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered

- Bluetooth cannot transmit simultaneously with 2.4 GHz WLAN.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
- Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
- 5 GHz Wireless Router is only supported for the U-NII-1, U-NII-3 by S/W, therefore U-NII2A, and U-NII2C were not evaluated for wireless router conditions.
- This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac. 802.11a/g/n/ac supports CDD and STBC and 802.11n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
- This device supports VOLTE and VOWIFI.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 10 of 134

8. This device supports Bluetooth Tethering.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-2A & U-NII-2C WIFI, only 2.4 GHz, U-NII-1 and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ac with the following features:

- a) Up to 80 MHz Bandwidth only
- b) No aggregate channel configurations
- c) 2 Tx antenna output
- d) 256 QAM is supported
- e) TDWR and Band gap channels are supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, U-NII-1 WLAN, U-NII-3 WLAN, and 2.4 GHz Bluetooth operations since wireless router 1g SAR was < 1.2 W/kg.

(B) Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. The downlink carrier aggregation exclusion analysis can be found in Appendix H.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 11 of 134

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM configurations were measured per Section 5.1 of FCC KDB Publication 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64 QAM is $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 14.1).

This device supports LTE Carrier Aggregation (CA) for LTE Band 5 and LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 12 of 134

LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 71 (665.5 - 695.5 MHz) LTE Band 12 (699.7 - 715.3 MHz) LTE Band 17 (706.5 - 713.5 MHz) LTE Band 13 (779.5 - 784.5 MHz) LTE Band 14 (790.5 - 795.5 MHz) LTE Band 28 (Cell) (814.7 - 848.3 MHz) LTE Band 5 (Cell) (824.7 - 848.3 MHz) LTE Band 66 (AWS) (1710.7 - 1779.3 MHz) LTE Band 4 (AWS) (1710.7 - 1754.3 MHz) LTE Band 25 (PCS) (1850.7 - 1914.3 MHz) LTE Band 2 (PCS) (1850.7 - 1909.3 MHz) LTE Band 30 (2307.5 - 2312.5 MHz) LTE Band 7 (2502.5 - 2567.5 MHz) LTE Band 48 (3552.5 - 3697.5 MHz) LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz LTE Band 17: 5 MHz, 10 MHz LTE Band 13: 5 MHz, 10 MHz LTE Band 14: 5 MHz, 10 MHz LTE Band 28 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 30: 5 MHz, 10 MHz LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 71: 5 MHz	665.5 (133147)		680.5 (133297)		695.5 (133447)
LTE Band 71: 10 MHz	668 (133172)		680.5 (133297)		693 (133422)
LTE Band 71: 15 MHz	670.5 (133197)		680.5 (133297)		690.5 (133397)
LTE Band 71: 20 MHz	673 (133222)		680.5 (133297)		688 (133372)
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)		711 (23130)
LTE Band 17: 5 MHz	706.5 (23755)		710 (23780)		713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)		710 (23780)		711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)		784.5 (23255)
LTE Band 13: 10 MHz	N/A		782 (23230)		N/A
LTE Band 14: 5 MHz	790.5 (23305)		793 (23330)		795.5 (23355)
LTE Band 14: 10 MHz	N/A		793 (23330)		N/A
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)		848.3 (27033)
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)		847.5 (27025)
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)		846.5 (27015)
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)		844 (26990)
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)		841.5 (26965)
LTE Band 5 (Cell): 1.4 MHz	824.7 (26807)		836.5 (26975)		848.3 (27043)
LTE Band 5 (Cell): 3 MHz	825.5 (26815)		836.5 (26975)		847.5 (27035)
LTE Band 5 (Cell): 5 MHz	826.5 (26825)		836.5 (26975)		846.5 (27025)
LTE Band 5 (Cell): 10 MHz	829 (26850)		836.5 (26975)		844 (27000)
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)		1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)		1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)		1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)		1775 (132622)
LTE Band 66 (AWS): 15 MHz	1715.5 (132047)		1745 (132322)		1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)		1770 (132572)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (131979)		1732.5 (20175)		1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (131985)		1732.5 (20175)		1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (131995)		1732.5 (20175)		1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)		1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)		1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)		1745 (20300)
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)		1914.3 (26583)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)		1913.5 (26575)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)		1912.5 (26565)
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)		1910 (26540)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)		1907.5 (26515)
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)		1905 (26500)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)		1909.3 (19183)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)		1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)		1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)		1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)		1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)		1900 (19100)
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)		2312.5 (27735)
LTE Band 30: 10 MHz	N/A		2310 (27710)		N/A
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)		2567.5 (21425)
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)		2565 (21400)
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)		2562.5 (21375)
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)		2560 (21350)
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690 (56640)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 19 (QPSK, 16QAM, 64QAM, 256QAM), UL UE Cat 13 (QPSK, 16QAM, 64QAM)				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3-6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports carrier aggregation, downlink MIMO, LAA features as shown in Section 9 and Appendix H. All other uplink communications are identical to the Release 8 specifications. Uplink communications are done on the PCC unless otherwise specified. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced eICIC, MCH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 13 of 134	

3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 14 of 134

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

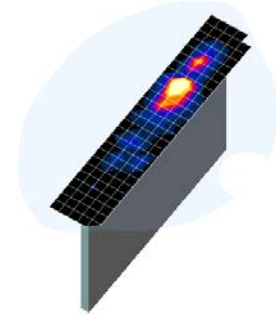


Figure 4-1 point
Sample SAR Area
Scan

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
				$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5* $\Delta z_{\text{zoom}}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5* $\Delta z_{\text{zoom}}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5* $\Delta z_{\text{zoom}}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5* $\Delta z_{\text{zoom}}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5* $\Delta z_{\text{zoom}}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

FCC ID: ZNFG820UM		SAR EVALUATION REPORT			Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset			Page 15 of 134

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

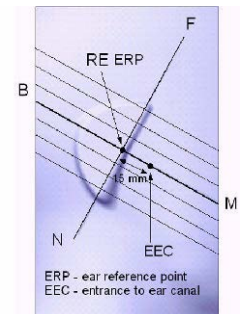


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 5-3). The acoustic output was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5-2
Front, back and side view of SAM Twin Phantom

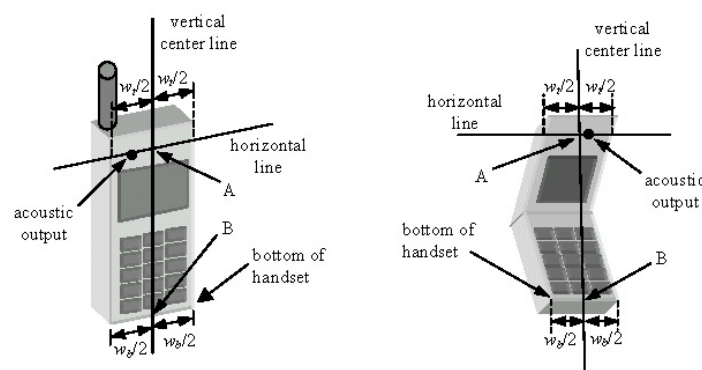


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 16 of 134

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 Positioning for Cheek

1. The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

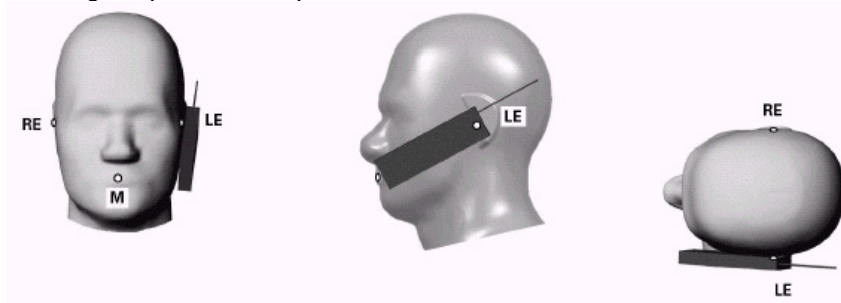


Figure 6-1 Front, Side and Top View of Cheek Position

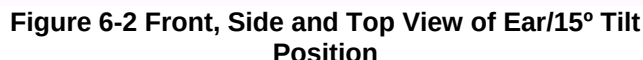
2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15° Tilt

With the test device aligned in the “Cheek Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 17 of 134	



contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 19 of 134

support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≤ 25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 20 of 134

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 21 of 134

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

The device is placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

8.4 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 22 of 134

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH_n), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCH_n), with FCH at full rate and SCH₀ enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with EVDO capabilities, the 3G SAR test reduction procedure is applied to EVDO Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 23 of 134

When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

For EVDO data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with EVDO Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03r01. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

The 3G SAR test reduction procedure is applied to the 1x-Advanced transmission mode with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The 1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1s". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 24 of 134

primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.5.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all “1s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCH_n configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCH_n, for the highest reported SAR configuration in 12.2 kbps RMC.

8.5.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

8.5.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.5.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.6.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 25 of 134

8.6.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.6.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

- a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - i. The required channel and offset combination with the highest maximum output power is required for SAR.
 - ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
 - iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
- d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to $\frac{1}{2}$ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.6.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for downlink only carrier aggregation configurations when the average output

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 26 of 134

power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.7.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.7.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.7.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 27 of 134	

positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.7.7 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 28 of 134

8.7.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 29 of 134

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	25.23	25.22	25.10	25.38	25.46	25.33	25.14
Cellular	1013	22H	824.7	25.31	25.09	25.07	25.30	25.07	25.02	25.32
	384	22H	836.52	25.01	25.42	25.46	25.16	25.42	25.43	25.47
	777	22H	848.31	25.02	25.10	25.45	25.13	25.15	25.24	25.35
PCS	25	24E	1851.25	24.80	24.94	25.05	25.20	25.12	25.01	24.76
	600	24E	1880	25.14	25.20	24.78	25.18	24.96	25.10	24.98
	1175	24E	1908.75	25.04	24.97	25.10	24.72	25.04	25.03	25.09

Table 9-2
Reduced Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	22.88	23.09	22.73	23.01	22.92	23.05	23.15
	600	24E	1880	22.77	22.95	22.85	22.90	23.16	23.15	23.06
	1175	24E	1908.75	22.73	23.06	23.05	23.18	23.00	23.08	23.09

Note: RC1 is only applicable for IS-95 compatibility. For FCC Rule Part 90S, Per FCC KDB Publication 447498 D01v06 4.1.g), only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

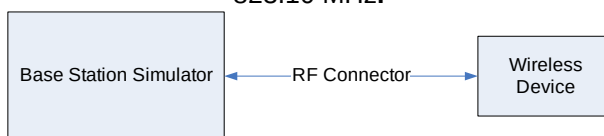


Figure 9-1
Power Measurement Setup

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 30 of 134

9.2 GSM Conducted Powers

Table 9-3
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	33.68	33.63	32.80	31.01	29.15	26.47	26.11	25.46	25.21
	190	34.01	33.79	32.60	31.09	28.89	26.60	26.48	25.33	25.37
	251	33.99	33.76	32.62	30.95	28.72	26.38	26.33	25.48	25.55
GSM 1900	512	31.10	30.66	29.91	27.99	26.02	25.65	25.95	24.74	24.75
	661	30.62	30.79	29.82	27.62	25.69	25.77	25.60	25.06	24.65
	810	31.02	30.64	30.01	27.95	25.93	25.63	25.55	25.12	24.76
Calculated Maximum Frame-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	24.65	24.60	26.78	26.75	26.14	17.44	20.09	21.20	22.20
	190	24.98	24.76	26.58	26.83	25.88	17.57	20.46	21.07	22.36
	251	24.96	24.73	26.60	26.69	25.71	17.35	20.31	21.22	22.54
GSM 1900	512	22.07	21.63	23.89	23.73	23.01	16.62	19.93	20.48	21.74
	661	21.59	21.76	23.80	23.36	22.68	16.74	19.58	20.80	21.64
	810	21.99	21.61	23.99	23.69	22.92	16.60	19.53	20.86	21.75
GSM 850	Frame	24.67	24.67	26.68	26.44	25.69	17.17	20.18	20.94	22.19
GSM 1900	Avg.Targets:	21.67	21.67	23.68	23.44	22.69	16.67	19.68	20.44	21.69

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
- EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GSM Class: B

GPRS Multislot class: 12 (Max 4 Tx uplink slots)

EDGE Multislot class: 12 (Max 4 Tx uplink slots)

DTM Multislot Class: N/A

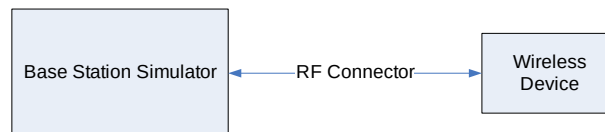


Figure 9-2
Power Measurement Setup

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 31 of 134	

9.3 UMTS Conducted Powers

Table 9-4
Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	25.29	25.33	25.29	24.92	24.94	25.31	24.91	25.11	25.20	-
99		12.2 kbps AMR	25.21	25.35	25.43	24.89	25.13	25.17	24.98	25.13	25.18	-
6	HSDPA	Subtest 1	24.08	24.21	24.14	23.62	24.10	23.98	23.75	24.13	24.04	0
6		Subtest 2	24.06	23.97	24.00	23.64	23.85	23.96	23.64	23.85	23.92	0
6		Subtest 3	23.59	23.49	23.76	23.14	23.45	23.51	23.22	23.42	23.37	0.5
6		Subtest 4	23.46	23.61	23.80	23.27	23.23	23.60	23.19	23.28	23.50	0.5
6	HSUPA	Subtest 1	24.08	24.14	24.19	23.81	23.89	24.37	23.71	23.93	24.16	0
6		Subtest 2	22.01	22.05	22.19	22.02	22.02	22.30	21.86	21.96	22.15	2
6		Subtest 3	23.20	23.16	23.11	22.92	22.82	23.15	22.75	22.87	23.06	1
6		Subtest 4	22.15	22.21	22.10	21.69	21.89	22.25	21.79	21.79	22.17	2
6		Subtest 5	24.13	24.06	24.15	23.82	24.03	24.10	23.93	23.91	24.17	0
8	DC-HSDPA	Subtest 1	24.02	24.06	24.10	23.77	24.05	24.08	23.77	23.98	23.92	0
8		Subtest 2	24.06	24.18	24.07	23.61	23.65	23.99	23.72	23.96	24.10	0
8		Subtest 3	23.41	23.59	23.61	22.94	23.30	23.36	23.15	23.41	23.35	0.5
8		Subtest 4	23.50	23.57	23.80	23.11	23.18	23.53	23.38	23.30	23.40	0.5

Table 9-5
Reduced Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.82	22.95	23.41	22.96	23.15	23.10	-
99		12.2 kbps AMR	22.84	23.17	23.22	22.91	23.20	23.08	-
6	HSDPA	Subtest 1	21.71	22.06	22.07	21.79	22.12	22.04	0
6		Subtest 2	21.58	21.81	21.92	21.67	21.86	21.89	0
6		Subtest 3	21.10	21.50	21.48	21.22	21.43	21.30	0.5
6		Subtest 4	21.33	21.32	21.58	21.25	21.24	21.58	0.5
6	HSUPA	Subtest 1	21.86	22.00	22.43	21.71	21.91	22.08	0
6		Subtest 2	20.01	20.03	20.27	19.78	19.94	20.06	2
6		Subtest 3	21.05	20.70	21.12	20.66	20.84	20.94	1
6		Subtest 4	19.63	19.75	20.20	19.77	19.86	20.20	2
6		Subtest 5	21.92	21.98	22.06	21.95	21.98	22.16	0
8	DC-HSDPA	Subtest 1	21.84	22.06	22.09	21.73	21.92	21.86	0
8		Subtest 2	21.55	21.71	22.05	21.77	21.90	22.13	0
8		Subtest 3	21.04	21.36	21.29	21.06	21.31	21.41	0.5
8		Subtest 4	21.02	21.23	21.47	21.38	21.34	21.32	0.5

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- The DUT supports UE category 24 for HSDPA

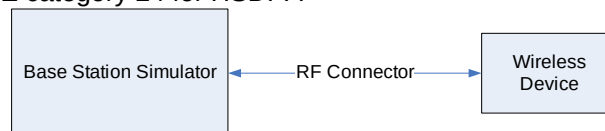


Figure 9-3
Power Measurement Setup

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 32 of 134

9.4 LTE Conducted Powers

9.4.1

LTE Band 71

Table 9-6
LTE Band 71 Conducted Powers - 20 MHz Bandwidth

LTE Band 71 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			133297 (680.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.96	0	0
	1	50	25.16		0
	1	99	24.90		0
	50	0	23.88	0-1	1
	50	25	24.10		1
	50	50	23.92		1
16QAM	100	0	23.84	0-1	1
	1	0	23.77		1
	1	50	23.94		1
	1	99	24.27	0-2	1
	50	0	23.32		2
	50	25	22.92		2
64QAM	50	50	23.09	0-2	2
	100	0	22.76		2
	1	0	23.04	0-2	2
	1	50	22.89		2
	1	99	22.94	0-3	2
	50	0	22.17		3
	50	25	21.99		3
	50	50	22.07	0-3	3
	100	0	22.03		3

Note: LTE Band 71 at 20 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-7
LTE Band 71 Conducted Powers - 15 MHz Bandwidth

LTE Band 71 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			133297 (680.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.05	0	0
	1	36	25.27		0
	1	74	24.92		0
	36	0	24.04	0-1	1
	36	18	23.99		1
	36	37	24.00		1
16QAM	75	0	23.92	0-1	1
	1	0	24.09		1
	1	36	23.97		1
	1	74	24.23	0-2	1
	36	0	22.83		2
	36	18	22.91		2
64QAM	36	37	22.84	0-2	2
	75	0	23.12		2
	1	0	23.01	0-2	2
	1	36	23.14		2
	1	74	23.23		2
	36	0	22.03	0-3	3
	36	18	22.01		3
	36	37	21.96		3
	75	0	22.00	0-3	3

Note: LTE Band 71 at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 33 of 134	

Table 9-8
LTE Band 71 Conducted Powers - 10 MHz Bandwidth

LTE Band 71 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			133172 (668.0 MHz)	133297 (680.5 MHz)	133422 (693.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.84	24.91	25.08	0	0
	1	25	24.87	25.27	25.15		0
	1	49	24.99	24.93	25.03		0
	25	0	24.01	23.81	24.04	0-1	1
	25	12	23.78	23.83	24.04		1
	25	25	24.11	24.20	23.91		1
	50	0	23.97	24.03	23.99		1
16QAM	1	0	24.06	23.92	23.74	0-1	1
	1	25	24.10	23.98	24.04		1
	1	49	23.93	23.89	24.06		1
	25	0	23.20	23.14	22.91	0-2	2
	25	12	22.87	22.96	22.86		2
	25	25	22.91	22.88	22.75		2
	50	0	22.89	22.84	23.01		2
64QAM	1	0	22.98	23.09	23.04	0-2	2
	1	25	22.93	22.96	22.99		2
	1	49	23.03	22.90	22.87		2
	25	0	22.03	22.09	21.73	0-3	3
	25	12	21.97	22.22	22.15		3
	25	25	22.02	22.18	21.95		3
	50	0	21.87	22.31	21.89		3

Table 9-9
LTE Band 71 Conducted Powers - 5 MHz Bandwidth

LTE Band 71 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			133147 (665.5 MHz)	133297 (680.5 MHz)	133447 (695.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.92	24.93	25.26	0	0
	1	12	24.91	24.94	25.04		0
	1	24	24.96	24.89	25.10		0
	12	0	23.99	24.02	24.04	0-1	1
	12	6	24.07	23.87	24.21		1
	12	13	24.09	24.13	23.89		1
	25	0	23.96	24.21	23.94		1
16QAM	1	0	24.16	24.03	24.00	0-1	1
	1	12	23.87	24.00	24.08		1
	1	24	23.95	23.87	24.07		1
	12	0	22.87	22.87	22.90	0-2	2
	12	6	22.73	23.10	23.21		2
	12	13	23.07	22.84	22.97		2
	25	0	23.06	23.03	23.02		2
64QAM	1	0	23.15	22.97	23.18	0-2	2
	1	12	23.27	23.03	23.05		2
	1	24	23.01	23.07	22.98		2
	12	0	21.97	22.00	21.94	0-3	3
	12	6	22.02	21.82	22.26		3
	12	13	21.95	21.69	22.00		3
	25	0	21.88	21.78	22.31		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 34 of 134	

9.4.2

LTE Band 12

Table 9-10
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23095 (707.5 MHz) Conducted Power [dBm]		
QPSK	1	0	25.18	0	0
	1	25	25.19		0
	1	49	25.02		0
	25	0	24.25	0-1	1
	25	12	24.06		1
	25	25	24.23		1
	50	0	24.05		1
16QAM	1	0	24.16	0-1	1
	1	25	24.24		1
	1	49	23.98		1
	25	0	23.12	0-2	2
	25	12	22.97		2
	25	25	23.16		2
	50	0	23.19		2
64QAM	1	0	23.27	0-2	2
	1	25	22.87		2
	1	49	23.06		2
	25	0	22.14	0-3	3
	25	12	22.03		3
	25	25	22.31		3
	50	0	22.24		3

Note: LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-11
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.97	25.26	25.18	0	0
	1	12	25.21	25.32	25.04		0
	1	24	24.94	25.08	24.89		0
	12	0	24.19	24.03	24.04	0-1	1
	12	6	23.90	23.90	24.14		1
	12	13	24.07	24.23	23.85		1
	25	0	24.27	24.00	24.22		1
16QAM	1	0	24.06	23.96	24.19	0-1	1
	1	12	24.18	23.92	24.34		1
	1	24	24.24	24.03	23.96		1
	12	0	23.27	23.40	23.28	0-2	2
	12	6	23.03	23.05	22.86		2
	12	13	23.29	23.29	23.04		2
	25	0	23.05	22.93	22.97		2
64QAM	1	0	23.12	23.23	22.96	0-2	2
	1	12	23.12	23.12	23.33		2
	1	24	23.02	23.05	23.22		2
	12	0	22.08	22.22	22.30	0-3	3
	12	6	22.26	22.13	21.94		3
	12	13	21.88	22.19	22.38		3
	25	0	21.99	22.16	22.00		3

FCC ID: ZNFG820UM			SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset			Page 35 of 134

Table 9-12
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.34	25.11	25.27	0	0
	1	7	25.02	25.23	24.89		0
	1	14	25.16	25.29	25.27		0
	8	0	24.03	24.21	23.92	0-1	1
	8	4	24.32	23.95	24.26		1
	8	7	24.14	23.88	24.24		1
	15	0	24.27	24.10	24.14		1
16QAM	1	0	24.29	24.05	24.34	0-1	1
	1	7	24.09	23.97	24.11		1
	1	14	24.07	24.42	24.02		1
	8	0	23.32	23.42	23.31	0-2	2
	8	4	23.31	23.09	23.17		2
	8	7	23.23	23.20	22.82		2
	15	0	23.24	23.24	23.27		2
64QAM	1	0	23.30	23.17	23.07	0-2	2
	1	7	23.28	22.76	23.17		2
	1	14	23.27	23.06	23.12		2
	8	0	21.95	22.35	21.88	0-3	3
	8	4	22.09	22.18	22.06		3
	8	7	21.93	21.98	22.20		3
	15	0	22.03	22.06	22.20		3

Table 9-13
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.27	25.29	25.10	0	0
	1	2	25.14	25.21	25.09		0
	1	5	24.89	24.86	25.19		0
	3	0	24.92	25.28	24.97		0
	3	2	25.06	25.26	25.13		0
	3	3	25.02	24.90	24.94		0
	6	0	24.13	24.37	24.37	0-1	1
16QAM	1	0	24.35	23.79	24.02	0-1	1
	1	2	23.88	24.03	24.21		1
	1	5	24.28	24.12	23.95		1
	3	0	24.09	23.90	24.05		1
	3	2	24.33	24.08	23.96		1
	3	3	24.11	24.25	23.99		1
	6	0	23.42	23.34	23.00	0-2	2
64QAM	1	0	22.82	23.27	23.35	0-2	2
	1	2	22.95	23.15	23.20		2
	1	5	23.27	23.00	22.82		2
	3	0	23.05	22.88	23.09		2
	3	2	23.31	23.10	22.88		2
	3	3	22.96	23.16	23.10		2
	6	0	22.34	21.83	21.84	0-3	3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 36 of 134	

9.4.3

LTE Band 13

Table 9-14
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz) Conducted Power [dBm]		
QPSK	1	0	25.13	0	0
	1	25	25.23		0
	1	49	25.16		0
	25	0	24.25	0-1	1
	25	12	24.38		1
	25	25	24.36		1
	50	0	24.27		1
16QAM	1	0	24.36	0-1	1
	1	25	24.36		1
	1	49	24.37		1
	25	0	23.01	0-2	2
	25	12	23.27		2
	25	25	23.14		2
	50	0	23.07		2
64QAM	1	0	23.24	0-2	2
	1	25	23.11		2
	1	49	23.12		2
	25	0	22.34	0-3	3
	25	12	22.38		3
	25	25	22.00		3
	50	0	22.14		3

Table 9-15
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz) Conducted Power [dBm]		
QPSK	1	0	25.02	0	0
	1	12	25.29		0
	1	24	25.17		0
	12	0	24.16	0-1	1
	12	6	24.30		1
	12	13	24.11		1
	25	0	24.02		1
16QAM	1	0	24.34	0-1	1
	1	12	24.13		1
	1	24	24.25		1
	12	0	23.07	0-2	2
	12	6	23.06		2
	12	13	23.02		2
	25	0	23.19		2
64QAM	1	0	23.18	0-2	2
	1	12	23.37		2
	1	24	23.21		2
	12	0	22.20	0-3	3
	12	6	22.25		3
	12	13	22.36		3
	25	0	22.17		3

Note: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 37 of 134

9.4.4

LTE Band 14

Table 9-16
LTE Band 14 Conducted Powers - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz) Conducted Power [dBm]		
QPSK	1	0	25.19	0	0
	1	25	25.18		0
	1	49	25.09		0
	25	0	24.17	0-1	1
	25	12	24.27		1
	25	25	24.15		1
16QAM	50	0	24.10	0-1	1
	1	0	24.18		1
	1	25	24.15		1
	1	49	24.04	0-2	1
	25	0	23.21		2
	25	12	23.05		2
64QAM	25	25	23.12	0-2	2
	50	0	23.11		2
	1	0	23.15		2
	1	25	23.05	0-2	2
	1	49	23.26		2
	25	0	22.04		3
64QAM	25	12	22.20	0-3	3
	25	25	22.16		3
	50	0	22.11		3

Table 9-17
LTE Band 14 Conducted Powers - 5 MHz Bandwidth

LTE Band 14 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23330 (793.0 MHz) Conducted Power [dBm]		
QPSK	1	0	25.20	0	0
	1	12	25.18		0
	1	24	25.18		0
	12	0	24.08	0-1	1
	12	6	24.15		1
	12	13	24.17		1
16QAM	25	0	24.07	0-1	1
	1	0	24.09		1
	1	12	24.17		1
	1	24	24.11	0-2	1
	12	0	23.08		2
	12	6	23.04		2
64QAM	12	13	23.19	0-2	2
	25	0	23.17		2
	1	0	23.22	0-2	2
	1	12	23.12		2
	1	24	23.05		2
	12	0	22.20	0-3	3
64QAM	12	6	22.16		3
	12	13	22.08		3
	25	0	22.09		3

Note: LTE Band 14 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 38 of 134

9.4.5

LTE Band 26 (Cell)

Table 9-18
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]		
QPSK	1	0	25.22	0	0
	1	36	25.34		0
	1	74	25.10		0
	36	0	24.47	0-1	1
	36	18	24.26		1
	36	37	24.17		1
	75	0	24.12		1
16QAM	1	0	24.35	0-1	1
	1	36	24.36		1
	1	74	24.38		1
	36	0	23.05	0-2	2
	36	18	23.12		2
	36	37	23.10		2
	75	0	23.19		2
64QAM	1	0	23.13	0-2	2
	1	36	23.30		2
	1	74	22.99		2
	36	0	22.08	0-3	3
	36	18	22.34		3
	36	37	22.20		3
	75	0	22.13		3

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-19
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26740 (819.0 MHz)	26865 (831.5 MHz)	26990 (844.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.35	25.14	25.03	0	0
	1	25	24.88	25.28	25.35		0
	1	49	25.09	25.25	25.43		0
	25	0	24.21	24.36	24.19	0-1	1
	25	12	24.14	24.32	24.05		1
	25	25	24.44	24.15	24.15		1
	50	0	24.10	24.33	23.96		1
16QAM	1	0	24.18	24.02	24.30	0-1	1
	1	25	24.34	23.89	24.01		1
	1	49	24.23	24.13	23.94		1
	25	0	23.02	23.24	23.08	0-2	2
	25	12	23.36	23.35	23.07		2
	25	25	23.04	23.00	23.32		2
	50	0	22.98	23.30	23.19		2
64QAM	1	0	22.98	22.89	23.39	0-2	2
	1	25	23.07	23.08	22.94		2
	1	49	23.17	23.38	23.05		2
	25	0	22.18	22.08	22.21	0-3	3
	25	12	22.12	22.24	22.43		3
	25	25	22.31	22.37	22.46		3
	50	0	22.02	22.37	22.05		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 39 of 134

Table 9-20
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26715 (816.5 MHz)	26865 (831.5 MHz)	27015 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.03	25.09	24.99	0	0
	1	12	25.29	25.32	25.04		0
	1	24	25.06	25.19	24.92		0
	12	0	24.35	23.94	24.12	0-1	1
	12	6	24.22	23.98	24.03		1
	12	13	24.26	24.06	24.37		1
	25	0	24.25	24.27	24.31		1
16QAM	1	0	24.29	24.13	24.31	0-1	1
	1	12	24.08	24.30	24.36		1
	1	24	24.37	24.13	24.03		1
	12	0	23.38	23.00	23.32	0-2	2
	12	6	23.03	23.26	23.13		2
	12	13	23.29	23.13	23.30		2
	25	0	23.38	23.35	23.40		2
64QAM	1	0	23.06	23.26	23.21	0-2	2
	1	12	23.29	23.05	23.01		2
	1	24	23.16	22.90	23.01		2
	12	0	22.11	21.97	22.16	0-3	3
	12	6	22.12	22.28	22.06		3
	12	13	22.40	22.07	22.26		3
	25	0	21.96	22.07	22.26		3

Table 9-21
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26705 (815.5 MHz)	26865 (831.5 MHz)	27025 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.05	24.95	25.24	0	0
	1	7	25.00	25.11	24.97		0
	1	14	25.16	25.41	25.12		0
	8	0	23.95	24.33	24.06	0-1	1
	8	4	24.18	23.95	24.23		1
	8	7	24.10	24.45	24.23		1
	15	0	23.97	24.36	24.18		1
16QAM	1	0	23.99	24.10	24.36	0-1	1
	1	7	24.31	24.12	24.18		1
	1	14	24.29	24.26	24.30		1
	8	0	23.21	23.24	23.11	0-2	2
	8	4	23.10	23.20	23.04		2
	8	7	23.27	23.18	23.38		2
	15	0	22.95	23.46	23.00		2
64QAM	1	0	23.13	23.35	23.35	0-2	2
	1	7	23.31	23.06	23.03		2
	1	14	22.96	22.91	23.00		2
	8	0	22.32	22.36	22.17	0-3	3
	8	4	21.91	22.03	22.43		3
	8	7	22.10	22.09	22.29		3
	15	0	22.15	21.92	22.06		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 40 of 134	

Table 9-22
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26697 (814.7 MHz)	26865 (831.5 MHz)	27033 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.24	25.08	24.97	0	0
	1	2	25.14	24.94	25.14		0
	1	5	25.22	25.05	25.27		0
	3	0	25.22	25.10	25.14		0
	3	2	25.05	25.40	25.22		0
	3	3	25.06	25.15	25.03		0
	6	0	24.43	24.21	24.01		1
16QAM	1	0	24.08	23.99	24.04	0-1	1
	1	2	23.91	24.02	24.26		1
	1	5	23.97	24.10	24.21		1
	3	0	24.32	24.02	24.35		1
	3	2	23.99	24.25	24.31		1
	3	3	24.34	24.27	24.01		1
	6	0	23.08	23.04	23.04	2	
64QAM	1	0	23.24	23.04	23.33	0-2	2
	1	2	23.36	23.17	22.99		2
	1	5	23.26	22.92	23.09		2
	3	0	23.12	23.39	23.27		2
	3	2	23.11	23.06	23.43		2
	3	3	23.26	23.00	23.31		2
	6	0	22.21	22.01	22.22	0-3	3

9.4.6 LTE Band 5 (Cell)

Table 9-23
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20525 (836.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	25.15	0	0
	1	25	25.02		0
	1	49	24.88		0
	25	0	24.11	0-1	1
	25	12	24.30		1
	25	25	24.11		1
	50	0	23.90		1
16QAM	1	0	24.03	0-1	1
	1	25	24.11		1
	1	49	23.99		1
	25	0	23.21	0-2	2
	25	12	23.08		2
	25	25	23.16		2
	50	0	23.35		2
64QAM	1	0	23.14	0-2	2
	1	25	23.19		2
	1	49	23.22		2
	25	0	22.22	0-3	3
	25	12	22.24		3
	25	25	22.12		3
	50	0	22.11		3

Note: LTE Band 5 (Cell) at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 41 of 134	

Table 9-24
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.21	24.92	25.14	0	0
	1	12	25.19	25.30	24.95		0
	1	24	25.27	25.15	25.22		0
	12	0	23.99	23.97	24.30	0-1	1
	12	6	23.92	24.13	23.99		1
	12	13	23.92	24.00	24.10		1
	25	0	24.27	24.21	23.92		1
16QAM	1	0	24.03	24.21	24.24	0-1	1
	1	12	24.13	24.04	24.06		1
	1	24	24.15	24.03	24.14		1
	12	0	23.04	23.27	23.30	0-2	2
	12	6	23.10	23.04	23.08		2
	12	13	22.87	22.97	23.24		2
	25	0	22.94	23.35	23.26		2
64QAM	1	0	23.30	23.20	23.07	0-2	2
	1	12	23.16	22.86	23.15		2
	1	24	22.89	23.11	22.98		2
	12	0	22.22	22.27	22.23	0-3	3
	12	6	22.14	22.03	22.16		3
	12	13	21.96	22.11	22.27		3
	25	0	22.32	22.05	22.09		3

Table 9-25
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.93	25.08	25.28	0	0
	1	7	25.16	24.96	25.13		0
	1	14	25.29	24.90	25.08		0
	8	0	23.90	24.16	24.39	0-1	1
	8	4	24.34	24.01	24.21		1
	8	7	24.18	24.28	23.98		1
	15	0	24.02	24.18	24.20		1
16QAM	1	0	23.97	24.09	24.14	0-1	1
	1	7	24.08	24.09	24.07		1
	1	14	24.20	24.01	24.09		1
	8	0	23.14	23.03	22.95	0-2	2
	8	4	23.18	23.19	23.23		2
	8	7	23.13	23.00	23.25		2
	15	0	23.07	23.30	23.15		2
64QAM	1	0	23.02	23.20	23.00	0-2	2
	1	7	23.16	23.06	23.10		2
	1	14	23.06	23.10	23.12		2
	8	0	21.97	22.03	21.89	0-3	3
	8	4	22.26	22.08	21.85		3
	8	7	21.99	21.97	22.26		3
	15	0	22.26	22.06	22.26		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 42 of 134

Table 9-26
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.12	25.24	25.07	0	0
	1	2	25.17	25.11	25.35		0
	1	5	25.18	25.04	25.24		0
	3	0	24.92	25.17	25.33		0
	3	2	25.11	25.30	25.26		0
	3	3	24.94	25.30	25.09		0
	6	0	24.28	24.06	23.96	0-1	1
16QAM	1	0	24.19	24.17	24.14	0-1	1
	1	2	23.98	24.11	24.29		1
	1	5	24.21	23.93	24.08		1
	3	0	24.23	24.23	24.31		1
	3	2	24.14	24.12	24.25		1
	3	3	24.29	24.21	23.94		1
	6	0	23.19	23.00	23.14	0-2	2
64QAM	1	0	22.98	23.35	22.87	0-2	2
	1	2	23.23	23.04	23.05		2
	1	5	23.06	23.23	22.94		2
	3	0	23.16	23.27	23.07		2
	3	2	23.08	23.30	22.90		2
	3	3	23.09	23.16	23.20		2
	6	0	22.15	22.24	21.98	0-3	3

9.4.7 Maximum LTE Band 66 (AWS)

Table 9-27
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.12	24.44	0	0
	1	50	24.27	24.39	24.18		0
	1	99	24.23	24.46	24.31		0
	50	0	23.39	23.45	23.10	0-1	1
	50	25	23.18	23.28	23.19		1
	50	50	23.33	23.09	23.44		1
	100	0	23.42	23.31	23.31		1
16QAM	1	0	23.40	23.31	23.28	0-1	1
	1	50	23.16	23.47	23.30		1
	1	99	23.41	23.45	23.46		1
	50	0	22.34	22.20	22.42	0-2	2
	50	25	22.20	22.35	22.25		2
	50	50	22.21	22.41	22.20		2
	100	0	22.41	22.18	22.29		2
64QAM	1	0	22.25	22.49	22.24	0-2	2
	1	50	22.31	22.31	22.26		2
	1	99	22.17	22.42	22.20		2
	50	0	21.38	21.12	21.17	0-3	3
	50	25	21.21	21.21	21.33		3
	50	50	21.10	21.12	21.44		3
	100	0	21.31	21.19	21.20		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 43 of 134	

Table 9-28
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.28	24.14	24.14	0	0
	1	36	24.42	24.36	24.15		0
	1	74	24.37	24.28	24.41		0
	36	0	23.31	23.23	23.28	0-1	1
	36	18	23.34	23.31	23.40		1
	36	37	23.41	23.21	23.20		1
	75	0	23.12	23.31	23.33		1
16QAM	1	0	23.25	23.26	23.34	0-1	1
	1	36	23.37	23.32	23.50		1
	1	74	23.47	23.19	23.42		1
	36	0	22.33	22.37	22.44	0-2	2
	36	18	22.21	22.23	22.25		2
	36	37	22.37	22.28	22.35		2
	75	0	22.23	22.25	22.40		2
64QAM	1	0	22.27	22.20	22.46	0-2	2
	1	36	22.21	22.33	22.13		2
	1	74	22.27	22.24	22.17		2
	36	0	21.44	21.40	21.19	0-3	3
	36	18	21.11	21.37	21.30		3
	36	37	21.25	21.39	21.36		3
	75	0	21.31	21.32	21.23		3

Table 9-29
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.43	24.20	24.31	0	0
	1	25	24.18	24.41	24.34		0
	1	49	24.30	24.10	24.50		0
	25	0	23.20	23.21	23.18	0-1	1
	25	12	23.40	23.33	23.23		1
	25	25	23.23	23.33	23.35		1
	50	0	23.39	23.22	23.38		1
16QAM	1	0	23.39	23.33	23.40	0-1	1
	1	25	23.30	23.25	23.46		1
	1	49	23.36	23.26	23.24		1
	25	0	22.17	22.50	22.39	0-2	2
	25	12	22.43	22.18	22.38		2
	25	25	22.27	22.42	22.46		2
	50	0	22.37	22.30	22.34		2
64QAM	1	0	22.18	22.39	22.38	0-2	2
	1	25	22.41	22.20	22.36		2
	1	49	22.37	22.41	22.15		2
	25	0	21.41	21.12	21.37	0-3	3
	25	12	21.13	21.20	21.43		3
	25	25	21.47	21.24	21.16		3
	50	0	21.28	21.47	21.29		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 44 of 134

Table 9-30
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.21	24.38	24.39	0	0
	1	12	24.31	24.46	24.32		0
	1	24	24.45	24.25	24.39		0
	12	0	23.19	23.21	23.13	0-1	1
	12	6	23.45	23.13	23.34		1
	12	13	23.42	23.30	23.09		1
	25	0	23.10	23.40	23.19		1
16QAM	1	0	23.25	23.20	23.41	0-1	1
	1	12	23.40	23.37	23.34		1
	1	24	23.20	23.31	23.44		1
	12	0	22.18	22.47	22.41	0-2	2
	12	6	22.36	22.42	22.28		2
	12	13	22.27	22.50	22.33		2
	25	0	22.43	22.30	22.13		2
64QAM	1	0	22.37	22.18	22.39	0-2	2
	1	12	22.24	22.22	22.45		2
	1	24	22.32	22.32	22.47		2
	12	0	21.25	21.22	21.33	0-3	3
	12	6	21.25	21.31	21.42		3
	12	13	21.37	21.28	21.24		3
	25	0	21.46	21.38	21.21		3

Table 9-31
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.40	24.10	24.45	0	0
	1	7	24.31	24.32	24.47		0
	1	14	24.42	24.25	24.23		0
	8	0	23.37	23.27	23.20	0-1	1
	8	4	23.30	23.15	23.42		1
	8	7	23.21	23.28	23.23		1
	15	0	23.25	23.30	23.28		1
16QAM	1	0	23.10	23.35	23.18	0-1	1
	1	7	23.30	23.25	23.47		1
	1	14	23.41	23.23	23.28		1
	8	0	22.44	22.32	22.36	0-2	2
	8	4	22.38	22.23	22.38		2
	8	7	22.42	22.19	22.14		2
	15	0	22.43	22.22	22.37		2
64QAM	1	0	22.35	22.25	22.32	0-2	2
	1	7	22.19	22.34	22.31		2
	1	14	22.18	22.20	22.28		2
	8	0	21.24	21.27	21.42	0-3	3
	8	4	21.47	21.27	21.30		3
	8	7	21.24	21.24	21.39		3
	15	0	21.47	21.31	21.40		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 45 of 134

Table 9-32
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.13	24.19	24.32	0	0
	1	2	24.37	24.28	24.36		0
	1	5	24.31	24.30	24.38		0
	3	0	24.29	24.35	24.33		0
	3	2	24.14	24.13	24.43		0
	3	3	24.16	24.43	24.47		0
	6	0	23.22	23.11	23.46	0-1	1
16QAM	1	0	23.49	23.44	23.26	0-1	1
	1	2	23.27	23.26	23.39		1
	1	5	23.44	23.23	23.19		1
	3	0	23.43	23.24	23.26		1
	3	2	23.26	23.40	23.35		1
	3	3	23.31	23.18	23.37		1
	6	0	22.36	22.44	22.32	0-2	2
64QAM	1	0	22.29	22.35	22.21	0-2	2
	1	2	22.13	22.20	22.24		2
	1	5	22.34	22.18	22.33		2
	3	0	22.39	22.43	22.30		2
	3	2	22.26	22.34	22.49		2
	3	3	22.33	22.26	22.42		2
	6	0	21.23	21.24	21.21	0-3	3

9.4.8 Reduced LTE Band 66 (AWS)

Table 9-33
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.36	23.38	23.31	0	0
	1	50	23.33	23.22	23.40		0
	1	99	23.42	23.44	23.19		0
	50	0	23.36	23.47	23.11	0-1	0
	50	25	23.44	23.20	23.10		0
	50	50	23.36	23.36	23.23		0
	100	0	23.07	23.14	23.23		0
16QAM	1	0	23.30	23.21	23.06	0-1	0
	1	50	23.39	23.11	23.05		0
	1	99	23.04	23.19	23.11		0
	50	0	22.22	22.45	22.28	0-2	1
	50	25	22.40	21.89	22.16		1
	50	50	22.29	22.40	22.23		1
	100	0	22.00	22.34	22.21		1
64QAM	1	0	22.07	22.17	22.19	0-2	1
	1	50	22.12	22.30	22.34		1
	1	99	22.41	22.19	22.34		1
	50	0	21.17	21.30	21.40	0-3	2
	50	25	21.13	21.24	20.85		2
	50	50	21.19	21.15	21.30		2
	100	0	21.30	21.35	21.32		2

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 46 of 134	

Table 9-34
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.03	23.50	23.49	0	0
	1	36	23.26	23.34	23.03		0
	1	74	23.14	23.18	23.43		0
	36	0	23.12	23.29	23.29	0-1	0
	36	18	23.28	23.44	23.05		0
	36	37	23.46	23.17	23.18		0
	75	0	23.21	23.23	23.43		0
16QAM	1	0	23.36	23.35	23.11	0-1	0
	1	36	23.22	23.18	23.37		0
	1	74	23.48	23.26	23.48		0
	36	0	22.40	22.24	22.28	0-2	1
	36	18	22.13	21.85	21.97		1
	36	37	22.12	22.39	22.13		1
	75	0	22.29	22.14	22.36		1
64QAM	1	0	22.23	22.25	21.93	0-2	1
	1	36	21.96	22.06	21.93		1
	1	74	22.36	22.25	22.34		1
	36	0	21.50	21.20	21.31	0-3	2
	36	18	21.18	21.26	21.30		2
	36	37	21.17	21.40	21.40		2
	75	0	21.40	21.32	21.11		2

Table 9-35
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.38	23.11	23.30	0	0
	1	25	23.07	23.03	23.03		0
	1	49	23.34	23.05	23.29		0
	25	0	23.30	23.37	23.28	0-1	0
	25	12	23.21	23.16	23.34		0
	25	25	23.18	23.42	23.02		0
	50	0	23.31	23.03	23.17		0
16QAM	1	0	23.39	23.36	23.40	0-1	0
	1	25	23.10	23.46	23.27		0
	1	49	23.31	23.01	23.30		0
	25	0	22.39	22.22	22.36	0-2	1
	25	12	22.26	22.20	22.14		1
	25	25	22.10	22.19	21.91		1
	50	0	22.36	22.19	22.34		1
64QAM	1	0	22.17	22.27	22.24	0-2	1
	1	25	22.26	22.46	21.95		1
	1	49	22.09	22.29	22.19		1
	25	0	21.13	21.13	21.36	0-3	2
	25	12	20.94	21.40	21.09		2
	25	25	21.30	21.14	21.31		2
	50	0	21.26	21.15	21.25		2

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 47 of 134

Table 9-36
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.48	23.47	23.34	0	0
	1	12	23.39	23.11	23.29		0
	1	24	23.17	23.16	23.13		0
	12	0	23.09	23.33	23.08	0-1	0
	12	6	23.42	23.06	23.31		0
	12	13	23.37	23.09	23.45		0
	25	0	23.26	23.01	23.27		0
16QAM	1	0	23.38	23.22	23.06	0-1	0
	1	12	23.36	23.34	23.25		0
	1	24	23.36	23.06	23.03		0
	12	0	22.10	22.06	22.26	0-2	1
	12	6	22.02	22.21	22.26		1
	12	13	22.02	22.22	22.26		1
	25	0	21.88	22.15	22.21		1
64QAM	1	0	22.04	22.05	22.01	0-2	1
	1	12	22.25	22.50	22.43		1
	1	24	22.39	22.02	22.03		1
	12	0	21.18	21.35	21.19	0-3	2
	12	6	21.18	21.21	21.13		2
	12	13	21.43	21.38	21.38		2
	25	0	21.13	21.27	21.47		2

Table 9-37
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.42	23.00	23.47	0	0
	1	7	23.47	23.03	23.04		0
	1	14	23.10	23.15	23.12		0
	8	0	23.14	23.14	23.02	0-1	0
	8	4	23.32	23.46	23.39		0
	8	7	23.39	23.41	23.25		0
	15	0	23.22	23.21	23.03		0
16QAM	1	0	23.28	23.35	23.30	0-1	0
	1	7	23.43	23.49	23.36		0
	1	14	23.09	23.27	23.25		0
	8	0	22.49	21.96	22.45	0-2	1
	8	4	22.29	22.00	22.18		1
	8	7	22.13	22.48	22.22		1
	15	0	22.17	22.38	22.43		1
64QAM	1	0	22.41	22.26	22.08	0-2	1
	1	7	22.35	22.20	22.14		1
	1	14	22.32	22.07	21.95		1
	8	0	21.12	20.97	21.47	0-3	2
	8	4	21.46	21.15	21.24		2
	8	7	21.02	21.30	21.09		2
	15	0	21.10	21.42	21.11		2

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 48 of 134

Table 9-38
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.02	23.05	23.48	0	0
	1	2	23.01	23.41	23.24		0
	1	5	23.11	23.03	23.36		0
	3	0	23.48	23.37	23.09		0
	3	2	23.29	23.07	23.35		0
	3	3	23.04	23.23	23.10		0
	6	0	23.19	23.10	23.07		0
16QAM	1	0	23.42	23.38	23.44	0-1	0
	1	2	23.18	23.19	23.39		0
	1	5	23.18	23.29	23.40		0
	3	0	23.37	23.18	23.18		0
	3	2	23.16	23.10	23.47		0
	3	3	23.34	23.00	23.44		0
	6	0	22.50	22.30	22.26		1
64QAM	1	0	22.47	22.23	22.01	0-2	1
	1	2	22.38	22.17	22.26		1
	1	5	22.32	22.08	22.34		1
	3	0	22.29	22.28	22.08		1
	3	2	22.08	21.84	22.29		1
	3	3	22.46	22.34	22.35		1
	6	0	21.27	21.07	21.50		0-3

9.4.9 Maximum LTE Band 25 (PCS)

Table 9-39
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.92	24.95	25.11	0	0
	1	50	24.96	25.13	24.80		0
	1	99	25.00	24.87	24.76		0
	50	0	23.82	23.79	23.81	0-1	1
	50	25	23.95	23.75	24.09		1
	50	50	23.78	23.88	24.14		1
	100	0	24.10	23.86	23.92		1
16QAM	1	0	23.89	23.94	24.07	0-1	1
	1	50	24.18	24.12	24.19		1
	1	99	23.72	23.97	24.13		1
	50	0	22.91	22.98	23.06	0-2	2
	50	25	22.70	23.12	22.72		2
	50	50	23.18	23.19	22.85		2
	100	0	22.74	23.16	22.75		2
64QAM	1	0	22.76	23.17	22.72	0-2	2
	1	50	23.05	22.89	23.14		2
	1	99	23.07	23.05	22.74		2
	50	0	21.71	22.12	21.71	0-3	3
	50	25	22.00	22.01	22.03		3
	50	50	22.08	22.17	21.87		3
	100	0	21.84	22.11	21.88		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 49 of 134	

Table 9-40
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.99	25.13	24.71	0	0
	1	36	25.02	25.12	24.75		0
	1	74	24.82	25.19	24.99		0
	36	0	23.71	23.99	24.01	0-1	1
	36	18	23.94	23.94	23.81		1
	36	37	23.85	24.14	23.93		1
	75	0	24.20	24.04	24.04		1
16QAM	1	0	23.88	23.72	24.02	0-1	1
	1	36	24.00	23.72	23.87		1
	1	74	24.18	23.88	23.92		1
	36	0	22.89	23.00	23.17	0-2	2
	36	18	23.07	22.87	23.18		2
	36	37	22.80	23.05	23.12		2
	75	0	23.03	22.76	23.07		2
64QAM	1	0	22.88	22.71	22.93	0-2	2
	1	36	23.15	22.91	22.76		2
	1	74	22.93	22.86	23.06		2
	36	0	22.17	21.97	21.75	0-3	3
	36	18	22.20	22.06	21.84		3
	36	37	21.91	22.10	22.11		3
	75	0	21.91	21.93	22.13		3

Table 9-41
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.94	24.93	24.99	0	0
	1	25	25.17	25.00	24.76		0
	1	49	25.03	25.16	25.13		0
	25	0	24.05	24.08	23.72	0-1	1
	25	12	24.16	24.05	24.07		1
	25	25	24.13	24.15	23.98		1
	50	0	24.15	24.02	24.18		1
16QAM	1	0	23.84	23.91	23.84	0-1	1
	1	25	24.02	24.07	24.07		1
	1	49	23.90	23.94	24.18		1
	25	0	22.79	22.91	22.84	0-2	2
	25	12	22.97	22.76	23.18		2
	25	25	22.99	23.07	22.73		2
	50	0	23.11	22.97	22.89		2
64QAM	1	0	23.16	22.72	23.15	0-2	2
	1	25	22.73	23.17	23.16		2
	1	49	23.14	23.11	22.94		2
	25	0	22.05	21.81	21.77	0-3	3
	25	12	22.14	21.94	21.85		3
	25	25	22.13	22.13	21.72		3
	50	0	21.91	22.01	22.18		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 50 of 134

Table 9-42
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.16	24.74	24.85	0	0
	1	12	24.76	25.11	24.77		0
	1	24	24.90	24.98	24.84		0
	12	0	23.91	23.74	24.17	0-1	1
	12	6	24.14	24.04	24.00		1
	12	13	23.80	24.00	24.01		1
	25	0	23.85	23.88	23.87		1
16QAM	1	0	24.17	24.00	23.79	0-1	1
	1	12	24.13	23.75	23.72		1
	1	24	23.76	23.72	23.91		1
	12	0	22.90	22.78	22.88	0-2	2
	12	6	22.97	22.86	22.76		2
	12	13	22.85	23.02	23.10		2
	25	0	22.95	23.00	22.73		2
64QAM	1	0	22.93	22.96	23.17	0-2	2
	1	12	23.07	23.00	22.77		2
	1	24	22.73	22.88	22.82		2
	12	0	22.10	22.16	21.74	0-3	3
	12	6	21.87	21.96	21.74		3
	12	13	22.05	22.10	21.81		3
	25	0	21.72	21.76	21.96		3

Table 9-43
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.94	25.17	24.97	0	0
	1	7	25.07	24.71	25.00		0
	1	14	25.08	24.85	24.92		0
	8	0	23.72	23.73	23.73	0-1	1
	8	4	23.99	23.85	23.94		1
	8	7	23.93	24.02	23.89		1
	15	0	23.87	24.01	24.10		1
16QAM	1	0	23.98	24.17	23.93	0-1	1
	1	7	23.88	23.86	23.76		1
	1	14	23.72	24.02	23.92		1
	8	0	22.70	23.14	23.19	0-2	2
	8	4	22.83	23.12	23.10		2
	8	7	23.12	22.81	23.07		2
	15	0	22.70	22.70	23.03		2
64QAM	1	0	23.15	22.90	22.89	0-2	2
	1	7	22.92	22.90	22.88		2
	1	14	22.99	23.16	23.19		2
	8	0	21.80	22.11	21.89	0-3	3
	8	4	21.75	21.99	22.10		3
	8	7	21.97	22.09	21.82		3
	15	0	22.03	22.00	21.77		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 51 of 134

Table 9-44
LTE Band 25 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	25.14	25.16	24.75	0	0
	1	2	24.90	24.96	24.72		0
	1	5	24.97	24.70	24.77		0
	3	0	24.82	24.91	25.08		0
	3	2	24.84	24.76	24.92		0
	3	3	24.87	25.05	24.80		0
	6	0	23.89	23.96	23.99		0-1
16QAM	1	0	23.88	23.83	23.75	0-1	1
	1	2	24.17	24.14	24.04		1
	1	5	24.03	24.19	24.00		1
	3	0	23.91	24.09	23.76		1
	3	2	23.92	23.73	23.76		1
	3	3	23.96	23.89	24.07		1
	6	0	22.90	23.08	23.02		0-2
64QAM	1	0	22.70	22.99	22.90	0-2	2
	1	2	23.12	22.96	23.11		2
	1	5	23.17	22.83	23.04		2
	3	0	22.76	23.13	22.74		2
	3	2	23.00	22.79	22.85		2
	3	3	22.86	23.13	22.83		2
	6	0	21.71	22.14	21.81		0-3

9.4.10 Reduced LTE Band 25 (PCS)

Table 9-45
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.91	22.88	23.17	0	0
	1	50	23.08	22.74	22.95		0
	1	99	22.93	23.08	22.99		0
	50	0	23.09	23.14	23.14	0-1	0
	50	25	23.17	22.90	22.78		0
	50	50	23.09	23.01	22.72		0
	100	0	22.80	23.06	23.11		0
16QAM	1	0	22.85	23.14	22.99	0-1	0
	1	50	23.05	23.17	23.00		0
	1	99	22.74	22.80	22.88		0
	50	0	22.96	23.13	22.98	0-2	0
	50	25	22.72	22.74	22.82		0
	50	50	23.16	22.82	22.93		0
	100	0	23.12	22.95	23.14		0
64QAM	1	0	22.99	22.87	22.81	0-2	0
	1	50	23.14	22.90	23.06		0
	1	99	23.04	23.01	23.18		0
	50	0	21.77	21.85	21.91	0-3	1
	50	25	21.92	21.80	21.74		1
	50	50	21.97	22.13	21.73		1
	100	0	21.80	21.79	21.76		1

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 52 of 134

Table 9-46
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.80	23.18	23.04	0	0
	1	36	23.02	23.08	23.11		0
	1	74	22.84	22.96	22.93		0
	36	0	23.03	22.81	23.09	0-1	0
	36	18	22.79	22.77	22.72		0
	36	37	23.17	22.92	22.72		0
	75	0	23.05	23.04	22.72		0
16QAM	1	0	22.96	22.77	23.09	0-1	0
	1	36	22.88	23.19	23.01		0
	1	74	23.06	22.91	23.06		0
	36	0	22.99	22.97	22.98	0-2	0
	36	18	22.70	23.17	23.08		0
	36	37	23.14	23.15	23.16		0
	75	0	22.97	23.00	22.99		0
64QAM	1	0	22.87	23.01	22.72	0-2	0
	1	36	22.76	22.85	22.74		0
	1	74	22.89	23.12	23.11		0
	36	0	21.76	22.19	22.19	0-3	1
	36	18	21.82	21.88	22.16		1
	36	37	22.15	21.91	22.03		1
	75	0	21.99	21.95	21.75		1

Table 9-47
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.81	23.06	23.09	0	0
	1	25	22.91	23.16	22.91		0
	1	49	23.12	22.89	22.76		0
	25	0	23.12	22.92	23.16	0-1	0
	25	12	22.99	22.79	22.71		0
	25	25	22.80	22.79	23.00		0
16QAM	50	0	22.81	22.83	22.90	0	
	1	0	22.81	22.74	23.14	0-1	0
	1	25	23.09	23.16	22.84		0
	1	49	22.88	22.93	22.82		0
	25	0	22.93	23.17	22.91	0-2	0
	25	12	22.78	22.99	22.78		0
	25	25	22.92	23.13	23.13		0
50	0	22.93	22.97	22.74	0		
64QAM	1	0	22.84	23.16	23.01	0-2	0
	1	25	22.90	22.85	23.07		0
	1	49	22.82	22.83	23.12		0
	25	0	21.97	21.80	21.89	0-3	1
	25	12	21.86	22.05	21.84		1
	25	25	22.15	21.92	21.76		1
	50	0	22.00	21.88	21.91		1

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 53 of 134	

Table 9-48
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.79	22.93	22.86	0	0
	1	12	22.80	22.77	22.85		0
	1	24	23.11	22.70	22.80		0
	12	0	23.03	22.98	22.73	0-1	0
	12	6	23.08	23.08	22.78		0
	12	13	22.91	23.12	23.00		0
16QAM	25	0	22.89	22.89	23.10	0	
	1	0	22.95	22.97	22.87	0-1	0
	1	12	22.93	22.75	23.00		0
	1	24	23.05	23.14	22.88		0
	12	0	22.80	22.90	22.79	0-2	0
	12	6	22.90	23.07	22.94		0
12	13	23.01	22.73	23.09	0		
64QAM	25	0	22.84	23.09	23.17	0	
	1	0	22.88	22.97	22.74	0-2	0
	1	12	22.94	23.07	23.13		0
	1	24	23.16	23.14	22.70		0
	12	0	22.08	21.92	22.13	0-3	1
	12	6	22.11	21.88	21.94		1
12	13	22.14	21.96	21.80	1		
	25	0	22.05	21.96	22.02		1

Table 9-49
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
Conducted Power [dBm]							
QPSK	1	0	22.89	22.75	22.86	0	0
	1	7	23.01	22.73	22.84		0
	1	14	22.86	22.81	22.91		0
	8	0	22.90	23.06	23.12	0-1	0
	8	4	22.86	23.03	22.71		0
	8	7	23.06	23.07	22.93		0
16QAM	15	0	22.74	22.77	22.70	0-1	0
	1	0	22.95	22.82	22.74		0
	1	7	22.81	22.75	22.92		0
	1	14	22.76	23.04	22.99	0-2	0
	8	0	23.02	22.76	22.82		0
	8	4	23.16	22.74	22.95		0
64QAM	8	7	23.18	22.96	23.04	0-2	0
	15	0	22.89	23.14	23.07		0
	1	0	22.72	22.92	22.95	0-2	0
	1	7	22.75	22.88	22.94		0
	1	14	23.06	23.00	23.15		0-3
	8	0	21.75	22.06	21.72	1	
8	4	21.98	22.18	21.77	1		
8	7	22.06	21.79	22.13	1		
	15	0	21.88	22.16	21.93		1

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 54 of 134	

Table 9-50
LTE Band 25 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
Conducted Power [dBm]							
QPSK	1	0	23.04	23.00	23.03	0	0
	1	2	22.82	23.17	22.92		0
	1	5	22.71	22.94	22.95		0
	3	0	22.73	23.08	22.76		0
	3	2	22.75	23.09	22.89		0
	3	3	23.17	23.14	22.72		0
6	0	22.96	23.00	22.83	0-1	0	
16QAM	1	0	22.86	23.16	23.14	0-1	0
	1	2	22.72	22.90	23.07		0
	1	5	23.10	22.72	22.78		0
	3	0	23.13	23.17	23.04		0
	3	2	23.18	22.91	23.16		0
	3	3	22.78	22.82	22.85		0
6	0	23.14	23.04	22.84	0-2	0	
64QAM	1	0	22.89	23.15	22.91	0-2	0
	1	2	22.72	22.90	23.07		0
	1	5	22.80	22.90	22.94		0
	3	0	23.09	22.88	22.94		0
	3	2	23.12	22.77	22.90		0
	3	3	23.19	22.77	23.11		0
6	0	21.94	21.84	22.13	0-3	1	

9.4.11 Maximum LTE Band 30

Table 9-51
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz) Conducted Power [dBm]		
QPSK	1	0	23.07	0	0
	1	25	23.28		0
	1	49	23.19		0
	25	0	22.48	0-1	1
	25	12	22.39		1
	25	25	22.30		1
	50	0	22.26		1
16QAM	1	0	22.35	0-1	1
	1	25	22.20		1
	1	49	22.38		1
	25	0	21.28	0-2	2
	25	12	21.24		2
	25	25	21.31		2
	50	0	21.34		2
64QAM	1	0	21.37	0-2	2
	1	25	21.36		2
	1	49	21.08		2
	25	0	20.38	0-3	3
	25	12	20.33		3
	25	25	20.30		3
	50	0	20.46		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 55 of 134	

Table 9-52
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	23.17	0	0
	1	12	23.27		0
	1	24	23.45		0
	12	0	22.40	0-1	1
	12	6	22.42		1
	12	13	22.31		1
	25	0	22.29		1
16QAM	1	0	22.41	0-1	1
	1	12	22.23		1
	1	24	22.45		1
	12	0	21.15	0-2	2
	12	6	21.24		2
	12	13	21.44		2
	25	0	21.18		2
64QAM	1	0	21.18	0-2	2
	1	12	21.37		2
	1	24	21.22		2
	12	0	20.46	0-3	3
	12	6	20.22		3
	12	13	20.23		3
	25	0	20.29		3

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.4.12 Reduced LTE Band 30

Table 9-53
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	20.71	0	0
	1	25	20.87		0
	1	49	21.08		0
	25	0	20.90	0-1	0
	25	12	20.96		0
	25	25	20.79		0
	50	0	20.74		0
16QAM	1	0	20.79	0-1	0
	1	25	20.79		0
	1	49	20.99		0
	25	0	21.06	0-2	0
	25	12	20.86		0
	25	25	21.06		0
	50	0	21.04		0
64QAM	1	0	20.91	0-2	0
	1	25	20.74		0
	1	49	21.05		0
	25	0	19.83	0-3	0.5
	25	12	19.92		0.5
	25	25	19.77		0.5
	50	0	19.88		0.5

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 56 of 134	

Table 9-54
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	20.88	0	0
	1	12	20.81		0
	1	24	20.71		0
	12	0	20.92	0-1	0
	12	6	20.85		0
	12	13	21.02		0
	25	0	20.92		0
	1	0	20.83		0
16QAM	1	12	20.98	0-1	0
	1	24	20.78		0
	12	0	20.72		0
	12	6	21.10	0-2	0
	12	13	20.88		0
	25	0	20.82		0
	1	0	20.77		0
	1	12	20.90	0-2	0
64QAM	1	24	20.95		0
	12	0	19.84		0.5
	12	6	19.74	0-3	0.5
	12	13	20.03		0.5
	25	0	20.04		0.5
	1	0	20.77		0
	1	12	20.90		0
	1	24	20.95		0

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.4.13 Maximum LTE Band 7

Table 9-55
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.39	23.35	23.28	0	0
	1	50	23.30	23.50	23.55		0
	1	99	23.50	23.63	23.35		0
	50	0	22.41	22.69	22.24	0-1	1
	50	25	22.68	22.27	22.26		1
	50	50	22.62	22.67	22.66		1
	100	0	22.45	22.62	22.61		1
16QAM	1	0	22.56	22.56	22.28	0-1	1
	1	50	22.36	22.27	22.54		1
	1	99	22.25	22.50	22.69		1
	50	0	21.67	21.58	21.38	0-2	2
	50	25	21.44	21.65	21.39		2
	50	50	21.41	21.21	21.67		2
	100	0	21.42	21.47	21.60		2
64QAM	1	0	21.32	21.59	21.59	0-2	2
	1	50	21.34	21.22	21.21		2
	1	99	21.20	21.63	21.44		2
	50	0	20.40	20.53	20.62	0-3	3
	50	25	20.31	20.55	20.58		3
	50	50	20.32	20.52	20.48		3
	100	0	20.53	20.42	20.67		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 57 of 134	

Table 9-56
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7							
15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.39	23.35	23.54	0	0
	1	36	23.61	23.48	23.22		0
	1	74	23.57	23.55	23.57		0
	36	0	22.26	22.48	22.49	0-1	1
	36	18	22.21	22.54	22.60		1
	36	37	22.67	22.51	22.66		1
	75	0	22.64	22.52	22.62		1
16QAM	1	0	22.38	22.39	22.34	0-1	1
	1	36	22.49	22.67	22.24		1
	1	74	22.36	22.69	22.52		1
	36	0	21.24	21.49	21.20	0-2	2
	36	18	21.40	21.45	21.53		2
	36	37	21.60	21.36	21.60		2
	75	0	21.50	21.65	21.52		2
64QAM	1	0	21.46	21.20	21.46	0-2	2
	1	36	21.20	21.56	21.41		2
	1	74	21.60	21.22	21.65		2
	36	0	20.23	20.55	20.48	0-3	3
	36	18	20.47	20.61	20.26		3
	36	37	20.53	20.60	20.26		3
	75	0	20.35	20.29	20.60		3

Table 9-57
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.25	23.50	23.28	0	0
	1	25	23.35	23.64	23.61		0
	1	49	23.53	23.57	23.70		0
	25	0	22.53	22.49	22.34	0-1	1
	25	12	22.38	22.39	22.66		1
	25	25	22.22	22.34	22.64		1
16QAM	50	0	22.57	22.68	22.54	1	
	1	0	22.55	22.51	22.29	0-1	1
	1	25	22.40	22.66	22.27		1
	1	49	22.63	22.47	22.24		1
	25	0	21.69	21.36	21.45	0-2	2
	25	12	21.48	21.41	21.25		2
	25	25	21.45	21.31	21.24		2
64QAM	50	0	21.26	21.56	21.21	2	
	1	0	21.52	21.31	21.49	0-2	2
	1	25	21.57	21.42	21.60		2
	1	49	21.57	21.60	21.50		2
	25	0	20.23	20.38	20.66	0-3	3
	25	12	20.24	20.39	20.56		3
	25	25	20.31	20.58	20.34		3
	50	0	20.61	20.41	20.69	3	

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 58 of 134	

Table 9-58
LTE Band 7 Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.24	23.67	23.59	0	0
	1	12	23.38	23.67	23.29		0
	1	24	23.29	23.44	23.55		0
	12	0	22.33	22.29	22.32	0-1	1
	12	6	22.45	22.39	22.42		1
	12	13	22.64	22.59	22.46		1
	25	0	22.55	22.58	22.46		1
16QAM	1	0	22.41	22.44	22.44	0-1	1
	1	12	22.58	22.58	22.53		1
	1	24	22.40	22.50	22.66		1
	12	0	21.67	21.53	21.41	0-2	2
	12	6	21.25	21.35	21.69		2
	12	13	21.31	21.68	21.51		2
	25	0	21.41	21.51	21.26		2
64QAM	1	0	21.37	21.39	21.66	0-2	2
	1	12	21.44	21.29	21.57		2
	1	24	21.32	21.34	21.58		2
	12	0	20.36	20.26	20.21	0-3	3
	12	6	20.47	20.67	20.53		3
	12	13	20.37	20.24	20.51		3
	25	0	20.59	20.43	20.69		3

9.4.14 Reduced LTE Band 7

Table 9-59
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.84	20.79	20.76	0	0
	1	50	20.72	20.98	21.00		0
	1	99	20.85	21.02	20.93		0
	50	0	20.73	21.04	20.90	0-1	0
	50	25	21.01	21.08	20.84		0
	50	50	20.82	20.89	20.93		0
	100	0	20.84	20.97	20.77		0
16QAM	1	0	20.83	20.78	21.09	0-1	0
	1	50	20.98	20.77	21.01		0
	1	99	21.00	20.74	20.93		0
	50	0	20.89	21.03	20.72	0-2	0
	50	25	20.80	20.80	20.95		0
	50	50	21.05	20.80	20.76		0
	100	0	20.83	21.05	20.91		0
64QAM	1	0	20.80	20.95	20.97	0-2	0
	1	50	20.74	20.92	21.03		0
	1	99	21.01	20.89	21.05		0
	50	0	19.95	20.05	19.91	0-3	0.5
	50	25	20.08	19.88	20.07		0.5
	50	50	20.03	20.02	19.92		0.5
	100	0	19.82	19.74	20.03		0.5

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 59 of 134

Table 9-60
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.80	21.10	20.86	0	0
	1	36	21.05	20.80	21.04		0
	1	74	20.91	20.93	21.10		0
	36	0	20.71	20.95	20.90	0-1	0
	36	18	20.74	21.06	21.10		0
	36	37	20.99	20.87	20.71		0
	75	0	20.92	20.82	21.07		0
16QAM	1	0	20.97	20.79	21.05	0-1	0
	1	36	20.87	20.94	20.86		0
	1	74	20.88	20.75	20.79		0
	36	0	20.92	20.96	20.94	0-2	0
	36	18	20.87	20.93	20.98		0
	36	37	20.91	20.99	21.06		0
	75	0	21.08	20.96	20.88		0
64QAM	1	0	20.88	20.86	20.73	0-2	0
	1	36	21.00	20.85	20.90		0
	1	74	20.83	20.72	21.06		0
	36	0	19.84	20.01	20.08	0-3	0.5
	36	18	20.06	20.07	19.76		0.5
	36	37	20.04	19.98	19.72		0.5
	75	0	19.84	19.73	19.72		0.5

Table 9-61
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.82	21.04	20.88	0	0
	1	25	20.77	20.98	21.10		0
	1	49	21.06	20.97	20.96		0
	25	0	20.81	21.02	21.00	0-1	0
	25	12	20.72	20.91	20.96		0
	25	25	21.07	20.84	20.92		0
16QAM	50	0	20.81	21.07	20.90	0	
	1	0	20.99	20.99	21.02	0-1	0
	1	25	20.88	20.86	20.97		0
	1	49	20.83	20.95	20.70		0
	25	0	20.86	20.94	20.83	0-2	0
	25	12	20.98	20.95	20.95		0
25	25	20.80	20.93	20.87	0		
64QAM	50	0	20.86	21.05	20.89	0	
	1	0	21.06	20.93	20.95	0-2	0
	1	25	21.00	20.90	21.03		0
	1	49	20.95	20.89	20.80		0
	25	0	19.95	20.07	19.73	0-3	0.5
	25	12	20.06	20.10	19.84		0.5
25	25	19.90	19.80	19.77	0.5		
	50	0	20.06	19.83	19.94	0.5	

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 60 of 134	

Table 9-62
LTE Band 7 Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.77	20.82	20.88	0	0
	1	12	20.71	20.97	21.06		0
	1	24	21.06	20.94	20.88		0
	12	0	21.09	20.87	21.09	0-1	0
	12	6	20.80	20.75	20.95		0
	12	13	20.81	21.05	20.75		0
	25	0	20.94	20.70	20.88		0
16QAM	1	0	20.93	20.82	20.72	0-1	0
	1	12	20.78	20.99	20.92		0
	1	24	20.99	20.81	20.76		0
	12	0	21.09	20.98	21.06	0-2	0
	12	6	20.71	20.93	20.77		0
	12	13	20.87	20.83	20.83		0
	25	0	21.00	20.88	20.72		0
64QAM	1	0	21.04	20.85	21.06	0-2	0
	1	12	20.80	20.84	20.91		0
	1	24	20.98	20.99	20.88		0
	12	0	19.84	20.02	19.75	0-3	0.5
	12	6	20.07	19.86	19.75		0.5
	12	13	19.98	19.71	20.07		0.5
	25	0	20.00	19.79	19.91		0.5

9.4.15 LTE Band 48

Table 9-63
LTE Band 48 Conducted Powers - 20 MHz Bandwidth

LTE Band 48 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55340 (3560.0 MHz)	55773 (3603.3 MHz)	56207 (3646.7 MHz)	56640 (3690.0 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	22.28	22.34	22.55	22.61	0	0
	1	50	22.39	22.31	22.28	22.25		0
	1	99	22.48	22.42	22.45	22.53		0
	50	0	21.60	21.58	21.43	21.16	0-1	1
	50	25	21.49	21.48	21.16	21.46		1
	50	50	21.16	21.67	21.19	21.12		1
	100	0	21.41	21.50	21.50	21.33		1
16QAM	1	0	21.55	21.45	21.18	21.59	0-1	1
	1	50	21.45	21.23	21.30	21.16		1
	1	99	21.43	21.30	21.18	21.05		1
	50	0	20.46	20.45	20.41	20.48	0-2	2
	50	25	20.43	20.55	20.60	20.35		2
	50	50	20.26	20.19	20.50	20.59		2
	100	0	20.17	20.49	20.23	20.48		2
64QAM	1	0	20.19	20.44	20.21	20.39	0-2	2
	1	50	20.43	20.51	20.08	20.23		2
	1	99	20.54	20.55	20.60	20.49		2
	50	0	19.53	19.61	19.50	19.24	0-3	3
	50	25	19.47	19.21	19.40	19.45		3
	50	50	19.23	19.42	19.21	19.31		3
	100	0	19.13	19.17	19.21	19.51		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 61 of 134	

Table 9-64
LTE Band 48 Conducted Powers - 15 MHz Bandwidth

LTE Band 48 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55315 (3557.5 MHz)	55765 (3602.5 MHz)	56215 (3647.5 MHz)	56665 (3692.5 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	22.50	22.58	22.13	22.49	0	0
	1	36	22.25	22.06	22.49	22.29		0
	1	74	22.66	22.21	22.39	22.40		0
	36	0	21.39	21.60	21.56	21.51	0-1	1
	36	18	21.44	21.32	21.20	21.38		1
	36	37	21.17	21.22	21.20	21.24		1
	75	0	21.21	21.43	21.19	21.40		1
16QAM	1	0	21.55	21.15	21.21	21.56	0-1	1
	1	36	21.40	21.27	21.22	21.41		1
	1	74	21.27	21.45	21.27	21.10		1
	36	0	20.20	20.51	20.17	20.48	0-2	2
	36	18	20.29	20.54	20.56	20.48		2
	36	37	20.48	20.57	20.44	20.33		2
	75	0	20.35	20.59	20.30	20.49		2
64QAM	1	0	20.39	20.59	20.33	20.66	0-2	2
	1	36	20.37	20.46	20.54	20.33		2
	1	74	20.41	20.06	20.62	20.22		2
	36	0	19.52	19.28	19.37	19.41	0-3	3
	36	18	19.61	19.23	19.51	19.20		3
	36	37	19.50	19.28	19.51	19.23		3
	75	0	19.49	19.28	19.51	19.22		3

Table 9-65
LTE Band 48 Conducted Powers - 10 MHz Bandwidth

LTE Band 48 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55290 (3555.0 MHz)	55773 (3601.7 MHz)	56207 (3648.3 MHz)	56690 (3695.0 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	22.06	22.22	22.24	22.43	0	0
	1	25	22.07	22.14	22.53	22.62		0
	1	49	22.48	22.20	22.56	22.48		0
	25	0	21.36	21.15	21.34	21.25	0-1	1
	25	12	21.35	21.50	21.44	21.30		1
	25	25	21.24	21.26	21.48	21.16		1
	50	0	21.36	21.34	21.28	21.54		1
16QAM	1	0	21.10	21.42	21.27	21.13	0-1	1
	1	25	21.11	21.26	21.31	21.09		1
	1	49	21.27	21.47	21.08	21.30		1
	25	0	20.51	20.31	20.22	20.51	0-2	2
	25	12	20.18	20.20	20.42	20.45		2
	25	25	20.40	20.21	20.47	20.33		2
	50	0	20.62	20.45	20.41	20.26		2
64QAM	1	0	20.42	20.52	20.57	20.53	0-2	2
	1	25	20.13	20.30	20.57	20.25		2
	1	49	20.16	20.43	20.46	20.26		2
	25	0	19.21	19.42	19.43	19.44	0-3	3
	25	12	19.08	19.30	19.40	19.44		3
	25	25	19.48	19.43	19.35	19.51		3
	50	0	19.36	19.38	19.51	19.44		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 62 of 134	

Table 9-66
LTE Band 48 Conducted Powers - 5 MHz Bandwidth

LTE Band 48 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			55265 (3552.5 MHz)	55773 (3600.8 MHz)	56207 (3649.2 MHz)	56715 (3697.5 MHz)		
			Conducted Power [dBm]					
QPSK	1	0	22.23	22.46	22.23	22.67	0	0
	1	12	22.68	22.36	22.30	22.31		0
	1	24	22.25	22.61	22.35	22.42		0
	12	0	21.25	21.23	21.12	21.35	0-1	1
	12	6	21.30	21.25	21.32	21.14		1
	12	13	21.56	21.49	21.30	21.36		1
	25	0	21.34	21.16	21.48	21.51		1
16QAM	1	0	21.51	21.28	21.67	21.63	0-1	1
	1	12	21.34	21.27	21.35	21.53		1
	1	24	21.50	21.35	21.59	21.62		1
	12	0	20.46	20.43	20.20	20.46	0-2	2
	12	6	20.24	20.21	20.18	20.61		2
	12	13	20.44	20.23	20.43	20.65		2
	25	0	20.27	20.26	20.37	20.61		2
64QAM	1	0	20.48	20.23	20.31	20.58	0-2	2
	1	12	20.20	20.52	20.15	20.47		2
	1	24	20.19	20.17	20.25	20.36		2
	12	0	19.28	19.17	19.11	19.19	0-3	3
	12	6	19.58	19.32	19.20	19.36		3
	12	13	19.43	19.22	19.58	19.48		3
	25	0	19.57	19.09	19.57	19.29		3

9.4.16 LTE Band 41 Power Class 3

Table 9-67
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.79	24.81	25.02	24.95	24.60	0	0
	1	50	24.80	24.78	24.77	24.97	24.78		0
	1	99	25.01	24.86	24.76	24.95	24.59		0
	50	0	23.78	23.88	24.16	23.72	23.92	0-1	1
	50	25	23.74	23.78	23.90	23.73	23.82		1
	50	50	23.70	23.83	23.71	24.14	24.15		1
	100	0	23.81	23.70	24.11	24.08	23.70		1
16QAM	1	0	23.86	24.02	23.96	23.96	23.89	0-1	1
	1	50	23.92	23.69	23.92	23.80	23.96		1
	1	99	23.98	23.78	23.97	24.04	23.65		1
	50	0	22.88	23.10	22.99	22.74	23.04	0-2	2
	50	25	22.92	23.09	22.80	22.84	22.94		2
	50	50	22.75	22.65	23.09	22.77	22.79		2
	100	0	22.98	23.06	22.70	22.95	23.01		2
64QAM	1	0	22.90	23.14	23.05	22.93	23.06	0-2	2
	1	50	22.62	22.92	23.06	22.93	22.81		2
	1	99	22.76	23.16	23.04	23.04	23.05		2
	50	0	22.07	21.61	21.63	21.63	21.96	0-3	3
	50	25	21.91	21.88	21.60	22.09	22.11		3
	50	50	21.82	21.82	21.96	21.63	21.88		3
	100	0	22.14	21.67	21.84	22.11	21.61		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 63 of 134	

Table 9-68
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.99	24.96	24.76	25.02	25.09	0	0
	1	36	24.63	24.75	25.01	24.65	24.99		0
	1	74	25.05	25.01	25.16	24.94	24.72		0
	36	0	23.88	23.64	23.75	23.89	23.76	0-1	1
	36	18	23.96	23.95	23.73	23.75	23.85		1
	36	37	23.91	23.74	23.73	24.07	23.81		1
	75	0	23.64	23.78	24.00	23.88	24.01		1
16QAM	1	0	23.83	24.06	24.02	24.02	23.92	0-1	1
	1	36	23.68	24.04	23.59	23.67	23.75		1
	1	74	23.74	24.02	23.57	24.12	23.98		1
	36	0	22.82	22.97	22.89	22.68	22.71	0-2	2
	36	18	23.16	22.69	22.60	22.63	22.75		2
	36	37	23.10	22.72	23.01	22.79	23.01		2
	75	0	22.70	22.73	22.77	22.78	22.70		2
64QAM	1	0	23.06	22.73	22.57	22.65	22.76	0-2	2
	1	36	22.74	22.90	22.63	22.99	23.07		2
	1	74	22.67	23.02	22.91	22.88	22.71		2
	36	0	21.75	22.12	21.73	21.90	21.54	0-3	3
	36	18	21.75	21.83	22.12	21.70	21.68		3
	36	37	21.66	21.81	21.66	22.03	21.76		3
	75	0	21.74	21.72	21.89	22.02	21.79		3

Table 9-69
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.83	24.98	24.78	25.10	24.92	0	0
	1	25	25.10	24.73	24.87	25.00	25.06		0
	1	49	24.99	24.87	24.77	24.58	25.15		0
	25	0	24.05	23.97	23.57	23.66	23.85	0-1	1
	25	12	23.97	23.92	23.92	23.65	23.78		1
	25	25	23.64	23.95	24.06	24.05	23.98		1
	50	0	23.84	24.01	23.78	23.77	23.99		1
16QAM	1	0	24.04	24.15	23.78	23.71	23.77	0-1	1
	1	25	23.75	23.86	24.16	23.69	23.98		1
	1	49	23.69	24.04	23.61	23.95	23.70		1
	25	0	22.84	22.71	22.63	22.98	22.68	0-2	2
	25	12	23.01	22.66	22.86	22.68	23.01		2
	25	25	22.86	22.88	23.06	23.02	22.66		2
	50	0	22.79	22.99	22.68	22.84	22.94		2
64QAM	1	0	22.88	22.81	22.94	23.05	22.78	0-2	2
	1	25	22.67	22.77	22.66	22.96	23.11		2
	1	49	23.09	22.77	22.76	22.85	22.64		2
	25	0	21.79	21.88	21.71	21.70	21.61	0-3	3
	25	12	22.01	22.04	21.79	21.70	21.94		3
	25	25	22.11	22.10	21.82	21.95	21.83		3
	50	0	21.69	22.11	21.87	21.73	21.86		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 64 of 134	

Table 9-70
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.89	25.08	25.02	24.65	24.77	0	0
	1	12	25.01	24.91	24.77	24.91	24.72		0
	1	24	24.79	24.66	24.65	24.88	25.02		0
	12	0	23.81	23.83	23.89	23.87	23.67	0-1	1
	12	6	23.95	23.74	23.98	24.09	23.91		1
	12	13	23.64	24.12	24.01	23.62	24.05		1
16QAM	25	0	23.79	23.68	23.85	23.69	23.81	0-1	1
	1	0	23.99	23.90	24.08	23.55	23.73		1
	1	12	23.69	23.76	23.81	23.74	23.70		1
	1	24	24.10	23.61	23.80	23.65	23.92	0-2	1
	12	0	22.84	22.73	22.82	23.15	22.87		2
	12	6	23.08	22.92	22.89	22.83	22.89		2
64QAM	12	13	22.75	22.95	23.13	22.86	23.01	0-2	2
	25	0	22.98	23.11	23.07	22.91	23.08		2
	1	0	22.71	22.92	23.05	23.03	22.94		0-3
	1	12	22.68	23.07	23.12	22.83	23.15	2	
	1	24	22.98	22.59	22.63	22.73	22.92	2	
	12	0	21.66	21.77	21.92	22.09	21.87	0-3	3
12	6	21.92	22.09	21.82	21.83	21.65	3		
12	13	21.73	21.77	21.81	21.86	21.58	3		
	25	0	21.61	22.15	21.97	21.93	21.80		3

9.4.17 Maximum LTE Band 41 Power Class 2

Table 9-71
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	27.50	27.36	27.24	27.54	27.31	0	0
	1	50	27.25	27.51	27.44	27.22	27.52		0
	1	99	27.13	27.61	27.66	27.27	27.40		0
	50	0	26.42	26.22	26.48	26.42	26.27	0-1	1
	50	25	26.09	26.30	26.40	26.45	26.34		1
	50	50	26.39	26.42	26.63	26.45	26.19		1
	100	0	26.40	26.22	26.53	26.55	26.21		1
16QAM	1	0	26.37	26.58	26.27	26.51	26.13	0-1	1
	1	50	26.54	26.61	26.14	26.53	26.47		1
	1	99	26.40	26.24	26.32	26.43	26.19		1
	50	0	25.16	25.62	25.29	25.55	25.37	0-2	2
	50	25	25.17	25.12	25.47	25.10	25.40		2
	50	50	25.20	25.27	25.48	25.26	25.12		2
	100	0	25.64	25.38	25.21	25.38	25.21		2
64QAM	1	0	25.36	25.48	25.22	25.33	25.58	0-2	2
	1	50	25.38	25.57	25.61	25.20	25.25		2
	1	99	25.17	25.29	25.39	25.50	25.16		2
	50	0	24.17	24.25	24.39	24.15	24.22	0-3	3
	50	25	24.15	24.44	24.07	24.45	24.37		3
	50	50	24.42	24.30	24.24	24.22	24.14		3
	100	0	24.16	24.21	24.40	24.46	24.51		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 65 of 134

Table 9-72
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	27.60	27.43	27.26	27.48	27.18	0	0
	1	36	27.49	27.48	27.54	27.44	27.38		0
	1	74	27.28	27.52	27.58	27.29	27.31		0
	36	0	26.37	26.18	26.42	26.32	26.43	0-1	1
	36	18	26.26	26.15	26.45	26.23	26.67		1
	36	37	26.07	26.11	26.23	26.54	26.59		1
	75	0	26.61	26.18	26.49	26.46	26.18		1
16QAM	1	0	26.23	26.33	26.29	26.42	26.63	0-1	1
	1	36	26.39	26.34	26.59	26.59	26.51		1
	1	74	26.18	26.61	26.45	26.31	26.48		1
	36	0	25.27	25.44	25.48	25.55	25.29	0-2	2
	36	18	25.47	25.53	25.61	25.49	25.47		2
	36	37	25.39	25.17	25.32	25.24	25.36		2
	75	0	25.40	25.60	25.41	25.55	25.20		2
64QAM	1	0	25.54	25.18	25.37	25.24	25.27	0-2	2
	1	36	25.64	25.68	25.34	25.44	25.55		2
	1	74	25.14	25.31	25.38	25.15	25.57		2
	36	0	24.25	24.56	24.41	24.59	24.39	0-3	3
	36	18	24.14	24.65	24.63	24.16	24.47		3
	36	37	24.39	24.42	24.41	24.41	24.54		3
	75	0	24.47	24.19	24.57	24.36	24.41		3

Table 9-73
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	27.39	27.11	27.50	27.21	27.16	0	0
	1	25	27.46	27.39	27.47	27.26	27.44		0
	1	49	27.37	27.33	27.20	27.55	27.45		0
	25	0	26.49	26.18	26.54	26.47	26.07	0-1	1
	25	12	26.25	26.17	26.38	26.29	26.43		1
	25	25	26.51	26.56	26.38	26.59	26.15		1
	50	0	26.25	26.44	26.61	26.15	26.40		1
16QAM	1	0	26.49	26.23	26.23	26.40	26.58	0-1	1
	1	25	26.61	26.54	26.20	26.38	26.41		1
	1	49	26.12	26.48	26.40	26.25	26.44		1
	25	0	25.47	25.56	25.20	25.40	25.46	0-2	2
	25	12	25.49	25.35	25.07	25.43	25.58		2
	25	25	25.17	25.09	25.33	25.21	25.28		2
	50	0	25.58	25.19	25.35	25.23	25.60		2
64QAM	1	0	25.09	25.26	25.13	25.62	25.41	0-2	2
	1	25	25.44	25.64	25.47	25.59	25.07		2
	1	49	25.36	25.29	25.37	25.27	25.39		2
	25	0	24.46	24.32	24.17	24.41	24.17	0-3	3
	25	12	24.60	24.23	24.49	24.40	24.57		3
	25	25	24.18	24.16	24.19	24.17	24.58		3
	50	0	24.61	24.28	24.40	24.29	24.18		3

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 66 of 134	

Table 9-74
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	27.27	27.23	27.34	27.33	27.34	0	0
	1	12	27.42	27.44	27.63	27.26	27.54		0
	1	24	27.52	27.38	27.25	27.19	27.43		0
	12	0	26.11	26.25	26.07	26.41	26.39	0-1	1
	12	6	26.35	26.57	26.20	26.45	26.42		1
	12	13	26.07	26.18	26.16	26.30	26.19		1
	25	0	26.52	26.41	26.43	26.07	26.40		1
16QAM	1	0	26.25	26.48	26.26	26.36	26.44	0-1	1
	1	12	26.34	26.40	26.22	26.32	26.17		1
	1	24	26.56	26.36	26.24	26.63	26.42		1
	12	0	25.55	25.60	25.11	25.35	25.50	0-2	2
	12	6	25.14	25.10	25.24	25.41	25.45		2
	12	13	25.24	25.43	25.46	25.59	25.28		2
	25	0	25.40	25.31	25.34	25.58	25.42		2
64QAM	1	0	25.59	25.43	25.39	25.37	25.41	0-2	2
	1	12	25.45	25.59	25.44	25.26	25.23		2
	1	24	25.48	25.55	25.55	25.33	25.06		2
	12	0	24.40	24.19	24.28	24.48	24.50	0-3	3
	12	6	24.65	24.58	24.14	24.25	24.27		3
	12	13	24.38	24.15	24.33	24.14	24.10		3
	25	0	24.52	24.54	24.32	24.16	24.60		3

9.4.18 Reduced LTE Band 41 Power Class 2

Table 9-75
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	25.00	25.01	25.11	24.76	25.10	0	0
	1	50	25.02	25.03	25.09	24.74	24.99		0
	1	99	24.99	25.09	24.88	24.70	24.96		0
	50	0	24.74	24.87	25.08	25.07	24.78	0-1	0
	50	25	24.98	24.95	24.86	24.88	25.04		0
	50	50	24.83	24.97	24.83	24.98	25.03		0
	100	0	25.03	25.00	25.01	24.77	24.98		0
16QAM	1	0	24.86	24.84	25.00	24.82	25.07	0-1	0
	1	50	25.06	24.95	24.98	24.87	25.04		0
	1	99	24.80	24.91	24.78	24.77	24.91		0
	50	0	24.96	25.01	24.99	24.87	24.94	0-2	0
	50	25	25.06	24.77	24.82	25.04	24.81		0
	50	50	24.96	24.75	25.09	24.88	25.02		0
	100	0	24.94	25.02	24.71	25.03	24.95		0
64QAM	1	0	25.09	24.99	24.90	24.96	24.76	0-2	0
	1	50	24.88	24.87	24.75	24.81	25.08		0
	1	99	25.04	24.96	25.00	24.93	24.88		0
	50	0	23.87	23.97	24.02	23.77	23.75	0-3	0.5
	50	25	23.82	24.07	23.82	23.99	24.04		0.5
	50	50	23.79	23.99	24.00	23.75	24.07		0.5
	100	0	24.10	23.77	23.71	24.03	24.10		0.5

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 67 of 134

Table 9-76
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.83	24.80	25.06	24.71	24.94	0	0
	1	36	24.79	24.79	24.81	24.79	24.91		0
	1	74	24.98	24.93	24.96	25.01	25.02		0
	36	0	24.85	25.02	24.95	24.72	24.77	0-1	0
	36	18	24.93	24.86	24.82	24.73	24.94		0
	36	37	24.70	24.87	24.89	24.88	24.78		0
	75	0	24.74	25.05	24.84	24.86	25.07		0
16QAM	1	0	25.07	25.02	25.10	24.95	24.76	0-1	0
	1	36	25.02	25.08	24.74	24.96	24.83		0
	1	74	24.80	25.08	24.92	24.98	24.75		0
	36	0	24.96	24.92	24.94	24.74	24.76	0-2	0
	36	18	24.83	25.08	25.07	24.84	24.95		0
	36	37	24.79	24.89	24.95	24.74	24.98		0
	75	0	24.92	25.00	24.87	24.85	25.08		0
64QAM	1	0	25.08	24.96	24.88	24.93	25.01	0-2	0
	1	36	24.73	25.09	24.87	24.73	24.97		0
	1	74	24.75	24.80	24.98	24.82	25.04		0
	36	0	23.78	24.05	23.87	24.03	24.10	0-3	0.5
	36	18	23.99	23.90	23.96	24.08	23.82		0.5
	36	37	24.02	24.06	23.99	23.97	23.82		0.5
	75	0	23.97	23.81	24.04	23.78	23.83		0.5

Table 9-77
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	25.05	24.83	24.82	25.01	25.08	0	0
	1	25	25.00	24.81	24.79	25.09	24.94		0
	1	49	24.77	24.89	24.81	24.93	25.06		0
	25	0	24.82	25.02	24.74	24.75	25.08	0-1	0
	25	12	24.81	25.04	24.87	24.70	25.06		0
	25	25	24.88	24.98	24.72	24.97	24.78		0
	50	0	24.76	24.83	24.92	25.01	24.79		0
16QAM	1	0	24.85	24.95	24.90	24.84	24.97	0-1	0
	1	25	24.71	24.90	24.97	24.72	24.79		0
	1	49	24.87	24.78	24.98	24.71	25.09		0
	25	0	24.97	24.85	24.82	25.03	25.04	0-2	0
	25	12	24.86	24.77	24.85	24.82	24.82		0
	25	25	25.00	24.71	24.92	25.01	24.70		0
	50	0	24.93	24.86	24.85	24.85	24.94		0
64QAM	1	0	25.06	24.93	24.77	25.05	24.76	0-2	0
	1	25	24.96	25.08	24.97	24.84	24.87		0
	1	49	24.84	24.80	25.06	24.90	24.81		0
	25	0	23.85	23.86	24.04	23.74	23.88	0-3	0.5
	25	12	23.95	23.80	23.72	23.75	23.78		0.5
	25	25	24.03	23.71	23.80	23.79	24.09		0.5
	50	0	24.05	24.05	24.08	24.06	23.76		0.5

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 68 of 134	

Table 9-78
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.80	24.84	25.06	24.85	24.84	0	0
	1	12	25.05	25.02	25.00	24.96	24.76		0
	1	24	24.71	24.82	25.00	24.81	24.82		0
	12	0	24.84	24.88	25.00	25.09	25.02	0-1	0
	12	6	24.88	24.80	25.07	24.87	25.06		0
	12	13	24.97	24.94	24.74	24.94	24.97		0
	25	0	24.81	24.76	25.07	25.04	25.07		0
16QAM	1	0	25.03	24.75	24.71	24.80	25.07	0-1	0
	1	12	24.79	24.71	24.97	24.92	24.73		0
	1	24	24.79	24.99	24.73	25.06	24.89		0
	12	0	24.91	24.93	24.90	24.71	24.74	0-2	0
	12	6	24.70	24.82	25.03	24.80	25.03		0
	12	13	24.96	24.95	25.08	24.87	24.81		0
	25	0	24.78	24.72	25.09	25.08	24.77		0
64QAM	1	0	25.00	24.88	24.89	25.03	24.99	0-2	0
	1	12	24.77	25.09	25.02	24.88	24.71		0
	1	24	24.72	25.02	24.89	24.90	24.86		0
	12	0	23.83	23.87	23.99	23.84	23.97	0-3	0.5
	12	6	23.80	23.82	23.87	24.07	23.85		0.5
	12	13	23.98	23.94	23.88	23.78	24.08		0.5
	25	0	23.93	23.81	23.71	24.08	23.79		0.5

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 69 of 134

9.4.19 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-79
LTE Uplink Carrier Aggregation Conducted Powers

	PCC								SCC						Power								
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)							
CA_41C (1)	LTE B41	20	40620	2593.0	QPSK	1	0	LTE B41	20	40422	2573.2	QPSK	1	99	25.09	25.02							
	PCC								SCC						Power								
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)							
CA_41C (1)	LTE B41 PC2	20	40620	2593.0	QPSK	1	0	LTE B41 PC2	20	40422	2573.2	QPSK	1	99	27.40	27.24							
	PCC								SCC						Power								
Combination	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)			
CA_5B	LTE B5	10	20525	836.5	2525	881.5	QPSK	1	0	LTE B5	5	20453	829.3	2453	874.3	QPSK	1	24	25.32	25.15			
	PCC								SCC1						SCC2						Power		
Additional DLCA Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	DL Ant. Config.	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	DL Ant. Config.	Modulation	SCC UL# RB	SCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	DL Ant. Config.	ULCA Tx.Power with additional DLCA Enabled (dBm)	ULCA Tx Power (dBm)
CA_41C (1)	LTE B41	20	40620	2593.0	4x4	QPSK	1	0	LTE B41	20	40422	2573.2	4x4	QPSK	1	99	-	-	-	-	-	25.04	25.09
CA_41D	LTE B41	20	40620	2593.0	4x4	QPSK	1	0	LTE B41	20	40422	2573.2	4x4	QPSK	1	99	LTE B41	20	40818	2612.8	4x4	25.06	25.09

Notes:

1. This device supports uplink carrier aggregation for LTE CA_5B, LTE CA_41C (1), LTE CA_41C (1), and LTE CA_41D. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
3. [CC] indicates component carrier with 4x4 DL MIMO antenna configuration.

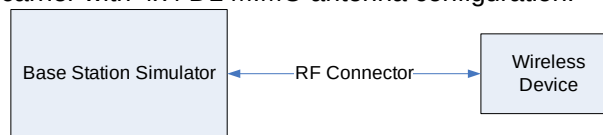


Figure 9-4
Power Measurement Setup

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 70 of 134

9.5 WLAN Conducted Powers

Table 9-80
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	20.47	16.89	15.67	15.64
2422	3	N/A	19.48	18.23	18.21
2437	6	20.49	19.49	18.46	18.48
2452	9	N/A	19.06	17.91	17.89
2462	11	20.45	16.83	15.61	15.58

Table 9-81
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	20.03	16.95	15.81	15.80
2422	3	N/A	19.49	18.49	18.48
2437	6	20.44	19.47	18.49	18.48
2452	9	N/A	18.83	17.72	17.65
2462	11	20.04	16.80	15.60	15.60

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 71 of 134

Table 9-82
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.53	16.54	16.43
5200	40	18.91	18.83	18.71
5220	44	16.61	16.53	16.47
5240	48	16.16	16.13	16.05
5260	52	16.23	16.17	16.14
5280	56	18.77	18.64	18.60
5300	60	16.71	16.53	16.48
5320	64	16.18	16.18	16.10
5500	100	16.31	16.44	16.21
5600	120	16.65	16.58	16.54
5620	124	16.79	16.43	16.33
5720	144	16.49	16.47	16.48
5745	149	16.64	16.51	16.54
5785	157	18.83	18.61	18.05
5805	161	18.57	18.28	18.32
5825	165	17.85	17.61	17.62

Table 9-83
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.41	16.31	16.24
5200	40	18.84	18.79	18.02
5220	44	16.45	16.26	16.26
5240	48	16.46	16.33	16.30
5260	52	16.26	16.11	16.07
5280	56	18.77	18.65	18.12
5300	60	16.73	16.02	16.52
5320	64	16.28	16.19	16.13
5500	100	16.81	16.66	16.65
5600	120	16.23	16.12	16.13
5620	124	16.34	16.17	16.20
5720	144	16.53	16.40	16.35
5745	149	16.60	16.45	16.44
5785	157	18.96	18.97	18.04
5805	161	18.71	18.57	18.61
5825	165	17.94	17.88	17.82

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 72 of 134

Table 9-84
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	16.54	16.31	19.44
5200	40	18.83	18.79	21.82
5220	44	16.53	16.26	19.41
5240	48	16.13	16.33	19.24
5260	52	16.17	16.11	19.15
5280	56	18.64	18.65	21.66
5300	60	16.53	16.02	19.29
5320	64	16.18	16.19	19.20
5500	100	16.44	16.66	19.56
5600	120	16.58	16.12	19.37
5620	124	16.43	16.17	19.31
5720	144	16.47	16.40	19.45
5745	149	16.51	16.45	19.49
5785	157	18.61	18.97	21.80
5805	161	18.28	18.57	21.44
5825	165	17.61	17.88	20.76

Table 9-85
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	16.85	16.82	15.61	15.57
2422	3	N/A	17.18	16.95	16.94
2437	6	16.90	17.05	16.90	16.95
2452	9	N/A	16.81	16.63	16.56
2462	11	17.25	16.81	15.56	15.54

Table 9-86
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	17.07	16.87	15.77	15.69
2422	3	N/A	17.51	17.36	17.36
2437	6	17.24	17.31	17.11	17.11
2452	9	N/A	17.36	17.20	17.20
2462	11	17.19	16.75	15.56	15.58

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 73 of 134

Table 9-87
2.4 GHz WLAN Reduced Average RF Power –MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	15.61	15.77	18.70
2422	3	16.95	17.36	20.17
2437	6	16.90	17.11	20.02
2452	9	16.63	17.20	19.93
2462	11	15.56	15.56	18.57

Table 9-88
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	13.07	13.08
5230	46	14.14	14.12
5270	54	13.99	14.02
5310	62	12.54	12.49
5510	102	12.98	12.98
5550	110	14.49	14.45
5590	118	14.47	14.37
5630	126	14.15	14.17
5710	142	14.14	14.16
5755	151	14.26	14.41
5795	159	14.23	14.25

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 74 of 134	

Table 9-89
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	13.18	13.23
5230	46	14.34	14.34
5270	54	14.45	14.48
5310	62	12.41	12.46
5510	102	12.30	12.34
5550	110	14.14	14.19
5590	118	14.09	14.17
5630	126	14.49	14.06
5710	142	14.10	14.08
5755	151	14.30	14.35
5795	159	14.34	14.32

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

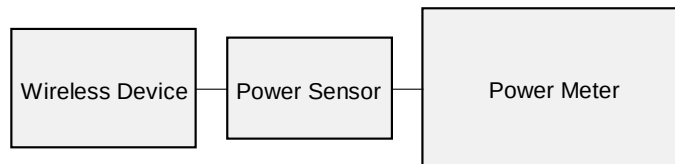


Figure 9-5
Power Measurement Setup

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 75 of 134

9.6 Bluetooth Conducted Powers

Table 9-90
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	10.91	12.322
2441	1.0	GFSK	39	11.73	14.889
2480	1.0	GFSK	78	10.51	11.246
2402	2.0	$\pi/4$ -DQPSK	0	10.21	10.486
2441	2.0	$\pi/4$ -DQPSK	39	11.38	13.728
2480	2.0	$\pi/4$ -DQPSK	78	9.91	9.788
2402	3.0	8DPSK	0	10.34	10.824
2441	3.0	8DPSK	39	11.46	13.981
2480	3.0	8DPSK	78	10.01	10.016

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 76 of 134

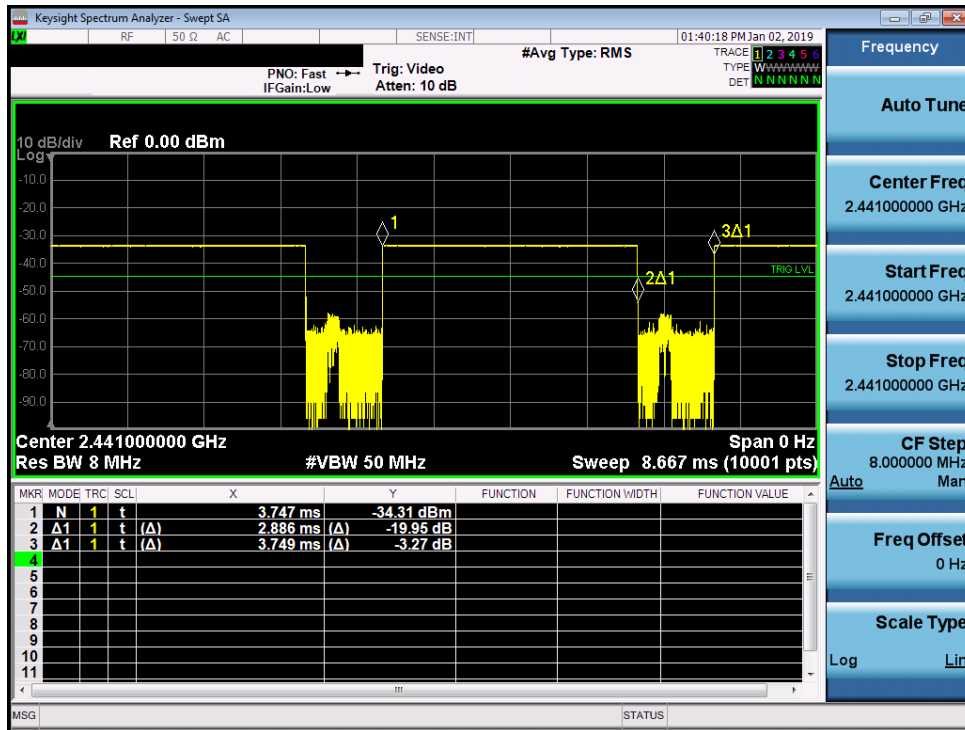


Figure 9-6
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$\text{Duty Cycle} = \frac{\text{Pulse Width}}{\text{Period}} * 100\% = \frac{2.886\text{ms}}{3.749\text{ms}} * 100\% = 77.0\%$$

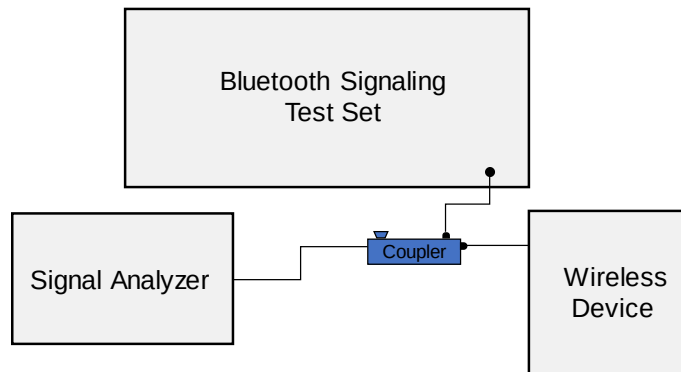


Figure 9-7
Power Measurement Setup

FCC ID: ZNFG820UM				Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 77 of 134

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Head Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
1/14/2019	750H	21.6	680	0.879	42.845	0.888	42.305	-1.01%	1.28%
			695	0.884	42.809	0.889	42.227	-0.56%	1.38%
			700	0.886	42.796	0.889	42.201	-0.34%	1.41%
			710	0.889	42.750	0.890	42.149	-0.11%	1.43%
			740	0.901	42.672	0.893	41.994	0.90%	1.61%
			755	0.907	42.628	0.894	41.916	1.45%	1.70%
			770	0.913	42.591	0.895	41.838	2.01%	1.80%
			785	0.918	42.552	0.896	41.760	2.46%	1.90%
			800	0.923	42.510	0.897	41.682	2.90%	1.99%
1/21/2019	835H	19.4	820	0.889	40.180	0.899	41.578	-1.11%	-3.36%
			835	0.894	40.135	0.900	41.500	-0.67%	-3.29%
			850	0.899	40.088	0.916	41.500	-1.86%	-3.40%
2/1/2019	835H	21.1	820	0.922	41.042	0.899	41.578	2.56%	-1.29%
			835	0.928	40.992	0.900	41.500	3.11%	-1.22%
			850	0.933	40.934	0.916	41.500	1.86%	-1.36%
1/14/2019	1750H	21.6	1710	1.350	40.609	1.348	40.142	0.15%	1.16%
			1750	1.377	40.556	1.371	40.079	0.44%	1.19%
			1790	1.401	40.486	1.394	40.016	0.50%	1.17%
1/17/2019	1750H	20.6	1710	1.324	39.532	1.348	40.142	-1.78%	-1.52%
			1750	1.347	39.488	1.371	40.079	-1.75%	-1.47%
			1790	1.370	39.417	1.394	40.016	-1.72%	-1.50%
1/17/2019	1900H	20.6	1850	1.406	39.331	1.400	40.000	0.43%	-1.67%
			1880	1.426	39.310	1.400	40.000	1.86%	-1.72%
			1910	1.445	39.274	1.400	40.000	3.21%	-1.82%
1/15/2019	2450H	21.2	2450	1.791	38.632	1.800	39.200	-0.50%	-1.45%
			2500	1.829	38.545	1.855	39.136	-1.40%	-1.51%
			2550	1.870	38.447	1.909	39.073	-2.04%	-1.60%
			2600	1.910	38.363	1.964	39.009	-2.75%	-1.66%
			2650	1.950	38.258	2.018	38.945	-3.37%	-1.76%
			2700	1.991	38.164	2.073	38.882	-3.96%	-1.85%
			2300	1.703	39.272	1.670	39.500	1.98%	-0.58%
1/18/2019	2450H	20.5	2310	1.711	39.257	1.679	39.480	1.91%	-0.56%
			2400	1.777	39.114	1.756	39.289	1.20%	-0.45%
			2450	1.815	39.021	1.800	39.200	0.83%	-0.46%
			2500	1.852	38.951	1.855	39.136	-0.16%	-0.47%
			2400	1.778	38.213	1.756	39.289	1.25%	-2.74%
			2450	1.819	38.136	1.800	39.200	1.06%	-2.71%
			2500	1.855	38.050	1.855	39.136	0.00%	-2.77%
2/5/2019	2450H	22.4	2450	1.792	38.231	1.800	39.200	-0.44%	-2.47%
			2500	1.828	38.162	1.855	39.136	-1.46%	-2.49%
			2550	1.869	38.105	1.909	39.073	-2.10%	-2.48%
			2600	1.909	38.043	1.964	39.009	-2.80%	-2.48%
			2650	1.948	37.962	2.018	38.945	-3.47%	-2.52%
			2700	1.989	37.865	2.073	38.882	-4.05%	-2.62%
			3500	2.868	36.271	2.913	37.929	-1.54%	-4.37%
1/21/2019	3500H - 3700H	20.2	3550	2.904	36.255	2.964	37.871	-2.02%	-4.27%
			3600	2.944	36.221	3.015	37.814	-2.35%	-4.21%
			3645	2.980	36.139	3.061	37.763	-2.65%	-4.30%
			3685	3.012	36.116	3.102	37.717	-2.90%	-4.24%
			3725	3.040	36.051	3.143	37.671	-3.28%	-4.30%
			5180	4.603	35.151	4.635	36.009	-0.69%	-2.38%
			5200	4.617	35.144	4.655	35.986	-0.82%	-2.34%
01/15/2019	5200H-5800H	19.6	5220	4.629	35.103	4.676	35.963	-1.01%	-2.39%
			5240	4.654	35.060	4.696	35.940	-0.89%	-2.45%
			5260	4.686	35.007	4.717	35.917	-0.66%	-2.53%
			5280	4.715	35.001	4.737	35.894	-0.46%	-2.49%
			5300	4.737	34.971	4.758	35.871	-0.44%	-2.51%
			5320	4.749	34.937	4.778	35.849	-0.61%	-2.54%
			5500	4.939	34.724	4.963	35.643	-0.48%	-2.58%
			5520	4.950	34.686	4.983	35.620	-0.66%	-2.62%
			5540	4.976	34.629	5.004	35.597	-0.56%	-2.72%
			5560	5.004	34.625	5.024	35.574	-0.40%	-2.67%
			5580	5.019	34.610	5.045	35.551	-0.52%	-2.65%
			5600	5.029	34.575	5.065	35.529	-0.71%	-2.69%
			5620	5.058	34.542	5.086	35.506	-0.55%	-2.72%
			5640	5.078	34.505	5.106	35.483	-0.55%	-2.76%
			5660	5.105	34.477	5.127	35.460	-0.43%	-2.77%
			5680	5.112	34.438	5.147	35.437	-0.68%	-2.82%
			5700	5.145	34.386	5.168	35.414	-0.45%	-2.90%
			5745	5.201	34.322	5.214	35.363	-0.25%	-2.94%
			5765	5.215	34.315	5.234	35.340	-0.36%	-2.90%
			5785	5.231	34.253	5.255	35.317	-0.46%	-3.01%
			5800	5.260	34.208	5.270	35.300	-0.19%	-3.09%
			5805	5.268	34.195	5.275	35.294	-0.13%	-3.11%
			5825	5.297	34.173	5.296	35.271	0.02%	-3.11%

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 78 of 134

Table 10-2
Body Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
1/14/2019	750B	20.8	680	0.934	53.686	0.958	55.804	-2.51%	-3.80%
			695	0.937	53.612	0.959	55.745	-2.29%	-3.83%
			700	0.938	53.594	0.959	55.726	-2.19%	-3.83%
			710	0.940	53.545	0.960	55.687	-2.08%	-3.85%
			740	0.949	53.437	0.963	55.570	-1.45%	-3.84%
			755	0.957	53.412	0.964	55.512	-0.73%	-3.78%
			770	0.965	53.392	0.965	55.453	0.00%	-3.72%
			785	0.972	53.361	0.966	55.395	0.62%	-3.67%
1/14/2019	835B	19.8	800	0.978	53.328	0.967	55.336	1.14%	-3.63%
			820	0.993	54.254	0.969	55.258	2.48%	-1.82%
			835	1.000	54.240	0.970	55.200	3.09%	-1.74%
1/21/2019	835B	20.3	850	1.006	54.218	0.988	55.154	1.82%	-1.70%
			820	0.971	54.323	0.969	55.258	0.21%	-1.69%
			835	0.986	54.197	0.970	55.200	1.65%	-1.82%
1/17/2019	1750B	18.8	850	1.000	54.058	0.988	55.154	1.21%	-1.99%
			1710	1.479	51.664	1.463	53.537	1.09%	-3.50%
			1750	1.509	51.597	1.488	53.432	1.41%	-3.43%
1/11/2019	1900B	22.5	1790	1.536	51.528	1.514	53.326	1.45%	-3.37%
			1850	1.472	52.543	1.520	53.300	-3.16%	-1.42%
			1880	1.505	52.410	1.520	53.300	-0.99%	-1.67%
1/14/2019	1900B	23.0	1910	1.539	52.297	1.520	53.300	1.25%	-1.88%
			1850	1.492	53.283	1.520	53.300	-1.84%	-0.03%
			1880	1.533	53.246	1.520	53.300	0.86%	-0.10%
1/16/2019	1900B	22.4	1910	1.567	53.089	1.520	53.300	3.09%	-0.40%
			1850	1.488	52.524	1.520	53.300	-2.11%	-1.46%
			1880	1.521	52.410	1.520	53.300	0.07%	-1.67%
1/18/2019	1900B	22.5	1910	1.555	52.312	1.520	53.300	2.30%	-1.85%
			1850	1.476	52.822	1.520	53.300	-2.89%	-0.90%
			1880	1.508	52.736	1.520	53.300	-0.79%	-1.06%
			1910	1.539	52.645	1.520	53.300	1.25%	-1.23%

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 79 of 134

Table 10-3
Body Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
1/14/2019	2450B	23.5	2450	2.039	51.588	1.950	52.700	4.56%	-2.11%
			2500	2.095	51.439	2.021	52.636	3.66%	-2.27%
			2550	2.155	51.316	2.092	52.573	3.01%	-2.39%
			2600	2.208	51.169	2.163	52.509	2.08%	-2.55%
			2650	2.270	50.984	2.234	52.445	1.61%	-2.79%
			2700	2.330	50.864	2.305	52.382	1.08%	-2.90%
1/21/2019	2450B	22.0	2300	1.871	52.137	1.809	52.900	3.43%	-1.44%
			2310	1.883	52.109	1.816	52.887	3.69%	-1.47%
			2400	1.985	51.859	1.902	52.767	4.36%	-1.72%
			2450	2.043	51.711	1.950	52.700	4.77%	-1.88%
			2500	2.102	51.571	2.021	52.636	4.01%	-2.02%
			2550	2.163	51.425	2.092	52.573	3.39%	-2.18%
			2600	2.224	51.297	2.163	52.509	2.82%	-2.31%
			2650	2.286	51.135	2.234	52.445	2.33%	-2.50%
1/24/2019	2450B	21.8	2700	2.348	50.997	2.305	52.382	1.87%	-2.64%
			2400	1.964	51.604	1.902	52.767	3.26%	-2.20%
			2450	2.022	51.501	1.950	52.700	3.69%	-2.28%
1/27/2019	2450B	23.1	2500	2.083	51.383	2.021	52.636	3.07%	-2.38%
			2300	1.864	51.553	1.809	52.900	3.04%	-2.55%
			2310	1.876	51.526	1.816	52.887	3.30%	-2.57%
			2400	1.972	51.266	1.902	52.767	3.68%	-2.84%
			2450	2.028	51.137	1.950	52.700	4.00%	-2.97%
2/5/2019	2450B	23.2	2500	2.087	50.995	2.021	52.636	3.27%	-3.12%
			2450	2.035	51.977	1.950	52.700	4.36%	-1.37%
			2500	2.091	51.817	2.021	52.636	3.46%	-1.56%
			2550	2.152	51.661	2.092	52.573	2.87%	-1.73%
			2600	2.212	51.487	2.163	52.509	2.27%	-1.95%
			2650	2.273	51.324	2.234	52.445	1.75%	-2.14%
1/17/2019	3500B - 3700B	20.0	2700	2.337	51.166	2.305	52.382	1.39%	-2.32%
			3500	3.192	51.083	3.314	51.321	-3.68%	-0.46%
			3550	3.259	51.026	3.372	51.254	-3.35%	-0.44%
			3600	3.314	50.932	3.431	51.186	-3.41%	-0.50%
			3645	3.368	50.881	3.483	51.125	-3.30%	-0.48%
			3685	3.422	50.769	3.530	51.070	-3.06%	-0.59%
01/11/2019	5200B-5800B	21.7	3725	3.473	50.711	3.577	51.016	-2.91%	-0.60%
			5180	5.334	48.265	5.276	49.041	1.10%	-1.58%
			5200	5.345	48.270	5.299	49.014	0.87%	-1.52%
			5220	5.382	48.246	5.323	48.987	1.11%	-1.51%
			5240	5.412	48.120	5.346	48.960	1.23%	-1.72%
			5260	5.444	48.129	5.369	48.933	1.40%	-1.64%
			5280	5.469	48.148	5.393	48.906	1.41%	-1.55%
			5300	5.495	48.031	5.416	48.879	1.46%	-1.73%
			5320	5.506	47.994	5.439	48.851	1.23%	-1.75%
			5500	5.773	47.680	5.650	48.607	2.18%	-1.91%
			5520	5.789	47.608	5.673	48.580	2.04%	-2.00%
			5540	5.818	47.551	5.696	48.553	2.14%	-2.06%
			5560	5.874	47.516	5.720	48.526	2.69%	-2.08%
			5580	5.898	47.489	5.743	48.499	2.70%	-2.08%
			5600	5.928	47.445	5.766	48.471	2.81%	-2.12%
			5620	5.942	47.401	5.790	48.444	2.63%	-2.15%
			5640	5.984	47.368	5.813	48.417	2.94%	-2.17%
			5660	6.014	47.289	5.837	48.390	3.03%	-2.28%
			5680	6.046	47.282	5.860	48.363	3.17%	-2.24%
			5700	6.086	47.244	5.883	48.336	3.45%	-2.26%
			5745	6.158	47.118	5.936	48.275	3.74%	-2.40%
			5765	6.177	47.112	5.959	48.248	3.66%	-2.35%
			5785	6.215	47.091	5.982	48.220	3.90%	-2.34%
			5800	6.235	47.061	6.000	48.200	3.92%	-2.36%
			5805	6.241	47.053	6.006	48.193	3.91%	-2.37%
			5825	6.292	47.053	6.029	48.166	4.36%	-2.31%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 80 of 134	

10.2 Test System Verification

Prior to SAR assessment, the system is verified to $\pm 10\%$ of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-4
System Verification Results – 1g

System Verification												
TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
D	750	HEAD	01/14/2019	22.4	21.6	0.200	1003	7357	1.750	8.280	8.750	5.68%
G	835	HEAD	01/21/2019	21.6	19.4	0.200	4d133	7410	2.000	9.430	10.000	6.04%
G	835	HEAD	02/01/2019	22.6	21.1	0.200	4d047	7410	2.000	9.470	10.000	5.60%
D	1750	HEAD	01/14/2019	22.4	21.6	0.100	1150	7357	3.810	36.500	38.100	4.38%
M	1750	HEAD	01/17/2019	21.1	20.6	0.100	1148	3287	3.610	36.400	36.100	-0.82%
M	1900	HEAD	01/17/2019	21.1	20.6	0.100	5d148	3287	4.250	40.100	42.500	5.99%
H	2300	HEAD	01/18/2019	21.4	20.5	0.100	1064	7409	5.050	47.600	50.500	6.09%
H	2450	HEAD	01/15/2019	20.9	21.2	0.100	797	7409	5.270	52.700	52.700	0.00%
H	2450	HEAD	01/18/2019	21.4	20.5	0.100	797	7409	5.460	52.700	54.600	3.61%
H	2450	HEAD	01/24/2019	21.9	20.3	0.100	981	7409	5.200	52.300	52.000	-0.57%
G	2450	HEAD	02/05/2019	24.0	22.4	0.100	981	7410	5.130	52.300	51.300	-1.91%
H	2600	HEAD	01/15/2019	20.9	21.2	0.100	1064	7409	5.550	57.000	55.500	-2.63%
G	2600	HEAD	02/05/2019	24.0	22.4	0.100	1004	7410	5.310	55.900	53.100	-5.01%
H	3500	HEAD	01/21/2019	20.0	20.0	0.100	1059	3949	6.230	64.600	62.300	-3.56%
H	3700	HEAD	01/21/2019	20.0	20.0	0.100	1018	3949	6.220	65.800	62.200	-5.47%
H	5250	HEAD	01/15/2019	21.4	19.6	0.050	1191	7409	3.740	78.900	74.800	-5.20%
H	5600	HEAD	01/15/2019	21.4	19.6	0.050	1191	7409	3.940	83.600	78.800	-5.74%
H	5750	HEAD	01/15/2019	21.4	19.6	0.050	1191	7409	3.780	79.100	75.600	-4.42%
J	750	BODY	01/14/2019	22.5	20.8	0.200	1003	3347	1.840	8.580	9.200	7.23%
I	835	BODY	01/14/2019	20.3	21.1	0.200	4d047	7406	2.030	9.710	10.150	4.53%
D	835	BODY	01/21/2019	21.0	20.3	0.200	4d047	7357	1.960	9.710	9.800	0.93%
J	1750	BODY	01/17/2019	20.8	18.8	0.100	1008	3347	3.750	37.400	37.500	0.27%
G	1900	BODY	01/11/2019	22.6	22.5	0.100	5d149	7410	3.940	39.400	39.400	0.00%
G	1900	BODY	01/14/2019	23.4	22.2	0.100	5d149	7410	4.070	39.400	40.700	3.30%
G	1900	BODY	01/16/2019	23.5	21.8	0.100	5d149	7410	4.200	39.400	42.000	6.60%
G	1900	BODY	01/18/2019	23.4	21.8	0.100	5d149	7410	3.860	39.400	38.600	-2.03%
K	2300	BODY	01/21/2019	21.6	21.0	0.100	1073	3319	5.150	47.700	51.500	7.97%
K	2450	BODY	01/14/2019	22.3	21.6	0.100	981	3319	4.980	50.900	49.800	-2.16%
K	2450	BODY	01/21/2019	21.6	21.0	0.100	981	3319	5.120	50.900	51.200	0.59%
K	2450	BODY	01/24/2019	23.5	21.8	0.100	981	3319	5.150	50.900	51.500	1.18%
K	2450	BODY	01/27/2019	22.2	22.9	0.100	981	3319	5.220	50.900	52.200	2.55%
K	2450	BODY	02/05/2019	22.7	22.9	0.100	981	3319	4.950	50.900	49.500	-2.75%
K	2600	BODY	01/14/2019	22.3	21.6	0.100	1004	3319	5.530	54.800	55.300	0.91%
K	2600	BODY	02/05/2019	22.7	22.9	0.100	1004	3319	5.620	54.800	56.200	2.55%
L	3500	BODY	01/17/2019	22.0	20.0	0.100	1059	3914	5.900	65.100	59.000	-9.37%
L	3700	BODY	01/17/2019	22.0	20.0	0.100	1018	3914	6.080	64.300	60.800	-5.44%
L	5250	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	3.730	77.000	74.600	-3.12%
L	5600	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	3.900	79.200	78.000	-1.52%
L	5750	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	3.550	76.100	71.000	-6.70%

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 81 of 134

Table 10-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
J	1750	BODY	01/17/2019	20.8	18.8	0.100	1008	3347	1.990	19.900	19.900	0.00%
G	1900	BODY	01/14/2019	23.4	22.2	0.100	5d149	7410	2.040	20.700	20.400	-1.45%
K	2300	BODY	01/21/2019	21.6	21.0	0.100	1073	3319	2.450	23.200	24.500	5.60%
K	2450	BODY	01/21/2019	21.6	21.0	0.100	981	3319	2.350	24.200	23.500	-2.89%
K	2600	BODY	01/21/2019	21.6	21.0	0.100	1004	3319	2.430	24.700	24.300	-1.62%
L	5250	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	1.040	21.600	20.800	-3.70%
L	5600	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	1.080	22.200	21.600	-2.70%
L	5750	BODY	01/11/2019	21.3	21.7	0.050	1191	7308	0.988	21.200	19.760	-6.79%

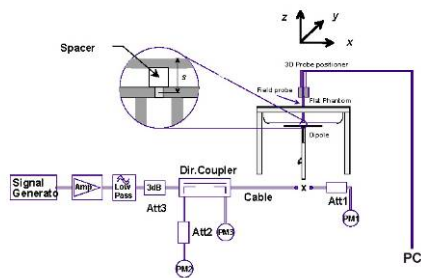


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 82 of 134	

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
CDMA BC10 (\$90S) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.11	Right	Cheek	03724	1:1	0.022	1.067	0.023	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.16	Right	Tilt	03724	1:1	0.015	1.067	0.016	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.12	Left	Cheek	03724	1:1	0.028	1.067	0.030	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.18	Left	Cheek 1st Add.	03724	1:1	0.037	1.067	0.039	A1
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.20	Left	Cheek 2nd Add.	03724	1:1	0.034	1.067	0.036	
820.10	564	CDMA BC10 (\$90S)	RC3 / SO55	25.5	25.22	0.18	Left	Tilt	03724	1:1	0.014	1.067	0.015	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.14	0.17	Right	Cheek	03724	1:1	0.021	1.086	0.023	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.14	0.11	Right	Tilt	03724	1:1	0.014	1.086	0.015	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.14	0.14	Left	Cheek	03724	1:1	0.026	1.086	0.028	
820.10	564	CDMA BC10 (\$90S)	EVDO Rev. A	25.5	25.14	0.13	Left	Tilt	03724	1:1	0.013	1.086	0.014	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
CDMA BC0 (\$22H) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.42	0.18	Right	Cheek	03724	1:1	0.027	1.019	0.028	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.42	0.14	Right	Tilt	03724	1:1	0.018	1.019	0.018	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.42	0.14	Left	Cheek	03724	1:1	0.029	1.019	0.030	
836.52	384	CDMA BC0 (\$22H)	RC3 / SO55	25.5	25.42	0.16	Left	Tilt	03724	1:1	0.016	1.019	0.016	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.17	Right	Cheek	03724	1:1	0.025	1.007	0.025	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.18	Right	Tilt	03724	1:1	0.018	1.007	0.018	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.20	Left	Cheek	03724	1:1	0.030	1.007	0.030	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.15	Left	Cheek 1st Add.	03724	1:1	0.047	1.007	0.047	A2
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.12	Left	Cheek 2nd Add.	03724	1:1	0.045	1.007	0.045	
836.52	384	CDMA BC0 (\$22H)	EVDO Rev. A	25.5	25.47	0.17	Left	Tilt	03724	1:1	0.018	1.007	0.018	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

FCC ID: ZNFG820UM			SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 83 of 134	

Table 11-3
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.20	0.09	Right	Cheek	03716	1:1	0.198	1.000	0.198	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.20	0.18	Right	Tilt	03716	1:1	0.047	1.000	0.047	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.20	0.03	Left	Cheek	03716	1:1	0.133	1.000	0.133	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.20	0.09	Left	Tilt	03716	1:1	0.096	1.000	0.096	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	0.00	Right	Cheek	03716	1:1	0.204	1.052	0.215	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	-0.08	Right	Cheek 1st Add.	03716	1:1	0.384	1.052	0.404	A3
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	-0.08	Right	Cheek 2nd Add.	03716	1:1	0.360	1.052	0.379	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	0.16	Right	Tilt	03716	1:1	0.040	1.052	0.042	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	0.02	Left	Cheek	03716	1:1	0.151	1.052	0.159	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	24.98	0.06	Left	Tilt	03716	1:1	0.108	1.052	0.114	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.2	34.01	0.14	Right	Cheek	03716	1	1:8.3	0.016	1.045	0.017	
836.60	190	GSM 850	GSM	34.2	34.01	0.16	Right	Tilt	03716	1	1:8.3	0.010	1.045	0.010	
836.60	190	GSM 850	GSM	34.2	34.01	0.15	Left	Cheek	03716	1	1:8.3	0.022	1.045	0.023	
836.60	190	GSM 850	GSM	34.2	34.01	0.13	Left	Tilt	03716	1	1:8.3	0.009	1.045	0.009	
836.60	190	GSM 850	GPRS	31.2	31.09	0.19	Right	Cheek	03716	3	1:2.76	0.030	1.026	0.031	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.09	Right	Cheek 1st Add.	03716	3	1:2.76	0.109	1.026	0.112	A4
836.60	190	GSM 850	GPRS	31.2	31.09	0.14	Right	Cheek 2nd Add.	03716	3	1:2.76	0.108	1.026	0.111	
836.60	190	GSM 850	GPRS	31.2	31.09	0.09	Right	Tilt	03716	3	1:2.76	0.014	1.026	0.014	
836.60	190	GSM 850	GPRS	31.2	31.09	0.13	Left	Cheek	03716	3	1:2.76	0.029	1.026	0.030	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.04	Left	Tilt	03716	3	1:2.76	0.016	1.026	0.016	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 84 of 134	

Table 11-5
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.2	30.62	-0.02	Right	Cheek	03716	1	1:8.3	0.141	1.143	0.161	
1880.00	661	GSM 1900	GSM	31.2	30.62	0.04	Right	Tilt	03716	1	1:8.3	0.041	1.143	0.047	
1880.00	661	GSM 1900	GSM	31.2	30.62	0.07	Left	Cheek	03716	1	1:8.3	0.106	1.143	0.121	
1880.00	661	GSM 1900	GSM	31.2	30.62	0.12	Left	Tilt	03716	1	1:8.3	0.063	1.143	0.072	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.17	Right	Cheek	03716	3	1:2.76	0.182	1.143	0.208	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.06	Right	Cheek 1st Add.	03716	3	1:2.76	0.364	1.143	0.416	A5
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.05	Right	Cheek 2nd Add.	03716	3	1:2.76	0.336	1.143	0.384	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.12	Right	Tilt	03716	3	1:2.76	0.046	1.143	0.053	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.08	Left	Cheek	03716	3	1:2.76	0.128	1.143	0.146	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.02	Left	Tilt	03716	3	1:2.76	0.079	1.143	0.090	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-6
UMTS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.17	Right	Cheek	03724	1:1	0.032	1.040	0.033	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.15	Right	Tilt	03724	1:1	0.020	1.040	0.021	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.14	Left	Cheek	03724	1:1	0.033	1.040	0.034	
836.60	4183	UMTS 850	RMC	25.5	25.33	-0.03	Left	Cheek 1st Add.	03724	1:1	0.051	1.040	0.053	A6
836.60	4183	UMTS 850	RMC	25.5	25.33	0.02	Left	Cheek 2nd Add.	03724	1:1	0.047	1.040	0.049	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.15	Left	Tilt	03724	1:1	0.019	1.040	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 85 of 134

Table 11-7
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.02	Right	Cheek	03716	1:1	0.191	1.138	0.217	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.03	Right	Cheek 1st Add.	03716	1:1	0.429	1.138	0.488	A7
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.04	Right	Cheek 2nd Add.	03716	1:1	0.407	1.138	0.463	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.11	Right	Tilt	03716	1:1	0.061	1.138	0.069	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.08	Left	Cheek	03716	1:1	0.111	1.138	0.126	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.07	Left	Tilt	03716	1:1	0.076	1.138	0.086	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-8
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.03	Right	Cheek	03716	1:1	0.197	1.021	0.201	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.00	Right	Cheek 1st Add.	03716	1:1	0.391	1.021	0.399	A8
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.04	Right	Cheek 2nd Add.	03716	1:1	0.372	1.021	0.380	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.12	Right	Tilt	03716	1:1	0.044	1.021	0.045	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.01	Left	Cheek	03716	1:1	0.139	1.021	0.142	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.10	Left	Tilt	03716	1:1	0.091	1.021	0.093	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-9
LTE Band 71 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Serial Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.07	0	Right	Cheek	QPSK	1	50	03732	1:1	0.121	1.081	0.131	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	-0.18	0	Right	Cheek 1st Add.	QPSK	1	50	03732	1:1	0.301	1.081	0.325	A9
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.00	0	Right	Cheek 2nd Add.	QPSK	1	50	03732	1:1	0.284	1.081	0.307	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.13	1	Right	Cheek	QPSK	50	25	03732	1:1	0.100	1.096	0.110	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.07	0	Right	Tilt	QPSK	1	50	03732	1:1	0.084	1.081	0.091	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.14	1	Right	Tilt	QPSK	50	25	03732	1:1	0.069	1.096	0.076	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.17	0	Left	Cheek	QPSK	1	50	03732	1:1	0.093	1.081	0.101	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.13	1	Left	Cheek	QPSK	50	25	03732	1:1	0.074	1.096	0.081	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.07	0	Left	Tilt	QPSK	1	50	03732	1:1	0.067	1.081	0.072	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	-0.15	1	Left	Tilt	QPSK	50	25	03732	1:1	0.057	1.096	0.062	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 86 of 134

Table 11-10
LTE Band 12 Head SAR

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (5g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.07	0	Right	Cheek	QPSK	1	25	03732	1:1	0.169	1.074	0.182	A10
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	-0.07	0	Right	Cheek 1st Add.	QPSK	1	25	03732	1:1	0.444	1.074	0.477	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.07	0	Right	Cheek 2nd Add.	QPSK	1	25	03732	1:1	0.421	1.074	0.452	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.04	1	Right	Cheek	QPSK	25	0	03732	1:1	0.109	1.059	0.115	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.01	0	Right	Tilt	QPSK	1	25	03732	1:1	0.121	1.074	0.130	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.17	1	Right	Tilt	QPSK	25	0	03732	1:1	0.077	1.059	0.082	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.01	0	Left	Cheek	QPSK	1	25	03732	1:1	0.140	1.074	0.150	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.11	1	Left	Cheek	QPSK	25	0	03732	1:1	0.092	1.059	0.097	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.13	0	Left	Tilt	QPSK	1	25	03732	1:1	0.100	1.074	0.107	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.20	1	Left	Tilt	QPSK	25	0	03732	1:1	0.069	1.059	0.073	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-11
LTE Band 13 Head SAR

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.13	0	Right	Cheek	QPSK	1	25	03732	1:1	0.196	1.064	0.209	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.10	0	Right	Cheek 1st Add.	QPSK	1	25	03732	1:1	0.582	1.064	0.619	A11
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	-0.04	0	Right	Cheek 2nd Add.	QPSK	1	25	03732	1:1	0.553	1.064	0.588	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.03	1	Right	Cheek	QPSK	25	12	03732	1:1	0.135	1.028	0.139	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.13	0	Right	Tilt	QPSK	1	25	03732	1:1	0.182	1.064	0.194	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	-0.02	1	Right	Tilt	QPSK	25	12	03732	1:1	0.123	1.028	0.126	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.04	0	Left	Cheek	QPSK	1	25	03732	1:1	0.193	1.064	0.205	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.02	1	Left	Cheek	QPSK	25	12	03732	1:1	0.133	1.028	0.137	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.08	0	Left	Tilt	QPSK	1	25	03732	1:1	0.139	1.064	0.148	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.11	1	Left	Tilt	QPSK	25	12	03732	1:1	0.094	1.028	0.097	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak										Head 1.6 W/kg (mW/g) averaged over 1 gram									
Uncontrolled Exposure/General Population																			

Table 11-12
LTE Band 14 Head SAR

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.04	0	Right	Cheek	QPSK	1	0	03732	1:1	0.190	1.074	0.204	A12
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.05	0	Right	Cheek 1st Add.	QPSK	1	0	03732	1:1	0.508	1.074	0.546	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.10	0	Right	Cheek 2nd Add.	QPSK	1	0	03732	1:1	0.472	1.074	0.507	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.02	1	Right	Cheek	QPSK	25	12	03732	1:1	0.157	1.054	0.165	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.06	0	Right	Tilt	QPSK	1	0	03732	1:1	0.163	1.074	0.175	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.06	1	Right	Tilt	QPSK	25	12	03732	1:1	0.141	1.054	0.149	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.09	0	Left	Cheek	QPSK	1	0	03732	1:1	0.180	1.074	0.193	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	0.11	1	Left	Cheek	QPSK	25	12	03732	1:1	0.160	1.054	0.169	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.02	0	Left	Tilt	QPSK	1	0	03732	1:1	0.133	1.074	0.143	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	0.06	1	Left	Tilt	QPSK	25	12	03732	1:1	0.116	1.054	0.122	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 87 of 134	

Table 11-13
LTE Band 26 (Cell) Head SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.20	0	Right	Cheek	QPSK	1	36	03765	1:1	0.027	1.038	0.028	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.12	1	Right	Cheek	QPSK	36	0	03765	1:1	0.016	1.007	0.016	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.12	0	Right	Tilt	QPSK	1	36	03765	1:1	0.017	1.038	0.018	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.15	1	Right	Tilt	QPSK	36	0	03765	1:1	0.009	1.007	0.009	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.01	0	Left	Cheek	QPSK	1	36	03765	1:1	0.028	1.038	0.029	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.18	0	Left	Cheek 1st Add.	QPSK	1	36	03765	1:1	0.045	1.038	0.047	A13
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.18	0	Left	Cheek 2nd Add.	QPSK	1	36	03765	1:1	0.041	1.038	0.043	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.20	1	Left	Cheek	QPSK	36	0	03765	1:1	0.016	1.007	0.016	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.13	0	Left	Tilt	QPSK	1	36	03765	1:1	0.014	1.038	0.015	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.11	1	Left	Tilt	QPSK	36	0	03765	1:1	0.008	1.007	0.008	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-14
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.11	0	Right	Cheek	QPSK	1	0	03765	1.1	0.023	1.084	0.025	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.20	1	Right	Cheek	QPSK	25	12	03765	1.1	0.020	1.047	0.021	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.19	0	Right	Tilt	QPSK	1	0	03765	1.1	0.014	1.084	0.015	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.11	1	Right	Tilt	QPSK	25	12	03765	1.1	0.013	1.047	0.014	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.11	0	Left	Cheek	QPSK	1	0	03765	1.1	0.027	1.084	0.029	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.05	0	Left	Cheek 1st Add.	QPSK	1	0	03765	1.1	0.041	1.084	0.044	A14
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.32	0.11	0	Left	Cheek 1st Add.	QPSK	1	0	03765	1.1	0.040	1.042	0.042	
	SCC	829.30	20453	5		QPSK							1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.18	0	Left	Cheek 2nd Add.	QPSK	1	0	03765	1.1	0.041	1.084	0.044	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.18	1	Left	Cheek	QPSK	25	12	03765	1.1	0.022	1.047	0.023	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.18	0	Left	Tilt	QPSK	1	0	03765	1.1	0.013	1.084	0.014	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.16	1	Left	Tilt	QPSK	25	12	03765	1.1	0.012	1.047	0.013	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-15
LTE Band 66 (AWS) Head SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.10	0	Right	Cheek	QPSK	1	99	03732	1:1	0.163	1.009	0.164	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	-0.04	0	Right	Cheek 1st Add.	QPSK	1	99	03732	1:1	0.368	1.009	0.371	A15
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.06	0	Right	Cheek 2nd Add.	QPSK	1	99	03732	1:1	0.344	1.009	0.347	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	0.17	1	Right	Cheek	QPSK	50	0	03732	1:1	0.155	1.012	0.157	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.18	0	Right	Tilt	QPSK	1	99	03732	1:1	0.059	1.009	0.060	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	0.20	1	Right	Tilt	QPSK	50	0	03732	1:1	0.053	1.012	0.054	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.08	0	Left	Cheek	QPSK	1	99	03732	1:1	0.094	1.009	0.095	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	0.13	1	Left	Cheek	QPSK	50	0	03732	1:1	0.093	1.012	0.094	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.12	0	Left	Tilt	QPSK	1	99	03732	1:1	0.046	1.009	0.046	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	0.16	1	Left	Tilt	QPSK	50	0	03732	1:1	0.040	1.012	0.040	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 88 of 134

Table 11-16
LTE Band 25 (PCS) Head SAR

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR[dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.13	0	Right	Cheek	QPSK	1	50	03732	1:1	0.153	1.016	0.155	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.07	0	Right	Cheek 1st Add.	QPSK	1	50	03732	1:1	0.289	1.016	0.294	A16
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.02	0	Right	Cheek 2nd Add.	QPSK	1	50	03732	1:1	0.260	1.016	0.264	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.16	1	Right	Cheek	QPSK	50	50	03732	1:1	0.133	1.014	0.135	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.04	0	Right	Tilt	QPSK	1	50	03732	1:1	0.046	1.016	0.047	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.17	1	Right	Tilt	QPSK	50	50	03732	1:1	0.046	1.014	0.047	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.04	0	Left	Cheek	QPSK	1	50	03732	1:1	0.117	1.016	0.119	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.10	1	Left	Cheek	QPSK	50	50	03732	1:1	0.108	1.014	0.110	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.15	0	Left	Tilt	QPSK	1	50	03732	1:1	0.075	1.016	0.076	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.10	1	Left	Tilt	QPSK	50	50	03732	1:1	0.066	1.014	0.067	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak										Head 1.6 W/kg (mW/g) averaged over 1 gram									
Uncontrolled Exposure/General Population																			

Table 11-17
LTE Band 30 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.01	0	Right	Cheek	QPSK	1	25	03757	1:1	0.136	1.102	0.150	A17
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.13	0	Right	Cheek 1st Add.	QPSK	1	25	03757	1:1	0.329	1.102	0.363	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.13	0	Right	Cheek 2nd Add.	QPSK	1	25	03757	1:1	0.338	1.102	0.372	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.16	1	Right	Cheek	QPSK	25	0	03757	1:1	0.087	1.052	0.092	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.08	0	Right	Tilt	QPSK	1	25	03757	1:1	0.088	1.102	0.097	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.12	1	Right	Tilt	QPSK	25	0	03757	1:1	0.059	1.052	0.062	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.11	0	Left	Cheek	QPSK	1	25	03757	1:1	0.088	1.102	0.097	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.13	1	Left	Cheek	QPSK	25	0	03757	1:1	0.054	1.052	0.057	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.19	0	Left	Tilt	QPSK	1	25	03757	1:1	0.046	1.102	0.051	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.15	1	Left	Tilt	QPSK	25	0	03757	1:1	0.027	1.052	0.028	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-18
LTE Band 7 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.08	0	Right	Cheek	QPSK	1	99	03757	1:1	0.151	1.016	0.153	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.08	0	Right	Cheek 1st Add.	QPSK	1	99	03757	1:1	0.281	1.016	0.285	A18
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.04	0	Right	Cheek 2nd Add.	QPSK	1	99	03757	1:1	0.273	1.016	0.277	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.13	1	Right	Cheek	QPSK	50	0	03757	1:1	0.083	1.002	0.083	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.20	0	Right	Tilt	QPSK	1	99	03757	1:1	0.055	1.016	0.056	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.14	1	Right	Tilt	QPSK	50	0	03757	1:1	0.038	1.002	0.038	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.15	0	Left	Cheek	QPSK	1	99	03757	1:1	0.131	1.016	0.133	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.09	1	Left	Cheek	QPSK	50	0	03757	1:1	0.075	1.002	0.075	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.05	0	Left	Tilt	QPSK	1	99	03757	1:1	0.058	1.016	0.059	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.18	1	Left	Tilt	QPSK	50	0	03757	1:1	0.040	1.002	0.040	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 89 of 134

Table 11-19
LTE Band 48 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.20	0	Right	Cheek	QPSK	1	0	03732	1:1.58	0.128	1.021	0.131	A19
3690.00	56640	High	LTE Band 48	20	22.7	22.61	-0.13	0	Right	Cheek 1st Add.	QPSK	1	0	03732	1:1.58	0.308	1.021	0.314	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	-0.13	0	Right	Cheek 2nd Add.	QPSK	1	0	03732	1:1.58	0.245	1.021	0.250	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	0.11	1	Right	Cheek	QPSK	50	50	03732	1:1.58	0.065	1.007	0.065	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.15	0	Right	Tilt	QPSK	1	0	03732	1:1.58	0.055	1.021	0.056	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	0.15	1	Right	Tilt	QPSK	50	50	03732	1:1.58	0.035	1.007	0.035	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.11	0	Left	Cheek	QPSK	1	0	03732	1:1.58	0.048	1.021	0.049	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	0.16	1	Left	Cheek	QPSK	50	50	03732	1:1.58	0.022	1.007	0.022	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.16	0	Left	Tilt	QPSK	1	0	03732	1:1.58	0.077	1.021	0.079	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	0.17	1	Left	Tilt	QPSK	50	50	03732	1:1.58	0.048	1.007	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-20
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink / 2 CC Uplink, Power Class	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.18	0	Right	Cheek	QPSK	1	0	18646	1:1.58	0.104	1.042	0.108	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.11	1	Right	Cheek	QPSK	50	0	18646	1:1.58	0.089	1.009	0.090	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.19	0	Right	Tilt	QPSK	1	0	18646	1:1.58	0.037	1.042	0.039	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.11	1	Right	Tilt	QPSK	50	0	18646	1:1.58	0.031	1.009	0.031	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.08	0	Left	Cheek	QPSK	1	0	18646	1:1.58	0.145	1.042	0.151	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.05	0	Left	Cheek 1st Add.	QPSK	1	0	18646	1:1.58	0.389	1.042	0.405	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.7	27.24	-0.10	0	Left	Cheek 1st Add.	QPSK	1	0	18646	1:2.31	0.418	1.112	0.465	
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	25.09	-0.16	0	Left	Cheek 1st Add.	QPSK	1	0	18646	1:1.58	0.374	1.026	0.384	
2 CC Uplink - Power Class 2	SCC	2573.20	40422	Mid	LTE Band 41	20	27.7	27.40	0.04	0	Left	Cheek 1st Add.	QPSK	1	99	18646	1:2.31	0.450	1.072	0.482	A20
	PCC	2593.00	40620										QPSK	1	0						
1 CC Uplink - Power Class 3	SCC	2573.20	40422										QPSK	1	99						
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	-0.03	0	Left	Cheek 2nd Add.	QPSK	1	0	18646	1:1.58	0.368	1.042	0.383	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.14	1	Left	Cheek	QPSK	50	0	18646	1:1.58	0.126	1.009	0.127	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.14	0	Left	Tilt	QPSK	1	0	18646	1:1.58	0.079	1.042	0.082	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.12	1	Left	Tilt	QPSK	50	0	18646	1:1.58	0.065	1.009	0.066	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 90 of 134

**Table 11-21
DTS Head SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	17.5	17.25	-0.11	Right	Cheek	1	03781	1	99.3	0.769	0.424	1.059	1.007	0.452	
2462	11	802.11b	DSSS	22	17.5	17.25	0.20	Right	Cheek 1st Add.	1	03781	1	99.3	0.424	0.275	1.059	1.007	0.293	
2462	11	802.11b	DSSS	22	17.5	17.25	0.14	Right	Cheek 2nd Add.	1	03781	1	99.3	0.576	0.348	1.059	1.007	0.371	
2462	11	802.11b	DSSS	22	17.5	17.25	0.18	Right	Tilt	1	03781	1	99.3	0.335	0.202	1.059	1.007	0.215	
2462	11	802.11b	DSSS	22	17.5	17.25	0.14	Left	Cheek	1	03781	1	99.3	0.205	0.139	1.059	1.007	0.148	
2462	11	802.11b	DSSS	22	17.5	17.25	0.17	Left	Tilt	1	03781	1	99.3	0.069	-	1.059	1.007	-	
2437	6	802.11b	DSSS	22	17.5	17.24	0.17	Right	Cheek	2	03781	1	99.1	0.781	0.501	1.062	1.009	0.537	
2437	6	802.11b	DSSS	22	17.5	17.24	-0.18	Right	Cheek 1st Add.	2	03781	1	99.1	0.370	0.230	1.062	1.009	0.246	
2437	6	802.11b	DSSS	22	17.5	17.24	0.19	Right	Cheek 2nd Add.	2	03781	1	99.1	0.309	0.218	1.062	1.009	0.234	
2412	1	802.11b	DSSS	22	17.5	17.07	0.14	Right	Tilt	2	03781	1	99.1	0.909	0.638	1.104	1.009	0.711	
2437	6	802.11b	DSSS	22	17.5	17.24	0.19	Right	Tilt	2	03781	1	99.1	0.947	0.595	1.062	1.009	0.638	
2462	11	802.11b	DSSS	22	17.5	17.19	0.14	Right	Tilt	2	03781	1	99.1	0.543	0.351	1.074	1.009	0.380	
2412	1	802.11b	DSSS	22	17.5	17.07	0.14	Right	Tilt 1st Add.	2	03781	1	99.1	1.159	0.864	1.104	1.009	0.962	
2412	1	802.11b	DSSS	22	17.5	17.07	0.13	Right	Tilt 2nd Add.	2	03781	1	99.1	1.048	0.687	1.104	1.009	0.765	
2437	6	802.11b	DSSS	22	17.5	17.24	-0.14	Left	Cheek	2	03781	1	99.1	0.522	0.275	1.062	1.009	0.295	
2437	6	802.11b	DSSS	22	17.5	17.24	0.15	Left	Tilt	2	03781	1	99.1	0.559	-	1.062	1.009	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

**Table 11-22
DTS MIMO Head SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	0.14	Right	Cheek	MIMO	03781	13	98.1	0.763	0.525	1.135	1.019	0.607	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	-0.15	Right	Cheek 1st Add.	MIMO	03781	13	98.1	0.542	0.460	1.135	1.019	0.532	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	-0.09	Right	Cheek 2nd Add.	MIMO	03781	13	98.1	0.858	0.493	1.135	1.019	0.570	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	0.10	Right	Tilt	MIMO	03781	13	98.1	1.053	0.569	1.135	1.019	0.658	
2437	6	802.11n	OFDM	20	17.5	16.90	17.5	17.11	0.09	Right	Tilt	MIMO	03781	13	98.1	0.841	0.582	1.148	1.019	0.681	
2452	9	802.11n	OFDM	20	17.5	16.63	17.5	17.20	0.08	Right	Tilt	MIMO	03781	13	98.1	0.976	0.698	1.222	1.019	0.869	
2452	9	802.11n	OFDM	20	17.5	16.63	17.5	17.20	0.17	Right	Tilt 1st Add.	MIMO	03781	13	98.1	1.531	0.888	1.222	1.019	1.106	A21
2452	9	802.11n	OFDM	20	17.5	16.63	17.5	17.20	-0.04	Right	Tilt 2nd Add.	MIMO	03781	13	98.1	1.560	0.820	1.222	1.019	1.021	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	0.14	Left	Cheek	MIMO	03781	13	98.1	0.353	-	1.135	1.019	-	
2422	3	802.11n	OFDM	20	17.5	16.95	17.5	17.36	0.13	Left	Tilt	MIMO	03781	13	98.1	0.493	-	1.135	1.019	-	
2452	9	802.11n	OFDM	20	17.5	16.63	17.5	17.20	-0.14	Right	Tilt 1st Add.	MIMO	03781	13	98.1	1.665	0.881	1.222	1.019	1.097	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

To achieve the 20.5 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 17.5 dBm.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 91 of 134

**Table 11-23
NII Head SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5270	54	802.11n	OFDM	40	14.5	13.99	-0.12	Right	Cheek	1	03781	13.5	97.3	0.072	0.033	1.125	1.028	0.038	
5270	54	802.11n	OFDM	40	14.5	13.99	0.13	Right	Cheek 1st Add.	1	03781	13.5	97.3	0.080	0.027	1.125	1.028	0.031	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Right	Cheek 2nd Add.	1	03781	13.5	97.3	0.090	0.031	1.125	1.028	0.036	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Right	Tilt	1	03781	13.5	97.3	0.058	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	13.99	0.00	Left	Cheek	1	03781	13.5	97.3	0.023	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Left	Tilt	1	03781	13.5	97.3	0.009	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	14.45	0.14	Right	Cheek	2	03781	13.5	97.2	0.669	0.305	1.012	1.029	0.318	
5270	54	802.11n	OFDM	40	14.5	14.45	0.15	Right	Tilt	2	03781	13.5	97.2	0.942	0.434	1.012	1.029	0.452	
5270	54	802.11n	OFDM	40	14.5	14.45	-0.13	Left	Cheek	2	03781	13.5	97.2	0.361	-	1.012	1.029	-	
5270	54	802.11n	OFDM	40	14.5	14.45	0.19	Left	Tilt	2	03781	13.5	97.2	0.421	-	1.012	1.029	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.19	Right	Cheek	1	03781	13.5	97.3	0.024	-	1.002	1.028	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.14	Right	Tilt	1	03781	13.5	97.3	0.030	0.011	1.002	1.028	0.011	
5550	110	802.11n	OFDM	40	14.5	14.49	0.19	Left	Cheek	1	03781	13.5	97.3	0.009	-	1.002	1.028	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.09	Left	Tilt	1	03781	13.5	97.3	0.010	-	1.002	1.028	-	
5630	126	802.11n	OFDM	40	14.5	14.49	0.09	Right	Cheek	2	03781	13.5	97.2	0.835	0.416	1.002	1.029	0.429	
5630	126	802.11n	OFDM	40	14.5	14.49	0.13	Right	Cheek 1st Add.	2	03781	13.5	97.2	0.345	0.145	1.002	1.029	0.150	
5630	126	802.11n	OFDM	40	14.5	14.49	-0.16	Right	Cheek 2nd Add.	2	03781	13.5	97.2	0.384	0.154	1.002	1.029	0.159	
5630	126	802.11n	OFDM	40	14.5	14.49	0.16	Right	Tilt	2	03781	13.5	97.2	1.126	0.508	1.002	1.029	0.524	A22
5630	126	802.11n	OFDM	40	14.5	14.49	0.14	Right	Tilt 1st Add.	2	03781	13.5	97.2	1.039	0.440	1.002	1.029	0.454	
5630	126	802.11n	OFDM	40	14.5	14.49	0.13	Right	Tilt 2nd Add.	2	03781	13.5	97.2	1.212	0.470	1.002	1.029	0.485	
5630	126	802.11n	OFDM	40	14.5	14.49	0.13	Left	Cheek	2	03781	13.5	97.2	0.545	-	1.002	1.029	-	
5630	126	802.11n	OFDM	40	14.5	14.49	-0.11	Left	Tilt	2	03781	13.5	97.2	0.567	-	1.002	1.029	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.17	Right	Cheek	1	03781	13.5	97.3	0.044	-	1.057	1.028	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.13	Right	Tilt	1	03781	13.5	97.3	0.073	0.024	1.057	1.028	0.026	
5755	151	802.11n	OFDM	40	14.5	14.26	0.19	Left	Cheek	1	03781	13.5	97.3	0.011	-	1.057	1.028	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.09	Left	Tilt	1	03781	13.5	97.3	0.012	-	1.057	1.028	-	
5795	159	802.11n	OFDM	40	14.5	14.34	0.18	Right	Cheek	2	03781	13.5	97.2	0.561	-	1.038	1.029	-	
5795	159	802.11n	OFDM	40	14.5	14.34	0.16	Right	Tilt	2	03781	13.5	97.2	0.882	0.372	1.038	1.029	0.397	
5795	159	802.11n	OFDM	40	14.5	14.34	0.19	Left	Cheek	2	03781	13.5	97.2	0.335	-	1.038	1.029	-	
5795	159	802.11n	OFDM	40	14.5	14.34	0.17	Left	Tilt	2	03781	13.5	97.2	0.455	-	1.038	1.029	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

**Table 11-24
DSS Head SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.06	Right	Cheek	03781	1	77	0.143	1.064	1.299	0.198	A23
2441.00	39	Bluetooth	FHSS	12.0	11.73	-0.02	Right	Cheek 1st Add.	03781	1	77	0.106	1.064	1.299	0.147	
2441.00	39	Bluetooth	FHSS	12.0	11.73	-0.07	Right	Cheek 2nd Add.	03781	1	77	0.126	1.064	1.299	0.174	
2441.00	39	Bluetooth	FHSS	12.0	11.73	-0.02	Right	Tilt	03781	1	77	0.071	1.064	1.299	0.098	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.17	Left	Cheek	03781	1	77	0.056	1.064	1.299	0.077	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.14	Left	Tilt	03781	1	77	0.019	1.064	1.299	0.026	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 92 of 134	

11.2 Standalone Body-Worn SAR Data

Table 11-25
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (\$90S)	TDSO / SO32	25.5	25.46	0.00	10 mm	03724	N/A	1:1	back	0.160	1.009	0.161	A24
836.52	384	CDMA BC0 (\$22H)	TDSO / SO32	25.5	25.42	-0.01	10 mm	03724	N/A	1:1	back	0.178	1.019	0.181	A26
1880.00	600	PCS CDMA	TDSO / SO32	25.2	24.96	0.03	10 mm	03724	N/A	1:1	back	0.533	1.057	0.563	A28
836.60	190	GSM 850	GSM	34.2	34.01	0.01	10 mm	03716	1	1:8.3	back	0.124	1.045	0.130	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.06	10 mm	03716	3	1:2.76	back	0.187	1.026	0.192	A30
1880.00	661	GSM 1900	GSM	31.2	30.62	0.00	10 mm	03724	1	1:8.3	back	0.398	1.143	0.455	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.01	10 mm	03724	3	1:2.76	back	0.425	1.143	0.486	A31
836.60	4183	UMTS 850	RMC	25.5	25.33	0.00	10 mm	03724	N/A	1:1	back	0.141	1.040	0.147	A33
1712.40	1312	UMTS 1750	RMC	25.5	24.92	0.01	10 mm	03724	N/A	1:1	back	0.551	1.143	0.630	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.00	10 mm	03724	N/A	1:1	back	0.605	1.138	0.688	A34
1752.60	1513	UMTS 1750	RMC	25.5	25.31	-0.01	10 mm	03724	N/A	1:1	back	0.598	1.045	0.625	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.07	10 mm	03724	N/A	1:1	back	0.555	1.021	0.567	A36
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body 1.6 W/kg (mW/g) averaged over 1 gram								
Spatial Peak															
Uncontrolled Exposure/General Population															

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 93 of 134

Table 11-26
LTE Body-Worn SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	-0.07	0	03765	QPSK	1	50	10 mm	back	1:1	0.404	1.081	0.437	A38
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.02	1	03765	QPSK	50	25	10 mm	back	1:1	0.352	1.096	0.386	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.01	0	03765	QPSK	1	25	10 mm	back	1:1	0.589	1.074	0.633	A39
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.00	1	03765	QPSK	25	0	10 mm	back	1:1	0.387	1.059	0.410	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.01	0	03765	QPSK	1	25	10 mm	back	1:1	0.750	1.064	0.798	A40
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.00	1	03765	QPSK	25	12	10 mm	back	1:1	0.497	1.028	0.511	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	-0.07	0	03765	QPSK	1	0	10 mm	back	1:1	0.667	1.074	0.716	A41
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.01	1	03765	QPSK	25	12	10 mm	back	1:1	0.561	1.054	0.591	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.11	0	03765	QPSK	1	36	10 mm	back	1:1	0.149	1.038	0.155	A42
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.01	1	03765	QPSK	36	0	10 mm	back	1:1	0.091	1.007	0.092	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	-0.06	0	03765	QPSK	1	99	10 mm	back	1:1	0.506	1.009	0.511	A44
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	-0.02	1	03765	QPSK	50	0	10 mm	back	1:1	0.367	1.012	0.371	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.07	0	03765	QPSK	1	50	10 mm	back	1:1	0.540	1.016	0.549	A46
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.05	1	03765	QPSK	50	50	10 mm	back	1:1	0.315	1.014	0.319	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.02	0	03740	QPSK	1	25	10 mm	back	1:1	0.471	1.102	0.519	A48
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.09	1	03740	QPSK	25	0	10 mm	back	1:1	0.312	1.052	0.328	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.01	0	03740	QPSK	1	99	10 mm	back	1:1	0.427	1.016	0.434	A49
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.01	1	03740	QPSK	50	0	10 mm	back	1:1	0.274	1.002	0.275	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.08	0	03740	QPSK	1	0	10 mm	back	1:1.58	0.276	1.021	0.282	A51
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	-0.01	1	03740	QPSK	50	50	10 mm	back	1:1.58	0.166	1.007	0.167	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-27
LTE Band 5 (Cell) Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.06	0	03757	QPSK	1	0	10 mm	back	1:1	0.170	1.084		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.01	1	03757	QPSK	25	12	10 mm	back	1:1	0.157	1.047		
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.32	-0.01	0	03757	QPSK	1	0	10 mm	back	1:1	0.171	1.042	0.178	A43
	SCC	829.30	20453	Mid		5							1	24							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak											Body 1.6 W/kg (mW/g) averaged over 1 gram										
Uncontrolled Exposure/General Population																					

Table 11-28
LTE Band 41 Body-Worn SAR

MEASUREMENT RESULTS																				
1 CC Uplink 2 CC Uplink, Power Class	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)	(W/kg)		
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	-0.13	0	03732	QPSK	1	0	10 mm	back	1:1.58	0.213	1.042	0.222
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	-0.04	1	03732	QPSK	50	0	10 mm	back	1:1.58	0.168	1.009	0.170
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.7	27.24	-0.05	0	03732	QPSK	1	0	10 mm	back	1:2.31	0.243	1.112	0.270
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	25.09	-0.03	0	03732	QPSK	1	0	10 mm	back	1:1.58	0.208	1.026	0.213
	SCC	2573.20	40422										1	99						
2 CC Uplink - Power Class 2	PCC	2593.00	40620	Mid	LTE Band 41	20	27.7	27.40	-0.04	0	03732	QPSK	1	0	10 mm	back	1:2.31	0.265	1.072	0.284
	SCC	2573.20	40422										1	99						
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 94 of 134

Table 11-29
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.5	20.47	-0.04	10 mm	1	03773	1	back	99.3	0.360	0.305	1.007	1.007	0.309	
2437	6	802.11b	DSSS	22	20.5	20.49	-0.15	10 mm	1	03773	1	back	99.3	0.728	0.601	1.002	1.007	0.606	A54
2462	11	802.11b	DSSS	22	20.5	20.45	0.03	10 mm	1	03773	1	back	99.3	0.350	0.293	1.012	1.007	0.299	
2437	6	802.11b	DSSS	22	20.5	20.44	0.14	10 mm	2	03781	1	back	99.1	0.198	0.167	1.014	1.009	0.171	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-30
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	19.0	18.77	0.14	10 mm	1	03773	6	back	98.3	0.870	0.356	1.054	1.017	0.382	
5280	56	802.11a	OFDM	20	19.0	18.77	0.01	10 mm	2	03773	6	back	98.3	0.201	0.104	1.054	1.017	0.111	
5620	124	802.11a	OFDM	20	17.0	16.79	0.03	10 mm	1	03773	6	back	98.3	0.575	0.226	1.050	1.017	0.241	
5500	100	802.11a	OFDM	20	17.0	16.81	0.04	10 mm	2	03773	6	back	98.3	0.251	0.123	1.045	1.017	0.131	
5785	157	802.11a	OFDM	20	19.0	18.83	0.04	10 mm	1	03773	6	back	98.3	0.895	0.363	1.040	1.017	0.384	A56
5785	157	802.11a	OFDM	20	19.0	18.96	0.12	10 mm	2	03773	6	back	98.3	0.387	0.173	1.009	1.017	0.178	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

Table 11-31
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.73	0.11	10 mm	03781	1	back	77	0.060	1.064	1.299	0.083	A58
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 95 of 134

11.3 Standalone Hotspot SAR Data

Table 11-32
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.33	-0.05	10 mm	03724	N/A	1.1	back	0.122	1.040	0.127	A25
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.33	0.07	10 mm	03724	N/A	1.1	front	0.058	1.040	0.060	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.33	-0.08	10 mm	03724	N/A	1.1	bottom	0.041	1.040	0.043	
820.10	564	CDMA BC10 (S90S)	EVDO Rev. 0	25.5	25.33	0.06	10 mm	03724	N/A	1.1	right	0.054	1.040	0.056	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.43	-0.04	10 mm	03724	N/A	1.1	back	0.160	1.016	0.163	A27
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.43	0.02	10 mm	03724	N/A	1.1	front	0.080	1.016	0.081	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.43	-0.04	10 mm	03724	N/A	1.1	bottom	0.056	1.016	0.057	
836.52	384	CDMA BC0 (S22H)	EVDO Rev. 0	25.5	25.43	0.04	10 mm	03724	N/A	1.1	right	0.066	1.016	0.067	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	0.11	10 mm	03724	N/A	1.1	back	0.543	1.023	0.555	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.01	10 mm	03724	N/A	1.1	front	0.401	1.023	0.410	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.2	25.01	-0.03	10 mm	03724	N/A	1.1	bottom	0.935	1.045	0.977	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.03	10 mm	03724	N/A	1.1	bottom	1.030	1.023	1.054	A29
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.2	25.03	-0.05	10 mm	03724	N/A	1.1	bottom	0.967	1.040	1.006	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.05	10 mm	03724	N/A	1.1	right	0.201	1.023	0.206	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	0.09	10 mm	03724	N/A	1.1	left	0.124	1.023	0.127	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.06	10 mm	03716	3	1.2.76	back	0.187	1.026	0.192	A30
836.60	190	GSM 850	GPRS	31.2	31.09	0.02	10 mm	03716	3	1.2.76	front	0.074	1.026	0.076	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.01	10 mm	03716	3	1.2.76	bottom	0.054	1.026	0.055	
836.60	190	GSM 850	GPRS	31.2	31.09	-0.09	10 mm	03716	3	1.2.76	right	0.077	1.026	0.079	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.01	10 mm	03724	3	1.2.76	back	0.425	1.143	0.486	
1880.00	661	GSM 1900	GPRS	28.2	27.62	-0.10	10 mm	03724	3	1.2.76	front	0.311	1.143	0.355	
1850.20	512	GSM 1900	GPRS	28.2	27.99	-0.07	10 mm	03724	3	1.2.76	bottom	0.811	1.050	0.852	
1880.00	661	GSM 1900	GPRS	28.2	27.62	-0.14	10 mm	03724	3	1.2.76	bottom	0.876	1.143	1.001	A32
1909.80	810	GSM 1900	GPRS	28.2	27.95	-0.13	10 mm	03724	3	1.2.76	bottom	0.835	1.059	0.884	
1880.00	661	GSM 1900	GPRS	28.2	27.62	-0.10	10 mm	03724	3	1.2.76	right	0.175	1.143	0.200	
1880.00	661	GSM 1900	GPRS	28.2	27.62	0.06	10 mm	03724	3	1.2.76	left	0.076	1.143	0.087	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.00	10 mm	03724	N/A	1.1	back	0.141	1.040	0.147	A33
836.60	4183	UMTS 850	RMC	25.5	25.33	0.03	10 mm	03724	N/A	1.1	front	0.074	1.040	0.077	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.03	10 mm	03724	N/A	1.1	bottom	0.052	1.040	0.054	
836.60	4183	UMTS 850	RMC	25.5	25.33	0.00	10 mm	03724	N/A	1.1	right	0.076	1.040	0.079	
1712.40	1312	UMTS 1750	RMC	25.5	24.92	0.01	10 mm	03724	N/A	1.1	back	0.551	1.143	0.630	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.00	10 mm	03724	N/A	1.1	back	0.605	1.138	0.688	
1752.60	1513	UMTS 1750	RMC	25.5	25.31	-0.01	10 mm	03724	N/A	1.1	back	0.598	1.045	0.625	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.04	10 mm	03724	N/A	1.1	front	0.459	1.138	0.522	
1712.40	1312	UMTS 1750	RMC	25.5	24.92	-0.01	10 mm	03724	N/A	1.1	bottom	0.851	1.143	0.973	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.04	10 mm	03724	N/A	1.1	bottom	0.901	1.138	1.025	
1752.60	1513	UMTS 1750	RMC	25.5	25.31	-0.06	10 mm	03724	N/A	1.1	bottom	0.932	1.045	0.974	A35
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.01	10 mm	03724	N/A	1.1	right	0.133	1.138	0.151	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.08	10 mm	03724	N/A	1.1	left	0.084	1.138	0.096	
1752.60	1513	UMTS 1750	RMC	25.5	25.31	-0.02	10 mm	03724	N/A	1.1	bottom	0.930	1.045	0.972	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.07	10 mm	03724	N/A	1.1	back	0.555	1.021	0.567	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.04	10 mm	03724	N/A	1.1	front	0.422	1.021	0.431	
1852.40	9262	UMTS 1900	RMC	25.2	24.91	-0.06	10 mm	03724	N/A	1.1	bottom	0.956	1.069	1.022	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.02	10 mm	03724	N/A	1.1	bottom	1.060	1.021	1.082	A37
1907.60	9538	UMTS 1900	RMC	25.2	25.20	-0.02	10 mm	03724	N/A	1.1	bottom	0.982	1.000	0.982	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.04	10 mm	03724	N/A	1.1	right	0.210	1.021	0.214	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.02	10 mm	03724	N/A	1.1	left	0.119	1.021	0.121	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.04	10 mm	03724	N/A	1.1	bottom	1.020	1.021	1.041	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Blue entries represent variability measurements.

FCC ID: ZNFG820UM			SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 96 of 134		

Table 11-33
LTE Band 71 Hotspot SAR

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	-0.07	0	03765	QPSK	1	50	10 mm	back	1:1	0.404	1.081	0.437	A38
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.02	1	03765	QPSK	50	25	10 mm	back	1:1	0.352	1.096	0.386	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	-0.03	0	03765	QPSK	1	50	10 mm	front	1:1	0.238	1.081	0.257	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	0.00	1	03765	QPSK	50	25	10 mm	front	1:1	0.203	1.096	0.222	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.00	0	03765	QPSK	1	50	10 mm	bottom	1:1	0.087	1.081	0.094	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	-0.12	1	03765	QPSK	50	25	10 mm	bottom	1:1	0.075	1.096	0.082	
680.50	133297	Mid	LTE Band 71	20	25.5	25.16	0.03	0	03765	QPSK	1	50	10 mm	right	1:1	0.272	1.081	0.294	
680.50	133297	Mid	LTE Band 71	20	24.5	24.10	-0.01	1	03765	QPSK	50	25	10 mm	right	1:1	0.227	1.096	0.249	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-34
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.01	0	03765	QPSK	1	25	10 mm	back	1:1	0.589	1.074	0.633	A39
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.00	1	03765	QPSK	25	0	10 mm	back	1:1	0.387	1.059	0.410	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.06	0	03765	QPSK	1	25	10 mm	front	1:1	0.360	1.074	0.387	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	0.02	1	03765	QPSK	25	0	10 mm	front	1:1	0.235	1.059	0.249	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	0.00	0	03765	QPSK	1	25	10 mm	bottom	1:1	0.131	1.074	0.141	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	-0.07	1	03765	QPSK	25	0	10 mm	bottom	1:1	0.086	1.059	0.091	
707.50	23095	Mid	LTE Band 12	10	25.5	25.19	-0.16	0	03765	QPSK	1	25	10 mm	right	1:1	0.322	1.074	0.346	
707.50	23095	Mid	LTE Band 12	10	24.5	24.25	-0.02	1	03765	QPSK	25	0	10 mm	right	1:1	0.212	1.059	0.225	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-35
LTE Band 13 Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	0.01	0	03765	QPSK	1	25	10 mm	back	1:1	0.750	1.064	0.798	A40
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.00	1	03765	QPSK	25	12	10 mm	back	1:1	0.497	1.028	0.511	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	-0.02	0	03765	QPSK	1	25	10 mm	front	1:1	0.518	1.064	0.551	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.00	1	03765	QPSK	25	12	10 mm	front	1:1	0.345	1.028	0.355	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	-0.06	0	03765	QPSK	1	25	10 mm	bottom	1:1	0.183	1.064	0.195	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	-0.08	1	03765	QPSK	25	12	10 mm	bottom	1:1	0.119	1.028	0.122	
782.00	23230	Mid	LTE Band 13	10	25.5	25.23	-0.16	0	03765	QPSK	1	25	10 mm	right	1:1	0.260	1.064	0.277	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	-0.10	1	03765	QPSK	25	12	10 mm	right	1:1	0.176	1.028	0.181	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 97 of 134

Table 11-36
LTE Band 14 Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	-0.07	0	03765	QPSK	1	0	10 mm	back	1:1	0.667	1.074	0.716	A41
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.01	1	03765	QPSK	25	12	10 mm	back	1:1	0.561	1.054	0.591	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	-0.06	0	03765	QPSK	1	0	10 mm	front	1:1	0.467	1.074	0.502	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	0.00	1	03765	QPSK	25	12	10 mm	front	1:1	0.398	1.054	0.419	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	0.01	0	03765	QPSK	1	0	10 mm	bottom	1:1	0.163	1.074	0.175	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.06	1	03765	QPSK	25	12	10 mm	bottom	1:1	0.146	1.054	0.154	
793.00	23330	Mid	LTE Band 14	10	25.5	25.19	-0.05	0	03765	QPSK	1	0	10 mm	right	1:1	0.220	1.074	0.236	
793.00	23330	Mid	LTE Band 14	10	24.5	24.27	-0.04	1	03765	QPSK	25	12	10 mm	right	1:1	0.159	1.054	0.168	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-37
LTE Band 26 (Cell) Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.11	0	03765	QPSK	1	36	10 mm	back	1:1	0.149	1.038	0.155	A42
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.01	1	03765	QPSK	36	0	10 mm	back	1:1	0.091	1.007	0.092	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.13	0	03765	QPSK	1	36	10 mm	front	1:1	0.076	1.038	0.079	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.01	1	03765	QPSK	36	0	10 mm	front	1:1	0.047	1.007	0.047	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.05	0	03765	QPSK	1	36	10 mm	bottom	1:1	0.053	1.038	0.055	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.10	1	03765	QPSK	36	0	10 mm	bottom	1:1	0.032	1.007	0.032	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.06	0	03765	QPSK	1	36	10 mm	right	1:1	0.075	1.038	0.078	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.47	0.02	1	03765	QPSK	36	0	10 mm	right	1:1	0.046	1.007	0.046	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-38
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.06	0	03757	QPSK	1	0	10 mm	back	1:1	0.170	1.084	0.184	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.01	1	03757	QPSK	25	12	10 mm	back	1:1	0.157	1.047	0.164	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.32	-0.01	0	03757	QPSK	1	0	10 mm	back	1:1	0.171	1.042	0.178	A43
	SCC	829.30	20453	Mid		5							1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.07	0	03757	QPSK	1	0	10 mm	front	1:1	0.082	1.084	0.089	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.10	1	03757	QPSK	25	12	10 mm	front	1:1	0.076	1.047	0.080	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.01	0	03757	QPSK	1	0	10 mm	bottom	1:1	0.053	1.084	0.057	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.15	1	03757	QPSK	25	12	10 mm	bottom	1:1	0.048	1.047	0.050	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	0.10	0	03757	QPSK	1	0	10 mm	right	1:1	0.073	1.084	0.079	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.30	0.05	1	03757	QPSK	25	12	10 mm	right	1:1	0.064	1.047	0.067	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 98 of 134

Table 11-39
LTE Band 66 (AWS) Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #	
MHz	Ch.																		
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	-0.06	0	03765	QPSK	1	99	10 mm	back	1:1	0.506	1.009	0.511	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	-0.02	1	03765	QPSK	50	0	10 mm	back	1:1	0.367	1.012	0.371	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	-0.10	0	03765	QPSK	1	99	10 mm	front	1:1	0.412	1.009	0.416	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	-0.09	1	03765	QPSK	50	0	10 mm	front	1:1	0.296	1.012	0.300	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.5	24.27	-0.09	0	03765	QPSK	1	50	10 mm	bottom	1:1	0.692	1.054	0.729	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	-0.06	0	03765	QPSK	1	99	10 mm	bottom	1:1	0.810	1.009	0.817	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.44	-0.10	0	03765	QPSK	1	0	10 mm	bottom	1:1	0.829	1.014	0.841	A45
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	-0.02	1	03765	QPSK	50	0	10 mm	bottom	1:1	0.562	1.012	0.569	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.42	-0.04	1	03765	QPSK	100	0	10 mm	bottom	1:1	0.517	1.019	0.527	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.04	0	03765	QPSK	1	99	10 mm	right	1:1	0.140	1.009	0.141	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	0.01	1	03765	QPSK	50	0	10 mm	right	1:1	0.097	1.012	0.098	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.5	24.46	0.04	0	03765	QPSK	1	99	10 mm	left	1:1	0.093	1.009	0.094	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.45	-0.03	1	03765	QPSK	50	0	10 mm	left	1:1	0.060	1.012	0.061	
								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-40
LTE Band 25 (PCS) Hotspot SAR

ANSI / IEEE C95.1 1992 - SAFETY LIMIT																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.07	0	03765	QPSK	1	50	10 mm	back	1:1	0.540	1.016	0.549	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.05	1	03765	QPSK	50	50	10 mm	back	1:1	0.315	1.014	0.319	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.01	0	03765	QPSK	1	50	10 mm	front	1:1	0.373	1.016	0.379	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.02	1	03765	QPSK	50	50	10 mm	front	1:1	0.200	1.014	0.203	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.00	-0.04	0	03765	QPSK	1	99	10 mm	bottom	1:1	0.913	1.047	0.956	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.09	0	03765	QPSK	1	50	10 mm	bottom	1:1	0.970	1.016	0.986	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.11	-0.04	0	03765	QPSK	1	0	10 mm	bottom	1:1	1.000	1.021	1.021	A47
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.07	1	03765	QPSK	50	50	10 mm	bottom	1:1	0.591	1.014	0.599	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.10	-0.10	1	03765	QPSK	100	0	10 mm	bottom	1:1	0.616	1.023	0.630	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.07	0	03765	QPSK	1	50	10 mm	right	1:1	0.133	1.016	0.135	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.09	1	03765	QPSK	50	50	10 mm	right	1:1	0.076	1.014	0.077	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.06	0	03765	QPSK	1	50	10 mm	left	1:1	0.133	1.016	0.135	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.01	1	03765	QPSK	50	50	10 mm	left	1:1	0.086	1.014	0.087	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak								Body 1.6 W/kg (mW/g) averaged over 1 gram											
Uncontrolled Exposure/General Population																			

Table 11-41
LTE Band 30 Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.02	0	03740	QPSK	1	25	10 mm	back	1:1	0.471	1.102	0.519	A48
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.09	1	03740	QPSK	25	0	10 mm	back	1:1	0.312	1.052	0.328	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.13	0	03740	QPSK	1	25	10 mm	front	1:1	0.336	1.102	0.370	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.07	1	03740	QPSK	25	0	10 mm	front	1:1	0.225	1.052	0.237	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.01	0	03740	QPSK	1	25	10 mm	bottom	1:1	0.240	1.102	0.264	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.13	1	03740	QPSK	25	0	10 mm	bottom	1:1	0.155	1.052	0.163	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.02	0	03740	QPSK	1	25	10 mm	left	1:1	0.129	1.102	0.142	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.00	1	03740	QPSK	25	0	10 mm	left	1:1	0.081	1.052	0.085	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 99 of 134

Table 11-42
LTE Band 7 Hotspot SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.01	0	03740	QPSK	1	99	10 mm	back	1:1	0.427	1.016	0.434	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.01	1	03740	QPSK	50	0	10 mm	back	1:1	0.274	1.002	0.275	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	0.10	0	03740	QPSK	1	99	10 mm	front	1:1	0.385	1.016	0.391	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.01	1	03740	QPSK	50	0	10 mm	front	1:1	0.247	1.002	0.247	
2510.00	20850	Low	LTE Band 7	20	23.7	23.50	0.01	0	03740	QPSK	1	99	10 mm	bottom	1:1	0.662	1.047	0.693	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.07	0	03740	QPSK	1	99	10 mm	bottom	1:1	0.711	1.016	0.722	A50
2560.00	21350	High	LTE Band 7	20	23.7	23.55	-0.11	0	03740	QPSK	1	50	10 mm	bottom	1:1	0.698	1.035	0.722	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.03	1	03740	QPSK	50	0	10 mm	bottom	1:1	0.463	1.002	0.464	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.08	0	03740	QPSK	1	99	10 mm	left	1:1	0.176	1.016	0.179	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.03	1	03740	QPSK	50	0	10 mm	left	1:1	0.109	1.002	0.109	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-43
LTE Band 48 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.08	0	03740	QPSK	1	0	10 mm	back	1:1.58	0.276	1.021	0.282	A51
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	-0.01	1	03740	QPSK	50	50	10 mm	back	1:1.58	0.166	1.007	0.167	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.17	0	03740	QPSK	1	0	10 mm	front	1:1.58	0.074	1.021	0.076	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	-0.07	1	03740	QPSK	50	50	10 mm	front	1:1.58	0.056	1.007	0.056	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	0.01	0	03740	QPSK	1	0	10 mm	bottom	1:1.58	0.186	1.021	0.190	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	0.01	1	03740	QPSK	50	50	10 mm	bottom	1:1.58	0.131	1.007	0.132	
3690.00	56640	High	LTE Band 48	20	22.7	22.61	-0.09	0	03740	QPSK	1	0	10 mm	right	1:1.58	0.267	1.021	0.273	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.67	-0.11	1	03740	QPSK	50	50	10 mm	right	1:1.58	0.168	1.007	0.169	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-44
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink, Power Class	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	-0.13	0	03732	QPSK	1	0	10 mm	back	1:1.58	0.213	1.042	0.222	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	-0.04	1	03732	QPSK	50	0	10 mm	back	1:1.58	0.168	1.009	0.170	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	-0.05	0	03732	QPSK	1	0	10 mm	front	1:1.58	0.273	1.042	0.284	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	-0.01	1	03732	QPSK	50	0	10 mm	front	1:1.58	0.226	1.009	0.228	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	-0.18	0	03732	QPSK	1	0	10 mm	bottom	1:1.58	0.423	1.042	0.441	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.01	1	03732	QPSK	50	0	10 mm	bottom	1:1.58	0.300	1.009	0.303	
1 CC Uplink - Power Class 2	NIA	2593.00	40620	Mid	LTE Band 41	20	27.7	27.24	-0.06	0	03732	QPSK	1	0	10 mm	bottom	1:2.31	0.435	1.112	0.484	
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	25.09	0.03	0	03732	QPSK	1	0	10 mm	bottom	1:1.58	0.395	1.026	0.405	
	SCC	2573.20	40422										1	99							
2 CC Uplink - Power Class 2	PCC	2593.00	40620	Mid	LTE Band 41	20	27.7	27.40	0.10	0	03732	QPSK	1	0	10 mm	bottom	1:2.31	0.492	1.072	0.527	A53
	SCC	2573.20	40422										1	99							
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	25.2	25.02	0.02	0	03732	QPSK	1	0	10 mm	left	1:1.58	0.136	1.042	0.142	
1 CC Uplink - Power Class 3	NIA	2593.00	40620	Mid	LTE Band 41	20	24.2	24.16	0.10	1	03732	QPSK	50	0	10 mm	left	1:1.58	0.097	1.009	0.098	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 100 of 134	

Table 11-45
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.5	20.47	-0.04	10 mm	1	03773	1	back	99.3	0.360	0.305	1.007	1.007	0.309	
2437	6	802.11b	DSSS	22	20.5	20.49	-0.15	10 mm	1	03773	1	back	99.3	0.728	0.601	1.002	1.007	0.606	
2462	11	802.11b	DSSS	22	20.5	20.45	0.03	10 mm	1	03773	1	back	99.3	0.350	0.293	1.012	1.007	0.299	
2437	6	802.11b	DSSS	22	20.5	20.49	0.12	10 mm	1	03773	1	front	99.3	0.536	0.376	1.002	1.007	0.379	
2437	6	802.11b	DSSS	22	20.5	20.49	0.16	10 mm	1	03773	1	top	99.3	0.117	-	1.002	1.007	-	
2412	1	802.11b	DSSS	22	20.5	20.47	0.20	10 mm	1	03773	1	left	99.3	0.488	0.384	1.007	1.007	0.389	
2437	6	802.11b	DSSS	22	20.5	20.49	-0.12	10 mm	1	03773	1	left	99.3	1.010	0.797	1.002	1.007	0.804	A55
2462	11	802.11b	DSSS	22	20.5	20.45	0.12	10 mm	1	03773	1	left	99.3	0.525	0.421	1.012	1.007	0.429	
2437	6	802.11b	DSSS	22	20.5	20.44	0.14	10 mm	2	03781	1	back	99.1	0.198	0.167	1.014	1.009	0.171	
2437	6	802.11b	DSSS	22	20.5	20.44	0.20	10 mm	2	03781	1	front	99.1	0.201	-	1.014	1.009	-	
2437	6	802.11b	DSSS	22	20.5	20.44	0.13	10 mm	2	03781	1	top	99.1	0.342	0.290	1.014	1.009	0.297	
2437	6	802.11b	DSSS	22	20.5	20.44	0.09	10 mm	2	03781	1	left	99.1	0.031	-	1.014	1.009	-	
5200	40	802.11a	OFDM	20	19.0	18.91	0.14	10 mm	1	03773	6	back	98.3	0.916	0.380	1.021	1.017	0.395	A57
5200	40	802.11a	OFDM	20	19.0	18.91	0.18	10 mm	1	03773	6	front	98.3	0.028	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.91	-0.12	10 mm	1	03773	6	top	98.3	0.046	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.91	-0.13	10 mm	1	03773	6	left	98.3	0.223	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	-0.13	10 mm	2	03773	6	back	98.3	0.254	-	1.038	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	0.19	10 mm	2	03773	6	front	98.3	0.272	0.121	1.038	1.017	0.128	
5200	40	802.11a	OFDM	20	19.0	18.84	-0.17	10 mm	2	03773	6	top	98.3	0.095	-	1.038	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	0.19	10 mm	2	03773	6	left	98.3	0.047	-	1.038	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	0.04	10 mm	1	03773	6	back	98.3	0.895	0.363	1.040	1.017	0.384	
5785	157	802.11a	OFDM	20	19.0	18.83	0.00	10 mm	1	03773	6	front	98.3	0.033	-	1.040	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	-0.20	10 mm	1	03773	6	top	98.3	0.093	-	1.040	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	0.12	10 mm	1	03773	6	left	98.3	0.333	-	1.040	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.96	0.12	10 mm	2	03773	6	back	98.3	0.387	0.173	1.009	1.017	0.178	
5785	157	802.11a	OFDM	20	19.0	18.96	-0.17	10 mm	2	03773	6	front	98.3	0.239	-	1.009	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.96	-0.03	10 mm	2	03773	6	top	98.3	0.173	-	1.009	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.96	-0.14	10 mm	2	03773	6	left	98.3	0.113	-	1.009	1.017	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

Table 11-46
DSS Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	12.0	11.73	0.11	10 mm	03781	1	back	77	0.060	1.064	1.299	0.083	
2441	39	Bluetooth	FHSS	12.0	11.73	0.05	10 mm	03781	1	front	77	0.030	1.064	1.299	0.041	
2441	39	Bluetooth	FHSS	12.0	11.73	0.11	10 mm	03781	1	top	77	0.008	1.064	1.299	0.011	
2441	39	Bluetooth	FHSS	12.0	11.73	-0.02	10 mm	03781	1	left	77	0.065	1.064	1.299	0.090	A59
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 101 of 134

11.4 Standalone Phablet SAR Data

Table 11-47
UMTS/CDMA Phablet SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	0.09	2 mm	03724	1:1	back	1.230	1.023	1.258	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.05	0 mm	03724	1:1	front	1.450	1.023	1.483	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.07	3 mm	03724	1:1	bottom	1.670	1.023	1.708	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	-0.12	0 mm	03724	1:1	right	0.746	1.023	0.763	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.10	0.04	0 mm	03724	1:1	left	0.341	1.023	0.349	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.2	23.15	0.08	0 mm	03724	1:1	back	1.710	1.012	1.731	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.2	23.05	-0.12	0 mm	03724	1:1	bottom	2.640	1.035	2.732	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.2	23.15	-0.10	0 mm	03724	1:1	bottom	2.790	1.012	2.823	A60
1908.75	1175	PCS CDMA	EVDO Rev. 0	23.2	23.08	-0.13	0 mm	03724	1:1	bottom	2.480	1.028	2.549	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.01	2 mm	03724	1:1	back	1.290	1.138	1.468	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.03	0 mm	03724	1:1	front	1.640	1.138	1.866	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.12	3 mm	03724	1:1	bottom	1.260	1.138	1.434	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	0.03	0 mm	03724	1:1	right	0.368	1.138	0.419	
1732.40	1412	UMTS 1750	RMC	25.5	24.94	-0.13	0 mm	03724	1:1	left	0.262	1.138	0.298	
1752.60	1513	UMTS 1750	RMC	23.5	23.41	-0.01	0 mm	03724	1:1	back	1.380	1.021	1.409	
1712.40	1312	UMTS 1750	RMC	23.5	22.82	-0.06	0 mm	03724	1:1	bottom	1.970	1.169	2.303	
1732.40	1412	UMTS 1750	RMC	23.5	22.95	-0.06	0 mm	03724	1:1	bottom	2.090	1.135	2.372	
1752.60	1513	UMTS 1750	RMC	23.5	23.41	0.00	0 mm	03724	1:1	bottom	2.150	1.021	2.195	A61
1752.60	1513	UMTS 1750	RMC	23.5	23.41	-0.02	0 mm	03724	1:1	bottom	2.140	1.021	2.185	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	0.04	2 mm	03724	1:1	back	1.140	1.021	1.164	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.10	0 mm	03724	1:1	front	1.380	1.021	1.409	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.02	3 mm	03724	1:1	bottom	1.640	1.021	1.674	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.07	0 mm	03724	1:1	right	0.796	1.021	0.813	
1880.00	9400	UMTS 1900	RMC	25.2	25.11	-0.08	0 mm	03724	1:1	left	0.353	1.021	0.360	
1880.00	9400	UMTS 1900	RMC	23.2	23.15	0.09	0 mm	03724	1:1	back	1.350	1.012	1.366	
1852.40	9262	UMTS 1900	RMC	23.2	22.96	-0.07	0 mm	03724	1:1	bottom	2.780	1.057	2.938	
1880.00	9400	UMTS 1900	RMC	23.2	23.15	-0.10	0 mm	03724	1:1	bottom	2.860	1.012	2.894	A62
1907.60	9538	UMTS 1900	RMC	23.2	23.10	-0.11	0 mm	03724	1:1	bottom	2.660	1.023	2.721	
1880.00	9400	UMTS 1900	RMC	23.2	23.15	-0.10	0 mm	03724	1:1	bottom	2.850	1.012	2.884	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

Note: blue entries represent variability measurements.

FCC ID: ZNFG820UM			SAR EVALUATION REPORT			Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 102 of 134		

Table 11-48
LTE Phablet SAR

FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power DPM [dB]	MPRE [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (20g) [W/kg]	Scaling Factor	Reported SAR [20g] [W/kg]	Plot #
MHz	Ch.																	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	24.5	24.46	-0.12	0	QPSK	1	99	2 mm	back	1:1	0.950	1.009	0.959	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.45	-0.17	1	QPSK	50	0	2 mm	back	1:1	0.689	1.012	0.697	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	24.5	24.46	0.07	0	QPSK	1	99	0 mm	front	1:1	1.510	1.009	1.524	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.46	0.04	1	QPSK	50	0	0 mm	front	1:1	1.100	1.012	1.113	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	24.5	24.46	-0.05	0	QPSK	1	99	3 mm	bottom	1:1	1.310	1.009	1.322	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.45	-0.09	1	QPSK	50	0	3 mm	bottom	1:1	0.921	1.012	0.932	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	24.5	24.46	-0.01	0	QPSK	1	99	0 mm	right	1:1	0.439	1.009	0.443	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.45	-0.08	1	QPSK	50	0	0 mm	right	1:1	0.290	1.012	0.293	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	24.5	24.46	-0.12	0	QPSK	1	99	0 mm	left	1:1	0.288	1.009	0.291	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.45	-0.18	1	QPSK	50	0	0 mm	left	1:1	0.197	1.012	0.199	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.44	-0.12	0	QPSK	1	99	0 mm	back	1:1	1.520	1.014	1.551	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.47	-0.19	0	QPSK	50	0	0 mm	back	1:1	1.260	1.007	1.269	
1720.00	132072	Low	LTE Band 66 (AWVS)	20	23.5	23.42	0.05	0	QPSK	1	99	0 mm	bottom	1:1	1.990	1.019	2.028	
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.44	0.14	0	QPSK	1	99	0 mm	bottom	1:1	2.110	1.014	2.140	
1770.00	132572	High	LTE Band 66 (AWVS)	20	23.5	23.40	0.11	0	QPSK	1	50	0 mm	bottom	1:1	2.140	1.023	2.189	A63
1745.00	132322	Mid	LTE Band 66 (AWVS)	20	23.5	23.47	0.04	0	QPSK	50	0	0 mm	bottom	1:1	1.750	1.007	1.762	
1770.00	132572	High	LTE Band 66 (AWVS)	20	23.5	23.23	0.05	0	QPSK	100	0	0 mm	bottom	1:1	1.720	1.064	1.830	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	0.12	0	QPSK	1	50	2 mm	back	1:1	1.190	1.016	1.209	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	0.09	1	QPSK	50	50	2 mm	back	1:1	0.728	1.014	0.738	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.05	0	QPSK	1	50	0 mm	front	1:1	1.320	1.016	1.341	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.02	1	QPSK	50	50	0 mm	front	1:1	0.752	1.014	0.763	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.10	0	QPSK	1	50	3 mm	bottom	1:1	1.530	1.016	1.554	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.14	1	QPSK	50	50	3 mm	bottom	1:1	0.945	1.014	0.958	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.14	0	QPSK	1	50	0 mm	right	1:1	0.615	1.016	0.625	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.11	1	QPSK	50	50	0 mm	right	1:1	0.401	1.014	0.407	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.13	-0.01	0	QPSK	1	50	0 mm	left	1:1	0.319	1.016	0.324	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.14	-0.04	1	QPSK	50	50	0 mm	left	1:1	0.181	1.014	0.184	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.17	0.00	0	QPSK	1	0	0 mm	back	1:1	1.440	1.007	1.450	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.17	0.10	0	QPSK	50	25	0 mm	back	1:1	1.520	1.007	1.531	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.08	-0.06	0	QPSK	1	50	0 mm	bottom	1:1	2.510	1.028	2.580	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.2	23.08	-0.08	0	QPSK	1	99	0 mm	bottom	1:1	2.570	1.028	2.642	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.17	-0.09	0	QPSK	1	0	0 mm	bottom	1:1	2.600	1.007	2.618	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.17	0.08	0	QPSK	50	25	0 mm	bottom	1:1	2.590	1.007	2.608	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.2	23.14	-0.04	0	QPSK	50	0	0 mm	bottom	1:1	2.640	1.014	2.677	A64
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	-0.06	0	QPSK	50	0	0 mm	bottom	1:1	2.630	1.014	2.667	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.11	-0.07	0	QPSK	100	0	0 mm	bottom	1:1	2.550	1.021	2.604	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.28	0.08	0	QPSK	1	25	2 mm	back	1:1	1.340	1.002	1.477	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.08	1	QPSK	25	0	2 mm	back	1:1	0.880	1.052	0.926	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.15	0	QPSK	1	25	0 mm	front	1:1	2.380	1.102	2.623	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.13	1	QPSK	25	0	0 mm	front	1:1	1.570	1.052	1.652	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.28	-0.12	1	QPSK	50	0	0 mm	front	1:1	1.210	1.107	1.339	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	0.15	0	QPSK	1	25	3 mm	bottom	1:1	1.000	1.102	1.102	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	0.04	1	QPSK	25	0	3 mm	bottom	1:1	0.649	1.052	0.683	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.28	-0.12	0	QPSK	1	25	0 mm	left	1:1	0.439	1.102	0.494	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.48	-0.17	1	QPSK	25	0	0 mm	left	1:1	0.279	1.052	0.294	
2310.00	27710	Mid	LTE Band 30	10	21.2	21.08	-0.09	0	QPSK	1	49	0 mm	back	1:1	1.360	1.028	1.398	
2310.00	27710	Mid	LTE Band 30	10	21.2	20.96	-0.11	0	QPSK	25	12	0 mm	back	1:1	1.420	1.057	1.501	
2310.00	27710	Mid	LTE Band 30	10	21.2	21.08	-0.16	0	QPSK	1	49	0 mm	bottom	1:1	2.510	1.028	2.580	
2310.00	27710	Mid	LTE Band 30	10	21.2	20.96	-0.11	0	QPSK	25	12	0 mm	bottom	1:1	2.730	1.057	2.886	A65
2310.00	27710	Mid	LTE Band 30	10	21.2	20.74	-0.15	0	QPSK	50	0	0 mm	bottom	1:1	2.720	1.112	3.025	
2310.00	27710	Mid	LTE Band 30	10	21.2	20.96	-0.08	0	QPSK	25	12	0 mm	bottom	1:1	2.750	1.057	2.854	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.03	0	QPSK	1	99	2 mm	back	1:1	1.330	1.016	1.351	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	0.03	1	QPSK	50	0	2 mm	back	1:1	0.871	1.002	0.873	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.01	0	QPSK	1	99	0 mm	front	1:1	1.960	1.016	1.991	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.03	1	QPSK	50	0	0 mm	front	1:1	1.290	1.002	1.293	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.09	0	QPSK	1	99	3 mm	bottom	1:1	1.750	1.016	1.778	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.08	1	QPSK	50	0	3 mm	bottom	1:1	1.150	1.002	1.152	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.63	-0.03	0	QPSK	1	99	0 mm	left	1:1	0.604	1.016	0.614	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.69	-0.12	1	QPSK	50	0	0 mm	left	1:1	0.402	1.002	0.403	
2535.00	21100	Mid	LTE Band 7	20	21.2	21.02	0.13	0	QPSK	1	99	0 mm	back	1:1	1.630	1.042	1.698	
2535.00	21100	Mid	LTE Band 7	20	21.2	21.08	0.11	0	QPSK	50	25	0 mm	back	1:1	1.720	1.028	1.768	
2510.00	20850	Low	LTE Band 7	20	21.2	20.85	0.15	0	QPSK	1	99	0 mm	bottom	1:1	2.770	1.084	3.003	
2535.00	21100	Mid	LTE Band 7	20	21.2	21.02	-0.12	0	QPSK	1	99	0 mm	bottom	1:1	2.790	1.042	2.907	
2560.00	21350	High	LTE Band 7	20	21.2	21.00	0.16	0	QPSK	1	50	0 mm	bottom	1:1	2.800	1.047	2.932	
2510.00	20850	Low	LTE Band 7	20	21.2	21.01	0.16	0	QPSK	50	25	0 mm	bottom	1:1	2.870	1.045	2.999	
2535.00	21100	Mid	LTE Band 7	20	21.2	21.08	-0.15	0	QPSK	50	25	0 mm	bottom	1:1	2.990	1.028	3.074	A66
2560.00	21350	High	LTE Band 7	20	21.2	20.93	0.16	0	QPSK	50	50	0 mm	bottom	1:1	2.910	1.064	3.096	
2535.00	21100	Mid	LTE Band 7	20	21.2	20.97	-0.09	0	QPSK	100	0	0 mm	bottom	1:1	2.980	1.054	3.141	
2510.00	20850	Low	LTE Band 7	20	21.2	21.01	0.03	0	QPSK	50	25	0 mm	bottom	1:1	2.560	1.045	2.675	
2535.00	21100	Mid	LTE Band 7	20	21.2	21.08	-0.18	0	QPSK	50	25	0 mm	bottom	1:1	2.540	1.028	2.611	
ANSI / IEEE C63.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Phablet 4.0 W/kg (mW/g) averaged over 10 grams								

Note: blue entry represents variability measurement.

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 103 of 134

**Table 11-49
WLAN Phablet SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	17.0	16.23	-0.15	0 mm	1	03773	6	back	98.3	10.564	1.040	1.194	1.017	1.263	A67
5280	56	802.11a	OFDM	20	19.0	18.77	-0.12	0 mm	1	03773	6	back	98.3	15.194	1.560	1.054	1.017	1.672	
5320	64	802.11a	OFDM	20	17.0	16.18	0.14	0 mm	1	03773	6	back	98.3	8.439	0.949	1.208	1.017	1.166	
5280	56	802.11a	OFDM	20	19.0	18.77	0.00	0 mm	1	03773	6	front	98.3	0.501	0.065	1.054	1.017	0.070	
5280	56	802.11a	OFDM	20	19.0	18.77	0.18	0 mm	1	03773	6	top	98.3	0.274	-	1.054	1.017	-	
5280	56	802.11a	OFDM	20	19.0	18.77	0.14	0 mm	1	03773	6	left	98.3	1.304	0.175	1.054	1.017	0.188	
5280	56	802.11a	OFDM	20	19.0	18.77	0.17	0 mm	2	03773	6	back	98.3	3.794	0.766	1.054	1.017	0.821	
5280	56	802.11a	OFDM	20	19.0	18.77	0.00	0 mm	2	03773	6	front	98.3	3.219	0.491	1.054	1.017	0.526	
5280	56	802.11a	OFDM	20	19.0	18.77	0.11	0 mm	2	03773	6	top	98.3	1.685	-	1.054	1.017	-	
5280	56	802.11a	OFDM	20	19.0	18.77	0.18	0 mm	2	03773	6	left	98.3	1.009	-	1.054	1.017	-	
5620	124	802.11a	OFDM	20	17.0	16.79	0.15	0 mm	1	03773	6	back	98.3	7.837	0.803	1.050	1.017	0.857	
5620	124	802.11a	OFDM	20	17.0	16.79	0.00	0 mm	1	03773	6	front	98.3	0.361	0.034	1.050	1.017	0.036	
5620	124	802.11a	OFDM	20	17.0	16.79	0.12	0 mm	1	03773	6	top	98.3	0.368	-	1.050	1.017	-	
5620	124	802.11a	OFDM	20	17.0	16.79	0.13	0 mm	1	03773	6	left	98.3	1.472	-	1.050	1.017	-	
5500	100	802.11a	OFDM	20	17.0	16.81	0.04	0 mm	2	03773	6	back	98.3	4.386	0.573	1.045	1.017	0.609	
5500	100	802.11a	OFDM	20	17.0	16.81	0.19	0 mm	2	03773	6	front	98.3	2.429	0.377	1.045	1.017	0.401	
5500	100	802.11a	OFDM	20	17.0	16.81	0.13	0 mm	2	03773	6	top	98.3	1.750	-	1.045	1.017	-	
5500	100	802.11a	OFDM	20	17.0	16.81	0.12	0 mm	2	03773	6	left	98.3	0.751	-	1.045	1.017	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

**Table 11-50
WLAN MIMO Phablet SAR**

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan [W/kg]	SAR (10g) [W/kg]	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) [W/kg]	Plot #
MHz	Ch.																				
5260	52	802.11n	OFDM	20	17.0	16.17	17.0	16.11	-0.13	0 mm	MMO	03773	13	back	98.1	8.430	1.060	1.227	1.019	1.325	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	-0.18	0 mm	MMO	03773	13	back	98.1	12.889	1.550	1.086	1.019	1.715	
5320	64	802.11n	OFDM	20	17.0	16.18	17.0	16.19	0.17	0 mm	MMO	03773	13	back	98.1	8.433	1.030	1.208	1.019	1.268	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.19	0 mm	MMO	03773	13	front	98.1	4.516	0.509	1.086	1.019	0.563	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	-0.14	0 mm	MMO	03773	13	top	98.1	1.717	-	1.086	1.019	-	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.14	0 mm	MMO	03773	13	left	98.1	3.401	-	1.086	1.019	-	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	-0.18	0 mm	MMO	03773	13	back	98.1	6.997	0.842	1.138	1.019	0.976	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	-0.11	0 mm	MMO	03773	13	front	98.1	3.240	0.373	1.138	1.019	0.433	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	-0.12	0 mm	MMO	03773	13	top	98.1	1.460	-	1.138	1.019	-	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	-0.06	0 mm	MMO	03773	13	left	98.1	1.429	-	1.138	1.019	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Phablet										
Spatial Peak Uncontrolled Exposure/General Population											4.0 W/kg (mW/g) averaged over 10 grams										

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 104 of 134

6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
12. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
13. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.8 for more information).

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.
4. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 105 of 134

the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

6. CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1X Advanced was not more than 0.25 dB higher than the maximum powers for 1X.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 and LTE Band 48 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 14 for linearity results.
8. For LTE Band 41 and LTE Band 5, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.
9. This device supports ULCA active with Power Class 2. Highest SAR test configuration for each exposure condition in Power Class 3 with ULCA active was repeated with Power Class 2 with ULCA active.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 106 of 134

WLAN Notes:

1. For held-to-ear, hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.6 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 107 of 134

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

12.3 Head SAR Simultaneous Transmission Analysis

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Table 12-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	CDMA/EVDO BC10 (\$90S)	0.039	0.452	0.962	0.491	1.001
	CDMA/EVDO BC0 (\$22H)	0.047	0.452	0.962	0.499	1.009
	PCS CDMA/EVDO	0.404	0.452	0.962	0.856	1.366
	GSM/GPRS 850	0.112	0.452	0.962	0.564	1.074
	GSM/GPRS 1900	0.416	0.452	0.962	0.868	1.378
	UMTS 850	0.053	0.452	0.962	0.505	1.015
	UMTS 1750	0.488	0.452	0.962	0.940	1.450
	UMTS 1900	0.399	0.452	0.962	0.851	1.361
	LTE Band 71	0.325	0.452	0.962	0.777	1.287
	LTE Band 12	0.477	0.452	0.962	0.929	1.439
	LTE Band 13	0.619	0.452	0.962	1.071	1.581
	LTE Band 14	0.546	0.452	0.962	0.998	1.508
	LTE Band 26 (Cell)	0.047	0.452	0.962	0.499	1.009
	LTE Band 5 (Cell)	0.044	0.452	0.962	0.496	1.006
	LTE Band 66 (AWS)	0.371	0.452	0.962	0.823	1.333
	LTE Band 25 (PCS)	0.294	0.452	0.962	0.746	1.256
	LTE Band 30	0.372	0.452	0.962	0.824	1.334
	LTE Band 7	0.285	0.452	0.962	0.737	1.247
	LTE Band 48	0.314	0.452	0.962	0.766	1.276
	LTE Band 41	0.482	0.452	0.962	0.934	1.444

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 108 of 134

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	CDMA/EVDO BC10 (S90S)	0.039	1.106	1.145
	CDMA/EVDO BC0 (S22H)	0.047	1.106	1.153
	PCS CDMA/EVDO	0.404	1.106	1.510
	GSM/GPRS 850	0.112	1.106	1.218
	GSM/GPRS 1900	0.416	1.106	1.522
	UMTS 850	0.053	1.106	1.159
	UMTS 1750	0.488	1.106	1.594
	UMTS 1900	0.399	1.106	1.505
	LTE Band 71	0.325	1.106	1.431
	LTE Band 12	0.477	1.106	1.583
	LTE Band 13	0.619	1.106	See Table Below
	LTE Band 14	0.546	1.106	See Table Below
	LTE Band 26 (Cell)	0.047	1.106	1.153
	LTE Band 5 (Cell)	0.044	1.106	1.150
	LTE Band 66 (AWS)	0.371	1.106	1.477
	LTE Band 25 (PCS)	0.294	1.106	1.400
	LTE Band 30	0.372	1.106	1.478
	LTE Band 7	0.285	1.106	1.391
	LTE Band 48	0.314	1.106	1.420
	LTE Band 41	0.482	1.106	1.588

Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 14 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Head SAR	Right Cheek	0.619	0.607	1.226	Head SAR	Right Cheek	0.546	0.607	1.153
	Right Tilt	0.194	1.106	1.300		Right Tilt	0.175	1.106	1.281
	Left Cheek	0.205	1.106*	1.311		Left Cheek	0.193	1.106*	1.299
	Left Tilt	0.148	1.106*	1.254		Left Tilt	0.143	1.106*	1.249

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 109 of 134

Table 12-2
Simultaneous Transmission Scenario with 5 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	CDMA/EVDO BC10 (\$90S)	0.039	0.038	0.524	0.077	0.563	0.601
	CDMA/EVDO BC0 (\$22H)	0.047	0.038	0.524	0.085	0.571	0.609
	PCS CDMA/EVDO	0.404	0.038	0.524	0.442	0.928	0.966
	GSM/GPRS 850	0.112	0.038	0.524	0.150	0.636	0.674
	GSM/GPRS 1900	0.416	0.038	0.524	0.454	0.940	0.978
	UMTS 850	0.053	0.038	0.524	0.091	0.577	0.615
	UMTS 1750	0.488	0.038	0.524	0.526	1.012	1.050
	UMTS 1900	0.399	0.038	0.524	0.437	0.923	0.961
	LTE Band 71	0.325	0.038	0.524	0.363	0.849	0.887
	LTE Band 12	0.477	0.038	0.524	0.515	1.001	1.039
	LTE Band 13	0.619	0.038	0.524	0.657	1.143	1.181
	LTE Band 14	0.546	0.038	0.524	0.584	1.070	1.108
	LTE Band 26 (Cell)	0.047	0.038	0.524	0.085	0.571	0.609
	LTE Band 5 (Cell)	0.044	0.038	0.524	0.082	0.568	0.606
	LTE Band 66 (AWS)	0.371	0.038	0.524	0.409	0.895	0.933
	LTE Band 25 (PCS)	0.294	0.038	0.524	0.332	0.818	0.856
	LTE Band 30	0.372	0.038	0.524	0.410	0.896	0.934
	LTE Band 7	0.285	0.038	0.524	0.323	0.809	0.847
	LTE Band 48	0.314	0.038	0.524	0.352	0.838	0.876
	LTE Band 41	0.482	0.038	0.524	0.520	1.006	1.044

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 110 of 134	

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	CDMA/EVDO BC10 (\$90S)	0.039	0.452	0.524	0.491	0.563	1.015
	CDMA/EVDO BC0 (\$22H)	0.047	0.452	0.524	0.499	0.571	1.023
	PCS CDMA/EVDO	0.404	0.452	0.524	0.856	0.928	1.380
	GSM/GPRS 850	0.112	0.452	0.524	0.564	0.636	1.088
	GSM/GPRS 1900	0.416	0.452	0.524	0.868	0.940	1.392
	UMTS 850	0.053	0.452	0.524	0.505	0.577	1.029
	UMTS 1750	0.488	0.452	0.524	0.940	1.012	1.464
	UMTS 1900	0.399	0.452	0.524	0.851	0.923	1.375
	LTE Band 71	0.325	0.452	0.524	0.777	0.849	1.301
	LTE Band 12	0.477	0.452	0.524	0.929	1.001	1.453
	LTE Band 13	0.619	0.452	0.524	1.071	1.143	See Table Below
	LTE Band 14	0.546	0.452	0.524	0.998	1.070	1.522
	LTE Band 26 (Cell)	0.047	0.452	0.524	0.499	0.571	1.023
	LTE Band 5 (Cell)	0.044	0.452	0.524	0.496	0.568	1.020
	LTE Band 66 (AWS)	0.371	0.452	0.524	0.823	0.895	1.347
	LTE Band 25 (PCS)	0.294	0.452	0.524	0.746	0.818	1.270
	LTE Band 30	0.372	0.452	0.524	0.824	0.896	1.348
	LTE Band 7	0.285	0.452	0.524	0.737	0.809	1.261
	LTE Band 48	0.314	0.452	0.524	0.766	0.838	1.290
	LTE Band 41	0.482	0.452	0.524	0.934	1.006	1.458

Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.619	0.452	0.429	1.071	1.048	1.500
	Right Tilt	0.194	0.215	0.524	0.409	0.718	0.933
	Left Cheek	0.205	0.148	0.524*	0.353	0.729	0.877
	Left Tilt	0.148	0.452*	0.524*	0.600	0.672	1.124

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 111 of 134

Table 12-4
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	CDMA/EVDO BC10 (\$90S)	0.039	0.198	0.237
	CDMA/EVDO BC0 (\$22H)	0.047	0.198	0.245
	PCS CDMA/EVDO	0.404	0.198	0.602
	GSM/GPRS 850	0.112	0.198	0.310
	GSM/GPRS 1900	0.416	0.198	0.614
	UMTS 850	0.053	0.198	0.251
	UMTS 1750	0.488	0.198	0.686
	UMTS 1900	0.399	0.198	0.597
	LTE Band 71	0.325	0.198	0.523
	LTE Band 12	0.477	0.198	0.675
	LTE Band 13	0.619	0.198	0.817
	LTE Band 14	0.546	0.198	0.744
	LTE Band 26 (Cell)	0.047	0.198	0.245
	LTE Band 5 (Cell)	0.044	0.198	0.242
	LTE Band 66 (AWS)	0.371	0.198	0.569
	LTE Band 25 (PCS)	0.294	0.198	0.492
	LTE Band 30	0.372	0.198	0.570
	LTE Band 7	0.285	0.198	0.483
	LTE Band 48	0.314	0.198	0.512
	LTE Band 41	0.482	0.198	0.680

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (\$90S)	0.161	0.606	0.171	0.767	0.332	0.938
	CDMA BC0 (\$22H)	0.181	0.606	0.171	0.787	0.352	0.958
	PCS CDMA	0.563	0.606	0.171	1.169	0.734	1.340
	GSM/GPRS 850	0.192	0.606	0.171	0.798	0.363	0.969
	GSM/GPRS 1900	0.486	0.606	0.171	1.092	0.657	1.263
	UMTS 850	0.147	0.606	0.171	0.753	0.318	0.924
	UMTS 1750	0.688	0.606	0.171	1.294	0.859	1.465
	UMTS 1900	0.567	0.606	0.171	1.173	0.738	1.344
	LTE Band 71	0.437	0.606	0.171	1.043	0.608	1.214
	LTE Band 12	0.633	0.606	0.171	1.239	0.804	1.410
	LTE Band 13	0.798	0.606	0.171	1.404	0.969	1.575
	LTE Band 14	0.716	0.606	0.171	1.322	0.887	1.493
	LTE Band 26 (Cell)	0.155	0.606	0.171	0.761	0.326	0.932
	LTE Band 5 (Cell)	0.184	0.606	0.171	0.790	0.355	0.961
	LTE Band 66 (AWS)	0.511	0.606	0.171	1.117	0.682	1.288
	LTE Band 25 (PCS)	0.549	0.606	0.171	1.155	0.720	1.326
	LTE Band 30	0.519	0.606	0.171	1.125	0.690	1.296
	LTE Band 7	0.434	0.606	0.171	1.040	0.605	1.211
	LTE Band 48	0.282	0.606	0.171	0.888	0.453	1.059
	LTE Band 41	0.284	0.606	0.171	0.890	0.455	1.061

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 112 of 134	

Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (\$90S)	0.161	0.384	0.178	0.545	0.339	0.723
	CDMA BC0 (\$22H)	0.181	0.384	0.178	0.565	0.359	0.743
	PCS CDMA	0.563	0.384	0.178	0.947	0.741	1.125
	GSM/GPRS 850	0.192	0.384	0.178	0.576	0.370	0.754
	GSM/GPRS 1900	0.486	0.384	0.178	0.870	0.664	1.048
	UMTS 850	0.147	0.384	0.178	0.531	0.325	0.709
	UMTS 1750	0.688	0.384	0.178	1.072	0.866	1.250
	UMTS 1900	0.567	0.384	0.178	0.951	0.745	1.129
	LTE Band 71	0.437	0.384	0.178	0.821	0.615	0.999
	LTE Band 12	0.633	0.384	0.178	1.017	0.811	1.195
	LTE Band 13	0.798	0.384	0.178	1.182	0.976	1.360
	LTE Band 14	0.716	0.384	0.178	1.100	0.894	1.278
	LTE Band 26 (Cell)	0.155	0.384	0.178	0.539	0.333	0.717
	LTE Band 5 (Cell)	0.184	0.384	0.178	0.568	0.362	0.746
	LTE Band 66 (AWS)	0.511	0.384	0.178	0.895	0.689	1.073
	LTE Band 25 (PCS)	0.549	0.384	0.178	0.933	0.727	1.111
	LTE Band 30	0.519	0.384	0.178	0.903	0.697	1.081
	LTE Band 7	0.434	0.384	0.178	0.818	0.612	0.996
	LTE Band 48	0.282	0.384	0.178	0.666	0.460	0.844
	LTE Band 41	0.284	0.384	0.178	0.668	0.462	0.846

Table 12-7
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (\$90S)	0.161	0.606	0.178	0.767	0.339	0.945
	CDMA BC0 (\$22H)	0.181	0.606	0.178	0.787	0.359	0.965
	PCS CDMA	0.563	0.606	0.178	1.169	0.741	1.347
	GSM/GPRS 850	0.192	0.606	0.178	0.798	0.370	0.976
	GSM/GPRS 1900	0.486	0.606	0.178	1.092	0.664	1.270
	UMTS 850	0.147	0.606	0.178	0.753	0.325	0.931
	UMTS 1750	0.688	0.606	0.178	1.294	0.866	1.472
	UMTS 1900	0.567	0.606	0.178	1.173	0.745	1.351
	LTE Band 71	0.437	0.606	0.178	1.043	0.615	1.221
	LTE Band 12	0.633	0.606	0.178	1.239	0.811	1.417
	LTE Band 13	0.798	0.606	0.178	1.404	0.976	1.582
	LTE Band 14	0.716	0.606	0.178	1.322	0.894	1.500
	LTE Band 26 (Cell)	0.155	0.606	0.178	0.761	0.333	0.939
	LTE Band 5 (Cell)	0.184	0.606	0.178	0.790	0.362	0.968
	LTE Band 66 (AWS)	0.511	0.606	0.178	1.117	0.689	1.295
	LTE Band 25 (PCS)	0.549	0.606	0.178	1.155	0.727	1.333
	LTE Band 30	0.519	0.606	0.178	1.125	0.697	1.303
	LTE Band 7	0.434	0.606	0.178	1.040	0.612	1.218
	LTE Band 48	0.282	0.606	0.178	0.888	0.460	1.066
	LTE Band 41	0.284	0.606	0.178	0.890	0.462	1.068

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 113 of 134	

Table 12-8
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	CDMA BC10 (\$90S)	0.161	0.083	0.244
	CDMA BC0 (\$22H)	0.181	0.083	0.264
	PCS CDMA	0.563	0.083	0.646
	GSM/GPRS 850	0.192	0.083	0.275
	GSM/GPRS 1900	0.486	0.083	0.569
	UMTS 850	0.147	0.083	0.230
	UMTS 1750	0.688	0.083	0.771
	UMTS 1900	0.567	0.083	0.650
	LTE Band 71	0.437	0.083	0.520
	LTE Band 12	0.633	0.083	0.716
	LTE Band 13	0.798	0.083	0.881
	LTE Band 14	0.716	0.083	0.799
	LTE Band 26 (Cell)	0.155	0.083	0.238
	LTE Band 5 (Cell)	0.184	0.083	0.267
	LTE Band 66 (AWS)	0.511	0.083	0.594
	LTE Band 25 (PCS)	0.549	0.083	0.632
	LTE Band 30	0.519	0.083	0.602
	LTE Band 7	0.434	0.083	0.517
	LTE Band 48	0.282	0.083	0.365
	LTE Band 41	0.284	0.083	0.367

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 114 of 134

12.5 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.127	0.804	0.297	0.931	0.424	1.228
	EVDO BC0 (\$22H)	0.163	0.804	0.297	0.967	0.460	1.264
	PCS EVDO	1.054	0.804	0.297	See Table Below	1.351	See Table Below
	GPRS 850	0.192	0.804	0.297	0.996	0.489	1.293
	GPRS 1900	1.001	0.804	0.297	See Table Below	1.298	See Table Below
	UMTS 850	0.147	0.804	0.297	0.951	0.444	1.248
	UMTS 1750	1.025	0.804	0.297	See Table Below	1.322	See Table Below
	UMTS 1900	1.082	0.804	0.297	See Table Below	1.379	See Table Below
	LTE Band 71	0.437	0.804	0.297	1.241	0.734	1.538
	LTE Band 12	0.633	0.804	0.297	1.437	0.930	See Table Below
	LTE Band 13	0.798	0.804	0.297	See Table Below	1.095	See Table Below
	LTE Band 14	0.716	0.804	0.297	1.520	1.013	See Table Below
	LTE Band 26 (Cell)	0.155	0.804	0.297	0.959	0.452	1.256
	LTE Band 5 (Cell)	0.184	0.804	0.297	0.988	0.481	1.285
	LTE Band 66 (AWS)	0.841	0.804	0.297	See Table Below	1.138	See Table Below
	LTE Band 25 (PCS)	1.021	0.804	0.297	See Table Below	1.318	See Table Below
	LTE Band 30	0.519	0.804	0.297	1.323	0.816	See Table Below
	LTE Band 7	0.722	0.804	0.297	1.526	1.019	See Table Below
	LTE Band 48	0.282	0.804	0.297	1.086	0.579	1.383
	LTE Band 41	0.527	0.804	0.297	1.331	0.824	See Table Below
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+2+3	
Hotspot SAR	Back	0.555	0.606	0.171	1.161	1.332	
	Front	0.410	0.379	0.297*	0.789	1.086	
	Top	-	0.804*	0.297	0.804	1.101	
	Bottom	1.054	-	-	1.054	1.054	
	Right	0.206	-	-	0.206	0.206	
	Left	0.127	0.804	0.297*	0.931	1.228	
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+2+3	
Hotspot SAR	Back	0.688	0.606	0.171	1.294	1.465	
	Front	0.522	0.379	0.297*	0.901	1.198	
	Top	-	0.804*	0.297	0.804	1.101	
	Bottom	1.025	-	-	1.025	1.025	
	Right	0.151	-	-	0.151	0.151	
	Left	0.096	0.804	0.297*	0.900	1.197	
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+2+3	
Hotspot SAR	Back	0.486	0.606	0.171	1.092	1.263	
	Front	0.355	0.379	0.297*	0.734	1.031	
	Top	-	0.804*	0.297	0.804	1.101	
	Bottom	1.001	-	-	1.001	1.001	
	Right	0.200	-	-	0.200	0.200	
	Left	0.087	0.804	0.297*	0.891	1.188	
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+2+3	
Hotspot SAR	Back	0.567	0.606	0.171	1.173	1.344	
	Front	0.431	0.379	0.297*	0.810	1.107	
	Top	-	0.804*	0.297	0.804	1.101	
	Bottom	1.082	-	-	1.082	1.082	
	Right	0.214	-	-	0.214	0.214	
	Left	0.121	0.804	0.297*	0.925	1.222	

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 115 of 134

Simult Tx	Configuration	LTE Band 12 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2+3	
Hotspot SAR	Back	0.633	0.606	0.171	1.410	
	Front	0.387	0.379	0.297*	1.063	
	Top	-	0.804*	0.297	1.101	
	Bottom	0.141	-	-	0.141	
	Right	0.346	-	-	0.346	
	Left	-	0.804	0.297*	1.101	
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+2+3
Hotspot SAR	Back	0.798	0.606	0.171	1.404	1.575
	Front	0.551	0.379	0.297*	0.930	1.227
	Top	-	0.804*	0.297	0.804	1.101
	Bottom	0.195	-	-	0.195	0.195
	Right	0.277	-	-	0.277	0.277
	Left	-	0.804	0.297*	0.804	1.101
Simult Tx	Configuration	LTE Band 14 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2+3	
Hotspot SAR	Back	0.716	0.606	0.171	1.493	
	Front	0.502	0.379	0.297*	1.178	
	Top	-	0.804*	0.297	1.101	
	Bottom	0.175	-	-	0.175	
	Right	0.236	-	-	0.236	
	Left	-	0.804	0.297*	1.101	
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+2+3
Hotspot SAR	Back	0.511	0.606	0.171	1.117	1.288
	Front	0.416	0.379	0.297*	0.795	1.092
	Top	-	0.804*	0.297	0.804	1.101
	Bottom	0.841	-	-	0.841	0.841
	Right	0.141	-	-	0.141	0.141
	Left	0.094	0.804	0.297*	0.898	1.195
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+2+3
Hotspot SAR	Back	0.549	0.606	0.171	1.155	1.326
	Front	0.379	0.379	0.297*	0.758	1.055
	Top	-	0.804*	0.297	0.804	1.101
	Bottom	1.021	-	-	1.021	1.021
	Right	0.135	-	-	0.135	0.135
	Left	0.135	0.804	0.297*	0.939	1.236
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2+3	
Hotspot SAR	Back	0.519	0.606	0.171	1.296	
	Front	0.370	0.379	0.297*	1.046	
	Top	-	0.804*	0.297	1.101	
	Bottom	0.264	-	-	0.264	
	Right	-	-	-	0.000	
	Left	0.142	0.804	0.297*	1.243	
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2+3	
Hotspot SAR	Back	0.434	0.606	0.171	1.211	
	Front	0.391	0.379	0.297*	1.067	
	Top	-	0.804*	0.297	1.101	
	Bottom	0.722	-	-	0.722	
	Right	-	-	-	0.000	
	Left	0.179	0.804	0.297*	1.280	
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2+3	
Hotspot SAR	Back	0.222	0.606	0.171	0.999	
	Front	0.284	0.379	0.297*	0.960	
	Top	-	0.804*	0.297	1.101	
	Bottom	0.527	-	-	0.527	
	Right	-	-	-	0.000	
	Left	0.142	0.804	0.297*	1.243	

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 116 of 134

Table 12-10
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.127	0.395	0.178	0.522	0.305	0.700
	EVDO BC0 (\$22H)	0.163	0.395	0.178	0.558	0.341	0.736
	PCS EVDO	1.054	0.395	0.178	1.449	1.232	See Table Below
	GPRS 850	0.192	0.395	0.178	0.587	0.370	0.765
	GPRS 1900	1.001	0.395	0.178	1.396	1.179	1.574
	UMTS 850	0.147	0.395	0.178	0.542	0.325	0.720
	UMTS 1750	1.025	0.395	0.178	1.420	1.203	See Table Below
	UMTS 1900	1.082	0.395	0.178	1.477	1.260	See Table Below
	LTE Band 71	0.437	0.395	0.178	0.832	0.615	1.010
	LTE Band 12	0.633	0.395	0.178	1.028	0.811	1.206
	LTE Band 13	0.798	0.395	0.178	1.193	0.976	1.371
	LTE Band 14	0.716	0.395	0.178	1.111	0.894	1.289
	LTE Band 26 (Cell)	0.155	0.395	0.178	0.550	0.333	0.728
	LTE Band 5 (Cell)	0.184	0.395	0.178	0.579	0.362	0.757
	LTE Band 66 (AWS)	0.841	0.395	0.178	1.236	1.019	1.414
	LTE Band 25 (PCS)	1.021	0.395	0.178	1.416	1.199	1.594
	LTE Band 30	0.519	0.395	0.178	0.914	0.697	1.092
	LTE Band 7	0.722	0.395	0.178	1.117	0.900	1.295
	LTE Band 48	0.282	0.395	0.178	0.677	0.460	0.855
	LTE Band 41	0.527	0.395	0.178	0.922	0.705	1.100

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Hotspot SAR	Back	0.555	0.395	0.178	1.128	Hotspot SAR	Back	0.688	0.395	0.178	1.261
	Front	0.410	0.395*	0.128	0.933		Front	0.522	0.395*	0.128	1.045
	Top	-	0.395*	0.178*	0.573		Top	-	0.395*	0.178*	0.573
	Bottom	1.054	-	-	1.054		Bottom	1.025	-	-	1.025
	Right	0.206	-	-	0.206		Right	0.151	-	-	0.151
	Left	0.127	0.395*	0.178*	0.700		Left	0.096	0.395*	0.178*	0.669

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.567	0.395	0.178	1.140
	Front	0.431	0.395*	0.128	0.954
	Top	-	0.395*	0.178*	0.573
	Bottom	1.082	-	-	1.082
	Right	0.214	-	-	0.214
	Left	0.121	0.395*	0.178*	0.694

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 117 of 134

Table 12-11

Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	EVDO BC10 (\$90S)	0.127	0.804	0.178	1.109
	EVDO BC0 (\$22H)	0.163	0.804	0.178	1.145
	PCS EVDO	1.054	0.804	0.178	See Table Below
	GPRS 850	0.192	0.804	0.178	1.174
	GPRS 1900	1.001	0.804	0.178	See Table Below
	UMTS 850	0.147	0.804	0.178	1.129
	UMTS 1750	1.025	0.804	0.178	See Table Below
	UMTS 1900	1.082	0.804	0.178	See Table Below
	LTE Band 71	0.437	0.804	0.178	1.419
	LTE Band 12	0.633	0.804	0.178	See Table Below
	LTE Band 13	0.798	0.804	0.178	See Table Below
	LTE Band 14	0.716	0.804	0.178	See Table Below
	LTE Band 26 (Cell)	0.155	0.804	0.178	1.137
	LTE Band 5 (Cell)	0.184	0.804	0.178	1.166
	LTE Band 66 (AWS)	0.841	0.804	0.178	See Table Below
	LTE Band 25 (PCS)	1.021	0.804	0.178	See Table Below
	LTE Band 30	0.519	0.804	0.178	1.501
	LTE Band 7	0.722	0.804	0.178	See Table Below
	LTE Band 48	0.282	0.804	0.178	1.264
	LTE Band 41	0.527	0.804	0.178	1.509
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.555	0.606	0.178	1.339
	Front	0.410	0.379	0.128	0.917
	Top	-	0.804*	0.178*	0.982
	Bottom	1.054	-	-	1.054
	Right	0.206	-	-	0.206
	Left	0.127	0.804	0.178*	1.109
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.486	0.606	0.178	1.270
	Front	0.355	0.379	0.128	0.862
	Top	-	0.804*	0.178*	0.982
	Bottom	1.001	-	-	1.001
	Right	0.200	-	-	0.200
	Left	0.087	0.804	0.178*	1.069
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.688	0.606	0.178	1.472
	Front	0.522	0.379	0.128	1.029
	Top	-	0.804*	0.178*	0.982
	Bottom	1.025	-	-	1.025
	Right	0.151	-	-	0.151
	Left	0.096	0.804	0.178*	1.078
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.567	0.606	0.178	1.351
	Front	0.431	0.379	0.128	0.938
	Top	-	0.804*	0.178*	0.982
	Bottom	1.082	-	-	1.082
	Right	0.214	-	-	0.214
	Left	0.121	0.804	0.178*	1.103
Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.633	0.606	0.178	1.417
	Front	0.387	0.379	0.128	0.894
	Top	-	0.804*	0.178*	0.982
	Bottom	0.141	-	-	0.141
	Right	0.346	-	-	0.346
	Left	-	0.804	0.178*	0.982

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 118 of 134

Simult Tx	Configuration	LTE Band 14 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.716	0.606	0.178	1.500
	Front	0.502	0.379	0.128	1.009
	Top	-	0.804*	0.178*	0.982
	Bottom	0.175	-	-	0.175
	Right	0.236	-	-	0.236
	Left	-	0.804	0.178*	0.982
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.549	0.606	0.178	1.333
	Front	0.379	0.379	0.128	0.886
	Top	-	0.804*	0.178*	0.982
	Bottom	1.021	-	-	1.021
	Right	0.135	-	-	0.135
	Left	0.135	0.804	0.178*	1.117

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.511	0.606	0.178	1.295
	Front	0.416	0.379	0.128	0.923
	Top	-	0.804*	0.178*	0.982
	Bottom	0.841	-	-	0.841
	Right	0.141	-	-	0.141
	Left	0.094	0.804	0.178*	1.076
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.434	0.606	0.178	1.218
	Front	0.391	0.379	0.128	0.898
	Top	-	0.804*	0.178*	0.982
	Bottom	0.722	-	-	0.722
	Right	-	-	-	0.000
	Left	0.179	0.804	0.178*	1.161

Table 12-12
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	EVDO BC10 (§90S)	0.127	0.090	0.217
	EVDO BC0 (§22H)	0.163	0.090	0.253
	PCS EVDO	1.054	0.090	1.144
	GPRS 850	0.192	0.090	0.282
	GPRS 1900	1.001	0.090	1.091
	UMTS 850	0.147	0.090	0.237
	UMTS 1750	1.025	0.090	1.115
	UMTS 1900	1.082	0.090	1.172
	LTE Band 71	0.437	0.090	0.527
	LTE Band 12	0.633	0.090	0.723
	LTE Band 13	0.798	0.090	0.888
	LTE Band 14	0.716	0.090	0.806
	LTE Band 26 (Cell)	0.155	0.090	0.245
	LTE Band 5 (Cell)	0.184	0.090	0.274
	LTE Band 66 (AWS)	0.841	0.090	0.931
	LTE Band 25 (PCS)	1.021	0.090	1.111
	LTE Band 30	0.519	0.090	0.609
	LTE Band 7	0.722	0.090	0.812
	LTE Band 48	0.282	0.090	0.372
	LTE Band 41	0.527	0.090	0.617

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 119 of 134	

12.6 Phablet Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore, no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.731	1.672	0.821	3.403	2.552
	Front	1.483	0.070	0.526	1.553	2.009
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	2.823	-	-	2.823	2.823
	Right	0.763	-	-	0.763	0.763
	Left	0.349	0.188	0.821*	0.537	1.170

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.468	1.672	0.821	3.140	2.289
	Front	1.866	0.070	0.526	1.936	2.392
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	2.372	-	-	2.372	2.372
	Right	0.419	-	-	0.419	0.419
	Left	0.298	0.188	0.821*	0.486	1.119

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.366	1.672	0.821	3.038	2.187
	Front	1.409	0.070	0.526	1.479	1.935
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	2.938	-	-	2.938	2.938
	Right	0.813	-	-	0.813	0.813
	Left	0.360	0.188	0.821*	0.548	1.181

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.551	1.672	0.821	3.223	2.372
	Front	1.524	0.070	0.526	1.594	2.050
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	2.189	-	-	2.189	2.189
	Right	0.443	-	-	0.443	0.443
	Left	0.291	0.188	0.821*	0.479	1.112

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.531	1.672	0.821	3.203	2.352
	Front	1.341	0.070	0.526	1.411	1.867
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	2.677	-	-	2.677	2.677
	Right	0.625	-	-	0.625	0.625
	Left	0.324	0.188	0.821*	0.512	1.145

Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.501	1.672	0.821	3.173	2.322
	Front	2.623	0.070	0.526	2.693	3.149
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	3.025	-	-	3.025	3.025
	Right	-	-	-	0.000	0.000
	Left	0.484	0.188	0.821*	0.672	1.305

Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.768	1.672	0.821	3.440	2.589
	Front	1.991	0.070	0.526	2.061	2.517
	Top	-	1.672*	0.821*	1.672	0.821
	Bottom	3.141	-	-	3.141	3.141
	Right	-	-	-	0.000	0.000
	Left	0.614	0.188	0.821*	0.802	1.435

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 120 of 134

Table 12-14
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Phablet)

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.731	1.715	3.446	Phablet SAR	Back	1.468	1.715	3.183
	Front	1.483	0.563	2.046		Front	1.866	0.563	2.429
	Top	-	1.715*	1.715		Top	-	1.715*	1.715
	Bottom	2.823	-	2.823		Bottom	2.372	-	2.372
	Right	0.763	-	0.763		Right	0.419	-	0.419
	Left	0.349	1.715*	2.064		Left	0.298	1.715*	2.013
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.366	1.715	3.081	Phablet SAR	Back	1.551	1.715	3.266
	Front	1.409	0.563	1.972		Front	1.524	0.563	2.087
	Top	-	1.715*	1.715		Top	-	1.715*	1.715
	Bottom	2.938	-	2.938		Bottom	2.189	-	2.189
	Right	0.813	-	0.813		Right	0.443	-	0.443
	Left	0.360	1.715*	2.075		Left	0.291	1.715*	2.006
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.531	1.715	3.246	Phablet SAR	Back	1.501	1.715	3.216
	Front	1.341	0.563	1.904		Front	2.623	0.563	3.186
	Top	-	1.715*	1.715		Top	-	1.715*	1.715
	Bottom	2.677	-	2.677		Bottom	3.025	-	3.025
	Right	0.625	-	0.625		Right	-	-	0.000
	Left	0.324	1.715*	2.039		Left	0.484	1.715*	2.199
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)					
		1	2	1+2					
Phablet SAR	Back	1.768	1.715	3.483					
	Front	1.991	0.563	2.554					
	Top	-	1.715*	1.715					
	Bottom	3.141	-	3.141					
	Right	-	-	0.000					
	Left	0.614	1.715*	2.329					

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 121 of 134	

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- 5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Data Rate (Mbps)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2452.00	9	802.11n, 20 MHz Bandwidth	OFDM, MIMO	Right	Tilt 1st Add.	13	0.888	0.881	1.01	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 13-2
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)		(W/kg)		(W/kg)	
1750	1752.60	1513	UMTS 1750	RMC	bottom	10 mm	0.932	0.930	1.00	N/A	N/A	N/A	N/A
1900	1880.00	9400	UMTS 1900	RMC	bottom	10 mm	1.060	1.020	1.04	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram							

FCC ID: ZNFG820UM			SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset			Page 122 of 134

Table 13-3
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1752.60	1513	UMTS 1750	RMC	bottom	0 mm	2.150	2.140	1.00	N/A	N/A	N/A	N/A
1900	1880.00	9400	UMTS 1900	RMC	bottom	0 mm	2.860	2.850	1.00	N/A	N/A	N/A	N/A
2300	2310.00	27710	LTE Band 30, 10 MHz Bandwidth	QPSK, 25 RB, 12 RB Offset	bottom	0 mm	2.730	2.700	1.01	N/A	N/A	N/A	N/A
2450	2510.00	20850	LTE Band 7, 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	Bottom	0 mm	2.870	2.560	1.12	N/A	N/A	N/A	N/A
2600	2535.00	21100	LTE Band 7, 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	bottom	0 mm	2.990	2.540	1.18	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Phablet							
Spatial Peak						4.0 W/kg (mW/g)							
Uncontrolled Exposure/General Population						averaged over 10 grams							

13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 123 of 134

14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. When ULCA is active, the linearity between the Power Class 2 with ULCA active and Power Class 3 with ULCA active SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

Table 14-1
LTE Band 41 Standalone Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.02	27.24
Measured SAR (W/kg)	0.389	0.418
Measured Power (mW)	317.69	529.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	201.10	229.34
% deviation from expected linearity		-5.78%

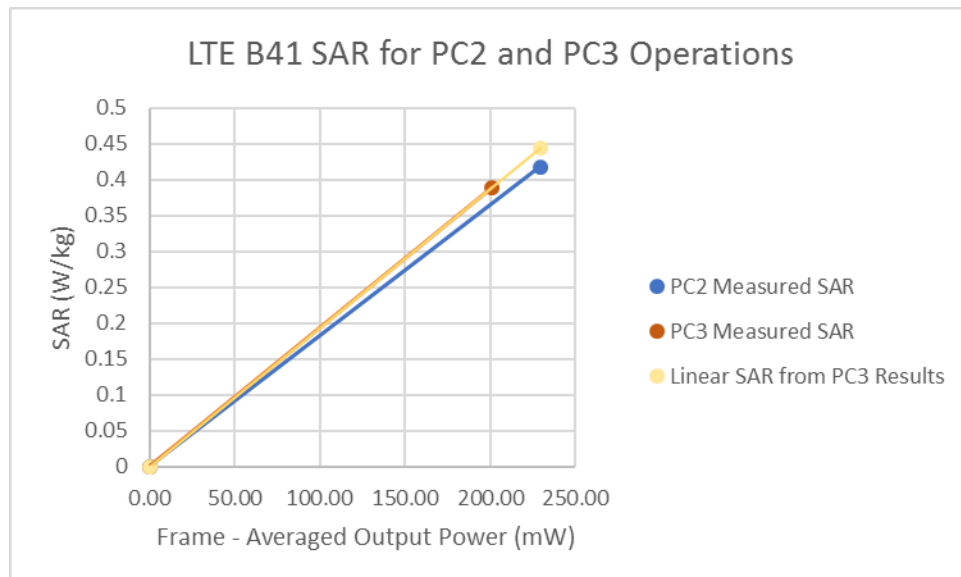


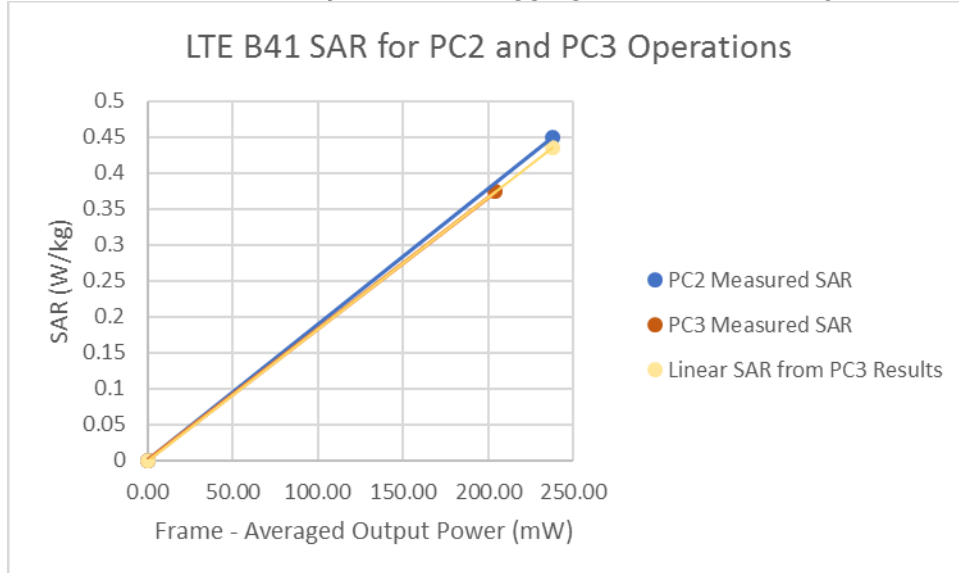
Figure 14-1
LTE Band 41 Standalone Head Linearity

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 124 of 134

Table 14-2
LTE Band 41 Uplink Carrier Aggregation Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.09	27.4
Measured SAR (W/kg)	0.374	0.45
Measured Power (mW)	322.85	549.54
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	204.36	237.95
% deviation from expected linearity		3.34%

Figure 14-2
LTE Band 41 Uplink Carrier Aggregation Head Linearity



FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 125 of 134

Table 14-3
LTE Band 41 Standalone Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.02	27.24
Measured SAR (W/kg)	0.213	0.243
Measured Power (mW)	317.69	529.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	201.10	229.34
% deviation from expected linearity		0.03%

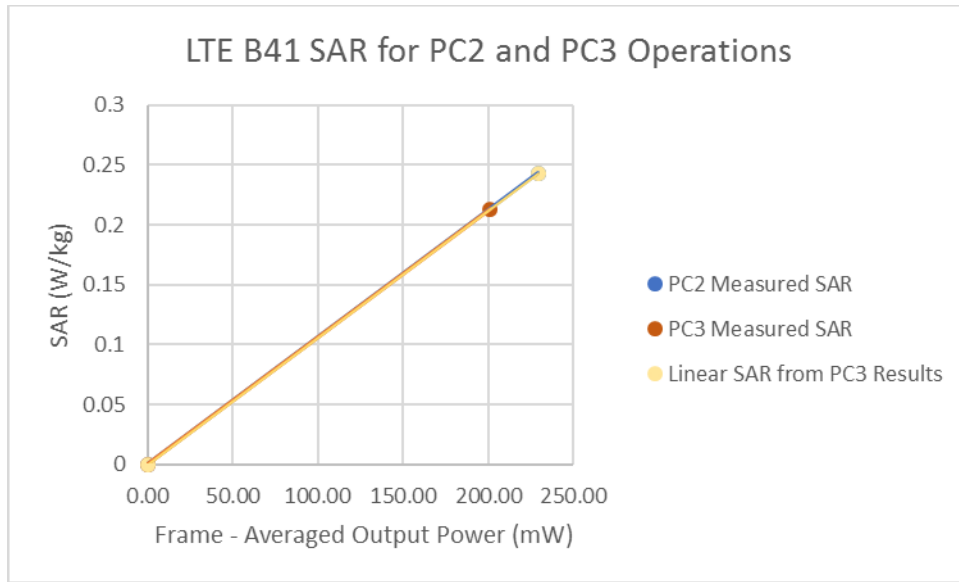


Figure 14-3
LTE Band 41 Standalone Body-Worn Linearity

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 126 of 134

Table 14-4
LTE Band 41 Uplink Carrier Aggregation Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.09	27.4
Measured SAR (W/kg)	0.208	0.265
Measured Power (mW)	322.85	549.54
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	204.36	237.95
% deviation from expected linearity		9.42%

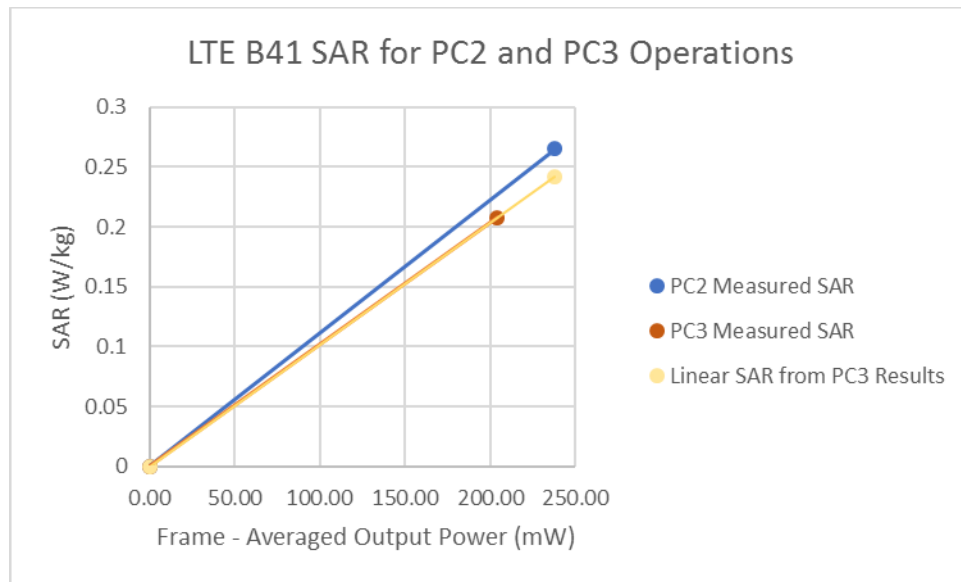


Figure 14-4
LTE Band 41 Uplink Carrier Aggregation Body-Worn Linearity

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 127 of 134

Table 14-5
LTE Band 41 Standalone Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.02	27.24
Measured SAR (W/kg)	0.423	0.435
Measured Power (mW)	317.69	529.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	201.10	229.34
% deviation from expected linearity		-9.83%

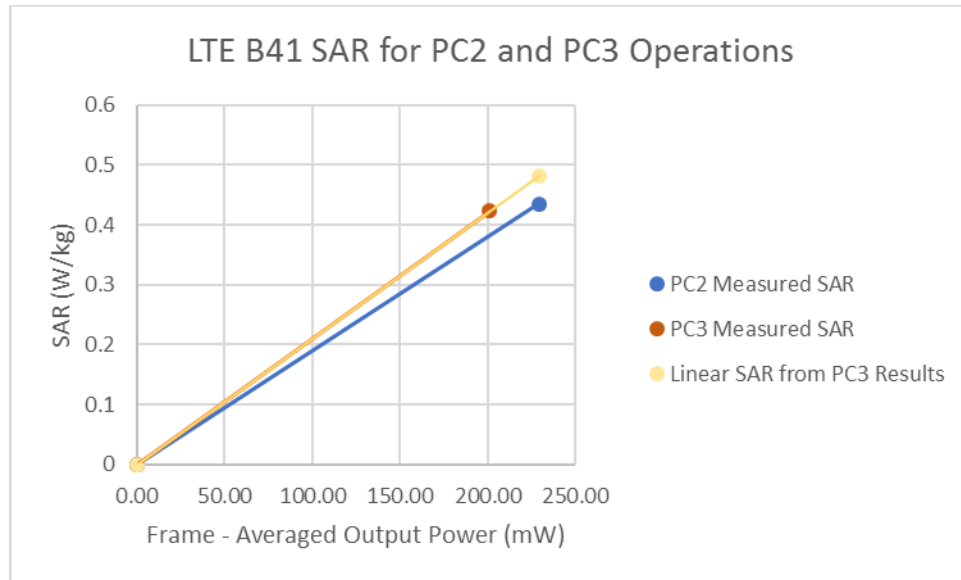


Figure 14-5
LTE Band 41 Standalone Hotspot Linearity

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 128 of 134

Table 14-6
LTE Band 41 Uplink Carrier Aggregation Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.09	27.4
Measured SAR (W/kg)	0.395	0.492
Measured Power (mW)	322.85	549.54
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	204.36	237.95
% deviation from expected linearity		6.98%

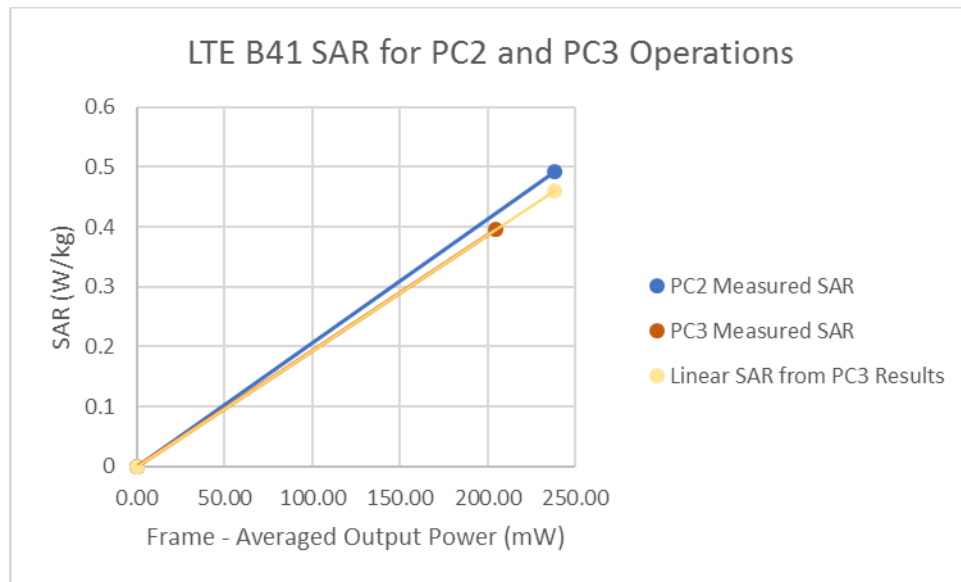


Figure 14-6
LTE Band 41 Uplink Carrier Aggregation Hotspot Linearity

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 129 of 134

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85033E	3.5mm Standard Calibration Kit	8/13/2018	Annual	8/13/2019	MY53402352
Agilent	8723ES	S-Parameter Network Analyzer	10/2/2018	Annual	10/2/2019	US39170118
Agilent	E4438C	ESG Vector Signal Generator	4/19/2018	Annual	4/19/2019	MY4727002
Agilent	E4404A	PSA Series Spectrum Analyzer	11/14/2018	Annual	11/14/2019	MY46186272
Agilent	E5515C	Wireless Communications Test Set	2/28/2018	Biennial	2/28/2020	GB41460275
Agilent	E5515C	Wireless Communications Test Set	5/22/2018	Biennial	5/22/2020	GB43193563
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	11/28/2018	Annual	11/28/2019	MY47420603
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	343971
Anritsu	MA24106A	USB Power Sensor	7/17/2018	Annual	7/17/2019	1827527
Anritsu	MA24106A	USB Power Sensor	6/5/2018	Annual	6/5/2019	1231535
Anritsu	MA24106A	USB Power Sensor	6/5/2018	Annual	6/5/2019	1231538
Anritsu	MA24106A	USB Power Sensor	6/21/2018	Annual	6/21/2019	1244512
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1126066
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1207470
Anritsu	ML2496A	Power Meter	10/21/2018	Annual	10/21/2019	1138001
Anritsu	MT8820C	Radio Communication Analyzer	6/27/2018	Annual	6/27/2019	6201240328
Anritsu	MT8821C	Radio Communication Analyzer	11/6/2018	Annual	11/6/2019	6200901190
Anritsu	MT8821C	Radio Communication Analyzer	7/26/2018	Annual	7/26/2019	6201144418
Anritsu	MT8821C	Radio Communication Analyzer	7/24/2018	Annual	7/24/2019	6201664756
Anritsu	MT8821C	Radio Communication Analyzer	3/20/2018	Annual	3/20/2019	6201144419
Anritsu	MT8862A	Wireless Connectivity Test Set	7/3/2018	Annual	7/3/2019	6261782395
Control Company	4040	Therm./Clock/Humidity Monitor	3/1/2017	Biennial	3/1/2019	170152009
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	17022394
Control Company	4352	Ultra Long Stem Thermometer	2/14/2017	Biennial	2/14/2019	170132607
Control Company	4352	Ultra Long Stem Thermometer	3/2/2017	Biennial	3/2/2019	170155334
Keysight	7720	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6°CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	NC-100	Torque Wrench	4/18/2018	Annual	4/18/2019	1445
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	7/5/2018	Annual	7/5/2019	106578
Seekonk	NC-100	Torque Wrench	11/1/2017	Biennial	11/1/2019	22313
Seekonk	NC-100	Torque Wrench	11/1/2017	Biennial	11/1/2019	N/A
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Biennial	5/9/2019	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Annual	10/22/2019	1150
SPEAG	D1765V2	1765 MHz SAR Dipole	5/23/2018	Annual	5/23/2019	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	5d148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d149
SPEAG	D2300V2	2300 MHz SAR Dipole	11/8/2017	Biennial	11/8/2019	1064
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Annual	8/13/2019	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Biennial	9/11/2019	797
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Annual	8/16/2019	981
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Annual	4/11/2019	1004
SPEAG	D2600V2	2600 MHz SAR Dipole	6/7/2017	Biennial	6/7/2019	1064
SPEAG	D3500V2	3500 MHz SAR Dipole	1/11/2018	Biennial	1/11/2020	1059
SPEAG	D3700V2	3700 MHz SAR Dipole	1/11/2018	Biennial	1/11/2020	1018
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Triennial	9/21/2019	1191
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	1003
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	4d047
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	4d133
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2018	Annual	2/15/2019	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/22/2018	Annual	5/22/2019	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2018	Annual	7/11/2019	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2018	Annual	10/18/2019	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2018	Annual	6/18/2019	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/3/2018	Annual	10/3/2019	1558
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/13/2018	Annual	3/13/2019	1102
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	11/13/2018	Annual	11/13/2019	1121
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/11/2018	Annual	9/11/2019	1091
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	7/11/2018	Annual	7/11/2019	1039
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/22/2018	Annual	8/22/2019	1041
SPEAG	DAKS-3.5	Portable DAK	9/11/2018	Annual	9/11/2019	1045
SPEAG	ES3DV3	SAR Probe	10/22/2018	Annual	10/22/2019	3287
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3319
SPEAG	ES3DV3	SAR Probe	3/27/2018	Annual	3/27/2019	3347
SPEAG	EX3DV4	SAR Probe	2/14/2018	Annual	2/14/2019	3914
SPEAG	EX3DV4	SAR Probe	8/24/2018	Annual	8/24/2019	3949
SPEAG	EX3DV4	SAR Probe	8/23/2018	Annual	8/23/2019	7308
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	EX3DV4	SAR Probe	5/22/2018	Annual	5/22/2019	7406
SPEAG	EX3DV4	SAR Probe	6/25/2018	Annual	6/25/2019	7409
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7410

Note 1: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

Note 2: Each equipment item was used solely within its respective calibration period.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 130 of 134

16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Uncertainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)	RSS					11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)	k=2					23.0	22.6	

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 131 of 134

17 CONCLUSION

17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 132 of 134

18 REFERENCES

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
- [3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.
- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
- [5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
- [6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.
- [9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [13] G. Hartsgrrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [15] W. Gander, Computermathematik, Birkhaeuser, Basel, 1992.
- [16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

FCC ID: ZNFG820UM	 SAR EVALUATION REPORT 		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset	Page 133 of 134

- [18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.
- [19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hochschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.
- [21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.
- [22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015
- [23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07
- [24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01
- [25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04
- [26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04
- [27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02
- [28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02
- [29] Anexo à Resolução No. 533, de 10 de Setembro de 2009.
- [30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

FCC ID: ZNFG820UM		SAR EVALUATION REPORT		Approved by: Quality Manager
Document S/N: 1M1901080002-01-R4.ZNF	Test Dates: 01/11/19 - 02/05/19	DUT Type: Portable Handset		Page 134 of 134

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.889 \text{ S/m}$; $\epsilon_r = 40.18$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-21-2019; Ambient Temp: 21.6°C; Tissue Temp: 19.4°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 820.1 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA, Rule Part 90S, Left Head, Cheek 1st Additional Position, Mid.ch

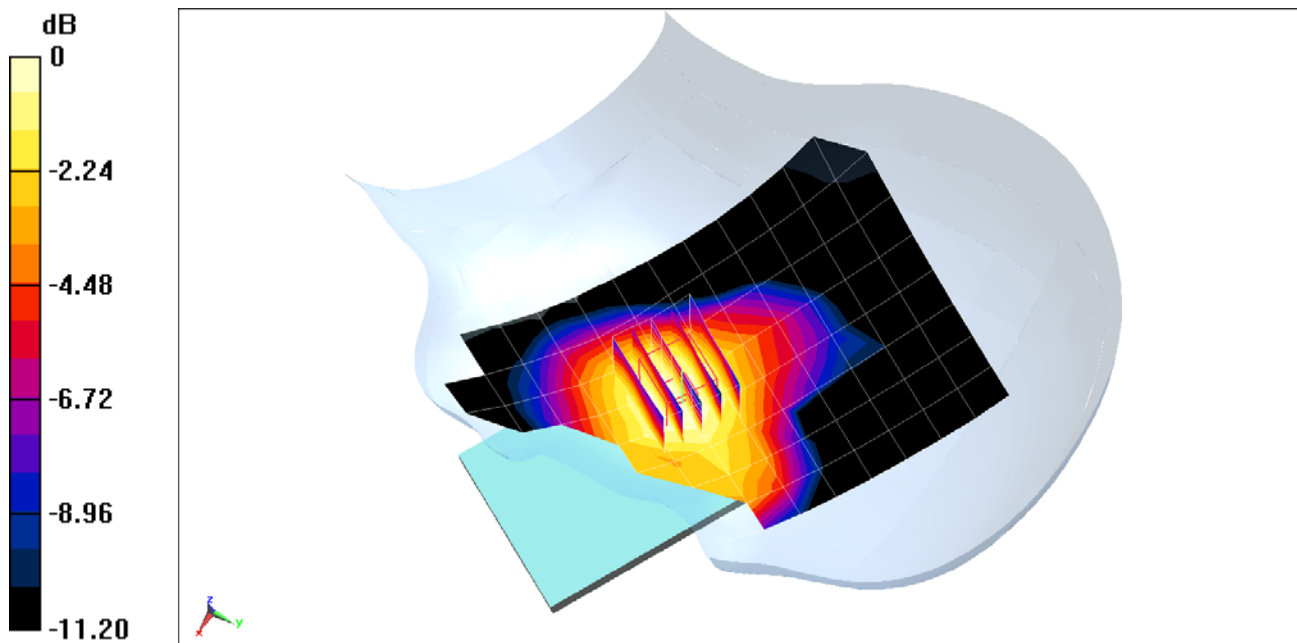
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.738 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.0450 W/kg

SAR(1 g) = 0.037 W/kg



0 dB = 0.0422 W/kg = -13.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.895 \text{ S/m}$; $\epsilon_r = 40.13$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-21-2019; Ambient Temp: 21.6°C; Tissue Temp: 19.4°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.52 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO Rev. A, Rule Part 22H, Left Head, Cheek 1st Additional Position, Mid.ch

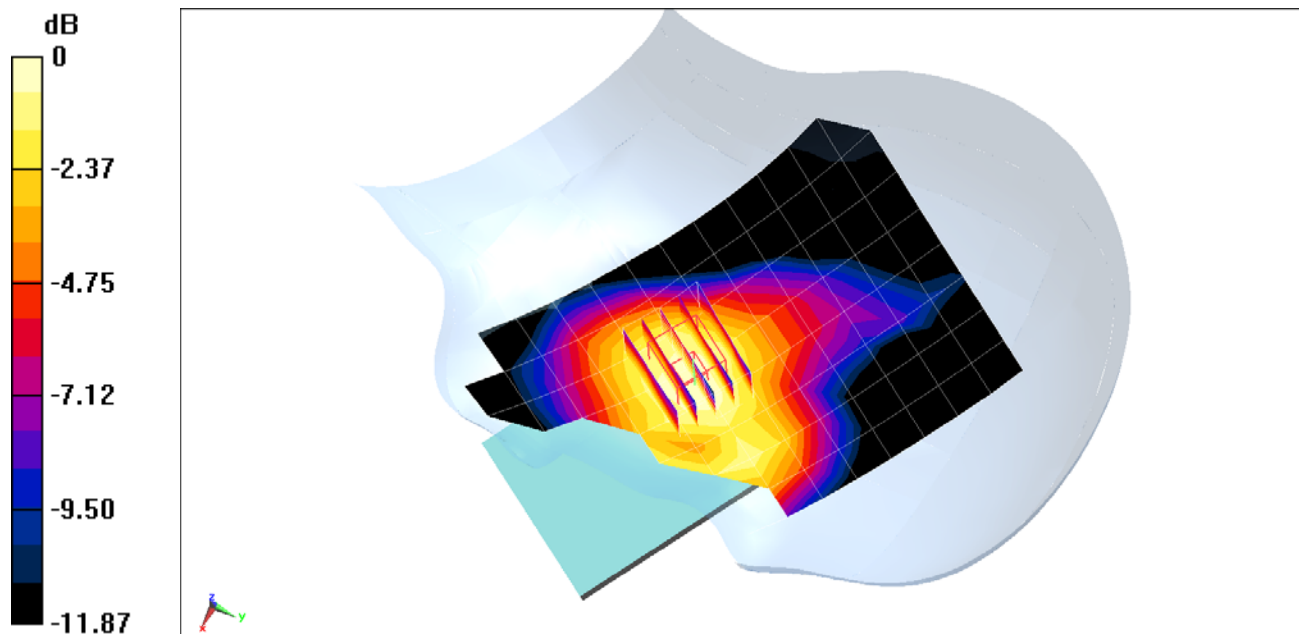
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.481 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0580 W/kg

SAR(1 g) = 0.0465 W/kg



0 dB = 0.0538 W/kg = -12.69 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.426 \text{ S/m}$; $\epsilon_r = 39.31$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-17-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.24, 5.24, 5.24) @ 1880 MHz; Calibrated: 10/22/2018

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 10/18/2018

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO Rev A, Right Head, Cheek 1st Additional Position, Mid.ch

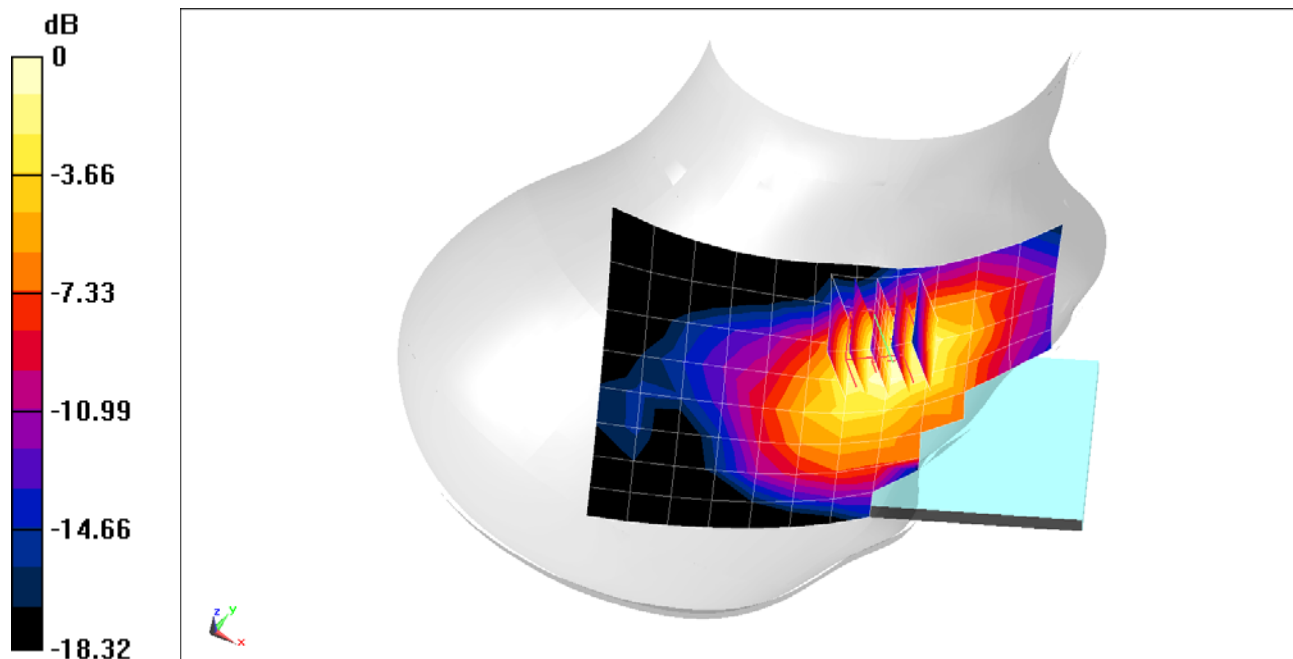
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.25 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.583 W/kg

SAR(1 g) = 0.384 W/kg



0 dB = 0.447 W/kg = -3.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.895 \text{ S/m}$; $\epsilon_r = 40.13$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-21-2019; Ambient Temp: 21.6°C; Tissue Temp: 19.4°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.6 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, Right Head, Cheek 1st Additional Position, Mid.ch, 3 Tx slots

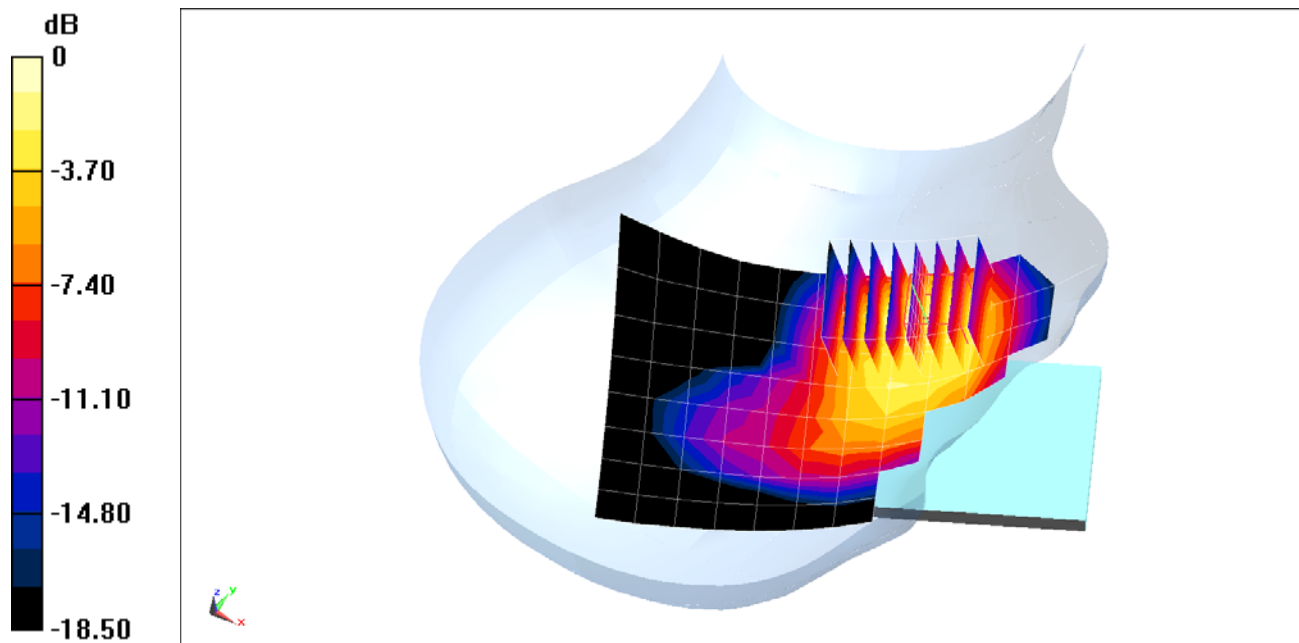
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x8x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.26 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.234 W/kg

SAR(1 g) = 0.109 W/kg



0 dB = 0.183 W/kg = -7.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.426 \text{ S/m}$; $\epsilon_r = 39.31$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-17-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.24, 5.24, 5.24) @ 1880 MHz; Calibrated: 10/22/2018

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 10/18/2018

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, Right Head, Cheek 1st Additional Position, Mid.ch, 3 Tx slots

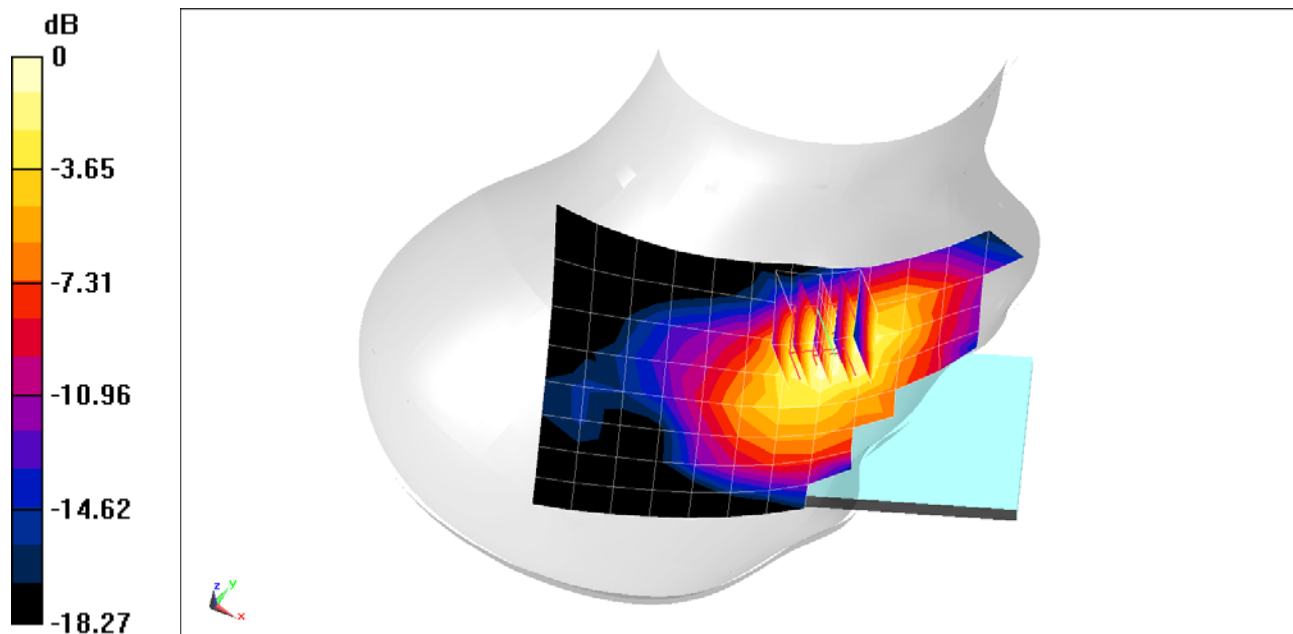
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.94 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.555 W/kg

SAR(1 g) = 0.364 W/kg



0 dB = 0.427 W/kg = -3.70 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.929 \text{ S/m}$; $\epsilon_r = 40.986$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 02-01-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.6 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 850, Left Head, Cheek 1st Additional Position, Mid.ch

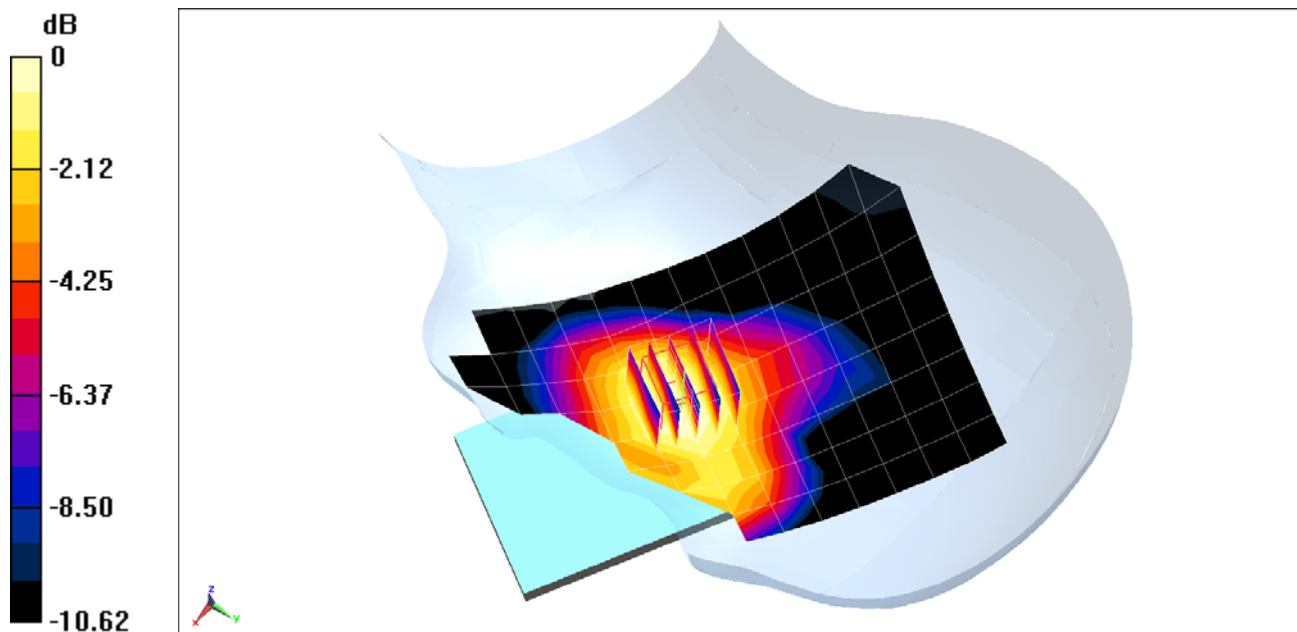
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.829 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.0620 W/kg

SAR(1 g) = 0.051 W/kg



0 dB = 0.0584 W/kg = -12.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.337 \text{ S/m}$; $\epsilon_r = 39.507$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-17-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.48, 5.48, 5.48) @ 1732.4 MHz; Calibrated: 10/22/2018

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 10/18/2018

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Right Head, Cheek 1st Additional Position, Mid.ch

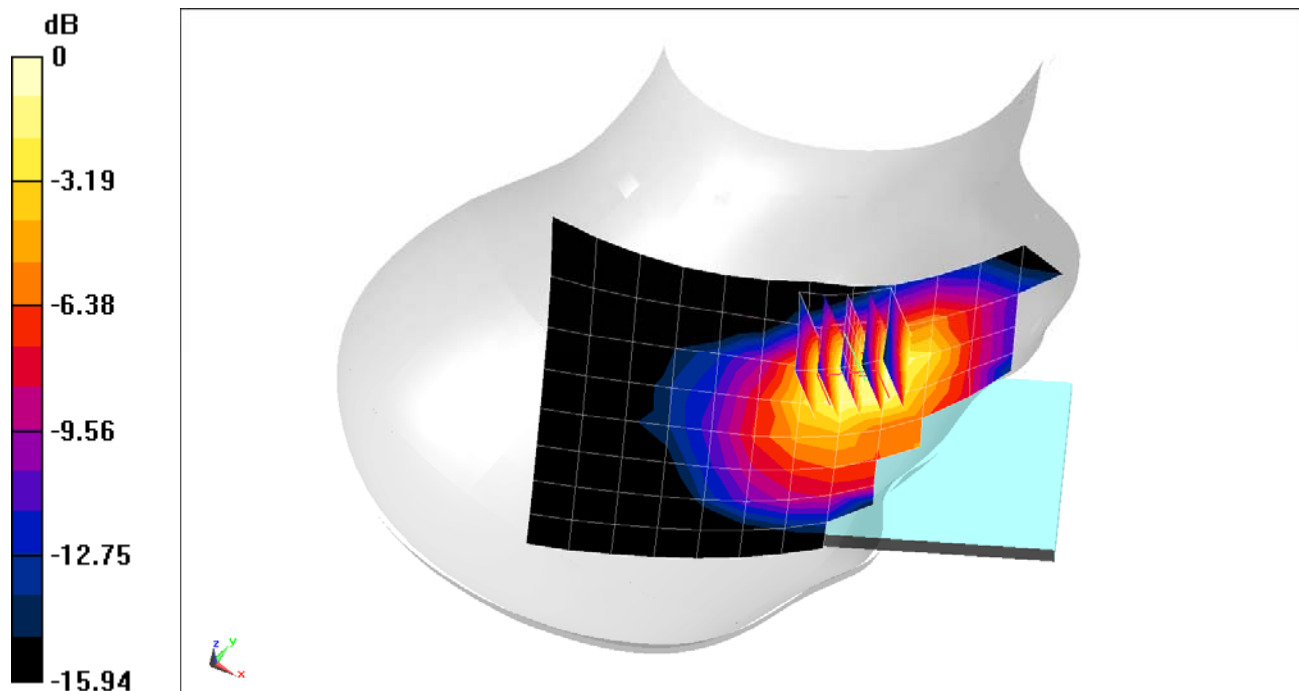
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.88 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.659 W/kg

SAR(1 g) = 0.429 W/kg



0 dB = 0.500 W/kg = -3.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.426 \text{ S/m}$; $\epsilon_r = 39.31$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-17-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.24, 5.24, 5.24) @ 1880 MHz; Calibrated: 10/22/2018

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 10/18/2018

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Right Head, Cheek 1st Additional Position, Mid.ch

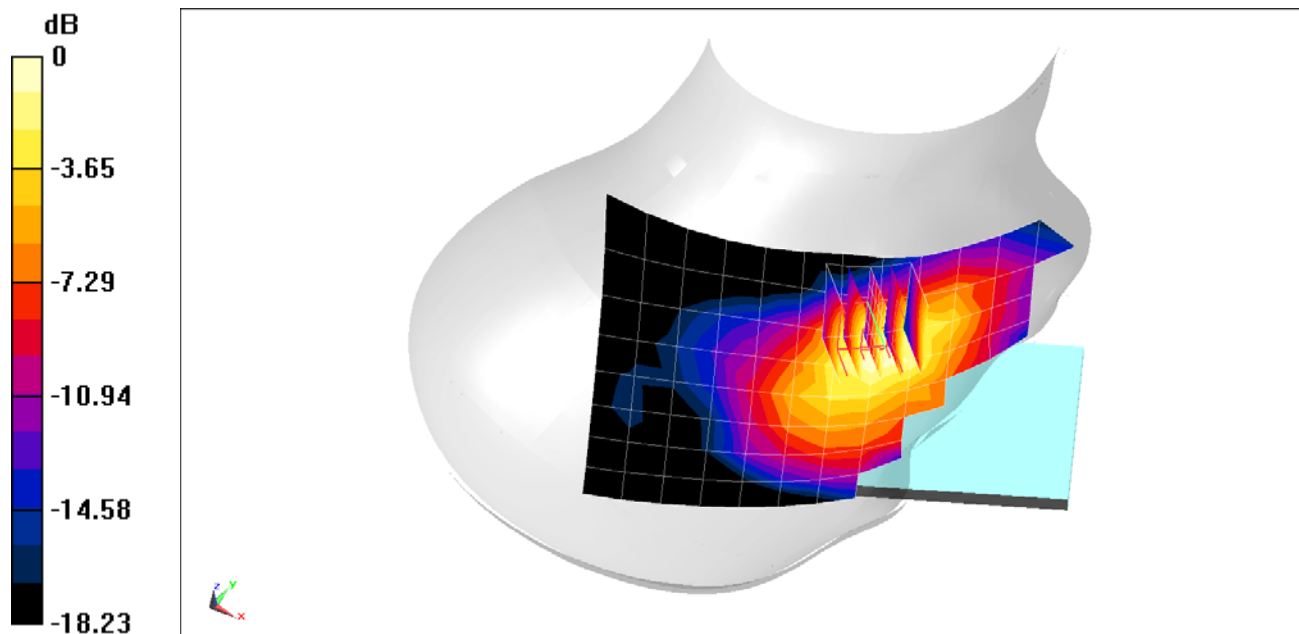
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.52 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.588 W/kg

SAR(1 g) = 0.391 W/kg



0 dB = 0.461 W/kg = -3.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 680.5 \text{ MHz}$; $\sigma = 0.879 \text{ S/m}$; $\epsilon_r = 42.844$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-14-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(10.5, 10.5, 10.5) @ 680.5 MHz; Calibrated: 4/18/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2018

Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 71, Right Head, Cheek, 1st Additional Position, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

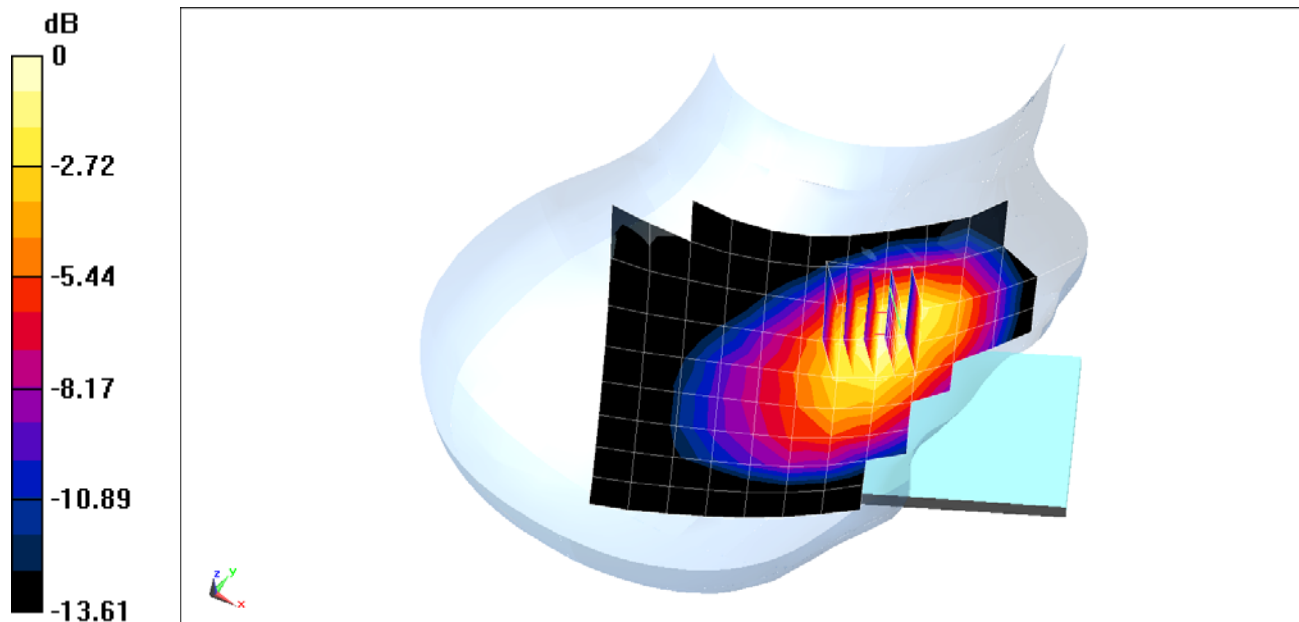
Area Scan (10x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.73 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.499 W/kg

SAR(1 g) = 0.301 W/kg



0 dB = 0.337 W/kg = -4.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.888 \text{ S/m}$; $\epsilon_r = 42.761$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-14-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(10.5, 10.5, 10.5) @ 707.5 MHz; Calibrated: 4/18/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2018

Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 12, Right Head, Cheek 1st Additional Position, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

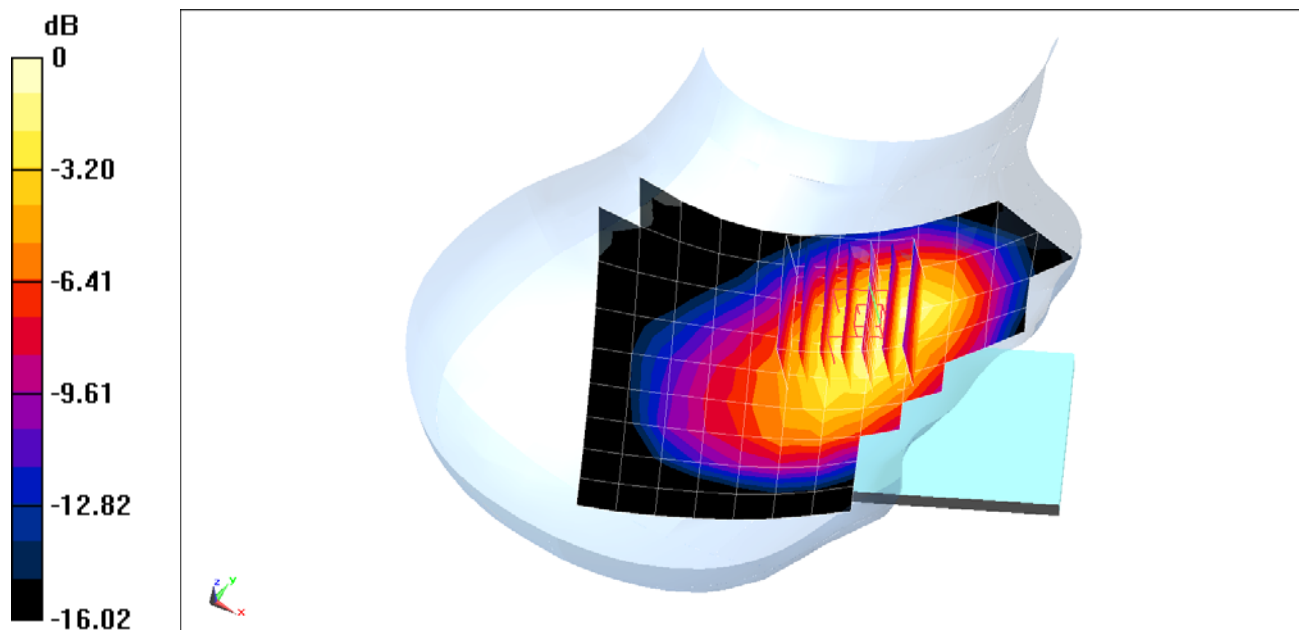
Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.52 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.718 W/kg

SAR(1 g) = 0.444 W/kg



0 dB = 0.614 W/kg = -2.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.917 \text{ S/m}$; $\epsilon_r = 42.56$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-14-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(10.5, 10.5, 10.5) @ 782 MHz; Calibrated: 4/18/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2018

Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 13, Right Head, Cheek 1st Additional Position, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

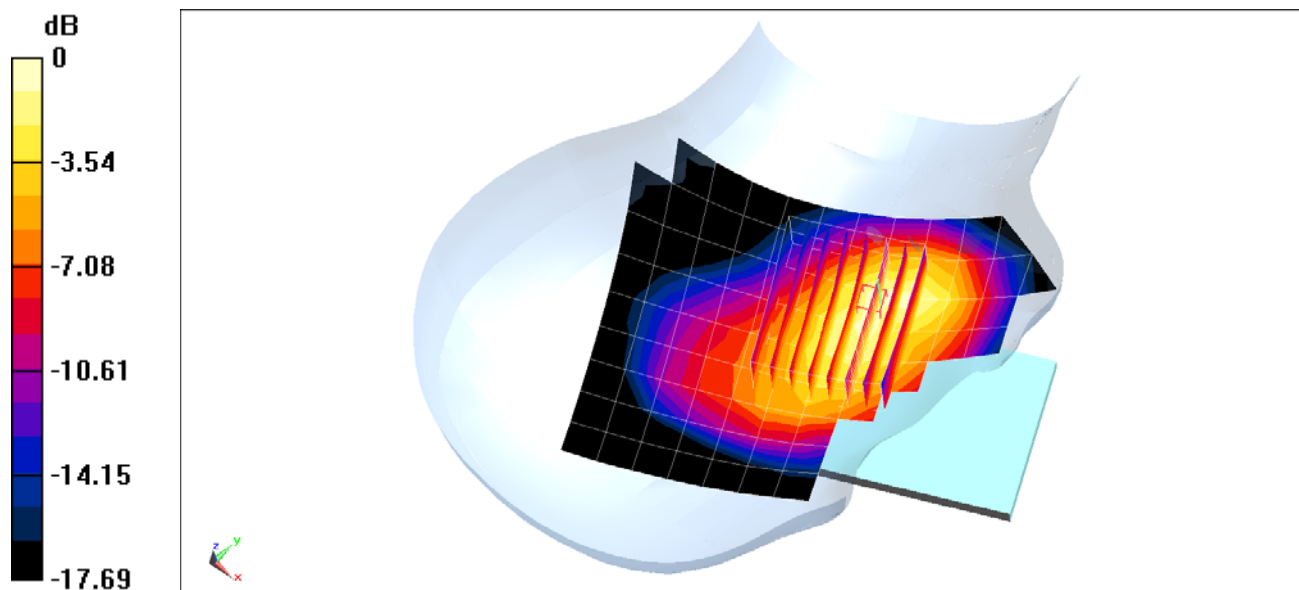
Area Scan (10x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (9x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.37 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.957 W/kg

SAR(1 g) = 0.582 W/kg



0 dB = 0.816 W/kg = -0.88 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 0.921 \text{ S/m}$; $\epsilon_r = 42.53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-14-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(10.5, 10.5, 10.5) @ 793 MHz; Calibrated: 4/18/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2018

Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 14, Right Head, Cheek 1st Additional Position, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

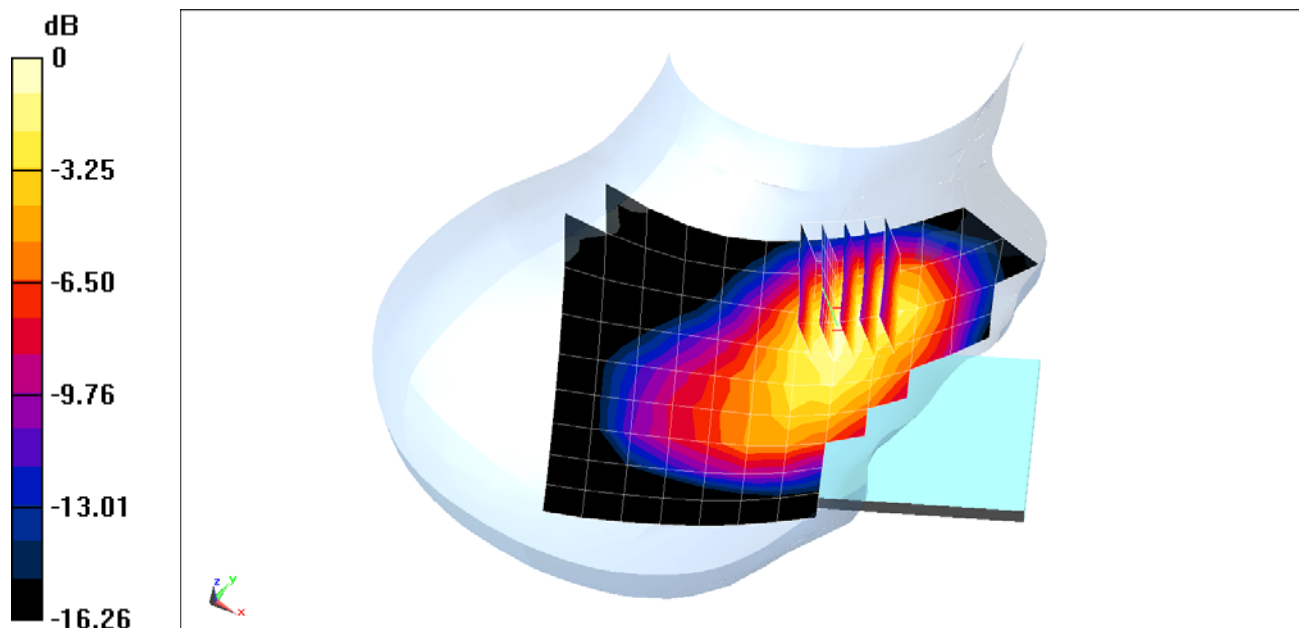
Area Scan (10x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.00 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.869 W/kg

SAR(1 g) = 0.508 W/kg



0 dB = 0.735 W/kg = -1.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03765

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5$ MHz; $\sigma = 0.893$ S/m; $\epsilon_r = 40.145$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 01-21-2019; Ambient Temp: 21.6°C; Tissue Temp: 19.4°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 831.5 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 26 (Cell.), Left Head, Cheek 1st Additional Position, Mid.ch
15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset

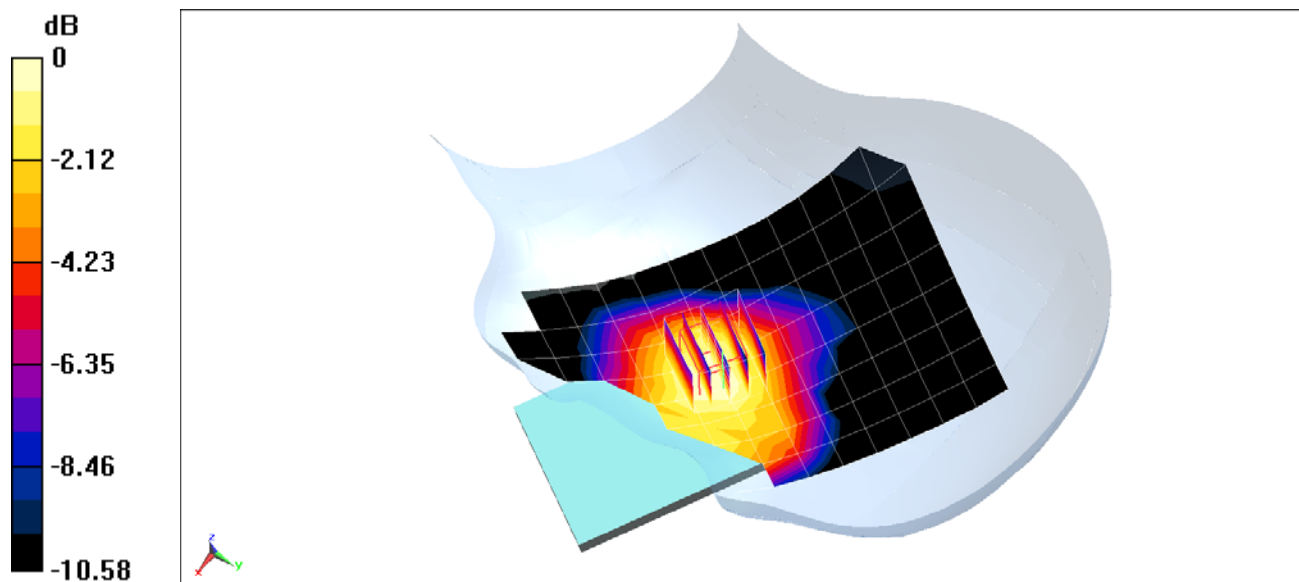
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.517 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.0590 W/kg

SAR(1 g) = 0.045 W/kg



0 dB = 0.0530 W/kg = -12.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03765

Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.5$ MHz; $\sigma = 0.895$ S/m; $\epsilon_r = 40.13$; $\rho = 1000$ kg/m³

Phantom section: Left Section;

Test Date: 01-21-2019; Ambient Temp: 21.6°C; Tissue Temp: 19.4°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.5 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 5 (Cell.), Left Head, Cheek 1st Additional Position, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

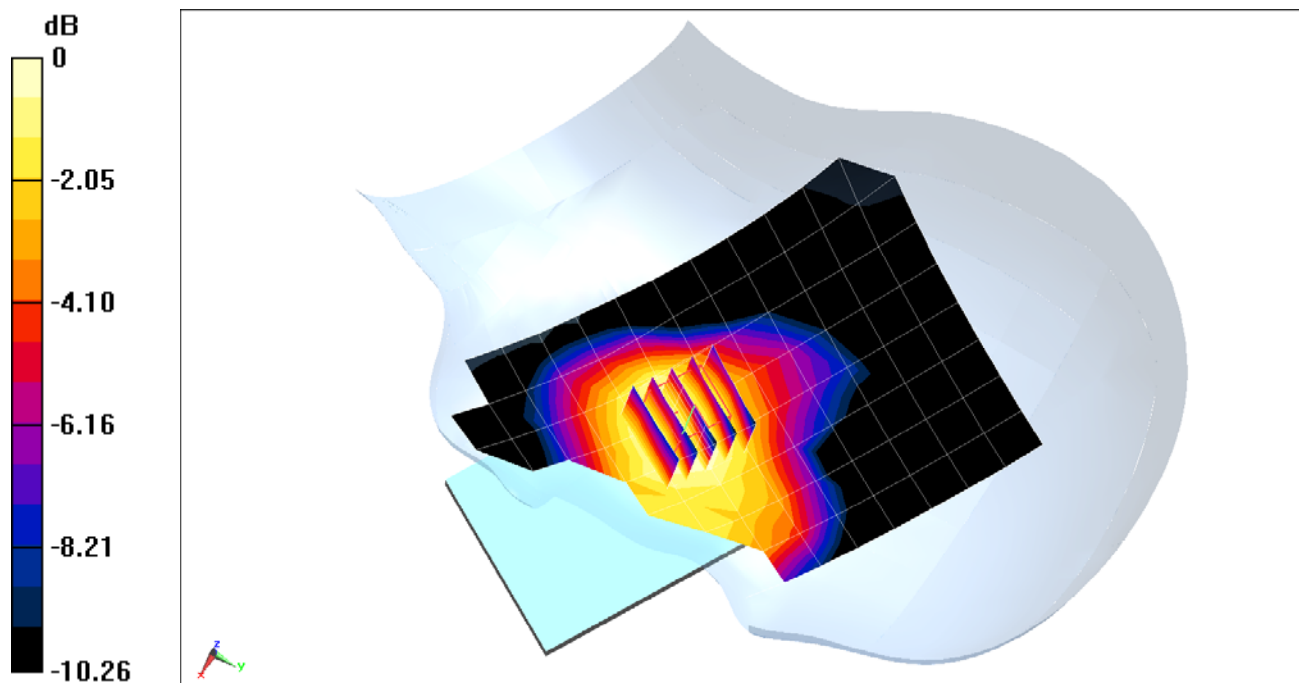
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.687 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.0500 W/kg

SAR(1 g) = 0.041 W/kg



0 dB = 0.0475 W/kg = -13.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.374 \text{ S/m}$; $\epsilon_r = 40.563$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-14-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(8.8, 8.8, 8.8) @ 1745 MHz; Calibrated: 4/18/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2018

Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Right Head, Cheek 1st Additional Position, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

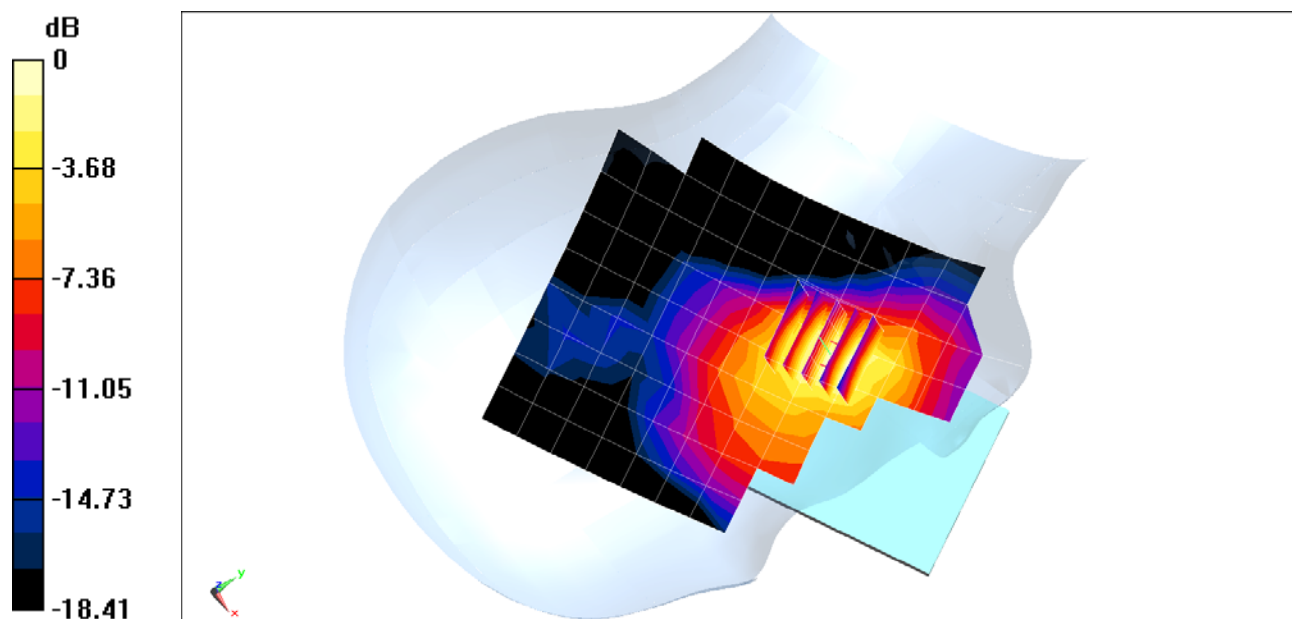
Area Scan (10x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.93 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.563 W/kg

SAR(1 g) = 0.368 W/kg



0 dB = 0.492 W/kg = -3.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.428 \text{ S/m}$; $\epsilon_r = 39.307$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-17-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.24, 5.24, 5.24) @ 1882.5 MHz; Calibrated: 10/22/2018

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 10/18/2018

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Right Head, Cheek 1st Additional Position, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

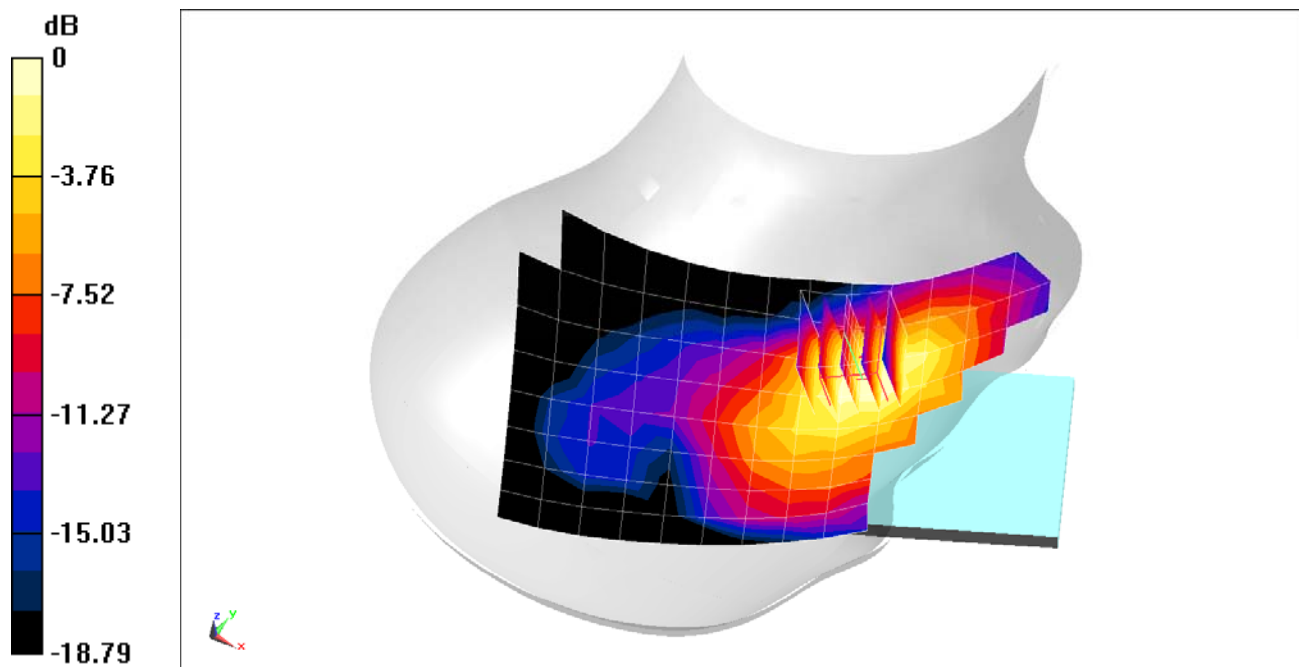
Area Scan (9x16x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.12 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.443 W/kg

SAR(1 g) = 0.289 W/kg



0 dB = 0.338 W/kg = -4.71 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03757

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2310$ MHz; $\sigma = 1.711$ S/m; $\epsilon_r = 39.257$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 01-18-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(7.57, 7.57, 7.57) @ 2310 MHz; Calibrated: 6/25/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 30, Right Head, Cheek 2nd Additional Position, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

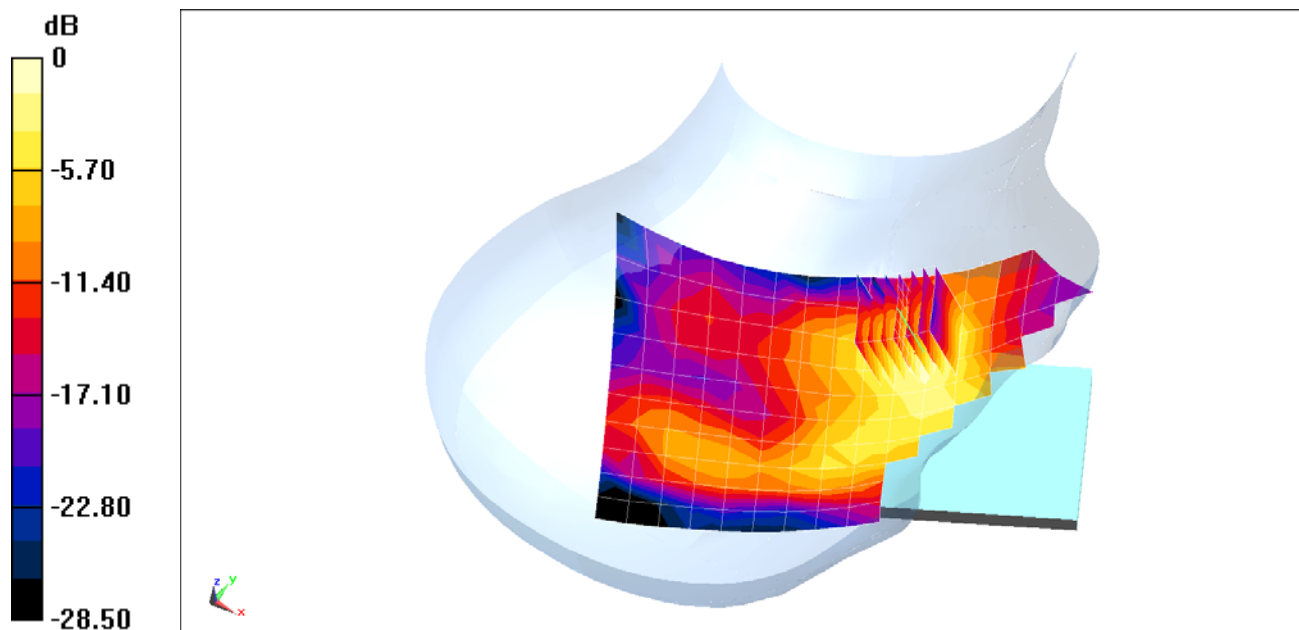
Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.87 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.570 W/kg

SAR(1 g) = 0.338 W/kg



0 dB = 0.492 W/kg = -3.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03757

Communication System: UID 0, _LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1

Medium: 2.4GHz Head Medium parameters used (interpolated):

$f = 2535 \text{ MHz}$; $\sigma = 1.858 \text{ S/m}$; $\epsilon_r = 38.476$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-15-2019; Ambient Temp: 20.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7409; ConvF(6.98, 6.98, 6.98) @ 2535 MHz; Calibrated: 6/25/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 7, Right Head, Cheek 1st Additional Position, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

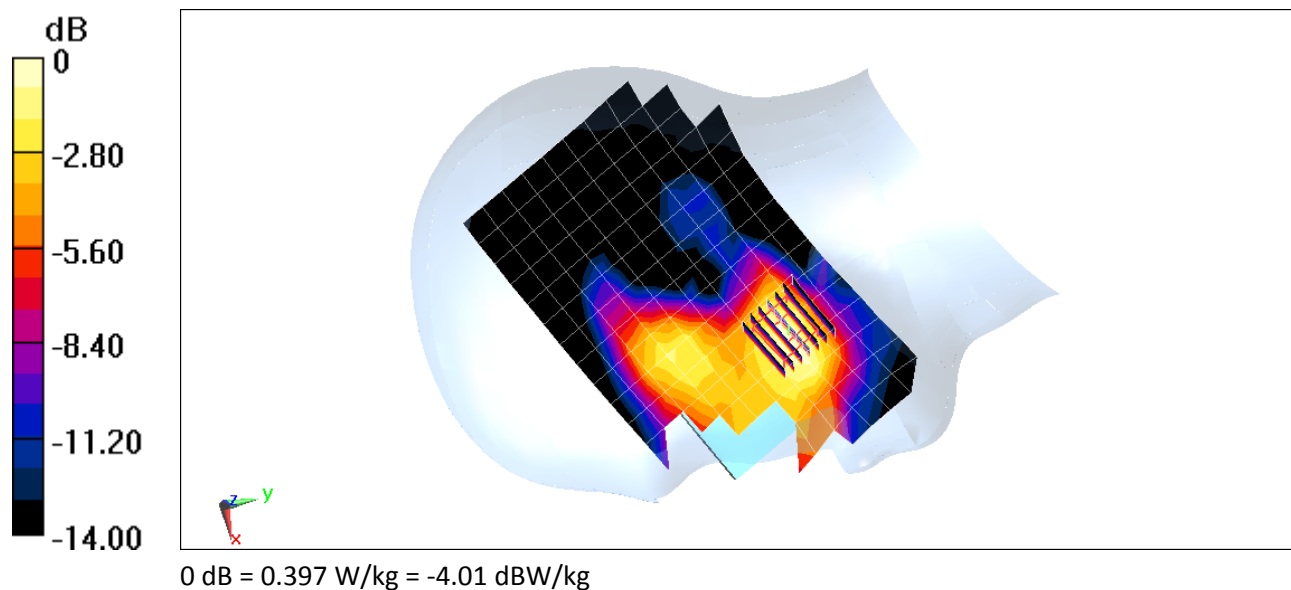
Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.57 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.484 W/kg

SAR(1 g) = 0.281 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03732

Communication System: UID 0, LTE Band 48; Frequency: 3690 MHz; Duty Cycle: 1:1.58

Medium: 3500-3700 MHz Head Medium parameters used (interpolated):

$f = 3690$ MHz; $\sigma = 3.016$ S/m; $\epsilon_r = 36.108$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 1-21-2019; Ambient Temp: 20.0°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN3949; ConvF(7.24, 7.24, 7.24) @ 3690 MHz; Calibrated: 8/24/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 48, Right Head, Cheek 1st Additional Position, High.ch
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

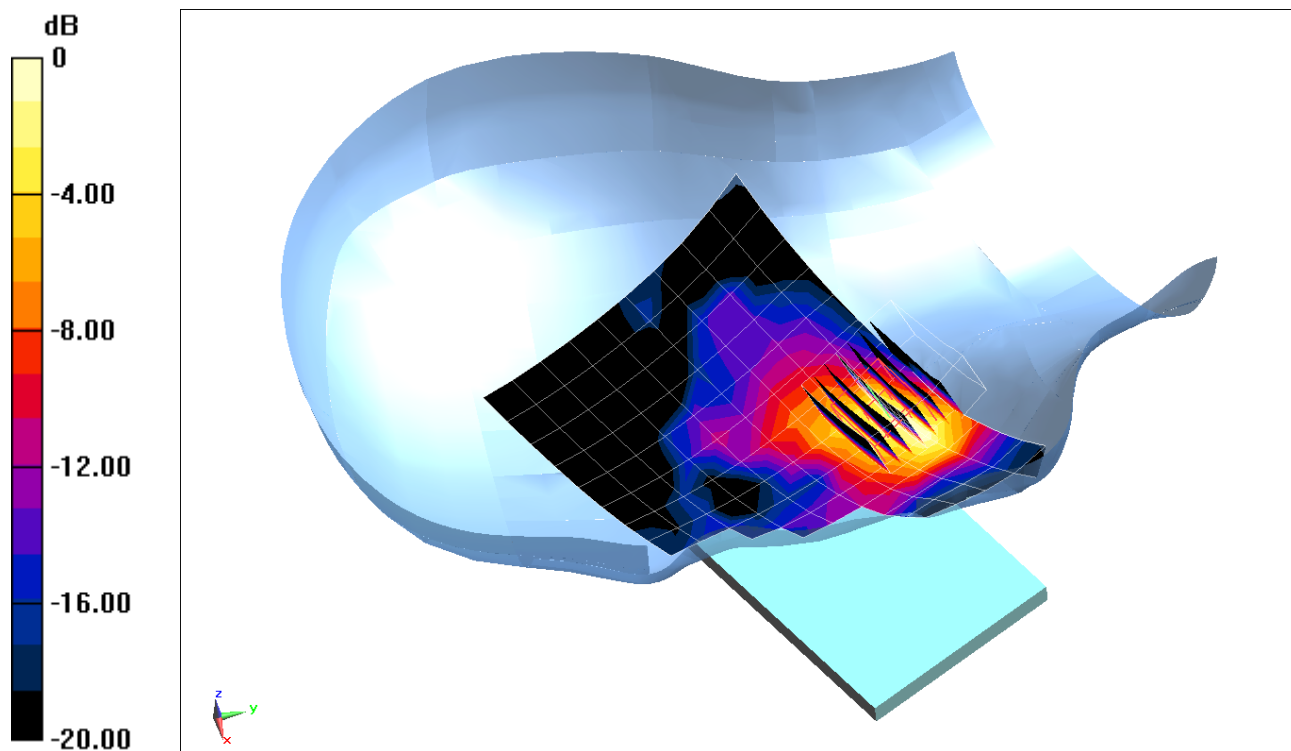
Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (9x8x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 11.78 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.951 W/kg

SAR(1 g) = 0.308 W/kg



0 dB = 0.608 W/kg = -2.16 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 18646

Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2593 MHz; Duty Cycle: 1:2.31

Medium: 2300-2600 Head Medium parameters used (interpolated):

$f = 2593$ MHz; $\sigma = 1.903$ S/m; $\epsilon_r = 38.052$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 02-05-2019; Ambient Temp: 24.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7410; ConvF(7.24, 7.24, 7.24) @ 2593 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 Power Class 2, Left Head, Cheek, 1st Additional Position, ULCA , QPSK

PCC: 20 MHz Bandwidth, Ch. 40620, 1 RB, 0 RB Offset

SCC: 20 MHz Bandwidth, Ch. 40422, 1 RB, 99 Offset

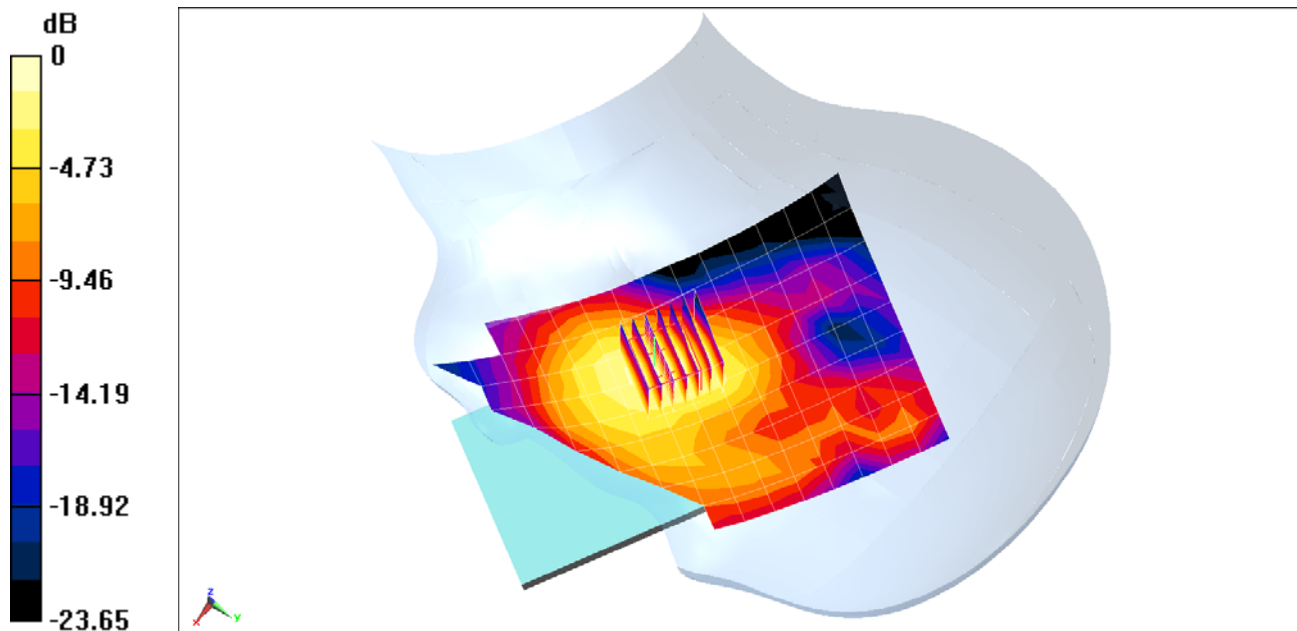
Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.96 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.824 W/kg

SAR(1 g) = 0.450 W/kg



0 dB = 0.685 W/kg = -1.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03781

Communication System: UID 0, _IEEE 802.11n; Frequency: 2452 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2452 \text{ MHz}$; $\sigma = 1.82 \text{ S/m}$; $\epsilon_r = 38.133$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 1-24-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7409; ConvF(7.23, 7.23, 7.23) @ 2452 MHz; Calibrated: 6/25/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, MIMO, 20 MHz Bandwidth, Right Head
Tilt 1st Additional Position, Ch 09, 13 Mbps**

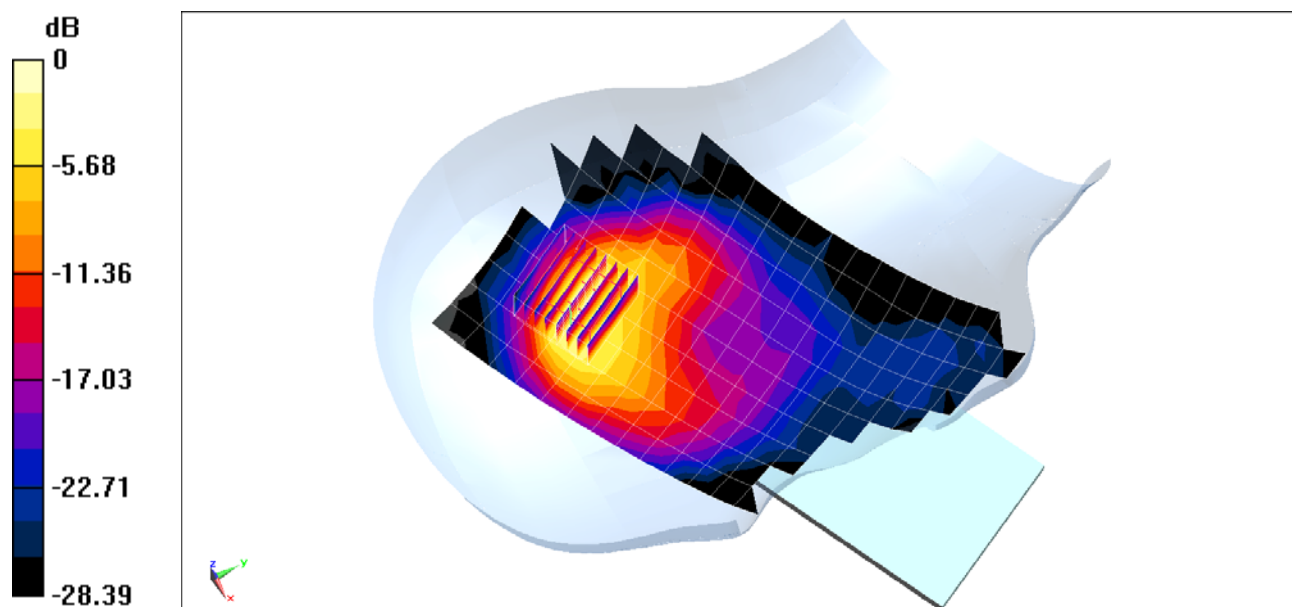
Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.955 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 2.04 W/kg

SAR(1 g) = 0.888 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03781

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5630 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used (interpolated):

$f = 5630 \text{ MHz}$; $\sigma = 5.068 \text{ S/m}$; $\epsilon_r = 34.523$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-15-2019; Ambient Temp: 21.4°C; Tissue Temp: 19.6°C

Probe: EX3DV4 - SN7409; ConvF(4.77, 4.77, 4.77) @ 5630 MHz; Calibrated: 6/25/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, Antenna 2, U-NII-2C, 40 MHz Bandwidth,
Right Head, Tilt, Ch 126, 13.5 Mbps**

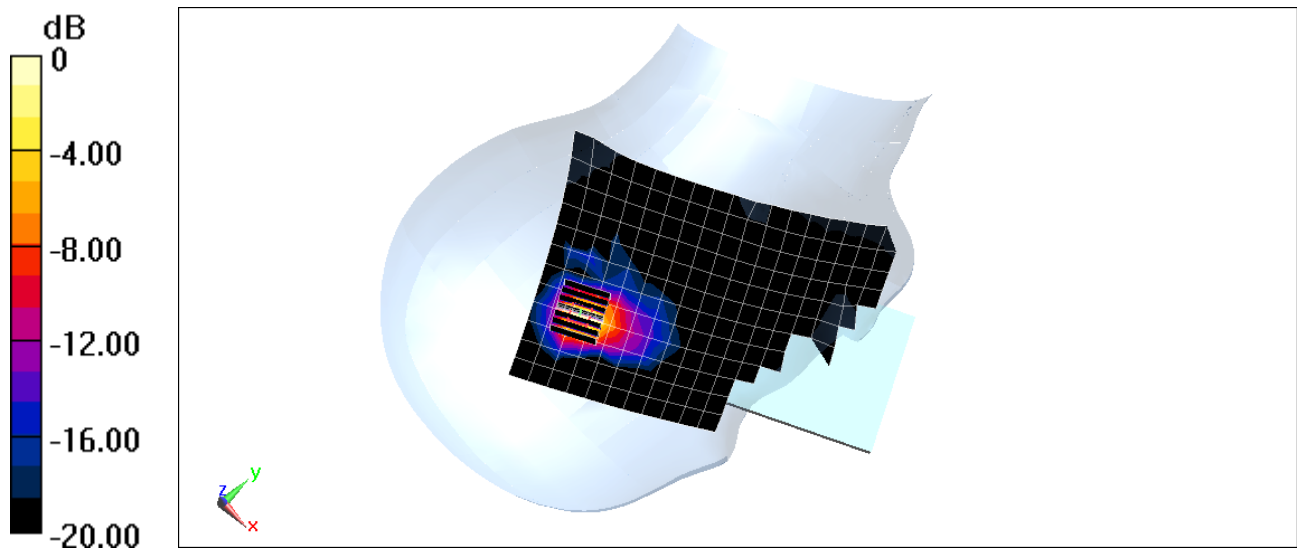
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 1.956 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 2.34 W/kg

SAR(1 g) = 0.508 W/kg



0 dB = 1.32 W/kg = 1.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03781

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.299

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.808 \text{ S/m}$; $\epsilon_r = 39.038$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-18-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(7.23, 7.23, 7.23) @ 2441 MHz; Calibrated: 6/25/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/18/2018

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Bluetooth, Right Head, Cheek, Ch 39, 1Mbps

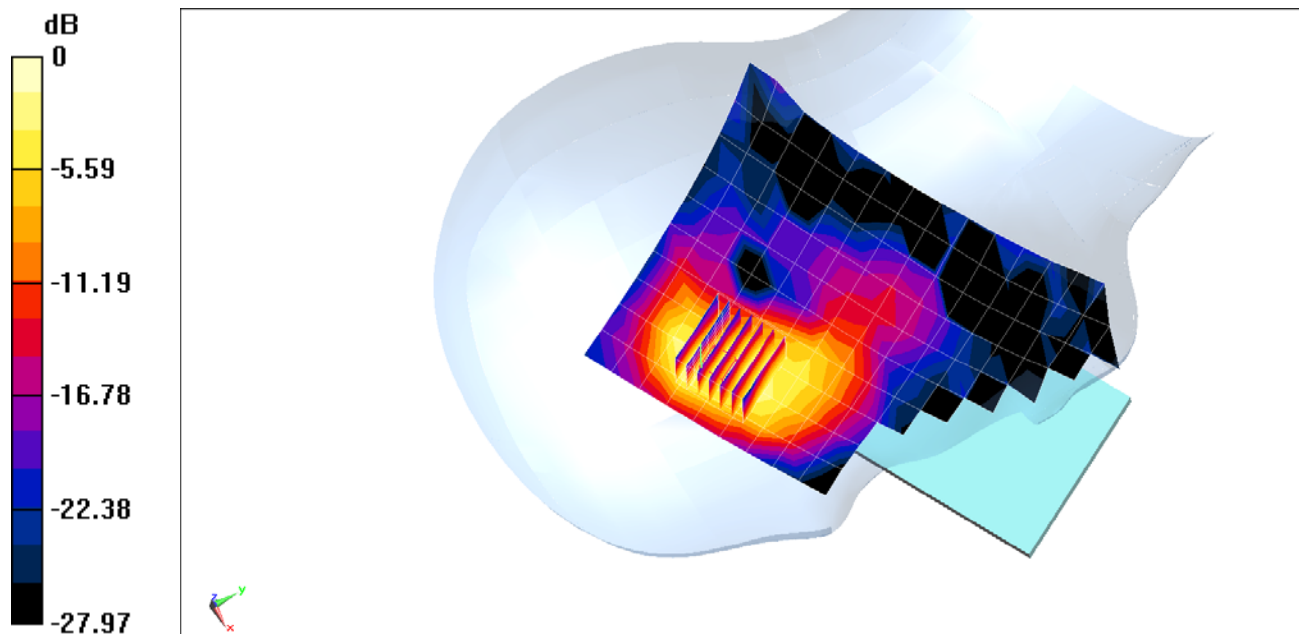
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.396 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.364 W/kg

SAR(1 g) = 0.143 W/kg



0 dB = 0.262 W/kg = -5.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.993 \text{ S/m}$; $\epsilon_r = 54.254$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(9.61, 9.61, 9.61) @ 820.1 MHz; Calibrated: 5/22/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/22/2018

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA BC10, Rule Part 90S, Body SAR, Back side, Mid.ch

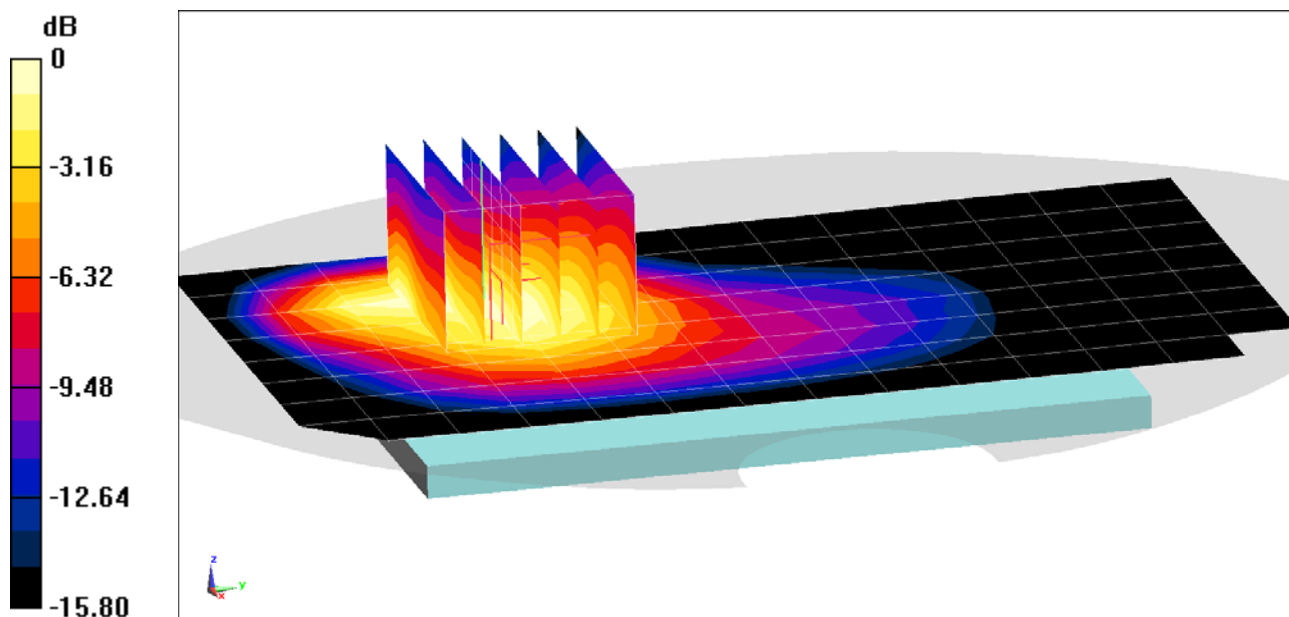
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (7x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.78 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.262 W/kg

SAR(1 g) = 0.160 W/kg



0 dB = 0.220 W/kg = -6.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 820.1 \text{ MHz}$; $\sigma = 0.993 \text{ S/m}$; $\epsilon_r = 54.254$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(9.61, 9.61, 9.61) @ 820.1 MHz; Calibrated: 5/22/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/22/2018

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO BC10, Rule Part 90S, Body SAR, Back side, Mid.ch

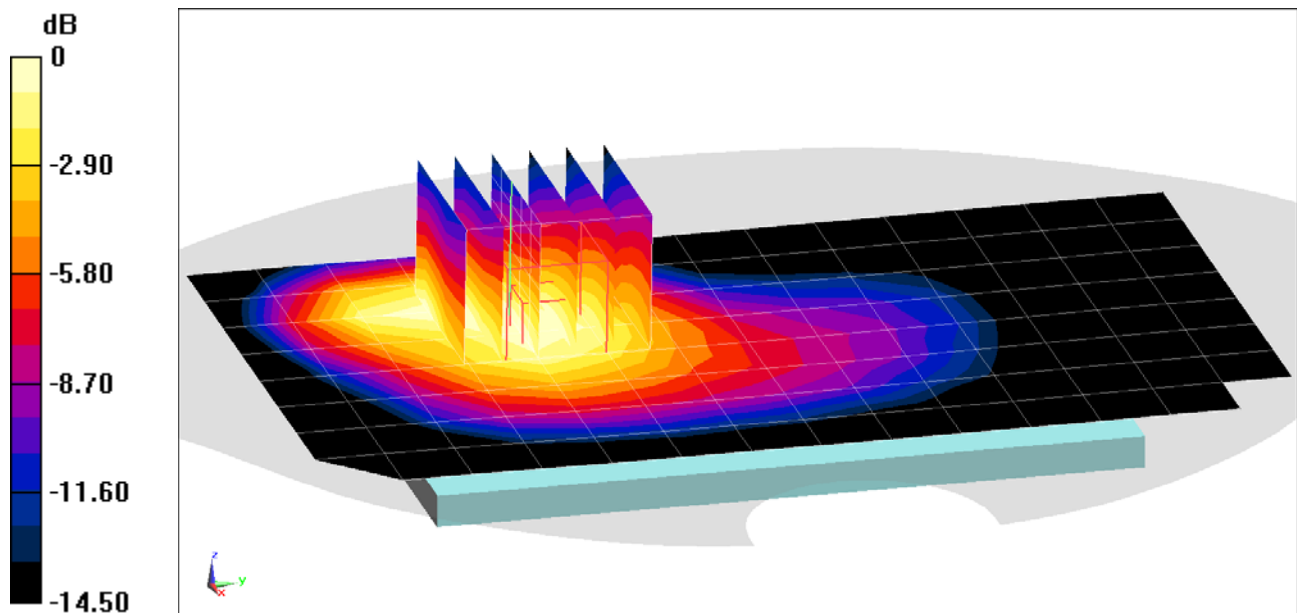
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.08 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.185 W/kg

SAR(1 g) = 0.122 W/kg



0 dB = 0.157 W/kg = -8.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 1.001$ S/m; $\epsilon_r = 54.238$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(9.61, 9.61, 9.61) @ 836.52 MHz; Calibrated: 5/22/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/22/2018

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA, Rule Part 22H, Body SAR, Back side, Mid.ch

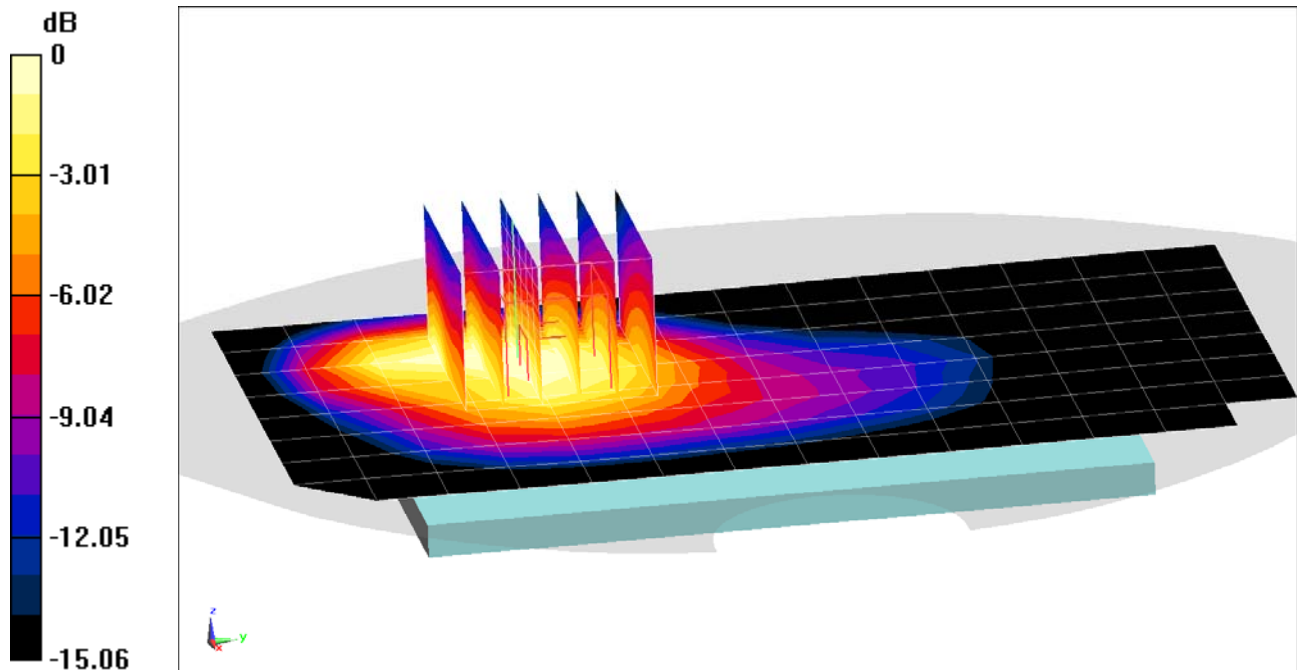
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.49 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.290 W/kg

SAR(1 g) = 0.178 W/kg



0 dB = 0.243 W/kg = -6.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 1.001$ S/m; $\epsilon_r = 54.238$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(9.61, 9.61, 9.61) @ 836.52 MHz; Calibrated: 5/22/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/22/2018

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO, Rule Part 22H, Body SAR, Back side, Mid.ch

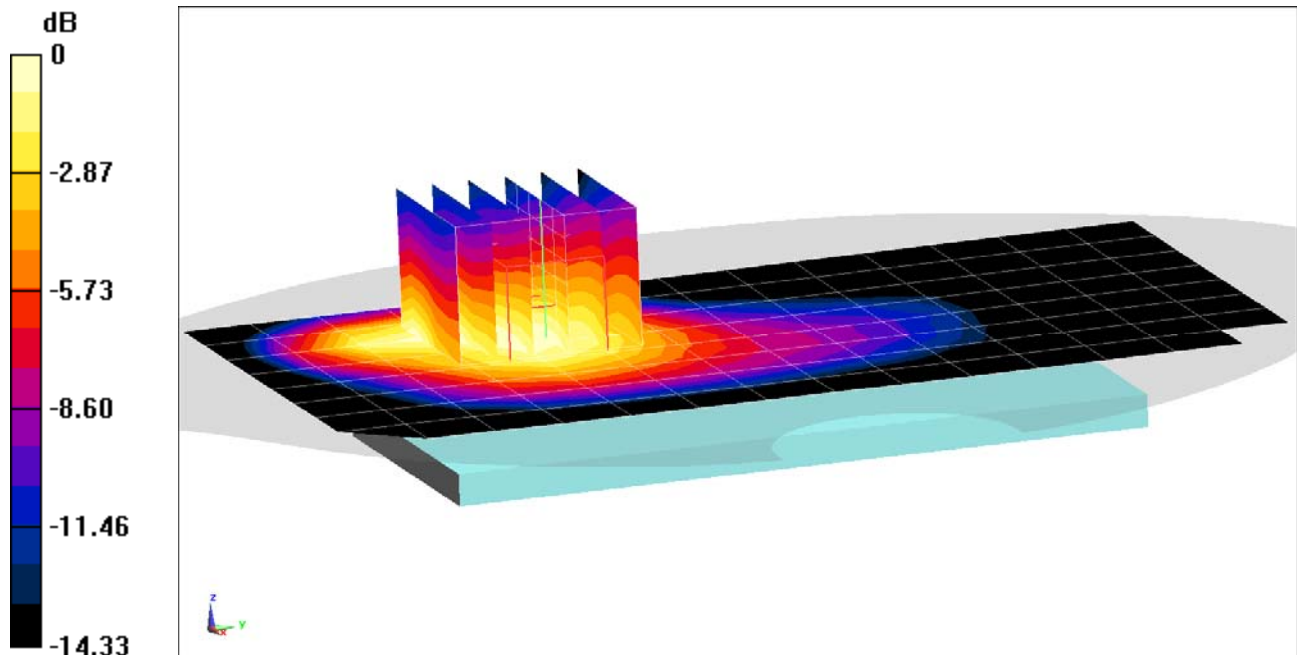
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.67 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.160 W/kg



0 dB = 0.210 W/kg = -6.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 53.246$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: PCS CDMA, Body SAR, Back side, Mid.ch

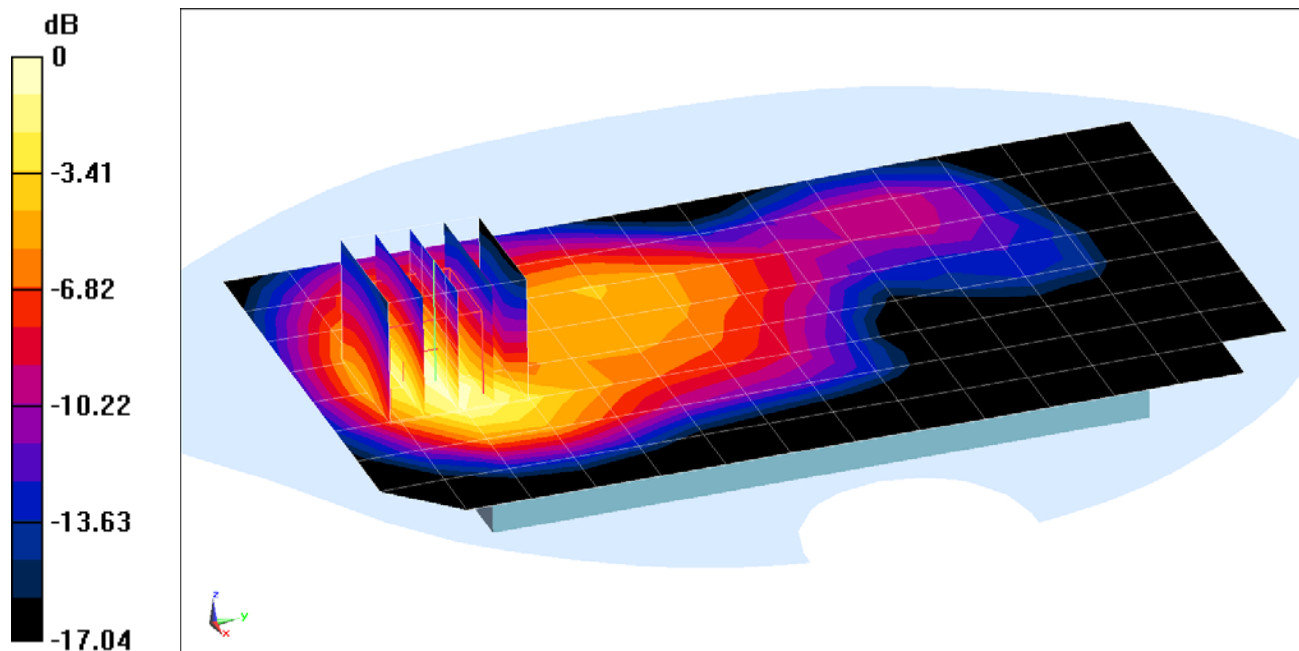
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.35 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.905 W/kg

SAR(1 g) = 0.533 W/kg



0 dB = 0.746 W/kg = -1.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03724

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 53.246$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 23.4°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO, Body SAR, Bottom Edge, Mid.ch

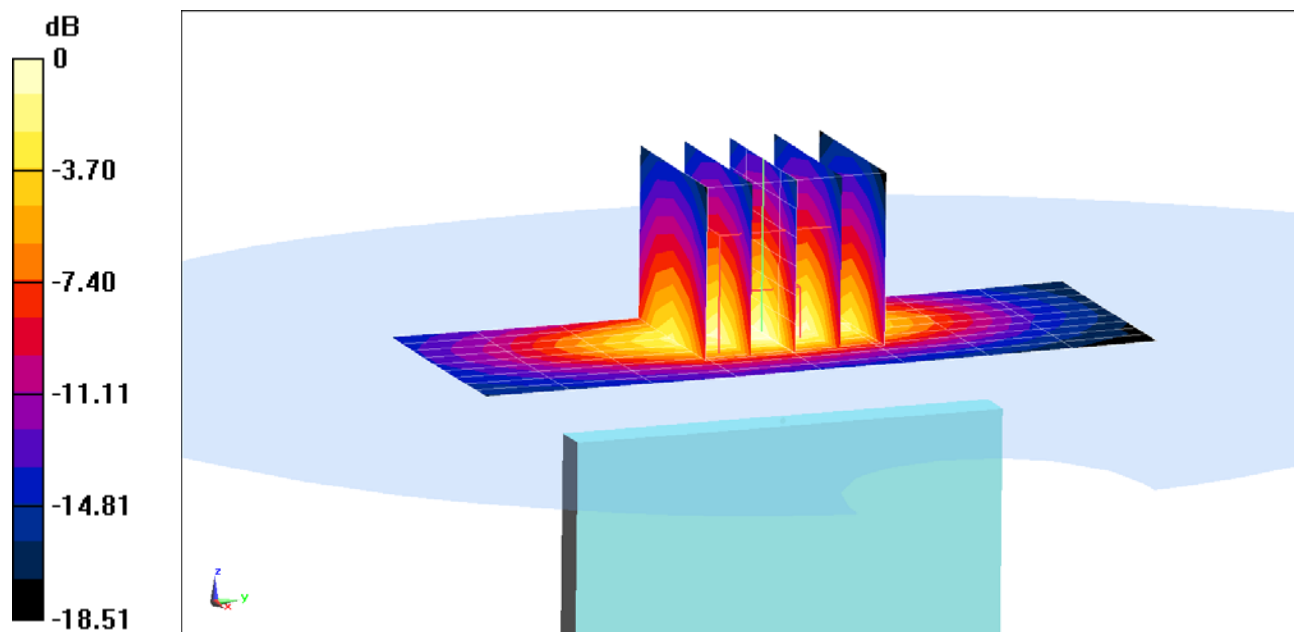
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 27.78 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.83 W/kg

SAR(1 g) = 1.03 W/kg



0 dB = 1.57 W/kg = 1.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03716

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6$ MHz; $\sigma = 1.001$ S/m; $\epsilon_r = 54.238$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-14-2019; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(9.61, 9.61, 9.61) @ 836.6 MHz; Calibrated: 5/22/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/22/2018

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 3 Tx Slots

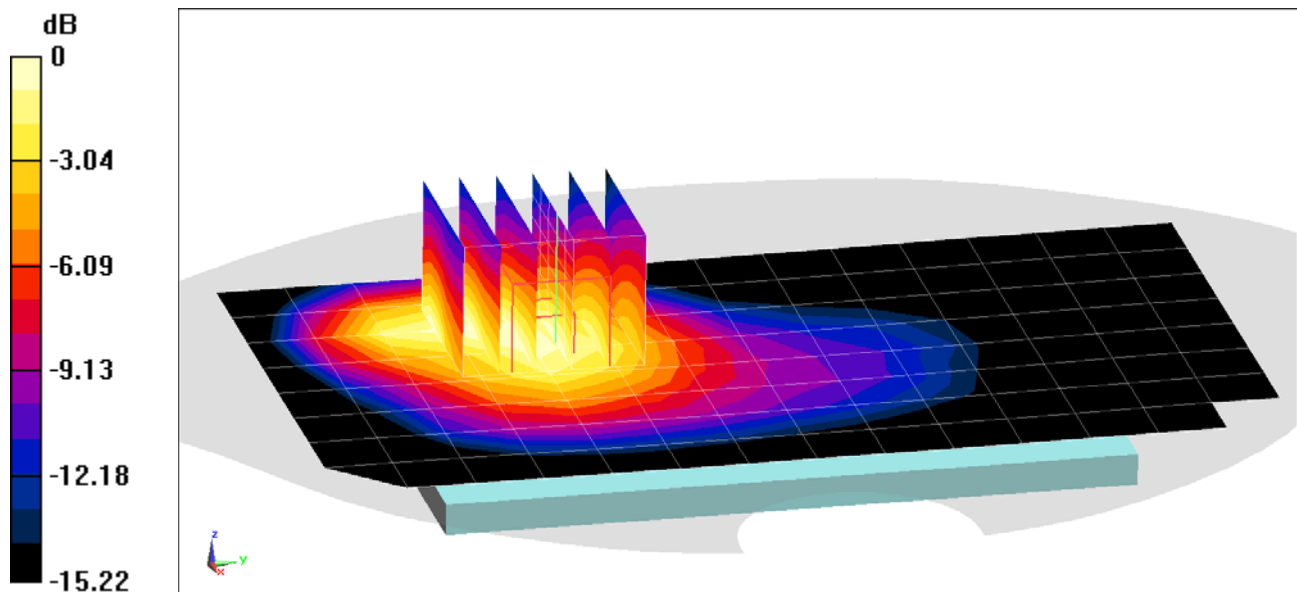
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.73 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.294 W/kg

SAR(1 g) = 0.187 W/kg



0 dB = 0.250 W/kg = -6.02 dBW/kg